# A47 Wansford to Sutton Dualling

## Scheme Number: TR010039

# Volume 9
# 9.42 Supplementary Ground Investigations 2022

Planning Act 2008

Infrastructure Planning (Examination Procedure) Rules 2010

November 2022

Infrastructure Planning

Planning Act 2008

**The Infrastructure Planning (Examination Procedure) Rules 2010**

# A47 Wansford to Sutton Development Consent Order 202[x]

## 9.42 Supplementary Ground Investigations 2022 (Appendix II Provided in Separate Report (Parts A and B))

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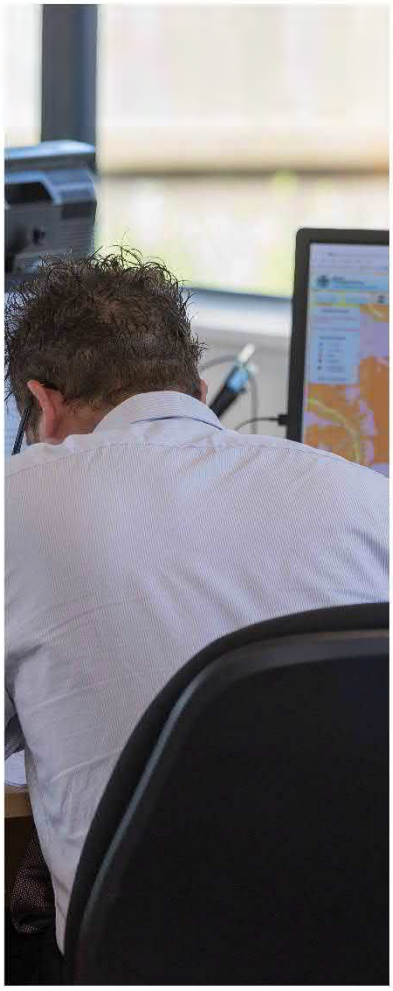
GROUND TECHNOLOGY



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| **Project** | A47 Wansford to Sutton Dualling |
| **Project ID** | GT0386 |
| **Client** | Galliford Try |

GROUND TECHNOLOGY

# GEOENVIRONMENTAL REPORT

Report No. GT0386

**SITE**

A47 Wansford to Sutton Dualling

**CLIENT**

Galliford Try

**DATE**

25/10/2022

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## DOCUMENT CONTROL

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| **Site** | A47 Wansford to Sutton Dualling |
| **Client** | Galliford Try |
| **Date** | 25th October 2022 |

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## ISSUE RECORD

| Revision | Date | Comments | Prepared by | Approved by |
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| R00 | 01/07/2022 | Draft report for comment minus laboratory testing. | Matt McKie | Adam Barnard |
| R01 | 03/08/2022 | Draft report for comment. | Matt McKie | Adam Barnard |
| R02 | 25/10/2022 | Comments addressed | Matt McKie | Adam Barnard |
| | | | | |

## GENERAL CONDITIONS / LIMITATIONS RELATING TO SITE INVESTIGATION

The findings of this report are based on several exploratory holes at specified locations across the site. It is possible that conditions exist other than those encountered and therefore no guarantee can be given as to the extent to which the findings are representative.

It should be noted that groundwater conditions fluctuate according to seasonal and other factors, which cannot be predicted with certainty. In low permeability soils equilibrium ground water levels are rarely established during the period of fieldwork.

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# 1 INTRODUCTION

## 1.1 Background

Ground Technology Services (GTS) were instructed by Galliford Try to conduct a supplementary ground investigation (GI) for the A47 Wansford to Sutton Dualling Scheme (the Scheme). The supplementary ground investigation is required to provide greater certainty in the ground and groundwater conditions required to inform detailed design. This supplementary GI will complement the previous GI at the site, undertaken during 2018, and covers changes made to the highway's alignment design. The Principal Contractor for the scheme is Galliford Try and the Designer and Investigation Supervisor Sweco UK Ltd (Sweco). The Client and overseeing organisation is National Highways.

The purpose of the investigation is to provide additional geotechnical and groundwater data for the proposed upgrade of the existing single carriageway to a dual carriageway. The primary target for this phase of the investigation is key structures, earthworks, and drainage ponds which have been relocated during design developments or added after completion of the 2018 GI.

The ground investigation works were undertaken in accordance with the document 'A47 Wansford to Sutton Dualling Supplementary GI Specification – HE551494-GTY-VGT-000-SP-VG-50001', prepared by Sweco on behalf of Galliford Try. The main objectives of the investigation summarised within the GI Specification are as follows:

- Further investigate and monitor the groundwater regime, permeability and infiltration properties at key structures, embankments, cuttings, and drainage ponds.
- Investigate and where possible, delineate the presence of relict shear surfaces associated with historic landslides.
- Refine geotechnical parameters to enable detailed design.
- Increase understanding of suitability of site-won fill material across the proposed cuttings, and its acceptability for re-use as embankment fill and/or structural fill.
- Undertake geo-environmental laboratory testing to refine the geo-environmental assessment at specific areas.
- Further investigate in-situ CBR values of near or at grade sections of proposed roads to facilitate pavement design.

The proposed scope of works required to meet the objectives included:

- Dynamically sampled boreholes with rotary core follow-on.
- Cable percussion techniques in some granular soils where recovery may otherwise be compromised
- Machine excavated trial pits.
- Dynamic Cone Penetrometer tests (DCP / TRL).
- In situ variable head permeability tests within installations.
- Soakaway/Infiltration tests.
- Installations of groundwater and ground gas monitoring standpipes, some with groundwater data loggers.
- GPR scanning for the purpose of service avoidance.
- Geotechnical and geo-environmental laboratory testing.
- Provision of AGS and factual report.

The proposed scheme layout and proposed exploratory hole locations were provided in drawings HE551489-GTYHGT-000-DR-VG-30201 to HE551489-GTYHGT-000-DR-VG-30206.

Towards the end of the fieldwork an addition two rotary boreholes were scheduled to 25 m depth to allow for the installation of inclinometers along with 12 months of monitoring. A revised specification was issued by Galliford Try on 15th May 2022 detailing the additional boreholes, 'A47 Wansford to Sutton Dualling Supplementary GI Specification – HE551494-GTY-VGT-000-SP-VG-50002-C03'.

# 2 THE SITE

## 2.1 Description and location

The A47 Wansford to Sutton Dualling Scheme is located along a section of road approximately 2.50 km in length between the A47/A1 junction, at Wansford and the existing A47/Castor/Upton roundabout, north of Sutton. The easternmost section of the scheme is located approximately 10 km west of the centre of Peterborough. The site boundary for the Scheme encompasses the existing A47 carriageway from approximately 450 m west of the A47/A1 junction at Wansford to approximately 750 m east of the existing Sutton roundabout. The site boundary encompasses a zone surrounding the A47 up to 400 m 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 existing route of the A47 runs through the centre of the site. Its elevation gradually falls from approximately 30 m AOD in the west, to a low point of 11 m AOD at White Water Brook. The road then gradually climbs to the east to approximately 20 m AOD where it remains for the remainder of the route. Four junctions are located along the A47 between the Wansford roundabout and Castor/Upton roundabout.

The National Grid Reference TL 07657 99751 (507657 E 299751 N) lies within the centre of the existing Wansford roundabout on the western side of the site. National Grid Reference TL 10113 99241 (510113 E 299241 N) lies within the existing A47/Castor/Upton roundabout on the eastern extent of the site.

The proposed alignment is shown on drawings HE551494-GTY-VGT-000-DR-VG-50001 to 50007 inclusive.

## 2.2 Geology

The geological information interpreted by the British Geological Survey (BGS) Geology of Britain viewer and the main phase of the GI indicates that the geology directly underlying the Scheme is highly variable over short lateral distances. The following geological units are anticipated to be encountered within the boundaries of the Scheme:

- Topsoil/Made Ground;
- Head;
- Alluvium;
- River Terrace Deposits;
- Rutland Formation;
- Lincolnshire Limestone Formation;
- Grantham Formation and;
- Whitby Mudstone Formation.

## 2.3 Hydrology

The nearest major surface water feature is the River Nene, which is located immediately south of the proposed Scheme flowing west to east.

## 2.4 Hydrogeology

The GI Specification notes that groundwater is expected to be encountered across the proposed Scheme, generally at a shallower depth in proximity to the River Nene. The Specification notes that groundwater was encountered within the Alluvium, River Terrace Deposits, Lincolnshire Limestone Formation, Grantham Formation and the Whitby Mudstone Formation.

The Head deposits and the Grantham Formation are classified by the Environment Agency as Secondary Undifferentiated Aquifers. The Alluvium and the River Terrace Deposits are classified as Secondary ‘A’ aquifers

and the Rutland Formation is classified as a Secondary ‘B’ aquifer. The Upper and Lower Lincolnshire Limestone Formations are classified by the Environment Agency as Principal Aquifers. The Whitby Mudstone Formation is classified by the Environment Agency as unproductive.

No source protection zones are located within the Scheme site boundary.

# 3 FIELDWORK

## 3.1 Scope

The field work was undertaken in general accordance with Eurocode 7 Part 2[1], The Steering Group Specification (2012)[2] and where there is no conflict BS 5930:2020[3]. The soil descriptions used in the exploratory hole records are in accordance with the relevant European Standards[1], BS EN ISO 14688-2:2004[4] and Part 6 of BS5930:2020[3].

GTS arrived on site on 1st February 2022 to establish a working compound in the designated lay down area. Two rotary drilling rigs were mobilised on 14th February 2022, with a third rotary rig joining on the 16th February 2022. A single cable percussion rig was also mobilised on the 14th April 2022. A trial pitting excavator was mobilised on the 15th February 2022. Dynamic Cone Penetrometer testing was carried out in two phases between the 23rd February and 4th March 2022, and the 4th April and 8th April 2022.

A rotary rig and cable percussion rig undertook 11 nightshifts between the 7th March and 23rd March 2022 to drill BH115, BH116 and BH118.

Trial pitting was completed on the 1st April 2022. Rotary drilling was completed to the initial specification on 24th April 2022. Two inclinometer boreholes were added to the scope of works and instructed by Galliford Try on the 20th April 2022. A single rotary rig was mobilised on the 16th May 2022 to undertake the additional boreholes.

The supplementary ground investigation was completed on the 25th May 2022.

The ground investigation comprised:

- 28 rotary boreholes with in-situ testing;
- 8 cable percussion with rotary follow-on boreholes with in-situ testing;
- 65 trial pits;
- 10 soakaway trial pits;
- 67 DCP probes;
- 25 monitoring installations with associated well developments;
- Permeability testing;
- Geotechnical and geochemical sampling.

Geotechnical sampling was carried out in all exploratory locations. The sample types and frequencies from each intrusive location were determined by the specification.

In-situ testing was undertaken in accordance with the current Eurocode and British Standards:

- Standard Penetration testing in all boreholes undertaken in accordance with BS EN ISO 22476-3:2005[5]; SPT hammer calibration certificates are referenced in Appendix II,
- Hand shear vane in accordance with BS EN ISO 22476-9[6]; calibration certificates are referenced in Appendix II,
- UK Transport Research Laboratory (TRL) Dynamic Cone Penetrometer (DCP) tests, correlated to in-situ CBR % (California Bearing Ratio), carried out as highlighted in Schedule 2.
- Soakaway testing was undertaken in accordance with BRE 365 (Soakaway Design)[8].
- Permeability calculations were undertaken to BS 5930, Section 25.4.6.1 (1999)[9] standards, and intake factor (F) as per BS 5930, Section 25.4.6.1 (1981)[10].

An archaeological clerk of works was required to oversee excavations for the duration of the site operations.

## 3.2 Rotary boreholes

28 full depth rotary boreholes were drilled to depths between 6.00 m and 30.60 m bgl as specified by the Investigation Supervisor. Three tracked rotary rigs were utilised (a Tecop, Beretta T44 and a Fraste) employing dynamic sampling and rotary coring techniques between the 14th February 2022 and 24th April 2022, with a single rig returning to complete the additional boreholes between the 16th May 2022 and 25th May 2022.

All positions were initially scanned for services using GML and GPR methods where possible then further scanned at ground level and at intervals of 300 mm to 1.20 m bgl using a CAT by a certified operator throughout the excavation of the hand dug pits, to ensure that underground services were cleared.

The boreholes commenced using dynamic sampling techniques through the granular surface materials. Rotary coring was undertaken once the dynamic sampled sections reached a depth that the strata could be successfully recovered using rotary techniques.

In-situ standard penetration tests (SPTs) were carried out between each successive drive within the dynamically sampled section as a guide to the relative density/consistency of the soils encountered. The trip hammer utilised was calibrated in accordance with BS EN ISO 22476-3 (2005)[5]. The Calibration certificates can be found in Appendix VII.

The boreholes were progressed from the base of the dynamically sampled sections using rotary coring techniques with water flush. Each successive core run was generally 1.50 m long and retained in the core liner. SPTs were carried out between each core run as a guide to the relative density/consistency of the soils encountered.

The recovered cores were split, photographed, sub-sampled and logged on site by GTS engineers, as an aid to the production of borehole logs. The engineer verified logs and photographs are contained within Appendix II and are based upon the results of in-situ testing, laboratory test results and the descriptions of recovered samples.

Requirements for the installation of the boreholes were provided by the Investigation Supervisor during the site works. Upon completion of the boreholes, the Investigation Supervisor were provided with the ground conditions encountered prior to the instruction of the required installation.

### 3.2.1 Inclinometer boreholes

Two additional boreholes requested by Sweco (BH135 and BH136), and instructed by Galliford Try, were drilled using rotary techniques and installed with inclinometer pipe to a depth of 25.00 m bgl. The pipe was grouted into the borehole using a pre-determined grout mix supplied by the Investigation Supervisor. The inclinometer pipe allows an inclinometer probe to be lowered down the borehole to measure any lateral movement of the pipe in response to ground movement. Monitoring of the inclinometer boreholes will be undertaken as covered in Section 5.3 of this report.

## 3.3 Cable percussion with rotary follow-on boreholes

Seven boreholes were initially drilled from the surface using cable percussion techniques, utilising a Dando 3000 drilling rig. The cable percussion drilling was used on selected holes where the near-surface strata was deemed too granular to achieve suitable recovery using dynamic sampling or rotary coring techniques. Once the cable drilling had advanced through the granular material, rotary coring was undertaken from the base of the cable percussive borehole.

All positions were initially scanned for services using GML and GPR methods where possible then further scanned at ground level and at intervals of 300 mm to 1.20 m bgl using a CAT by a certified operator throughout the excavation of the hand dug pits, to ensure that underground services were cleared.

During the cable percussion drilling, the borehole was cased using 200 mm diameter steel casing to prevent the hole from collapsing and to allow the advancement of the rotary drilling.

In-situ standard penetration tests (SPTs) were carried out at regular intervals as a guide to the relative density/consistency of the soils encountered. The trip hammer utilised was calibrated in accordance with BS EN ISO 22476-3:2005[5].

The recovered strata from the cable percussion drilling were recorded and described by a GTS engineer on site, and samples taken during drilling as an aid to the production of borehole logs. The engineer verified logs are contained within Appendix II and are based upon the results of in-situ testing, laboratory test results and the descriptions of recovered samples.

Requirements for the installation of the boreholes were provided by the Investigation Supervisor during the site works. Upon completion of the boreholes, the Investigation Supervisor was contacted for details of the required installation if required. The Investigation Supervisor were provided with the ground conditions encountered prior to the instruction of any required installation.

## 3.4 Mechanically excavated trial pits

65 mechanically excavated trial pits were completed to a maximum depth of 4.00 m bgl to allow the logging of the near surface geology and the collection of soil samples.

The proposed locations of the trial pits were specified by Investigation Supervisor and the plan provided in Schedule 2. Prior to digging the pits, the area was cleared using GML and GPR techniques where possible, and CAT scanned to ensure that no underground services were present. The pits measured between 0.25 m and 0.40 m in width and approximately 2.00 m in length. The trial pit logs are presented in Appendix II.

## 3.5 BRE Soakaway testing

Ten soakaway tests within trial pits were undertaken in accordance with BRE 365 (Soakaway Design)[7]. The soil infiltration rate, *f*, was defined in accordance with BRE 365 (Soakaway Design)[7].

BRE soakaway tests were undertaken in ten additional trial pits adjacent to the logged pit. Following excavation and logging, each of these infiltration test trial pits were installed with a section of slotted pipe from the base to ground level and filled to ground level with gravel to provide a response zone for the infiltration tests and prevent the pit from collapse. A RuggedTROLL water level logger (diver) was placed within the pipe 100 mm from the base.

Once the diver was installed, water was pumped into the hole from a water bowser until it reached the surface of the gravel. An electronic dip meter was used to accurately determine the depth of water added to the hole.

A total of three infiltration tests were typically undertaken in each location where permeability was sufficient for 75% drainage within the specified 24 hours. Each test finished once the water level dropped below 75 % of the gravel response zone. Water was then added to bring the level back to the top of the response zone and the subsequent test started. If water levels did not drop below 50 % of the response zone depth in a 24-hour period, the test was stopped, and the diver removed from the hole.

Results for all infiltration tests are presented in Appendix III.

## 3.6 UK Transport Research Laboratory (TRL) Probes

67 in-situ Dynamic Cone Penetrometer (DCP) tests using UK Transport Research Laboratory (TRL) probes were undertaken to obtain California Bearing Ratio (CBR) values. Of these, 32 DCP's were undertaken adjacent to trial pits.

All positions were initially scanned for services using GML and GPR methods were possible then further scanned at ground level and at intervals of 300 mm to 1.20 m bgl using a CAT by a certified operator throughout the excavation of the hand dug pits, to ensure that underground services were cleared.

Adjacent to each DCP a hand excavated trial pit was dug to 1.20 m. DCPs were undertaken from ground level as specified by the Investigation Supervisor. The test then progressed with the distance of penetration recorded from a single blow of the hammer. If penetration was less than 10 mm for a single blow, the penetration of several blows

was recorded. The process was repeated until the target depth was reached. The probes were penetrated to a maximum depth of 1.50 m, at which the test was completed. A test was refused if zero penetration was recorded from ten blows of the hammer, or if the TRL probe rods began to bend.

The results of the tests and calculated layer CBR values are contained in Appendix III.

## 3.7 Variable head permeability tests

Variable head permeability tests were undertaken within the installations of ten boreholes: BH101, BH107, BH108, BH109, BH111, BH114, BH121, BH123, BH124 and BH132. The tests were undertaken in accordance with BS EN ISO 22282-1[9].

Prior to commencement of the test, a RuggedTroll diver data logger was placed 100 mm above the base of the installation. The diver data logger was used to record the head of water above the sensor. Water was then pumped into the borehole until the water level reached ground level. The test section within each borehole comprised the length of slotted pipe at the base of the installation. Data from the diver was then downloaded and inputted into a calculation sheet to provide a Permeability Coefficient for each test, using calculation method B4.1 within BS EN ISO 22282-2:2012[10].

## 3.8 Sampling regime

Sampling during the intrusive investigation was undertaken in accordance with the UK Specification for Ground Investigation, 2nd edition[2] where appropriate.

### 3.8.1 Cable percussive boreholes

The client specified the following sampling regime for the cable percussive boreholes:

- Small disturbed samples of fine to medium grained soil undertaken at 1.00 m intervals and where there was a stratum change for the first 5.00 m and then at 1.50 m intervals thereafter.
- Bulk sample of coarse grained / granular material (if recovered) at 1.00 m intervals for the first 5.00 m and then at 1.50 m intervals thereafter.
- SPT split spoon sample obtained at 1.00 m alternate intervals (with UT100's recovered in the intermediary 1.00 m intervals) to 5.00 m bgl, and 1.50 m intervals thereafter.
- UT100 samples undertaken at 1.00 m intervals in fine grained soils (alternating with SPTs) to 5.00 m bgl, and 1.50 m intervals thereafter.

### 3.8.2 Trial pits

It was ensured that sufficient sample quantities are collected for the purpose of compaction, MCV and shear box testing. This required double bulk samples to be collected. Both double bulk samples and a small disturbed sample were taken at each change in strata as determined by the trial pit engineer.

### 3.8.3 Groundwater sampling

No groundwater sampling of the boreholes was requested during the intrusive investigation.

### 3.8.4 Environmental sampling

Where made ground was encountered the following samples were taken:

- From each different made ground strata type within each exploratory position to the maximum depth of the made ground, or as specified by Investigation Supervisor.
- A single sample obtained from the natural stratum immediately underlying the made ground.

Where made ground was absent:

- One sample was taken of the topsoil (where present) and one sample taken of the underlying natural ground.

## 3.9 Project restrictions

This section outlines the project restrictions encountered during the fieldwork.

### 3.9.1 Exploratory position restrictions

Table 1 below outlines the exploratory position restrictions and cancelations. All restrictions were prior agreed with Galliford Try.

| Location ID | Reason for early termination / restrictions |
|---|---|
| BH104 | Terminated at 4.95 m bgl due to borehole becoming blocked. Borehole repositioned and renamed BH104A. BH104A achieved the target depth. |
| BH120 | Terminated at 5.00 m bgl due to dynamic sampling barrel becoming jammed. Borehole repositioned and drilled from ground level to 6.00 m bgl using cable percussive techniques. Renamed BH120A and achieved target depth. |
| TP113, TP147, TP148 and TP149 | Terminated above target depth due to collapse of trial pit walls. |
| TP129, TP133, TP134 and TP135 | Terminated above target depth due to water ingress. |
| TP107 to TP112, TP114 to TP128, TP130 to TP132, TP136 to TP139, TP141, TP144 to TP146 and TP150 to TP171. | Terminated above target depth due to encountering hard ground. |
| | |
| Only 11 DCP TRL probe positions reached the target depth of 1.50 m bgl. These positions were: DCP103, DCP122, DCP129, DCP130, DCP135, TP126, TP139, TP143, TP164, TP167 and TP169. The remaining positions all refused short of the target depth. | Terminated above target depth of 1.50 m bgl due to encountering hard ground. Test restricted when zero penetration was achieved after 10 hammer blows or if the TRL probe rods began to bend significantly. |

Table 1 Exploratory hole restrictions

# 4 LABORATORY TESTING

## 4.1 Geotechnical testing

Laboratory testing was specified by Investigation Supervisor, and carried out in accordance with BS 1377:1990[11]. The geotechnical testing was carried out by ASC GeoTesting and Professional Soils Laboratory Limited, both UKAS accredited laboratories.

BRE concrete classification tests were undertaken to BRE Special Digest 1 (SD1):2005[12]. The results of these tests are included with the geotechnical laboratory test results in Appendix IV. These tests were carried out by Derwentside Environmental Testing Services Ltd, a UKAS and MCERTS accredited laboratory.

A summary of the Geotechnical testing scheduled is shown in Table 2. Where testing was been restricted, this was discussed with the Investigation Supervisor and alternatives were suggested. A Restriction Report for each has been highlighted in the back of Appendix IV.

| Test description | Method | Total number of tests scheduled | Total number of tests reported | Number of restrictions |
|---|---|---|---|---|
| Moisture content | BS1377-2 Method 3 | 483 | 483 | 0 |
| Liquid and plastic limit and plasticity determinations (one point) | BS1377-2 Method 4 | 8 | 8 | 0 |
| Liquid and plastic limit and plasticity determinations (four point) | BS1377-2 Method 4 | 225 | 218 | 7 |
| Particle size distribution sieve (wet) | BS1377-2 Method 9 | 208 | 202 | 6 |
| Particle size distribution fine (pipette) | BS1377-2 Method 9 | 107 | 91 | 16 |
| Compaction test (4.5 kg rammer) | BS1377-4 Method 3 | 0 | 15 | 0 |
| Compaction test (2.5 kg rammer) | BS1377-4 Method 3 | 36 | 35 | 1 |
| Compaction test (vibrating hammer) | BS1377-4 Method 3 | 62 | 36 | 10 |
| California Bearing Ratio (CBR) (soaked) | BS1377-4 Method 7 | 47 | 41 | 6 |
| California Bearing Ratio (CBR) (unsoaked) | BS1377-4 Method 7 | 2 | 2 | 0 |
| Determination of the moisture condition value (MCV) (5-point) | BS1377-4 Method 5 | 80 | 76 | 4 |
| Triaxial test (multi) | BS1377-7 Method 8 | 46 | 42 | 4 |
| Oedometer test | BS1377-5 Method 3 | 24 | 24 | 0 |
| Shear box (large) | BS1377-7 Method 5 | 34 | 25 | 9 |
| Shear box (small) | BS1377-7 Method 5 | 41 | 41 | 0 |
| Ring shear (small) | | 33 | 33 | 0 |
| Consolidated-undrained triaxial compression test with measurement of pore pressure | BS1377-8 Method 7 | 11 | 11 | 0 |
| Consolidated-drained triaxial compression test with measurement of volume change | BS1377-8 Method 8 | 32 | 32 | 0 |
| Laboratory vane | BS1377-7 Method 3 | 1 | 1 | 0 |
| Determination of density (linear measurement method) | BS1377-2 Method 7 | 38 | 21 | 17 |
| Porosity/density (saturation and calliper) | | 5 | 5 | 0 |
| Uniaxial compressive strength | | 17 | 16 | 1 |
| Point load on irregular rock lump/core sample | | 17 | 17 | 0 |
| Point loads | | 25 | 21 | 4 |
| Natural moisture content of rock sample | | 49 | 48 | 1 |
| BRE Suite A | BRE Digest | 1 | 1 | 0 |
| Sweco BRE SD1 Suite | BRE Digest | 87 | 87 | 0 |
| Determination of the organic matter content | BS1377-3 Method 3 | 31 | 31 | 0 |

Table 2 Geotechnical testing scheduled

## 4.2 Chemical testing

Chemical testing was undertaken on a selection of samples identified by Sweco. On receipt of the completed chemical schedule, GTS instructed Derwentside Environmental Testing Services to undertake the testing. The

results of the chemical tests are presented in Appendix V and the number of scheduled tested summarised in Table 3.

| Testing suite | Total number of tests reported |
|---|---|
| QTSE 3845 - A47 Wansford to Sutton Soil Suite | 107 |
| QTSE 3845 - A47 Wansford to Sutton Leachate Suite | 39 |
| Asbestos Screen | 9 |
| WAC | 5 |

Table 3 Geochemical testing scheduled

# 5 GROUND CONDITIONS AND CHARACTERISATION

## 5.1 Physical soil and groundwater conditions

Reference should be made to the exploratory hole logs in Appendix II for full details of the strata encountered by this investigation. However, it has been requested by the Investigation Supervisor to omit the geological names from the borehole logs as this provides a level of interpretation which is beyond the scope of this report.

### 5.1.1 Groundwater

Groundwater strikes were recorded within 20 exploratory hole locations. The table below presents the depth at which groundwater was initially observed within the exploratory holes and the change in water level after 20 minutes. In some cases, the groundwater level may have been inhibited due to the addition of small amounts of water to aid the drilling, however the effect is thought to be minimal.

| Location ID | Strike depth (m bgl) | Depth after 20 minutes (m bgl) |
|---|---|---|
| BH104 & BH104A | 8.00 | 7.10 |
| BH106 | 4.30 | 4.30 |
| BH107 | 6.00 | 4.85 |
| BH108 | 10.50 | 8.60 |
| BH110 | 7.80 | 7.60 |
| BH113 | 0.90 | 0.80 |
| BH114 | 1.80 | 1.75 |
| BH119 | 14.60 | 12.40 |
| BH120 & BH120A | 4.00 | 4.00 |
| BH127 | 2.50 | 2.50 |
| BH129 | 3.20 | 3.20 |
| BH130 | 7.00 | 7.00 |
| TP127 | 2.80 | - |
| TP129 | 1.60 | - |
| TP133 | 2.40 | - |
| TP134 | 1.60 | - |
| TP135 | 2.00 | - |
| TP137 | 2.90 | - |

Table 4 Groundwater levels

Groundwater levels within installed boreholes were also monitored on a weekly basis throughout the duration of the ground investigation. Results of these monitoring rounds can be found in Table 5.

| Exploratory position | 11/03/2022 | 18/03/2022 | 25/03/2022 | 01/04/2022 | 08/04/2022 | 14/04/2022 | 22/04/2022 | 29/04/2022 | 18/05/2022 |
|---|---|---|---|---|---|---|---|---|---|
| | Water depth (m bgl) | | | | | | | | |
| BH104A | 3.93 | 3.95 | 3.94 | 3.96 | 3.93 | 3.93 | 3.93 | 3.93 | 3.91 |
| BH105 | 5.18 | 5.18 | 5.18 | 5.20 | 5.19 | 5.20 | 5.20 | 5.22 | 5.31 |
| BH107 | Dry | Dry | Dry | Dry | Dry | Dry | Dry | Dry | Dry |
| BH108 | 7.86 | 7.85 | 7.86 | 7.87 | 7.86 | 7.85 | 7.85 | 7.86 | 7.88 |
| BH109 | Dry | Dry | Dry | Dry | Dry | Dry | Dry | Dry | Dry |
| BH110 | 5.01 | 5.06 | 5.04 | 5.04 | 5.03 | 5.04 | 5.04 | 5.03 | 5.03 |
| BH111 | 8.15 | 8.17 | 8.17 | 8.15 | 8.17 | 8.18 | 8.18 | 8.18 | 8.25 |
| BH112 | | | | | | | | 3.14 | 3.15 |
| BH113 | | | | | | | | 1.41 | 1.43 |
| BH114 | | 1.36 | 1.38 | 1.37 | 1.42 | 1.40 | 1.40 | 1.42 | 1.72 |
| BH116 | | 1.87 | 1.91 | 1.91 | 1.91 | 1.93 | 1.92 | 1.91 | 1.94 |
| BH117 | | 4.82 | 4.82 | 4.84 | 4.86 | 4.85 | 4.85 | 4.90 | 4.98 |
| BH119 | | | 5.36 | 5.38 | 5.36 | 5.36 | 5.36 | 5.35 | 5.38 |
| BH121 | | | | | Dry | Dry | Dry | Dry | Dry |
| BH123 | | | | | Dry | Dry | Dry | Dry | Dry |
| BH124 | | | | | Dry | Dry | Dry | Dry | Dry |
| BH126 | | | | | Dry | Dry | Dry | Dry | Dry |
| BH127 | | | | Dry | Dry | Dry | Dry | Dry | Dry |
| BH128 | | 0.60 | 0.58 | 0.61 | 0.65 | 0.64 | 0.64 | 0.64 | 0.66 |
| BH129 | | | | Dry | Dry | Dry | Dry | Dry | Dry |
| BH130 | | | | | Dry | Dry | Dry | Dry | Dry |
| BH131 | | | | | Dry | Dry | Dry | Dry | Dry |
| BH132 | 5.09 | 5.11 | 5.05 | 5.11 | 5.12 | 5.12 | 5.12 | 5.10 | 5.04 |
| BH133 | 0.55 | 0.48 | 0.50 | 0.52 | 0.52 | 0.52 | 0.50 | 0.50 | 0.57 |
| BH134 | | | | | | 3.11 | 3.10 | 3.10 | 3.25 |

Table 5 Ground water monitoring results during ground investigation

## 5.2 Post-fieldwork monitoring

Post fieldwork gas and groundwater monitoring will be undertaken weekly for the first month at monthly intervals for a period of 12 months. Monitoring will comprise obtaining groundwater levels using a dip meter and where installed, downloading the data obtained from well loggers. Ground gas monitors will record $O_2$, $CO_2$, $CH_4$ and LEL levels within the specified borehole locations. Results of these monitoring rounds at the time of report issue can be found in Table 6 **Post monitoring dates with groundwater levels**, Appendix VI and will also be issued in excel and AGS 4.0 format monthly when the data becomes available.

All borehole installs that contained groundwater were purged prior to the first round of monitoring being undertaken. Purging was undertaken using low-flow techniques and an AquaTROLL 400 water quality probe. The probe recorded the pH, temperature, specific conductivity, RDO concentration, turbidity and ORP of the groundwater. The purge data can be found in Appendix VI.

| Exploratory position | Diver installed (Y / N) | 13/06/2022 | 21/06/2022 | 27/06/2022 | 05/07/2022 | 26/07/2022 | 23/08/2022 | 13/09/2022 | 14/10/2022 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Water depth (m bgl) | | | | | | | | | | | | | | |
| BH104A | N | 3.97 | 3.97 | 3.98 | 3.97 | 3.99 | 4.03 | 4.05 | 4.08 | | | | | | | |
| BH105 | Y | 5.36 | 5.37 | 5.39 | 5.39 | 5.43 | 5.44 | 5.48 | 5.48 | | | | | | | |
| BH107 | Y | Dry | Dry | Dry | Dry | Dry | Dry | Dry | Dry | | | | | | | |
| BH108 | Y | 7.87 | 7.88 | 7.90 | 7.90 | 7.9 | 7.92 | 7.96 | 7.99 | | | | | | | |
| BH109 | N | Dry | Dry | Dry | Dry | Dry | Dry | Dry | Dry | | | | | | | |
| BH110 | N | 5.07 | 5.05 | 5.06 | 5.06 | 5.14 | 5.16 | 5.17 | 5.19 | | | | | | | |
| BH111 | Y | 8.28 | 8.25 | 8.25 | 8.26 | 8.20 | 8.21 | 8.23 | 8.23 | | | | | | | |
| BH112 | N | 2.64 | 2.64 | 2.64 | 2.65 | 2.66 | 2.73 | 2.75 | 2.78 | | | | | | | |
| BH113 | N | 0.64 | 0.82 | 0.90 | 0.96 | 0.83 | 1.16 | 1.14 | 1.18 | | | | | | | |
| BH114 | N | 1.82 | 1.80 | 1.82 | 1.80 | 1.84 | 2.16 | 2.15 | 2.15 | | | | | | | |
| BH116 | N | 2.07 | 2.10 | 2.10 | 2.08 | 2.20 | 2.25 | 2.20 | 2.21 | | | | | | | |
| BH117 | Y | 5.10 | 5.10 | 5.10 | 5.18 | 5.25 | n/a | 5.30 | 5.37 | | | | | | | |
| BH119 | Y | 5.42 | 5.42 | 5.43 | 5.44 | 5.43 | 5.46 | 5.47 | 5.40 | | | | | | | |
| BH121 | N | Dry | Dry | Dry | Dry | Dry | Dry | Dry | Dry | | | | | | | |
| BH123 | N | Dry | Dry | Dry | Dry | Dry | Dry | Dry | Dry | | | | | | | |
| BH124 | N | Dry | Dry | Dry | Dry | Dry | Dry | Dry | Dry | | | | | | | |
| BH126 | Y | 2.93 | Dry | Dry | 2.95 | 3.00 | 3.00 | 3.02 | 3.05 | | | | | | | |
| BH127 | Y | Dry | Dry | Dry | Dry | Dry | Dry | Dry | Dry | | | | | | | |
| BH128 | N | 0.66 | 0.66 | 0.65 | 0.65 | 0.70 | 0.78 | 0.75 | 0.79 | | | | | | | |
| BH129 | N | Dry | Dry | Dry | Dry | Dry | Dry | Dry | Dry | | | | | | | |
| BH130 | Y | Dry | Dry | Dry | Dry | Dry | Dry | Dry | Dry | | | | | | | |
| BH131 | Y | 1.92 | Dry | Dry | 2.02 | 2.07 | 2.12 | 2.15 | 2.18 | | | | | | | |
| BH132 | N | 5.05 | 5.05 | 5.06 | 5.06 | 5.11 | 5.10 | 5.13 | 5.13 | | | | | | | |
| BH133 | N | 0.74 | 0.74 | 0.74 | 0.74 | 0.75 | 0.75 | 0.75 | 0.76 | | | | | | | |
| BH134 | N | 3.48 | 3.30 | 3.25 | 2.82 | 3.17 | 3.38 | 3.55 | 3.58 | | | | | | | |

**Table 6 Post monitoring dates with groundwater levels**

## 5.3 Inclinometer borehole monitoring

During each post fieldwork monitoring round, boreholes BH135 and BH136 will be monitored using a Geosense Portable Inclinometer system. Both these boreholes are installed with inclinometer pipe as covered in Section 3.2.1.

The inclinometer pipe contains four equally spaced, parallel 'keyways' on the inner surface. These keyways allow an inclinometer probe to be moved vertically within the pipe. The probe takes an inclination measurement at every 0.50 m interval as it is slowly raised from the base of the borehole. The process is conducted twice on an A+ and A- axis to provide four inclination measurements, 90 degrees apart, at each depth interval. Once complete, the data is downloaded into SiteMaster software to produce the results in a graphical and tabulated format. All inclination data collected from the monitoring rounds is compared to the baseline measurements obtained on the 13th June 2022.

The results from the inclinometer probe monitoring rounds are contained within Appendix VI.

# 6 REFERENCES


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2. UK Specification for Ground Investigation, Second edition. ICE (2012).
3. BS 5930:2015: Site Investigation - Code of Practice, British Standards Institution.
4. BS EN ISO 14688-2:2004: Geotechnical Investigation and Testing - Identification and Classification of Soil. Principles for a Classification.
5. BS EN ISO 22476-3:2005: Geotechnical investigation and testing. Field testing - Standard penetration test
6. BS EN ISO 22476-9:2020: Geotechnical investigation and testing. Field testing - Field vane test (FVT and FVT-F).
7. BS EN ISO 22476-1:20127: Geotechnical investigation and testing. Field testing - Electrical cone and piezocone penetration test.
8. BRE (Building Research Establishment) Digest 365 Soakaway Design. (2016).
9. BS 5930 Section 25.4.6.1 (1999). Site Investigation - Code of Practice, British Standards Institution.
10. BS 5930 Section 25.4.6.1 (1981). Site Investigation - Code of Practice, British Standards Institution.
11. BS 1377-1:1990: Methods of test for soils for civil engineering purposes. General requirements and sample preparation.
12. BRE (Building Research Establishment) Special Digest 1 – Concrete in aggressive ground (2005).

GROUND TECHNOLOGY

# Appendix I – Location Plan

ORDNANCE SURVEY (c) CROWN COPYRIGHT 2022. ALL RIGHTS RESERVED. LICENCE NUMBER 100022432

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| | | | | |

GROUND TECHNOLOGY

COMMENT/APPROVAL

project
A47 WANSFORD TO PETERBOROUGH

drawing title
EXPLORATORY HOLE LOCATION PLAN
KEY PLAN

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project
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SHEET 1 OF 4

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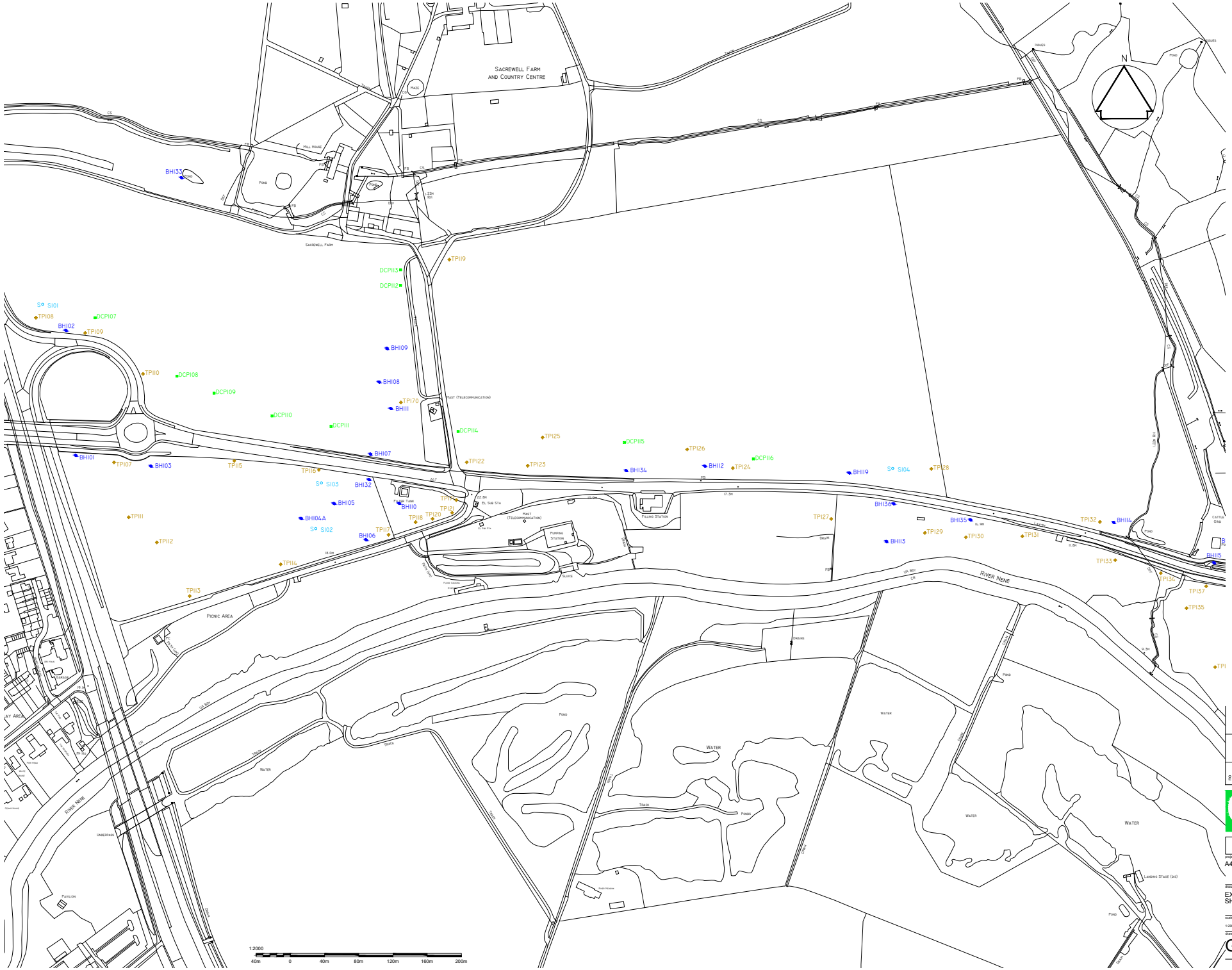


Key

- BHxxx Borehole
- TPxxx Trial Pit
- DCPxxx Dynamic Cone Penetration Test
- S SIxxx Soakaway Test

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GROUND TECHNOLOGY

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project
A47 WANSFORD TO PETERBOROUGH

drawing title
EXPLORATORY HOLE LOCATION PLAN
SHEET 2 OF 4

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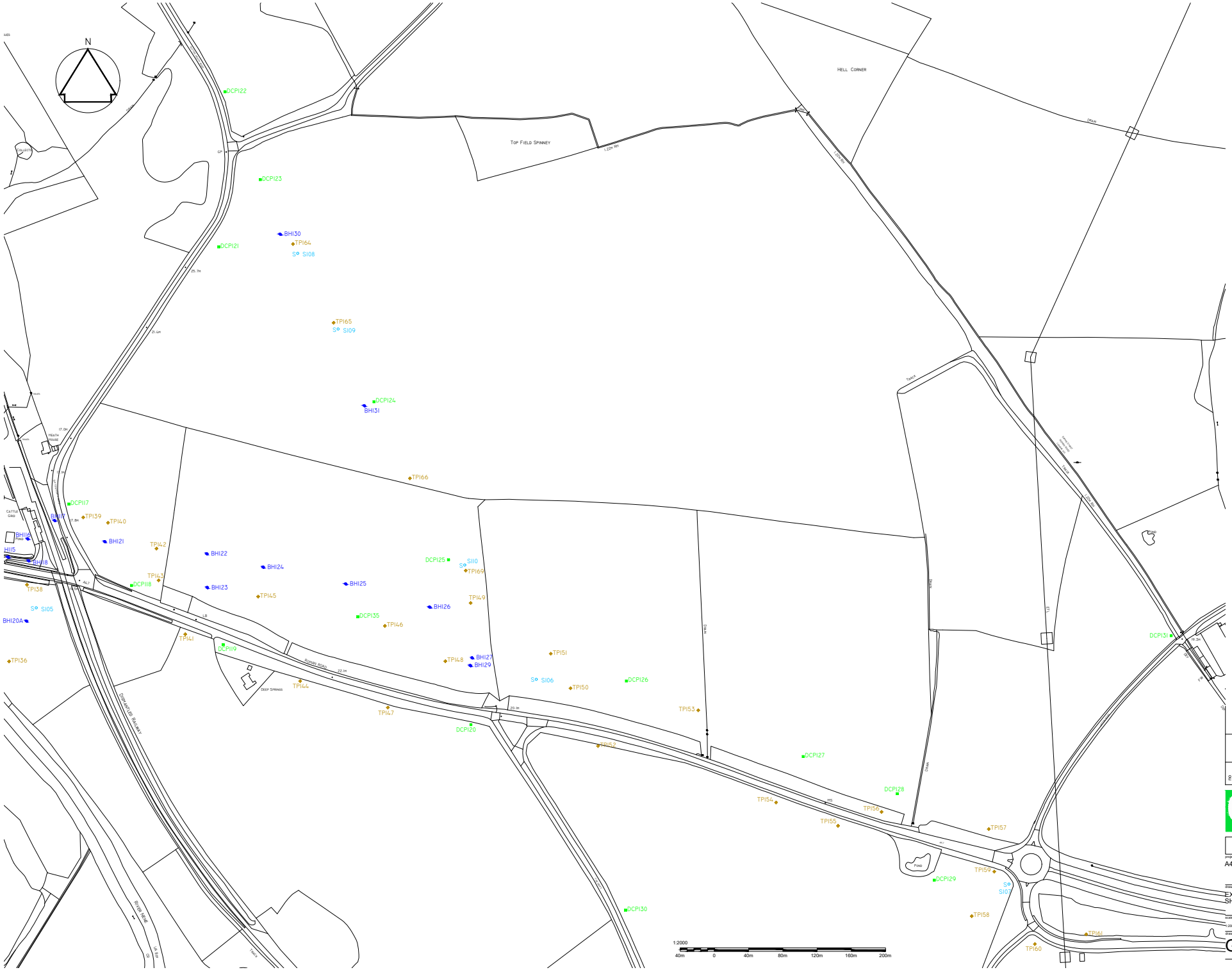


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GROUND TECHNOLOGY

COMMENT/APPROVAL

project
A47 WANSFORD TO PETERBOROUGH

drawing title
EXPLORATORY HOLE LOCATION PLAN
SHEET 3 OF 4

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drawing no: GT0386-004 rev:

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GROUND TECHNOLOGY

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SHEET 4 OF 4

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GT0386-005

rev:

GROUND TECHNOLOGY

# Appendix III – In situ test results

# DYNAMIC CONE PENETRATION TEST

Test Location:
**DCP101**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 507240.82 | mE | Checked by: | MM |
| Project No: | GT0386 | | 300801.28 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 41.00 | mOD | | |
| Engineer: | DB | | | | Weather: | Sunny |
| Date of test: | 08/04/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 0 | 0 | 170 | | 0 | 0 |
| 1 | 1 | 220 | | 50 | 50 |
| 1 | 2 | 265 | | 45 | 95 |
| 1 | 3 | 310 | | 45 | 140 |
| 1 | 4 | 330 | | 20 | 160 |
| 1 | 5 | 345 | | 15 | 175 |
| 1 | 6 | 350 | | 5 | 180 |
| 1 | 7 | 360 | | 10 | 190 |
| 1 | 8 | 365 | | 5 | 195 |
| 1 | 9 | 370 | | 5 | 200 |
| 1 | 10 | 375 | | 5 | 205 |
| 1 | 11 | 380 | | 5 | 210 |
| 1 | 12 | 385 | | 5 | 215 |
| 1 | 13 | 390 | | 5 | 220 |
| 1 | 14 | 392 | | 2 | 222 |
| 1 | 15 | 395 | | 3 | 225 |
| 1 | 16 | 400 | | 5 | 230 |
| 1 | 17 | 402 | | 2 | 232 |
| 1 | 18 | 405 | | 3 | 235 |
| 1 | 19 | 410 | | 5 | 240 |
| 1 | 20 | 415 | | 5 | 245 |
| 1 | 21 | 420 | | 5 | 250 |
| 1 | 22 | 425 | | 5 | 255 |
| 1 | 23 | 430 | | 5 | 260 |
| 1 | 24 | 435 | | 5 | 265 |
| 1 | 25 | 440 | | 5 | 270 |
| 1 | 26 | 445 | | 5 | 275 |
| 1 | 27 | 450 | | 5 | 280 |
| 1 | 28 | 452 | | 2 | 282 |
| 1 | 29 | 455 | | 3 | 285 |
| 1 | 30 | 460 | | 5 | 290 |
| 1 | 31 | 462 | | 2 | 292 |
| 1 | 32 | 465 | | 3 | 295 |
| 1 | 33 | 470 | | 5 | 300 |
| 1 | 34 | 480 | | 10 | 310 |
| 1 | 35 | 482 | | 2 | 312 |
| 1 | 36 | 490 | | 8 | 320 |
| 1 | 37 | 495 | | 5 | 325 |
| 1 | 38 | 502 | | 7 | 332 |
| 1 | 39 | 505 | | 3 | 335 |
| 1 | 40 | 510 | | 5 | 340 |
| 2 | 42 | 512 | | 2 | 342 |
| 2 | 44 | 515 | | 3 | 345 |
| 3 | 47 | 518 | | 3 | 348 |
| 5 | 52 | 520 | | 2 | 350 |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

Comments:
TRL probe commenced from ground level, hand pit dug adjacent to TRL position prior to probing to confirm no services present. Topsoil from GL to 0.30 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**DCP101**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 507240.82 | mE | Checked by: | MM |
| Project No: | GT0386 | | 300801.28 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 41.00 | mOD | | |
| Engineer: | DB | | | | Weather: | Sunny |
| Date of test: | 08/04/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
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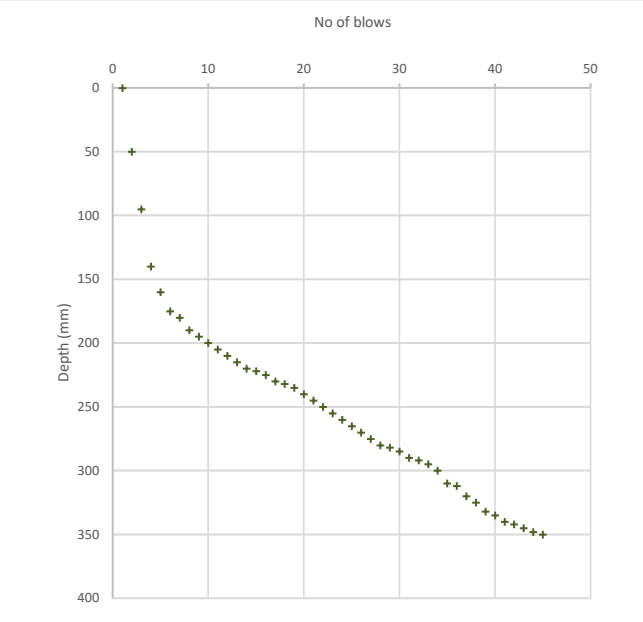
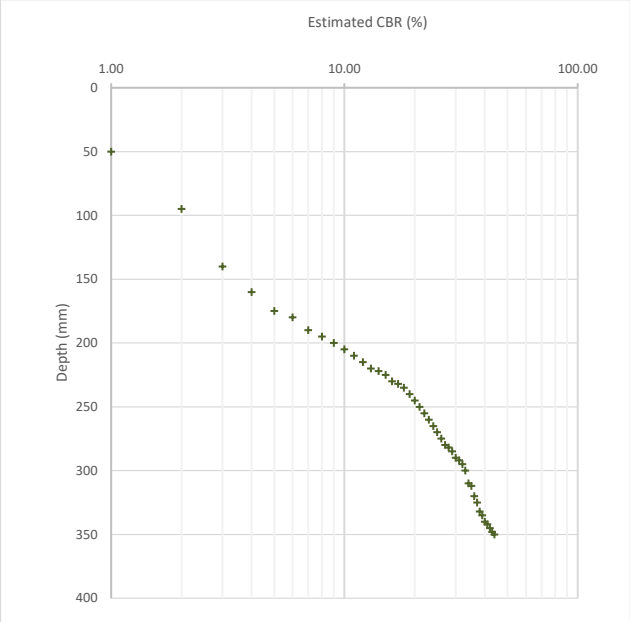



| Test No. | Depth from (mm) | Depth to (mm) | CBR value |
|---|---|---|---|
| 1 | 0 | 175 | 7 |
| 2 | 175 | 350 | 75 |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

**Estimated CBR value calculated using TRL equation:**

$$\log_{10}(CBR) = 2.48 - 1.057 \cdot \log_{10}(mm/blow)$$

**References:**

CNS Farnell (2003) Dynamic Cone Penetrometer Model A2465 Operating Instructions.

Transport and Road Research Laboratory (1990) Overseas Road Note 8. A users manual for a program to analyse dynamic cone penetrometer data.

Transport and Road Research Laboratory (2004) TRL Project Report PR/INT/277/04.

Comments:

TRL probe commenced from ground level, hand pit dug adjacent to TRL position prior to probing to confirm no services present. Topsoil from GL to 0.30 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**DCP102**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 507241.23 | mE | Checked by: | MM |
| Project No: | GT0386 | | 300769.35 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 39.81 | mOD | | |
| Engineer: | DB | | | | Weather: | Sunny |
| Date of test: | 08/04/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 0 | 0 | 135 | | 0 | 0 |
| 2 | 2 | 265 | | 130 | 130 |
| 2 | 4 | 325 | | 60 | 190 |
| 2 | 6 | 360 | | 35 | 225 |
| 2 | 8 | 370 | | 10 | 235 |
| 2 | 10 | 380 | | 10 | 245 |
| 2 | 12 | 395 | | 15 | 260 |
| 2 | 14 | 400 | | 5 | 265 |
| 3 | 17 | 430 | | 30 | 295 |
| 2 | 19 | 450 | | 20 | 315 |
| 2 | 21 | 475 | | 25 | 340 |
| 2 | 23 | 485 | | 10 | 350 |
| 2 | 25 | 500 | | 15 | 365 |
| 2 | 27 | 520 | | 20 | 385 |
| 2 | 29 | 550 | | 30 | 415 |
| 2 | 31 | 570 | | 20 | 435 |
| 2 | 33 | 595 | | 25 | 460 |
| 2 | 35 | 615 | | 20 | 480 |
| 2 | 37 | 640 | | 25 | 505 |
| 3 | 40 | 670 | | 30 | 535 |
| 2 | 42 | 690 | | 20 | 555 |
| 2 | 44 | 715 | | 25 | 580 |
| 2 | 46 | 735 | | 20 | 600 |
| 2 | 48 | 755 | | 20 | 620 |
| 2 | 50 | 775 | | 20 | 640 |
| 2 | 52 | 800 | | 25 | 665 |
| 3 | 55 | 835 | | 35 | 700 |
| 2 | 57 | 855 | | 20 | 720 |
| 3 | 60 | 890 | | 35 | 755 |
| 2 | 62 | 905 | | 15 | 770 |
| 2 | 64 | 925 | | 20 | 790 |
| 3 | 67 | 965 | | 40 | 830 |
| 2 | 69 | 980 | | 15 | 845 |
| 3 | 72 | 1010 | | 30 | 875 |
| 2 | 74 | 1030 | | 20 | 895 |
| 2 | 76 | 1055 | | 25 | 920 |
| 2 | 78 | 1080 | | 25 | 945 |
| 2 | 80 | 1105 | | 25 | 970 |
| 2 | 82 | 1125 | | 20 | 990 |
| 2 | 84 | 1150 | | 25 | 1015 |
| 3 | 87 | 1180 | | 30 | 1045 |
| 3 | 90 | 1210 | | 30 | 1075 |
| 3 | 93 | 1245 | | 35 | 1110 |
| 2 | 95 | 1270 | | 25 | 1135 |
| 2 | 97 | 1295 | | 25 | 1160 |
| 2 | 99 | 1310 | | 15 | 1175 |
| 2 | 101 | 1335 | | 25 | 1200 |
| 3 | 104 | 1365 | | 30 | 1230 |
| 2 | 106 | 1390 | | 25 | 1255 |
| 2 | 108 | 1415 | | 25 | 1280 |
| 2 | 110 | 1440 | | 25 | 1305 |
| 2 | 112 | 1465 | | 25 | 1330 |

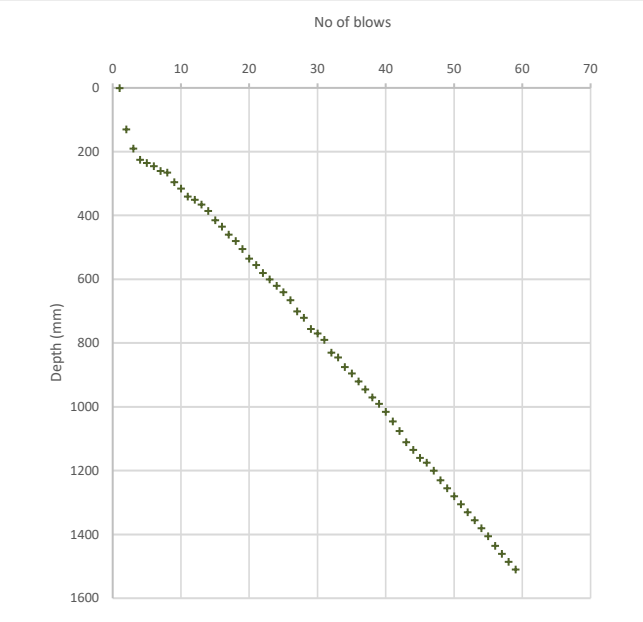
Comments:
TRL probe commenced from ground level, hand pit dug adjacent to TRL position prior to probing to confirm no services present. Topsoil from GL to 0.30 m bgl.

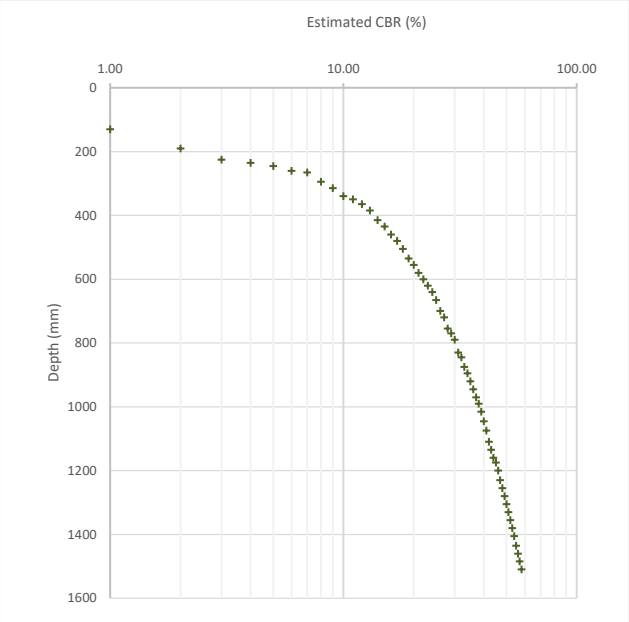
# DYNAMIC CONE PENETRATION TEST

Test Location:
**DCP102**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 507241.23 | mE | Checked by: | MM |
| Project No: | GT0386 | | 300769.35 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 39.81 | mOD | | |
| Engineer: | DB | | | | Weather: | Sunny |
| Date of test: | 08/04/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 2 | 114 | 1490 | | 25 | 1355 |
| 2 | 116 | 1515 | | 25 | 1380 |
| 2 | 118 | 1540 | | 25 | 1405 |
| 3 | 121 | 1570 | | 30 | 1435 |
| 2 | 123 | 1595 | | 25 | 1460 |
| 2 | 125 | 1620 | | 25 | 1485 |
| 2 | 127 | 1645 | | 25 | 1510 |
| | | | | | |




| Test No. | Depth from (mm) | Depth to (mm) | CBR value |
|---|---|---|---|
| 1 | 0 | 190 | 5.1 |
| 2 | 190 | 1510 | 25 |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

**Estimated CBR value calculated using TRL equation:**

$$\log_{10}(CBR) = 2.48 - 1.057 \cdot \log_{10}(mm/blow)$$

**References:**

CNS Farnell (2003) Dynamic Cone Penetrometer Model A2465 Operating Instructions.
Transport and Road Research Laboratory (1990) Overseas Road Note 8. A users manual for a program to analyse dynamic cone penetrometer data.
Transport and Road Research Laboratory (2004) TRL Project Report PR/INT/277/04.

Comments:

TRL probe commenced from ground level, hand pit dug adjacent to TRL position prior to probing to confirm no services present. Topsoil from GL to 0.30 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**DCP103**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 507245.60 | mE | Checked by: | MM |
| Project No: | GT0386 | | 300743.28 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 39.30 | mOD | | |
| Engineer: | DB | | | | Weather: | Sunny |
| Date of test: | 08/04/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 0 | 0 | 0 | | 0 | 0 |
| 2 | 2 | 195 | | 195 | 195 |
| 2 | 4 | 250 | | 55 | 250 |
| 2 | 6 | 275 | | 25 | 275 |
| 2 | 8 | 290 | | 15 | 290 |
| 2 | 10 | 310 | | 20 | 310 |
| 2 | 12 | 320 | | 10 | 320 |
| 2 | 14 | 335 | | 15 | 335 |
| 3 | 17 | 365 | | 30 | 365 |
| 2 | 19 | 390 | | 25 | 390 |
| 2 | 21 | 410 | | 20 | 410 |
| 2 | 23 | 435 | | 25 | 435 |
| 2 | 25 | 460 | | 25 | 460 |
| 2 | 27 | 515 | | 55 | 515 |
| 2 | 29 | 550 | | 35 | 550 |
| 2 | 31 | 600 | | 50 | 600 |
| 2 | 33 | 620 | | 20 | 620 |
| 2 | 35 | 640 | | 20 | 640 |
| 2 | 37 | 660 | | 20 | 660 |
| 3 | 40 | 710 | | 50 | 710 |
| 2 | 42 | 735 | | 25 | 735 |
| 2 | 44 | 755 | | 20 | 755 |
| 2 | 46 | 770 | | 15 | 770 |
| 2 | 48 | 790 | | 20 | 790 |
| 2 | 50 | 800 | | 10 | 800 |
| 2 | 52 | 825 | | 25 | 825 |
| 3 | 55 | 835 | | 10 | 835 |
| 2 | 57 | 850 | | 15 | 850 |
| 3 | 60 | 860 | | 10 | 860 |
| 2 | 62 | 870 | | 10 | 870 |
| 2 | 64 | 880 | | 10 | 880 |
| 3 | 67 | 890 | | 10 | 890 |
| 2 | 69 | 900 | | 10 | 900 |
| 3 | 72 | 910 | | 10 | 910 |
| 2 | 74 | 920 | | 10 | 920 |
| 2 | 76 | 925 | | 5 | 925 |
| 2 | 78 | 935 | | 10 | 935 |
| 2 | 80 | 940 | | 5 | 940 |
| 2 | 82 | 945 | | 5 | 945 |
| 2 | 84 | 955 | | 10 | 955 |
| 3 | 87 | 960 | | 5 | 960 |
| 3 | 90 | 965 | | 5 | 965 |
| 3 | 93 | 980 | | 15 | 980 |
| 2 | 95 | 1000 | | 20 | 1000 |
| 2 | 97 | 1015 | | 15 | 1015 |
| 2 | 99 | 1030 | | 15 | 1030 |
| 2 | 101 | 1045 | | 15 | 1045 |
| 3 | 104 | 1065 | | 20 | 1065 |
| 2 | 106 | 1085 | | 20 | 1085 |
| 2 | 108 | 1110 | | 25 | 1110 |
| 2 | 110 | 1130 | | 20 | 1130 |
| 2 | 112 | 1165 | | 35 | 1165 |

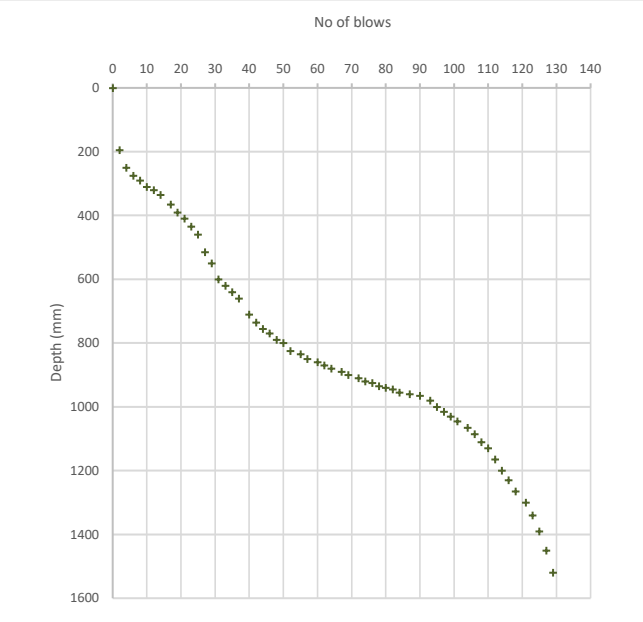
Comments:
TRL probe commenced from ground level, hand pit dug adjacent to TRL position prior to probing to confirm no services present. Topsoil from GL to 0.30 m bgl.

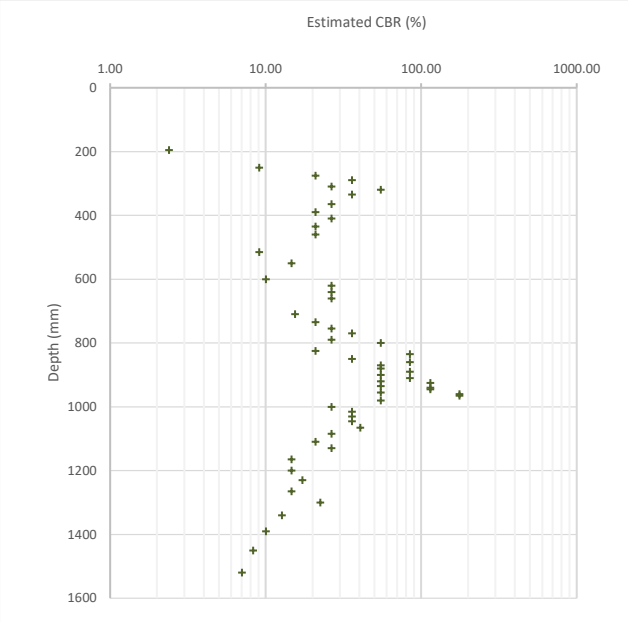
# DYNAMIC CONE PENETRATION TEST

Test Location:
**DCP103**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 507245.60 | mE | Checked by: | MM |
| Project No: | GT0386 | | 300743.28 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 39.30 | mOD | | |
| Engineer: | DB | | | | Weather: | Sunny |
| Date of test: | 08/04/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 2 | 114 | 1200 | | 35 | 1200 |
| 2 | 116 | 1230 | | 30 | 1230 |
| 2 | 118 | 1265 | | 35 | 1265 |
| 3 | 121 | 1300 | | 35 | 1300 |
| 2 | 123 | 1340 | | 40 | 1340 |
| 2 | 125 | 1390 | | 50 | 1390 |
| 2 | 127 | 1450 | | 60 | 1450 |
| 2 | 129 | 1520 | | 70 | 1520 |




| Test No. | Depth from (mm) | Depth to (mm) | CBR value |
|---|---|---|---|
| 1 | 0 | 1520 | 22 |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

**Estimated CBR value calculated using TRL equation:**

$$\log_{10}(CBR) = 2.48 - 1.057 \cdot \log_{10}(mm/blow)$$

**References:**

CNS Farnell (2003) Dynamic Cone Penetrometer Model A2465 Operating Instructions.
Transport and Road Research Laboratory (1990) Overseas Road Note 8. A users manual for a program to analyse dynamic cone penetrometer data.
Transport and Road Research Laboratory (2004) TRL Project Report PR/INT/277/04.

Comments:

TRL probe commenced from ground level, hand pit dug adjacent to TRL position prior to probing to confirm no services present. Topsoil from GL to 0.30 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**DCP104**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 507255.15 | mE | Checked by: | MM |
| Project No: | GT0386 | | 300695.84 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 39.40 | mOD | | |
| Engineer: | MM | | | | Weather: | Sunny |
| Date of test: | 07/04/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 0 | 0 | 125 | | 0 | 0 |
| 1 | 1 | 230 | | 105 | 105 |
| 1 | 2 | 290 | | 60 | 165 |
| 1 | 3 | 330 | | 40 | 205 |
| 1 | 4 | 370 | | 40 | 245 |
| 1 | 5 | 420 | | 50 | 295 |
| 1 | 6 | 445 | | 25 | 320 |
| 1 | 7 | 460 | | 15 | 335 |
| 1 | 8 | 475 | | 15 | 350 |
| 1 | 9 | 485 | | 10 | 360 |
| 1 | 10 | 500 | | 15 | 375 |
| 1 | 11 | 510 | | 10 | 385 |
| 1 | 12 | 520 | | 10 | 395 |
| 1 | 13 | 525 | | 5 | 400 |
| 1 | 14 | 535 | | 10 | 410 |
| 1 | 15 | 550 | | 15 | 425 |
| 1 | 16 | 565 | | 15 | 440 |
| 1 | 17 | 575 | | 10 | 450 |
| 1 | 18 | 585 | | 10 | 460 |
| 1 | 19 | 600 | | 15 | 475 |
| 2 | 21 | 610 | | 10 | 485 |
| 2 | 23 | 620 | | 10 | 495 |
| 2 | 25 | 630 | | 10 | 505 |
| 2 | 27 | 650 | | 20 | 525 |
| 2 | 29 | 665 | | 15 | 540 |
| 2 | 31 | 680 | | 15 | 555 |
| 2 | 33 | 690 | | 10 | 565 |
| 2 | 35 | 700 | | 10 | 575 |
| 2 | 37 | 710 | | 10 | 585 |
| 2 | 39 | 720 | | 10 | 595 |
| 2 | 41 | 735 | | 15 | 610 |
| 2 | 43 | 745 | | 10 | 620 |
| 2 | 45 | 760 | | 15 | 635 |
| 2 | 47 | 770 | | 10 | 645 |
| 2 | 49 | 785 | | 15 | 660 |
| 2 | 51 | 800 | | 15 | 675 |
| 2 | 53 | 810 | | 10 | 685 |
| 2 | 55 | 825 | | 15 | 700 |
| 1 | 56 | 835 | | 10 | 710 |
| 1 | 57 | 840 | | 5 | 715 |
| 1 | 58 | 845 | | 5 | 720 |
| 1 | 59 | 850 | | 5 | 725 |
| 1 | 60 | 855 | | 5 | 730 |
| 1 | 61 | 860 | | 5 | 735 |
| 1 | 62 | 865 | | 5 | 740 |
| 1 | 63 | 868 | | 3 | 743 |
| 1 | 64 | 870 | | 2 | 745 |
| 1 | 65 | 872 | | 2 | 747 |
| 1 | 66 | 875 | | 3 | 750 |
| 1 | 67 | 880 | | 5 | 755 |
| 1 | 68 | 882 | | 2 | 757 |
| 1 | 69 | 885 | | 3 | 760 |

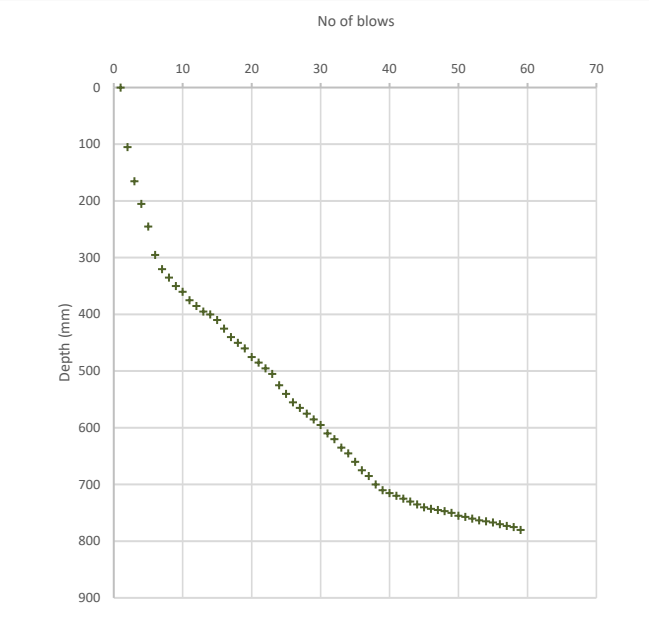
Comments:
TRL probe commenced from ground level, hand pit dug adjacent to TRL position prior to probing to confirm no services present. Topsoil from GL to 0.30 m bgl.

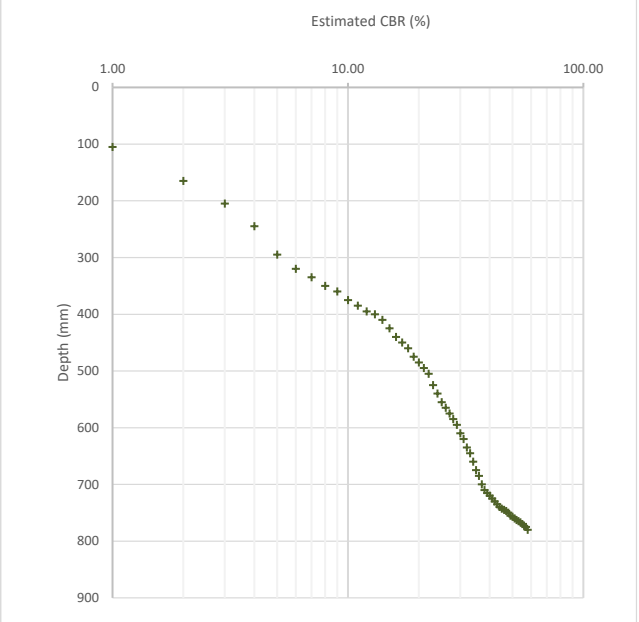
# DYNAMIC CONE PENETRATION TEST

Test Location:
**DCP104**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 507255.15 | mE | Checked by: | MM |
| Project No: | GT0386 | | 300695.84 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 39.40 | mOD | | |
| Engineer: | MM | | | | Weather: | Sunny |
| Date of test: | 07/04/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 1 | 70 | 888 | | 3 | 763 |
| 1 | 71 | 890 | | 2 | 765 |
| 1 | 72 | 892 | | 2 | 767 |
| 1 | 73 | 895 | | 3 | 770 |
| 1 | 74 | 898 | | 3 | 773 |
| 1 | 75 | 900 | | 2 | 775 |
| 5 | 80 | 905 | | 5 | 780 |
| | | | | | |




| Test No. | Depth from (mm) | Depth to (mm) | CBR value |
|---|---|---|---|
| 1 | 0 | 320 | 4.5 |
| 2 | 320 | 743 | 36 |
| 3 | 743 | 780 | 130 |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

**Estimated CBR value calculated using TRL equation:**

$$\log_{10}(CBR) = 2.48 - 1.057 \cdot \log_{10}(mm/blow)$$

**References:**

CNS Farnell (2003) Dynamic Cone Penetrometer Model A2465 Operating Instructions.

Transport and Road Research Laboratory (1990) Overseas Road Note 8. A users manual for a program to analyse dynamic cone penetrometer data.

Transport and Road Research Laboratory (2004) TRL Project Report PR/INT/277/04.

Comments:

TRL probe commenced from ground level, hand pit dug adjacent to TRL position prior to probing to confirm no services present. Topsoil from GL to 0.30 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**DCP105**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 507259.96 | mE | Checked by: | MM |
| Project No: | GT0386 | | 300669.73 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 39.90 | mOD | | |
| Engineer: | MM | | | | Weather: | Sunny |
| Date of test: | 11/04/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 0 | 0 | 190 | | 0 | 0 |
| 1 | 1 | 270 | | 80 | 80 |
| 1 | 2 | 310 | | 40 | 120 |
| 1 | 3 | 345 | | 35 | 155 |
| 1 | 4 | 370 | | 25 | 180 |
| 1 | 5 | 385 | | 15 | 195 |
| 1 | 6 | 395 | | 10 | 205 |
| 1 | 7 | 400 | | 5 | 210 |
| 1 | 8 | 410 | | 10 | 220 |
| 1 | 9 | 420 | | 10 | 230 |
| 1 | 10 | 425 | | 5 | 235 |
| 1 | 11 | 430 | | 5 | 240 |
| 1 | 12 | 440 | | 10 | 250 |
| 1 | 13 | 445 | | 5 | 255 |
| 1 | 14 | 450 | | 5 | 260 |
| 1 | 15 | 455 | | 5 | 265 |
| 1 | 16 | 460 | | 5 | 270 |
| 1 | 17 | 465 | | 5 | 275 |
| 1 | 18 | 470 | | 5 | 280 |
| 1 | 19 | 480 | | 10 | 290 |
| 1 | 20 | 485 | | 5 | 295 |
| 1 | 21 | 490 | | 5 | 300 |
| 1 | 22 | 492 | | 2 | 302 |
| 1 | 23 | 495 | | 3 | 305 |
| 1 | 24 | 500 | | 5 | 310 |
| 1 | 25 | 505 | | 5 | 315 |
| 1 | 26 | 508 | | 3 | 318 |
| 1 | 27 | 510 | | 2 | 320 |
| 1 | 28 | 515 | | 5 | 325 |
| 1 | 29 | 518 | | 3 | 328 |
| 1 | 30 | 520 | | 2 | 330 |
| 1 | 31 | 522 | | 2 | 332 |
| 5 | 36 | 525 | | 3 | 335 |

Comments:
TRL probe commenced from ground level, hand pit dug adjacent to TRL position prior to probing to confirm no services present. Topsoil from GL to 0.30 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**DCP105**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 507259.96 | mE | Checked by: | MM |
| Project No: | GT0386 | | 300669.73 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 39.90 | mOD | | |
| Engineer: | MM | | | | Weather: | Sunny |
| Date of test: | 11/04/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| | | | | | |
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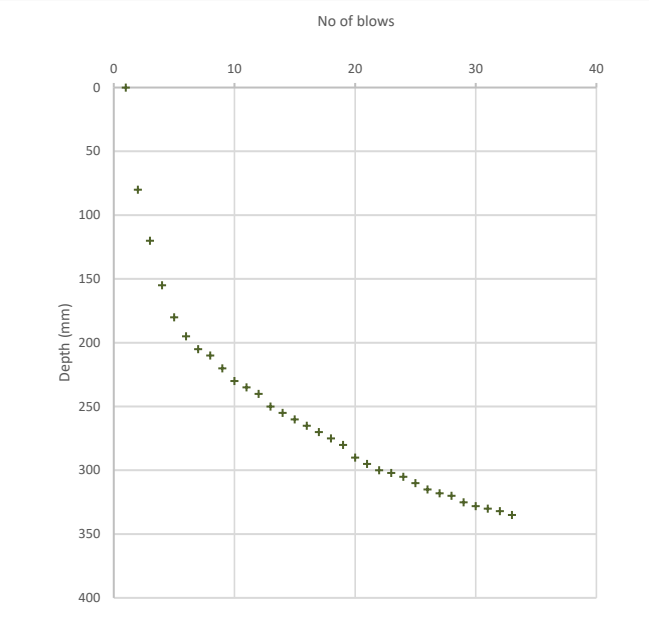


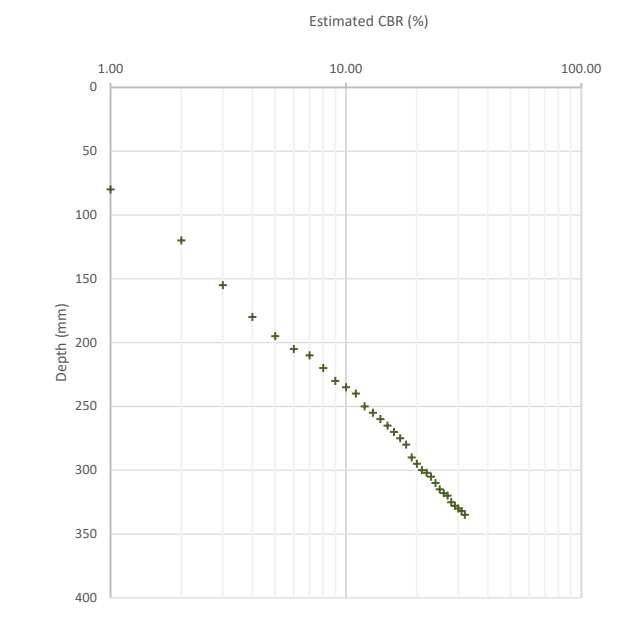


| Test No. | Depth from (mm) | Depth to (mm) | CBR value |
|---|---|---|---|
| 1 | 0 | 195 | 6.3 |
| 2 | 195 | 335 | 61 |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

**Estimated CBR value calculated using TRL equation:**

$$\log_{10}(CBR) = 2.48 - 1.057 \cdot \log_{10}(mm/blow)$$

**References:**

CNS Farnell (2003) Dynamic Cone Penetrometer Model A2465 Operating Instructions.

Transport and Road Research Laboratory (1990) Overseas Road Note 8. A users manual for a program to analyse dynamic cone penetrometer data.

Transport and Road Research Laboratory (2004) TRL Project Report PR/INT/277/04.

Comments:

TRL probe commenced from ground level, hand pit dug adjacent to TRL position prior to probing to confirm no services present. Topsoil from GL to 0.30 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**DCP106**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 507302.42 | mE | Checked by: | MM |
| Project No: | GT0386 | | 300575.89 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 41.72 | mOD | | |
| Engineer: | MM | | | | Weather: | Sunny |
| Date of test: | 11/04/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 0 | 0 | 100 | | 0 | 0 |
| 1 | 1 | 185 | | 85 | 85 |
| 1 | 2 | 225 | | 40 | 125 |
| 1 | 3 | 260 | | 35 | 160 |
| 1 | 4 | 290 | | 30 | 190 |
| 1 | 5 | 315 | | 25 | 215 |
| 1 | 6 | 350 | | 35 | 250 |
| 1 | 7 | 385 | | 35 | 285 |
| 1 | 8 | 415 | | 30 | 315 |
| 1 | 9 | 445 | | 30 | 345 |
| 1 | 10 | 475 | | 30 | 375 |
| 1 | 11 | 500 | | 25 | 400 |
| 1 | 12 | 515 | | 15 | 415 |
| 1 | 13 | 530 | | 15 | 430 |
| 1 | 14 | 535 | | 5 | 435 |
| 1 | 15 | 540 | | 5 | 440 |
| 1 | 16 | 545 | | 5 | 445 |
| 1 | 17 | 550 | | 5 | 450 |
| 1 | 18 | 555 | | 5 | 455 |
| 1 | 19 | 560 | | 5 | 460 |
| 1 | 20 | 565 | | 5 | 465 |
| 1 | 21 | 570 | | 5 | 470 |
| 1 | 22 | 580 | | 10 | 480 |
| 1 | 23 | 585 | | 5 | 485 |
| 1 | 24 | 595 | | 10 | 495 |
| 1 | 25 | 610 | | 15 | 510 |
| 1 | 26 | 620 | | 10 | 520 |
| 1 | 27 | 635 | | 15 | 535 |
| 1 | 28 | 640 | | 5 | 540 |
| 1 | 29 | 650 | | 10 | 550 |
| 1 | 30 | 655 | | 5 | 555 |
| 1 | 31 | 660 | | 5 | 560 |

Comments:
TRL probe commenced from ground level, hand pit dug adjacent to TRL position prior to probing to confirm no services present. Made ground from GL base of handpit.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**DCP106**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 507302.42 | mE | Checked by: | MM |
| Project No: | GT0386 | | 300575.89 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 41.72 | mOD | | |
| Engineer: | MM | | | | Weather: | Sunny |
| Date of test: | 11/04/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| | | | | | |
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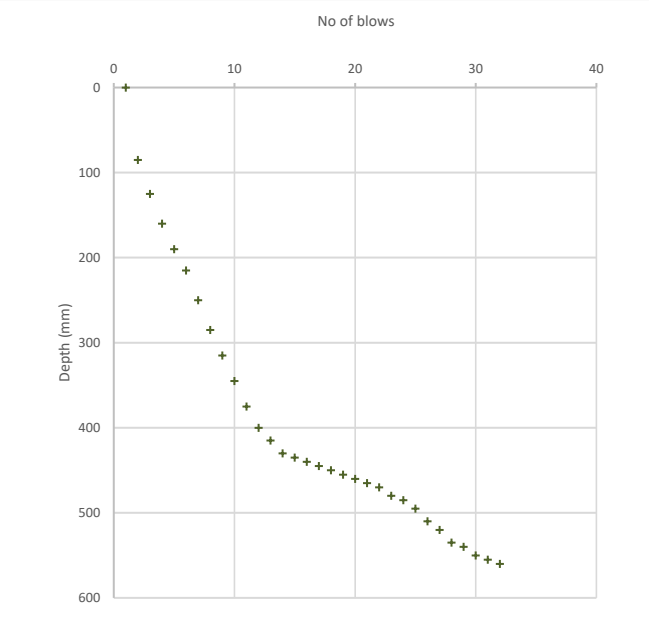


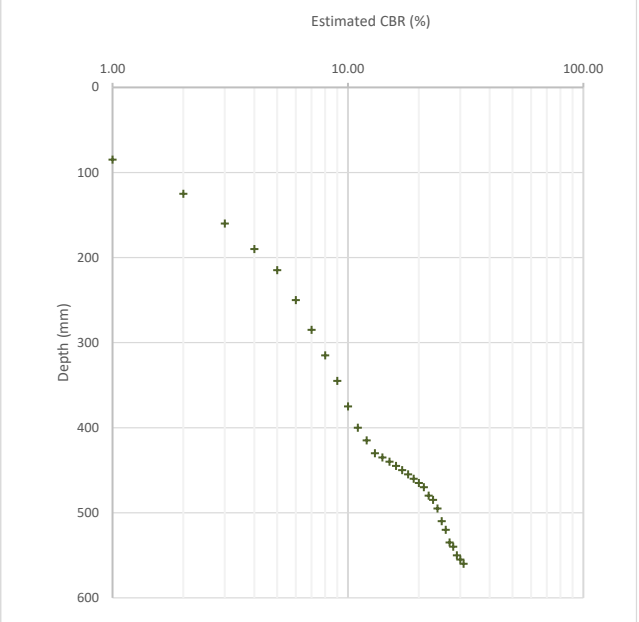


| Test No. | Depth from (mm) | Depth to (mm) | CBR value |
|---|---|---|---|
| 1 | 0 | 430 | 7.5 |
| 2 | 430 | 560 | 37 |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

**Estimated CBR value calculated using TRL equation:**

$$\log_{10}(CBR) = 2.48 - 1.057 \cdot \log_{10}(mm/blow)$$

**References:**

CNS Farnell (2003) Dynamic Cone Penetrometer Model A2465 Operating Instructions.

Transport and Road Research Laboratory (1990) Overseas Road Note 8. A users manual for a program to analyse dynamic cone penetrometer data.

Transport and Road Research Laboratory (2004) TRL Project Report PR/INT/277/04.

Comments:

TRL probe commenced from ground level, hand pit dug adjacent to TRL position prior to probing to confirm no services present. Made ground from GL base of handpit.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**DCP107**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 507608.33 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299883.36 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 29.73 | mOD | | |
| Engineer: | DB | | | | Weather: | Sunny |
| Date of test: | 01/03/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 0 | 0 | 120 | | 0 | 0 |
| 1 | 1 | 160 | | 40 | 40 |
| 1 | 2 | 220 | | 60 | 100 |
| 1 | 3 | 260 | | 40 | 140 |
| 1 | 4 | 300 | | 40 | 180 |
| 1 | 5 | 340 | | 40 | 220 |
| 1 | 6 | 380 | | 40 | 260 |
| 1 | 7 | 390 | | 10 | 270 |
| 1 | 8 | 400 | | 10 | 280 |
| 1 | 9 | 410 | | 10 | 290 |
| 1 | 10 | 430 | | 20 | 310 |
| 1 | 11 | 440 | | 10 | 320 |
| 1 | 12 | 455 | | 15 | 335 |
| 1 | 13 | 470 | | 15 | 350 |
| 1 | 14 | 480 | | 10 | 360 |
| 1 | 15 | 490 | | 10 | 370 |
| 2 | 17 | 530 | | 40 | 410 |
| 1 | 18 | 560 | | 30 | 440 |
| 1 | 19 | 575 | | 15 | 455 |
| 1 | 20 | 600 | | 25 | 480 |
| 1 | 21 | 620 | | 20 | 500 |
| 1 | 22 | 650 | | 30 | 530 |
| 2 | 24 | 705 | | 55 | 585 |
| 1 | 25 | 725 | | 20 | 605 |
| 1 | 26 | 735 | | 10 | 615 |
| 1 | 27 | 755 | | 20 | 635 |
| 2 | 29 | 780 | | 25 | 660 |
| 2 | 31 | 800 | | 20 | 680 |
| 5 | 36 | 830 | | 30 | 710 |
| 2 | 38 | 840 | | 10 | 720 |
| 4 | 42 | 890 | | 50 | 770 |
| 6 | 48 | 940 | | 50 | 820 |
| 5 | 53 | 990 | | 50 | 870 |
| 6 | 59 | 1035 | | 45 | 915 |
| 5 | 64 | 1078 | | 43 | 958 |
| 6 | 70 | 1140 | | 62 | 1020 |
| 6 | 76 | 1188 | | 48 | 1068 |
| 6 | 82 | 1258 | | 70 | 1138 |
| 7 | 89 | 1299 | | 41 | 1179 |
| 6 | 95 | 1331 | | 32 | 1211 |
| 6 | 101 | 1367 | | 36 | 1247 |
| 6 | 107 | 1454 | | 87 | 1334 |
| 5 | 112 | 1476 | | 22 | 1356 |
| 6 | 118 | 1535 | | 59 | 1415 |
| 6 | 124 | 1578 | | 43 | 1458 |
| 7 | 131 | 1633 | | 55 | 1513 |
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Comments:
TRL probe commenced from ground level, hand pit dug adjacent to TRL position prior to probing to confirm no services present. Topsoil from GL to 0.40 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**DCP107**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 507608.33 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299883.36 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 29.73 | mOD | | |
| Engineer: | DB | | | | Weather: | Sunny |
| Date of test: | 01/03/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
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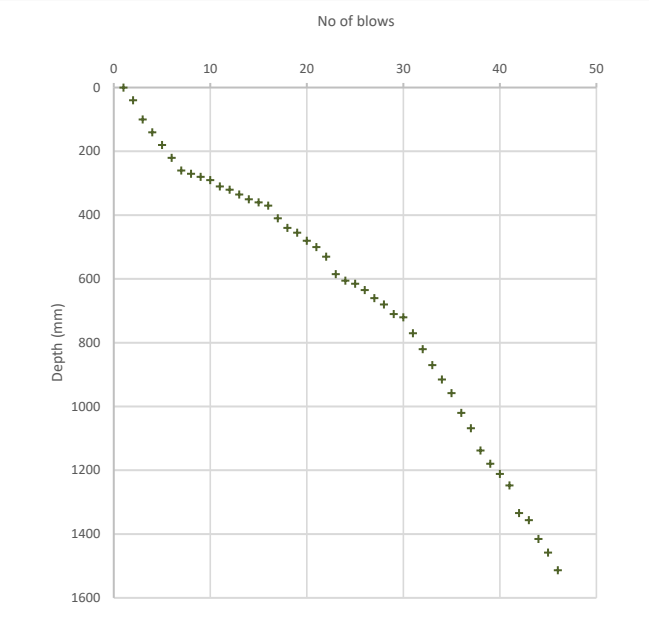


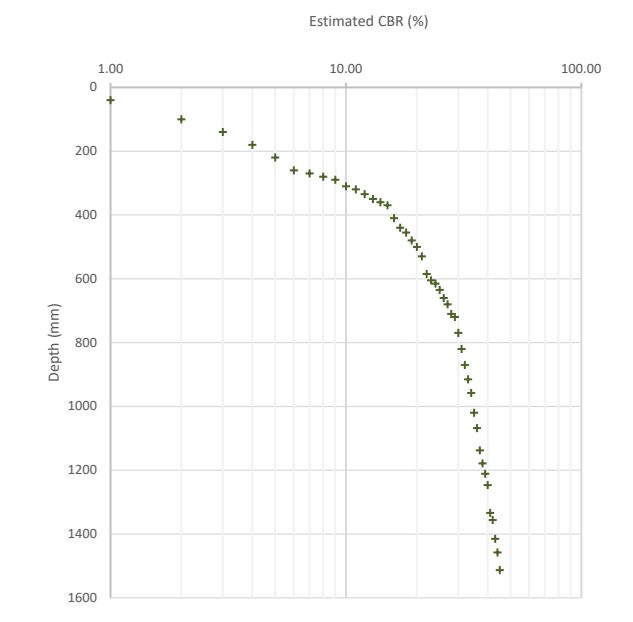


| Test No. | Depth from (mm) | Depth to (mm) | CBR value |
|---|---|---|---|
| 1 | 0 | 260 | 5.6 |
| 2 | 260 | 1513 | 26 |
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| | | | |

**Estimated CBR value calculated using TRL equation:**

$$\log_{10}(CBR) = 2.48 - 1.057 \cdot \log_{10}(mm/blow)$$

**References:**

CNS Farnell (2003) Dynamic Cone Penetrometer Model A2465 Operating Instructions.

Transport and Road Research Laboratory (1990) Overseas Road Note 8. A users manual for a program to analyse dynamic cone penetrometer data.

Transport and Road Research Laboratory (2004) TRL Project Report PR/INT/277/04.

Comments:

TRL probe commenced from ground level, hand pit dug adjacent to TRL position prior to probing to confirm no services present. Topsoil from GL to 0.40 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**DCP108**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 507704.04 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299815.15 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 30.81 | mOD | | |
| Engineer: | DB | | | | Weather: | Sunny |
| Date of test: | 01/03/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 0 | 0 | 100 | | 0 | 0 |
| 1 | 1 | 200 | | 100 | 100 |
| 1 | 2 | 260 | | 60 | 160 |
| 1 | 3 | 290 | | 30 | 190 |
| 1 | 4 | 320 | | 30 | 220 |
| 1 | 5 | 370 | | 50 | 270 |
| 1 | 6 | 420 | | 50 | 320 |
| 1 | 7 | 460 | | 40 | 360 |
| 1 | 8 | 470 | | 10 | 370 |
| 1 | 9 | 490 | | 20 | 390 |
| 1 | 10 | 500 | | 10 | 400 |
| 1 | 11 | 510 | | 10 | 410 |
| 1 | 12 | 520 | | 10 | 420 |
| 1 | 13 | 530 | | 10 | 430 |
| 1 | 14 | 540 | | 10 | 440 |
| 1 | 15 | 560 | | 20 | 460 |
| 1 | 16 | 570 | | 10 | 470 |
| 1 | 17 | 580 | | 10 | 480 |
| 1 | 18 | 590 | | 10 | 490 |
| 1 | 19 | 600 | | 10 | 500 |
| 1 | 20 | 620 | | 20 | 520 |
| 1 | 21 | 640 | | 20 | 540 |
| 1 | 22 | 650 | | 10 | 550 |
| 1 | 23 | 660 | | 10 | 560 |
| 1 | 24 | 665 | | 5 | 565 |
| 2 | 26 | 670 | | 5 | 570 |
| 10 | 36 | 680 | | 10 | 580 |

Comments:
TRL probe commenced from ground level, hand pit dug adjacent to TRL position prior to probing to confirm no services present. Topsoil from GL to 0.35 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**DCP108**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 507704.04 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299815.15 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 30.81 | mOD | | |
| Engineer: | DB | | | | Weather: | Sunny |
| Date of test: | 01/03/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
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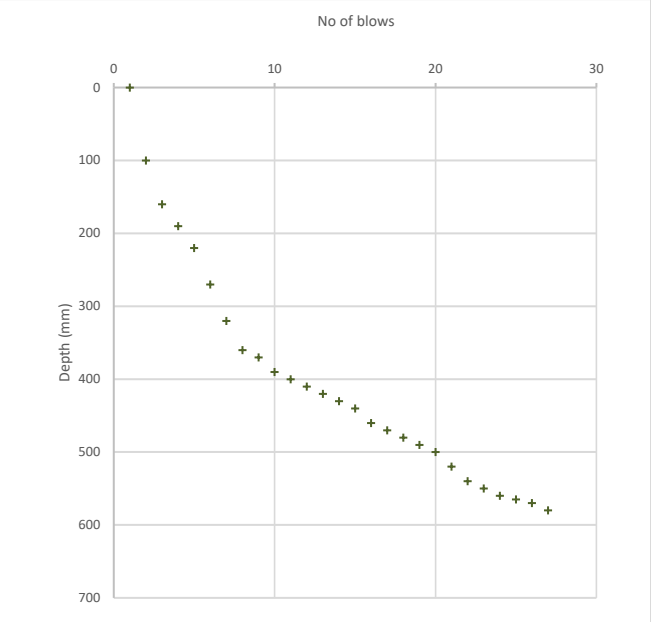


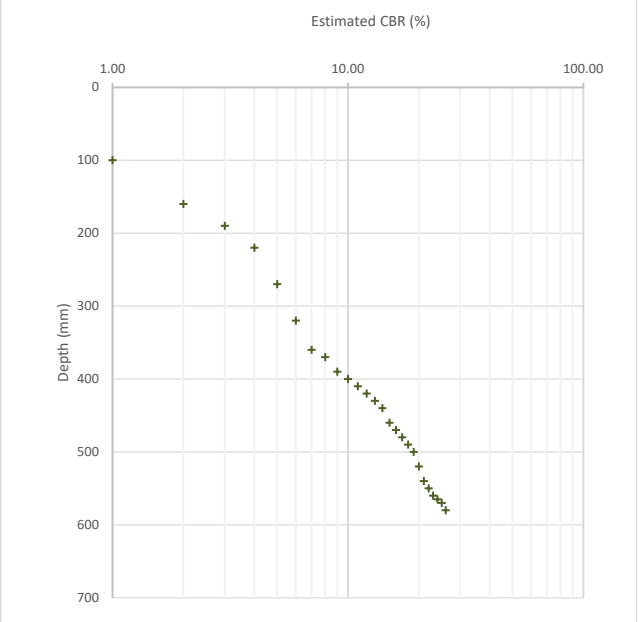


| Test No. | Depth from (mm) | Depth to (mm) | CBR value |
|---|---|---|---|
| 1 | 0 | 360 | 4.7 |
| 2 | 360 | 580 | 35 |
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**Estimated CBR value calculated using TRL equation:**

$$\log_{10}(CBR) = 2.48 - 1.057 \cdot \log_{10}(mm/blow)$$

**References:**

CNS Farnell (2003) Dynamic Cone Penetrometer Model A2465 Operating Instructions.

Transport and Road Research Laboratory (1990) Overseas Road Note 8. A users manual for a program to analyse dynamic cone penetrometer data.

Transport and Road Research Laboratory (2004) TRL Project Report PR/INT/277/04.

Comments:

TRL probe commenced from ground level, hand pit dug adjacent to TRL position prior to probing to confirm no services present. Topsoil from GL to 0.35 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**DCP109**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 507747.46 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299795.25 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 30.45 | mOD | | |
| Engineer: | DB | | | | Weather: | Sunny |
| Date of test: | 01/03/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 0 | 0 | 100 | | 0 | 0 |
| 1 | 1 | 115 | | 15 | 15 |
| 1 | 2 | 125 | | 10 | 25 |
| 1 | 3 | 145 | | 20 | 45 |
| 1 | 4 | 180 | | 35 | 80 |
| 1 | 5 | 220 | | 40 | 120 |
| 1 | 6 | 270 | | 50 | 170 |
| 1 | 7 | 310 | | 40 | 210 |
| 1 | 8 | 340 | | 30 | 240 |
| 1 | 9 | 355 | | 15 | 255 |
| 1 | 10 | 375 | | 20 | 275 |
| 1 | 11 | 386 | | 11 | 286 |
| 1 | 12 | 397 | | 11 | 297 |
| 1 | 13 | 407 | | 10 | 307 |
| 1 | 14 | 420 | | 13 | 320 |
| 1 | 15 | 425 | | 5 | 325 |
| 1 | 16 | 435 | | 10 | 335 |
| 1 | 17 | 440 | | 5 | 340 |
| 1 | 18 | 446 | | 6 | 346 |
| 1 | 19 | 449 | | 3 | 349 |
| 1 | 20 | 454 | | 5 | 354 |
| 1 | 21 | 464 | | 10 | 364 |
| 1 | 22 | 470 | | 6 | 370 |
| 1 | 23 | 485 | | 15 | 385 |
| 1 | 24 | 500 | | 15 | 400 |
| 1 | 25 | 510 | | 10 | 410 |
| 1 | 26 | 515 | | 5 | 415 |
| 1 | 27 | 525 | | 10 | 425 |
| 1 | 28 | 535 | | 10 | 435 |
| 1 | 29 | 540 | | 5 | 440 |
| 3 | 32 | 565 | | 25 | 465 |
| 2 | 34 | 582 | | 17 | 482 |
| 1 | 35 | 597 | | 15 | 497 |
| 1 | 36 | 602 | | 5 | 502 |
| 1 | 37 | 610 | | 8 | 510 |
| 2 | 39 | 620 | | 10 | 520 |
| 4 | 43 | 642 | | 22 | 542 |
| 4 | 47 | 670 | | 28 | 570 |
| 1 | 48 | 680 | | 10 | 580 |
| 1 | 49 | 695 | | 15 | 595 |
| 3 | 52 | 725 | | 30 | 625 |
| 3 | 55 | 740 | | 15 | 640 |
| 2 | 57 | 760 | | 20 | 660 |
| 2 | 59 | 775 | | 15 | 675 |
| 4 | 63 | 790 | | 15 | 690 |
| 2 | 65 | 800 | | 10 | 700 |
| 4 | 69 | 820 | | 20 | 720 |
| 3 | 72 | 825 | | 5 | 725 |
| 1 | 73 | 827 | | 2 | 727 |
| 10 | 83 | 830 | | 3 | 730 |
| | | | | | |
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Comments:
TRL probe commenced from ground level, hand pit dug adjacent to TRL position prior to probing to confirm no services present. Topsoil from GL to 0.30 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**DCP109**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 507747.46 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299795.25 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 30.45 | mOD | | |
| Engineer: | DB | | | | Weather: | Sunny |
| Date of test: | 01/03/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
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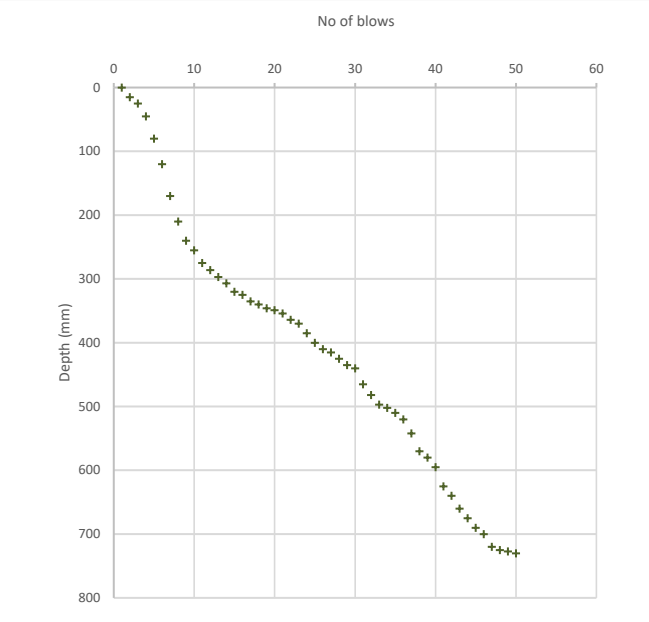


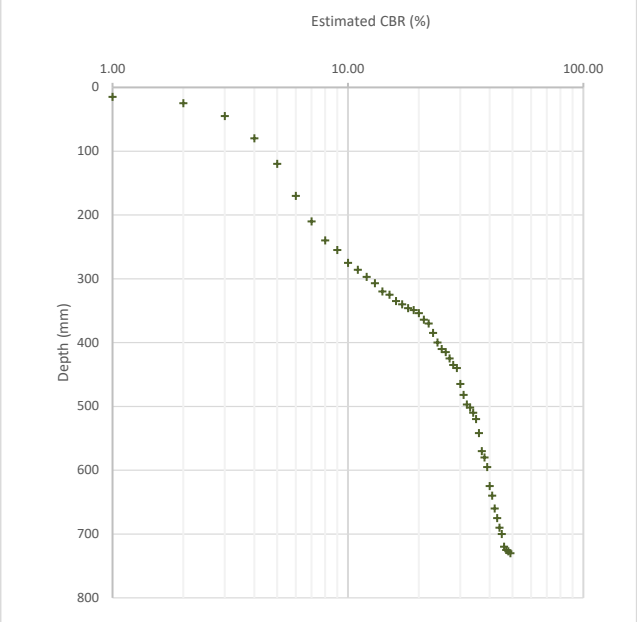


| Test No. | Depth from (mm) | Depth to (mm) | CBR value |
|---|---|---|---|
| 1 | 0 | 240 | 8.3 |
| 2 | 240 | 690 | 33 |
| 3 | 690 | 730 | 150 |
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**Estimated CBR value calculated using TRL equation:**

$$\log_{10}(CBR) = 2.48 - 1.057 \cdot \log_{10}(mm/blow)$$

**References:**

CNS Farnell (2003) Dynamic Cone Penetrometer Model A2465 Operating Instructions.

Transport and Road Research Laboratory (1990) Overseas Road Note 8. A users manual for a program to analyse dynamic cone penetrometer data.

Transport and Road Research Laboratory (2004) TRL Project Report PR/INT/277/04.

Comments:

TRL probe commenced from ground level, hand pit dug adjacent to TRL position prior to probing to confirm no services present. Topsoil from GL to 0.30 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**DCP110**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 507815.30 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299768.68 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 29.48 | mOD | | |
| Engineer: | DB | | | | Weather: | Sunny |
| Date of test: | 01/03/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 0 | 0 | 100 | | 0 | 0 |
| 1 | 1 | 180 | | 80 | 80 |
| 1 | 2 | 250 | | 70 | 150 |
| 1 | 3 | 300 | | 50 | 200 |
| 1 | 4 | 360 | | 60 | 260 |
| 1 | 5 | 370 | | 10 | 270 |
| 1 | 6 | 375 | | 5 | 275 |
| 1 | 7 | 378 | | 3 | 278 |
| 1 | 8 | 381 | | 3 | 281 |
| 1 | 9 | 385 | | 4 | 285 |
| 2 | 11 | 390 | | 5 | 290 |
| 1 | 12 | 400 | | 10 | 300 |
| 1 | 13 | 420 | | 20 | 320 |
| 1 | 14 | 425 | | 5 | 325 |
| 1 | 15 | 440 | | 15 | 340 |
| 1 | 16 | 455 | | 15 | 355 |
| 1 | 17 | 470 | | 15 | 370 |
| 1 | 18 | 480 | | 10 | 380 |
| 1 | 19 | 500 | | 20 | 400 |
| 1 | 20 | 530 | | 30 | 430 |
| 1 | 21 | 560 | | 30 | 460 |
| 1 | 22 | 570 | | 10 | 470 |
| 1 | 23 | 580 | | 10 | 480 |
| 1 | 24 | 590 | | 10 | 490 |
| 1 | 25 | 610 | | 20 | 510 |
| 1 | 26 | 640 | | 30 | 540 |
| 1 | 27 | 660 | | 20 | 560 |
| 1 | 28 | 670 | | 10 | 570 |
| 1 | 29 | 680 | | 10 | 580 |
| 1 | 30 | 690 | | 10 | 590 |
| 2 | 32 | 695 | | 5 | 595 |
| 1 | 33 | 700 | | 5 | 600 |
| 1 | 34 | 710 | | 10 | 610 |
| 1 | 35 | 730 | | 20 | 630 |
| 1 | 36 | 740 | | 10 | 640 |
| 1 | 37 | 750 | | 10 | 650 |
| 1 | 38 | 760 | | 10 | 660 |
| 1 | 39 | 770 | | 10 | 670 |
| 1 | 40 | 780 | | 10 | 680 |
| 1 | 41 | 785 | | 5 | 685 |
| 1 | 42 | 790 | | 5 | 690 |
| 1 | 43 | 795 | | 5 | 695 |
| 4 | 47 | 800 | | 5 | 700 |
| 1 | 48 | 805 | | 5 | 705 |
| 1 | 49 | 810 | | 5 | 710 |
| 1 | 50 | 820 | | 10 | 720 |
| 1 | 51 | 825 | | 5 | 725 |
| 10 | 61 | 835 | | 10 | 735 |
| | | | | | |
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Comments:
TRL probe commenced from ground level, hand pit dug adjacent to TRL position prior to probing to confirm no services present. Topsoil from GL to 0.30 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**DCP110**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 507815.30 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299768.68 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 29.48 | mOD | | |
| Engineer: | DB | | | | Weather: | Sunny |
| Date of test: | 01/03/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
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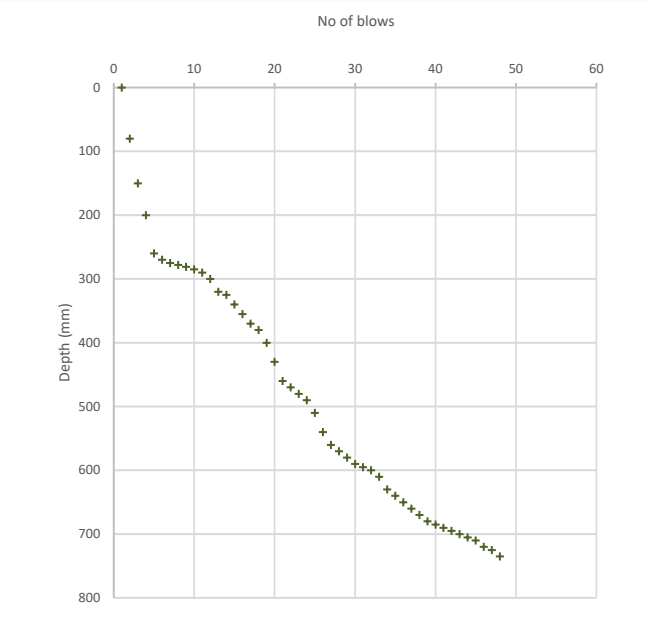


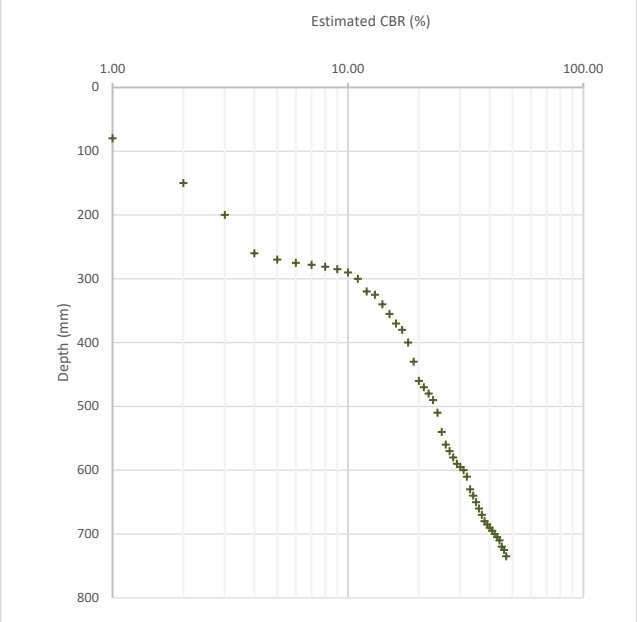


| Test No. | Depth from (mm) | Depth to (mm) | CBR value |
|---|---|---|---|
| 1 | 0 | 260 | 3.7 |
| 2 | 260 | 685 | 23 |
| 3 | 685 | 735 | 110 |
| | | | |
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| | | | |
| | | | |

**Estimated CBR value calculated using TRL equation:**

$$\log_{10}(CBR) = 2.48 - 1.057 \cdot \log_{10}(mm/blow)$$

**References:**

CNS Farnell (2003) Dynamic Cone Penetrometer Model A2465 Operating Instructions.

Transport and Road Research Laboratory (1990) Overseas Road Note 8. A users manual for a program to analyse dynamic cone penetrometer data.

Transport and Road Research Laboratory (2004) TRL Project Report PR/INT/277/04.

Comments:

TRL probe commenced from ground level, hand pit dug adjacent to TRL position prior to probing to confirm no services present. Topsoil from GL to 0.30 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**DCP111**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 507884.24 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299756.42 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 28.55 | mOD | | |
| Engineer: | DB | | | | Weather: | Sunny |
| Date of test: | 01/03/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 0 | 0 | 120 | | 0 | 0 |
| 1 | 1 | 210 | | 90 | 90 |
| 1 | 2 | 300 | | 90 | 180 |
| 1 | 3 | 380 | | 80 | 260 |
| 1 | 4 | 440 | | 60 | 320 |
| 1 | 5 | 460 | | 20 | 340 |
| 1 | 6 | 470 | | 10 | 350 |
| 2 | 8 | 480 | | 10 | 360 |
| 1 | 9 | 485 | | 5 | 365 |
| 1 | 10 | 520 | | 35 | 400 |
| 1 | 11 | 530 | | 10 | 410 |
| 1 | 12 | 570 | | 40 | 450 |
| 1 | 13 | 610 | | 40 | 490 |
| 1 | 14 | 630 | | 20 | 510 |
| 1 | 15 | 650 | | 20 | 530 |
| 1 | 16 | 665 | | 15 | 545 |
| 1 | 17 | 675 | | 10 | 555 |
| 1 | 18 | 685 | | 10 | 565 |
| 1 | 19 | 692 | | 7 | 572 |
| 1 | 20 | 700 | | 8 | 580 |
| 1 | 21 | 715 | | 15 | 595 |
| 1 | 22 | 720 | | 5 | 600 |
| 1 | 23 | 725 | | 5 | 605 |
| 1 | 24 | 730 | | 5 | 610 |
| 1 | 25 | 735 | | 5 | 615 |
| 1 | 26 | 740 | | 5 | 620 |
| 1 | 27 | 750 | | 10 | 630 |
| 2 | 29 | 755 | | 5 | 635 |
| 1 | 30 | 760 | | 5 | 640 |
| 1 | 31 | 765 | | 5 | 645 |
| 1 | 32 | 770 | | 5 | 650 |
| 2 | 34 | 780 | | 10 | 660 |
| 1 | 35 | 782 | | 2 | 662 |
| 1 | 36 | 785 | | 3 | 665 |
| 1 | 37 | 790 | | 5 | 670 |
| 1 | 38 | 799 | | 9 | 679 |
| 10 | 48 | 800 | | 1 | 680 |

Comments:
TRL probe commenced from ground level, hand pit dug adjacent to TRL position prior to probing to confirm no services present. Topsoil from GL to 0.30 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**DCP111**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 507884.24 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299756.42 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 28.55 | mOD | | |
| Engineer: | DB | | | | Weather: | Sunny |
| Date of test: | 01/03/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
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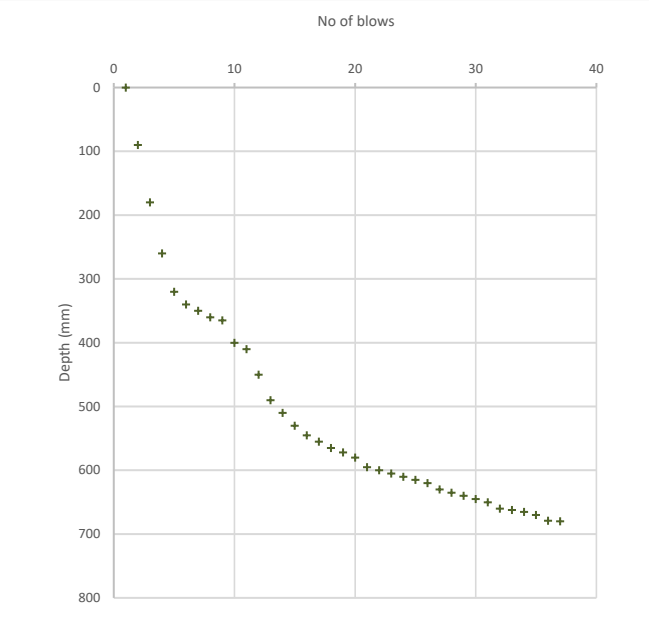


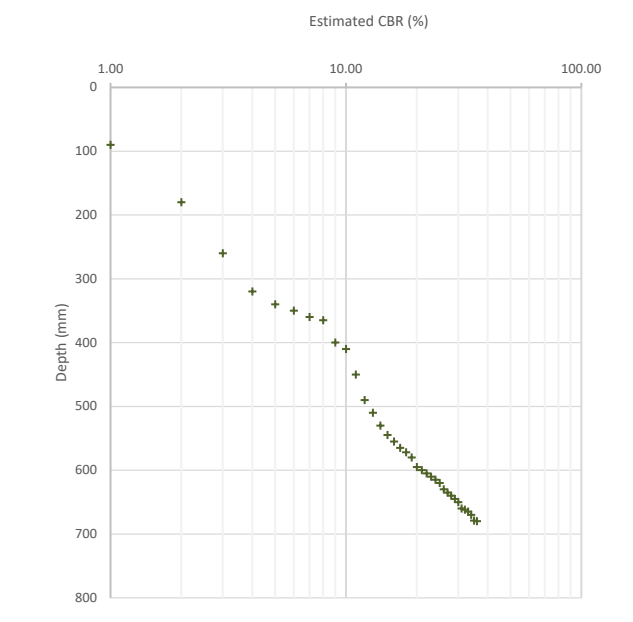


| Test No. | Depth from (mm) | Depth to (mm) | CBR value |
|---|---|---|---|
| 1 | 0 | 320 | 2.9 |
| 2 | 320 | 680 | 33 |
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**Estimated CBR value calculated using TRL equation:**

$$\log_{10}(CBR) = 2.48 - 1.057 \cdot \log_{10}(mm/blow)$$

**References:**

CNS Farnell (2003) Dynamic Cone Penetrometer Model A2465 Operating Instructions.

Transport and Road Research Laboratory (1990) Overseas Road Note 8. A users manual for a program to analyse dynamic cone penetrometer data.

Transport and Road Research Laboratory (2004) TRL Project Report PR/INT/277/04.

Comments:

TRL probe commenced from ground level, hand pit dug adjacent to TRL position prior to probing to confirm no services present. Topsoil from GL to 0.30 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**DCP112**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 507965.38 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299921.28 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 24.04 | mOD | | |
| Engineer: | DB | | | | Weather: | Sunny |
| Date of test: | 01/03/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 0 | 0 | 105 | | 0 | 0 |
| 1 | 1 | 190 | | 85 | 85 |
| 1 | 2 | 215 | | 25 | 110 |
| 1 | 3 | 280 | | 65 | 175 |
| 1 | 4 | 327 | | 47 | 222 |
| 1 | 5 | 349 | | 22 | 244 |
| 1 | 6 | 370 | | 21 | 265 |
| 1 | 7 | 380 | | 10 | 275 |
| 1 | 8 | 390 | | 10 | 285 |
| 1 | 9 | 393 | | 3 | 288 |
| 1 | 10 | 400 | | 7 | 295 |
| 1 | 11 | 401 | | 1 | 296 |
| 1 | 12 | 409 | | 8 | 304 |
| 1 | 13 | 410 | | 1 | 305 |
| 1 | 14 | 413 | | 3 | 308 |
| 1 | 15 | 420 | | 7 | 315 |
| 1 | 16 | 423 | | 3 | 318 |
| 1 | 17 | 435 | | 12 | 330 |
| 1 | 18 | 450 | | 15 | 345 |
| 1 | 19 | 455 | | 5 | 350 |
| 1 | 20 | 462 | | 7 | 357 |
| 1 | 21 | 470 | | 8 | 365 |
| 1 | 22 | 471 | | 1 | 366 |
| 1 | 23 | 476 | | 5 | 371 |
| 1 | 24 | 480 | | 4 | 375 |
| 1 | 25 | 490 | | 10 | 385 |
| 2 | 27 | 510 | | 20 | 405 |
| 2 | 29 | 530 | | 20 | 425 |
| 2 | 31 | 533 | | 3 | 428 |
| 2 | 33 | 540 | | 7 | 435 |
| 2 | 35 | 550 | | 10 | 445 |
| 2 | 37 | 560 | | 10 | 455 |
| 2 | 39 | 570 | | 10 | 465 |
| 3 | 42 | 580 | | 10 | 475 |
| 3 | 45 | 595 | | 15 | 490 |
| 2 | 47 | 650 | | 55 | 545 |
| 2 | 49 | 660 | | 10 | 555 |
| 1 | 50 | 670 | | 10 | 565 |
| 1 | 51 | 678 | | 8 | 573 |
| 1 | 52 | 683 | | 5 | 578 |
| 5 | 57 | 690 | | 7 | 585 |
| 10 | 67 | 691 | | 1 | 586 |
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Comments:
TRL probe commenced from ground level, hand pit dug adjacent to TRL position prior to probing to confirm no services present. Topsoil from GL to 0.30 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**DCP112**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 507965.38 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299921.28 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 24.04 | mOD | | |
| Engineer: | DB | | | | Weather: | Sunny |
| Date of test: | 01/03/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
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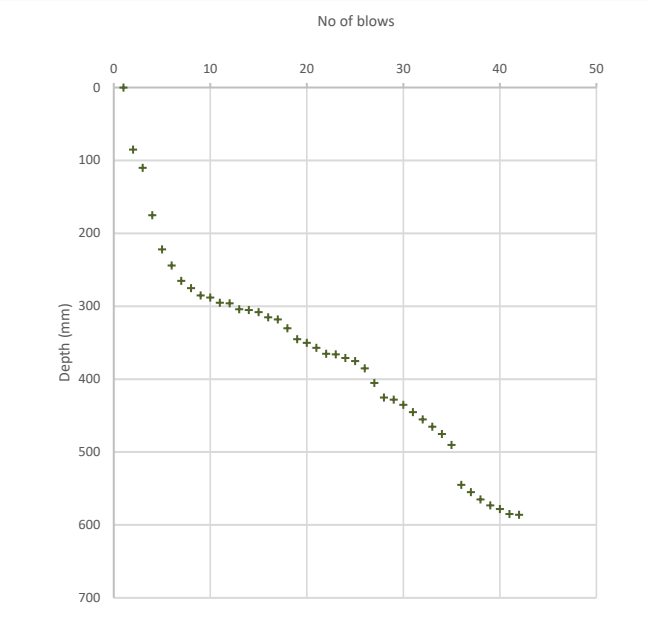


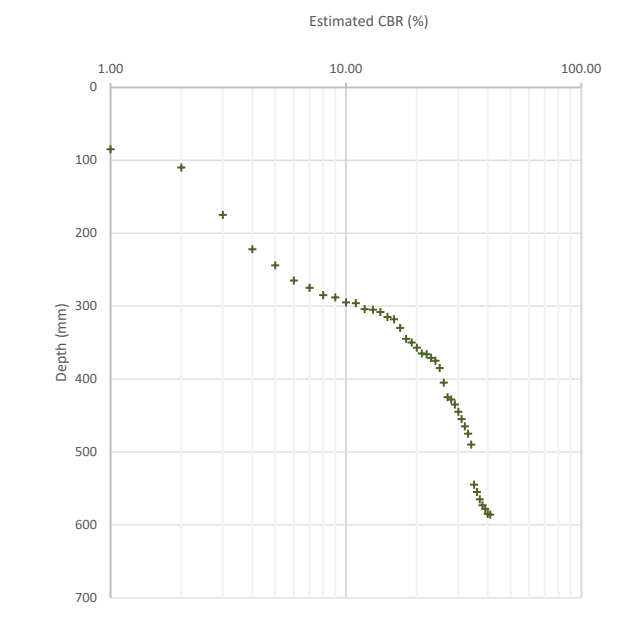


| Test No. | Depth from (mm) | Depth to (mm) | CBR value |
|---|---|---|---|
| 1 | 0 | 425 | 18 |
| 2 | 425 | 586 | 66 |
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**Estimated CBR value calculated using TRL equation:**

$$\log_{10}(CBR) = 2.48 - 1.057 \cdot \log_{10}(mm/blow)$$

**References:**

CNS Farnell (2003) Dynamic Cone Penetrometer Model A2465 Operating Instructions.

Transport and Road Research Laboratory (1990) Overseas Road Note 8. A users manual for a program to analyse dynamic cone penetrometer data.

Transport and Road Research Laboratory (2004) TRL Project Report PR/INT/277/04.

Comments:

TRL probe commenced from ground level, hand pit dug adjacent to TRL position prior to probing to confirm no services present. Topsoil from GL to 0.30 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**DCP113**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 507965.42 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299939.42 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 23.07 | mOD | | |
| Engineer: | DB | | | | Weather: | Sunny |
| Date of test: | 01/03/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 0 | 0 | 90 | | 0 | 0 |
| 1 | 1 | 170 | | 80 | 80 |
| 1 | 2 | 190 | | 20 | 100 |
| 1 | 3 | 210 | | 20 | 120 |
| 1 | 4 | 240 | | 30 | 150 |
| 1 | 5 | 270 | | 30 | 180 |
| 1 | 6 | 298 | | 28 | 208 |
| 1 | 7 | 320 | | 22 | 230 |
| 1 | 8 | 325 | | 5 | 235 |
| 1 | 9 | 370 | | 45 | 280 |
| 1 | 10 | 395 | | 25 | 305 |
| 1 | 11 | 415 | | 20 | 325 |
| 1 | 12 | 430 | | 15 | 340 |
| 1 | 13 | 440 | | 10 | 350 |
| 1 | 14 | 460 | | 20 | 370 |
| 1 | 15 | 470 | | 10 | 380 |
| 1 | 16 | 479 | | 9 | 389 |
| 1 | 17 | 480 | | 1 | 390 |
| 1 | 18 | 495 | | 15 | 405 |
| 1 | 19 | 500 | | 5 | 410 |
| 1 | 20 | 525 | | 25 | 435 |
| 1 | 21 | 539 | | 14 | 449 |
| 1 | 22 | 550 | | 11 | 460 |
| 2 | 24 | 570 | | 20 | 480 |
| 3 | 27 | 590 | | 20 | 500 |
| 1 | 28 | 592 | | 2 | 502 |
| 1 | 29 | 596 | | 4 | 506 |
| 1 | 30 | 599 | | 3 | 509 |
| 2 | 32 | 610 | | 11 | 520 |
| 3 | 35 | 630 | | 20 | 540 |
| 3 | 38 | 640 | | 10 | 550 |
| 2 | 40 | 650 | | 10 | 560 |
| 2 | 42 | 670 | | 20 | 580 |
| 2 | 44 | 700 | | 30 | 610 |
| 1 | 45 | 705 | | 5 | 615 |
| 2 | 47 | 720 | | 15 | 630 |
| 4 | 51 | 730 | | 10 | 640 |
| 2 | 53 | 740 | | 10 | 650 |
| 1 | 54 | 750 | | 10 | 660 |
| 1 | 55 | 752 | | 2 | 662 |
| 1 | 56 | 757 | | 5 | 667 |
| 3 | 59 | 760 | | 3 | 670 |
| 10 | 69 | 761 | | 1 | 671 |
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Comments:
TRL probe commenced from ground level, hand pit dug adjacent to TRL position prior to probing to confirm no services present. Topsoil from GL to 0.40 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**DCP113**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 507965.42 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299939.42 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 23.07 | mOD | | |
| Engineer: | DB | | | | Weather: | Sunny |
| Date of test: | 01/03/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
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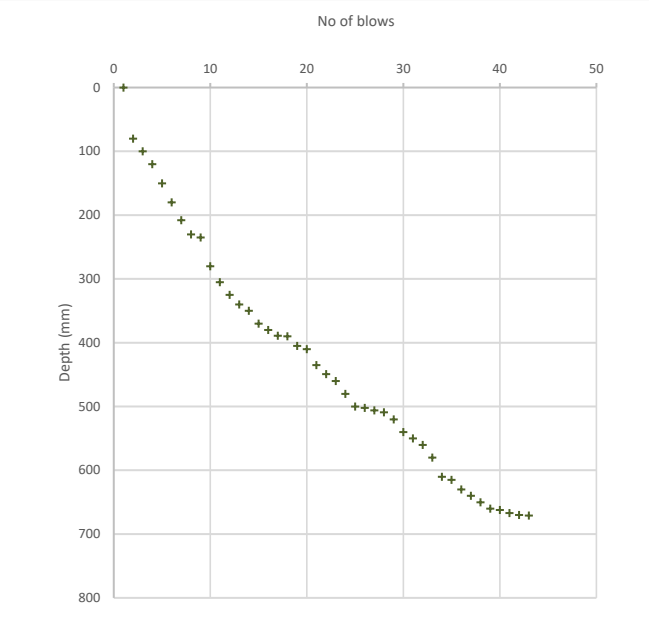


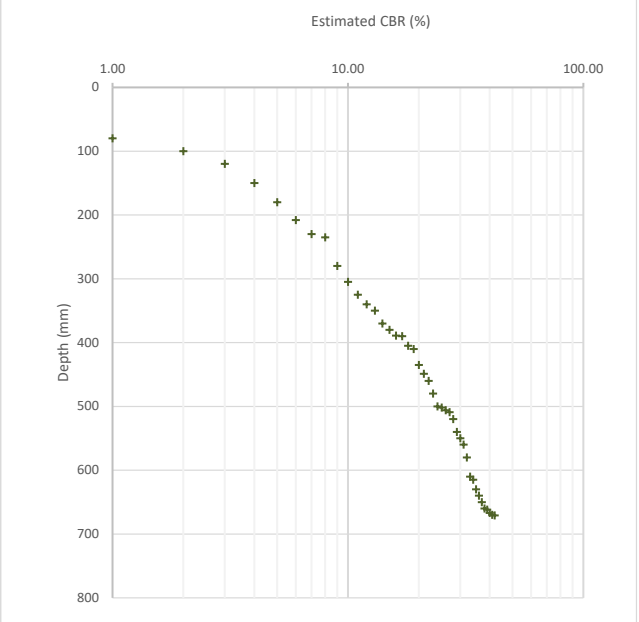


| Test No. | Depth from (mm) | Depth to (mm) | CBR value |
|---|---|---|---|
| 1 | 0 | 671 | 27 |
| | | | |
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**Estimated CBR value calculated using TRL equation:**

$$\log_{10}(CBR) = 2.48 - 1.057 \cdot \log_{10}(mm/blow)$$

**References:**

CNS Farnell (2003) Dynamic Cone Penetrometer Model A2465 Operating Instructions.

Transport and Road Research Laboratory (1990) Overseas Road Note 8. A users manual for a program to analyse dynamic cone penetrometer data.

Transport and Road Research Laboratory (2004) TRL Project Report PR/INT/277/04.

Comments:

TRL probe commenced from ground level, hand pit dug adjacent to TRL position prior to probing to confirm no services present. Topsoil from GL to 0.40 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**DCP114**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 508032.73 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299750.48 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 27.17 | mOD | | |
| Engineer: | DB | | | | Weather: | Sunny |
| Date of test: | 02/03/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 0 | 0 | 100 | | 0 | 0 |
| 1 | 1 | 210 | | 110 | 110 |
| 1 | 2 | 280 | | 70 | 180 |
| 1 | 3 | 330 | | 50 | 230 |
| 1 | 4 | 350 | | 20 | 250 |
| 1 | 5 | 360 | | 10 | 260 |
| 1 | 6 | 370 | | 10 | 270 |
| 2 | 8 | 380 | | 10 | 280 |
| 1 | 9 | 390 | | 10 | 290 |
| 1 | 10 | 400 | | 10 | 300 |
| 1 | 11 | 410 | | 10 | 310 |
| 1 | 12 | 420 | | 10 | 320 |
| 1 | 13 | 430 | | 10 | 330 |
| 1 | 14 | 440 | | 10 | 340 |
| 1 | 15 | 450 | | 10 | 350 |
| 4 | 19 | 460 | | 10 | 360 |
| 1 | 20 | 465 | | 5 | 365 |
| 10 | 30 | 470 | | 5 | 370 |

Comments:
TRL probe commenced from ground level, hand pit dug adjacent to TRL position prior to probing to confirm no services present. Topsoil from GL to 0.50 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**DCP114**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 508032.73 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299750.48 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 27.17 | mOD | | |
| Engineer: | DB | | | | Weather: | Sunny |
| Date of test: | 02/03/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
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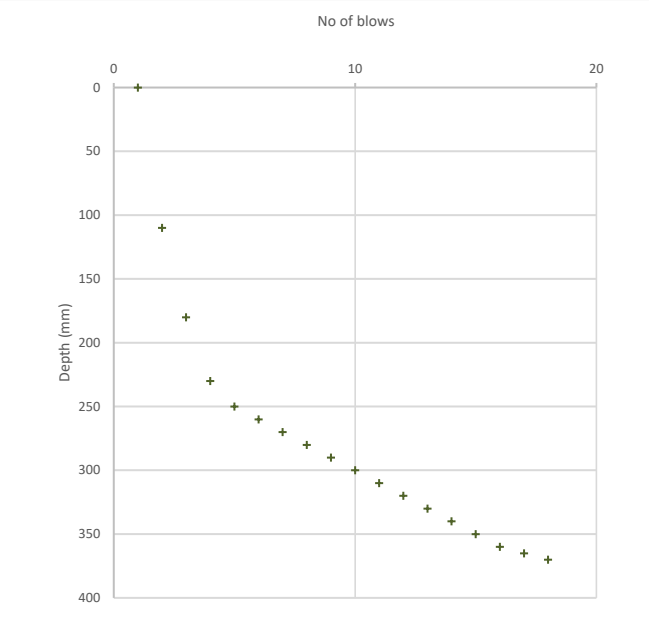


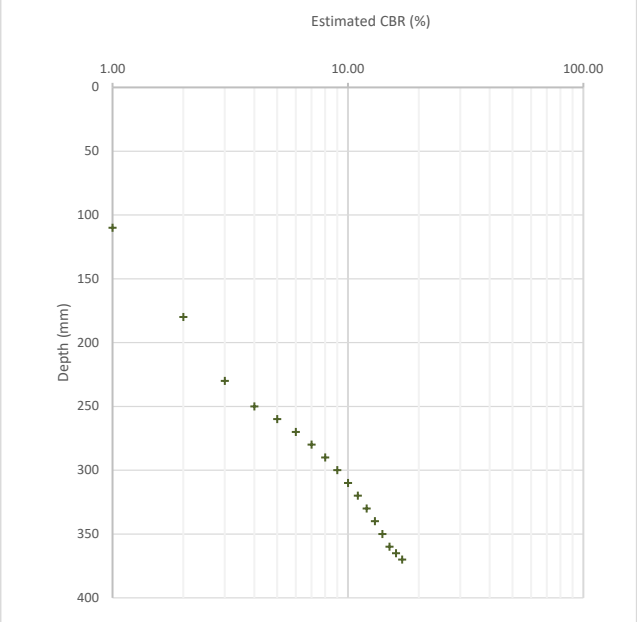


| Test No. | Depth from (mm) | Depth to (mm) | CBR value |
|---|---|---|---|
| 1 | 0 | 230 | 3.1 |
| 2 | 230 | 350 | 26 |
| 3 | 350 | 370 | 220 |
| | | | |
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**Estimated CBR value calculated using TRL equation:**

$$\log_{10}(CBR) = 2.48 - 1.057 \cdot \log_{10}(mm/blow)$$

**References:**

CNS Farnell (2003) Dynamic Cone Penetrometer Model A2465 Operating Instructions.

Transport and Road Research Laboratory (1990) Overseas Road Note 8. A users manual for a program to analyse dynamic cone penetrometer data.

Transport and Road Research Laboratory (2004) TRL Project Report PR/INT/277/04.

Comments:

TRL probe commenced from ground level, hand pit dug adjacent to TRL position prior to probing to confirm no services present. Topsoil from GL to 0.50 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**DCP115**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 508227.05 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299737.71 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 21.64 | mOD | | |
| Engineer: | DB | | | | Weather: | Sunny |
| Date of test: | 02/03/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 0 | 0 | 100 | | 0 | 0 |
| 1 | 1 | 130 | | 30 | 30 |
| 1 | 2 | 210 | | 80 | 110 |
| 1 | 3 | 280 | | 70 | 180 |
| 1 | 4 | 330 | | 50 | 230 |
| 1 | 5 | 370 | | 40 | 270 |
| 1 | 6 | 420 | | 50 | 320 |
| 1 | 7 | 450 | | 30 | 350 |
| 1 | 8 | 500 | | 50 | 400 |
| 1 | 9 | 550 | | 50 | 450 |
| 1 | 10 | 610 | | 60 | 510 |
| 1 | 11 | 670 | | 60 | 570 |
| 1 | 12 | 720 | | 50 | 620 |
| 1 | 13 | 770 | | 50 | 670 |
| 1 | 14 | 790 | | 20 | 690 |
| 1 | 15 | 810 | | 20 | 710 |
| 1 | 16 | 830 | | 20 | 730 |
| 1 | 17 | 850 | | 20 | 750 |
| 1 | 18 | 870 | | 20 | 770 |
| 1 | 19 | 895 | | 25 | 795 |
| 1 | 20 | 920 | | 25 | 820 |
| 2 | 22 | 970 | | 50 | 870 |
| 1 | 23 | 980 | | 10 | 880 |
| 1 | 24 | 990 | | 10 | 890 |
| 1 | 25 | 1000 | | 10 | 900 |
| 1 | 26 | 1020 | | 20 | 920 |
| 1 | 27 | 1030 | | 10 | 930 |
| 1 | 28 | 1040 | | 10 | 940 |
| 1 | 29 | 1050 | | 10 | 950 |
| 1 | 30 | 1060 | | 10 | 960 |
| 1 | 31 | 1070 | | 10 | 970 |
| 1 | 32 | 1080 | | 10 | 980 |
| 2 | 34 | 1090 | | 10 | 990 |
| 2 | 36 | 1100 | | 10 | 1000 |
| 3 | 39 | 1120 | | 20 | 1020 |
| 2 | 41 | 1130 | | 10 | 1030 |
| 2 | 43 | 1140 | | 10 | 1040 |
| 3 | 46 | 1160 | | 20 | 1060 |
| 2 | 48 | 1180 | | 20 | 1080 |
| 2 | 50 | 1200 | | 20 | 1100 |
| 2 | 52 | 1220 | | 20 | 1120 |
| 2 | 54 | 1230 | | 10 | 1130 |
| 10 | 64 | 1245 | | 15 | 1145 |
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Comments:
TRL probe commenced from ground level, hand pit dug adjacent to TRL position prior to probing to confirm no services present. Topsoil from GL to 0.30 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**DCP115**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 508227.05 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299737.71 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 21.64 | mOD | | |
| Engineer: | DB | | | | Weather: | Sunny |
| Date of test: | 02/03/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
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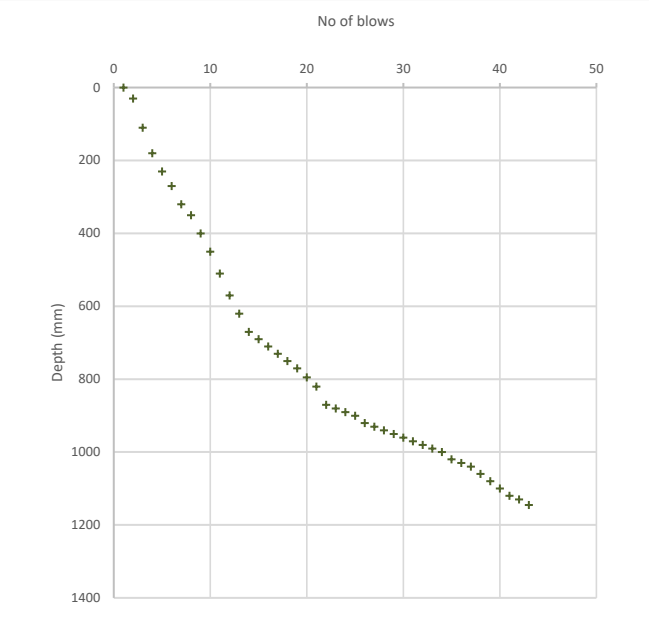


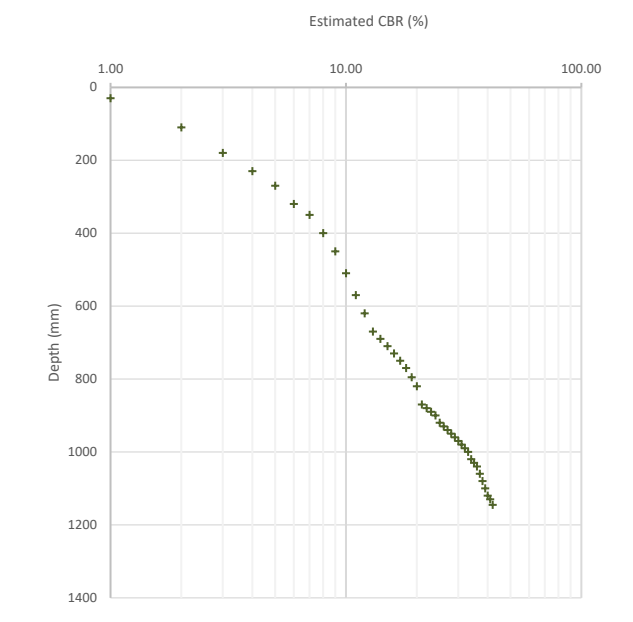


| Test No. | Depth from (mm) | Depth to (mm) | CBR value |
|---|---|---|---|
| 1 | 0 | 30 | 8.3 |
| 2 | 30 | 795 | 5.7 |
| | | | |
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**Estimated CBR value calculated using TRL equation:**

$$\log_{10}(CBR) = 2.48 - 1.057 \cdot \log_{10}(mm/blow)$$

**References:**

CNS Farnell (2003) Dynamic Cone Penetrometer Model A2465 Operating Instructions.

Transport and Road Research Laboratory (1990) Overseas Road Note 8. A users manual for a program to analyse dynamic cone penetrometer data.

Transport and Road Research Laboratory (2004) TRL Project Report PR/INT/277/04.

Comments:

TRL probe commenced from ground level, hand pit dug adjacent to TRL position prior to probing to confirm no services present. Topsoil from GL to 0.30 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**DCP116**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 508377.89 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299718.43 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 18.09 | mOD | | |
| Engineer: | DB | | | | Weather: | Sunny |
| Date of test: | 02/03/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 0 | 0 | 100 | | 0 | 0 |
| 1 | 1 | 420 | | 320 | 320 |
| 1 | 2 | 450 | | 30 | 350 |
| 1 | 3 | 460 | | 10 | 360 |
| 1 | 4 | 480 | | 20 | 380 |
| 1 | 5 | 500 | | 20 | 400 |
| 1 | 6 | 530 | | 30 | 430 |
| 1 | 7 | 535 | | 5 | 435 |
| 1 | 8 | 540 | | 5 | 440 |
| 1 | 9 | 550 | | 10 | 450 |
| 10 | 19 | 560 | | 10 | 460 |

Comments:
TRL probe commenced from ground level, hand pit dug adjacent to TRL position prior to probing to confirm no services present. Topsoil from GL to 0.30 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**DCP116**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 508377.89 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299718.43 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 18.09 | mOD | | |
| Engineer: | DB | | | | Weather: | Sunny |
| Date of test: | 02/03/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
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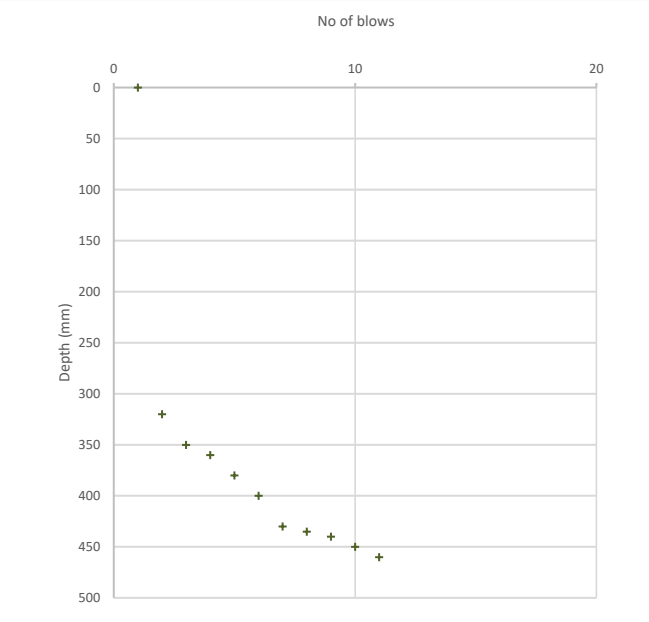


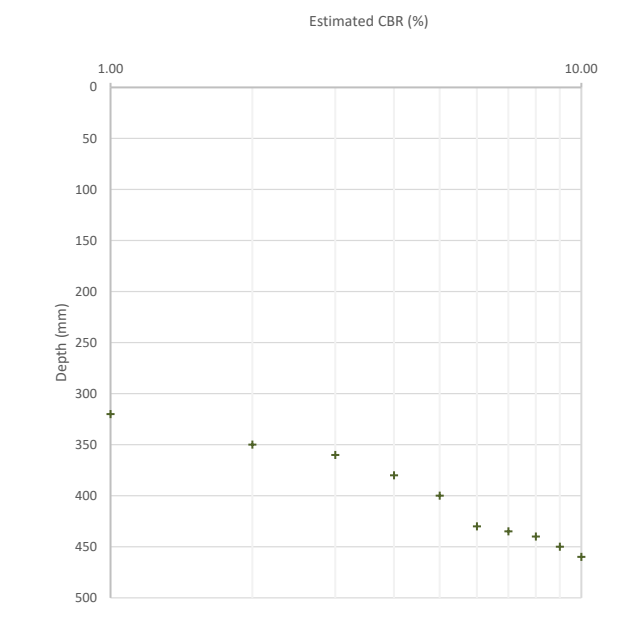


| Test No. | Depth from (mm) | Depth to (mm) | CBR value |
|---|---|---|---|
| 1 | 0 | 320 | 0.68 |
| 2 | 320 | 460 | 35 |
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| | | | |
| | | | |

**Estimated CBR value calculated using TRL equation:**

$$\log_{10}(CBR) = 2.48 - 1.057 \cdot \log_{10}(mm/blow)$$

**References:**

CNS Farnell (2003) Dynamic Cone Penetrometer Model A2465 Operating Instructions.

Transport and Road Research Laboratory (1990) Overseas Road Note 8. A users manual for a program to analyse dynamic cone penetrometer data.

Transport and Road Research Laboratory (2004) TRL Project Report PR/INT/277/04.

Comments:

TRL probe commenced from ground level, hand pit dug adjacent to TRL position prior to probing to confirm no services present. Topsoil from GL to 0.30 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**DCP117**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 508987.45 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299659.03 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 17.76 | mOD | | |
| Engineer: | JJ | | | | Weather: | Sunny |
| Date of test: | 07/04/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 0 | 0 | 100 | | 0 | 0 |
| 1 | 1 | 185 | | 85 | 85 |
| 1 | 2 | 230 | | 45 | 130 |
| 1 | 3 | 260 | | 30 | 160 |
| 1 | 4 | 290 | | 30 | 190 |
| 1 | 5 | 350 | | 60 | 250 |
| 2 | 7 | 370 | | 20 | 270 |
| 2 | 9 | 390 | | 20 | 290 |
| 2 | 11 | 405 | | 15 | 305 |
| 2 | 13 | 425 | | 20 | 325 |
| 2 | 15 | 445 | | 20 | 345 |
| 2 | 17 | 465 | | 20 | 365 |
| 2 | 19 | 490 | | 25 | 390 |
| 2 | 21 | 520 | | 30 | 420 |
| 2 | 23 | 555 | | 35 | 455 |
| 2 | 25 | 575 | | 20 | 475 |
| 2 | 27 | 585 | | 10 | 485 |
| 2 | 29 | 600 | | 15 | 500 |
| 2 | 31 | 625 | | 25 | 525 |
| 2 | 33 | 635 | | 10 | 535 |
| 2 | 35 | 650 | | 15 | 550 |
| 2 | 37 | 665 | | 15 | 565 |
| 2 | 39 | 675 | | 10 | 575 |
| 2 | 41 | 685 | | 10 | 585 |
| 2 | 43 | 700 | | 15 | 600 |
| 2 | 45 | 730 | | 30 | 630 |
| 2 | 47 | 760 | | 30 | 660 |
| 2 | 49 | 780 | | 20 | 680 |
| 2 | 51 | 795 | | 15 | 695 |
| 2 | 53 | 835 | | 40 | 735 |
| 2 | 55 | 850 | | 15 | 750 |
| 2 | 57 | 875 | | 25 | 775 |
| 2 | 59 | 885 | | 10 | 785 |
| 2 | 61 | 905 | | 20 | 805 |
| 2 | 63 | 920 | | 15 | 820 |
| 2 | 65 | 945 | | 25 | 845 |
| 2 | 67 | 955 | | 10 | 855 |
| 2 | 69 | 970 | | 15 | 870 |
| 2 | 71 | 985 | | 15 | 885 |
| 2 | 73 | 995 | | 10 | 895 |
| 2 | 75 | 1005 | | 10 | 905 |
| 2 | 77 | 1025 | | 20 | 925 |
| 2 | 79 | 1035 | | 10 | 935 |
| 2 | 81 | 1055 | | 20 | 955 |
| 2 | 83 | 1065 | | 10 | 965 |
| 2 | 85 | 1085 | | 20 | 985 |
| 2 | 87 | 1095 | | 10 | 995 |
| 2 | 89 | 1105 | | 10 | 1005 |
| 2 | 91 | 1115 | | 10 | 1015 |
| 2 | 93 | 1125 | | 10 | 1025 |
| 2 | 95 | 1140 | | 15 | 1040 |
| 2 | 97 | 1155 | | 15 | 1055 |

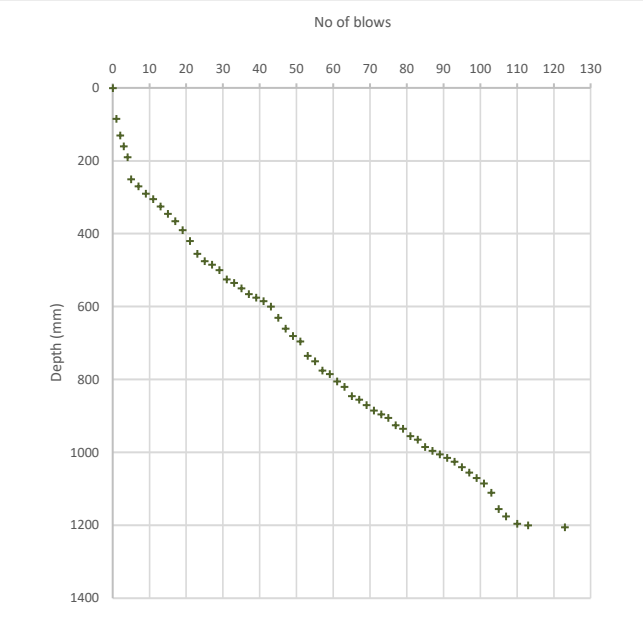
Comments:
TRL probe commenced from ground level, hand pit dug adjacent to TRL position prior to probing to confirm no services present. Topsoil from GL to 0.30 m bgl.

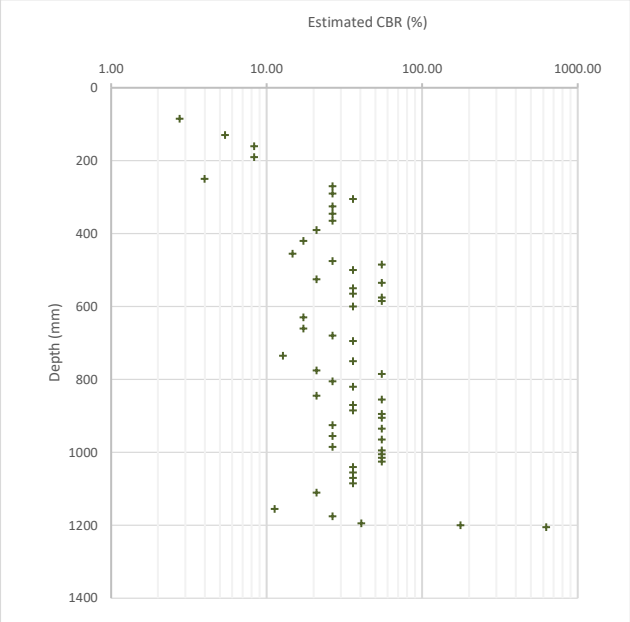
# DYNAMIC CONE PENETRATION TEST

Test Location:
**DCP117**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 508987.45 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299659.03 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 17.76 | mOD | | |
| Engineer: | JJ | | | | Weather: | Sunny |
| Date of test: | 07/04/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 2 | 99 | 1170 | | 15 | 1070 |
| 2 | 101 | 1185 | | 15 | 1085 |
| 2 | 103 | 1210 | | 25 | 1110 |
| 2 | 105 | 1255 | | 45 | 1155 |
| 2 | 107 | 1275 | | 20 | 1175 |
| 3 | 110 | 1295 | | 20 | 1195 |
| 3 | 113 | 1300 | | 5 | 1200 |
| 10 | 123 | 1305 | | 5 | 1205 |




| Test No. | Depth from (mm) | Depth to (mm) | CBR value |
|---|---|---|---|
| 1 | 0 | 250 | 4.8 |
| 2 | 250 | 1205 | 33 |
| | | | |
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| | | | |

**Estimated CBR value calculated using TRL equation:**

$$\log_{10}(CBR) = 2.48 - 1.057 \cdot \log_{10}(mm/blow)$$

**References:**

CNS Farnell (2003) Dynamic Cone Penetrometer Model A2465 Operating Instructions.
Transport and Road Research Laboratory (1990) Overseas Road Note 8. A users manual for a program to analyse dynamic cone penetrometer data.
Transport and Road Research Laboratory (2004) TRL Project Report PR/INT/277/04.

Comments:

TRL probe commenced from ground level, hand pit dug adjacent to TRL position prior to probing to confirm no services present. Topsoil from GL to 0.30 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**DCP118**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 509060.66 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299563.87 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 20.36 | mOD | | |
| Engineer: | JJ | | | | Weather: | Sunny |
| Date of test: | 07/04/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 0 | 0 | 95 | | 0 | 0 |
| 1 | 1 | 125 | | 30 | 30 |
| 1 | 2 | 160 | | 35 | 65 |
| 1 | 3 | 205 | | 45 | 110 |
| 1 | 4 | 250 | | 45 | 155 |
| 1 | 5 | 290 | | 40 | 195 |
| 1 | 6 | 320 | | 30 | 225 |
| 1 | 7 | 360 | | 40 | 265 |
| 1 | 8 | 395 | | 35 | 300 |
| 1 | 9 | 425 | | 30 | 330 |
| 1 | 10 | 470 | | 45 | 375 |
| 1 | 11 | 505 | | 35 | 410 |
| 1 | 12 | 530 | | 25 | 435 |
| 1 | 13 | 550 | | 20 | 455 |
| 1 | 14 | 570 | | 20 | 475 |
| 1 | 15 | 605 | | 35 | 510 |
| 1 | 16 | 625 | | 20 | 530 |
| 1 | 17 | 635 | | 10 | 540 |
| 1 | 18 | 650 | | 15 | 555 |
| 1 | 19 | 680 | | 30 | 585 |
| 1 | 20 | 705 | | 25 | 610 |
| 1 | 21 | 735 | | 30 | 640 |
| 1 | 22 | 750 | | 15 | 655 |
| 1 | 23 | 775 | | 25 | 680 |
| 1 | 24 | 795 | | 20 | 700 |
| 1 | 25 | 820 | | 25 | 725 |
| 1 | 26 | 840 | | 20 | 745 |
| 1 | 27 | 865 | | 25 | 770 |
| 1 | 28 | 885 | | 20 | 790 |
| 1 | 29 | 905 | | 20 | 810 |
| 1 | 30 | 920 | | 15 | 825 |
| 1 | 31 | 945 | | 25 | 850 |
| 1 | 32 | 965 | | 20 | 870 |
| 1 | 33 | 990 | | 25 | 895 |
| 1 | 34 | 1015 | | 25 | 920 |
| 1 | 35 | 1035 | | 20 | 940 |
| 1 | 36 | 1050 | | 15 | 955 |
| 2 | 38 | 1075 | | 25 | 980 |
| 3 | 41 | 1090 | | 15 | 995 |
| 3 | 44 | 1105 | | 15 | 1010 |
| 4 | 48 | 1120 | | 15 | 1025 |
| 10 | 58 | 1130 | | 10 | 1035 |

Comments:
TRL probe commenced from ground level, hand pit dug adjacent to TRL position prior to probing to confirm no services present. Topsoil from GL to 0.35 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**DCP118**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 509060.66 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299563.87 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 20.36 | mOD | | |
| Engineer: | JJ | | | | Weather: | Sunny |
| Date of test: | 07/04/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
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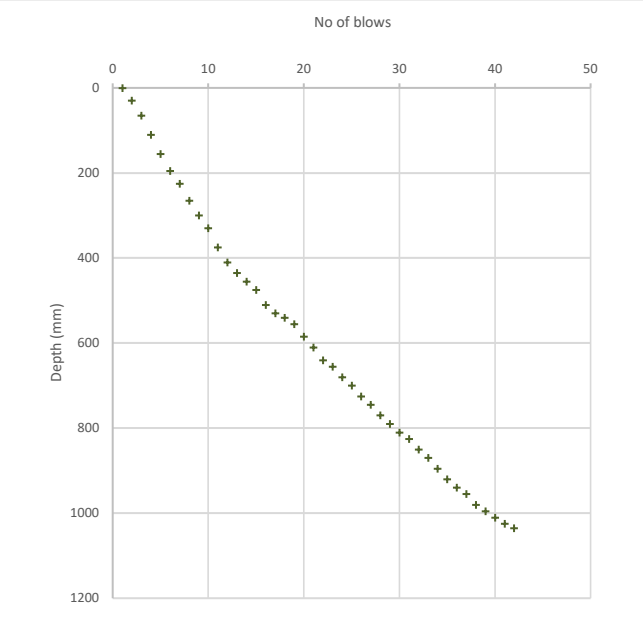


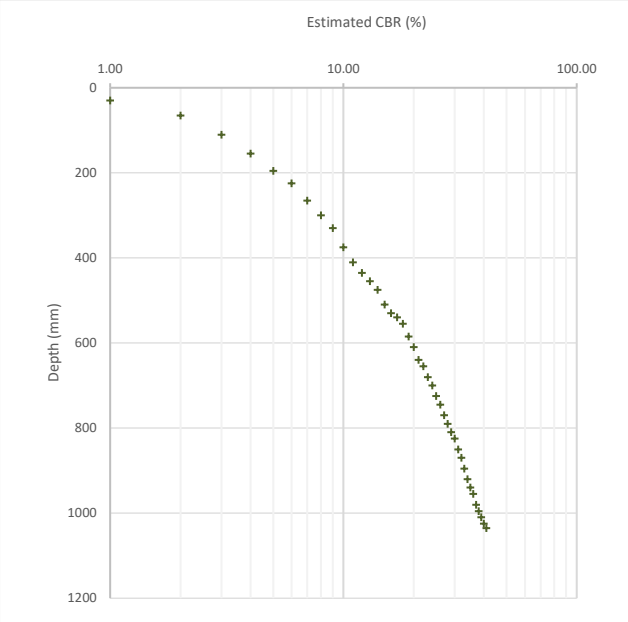


| Test No. | Depth from (mm) | Depth to (mm) | CBR value |
|---|---|---|---|
| 1 | 0 | 995 | 10 |
| 2 | 995 | 1035 | 120 |
| | | | |
| | | | |
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| | | | |
| | | | |

**Estimated CBR value calculated using TRL equation:**

$$\log_{10}(CBR) = 2.48 - 1.057 \cdot \log_{10}(mm/blow)$$

**References:**

CNS Farnell (2003) Dynamic Cone Penetrometer Model A2465 Operating Instructions.

Transport and Road Research Laboratory (1990) Overseas Road Note 8. A users manual for a program to analyse dynamic cone penetrometer data.

Transport and Road Research Laboratory (2004) TRL Project Report PR/INT/277/04.

Comments:

TRL probe commenced from ground level, hand pit dug adjacent to TRL position prior to probing to confirm no services present. Topsoil from GL to 0.35 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**DCP119**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 509167.77 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299494.69 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 21.17 | mOD | | |
| Engineer: | MM | | | | Weather: | Sunny |
| Date of test: | 07/04/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 0 | 0 | 95 | | 0 | 0 |
| 1 | 1 | 150 | | 55 | 55 |
| 1 | 2 | 210 | | 60 | 115 |
| 1 | 3 | 235 | | 25 | 140 |
| 1 | 4 | 260 | | 25 | 165 |
| 1 | 5 | 315 | | 55 | 220 |
| 1 | 6 | 355 | | 40 | 260 |
| 1 | 7 | 390 | | 35 | 295 |
| 1 | 8 | 420 | | 30 | 325 |
| 1 | 9 | 465 | | 45 | 370 |
| 1 | 10 | 510 | | 45 | 415 |
| 1 | 11 | 535 | | 25 | 440 |
| 1 | 12 | 560 | | 25 | 465 |
| 1 | 13 | 580 | | 20 | 485 |
| 1 | 14 | 600 | | 20 | 505 |
| 1 | 15 | 630 | | 30 | 535 |
| 1 | 16 | 665 | | 35 | 570 |
| 1 | 17 | 690 | | 25 | 595 |
| 1 | 18 | 710 | | 20 | 615 |
| 1 | 19 | 735 | | 25 | 640 |
| 1 | 20 | 765 | | 30 | 670 |
| 1 | 21 | 790 | | 25 | 695 |
| 1 | 22 | 810 | | 20 | 715 |
| 1 | 23 | 830 | | 20 | 735 |
| 1 | 24 | 850 | | 20 | 755 |
| 1 | 25 | 875 | | 25 | 780 |
| 1 | 26 | 910 | | 35 | 815 |
| 1 | 27 | 950 | | 40 | 855 |
| 1 | 28 | 995 | | 45 | 900 |
| 1 | 29 | 1030 | | 35 | 935 |
| 1 | 30 | 1065 | | 35 | 970 |
| 1 | 31 | 1110 | | 45 | 1015 |
| 1 | 32 | 1140 | | 30 | 1045 |
| 1 | 33 | 1185 | | 45 | 1090 |
| 1 | 34 | 1230 | | 45 | 1135 |
| 1 | 35 | 1250 | | 20 | 1155 |
| 1 | 36 | 1275 | | 25 | 1180 |
| 1 | 37 | 1300 | | 25 | 1205 |
| 1 | 38 | 1330 | | 30 | 1235 |
| 1 | 39 | 1350 | | 20 | 1255 |
| 1 | 40 | 1365 | | 15 | 1270 |
| 1 | 41 | 1380 | | 15 | 1285 |
| 1 | 42 | 1395 | | 15 | 1300 |
| 1 | 43 | 1410 | | 15 | 1315 |
| 1 | 44 | 1420 | | 10 | 1325 |
| 1 | 45 | 1440 | | 20 | 1345 |
| 1 | 46 | 1460 | | 20 | 1365 |
| 1 | 47 | 1480 | | 20 | 1385 |
| 1 | 48 | 1490 | | 10 | 1395 |
| 1 | 49 | 1500 | | 10 | 1405 |
| 1 | 50 | 1510 | | 10 | 1415 |
| 1 | 51 | 1530 | | 20 | 1435 |

Comments:
TRL probe commenced from ground level, hand pit dug adjacent to TRL position prior to probing to confirm no services present. Topsoil from GL to 0.30 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**DCP119**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 509167.77 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299494.69 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 21.17 | mOD | | |
| Engineer: | MM | | | | Weather: | Sunny |
| Date of test: | 07/04/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 1 | 52 | 1540 | | 10 | 1445 |
| 1 | 53 | 1555 | | 15 | 1460 |
| 1 | 54 | 1570 | | 15 | 1475 |
| 1 | 55 | 1580 | | 10 | 1485 |
| 1 | 56 | 1610 | | 30 | 1515 |
| | | | | | |
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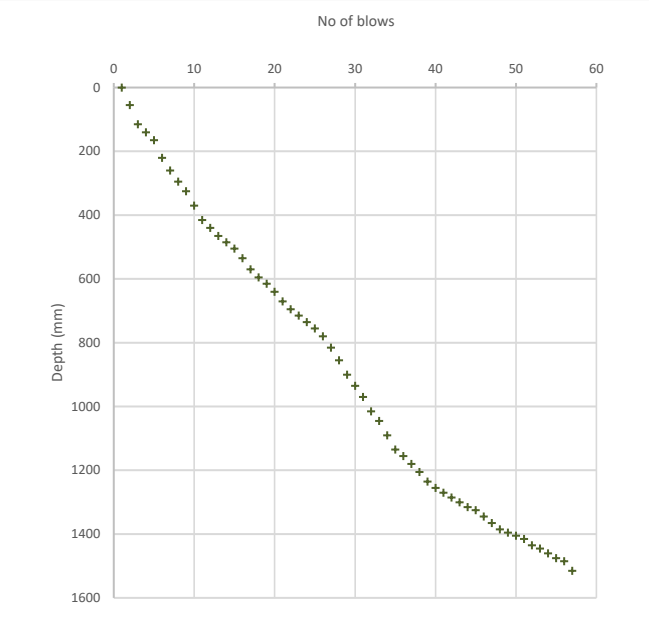


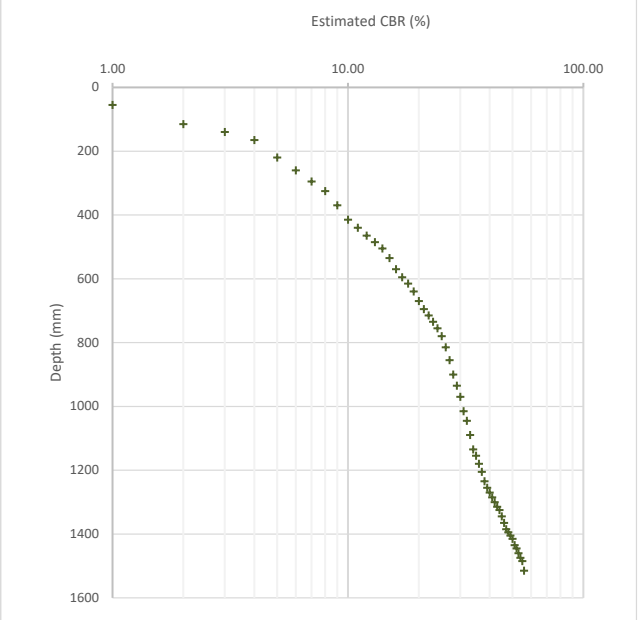


| Test No. | Depth from (mm) | Depth to (mm) | CBR value |
|---|---|---|---|
| 1 | 0 | 1515 | 9.2 |
| | | | |
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| | | | |
| | | | |

**Estimated CBR value calculated using TRL equation:**

$$\log_{10}(CBR) = 2.48 - 1.057 \cdot \log_{10}(mm/blow)$$

**References:**

CNS Farnell (2003) Dynamic Cone Penetrometer Model A2465 Operating Instructions.

Transport and Road Research Laboratory (1990) Overseas Road Note 8. A users manual for a program to analyse dynamic cone penetrometer data.

Transport and Road Research Laboratory (2004) TRL Project Report PR/INT/277/04.

Comments:

TRL probe commenced from ground level, hand pit dug adjacent to TRL position prior to probing to confirm no services present. Topsoil from GL to 0.30 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**DCP120**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 509457.35 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299401.25 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 19.39 | mOD | | |
| Engineer: | MM | | | | Weather: | Sunny |
| Date of test: | 07/04/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 0 | 0 | 100 | | 0 | 0 |
| 1 | 1 | 130 | | 30 | 30 |
| 1 | 2 | 155 | | 25 | 55 |
| 1 | 3 | 190 | | 35 | 90 |
| 1 | 4 | 230 | | 40 | 130 |
| 1 | 5 | 290 | | 60 | 190 |
| 1 | 6 | 340 | | 50 | 240 |
| 1 | 7 | 380 | | 40 | 280 |
| 1 | 8 | 410 | | 30 | 310 |
| 1 | 9 | 440 | | 30 | 340 |
| 1 | 10 | 455 | | 15 | 355 |
| 1 | 11 | 480 | | 25 | 380 |
| 1 | 12 | 510 | | 30 | 410 |
| 1 | 13 | 530 | | 20 | 430 |
| 1 | 14 | 550 | | 20 | 450 |
| 1 | 15 | 560 | | 10 | 460 |
| 1 | 16 | 570 | | 10 | 470 |
| 1 | 17 | 580 | | 10 | 480 |
| 1 | 18 | 585 | | 5 | 485 |
| 1 | 19 | 590 | | 5 | 490 |
| 1 | 20 | 595 | | 5 | 495 |
| 1 | 21 | 600 | | 5 | 500 |
| 1 | 22 | 605 | | 5 | 505 |
| 1 | 23 | 610 | | 5 | 510 |
| 1 | 24 | 620 | | 10 | 520 |
| 1 | 25 | 635 | | 15 | 535 |
| 1 | 26 | 640 | | 5 | 540 |
| 1 | 27 | 650 | | 10 | 550 |
| 1 | 28 | 655 | | 5 | 555 |
| 1 | 29 | 660 | | 5 | 560 |
| 1 | 30 | 665 | | 5 | 565 |
| 1 | 31 | 670 | | 5 | 570 |
| 1 | 32 | 675 | | 5 | 575 |
| 1 | 33 | 680 | | 5 | 580 |
| 1 | 34 | 690 | | 10 | 590 |
| 1 | 35 | 700 | | 10 | 600 |
| 1 | 36 | 702 | | 2 | 602 |
| 1 | 37 | 705 | | 3 | 605 |
| 1 | 38 | 710 | | 5 | 610 |
| 1 | 39 | 715 | | 5 | 615 |
| 1 | 40 | 720 | | 5 | 620 |
| 1 | 41 | 722 | | 2 | 622 |
| 1 | 42 | 725 | | 3 | 625 |
| 1 | 43 | 730 | | 5 | 630 |
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Comments:
TRL probe commenced from ground level, hand pit dug adjacent to TRL position prior to probing to confirm no services present. Topsoil from GL to 0.45 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**DCP120**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 509457.35 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299401.25 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 19.39 | mOD | | |
| Engineer: | MM | | | | Weather: | Sunny |
| Date of test: | 07/04/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
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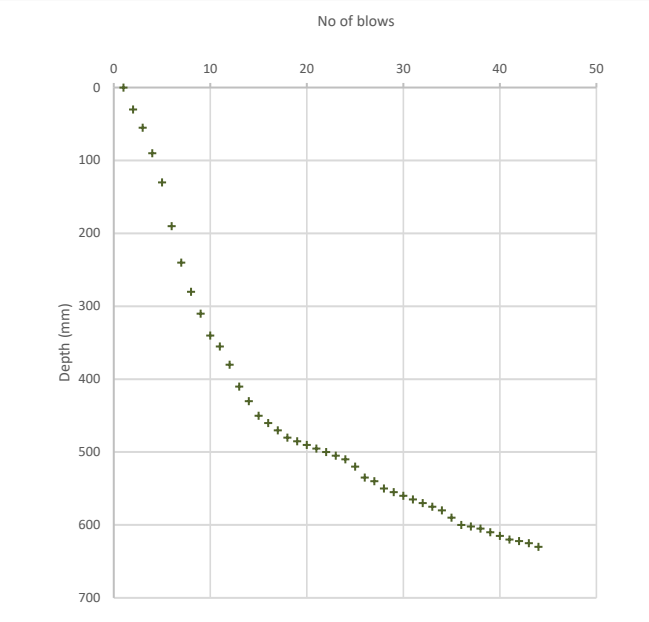


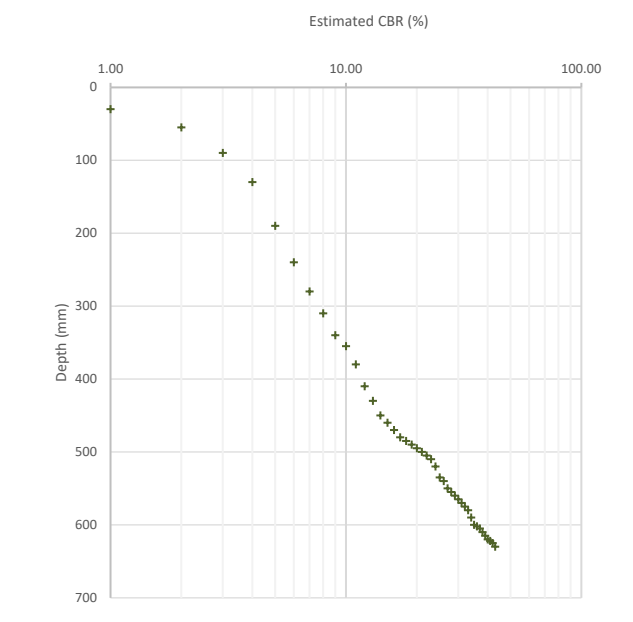


| Test No. | Depth from (mm) | Depth to (mm) | CBR value |
|---|---|---|---|
| 1 | 0 | 450 | 7.7 |
| 2 | 450 | 630 | 44 |
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**Estimated CBR value calculated using TRL equation:**

$$\log_{10}(CBR) = 2.48 - 1.057 \cdot \log_{10}(mm/blow)$$

**References:**

CNS Farnell (2003) Dynamic Cone Penetrometer Model A2465 Operating Instructions.

Transport and Road Research Laboratory (1990) Overseas Road Note 8. A users manual for a program to analyse dynamic cone penetrometer data.

Transport and Road Research Laboratory (2004) TRL Project Report PR/INT/277/04.

Comments:

TRL probe commenced from ground level, hand pit dug adjacent to TRL position prior to probing to confirm no services present. Topsoil from GL to 0.45 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**DCP121**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 509162.70 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299959.56 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 26.46 | mOD | | |
| Engineer: | JJ | | | | Weather: | Sunny |
| Date of test: | 07/04/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 0 | 0 | 105 | | 0 | 0 |
| 1 | 1 | 180 | | 75 | 75 |
| 1 | 2 | 250 | | 70 | 145 |
| 1 | 3 | 270 | | 20 | 165 |
| 1 | 4 | 290 | | 20 | 185 |
| 1 | 5 | 320 | | 30 | 215 |
| 1 | 6 | 335 | | 15 | 230 |
| 1 | 7 | 370 | | 35 | 265 |
| 1 | 8 | 390 | | 20 | 285 |
| 1 | 9 | 410 | | 20 | 305 |
| 1 | 10 | 415 | | 5 | 310 |
| 1 | 11 | 430 | | 15 | 325 |
| 1 | 12 | 445 | | 15 | 340 |
| 1 | 13 | 465 | | 20 | 360 |
| 1 | 14 | 480 | | 15 | 375 |
| 1 | 15 | 490 | | 10 | 385 |
| 1 | 16 | 505 | | 15 | 400 |
| 1 | 17 | 520 | | 15 | 415 |
| 1 | 18 | 540 | | 20 | 435 |
| 1 | 19 | 555 | | 15 | 450 |
| 1 | 20 | 560 | | 5 | 455 |
| 1 | 21 | 565 | | 5 | 460 |
| 1 | 22 | 575 | | 10 | 470 |
| 1 | 23 | 580 | | 5 | 475 |
| 1 | 24 | 585 | | 5 | 480 |
| 1 | 25 | 590 | | 5 | 485 |
| 1 | 26 | 600 | | 10 | 495 |
| 1 | 27 | 610 | | 10 | 505 |
| 1 | 28 | 630 | | 20 | 525 |
| 1 | 29 | 650 | | 20 | 545 |
| 1 | 30 | 665 | | 15 | 560 |
| 1 | 31 | 670 | | 5 | 565 |
| 3 | 34 | 690 | | 20 | 585 |
| 2 | 36 | 695 | | 5 | 590 |
| 2 | 38 | 700 | | 5 | 595 |
| 10 | 48 | 705 | | 5 | 600 |

Comments:
TRL probe commenced from ground level, hand pit dug adjacent to TRL position prior to probing to confirm no services present. Topsoil from GL to 0.35 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**DCP121**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 509162.70 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299959.56 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 26.46 | mOD | | |
| Engineer: | JJ | | | | Weather: | Sunny |
| Date of test: | 07/04/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
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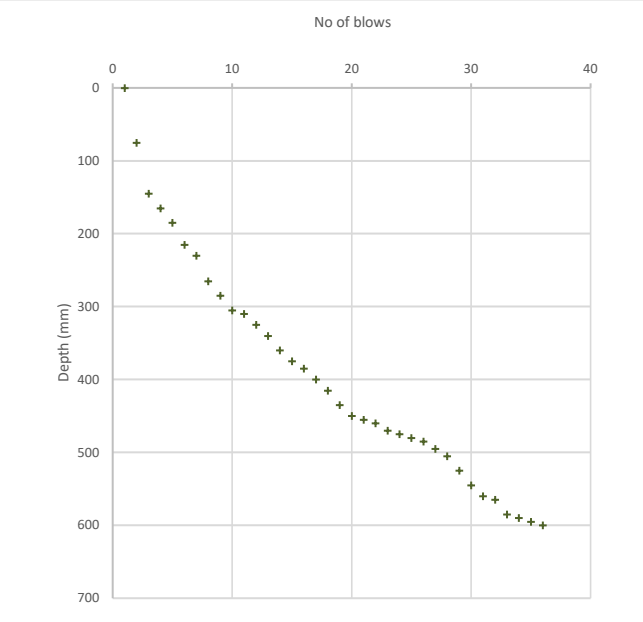


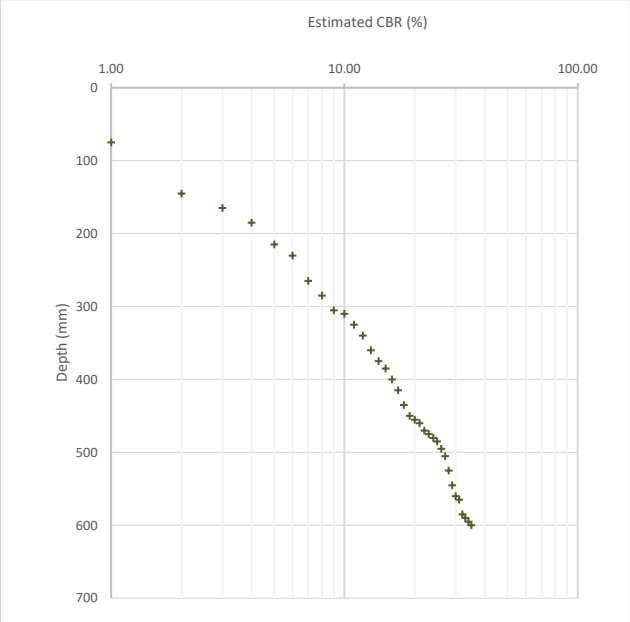


| Test No. | Depth from (mm) | Depth to (mm) | CBR value |
|---|---|---|---|
| 1 | 0 | 455 | 11 |
| 2 | 455 | 600 | 53 |
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**Estimated CBR value calculated using TRL equation:**

$$\log_{10}(CBR) = 2.48 - 1.057 \cdot \log_{10}(mm/blow)$$

**References:**

CNS Farnell (2003) Dynamic Cone Penetrometer Model A2465 Operating Instructions.

Transport and Road Research Laboratory (1990) Overseas Road Note 8. A users manual for a program to analyse dynamic cone penetrometer data.

Transport and Road Research Laboratory (2004) TRL Project Report PR/INT/277/04.

Comments:

TRL probe commenced from ground level, hand pit dug adjacent to TRL position prior to probing to confirm no services present. Topsoil from GL to 0.35 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**DCP122**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 509169.90 | mE | Checked by: | MM |
| Project No: | GT0386 | | 300140.81 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 25.89 | mOD | | |
| Engineer: | MM | | | | Weather: | Sunny |
| Date of test: | 11/04/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 0 | 0 | 0 | | 0 | 0 |
| 1 | 1 | 140 | | 140 | 140 |
| 1 | 2 | 200 | | 60 | 200 |
| 1 | 3 | 340 | | 140 | 340 |
| 1 | 4 | 395 | | 55 | 395 |
| 1 | 5 | 440 | | 45 | 440 |
| 1 | 6 | 470 | | 30 | 470 |
| 1 | 7 | 485 | | 15 | 485 |
| 1 | 8 | 510 | | 25 | 510 |
| 1 | 9 | 540 | | 30 | 540 |
| 1 | 10 | 570 | | 30 | 570 |
| 1 | 11 | 605 | | 35 | 605 |
| 1 | 12 | 640 | | 35 | 640 |
| 1 | 13 | 680 | | 40 | 680 |
| 1 | 14 | 695 | | 15 | 695 |
| 1 | 15 | 715 | | 20 | 715 |
| 1 | 16 | 740 | | 25 | 740 |
| 1 | 17 | 780 | | 40 | 780 |
| 1 | 18 | 810 | | 30 | 810 |
| 1 | 19 | 835 | | 25 | 835 |
| 1 | 20 | 865 | | 30 | 865 |
| 1 | 21 | 910 | | 45 | 910 |
| 1 | 22 | 935 | | 25 | 935 |
| 1 | 23 | 970 | | 35 | 970 |
| 1 | 24 | 1000 | | 30 | 1000 |
| 1 | 25 | 1030 | | 30 | 1030 |
| 1 | 26 | 1060 | | 30 | 1060 |
| 1 | 27 | 1080 | | 20 | 1080 |
| 1 | 28 | 1100 | | 20 | 1100 |
| 1 | 29 | 1120 | | 20 | 1120 |
| 1 | 30 | 1140 | | 20 | 1140 |
| 1 | 31 | 1155 | | 15 | 1155 |
| 1 | 32 | 1175 | | 20 | 1175 |
| 1 | 33 | 1190 | | 15 | 1190 |
| 1 | 34 | 1210 | | 20 | 1210 |
| 1 | 35 | 1230 | | 20 | 1230 |
| 1 | 36 | 1250 | | 20 | 1250 |
| 1 | 37 | 1260 | | 10 | 1260 |
| 1 | 38 | 1280 | | 20 | 1280 |
| 1 | 39 | 1290 | | 10 | 1290 |
| 1 | 40 | 1305 | | 15 | 1305 |
| 1 | 41 | 1320 | | 15 | 1320 |
| 1 | 42 | 1335 | | 15 | 1335 |
| 1 | 43 | 1350 | | 15 | 1350 |
| 1 | 44 | 1360 | | 10 | 1360 |
| 1 | 45 | 1370 | | 10 | 1370 |
| 1 | 46 | 1380 | | 10 | 1380 |
| 1 | 47 | 1395 | | 15 | 1395 |
| 1 | 48 | 1405 | | 10 | 1405 |
| 1 | 49 | 1415 | | 10 | 1415 |
| 1 | 50 | 1425 | | 10 | 1425 |
| 1 | 51 | 1435 | | 10 | 1435 |

Comments:
TRL probe commenced from ground level, hand pit dug adjacent to TRL position prior to probing to confirm no services present. Topsoil from GL to 0.30 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**DCP122**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 509169.90 | mE | Checked by: | MM |
| Project No: | GT0386 | | 300140.81 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 25.89 | mOD | | |
| Engineer: | MM | | | | Weather: | Sunny |
| Date of test: | 11/04/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 1 | 52 | 1450 | | 15 | 1450 |
| 1 | 53 | 1460 | | 10 | 1460 |
| 1 | 54 | 1470 | | 10 | 1470 |
| 1 | 55 | 1480 | | 10 | 1480 |
| 1 | 56 | 1490 | | 10 | 1490 |
| 1 | 57 | 1500 | | 10 | 1500 |
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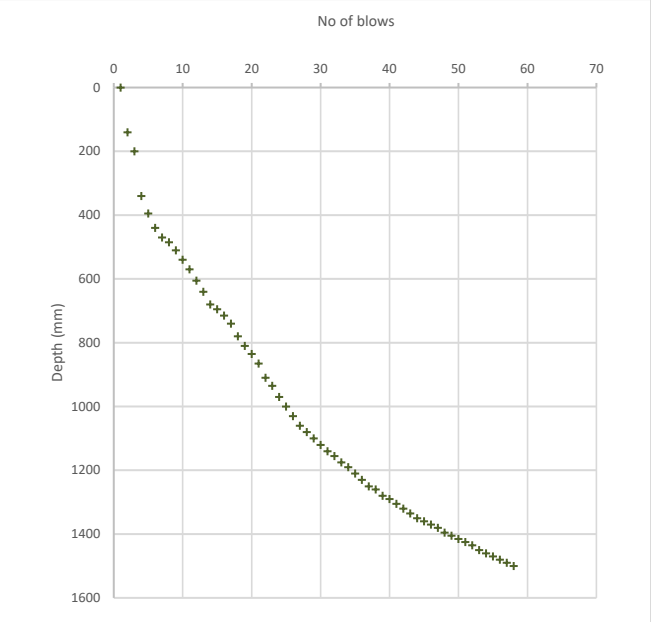


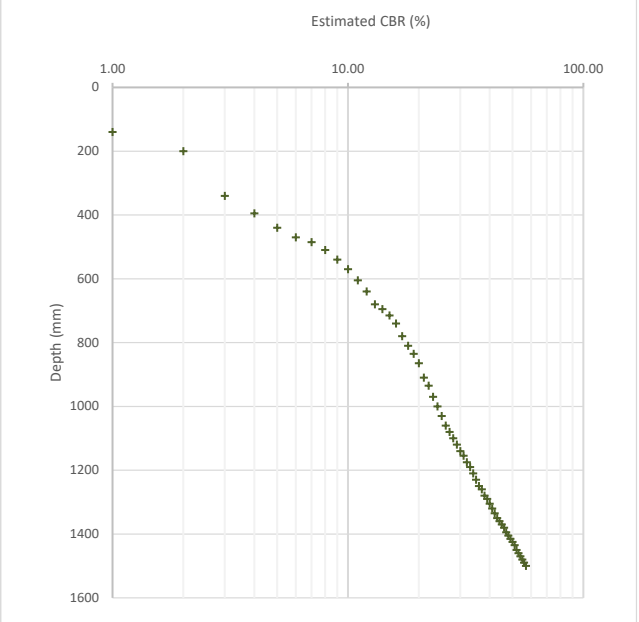


| Test No. | Depth from (mm) | Depth to (mm) | CBR value |
|---|---|---|---|
| 1 | 0 | 1500 | 9.5 |
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**Estimated CBR value calculated using TRL equation:**

$$\log_{10}(CBR) = 2.48 - 1.057 \cdot \log_{10}(mm/blow)$$

**References:**

CNS Farnell (2003) Dynamic Cone Penetrometer Model A2465 Operating Instructions.

Transport and Road Research Laboratory (1990) Overseas Road Note 8. A users manual for a program to analyse dynamic cone penetrometer data.

Transport and Road Research Laboratory (2004) TRL Project Report PR/INT/277/04.

Comments:

TRL probe commenced from ground level, hand pit dug adjacent to TRL position prior to probing to confirm no services present. Topsoil from GL to 0.30 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**DCP123**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 509211.17 | mE | Checked by: | MM |
| Project No: | GT0386 | | 300038.21 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 27.68 | mOD | | |
| Engineer: | JJ | | | | Weather: | Sunny |
| Date of test: | 07/04/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 0 | 0 | 130 | | 0 | 0 |
| 1 | 1 | 210 | | 80 | 80 |
| 1 | 2 | 245 | | 35 | 115 |
| 1 | 3 | 280 | | 35 | 150 |
| 1 | 4 | 320 | | 40 | 190 |
| 1 | 5 | 335 | | 15 | 205 |
| 1 | 6 | 350 | | 15 | 220 |
| 1 | 7 | 370 | | 20 | 240 |
| 1 | 8 | 400 | | 30 | 270 |
| 1 | 9 | 410 | | 10 | 280 |
| 1 | 10 | 415 | | 5 | 285 |
| 1 | 11 | 425 | | 10 | 295 |
| 1 | 12 | 440 | | 15 | 310 |
| 1 | 13 | 450 | | 10 | 320 |
| 1 | 14 | 470 | | 20 | 340 |
| 1 | 15 | 490 | | 20 | 360 |
| 1 | 16 | 500 | | 10 | 370 |
| 1 | 17 | 515 | | 15 | 385 |
| 1 | 18 | 525 | | 10 | 395 |
| 1 | 19 | 540 | | 15 | 410 |
| 1 | 20 | 550 | | 10 | 420 |
| 1 | 21 | 560 | | 10 | 430 |
| 1 | 22 | 575 | | 15 | 445 |
| 1 | 23 | 590 | | 15 | 460 |
| 1 | 24 | 605 | | 15 | 475 |
| 1 | 25 | 615 | | 10 | 485 |
| 1 | 26 | 625 | | 10 | 495 |
| 1 | 27 | 640 | | 15 | 510 |
| 1 | 28 | 650 | | 10 | 520 |
| 1 | 29 | 660 | | 10 | 530 |
| 1 | 30 | 675 | | 15 | 545 |
| 1 | 31 | 685 | | 10 | 555 |
| 1 | 32 | 690 | | 5 | 560 |
| 1 | 33 | 700 | | 10 | 570 |
| 1 | 34 | 705 | | 5 | 575 |
| 1 | 35 | 710 | | 5 | 580 |
| 1 | 36 | 720 | | 10 | 590 |
| 2 | 38 | 730 | | 10 | 600 |
| 4 | 42 | 740 | | 10 | 610 |
| 10 | 52 | 750 | | 10 | 620 |
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Comments:
TRL probe commenced from ground level, hand pit dug adjacent to TRL position prior to probing to confirm no services present. Topsoil from GL to 0.35 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**DCP123**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 509211.17 | mE | Checked by: | MM |
| Project No: | GT0386 | | 300038.21 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 27.68 | mOD | | |
| Engineer: | JJ | | | | Weather: | Sunny |
| Date of test: | 07/04/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
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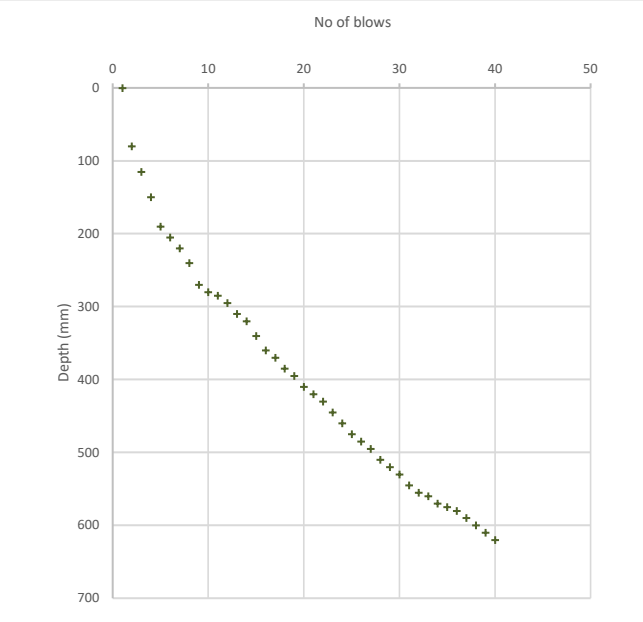


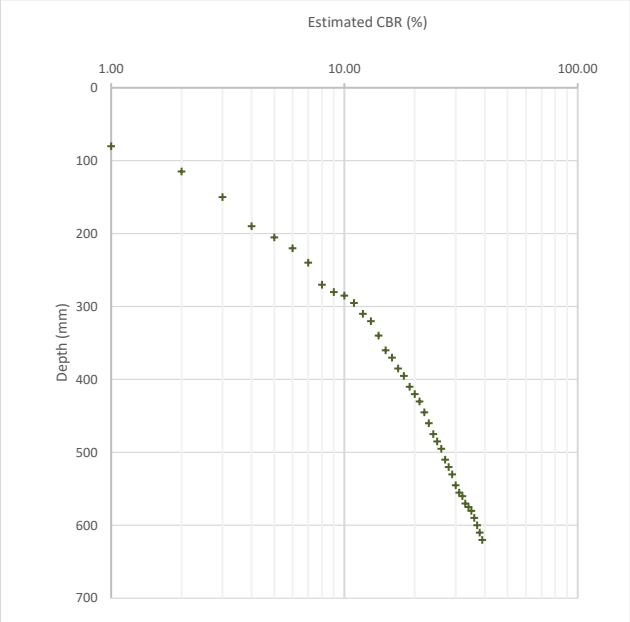


| Test No. | Depth from (mm) | Depth to (mm) | CBR value |
|---|---|---|---|
| 1 | 0 | 240 | 7.2 |
| 2 | 240 | 620 | 32 |
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**Estimated CBR value calculated using TRL equation:**

$$\log_{10}(CBR) = 2.48 - 1.057 \cdot \log_{10}(mm/blow)$$

**References:**

CNS Farnell (2003) Dynamic Cone Penetrometer Model A2465 Operating Instructions.
Transport and Road Research Laboratory (1990) Overseas Road Note 8. A users manual for a program to analyse dynamic cone penetrometer data.
Transport and Road Research Laboratory (2004) TRL Project Report PR/INT/277/04.

Comments:
TRL probe commenced from ground level, hand pit dug adjacent to TRL position prior to probing to confirm no services present. Topsoil from GL to 0.35 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**DCP124**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | | Hole type: | DCP |
| | | Co-ordinates: | 509344.11 | mE | | Checked by: | MM |
| Project No: | GT0386 | | 299778.59 | mN | | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 29.51 | mOD | | | |
| Engineer: | JJ | | | | | Weather: | Sunny |
| Date of test: | 07/04/2022 | Start Depth: | 0 | mm | | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 0 | 0 | 130 | | 0 | 0 |
| 1 | 1 | 185 | | 55 | 55 |
| 1 | 2 | 240 | | 55 | 110 |
| 1 | 3 | 280 | | 40 | 150 |
| 1 | 4 | 330 | | 50 | 200 |
| 1 | 5 | 370 | | 40 | 240 |
| 1 | 6 | 390 | | 20 | 260 |
| 1 | 7 | 400 | | 10 | 270 |
| 1 | 8 | 405 | | 5 | 275 |
| 3 | 11 | 410 | | 5 | 280 |
| 5 | 16 | 415 | | 5 | 285 |
| 10 | 26 | 420 | | 5 | 290 |

Comments:
TRL probe commenced from ground level, hand pit dug adjacent to TRL position prior to probing to confirm no services present. Topsoil from GL to 0.30 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**DCP124**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 509344.11 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299778.59 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 29.51 | mOD | | |
| Engineer: | JJ | | | | Weather: | Sunny |
| Date of test: | 07/04/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
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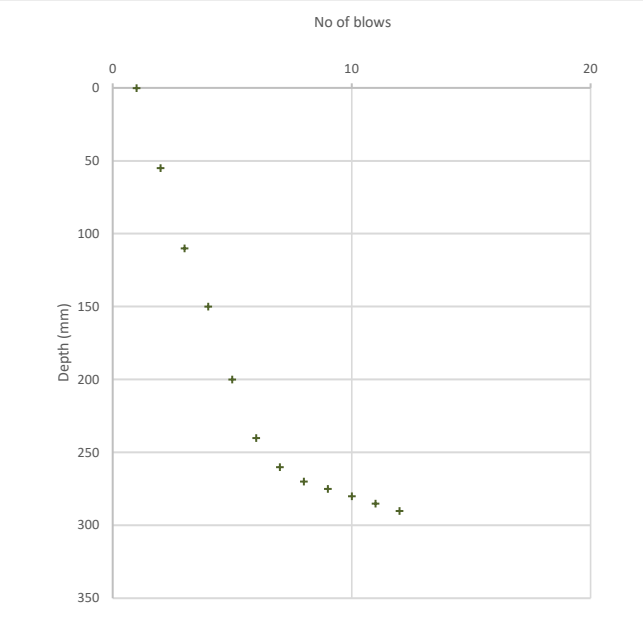


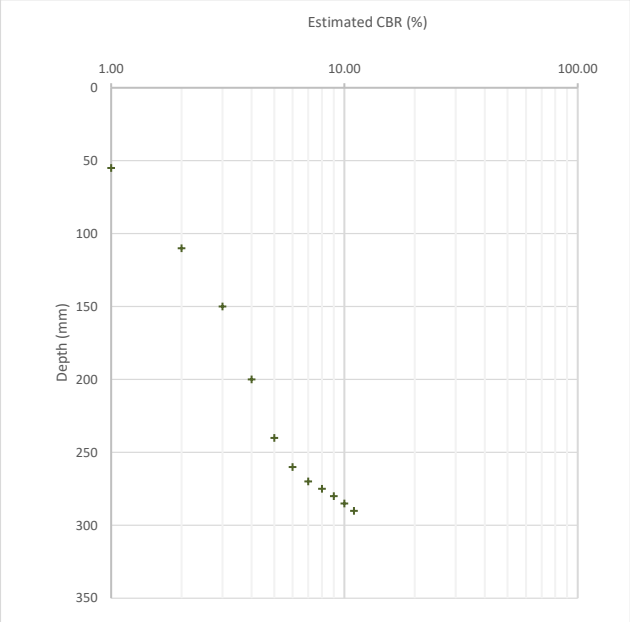


| Test No. | Depth from (mm) | Depth to (mm) | CBR value |
|---|---|---|---|
| 1 | 0 | 240 | 5 |
| 2 | 240 | 290 | 120 |
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| | | | |

**Estimated CBR value calculated using TRL equation:**

$$\log_{10}(CBR) = 2.48 - 1.057 \cdot \log_{10}(mm/blow)$$

**References:**

CNS Farnell (2003) Dynamic Cone Penetrometer Model A2465 Operating Instructions.
Transport and Road Research Laboratory (1990) Overseas Road Note 8. A users manual for a program to analyse dynamic cone penetrometer data.
Transport and Road Research Laboratory (2004) TRL Project Report PR/INT/277/04.

Comments:

TRL probe commenced from ground level, hand pit dug adjacent to TRL position prior to probing to confirm no services present. Topsoil from GL to 0.30 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**DCP125**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 509431.15 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299593.91 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 22.64 | mOD | | |
| Engineer: | JJ | | | | Weather: | Sunny |
| Date of test: | 07/04/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 0 | 0 | 30 | | 0 | 0 |
| 1 | 1 | 200 | | 170 | 170 |
| 1 | 2 | 290 | | 90 | 260 |
| 1 | 3 | 350 | | 60 | 320 |
| 1 | 4 | 400 | | 50 | 370 |
| 1 | 5 | 460 | | 60 | 430 |
| 1 | 6 | 525 | | 65 | 495 |
| 1 | 7 | 570 | | 45 | 540 |
| 1 | 8 | 625 | | 55 | 595 |
| 1 | 9 | 675 | | 50 | 645 |
| 1 | 10 | 715 | | 40 | 685 |
| 1 | 11 | 755 | | 40 | 725 |
| 1 | 12 | 800 | | 45 | 770 |
| 1 | 13 | 845 | | 45 | 815 |
| 1 | 14 | 895 | | 50 | 865 |
| 1 | 15 | 945 | | 50 | 915 |
| 1 | 16 | 985 | | 40 | 955 |
| 1 | 17 | 1025 | | 40 | 995 |
| 1 | 18 | 1065 | | 40 | 1035 |
| 1 | 19 | 1085 | | 20 | 1055 |
| 1 | 20 | 1095 | | 10 | 1065 |
| 1 | 21 | 1135 | | 40 | 1105 |
| 1 | 22 | 1190 | | 55 | 1160 |
| 1 | 23 | 1215 | | 25 | 1185 |
| 1 | 24 | 1270 | | 55 | 1240 |
| 1 | 25 | 1285 | | 15 | 1255 |
| 1 | 26 | 1300 | | 15 | 1270 |
| 1 | 27 | 1310 | | 10 | 1280 |
| 1 | 28 | 1325 | | 15 | 1295 |
| 1 | 29 | 1330 | | 5 | 1300 |
| 1 | 30 | 1355 | | 25 | 1325 |
| 1 | 31 | 1370 | | 15 | 1340 |
| 1 | 32 | 1375 | | 5 | 1345 |
| 1 | 33 | 1385 | | 10 | 1355 |
| 1 | 34 | 1400 | | 15 | 1370 |
| 1 | 35 | 1405 | | 5 | 1375 |
| 1 | 36 | 1415 | | 10 | 1385 |
| 1 | 37 | 1420 | | 5 | 1390 |
| 1 | 38 | 1425 | | 5 | 1395 |
| 2 | 40 | 1430 | | 5 | 1400 |
| 3 | 43 | 1435 | | 5 | 1405 |
| 10 | 53 | 1440 | | 5 | 1410 |

Comments:
TRL probe commenced from ground level, hand pit dug adjacent to TRL position prior to probing to confirm no services present. Topsoil from GL to 0.40 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**DCP125**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 509431.15 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299593.91 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 22.64 | mOD | | |
| Engineer: | JJ | | | | Weather: | Sunny |
| Date of test: | 07/04/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
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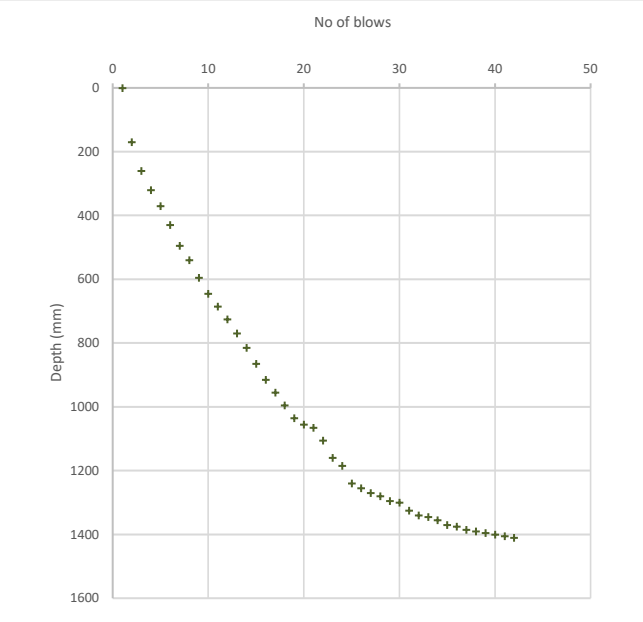


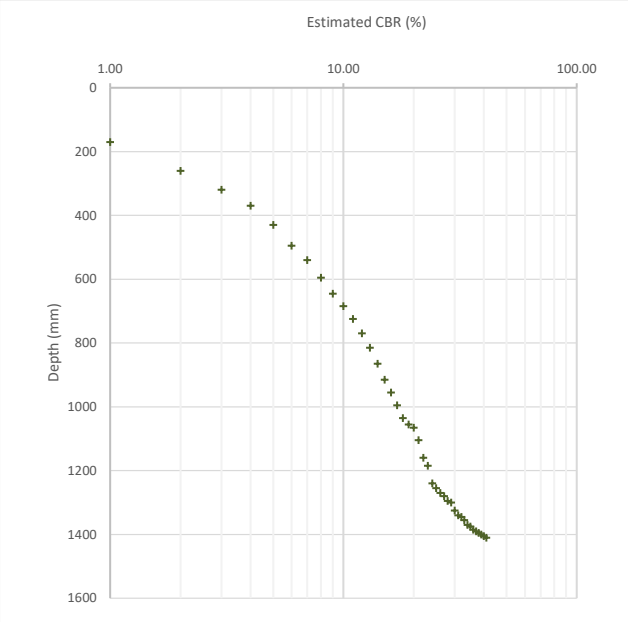


| Test No. | Depth from (mm) | Depth to (mm) | CBR value |
|---|---|---|---|
| #N/A | #N/A | #N/A | #N/A |
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**Estimated CBR value calculated using TRL equation:**

$$\log_{10}(CBR) = 2.48 - 1.057 \cdot \log_{10}(mm/blow)$$

**References:**

CNS Farnell (2003) Dynamic Cone Penetrometer Model A2465 Operating Instructions.

Transport and Road Research Laboratory (1990) Overseas Road Note 8. A users manual for a program to analyse dynamic cone penetrometer data.

Transport and Road Research Laboratory (2004) TRL Project Report PR/INT/277/04.

Comments:

TRL probe commenced from ground level, hand pit dug adjacent to TRL position prior to probing to confirm no services present. Topsoil from GL to 0.40 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**DCP126**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 509639.15 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299452.25 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 21.10 | mOD | | |
| Engineer: | JJ | | | | Weather: | Sunny |
| Date of test: | 07/04/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 0 | 0 | 110 | | 0 | 0 |
| 1 | 1 | 190 | | 80 | 80 |
| 1 | 2 | 270 | | 80 | 160 |
| 1 | 3 | 315 | | 45 | 205 |
| 1 | 4 | 365 | | 50 | 255 |
| 1 | 5 | 370 | | 5 | 260 |
| 1 | 6 | 380 | | 10 | 270 |
| 1 | 7 | 390 | | 10 | 280 |
| 1 | 8 | 400 | | 10 | 290 |
| 1 | 9 | 405 | | 5 | 295 |
| 1 | 10 | 415 | | 10 | 305 |
| 1 | 11 | 425 | | 10 | 315 |
| 1 | 12 | 440 | | 15 | 330 |
| 1 | 13 | 450 | | 10 | 340 |
| 1 | 14 | 470 | | 20 | 360 |
| 1 | 15 | 490 | | 20 | 380 |
| 1 | 16 | 500 | | 10 | 390 |
| 1 | 17 | 515 | | 15 | 405 |
| 1 | 18 | 525 | | 10 | 415 |
| 1 | 19 | 540 | | 15 | 430 |
| 1 | 20 | 550 | | 10 | 440 |
| 1 | 21 | 565 | | 15 | 455 |
| 1 | 22 | 575 | | 10 | 465 |
| 4 | 26 | 580 | | 5 | 470 |
| 10 | 36 | 585 | | 5 | 475 |

Comments:
TRL probe commenced from ground level, hand pit dug adjacent to TRL position prior to probing to confirm no services present. Topsoil from GL to 0.30 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**DCP126**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 509639.15 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299452.25 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 21.10 | mOD | | |
| Engineer: | JJ | | | | Weather: | Sunny |
| Date of test: | 07/04/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
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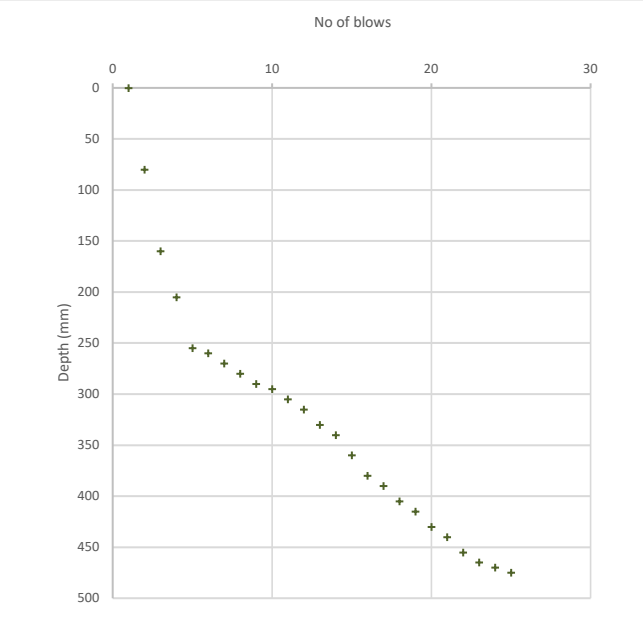


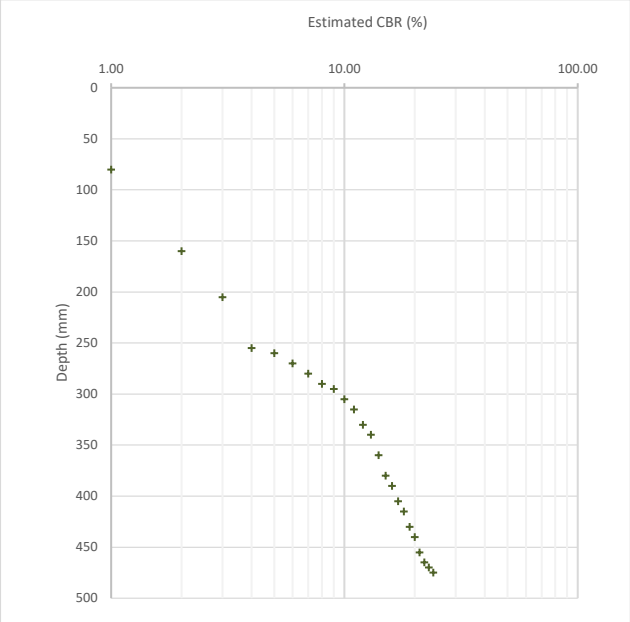


| Test No. | Depth from (mm) | Depth to (mm) | CBR value |
|---|---|---|---|
| 1 | 0 | 255 | 3.7 |
| 2 | 255 | 475 | 39 |
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**Estimated CBR value calculated using TRL equation:**

$$\log_{10}(CBR) = 2.48 - 1.057 \cdot \log_{10}(mm/blow)$$

**References:**

CNS Farnell (2003) Dynamic Cone Penetrometer Model A2465 Operating Instructions.

Transport and Road Research Laboratory (1990) Overseas Road Note 8. A users manual for a program to analyse dynamic cone penetrometer data.

Transport and Road Research Laboratory (2004) TRL Project Report PR/INT/277/04.

Comments:

TRL probe commenced from ground level, hand pit dug adjacent to TRL position prior to probing to confirm no services present. Topsoil from GL to 0.30 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**DCP127**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 509845.79 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299363.99 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 19.07 | mOD | | |
| Engineer: | JJ | | | | Weather: | Sunny |
| Date of test: | 07/04/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 0 | 0 | 95 | | 0 | 0 |
| 1 | 1 | 150 | | 55 | 55 |
| 1 | 2 | 210 | | 60 | 115 |
| 1 | 3 | 270 | | 60 | 175 |
| 1 | 4 | 315 | | 45 | 220 |
| 1 | 5 | 450 | | 135 | 355 |
| 1 | 6 | 460 | | 10 | 365 |
| 2 | 8 | 465 | | 5 | 370 |
| 10 | 18 | 470 | | 5 | 375 |

Comments:
TRL probe commenced from ground level, hand pit dug adjacent to TRL position prior to probing to confirm no services present. Topsoil from GL to 0.40 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**DCP127**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 509845.79 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299363.99 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 19.07 | mOD | | |
| Engineer: | JJ | | | | Weather: | Sunny |
| Date of test: | 07/04/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
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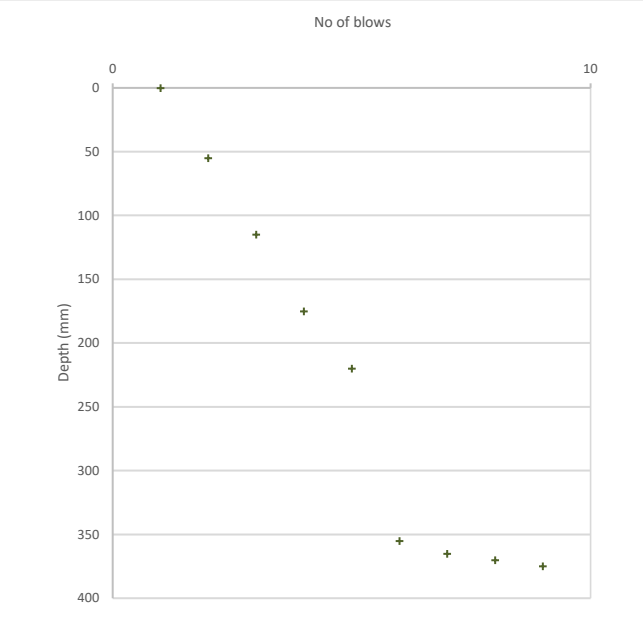


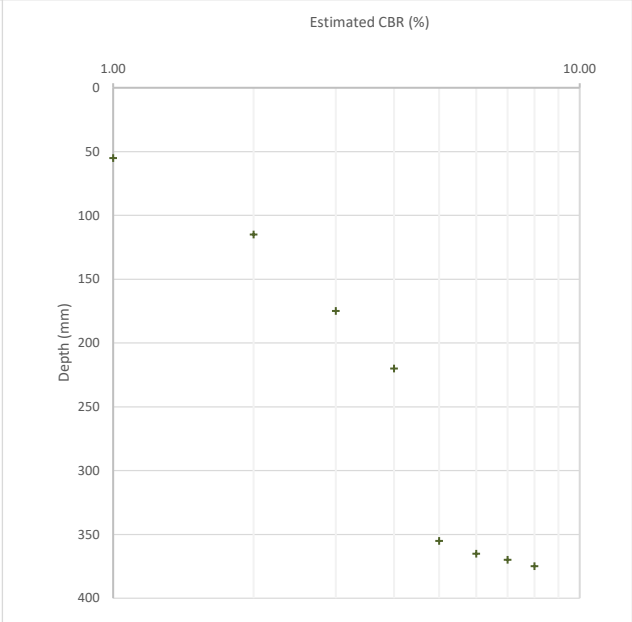


| Test No. | Depth from (mm) | Depth to (mm) | CBR value |
|---|---|---|---|
| 1 | 0 | 365 | 3.9 |
| 2 | 365 | 375 | 370 |
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**Estimated CBR value calculated using TRL equation:**

$$\log_{10}(CBR) = 2.48 - 1.057 \cdot \log_{10}(mm/blow)$$

**References:**

CNS Farnell (2003) Dynamic Cone Penetrometer Model A2465 Operating Instructions.
Transport and Road Research Laboratory (1990) Overseas Road Note 8. A users manual for a program to analyse dynamic cone penetrometer data.
Transport and Road Research Laboratory (2004) TRL Project Report PR/INT/277/04.

Comments:
TRL probe commenced from ground level, hand pit dug adjacent to TRL position prior to probing to confirm no services present. Topsoil from GL to 0.40 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**DCP128**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | | Hole type: | DCP |
| | | Co-ordinates: | 509955.71 | mE | | Checked by: | MM |
| Project No: | GT0386 | | 299320.58 | mN | | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 18.04 | mOD | | | |
| Engineer: | JJ | | | | | Weather: | Sunny |
| Date of test: | 07/04/2022 | Start Depth: | 0 | mm | | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 0 | 0 | 105 | | 0 | 0 |
| 1 | 1 | 130 | | 25 | 25 |
| 1 | 2 | 160 | | 30 | 55 |
| 1 | 3 | 210 | | 50 | 105 |
| 1 | 4 | 270 | | 60 | 165 |
| 1 | 5 | 350 | | 80 | 245 |
| 1 | 6 | 410 | | 60 | 305 |
| 1 | 7 | 430 | | 20 | 325 |
| 1 | 8 | 460 | | 30 | 355 |
| 1 | 9 | 470 | | 10 | 365 |
| 1 | 10 | 505 | | 35 | 400 |
| 1 | 11 | 520 | | 15 | 415 |
| 1 | 12 | 540 | | 20 | 435 |
| 1 | 13 | 560 | | 20 | 455 |
| 1 | 14 | 605 | | 45 | 500 |
| 1 | 15 | 630 | | 25 | 525 |
| 1 | 16 | 650 | | 20 | 545 |
| 1 | 17 | 675 | | 25 | 570 |
| 1 | 18 | 710 | | 35 | 605 |
| 1 | 19 | 720 | | 10 | 615 |
| 1 | 20 | 730 | | 10 | 625 |
| 1 | 21 | 745 | | 15 | 640 |
| 1 | 22 | 780 | | 35 | 675 |
| 1 | 23 | 830 | | 50 | 725 |
| 1 | 24 | 870 | | 40 | 765 |
| 1 | 25 | 930 | | 60 | 825 |
| 1 | 26 | 980 | | 50 | 875 |
| 1 | 27 | 1020 | | 40 | 915 |
| 1 | 28 | 1050 | | 30 | 945 |
| 1 | 29 | 1070 | | 20 | 965 |
| 1 | 30 | 1100 | | 30 | 995 |
| 3 | 33 | 1105 | | 5 | 1000 |
| 10 | 43 | 1110 | | 5 | 1005 |

Comments:
TRL probe commenced from ground level, hand pit dug adjacent to TRL position prior to probing to confirm no services present. Topsoil from GL to 0.40 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**DCP128**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 509955.71 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299320.58 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 18.04 | mOD | | |
| Engineer: | JJ | | | | Weather: | Sunny |
| Date of test: | 07/04/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
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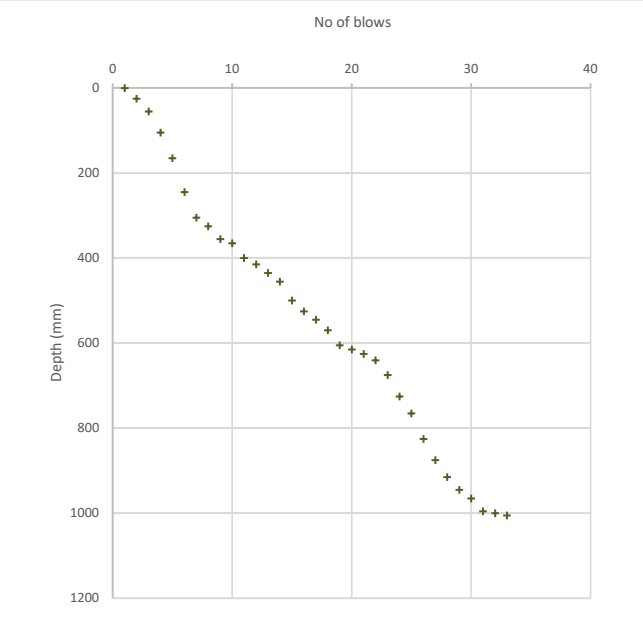


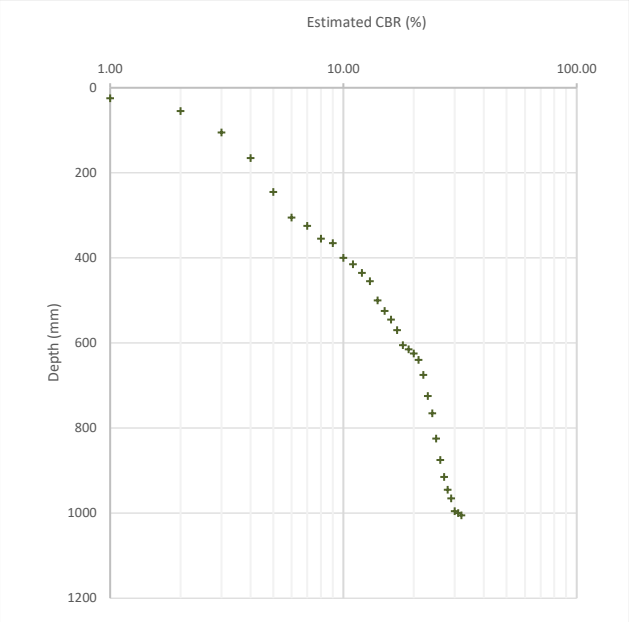


| Test No. | Depth from (mm) | Depth to (mm) | CBR value |
|---|---|---|---|
| 1 | 0 | 1000 | 8.2 |
| 2 | 1000 | 1005 | 630 |
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**Estimated CBR value calculated using TRL equation:**

$$\log_{10}(CBR) = 2.48 - 1.057 \cdot \log_{10}(mm/blow)$$

**References:**

CNS Farnell (2003) Dynamic Cone Penetrometer Model A2465 Operating Instructions.
Transport and Road Research Laboratory (1990) Overseas Road Note 8. A users manual for a program to analyse dynamic cone penetrometer data.
Transport and Road Research Laboratory (2004) TRL Project Report PR/INT/277/04.

Comments:

TRL probe commenced from ground level, hand pit dug adjacent to TRL position prior to probing to confirm no services present. Topsoil from GL to 0.40 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**DCP129**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 509998.95 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299219.52 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 16.42 | mOD | | |
| Engineer: | MM | | | | Weather: | Sunny |
| Date of test: | 07/04/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 0 | 0 | 0 | | 0 | 0 |
| 1 | 1 | 50 | | 50 | 50 |
| 1 | 2 | 80 | | 30 | 80 |
| 1 | 3 | 120 | | 40 | 120 |
| 1 | 4 | 190 | | 70 | 190 |
| 1 | 5 | 265 | | 75 | 265 |
| 1 | 6 | 340 | | 75 | 340 |
| 1 | 7 | 375 | | 35 | 375 |
| 1 | 8 | 400 | | 25 | 400 |
| 1 | 9 | 430 | | 30 | 430 |
| 1 | 10 | 450 | | 20 | 450 |
| 1 | 11 | 475 | | 25 | 475 |
| 1 | 12 | 500 | | 25 | 500 |
| 1 | 13 | 525 | | 25 | 525 |
| 1 | 14 | 550 | | 25 | 550 |
| 1 | 15 | 585 | | 35 | 585 |
| 1 | 16 | 615 | | 30 | 615 |
| 1 | 17 | 650 | | 35 | 650 |
| 1 | 18 | 680 | | 30 | 680 |
| 1 | 19 | 710 | | 30 | 710 |
| 1 | 20 | 740 | | 30 | 740 |
| 1 | 21 | 770 | | 30 | 770 |
| 1 | 22 | 800 | | 30 | 800 |
| 1 | 23 | 830 | | 30 | 830 |
| 1 | 24 | 850 | | 20 | 850 |
| 1 | 25 | 875 | | 25 | 875 |
| 1 | 26 | 905 | | 30 | 905 |
| 1 | 27 | 930 | | 25 | 930 |
| 1 | 28 | 960 | | 30 | 960 |
| 1 | 29 | 985 | | 25 | 985 |
| 1 | 30 | 1015 | | 30 | 1015 |
| 1 | 31 | 1040 | | 25 | 1040 |
| 1 | 32 | 1065 | | 25 | 1065 |
| 1 | 33 | 1090 | | 25 | 1090 |
| 1 | 34 | 1110 | | 20 | 1110 |
| 1 | 35 | 1135 | | 25 | 1135 |
| 1 | 36 | 1160 | | 25 | 1160 |
| 1 | 37 | 1185 | | 25 | 1185 |
| 1 | 38 | 1210 | | 25 | 1210 |
| 1 | 39 | 1235 | | 25 | 1235 |
| 1 | 40 | 1260 | | 25 | 1260 |
| 1 | 41 | 1280 | | 20 | 1280 |
| 1 | 42 | 1300 | | 20 | 1300 |
| 1 | 43 | 1320 | | 20 | 1320 |
| 1 | 44 | 1340 | | 20 | 1340 |
| 1 | 45 | 1365 | | 25 | 1365 |
| 1 | 46 | 1380 | | 15 | 1380 |
| 1 | 47 | 1400 | | 20 | 1400 |
| 1 | 48 | 1415 | | 15 | 1415 |
| 1 | 49 | 1450 | | 35 | 1450 |
| 1 | 50 | 1470 | | 20 | 1470 |
| 1 | 51 | 1500 | | 30 | 1500 |

Comments:
TRL probe commenced from ground level, hand pit dug adjacent to TRL position prior to probing to confirm no services present. Topsoil from GL to 0.30 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**DCP129**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 509998.95 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299219.52 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 16.42 | mOD | | |
| Engineer: | MM | | | | Weather: | Sunny |
| Date of test: | 07/04/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
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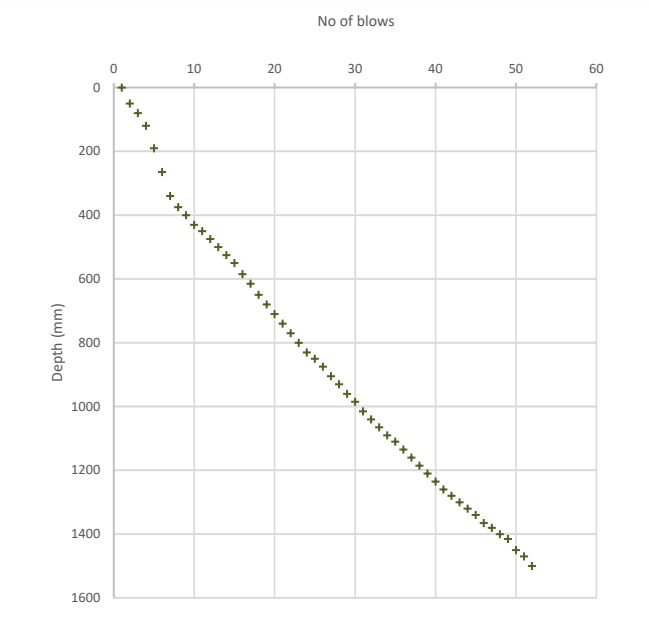


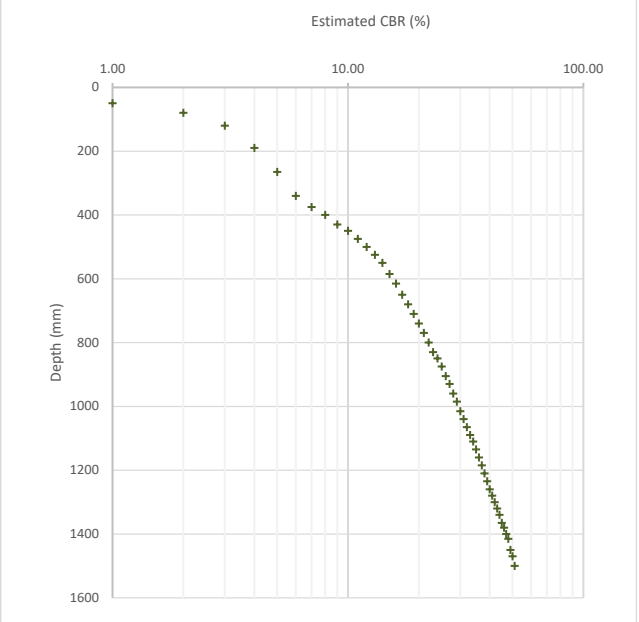


| Test No. | Depth from (mm) | Depth to (mm) | CBR value |
|---|---|---|---|
| 1 | 0 | 1500 | 8.5 |
| | | | |
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| | | | |

**Estimated CBR value calculated using TRL equation:**

$$\log_{10}(CBR) = 2.48 - 1.057 \cdot \log_{10}(mm/blow)$$

**References:**

CNS Farnell (2003) Dynamic Cone Penetrometer Model A2465 Operating Instructions.

Transport and Road Research Laboratory (1990) Overseas Road Note 8. A users manual for a program to analyse dynamic cone penetrometer data.

Transport and Road Research Laboratory (2004) TRL Project Report PR/INT/277/04.

Comments:

TRL probe commenced from ground level, hand pit dug adjacent to TRL position prior to probing to confirm no services present. Topsoil from GL to 0.30 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**DCP130**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 509638.17 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299184.46 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 17.86 | mOD | | |
| Engineer: | MM | | | | Weather: | Sunny |
| Date of test: | 07/04/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 0 | 0 | 0 | | 0 | 0 |
| 1 | 1 | 80 | | 80 | 80 |
| 1 | 2 | 110 | | 30 | 110 |
| 1 | 3 | 135 | | 25 | 135 |
| 1 | 4 | 160 | | 25 | 160 |
| 1 | 5 | 175 | | 15 | 175 |
| 1 | 6 | 190 | | 15 | 190 |
| 1 | 7 | 205 | | 15 | 205 |
| 1 | 8 | 225 | | 20 | 225 |
| 1 | 9 | 245 | | 20 | 245 |
| 1 | 10 | 265 | | 20 | 265 |
| 1 | 11 | 305 | | 40 | 305 |
| 1 | 12 | 345 | | 40 | 345 |
| 1 | 13 | 395 | | 50 | 395 |
| 1 | 14 | 430 | | 35 | 430 |
| 1 | 15 | 460 | | 30 | 460 |
| 1 | 16 | 490 | | 30 | 490 |
| 1 | 17 | 510 | | 20 | 510 |
| 1 | 18 | 525 | | 15 | 525 |
| 1 | 19 | 540 | | 15 | 540 |
| 1 | 20 | 555 | | 15 | 555 |
| 1 | 21 | 575 | | 20 | 575 |
| 1 | 22 | 595 | | 20 | 595 |
| 1 | 23 | 620 | | 25 | 620 |
| 1 | 24 | 635 | | 15 | 635 |
| 1 | 25 | 660 | | 25 | 660 |
| 1 | 26 | 670 | | 10 | 670 |
| 1 | 27 | 690 | | 20 | 690 |
| 1 | 28 | 715 | | 25 | 715 |
| 1 | 29 | 730 | | 15 | 730 |
| 1 | 30 | 750 | | 20 | 750 |
| 1 | 31 | 770 | | 20 | 770 |
| 1 | 32 | 785 | | 15 | 785 |
| 1 | 33 | 795 | | 10 | 795 |
| 1 | 34 | 810 | | 15 | 810 |
| 1 | 35 | 820 | | 10 | 820 |
| 3 | 38 | 850 | | 30 | 850 |
| 3 | 41 | 880 | | 30 | 880 |
| 3 | 44 | 915 | | 35 | 915 |
| 3 | 47 | 940 | | 25 | 940 |
| 3 | 50 | 970 | | 30 | 970 |
| 3 | 53 | 1000 | | 30 | 1000 |
| 3 | 56 | 1035 | | 35 | 1035 |
| 3 | 59 | 1060 | | 25 | 1060 |
| 3 | 62 | 1090 | | 30 | 1090 |
| 3 | 65 | 1125 | | 35 | 1125 |
| 3 | 68 | 1155 | | 30 | 1155 |
| 3 | 71 | 1180 | | 25 | 1180 |
| 3 | 74 | 1210 | | 30 | 1210 |
| 3 | 77 | 1245 | | 35 | 1245 |
| 3 | 80 | 1270 | | 25 | 1270 |
| 3 | 83 | 1305 | | 35 | 1305 |

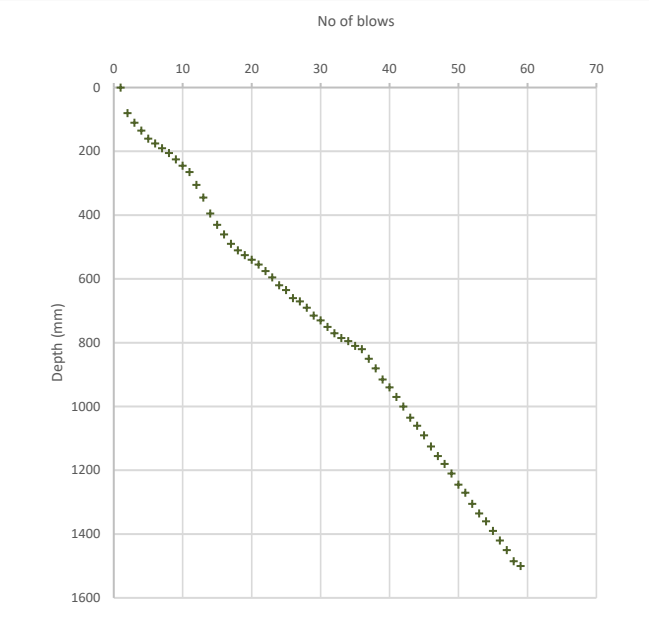
Comments:
TRL probe commenced from ground level, hand pit dug adjacent to TRL position prior to probing to confirm no services present. Topsoil from GL to 0.30 m bgl.

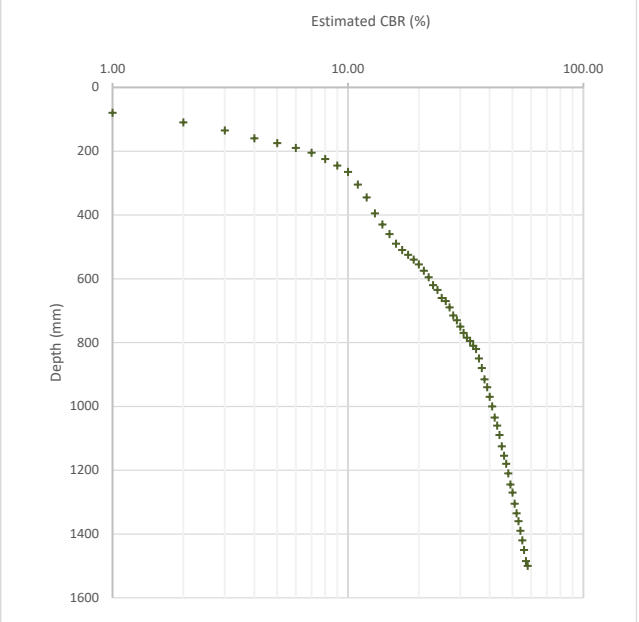
# DYNAMIC CONE PENETRATION TEST

Test Location:
**DCP130**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 509638.17 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299184.46 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 17.86 | mOD | | |
| Engineer: | MM | | | | Weather: | Sunny |
| Date of test: | 07/04/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 3 | 86 | 1335 | | 30 | 1335 |
| 3 | 89 | 1360 | | 25 | 1360 |
| 3 | 92 | 1390 | | 30 | 1390 |
| 3 | 95 | 1420 | | 30 | 1420 |
| 3 | 98 | 1450 | | 30 | 1450 |
| 3 | 101 | 1485 | | 35 | 1485 |
| 2 | 103 | 1500 | | 15 | 1500 |
| | | | | | |




| Test No. | Depth from (mm) | Depth to (mm) | CBR value |
|---|---|---|---|
| 1 | 0 | 785 | 10 |
| 2 | 785 | 1500 | 26 |
| | | | |
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**Estimated CBR value calculated using TRL equation:**

$$\log_{10}(CBR) = 2.48 - 1.057 \cdot \log_{10}(mm/blow)$$

**References:**

CNS Farnell (2003) Dynamic Cone Penetrometer Model A2465 Operating Instructions.

Transport and Road Research Laboratory (1990) Overseas Road Note 8. A users manual for a program to analyse dynamic cone penetrometer data.

Transport and Road Research Laboratory (2004) TRL Project Report PR/INT/277/04.

Comments:

TRL probe commenced from ground level, hand pit dug adjacent to TRL position prior to probing to confirm no services present. Topsoil from GL to 0.30 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**DCP131**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 510275.87 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299505.25 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 19.14 | mOD | | |
| Engineer: | JJ | | | | Weather: | Sunny |
| Date of test: | 07/04/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 0 | 0 | 85 | | 0 | 0 |
| 1 | 1 | 110 | | 25 | 25 |
| 1 | 2 | 130 | | 20 | 45 |
| 1 | 3 | 145 | | 15 | 60 |
| 1 | 4 | 160 | | 15 | 75 |
| 1 | 5 | 175 | | 15 | 90 |
| 1 | 6 | 250 | | 75 | 165 |
| 1 | 7 | 305 | | 55 | 220 |
| 1 | 8 | 335 | | 30 | 250 |
| 1 | 9 | 370 | | 35 | 285 |
| 1 | 10 | 415 | | 45 | 330 |
| 1 | 11 | 420 | | 5 | 335 |
| 1 | 12 | 425 | | 5 | 340 |
| 1 | 13 | 430 | | 5 | 345 |
| 1 | 14 | 465 | | 35 | 380 |
| 1 | 15 | 515 | | 50 | 430 |
| 1 | 16 | 550 | | 35 | 465 |
| 1 | 17 | 570 | | 20 | 485 |
| 1 | 18 | 585 | | 15 | 500 |
| 1 | 19 | 610 | | 25 | 525 |
| 1 | 20 | 620 | | 10 | 535 |
| 2 | 22 | 625 | | 5 | 540 |
| 10 | 32 | 630 | | 5 | 545 |

Comments:
TRL probe commenced from ground level, hand pit dug adjacent to TRL position prior to probing to confirm no services present. Topsoil from GL to 0.35 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**DCP131**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 510275.87 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299505.25 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 19.14 | mOD | | |
| Engineer: | JJ | | | | Weather: | Sunny |
| Date of test: | 07/04/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
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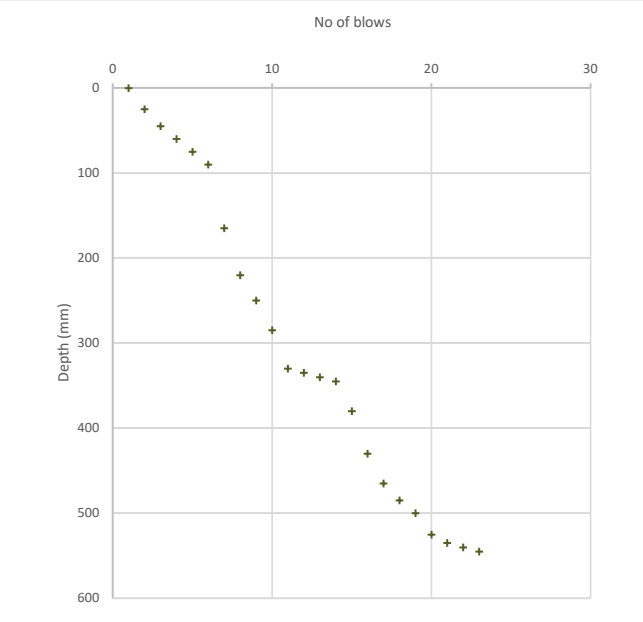


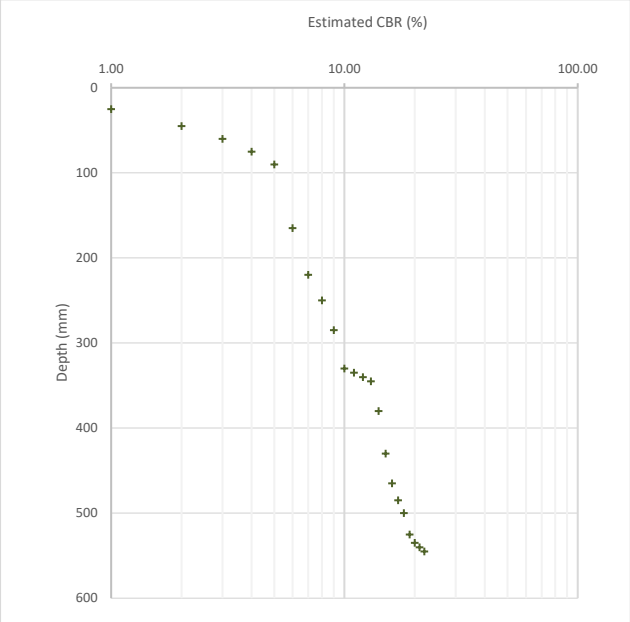


| Test No. | Depth from (mm) | Depth to (mm) | CBR value |
|---|---|---|---|
| 1 | 0 | 545 | 15 |
| | | | |
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| | | | |

**Estimated CBR value calculated using TRL equation:**

$$\log_{10}(CBR) = 2.48 - 1.057 \cdot \log_{10}(mm/blow)$$

**References:**

CNS Farnell (2003) Dynamic Cone Penetrometer Model A2465 Operating Instructions.
Transport and Road Research Laboratory (1990) Overseas Road Note 8. A users manual for a program to analyse dynamic cone penetrometer data.
Transport and Road Research Laboratory (2004) TRL Project Report PR/INT/277/04.

Comments:

TRL probe commenced from ground level, hand pit dug adjacent to TRL position prior to probing to confirm no services present. Topsoil from GL to 0.35 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**DCP132**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 509994.98 | mE | Checked by: | MM |
| Project No: | GT0386 | | 300638.15 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 47.33 | mOD | | |
| Engineer: | DB | | | | Weather: | Sunny |
| Date of test: | 24/02/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 0 | 0 | 220 | | 0 | 0 |
| 1 | 1 | 305 | | 85 | 85 |
| 1 | 2 | 380 | | 75 | 160 |
| 1 | 3 | 470 | | 90 | 250 |
| 1 | 4 | 535 | | 65 | 315 |
| 1 | 5 | 590 | | 55 | 370 |
| 1 | 6 | 650 | | 60 | 430 |
| 1 | 7 | 694 | | 44 | 474 |
| 1 | 8 | 730 | | 36 | 510 |
| 1 | 9 | 770 | | 40 | 550 |
| 1 | 10 | 795 | | 25 | 575 |
| 1 | 11 | 820 | | 25 | 600 |
| 1 | 12 | 840 | | 20 | 620 |
| 1 | 13 | 860 | | 20 | 640 |
| 1 | 14 | 870 | | 10 | 650 |
| 1 | 15 | 874 | | 4 | 654 |
| 1 | 16 | 880 | | 6 | 660 |
| 1 | 17 | 900 | | 20 | 680 |
| 3 | 20 | 920 | | 20 | 700 |
| 10 | 30 | 928 | | 8 | 708 |

Comments:
TRL probe commenced from ground level, hand pit dug adjacent to TRL position prior to probing to confirm no services present. Topsoil from GL to 0.60 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**DCP132**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 509994.98 | mE | Checked by: | MM |
| Project No: | GT0386 | | 300638.15 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 47.33 | mOD | | |
| Engineer: | DB | | | | Weather: | Sunny |
| Date of test: | 24/02/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| | | | | | |
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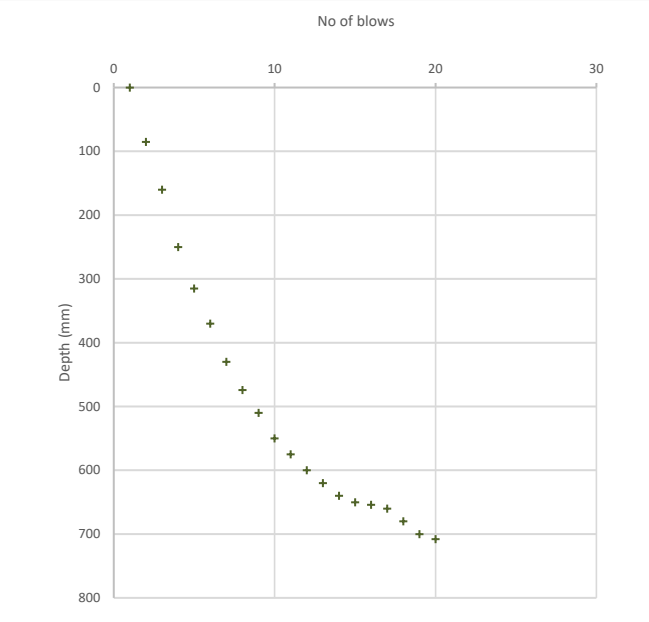


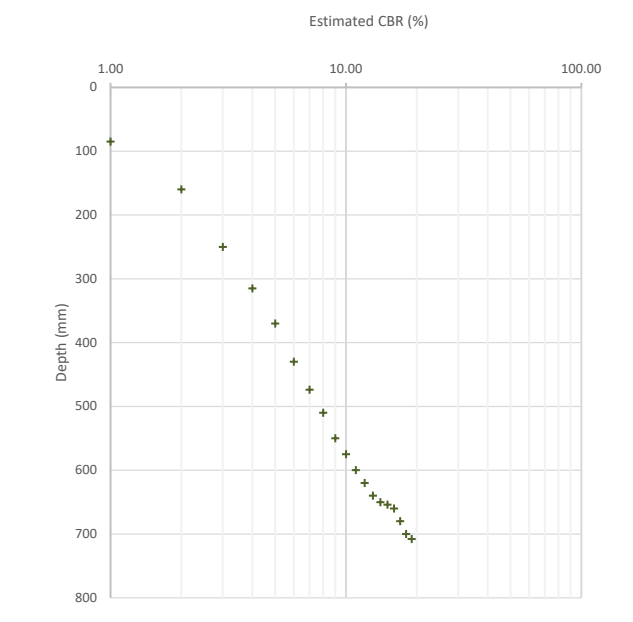


| Test No. | Depth from (mm) | Depth to (mm) | CBR value |
|---|---|---|---|
| 1 | 0 | 575 | 4.2 |
| 2 | 575 | 650 | 14 |
| 3 | 650 | 708 | 77 |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

**Estimated CBR value calculated using TRL equation:**

$$\log_{10}(CBR) = 2.48 - 1.057 \cdot \log_{10}(mm/blow)$$

**References:**

CNS Farnell (2003) Dynamic Cone Penetrometer Model A2465 Operating Instructions.

Transport and Road Research Laboratory (1990) Overseas Road Note 8. A users manual for a program to analyse dynamic cone penetrometer data.

Transport and Road Research Laboratory (2004) TRL Project Report PR/INT/277/04.

Comments:

TRL probe commenced from ground level, hand pit dug adjacent to TRL position prior to probing to confirm no services present. Topsoil from GL to 0.60 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**DCP133**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 510141.80 | mE | Checked by: | MM |
| Project No: | GT0386 | | 300573.28 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 41.47 | mOD | | |
| Engineer: | DB | | | | Weather: | Sunny |
| Date of test: | 24/02/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 0 | 0 | 190 | | 0 | 0 |
| 1 | 1 | 250 | | 60 | 60 |
| 1 | 2 | 340 | | 90 | 150 |
| 1 | 3 | 370 | | 30 | 180 |
| 1 | 4 | 400 | | 30 | 210 |
| 1 | 5 | 510 | | 110 | 320 |
| 1 | 6 | 605 | | 95 | 415 |
| 1 | 7 | 660 | | 55 | 470 |
| 1 | 8 | 703 | | 43 | 513 |
| 1 | 9 | 730 | | 27 | 540 |
| 1 | 10 | 755 | | 25 | 565 |
| 1 | 11 | 780 | | 25 | 590 |
| 1 | 12 | 805 | | 25 | 615 |
| 1 | 13 | 825 | | 20 | 635 |
| 1 | 14 | 845 | | 20 | 655 |
| 1 | 15 | 870 | | 25 | 680 |
| 1 | 16 | 890 | | 20 | 700 |
| 1 | 17 | 920 | | 30 | 730 |
| 1 | 18 | 940 | | 20 | 750 |
| 4 | 22 | 945 | | 5 | 755 |
| 10 | 32 | 948 | | 3 | 758 |

Comments:
TRL probe commenced from ground level, hand pit dug adjacent to TRL position prior to probing to confirm no services present. Topsoil from GL to 0.60 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**DCP133**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 510141.80 | mE | Checked by: | MM |
| Project No: | GT0386 | | 300573.28 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 41.47 | mOD | | |
| Engineer: | DB | | | | Weather: | Sunny |
| Date of test: | 24/02/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| | | | | | |
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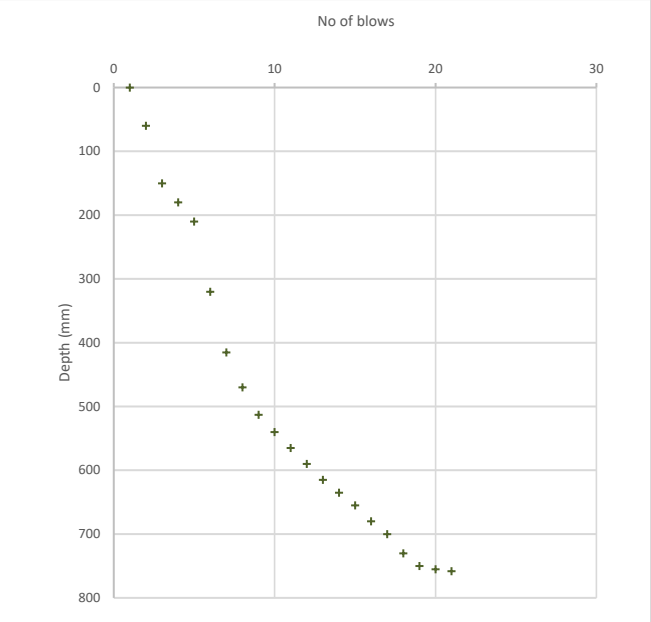


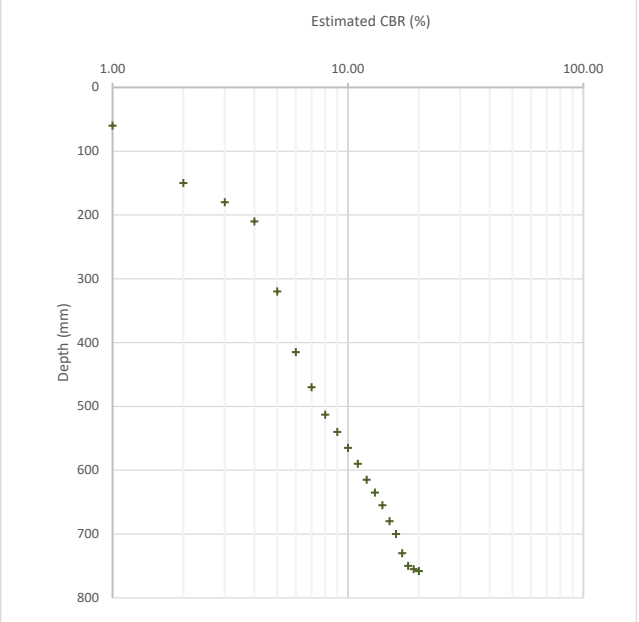


| Test No. | Depth from (mm) | Depth to (mm) | CBR value |
|---|---|---|---|
| 1 | 0 | 755 | 7.2 |
| 2 | 755 | 758 | 1100 |
| | | | |
| | | | |
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| | | | |
| | | | |
| | | | |

**Estimated CBR value calculated using TRL equation:**

$$\log_{10}(CBR) = 2.48 - 1.057 \cdot \log_{10}(mm/blow)$$

**References:**

CNS Farnell (2003) Dynamic Cone Penetrometer Model A2465 Operating Instructions.

Transport and Road Research Laboratory (1990) Overseas Road Note 8. A users manual for a program to analyse dynamic cone penetrometer data.

Transport and Road Research Laboratory (2004) TRL Project Report PR/INT/277/04.

Comments:

TRL probe commenced from ground level, hand pit dug adjacent to TRL position prior to probing to confirm no services present. Topsoil from GL to 0.60 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**DCP134**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 510293.59 | mE | Checked by: | MM |
| Project No: | GT0386 | | 300514.94 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 38.04 | mOD | | |
| Engineer: | DB | | | | Weather: | Sunny |
| Date of test: | 24/02/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 0 | 0 | 190 | | 0 | 0 |
| 1 | 1 | 250 | | 60 | 60 |
| 1 | 2 | 340 | | 90 | 150 |
| 1 | 3 | 370 | | 30 | 180 |
| 1 | 4 | 400 | | 30 | 210 |
| 1 | 5 | 510 | | 110 | 320 |
| 1 | 6 | 605 | | 95 | 415 |
| 1 | 7 | 660 | | 55 | 470 |
| 1 | 8 | 703 | | 43 | 513 |
| 1 | 9 | 730 | | 27 | 540 |
| 1 | 10 | 755 | | 25 | 565 |
| 1 | 11 | 780 | | 25 | 590 |
| 1 | 12 | 805 | | 25 | 615 |
| 1 | 13 | 825 | | 20 | 635 |
| 1 | 14 | 845 | | 20 | 655 |
| 1 | 15 | 870 | | 25 | 680 |
| 1 | 16 | 890 | | 20 | 700 |
| 1 | 17 | 920 | | 30 | 730 |
| 1 | 18 | 940 | | 20 | 750 |
| 4 | 22 | 945 | | 5 | 755 |
| 10 | 32 | 948 | | 3 | 758 |

Comments:
TRL probe commenced from ground level, hand pit dug adjacent to TRL position prior to probing to confirm no services present. Topsoil from GL to 0.75 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**DCP134**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 510293.59 | mE | Checked by: | MM |
| Project No: | GT0386 | | 300514.94 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 38.04 | mOD | | |
| Engineer: | DB | | | | Weather: | Sunny |
| Date of test: | 24/02/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| | | | | | |
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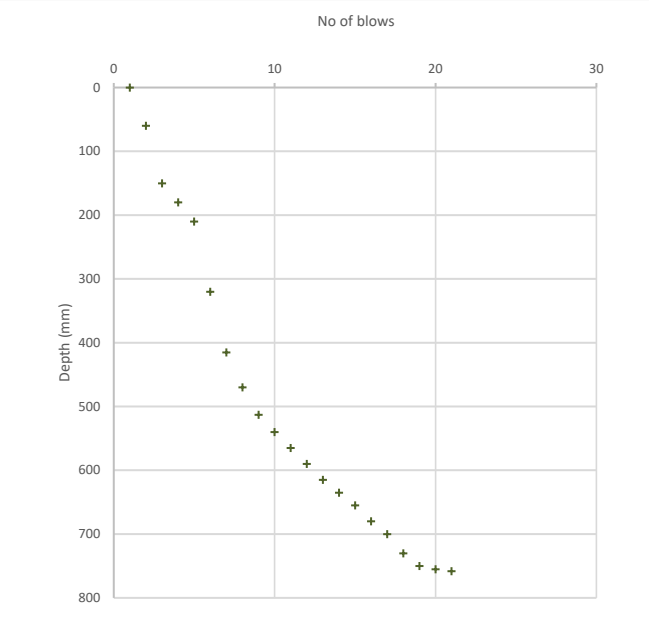


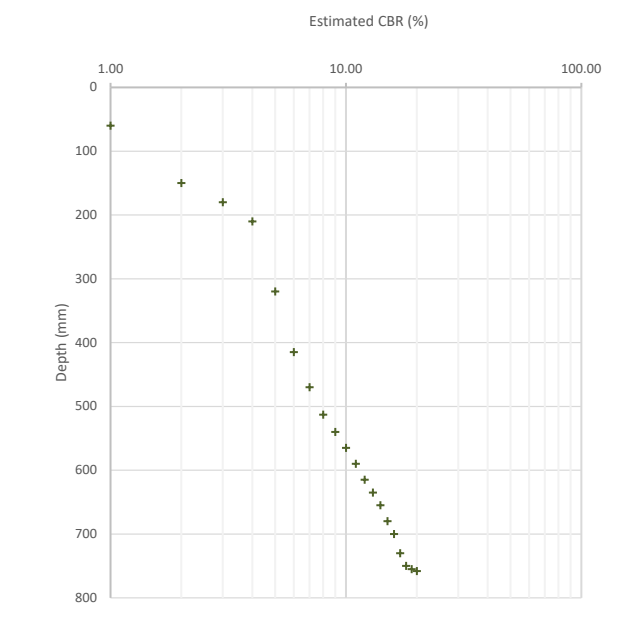


| Test No. | Depth from (mm) | Depth to (mm) | CBR value |
|---|---|---|---|
| 1 | 0 | 755 | 7.2 |
| 2 | 755 | 758 | 1100 |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

**Estimated CBR value calculated using TRL equation:**

$$\log_{10}(CBR) = 2.48 - 1.057 \cdot \log_{10}(mm/blow)$$

**References:**

CNS Farnell (2003) Dynamic Cone Penetrometer Model A2465 Operating Instructions.

Transport and Road Research Laboratory (1990) Overseas Road Note 8. A users manual for a program to analyse dynamic cone penetrometer data.

Transport and Road Research Laboratory (2004) TRL Project Report PR/INT/277/04.

Comments:

TRL probe commenced from ground level, hand pit dug adjacent to TRL position prior to probing to confirm no services present. Topsoil from GL to 0.75 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**DCP135**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 509325.15 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299527.36 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 20.88 | mOD | | |
| Engineer: | JJ | | | | Weather: | Sunny |
| Date of test: | 07/04/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 0 | 0 | 100 | | 0 | 0 |
| 1 | 1 | 200 | | 100 | 100 |
| 1 | 2 | 300 | | 100 | 200 |
| 1 | 3 | 350 | | 50 | 250 |
| 1 | 4 | 395 | | 45 | 295 |
| 1 | 5 | 440 | | 45 | 340 |
| 1 | 6 | 490 | | 50 | 390 |
| 1 | 7 | 540 | | 50 | 440 |
| 1 | 8 | 600 | | 60 | 500 |
| 1 | 9 | 660 | | 60 | 560 |
| 1 | 10 | 710 | | 50 | 610 |
| 1 | 11 | 760 | | 50 | 660 |
| 1 | 12 | 800 | | 40 | 700 |
| 1 | 13 | 810 | | 10 | 710 |
| 1 | 14 | 850 | | 40 | 750 |
| 1 | 15 | 880 | | 30 | 780 |
| 1 | 16 | 920 | | 40 | 820 |
| 1 | 17 | 980 | | 60 | 880 |
| 1 | 18 | 1030 | | 50 | 930 |
| 1 | 19 | 1070 | | 40 | 970 |
| 1 | 20 | 1100 | | 30 | 1000 |
| 1 | 21 | 1120 | | 20 | 1020 |
| 1 | 22 | 1150 | | 30 | 1050 |
| 1 | 23 | 1170 | | 20 | 1070 |
| 1 | 24 | 1210 | | 40 | 1110 |
| 1 | 25 | 1240 | | 30 | 1140 |
| 1 | 26 | 1270 | | 30 | 1170 |
| 1 | 27 | 1300 | | 30 | 1200 |
| 1 | 28 | 1320 | | 20 | 1220 |
| 1 | 29 | 1350 | | 30 | 1250 |
| 1 | 30 | 1375 | | 25 | 1275 |
| 1 | 31 | 1390 | | 15 | 1290 |
| 1 | 32 | 1410 | | 20 | 1310 |
| 1 | 33 | 1435 | | 25 | 1335 |
| 1 | 34 | 1450 | | 15 | 1350 |
| 1 | 35 | 1480 | | 30 | 1380 |
| 1 | 36 | 1500 | | 20 | 1400 |
| 1 | 37 | 1525 | | 25 | 1425 |
| 1 | 38 | 1550 | | 25 | 1450 |
| 1 | 39 | 1560 | | 10 | 1460 |
| 1 | 40 | 1580 | | 20 | 1480 |
| 1 | 41 | 1600 | | 20 | 1500 |
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Comments:
TRL probe commenced from ground level, hand pit dug adjacent to TRL position prior to probing to confirm no services present. Topsoil from GL to 0.40 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**DCP135**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 509325.15 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299527.36 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 20.88 | mOD | | |
| Engineer: | JJ | | | | Weather: | Sunny |
| Date of test: | 07/04/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
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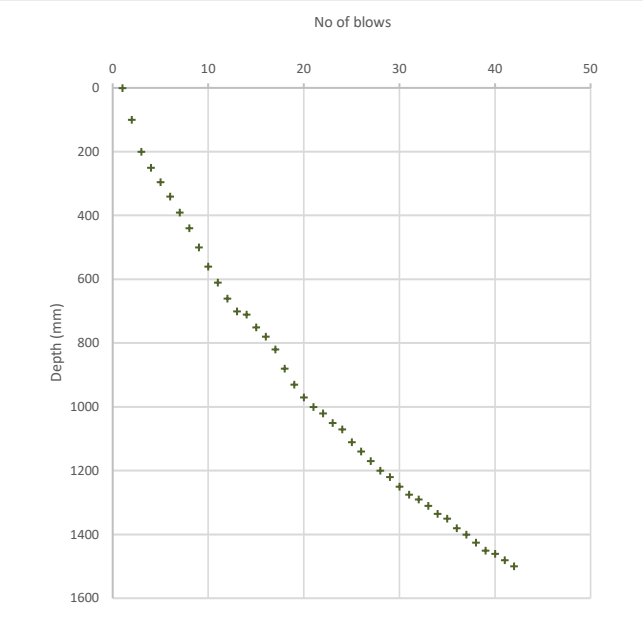


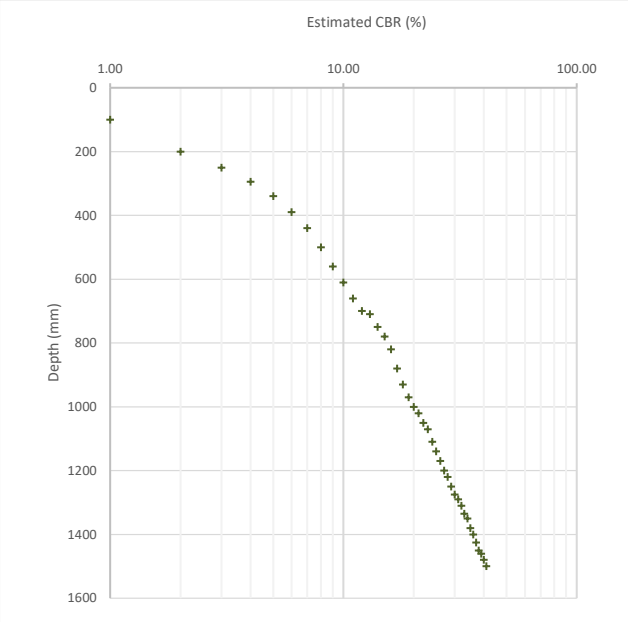


| Test No. | Depth from (mm) | Depth to (mm) | CBR value |
|---|---|---|---|
| 1 | 0 | 1500 | 6.7 |
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**Estimated CBR value calculated using TRL equation:**

$$\log_{10}(CBR) = 2.48 - 1.057 \cdot \log_{10}(mm/blow)$$

**References:**

CNS Farnell (2003) Dynamic Cone Penetrometer Model A2465 Operating Instructions.
Transport and Road Research Laboratory (1990) Overseas Road Note 8. A users manual for a program to analyse dynamic cone penetrometer data.
Transport and Road Research Laboratory (2004) TRL Project Report PR/INT/277/04.

Comments:

TRL probe commenced from ground level, hand pit dug adjacent to TRL position prior to probing to confirm no services present. Topsoil from GL to 0.40 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**TP107 TRL**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 507630.51 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299714.38 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 30.90 | mOD | | |
| Engineer: | DB | | | | Weather: | Sunny |
| Date of test: | 24/02/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 0 | 0 | 260 | | 0 | 0 |
| 1 | 1 | 305 | | 45 | 45 |
| 1 | 2 | 340 | | 35 | 80 |
| 1 | 3 | 370 | | 30 | 110 |
| 1 | 4 | 400 | | 30 | 140 |
| 1 | 5 | 410 | | 10 | 150 |
| 1 | 6 | 420 | | 10 | 160 |
| 1 | 7 | 430 | | 10 | 170 |
| 1 | 8 | 440 | | 10 | 180 |
| 1 | 9 | 450 | | 10 | 190 |
| 1 | 10 | 460 | | 10 | 200 |
| 1 | 11 | 465 | | 5 | 205 |
| 1 | 12 | 470 | | 5 | 210 |
| 1 | 13 | 480 | | 10 | 220 |
| 1 | 14 | 490 | | 10 | 230 |
| 1 | 15 | 500 | | 10 | 240 |
| 1 | 16 | 505 | | 5 | 245 |
| 1 | 17 | 510 | | 5 | 250 |
| 1 | 18 | 520 | | 10 | 260 |
| 2 | 20 | 530 | | 10 | 270 |
| 1 | 21 | 540 | | 10 | 280 |
| 2 | 23 | 550 | | 10 | 290 |
| 1 | 24 | 560 | | 10 | 300 |
| 1 | 25 | 570 | | 10 | 310 |
| 1 | 26 | 580 | | 10 | 320 |
| 1 | 27 | 590 | | 10 | 330 |
| 1 | 28 | 600 | | 10 | 340 |
| 1 | 29 | 610 | | 10 | 350 |
| 1 | 30 | 620 | | 10 | 360 |
| 1 | 31 | 630 | | 10 | 370 |
| 1 | 32 | 640 | | 10 | 380 |
| 1 | 33 | 650 | | 10 | 390 |
| 1 | 34 | 665 | | 15 | 405 |
| 1 | 35 | 670 | | 5 | 410 |
| 1 | 36 | 680 | | 10 | 420 |
| 1 | 37 | 690 | | 10 | 430 |
| 1 | 38 | 700 | | 10 | 440 |
| 1 | 39 | 710 | | 10 | 450 |
| 1 | 40 | 720 | | 10 | 460 |
| 1 | 41 | 725 | | 5 | 465 |
| 1 | 42 | 730 | | 5 | 470 |
| 1 | 43 | 735 | | 5 | 475 |
| 1 | 44 | 740 | | 5 | 480 |
| 1 | 45 | 750 | | 10 | 490 |
| 1 | 46 | 755 | | 5 | 495 |
| 1 | 47 | 760 | | 5 | 500 |
| 2 | 49 | 770 | | 10 | 510 |
| 1 | 50 | 775 | | 5 | 515 |
| 1 | 51 | 780 | | 5 | 520 |
| 1 | 52 | 785 | | 5 | 525 |
| 10 | 62 | 790 | | 5 | 530 |
| | | | | | |

Comments:
TRL probe commenced from ground level adjacent to trial pit location. Topsoil from GL to 0.25 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**TP107 TRL**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 507630.51 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299714.38 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 30.90 | mOD | | |
| Engineer: | DB | | | | Weather: | Sunny |
| Date of test: | 24/02/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
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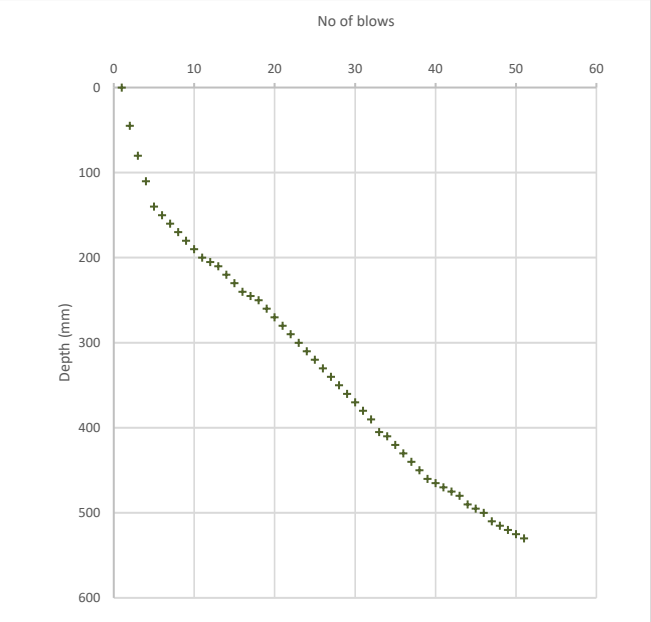


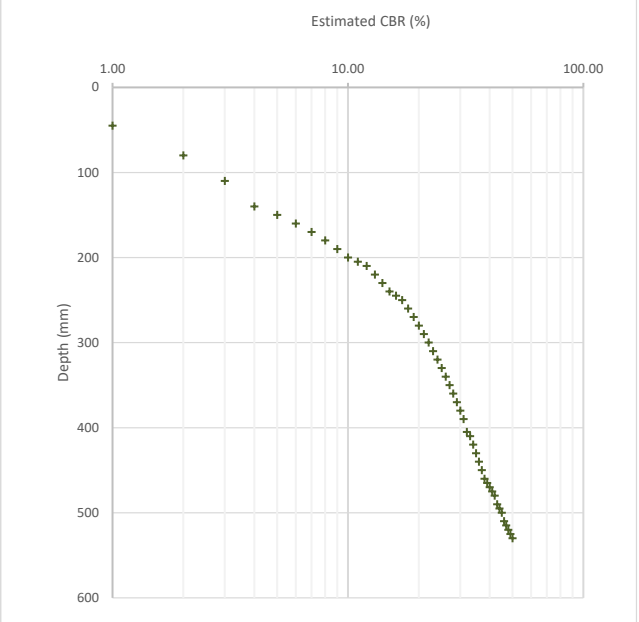


| Test No. | Depth from (mm) | Depth to (mm) | CBR value |
|---|---|---|---|
| 1 | 0 | 465 | 23 |
| 2 | 465 | 530 | 91 |
| | | | |
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**Estimated CBR value calculated using TRL equation:**

$$\log_{10}(CBR) = 2.48 - 1.057 \cdot \log_{10}(mm/blow)$$

**References:**

CNS Farnell (2003) Dynamic Cone Penetrometer Model A2465 Operating Instructions.

Transport and Road Research Laboratory (1990) Overseas Road Note 8. A users manual for a program to analyse dynamic cone penetrometer data.

Transport and Road Research Laboratory (2004) TRL Project Report PR/INT/277/04.

Comments:

TRL probe commenced from ground level adjacent to trial pit location. Topsoil from GL to 0.25 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**TP108 TRL**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 507539.27 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299883.38 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 30.74 | mOD | | |
| Engineer: | DB | | | | Weather: | Sunny |
| Date of test: | 02/03/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 0 | 0 | 100 | | 0 | 0 |
| 1 | 1 | 170 | | 70 | 70 |
| 1 | 2 | 210 | | 40 | 110 |
| 1 | 3 | 240 | | 30 | 140 |
| 1 | 4 | 270 | | 30 | 170 |
| 1 | 5 | 310 | | 40 | 210 |
| 1 | 6 | 330 | | 20 | 230 |
| 1 | 7 | 360 | | 30 | 260 |
| 1 | 8 | 370 | | 10 | 270 |
| 2 | 10 | 380 | | 10 | 280 |
| 1 | 11 | 390 | | 10 | 290 |
| 2 | 13 | 400 | | 10 | 300 |
| 1 | 14 | 410 | | 10 | 310 |
| 1 | 15 | 420 | | 10 | 320 |
| 1 | 16 | 430 | | 10 | 330 |
| 2 | 18 | 450 | | 20 | 350 |
| 2 | 20 | 470 | | 20 | 370 |
| 2 | 22 | 480 | | 10 | 380 |
| 1 | 23 | 500 | | 20 | 400 |
| 1 | 24 | 510 | | 10 | 410 |
| 2 | 26 | 520 | | 10 | 420 |
| 1 | 27 | 530 | | 10 | 430 |
| 2 | 29 | 540 | | 10 | 440 |
| 2 | 31 | 550 | | 10 | 450 |
| 10 | 41 | 560 | | 10 | 460 |

Comments:
TRL probe commenced from ground level adjacent to trial pit location. Topsoil from GL to 0.25 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**TP108 TRL**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 507539.27 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299883.38 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 30.74 | mOD | | |
| Engineer: | DB | | | | Weather: | Sunny |
| Date of test: | 02/03/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
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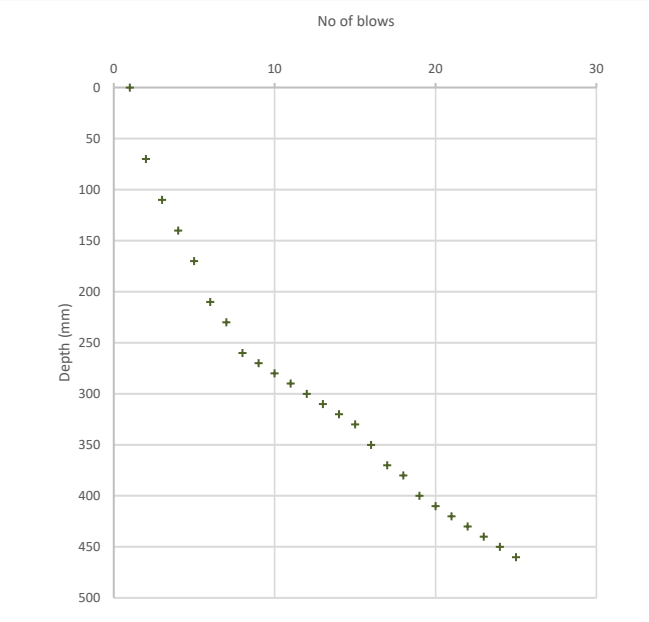


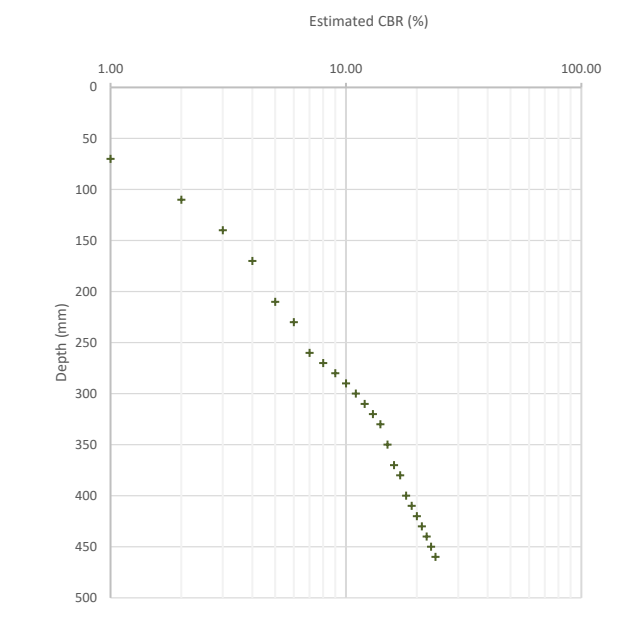


| Test No. | Depth from (mm) | Depth to (mm) | CBR value |
|---|---|---|---|
| 1 | 0 | 260 | 6.6 |
| 2 | 260 | 460 | 46 |
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| | | | |

**Estimated CBR value calculated using TRL equation:**

$$\log_{10}(CBR) = 2.48 - 1.057 \cdot \log_{10}(mm/blow)$$

**References:**

CNS Farnell (2003) Dynamic Cone Penetrometer Model A2465 Operating Instructions.

Transport and Road Research Laboratory (1990) Overseas Road Note 8. A users manual for a program to analyse dynamic cone penetrometer data.

Transport and Road Research Laboratory (2004) TRL Project Report PR/INT/277/04.

Comments:

TRL probe commenced from ground level adjacent to trial pit location. Topsoil from GL to 0.25 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**TP109 TRL**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 507596.82 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299865.60 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 30.58 | mOD | | |
| Engineer: | MM | | | | Weather: | Sunny |
| Date of test: | 04/04/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 0 | 0 | 90 | | 0 | 0 |
| 1 | 1 | 120 | | 30 | 30 |
| 1 | 2 | 140 | | 20 | 50 |
| 1 | 3 | 170 | | 30 | 80 |
| 1 | 4 | 200 | | 30 | 110 |
| 1 | 5 | 225 | | 25 | 135 |
| 1 | 6 | 260 | | 35 | 170 |
| 1 | 7 | 290 | | 30 | 200 |
| 1 | 8 | 310 | | 20 | 220 |
| 1 | 9 | 320 | | 10 | 230 |
| 1 | 10 | 342 | | 22 | 252 |
| 1 | 11 | 365 | | 23 | 275 |
| 1 | 12 | 395 | | 30 | 305 |
| 1 | 13 | 405 | | 10 | 315 |
| 1 | 14 | 415 | | 10 | 325 |
| 1 | 15 | 430 | | 15 | 340 |
| 1 | 16 | 440 | | 10 | 350 |
| 1 | 17 | 445 | | 5 | 355 |
| 1 | 18 | 455 | | 10 | 365 |
| 1 | 19 | 465 | | 10 | 375 |
| 1 | 20 | 472 | | 7 | 382 |
| 1 | 21 | 480 | | 8 | 390 |
| 1 | 22 | 490 | | 10 | 400 |
| 1 | 23 | 500 | | 10 | 410 |
| 1 | 24 | 505 | | 5 | 415 |
| 1 | 25 | 515 | | 10 | 425 |
| 1 | 26 | 520 | | 5 | 430 |
| 1 | 27 | 530 | | 10 | 440 |
| 1 | 28 | 535 | | 5 | 445 |
| 1 | 29 | 542 | | 7 | 452 |
| 1 | 30 | 550 | | 8 | 460 |
| 1 | 31 | 560 | | 10 | 470 |
| 1 | 32 | 570 | | 10 | 480 |
| 1 | 33 | 580 | | 10 | 490 |
| 1 | 34 | 590 | | 10 | 500 |
| 1 | 35 | 605 | | 15 | 515 |
| 1 | 36 | 615 | | 10 | 525 |
| 1 | 37 | 625 | | 10 | 535 |
| 2 | 39 | 650 | | 25 | 560 |
| 1 | 40 | 660 | | 10 | 570 |
| 1 | 41 | 670 | | 10 | 580 |
| 1 | 42 | 672 | | 2 | 582 |
| 1 | 43 | 680 | | 8 | 590 |
| 1 | 44 | 685 | | 5 | 595 |
| 1 | 45 | 690 | | 5 | 600 |
| 1 | 46 | 695 | | 5 | 605 |
| 1 | 47 | 700 | | 5 | 610 |
| 2 | 49 | 710 | | 10 | 620 |
| 1 | 50 | 715 | | 5 | 625 |
| 1 | 51 | 720 | | 5 | 630 |
| 2 | 53 | 725 | | 5 | 635 |
| 1 | 54 | 732 | | 7 | 642 |

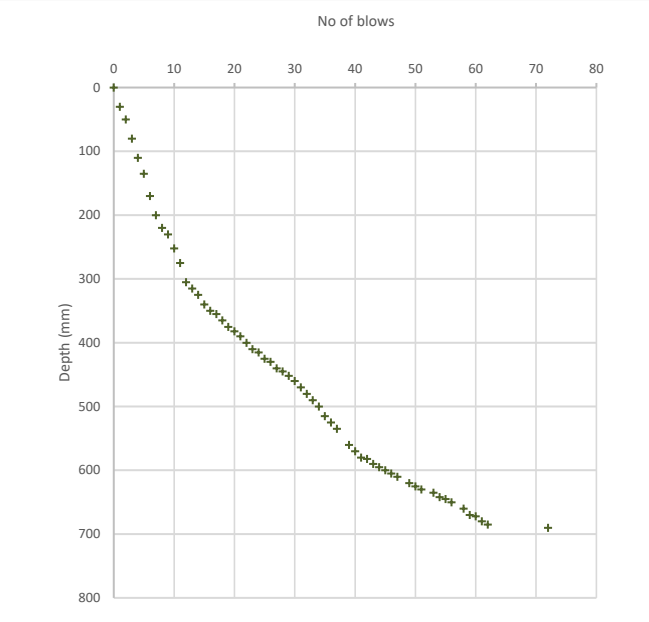
Comments:
TRL probe commenced from ground level adjacent to trial pit location. Topsoil from GL to 0.35 m bgl.

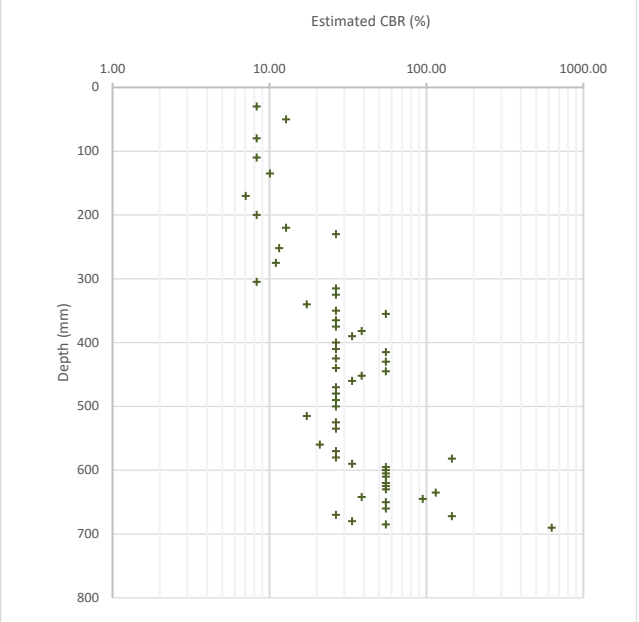
# DYNAMIC CONE PENETRATION TEST

Test Location:
**TP109 TRL**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 507596.82 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299865.60 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 30.58 | mOD | | |
| Engineer: | MM | | | | Weather: | Sunny |
| Date of test: | 04/04/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 1 | 55 | 735 | | 3 | 645 |
| 1 | 56 | 740 | | 5 | 650 |
| 2 | 58 | 750 | | 10 | 660 |
| 1 | 59 | 760 | | 10 | 670 |
| 1 | 60 | 762 | | 2 | 672 |
| 1 | 61 | 770 | | 8 | 680 |
| 1 | 62 | 775 | | 5 | 685 |
| 10 | 72 | 780 | | 5 | 690 |




| Test No. | Depth from (mm) | Depth to (mm) | CBR value |
|---|---|---|---|
| 1 | 0 | 350 | 12 |
| 2 | 350 | 690 | 45 |
| | | | |
| | | | |
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| | | | |
| | | | |
| | | | |

**Estimated CBR value calculated using TRL equation:**

$$\log_{10}(CBR) = 2.48 - 1.057 \cdot \log_{10}(mm/blow)$$

**References:**

CNS Farnell (2003) Dynamic Cone Penetrometer Model A2465 Operating Instructions.

Transport and Road Research Laboratory (1990) Overseas Road Note 8. A users manual for a program to analyse dynamic cone penetrometer data.

Transport and Road Research Laboratory (2004) TRL Project Report PR/INT/277/04.

Comments:

TRL probe commenced from ground level adjacent to trial pit location. Topsoil from GL to 0.35 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**TP110 TRL**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 507664.42 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299817.73 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 31.55 | mOD | | |
| Engineer: | DB | | | | Weather: | Sunny |
| Date of test: | 02/03/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 0 | 0 | 100 | | 0 | 0 |
| 1 | 1 | 180 | | 80 | 80 |
| 1 | 2 | 250 | | 70 | 150 |
| 1 | 3 | 300 | | 50 | 200 |
| 1 | 4 | 350 | | 50 | 250 |
| 1 | 5 | 390 | | 40 | 290 |
| 1 | 6 | 430 | | 40 | 330 |
| 1 | 7 | 460 | | 30 | 360 |
| 1 | 8 | 480 | | 20 | 380 |
| 1 | 9 | 500 | | 20 | 400 |
| 1 | 10 | 530 | | 30 | 430 |
| 1 | 11 | 550 | | 20 | 450 |
| 1 | 12 | 580 | | 30 | 480 |
| 1 | 13 | 620 | | 40 | 520 |
| 1 | 14 | 670 | | 50 | 570 |
| 1 | 15 | 720 | | 50 | 620 |
| 1 | 16 | 760 | | 40 | 660 |
| 1 | 17 | 800 | | 40 | 700 |
| 1 | 18 | 840 | | 40 | 740 |
| 1 | 19 | 850 | | 10 | 750 |
| 1 | 20 | 860 | | 10 | 760 |
| 1 | 21 | 865 | | 5 | 765 |
| 1 | 22 | 870 | | 5 | 770 |
| 1 | 23 | 875 | | 5 | 775 |
| 2 | 25 | 880 | | 5 | 780 |
| 2 | 27 | 890 | | 10 | 790 |
| 1 | 28 | 895 | | 5 | 795 |
| 1 | 29 | 900 | | 5 | 800 |
| 1 | 30 | 910 | | 10 | 810 |
| 1 | 31 | 920 | | 10 | 820 |
| 1 | 32 | 930 | | 10 | 830 |
| 1 | 33 | 940 | | 10 | 840 |
| 1 | 34 | 950 | | 10 | 850 |
| 1 | 35 | 960 | | 10 | 860 |
| 1 | 36 | 970 | | 10 | 870 |
| 3 | 39 | 980 | | 10 | 880 |
| 2 | 41 | 990 | | 10 | 890 |
| 1 | 42 | 995 | | 5 | 895 |
| 1 | 43 | 1000 | | 5 | 900 |
| 5 | 48 | 1005 | | 5 | 905 |
| 10 | 58 | 1010 | | 5 | 910 |

Comments:
TRL probe commenced from ground level adjacent to trial pit location. Topsoil from GL to 0.80 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**TP110 TRL**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 507664.42 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299817.73 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 31.55 | mOD | | |
| Engineer: | DB | | | | Weather: | Sunny |
| Date of test: | 02/03/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
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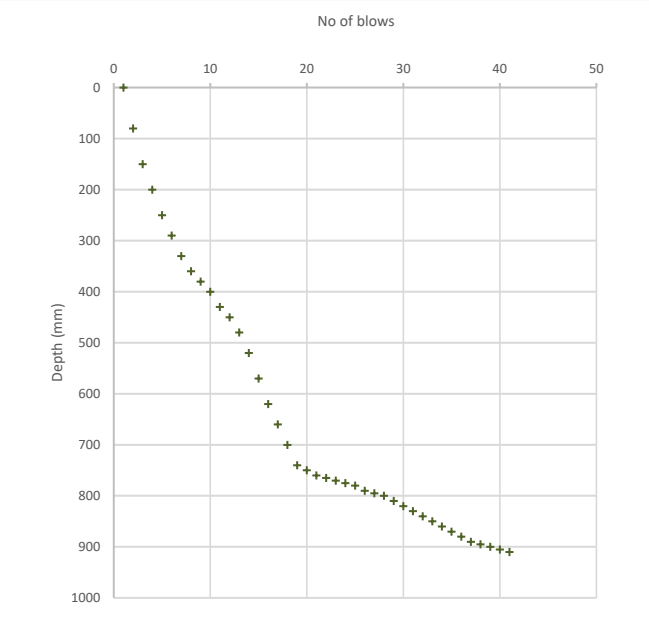


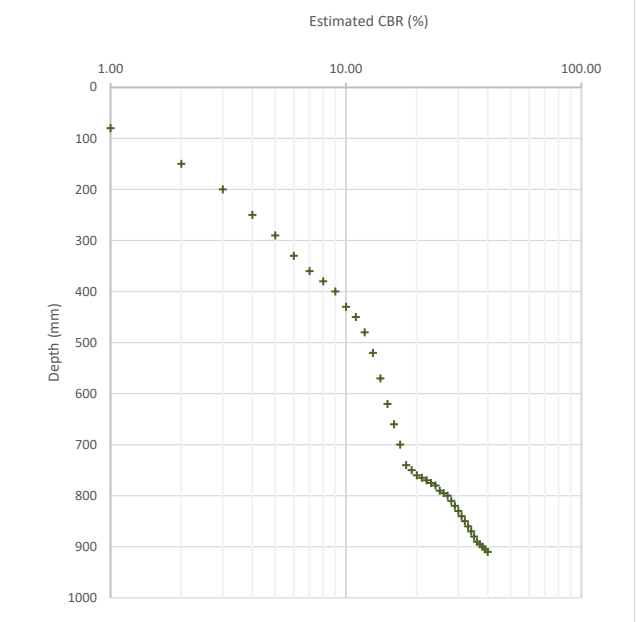


| Test No. | Depth from (mm) | Depth to (mm) | CBR value |
|---|---|---|---|
| 1 | 0 | 740 | 5.9 |
| 2 | 740 | 910 | 65 |
| | | | |
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| | | | |
| | | | |

**Estimated CBR value calculated using TRL equation:**

$$\log_{10}(CBR) = 2.48 - 1.057 \cdot \log_{10}(mm/blow)$$

**References:**

CNS Farnell (2003) Dynamic Cone Penetrometer Model A2465 Operating Instructions.

Transport and Road Research Laboratory (1990) Overseas Road Note 8. A users manual for a program to analyse dynamic cone penetrometer data.

Transport and Road Research Laboratory (2004) TRL Project Report PR/INT/277/04.

Comments:

TRL probe commenced from ground level adjacent to trial pit location. Topsoil from GL to 0.80 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**TP121 TRL**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 508025.67 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299655.46 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 22.37 | mOD | | |
| Engineer: | DB | | | | Weather: | Sunny |
| Date of test: | 24/02/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 0 | 0 | 170 | | 0 | 0 |
| 1 | 1 | 215 | | 45 | 45 |
| 1 | 2 | 270 | | 55 | 100 |
| 1 | 3 | 305 | | 35 | 135 |
| 1 | 4 | 335 | | 30 | 165 |
| 1 | 5 | 365 | | 30 | 195 |
| 1 | 6 | 385 | | 20 | 215 |
| 1 | 7 | 400 | | 15 | 230 |
| 1 | 8 | 415 | | 15 | 245 |
| 1 | 9 | 425 | | 10 | 255 |
| 1 | 10 | 460 | | 35 | 290 |
| 1 | 11 | 500 | | 40 | 330 |
| 1 | 12 | 530 | | 30 | 360 |
| 1 | 13 | 555 | | 25 | 385 |
| 1 | 14 | 575 | | 20 | 405 |
| 1 | 15 | 605 | | 30 | 435 |
| 1 | 16 | 640 | | 35 | 470 |
| 1 | 17 | 660 | | 20 | 490 |
| 1 | 18 | 672 | | 12 | 502 |
| 1 | 19 | 680 | | 8 | 510 |
| 1 | 20 | 690 | | 10 | 520 |
| 1 | 21 | 700 | | 10 | 530 |
| 1 | 22 | 710 | | 10 | 540 |
| 1 | 23 | 726 | | 16 | 556 |
| 1 | 24 | 730 | | 4 | 560 |
| 1 | 25 | 744 | | 14 | 574 |
| 2 | 27 | 760 | | 16 | 590 |
| 2 | 29 | 782 | | 22 | 612 |
| 2 | 31 | 800 | | 18 | 630 |
| 2 | 33 | 820 | | 20 | 650 |
| 2 | 35 | 848 | | 28 | 678 |
| 2 | 37 | 862 | | 14 | 692 |
| 2 | 39 | 885 | | 23 | 715 |
| 2 | 41 | 902 | | 17 | 732 |
| 2 | 43 | 920 | | 18 | 750 |
| 2 | 45 | 965 | | 45 | 795 |
| 2 | 47 | 1009 | | 44 | 839 |
| 2 | 49 | 1044 | | 35 | 874 |
| 2 | 51 | 1080 | | 36 | 910 |
| 2 | 53 | 1124 | | 44 | 954 |
| 2 | 55 | 1162 | | 38 | 992 |
| 3 | 58 | 1200 | | 38 | 1030 |
| 2 | 60 | 1245 | | 45 | 1075 |
| 2 | 62 | 1280 | | 35 | 1110 |
| 2 | 64 | 1321 | | 41 | 1151 |
| 3 | 67 | 1360 | | 39 | 1190 |
| 3 | 70 | 1407 | | 47 | 1237 |
| 3 | 73 | 1444 | | 37 | 1274 |
| 3 | 76 | 1480 | | 36 | 1310 |
| 3 | 79 | 1526 | | 46 | 1356 |
| 2 | 81 | 1560 | | 34 | 1390 |
| 3 | 84 | 1609 | | 49 | 1439 |

Comments:
TRL probe commenced from ground level adjacent to trial pit location. Topsoil from GL to 0.25 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**TP121 TRL**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 508025.67 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299655.46 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 22.37 | mOD | | |
| Engineer: | DB | | | | Weather: | Sunny |
| Date of test: | 24/02/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 3 | 87 | 1640 | | 31 | 1470 |
| 3 | 90 | 1680 | | 40 | 1510 |
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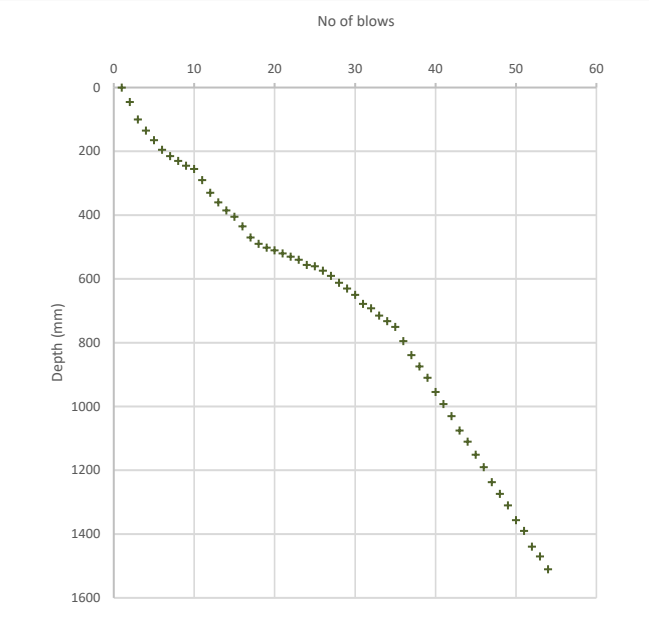


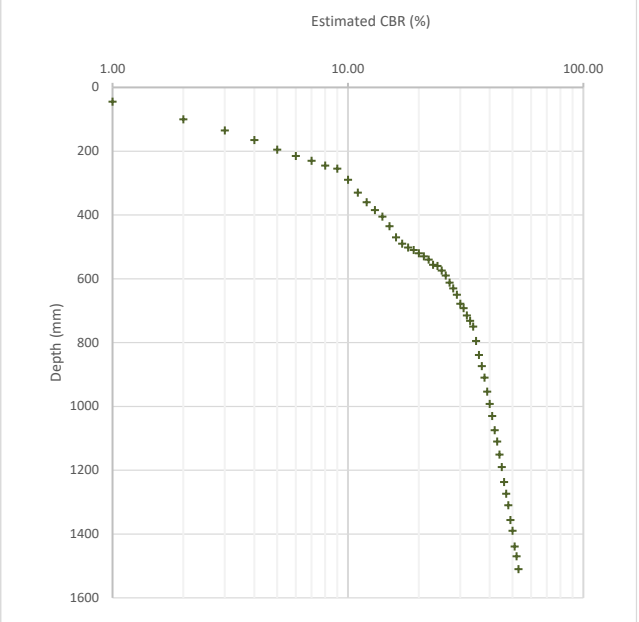


| Test No. | Depth from (mm) | Depth to (mm) | CBR value |
|---|---|---|---|
| 1 | 0 | 1510 | 15 |
| | | | |
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| | | | |

**Estimated CBR value calculated using TRL equation:**

$$\log_{10}(CBR) = 2.48 - 1.057 \cdot \log_{10}(mm/blow)$$

**References:**

CNS Farnell (2003) Dynamic Cone Penetrometer Model A2465 Operating Instructions.

Transport and Road Research Laboratory (1990) Overseas Road Note 8. A users manual for a program to analyse dynamic cone penetrometer data.

Transport and Road Research Laboratory (2004) TRL Project Report PR/INT/277/04.

Comments:

TRL probe commenced from ground level adjacent to trial pit location. Topsoil from GL to 0.25 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**TP121 TRL**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 508025.67 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299655.46 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 22.37 | mOD | | |
| Engineer: | DB | | | | Weather: | Sunny |
| Date of test: | 24/02/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 0 | 0 | 160 | | 0 | 0 |
| 1 | 1 | 211 | | 51 | 51 |
| 1 | 2 | 242 | | 31 | 82 |
| 1 | 3 | 280 | | 38 | 120 |
| 1 | 4 | 305 | | 25 | 145 |
| 1 | 5 | 320 | | 15 | 160 |
| 1 | 6 | 355 | | 35 | 195 |
| 1 | 7 | 380 | | 25 | 220 |
| 1 | 8 | 415 | | 35 | 255 |
| 1 | 9 | 458 | | 43 | 298 |
| 1 | 10 | 485 | | 27 | 325 |
| 1 | 11 | 510 | | 25 | 350 |
| 1 | 12 | 532 | | 22 | 372 |
| 1 | 13 | 550 | | 18 | 390 |
| 1 | 14 | 570 | | 20 | 410 |
| 1 | 15 | 590 | | 20 | 430 |
| 2 | 17 | 610 | | 20 | 450 |
| 2 | 19 | 630 | | 20 | 470 |
| 2 | 21 | 659 | | 29 | 499 |
| 2 | 23 | 675 | | 16 | 515 |
| 2 | 25 | 690 | | 15 | 530 |
| 2 | 27 | 718 | | 28 | 558 |
| 2 | 29 | 730 | | 12 | 570 |
| 2 | 31 | 752 | | 22 | 592 |
| 2 | 33 | 770 | | 18 | 610 |
| 2 | 35 | 795 | | 25 | 635 |
| 2 | 37 | 814 | | 19 | 654 |
| 2 | 39 | 830 | | 16 | 670 |
| 2 | 41 | 855 | | 25 | 695 |
| 2 | 43 | 870 | | 15 | 710 |
| 2 | 45 | 895 | | 25 | 735 |
| 2 | 47 | 916 | | 21 | 756 |
| 2 | 49 | 930 | | 14 | 770 |
| 2 | 51 | 953 | | 23 | 793 |
| 2 | 53 | 970 | | 17 | 810 |
| 2 | 55 | 990 | | 20 | 830 |
| 2 | 57 | 1010 | | 20 | 850 |
| 2 | 59 | 1035 | | 25 | 875 |
| 2 | 61 | 1052 | | 17 | 892 |
| 2 | 63 | 1070 | | 18 | 910 |
| 2 | 65 | 1090 | | 20 | 930 |
| 3 | 68 | 1120 | | 30 | 960 |
| 2 | 70 | 1150 | | 30 | 990 |
| 2 | 72 | 1189 | | 39 | 1029 |
| 2 | 74 | 1210 | | 21 | 1050 |
| 3 | 77 | 1244 | | 34 | 1084 |
| 3 | 80 | 1273 | | 29 | 1113 |
| 3 | 83 | 1302 | | 29 | 1142 |
| 3 | 86 | 1336 | | 34 | 1176 |
| 3 | 89 | 1366 | | 30 | 1206 |
| 2 | 91 | 1390 | | 24 | 1230 |
| 3 | 94 | 1422 | | 32 | 1262 |

Comments:
TRL probe commenced from ground level adjacent to trial pit location. Topsoil from GL to 0.25 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**TP121 TRL**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 508025.67 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299655.46 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 22.37 | mOD | | |
| Engineer: | DB | | | | Weather: | Sunny |
| Date of test: | 24/02/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 3 | 97 | 1456 | | 34 | 1296 |
| 4 | 101 | 1487 | | 31 | 1327 |
| 10 | 111 | 1500 | | 13 | 1340 |
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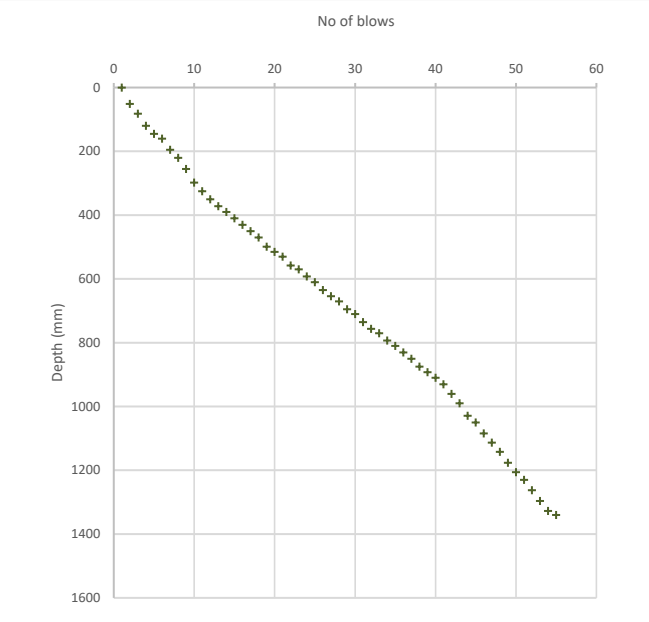


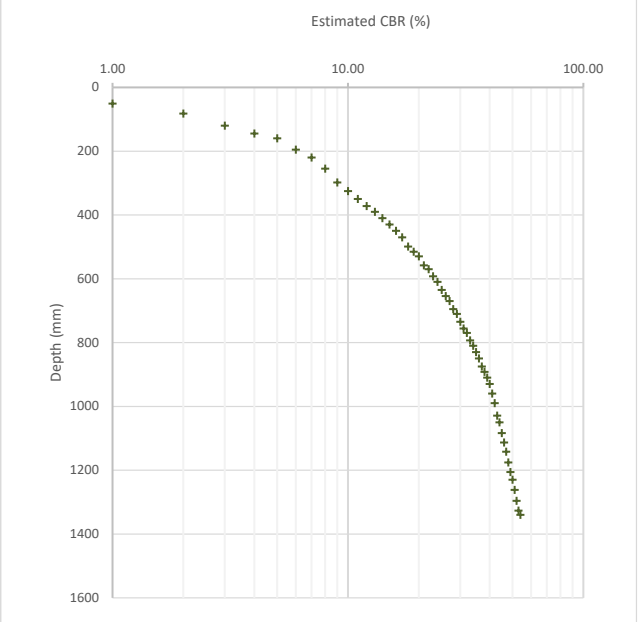


| Test No. | Depth from (mm) | Depth to (mm) | CBR value |
|---|---|---|---|
| 1 | 0 | 325 | 7.6 |
| 2 | 325 | 1340 | 26 |
| | | | |
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| | | | |
| | | | |

**Estimated CBR value calculated using TRL equation:**

$$\log_{10}(CBR) = 2.48 - 1.057 \cdot \log_{10}(mm/blow)$$

**References:**

CNS Farnell (2003) Dynamic Cone Penetrometer Model A2465 Operating Instructions.

Transport and Road Research Laboratory (1990) Overseas Road Note 8. A users manual for a program to analyse dynamic cone penetrometer data.

Transport and Road Research Laboratory (2004) TRL Project Report PR/INT/277/04.

Comments:

TRL probe commenced from ground level adjacent to trial pit location. Topsoil from GL to 0.25 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**TP125 TRL**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 508131.47 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299743.42 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 25.04 | mOD | | |
| Engineer: | MM | | | | Weather: | Sunny |
| Date of test: | 04/03/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 0 | 0 | 80 | | 0 | 0 |
| 1 | 1 | 100 | | 20 | 20 |
| 1 | 2 | 115 | | 15 | 35 |
| 1 | 3 | 142 | | 27 | 62 |
| 1 | 4 | 165 | | 23 | 85 |
| 1 | 5 | 182 | | 17 | 102 |
| 1 | 6 | 200 | | 18 | 120 |
| 2 | 8 | 220 | | 20 | 140 |
| 2 | 10 | 245 | | 25 | 165 |
| 1 | 11 | 260 | | 15 | 180 |
| 1 | 12 | 282 | | 22 | 202 |
| 1 | 13 | 300 | | 18 | 220 |
| 2 | 15 | 320 | | 20 | 240 |
| 2 | 17 | 365 | | 45 | 285 |
| 1 | 18 | 380 | | 15 | 300 |
| 1 | 19 | 390 | | 10 | 310 |
| 2 | 21 | 410 | | 20 | 330 |
| 2 | 23 | 440 | | 30 | 360 |
| 2 | 25 | 460 | | 20 | 380 |
| 1 | 26 | 475 | | 15 | 395 |
| 2 | 28 | 485 | | 10 | 405 |
| 1 | 29 | 505 | | 20 | 425 |
| 1 | 30 | 515 | | 10 | 435 |
| 2 | 32 | 530 | | 15 | 450 |
| 2 | 34 | 560 | | 30 | 480 |
| 2 | 36 | 580 | | 20 | 500 |
| 1 | 37 | 585 | | 5 | 505 |
| 1 | 38 | 590 | | 5 | 510 |
| 1 | 39 | 610 | | 20 | 530 |
| 2 | 41 | 640 | | 30 | 560 |
| 1 | 42 | 660 | | 20 | 580 |
| 2 | 44 | 690 | | 30 | 610 |
| 1 | 45 | 705 | | 15 | 625 |
| 2 | 47 | 740 | | 35 | 660 |
| 2 | 49 | 760 | | 20 | 680 |
| 2 | 51 | 770 | | 10 | 690 |
| 1 | 52 | 780 | | 10 | 700 |
| 1 | 53 | 785 | | 5 | 705 |
| 2 | 55 | 800 | | 15 | 720 |
| 2 | 57 | 820 | | 20 | 740 |
| 2 | 59 | 840 | | 20 | 760 |
| 2 | 61 | 860 | | 20 | 780 |
| 1 | 62 | 875 | | 15 | 795 |
| 1 | 63 | 885 | | 10 | 805 |
| 1 | 64 | 910 | | 25 | 830 |
| 1 | 65 | 930 | | 20 | 850 |
| 2 | 67 | 975 | | 45 | 895 |
| 1 | 68 | 990 | | 15 | 910 |
| 1 | 69 | 1010 | | 20 | 930 |
| 2 | 71 | 1040 | | 30 | 960 |
| 1 | 72 | 1070 | | 30 | 990 |
| 1 | 73 | 1085 | | 15 | 1005 |

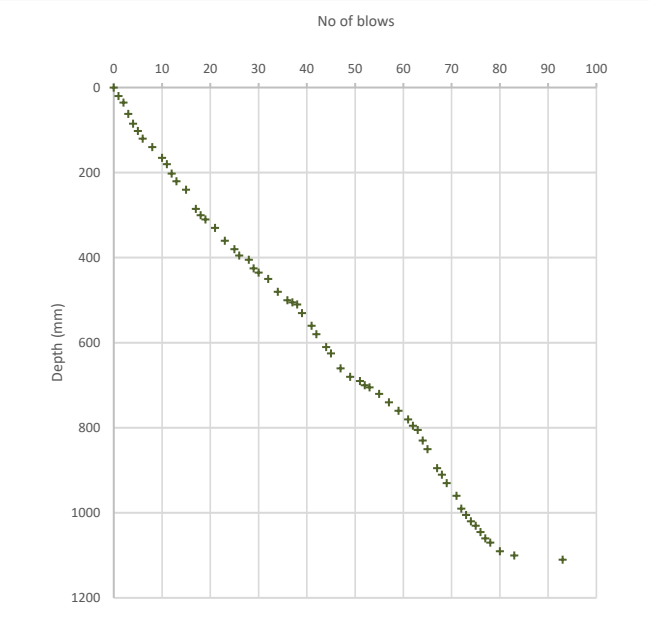
Comments:
TRL probe commenced from ground level adjacent to trial pit location. Topsoil from GL to 0.30 m bgl.

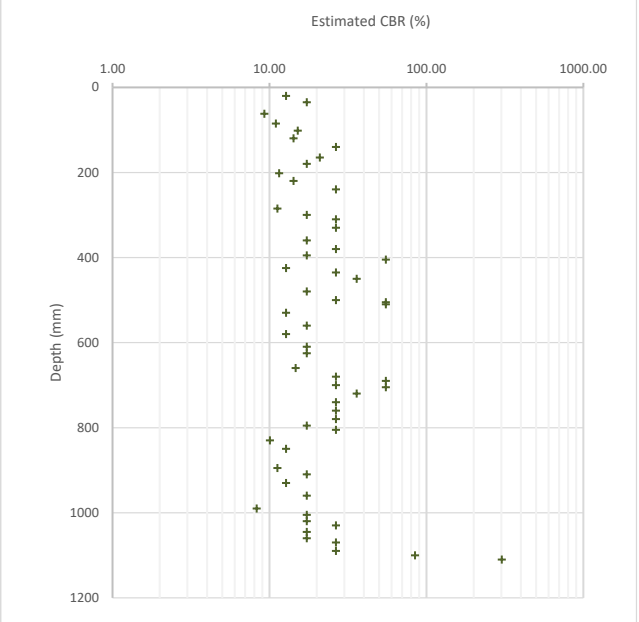
# DYNAMIC CONE PENETRATION TEST

Test Location:
**TP125 TRL**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 508131.47 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299743.42 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 25.04 | mOD | | |
| Engineer: | MM | | | | Weather: | Sunny |
| Date of test: | 04/03/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 1 | 74 | 1100 | | 15 | 1020 |
| 1 | 75 | 1110 | | 10 | 1030 |
| 1 | 76 | 1125 | | 15 | 1045 |
| 1 | 77 | 1140 | | 15 | 1060 |
| 1 | 78 | 1150 | | 10 | 1070 |
| 2 | 80 | 1170 | | 20 | 1090 |
| 3 | 83 | 1180 | | 10 | 1100 |
| 10 | 93 | 1190 | | 10 | 1110 |




| Test No. | Depth from (mm) | Depth to (mm) | CBR value |
|---|---|---|---|
| 1 | 0 | 1110 | 22 |
| | | | |
| | | | |
| | | | |
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| | | | |
| | | | |
| | | | |

**Estimated CBR value calculated using TRL equation:**

$$\log_{10}(CBR) = 2.48 - 1.057 \cdot \log_{10}(mm/blow)$$

**References:**

CNS Farnell (2003) Dynamic Cone Penetrometer Model A2465 Operating Instructions.

Transport and Road Research Laboratory (1990) Overseas Road Note 8. A users manual for a program to analyse dynamic cone penetrometer data.

Transport and Road Research Laboratory (2004) TRL Project Report PR/INT/277/04.

Comments:

TRL probe commenced from ground level adjacent to trial pit location. Topsoil from GL to 0.30 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**TP126 TRL**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 508300.44 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299729.49 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 17.89 | mOD | | |
| Engineer: | MM | | | | Weather: | Sunny |
| Date of test: | 04/03/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 0 | 0 | 0 | | 0 | 0 |
| 1 | 1 | 50 | | 50 | 50 |
| 1 | 2 | 110 | | 60 | 110 |
| 1 | 3 | 180 | | 70 | 180 |
| 1 | 4 | 295 | | 115 | 295 |
| 1 | 5 | 342 | | 47 | 342 |
| 1 | 6 | 380 | | 38 | 380 |
| 1 | 7 | 420 | | 40 | 420 |
| 1 | 8 | 434 | | 14 | 434 |
| 1 | 9 | 485 | | 51 | 485 |
| 1 | 10 | 505 | | 20 | 505 |
| 1 | 11 | 530 | | 25 | 530 |
| 1 | 12 | 560 | | 30 | 560 |
| 1 | 13 | 585 | | 25 | 585 |
| 1 | 14 | 610 | | 25 | 610 |
| 1 | 15 | 640 | | 30 | 640 |
| 1 | 16 | 665 | | 25 | 665 |
| 1 | 17 | 675 | | 10 | 675 |
| 1 | 18 | 685 | | 10 | 685 |
| 1 | 19 | 690 | | 5 | 690 |
| 1 | 20 | 700 | | 10 | 700 |
| 1 | 21 | 720 | | 20 | 720 |
| 1 | 22 | 745 | | 25 | 745 |
| 2 | 24 | 785 | | 40 | 785 |
| 1 | 25 | 808 | | 23 | 808 |
| 1 | 26 | 825 | | 17 | 825 |
| 1 | 27 | 855 | | 30 | 855 |
| 1 | 28 | 880 | | 25 | 880 |
| 1 | 29 | 895 | | 15 | 895 |
| 1 | 30 | 905 | | 10 | 905 |
| 1 | 31 | 920 | | 15 | 920 |
| 1 | 32 | 935 | | 15 | 935 |
| 1 | 33 | 947 | | 12 | 947 |
| 1 | 34 | 970 | | 23 | 970 |
| 1 | 35 | 995 | | 25 | 995 |
| 1 | 36 | 1025 | | 30 | 1025 |
| 2 | 38 | 1060 | | 35 | 1060 |
| 1 | 39 | 1085 | | 25 | 1085 |
| 1 | 40 | 1115 | | 30 | 1115 |
| 1 | 41 | 1130 | | 15 | 1130 |
| 1 | 42 | 1145 | | 15 | 1145 |
| 1 | 43 | 1160 | | 15 | 1160 |
| 1 | 44 | 1177 | | 17 | 1177 |
| 1 | 45 | 1195 | | 18 | 1195 |
| 1 | 46 | 1205 | | 10 | 1205 |
| 1 | 47 | 1215 | | 10 | 1215 |
| 1 | 48 | 1230 | | 15 | 1230 |
| 1 | 49 | 1240 | | 10 | 1240 |
| 1 | 50 | 1250 | | 10 | 1250 |
| 1 | 51 | 1265 | | 15 | 1265 |
| 1 | 52 | 1275 | | 10 | 1275 |
| 1 | 53 | 1285 | | 10 | 1285 |

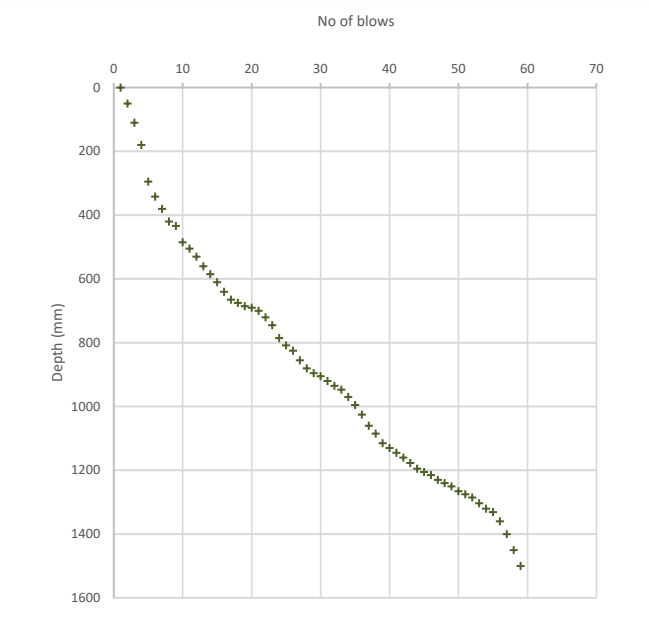
Comments:
TRL probe commenced from ground level adjacent to trial pit location. Topsoil from GL to 0.45 m bgl.

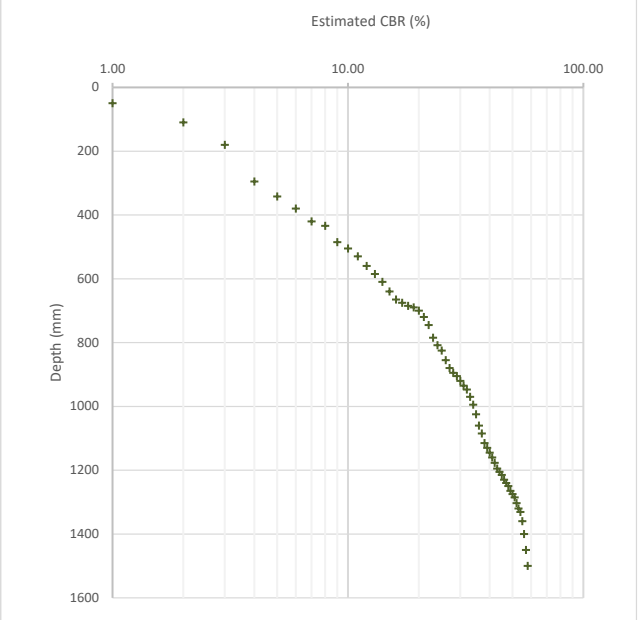
# DYNAMIC CONE PENETRATION TEST

Test Location:
**TP126 TRL**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 508300.44 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299729.49 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 17.89 | mOD | | |
| Engineer: | MM | | | | Weather: | Sunny |
| Date of test: | 04/03/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 1 | 54 | 1303 | | 18 | 1303 |
| 1 | 55 | 1320 | | 17 | 1320 |
| 1 | 56 | 1331 | | 11 | 1331 |
| 3 | 59 | 1360 | | 29 | 1360 |
| 2 | 61 | 1400 | | 40 | 1400 |
| 4 | 65 | 1450 | | 50 | 1450 |
| 4 | 69 | 1500 | | 50 | 1500 |
| | | | | | |




| Test No. | Depth from (mm) | Depth to (mm) | CBR value |
|---|---|---|---|
| 1 | 0 | 434 | 4.4 |
| 2 | 434 | 1500 | 15 |
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**Estimated CBR value calculated using TRL equation:**

$$\log_{10}(CBR) = 2.48 - 1.057 \cdot \log_{10}(mm/blow)$$

**References:**

CNS Farnell (2003) Dynamic Cone Penetrometer Model A2465 Operating Instructions.

Transport and Road Research Laboratory (1990) Overseas Road Note 8. A users manual for a program to analyse dynamic cone penetrometer data.

Transport and Road Research Laboratory (2004) TRL Project Report PR/INT/277/04.

Comments:

TRL probe commenced from ground level adjacent to trial pit location. Topsoil from GL to 0.45 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**TP130 TRL**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 508626.24 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299626.84 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 9.95 | mOD | | |
| Engineer: | MM | | | | Weather: | Sunny |
| Date of test: | 04/03/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 0 | 0 | 0 | | 0 | 0 |
| 1 | 1 | 125 | | 125 | 125 |
| 1 | 2 | 260 | | 135 | 260 |
| 1 | 3 | 290 | | 30 | 290 |
| 1 | 4 | 330 | | 40 | 330 |
| 1 | 5 | 390 | | 60 | 390 |
| 1 | 6 | 480 | | 90 | 480 |
| 1 | 7 | 530 | | 50 | 530 |
| 1 | 8 | 575 | | 45 | 575 |
| 1 | 9 | 610 | | 35 | 610 |
| 1 | 10 | 640 | | 30 | 640 |
| 1 | 11 | 660 | | 20 | 660 |
| 1 | 12 | 690 | | 30 | 690 |
| 1 | 13 | 710 | | 20 | 710 |
| 1 | 14 | 740 | | 30 | 740 |
| 1 | 15 | 760 | | 20 | 760 |
| 1 | 16 | 780 | | 20 | 780 |
| 1 | 17 | 800 | | 20 | 800 |
| 1 | 18 | 815 | | 15 | 815 |
| 1 | 19 | 840 | | 25 | 840 |
| 1 | 20 | 860 | | 20 | 860 |
| 1 | 21 | 875 | | 15 | 875 |
| 1 | 22 | 895 | | 20 | 895 |
| 1 | 23 | 910 | | 15 | 910 |
| 1 | 24 | 920 | | 10 | 920 |
| 1 | 25 | 930 | | 10 | 930 |
| 1 | 26 | 940 | | 10 | 940 |
| 1 | 27 | 950 | | 10 | 950 |
| 1 | 28 | 960 | | 10 | 960 |
| 1 | 29 | 970 | | 10 | 970 |
| 1 | 30 | 980 | | 10 | 980 |
| 1 | 31 | 990 | | 10 | 990 |
| 1 | 32 | 1000 | | 10 | 1000 |
| 1 | 33 | 1010 | | 10 | 1010 |
| 1 | 34 | 1020 | | 10 | 1020 |
| 1 | 35 | 1030 | | 10 | 1030 |
| 1 | 36 | 1040 | | 10 | 1040 |
| 1 | 37 | 1050 | | 10 | 1050 |
| 1 | 38 | 1060 | | 10 | 1060 |
| 4 | 42 | 1100 | | 40 | 1100 |
| 4 | 46 | 1140 | | 40 | 1140 |
| 4 | 50 | 1180 | | 40 | 1180 |
| 3 | 53 | 1210 | | 30 | 1210 |
| 5 | 58 | 1260 | | 50 | 1260 |
| 4 | 62 | 1300 | | 40 | 1300 |
| 5 | 67 | 1350 | | 50 | 1350 |
| 5 | 72 | 1400 | | 50 | 1400 |
| 5 | 77 | 1450 | | 50 | 1450 |
| 5 | 82 | 1500 | | 50 | 1500 |
| | | | | | |
| | | | | | |
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Comments:
TRL probe commenced from ground level adjacent to trial pit location. Topsoil from GL to 0.30 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**TP130 TRL**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 508626.24 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299626.84 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 9.95 | mOD | | |
| Engineer: | MM | | | | Weather: | Sunny |
| Date of test: | 04/03/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
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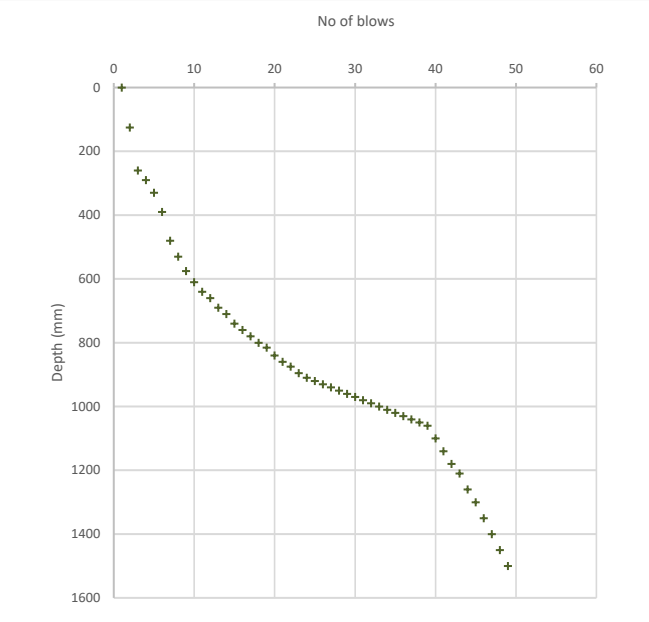


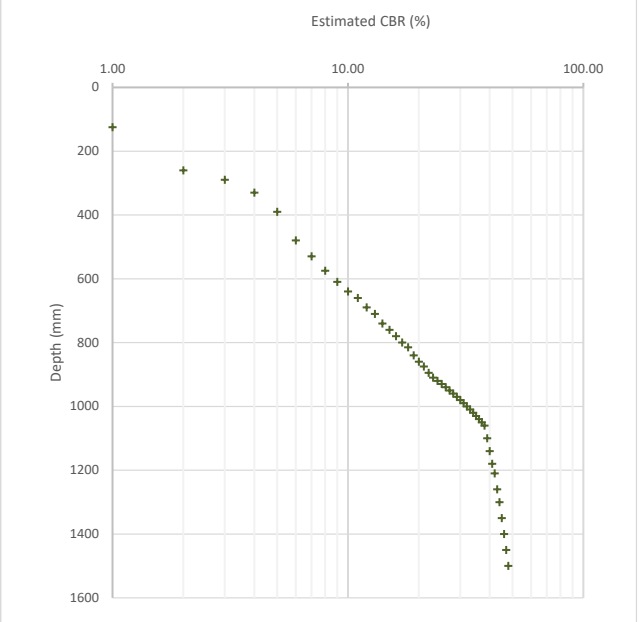


| Test No. | Depth from (mm) | Depth to (mm) | CBR value |
|---|---|---|---|
| 1 | 0 | 910 | 6.2 |
| 2 | 910 | 1500 | 26 |
| | | | |
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**Estimated CBR value calculated using TRL equation:**

$$\log_{10}(CBR) = 2.48 - 1.057 \cdot \log_{10}(mm/blow)$$

**References:**

CNS Farnell (2003) Dynamic Cone Penetrometer Model A2465 Operating Instructions.

Transport and Road Research Laboratory (1990) Overseas Road Note 8. A users manual for a program to analyse dynamic cone penetrometer data.

Transport and Road Research Laboratory (2004) TRL Project Report PR/INT/277/04.

Comments:

TRL probe commenced from ground level adjacent to trial pit location. Topsoil from GL to 0.30 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**TP131 TRL**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 508692.25 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299627.99 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 13.81 | mOD | | |
| Engineer: | MM | | | | Weather: | Sunny |
| Date of test: | 04/03/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 0 | 0 | 105 | | 0 | 0 |
| 1 | 1 | 190 | | 85 | 85 |
| 1 | 2 | 260 | | 70 | 155 |
| 1 | 3 | 320 | | 60 | 215 |
| 1 | 4 | 370 | | 50 | 265 |
| 1 | 5 | 410 | | 40 | 305 |
| 1 | 6 | 445 | | 35 | 340 |
| 1 | 7 | 500 | | 55 | 395 |
| 1 | 8 | 530 | | 30 | 425 |
| 1 | 9 | 565 | | 35 | 460 |
| 1 | 10 | 600 | | 35 | 495 |
| 1 | 11 | 640 | | 40 | 535 |
| 1 | 12 | 670 | | 30 | 565 |
| 1 | 13 | 700 | | 30 | 595 |
| 1 | 14 | 715 | | 15 | 610 |
| 1 | 15 | 725 | | 10 | 620 |
| 1 | 16 | 740 | | 15 | 635 |
| 1 | 17 | 755 | | 15 | 650 |
| 1 | 18 | 770 | | 15 | 665 |
| 1 | 19 | 785 | | 15 | 680 |
| 1 | 20 | 805 | | 20 | 700 |
| 1 | 21 | 825 | | 20 | 720 |
| 1 | 22 | 850 | | 25 | 745 |
| 1 | 23 | 890 | | 40 | 785 |
| 1 | 24 | 920 | | 30 | 815 |
| 1 | 25 | 955 | | 35 | 850 |
| 1 | 26 | 985 | | 30 | 880 |
| 1 | 27 | 1000 | | 15 | 895 |
| 1 | 28 | 1010 | | 10 | 905 |
| 1 | 29 | 1025 | | 15 | 920 |
| 1 | 30 | 1035 | | 10 | 930 |
| 1 | 31 | 1045 | | 10 | 940 |
| 1 | 32 | 1050 | | 5 | 945 |
| 1 | 33 | 1060 | | 10 | 955 |
| 1 | 34 | 1065 | | 5 | 960 |
| 1 | 35 | 1075 | | 10 | 970 |
| 1 | 36 | 1080 | | 5 | 975 |
| 1 | 37 | 1100 | | 20 | 995 |
| 1 | 38 | 1112 | | 12 | 1007 |
| 1 | 39 | 1120 | | 8 | 1015 |
| 1 | 40 | 1125 | | 5 | 1020 |
| 1 | 41 | 1130 | | 5 | 1025 |
| 1 | 42 | 1140 | | 10 | 1035 |
| 1 | 43 | 1150 | | 10 | 1045 |
| 1 | 44 | 1155 | | 5 | 1050 |
| 1 | 45 | 1160 | | 5 | 1055 |
| 1 | 46 | 1165 | | 5 | 1060 |
| 1 | 47 | 1170 | | 5 | 1065 |
| 1 | 48 | 1175 | | 5 | 1070 |
| 1 | 49 | 1180 | | 5 | 1075 |
| 1 | 50 | 1185 | | 5 | 1080 |
| 1 | 51 | 1190 | | 5 | 1085 |

Comments:
TRL probe commenced from ground level adjacent to trial pit location. Topsoil from GL to 0.45 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**TP131 TRL**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 508692.25 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299627.99 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 13.81 | mOD | | |
| Engineer: | MM | | | | Weather: | Sunny |
| Date of test: | 04/03/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 1 | 52 | 1192 | | 2 | 1087 |
| 1 | 53 | 1195 | | 3 | 1090 |
| 1 | 54 | 1200 | | 5 | 1095 |
| 2 | 56 | 1210 | | 10 | 1105 |
| 3 | 59 | 1225 | | 15 | 1120 |
| 10 | 69 | 1235 | | 10 | 1130 |
| | | | | | |
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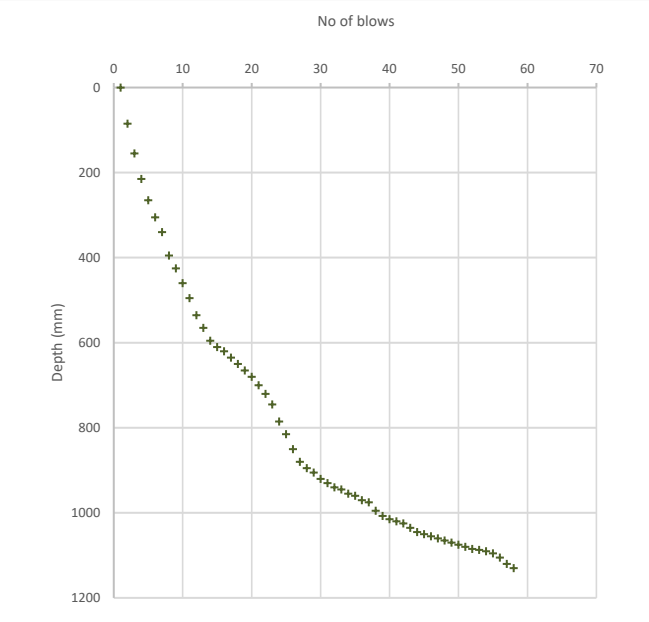


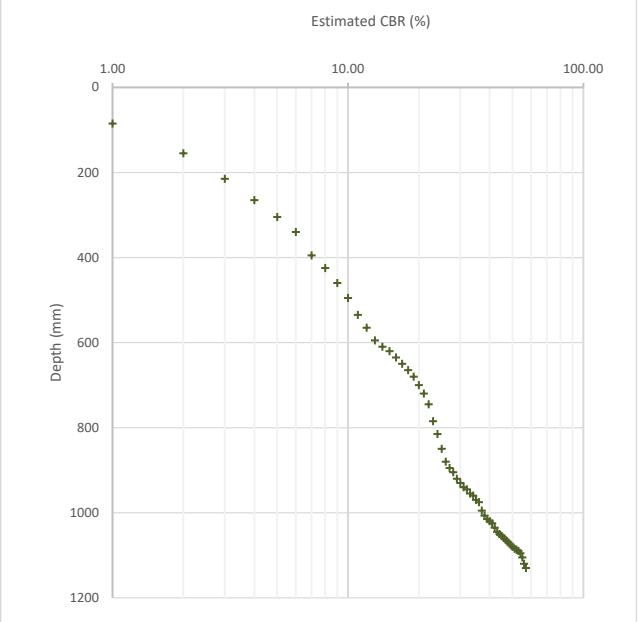


| Test No. | Depth from (mm) | Depth to (mm) | CBR value |
|---|---|---|---|
| 1 | 0 | 595 | 5.3 |
| 2 | 595 | 1130 | 28 |
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| | | | |

**Estimated CBR value calculated using TRL equation:**

$$\log_{10}(CBR) = 2.48 - 1.057 \cdot \log_{10}(mm/blow)$$

**References:**

CNS Farnell (2003) Dynamic Cone Penetrometer Model A2465 Operating Instructions.
Transport and Road Research Laboratory (1990) Overseas Road Note 8. A users manual for a program to analyse dynamic cone penetrometer data.
Transport and Road Research Laboratory (2004) TRL Project Report PR/INT/277/04.

Comments:
TRL probe commenced from ground level adjacent to trial pit location. Topsoil from GL to 0.45 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**TP139 TRL**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 509004.19 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299643.47 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 18.52 | mOD | | |
| Engineer: | MM | | | | Weather: | Sunny |
| Date of test: | 05/04/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 0 | 0 | 0 | | 0 | 0 |
| 1 | 1 | 115 | | 115 | 115 |
| 1 | 2 | 145 | | 30 | 145 |
| 1 | 3 | 175 | | 30 | 175 |
| 1 | 4 | 205 | | 30 | 205 |
| 1 | 5 | 260 | | 55 | 260 |
| 1 | 6 | 290 | | 30 | 290 |
| 1 | 7 | 310 | | 20 | 310 |
| 2 | 9 | 335 | | 25 | 335 |
| 2 | 11 | 380 | | 45 | 380 |
| 2 | 13 | 425 | | 45 | 425 |
| 2 | 15 | 445 | | 20 | 445 |
| 2 | 17 | 465 | | 20 | 465 |
| 2 | 19 | 500 | | 35 | 500 |
| 2 | 21 | 515 | | 15 | 515 |
| 2 | 23 | 530 | | 15 | 530 |
| 2 | 25 | 550 | | 20 | 550 |
| 2 | 27 | 570 | | 20 | 570 |
| 2 | 29 | 590 | | 20 | 590 |
| 2 | 31 | 600 | | 10 | 600 |
| 2 | 33 | 610 | | 10 | 610 |
| 2 | 35 | 620 | | 10 | 620 |
| 2 | 37 | 630 | | 10 | 630 |
| 2 | 39 | 640 | | 10 | 640 |
| 2 | 41 | 650 | | 10 | 650 |
| 2 | 43 | 660 | | 10 | 660 |
| 2 | 45 | 680 | | 20 | 680 |
| 2 | 47 | 700 | | 20 | 700 |
| 2 | 49 | 715 | | 15 | 715 |
| 2 | 51 | 750 | | 35 | 750 |
| 2 | 53 | 790 | | 40 | 790 |
| 2 | 55 | 840 | | 50 | 840 |
| 2 | 57 | 870 | | 30 | 870 |
| 2 | 59 | 905 | | 35 | 905 |
| 2 | 61 | 945 | | 40 | 945 |
| 2 | 63 | 990 | | 45 | 990 |
| 2 | 65 | 1025 | | 35 | 1025 |
| 2 | 67 | 1050 | | 25 | 1050 |
| 2 | 69 | 1075 | | 25 | 1075 |
| 2 | 71 | 1095 | | 20 | 1095 |
| 2 | 73 | 1115 | | 20 | 1115 |
| 2 | 75 | 1135 | | 20 | 1135 |
| 2 | 77 | 1165 | | 30 | 1165 |
| 2 | 79 | 1185 | | 20 | 1185 |
| 2 | 81 | 1205 | | 20 | 1205 |
| 2 | 83 | 1225 | | 20 | 1225 |
| 2 | 85 | 1245 | | 20 | 1245 |
| 2 | 87 | 1285 | | 40 | 1285 |
| 2 | 89 | 1305 | | 20 | 1305 |
| 2 | 91 | 1330 | | 25 | 1330 |
| 2 | 93 | 1380 | | 50 | 1380 |
| 2 | 95 | 1425 | | 45 | 1425 |

Comments:
TRL probe commenced from ground level adjacent to trial pit location. Topsoil from GL to 0.30 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**TP139 TRL**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 509004.19 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299643.47 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 18.52 | mOD | | |
| Engineer: | MM | | | | Weather: | Sunny |
| Date of test: | 05/04/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 2 | 97 | 1480 | | 55 | 1480 |
| 2 | 99 | 1500 | | 20 | 1500 |
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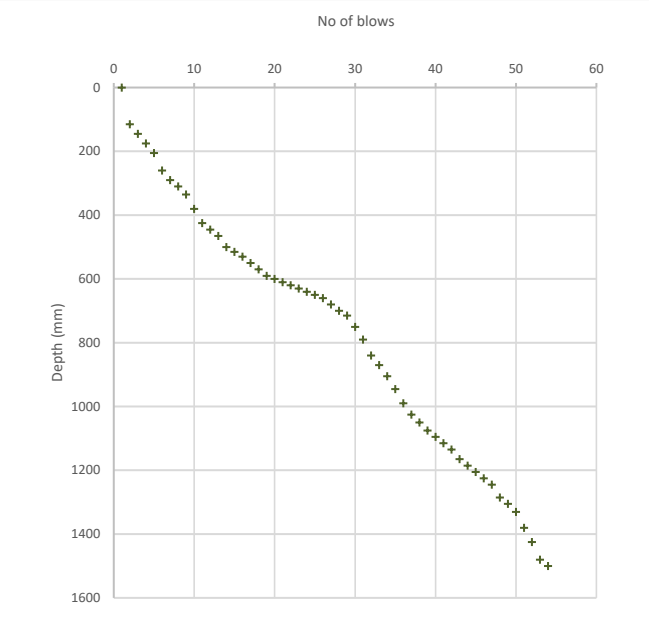


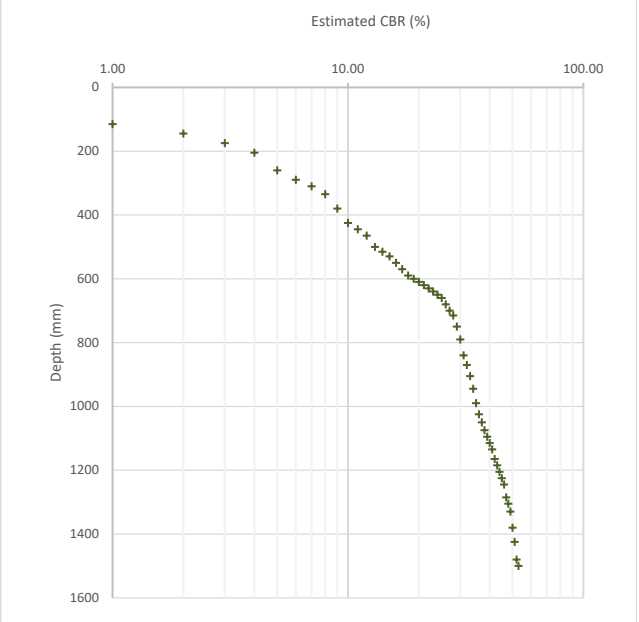


| Test No. | Depth from (mm) | Depth to (mm) | CBR value |
|---|---|---|---|
| 1 | 0 | 310 | 5.5 |
| 2 | 310 | 700 | 27 |
| | | | |
| | | | |
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| | | | |
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**Estimated CBR value calculated using TRL equation:**

$$\log_{10}(CBR) = 2.48 - 1.057 \cdot \log_{10}(mm/blow)$$

**References:**

CNS Farnell (2003) Dynamic Cone Penetrometer Model A2465 Operating Instructions.

Transport and Road Research Laboratory (1990) Overseas Road Note 8. A users manual for a program to analyse dynamic cone penetrometer data.

Transport and Road Research Laboratory (2004) TRL Project Report PR/INT/277/04.

Comments:

TRL probe commenced from ground level adjacent to trial pit location. Topsoil from GL to 0.30 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**TP141 TRL**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 509123.51 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299506.87 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 20.84 | mOD | | |
| Engineer: | MM | | | | Weather: | Sunny |
| Date of test: | 05/04/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 0 | 0 | 100 | | 0 | 0 |
| 1 | 1 | 130 | | 30 | 30 |
| 1 | 2 | 160 | | 30 | 60 |
| 1 | 3 | 210 | | 50 | 110 |
| 1 | 4 | 270 | | 60 | 170 |
| 1 | 5 | 350 | | 80 | 250 |
| 1 | 6 | 400 | | 50 | 300 |
| 1 | 7 | 430 | | 30 | 330 |
| 1 | 8 | 460 | | 30 | 360 |
| 1 | 9 | 465 | | 5 | 365 |
| 1 | 10 | 495 | | 30 | 395 |
| 1 | 11 | 530 | | 35 | 430 |
| 1 | 12 | 550 | | 20 | 450 |
| 1 | 13 | 600 | | 50 | 500 |
| 1 | 14 | 645 | | 45 | 545 |
| 1 | 15 | 680 | | 35 | 580 |
| 1 | 16 | 710 | | 30 | 610 |
| 1 | 17 | 740 | | 30 | 640 |
| 1 | 18 | 770 | | 30 | 670 |
| 1 | 19 | 790 | | 20 | 690 |
| 1 | 20 | 800 | | 10 | 700 |
| 1 | 21 | 845 | | 45 | 745 |
| 1 | 22 | 855 | | 10 | 755 |
| 1 | 23 | 870 | | 15 | 770 |
| 1 | 24 | 890 | | 20 | 790 |
| 2 | 26 | 900 | | 10 | 800 |
| 1 | 27 | 920 | | 20 | 820 |
| 1 | 28 | 935 | | 15 | 835 |
| 1 | 29 | 945 | | 10 | 845 |
| 10 | 39 | 960 | | 15 | 860 |

Comments:
TRL probe commenced from ground level adjacent to trial pit location. Topsoil from GL to 0.30 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**TP141 TRL**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 509123.51 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299506.87 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 20.84 | mOD | | |
| Engineer: | MM | | | | Weather: | Sunny |
| Date of test: | 05/04/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
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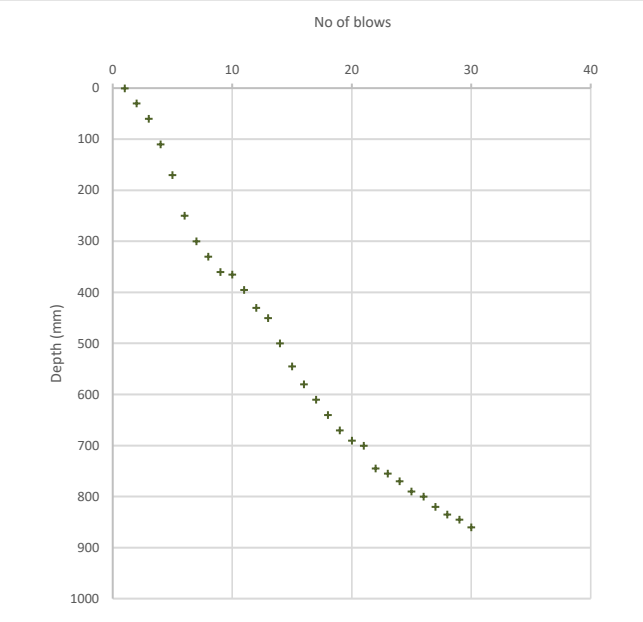


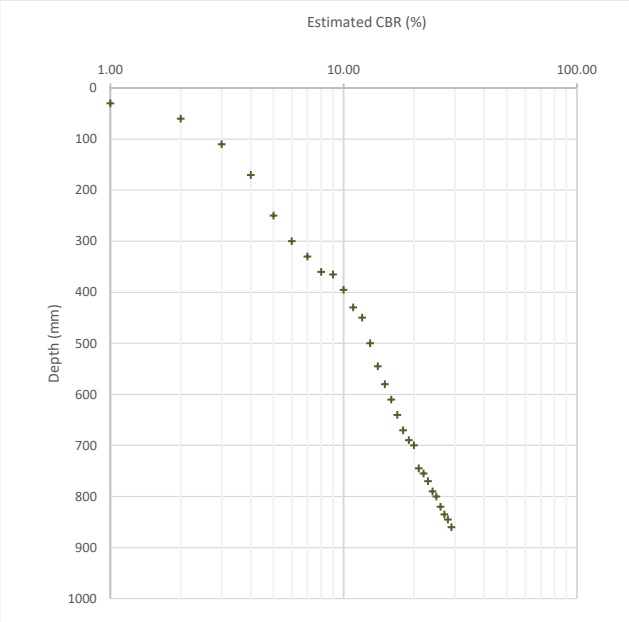


| Test No. | Depth from (mm) | Depth to (mm) | CBR value |
|---|---|---|---|
| 1 | 0 | 860 | 11 |
| | | | |
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| | | | |

**Estimated CBR value calculated using TRL equation:**

$$\log_{10}(CBR) = 2.48 - 1.057 \cdot \log_{10}(mm/blow)$$

**References:**

CNS Farnell (2003) Dynamic Cone Penetrometer Model A2465 Operating Instructions.
Transport and Road Research Laboratory (1990) Overseas Road Note 8. A users manual for a program to analyse dynamic cone penetrometer data.
Transport and Road Research Laboratory (2004) TRL Project Report PR/INT/277/04.

Comments:
TRL probe commenced from ground level adjacent to trial pit location. Topsoil from GL to 0.30 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**TP142 TRL**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 509089.89 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299606.98 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 22.00 | mOD | | |
| Engineer: | MM | | | | Weather: | Sunny |
| Date of test: | 05/04/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 0 | 0 | 110 | | 0 | 0 |
| 1 | 1 | 170 | | 60 | 60 |
| 1 | 2 | 230 | | 60 | 120 |
| 1 | 3 | 290 | | 60 | 180 |
| 1 | 4 | 330 | | 40 | 220 |
| 1 | 5 | 345 | | 15 | 235 |
| 1 | 6 | 360 | | 15 | 250 |
| 1 | 7 | 370 | | 10 | 260 |
| 2 | 9 | 380 | | 10 | 270 |
| 1 | 10 | 390 | | 10 | 280 |
| 1 | 11 | 395 | | 5 | 285 |
| 1 | 12 | 400 | | 5 | 290 |
| 1 | 13 | 410 | | 10 | 300 |
| 1 | 14 | 415 | | 5 | 305 |
| 1 | 15 | 420 | | 5 | 310 |
| 1 | 16 | 425 | | 5 | 315 |
| 1 | 17 | 430 | | 5 | 320 |
| 1 | 18 | 435 | | 5 | 325 |
| 1 | 19 | 440 | | 5 | 330 |
| 1 | 20 | 445 | | 5 | 335 |
| 2 | 22 | 450 | | 5 | 340 |
| 1 | 23 | 455 | | 5 | 345 |
| 1 | 24 | 460 | | 5 | 350 |
| 1 | 25 | 465 | | 5 | 355 |
| 2 | 27 | 470 | | 5 | 360 |
| 2 | 29 | 480 | | 10 | 370 |
| 2 | 31 | 490 | | 10 | 380 |
| 2 | 33 | 500 | | 10 | 390 |
| 2 | 35 | 510 | | 10 | 400 |
| 2 | 37 | 515 | | 5 | 405 |
| 10 | 47 | 520 | | 5 | 410 |

Comments:
TRL probe commenced from ground level adjacent to trial pit location. Topsoil from GL to 0.30 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**TP142 TRL**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 509089.89 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299606.98 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 22.00 | mOD | | |
| Engineer: | MM | | | | Weather: | Sunny |
| Date of test: | 05/04/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
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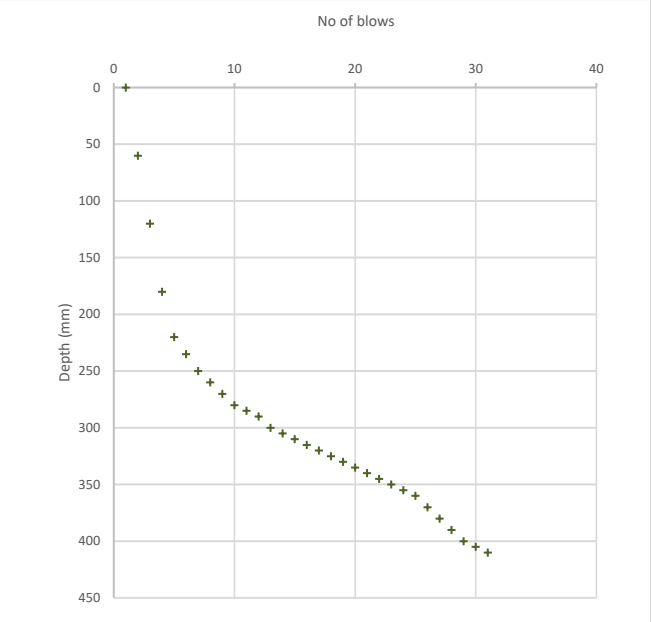


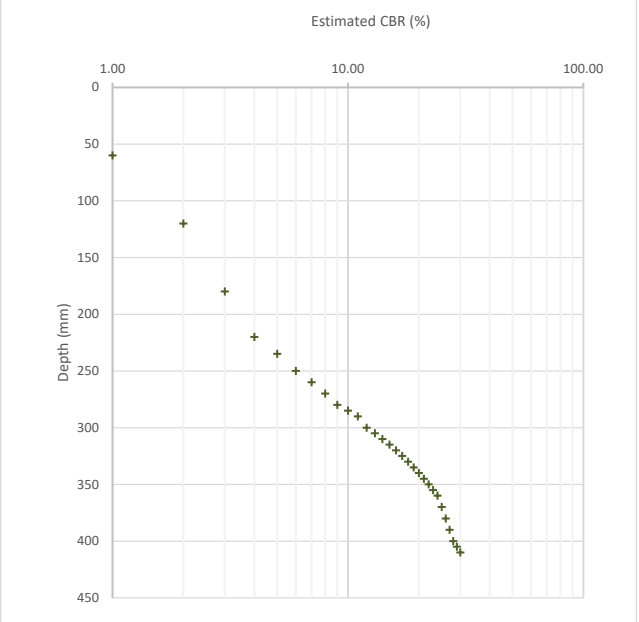


| Test No. | Depth from (mm) | Depth to (mm) | CBR value |
|---|---|---|---|
| 1 | 0 | 270 | 8.3 |
| 2 | 270 | 410 | 76 |
| | | | |
| | | | |
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| | | | |
| | | | |
| | | | |

**Estimated CBR value calculated using TRL equation:**

$$\log_{10}(CBR) = 2.48 - 1.057 \cdot \log_{10}(mm/blow)$$

**References:**

CNS Farnell (2003) Dynamic Cone Penetrometer Model A2465 Operating Instructions.

Transport and Road Research Laboratory (1990) Overseas Road Note 8. A users manual for a program to analyse dynamic cone penetrometer data.

Transport and Road Research Laboratory (2004) TRL Project Report PR/INT/277/04.

Comments:

TRL probe commenced from ground level adjacent to trial pit location. Topsoil from GL to 0.30 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**TP143 TRL**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 509092.32 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299569.91 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 21.44 | mOD | | |
| Engineer: | MM | | | | Weather: | Sunny |
| Date of test: | 05/04/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 0 | 0 | 0 | | 0 | 0 |
| 1 | 1 | 120 | | 120 | 120 |
| 1 | 2 | 170 | | 50 | 170 |
| 1 | 3 | 210 | | 40 | 210 |
| 1 | 4 | 265 | | 55 | 265 |
| 1 | 5 | 330 | | 65 | 330 |
| 2 | 7 | 365 | | 35 | 365 |
| 2 | 9 | 390 | | 25 | 390 |
| 2 | 11 | 430 | | 40 | 430 |
| 2 | 13 | 460 | | 30 | 460 |
| 2 | 15 | 495 | | 35 | 495 |
| 2 | 17 | 530 | | 35 | 530 |
| 2 | 19 | 550 | | 20 | 550 |
| 2 | 21 | 570 | | 20 | 570 |
| 2 | 23 | 590 | | 20 | 590 |
| 2 | 25 | 610 | | 20 | 610 |
| 2 | 27 | 635 | | 25 | 635 |
| 2 | 29 | 650 | | 15 | 650 |
| 2 | 31 | 670 | | 20 | 670 |
| 2 | 33 | 690 | | 20 | 690 |
| 2 | 35 | 705 | | 15 | 705 |
| 2 | 37 | 720 | | 15 | 720 |
| 2 | 39 | 735 | | 15 | 735 |
| 2 | 41 | 745 | | 10 | 745 |
| 2 | 43 | 760 | | 15 | 760 |
| 2 | 45 | 780 | | 20 | 780 |
| 2 | 47 | 790 | | 10 | 790 |
| 2 | 49 | 805 | | 15 | 805 |
| 2 | 51 | 820 | | 15 | 820 |
| 2 | 53 | 840 | | 20 | 840 |
| 2 | 55 | 850 | | 10 | 850 |
| 2 | 57 | 870 | | 20 | 870 |
| 2 | 59 | 885 | | 15 | 885 |
| 2 | 61 | 900 | | 15 | 900 |
| 2 | 63 | 915 | | 15 | 915 |
| 2 | 65 | 925 | | 10 | 925 |
| 2 | 67 | 930 | | 5 | 930 |
| 2 | 69 | 940 | | 10 | 940 |
| 2 | 71 | 950 | | 10 | 950 |
| 2 | 73 | 970 | | 20 | 970 |
| 2 | 75 | 990 | | 20 | 990 |
| 2 | 77 | 1010 | | 20 | 1010 |
| 2 | 79 | 1020 | | 10 | 1020 |
| 2 | 81 | 1030 | | 10 | 1030 |
| 2 | 83 | 1040 | | 10 | 1040 |
| 2 | 85 | 1050 | | 10 | 1050 |
| 2 | 87 | 1065 | | 15 | 1065 |
| 2 | 89 | 1080 | | 15 | 1080 |
| 2 | 91 | 1090 | | 10 | 1090 |
| 2 | 93 | 1110 | | 20 | 1110 |
| 2 | 95 | 1120 | | 10 | 1120 |
| 2 | 97 | 1130 | | 10 | 1130 |

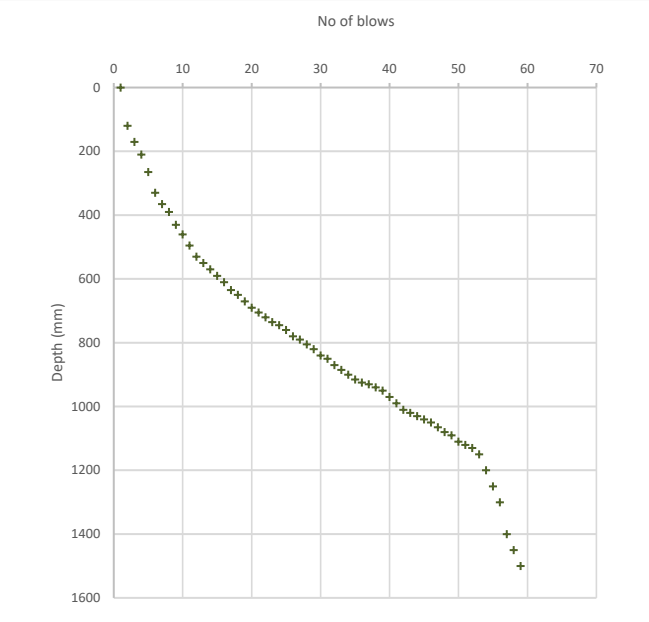
Comments:
TRL probe commenced from ground level adjacent to trial pit location. Topsoil from GL to 0.30 m bgl.

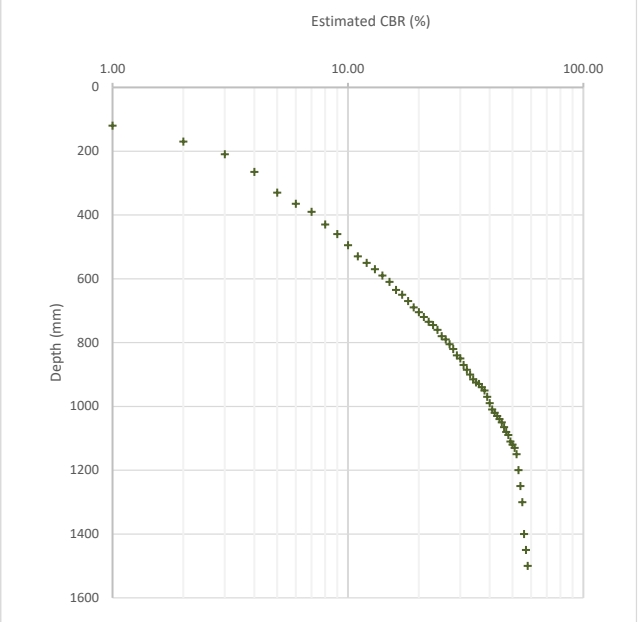
# DYNAMIC CONE PENETRATION TEST

Test Location:
**TP143 TRL**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 509092.32 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299569.91 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 21.44 | mOD | | |
| Engineer: | MM | | | | Weather: | Sunny |
| Date of test: | 05/04/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 3 | 100 | 1150 | | 20 | 1150 |
| 4 | 104 | 1200 | | 50 | 1200 |
| 8 | 112 | 1250 | | 50 | 1250 |
| 7 | 119 | 1300 | | 50 | 1300 |
| 6 | 125 | 1400 | | 100 | 1400 |
| 7 | 132 | 1450 | | 50 | 1450 |
| 8 | 140 | 1500 | | 50 | 1500 |
| | | | | | |




| Test No. | Depth from (mm) | Depth to (mm) | CBR value |
|---|---|---|---|
| 1 | 0 | 365 | 4.6 |
| 2 | 365 | 1500 | 31 |
| | | | |
| | | | |
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| | | | |
| | | | |
| | | | |

**Estimated CBR value calculated using TRL equation:**

$$\log_{10}(CBR) = 2.48 - 1.057 \cdot \log_{10}(mm/blow)$$

**References:**

CNS Farnell (2003) Dynamic Cone Penetrometer Model A2465 Operating Instructions.

Transport and Road Research Laboratory (1990) Overseas Road Note 8. A users manual for a program to analyse dynamic cone penetrometer data.

Transport and Road Research Laboratory (2004) TRL Project Report PR/INT/277/04.

Comments:

TRL probe commenced from ground level adjacent to trial pit location. Topsoil from GL to 0.30 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**TP144 TRL**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 509257.83 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299452.11 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 20.86 | mOD | | |
| Engineer: | MM | | | | Weather: | Sunny |
| Date of test: | 05/04/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 0 | 0 | 95 | | 0 | 0 |
| 1 | 1 | 135 | | 40 | 40 |
| 1 | 2 | 170 | | 35 | 75 |
| 1 | 3 | 245 | | 75 | 150 |
| 1 | 4 | 300 | | 55 | 205 |
| 1 | 5 | 355 | | 55 | 260 |
| 1 | 6 | 395 | | 40 | 300 |
| 1 | 7 | 430 | | 35 | 335 |
| 1 | 8 | 450 | | 20 | 355 |
| 1 | 9 | 475 | | 25 | 380 |
| 1 | 10 | 490 | | 15 | 395 |
| 1 | 11 | 530 | | 40 | 435 |
| 1 | 12 | 560 | | 30 | 465 |
| 1 | 13 | 590 | | 30 | 495 |
| 1 | 14 | 610 | | 20 | 515 |
| 1 | 15 | 630 | | 20 | 535 |
| 1 | 16 | 640 | | 10 | 545 |
| 1 | 17 | 650 | | 10 | 555 |
| 1 | 18 | 660 | | 10 | 565 |
| 1 | 19 | 665 | | 5 | 570 |
| 1 | 20 | 670 | | 5 | 575 |
| 2 | 22 | 675 | | 5 | 580 |
| 2 | 24 | 680 | | 5 | 585 |
| 2 | 26 | 690 | | 10 | 595 |
| 2 | 28 | 695 | | 5 | 600 |
| 3 | 31 | 700 | | 5 | 605 |
| 10 | 41 | 710 | | 10 | 615 |

Comments:
TRL probe commenced from ground level adjacent to trial pit location. Topsoil from GL to 0.30 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**TP144 TRL**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 509257.83 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299452.11 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 20.86 | mOD | | |
| Engineer: | MM | | | | Weather: | Sunny |
| Date of test: | 05/04/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| | | | | | |
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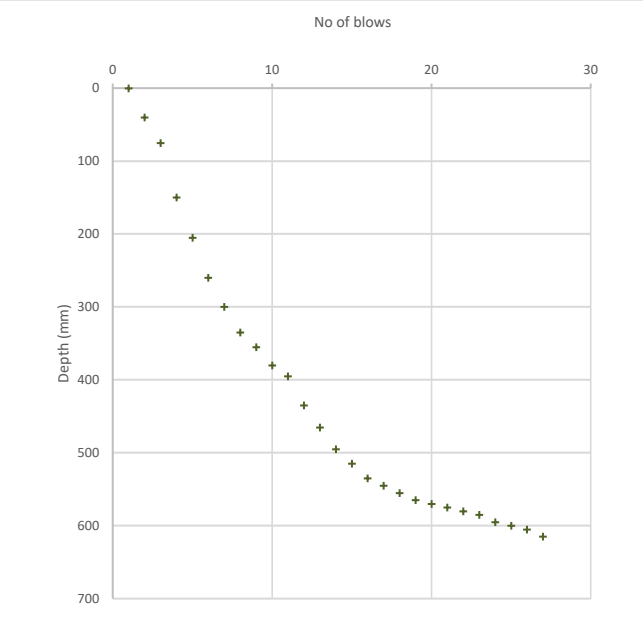


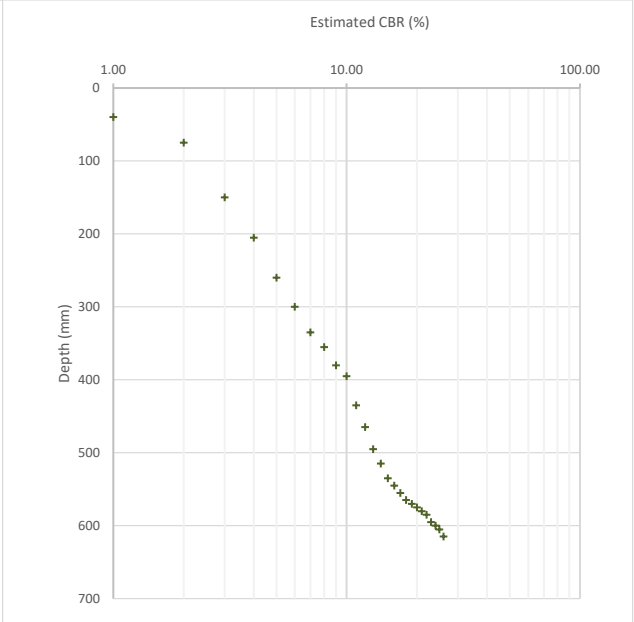


| Test No. | Depth from (mm) | Depth to (mm) | CBR value |
|---|---|---|---|
| 1 | 0 | 355 | 5.5 |
| 2 | 355 | 615 | 34 |
| | | | |
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| | | | |
| | | | |

**Estimated CBR value calculated using TRL equation:**

$$\log_{10}(CBR) = 2.48 - 1.057 \cdot \log_{10}(mm/blow)$$

**References:**

CNS Farnell (2003) Dynamic Cone Penetrometer Model A2465 Operating Instructions.
Transport and Road Research Laboratory (1990) Overseas Road Note 8. A users manual for a program to analyse dynamic cone penetrometer data.
Transport and Road Research Laboratory (2004) TRL Project Report PR/INT/277/04.

Comments:
TRL probe commenced from ground level adjacent to trial pit location. Topsoil from GL to 0.30 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**TP145 TRL**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 509208.69 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299550.87 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 22.44 | mOD | | |
| Engineer: | MM | | | | Weather: | Sunny |
| Date of test: | 05/04/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 0 | 0 | 0 | | 0 | 0 |
| 1 | 1 | 100 | | 100 | 100 |
| 1 | 2 | 140 | | 40 | 140 |
| 1 | 3 | 160 | | 20 | 160 |
| 1 | 4 | 180 | | 20 | 180 |
| 1 | 5 | 210 | | 30 | 210 |
| 1 | 6 | 260 | | 50 | 260 |
| 1 | 7 | 290 | | 30 | 290 |
| 1 | 8 | 320 | | 30 | 320 |
| 1 | 9 | 335 | | 15 | 335 |
| 1 | 10 | 350 | | 15 | 350 |
| 1 | 11 | 365 | | 15 | 365 |
| 1 | 12 | 375 | | 10 | 375 |
| 1 | 13 | 400 | | 25 | 400 |
| 1 | 14 | 410 | | 10 | 410 |
| 1 | 15 | 420 | | 10 | 420 |
| 1 | 16 | 440 | | 20 | 440 |
| 1 | 17 | 460 | | 20 | 460 |
| 1 | 18 | 480 | | 20 | 480 |
| 1 | 19 | 515 | | 35 | 515 |
| 1 | 20 | 540 | | 25 | 540 |
| 1 | 21 | 555 | | 15 | 555 |
| 1 | 22 | 570 | | 15 | 570 |
| 1 | 23 | 590 | | 20 | 590 |
| 1 | 24 | 600 | | 10 | 600 |
| 1 | 25 | 620 | | 20 | 620 |
| 1 | 26 | 630 | | 10 | 630 |
| 1 | 27 | 650 | | 20 | 650 |
| 1 | 28 | 680 | | 30 | 680 |
| 1 | 29 | 710 | | 30 | 710 |
| 1 | 30 | 740 | | 30 | 740 |
| 1 | 31 | 760 | | 20 | 760 |
| 1 | 32 | 785 | | 25 | 785 |
| 1 | 33 | 805 | | 20 | 805 |
| 1 | 34 | 825 | | 20 | 825 |
| 1 | 35 | 845 | | 20 | 845 |
| 1 | 36 | 860 | | 15 | 860 |
| 1 | 37 | 880 | | 20 | 880 |
| 1 | 38 | 900 | | 20 | 900 |
| 1 | 39 | 920 | | 20 | 920 |
| 1 | 40 | 940 | | 20 | 940 |
| 1 | 41 | 955 | | 15 | 955 |
| 1 | 42 | 975 | | 20 | 975 |
| 1 | 43 | 995 | | 20 | 995 |
| 2 | 45 | 1030 | | 35 | 1030 |
| 1 | 46 | 1050 | | 20 | 1050 |
| 1 | 47 | 1070 | | 20 | 1070 |
| 1 | 48 | 1090 | | 20 | 1090 |
| 1 | 49 | 1120 | | 30 | 1120 |
| 1 | 50 | 1135 | | 15 | 1135 |
| 1 | 51 | 1160 | | 25 | 1160 |
| 1 | 52 | 1180 | | 20 | 1180 |

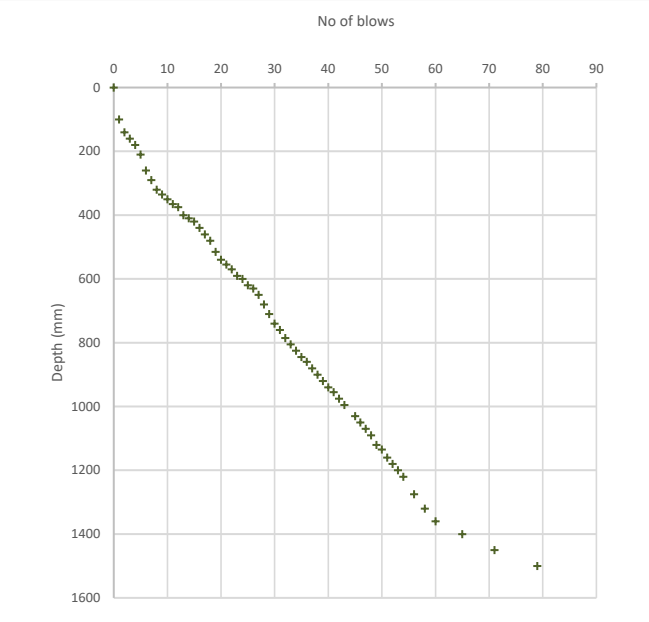
Comments:
TRL probe commenced from ground level adjacent to trial pit location. Topsoil from GL to 0.30 m bgl.

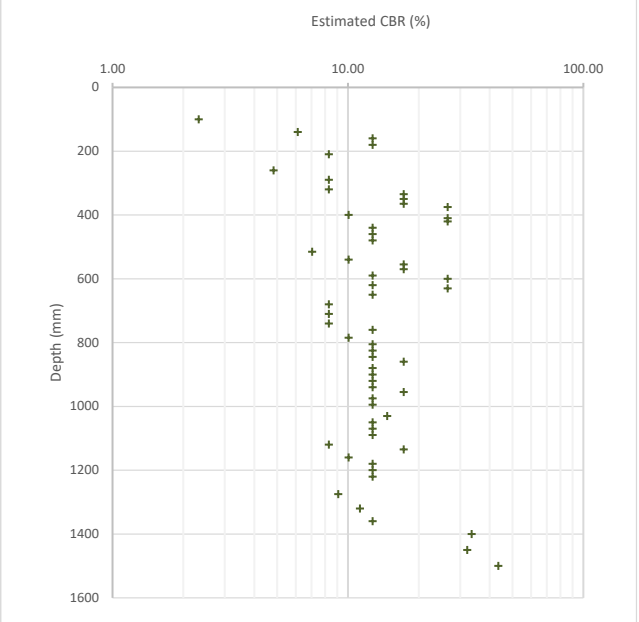
# DYNAMIC CONE PENETRATION TEST

Test Location:
**TP145 TRL**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 509208.69 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299550.87 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 22.44 | mOD | | |
| Engineer: | MM | | | | Weather: | Sunny |
| Date of test: | 05/04/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 1 | 53 | 1200 | | 20 | 1200 |
| 1 | 54 | 1220 | | 20 | 1220 |
| 2 | 56 | 1275 | | 55 | 1275 |
| 2 | 58 | 1320 | | 45 | 1320 |
| 2 | 60 | 1360 | | 40 | 1360 |
| 5 | 65 | 1400 | | 40 | 1400 |
| 6 | 71 | 1450 | | 50 | 1450 |
| 8 | 79 | 1500 | | 50 | 1500 |




| Test No. | Depth from (mm) | Depth to (mm) | CBR value |
|---|---|---|---|
| 1 | 0 | 335 | 6.6 |
| 2 | 335 | 1500 | 15 |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

**Estimated CBR value calculated using TRL equation:**

$$\log_{10}(CBR) = 2.48 - 1.057 \cdot \log_{10}(mm/blow)$$

**References:**

CNS Farnell (2003) Dynamic Cone Penetrometer Model A2465 Operating Instructions.

Transport and Road Research Laboratory (1990) Overseas Road Note 8. A users manual for a program to analyse dynamic cone penetrometer data.

Transport and Road Research Laboratory (2004) TRL Project Report PR/INT/277/04.

Comments:

TRL probe commenced from ground level adjacent to trial pit location. Topsoil from GL to 0.30 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**TP146 TRL**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 509356.85 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299516.63 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 20.41 | mOD | | |
| Engineer: | MM | | | | Weather: | Sunny |
| Date of test: | 05/04/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 0 | 0 | 0 | | 0 | 0 |
| 1 | 1 | 100 | | 100 | 100 |
| 1 | 2 | 230 | | 130 | 230 |
| 1 | 3 | 290 | | 60 | 290 |
| 1 | 4 | 340 | | 50 | 340 |
| 1 | 5 | 390 | | 50 | 390 |
| 1 | 6 | 430 | | 40 | 430 |
| 1 | 7 | 460 | | 30 | 460 |
| 1 | 8 | 475 | | 15 | 475 |
| 1 | 9 | 495 | | 20 | 495 |
| 1 | 10 | 525 | | 30 | 525 |
| 1 | 11 | 555 | | 30 | 555 |
| 1 | 12 | 580 | | 25 | 580 |
| 1 | 13 | 610 | | 30 | 610 |
| 1 | 14 | 635 | | 25 | 635 |
| 1 | 15 | 660 | | 25 | 660 |
| 1 | 16 | 690 | | 30 | 690 |
| 1 | 17 | 720 | | 30 | 720 |
| 1 | 18 | 755 | | 35 | 755 |
| 1 | 19 | 785 | | 30 | 785 |
| 1 | 20 | 815 | | 30 | 815 |
| 1 | 21 | 840 | | 25 | 840 |
| 1 | 22 | 870 | | 30 | 870 |
| 1 | 23 | 895 | | 25 | 895 |
| 1 | 24 | 915 | | 20 | 915 |
| 1 | 25 | 935 | | 20 | 935 |
| 1 | 26 | 955 | | 20 | 955 |
| 1 | 27 | 980 | | 25 | 980 |
| 1 | 28 | 1000 | | 20 | 1000 |
| 1 | 29 | 1025 | | 25 | 1025 |
| 1 | 30 | 1050 | | 25 | 1050 |
| 1 | 31 | 1072 | | 22 | 1072 |
| 1 | 32 | 1105 | | 33 | 1105 |
| 1 | 33 | 1115 | | 10 | 1115 |
| 1 | 34 | 1135 | | 20 | 1135 |
| 1 | 35 | 1150 | | 15 | 1150 |
| 1 | 36 | 1170 | | 20 | 1170 |
| 1 | 37 | 1185 | | 15 | 1185 |
| 1 | 38 | 1200 | | 15 | 1200 |
| 1 | 39 | 1210 | | 10 | 1210 |
| 1 | 40 | 1230 | | 20 | 1230 |
| 1 | 41 | 1245 | | 15 | 1245 |
| 1 | 42 | 1260 | | 15 | 1260 |
| 1 | 43 | 1275 | | 15 | 1275 |
| 1 | 44 | 1290 | | 15 | 1290 |
| 1 | 45 | 1310 | | 20 | 1310 |
| 1 | 46 | 1325 | | 15 | 1325 |
| 1 | 47 | 1350 | | 25 | 1350 |
| 1 | 48 | 1390 | | 40 | 1390 |
| 1 | 49 | 1410 | | 20 | 1410 |
| 1 | 50 | 1440 | | 30 | 1440 |
| 1 | 51 | 1480 | | 40 | 1480 |

Comments:
TRL probe commenced from ground level adjacent to trial pit location. Topsoil from GL to 0.30 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**TP146 TRL**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 509356.85 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299516.63 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 20.41 | mOD | | |
| Engineer: | MM | | | | Weather: | Sunny |
| Date of test: | 05/04/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 10 | 61 | 1500 | | 20 | 1500 |
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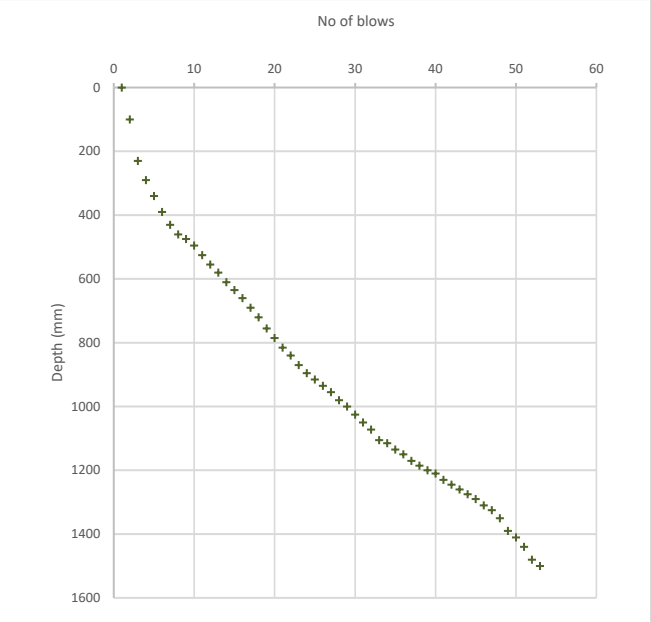


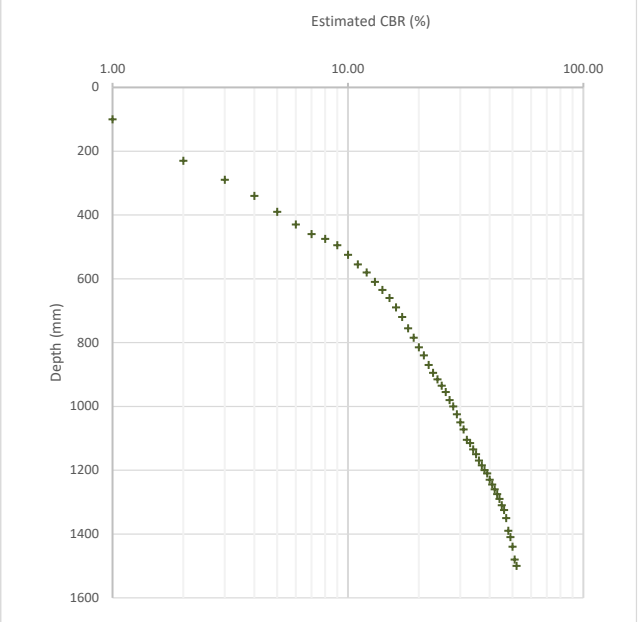


| Test No. | Depth from (mm) | Depth to (mm) | CBR value |
|---|---|---|---|
| 1 | 0 | 460 | 3.6 |
| 2 | 460 | 1500 | 13 |
| | | | |
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**Estimated CBR value calculated using TRL equation:**

$$\log_{10}(CBR) = 2.48 - 1.057 \cdot \log_{10}(mm/blow)$$

**References:**

CNS Farnell (2003) Dynamic Cone Penetrometer Model A2465 Operating Instructions.

Transport and Road Research Laboratory (1990) Overseas Road Note 8. A users manual for a program to analyse dynamic cone penetrometer data.

Transport and Road Research Laboratory (2004) TRL Project Report PR/INT/277/04.

Comments:

TRL probe commenced from ground level adjacent to trial pit location. Topsoil from GL to 0.30 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**TP147 TRL**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 509360.28 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299421.21 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 20.47 | mOD | | |
| Engineer: | JJ | | | | Weather: | Sunny |
| Date of test: | 05/04/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 0 | 0 | 120 | | 0 | 0 |
| 1 | 1 | 150 | | 30 | 30 |
| 1 | 2 | 180 | | 30 | 60 |
| 1 | 3 | 240 | | 60 | 120 |
| 1 | 4 | 310 | | 70 | 190 |
| 1 | 5 | 370 | | 60 | 250 |
| 1 | 6 | 420 | | 50 | 300 |
| 1 | 7 | 465 | | 45 | 345 |
| 1 | 8 | 515 | | 50 | 395 |
| 1 | 9 | 550 | | 35 | 430 |
| 1 | 10 | 600 | | 50 | 480 |
| 1 | 11 | 645 | | 45 | 525 |
| 1 | 12 | 695 | | 50 | 575 |
| 1 | 13 | 740 | | 45 | 620 |
| 1 | 14 | 785 | | 45 | 665 |
| 1 | 15 | 820 | | 35 | 700 |
| 1 | 16 | 855 | | 35 | 735 |
| 1 | 17 | 885 | | 30 | 765 |
| 1 | 18 | 910 | | 25 | 790 |
| 1 | 19 | 940 | | 30 | 820 |
| 1 | 20 | 960 | | 20 | 840 |
| 1 | 21 | 975 | | 15 | 855 |
| 1 | 22 | 1005 | | 30 | 885 |
| 1 | 23 | 1030 | | 25 | 910 |
| 1 | 24 | 1050 | | 20 | 930 |
| 1 | 25 | 1065 | | 15 | 945 |
| 1 | 26 | 1080 | | 15 | 960 |
| 2 | 28 | 1090 | | 10 | 970 |
| 10 | 38 | 1100 | | 10 | 980 |

Comments:
TRL probe commenced from ground level adjacent to trial pit location. Topsoil from GL to 0.30 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**TP147 TRL**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 509360.28 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299421.21 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 20.47 | mOD | | |
| Engineer: | JJ | | | | Weather: | Sunny |
| Date of test: | 05/04/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
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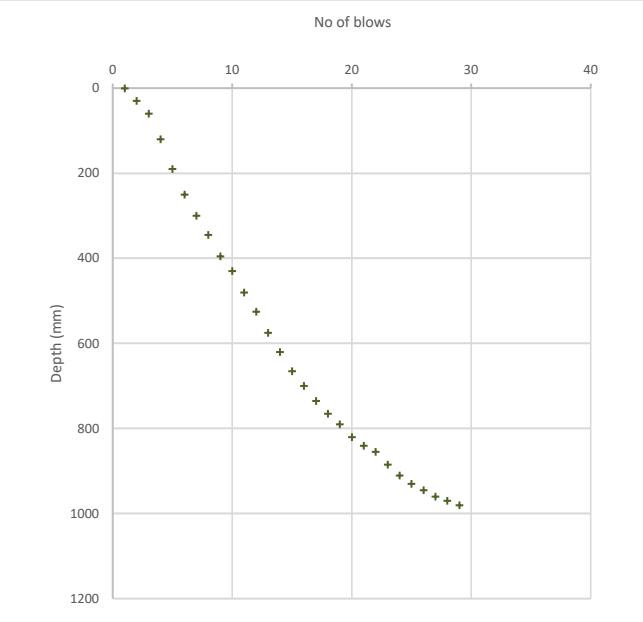


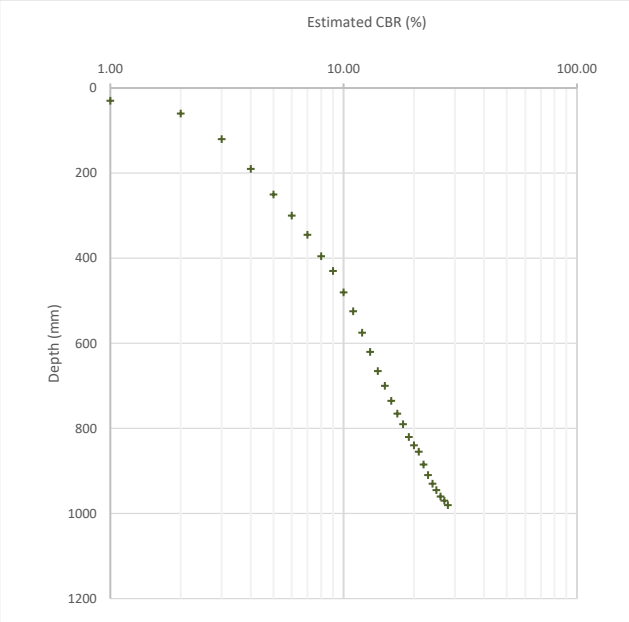


| Test No. | Depth from (mm) | Depth to (mm) | CBR value |
|---|---|---|---|
| 1 | 0 | 980 | 9.7 |
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**Estimated CBR value calculated using TRL equation:**

$$\log_{10}(CBR) = 2.48 - 1.057 \cdot \log_{10}(mm/blow)$$

**References:**

CNS Farnell (2003) Dynamic Cone Penetrometer Model A2465 Operating Instructions.
Transport and Road Research Laboratory (1990) Overseas Road Note 8. A users manual for a program to analyse dynamic cone penetrometer data.
Transport and Road Research Laboratory (2004) TRL Project Report PR/INT/277/04.

Comments:
TRL probe commenced from ground level adjacent to trial pit location. Topsoil from GL to 0.30 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**TP148 TRL**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 509427.54 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299475.35 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 19.98 | mOD | | |
| Engineer: | JJ | | | | Weather: | Sunny |
| Date of test: | 05/04/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 0 | 0 | 95 | | 0 | 0 |
| 1 | 1 | 190 | | 95 | 95 |
| 1 | 2 | 270 | | 80 | 175 |
| 1 | 3 | 315 | | 45 | 220 |
| 1 | 4 | 365 | | 50 | 270 |
| 1 | 5 | 420 | | 55 | 325 |
| 1 | 6 | 465 | | 45 | 370 |
| 1 | 7 | 505 | | 40 | 410 |
| 1 | 8 | 545 | | 40 | 450 |
| 1 | 9 | 590 | | 45 | 495 |
| 1 | 10 | 630 | | 40 | 535 |
| 1 | 11 | 680 | | 50 | 585 |
| 1 | 12 | 725 | | 45 | 630 |
| 1 | 13 | 770 | | 45 | 675 |
| 1 | 14 | 815 | | 45 | 720 |
| 1 | 15 | 850 | | 35 | 755 |
| 1 | 16 | 870 | | 20 | 775 |
| 1 | 17 | 890 | | 20 | 795 |
| 1 | 18 | 915 | | 25 | 820 |
| 1 | 19 | 930 | | 15 | 835 |
| 1 | 20 | 940 | | 10 | 845 |
| 2 | 22 | 945 | | 5 | 850 |
| 1 | 23 | 950 | | 5 | 855 |
| 2 | 25 | 955 | | 5 | 860 |
| 1 | 26 | 975 | | 20 | 880 |
| 1 | 27 | 985 | | 10 | 890 |
| 1 | 28 | 995 | | 10 | 900 |
| 1 | 29 | 1000 | | 5 | 905 |
| 1 | 30 | 1010 | | 10 | 915 |
| 1 | 31 | 1025 | | 15 | 930 |
| 1 | 32 | 1040 | | 15 | 945 |
| 1 | 33 | 1045 | | 5 | 950 |
| 10 | 43 | 1050 | | 5 | 955 |

Comments:
TRL probe commenced from ground level adjacent to trial pit location. Topsoil from GL to 0.30 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**TP148 TRL**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 509427.54 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299475.35 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 19.98 | mOD | | |
| Engineer: | JJ | | | | Weather: | Sunny |
| Date of test: | 05/04/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
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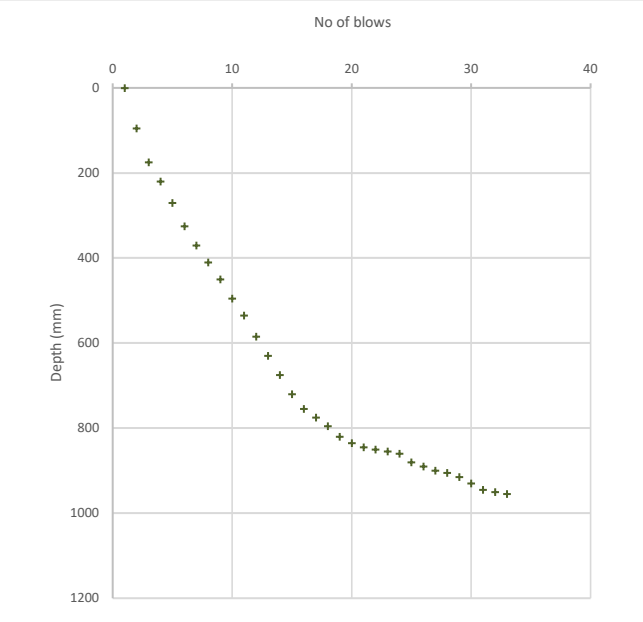


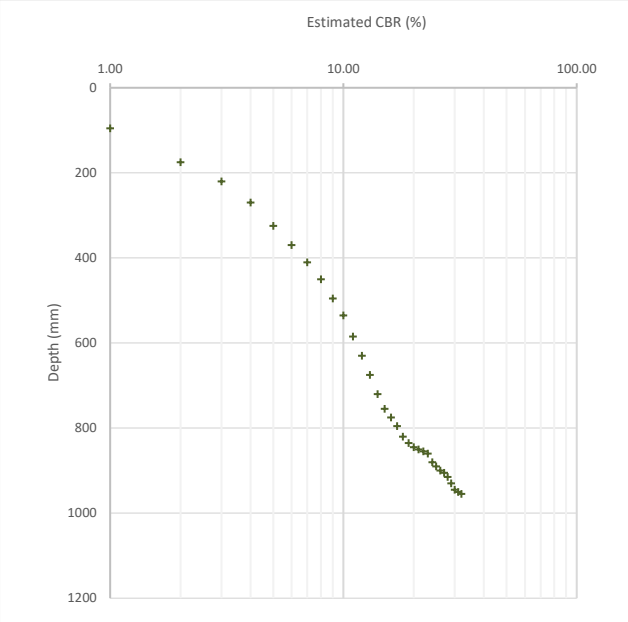


| Test No. | Depth from (mm) | Depth to (mm) | CBR value |
|---|---|---|---|
| 1 | 0 | 775 | 5 |
| 2 | 775 | 955 | 41 |
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**Estimated CBR value calculated using TRL equation:**

$$\log_{10}(CBR) = 2.48 - 1.057 \cdot \log_{10}(mm/blow)$$

**References:**

CNS Farnell (2003) Dynamic Cone Penetrometer Model A2465 Operating Instructions.
Transport and Road Research Laboratory (1990) Overseas Road Note 8. A users manual for a program to analyse dynamic cone penetrometer data.
Transport and Road Research Laboratory (2004) TRL Project Report PR/INT/277/04.

Comments:
TRL probe commenced from ground level adjacent to trial pit location. Topsoil from GL to 0.30 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**TP149 TRL**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 509457.05 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299543.39 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 20.98 | mOD | | |
| Engineer: | JJ | | | | Weather: | Sunny |
| Date of test: | 05/04/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 0 | 0 | 110 | | 0 | 0 |
| 1 | 1 | 160 | | 50 | 50 |
| 1 | 2 | 230 | | 70 | 120 |
| 1 | 3 | 285 | | 55 | 175 |
| 1 | 4 | 330 | | 45 | 220 |
| 1 | 5 | 375 | | 45 | 265 |
| 1 | 6 | 385 | | 10 | 275 |
| 1 | 7 | 400 | | 15 | 290 |
| 1 | 8 | 405 | | 5 | 295 |
| 1 | 9 | 415 | | 10 | 305 |
| 1 | 10 | 420 | | 5 | 310 |
| 1 | 11 | 425 | | 5 | 315 |
| 1 | 12 | 435 | | 10 | 325 |
| 1 | 13 | 450 | | 15 | 340 |
| 1 | 14 | 465 | | 15 | 355 |
| 1 | 15 | 470 | | 5 | 360 |
| 1 | 16 | 475 | | 5 | 365 |
| 1 | 17 | 480 | | 5 | 370 |
| 1 | 18 | 490 | | 10 | 380 |
| 2 | 20 | 495 | | 5 | 385 |
| 1 | 21 | 500 | | 5 | 390 |
| 1 | 22 | 505 | | 5 | 395 |
| 3 | 25 | 510 | | 5 | 400 |
| 2 | 27 | 515 | | 5 | 405 |
| 1 | 28 | 520 | | 5 | 410 |
| 1 | 29 | 535 | | 15 | 425 |
| 1 | 30 | 550 | | 15 | 440 |
| 1 | 31 | 565 | | 15 | 455 |
| 1 | 32 | 575 | | 10 | 465 |
| 1 | 33 | 585 | | 10 | 475 |
| 1 | 34 | 590 | | 5 | 480 |
| 10 | 44 | 595 | | 5 | 485 |

Comments:
TRL probe commenced from ground level adjacent to trial pit location. Topsoil from GL to 0.30 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**TP149 TRL**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 509457.05 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299543.39 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 20.98 | mOD | | |
| Engineer: | JJ | | | | Weather: | Sunny |
| Date of test: | 05/04/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
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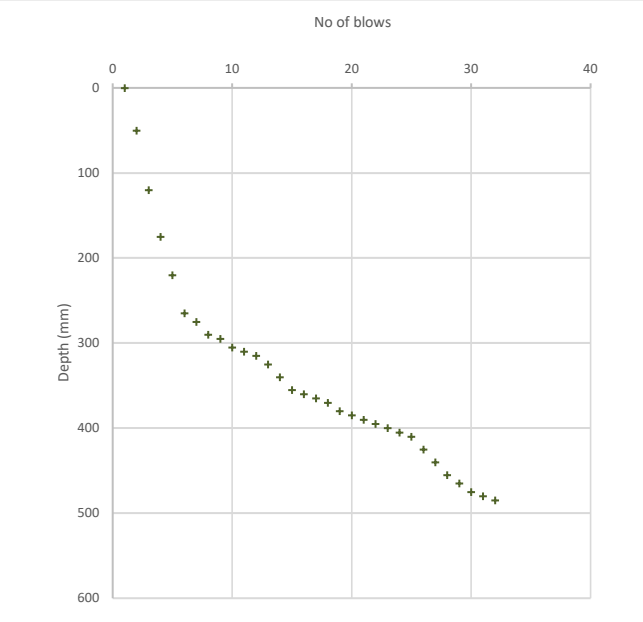


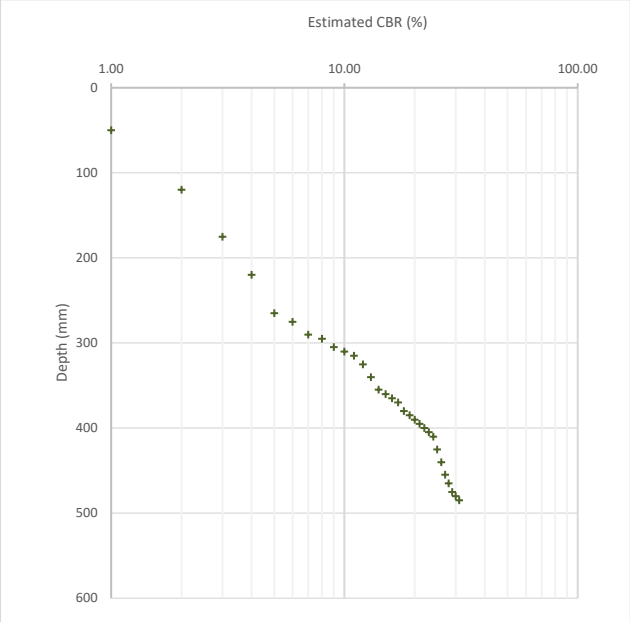


| Test No. | Depth from (mm) | Depth to (mm) | CBR value |
|---|---|---|---|
| 1 | 0 | 265 | 4.5 |
| 2 | 265 | 485 | 49 |
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**Estimated CBR value calculated using TRL equation:**

$$\log_{10}(CBR) = 2.48 - 1.057 \cdot \log_{10}(mm/blow)$$

**References:**

CNS Farnell (2003) Dynamic Cone Penetrometer Model A2465 Operating Instructions.
Transport and Road Research Laboratory (1990) Overseas Road Note 8. A users manual for a program to analyse dynamic cone penetrometer data.
Transport and Road Research Laboratory (2004) TRL Project Report PR/INT/277/04.

Comments:
TRL probe commenced from ground level adjacent to trial pit location. Topsoil from GL to 0.30 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**TP151 TRL**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 509550.72 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299484.14 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 20.68 | mOD | | |
| Engineer: | JJ | | | | Weather: | Sunny |
| Date of test: | 05/04/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 0 | 0 | 140 | | 0 | 0 |
| 1 | 1 | 285 | | 145 | 145 |
| 1 | 2 | 345 | | 60 | 205 |
| 1 | 3 | 395 | | 50 | 255 |
| 1 | 4 | 435 | | 40 | 295 |
| 1 | 5 | 470 | | 35 | 330 |
| 1 | 6 | 520 | | 50 | 380 |
| 1 | 7 | 575 | | 55 | 435 |
| 1 | 8 | 630 | | 55 | 490 |
| 1 | 9 | 690 | | 60 | 550 |
| 1 | 10 | 730 | | 40 | 590 |
| 1 | 11 | 790 | | 60 | 650 |
| 1 | 12 | 830 | | 40 | 690 |
| 1 | 13 | 870 | | 40 | 730 |
| 2 | 15 | 915 | | 45 | 775 |
| 2 | 17 | 950 | | 35 | 810 |
| 3 | 20 | 960 | | 10 | 820 |
| 10 | 30 | 965 | | 5 | 825 |

Comments:
TRL probe commenced from ground level adjacent to trial pit location. Topsoil from GL to 0.40 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**TP151 TRL**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 509550.72 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299484.14 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 20.68 | mOD | | |
| Engineer: | JJ | | | | Weather: | Sunny |
| Date of test: | 05/04/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
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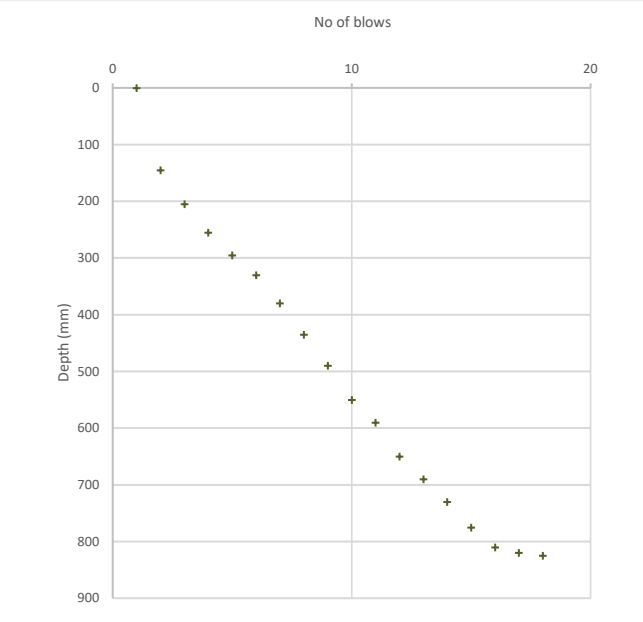


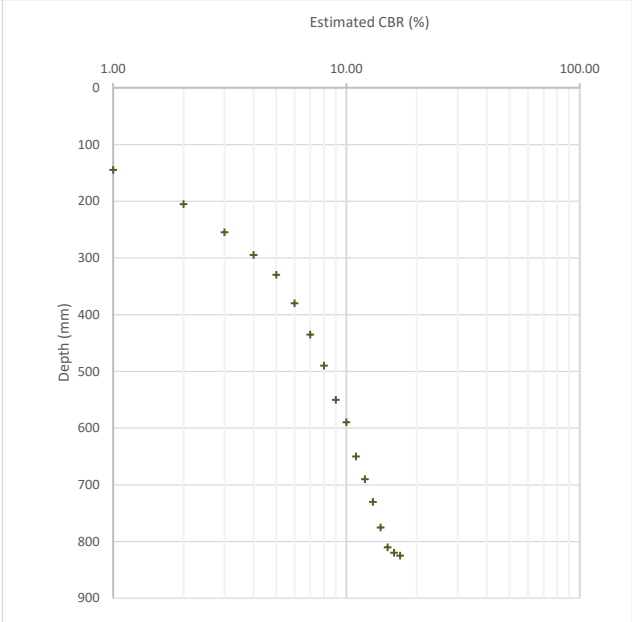


| Test No. | Depth from (mm) | Depth to (mm) | CBR value |
|---|---|---|---|
| 1 | 0 | 825 | 9.1 |
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**Estimated CBR value calculated using TRL equation:**

$$\log_{10}(CBR) = 2.48 - 1.057 \cdot \log_{10}(mm/blow)$$

**References:**

CNS Farnell (2003) Dynamic Cone Penetrometer Model A2465 Operating Instructions.
Transport and Road Research Laboratory (1990) Overseas Road Note 8. A users manual for a program to analyse dynamic cone penetrometer data.
Transport and Road Research Laboratory (2004) TRL Project Report PR/INT/277/04.

Comments:
TRL probe commenced from ground level adjacent to trial pit location. Topsoil from GL to 0.40 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**TP152 TRL**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 509606.01 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299376.27 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 19.41 | mOD | | |
| Engineer: | JJ | | | | Weather: | Sunny |
| Date of test: | 05/04/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 0 | 0 | 110 | | 0 | 0 |
| 1 | 1 | 150 | | 40 | 40 |
| 1 | 2 | 200 | | 50 | 90 |
| 1 | 3 | 250 | | 50 | 140 |
| 1 | 4 | 305 | | 55 | 195 |
| 1 | 5 | 330 | | 25 | 220 |
| 1 | 6 | 370 | | 40 | 260 |
| 1 | 7 | 415 | | 45 | 305 |
| 1 | 8 | 435 | | 20 | 325 |
| 1 | 9 | 450 | | 15 | 340 |
| 1 | 10 | 465 | | 15 | 355 |
| 1 | 11 | 480 | | 15 | 370 |
| 1 | 12 | 490 | | 10 | 380 |
| 1 | 13 | 505 | | 15 | 395 |
| 1 | 14 | 520 | | 15 | 410 |
| 1 | 15 | 540 | | 20 | 430 |
| 1 | 16 | 560 | | 20 | 450 |
| 1 | 17 | 605 | | 45 | 495 |
| 1 | 18 | 625 | | 20 | 515 |
| 1 | 19 | 650 | | 25 | 540 |
| 1 | 20 | 670 | | 20 | 560 |
| 1 | 21 | 685 | | 15 | 575 |
| 1 | 22 | 700 | | 15 | 590 |
| 1 | 23 | 710 | | 10 | 600 |
| 1 | 24 | 735 | | 25 | 625 |
| 1 | 25 | 745 | | 10 | 635 |
| 1 | 26 | 760 | | 15 | 650 |
| 1 | 27 | 790 | | 30 | 680 |
| 1 | 28 | 810 | | 20 | 700 |
| 1 | 29 | 830 | | 20 | 720 |
| 1 | 30 | 850 | | 20 | 740 |
| 1 | 31 | 870 | | 20 | 760 |
| 1 | 32 | 890 | | 20 | 780 |
| 1 | 33 | 910 | | 20 | 800 |
| 1 | 34 | 930 | | 20 | 820 |
| 1 | 35 | 950 | | 20 | 840 |
| 1 | 36 | 960 | | 10 | 850 |
| 1 | 37 | 990 | | 30 | 880 |
| 1 | 38 | 1020 | | 30 | 910 |
| 1 | 39 | 1050 | | 30 | 940 |
| 1 | 40 | 1070 | | 20 | 960 |
| 1 | 41 | 1100 | | 30 | 990 |
| 1 | 42 | 1115 | | 15 | 1005 |
| 1 | 43 | 1135 | | 20 | 1025 |
| 1 | 44 | 1140 | | 5 | 1030 |
| 1 | 45 | 1150 | | 10 | 1040 |
| 1 | 46 | 1165 | | 15 | 1055 |
| 1 | 47 | 1180 | | 15 | 1070 |
| 1 | 48 | 1190 | | 10 | 1080 |
| 2 | 50 | 1200 | | 10 | 1090 |
| 10 | 60 | 1210 | | 10 | 1100 |
| | | | | | |

Comments:
TRL probe commenced from ground level adjacent to trial pit location. Topsoil from GL to 0.40 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**TP152 TRL**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 509606.01 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299376.27 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 19.41 | mOD | | |
| Engineer: | JJ | | | | Weather: | Sunny |
| Date of test: | 05/04/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
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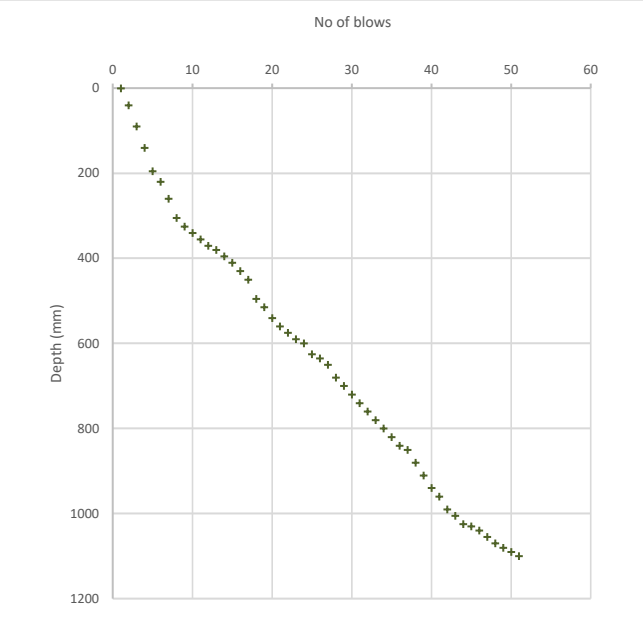


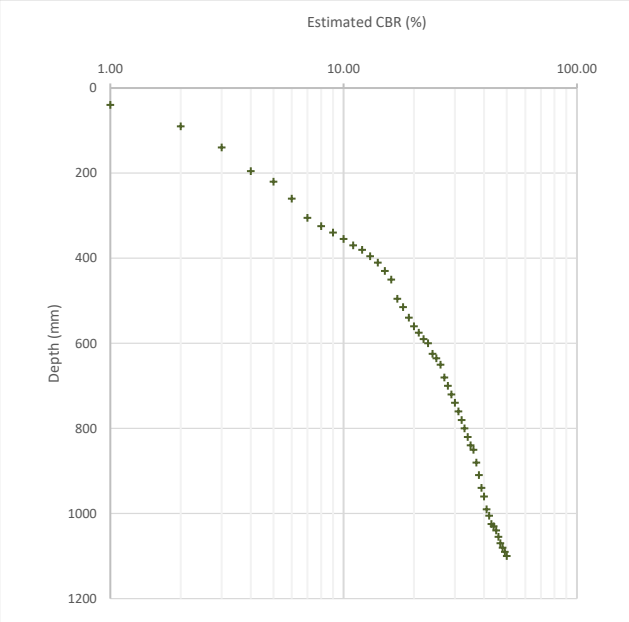


| Test No. | Depth from (mm) | Depth to (mm) | CBR value |
|---|---|---|---|
| 1 | 0 | 325 | 6 |
| 2 | 325 | 1100 | 17 |
| | | | |
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| | | | |

**Estimated CBR value calculated using TRL equation:**

$$\log_{10}(CBR) = 2.48 - 1.057 \cdot \log_{10}(mm/blow)$$

**References:**

CNS Farnell (2003) Dynamic Cone Penetrometer Model A2465 Operating Instructions.

Transport and Road Research Laboratory (1990) Overseas Road Note 8. A users manual for a program to analyse dynamic cone penetrometer data.

Transport and Road Research Laboratory (2004) TRL Project Report PR/INT/277/04.

Comments:

TRL probe commenced from ground level adjacent to trial pit location. Topsoil from GL to 0.40 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**TP153 TRL**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 509723.08 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299418.08 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 20.51 | mOD | | |
| Engineer: | JJ | | | | Weather: | Sunny |
| Date of test: | 05/04/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 0 | 0 | 100 | | 0 | 0 |
| 1 | 1 | 180 | | 80 | 80 |
| 1 | 2 | 240 | | 60 | 140 |
| 1 | 3 | 295 | | 55 | 195 |
| 1 | 4 | 330 | | 35 | 230 |
| 1 | 5 | 360 | | 30 | 260 |
| 1 | 6 | 385 | | 25 | 285 |
| 1 | 7 | 410 | | 25 | 310 |
| 1 | 8 | 415 | | 5 | 315 |
| 1 | 9 | 425 | | 10 | 325 |
| 1 | 10 | 430 | | 5 | 330 |
| 1 | 11 | 450 | | 20 | 350 |
| 1 | 12 | 455 | | 5 | 355 |
| 1 | 13 | 465 | | 10 | 365 |
| 1 | 14 | 470 | | 5 | 370 |
| 1 | 15 | 480 | | 10 | 380 |
| 1 | 16 | 490 | | 10 | 390 |
| 1 | 17 | 505 | | 15 | 405 |
| 1 | 18 | 515 | | 10 | 415 |
| 1 | 19 | 520 | | 5 | 420 |
| 1 | 20 | 530 | | 10 | 430 |
| 1 | 21 | 545 | | 15 | 445 |
| 1 | 22 | 550 | | 5 | 450 |
| 1 | 23 | 560 | | 10 | 460 |
| 1 | 24 | 570 | | 10 | 470 |
| 1 | 25 | 605 | | 35 | 505 |
| 1 | 26 | 630 | | 25 | 530 |
| 1 | 27 | 670 | | 40 | 570 |
| 1 | 28 | 710 | | 40 | 610 |
| 1 | 29 | 745 | | 35 | 645 |
| 1 | 30 | 780 | | 35 | 680 |
| 1 | 31 | 825 | | 45 | 725 |
| 1 | 32 | 835 | | 10 | 735 |
| 1 | 33 | 890 | | 55 | 790 |
| 3 | 36 | 920 | | 30 | 820 |
| 1 | 37 | 960 | | 40 | 860 |
| 1 | 38 | 990 | | 30 | 890 |
| 1 | 39 | 1030 | | 40 | 930 |
| 1 | 40 | 1080 | | 50 | 980 |
| 1 | 41 | 1115 | | 35 | 1015 |
| 1 | 42 | 1150 | | 35 | 1050 |
| 1 | 43 | 1175 | | 25 | 1075 |
| 1 | 44 | 1200 | | 25 | 1100 |
| 1 | 45 | 1220 | | 20 | 1120 |
| 1 | 46 | 1245 | | 25 | 1145 |
| 1 | 47 | 1260 | | 15 | 1160 |
| 1 | 48 | 1270 | | 10 | 1170 |
| 1 | 49 | 1280 | | 10 | 1180 |
| 1 | 50 | 1290 | | 10 | 1190 |
| 1 | 51 | 1300 | | 10 | 1200 |
| 1 | 52 | 1305 | | 5 | 1205 |
| 1 | 53 | 1310 | | 5 | 1210 |

Comments:
TRL probe commenced from ground level adjacent to trial pit location. Topsoil from GL to 0.30 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**TP153 TRL**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 509723.08 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299418.08 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 20.51 | mOD | | |
| Engineer: | JJ | | | | Weather: | Sunny |
| Date of test: | 05/04/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 1 | 54 | 1315 | | 5 | 1215 |
| 2 | 56 | 1320 | | 5 | 1220 |
| 4 | 60 | 1325 | | 5 | 1225 |
| 10 | 70 | 1330 | | 5 | 1230 |
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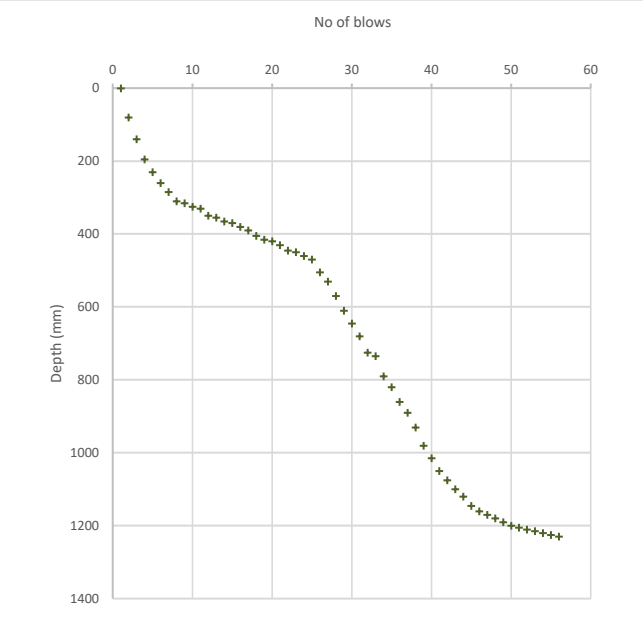


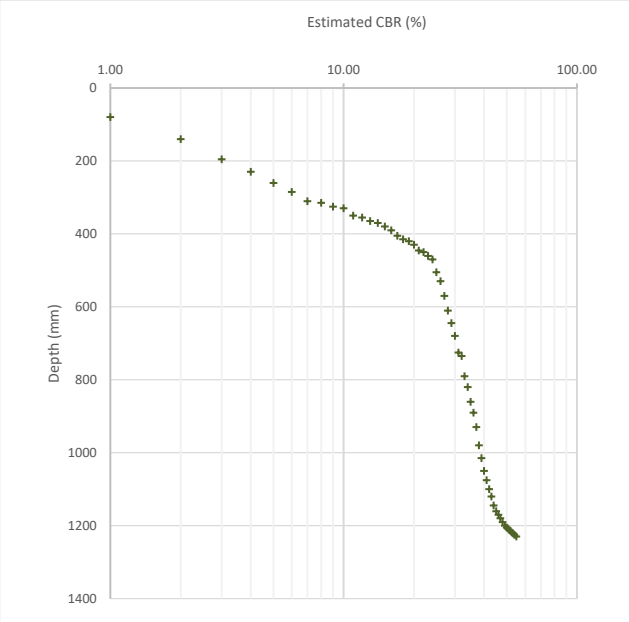


| Test No. | Depth from (mm) | Depth to (mm) | CBR value |
|---|---|---|---|
| 1 | 0 | 315 | 6.2 |
| 2 | 315 | 1205 | 13 |
| 3 | 1205 | 1230 | 210 |
| | | | |
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| | | | |

**Estimated CBR value calculated using TRL equation:**

$$\log_{10}(CBR) = 2.48 - 1.057 \cdot \log_{10}(mm/blow)$$

**References:**

CNS Farnell (2003) Dynamic Cone Penetrometer Model A2465 Operating Instructions.

Transport and Road Research Laboratory (1990) Overseas Road Note 8. A users manual for a program to analyse dynamic cone penetrometer data.

Transport and Road Research Laboratory (2004) TRL Project Report PR/INT/277/04.

Comments:

TRL probe commenced from ground level adjacent to trial pit location. Topsoil from GL to 0.30 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**TP154 TRL**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 509814.12 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299310.28 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 18.64 | mOD | | |
| Engineer: | JJ | | | | Weather: | Sunny |
| Date of test: | 05/04/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 0 | 0 | 90 | | 0 | 0 |
| 1 | 1 | 150 | | 60 | 60 |
| 1 | 2 | 210 | | 60 | 120 |
| 1 | 3 | 270 | | 60 | 180 |
| 1 | 4 | 315 | | 45 | 225 |
| 1 | 5 | 350 | | 35 | 260 |
| 1 | 6 | 390 | | 40 | 300 |
| 1 | 7 | 425 | | 35 | 335 |
| 1 | 8 | 475 | | 50 | 385 |
| 1 | 9 | 510 | | 35 | 420 |
| 1 | 10 | 565 | | 55 | 475 |
| 1 | 11 | 610 | | 45 | 520 |
| 1 | 12 | 660 | | 50 | 570 |
| 1 | 13 | 695 | | 35 | 605 |
| 1 | 14 | 735 | | 40 | 645 |
| 1 | 15 | 760 | | 25 | 670 |
| 1 | 16 | 805 | | 45 | 715 |
| 1 | 17 | 830 | | 25 | 740 |
| 1 | 18 | 860 | | 30 | 770 |
| 1 | 19 | 890 | | 30 | 800 |
| 1 | 20 | 925 | | 35 | 835 |
| 1 | 21 | 955 | | 30 | 865 |
| 1 | 22 | 960 | | 5 | 870 |
| 1 | 23 | 1000 | | 40 | 910 |
| 1 | 24 | 1035 | | 35 | 945 |
| 1 | 25 | 1070 | | 35 | 980 |
| 1 | 26 | 1090 | | 20 | 1000 |
| 1 | 27 | 1115 | | 25 | 1025 |
| 1 | 28 | 1135 | | 20 | 1045 |
| 1 | 29 | 1160 | | 25 | 1070 |
| 1 | 30 | 1175 | | 15 | 1085 |
| 1 | 31 | 1200 | | 25 | 1110 |
| 1 | 32 | 1225 | | 25 | 1135 |
| 1 | 33 | 1235 | | 10 | 1145 |
| 1 | 34 | 1245 | | 10 | 1155 |
| 2 | 36 | 1250 | | 5 | 1160 |
| 3 | 39 | 1260 | | 10 | 1170 |
| 10 | 49 | 1265 | | 5 | 1175 |

Comments:
TRL probe commenced from ground level adjacent to trial pit location. Topsoil from GL to 0.50 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**TP154 TRL**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 509814.12 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299310.28 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 18.64 | mOD | | |
| Engineer: | JJ | | | | Weather: | Sunny |
| Date of test: | 05/04/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
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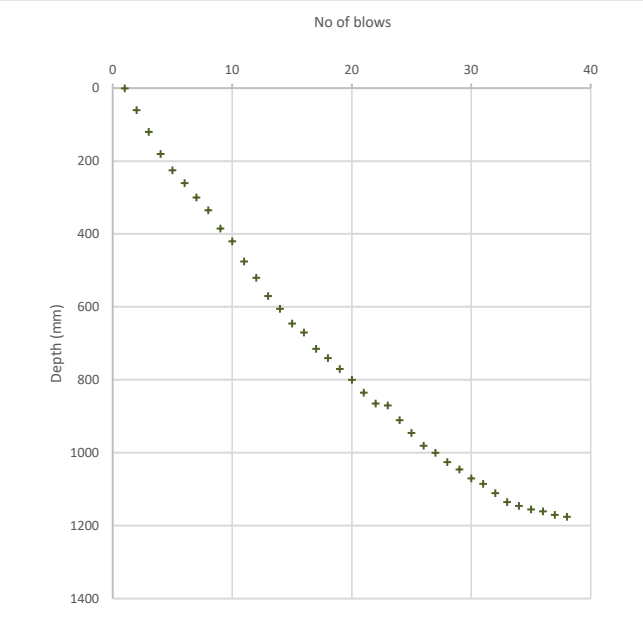


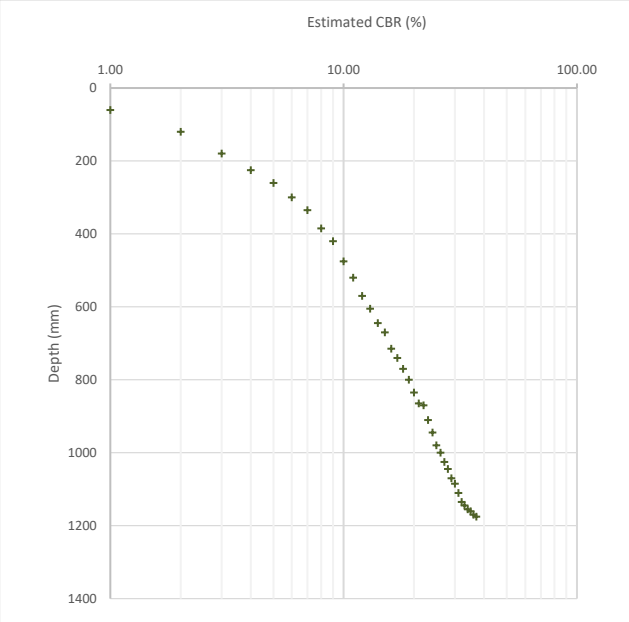


| Test No. | Depth from (mm) | Depth to (mm) | CBR value |
|---|---|---|---|
| 1 | 0 | 1160 | 7.7 |
| 2 | 1160 | 1175 | 260 |
| | | | |
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| | | | |

**Estimated CBR value calculated using TRL equation:**

$$\log_{10}(CBR) = 2.48 - 1.057 \cdot \log_{10}(mm/blow)$$

**References:**

CNS Farnell (2003) Dynamic Cone Penetrometer Model A2465 Operating Instructions.
Transport and Road Research Laboratory (1990) Overseas Road Note 8. A users manual for a program to analyse dynamic cone penetrometer data.
Transport and Road Research Laboratory (2004) TRL Project Report PR/INT/277/04.

Comments:
TRL probe commenced from ground level adjacent to trial pit location. Topsoil from GL to 0.50 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**TP162 TRL**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 507406.16 | mE | Checked by: | MM |
| Project No: | GT0386 | | 300258.15 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 27.29 | mOD | | |
| Engineer: | DB | | | | Weather: | Sunny |
| Date of test: | 04/03/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 0 | 0 | 90 | | 0 | 0 |
| 1 | 1 | 180 | | 90 | 90 |
| 1 | 2 | 310 | | 130 | 220 |
| 1 | 3 | 330 | | 20 | 240 |
| 1 | 4 | 360 | | 30 | 270 |
| 1 | 5 | 380 | | 20 | 290 |
| 1 | 6 | 410 | | 30 | 320 |
| 1 | 7 | 460 | | 50 | 370 |
| 1 | 8 | 490 | | 30 | 400 |
| 1 | 9 | 500 | | 10 | 410 |
| 1 | 10 | 550 | | 50 | 460 |
| 1 | 11 | 560 | | 10 | 470 |
| 1 | 12 | 570 | | 10 | 480 |
| 1 | 13 | 590 | | 20 | 500 |
| 1 | 14 | 660 | | 70 | 570 |
| 1 | 15 | 670 | | 10 | 580 |
| 1 | 16 | 730 | | 60 | 640 |
| 1 | 17 | 780 | | 50 | 690 |
| 1 | 18 | 810 | | 30 | 720 |
| 1 | 19 | 840 | | 30 | 750 |
| 1 | 20 | 860 | | 20 | 770 |
| 1 | 21 | 890 | | 30 | 800 |
| 1 | 22 | 910 | | 20 | 820 |
| 1 | 23 | 930 | | 20 | 840 |
| 10 | 33 | 960 | | 30 | 870 |

Comments:
TRL probe commenced from ground level adjacent to trial pit location. Topsoil from GL to 0.30 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**TP162 TRL**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 507406.16 | mE | Checked by: | MM |
| Project No: | GT0386 | | 300258.15 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 27.29 | mOD | | |
| Engineer: | DB | | | | Weather: | Sunny |
| Date of test: | 04/03/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
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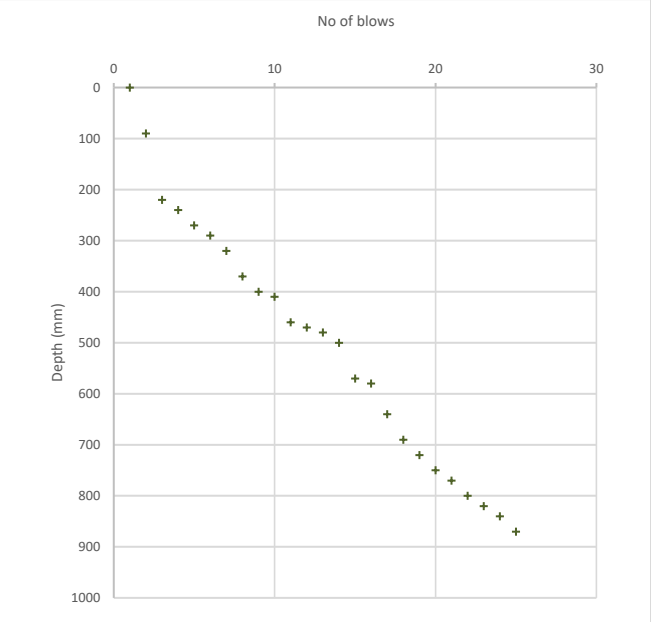


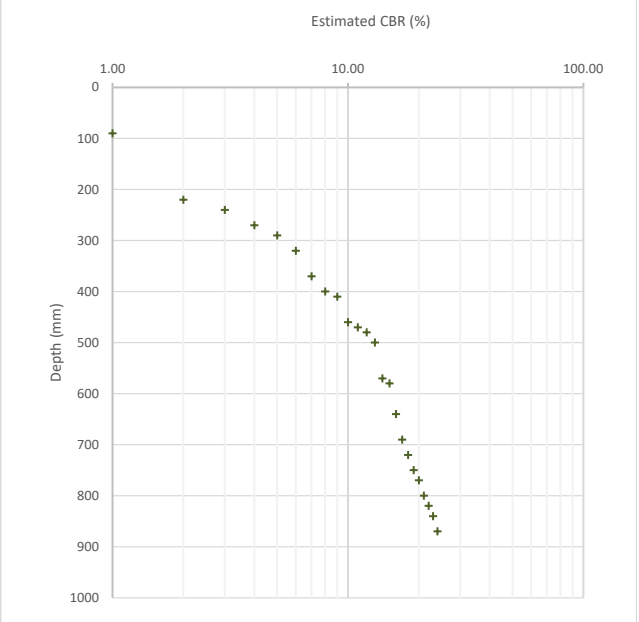


| Test No. | Depth from (mm) | Depth to (mm) | CBR value |
|---|---|---|---|
| 1 | 0 | 870 | 9.5 |
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**Estimated CBR value calculated using TRL equation:**

$$\log_{10}(CBR) = 2.48 - 1.057 \cdot \log_{10}(mm/blow)$$

**References:**

CNS Farnell (2003) Dynamic Cone Penetrometer Model A2465 Operating Instructions.

Transport and Road Research Laboratory (1990) Overseas Road Note 8. A users manual for a program to analyse dynamic cone penetrometer data.

Transport and Road Research Laboratory (2004) TRL Project Report PR/INT/277/04.

Comments:

TRL probe commenced from ground level adjacent to trial pit location. Topsoil from GL to 0.30 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**TP163 TRL**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 507379.35 | mE | Checked by: | MM |
| Project No: | GT0386 | | 300326.75 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 30.00 | mOD | | |
| Engineer: | DB | | | | Weather: | Sunny |
| Date of test: | 04/03/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 0 | 0 | 100 | | 0 | 0 |
| 1 | 1 | 160 | | 60 | 60 |
| 1 | 2 | 190 | | 30 | 90 |
| 1 | 3 | 210 | | 20 | 110 |
| 1 | 4 | 240 | | 30 | 140 |
| 1 | 5 | 260 | | 20 | 160 |
| 1 | 6 | 280 | | 20 | 180 |
| 1 | 7 | 290 | | 10 | 190 |
| 1 | 8 | 320 | | 30 | 220 |
| 1 | 9 | 350 | | 30 | 250 |
| 2 | 11 | 370 | | 20 | 270 |
| 1 | 12 | 380 | | 10 | 280 |
| 2 | 14 | 390 | | 10 | 290 |
| 1 | 15 | 400 | | 10 | 300 |
| 10 | 25 | 410 | | 10 | 310 |

Comments:
TRL probe commenced from ground level adjacent to trial pit location. Topsoil from GL to 0.30 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**TP163 TRL**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 507379.35 | mE | Checked by: | MM |
| Project No: | GT0386 | | 300326.75 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 30.00 | mOD | | |
| Engineer: | DB | | | | Weather: | Sunny |
| Date of test: | 04/03/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
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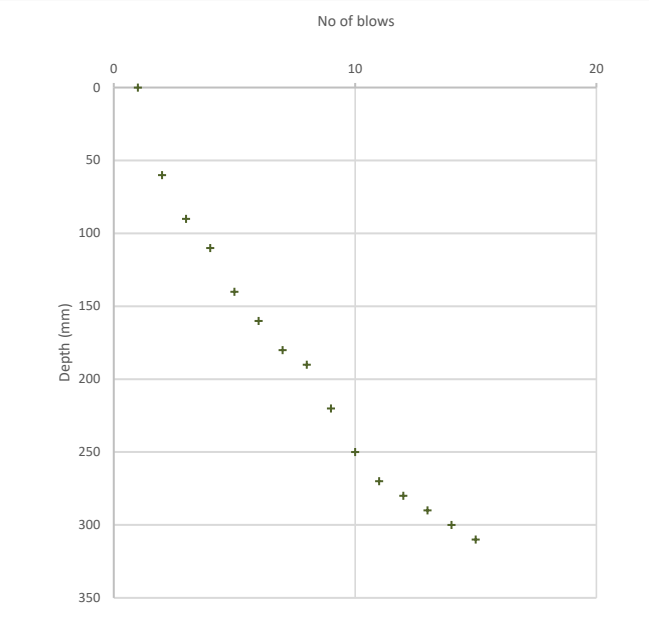


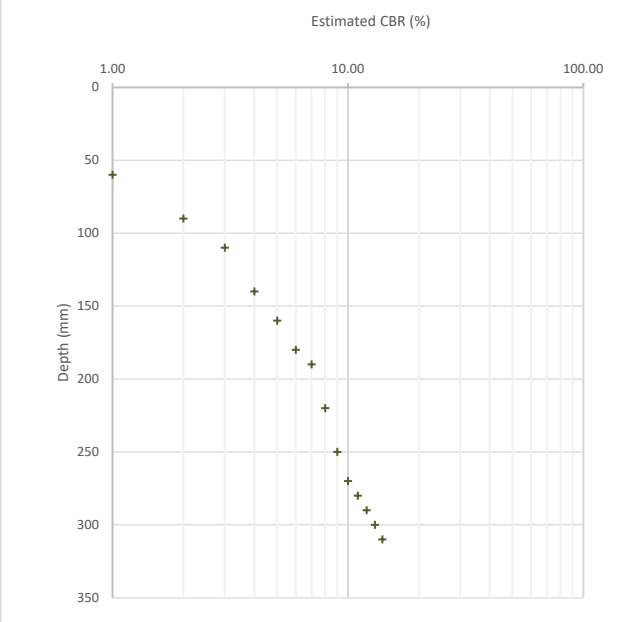


| Test No. | Depth from (mm) | Depth to (mm) | CBR value |
|---|---|---|---|
| 1 | 0 | 270 | 10 |
| 2 | 270 | 310 | 100 |
| | | | |
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| | | | |
| | | | |

**Estimated CBR value calculated using TRL equation:**

$$\log_{10}(CBR) = 2.48 - 1.057 \cdot \log_{10}(mm/blow)$$

**References:**

CNS Farnell (2003) Dynamic Cone Penetrometer Model A2465 Operating Instructions.

Transport and Road Research Laboratory (1990) Overseas Road Note 8. A users manual for a program to analyse dynamic cone penetrometer data.

Transport and Road Research Laboratory (2004) TRL Project Report PR/INT/277/04.

Comments:

TRL probe commenced from ground level adjacent to trial pit location. Topsoil from GL to 0.30 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**TP164 TRL**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 509249.43 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299962.87 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 31.22 | mOD | | |
| Engineer: | MM | | | | Weather: | Sunny |
| Date of test: | 04/03/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 0 | 0 | 0 | | 0 | 0 |
| 1 | 1 | 105 | | 105 | 105 |
| 1 | 2 | 185 | | 80 | 185 |
| 1 | 3 | 235 | | 50 | 235 |
| 1 | 4 | 275 | | 40 | 275 |
| 1 | 5 | 295 | | 20 | 295 |
| 1 | 6 | 315 | | 20 | 315 |
| 1 | 7 | 330 | | 15 | 330 |
| 1 | 8 | 350 | | 20 | 350 |
| 1 | 9 | 370 | | 20 | 370 |
| 1 | 10 | 380 | | 10 | 380 |
| 1 | 11 | 400 | | 20 | 400 |
| 1 | 12 | 415 | | 15 | 415 |
| 1 | 13 | 445 | | 30 | 445 |
| 1 | 14 | 495 | | 50 | 495 |
| 1 | 15 | 545 | | 50 | 545 |
| 1 | 16 | 570 | | 25 | 570 |
| 1 | 17 | 595 | | 25 | 595 |
| 1 | 18 | 615 | | 20 | 615 |
| 1 | 19 | 620 | | 5 | 620 |
| 1 | 20 | 640 | | 20 | 640 |
| 1 | 21 | 670 | | 30 | 670 |
| 1 | 22 | 700 | | 30 | 700 |
| 1 | 23 | 720 | | 20 | 720 |
| 1 | 24 | 735 | | 15 | 735 |
| 1 | 25 | 740 | | 5 | 740 |
| 1 | 26 | 755 | | 15 | 755 |
| 1 | 27 | 765 | | 10 | 765 |
| 1 | 28 | 785 | | 20 | 785 |
| 1 | 29 | 800 | | 15 | 800 |
| 1 | 30 | 845 | | 45 | 845 |
| 1 | 31 | 870 | | 25 | 870 |
| 1 | 32 | 890 | | 20 | 890 |
| 1 | 33 | 915 | | 25 | 915 |
| 1 | 34 | 930 | | 15 | 930 |
| 1 | 35 | 945 | | 15 | 945 |
| 1 | 36 | 965 | | 20 | 965 |
| 1 | 37 | 1000 | | 35 | 1000 |
| 1 | 38 | 1035 | | 35 | 1035 |
| 1 | 39 | 1070 | | 35 | 1070 |
| 1 | 40 | 1095 | | 25 | 1095 |
| 1 | 41 | 1115 | | 20 | 1115 |
| 1 | 42 | 1130 | | 15 | 1130 |
| 1 | 43 | 1145 | | 15 | 1145 |
| 1 | 44 | 1155 | | 10 | 1155 |
| 1 | 45 | 1165 | | 10 | 1165 |
| 1 | 46 | 1175 | | 10 | 1175 |
| 1 | 47 | 1185 | | 10 | 1185 |
| 1 | 48 | 1200 | | 15 | 1200 |
| 1 | 49 | 1215 | | 15 | 1215 |
| 1 | 50 | 1225 | | 10 | 1225 |
| 1 | 51 | 1250 | | 25 | 1250 |

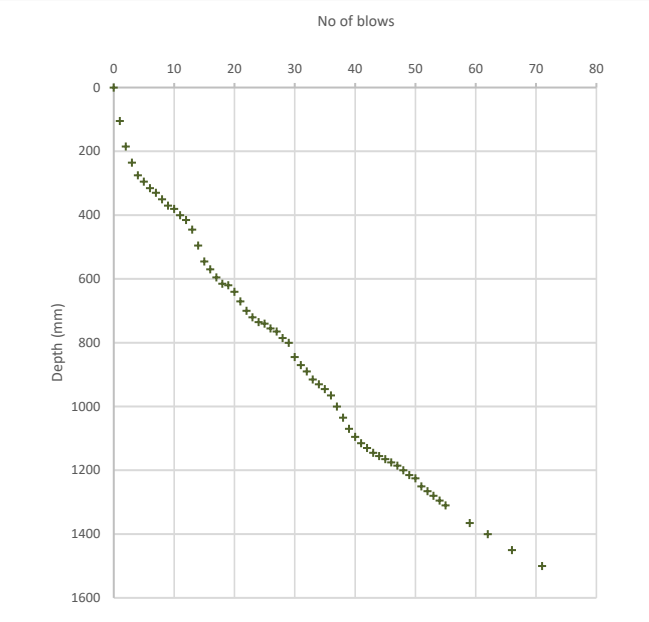
Comments:
TRL probe commenced from ground level adjacent to trial pit location. Topsoil from GL to 0.30 m bgl.

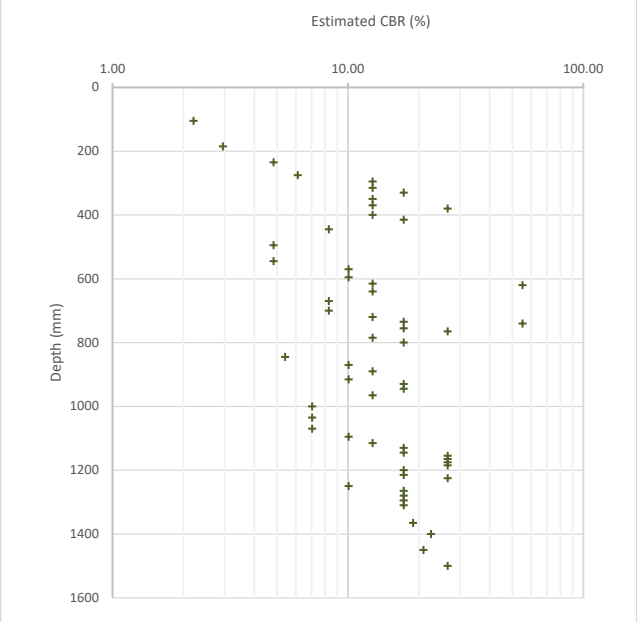
# DYNAMIC CONE PENETRATION TEST

Test Location:
**TP164 TRL**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 509249.43 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299962.87 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 31.22 | mOD | | |
| Engineer: | MM | | | | Weather: | Sunny |
| Date of test: | 04/03/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 1 | 52 | 1265 | | 15 | 1265 |
| 1 | 53 | 1280 | | 15 | 1280 |
| 1 | 54 | 1295 | | 15 | 1295 |
| 1 | 55 | 1310 | | 15 | 1310 |
| 4 | 59 | 1365 | | 55 | 1365 |
| 3 | 62 | 1400 | | 35 | 1400 |
| 4 | 66 | 1450 | | 50 | 1450 |
| 5 | 71 | 1500 | | 50 | 1500 |




| Test No. | Depth from (mm) | Depth to (mm) | CBR value |
|---|---|---|---|
| 1 | 0 | 1500 | 12 |
| | | | |
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**Estimated CBR value calculated using TRL equation:**

$$\log_{10}(CBR) = 2.48 - 1.057 \cdot \log_{10}(mm/blow)$$

**References:**

CNS Farnell (2003) Dynamic Cone Penetrometer Model A2465 Operating Instructions.

Transport and Road Research Laboratory (1990) Overseas Road Note 8. A users manual for a program to analyse dynamic cone penetrometer data.

Transport and Road Research Laboratory (2004) TRL Project Report PR/INT/277/04.

Comments:

TRL probe commenced from ground level adjacent to trial pit location. Topsoil from GL to 0.30 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**TP165 TRL**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 509296.89 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299870.89 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 30.32 | mOD | | |
| Engineer: | MM | | | | Weather: | Sunny |
| Date of test: | 04/03/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 0 | 0 | 140 | | 0 | 0 |
| 1 | 1 | 190 | | 50 | 50 |
| 1 | 2 | 240 | | 50 | 100 |
| 1 | 3 | 290 | | 50 | 150 |
| 1 | 4 | 320 | | 30 | 180 |
| 1 | 5 | 345 | | 25 | 205 |
| 1 | 6 | 375 | | 30 | 235 |
| 1 | 7 | 412 | | 37 | 272 |
| 1 | 8 | 435 | | 23 | 295 |
| 1 | 9 | 450 | | 15 | 310 |
| 1 | 10 | 460 | | 10 | 320 |
| 1 | 11 | 470 | | 10 | 330 |
| 1 | 12 | 485 | | 15 | 345 |
| 1 | 13 | 495 | | 10 | 355 |
| 1 | 14 | 505 | | 10 | 365 |
| 1 | 15 | 515 | | 10 | 375 |
| 1 | 16 | 525 | | 10 | 385 |
| 1 | 17 | 535 | | 10 | 395 |
| 1 | 18 | 545 | | 10 | 405 |
| 1 | 19 | 555 | | 10 | 415 |
| 1 | 20 | 560 | | 5 | 420 |
| 1 | 21 | 570 | | 10 | 430 |
| 1 | 22 | 580 | | 10 | 440 |
| 1 | 23 | 585 | | 5 | 445 |
| 1 | 24 | 600 | | 15 | 460 |
| 1 | 25 | 615 | | 15 | 475 |
| 1 | 26 | 630 | | 15 | 490 |
| 1 | 27 | 650 | | 20 | 510 |
| 1 | 28 | 670 | | 20 | 530 |
| 1 | 29 | 680 | | 10 | 540 |
| 1 | 30 | 685 | | 5 | 545 |
| 1 | 31 | 687 | | 2 | 547 |
| 1 | 32 | 690 | | 3 | 550 |
| 1 | 33 | 695 | | 5 | 555 |
| 10 | 43 | 700 | | 5 | 560 |

Comments:
TRL probe commenced from ground level adjacent to trial pit location. Topsoil from GL to 0.30 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**TP165 TRL**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 509296.89 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299870.89 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 30.32 | mOD | | |
| Engineer: | MM | | | | Weather: | Sunny |
| Date of test: | 04/03/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
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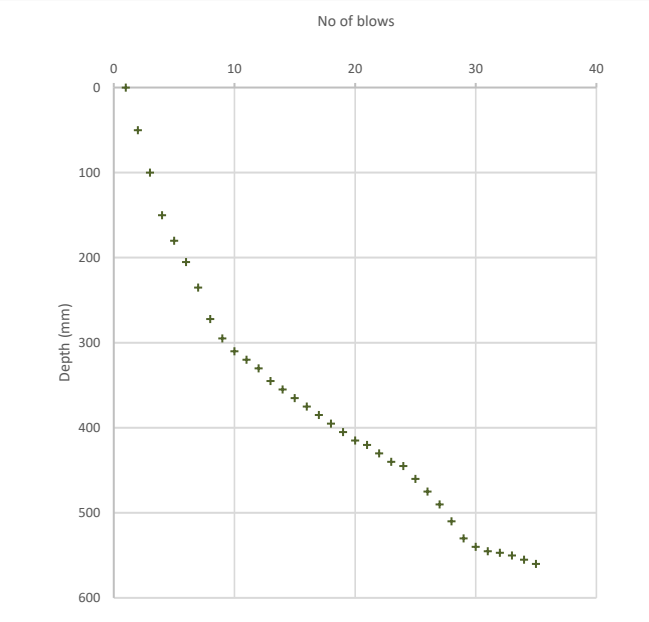


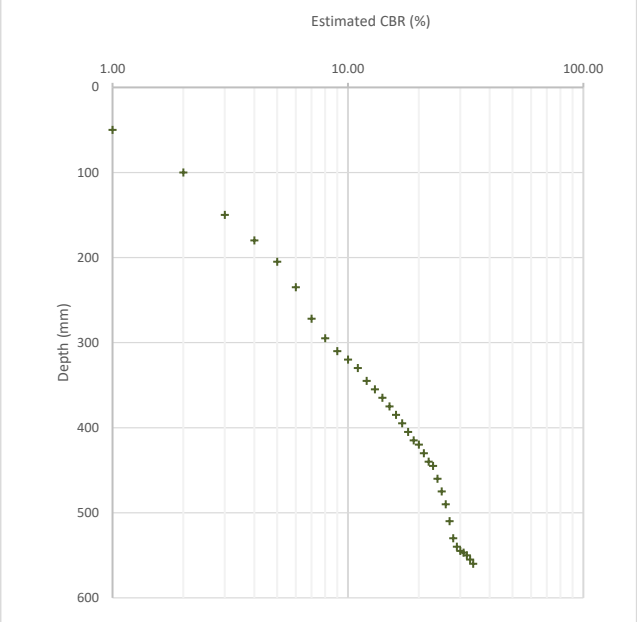


| Test No. | Depth from (mm) | Depth to (mm) | CBR value |
|---|---|---|---|
| 1 | 0 | 295 | 6.7 |
| 2 | 295 | 560 | 36 |
| | | | |
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**Estimated CBR value calculated using TRL equation:**

$$\log_{10}(CBR) = 2.48 - 1.057 \cdot \log_{10}(mm/blow)$$

**References:**

CNS Farnell (2003) Dynamic Cone Penetrometer Model A2465 Operating Instructions.

Transport and Road Research Laboratory (1990) Overseas Road Note 8. A users manual for a program to analyse dynamic cone penetrometer data.

Transport and Road Research Laboratory (2004) TRL Project Report PR/INT/277/04.

Comments:

TRL probe commenced from ground level adjacent to trial pit location. Topsoil from GL to 0.30 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**TP166 TRL**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 509386.08 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299689.08 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 27.94 | mOD | | |
| Engineer: | MM | | | | Weather: | Sunny |
| Date of test: | 04/03/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 0 | 0 | 170 | | 0 | 0 |
| 1 | 1 | 245 | | 75 | 75 |
| 1 | 2 | 275 | | 30 | 105 |
| 1 | 3 | 305 | | 30 | 135 |
| 1 | 4 | 340 | | 35 | 170 |
| 1 | 5 | 370 | | 30 | 200 |
| 1 | 6 | 385 | | 15 | 215 |
| 1 | 7 | 395 | | 10 | 225 |
| 1 | 8 | 405 | | 10 | 235 |
| 1 | 9 | 420 | | 15 | 250 |
| 1 | 10 | 440 | | 20 | 270 |
| 1 | 11 | 455 | | 15 | 285 |
| 1 | 12 | 475 | | 20 | 305 |
| 1 | 13 | 505 | | 30 | 335 |
| 1 | 14 | 530 | | 25 | 360 |
| 1 | 15 | 560 | | 30 | 390 |
| 1 | 16 | 585 | | 25 | 415 |
| 1 | 17 | 625 | | 40 | 455 |
| 1 | 18 | 660 | | 35 | 490 |
| 1 | 19 | 690 | | 30 | 520 |
| 1 | 20 | 710 | | 20 | 540 |
| 1 | 21 | 735 | | 25 | 565 |
| 1 | 22 | 760 | | 25 | 590 |
| 1 | 23 | 785 | | 25 | 615 |
| 1 | 24 | 810 | | 25 | 640 |
| 1 | 25 | 825 | | 15 | 655 |
| 1 | 26 | 840 | | 15 | 670 |
| 1 | 27 | 845 | | 5 | 675 |
| 1 | 28 | 850 | | 5 | 680 |
| 2 | 30 | 855 | | 5 | 685 |
| 10 | 40 | 860 | | 5 | 690 |

Comments:
TRL probe commenced from ground level adjacent to trial pit location. Topsoil from GL to 0.50 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**TP166 TRL**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 509386.08 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299689.08 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 27.94 | mOD | | |
| Engineer: | MM | | | | Weather: | Sunny |
| Date of test: | 04/03/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| | | | | | |
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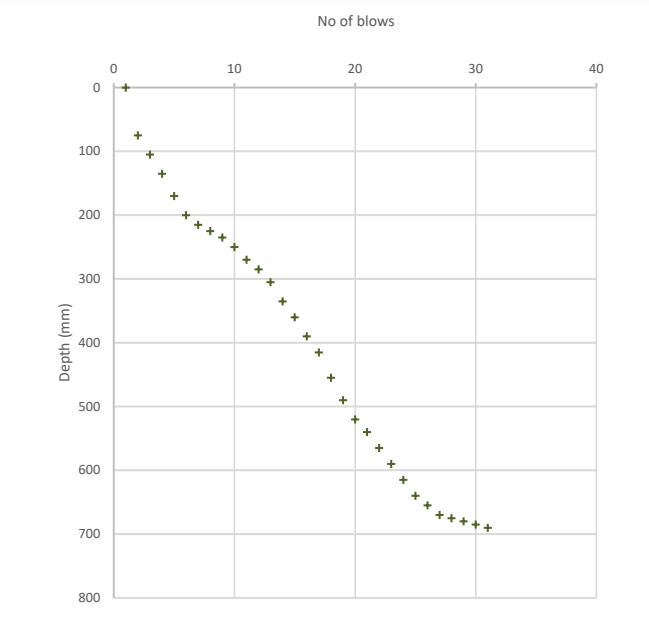


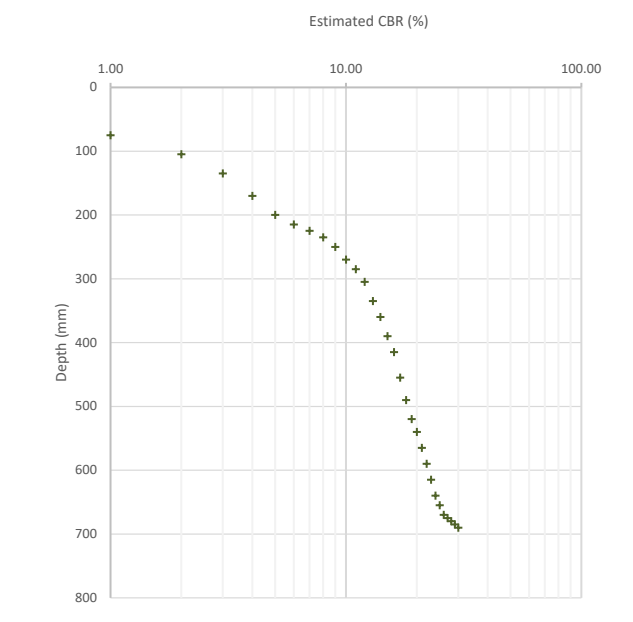


| Test No. | Depth from (mm) | Depth to (mm) | CBR value |
|---|---|---|---|
| 1 | 0 | 675 | 10 |
| 2 | 675 | 690 | 260 |
| | | | |
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| | | | |
| | | | |

**Estimated CBR value calculated using TRL equation:**

$$\log_{10}(CBR) = 2.48 - 1.057 \cdot \log_{10}(mm/blow)$$

**References:**

CNS Farnell (2003) Dynamic Cone Penetrometer Model A2465 Operating Instructions.

Transport and Road Research Laboratory (1990) Overseas Road Note 8. A users manual for a program to analyse dynamic cone penetrometer data.

Transport and Road Research Laboratory (2004) TRL Project Report PR/INT/277/04.

Comments:

TRL probe commenced from ground level adjacent to trial pit location. Topsoil from GL to 0.50 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**TP167 TRL**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 510424.12 | mE | Checked by: | MM |
| Project No: | GT0386 | | 300468.66 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 35.43 | mOD | | |
| Engineer: | DB | | | | Weather: | Sunny |
| Date of test: | 04/03/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 0 | 0 | 100 | | 0 | 0 |
| 1 | 1 | 250 | | 150 | 150 |
| 1 | 2 | 320 | | 70 | 220 |
| 1 | 3 | 380 | | 60 | 280 |
| 1 | 4 | 420 | | 40 | 320 |
| 1 | 5 | 460 | | 40 | 360 |
| 1 | 6 | 490 | | 30 | 390 |
| 1 | 7 | 500 | | 10 | 400 |
| 1 | 8 | 530 | | 30 | 430 |
| 1 | 9 | 560 | | 30 | 460 |
| 1 | 10 | 580 | | 20 | 480 |
| 1 | 11 | 600 | | 20 | 500 |
| 1 | 12 | 620 | | 20 | 520 |
| 1 | 13 | 640 | | 20 | 540 |
| 1 | 14 | 660 | | 20 | 560 |
| 1 | 15 | 690 | | 30 | 590 |
| 1 | 16 | 700 | | 10 | 600 |
| 1 | 17 | 710 | | 10 | 610 |
| 1 | 18 | 720 | | 10 | 620 |
| 1 | 19 | 740 | | 20 | 640 |
| 1 | 20 | 750 | | 10 | 650 |
| 1 | 21 | 760 | | 10 | 660 |
| 1 | 22 | 780 | | 20 | 680 |
| 1 | 23 | 800 | | 20 | 700 |
| 1 | 24 | 810 | | 10 | 710 |
| 1 | 25 | 820 | | 10 | 720 |
| 1 | 26 | 830 | | 10 | 730 |
| 1 | 27 | 840 | | 10 | 740 |
| 1 | 28 | 850 | | 10 | 750 |
| 1 | 29 | 860 | | 10 | 760 |
| 1 | 30 | 870 | | 10 | 770 |
| 1 | 31 | 880 | | 10 | 780 |
| 1 | 32 | 890 | | 10 | 790 |
| 1 | 33 | 900 | | 10 | 800 |
| 1 | 34 | 910 | | 10 | 810 |
| 1 | 35 | 915 | | 5 | 815 |
| 1 | 36 | 920 | | 5 | 820 |
| 1 | 37 | 930 | | 10 | 830 |
| 1 | 38 | 940 | | 10 | 840 |
| 1 | 39 | 950 | | 10 | 850 |
| 1 | 40 | 970 | | 20 | 870 |
| 1 | 41 | 975 | | 5 | 875 |
| 1 | 42 | 980 | | 5 | 880 |
| 1 | 43 | 990 | | 10 | 890 |
| 1 | 44 | 1000 | | 10 | 900 |
| 4 | 48 | 1030 | | 30 | 930 |
| 4 | 52 | 1050 | | 20 | 950 |
| 4 | 56 | 1070 | | 20 | 970 |
| 4 | 60 | 1080 | | 10 | 980 |
| 4 | 64 | 1100 | | 20 | 1000 |
| 4 | 68 | 1140 | | 40 | 1040 |
| 4 | 72 | 1180 | | 40 | 1080 |

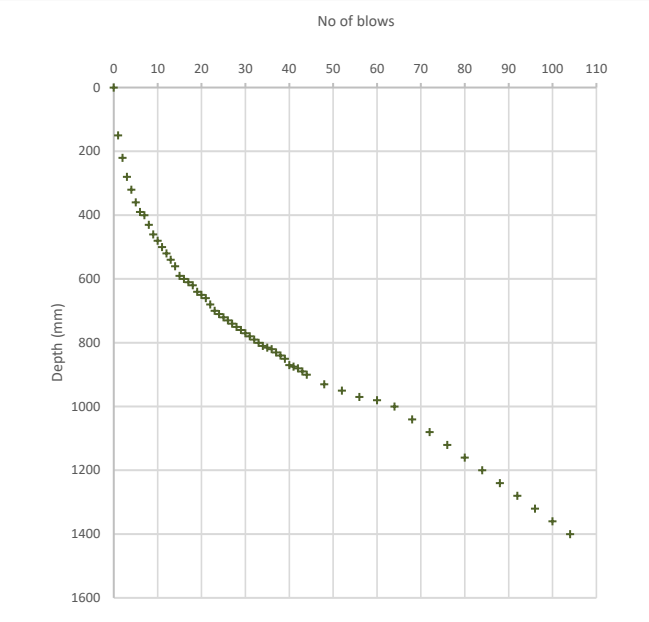
Comments:
TRL probe commenced from ground level adjacent to trial pit location. Topsoil from GL to 0.20 m bgl.

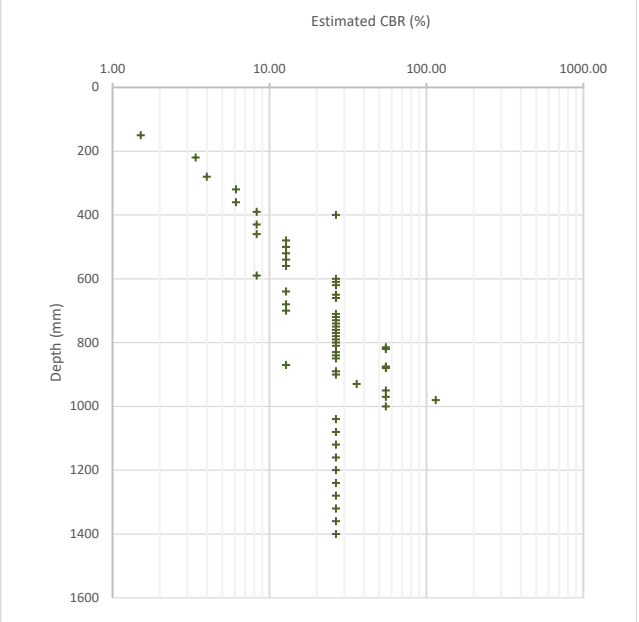
# DYNAMIC CONE PENETRATION TEST

Test Location:
**TP167 TRL**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 510424.12 | mE | Checked by: | MM |
| Project No: | GT0386 | | 300468.66 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 35.43 | mOD | | |
| Engineer: | DB | | | | Weather: | Sunny |
| Date of test: | 04/03/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 4 | 76 | 1220 | | 40 | 1120 |
| 4 | 80 | 1260 | | 40 | 1160 |
| 4 | 84 | 1300 | | 40 | 1200 |
| 4 | 88 | 1340 | | 40 | 1240 |
| 4 | 92 | 1380 | | 40 | 1280 |
| 4 | 96 | 1420 | | 40 | 1320 |
| 4 | 100 | 1460 | | 40 | 1360 |
| 4 | 104 | 1500 | | 40 | 1400 |




| Test No. | Depth from (mm) | Depth to (mm) | CBR value |
|---|---|---|---|
| 1 | 0 | 600 | 6.6 |
| 2 | 600 | 1400 | 29 |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

**Estimated CBR value calculated using TRL equation:**

$$\log_{10}(CBR) = 2.48 - 1.057 \cdot \log_{10}(mm/blow)$$

**References:**

CNS Farnell (2003) Dynamic Cone Penetrometer Model A2465 Operating Instructions.

Transport and Road Research Laboratory (1990) Overseas Road Note 8. A users manual for a program to analyse dynamic cone penetrometer data.

Transport and Road Research Laboratory (2004) TRL Project Report PR/INT/277/04.

Comments:

TRL probe commenced from ground level adjacent to trial pit location. Topsoil from GL to 0.20 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**TP168 TRL**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 510543.27 | mE | Checked by: | MM |
| Project No: | GT0386 | | 300464.37 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 37.21 | mOD | | |
| Engineer: | DB | | | | Weather: | Sunny |
| Date of test: | 04/03/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 0 | 0 | 130 | | 0 | 0 |
| 1 | 1 | 180 | | 50 | 50 |
| 1 | 2 | 190 | | 10 | 60 |
| 1 | 3 | 200 | | 10 | 70 |
| 1 | 4 | 210 | | 10 | 80 |
| 1 | 5 | 220 | | 10 | 90 |
| 1 | 6 | 230 | | 10 | 100 |
| 10 | 16 | 240 | | 10 | 110 |

Comments:
TRL probe commenced from ground level adjacent to trial pit location. Topsoil from GL to 0.30 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**TP168 TRL**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 510543.27 | mE | Checked by: | MM |
| Project No: | GT0386 | | 300464.37 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 37.21 | mOD | | |
| Engineer: | DB | | | | Weather: | Sunny |
| Date of test: | 04/03/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
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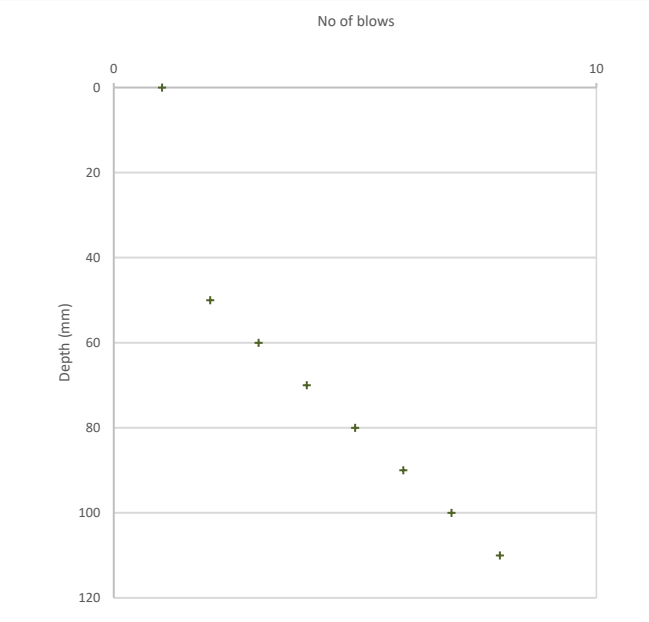


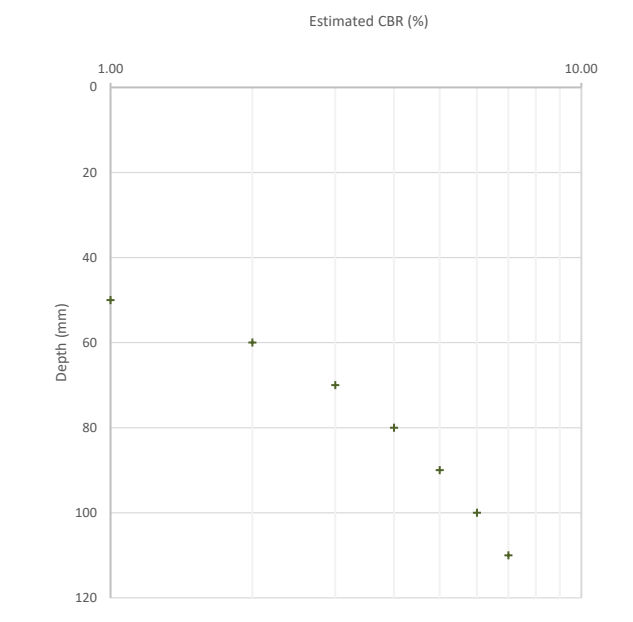


| Test No. | Depth from (mm) | Depth to (mm) | CBR value |
|---|---|---|---|
| 1 | 0 | 110 | 39 |
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**Estimated CBR value calculated using TRL equation:**

$$\log_{10}(CBR) = 2.48 - 1.057 \cdot \log_{10}(mm/blow)$$

**References:**

CNS Farnell (2003) Dynamic Cone Penetrometer Model A2465 Operating Instructions.

Transport and Road Research Laboratory (1990) Overseas Road Note 8. A users manual for a program to analyse dynamic cone penetrometer data.

Transport and Road Research Laboratory (2004) TRL Project Report PR/INT/277/04.

Comments:

TRL probe commenced from ground level adjacent to trial pit location. Topsoil from GL to 0.30 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**TP169 TRL**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 509451.31 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299581.32 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 22.18 | mOD | | |
| Engineer: | JJ | | | | Weather: | Sunny |
| Date of test: | 05/04/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
| 0 | 0 | 100 | | 0 | 0 |
| 1 | 1 | 240 | | 140 | 140 |
| 1 | 2 | 315 | | 75 | 215 |
| 1 | 3 | 370 | | 55 | 270 |
| 1 | 4 | 450 | | 80 | 350 |
| 1 | 5 | 465 | | 15 | 365 |
| 1 | 6 | 510 | | 45 | 410 |
| 1 | 7 | 570 | | 60 | 470 |
| 1 | 8 | 620 | | 50 | 520 |
| 1 | 9 | 685 | | 65 | 585 |
| 1 | 10 | 735 | | 50 | 635 |
| 1 | 11 | 775 | | 40 | 675 |
| 1 | 12 | 805 | | 30 | 705 |
| 1 | 13 | 825 | | 20 | 725 |
| 1 | 14 | 845 | | 20 | 745 |
| 1 | 15 | 870 | | 25 | 770 |
| 1 | 16 | 890 | | 20 | 790 |
| 1 | 17 | 905 | | 15 | 805 |
| 1 | 18 | 920 | | 15 | 820 |
| 1 | 19 | 935 | | 15 | 835 |
| 3 | 22 | 940 | | 5 | 840 |
| 1 | 23 | 945 | | 5 | 845 |
| 1 | 24 | 1000 | | 55 | 900 |
| 1 | 25 | 1050 | | 50 | 950 |
| 1 | 26 | 1090 | | 40 | 990 |
| 1 | 27 | 1125 | | 35 | 1025 |
| 1 | 28 | 1150 | | 25 | 1050 |
| 1 | 29 | 1170 | | 20 | 1070 |
| 1 | 30 | 1210 | | 40 | 1110 |
| 1 | 31 | 1265 | | 55 | 1165 |
| 1 | 32 | 1300 | | 35 | 1200 |
| 1 | 33 | 1325 | | 25 | 1225 |
| 1 | 34 | 1345 | | 20 | 1245 |
| 1 | 35 | 1360 | | 15 | 1260 |
| 1 | 36 | 1380 | | 20 | 1280 |
| 1 | 37 | 1395 | | 15 | 1295 |
| 1 | 38 | 1440 | | 45 | 1340 |
| 1 | 39 | 1450 | | 10 | 1350 |
| 1 | 40 | 1460 | | 10 | 1360 |
| 1 | 41 | 1470 | | 10 | 1370 |
| 1 | 42 | 1475 | | 5 | 1375 |
| 1 | 43 | 1480 | | 5 | 1380 |
| 1 | 44 | 1490 | | 10 | 1390 |
| 2 | 46 | 1495 | | 5 | 1395 |
| 2 | 48 | 1500 | | 5 | 1400 |
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Comments:
TRL probe commenced from ground level adjacent to trial pit location. Topsoil from GL to 0.45 m bgl.

# DYNAMIC CONE PENETRATION TEST

Test Location:
**TP169 TRL**


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Name: | A47 Wansford to Sutton | Survey grid system: | OSGB | | Hole type: | DCP |
| | | Co-ordinates: | 509451.31 | mE | Checked by: | MM |
| Project No: | GT0386 | | 299581.32 | mN | Approved by: | MM |
| Client: | Galliford Try | Ground level: | 22.18 | mOD | | |
| Engineer: | JJ | | | | Weather: | Sunny |
| Date of test: | 05/04/2022 | Start Depth: | 0 | mm | Equipment: | CNS Farnell DCP Model A2465 |
| Test number: | 1 | Inclination: | 90 | deg. | | |

| Number of blows | Total blows | Reading (mm) | Rod Change Reading (mm) | Penetration Increment (mm) | Depth (mm) |
|---|---|---|---|---|---|
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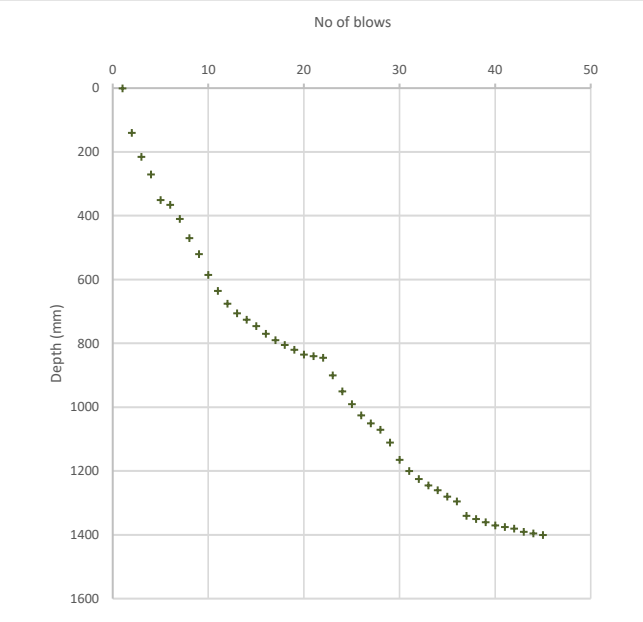


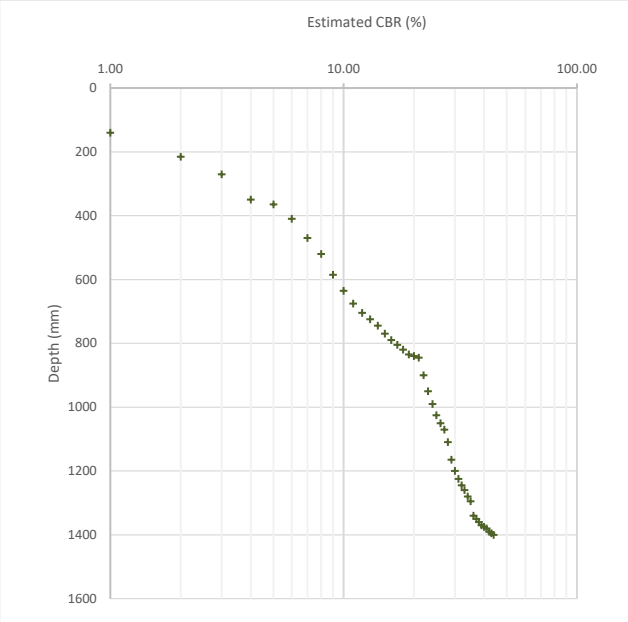


| Test No. | Depth from (mm) | Depth to (mm) | CBR value |
|---|---|---|---|
| 1 | 0 | 725 | 4.3 |
| 2 | 725 | 1350 | 10 |
| 3 | 1350 | 1400 | 49 |
| | | | |
| | | | |
| | | | |
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| | | | |

**Estimated CBR value calculated using TRL equation:**

$$\log_{10}(CBR) = 2.48 - 1.057 \cdot \log_{10}(mm/blow)$$

**References:**

CNS Farnell (2003) Dynamic Cone Penetrometer Model A2465 Operating Instructions.

Transport and Road Research Laboratory (1990) Overseas Road Note 8. A users manual for a program to analyse dynamic cone penetrometer data.

Transport and Road Research Laboratory (2004) TRL Project Report PR/INT/277/04.

Comments:

TRL probe commenced from ground level adjacent to trial pit location. Topsoil from GL to 0.45 m bgl.

GROUND TECHNOLOGY

| Water Permeability Test in a Borehole Using Open Systems ISO 22282-2 | | | | | |
|---|---|---|---|---|---|
| Contract Number: | GT0386 | | Contract Name: | Wansford to Sutton GI | |
| Borehole ID: | BH101 | | Date: | 16/02/2022 | |
| Test No: | 1 of 1 | | Drilling Method: | Rotary | |
| Borehole Diameter: | 0.05 | | Base of plain pipe | n/a | |
| Test Head: | n/a | | Operator: | MM | |
| Borehole Test Section: | From | 0.00 | Ground water level at start (mbgl): | N/A | |
| | To | 6.00 | | | |
| Test Method: | Falling Head | | Time at Start of Test: | 16/02/2022 13:30 | |
| Type of Filter: | None used | | Time at End of Test: | 16/02/2022 13:50 | |

| Time (mins): | Flow Rate (V) | Hydraulic Head (h) | Head Changes (m) |
|---|---|---|---|
| 0 | | 0.00 | 0 |
| 1 | | 0.00 | 0.00 |
| 2 | | 0.00 | 0.00 |
| 3 | | 0.00 | 0.00 |
| 4 | | 0.00 | 0.00 |
| 5 | | 0.00 | 0.00 |
| 6 | | 0.00 | 0.00 |
| 7 | | 0.00 | 0.00 |
| 8 | | 0.00 | 0.00 |
| 9 | | 0.00 | 0.00 |
| 10 | | 0.00 | 0.00 |
| 11 | | 0.00 | 0.00 |
| 12 | | 0.00 | 0.00 |
| 13 | | 0.00 | 0.00 |
| 14 | | 0.00 | 0.00 |
| 15 | | 0.00 | 0.00 |
| 16 | | 0.00 | 0.00 |
| 17 | | 0.00 | 0.00 |
| 18 | | 0.00 | 0.00 |
| 19 | | 0.00 | 0.00 |
| 20 | | 0.00 | 0.00 |

**Permeability rate in accordance with BS EN 22282-2 (Annex B.3)**

Remarks:
1) Level data recorded using RuggedTroll Datalogger
2) Water level sensor placed 0.20 m above borehole base
3) No head of water achieved after pumping 1000 Ltrs of water down borehole.
4) Test terminated due to high permeability.

GROUND TECHNOLOGY

## Constant Head in Unsaturated Soils

BS EN ISO 22282-2:2012. Calculation Method B4.1.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Contract Number: | GT0386 | | | Contract Name: | Wansford to Sutton GI | | |
| Borehole ID: | BH101 | | | Date: | 16/02/2022 | | |
| Test No: | 1 of 1 | | | Drilling Method: | Rotary | | |
| Casing Diameter (D): | 0.05 | | | Base of casing | n/a | | |
| Test Length (L): | 6.00 | | | Operator: | MM | | |
| Borehole Test Section: | From | 0.00 | | Ground water level at start (mbgl): | N/A | | |
| | To | 6.00 | | | | | |

| Parameter | Unit | Symbol | Value |
|---|---|---|---|
| Internal Cross Section | | *S* | 0.00196 |
| Shape Factor (from ISO 22282-1) | | *F* | 6.8786 |
| Slope α | | *α* | n/a |
| Calculation Reference | | | B.4.1 |
| Permeability Coefficient | $m/sec^{-1}$ | *k* | **n/a** |

Remarks:
1) Level data recorded using RuggedTroll Datalogger
2) Water level sensor placed 0.10 m above borehole base
3) No head of water achieved after pumping 1000 Ltrs of water down borehole.
4) Test terminated due to high soakaway rate.

GROUND TECHNOLOGY

| Water Permeability Test in a Borehole Using Open Systems ISO 22282-2 | | | | | |
|---|---|---|---|---|---|
| Contract Number: | GT0386 | | Contract Name: | Wansford to Sutton GI | |
| Borehole ID: | BH107 | | Date: | 18/04/2022 | |
| Test No: | 1 of 1 | | Drilling Method: | Rotary | |
| Borehole Diameter: | 0.05 | | Base of plain pipe | 5.00 | |
| Test Head: | n/a | | Operator: | MM | |
| Borehole Test Section: | From | 5.00 | Ground water level at start (mbgl): | N/A | |
| | To | 7.50 | | | |
| Test Method: | Falling Head | | Time at Start of Test: | 18/04/2022 10:05 | |
| Type of Filter: | None used | | Time at End of Test: | 18/04/2022 10:25 | |

| Time (mins): | Flow Rate (V) | Hydraulic Head (h) | Head Changes (m) |
|---|---|---|---|
| 0 | | 0.00 | 0 |
| 1 | | 0.00 | 0.00 |
| 2 | | 0.00 | 0.00 |
| 3 | | 0.00 | 0.00 |
| 4 | | 0.00 | 0.00 |
| 5 | | 0.00 | 0.00 |
| 6 | | 0.00 | 0.00 |
| 7 | | 0.00 | 0.00 |
| 8 | | 0.00 | 0.00 |
| 9 | | 0.00 | 0.00 |
| 10 | | 0.00 | 0.00 |
| 11 | | 0.00 | 0.00 |
| 12 | | 0.00 | 0.00 |
| 13 | | 0.00 | 0.00 |
| 14 | | 0.00 | 0.00 |
| 15 | | 0.00 | 0.00 |
| 16 | | 0.00 | 0.00 |
| 17 | | 0.00 | 0.00 |
| 18 | | 0.00 | 0.00 |
| 19 | | 0.00 | 0.00 |
| 20 | | 0.00 | 0.00 |

**Permeability rate in accordance with BS EN 22282-2 (Annex B.3)**

Remarks:
1) Level data recorded using RuggedTroll Datalogger
2) Water level sensor placed 0.20 m above borehole base
3) No head of water achieved after pumping 1000 Ltrs of water down borehole.
4) Test terminated due to high permeability.

GROUND TECHNOLOGY

## Constant Head in Unsaturated Soils

BS EN ISO 22282-2:2012. Calculation Method B4.1.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Contract Number: | GT0386 | | | Contract Name: | Wansford to Sutton GI | | |
| Borehole ID: | BH107 | | | Date: | 18/04/2022 | | |
| Test No: | 1 of 1 | | | Drilling Method: | Rotary | | |
| Casing Diameter (D): | 0.05 | | | Base of casing | 5.00 | | |
| Test Length (L): | 2.50 | | | Operator: | MM | | |
| Borehole Test Section: | From | 5.00 | | Ground water level at start (mbgl): | N/A | | |
| | To | 7.50 | | | | | |

| Parameter | Unit | Symbol | Value |
|---|---|---|---|
| Internal Cross Section | | *S* | 0.00196 |
| Shape Factor (from ISO 22282-1) | | *F* | 3.4109 |
| Slope α | | *α* | n/a |
| Calculation Reference | | | B.4.1 |
| Permeability Coefficient | $m/sec^{-1}$ | *k* | **n/a** |

Remarks:
1) Level data recorded using RuggedTroll Datalogger
2) Water level sensor placed 0.10 m above borehole base
3) No head of water achieved after pumping 1000 Ltrs of water down borehole.
4) Test terminated due to high soakaway rate.

GROUND TECHNOLOGY

| Water Permeability Test in a Borehole Using Open Systems ISO 22282-2 | | | | | |
|---|---|---|---|---|---|
| Contract Number: | GT0386 | | Contract Name: | Wansford to Sutton GI | |
| Borehole ID: | BH108 | | Date: | 18/04/2022 | |
| Test No: | 1 of 1 | | Drilling Method: | Rotary | |
| Borehole Diameter: | 0.05 | | Base of plain pipe | 5.00 | |
| Test Head: | n/a | | Operator: | MM | |
| Borehole Test Section: | From | 5.00 | Ground water level at start (mbgl): | 7.85 | |
| | To | 10.00 | | | |
| Test Method: | Falling Head | | Time at Start of Test: | 18/04/2022 11:34 | |
| Type of Filter: | None used | | Time at End of Test: | 18/04/2022 11:54 | |

| Time (mins): | Flow Rate (V) | Hydraulic Head (h) | Head Changes (m) |
|---|---|---|---|
| 0 | | 0.00 | 0 |
| 1 | | 0.00 | 0.00 |
| 2 | | 0.00 | 0.00 |
| 3 | | 0.00 | 0.00 |
| 4 | | 0.00 | 0.00 |
| 5 | | 0.00 | 0.00 |
| 6 | | 0.00 | 0.00 |
| 7 | | 0.00 | 0.00 |
| 8 | | 0.00 | 0.00 |
| 9 | | 0.00 | 0.00 |
| 10 | | 0.00 | 0.00 |
| 11 | | 0.00 | 0.00 |
| 12 | | 0.00 | 0.00 |
| 13 | | 0.00 | 0.00 |
| 14 | | 0.00 | 0.00 |
| 15 | | 0.00 | 0.00 |
| 16 | | 0.00 | 0.00 |
| 17 | | 0.00 | 0.00 |
| 18 | | 0.00 | 0.00 |
| 19 | | 0.00 | 0.00 |
| 20 | | 0.00 | 0.00 |

**Permeability rate in accordance with BS EN 22282-2 (Annex B.3)**

Remarks:
1) Level data recorded using RuggedTroll Datalogger
2) Water level sensor placed 0.20 m above borehole base
3) No head of water achieved after pumping 1000 Ltrs of water down borehole.
4) Test terminated due to high permeability.

GROUND TECHNOLOGY

## Constant Head in Unsaturated Soils

BS EN ISO 22282-2:2012. Calculation Method B4.1.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Contract Number: | GT0386 | | | Contract Name: | Wansford to Sutton GI | | |
| Borehole ID: | BH108 | | | Date: | 18/04/2022 | | |
| Test No: | 1 of 1 | | | Drilling Method: | Rotary | | |
| Casing Diameter (D): | 0.05 | | | Base of casing | 5.00 | | |
| Test Length (L): | 5.00 | | | Operator: | MM | | |
| Borehole Test Section: | From | 5.00 | | Ground water level at start (mbgl): | 7.85 | | |
| | To | 10.00 | | | | | |

| Parameter | Unit | Symbol | Value |
|---|---|---|---|
| Internal Cross Section | | *S* | 0.00196 |
| Shape Factor (from ISO 22282-1) | | *F* | 5.9294 |
| Slope α | | *α* | n/a |
| Calculation Reference | | | B.4.1 |
| Permeability Coefficient | $m/sec^{-1}$ | *k* | **n/a** |

Remarks:
1) Level data recorded using RuggedTroll Datalogger
2) Water level sensor placed 0.10 m above borehole base
3) No head of water achieved after pumping 1000 Ltrs of water down borehole.
4) Test terminated due to high soakaway rate.

GROUND TECHNOLOGY

| Water Permeability Test in a Borehole Using Open Systems ISO 22282-2 | | | | |
|---|---|---|---|---|
| Contract Number: | GT0386 | | Contract Name: | Wansford to Sutton GI |
| Borehole ID: | BH109 | | Date: | 19/04/2022 |
| Test No: | 1 of 3 | | Drilling Method: | Rotary |
| Borehole Diameter: | 0.05 | | Base of plain pipe | 2.50 |
| Test Head: | 4.48 | | Operator: | MM |
| Borehole Test Section: | From | 2.50 | Ground water level at start (mbgl): | N/A |
| | To | 4.50 | | |
| Test Method: | Falling Head | | Time at Start of Test: | 19/04/2022 13:39 |
| Type of Filter: | None used | | Time at End of Test: | 19/04/2022 13:40 |

| Time (mins): | Flow Rate (V) | Hydraulic Head (h) | Head Changes (m) |
|---|---|---|---|
| 0.08 | | 4.48 | 0 |
| 0.16 | | 3.82 | -0.66 |
| 0.24 | | 3.15 | -1.33 |
| 0.32 | | 3.12 | -1.36 |
| 0.4 | | 3.05 | -1.43 |
| 0.48 | | 2.32 | -2.16 |
| 0.56 | | 1.71 | -2.77 |
| 0.64 | | 1.26 | -3.22 |
| 0.72 | | 0.94 | -3.54 |
| 0.8 | | 0.81 | -3.67 |
| 0.88 | | 0.67 | -3.81 |
| 0.96 | | 0.52 | -3.96 |
| 1.04 | | 0.35 | -4.13 |
| 1.12 | | 0.20 | -4.28 |
| 1.2 | | 0.07 | -4.42 |
| 1.28 | | 0.01 | -4.47 |
| | | | |
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**Permeability rate in accordance with BS EN 22282-2 (Annex B.3)**

Remarks:
1) Level data recorded using RuggedTroll Datalogger
2) Water level sensor placed 0.20 m above borehole base

GROUND TECHNOLOGY

## Constant Head in Unsaturated Soils

BS EN ISO 22282-2:2012. Calculation Method B4.1.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Contract Number: | GT0386 | | | Contract Name: | Wansford to Sutton GI | | |
| Borehole ID: | BH109 | | | Date: | 19/04/2022 | | |
| Test No: | 1 of 3 | | | Drilling Method: | Rotary | | |
| Casing Diameter (D): | 0.05 | | | Base of casing | 2.50 | | |
| Test Length (L): | 2.00 | | | Operator: | MM | | |
| Borehole Test Section: | From | 2.50 | | Ground water level at start (mbgl): | N/A | | |
| | To | 4.50 | | | | | |

| Parameter | Unit | Symbol | Value |
|---|---|---|---|
| Internal Cross Section | | *S* | 0.00196 |
| Shape Factor (from ISO 22282-1) | | *F* | 2.8677 |
| Slope α | | *α* | 0.0699 |
| Calculation Reference | | | B.4.1 |
| Permeability Coefficient | $m/sec^{-1}$ | *k* | **4.79E-05** |

Remarks:
1) Level data recorded using RuggedTroll Datalogger
2) Water level sensor placed 0.10 m above borehole base

GROUND TECHNOLOGY

| Water Permeability Test in a Borehole Using Open Systems ISO 22282-2 | | | | | | | |
|---|---|---|---|---|---|---|---|
| Contract Number: | GT0386 | | | Contract Name: | Wansford to Sutton GI | | |
| Borehole ID: | BH109 | | | Date: | 19/04/2022 | | |
| Test No: | 2 of 3 | | | Drilling Method: | Rotary | | |
| Borehole Diameter: | 0.05 | | | Base of cplain pipe | 2.50 | | |
| Test Head: | 4.42 | | | Operator: | MM | | |
| Borehole Test Section: | From | 2.50 | | Ground water level at start (mbgl): | N/A | | |
| | To | 4.50 | | | | | |
| Test Method: | Falling Head | | Time at Start of Test: | | 19/04/2022 13:55 | | |
| Type of Filter: | None used | | Time at End of Test: | | 19/04/2022 13:56 | | |
| Time (mins): | Flow Rate (V) | | Hydraulic Head (h) | | Head Changes (m) | | |
| 0.08 | | | 4.42 | | 0 | | |
| 0.16 | | | 4.23 | | -0.19 | | |
| 0.24 | | | 3.92 | | -0.50 | | |
| 0.32 | | | 3.21 | | -1.21 | | |
| 0.4 | | | 3.02 | | -1.40 | | |
| 0.48 | | | 2.82 | | -1.60 | | |
| 0.56 | | | 2.27 | | -2.15 | | |
| 0.64 | | | 1.82 | | -2.60 | | |
| 0.72 | | | 1.39 | | -3.03 | | |
| 0.8 | | | 1.04 | | -3.38 | | |
| 0.88 | | | 0.82 | | -3.60 | | |
| 0.96 | | | 0.70 | | -3.72 | | |
| 1.04 | | | 0.51 | | -3.91 | | |
| 1.12 | | | 0.36 | | -4.06 | | |
| 1.2 | | | 0.23 | | -4.19 | | |
| 1.28 | | | 0.06 | | -4.36 | | |
| 1.36 | | | 0.04 | | -4.38 | | |
| 1.44 | | | 0.02 | | -4.40 | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

**Permeability rate in accordance with BS EN 22282-2 (Annex B.3)**

Remarks:
1) Level data recorded using RuggedTroll Datalogger
2) Water level sensor placed 0.20 m above borehole base

GROUND TECHNOLOGY

## Constant Head in Unsaturated Soils

BS EN ISO 22282-2:2012. Calculation Method B4.1.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Contract Number: | GT0386 | | | Contract Name: | Wansford to Sutton GI | | |
| Borehole ID: | BH109 | | | Date: | 19/04/2022 | | |
| Test No: | 2 of 3 | | | Drilling Method: | Rotary | | |
| Casing Diameter (D): | 0.05 | | | Base of casing | 2.50 | | |
| Test Length (L): | 2.00 | | | Operator: | MM | | |
| Borehole Test Section: | From | 2.50 | | Ground water level at start (mbgl): | N/A | | |
| | To | 4.50 | | | | | |

| Parameter | Unit | Symbol | Value |
|---|---|---|---|
| Internal Cross Section | | *S* | 0.00196 |
| Shape Factor (from ISO 22282-1) | | *F* | 2.8677 |
| Slope α | | *α* | 0.0645 |
| Calculation Reference | | | B.4.1 |
| Permeability Coefficient | $m/sec^{-1}$ | *k* | **4.42E-05** |

Remarks:
1) Level data recorded using RuggedTroll Datalogger
2) Water level sensor placed 0.10 m above borehole base

GROUND TECHNOLOGY

| Water Permeability Test in a Borehole Using Open Systems ISO 22282-2 | | | | | | | |
|---|---|---|---|---|---|---|---|
| Contract Number: | GT0386 | | | Contract Name: | Wansford to Sutton GI | | |
| Borehole ID: | BH109 | | | Date: | 19/04/2022 | | |
| Test No: | 3 of 3 | | | Drilling Method: | Rotary | | |
| Borehole Diameter: | 0.05 | | | Base of plain pipe | 2.50 | | |
| Test Head: | 4.40 | | | Operator: | MM | | |
| Borehole Test Section: | From | 2.50 | | Ground water level at start (mbgl): | N/A | | |
| | To | 4.50 | | | | | |
| Test Method: | Falling Head | | Time at Start of Test: | | 19/04/2022 14:20 | | |
| Type of Filter: | None used | | Time at End of Test: | | 19/04/2022 14:21 | | |
| Time (mins): | Flow Rate (V) | | Hydraulic Head (h) | | Head Changes (m) | | |
| 0.08 | | | 4.40 | | 0 | | |
| 0.16 | | | 4.30 | | -0.10 | | |
| 0.24 | | | 4.22 | | -0.18 | | |
| 0.32 | | | 4.02 | | -0.38 | | |
| 0.4 | | | 3.65 | | -0.75 | | |
| 0.48 | | | 3.23 | | -1.17 | | |
| 0.56 | | | 3.04 | | -1.36 | | |
| 0.64 | | | 2.65 | | -1.75 | | |
| 0.72 | | | 2.46 | | -1.95 | | |
| 0.8 | | | 1.85 | | -2.55 | | |
| 0.88 | | | 1.55 | | -2.85 | | |
| 0.96 | | | 1.13 | | -3.27 | | |
| 1.04 | | | 0.92 | | -3.48 | | |
| 1.12 | | | 0.75 | | -3.66 | | |
| 1.2 | | | 0.54 | | -3.86 | | |
| 1.28 | | | 0.40 | | -4.00 | | |
| 1.36 | | | 0.30 | | -4.10 | | |
| 1.44 | | | 0.21 | | -4.19 | | |
| 1.52 | | | 0.15 | | -4.25 | | |
| 1.6 | | | 0.07 | | -4.33 | | |
| 1.68 | | | 0.02 | | -4.38 | | |

**Permeability rate in accordance with BS EN 22282-2 (Annex B.3)**

Remarks:
1) Level data recorded using RuggedTroll Datalogger
2) Water level sensor placed 0.20 m above borehole base

GROUND TECHNOLOGY

## Constant Head in Unsaturated Soils

BS EN ISO 22282-2:2012. Calculation Method B4.1.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Contract Number: | GT0386 | | | Contract Name: | Wansford to Sutton GI | | |
| Borehole ID: | BH109 | | | Date: | 19/04/2022 | | |
| Test No: | 3 of 3 | | | Drilling Method: | Rotary | | |
| Casing Diameter (D): | 0.05 | | | Base of casing | 2.50 | | |
| Test Length (L): | 2.00 | | | Operator: | MM | | |
| Borehole Test Section: | From | 2.50 | | Ground water level at start (mbgl): | N/A | | |
| | To | 4.50 | | | | | |

| Parameter | Unit | Symbol | Value |
|---|---|---|---|
| Internal Cross Section | | *S* | 0.00196 |
| Shape Factor (from ISO 22282-1) | | *F* | 2.8677 |
| Slope α | | *α* | 0.0504 |
| Calculation Reference | | | B.4.1 |
| Permeability Coefficient | $m/sec^{-1}$ | *k* | **3.45E-05** |

Remarks:
1) Level data recorded using RuggedTroll Datalogger
2) Water level sensor placed 0.10 m above borehole base

GROUND TECHNOLOGY

| Water Permeability Test in a Borehole Using Open Systems ISO 22282-2 | | | | | |
|---|---|---|---|---|---|
| Contract Number: | GT0386 | | Contract Name: | Wansford to Sutton GI | |
| Borehole ID: | BH111 | | Date: | 18/04/2022 | |
| Test No: | 1 of 1 | | Drilling Method: | Rotary | |
| Borehole Diameter: | 0.05 | | Base of plain pipe | 4.00 | |
| Test Head: | n/a | | Operator: | MM | |
| Borehole Test Section: | From | 4.00 | Ground water level at start (mbgl): | 8.18 | |
| | To | 8.00 | | | |
| Test Method: | Falling Head | | Time at Start of Test: | 18/04/2022 12:22 | |
| Type of Filter: | None used | | Time at End of Test: | 18/04/2022 12:42 | |

| Time (mins): | Flow Rate (V) | Hydraulic Head (h) | Head Changes (m) |
|---|---|---|---|
| 0 | | 0.00 | 0 |
| 1 | | 0.00 | 0.00 |
| 2 | | 0.00 | 0.00 |
| 3 | | 0.00 | 0.00 |
| 4 | | 0.00 | 0.00 |
| 5 | | 0.00 | 0.00 |
| 6 | | 0.00 | 0.00 |
| 7 | | 0.00 | 0.00 |
| 8 | | 0.00 | 0.00 |
| 9 | | 0.00 | 0.00 |
| 10 | | 0.00 | 0.00 |
| 11 | | 0.00 | 0.00 |
| 12 | | 0.00 | 0.00 |
| 13 | | 0.00 | 0.00 |
| 14 | | 0.00 | 0.00 |
| 15 | | 0.00 | 0.00 |
| 16 | | 0.00 | 0.00 |
| 17 | | 0.00 | 0.00 |
| 18 | | 0.00 | 0.00 |
| 19 | | 0.00 | 0.00 |
| 20 | | 0.00 | 0.00 |

**Permeability rate in accordance with BS EN 22282-2 (Annex B.3)**

Remarks:
1) Level data recorded using RuggedTroll Datalogger
2) Water level sensor placed 0.20 m above borehole base
3) No head of water achieved after pumping 1000 Ltrs of water down borehole.
4) Test terminated due to high permeability.

GROUND TECHNOLOGY

## Constant Head in Unsaturated Soils

BS EN ISO 22282-2:2012. Calculation Method B4.1.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Contract Number: | GT0386 | | | Contract Name: | Wansford to Sutton GI | | |
| Borehole ID: | BH111 | | | Date: | 18/04/2022 | | |
| Test No: | 1 of 1 | | | Drilling Method: | Rotary | | |
| Casing Diameter (D): | 0.05 | | | Base of casing | 4.00 | | |
| Test Length (L): | 4.00 | | | Operator: | MM | | |
| Borehole Test Section: | From | 4.00 | | Ground water level at start (mbgl): | 8.18 | | |
| | To | 8.00 | | | | | |

| Parameter | Unit | Symbol | Value |
|---|---|---|---|
| Internal Cross Section | | *S* | 0.00196 |
| Shape Factor (from ISO 22282-1) | | *F* | 4.9521 |
| Slope α | | *α* | n/a |
| Calculation Reference | | | B.4.1 |
| Permeability Coefficient | $m/sec^{-1}$ | *k* | **n/a** |

Remarks:
1) Level data recorded using RuggedTroll Datalogger
2) Water level sensor placed 0.10 m above borehole base
3) No head of water achieved after pumping 1000 Ltrs of water down borehole.
4) Test terminated due to high soakaway rate.

GROUND TECHNOLOGY

| Water Permeability Test in a Borehole Using Open Systems ISO 22282-2 | | | | | |
|---|---|---|---|---|---|
| Contract Number: | GT0386 | | Contract Name: | Wansford to Sutton GI | |
| Borehole ID: | BH114 | | Date: | 21/04/2022 | |
| Test No: | 1 of 3 | | Drilling Method: | Rotary | |
| Borehole Diameter: | 0.2 | | Base of plain pipe | 1.00 | |
| Test Head: | 1.45 | | Operator: | MM | |
| Borehole Test Section: | From | 1.00 | Ground water level at start (mbgl): | 1.48 | |
| | To | 5.00 | | | |
| Test Method: | Falling Head | | Time at Start of Test: | 21/04/2022 13:54 | |
| Type of Filter: | None used | | Time at End of Test: | 21/04/2022 14:05 | |

| Time (mins): | Flow Rate (V) | Hydraulic Head (h) | Head Changes (m) |
|---|---|---|---|
| 0 | | 1.45 | 0 |
| 0.58 | | 1.05 | -0.40 |
| 1.16 | | 0.55 | -0.90 |
| 1.74 | | 0.33 | -1.12 |
| 2.32 | | 0.20 | -1.25 |
| 2.9 | | 0.18 | -1.27 |
| 3.48 | | 0.16 | -1.29 |
| 4.06 | | 0.15 | -1.30 |
| 4.64 | | 0.14 | -1.31 |
| 5.22 | | 0.12 | -1.33 |
| 5.8 | | 0.11 | -1.34 |
| 6.38 | | 0.11 | -1.34 |
| 6.96 | | 0.10 | -1.35 |
| 7.54 | | 0.10 | -1.35 |
| 8.12 | | 0.09 | -1.36 |
| 8.7 | | 0.09 | -1.36 |
| 9.28 | | 0.09 | -1.36 |
| 9.86 | | 0.08 | -1.37 |
| 10.44 | | 0.08 | -1.37 |
| 11.02 | | 0.07 | -1.38 |
| 11.6 | | 0.06 | -1.39 |

**Permeability rate in accordance with BS EN 22282-2 (Annex B.3)**

Remarks:
1) Level data recorded using RuggedTroll Datalogger
2) Water level sensor placed 0.20 m above borehole base

GROUND TECHNOLOGY

## Constant Head in Unsaturated Soils

BS EN ISO 22282-2:2012. Calculation Method B4.1.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Contract Number: | GT0386 | | | Contract Name: | Wansford to Sutton GI | | |
| Borehole ID: | BH114 | | | Date: | 21/04/2022 | | |
| Test No: | 1 of 3 | | | Drilling Method: | Rotary | | |
| Casing Diameter (D): | 0.2 | | | Base of casing | 1.00 | | |
| Test Length (L): | 4.00 | | | Operator: | MM | | |
| Borehole Test Section: | From | 1.00 | | Ground water level at start (mbgl): | 1.48 | | |
| | To | 5.00 | | | | | |

| Parameter | Unit | Symbol | Value |
|---|---|---|---|
| Internal Cross Section | | *S* | 0.03142 |
| Shape Factor (from ISO 22282-1) | | *F* | 6.8131 |
| Slope α | | *α* | 0.0031 |
| Calculation Reference | | | B.4.1 |
| Permeability Coefficient | $m/sec^{-1}$ | *k* | **1.42E-05** |

Remarks:
1) Level data recorded using RuggedTroll Datalogger
2) Water level sensor placed 0.10 m above borehole base

GROUND TECHNOLOGY

| Water Permeability Test in a Borehole Using Open Systems ISO 22282-2 | | | | | |
|---|---|---|---|---|---|
| Contract Number: | GT0386 | | Contract Name: | Wansford to Sutton GI | |
| Borehole ID: | BH114 | | Date: | 21/04/2022 | |
| Test No: | 2 of 3 | | Drilling Method: | Rotary | |
| Borehole Diameter: | 0.05 | | Base of plain pipe | 1.00 | |
| Test Head: | 1.47 | | Operator: | MM | |
| Borehole Test Section: | From | 1.00 | Ground water level at start (mbgl): | 1.48 | |
| | To | 5.00 | | | |
| Test Method: | Falling Head | | Time at Start of Test: | 21/04/2022 14:11 | |
| Type of Filter: | None used | | Time at End of Test: | 21/04/2022 14:26 | |

| Time (mins): | Flow Rate (V) | Hydraulic Head (h) | Head Changes (m) |
|---|---|---|---|
| 0 | | 1.47 | 0 |
| 0.75 | | 0.54 | -0.93 |
| 1.5 | | 0.21 | -1.26 |
| 2.25 | | 0.18 | -1.29 |
| 3 | | 0.16 | -1.31 |
| 3.75 | | 0.14 | -1.33 |
| 4.5 | | 0.12 | -1.35 |
| 5.25 | | 0.10 | -1.37 |
| 6 | | 0.08 | -1.39 |
| 6.75 | | 0.07 | -1.40 |
| 7.5 | | 0.07 | -1.40 |
| 8.25 | | 0.06 | -1.41 |
| 9 | | 0.06 | -1.41 |
| 9.75 | | 0.06 | -1.42 |
| 10.5 | | 0.05 | -1.42 |
| 11.25 | | 0.05 | -1.42 |
| 12 | | 0.04 | -1.43 |
| 12.75 | | 0.04 | -1.43 |
| 13.5 | | 0.03 | -1.44 |
| 14.25 | | 0.03 | -1.44 |
| 15 | | 0.02 | -1.45 |

**Permeability rate in accordance with BS EN 22282-2 (Annex B.3)**

Remarks:
1) Level data recorded using RuggedTroll Datalogger
2) Water level sensor placed 0.20 m above borehole base

GROUND TECHNOLOGY

## Constant Head in Unsaturated Soils

BS EN ISO 22282-2:2012. Calculation Method B4.1.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Contract Number: | GT0386 | | | Contract Name: | Wansford to Sutton GI | | |
| Borehole ID: | BH114 | | | Date: | 21/04/2022 | | |
| Test No: | 2 of 3 | | | Drilling Method: | Rotary | | |
| Casing Diameter (D): | 0.05 | | | Base of casing | 1.00 | | |
| Test Length (L): | 4.00 | | | Operator: | MM | | |
| Borehole Test Section: | From | 1.00 | | Ground water level at start (mbgl): | 1.48 | | |
| | To | 5.00 | | | | | |

| Parameter | Unit | Symbol | Value |
|---|---|---|---|
| Internal Cross Section | | *S* | 0.00196 |
| Shape Factor (from ISO 22282-1) | | *F* | 4.9521 |
| Slope α | | *α* | 0.0028 |
| Calculation Reference | | | B.4.1 |
| Permeability Coefficient | $m/sec^{-1}$ | *k* | **1.12E-06** |

Remarks:
1) Level data recorded using RuggedTroll Datalogger
2) Water level sensor placed 0.10 m above borehole base

GROUND TECHNOLOGY

| Water Permeability Test in a Borehole Using Open Systems ISO 22282-2 | | | | | |
|---|---|---|---|---|---|
| Contract Number: | GT0386 | | Contract Name: | Wansford to Sutton GI | |
| Borehole ID: | BH114 | | Date: | 21/04/2022 | |
| Test No: | 3 of 3 | | Drilling Method: | Rotary | |
| Borehole Diameter: | 0.05 | | Base of plain pipe | 1.00 | |
| Test Head: | 1.39 | | Operator: | MM | |
| Borehole Test Section: | From | 1.00 | Ground water level at start (mbgl): | 1.48 | |
| | To | 5.00 | | | |
| Test Method: | Falling Head | | Time at Start of Test: | 21/04/2022 14:30 | |
| Type of Filter: | None used | | Time at End of Test: | 21/04/2022 14:45 | |

| Time (mins): | Flow Rate (V) | Hydraulic Head (h) | Head Changes (m) |
|---|---|---|---|
| 0 | | 1.39 | 0 |
| 0.75 | | 0.61 | -0.78 |
| 1.5 | | 0.29 | -1.10 |
| 2.25 | | 0.19 | -1.20 |
| 3 | | 0.18 | -1.21 |
| 3.75 | | 0.16 | -1.23 |
| 4.5 | | 0.15 | -1.24 |
| 5.25 | | 0.14 | -1.25 |
| 6 | | 0.12 | -1.27 |
| 6.75 | | 0.10 | -1.29 |
| 7.5 | | 0.10 | -1.29 |
| 8.25 | | 0.10 | -1.30 |
| 9 | | 0.09 | -1.30 |
| 9.75 | | 0.09 | -1.31 |
| 10.5 | | 0.08 | -1.31 |
| 11.25 | | 0.08 | -1.31 |
| 12 | | 0.07 | -1.32 |
| 12.75 | | 0.06 | -1.33 |
| 13.5 | | 0.05 | -1.34 |
| 14.25 | | 0.05 | -1.34 |
| 15 | | 0.04 | -1.35 |

**Permeability rate in accordance with BS EN 22282-2 (Annex B.3)**

Remarks:
1) Level data recorded using RuggedTroll Datalogger
2) Water level sensor placed 0.20 m above borehole base

GROUND TECHNOLOGY

## Constant Head in Unsaturated Soils

BS EN ISO 22282-2:2012. Calculation Method B4.1.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Contract Number: | GT0386 | | | Contract Name: | Wansford to Sutton GI | | |
| Borehole ID: | BH114 | | | Date: | 21/04/2022 | | |
| Test No: | 3 of 3 | | | Drilling Method: | Rotary | | |
| Casing Diameter (D): | 0.05 | | | Base of casing | 1.00 | | |
| Test Length (L): | 4.00 | | | Operator: | MM | | |
| Borehole Test Section: | From | 1.00 | | Ground water level at start (mbgl): | 1.48 | | |
| | To | 5.00 | | | | | |

| Parameter | Unit | Symbol | Value |
|---|---|---|---|
| Internal Cross Section | | *S* | 0.00196 |
| Shape Factor (from ISO 22282-1) | | *F* | 4.9521 |
| Slope α | | *α* | 0.0023 |
| Calculation Reference | | | B.4.1 |
| Permeability Coefficient | $m/sec^{-1}$ | *k* | **9.15E-07** |

Remarks:
1) Level data recorded using RuggedTroll Datalogger
2) Water level sensor placed 0.10 m above borehole base

GROUND TECHNOLOGY

| Water Permeability Test in a Borehole Using Open Systems ISO 22282-2 | | | | | |
|---|---|---|---|---|---|
| Contract Number: | GT0386 | | Contract Name: | Wansford to Sutton GI | |
| Borehole ID: | BH121 | | Date: | 18/04/2022 | |
| Test No: | 1 of 1 | | Drilling Method: | Rotary | |
| Borehole Diameter: | 0.05 | | Base of plain pipe | 1.00 | |
| Test Head: | n/a | | Operator: | MM | |
| Borehole Test Section: | From | 1.00 | Ground water level at start (mbgl): | n/a | |
| | To | 5.00 | | | |
| Test Method: | Falling Head | | Time at Start of Test: | 18/04/2022 13:44 | |
| Type of Filter: | None used | | Time at End of Test: | 18/04/2022 14:04 | |

| Time (mins): | Flow Rate (V) | Hydraulic Head (h) | Head Changes (m) |
|---|---|---|---|
| 0 | | 0.00 | 0 |
| 1 | | 0.00 | 0.00 |
| 2 | | 0.00 | 0.00 |
| 3 | | 0.00 | 0.00 |
| 4 | | 0.00 | 0.00 |
| 5 | | 0.00 | 0.00 |
| 6 | | 0.00 | 0.00 |
| 7 | | 0.00 | 0.00 |
| 8 | | 0.00 | 0.00 |
| 9 | | 0.00 | 0.00 |
| 10 | | 0.00 | 0.00 |
| 11 | | 0.00 | 0.00 |
| 12 | | 0.00 | 0.00 |
| 13 | | 0.00 | 0.00 |
| 14 | | 0.00 | 0.00 |
| 15 | | 0.00 | 0.00 |
| 16 | | 0.00 | 0.00 |
| 17 | | 0.00 | 0.00 |
| 18 | | 0.00 | 0.00 |
| 19 | | 0.00 | 0.00 |
| 20 | | 0.00 | 0.00 |

**Permeability rate in accordance with BS EN 22282-2 (Annex B.3)**

Remarks:
1) Level data recorded using RuggedTroll Datalogger
2) Water level sensor placed 0.20 m above borehole base
3) No head of water achieved after pumping 1000 Ltrs of water down borehole.
4) Test terminated due to high permeability.

GROUND TECHNOLOGY

## Constant Head in Unsaturated Soils

BS EN ISO 22282-2:2012. Calculation Method B4.1.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Contract Number: | GT0386 | | | Contract Name: | Wansford to Sutton GI | | |
| Borehole ID: | BH121 | | | Date: | 18/04/2022 | | |
| Test No: | 1 of 1 | | | Drilling Method: | Rotary | | |
| Casing Diameter (D): | 0.05 | | | Base of casing | 1.00 | | |
| Test Length (L): | 4.00 | | | Operator: | MM | | |
| Borehole Test Section: | From | 1.00 | | Ground water level at start (mbgl): | n/a | | |
| | To | 5.00 | | | | | |

| Parameter | Unit | Symbol | Value |
|---|---|---|---|
| Internal Cross Section | | *S* | 0.00196 |
| Shape Factor (from ISO 22282-1) | | *F* | 4.9521 |
| Slope α | | *α* | n/a |
| Calculation Reference | | | B.4.1 |
| Permeability Coefficient | $m/sec^{-1}$ | *k* | **n/a** |

Remarks:
1) Level data recorded using RuggedTroll Datalogger
2) Water level sensor placed 0.10 m above borehole base
3) No head of water achieved after pumping 1000 Ltrs of water down borehole.
4) Test terminated due to high soakaway rate.

GROUND TECHNOLOGY

| Water Permeability Test in a Borehole Using Open Systems ISO 22282-2 | | | | | | | |
|---|---|---|---|---|---|---|---|
| Contract Number: | GT0386 | | | Contract Name: | Wansford to Sutton GI | | |
| Borehole ID: | BH123 | | | Date: | 18/04/2022 | | |
| Test No: | 1 of 3 | | | Drilling Method: | Rotary | | |
| Borehole Diameter: | 0.05 | | | Base of plain pipe | 2.50 | | |
| Test Head: | 3.50 | | | Operator: | MM | | |
| Borehole Test Section: | From | 1.00 | | Ground water level at start (mbgl): | N/A | | |
| | To | 3.50 | | | | | |
| Test Method: | Falling Head | | Time at Start of Test: | | 18/04/2022 15:10 | | |
| Type of Filter: | None used | | Time at End of Test: | | 18/04/2022 15:13 | | |
| Time (mins): | Flow Rate (V) | | Hydraulic Head (h) | | Head Changes (m) | | |
| 0.2 | | | 3.50 | | 0 | | |
| 0.4 | | | 3.21 | | -0.29 | | |
| 0.6 | | | 2.78 | | -0.72 | | |
| 0.8 | | | 2.58 | | -0.92 | | |
| 1 | | | 2.27 | | -1.23 | | |
| 1.2 | | | 1.94 | | -1.56 | | |
| 1.4 | | | 1.67 | | -1.83 | | |
| 1.6 | | | 1.43 | | -2.07 | | |
| 1.8 | | | 1.22 | | -2.28 | | |
| 2 | | | 1.03 | | -2.47 | | |
| 2.2 | | | 0.86 | | -2.64 | | |
| 2.4 | | | 0.57 | | -2.93 | | |
| 2.6 | | | 0.38 | | -3.12 | | |
| 2.8 | | | 0.21 | | -3.29 | | |
| 3 | | | 0.13 | | -3.37 | | |
| 3.2 | | | 0.08 | | -3.42 | | |
| 3.4 | | | 0.02 | | -3.48 | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

**Permeability rate in accordance with BS EN 22282-2 (Annex B.3)**

Remarks:
1) Level data recorded using RuggedTroll Datalogger
2) Water level sensor placed 0.20 m above borehole base

GROUND TECHNOLOGY

## Constant Head in Unsaturated Soils

BS EN ISO 22282-2:2012. Calculation Method B4.1.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Contract Number: | GT0386 | | | Contract Name: | Wansford to Sutton GI | | |
| Borehole ID: | BH123 | | | Date: | 18/04/2022 | | |
| Test No: | 1 of 3 | | | Drilling Method: | Rotary | | |
| Casing Diameter (D): | 0.05 | | | Base of casing | 2.50 | | |
| Test Length (L): | 2.50 | | | Operator: | MM | | |
| Borehole Test Section: | From | 1.00 | | Ground water level at start (mbgl): | N/A | | |
| | To | 3.50 | | | | | |

| Parameter | Unit | Symbol | Value |
|---|---|---|---|
| Internal Cross Section | | *S* | 0.00196 |
| Shape Factor (from ISO 22282-1) | | *F* | 3.4109 |
| Slope α | | *α* | 0.0206 |
| Calculation Reference | | | B.4.1 |
| Permeability Coefficient | $m/sec^{-1}$ | *k* | **1.19E-05** |

Remarks:
1) Level data recorded using RuggedTroll Datalogger
2) Water level sensor placed 0.10 m above borehole base

GROUND TECHNOLOGY

| Water Permeability Test in a Borehole Using Open Systems ISO 22282-2 | | | | | |
|---|---|---|---|---|---|
| Contract Number: | GT0386 | | Contract Name: | Wansford to Sutton GI | |
| Borehole ID: | BH123 | | Date: | 18/04/2022 | |
| Test No: | 2 of 3 | | Drilling Method: | Rotary | |
| Borehole Diameter: | 0.05 | | Base of plain pipe | 2.50 | |
| Test Head: | 3.50 | | Operator: | MM | |
| Borehole Test Section: | From | 1.00 | Ground water level at start (mbgl): | N/A | |
| | To | 3.50 | | | |
| Test Method: | Falling Head | | Time at Start of Test: | 18/04/2022 15:18 | |
| Type of Filter: | None used | | Time at End of Test: | 18/04/2022 15:23 | |

| Time (mins): | Flow Rate (V) | Hydraulic Head (h) | Head Changes (m) |
|---|---|---|---|
| 0 | | 3.50 | 0 |
| 0.4 | | 3.31 | -0.19 |
| 0.8 | | 2.76 | -0.74 |
| 1.2 | | 2.14 | -1.36 |
| 1.6 | | 1.65 | -1.85 |
| 2 | | 1.23 | -2.27 |
| 2.4 | | 0.92 | -2.58 |
| 2.8 | | 0.67 | -2.83 |
| 3.2 | | 0.49 | -3.01 |
| 3.6 | | 0.30 | -3.20 |
| 4 | | 0.21 | -3.29 |
| 4.4 | | 0.14 | -3.36 |
| 4.8 | | 0.08 | -3.42 |
| 5.2 | | 0.06 | -3.44 |
| 5.6 | | 0.04 | -3.46 |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

**Permeability rate in accordance with BS EN 22282-2 (Annex B.3)**

Remarks:
1) Level data recorded using RuggedTroll Datalogger
2) Water level sensor placed 0.20 m above borehole base

GROUND TECHNOLOGY

## Constant Head in Unsaturated Soils

BS EN ISO 22282-2:2012. Calculation Method B4.1.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Contract Number: | GT0386 | | | Contract Name: | Wansford to Sutton GI | | |
| Borehole ID: | BH123 | | | Date: | 18/04/2022 | | |
| Test No: | 2 of 3 | | | Drilling Method: | Rotary | | |
| Casing Diameter (D): | 0.05 | | | Base of casing | 2.50 | | |
| Test Length (L): | 2.50 | | | Operator: | MM | | |
| Borehole Test Section: | From | 1.00 | | Ground water level at start (mbgl): | N/A | | |
| | To | 3.50 | | | | | |

| Parameter | Unit | Symbol | Value |
|---|---|---|---|
| Internal Cross Section | | *S* | 0.00196 |
| Shape Factor (from ISO 22282-1) | | *F* | 3.4109 |
| Slope α | | *α* | 0.0139 |
| Calculation Reference | | | B.4.1 |
| Permeability Coefficient | $m/sec^{-1}$ | *k* | **8.02E-06** |

Remarks:
1) Level data recorded using RuggedTroll Datalogger
2) Water level sensor placed 0.10 m above borehole base

GROUND TECHNOLOGY

| Water Permeability Test in a Borehole Using Open Systems ISO 22282-2 | | | | | |
|---|---|---|---|---|---|
| Contract Number: | GT0386 | | Contract Name: | Wansford to Sutton GI | |
| Borehole ID: | BH123 | | Date: | 18/04/2022 | |
| Test No: | 3 of 3 | | Drilling Method: | Rotary | |
| Borehole Diameter: | 0.05 | | Base of plain pipe | 2.50 | |
| Test Head: | 3.50 | | Operator: | MM | |
| Borehole Test Section: | From | 1.00 | Ground water level at start (mbgl): | N/A | |
| | To | 3.50 | | | |
| Test Method: | Falling Head | | Time at Start of Test: | 18/04/2022 16:00 | |
| Type of Filter: | None used | | Time at End of Test: | 18/04/2022 16:08 | |

| Time (mins): | Flow Rate (V) | Hydraulic Head (h) | Head Changes (m) |
|---|---|---|---|
| 0 | | 3.50 | 0 |
| 0.4 | | 3.31 | -0.19 |
| 0.8 | | 2.96 | -0.54 |
| 1.2 | | 2.65 | -0.85 |
| 1.6 | | 2.37 | -1.13 |
| 2 | | 2.15 | -1.35 |
| 2.4 | | 1.97 | -1.53 |
| 2.8 | | 1.76 | -1.74 |
| 3.2 | | 1.61 | -1.89 |
| 3.6 | | 1.43 | -2.07 |
| 4 | | 1.25 | -2.25 |
| 4.4 | | 1.07 | -2.43 |
| 4.8 | | 0.89 | -2.61 |
| 5.2 | | 0.71 | -2.79 |
| 5.6 | | 0.53 | -2.97 |
| 6 | | 0.35 | -3.15 |
| 6.4 | | 0.27 | -3.23 |
| 6.8 | | 0.20 | -3.30 |
| 7.2 | | 0.15 | -3.35 |
| 7.6 | | 0.11 | -3.39 |
| 8 | | 0.07 | -3.43 |

**Permeability rate in accordance with BS EN 22282-2 (Annex B.3)**

Remarks:
1) Level data recorded using RuggedTroll Datalogger
2) Water level sensor placed 0.20 m above borehole base

GROUND TECHNOLOGY

## Constant Head in Unsaturated Soils

BS EN ISO 22282-2:2012. Calculation Method B4.1.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Contract Number: | GT0386 | | | Contract Name: | Wansford to Sutton GI | | |
| Borehole ID: | BH123 | | | Date: | 18/04/2022 | | |
| Test No: | 3 of 3 | | | Drilling Method: | Rotary | | |
| Casing Diameter (D): | 0.05 | | | Base of casing | 2.50 | | |
| Test Length (L): | 2.50 | | | Operator: | MM | | |
| Borehole Test Section: | From | 1.00 | | Ground water level at start (mbgl): | N/A | | |
| | To | 3.50 | | | | | |

| Parameter | Unit | Symbol | Value |
|---|---|---|---|
| Internal Cross Section | | *S* | 0.00196 |
| Shape Factor (from ISO 22282-1) | | *F* | 3.4109 |
| Slope α | | *α* | 0.0078 |
| Calculation Reference | | | B.4.1 |
| Permeability Coefficient | $m/sec^{-1}$ | *k* | **4.46E-06** |

Remarks:
1) Level data recorded using RuggedTroll Datalogger
2) Water level sensor placed 0.10 m above borehole base

GROUND TECHNOLOGY

| Water Permeability Test in a Borehole Using Open Systems ISO 22282-2 | | | | | |
|---|---|---|---|---|---|
| Contract Number: | GT0386 | | Contract Name: | Wansford to Sutton GI | |
| Borehole ID: | BH124 | | Date: | 18/04/2022 | |
| Test No: | 1 of 1 | | Drilling Method: | Rotary | |
| Borehole Diameter: | 0.05 | | Base of plain pipe | 5.00 | |
| Test Head: | n/a | | Operator: | MM | |
| Borehole Test Section: | From | 5.00 | Ground water level at start (mbgl): | n/a | |
| | To | 10.00 | | | |
| Test Method: | Falling Head | | Time at Start of Test: | 18/04/2022 14:47 | |
| Type of Filter: | None used | | Time at End of Test: | 18/04/2022 15:07 | |

| Time (mins): | Flow Rate (V) | Hydraulic Head (h) | Head Changes (m) |
|---|---|---|---|
| 0 | | 0.00 | 0 |
| 1 | | 0.00 | 0.00 |
| 2 | | 0.00 | 0.00 |
| 3 | | 0.00 | 0.00 |
| 4 | | 0.00 | 0.00 |
| 5 | | 0.00 | 0.00 |
| 6 | | 0.00 | 0.00 |
| 7 | | 0.00 | 0.00 |
| 8 | | 0.00 | 0.00 |
| 9 | | 0.00 | 0.00 |
| 10 | | 0.00 | 0.00 |
| 11 | | 0.00 | 0.00 |
| 12 | | 0.00 | 0.00 |
| 13 | | 0.00 | 0.00 |
| 14 | | 0.00 | 0.00 |
| 15 | | 0.00 | 0.00 |
| 16 | | 0.00 | 0.00 |
| 17 | | 0.00 | 0.00 |
| 18 | | 0.00 | 0.00 |
| 19 | | 0.00 | 0.00 |
| 20 | | 0.00 | 0.00 |

**Permeability rate in accordance with BS EN 22282-2 (Annex B.3)**

Remarks:
1) Level data recorded using RuggedTroll Datalogger
2) Water level sensor placed 0.20 m above borehole base
3) No head of water achieved after pumping 1000 Ltrs of water down borehole.
4) Test terminated due to high permeability.

GROUND TECHNOLOGY

## Constant Head in Unsaturated Soils

BS EN ISO 22282-2:2012. Calculation Method B4.1.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Contract Number: | GT0386 | | | Contract Name: | Wansford to Sutton GI | | |
| Borehole ID: | BH124 | | | Date: | 18/04/2022 | | |
| Test No: | 1 of 1 | | | Drilling Method: | Rotary | | |
| Casing Diameter (D): | 0.05 | | | Base of casing | 5.00 | | |
| Test Length (L): | 5.00 | | | Operator: | MM | | |
| Borehole Test Section: | From | 5.00 | | Ground water level at start (mbgl): | n/a | | |
| | To | 10.00 | | | | | |

| Parameter | Unit | Symbol | Value |
|---|---|---|---|
| Internal Cross Section | | *S* | 0.00196 |
| Shape Factor (from ISO 22282-1) | | *F* | 5.9294 |
| Slope α | | *α* | n/a |
| Calculation Reference | | | B.4.1 |
| Permeability Coefficient | $m/sec^{-1}$ | *k* | **n/a** |

Remarks:
1) Level data recorded using RuggedTroll Datalogger
2) Water level sensor placed 0.10 m above borehole base
3) No head of water achieved after pumping 1000 Ltrs of water down borehole.
4) Test terminated due to high soakaway rate.

GROUND TECHNOLOGY

| Water Permeability Test in a Borehole Using Open Systems ISO 22282-2 | | | | | |
|---|---|---|---|---|---|
| Contract Number: | GT0386 | | Contract Name: | Wansford to Sutton GI | |
| Borehole ID: | BH132 | | Date: | 20/04/2022 | |
| Test No: | 1 of 3 | | Drilling Method: | Rotary | |
| Borehole Diameter: | 0.05 | | Base of casing | 1.00 | |
| Test Head: | 5.12 | | Operator: | MM | |
| Borehole Test Section: | From | 1.00 | Ground water level at start (mbgl): | 5.12 | |
| | To | 10.00 | | | |
| Test Method: | Falling Head | | Time at Start of Test: | 20/04/2022 10:57 | |
| Type of Filter: | None used | | Time at End of Test: | 20/04/2022 11:07 | |

| Time (mins): | Flow Rate (V) | Hydraulic Head (h) | Head Changes (m) |
|---|---|---|---|
| 0 | | 5.12 | 0 |
| 0.5 | | 2.53 | -2.59 |
| 1 | | 2.19 | -2.93 |
| 1.5 | | 1.79 | -3.33 |
| 2 | | 1.53 | -3.59 |
| 2.5 | | 1.23 | -3.89 |
| 3 | | 1.03 | -4.10 |
| 3.5 | | 0.83 | -4.29 |
| 4 | | 0.70 | -4.42 |
| 4.5 | | 0.59 | -4.54 |
| 5 | | 0.49 | -4.63 |
| 5.5 | | 0.41 | -4.71 |
| 6 | | 0.35 | -4.77 |
| 6.5 | | 0.29 | -4.83 |
| 7 | | 0.24 | -4.88 |
| 7.5 | | 0.22 | -4.90 |
| 8 | | 0.19 | -4.93 |
| 8.5 | | 0.16 | -4.96 |
| 9 | | 0.13 | -4.99 |
| 9.5 | | 0.12 | -5.00 |
| 10 | | 0.10 | -5.02 |

**Permeability rate in accordance with BS EN 22282-2 (Annex B.3)**

Remarks:
1) Level data recorded using RuggedTroll Datalogger
2) Water level sensor placed 0.20 m above borehole base

GROUND TECHNOLOGY

## Constant Head in Unsaturated Soils

BS EN ISO 22282-2:2012. Calculation Method B4.1.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Contract Number: | GT0386 | | | Contract Name: | Wansford to Sutton GI | | |
| Borehole ID: | BH132 | | | Date: | 20/04/2022 | | |
| Test No: | 1 of 3 | | | Drilling Method: | Rotary | | |
| Casing Diameter (D): | 0.05 | | | Base of casing | 1.00 | | |
| Test Length (L): | 9.00 | | | Operator: | MM | | |
| Borehole Test Section: | From | 1.00 | | Ground water level at start (mbgl): | 5.12 | | |
| | To | 10.00 | | | | | |

| Parameter | Unit | Symbol | Value |
|---|---|---|---|
| Internal Cross Section | | *S* | 0.00196 |
| Shape Factor (from ISO 22282-1) | | *F* | 9.6071 |
| Slope α | | *α* | 0.0057 |
| Calculation Reference | | | B.4.1 |
| Permeability Coefficient | $m/sec^{-1}$ | *k* | **1.17E-06** |

Remarks:
1) Level data recorded using RuggedTroll Datalogger
2) Water level sensor placed 0.10 m above borehole base

GROUND TECHNOLOGY

| Water Permeability Test in a Borehole Using Open Systems ISO 22282-2 | | | | | |
|---|---|---|---|---|---|
| Contract Number: | GT0386 | | Contract Name: | Wansford to Sutton GI | |
| Borehole ID: | BH132 | | Date: | 20/04/2022 | |
| Test No: | 2 of 3 | | Drilling Method: | Rotary | |
| Borehole Diameter: | 0.05 | | Base of plain pipe | 1.00 | |
| Test Head: | 5.10 | | Operator: | MM | |
| Borehole Test Section: | From | 1.00 | Ground water level at start (mbgl): | 5.12 | |
| | To | 10.00 | | | |
| Test Method: | Falling Head | | Time at Start of Test: | 20/04/2022 10:57 | |
| Type of Filter: | None used | | Time at End of Test: | 20/04/2022 11:17 | |

| Time (mins): | Flow Rate (V) | Hydraulic Head (h) | Head Changes (m) |
|---|---|---|---|
| 0 | | 5.10 | 0 |
| 1 | | 2.62 | -2.48 |
| 2 | | 2.19 | -2.91 |
| 3 | | 1.85 | -3.26 |
| 4 | | 1.53 | -3.57 |
| 5 | | 1.20 | -3.90 |
| 6 | | 0.96 | -4.14 |
| 7 | | 0.77 | -4.33 |
| 8 | | 0.62 | -4.48 |
| 9 | | 0.52 | -4.59 |
| 10 | | 0.42 | -4.68 |
| 11 | | 0.36 | -4.74 |
| 12 | | 0.31 | -4.79 |
| 13 | | 0.27 | -4.83 |
| 14 | | 0.24 | -4.86 |
| 15 | | 0.21 | -4.89 |
| 16 | | 0.18 | -4.92 |
| 17 | | 0.15 | -4.95 |
| 18 | | 0.12 | -4.98 |
| 19 | | 0.09 | -5.01 |
| 20 | | 0.02 | -5.08 |

**Permeability rate in accordance with BS EN 22282-2 (Annex B.3)**

Remarks:
1) Level data recorded using RuggedTroll Datalogger
2) Water level sensor placed 0.20 m above borehole base

GROUND TECHNOLOGY

## Constant Head in Unsaturated Soils

BS EN ISO 22282-2:2012. Calculation Method B4.1.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Contract Number: | GT0386 | | | Contract Name: | Wansford to Sutton GI | | |
| Borehole ID: | BH132 | | | Date: | 20/04/2022 | | |
| Test No: | 2 of 3 | | | Drilling Method: | Rotary | | |
| Casing Diameter (D): | 0.05 | | | Base of casing | 1.00 | | |
| Test Length (L): | 9.00 | | | Operator: | MM | | |
| Borehole Test Section: | From | 1.00 | | Ground water level at start (mbgl): | 5.12 | | |
| | To | 10.00 | | | | | |

| Parameter | Unit | Symbol | Value |
|---|---|---|---|
| Internal Cross Section | | *S* | 0.00196 |
| Shape Factor (from ISO 22282-1) | | *F* | 9.6071 |
| Slope α | | *α* | 0.0033 |
| Calculation Reference | | | B.4.1 |
| Permeability Coefficient | $m/sec^{-1}$ | *k* | **6.83E-07** |

Remarks:
1) Level data recorded using RuggedTroll Datalogger
2) Water level sensor placed 0.10 m above borehole base

GROUND TECHNOLOGY

| Water Permeability Test in a Borehole Using Open Systems ISO 22282-2 | | | | | |
|---|---|---|---|---|---|
| Contract Number: | GT0386 | | Contract Name: | Wansford to Sutton GI | |
| Borehole ID: | BH132 | | Date: | 20/04/2022 | |
| Test No: | 3 of 3 | | Drilling Method: | Rotary | |
| Borehole Diameter: | 0.05 | | Base of plain pipe | 1.00 | |
| Test Head: | 5.07 | | Operator: | MM | |
| Borehole Test Section: | From | 1.00 | Ground water level at start (mbgl): | 5.12 | |
| | To | 10.00 | | | |
| Test Method: | Falling Head | | Time at Start of Test: | 20/04/2022 10:57 | |
| Type of Filter: | None used | | Time at End of Test: | 20/04/2022 11:29 | |

| Time (mins): | Flow Rate (V) | Hydraulic Head (h) | Head Changes (m) |
|---|---|---|---|
| 0 | | 5.07 | 0 |
| 1.6 | | 2.29 | -2.78 |
| 3.2 | | 1.77 | -3.30 |
| 4.8 | | 1.21 | -3.86 |
| 6.4 | | 0.81 | -4.26 |
| 8 | | 0.57 | -4.50 |
| 9.6 | | 0.42 | -4.65 |
| 11.2 | | 0.33 | -4.74 |
| 12.8 | | 0.26 | -4.81 |
| 14.4 | | 0.22 | -4.85 |
| 16 | | 0.19 | -4.88 |
| 17.6 | | 0.16 | -4.91 |
| 19.2 | | 0.15 | -4.92 |
| 20.8 | | 0.13 | -4.94 |
| 22.4 | | 0.12 | -4.95 |
| 24 | | 0.12 | -4.95 |
| 25.6 | | 0.11 | -4.96 |
| 27.2 | | 0.09 | -4.98 |
| 28.8 | | 0.08 | -4.99 |
| 30.4 | | 0.07 | -5.00 |
| 32 | | 0.06 | -5.01 |

**Permeability rate in accordance with BS EN 22282-2 (Annex B.3)**

Remarks:
1) Level data recorded using RuggedTroll Datalogger
2) Water level sensor placed 0.20 m above borehole base

GROUND TECHNOLOGY

## Constant Head in Unsaturated Soils

BS EN ISO 22282-2:2012. Calculation Method B4.1.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Contract Number: | GT0386 | | | Contract Name: | Wansford to Sutton GI | | |
| Borehole ID: | BH132 | | | Date: | 20/04/2022 | | |
| Test No: | 3 of 3 | | | Drilling Method: | Rotary | | |
| Casing Diameter (D): | 0.05 | | | Base of casing | 1.00 | | |
| Test Length (L): | 9.00 | | | Operator: | MM | | |
| Borehole Test Section: | From | 1.00 | | Ground water level at start (mbgl): | 5.12 | | |
| | To | 10.00 | | | | | |

| Parameter | Unit | Symbol | Value |
|---|---|---|---|
| Internal Cross Section | | *S* | 0.00196 |
| Shape Factor (from ISO 22282-1) | | *F* | 9.6071 |
| Slope α | | *α* | 0.0018 |
| Calculation Reference | | | B.4.1 |
| Permeability Coefficient | $m/sec^{-1}$ | *k* | **3.75E-07** |

Remarks:
1) Level data recorded using RuggedTroll Datalogger
2) Water level sensor placed 0.10 m above borehole base

# Trial pit soakaway test
# BRE Digest 365

GROUND TECHNOLOGY

| Job details | | | |
|---|---|---|---|
| Job number: | **GT0386** | Trial pit number: | **S101** |
| Job name: | **A47 Wansford to Sutton Duelling** | Test number: | **1 of 3** |
| Engineers initials: | JJ | Date: | 01/03/2022 |

| Test detials | | | |
|---|---|---|---|
| Pit depth (m): | 1.00 | Initial ground water (m bgl): | n/a |
| Pit width (m): | 0.25 | Water level at the start (m bgl): | 0.60 |
| Pit length (m): | 1.80 | Water level at the end (m bgl): | 0.87 |
| Gravel used: | Yes | Volume of water added (litres): | 300 |

| Test data | | | | | |
|---|---|---|---|---|---|
| Time (minutes) | Water level (m bgl) | Water level fall (m) | Time (minutes) | Water level (m bgl) | Water level fall (m) |
| 0.50 | 0.60 | -0.02 | 11.00 | 0.83 | -0.24 |
| 1.00 | 0.63 | -0.04 | 12.00 | 0.84 | -0.25 |
| 1.50 | 0.63 | -0.05 | 13.00 | 0.85 | -0.27 |
| 2.00 | 0.64 | -0.06 | 14.00 | 0.86 | -0.28 |
| 2.50 | 0.66 | -0.08 | 15.00 | 0.87 | -0.29 |
| 3.00 | 0.67 | -0.09 | | | |
| 3.50 | 0.68 | -0.10 | | | |
| 4.00 | 0.69 | -0.11 | | | |
| 4.50 | 0.70 | -0.12 | | | |
| 5.00 | 0.72 | -0.14 | | | |
| 5.50 | 0.72 | -0.13 | | | |
| 6.00 | 0.74 | -0.15 | | | |
| 6.50 | 0.75 | -0.17 | | | |
| 7.00 | 0.75 | -0.17 | | | |
| 7.50 | 0.77 | -0.18 | | | |
| 8.00 | 0.77 | -0.19 | | | |
| 8.50 | 0.78 | -0.20 | | | |
| 9.00 | 0.80 | -0.22 | | | |
| 9.50 | 0.79 | -0.21 | | | |
| 10.00 | 0.82 | -0.23 | | | |

**Soil description**

Firm orangish brown silty slightly sandy CLAY. Sand is fine and medium.

**Remarks**

Water level did not reach 75% effective depth. Result calculated based on actual depths achieved.

| Soil infiltration rate (***f***) | 1.73E-04 | m/s |
|---|---|---|

# Trial pit soakaway test
# BRE Digest 365

GROUND TECHNOLOGY

| Job details | | | |
|---|---|---|---|
| Job number: | **GT0386** | Trial pit number: | **S101** |
| Job name: | **A47 Wansford to Sutton Duelling** | Test number: | **2 of 3** |
| Engineers initials: | JJ | Date: | 01/03/2022 |

| Test detials | | | |
|---|---|---|---|
| Pit depth (m): | 1.00 | Initial ground water (m bgl): | n/a |
| Pit width (m): | 0.25 | Water level at the start (m bgl): | 0.11 |
| Pit length (m): | 1.80 | Water level at the end (m bgl): | 0.76 |
| Gravel used: | Yes | Volume of water added (litres): | 300 |

| Test data | | | | | |
|---|---|---|---|---|---|
| Time (minutes) | Water level (m bgl) | Water level fall (m) | Time (minutes) | Water level (m bgl) | Water level fall (m) |
| 0.50 | 0.11 | -0.02 | 11.00 | 0.22 | -0.13 |
| 1.00 | 0.11 | -0.03 | 12.00 | 0.24 | -0.15 |
| 1.50 | 0.13 | -0.04 | 13.00 | 0.24 | -0.16 |
| 2.00 | 0.12 | -0.04 | 14.00 | 0.25 | -0.17 |
| 2.50 | 0.13 | -0.05 | 15.00 | 0.27 | -0.18 |
| 3.00 | 0.14 | -0.05 | 20.00 | 0.32 | -0.24 |
| 3.50 | 0.15 | -0.06 | 25.00 | 0.37 | -0.28 |
| 4.00 | 0.15 | -0.06 | 30.00 | 0.41 | -0.32 |
| 4.50 | 0.15 | -0.07 | 40.00 | 0.46 | -0.37 |
| 5.00 | 0.16 | -0.07 | 50.00 | 0.52 | -0.43 |
| 5.50 | 0.17 | -0.08 | 60.00 | 0.56 | -0.48 |
| 6.00 | 0.17 | -0.09 | 90.00 | 0.65 | -0.56 |
| 6.50 | 0.17 | -0.09 | 120.00 | 0.72 | -0.63 |
| 7.00 | 0.18 | -0.10 | 150.00 | 0.76 | -0.67 |
| 7.50 | 0.19 | -0.10 | | | |
| 8.00 | 0.19 | -0.11 | | | |
| 8.50 | 0.20 | -0.12 | | | |
| 9.00 | 0.20 | -0.11 | | | |
| 9.50 | 0.21 | -0.12 | | | |
| 10.00 | 0.21 | -0.12 | | | |

**Soil description**

Firm orangish brown silty slightly sandy CLAY. Sand is fine and medium.

**Remarks**

Water level did not reach 75% effective depth. Result calculated based on actual depths achieved.

| Soil infiltration rate (***f***) | 2.60E-05 | m/s |
|---|---|---|

# Trial pit soakaway test
# BRE Digest 365

GROUND TECHNOLOGY

| Job details | | | |
|---|---|---|---|
| Job number: | **GT0386** | Trial pit number: | **S101** |
| Job name: | **A47 Wansford to Sutton Duelling** | Test number: | **3 of 3** |
| Engineers initials: | JJ | Date: | 01/03/2022 |

| Test detials | | | |
|---|---|---|---|
| Pit depth (m): | 1.00 | Initial ground water (m bgl): | n/a |
| Pit width (m): | 0.25 | Water level at the start (m bgl): | 0.09 |
| Pit length (m): | 1.80 | Water level at the end (m bgl): | 0.64 |
| Gravel used: | Yes | Volume of water added (litres): | 300 |

| Test data | | | | | |
|---|---|---|---|---|---|
| Time (minutes) | Water level (m bgl) | Water level fall (m) | Time (minutes) | Water level (m bgl) | Water level fall (m) |
| 0.50 | 0.09 | -0.02 | 11.00 | 0.22 | -0.15 |
| 1.00 | 0.10 | -0.03 | 12.00 | 0.22 | -0.15 |
| 1.50 | 0.11 | -0.04 | 13.00 | 0.24 | -0.17 |
| 2.00 | 0.12 | -0.05 | 14.00 | 0.25 | -0.18 |
| 2.50 | 0.12 | -0.05 | 15.00 | 0.26 | -0.19 |
| 3.00 | 0.13 | -0.06 | 20.00 | 0.31 | -0.24 |
| 3.50 | 0.13 | -0.06 | 25.00 | 0.35 | -0.28 |
| 4.00 | 0.14 | -0.07 | 30.00 | 0.39 | -0.32 |
| 4.50 | 0.15 | -0.08 | 40.00 | 0.45 | -0.38 |
| 5.00 | 0.15 | -0.09 | 50.00 | 0.50 | -0.43 |
| 5.50 | 0.16 | -0.09 | 60.00 | 0.55 | -0.48 |
| 6.00 | 0.16 | -0.09 | 90.00 | 0.64 | -0.57 |
| 6.50 | 0.17 | -0.10 | | | |
| 7.00 | 0.16 | -0.09 | | | |
| 7.50 | 0.18 | -0.11 | | | |
| 8.00 | 0.18 | -0.11 | | | |
| 8.50 | 0.19 | -0.12 | | | |
| 9.00 | 0.19 | -0.13 | | | |
| 9.50 | 0.20 | -0.13 | | | |
| 10.00 | 0.20 | -0.13 | | | |

**Soil description**

Firm orangish brown silty slightly sandy CLAY. Sand is fine and medium.

**Remarks**

Water level did not reach 75% effective depth. Result calculated based on actual depths achieved.

| Soil infiltration rate (***f***) | 3.10E-05 | m/s |
|---|---|---|

# Trial pit soakaway test
# BRE Digest 365

GROUND TECHNOLOGY

| Job details | | | |
|---|---|---|---|
| Job number: | **GT0386** | Trial pit number: | **S102** |
| Job name: | **A47 Wansford to Sutton Duelling** | Test number: | **1 of 2** |
| Engineers initials: | JJ | Date: | 21/02/2022 |

| Test detials | | | |
|---|---|---|---|
| Pit depth (m): | 1.50 | Initial ground water (m bgl): | n/a |
| Pit width (m): | 0.45 | Water level at the start (m bgl): | 0.86 |
| Pit length (m): | 2.00 | Water level at the end (m bgl): | 1.32 |
| Gravel used: | Yes | Volume of water added (litres): | 300 |

**Test data**

| Time (minutes) | Water level (m bgl) | Water level fall (m) | Time (minutes) | Water level (m bgl) | Water level fall (m) |
|---|---|---|---|---|---|
| 0.00 | 0.86 | 0.00 | | | |
| 0.10 | 0.88 | -0.02 | | | |
| 0.20 | 0.92 | -0.05 | | | |
| 0.30 | 0.96 | -0.10 | | | |
| 0.40 | 0.99 | -0.12 | | | |
| 0.50 | 1.02 | -0.15 | | | |
| 0.60 | 1.06 | -0.20 | | | |
| 0.70 | 1.09 | -0.22 | | | |
| 0.80 | 1.10 | -0.24 | | | |
| 0.90 | 1.13 | -0.27 | | | |
| 1.00 | 1.14 | -0.28 | | | |
| 1.10 | 1.17 | -0.31 | | | |
| 1.20 | 1.19 | -0.33 | | | |
| 1.30 | 1.21 | -0.35 | | | |
| 1.40 | 1.23 | -0.37 | | | |
| 1.50 | 1.24 | -0.38 | | | |
| 1.60 | 1.26 | -0.40 | | | |
| 1.70 | 1.28 | -0.42 | | | |
| 1.80 | 1.31 | -0.44 | | | |
| 1.90 | 1.32 | -0.46 | | | |

**Soil description**

Extremely weak to very weak light yellowish brown and weathered very sandy LIMESTONE. Sand is fine to coarse.

**Remarks**

Complete test
Could not fill pit to the top with water due to fast soakaway rate

| Soil infiltration rate (***f***) | 1.36E-03 | m/s |
|---|---|---|

# Trial pit soakaway test
# BRE Digest 365

GROUND TECHNOLOGY

| Job details | | | |
|---|---|---|---|
| Job number: | **GT0386** | Trial pit number: | **S102** |
| Job name: | **A47 Wansford to Sutton Duelling** | Test number: | **2 of 2** |
| Engineers initials: | JJ | Date: | 21/02/2022 |

| Test detials | | | |
|---|---|---|---|
| Pit depth (m): | 1.50 | Initial ground water (m bgl): | n/a |
| Pit width (m): | 0.45 | Water level at the start (m bgl): | 0.71 |
| Pit length (m): | 2.00 | Water level at the end (m bgl): | 1.38 |
| Gravel used: | Yes | Volume of water added (litres): | 300 |

**Test data**

| Time (minutes) | Water level (m bgl) | Water level fall (m) | Time (minutes) | Water level (m bgl) | Water level fall (m) |
|---|---|---|---|---|---|
| 0.00 | 0.71 | 0.00 | | | |
| 0.20 | 0.73 | -0.02 | | | |
| 0.40 | 0.78 | -0.07 | | | |
| 0.60 | 0.85 | -0.14 | | | |
| 0.80 | 0.91 | -0.20 | | | |
| 1.00 | 0.97 | -0.26 | | | |
| 1.20 | 1.03 | -0.31 | | | |
| 1.40 | 1.07 | -0.36 | | | |
| 1.60 | 1.11 | -0.40 | | | |
| 1.80 | 1.14 | -0.43 | | | |
| 2.00 | 1.18 | -0.46 | | | |
| 2.20 | 1.21 | -0.50 | | | |
| 2.40 | 1.24 | -0.53 | | | |
| 2.60 | 1.27 | -0.55 | | | |
| 2.80 | 1.30 | -0.58 | | | |
| 3.00 | 1.33 | -0.61 | | | |
| 3.20 | 1.34 | -0.62 | | | |
| 3.40 | 1.34 | -0.62 | | | |
| 3.60 | 1.35 | -0.64 | | | |
| 3.80 | 1.38 | -0.66 | | | |

**Soil description**

Extremely weak to very weak light yellowish brown and weathered very sandy LIMESTONE. Sand is fine to coarse.

**Remarks**

Complete test
Could not fill pit to the top with water due to fast soakaway rate

| Soil infiltration rate (***f***) | 9.95E-04 | m/s |
|---|---|---|

# Trial pit soakaway test
# BRE Digest 365

GROUND TECHNOLOGY

| Job details | | | |
|---|---|---|---|
| Job number: | **GT0386** | Trial pit number: | **S103** |
| Job name: | **A47 Wansford to Sutton Duelling** | Test number: | **1 of 1** |
| Engineers initials: | JJ | Date: | 21/02/2022 |

| Test detials | | | |
|---|---|---|---|
| Pit depth (m): | 1.50 | Initial ground water (m bgl): | n/a |
| Pit width (m): | 0.45 | Water level at the start (m bgl): | n/a |
| Pit length (m): | 2.00 | Water level at the end (m bgl): | n/a |
| Gravel used: | Yes | Volume of water added (litres): | n/a |

| Test data | | | | | |
|---|---|---|---|---|---|
| Time (minutes) | Water level (m bgl) | Water level fall (m) | Time (minutes) | Water level (m bgl) | Water level fall (m) |
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**Soil description**

Extremely weak to very weak light yellowish brown and weathered very sandy LIMESTONE. Sand is fine to coarse

**Remarks**

Drainage rate faster than fill rate - could not achieve a head of water

| Soil infiltration rate (***f***) | m/s |
|---|---|

# Trial pit soakaway test
# BRE Digest 365

GROUND TECHNOLOGY

| Job details | | | |
|---|---|---|---|
| Job number: | **GT0386** | Trial pit number: | **S104** |
| Job name: | **A47 Wansford to Sutton Duelling** | Test number: | **1 of 3** |
| Engineers initials: | JJ | Date: | 09/03/2022 |

| Test detials | | | |
|---|---|---|---|
| Pit depth (m): | 1.50 | Initial ground water (m bgl): | n/a |
| Pit width (m): | 0.25 | Water level at the start (m bgl): | 0.31 |
| Pit length (m): | 1.40 | Water level at the end (m bgl): | 0.94 |
| Gravel used: | Yes | Volume of water added (litres): | 300 |

**Test data**

| Time (minutes) | Water level (m bgl) | Water level fall (m) | Time (minutes) | Water level (m bgl) | Water level fall (m) |
|---|---|---|---|---|---|
| 1.00 | 0.31 | 0.00 | 21.00 | 0.80 | -0.49 |
| 2.00 | 0.33 | -0.02 | 22.00 | 0.81 | -0.50 |
| 3.00 | 0.34 | -0.03 | 23.00 | 0.83 | -0.52 |
| 4.00 | 0.38 | -0.07 | 24.00 | 0.85 | -0.53 |
| 5.00 | 0.44 | -0.12 | 25.00 | 0.86 | -0.55 |
| 6.00 | 0.47 | -0.16 | 26.00 | 0.87 | -0.56 |
| 7.00 | 0.50 | -0.19 | 27.00 | 0.88 | -0.57 |
| 8.00 | 0.53 | -0.22 | 28.00 | 0.91 | -0.59 |
| 9.00 | 0.55 | -0.24 | 29.00 | 0.92 | -0.60 |
| 10.00 | 0.57 | -0.26 | 30.00 | 0.93 | -0.62 |
| 11.00 | 0.60 | -0.28 | 31.00 | 0.94 | -0.63 |
| 12.00 | 0.62 | -0.30 | | | |
| 13.00 | 0.65 | -0.33 | | | |
| 14.00 | 0.66 | -0.35 | | | |
| 15.00 | 0.69 | -0.38 | | | |
| 16.00 | 0.70 | -0.39 | | | |
| 17.00 | 0.73 | -0.41 | | | |
| 18.00 | 0.74 | -0.43 | | | |
| 19.00 | 0.76 | -0.45 | | | |
| 20.00 | 0.78 | -0.46 | | | |

**Soil description**

Dark brown clayey SAND. Sand is fine to coarse.

**Remarks**

Water level did not reach 75% effective depth. Result calculated based on actual depths achieved.

| Soil infiltration rate (***f***) | 6.89E-05 | m/s |
|---|---|---|

# Trial pit soakaway test
# BRE Digest 365

GROUND TECHNOLOGY

| Job details | | | |
|---|---|---|---|
| Job number: | **GT0386** | Trial pit number: | **S104** |
| Job name: | **A47 Wansford to Sutton Duelling** | Test number: | **2 of 3** |
| Engineers initials: | JJ | Date: | 09/03/2022 |

| Test detials | | | |
|---|---|---|---|
| Pit depth (m): | 1.50 | Initial ground water (m bgl): | n/a |
| Pit width (m): | 0.25 | Water level at the start (m bgl): | 0.27 |
| Pit length (m): | 1.40 | Water level at the end (m bgl): | 1.08 |
| Gravel used: | Yes | Volume of water added (litres): | 300 |

**Test data**

| Time (minutes) | Water level (m bgl) | Water level fall (m) | Time (minutes) | Water level (m bgl) | Water level fall (m) |
|---|---|---|---|---|---|
| 0.00 | 0.27 | 0.00 | 15.00 | 0.58 | -0.31 |
| 0.50 | 0.29 | -0.02 | 16.00 | 0.60 | -0.33 |
| 1.00 | 0.29 | -0.02 | 17.00 | 0.63 | -0.36 |
| 1.50 | 0.30 | -0.03 | 18.00 | 0.64 | -0.37 |
| 2.00 | 0.31 | -0.04 | 19.00 | 0.67 | -0.40 |
| 2.50 | 0.31 | -0.04 | 20.00 | 0.69 | -0.42 |
| 3.00 | 0.32 | -0.05 | 22.00 | 0.73 | -0.46 |
| 3.50 | 0.32 | -0.05 | 24.00 | 0.77 | -0.50 |
| 4.00 | 0.33 | -0.06 | 26.00 | 0.81 | -0.53 |
| 4.50 | 0.33 | -0.05 | 28.00 | 0.83 | -0.56 |
| 5.00 | 0.34 | -0.07 | 30.00 | 0.87 | -0.60 |
| 6.00 | 0.35 | -0.08 | 32.00 | 0.90 | -0.63 |
| 7.00 | 0.36 | -0.09 | 34.00 | 0.94 | -0.67 |
| 8.00 | 0.40 | -0.13 | 36.00 | 0.96 | -0.69 |
| 9.00 | 0.44 | -0.17 | 38.00 | 1.00 | -0.73 |
| 10.00 | 0.47 | -0.20 | 40.00 | 1.03 | -0.76 |
| 11.00 | 0.50 | -0.22 | 42.00 | 1.04 | -0.77 |
| 12.00 | 0.52 | -0.25 | 44.00 | 1.08 | -0.80 |
| 13.00 | 0.54 | -0.27 | | | |
| 14.00 | 0.56 | -0.29 | | | |

**Soil description**

Dark brown clayey SAND. Sand is fine to coarse.

**Remarks**

Water level did not reach 75% effective depth. Result calculated based on actual depths achieved.

| Soil infiltration rate ($f$) | 6.65E-05 | m/s |
|---|---|---|

# Trial pit soakaway test
# BRE Digest 365

GROUND TECHNOLOGY

| Job details | | | |
|---|---|---|---|
| Job number: | **GT0386** | Trial pit number: | **S104** |
| Job name: | **A47 Wansford to Sutton Duelling** | Test number: | **3 of 3** |
| Engineers initials: | JJ | Date: | 09/03/2022 |

| Test detials | | | |
|---|---|---|---|
| Pit depth (m): | 1.50 | Initial ground water (m bgl): | n/a |
| Pit width (m): | 0.25 | Water level at the start (m bgl): | 0.25 |
| Pit length (m): | 1.40 | Water level at the end (m bgl): | 0.62 |
| Gravel used: | Yes | Volume of water added (litres): | 300 |

**Test data**

| Time (minutes) | Water level (m bgl) | Water level fall (m) | Time (minutes) | Water level (m bgl) | Water level fall (m) |
|---|---|---|---|---|---|
| 0.00 | 0.25 | 0.00 | 10.00 | 0.38 | -0.13 |
| 0.50 | 0.26 | -0.01 | 11.00 | 0.41 | -0.16 |
| 1.00 | 0.27 | -0.02 | 12.00 | 0.44 | -0.19 |
| 1.50 | 0.27 | -0.02 | 13.00 | 0.47 | -0.22 |
| 2.00 | 0.27 | -0.02 | 14.00 | 0.49 | -0.25 |
| 2.50 | 0.28 | -0.03 | 15.00 | 0.52 | -0.27 |
| 3.00 | 0.29 | -0.05 | 16.00 | 0.54 | -0.29 |
| 3.50 | 0.29 | -0.04 | 17.00 | 0.56 | -0.31 |
| 4.00 | 0.30 | -0.05 | 18.00 | 0.58 | -0.33 |
| 4.50 | 0.30 | -0.06 | 19.00 | 0.59 | -0.34 |
| 5.00 | 0.30 | -0.05 | 20.00 | 0.61 | -0.36 |
| 5.50 | 0.31 | -0.06 | 21.00 | 0.62 | -0.38 |
| 6.00 | 0.31 | -0.06 | | | |
| 6.50 | 0.32 | -0.07 | | | |
| 7.00 | 0.32 | -0.07 | | | |
| 7.50 | 0.33 | -0.08 | | | |
| 8.00 | 0.33 | -0.09 | | | |
| 8.50 | 0.35 | -0.10 | | | |
| 9.00 | 0.35 | -0.10 | | | |
| 9.50 | 0.36 | -0.11 | | | |

**Soil description**

Dark brown clayey SAND. Sand is fine to coarse.

**Remarks**

Water level did not reach 75% effective depth. Result calculated based on actual depths achieved.

| Soil infiltration rate (***f***) | 5.51E-05 | m/s |
|---|---|---|

# Trial pit soakaway test
# BRE Digest 365

GROUND TECHNOLOGY

| Job details | | | |
|---|---|---|---|
| Job number: | **GT0386** | Trial pit number: | **S105** |
| Job name: | **A47 Wansford to Sutton Duelling** | Test number: | **1 of 3** |
| Engineers initials: | JJ | Date: | 03/03/2022 |

| Test detials | | | |
|---|---|---|---|
| Pit depth (m): | 1.50 | Initial ground water (m bgl): | n/a |
| Pit width (m): | 0.25 | Water level at the start (m bgl): | 0.15 |
| Pit length (m): | 1.65 | Water level at the end (m bgl): | 0.80 |
| Gravel used: | Yes | Volume of water added (litres): | 300 |

| Test data | | | | | |
|---|---|---|---|---|---|
| Time (minutes) | Water level (m bgl) | Water level fall (m) | Time (minutes) | Water level (m bgl) | Water level fall (m) |
| 0.00 | 0.15 | 0.00 | 40.00 | 0.66 | -0.51 |
| 2.00 | 0.19 | -0.04 | 44.00 | 0.68 | -0.53 |
| 4.00 | 0.23 | -0.08 | 48.00 | 0.70 | -0.55 |
| 6.00 | 0.25 | -0.11 | 52.00 | 0.71 | -0.56 |
| 8.00 | 0.28 | -0.14 | 56.00 | 0.72 | -0.58 |
| 10.00 | 0.33 | -0.19 | 60.00 | 0.74 | -0.59 |
| 12.00 | 0.38 | -0.23 | 64.00 | 0.74 | -0.60 |
| 14.00 | 0.41 | -0.26 | 68.00 | 0.76 | -0.62 |
| 16.00 | 0.44 | -0.30 | 72.00 | 0.78 | -0.63 |
| 18.00 | 0.47 | -0.32 | 76.00 | 0.78 | -0.64 |
| 20.00 | 0.50 | -0.35 | 80.00 | 0.80 | -0.65 |
| 22.00 | 0.51 | -0.37 | | | |
| 24.00 | 0.54 | -0.40 | | | |
| 26.00 | 0.55 | -0.41 | | | |
| 28.00 | 0.58 | -0.43 | | | |
| 30.00 | 0.59 | -0.44 | | | |
| 32.00 | 0.60 | -0.45 | | | |
| 34.00 | 0.63 | -0.48 | | | |
| 36.00 | 0.63 | -0.48 | | | |
| 38.00 | 0.64 | -0.49 | | | |

**Soil description**

Reddish brown and light brown silty very gravelly SAND. Sand is fine to coarse. Gravel is subangular to rounded fine to coarse flint and fine highly weathered limestone.

**Remarks**

Water level did not reach 75% effective depth. Result calculated based on actual depths achieved.

| Soil infiltration rate (***f***) | 2.32E-05 | m/s |
|---|---|---|

# Trial pit soakaway test
# BRE Digest 365

GROUND TECHNOLOGY

| Job details | | | |
|---|---|---|---|
| Job number: | **GT0386** | Trial pit number: | **S105** |
| Job name: | **A47 Wansford to Sutton Duelling** | Test number: | **2 of 3** |
| Engineers initials: | JJ | Date: | 03/03/2022 |

| Test detials | | | |
|---|---|---|---|
| Pit depth (m): | 1.50 | Initial ground water (m bgl): | n/a |
| Pit width (m): | 0.25 | Water level at the start (m bgl): | 0.13 |
| Pit length (m): | 1.65 | Water level at the end (m bgl): | 0.74 |
| Gravel used: | Yes | Volume of water added (litres): | 300 |

**Test data**

| Time (minutes) | Water level (m bgl) | Water level fall (m) | Time (minutes) | Water level (m bgl) | Water level fall (m) |
|---|---|---|---|---|---|
| 0.00 | 0.13 | 0.00 | 30.00 | 0.39 | -0.26 |
| 1.00 | 0.15 | -0.02 | 34.00 | 0.43 | -0.30 |
| 2.00 | 0.15 | -0.03 | 38.00 | 0.46 | -0.33 |
| 3.00 | 0.16 | -0.04 | 42.00 | 0.50 | -0.37 |
| 4.00 | 0.17 | -0.04 | 46.00 | 0.53 | -0.40 |
| 5.00 | 0.18 | -0.05 | 50.00 | 0.55 | -0.42 |
| 6.00 | 0.18 | -0.05 | 54.00 | 0.57 | -0.44 |
| 7.00 | 0.19 | -0.06 | 58.00 | 0.59 | -0.46 |
| 8.00 | 0.20 | -0.07 | 62.00 | 0.61 | -0.48 |
| 9.00 | 0.21 | -0.08 | 66.00 | 0.63 | -0.50 |
| 10.00 | 0.22 | -0.09 | 70.00 | 0.65 | -0.52 |
| 12.00 | 0.23 | -0.10 | 74.00 | 0.66 | -0.53 |
| 14.00 | 0.23 | -0.10 | 78.00 | 0.69 | -0.56 |
| 16.00 | 0.25 | -0.12 | 82.00 | 0.70 | -0.57 |
| 18.00 | 0.27 | -0.14 | 86.00 | 0.71 | -0.58 |
| 20.00 | 0.28 | -0.16 | 90.00 | 0.72 | -0.60 |
| 22.00 | 0.30 | -0.17 | 94.00 | 0.73 | -0.60 |
| 24.00 | 0.33 | -0.20 | 98.00 | 0.74 | -0.61 |
| 26.00 | 0.35 | -0.22 | | | |
| 28.00 | 0.37 | -0.24 | | | |

**Soil description**

Reddish brown and light brown silty very gravelly SAND. Sand is fine to coarse. Gravel is subangular to rounded fine to coarse flint and fine highly weathered limestone.

**Remarks**

Water level did not reach 75% effective depth. Result calculated based on actual depths achieved.

| Soil infiltration rate (***f***) | 1.85E-05 | m/s |
|---|---|---|

# Trial pit soakaway test
# BRE Digest 365

GROUND TECHNOLOGY

| Job details | | | |
|---|---|---|---|
| Job number: | **GT0386** | Trial pit number: | **S105** |
| Job name: | **A47 Wansford to Sutton Duelling** | Test number: | **3 of 3** |
| Engineers initials: | JJ | Date: | 03/03/2022 |

| Test detials | | | |
|---|---|---|---|
| Pit depth (m): | 1.50 | Initial ground water (m bgl): | n/a |
| Pit width (m): | 0.25 | Water level at the start (m bgl): | 0.16 |
| Pit length (m): | 1.65 | Water level at the end (m bgl): | 1.32 |
| Gravel used: | Yes | Volume of water added (litres): | 300 |

**Test data**

| Time (minutes) | Water level (m bgl) | Water level fall (m) | Time (minutes) | Water level (m bgl) | Water level fall (m) |
|---|---|---|---|---|---|
| 0.00 | 0.16 | 0.00 | 90.00 | 0.72 | -0.56 |
| 1.00 | 0.18 | -0.02 | 100.00 | 0.74 | -0.58 |
| 2.00 | 0.19 | -0.03 | 130.00 | 0.82 | -0.67 |
| 3.00 | 0.19 | -0.03 | 160.00 | 0.88 | -0.72 |
| 4.00 | 0.19 | -0.04 | 190.00 | 0.93 | -0.78 |
| 5.00 | 0.20 | -0.04 | 220.00 | 0.97 | -0.81 |
| 8.00 | 0.22 | -0.06 | 250.00 | 1.00 | -0.84 |
| 11.00 | 0.22 | -0.07 | 280.00 | 1.04 | -0.88 |
| 14.00 | 0.25 | -0.10 | 310.00 | 1.07 | -0.91 |
| 17.00 | 0.29 | -0.13 | 340.00 | 1.11 | -0.95 |
| 20.00 | 0.30 | -0.14 | 370.00 | 1.14 | -0.98 |
| 23.00 | 0.34 | -0.18 | 400.00 | 1.17 | -1.01 |
| 26.00 | 0.36 | -0.20 | 430.00 | 1.19 | -1.03 |
| 29.00 | 0.39 | -0.23 | 460.00 | 1.21 | -1.05 |
| 32.00 | 0.41 | -0.25 | 490.00 | 1.23 | -1.07 |
| 40.00 | 0.49 | -0.33 | 520.00 | 1.25 | -1.09 |
| 50.00 | 0.55 | -0.40 | 550.00 | 1.28 | -1.12 |
| 60.00 | 0.59 | -0.44 | 600.00 | 1.32 | -1.17 |
| 70.00 | 0.65 | -0.49 | | | |
| 80.00 | 0.69 | -0.53 | | | |

**Soil description**

Reddish brown and light brown silty very gravelly SAND. Sand is fine to coarse. Gravel is subangular to rounded fine to coarse flint and fine highly weathered limestone.

**Remarks**

Complete test

| Soil infiltration rate ($f$) | 9.85E-06 | m/s |
|---|---|---|

# Trial pit soakaway test
# BRE Digest 365

GROUND TECHNOLOGY

| Job details | | | |
|---|---|---|---|
| Job number: | **GT0386** | Trial pit number: | **S106** |
| Job name: | **A47 Wansford to Sutton Duelling** | Test number: | **1 of 3** |
| Engineers initials: | JJ | Date: | 01/04/2022 |

| Test detials | | | |
|---|---|---|---|
| Pit depth (m): | 1.50 | Initial ground water (m bgl): | n/a |
| Pit width (m): | 0.25 | Water level at the start (m bgl): | 0.24 |
| Pit length (m): | 1.60 | Water level at the end (m bgl): | 1.34 |
| Gravel used: | Yes | Volume of water added (litres): | 300 |

| Test data | | | | | |
|---|---|---|---|---|---|
| Time (minutes) | Water level (m bgl) | Water level fall (m) | Time (minutes) | Water level (m bgl) | Water level fall (m) |
| 0.00 | 0.24 | 0.00 | | | |
| 0.50 | 0.33 | -0.09 | | | |
| 1.00 | 0.44 | -0.19 | | | |
| 1.50 | 0.53 | -0.29 | | | |
| 2.00 | 0.60 | -0.36 | | | |
| 2.50 | 0.68 | -0.44 | | | |
| 3.00 | 0.75 | -0.51 | | | |
| 3.50 | 0.84 | -0.59 | | | |
| 4.00 | 0.90 | -0.66 | | | |
| 4.50 | 0.97 | -0.72 | | | |
| 5.00 | 1.03 | -0.79 | | | |
| 5.50 | 1.09 | -0.85 | | | |
| 6.00 | 1.14 | -0.90 | | | |
| 6.50 | 1.18 | -0.94 | | | |
| 7.00 | 1.21 | -0.97 | | | |
| 7.50 | 1.25 | -1.01 | | | |
| 8.00 | 1.29 | -1.04 | | | |
| 8.50 | 1.31 | -1.07 | | | |
| 9.00 | 1.34 | -1.09 | | | |
| | | | | | |

**Soil description**

Firm orangish brown silty slightly sandy CLAY. Sand is fine and medium.

**Remarks**

Complete test

| | | |
|---|---|---|
| Soil infiltration rate (***f***) | 5.48E-04 | m/s |

# Trial pit soakaway test
# BRE Digest 365

GROUND TECHNOLOGY

| Job details | | | |
|---|---|---|---|
| Job number: | **GT0386** | Trial pit number: | **S106** |
| Job name: | **A47 Wansford to Sutton Duelling** | Test number: | **2 of 3** |
| Engineers initials: | JJ | Date: | 04/04/2022 |

| Test detials | | | |
|---|---|---|---|
| Pit depth (m): | 1.50 | Initial ground water (m bgl): | n/a |
| Pit width (m): | 0.25 | Water level at the start (m bgl): | 0.13 |
| Pit length (m): | 1.60 | Water level at the end (m bgl): | 1.26 |
| Gravel used: | Yes | Volume of water added (litres): | 300 |

| Test data | | | | | |
|---|---|---|---|---|---|
| Time (minutes) | Water level (m bgl) | Water level fall (m) | Time (minutes) | Water level (m bgl) | Water level fall (m) |
| 0.00 | 0.13 | 0.00 | | | |
| 0.50 | 0.16 | -0.03 | | | |
| 1.00 | 0.26 | -0.13 | | | |
| 1.50 | 0.35 | -0.22 | | | |
| 2.00 | 0.43 | -0.30 | | | |
| 2.50 | 0.51 | -0.38 | | | |
| 3.00 | 0.56 | -0.43 | | | |
| 3.50 | 0.63 | -0.50 | | | |
| 4.00 | 0.68 | -0.55 | | | |
| 4.50 | 0.75 | -0.62 | | | |
| 5.00 | 0.81 | -0.68 | | | |
| 6.00 | 0.93 | -0.80 | | | |
| 7.00 | 1.04 | -0.91 | | | |
| 8.00 | 1.12 | -0.99 | | | |
| 9.00 | 1.20 | -1.07 | | | |
| 10.00 | 1.26 | -1.13 | | | |
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**Soil description**

Firm orangish brown silty slightly sandy CLAY. Sand is fine and medium.

**Remarks**

Complete test

| | | |
|---|---|---|
| Soil infiltration rate ($f$) | 4.81E-04 | m/s |

# Trial pit soakaway test
# BRE Digest 365

GROUND TECHNOLOGY

| Job details | | | |
|---|---|---|---|
| Job number: | **GT0386** | Trial pit number: | **S106** |
| Job name: | **A47 Wansford to Sutton Duelling** | Test number: | **3 of 3** |
| Engineers initials: | JJ | Date: | 01/04/2022 |

| Test detials | | | |
|---|---|---|---|
| Pit depth (m): | 1.50 | Initial ground water (m bgl): | n/a |
| Pit width (m): | 0.25 | Water level at the start (m bgl): | 0.09 |
| Pit length (m): | 1.60 | Water level at the end (m bgl): | 1.39 |
| Gravel used: | Yes | Volume of water added (litres): | 300 |

| Test data | | | | | |
|---|---|---|---|---|---|
| Time (minutes) | Water level (m bgl) | Water level fall (m) | Time (minutes) | Water level (m bgl) | Water level fall (m) |
| 0.00 | 0.09 | 0.00 | 10.00 | 1.16 | -1.07 |
| 0.50 | 0.12 | -0.03 | 11.00 | 1.21 | -1.12 |
| 1.00 | 0.19 | -0.09 | 12.00 | 1.26 | -1.16 |
| 1.50 | 0.27 | -0.17 | 13.00 | 1.31 | -1.21 |
| 2.00 | 0.35 | -0.26 | 14.00 | 1.34 | -1.25 |
| 2.50 | 0.43 | -0.33 | 15.00 | 1.38 | -1.28 |
| 3.00 | 0.49 | -0.40 | 16.00 | 1.38 | -1.28 |
| 3.50 | 0.55 | -0.45 | 17.00 | 1.38 | -1.29 |
| 4.00 | 0.60 | -0.50 | 18.00 | 1.38 | -1.28 |
| 4.50 | 0.66 | -0.56 | 19.00 | 1.38 | -1.28 |
| 5.00 | 0.70 | -0.61 | 20.00 | 1.38 | -1.29 |
| 5.50 | 0.76 | -0.66 | 21.00 | 1.38 | -1.29 |
| 6.00 | 0.81 | -0.72 | 22.00 | 1.39 | -1.29 |
| 6.50 | 0.87 | -0.78 | 24.00 | 1.38 | -1.28 |
| 7.00 | 0.91 | -0.82 | 26.00 | 1.38 | -1.29 |
| 7.50 | 0.97 | -0.88 | 28.00 | 1.39 | -1.29 |
| 8.00 | 1.01 | -0.92 | | | |
| 8.50 | 1.05 | -0.96 | | | |
| 9.00 | 1.09 | -0.99 | | | |
| 9.50 | 1.13 | -1.04 | | | |

**Soil description**

Firm orangish brown silty slightly sandy CLAY. Sand is fine and medium.

**Remarks**

Complete test

| Soil infiltration rate ($f$) | 2.45E-04 | m/s |
|---|---|---|

# Trial pit soakaway test
# BRE Digest 365

GROUND TECHNOLOGY

| Job details | | | |
|---|---|---|---|
| Job number: | **GT0386** | Trial pit number: | **S107** |
| Job name: | **A47 Wansford to Sutton Duelling** | Test number: | **1 of 1** |
| Engineers initials: | JJ | Date: | 30/03/2022 |

| Test detials | | | |
|---|---|---|---|
| Pit depth (m): | 1.50 | Initial ground water (m bgl): | n/a |
| Pit width (m): | 0.25 | Water level at the start (m bgl): | 0.00 |
| Pit length (m): | 1.70 | Water level at the end (m bgl): | 0.50 |
| Gravel used: | Yes | Volume of water added (litres): | 300 |

| Test data | | | | | |
|---|---|---|---|---|---|
| Time (minutes) | Water level (m bgl) | Water level fall (m) | Time (minutes) | Water level (m bgl) | Water level fall (m) |
| 0.00 | 0.00 | 0.00 | 600.00 | 0.42 | -0.42 |
| 30.00 | 0.02 | -0.02 | 630.00 | 0.41 | -0.41 |
| 60.00 | 0.09 | -0.09 | 660.00 | 0.43 | -0.43 |
| 90.00 | 0.14 | -0.14 | 690.00 | 0.43 | -0.43 |
| 120.00 | 0.19 | -0.19 | 720.00 | 0.44 | -0.44 |
| 150.00 | 0.21 | -0.21 | 750.00 | 0.44 | -0.44 |
| 180.00 | 0.23 | -0.23 | 780.00 | 0.45 | -0.45 |
| 210.00 | 0.26 | -0.26 | 810.00 | 0.45 | -0.45 |
| 240.00 | 0.28 | -0.28 | 840.00 | 0.46 | -0.46 |
| 270.00 | 0.30 | -0.30 | 870.00 | 0.46 | -0.46 |
| 300.00 | 0.31 | -0.31 | 900.00 | 0.46 | -0.46 |
| 330.00 | 0.32 | -0.32 | 930.00 | 0.48 | -0.48 |
| 360.00 | 0.33 | -0.33 | 960.00 | 0.48 | -0.48 |
| 390.00 | 0.35 | -0.35 | 990.00 | 0.49 | -0.49 |
| 420.00 | 0.36 | -0.36 | 1020.00 | 0.49 | -0.49 |
| 450.00 | 0.38 | -0.38 | 1050.00 | 0.49 | -0.49 |
| 480.00 | 0.38 | -0.38 | 1080.00 | 0.49 | -0.49 |
| 510.00 | 0.39 | -0.39 | 1110.00 | 0.50 | -0.50 |
| 540.00 | 0.40 | -0.40 | | | |
| 570.00 | 0.40 | -0.40 | | | |

**Soil description**

Firm orangish brown silty slightly sandy CLAY. Sand is fine and medium

**Remarks**

Water level did not reach 75% effective depth. Result calculated based on actual depths achieved.

| Soil infiltration rate (***f***) | 1.03E-06 | m/s |
|---|---|---|

# Trial pit soakaway test
# BRE Digest 365

GROUND TECHNOLOGY

| Job details | | | |
|---|---|---|---|
| Job number: | **GT0386** | Trial pit number: | **S108** |
| Job name: | **A47 Wansford to Sutton Duelling** | Test number: | **1 of 1** |
| Engineers initials: | JJ | Date: | 01/04/2022 |

| Test detials | | | |
|---|---|---|---|
| Pit depth (m): | 1.50 | Initial ground water (m bgl): | n/a |
| Pit width (m): | 0.25 | Water level at the start (m bgl): | 0.21 |
| Pit length (m): | 1.50 | Water level at the end (m bgl): | 1.04 |
| Gravel used: | Yes | Volume of water added (litres): | 300 |

| Test data | | | | | |
|---|---|---|---|---|---|
| Time (minutes) | Water level (m bgl) | Water level fall (m) | Time (minutes) | Water level (m bgl) | Water level fall (m) |
| 0.00 | 0.21 | 0.00 | 760.00 | 0.95 | -0.74 |
| 1.00 | 0.29 | -0.07 | 798.00 | 0.96 | -0.75 |
| 2.00 | 0.38 | -0.17 | 836.00 | 0.95 | -0.74 |
| 3.00 | 0.47 | -0.26 | 874.00 | 0.96 | -0.75 |
| 4.00 | 0.56 | -0.35 | 912.00 | 0.98 | -0.76 |
| 5.00 | 0.62 | -0.41 | 950.00 | 0.97 | -0.76 |
| 10.00 | 0.74 | -0.52 | 988.00 | 0.99 | -0.77 |
| 30.00 | 0.80 | -0.59 | 1026.00 | 0.99 | -0.77 |
| 60.00 | 0.81 | -0.60 | 1064.00 | 1.00 | -0.78 |
| 120.00 | 0.83 | -0.62 | 1102.00 | 1.00 | -0.79 |
| 240.00 | 0.87 | -0.66 | 1140.00 | 1.01 | -0.79 |
| 400.00 | 0.89 | -0.68 | 1178.00 | 1.01 | -0.80 |
| 450.00 | 0.90 | -0.69 | 1216.00 | 1.01 | -0.80 |
| 500.00 | 0.92 | -0.71 | 1254.00 | 1.02 | -0.81 |
| 532.00 | 0.92 | -0.70 | 1292.00 | 1.03 | -0.82 |
| 570.00 | 0.92 | -0.71 | 1330.00 | 1.02 | -0.81 |
| 608.00 | 0.93 | -0.72 | 1368.00 | 1.03 | -0.81 |
| 646.00 | 0.93 | -0.72 | 1406.00 | 1.04 | -0.82 |
| 684.00 | 0.94 | -0.73 | 1440.00 | 1.04 | -0.83 |
| 722.00 | 0.94 | -0.73 | | | |

**Soil description**

Firm to stiff light grey silty CLAY.

**Remarks**

Water level did not reach 75% effective depth. Result calculated based on actual depths achieved.

| Soil infiltration rate ($f$) | 1.78E-06 | m/s |
|---|---|---|

# Trial pit soakaway test
# BRE Digest 365

GROUND TECHNOLOGY

| Job details | | | |
|---|---|---|---|
| Job number: | **GT0386** | Trial pit number: | **S109** |
| Job name: | **A47 Wansford to Sutton Duelling** | Test number: | **1 of 3** |
| Engineers initials: | JJ | Date: | 01/04/2022 |

| Test detials | | | |
|---|---|---|---|
| Pit depth (m): | 1.50 | Initial ground water (m bgl): | n/a |
| Pit width (m): | 0.25 | Water level at the start (m bgl): | 0.99 |
| Pit length (m): | 1.10 | Water level at the end (m bgl): | 1.39 |
| Gravel used: | Yes | Volume of water added (litres): | 300 |

**Test data**

| Time (minutes) | Water level (m bgl) | Water level fall (m) | Time (minutes) | Water level (m bgl) | Water level fall (m) |
|---|---|---|---|---|---|
| 0.00 | 0.99 | 0.00 | | | |
| 0.50 | 1.03 | -0.03 | | | |
| 1.00 | 1.06 | -0.06 | | | |
| 1.50 | 1.10 | -0.11 | | | |
| 2.00 | 1.14 | -0.15 | | | |
| 2.50 | 1.18 | -0.18 | | | |
| 3.00 | 1.22 | -0.22 | | | |
| 3.50 | 1.25 | -0.25 | | | |
| 4.00 | 1.28 | -0.29 | | | |
| 4.50 | 1.30 | -0.31 | | | |
| 5.00 | 1.33 | -0.34 | | | |
| 5.50 | 1.36 | -0.37 | | | |
| 6.00 | 1.39 | -0.39 | | | |
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**Soil description**

Light brown and orangish brown clayey gravelly SAND. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse limestone

**Remarks**

Complete test

Could not fill pit to ground level with water due to fast soakaway rate on all three fillings

| Soil infiltration rate (***f***) | 5.70E-04 | m/s |
|---|---|---|

# Trial pit soakaway test
# BRE Digest 365

GROUND TECHNOLOGY

| Job details | | | |
|---|---|---|---|
| Job number: | **GT0386** | Trial pit number: | **S109** |
| Job name: | **A47 Wansford to Sutton Duelling** | Test number: | **2 of 3** |
| Engineers initials: | JJ | Date: | 01/04/2022 |

| Test detials | | | |
|---|---|---|---|
| Pit depth (m): | 1.50 | Initial ground water (m bgl): | n/a |
| Pit width (m): | 0.25 | Water level at the start (m bgl): | 1.29 |
| Pit length (m): | 1.10 | Water level at the end (m bgl): | 1.40 |
| Gravel used: | Yes | Volume of water added (litres): | 300 |

**Test data**

| Time (minutes) | Water level (m bgl) | Water level fall (m) | Time (minutes) | Water level (m bgl) | Water level fall (m) |
|---|---|---|---|---|---|
| 0.00 | 1.29 | 0.00 | | | |
| 0.50 | 1.29 | 0.00 | | | |
| 1.00 | 1.30 | -0.01 | | | |
| 1.50 | 1.31 | -0.03 | | | |
| 2.00 | 1.32 | -0.04 | | | |
| 2.50 | 1.34 | -0.05 | | | |
| 3.00 | 1.35 | -0.06 | | | |
| 3.50 | 1.35 | -0.07 | | | |
| 4.00 | 1.36 | -0.08 | | | |
| 4.50 | 1.37 | -0.09 | | | |
| 5.00 | 1.38 | -0.09 | | | |
| 5.50 | 1.39 | -0.10 | | | |
| 6.00 | 1.40 | -0.11 | | | |
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**Soil description**

Light brown and orangish brown clayey gravelly SAND. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse limestone

**Remarks**

Water level did not reach 75% effective depth. Result calculated based on actual depths achieved.

| Soil infiltration rate (***f***) | 2.22E-04 | m/s |
|---|---|---|

# Trial pit soakaway test
# BRE Digest 365

GROUND TECHNOLOGY

| Job details | | | |
|---|---|---|---|
| Job number: | **GT0386** | Trial pit number: | **S109** |
| Job name: | **A47 Wansford to Sutton Duelling** | Test number: | **3 of 3** |
| Engineers initials: | JJ | Date: | 01/04/2022 |

| Test detials | | | |
|---|---|---|---|
| Pit depth (m): | 1.50 | Initial ground water (m bgl): | n/a |
| Pit width (m): | 0.25 | Water level at the start (m bgl): | 1.37 |
| Pit length (m): | 1.10 | Water level at the end (m bgl): | 1.40 |
| Gravel used: | Yes | Volume of water added (litres): | 300 |

**Test data**

| Time (minutes) | Water level (m bgl) | Water level fall (m) | Time (minutes) | Water level (m bgl) | Water level fall (m) |
|---|---|---|---|---|---|
| 0.00 | 1.37 | 0.00 | | | |
| 0.50 | 1.37 | 0.00 | | | |
| 1.00 | 1.37 | 0.00 | | | |
| 1.50 | 1.37 | -0.01 | | | |
| 2.00 | 1.38 | -0.01 | | | |
| 2.50 | 1.39 | -0.02 | | | |
| 3.00 | 1.39 | -0.03 | | | |
| 3.50 | 1.40 | -0.03 | | | |
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**Soil description**

Light brown and orangish brown clayey gravelly SAND. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse limestone

**Remarks**

Water level did not reach 75% effective depth. Result calculated based on actual depths achieved.

| Soil infiltration rate ($f$) | 1.33E-04 | m/s |
|---|---|---|

# Trial pit soakaway test
# BRE Digest 365

GROUND TECHNOLOGY

| Job details | | | |
|---|---|---|---|
| Job number: | **GT0386** | Trial pit number: | **S110** |
| Job name: | **A47 Wansford to Sutton Duelling** | Test number: | **1 of 1** |
| Engineers initials: | JJ | Date: | 28/03/2022 |

| Test detials | | | |
|---|---|---|---|
| Pit depth (m): | 2.00 | Initial ground water (m bgl): | n/a |
| Pit width (m): | 0.25 | Water level at the start (m bgl): | 0.45 |
| Pit length (m): | 1.20 | Water level at the end (m bgl): | 1.55 |
| Gravel used: | Yes | Volume of water added (litres): | 300 |

| Test data | | | | | |
|---|---|---|---|---|---|
| Time (minutes) | Water level (m bgl) | Water level fall (m) | Time (minutes) | Water level (m bgl) | Water level fall (m) |
| 1.00 | 0.45 | -0.02 | 660.00 | 1.00 | -0.57 |
| 2.00 | 0.45 | -0.02 | 720.00 | 1.04 | -0.61 |
| 3.00 | 0.45 | -0.02 | 780.00 | 1.10 | -0.66 |
| 4.00 | 0.45 | -0.01 | 840.00 | 1.15 | -0.71 |
| 5.00 | 0.45 | -0.01 | 900.00 | 1.20 | -0.77 |
| 10.00 | 0.45 | -0.01 | 960.00 | 1.24 | -0.80 |
| 20.00 | 0.45 | -0.02 | 1020.00 | 1.29 | -0.86 |
| 30.00 | 0.46 | -0.02 | 1080.00 | 1.33 | -0.89 |
| 40.00 | 0.47 | -0.04 | 1140.00 | 1.37 | -0.94 |
| 50.00 | 0.48 | -0.05 | 1200.00 | 1.42 | -0.98 |
| 60.00 | 0.49 | -0.05 | 1260.00 | 1.45 | -1.02 |
| 120.00 | 0.54 | -0.11 | 1320.00 | 1.49 | -1.05 |
| 180.00 | 0.58 | -0.14 | 1380.00 | 1.52 | -1.08 |
| 240.00 | 0.63 | -0.20 | 1440.00 | 1.55 | -1.11 |
| 300.00 | 0.68 | -0.25 | | | |
| 360.00 | 0.73 | -0.30 | | | |
| 420.00 | 0.79 | -0.36 | | | |
| 480.00 | 0.84 | -0.40 | | | |
| 540.00 | 0.90 | -0.46 | | | |
| 600.00 | 0.95 | -0.51 | | | |

**Soil description**

Soft to firm greenish light grey slightly mottled orangish brown silty slightly sandy CLAY. Sand is fine to coarse.

**Remarks**

Water level did not reach 75% effective depth. Result calculated based on actual depths achieved.

| Soil infiltration rate (***f***) | 2.25E-06 | m/s |
|---|---|---|

GROUND TECHNOLOGY

# Appendix IV – Geotechnical test results

# SUMMARY OF LABORATORY SOIL DESCRIPTIONS

| Hole Number | Sample Number | Sample Type | Top Depth m | Base Depth m | Description of Sample |
|---|---|---|---|---|---|
| TP113 | 5 | B | 0.60 | 0.90 | Brown very sandy clayey GRAVEL. |
| TP113 | 9 | B | 2.10 | 2.40 | Brown gravelly clayey SAND. |
| TP113 | 11 | B | 3.00 | 3.10 | Grey mottled brown slightly clayey SAND. |
| TP114 | 7 | B | 1.05 | 1.20 | Brown very gravelly clayey SAND. |
| TP117 | 5 | B | 0.90 | 1.20 | Brown very sandy clayey GRAVEL. |
| TP117 | 7 | B | 2.00 | 2.30 | Brown slightly gravelly clayey SAND. |
| TP107 | 5 | B | 0.60 | 0.90 | Brown very gravelly slightly clayey SAND |
| TP118 | 5 | B | 1.50 | 2.00 | Brown very sandy clayey GRAVEL. |
| TP119 | 7 | B | 1.00 | 1.30 | Brown slightly gravelly sandy CLAY. |
| TP124 | 7 | B | 2.00 | 2.30 | Brown very gravelly clayey SAND. |
| TP126 | 5 | B | 1.00 | 1.30 | Brown slightly gravelly clayey SAND. |
| TP128 | 7 | B | 1.90 | 2.10 | Brown slightly gravelly very sandy CLAY. |
| TP135 | 5 | B | 1.00 | 1.30 | Brown very sandy clayey GRAVEL. |
| TP136 | 7 | B | 1.50 | 1.80 | Brown very sandy clayey GRAVEL. |
| TP136 | 9 | B | 2.00 | 2.20 | Brown very sandy clayey GRAVEL. |
| TP137 | 5 | B | 1.00 | 1.30 | Brown very sandy clayey GRAVEL. |
| TP137 | 7 | B | 2.70 | 3.00 | Brown very sandy clayey GRAVEL. |
| TP138 | 5 | B | 1.00 | 1.30 | Brown very sandy clayey GRAVEL. |
| TP138 | 7 | B | 2.20 | 2.50 | Brown very sandy slightly clayey GRAVEL. |

# SUMMARY OF LABORATORY SOIL DESCRIPTIONS

| Hole Number | Sample Number | Sample Type | Top Depth m | Base Depth m | Description of Sample |
|---|---|---|---|---|---|
| TP162 | 5 | B | 0.80 | 1.10 | Brown very sandy clayey GRAVEL. |
| TP163 | 5 | B | 0.50 | 0.80 | Brown very sandy clayey GRAVEL. |
| TP167 | 5 | B | 1.00 | 1.30 | Grey mottled brown slightly gravelly slightly sandy CLAY. |
| TP170 | 5 | B | 0.90 | 1.10 | Brown very sandy clayey GRAVEL. |
| TP170 | 7 | B | 2.00 | 2.30 | Grey mottled brown slightly gravelly sandy CLAY. |
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# SUMMARY OF LABORATORY SOIL DESCRIPTIONS

| Hole Number | Sample Number | Sample Type | Top Depth m | Base Depth m | Description of Sample |
|---|---|---|---|---|---|
| BH104 & BH104A | 111 | CS | 16.70 | 17.00 | Grey CLAY. |
| BH104 & BH104A | 114 | CS | 18.60 | 18.90 | Grey CLAY. |
| BH105 | 112 | CS | 11.60 | 11.78 | Grey CLAY. |
| BH105 | 113 | CS | 13.00 | 13.28 | Grey CLAY. |
| BH105 | 115 | CS | 15.18 | 15.50 | Grey CLAY. |
| BH105 | 117 | CS | 17.50 | 17.80 | Grey CLAY. |
| BH106 | 102 | B | 1.50 | 2.00 | Brown silty SAND. |
| BH106 | 108 | B | 3.50 | 4.00 | Brown very sandy GRAVEL. |
| BH106 | 117 | CS | 8.70 | 9.00 | Grey CLAY. |
| BH106 | 118 | CS | 10.65 | 10.95 | Grey CLAY. |
| BH108 | 3 | B | 0.30 | 0.70 | Brown sandy GRAVEL with cobbles. |
| BH108 | 101 | B | 0.95 | 1.65 | Brown very sandy GRAVEL. |
| BH108 | 107 | B | 7.00 | 8.00 | Brown SAND. |
| BH108 | 108 | B | 8.40 | 8.90 | Brown silty SAND. |
| BH108 | 112 | CS | 11.70 | 12.00 | Brown sandy CLAY. |
| BH108 | 114 | CS | 16.20 | 16.50 | Grey CLAY. |
| BH108 | 116 | CS | 18.72 | 18.98 | Grey CLAY. |
| BH109 | 6 | B | 0.30 | 0.50 | Brown very sandy GRAVEL. |
| BH111 | B2 | B | 0.50 | 1.20 | Brown very sandy very clayey GRAVEL. |

# SUMMARY OF LABORATORY SOIL DESCRIPTIONS

| Hole Number | Sample Number | Sample Type | Top Depth m | Base Depth m | Description of Sample |
|---|---|---|---|---|---|
| BH114 | 104 | CS | 5.50 | 5.80 | Grey slightly gravelly CLAY. |
| BH114 | 107 | CS | 9.50 | 9.70 | Grey CLAY. |
| BH114 | 113 | CS | 17.00 | 17.22 | Grey CLAY. |
| BH117 | 3 | B | 1.50 | 2.00 | Brown gravelly very sandy CLAY. |
| BH117 | 4 | B | 2.50 | 3.00 | Brown slightly gravelly very sandy CLAY. |
| BH117 | 5 | B | 3.50 | 4.00 | Brown gravelly very sandy CLAY. |
| BH117 | 1 | D | 7.50 | 7.95 | Brown silty SAND. |
| BH128 | 107 | CS | 8.95 | 9.20 | Grey CLAY. |
| BH128 | 110 | CS | 12.45 | 12.75 | Grey CLAY. |
| BH128 | 111 | CS | 14.20 | 14.50 | Grey CLAY. |
| BH132 | 1 | B | 0.20 | 0.60 | Brown very sandy GRAVEL. |
| BH132 | 2 | B | 0.80 | 1.20 | Brown very sandy clayey GRAVEL. |
| BH132 | 105 | D | 5.25 | 5.40 | Brown silty SAND. |
| BH132 | 113 | CS | 10.30 | 10.60 | Grey CLAY. |
| BH132 | 115 | CS | 13.66 | 13.87 | Grey CLAY. |
| BH133 | 105 | CS | 5.74 | 6.00 | Grey CLAY. |
| BH133 | 106 | CS | 6.74 | 7.00 | Grey CLAY. |
| BH133 | 107 | CS | 7.90 | 8.20 | Grey CLAY. |
| TP131 | 7 | B | 2.00 | 2.30 | Brown very gravelly very sandy CLAY. |

# SUMMARY OF LABORATORY SOIL DESCRIPTIONS

| Hole Number | Sample Number | Sample Type | Top Depth m | Base Depth m | Description of Sample |
|---|---|---|---|---|---|
| TP132 | 5 | B | 1.00 | 1.30 | Brown very sandy silty GRAVEL. |
| TP132 | 7 | B | 2.00 | 2.30 | Brown very gravelly slightly clayey SAND with some cobbles. |
| TP133 | 7 | B | 1.70 | 2.00 | Brown very sandy silty GRAVEL. |
| TP134 | 5 | B | 0.50 | 0.80 | Brown gravelly very sandy CLAY. |
| TP153 | 6 | B | 1.00 | 1.30 | Brown slightly gravelly very sandy CLAY. |
| TP153 | 8 | B | 2.30 | 2.60 | Brown very gravelly SAND. |
| TP156 | 5 | B | 1.00 | 1.30 | Brown gravelly very sandy CLAY. |
| TP156 | 7 | B | 2.00 | 2.30 | Brown very gravelly SAND. |
| TP157 | 5 | B | 1.00 | 1.30 | Brown slightly sandy CLAY. |
| TP151 | 5 | B | 1.00 | 1.30 | Brown very sandy CLAY. |
| TP151 | 7 | B | 2.10 | 2.40 | Brown SAND & GRAVEL. |
| TP152 | 5 | B | 1.00 | 1.30 | Brown very sandy slightly clayey GRAVEL. |
| TP154 | 5 | B | 1.00 | 1.30 | Brown very gravelly very sandy CLAY. |
| TP154 | 7 | B | 2.00 | 2.30 | Brown slightly gravelly very sandy CLAY. |
| TP155 | 5 | B | 1.00 | 1.30 | Brown SAND & GRAVEL. |
| TP158 | 5 | B | 1.00 | 1.30 | Brown very sandy GRAVEL. |
| TP159 | 5 | B | 1.00 | 1.30 | Brown sandy CLAY. |
| TP159 | 7 | B | 2.00 | 2.30 | Brown slightly gravelly sandy CLAY. |
| BH115 | 101 | CS | 7.25 | 7.57 | Stiff brown very sandy CLAY. |

# SUMMARY OF LABORATORY SOIL DESCRIPTIONS

| Hole Number | Sample Number | Sample Type | Top Depth m | Base Depth m | Description of Sample |
|---|---|---|---|---|---|
| BH115 | 103 | CS | 10.30 | 10.60 | Grey slightly sandy CLAY. |
| BH115 | 108 | CS | 17.80 | 17.98 | Grey slightly sandy CLAY. |
| BH116 | 3 | B | 1.50 | 2.00 | Brown very gravelly very sandy CLAY. |
| BH116 | 6 | B | 3.50 | 4.00 | Brown silty SAND. |
| BH116 | 7 | B | 4.50 | 5.00 | Brown silty SAND. |
| BH116 | 101 | CS | 6.50 | 6.66 | Grey sandy CLAY. |
| BH116 | 104 | CS | 10.73 | 11.00 | Grey slightly sandy CLAY. |
| BH116 | 107 | CS | 15.85 | 16.00 | Grey CLAY. |
| BH116 | 110 | CS | 20.00 | 20.16 | Grey slightly sandy CLAY. |
| BH118 | 6 | B | 4.50 | 5.00 | Brown silty SAND. |
| BH118 | 7 | B | 5.50 | 6.00 | Brown SAND. |
| BH118 | 8 | B | 6.10 | 6.10 | Grey sandy very silty CLAY. |
| BH118 | 106 | CS | 15.80 | 16.00 | Grey CLAY. |
| BH120 & BH120A | 1 | B | 0.50 | 0.50 | Brown very gravelly very sandy CLAY. |
| BH120 & BH120A | 2 | B | 1.10 | 1.10 | Brown very sandy GRAVEL. |
| BH120 & BH120A | 3 | B | 1.50 | 2.00 | Brown very sandy GRAVEL with cobbles. |
| BH120 & BH120A | 6 | B | 4.50 | 5.00 | Brown very sandy GRAVEL. |
| BH120 & BH120A | 7 | B | 5.50 | 5.70 | Brown SAND & GRAVEL. |
| BH120 & BH120A | 103 | CS | 9.20 | 9.50 | Grey slightly sandy CLAY. |

# SUMMARY OF LABORATORY SOIL DESCRIPTIONS

| Hole Number | Sample Number | Sample Type | Top Depth m | Base Depth m | Description of Sample |
|---|---|---|---|---|---|
| BH120 & BH120A | 107 | CS | 13.70 | 13.95 | Grey slightly sandy CLAY. |
| BH126 | 2 | B | 0.50 | | Brown gravelly sandy CLAY. |
| BH126 | 3 | B | 1.20 | | Brown slightly gravelly sandy CLAY. |
| BH126 | 4 | B | 2.90 | 3.00 | Brown very sandy CLAY. |
| BH127 | 101 | B | 1.30 | 1.85 | Brown very sandy silty GRAVEL. |
| BH127 | 102 | B | 2.20 | 2.70 | Brown very gravelly SAND. |
| BH127 | 103 | B | 2.90 | 4.25 | Brown sandy GRAVEL with some cobbles. |
| BH129 | 101 | B | 1.20 | 2.20 | Brown very sandy GRAVEl. |
| BH129 | 104 | B | 3.70 | 4.20 | Brown very sandy GRAVEl. |
| BH129 | 105 | B | 4.20 | 4.50 | Brown sandy GRAVEl. |
| BH107 | 103 | B | 6.20 | 7.20 | Brown slightly gravelly silty SAND. |
| BH107 | 105 | B | 7.90 | 8.10 | Grey slightly sandy CLAY. |
| BH107 | 108 | CS | 10.95 | 11.20 | Grey slightly sandy CLAY. |
| BH107 | 111 | CS | 13.90 | 14.20 | Grey CLAY. |
| BH107 | 113 | CS | 18.18 | 18.45 | Grey CLAY. |
| BH123 | 101 | B | 1.20 | 2.00 | Brown very sandy GRAVEL. |
| BH123 | 102 | B | 2.00 | 3.00 | Brown very sandy GRAVEL. |
| BH123 | 103 | B | 3.00 | 4.00 | Brown very sandy GRAVEL. |
| BH124 | 102 | B | 1.00 | 1.30 | Brown SAND & GRAVEL. |

UKAS TESTING
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**Wansford to Sutton Dualling Supplementary GI**

**Contract No:**
**PSL22/3650**
**Client Ref:**
**GT0386**

# SUMMARY OF LABORATORY SOIL DESCRIPTIONS

| Hole Number | Sample Number | Sample Type | Top Depth m | Base Depth m | Description of Sample |
|---|---|---|---|---|---|
| BH124 | 103 | CS | 1.50 | 1.80 | Brown slightly gravelly slightly sandy CLAY. |
| BH124 | 104 | CS | 2.50 | 2.80 | Brown CLAY. |
| BH124 | 105 | CS | 3.50 | 3.80 | Brown mottled grey very sandy CLAY. |
| BH124 | 106 | CS | 4.50 | 4.65 | Brown slightly gravelly slightly sandy CLAY. |
| BH119 | 101 | D | 1.30 | 1.60 | Brown very gravelly very sandy CLAY. |
| BH119 | 103 | B | 2.00 | 3.00 | Brown very clayey SAND & GRAVEL. |
| BH119 | 104 | B | 3.20 | 4.20 | Brown sandy very clayey GRAVEL. |
| BH119 | 106 | CS | 4.90 | 5.20 | Grey CLAY. |
| BH119 | 107 | CS | 5.80 | 6.10 | Grey CLAY. |
| BH119 | 108 | CS | 6.40 | 6.70 | Grey CLAY. |
| BH121 | 4 | B | 1.50 | 2.00 | Brown very gravelly very sandy CLAY. |
| BH121 | 5 | B | 2.00 | 2.00 | Brown gravelly sandy CLAY. |
| BH121 | 106 | B | 7.00 | 8.00 | Brown SAND. |
| BH121 | 107 | B | 8.00 | 9.00 | Brown gravelly SAND. |
| BH121 | 109 | B | 9.70 | 10.00 | Greyish brown slightly clayey silty SAND. |
| BH121 | 111 | B | 10.60 | 11.00 | Greyish brown slightly clayey silty SAND. |
| BH122 | 102 | B | 0.30 | 1.20 | Brown sandy silty GRAVEL. |
| BH122 | 104 | B | 2.60 | 2.80 | Brown very sandy GRAVEL. |
| BH122 | 7 | B | 3.40 | 4.10 | Brown very gravelly sandy CLAY. |

# SUMMARY OF LABORATORY SOIL DESCRIPTIONS

| Hole Number | Sample Number | Sample Type | Top Depth m | Base Depth m | Description of Sample |
|---|---|---|---|---|---|
| BH122 | 114 | D | 14.50 | 14.60 | Brown silty SAND. |
| BH125 | 101 | CS | 1.55 | 1.75 | Stiff brown very sandy CLAY. |
| BH131 | 106 | CS | 5.24 | 5.54 | Grey slightly sandy CLAY. |
| BH131 | 107 | CS | 6.75 | 7.00 | Grey slightly sandy CLAY. |
| BH131 | 108 | CS | 7.20 | 7.50 | Grey CLAY. |
| BH131 | 111 | B | 8.20 | 8.60 | Brown slightly gravelly silty SAND. |
| BH134 | 103 | CS | 2.66 | 2.91 | Brown slightly gravelly slightly sandy CLAY. |
| BH134 | 106 | CS | 4.83 | 5.13 | Brown slightly gravelly sandy CLAY. |
| BH134 | 107 | CS | 6.80 | 7.10 | Grey CLAY. |
| BH134 | 108 | CS | 7.80 | 8.10 | Grey slightly sandy CLAY. |
| BH134 | 109 | CS | 8.80 | 9.10 | Grey CLAY. |
| BH134 | 110 | CS | 9.92 | 10.20 | Grey CLAY. |
| BH134 | 112 | CS | 11.67 | 11.97 | Grey slightly sandy CLAY. |
| BH134 | 113 | CS | 12.45 | 12.70 | Grey slightly sandy CLAY. |
| BH112 | 103 | B | 2.20 | 2.40 | Brown very sandy GRAVEL. |
| BH112 | 105 | B | 4.40 | 4.80 | Brown sandy very clayey GRAVEL. |
| BH112 | 106 | CS | 5.67 | 6.00 | Grey sandy CLAY. |
| BH112 | 108 | CS | 8.00 | 8.22 | Grey slightly sandy CLAY. |
| BH112 | 111 | CS | 13.33 | 13.50 | Grey slightly sandy CLAY. |

# SUMMARY OF LABORATORY SOIL DESCRIPTIONS

| Hole Number | Sample Number | Sample Type | Top Depth m | Base Depth m | Description of Sample |
|---|---|---|---|---|---|
| BH112 | 113 | CS | 15.50 | 15.72 | Grey CLAY. |
| BH112 | 116 | CS | 17.80 | 18.00 | Grey CLAY. |
| BH113 | 102 | CS | 7.77 | 8.00 | Grey CLAY. |
| BH113 | 103 | CS | 9.27 | 9.50 | Grey CLAY. |
| BH113 | 105 | CS | 12.00 | 12.25 | Grey CLAY. |
| BH113 | 106 | CS | 13.00 | 13.10 | Grey CLAY. |
| BH113 | 107 | CS | 15.00 | 15.24 | Grey CLAY. |
| BH113 | 109 | CS | 18.20 | 18.34 | Grey CLAY. |
| TP127 | 2 | B | 0.10 | 0.40 | Brown very gravelly very sandy CLAY. |
| TP127 | 5 | B | 1.00 | 1.30 | Brown very gravelly very sandy CLAY. |
| TP127 | 6 | D | 1.95 | 2.00 | Brown very gravelly very sandy CLAY. |
| TP127 | 7 | B | 2.70 | 3.00 | Grey CLAY. |
| TP127 | 8 | D | 2.95 | 3.00 | Grey CLAY. |
| TP129 | 5 | B | 1.00 | 1.30 | Brown gravelly sandy CLAY. |
| TP129 | 6 | D | 1.50 | 1.55 | Brown gravelly sandy CLAY. |
| TP130 | 5 | B | 0.50 | 0.80 | Brown gravelly sandy CLAY. |
| TP130 | 6 | D | 0.80 | 0.85 | Brown slightly sandy CLAY. |
| TP130 | 7 | B | 1.50 | 1.80 | Grey CLAY. |
| TP130 | 10 | D | 2.90 | 2.95 | Grey CLAY. |

# SUMMARY OF LABORATORY SOIL DESCRIPTIONS

| Hole Number | Sample Number | Sample Type | Top Depth m | Base Depth m | Description of Sample |
|---|---|---|---|---|---|
| TP131 | 5 | B | 1.00 | 1.30 | Brown very gravelly very sandy CLAY. |
| BH110 | 101 | B | 2.50 | 3.20 | Brown very gravelly SAND. |
| BH110 | 102 | B | 4.50 | 5.00 | Brown SAND. |
| BH110 | 104 | B | 6.10 | 6.70 | Brown slightly gravelly slightly clayey SAND. |
| BH110 | 106 | CS | 7.57 | 7.87 | Brown sandy CLAY. |
| BH110 | 109 | CS | 9.43 | 9.73 | Grey CLAY. |
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UKAS TESTING
4043

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**Wansford to Sutton Dualling Supplementary GI**

**Contract No:**
**PSL22/3650**
**Client Ref:**
**GT0386**

# SUMMARY OF LABORATORY SOIL DESCRIPTIONS

| Hole Number | Sample Number | Sample Type | Top Depth m | Base Depth m | Description of Sample |
|---|---|---|---|---|---|
| TP139 | 5 | B | 0.50 | 0.70 | Brown mottled grey slightly gravelly sandy CLAY. |
| TP139 | 7 | B | 1.60 | 1.80 | Brown very gravelly very sandy CLAY. |
| TP140 | 4 | B | 0.30 | 0.50 | Brown slightly gravelly very sandy CLAY. |
| TP140 | 7 | B | 1.00 | 1.20 | Brown very sandy very clayey GRAVEL. |
| TP140 | 9 | B | 1.70 | 1.90 | Brown mottled grey slightly gravelly sandy CLAY. |
| TP141 | 4 | B | 0.30 | 0.50 | Brown very sandy clayey GRAVEL. |
| TP141 | 7 | B | 0.50 | 0.70 | Brown mottled grey slightly gravelly sandy CLAY. |
| TP142 | 4 | B | 0.30 | 0.50 | Brown very sandy slightly clayey GRAVEL. |
| TP142 | 13 | B | 1.50 | 1.70 | Brown very sandy clayey GRAVEL. |
| TP142 | 9 | B | 2.70 | 2.90 | Grey slightly gravelly slightly sandy CLAY. |
| TP143 | 5 | B | 1.00 | 1.30 | Brown very gravelly silty SAND. |
| TP143 | 7 | B | 2.10 | 2.40 | Brown mottled grey slightly gravelly sandy CLAY. |
| TP143 | 9 | B | 3.00 | 3.20 | Brown mottled grey slightly gravelly sandy CLAY. |
| TP144 | 4 | B | 0.40 | 0.50 | Brown very sandy slightly clayey GRAVEL. |
| TP144 | 7 | B | 1.75 | 1.90 | Brown gravelly sandy CLAY. |
| TP145 | 5 | B | 1.00 | 1.30 | Brown sandy clayey GRAVEL. |
| TP145 | 7 | B | 2.00 | 2.30 | Brown very sandy slightly clayey GRAVEL. |
| TP146 | 5 | B | 0.40 | 0.70 | Brown mottled grey gravelly sandy CLAY. |
| TP146 | 7 | B | 1.10 | 1.40 | Grey slightly gravelly sandy CLAY. |

# SUMMARY OF LABORATORY SOIL DESCRIPTIONS

| Hole Number | Sample Number | Sample Type | Top Depth m | Base Depth m | Description of Sample |
|---|---|---|---|---|---|
| TP147 | 4 | B | 0.40 | 0.50 | Brown slightly gravelly sandy CLAY. |
| TP147 | 7 | B | 0.60 | 0.80 | Brown very sandy slightly clayey GRAVEL. |
| TP148 | 5 | B | 1.00 | 1.30 | Brown slightly gravelly very sandy CLAY. |
| TP149 | 5 | B | 1.00 | 1.30 | Brown mottled grey slightly gravelly sandy CLAY. |
| TP149 | 7 | B | 2.00 | 2.30 | Brown mottled grey gravelly sandy CLAY. |
| TP149 | 9 | B | 3.00 | 3.30 | Brown mottled grey gravelly sandy CLAY. |
| TP150 | 5 | B | 1.00 | 1.30 | Brown slightly gravelly sandy CLAY. |
| TP150 | 7 | B | 2.00 | 2.30 | Brown very sandy slightly silty GRAVEL. |
| TP160 | 5 | B | 1.00 | 1.30 | Brown very sandy CLAY. |
| TP160 | 7 | B | 2.00 | 2.30 | Brown very gravelly slightly clayey silty SAND. |
| TP161 | 5 | B | 1.00 | 1.30 | Brown gravelly very sandy CLAY. |
| TP164 | 5 | B | 0.30 | 0.60 | Brown very gravelly sandy CLAY. |
| TP164 | 7 | B | 1.00 | 1.30 | Brown gravelly sandy CLAY. |
| TP165 | 5 | B | 1.00 | 1.30 | Brown very sandy silty GRAVEL. |
| TP166 | 7 | B | 2.30 | 2.60 | Brown mottled grey slightly gravelly slightly sandy CLAY. |
| TP169 | 5 | B | 1.00 | 1.30 | Brown very sandy CLAY. |
| TP169 | 7 | B | 2.00 | 2.30 | Grey sandy CLAY. |
| TP169 | 9 | B | 3.40 | 3.70 | Grey CLAY. |
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# SUMMARY OF LABORATORY SOIL DESCRIPTIONS

| Hole Number | Sample Number | Sample Type | Top Depth m | Base Depth m | Description of Sample |
|---|---|---|---|---|---|
| BH135 | 6 | B | 0.40 | 0.60 | Brown very gravelly slightly clayey silty SAND. |
| BH135 | 7 | B | 1.20 | 1.40 | Brown very sandy slightly clayey silty GRAVEL. |
| BH135 | 9 | CS | 2.87 | 3.20 | Brown sandy CLAY. |
| BH135 | 11 | CS | 5.56 | 5.86 | Grey slightly sandy CLAY. |
| BH135 | 14 | CS | 10.85 | 11.15 | Grey slightly sandy CLAY. |
| BH135 | 16 | CS | 13.67 | 13.97 | Grey slightly sandy CLAY. |
| BH135 | 17 | CS | 15.20 | 15.50 | Grey slightly sandy CLAY. |
| BH135 | 18 | CS | 17.30 | 17.60 | Grey slightly sandy CLAY. |
| BH135 | 22 | CS | 23.20 | 23.50 | Grey slightly sandy CLAY. |
| BH136 | 6 | B | 0.50 | 0.70 | Brown slightly gravelly very sandy CLAY. |
| BH136 | 13 | CS | 4.80 | 5.10 | Grey slightly sandy CLAY. |
| BH136 | 15 | CS | 7.25 | 7.55 | Grey slightly sandy CLAY. |
| BH136 | 17 | CS | 10.40 | 10.70 | Grey slightly sandy CLAY. |
| BH136 | 20 | CS | 14.44 | 14.70 | Grey slightly sandy CLAY. |
| BH136 | 27 | CS | 16.47 | 16.61 | Grey slightly sandy CLAY. |
| BH136 | 28 | CS | 23.30 | 23.51 | Grey slightly sandy CLAY. |
| BH136 | 29 | CS | 24.42 | 24.64 | Grey slightly sandy CLAY. |
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# SUMMARY OF SOIL CLASSIFICATION TESTS

**(BS1377 : PART 2 : 1990)**

| Hole Number | Sample Number | Sample Type | Top Depth m | Base Depth m | Moisture Content % Clause 3.2 | Particle Density $Mg/m^3$ Clause 8.2 | Liquid Limit % Clause 4.3/4 | Plastic Limit % Clause 5.3 | Plasticity Index % Clause 5.4 | Passing .425mm % | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|
| BH104 & BH104A | 111 | CS | 16.70 | 17.00 | 19 | | 59 | 25 | 34 | 100 | High Plasticity CH |
| BH104 & BH104A | 114 | CS | 18.60 | 18.90 | 20 | | 62 | 26 | 36 | 100 | High Plasticity CH |
| BH105 | 112 | CS | 11.60 | 11.78 | 26 | | | | | | |
| BH105 | 117 | CS | 17.50 | 17.80 | 20 | | | | | | |
| BH106 | 108 | B | 3.50 | 4.00 | 19 | | | | | | |
| BH106 | 117 | CS | 8.70 | 9.00 | 30 | | | | | | |
| BH106 | 118 | CS | 10.65 | 10.95 | 25 | | | | | | |
| BH108 | 3 | B | 0.30 | 0.70 | 9.8 | | | | | | |
| BH108 | 101 | B | 0.95 | 1.65 | 7.6 | | | | | | |
| BH108 | 108 | B | 8.40 | 8.90 | 20 | | | | | | |
| BH108 | 114 | CS | 16.20 | 16.50 | 24 | | 64 | 27 | 37 | 100 | High Plasticity CH |
| BH108 | 116 | CS | 18.72 | 18.98 | 22 | | 61 | 26 | 35 | 100 | High Plasticity CH |
| BH109 | 6 | B | 0.30 | 0.50 | 13 | | | | | | |
| BH111 | B2 | B | 0.50 | 1.20 | 11 | | | | | | |
| BH114 | 104 | CS | 5.50 | 5.80 | 21 | | | | | | |
| BH114 | 107 | CS | 9.50 | 9.70 | 21 | | 63 | 25 | 38 | 100 | High Plasticity CH |
| BH114 | 113 | CS | 17.00 | 17.22 | 24 | | 69 | 27 | 42 | 100 | High Plasticity CH |
| BH117 | 3 | B | 1.50 | 2.00 | 15 | | | | | | |
| BH117 | 5 | B | 3.50 | 4.00 | 18 | | | | | | |

**SYMBOLS :** **NP : Non Plastic** *** : Liquid Limit and Plastic Limit Wet Sieved.**

UKAS TESTING 4043

PSL Professional Soils Laboratory

**Wansford to Sutton Dualling Supplementary GI**

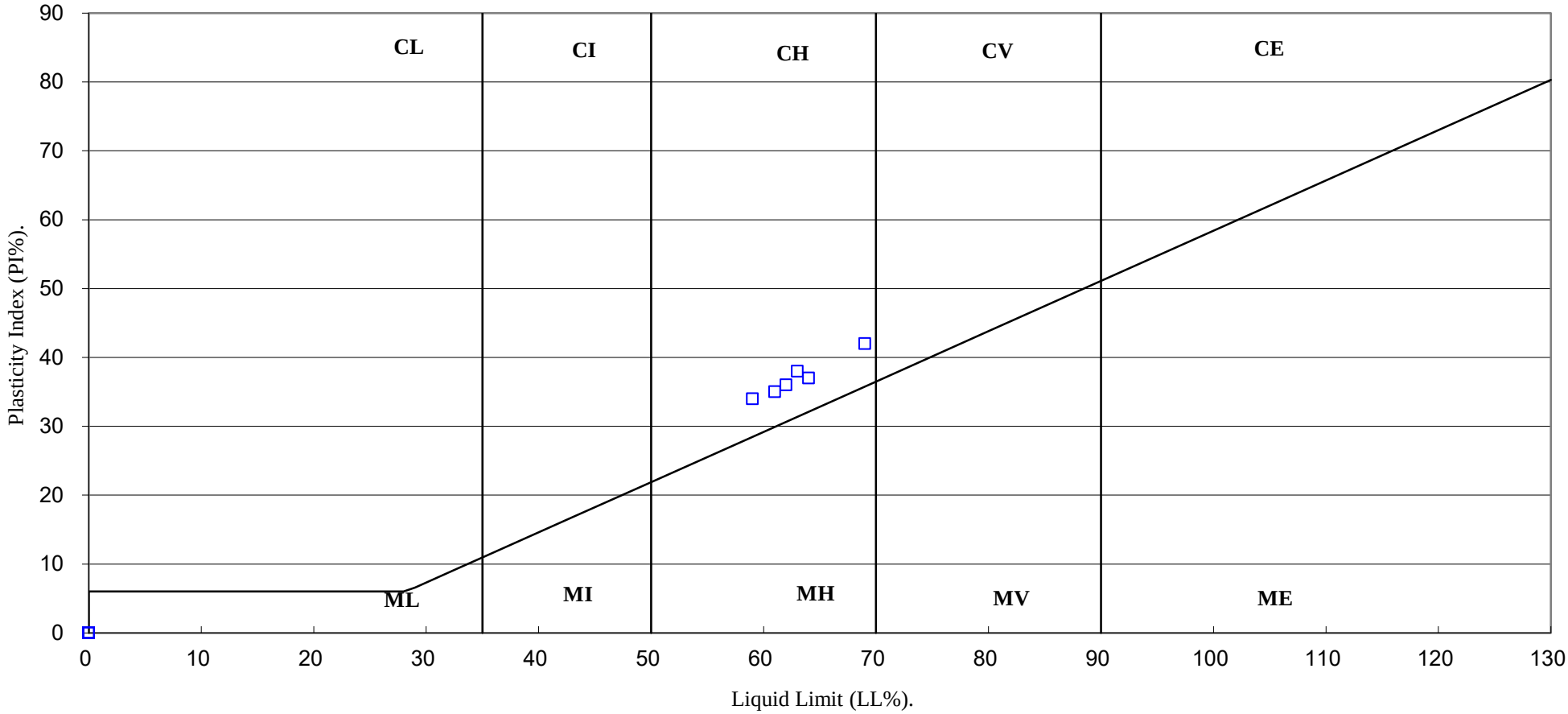
**Contract No:**

**PSL22/3650**

**Client Ref:**

**GT0386**

# PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.

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| UKAS TESTING 4043 | PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** | **Contract No:** PSL22/3650 **Client Ref:** GT0386 |

# SUMMARY OF SOIL CLASSIFICATION TESTS

**(BS1377 : PART 2 : 1990)**

| Hole Number | Sample Number | Sample Type | Top Depth m | Base Depth m | Moisture Content % Clause 3.2 | Particle Density Mg/m$^3$ Clause 8.2 | Liquid Limit % Clause 4.3/4 | Plastic Limit % Clause 5.3 | Plasticity Index % Clause 5.4 | Passing .425mm % | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|
| BH117 | 1 | D | 7.50 | 7.95 | 19 | | | | | | |
| BH128 | 110 | CS | 12.45 | 12.75 | 23 | | 63 | 26 | 37 | 100 | High Plasticity CH |
| BH128 | 111 | CS | 14.20 | 14.50 | 22 | | 60 | 25 | 35 | 100 | High Plasticity CH |
| BH132 | 1 | B | 0.20 | 0.60 | 11 | | | | | | |
| BH132 | 2 | B | 0.80 | 1.20 | 12 | | | | | | |
| BH132 | 105 | D | 5.25 | 5.40 | 20 | | | | | | |
| BH133 | 105 | CS | 5.74 | 6.00 | 27 | | 62 | 26 | 36 | 100 | High Plasticity CH |
| BH133 | 106 | CS | 6.74 | 7.00 | 25 | | 68 | 27 | 41 | 100 | High Plasticity CH |
| TP131 | 7 | B | 2.00 | 2.30 | 17 | | 34 | 17 | 17 | 59 | Low Plasticity CL |
| TP132 | 5 | B | 1.00 | 1.30 | 7.4 | | | | | | |
| TP132 | 7 | B | 2.00 | 2.30 | 8.0 | | | | | | |
| TP134 | 5 | B | 0.50 | 0.80 | 19 | | 44 | 20 | 24 | 66 | Intermediate Plasticity CI |
| TP153 | 6 | B | 1.00 | 1.30 | 16 | | | | | | |
| TP153 | 8 | B | 2.30 | 2.60 | 7.2 | | | | | | |
| TP156 | 5 | B | 1.00 | 1.30 | 16 | | 38 | 18 | 20 | 65 | Intermediate Plasticity CI |
| TP156 | 7 | B | 2.00 | 2.30 | 8.0 | | | | | | |
| TP157 | 5 | B | 1.00 | 1.30 | 23 | | 51 | 23 | 28 | 100 | High Plasticity CH |
| TP152 | 5 | B | 1.00 | 1.30 | 9.8 | | | | | | |
| TP155 | 5 | B | 1.00 | 1.30 | 6.2 | | | | | | |

**SYMBOLS :** **NP : Non Plastic** *** : Liquid Limit and Plastic Limit Wet Sieved.**

UKAS TESTING 4043

PSL Professional Soils Laboratory

**Wansford to Sutton Dualling Supplementary GI**

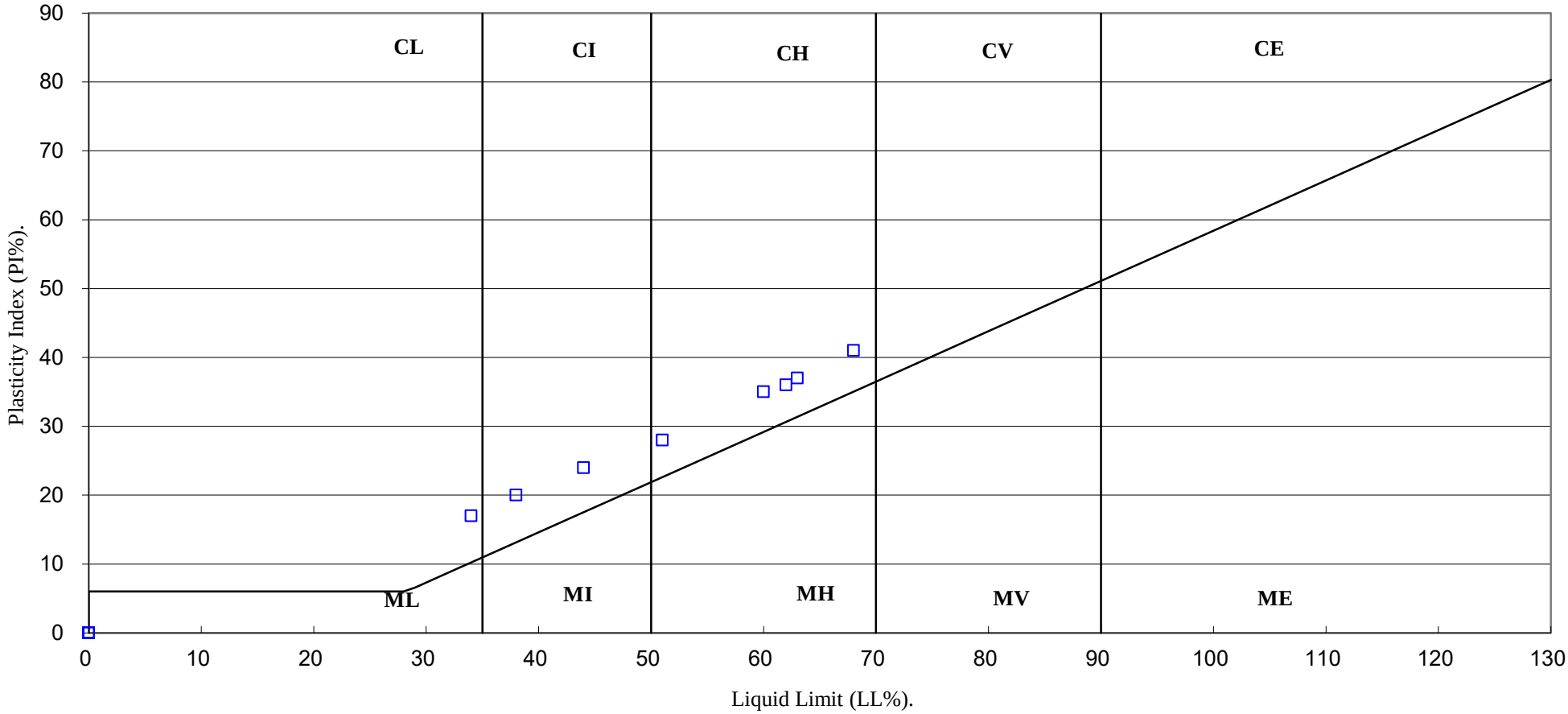
**Contract No:**

**PSL22/3650**

**Client Ref:**

**GT0386**

# PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.

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|---|---|---|---|
| UKAS TESTING 4043 | PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** | **Contract No:** PSL22/3650 **Client Ref:** GT0386 |

# SUMMARY OF SOIL CLASSIFICATION TESTS

**(BS1377 : PART 2 : 1990)**

| Hole Number | Sample Number | Sample Type | Top Depth m | Base Depth m | Moisture Content % Clause 3.2 | Particle Density Mg/m$^3$ Clause 8.2 | Liquid Limit % Clause 4.3/4 | Plastic Limit % Clause 5.3 | Plasticity Index % Clause 5.4 | Passing .425mm % | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TP158 | 5 | B | 1.00 | 1.30 | 10 | | | | | | |
| TP159 | 5 | B | 1.00 | 1.30 | 25 | | 42 | 21 | 21 | 100 | Intermediate Plasticity CI |
| TP159 | 7 | B | 2.00 | 2.30 | 24 | | 48 | 23 | 25 | 96 | Intermediate Plasticity CI |
| BH115 | 101 | CS | 7.25 | 7.57 | 15 | | | | | | |
| BH115 | 103 | CS | 10.30 | 10.60 | 20 | | | | | | |
| BH115 | 108 | CS | 17.80 | 17.98 | 20 | | | | | | |
| BH116 | 3 | B | 1.50 | 2.00 | 13 | | | | | | |
| BH116 | 6 | B | 3.50 | 4.00 | 19 | | | | | | |
| BH116 | 7 | B | 4.50 | 5.00 | 23 | | | | | | |
| BH116 | 101 | CS | 6.50 | 6.66 | 14 | | | | | | |
| BH116 | 104 | CS | 10.73 | 11.00 | 22 | | | | | | |
| BH116 | 107 | CS | 15.85 | 16.00 | 24 | | | | | | |
| BH116 | 110 | CS | 20.00 | 20.16 | 20 | | | | | | |
| BH118 | 6 | B | 4.50 | 5.00 | 24 | | | | | | |
| BH118 | 7 | B | 5.50 | 6.00 | 21 | | | | | | |
| BH118 | 8 | B | 6.10 | 6.10 | 25 | | 44 | 24 | 20 | 100 | Intermediate Plasticity CI |
| BH118 | 106 | CS | 15.80 | 16.00 | 23 | | | | | | |
| BH120 & BH120A | 1 | B | 0.50 | | 13 | | | | | | |
| BH120 & BH120A | 2 | B | 1.10 | | 7.2 | | | | | | |

**SYMBOLS :** **NP : Non Plastic** *** : Liquid Limit and Plastic Limit Wet Sieved.**

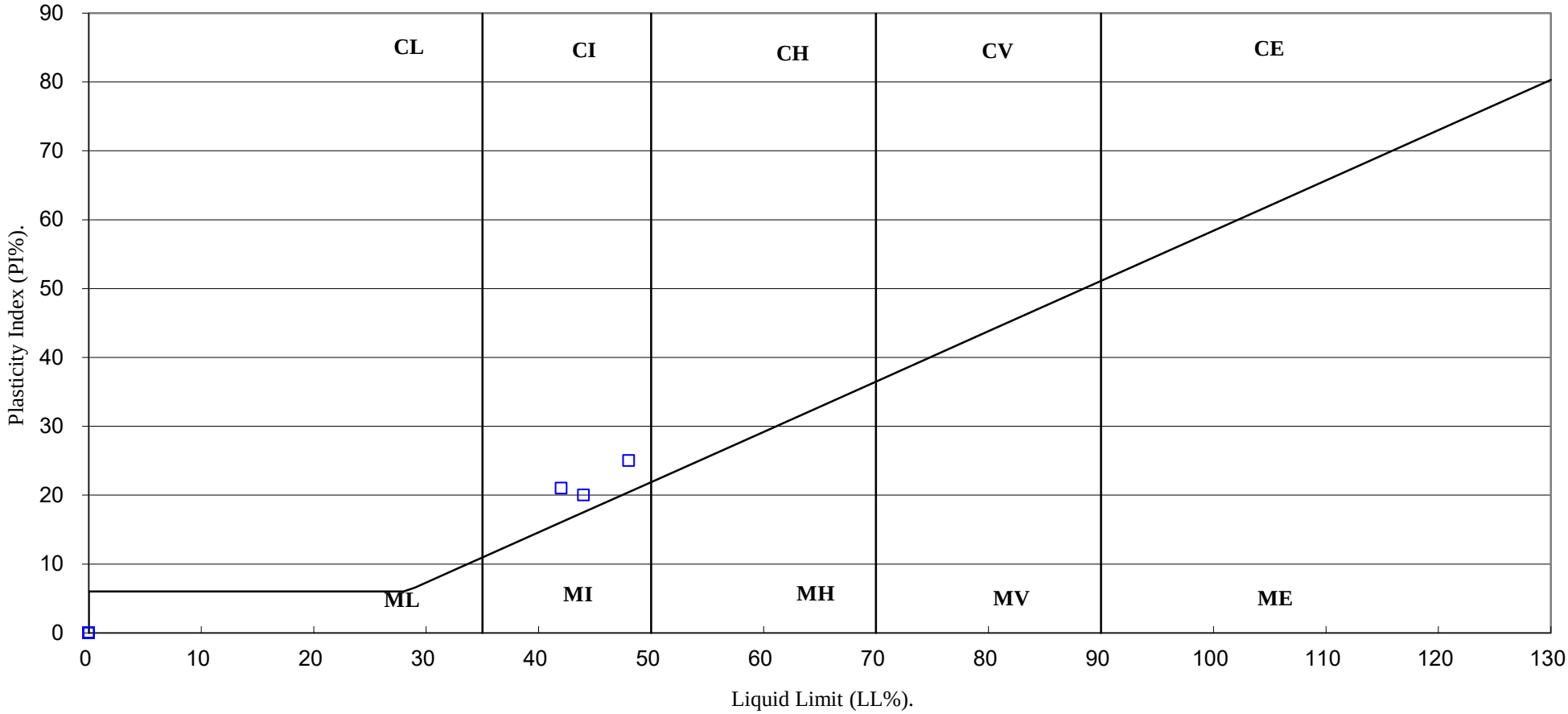
UKAS TESTING 4043

PSL Professional Soils Laboratory

**Wansford to Sutton Dualling Supplementary GI**

**Contract No:**
**PSL22/3650**
**Client Ref:**
**GT0386**

# PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.

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|---|---|---|---|
| UKAS TESTING 4043 | PSL Professional Soils Laboratory | Wansford to Sutton Dualling Supplementary GI | **Contract No:** PSL22/3650 **Client Ref:** GT0386 |

# SUMMARY OF SOIL CLASSIFICATION TESTS

**(BS1377 : PART 2 : 1990)**

| Hole Number | Sample Number | Sample Type | Top Depth m | Base Depth m | Moisture Content % Clause 3.2 | Particle Density $Mg/m^3$ Clause 8.2 | Liquid Limit % Clause 4.3/4 | Plastic Limit % Clause 5.3 | Plasticity Index % Clause 5.4 | Passing .425mm % | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|
| BH120 & BH120A | 3 | B | 1.50 | 2.00 | 5.4 | | | | | | |
| BH120 & BH120A | 6 | B | 4.50 | 5.00 | 7.4 | | | | | | |
| BH120 & BH120A | 7 | B | 5.50 | 5.70 | 5.8 | | | | | | |
| BH120 & BH120A | 103 | CS | 9.20 | 9.50 | 22 | | 61 | 26 | 35 | 100 | High Plasticity CH |
| BH120 & BH120A | 107 | CS | 13.70 | 13.95 | 18 | | 59 | 25 | 34 | 100 | High Plasticity CH |
| BH126 | 2 | B | 0.50 | | 21 | | 41 | 20 | 21 | 82 | Intermediate Plasticity CI |
| BH126 | 3 | B | 1.20 | | 22 | | 42 | 18 | 24 | 86 | Intermediate Plasticity CI |
| BH126 | 4 | B | 2.90 | 3.00 | 19 | | 30 | 15 | 15 | 100 | Low Plasticity CL |
| BH127 | 101 | B | 1.30 | 1.85 | 7.4 | | | | | | |
| BH127 | 102 | B | 2.20 | 2.70 | 4.8 | | | | | | |
| BH127 | 103 | B | 2.90 | 4.25 | 4.9 | | | | | | |
| BH129 | 101 | B | 1.20 | 2.20 | 7.0 | | | | | | |
| BH129 | 104 | B | 3.70 | 4.20 | 8.2 | | | | | | |
| BH129 | 105 | B | 4.20 | 4.50 | 7.2 | | | | | | |
| BH107 | 103 | B | 6.20 | 7.20 | 13 | | | | | | |
| BH107 | 105 | B | 7.90 | 8.10 | 23 | | 67 | 28 | 39 | 100 | High Plasticity CH |
| BH107 | 113 | CS | 18.18 | 18.45 | 21 | | 61 | 26 | 35 | 100 | High Plasticity CH |
| BH123 | 101 | B | 1.20 | 2.00 | 7.0 | | | | | | |
| BH123 | 102 | B | 2.00 | 3.00 | 5.7 | | | | | | |

**SYMBOLS :** **NP : Non Plastic** *** : Liquid Limit and Plastic Limit Wet Sieved.**

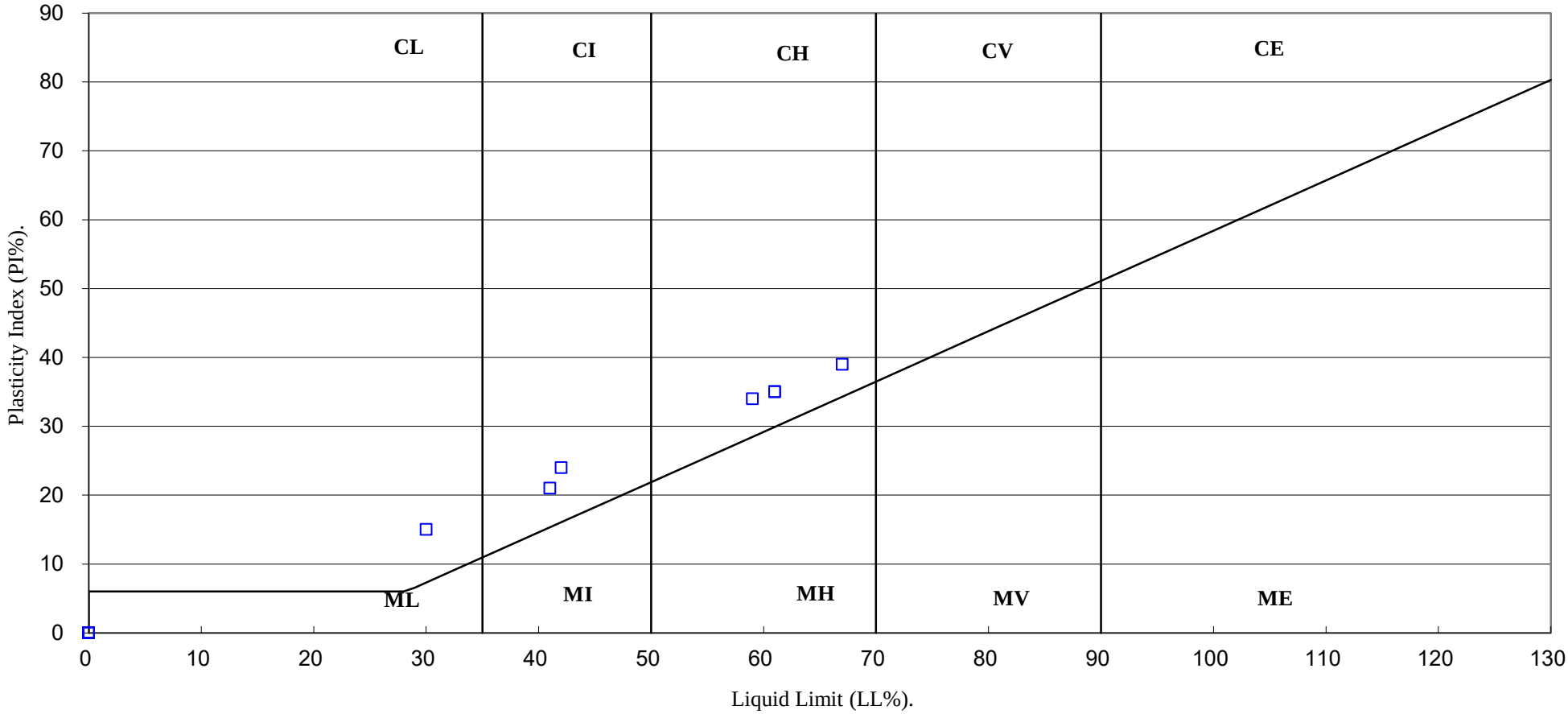
UKAS TESTING 4043

PSL Professional Soils Laboratory

**Wansford to Sutton Dualling Supplementary GI**

**Contract No:**
**PSL22/3650**
**Client Ref:**
**GT0386**

# PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.

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|---|---|---|---|
| UKAS TESTING 4043 | PSL Professional Soils Laboratory | Wansford to Sutton Dualling Supplementary GI | Contract No: PSL22/3650 Client Ref: GT0386 |

# SUMMARY OF SOIL CLASSIFICATION TESTS

**(BS1377 : PART 2 : 1990)**

| Hole Number | Sample Number | Sample Type | Top Depth m | Base Depth m | Moisture Content % Clause 3.2 | Particle Density $Mg/m^3$ Clause 8.2 | Liquid Limit % Clause 4.3/4 | Plastic Limit % Clause 5.3 | Plasticity Index % Clause 5.4 | Passing .425mm % | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|
| BH123 | 103 | B | 3.00 | 4.00 | 5.4 | | | | | | |
| BH124 | 102 | B | 1.00 | 1.30 | 8.2 | | | | | | |
| BH124 | 103 | CS | 1.50 | 1.80 | 22 | | 56 | 24 | 32 | 90 | High Plasticity CH |
| BH124 | 104 | CS | 2.50 | 2.80 | 32 | | 72 | 29 | 43 | 100 | Very High Plasticity CV |
| BH124 | 105 | CS | 3.50 | 3.80 | 7.8 | | 29 | 15 | 14 | 100 | Low Plasticity CL |
| BH119 | 101 | D | 1.30 | 1.60 | 21 | | 38 | 18 | 20 | 63 | Intermediate Plasticity CI |
| BH119 | 103 | B | 2.00 | 3.00 | 8.9 | | | | | | |
| BH119 | 104 | B | 3.20 | 4.20 | 8.2 | | | | | | |
| BH119 | 106 | CS | 4.90 | 5.20 | 27 | | 68 | 28 | 40 | 100 | High Plasticity CH |
| BH119 | 107 | CS | 5.80 | 6.10 | 27 | | 66 | 27 | 39 | 100 | High Plasticity CH |
| BH119 | 108 | CS | 6.40 | 6.70 | 29 | | 74 | 30 | 44 | 100 | Very High Plasticity CV |
| BH121 | 4 | B | 1.50 | 2.00 | 15 | | 37 | 18 | 19 | 48 | Intermediate Plasticity CI |
| BH121 | 5 | B | 2.00 | | 14 | | 42 | 20 | 22 | 78 | Intermediate Plasticity CI |
| BH121 | 106 | B | 7.00 | 8.00 | 20 | | | | | | |
| BH121 | 107 | B | 8.00 | 9.00 | 20 | | | | | | |
| BH121 | 111 | B | 10.60 | 11.00 | 16 | | | | | | |
| BH122 | 102 | B | 0.30 | 1.20 | 8.6 | | | | | | |
| BH122 | 104 | B | 2.60 | 2.80 | 7.3 | | | | | | |
| BH122 | 7 | B | 3.40 | 4.10 | 11 | | | | | | |

**SYMBOLS :** **NP : Non Plastic** *** : Liquid Limit and Plastic Limit Wet Sieved.**

UKAS TESTING 4043

PSL Professional Soils Laboratory

**Wansford to Sutton Dualling Supplementary GI**

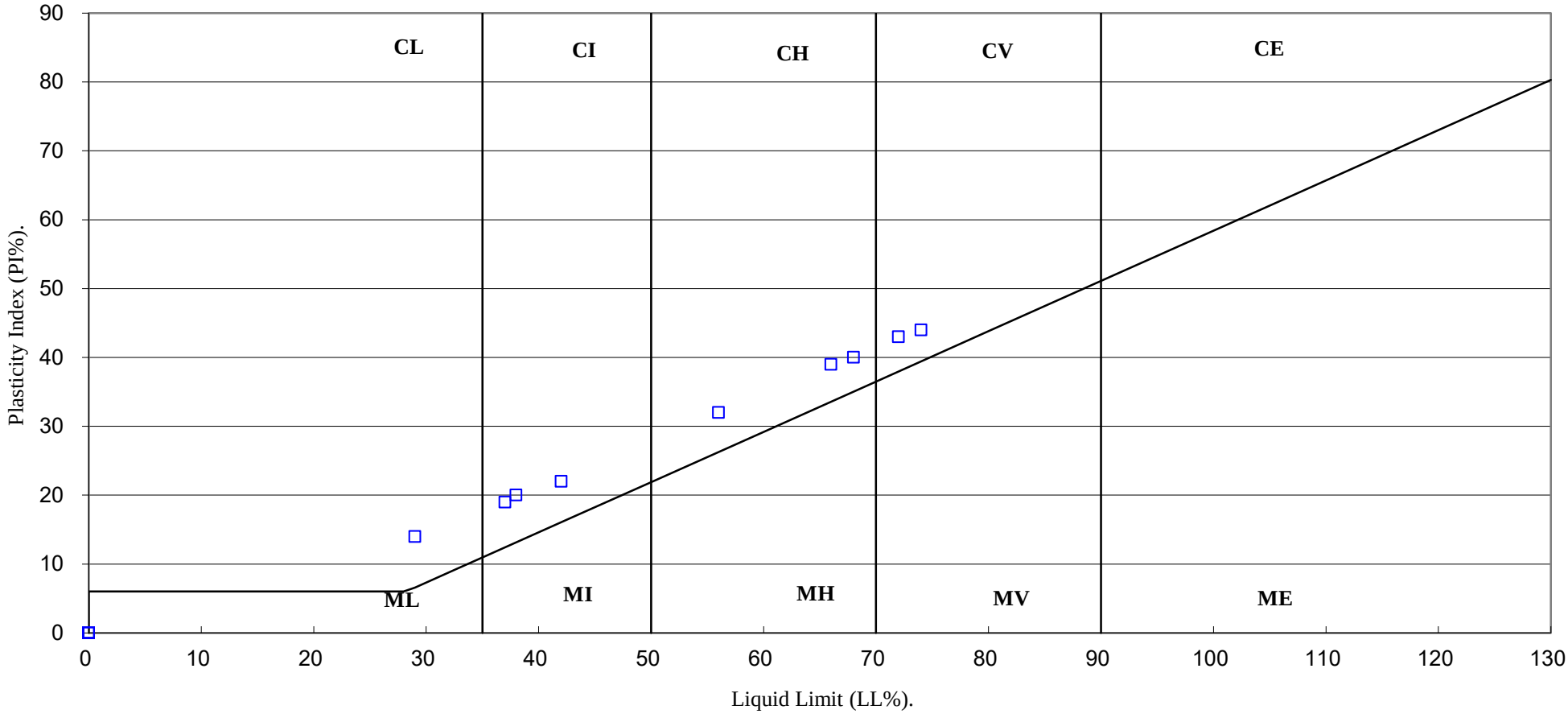
**Contract No:**

**PSL22/3650**

**Client Ref:**

**GT0386**

# PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.

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|---|---|---|---|
| UKAS TESTING 4043 | PSL Professional Soils Laboratory | Wansford to Sutton Dualling Supplementary GI | Contract No: PSL22/3650 Client Ref: GT0386 |

# SUMMARY OF SOIL CLASSIFICATION TESTS

**(BS1377 : PART 2 : 1990)**

| Hole Number | Sample Number | Sample Type | Top Depth m | Base Depth m | Moisture Content % Clause 3.2 | Particle Density Mg/m$^3$ Clause 8.2 | Liquid Limit % Clause 4.3/4 | Plastic Limit % Clause 5.3 | Plasticity Index % Clause 5.4 | Passing .425mm % | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|
| BH125 | 101 | CS | 1.55 | 1.75 | 12 | | 38 | 18 | 20 | 100 | Intermediate Plasticity CI |
| BH131 | 106 | CS | 5.24 | 5.54 | 20 | | 61 | 25 | 36 | 100 | High Plasticity CH |
| BH131 | 107 | CS | 6.75 | 7.00 | 20 | | 55 | 24 | 31 | 100 | High Plasticity CH |
| BH131 | 108 | CS | 7.20 | 7.50 | 22 | | 64 | 28 | 36 | 100 | High Plasticity CH |
| BH131 | 111 | B | 8.20 | 8.60 | 9.2 | | | | | | |
| BH134 | 106 | CS | 4.83 | 5.13 | 23 | | | | | | |
| BH134 | 107 | CS | 6.80 | 7.10 | 32 | | 72 | 29 | 43 | 100 | Very High Plasticity CV |
| BH134 | 108 | CS | 7.80 | 8.10 | 19 | | 53 | 23 | 30 | 100 | High Plasticity CH |
| BH134 | 109 | CS | 8.80 | 9.10 | 23 | | 61 | 26 | 38 | 100 | High Plasticity CH |
| BH134 | 110 | CS | 9.92 | 10.20 | 25 | | 67 | 28 | 39 | 100 | High Plasticity CH |
| BH134 | 112 | CS | 11.67 | 11.97 | 19 | | 56 | 24 | 32 | 100 | High Plasticity CH |
| BH134 | 113 | CS | 12.45 | 12.70 | 21 | | 54 | 24 | 30 | 100 | High Plasticity CH |
| BH112 | 103 | B | 2.20 | 2.40 | 6.3 | | | | | | |
| BH112 | 105 | B | 4.40 | 4.80 | 13 | | | | | | |
| BH112 | 106 | CS | 5.67 | 6.00 | 22 | | | | | | |
| BH112 | 108 | CS | 8.00 | 8.22 | 24 | | | | | | |
| BH112 | 111 | CS | 13.33 | 13.50 | 19 | | | | | | |
| BH112 | 113 | CS | 15.50 | 15.72 | 23 | | 67 | 27 | 40 | 100 | High Plasticity CH |
| BH113 | 102 | CS | 7.77 | 8.00 | 21 | | 62 | 26 | 36 | 100 | High Plasticity CH |

**SYMBOLS :** **NP : Non Plastic** *** : Liquid Limit and Plastic Limit Wet Sieved.**

UKAS TESTING 4043

PSL Professional Soils Laboratory

**Wansford to Sutton Dualling Supplementary GI**

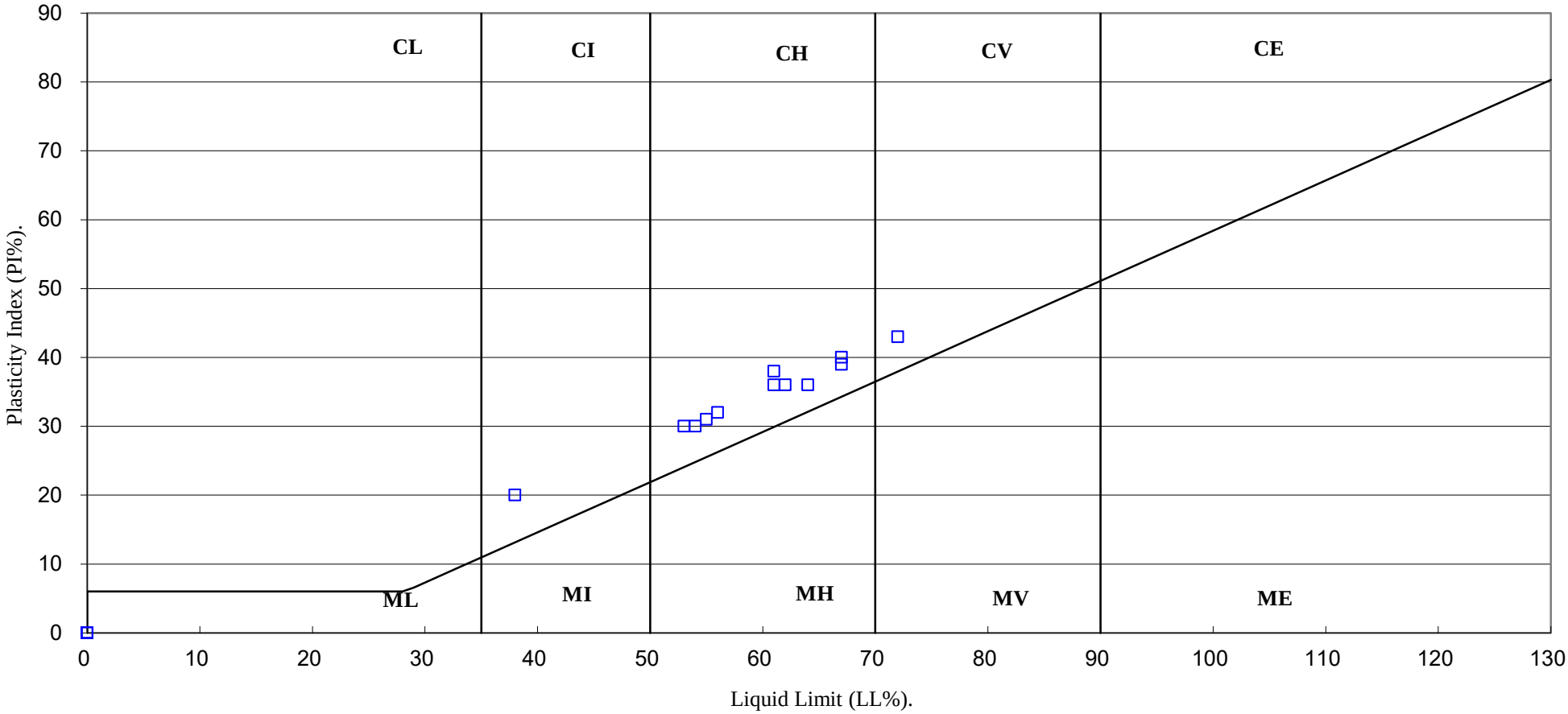
**Contract No:**

**PSL22/3650**

**Client Ref:**

**GT0386**

# PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.

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| UKAS TESTING 4043 | PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** | **Contract No:** PSL22/3650 **Client Ref:** GT0386 |

# SUMMARY OF SOIL CLASSIFICATION TESTS

**(BS1377 : PART 2 : 1990)**

| Hole Number | Sample Number | Sample Type | Top Depth m | Base Depth m | Moisture Content % Clause 3.2 | Particle Density $Mg/m^3$ Clause 8.2 | Liquid Limit % Clause 4.3/4 | Plastic Limit % Clause 5.3 | Plasticity Index % Clause 5.4 | Passing .425mm % | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|
| BH113 | 103 | CS | 9.27 | 9.50 | 22 | | | | | | |
| BH113 | 105 | CS | 12.00 | 12.25 | 22 | | 57 | 24 | 33 | 100 | High Plasticity CH |
| BH113 | 106 | CS | 13.00 | 13.10 | 19 | | | | | | |
| BH113 | 107 | CS | 15.00 | 15.24 | 25 | | | | | | |
| BH113 | 109 | CS | 18.20 | 18.34 | 19 | | 60 | 25 | 35 | 100 | High Plasticity CH |
| TP127 | 2 | B | 0.10 | 0.40 | 20 | | 47 | 23 | 24 | 61 | Intermediate Plasticity CI |
| TP127 | 5 | B | 1.00 | 1.30 | 16 | | 36 | 18 | 18 | 55 | Intermediate Plasticity CI |
| TP127 | 6 | D | 1.95 | 2.00 | 19 | | 37 | 18 | 19 | 62 | Intermediate Plasticity CI |
| TP127 | 7 | B | 2.70 | 3.00 | 27 | | 68 | 28 | 40 | 100 | High Plasticity CH |
| TP127 | 8 | D | 2.95 | 3.00 | 25 | | 71 | 29 | 42 | 100 | Very High Plasticity CV |
| TP129 | 5 | B | 1.00 | 1.30 | 35 | | 60 | 25 | 35 | 76 | High Plasticity CH |
| TP129 | 6 | D | 1.50 | 1.55 | 31 | | 48 | 23 | 25 | 85 | Intermediate Plasticity CI |
| TP130 | 5 | B | 0.50 | 0.80 | 24 | | 56 | 24 | 32 | 80 | High Plasticity CH |
| TP130 | 6 | D | 0.80 | 0.85 | 24 | | 61 | 26 | 35 | 100 | High Plasticity CH |
| TP130 | 7 | B | 1.50 | 1.80 | 25 | | 71 | 28 | 43 | 100 | Very High Plasticity CV |
| TP130 | 10 | D | 2.90 | 2.95 | 24 | | 73 | 29 | 44 | 100 | Very High Plasticity CV |
| TP131 | 5 | B | 1.00 | 1.30 | 14 | | 40 | 20 | 20 | 66 | Intermediate Plasticity CI |
| BH110 | 101 | B | 2.50 | 3.20 | 16 | | | | | | |
| BH110 | 102 | B | 4.50 | 5.00 | 14 | | | | | | |

**SYMBOLS :** **NP : Non Plastic** *** : Liquid Limit and Plastic Limit Wet Sieved.**

UKAS TESTING 4043

PSL Professional Soils Laboratory

**Wansford to Sutton Dualling Supplementary GI**

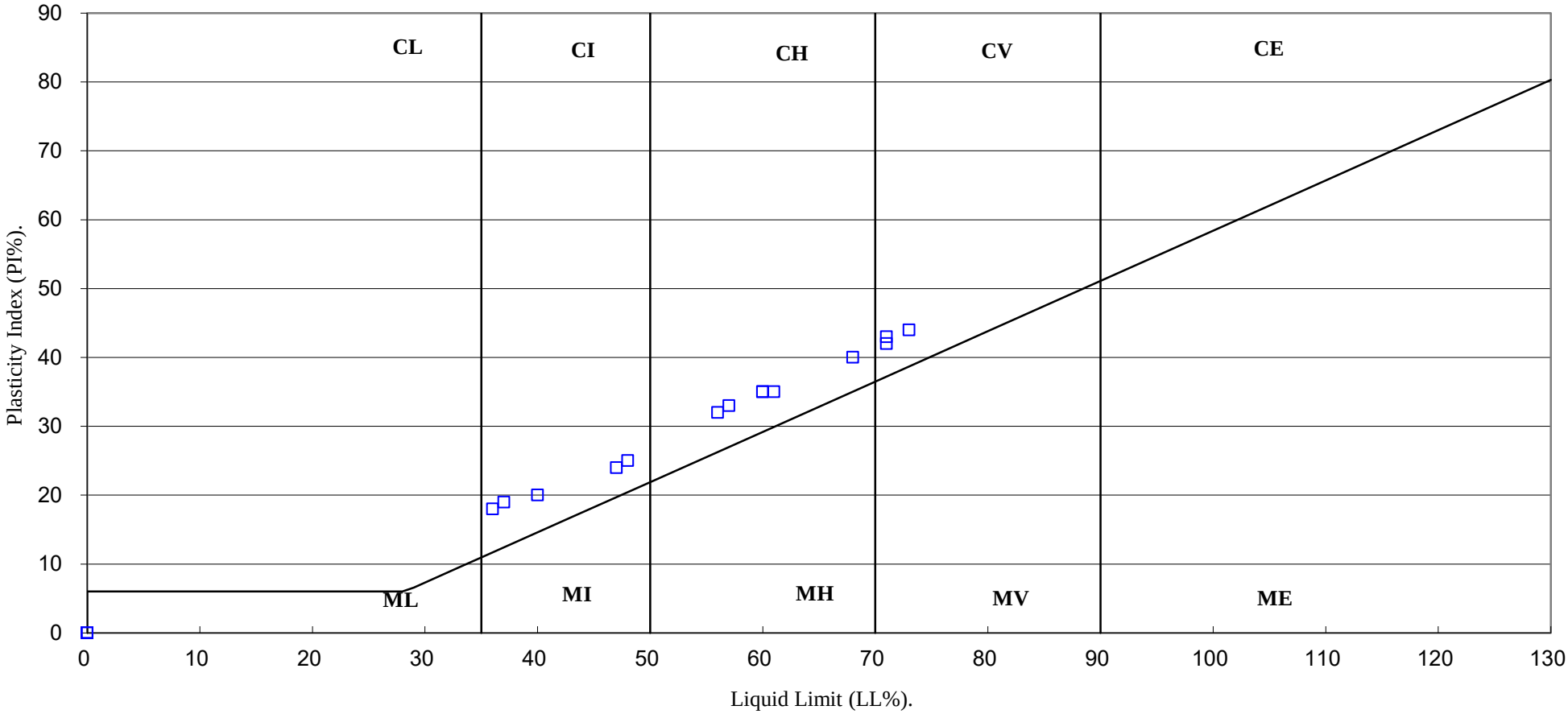
**Contract No:**

**PSL22/3650**

**Client Ref:**

**GT0386**

# PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.

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|---|---|---|---|
| UKAS TESTING 4043 | PSL Professional Soils Laboratory | Wansford to Sutton Dualling Supplementary GI | Contract No: PSL22/3650 Client Ref: GT0386 |

# SUMMARY OF SOIL CLASSIFICATION TESTS

**(BS1377 : PART 2 : 1990)**

| Hole Number | Sample Number | Sample Type | Top Depth m | Base Depth m | Moisture Content % Clause 3.2 | Particle Density $Mg/m^3$ Clause 8.2 | Liquid Limit % Clause 4.3/4 | Plastic Limit % Clause 5.3 | Plasticity Index % Clause 5.4 | Passing .425mm % | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|
| BH110 | 104 | B | 6.10 | 6.70 | 17 | | | | | | |
| BH110 | 106 | CS | 7.57 | 7.87 | 15 | | 46 | 18 | 28 | 100 | Intermediate Plasticity CI |
| BH110 | 109 | CS | 9.43 | 9.73 | 23 | | 67 | 28 | 39 | 100 | High Plasticity CH |
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**SYMBOLS :** **NP : Non Plastic** *** : Liquid Limit and Plastic Limit Wet Sieved.**

UKAS TESTING 4043

PSL Professional Soils Laboratory

**Wansford to Sutton Dualling Supplementary GI**

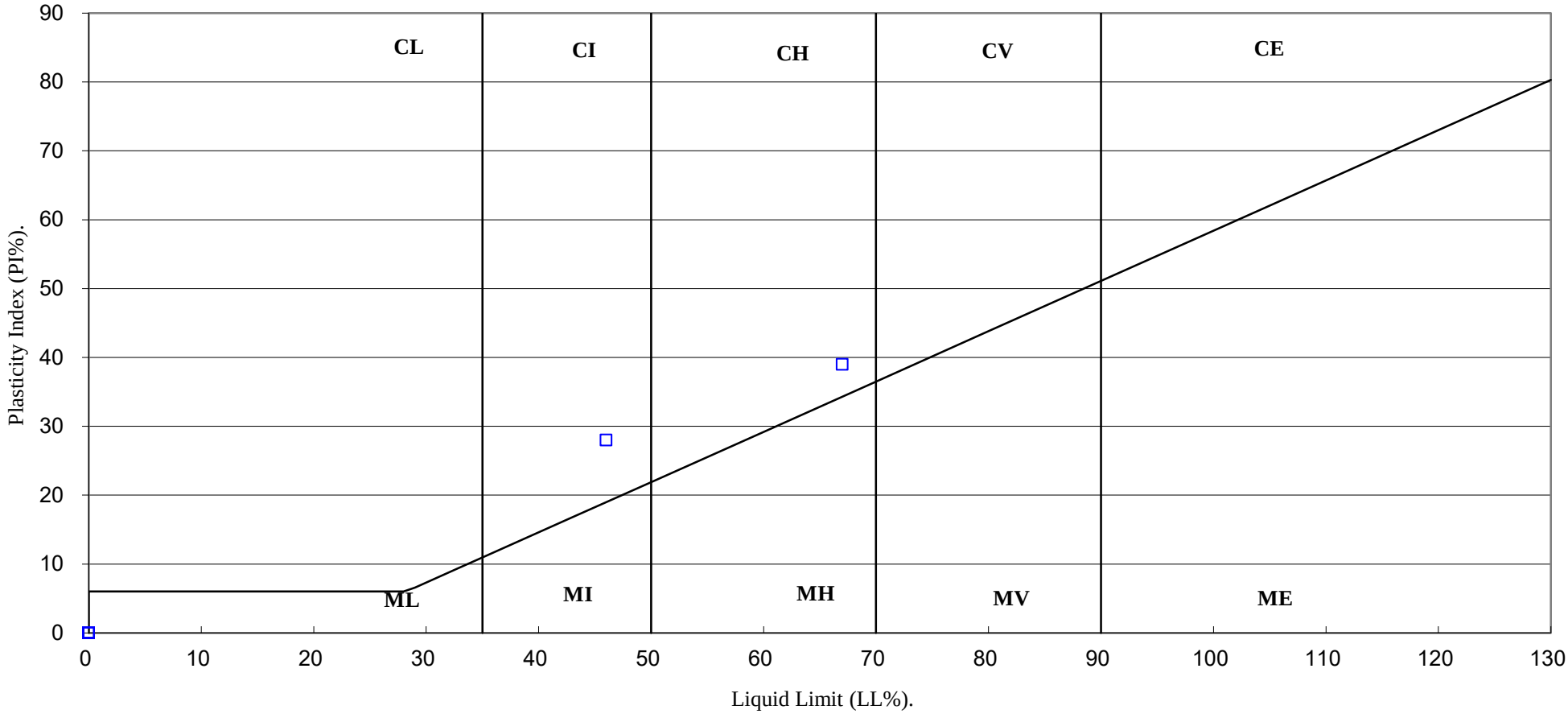
**Contract No:**

**PSL22/3650**

**Client Ref:**

**GT0386**

# PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.

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|---|---|---|---|
| UKAS TESTING 4043 | PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** | **Contract No:** PSL22/3650 **Client Ref:** GT0386 |

# SUMMARY OF SOIL CLASSIFICATION TESTS

**(BS1377 : PART 2 : 1990)**

| Hole Number | Sample Number | Sample Type | Top Depth m | Base Depth m | Moisture Content % Clause 3.2 | Linear Shrinkage % Clause 6.5 | Particle Density $Mg/m^3$ Clause 8.2 | Liquid Limit % Clause 4.3/4 | Plastic Limit % Clause 5.3 | Plasticity Index % Clause 5.4 | Passing .425mm % | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TP139 | 5 | B | 0.50 | 0.70 | 11 | | | | | | | |
| TP139 | 7 | B | 1.60 | 1.80 | 16 | | | | | | | |
| TP140 | 4 | B | 0.30 | 0.50 | 21 | | | | | | | |
| TP140 | 7 | B | 1.00 | 1.20 | 11 | | | | | | | |
| TP140 | 9 | B | 1.70 | 1.90 | 11 | | | | | | | |
| TP141 | 4 | B | 0.30 | 0.50 | 11 | | | | | | | |
| TP142 | 4 | B | 0.30 | 0.50 | 9.2 | | | | | | | |
| TP142 | 9 | B | 2.70 | 2.90 | 13 | | | | | | | |
| TP143 | 5 | B | 1.00 | 1.30 | 9.9 | | | | | | | |
| TP143 | 7 | B | 2.10 | 2.40 | 11 | | | 40 | 19 | 21 | 100 | Intermediate Plasticity CI |
| TP143 | 9 | B | 3.00 | 3.20 | 8.2 | | | | | | | |
| TP144 | 4 | B | 0.40 | 0.50 | 7.8 | | | | | | | |
| TP144 | 7 | B | 1.75 | 1.90 | 16 | | | 38 | 18 | 20 | 67 | Intermediate Plasticity CI |
| TP145 | 5 | B | 1.00 | 1.30 | 10 | | | | | | | |
| TP145 | 7 | B | 2.00 | 2.30 | 11 | | | | | | | |
| TP146 | 5 | B | 0.40 | 0.70 | 11 | | | 36 | 18 | 18 | 81 | Intermediate Plasticity CI |
| TP146 | 7 | B | 1.10 | 1.40 | 11 | | | | | | | |
| TP147 | 4 | B | 0.40 | 0.50 | 17 | | | | | | | |
| TP147 | 7 | B | 0.60 | 0.80 | 4.7 | | | | | | | |

**SYMBOLS :** **NP : Non Plastic** *** : Liquid Limit and Plastic Limit Wet Sieved.**

UKAS TESTING 4043

PSL Professional Soils Laboratory

**Wansford to Sutton Dualling Supplementary GI**

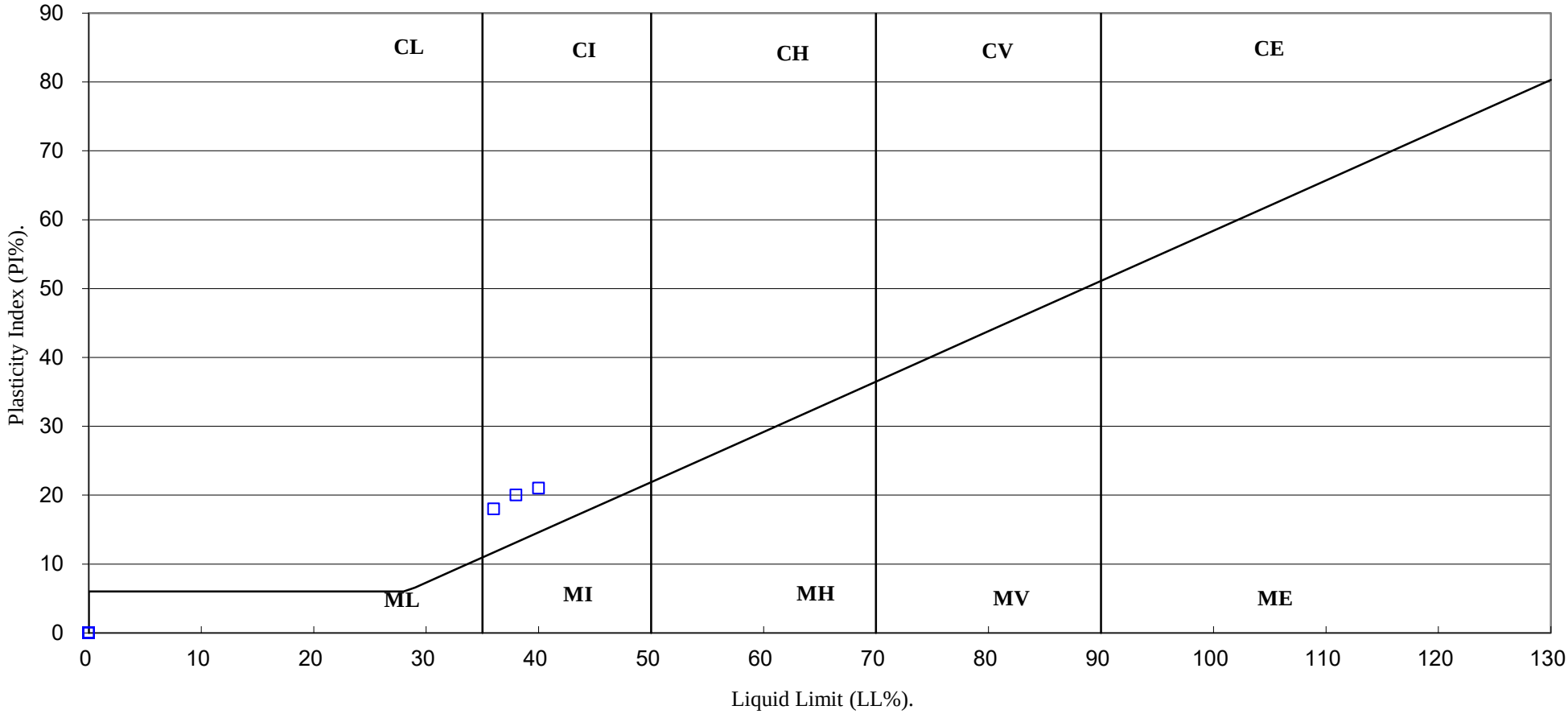
**Contract No:**

**PSL22/3825**

**Client Ref:**

**GT0386**

# PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.

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|---|---|---|---|
| UKAS TESTING 4043 | PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** | **Contract No:** PSL22/3825 **Client Ref:** GT0386 |

# SUMMARY OF SOIL CLASSIFICATION TESTS

**(BS1377 : PART 2 : 1990)**

| Hole Number | Sample Number | Sample Type | Top Depth m | Base Depth m | Moisture Content % Clause 3.2 | Linear Shrinkage % Clause 6.5 | Particle Density $Mg/m^3$ Clause 8.2 | Liquid Limit % Clause 4.3/4 | Plastic Limit % Clause 5.3 | Plasticity Index % Clause 5.4 | Passing .425mm % | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TP148 | 5 | B | 1.00 | 1.30 | 17 | | | 31 | 16 | 15 | 89 | Low Plasticity CL |
| TP149 | 5 | B | 1.00 | 1.30 | 16 | | | | | | | |
| TP149 | 7 | B | 2.00 | 2.30 | 18 | | | | | | | |
| TP149 | 9 | B | 3.00 | 3.30 | 20 | | | | | | | |
| TP150 | 5 | B | 1.00 | 1.30 | 20 | | | | | | | |
| TP150 | 7 | B | 2.00 | 2.30 | 6.0 | | | | | | | |
| TP160 | 5 | B | 1.00 | 1.30 | 17 | | | | | | | |
| TP160 | 7 | B | 2.00 | 2.30 | 11 | | | | | | | |
| TP161 | 5 | B | 1.00 | 1.30 | 9.6 | | | | | | | |
| TP164 | 5 | B | 0.30 | 0.60 | 24 | | | | | | | |
| TP164 | 7 | B | 1.00 | 1.30 | 25 | | | | | | | |
| TP165 | 5 | B | 1.00 | 1.30 | 12 | | | | | | | |
| TP166 | 7 | B | 2.30 | 2.60 | 22 | | | | | | | |
| TP169 | 5 | B | 1.00 | 1.30 | 18 | | | | | | | |
| TP169 | 7 | B | 2.00 | 2.30 | 22 | | | | | | | |
| TP169 | 9 | B | 3.40 | 3.70 | 34 | | | 71 | 29 | 42 | 100 | Very High Plasticity CV |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

**SYMBOLS :** **NP : Non Plastic** *** : Liquid Limit and Plastic Limit Wet Sieved.**

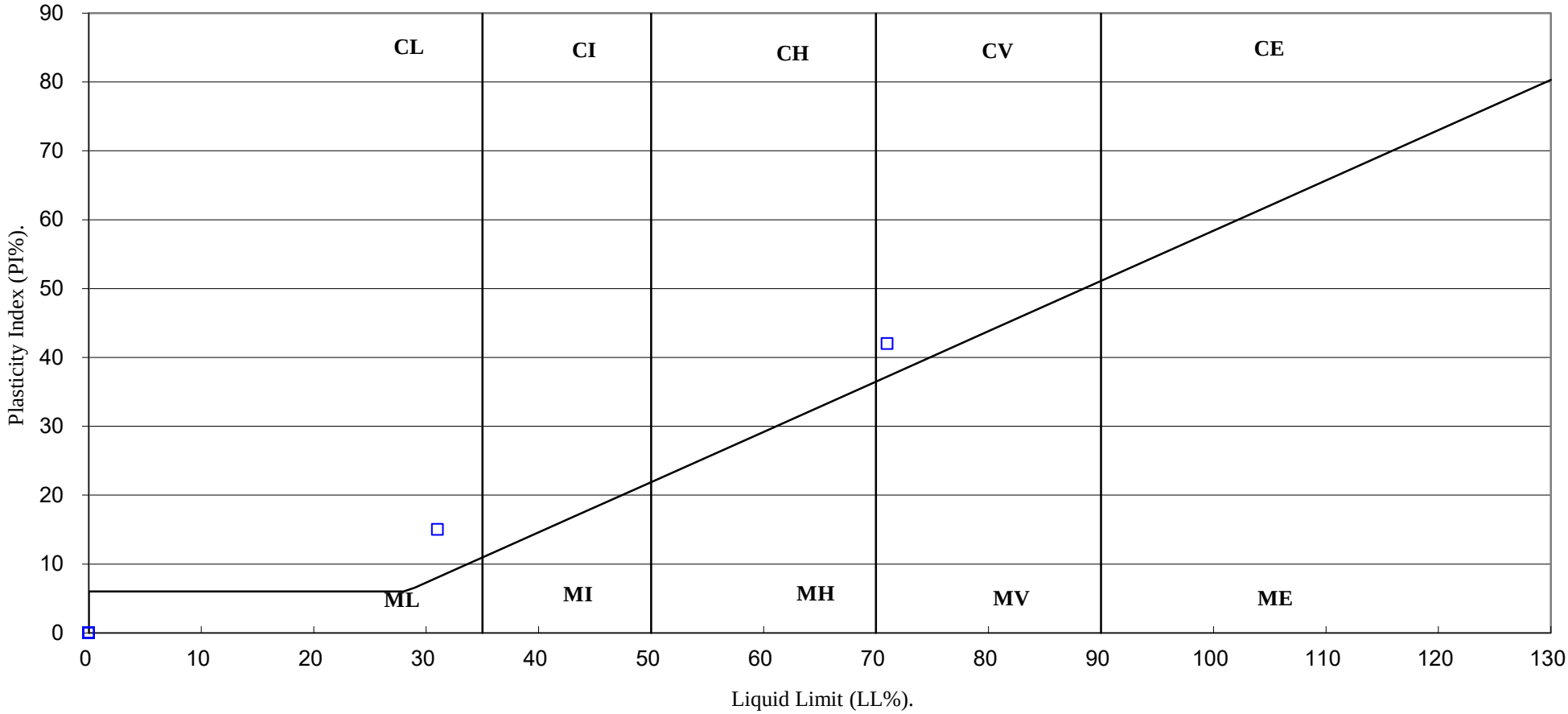
UKAS TESTING 4043

PSL Professional Soils Laboratory

**Wansford to Sutton Dualling Supplementary GI**

**Contract No:**
**PSL22/3825**
**Client Ref:**
**GT0386**

# PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.

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|---|---|---|---|
| UKAS TESTING 4043 | PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** | **Contract No:** PSL22/3825 **Client Ref:** GT0386 |

# SUMMARY OF SOIL CLASSIFICATION TESTS

**(BS1377 : PART 2 : 1990)**

| Hole Number | Sample Number | Sample Type | Top Depth m | Base Depth m | Moisture Content % Clause 3.2 | Linear Shrinkage % Clause 6.5 | Particle Density $Mg/m^3$ Clause 8.2 | Liquid Limit % Clause 4.3/4 | Plastic Limit % Clause 5.3 | Plasticity Index % Clause 5.4 | Passing .425mm % | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BH135 | 6 | B | 0.40 | 0.60 | 16 | | | | | | | |
| BH135 | 7 | B | 1.20 | 1.40 | 8.9 | | | | | | | |
| BH135 | 9 | CS | 2.87 | 3.20 | 17 | | | 44 | 22 | 22 | 100 | Intermediate Plasticity CI |
| BH135 | 11 | CS | 5.56 | 5.86 | 25 | | | 55 | 25 | 30 | 100 | High Plasticity CH |
| BH135 | 14 | CS | 10.85 | 11.15 | 19 | | | | | | | |
| BH135 | 16 | CS | 13.67 | 13.97 | 22 | | | 53 | 24 | 29 | 100 | High Plasticity CH |
| BH135 | 17 | CS | 15.20 | 15.50 | 20 | | | 66 | 28 | 38 | 100 | High Plasticity CH |
| BH135 | 18 | CS | 17.30 | 17.60 | 20 | | | | | | | |
| BH135 | 22 | CS | 23.20 | 23.50 | 23 | | | 65 | 28 | 37 | 100 | High Plasticity CH |
| BH136 | 6 | B | 0.50 | 0.70 | 11 | | | | | | | |
| BH136 | 15 | CS | 7.25 | 7.55 | 22 | | | | | | | |
| BH136 | 17 | CS | 10.40 | 10.70 | 22 | | | | | | | |
| BH136 | 20 | CS | 14.44 | 14.70 | 23 | | | | | | | |
| BH136 | 27 | CS | 16.47 | 16.61 | 22 | | | 67 | 28 | 39 | 100 | High Plasticity CH |
| BH136 | 28 | CS | 23.30 | 23.51 | 21 | | | | | | | |
| BH136 | 29 | CS | 24.42 | 24.64 | 19 | | | 65 | 27 | 38 | 100 | High Plasticity CH |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

**SYMBOLS :** **NP : Non Plastic** *** : Liquid Limit and Plastic Limit Wet Sieved.**

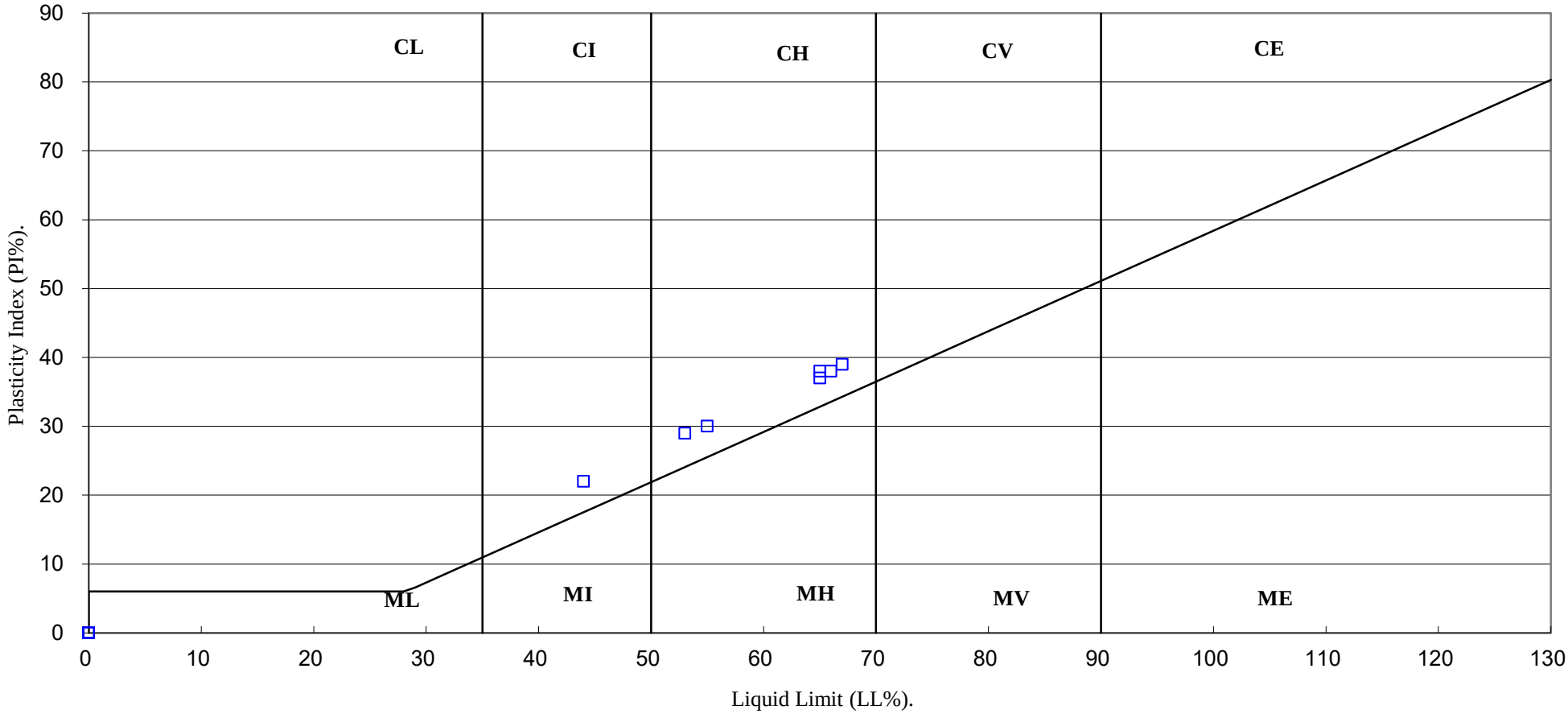
UKAS TESTING 4043

PSL Professional Soils Laboratory

**Wansford to Sutton Dualling Supplementary GI**

**Contract No:**
**PSL22/4145**
**Client Ref:**
**GT0386**

# PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.




| | | | |
|---|---|---|---|
| UKAS TESTING 4043 | PSL Professional Soils Laboratory | Wansford to Sutton Dualling Supplementary GI | **Contract No:** PSL22/4145 **Client Ref:** GT0386 |

# GEOTECHNICAL LABORATORY TESTING SUMMARY SHEET

**Site Location:** Wansford to Sutton Dualling Supplementary GI
**Project Number:** GT0386
**Client:** Galliford Try

| SAMPLE DETAILS | | | INDEX TESTS | | | | | | | PSD | | | | DENSITY | | | | | | STRENGTH | | | | | | | REMARKS/OTHER TESTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Location | Depth (m) | TYPE | W % | LL% | PL% | (x) % | PI | CLASS | Prep Method | % COBBLES | % GRAVEL | % SAND | % SILT AND CLAY | PARTICLE DENSITY Mg/m$^3$ | BULK Mg/m$^3$ | DRY Mg/m$^3$ | MAXIMUM DRY DENSITY | OPTIMUM W% | MCV | TYPE | DIA (mm) | $\sigma_3$ | $\sigma1-\sigma3$ | $C_u$ kPa | $\varnothing_u$ (°) | | |
| | | | 2:3 | 2:4 | 2:5 | | 2:5 | | | 2:9 | 2:9 | 2:9 | 2:9 | 2:8 | 2:7 | 2:7 | 4:4 | 4:3 | 4:5 | | | | | 7:8/7:9 | | | |
| BH101 | 0.5 | B | | | | | | | | 0.0 | 60.2 | 32.3 | 7.5 | | | | | | | | | | | | | | |
| BH101 | 2.1 | D | 5.2 | | | | | | | | | | | | | | | | | | | | | | | | |
| BH102 | 8.2 | D | 24 | 31 | NP | 98 | | | Wet Sieve | | | | | | | | | | | | | | | | | | |
| BH102 | 9.5 | D | 16 | 34 | 13 | 100 | 21 | CL | Natural | | | | | | | | | | | | | | | | | | |
| BH103 | 8.6 | D | 20 | 34 | 17 | 100 | 17 | CL | Wet Sieve | | | | | | | | | | | | | | | | | | |
| BH103 | 9.8 | D | 16 | 42 | 15 | 98 | 27 | CI | Wet Sieve | | | | | | | | | | | | | | | | | | |
| BH103 | 11.6 | D | 17 | 35 | 17 | 69 | 18 | CI | Wet Sieve | | | | | | | | | | | | | | | | | | |
| BH104 & BH104A | 0.5 | D | 14 | | | | | | | | | | | | | | | | | | | | | | | | |
| BH104 & BH104A | 3.5 | D | 1.2 | | | | | | | | | | | | | | | | | | | | | | | | |
| BH104 & BH104A | 5.35 | D | 12 | 29 | 15 | 100 | 14 | CL | Natural | 0.0 | 0.2 | 21.1 | 78.6 | | | | | | | | | | | | | | |
| BH104 & BH104A | 6.3 | D | 12 | 22 | 12 | 100 | 10 | CL | Natural | | | | | | | | | | | | | | | | | | |
| BH104 & BH104A | 9.4 | D | 30 | 59 | 26 | 98 | 33 | CH | Wet Sieve | | | | | | | | | | | | | | | | | | |
| BH104 & BH104A | 10.5 | D | 29 | 67 | 30 | 100 | 37 | CH | Natural | | | | | | | | | | | | | | | | | | |
| BH104 & BH104A | 11.5 | D | 31 | 58 | 26 | 100 | 32 | CH | Natural | | | | | | | | | | | | | | | | | | |
| BH104 & BH104A | 16.2 | CS | 20 | 58 | 24 | 99 | 34 | CH | Wet Sieve | | | | | | 2.10 | 1.75 | | | | MUU | 70 | 150<br>300<br>450 | 232<br>257<br>265 | 126 | | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Key:** | U | Undisturbed Sample | (x) % | % passing BS 0.425mm sieve | MUU | Multi Stage Unconsolidated Undrained | s1-s3 | Deviator Stress |
| | D | Small Disturbed Sample | NP | Non Plastic | HV | Hand Vane | $C_u$ | Undrained Shear Strength |
| | B | Bulk Disturbed Sample | SUU | Single Stage Unconsolidated Undrained | $s_3$ | Cell Pressure | $Æ_u$ | Angle of Shear Resistance |

**Remarks:**

**TEST METHODS:** Unless indicated otherwise (in Remarks/Other Tests), the methods of test given in **BS 1377: 1990 Parts 1 to 9** were used. These are referenced beneath the abbreviated test description in the form Part:Test Method - for example 3:2 would be BS 1377:1990 Part 3:Test Method 2.

| | |
|---|---|
| **Approved:** | barmstrong |
| **Date:** | 15/07/2022 |
| **Page:** | 1 of 23 |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA
Authorised Signatories: o Ben Armstrong (Quality Manager)

# GEOTECHNICAL LABORATORY TESTING SUMMARY SHEET

**Site Location:** Wansford to Sutton Dualling Supplementary GI
**Project Number:** GT0386
**Client:** Galliford Try

| SAMPLE DETAILS | | | INDEX TESTS | | | | | | | PSD | | | | DENSITY | | | | | | STRENGTH | | | | | | | REMARKS/OTHER TESTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Location | Depth (m) | TYPE | W % 2:3 | LL% 2:4 | PL% 2:5 | (x) % | PI 2:5 | CLASS | Prep Method | % COBBLES 2:9 | % GRAVEL 2:9 | % SAND 2:9 | % SILT AND CLAY 2:9 | PARTICLE DENSITY Mg/m$^3$ 2:8 | BULK Mg/m$^3$ 2:7 | DRY Mg/m$^3$ 2:7 | MAXIMUM DRY DENSITY 4:4 | OPTIMUM W% 4:3 | MCV 4:5 | TYPE | DIA (mm) | $\sigma_3$ | $\sigma1-\sigma3$ | $C_u$ kPa 7:8/7:9 | $\varnothing_u$ (°) | | |
| BH105 | 1.3 | D | 9 | | | | | | | | | | | | | | | | | | | | | | | | |
| BH105 | 2.2 | D | 7.5 | | | | | | | | | | | | | | | | | | | | | | | | |
| BH105 | 5.3 | D | 21 | | | | | | | | | | | | | | | | | | | | | | | | |
| BH105 | 6.5 | D | 19 | 29 | 16 | 97 | 13 | CL | Wet Sieve | | | | | | | | | | | | | | | | | | |
| BH105 | 8.75 | CS | 12 | 39 | 13 | 100 | 26 | CI | Natural | | | | | | 2.26 | 2.02 | | | | MUU | 102 | 90<br>180<br>270 | 252<br>290<br>334 | 146 | | | |
| BH105 | 10.5 | D | 33 | 63 | 25 | 89 | 38 | CH | Wet Sieve | | | | | | | | | | | | | | | | | | |
| BH105 | 12.5 | D | 22 | 56 | 26 | 100 | 30 | CH | Natural | | | | | | | | | | | | | | | | | | |
| BH105 | 15.5 | D | 16 | 60 | 23 | 100 | 37 | CH | Natural | | | | | | | | | | | | | | | | | | |
| BH105 | 17 | D | 21 | 61 | 24 | 97 | 37 | CH | Wet Sieve | | | | | | | | | | | | | | | | | | |
| BH106 | 0.8 | D | 10 | | | | | | | | | | | | | | | | | | | | | | | | |
| BH106 | 1.4 | D | 8 | | | | | | | | | | | | | | | | | | | | | | | | |
| BH106 | 2 | D | 16 | | | | | | | | | | | | | | | | | | | | | | | | |
| BH106 | 2.8 | D | 15 | | | | | | | | | | | | | | | | | | | | | | | | |
| BH106 | 3.6 | D | 25 | | | | | | | | | | | | | | | | | | | | | | | | |
| BH106 | 4.35 | D | 23 | | | | | | | | | | | | | | | | | | | | | | | | |

| **Key:** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | U | Undisturbed Sample | (x) % | % passing BS 0.425mm sieve | MUU | Multi Stage Unconsolidated Undrained | s1-s3 | Deviator Stress |
| | D | Small Disturbed Sample | NP | Non Plastic | HV | Hand Vane | $C_u$ | Undrained Shear Strength |
| | B | Bulk Disturbed Sample | SUU | Single Stage Unconsolidated Undrained | $s_3$ | Cell Pressure | $Æ_u$ | Angle of Shear Resistance |

**Remarks:**

**TEST METHODS:** Unless indicated otherwise (in Remarks/Other Tests), the methods of test given in **BS 1377: 1990 Parts 1 to 9** were used. These are referenced beneath the abbreviated test description in the form Part:Test Method - for example 3:2 would be BS 1377:1990 Part 3:Test Method 2.

| | |
|---|---|
| **Approved:** | barmstrong |
| **Date:** | 15/07/2022 |
| **Page:** | 2 of 23 |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA
Authorised Signatories: o Ben Armstrong (Quality Manager)

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# GEOTECHNICAL LABORATORY TESTING SUMMARY SHEET

**Site Location:** Wansford to Sutton Dualling Supplementary GI
**Project Number:** GT0386
**Client:** Galliford Try

| SAMPLE DETAILS | | | INDEX TESTS | | | | | | | PSD | | | | DENSITY | | | | | | STRENGTH | | | | | | | REMARKS/OTHER TESTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Location | Depth (m) | TYPE | W % | LL% | PL% | (x) % | PI | CLASS | Prep Method | % COBBLES | % GRAVEL | % SAND | % SILT AND CLAY | PARTICLE DENSITY Mg/m$^3$ | BULK Mg/m$^3$ | DRY Mg/m$^3$ | MAXIMUM DRY DENSITY | OPTIMUM W% | MCV | TYPE | DIA (mm) | $\sigma_3$ | $\sigma1-\sigma3$ | $C_u$ kPa | $\varnothing_u$ (°) | | |
| | | | 2:3 | 2:4 | 2:5 | | 2:5 | | | 2:9 | 2:9 | 2:9 | 2:9 | 2:8 | 2:7 | 2:7 | 4:4 | 4:3 | 4:5 | | | | | 7:8/7:9 | | | |
| BH106 | 4.85 | D | 18 | 26 | 16 | 100 | 10 | CL | Wet Sieve | | | | | | | | | | | | | | | | | | |
| BH106 | 5.7 | D | 13 | | | | | | | | | | | | | | | | | | | | | | | | |
| BH106 | 9.5 | D | 28 | 68 | 26 | 100 | 42 | CH | Natural | | | | | | | | | | | | | | | | | | |
| BH106 | 12.1 | CS | 24 | 57 | 28 | 97 | 29 | CH | Wet Sieve | | | | | | | | | | | | | | | | | | |
| BH106 | 15.1 | CS | 20 | | | | | | | | | | | | 2.04 | 1.70 | | | | MUU | 103 | 150<br>300<br>450 | 171<br>175<br>177 | 87 | | | |
| BH106 | 15.5 | D | 21 | 57 | 23 | 99 | 34 | CH | Wet Sieve | | | | | | | | | | | | | | | | | | |
| BH107 | 0.7 | B | | | | | | | | 2.9 | 64.2 | 20.1 | 12.8 | | | | | | | | | | | | | | |
| BH107 | 7.5 | B | 20 | | | | | | | 0.0 | 46.4 | 48.6 | 5.0 | | | | | | | | | | | | | | |
| BH107 | 8.9 | D | 20 | 29 | NP | 100 | | | Wet Sieve | | | | | | | | | | | | | | | | | | |
| BH107 | 9.5 | D | | | | | | | | | | | | | 2.13 | 1.79 | | | | | | | | | | | |
| BH107 | 11.9 | CS | 20 | | | | | | | | | | | | 2.02 | 1.69 | | | | MUU | 70 | 120<br>240<br>360 | 155<br>148<br>173 | 79 | | | |
| BH107 | 12.9 | CS | 20 | | | | | | | | | | | | 2.05 | 1.70 | | | | MUU | 70 | 130<br>260<br>390 | 137<br>160<br>179 | 79 | | | |
| BH108 | 6.5 | B | 12 | | | | | | | 0.0 | 0.3 | 73.7 | 26.0 | | | | | | | | | | | | | | |
| BH108 | 9.6 | D | 16 | 30 | NP | 100 | | | Wet Sieve | | | | | | | | | | | | | | | | | | |
| BH108 | 10.4 | CS | 23 | 46 | 17 | 100 | 29 | CI | Wet Sieve | | | | | | 1.97 | 1.60 | | | | MUU | 100 | 110<br>220<br>330 | 117<br>151<br>187 | 76 | | | |

| **Key:** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | U | Undisturbed Sample | (x) % | % passing BS 0.425mm sieve | MUU | Multi Stage Unconsolidated Undrained | s1-s3 | Deviator Stress |
| | D | Small Disturbed Sample | NP | Non Plastic | HV | Hand Vane | $C_u$ | Undrained Shear Strength |
| | B | Bulk Disturbed Sample | SUU | Single Stage Unconsolidated Undrained | $s_3$ | Cell Pressure | Æ$_u$ | Angle of Shear Resistance |

**Remarks:**

**TEST METHODS:** Unless indicated otherwise (in Remarks/Other Tests), the methods of test given in **BS 1377: 1990 Parts 1 to 9** were used. These are referenced beneath the abbreviated test description in the form Part:Test Method - for example 3:2 would be BS 1377:1990 Part 3:Test Method 2.

| | |
|---|---|
| **Approved:** | barmstrong |
| **Date:** | 15/07/2022 |
| **Page:** | 3 of 23 |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA
Authorised Signatories: o Ben Armstrong (Quality Manager)

UKAS TESTING

# GEOTECHNICAL LABORATORY TESTING SUMMARY SHEET

**Site Location:** Wansford to Sutton Dualling Supplementary GI
**Project Number:** GT0386
**Client:** Galliford Try

| SAMPLE DETAILS | | | INDEX TESTS | | | | | | | PSD | | | | DENSITY | | | | | | STRENGTH | | | | | | | REMARKS/OTHER TESTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Location | Depth (m) | TYPE | W % 2:3 | LL% 2:4 | PL% 2:5 | (x) % | PI 2:5 | CLASS | Prep Method | % COBBLES 2:9 | % GRAVEL 2:9 | % SAND 2:9 | % SILT AND CLAY 2:9 | PARTICLE DENSITY $Mg/m^3$ 2:8 | BULK $Mg/m^3$ 2:7 | DRY $Mg/m^3$ 2:7 | MAXIMUM DRY DENSITY 4:4 | OPTIMUM W% 4:3 | MCV 4:5 | TYPE | DIA (mm) | $\sigma_3$ | $\sigma1-\sigma3$ | $C_u$ kPa 7:8/7:9 | $\varnothing_u$ (°) | | |
| BH108 | 17.5 | CS | 18 | 58 | 24 | 100 | 34 | CH | Natural | | | | | | 2.12 | 1.80 | | | | MUU | 70 | 170<br>340<br>510 | 175<br>201<br>210 | 98 | | | |
| BH109 | 7.65 | D | 19 | 31 | 23 | 100 | 8 | CL | Wet Sieve | | | | | | | | | | | | | | | | | | |
| BH109 | 9.3 | D | 17 | 44 | 15 | 99 | 29 | CI | Wet Sieve | | | | | | | | | | | | | | | | | | |
| BH110 | 5 | D | 22 | | | | | | | | | | | | | | | | | | | | | | | | |
| BH110 | 6.8 | D | 24 | | | | | | | | | | | | | | | | | | | | | | | | |
| BH110 | 7.3 | D | 13 | | | | | | | | | | | | | | | | | | | | | | | | |
| BH111 | 1.2 | D | 8.9 | | | | | | | | | | | | | | | | | | | | | | | | |
| BH111 | 4.85 | D | 17 | | | | | | | 0.0 | 0.9 | 81.3 | 17.8 | | | | | | | | | | | | | | |
| BH111 | 5.9 | D | 3.7 | | | | | | | | | | | | | | | | | | | | | | | | |
| BH111 | 7 | D | 15 | | | | | | | 0.0 | 1.9 | 84.0 | 14.1 | | | | | | | | | | | | | | |
| BH111 | 8.2 | D | 20 | 29 | 18 | 100 | 11 | CL | Natural | | | | | | | | | | | | | | | | | | |
| BH111 | 9 | D | 13 | | | | | | | | | | | | | | | | | | | | | | | | |
| BH111 | 9.5 | CS | 10 | | | | | | | | | | | | | | | | | | | | | | | | |
| BH111 | 11.4 | CS | 26 | | | | | | | | | | | | 1.94 | 1.54 | | | | MUU | 70 | 110<br>220<br>330 | 157<br>165<br>178 | 83 | | | |
| BH111 | 12.9 | D | 31 | 64 | 26 | 100 | 38 | CH | Natural | | | | | | | | | | | | | | | | | | |

| **Key:** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | U | Undisturbed Sample | (x) % | % passing BS 0.425mm sieve | MUU | Multi Stage Unconsolidated Undrained | s1-s3 | Deviator Stress |
| | D | Small Disturbed Sample | NP | Non Plastic | HV | Hand Vane | $C_u$ | Undrained Shear Strength |
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**Remarks:**

**TEST METHODS:** Unless indicated otherwise (in Remarks/Other Tests), the methods of test given in **BS 1377: 1990 Parts 1 to 9** were used. These are referenced beneath the abbreviated test description in the form Part:Test Method - for example 3:2 would be BS 1377:1990 Part 3:Test Method 2.

| | |
|---|---|
| **Approved:** | barmstrong |
| **Date:** | 15/07/2022 |
| **Page:** | 4 of 23 |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA
Authorised Signatories: o Ben Armstrong (Quality Manager)

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# GEOTECHNICAL LABORATORY TESTING SUMMARY SHEET

**Site Location:** Wansford to Sutton Dualling Supplementary GI
**Project Number:** GT0386
**Client:** Galliford Try

| SAMPLE DETAILS | | | INDEX TESTS | | | | | | | PSD | | | | DENSITY | | | | | | STRENGTH | | | | | | | REMARKS/OTHER TESTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Location | Depth (m) | TYPE | W % | LL% | PL% | (x) % | PI | CLASS | Prep Method | % COBBLES | % GRAVEL | % SAND | % SILT AND CLAY | PARTICLE DENSITY $Mg/m^3$ | BULK $Mg/m^3$ | DRY $Mg/m^3$ | MAXIMUM DRY DENSITY | OPTIMUM W% | MCV | TYPE | DIA (mm) | $\sigma_3$ | $\sigma 1-\sigma 3$ | $C_u$ kPa | $\varnothing_u$ (°) | | |
| | | | 2:3 | 2:4 | 2:5 | | 2:5 | | | 2:9 | 2:9 | 2:9 | 2:9 | 2:8 | 2:7 | 2:7 | 4:4 | 4:3 | 4:5 | | | | | 7:8/7:9 | | | |
| BH112 | 0.35 | D | 14 | 35 | 16 | 81 | 19 | CL | Wet Sieve | | | | | | | | | | | | | | | | | | |
| BH112 | 1.6 | D | 23 | 37 | 16 | 95 | 21 | CI | Wet Sieve | | | | | | | | | | | | | | | | | | |
| BH112 | 6.7 | CS | 23 | 64 | 25 | 100 | 39 | CH | Natural | | | | | | | | | | | | | | | | | | |
| BH112 | 11 | CS | 21 | 55 | 24 | 100 | 31 | CH | Natural | | | | | | 2.07 | 1.71 | | | | MUU | 70 | 110<br>220<br>330 | 137<br>159<br>184 | 80 | | | |
| BH113 | 0.5 | B | 50 | 81 | 33 | 99 | 48 | CV | Wet Sieve | 0.0 | 0.1 | 29.7 | 70.1 | | | | | | | | | | | | | | |
| BH113 | 1 | B | 52 | | | | | | | 0.0 | 1.0 | 45.9 | 53.1 | | | | | | | | | | | | | | |
| BH113 | 1.5 | D | 50 | 79 | 33 | 100 | 46 | CV | Wet Sieve | | | | | | | | | | | | | | | | | | |
| BH113 | 2.5 | B | 60 | | | | | | | 0.0 | 23.0 | 36.9 | 40.1 | | | | | | | | | | | | | | |
| BH113 | 4 | B | 80 | 64 | 28 | 58 | 36 | CH | Wet Sieve | 37.3 | 11.9 | 16.0 | 34.8 | | | | | | | | | | | | | | |
| BH113 | 5.3 | CS | 24 | | | | | | | | | | | | 2.04 | 1.64 | | | | MUU | 70 | 50<br>100<br>150 | 89<br>105<br>127 | 54 | | | |
| BH113 | 10.4 | CS | 20 | 58 | 26 | 100 | 32 | CH | Natural | | | | | | 2.07 | 1.72 | | | | MUU | 70 | 100<br>200<br>300 | 216<br>254<br>269 | 107 | | | |
| BH113 | 17 | CS | 19 | | | | | | | | | | | | 2.05 | 1.72 | | | | MUU | 70 | 170<br>340<br>510 | 326<br>392<br>403 | 187 | | | |
| BH114 | 1.3 | D | 7.1 | | | | | | | | | | | | | | | | | | | | | | | | |
| BH114 | 2.6 | D | 27 | 54 | 24 | 100 | 30 | CH | Natural | | | | | | | | | | | | | | | | | | |
| BH114 | 4.5 | CS | 21 | | | | | | | | | | | | | | | | | | | | | | | | |

| **Key:** | | | | | | | |
|---|---|---|---|---|---|---|---|
| | U | Undisturbed Sample | (x) % | % passing BS 0.425mm sieve | MUU | Multi Stage Unconsolidated Undrained | s1-s3 | Deviator Stress |
| | D | Small Disturbed Sample | NP | Non Plastic | HV | Hand Vane | $C_u$ | Undrained Shear Strength |
| | B | Bulk Disturbed Sample | SUU | Single Stage Unconsolidated Undrained | $s_3$ | Cell Pressure | $Æ_u$ | Angle of Shear Resistance |

| **Remarks:** | **TEST METHODS:** Unless indicated otherwise (in Remarks/Other Tests), the methods of test given in **BS 1377: 1990 Parts 1 to 9** were used. These are referenced beneath the abbreviated test description in the form Part:Test Method - for example 3:2 would be BS 1377:1990 Part 3:Test Method 2. | **Approved:** | barmstrong |
|---|---|---|---|
| | | **Date:** | 15/07/2022 |
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Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA
Authorised Signatories: o Ben Armstrong (Quality Manager)

# GEOTECHNICAL LABORATORY TESTING SUMMARY SHEET

**Site Location:** Wansford to Sutton Dualling Supplementary GI
**Project Number:** GT0386
**Client:** Galliford Try

| SAMPLE DETAILS | | | INDEX TESTS | | | | | | | PSD | | | | DENSITY | | | | | | STRENGTH | | | | | | | REMARKS/OTHER TESTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Location | Depth (m) | TYPE | W % 2:3 | LL% 2:4 | PL% 2:5 | (x) % | PI 2:5 | CLASS | Prep Method | % COBBLES 2:9 | % GRAVEL 2:9 | % SAND 2:9 | % SILT AND CLAY 2:9 | PARTICLE DENSITY Mg/m$^3$ 2:8 | BULK Mg/m$^3$ 2:7 | DRY Mg/m$^3$ 2:7 | MAXIMUM DRY DENSITY 4:4 | OPTIMUM W% 4:3 | MCV 4:5 | TYPE | DIA (mm) | $\sigma_3$ | $\sigma1-\sigma3$ | $C_u$ kPa 7:8/7:9 | $\varnothing_u$ (°) | | |
| BH114 | 6.6 | CS | 22 | 63 | 23 | 100 | 40 | CH | Wet Sieve | | | | | | | | | | | | | | | | | | |
| BH114 | 8.5 | CS | 23 | | | | | | | | | | | | 2.06 | 1.67 | | | | MUU | 70 | 80<br>160<br>240 | 226<br>245<br>247 | 120 | | |
| BH114 | 11 | CS | 20 | | | | | | | | | | | | 2.09 | 1.74 | | | | MUU | 70 | 110<br>220<br>330 | 344<br>357<br>359 | 177 | | |
| BH115 | 1 | B | 16 | 29 | 14 | 58 | 15 | CL | Wet Sieve | 8.4 | 41.1 | 33.8 | 16.7 | | | | | | | | | | | | | | |
| BH115 | 2.5 | B | 13 | | | | | | | 13.3 | 61.3 | 17.4 | 7.9 | | | | | | | | | | | | | | |
| BH115 | 5.5 | B | 12 | | | | | | | 23.8 | 52.5 | 14.4 | 9.2 | | | | | | | | | | | | | | |
| BH115 | 8.5 | D | 20 | 30 | 16 | 77 | 14 | CL | Wet Sieve | | | | | | | | | | | | | | | | | | |
| BH115 | 8.8 | D | 21 | | | | | | | 0.0 | 21.5 | 21.3 | 57.2 | | | | | | | | | | | | | | |
| BH115 | 9.5 | D | 19 | 58 | 22 | 96 | 36 | CH | Wet Sieve | | | | | | 2.05 | 1.72 | | | | | | | | | | | |
| BH115 | 11 | D | 21 | | | | | | | 0.0 | 5.6 | 3.2 | 91.2 | | | | | | | | | | | | | | |
| BH115 | 11.5 | CS | 22 | | | | | | | | | | | | | | | | | | | | | | | | |
| BH115 | 12.5 | D | 20 | 58 | 23 | 100 | 35 | CH | Wet Sieve | | | | | | 2.02 | 1.68 | | | | | | | | | | | |
| BH115 | 14 | D | 21 | 63 | 24 | 100 | 39 | CH | Natural | | | | | | | | | | | | | | | | | | |
| BH115 | 14.7 | CS | 24 | 59 | 24 | 99 | 35 | CH | Natural | | | | | | | | | | | | | | | | | | |
| BH115 | 15.5 | D | 20 | 56 | 24 | 100 | 32 | CH | Natural | 0.0 | 6.4 | 4.5 | 89.0 | | | | | | | | | | | | | | |

| **Key:** | | | | | | | |
|---|---|---|---|---|---|---|---|
| | U | Undisturbed Sample | (x) % | % passing BS 0.425mm sieve | MUU | Multi Stage Unconsolidated Undrained | s1-s3 | Deviator Stress |
| | D | Small Disturbed Sample | NP | Non Plastic | HV | Hand Vane | $C_u$ | Undrained Shear Strength |
| | B | Bulk Disturbed Sample | SUU | Single Stage Unconsolidated Undrained | $s_3$ | Cell Pressure | Æ$_u$ | Angle of Shear Resistance |

**Remarks:**

**TEST METHODS:** Unless indicated otherwise (in Remarks/Other Tests), the methods of test given in **BS 1377: 1990 Parts 1 to 9** were used. These are referenced beneath the abbreviated test description in the form Part:Test Method - for example 3:2 would be BS 1377:1990 Part 3:Test Method 2.

| | |
|---|---|
| **Approved:** | barmstrong |
| **Date:** | 15/07/2022 |
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Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA
Authorised Signatories: o Ben Armstrong (Quality Manager)

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# GEOTECHNICAL LABORATORY TESTING SUMMARY SHEET

**Site Location:** Wansford to Sutton Dualling Supplementary GI
**Project Number:** GT0386
**Client:** Galliford Try

| SAMPLE DETAILS | | | INDEX TESTS | | | | | | | PSD | | | | DENSITY | | | | | | STRENGTH | | | | | | | REMARKS/OTHER TESTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Location | Depth (m) | TYPE | W % | LL% | PL% | (x) % | PI | CLASS | Prep Method | % COBBLES | % GRAVEL | % SAND | % SILT AND CLAY | PARTICLE DENSITY Mg/m$^3$ | BULK Mg/m$^3$ | DRY Mg/m$^3$ | MAXIMUM DRY DENSITY | OPTIMUM W% | MCV | TYPE | DIA (mm) | $\sigma_3$ | $\sigma 1-\sigma 3$ | $C_u$ kPa | $\varnothing_u$ (°) | | |
| | | | 2:3 | 2:4 | 2:5 | | 2:5 | | | 2:9 | 2:9 | 2:9 | 2:9 | 2:8 | 2:7 | 2:7 | 4:4 | 4:3 | 4:5 | | | | | 7:8/7:9 | | | |
| BH115 | 17 | D | 20 | 57 | 21 | 98 | 36 | CH | Wet Sieve | | | | | | 2.05 | 1.70 | | | | | | | | | | | |
| BH116 | 0.5 | B | 13 | | | | | | | 0.0 | 40.4 | 34.6 | 25.0 | | | | | | | | | | | | | | |
| BH116 | 1 | B | 20 | | | | | | | 0.0 | 34.3 | 39.2 | 26.5 | | | | | | | | | | | | | | |
| BH116 | 5.8 | B | 26 | | | | | | | 0.0 | 0.8 | 7.0 | 92.2 | | | | | | | | | | | | | | |
| BH116 | 7 | D | 15 | 30 | 12 | 100 | 18 | CL | Wet Sieve | | | | | | 2.20 | 1.92 | | | | | | | | | | | |
| BH116 | 8.2 | CS | 11 | 28 | 9 | 100 | 18 | CL | Wet Sieve | | | | | | | | | | | | | | | | | | |
| BH116 | 9.88 | CS | 21 | | | | | | | | | | | | | | | | | | | | | | | | |
| BH116 | 10 | D | 21 | 59 | 23 | 100 | 36 | CH | Natural | | | | | | | | | | | | | | | | | | |
| BH116 | 11.5 | D | 21 | 61 | 22 | 100 | 39 | CH | Wet Sieve | | | | | | 2.03 | 1.68 | | | | | | | | | | | |
| BH116 | 12.7 | CS | 22 | | | | | | | | | | | | 2.08 | 1.71 | | | | MUU | 103 | 120<br>240<br>360 | 121<br>140<br>150 | 69 | | | |
| BH116 | 14.2 | CS | 23 | | | | | | | | | | | | 2.00 | 1.62 | | | | MUU | 102 | 90<br>180<br>270 | 87<br>109<br>138 | 56 | | | |
| BH116 | 16 | D | 19 | 58 | 21 | 100 | 37 | CH | Natural | | | | | | | | | | | | | | | | | | |
| BH116 | 17.5 | D | 18 | | | | | | | 0.0 | 0.0 | 1.3 | 98.7 | | | | | | | | | | | | | | |
| BH116 | 19 | D | 21 | 55 | 18 | 100 | 37 | CH | Natural | | | | | | | | | | | | | | | | | | |
| BH116 | 21.8 | CS | 14 | | | | | | | | | | | | 2.06 | 1.81 | | | | MUU | 70 | 200<br>400<br>600 | 208<br>254<br>308 | 128 | | | |

| **Key:** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | U | Undisturbed Sample | (x) % | % passing BS 0.425mm sieve | MUU | Multi Stage Unconsolidated Undrained | s1-s3 | Deviator Stress |
| | D | Small Disturbed Sample | NP | Non Plastic | HV | Hand Vane | $C_u$ | Undrained Shear Strength |
| | B | Bulk Disturbed Sample | SUU | Single Stage Unconsolidated Undrained | $s_3$ | Cell Pressure | $Æ_u$ | Angle of Shear Resistance |

| **Remarks:** | **TEST METHODS:** Unless indicated otherwise (in Remarks/Other Tests), the methods of test given in **BS 1377: 1990 Parts 1 to 9** were used. These are referenced beneath the abbreviated test description in the form Part:Test Method - for example 3:2 would be BS 1377:1990 Part 3:Test Method 2. | **Approved:** | barmstrong |
|---|---|---|---|
| | | **Date:** | 15/07/2022 |
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Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA
Authorised Signatories: o Ben Armstrong (Quality Manager)

UKAS TESTING

# GEOTECHNICAL LABORATORY TESTING SUMMARY SHEET

**Site Location:** Wansford to Sutton Dualling Supplementary GI
**Project Number:** GT0386
**Client:** Galliford Try

| SAMPLE DETAILS | | | INDEX TESTS | | | | | | | PSD | | | | DENSITY | | | | | | STRENGTH | | | | | | | REMARKS/OTHER TESTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Location | Depth (m) | TYPE | W % 2:3 | LL% 2:4 | PL% 2:5 | (x) % | PI 2:5 | CLASS | Prep Method | % COBBLES 2:9 | % GRAVEL 2:9 | % SAND 2:9 | % SILT AND CLAY 2:9 | PARTICLE DENSITY Mg/m$^3$ 2:8 | BULK Mg/m$^3$ 2:7 | DRY Mg/m$^3$ 2:7 | MAXIMUM DRY DENSITY 4:4 | OPTIMUM W% 4:3 | MCV 4:5 | TYPE | DIA (mm) | $\sigma_3$ | $\sigma1-\sigma3$ | $C_u$ kPa 7:8/7:9 | $\varnothing_u$ (°) | | |
| BH116 | 22 | D | 18 | 58 | 24 | 100 | 34 | CH | Natural | | | | | | | | | | | | | | | | | | |
| BH117 | 1 | B | 22 | 52 | 19 | 67 | 33 | CH | Wet Sieve | 0.0 | 28.6 | 44.2 | 27.3 | | | | | | | | | | | | | | |
| BH117 | 4.5 | B | 18 | 31 | 16 | 63 | 15 | CL | Wet Sieve | 0.0 | 22.0 | 47.4 | 30.6 | | | | | | | | | | | | | | |
| BH117 | 7 | D | 22 | | | | | | | | | | | | | | | | | | | | | | | | |
| BH117 | 10.5 | D | 18 | 29 | 18 | 99 | 11 | CL | Wet Sieve | | | | | | | | | | | | | | | | | | |
| BH117 | 11.2 | D | 18 | | | | | | | | | | | | | | | | | | | | | | | | |
| BH117 | 12.6 | D | 21 | 59 | 21 | 90 | 38 | CH | Wet Sieve | | | | | | | | | | | | | | | | | | |
| BH117 | 13.5 | D | 18 | 55 | 22 | 98 | 33 | CH | Wet Sieve | 0.0 | 1.7 | 8.3 | 90.0 | | | | | | | | | | | | | | |
| BH117 | 14.4 | CS | 21 | 53 | 27 | 97 | 26 | CH | Wet Sieve | | | | | | 2.10 | 1.73 | | | | MUU | 103 | 150<br>300<br>450 | 182<br>205<br>217 | 101 | | | |
| BH117 | 15 | D | 18 | 54 | 24 | 95 | 30 | CH | Wet Sieve | | | | | | | | | | | | | | | | | | |
| BH117 | 19.5 | D | 19 | 60 | 23 | 100 | 37 | CH | Wet Sieve | | | | | | | | | | | | | | | | | | |
| BH117 | 21.8 | CS | 20 | 51 | 22 | 100 | 29 | CH | Natural | | | | | | 2.20 | 1.83 | | | | MUU | 102 | 220<br>440<br>660 | 129<br>153<br>165 | 75 | | | |
| BH118 | 1 | B | 18 | | | | | | | 0.0 | 23.9 | 38.1 | 38.0 | | | | | | | | | | | | | | |
| BH118 | 1.5 | B | 17 | | | | | | | 0.0 | 19.1 | 40.9 | 40.0 | | | | | | | | | | | | | | |
| BH118 | 2.5 | B | 26 | 29 | 15 | 54 | 14 | CL | Wet Sieve | 0.0 | 50.0 | 30.0 | 20.0 | | | | | | | | | | | | | | |

| **Key:** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | U | Undisturbed Sample | (x) % | % passing BS 0.425mm sieve | MUU | Multi Stage Unconsolidated Undrained | s1-s3 | Deviator Stress |
| | D | Small Disturbed Sample | NP | Non Plastic | HV | Hand Vane | $C_u$ | Undrained Shear Strength |
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**Remarks:**

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| | |
|---|---|
| **Approved:** | barmstrong |
| **Date:** | 15/07/2022 |
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Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA
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# GEOTECHNICAL LABORATORY TESTING SUMMARY SHEET

**Site Location:** Wansford to Sutton Dualling Supplementary GI
**Project Number:** GT0386
**Client:** Galliford Try

| SAMPLE DETAILS | | | INDEX TESTS | | | | | | | PSD | | | | DENSITY | | | | | | STRENGTH | | | | | | | REMARKS/OTHER TESTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Location | Depth (m) | TYPE | W % 2:3 | LL% 2:4 | PL% 2:5 | (x) % | PI 2:5 | CLASS | Prep Method | % COBBLES 2:9 | % GRAVEL 2:9 | % SAND 2:9 | % SILT AND CLAY 2:9 | PARTICLE DENSITY Mg/m$^3$ 2:8 | BULK Mg/m$^3$ 2:7 | DRY Mg/m$^3$ 2:7 | MAXIMUM DRY DENSITY 4:4 | OPTIMUM W% 4:3 | MCV 4:5 | TYPE | DIA (mm) | $\sigma_3$ | $\sigma1-\sigma3$ | $C_u$ kPa 7:8/7:9 | $\varnothing_u$ (°) | | |
| BH118 | 3.5 | B | 16 | | | | | | | 0.0 | 41.8 | 47.2 | 11.0 | | | | | | | | | | | | | | |
| BH118 | 7.6 | D | 26 | 33 | | 99 | ##### | ML | Wet Sieve | | | | | | | | | | | | | | | | | | |
| BH118 | 8.5 | D | 14 | 31 | 12 | 99 | 19 | CL | Wet Sieve | | | | | | | | | | | | | | | | | | |
| BH118 | 9.57 | CS | 11 | 34 | 11 | 98 | 23 | CL | Wet Sieve | | | | | | | | | | | | | | | | | | |
| BH118 | 10 | D | | | | | | | | | | | | | 2.27 | 1.95 | | | | | | | | | | | |
| BH118 | 11.5 | D | 18 | 57 | 22 | 99 | 35 | CH | Wet Sieve | | | | | | | | | | | | | | | | | | |
| BH118 | 12.8 | CS | 20 | | | | | | | | | | | | | | | | | | | | | | | | |
| BH118 | 13 | D | 18 | 53 | 22 | 100 | 31 | CH | Wet Sieve | | | | | | 2.06 | 1.74 | | | | | | | | | | | |
| BH118 | 14.2 | CS | 21 | | | | | | | | | | | | 2.08 | 1.72 | | | | MUU | 70 | 140<br>280<br>420 | 196<br>241<br>258 | 116 | | | |
| BH118 | 14.5 | D | 20 | 58 | 21 | 100 | 37 | CH | Natural | 0.0 | 0.2 | 2.6 | 97.1 | | | | | | | | | | | | | | |
| BH118 | 16 | D | 19 | 63 | 24 | 100 | 39 | CH | Natural | | | | | | | | | | | | | | | | | | |
| BH118 | 17.5 | D | 18 | | | | | | | | | | | | | | | | | | | | | | | | |
| BH118 | 18.7 | CS | 19 | | | | | | | | | | | | 2.06 | 1.73 | | | | MUU | 103 | 190<br>380<br>570 | 267<br>303<br>321 | 149 | | | |
| BH118 | 22 | D | 19 | 62 | 24 | 100 | 38 | CH | Natural | | | | | | | | | | | | | | | | | | |
| BH118 | 25 | D | 17 | 59 | 24 | 100 | 35 | CH | Natural | | | | | | | | | | | | | | | | | | |

| **Key:** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | U | Undisturbed Sample | (x) % | % passing BS 0.425mm sieve | MUU | Multi Stage Unconsolidated Undrained | s1-s3 | Deviator Stress |
| | D | Small Disturbed Sample | NP | Non Plastic | HV | Hand Vane | $C_u$ | Undrained Shear Strength |
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**Remarks:**

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|---|---|
| **Approved:** | barmstrong |
| **Date:** | 15/07/2022 |
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Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA
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# GEOTECHNICAL LABORATORY TESTING SUMMARY SHEET

**Site Location:** Wansford to Sutton Dualling Supplementary GI
**Project Number:** GT0386
**Client:** Galliford Try

| SAMPLE DETAILS | | | INDEX TESTS | | | | | | | PSD | | | | DENSITY | | | | | | STRENGTH | | | | | | | REMARKS/OTHER TESTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Location | Depth (m) | TYPE | W % | LL% | PL% | (x) % | PI | CLASS | Prep Method | % COBBLES | % GRAVEL | % SAND | % SILT AND CLAY | PARTICLE DENSITY $Mg/m^3$ | BULK $Mg/m^3$ | DRY $Mg/m^3$ | MAXIMUM DRY DENSITY | OPTIMUM W% | MCV | TYPE | DIA (mm) | $\sigma_3$ | $\sigma1-\sigma3$ | $C_u$ kPa | $\varnothing_u$ (°) | | |
| | | | 2:3 | 2:4 | 2:5 | | 2:5 | | | 2:9 | 2:9 | 2:9 | 2:9 | 2:8 | 2:7 | 2:7 | 4:4 | 4:3 | 4:5 | | | | | 7:8/7:9 | | | |
| BH119 | 1.7 | D | 14 | 44 | 16 | 47 | 28 | CI | Wet Sieve | 0.0 | 53.5 | 24.1 | 22.4 | | | | | | | | | | | | | | |
| BH119 | 4.5 | D | 26 | 61 | 23 | 46 | 38 | CH | Wet Sieve | 0.0 | 60.0 | 4.7 | 35.3 | | | | | | | | | | | | | | |
| BH120 & BH120A | 3.5 | B | 5.3 | | | | | | | 0.0 | 78.7 | 19.5 | 1.8 | | | | | | | | | | | | | | |
| BH120 & BH120A | 5.7 | B | 24 | 26 | NP | 98 | | | Wet Sieve | 0.0 | 0.7 | 18.7 | 80.6 | | | | | | | | | | | | | | |
| BH120 & BH120A | 6 | D | 21 | | | | | | | | | | | | | | | | | | | | | | | | |
| BH120 & BH120A | 7.82 | CS | 10 | 39 | 12 | 96 | 27 | CI | Wet Sieve | | | | | | 2.19 | 2.00 | | | | MUU | 70 | 50<br>100<br>150 | 169<br>192<br>209 | 95 | | | |
| BH120 & BH120A | 13.25 | CS | 20 | 58 | 24 | 100 | 34 | CH | Natural | | | | | | 2.06 | 1.72 | | | | MUU | 70 | 130<br>260<br>390 | 190<br>229<br>242 | 110 | | | |
| BH121 | 0.5 | B | 10 | | | | | | | 0.0 | 44.4 | 26.6 | 29.0 | | | | | | | | | | | | | | |
| BH121 | 2.5 | D | 15 | 49 | 16 | 96 | 33 | CI | Wet Sieve | | | | | | 2.17 | 1.89 | | | | | | | | | | | |
| BH121 | 9 | B | 17 | | | | | | | | | | | | | | | | | | | | | | | | |
| BH121 | 13 | D | 22 | | | | | | | | | | | | | | | | | | | | | | | | |
| BH121 | 13.7 | B | 23 | | | | | | | 0.0 | 0.4 | 48.7 | 50.8 | | | | | | | | | | | | | | |
| BH122 | 1.5 | D | 9.4 | | | | | | | | | | | | | | | | | | | | | | | | |
| BH122 | 4.6 | CS | 10 | 34 | 12 | 95 | 22 | CL | Wet Sieve | | | | | | 2.28 | 2.07 | | | | MUU | 70 | 50<br>100<br>150 | 611<br>741<br>750 | 350 | | | |
| BH122 | 11.4 | D | 19 | | | | | | | 0.0 | 0.4 | 87.9 | 11.7 | | | | | | | | | | | | | | |

| **Key:** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | U | Undisturbed Sample | (x) % | % passing BS 0.425mm sieve | MUU | Multi Stage Unconsolidated Undrained | s1-s3 | Deviator Stress |
| | D | Small Disturbed Sample | NP | Non Plastic | HV | Hand Vane | $C_u$ | Undrained Shear Strength |
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|---|---|---|---|
| | | **Date:** | 15/07/2022 |
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Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA
Authorised Signatories: o Ben Armstrong (Quality Manager)

UKAS TESTING

# GEOTECHNICAL LABORATORY TESTING SUMMARY SHEET

**Site Location:** Wansford to Sutton Dualling Supplementary GI
**Project Number:** GT0386
**Client:** Galliford Try

| SAMPLE DETAILS | | | INDEX TESTS | | | | | | | PSD | | | | DENSITY | | | | | | STRENGTH | | | | | | | REMARKS/OTHER TESTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Location | Depth (m) | TYPE | W % | LL% | PL% | (x) % | PI | CLASS | Prep Method | % COBBLES | % GRAVEL | % SAND | % SILT AND CLAY | PARTICLE DENSITY Mg/m$^3$ | BULK Mg/m$^3$ | DRY Mg/m$^3$ | MAXIMUM DRY DENSITY | OPTIMUM W% | MCV | TYPE | DIA (mm) | $\sigma_3$ | $\sigma1-\sigma3$ | $C_u$ kPa | $\varnothing_u$ (°) | | |
| | | | 2:3 | 2:4 | 2:5 | | 2:5 | | | 2:9 | 2:9 | 2:9 | 2:9 | 2:8 | 2:7 | 2:7 | 4:4 | 4:3 | 4:5 | | | | | 7:8/7:9 | | | |
| BH122 | 13.5 | D | 19 | | | | | | | | | | | | | | | | | | | | | | | | |
| BH122 | 15.5 | D | 20 | | | | | | | 0.0 | 3.2 | 88.9 | 7.9 | | | | | | | | | | | | | | |
| BH122 | 19.4 | D | 17 | | | | | | | 0.0 | 1.0 | 90.4 | 8.6 | | | | | | | | | | | | | | |
| BH124 | 10.55 | D | 19 | | | | | | | 0.0 | 3.8 | 82.8 | 13.4 | | | | | | | | | | | | | | |
| BH125 | 2.85 | D | 15 | 24 | 13 | 96 | 11 | CL | Wet Sieve | | | | | | | | | | | | | | | | | | |
| BH126 | 2.5 | D | 7 | 32 | 12 | 100 | 20 | CL | Wet Sieve | | | | | | | | | | | | | | | | | | |
| BH128 | 1.5 | D | 100 | 136 | 60 | 100 | 76 | ME | Wet Sieve | | | | | | | | | | | | | | | | | | |
| BH128 | 3 | D | 36 | 73 | 29 | 98 | 44 | CV | Wet Sieve | | | | | | | | | | | | | | | | | | |
| BH128 | 3.7 | CS | 44 | | | | | | | | | | | | | | | | | | | | | | | | |
| BH128 | 4.7 | CS | 41 | 70 | 30 | 97 | 40 | CH | Natural | | | | | | 1.80 | 1.27 | | | | MUU | 70 | 50<br>100<br>150 | 50 62<br>63 | 58 | | | |
| BH128 | 6.1 | D | 30 | 64 | 25 | 100 | 39 | CH | Wet Sieve | | | | | | | | | | | | | | | | | | |
| BH128 | 9.9 | CS | 24 | 61 | 28 | 100 | 33 | CH | Wet Sieve | | | | | | | | | | | | | | | | | | |
| BH128 | 11.5 | CS | 22 | | | | | | | | | | | | 1.97 | 1.62 | | | | MUU | 70 | 100<br>200<br>400 | 117<br>128<br>139 | 64 | | | |
| BH129 | 3.4 | D | 1.3 | | | | | | | | | | | | | | | | | | | | | | | | |
| BH129 | 4.5 | B | 9.8 | | | | | | | 0.0 | 52.3 | 41.2 | 6.5 | | | | | | | | | | | | | | |

| **Key:** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | U | Undisturbed Sample | (x) % | % passing BS 0.425mm sieve | MUU | Multi Stage Unconsolidated Undrained | s1-s3 | Deviator Stress |
| | D | Small Disturbed Sample | NP | Non Plastic | HV | Hand Vane | $C_u$ | Undrained Shear Strength |
| | B | Bulk Disturbed Sample | SUU | Single Stage Unconsolidated Undrained | $s_3$ | Cell Pressure | Æu | Angle of Shear Resistance |

**Remarks:**

**TEST METHODS:** Unless indicated otherwise (in Remarks/Other Tests), the methods of test given in **BS 1377: 1990 Parts 1 to 9** were used. These are referenced beneath the abbreviated test description in the form Part:Test Method - for example 3:2 would be BS 1377:1990 Part 3:Test Method 2.

| | |
|---|---|
| **Approved:** | barmstrong |
| **Date:** | 15/07/2022 |
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Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA
Authorised Signatories: o Ben Armstrong (Quality Manager)

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# GEOTECHNICAL LABORATORY TESTING SUMMARY SHEET

**Site Location:** Wansford to Sutton Dualling Supplementary GI
**Project Number:** GT0386
**Client:** Galliford Try

| SAMPLE DETAILS | | | INDEX TESTS | | | | | | | PSD | | | | DENSITY | | | | | | STRENGTH | | | | | | | REMARKS/OTHER TESTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Location | Depth (m) | TYPE | W % | LL% | PL% | (x) % | PI | CLASS | Prep Method | % COBBLES | % GRAVEL | % SAND | % SILT AND CLAY | PARTICLE DENSITY Mg/m$^3$ | BULK Mg/m$^3$ | DRY Mg/m$^3$ | MAXIMUM DRY DENSITY | OPTIMUM W% | MCV | TYPE | DIA (mm) | $\sigma_3$ | $\sigma 1-\sigma 3$ | $C_u$ kPa | $\varnothing_u$ (°) | | |
| | | | 2:3 | 2:4 | 2:5 | | 2:5 | | | 2:9 | 2:9 | 2:9 | 2:9 | 2:8 | 2:7 | 2:7 | 4:4 | 4:3 | 4:5 | | | | | 7:8/7:9 | | | |
| BH129 | 5.2 | D | 8.6 | | | | | | | | | | | | | | | | | | | | | | | | |
| BH130 | 4.5 | D | 2.6 | | | | | | | | | | | | | | | | | | | | | | | | |
| BH130 | 4.8 | D | 20 | 48 | 20 | 92 | 28 | CI | Wet Sieve | | | | | | | | | | | | | | | | | | |
| BH130 | 5.56 | CS | 22 | | | | | | | | | | | | | | | | | | | | | | | | |
| BH130 | 6.75 | CS | 19 | 53 | 25 | 99 | 28 | CH | Wet Sieve | | | | | | 2.07 | 1.74 | | | | MUU | 70 | 65<br>130<br>195 | 120<br>124<br>136 | 63 | | | |
| BH130 | 7.56 | CS | 11 | 35 | 15 | 97 | 20 | CI | Wet Sieve | | | | | | 2.11 | 1.90 | | | | MUU | 70 | 75<br>150<br>225 | 121<br>173<br>207 | 84 | | | |
| BH130 | 8.5 | B | 18 | | | | | | | 0.0 | 10.1 | 74.1 | 15.8 | | | | | | | | | | | | | | |
| BH131 | 1.85 | CS | 1.9 | | | | | | | | | | | | | | | | | | | | | | | | |
| BH131 | 2.35 | CS | 16 | 38 | 15 | 98 | 23 | CI | Wet Sieve | | | | | | 2.10 | 1.81 | | | | MUU | 70 | 20 40<br>60 | 264<br>297<br>301 | 144 | | | |
| BH131 | 2.8 | D | 19 | 45 | 18 | 95 | 27 | CI | Wet Sieve | | | | | | | | | | | | | | | | | | |
| BH131 | 7.7 | D | 23 | 52 | 25 | 95 | 27 | CH | Wet Sieve | | | | | | | | | | | | | | | | | | |
| BH131 | 7.9 | D | 22 | 56 | 24 | 99 | 32 | CH | Wet Sieve | | | | | | | | | | | | | | | | | | |
| BH132 | 0.7 | D | 10 | | | | | | | | | | | | | | | | | | | | | | | | |
| BH132 | 1.2 | D | 9.7 | 31 | 14 | 44 | 17 | CL | Wet Sieve | | | | | | | | | | | | | | | | | | |
| BH132 | 5 | D | 18 | | | | | | | 0.0 | 6.6 | 70.5 | 23.0 | | | | | | | | | | | | | | |

| **Key:** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | U | Undisturbed Sample | (x) % | % passing BS 0.425mm sieve | MUU | Multi Stage Unconsolidated Undrained | s1-s3 | Deviator Stress |
| | D | Small Disturbed Sample | NP | Non Plastic | HV | Hand Vane | $C_u$ | Undrained Shear Strength |
| | B | Bulk Disturbed Sample | SUU | Single Stage Unconsolidated Undrained | $s_3$ | Cell Pressure | Æ$_u$ | Angle of Shear Resistance |

**Remarks:**

**TEST METHODS:** Unless indicated otherwise (in Remarks/Other Tests), the methods of test given in **BS 1377: 1990 Parts 1 to 9** were used. These are referenced beneath the abbreviated test description in the form Part:Test Method - for example 3:2 would be BS 1377:1990 Part 3:Test Method 2.

| | |
|---|---|
| **Approved:** | barmstrong |
| **Date:** | 15/07/2022 |
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Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA
Authorised Signatories: o Ben Armstrong (Quality Manager)

UKAS TESTING

# GEOTECHNICAL LABORATORY TESTING SUMMARY SHEET

**Site Location:** Wansford to Sutton Dualling Supplementary GI
**Project Number:** GT0386
**Client:** Galliford Try

| SAMPLE DETAILS | | | INDEX TESTS | | | | | | | PSD | | | | DENSITY | | | | | | STRENGTH | | | | | | | REMARKS/OTHER TESTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Location | Depth (m) | TYPE | W % | LL% | PL% | (x) % | PI | CLASS | Prep Method | % COBBLES | % GRAVEL | % SAND | % SILT AND CLAY | PARTICLE DENSITY Mg/m$^3$ | BULK Mg/m$^3$ | DRY Mg/m$^3$ | MAXIMUM DRY DENSITY | OPTIMUM W% | MCV | TYPE | DIA (mm) | $\sigma_3$ | $\sigma1-\sigma3$ | $C_u$ kPa | $\varnothing_u$ (°) | | |
| | | | 2:3 | 2:4 | 2:5 | | 2:5 | | | 2:9 | 2:9 | 2:9 | 2:9 | 2:8 | 2:7 | 2:7 | 4:4 | 4:3 | 4:5 | | | | | 7:8/7:9 | | | |
| BH132 | 6.35 | D | 19 | 29 | 18 | 100 | 11 | CL | Wet Sieve | | | | | | | | | | | | | | | | | | |
| BH132 | 7.35 | D | 20 | 29 | 15 | 99 | 14 | CL | Wet Sieve | | | | | | | | | | | | | | | | | | |
| BH132 | 7.8 | D | | | | | | | | 0.0 | 0.3 | 16.0 | 83.7 | | | | | | | | | | | | | | |
| BH132 | 12 | CS | 27 | | | | | | | | | | | | 1.91 | 1.50 | | | | MUU | 70 | 120<br>240<br>360 | 98<br>113<br>135 | 58 | | | |
| BH132 | 12.5 | D | 21 | 63 | 24 | 100 | 39 | CH | Wet Sieve | | | | | | | | | | | | | | | | | | |
| BH132 | 14 | D | 17 | 62 | 25 | 99 | 37 | CH | Wet Sieve | | | | | | | | | | | | | | | | | | |
| BH132 | 17 | D | 19 | 59 | 24 | 99 | 35 | CH | Wet Sieve | | | | | | | | | | | | | | | | | | |
| BH133 | 1 | B | 65 | 79 | 30 | 100 | 49 | CV | Wet Sieve | 0.0 | 18.5 | 30.6 | 50.9 | | | | | | | | | | | | | | |
| BH133 | 1.8 | D | 289 | | | | | | | | | | | | | | | | | | | | | | | | |
| BH133 | 9.5 | CS | 21 | | | | | | | | | | | | 2.06 | 1.70 | | | | MUU | 70 | 50<br>100<br>150 | 95<br>107<br>112 | 52 | | | |
| BH134 | 1.5 | D | 27 | 73 | 20 | 71 | 53 | CV | | | | | | | | | | | | | | | | | | | |
| BH134 | 3.6 | D | 27 | 45 | 16 | 87 | 29 | CI | Wet Sieve | | | | | | | | | | | | | | | | | | |
| BH134 | 3.9 | B | 34 | | | | | | | 0.0 | 41.0 | 36.2 | 22.8 | | | | | | | | | | | | | | |
| BH134 | 14.4 | CS | 21 | | | | | | | | | | | | 2.06 | 1.70 | | | | MUU | 70 | 140<br>280<br>420 | 140<br>163<br>186 | 82 | | | |
| BH134 | 18.09 | CS | 23 | | | | | | | | | | | | 1.94 | 1.58 | | | | MUU | 70 | 130<br>360<br>490 | 233<br>280<br>318 | 139 | | | |

| **Key:** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | U | Undisturbed Sample | (x) % | % passing BS 0.425mm sieve | MUU | Multi Stage Unconsolidated Undrained | s1-s3 | Deviator Stress |
| | D | Small Disturbed Sample | NP | Non Plastic | HV | Hand Vane | $C_u$ | Undrained Shear Strength |
| | B | Bulk Disturbed Sample | SUU | Single Stage Unconsolidated Undrained | $s_3$ | Cell Pressure | $Æ_u$ | Angle of Shear Resistance |

| **Remarks:** | **TEST METHODS:** Unless indicated otherwise (in Remarks/Other Tests), the methods of test given in **BS 1377: 1990 Parts 1 to 9** were used. These are referenced beneath the abbreviated test description in the form Part:Test Method - for example 3:2 would be BS 1377:1990 Part 3:Test Method 2. | **Approved:** | barmstrong |
|---|---|---|---|
| | | **Date:** | 15/07/2022 |
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Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA
Authorised Signatories: o Ben Armstrong (Quality Manager)

# GEOTECHNICAL LABORATORY TESTING SUMMARY SHEET

**Site Location:** Wansford to Sutton Dualling Supplementary GI
**Project Number:** GT0386
**Client:** Galliford Try

| SAMPLE DETAILS | | | INDEX TESTS | | | | | | | PSD | | | | DENSITY | | | | | | STRENGTH | | | | | | | REMARKS/OTHER TESTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Location | Depth (m) | TYPE | W % | LL% | PL% | (x) % | PI | CLASS | Prep Method | % COBBLES | % GRAVEL | % SAND | % SILT AND CLAY | PARTICLE DENSITY Mg/m$^3$ | BULK Mg/m$^3$ | DRY Mg/m$^3$ | MAXIMUM DRY DENSITY | OPTIMUM W% | MCV | TYPE | DIA (mm) | $\sigma_3$ | $\sigma 1-\sigma 3$ | $C_u$ kPa | $\varnothing_u$ (°) | | |
| | | | 2:3 | 2:4 | 2:5 | | 2:5 | | | 2:9 | 2:9 | 2:9 | 2:9 | 2:8 | 2:7 | 2:7 | 4:4 | 4:3 | 4:5 | | | | | 7:8/7:9 | | | |
| BH134 | 19.7 | D | 19 | 66 | 23 | 100 | 43 | CH | Natural | | | | | | | | | | | | | | | | | | |
| BH135 | 0 | UT | 192 | | | | | | | | | | | | 1.21 | 0.41 | | | | SUU | 102 | 20 | 85 | 42 | | | |
| BH135 | 0 | UT | 201 | | | | | | | | | | | | 1.20 | 0.40 | | | | SUU | 102 | 170 | 95 | 47 | | | |
| BH135 | 0 | UT | 194 | | | | | | | | | | | | 1.24 | 0.42 | | | | SUU | 101 | 350 | 132 | 66 | | | |
| BH135 | 3.35 | CS | 13 | 37 | 15 | 100 | 22 | CI | Wet Sieve | | | | | | 2.12 | 1.88 | | | | MUU | 70 | 30 60 90 | 332 376 388 | 183 | | | |
| BH135 | 7.7 | CS | 23 | | | | | | | | | | | | 2.03 | 1.65 | | | | MUU | 70 | 75 150 225 | 160 171 181 | 85 | | | |
| BH135 | 9.33 | CS | 21 | 61 | 26 | 100 | 35 | CH | Natural | | | | | | | | | | | | | | | | | | |
| BH135 | 12.8 | D | 23 | 56 | 24 | 99 | 32 | CH | Wet Sieve | | | | | | | | | | | | | | | | | | |
| BH135 | 20 | CS | 22 | 57 | 29 | 100 | 28 | CH | Natural | | | | | | 2.09 | 1.71 | | | | MUU | 70 | 200 400 600 | 217 278 310 | 134 | | | |
| BH136 | 0 | UT | 161 | | | | | | | | | | | | 1.19 | 0.45 | | | | SUU | 102 | 20 | 76 | 38 | | | |
| BH136 | 0 | UT | 195 | | | | | | | | | | | | 1.22 | 0.41 | | | | SUU | 101 | 170 | 95 | 48 | | | |
| BH136 | 0 | UT | 180 | | | | | | | | | | | | 1.23 | 0.44 | | | | SUU | 102 | 350 | 110 | 55 | | | |
| BH136 | 0 | UT | 191 | | | | | | | | | | | | 1.23 | 0.42 | | | | SUU | 102 | 20 | 117 | 59 | | | |
| BH136 | 0 | UT | 208 | | | | | | | | | | | | 1.18 | 0.38 | | | | SUU | 104 | 170 | 69 | 34 | | | |
| BH136 | 0 | UT | 186 | | | | | | | | | | | | 1.17 | 0.41 | | | | SUU | 103 | 350 | 150 | 75 | | | |

| **Key:** | | | | | | | |
|---|---|---|---|---|---|---|---|
| | U | Undisturbed Sample | (x) % | % passing BS 0.425mm sieve | MUU | Multi Stage Unconsolidated Undrained | s1-s3 | Deviator Stress |
| | D | Small Disturbed Sample | NP | Non Plastic | HV | Hand Vane | $C_u$ | Undrained Shear Strength |
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**Remarks:**

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|---|---|
| **Approved:** | barmstrong |
| **Date:** | 15/07/2022 |
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Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA
Authorised Signatories: o Ben Armstrong (Quality Manager)

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# GEOTECHNICAL LABORATORY TESTING SUMMARY SHEET

**Site Location:** Wansford to Sutton Dualling Supplementary GI
**Project Number:** GT0386
**Client:** Galliford Try

| SAMPLE DETAILS | | | INDEX TESTS | | | | | | | PSD | | | | DENSITY | | | | | | STRENGTH | | | | | | | REMARKS/OTHER TESTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Location | Depth (m) | TYPE | W % | LL% | PL% | (x) % | PI | CLASS | Prep Method | % COBBLES | % GRAVEL | % SAND | % SILT AND CLAY | PARTICLE DENSITY Mg/m$^3$ | BULK Mg/m$^3$ | DRY Mg/m$^3$ | MAXIMUM DRY DENSITY | OPTIMUM W% | MCV | TYPE | DIA (mm) | $\sigma_3$ | $\sigma1-\sigma3$ | $C_u$ kPa | $\varnothing_u$ (°) | | |
| | | | 2:3 | 2:4 | 2:5 | | 2:5 | | | 2:9 | 2:9 | 2:9 | 2:9 | 2:8 | 2:7 | 2:7 | 4:4 | 4:3 | 4:5 | | | | | 7:8/7:9 | | | |
| BH136 | 1.7 | CS | 19 | 58 | 20 | 98 | 38 | CH | Wet Sieve | | | | | | 2.07 | 1.74 | | | | MUU | 70 | 15 30 45 | 214 222 232 | 111 | | | |
| BH136 | 2.3 | D | 21 | 50 | 16 | 98 | 34 | CI | Wet Sieve | | | | | | | | | | | | | | | | | | |
| BH136 | 4.1 | D | 27 | 58 | 23 | 96 | 35 | CH | Wet Sieve | | | | | | | | | | | | | | | | | | |
| BH136 | 5.9 | CS | 19 | 60 | 22 | 100 | 38 | CH | Natural | | | | | | 2.07 | 1.74 | | | | MUU | 70 | 60 120 180 | 153 164 171 | 81 | | | |
| BH136 | 17.5 | D | 21 | | | | | | | | | | | | | | | | | | | | | | | | |
| BH136 | 18.2 | D | 22 | 56 | 25 | 100 | 31 | CH | Wet Sieve | | | | | | | | | | | | | | | | | | |
| BH136 | 20.78 | CS | 22 | 59 | 25 | 100 | 34 | CH | Natural | | | | | | 1.98 | 1.62 | | | | MUU | 70 | 200 400 600 | 217 234 256 | 118 | | | |
| TP107 | 0.6 | B | 11 | | | | | | | 2.9 | 61.7 | 30.3 | 5.1 | | | | | | | | | | | | | | |
| TP107 | 1 | D | 12 | | | | | | | | | | | | | | | | | | | | | | | | |
| TP108 | 0.5 | B | 12 | | | | | | | 0.0 | 62.6 | 22.6 | 14.8 | | | | | | | | | | | | | | |
| TP108 | 0.85 | D | 11 | | | | | | | | | | | | | | | | | | | | | | | | |
| TP109 | 0.6 | D | 14 | | | | | | | | | | | | | | | | | | | | | | | | |
| TP109 | 1 | B | 6.3 | | | | | | | 51.4 | 39.5 | 6.7 | 2.4 | | | | | | | | | | | | | | |
| TP110 | 0.2 | B | 17 | | | | | | | 0.0 | 25.5 | 40.1 | 34.4 | | | | | | | | | | | | | | |
| TP110 | 1.95 | D | 5.6 | | | | | | | | | | | | | | | | | | | | | | | | |

| **Key:** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | U | Undisturbed Sample | (x) % | % passing BS 0.425mm sieve | MUU | Multi Stage Unconsolidated Undrained | s1-s3 | Deviator Stress |
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| | |
|---|---|
| **Approved:** | barmstrong |
| **Date:** | 15/07/2022 |
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Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA
Authorised Signatories: o Ben Armstrong (Quality Manager)

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# GEOTECHNICAL LABORATORY TESTING SUMMARY SHEET

**Site Location:** Wansford to Sutton Dualling Supplementary GI
**Project Number:** GT0386
**Client:** Galliford Try

| SAMPLE DETAILS | | | INDEX TESTS | | | | | | | PSD | | | | DENSITY | | | | | | STRENGTH | | | | | | | REMARKS/OTHER TESTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Location | Depth (m) | TYPE | W % | LL% | PL% | (x) % | PI | CLASS | Prep Method | % COBBLES | % GRAVEL | % SAND | % SILT AND CLAY | PARTICLE DENSITY Mg/m$^3$ | BULK Mg/m$^3$ | DRY Mg/m$^3$ | MAXIMUM DRY DENSITY | OPTIMUM W% | MCV | TYPE | DIA (mm) | $\sigma_3$ | $\sigma 1-\sigma 3$ | $C_u$ kPa | $\varnothing_u$ (°) | | |
| | | | 2:3 | 2:4 | 2:5 | | 2:5 | | | 2:9 | 2:9 | 2:9 | 2:9 | 2:8 | 2:7 | 2:7 | 4:4 | 4:3 | 4:5 | | | | | 7:8/7:9 | | | |
| TP110 | 2.5 | B | | | | | | | | 42.9 | 28.4 | 10.4 | 18.3 | | | | | | | | | | | | | | |
| TP111 | 0.8 | B | 8.2 | | | | | | | 27.9 | 49.5 | 16.0 | 6.6 | | | | | | | | | | | | | | |
| TP112 | 0.6 | B | 4.2 | | | | | | | | | | | | | | | | | | | | | | | | |
| TP113 | 0.6 | B | 19 | | | | | | | 0.0 | 37.9 | 45.4 | 16.7 | | | | | | | | | | | | | | |
| TP113 | 2.1 | B | 23 | | | | | | | 0.0 | 11.5 | 66.5 | 22.0 | | | | | | | | | | | | | | |
| TP113 | 3 | B | 21 | | | | | | | 0.0 | 0.9 | 34.8 | 64.3 | | | | | | | | | | | | | | |
| TP114 | 0.5 | B | 6.8 | | | | | | | 55.3 | 26.9 | 11.5 | 6.3 | | | | | | | | | | | | | | |
| TP114 | 1.05 | B | 14 | | | | | | | 4.8 | 43.3 | 27.8 | 24.1 | | | | | | | | | | | | | | |
| TP115 | 0.2 | B | 11 | | | | | | | 50.9 | 34.2 | 9.6 | 5.3 | | | | | | | | | | | | | | |
| TP116 | 0.4 | B | 6.8 | | | | | | | 52.1 | 28.0 | 12.6 | 7.3 | | | | | | | | | | | | | | |
| TP117 | 0.9 | B | 18 | | | | | | | 0.0 | 17.3 | 65.8 | 16.9 | | | | | | | | | | | | | | |
| TP117 | 2 | B | 18 | | | | | | | 0.0 | 11.7 | 69.7 | 18.6 | | | | | | | | | | | | | | |
| TP118 | 1.5 | B | | | | | | | | 0.0 | 49.2 | 28.1 | 22.7 | | | | | | | | | | | | | | |
| TP118 | 2.1 | D | 12 | | | | | | | | | | | | | | | | | | | | | | | | |
| TP119 | 0.4 | B | 25 | | | | | | | 0.0 | 23.9 | 11.9 | 64.3 | | | | | | | | | | | | | | |

| **Key:** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | U | Undisturbed Sample | (x) % | % passing BS 0.425mm sieve | MUU | Multi Stage Unconsolidated Undrained | s1-s3 | Deviator Stress |
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|---|---|
| **Approved:** | barmstrong |
| **Date:** | 15/07/2022 |
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Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA
Authorised Signatories: o Ben Armstrong (Quality Manager)

UKAS TESTING

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# GEOTECHNICAL LABORATORY TESTING SUMMARY SHEET

**Site Location:** Wansford to Sutton Dualling Supplementary GI
**Project Number:** GT0386
**Client:** Galliford Try

| SAMPLE DETAILS | | | INDEX TESTS | | | | | | | PSD | | | | DENSITY | | | | | | STRENGTH | | | | | | | REMARKS/OTHER TESTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Location | Depth (m) | TYPE | W % | LL% | PL% | (x) % | PI | CLASS | Prep Method | % COBBLES | % GRAVEL | % SAND | % SILT AND CLAY | PARTICLE DENSITY $Mg/m^3$ | BULK $Mg/m^3$ | DRY $Mg/m^3$ | MAXIMUM DRY DENSITY | OPTIMUM W% | MCV | TYPE | DIA (mm) | $\sigma_3$ | $\sigma1-\sigma3$ | $C_u$ kPa | $\varnothing_u$ (°) | | |
| | | | 2:3 | 2:4 | 2:5 | | 2:5 | | | 2:9 | 2:9 | 2:9 | 2:9 | 2:8 | 2:7 | 2:7 | 4:4 | 4:3 | 4:5 | | | | | 7:8/7:9 | | | |
| TP119 | 0.6 | D | 16 | 41 | 18 | 72 | 23 | CI | Wet Sieve | | | | | | | | | | | | | | | | | | |
| TP119 | 1 | B | | | | | | | | 0.0 | 1.1 | 3.6 | 95.3 | | | | | | | | | | | | | | |
| TP119 | 1.95 | D | 21 | 65 | 23 | 99 | 42 | CH | Wet Sieve | | | | | | | | | | | | | | | | | | |
| TP120 | 1.1 | B | | | | | | | | 15.6 | 55.7 | 19.9 | 8.8 | | | | | | | | | | | | | | |
| TP120 | 1.95 | D | 9.8 | | | | | | | | | | | | | | | | | | | | | | | | |
| TP121 | 0.7 | B | | | | | | | | 17.0 | 31.7 | 2.8 | 48.5 | | | | | | | | | | | | | | |
| TP121 | 1.9 | D | 15 | | | | | | | | | | | | | | | | | | | | | | | | |
| TP122 | 0.6 | B | | | | | | | | 0.0 | 39.3 | 39.8 | 20.9 | | | | | | | | | | | | | | |
| TP122 | 0.9 | D | 12 | | | | | | | | | | | | | | | | | | | | | | | | |
| TP123 | 1 | B | | | | | | | | 23.7 | 48.5 | 17.3 | 10.5 | | | | | | | | | | | | | | |
| TP123 | 1.65 | D | 15 | | | | | | | | | | | | | | | | | | | | | | | | |
| TP124 | 1 | B | | | | | | | | 0.0 | 32.0 | 59.0 | 9.0 | | | | | | | | | | | | | | |
| TP124 | 1.15 | D | 9 | | | | | | | | | | | | | | | | | | | | | | | | |
| TP124 | 2 | B | | | | | | | | 0.0 | 41.3 | 49.3 | 9.4 | | | | | | | | | | | | | | |
| TP125 | 0.3 | B | | | | | | | | 41.8 | 27.6 | 18.6 | 12.0 | | | | | | | | | | | | | | |

| **Key:** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | U | Undisturbed Sample | (x) % | % passing BS 0.425mm sieve | MUU | Multi Stage Unconsolidated Undrained | s1-s3 | Deviator Stress |
| | D | Small Disturbed Sample | NP | Non Plastic | HV | Hand Vane | $C_u$ | Undrained Shear Strength |
| | B | Bulk Disturbed Sample | SUU | Single Stage Unconsolidated Undrained | $s_3$ | Cell Pressure | Æ$_u$ | Angle of Shear Resistance |

| **Remarks:** | **TEST METHODS:** Unless indicated otherwise (in Remarks/Other Tests), the methods of test given in **BS 1377: 1990 Parts 1 to 9** were used. These are referenced beneath the abbreviated test description in the form Part:Test Method - for example 3:2 would be BS 1377:1990 Part 3:Test Method 2. | **Approved:** | barmstrong |
|---|---|---|---|
| | | **Date:** | 15/07/2022 |
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Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA
Authorised Signatories: o Ben Armstrong (Quality Manager)

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# GEOTECHNICAL LABORATORY TESTING SUMMARY SHEET

**Site Location:** Wansford to Sutton Dualling Supplementary GI
**Project Number:** GT0386
**Client:** Galliford Try

| SAMPLE DETAILS | | | INDEX TESTS | | | | | | | PSD | | | | DENSITY | | | | | | STRENGTH | | | | | | | REMARKS/OTHER TESTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Location | Depth (m) | TYPE | W % | LL% | PL% | (x) % | PI | CLASS | Prep Method | % COBBLES | % GRAVEL | % SAND | % SILT AND CLAY | PARTICLE DENSITY $Mg/m^3$ | BULK $Mg/m^3$ | DRY $Mg/m^3$ | MAXIMUM DRY DENSITY | OPTIMUM W% | MCV | TYPE | DIA (mm) | $\sigma_3$ | $\sigma1-\sigma3$ | $C_u$ kPa | $\varnothing_u$ (°) | | |
| | | | 2:3 | 2:4 | 2:5 | | 2:5 | | | 2:9 | 2:9 | 2:9 | 2:9 | 2:8 | 2:7 | 2:7 | 4:4 | 4:3 | 4:5 | | | | | 7:8/7:9 | | | |
| TP125 | 0.6 | D | 12 | | | | | | | | | | | | | | | | | | | | | | | | |
| TP126 | 1 | B | 8.7 | | | | | | | 0.0 | 30.4 | 58.3 | 11.3 | | | | | | | | | | | | | | |
| TP128 | 1 | B | | | | | | | | 0.0 | 15.9 | 35.4 | 48.7 | | | | | | | | | | | | | | |
| TP128 | 1.9 | B | 21 | 31 | 23 | 88 | 8 | ML | Wet Sieve | 0.0 | 7.9 | 8.9 | 83.2 | | | | | | | | | | | | | | |
| TP133 | 0.3 | B | 15 | 38 | 17 | 57 | 21 | CI | Wet Sieve | 0.0 | 17.5 | 32.7 | 49.8 | | | | | | | | | | | | | | |
| TP134 | 1 | B | 22 | 27 | NP | 63 | | | Wet Sieve | | | | | | | | | | | | | | | | | | |
| TP135 | 1 | B | | | | | | | | 0.0 | 55.4 | 39.2 | 5.4 | | | | | | | | | | | | | | |
| TP135 | 1.3 | D | 13 | | | | | | | | | | | | | | | | | | | | | | | | |
| TP136 | 0.6 | B | | | | | | | | 0.0 | 1.1 | 59.4 | 39.5 | | | | | | | | | | | | | | |
| TP136 | 1 | D | 15 | 30 | 16 | 93 | 14 | CL | Wet Sieve | | | | | | | | | | | | | | | | | | |
| TP136 | 1.5 | B | | | | | | | | 0.0 | 42.9 | 44.8 | 12.3 | | | | | | | | | | | | | | |
| TP136 | 2 | D | 10 | | | | | | | | | | | | | | | | | | | | | | | | |
| TP137 | 1 | B | | | | | | | | 0.0 | 48.2 | 41.1 | 10.7 | | | | | | | | | | | | | | |
| TP138 | 1 | B | | | | | | | | 0.0 | 54.7 | 30.1 | 15.2 | | | | | | | | | | | | | | |
| TP138 | 1.35 | D | 8.5 | | | | | | | | | | | | | | | | | | | | | | | | |

| **Key:** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | U | Undisturbed Sample | (x) % | % passing BS 0.425mm sieve | MUU | Multi Stage Unconsolidated Undrained | s1-s3 | Deviator Stress |
| | D | Small Disturbed Sample | NP | Non Plastic | HV | Hand Vane | $C_u$ | Undrained Shear Strength |
| | B | Bulk Disturbed Sample | SUU | Single Stage Unconsolidated Undrained | $s_3$ | Cell Pressure | Æu | Angle of Shear Resistance |

| **Remarks:** | **TEST METHODS:** Unless indicated otherwise (in Remarks/Other Tests), the methods of test given in **BS 1377: 1990 Parts 1 to 9** were used. These are referenced beneath the abbreviated test description in the form Part:Test Method - for example 3:2 would be BS 1377:1990 Part 3:Test Method 2. | **Approved:** | barmstrong |
|---|---|---|---|
| | | **Date:** | 15/07/2022 |
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Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA
Authorised Signatories: o Ben Armstrong (Quality Manager)

UKAS TESTING

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# GEOTECHNICAL LABORATORY TESTING SUMMARY SHEET

**Site Location:** Wansford to Sutton Dualling Supplementary GI
**Project Number:** GT0386
**Client:** Galliford Try

| SAMPLE DETAILS | | | INDEX TESTS | | | | | | | PSD | | | | DENSITY | | | | | | STRENGTH | | | | | | | REMARKS/OTHER TESTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Location | Depth (m) | TYPE | W % | LL% | PL% | (x) % | PI | CLASS | Prep Method | % COBBLES | % GRAVEL | % SAND | % SILT AND CLAY | PARTICLE DENSITY $Mg/m^3$ | BULK $Mg/m^3$ | DRY $Mg/m^3$ | MAXIMUM DRY DENSITY | OPTIMUM W% | MCV | TYPE | DIA (mm) | $\sigma_3$ | $\sigma1-\sigma3$ | $C_u$ kPa | $\varnothing_u$ (°) | | |
| | | | 2:3 | 2:4 | 2:5 | | 2:5 | | | 2:9 | 2:9 | 2:9 | 2:9 | 2:8 | 2:7 | 2:7 | 4:4 | 4:3 | 4:5 | | | | | 7:8/7:9 | | | |
| TP138 | 2.5 | D | 8.2 | | | | | | | | | | | | | | | | | | | | | | | | |
| TP139 | 0.2 | B | 20 | 41 | 15 | 88 | 26 | CI | Wet Sieve | 0.0 | 20.4 | 20.3 | 59.3 | | | | | | | | | | | | | | |
| TP139 | 0.5 | D | 14 | 43 | 15 | 99 | 28 | CI | Wet Sieve | | | | | | | | | | | | | | | | | | |
| TP139 | 2.4 | B | 6.6 | | | | | | | | | | | | | | | | | | | | | | | | |
| TP140 | 1 | D | 9.3 | | | | | | | | | | | | | | | | | | | | | | | | |
| TP140 | 1.7 | D | 9.8 | 34 | 12 | 100 | 22 | CL | Wet Sieve | | | | | | | | | | | | | | | | | | |
| TP140 | 2.5 | D | 9.8 | 30 | 14 | 100 | 16 | CL | Wet Sieve | | | | | | | | | | | | | | | | | | |
| TP140 | 3.5 | B | | | | | | | | 0.0 | 0.2 | 9.5 | 90.3 | | | | | | | | | | | | | | |
| TP140 | 3.5 | D | 10 | 35 | 14 | 100 | 21 | CL | Wet Sieve | | | | | | | | | | | | | | | | | | |
| TP141 | 0.3 | D | 10 | 41 | 16 | 54 | 25 | CI | Wet Sieve | | | | | | | | | | | | | | | | | | |
| TP141 | 0.5 | D | 20 | 56 | 23 | 88 | 33 | CH | Wet Sieve | | | | | | | | | | | | | | | | | | |
| TP141 | 1.9 | D | 12 | | | | | | | | | | | | | | | | | | | | | | | | |
| TP141 | 1.9 | B | 13 | | | | | | | | | | | | | | | | | | | | | | | | |
| TP142 | 0.3 | D | 11 | | | | | | | | | | | | | | | | | | | | | | | | |
| TP142 | 1.5 | D | 9.3 | | | | | | | | | | | | | | | | | | | | | | | | |

| **Key:** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | U | Undisturbed Sample | (x) % | % passing BS 0.425mm sieve | MUU | Multi Stage Unconsolidated Undrained | s1-s3 | Deviator Stress |
| | D | Small Disturbed Sample | NP | Non Plastic | HV | Hand Vane | $C_u$ | Undrained Shear Strength |
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| **Remarks:** | **TEST METHODS:** Unless indicated otherwise (in Remarks/Other Tests), the methods of test given in **BS 1377: 1990 Parts 1 to 9** were used. These are referenced beneath the abbreviated test description in the form Part:Test Method - for example 3:2 would be BS 1377:1990 Part 3:Test Method 2. | **Approved:** | barmstrong |
|---|---|---|---|
| | | **Date:** | 15/07/2022 |
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Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA
Authorised Signatories: o Ben Armstrong (Quality Manager)

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# GEOTECHNICAL LABORATORY TESTING SUMMARY SHEET

**Site Location:** Wansford to Sutton Dualling Supplementary GI
**Project Number:** GT0386
**Client:** Galliford Try

| SAMPLE DETAILS | | | INDEX TESTS | | | | | | | PSD | | | | DENSITY | | | | | | STRENGTH | | | | | | | REMARKS/OTHER TESTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Location | Depth (m) | TYPE | W % 2:3 | LL% 2:4 | PL% 2:5 | (x) % | PI 2:5 | CLASS | Prep Method | % COBBLES 2:9 | % GRAVEL 2:9 | % SAND 2:9 | % SILT AND CLAY 2:9 | PARTICLE DENSITY $Mg/m^3$ 2:8 | BULK $Mg/m^3$ 2:7 | DRY $Mg/m^3$ 2:7 | MAXIMUM DRY DENSITY 4:4 | OPTIMUM W% 4:3 | MCV 4:5 | TYPE | DIA (mm) | $\sigma_3$ | $\sigma 1-\sigma 3$ | $C_u$ kPa 7:8/7:9 | $\varnothing_u$ (°) | | |
| TP142 | 2.7 | D | 16 | 34 | 15 | 95 | 19 | CL | Wet Sieve | | | | | | | | | | | | | | | | | | |
| TP143 | 1.3 | D | 9.1 | | | | | | | | | | | | | | | | | | | | | | | | |
| TP143 | 2.95 | D | 12 | 32 | 17 | 50 | 15 | CL | Wet Sieve | 0.0 | 37.5 | 39.2 | 23.3 | | | | | | | | | | | | | | |
| TP143 | 3.15 | D | 9.1 | 33 | 12 | 99 | 21 | CL | Wet Sieve | | | | | | | | | | | | | | | | | | |
| TP144 | 0.4 | D | 6.2 | | | | | | | | | | | | | | | | | | | | | | | | |
| TP144 | 1.75 | D | 26 | | | | | | | | | | | | | | | | | | | | | | | | |
| TP144 | 1.9 | B | 6.5 | | | | | | | | | | | | | | | | | | | | | | | | |
| TP145 | 1.3 | D | 11 | | | | | | | | | | | | | | | | | | | | | | | | |
| TP145 | 2.85 | D | 10 | | | | | | | | | | | | | | | | | | | | | | | | |
| TP146 | 0.7 | D | 9.6 | 29 | 13 | 89 | 16 | CL | Wet Sieve | | | | | | | | | | | | | | | | | | |
| TP146 | 1.4 | D | 8.5 | 33 | 13 | 100 | 20 | CL | Wet Sieve | | | | | | | | | | | | | | | | | | |
| TP146 | 2.45 | D | 11 | 33 | 13 | 99 | 20 | CL | Wet Sieve | | | | | | | | | | | | | | | | | | |
| TP147 | 0.4 | D | 13 | 35 | 15 | 90 | 20 | CL | Wet Sieve | | | | | | | | | | | | | | | | | | |
| TP147 | 0.6 | D | 5.7 | | | | | | | | | | | | | | | | | | | | | | | | |
| TP148 | 1.3 | D | 6.5 | | | | | | | | | | | | | | | | | | | | | | | | |

| **Key:** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | U | Undisturbed Sample | (x) % | % passing BS 0.425mm sieve | MUU | Multi Stage Unconsolidated Undrained | s1-s3 | Deviator Stress |
| | D | Small Disturbed Sample | NP | Non Plastic | HV | Hand Vane | $C_u$ | Undrained Shear Strength |
| | B | Bulk Disturbed Sample | SUU | Single Stage Unconsolidated Undrained | $s_3$ | Cell Pressure | Æ$_u$ | Angle of Shear Resistance |

**Remarks:**

**TEST METHODS:** Unless indicated otherwise (in Remarks/Other Tests), the methods of test given in **BS 1377: 1990 Parts 1 to 9** were used. These are referenced beneath the abbreviated test description in the form Part:Test Method - for example 3:2 would be BS 1377:1990 Part 3:Test Method 2.

| | |
|---|---|
| **Approved:** | barmstrong |
| **Date:** | 15/07/2022 |
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Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA
Authorised Signatories: o Ben Armstrong (Quality Manager)

UKAS TESTING

# GEOTECHNICAL LABORATORY TESTING SUMMARY SHEET

**Site Location:** Wansford to Sutton Dualling Supplementary GI
**Project Number:** GT0386
**Client:** Galliford Try

| SAMPLE DETAILS | | | INDEX TESTS | | | | | | | PSD | | | | DENSITY | | | | | | STRENGTH | | | | | | | REMARKS/OTHER TESTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Location | Depth (m) | TYPE | W % | LL% | PL% | (x) % | PI | CLASS | Prep Method | % COBBLES | % GRAVEL | % SAND | % SILT AND CLAY | PARTICLE DENSITY $Mg/m^3$ | BULK $Mg/m^3$ | DRY $Mg/m^3$ | MAXIMUM DRY DENSITY | OPTIMUM W% | MCV | TYPE | DIA (mm) | $\sigma_3$ | $\sigma1-\sigma3$ | $C_u$ kPa | $\varnothing_u$ (°) | | |
| | | | 2:3 | 2:4 | 2:5 | | 2:5 | | | 2:9 | 2:9 | 2:9 | 2:9 | 2:8 | 2:7 | 2:7 | 4:4 | 4:3 | 4:5 | | | | | 7:8/7:9 | | | |
| TP148 | 2.1 | B | 8.7 | | | | | | | 0.0 | 51.6 | 39.0 | 9.4 | | | | | | | | | | | | | | |
| TP149 | 1.3 | D | 18 | 45 | 16 | 80 | 29 | CI | Wet Sieve | | | | | | | | | | | | | | | | | | |
| TP149 | 2.3 | D | 22 | 54 | 22 | 70 | 32 | CH | Wet Sieve | | | | | | | | | | | | | | | | | | |
| TP149 | 3.55 | D | 17 | 58 | 19 | 78 | 39 | CH | Wet Sieve | | | | | | | | | | | | | | | | | | |
| TP150 | 1.3 | D | 19 | 41 | 30 | 96 | 11 | MI | Wet Sieve | | | | | | | | | | | | | | | | | | |
| TP151 | 1.3 | D | 20 | 38 | 13 | 94 | 25 | CI | Wet Sieve | | | | | | | | | | | | | | | | | | |
| TP151 | 2.4 | D | 8.3 | 30 | 12 | 43 | 18 | CL | Wet Sieve | | | | | | | | | | | | | | | | | | |
| TP152 | 2 | B | 9.5 | | | | | | | 0.0 | 58.0 | 30.8 | 11.2 | | | | | | | | | | | | | | |
| TP154 | 1.3 | D | 17 | 43 | 16 | 78 | 27 | CI | Wet Sieve | | | | | | | | | | | | | | | | | | |
| TP154 | 3 | B | 12 | | | | | | | 0.0 | 28.7 | 54.1 | 17.2 | | | | | | | | | | | | | | |
| TP155 | 2.5 | B | 5.6 | | | | | | | 0.0 | 50.2 | 41.2 | 8.6 | | | | | | | | | | | | | | |
| TP157 | 1.95 | D | 20 | | | | | | | | | | | | | | | | | | | | | | | | |
| TP157 | 2.5 | B | 25 | | | | | | | | | | | | | | | | | | | | | | | | |
| TP157 | 3 | B | 24 | 37 | 18 | 100 | 19 | CI | Wet Sieve | | | | | | | | | | | | | | | | | | |
| TP158 | 2 | B | 16 | | | | | | | 0.0 | 13.2 | 40.6 | 46.2 | | | | | | | | | | | | | | |

| **Key:** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | U | Undisturbed Sample | (x) % | % passing BS 0.425mm sieve | MUU | Multi Stage Unconsolidated Undrained | s1-s3 | Deviator Stress |
| | D | Small Disturbed Sample | NP | Non Plastic | HV | Hand Vane | $C_u$ | Undrained Shear Strength |
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|---|---|---|---|
| | | **Date:** | 15/07/2022 |
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Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA
Authorised Signatories: o Ben Armstrong (Quality Manager)

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# GEOTECHNICAL LABORATORY TESTING SUMMARY SHEET

**Site Location:** Wansford to Sutton Dualling Supplementary GI
**Project Number:** GT0386
**Client:** Galliford Try

| SAMPLE DETAILS | | | INDEX TESTS | | | | | | | PSD | | | | DENSITY | | | | | | STRENGTH | | | | | | | REMARKS/OTHER TESTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Location | Depth (m) | TYPE | W % 2:3 | LL% 2:4 | PL% 2:5 | (x) % | PI 2:5 | CLASS | Prep Method | % COBBLES 2:9 | % GRAVEL 2:9 | % SAND 2:9 | % SILT AND CLAY 2:9 | PARTICLE DENSITY $Mg/m^3$ 2:8 | BULK $Mg/m^3$ 2:7 | DRY $Mg/m^3$ 2:7 | MAXIMUM DRY DENSITY 4:4 | OPTIMUM W% 4:3 | MCV 4:5 | TYPE | DIA (mm) | $\sigma_3$ | $\sigma1-\sigma3$ | $C_u$ kPa 7:8/7:9 | $\varnothing_u$ (°) | | |
| TP160 | 1.3 | D | 18 | 37 | 14 | 86 | 23 | CI | Wet Sieve | | | | | | | | | | | | | | | | | | |
| TP162 | 0.45 | D | 15 | | | | | | | | | | | | | | | | | | | | | | | | |
| TP162 | 0.8 | B | | | | | | | | 23.6 | 45.1 | 20.5 | 10.8 | | | | | | | | | | | | | | |
| TP163 | 0.9 | D | 13 | | | | | | | | | | | | | | | | | | | | | | | | |
| TP164 | 0.6 | D | 21 | 48 | 19 | 52 | 29 | CI | Wet Sieve | | | | | | | | | | | | | | | | | | |
| TP164 | 1.3 | D | 45 | 83 | 16 | 89 | 67 | CV | Wet Sieve | | | | | | | | | | | | | | | | | | |
| TP164 | 2.75 | D | 27 | 77 | 25 | 95 | 52 | CV | Wet Sieve | | | | | | | | | | | | | | | | | | |
| TP166 | 1 | B | 2.8 | | | | | | | | | | | | | | | | | | | | | | | | |
| TP166 | 2.7 | D | 12 | 37 | 17 | 66 | 20 | CI | Wet Sieve | | | | | | | | | | | | | | | | | | |
| TP167 | 1 | B | | | | | | | | 0.0 | 5.1 | 15.9 | 79.0 | | | | | | | | | | | | | | |
| TP167 | 1.95 | D | 39 | 90 | 28 | 97 | 62 | CV | Wet Sieve | | | | | | | | | | | | | | | | | | |
| TP167 | 2.7 | B | | | | | | | | 0.0 | 22.1 | 3.7 | 74.2 | | | | | | | | | | | | | | |
| TP167 | 3.1 | D | 27 | 61 | 27 | 70 | 34 | CH | Wet Sieve | | | | | | | | | | | | | | | | | | |
| TP168 | 1 | B | | | | | | | | 25.0 | 35.0 | 17.7 | 22.3 | | | | | | | | | | | | | | |
| TP168 | 1.25 | D | 30 | 74 | 33 | 98 | 41 | CV | Wet Sieve | | | | | | | | | | | | | | | | | | |

| **Key:** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | U | Undisturbed Sample | (x) % | % passing BS 0.425mm sieve | MUU | Multi Stage Unconsolidated Undrained | s1-s3 | Deviator Stress |
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| | |
|---|---|
| **Approved:** | barmstrong |
| **Date:** | 15/07/2022 |
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Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA
Authorised Signatories: o Ben Armstrong (Quality Manager)

UKAS TESTING

# GEOTECHNICAL LABORATORY TESTING SUMMARY SHEET

**Site Location:** Wansford to Sutton Dualling Supplementary GI
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**Client:** Galliford Try

| SAMPLE DETAILS | | | INDEX TESTS | | | | | | | PSD | | | | DENSITY | | | | | | STRENGTH | | | | | | | REMARKS/OTHER TESTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Location | Depth (m) | TYPE | W % | LL% | PL% | (x) % | PI | CLASS | Prep Method | % COBBLES | % GRAVEL | % SAND | % SILT AND CLAY | PARTICLE DENSITY $Mg/m^3$ | BULK $Mg/m^3$ | DRY $Mg/m^3$ | MAXIMUM DRY DENSITY | OPTIMUM W% | MCV | TYPE | DIA (mm) | $\sigma_3$ | $\sigma1-\sigma3$ | $C_u$ kPa | $\varnothing_u$ (°) | | |
| | | | 2:3 | 2:4 | 2:5 | | 2:5 | | | 2:9 | 2:9 | 2:9 | 2:9 | 2:8 | 2:7 | 2:7 | 4:4 | 4:3 | 4:5 | | | | | 7:8/7:9 | | | |
| TP168 | 2 | B | | | | | | | | 0.0 | 0.2 | 9.0 | 90.7 | | | | | | | | | | | | | | |
| TP168 | 2.9 | D | 28 | 70 | 33 | 89 | 37 | CH | Wet Sieve | | | | | | | | | | | | | | | | | | |
| TP169 | 1.3 | D | 24 | 31 | 17 | 99 | 14 | CL | Wet Sieve | | | | | | | | | | | | | | | | | | |
| TP169 | 2.3 | D | 24 | 51 | 19 | 100 | 32 | CH | Wet Sieve | | | | | | | | | | | | | | | | | | |
| TP170 | 0.9 | B | | | | | | | | 0.0 | 67.4 | 22.0 | 10.6 | | | | | | | | | | | | | | |
| TP170 | 0.9 | D | 13 | | | | | | | | | | | | | | | | | | | | | | | | |
| TP170 | 1.2 | B | | | | | | | | 61.2 | 31.4 | 4.9 | 2.5 | | | | | | | | | | | | | | |
| TP170 | 1.5 | D | 14 | | | | | | | | | | | | | | | | | | | | | | | | |
| TP170 | 2 | B | | | | | | | | 0.0 | 7.1 | 15.4 | 77.5 | | | | | | | | | | | | | | |
| TP171 | 0.2 | B | 5.5 | | | | | | | | | | | | | | | | | | | | | | | | |
| TP171 | 0.5 | D | 8.8 | | | | | | | | | | | | | | | | | | | | | | | | |
| TP171 | 1 | B | 6.1 | | | | | | | | | | | | | | | | | | | | | | | | |
| TP171 | 1.3 | D | 9.8 | | | | | | | | | | | | | | | | | | | | | | | | |
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| **Key:** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | U | Undisturbed Sample | (x) % | % passing BS 0.425mm sieve | MUU | Multi Stage Unconsolidated Undrained | s1-s3 | Deviator Stress |
| | D | Small Disturbed Sample | NP | Non Plastic | HV | Hand Vane | $C_u$ | Undrained Shear Strength |
| | B | Bulk Disturbed Sample | SUU | Single Stage Unconsolidated Undrained | $s_3$ | Cell Pressure | Æ$_u$ | Angle of Shear Resistance |

**Remarks:**

**TEST METHODS:** Unless indicated otherwise (in Remarks/Other Tests), the methods of test given in **BS 1377: 1990 Parts 1 to 9** were used. These are referenced beneath the abbreviated test description in the form Part:Test Method - for example 3:2 would be BS 1377:1990 Part 3:Test Method 2.

| | |
|---|---|
| **Approved:** | barmstrong |
| **Date:** | 15/07/2022 |
| **Page:** | 23 of 23 |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA
Authorised Signatories: o Ben Armstrong (Quality Manager)

UKAS TESTING

# SUMMARY OF SOIL DENSITY RELATED TESTS

**(BS1377 : PART 2 & 4 : 1990 )**

| Hole Number | Sample Number | Sample Type | Top Depth m | Base Depth m | Moisture Content % | Bulk Density $Mg/m^3$ | Dry Density $Mg/m^3$ | Retained 20mm % | Retained 37.5mm % | Method of compaction kg | Maximum Dry Density $Mg/m^3$ | Minimum Dry Density $Mg/m^3$ | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BH116 | 6 | B | 3.50 | 4.00 | 19 | 1.91 | 1.61 | | | | | | |
| BH118 | 7 | B | 5.50 | 6.00 | 21 | 2.07 | 1.71 | | | | | | |
| BH120 & BH120A | 3 | B | 1.50 | 2.00 | 5.4 | 2.03 | 1.93 | | | | | | |
| BH126 | 3 | B | 1.20 | | 22 | 2.01 | 1.65 | | | | | | |
| BH127 | 101 | B | 1.30 | 1.85 | 7.4 | 2.07 | 1.93 | | | | | | |
| BH107 | 103 | B | 6.20 | 7.20 | 13 | 1.90 | 1.68 | | | | | | |
| BH123 | 102 | B | 2.00 | 3.00 | 5.7 | 2.05 | 1.94 | | | | | | |
| BH124 | 102 | B | 1.00 | 1.30 | 8.2 | 2.19 | 2.02 | | | | | | |
| BH121 | 111 | B | 10.60 | 11.00 | 16 | 2.02 | 1.74 | | | | | | |
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UKAS TESTING
4043

PSL
Professional Soils Laboratory

**Wansford to Sutton Dualling Supplementary GI**

**Contract No:**
**PSL22/3650**
**Client Ref:**
**GT0386**

# SUMMARY OF SOIL DENSITY RELATED TESTS

**(BS1377 : PART 2 & 4 : 1990 )**

| Hole Number | Sample Number | Sample Type | Top Depth m | Base Depth m | Moisture Content % | Bulk Density $Mg/m^3$ | Dry Density $Mg/m^3$ | Retained 20mm % | Retained 37.5mm % | Method of compaction kg | Maximum Dry Density $Mg/m^3$ | Minimum Dry Density $Mg/m^3$ | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TP140 | 4 | B | 0.30 | 0.50 | 21 | 1.98 | 1.63 | | | | | | |
| TP160 | 7 | B | 2.00 | 2.30 | 11 | 1.87 | 1.68 | | | | | | |
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UKAS TESTING
4043

PSL
Professional Soils Laboratory

**Wansford to Sutton Dualling Supplementary GI**

**Contract No:**
**PSL22/3825**
**Client Ref:**
**GT0386**

## DENSITY BY LINEAR MEASUREMENT SUMMARY SHEET

**BS 1377 : Part 2 : 1990 : Clause 7.2**

| Location | Wansford to Sutton Dualling Supplementary GI | Job Ref | **GT0386** |
|---|---|---|---|

| Hole ID | Sample Type | Sample Reference | Depth (m) | Moisture Content % | Bulk Density ($Mg/m^3$) | Dry Density ($Mg/m^3$) | Remarks |
|---|---|---|---|---|---|---|---|
| BH121 | D | 1 | 2.5 | 15.19 | 2.17 | 1.89 | |
| BH116 | D | 1 | 7 | 14.54 | 2.20 | 1.92 | |
| BH107 | D | 107 | 9.5 | 18.99 | 2.13 | 1.79 | |
| BH115 | D | 2 | 9.5 | 18.77 | 2.05 | 1.72 | |
| BH118 | D | 2 | 10 | 16.72 | 2.27 | 1.95 | |
| BH116 | D | 4 | 11.5 | 20.72 | 2.03 | 1.68 | |
| BH115 | D | 4 | 12.5 | 20.00 | 2.02 | 1.68 | |
| BH107 | CS | 110 | 12.9 | 20.10 | 2.05 | 1.70 | |
| BH118 | D | 4 | 13 | 18.44 | 2.06 | 1.74 | |
| BH115 | D | 7 | 17 | 20.27 | 2.05 | 1.70 | |
| | | | | | | | |
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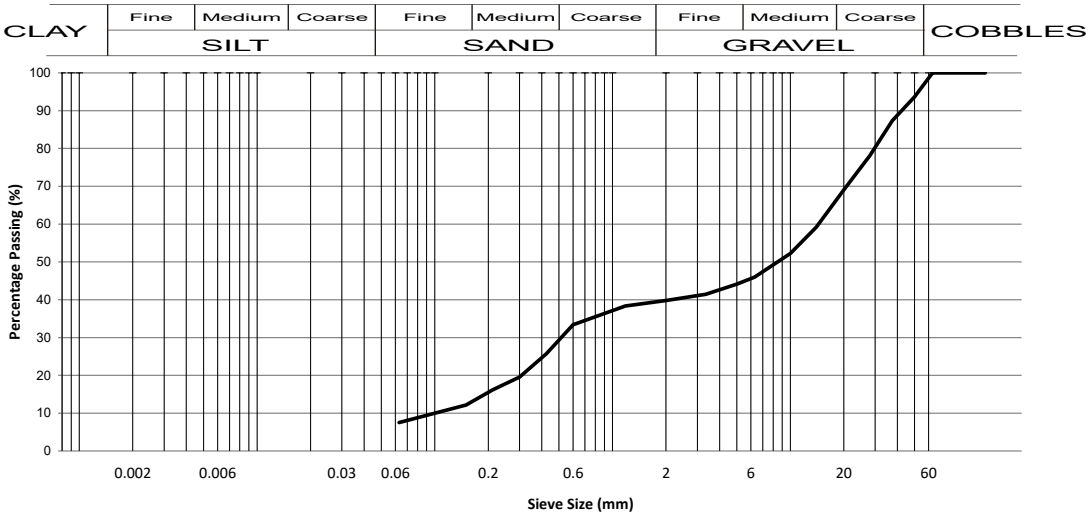
| Remarks | |
|---|---|

Test Report By: ASC Geotesting, Victory Park, Attleborough, NR17 1ZA

Authorised Signatories: ☐ Ben Armstrong (Quality Manager)

| | PARTICLE SIZE DISTRIBUTION<br>BS 1377 : Part 2 : 1990 : Clause 9.2 Wet Sieving | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH101 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 3 |
| | | Depth (m) | 0.50 |
| Soil Description | Brown clayey very sandy GRAVEL. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 94 | | |
| 37.5 | 87 | | |
| 28 | 78 | | |
| 20 | 69 | | |
| 14 | 59 | | |
| 10 | 52 | | |
| 6.3 | 46 | | |
| 5 | 44 | | |
| 3.35 | 41 | | |
| 2 | 40 | | |
| 1.18 | 38 | | |
| 0.6 | 33 | | |
| 0.425 | 26 | | |
| 0.3 | 20 | | |
| 0.212 | 16 | | |
| 0.15 | 12 | | |
| 0.063 | 8 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | N/A |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 60.2 |
| Sand | 32.3 |
| Fines | 7.5 |

| Grading Analysis | |
|---|---|
| D100 | 63.00 |
| D60 | 14.48 |
| D10 | 0.11 |
| Uniformity Coefficient* | 132.55 |

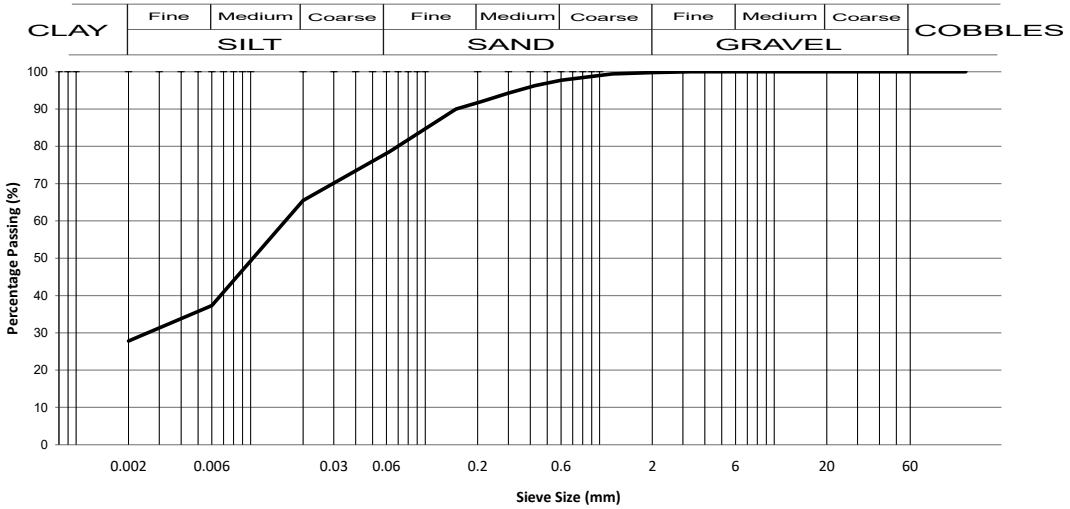
* Uniformity Coefficient Calculation not Accredited

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| Tsmith | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | PARTICLE SIZE DISTRIBUTION<br>**Combined Wet Sieving and Sedimentation by Pipette**<br>**BS 1377 : Part 2 : 1990 : Clause 9.2 and 9.4** | Job Ref | **GT0386** |
|---|---|---|---|
| | | Borehole / Pit No | BH104 & BH104A |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #6199476055880019 |
| | | Depth (m) | 5.35 |
| Soil Description | Firm grey slightly gravelly slightly sandy CLAY. | Sample type | D |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | 0.020 | 65 |
| 75 | 100 | 0.006 | 37 |
| 63 | 100 | 0.002 | 28 |
| 50 | 100 | | |
| 38 | 100 | | |
| 28 | 100 | | |
| 20 | 100 | | |
| 14 | 100 | | |
| 10 | 100 | | |
| 6.30 | 100 | | |
| 5.00 | 100 | | |
| 3.35 | 100 | | |
| 2.00 | 100 | | |
| 1.180 | 99 | | |
| 0.600 | 98 | | |
| 0.425 | 96 | | |
| 0.300 | 94 | | |
| 0.212 | 92 | | |
| 0.150 | 90 | | |
| 0.063 | 79 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | Clause 9.4 |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 0.2 |
| Sand | 21.1 |
| Silt | 50.8 |
| Clay | 27.8 |

| Grading Analysis | |
|---|---|
| D100 | 3.3500 |
| D60 | 0.0173 |
| D10 | |
| Uniformity Coefficient * | |

* Uniformity Coefficient Calculation not Accredited

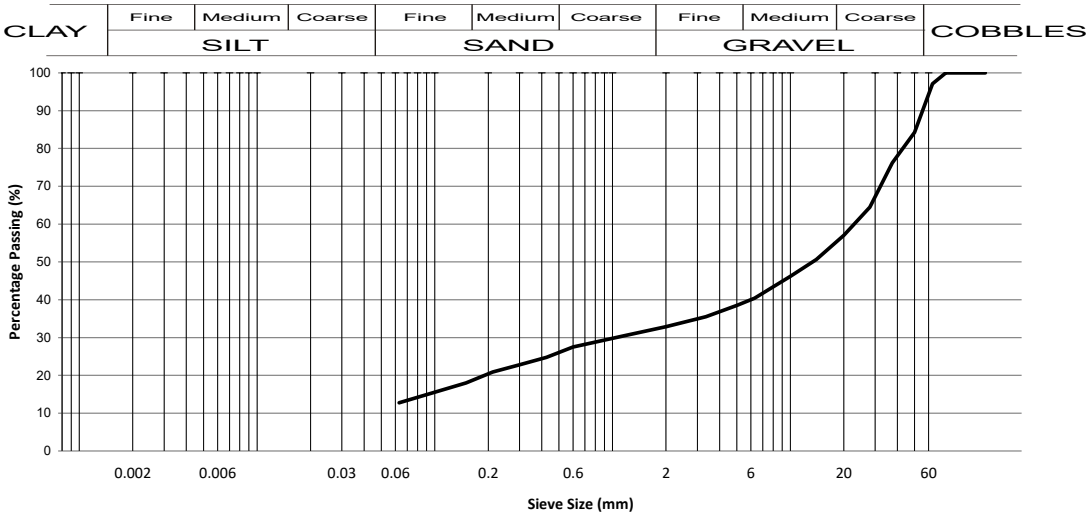
| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| Tsmith | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

8927

| | PARTICLE SIZE DISTRIBUTION<br>BS 1377 : Part 2 : 1990 : Clause 9.2 Wet Sieving | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH107 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 2 |
| | | Depth (m) | 0.70 |
| Soil Description | Light brown slightly cobbly clayey very sandy GRAVEL. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 75 | 100 | | |
| 63 | 97 | | |
| 50 | 84 | | |
| 37.5 | 76 | | |
| 28 | 64 | | |
| 20 | 57 | | |
| 14 | 51 | | |
| 10 | 46 | | |
| 6.3 | 40 | | |
| 5 | 39 | | |
| 3.35 | 36 | | |
| 2 | 33 | | |
| 1.18 | 31 | | |
| 0.6 | 27 | | |
| 0.425 | 25 | | |
| 0.3 | 23 | | |
| 0.212 | 21 | | |
| 0.15 | 18 | | |
| 0.063 | 13 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | N/A |

| Sample Proportions | |
|---|---|
| Cobbles | 2.9 |
| Gravel | 64.2 |
| Sand | 20.1 |
| Fines | 12.8 |

| Grading Analysis | |
|---|---|
| D100 | 75.00 |
| D60 | 23.16 |
| D10 | 0.02 |
| Uniformity Coefficient* | 1338.25 |

* Uniformity Coefficient Calculation not Accredited

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| Tsmith | calbon | barmstrong | |

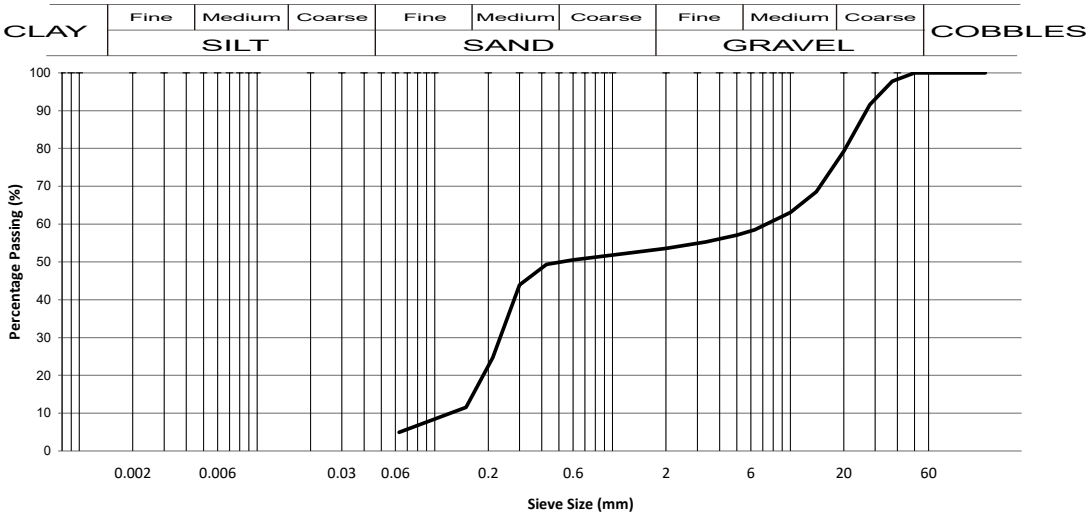
Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

# PARTICLE SIZE DISTRIBUTION

**BS 1377 : Part 2 : 1990 : Clause 9.2 Wet Sieving**

| | | | |
|---|---|---|---|
| | | Job Ref | GT0386 |
| | | Borehole / Pit No | BH107 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 104 |
| | | Depth (m) | 7.50 |
| Soil Description | Dark orange silty SAND and GRAVEL. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 98 | | |
| 28 | 92 | | |
| 20 | 79 | | |
| 14 | 69 | | |
| 10 | 63 | | |
| 6.3 | 59 | | |
| 5 | 57 | | |
| 3.35 | 55 | | |
| 2 | 54 | | |
| 1.18 | 52 | | |
| 0.6 | 51 | | |
| 0.425 | 49 | | |
| 0.3 | 44 | | |
| 0.212 | 25 | | |
| 0.15 | 12 | | |
| 0.063 | 5 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | N/A |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 46.4 |
| Sand | 48.6 |
| Fines | 5.0 |

| Grading Analysis | |
|---|---|
| D100 | 50.00 |
| D60 | 7.51 |
| D10 | 0.13 |
| Uniformity Coefficient* | 57.82 |

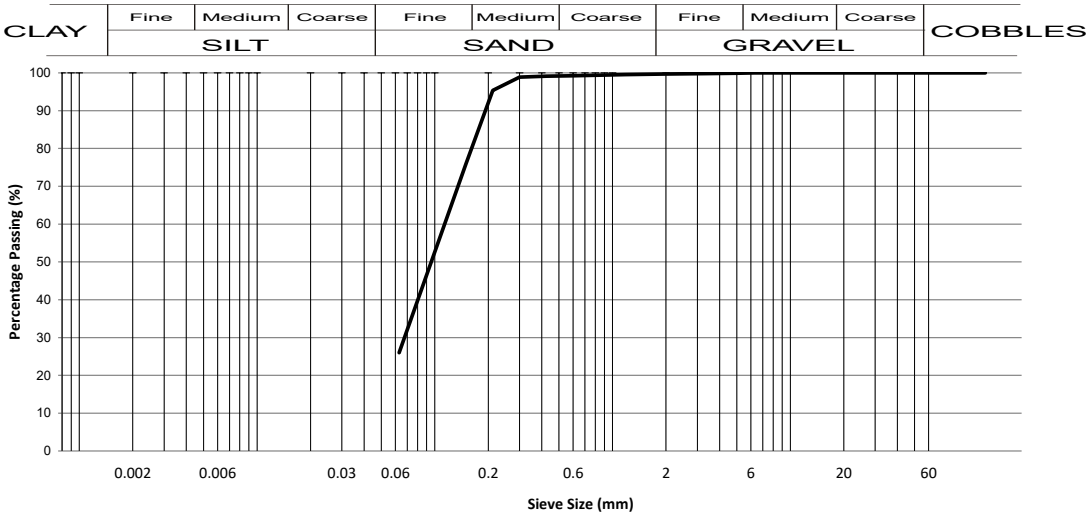
* Uniformity Coefficient Calculation not Accredited

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| Tsmith | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | PARTICLE SIZE DISTRIBUTION<br>BS 1377 : Part 2 : 1990 : Clause 9.2 Wet Sieving | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH108 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 106 |
| | | Depth (m) | 6.50 |
| Soil Description | Orange mottled brown rare gravel very clayey SAND. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 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 | 99 | | |
| 0.425 | 99 | | |
| 0.3 | 99 | | |
| 0.212 | 95 | | |
| 0.15 | 76 | | |
| 0.063 | 26 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | N/A |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 0.3 |
| Sand | 73.7 |
| Fines | 26.0 |

| Grading Analysis | |
|---|---|
| D100 | 6.30 |
| D60 | 0.12 |
| D10 | 0.04 |
| Uniformity Coefficient* | 3.47 |

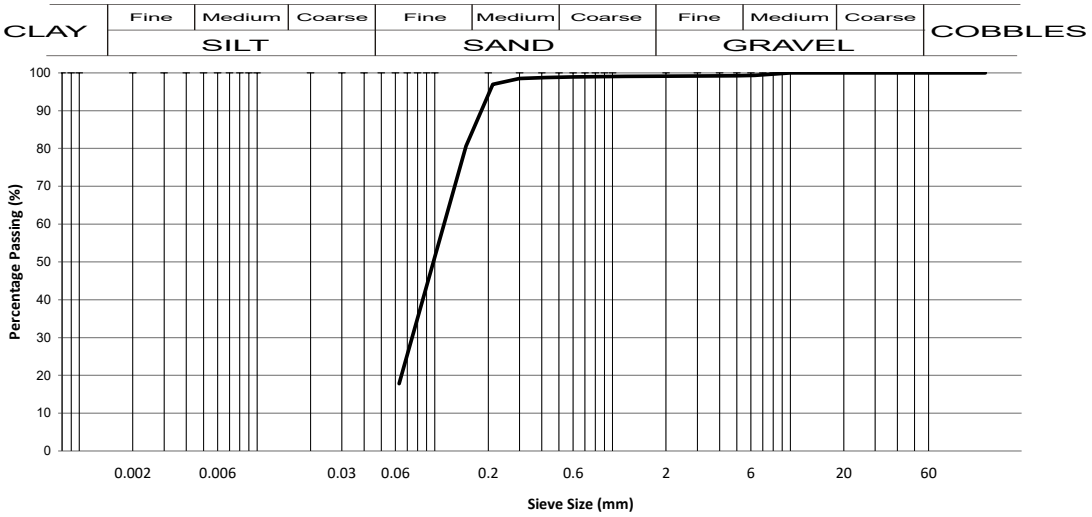
* Uniformity Coefficient Calculation not Accredited

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| Tsmith | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | PARTICLE SIZE DISTRIBUTION<br>BS 1377 : Part 2 : 1990 : Clause 9.2 Wet Sieving | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH111 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 105 |
| | | Depth (m) | 4.85 |
| Soil Description | Light brown rare gravel clayey SAND. | Sample type | D |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 75 | 100 | | |
| 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 | 97 | | |
| 0.15 | 81 | | |
| 0.063 | 18 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | N/A |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 0.9 |
| Sand | 81.3 |
| Fines | 17.8 |

| Grading Analysis | |
|---|---|
| D100 | 10.00 |
| D60 | 0.12 |
| D10 | 0.05 |
| Uniformity Coefficient* | 2.33 |

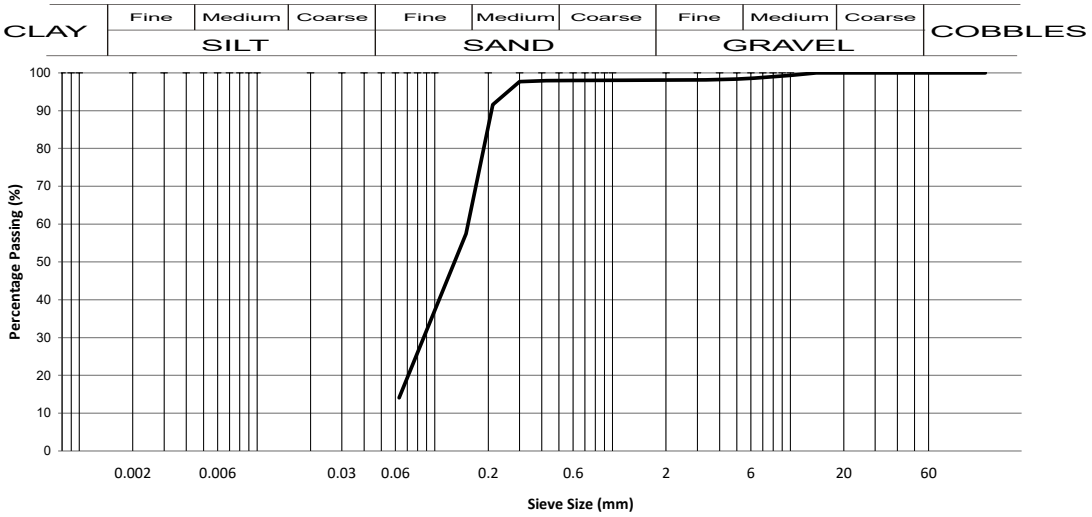
* Uniformity Coefficient Calculation not Accredited

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| Tsmith | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | PARTICLE SIZE DISTRIBUTION<br>BS 1377 : Part 2 : 1990 : Clause 9.2 Wet Sieving | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH111 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 107 |
| | | Depth (m) | 7.00 |
| Soil Description | Light orange slightly gravelly clayey SAND. | Sample type | D |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 100 | | |
| 28 | 100 | | |
| 20 | 100 | | |
| 14 | 100 | | |
| 10 | 99 | | |
| 6.3 | 99 | | |
| 5 | 98 | | |
| 3.35 | 98 | | |
| 2 | 98 | | |
| 1.18 | 98 | | |
| 0.6 | 98 | | |
| 0.425 | 98 | | |
| 0.3 | 98 | | |
| 0.212 | 92 | | |
| 0.15 | 57 | | |
| 0.063 | 14 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | N/A |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 1.9 |
| Sand | 84.0 |
| Fines | 14.1 |

| Grading Analysis | |
|---|---|
| D100 | 14.00 |
| D60 | 0.15 |
| D10 | 0.05 |
| Uniformity Coefficient* | 2.82 |

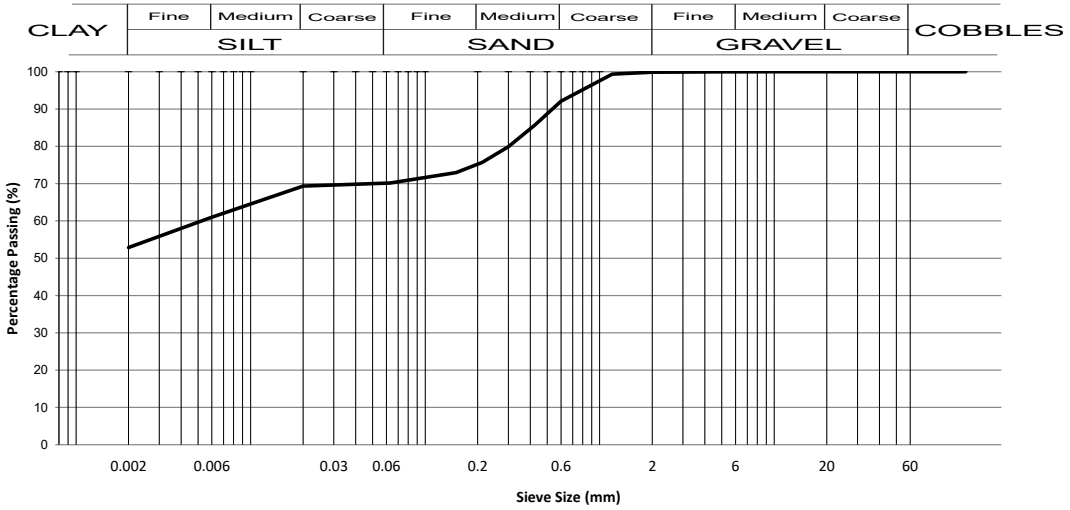
* Uniformity Coefficient Calculation not Accredited

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| Tsmith | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | PARTICLE SIZE DISTRIBUTION<br>**Combined Wet Sieving and Sedimentation by Pipette**<br>**BS 1377 : Part 2 : 1990 : Clause 9.2 and 9.4** | Job Ref | **GT0386** |
|---|---|---|---|
| | | Borehole / Pit No | BH113 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | GTO386-BH113-B2 |
| | | Depth (m) | 0.50 |
| Soil Description | Soft brown mottled orangish brown and dark brown slightly gravelly slightly sandy CLAY. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | 0.020 | 69 |
| 75 | 100 | 0.006 | 61 |
| 63 | 100 | 0.002 | 53 |
| 50 | 100 | | |
| 38 | 100 | | |
| 28 | 100 | | |
| 20 | 100 | | |
| 14 | 100 | | |
| 10 | 100 | | |
| 6.30 | 100 | | |
| 5.00 | 100 | | |
| 3.35 | 100 | | |
| 2.00 | 100 | | |
| 1.180 | 99 | | |
| 0.600 | 92 | | |
| 0.425 | 86 | | |
| 0.300 | 80 | | |
| 0.212 | 76 | | |
| 0.150 | 73 | | |
| 0.063 | 70 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | Clause 9.4 |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 0.1 |
| Sand | 29.7 |
| Silt | 17.3 |
| Clay | 52.9 |

| Grading Analysis | |
|---|---|
| D100 | 10.0000 |
| D60 | 0.0055 |
| D10 | |
| Uniformity Coefficient * | |

* Uniformity Coefficient Calculation not Accredited

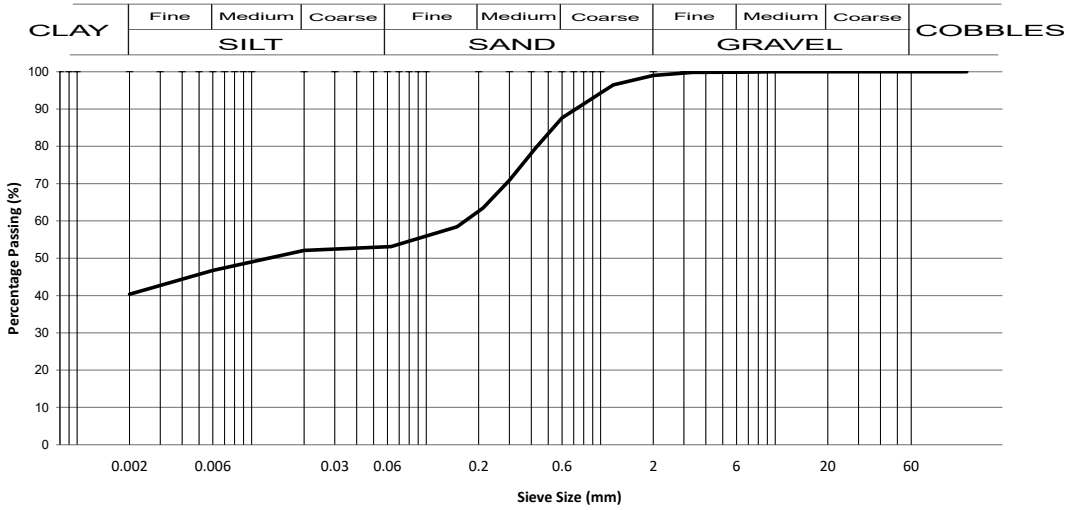
| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

8927

| | PARTICLE SIZE DISTRIBUTION<br>**Combined Wet Sieving and Sedimentation by Pipette**<br>**BS 1377 : Part 2 : 1990 : Clause 9.2 and 9.4** | Job Ref | **GT0386** |
|---|---|---|---|
| | | Borehole / Pit No | BH113 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | GTO386-BH113-B3 |
| | | Depth (m) | 1.00 |
| Soil Description | Soft brown mottled light grey slightly gravelly sandy CLAY. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | 0.020 | 52 |
| 75 | 100 | 0.006 | 47 |
| 63 | 100 | 0.002 | 40 |
| 50 | 100 | | |
| 38 | 100 | | |
| 28 | 100 | | |
| 20 | 100 | | |
| 14 | 100 | | |
| 10 | 100 | | |
| 6.30 | 100 | | |
| 5.00 | 100 | | |
| 3.35 | 100 | | |
| 2.00 | 99 | | |
| 1.180 | 96 | | |
| 0.600 | 88 | | |
| 0.425 | 80 | | |
| 0.300 | 71 | | |
| 0.212 | 63 | | |
| 0.150 | 58 | | |
| 0.063 | 53 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | Clause 9.4 |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 1.0 |
| Sand | 45.9 |
| Silt | 12.8 |
| Clay | 40.3 |

| Grading Analysis | |
|---|---|
| D100 | 10.0000 |
| D60 | 0.1694 |
| D10 | |
| Uniformity Coefficient * | |

* Uniformity Coefficient Calculation not Accredited

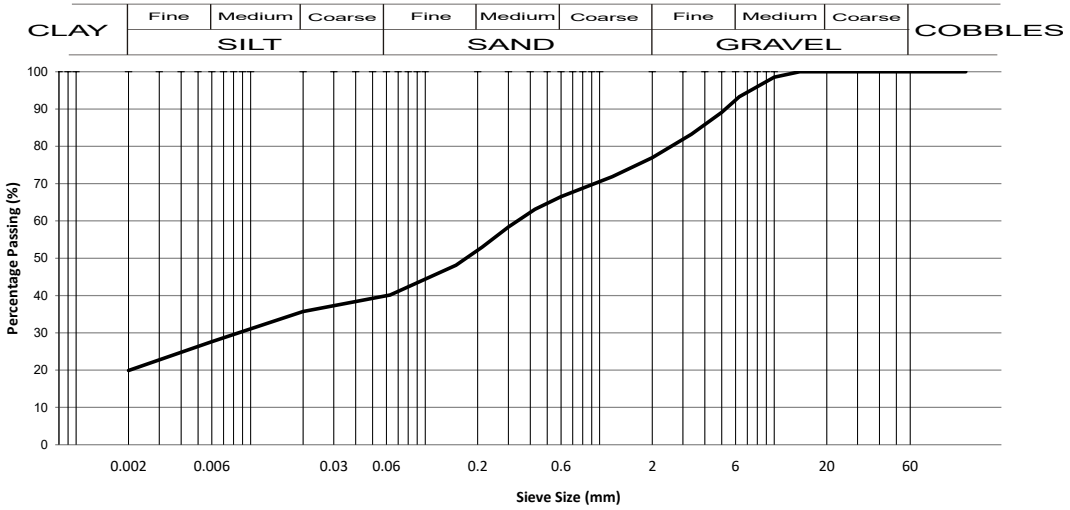
| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

8927

| | PARTICLE SIZE DISTRIBUTION<br>**Combined Wet Sieving and Sedimentation by Pipette**<br>**BS 1377 : Part 2 : 1990 : Clause 9.2 and 9.4** | Job Ref | **GT0386** |
|---|---|---|---|
| | | Borehole / Pit No | BH113 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | GTO386-BH113-B5 |
| | | Depth (m) | 2.50 |
| Soil Description | Very soft brown slightly gravelly sandy CLAY. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | 0.020 | 36 |
| 75 | 100 | 0.006 | 28 |
| 63 | 100 | 0.002 | 20 |
| 50 | 100 | | |
| 38 | 100 | | |
| 28 | 100 | | |
| 20 | 100 | | |
| 14 | 100 | | |
| 10 | 99 | | |
| 6.30 | 93 | | |
| 5.00 | 89 | | |
| 3.35 | 83 | | |
| 2.00 | 77 | | |
| 1.180 | 72 | | |
| 0.600 | 67 | | |
| 0.425 | 63 | | |
| 0.300 | 58 | | |
| 0.212 | 53 | | |
| 0.150 | 48 | | |
| 0.063 | 40 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | Clause 9.4 |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 23.0 |
| Sand | 36.9 |
| Silt | 20.2 |
| Clay | 19.9 |

| Grading Analysis | |
|---|---|
| D100 | 14.0000 |
| D60 | 0.3426 |
| D10 | |
| Uniformity Coefficient * | |

* Uniformity Coefficient Calculation not Accredited

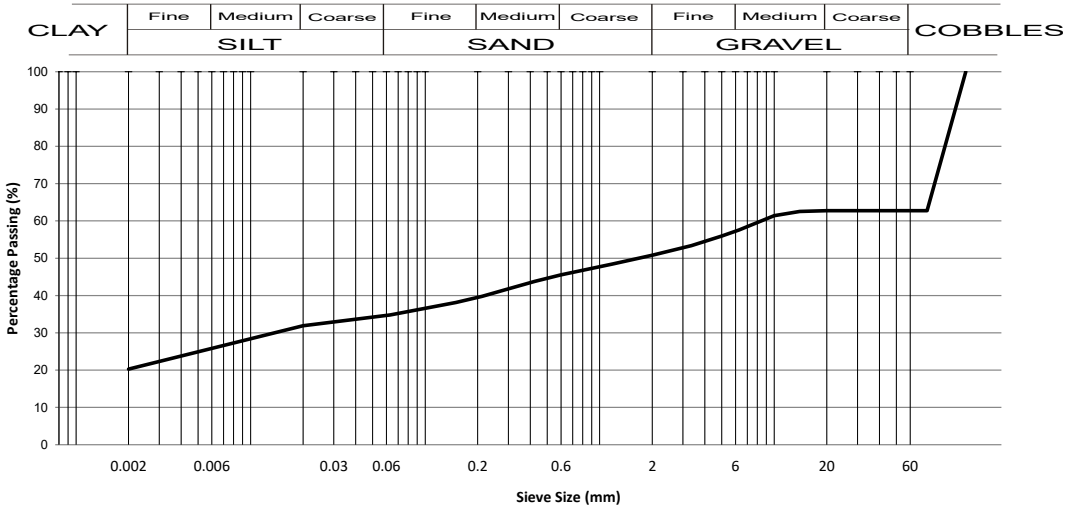
| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

8927

| | PARTICLE SIZE DISTRIBUTION<br>**Combined Wet Sieving and Sedimentation by Pipette**<br>**BS 1377 : Part 2 : 1990 : Clause 9.2 and 9.4** | Job Ref | **GT0386** |
|---|---|---|---|
| | | Borehole / Pit No | BH113 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | GTO386-BH113-B7 |
| | | Depth (m) | 4.00 |
| Soil Description | Very soft brown mottled greyish brown slightly gravelly slightly sandy cobbly CLAY. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | 0.020 | 32 |
| 75 | 63 | 0.006 | 26 |
| 63 | 63 | 0.002 | 20 |
| 50 | 63 | | |
| 38 | 63 | | |
| 28 | 63 | | |
| 20 | 63 | | |
| 14 | 63 | | |
| 10 | 61 | | |
| 6.30 | 58 | | |
| 5.00 | 56 | | |
| 3.35 | 53 | | |
| 2.00 | 51 | | |
| 1.180 | 48 | | |
| 0.600 | 46 | | |
| 0.425 | 44 | | |
| 0.300 | 42 | | |
| 0.212 | 40 | | |
| 0.150 | 38 | | |
| 0.063 | 35 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | Clause 9.4 |

| Sample Proportions | |
|---|---|
| Cobbles | 37.3 |
| Gravel | 11.9 |
| Sand | 16.0 |
| Silt | 14.5 |
| Clay | 20.3 |

| Grading Analysis | |
|---|---|
| D100 | 125.0000 |
| D60 | 8.6282 |
| D10 | |
| Uniformity Coefficient * | |

* Uniformity Coefficient Calculation not Accredited

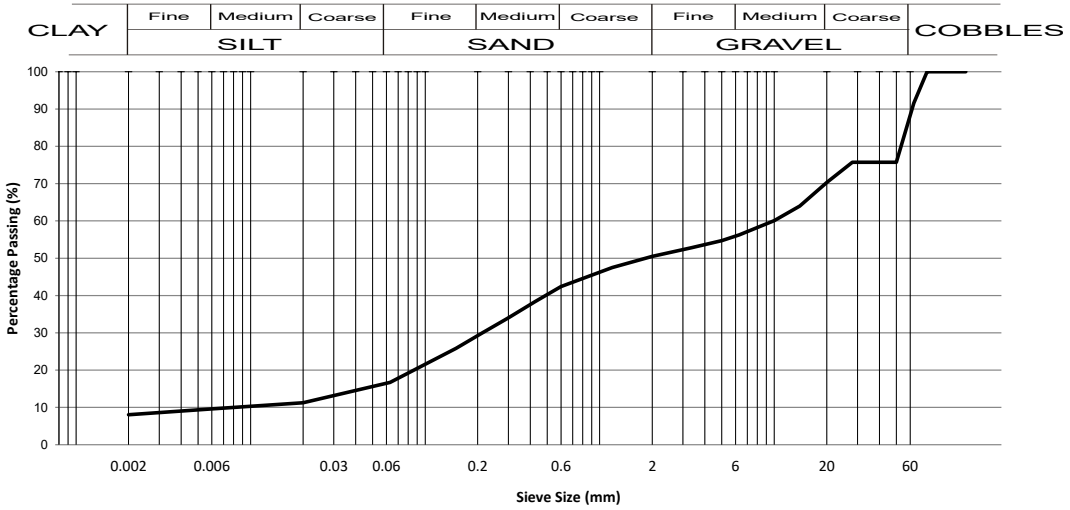
| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

8927

| | PARTICLE SIZE DISTRIBUTION<br>**Combined Wet Sieving and Sedimentation by Pipette**<br>**BS 1377 : Part 2 : 1990 : Clause 9.2 and 9.4** | Job Ref | **GT0386** |
|---|---|---|---|
| | | Borehole / Pit No | BH115 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | GT0386-BH115-B2 |
| | | Depth (m) | 1.00 |
| Soil Description | Soft dark brown mottled light brown slightly cobbly slightly sandy gravelly CLAY. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | 0.020 | 11 |
| 75 | 100 | 0.006 | 10 |
| 63 | 92 | 0.002 | 8 |
| 50 | 76 | | |
| 38 | 76 | | |
| 28 | 76 | | |
| 20 | 70 | | |
| 14 | 64 | | |
| 10 | 60 | | |
| 6.30 | 56 | | |
| 5.00 | 55 | | |
| 3.35 | 53 | | |
| 2.00 | 50 | | |
| 1.180 | 48 | | |
| 0.600 | 42 | | |
| 0.425 | 38 | | |
| 0.300 | 34 | | |
| 0.212 | 30 | | |
| 0.150 | 26 | | |
| 0.063 | 17 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | Clause 9.4 |

| Sample Proportions | |
|---|---|
| Cobbles | 8.4 |
| Gravel | 41.1 |
| Sand | 33.8 |
| Silt | 8.7 |
| Clay | 8.0 |

| Grading Analysis | |
|---|---|
| D100 | 75.0000 |
| D60 | 9.9208 |
| D10 | 0.0093 |
| Uniformity Coefficient * | 1062.4915 |

* Uniformity Coefficient Calculation not Accredited

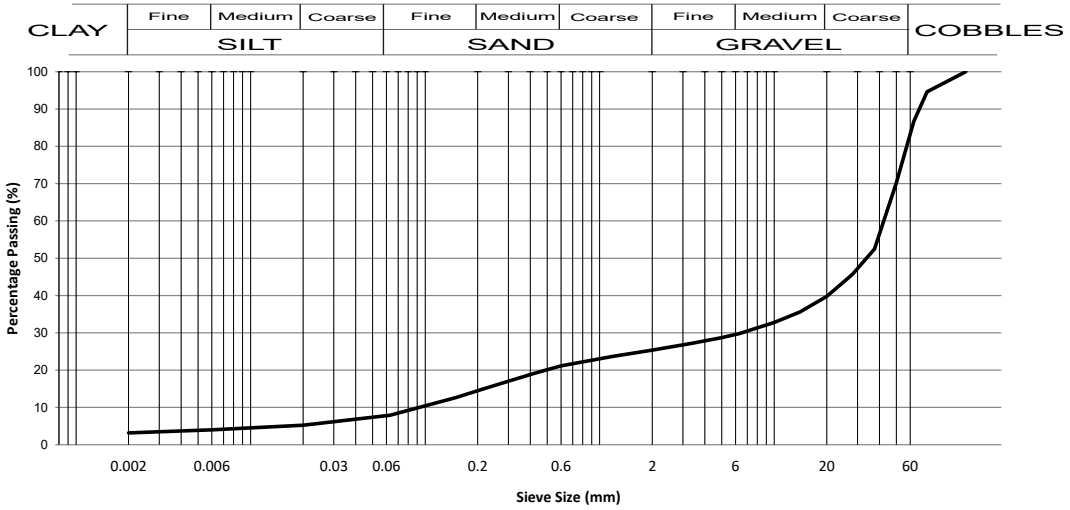
| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| barmstrong | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

8927

| | PARTICLE SIZE DISTRIBUTION<br>**Combined Wet Sieving and Sedimentation by Pipette**<br>**BS 1377 : Part 2 : 1990 : Clause 9.2 and 9.4** | Job Ref | **GT0386** |
|---|---|---|---|
| | | Borehole / Pit No | BH115 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | GT0386-BH115-B4 |
| | | Depth (m) | 2.50 |
| Soil Description | Light brown slightly clayey cobbly sandy GRAVEL. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | 0.020 | 5 |
| 75 | 95 | 0.006 | 4 |
| 63 | 87 | 0.002 | 3 |
| 50 | 70 | | |
| 38 | 52 | | |
| 28 | 46 | | |
| 20 | 40 | | |
| 14 | 36 | | |
| 10 | 33 | | |
| 6.30 | 30 | | |
| 5.00 | 29 | | |
| 3.35 | 27 | | |
| 2.00 | 25 | | |
| 1.180 | 24 | | |
| 0.600 | 21 | | |
| 0.425 | 19 | | |
| 0.300 | 17 | | |
| 0.212 | 15 | | |
| 0.150 | 13 | | |
| 0.063 | 8 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | Clause 9.4 |

| Sample Proportions | |
|---|---|
| Cobbles | 13.3 |
| Gravel | 61.3 |
| Sand | 17.4 |
| Silt | 4.7 |
| Clay | 3.2 |

| Grading Analysis | |
|---|---|
| D100 | 125.0000 |
| D60 | 42.8084 |
| D10 | 0.1015 |
| Uniformity Coefficient * | 421.7471 |

* Uniformity Coefficient Calculation not Accredited

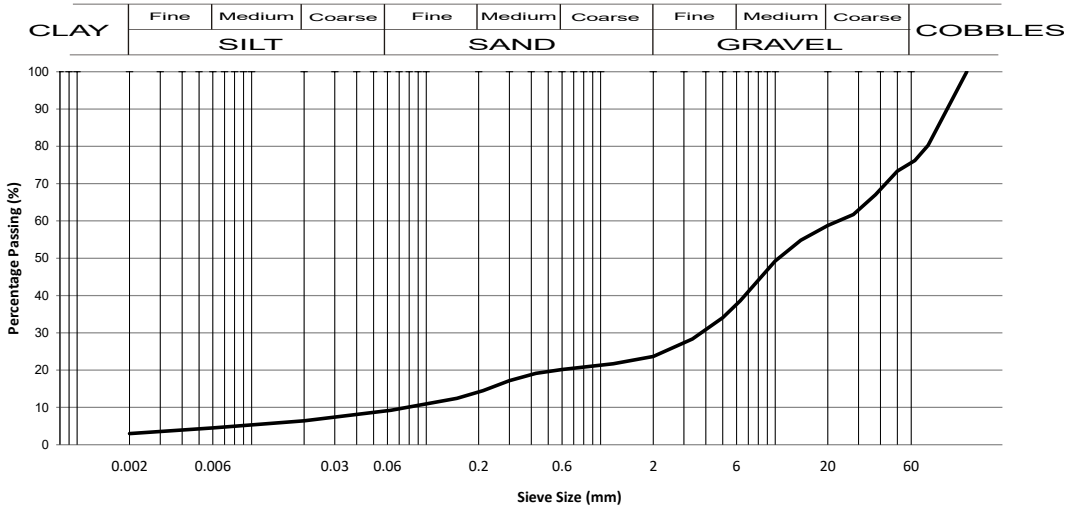
| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

8927

| | PARTICLE SIZE DISTRIBUTION<br>**Combined Wet Sieving and Sedimentation by Pipette**<br>**BS 1377 : Part 2 : 1990 : Clause 9.2 and 9.4** | Job Ref | **GT0386** |
|---|---|---|---|
| | | Borehole / Pit No | BH115 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | GT0386-BH115-B7 |
| | | Depth (m) | 5.50 |
| Soil Description | Brown clayey sandy very cobbly GRAVEL. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | 0.020 | 6 |
| 75 | 80 | 0.006 | 5 |
| 63 | 76 | 0.002 | 3 |
| 50 | 73 | | |
| 38 | 67 | | |
| 28 | 62 | | |
| 20 | 59 | | |
| 14 | 55 | | |
| 10 | 49 | | |
| 6.30 | 39 | | |
| 5.00 | 34 | | |
| 3.35 | 28 | | |
| 2.00 | 24 | | |
| 1.180 | 22 | | |
| 0.600 | 20 | | |
| 0.425 | 19 | | |
| 0.300 | 17 | | |
| 0.212 | 14 | | |
| 0.150 | 12 | | |
| 0.063 | 9 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | Clause 9.4 |

| Sample Proportions | |
|---|---|
| Cobbles | 23.8 |
| Gravel | 52.5 |
| Sand | 14.4 |
| Silt | 6.3 |
| Clay | 3.0 |

| Grading Analysis | |
|---|---|
| D100 | 125.0000 |
| D60 | 23.3014 |
| D10 | 0.0835 |
| Uniformity Coefficient * | 279.0416 |

* Uniformity Coefficient Calculation not Accredited

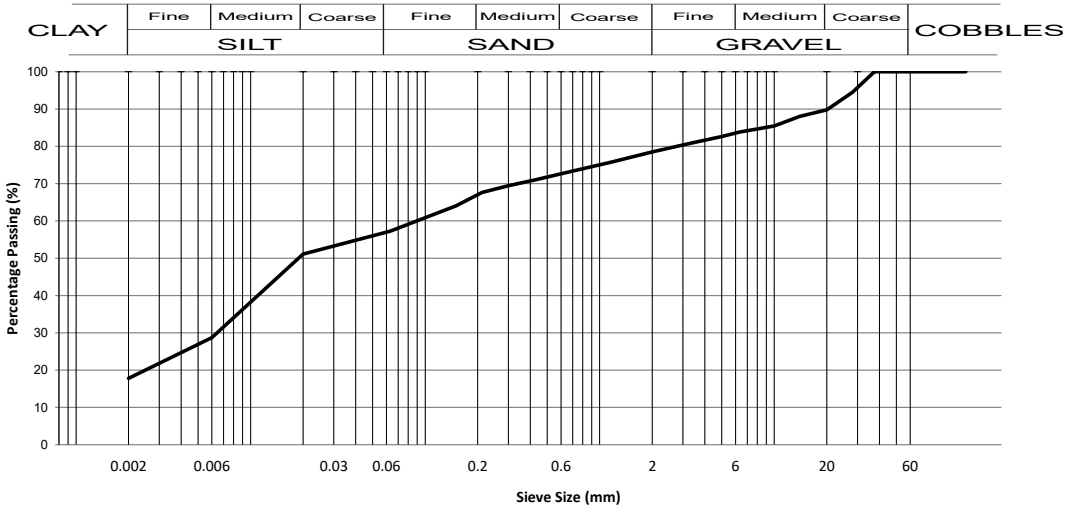
| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| barmstrong | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

8927

| | PARTICLE SIZE DISTRIBUTION<br>**Combined Wet Sieving and Sedimentation by Pipette**<br>**BS 1377 : Part 2 : 1990 : Clause 9.2 and 9.4** | Job Ref | **GT0386** |
|---|---|---|---|
| | | Borehole / Pit No | BH115 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #1274029017080022 |
| | | Depth (m) | 8.80 |
| Soil Description | Very soft brown slightly sandy slightly gravelly CLAY. | Sample type | D |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | 0.020 | 51 |
| 75 | 100 | 0.006 | 29 |
| 63 | 100 | 0.002 | 18 |
| 50 | 100 | | |
| 38 | 100 | | |
| 28 | 94 | | |
| 20 | 90 | | |
| 14 | 88 | | |
| 10 | 85 | | |
| 6.30 | 84 | | |
| 5.00 | 83 | | |
| 3.35 | 81 | | |
| 2.00 | 79 | | |
| 1.180 | 76 | | |
| 0.600 | 73 | | |
| 0.425 | 71 | | |
| 0.300 | 69 | | |
| 0.212 | 68 | | |
| 0.150 | 64 | | |
| 0.063 | 57 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | Clause 9.4 |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 21.5 |
| Sand | 21.3 |
| Silt | 39.5 |
| Clay | 17.8 |

| Grading Analysis | |
|---|---|
| D100 | 37.5000 |
| D60 | 0.0984 |
| D10 | |
| Uniformity Coefficient * | |

* Uniformity Coefficient Calculation not Accredited

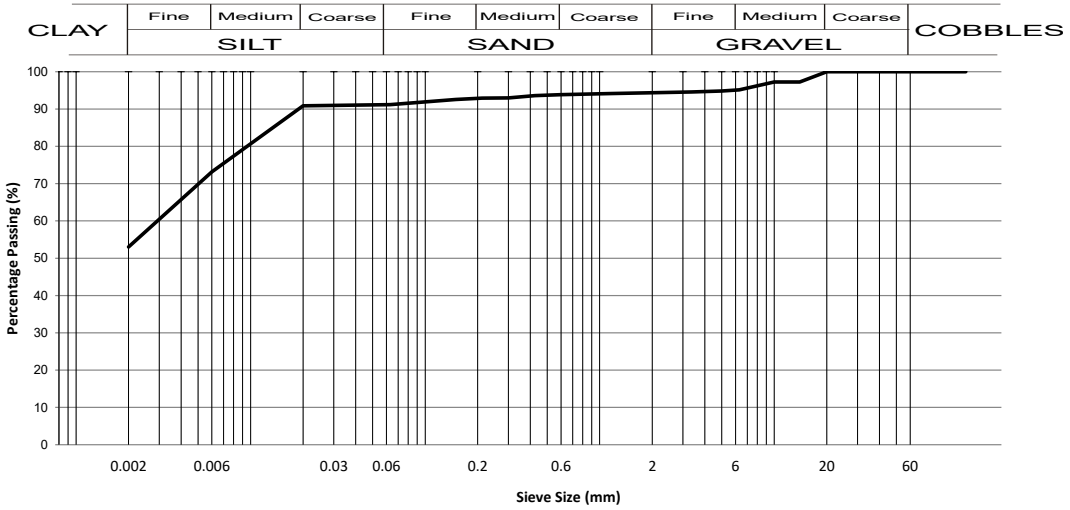
| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

8927

| | PARTICLE SIZE DISTRIBUTION<br>**Combined Wet Sieving and Sedimentation by Pipette**<br>**BS 1377 : Part 2 : 1990 : Clause 9.2 and 9.4** | Job Ref | **GT0386** |
|---|---|---|---|
| | | Borehole / Pit No | BH115 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | GT0386-BH115-D4 |
| | | Depth (m) | 11.00 |
| Soil Description | Firm greyish black slightly sandy slightly gravelly CLAY. | Sample type | D |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | 0.020 | 91 |
| 75 | 100 | 0.006 | 73 |
| 63 | 100 | 0.002 | 53 |
| 50 | 100 | | |
| 38 | 100 | | |
| 28 | 100 | | |
| 20 | 100 | | |
| 14 | 97 | | |
| 10 | 97 | | |
| 6.30 | 95 | | |
| 5.00 | 95 | | |
| 3.35 | 95 | | |
| 2.00 | 94 | | |
| 1.180 | 94 | | |
| 0.600 | 94 | | |
| 0.425 | 94 | | |
| 0.300 | 93 | | |
| 0.212 | 93 | | |
| 0.150 | 93 | | |
| 0.063 | 91 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | Clause 9.4 |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 5.6 |
| Sand | 3.2 |
| Silt | 38.2 |
| Clay | 53.0 |

| Grading Analysis | |
|---|---|
| D100 | 20.0000 |
| D60 | 0.0034 |
| D10 | |
| Uniformity Coefficient * | |

* Uniformity Coefficient Calculation not Accredited

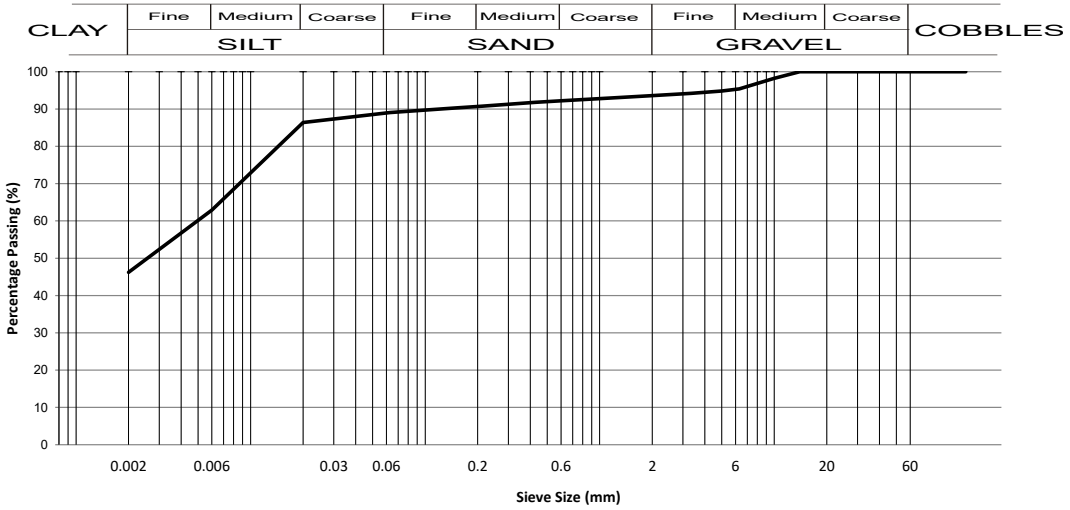
| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

8927

| | PARTICLE SIZE DISTRIBUTION<br>**Combined Wet Sieving and Sedimentation by Pipette**<br>**BS 1377 : Part 2 : 1990 : Clause 9.2 and 9.4** | Job Ref | **GT0386** |
|---|---|---|---|
| | | Borehole / Pit No | BH115 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | GT0386-BH115-D7 |
| | | Depth (m) | 15.50 |
| Soil Description | Very stiff dark grey slightly sandy slightly gravelly CLAY. | Sample type | D |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | 0.020 | 86 |
| 75 | 100 | 0.006 | 63 |
| 63 | 100 | 0.002 | 46 |
| 50 | 100 | | |
| 38 | 100 | | |
| 28 | 100 | | |
| 20 | 100 | | |
| 14 | 100 | | |
| 10 | 98 | | |
| 6.30 | 95 | | |
| 5.00 | 95 | | |
| 3.35 | 94 | | |
| 2.00 | 94 | | |
| 1.180 | 93 | | |
| 0.600 | 92 | | |
| 0.425 | 92 | | |
| 0.300 | 91 | | |
| 0.212 | 91 | | |
| 0.150 | 90 | | |
| 0.063 | 89 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | Clause 9.4 |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 6.4 |
| Sand | 4.5 |
| Silt | 42.8 |
| Clay | 46.2 |

| Grading Analysis | |
|---|---|
| D100 | 14.0000 |
| D60 | 0.0053 |
| D10 | |
| Uniformity Coefficient * | |

* Uniformity Coefficient Calculation not Accredited

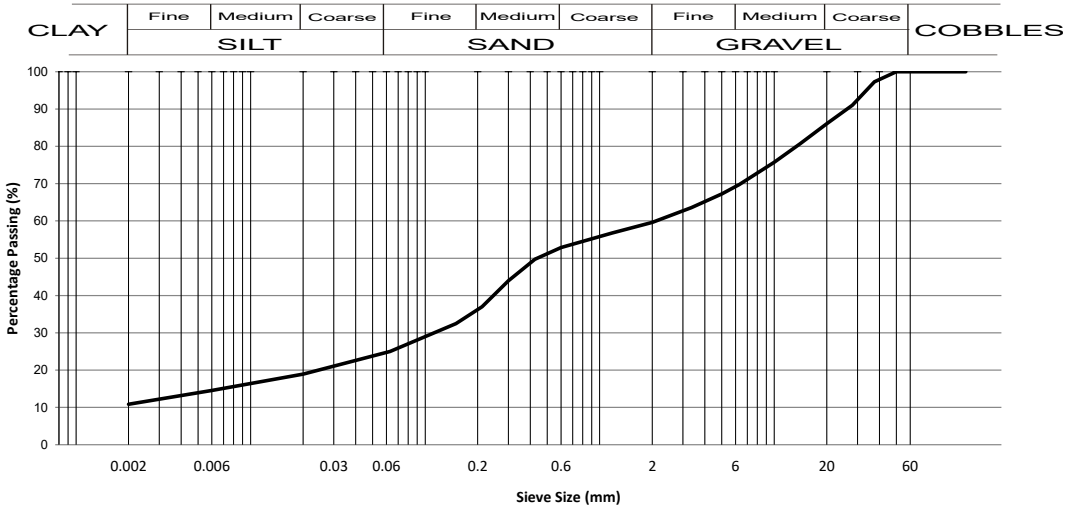
| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

8927

| | PARTICLE SIZE DISTRIBUTION<br>**Combined Wet Sieving and Sedimentation by Pipette**<br>**BS 1377 : Part 2 : 1990 : Clause 9.2 and 9.4** | Job Ref | **GT0386** |
|---|---|---|---|
| | | Borehole / Pit No | BH116 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | GT0386-BH116-B1 |
| | | Depth (m) | 0.50 |
| Soil Description | Soft to firm light brown mottled dark brown slightly sandy gravelly CLAY. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | 0.020 | 19 |
| 75 | 100 | 0.006 | 15 |
| 63 | 100 | 0.002 | 11 |
| 50 | 100 | | |
| 38 | 97 | | |
| 28 | 91 | | |
| 20 | 86 | | |
| 14 | 81 | | |
| 10 | 76 | | |
| 6.30 | 70 | | |
| 5.00 | 67 | | |
| 3.35 | 64 | | |
| 2.00 | 60 | | |
| 1.180 | 57 | | |
| 0.600 | 53 | | |
| 0.425 | 50 | | |
| 0.300 | 44 | | |
| 0.212 | 37 | | |
| 0.150 | 32 | | |
| 0.063 | 25 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | Clause 9.4 |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 40.4 |
| Sand | 34.6 |
| Silt | 14.2 |
| Clay | 10.9 |

| Grading Analysis | |
|---|---|
| D100 | 50.0000 |
| D60 | 2.1371 |
| D10 | |
| Uniformity Coefficient * | |

* Uniformity Coefficient Calculation not Accredited

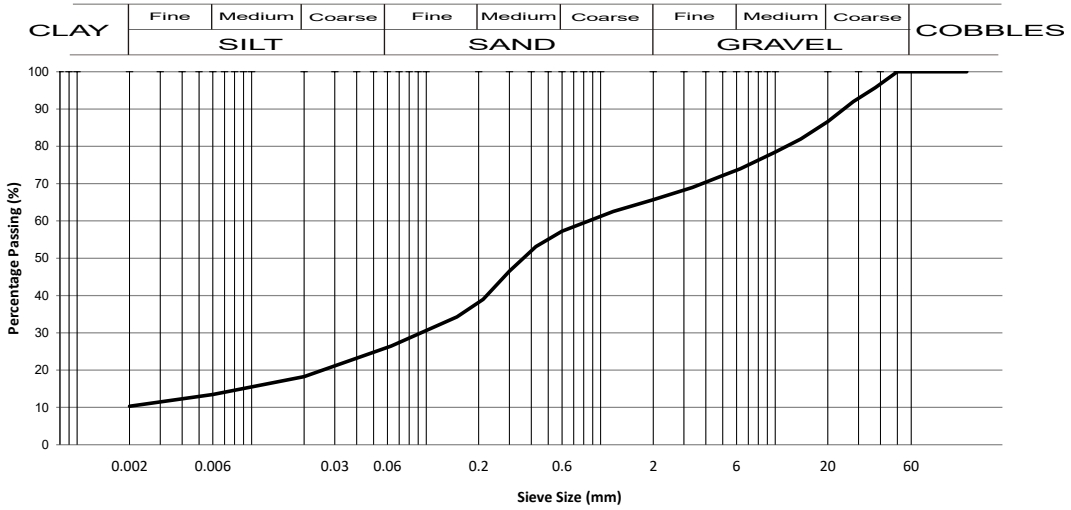
| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

8927

| | PARTICLE SIZE DISTRIBUTION<br>**Combined Wet Sieving and Sedimentation by Pipette**<br>**BS 1377 : Part 2 : 1990 : Clause 9.2 and 9.4** | Job Ref | **GT0386** |
|---|---|---|---|
| | | Borehole / Pit No | BH116 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | GT0386-BH116-B2 |
| | | Depth (m) | 1.00 |
| Soil Description | Very soft brown mottled light brown slightly gravelly sandy CLAY. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | 0.020 | 18 |
| 75 | 100 | 0.006 | 13 |
| 63 | 100 | 0.002 | 10 |
| 50 | 100 | | |
| 38 | 96 | | |
| 28 | 92 | | |
| 20 | 87 | | |
| 14 | 82 | | |
| 10 | 78 | | |
| 6.30 | 74 | | |
| 5.00 | 72 | | |
| 3.35 | 69 | | |
| 2.00 | 66 | | |
| 1.180 | 63 | | |
| 0.600 | 57 | | |
| 0.425 | 53 | | |
| 0.300 | 47 | | |
| 0.212 | 39 | | |
| 0.150 | 34 | | |
| 0.063 | 26 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | Clause 9.4 |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 34.3 |
| Sand | 39.2 |
| Silt | 16.2 |
| Clay | 10.3 |

| Grading Analysis | |
|---|---|
| D100 | 50.0000 |
| D60 | 0.9027 |
| D10 | |
| Uniformity Coefficient * | |

* Uniformity Coefficient Calculation not Accredited

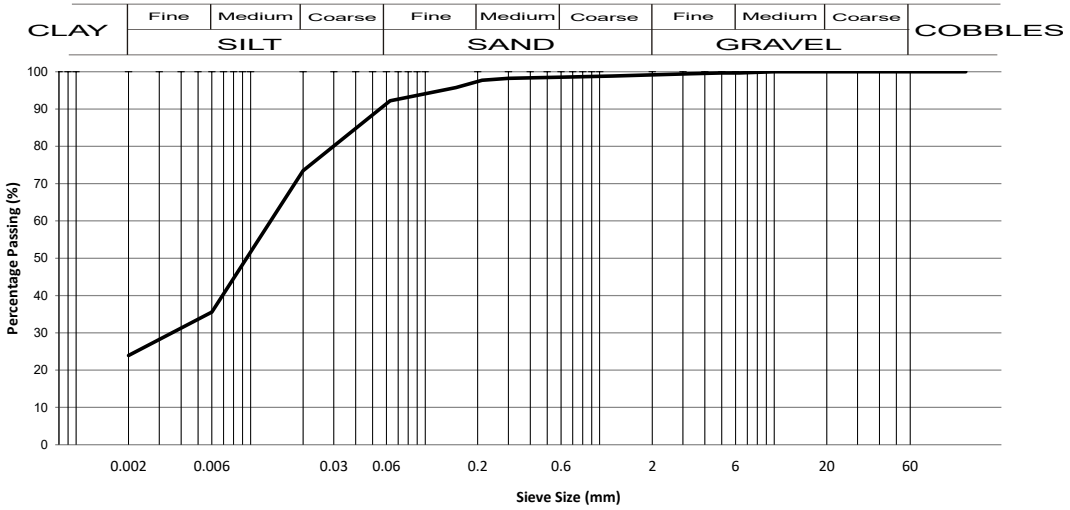
| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

8927

| | PARTICLE SIZE DISTRIBUTION<br>**Combined Wet Sieving and Sedimentation by Pipette**<br>**BS 1377 : Part 2 : 1990 : Clause 9.2 and 9.4** | Job Ref | **GT0386** |
|---|---|---|---|
| | | Borehole / Pit No | BH116 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | GT0386-BH116-B9 |
| | | Depth (m) | 5.80 |
| Soil Description | Very soft dark grey slightly gravelly slightly sandy CLAY. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | 0.020 | 73 |
| 75 | 100 | 0.006 | 36 |
| 63 | 100 | 0.002 | 24 |
| 50 | 100 | | |
| 38 | 100 | | |
| 28 | 100 | | |
| 20 | 100 | | |
| 14 | 100 | | |
| 10 | 100 | | |
| 6.30 | 100 | | |
| 5.00 | 100 | | |
| 3.35 | 99 | | |
| 2.00 | 99 | | |
| 1.180 | 99 | | |
| 0.600 | 99 | | |
| 0.425 | 98 | | |
| 0.300 | 98 | | |
| 0.212 | 98 | | |
| 0.150 | 96 | | |
| 0.063 | 92 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | Clause 9.4 |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 0.8 |
| Sand | 7.0 |
| Silt | 68.3 |
| Clay | 23.9 |

| Grading Analysis | |
|---|---|
| D100 | 10.0000 |
| D60 | 0.0150 |
| D10 | |
| Uniformity Coefficient * | |

* Uniformity Coefficient Calculation not Accredited

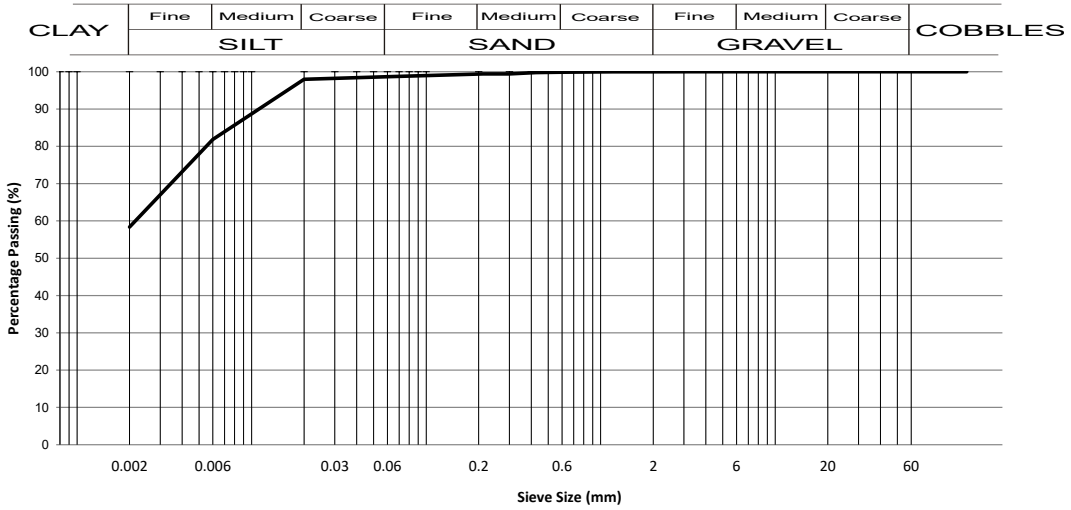
| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

8927

| | PARTICLE SIZE DISTRIBUTION<br>**Combined Wet Sieving and Sedimentation by Pipette**<br>**BS 1377 : Part 2 : 1990 : Clause 9.2 and 9.4** | Job Ref | **GT0386** |
|---|---|---|---|
| | | Borehole / Pit No | BH116 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | GT0386-BH116-D18 |
| | | Depth (m) | 17.50 |
| Soil Description | Very stiff dark grey slightly sandy CLAY. | Sample type | D |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | 0.020 | 98 |
| 75 | 100 | 0.006 | 82 |
| 63 | 100 | 0.002 | 58 |
| 50 | 100 | | |
| 38 | 100 | | |
| 28 | 100 | | |
| 20 | 100 | | |
| 14 | 100 | | |
| 10 | 100 | | |
| 6.30 | 100 | | |
| 5.00 | 100 | | |
| 3.35 | 100 | | |
| 2.00 | 100 | | |
| 1.180 | 100 | | |
| 0.600 | 100 | | |
| 0.425 | 100 | | |
| 0.300 | 99 | | |
| 0.212 | 99 | | |
| 0.150 | 99 | | |
| 0.063 | 99 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | Clause 9.4 |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 0.0 |
| Sand | 1.3 |
| Silt | 40.3 |
| Clay | 58.4 |

| Grading Analysis | |
|---|---|
| D100 | 3.3500 |
| D60 | 0.0023 |
| D10 | |
| Uniformity Coefficient * | |

* Uniformity Coefficient Calculation not Accredited

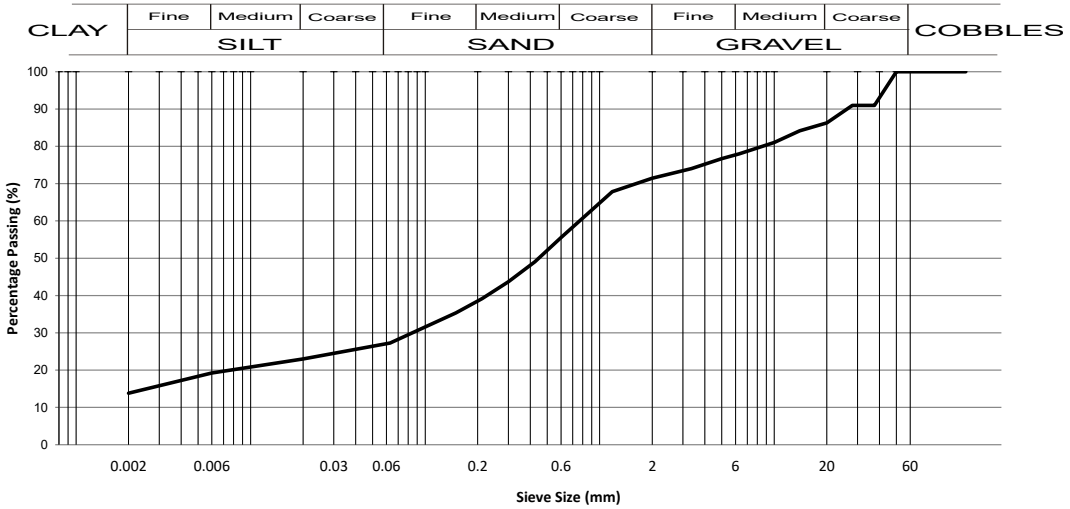
| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| Tsmith | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

8927

| | PARTICLE SIZE DISTRIBUTION<br>**Combined Wet Sieving and Sedimentation by Pipette**<br>**BS 1377 : Part 2 : 1990 : Clause 9.2 and 9.4** | Job Ref | **GT0386** |
|---|---|---|---|
| | | Borehole / Pit No | BH117 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | GTO386-BH117-B2 |
| | | Depth (m) | 1.00 |
| Soil Description | Soft to firm orangish brown slightly gravelly sandy CLAY. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | 0.020 | 23 |
| 75 | 100 | 0.006 | 19 |
| 63 | 100 | 0.002 | 14 |
| 50 | 100 | | |
| 38 | 91 | | |
| 28 | 91 | | |
| 20 | 86 | | |
| 14 | 84 | | |
| 10 | 81 | | |
| 6.30 | 78 | | |
| 5.00 | 77 | | |
| 3.35 | 74 | | |
| 2.00 | 71 | | |
| 1.180 | 68 | | |
| 0.600 | 56 | | |
| 0.425 | 49 | | |
| 0.300 | 44 | | |
| 0.212 | 39 | | |
| 0.150 | 35 | | |
| 0.063 | 27 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | Clause 9.4 |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 28.6 |
| Sand | 44.2 |
| Silt | 13.5 |
| Clay | 13.8 |

| Grading Analysis | |
|---|---|
| D100 | 50.0000 |
| D60 | 0.8106 |
| D10 | |
| Uniformity Coefficient * | |

* Uniformity Coefficient Calculation not Accredited

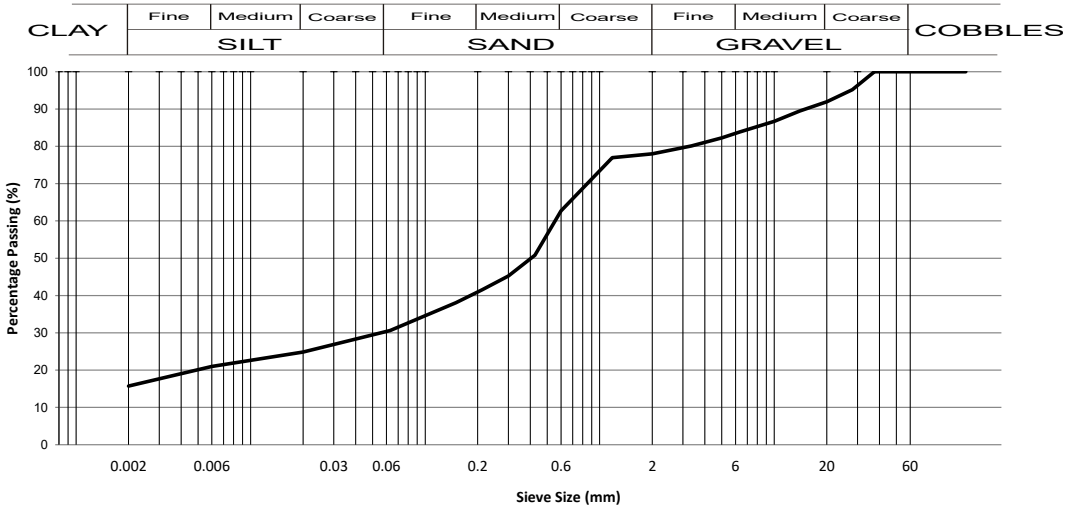
| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

8927

| | PARTICLE SIZE DISTRIBUTION<br>**Combined Wet Sieving and Sedimentation by Pipette**<br>**BS 1377 : Part 2 : 1990 : Clause 9.2 and 9.4** | Job Ref | **GT0386** |
|---|---|---|---|
| | | Borehole / Pit No | BH117 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | GTO386-BH117-B6 |
| | | Depth (m) | 4.50 |
| Soil Description | Soft orangish brown slightly gravelly sandy CLAY. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | 0.020 | 25 |
| 75 | 100 | 0.006 | 21 |
| 63 | 100 | 0.002 | 16 |
| 50 | 100 | | |
| 38 | 100 | | |
| 28 | 95 | | |
| 20 | 92 | | |
| 14 | 89 | | |
| 10 | 87 | | |
| 6.30 | 84 | | |
| 5.00 | 82 | | |
| 3.35 | 80 | | |
| 2.00 | 78 | | |
| 1.180 | 77 | | |
| 0.600 | 63 | | |
| 0.425 | 51 | | |
| 0.300 | 45 | | |
| 0.212 | 42 | | |
| 0.150 | 38 | | |
| 0.063 | 31 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | Clause 9.4 |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 22.0 |
| Sand | 47.4 |
| Silt | 14.9 |
| Clay | 15.7 |

| Grading Analysis | |
|---|---|
| D100 | 37.5000 |
| D60 | 0.5603 |
| D10 | |
| Uniformity Coefficient * | |

* Uniformity Coefficient Calculation not Accredited

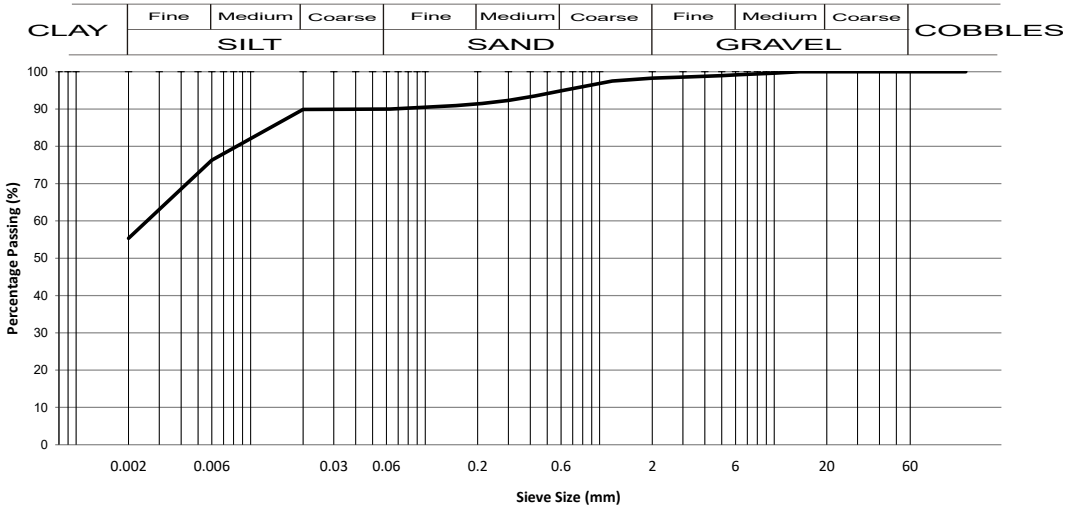
| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

8927

| | PARTICLE SIZE DISTRIBUTION<br>**Combined Wet Sieving and Sedimentation by Pipette**<br>**BS 1377 : Part 2 : 1990 : Clause 9.2 and 9.4** | Job Ref | **GT0386** |
|---|---|---|---|
| | | Borehole / Pit No | BH117 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | GT0386-BH117-D5 |
| | | Depth (m) | 13.50 |
| Soil Description | Firm to stiff blackish grey slightly gravelly slightly sandy CLAY. | Sample type | D |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | 0.020 | 90 |
| 75 | 100 | 0.006 | 76 |
| 63 | 100 | 0.002 | 55 |
| 50 | 100 | | |
| 38 | 100 | | |
| 28 | 100 | | |
| 20 | 100 | | |
| 14 | 100 | | |
| 10 | 100 | | |
| 6.30 | 99 | | |
| 5.00 | 99 | | |
| 3.35 | 99 | | |
| 2.00 | 98 | | |
| 1.180 | 97 | | |
| 0.600 | 95 | | |
| 0.425 | 93 | | |
| 0.300 | 92 | | |
| 0.212 | 91 | | |
| 0.150 | 91 | | |
| 0.063 | 90 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | Clause 9.4 |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 1.7 |
| Sand | 8.3 |
| Silt | 34.6 |
| Clay | 55.3 |

| Grading Analysis | |
|---|---|
| D100 | 14.0000 |
| D60 | 0.0029 |
| D10 | |
| Uniformity Coefficient * | |

* Uniformity Coefficient Calculation not Accredited

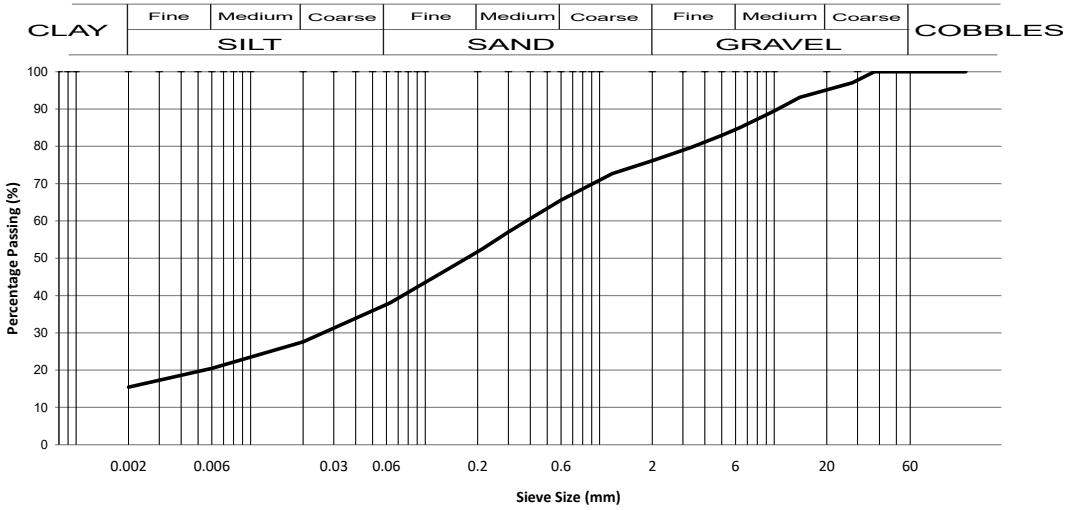
| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

8927

| | PARTICLE SIZE DISTRIBUTION<br>**Combined Wet Sieving and Sedimentation by Pipette**<br>**BS 1377 : Part 2 : 1990 : Clause 9.2 and 9.4** | Job Ref | **GT0386** |
|---|---|---|---|
| | | Borehole / Pit No | BH118 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | GT0386-BH118-B2 |
| | | Depth (m) | 1.00 |
| Soil Description | Soft brown slightly gravelly sandy CLAY. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | 0.020 | 28 |
| 75 | 100 | 0.006 | 20 |
| 63 | 100 | 0.002 | 15 |
| 50 | 100 | | |
| 38 | 100 | | |
| 28 | 97 | | |
| 20 | 95 | | |
| 14 | 93 | | |
| 10 | 89 | | |
| 6.30 | 85 | | |
| 5.00 | 83 | | |
| 3.35 | 80 | | |
| 2.00 | 76 | | |
| 1.180 | 73 | | |
| 0.600 | 66 | | |
| 0.425 | 61 | | |
| 0.300 | 57 | | |
| 0.212 | 52 | | |
| 0.150 | 48 | | |
| 0.063 | 38 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | Clause 9.4 |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 23.9 |
| Sand | 38.1 |
| Silt | 22.6 |
| Clay | 15.4 |

| Grading Analysis | |
|---|---|
| D100 | 37.5000 |
| D60 | 0.3860 |
| D10 | |
| Uniformity Coefficient * | |

* Uniformity Coefficient Calculation not Accredited

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

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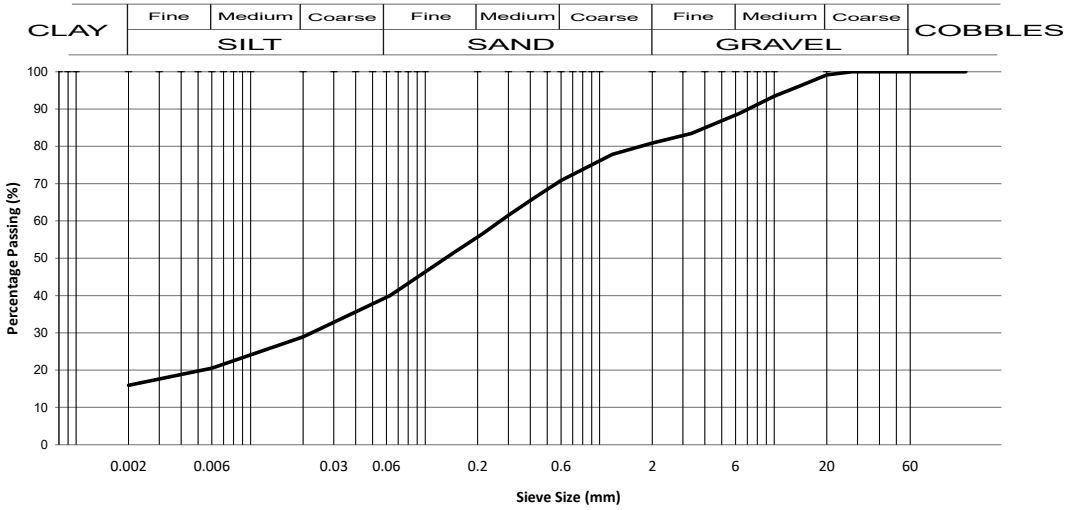
| | PARTICLE SIZE DISTRIBUTION<br>**Combined Wet Sieving and Sedimentation by Pipette**<br>**BS 1377 : Part 2 : 1990 : Clause 9.2 and 9.4** | Job Ref | **GT0386** |
|---|---|---|---|
| | | Borehole / Pit No | BH118 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | GT0386-BH118-B3 |
| | | Depth (m) | 1.50 |
| Soil Description | Soft brown mottled grey slightly gravelly sandy CLAY. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | 0.020 | 29 |
| 75 | 100 | 0.006 | 21 |
| 63 | 100 | 0.002 | 16 |
| 50 | 100 | | |
| 38 | 100 | | |
| 28 | 100 | | |
| 20 | 99 | | |
| 14 | 96 | | |
| 10 | 93 | | |
| 6.30 | 89 | | |
| 5.00 | 87 | | |
| 3.35 | 83 | | |
| 2.00 | 81 | | |
| 1.180 | 78 | | |
| 0.600 | 71 | | |
| 0.425 | 66 | | |
| 0.300 | 62 | | |
| 0.212 | 56 | | |
| 0.150 | 52 | | |
| 0.063 | 40 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | Clause 9.4 |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 19.1 |
| Sand | 40.9 |
| Silt | 24.1 |
| Clay | 15.9 |

| Grading Analysis | |
|---|---|
| D100 | 28.0000 |
| D60 | 0.2737 |
| D10 | |
| Uniformity Coefficient * | |

* Uniformity Coefficient Calculation not Accredited

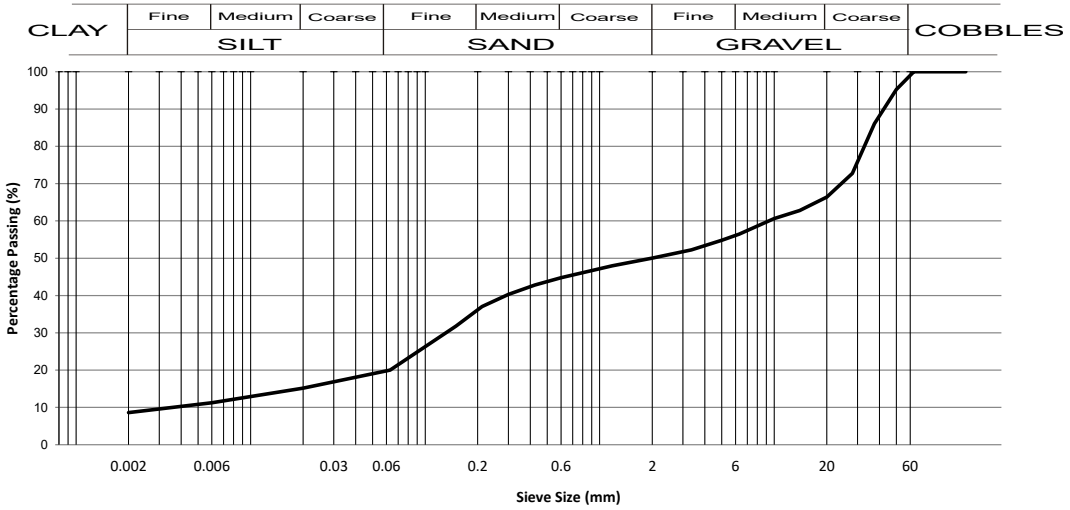
| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

8927

| | PARTICLE SIZE DISTRIBUTION<br>**Combined Wet Sieving and Sedimentation by Pipette**<br>**BS 1377 : Part 2 : 1990 : Clause 9.2 and 9.4** | Job Ref | **GT0386** |
|---|---|---|---|
| | | Borehole / Pit No | BH118 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | GT0386-BH118-B4 |
| | | Depth (m) | 2.50 |
| Soil Description | Very soft brown slightly sandy gravelly CLAY. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | 0.020 | 15 |
| 75 | 100 | 0.006 | 11 |
| 63 | 100 | 0.002 | 9 |
| 50 | 95 | | |
| 38 | 86 | | |
| 28 | 73 | | |
| 20 | 66 | | |
| 14 | 63 | | |
| 10 | 61 | | |
| 6.30 | 56 | | |
| 5.00 | 55 | | |
| 3.35 | 52 | | |
| 2.00 | 50 | | |
| 1.180 | 48 | | |
| 0.600 | 45 | | |
| 0.425 | 43 | | |
| 0.300 | 40 | | |
| 0.212 | 37 | | |
| 0.150 | 32 | | |
| 0.063 | 20 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | Clause 9.4 |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 50.0 |
| Sand | 30.0 |
| Silt | 11.4 |
| Clay | 8.6 |

| Grading Analysis | |
|---|---|
| D100 | 63.0000 |
| D60 | 9.4230 |
| D10 | 0.0041 |
| Uniformity Coefficient * | 2292.0075 |

* Uniformity Coefficient Calculation not Accredited

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

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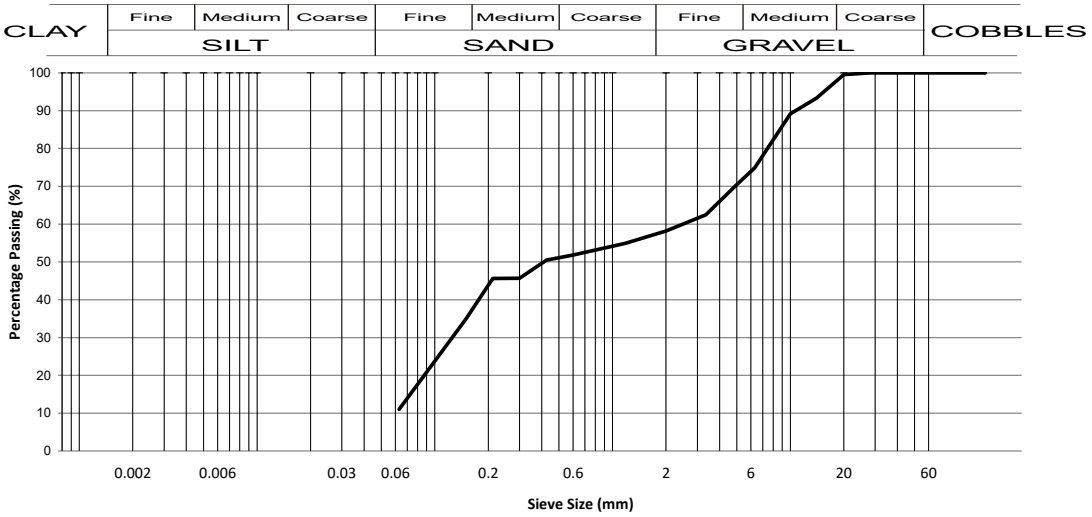
8927

| | PARTICLE SIZE DISTRIBUTION<br>BS 1377 : Part 2 : 1990 : Clause 9.2 Wet Sieving | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH118 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 5 |
| | | Depth (m) | 3.50 |
| Soil Description | Brown mottled greyish brown silty very gravelly SAND. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 100 | | |
| 28 | 100 | | |
| 20 | 100 | | |
| 14 | 93 | | |
| 10 | 89 | | |
| 6.3 | 75 | | |
| 5 | 70 | | |
| 3.35 | 62 | | |
| 2 | 58 | | |
| 1.18 | 55 | | |
| 0.6 | 52 | | |
| 0.425 | 51 | | |
| 0.3 | 46 | | |
| 0.212 | 46 | | |
| 0.15 | 35 | | |
| 0.063 | 11 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | N/A |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 41.8 |
| Sand | 47.2 |
| Fines | 11.0 |

| Grading Analysis | |
|---|---|
| D100 | 28.00 |
| D60 | 2.57 |
| D10 | 0.06 |
| Uniformity Coefficient* | 43.39 |

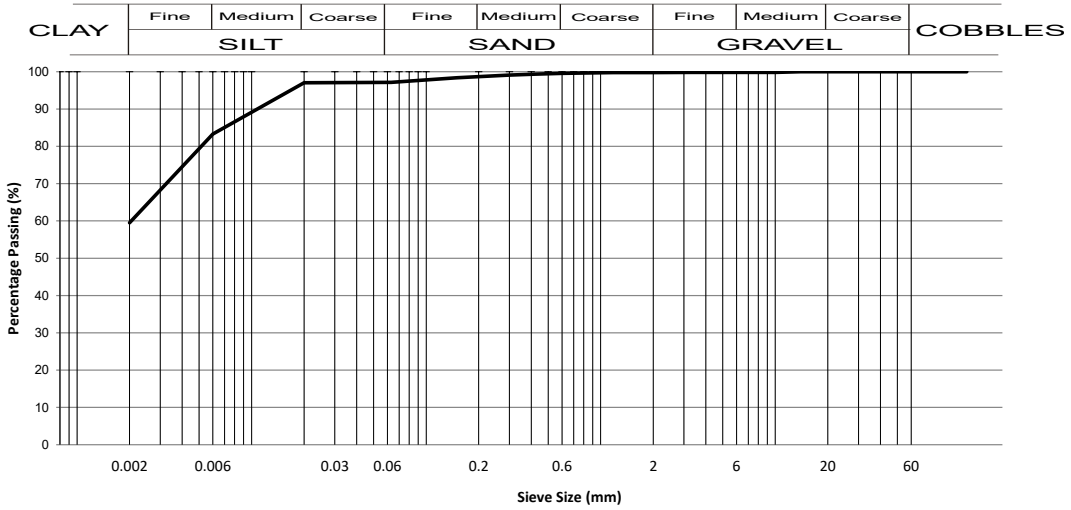
* Uniformity Coefficient Calculation not Accredited

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| Tsmith | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | PARTICLE SIZE DISTRIBUTION<br>**Combined Wet Sieving and Sedimentation by Pipette**<br>**BS 1377 : Part 2 : 1990 : Clause 9.2 and 9.4** | Job Ref | **GT0386** |
|---|---|---|---|
| | | Borehole / Pit No | BH118 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | GT0386-BH118-D12 |
| | | Depth (m) | 14.50 |
| Soil Description | Stiff dark grey slightly gravelly slightly sandy CLAY. | Sample type | D |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | 0.020 | 97 |
| 75 | 100 | 0.006 | 83 |
| 63 | 100 | 0.002 | 59 |
| 50 | 100 | | |
| 38 | 100 | | |
| 28 | 100 | | |
| 20 | 100 | | |
| 14 | 100 | | |
| 10 | 100 | | |
| 6.30 | 100 | | |
| 5.00 | 100 | | |
| 3.35 | 100 | | |
| 2.00 | 100 | | |
| 1.180 | 100 | | |
| 0.600 | 100 | | |
| 0.425 | 99 | | |
| 0.300 | 99 | | |
| 0.212 | 99 | | |
| 0.150 | 98 | | |
| 0.063 | 97 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | Clause 9.4 |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 0.2 |
| Sand | 2.6 |
| Silt | 37.6 |
| Clay | 59.5 |

| Grading Analysis | |
|---|---|
| D100 | 14.0000 |
| D60 | 0.0021 |
| D10 | |
| Uniformity Coefficient * | |

* Uniformity Coefficient Calculation not Accredited

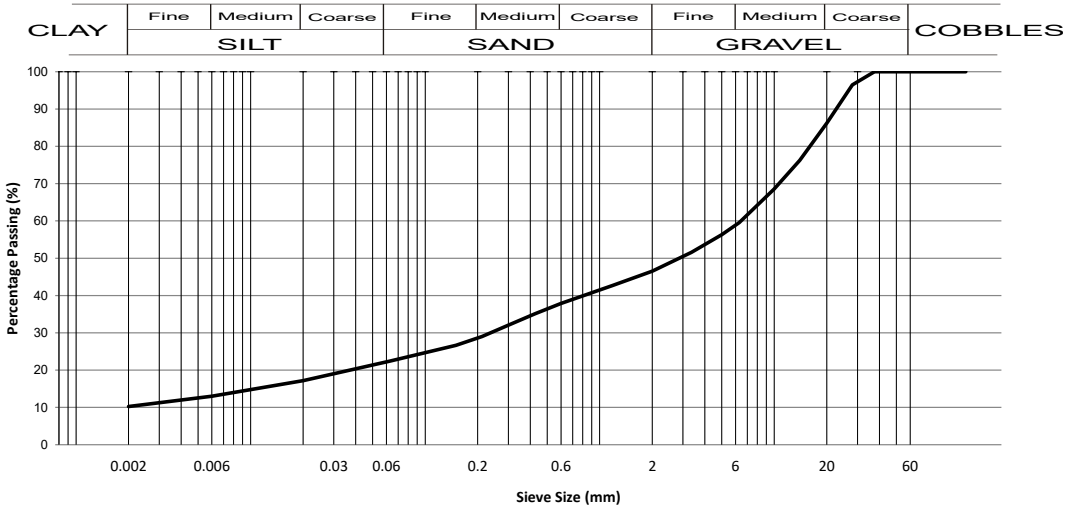
| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

8927

| | PARTICLE SIZE DISTRIBUTION<br>**Combined Wet Sieving and Sedimentation by Pipette**<br>**BS 1377 : Part 2 : 1990 : Clause 9.2 and 9.4** | Job Ref | **GT0386** |
|---|---|---|---|
| | | Borehole / Pit No | BH119 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #7805696682900004 |
| | | Depth (m) | 1.70 |
| Soil Description | Firm brown slightly sandy gravelly CLAY. | Sample type | D |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | 0.020 | 17 |
| 75 | 100 | 0.006 | 13 |
| 63 | 100 | 0.002 | 10 |
| 50 | 100 | | |
| 38 | 100 | | |
| 28 | 96 | | |
| 20 | 86 | | |
| 14 | 76 | | |
| 10 | 69 | | |
| 6.30 | 60 | | |
| 5.00 | 56 | | |
| 3.35 | 52 | | |
| 2.00 | 47 | | |
| 1.180 | 43 | | |
| 0.600 | 38 | | |
| 0.425 | 35 | | |
| 0.300 | 32 | | |
| 0.212 | 29 | | |
| 0.150 | 27 | | |
| 0.063 | 22 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | Clause 9.4 |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 53.5 |
| Sand | 24.1 |
| Silt | 12.2 |
| Clay | 10.2 |

| Grading Analysis | |
|---|---|
| D100 | 37.5000 |
| D60 | 6.4885 |
| D10 | |
| Uniformity Coefficient * | |

* Uniformity Coefficient Calculation not Accredited

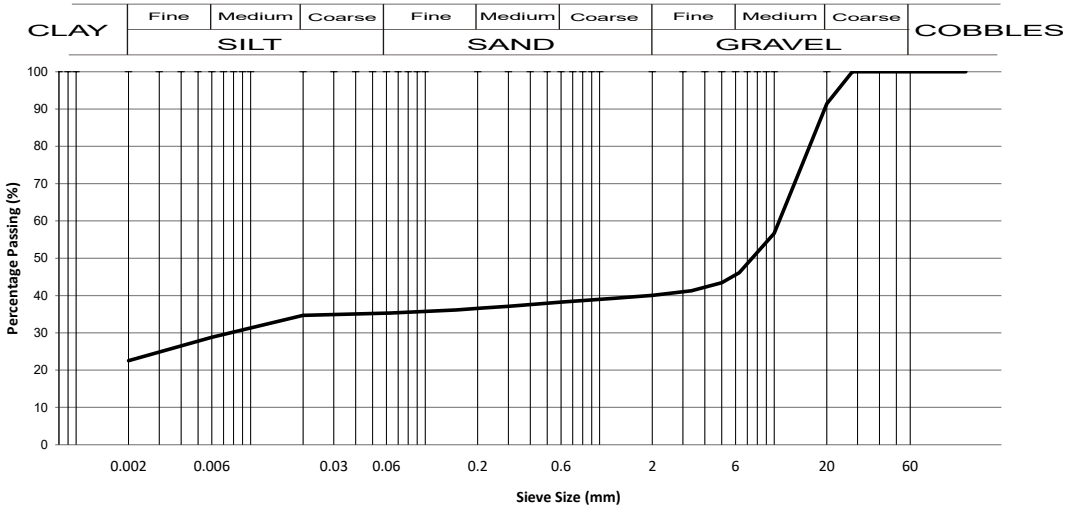
| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

8927

| | PARTICLE SIZE DISTRIBUTION<br>**Combined Wet Sieving and Sedimentation by Pipette**<br>**BS 1377 : Part 2 : 1990 : Clause 9.2 and 9.4** | Job Ref | **GT0386** |
|---|---|---|---|
| | | Borehole / Pit No | BH119 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #7805696682900007 |
| | | Depth (m) | 4.50 |
| Soil Description | Very soft grey mottled light brown slightly sandy gravelly CLAY. | Sample type | D |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | 0.020 | 35 |
| 75 | 100 | 0.006 | 29 |
| 63 | 100 | 0.002 | 23 |
| 50 | 100 | | |
| 38 | 100 | | |
| 28 | 100 | | |
| 20 | 91 | | |
| 14 | 74 | | |
| 10 | 57 | | |
| 6.30 | 46 | | |
| 5.00 | 43 | | |
| 3.35 | 41 | | |
| 2.00 | 40 | | |
| 1.180 | 39 | | |
| 0.600 | 38 | | |
| 0.425 | 38 | | |
| 0.300 | 37 | | |
| 0.212 | 37 | | |
| 0.150 | 36 | | |
| 0.063 | 35 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | Clause 9.4 |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 60.0 |
| Sand | 4.7 |
| Silt | 12.8 |
| Clay | 22.5 |

| Grading Analysis | |
|---|---|
| D100 | 28.0000 |
| D60 | 10.7896 |
| D10 | |
| Uniformity Coefficient * | |

* Uniformity Coefficient Calculation not Accredited

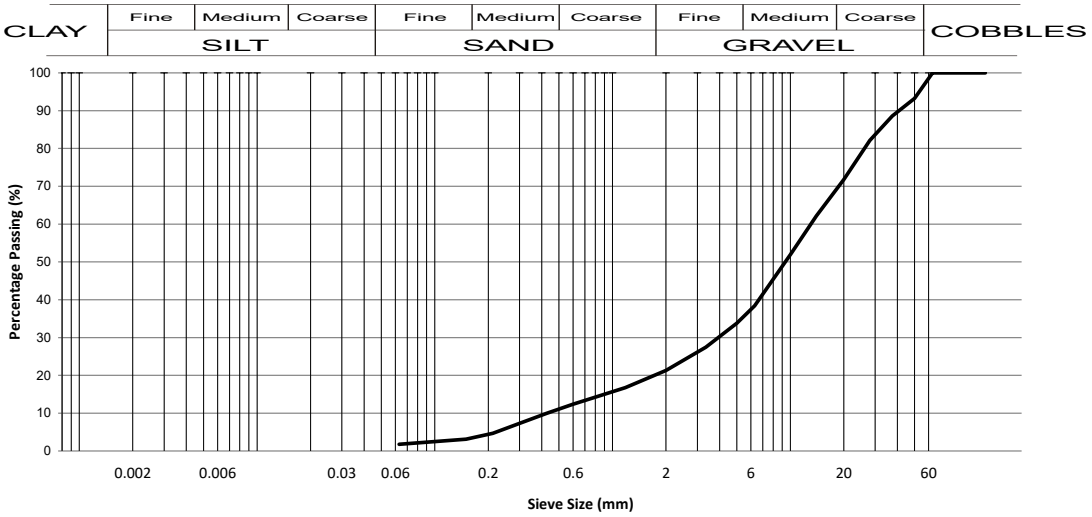
| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

8927

| | PARTICLE SIZE DISTRIBUTION<br>BS 1377 : Part 2 : 1990 : Clause 9.2 Wet Sieving | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH120 & BH120A |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 5 |
| | | Depth (m) | 3.50 |
| Soil Description | Brown slightly clayey sandy GRAVEL. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 93 | | |
| 37.5 | 89 | | |
| 28 | 82 | | |
| 20 | 72 | | |
| 14 | 62 | | |
| 10 | 52 | | |
| 6.3 | 38 | | |
| 5 | 34 | | |
| 3.35 | 27 | | |
| 2 | 21 | | |
| 1.18 | 17 | | |
| 0.6 | 12 | | |
| 0.425 | 10 | | |
| 0.3 | 7 | | |
| 0.212 | 5 | | |
| 0.15 | 3 | | |
| 0.063 | 2 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | N/A |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 78.7 |
| Sand | 19.5 |
| Fines | 1.8 |

| Grading Analysis | |
|---|---|
| D100 | 63.00 |
| D60 | 13.16 |
| D10 | 0.43 |
| Uniformity Coefficient* | 30.76 |

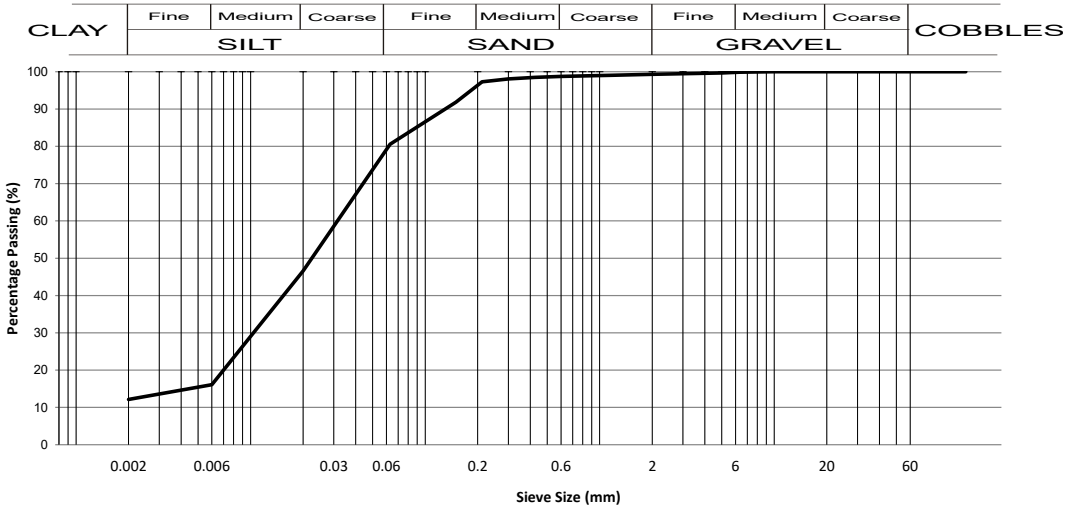
* Uniformity Coefficient Calculation not Accredited

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| Tsmith | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | PARTICLE SIZE DISTRIBUTION<br>**Combined Wet Sieving and Sedimentation by Pipette**<br>**BS 1377 : Part 2 : 1990 : Clause 9.2 and 9.4** | Job Ref | **GT0386** |
|---|---|---|---|
| | | Borehole / Pit No | BH120 & BH120A |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | GT0386-BH120A-B8 |
| | | Depth (m) | 5.70 |
| Soil Description | Firm dark grey mottled light grey slightly gravelly slightly sandy SILT. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | 0.020 | 47 |
| 75 | 100 | 0.006 | 16 |
| 63 | 100 | 0.002 | 12 |
| 50 | 100 | | |
| 38 | 100 | | |
| 28 | 100 | | |
| 20 | 100 | | |
| 14 | 100 | | |
| 10 | 100 | | |
| 6.30 | 100 | | |
| 5.00 | 100 | | |
| 3.35 | 100 | | |
| 2.00 | 99 | | |
| 1.180 | 99 | | |
| 0.600 | 99 | | |
| 0.425 | 98 | | |
| 0.300 | 98 | | |
| 0.212 | 97 | | |
| 0.150 | 92 | | |
| 0.063 | 81 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | Clause 9.4 |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 0.7 |
| Sand | 18.7 |
| Silt | 68.4 |
| Clay | 12.1 |

| Grading Analysis | |
|---|---|
| D100 | 10.0000 |
| D60 | 0.0370 |
| D10 | |
| Uniformity Coefficient * | |

* Uniformity Coefficient Calculation not Accredited

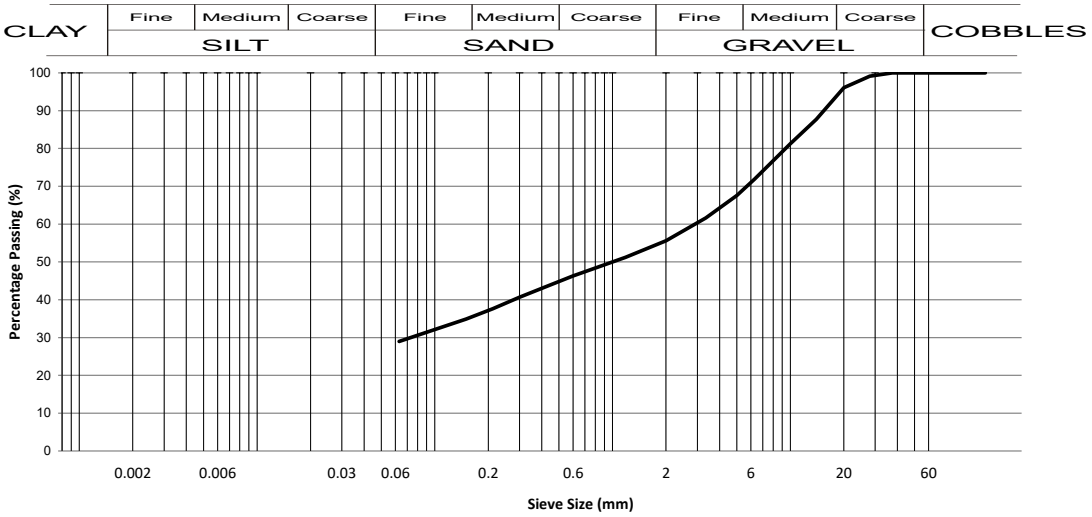
| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| Tsmith | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

8927

| | PARTICLE SIZE DISTRIBUTION<br>BS 1377 : Part 2 : 1990 : Clause 9.2 Wet Sieving | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH121 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 2 |
| | | Depth (m) | 0.50 |
| Soil Description | Firm orangish brown mottled light grey slightly sandy gravelly CLAY. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 100 | | |
| 28 | 99 | | |
| 20 | 96 | | |
| 14 | 88 | | |
| 10 | 81 | | |
| 6.3 | 72 | | |
| 5 | 68 | | |
| 3.35 | 62 | | |
| 2 | 56 | | |
| 1.18 | 51 | | |
| 0.6 | 46 | | |
| 0.425 | 44 | | |
| 0.3 | 41 | | |
| 0.212 | 38 | | |
| 0.15 | 35 | | |
| 0.063 | 29 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | N/A |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 44.4 |
| Sand | 26.6 |
| Fines | 29.0 |

| Grading Analysis | |
|---|---|
| D100 | 37.50 |
| D60 | 2.98 |
| D10 | N/A |
| Uniformity Coefficient* | N/A |

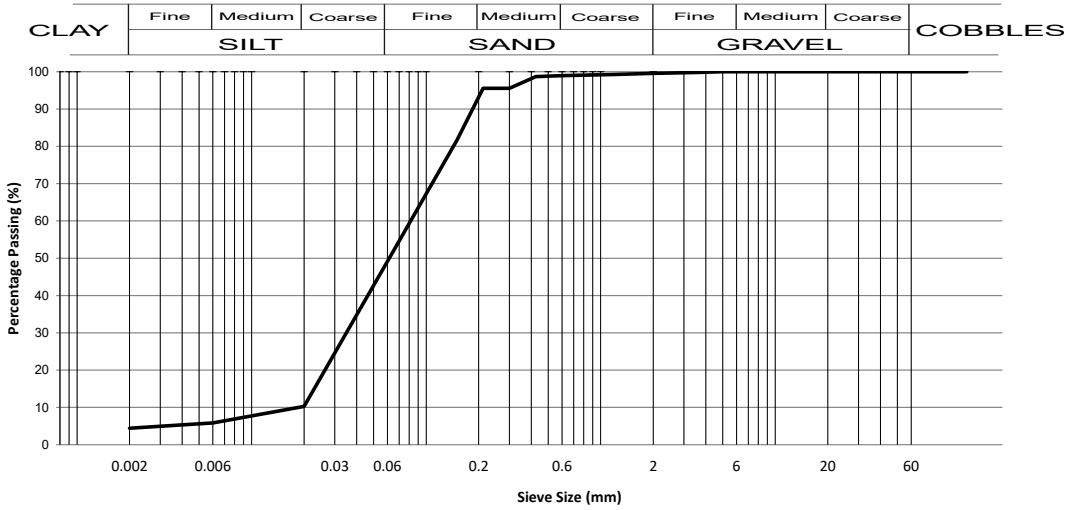
* Uniformity Coefficient Calculation not Accredited

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| barmstrong | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | PARTICLE SIZE DISTRIBUTION<br>**Combined Wet Sieving and Sedimentation by Pipette**<br>**BS 1377 : Part 2 : 1990 : Clause 9.2 and 9.4** | Job Ref | **GT0386** |
|---|---|---|---|
| | | Borehole / Pit No | BH121 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #3980675336890031 |
| | | Depth (m) | 13.70 |
| Soil Description | Greyish brown mottled light grey very slightly gravelly silty SAND. With frequent lumps of stiff grey SILT. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | 0.020 | 10 |
| 75 | 100 | 0.006 | 6 |
| 63 | 100 | 0.002 | 4 |
| 50 | 100 | | |
| 38 | 100 | | |
| 28 | 100 | | |
| 20 | 100 | | |
| 14 | 100 | | |
| 10 | 100 | | |
| 6.30 | 100 | | |
| 5.00 | 100 | | |
| 3.35 | 100 | | |
| 2.00 | 100 | | |
| 1.180 | 99 | | |
| 0.600 | 99 | | |
| 0.425 | 99 | | |
| 0.300 | 96 | | |
| 0.212 | 96 | | |
| 0.150 | 82 | | |
| 0.063 | 51 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | Clause 9.4 |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 0.4 |
| Sand | 48.7 |
| Silt | 46.4 |
| Clay | 4.4 |

| Grading Analysis | |
|---|---|
| D100 | 5.0000 |
| D60 | 0.0889 |
| D10 | 0.0192 |
| Uniformity Coefficient * | 4.6356 |

* Uniformity Coefficient Calculation not Accredited

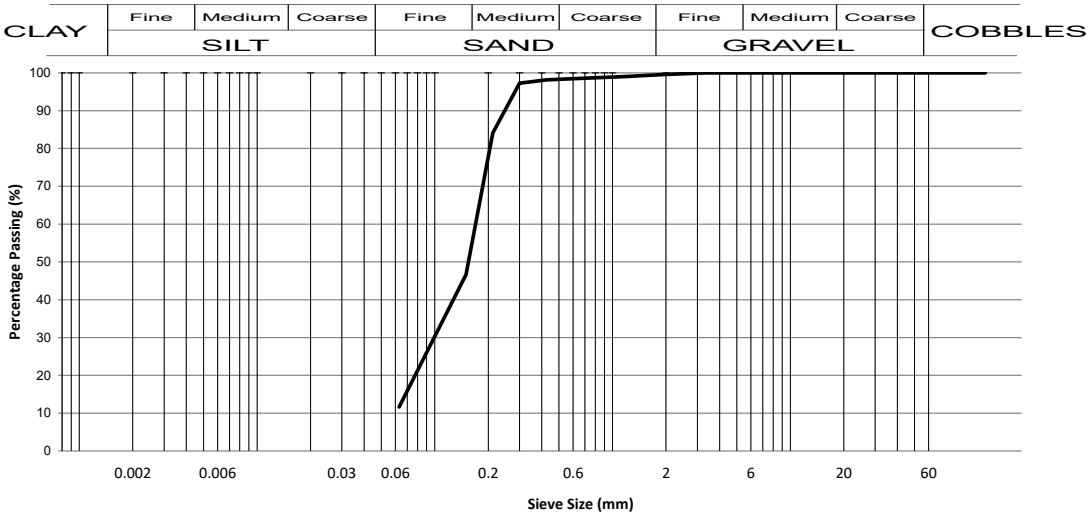
| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

8927

| | PARTICLE SIZE DISTRIBUTION<br>BS 1377 : Part 2 : 1990 : Clause 9.2 Wet Sieving | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH122 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 111 |
| | | Depth (m) | 11.40 |
| Soil Description | Orange slightly gravelly silty SAND. | Sample type | D |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 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 | 99 | | |
| 0.6 | 98 | | |
| 0.425 | 98 | | |
| 0.3 | 97 | | |
| 0.212 | 84 | | |
| 0.15 | 47 | | |
| 0.063 | 12 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | N/A |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 0.4 |
| Sand | 87.9 |
| Fines | 11.7 |

| Grading Analysis | |
|---|---|
| D100 | 3.35 |
| D60 | 0.17 |
| D10 | 0.06 |
| Uniformity Coefficient* | 2.92 |

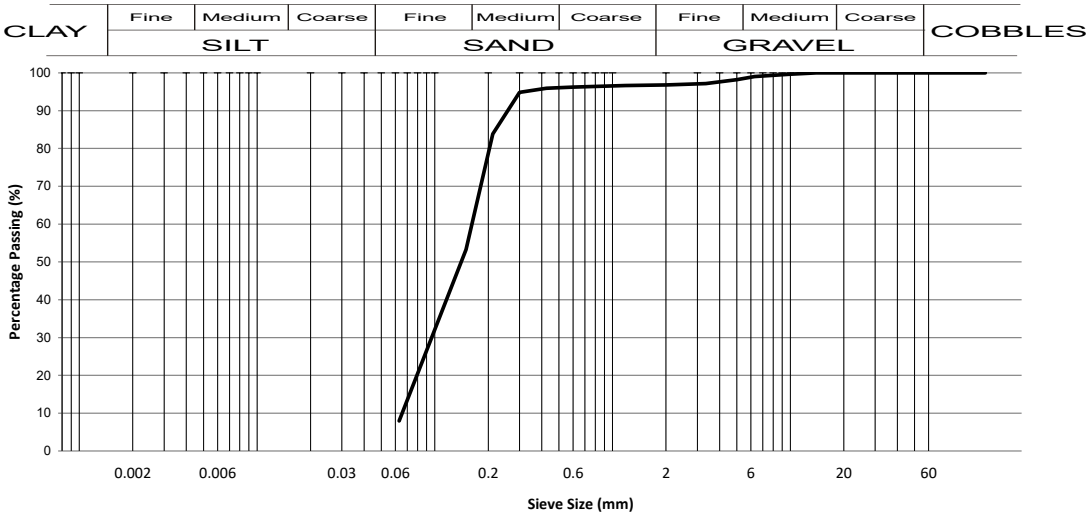
* Uniformity Coefficient Calculation not Accredited

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| Tsmith | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | PARTICLE SIZE DISTRIBUTION<br>BS 1377 : Part 2 : 1990 : Clause 9.2 Wet Sieving | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH122 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 115 |
| | | Depth (m) | 15.50 |
| Soil Description | Orangish brown slightly gravel silty SAND. | Sample type | D |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 100 | | |
| 28 | 100 | | |
| 20 | 100 | | |
| 14 | 100 | | |
| 10 | 100 | | |
| 6.3 | 99 | | |
| 5 | 98 | | |
| 3.35 | 97 | | |
| 2 | 97 | | |
| 1.18 | 97 | | |
| 0.6 | 96 | | |
| 0.425 | 96 | | |
| 0.3 | 95 | | |
| 0.212 | 84 | | |
| 0.15 | 53 | | |
| 0.063 | 8 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | N/A |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 3.2 |
| Sand | 88.9 |
| Fines | 7.9 |

| Grading Analysis | |
|---|---|
| D100 | 14.00 |
| D60 | 0.16 |
| D10 | 0.07 |
| Uniformity Coefficient* | 2.44 |

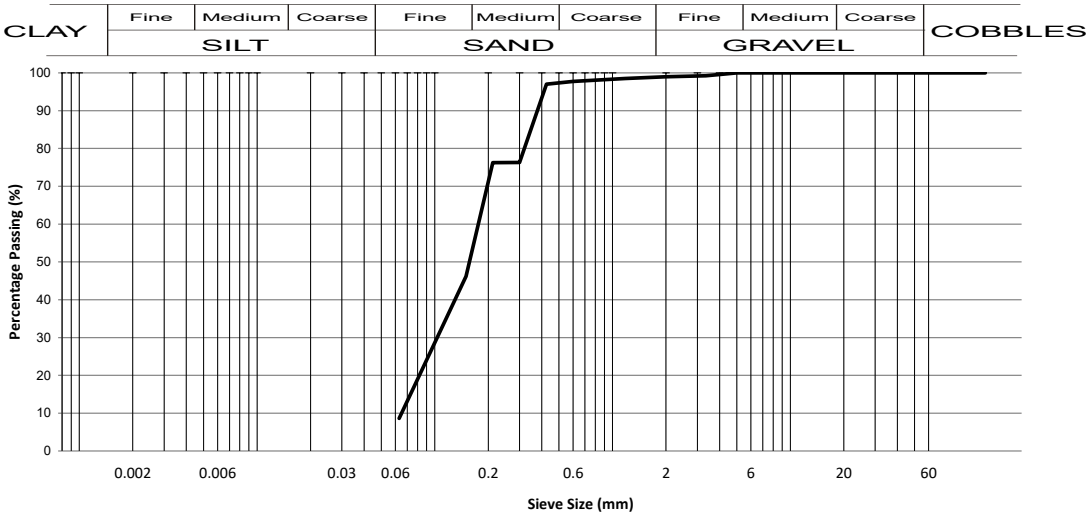
* Uniformity Coefficient Calculation not Accredited

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| barmstrong | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | PARTICLE SIZE DISTRIBUTION<br>BS 1377 : Part 2 : 1990 : Clause 9.2 Wet Sieving | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH122 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 119 |
| | | Depth (m) | 19.40 |
| Soil Description | Grey slightly gravelly silty SAND. | Sample type | D |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 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 | 99 | | |
| 2 | 99 | | |
| 1.18 | 99 | | |
| 0.6 | 98 | | |
| 0.425 | 97 | | |
| 0.3 | 76 | | |
| 0.212 | 76 | | |
| 0.15 | 46 | | |
| 0.063 | 9 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | N/A |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 1.0 |
| Sand | 90.4 |
| Fines | 8.6 |

| Grading Analysis | |
|---|---|
| D100 | 5.00 |
| D60 | 0.18 |
| D10 | 0.07 |
| Uniformity Coefficient* | 2.70 |

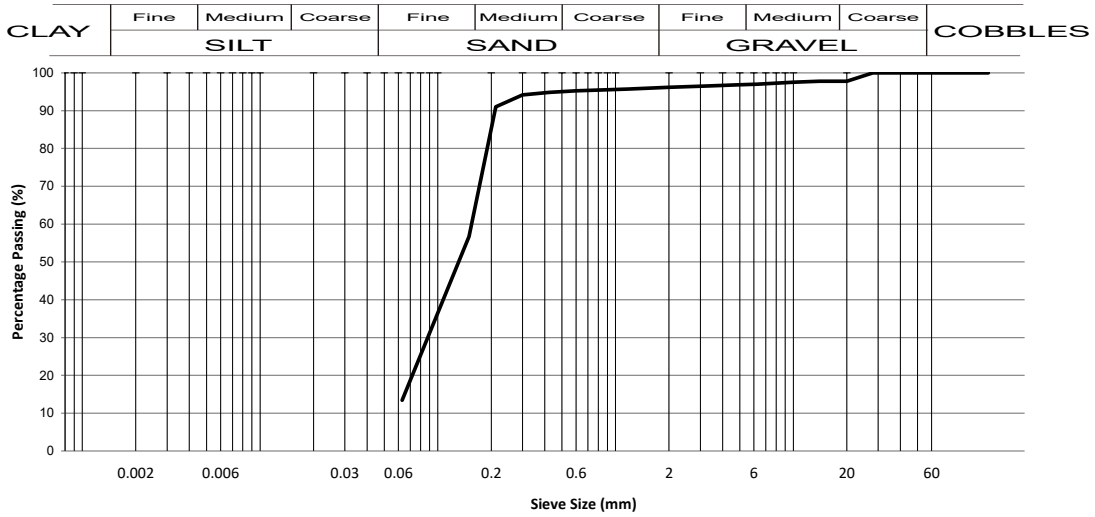
* Uniformity Coefficient Calculation not Accredited

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| Tsmith | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | PARTICLE SIZE DISTRIBUTION<br>BS 1377 : Part 2 : 1990 : Clause 9.2 Wet Sieving | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH124 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 109 |
| | | Depth (m) | 10.55 |
| Soil Description | Brown slightly gravelly silty SAND. | Sample type | D |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 100 | | |
| 28 | 100 | | |
| 20 | 98 | | |
| 14 | 98 | | |
| 10 | 98 | | |
| 6.3 | 97 | | |
| 5 | 97 | | |
| 3.35 | 97 | | |
| 2 | 96 | | |
| 1.18 | 96 | | |
| 0.6 | 95 | | |
| 0.425 | 95 | | |
| 0.3 | 94 | | |
| 0.212 | 91 | | |
| 0.15 | 57 | | |
| 0.063 | 13 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | N/A |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 3.8 |
| Sand | 82.8 |
| Fines | 13.4 |

| Grading Analysis | |
|---|---|
| D100 | 28.00 |
| D60 | 0.16 |
| D10 | 0.06 |
| Uniformity Coefficient* | 2.78 |

* Uniformity Coefficient Calculation not Accredited

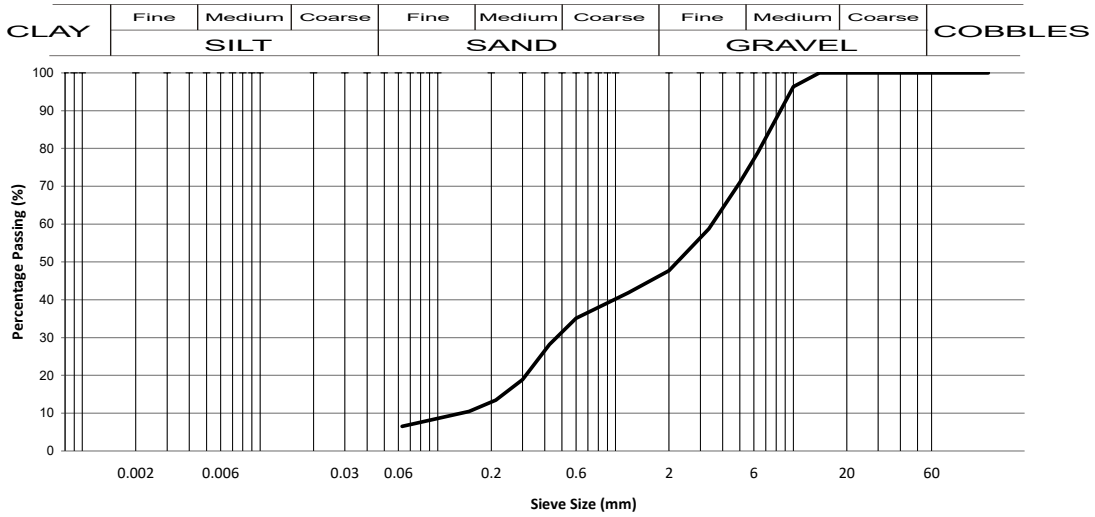
| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| Tsmith | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

ASC GeoTesting
Aggregate • Soil • Concrete

| | PARTICLE SIZE DISTRIBUTION<br>BS 1377 : Part 2 : 1990 : Clause 9.2 Wet Sieving | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH129 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 106 |
| | | Depth (m) | 4.50 |
| Soil Description | Brown clayey very sandy GRAVEL. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 100 | | |
| 28 | 100 | | |
| 20 | 100 | | |
| 14 | 100 | | |
| 10 | 96 | | |
| 6.3 | 79 | | |
| 5 | 71 | | |
| 3.35 | 59 | | |
| 2 | 48 | | |
| 1.18 | 42 | | |
| 0.6 | 35 | | |
| 0.425 | 28 | | |
| 0.3 | 19 | | |
| 0.212 | 13 | | |
| 0.15 | 10 | | |
| 0.063 | 7 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | N/A |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 52.3 |
| Sand | 41.2 |
| Fines | 6.5 |

| Grading Analysis | |
|---|---|
| D100 | 14.00 |
| D60 | 3.52 |
| D10 | 0.14 |
| Uniformity Coefficient* | 25.18 |

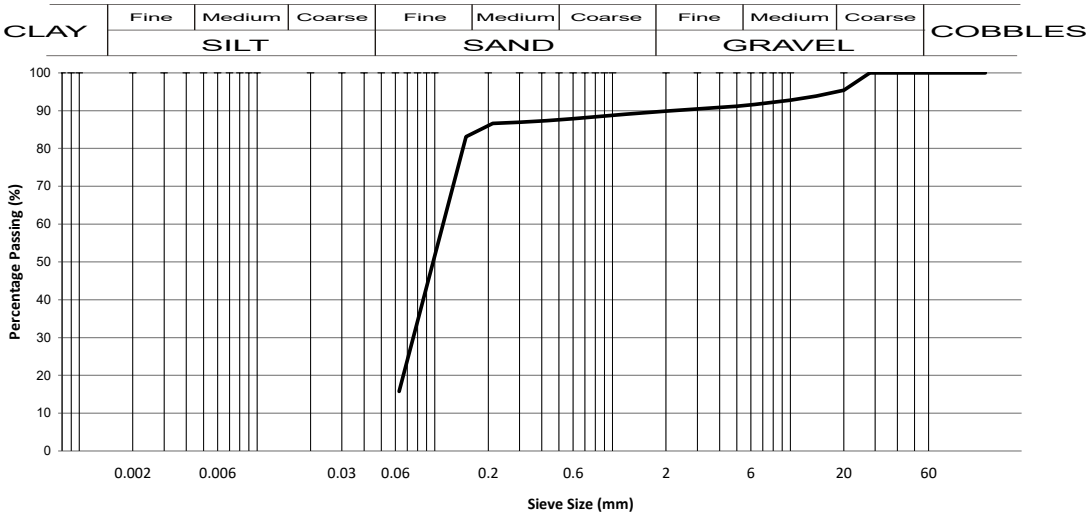
* Uniformity Coefficient Calculation not Accredited

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| Tsmith | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA
Authorised Approvers: Ben Armstrong (Quality Manager)

UKAS TESTING
8927

| | PARTICLE SIZE DISTRIBUTION<br>BS 1377 : Part 2 : 1990 : Clause 9.2 Wet Sieving | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH130 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 108 |
| | | Depth (m) | 8.50 |
| Soil Description | Light brown mottled light grey gravelly silty SAND. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 100 | | |
| 28 | 100 | | |
| 20 | 95 | | |
| 14 | 94 | | |
| 10 | 93 | | |
| 6.3 | 92 | | |
| 5 | 91 | | |
| 3.35 | 91 | | |
| 2 | 90 | | |
| 1.18 | 89 | | |
| 0.6 | 88 | | |
| 0.425 | 87 | | |
| 0.3 | 87 | | |
| 0.212 | 87 | | |
| 0.15 | 83 | | |
| 0.063 | 16 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | N/A |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 10.1 |
| Sand | 74.1 |
| Fines | 15.8 |

| Grading Analysis | |
|---|---|
| D100 | 28.00 |
| D60 | 0.12 |
| D10 | 0.06 |
| Uniformity Coefficient* | 2.16 |

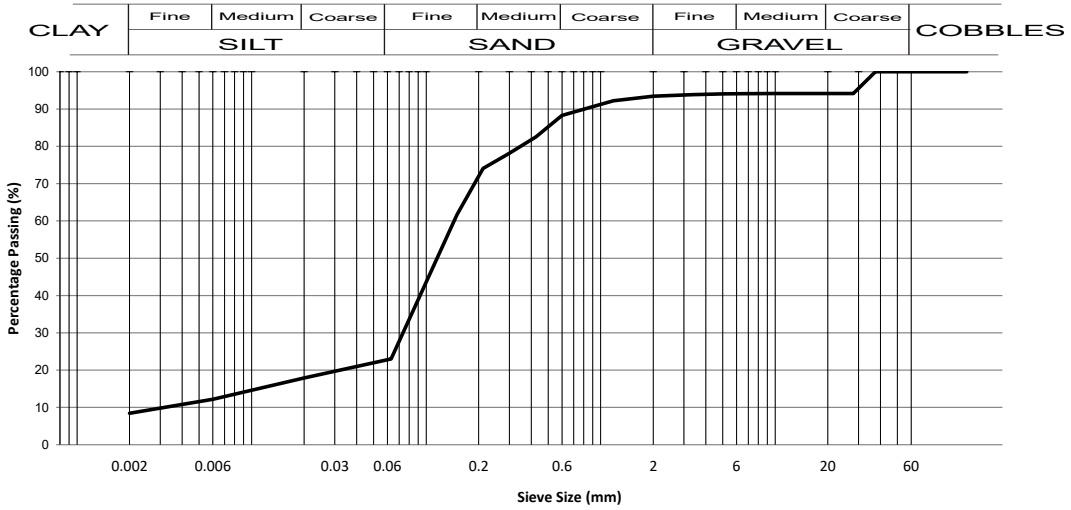
* Uniformity Coefficient Calculation not Accredited

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| barmstrong | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | PARTICLE SIZE DISTRIBUTION<br>**Combined Wet Sieving and Sedimentation by Pipette**<br>**BS 1377 : Part 2 : 1990 : Clause 9.2 and 9.4** | Job Ref | **GT0386** |
|---|---|---|---|
| | | Borehole / Pit No | BH132 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | GT0386-BH132-D7 |
| | | Depth (m) | 5.00 |
| Soil Description | Orange gravelly clayey SAND. | Sample type | D |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | 0.020 | 18 |
| 75 | 100 | 0.006 | 12 |
| 63 | 100 | 0.002 | 8 |
| 50 | 100 | | |
| 38 | 100 | | |
| 28 | 94 | | |
| 20 | 94 | | |
| 14 | 94 | | |
| 10 | 94 | | |
| 6.30 | 94 | | |
| 5.00 | 94 | | |
| 3.35 | 94 | | |
| 2.00 | 93 | | |
| 1.180 | 92 | | |
| 0.600 | 88 | | |
| 0.425 | 82 | | |
| 0.300 | 78 | | |
| 0.212 | 74 | | |
| 0.150 | 62 | | |
| 0.063 | 23 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | Clause 9.4 |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 6.6 |
| Sand | 70.5 |
| Silt | 14.5 |
| Clay | 8.4 |

| Grading Analysis | |
|---|---|
| D100 | 37.5000 |
| D60 | 0.1462 |
| D10 | 0.0037 |
| Uniformity Coefficient * | 39.7390 |

* Uniformity Coefficient Calculation not Accredited

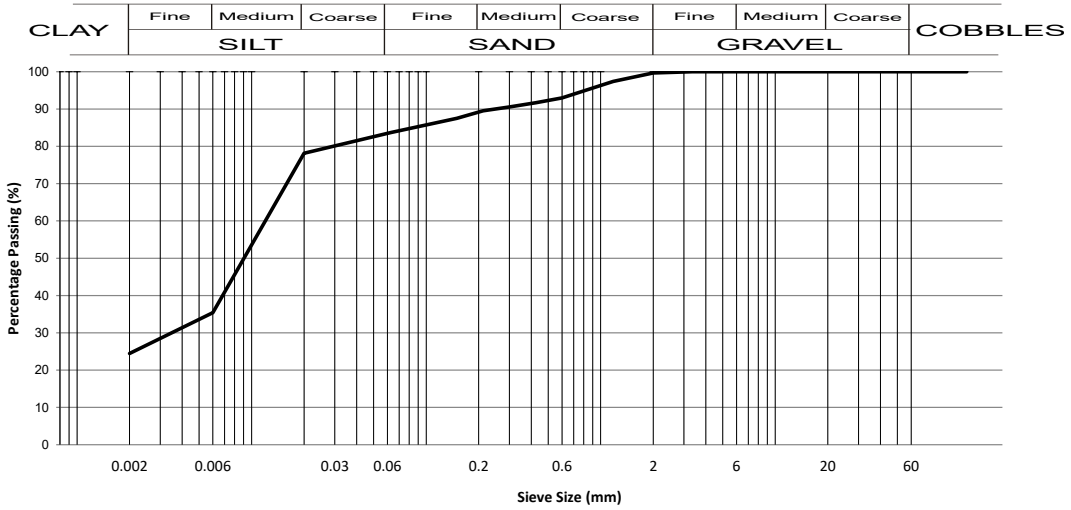
| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

8927

| | PARTICLE SIZE DISTRIBUTION<br>**Combined Wet Sieving and Sedimentation by Pipette**<br>**BS 1377 : Part 2 : 1990 : Clause 9.2 and 9.4** | Job Ref | **GT0386** |
|---|---|---|---|
| | | Borehole / Pit No | BH132 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #1837817701430028 |
| | | Depth (m) | 7.80 |
| Soil Description | Firm to stiff brownish grey slightly gravelly slightly sandy CLAY. | Sample type | D |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | 0.020 | 78 |
| 75 | 100 | 0.006 | 35 |
| 63 | 100 | 0.002 | 24 |
| 50 | 100 | | |
| 38 | 100 | | |
| 28 | 100 | | |
| 20 | 100 | | |
| 14 | 100 | | |
| 10 | 100 | | |
| 6.30 | 100 | | |
| 5.00 | 100 | | |
| 3.35 | 100 | | |
| 2.00 | 100 | | |
| 1.180 | 97 | | |
| 0.600 | 93 | | |
| 0.425 | 92 | | |
| 0.300 | 91 | | |
| 0.212 | 90 | | |
| 0.150 | 88 | | |
| 0.063 | 84 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | Clause 9.4 |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 0.3 |
| Sand | 16.0 |
| Silt | 59.2 |
| Clay | 24.5 |

| Grading Analysis | |
|---|---|
| D100 | 3.3500 |
| D60 | 0.0141 |
| D10 | |
| Uniformity Coefficient * | |

* Uniformity Coefficient Calculation not Accredited

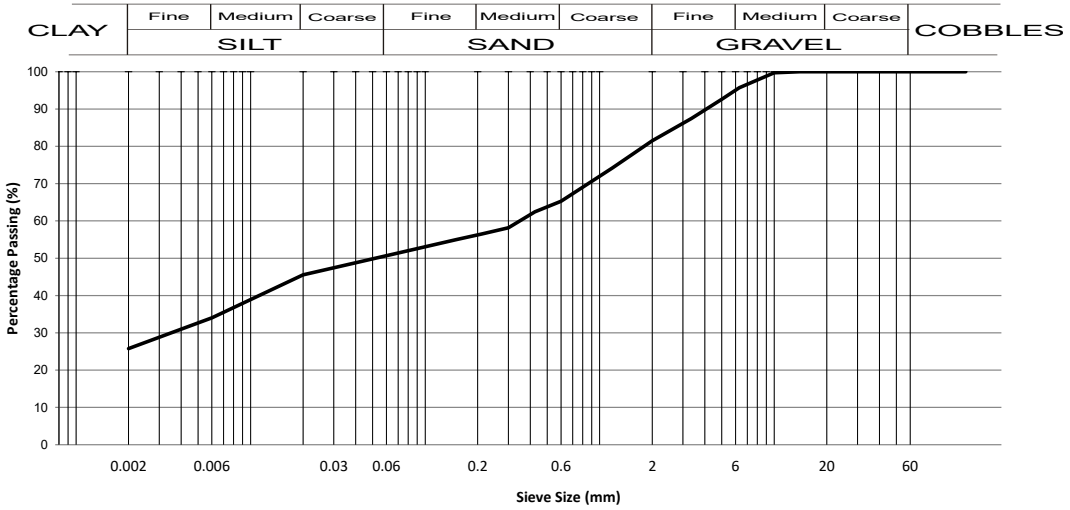
| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

8927

| | PARTICLE SIZE DISTRIBUTION<br>**Combined Wet Sieving and Sedimentation by Pipette**<br>**BS 1377 : Part 2 : 1990 : Clause 9.2 and 9.4** | Job Ref | **GT0386** |
|---|---|---|---|
| | | Borehole / Pit No | BH133 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #9381104693450005 |
| | | Depth (m) | 1.00 |
| Soil Description | Soft orangish brown mottled grey slightly gravelly slightly sandy CLAY. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | 0.020 | 46 |
| 75 | 100 | 0.006 | 34 |
| 63 | 100 | 0.002 | 26 |
| 50 | 100 | | |
| 38 | 100 | | |
| 28 | 100 | | |
| 20 | 100 | | |
| 14 | 100 | | |
| 10 | 100 | | |
| 6.30 | 96 | | |
| 5.00 | 93 | | |
| 3.35 | 87 | | |
| 2.00 | 81 | | |
| 1.180 | 74 | | |
| 0.600 | 65 | | |
| 0.425 | 62 | | |
| 0.300 | 58 | | |
| 0.212 | 57 | | |
| 0.150 | 55 | | |
| 0.063 | 51 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | Clause 9.4 |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 18.5 |
| Sand | 30.6 |
| Silt | 25.1 |
| Clay | 25.8 |

| Grading Analysis | |
|---|---|
| D100 | 14.0000 |
| D60 | 0.3531 |
| D10 | |
| Uniformity Coefficient * | |

* Uniformity Coefficient Calculation not Accredited

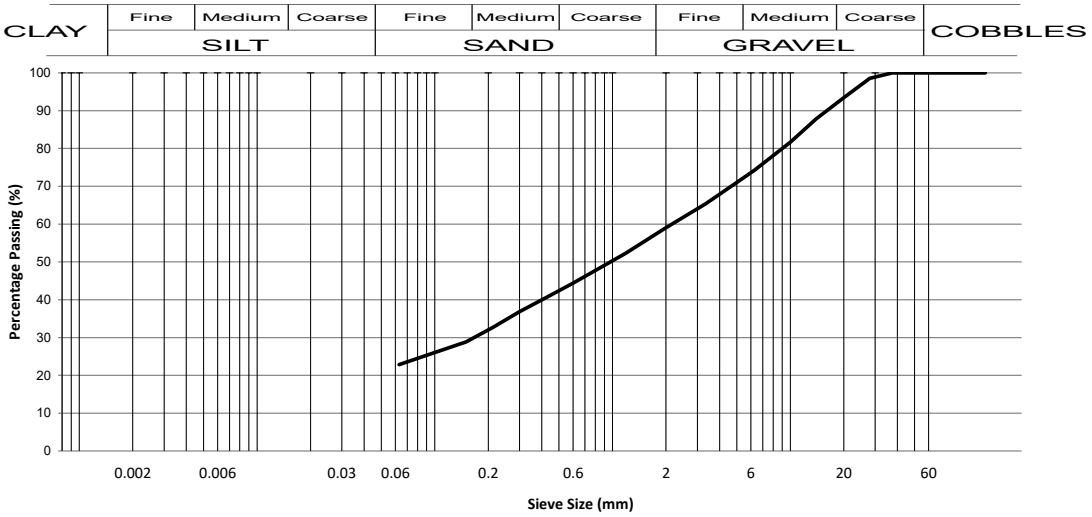
| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

8927

| | PARTICLE SIZE DISTRIBUTION<br>BS 1377 : Part 2 : 1990 : Clause 9.2 Wet Sieving | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH134 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 105 |
| | | Depth (m) | 3.90 |
| Soil Description | Soft brownish orange sandy gravelly CLAY. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 100 | | |
| 28 | 99 | | |
| 20 | 93 | | |
| 14 | 88 | | |
| 10 | 82 | | |
| 6.3 | 74 | | |
| 5 | 71 | | |
| 3.35 | 65 | | |
| 2 | 59 | | |
| 1.18 | 52 | | |
| 0.6 | 44 | | |
| 0.425 | 41 | | |
| 0.3 | 37 | | |
| 0.212 | 33 | | |
| 0.15 | 29 | | |
| 0.063 | 23 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | N/A |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 41.0 |
| Sand | 36.2 |
| Fines | 22.8 |

| Grading Analysis | |
|---|---|
| D100 | 37.50 |
| D60 | 2.20 |
| D10 | N/A |
| Uniformity Coefficient* | N/A |

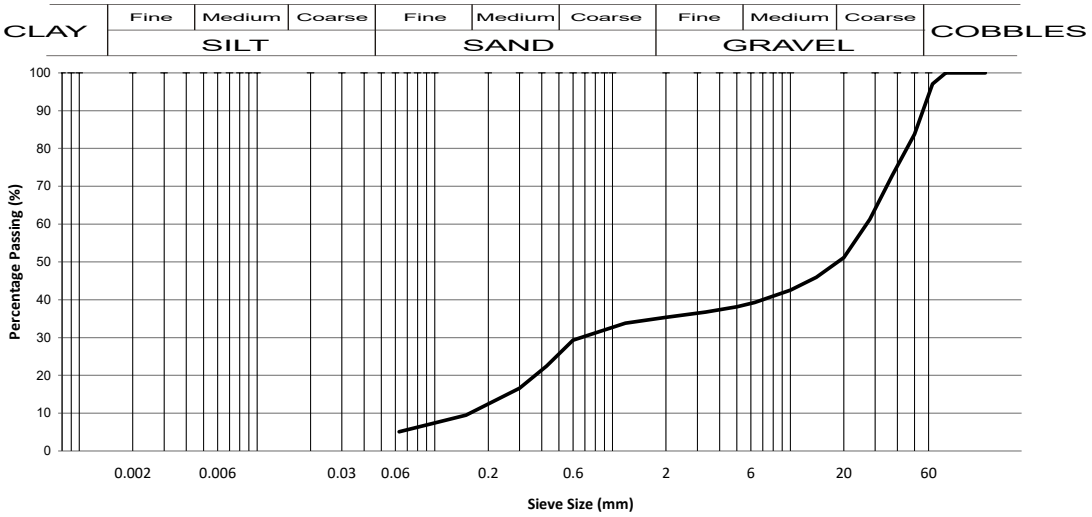
* Uniformity Coefficient Calculation not Accredited

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| Tsmith | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | PARTICLE SIZE DISTRIBUTION<br>BS 1377 : Part 2 : 1990 : Clause 9.2 Wet Sieving | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP107 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 5 |
| | | Depth (m) | 0.60 |
| Soil Description | Brown slightly cobbly clayey very sandy GRAVEL. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 75 | 100 | | |
| 63 | 97 | | |
| 50 | 84 | | |
| 37.5 | 73 | | |
| 28 | 61 | | |
| 20 | 51 | | |
| 14 | 46 | | |
| 10 | 43 | | |
| 6.3 | 39 | | |
| 5 | 38 | | |
| 3.35 | 37 | | |
| 2 | 35 | | |
| 1.18 | 34 | | |
| 0.6 | 29 | | |
| 0.425 | 22 | | |
| 0.3 | 17 | | |
| 0.212 | 13 | | |
| 0.15 | 9 | | |
| 0.063 | 5 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | N/A |

| Sample Proportions | |
|---|---|
| Cobbles | 2.9 |
| Gravel | 61.7 |
| Sand | 30.3 |
| Fines | 5.1 |

| Grading Analysis | |
|---|---|
| D100 | 75.00 |
| D60 | 26.98 |
| D10 | 0.16 |
| Uniformity Coefficient* | 169.85 |

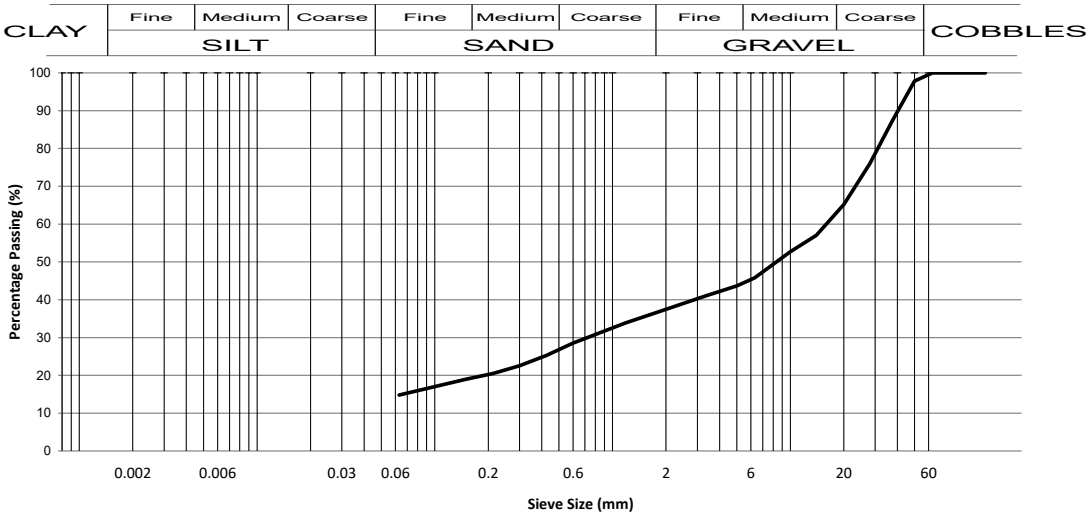
* Uniformity Coefficient Calculation not Accredited

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| Tsmith | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | PARTICLE SIZE DISTRIBUTION<br>BS 1377 : Part 2 : 1990 : Clause 9.2 Wet Sieving | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP108 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 5 |
| | | Depth (m) | 0.50 |
| Soil Description | Light brown clayey very sandy GRAVEL. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 98 | | |
| 37.5 | 87 | | |
| 28 | 76 | | |
| 20 | 65 | | |
| 14 | 57 | | |
| 10 | 53 | | |
| 6.3 | 46 | | |
| 5 | 44 | | |
| 3.35 | 41 | | |
| 2 | 37 | | |
| 1.18 | 34 | | |
| 0.6 | 29 | | |
| 0.425 | 25 | | |
| 0.3 | 23 | | |
| 0.212 | 20 | | |
| 0.15 | 19 | | |
| 0.063 | 15 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | N/A |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 62.6 |
| Sand | 22.6 |
| Fines | 14.8 |

| Grading Analysis | |
|---|---|
| D100 | 63.00 |
| D60 | 16.16 |
| D10 | N/A |
| Uniformity Coefficient* | N/A |

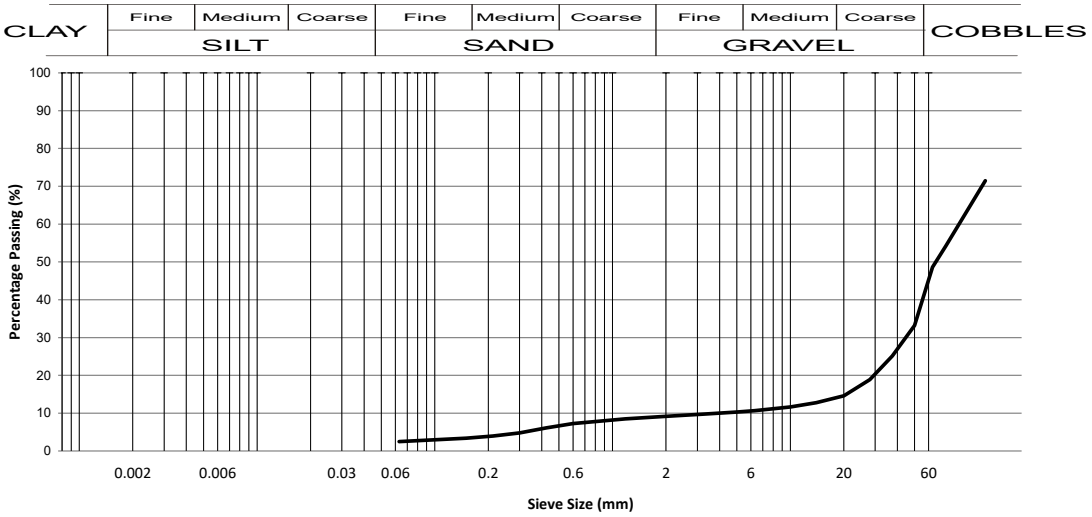
* Uniformity Coefficient Calculation not Accredited

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| Tsmith | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | PARTICLE SIZE DISTRIBUTION<br>BS 1377 : Part 2 : 1990 : Clause 9.2 Wet Sieving | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP109 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 6 |
| | | Depth (m) | 1.00 |
| Soil Description | Light brown slightly clayey sandy very gravelly COBBLES. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 71 | | |
| 75 | 54 | | |
| 63 | 49 | | |
| 50 | 33 | | |
| 37.5 | 25 | | |
| 28 | 19 | | |
| 20 | 15 | | |
| 14 | 13 | | |
| 10 | 12 | | |
| 6.3 | 11 | | |
| 5 | 10 | | |
| 3.35 | 10 | | |
| 2 | 9 | | |
| 1.18 | 8 | | |
| 0.6 | 7 | | |
| 0.425 | 6 | | |
| 0.3 | 5 | | |
| 0.212 | 4 | | |
| 0.15 | 3 | | |
| 0.063 | 2 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | N/A |

| Sample Proportions | |
|---|---|
| Cobbles | 51.4 |
| Gravel | 39.5 |
| Sand | 6.7 |
| Fines | 2.4 |

| Grading Analysis | |
|---|---|
| D100 | 207.60 |
| D60 | 91.78 |
| D10 | 4.08 |
| Uniformity Coefficient* | 22.47 |

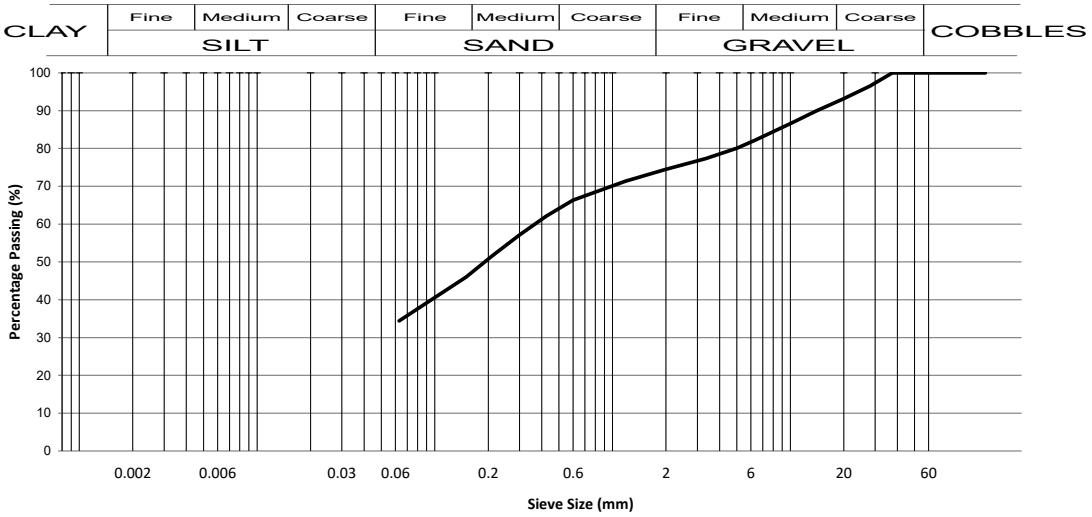
* Uniformity Coefficient Calculation not Accredited

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| Tsmith | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | PARTICLE SIZE DISTRIBUTION<br>BS 1377 : Part 2 : 1990 : Clause 9.2 Wet Sieving | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP110 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 2 |
| | | Depth (m) | 0.20 |
| Soil Description | Firm dark brown slightly gravelly sandy CLAY. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 100 | | |
| 28 | 97 | | |
| 20 | 93 | | |
| 14 | 90 | | |
| 10 | 87 | | |
| 6.3 | 82 | | |
| 5 | 80 | | |
| 3.35 | 77 | | |
| 2 | 75 | | |
| 1.18 | 71 | | |
| 0.6 | 66 | | |
| 0.425 | 62 | | |
| 0.3 | 57 | | |
| 0.212 | 52 | | |
| 0.15 | 46 | | |
| 0.063 | 34 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | N/A |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 25.5 |
| Sand | 40.1 |
| Fines | 34.4 |

| Grading Analysis | |
|---|---|
| D100 | 37.50 |
| D60 | 0.37 |
| D10 | N/A |
| Uniformity Coefficient* | N/A |

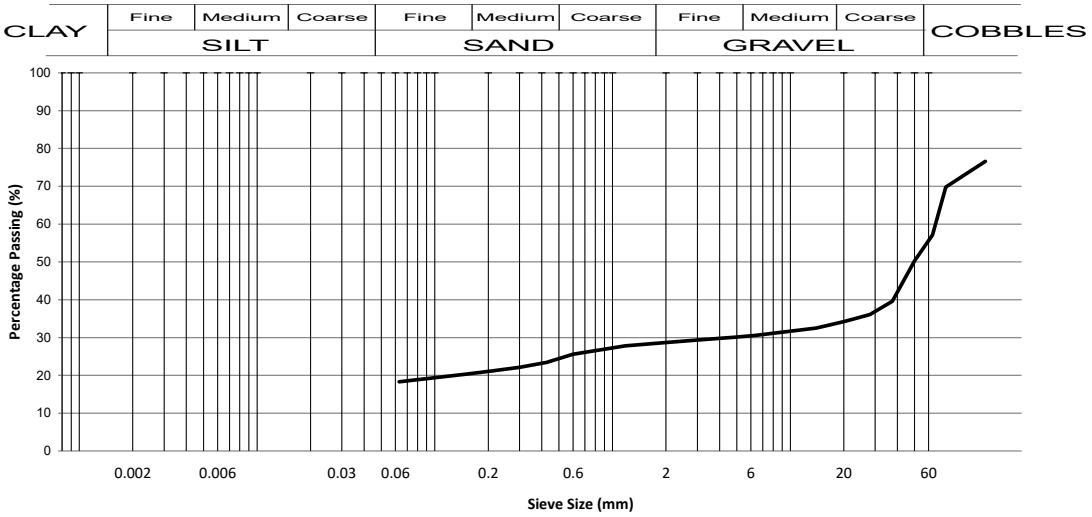
* Uniformity Coefficient Calculation not Accredited

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| Tsmith | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | PARTICLE SIZE DISTRIBUTION<br>BS 1377 : Part 2 : 1990 : Clause 9.2 Wet Sieving | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP110 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 7 |
| | | Depth (m) | 2.50 |
| Soil Description | Light brown sandy clayey very gravelly COBBLES with frequent lumps of light grey clay. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 77 | | |
| 75 | 70 | | |
| 63 | 57 | | |
| 50 | 50 | | |
| 37.5 | 40 | | |
| 28 | 36 | | |
| 20 | 34 | | |
| 14 | 33 | | |
| 10 | 32 | | |
| 6.3 | 31 | | |
| 5 | 30 | | |
| 3.35 | 29 | | |
| 2 | 29 | | |
| 1.18 | 28 | | |
| 0.6 | 26 | | |
| 0.425 | 23 | | |
| 0.3 | 22 | | |
| 0.212 | 21 | | |
| 0.15 | 20 | | |
| 0.063 | 18 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | N/A |

| Sample Proportions | |
|---|---|
| Cobbles | 42.9 |
| Gravel | 28.4 |
| Sand | 10.4 |
| Fines | 18.3 |

| Grading Analysis | |
|---|---|
| D100 | 297.13 |
| D60 | 65.73 |
| D10 | N/A |
| Uniformity Coefficient* | N/A |

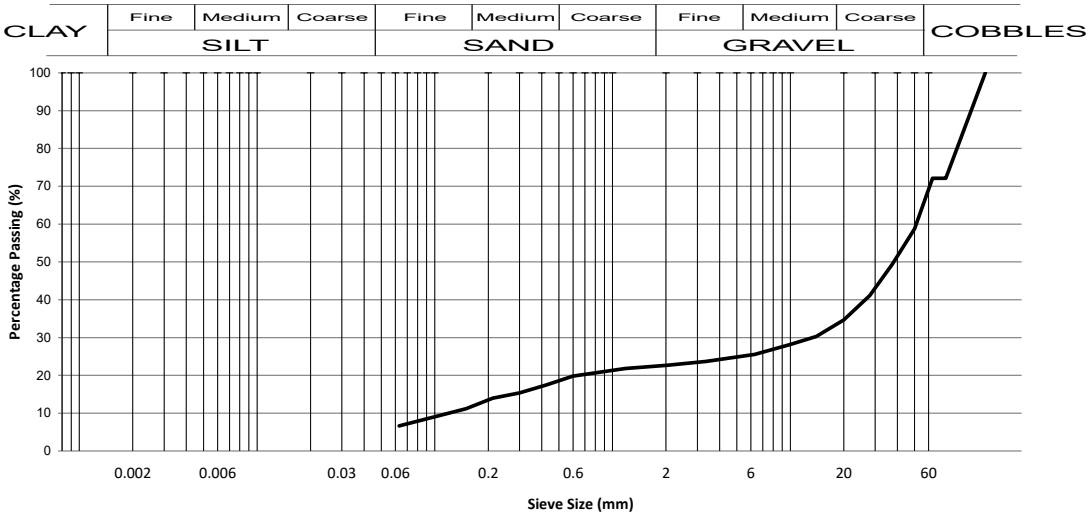
* Uniformity Coefficient Calculation not Accredited

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| Tsmith | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | PARTICLE SIZE DISTRIBUTION<br>BS 1377 : Part 2 : 1990 : Clause 9.2 Wet Sieving | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP111 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 5 |
| | | Depth (m) | 0.80 |
| Soil Description | Light brown clayey sandy very cobbly GRAVEL. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 75 | 72 | | |
| 63 | 72 | | |
| 50 | 59 | | |
| 37.5 | 49 | | |
| 28 | 41 | | |
| 20 | 35 | | |
| 14 | 30 | | |
| 10 | 28 | | |
| 6.3 | 26 | | |
| 5 | 25 | | |
| 3.35 | 24 | | |
| 2 | 23 | | |
| 1.18 | 22 | | |
| 0.6 | 20 | | |
| 0.425 | 17 | | |
| 0.3 | 15 | | |
| 0.212 | 14 | | |
| 0.15 | 11 | | |
| 0.063 | 7 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | N/A |

| Sample Proportions | |
|---|---|
| Cobbles | 27.9 |
| Gravel | 49.5 |
| Sand | 16.0 |
| Fines | 6.6 |

| Grading Analysis | |
|---|---|
| D100 | 125.00 |
| D60 | 51.20 |
| D10 | 0.13 |
| Uniformity Coefficient* | 400.79 |

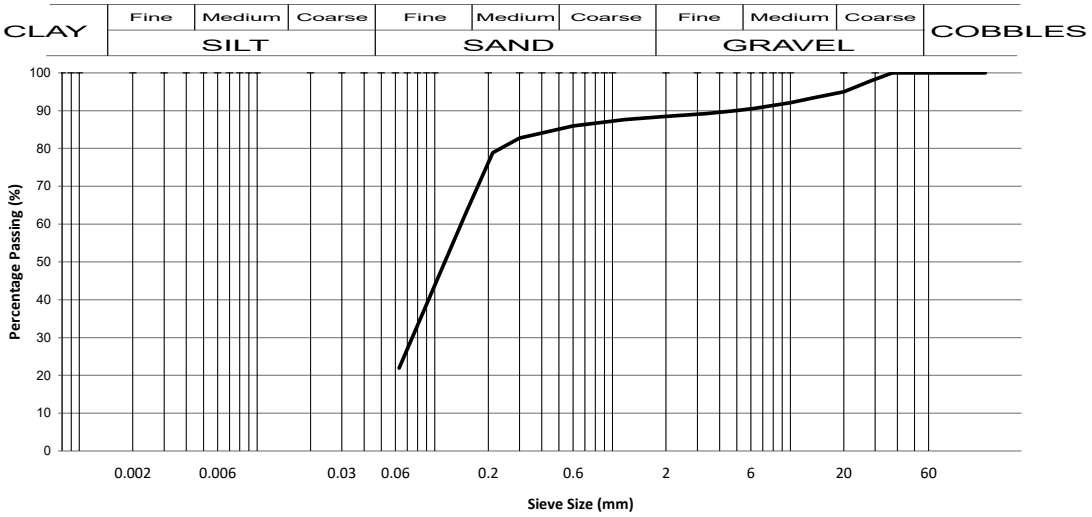
* Uniformity Coefficient Calculation not Accredited

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| Tsmith | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | PARTICLE SIZE DISTRIBUTION<br>BS 1377 : Part 2 : 1990 : Clause 9.2 Wet Sieving | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP113 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 9 |
| | | Depth (m) | 2.10 |
| Soil Description | Orangish brown gravelly very clayey SAND. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 100 | | |
| 28 | 98 | | |
| 20 | 95 | | |
| 14 | 94 | | |
| 10 | 92 | | |
| 6.3 | 91 | | |
| 5 | 90 | | |
| 3.35 | 89 | | |
| 2 | 88 | | |
| 1.18 | 88 | | |
| 0.6 | 86 | | |
| 0.425 | 84 | | |
| 0.3 | 83 | | |
| 0.212 | 79 | | |
| 0.15 | 63 | | |
| 0.063 | 22 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | N/A |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 11.5 |
| Sand | 66.5 |
| Fines | 22.0 |

| Grading Analysis | |
|---|---|
| D100 | 37.50 |
| D60 | 0.14 |
| D10 | 0.04 |
| Uniformity Coefficient* | 3.81 |

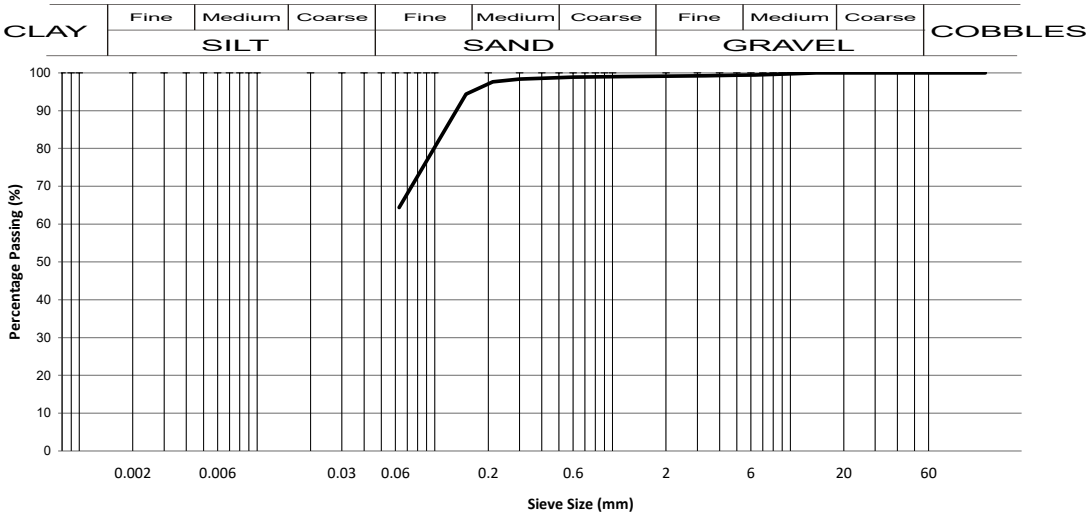
* Uniformity Coefficient Calculation not Accredited

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| Tsmith | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | PARTICLE SIZE DISTRIBUTION<br>BS 1377 : Part 2 : 1990 : Clause 9.2 Wet Sieving | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP113 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 11 |
| | | Depth (m) | 3.00 |
| Soil Description | Light grey motted orangish brown slightly gravelly slightly sandy SILT. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 75 | 100 | | |
| 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 | 98 | | |
| 0.212 | 98 | | |
| 0.15 | 94 | | |
| 0.063 | 64 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | N/A |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 0.9 |
| Sand | 34.8 |
| Fines | 64.3 |

| Grading Analysis | |
|---|---|
| D100 | 14.00 |
| D60 | 0.05 |
| D10 | N/A |
| Uniformity Coefficient* | N/A |

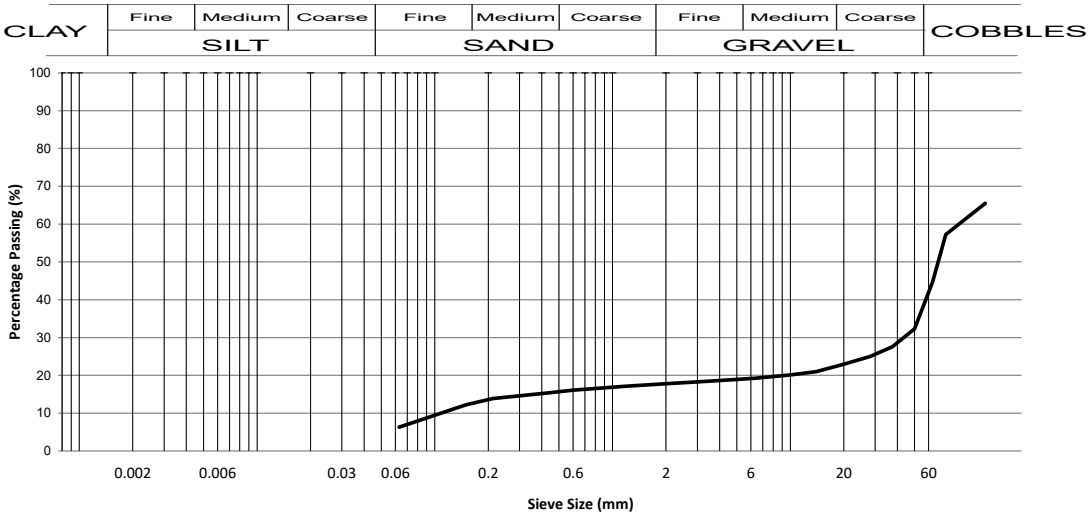
* Uniformity Coefficient Calculation not Accredited

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| Tsmith | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | PARTICLE SIZE DISTRIBUTION<br>BS 1377 : Part 2 : 1990 : Clause 9.2 Wet Sieving | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP114 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 5 |
| | | Depth (m) | 0.50 |
| Soil Description | Light brown clayey sandy very gravelly COBBLES. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 66 | | |
| 75 | 57 | | |
| 63 | 45 | | |
| 50 | 32 | | |
| 37.5 | 28 | | |
| 28 | 25 | | |
| 20 | 23 | | |
| 14 | 21 | | |
| 10 | 20 | | |
| 6.3 | 19 | | |
| 5 | 19 | | |
| 3.35 | 18 | | |
| 2 | 18 | | |
| 1.18 | 17 | | |
| 0.6 | 16 | | |
| 0.425 | 15 | | |
| 0.3 | 15 | | |
| 0.212 | 14 | | |
| 0.15 | 12 | | |
| 0.063 | 6 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | N/A |

| Sample Proportions | |
|---|---|
| Cobbles | 55.3 |
| Gravel | 26.9 |
| Sand | 11.5 |
| Fines | 6.3 |

| Grading Analysis | |
|---|---|
| D100 | 333.94 |
| D60 | 91.68 |
| D10 | 0.12 |
| Uniformity Coefficient* | 781.55 |

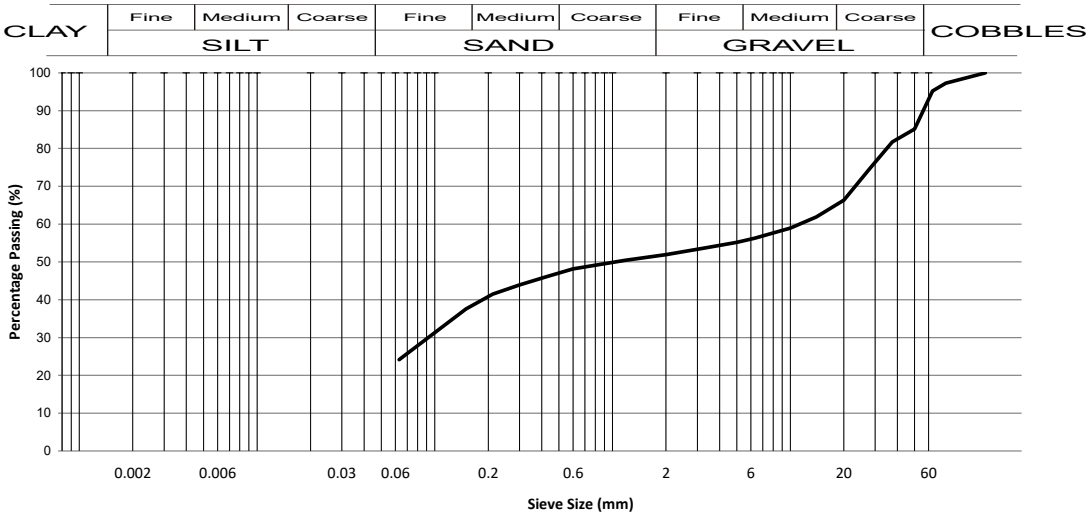
* Uniformity Coefficient Calculation not Accredited

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| Tsmith | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | PARTICLE SIZE DISTRIBUTION<br>BS 1377 : Part 2 : 1990 : Clause 9.2 Wet Sieving | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP114 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 7 |
| | | Depth (m) | 1.05 |
| Soil Description | Brown slightly cobbly very clayey very sandy GRAVEL. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 75 | 97 | | |
| 63 | 95 | | |
| 50 | 85 | | |
| 37.5 | 82 | | |
| 28 | 75 | | |
| 20 | 66 | | |
| 14 | 62 | | |
| 10 | 59 | | |
| 6.3 | 56 | | |
| 5 | 55 | | |
| 3.35 | 54 | | |
| 2 | 52 | | |
| 1.18 | 50 | | |
| 0.6 | 48 | | |
| 0.425 | 46 | | |
| 0.3 | 44 | | |
| 0.212 | 41 | | |
| 0.15 | 38 | | |
| 0.063 | 24 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | N/A |

| Sample Proportions | |
|---|---|
| Cobbles | 4.8 |
| Gravel | 43.3 |
| Sand | 27.8 |
| Fines | 24.1 |

| Grading Analysis | |
|---|---|
| D100 | 125.00 |
| D60 | 11.42 |
| D10 | N/A |
| Uniformity Coefficient* | N/A |

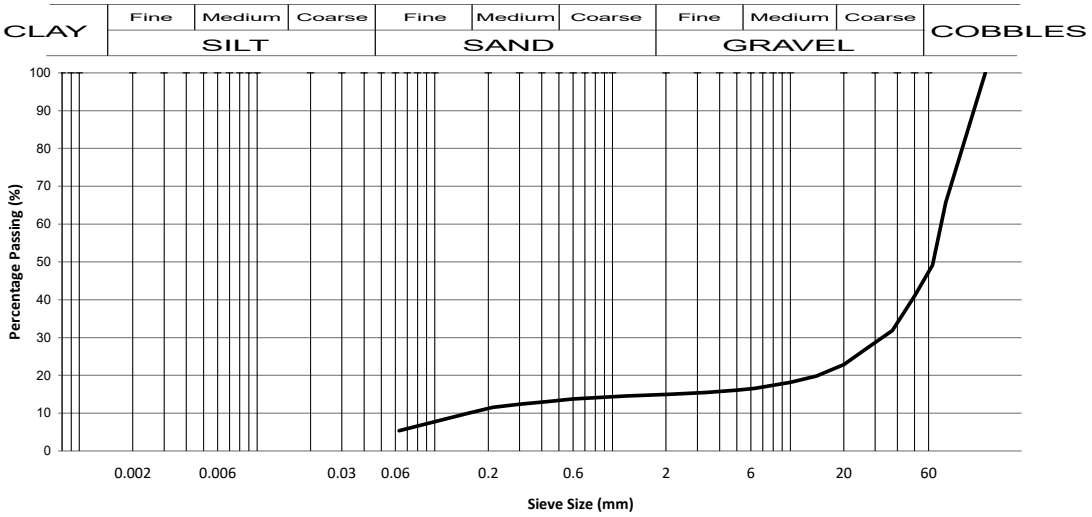
* Uniformity Coefficient Calculation not Accredited

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| Tsmith | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | PARTICLE SIZE DISTRIBUTION<br>BS 1377 : Part 2 : 1990 : Clause 9.2 Wet Sieving | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP115 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 5 |
| | | Depth (m) | 0.20 |
| Soil Description | Light brown clayey sandy very gravelly COBBLES. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 75 | 66 | | |
| 63 | 49 | | |
| 50 | 41 | | |
| 37.5 | 32 | | |
| 28 | 28 | | |
| 20 | 23 | | |
| 14 | 20 | | |
| 10 | 18 | | |
| 6.3 | 17 | | |
| 5 | 16 | | |
| 3.35 | 15 | | |
| 2 | 15 | | |
| 1.18 | 15 | | |
| 0.6 | 14 | | |
| 0.425 | 13 | | |
| 0.3 | 12 | | |
| 0.212 | 12 | | |
| 0.15 | 10 | | |
| 0.063 | 5 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | N/A |

| Sample Proportions | |
|---|---|
| Cobbles | 50.9 |
| Gravel | 34.2 |
| Sand | 9.6 |
| Fines | 5.3 |

| Grading Analysis | |
|---|---|
| D100 | 125.00 |
| D60 | 70.84 |
| D10 | 0.16 |
| Uniformity Coefficient* | 454.23 |

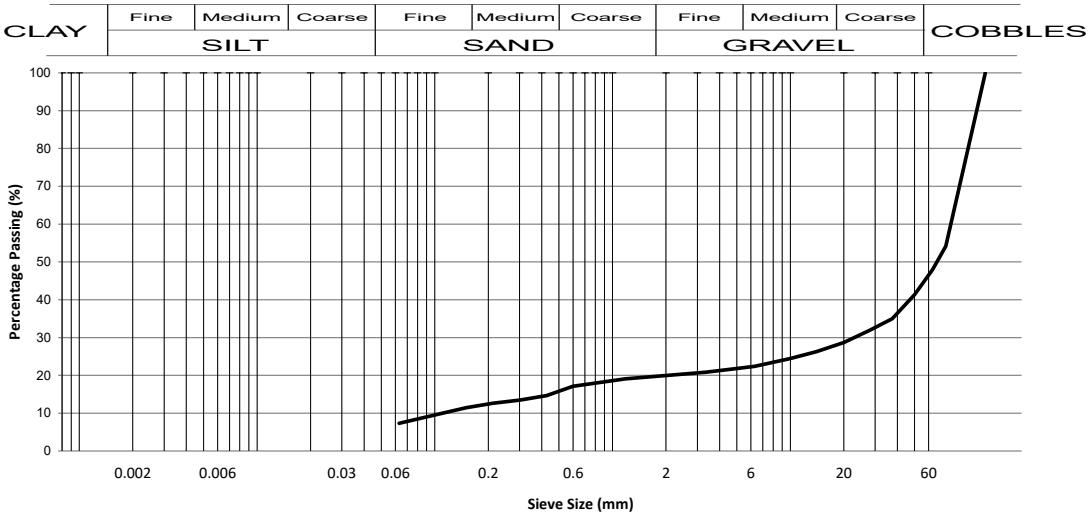
* Uniformity Coefficient Calculation not Accredited

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| Tsmith | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | PARTICLE SIZE DISTRIBUTION<br>BS 1377 : Part 2 : 1990 : Clause 9.2 Wet Sieving | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP116 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 5 |
| | | Depth (m) | 0.40 |
| Soil Description | Light brown clayey sandy very gravelly COBBLES. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 75 | 54 | | |
| 63 | 48 | | |
| 50 | 41 | | |
| 37.5 | 35 | | |
| 28 | 32 | | |
| 20 | 29 | | |
| 14 | 26 | | |
| 10 | 24 | | |
| 6.3 | 22 | | |
| 5 | 22 | | |
| 3.35 | 21 | | |
| 2 | 20 | | |
| 1.18 | 19 | | |
| 0.6 | 17 | | |
| 0.425 | 15 | | |
| 0.3 | 13 | | |
| 0.212 | 13 | | |
| 0.15 | 11 | | |
| 0.063 | 7 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | N/A |

| Sample Proportions | |
|---|---|
| Cobbles | 52.1 |
| Gravel | 28.0 |
| Sand | 12.6 |
| Fines | 7.3 |

| Grading Analysis | |
|---|---|
| D100 | 125.00 |
| D60 | 81.40 |
| D10 | 0.12 |
| Uniformity Coefficient* | 682.73 |

* Uniformity Coefficient Calculation not Accredited

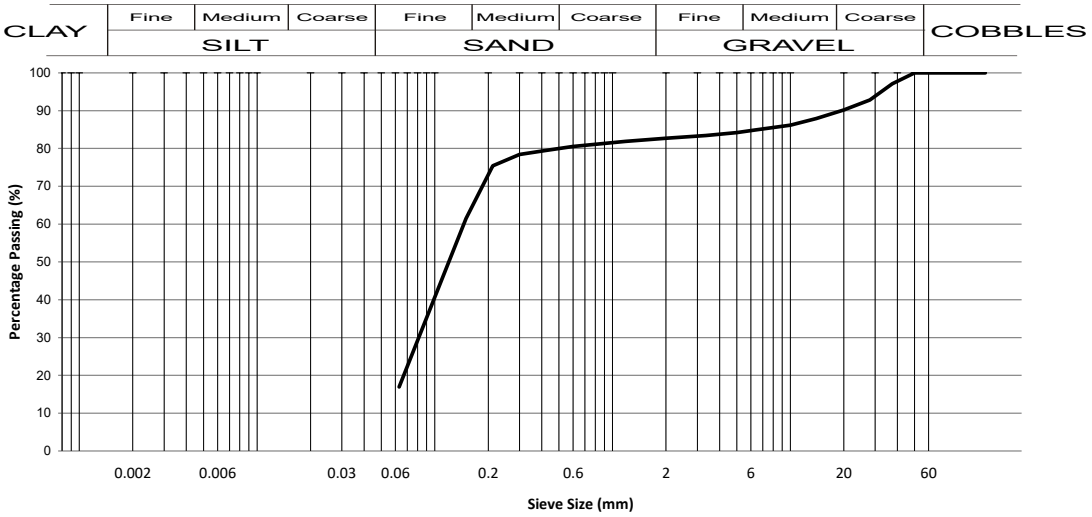
| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| Tsmith | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

ASC GeoTesting
Aggregate • Soil • Concrete

| | PARTICLE SIZE DISTRIBUTION<br>BS 1377 : Part 2 : 1990 : Clause 9.2 Wet Sieving | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP117 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 5 |
| | | Depth (m) | 0.90 |
| Soil Description | Orangish brown mottled brown clayey gravelly SAND. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 97 | | |
| 28 | 93 | | |
| 20 | 90 | | |
| 14 | 88 | | |
| 10 | 86 | | |
| 6.3 | 85 | | |
| 5 | 84 | | |
| 3.35 | 83 | | |
| 2 | 83 | | |
| 1.18 | 82 | | |
| 0.6 | 81 | | |
| 0.425 | 80 | | |
| 0.3 | 78 | | |
| 0.212 | 75 | | |
| 0.15 | 62 | | |
| 0.063 | 17 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | N/A |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 17.3 |
| Sand | 65.8 |
| Fines | 16.9 |

| Grading Analysis | |
|---|---|
| D100 | 50.00 |
| D60 | 0.15 |
| D10 | 0.05 |
| Uniformity Coefficient* | 2.97 |

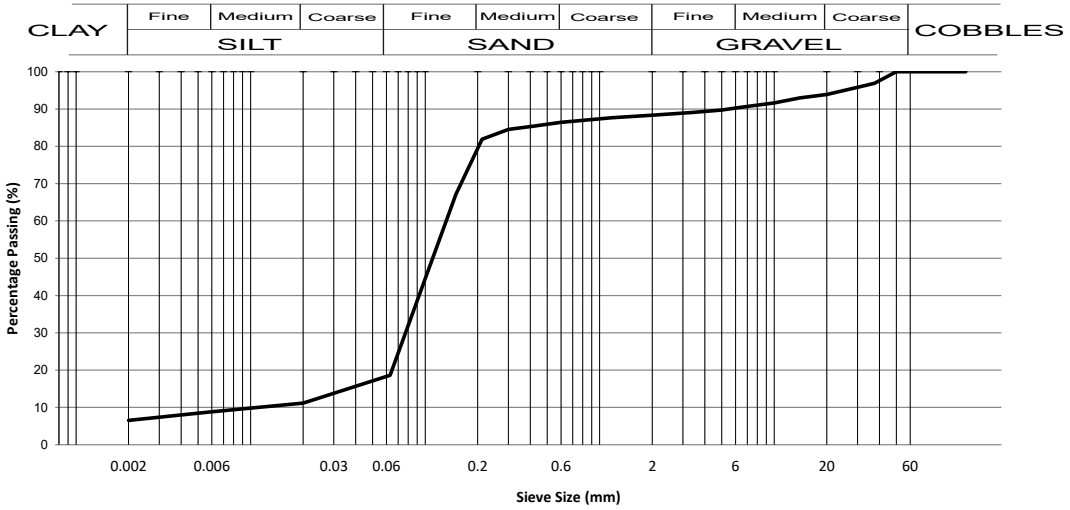
* Uniformity Coefficient Calculation not Accredited

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| Tsmith | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA
Authorised Approvers: Ben Armstrong (Quality Manager)

UKAS TESTING

| | PARTICLE SIZE DISTRIBUTION<br>**Combined Wet Sieving and Sedimentation by Pipette**<br>**BS 1377 : Part 2 : 1990 : Clause 9.2 and 9.4** | Job Ref | **GT0386** |
|---|---|---|---|
| | | Borehole / Pit No | TP117 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #5587778317540007 |
| | | Depth (m) | 2.00 |
| Soil Description | Orangish brown gravelly clayey SAND. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | 0.020 | 11 |
| 75 | 100 | 0.006 | 9 |
| 63 | 100 | 0.002 | 7 |
| 50 | 100 | | |
| 38 | 97 | | |
| 28 | 96 | | |
| 20 | 94 | | |
| 14 | 93 | | |
| 10 | 92 | | |
| 6.30 | 90 | | |
| 5.00 | 90 | | |
| 3.35 | 89 | | |
| 2.00 | 88 | | |
| 1.180 | 88 | | |
| 0.600 | 86 | | |
| 0.425 | 85 | | |
| 0.300 | 85 | | |
| 0.212 | 82 | | |
| 0.150 | 67 | | |
| 0.063 | 19 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | Clause 9.4 |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 11.7 |
| Sand | 69.7 |
| Silt | 12.1 |
| Clay | 6.5 |

| Grading Analysis | |
|---|---|
| D100 | 50.0000 |
| D60 | 0.1371 |
| D10 | 0.0130 |
| Uniformity Coefficient * | 10.5313 |

* Uniformity Coefficient Calculation not Accredited

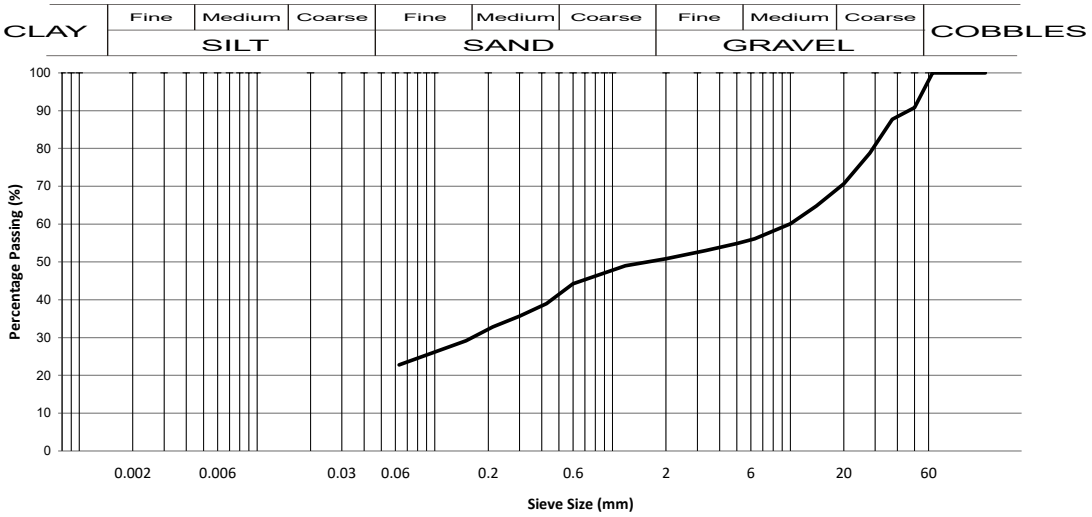
| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| Tsmith | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

8927

| | PARTICLE SIZE DISTRIBUTION<br>BS 1377 : Part 2 : 1990 : Clause 9.2 Wet Sieving | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP118 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 5 |
| | | Depth (m) | 1.50 |
| Soil Description | Brown mottled light brown very clayey very sandy GRAVEL.. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 91 | | |
| 37.5 | 88 | | |
| 28 | 79 | | |
| 20 | 71 | | |
| 14 | 65 | | |
| 10 | 60 | | |
| 6.3 | 56 | | |
| 5 | 55 | | |
| 3.35 | 53 | | |
| 2 | 51 | | |
| 1.18 | 49 | | |
| 0.6 | 44 | | |
| 0.425 | 39 | | |
| 0.3 | 36 | | |
| 0.212 | 33 | | |
| 0.15 | 29 | | |
| 0.063 | 23 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | N/A |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 49.2 |
| Sand | 28.1 |
| Fines | 22.7 |

| Grading Analysis | |
|---|---|
| D100 | 63.00 |
| D60 | 9.92 |
| D10 | N/A |
| Uniformity Coefficient* | N/A |

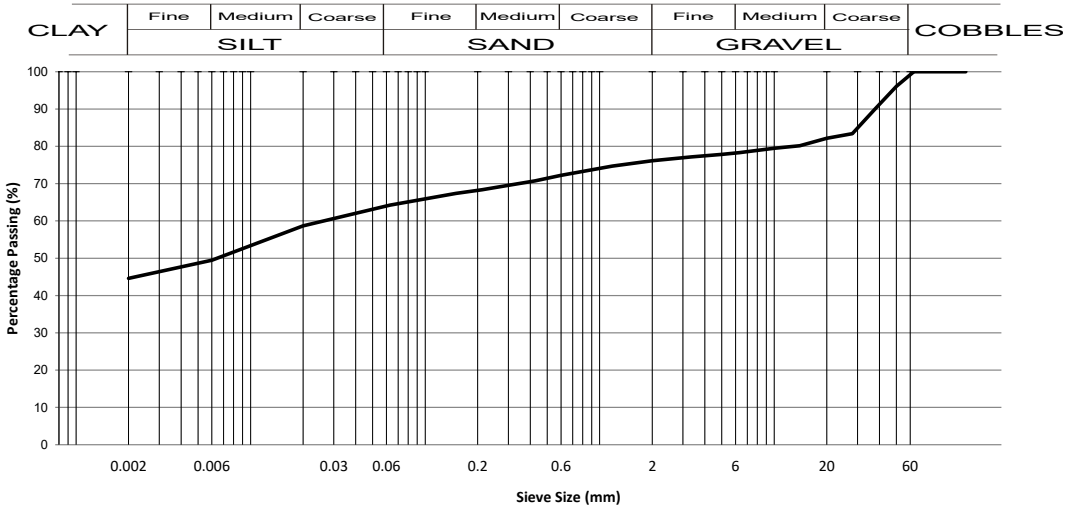
* Uniformity Coefficient Calculation not Accredited

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| Tsmith | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | PARTICLE SIZE DISTRIBUTION<br>**Combined Wet Sieving and Sedimentation by Pipette**<br>**BS 1377 : Part 2 : 1990 : Clause 9.2 and 9.4** | Job Ref | **GT0386** |
|---|---|---|---|
| | | Borehole / Pit No | TP119 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #5762333579240005 |
| | | Depth (m) | 0.40 |
| Soil Description | Stiff greyish brown slightly sandy slightly gravelly CLAY. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | 0.020 | 59 |
| 75 | 100 | 0.006 | 49 |
| 63 | 100 | 0.002 | 45 |
| 50 | 96 | | |
| 38 | 90 | | |
| 28 | 83 | | |
| 20 | 82 | | |
| 14 | 80 | | |
| 10 | 79 | | |
| 6.30 | 78 | | |
| 5.00 | 78 | | |
| 3.35 | 77 | | |
| 2.00 | 76 | | |
| 1.180 | 75 | | |
| 0.600 | 72 | | |
| 0.425 | 71 | | |
| 0.300 | 70 | | |
| 0.212 | 68 | | |
| 0.150 | 67 | | |
| 0.063 | 64 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | Clause 9.4 |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 23.9 |
| Sand | 11.9 |
| Silt | 19.7 |
| Clay | 44.6 |

| Grading Analysis | |
|---|---|
| D100 | 63.0000 |
| D60 | 0.0303 |
| D10 | |
| Uniformity Coefficient * | |

* Uniformity Coefficient Calculation not Accredited

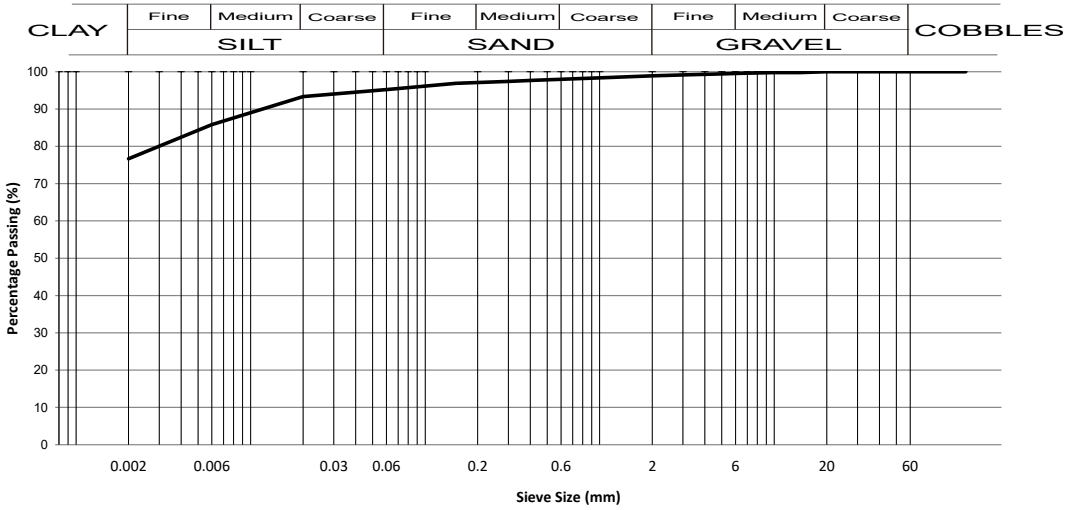
| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

8927

| | PARTICLE SIZE DISTRIBUTION<br>**Combined Wet Sieving and Sedimentation by Pipette**<br>**BS 1377 : Part 2 : 1990 : Clause 9.2 and 9.4** | Job Ref | **GT0386** |
|---|---|---|---|
| | | Borehole / Pit No | TP119 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #5762333579240007 |
| | | Depth (m) | 1.00 |
| Soil Description | Very stiff brownish grey mottled orangish brown and black slightly gravelly slightly sandy CLAY. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | 0.020 | 93 |
| 75 | 100 | 0.006 | 86 |
| 63 | 100 | 0.002 | 77 |
| 50 | 100 | | |
| 38 | 100 | | |
| 28 | 100 | | |
| 20 | 100 | | |
| 14 | 100 | | |
| 10 | 100 | | |
| 6.30 | 100 | | |
| 5.00 | 99 | | |
| 3.35 | 99 | | |
| 2.00 | 99 | | |
| 1.180 | 98 | | |
| 0.600 | 98 | | |
| 0.425 | 98 | | |
| 0.300 | 97 | | |
| 0.212 | 97 | | |
| 0.150 | 97 | | |
| 0.063 | 95 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | Clause 9.4 |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 1.1 |
| Sand | 3.6 |
| Silt | 18.6 |
| Clay | 76.7 |

| Grading Analysis | |
|---|---|
| D100 | 20.0000 |
| D60 | FALSE |
| D10 | |
| Uniformity Coefficient * | |

* Uniformity Coefficient Calculation not Accredited

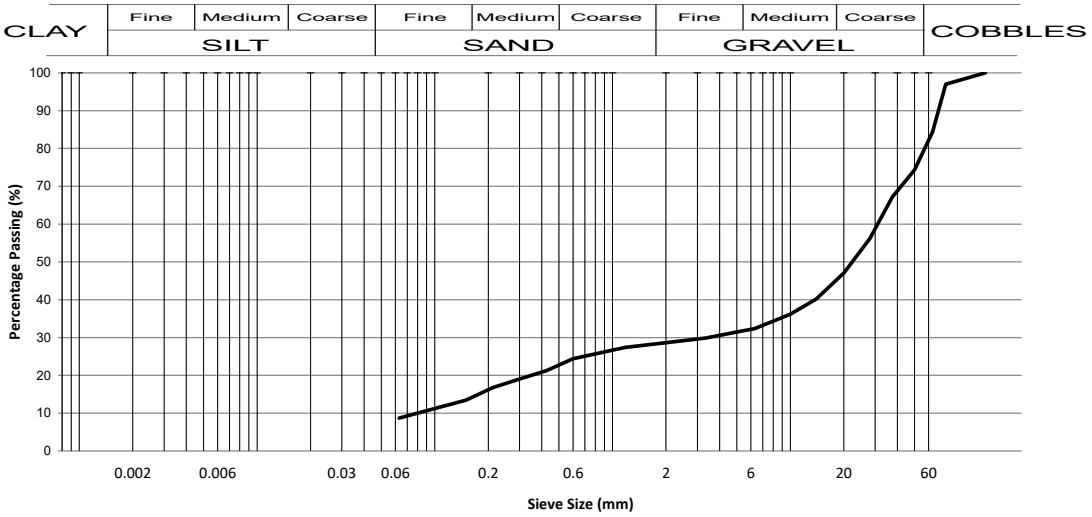
| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

8927

| | PARTICLE SIZE DISTRIBUTION<br>BS 1377 : Part 2 : 1990 : Clause 9.2 Wet Sieving | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP120 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 5 |
| | | Depth (m) | 1.10 |
| Soil Description | Brown mottled light brown clayey cobbly sandy GRAVEL. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 75 | 97 | | |
| 63 | 84 | | |
| 50 | 74 | | |
| 37.5 | 67 | | |
| 28 | 56 | | |
| 20 | 47 | | |
| 14 | 40 | | |
| 10 | 36 | | |
| 6.3 | 32 | | |
| 5 | 31 | | |
| 3.35 | 30 | | |
| 2 | 29 | | |
| 1.18 | 27 | | |
| 0.6 | 24 | | |
| 0.425 | 21 | | |
| 0.3 | 19 | | |
| 0.212 | 17 | | |
| 0.15 | 13 | | |
| 0.063 | 9 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | N/A |

| Sample Proportions | |
|---|---|
| Cobbles | 15.6 |
| Gravel | 55.7 |
| Sand | 19.9 |
| Fines | 8.8 |

| Grading Analysis | |
|---|---|
| D100 | 125.00 |
| D60 | 31.31 |
| D10 | 0.09 |
| Uniformity Coefficient* | 360.84 |

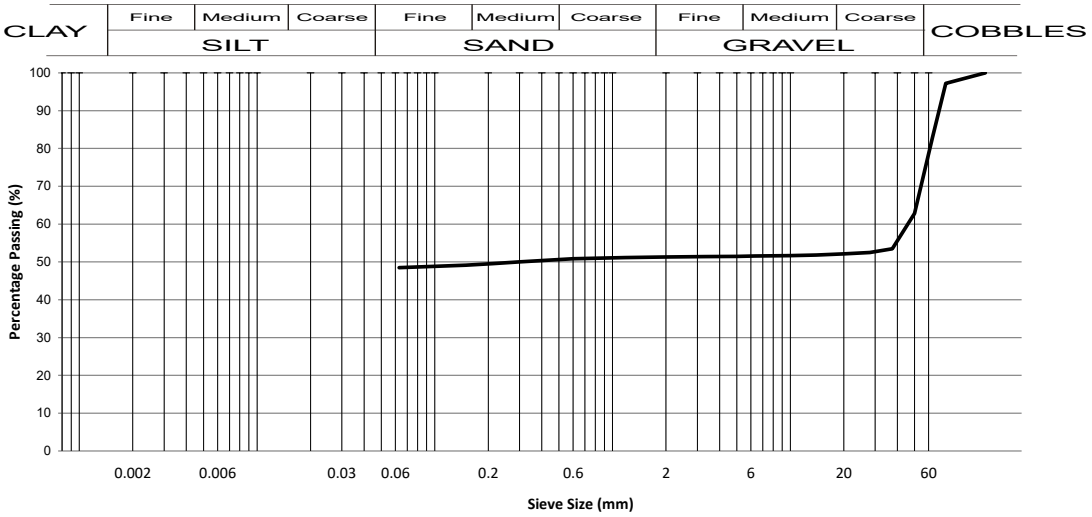
* Uniformity Coefficient Calculation not Accredited

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| Tsmith | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | PARTICLE SIZE DISTRIBUTION<br>BS 1377 : Part 2 : 1990 : Clause 9.2 Wet Sieving | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP121 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 5 |
| | | Depth (m) | 0.70 |
| Soil Description | Light brown slightly sandy cobbly very clayey GRAVEL. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 75 | 97 | | |
| 63 | 83 | | |
| 50 | 63 | | |
| 37.5 | 53 | | |
| 28 | 52 | | |
| 20 | 52 | | |
| 14 | 52 | | |
| 10 | 52 | | |
| 6.3 | 52 | | |
| 5 | 51 | | |
| 3.35 | 51 | | |
| 2 | 51 | | |
| 1.18 | 51 | | |
| 0.6 | 51 | | |
| 0.425 | 50 | | |
| 0.3 | 50 | | |
| 0.212 | 50 | | |
| 0.15 | 49 | | |
| 0.063 | 48 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | N/A |

| Sample Proportions | |
|---|---|
| Cobbles | 17.0 |
| Gravel | 31.7 |
| Sand | 2.8 |
| Fines | 48.5 |

| Grading Analysis | |
|---|---|
| D100 | 125.00 |
| D60 | 46.24 |
| D10 | N/A |
| Uniformity Coefficient* | N/A |

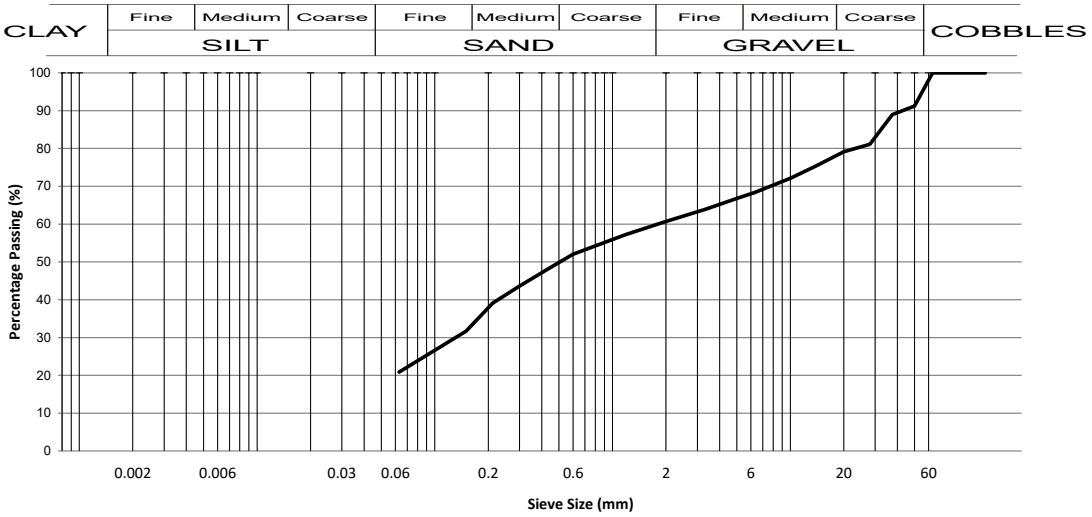
* Uniformity Coefficient Calculation not Accredited

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| Tsmith | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | PARTICLE SIZE DISTRIBUTION<br>BS 1377 : Part 2 : 1990 : Clause 9.2 Wet Sieving | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP122 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 5 |
| | | Depth (m) | 0.60 |
| Soil Description | Dark brown very clayey GRAVEL and SAND. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 91 | | |
| 37.5 | 89 | | |
| 28 | 81 | | |
| 20 | 79 | | |
| 14 | 75 | | |
| 10 | 72 | | |
| 6.3 | 68 | | |
| 5 | 67 | | |
| 3.35 | 64 | | |
| 2 | 61 | | |
| 1.18 | 57 | | |
| 0.6 | 52 | | |
| 0.425 | 48 | | |
| 0.3 | 44 | | |
| 0.212 | 39 | | |
| 0.15 | 32 | | |
| 0.063 | 21 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | N/A |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 39.3 |
| Sand | 39.8 |
| Fines | 20.9 |

| Grading Analysis | |
|---|---|
| D100 | 63.00 |
| D60 | 1.84 |
| D10 | N/A |
| Uniformity Coefficient* | N/A |

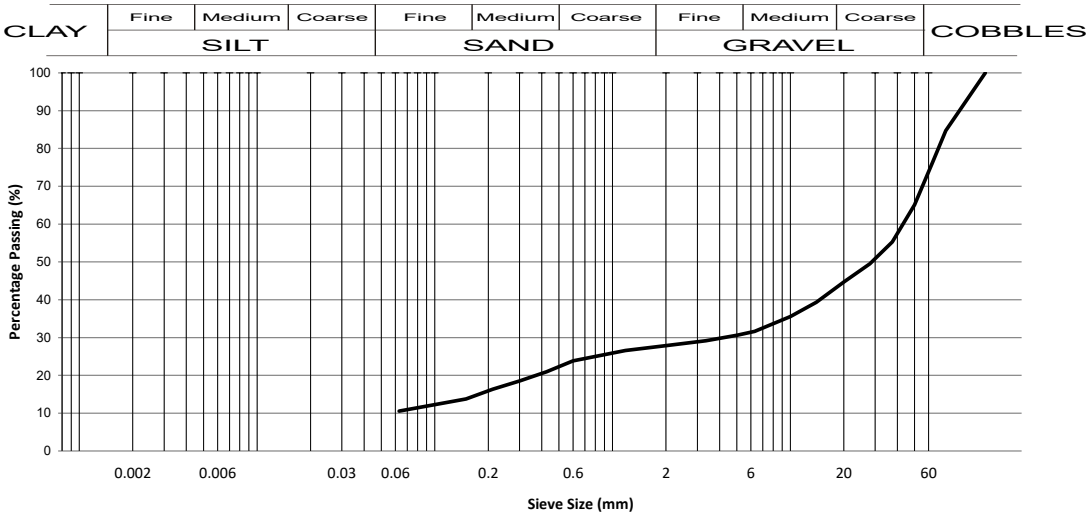
* Uniformity Coefficient Calculation not Accredited

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| Tsmith | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | PARTICLE SIZE DISTRIBUTION<br>BS 1377 : Part 2 : 1990 : Clause 9.2 Wet Sieving | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP123 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 5 |
| | | Depth (m) | 1.00 |
| Soil Description | Orangish brown clayey sandy very cobbly GRAVEL. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 75 | 85 | | |
| 63 | 76 | | |
| 50 | 65 | | |
| 37.5 | 55 | | |
| 28 | 49 | | |
| 20 | 45 | | |
| 14 | 39 | | |
| 10 | 36 | | |
| 6.3 | 32 | | |
| 5 | 31 | | |
| 3.35 | 29 | | |
| 2 | 28 | | |
| 1.18 | 27 | | |
| 0.6 | 24 | | |
| 0.425 | 21 | | |
| 0.3 | 19 | | |
| 0.212 | 16 | | |
| 0.15 | 14 | | |
| 0.063 | 11 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | N/A |

| Sample Proportions | |
|---|---|
| Cobbles | 23.7 |
| Gravel | 48.5 |
| Sand | 17.3 |
| Fines | 10.5 |

| Grading Analysis | |
|---|---|
| D100 | 125.00 |
| D60 | 43.52 |
| D10 | 0.05 |
| Uniformity Coefficient* | 901.47 |

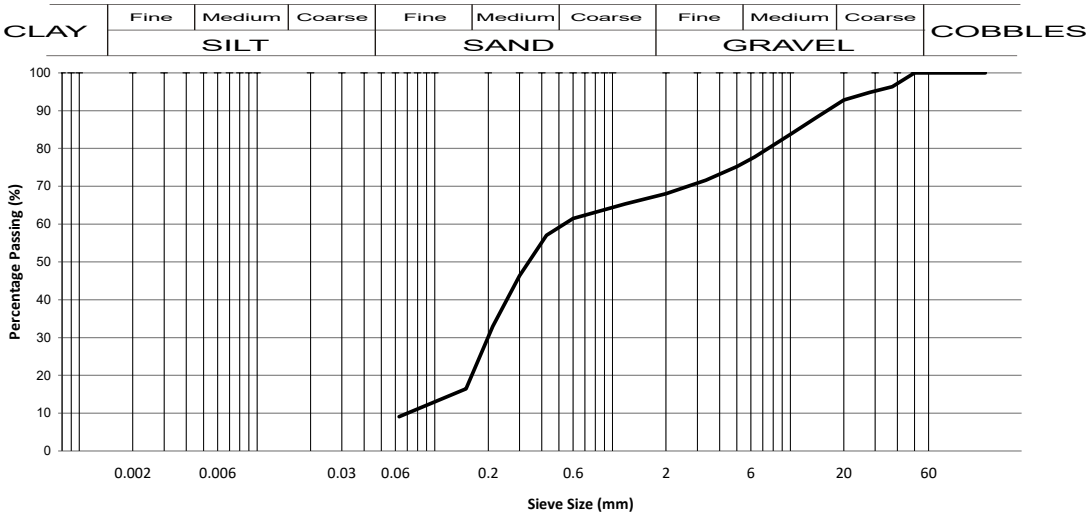
* Uniformity Coefficient Calculation not Accredited

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| Tsmith | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | PARTICLE SIZE DISTRIBUTION<br>BS 1377 : Part 2 : 1990 : Clause 9.2 Wet Sieving | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP124 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 5 |
| | | Depth (m) | 1.00 |
| Soil Description | Brownish orange clayey very gravelly SAND. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 96 | | |
| 28 | 95 | | |
| 20 | 93 | | |
| 14 | 88 | | |
| 10 | 84 | | |
| 6.3 | 78 | | |
| 5 | 75 | | |
| 3.35 | 72 | | |
| 2 | 68 | | |
| 1.18 | 65 | | |
| 0.6 | 61 | | |
| 0.425 | 57 | | |
| 0.3 | 46 | | |
| 0.212 | 33 | | |
| 0.15 | 16 | | |
| 0.063 | 9 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | N/A |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 32.0 |
| Sand | 59.0 |
| Fines | 9.0 |

| Grading Analysis | |
|---|---|
| D100 | 50.00 |
| D60 | 0.54 |
| D10 | 0.07 |
| Uniformity Coefficient* | 7.33 |

* Uniformity Coefficient Calculation not Accredited

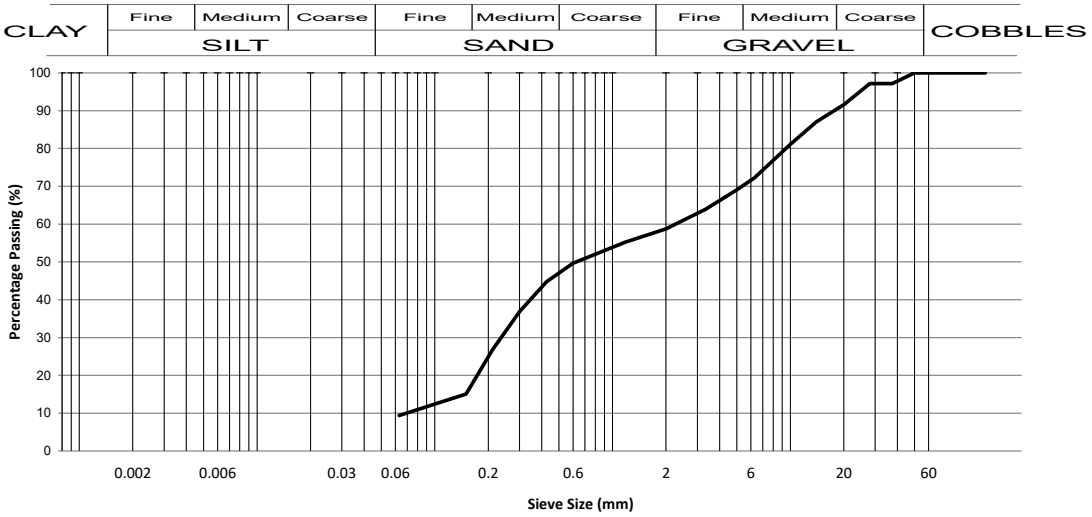
| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| Tsmith | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

ASC GeoTesting
Aggregate • Soil • Concrete

| | PARTICLE SIZE DISTRIBUTION<br>BS 1377 : Part 2 : 1990 : Clause 9.2 Wet Sieving | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP124 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 7 |
| | | Depth (m) | 2.00 |
| Soil Description | Brownish orange clayey very gravelly SAND. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 97 | | |
| 28 | 97 | | |
| 20 | 92 | | |
| 14 | 87 | | |
| 10 | 81 | | |
| 6.3 | 72 | | |
| 5 | 69 | | |
| 3.35 | 64 | | |
| 2 | 59 | | |
| 1.18 | 55 | | |
| 0.6 | 50 | | |
| 0.425 | 45 | | |
| 0.3 | 37 | | |
| 0.212 | 27 | | |
| 0.15 | 15 | | |
| 0.063 | 9 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | N/A |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 41.3 |
| Sand | 49.3 |
| Fines | 9.4 |

| Grading Analysis | |
|---|---|
| D100 | 50.00 |
| D60 | 2.33 |
| D10 | 0.07 |
| Uniformity Coefficient* | 32.16 |

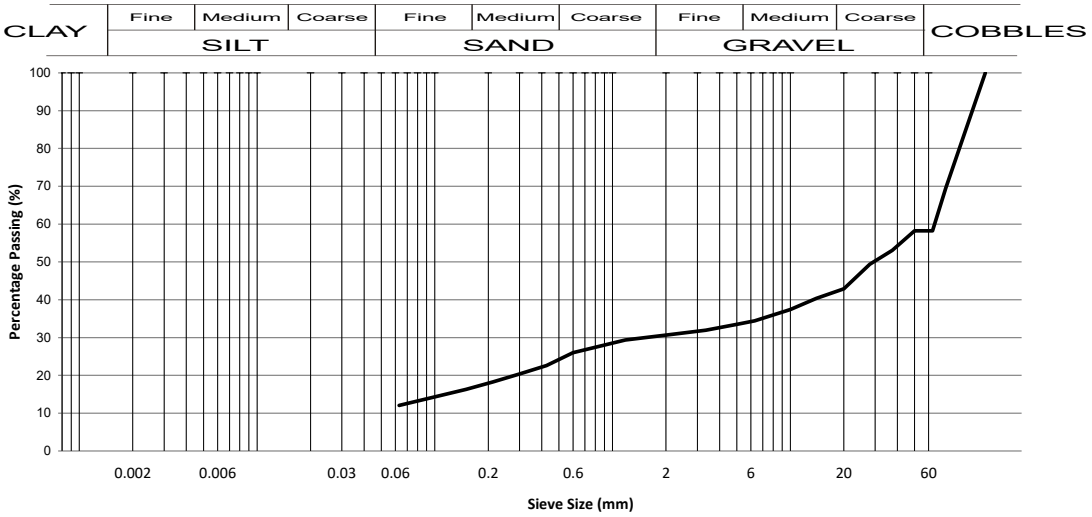
* Uniformity Coefficient Calculation not Accredited

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| Tsmith | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA
Authorised Approvers: Ben Armstrong (Quality Manager)

UKAS TESTING

| | PARTICLE SIZE DISTRIBUTION<br>BS 1377 : Part 2 : 1990 : Clause 9.2 Wet Sieving | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP125 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 5 |
| | | Depth (m) | 0.30 |
| Soil Description | Brown mottled light brown clayey sandy very gravelly COBBLES. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 75 | 70 | | |
| 63 | 58 | | |
| 50 | 58 | | |
| 37.5 | 53 | | |
| 28 | 49 | | |
| 20 | 43 | | |
| 14 | 40 | | |
| 10 | 37 | | |
| 6.3 | 34 | | |
| 5 | 34 | | |
| 3.35 | 32 | | |
| 2 | 31 | | |
| 1.18 | 29 | | |
| 0.6 | 26 | | |
| 0.425 | 23 | | |
| 0.3 | 20 | | |
| 0.212 | 18 | | |
| 0.15 | 16 | | |
| 0.063 | 12 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | N/A |

| Sample Proportions | |
|---|---|
| Cobbles | 41.8 |
| Gravel | 27.6 |
| Sand | 18.6 |
| Fines | 12.0 |

| Grading Analysis | |
|---|---|
| D100 | 125.00 |
| D60 | 64.87 |
| D10 | 0.02 |
| Uniformity Coefficient* | 3127.23 |

* Uniformity Coefficient Calculation not Accredited

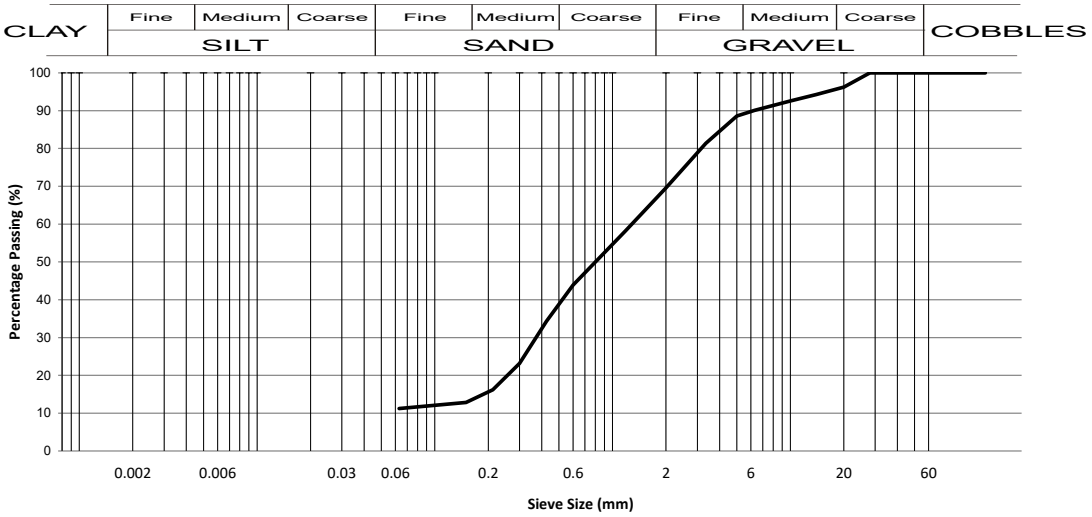
| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| Tsmith | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

ASC GeoTesting
Aggregate • Soil • Concrete

| | PARTICLE SIZE DISTRIBUTION<br>BS 1377 : Part 2 : 1990 : Clause 9.2 Wet Sieving | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP126 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 5 |
| | | Depth (m) | 1.00 |
| Soil Description | Brown clayey very gravelly SAND. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 100 | | |
| 28 | 100 | | |
| 20 | 96 | | |
| 14 | 94 | | |
| 10 | 93 | | |
| 6.3 | 90 | | |
| 5 | 89 | | |
| 3.35 | 81 | | |
| 2 | 70 | | |
| 1.18 | 58 | | |
| 0.6 | 44 | | |
| 0.425 | 34 | | |
| 0.3 | 23 | | |
| 0.212 | 16 | | |
| 0.15 | 13 | | |
| 0.063 | 11 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | N/A |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 30.4 |
| Sand | 58.3 |
| Fines | 11.3 |

| Grading Analysis | |
|---|---|
| D100 | 28.00 |
| D60 | 1.31 |
| D10 | N/A |
| Uniformity Coefficient* | N/A |

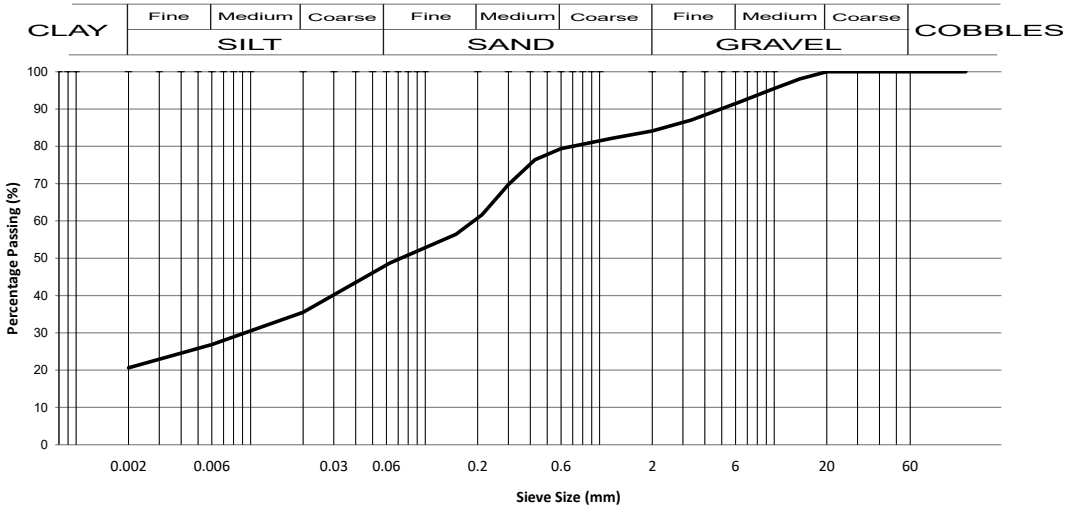
* Uniformity Coefficient Calculation not Accredited

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| Tsmith | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA
Authorised Approvers: Ben Armstrong (Quality Manager)

UKAS TESTING

| | PARTICLE SIZE DISTRIBUTION<br>**Combined Wet Sieving and Sedimentation by Pipette**<br>**BS 1377 : Part 2 : 1990 : Clause 9.2 and 9.4** | Job Ref | **GT0386** |
|---|---|---|---|
| | | Borehole / Pit No | TP128 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #7690045306300005 |
| | | Depth (m) | 1.00 |
| Soil Description | Firm brown slightly gravelly sandy CLAY. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | 0.020 | 35 |
| 75 | 100 | 0.006 | 27 |
| 63 | 100 | 0.002 | 21 |
| 50 | 100 | | |
| 38 | 100 | | |
| 28 | 100 | | |
| 20 | 100 | | |
| 14 | 98 | | |
| 10 | 95 | | |
| 6.30 | 92 | | |
| 5.00 | 90 | | |
| 3.35 | 87 | | |
| 2.00 | 84 | | |
| 1.180 | 82 | | |
| 0.600 | 79 | | |
| 0.425 | 76 | | |
| 0.300 | 70 | | |
| 0.212 | 62 | | |
| 0.150 | 56 | | |
| 0.063 | 49 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | Clause 9.4 |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 15.9 |
| Sand | 35.4 |
| Silt | 28.1 |
| Clay | 20.6 |

| Grading Analysis | |
|---|---|
| D100 | 20.0000 |
| D60 | 0.1922 |
| D10 | |
| Uniformity Coefficient * | |

* Uniformity Coefficient Calculation not Accredited

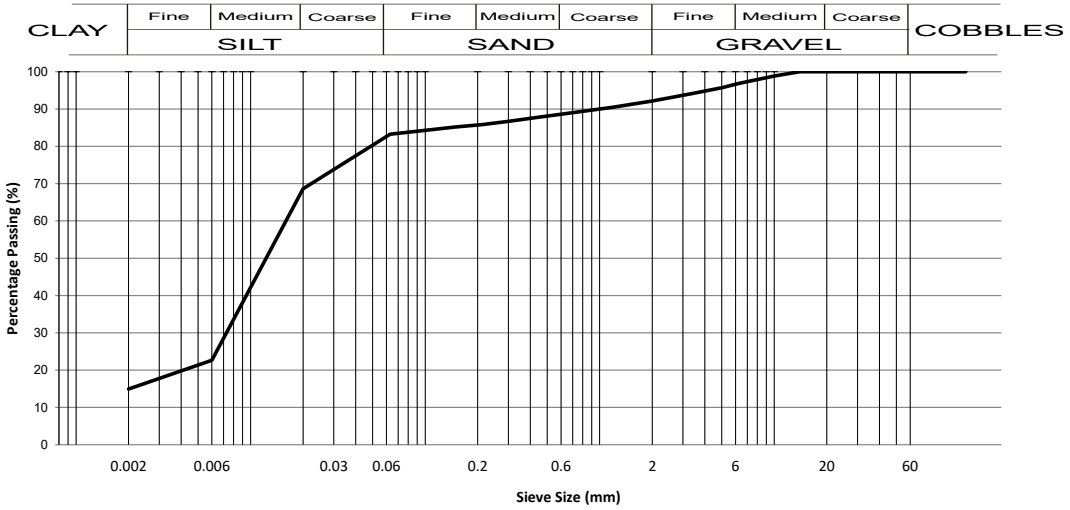
| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

8927

| | PARTICLE SIZE DISTRIBUTION<br>**Combined Wet Sieving and Sedimentation by Pipette**<br>**BS 1377 : Part 2 : 1990 : Clause 9.2 and 9.4** | Job Ref | **GT0386** |
|---|---|---|---|
| | | Borehole / Pit No | TP128 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #7690045306300007 |
| | | Depth (m) | 1.90 |
| Soil Description | Firm grey slightly gravelly slightly sandy SILT. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | 0.020 | 69 |
| 75 | 100 | 0.006 | 23 |
| 63 | 100 | 0.002 | 15 |
| 50 | 100 | | |
| 38 | 100 | | |
| 28 | 100 | | |
| 20 | 100 | | |
| 14 | 100 | | |
| 10 | 99 | | |
| 6.30 | 97 | | |
| 5.00 | 96 | | |
| 3.35 | 94 | | |
| 2.00 | 92 | | |
| 1.180 | 90 | | |
| 0.600 | 89 | | |
| 0.425 | 88 | | |
| 0.300 | 87 | | |
| 0.212 | 86 | | |
| 0.150 | 85 | | |
| 0.063 | 83 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | Clause 9.4 |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 7.9 |
| Sand | 8.9 |
| Silt | 68.3 |
| Clay | 14.9 |

| Grading Analysis | |
|---|---|
| D100 | 14.0000 |
| D60 | 0.0174 |
| D10 | |
| Uniformity Coefficient * | |

* Uniformity Coefficient Calculation not Accredited

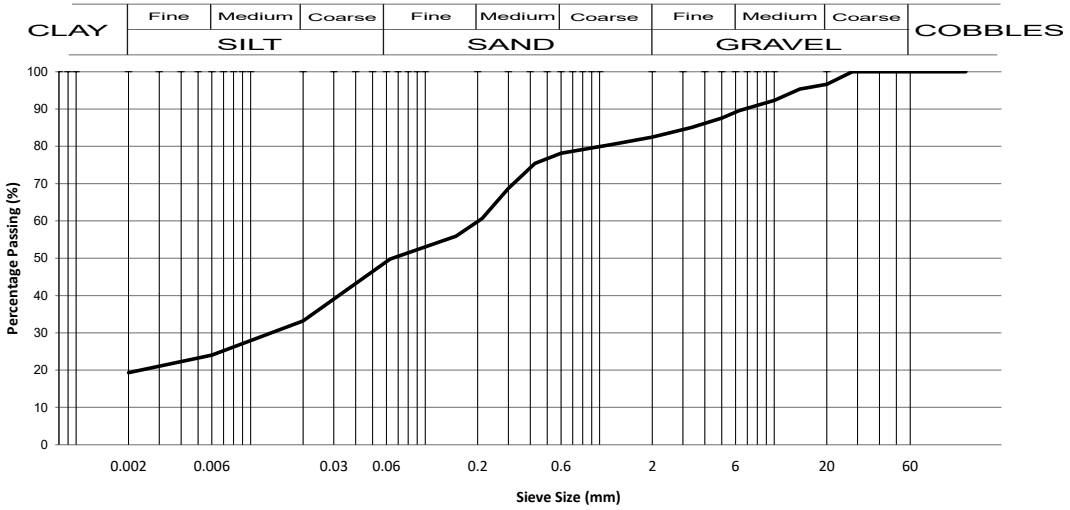
| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

8927

| | PARTICLE SIZE DISTRIBUTION<br>**Combined Wet Sieving and Sedimentation by Pipette**<br>**BS 1377 : Part 2 : 1990 : Clause 9.2 and 9.4** | Job Ref | **GT0386** |
|---|---|---|---|
| | | Borehole / Pit No | TP133 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #8952533825730005 |
| | | Depth (m) | 0.30 |
| Soil Description | Soft brown slightly gravelly slightly sandy CLAY. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | 0.020 | 33 |
| 75 | 100 | 0.006 | 24 |
| 63 | 100 | 0.002 | 19 |
| 50 | 100 | | |
| 38 | 100 | | |
| 28 | 100 | | |
| 20 | 97 | | |
| 14 | 95 | | |
| 10 | 92 | | |
| 6.30 | 90 | | |
| 5.00 | 88 | | |
| 3.35 | 85 | | |
| 2.00 | 82 | | |
| 1.180 | 81 | | |
| 0.600 | 78 | | |
| 0.425 | 75 | | |
| 0.300 | 69 | | |
| 0.212 | 61 | | |
| 0.150 | 56 | | |
| 0.063 | 50 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | Clause 9.4 |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 17.5 |
| Sand | 32.7 |
| Silt | 30.5 |
| Clay | 19.3 |

| Grading Analysis | |
|---|---|
| D100 | 28.0000 |
| D60 | 0.2038 |
| D10 | |
| Uniformity Coefficient * | |

* Uniformity Coefficient Calculation not Accredited

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

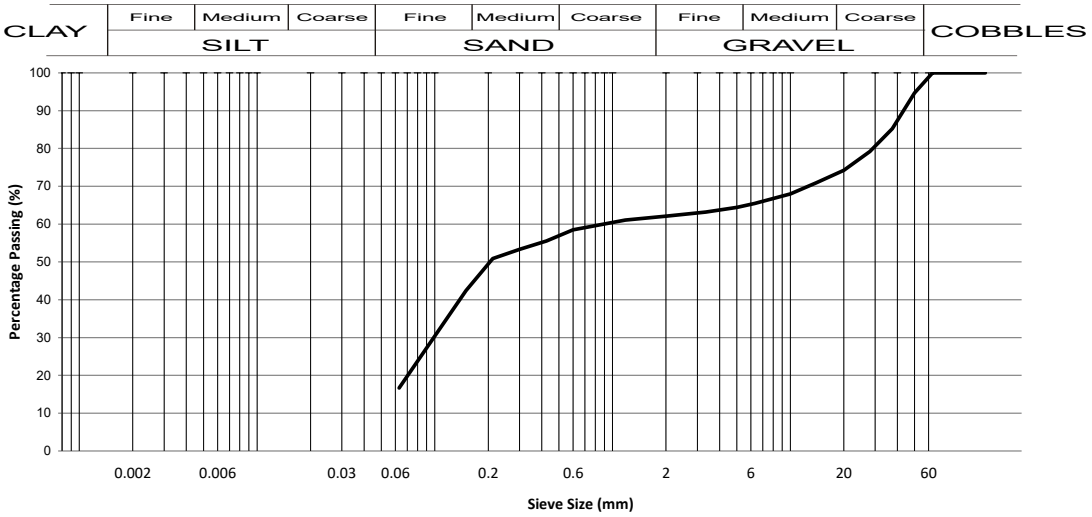
Authorised Approvers: Ben Armstrong (Quality Manager)

8927

# PARTICLE SIZE DISTRIBUTION

**BS 1377 : Part 2 : 1990 : Clause 9.2 Wet Sieving**

| | | | |
|---|---|---|---|
| | | Job Ref | GT0386 |
| | | Borehole / Pit No | TP113 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 5 |
| | | Depth (m) | 0.60 |
| Soil Description | Orangish brown clayey very gravelly SAND. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 95 | | |
| 37.5 | 85 | | |
| 28 | 79 | | |
| 20 | 74 | | |
| 14 | 71 | | |
| 10 | 68 | | |
| 6.3 | 65 | | |
| 5 | 64 | | |
| 3.35 | 63 | | |
| 2 | 62 | | |
| 1.18 | 61 | | |
| 0.6 | 58 | | |
| 0.425 | 56 | | |
| 0.3 | 53 | | |
| 0.212 | 51 | | |
| 0.15 | 42 | | |
| 0.063 | 17 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | N/A |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 37.9 |
| Sand | 45.4 |
| Fines | 16.7 |

| Grading Analysis | |
|---|---|
| D100 | 63.00 |
| D60 | 0.94 |
| D10 | 0.04 |
| Uniformity Coefficient* | 23.16 |

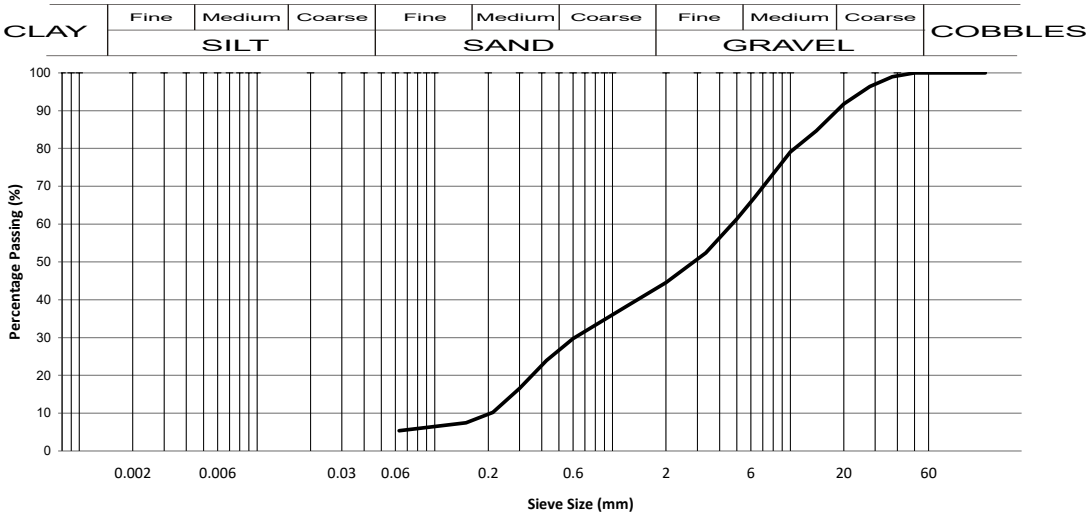
* Uniformity Coefficient Calculation not Accredited

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| Tsmith | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | PARTICLE SIZE DISTRIBUTION<br>BS 1377 : Part 2 : 1990 : Clause 9.2 Wet Sieving | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP135 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 5 |
| | | Depth (m) | 1.00 |
| Soil Description | Brown clayey very sandy GRAVEL. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 99 | | |
| 28 | 96 | | |
| 20 | 92 | | |
| 14 | 85 | | |
| 10 | 79 | | |
| 6.3 | 67 | | |
| 5 | 61 | | |
| 3.35 | 52 | | |
| 2 | 45 | | |
| 1.18 | 38 | | |
| 0.6 | 30 | | |
| 0.425 | 24 | | |
| 0.3 | 17 | | |
| 0.212 | 10 | | |
| 0.15 | 7 | | |
| 0.063 | 5 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | N/A |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 55.4 |
| Sand | 39.2 |
| Fines | 5.4 |

| Grading Analysis | |
|---|---|
| D100 | 50.00 |
| D60 | 4.75 |
| D10 | 0.21 |
| Uniformity Coefficient* | 22.90 |

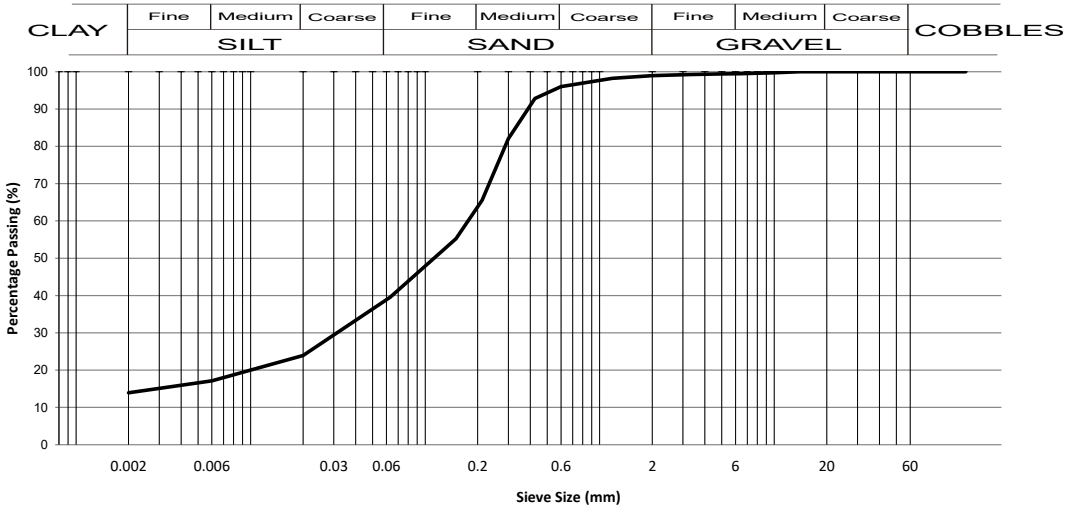
* Uniformity Coefficient Calculation not Accredited

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| Tsmith | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | PARTICLE SIZE DISTRIBUTION<br>**Combined Wet Sieving and Sedimentation by Pipette**<br>**BS 1377 : Part 2 : 1990 : Clause 9.2 and 9.4** | Job Ref | **GT0386** |
|---|---|---|---|
| | | Borehole / Pit No | TP136 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #1793822749420005 |
| | | Depth (m) | 0.60 |
| Soil Description | Soft brown slightly gravelly sandy CLAY. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | 0.020 | 24 |
| 75 | 100 | 0.006 | 17 |
| 63 | 100 | 0.002 | 14 |
| 50 | 100 | | |
| 38 | 100 | | |
| 28 | 100 | | |
| 20 | 100 | | |
| 14 | 100 | | |
| 10 | 100 | | |
| 6.30 | 99 | | |
| 5.00 | 99 | | |
| 3.35 | 99 | | |
| 2.00 | 99 | | |
| 1.180 | 98 | | |
| 0.600 | 96 | | |
| 0.425 | 93 | | |
| 0.300 | 82 | | |
| 0.212 | 66 | | |
| 0.150 | 55 | | |
| 0.063 | 40 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | Clause 9.4 |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 1.1 |
| Sand | 59.4 |
| Silt | 25.6 |
| Clay | 13.9 |

| Grading Analysis | |
|---|---|
| D100 | 14.0000 |
| D60 | 0.1788 |
| D10 | |
| Uniformity Coefficient * | |

* Uniformity Coefficient Calculation not Accredited

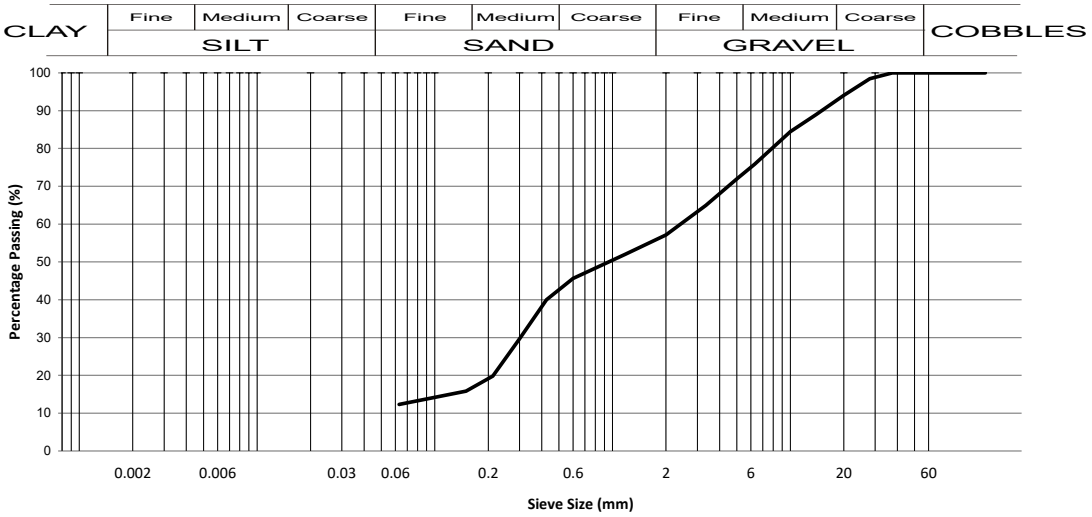
| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

8927

| | PARTICLE SIZE DISTRIBUTION<br>BS 1377 : Part 2 : 1990 : Clause 9.2 Wet Sieving | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP136 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 7 |
| | | Depth (m) | 1.50 |
| Soil Description | Brown clayey GRAVEL and SAND. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 100 | | |
| 28 | 98 | | |
| 20 | 94 | | |
| 14 | 89 | | |
| 10 | 84 | | |
| 6.3 | 76 | | |
| 5 | 72 | | |
| 3.35 | 65 | | |
| 2 | 57 | | |
| 1.18 | 52 | | |
| 0.6 | 46 | | |
| 0.425 | 40 | | |
| 0.3 | 30 | | |
| 0.212 | 20 | | |
| 0.15 | 16 | | |
| 0.063 | 12 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | N/A |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 42.9 |
| Sand | 44.8 |
| Fines | 12.3 |

| Grading Analysis | |
|---|---|
| D100 | 37.50 |
| D60 | 2.50 |
| D10 | 0.01 |
| Uniformity Coefficient* | 443.67 |

* Uniformity Coefficient Calculation not Accredited

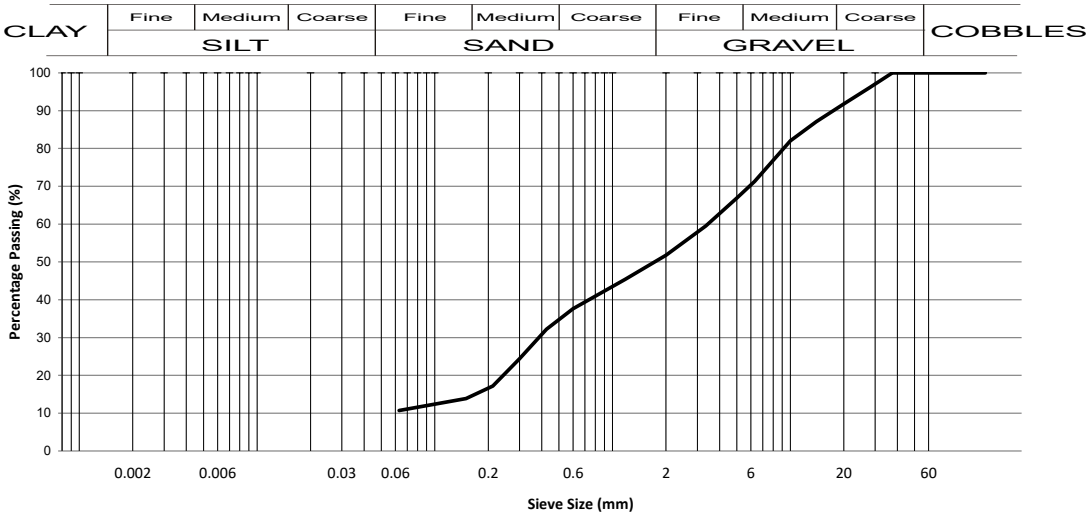
| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| Tsmith | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

ASC GeoTesting
Aggregate • Soil • Concrete

| | PARTICLE SIZE DISTRIBUTION<br>BS 1377 : Part 2 : 1990 : Clause 9.2 Wet Sieving | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP137 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 5 |
| | | Depth (m) | 1.00 |
| Soil Description | Brown clayey very sandy GRAVEL. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 100 | | |
| 28 | 96 | | |
| 20 | 92 | | |
| 14 | 87 | | |
| 10 | 82 | | |
| 6.3 | 71 | | |
| 5 | 67 | | |
| 3.35 | 60 | | |
| 2 | 52 | | |
| 1.18 | 45 | | |
| 0.6 | 38 | | |
| 0.425 | 32 | | |
| 0.3 | 24 | | |
| 0.212 | 17 | | |
| 0.15 | 14 | | |
| 0.063 | 11 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | N/A |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 48.2 |
| Sand | 41.1 |
| Fines | 10.7 |

| Grading Analysis | |
|---|---|
| D100 | 37.50 |
| D60 | 3.45 |
| D10 | 0.04 |
| Uniformity Coefficient* | 79.13 |

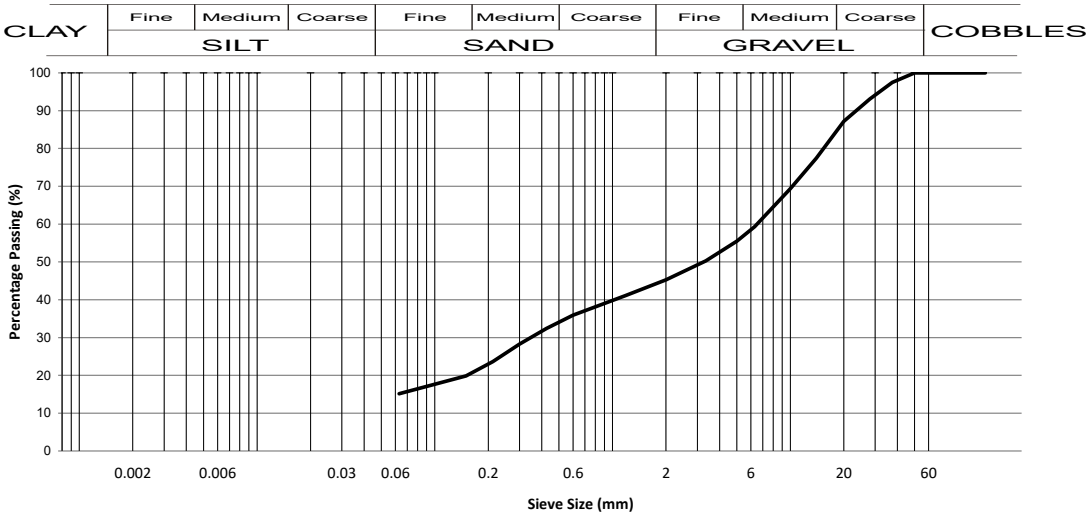
* Uniformity Coefficient Calculation not Accredited

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| Tsmith | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA
Authorised Approvers: Ben Armstrong (Quality Manager)

UKAS TESTING

| | PARTICLE SIZE DISTRIBUTION<br>BS 1377 : Part 2 : 1990 : Clause 9.2 Wet Sieving | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP138 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 5 |
| | | Depth (m) | 1.00 |
| Soil Description | Brown clayey very sandy GRAVEL. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 97 | | |
| 28 | 93 | | |
| 20 | 87 | | |
| 14 | 77 | | |
| 10 | 69 | | |
| 6.3 | 59 | | |
| 5 | 55 | | |
| 3.35 | 50 | | |
| 2 | 45 | | |
| 1.18 | 41 | | |
| 0.6 | 36 | | |
| 0.425 | 32 | | |
| 0.3 | 28 | | |
| 0.212 | 24 | | |
| 0.15 | 20 | | |
| 0.063 | 15 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | N/A |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 54.7 |
| Sand | 30.1 |
| Fines | 15.2 |

| Grading Analysis | |
|---|---|
| D100 | 50.00 |
| D60 | 6.55 |
| D10 | N/A |
| Uniformity Coefficient* | N/A |

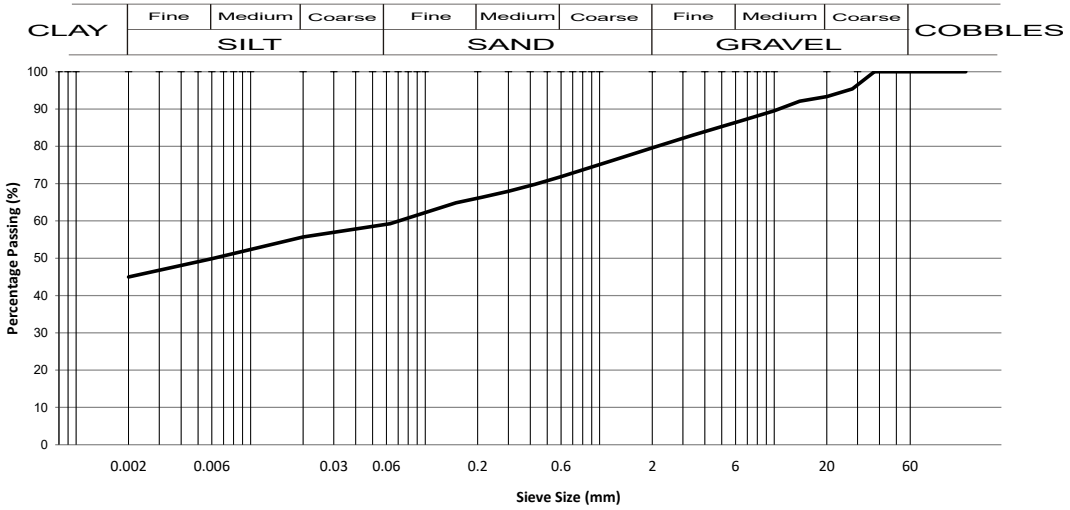
* Uniformity Coefficient Calculation not Accredited

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| Tsmith | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | PARTICLE SIZE DISTRIBUTION<br>**Combined Wet Sieving and Sedimentation by Pipette**<br>**BS 1377 : Part 2 : 1990 : Clause 9.2 and 9.4** | Job Ref | **GT0386** |
|---|---|---|---|
| | | Borehole / Pit No | TP139 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #2560436330990003 |
| | | Depth (m) | 0.20 |
| Soil Description | Firm to stiff light grey mottled brown and yellow slightly sandy slightly gravelly CLAY. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | 0.020 | 56 |
| 75 | 100 | 0.006 | 50 |
| 63 | 100 | 0.002 | 45 |
| 50 | 100 | | |
| 38 | 100 | | |
| 28 | 95 | | |
| 20 | 93 | | |
| 14 | 92 | | |
| 10 | 90 | | |
| 6.30 | 87 | | |
| 5.00 | 85 | | |
| 3.35 | 83 | | |
| 2.00 | 80 | | |
| 1.180 | 76 | | |
| 0.600 | 72 | | |
| 0.425 | 70 | | |
| 0.300 | 68 | | |
| 0.212 | 66 | | |
| 0.150 | 65 | | |
| 0.063 | 59 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | Clause 9.4 |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 20.4 |
| Sand | 20.3 |
| Silt | 14.3 |
| Clay | 45.0 |

| Grading Analysis | |
|---|---|
| D100 | 37.5000 |
| D60 | 0.0745 |
| D10 | |
| Uniformity Coefficient * | |

* Uniformity Coefficient Calculation not Accredited

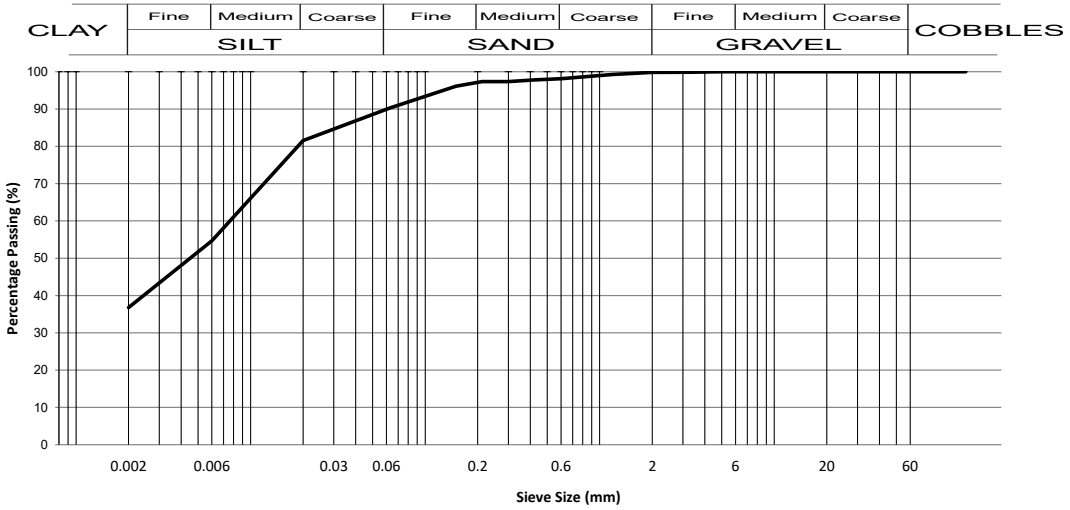
| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

8927

| | PARTICLE SIZE DISTRIBUTION<br>**Combined Wet Sieving and Sedimentation by Pipette**<br>**BS 1377 : Part 2 : 1990 : Clause 9.2 and 9.4** | Job Ref | **GT0386** |
|---|---|---|---|
| | | Borehole / Pit No | TP140 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #9314443897120013 |
| | | Depth (m) | 3.50 |
| Soil Description | Very stiff light grey mottled orange slightly gravelly slightly sandy CLAY. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | 0.020 | 82 |
| 75 | 100 | 0.006 | 55 |
| 63 | 100 | 0.002 | 37 |
| 50 | 100 | | |
| 38 | 100 | | |
| 28 | 100 | | |
| 20 | 100 | | |
| 14 | 100 | | |
| 10 | 100 | | |
| 6.30 | 100 | | |
| 5.00 | 100 | | |
| 3.35 | 100 | | |
| 2.00 | 100 | | |
| 1.180 | 99 | | |
| 0.600 | 98 | | |
| 0.425 | 98 | | |
| 0.300 | 97 | | |
| 0.212 | 97 | | |
| 0.150 | 96 | | |
| 0.063 | 90 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | Clause 9.4 |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 0.2 |
| Sand | 9.5 |
| Silt | 53.5 |
| Clay | 36.8 |

| Grading Analysis | |
|---|---|
| D100 | 5.0000 |
| D60 | 0.0088 |
| D10 | |
| Uniformity Coefficient * | |

* Uniformity Coefficient Calculation not Accredited

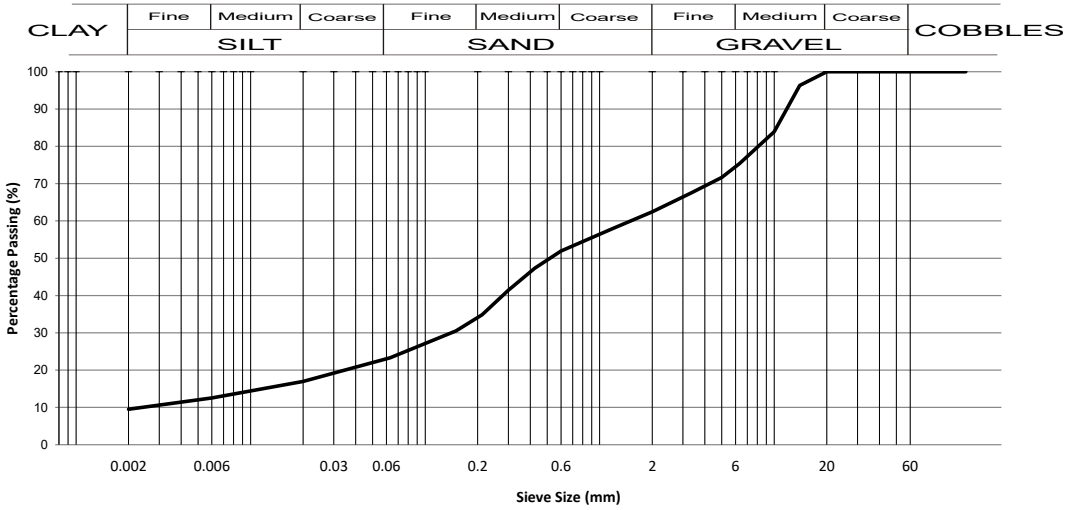
| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| Tsmith | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

8927

| | PARTICLE SIZE DISTRIBUTION<br>**Combined Wet Sieving and Sedimentation by Pipette**<br>**BS 1377 : Part 2 : 1990 : Clause 9.2 and 9.4** | Job Ref | **GT0386** |
|---|---|---|---|
| | | Borehole / Pit No | TP143 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #7267843972540008 |
| | | Depth (m) | 2.95 |
| Soil Description | Firm brown gravelly sandy CLAY. | Sample type | D |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | 0.020 | 17 |
| 75 | 100 | 0.006 | 13 |
| 63 | 100 | 0.002 | 10 |
| 50 | 100 | | |
| 38 | 100 | | |
| 28 | 100 | | |
| 20 | 100 | | |
| 14 | 96 | | |
| 10 | 84 | | |
| 6.30 | 75 | | |
| 5.00 | 72 | | |
| 3.35 | 68 | | |
| 2.00 | 62 | | |
| 1.180 | 58 | | |
| 0.600 | 52 | | |
| 0.425 | 47 | | |
| 0.300 | 41 | | |
| 0.212 | 35 | | |
| 0.150 | 31 | | |
| 0.063 | 23 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | Clause 9.4 |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 37.5 |
| Sand | 39.2 |
| Silt | 13.8 |
| Clay | 9.5 |

| Grading Analysis | |
|---|---|
| D100 | 20.0000 |
| D60 | 1.5573 |
| D10 | 0.0026 |
| Uniformity Coefficient * | 589.7548 |

* Uniformity Coefficient Calculation not Accredited

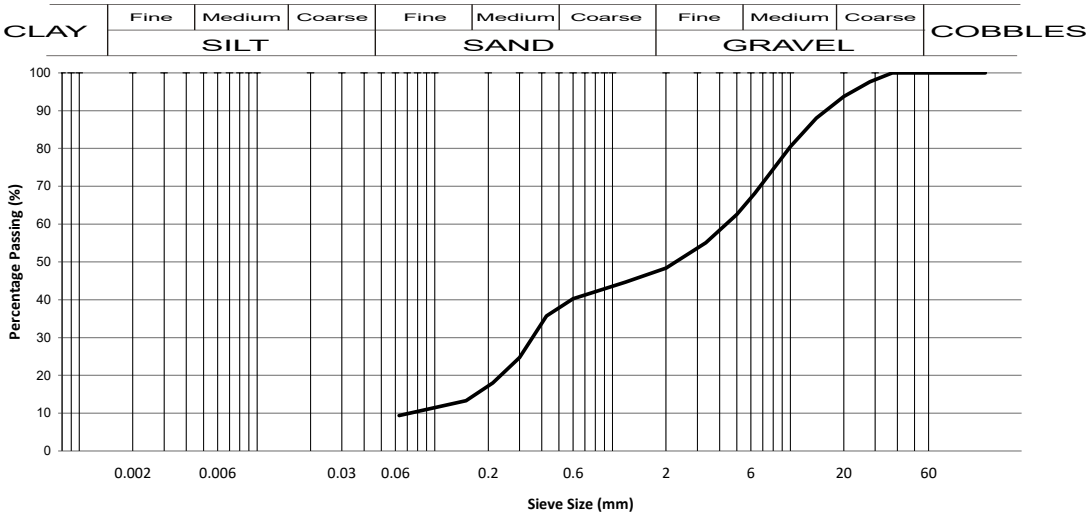
| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

8927

| | PARTICLE SIZE DISTRIBUTION<br>BS 1377 : Part 2 : 1990 : Clause 9.2 Wet Sieving | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP148 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 7 |
| | | Depth (m) | 2.10 |
| Soil Description | Brown clayey very sandy GRAVEL. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 100 | | |
| 28 | 98 | | |
| 20 | 94 | | |
| 14 | 88 | | |
| 10 | 80 | | |
| 6.3 | 68 | | |
| 5 | 63 | | |
| 3.35 | 55 | | |
| 2 | 48 | | |
| 1.18 | 45 | | |
| 0.6 | 40 | | |
| 0.425 | 36 | | |
| 0.3 | 25 | | |
| 0.212 | 18 | | |
| 0.15 | 13 | | |
| 0.063 | 9 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | N/A |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 51.6 |
| Sand | 39.0 |
| Fines | 9.4 |

| Grading Analysis | |
|---|---|
| D100 | 37.50 |
| D60 | 4.44 |
| D10 | 0.08 |
| Uniformity Coefficient* | 57.83 |

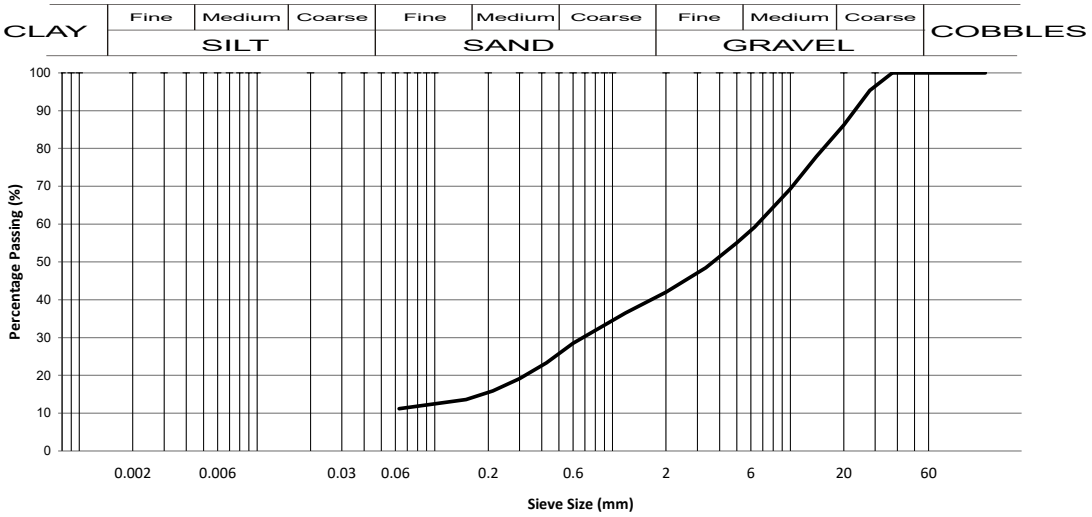
* Uniformity Coefficient Calculation not Accredited

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| Tsmith | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | PARTICLE SIZE DISTRIBUTION<br>BS 1377 : Part 2 : 1990 : Clause 9.2 Wet Sieving | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP152 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 7 |
| | | Depth (m) | 2.00 |
| Soil Description | Brown clayey very sandy GRAVEL. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 100 | | |
| 28 | 95 | | |
| 20 | 86 | | |
| 14 | 78 | | |
| 10 | 69 | | |
| 6.3 | 59 | | |
| 5 | 55 | | |
| 3.35 | 48 | | |
| 2 | 42 | | |
| 1.18 | 36 | | |
| 0.6 | 28 | | |
| 0.425 | 23 | | |
| 0.3 | 19 | | |
| 0.212 | 16 | | |
| 0.15 | 14 | | |
| 0.063 | 11 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | N/A |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 58.0 |
| Sand | 30.8 |
| Fines | 11.2 |

| Grading Analysis | |
|---|---|
| D100 | 37.50 |
| D60 | 6.59 |
| D10 | 0.02 |
| Uniformity Coefficient* | 326.70 |

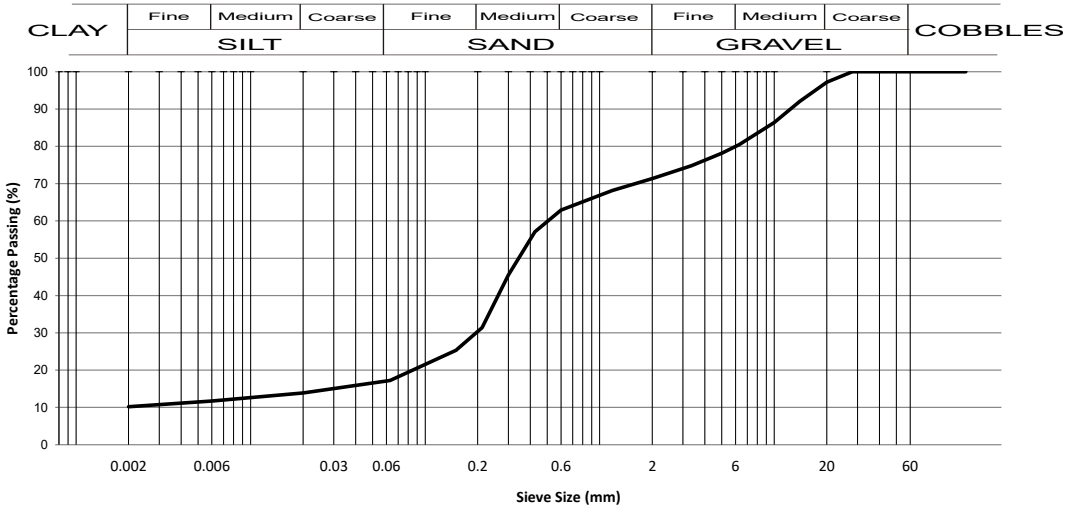
* Uniformity Coefficient Calculation not Accredited

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| barmstrong | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | PARTICLE SIZE DISTRIBUTION<br>**Combined Wet Sieving and Sedimentation by Pipette**<br>**BS 1377 : Part 2 : 1990 : Clause 9.2 and 9.4** | Job Ref | **GT0386** |
|---|---|---|---|
| | | Borehole / Pit No | TP154 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #0664806906440009 |
| | | Depth (m) | 3.00 |
| Soil Description | Soft brownish orange slightly gravelly sandy CLAY. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | 0.020 | 14 |
| 75 | 100 | 0.006 | 12 |
| 63 | 100 | 0.002 | 10 |
| 50 | 100 | | |
| 38 | 100 | | |
| 28 | 100 | | |
| 20 | 97 | | |
| 14 | 92 | | |
| 10 | 86 | | |
| 6.30 | 80 | | |
| 5.00 | 78 | | |
| 3.35 | 75 | | |
| 2.00 | 71 | | |
| 1.180 | 68 | | |
| 0.600 | 63 | | |
| 0.425 | 57 | | |
| 0.300 | 45 | | |
| 0.212 | 31 | | |
| 0.150 | 25 | | |
| 0.063 | 17 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | Clause 9.4 |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 28.7 |
| Sand | 54.1 |
| Silt | 7.0 |
| Clay | 10.2 |

| Grading Analysis | |
|---|---|
| D100 | 28.0000 |
| D60 | 0.5128 |
| D10 | |
| Uniformity Coefficient * | |

* Uniformity Coefficient Calculation not Accredited

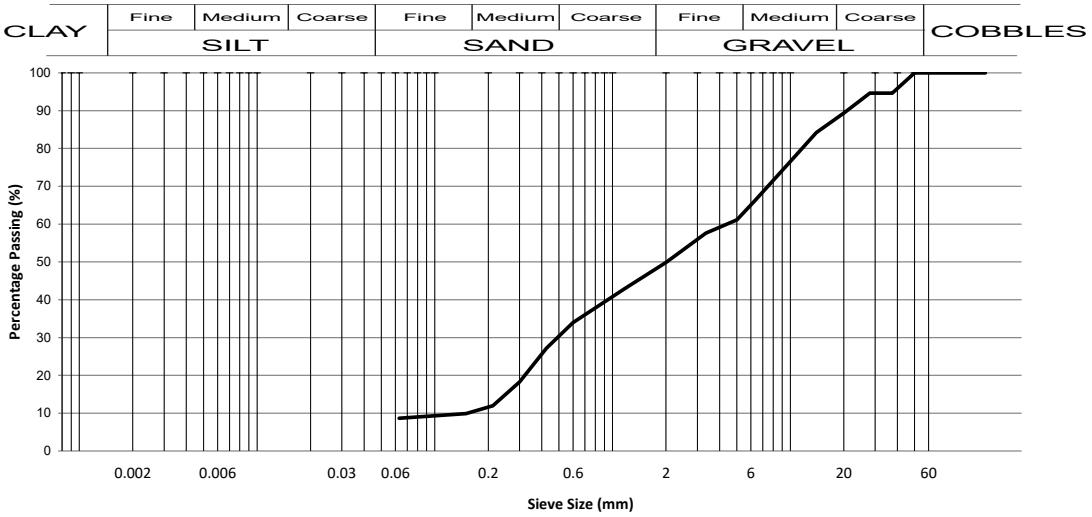
| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| barmstrong | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

8927

| | PARTICLE SIZE DISTRIBUTION<br>BS 1377 : Part 2 : 1990 : Clause 9.2 Wet Sieving | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP155 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 7 |
| | | Depth (m) | 2.50 |
| Soil Description | Orangish brown clayey very sandy GRAVEL. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 95 | | |
| 28 | 95 | | |
| 20 | 89 | | |
| 14 | 84 | | |
| 10 | 77 | | |
| 6.3 | 66 | | |
| 5 | 61 | | |
| 3.35 | 58 | | |
| 2 | 50 | | |
| 1.18 | 43 | | |
| 0.6 | 34 | | |
| 0.425 | 27 | | |
| 0.3 | 18 | | |
| 0.212 | 12 | | |
| 0.15 | 10 | | |
| 0.063 | 9 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | N/A |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 50.2 |
| Sand | 41.2 |
| Fines | 8.6 |

| Grading Analysis | |
|---|---|
| D100 | 50.00 |
| D60 | 4.48 |
| D10 | 0.15 |
| Uniformity Coefficient* | 29.16 |

* Uniformity Coefficient Calculation not Accredited

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| barmstrong | calbon | barmstrong | |

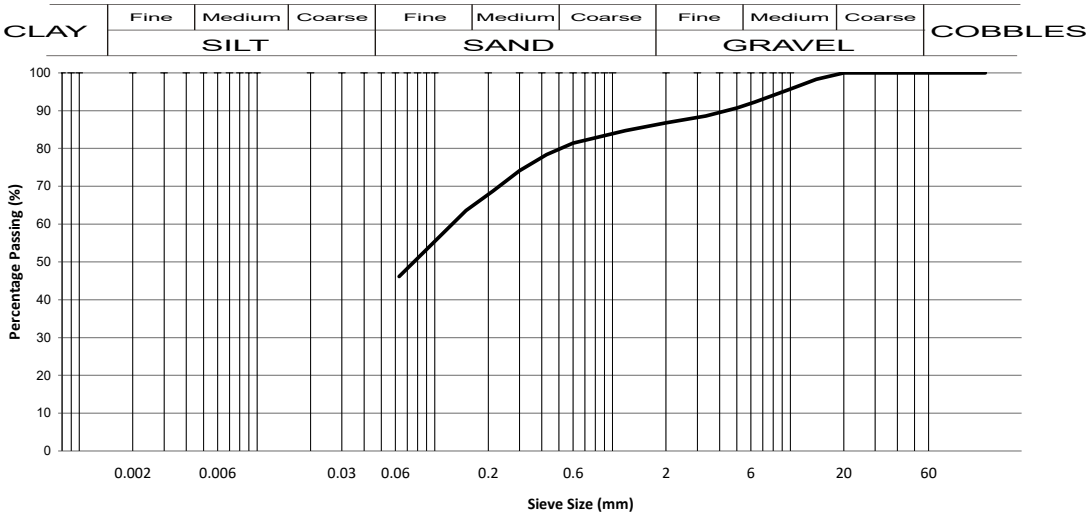
Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

UKAS TESTING

8927

| | PARTICLE SIZE DISTRIBUTION<br>BS 1377 : Part 2 : 1990 : Clause 9.2 Wet Sieving | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP158 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 7 |
| | | Depth (m) | 2.00 |
| Soil Description | Soft orangish brown slightly gravelly sandy CLAY. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 100 | | |
| 28 | 100 | | |
| 20 | 100 | | |
| 14 | 98 | | |
| 10 | 96 | | |
| 6.3 | 92 | | |
| 5 | 91 | | |
| 3.35 | 89 | | |
| 2 | 87 | | |
| 1.18 | 85 | | |
| 0.6 | 81 | | |
| 0.425 | 78 | | |
| 0.3 | 74 | | |
| 0.212 | 69 | | |
| 0.15 | 64 | | |
| 0.063 | 46 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | N/A |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 13.2 |
| Sand | 40.6 |
| Fines | 46.2 |

| Grading Analysis | |
|---|---|
| D100 | 20.00 |
| D60 | 0.13 |
| D10 | N/A |
| Uniformity Coefficient* | N/A |

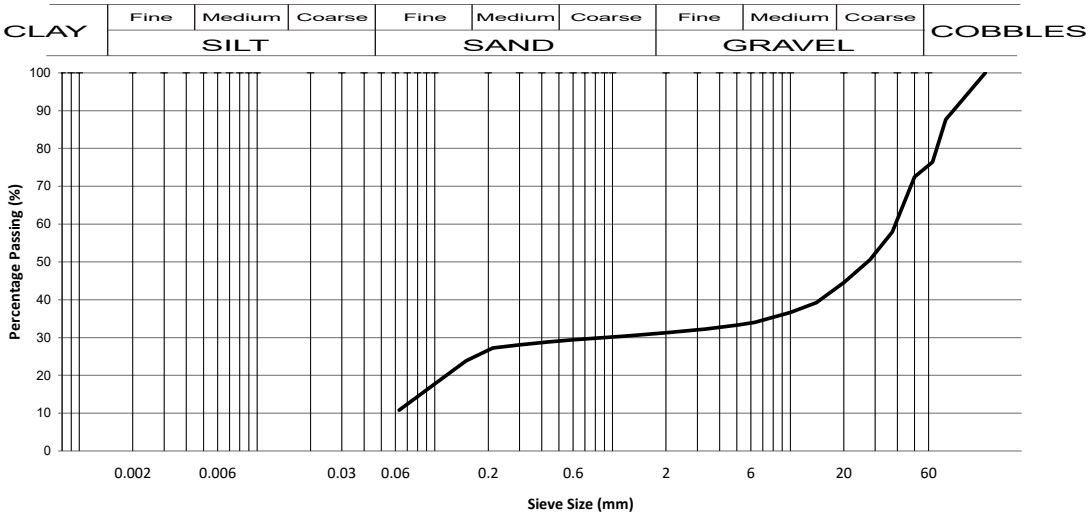
* Uniformity Coefficient Calculation not Accredited

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | PARTICLE SIZE DISTRIBUTION<br>BS 1377 : Part 2 : 1990 : Clause 9.2 Wet Sieving | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP162 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 5 |
| | | Depth (m) | 0.80 |
| Soil Description | Brown clayey very sandy very cobbly GRAVEL. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 75 | 88 | | |
| 63 | 76 | | |
| 50 | 72 | | |
| 37.5 | 58 | | |
| 28 | 51 | | |
| 20 | 45 | | |
| 14 | 39 | | |
| 10 | 37 | | |
| 6.3 | 34 | | |
| 5 | 33 | | |
| 3.35 | 32 | | |
| 2 | 31 | | |
| 1.18 | 30 | | |
| 0.6 | 29 | | |
| 0.425 | 29 | | |
| 0.3 | 28 | | |
| 0.212 | 27 | | |
| 0.15 | 24 | | |
| 0.063 | 11 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | N/A |

| Sample Proportions | |
|---|---|
| Cobbles | 23.6 |
| Gravel | 45.1 |
| Sand | 20.5 |
| Fines | 10.8 |

| Grading Analysis | |
|---|---|
| D100 | 125.00 |
| D60 | 39.28 |
| D10 | 0.06 |
| Uniformity Coefficient* | 680.66 |

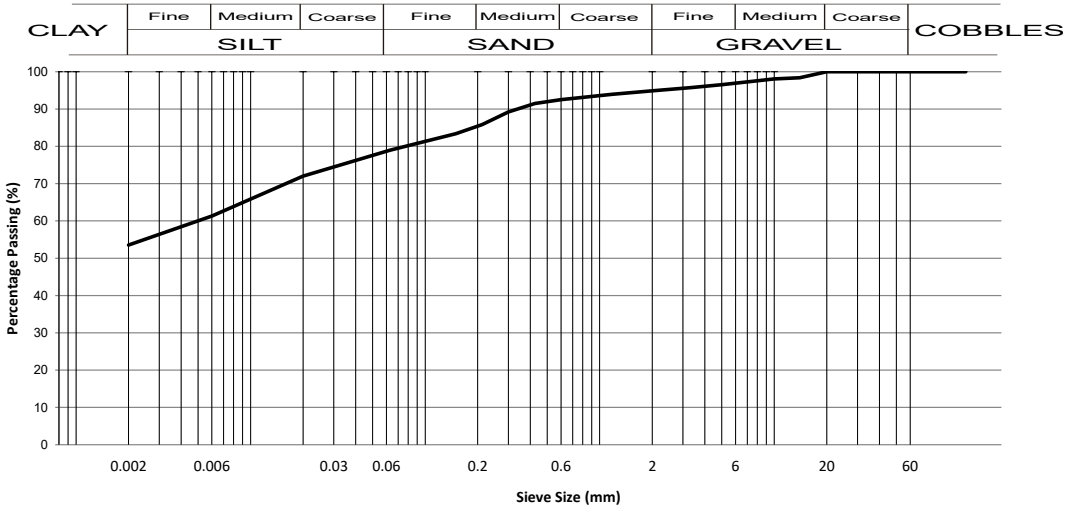
* Uniformity Coefficient Calculation not Accredited

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| Tsmith | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | PARTICLE SIZE DISTRIBUTION<br>**Combined Wet Sieving and Sedimentation by Pipette**<br>**BS 1377 : Part 2 : 1990 : Clause 9.2 and 9.4** | Job Ref | **GT0386** |
|---|---|---|---|
| | | Borehole / Pit No | TP167 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #0399029599680005 |
| | | Depth (m) | 1.00 |
| Soil Description | Firm brown mottled light grey orangish brown slightly gravelly slightly sandy CLAY. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | 0.020 | 72 |
| 75 | 100 | 0.006 | 61 |
| 63 | 100 | 0.002 | 54 |
| 50 | 100 | | |
| 38 | 100 | | |
| 28 | 100 | | |
| 20 | 100 | | |
| 14 | 98 | | |
| 10 | 98 | | |
| 6.30 | 97 | | |
| 5.00 | 97 | | |
| 3.35 | 96 | | |
| 2.00 | 95 | | |
| 1.180 | 94 | | |
| 0.600 | 93 | | |
| 0.425 | 91 | | |
| 0.300 | 89 | | |
| 0.212 | 86 | | |
| 0.150 | 83 | | |
| 0.063 | 79 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | Clause 9.4 |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 5.1 |
| Sand | 15.9 |
| Silt | 25.5 |
| Clay | 53.5 |

| Grading Analysis | |
|---|---|
| D100 | 20.0000 |
| D60 | 0.0053 |
| D10 | |
| Uniformity Coefficient * | |

* Uniformity Coefficient Calculation not Accredited

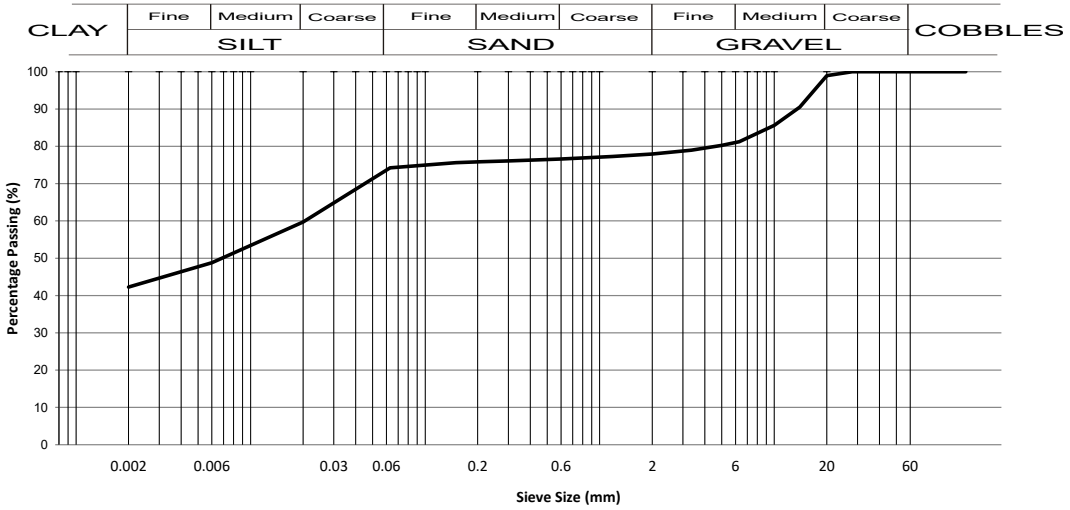
| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

8927

| | PARTICLE SIZE DISTRIBUTION<br>**Combined Wet Sieving and Sedimentation by Pipette**<br>**BS 1377 : Part 2 : 1990 : Clause 9.2 and 9.4** | Job Ref | **GT0386** |
|---|---|---|---|
| | | Borehole / Pit No | TP167 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #0399029599680007 |
| | | Depth (m) | 2.70 |
| Soil Description | Very stiff greenish grey slightly sandy slightly gravelly CLAY. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | 0.020 | 60 |
| 75 | 100 | 0.006 | 49 |
| 63 | 100 | 0.002 | 42 |
| 50 | 100 | | |
| 38 | 100 | | |
| 28 | 100 | | |
| 20 | 99 | | |
| 14 | 90 | | |
| 10 | 86 | | |
| 6.30 | 81 | | |
| 5.00 | 80 | | |
| 3.35 | 79 | | |
| 2.00 | 78 | | |
| 1.180 | 77 | | |
| 0.600 | 77 | | |
| 0.425 | 76 | | |
| 0.300 | 76 | | |
| 0.212 | 76 | | |
| 0.150 | 76 | | |
| 0.063 | 74 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | Clause 9.4 |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 22.1 |
| Sand | 3.7 |
| Silt | 31.9 |
| Clay | 42.3 |

| Grading Analysis | |
|---|---|
| D100 | 28.0000 |
| D60 | 0.0208 |
| D10 | |
| Uniformity Coefficient * | |

* Uniformity Coefficient Calculation not Accredited

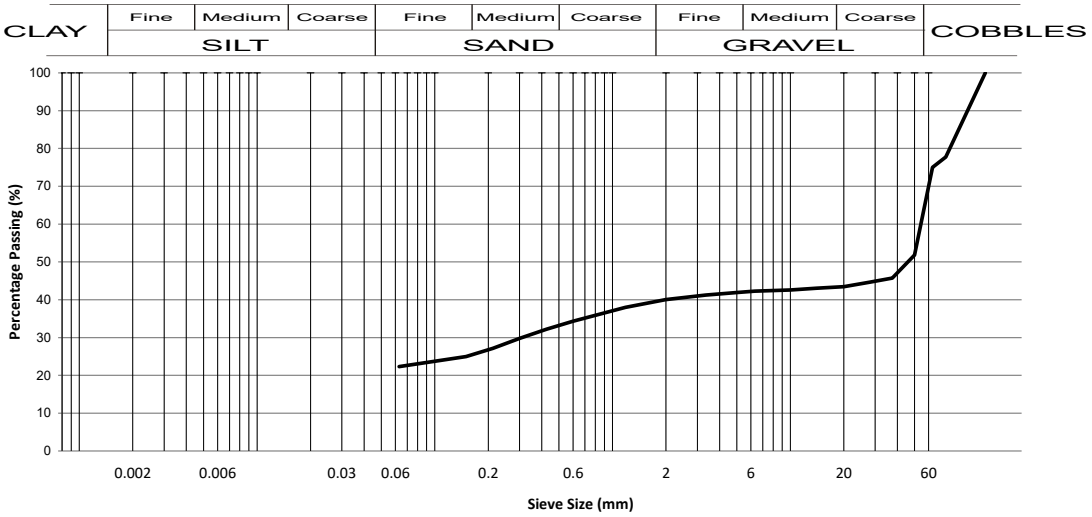
| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

8927

| | PARTICLE SIZE DISTRIBUTION<br>BS 1377 : Part 2 : 1990 : Clause 9.2 Wet Sieving | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP168 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 5 |
| | | Depth (m) | 1.00 |
| Soil Description | Firm brownish grey mottled orangish brown slightly sandy slightly cobbly gravelly CLAY. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 75 | 78 | | |
| 63 | 75 | | |
| 50 | 52 | | |
| 37.5 | 46 | | |
| 28 | 45 | | |
| 20 | 43 | | |
| 14 | 43 | | |
| 10 | 43 | | |
| 6.3 | 42 | | |
| 5 | 42 | | |
| 3.35 | 41 | | |
| 2 | 40 | | |
| 1.18 | 38 | | |
| 0.6 | 34 | | |
| 0.425 | 32 | | |
| 0.3 | 30 | | |
| 0.212 | 27 | | |
| 0.15 | 25 | | |
| 0.063 | 22 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | N/A |

| Sample Proportions | |
|---|---|
| Cobbles | 25.0 |
| Gravel | 35.0 |
| Sand | 17.7 |
| Fines | 22.3 |

| Grading Analysis | |
|---|---|
| D100 | 125.00 |
| D60 | 54.57 |
| D10 | N/A |
| Uniformity Coefficient* | N/A |

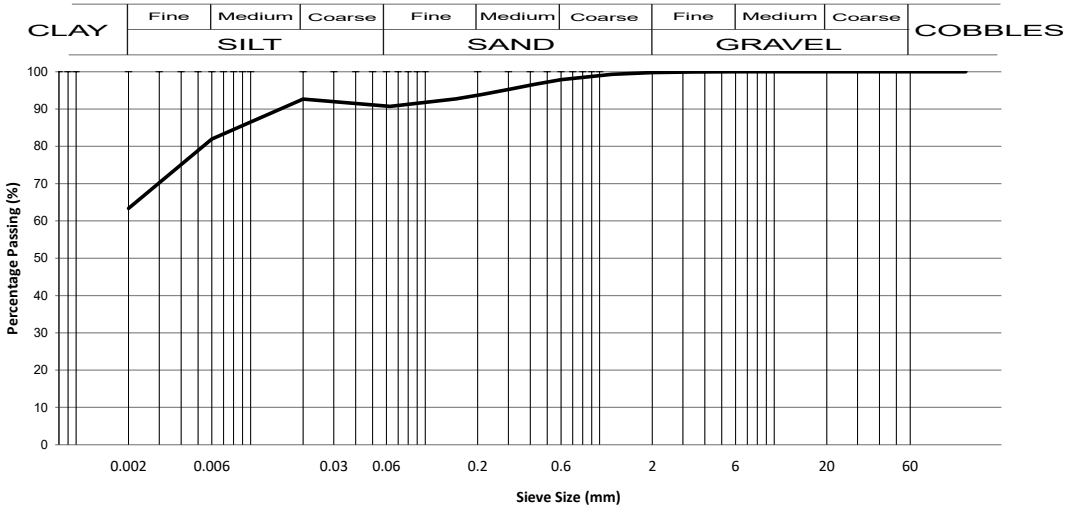
* Uniformity Coefficient Calculation not Accredited

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| Tsmith | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | PARTICLE SIZE DISTRIBUTION<br>**Combined Wet Sieving and Sedimentation by Pipette**<br>**BS 1377 : Part 2 : 1990 : Clause 9.2 and 9.4** | Job Ref | **GT0386** |
|---|---|---|---|
| | | Borehole / Pit No | TP168 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #8642345736090007 |
| | | Depth (m) | 2.00 |
| Soil Description | Stiff grey mottled dark grey slightly gravelly slightly sandy CLAY. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | 0.020 | 93 |
| 75 | 100 | 0.006 | 82 |
| 63 | 100 | 0.002 | 63 |
| 50 | 100 | | |
| 38 | 100 | | |
| 28 | 100 | | |
| 20 | 100 | | |
| 14 | 100 | | |
| 10 | 100 | | |
| 6.30 | 100 | | |
| 5.00 | 100 | | |
| 3.35 | 100 | | |
| 2.00 | 100 | | |
| 1.180 | 99 | | |
| 0.600 | 98 | | |
| 0.425 | 97 | | |
| 0.300 | 95 | | |
| 0.212 | 94 | | |
| 0.150 | 93 | | |
| 0.063 | 91 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | Clause 9.4 |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 0.2 |
| Sand | 9.0 |
| Silt | 27.4 |
| Clay | 63.4 |

| Grading Analysis | |
|---|---|
| D100 | 6.3000 |
| D60 | FALSE |
| D10 | |
| Uniformity Coefficient * | |

* Uniformity Coefficient Calculation not Accredited

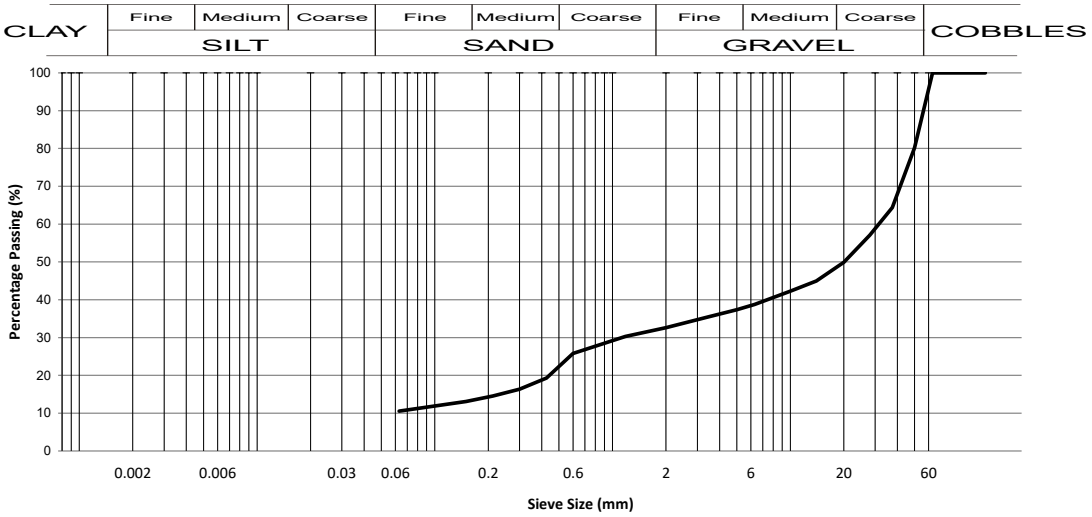
| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

8927

| | PARTICLE SIZE DISTRIBUTION<br>BS 1377 : Part 2 : 1990 : Clause 9.2 Wet Sieving | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP170 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 5 |
| | | Depth (m) | 0.90 |
| Soil Description | Brown clayey very sandy GRAVEL. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 80 | | |
| 37.5 | 64 | | |
| 28 | 57 | | |
| 20 | 50 | | |
| 14 | 45 | | |
| 10 | 42 | | |
| 6.3 | 39 | | |
| 5 | 37 | | |
| 3.35 | 35 | | |
| 2 | 33 | | |
| 1.18 | 30 | | |
| 0.6 | 26 | | |
| 0.425 | 19 | | |
| 0.3 | 16 | | |
| 0.212 | 15 | | |
| 0.15 | 13 | | |
| 0.063 | 11 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | N/A |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 67.4 |
| Sand | 22.0 |
| Fines | 10.6 |

| Grading Analysis | |
|---|---|
| D100 | 63.00 |
| D60 | 31.80 |
| D10 | 0.04 |
| Uniformity Coefficient* | 715.50 |

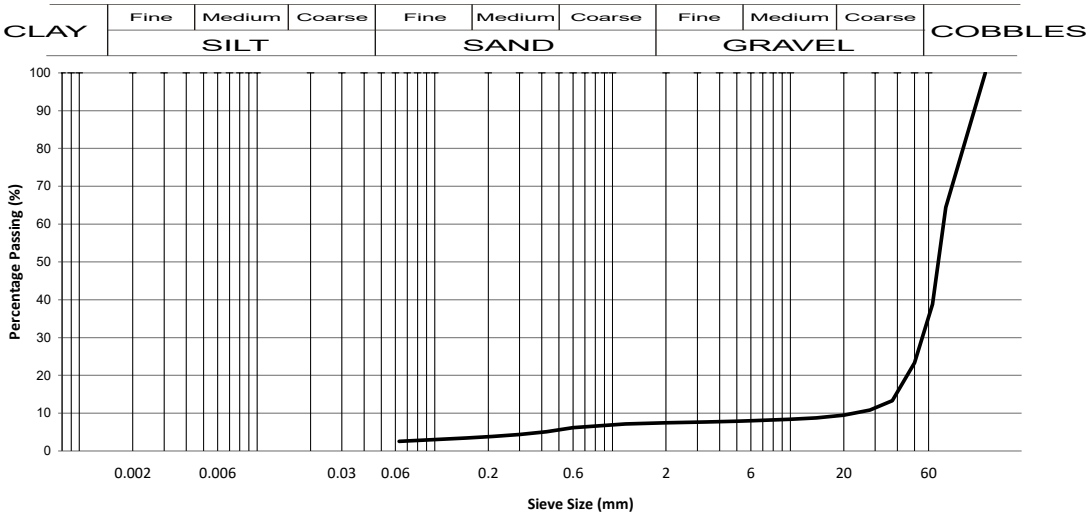
* Uniformity Coefficient Calculation not Accredited

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| Tsmith | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | PARTICLE SIZE DISTRIBUTION<br>BS 1377 : Part 2 : 1990 : Clause 9.2 Wet Sieving | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP170 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 7 |
| | | Depth (m) | 1.20 |
| Soil Description | Brown slightly clayey slightly sandy very gravelly COBBLES. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 75 | 64 | | |
| 63 | 39 | | |
| 50 | 23 | | |
| 37.5 | 13 | | |
| 28 | 11 | | |
| 20 | 9 | | |
| 14 | 9 | | |
| 10 | 8 | | |
| 6.3 | 8 | | |
| 5 | 8 | | |
| 3.35 | 8 | | |
| 2 | 7 | | |
| 1.18 | 7 | | |
| 0.6 | 6 | | |
| 0.425 | 5 | | |
| 0.3 | 4 | | |
| 0.212 | 4 | | |
| 0.15 | 3 | | |
| 0.063 | 3 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | N/A |

| Sample Proportions | |
|---|---|
| Cobbles | 61.2 |
| Gravel | 31.4 |
| Sand | 4.9 |
| Fines | 2.5 |

| Grading Analysis | |
|---|---|
| D100 | 125.00 |
| D60 | 72.92 |
| D10 | 23.16 |
| Uniformity Coefficient* | 3.15 |

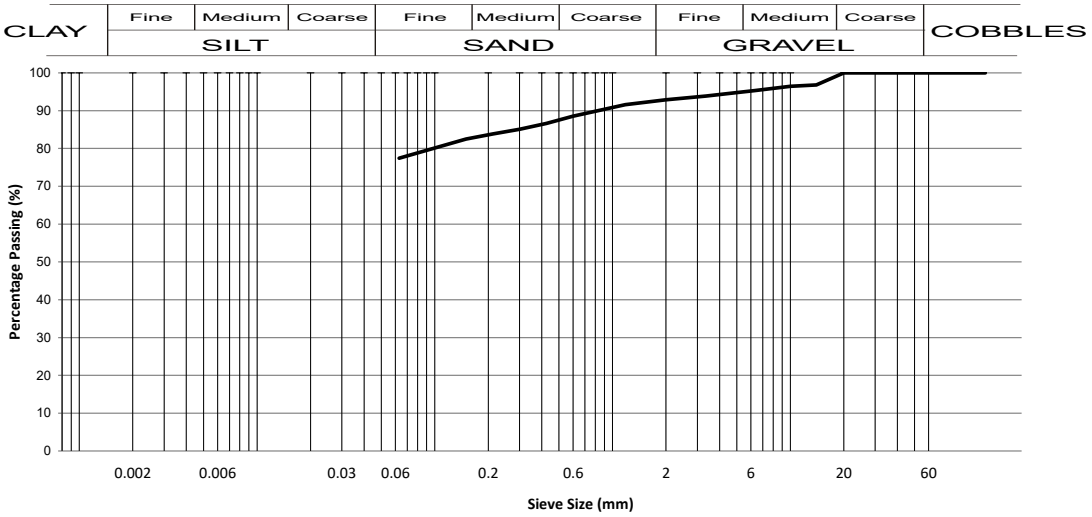
* Uniformity Coefficient Calculation not Accredited

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| Tsmith | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | PARTICLE SIZE DISTRIBUTION<br>BS 1377 : Part 2 : 1990 : Clause 9.2 Wet Sieving | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP170 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 7 |
| | | Depth (m) | 2.00 |
| Soil Description | Stiff dark grey mottled brown slightly gravelly slightly sandy CLAY. | Sample type | B |




| Seiving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 100 | | |
| 28 | 100 | | |
| 20 | 100 | | |
| 14 | 97 | | |
| 10 | 96 | | |
| 6.3 | 95 | | |
| 5 | 95 | | |
| 3.35 | 94 | | |
| 2 | 93 | | |
| 1.18 | 92 | | |
| 0.6 | 89 | | |
| 0.425 | 87 | | |
| 0.3 | 85 | | |
| 0.212 | 84 | | |
| 0.15 | 82 | | |
| 0.063 | 77 | | |

| Test Method | |
|---|---|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause 9.2 |
| Sedimentation | N/A |

| Sample Proportions | |
|---|---|
| Cobbles | 0.0 |
| Gravel | 7.1 |
| Sand | 15.4 |
| Fines | 77.5 |

| Grading Analysis | |
|---|---|
| D100 | 20.00 |
| D60 | -0.24 |
| D10 | N/A |
| Uniformity Coefficient* | N/A |

* Uniformity Coefficient Calculation not Accredited

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| Tsmith | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

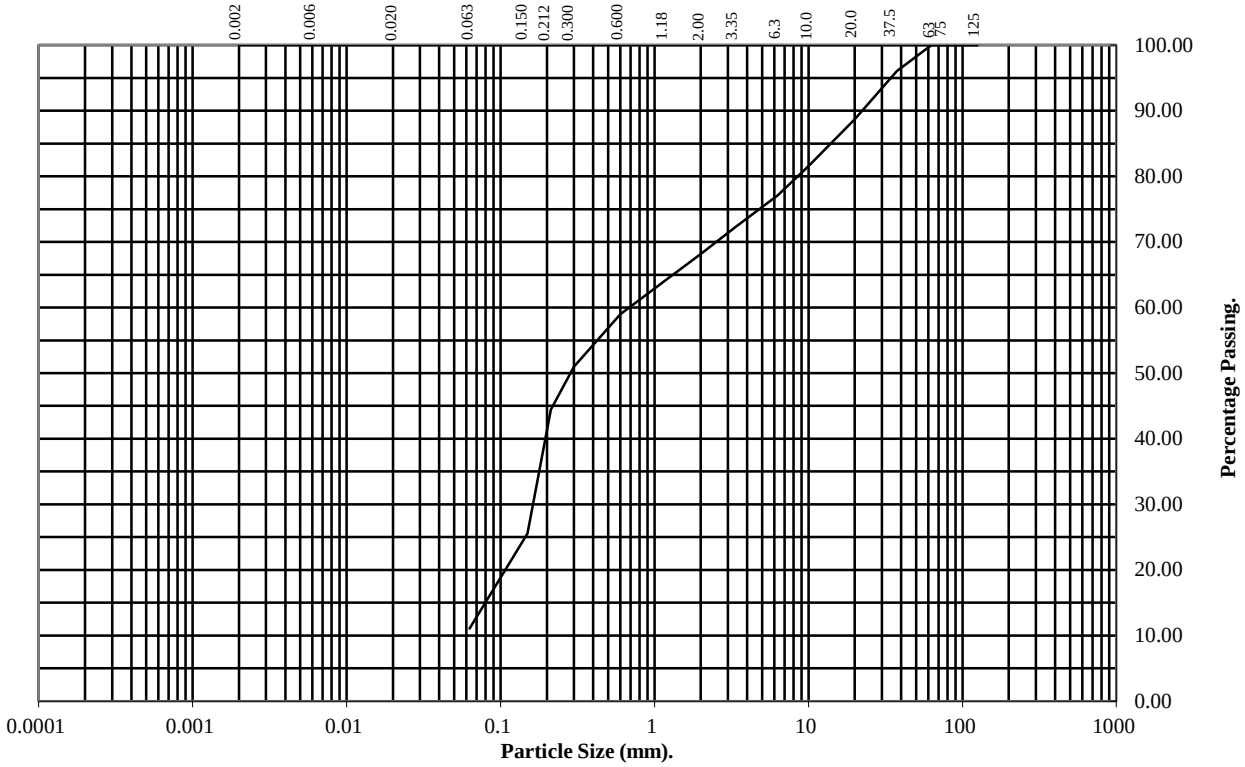
Authorised Approvers: Ben Armstrong (Quality Manager)

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve, Clause 9.2

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH135** | **Top Depth (m):** | **0.40** |
| **Sample Number:** | **6** | **Base Depth(m):** | **0.60** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 96 |
| 20 | 89 |
| 10 | 82 |
| 6.3 | 77 |
| 3.35 | 72 |
| 2 | 68 |
| 1.18 | 64 |
| 0.6 | 59 |
| 0.3 | 51 |
| 0.212 | 44 |
| 0.15 | 26 |
| 0.063 | 11 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 32 |
| Sand | 57 |
| Silt/Clay | 11 |

**Remarks:**

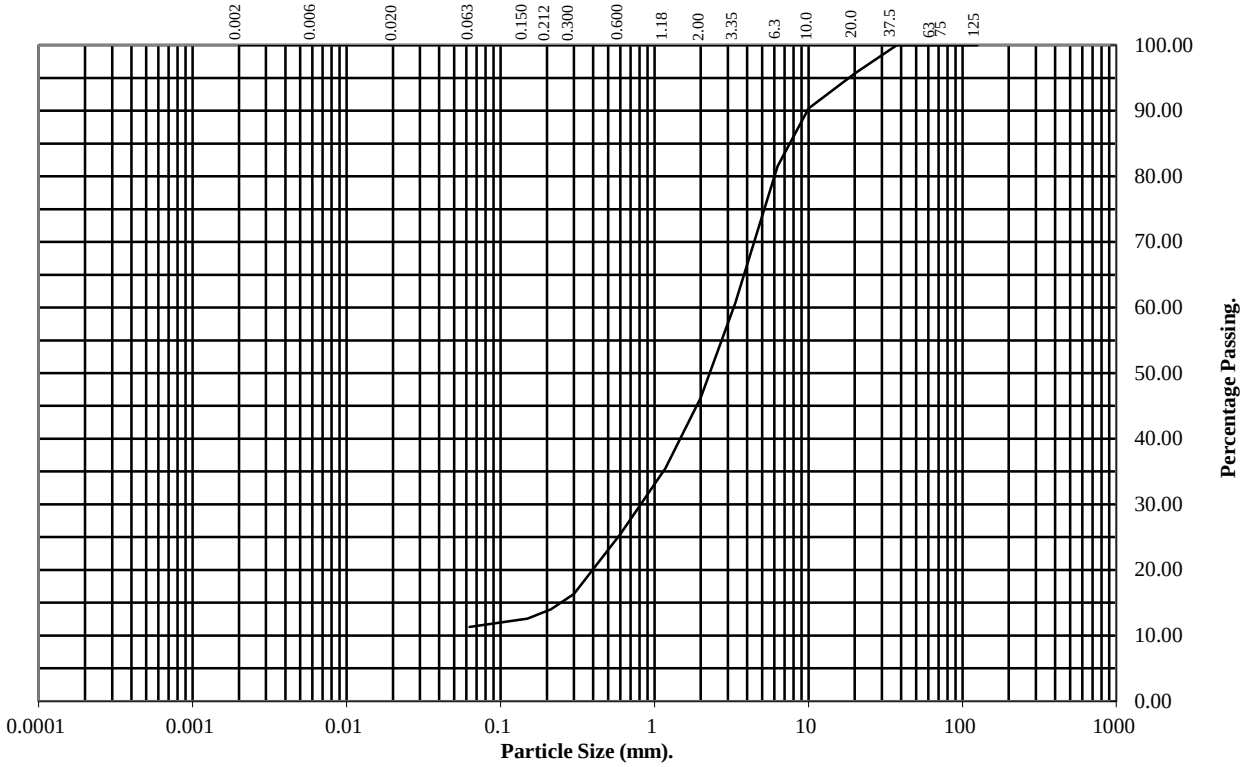
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve, Clause 9.2

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH135** | **Top Depth (m):** | **1.20** |
| **Sample Number:** | **7** | **Base Depth(m):** | **1.40** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 100 |
| 20 | 96 |
| 10 | 90 |
| 6.3 | 82 |
| 3.35 | 61 |
| 2 | 46 |
| 1.18 | 36 |
| 0.6 | 25 |
| 0.3 | 16 |
| 0.212 | 14 |
| 0.15 | 13 |
| 0.063 | 11 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 54 |
| Sand | 35 |
| Silt/Clay | 11 |

**Remarks:**

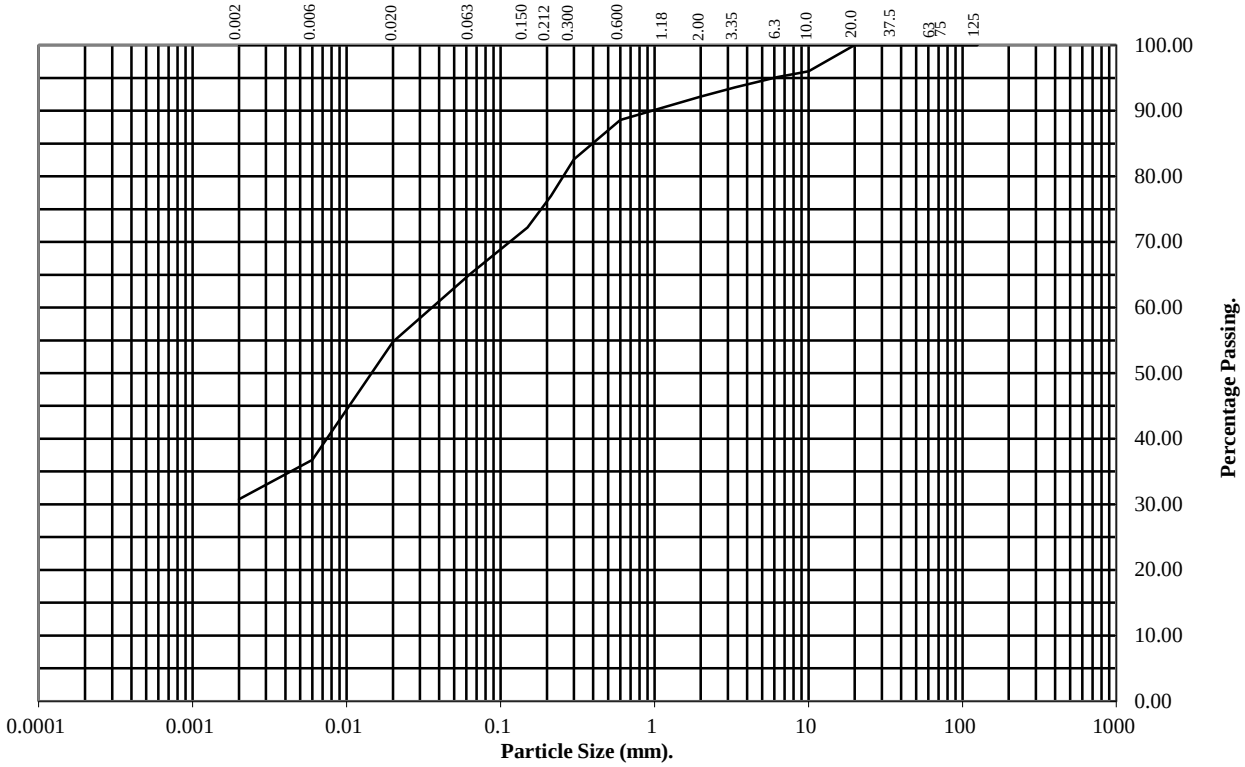
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH136** | **Top Depth (m):** | **0.50** |
| **Sample Number:** | **6** | **Base Depth(m):** | **0.70** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 100 |
| 20 | 100 |
| 10 | 96 |
| 6.3 | 95 |
| 3.35 | 94 |
| 2 | 92 |
| 1.18 | 91 |
| 0.6 | 89 |
| 0.3 | 83 |
| 0.212 | 77 |
| 0.15 | 72 |
| 0.063 | 65 |

| Particle Diameter | Percentage Passing |
|---|---|
| 0.02 | 55 |
| 0.006 | 37 |
| 0.002 | 31 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 8 |
| Sand | 27 |
| Silt | 34 |
| Clay | 31 |

**Remarks:**

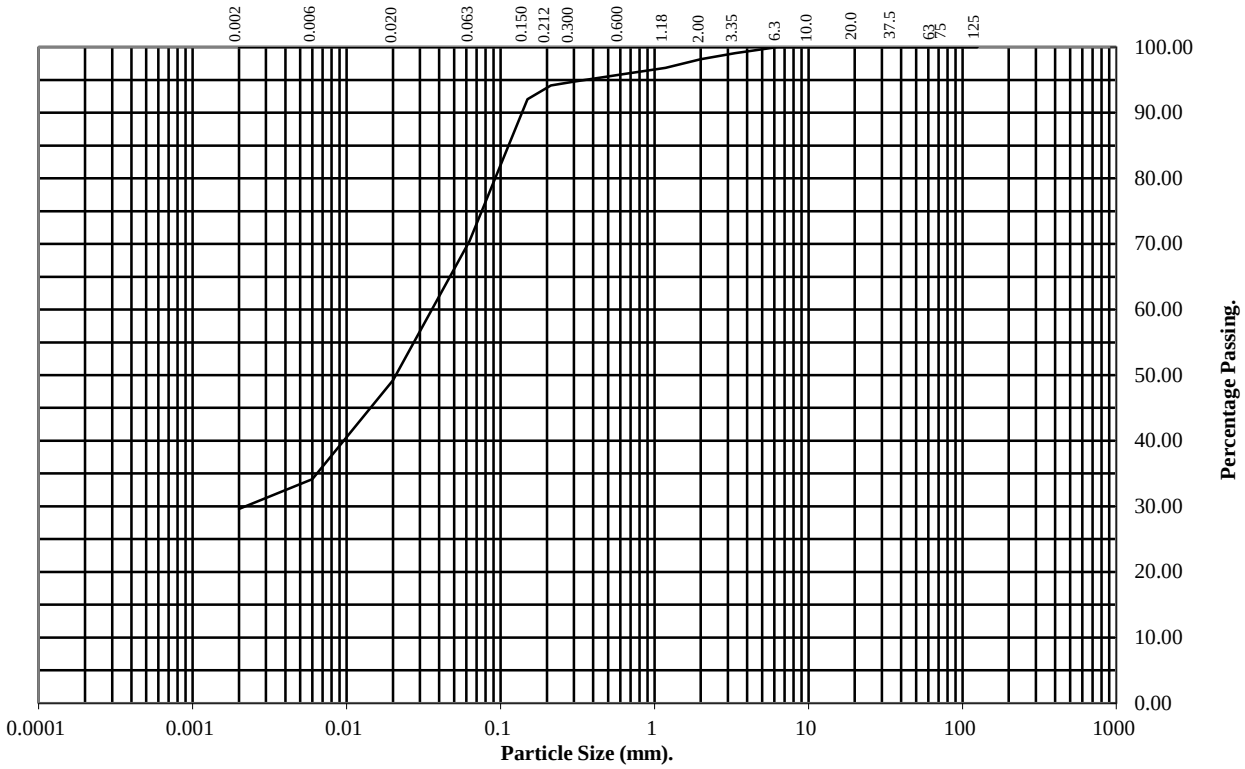
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP139** | **Top Depth (m):** | **0.50** |
| **Sample Number:** | **5** | **Base Depth(m):** | **0.70** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 100 |
| 20 | 100 |
| 10 | 100 |
| 6.3 | 100 |
| 3.35 | 99 |
| 2 | 98 |
| 1.18 | 97 |
| 0.6 | 96 |
| 0.3 | 95 |
| 0.212 | 94 |
| 0.15 | 92 |
| 0.063 | 70 |

| Particle Diameter | Percentage Passing |
|---|---|
| 0.02 | 49 |
| 0.006 | 34 |
| 0.002 | 30 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 2 |
| Sand | 28 |
| Silt | 40 |
| Clay | 30 |

**Remarks:**

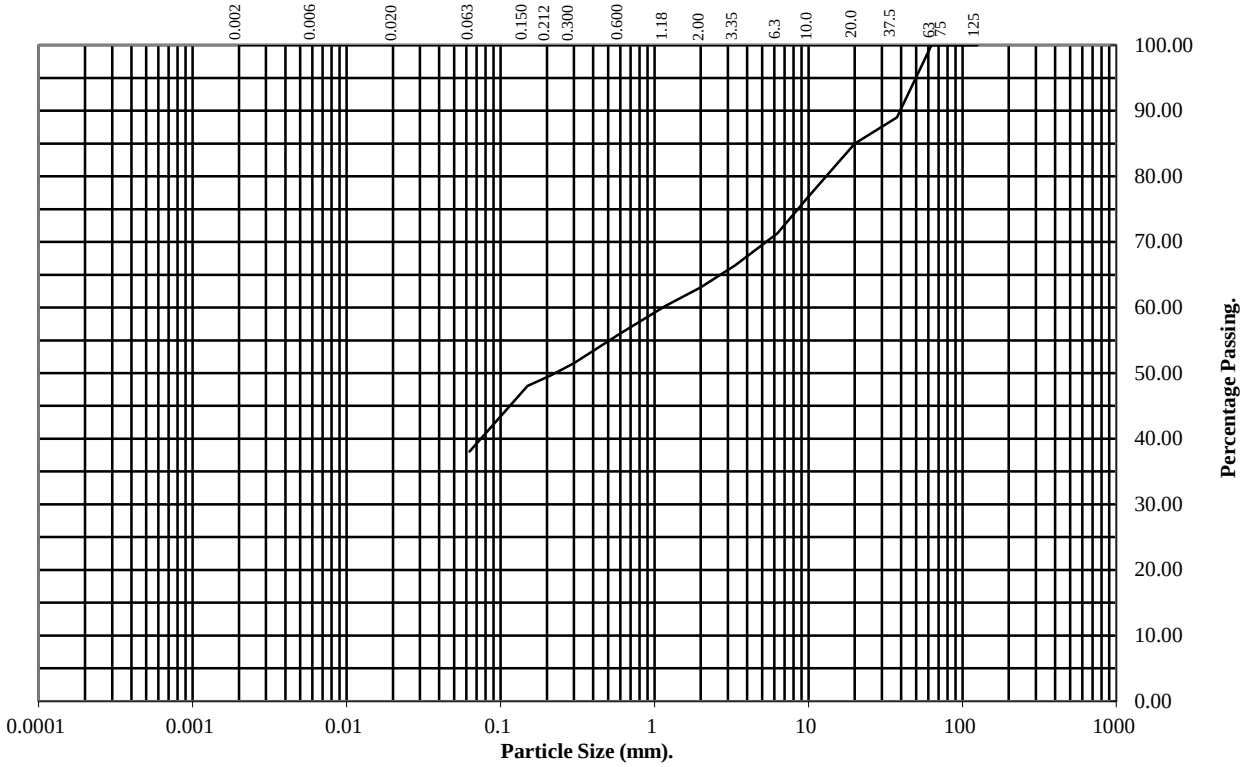
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve, Clause 9.2

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP139** | **Top Depth (m):** | **1.60** |
| **Sample Number:** | **7** | **Base Depth(m):** | **1.80** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 89 |
| 20 | 85 |
| 10 | 77 |
| 6.3 | 71 |
| 3.35 | 66 |
| 2 | 63 |
| 1.18 | 60 |
| 0.6 | 56 |
| 0.3 | 52 |
| 0.212 | 50 |
| 0.15 | 48 |
| 0.063 | 38 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 37 |
| Sand | 25 |
| Silt/Clay | 38 |

**Remarks:**

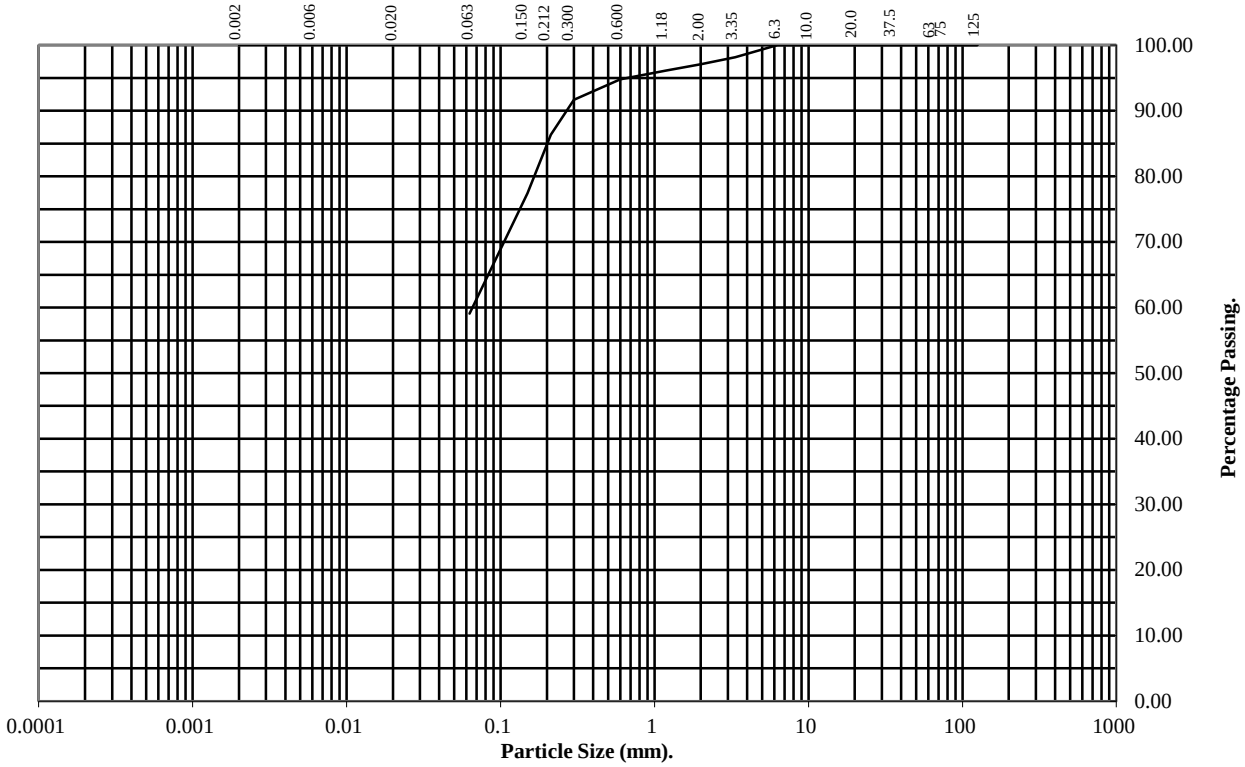
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve, Clause 9.2

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP140** | **Top Depth (m):** | **0.30** |
| **Sample Number:** | **4** | **Base Depth(m):** | **0.50** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 100 |
| 20 | 100 |
| 10 | 100 |
| 6.3 | 100 |
| 3.35 | 98 |
| 2 | 97 |
| 1.18 | 96 |
| 0.6 | 95 |
| 0.3 | 92 |
| 0.212 | 86 |
| 0.15 | 77 |
| 0.063 | 59 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 3 |
| Sand | 38 |
| Silt/Clay | 59 |

**Remarks:**

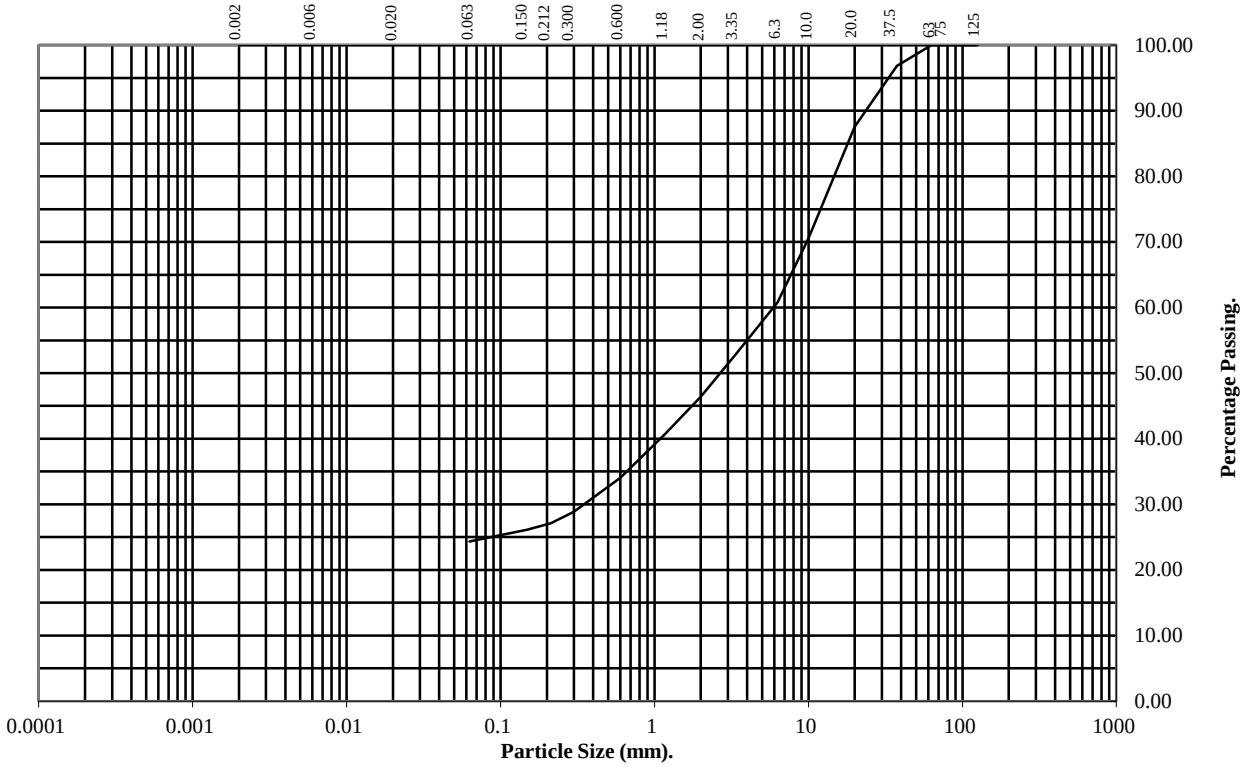
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve, Clause 9.2

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP140** | **Top Depth (m):** | **1.00** |
| **Sample Number:** | **7** | **Base Depth(m):** | **1.20** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 97 |
| 20 | 88 |
| 10 | 71 |
| 6.3 | 61 |
| 3.35 | 53 |
| 2 | 46 |
| 1.18 | 41 |
| 0.6 | 34 |
| 0.3 | 29 |
| 0.212 | 27 |
| 0.15 | 26 |
| 0.063 | 24 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 54 |
| Sand | 22 |
| Silt/Clay | 24 |

**Remarks:**

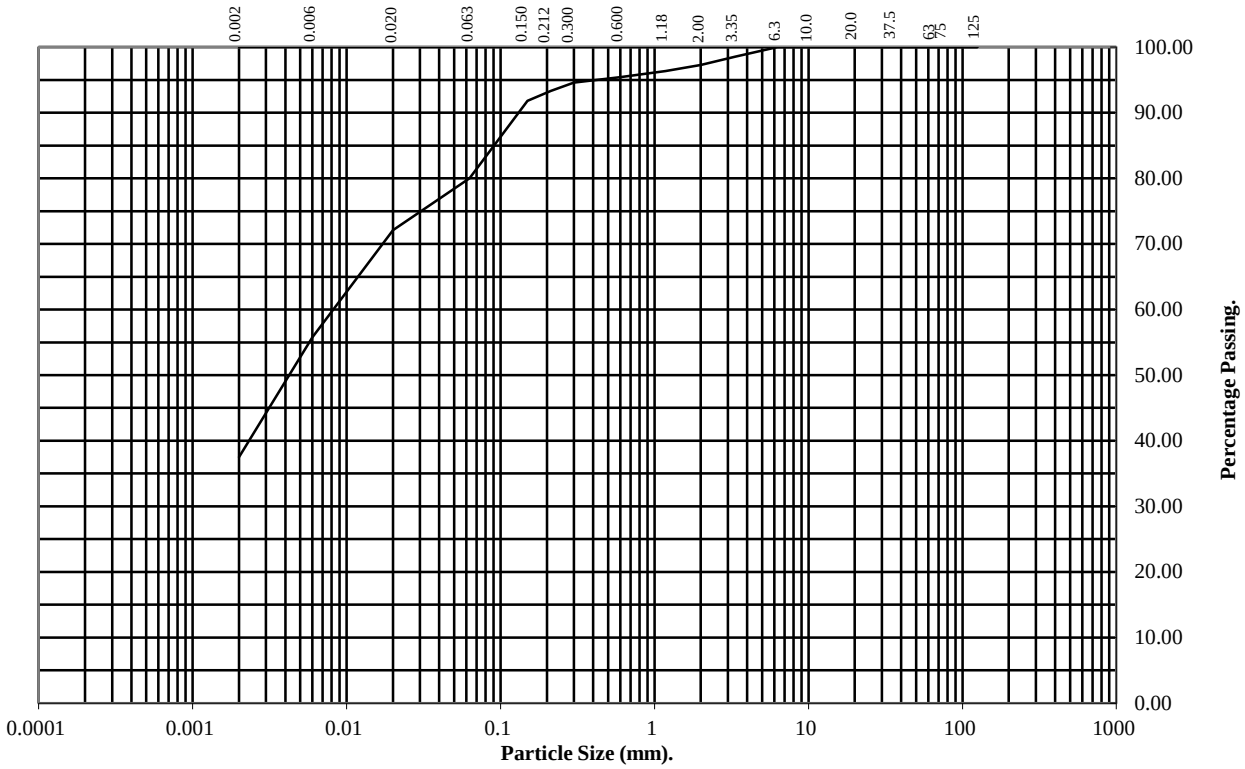
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP140** | **Top Depth (m):** | **1.70** |
| **Sample Number:** | **9** | **Base Depth(m):** | **1.90** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 100 |
| 20 | 100 |
| 10 | 100 |
| 6.3 | 100 |
| 3.35 | 99 |
| 2 | 97 |
| 1.18 | 96 |
| 0.6 | 95 |
| 0.3 | 95 |
| 0.212 | 93 |
| 0.15 | 92 |
| 0.063 | 80 |

| Particle Diameter | Percentage Passing |
|---|---|
| 0.02 | 72 |
| 0.006 | 56 |
| 0.002 | 38 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 3 |
| Sand | 17 |
| Silt | 42 |
| Clay | 38 |

**Remarks:**

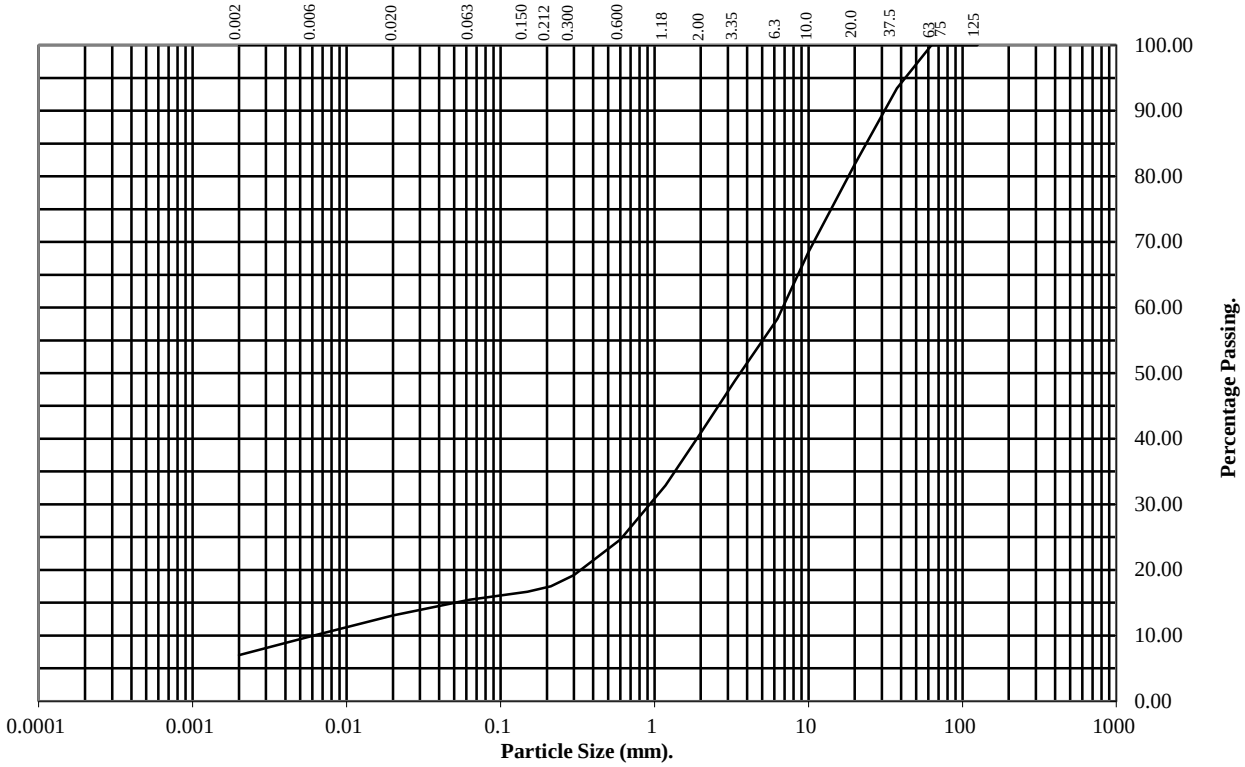
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP141** | **Top Depth (m):** | **0.30** |
| **Sample Number:** | **4** | **Base Depth(m):** | **0.50** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 93 |
| 20 | 82 |
| 10 | 68 |
| 6.3 | 58 |
| 3.35 | 49 |
| 2 | 41 |
| 1.18 | 33 |
| 0.6 | 25 |
| 0.3 | 19 |
| 0.212 | 17 |
| 0.15 | 17 |
| 0.063 | 15 |

| Particle Diameter | Percentage Passing |
|---|---|
| 0.02 | 13 |
| 0.006 | 10 |
| 0.002 | 7 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 59 |
| Sand | 26 |
| Silt | 8 |
| Clay | 7 |

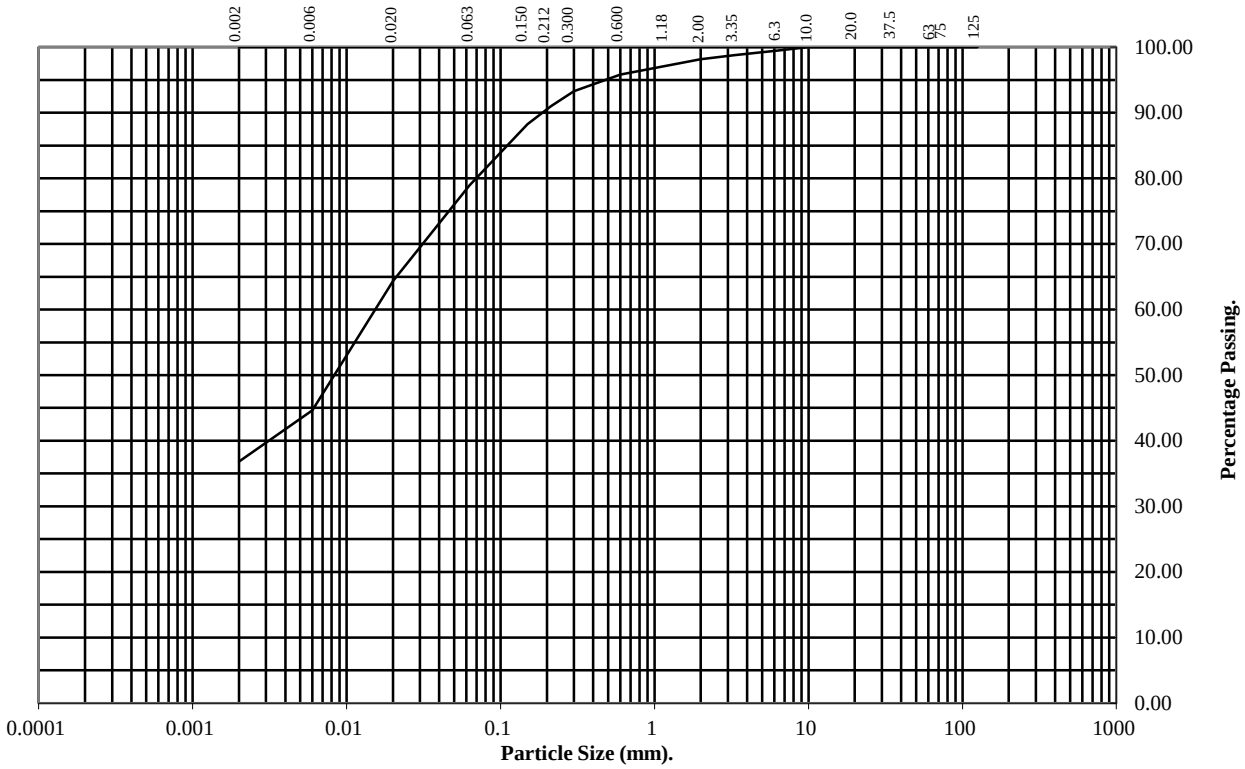
**Remarks:**
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP141** | **Top Depth (m):** | **0.50** |
| **Sample Number:** | **7** | **Base Depth(m):** | **0.70** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 100 |
| 20 | 100 |
| 10 | 100 |
| 6.3 | 99 |
| 3.35 | 99 |
| 2 | 98 |
| 1.18 | 97 |
| 0.6 | 96 |
| 0.3 | 93 |
| 0.212 | 91 |
| 0.15 | 88 |
| 0.063 | 79 |

| Particle Diameter | Percentage Passing |
|---|---|
| 0.02 | 64 |
| 0.006 | 45 |
| 0.002 | 37 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 2 |
| Sand | 19 |
| Silt | 42 |
| Clay | 37 |

**Remarks:**

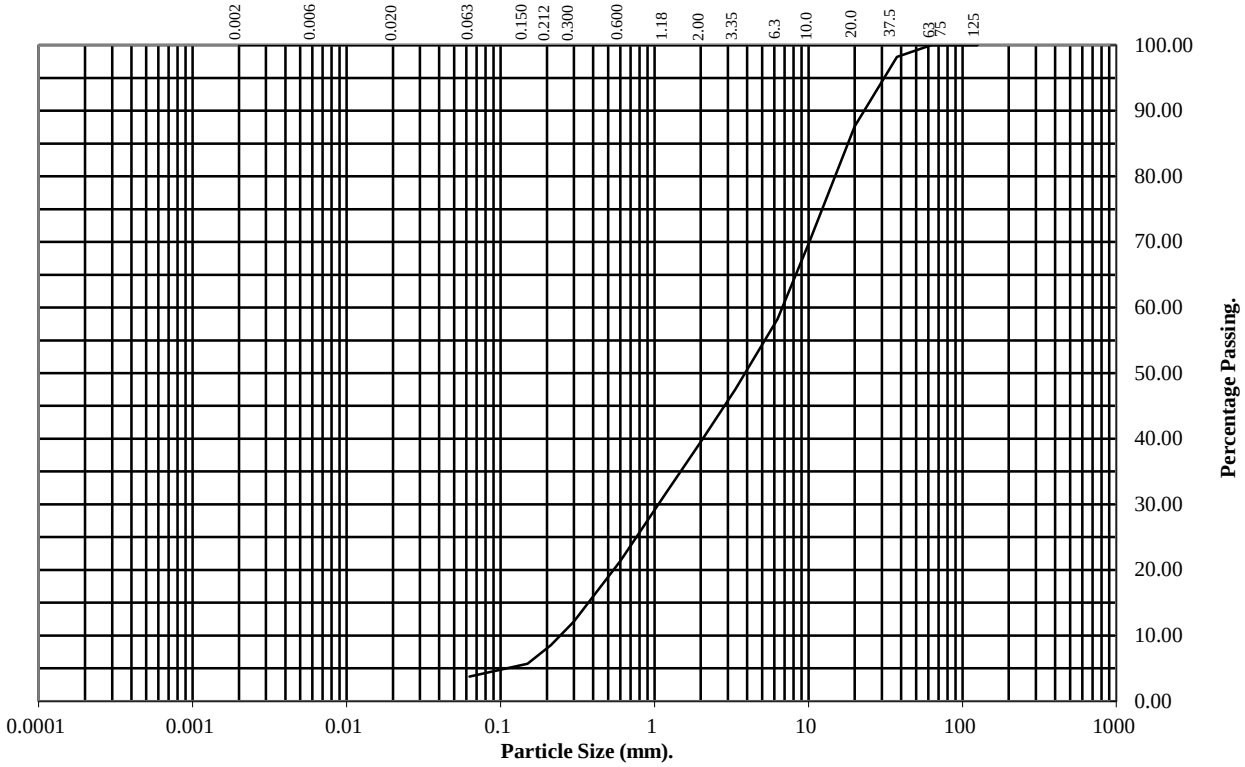
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve, Clause 9.2

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP142** | **Top Depth (m):** | **0.30** |
| **Sample Number:** | **4** | **Base Depth(m):** | **0.50** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 98 |
| 20 | 88 |
| 10 | 70 |
| 6.3 | 58 |
| 3.35 | 48 |
| 2 | 40 |
| 1.18 | 32 |
| 0.6 | 21 |
| 0.3 | 12 |
| 0.212 | 9 |
| 0.15 | 6 |
| 0.063 | 4 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 60 |
| Sand | 36 |
| Silt/Clay | 4 |

**Remarks:**

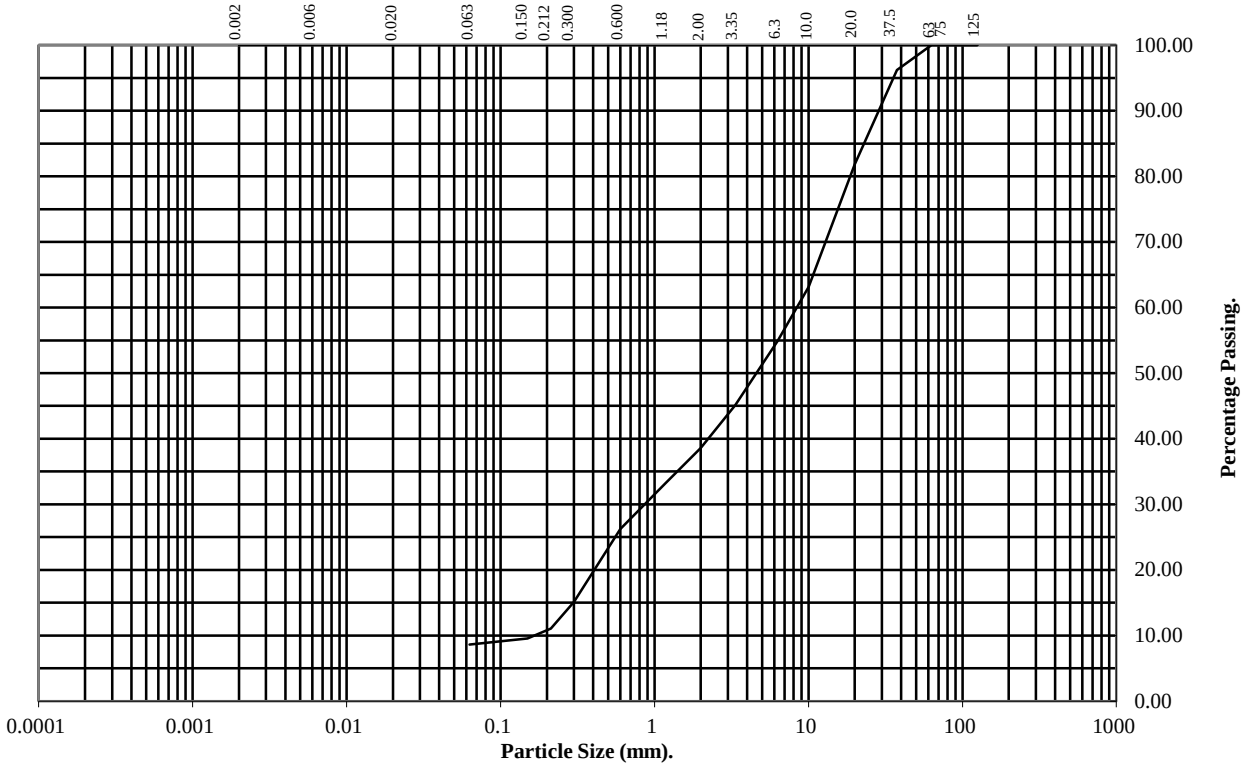
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve, Clause 9.2

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP142** | **Top Depth (m):** | **1.50** |
| **Sample Number:** | **13** | **Base Depth(m):** | **1.70** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 96 |
| 20 | 82 |
| 10 | 63 |
| 6.3 | 55 |
| 3.35 | 45 |
| 2 | 39 |
| 1.18 | 33 |
| 0.6 | 26 |
| 0.3 | 15 |
| 0.212 | 11 |
| 0.15 | 10 |
| 0.063 | 9 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 61 |
| Sand | 30 |
| Silt/Clay | 9 |

**Remarks:**

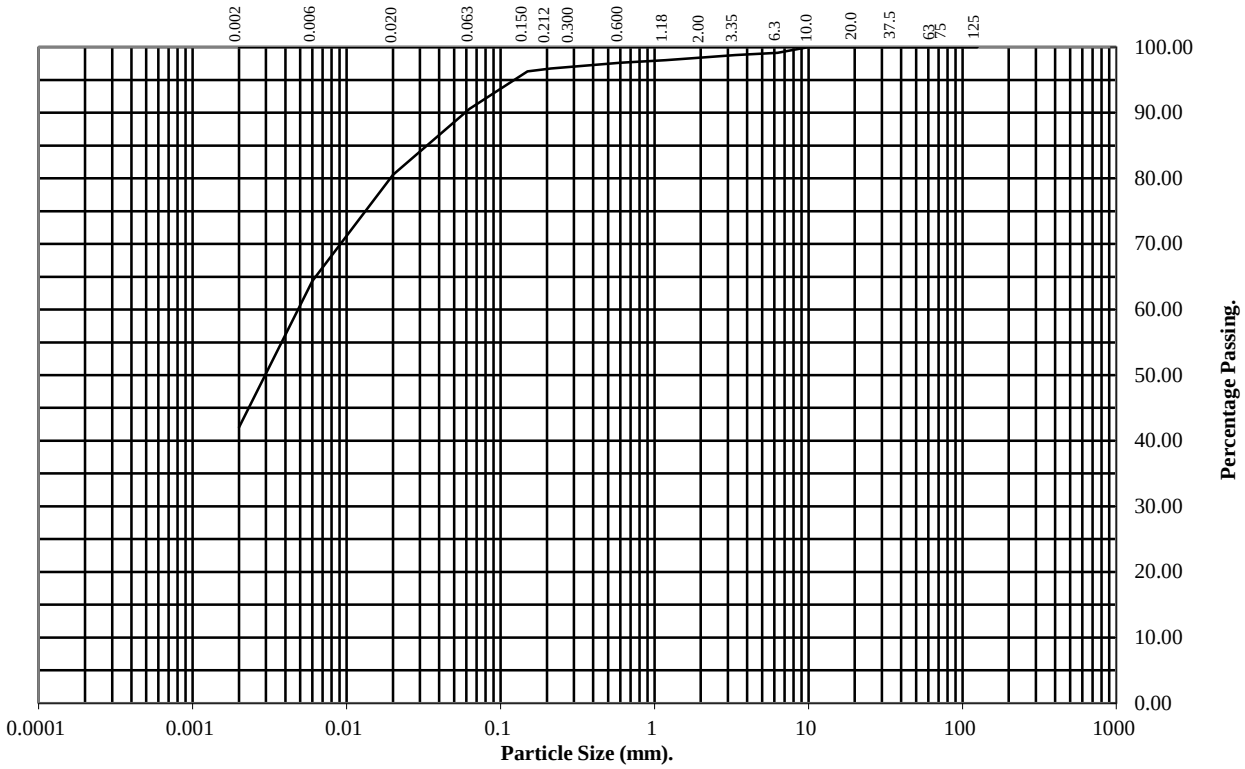
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP142** | **Top Depth (m):** | **2.70** |
| **Sample Number:** | **9** | **Base Depth(m):** | **2.90** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 100 |
| 20 | 100 |
| 10 | 100 |
| 6.3 | 99 |
| 3.35 | 99 |
| 2 | 98 |
| 1.18 | 98 |
| 0.6 | 98 |
| 0.3 | 97 |
| 0.212 | 97 |
| 0.15 | 96 |
| 0.063 | 91 |

| Particle Diameter | Percentage Passing |
|---|---|
| 0.02 | 81 |
| 0.006 | 64 |
| 0.002 | 42 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 2 |
| Sand | 7 |
| Silt | 49 |
| Clay | 42 |

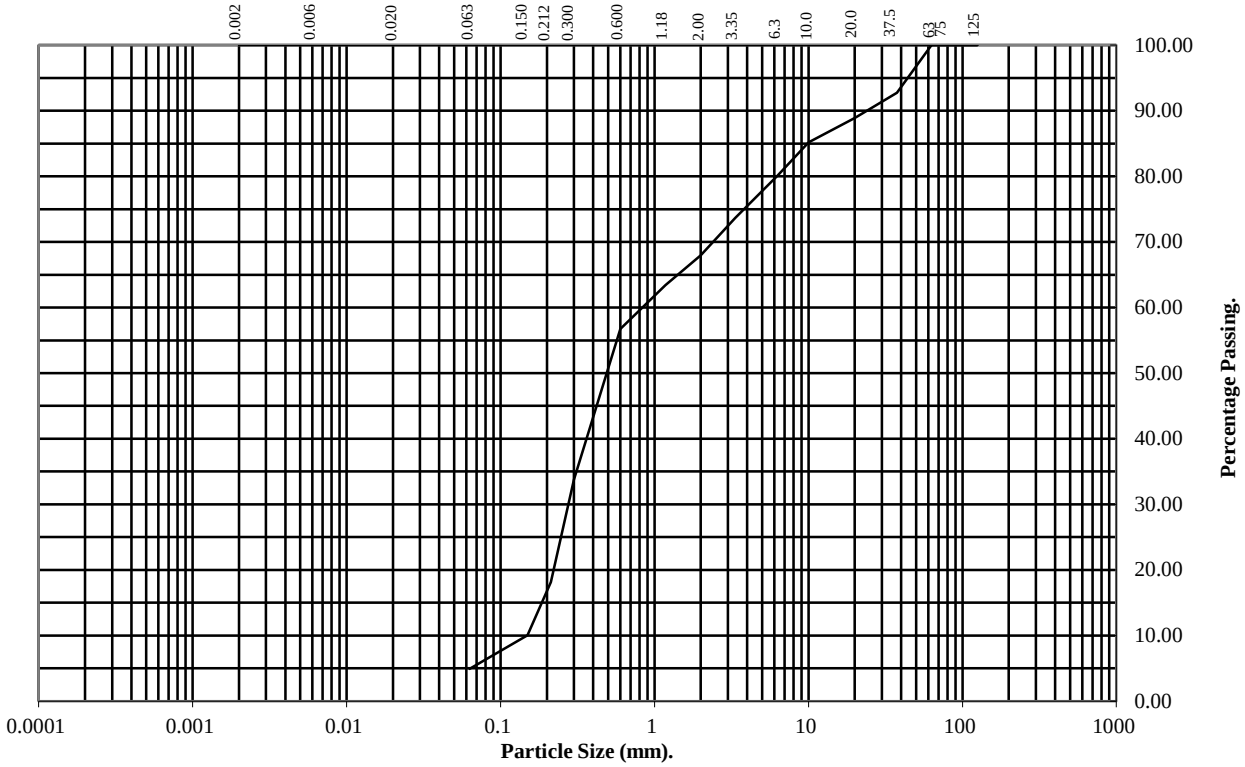
**Remarks:**
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve, Clause 9.2

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP143** | **Top Depth (m):** | **1.00** |
| **Sample Number:** | **5** | **Base Depth(m):** | **1.30** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 93 |
| 20 | 89 |
| 10 | 85 |
| 6.3 | 80 |
| 3.35 | 74 |
| 2 | 68 |
| 1.18 | 63 |
| 0.6 | 57 |
| 0.3 | 34 |
| 0.212 | 18 |
| 0.15 | 10 |
| 0.063 | 5 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 32 |
| Sand | 63 |
| Silt/Clay | 5 |

**Remarks:**

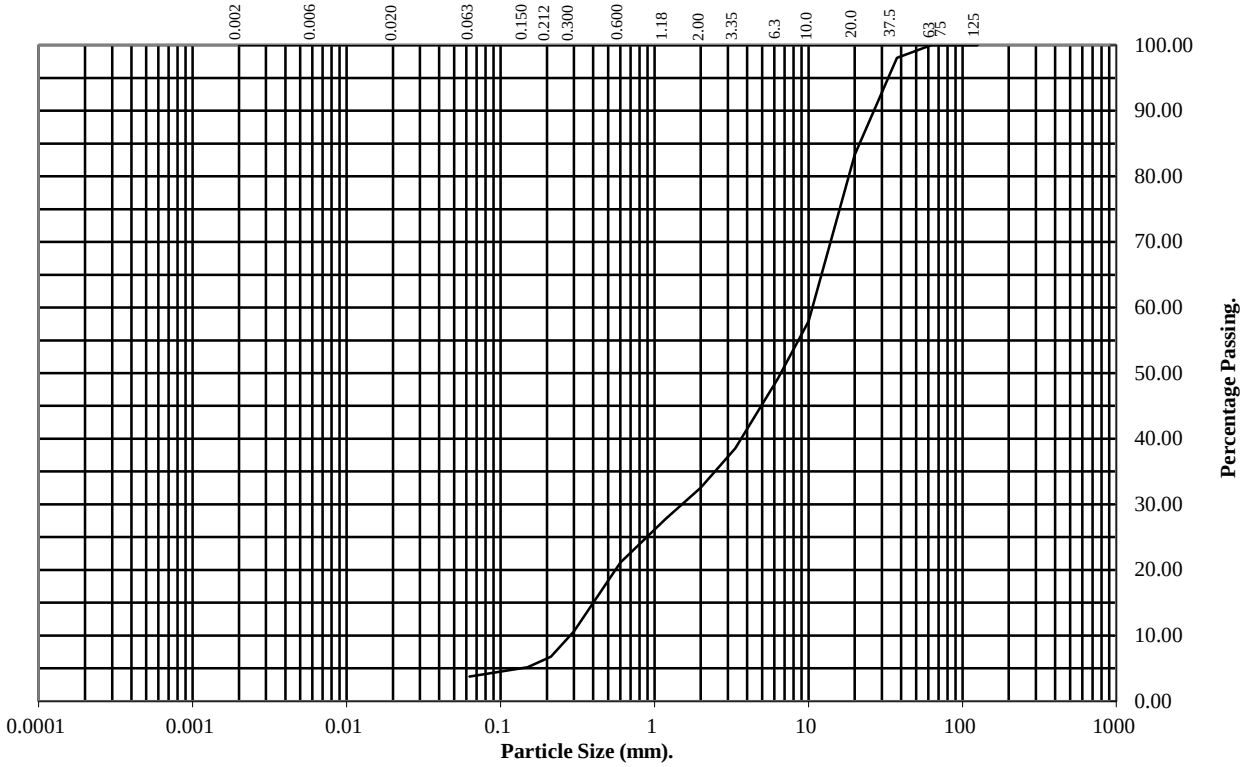
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve, Clause 9.2

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP144** | **Top Depth (m):** | **0.40** |
| **Sample Number:** | **4** | **Base Depth(m):** | **0.50** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 98 |
| 20 | 83 |
| 10 | 58 |
| 6.3 | 49 |
| 3.35 | 39 |
| 2 | 33 |
| 1.18 | 28 |
| 0.6 | 21 |
| 0.3 | 11 |
| 0.212 | 7 |
| 0.15 | 5 |
| 0.063 | 4 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 67 |
| Sand | 29 |
| Silt/Clay | 4 |

**Remarks:**

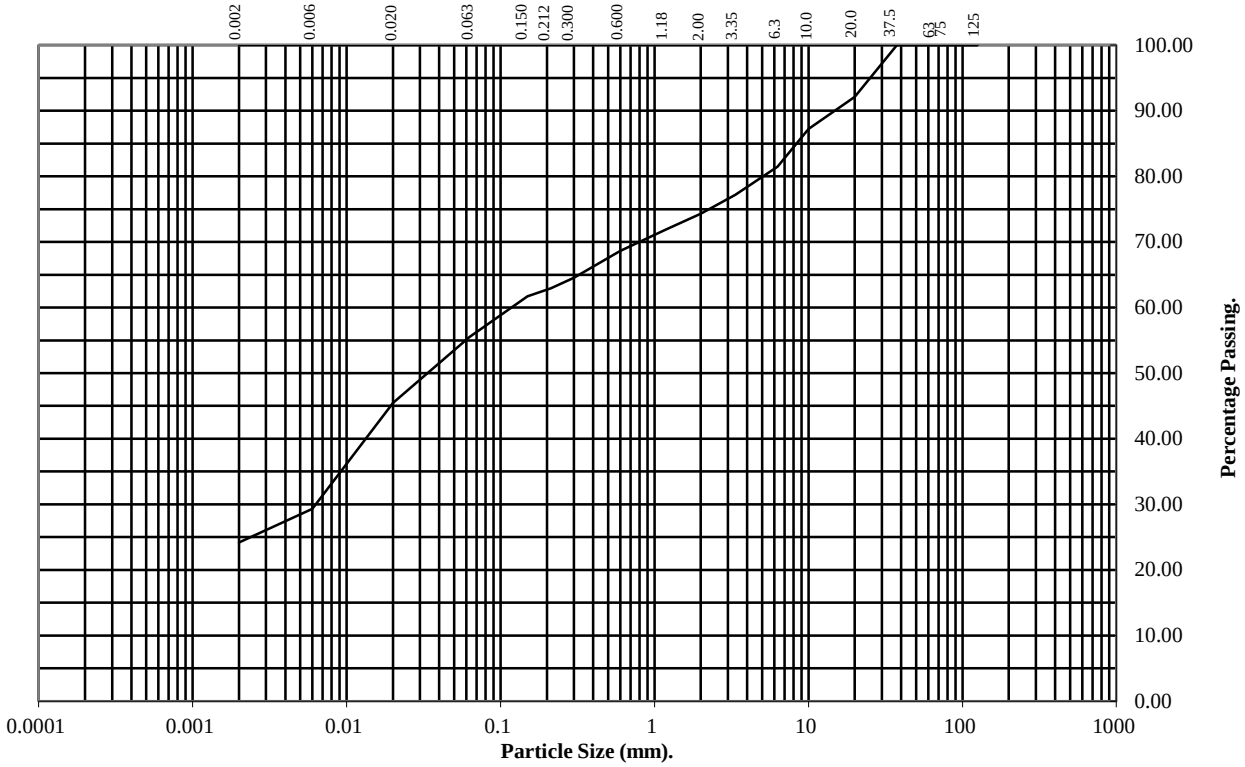
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP144** | **Top Depth (m):** | **1.75** |
| **Sample Number:** | **7** | **Base Depth(m):** | **1.90** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 100 |
| 20 | 92 |
| 10 | 87 |
| 6.3 | 81 |
| 3.35 | 77 |
| 2 | 74 |
| 1.18 | 72 |
| 0.6 | 69 |
| 0.3 | 65 |
| 0.212 | 63 |
| 0.15 | 62 |
| 0.063 | 56 |

| Particle Diameter | Percentage Passing |
|---|---|
| 0.02 | 45 |
| 0.006 | 29 |
| 0.002 | 24 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 26 |
| Sand | 18 |
| Silt | 32 |
| Clay | 24 |

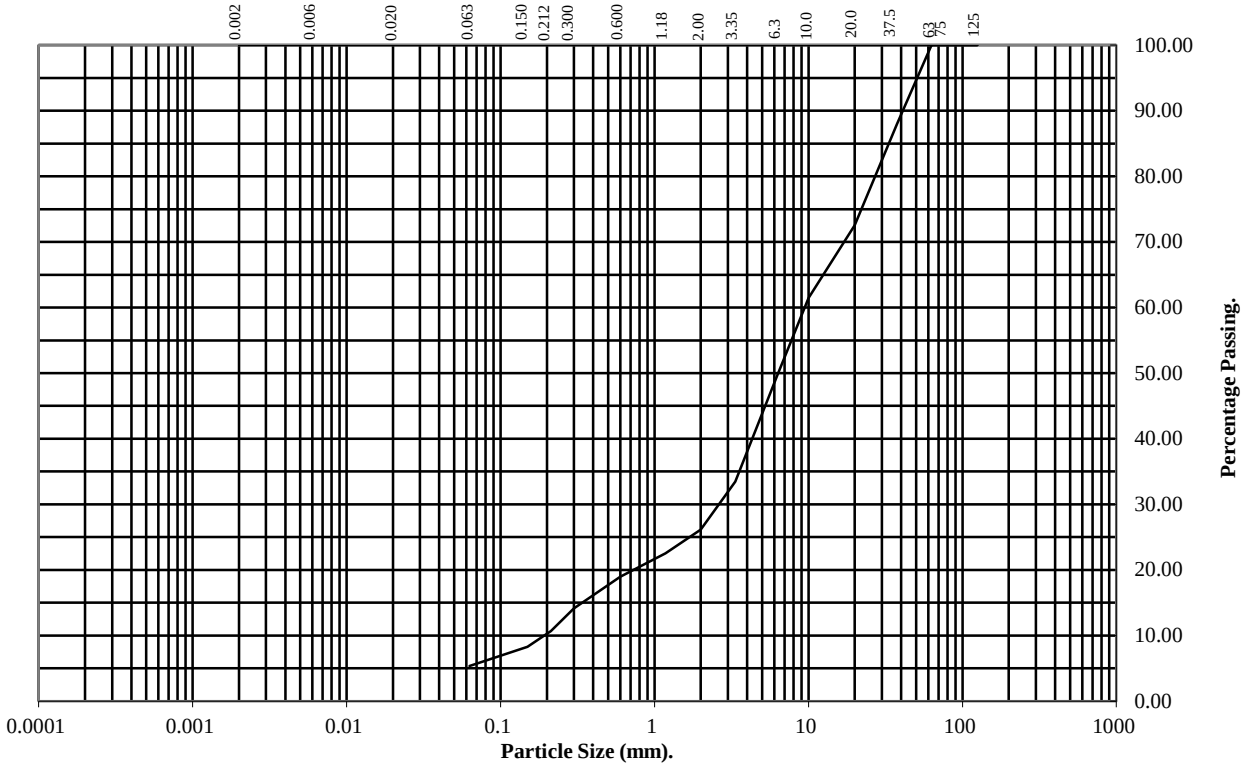
**Remarks:**
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve, Clause 9.2

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP145** | **Top Depth (m):** | **1.00** |
| **Sample Number:** | **5** | **Base Depth(m):** | **1.30** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 88 |
| 20 | 73 |
| 10 | 61 |
| 6.3 | 50 |
| 3.35 | 33 |
| 2 | 26 |
| 1.18 | 23 |
| 0.6 | 19 |
| 0.3 | 14 |
| 0.212 | 11 |
| 0.15 | 8 |
| 0.063 | 5 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 74 |
| Sand | 21 |
| Silt/Clay | 5 |

**Remarks:**

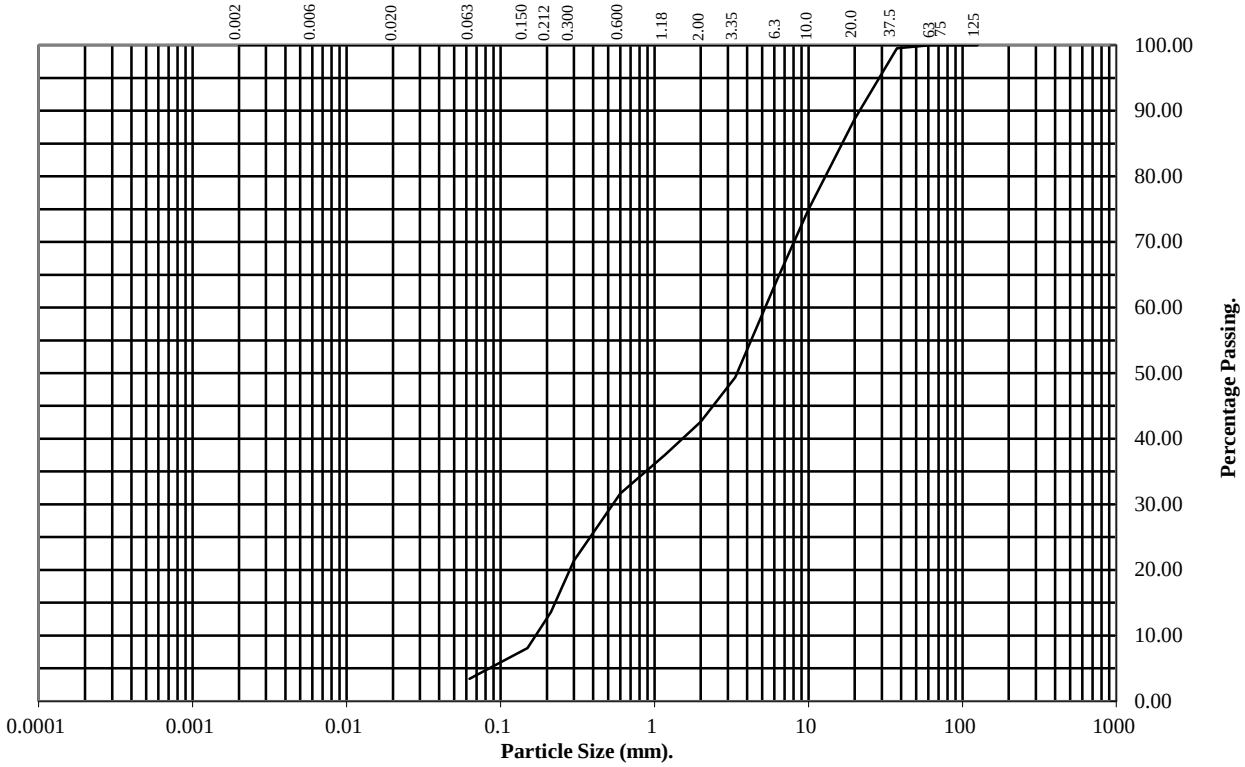
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve, Clause 9.2

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP145** | **Top Depth (m):** | **2.00** |
| **Sample Number:** | **7** | **Base Depth(m):** | **2.30** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 100 |
| 20 | 89 |
| 10 | 75 |
| 6.3 | 64 |
| 3.35 | 49 |
| 2 | 43 |
| 1.18 | 38 |
| 0.6 | 32 |
| 0.3 | 21 |
| 0.212 | 14 |
| 0.15 | 8 |
| 0.063 | 3 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 57 |
| Sand | 40 |
| Silt/Clay | 3 |

**Remarks:**

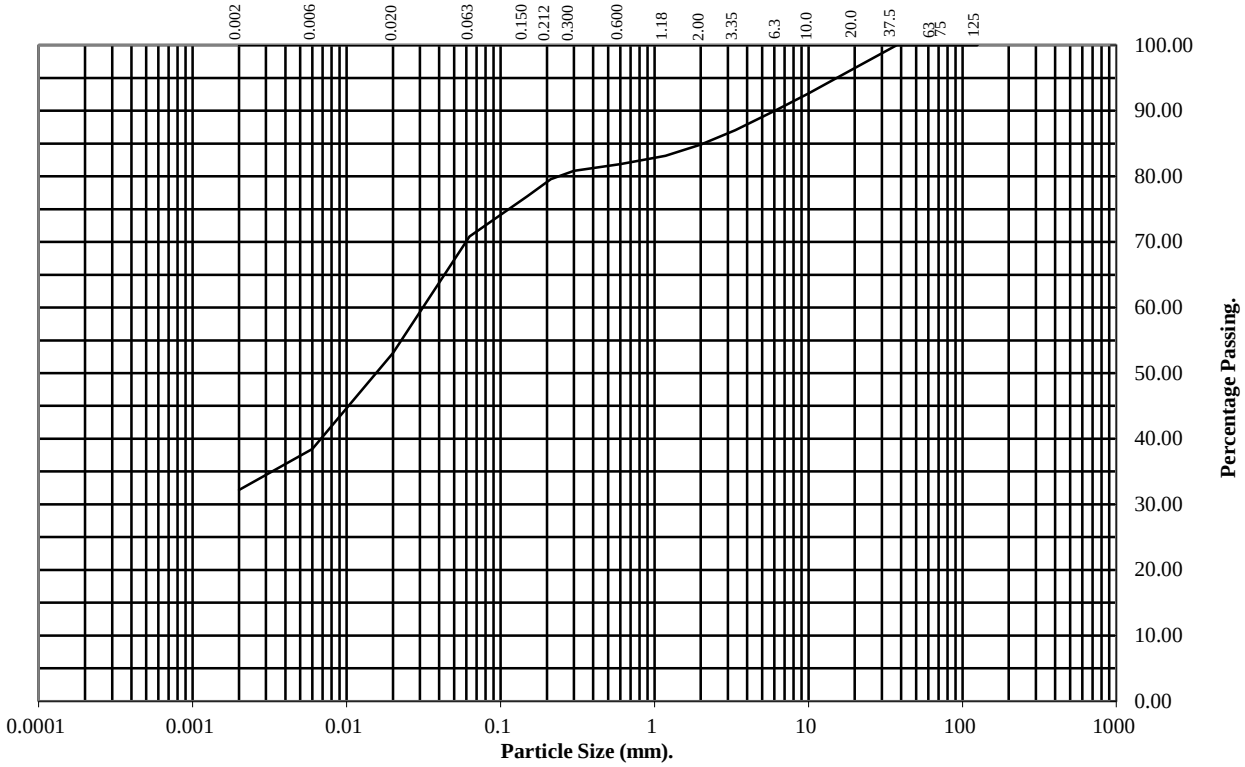
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP146** | **Top Depth (m):** | **0.40** |
| **Sample Number:** | **5** | **Base Depth(m):** | **0.70** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 100 |
| 20 | 97 |
| 10 | 93 |
| 6.3 | 90 |
| 3.35 | 87 |
| 2 | 85 |
| 1.18 | 83 |
| 0.6 | 82 |
| 0.3 | 81 |
| 0.212 | 80 |
| 0.15 | 77 |
| 0.063 | 71 |

| Particle Diameter | Percentage Passing |
|---|---|
| 0.02 | 53 |
| 0.006 | 38 |
| 0.002 | 32 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 15 |
| Sand | 14 |
| Silt | 39 |
| Clay | 32 |

**Remarks:**

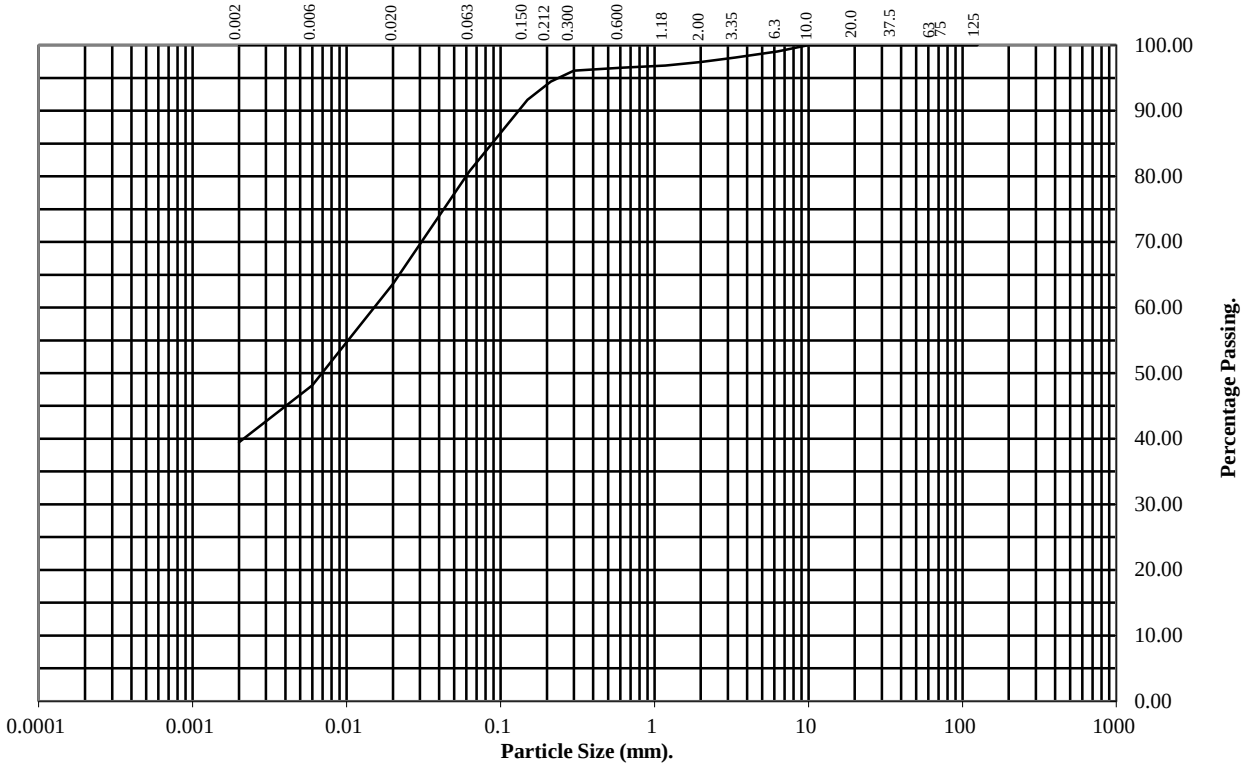
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP146** | **Top Depth (m):** | **1.10** |
| **Sample Number:** | **7** | **Base Depth(m):** | **1.40** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 100 |
| 20 | 100 |
| 10 | 100 |
| 6.3 | 99 |
| 3.35 | 98 |
| 2 | 97 |
| 1.18 | 97 |
| 0.6 | 97 |
| 0.3 | 96 |
| 0.212 | 94 |
| 0.15 | 92 |
| 0.063 | 81 |

| Particle Diameter | Percentage Passing |
|---|---|
| 0.02 | 64 |
| 0.006 | 48 |
| 0.002 | 39 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 3 |
| Sand | 16 |
| Silt | 42 |
| Clay | 39 |

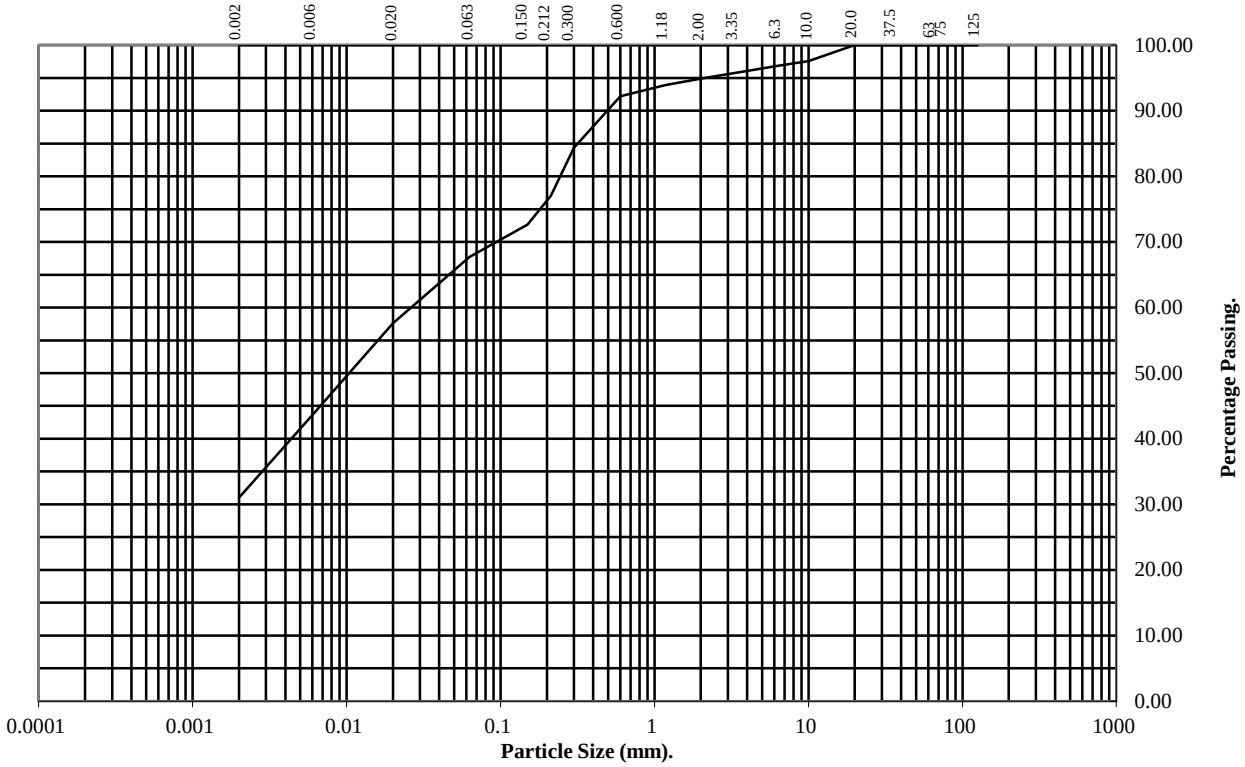
**Remarks:**
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP147** | **Top Depth (m):** | **0.40** |
| **Sample Number:** | **4** | **Base Depth(m):** | **0.50** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 100 |
| 20 | 100 |
| 10 | 98 |
| 6.3 | 97 |
| 3.35 | 96 |
| 2 | 95 |
| 1.18 | 94 |
| 0.6 | 92 |
| 0.3 | 84 |
| 0.212 | 77 |
| 0.15 | 73 |
| 0.063 | 68 |

| Particle Diameter | Percentage Passing |
|---|---|
| 0.02 | 58 |
| 0.006 | 44 |
| 0.002 | 31 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 5 |
| Sand | 27 |
| Silt | 37 |
| Clay | 31 |

**Remarks:**

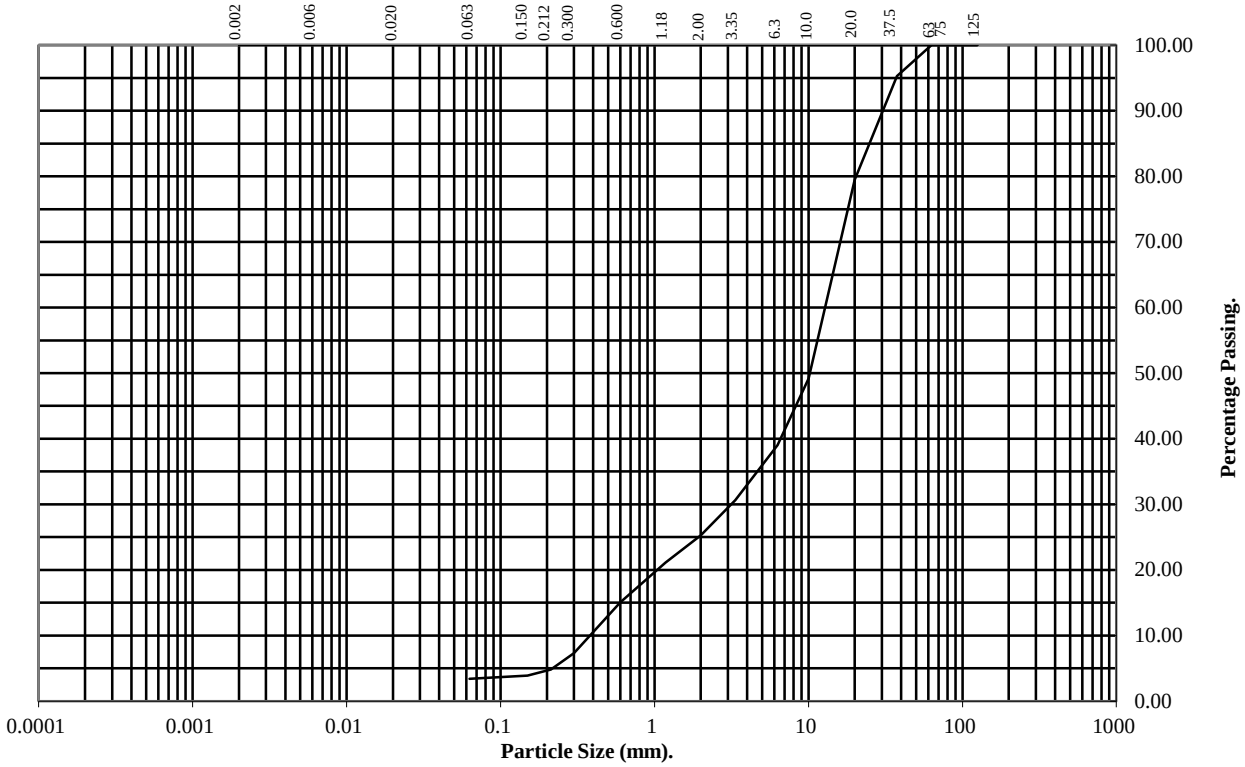
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve, Clause 9.2

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP147** | **Top Depth (m):** | **0.60** |
| **Sample Number:** | **7** | **Base Depth(m):** | **0.80** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 95 |
| 20 | 79 |
| 10 | 49 |
| 6.3 | 39 |
| 3.35 | 31 |
| 2 | 25 |
| 1.18 | 21 |
| 0.6 | 15 |
| 0.3 | 7 |
| 0.212 | 5 |
| 0.15 | 4 |
| 0.063 | 3 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 75 |
| Sand | 22 |
| Silt/Clay | 3 |

**Remarks:**

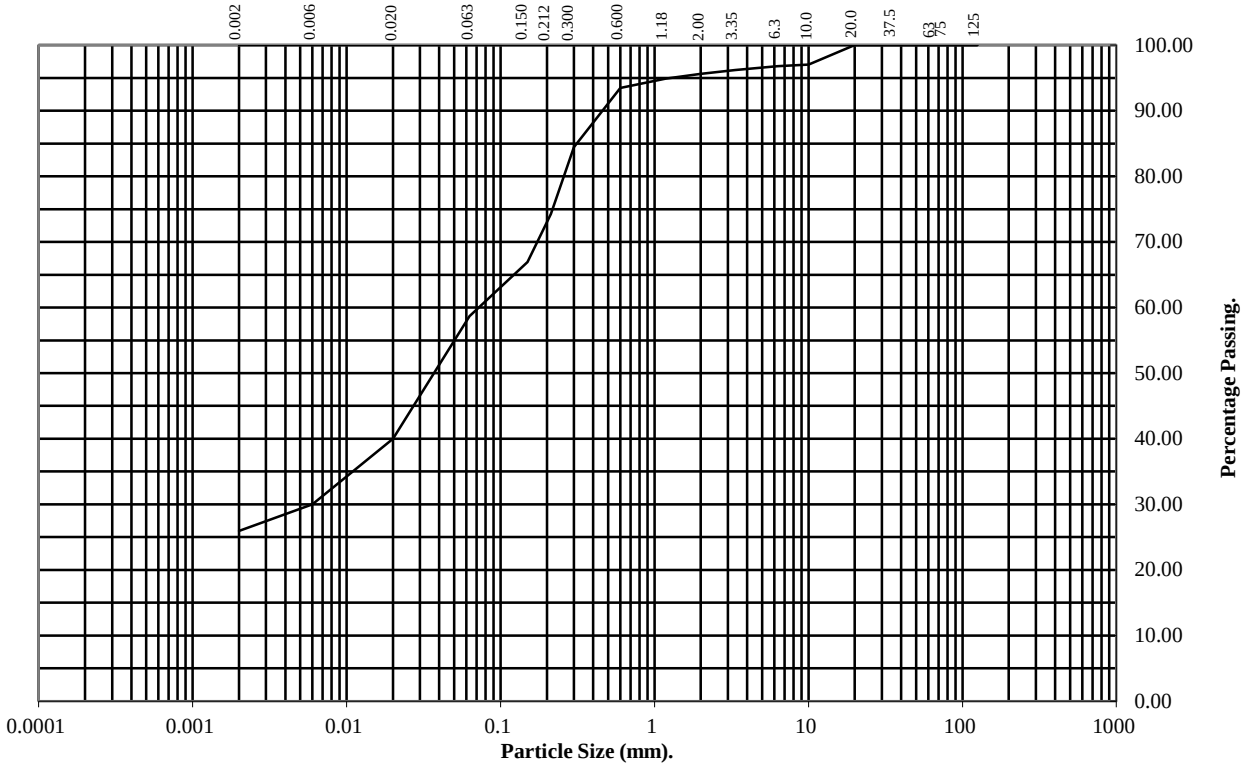
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP148** | **Top Depth (m):** | **1.00** |
| **Sample Number:** | **5** | **Base Depth(m):** | **1.30** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 100 |
| 20 | 100 |
| 10 | 97 |
| 6.3 | 97 |
| 3.35 | 96 |
| 2 | 96 |
| 1.18 | 95 |
| 0.6 | 93 |
| 0.3 | 84 |
| 0.212 | 74 |
| 0.15 | 67 |
| 0.063 | 59 |

| Particle Diameter | Percentage Passing |
|---|---|
| 0.02 | 40 |
| 0.006 | 30 |
| 0.002 | 26 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 4 |
| Sand | 37 |
| Silt | 33 |
| Clay | 26 |

**Remarks:**

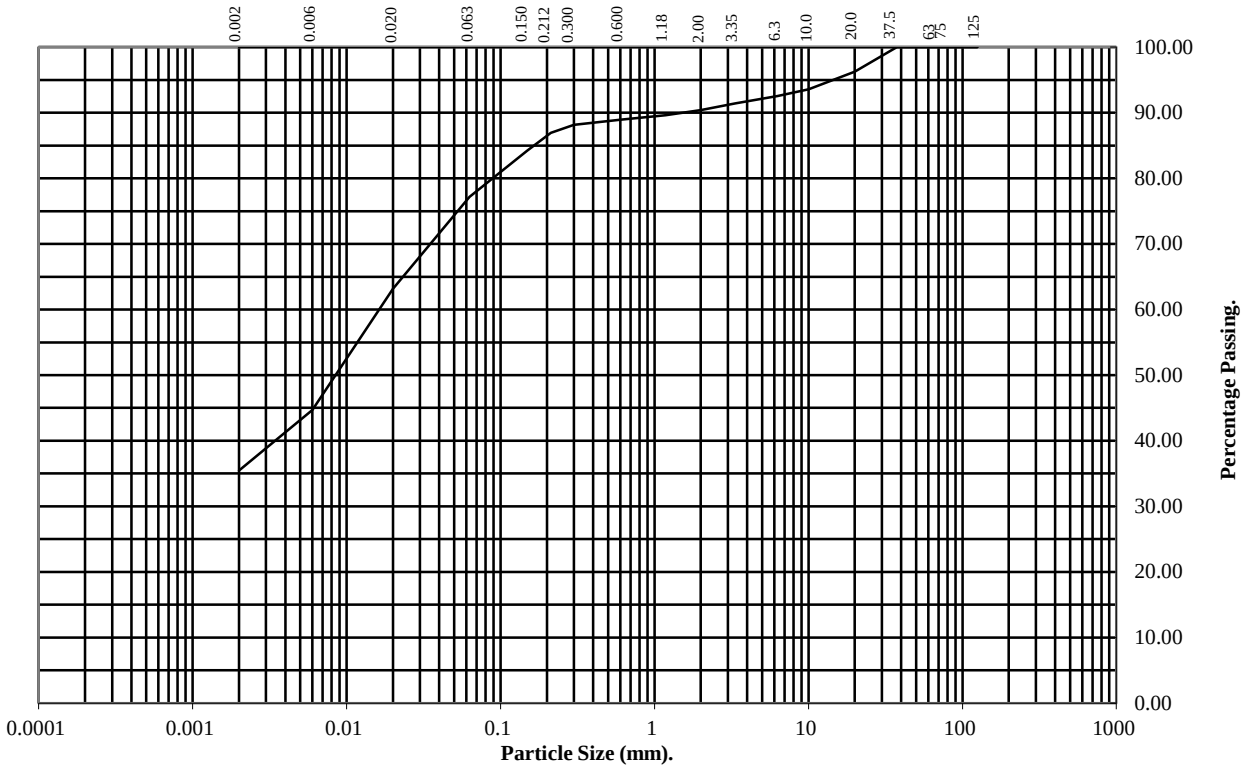
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP149** | **Top Depth (m):** | **1.00** |
| **Sample Number:** | **5** | **Base Depth(m):** | **1.30** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 100 |
| 20 | 96 |
| 10 | 94 |
| 6.3 | 93 |
| 3.35 | 91 |
| 2 | 90 |
| 1.18 | 90 |
| 0.6 | 89 |
| 0.3 | 88 |
| 0.212 | 87 |
| 0.15 | 84 |
| 0.063 | 77 |

| Particle Diameter | Percentage Passing |
|---|---|
| 0.02 | 63 |
| 0.006 | 45 |
| 0.002 | 35 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 10 |
| Sand | 13 |
| Silt | 42 |
| Clay | 35 |

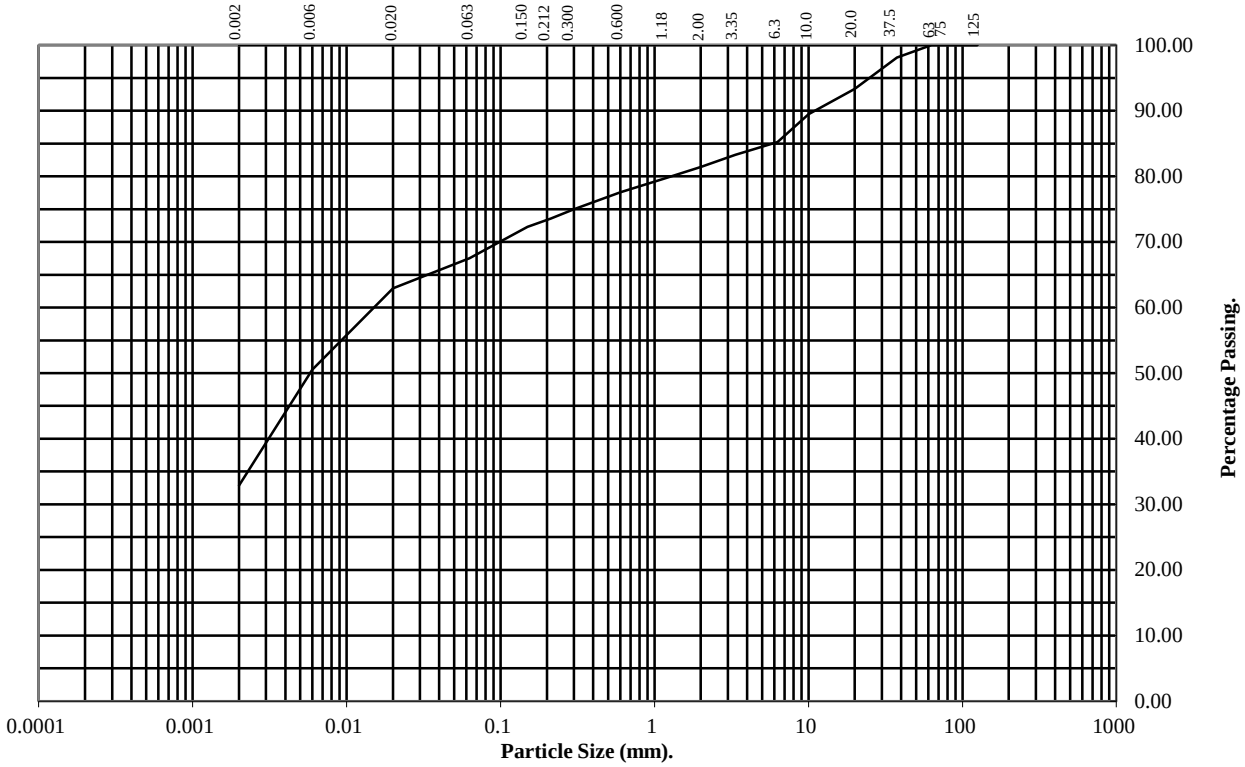
**Remarks:**
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP149** | **Top Depth (m):** | **2.00** |
| **Sample Number:** | **7** | **Base Depth(m):** | **2.30** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 98 |
| 20 | 93 |
| 10 | 89 |
| 6.3 | 85 |
| 3.35 | 83 |
| 2 | 81 |
| 1.18 | 80 |
| 0.6 | 78 |
| 0.3 | 75 |
| 0.212 | 74 |
| 0.15 | 72 |
| 0.063 | 68 |

| Particle Diameter | Percentage Passing |
|---|---|
| 0.02 | 63 |
| 0.006 | 51 |
| 0.002 | 33 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 19 |
| Sand | 13 |
| Silt | 35 |
| Clay | 33 |

**Remarks:**

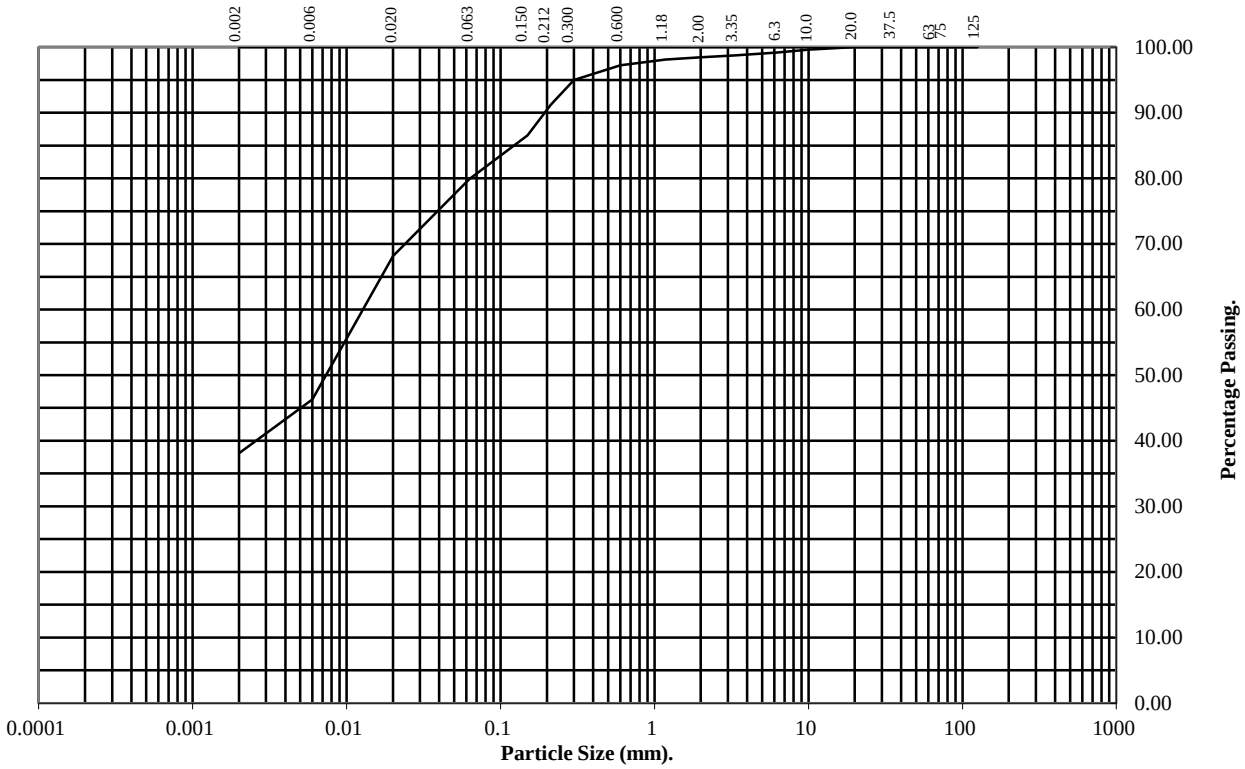
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP150** | **Top Depth (m):** | **1.00** |
| **Sample Number:** | **5** | **Base Depth(m):** | **1.30** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 100 |
| 20 | 100 |
| 10 | 100 |
| 6.3 | 99 |
| 3.35 | 99 |
| 2 | 98 |
| 1.18 | 98 |
| 0.6 | 97 |
| 0.3 | 95 |
| 0.212 | 91 |
| 0.15 | 87 |
| 0.063 | 80 |

| Particle Diameter | Percentage Passing |
|---|---|
| 0.02 | 68 |
| 0.006 | 46 |
| 0.002 | 38 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 2 |
| Sand | 18 |
| Silt | 42 |
| Clay | 38 |

**Remarks:**

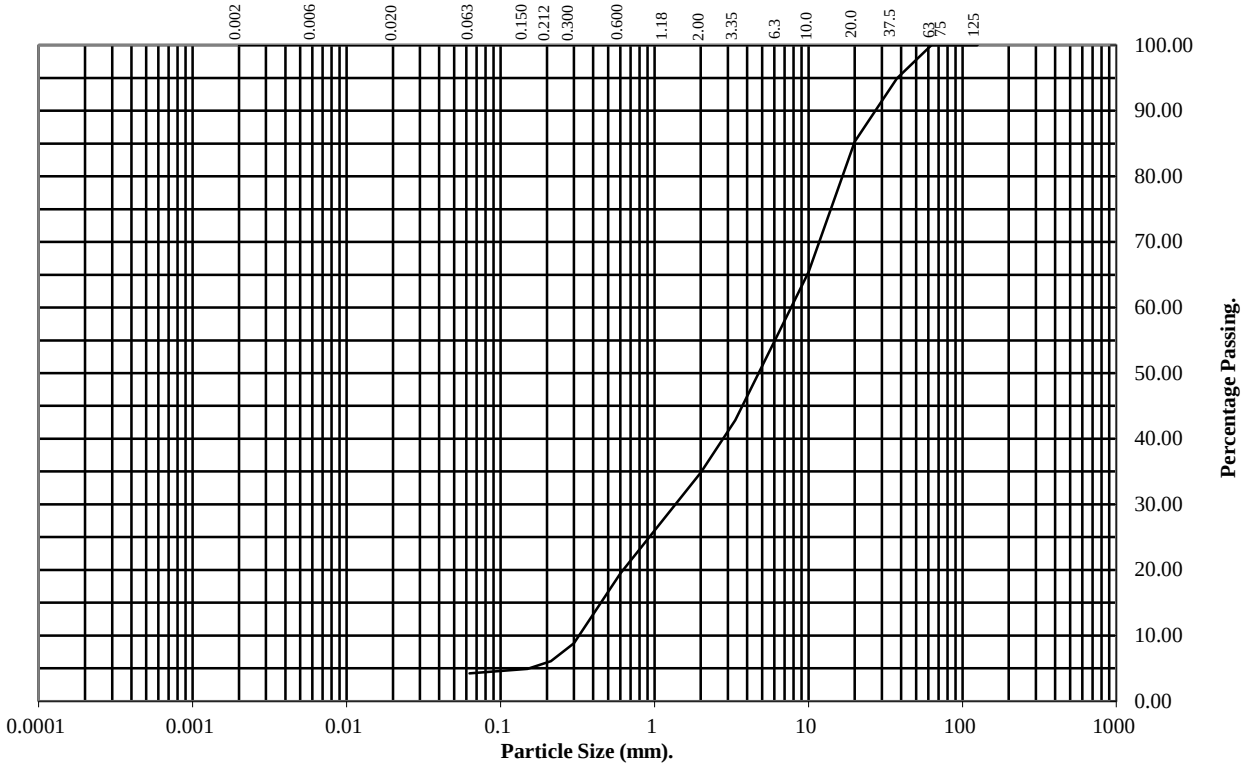
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve, Clause 9.2

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP150** | **Top Depth (m):** | **2.00** |
| **Sample Number:** | **7** | **Base Depth(m):** | **2.30** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 95 |
| 20 | 85 |
| 10 | 65 |
| 6.3 | 56 |
| 3.35 | 43 |
| 2 | 35 |
| 1.18 | 28 |
| 0.6 | 19 |
| 0.3 | 9 |
| 0.212 | 6 |
| 0.15 | 5 |
| 0.063 | 4 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 65 |
| Sand | 31 |
| Silt/Clay | 4 |

**Remarks:**

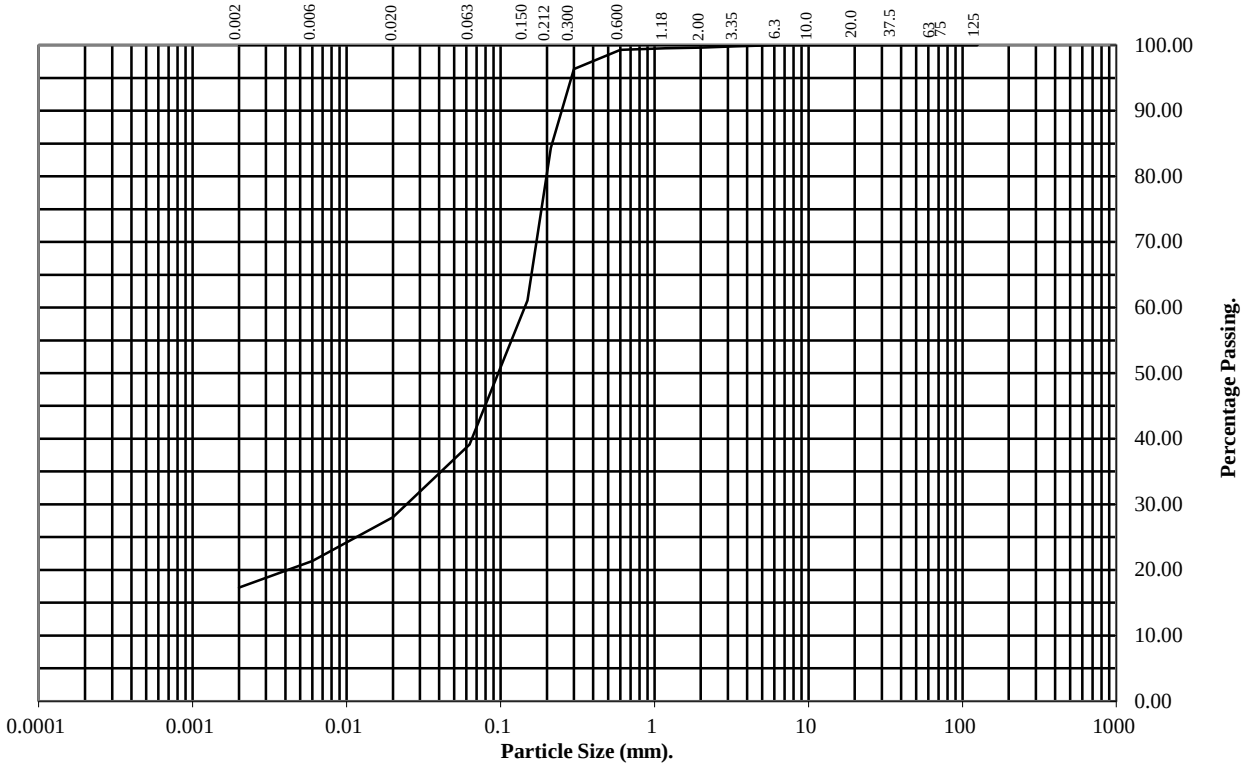
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP160** | **Top Depth (m):** | **1.00** |
| **Sample Number:** | **5** | **Base Depth(m):** | **1.30** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 100 |
| 20 | 100 |
| 10 | 100 |
| 6.3 | 100 |
| 3.35 | 100 |
| 2 | 100 |
| 1.18 | 100 |
| 0.6 | 99 |
| 0.3 | 96 |
| 0.212 | 84 |
| 0.15 | 61 |
| 0.063 | 39 |

| Particle Diameter | Percentage Passing |
|---|---|
| 0.02 | 28 |
| 0.006 | 21 |
| 0.002 | 17 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 0 |
| Sand | 61 |
| Silt | 22 |
| Clay | 17 |

**Remarks:**

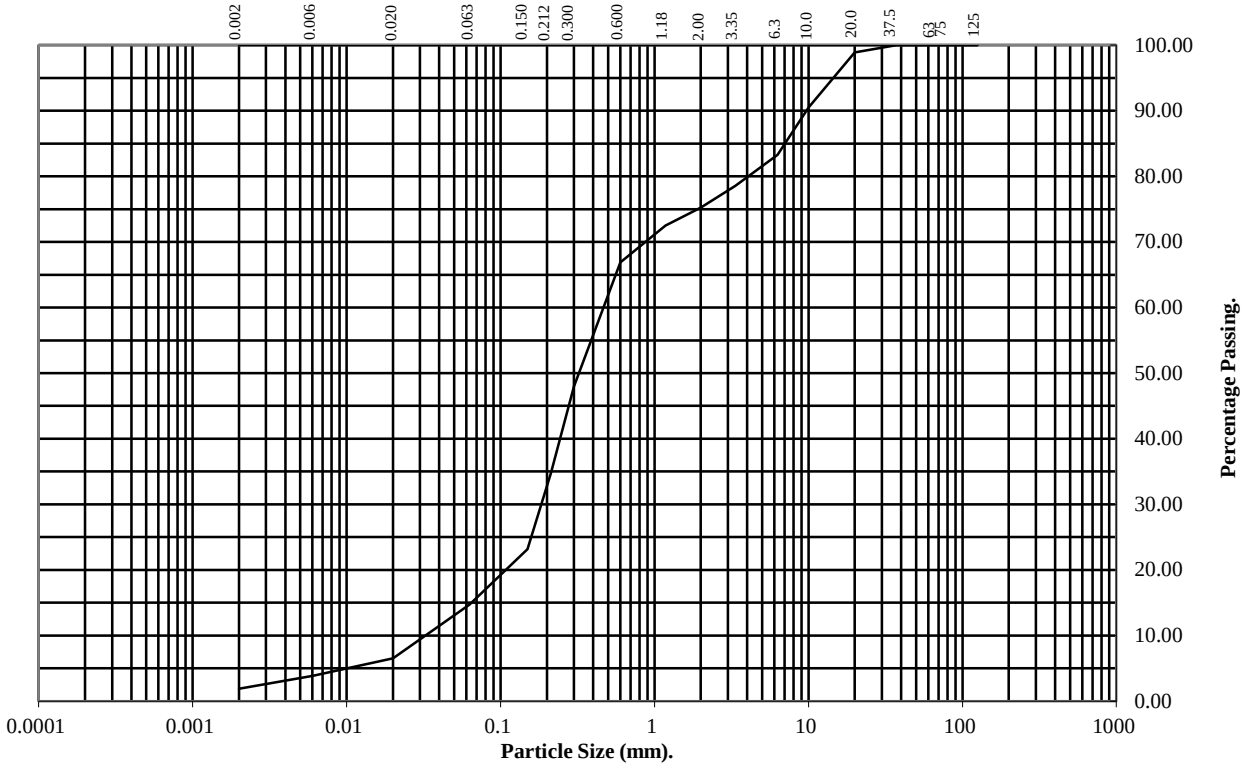
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP160** | **Top Depth (m):** | **2.00** |
| **Sample Number:** | **7** | **Base Depth(m):** | **2.30** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 100 |
| 20 | 99 |
| 10 | 91 |
| 6.3 | 83 |
| 3.35 | 79 |
| 2 | 75 |
| 1.18 | 72 |
| 0.6 | 67 |
| 0.3 | 48 |
| 0.212 | 35 |
| 0.15 | 23 |
| 0.063 | 15 |

| Particle Diameter | Percentage Passing |
|---|---|
| 0.02 | 7 |
| 0.006 | 4 |
| 0.002 | 2 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 25 |
| Sand | 60 |
| Silt | 13 |
| Clay | 2 |

**Remarks:**

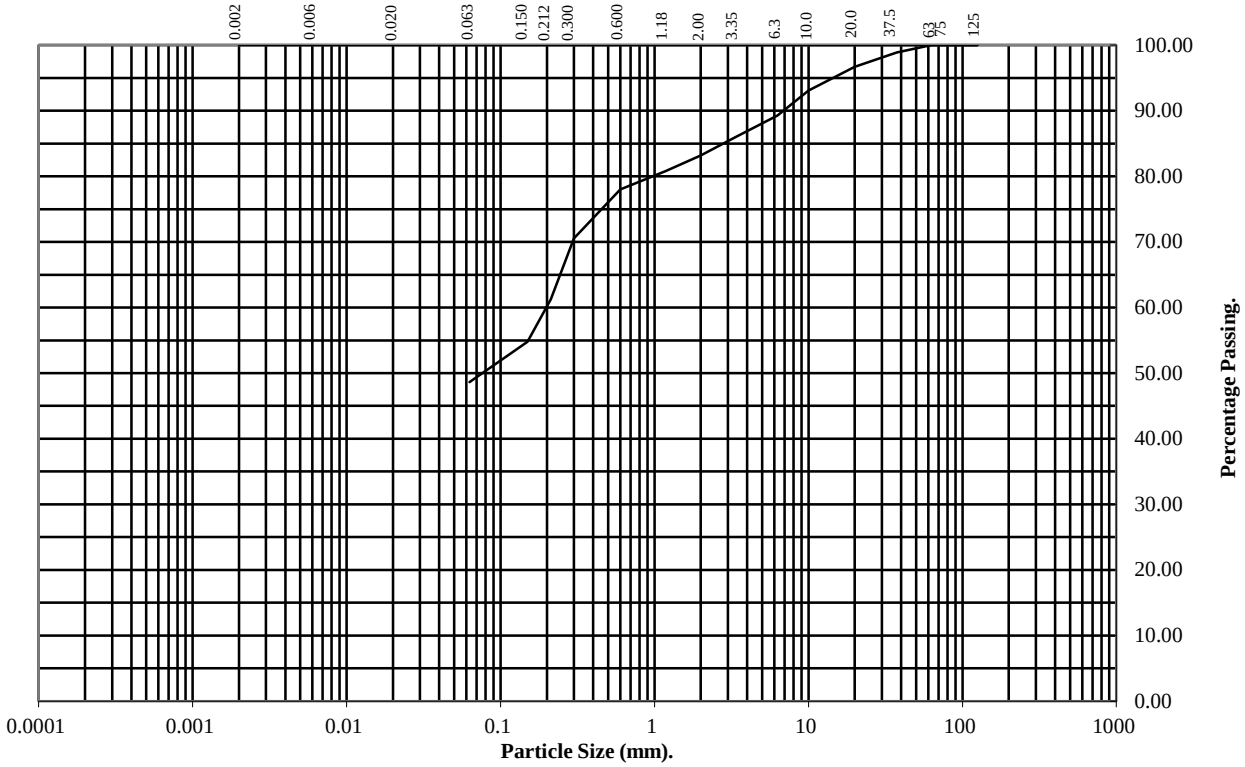
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve, Clause 9.2

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP161** | **Top Depth (m):** | **1.00** |
| **Sample Number:** | **5** | **Base Depth(m):** | **1.30** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 99 |
| 20 | 97 |
| 10 | 93 |
| 6.3 | 89 |
| 3.35 | 86 |
| 2 | 83 |
| 1.18 | 81 |
| 0.6 | 78 |
| 0.3 | 71 |
| 0.212 | 61 |
| 0.15 | 55 |
| 0.063 | 49 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 17 |
| Sand | 34 |
| Silt/Clay | 49 |

**Remarks:**

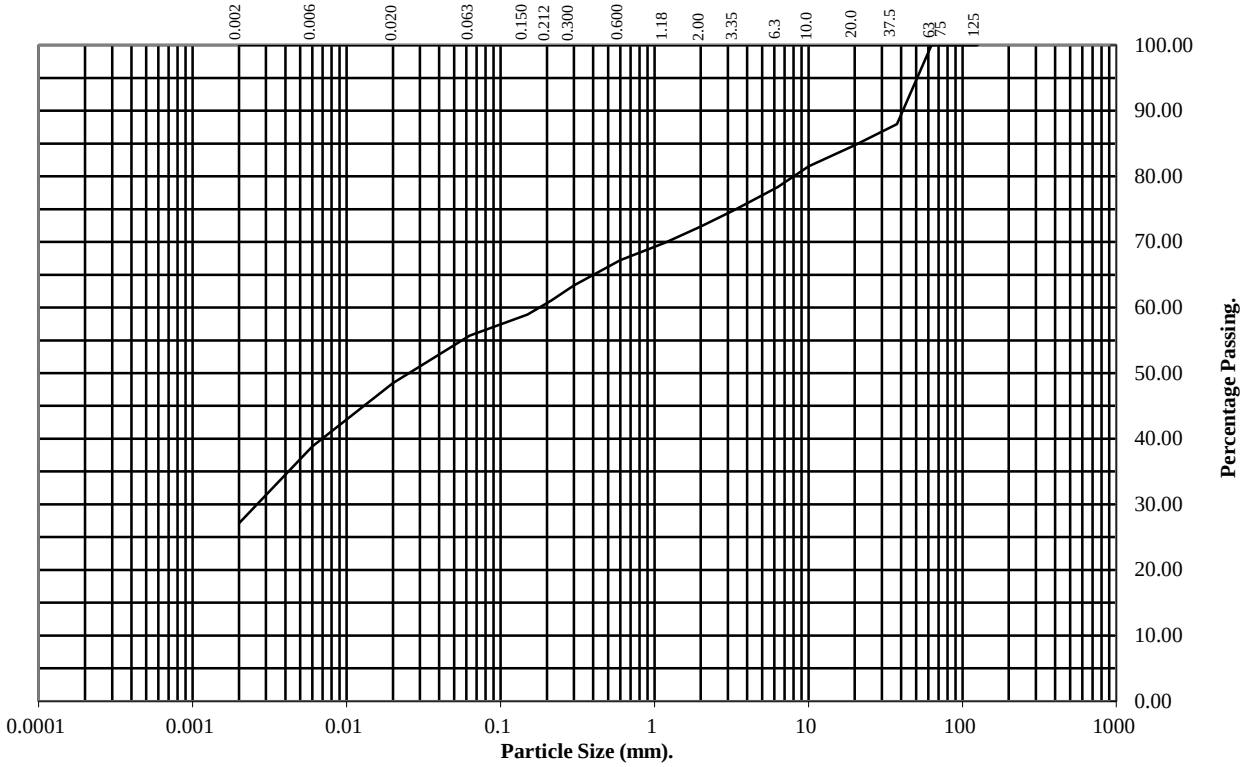
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP164** | **Top Depth (m):** | **0.30** |
| **Sample Number:** | **5** | **Base Depth(m):** | **0.60** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 88 |
| 20 | 85 |
| 10 | 82 |
| 6.3 | 78 |
| 3.35 | 75 |
| 2 | 72 |
| 1.18 | 70 |
| 0.6 | 67 |
| 0.3 | 63 |
| 0.212 | 61 |
| 0.15 | 59 |
| 0.063 | 56 |

| Particle Diameter | Percentage Passing |
|---|---|
| 0.02 | 48 |
| 0.006 | 39 |
| 0.002 | 27 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 28 |
| Sand | 16 |
| Silt | 29 |
| Clay | 27 |

**Remarks:**

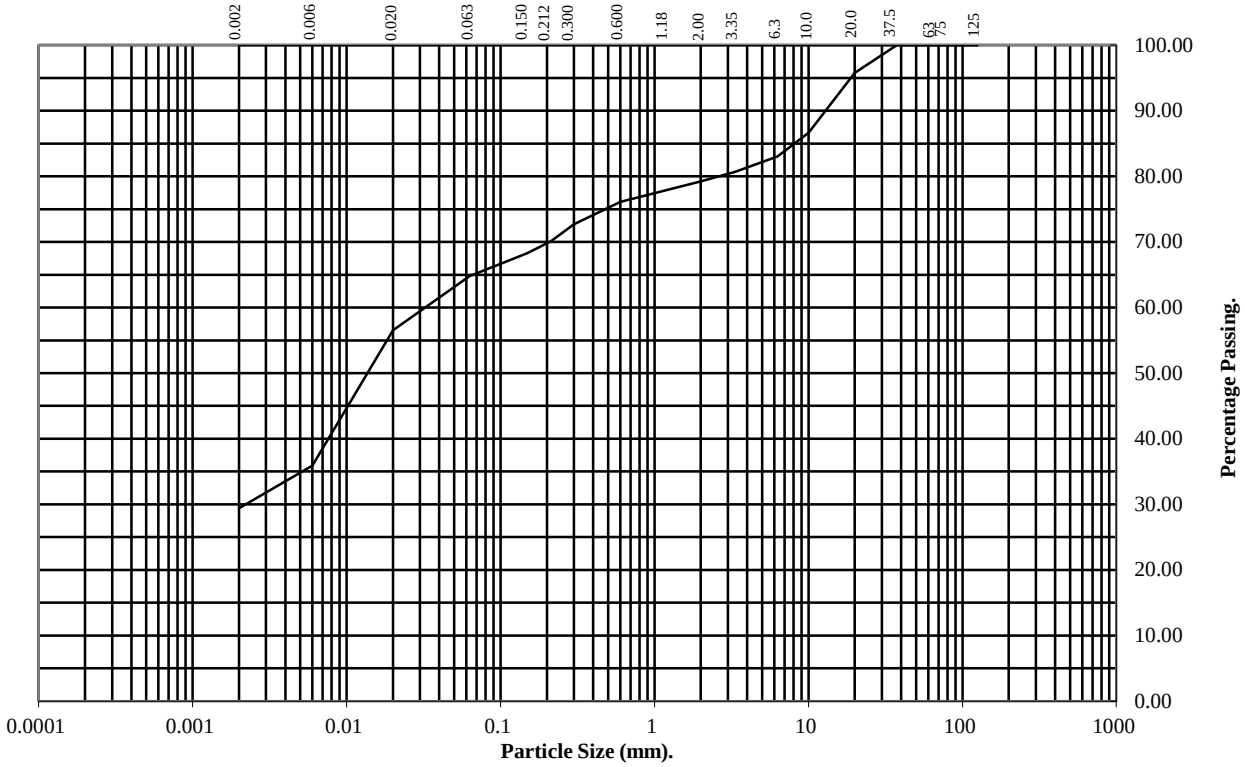
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP164** | **Top Depth (m):** | **1.00** |
| **Sample Number:** | **7** | **Base Depth(m):** | **1.30** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 100 |
| 20 | 96 |
| 10 | 87 |
| 6.3 | 83 |
| 3.35 | 81 |
| 2 | 79 |
| 1.18 | 78 |
| 0.6 | 76 |
| 0.3 | 73 |
| 0.212 | 70 |
| 0.15 | 68 |
| 0.063 | 65 |

| Particle Diameter | Percentage Passing |
|---|---|
| 0.02 | 57 |
| 0.006 | 36 |
| 0.002 | 29 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 21 |
| Sand | 14 |
| Silt | 36 |
| Clay | 29 |

**Remarks:**

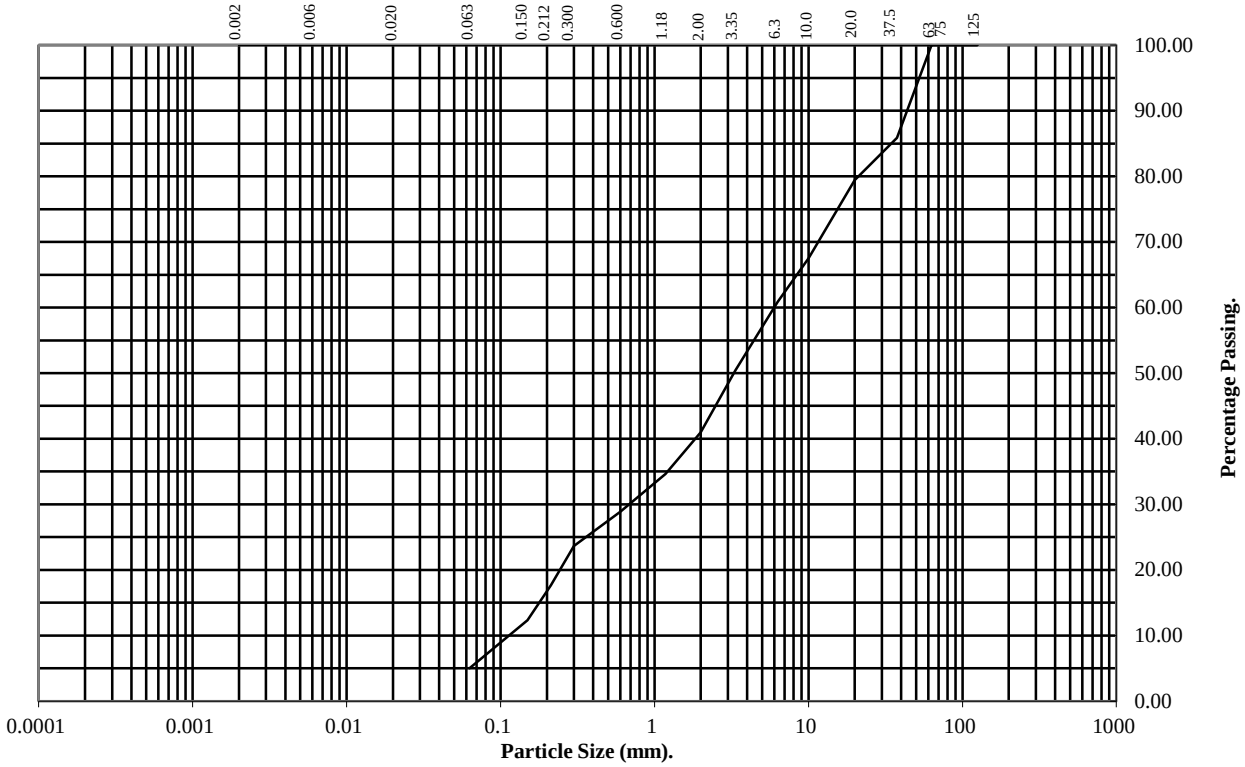
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve, Clause 9.2

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP165** | **Top Depth (m):** | **1.00** |
| **Sample Number:** | **5** | **Base Depth(m):** | **1.30** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 86 |
| 20 | 79 |
| 10 | 68 |
| 6.3 | 61 |
| 3.35 | 50 |
| 2 | 41 |
| 1.18 | 35 |
| 0.6 | 29 |
| 0.3 | 24 |
| 0.212 | 18 |
| 0.15 | 12 |
| 0.063 | 5 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 59 |
| Sand | 36 |
| Silt/Clay | 5 |

**Remarks:**

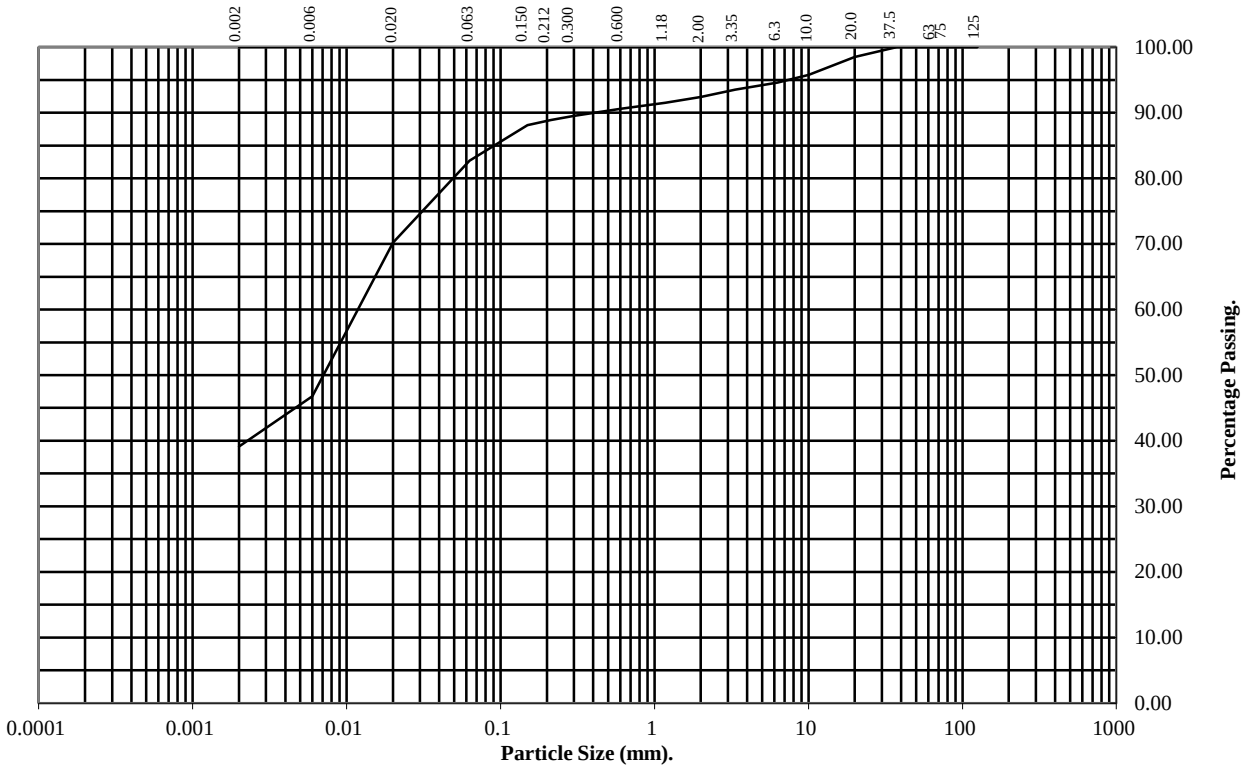
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP166** | **Top Depth (m):** | **2.30** |
| **Sample Number:** | **7** | **Base Depth(m):** | **2.60** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 100 |
| 20 | 99 |
| 10 | 96 |
| 6.3 | 95 |
| 3.35 | 94 |
| 2 | 92 |
| 1.18 | 92 |
| 0.6 | 91 |
| 0.3 | 90 |
| 0.212 | 89 |
| 0.15 | 88 |
| 0.063 | 83 |

| Particle Diameter | Percentage Passing |
|---|---|
| 0.02 | 70 |
| 0.006 | 47 |
| 0.002 | 39 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 8 |
| Sand | 9 |
| Silt | 44 |
| Clay | 39 |

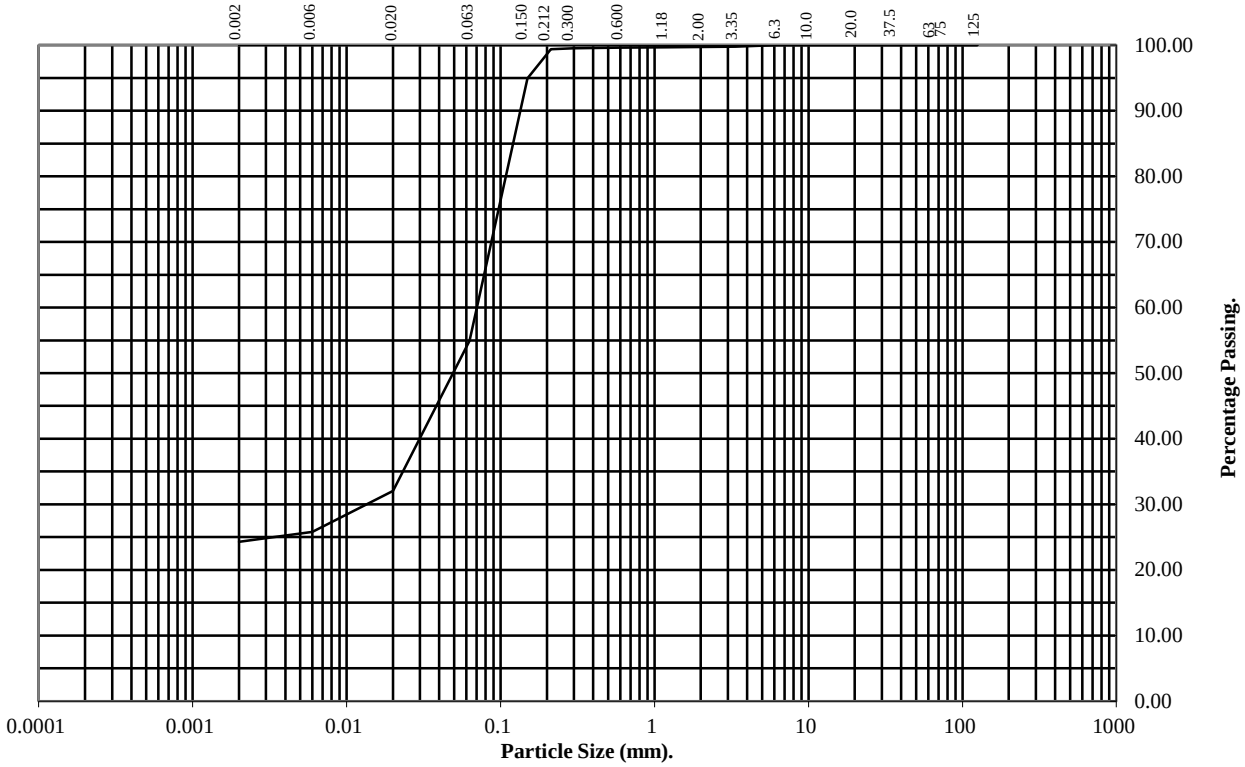
**Remarks:**
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP169** | **Top Depth (m):** | **1.00** |
| **Sample Number:** | **5** | **Base Depth(m):** | **1.30** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 100 |
| 20 | 100 |
| 10 | 100 |
| 6.3 | 100 |
| 3.35 | 100 |
| 2 | 100 |
| 1.18 | 100 |
| 0.6 | 100 |
| 0.3 | 100 |
| 0.212 | 99 |
| 0.15 | 95 |
| 0.063 | 55 |

| Particle Diameter | Percentage Passing |
|---|---|
| 0.02 | 32 |
| 0.006 | 26 |
| 0.002 | 24 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 0 |
| Sand | 45 |
| Silt | 31 |
| Clay | 24 |

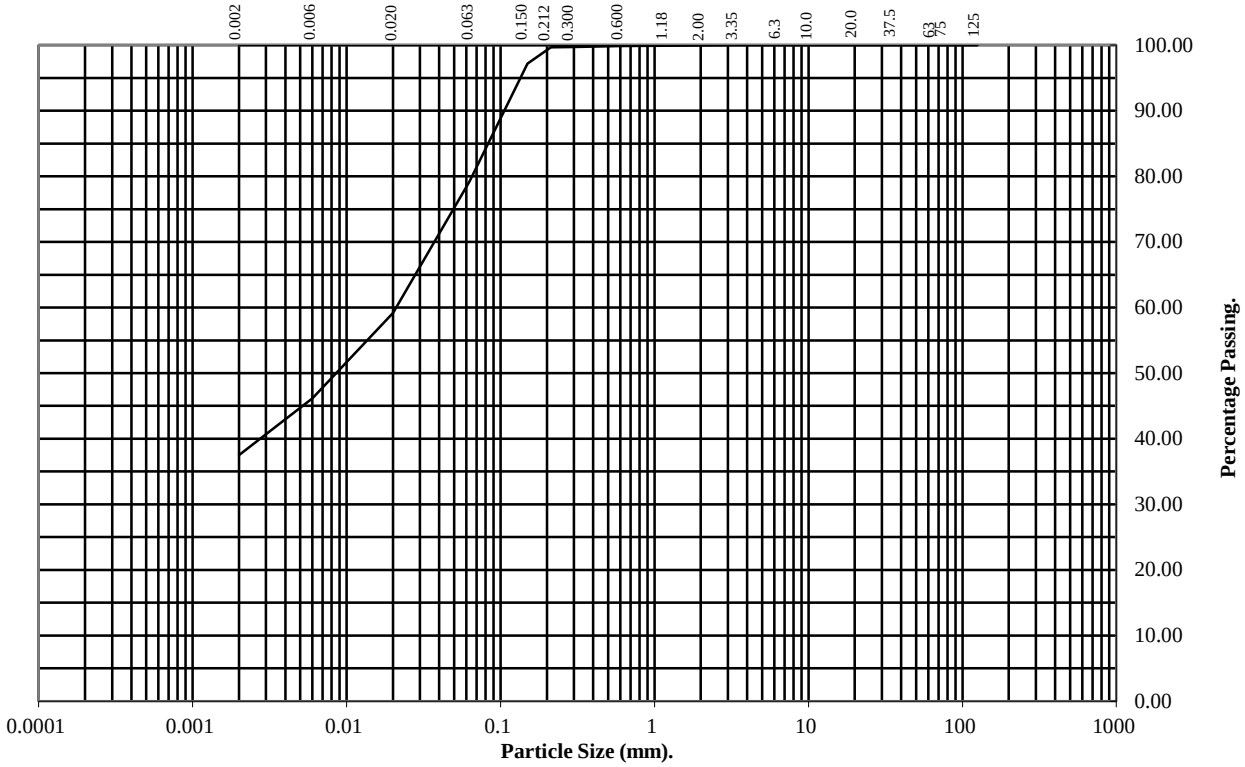
**Remarks:**
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP169** | **Top Depth (m):** | **2.00** |
| **Sample Number:** | **7** | **Base Depth(m):** | **2.30** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 100 |
| 20 | 100 |
| 10 | 100 |
| 6.3 | 100 |
| 3.35 | 100 |
| 2 | 100 |
| 1.18 | 100 |
| 0.6 | 100 |
| 0.3 | 100 |
| 0.212 | 100 |
| 0.15 | 97 |
| 0.063 | 79 |

| Particle Diameter | Percentage Passing |
|---|---|
| 0.02 | 59 |
| 0.006 | 46 |
| 0.002 | 37 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 0 |
| Sand | 21 |
| Silt | 42 |
| Clay | 37 |

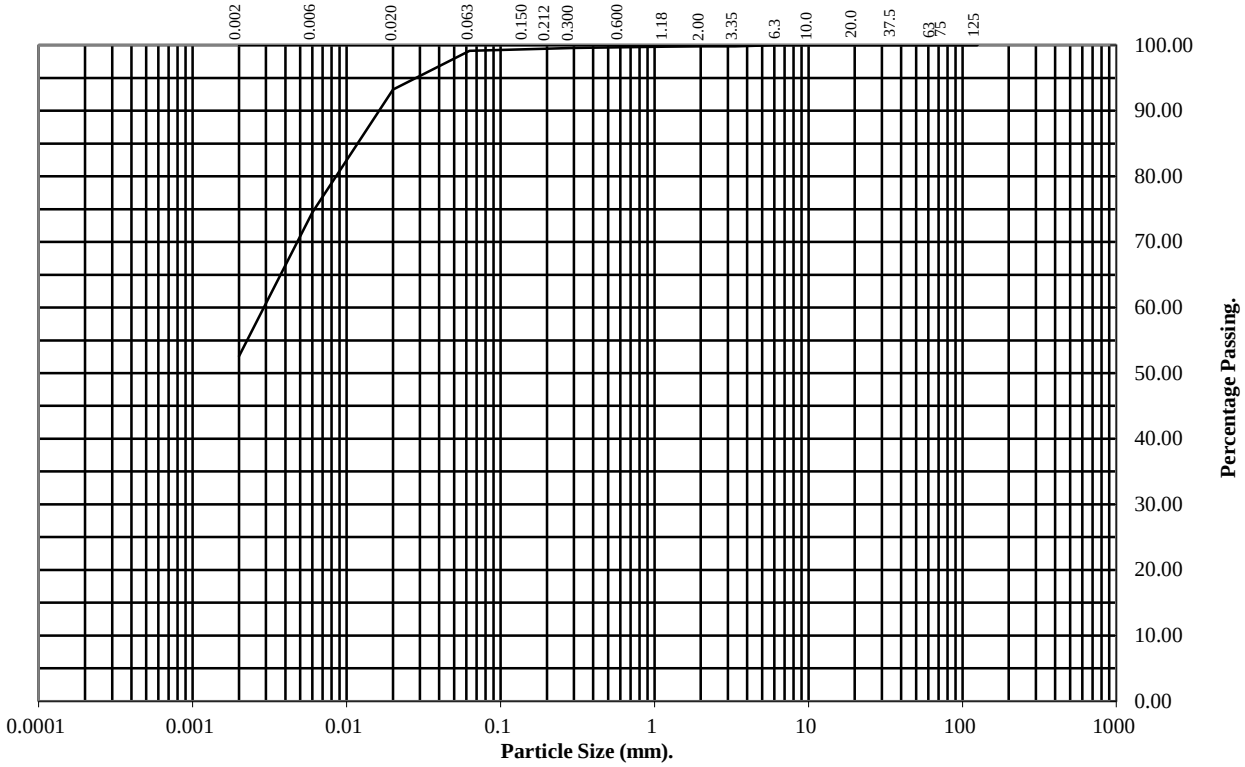
**Remarks:**
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP169** | **Top Depth (m):** | **3.40** |
| **Sample Number:** | **9** | **Base Depth(m):** | **3.70** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 100 |
| 20 | 100 |
| 10 | 100 |
| 6.3 | 100 |
| 3.35 | 100 |
| 2 | 100 |
| 1.18 | 100 |
| 0.6 | 100 |
| 0.3 | 100 |
| 0.212 | 100 |
| 0.15 | 99 |
| 0.063 | 99 |

| Particle Diameter | Percentage Passing |
|---|---|
| 0.02 | 93 |
| 0.006 | 74 |
| 0.002 | 53 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 0 |
| Sand | 1 |
| Silt | 46 |
| Clay | 53 |

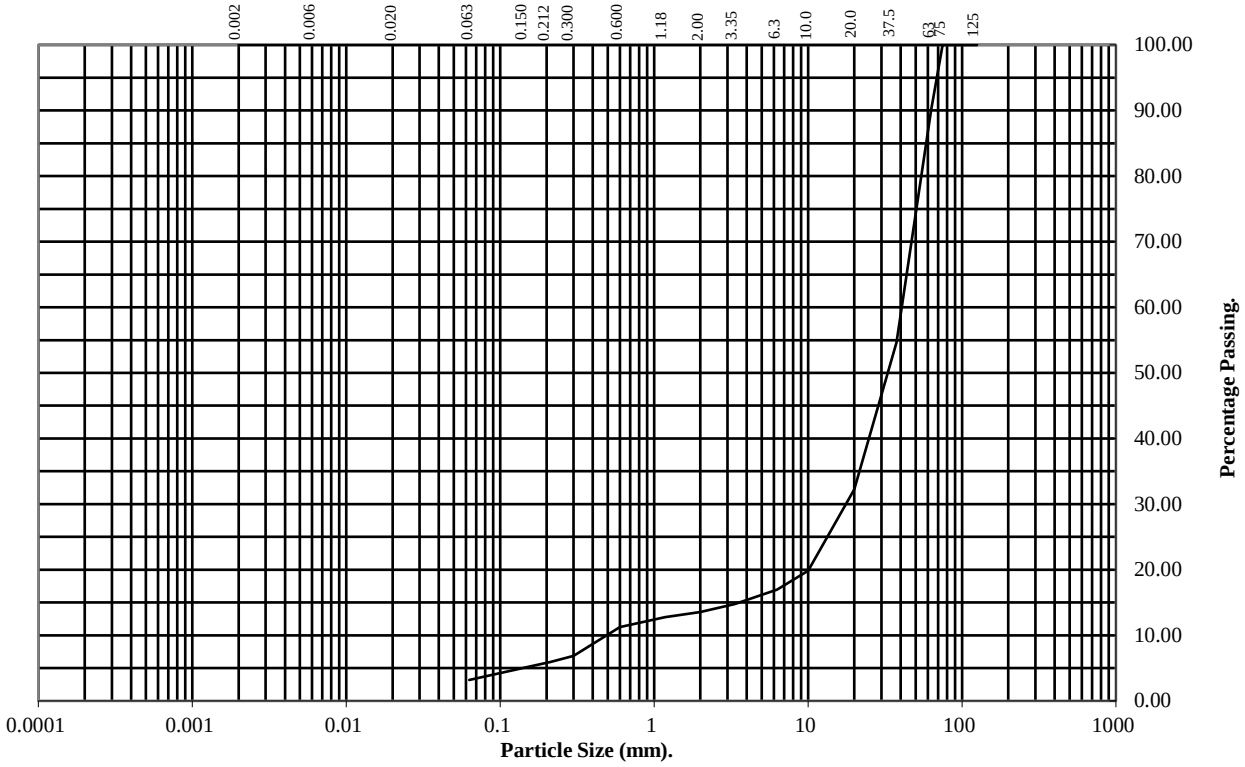
**Remarks:**
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve, Clause 9.2

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH108** | **Top Depth (m):** | **0.30** |
| **Sample Number:** | **3** | **Base Depth(m):** | **0.70** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 90 |
| 37.5 | 55 |
| 20 | 32 |
| 10 | 20 |
| 6.3 | 17 |
| 3.35 | 15 |
| 2 | 14 |
| 1.18 | 13 |
| 0.6 | 11 |
| 0.3 | 7 |
| 0.212 | 6 |
| 0.15 | 5 |
| 0.063 | 3 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 10 |
| Gravel | 76 |
| Sand | 11 |
| Silt/Clay | 3 |

**Remarks:**

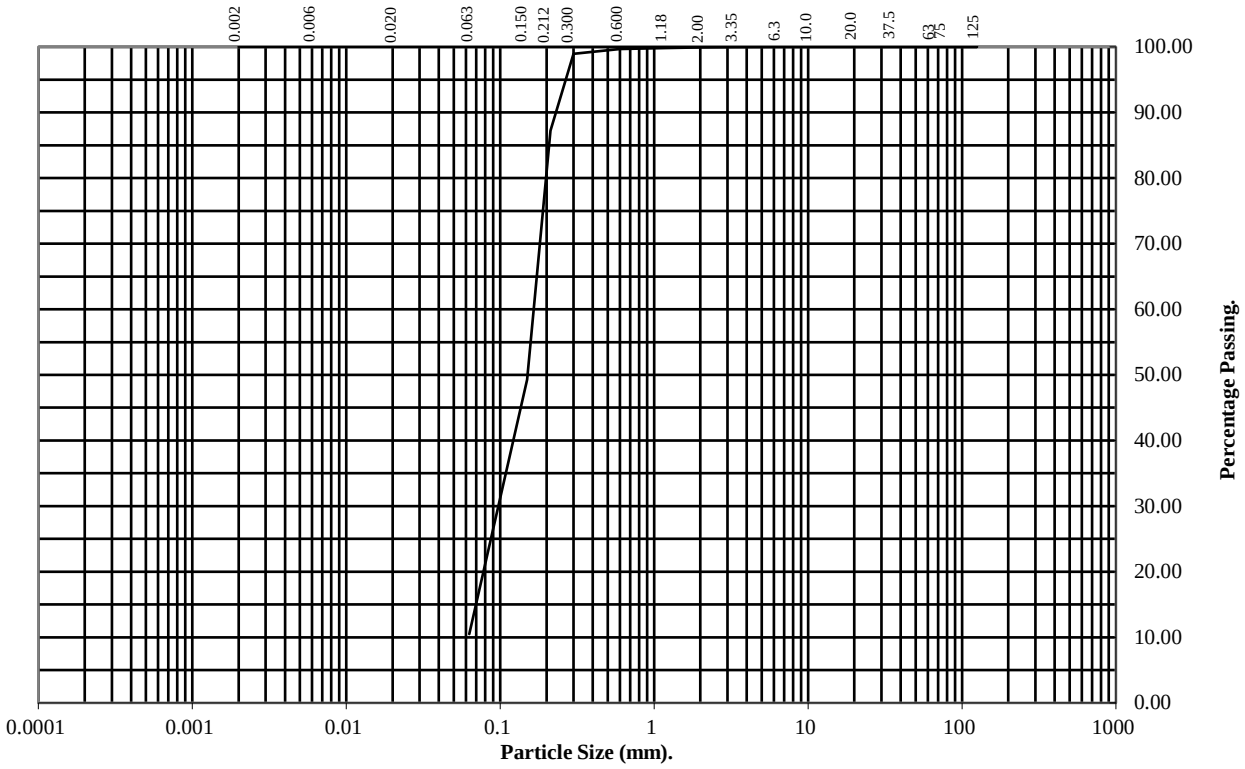
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve, Clause 9.2

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH108** | **Top Depth (m):** | **8.40** |
| **Sample Number:** | **108** | **Base Depth(m):** | **8.90** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 100 |
| 20 | 100 |
| 10 | 100 |
| 6.3 | 100 |
| 3.35 | 100 |
| 2 | 100 |
| 1.18 | 100 |
| 0.6 | 100 |
| 0.3 | 99 |
| 0.212 | 87 |
| 0.15 | 49 |
| 0.063 | 10 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 0 |
| Sand | 90 |
| Silt/Clay | 10 |

**Remarks:**

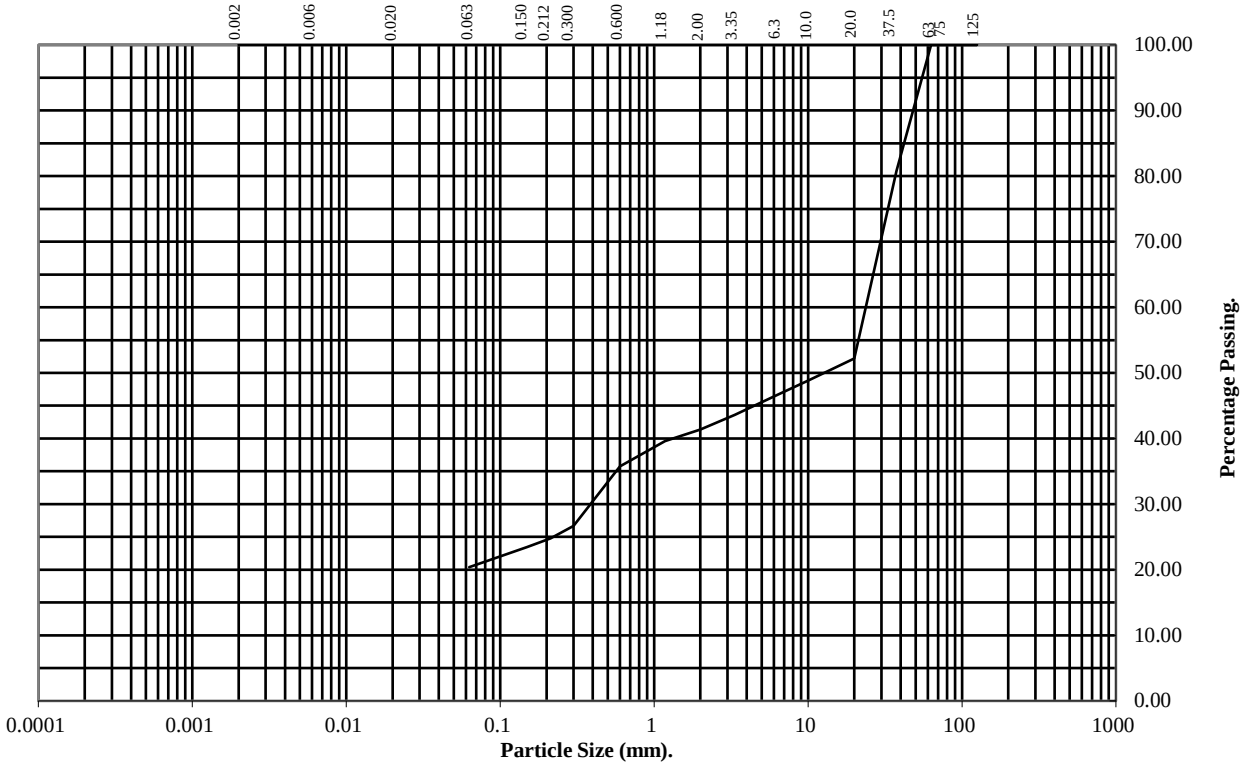
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve, Clause 9.2

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH111** | **Top Depth (m):** | **0.50** |
| **Sample Number:** | **B2** | **Base Depth(m):** | **1.20** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 81 |
| 20 | 52 |
| 10 | 49 |
| 6.3 | 47 |
| 3.35 | 44 |
| 2 | 41 |
| 1.18 | 40 |
| 0.6 | 36 |
| 0.3 | 27 |
| 0.212 | 25 |
| 0.15 | 23 |
| 0.063 | 20 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 59 |
| Sand | 21 |
| Silt/Clay | 20 |

**Remarks:**

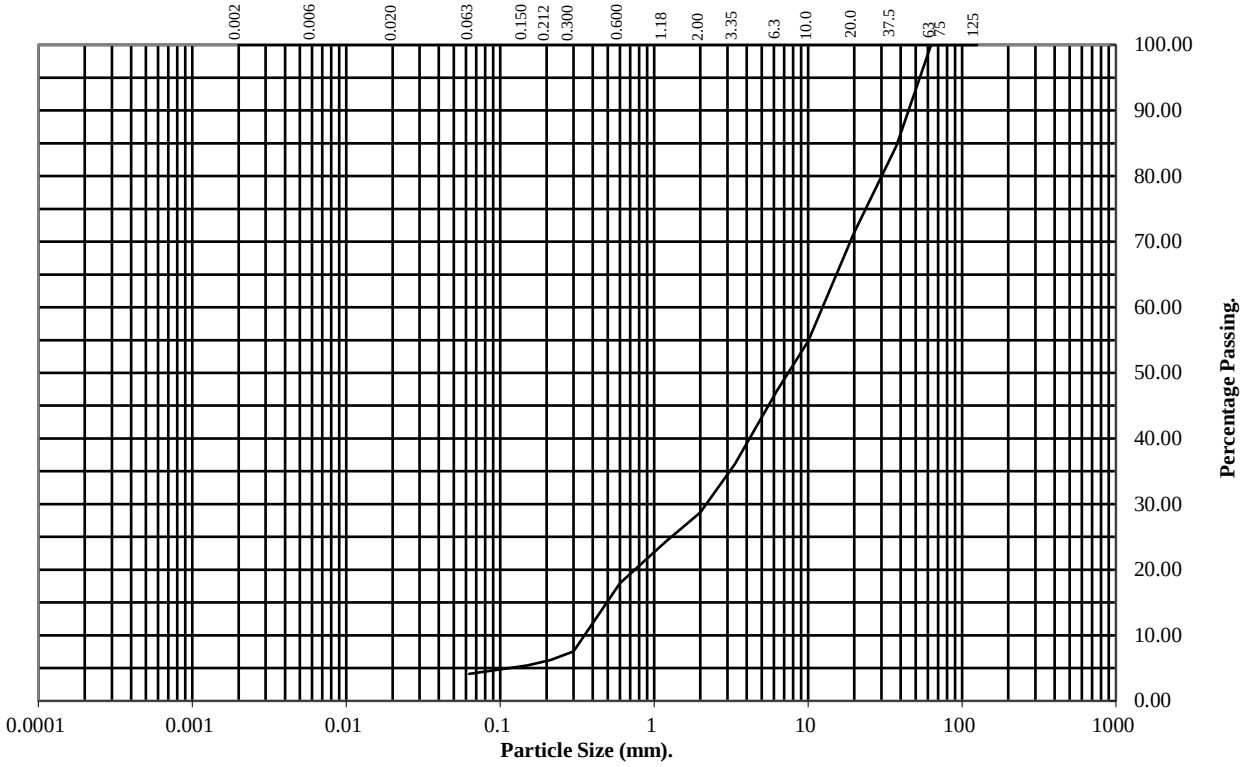
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve, Clause 9.2

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH132** | **Top Depth (m):** | **0.20** |
| **Sample Number:** | **1** | **Base Depth(m):** | **0.60** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 85 |
| 20 | 71 |
| 10 | 55 |
| 6.3 | 47 |
| 3.35 | 36 |
| 2 | 29 |
| 1.18 | 24 |
| 0.6 | 18 |
| 0.3 | 8 |
| 0.212 | 6 |
| 0.15 | 5 |
| 0.063 | 4 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 71 |
| Sand | 25 |
| Silt/Clay | 4 |

**Remarks:**

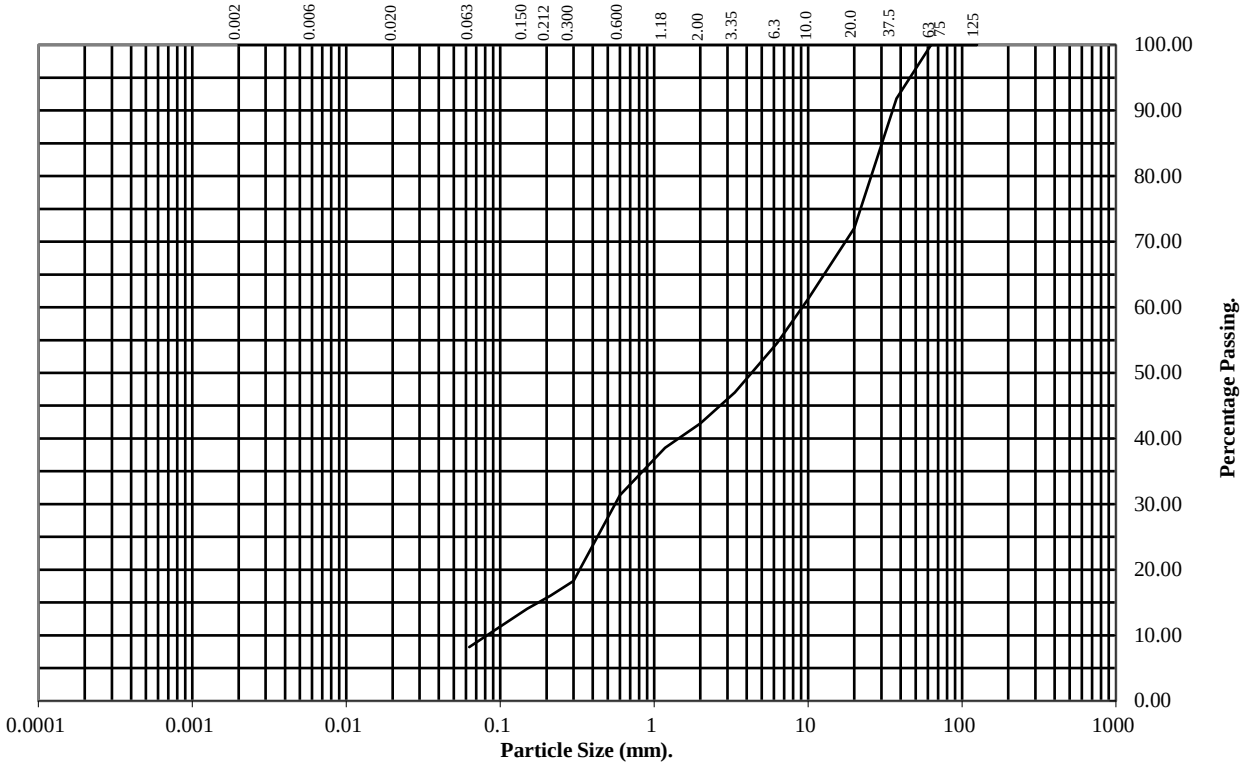
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve, Clause 9.2

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH132** | **Top Depth (m):** | **0.80** |
| **Sample Number:** | **2** | **Base Depth(m):** | **1.20** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 92 |
| 20 | 72 |
| 10 | 61 |
| 6.3 | 55 |
| 3.35 | 47 |
| 2 | 42 |
| 1.18 | 39 |
| 0.6 | 31 |
| 0.3 | 18 |
| 0.212 | 16 |
| 0.15 | 14 |
| 0.063 | 8 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 58 |
| Sand | 34 |
| Silt/Clay | 8 |

**Remarks:**

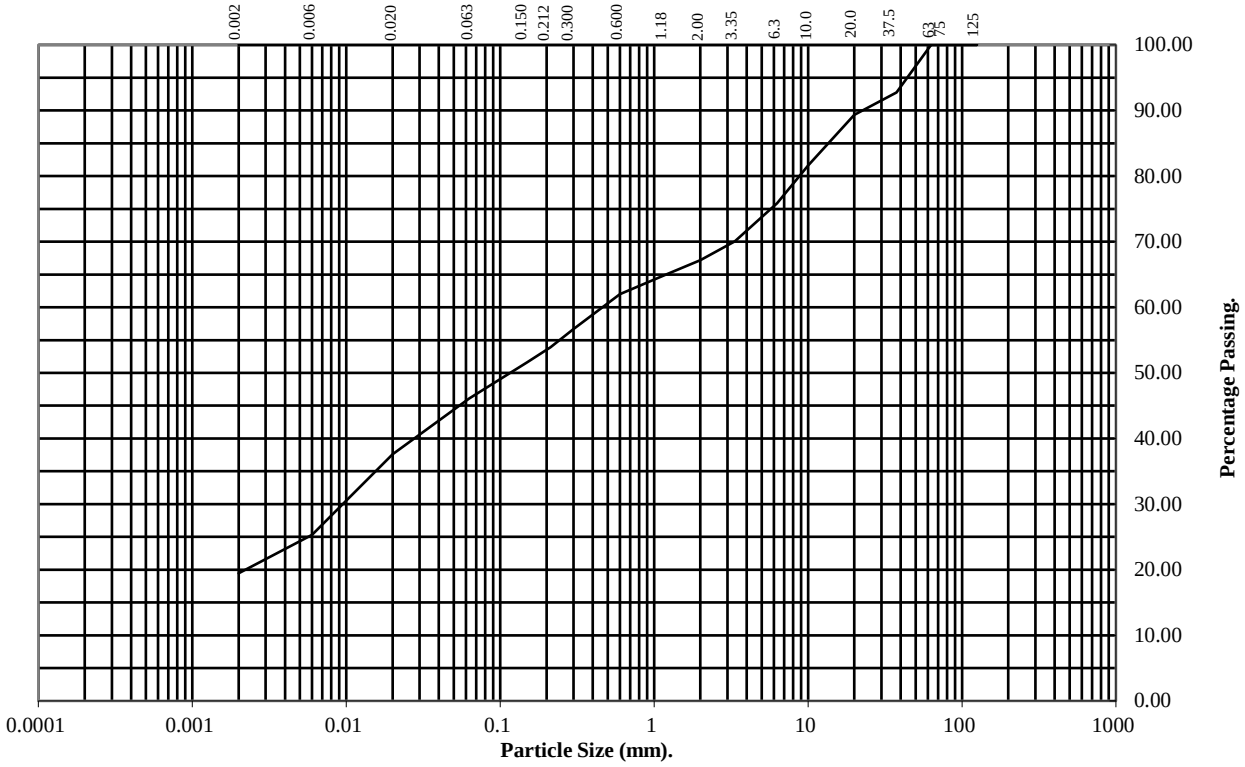
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP131** | **Top Depth (m):** | **2.00** |
| **Sample Number:** | **7** | **Base Depth(m):** | **2.30** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 93 |
| 20 | 89 |
| 10 | 82 |
| 6.3 | 76 |
| 3.35 | 70 |
| 2 | 67 |
| 1.18 | 65 |
| 0.6 | 62 |
| 0.3 | 57 |
| 0.212 | 54 |
| 0.15 | 52 |
| 0.063 | 46 |

| Particle Diameter | Percentage Passing |
|---|---|
| 0.02 | 38 |
| 0.006 | 25 |
| 0.002 | 19 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 33 |
| Sand | 21 |
| Silt | 27 |
| Clay | 19 |

**Remarks:**

See Summary of Soil Descriptions

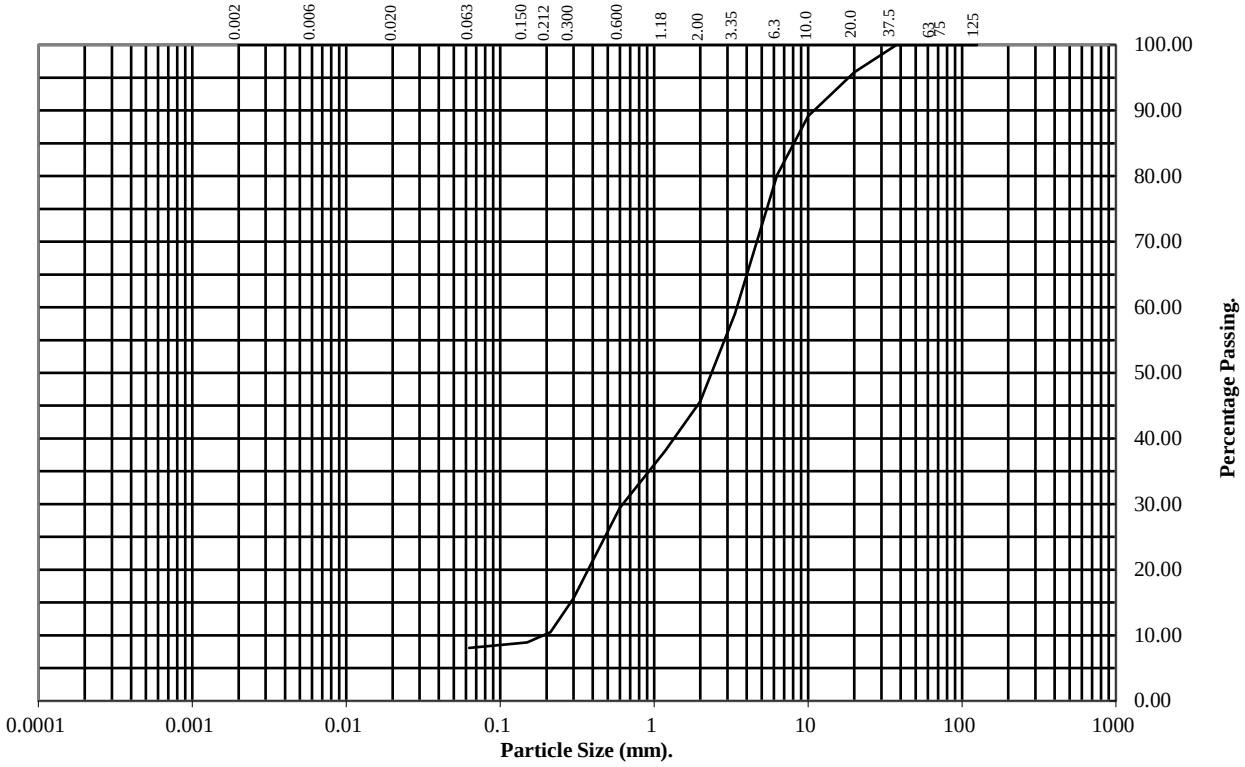
| | | | |
|---|---|---|---|
| UKAS TESTING 4043 | PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** | **Contract No:** PSL22/3650 **Client Ref:** GT0386 |

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve, Clause 9.2

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP132** | **Top Depth (m):** | **1.00** |
| **Sample Number:** | **5** | **Base Depth(m):** | **1.30** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 100 |
| 20 | 96 |
| 10 | 89 |
| 6.3 | 80 |
| 3.35 | 59 |
| 2 | 46 |
| 1.18 | 38 |
| 0.6 | 29 |
| 0.3 | 16 |
| 0.212 | 10 |
| 0.15 | 9 |
| 0.063 | 8 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 54 |
| Sand | 38 |
| Silt/Clay | 8 |

**Remarks:**

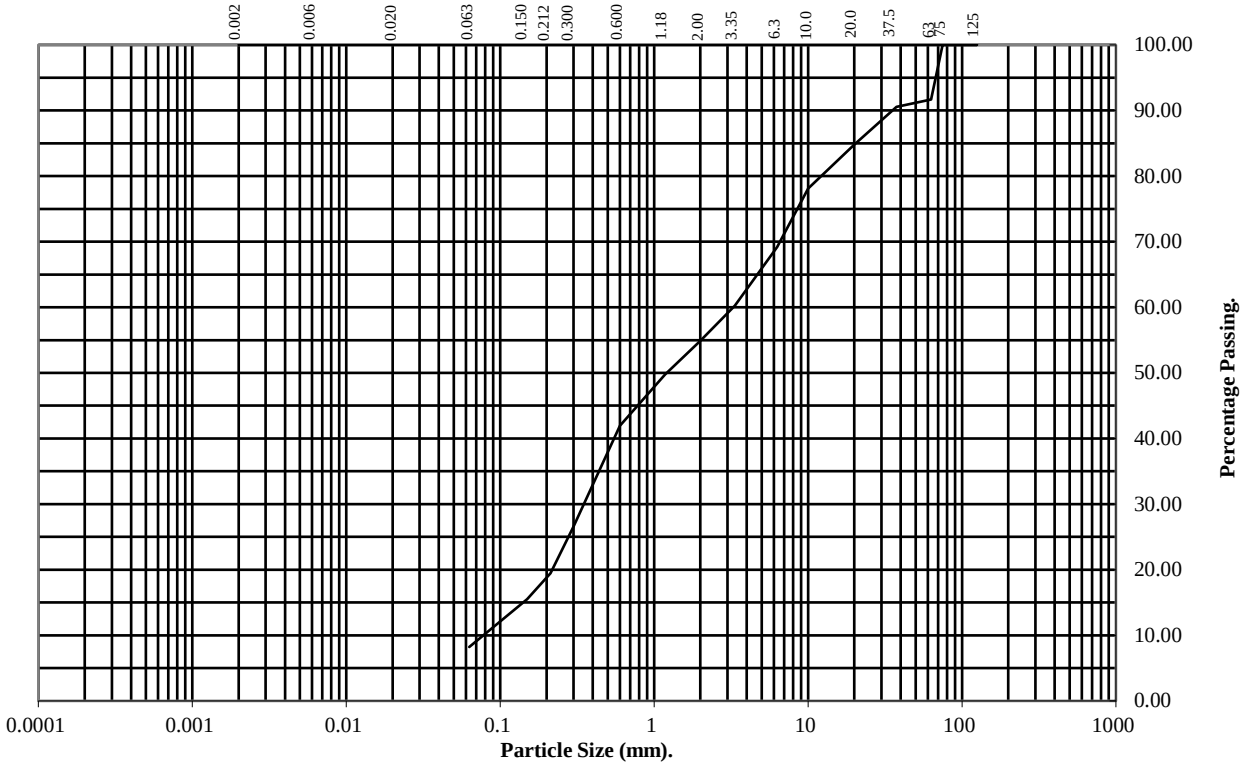
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve, Clause 9.2

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP132** | **Top Depth (m):** | **2.00** |
| **Sample Number:** | **7** | **Base Depth(m):** | **2.30** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 92 |
| 37.5 | 91 |
| 20 | 85 |
| 10 | 78 |
| 6.3 | 69 |
| 3.35 | 60 |
| 2 | 55 |
| 1.18 | 50 |
| 0.6 | 42 |
| 0.3 | 27 |
| 0.212 | 19 |
| 0.15 | 15 |
| 0.063 | 8 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 8 |
| Gravel | 37 |
| Sand | 47 |
| Silt/Clay | 8 |

**Remarks:**

See Summary of Soil Descriptions

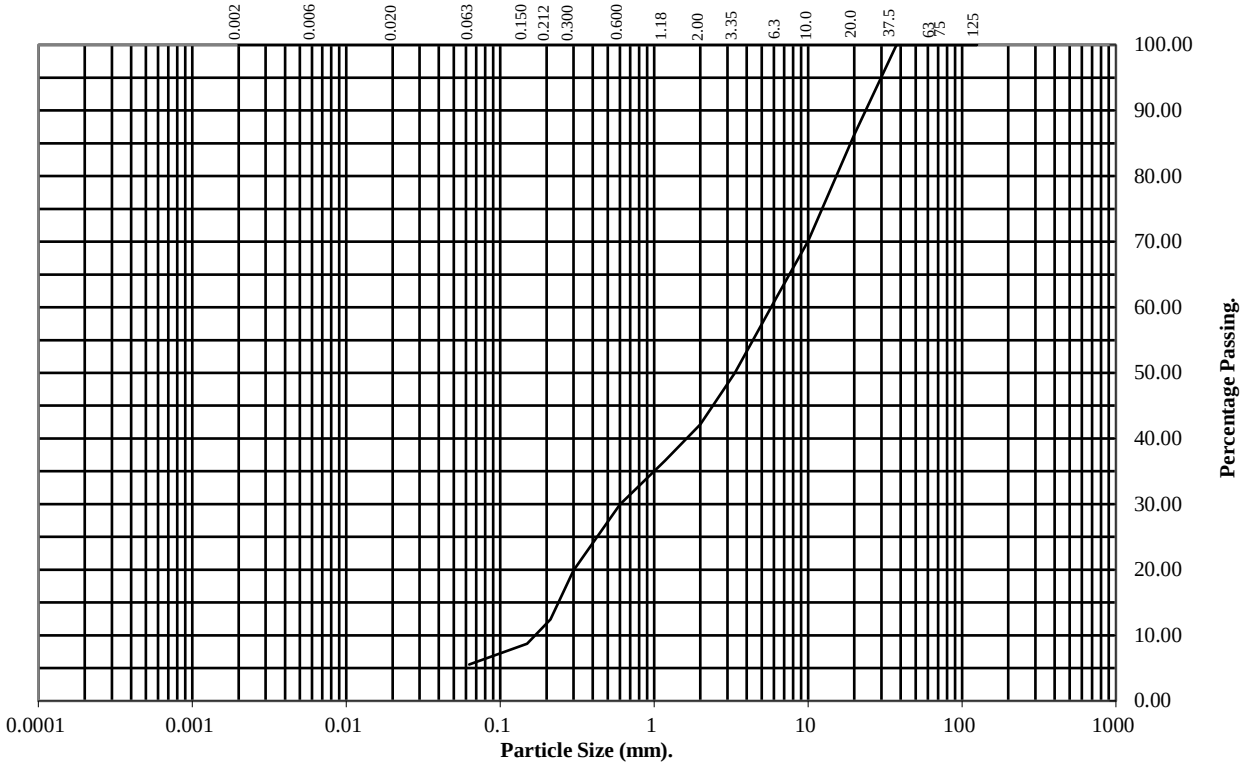
| | | | |
|---|---|---|---|
| UKAS TESTING 4043 | PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** | **Contract No:** PSL22/3650 **Client Ref:** GT0386 |

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve, Clause 9.2

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP133** | **Top Depth (m):** | **1.70** |
| **Sample Number:** | **7** | **Base Depth(m):** | **2.00** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 100 |
| 20 | 86 |
| 10 | 70 |
| 6.3 | 62 |
| 3.35 | 50 |
| 2 | 42 |
| 1.18 | 37 |
| 0.6 | 30 |
| 0.3 | 20 |
| 0.212 | 12 |
| 0.15 | 9 |
| 0.063 | 6 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 58 |
| Sand | 36 |
| Silt/Clay | 6 |

**Remarks:**

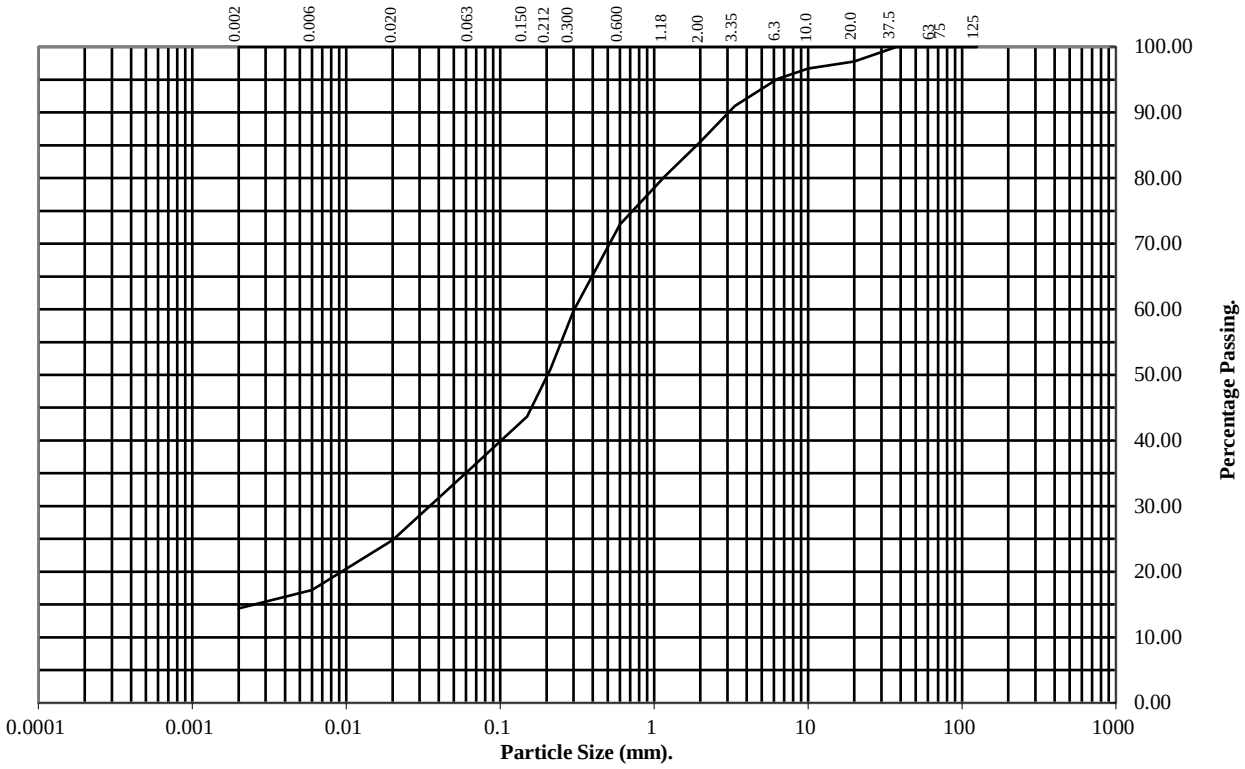
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP134** | **Top Depth (m):** | **0.50** |
| **Sample Number:** | **5** | **Base Depth(m):** | **0.80** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 100 |
| 20 | 98 |
| 10 | 97 |
| 6.3 | 95 |
| 3.35 | 91 |
| 2 | 86 |
| 1.18 | 80 |
| 0.6 | 73 |
| 0.3 | 60 |
| 0.212 | 51 |
| 0.15 | 44 |
| 0.063 | 36 |

| Particle Diameter | Percentage Passing |
|---|---|
| 0.02 | 25 |
| 0.006 | 17 |
| 0.002 | 14 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 14 |
| Sand | 50 |
| Silt | 22 |
| Clay | 14 |

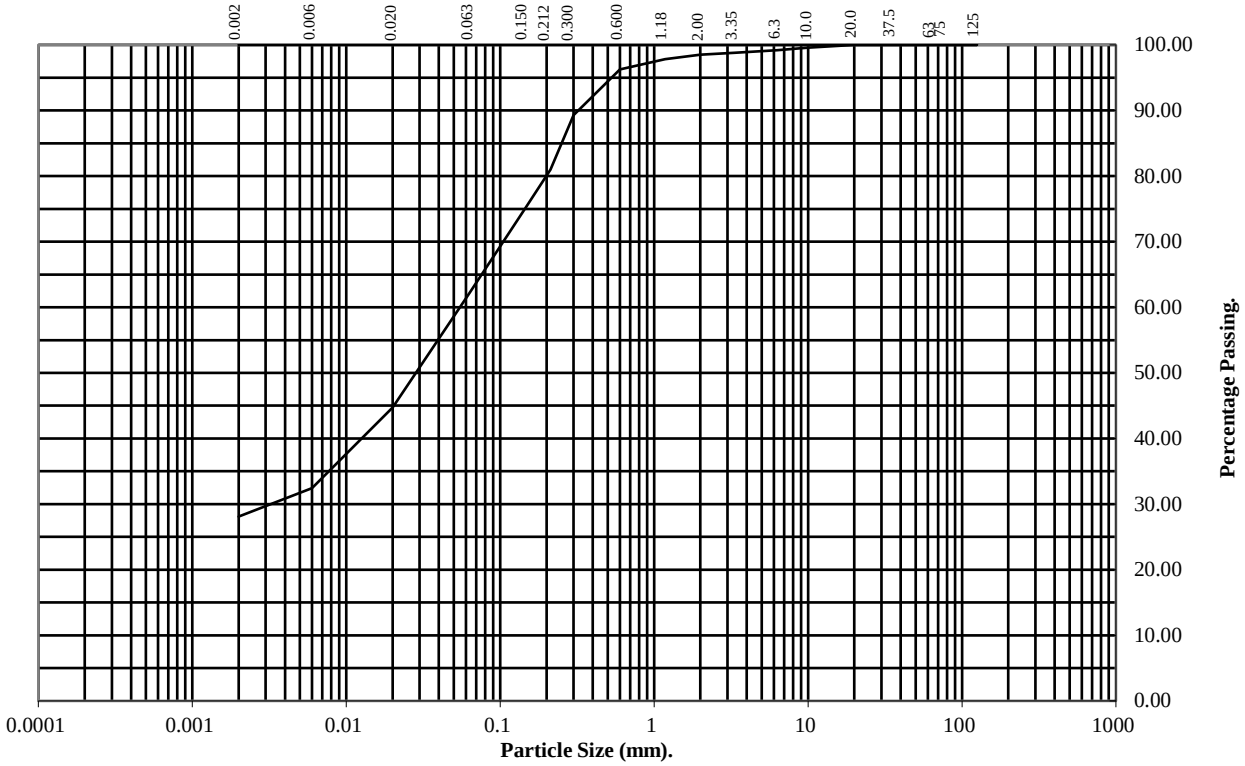
**Remarks:**
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP153** | **Top Depth (m):** | **1.00** |
| **Sample Number:** | **6** | **Base Depth(m):** | **1.30** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 100 |
| 20 | 100 |
| 10 | 100 |
| 6.3 | 99 |
| 3.35 | 99 |
| 2 | 98 |
| 1.18 | 98 |
| 0.6 | 96 |
| 0.3 | 89 |
| 0.212 | 81 |
| 0.15 | 76 |
| 0.063 | 62 |

| Particle Diameter | Percentage Passing |
|---|---|
| 0.02 | 45 |
| 0.006 | 32 |
| 0.002 | 28 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 2 |
| Sand | 36 |
| Silt | 34 |
| Clay | 28 |

**Remarks:**

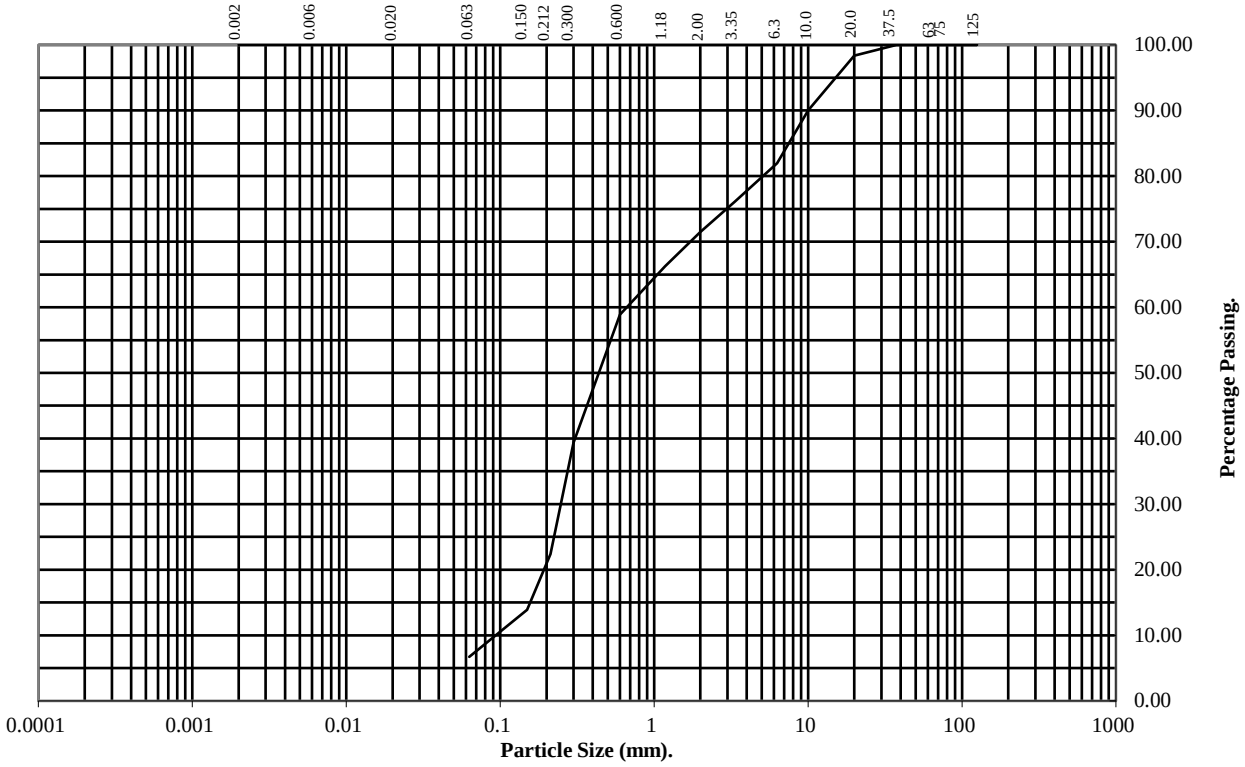
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve, Clause 9.2

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP153** | **Top Depth (m):** | **2.30** |
| **Sample Number:** | **8** | **Base Depth(m):** | **2.60** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 100 |
| 20 | 98 |
| 10 | 90 |
| 6.3 | 82 |
| 3.35 | 76 |
| 2 | 71 |
| 1.18 | 66 |
| 0.6 | 59 |
| 0.3 | 39 |
| 0.212 | 22 |
| 0.15 | 14 |
| 0.063 | 7 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 29 |
| Sand | 64 |
| Silt/Clay | 7 |

**Remarks:**

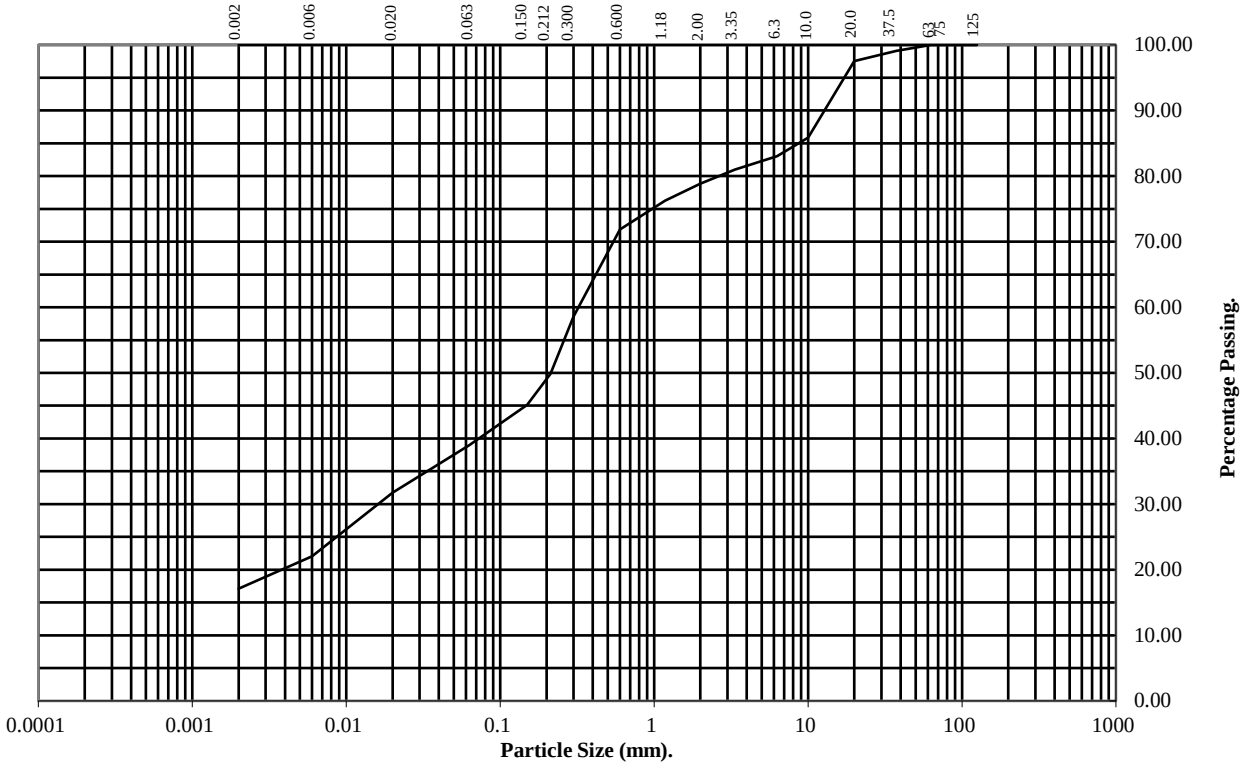
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP156** | **Top Depth (m):** | **1.00** |
| **Sample Number:** | **5** | **Base Depth(m):** | **1.30** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 99 |
| 20 | 98 |
| 10 | 86 |
| 6.3 | 83 |
| 3.35 | 81 |
| 2 | 79 |
| 1.18 | 76 |
| 0.6 | 72 |
| 0.3 | 59 |
| 0.212 | 50 |
| 0.15 | 45 |
| 0.063 | 39 |

| Particle Diameter | Percentage Passing |
|---|---|
| 0.02 | 32 |
| 0.006 | 22 |
| 0.002 | 17 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 21 |
| Sand | 40 |
| Silt | 22 |
| Clay | 17 |

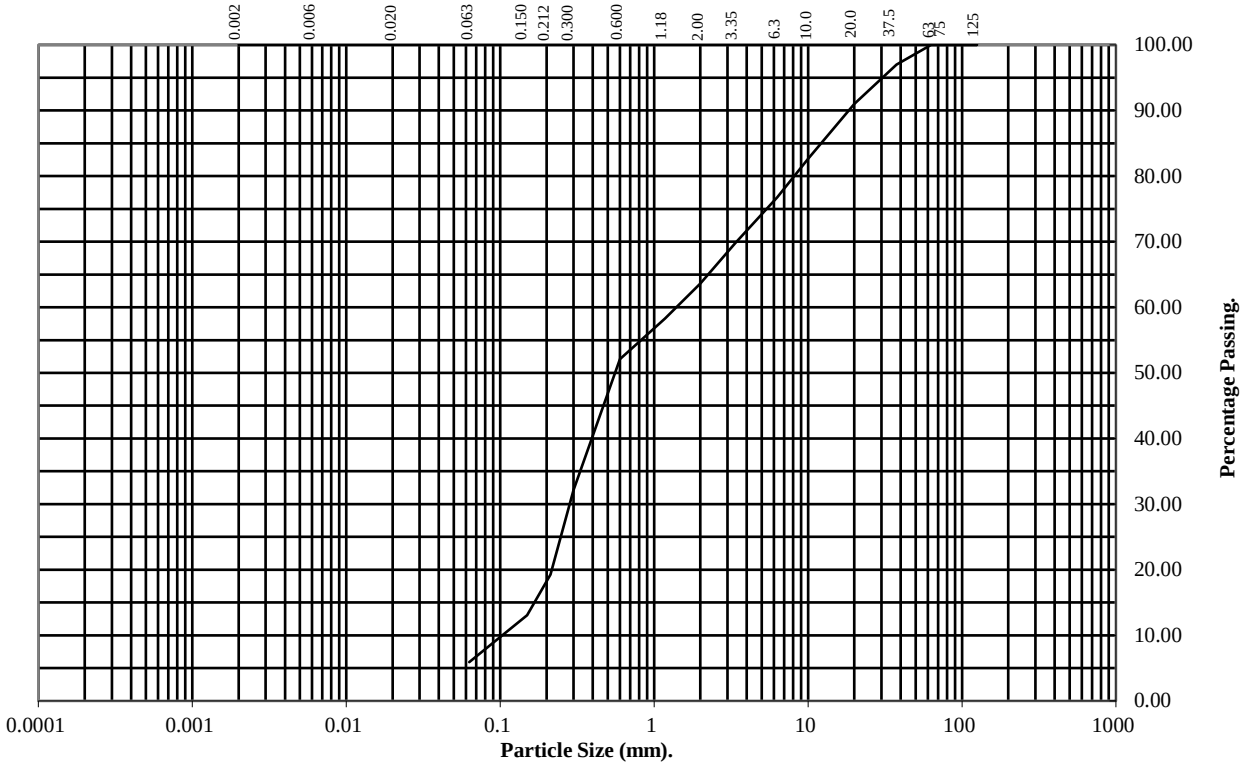
**Remarks:**
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve, Clause 9.2

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP156** | **Top Depth (m):** | **2.00** |
| **Sample Number:** | **7** | **Base Depth(m):** | **2.30** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 97 |
| 20 | 91 |
| 10 | 83 |
| 6.3 | 77 |
| 3.35 | 70 |
| 2 | 64 |
| 1.18 | 58 |
| 0.6 | 52 |
| 0.3 | 32 |
| 0.212 | 19 |
| 0.15 | 13 |
| 0.063 | 6 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 36 |
| Sand | 58 |
| Silt/Clay | 6 |

**Remarks:**

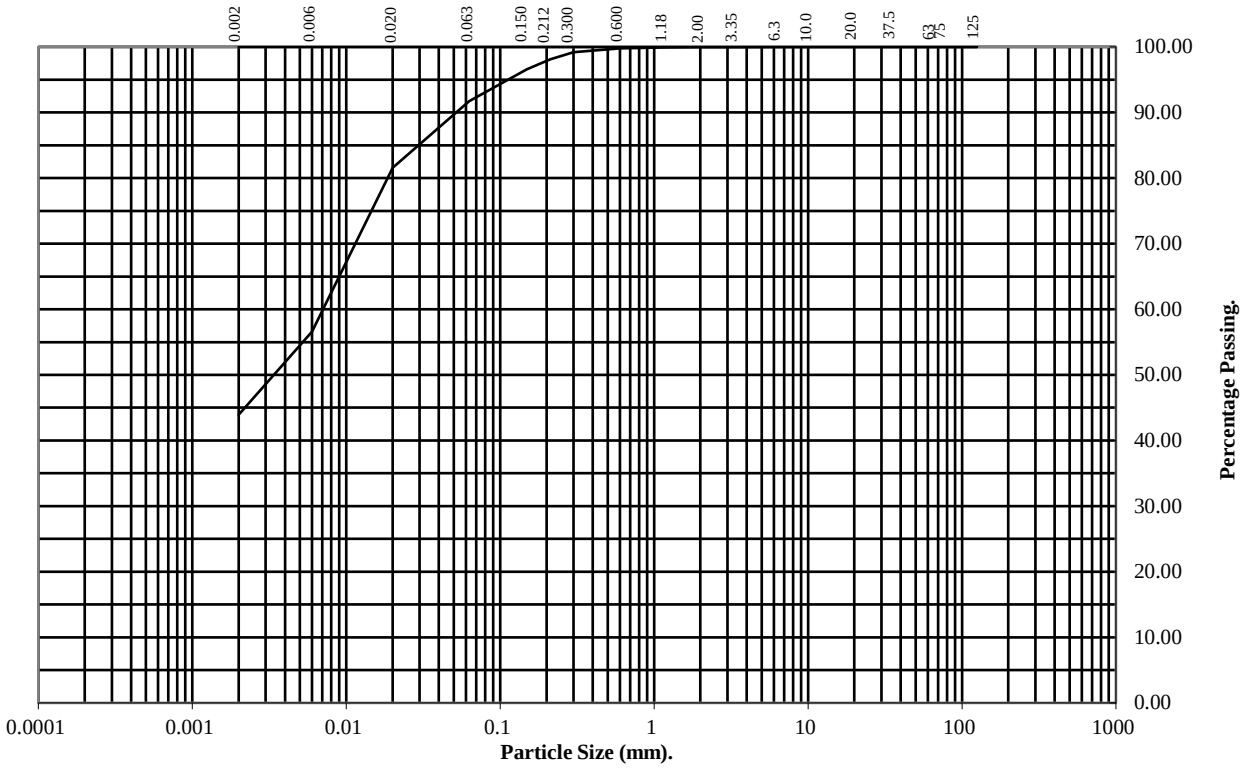
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP157** | **Top Depth (m):** | **1.00** |
| **Sample Number:** | **5** | **Base Depth(m):** | **1.30** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 100 |
| 20 | 100 |
| 10 | 100 |
| 6.3 | 100 |
| 3.35 | 100 |
| 2 | 100 |
| 1.18 | 100 |
| 0.6 | 100 |
| 0.3 | 99 |
| 0.212 | 98 |
| 0.15 | 97 |
| 0.063 | 92 |

| Particle Diameter | Percentage Passing |
|---|---|
| 0.02 | 82 |
| 0.006 | 57 |
| 0.002 | 44 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 0 |
| Sand | 8 |
| Silt | 48 |
| Clay | 44 |

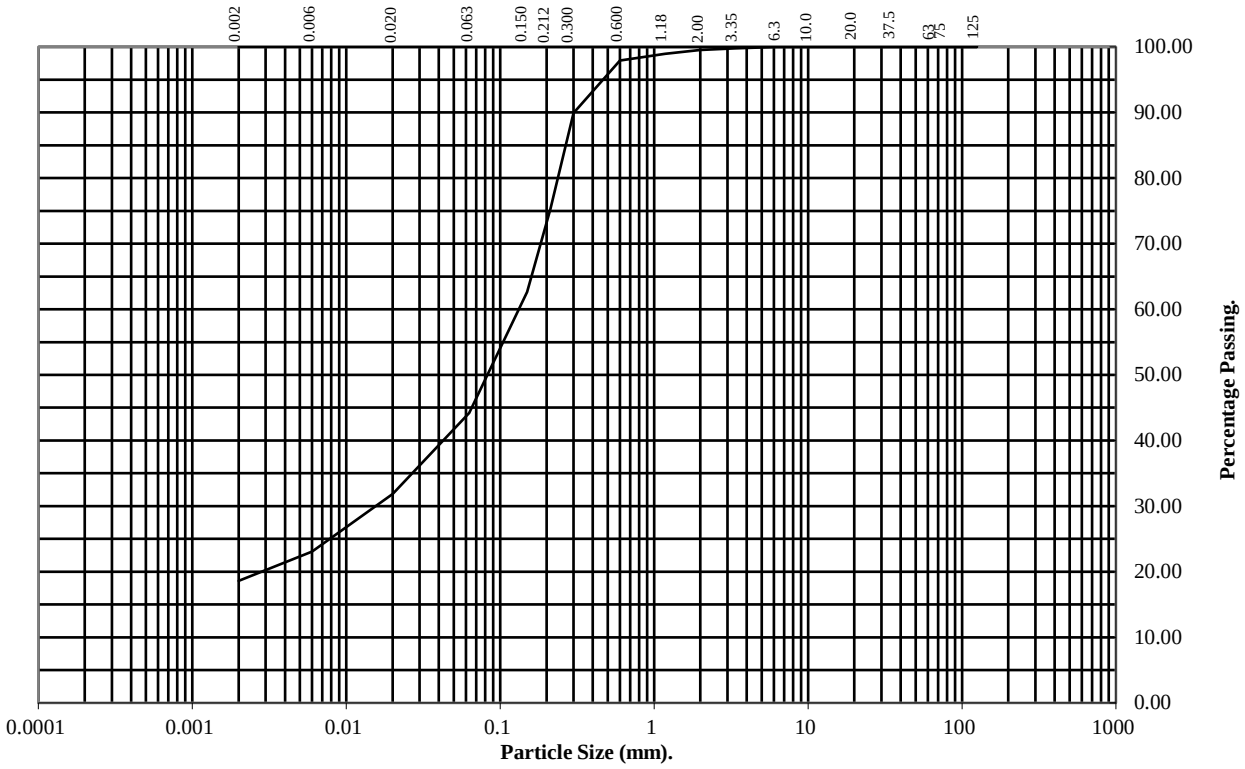
**Remarks:**
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP151** | **Top Depth (m):** | **1.00** |
| **Sample Number:** | **5** | **Base Depth(m):** | **1.30** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 100 |
| 20 | 100 |
| 10 | 100 |
| 6.3 | 100 |
| 3.35 | 100 |
| 2 | 100 |
| 1.18 | 99 |
| 0.6 | 98 |
| 0.3 | 90 |
| 0.212 | 75 |
| 0.15 | 63 |
| 0.063 | 44 |

| Particle Diameter | Percentage Passing |
|---|---|
| 0.02 | 32 |
| 0.006 | 23 |
| 0.002 | 19 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 0 |
| Sand | 56 |
| Silt | 25 |
| Clay | 19 |

**Remarks:**
See Summary of Soil Descriptions

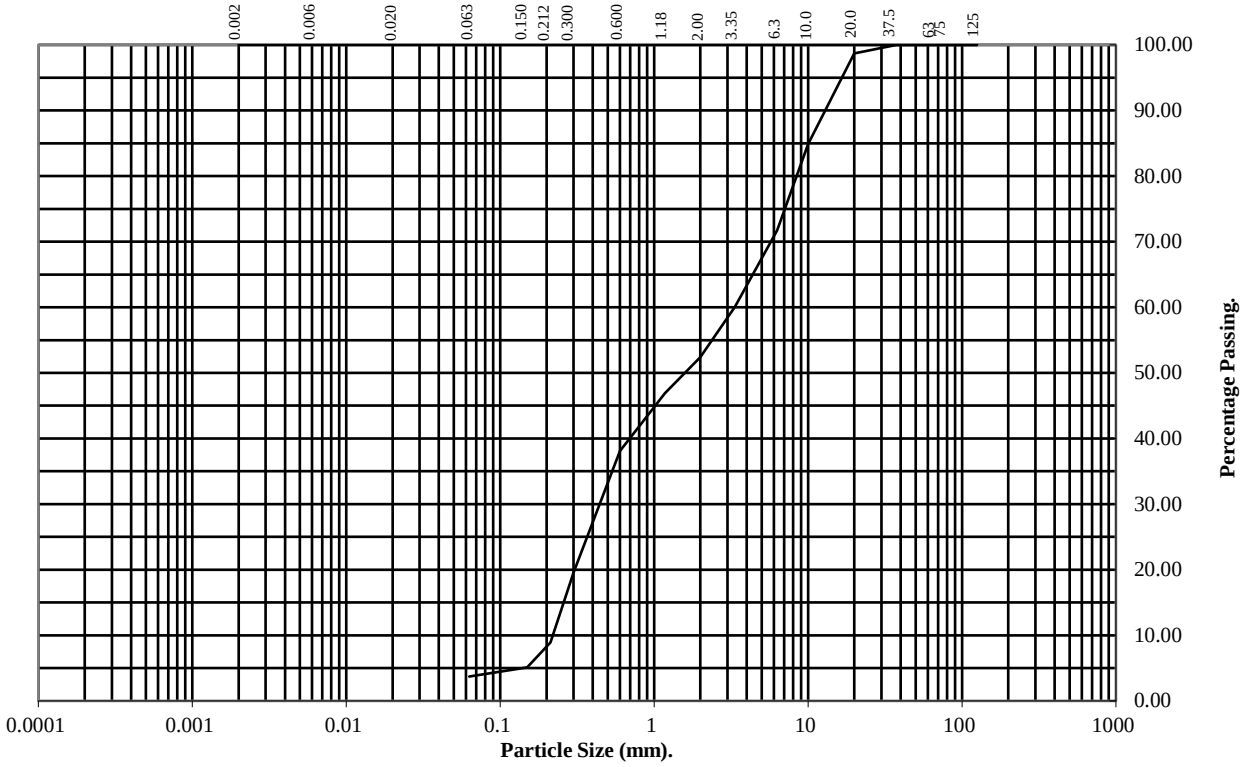
| | | | |
|---|---|---|---|
| UKAS TESTING 4043 | PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** | **Contract No:** PSL22/3650 **Client Ref:** GT0386 |

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve, Clause 9.2

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP151** | **Top Depth (m):** | **2.10** |
| **Sample Number:** | **7** | **Base Depth(m):** | **2.40** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 100 |
| 20 | 99 |
| 10 | 85 |
| 6.3 | 72 |
| 3.35 | 60 |
| 2 | 52 |
| 1.18 | 47 |
| 0.6 | 38 |
| 0.3 | 20 |
| 0.212 | 9 |
| 0.15 | 5 |
| 0.063 | 4 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 48 |
| Sand | 48 |
| Silt/Clay | 4 |

**Remarks:**

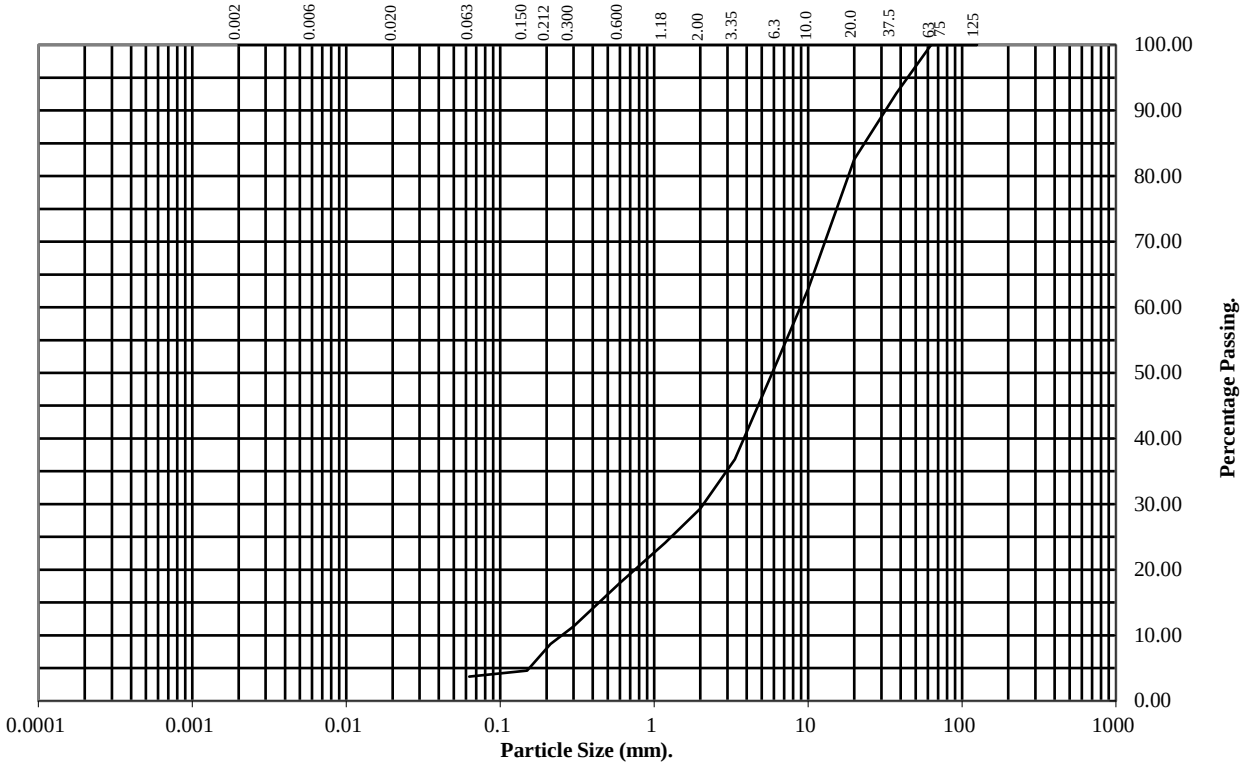
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve, Clause 9.2

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP152** | **Top Depth (m):** | **1.00** |
| **Sample Number:** | **5** | **Base Depth(m):** | **1.30** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 93 |
| 20 | 83 |
| 10 | 63 |
| 6.3 | 52 |
| 3.35 | 37 |
| 2 | 29 |
| 1.18 | 24 |
| 0.6 | 18 |
| 0.3 | 11 |
| 0.212 | 9 |
| 0.15 | 5 |
| 0.063 | 4 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 71 |
| Sand | 25 |
| Silt/Clay | 4 |

**Remarks:**

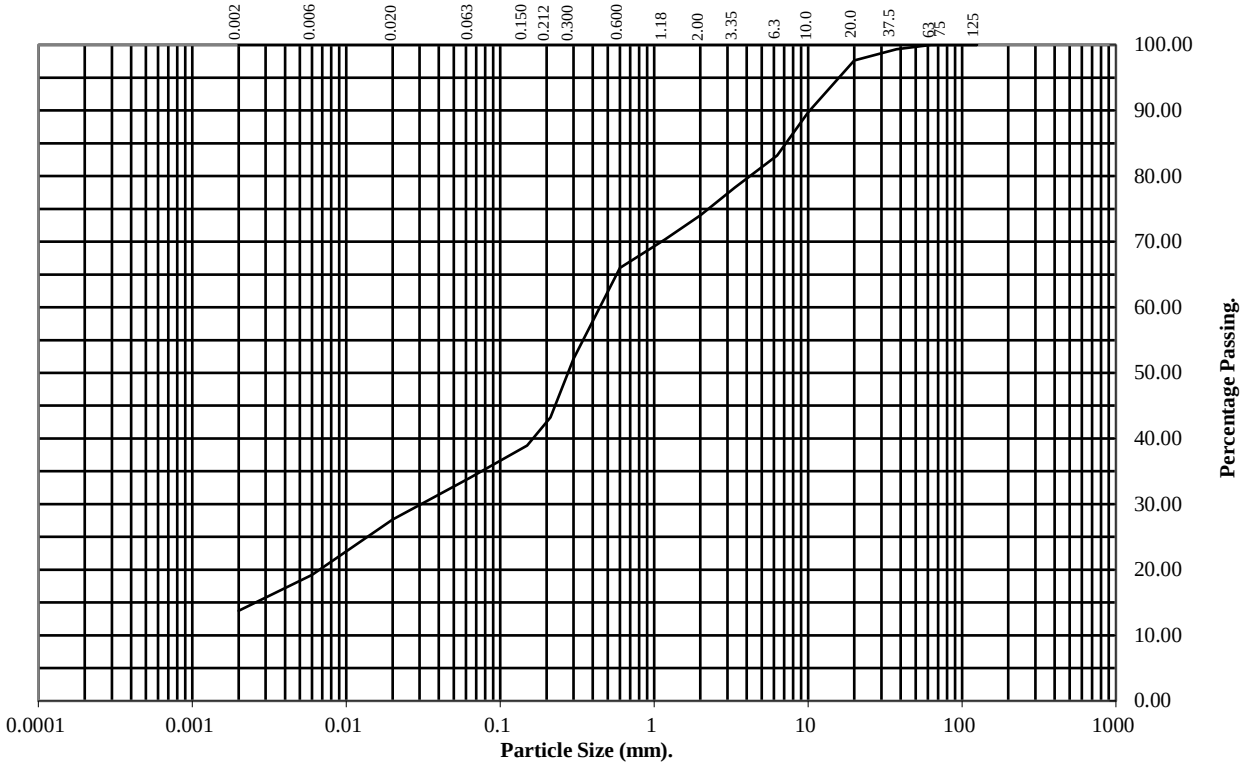
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP154** | **Top Depth (m):** | **1.00** |
| **Sample Number:** | **5** | **Base Depth(m):** | **1.30** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 99 |
| 20 | 98 |
| 10 | 90 |
| 6.3 | 83 |
| 3.35 | 78 |
| 2 | 74 |
| 1.18 | 70 |
| 0.6 | 66 |
| 0.3 | 52 |
| 0.212 | 43 |
| 0.15 | 39 |
| 0.063 | 34 |

| Particle Diameter | Percentage Passing |
|---|---|
| 0.02 | 28 |
| 0.006 | 19 |
| 0.002 | 14 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 26 |
| Sand | 40 |
| Silt | 20 |
| Clay | 14 |

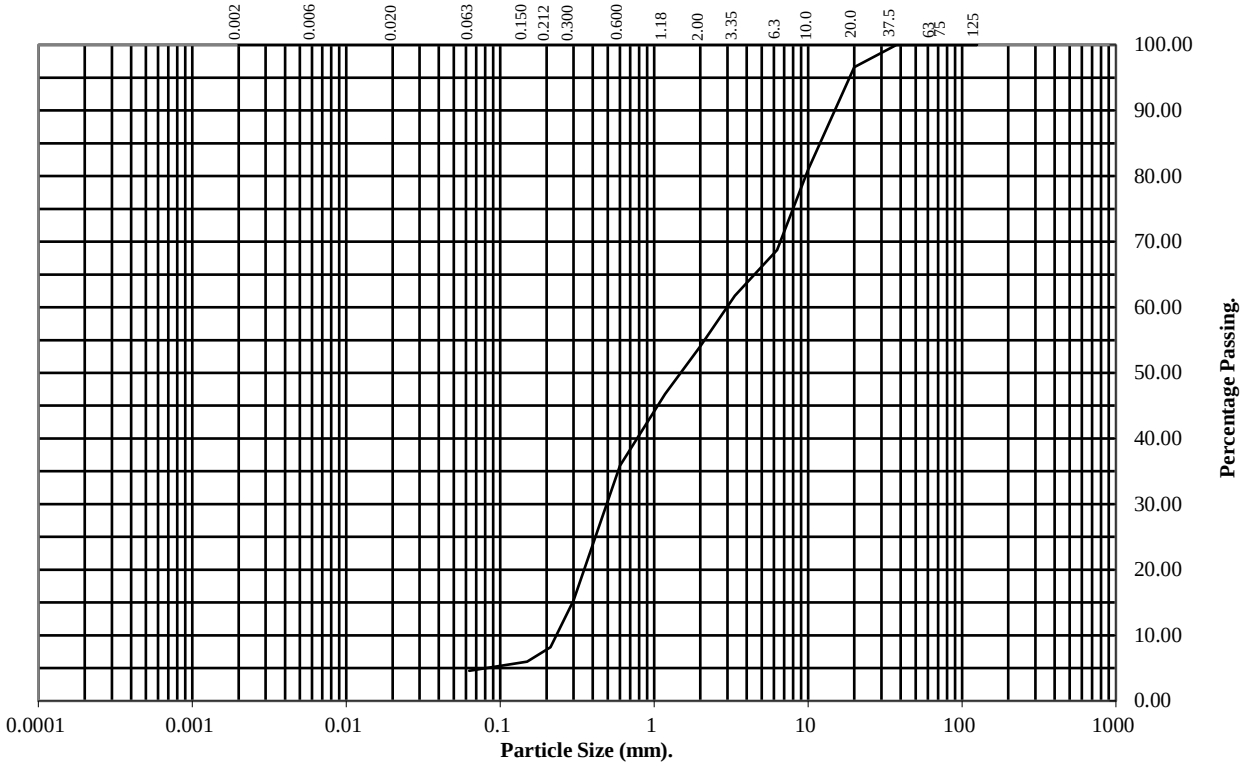
**Remarks:**
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve, Clause 9.2

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP155** | **Top Depth (m):** | **1.00** |
| **Sample Number:** | **5** | **Base Depth(m):** | **1.30** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 100 |
| 20 | 97 |
| 10 | 81 |
| 6.3 | 69 |
| 3.35 | 62 |
| 2 | 54 |
| 1.18 | 47 |
| 0.6 | 36 |
| 0.3 | 15 |
| 0.212 | 8 |
| 0.15 | 6 |
| 0.063 | 5 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 46 |
| Sand | 49 |
| Silt/Clay | 5 |

**Remarks:**

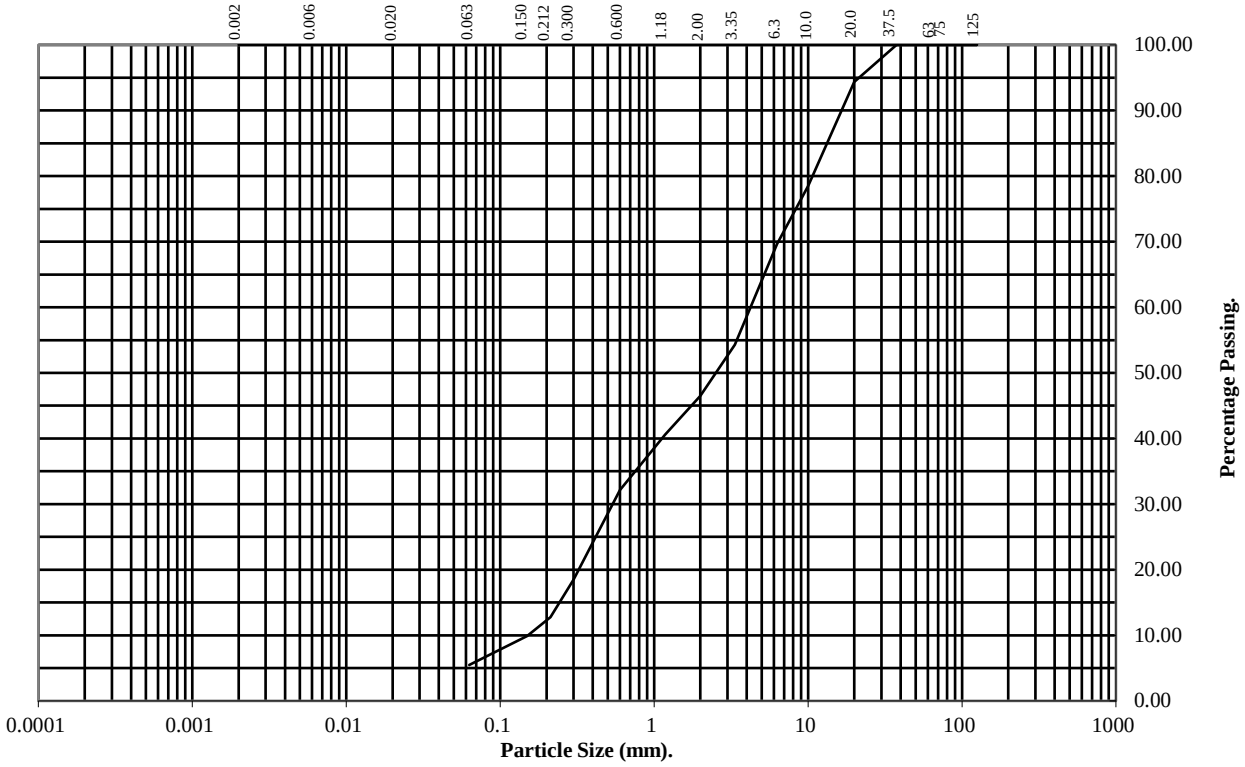
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve, Clause 9.2

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP158** | **Top Depth (m):** | **1.00** |
| **Sample Number:** | **5** | **Base Depth(m):** | **1.30** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 100 |
| 20 | 94 |
| 10 | 78 |
| 6.3 | 70 |
| 3.35 | 54 |
| 2 | 46 |
| 1.18 | 41 |
| 0.6 | 32 |
| 0.3 | 18 |
| 0.212 | 13 |
| 0.15 | 10 |
| 0.063 | 5 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 54 |
| Sand | 41 |
| Silt/Clay | 5 |

**Remarks:**

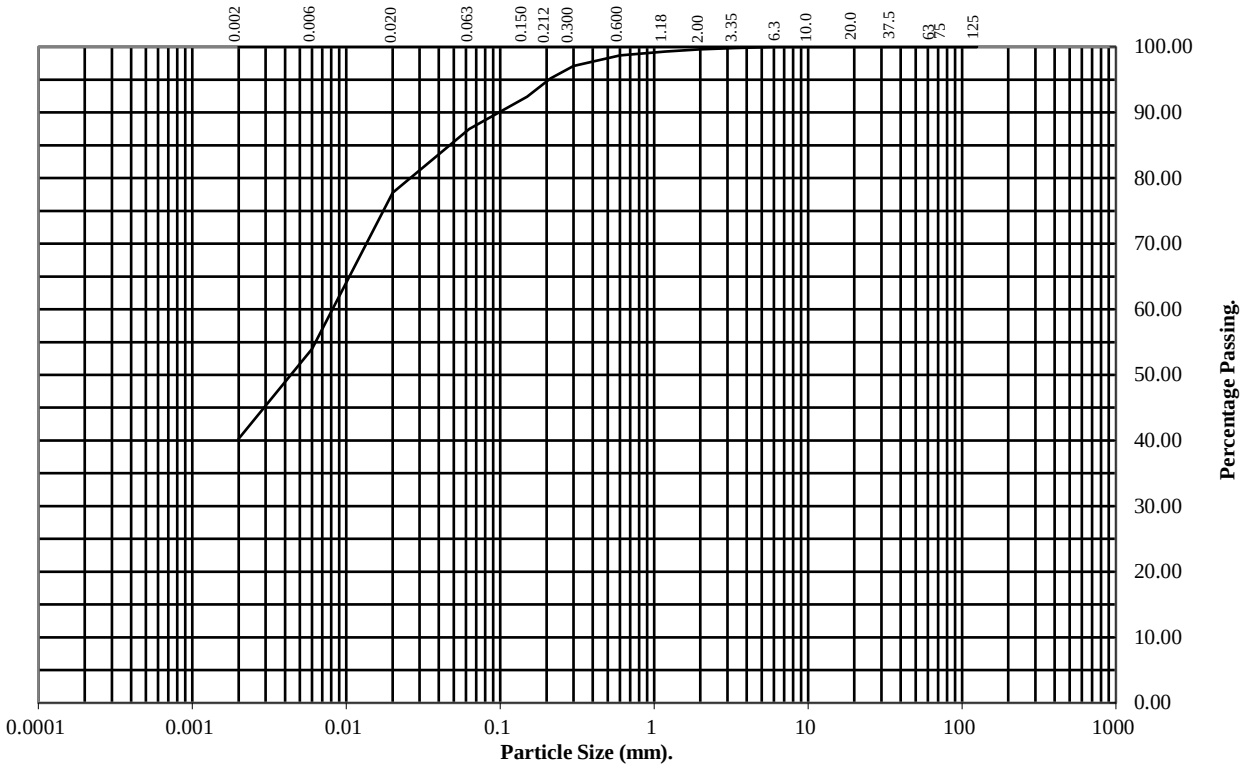
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP159** | **Top Depth (m):** | **1.00** |
| **Sample Number:** | **5** | **Base Depth(m):** | **1.30** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 100 |
| 20 | 100 |
| 10 | 100 |
| 6.3 | 100 |
| 3.35 | 100 |
| 2 | 100 |
| 1.18 | 99 |
| 0.6 | 99 |
| 0.3 | 97 |
| 0.212 | 95 |
| 0.15 | 92 |
| 0.063 | 87 |

| Particle Diameter | Percentage Passing |
|---|---|
| 0.02 | 78 |
| 0.006 | 54 |
| 0.002 | 40 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 0 |
| Sand | 13 |
| Silt | 47 |
| Clay | 40 |

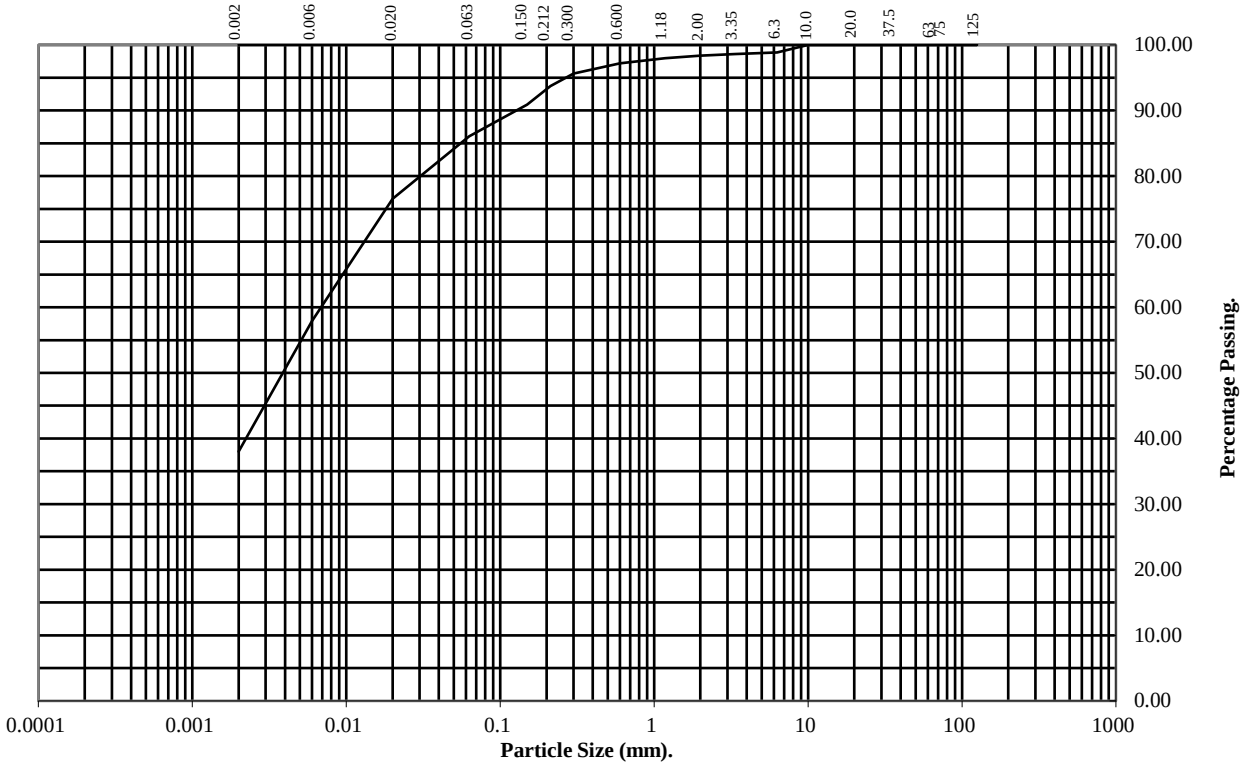
**Remarks:**
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP159** | **Top Depth (m):** | **2.00** |
| **Sample Number:** | **7** | **Base Depth(m):** | **2.30** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 100 |
| 20 | 100 |
| 10 | 100 |
| 6.3 | 99 |
| 3.35 | 99 |
| 2 | 98 |
| 1.18 | 98 |
| 0.6 | 97 |
| 0.3 | 96 |
| 0.212 | 94 |
| 0.15 | 91 |
| 0.063 | 86 |

| Particle Diameter | Percentage Passing |
|---|---|
| 0.02 | 77 |
| 0.006 | 58 |
| 0.002 | 38 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 2 |
| Sand | 12 |
| Silt | 48 |
| Clay | 38 |

**Remarks:**

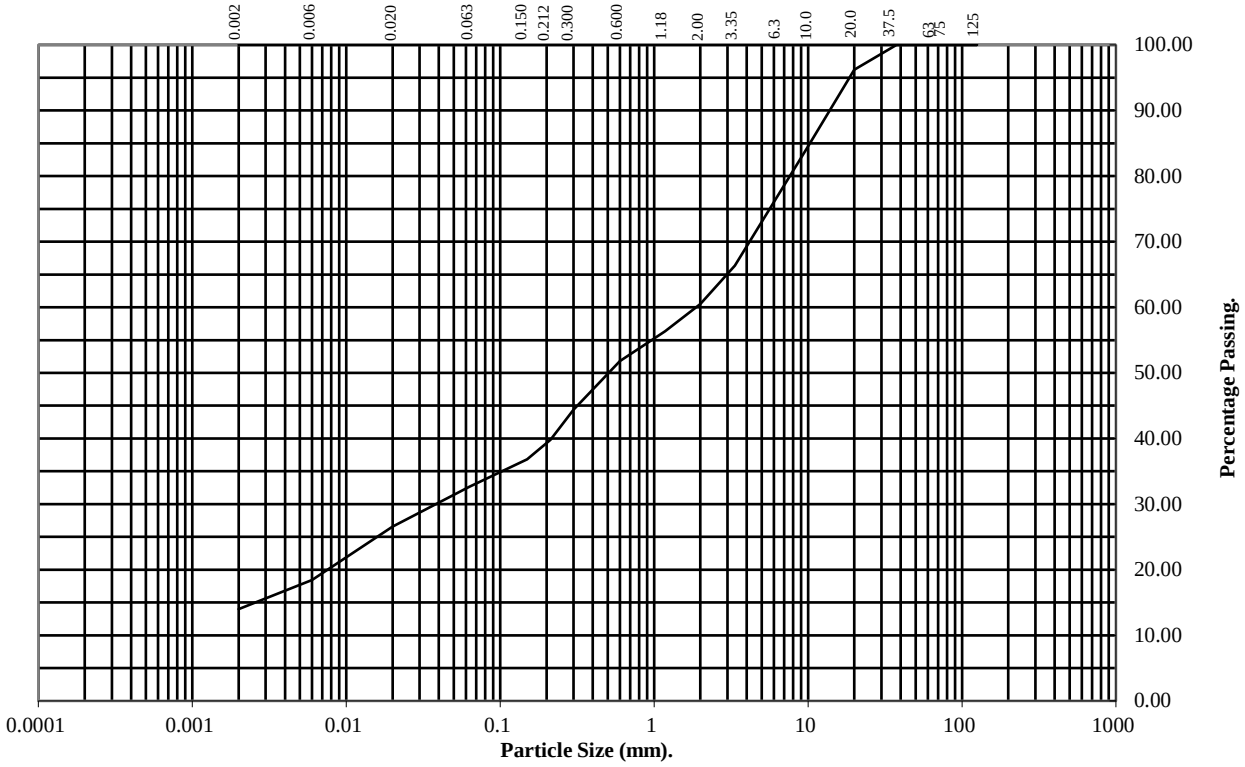
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH116** | **Top Depth (m):** | **1.50** |
| **Sample Number:** | **3** | **Base Depth(m):** | **2.00** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 100 |
| 20 | 96 |
| 10 | 85 |
| 6.3 | 77 |
| 3.35 | 66 |
| 2 | 61 |
| 1.18 | 56 |
| 0.6 | 52 |
| 0.3 | 44 |
| 0.212 | 40 |
| 0.15 | 37 |
| 0.063 | 33 |

| Particle Diameter | Percentage Passing |
|---|---|
| 0.02 | 27 |
| 0.006 | 18 |
| 0.002 | 14 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 39 |
| Sand | 28 |
| Silt | 19 |
| Clay | 14 |

**Remarks:**
See Summary of Soil Descriptions

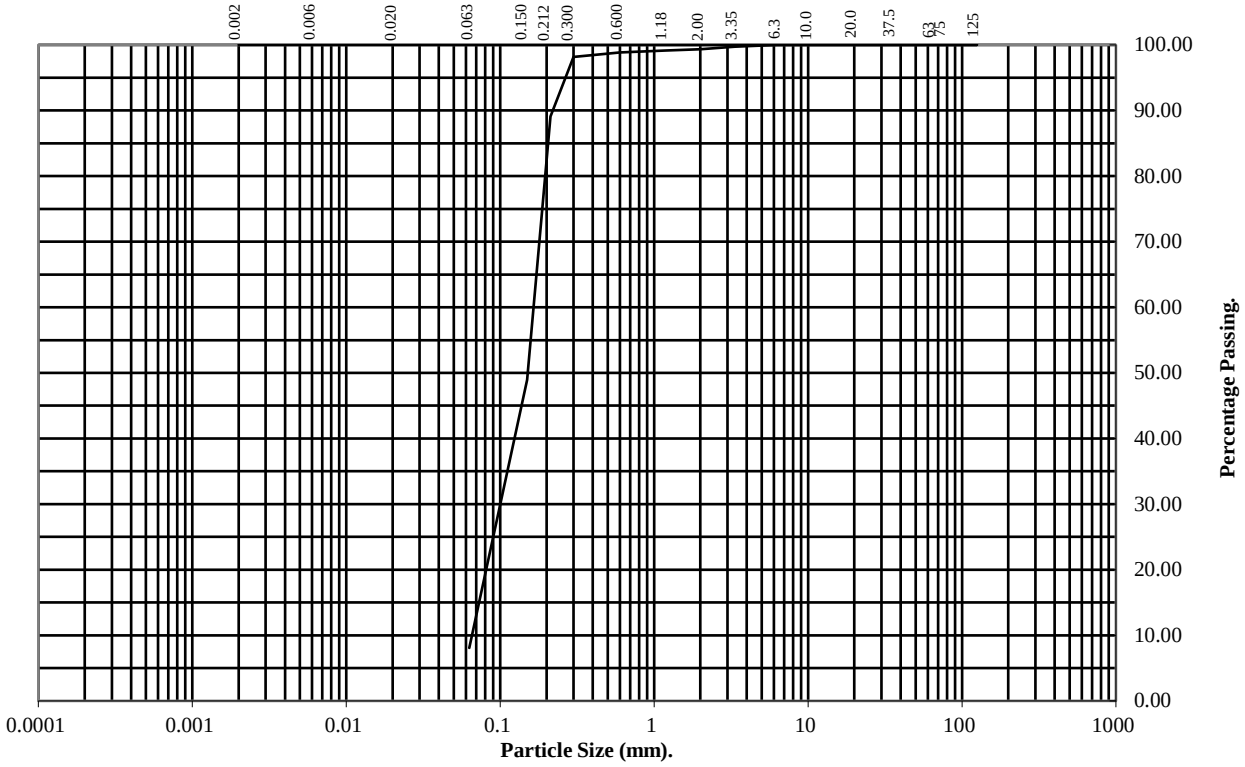
| | | | |
|---|---|---|---|
| UKAS TESTING 4043 | PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** | **Contract No:** PSL22/3650 **Client Ref:** GT0386 |

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve, Clause 9.2

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH116** | **Top Depth (m):** | **3.50** |
| **Sample Number:** | **6** | **Base Depth(m):** | **4.00** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 100 |
| 20 | 100 |
| 10 | 100 |
| 6.3 | 100 |
| 3.35 | 100 |
| 2 | 99 |
| 1.18 | 99 |
| 0.6 | 99 |
| 0.3 | 98 |
| 0.212 | 89 |
| 0.15 | 49 |
| 0.063 | 8 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 1 |
| Sand | 91 |
| Silt/Clay | 8 |

**Remarks:**

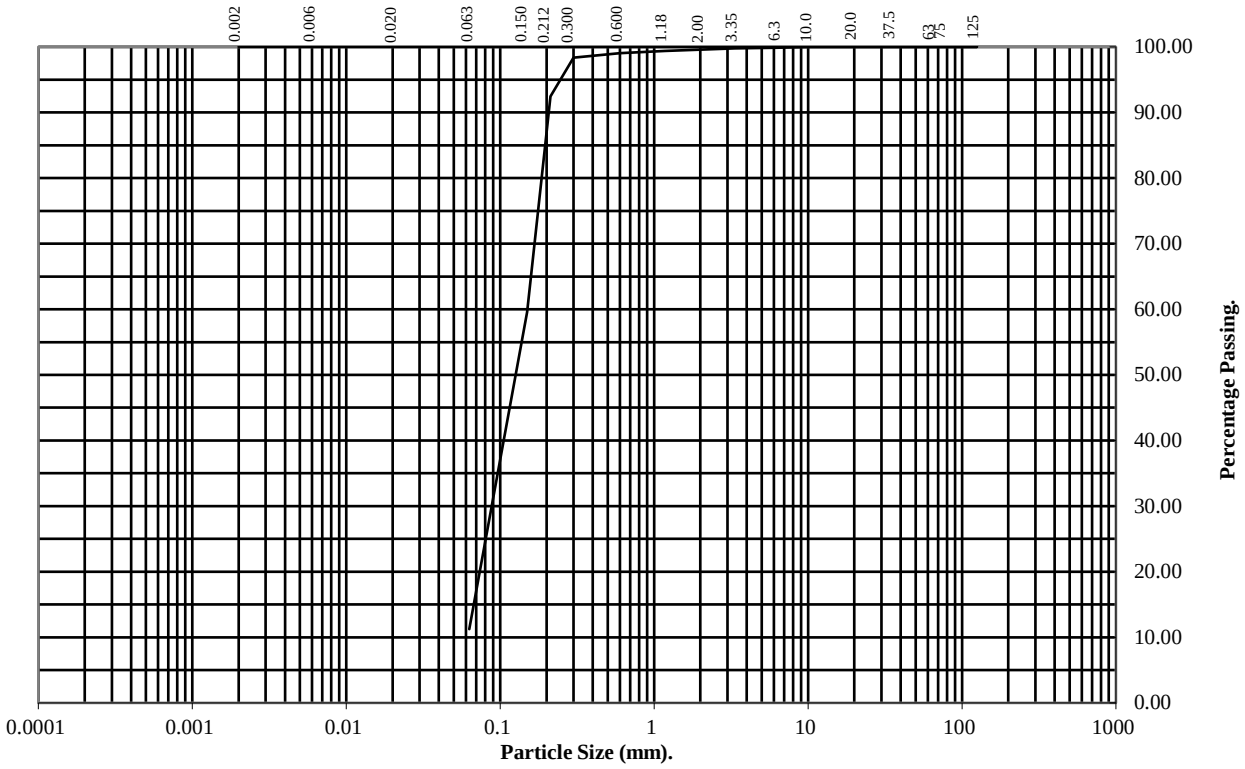
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve, Clause 9.2

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH118** | **Top Depth (m):** | **4.50** |
| **Sample Number:** | **6** | **Base Depth(m):** | **5.00** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 100 |
| 20 | 100 |
| 10 | 100 |
| 6.3 | 100 |
| 3.35 | 100 |
| 2 | 100 |
| 1.18 | 99 |
| 0.6 | 99 |
| 0.3 | 98 |
| 0.212 | 92 |
| 0.15 | 60 |
| 0.063 | 11 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 0 |
| Sand | 89 |
| Silt/Clay | 11 |

**Remarks:**

See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

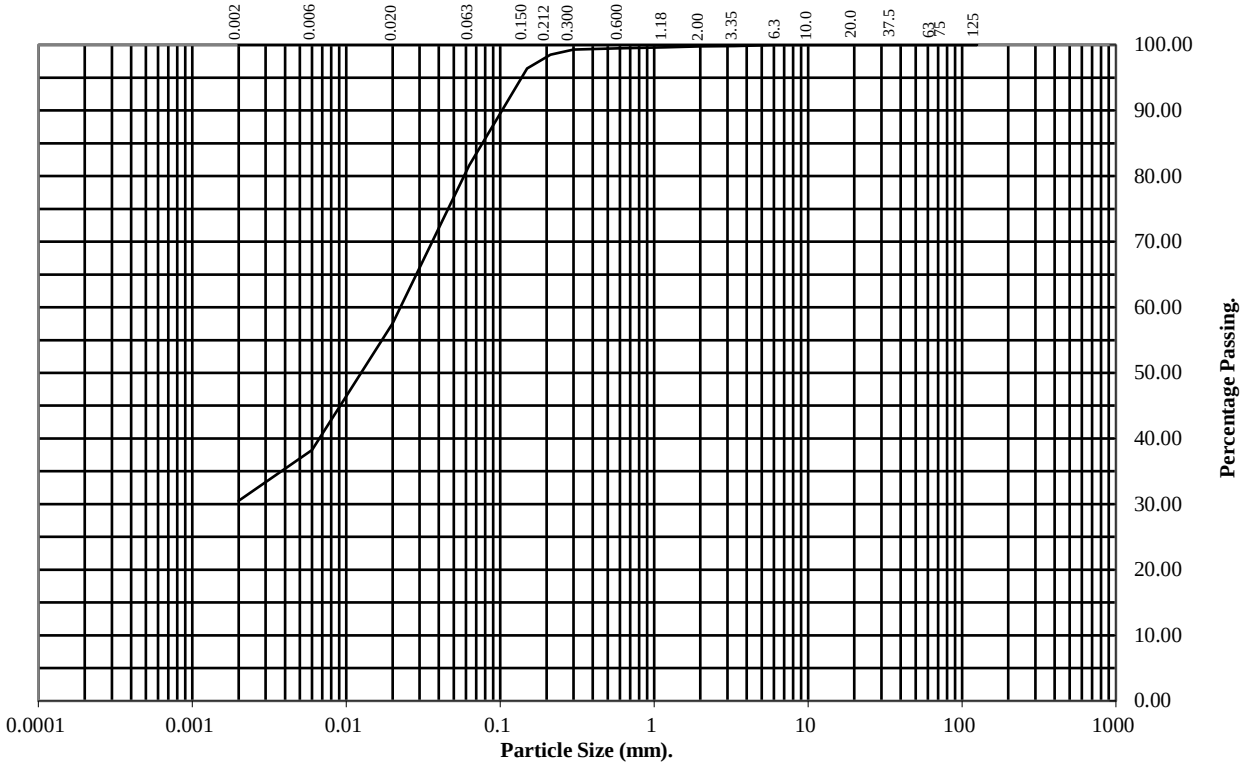
**BS1377 : Part 2 : 1990**

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

**Hole Number:** **BH118** **Top Depth (m):** **6.10**

**Sample Number:** **8** **Base Depth(m):**

**Sample Type:** **B**




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 100 |
| 20 | 100 |
| 10 | 100 |
| 6.3 | 100 |
| 3.35 | 100 |
| 2 | 100 |
| 1.18 | 100 |
| 0.6 | 99 |
| 0.3 | 99 |
| 0.212 | 99 |
| 0.15 | 96 |
| 0.063 | 82 |

| Particle Diameter | Percentage Passing |
|---|---|
| 0.02 | 58 |
| 0.006 | 38 |
| 0.002 | 31 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 0 |
| Sand | 18 |
| Silt | 51 |
| Clay | 31 |

**Remarks:**
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

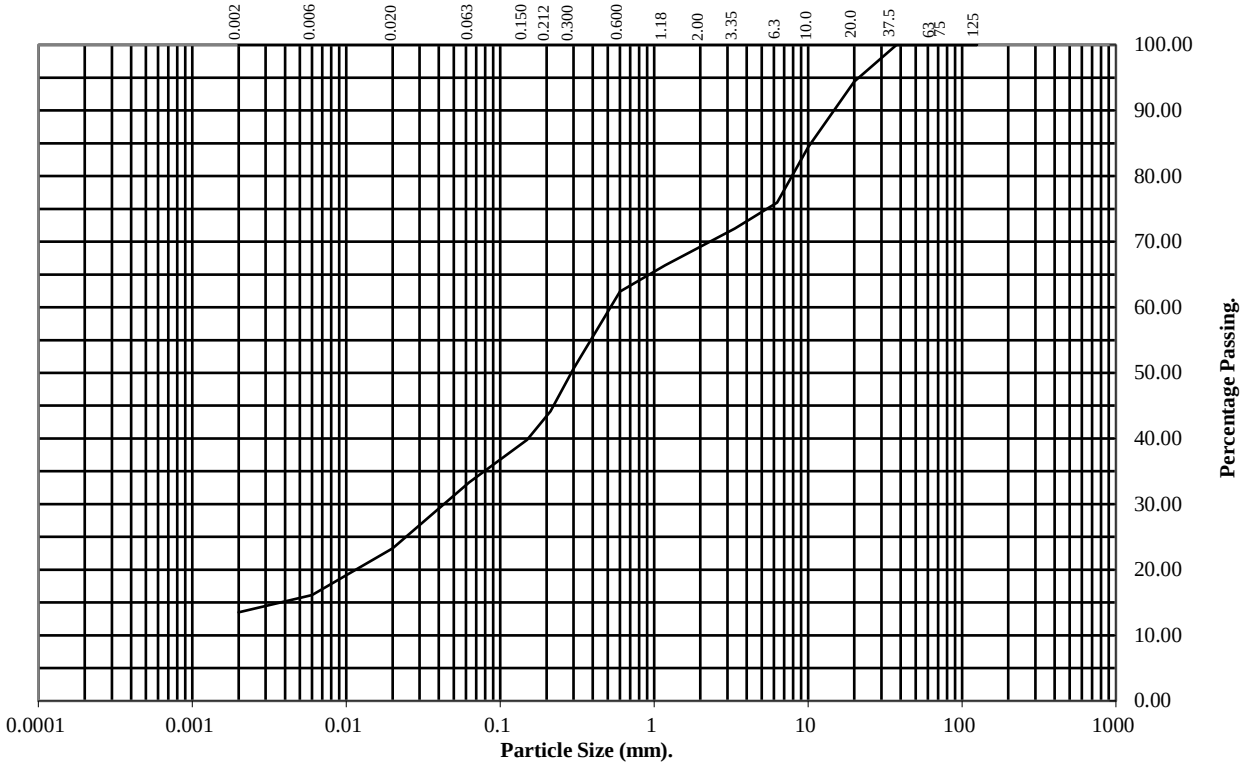
**BS1377 : Part 2 : 1990**

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

**Hole Number:** **BH120 & BH120a** **Top Depth (m):** **0.50**

**Sample Number:** **1** **Base Depth(m):**

**Sample Type:** **B**




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 100 |
| 20 | 94 |
| 10 | 84 |
| 6.3 | 76 |
| 3.35 | 72 |
| 2 | 69 |
| 1.18 | 66 |
| 0.6 | 62 |
| 0.3 | 51 |
| 0.212 | 44 |
| 0.15 | 40 |
| 0.063 | 33 |

| Particle Diameter | Percentage Passing |
|---|---|
| 0.02 | 23 |
| 0.006 | 16 |
| 0.002 | 14 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 31 |
| Sand | 36 |
| Silt | 19 |
| Clay | 14 |

**Remarks:**
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

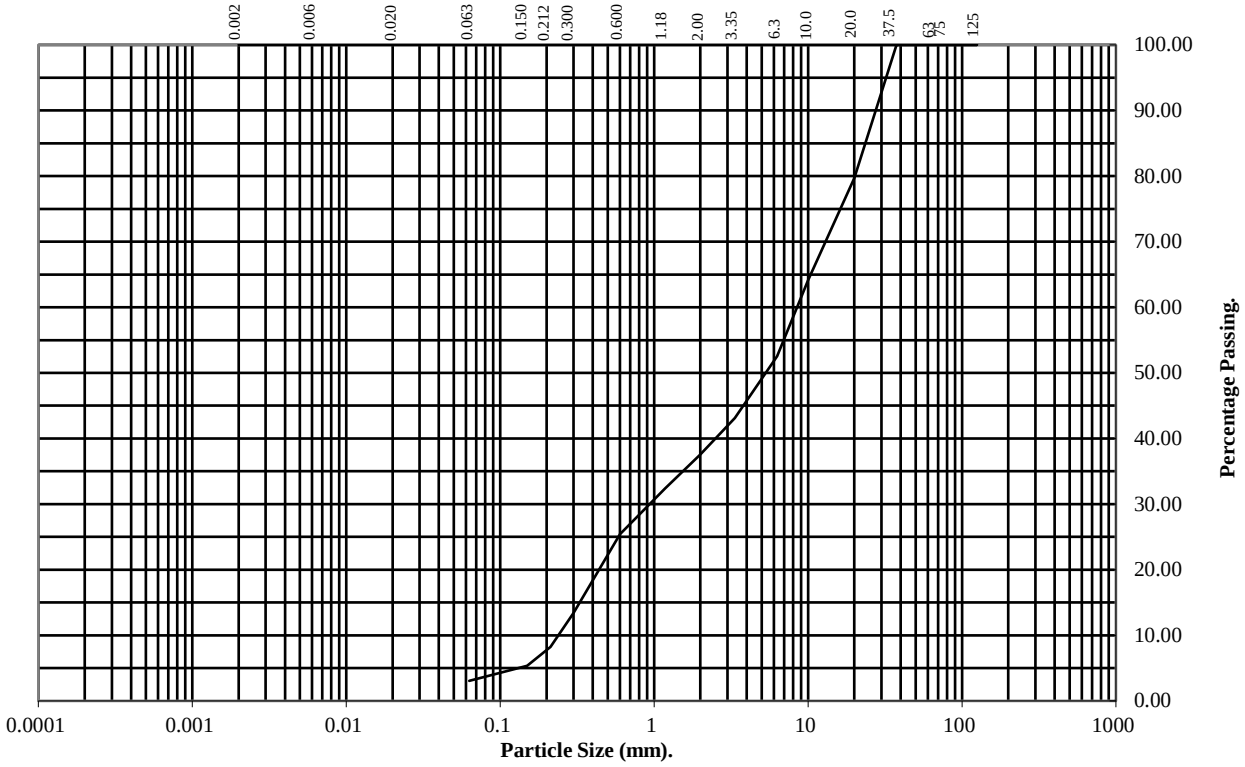
**BS1377 : Part 2 : 1990**

Wet Sieve, Clause 9.2

**Hole Number:** **BH120 & BH120A** **Top Depth (m):** **1.10**

**Sample Number:** **2** **Base Depth(m):**

**Sample Type:** **B**




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 100 |
| 20 | 80 |
| 10 | 64 |
| 6.3 | 53 |
| 3.35 | 43 |
| 2 | 38 |
| 1.18 | 32 |
| 0.6 | 25 |
| 0.3 | 13 |
| 0.212 | 8 |
| 0.15 | 5 |
| 0.063 | 3 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 62 |
| Sand | 35 |
| Silt/Clay | 3 |

**Remarks:**

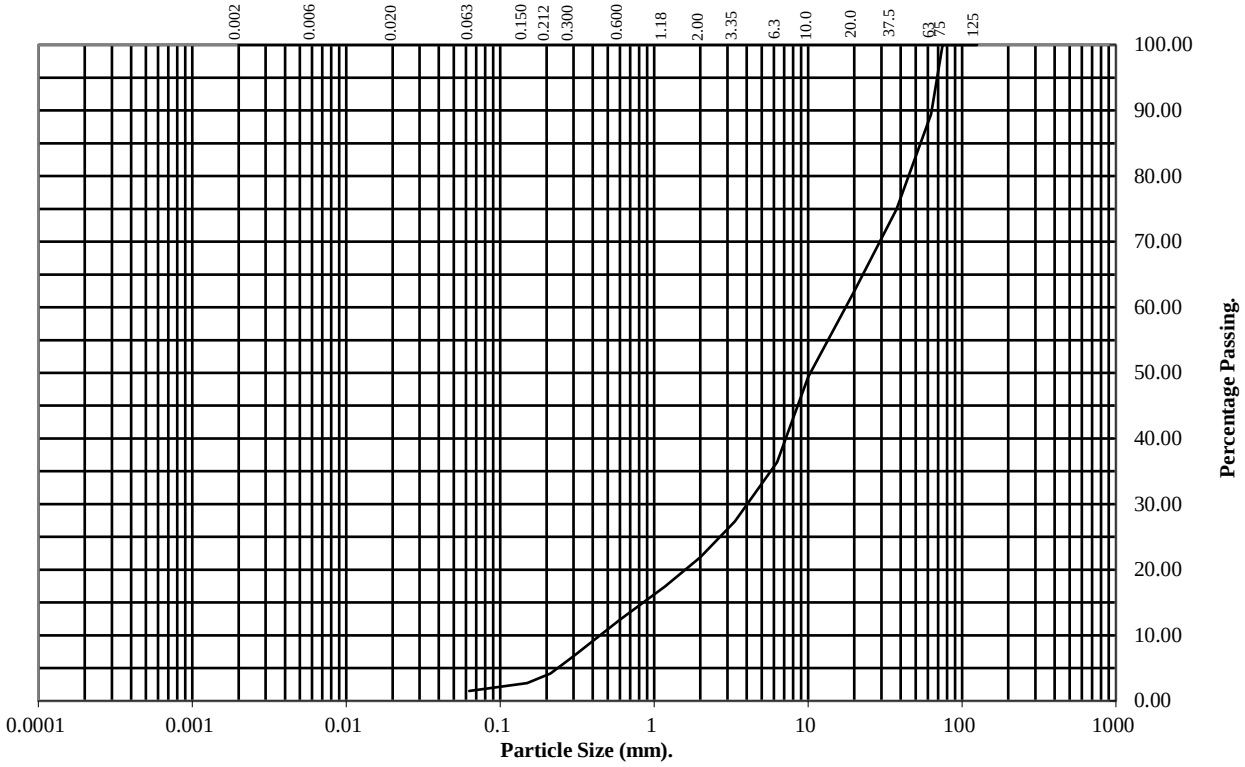
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve, Clause 9.2

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH120 & BH120a** | **Top Depth (m):** | **1.50** |
| **Sample Number:** | **3** | **Base Depth(m):** | **2.00** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 89 |
| 37.5 | 75 |
| 20 | 62 |
| 10 | 49 |
| 6.3 | 36 |
| 3.35 | 27 |
| 2 | 22 |
| 1.18 | 17 |
| 0.6 | 12 |
| 0.3 | 7 |
| 0.212 | 4 |
| 0.15 | 3 |
| 0.063 | 2 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 11 |
| Gravel | 67 |
| Sand | 20 |
| Silt/Clay | 2 |

**Remarks:**

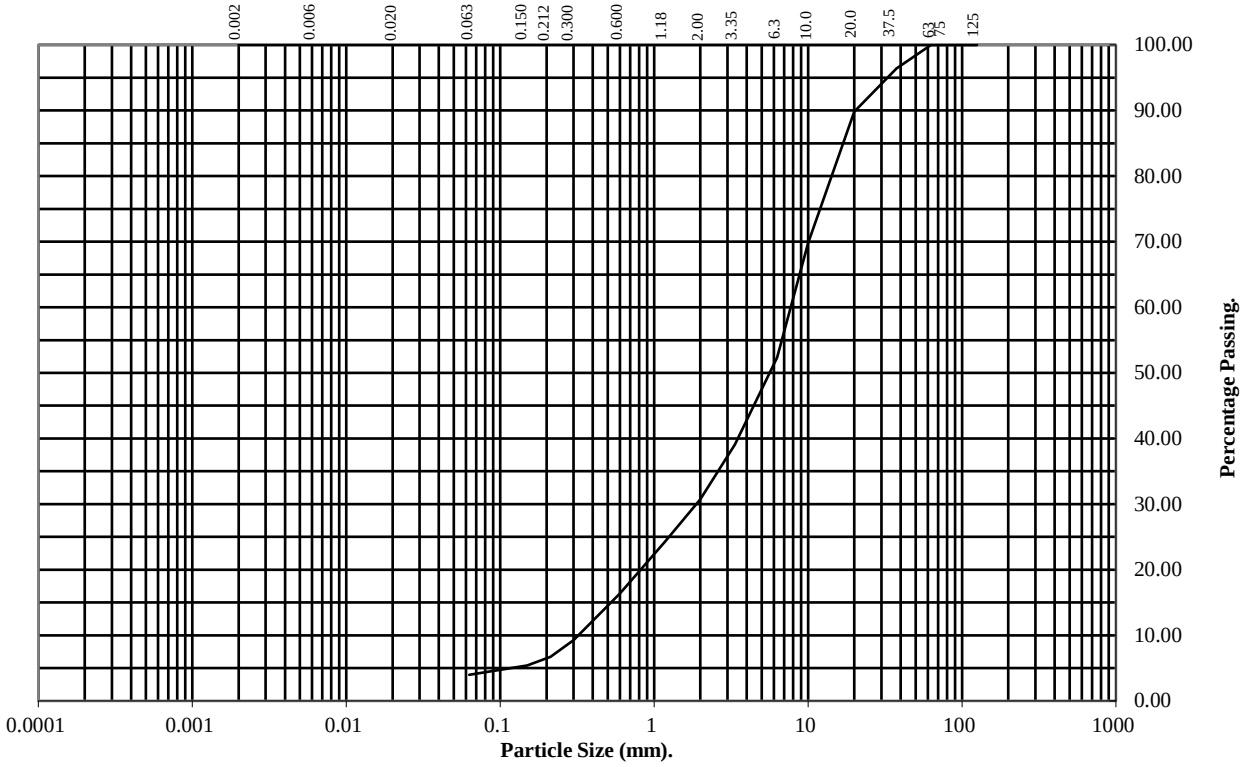
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve, Clause 9.2

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH120 & BH120A** | **Top Depth (m):** | **4.50** |
| **Sample Number:** | **6** | **Base Depth(m):** | **5.00** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 96 |
| 20 | 90 |
| 10 | 70 |
| 6.3 | 52 |
| 3.35 | 39 |
| 2 | 31 |
| 1.18 | 24 |
| 0.6 | 16 |
| 0.3 | 9 |
| 0.212 | 7 |
| 0.15 | 5 |
| 0.063 | 4 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 69 |
| Sand | 27 |
| Silt/Clay | 4 |

**Remarks:**

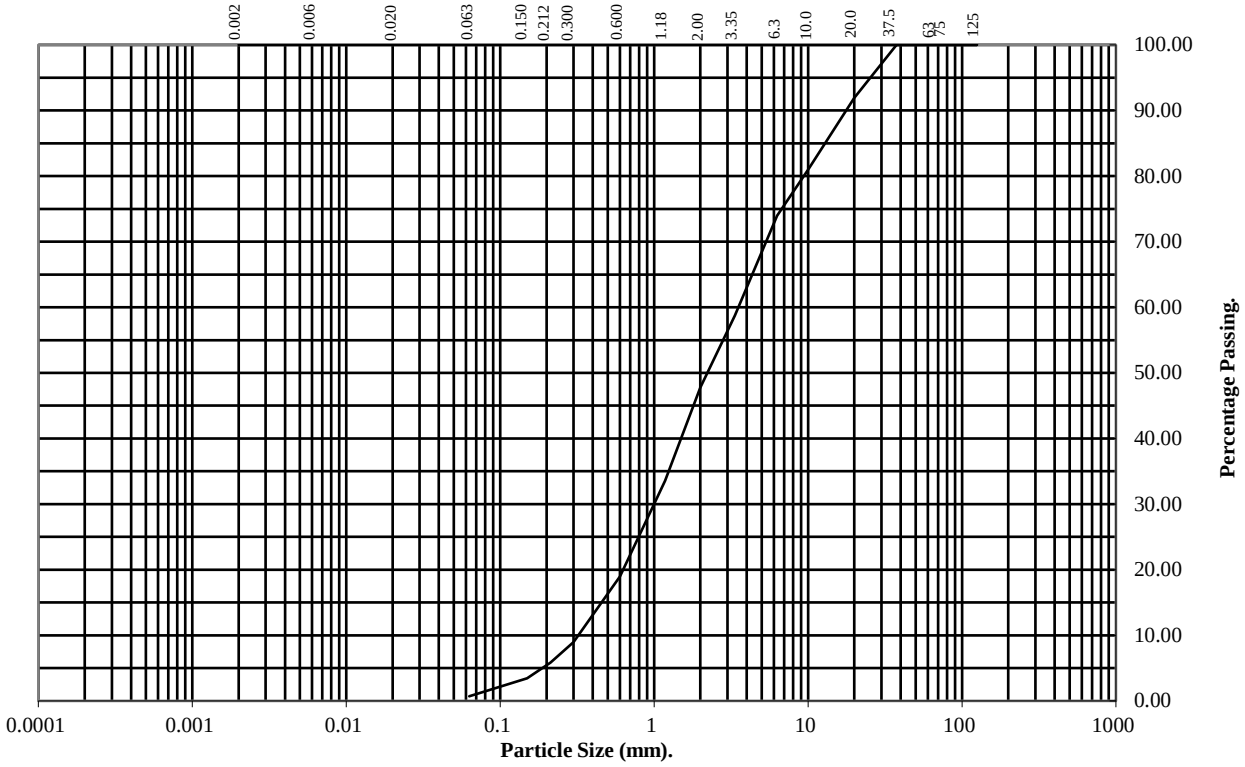
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve, Clause 9.2

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH120 & BH120A** | **Top Depth (m):** | **5.50** |
| **Sample Number:** | **7** | **Base Depth(m):** | **5.70** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 100 |
| 20 | 92 |
| 10 | 81 |
| 6.3 | 74 |
| 3.35 | 59 |
| 2 | 48 |
| 1.18 | 34 |
| 0.6 | 19 |
| 0.3 | 9 |
| 0.212 | 6 |
| 0.15 | 3 |
| 0.063 | 1 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 52 |
| Sand | 47 |
| Silt/Clay | 1 |

**Remarks:**

See Summary of Soil Descriptions

| | | | |
|---|---|---|---|
| UKAS TESTING 4043 | PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** | **Contract No:** PSL22/3650 **Client Ref:** GT0386 |

# PARTICLE SIZE DISTRIBUTION TEST

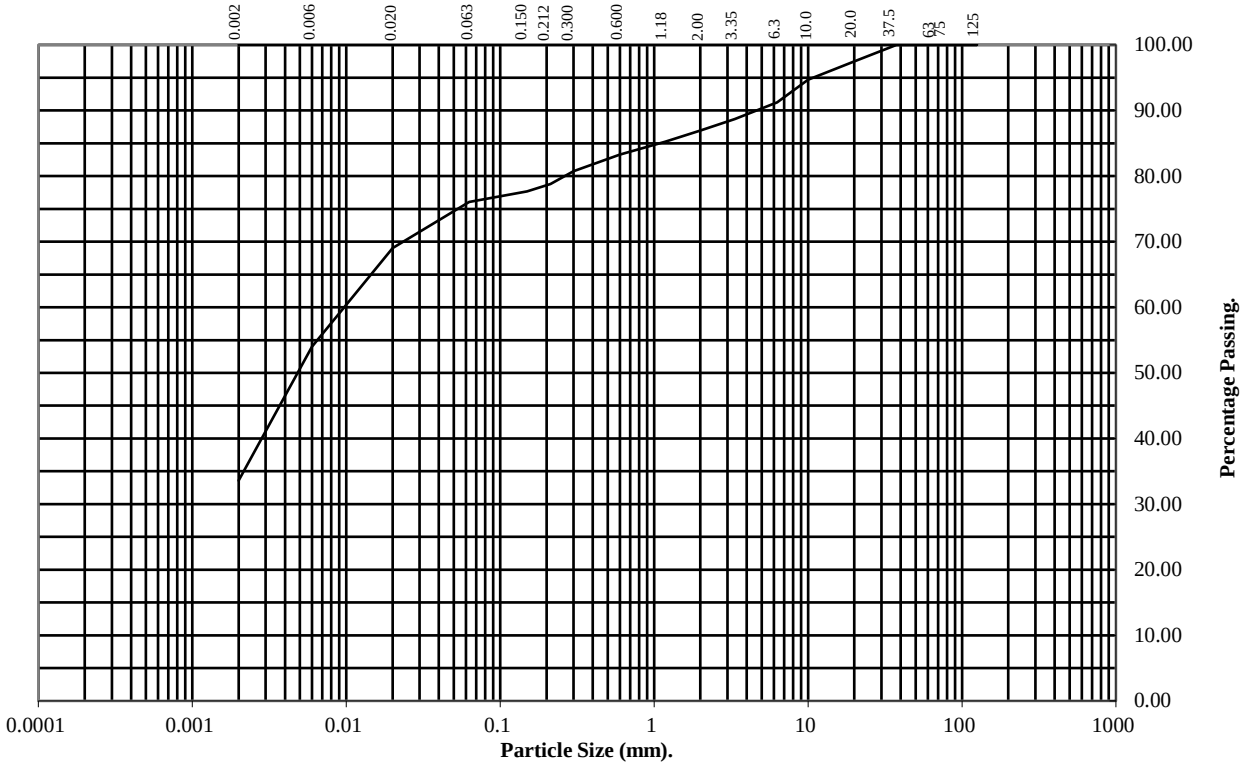
**BS1377 : Part 2 : 1990**

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

**Hole Number:** **BH126** **Top Depth (m):** **0.50**

**Sample Number:** **2** **Base Depth(m):**

**Sample Type:** **B**




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 100 |
| 20 | 97 |
| 10 | 95 |
| 6.3 | 91 |
| 3.35 | 89 |
| 2 | 87 |
| 1.18 | 85 |
| 0.6 | 83 |
| 0.3 | 81 |
| 0.212 | 79 |
| 0.15 | 78 |
| 0.063 | 76 |

| Particle Diameter | Percentage Passing |
|---|---|
| 0.02 | 69 |
| 0.006 | 54 |
| 0.002 | 34 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 13 |
| Sand | 11 |
| Silt | 42 |
| Clay | 34 |

**Remarks:**

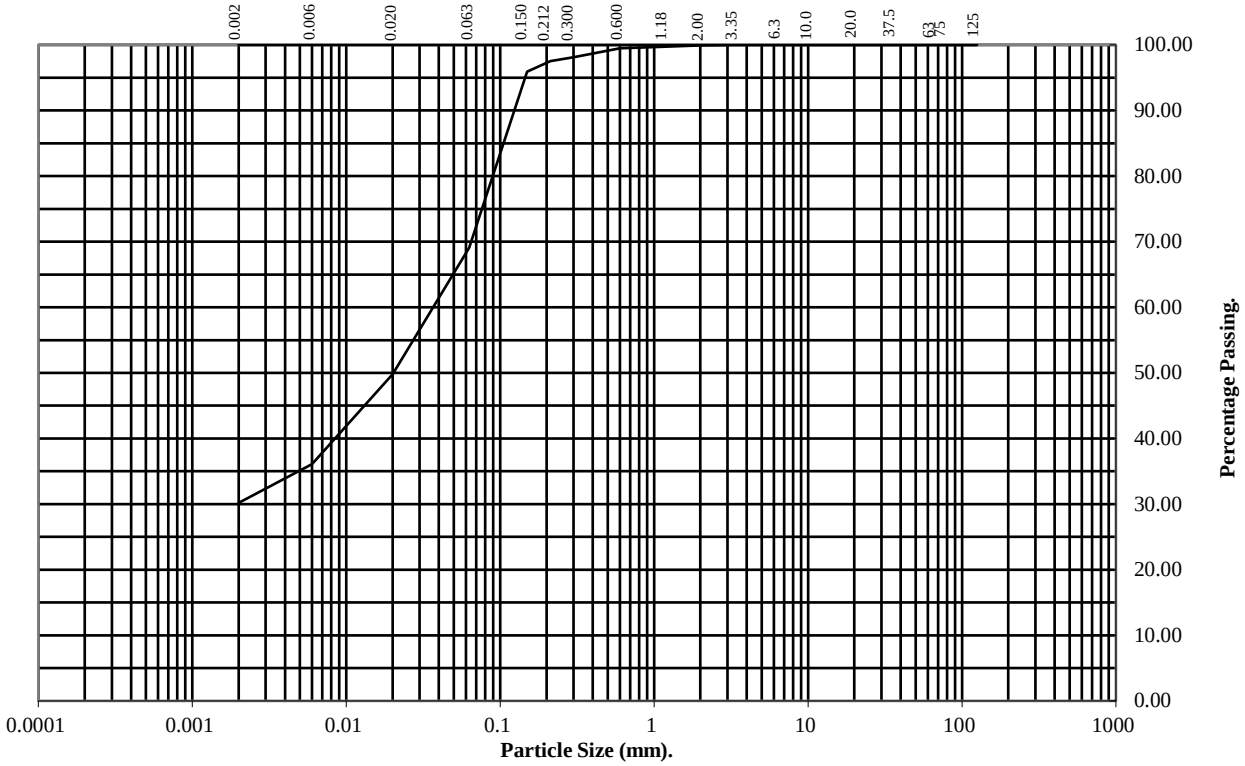
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH126** | **Top Depth (m):** | **2.90** |
| **Sample Number:** | **4** | **Base Depth(m):** | **3.00** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 100 |
| 20 | 100 |
| 10 | 100 |
| 6.3 | 100 |
| 3.35 | 100 |
| 2 | 100 |
| 1.18 | 100 |
| 0.6 | 99 |
| 0.3 | 98 |
| 0.212 | 98 |
| 0.15 | 96 |
| 0.063 | 69 |

| Particle Diameter | Percentage Passing |
|---|---|
| 0.02 | 50 |
| 0.006 | 36 |
| 0.002 | 30 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 0 |
| Sand | 31 |
| Silt | 39 |
| Clay | 30 |

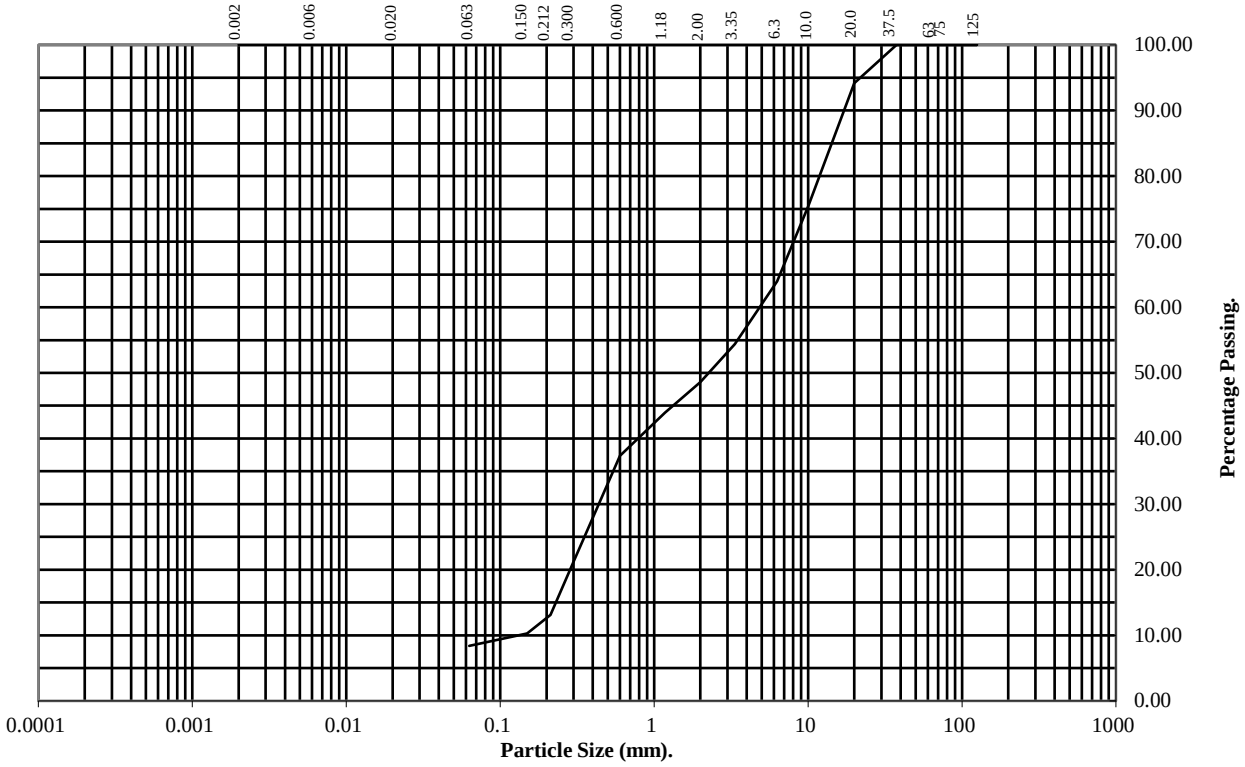
**Remarks:**
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve, Clause 9.2

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH127** | **Top Depth (m):** | **1.30** |
| **Sample Number:** | **101** | **Base Depth(m):** | **1.85** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 100 |
| 20 | 94 |
| 10 | 75 |
| 6.3 | 64 |
| 3.35 | 54 |
| 2 | 49 |
| 1.18 | 44 |
| 0.6 | 37 |
| 0.3 | 21 |
| 0.212 | 13 |
| 0.15 | 10 |
| 0.063 | 8 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 51 |
| Sand | 41 |
| Silt/Clay | 8 |

**Remarks:**

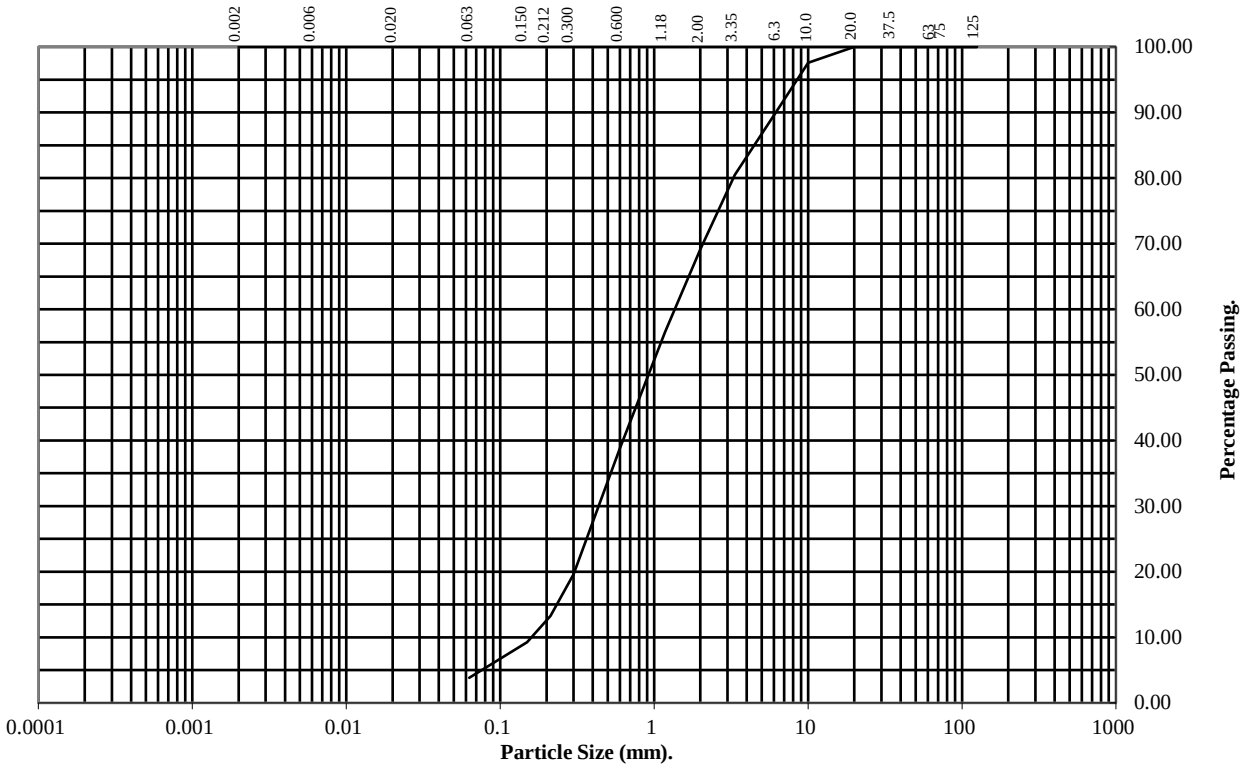
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve, Clause 9.2

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH127** | **Top Depth (m):** | **2.20** |
| **Sample Number:** | **102** | **Base Depth(m):** | **2.70** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 100 |
| 20 | 100 |
| 10 | 98 |
| 6.3 | 90 |
| 3.35 | 81 |
| 2 | 69 |
| 1.18 | 57 |
| 0.6 | 39 |
| 0.3 | 20 |
| 0.212 | 13 |
| 0.15 | 9 |
| 0.063 | 4 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 31 |
| Sand | 65 |
| Silt/Clay | 4 |

**Remarks:**

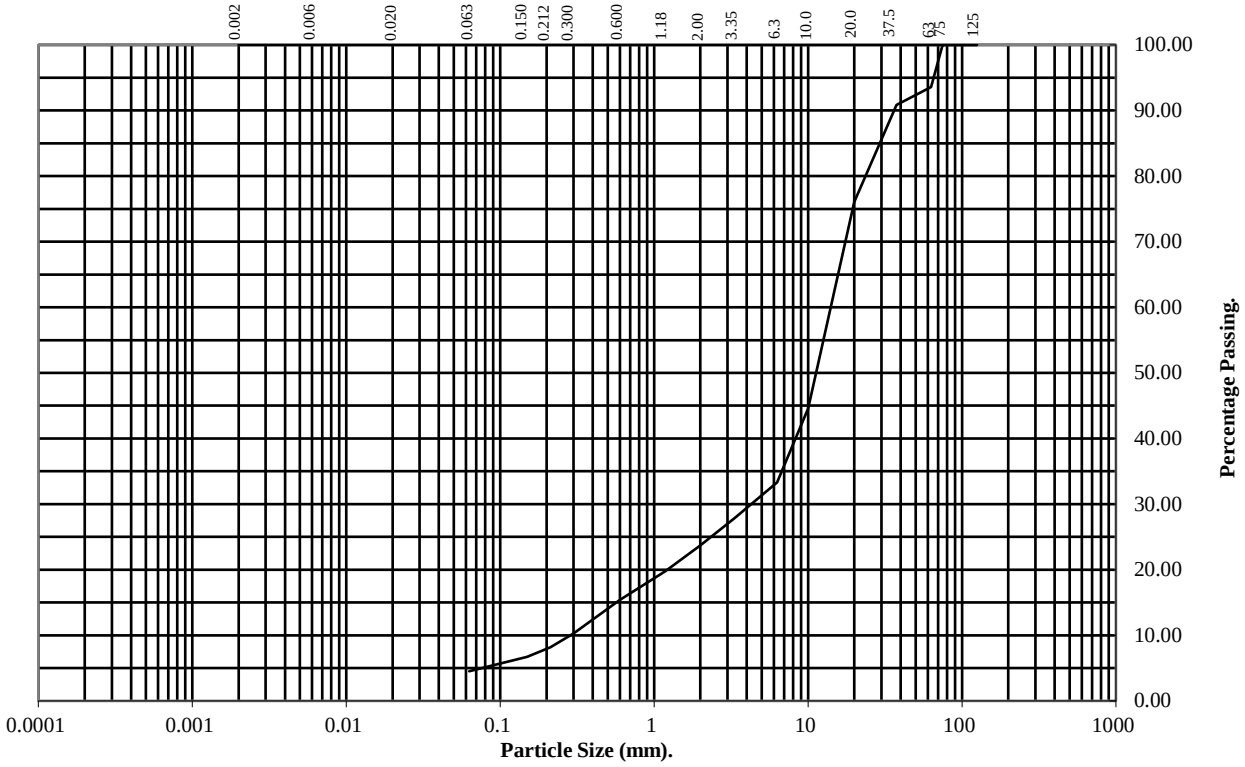
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve, Clause 9.2

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH127** | **Top Depth (m):** | **2.90** |
| **Sample Number:** | **103** | **Base Depth(m):** | **3.00** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 94 |
| 37.5 | 91 |
| 20 | 76 |
| 10 | 45 |
| 6.3 | 33 |
| 3.35 | 28 |
| 2 | 24 |
| 1.18 | 20 |
| 0.6 | 15 |
| 0.3 | 10 |
| 0.212 | 8 |
| 0.15 | 7 |
| 0.063 | 5 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 6 |
| Gravel | 70 |
| Sand | 19 |
| Silt/Clay | 5 |

**Remarks:**

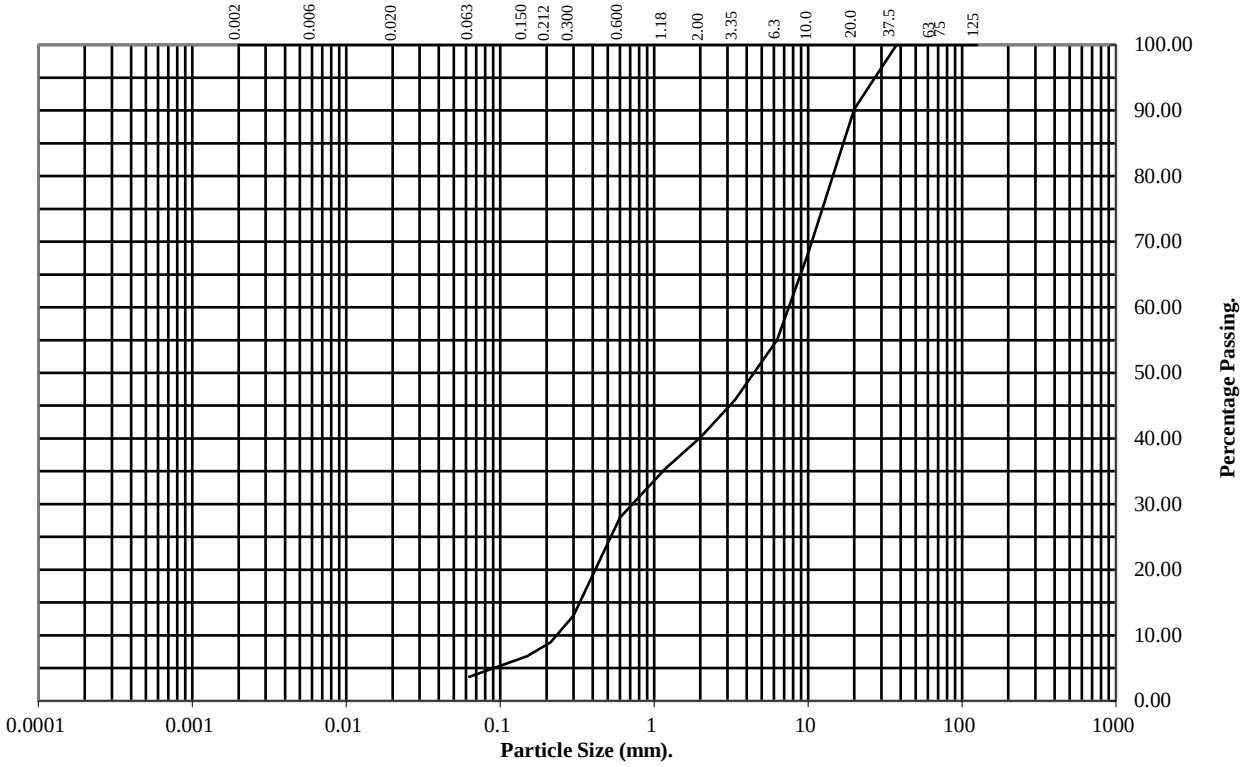
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve, Clause 9.2

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH129** | **Top Depth (m):** | **1.20** |
| **Sample Number:** | **101** | **Base Depth(m):** | **2.20** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 100 |
| 20 | 90 |
| 10 | 68 |
| 6.3 | 55 |
| 3.35 | 46 |
| 2 | 40 |
| 1.18 | 35 |
| 0.6 | 28 |
| 0.3 | 13 |
| 0.212 | 9 |
| 0.15 | 7 |
| 0.063 | 4 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 60 |
| Sand | 36 |
| Silt/Clay | 4 |

**Remarks:**

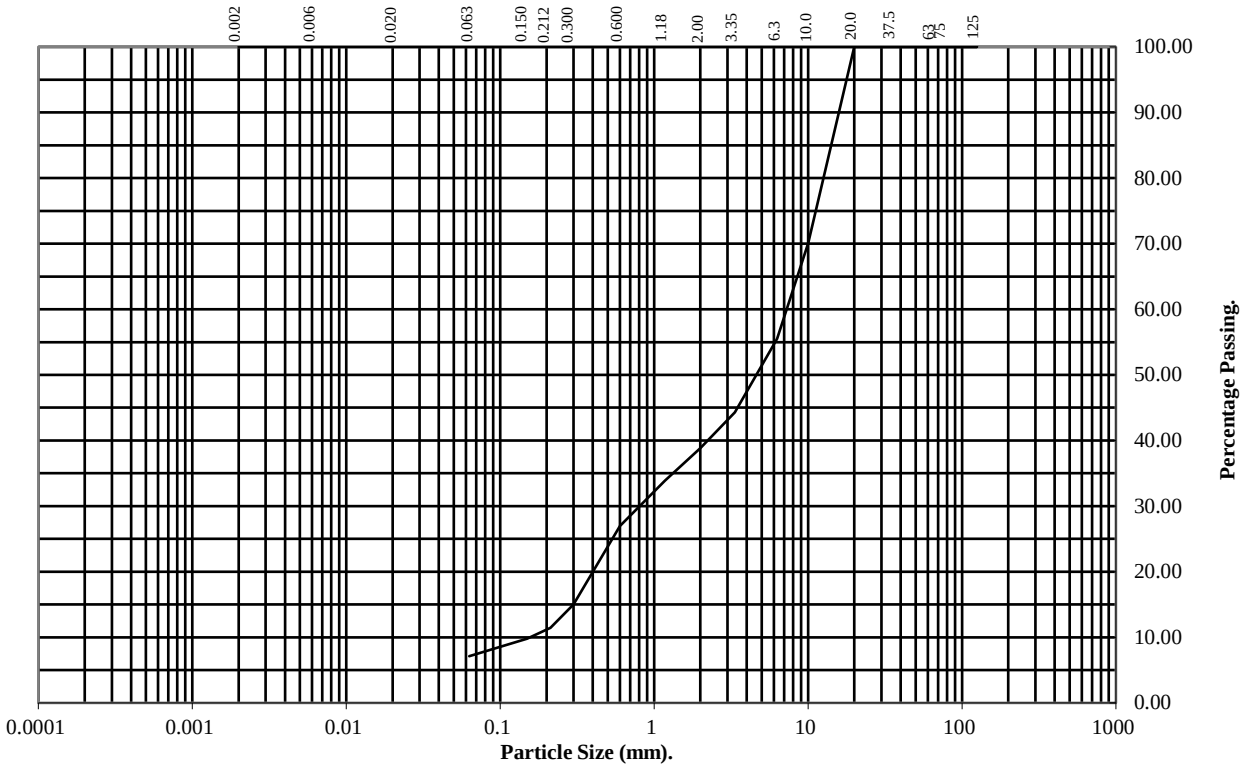
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve, Clause 9.2

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH129** | **Top Depth (m):** | **3.70** |
| **Sample Number:** | **104** | **Base Depth(m):** | **4.20** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 100 |
| 20 | 100 |
| 10 | 70 |
| 6.3 | 56 |
| 3.35 | 44 |
| 2 | 39 |
| 1.18 | 34 |
| 0.6 | 27 |
| 0.3 | 15 |
| 0.212 | 11 |
| 0.15 | 10 |
| 0.063 | 7 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 61 |
| Sand | 32 |
| Silt/Clay | 7 |

**Remarks:**

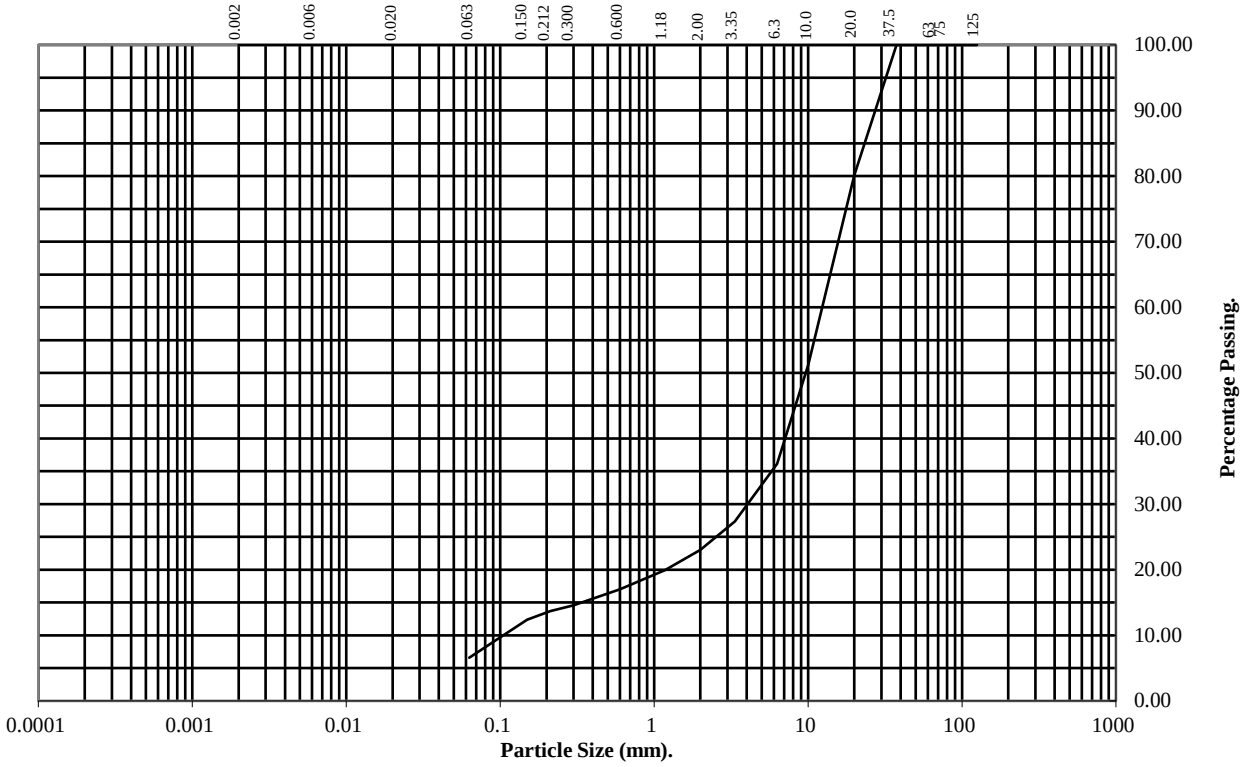
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve, Clause 9.2

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH129** | **Top Depth (m):** | **4.20** |
| **Sample Number:** | **105** | **Base Depth(m):** | **4.50** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 100 |
| 20 | 80 |
| 10 | 51 |
| 6.3 | 36 |
| 3.35 | 27 |
| 2 | 23 |
| 1.18 | 20 |
| 0.6 | 17 |
| 0.3 | 15 |
| 0.212 | 14 |
| 0.15 | 12 |
| 0.063 | 7 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 77 |
| Sand | 16 |
| Silt/Clay | 7 |

**Remarks:**

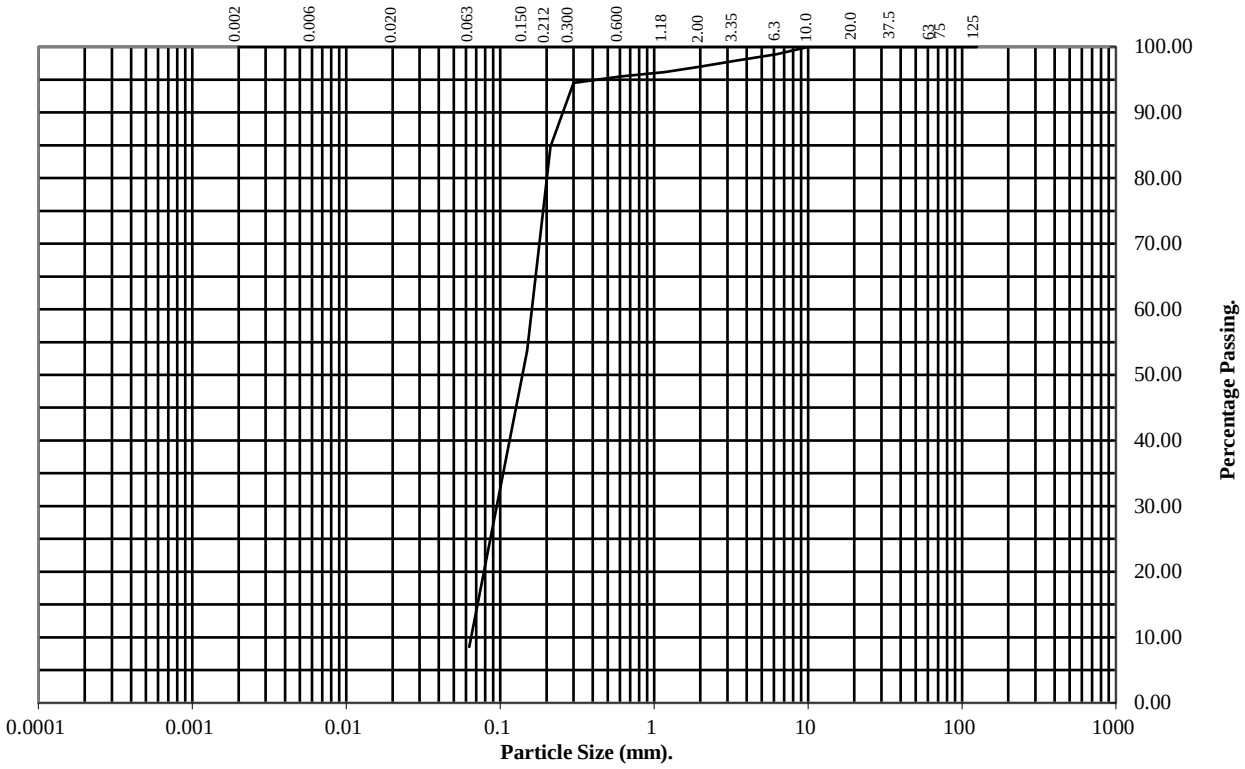
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve, Clause 9.2

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH107** | **Top Depth (m):** | **6.20** |
| **Sample Number:** | **103** | **Base Depth(m):** | **7.20** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 100 |
| 20 | 100 |
| 10 | 100 |
| 6.3 | 99 |
| 3.35 | 98 |
| 2 | 97 |
| 1.18 | 96 |
| 0.6 | 95 |
| 0.3 | 94 |
| 0.212 | 85 |
| 0.15 | 54 |
| 0.063 | 9 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 3 |
| Sand | 88 |
| Silt/Clay | 9 |

**Remarks:**

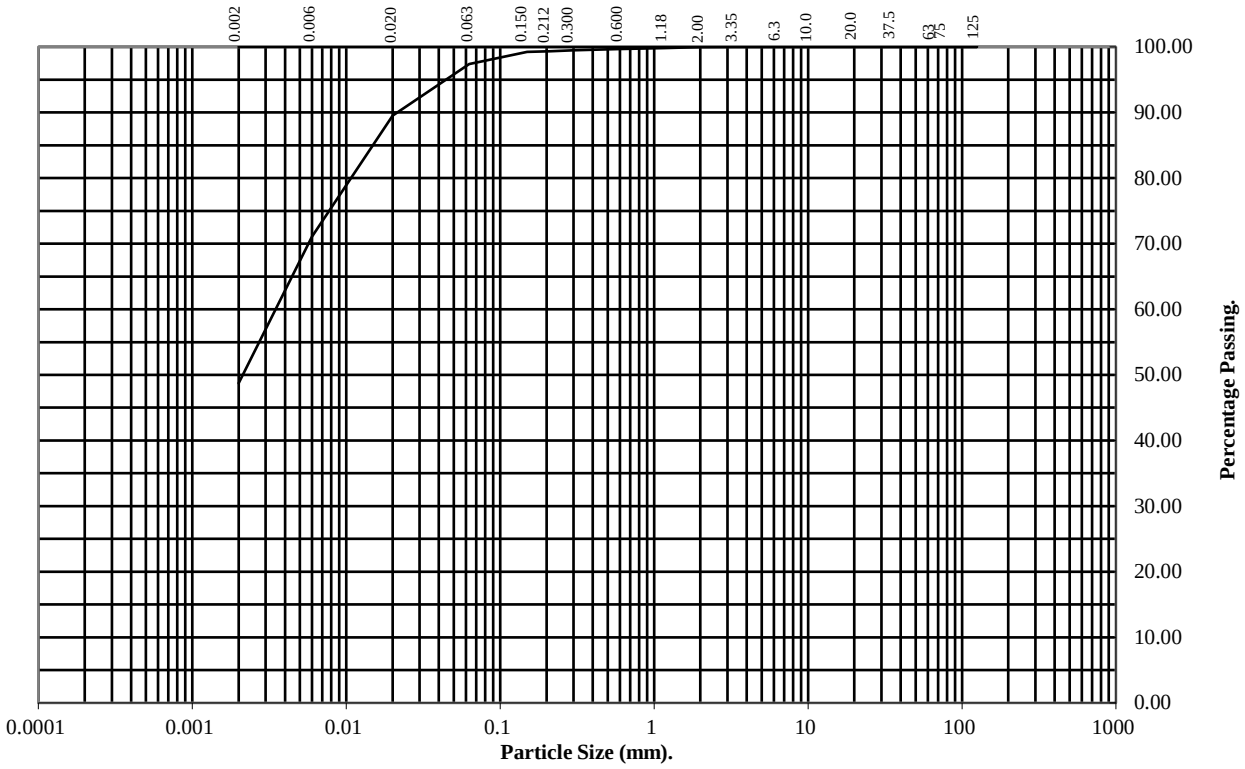
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH107** | **Top Depth (m):** | **7.90** |
| **Sample Number:** | **105** | **Base Depth(m):** | **8.10** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 100 |
| 20 | 100 |
| 10 | 100 |
| 6.3 | 100 |
| 3.35 | 100 |
| 2 | 100 |
| 1.18 | 100 |
| 0.6 | 100 |
| 0.3 | 99 |
| 0.212 | 99 |
| 0.15 | 99 |
| 0.063 | 97 |

| Particle Diameter | Percentage Passing |
|---|---|
| 0.02 | 90 |
| 0.006 | 71 |
| 0.002 | 49 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 0 |
| Sand | 3 |
| Silt | 48 |
| Clay | 49 |

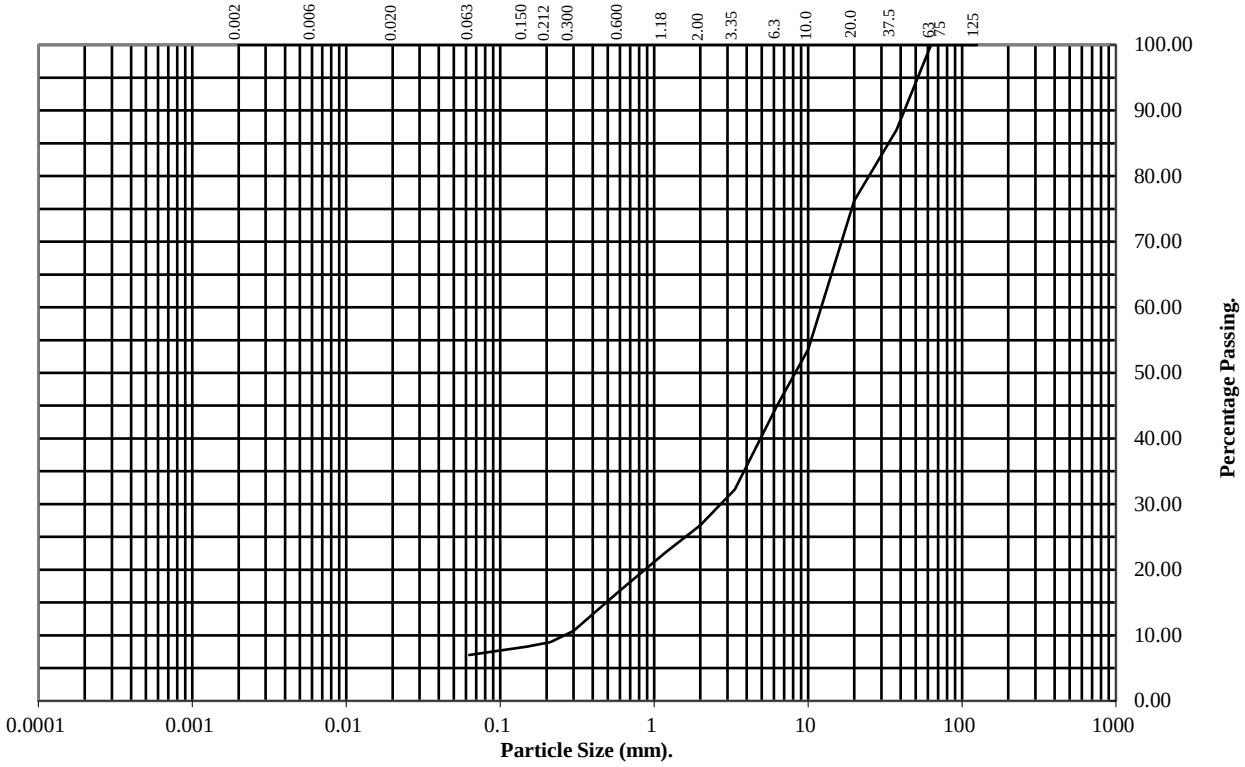
**Remarks:**
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve, Clause 9.2

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH123** | **Top Depth (m):** | **1.20** |
| **Sample Number:** | **101** | **Base Depth(m):** | **2.00** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 87 |
| 20 | 76 |
| 10 | 54 |
| 6.3 | 45 |
| 3.35 | 32 |
| 2 | 27 |
| 1.18 | 23 |
| 0.6 | 17 |
| 0.3 | 11 |
| 0.212 | 9 |
| 0.15 | 8 |
| 0.063 | 7 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 73 |
| Sand | 20 |
| Silt/Clay | 7 |

**Remarks:**

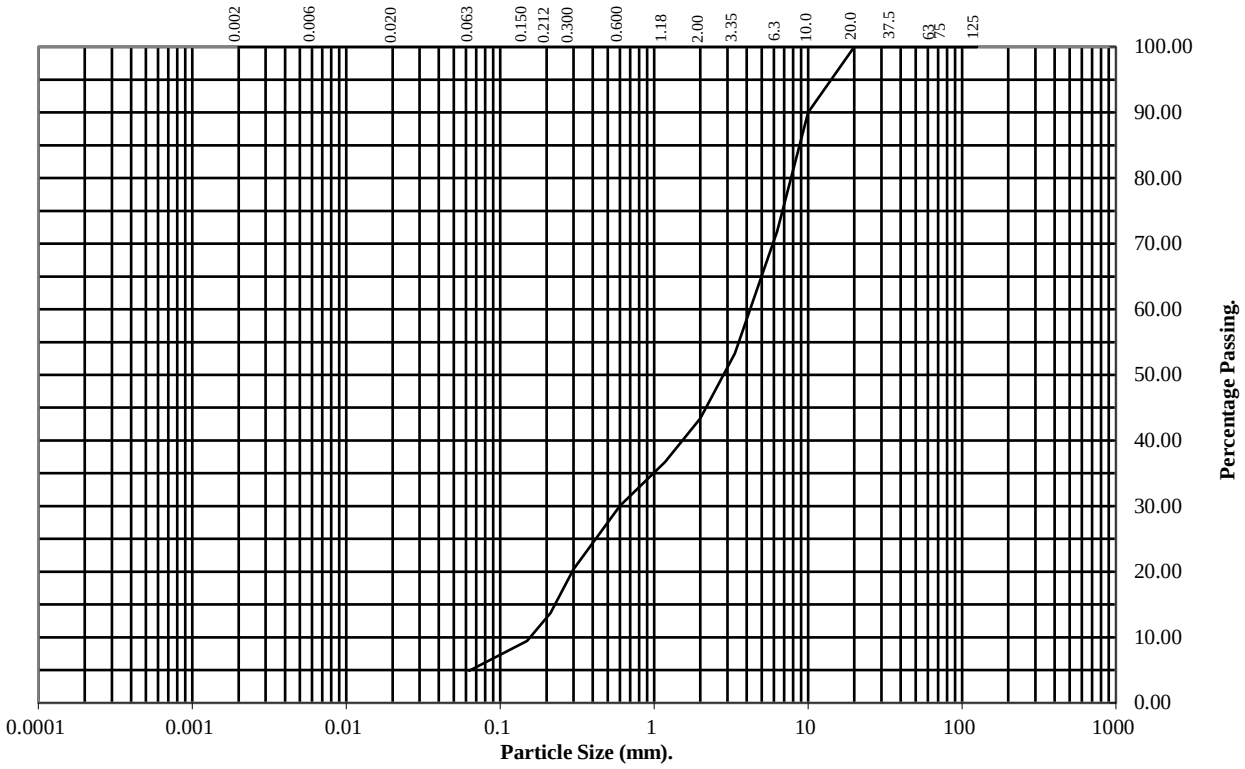
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve, Clause 9.2

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH123** | **Top Depth (m):** | **2.00** |
| **Sample Number:** | **102** | **Base Depth(m):** | **3.00** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 100 |
| 20 | 100 |
| 10 | 90 |
| 6.3 | 72 |
| 3.35 | 53 |
| 2 | 43 |
| 1.18 | 37 |
| 0.6 | 30 |
| 0.3 | 20 |
| 0.212 | 14 |
| 0.15 | 9 |
| 0.063 | 5 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 57 |
| Sand | 38 |
| Silt/Clay | 5 |

**Remarks:**

See Summary of Soil Descriptions

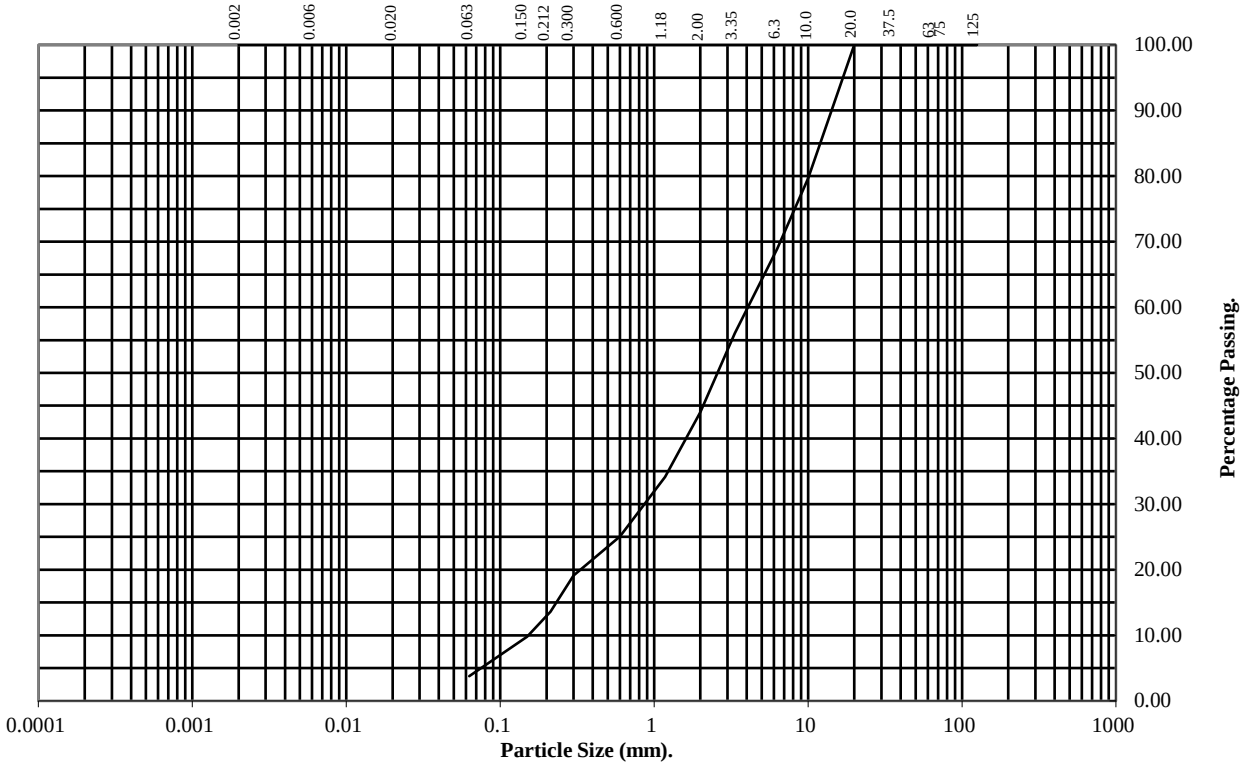
| | | | |
|---|---|---|---|
| UKAS TESTING 4043 | PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** | **Contract No:** PSL22/3650 **Client Ref:** GT0386 |

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve, Clause 9.2

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH123** | **Top Depth (m):** | **3.00** |
| **Sample Number:** | **103** | **Base Depth(m):** | **4.00** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 100 |
| 20 | 100 |
| 10 | 80 |
| 6.3 | 69 |
| 3.35 | 56 |
| 2 | 44 |
| 1.18 | 34 |
| 0.6 | 25 |
| 0.3 | 19 |
| 0.212 | 14 |
| 0.15 | 10 |
| 0.063 | 4 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 56 |
| Sand | 40 |
| Silt/Clay | 4 |

**Remarks:**

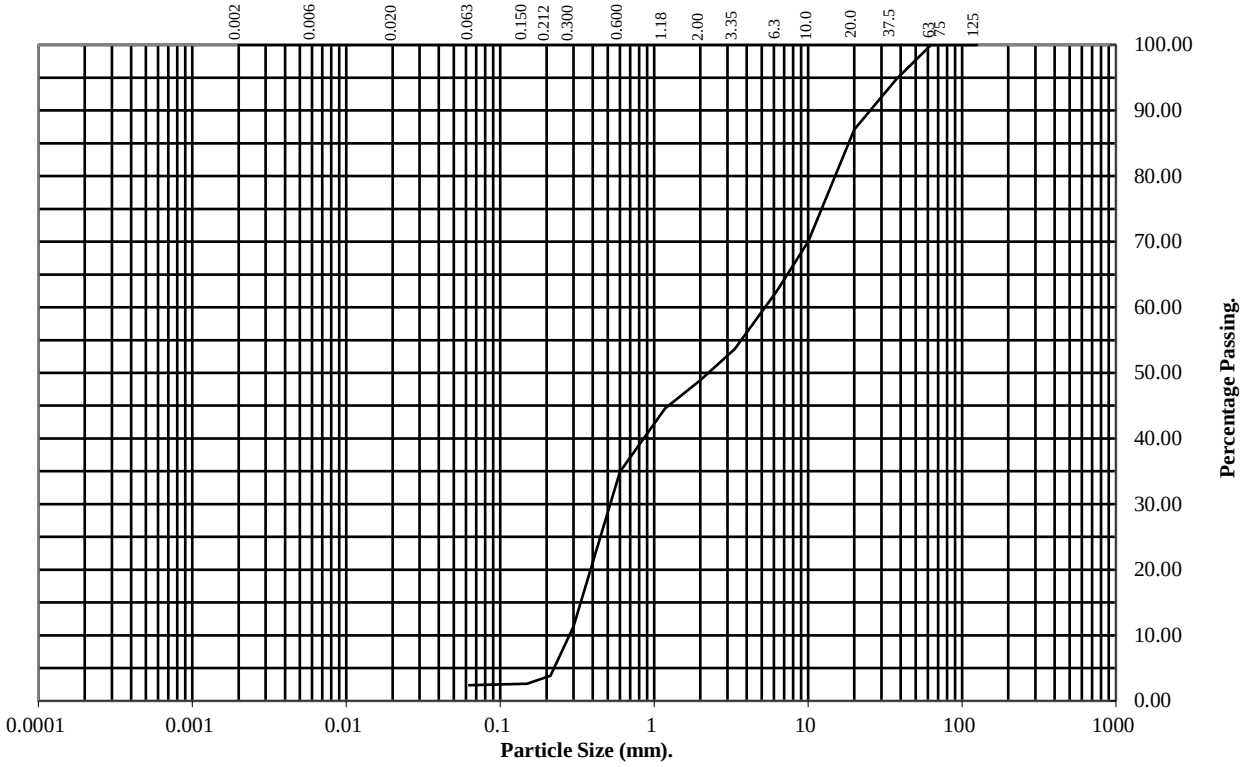
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve, Clause 9.2

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH124** | **Top Depth (m):** | **1.00** |
| **Sample Number:** | **102** | **Base Depth(m):** | **1.30** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 95 |
| 20 | 87 |
| 10 | 70 |
| 6.3 | 63 |
| 3.35 | 54 |
| 2 | 49 |
| 1.18 | 45 |
| 0.6 | 35 |
| 0.3 | 11 |
| 0.212 | 4 |
| 0.15 | 3 |
| 0.063 | 2 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 51 |
| Sand | 47 |
| Silt/Clay | 2 |

**Remarks:**

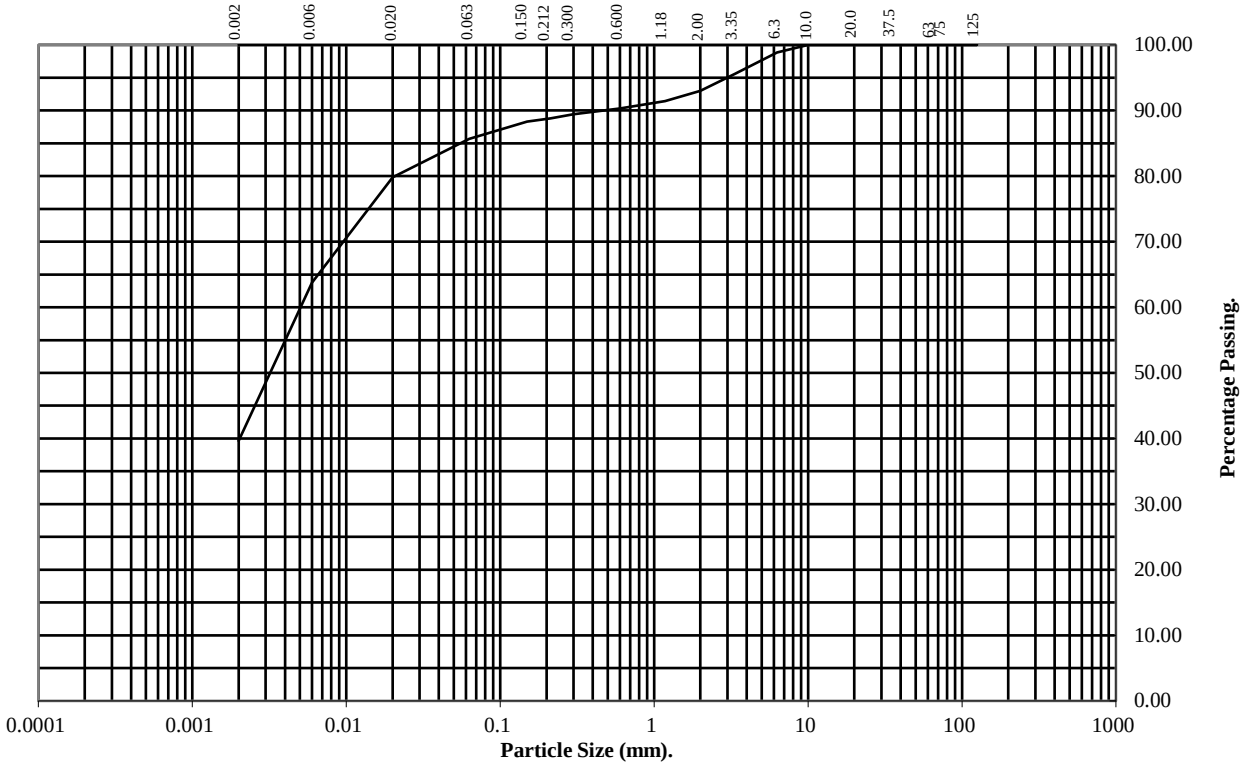
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH124** | **Top Depth (m):** | **1.50** |
| **Sample Number:** | **103** | **Base Depth(m):** | **1.80** |
| **Sample Type:** | **CS** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 100 |
| 20 | 100 |
| 10 | 100 |
| 6.3 | 99 |
| 3.35 | 96 |
| 2 | 93 |
| 1.18 | 91 |
| 0.6 | 90 |
| 0.3 | 89 |
| 0.212 | 89 |
| 0.15 | 88 |
| 0.063 | 86 |

| Particle Diameter | Percentage Passing |
|---|---|
| 0.02 | 80 |
| 0.006 | 64 |
| 0.002 | 40 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 7 |
| Sand | 7 |
| Silt | 46 |
| Clay | 40 |

**Remarks:**

See Summary of Soil Descriptions

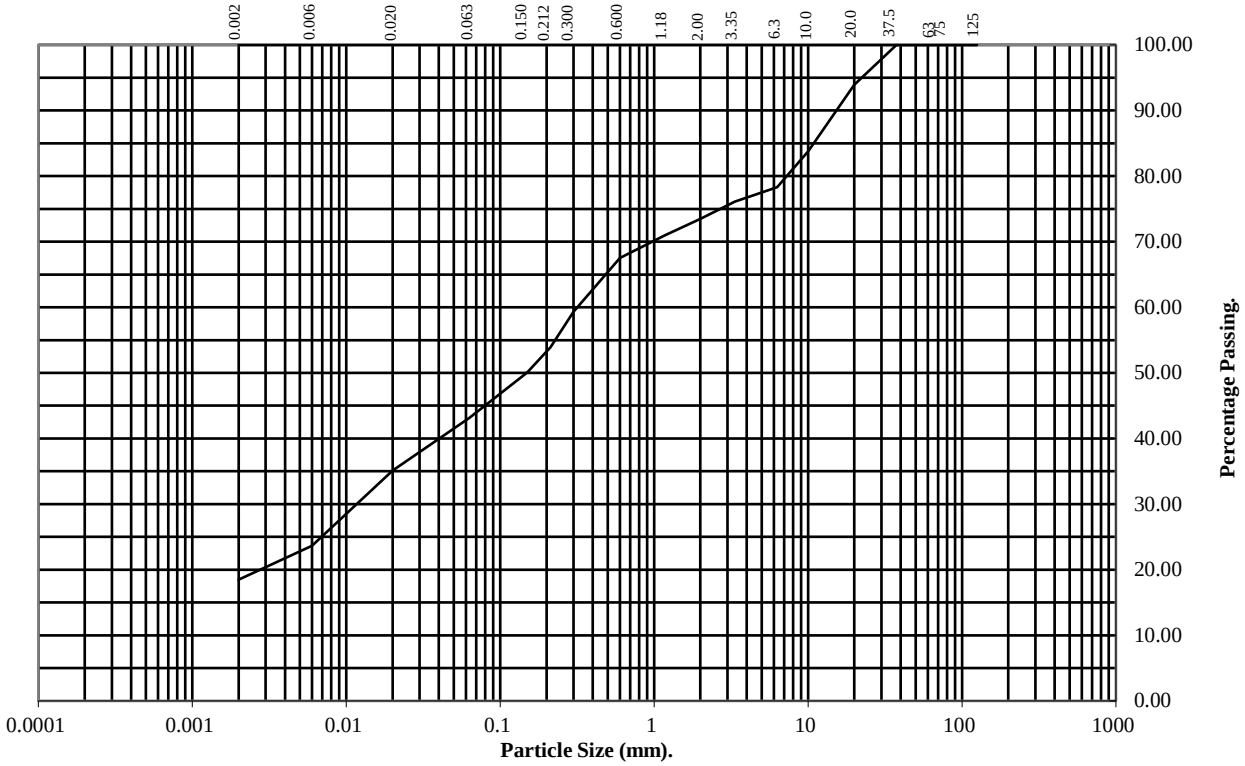
| | | | |
|---|---|---|---|
| UKAS TESTING 4043 | PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** | **Contract No:** PSL22/3650 **Client Ref:** GT0386 |

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH119** | **Top Depth (m):** | **1.30** |
| **Sample Number:** | **101** | **Base Depth(m):** | **1.60** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 100 |
| 20 | 94 |
| 10 | 84 |
| 6.3 | 78 |
| 3.35 | 76 |
| 2 | 73 |
| 1.18 | 71 |
| 0.6 | 68 |
| 0.3 | 59 |
| 0.212 | 54 |
| 0.15 | 50 |
| 0.063 | 43 |

| Particle Diameter | Percentage Passing |
|---|---|
| 0.02 | 35 |
| 0.006 | 24 |
| 0.002 | 18 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 27 |
| Sand | 30 |
| Silt | 25 |
| Clay | 18 |

**Remarks:**
See Summary of Soil Descriptions

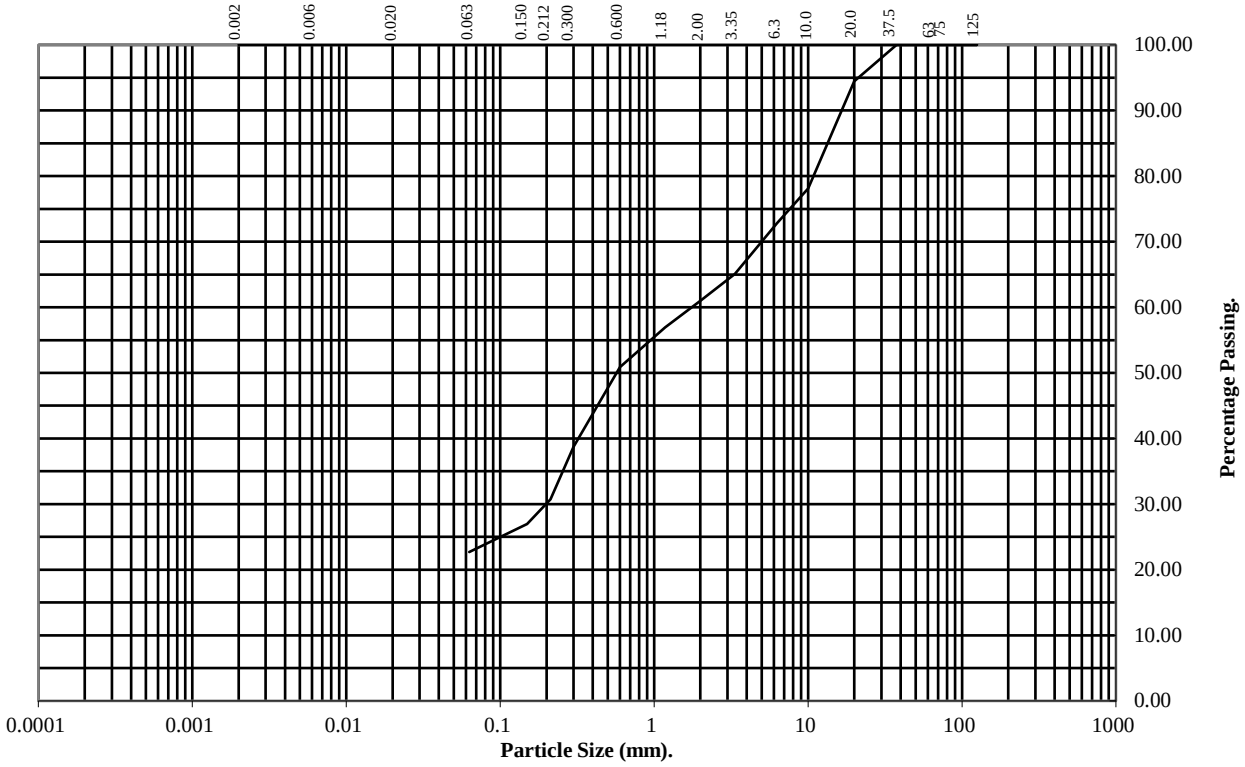
| | | | |
|---|---|---|---|
| UKAS TESTING 4043 | PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** | **Contract No:** PSL22/3650 **Client Ref:** GT0386 |

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve, Clause 9.2

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH119** | **Top Depth (m):** | **2.00** |
| **Sample Number:** | **103** | **Base Depth(m):** | **3.00** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 100 |
| 20 | 94 |
| 10 | 78 |
| 6.3 | 73 |
| 3.35 | 65 |
| 2 | 61 |
| 1.18 | 57 |
| 0.6 | 51 |
| 0.3 | 39 |
| 0.212 | 31 |
| 0.15 | 27 |
| 0.063 | 23 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 39 |
| Sand | 38 |
| Silt/Clay | 23 |

**Remarks:**

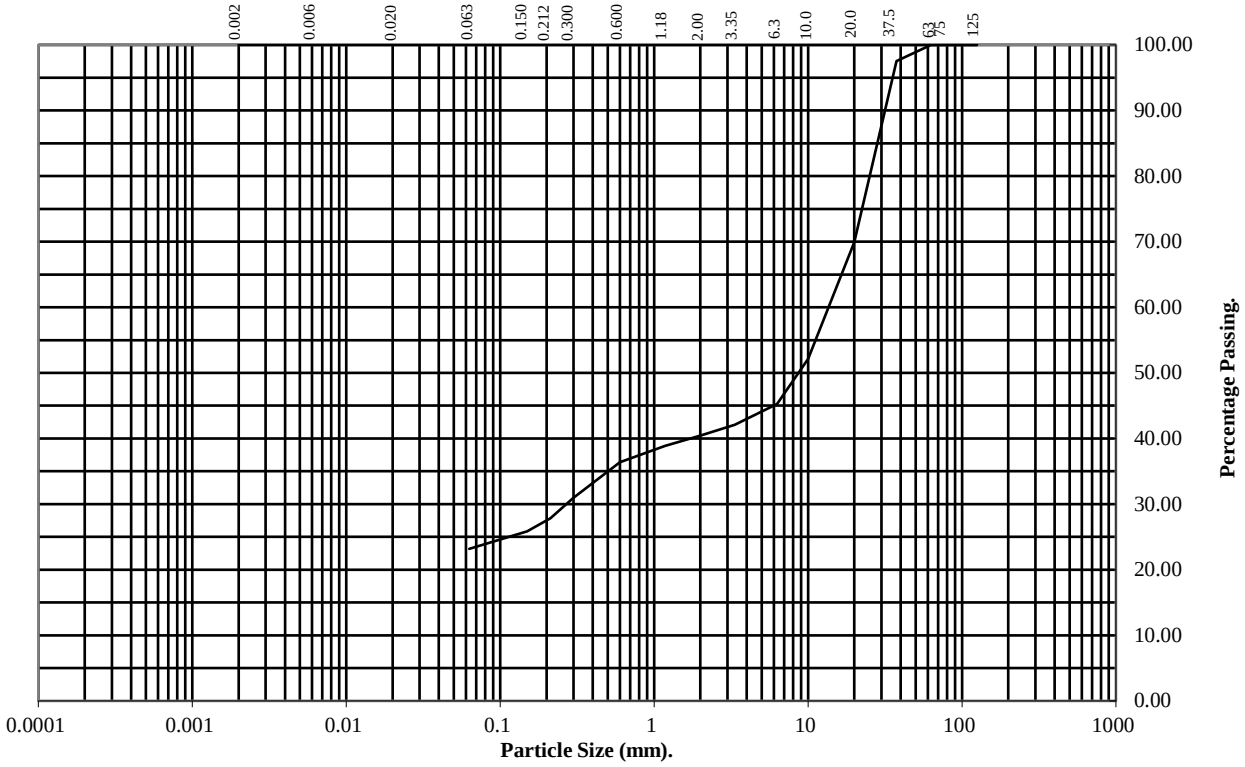
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve, Clause 9.2

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH119** | **Top Depth (m):** | **3.20** |
| **Sample Number:** | **104** | **Base Depth(m):** | **4.20** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 98 |
| 20 | 70 |
| 10 | 52 |
| 6.3 | 45 |
| 3.35 | 42 |
| 2 | 40 |
| 1.18 | 39 |
| 0.6 | 36 |
| 0.3 | 31 |
| 0.212 | 28 |
| 0.15 | 26 |
| 0.063 | 23 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 60 |
| Sand | 17 |
| Silt/Clay | 23 |

**Remarks:**

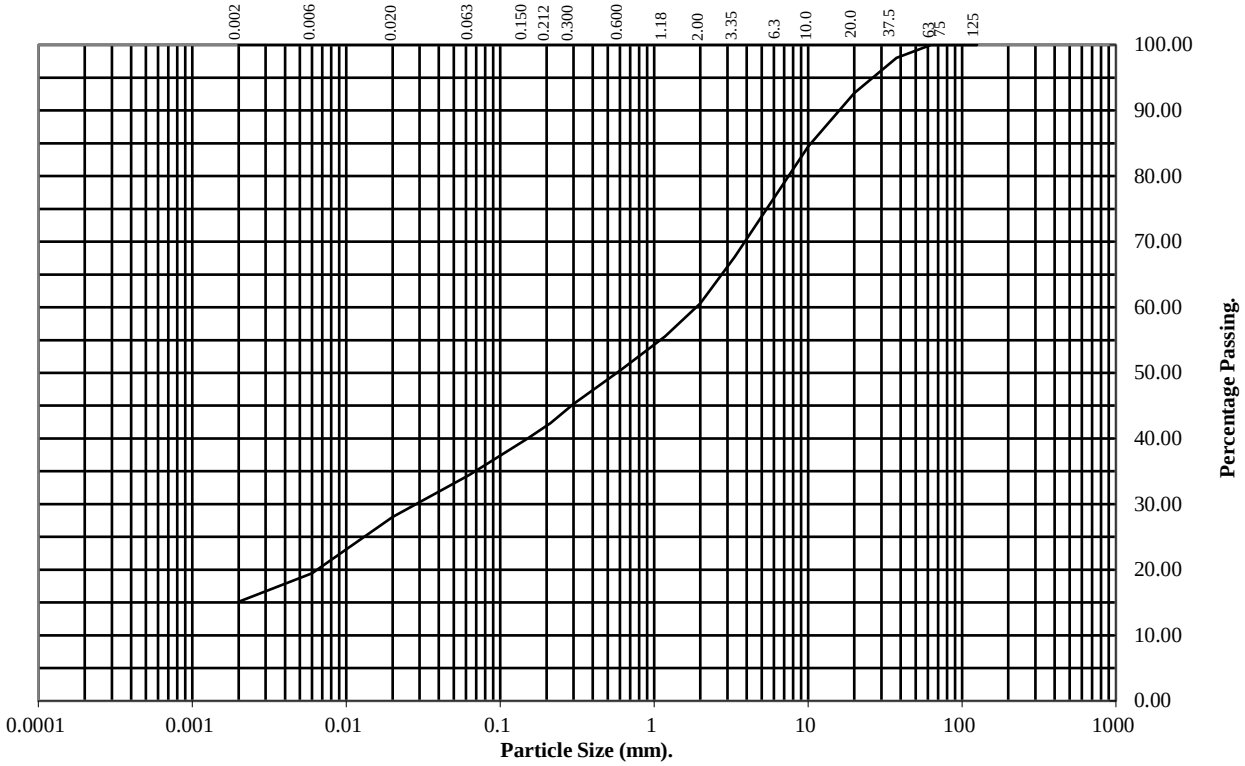
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH121** | **Top Depth (m):** | **1.50** |
| **Sample Number:** | **4** | **Base Depth(m):** | **2.00** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 98 |
| 20 | 93 |
| 10 | 85 |
| 6.3 | 77 |
| 3.35 | 68 |
| 2 | 61 |
| 1.18 | 56 |
| 0.6 | 50 |
| 0.3 | 45 |
| 0.212 | 42 |
| 0.15 | 40 |
| 0.063 | 34 |

| Particle Diameter | Percentage Passing |
|---|---|
| 0.02 | 28 |
| 0.006 | 19 |
| 0.002 | 15 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 39 |
| Sand | 27 |
| Silt | 19 |
| Clay | 15 |

**Remarks:**
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

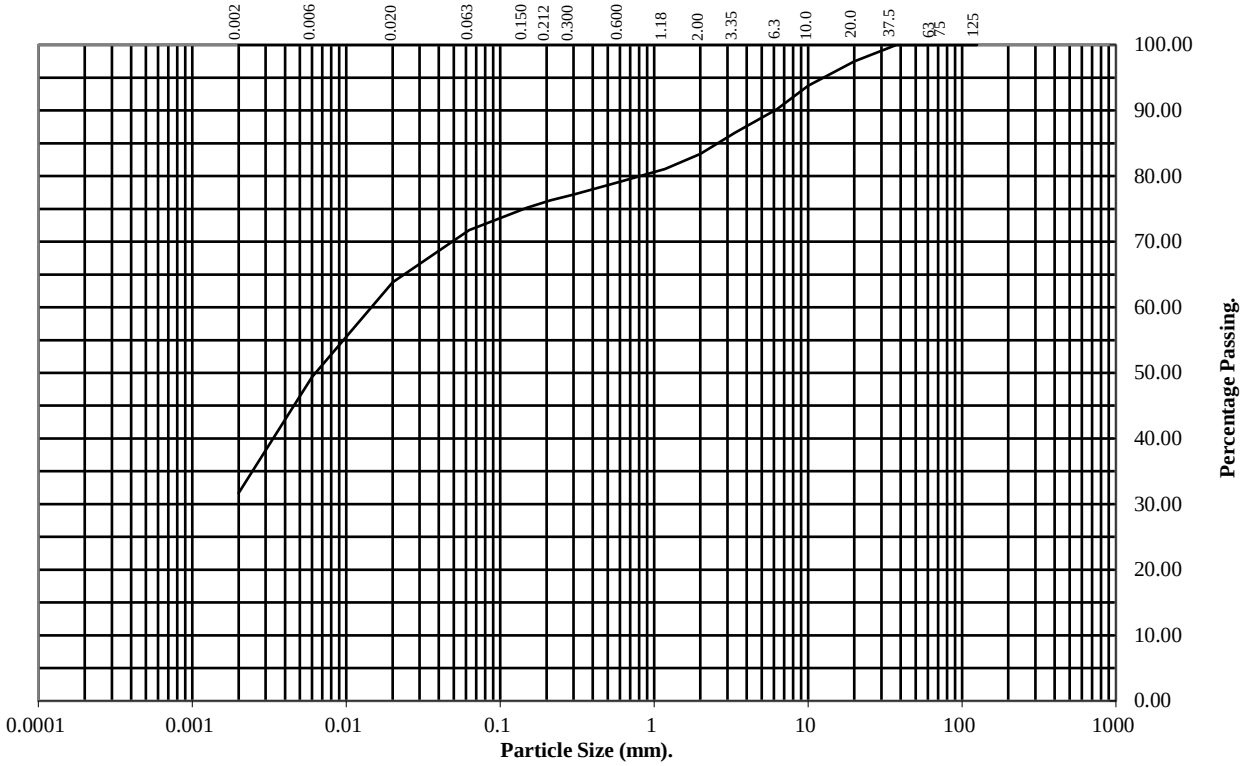
**BS1377 : Part 2 : 1990**

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

**Hole Number:** **BH121** **Top Depth (m):** **2.00**

**Sample Number:** **5** **Base Depth(m):**

**Sample Type:** **B**




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 100 |
| 20 | 97 |
| 10 | 94 |
| 6.3 | 90 |
| 3.35 | 87 |
| 2 | 83 |
| 1.18 | 81 |
| 0.6 | 79 |
| 0.3 | 77 |
| 0.212 | 76 |
| 0.15 | 75 |
| 0.063 | 72 |

| Particle Diameter | Percentage Passing |
|---|---|
| 0.02 | 64 |
| 0.006 | 49 |
| 0.002 | 32 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 17 |
| Sand | 11 |
| Silt | 40 |
| Clay | 32 |

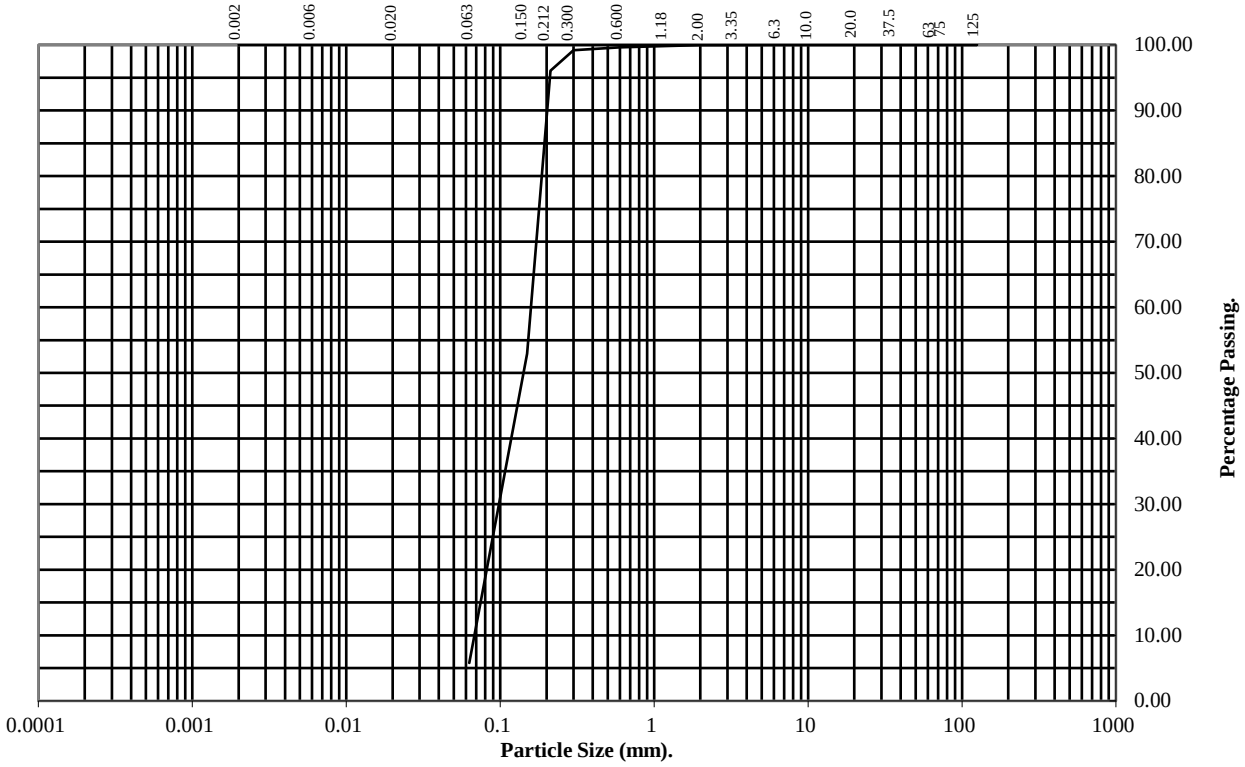
**Remarks:**
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve, Clause 9.2

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH121** | **Top Depth (m):** | **7.00** |
| **Sample Number:** | **106** | **Base Depth(m):** | **8.00** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 100 |
| 20 | 100 |
| 10 | 100 |
| 6.3 | 100 |
| 3.35 | 100 |
| 2 | 100 |
| 1.18 | 100 |
| 0.6 | 100 |
| 0.3 | 99 |
| 0.212 | 96 |
| 0.15 | 53 |
| 0.063 | 6 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 0 |
| Sand | 94 |
| Silt/Clay | 6 |

**Remarks:**

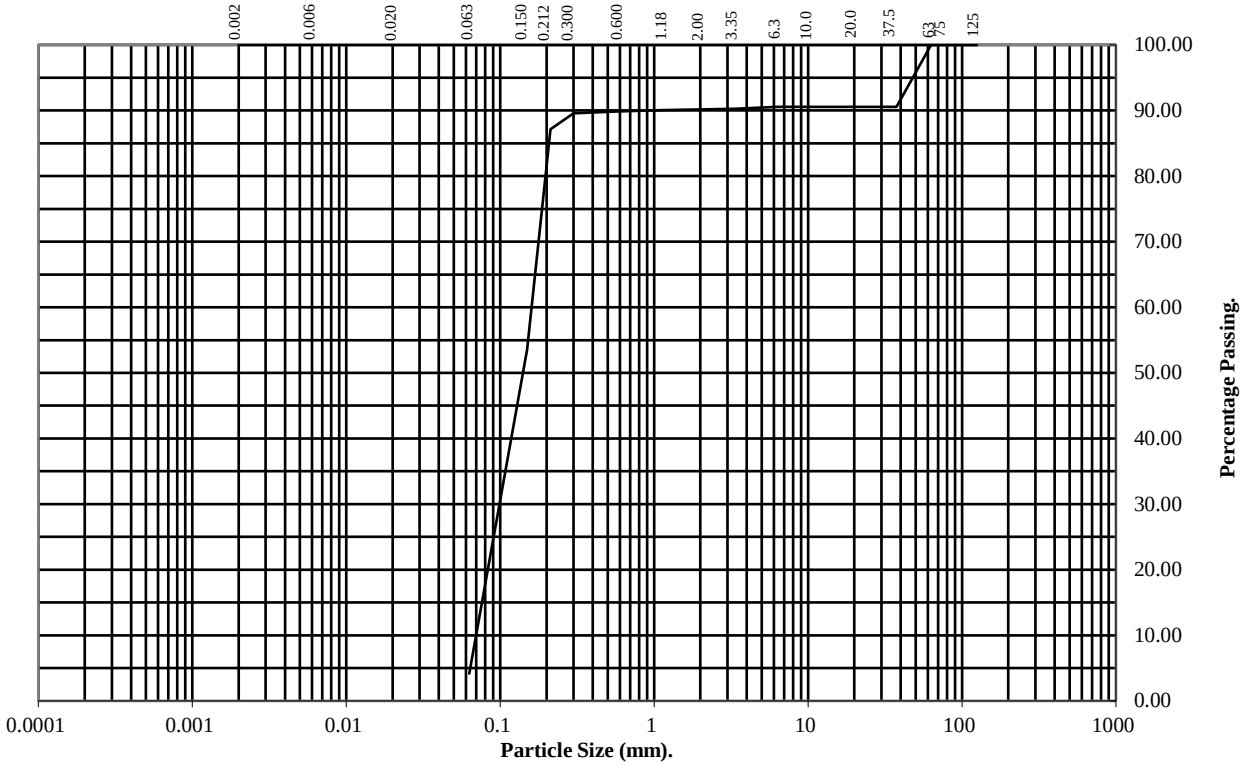
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve, Clause 9.2

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH121** | **Top Depth (m):** | **8.00** |
| **Sample Number:** | **107** | **Base Depth(m):** | **9.00** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 91 |
| 20 | 91 |
| 10 | 91 |
| 6.3 | 91 |
| 3.35 | 90 |
| 2 | 90 |
| 1.18 | 90 |
| 0.6 | 90 |
| 0.3 | 90 |
| 0.212 | 87 |
| 0.15 | 54 |
| 0.063 | 4 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 10 |
| Sand | 86 |
| Silt/Clay | 4 |

**Remarks:**

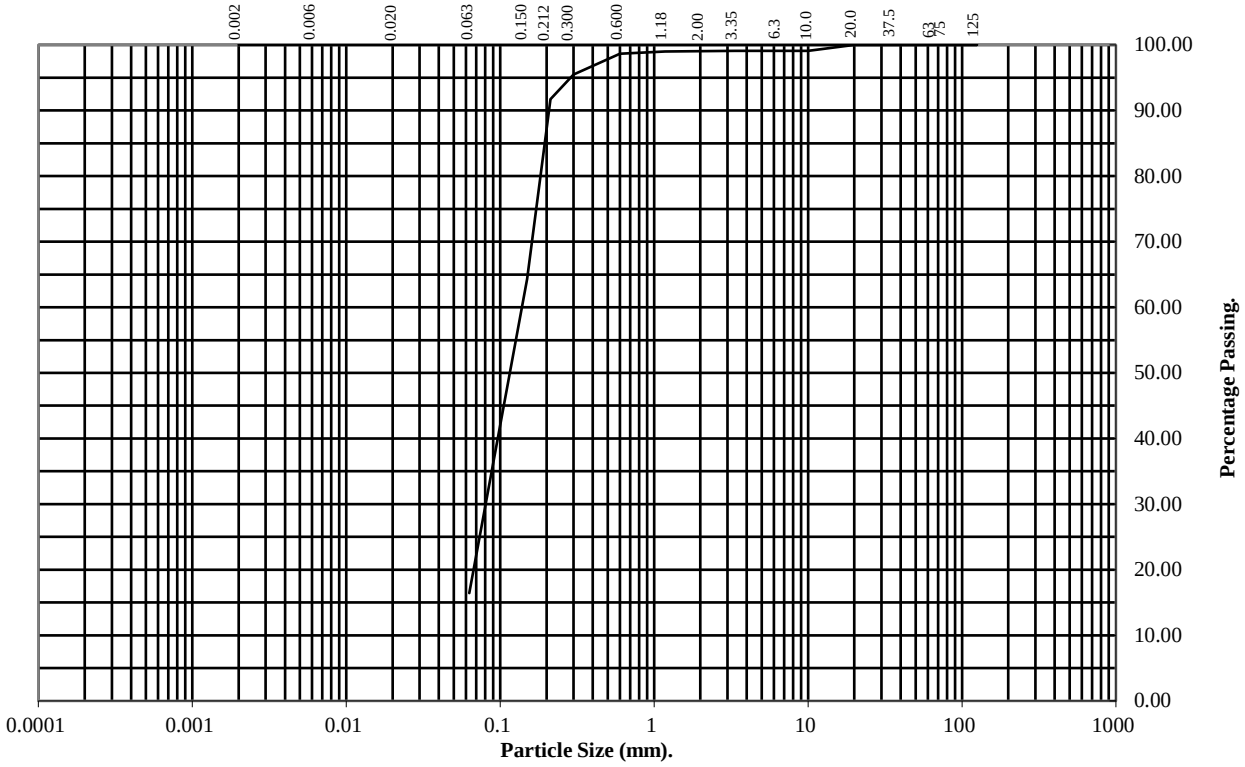
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve, Clause 9.2

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH121** | **Top Depth (m):** | **10.60** |
| **Sample Number:** | **111** | **Base Depth(m):** | **11.00** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 100 |
| 20 | 100 |
| 10 | 99 |
| 6.3 | 99 |
| 3.35 | 99 |
| 2 | 99 |
| 1.18 | 99 |
| 0.6 | 99 |
| 0.3 | 95 |
| 0.212 | 92 |
| 0.15 | 64 |
| 0.063 | 16 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 1 |
| Sand | 83 |
| Silt/Clay | 16 |

**Remarks:**

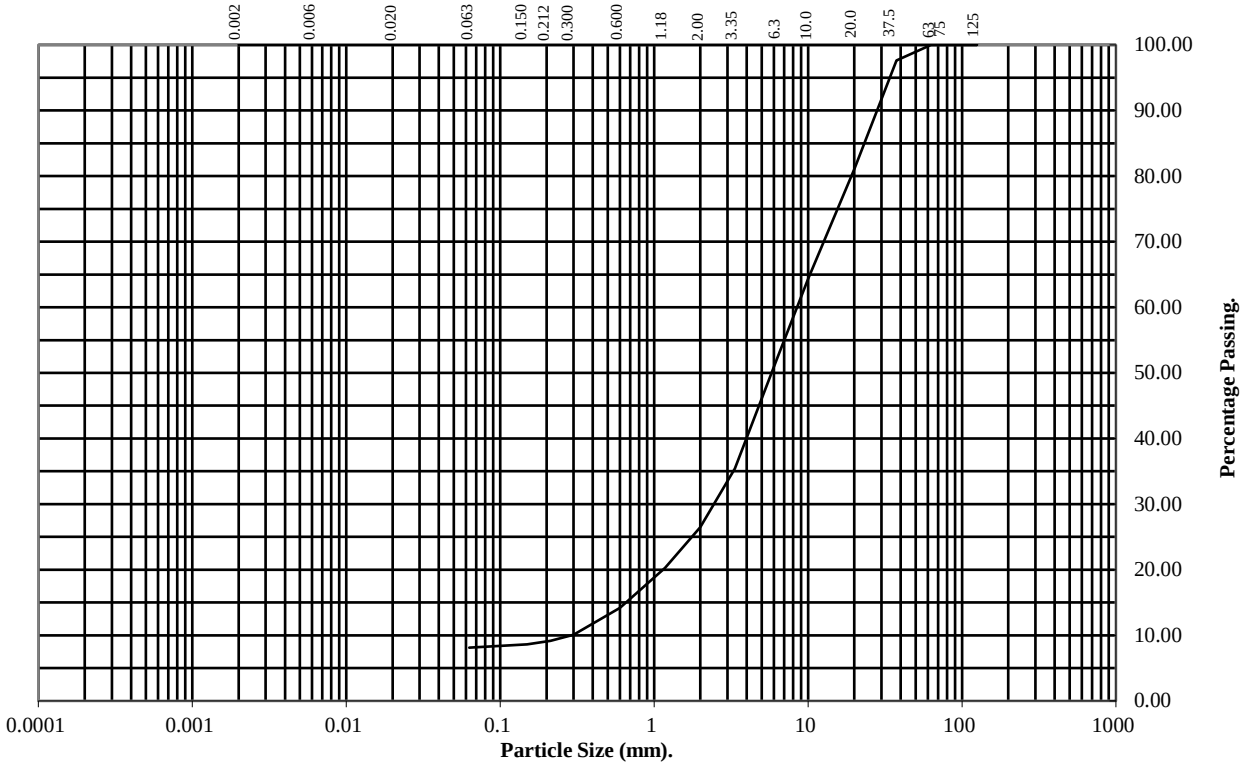
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve, Clause 9.2

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH122** | **Top Depth (m):** | **0.30** |
| **Sample Number:** | **102** | **Base Depth(m):** | **1.20** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 98 |
| 20 | 81 |
| 10 | 64 |
| 6.3 | 52 |
| 3.35 | 35 |
| 2 | 26 |
| 1.18 | 20 |
| 0.6 | 14 |
| 0.3 | 10 |
| 0.212 | 9 |
| 0.15 | 9 |
| 0.063 | 8 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 74 |
| Sand | 18 |
| Silt/Clay | 8 |

**Remarks:**

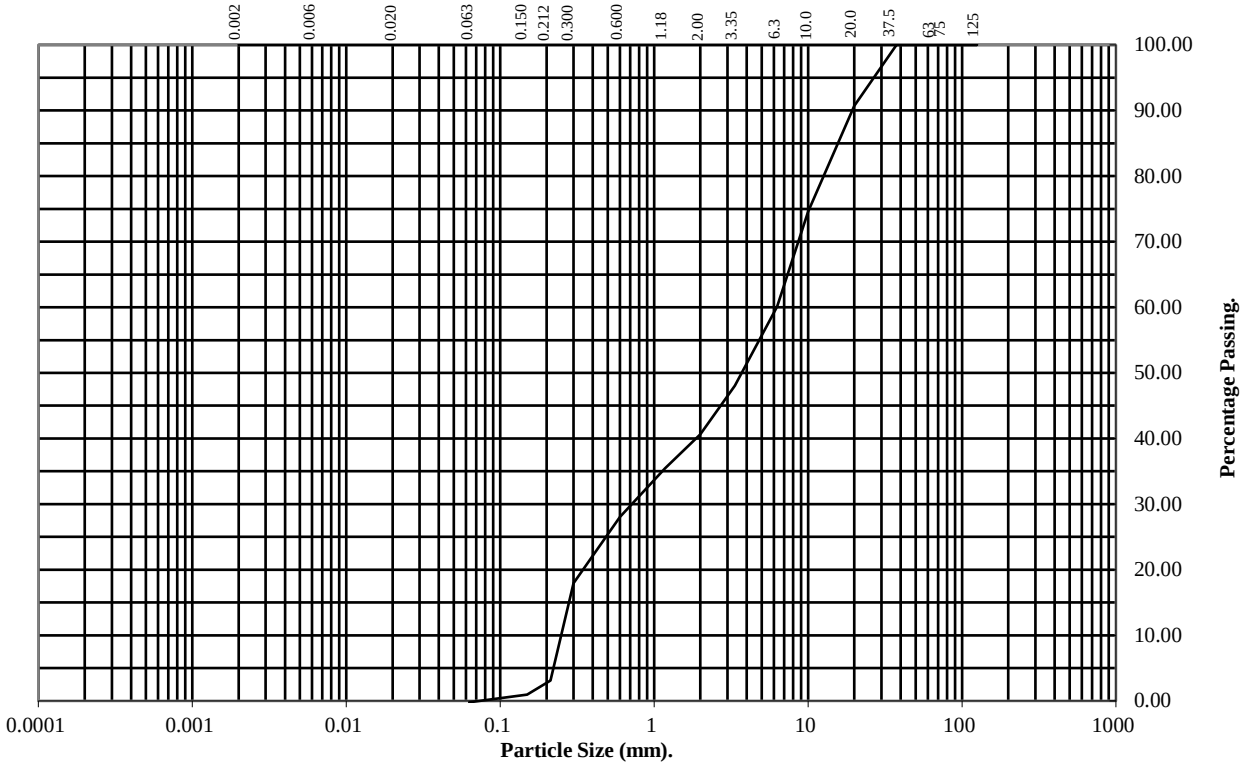
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve, Clause 9.2

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH122** | **Top Depth (m):** | **2.60** |
| **Sample Number:** | **104** | **Base Depth(m):** | **2.80** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 100 |
| 20 | 91 |
| 10 | 75 |
| 6.3 | 60 |
| 3.35 | 48 |
| 2 | 41 |
| 1.18 | 35 |
| 0.6 | 28 |
| 0.3 | 18 |
| 0.212 | 3 |
| 0.15 | 1 |
| 0.063 | 0 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 59 |
| Sand | 41 |
| Silt/Clay | 0 |

**Remarks:**

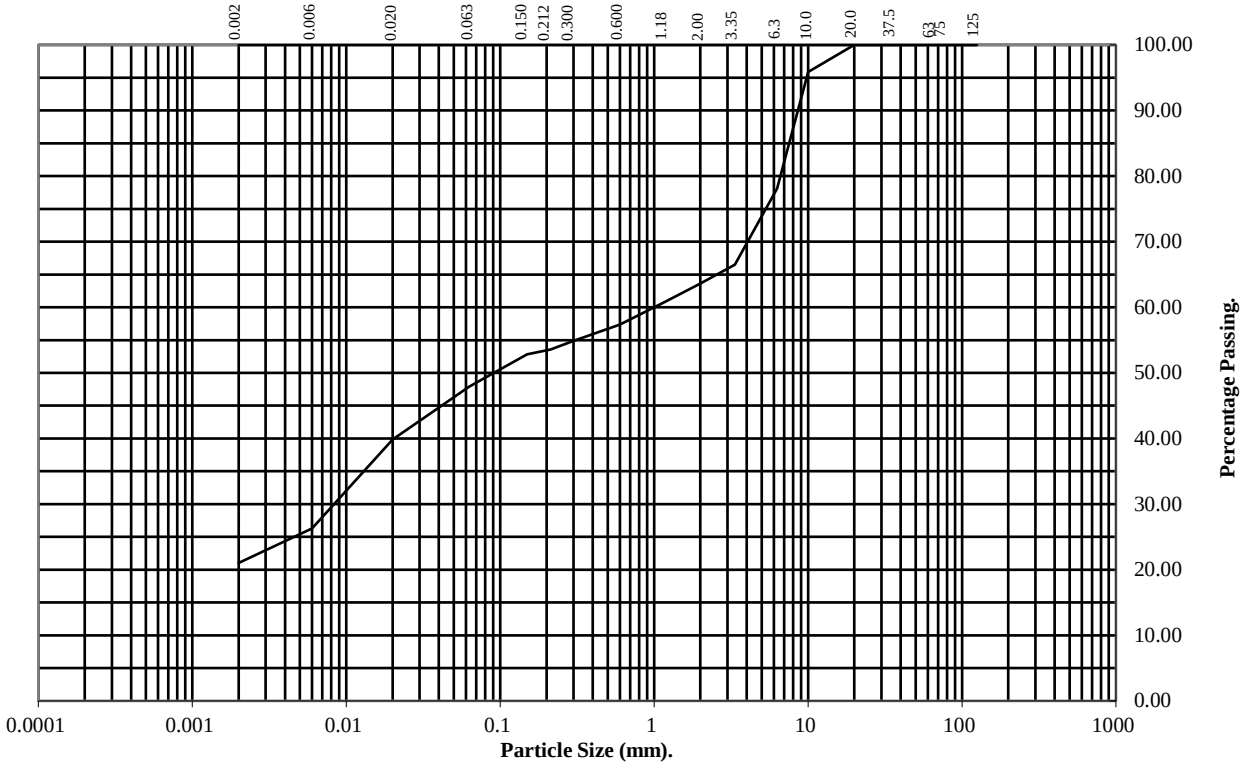
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH122** | **Top Depth (m):** | **3.40** |
| **Sample Number:** | **7** | **Base Depth(m):** | **4.10** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 100 |
| 20 | 100 |
| 10 | 96 |
| 6.3 | 78 |
| 3.35 | 66 |
| 2 | 64 |
| 1.18 | 61 |
| 0.6 | 57 |
| 0.3 | 55 |
| 0.212 | 54 |
| 0.15 | 53 |
| 0.063 | 48 |

| Particle Diameter | Percentage Passing |
|---|---|
| 0.02 | 40 |
| 0.006 | 26 |
| 0.002 | 21 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 36 |
| Sand | 16 |
| Silt | 27 |
| Clay | 21 |

**Remarks:**
See Summary of Soil Descriptions

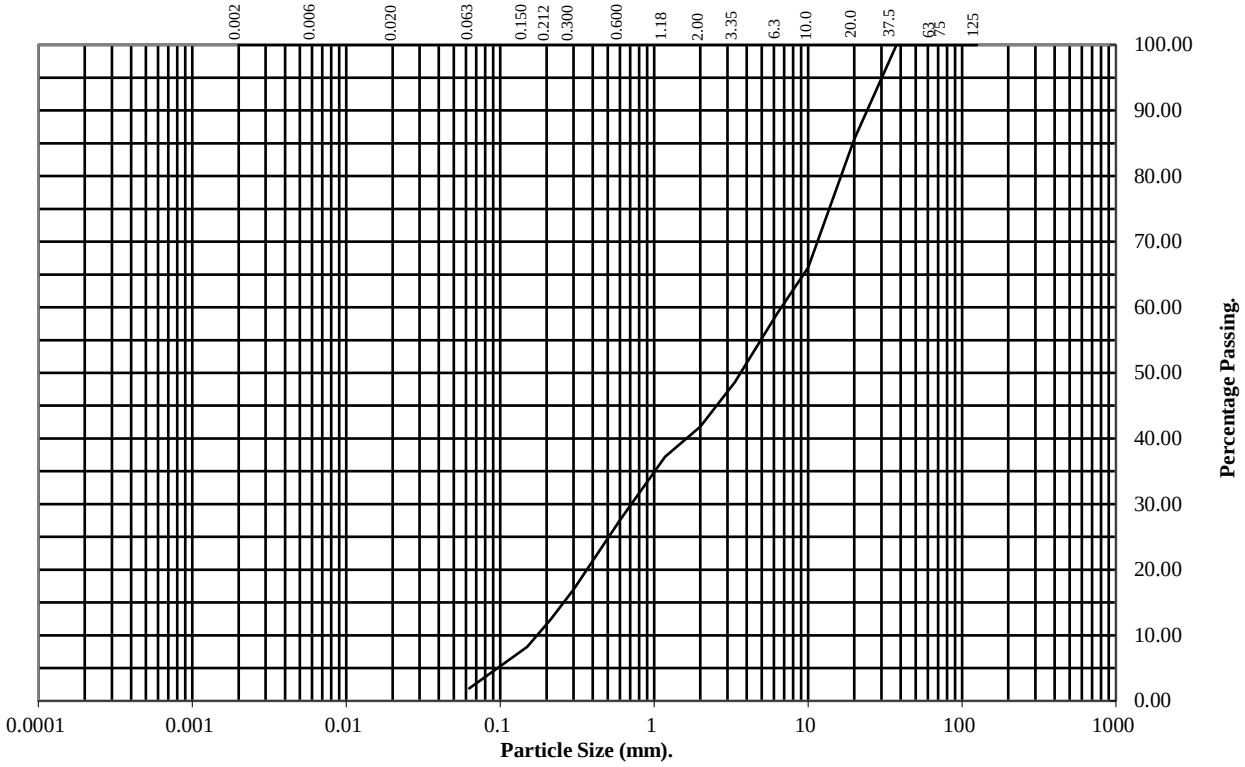
| | | | |
|---|---|---|---|
| UKAS TESTING 4043 | PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** | **Contract No:** PSL22/3650 **Client Ref:** GT0386 |

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve, Clause 9.2

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH112** | **Top Depth (m):** | **2.20** |
| **Sample Number:** | **103** | **Base Depth(m):** | **2.40** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 100 |
| 20 | 86 |
| 10 | 66 |
| 6.3 | 59 |
| 3.35 | 49 |
| 2 | 42 |
| 1.18 | 37 |
| 0.6 | 28 |
| 0.3 | 17 |
| 0.212 | 12 |
| 0.15 | 8 |
| 0.063 | 2 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 58 |
| Sand | 40 |
| Silt/Clay | 2 |

**Remarks:**

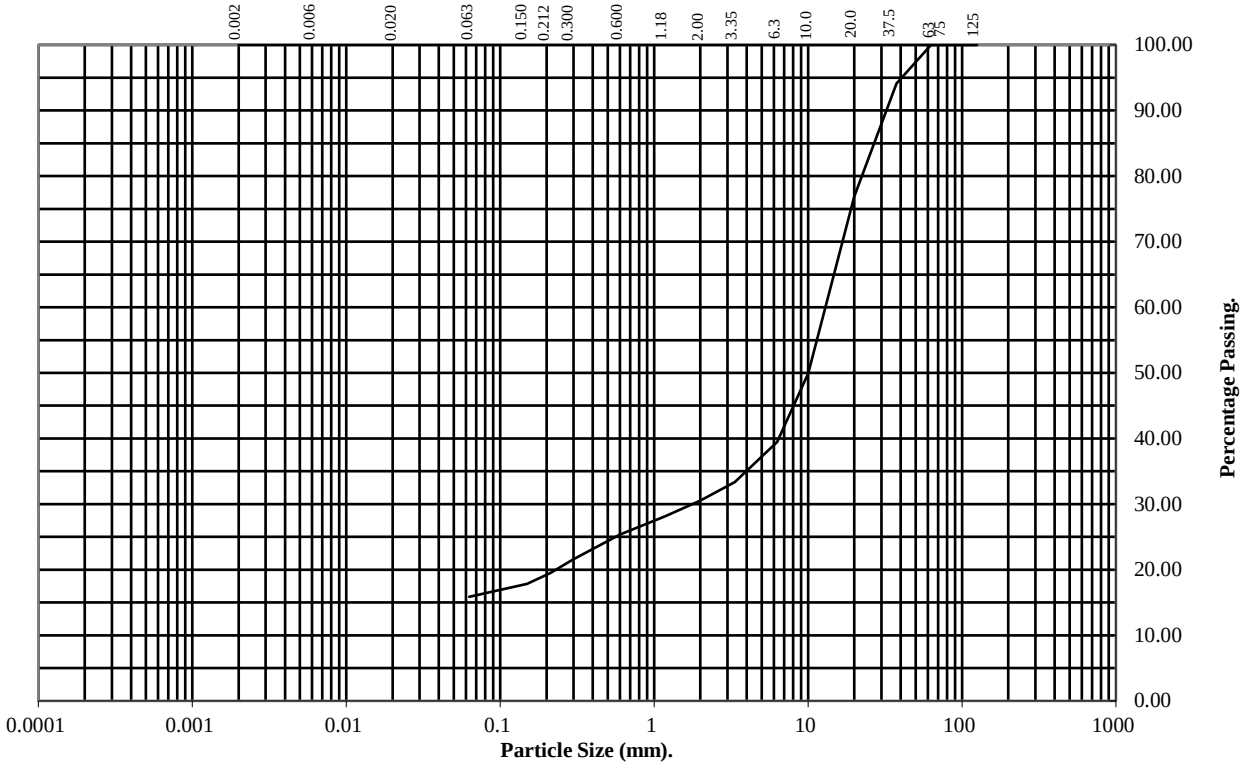
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve, Clause 9.2

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH112** | **Top Depth (m):** | **4.40** |
| **Sample Number:** | **105** | **Base Depth(m):** | **4.80** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 94 |
| 20 | 77 |
| 10 | 50 |
| 6.3 | 39 |
| 3.35 | 33 |
| 2 | 31 |
| 1.18 | 28 |
| 0.6 | 25 |
| 0.3 | 22 |
| 0.212 | 19 |
| 0.15 | 18 |
| 0.063 | 16 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 69 |
| Sand | 15 |
| Silt/Clay | 16 |

**Remarks:**

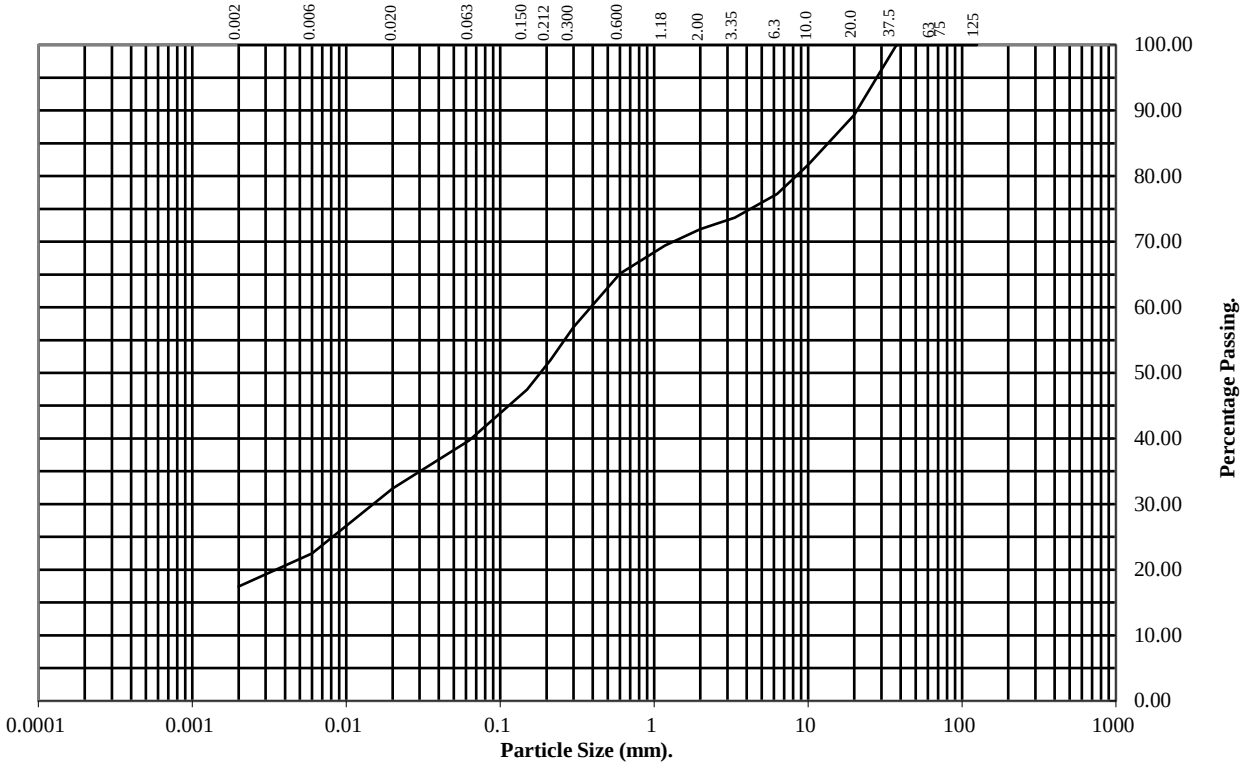
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP127** | **Top Depth (m):** | **0.10** |
| **Sample Number:** | **2** | **Base Depth(m):** | **0.40** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 100 |
| 20 | 89 |
| 10 | 82 |
| 6.3 | 77 |
| 3.35 | 74 |
| 2 | 72 |
| 1.18 | 69 |
| 0.6 | 65 |
| 0.3 | 57 |
| 0.212 | 52 |
| 0.15 | 47 |
| 0.063 | 40 |

| Particle Diameter | Percentage Passing |
|---|---|
| 0.02 | 32 |
| 0.006 | 22 |
| 0.002 | 17 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 28 |
| Sand | 32 |
| Silt | 23 |
| Clay | 17 |

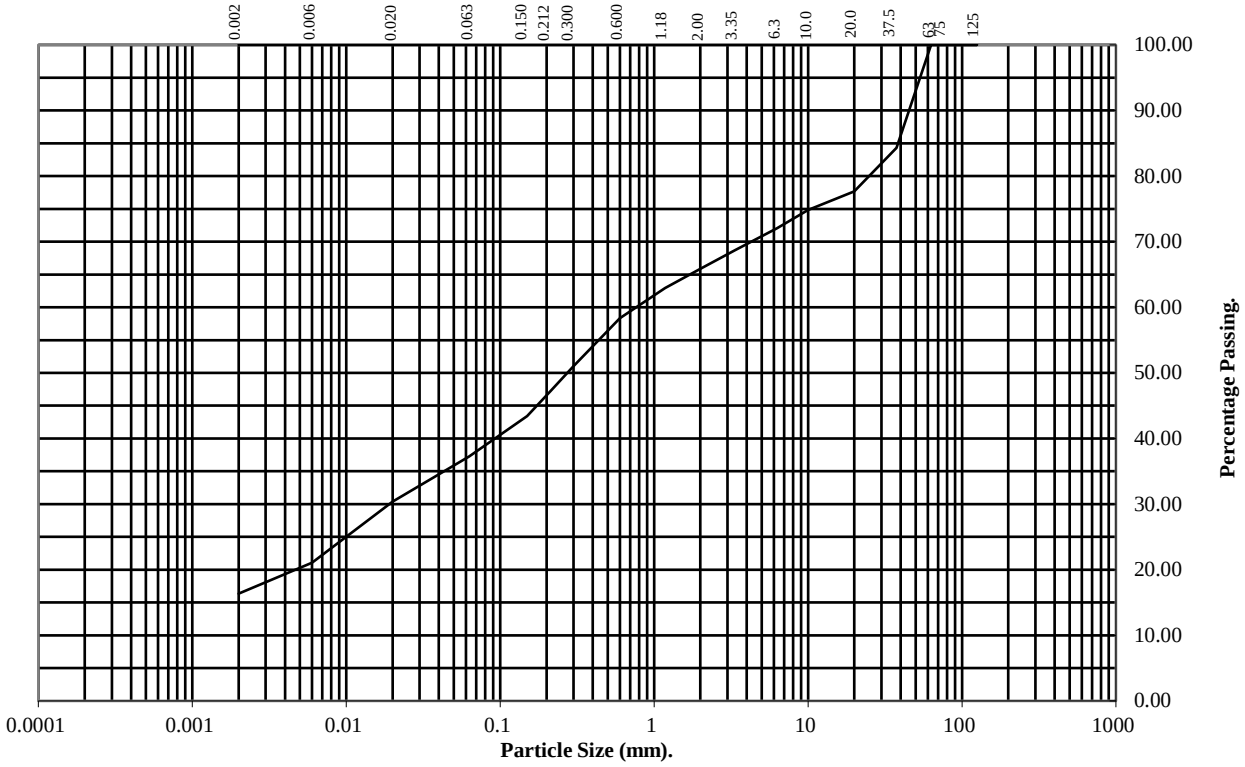
**Remarks:**
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP127** | **Top Depth (m):** | **1.00** |
| **Sample Number:** | **5** | **Base Depth(m):** | **1.30** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 84 |
| 20 | 78 |
| 10 | 75 |
| 6.3 | 72 |
| 3.35 | 69 |
| 2 | 66 |
| 1.18 | 63 |
| 0.6 | 58 |
| 0.3 | 51 |
| 0.212 | 47 |
| 0.15 | 43 |
| 0.063 | 37 |

| Particle Diameter | Percentage Passing |
|---|---|
| 0.02 | 30 |
| 0.006 | 21 |
| 0.002 | 16 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 34 |
| Sand | 29 |
| Silt | 21 |
| Clay | 16 |

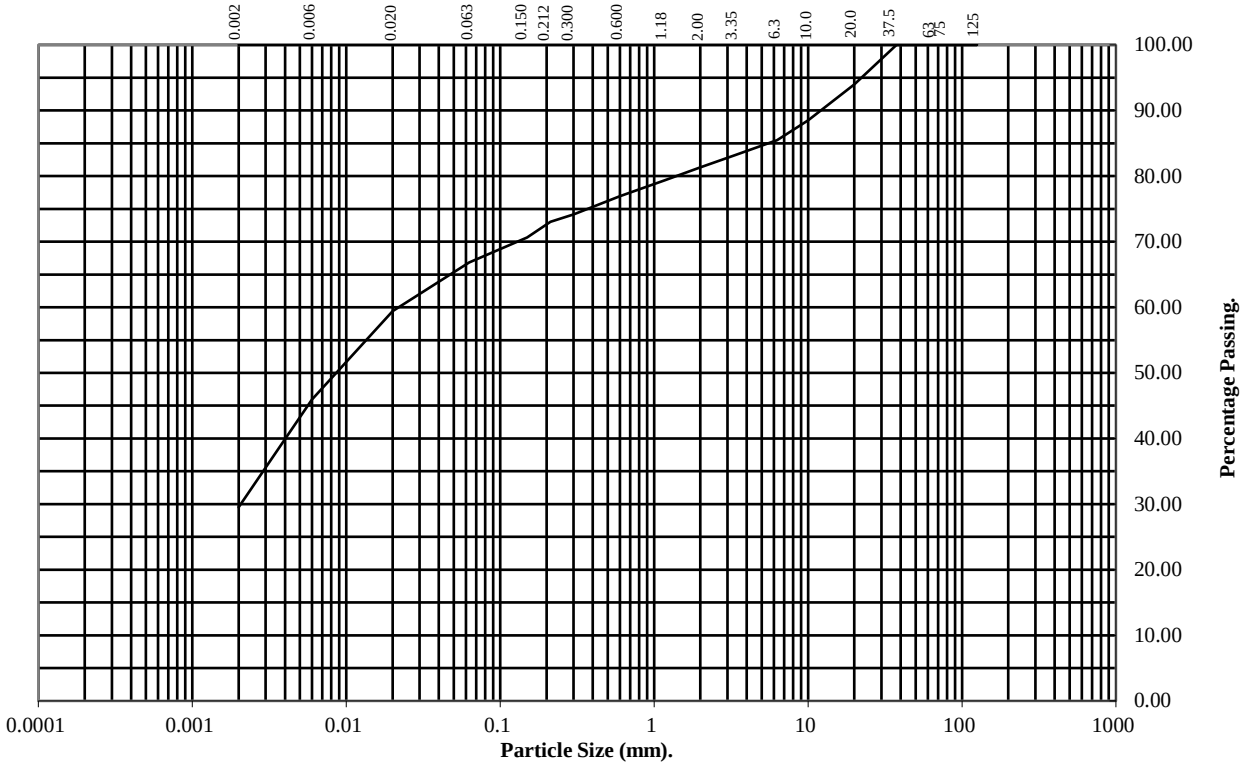
**Remarks:**
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP129** | **Top Depth (m):** | **1.00** |
| **Sample Number:** | **5** | **Base Depth(m):** | **1.30** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 100 |
| 20 | 94 |
| 10 | 89 |
| 6.3 | 85 |
| 3.35 | 83 |
| 2 | 81 |
| 1.18 | 79 |
| 0.6 | 77 |
| 0.3 | 74 |
| 0.212 | 73 |
| 0.15 | 71 |
| 0.063 | 67 |

| Particle Diameter | Percentage Passing |
|---|---|
| 0.02 | 59 |
| 0.006 | 46 |
| 0.002 | 30 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 19 |
| Sand | 14 |
| Silt | 37 |
| Clay | 30 |

**Remarks:**
See Summary of Soil Descriptions

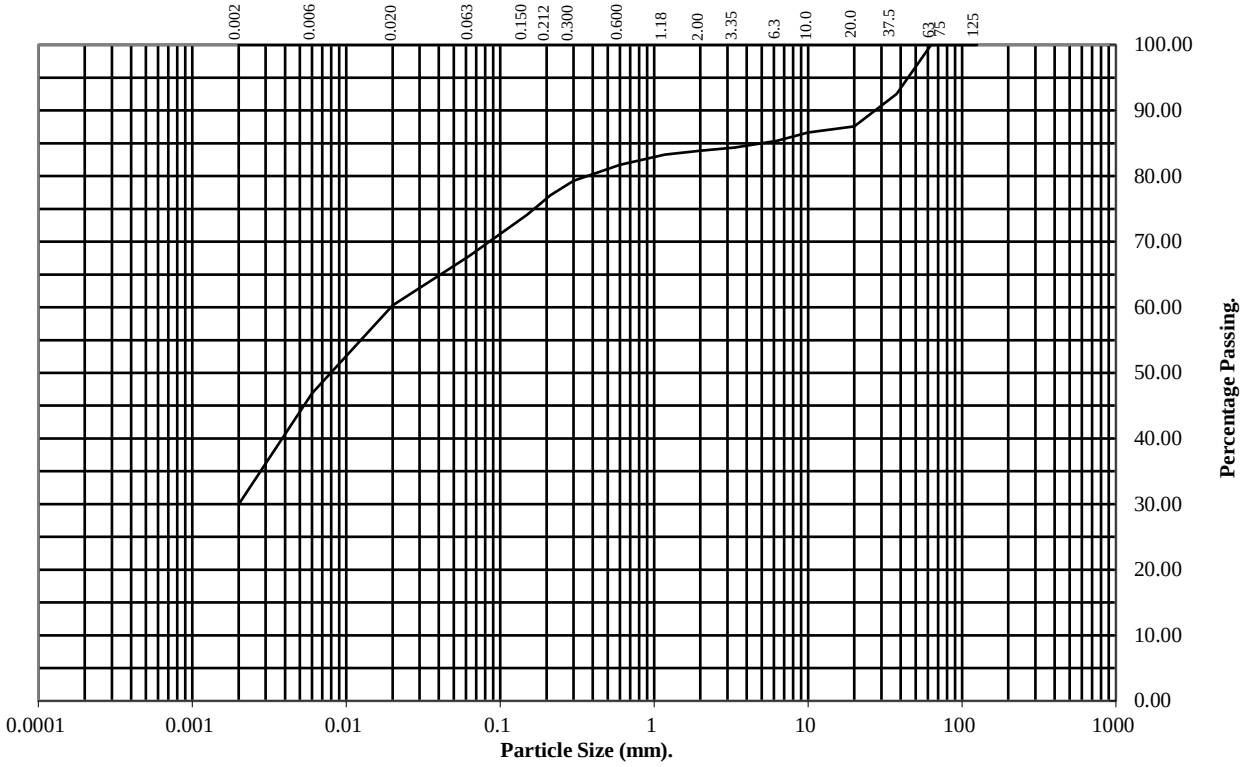
| | | | |
|---|---|---|---|
| UKAS TESTING 4043 | PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** | **Contract No:** PSL22/3650 **Client Ref:** GT0386 |

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP130** | **Top Depth (m):** | **0.50** |
| **Sample Number:** | **5** | **Base Depth(m):** | **0.80** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 92 |
| 20 | 88 |
| 10 | 87 |
| 6.3 | 85 |
| 3.35 | 84 |
| 2 | 84 |
| 1.18 | 83 |
| 0.6 | 82 |
| 0.3 | 79 |
| 0.212 | 77 |
| 0.15 | 74 |
| 0.063 | 68 |

| Particle Diameter | Percentage Passing |
|---|---|
| 0.02 | 60 |
| 0.006 | 47 |
| 0.002 | 30 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 16 |
| Sand | 16 |
| Silt | 38 |
| Clay | 30 |

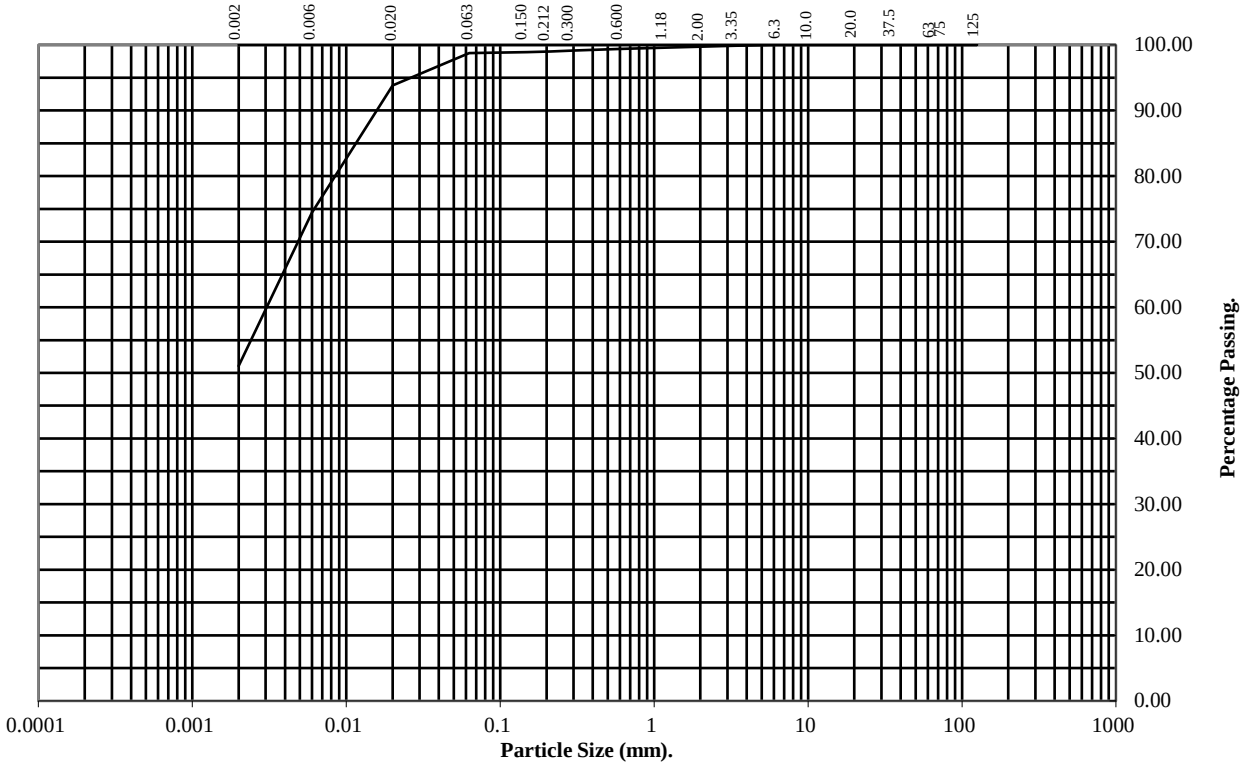
**Remarks:**
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP130** | **Top Depth (m):** | **1.50** |
| **Sample Number:** | **7** | **Base Depth(m):** | **1.80** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 100 |
| 20 | 100 |
| 10 | 100 |
| 6.3 | 100 |
| 3.35 | 100 |
| 2 | 100 |
| 1.18 | 100 |
| 0.6 | 99 |
| 0.3 | 99 |
| 0.212 | 99 |
| 0.15 | 99 |
| 0.063 | 99 |

| Particle Diameter | Percentage Passing |
|---|---|
| 0.02 | 94 |
| 0.006 | 74 |
| 0.002 | 51 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 0 |
| Sand | 1 |
| Silt | 48 |
| Clay | 51 |

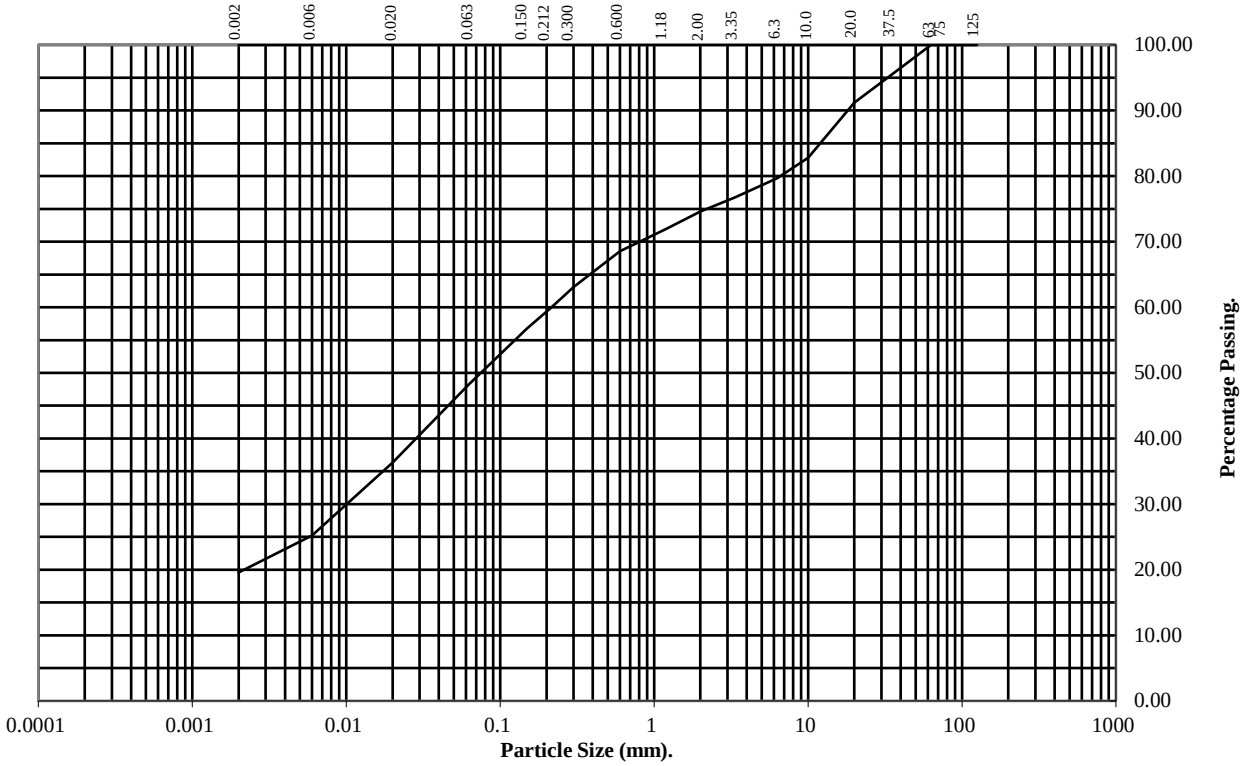
**Remarks:**
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP131** | **Top Depth (m):** | **1.00** |
| **Sample Number:** | **5** | **Base Depth(m):** | **1.30** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 96 |
| 20 | 91 |
| 10 | 83 |
| 6.3 | 80 |
| 3.35 | 77 |
| 2 | 75 |
| 1.18 | 72 |
| 0.6 | 69 |
| 0.3 | 63 |
| 0.212 | 60 |
| 0.15 | 57 |
| 0.063 | 48 |

| Particle Diameter | Percentage Passing |
|---|---|
| 0.02 | 36 |
| 0.006 | 25 |
| 0.002 | 20 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 25 |
| Sand | 27 |
| Silt | 28 |
| Clay | 20 |

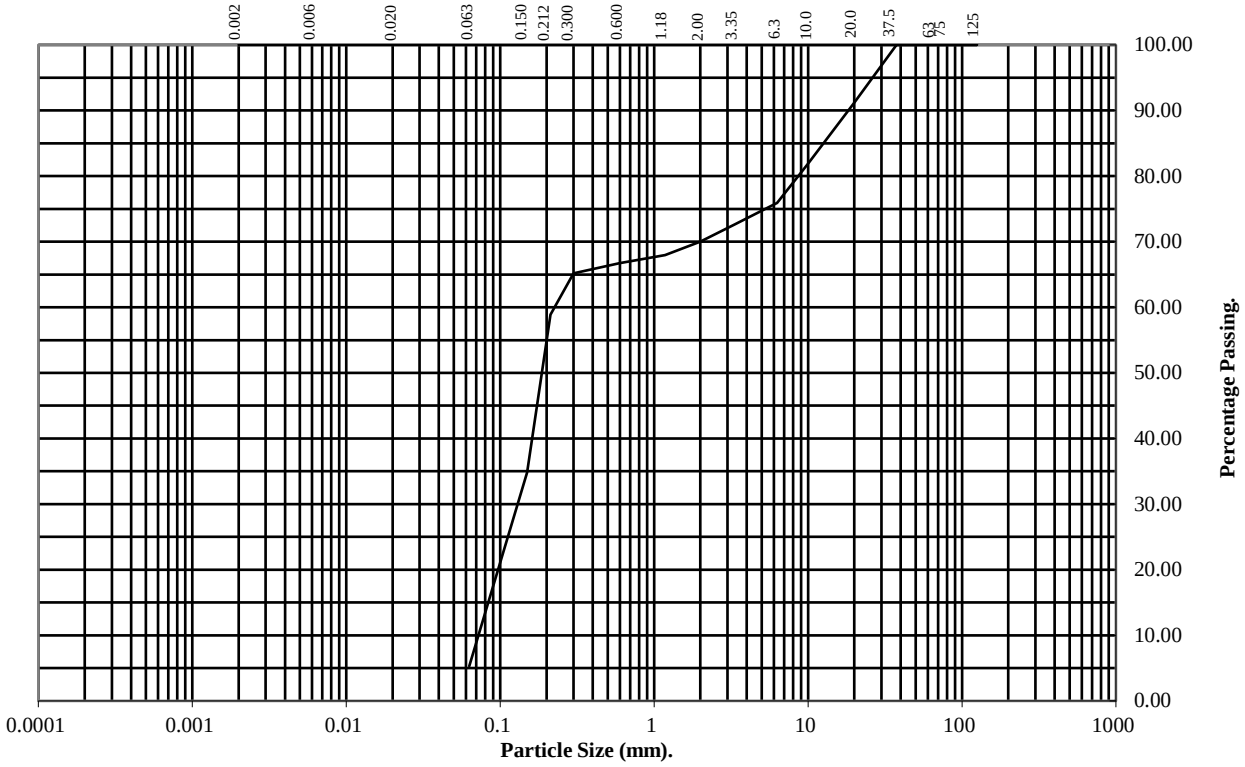
**Remarks:**
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve, Clause 9.2

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH110** | **Top Depth (m):** | **2.50** |
| **Sample Number:** | **101** | **Base Depth(m):** | **3.00** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 100 |
| 20 | 91 |
| 10 | 82 |
| 6.3 | 76 |
| 3.35 | 73 |
| 2 | 70 |
| 1.18 | 68 |
| 0.6 | 67 |
| 0.3 | 65 |
| 0.212 | 59 |
| 0.15 | 35 |
| 0.063 | 5 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 30 |
| Sand | 65 |
| Silt/Clay | 5 |

**Remarks:**

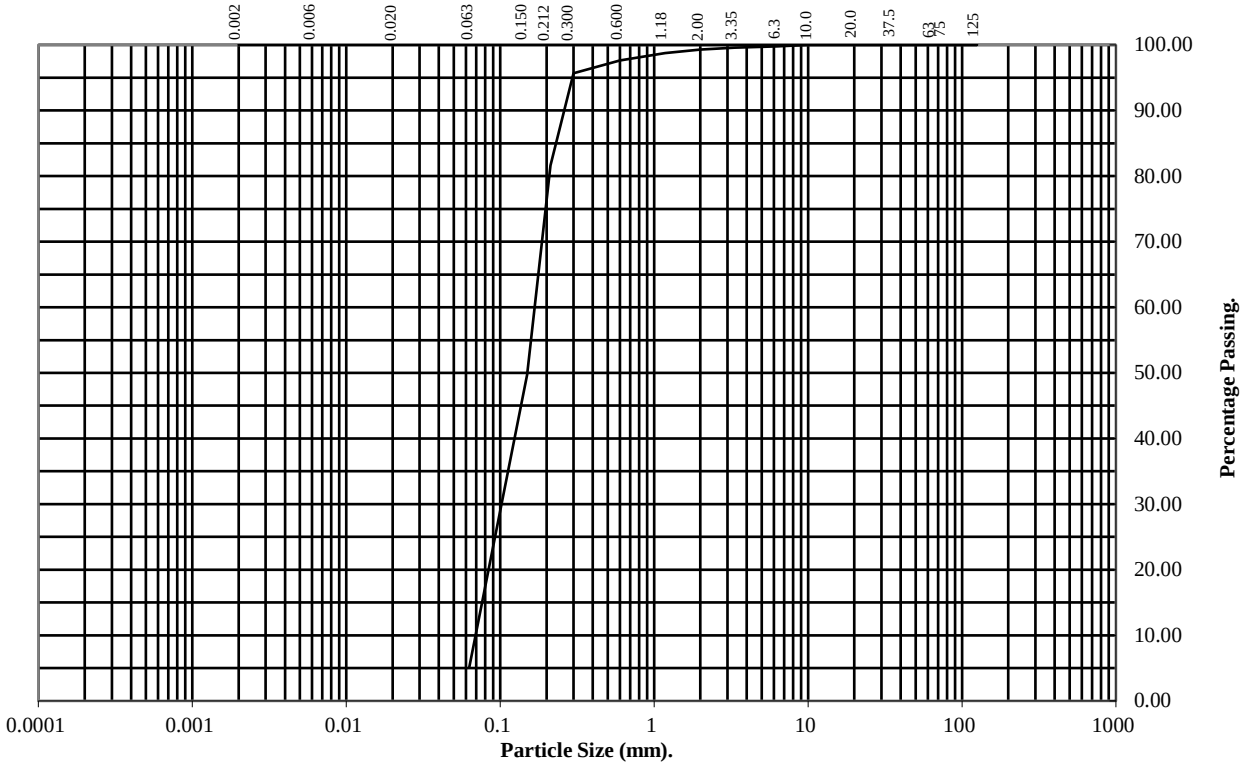
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve, Clause 9.2

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH110** | **Top Depth (m):** | **4.50** |
| **Sample Number:** | **102** | **Base Depth(m):** | **5.00** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 100 |
| 20 | 100 |
| 10 | 100 |
| 6.3 | 100 |
| 3.35 | 100 |
| 2 | 99 |
| 1.18 | 99 |
| 0.6 | 98 |
| 0.3 | 96 |
| 0.212 | 82 |
| 0.15 | 50 |
| 0.063 | 5 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 1 |
| Sand | 94 |
| Silt/Clay | 5 |

**Remarks:**

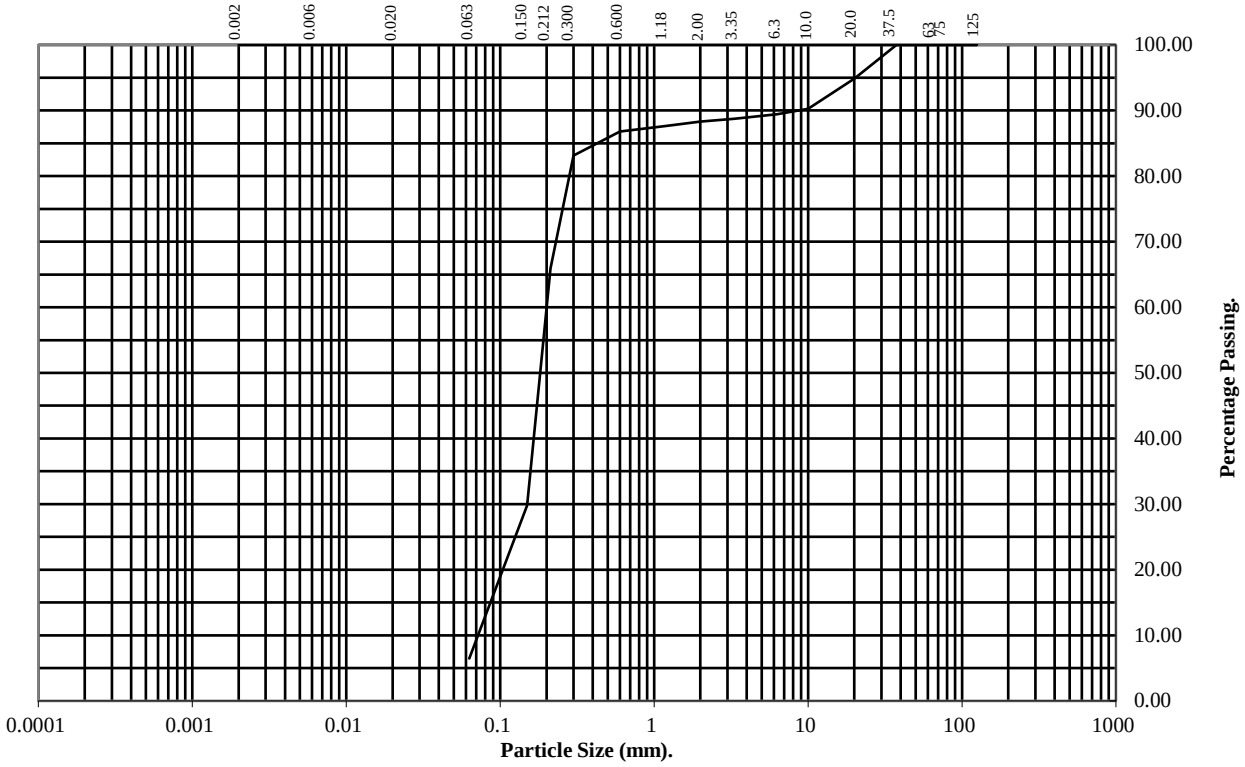
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve, Clause 9.2

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH110** | **Top Depth (m):** | **6.10** |
| **Sample Number:** | **104** | **Base Depth(m):** | **6.70** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 100 |
| 20 | 95 |
| 10 | 90 |
| 6.3 | 89 |
| 3.35 | 89 |
| 2 | 88 |
| 1.18 | 88 |
| 0.6 | 87 |
| 0.3 | 83 |
| 0.212 | 66 |
| 0.15 | 30 |
| 0.063 | 6 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 12 |
| Sand | 82 |
| Silt/Clay | 6 |

**Remarks:**

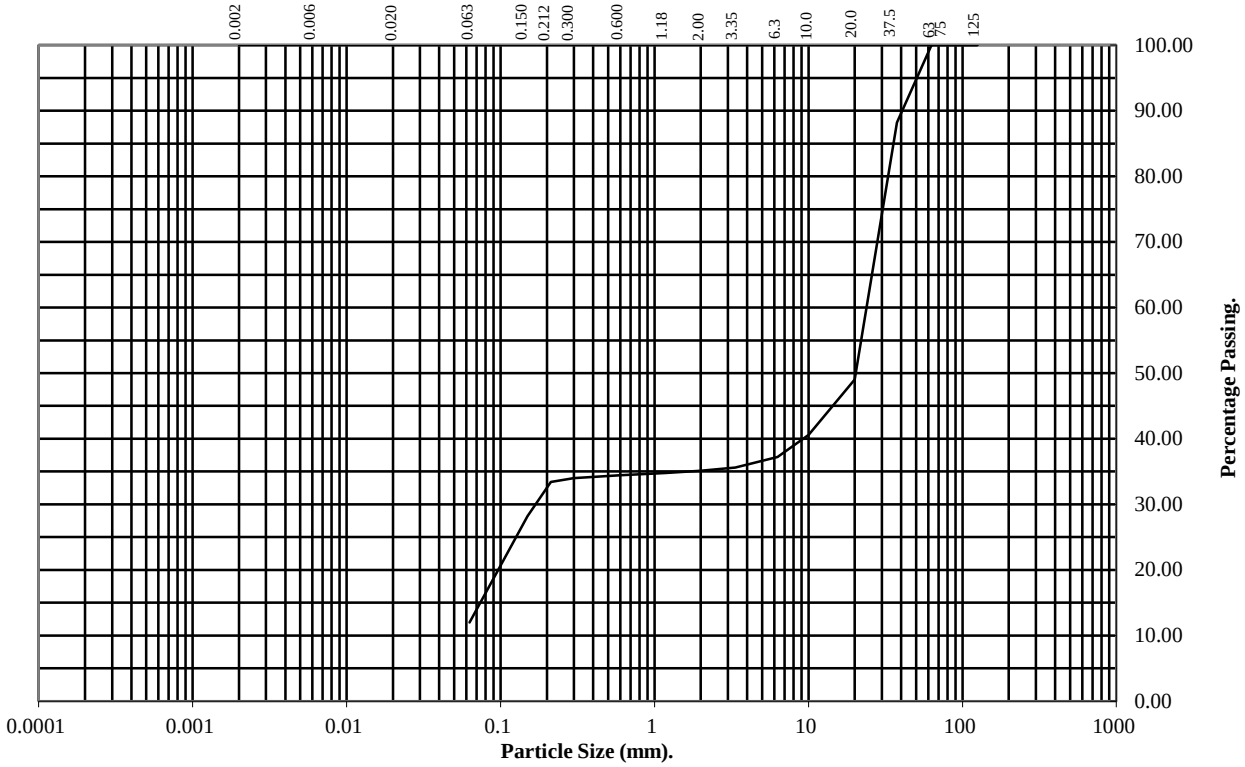
See Summary of Soil Descriptions

# PARTICLE SIZE DISTRIBUTION TEST

**BS1377 : Part 2 : 1990**

Wet Sieve, Clause 9.2

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP163** | **Top Depth (m):** | **0.50** |
| **Sample Number:** | **5** | **Base Depth(m):** | **0.80** |
| **Sample Type:** | **B** | | |




| BS Test Sieve (mm) | Percentage Passing |
|---|---|
| 125 | 100 |
| 75 | 100 |
| 63 | 100 |
| 37.5 | 88 |
| 20 | 49 |
| 10 | 41 |
| 6.3 | 37 |
| 3.35 | 36 |
| 2 | 35 |
| 1.18 | 35 |
| 0.6 | 34 |
| 0.3 | 34 |
| 0.212 | 33 |
| 0.15 | 28 |
| 0.063 | 12 |

| Soil Fraction | Total Percentage |
|---|---|
| Cobbles | 0 |
| Gravel | 65 |
| Sand | 23 |
| Silt/Clay | 12 |

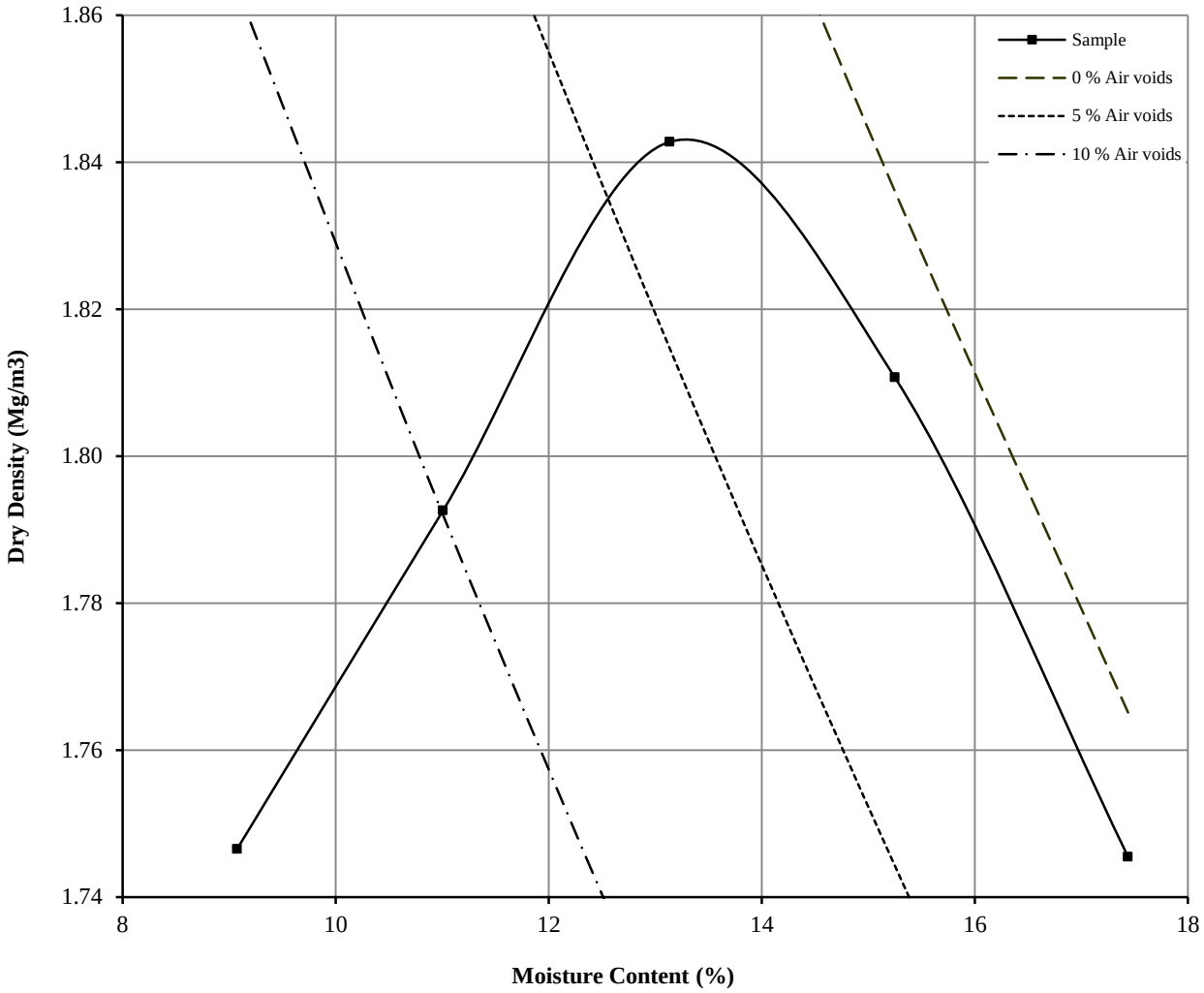
**Remarks:**

See Summary of Soil Descriptions

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.5 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP113** | **Top Depth (m) :** | **2.10** |
| **Sample Number:** | **9** | **Base Depth (m) :** | **2.40** |
| **Sample Type:** | **B** | | |

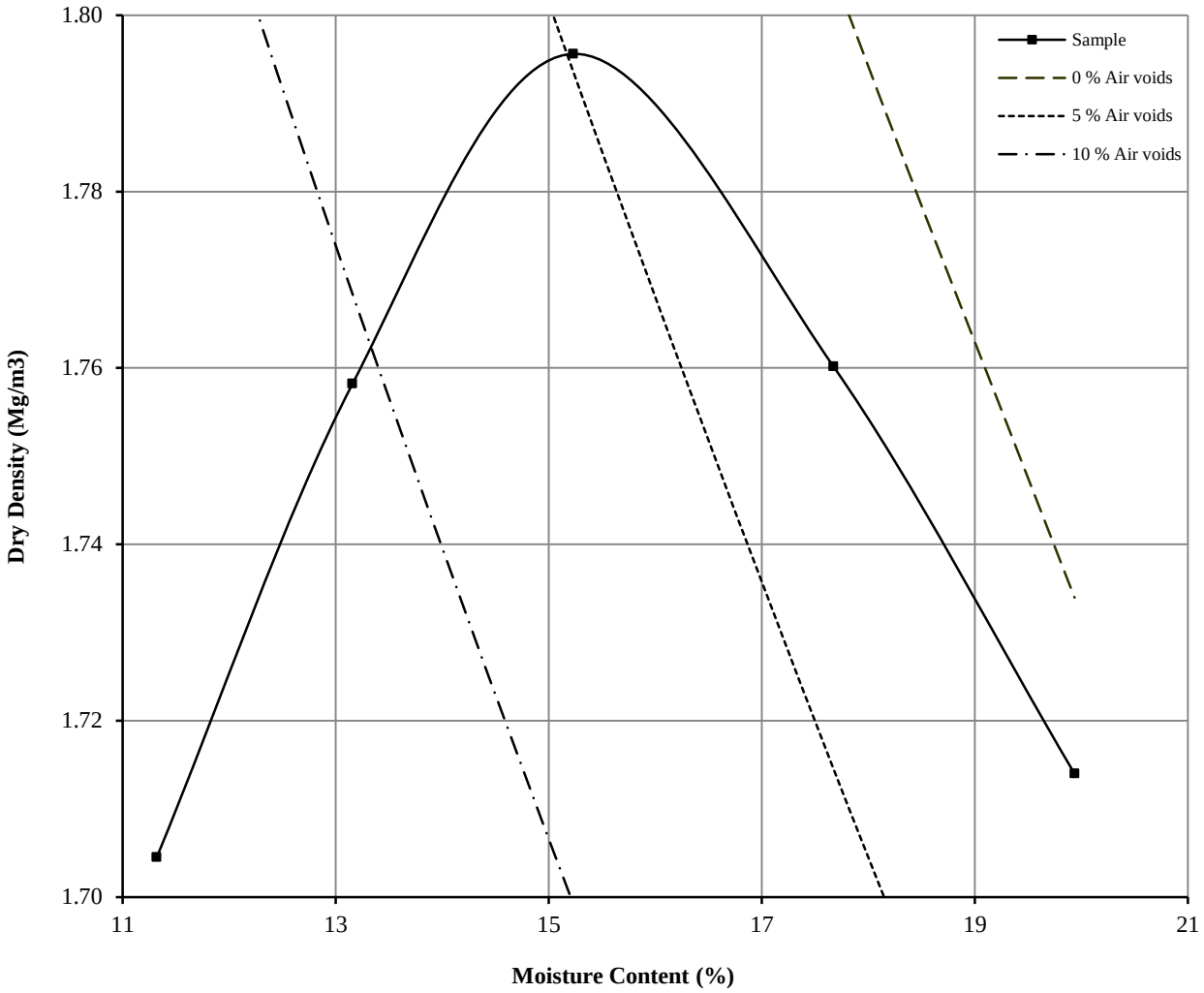



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 17 | Method of Compaction: | 4.5kg | Separate Samples |
| Particle Density (Mg/m3): | 2.55 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 0 |
| Maximum Dry Density (Mg/m3): | | 1.84 | Material Retained on 20.0 mm Test Sieve (%): | | 4 |
| Optimum Moisture Content (%): | | 13 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.5 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP114** | **Top Depth (m) :** | **1.05** |
| **Sample Number:** | **7** | **Base Depth (m) :** | **1.20** |
| **Sample Type:** | **B** | | |

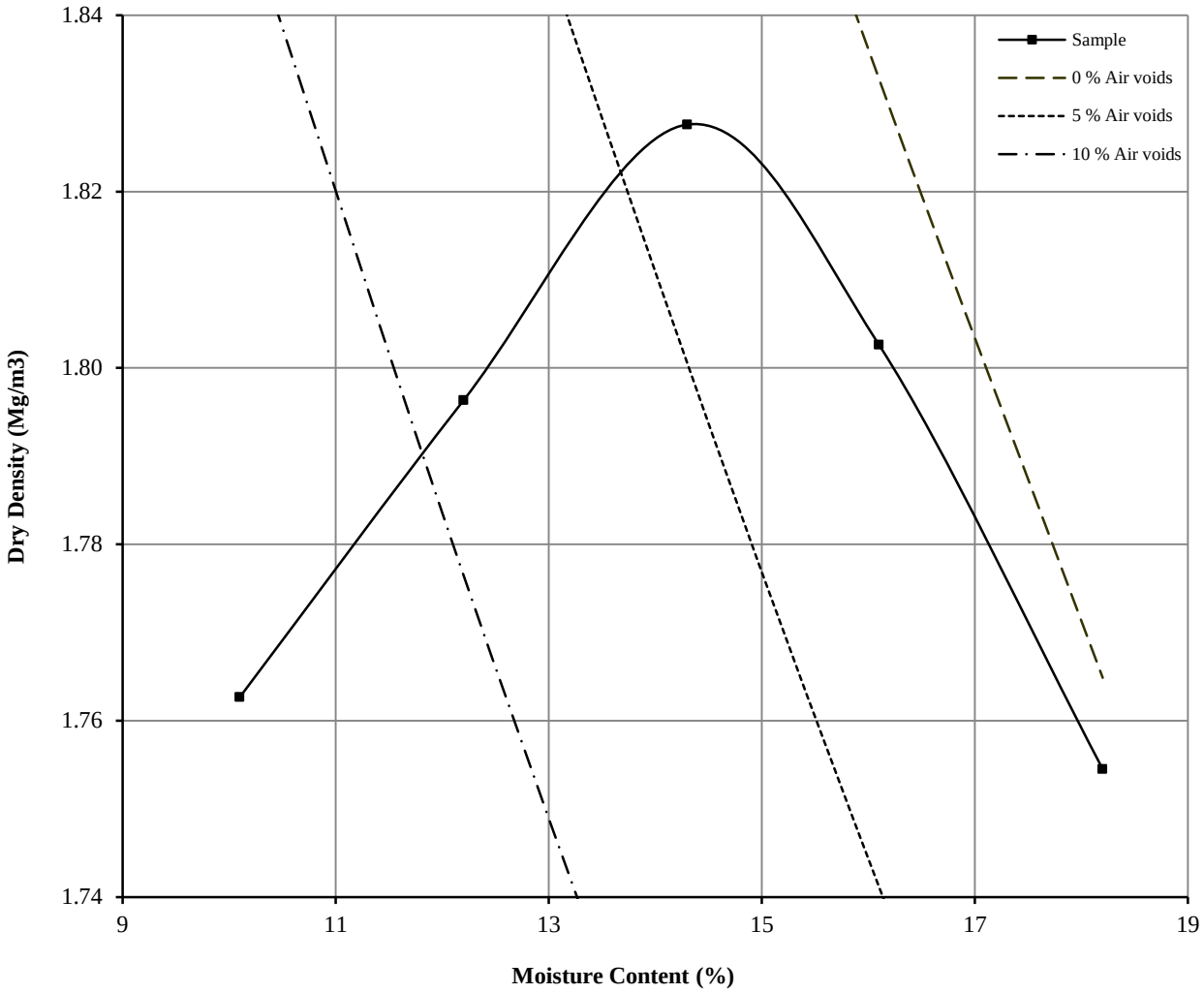



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 18 | Method of Compaction: | 4.5kg | Separate Samples |
| Particle Density (Mg/m3): | 2.65 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 0 |
| Maximum Dry Density (Mg/m3): | | 1.80 | Material Retained on 20.0 mm Test Sieve (%): | | 0 |
| Optimum Moisture Content (%): | | 15 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.6 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP117** | **Top Depth (m) :** | **0.90** |
| **Sample Number:** | **5** | **Base Depth (m) :** | **1.20** |
| **Sample Type:** | **B** | | |

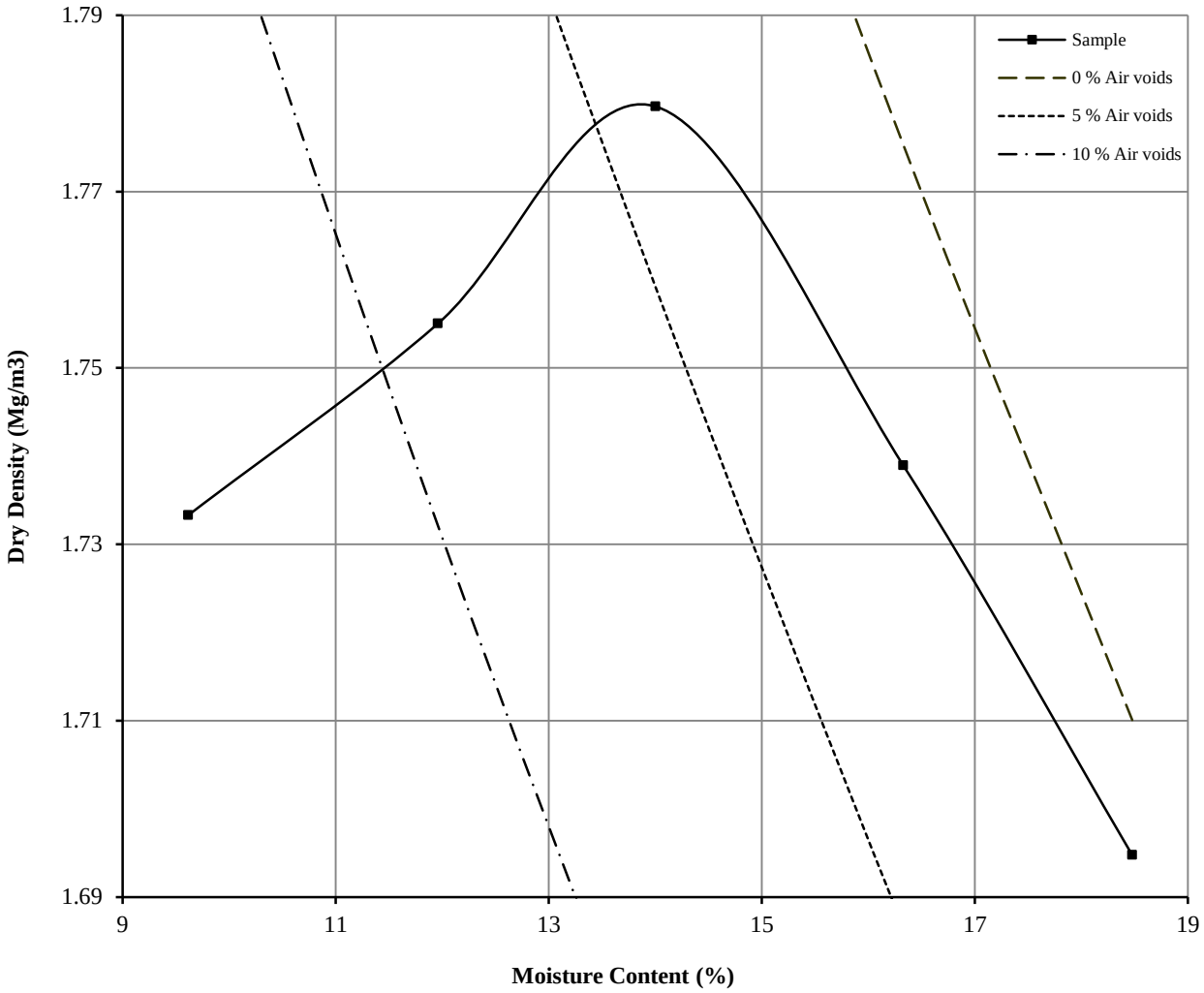



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 18 | Method of Compaction: | 4.5kg | Separate Samples |
| Particle Density (Mg/m3): | 2.6 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 0 |
| Maximum Dry Density (Mg/m3): | | 1.83 | Material Retained on 20.0 mm Test Sieve (%): | | 11 |
| Optimum Moisture Content (%): | | 14 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.5 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP117** | **Top Depth (m) :** | **2.00** |
| **Sample Number:** | **7** | **Base Depth (m) :** | **2.30** |
| **Sample Type:** | **B** | | |

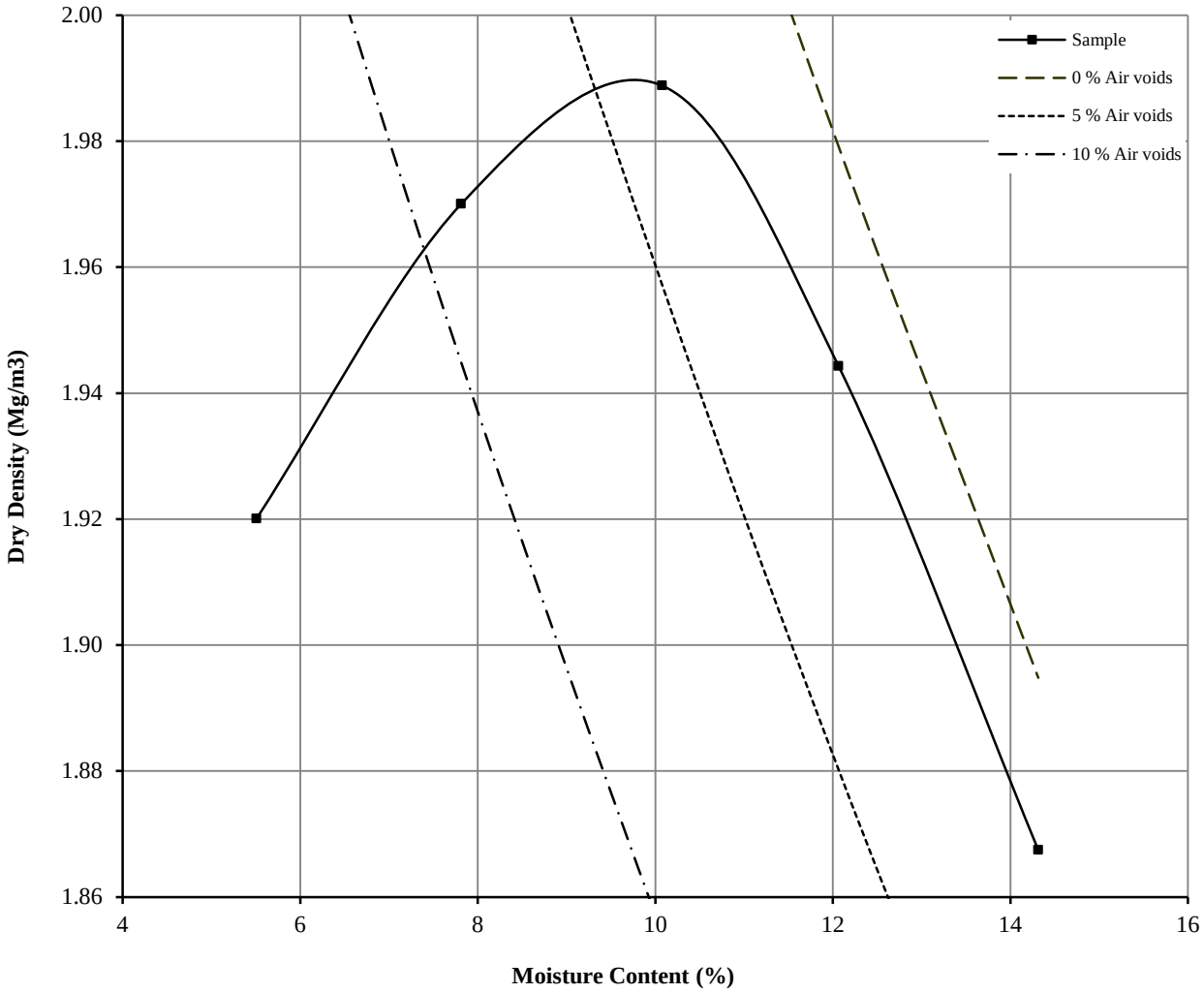



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 18 | Method of Compaction: | 4.5kg | Separate Samples |
| Particle Density (Mg/m3): | 2.5 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 0 |
| Maximum Dry Density (Mg/m3): | | 1.78 | Material Retained on 20.0 mm Test Sieve (%): | | 2 |
| Optimum Moisture Content (%): | | 14 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**Non compliance with BS 1377 : Part 4 : Clause 3.6 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP118** | **Top Depth (m) :** | **1.50** |
| **Sample Number:** | **5** | **Base Depth (m) :** | **2.00** |
| **Sample Type:** | **B** | | |

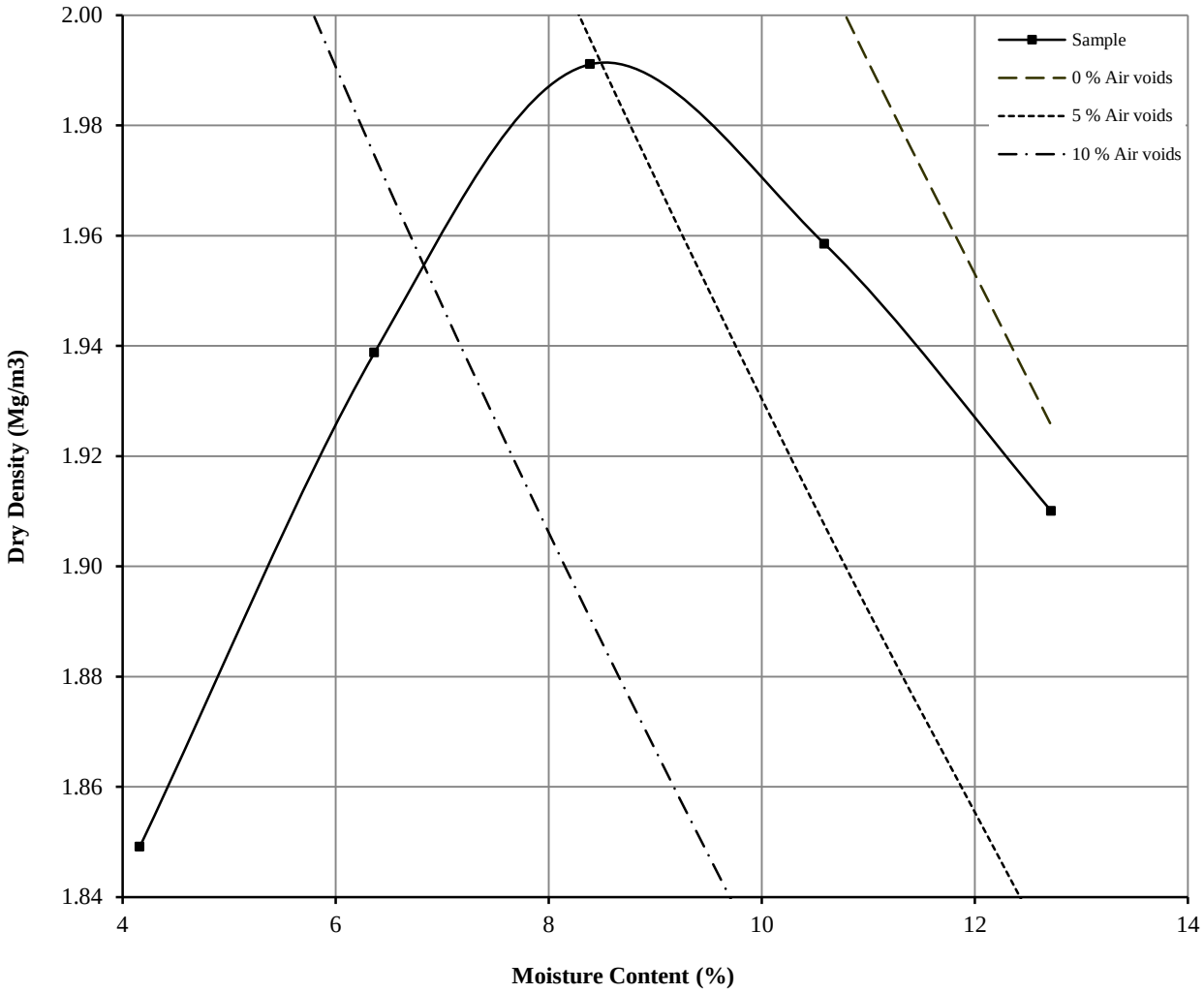



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 12 | Method of Compaction: | 4.5kg | Separate Samples |
| Particle Density (Mg/m3): | 2.6 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 14 |
| Maximum Dry Density (Mg/m3): | | 1.99 | Material Retained on 20.0 mm Test Sieve (%): | | 17 |
| Optimum Moisture Content (%): | | 10 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.6 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP135** | **Top Depth (m) :** | **1.00** |
| **Sample Number:** | **5** | **Base Depth (m) :** | **1.30** |
| **Sample Type:** | **B** | | |

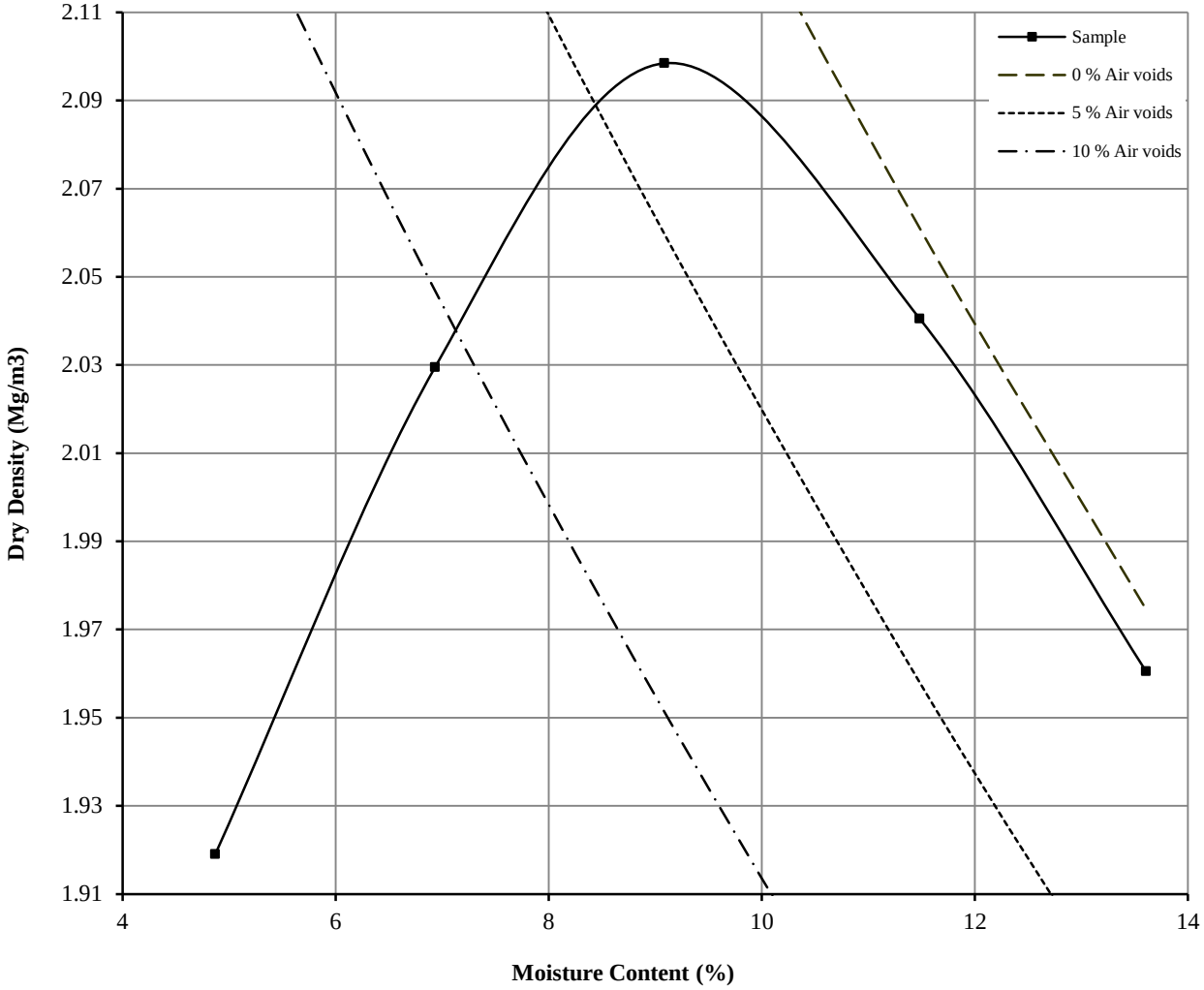



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 8.4 | Method of Compaction: | 4.5kg | Separate Samples |
| Particle Density (Mg/m3): | 2.55 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 2 |
| Maximum Dry Density (Mg/m3): | | 1.99 | Material Retained on 20.0 mm Test Sieve (%): | | 5 |
| Optimum Moisture Content (%): | | 8 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.6 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP136** | **Top Depth (m) :** | **2.00** |
| **Sample Number:** | **9** | **Base Depth (m) :** | **2.20** |
| **Sample Type:** | **B** | | |



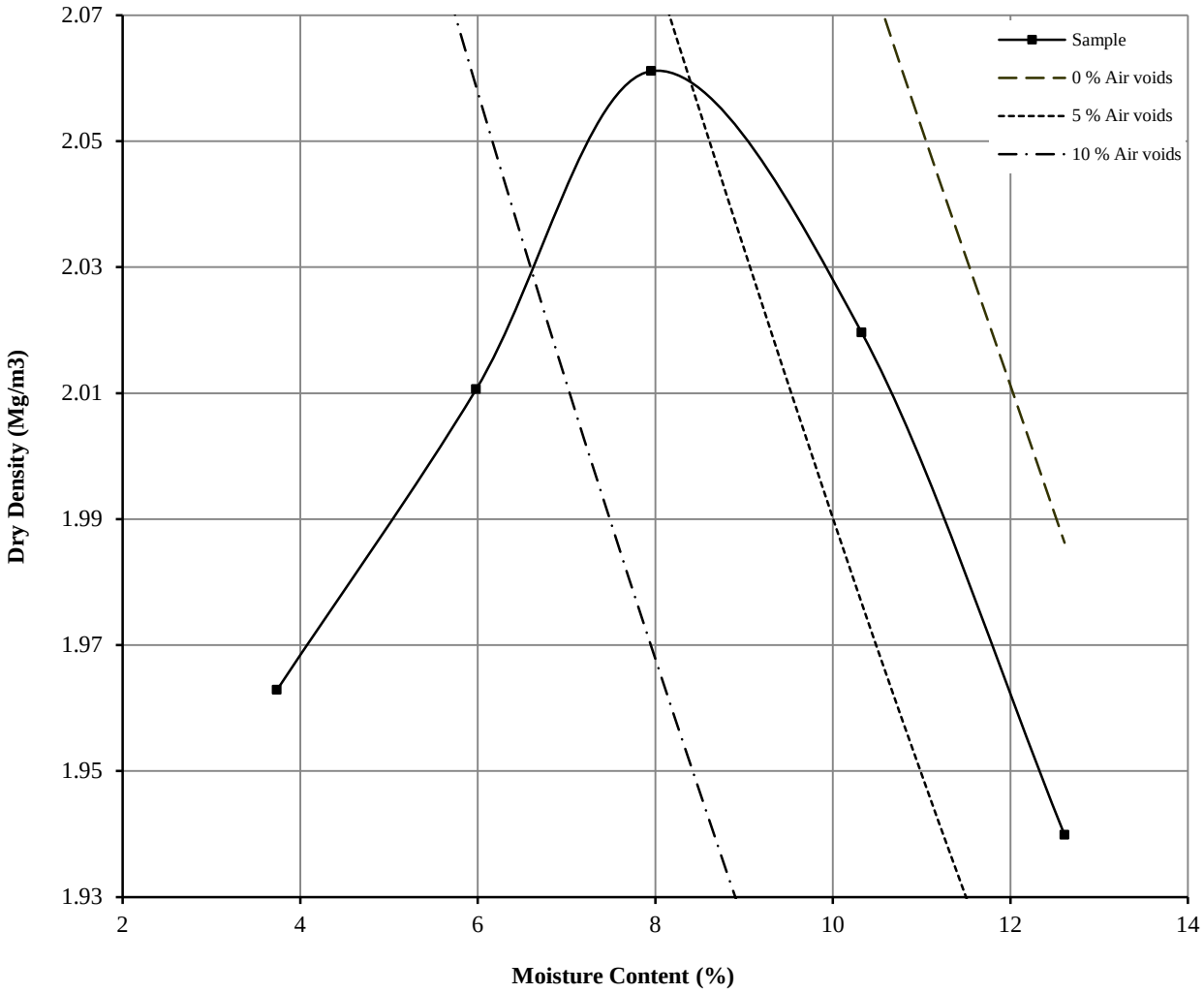

| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 9.1 | Method of Compaction: | 4.5kg | Separate Samples |
| Particle Density (Mg/m3): | 2.7 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 3 |
| Maximum Dry Density (Mg/m3): | | 2.10 | Material Retained on 20.0 mm Test Sieve (%): | | 5 |
| Optimum Moisture Content (%): | | 9 | | | |
| Remarks See summary of soil descriptions | | | | | |

| | | | |
|---|---|---|---|
| UKAS TESTING 4043 | PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** | **Contract** PSL22/3024 **Client Ref** |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.6 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP137** | **Top Depth (m) :** | **2.70** |
| **Sample Number:** | **7** | **Base Depth (m) :** | **3.00** |
| **Sample Type:** | **B** | | |

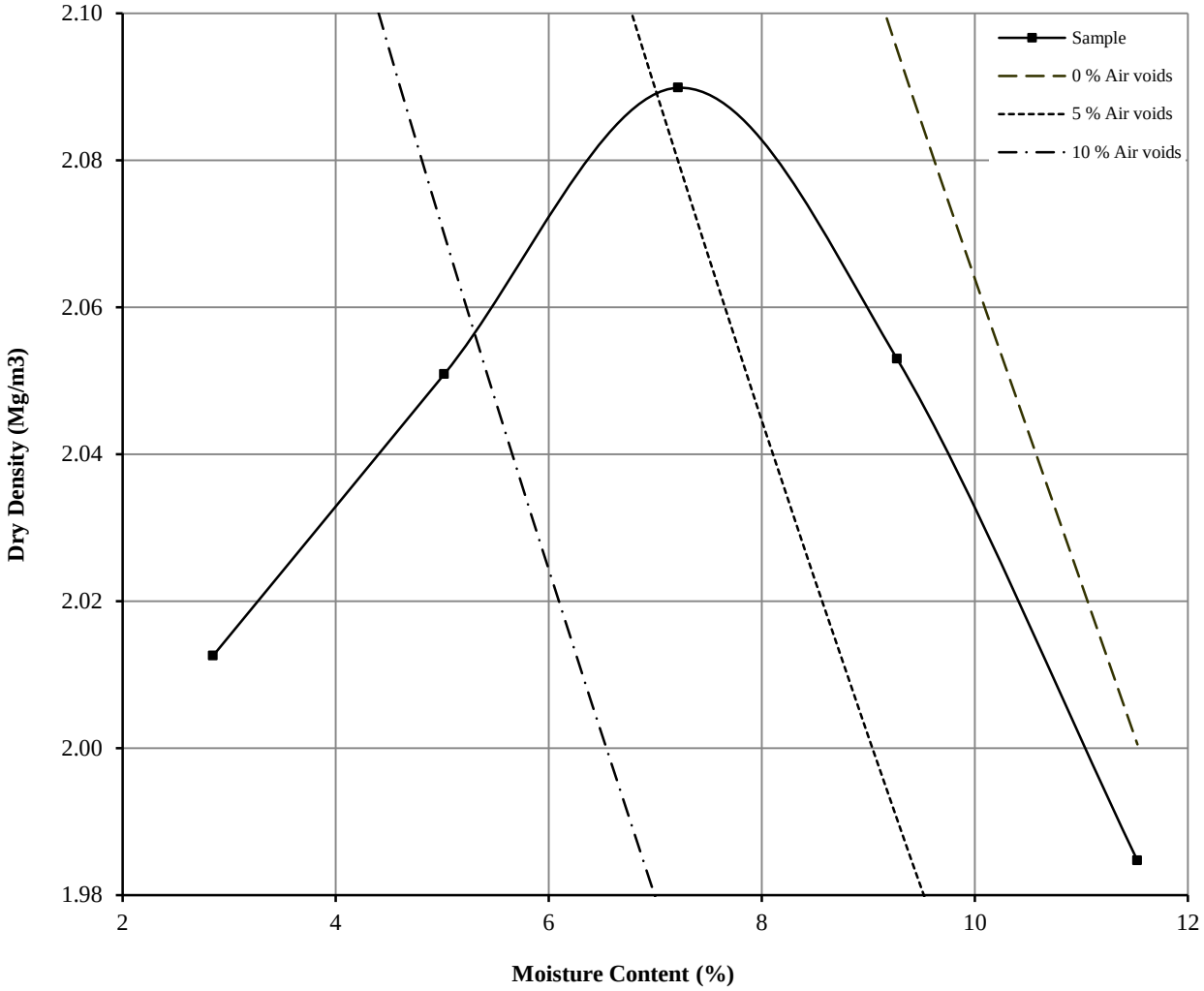



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 8.0 | Method of Compaction: | 4.5kg | Separate Samples |
| Particle Density (Mg/m3): | 2.65 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 2 |
| Maximum Dry Density (Mg/m3): | | 2.06 | Material Retained on 20.0 mm Test Sieve (%): | | 4 |
| Optimum Moisture Content (%): | | 8 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.6 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP138** | **Top Depth (m) :** | **1.00** |
| **Sample Number:** | **5** | **Base Depth (m) :** | **1.30** |
| **Sample Type:** | **B** | | |

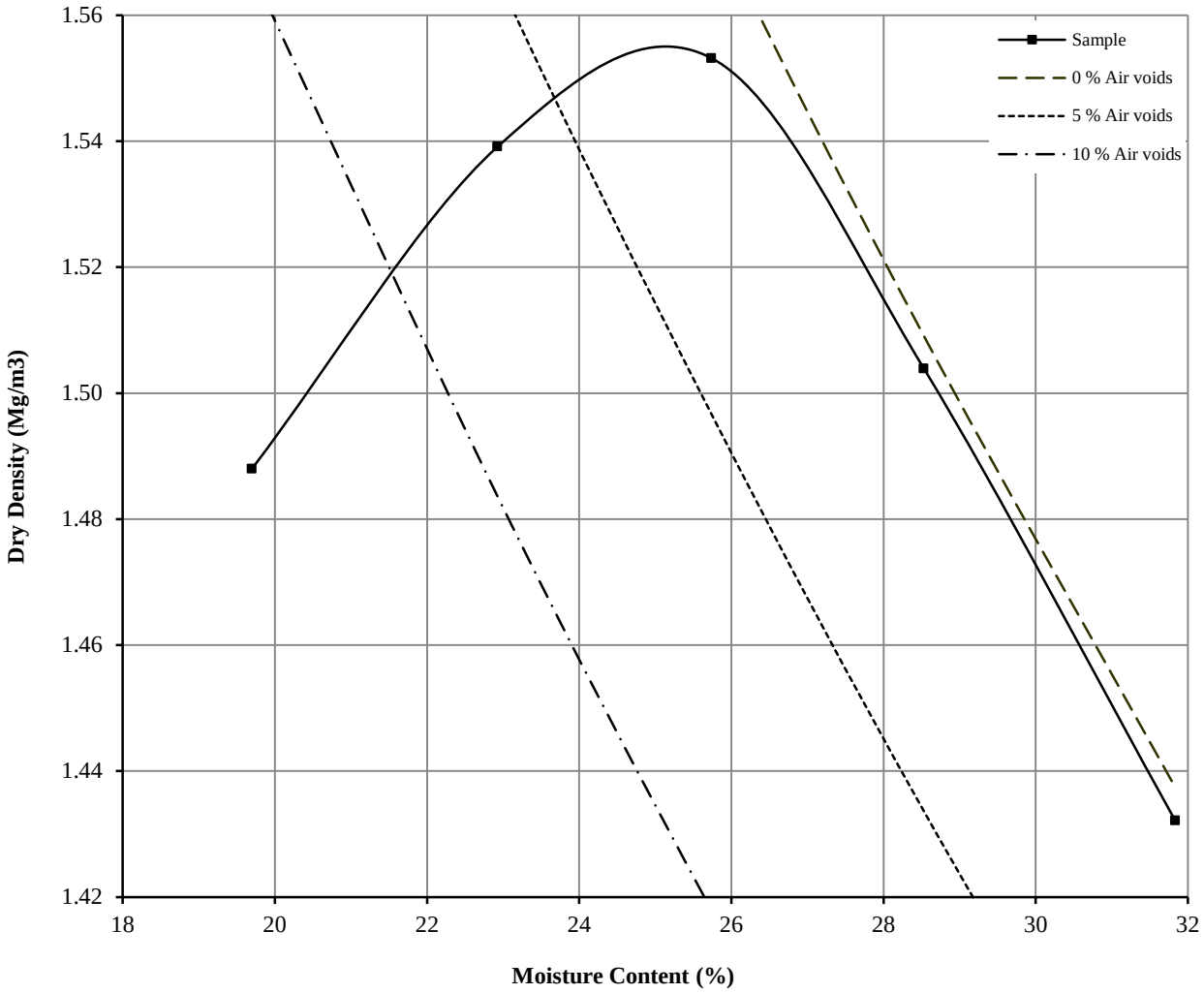



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 9.3 | Method of Compaction: | 4.5kg | Separate Samples |
| Particle Density (Mg/m3): | 2.6 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 3 |
| Maximum Dry Density (Mg/m3): | | 2.09 | Material Retained on 20.0 mm Test Sieve (%): | | 6 |
| Optimum Moisture Content (%): | | 7 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.3 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP167** | **Top Depth (m) :** | **1.00** |
| **Sample Number:** | **5** | **Base Depth (m) :** | **1.30** |
| **Sample Type:** | **B** | | |



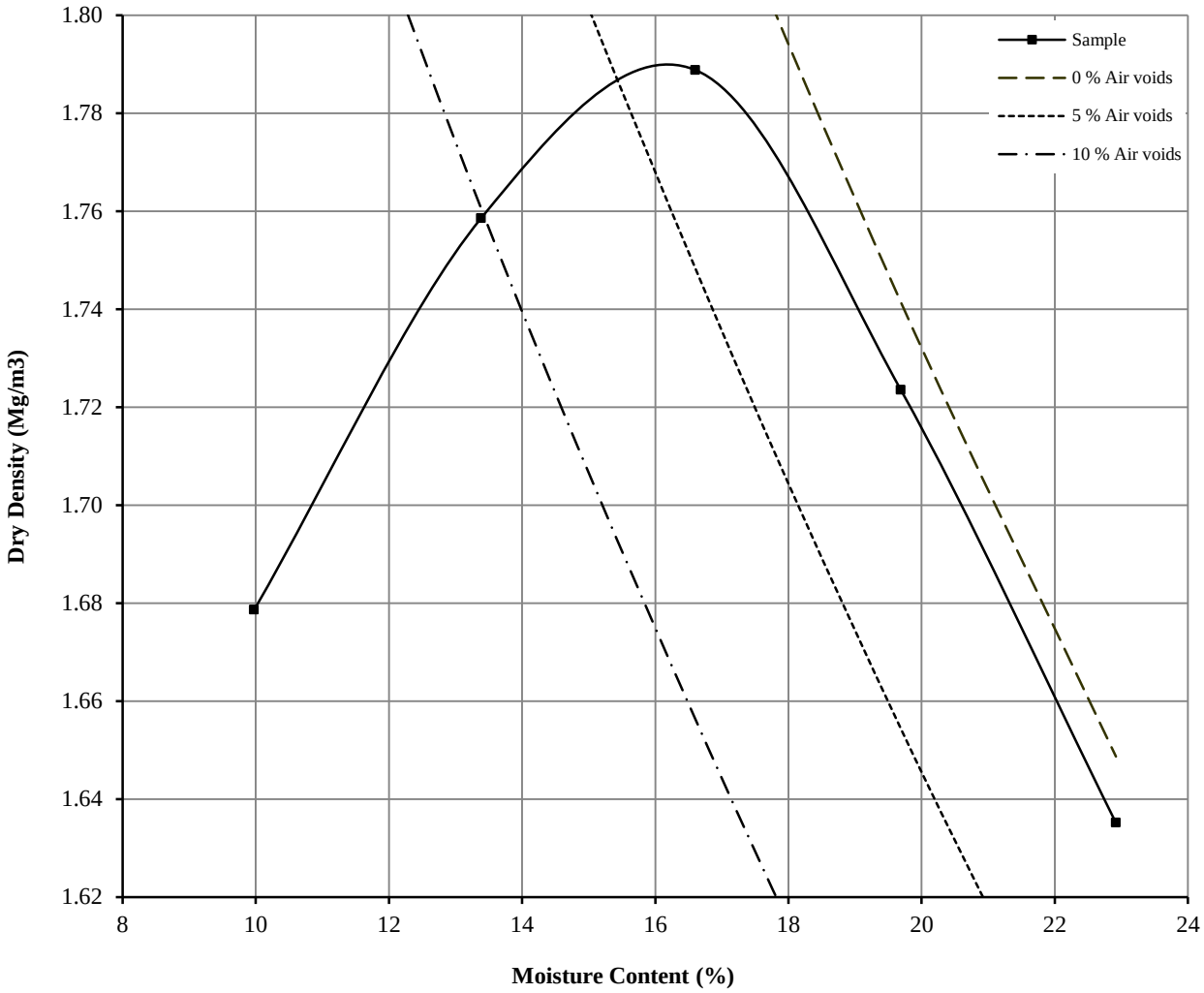

| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 32 | Method of Compaction: | 2.5kg | Separate Samples |
| Particle Density (Mg/m3): | 2.65 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 0 |
| Maximum Dry Density (Mg/m3): | | 1.55 | Material Retained on 20.0 mm Test Sieve (%): | | 3 |
| Optimum Moisture Content (%): | | 26 | | | |
| Remarks See summary of soil descriptions | | | | | |

| | | | |
|---|---|---|---|
| UKAS TESTING 4043 | PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** | **Contract** PSL22/3024 **Client Ref** |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.5 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP170** | **Top Depth (m) :** | **2.00** |
| **Sample Number:** | **7** | **Base Depth (m) :** | **2.30** |
| **Sample Type:** | **B** | | |

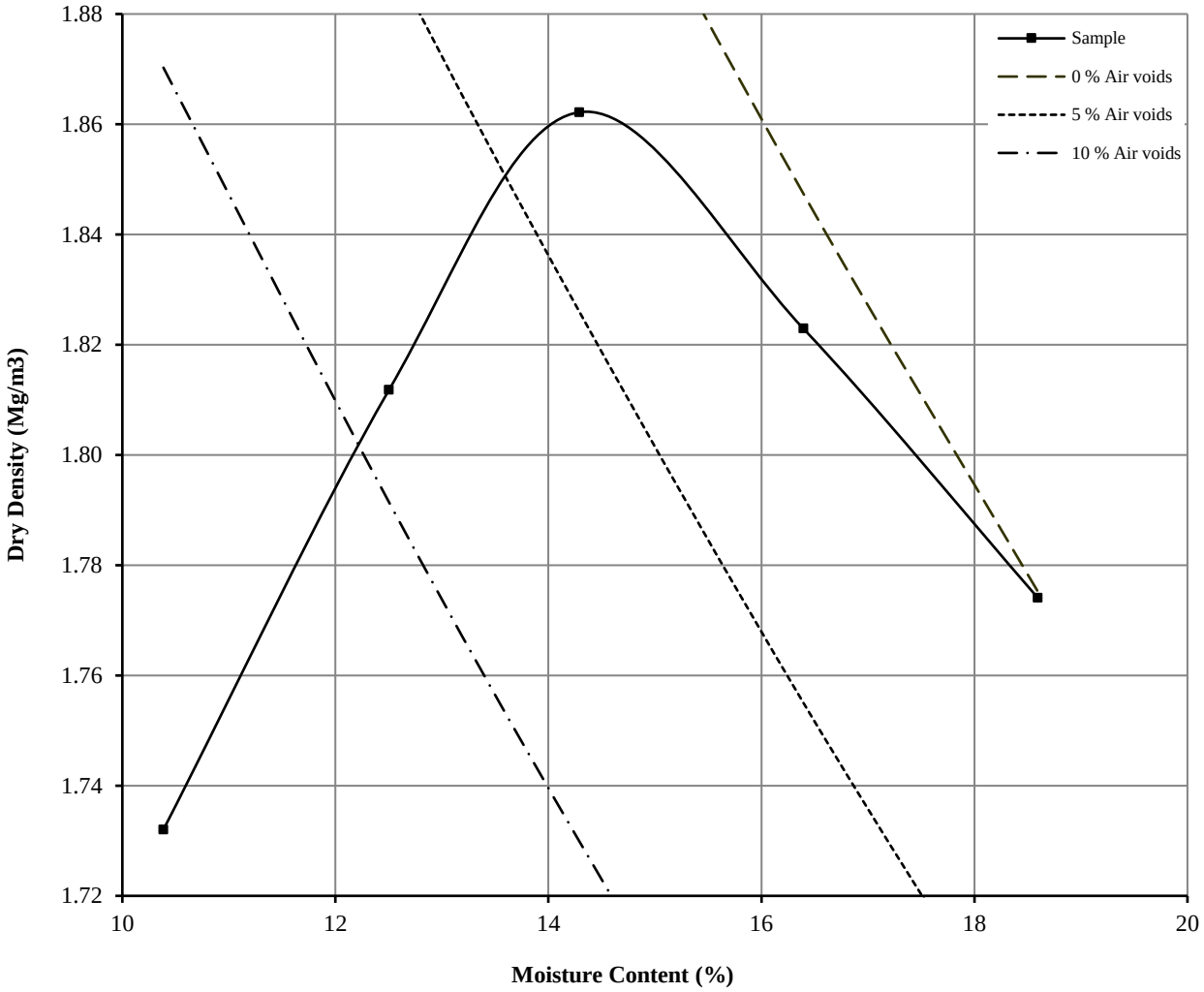



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 20 | Method of Compaction: | 4.5kg | Separate Samples |
| Particle Density (Mg/m3): | 2.65 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 0 |
| Maximum Dry Density (Mg/m3): | | 1.79 | Material Retained on 20.0 mm Test Sieve (%): | | 0 |
| Optimum Moisture Content (%): | | 17 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**Non compliance with BS 1377 : Part 4 : Clause 3.7 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH106** | **Top Depth (m) :** | **3.50** |
| **Sample Number:** | **108** | **Base Depth (m) :** | **4.00** |
| **Sample Type:** | **B** | | |

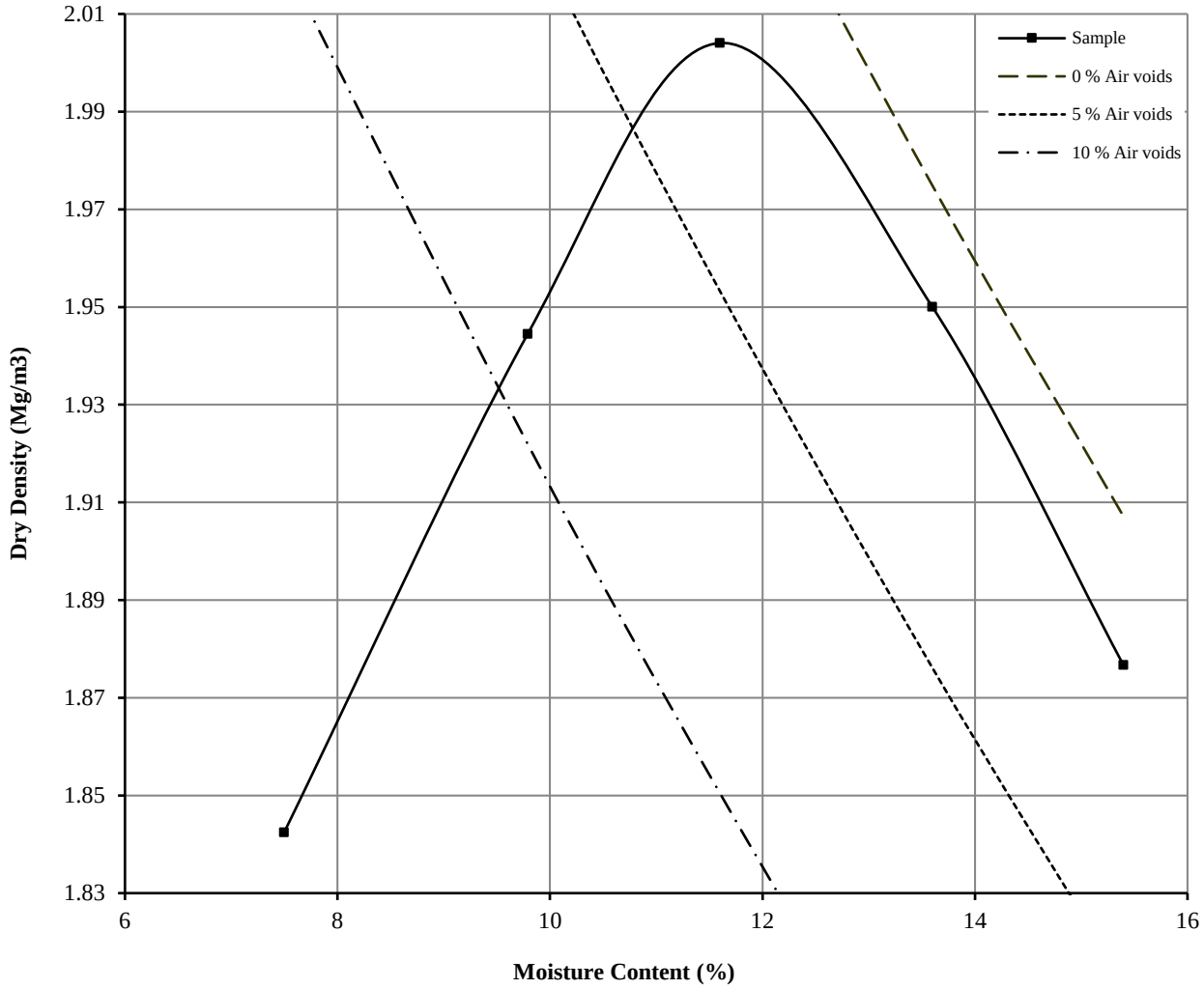



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 19 | Method of Compaction: | Vibro | Separate Samples |
| Particle Density (Mg/m3): | 2.65 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 30 |
| Maximum Dry Density (Mg/m3): | | 1.86 | Material Retained on 20.0 mm Test Sieve (%): | | 15 |
| Optimum Moisture Content (%): | | 14 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**Non compliance with BS 1377 : Part 4 : Clause 3.7 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH108** | **Top Depth (m) :** | **0.30** |
| **Sample Number:** | **3** | **Base Depth (m) :** | **0.70** |
| **Sample Type:** | **B** | | |

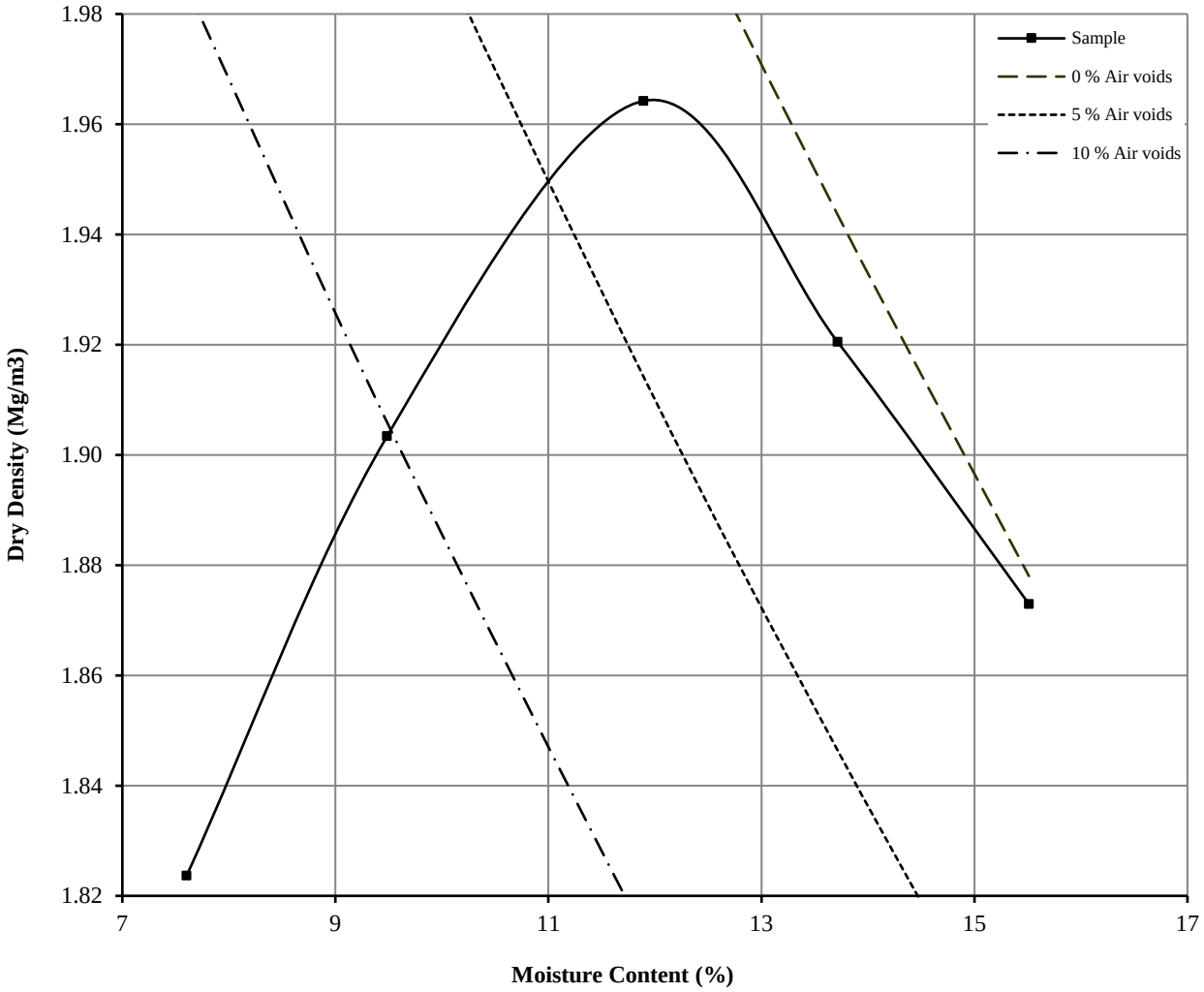



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 9.8 | Method of Compaction: | Vibro | Separate Samples |
| Particle Density (Mg/m3): | 2.7 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 45 |
| Maximum Dry Density (Mg/m3): | | 2.00 | Material Retained on 20.0 mm Test Sieve (%): | | 23 |
| Optimum Moisture Content (%): | | 12 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**Non compliance with BS 1377 : Part 4 : Clause 3.7 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH108** | **Top Depth (m) :** | **0.95** |
| **Sample Number:** | **101** | **Base Depth (m) :** | **1.65** |
| **Sample Type:** | **B** | | |

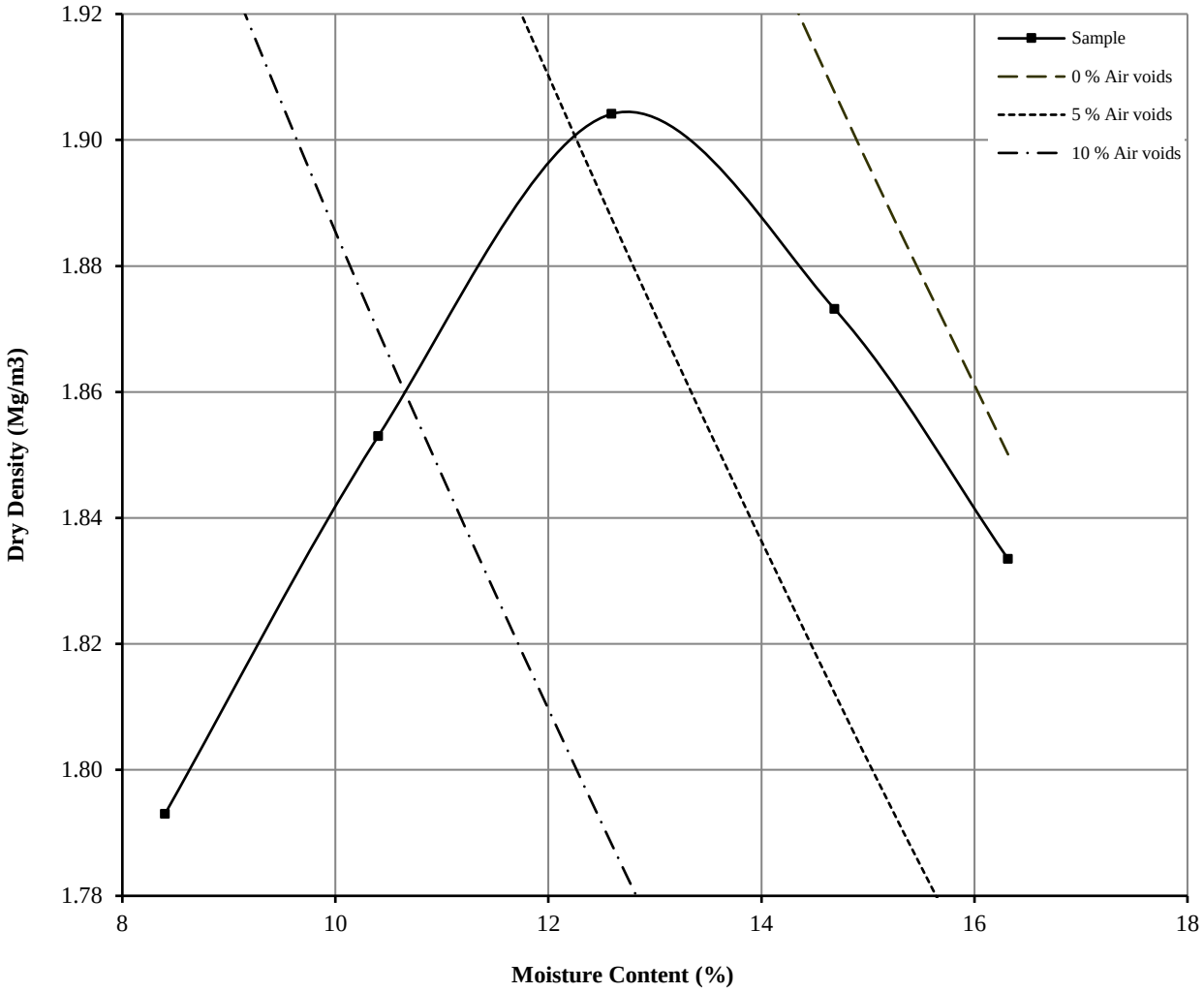



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 7.6 | Method of Compaction: | Vibro | Separate Samples |
| Particle Density (Mg/m3): | 2.65 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 34 |
| Maximum Dry Density (Mg/m3): | | 1.96 | Material Retained on 20.0 mm Test Sieve (%): | | 20 |
| Optimum Moisture Content (%): | | 12 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.5 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH108** | **Top Depth (m) :** | **7.00** |
| **Sample Number:** | **107** | **Base Depth (m) :** | **8.00** |
| **Sample Type:** | **B** | | |

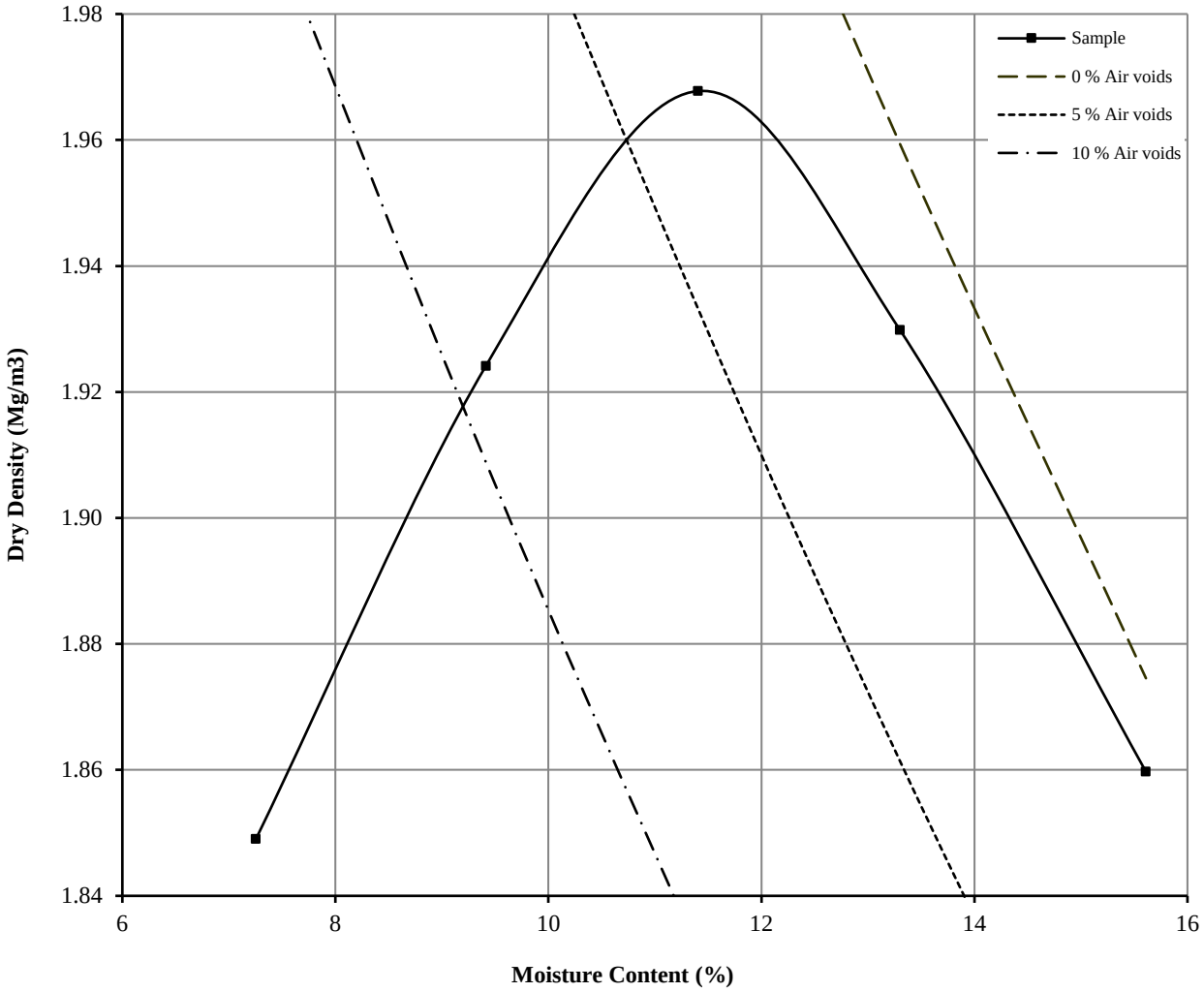



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 13 | Method of Compaction: | Vibro | Separate Samples |
| Particle Density (Mg/m3): | 2.65 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 0 |
| Maximum Dry Density (Mg/m3): | | 1.90 | Material Retained on 20.0 mm Test Sieve (%): | | 0 |
| Optimum Moisture Content (%): | | 13 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**Non compliance with BS 1377 : Part 4 : Clause 3.7 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH109** | **Top Depth (m) :** | **0.30** |
| **Sample Number:** | **6** | **Base Depth (m) :** | **0.50** |
| **Sample Type:** | **B** | | |

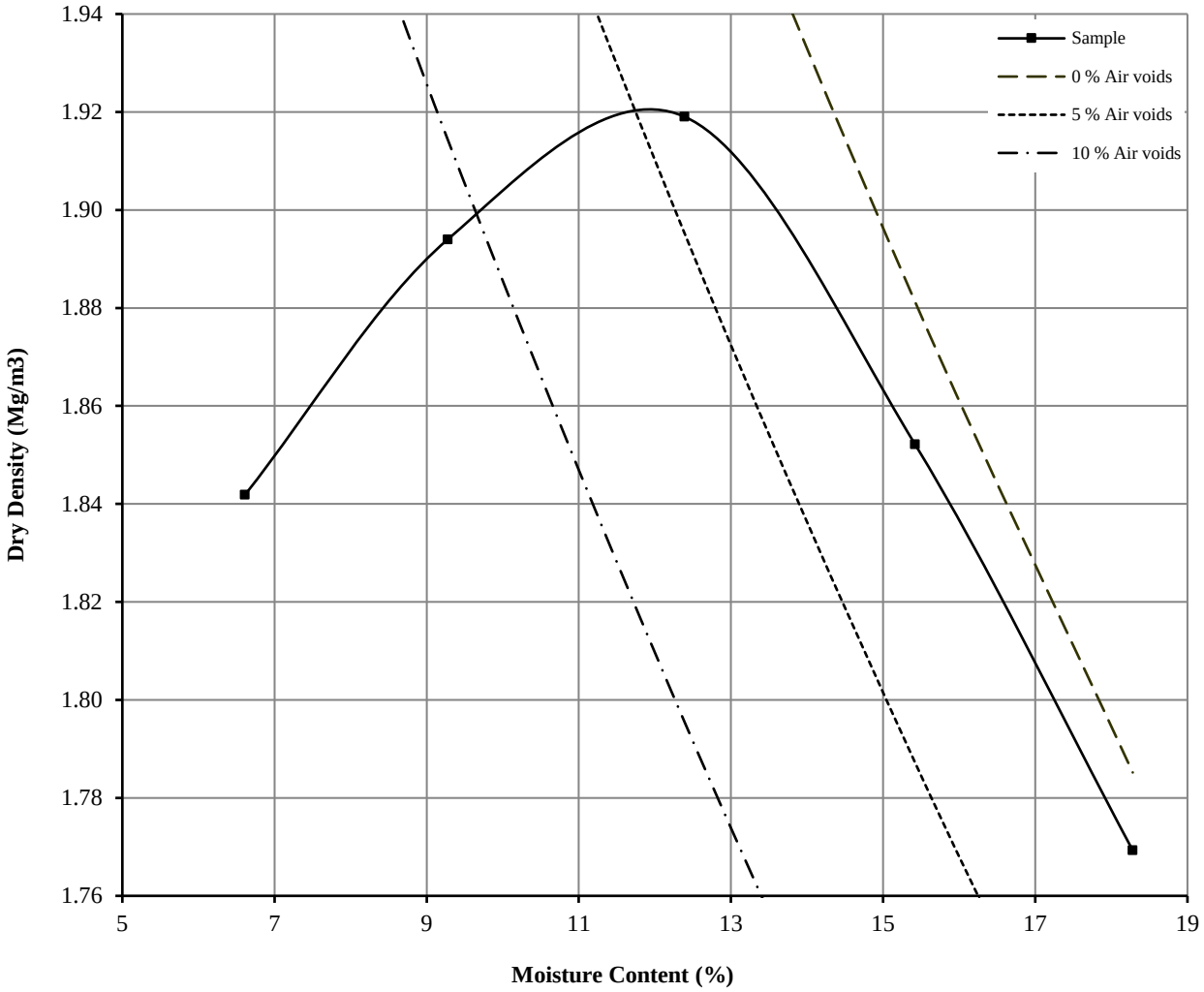



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 13 | Method of Compaction: | Vibro | Separate Samples |
| Particle Density (Mg/m3): | 2.65 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 62 |
| Maximum Dry Density (Mg/m3): | | 1.97 | Material Retained on 20.0 mm Test Sieve (%): | | 7 |
| Optimum Moisture Content (%): | | 11 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.3 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH117** | **Top Depth (m) :** | **1.50** |
| **Sample Number:** | **3** | **Base Depth (m) :** | **2.00** |
| **Sample Type:** | **B** | | |

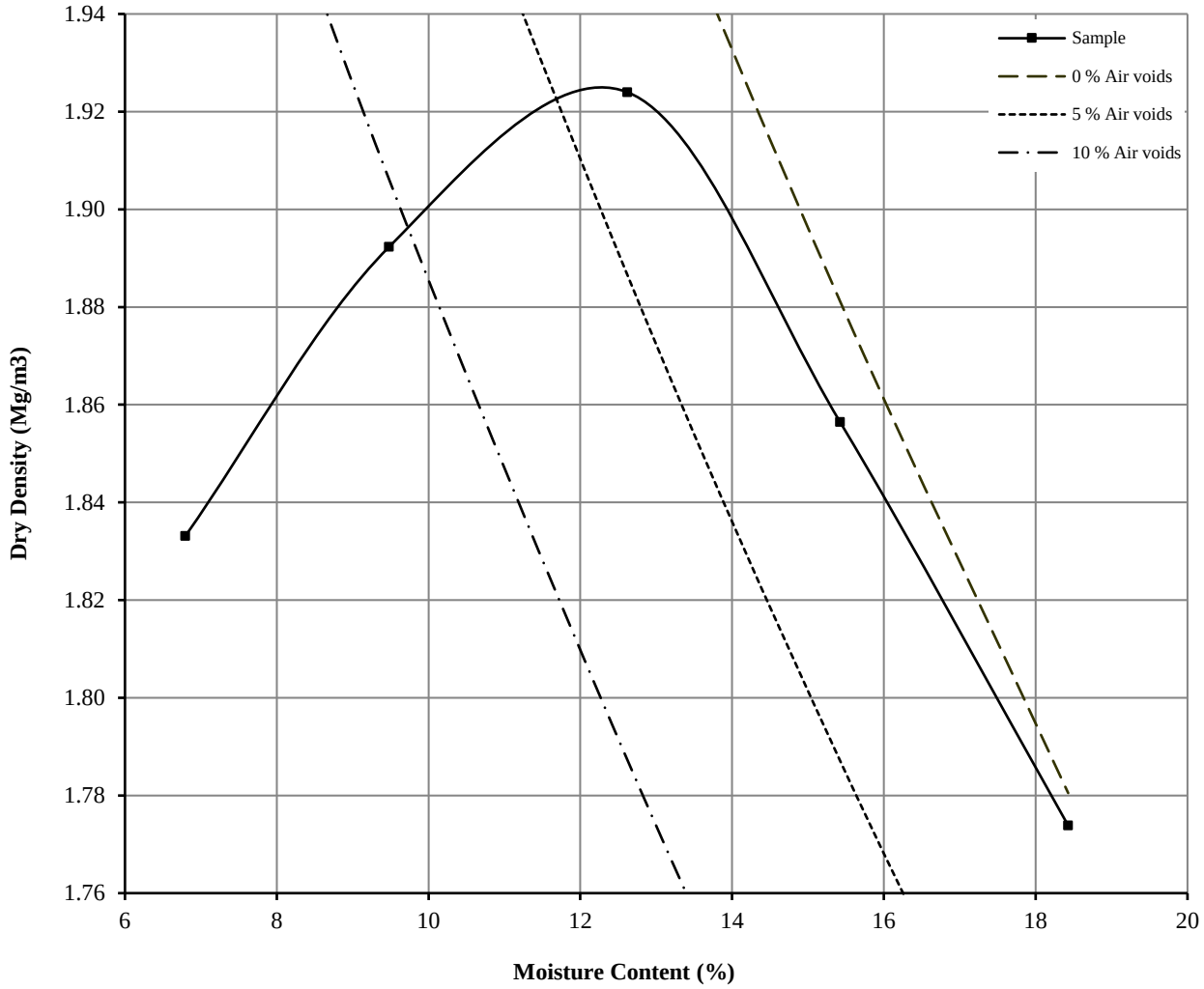



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 15 | Method of Compaction: | 2.5kg | Separate Samples |
| Particle Density (Mg/m3): | 2.65 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 0 |
| Maximum Dry Density (Mg/m3): | | 1.92 | Material Retained on 20.0 mm Test Sieve (%): | | 2 |
| Optimum Moisture Content (%): | | 12 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.3 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH117** | **Top Depth (m) :** | **3.50** |
| **Sample Number:** | **5** | **Base Depth (m) :** | **4.00** |
| **Sample Type:** | **B** | | |

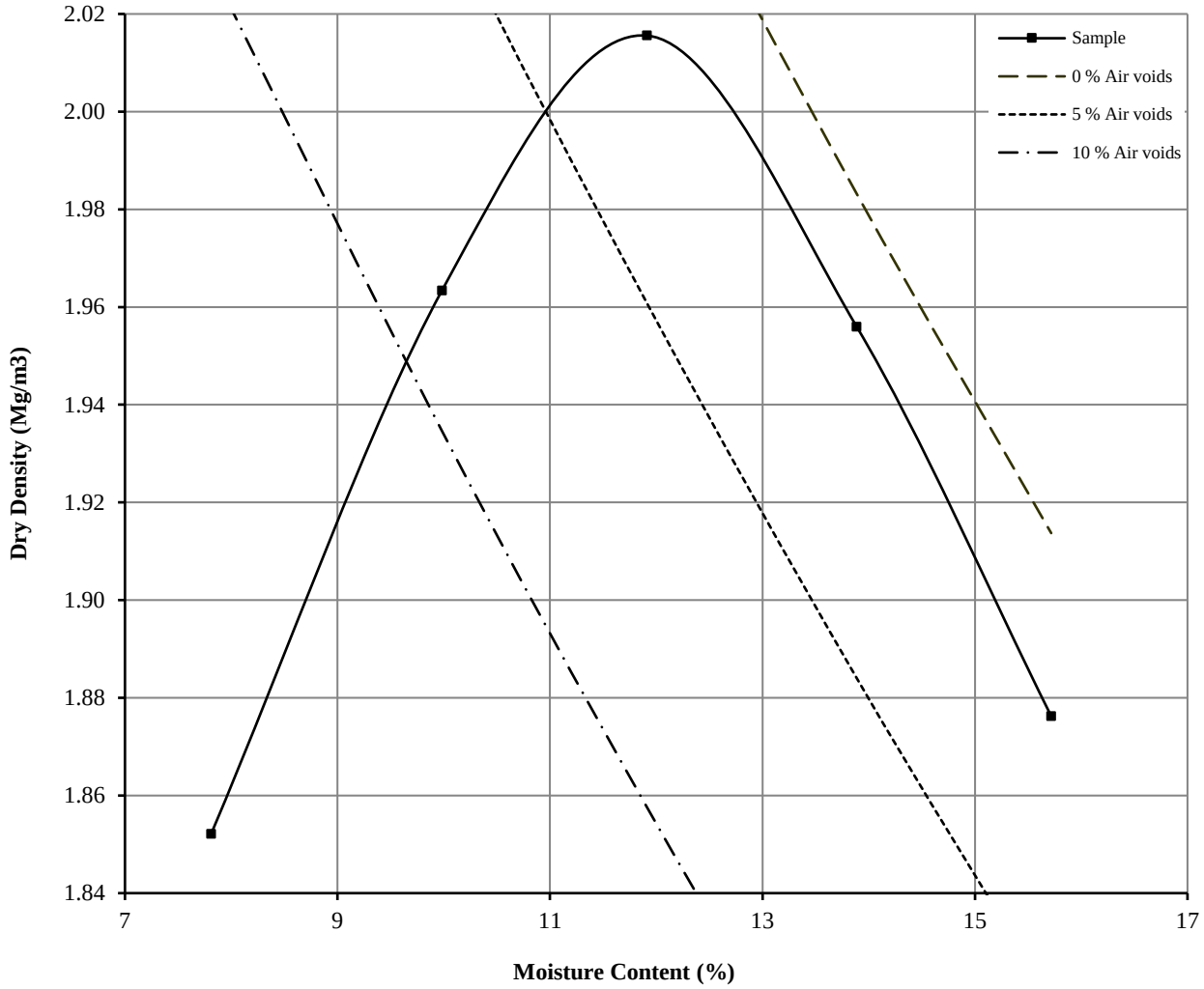



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 18 | Method of Compaction: | 2.5kg | Separate Samples |
| Particle Density (Mg/m3): | 2.65 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 4 |
| Maximum Dry Density (Mg/m3): | | 1.92 | Material Retained on 20.0 mm Test Sieve (%): | | 1 |
| Optimum Moisture Content (%): | | 13 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**Non compliance with BS 1377 : Part 4 : Clause 3.7 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH132** | **Top Depth (m) :** | **0.20** |
| **Sample Number:** | **1** | **Base Depth (m) :** | **0.60** |
| **Sample Type:** | **B** | | |

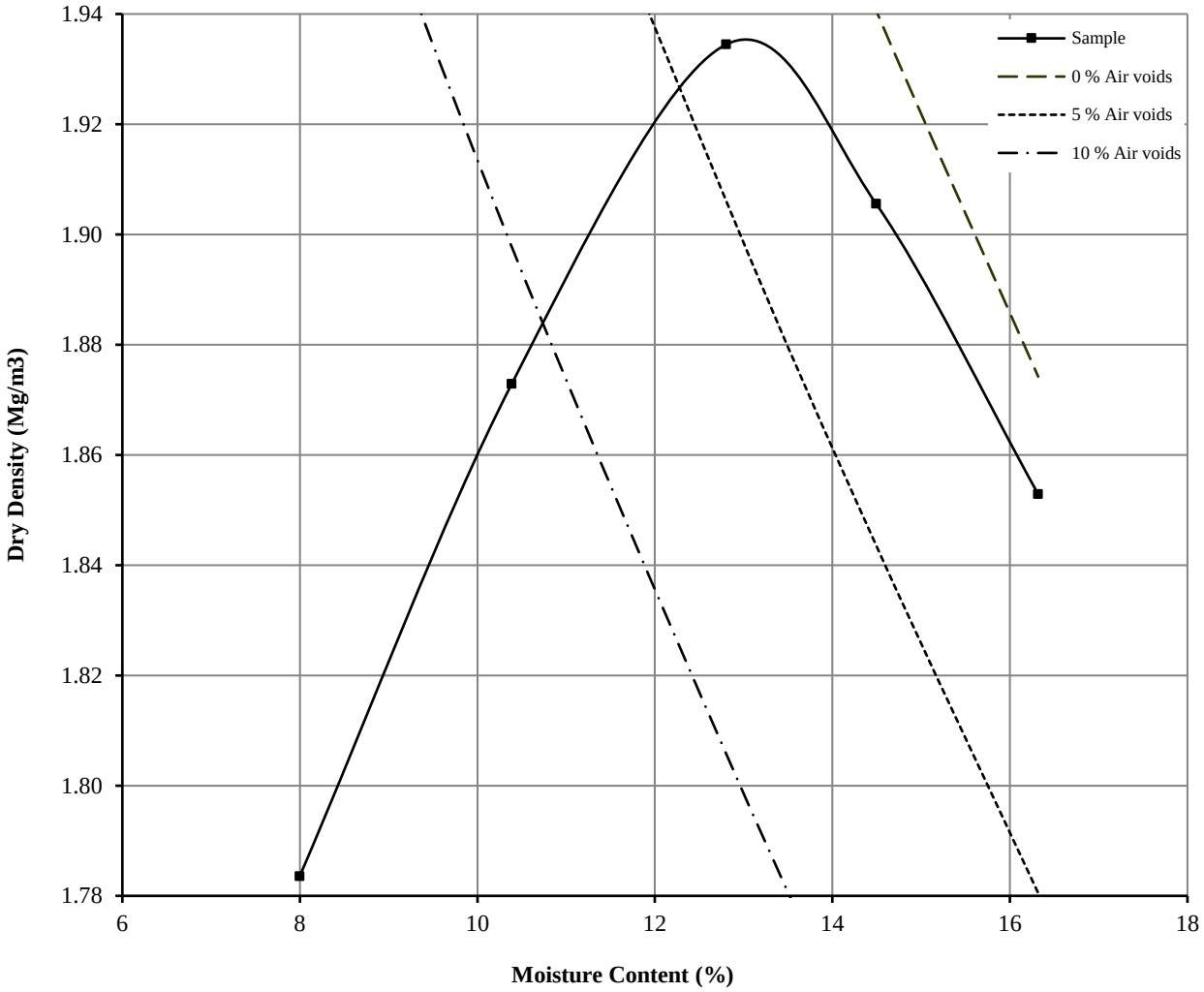



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 11 | Method of Compaction: | Vibro | Separate Samples |
| Particle Density (Mg/m3): | 2.7 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 15 |
| Maximum Dry Density (Mg/m3): | | 2.02 | Material Retained on 20.0 mm Test Sieve (%): | | 14 |
| Optimum Moisture Content (%): | | 11 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.7 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP132** | **Top Depth (m) :** | **2.00** |
| **Sample Number:** | **7** | **Base Depth (m) :** | **2.30** |
| **Sample Type:** | **B** | | |

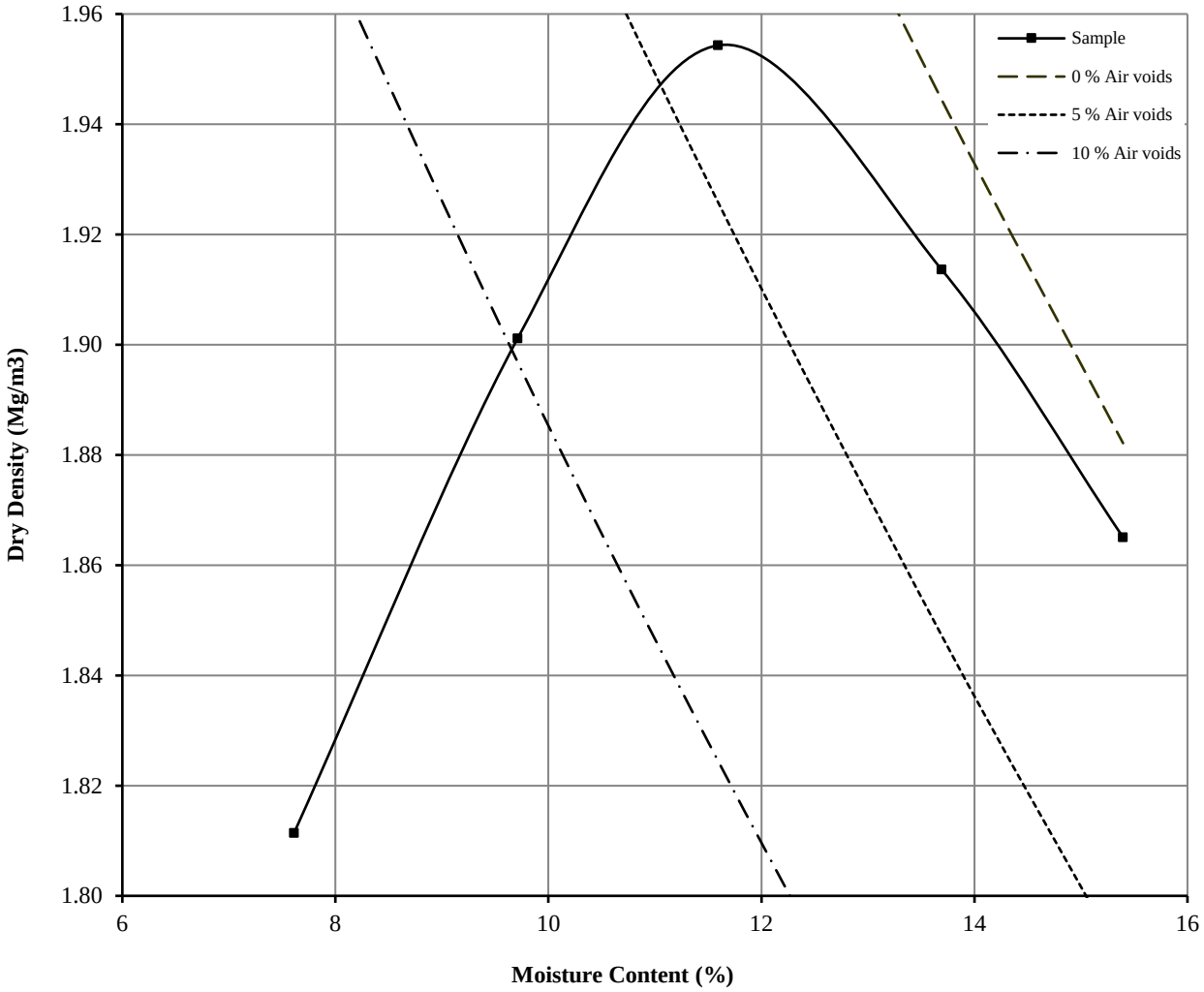



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 8.0 | Method of Compaction: | Vibro | Separate Samples |
| Particle Density (Mg/m3): | 2.7 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 9 |
| Maximum Dry Density (Mg/m3): | | 1.93 | Material Retained on 20.0 mm Test Sieve (%): | | 6 |
| Optimum Moisture Content (%): | | 13 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.7 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP133** | **Top Depth (m) :** | **1.70** |
| **Sample Number:** | **7** | **Base Depth (m) :** | **2.00** |
| **Sample Type:** | **B** | | |

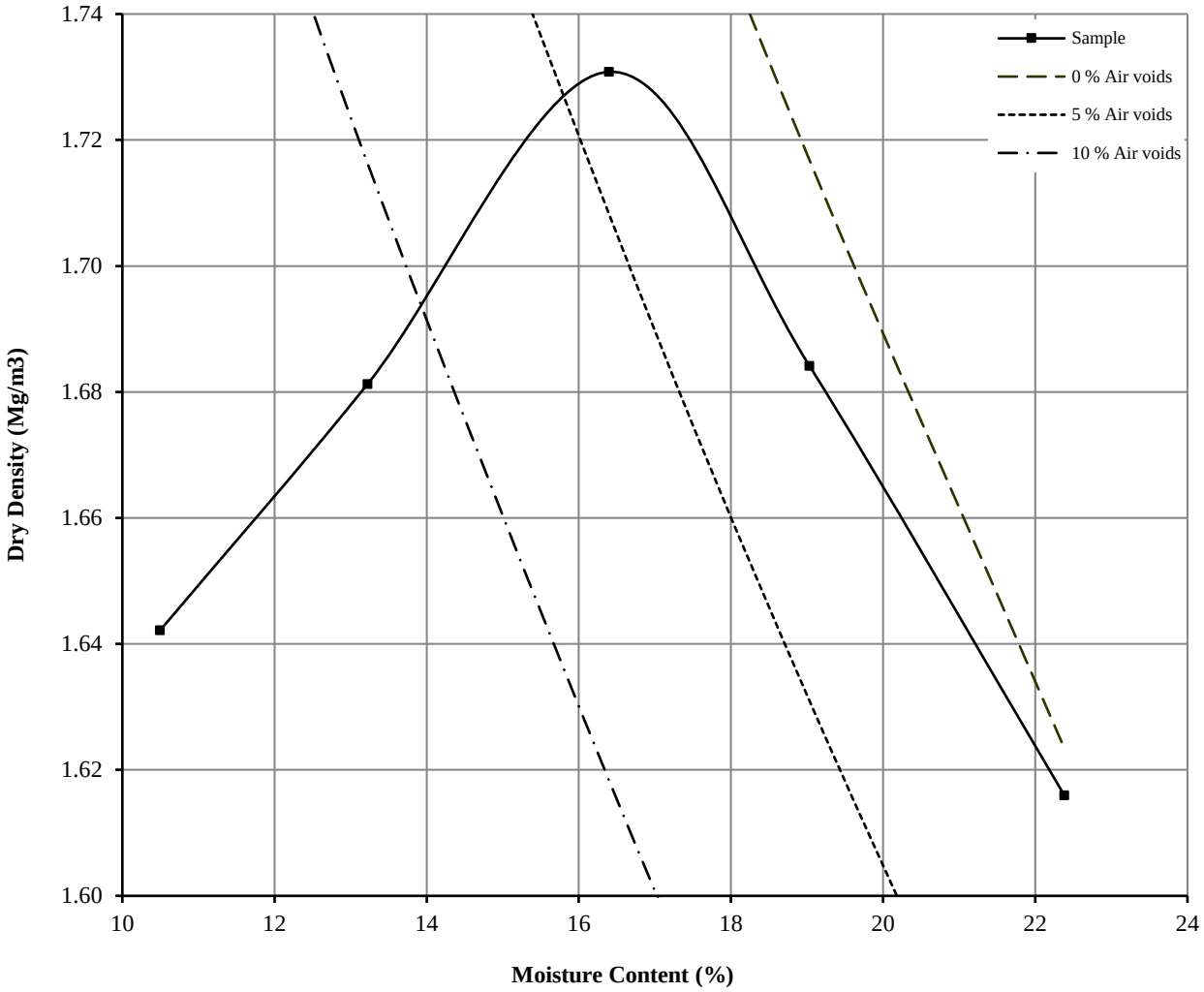



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 9.7 | Method of Compaction: | Vibro | Separate Samples |
| Particle Density (Mg/m3): | 2.65 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 0 |
| Maximum Dry Density (Mg/m3): | | 1.95 | Material Retained on 20.0 mm Test Sieve (%): | | 14 |
| Optimum Moisture Content (%): | | 12 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.3 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP134** | **Top Depth (m) :** | **0.50** |
| **Sample Number:** | **5** | **Base Depth (m) :** | **0.80** |
| **Sample Type:** | **B** | | |

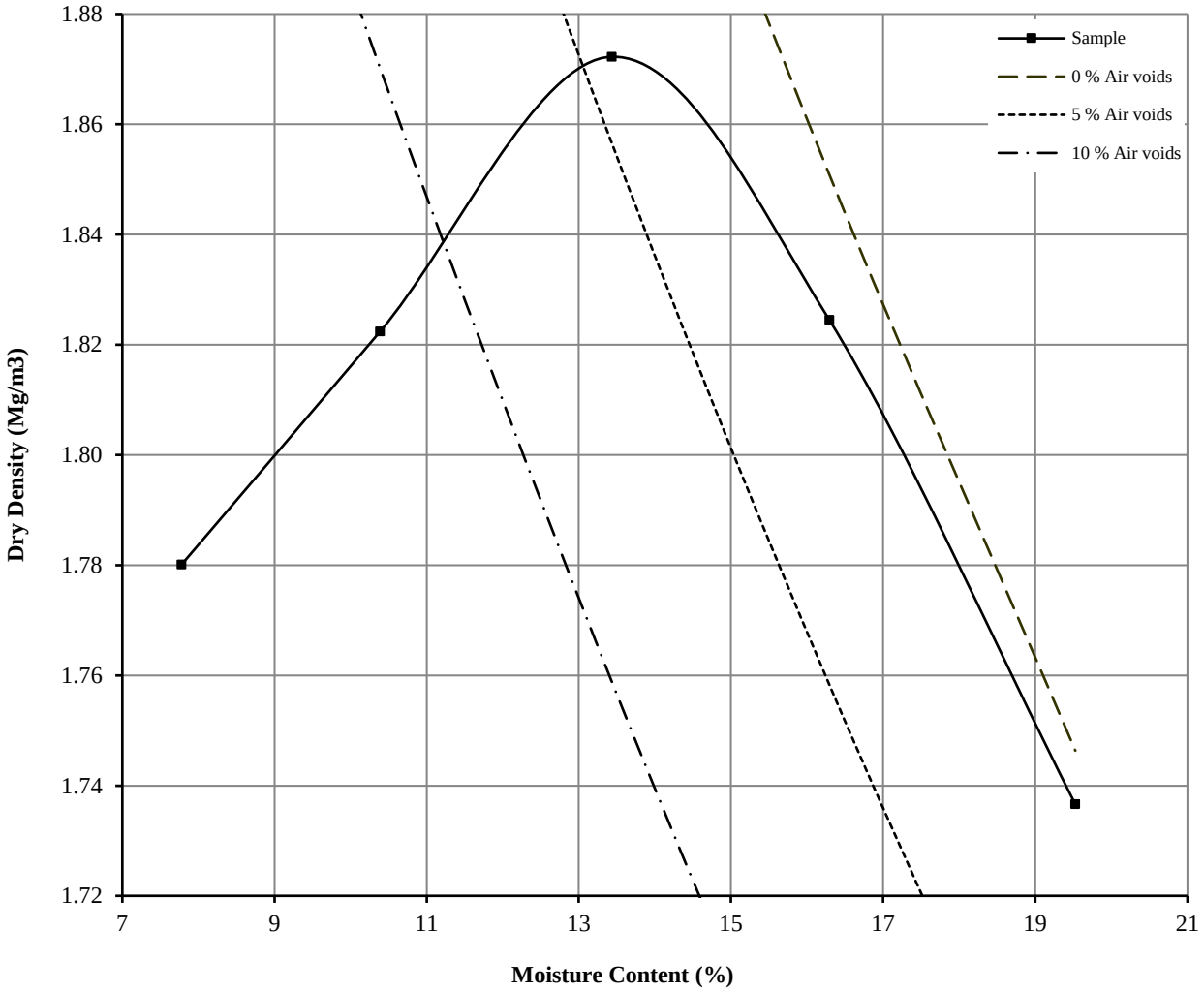



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 19 | Method of Compaction: | 2.5kg | Separate Samples |
| Particle Density (Mg/m3): | 2.55 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 0 |
| Maximum Dry Density (Mg/m3): | | 1.73 | Material Retained on 20.0 mm Test Sieve (%): | | 2 |
| Optimum Moisture Content (%): | | 16 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.5 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP153** | **Top Depth (m) :** | **1.00** |
| **Sample Number:** | **6** | **Base Depth (m) :** | **1.30** |
| **Sample Type:** | **B** | | |

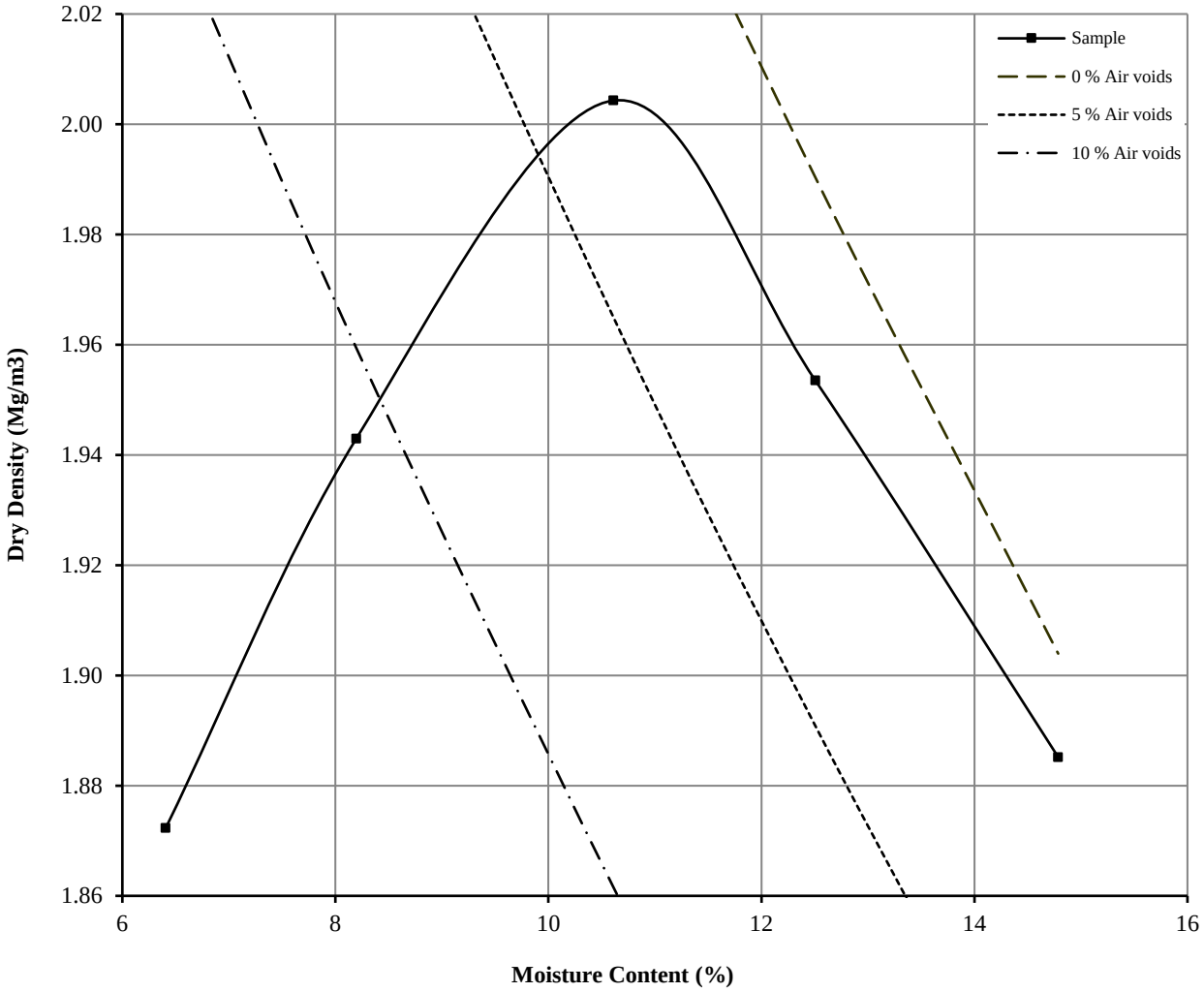



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 16 | Method of Compaction: | 4.5kg | Separate Samples |
| Particle Density (Mg/m3): | 2.65 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 0 |
| Maximum Dry Density (Mg/m3): | | 1.87 | Material Retained on 20.0 mm Test Sieve (%): | | 0 |
| Optimum Moisture Content (%): | | 13 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.5 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP153** | **Top Depth (m) :** | **2.30** |
| **Sample Number:** | **8** | **Base Depth (m) :** | **2.60** |
| **Sample Type:** | **B** | | |

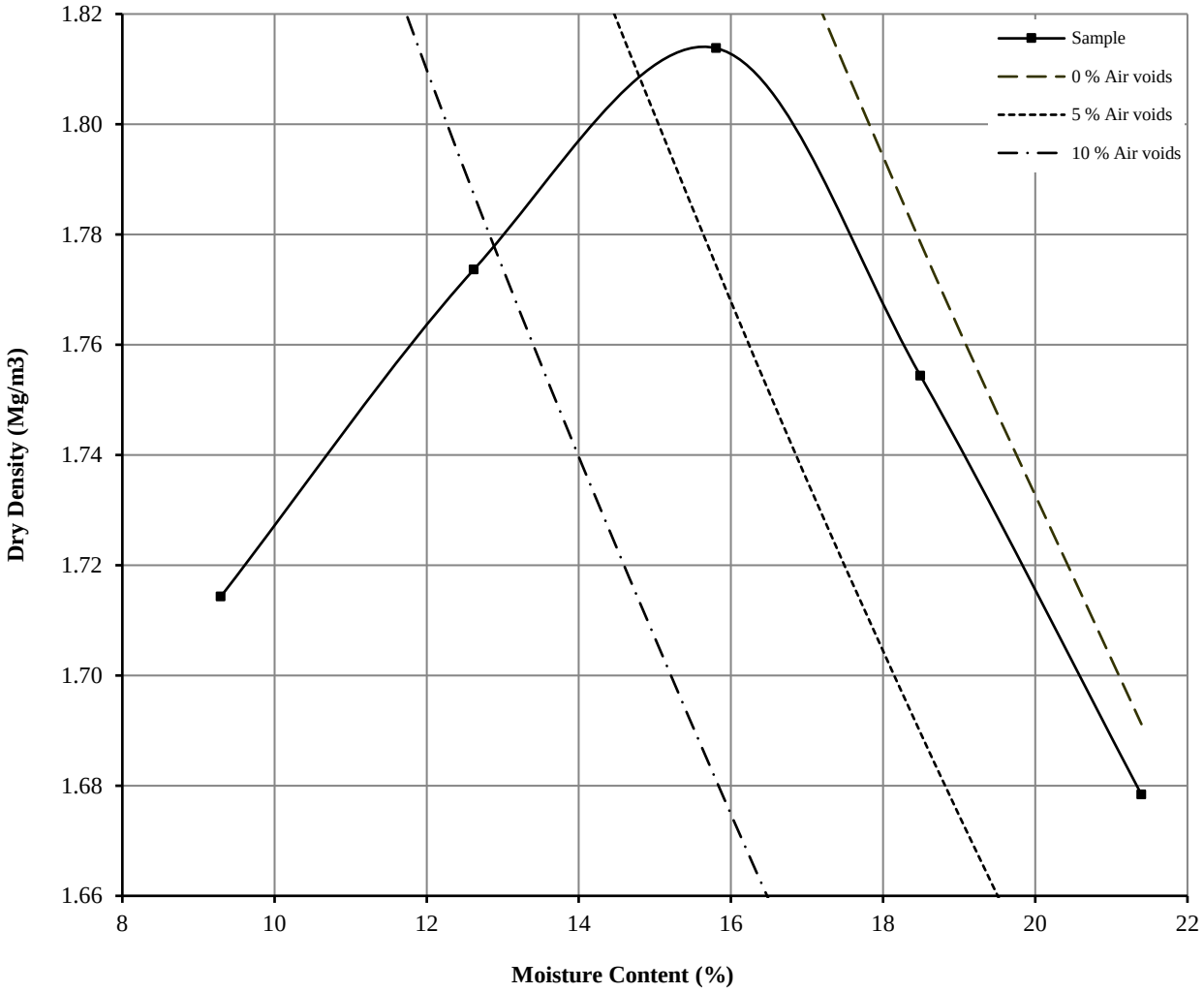



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 8.2 | Method of Compaction: | Vibro | Separate Samples |
| Particle Density (Mg/m3): | 2.65 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 0 |
| Maximum Dry Density (Mg/m3): | | 2.00 | Material Retained on 20.0 mm Test Sieve (%): | | 2 |
| Optimum Moisture Content (%): | | 11 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.3 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP156** | **Top Depth (m) :** | **1.00** |
| **Sample Number:** | **5** | **Base Depth (m) :** | **1.30** |
| **Sample Type:** | **B** | | |

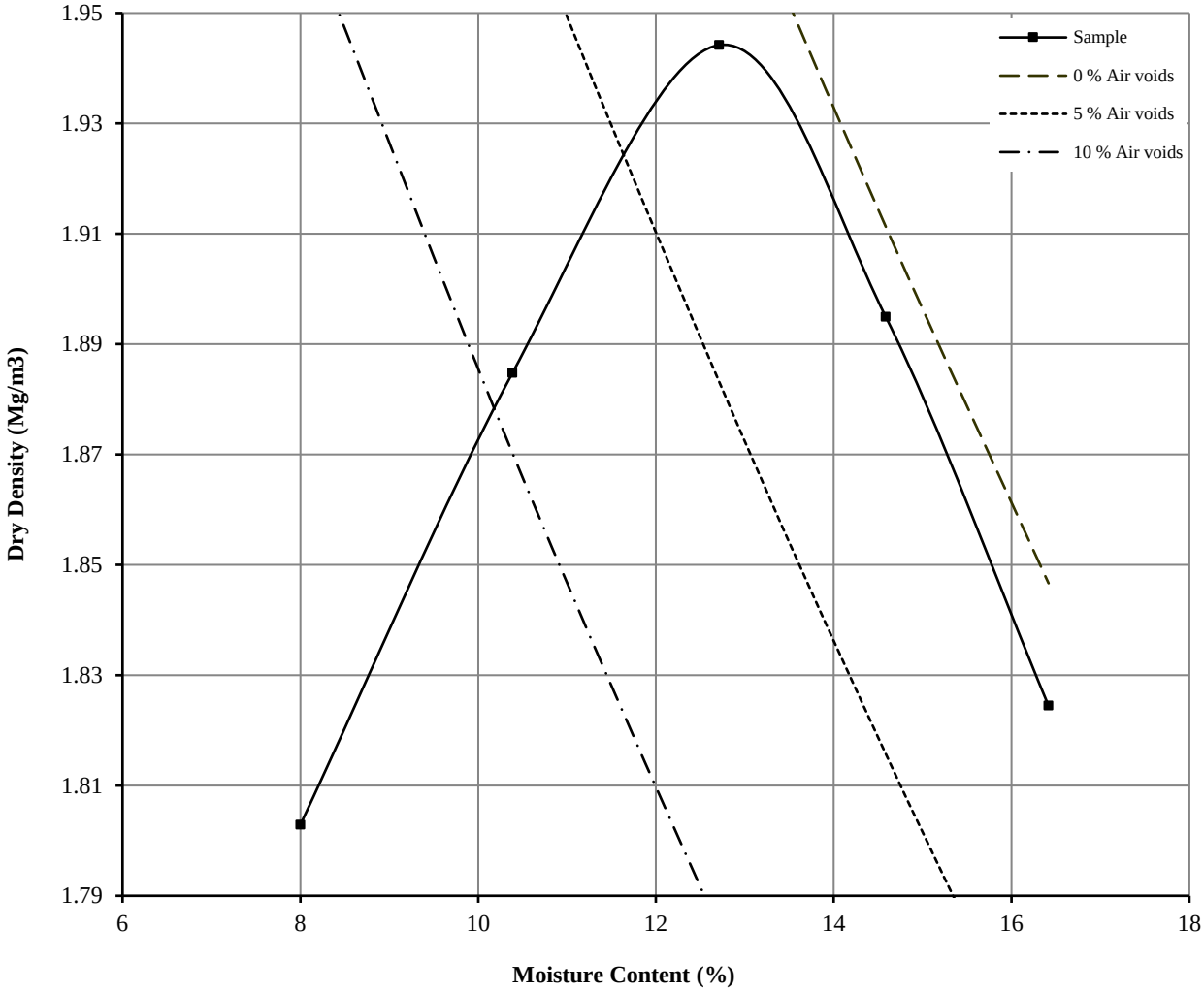



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 16 | Method of Compaction: | 2.5kg | Separate Samples |
| Particle Density (Mg/m3): | 2.65 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 1 |
| Maximum Dry Density (Mg/m3): | | 1.81 | Material Retained on 20.0 mm Test Sieve (%): | | 1 |
| Optimum Moisture Content (%): | | 16 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.7 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP156** | **Top Depth (m) :** | **2.00** |
| **Sample Number:** | **7** | **Base Depth (m) :** | **2.30** |
| **Sample Type:** | **B** | | |

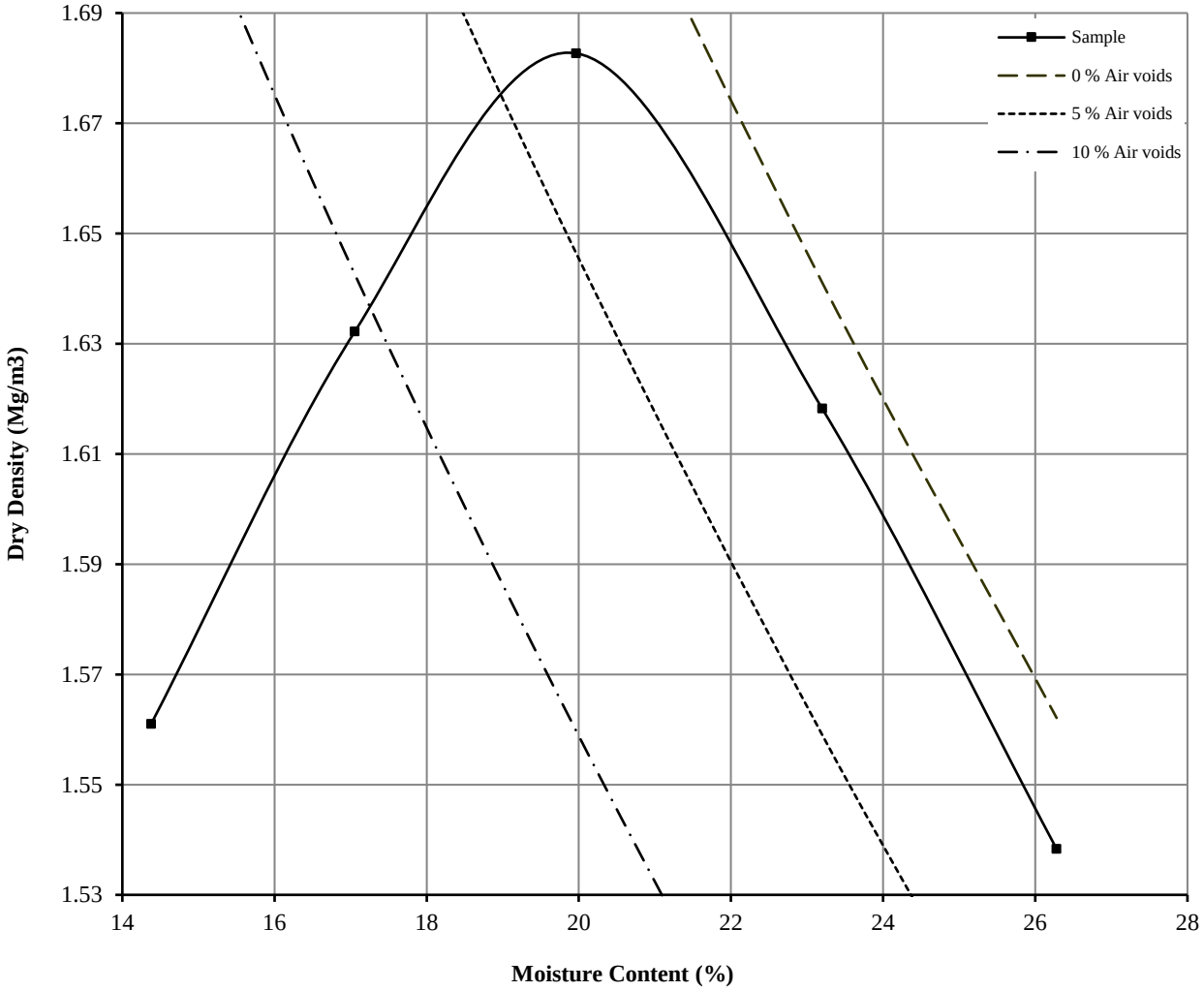



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 8.0 | Method of Compaction: | Vibro | Separate Samples |
| Particle Density (Mg/m3): | 2.65 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 3 |
| Maximum Dry Density (Mg/m3): | | 1.94 | Material Retained on 20.0 mm Test Sieve (%): | | 6 |
| Optimum Moisture Content (%): | | 13 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.3 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP157** | **Top Depth (m) :** | **1.00** |
| **Sample Number:** | **5** | **Base Depth (m) :** | **1.30** |
| **Sample Type:** | **B** | | |

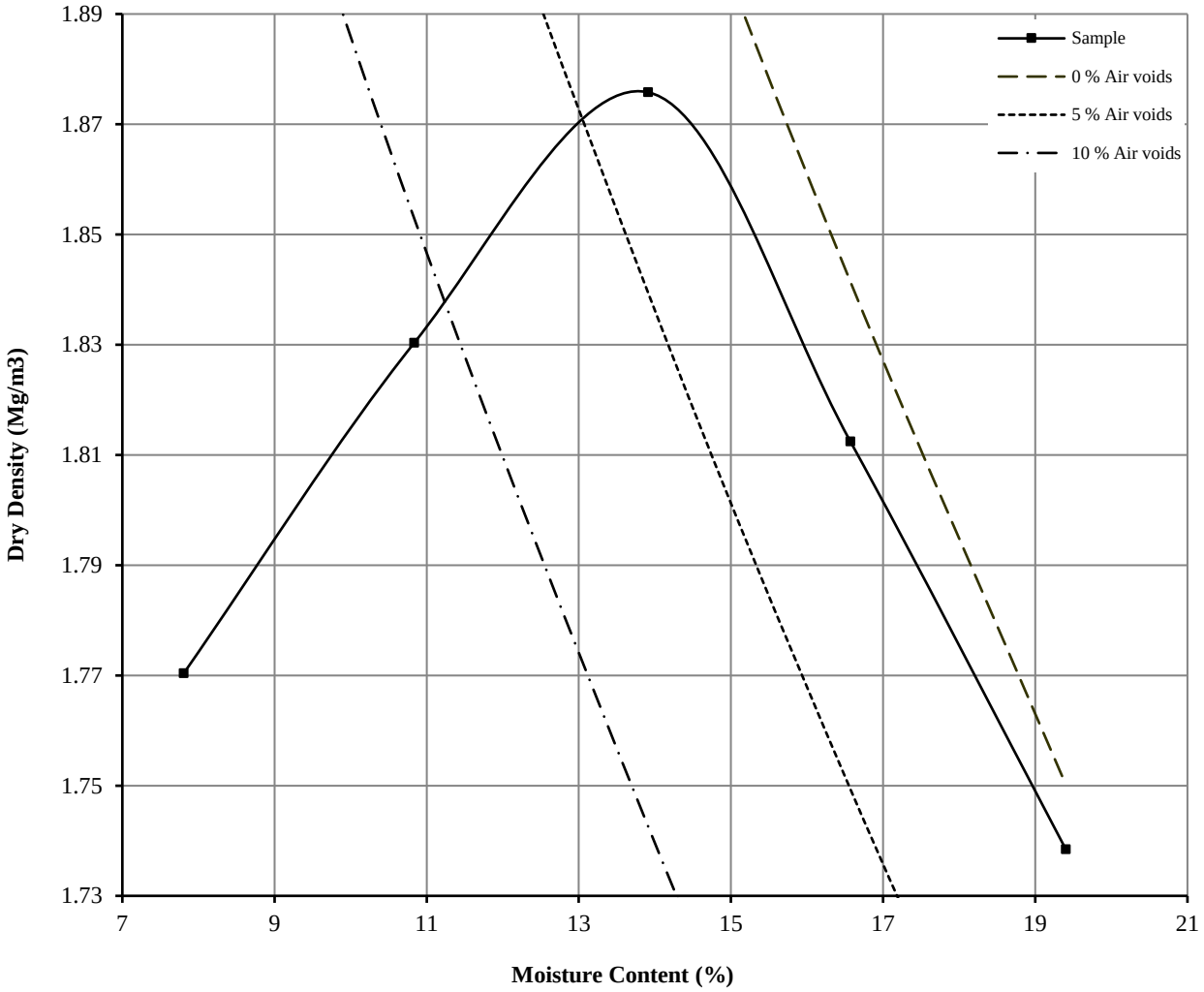



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 23 | Method of Compaction: | 2.5kg | Separate Samples |
| Particle Density (Mg/m3): | 2.65 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 0 |
| Maximum Dry Density (Mg/m3): | | 1.68 | Material Retained on 20.0 mm Test Sieve (%): | | 0 |
| Optimum Moisture Content (%): | | 20 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.3 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP151** | **Top Depth (m) :** | **1.00** |
| **Sample Number:** | **5** | **Base Depth (m) :** | **1.30** |
| **Sample Type:** | **B** | | |

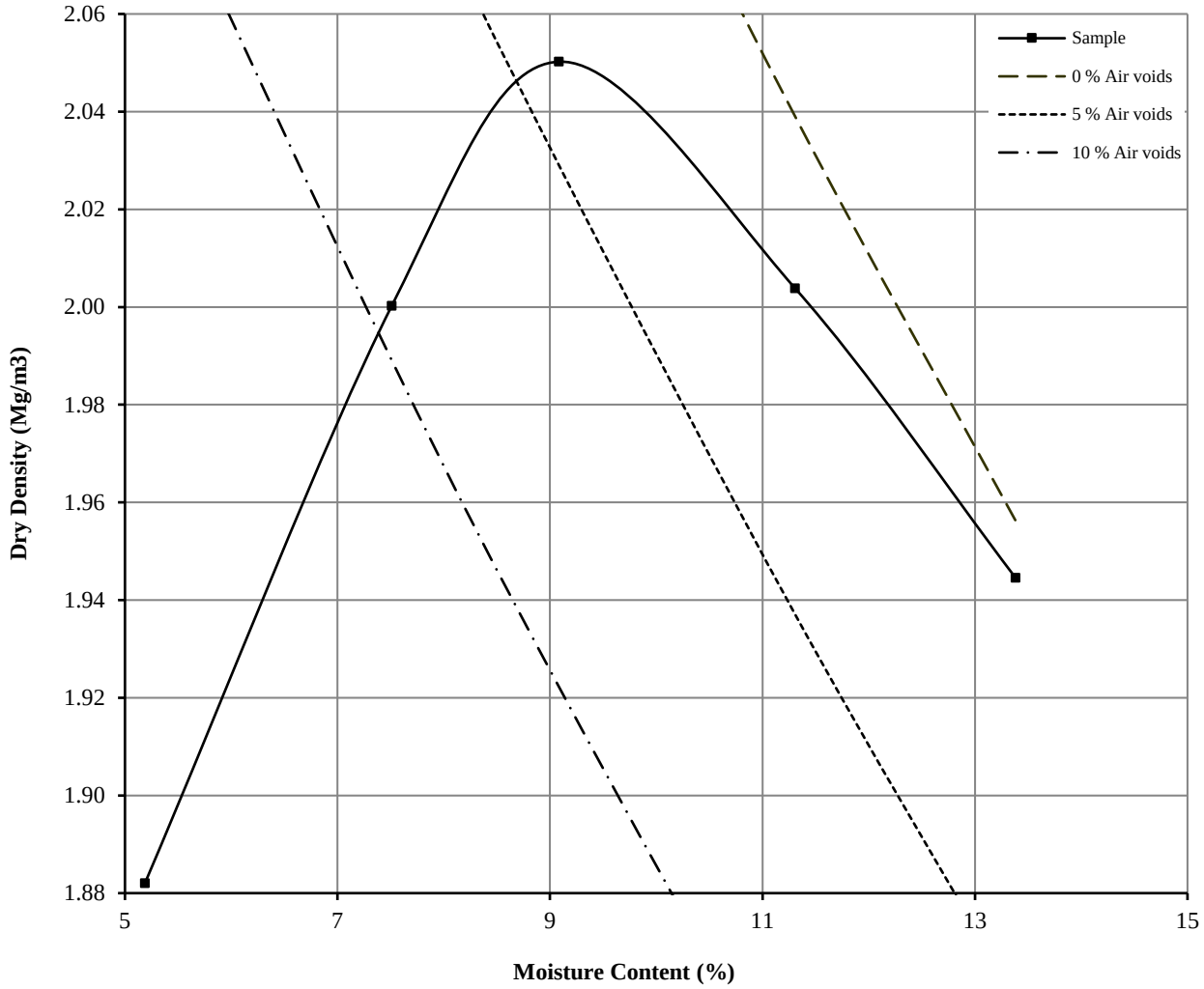



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 17 | Method of Compaction: | 2.5kg | Separate Samples |
| Particle Density (Mg/m3): | 2.65 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 0 |
| Maximum Dry Density (Mg/m3): | | 1.88 | Material Retained on 20.0 mm Test Sieve (%): | | 0 |
| Optimum Moisture Content (%): | | 14 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.5 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP151** | **Top Depth (m) :** | **2.10** |
| **Sample Number:** | **7** | **Base Depth (m) :** | **2.40** |
| **Sample Type:** | **B** | | |

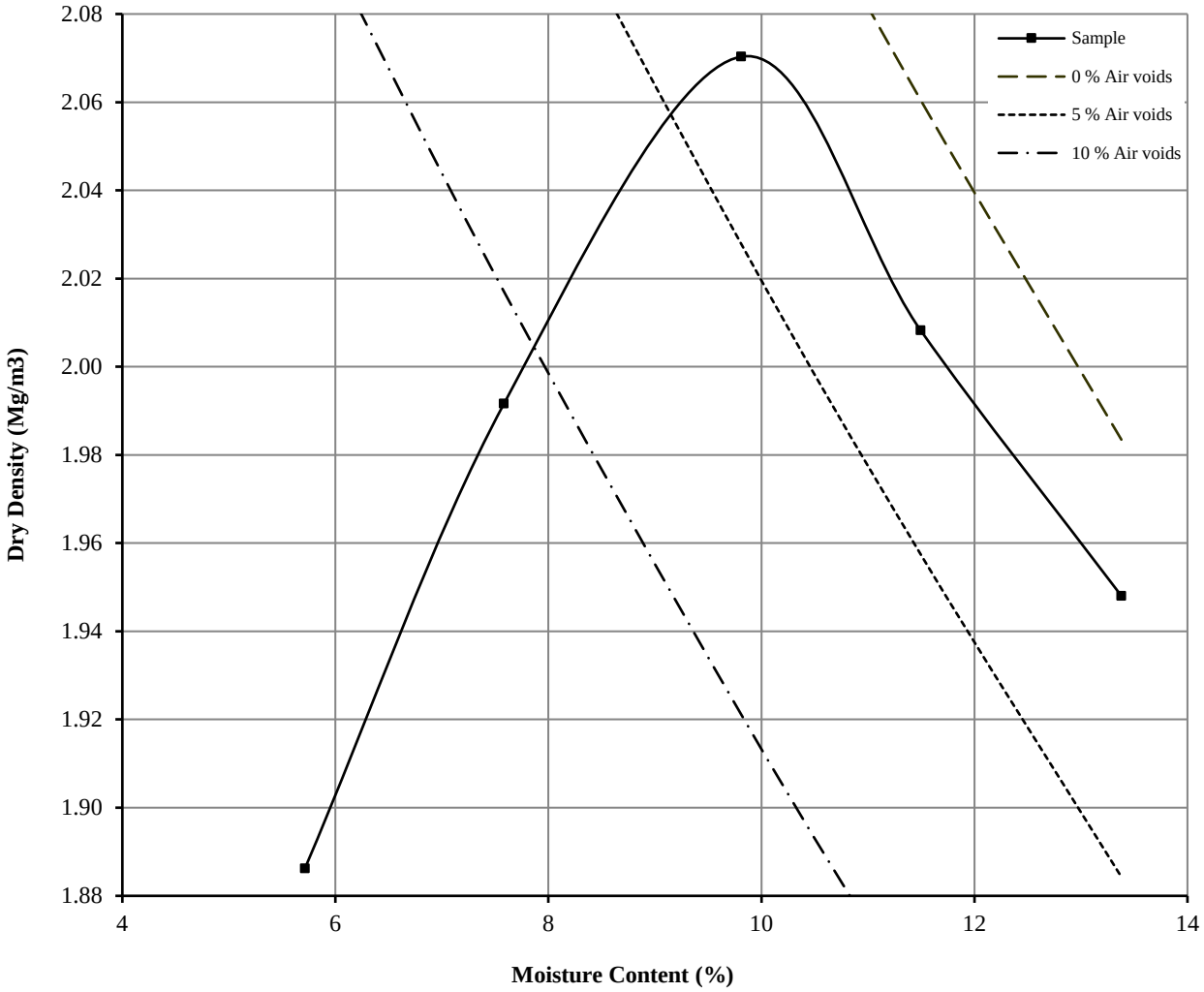



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 9.1 | Method of Compaction: | Vibro | Separate Samples |
| Particle Density (Mg/m3): | 2.65 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 0 |
| Maximum Dry Density (Mg/m3): | | 2.05 | Material Retained on 20.0 mm Test Sieve (%): | | 1 |
| Optimum Moisture Content (%): | | 9 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.7 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP152** | **Top Depth (m) :** | **1.00** |
| **Sample Number:** | **5** | **Base Depth (m) :** | **1.30** |
| **Sample Type:** | **B** | | |

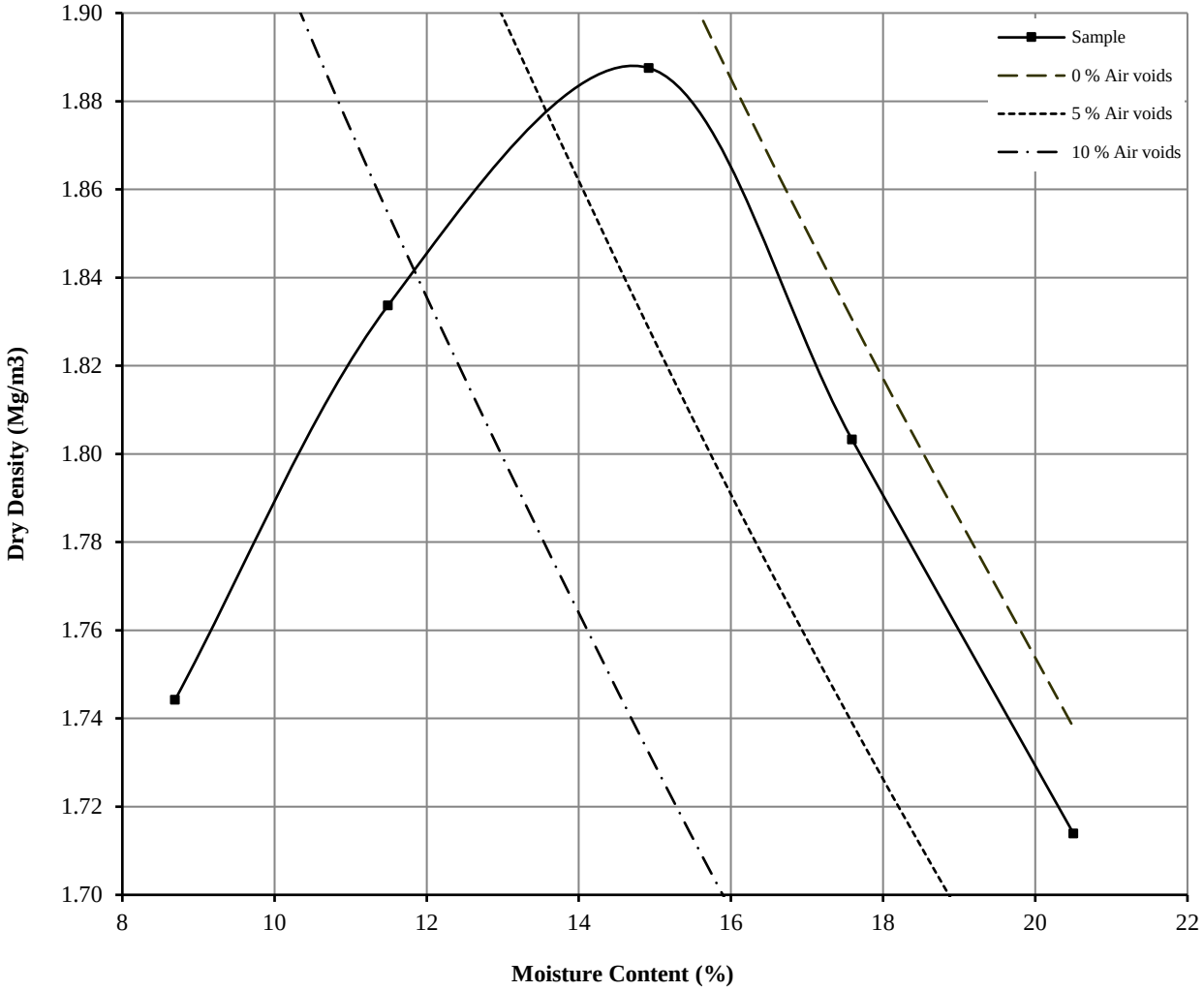



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 9.8 | Method of Compaction: | Vibro | Separate Samples |
| Particle Density (Mg/m3): | 2.7 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 7 |
| Maximum Dry Density (Mg/m3): | | 2.07 | Material Retained on 20.0 mm Test Sieve (%): | | 10 |
| Optimum Moisture Content (%): | | 10 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.3 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP154** | **Top Depth (m) :** | **1.00** |
| **Sample Number:** | **5** | **Base Depth (m) :** | **1.30** |
| **Sample Type:** | **B** | | |

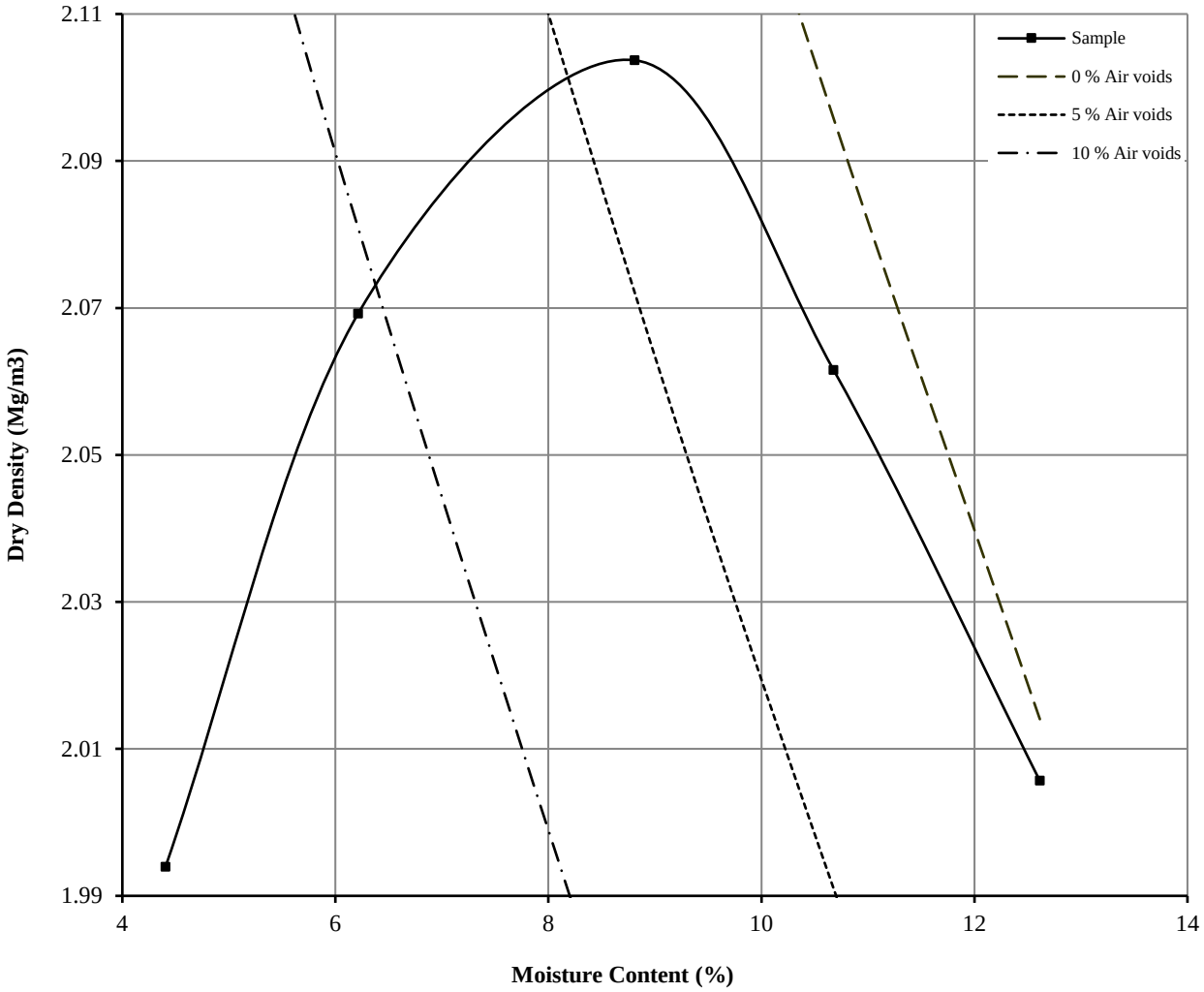



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 15 | Method of Compaction: | 2.5kg | Separate Samples |
| Particle Density (Mg/m3): | 2.7 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 1 |
| Maximum Dry Density (Mg/m3): | | 1.89 | Material Retained on 20.0 mm Test Sieve (%): | | 1 |
| Optimum Moisture Content (%): | | 15 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.5 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP155** | **Top Depth (m) :** | **1.00** |
| **Sample Number:** | **5** | **Base Depth (m) :** | **1.30** |
| **Sample Type:** | **B** | | |

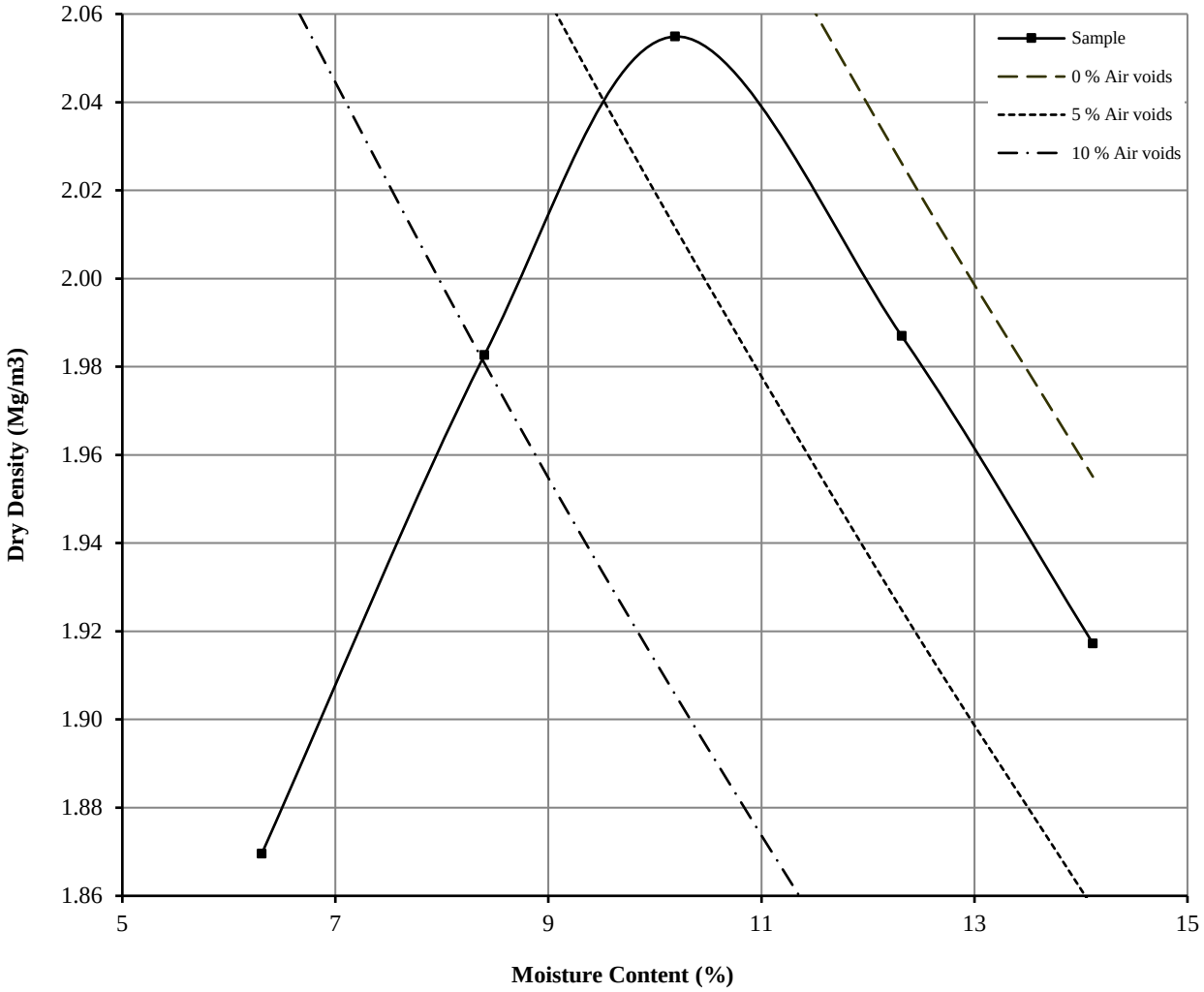



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 6.2 | Method of Compaction: | Vibro | Separate Samples |
| Particle Density (Mg/m3): | 2.7 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 0 |
| Maximum Dry Density (Mg/m3): | | 2.10 | Material Retained on 20.0 mm Test Sieve (%): | | 3 |
| Optimum Moisture Content (%): | | 9 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.7 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP158** | **Top Depth (m) :** | **1.00** |
| **Sample Number:** | **5** | **Base Depth (m) :** | **1.30** |
| **Sample Type:** | **B** | | |

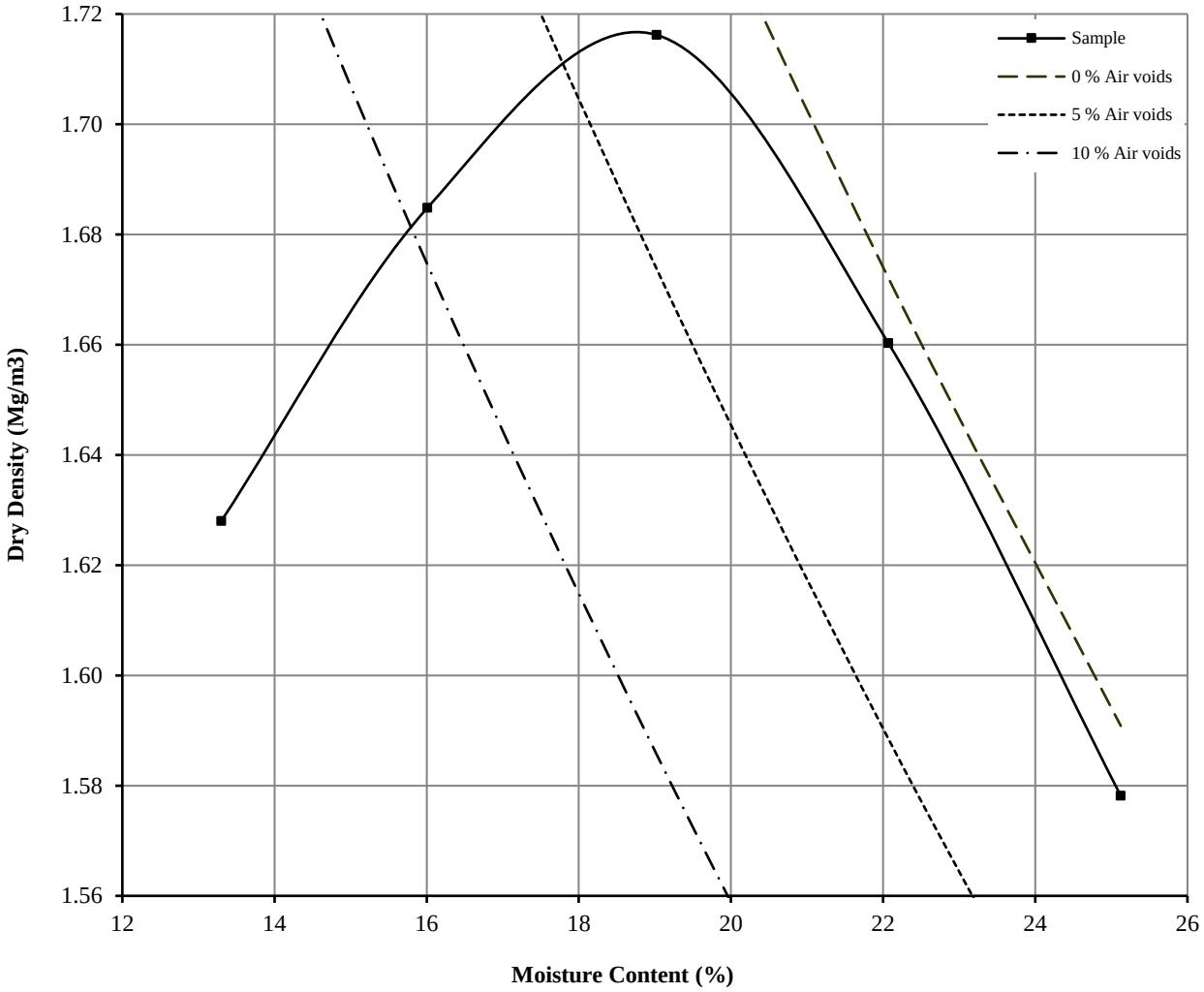



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 10 | Method of Compaction: | Vibro | Separate Samples |
| Particle Density (Mg/m3): | 2.7 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 0 |
| Maximum Dry Density (Mg/m3): | | 2.05 | Material Retained on 20.0 mm Test Sieve (%): | | 6 |
| Optimum Moisture Content (%): | | 10 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.3 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP159** | **Top Depth (m) :** | **1.00** |
| **Sample Number:** | **5** | **Base Depth (m) :** | **1.30** |
| **Sample Type:** | **B** | | |



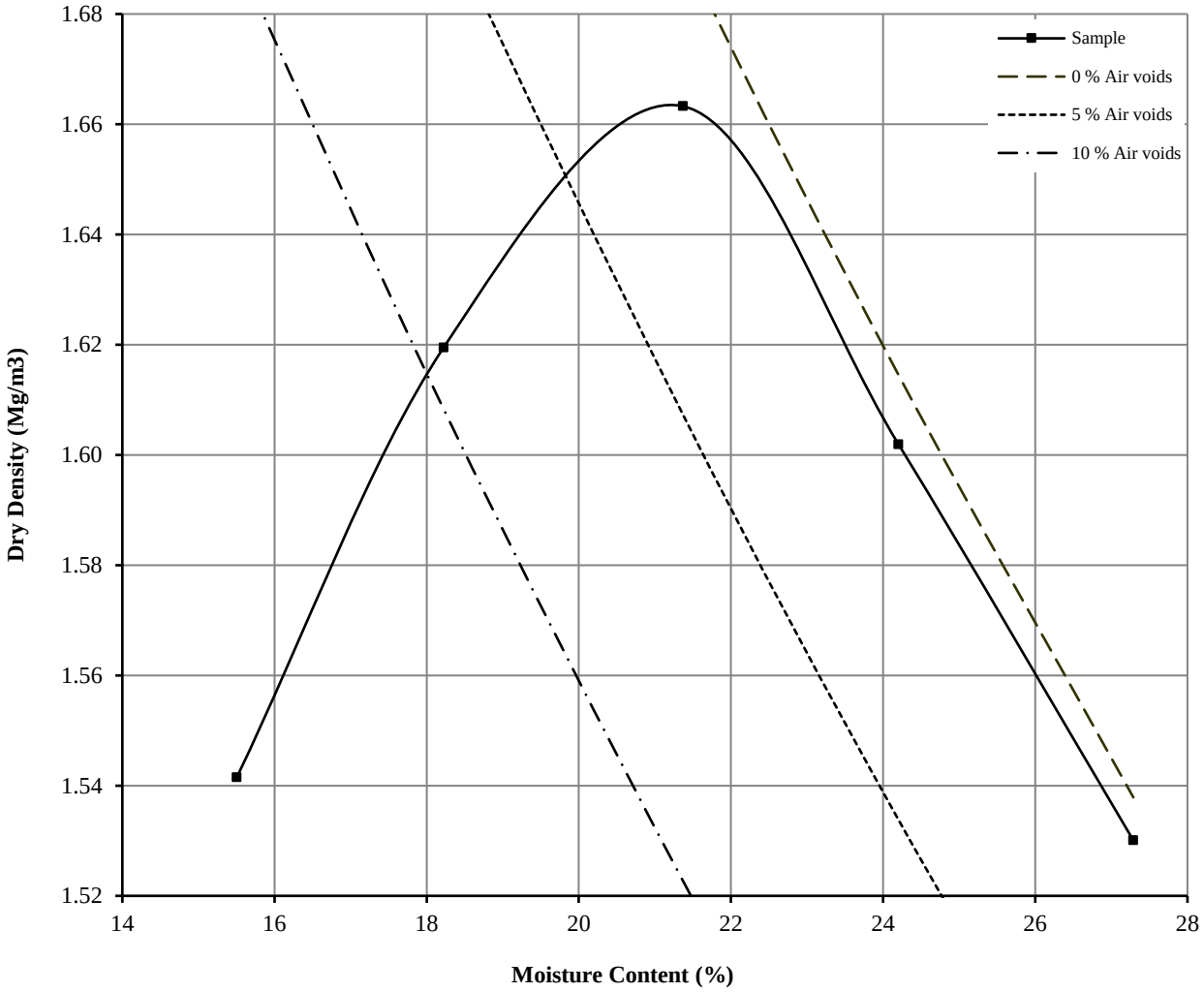

| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 25 | Method of Compaction: | 2.5kg | Separate Samples |
| Particle Density (Mg/m3): | 2.65 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 0 |
| Maximum Dry Density (Mg/m3): | | 1.72 | Material Retained on 20.0 mm Test Sieve (%): | | 0 |
| Optimum Moisture Content (%): | | 19 | | | |
| Remarks See summary of soil descriptions | | | | | |

| | | | |
|---|---|---|---|
| UKAS TESTING 4043 | PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** | **Contract** PSL22/3650 **Client Ref** GT0386 |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.3 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP159** | **Top Depth (m) :** | **2.00** |
| **Sample Number:** | **7** | **Base Depth (m) :** | **2.30** |
| **Sample Type:** | **B** | | |

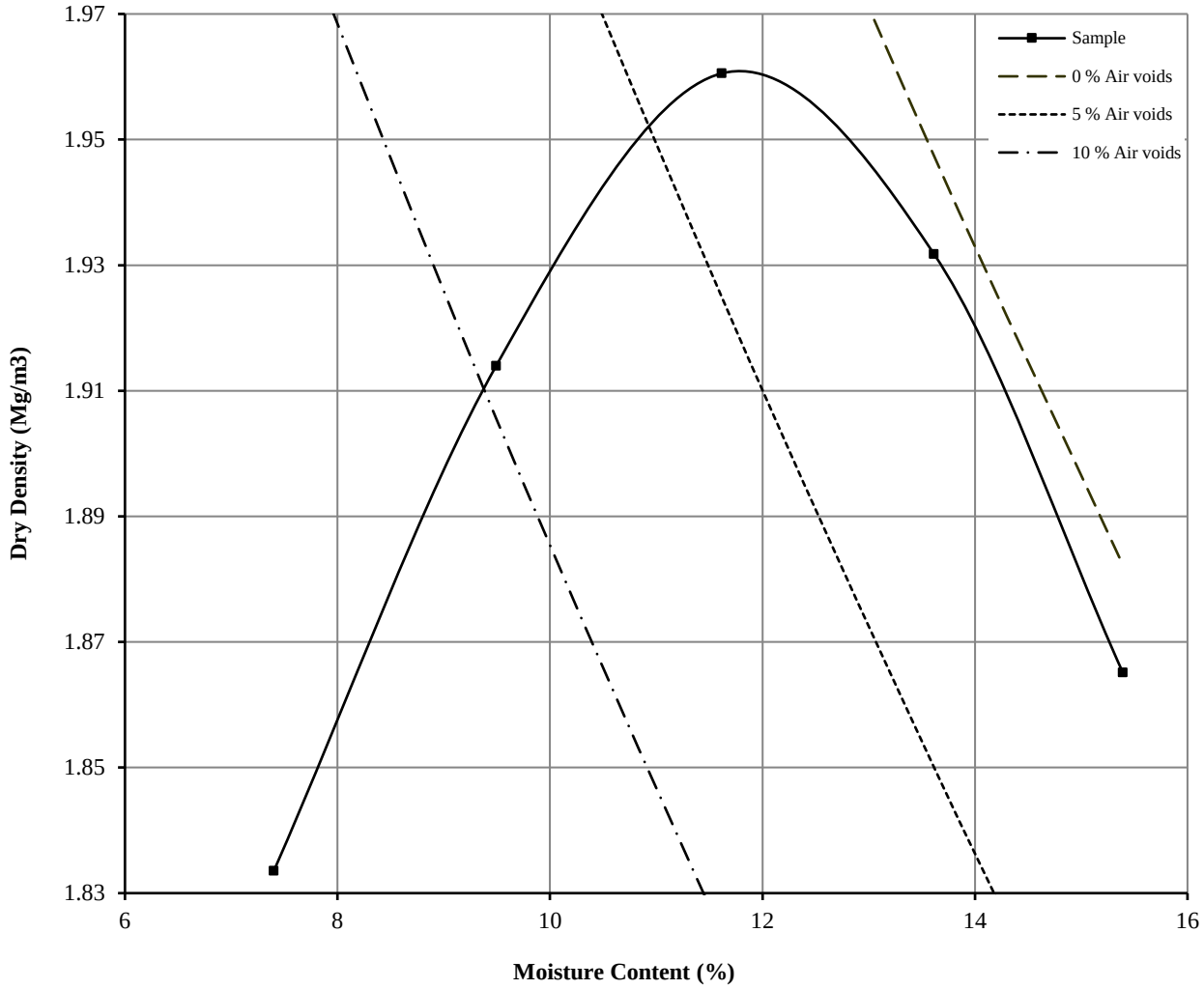



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 24 | Method of Compaction: | 2.5kg | Separate Samples |
| Particle Density (Mg/m3): | 2.65 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 0 |
| Maximum Dry Density (Mg/m3): | | 1.66 | Material Retained on 20.0 mm Test Sieve (%): | | 0 |
| Optimum Moisture Content (%): | | 21 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.5 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH116** | **Top Depth (m) :** | **4.50** |
| **Sample Number:** | **7** | **Base Depth (m) :** | **5.00** |
| **Sample Type:** | **B** | | |

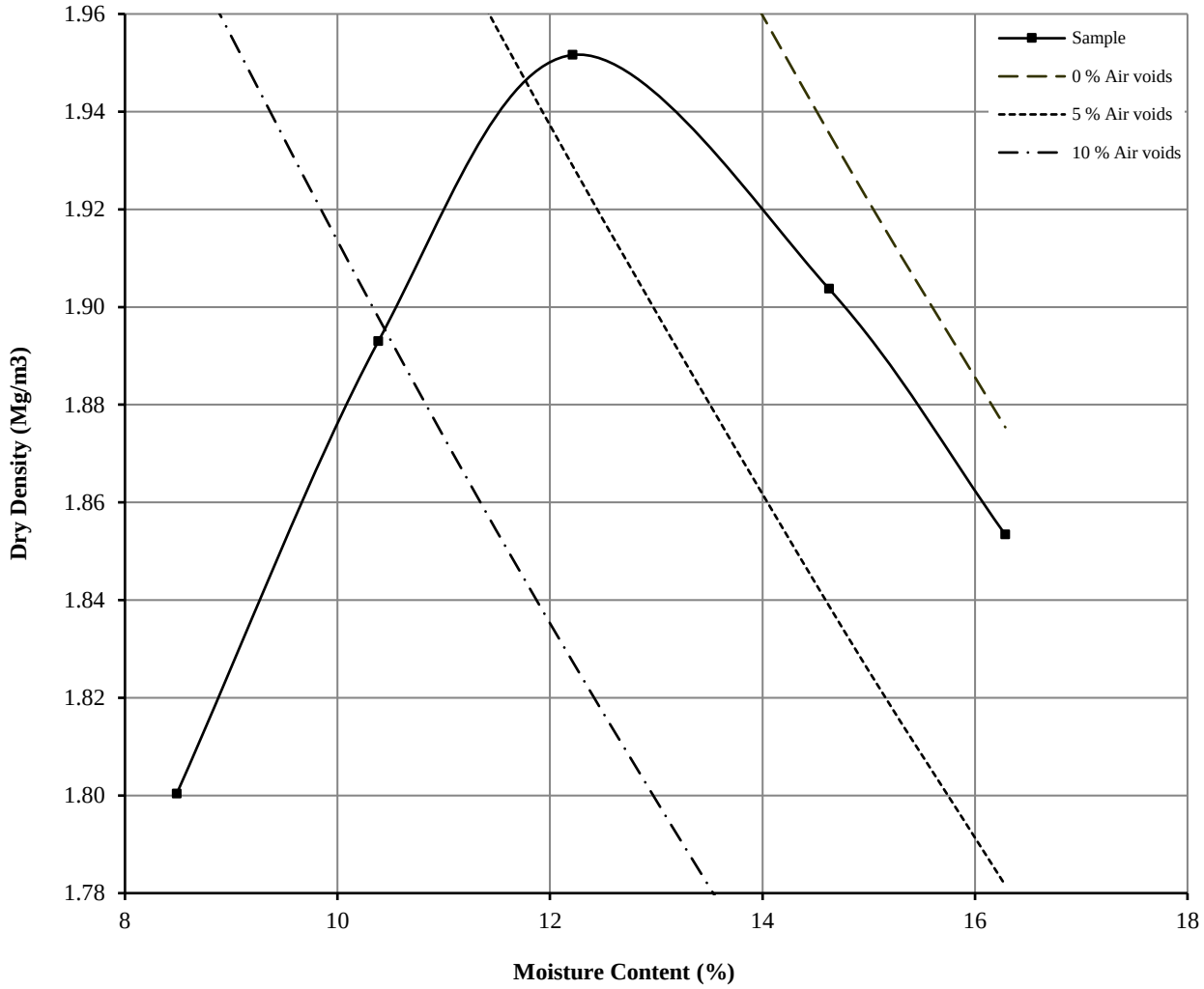



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 23 | Method of Compaction: | Vibro | Separate Samples |
| Particle Density (Mg/m3): | 2.65 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 0 |
| Maximum Dry Density (Mg/m3): | | 1.96 | Material Retained on 20.0 mm Test Sieve (%): | | 0 |
| Optimum Moisture Content (%): | | 12 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.5 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH118** | **Top Depth (m) :** | **5.50** |
| **Sample Number:** | **7** | **Base Depth (m) :** | **6.00** |
| **Sample Type:** | **B** | | |

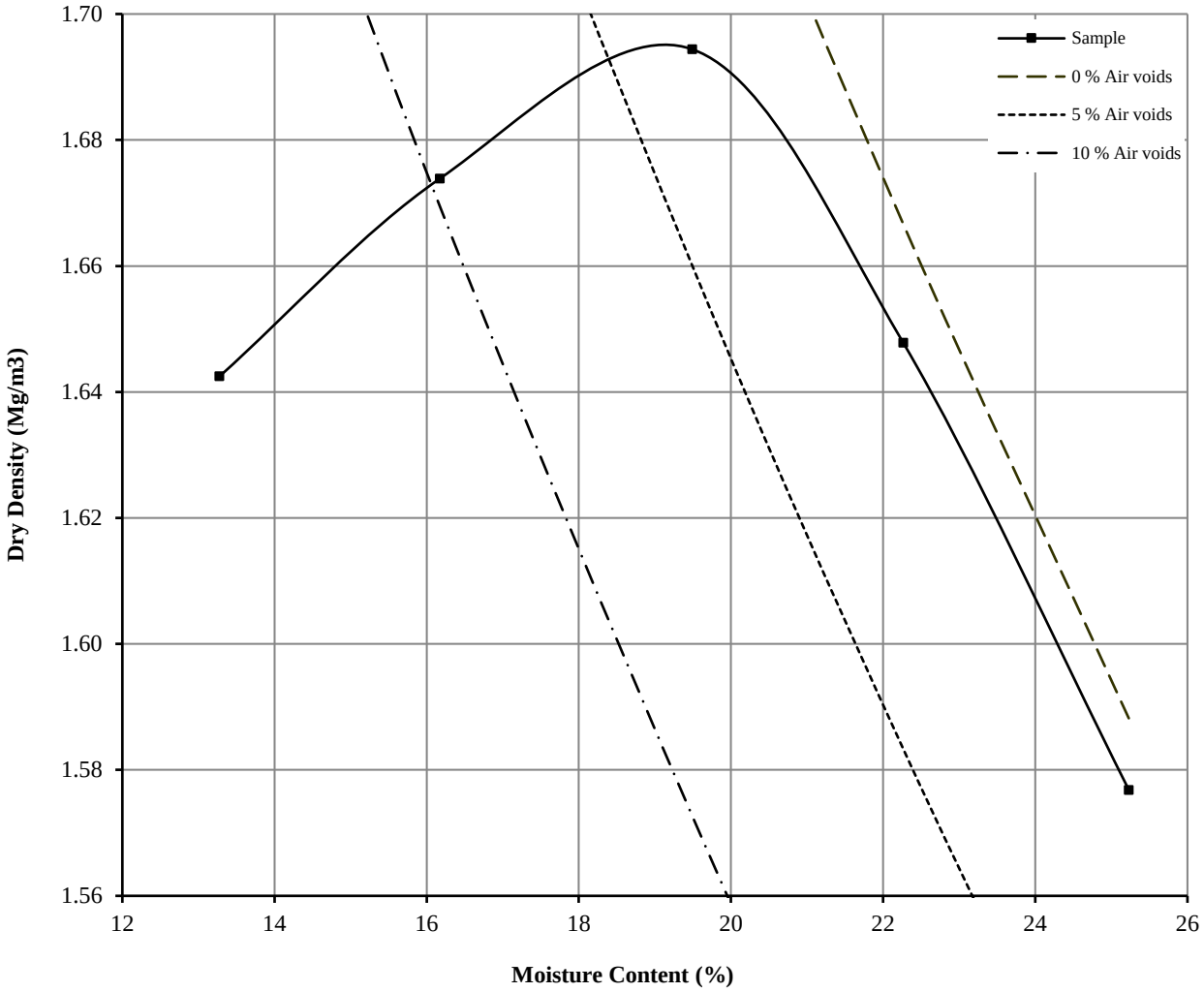



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 21 | Method of Compaction: | Vibro | Separate Samples |
| Particle Density (Mg/m3): | 2.7 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 0 |
| Maximum Dry Density (Mg/m3): | | 1.95 | Material Retained on 20.0 mm Test Sieve (%): | | 0 |
| Optimum Moisture Content (%): | | 12 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.3 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH118** | **Top Depth (m) :** | **6.10** |
| **Sample Number:** | **8** | **Base Depth (m) :** | |
| **Sample Type:** | **B** | | |

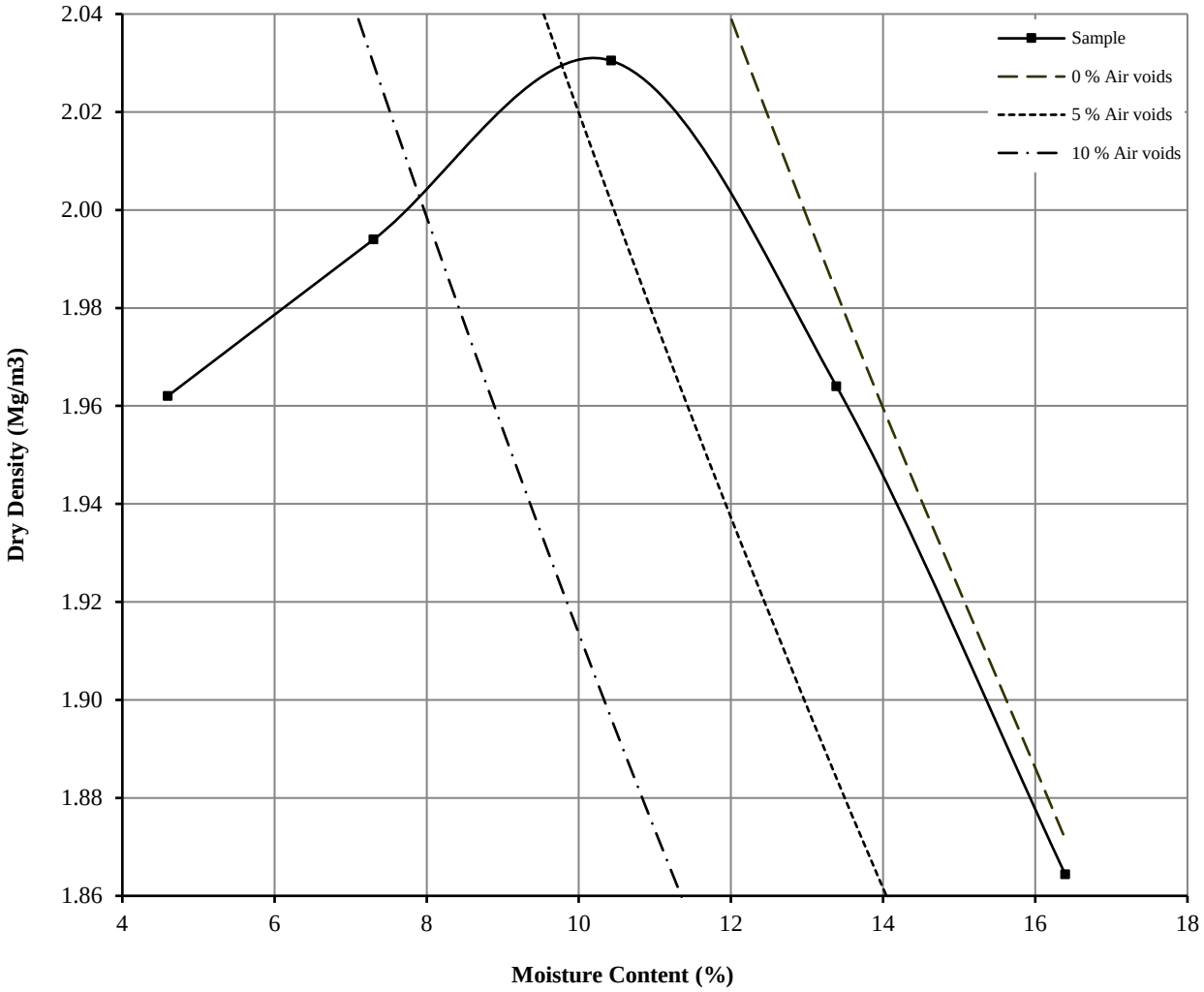



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 25 | Method of Compaction: | 2.5kg | Separate Samples |
| Particle Density (Mg/m3): | 2.65 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 0 |
| Maximum Dry Density (Mg/m3): | | 1.69 | Material Retained on 20.0 mm Test Sieve (%): | | 0 |
| Optimum Moisture Content (%): | | 19 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.6 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH120 & BH120A** | **Top Depth (m) :** | **0.50** |
| **Sample Number:** | **1** | **Base Depth (m) :** | |
| **Sample Type:** | **B** | | |

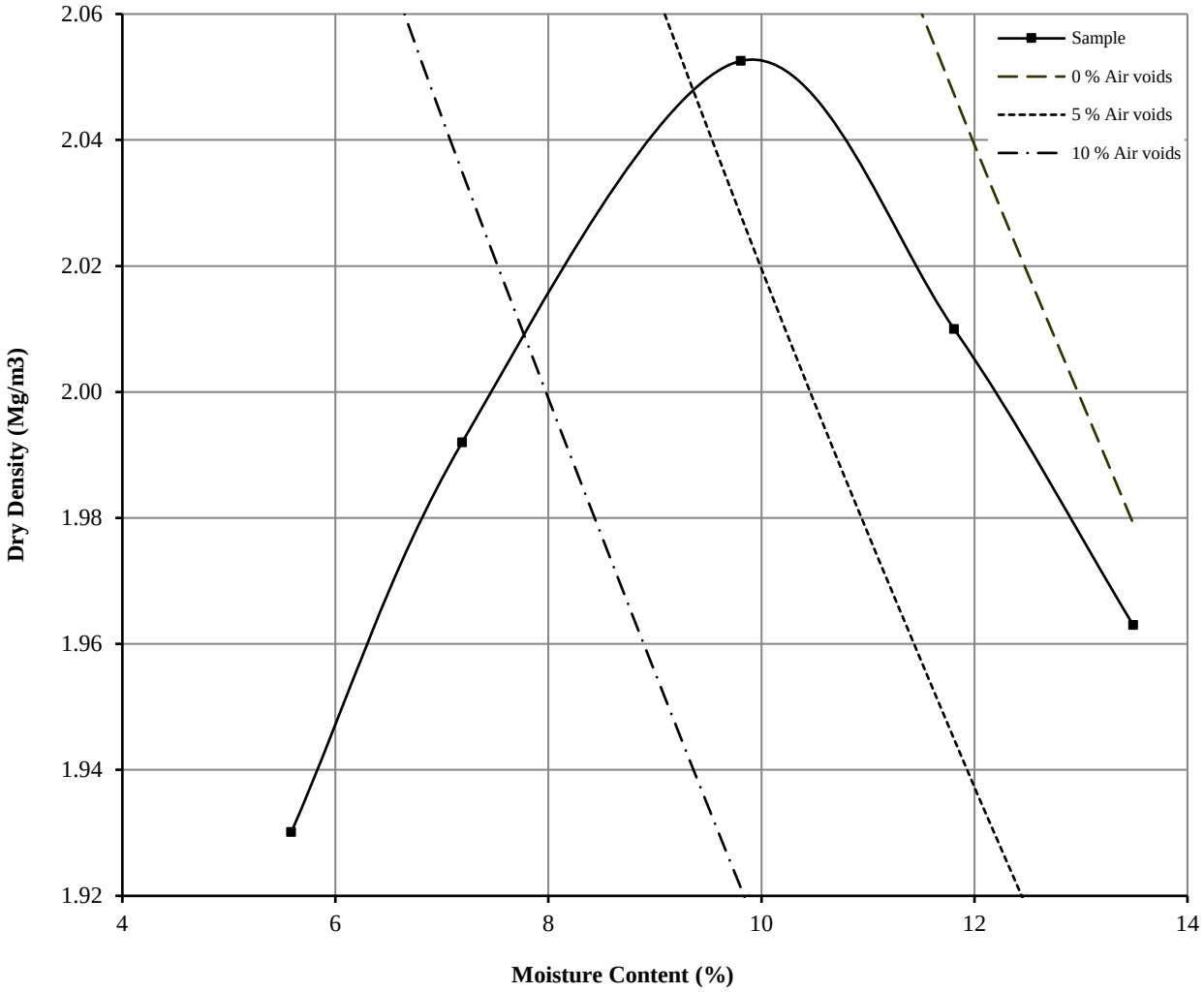



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 13 | Method of Compaction: | 4.5kg | Separate Samples |
| Particle Density (Mg/m3): | 2.7 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 0 |
| Maximum Dry Density (Mg/m3): | | 2.03 | Material Retained on 20.0 mm Test Sieve (%): | | 6 |
| Optimum Moisture Content (%): | | 10 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.7 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH120 & BH120A** | **Top Depth (m) :** | **1.10** |
| **Sample Number:** | **2** | **Base Depth (m) :** | |
| **Sample Type:** | **B** | | |

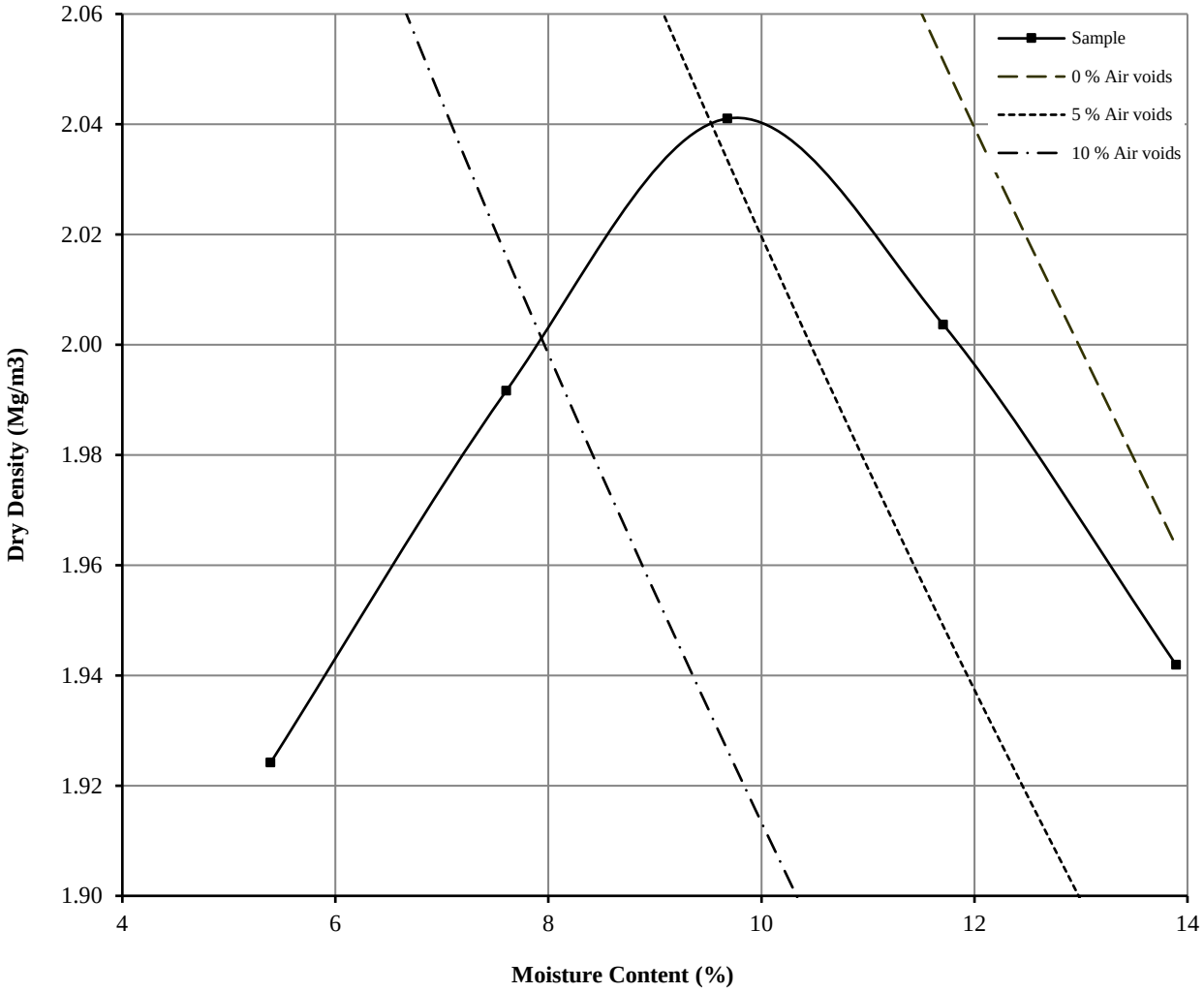



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 7.2 | Method of Compaction: | Vibro | Separate Samples |
| Particle Density (Mg/m3): | 2.7 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 0 |
| Maximum Dry Density (Mg/m3): | | 2.05 | Material Retained on 20.0 mm Test Sieve (%): | | 20 |
| Optimum Moisture Content (%): | | 10 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**Non compliance with BS 1377 : Part 4 : Clause 3.7 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH120 & BH120A** | **Top Depth (m) :** | **1.50** |
| **Sample Number:** | **3** | **Base Depth (m) :** | **2.00** |
| **Sample Type:** | **B** | | |

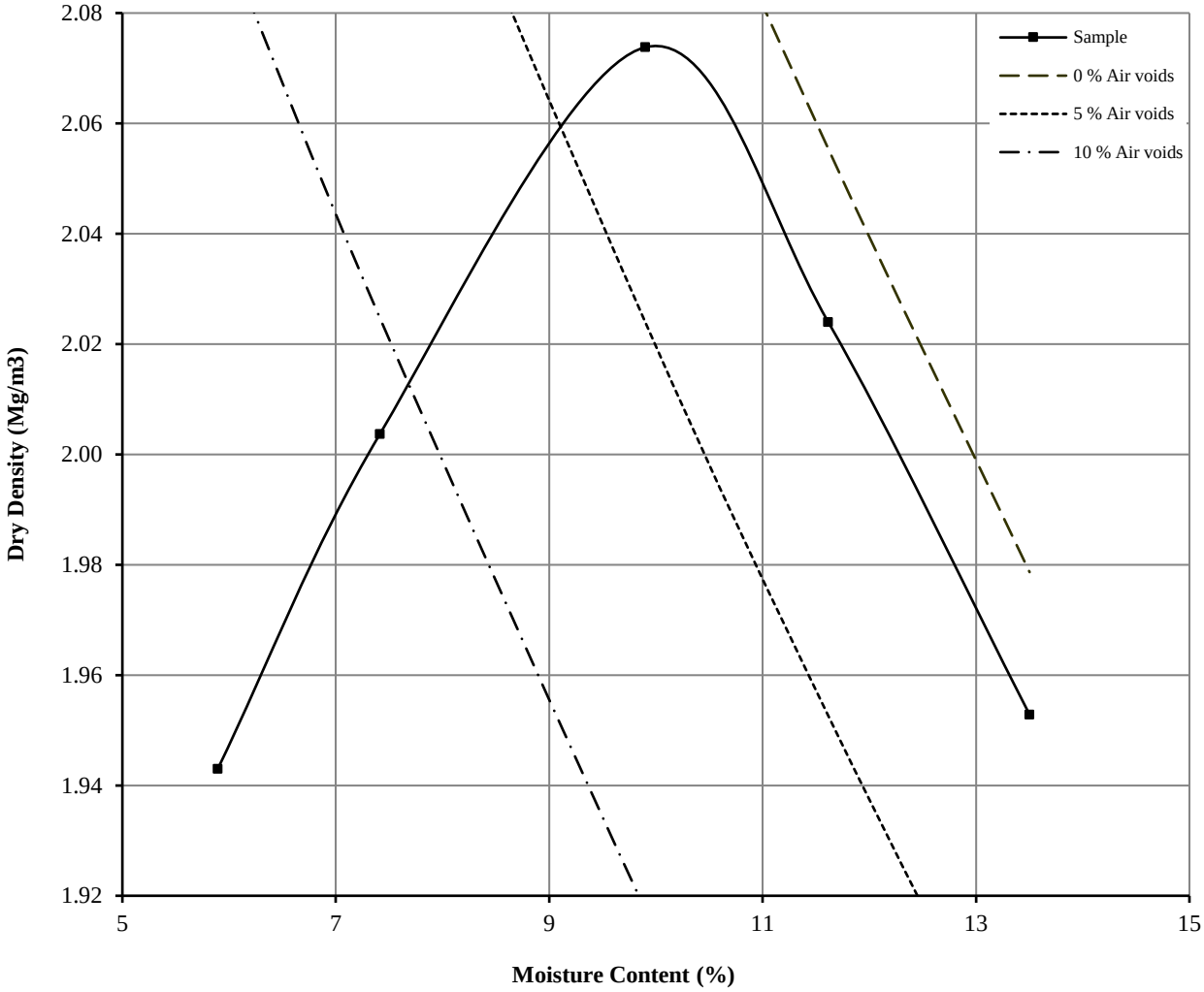



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 5.4 | Method of Compaction: | Vibro | Separate Samples |
| Particle Density (Mg/m3): | 2.7 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 25 |
| Maximum Dry Density (Mg/m3): | | 2.04 | Material Retained on 20.0 mm Test Sieve (%): | | 13 |
| Optimum Moisture Content (%): | | 10 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.7 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH120 & BH120A** | **Top Depth (m) :** | **4.50** |
| **Sample Number:** | **6** | **Base Depth (m) :** | **5.00** |
| **Sample Type:** | **B** | | |

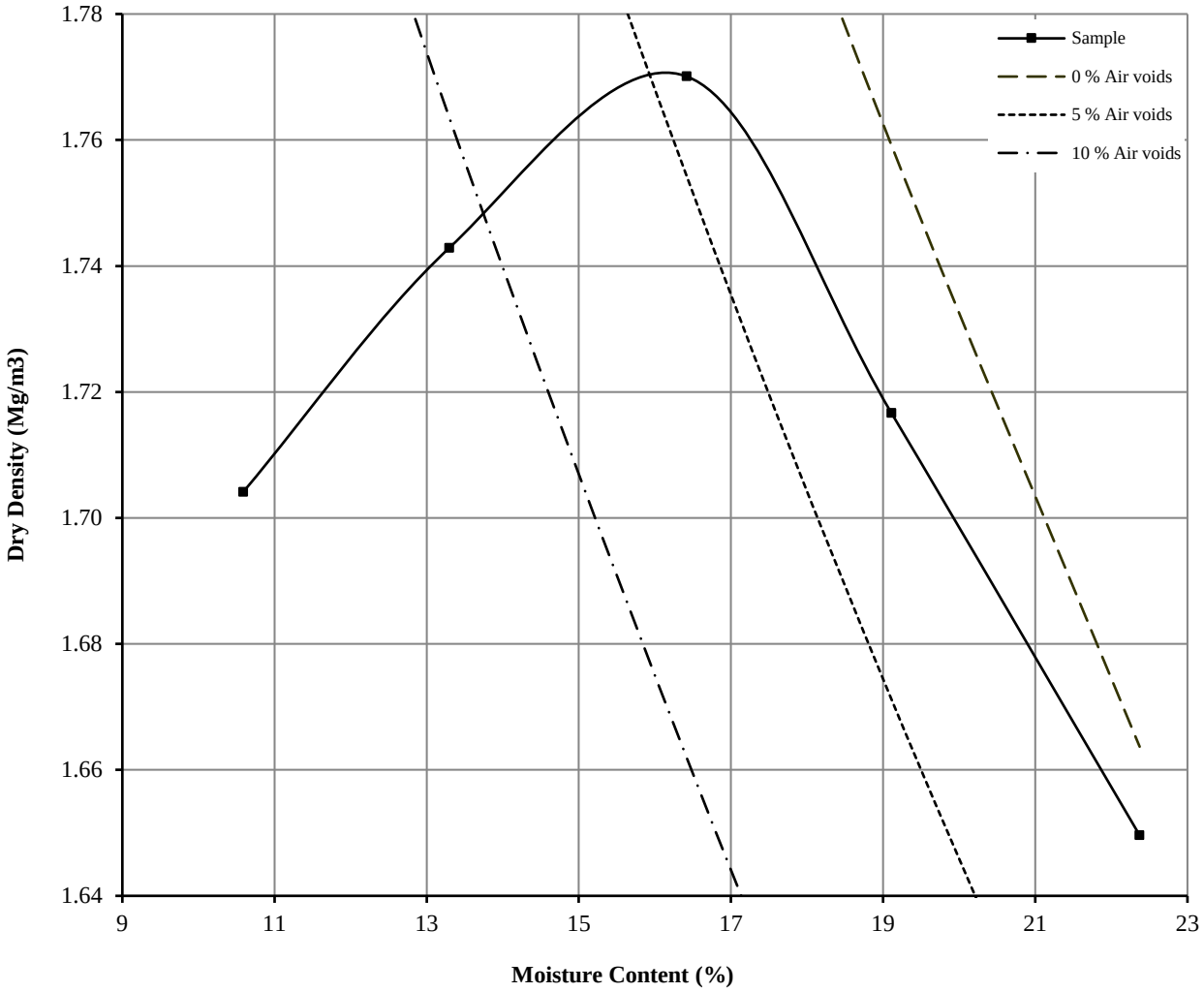



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 7.4 | Method of Compaction: | Vibro | Separate Samples |
| Particle Density (Mg/m3): | 2.7 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 4 |
| Maximum Dry Density (Mg/m3): | | 2.07 | Material Retained on 20.0 mm Test Sieve (%): | | 6 |
| Optimum Moisture Content (%): | | 10 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.3 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH126** | **Top Depth (m) :** | **1.20** |
| **Sample Number:** | **3** | **Base Depth (m) :** | |
| **Sample Type:** | **B** | | |

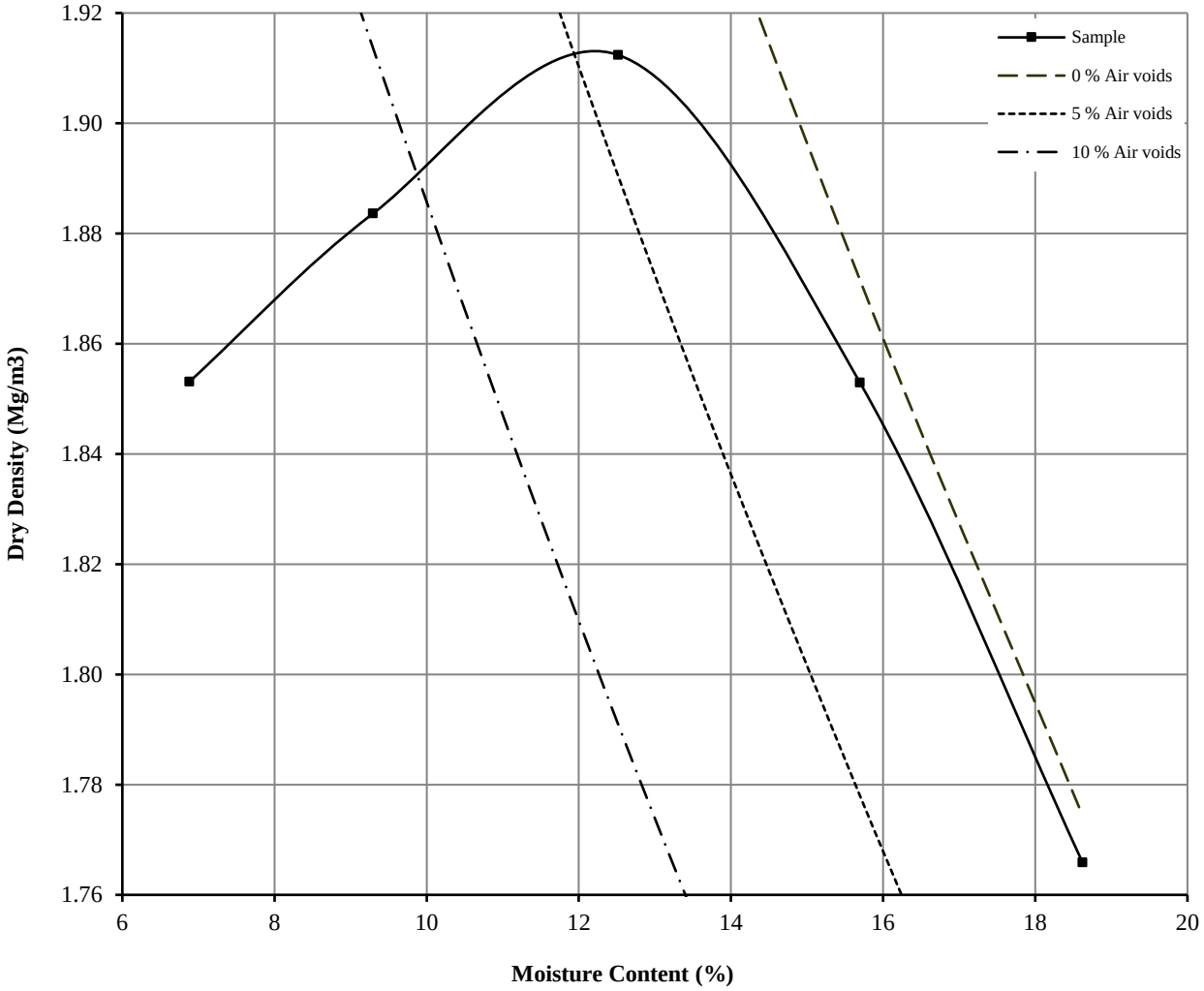



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 22 | Method of Compaction: | 2.5kg | Separate Samples |
| Particle Density (Mg/m3): | 2.65 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 0 |
| Maximum Dry Density (Mg/m3): | | 1.77 | Material Retained on 20.0 mm Test Sieve (%): | | 2 |
| Optimum Moisture Content (%): | | 16 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.3 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH126** | **Top Depth (m) :** | **2.90** |
| **Sample Number:** | **4** | **Base Depth (m) :** | **3.00** |
| **Sample Type:** | **B** | | |

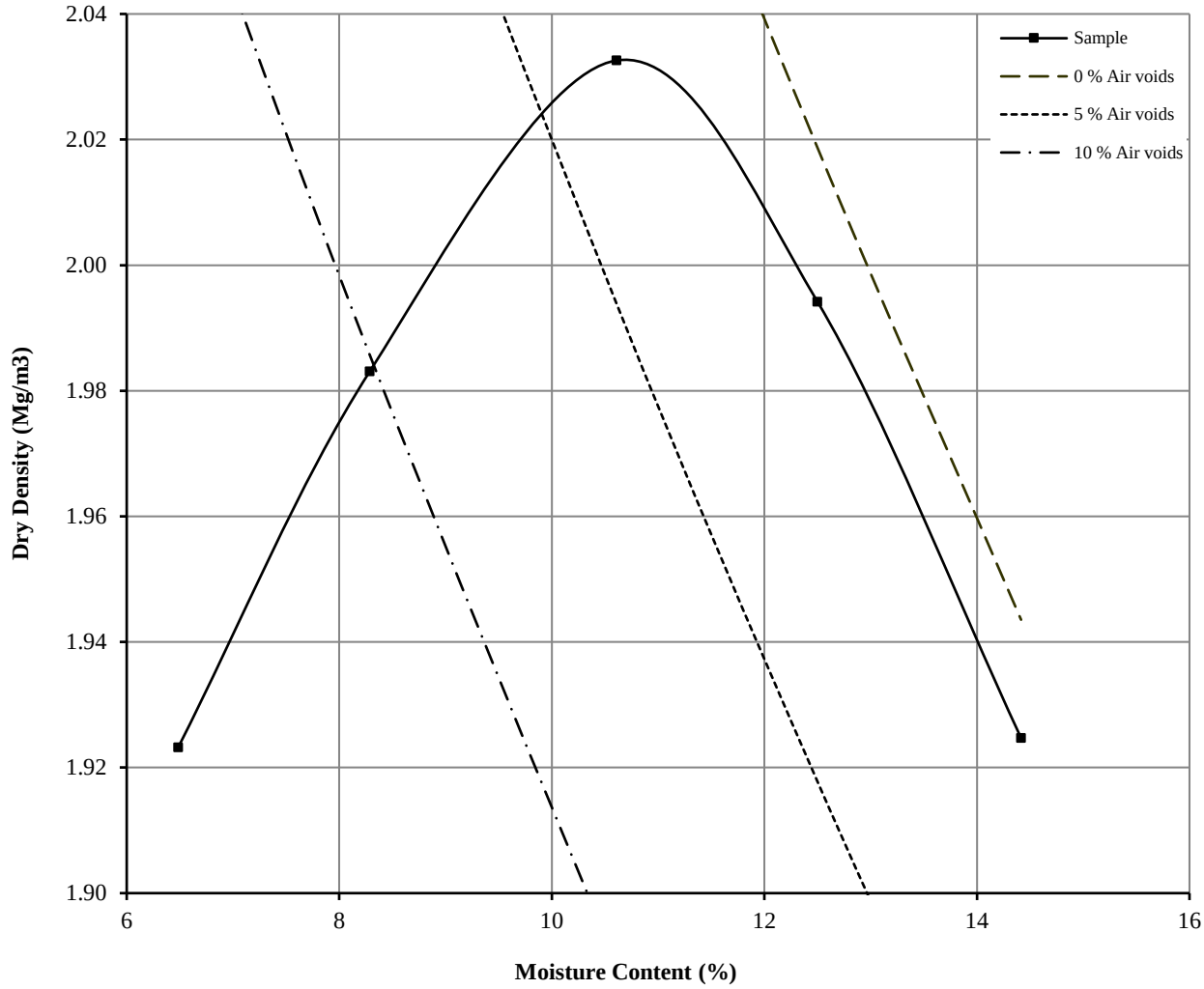



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 19 | Method of Compaction: | 2.5kg | Separate Samples |
| Particle Density (Mg/m3): | 2.65 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 0 |
| Maximum Dry Density (Mg/m3): | | 1.91 | Material Retained on 20.0 mm Test Sieve (%): | | 0 |
| Optimum Moisture Content (%): | | 13 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.5 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH127** | **Top Depth (m) :** | **2.20** |
| **Sample Number:** | **102** | **Base Depth (m) :** | **2.70** |
| **Sample Type:** | **B** | | |

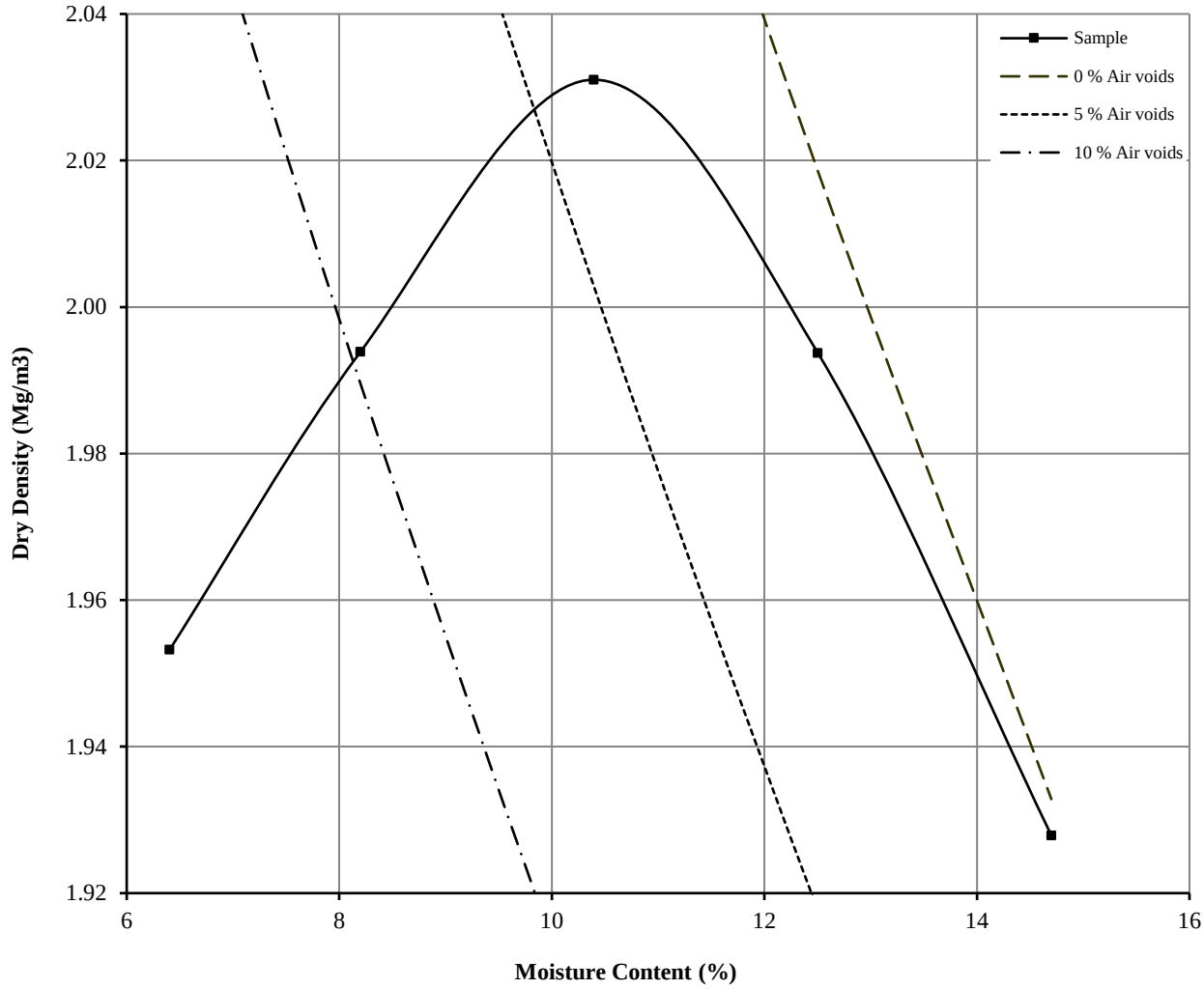



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 4.8 | Method of Compaction: | Vibro | Separate Samples |
| Particle Density (Mg/m3): | 2.7 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 0 |
| Maximum Dry Density (Mg/m3): | | 2.03 | Material Retained on 20.0 mm Test Sieve (%): | | 0 |
| Optimum Moisture Content (%): | | 11 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.7 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH127** | **Top Depth (m) :** | **2.90** |
| **Sample Number:** | **103** | **Base Depth (m) :** | **4.25** |
| **Sample Type:** | **B** | | |

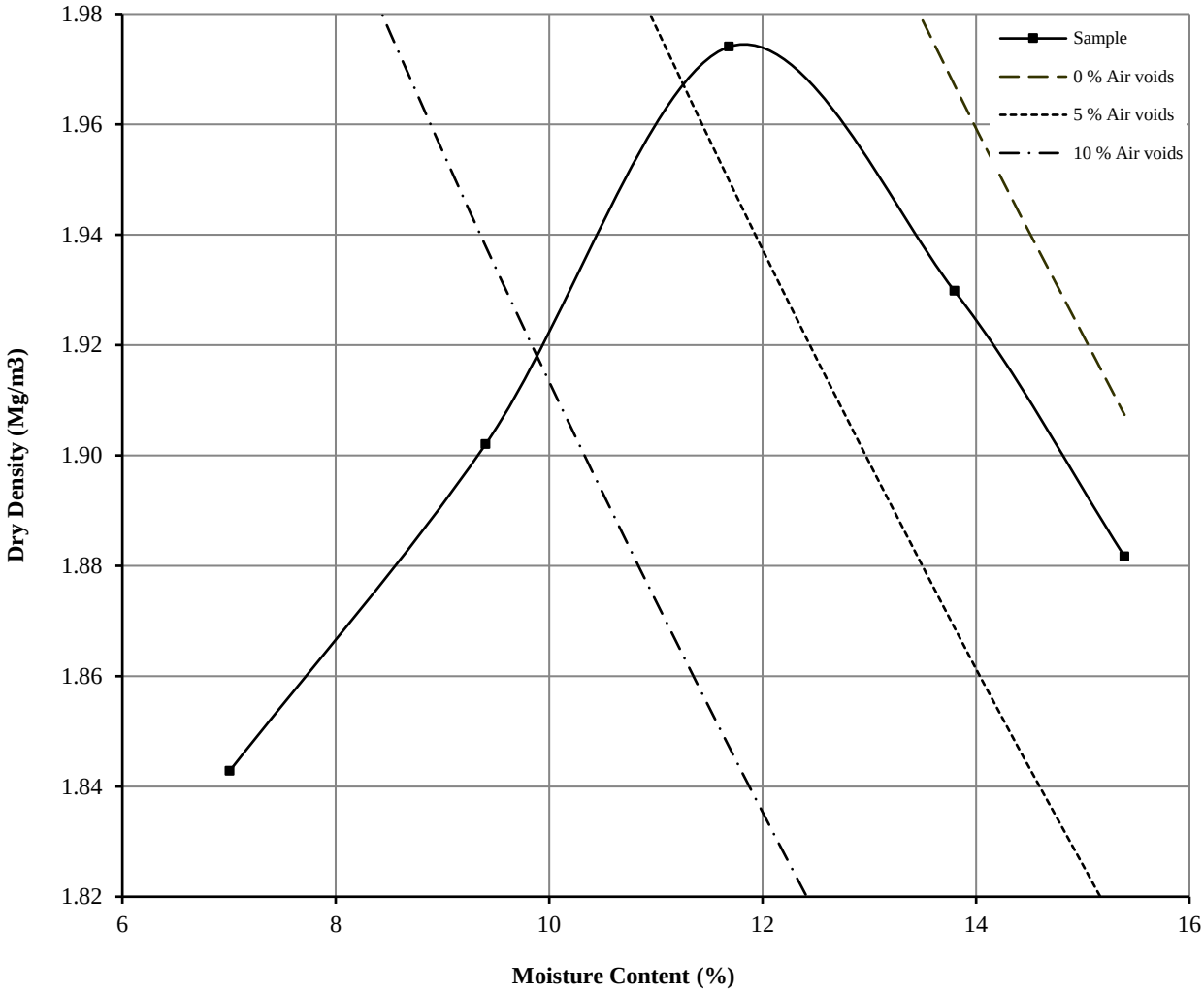



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 4.9 | Method of Compaction: | Vibro | Separate Samples |
| Particle Density (Mg/m3): | 2.7 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 9 |
| Maximum Dry Density (Mg/m3): | | 2.03 | Material Retained on 20.0 mm Test Sieve (%): | | 15 |
| Optimum Moisture Content (%): | | 10 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.7 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH129** | **Top Depth (m) :** | **1.20** |
| **Sample Number:** | **101** | **Base Depth (m) :** | **2.20** |
| **Sample Type:** | **B** | | |

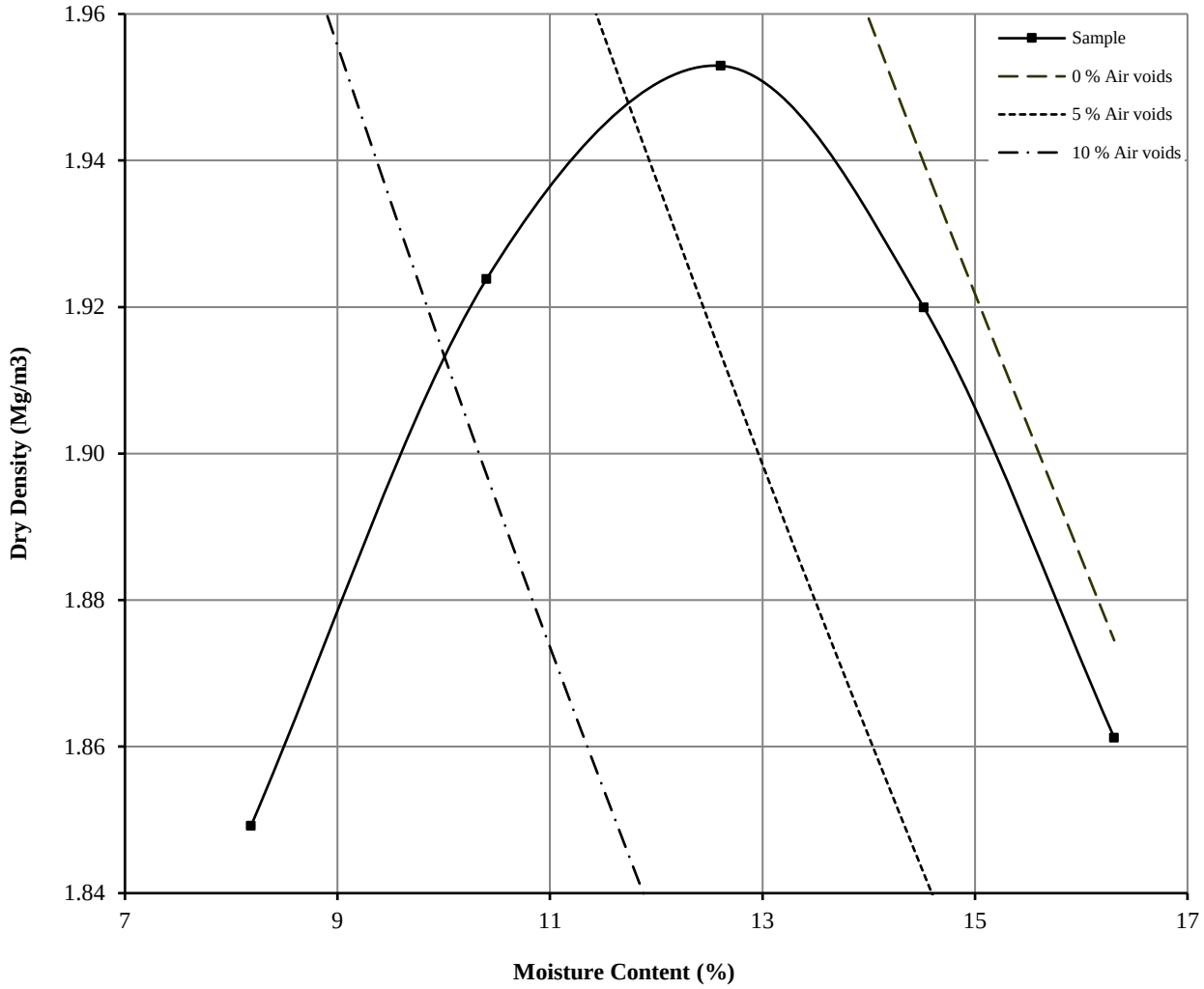



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 7.0 | Method of Compaction: | Vibro | Separate Samples |
| Particle Density (Mg/m3): | 2.7 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 0 |
| Maximum Dry Density (Mg/m3): | | 1.97 | Material Retained on 20.0 mm Test Sieve (%): | | 10 |
| Optimum Moisture Content (%): | | 12 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.5 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH129** | **Top Depth (m) :** | **3.70** |
| **Sample Number:** | **104** | **Base Depth (m) :** | **4.20** |
| **Sample Type:** | **B** | | |

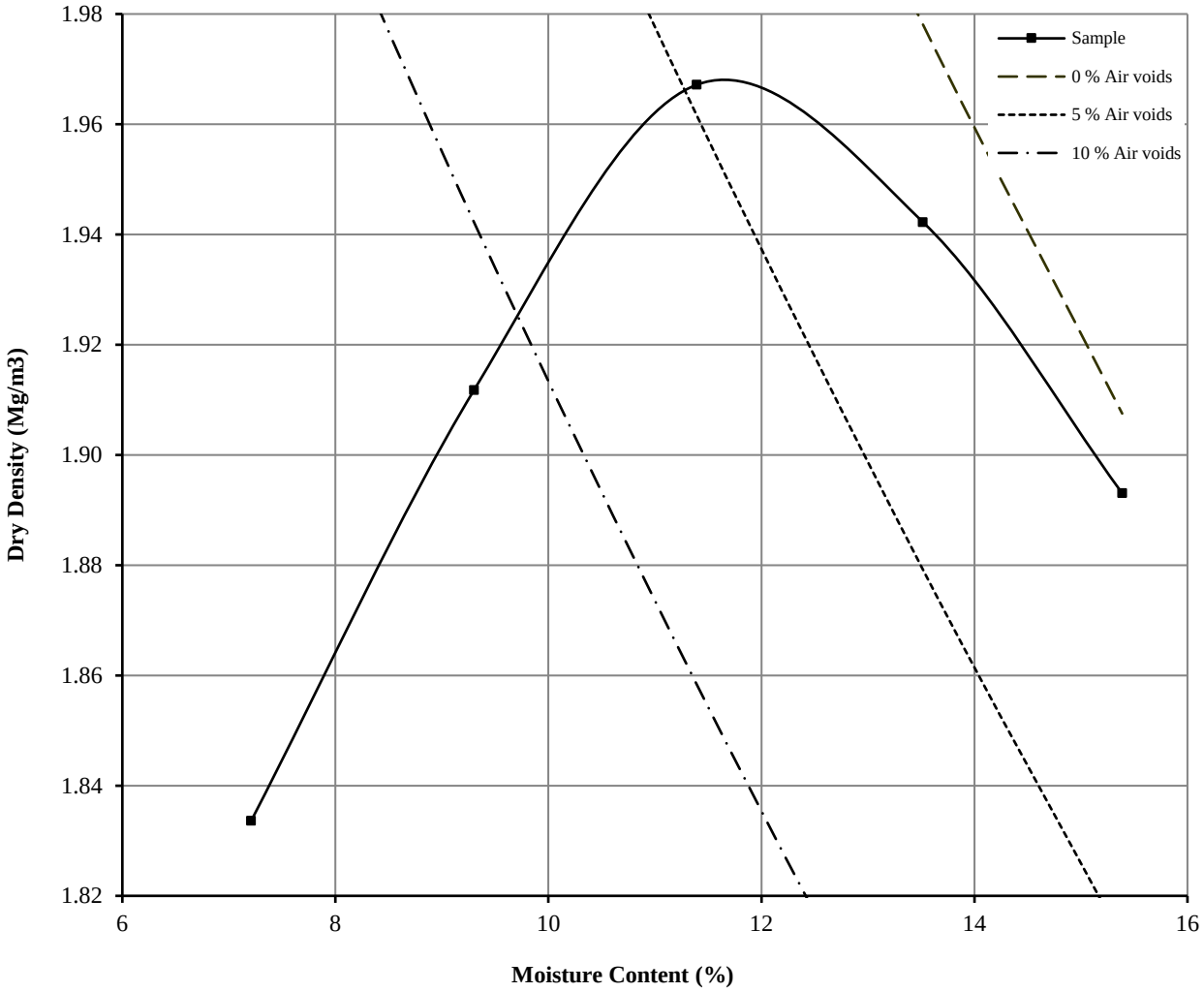



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 8.2 | Method of Compaction: | Vibro | Separate Samples |
| Particle Density (Mg/m3): | 2.7 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 0 |
| Maximum Dry Density (Mg/m3): | | 1.95 | Material Retained on 20.0 mm Test Sieve (%): | | 0 |
| Optimum Moisture Content (%): | | 13 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.7 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH129** | **Top Depth (m) :** | **4.20** |
| **Sample Number:** | **105** | **Base Depth (m) :** | **4.50** |
| **Sample Type:** | **B** | | |

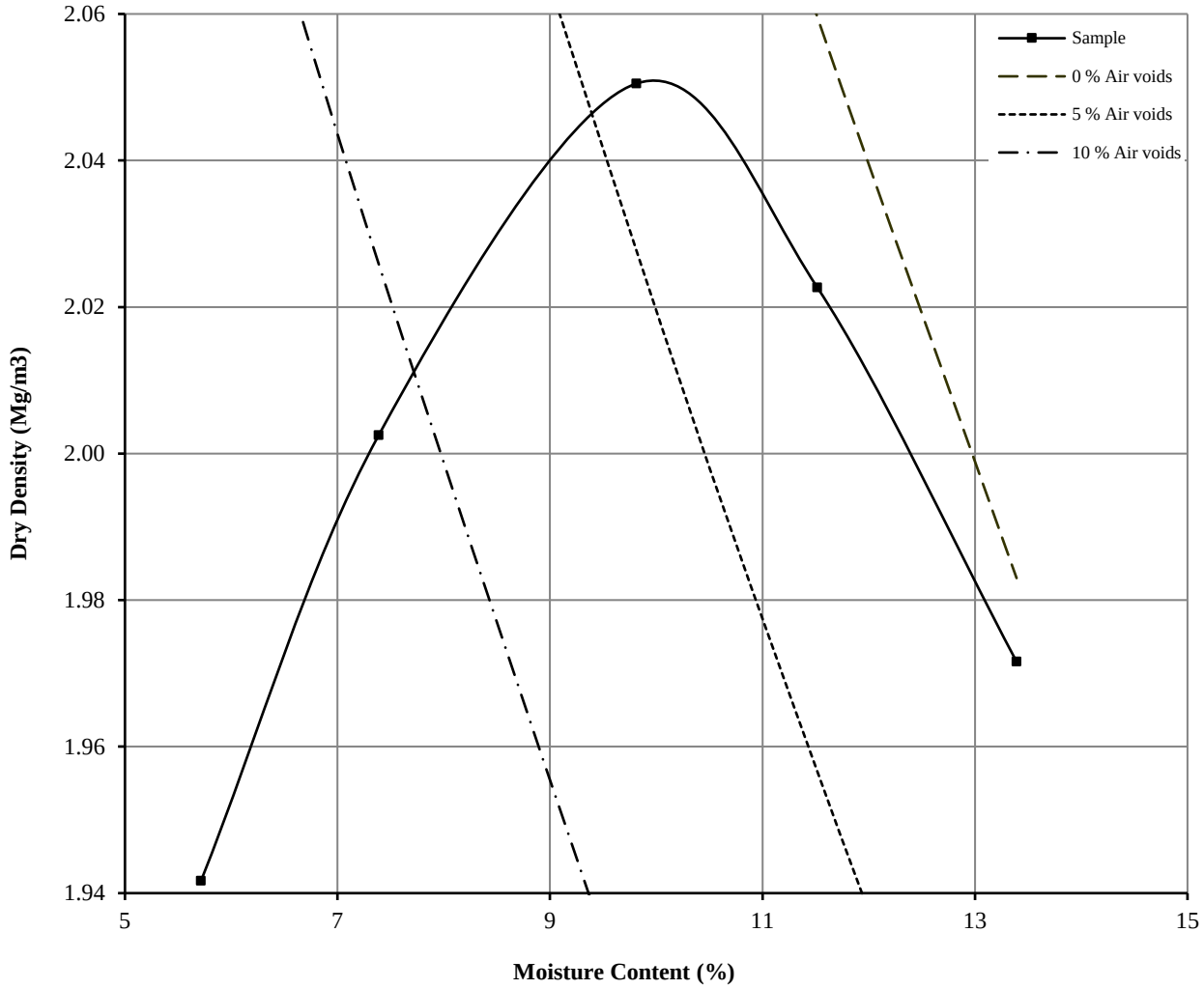



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 7.2 | Method of Compaction: | Vibro | Separate Samples |
| Particle Density (Mg/m3): | 2.7 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 0 |
| Maximum Dry Density (Mg/m3): | | 1.97 | Material Retained on 20.0 mm Test Sieve (%): | | 20 |
| Optimum Moisture Content (%): | | 11 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.5 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH123** | **Top Depth (m) :** | **2.00** |
| **Sample Number:** | **102** | **Base Depth (m) :** | **3.00** |
| **Sample Type:** | **B** | | |



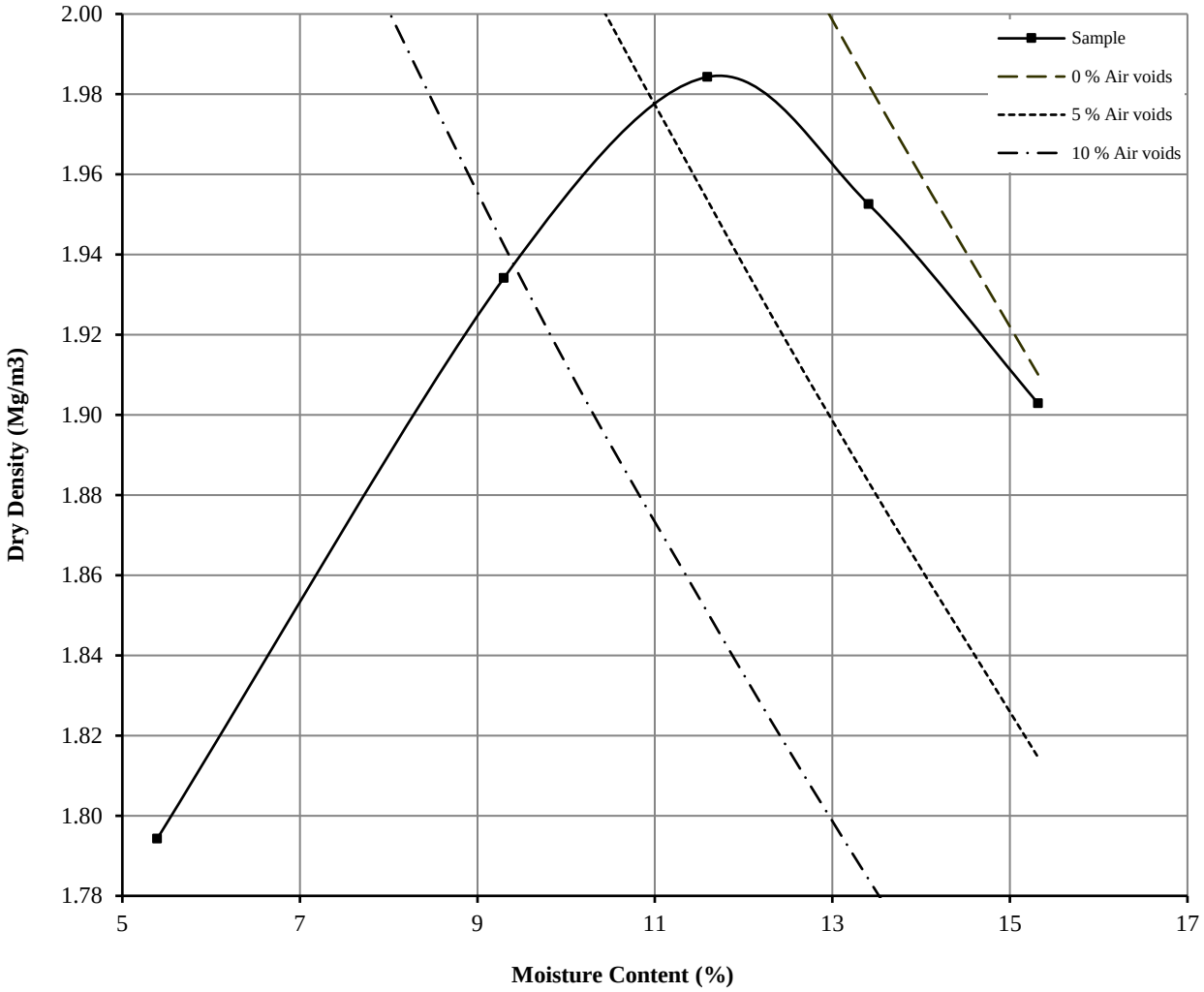

| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 5.7 | Method of Compaction: | Vibro | Separate Samples |
| Particle Density (Mg/m3): | 2.7 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 0 |
| Maximum Dry Density (Mg/m3): | | 2.05 | Material Retained on 20.0 mm Test Sieve (%): | | 0 |
| Optimum Moisture Content (%): | | 10 | | | |
| Remarks See summary of soil descriptions | | | | | |

| | | | |
|---|---|---|---|
| UKAS TESTING 4043 | PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** | **Contract** PSL22/3650 **Client Ref** GT0386 |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.5 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH123** | **Top Depth (m) :** | **3.00** |
| **Sample Number:** | **103** | **Base Depth (m) :** | **4.00** |
| **Sample Type:** | **B** | | |



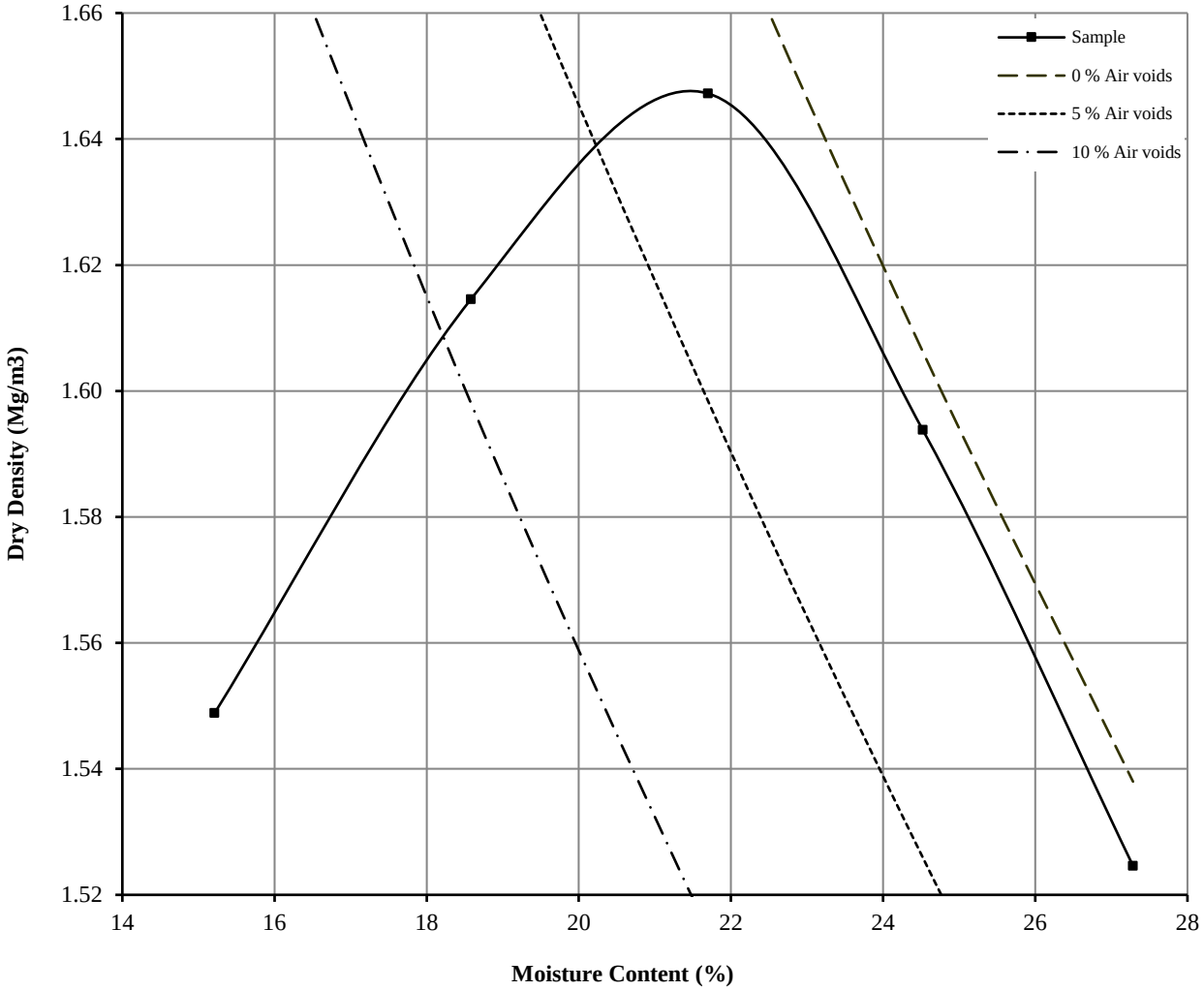

| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 5.4 | Method of Compaction: | Vibro | Separate Samples |
| Particle Density (Mg/m3): | 2.7 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 0 |
| Maximum Dry Density (Mg/m3): | | 1.98 | Material Retained on 20.0 mm Test Sieve (%): | | 0 |
| Optimum Moisture Content (%): | | 12 | | | |
| Remarks See summary of soil descriptions | | | | | |

| | | | |
|---|---|---|---|
| UKAS TESTING 4043 | PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** | **Contract** PSL22/3650 **Client Ref** GTO386 |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.3 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH124** | **Top Depth (m) :** | **1.50** |
| **Sample Number:** | **103** | **Base Depth (m) :** | **1.80** |
| **Sample Type:** | **CS** | | |

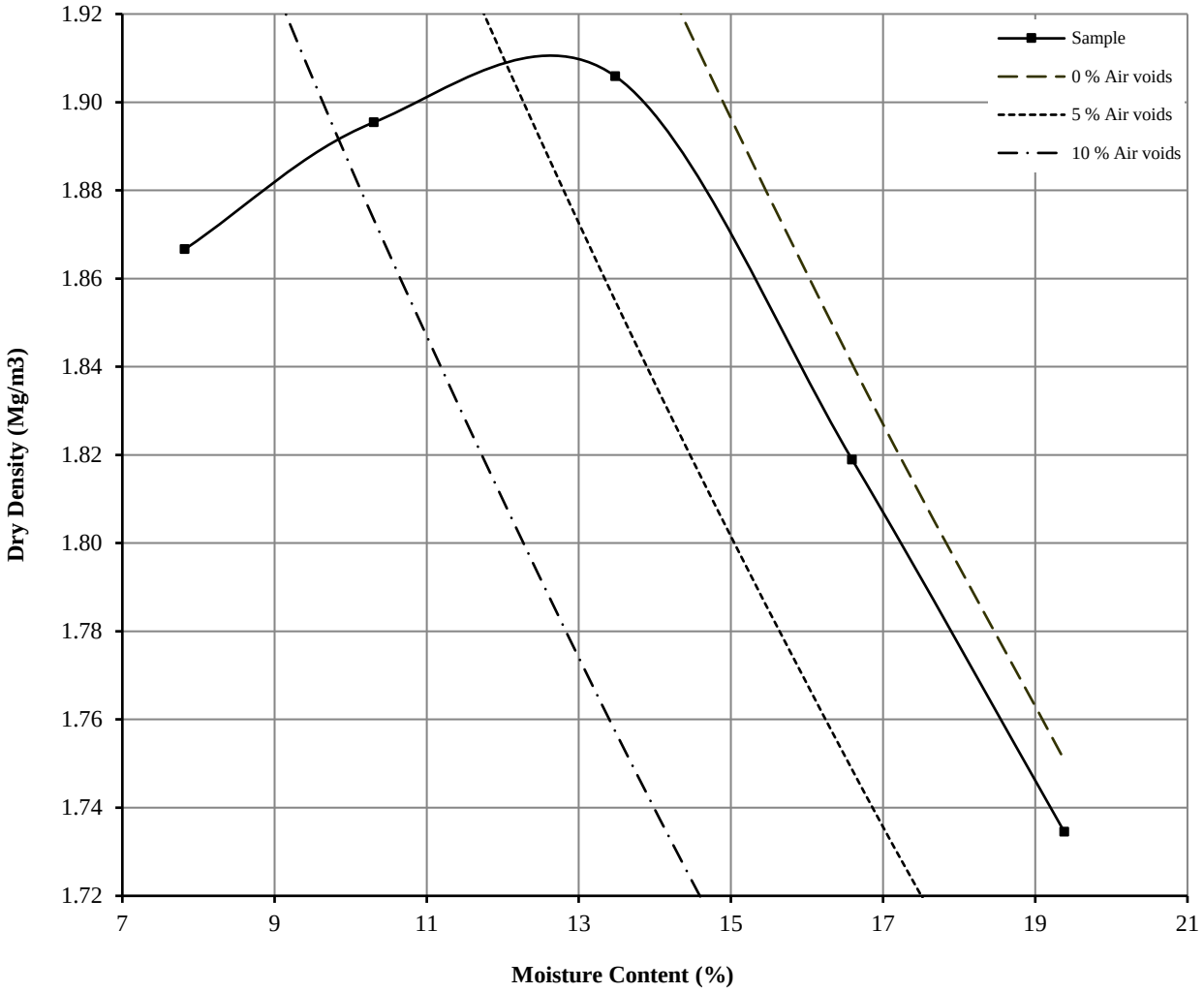



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 22 | Method of Compaction: | 2.5kg | Separate Samples |
| Particle Density (Mg/m3): | 2.65 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 0 |
| Maximum Dry Density (Mg/m3): | | 1.65 | Material Retained on 20.0 mm Test Sieve (%): | | 0 |
| Optimum Moisture Content (%): | | 22 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.3 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH124** | **Top Depth (m) :** | **3.50** |
| **Sample Number:** | **105** | **Base Depth (m) :** | **3.80** |
| **Sample Type:** | **CS** | | |

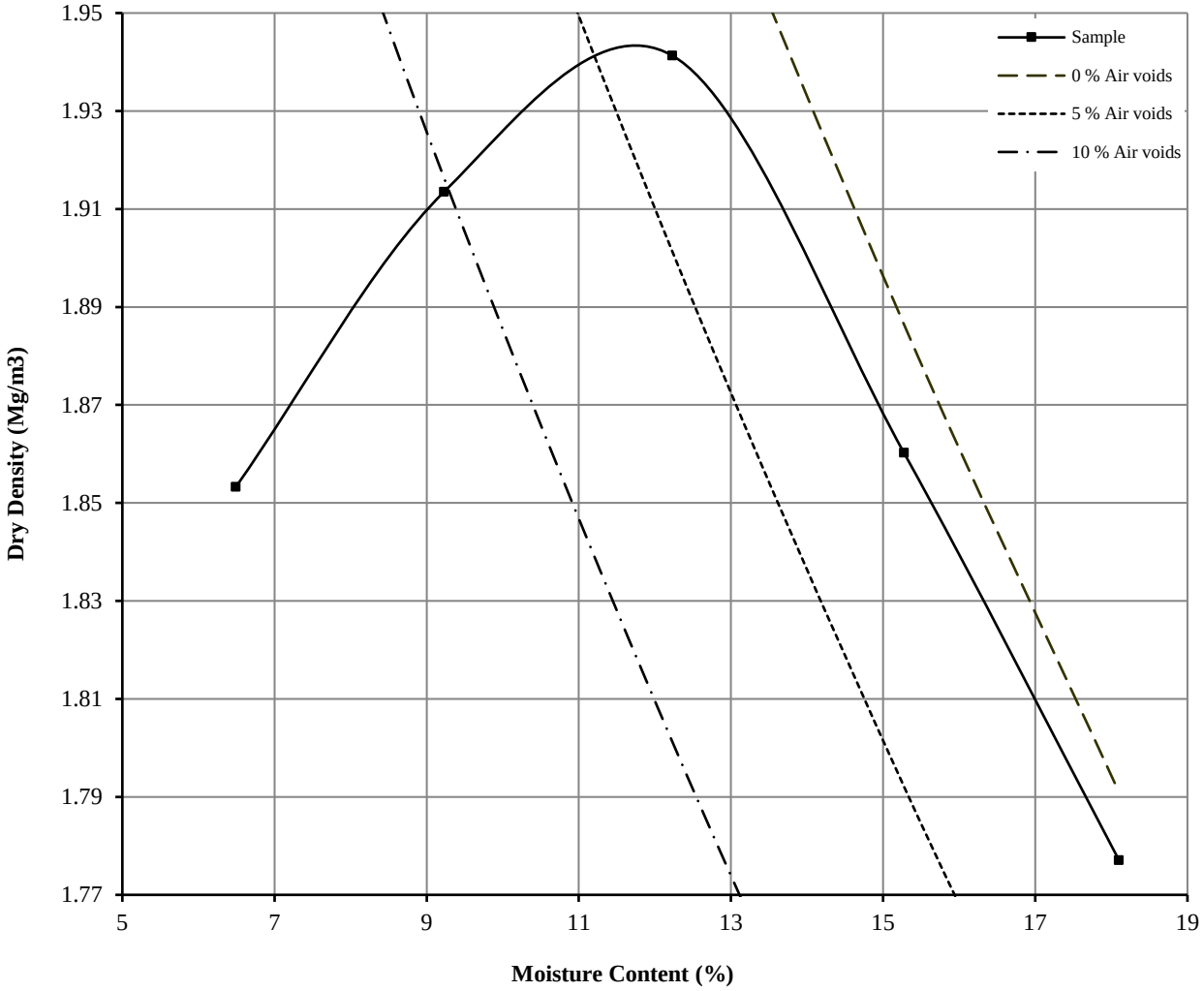



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 7.8 | Method of Compaction: | 2.5kg | Separate Samples |
| Particle Density (Mg/m3): | 2.65 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 0 |
| Maximum Dry Density (Mg/m3): | | 1.91 | Material Retained on 20.0 mm Test Sieve (%): | | 0 |
| Optimum Moisture Content (%): | | 13 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.4 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH121** | **Top Depth (m) :** | **1.50** |
| **Sample Number:** | **4** | **Base Depth (m) :** | **2.00** |
| **Sample Type:** | **B** | | |

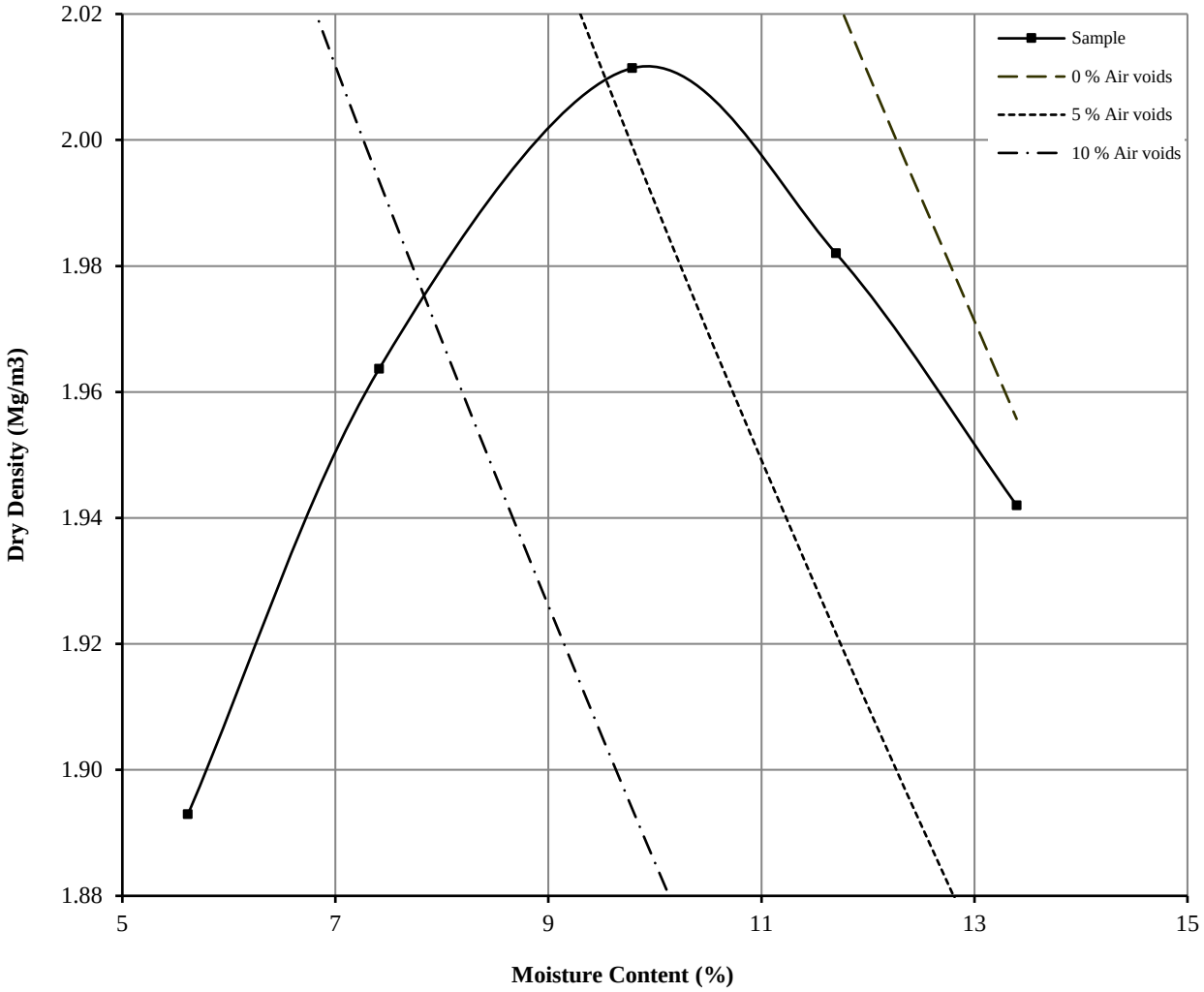



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 15 | Method of Compaction: | 2.5kg | Separate Samples |
| Particle Density (Mg/m3): | 2.65 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 2 |
| Maximum Dry Density (Mg/m3): | | 1.94 | Material Retained on 20.0 mm Test Sieve (%): | | 5 |
| Optimum Moisture Content (%): | | 12 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.5 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH121** | **Top Depth (m) :** | **7.00** |
| **Sample Number:** | **106** | **Base Depth (m) :** | **8.00** |
| **Sample Type:** | **B** | | |

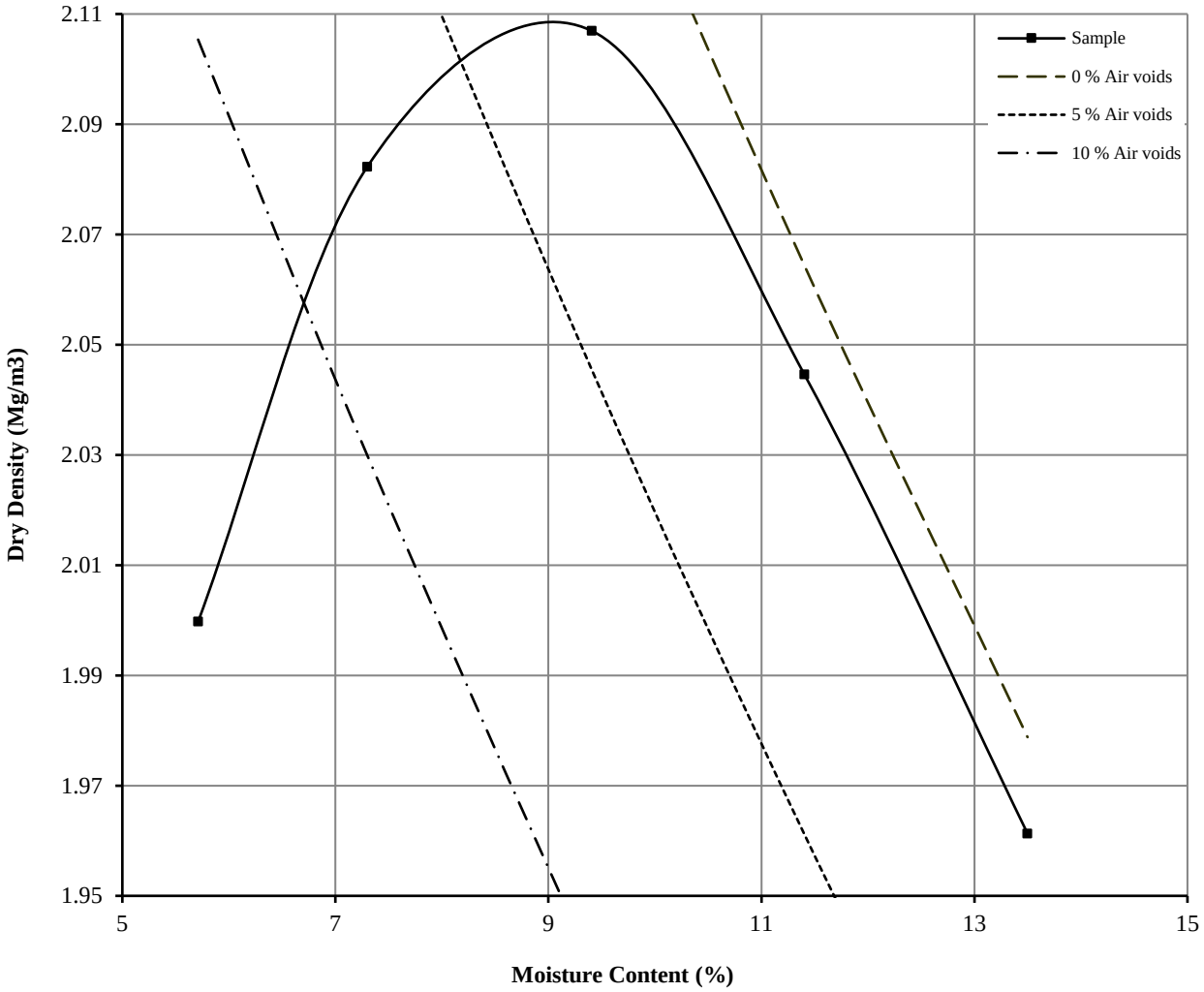



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 20 | Method of Compaction: | Vibro | Separate Samples |
| Particle Density (Mg/m3): | 2.65 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 0 |
| Maximum Dry Density (Mg/m3): | | 2.01 | Material Retained on 20.0 mm Test Sieve (%): | | 0 |
| Optimum Moisture Content (%): | | 10 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.7 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH122** | **Top Depth (m) :** | **2.60** |
| **Sample Number:** | **104** | **Base Depth (m) :** | **2.80** |
| **Sample Type:** | **B** | | |

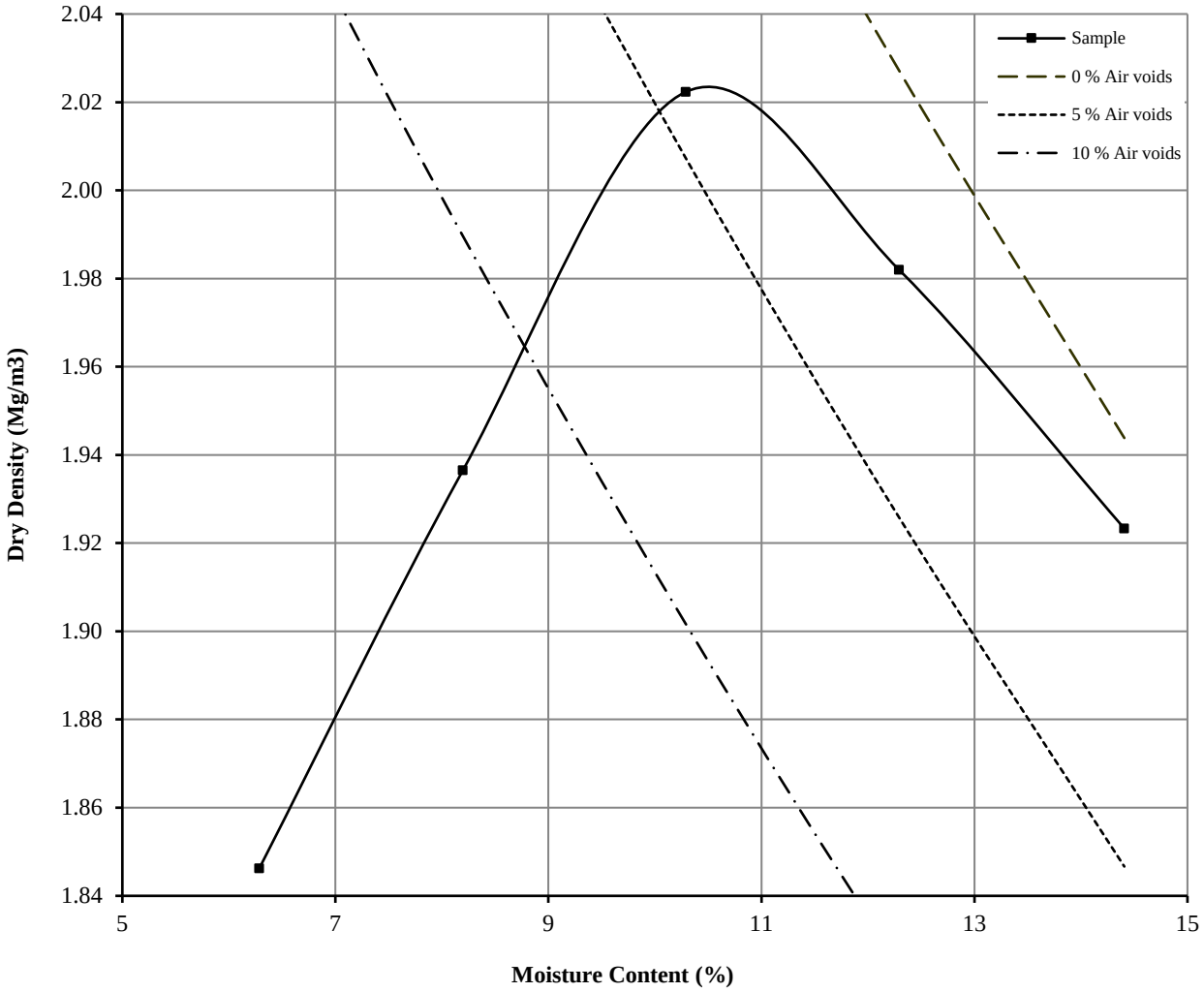



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 7.3 | Method of Compaction: | Vibro | Separate Samples |
| Particle Density (Mg/m3): | 2.7 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 0 |
| Maximum Dry Density (Mg/m3): | | 2.11 | Material Retained on 20.0 mm Test Sieve (%): | | 9 |
| Optimum Moisture Content (%): | | 9 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.7 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH112** | **Top Depth (m) :** | **2.20** |
| **Sample Number:** | **103** | **Base Depth (m) :** | **2.40** |
| **Sample Type:** | **B** | | |



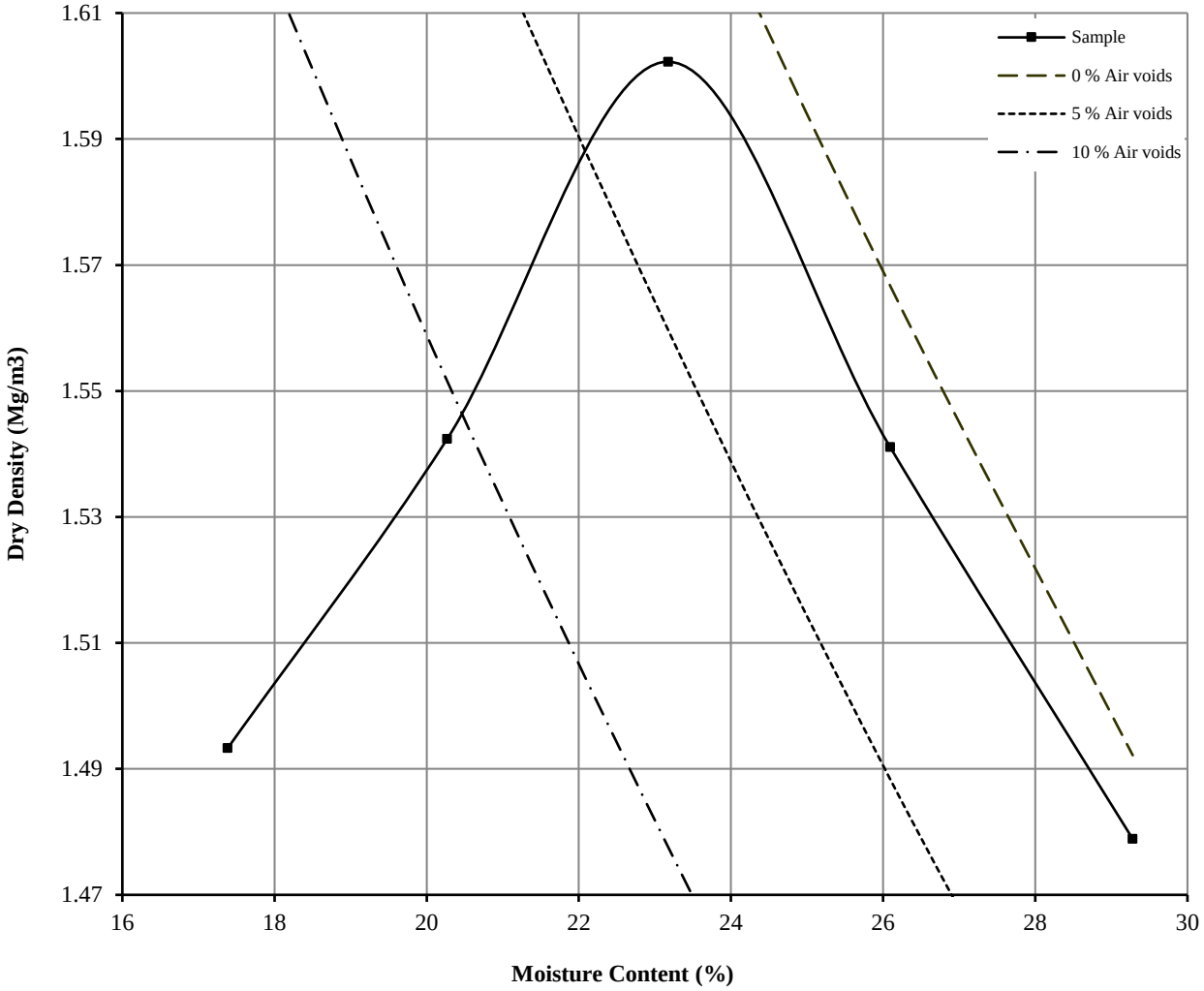

| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 6.3 | Method of Compaction: | Vibro | Separate Samples |
| Particle Density (Mg/m3): | 2.7 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 0 |
| Maximum Dry Density (Mg/m3): | | 2.02 | Material Retained on 20.0 mm Test Sieve (%): | | 14 |
| Optimum Moisture Content (%): | | 10 | | | |
| Remarks See summary of soil descriptions | | | | | |

| | | | |
|---|---|---|---|
| UKAS TESTING 4043 | PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** | **Contract** PSL22/3650 **Client Ref** GT0386 |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.4 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH129** | **Top Depth (m) :** | **1.00** |
| **Sample Number:** | **5** | **Base Depth (m) :** | **1.30** |
| **Sample Type:** | **B** | | |

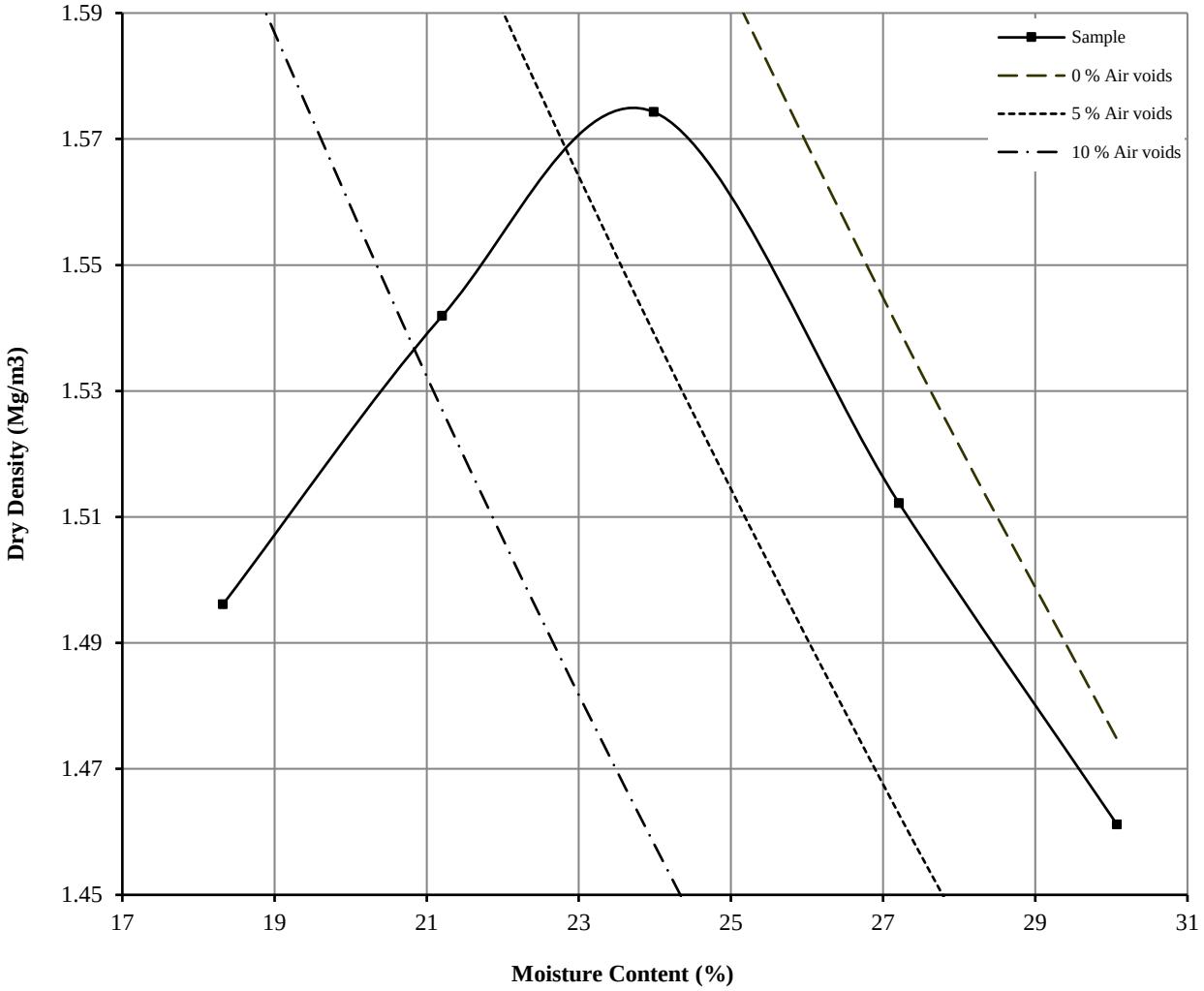



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 35 | Method of Compaction: | 2.5kg | Separate Samples |
| Particle Density (Mg/m3): | 2.65 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 0 |
| Maximum Dry Density (Mg/m3): | | 1.60 | Material Retained on 20.0 mm Test Sieve (%): | | 6 |
| Optimum Moisture Content (%): | | 23 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.4 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP130** | **Top Depth (m) :** | **0.50** |
| **Sample Number:** | **5** | **Base Depth (m) :** | **0.80** |
| **Sample Type:** | **B** | | |

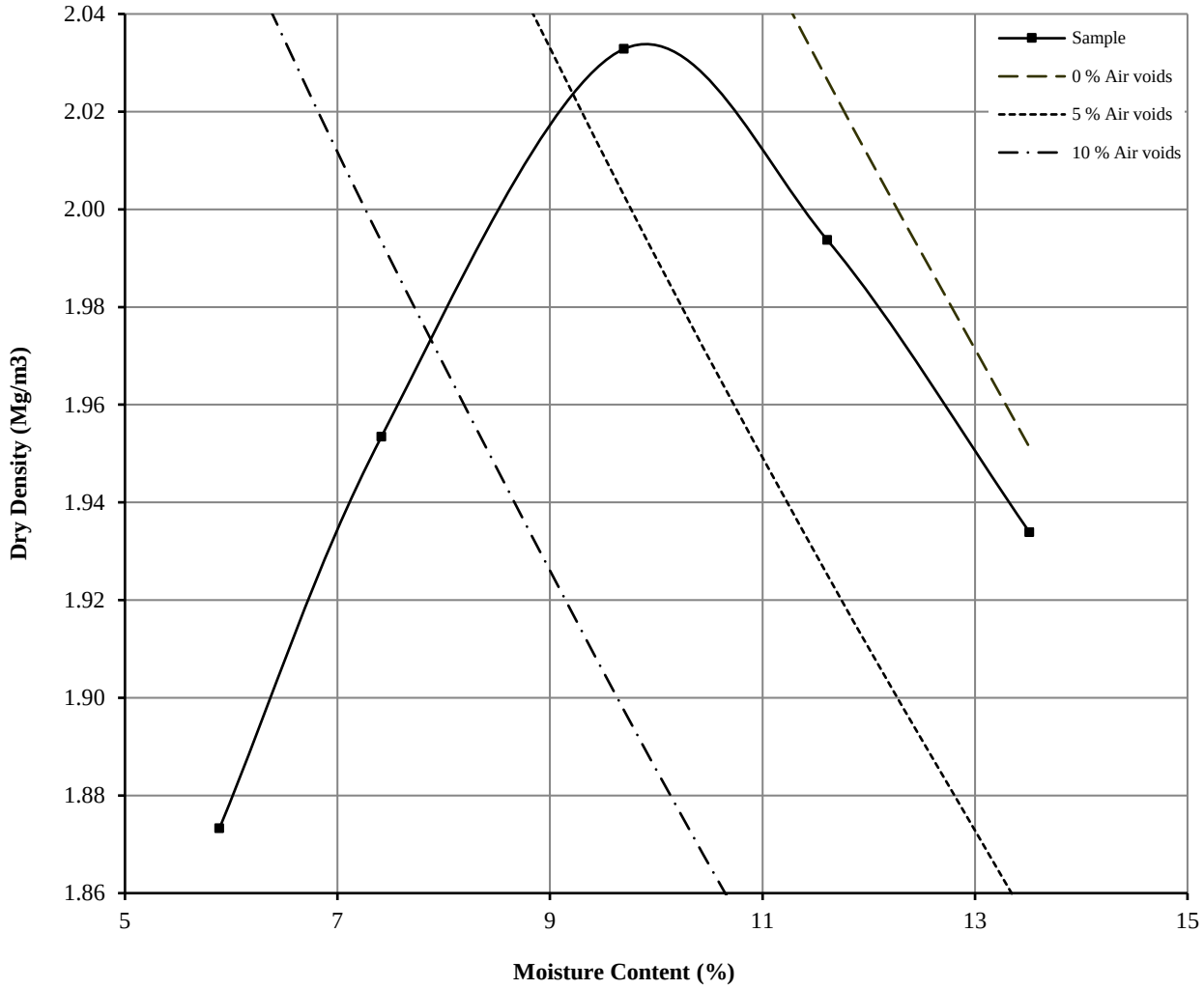



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 27 | Method of Compaction: | 2.5kg | Separate Samples |
| Particle Density (Mg/m3): | 2.65 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 8 |
| Maximum Dry Density (Mg/m3): | | 1.57 | Material Retained on 20.0 mm Test Sieve (%): | | 4 |
| Optimum Moisture Content (%): | | 24 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.5 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH110** | **Top Depth (m) :** | **4.50** |
| **Sample Number:** | **102** | **Base Depth (m) :** | **5.00** |
| **Sample Type:** | **B** | | |

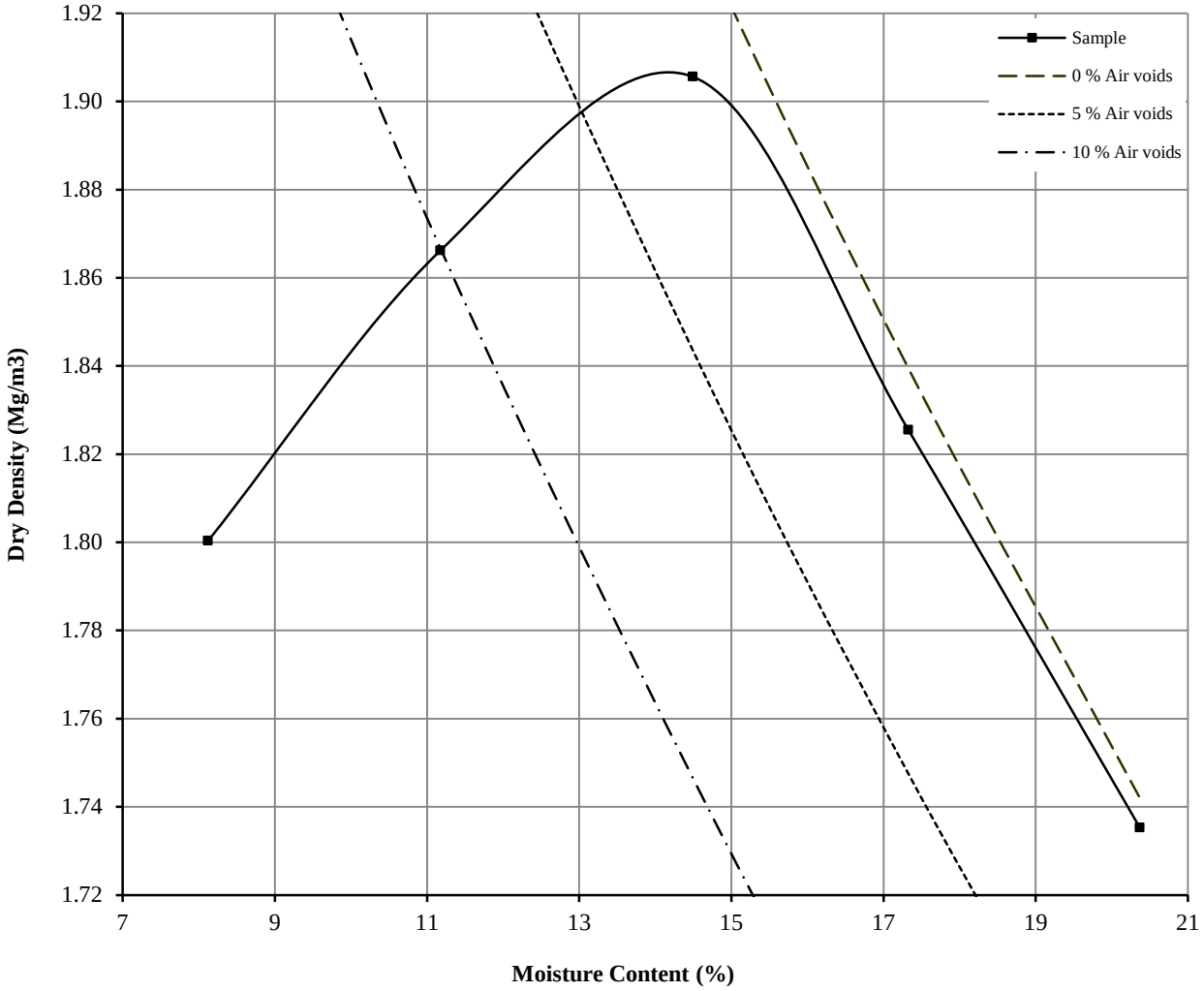



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 14 | Method of Compaction: | Vibro | Separate Samples |
| Particle Density (Mg/m3): | 2.65 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 0 |
| Maximum Dry Density (Mg/m3): | | 2.03 | Material Retained on 20.0 mm Test Sieve (%): | | 0 |
| Optimum Moisture Content (%): | | 10 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.3 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP139** | **Top Depth (m) :** | **0.50** |
| **Sample Number:** | **5** | **Base Depth (m) :** | **0.70** |
| **Sample Type:** | **B** | | |



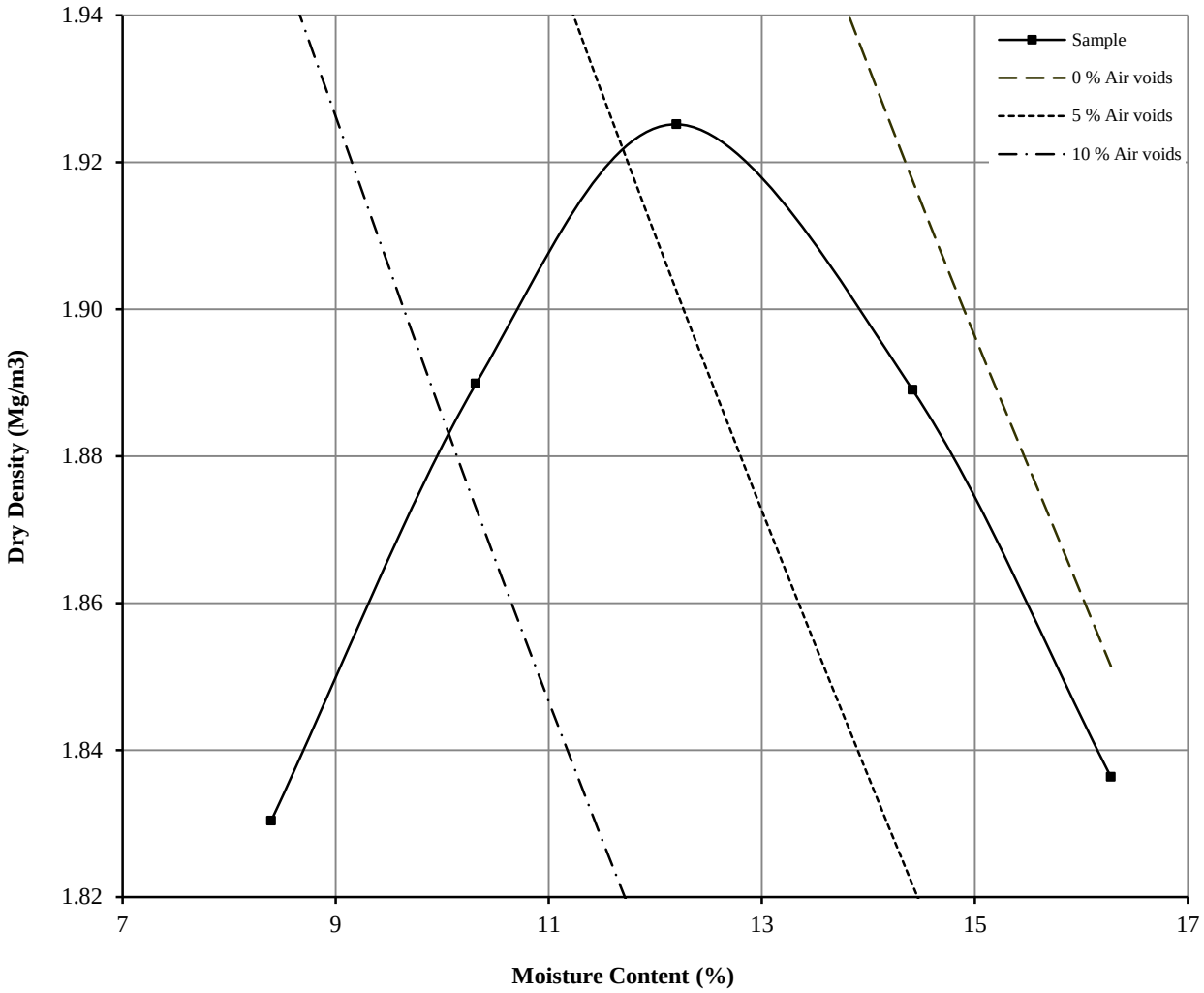

| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 11 | Method of Compaction: | 2.5kg | Separate Samples |
| Particle Density (Mg/m3): | 2.7 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 0 |
| Maximum Dry Density (Mg/m3): | | 1.91 | Material Retained on 20.0 mm Test Sieve (%): | | 0 |
| Optimum Moisture Content (%): | | 14 | | | |
| Remarks See summary of soil descriptions | | | | | |

| | | | |
|---|---|---|---|
| UKAS TESTING 4043 | PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** | **Contract** PSL22/3825 **Client Ref** GT0386 |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**Non compliance with BS 1377 : Part 4 : Clause 3.6 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP139** | **Top Depth (m) :** | **1.60** |
| **Sample Number:** | **7** | **Base Depth (m) :** | **1.80** |
| **Sample Type:** | **B** | | |

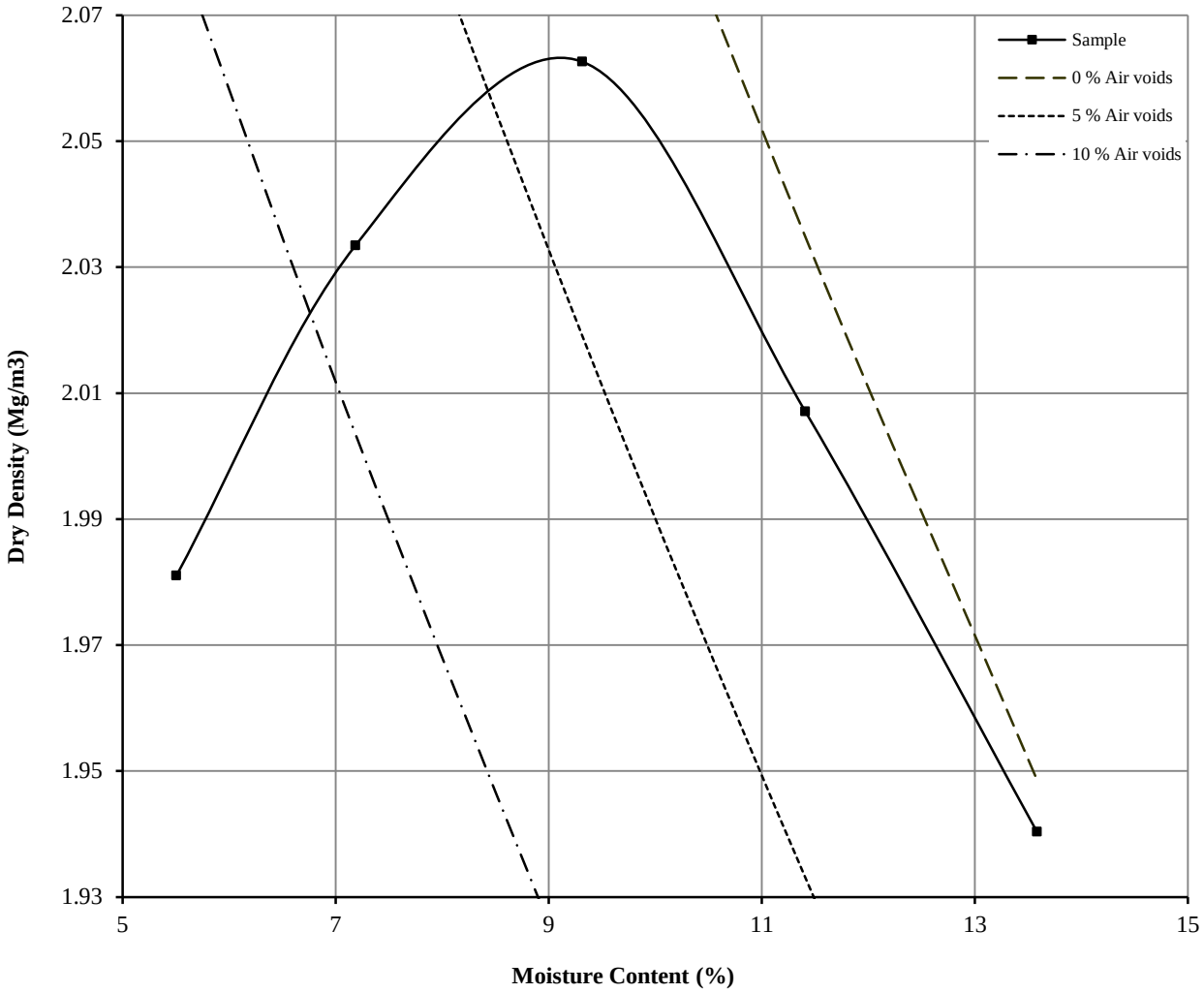



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 16 | Method of Compaction: | 4.5kg | Separate Samples |
| Particle Density (Mg/m3): | 2.65 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 11 |
| Maximum Dry Density (Mg/m3): | | 1.93 | Material Retained on 20.0 mm Test Sieve (%): | | 4 |
| Optimum Moisture Content (%): | | 12 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.6 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP140** | **Top Depth (m) :** | **1.00** |
| **Sample Number:** | **7** | **Base Depth (m) :** | **1.20** |
| **Sample Type:** | **B** | | |

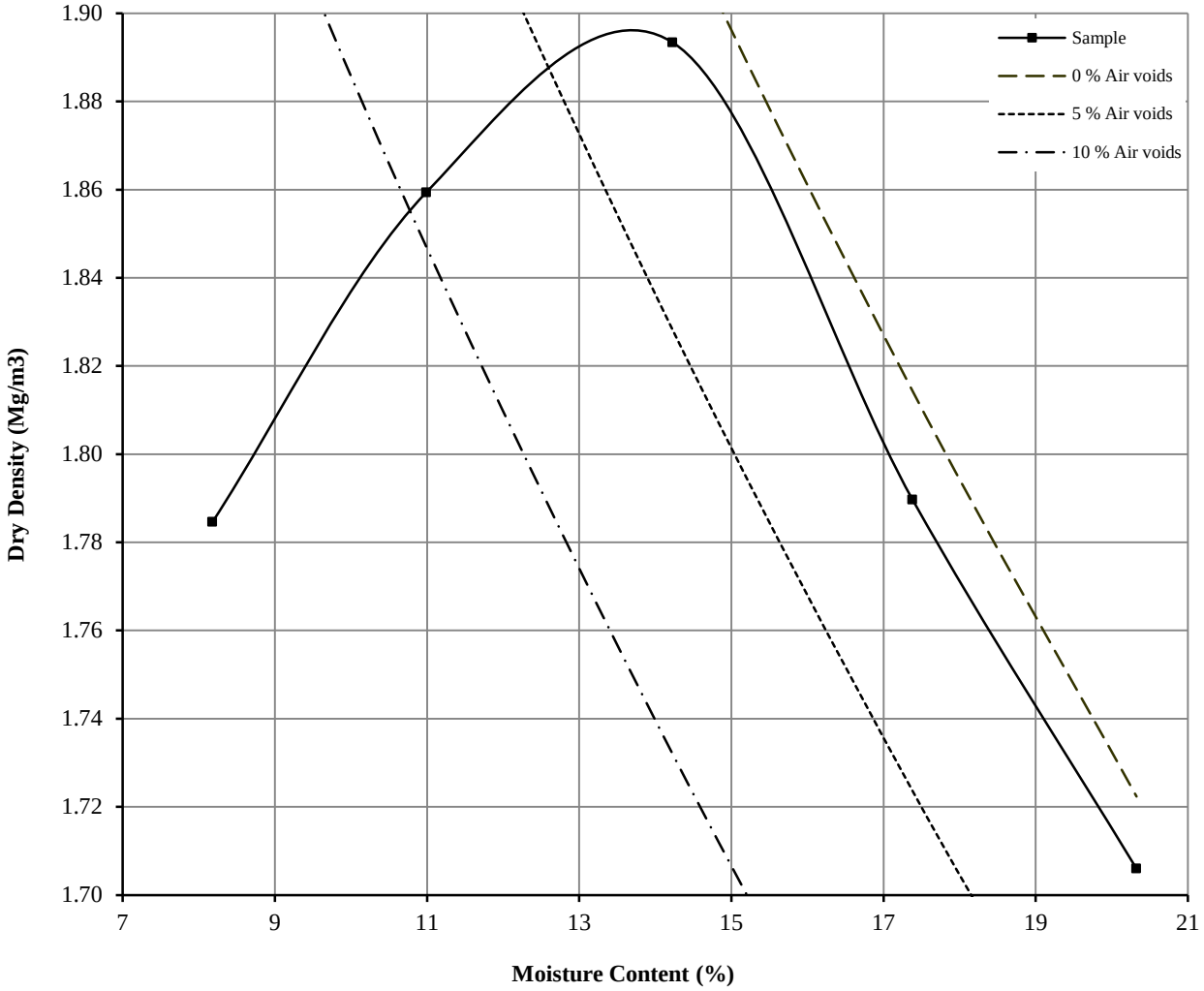



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 11 | Method of Compaction: | 4.5kg | Separate Samples |
| Particle Density (Mg/m3): | 2.65 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 3 |
| Maximum Dry Density (Mg/m3): | | 2.06 | Material Retained on 20.0 mm Test Sieve (%): | | 9 |
| Optimum Moisture Content (%): | | 9 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.3 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP140** | **Top Depth (m) :** | **1.70** |
| **Sample Number:** | **9** | **Base Depth (m) :** | **1.90** |
| **Sample Type:** | **B** | | |

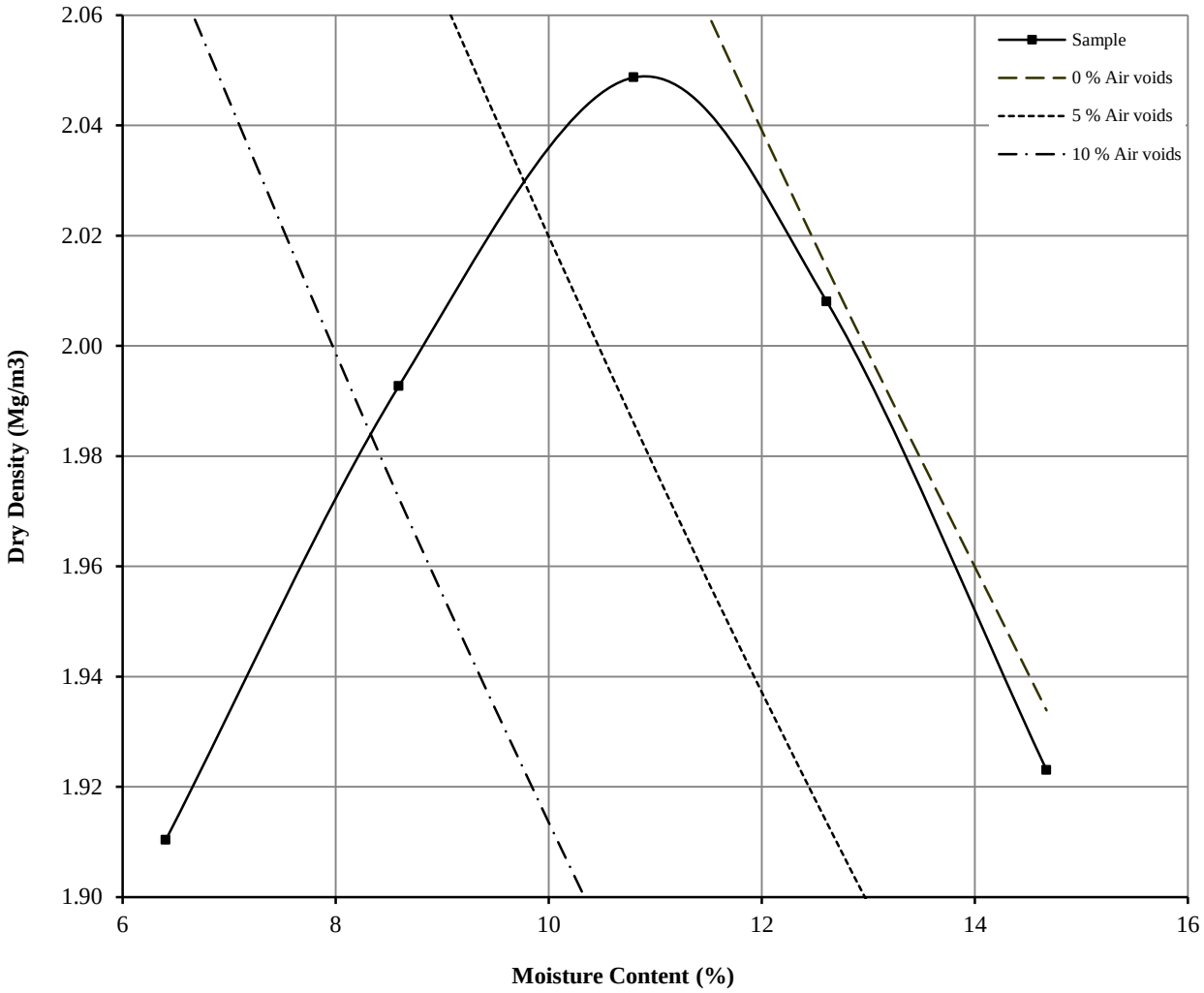



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 11 | Method of Compaction: | 2.5kg | Separate Samples |
| Particle Density (Mg/m3): | 2.65 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 0 |
| Maximum Dry Density (Mg/m3): | | 1.89 | Material Retained on 20.0 mm Test Sieve (%): | | 0 |
| Optimum Moisture Content (%): | | 14 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.4 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP141** | **Top Depth (m) :** | **0.30** |
| **Sample Number:** | **4** | **Base Depth (m) :** | **0.50** |
| **Sample Type:** | **B** | | |

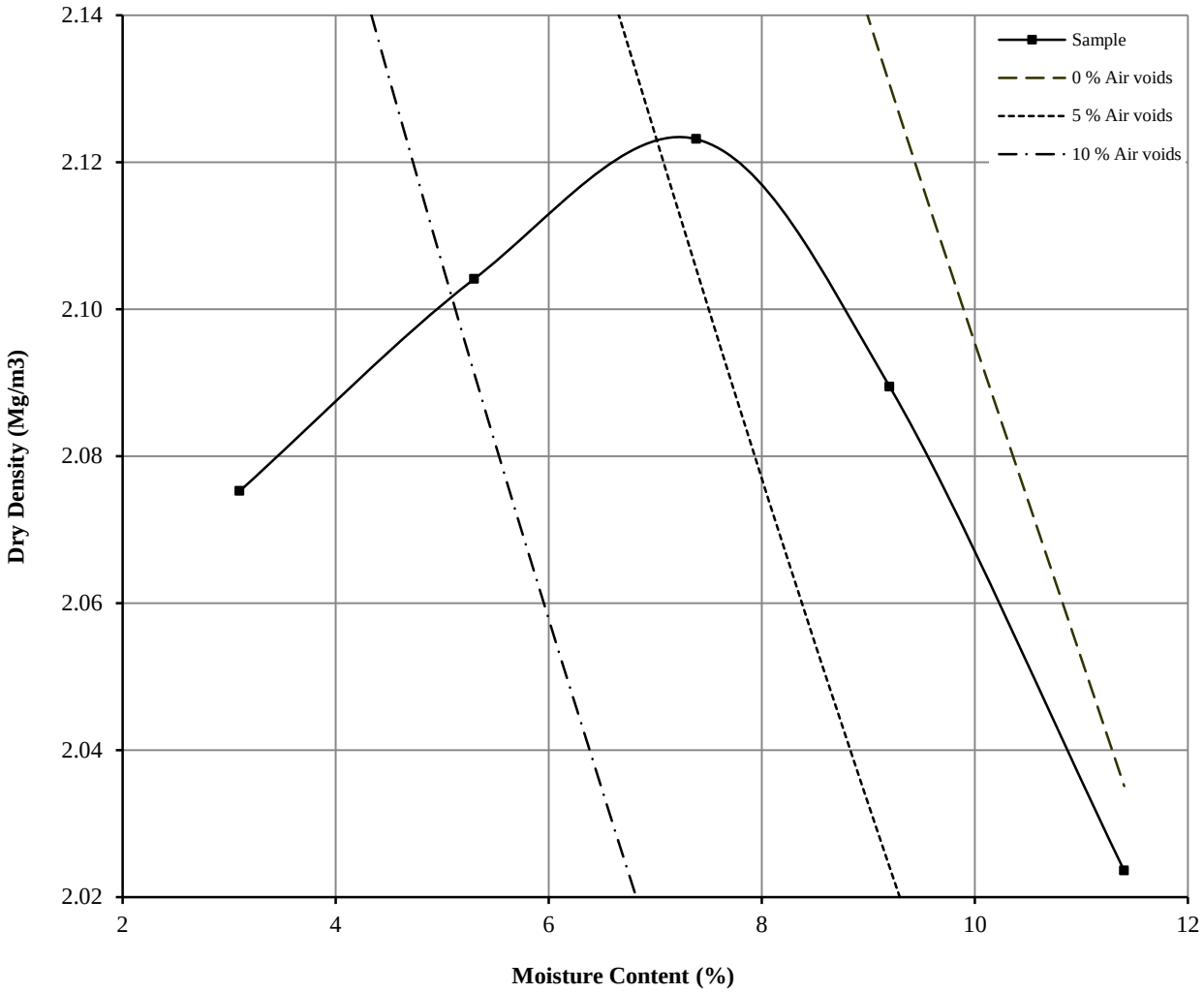



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 11 | Method of Compaction: | 2.5kg | Separate Samples |
| Particle Density (Mg/m3): | 2.7 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 7 |
| Maximum Dry Density (Mg/m3): | | 2.05 | Material Retained on 20.0 mm Test Sieve (%): | | 11 |
| Optimum Moisture Content (%): | | 11 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.7 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP142** | **Top Depth (m) :** | **0.30** |
| **Sample Number:** | **4** | **Base Depth (m) :** | **0.50** |
| **Sample Type:** | **B** | | |

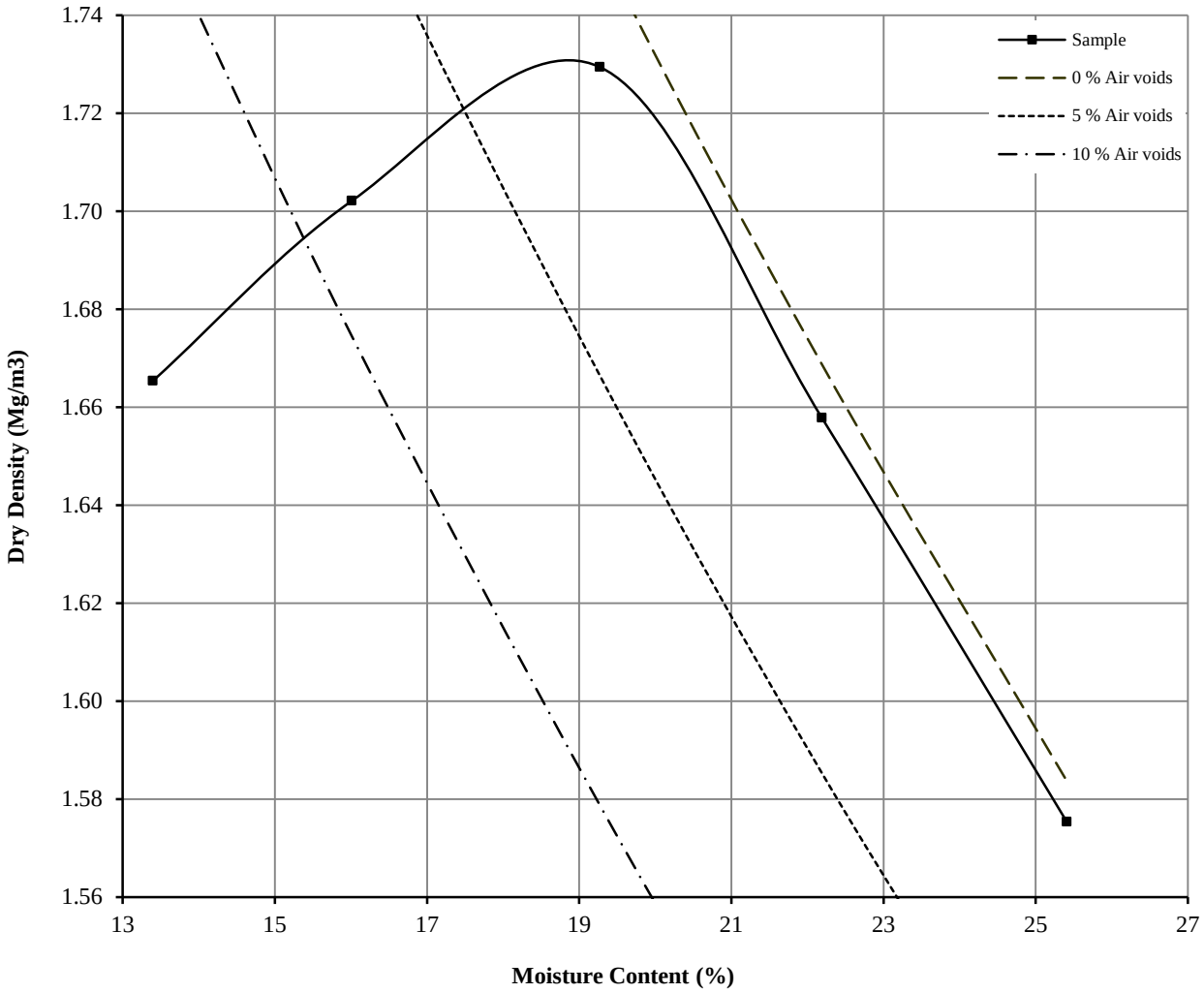



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 9.2 | Method of Compaction: | Vibro | Separate Samples |
| Particle Density (Mg/m3): | 2.65 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 2 |
| Maximum Dry Density (Mg/m3): | | 2.12 | Material Retained on 20.0 mm Test Sieve (%): | | 10 |
| Optimum Moisture Content (%): | | 7 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.3 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP142** | **Top Depth (m) :** | **2.70** |
| **Sample Number:** | **9** | **Base Depth (m) :** | **2.90** |
| **Sample Type:** | **B** | | |

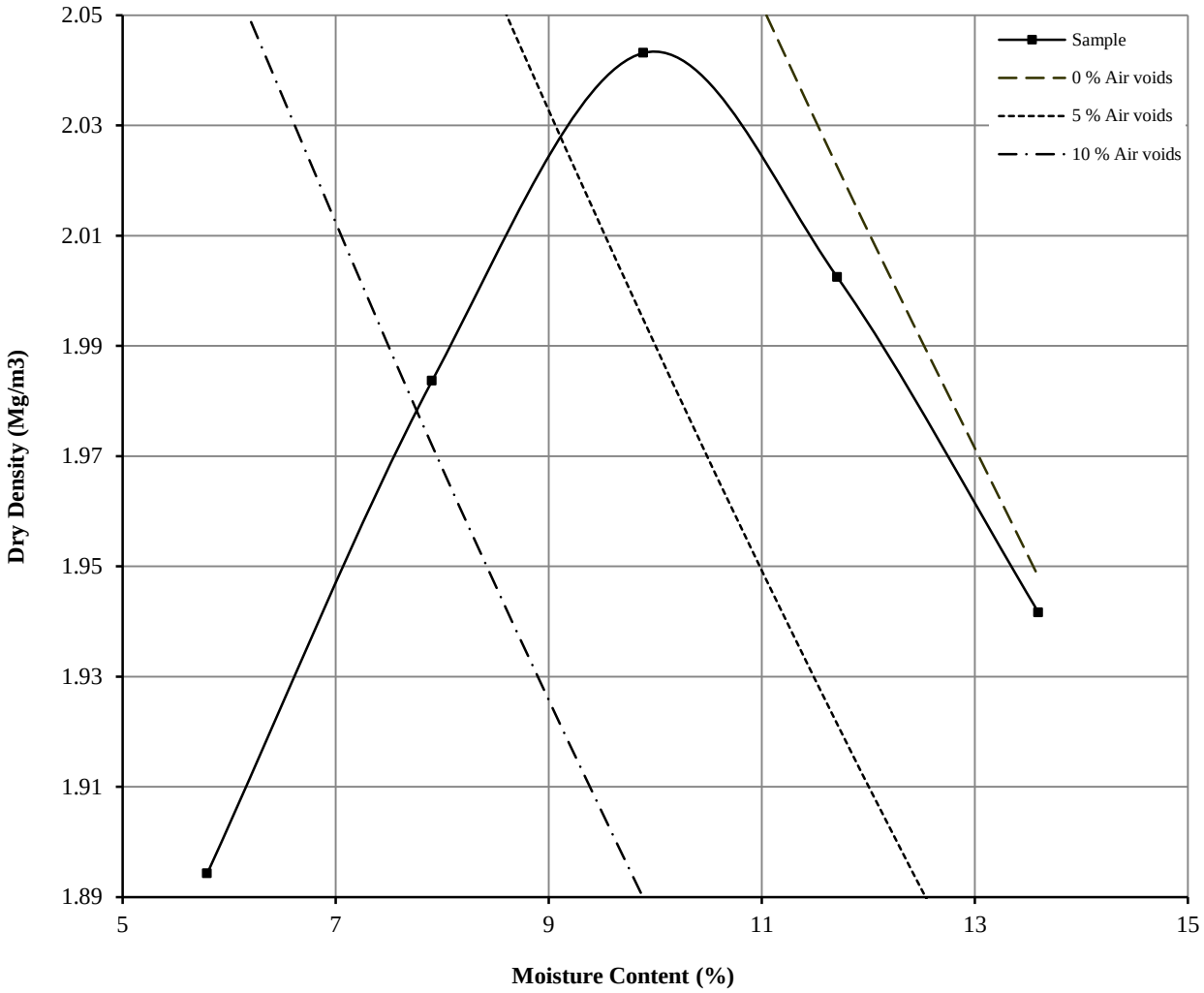



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 13 | Method of Compaction: | 2.5kg | Separate Samples |
| Particle Density (Mg/m3): | 2.65 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 0 |
| Maximum Dry Density (Mg/m3): | | 1.73 | Material Retained on 20.0 mm Test Sieve (%): | | 0 |
| Optimum Moisture Content (%): | | 19 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.7 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP143** | **Top Depth (m) :** | **1.00** |
| **Sample Number:** | **5** | **Base Depth (m) :** | **1.30** |
| **Sample Type:** | **B** | | |

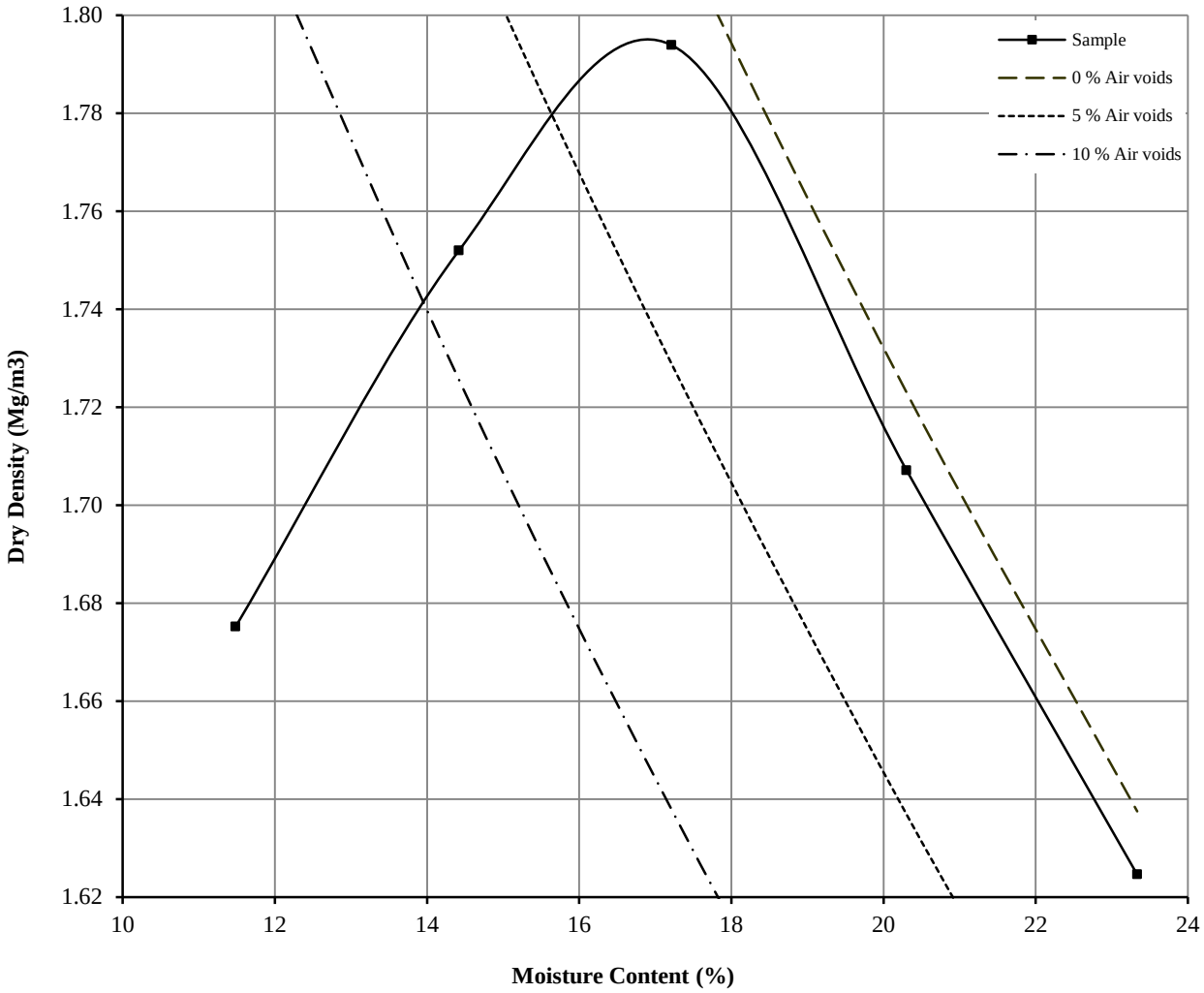



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 9.9 | Method of Compaction: | Vibro | Separate Samples |
| Particle Density (Mg/m3): | 2.65 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 7 |
| Maximum Dry Density (Mg/m3): | | 2.04 | Material Retained on 20.0 mm Test Sieve (%): | | 4 |
| Optimum Moisture Content (%): | | 10 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.3 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP143** | **Top Depth (m) :** | **3.00** |
| **Sample Number:** | **9** | **Base Depth (m) :** | **3.20** |
| **Sample Type:** | **B** | | |

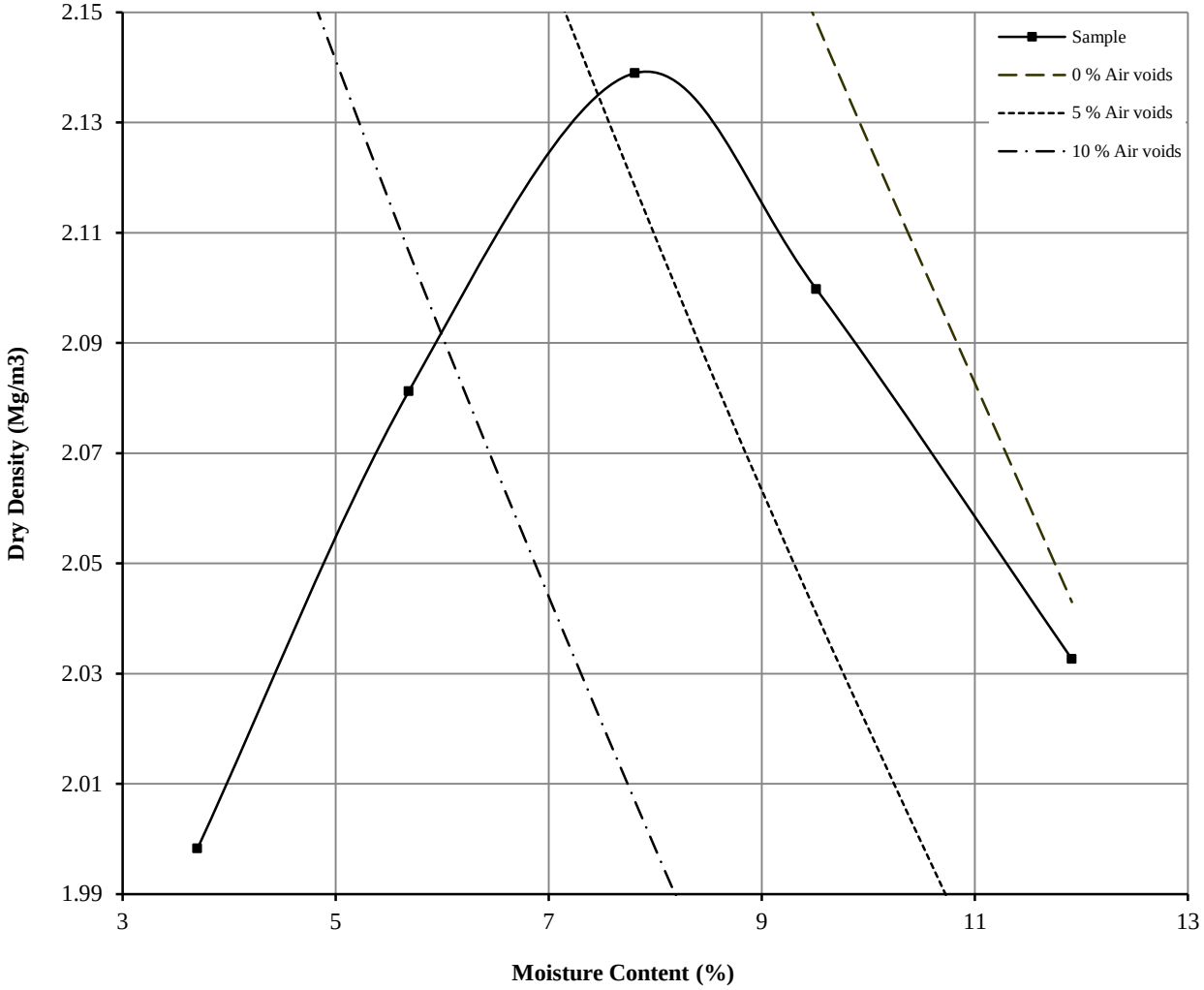



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 8.2 | Method of Compaction: | 2.5kg | Separate Samples |
| Particle Density (Mg/m3): | 2.65 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 0 |
| Maximum Dry Density (Mg/m3): | | 1.79 | Material Retained on 20.0 mm Test Sieve (%): | | 0 |
| Optimum Moisture Content (%): | | 17 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.7 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP144** | **Top Depth (m) :** | **0.40** |
| **Sample Number:** | **4** | **Base Depth (m) :** | **0.50** |
| **Sample Type:** | **B** | | |

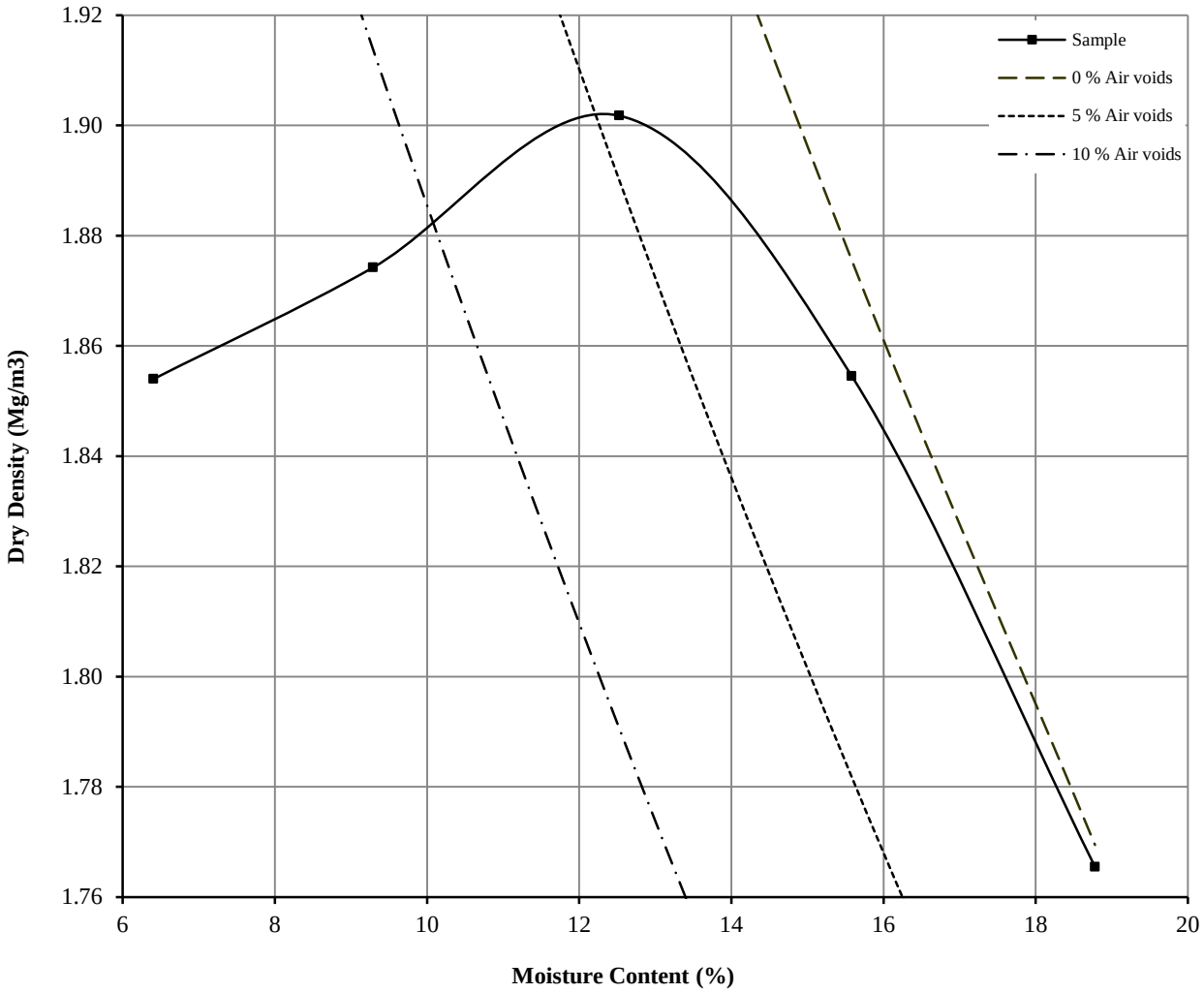



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 7.8 | Method of Compaction: | Vibro | Separate Samples |
| Particle Density (Mg/m3): | 2.7 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 2 |
| Maximum Dry Density (Mg/m3): | | 2.14 | Material Retained on 20.0 mm Test Sieve (%): | | 15 |
| Optimum Moisture Content (%): | | 8 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.4 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP144** | **Top Depth (m) :** | **1.75** |
| **Sample Number:** | **7** | **Base Depth (m) :** | **1.90** |
| **Sample Type:** | **B** | | |



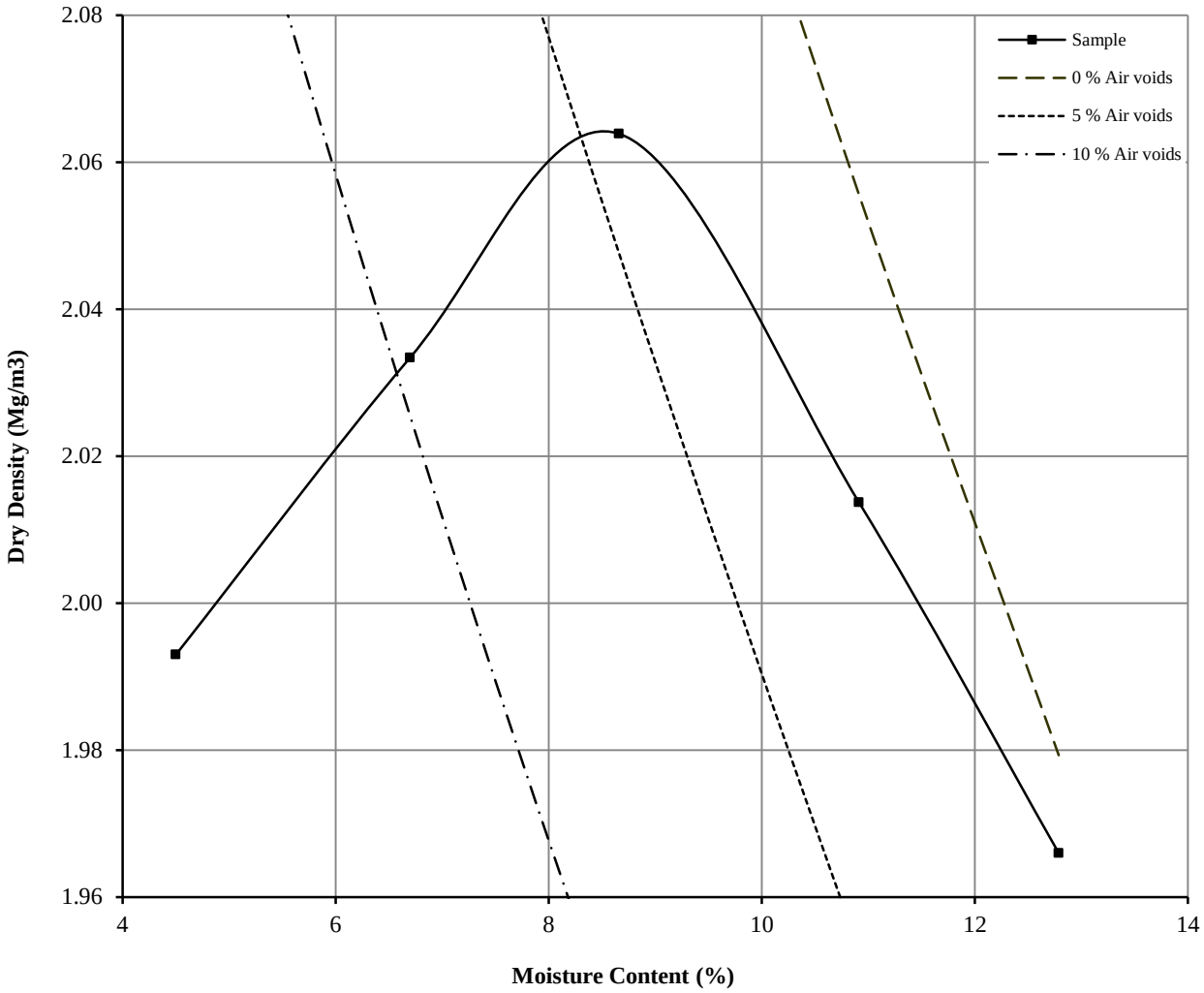

| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 16 | Method of Compaction: | 2.5kg | Separate Samples |
| Particle Density (Mg/m3): | 2.65 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 0 |
| Maximum Dry Density (Mg/m3): | | 1.90 | Material Retained on 20.0 mm Test Sieve (%): | | 8 |
| Optimum Moisture Content (%): | | 13 | | | |
| Remarks See summary of soil descriptions | | | | | |

| | | | |
|---|---|---|---|
| UKAS TESTING 4043 | PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** | **Contract** PSL22/3825 **Client Ref** GT0386 |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.7 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP145** | **Top Depth (m) :** | **2.00** |
| **Sample Number:** | **7** | **Base Depth (m) :** | **2.30** |
| **Sample Type:** | **B** | | |

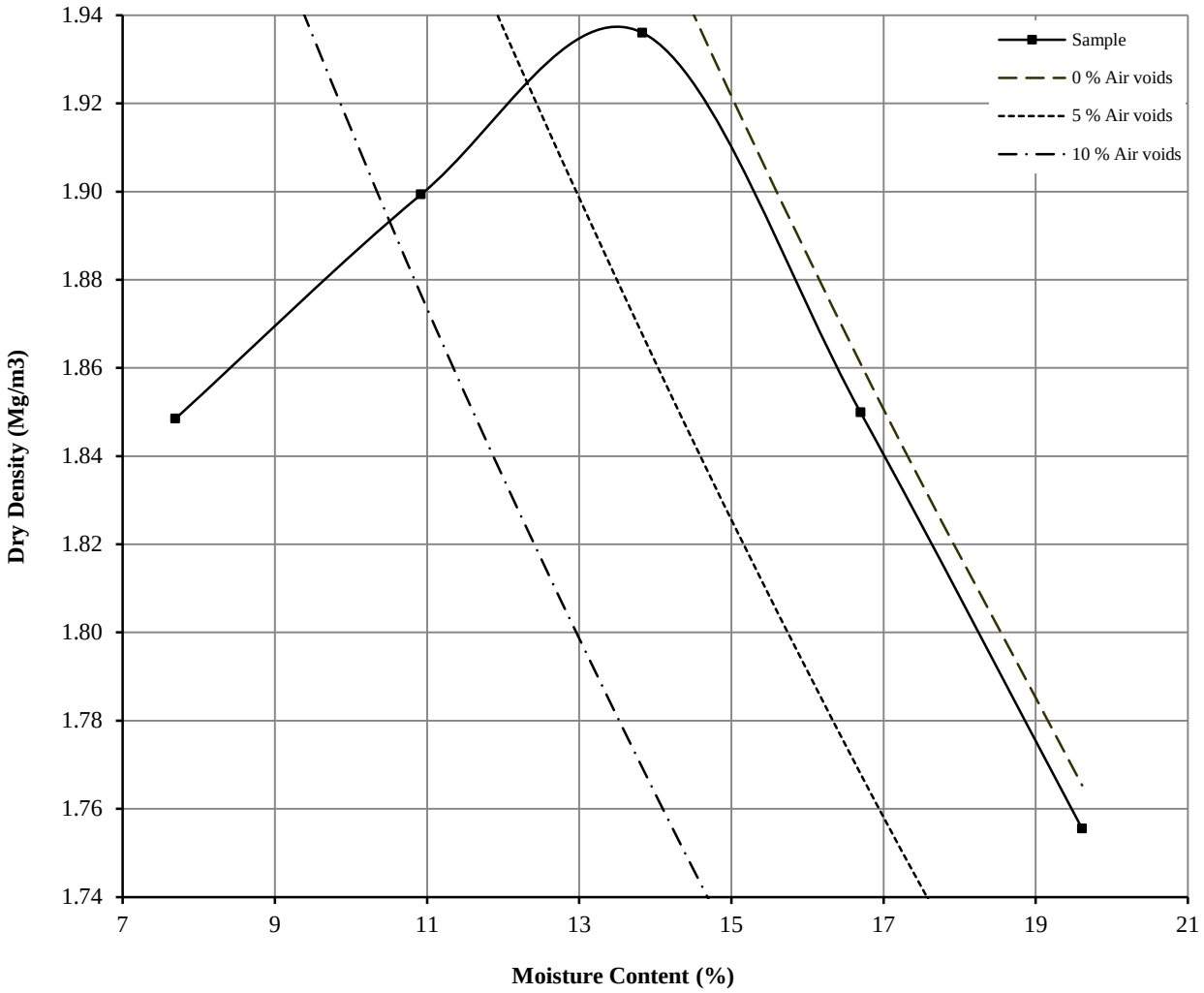



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 11 | Method of Compaction: | Vibro | Separate Samples |
| Particle Density (Mg/m3): | 2.65 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 0 |
| Maximum Dry Density (Mg/m3): | | 2.06 | Material Retained on 20.0 mm Test Sieve (%): | | 11 |
| Optimum Moisture Content (%): | | 9 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.3 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP146** | **Top Depth (m) :** | **0.40** |
| **Sample Number:** | **5** | **Base Depth (m) :** | **0.70** |
| **Sample Type:** | **B** | | |

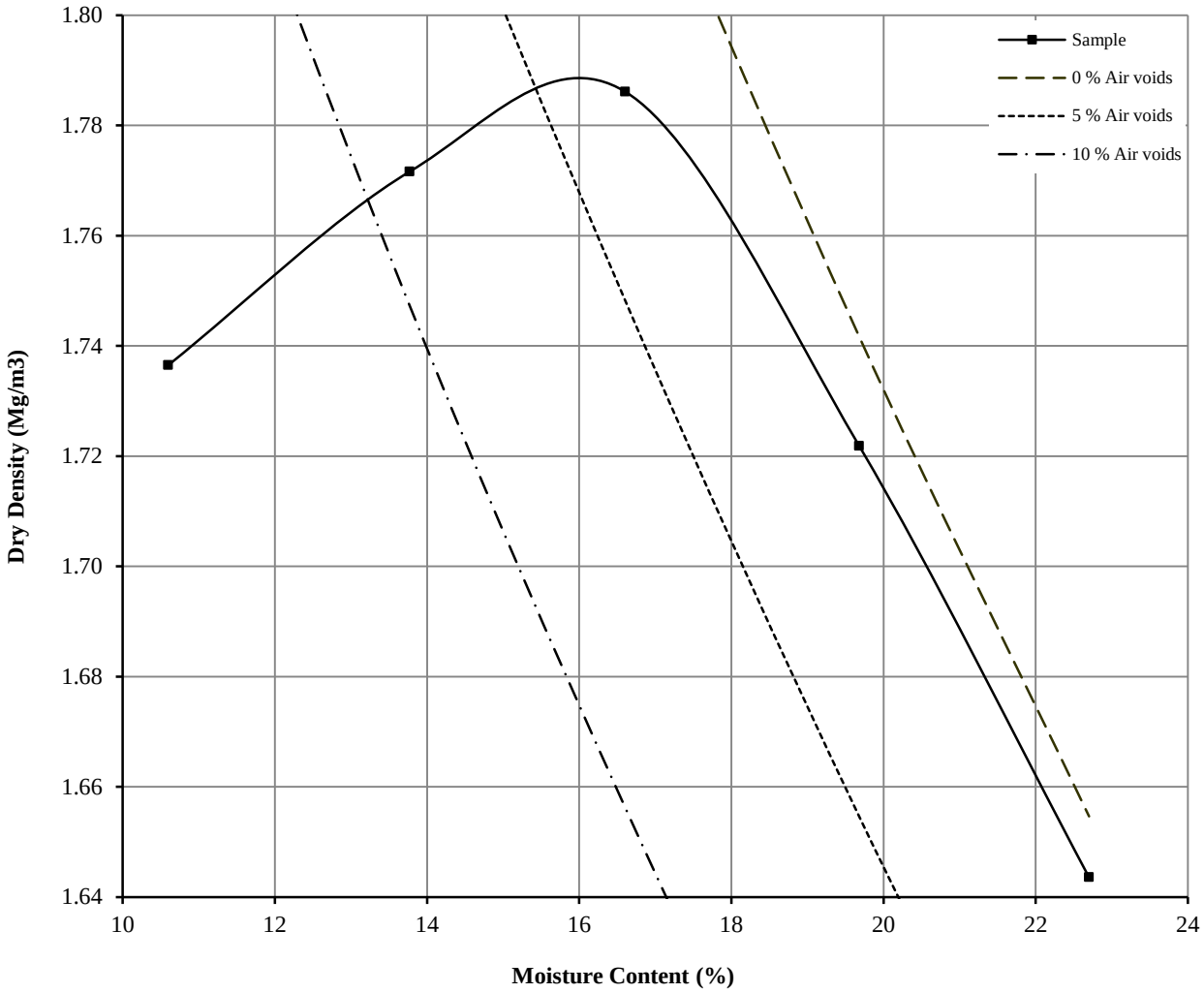



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 11 | Method of Compaction: | 2.5kg | Separate Samples |
| Particle Density (Mg/m3): | 2.7 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 0 |
| Maximum Dry Density (Mg/m3): | | 1.94 | Material Retained on 20.0 mm Test Sieve (%): | | 3 |
| Optimum Moisture Content (%): | | 14 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.3 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP146** | **Top Depth (m) :** | **1.10** |
| **Sample Number:** | **7** | **Base Depth (m) :** | **1.40** |
| **Sample Type:** | **B** | | |

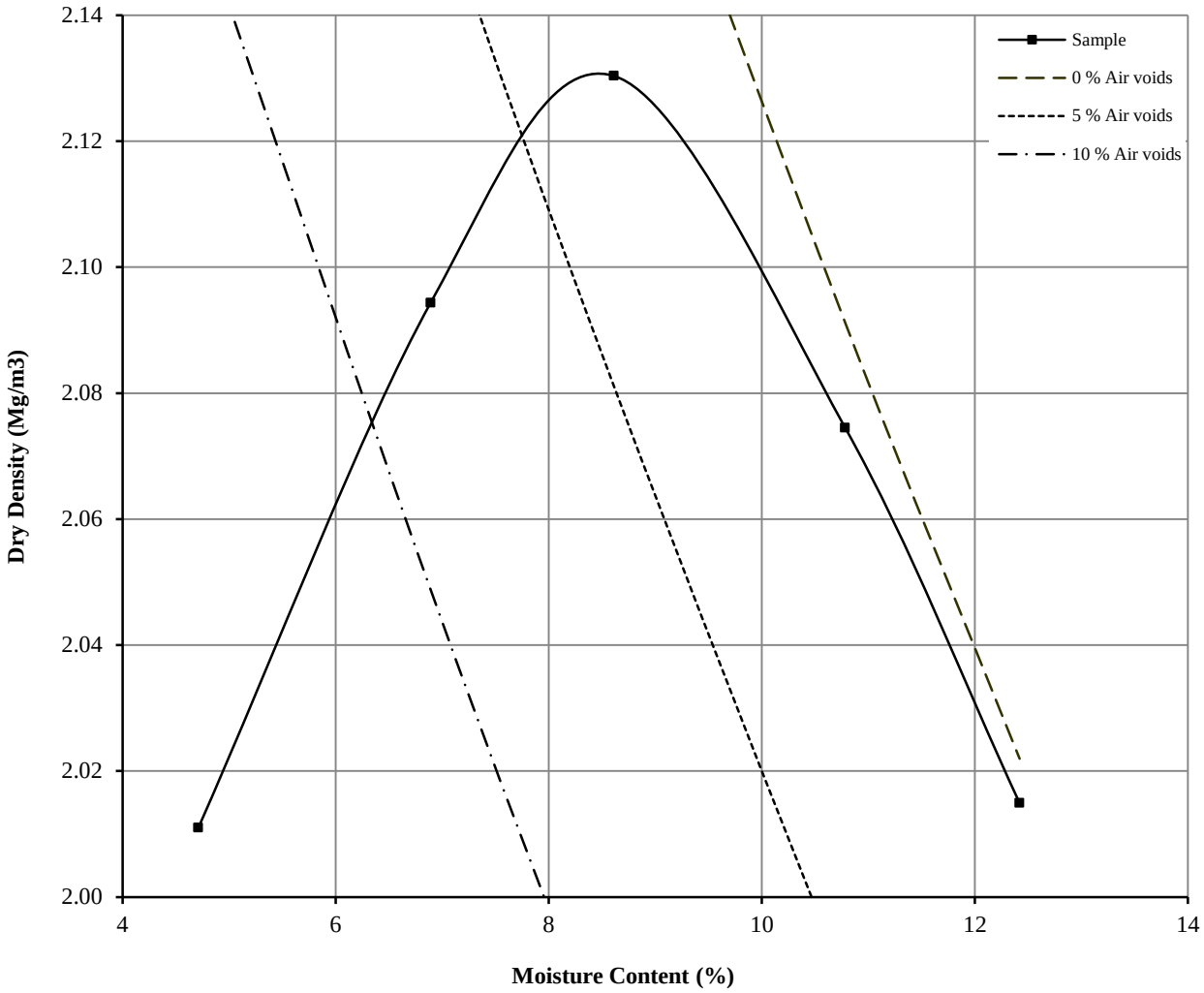



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 11 | Method of Compaction: | 2.5kg | Separate Samples |
| Particle Density (Mg/m3): | 2.65 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 0 |
| Maximum Dry Density (Mg/m3): | | 1.79 | Material Retained on 20.0 mm Test Sieve (%): | | 0 |
| Optimum Moisture Content (%): | | 17 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.7 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP147** | **Top Depth (m) :** | **0.60** |
| **Sample Number:** | **7** | **Base Depth (m) :** | **0.80** |
| **Sample Type:** | **B** | | |

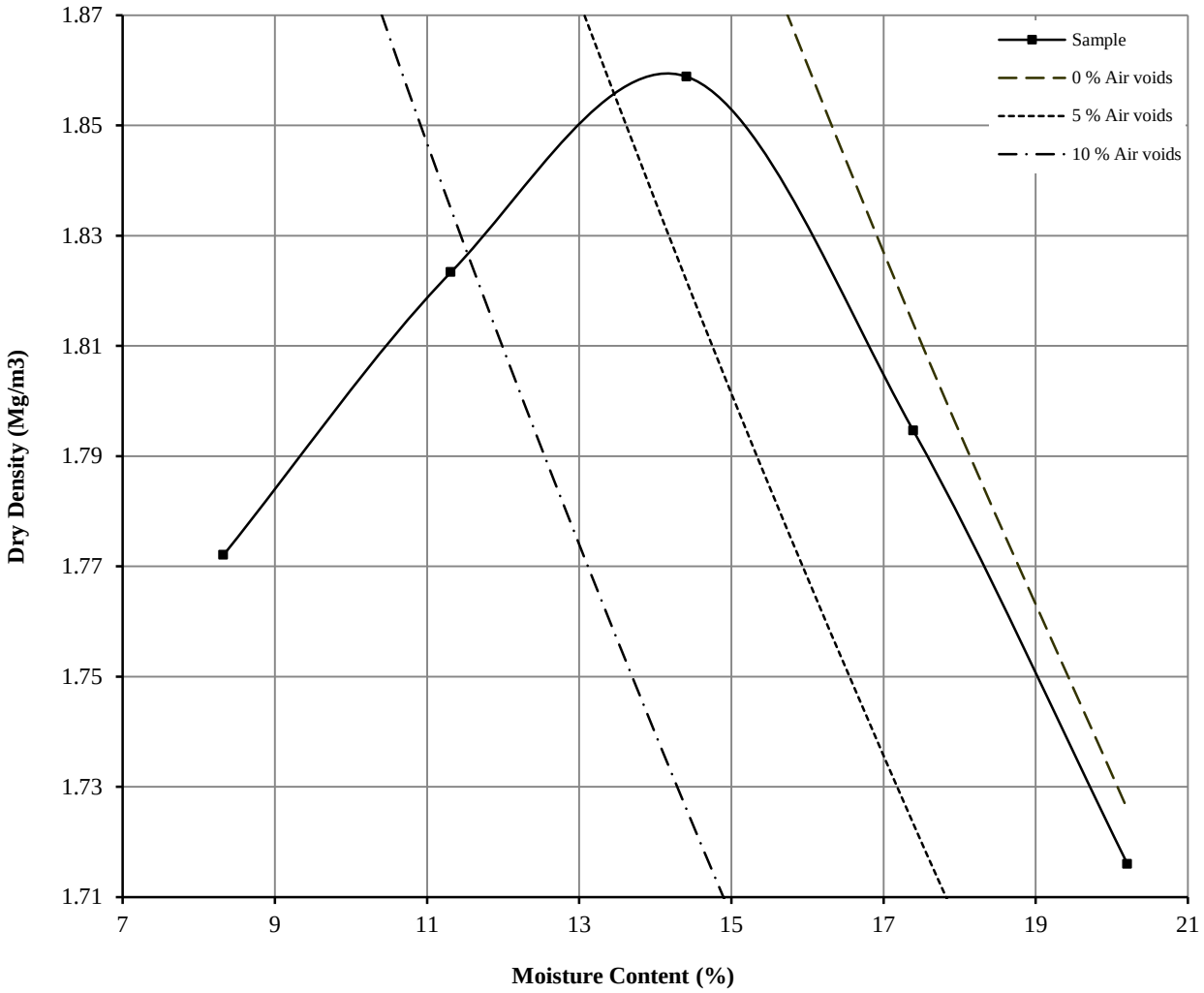



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 4.7 | Method of Compaction: | Vibro | Separate Samples |
| Particle Density (Mg/m3): | 2.7 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 5 |
| Maximum Dry Density (Mg/m3): | | 2.13 | Material Retained on 20.0 mm Test Sieve (%): | | 16 |
| Optimum Moisture Content (%): | | 9 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.3 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP148** | **Top Depth (m) :** | **1.00** |
| **Sample Number:** | **5** | **Base Depth (m) :** | **1.30** |
| **Sample Type:** | **B** | | |

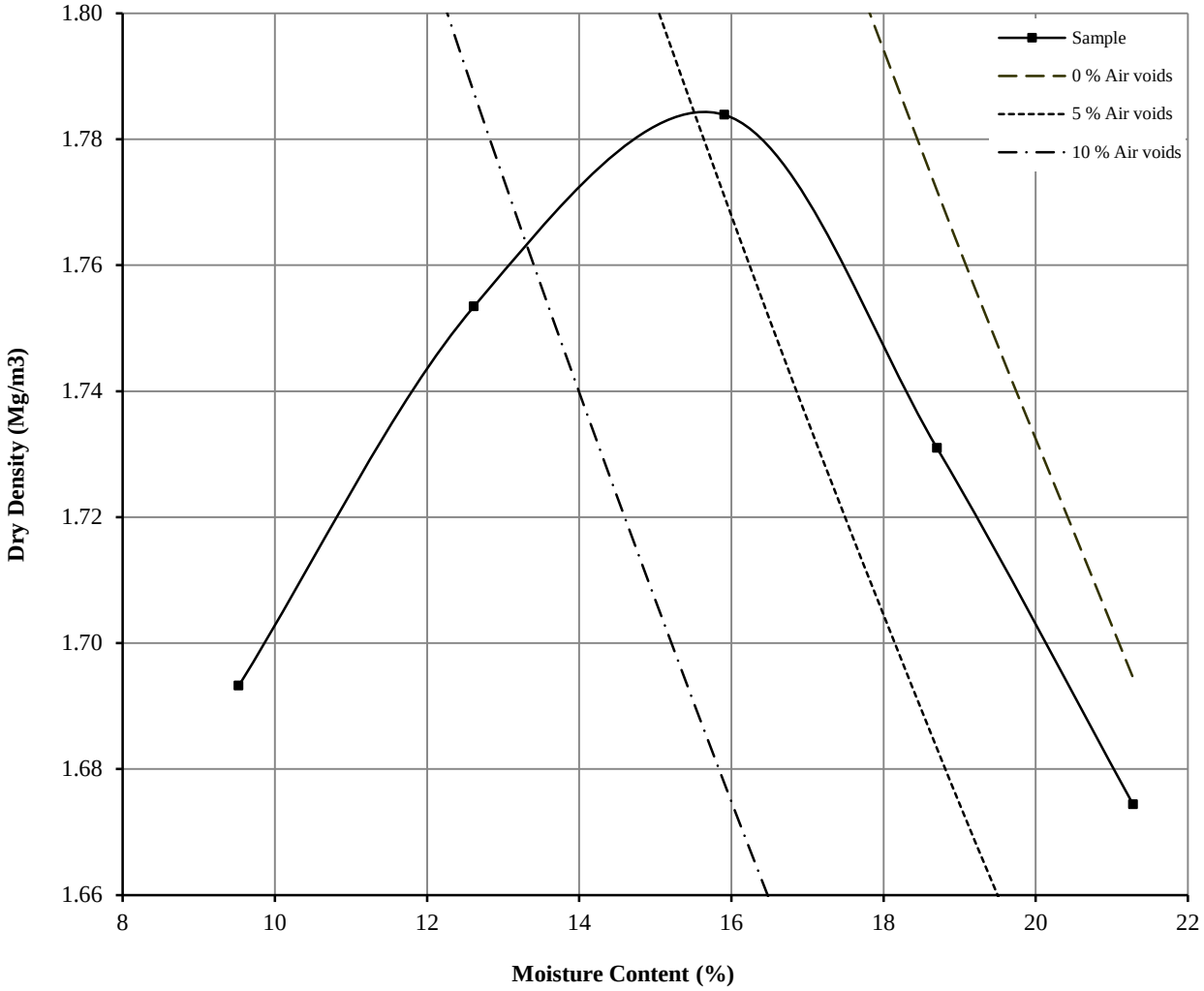



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 17 | Method of Compaction: | 2.5kg | Separate Samples |
| Particle Density (Mg/m3): | 2.65 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 0 |
| Maximum Dry Density (Mg/m3): | | 1.86 | Material Retained on 20.0 mm Test Sieve (%): | | 0 |
| Optimum Moisture Content (%): | | 14 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.3 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP149** | **Top Depth (m) :** | **1.00** |
| **Sample Number:** | **5** | **Base Depth (m) :** | **1.30** |
| **Sample Type:** | **B** | | |



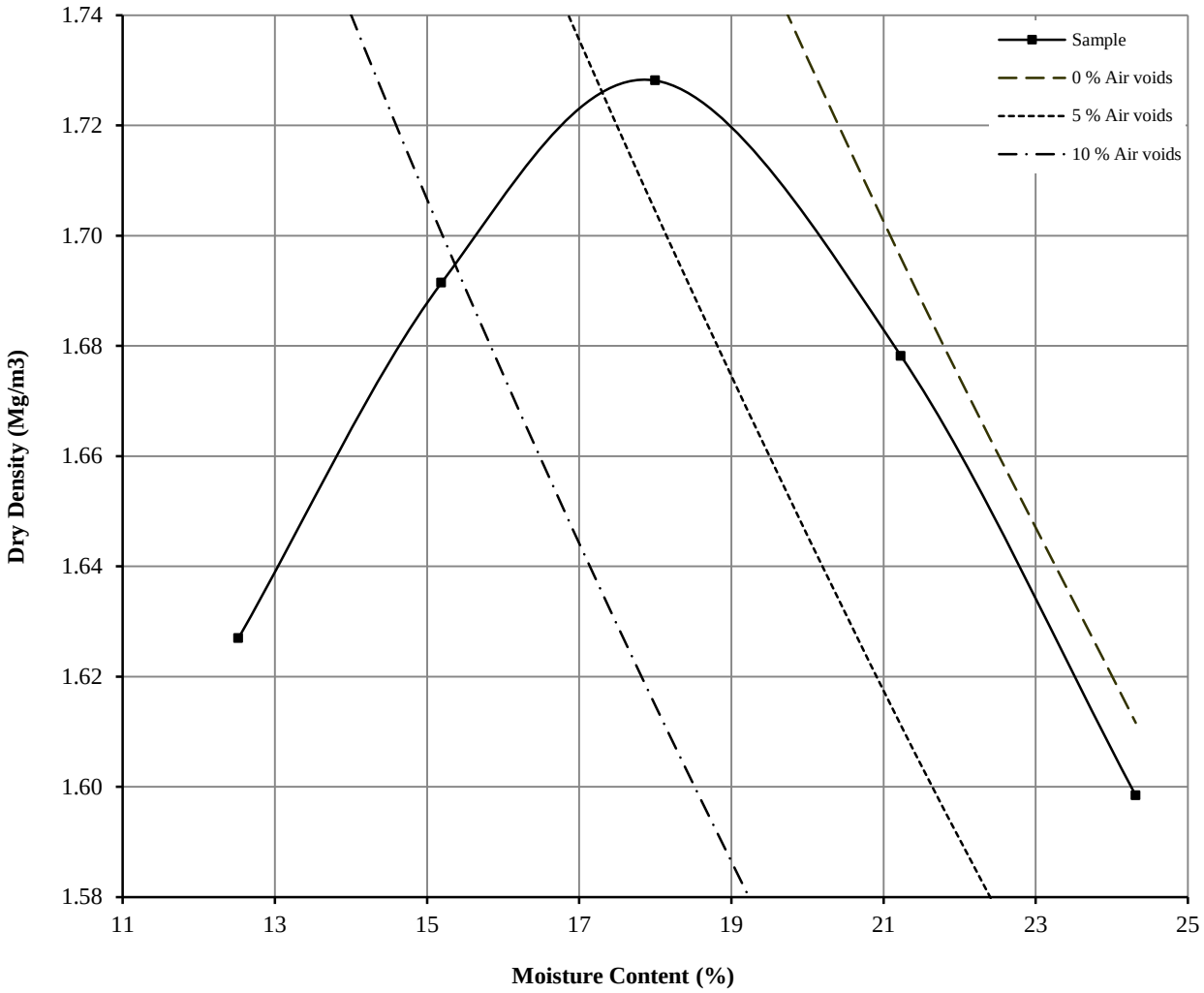

| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 16 | Method of Compaction: | 2.5kg | Separate Samples |
| Particle Density (Mg/m3): | 2.65 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 0 |
| Maximum Dry Density (Mg/m3): | | 1.78 | Material Retained on 20.0 mm Test Sieve (%): | | 4 |
| Optimum Moisture Content (%): | | 16 | | | |
| Remarks See summary of soil descriptions | | | | | |

| | | | |
|---|---|---|---|
| UKAS TESTING 4043 | PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** | **Contract** PSL22/3825 **Client Ref** GT0386 |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.4 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP149** | **Top Depth (m) :** | **2.00** |
| **Sample Number:** | **7** | **Base Depth (m) :** | **2.30** |
| **Sample Type:** | **B** | | |

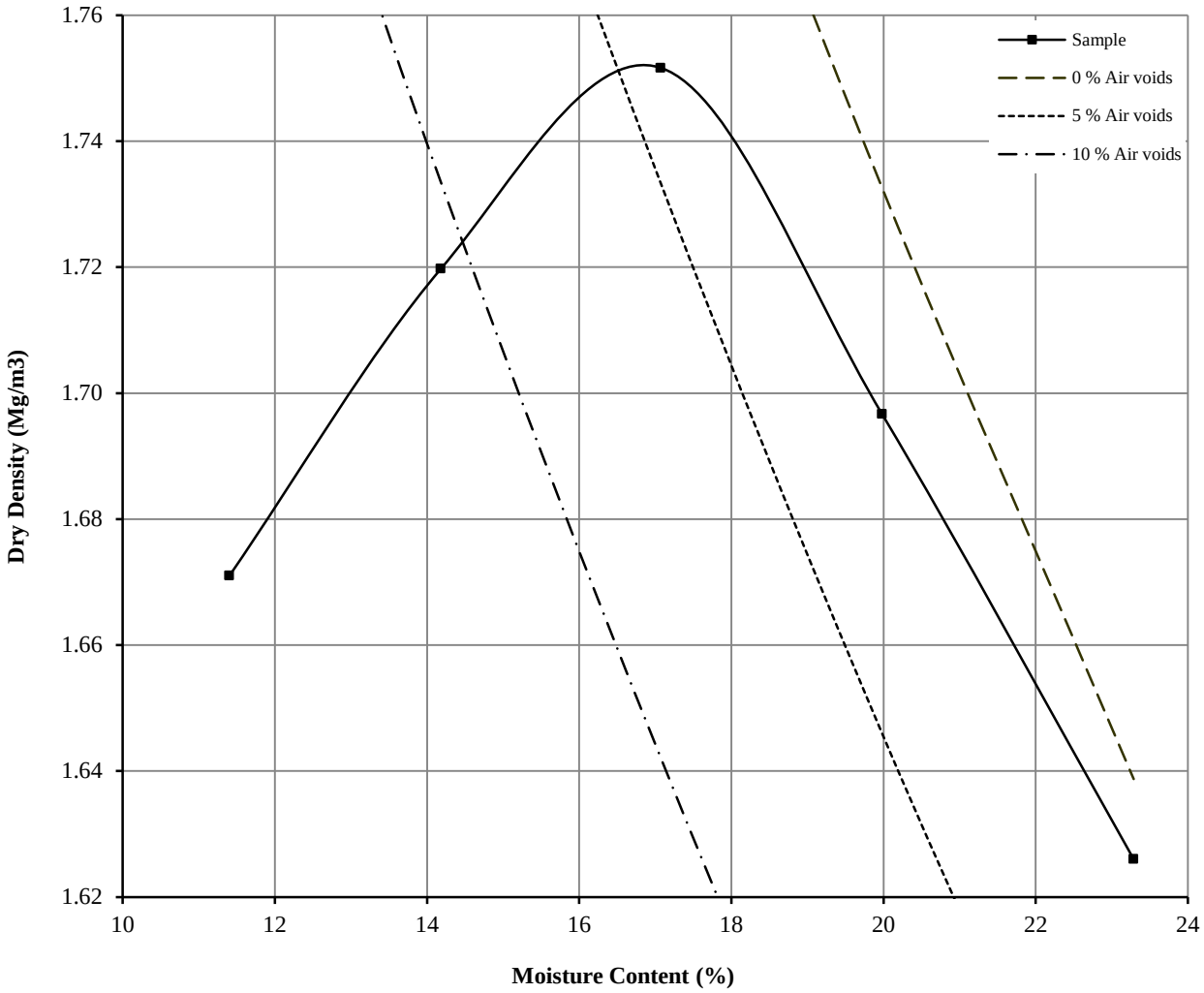



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 18 | Method of Compaction: | 2.5kg | Separate Samples |
| Particle Density (Mg/m3): | 2.65 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 2 |
| Maximum Dry Density (Mg/m3): | | 1.73 | Material Retained on 20.0 mm Test Sieve (%): | | 5 |
| Optimum Moisture Content (%): | | 18 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.3 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP150** | **Top Depth (m) :** | **1.00** |
| **Sample Number:** | **5** | **Base Depth (m) :** | **1.30** |
| **Sample Type:** | **B** | | |



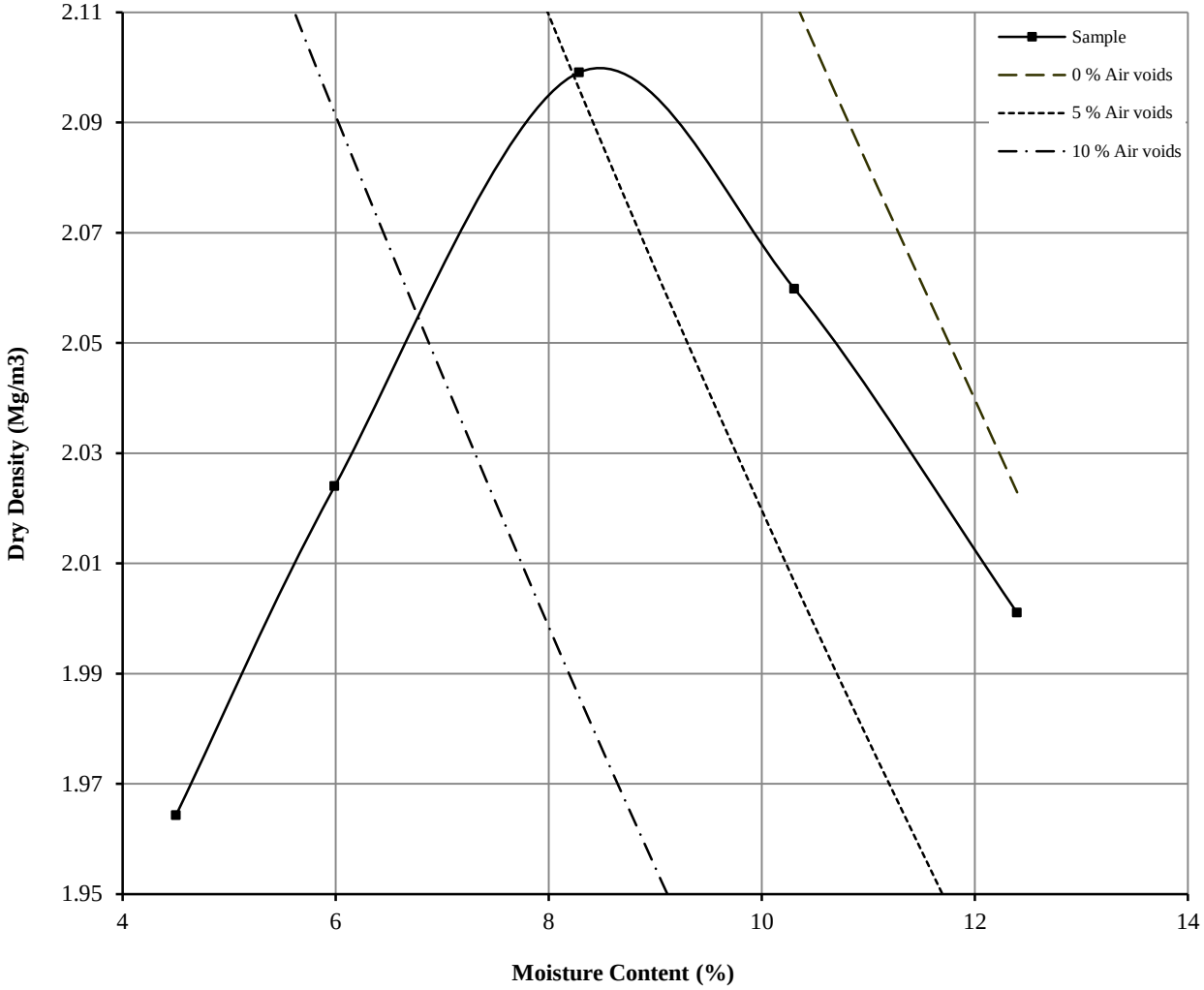

| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 20 | Method of Compaction: | 2.5kg | Separate Samples |
| Particle Density (Mg/m3): | 2.65 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 0 |
| Maximum Dry Density (Mg/m3): | | 1.75 | Material Retained on 20.0 mm Test Sieve (%): | | 0 |
| Optimum Moisture Content (%): | | 17 | | | |
| Remarks See summary of soil descriptions | | | | | |

| | | | |
|---|---|---|---|
| UKAS TESTING 4043 | PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** | **Contract** PSL22/3825 **Client Ref** GT0386 |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.7 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP150** | **Top Depth (m) :** | **2.00** |
| **Sample Number:** | **7** | **Base Depth (m) :** | **2.30** |
| **Sample Type:** | **B** | | |

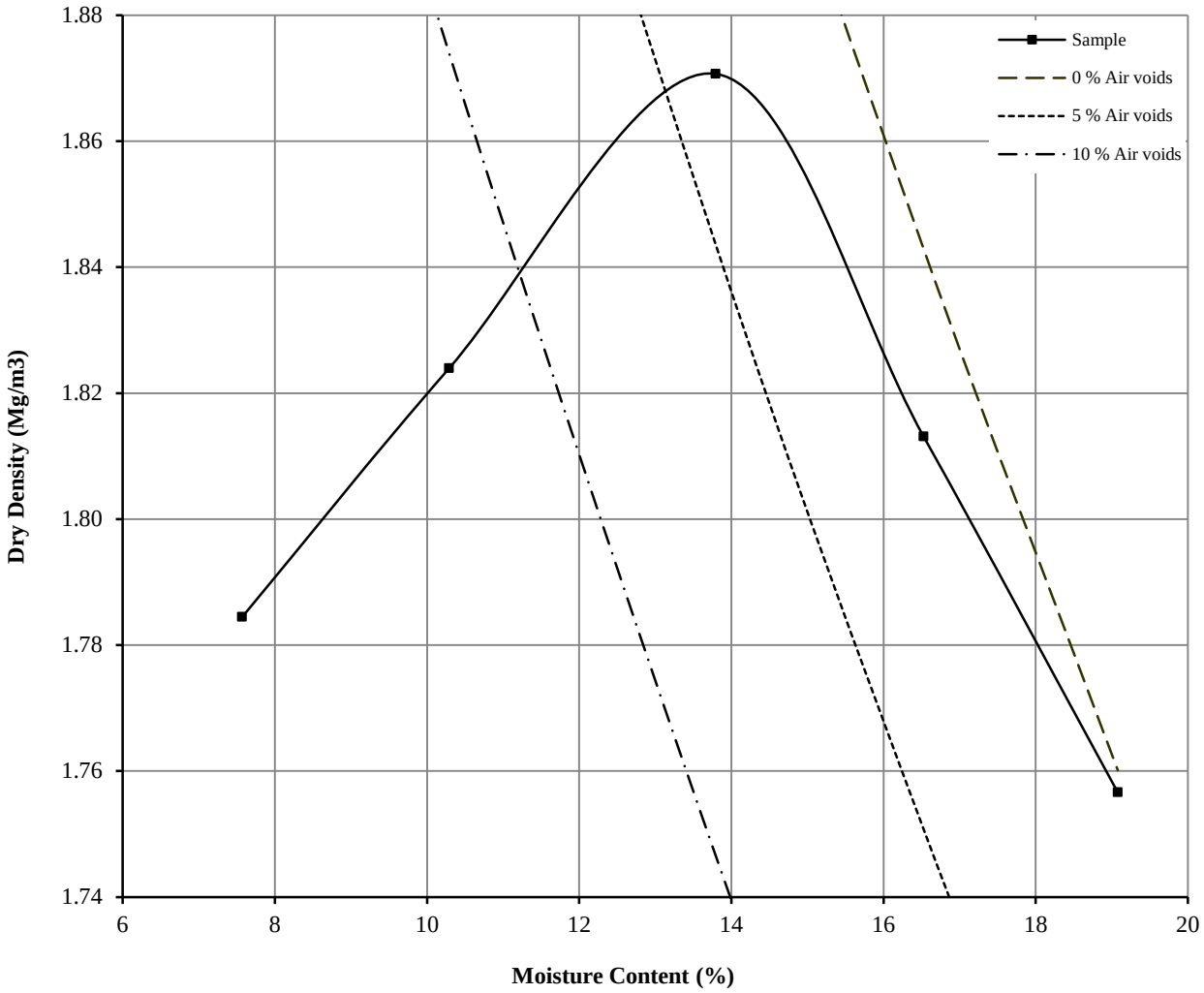



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 6.0 | Method of Compaction: | Vibro | Separate Samples |
| Particle Density (Mg/m3): | 2.7 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 5 |
| Maximum Dry Density (Mg/m3): | | 2.10 | Material Retained on 20.0 mm Test Sieve (%): | | 10 |
| Optimum Moisture Content (%): | | 8 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.3 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP160** | **Top Depth (m) :** | **1.00** |
| **Sample Number:** | **5** | **Base Depth (m) :** | **1.30** |
| **Sample Type:** | **B** | | |

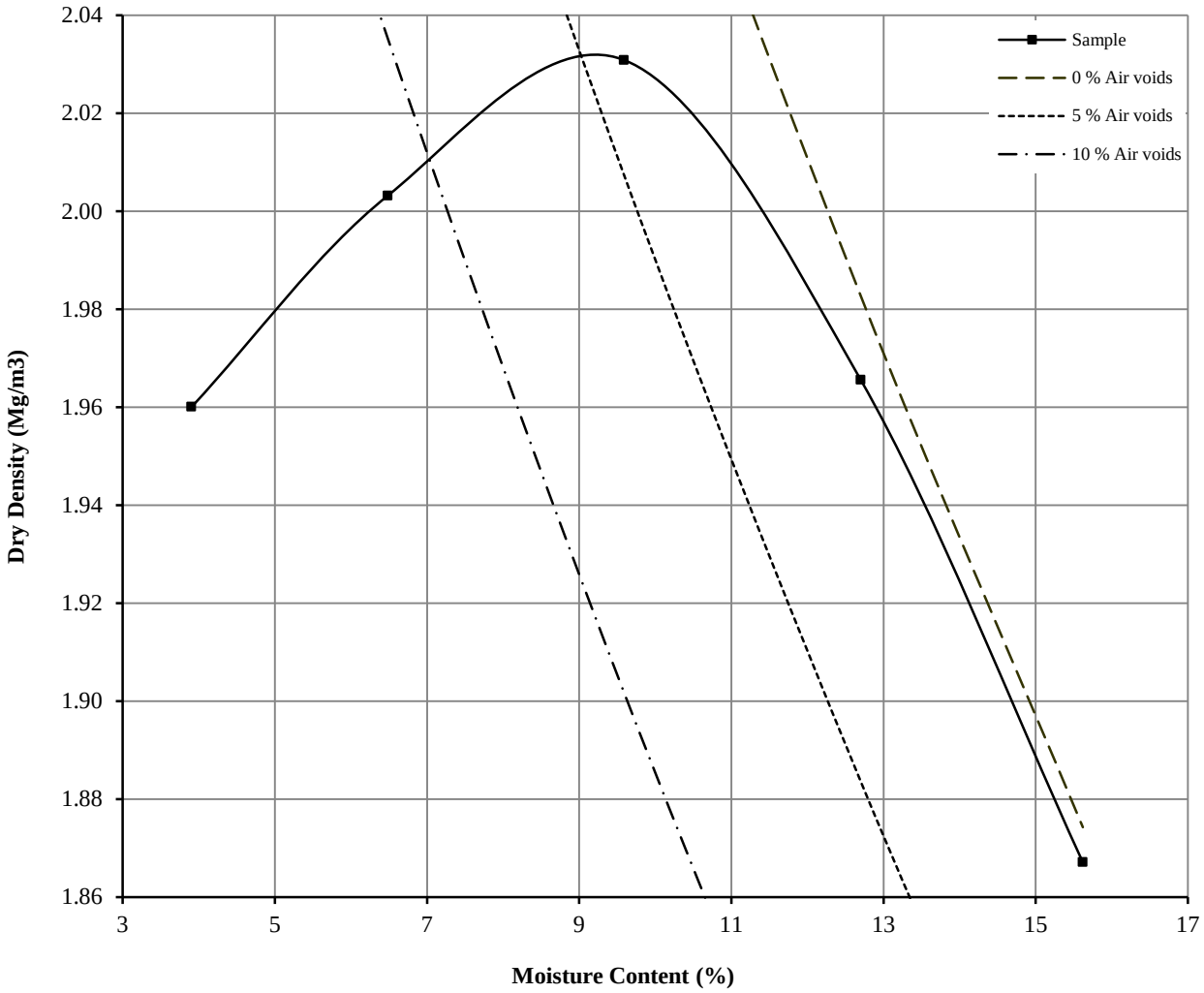



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 17 | Method of Compaction: | 2.5kg | Separate Samples |
| Particle Density (Mg/m3): | 2.65 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 0 |
| Maximum Dry Density (Mg/m3): | | 1.87 | Material Retained on 20.0 mm Test Sieve (%): | | 0 |
| Optimum Moisture Content (%): | | 14 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.5 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP161** | **Top Depth (m) :** | **1.00** |
| **Sample Number:** | **5** | **Base Depth (m) :** | **1.30** |
| **Sample Type:** | **B** | | |

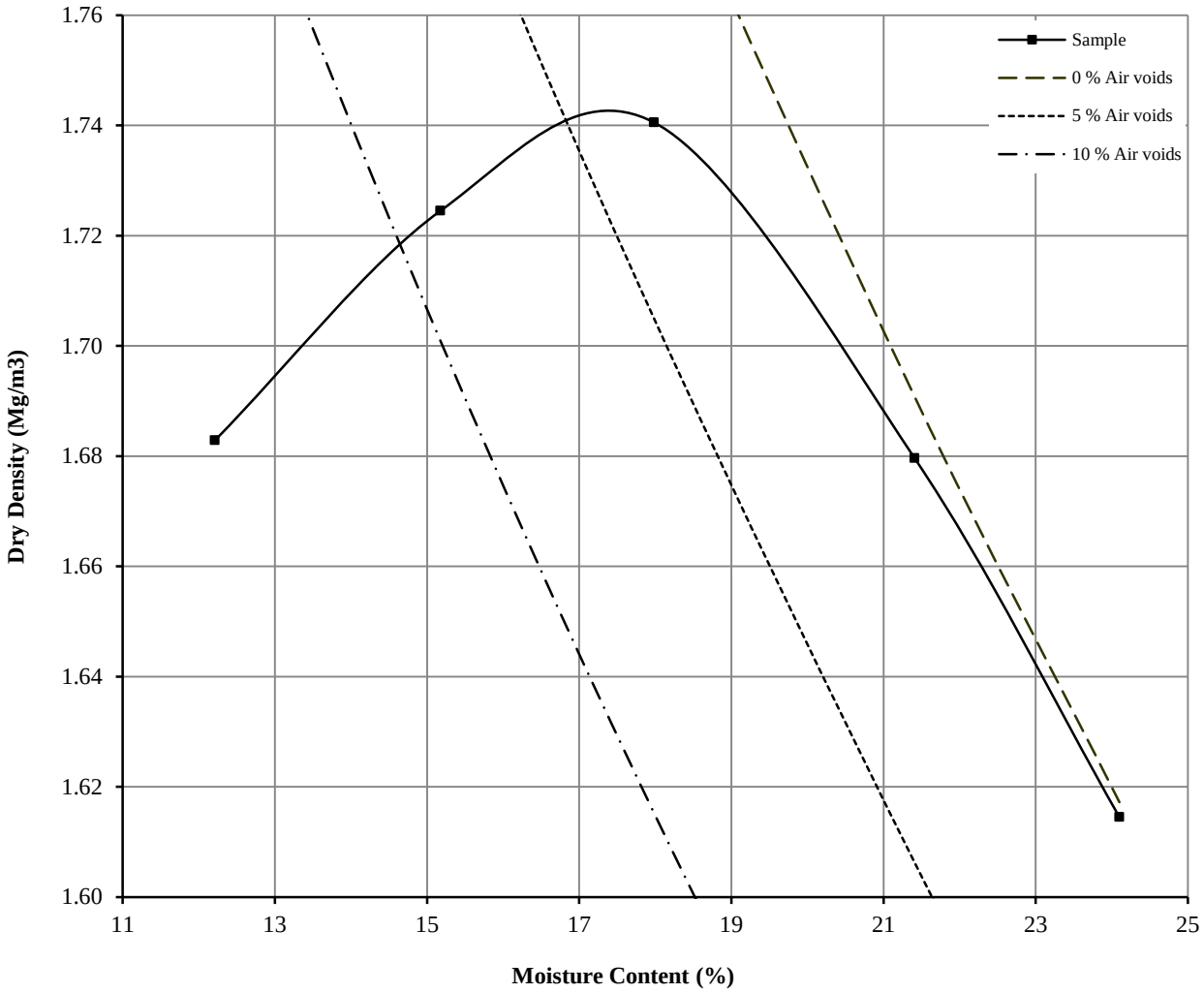



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 9.6 | Method of Compaction: | 4.5kg | Separate Samples |
| Particle Density (Mg/m3): | 2.65 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 1 |
| Maximum Dry Density (Mg/m3): | | 2.03 | Material Retained on 20.0 mm Test Sieve (%): | | 2 |
| Optimum Moisture Content (%): | | 10 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**Non compliance with BS 1377 : Part 4 : Clause 3.4 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP164** | **Top Depth (m) :** | **0.30** |
| **Sample Number:** | **5** | **Base Depth (m) :** | **0.60** |
| **Sample Type:** | **B** | | |

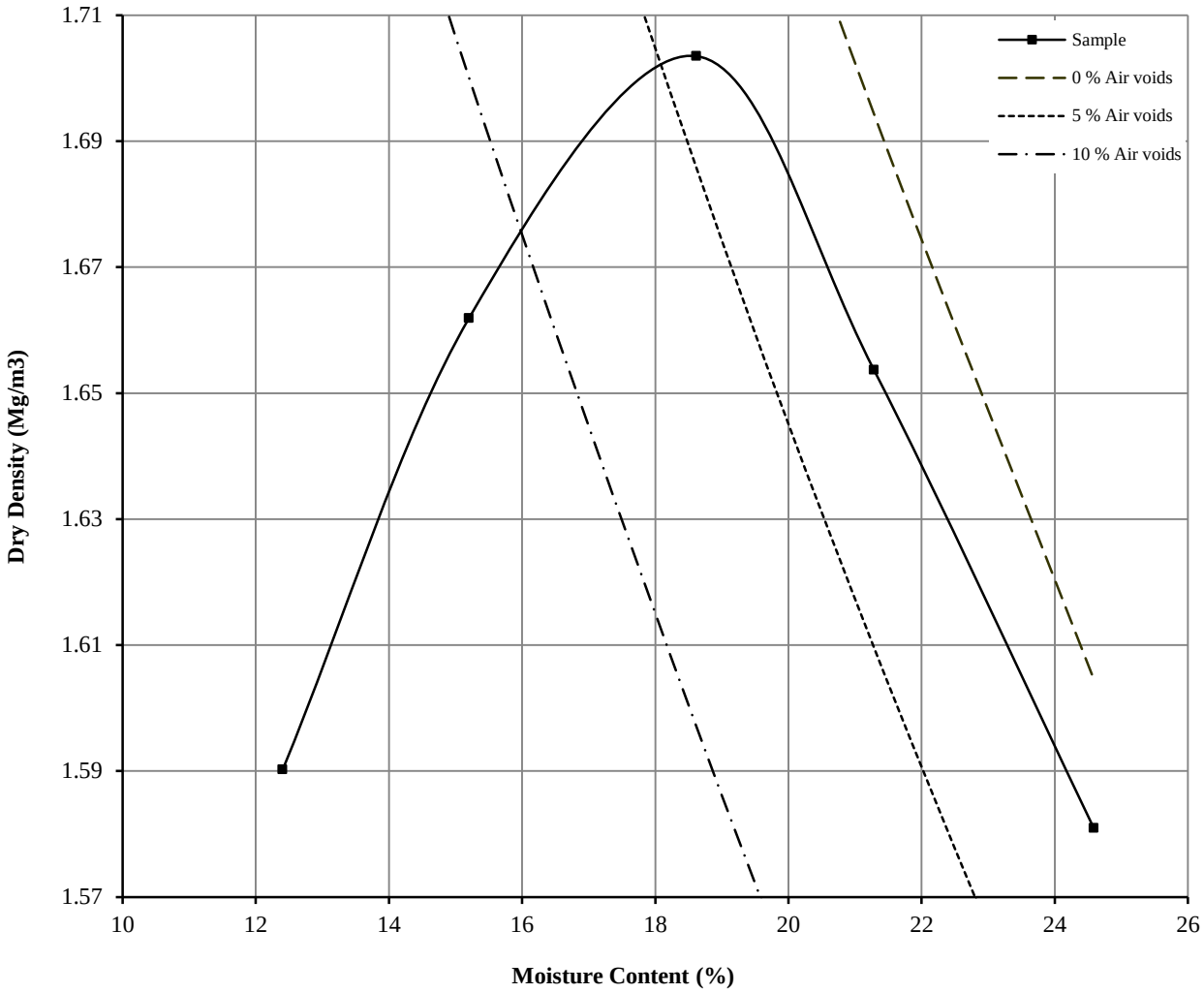



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 24 | Method of Compaction: | 2.5kg | Separate Samples |
| Particle Density (Mg/m3): | 2.65 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 12 |
| Maximum Dry Density (Mg/m3): | | 1.74 | Material Retained on 20.0 mm Test Sieve (%): | | 3 |
| Optimum Moisture Content (%): | | 18 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.3 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP164** | **Top Depth (m) :** | **1.00** |
| **Sample Number:** | **7** | **Base Depth (m) :** | **1.30** |
| **Sample Type:** | **B** | | |

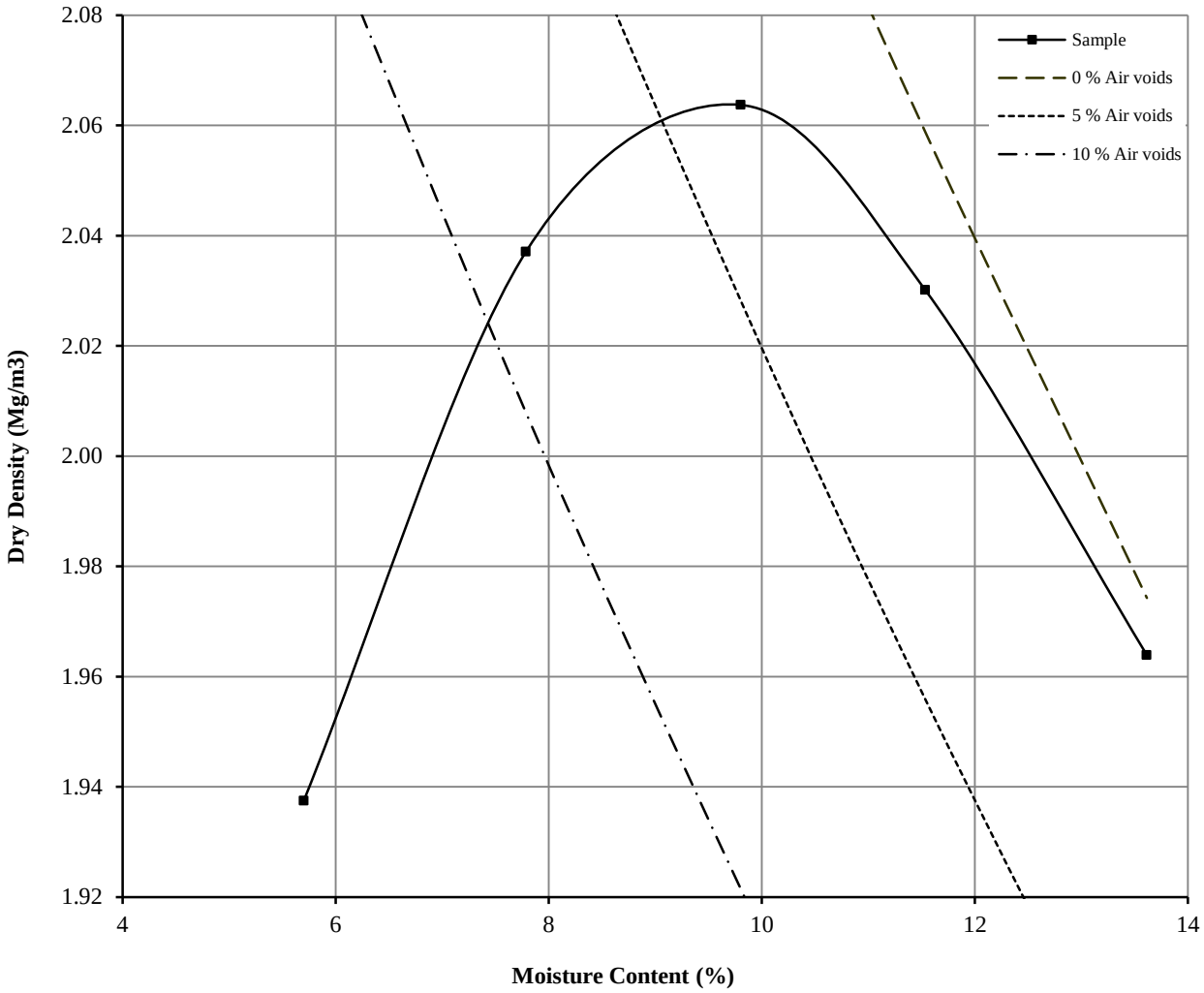



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 25 | Method of Compaction: | 2.5kg | Separate Samples |
| Particle Density (Mg/m3): | 2.65 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 0 |
| Maximum Dry Density (Mg/m3): | | 1.70 | Material Retained on 20.0 mm Test Sieve (%): | | 4 |
| Optimum Moisture Content (%): | | 19 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**Non compliance with BS 1377 : Part 4 : Clause 3.7 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP165** | **Top Depth (m) :** | **1.00** |
| **Sample Number:** | **5** | **Base Depth (m) :** | **1.30** |
| **Sample Type:** | **B** | | |

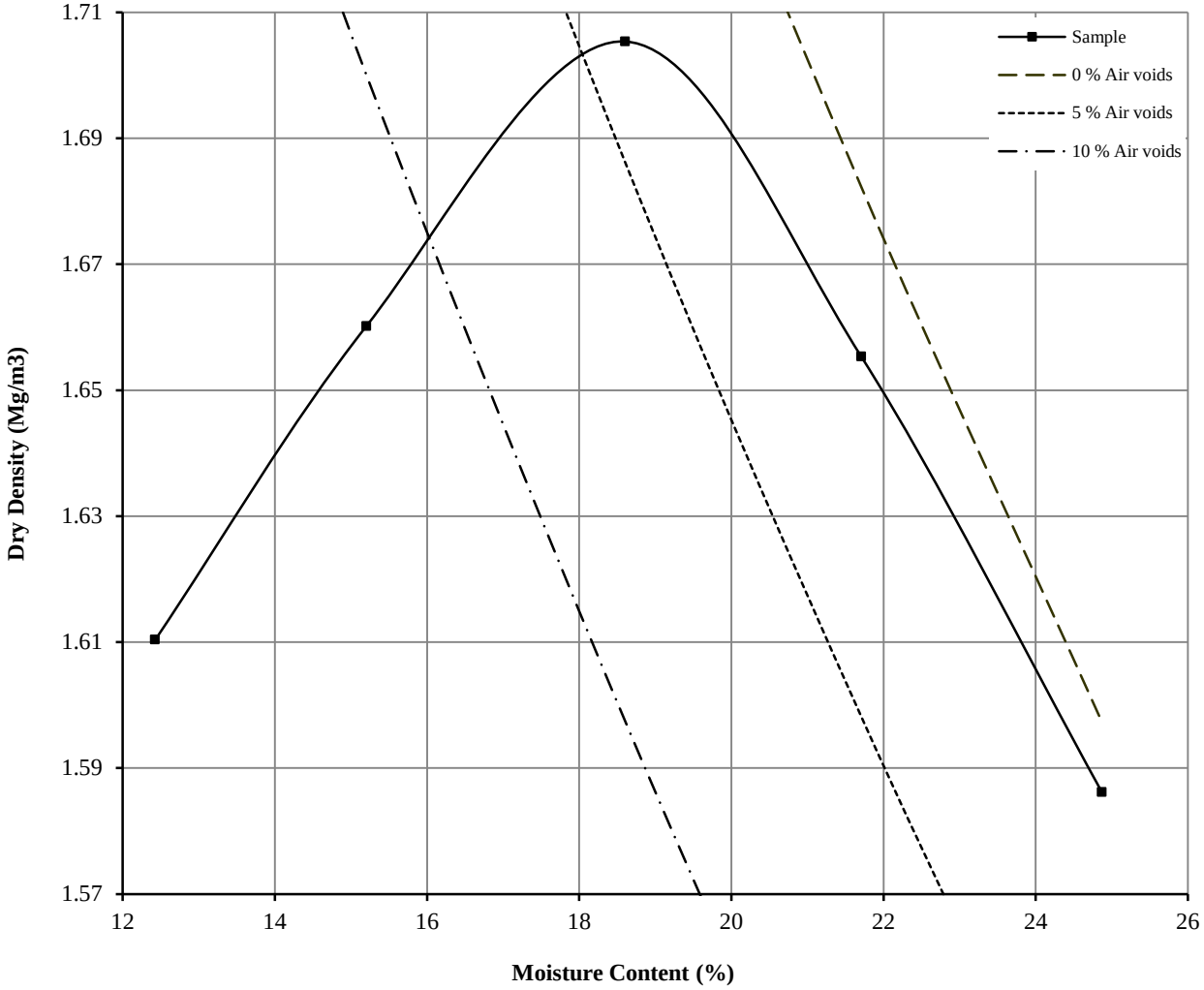



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 12 | Method of Compaction: | Vibro | Separate Samples |
| Particle Density (Mg/m3): | 2.7 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 14 |
| Maximum Dry Density (Mg/m3): | | 2.06 | Material Retained on 20.0 mm Test Sieve (%): | | 7 |
| Optimum Moisture Content (%): | | 10 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.3 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP166** | **Top Depth (m) :** | **2.30** |
| **Sample Number:** | **7** | **Base Depth (m) :** | **2.60** |
| **Sample Type:** | **B** | | |

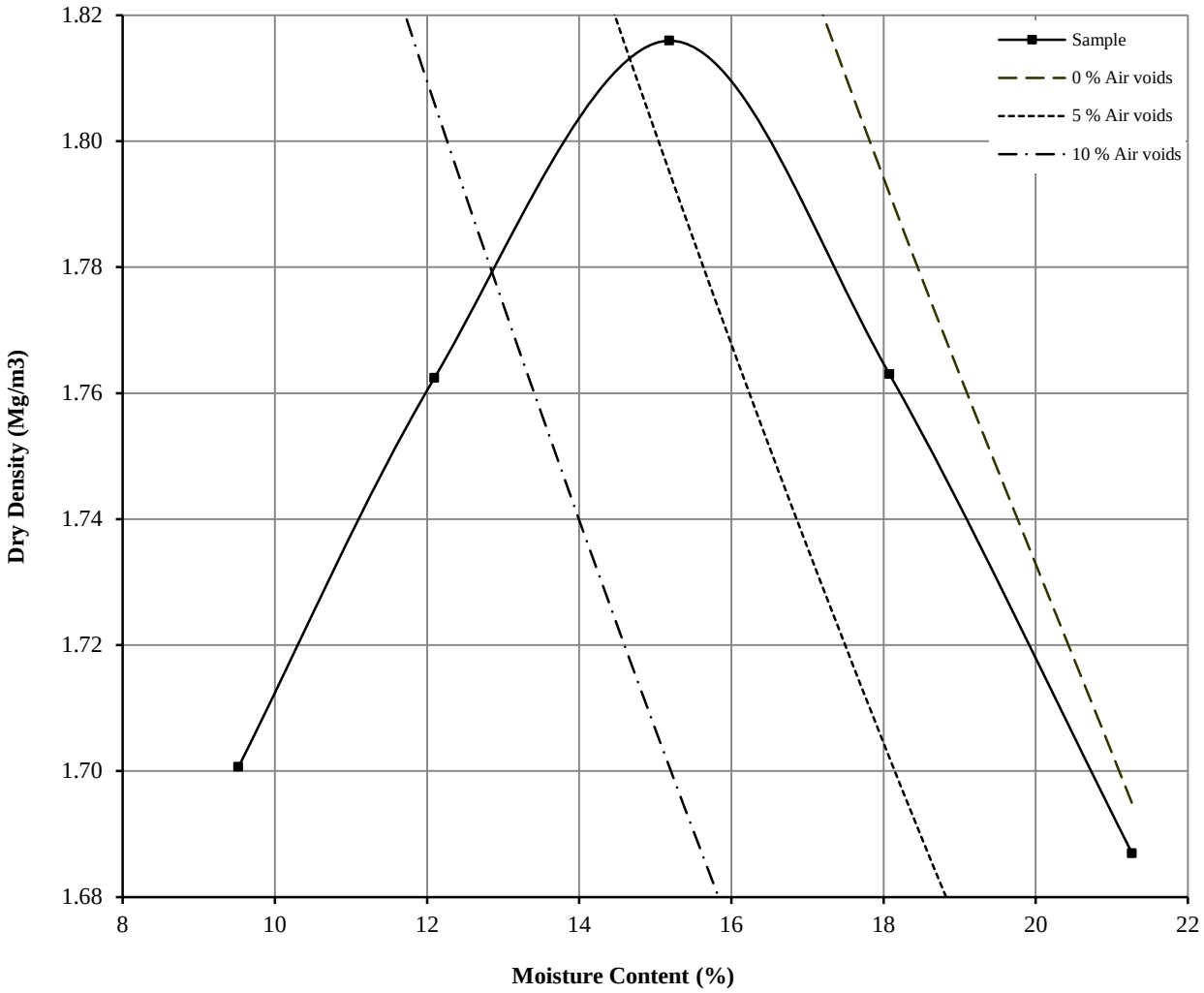



| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 22 | Method of Compaction: | 2.5kg | Separate Samples |
| Particle Density (Mg/m3): | 2.65 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 0 |
| Maximum Dry Density (Mg/m3): | | 1.71 | Material Retained on 20.0 mm Test Sieve (%): | | 1 |
| Optimum Moisture Content (%): | | 19 | | | |
| Remarks See summary of soil descriptions | | | | | |

# DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

**BS 1377 : Part 4 : Clause 3.3 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP169** | **Top Depth (m) :** | **1.00** |
| **Sample Number:** | **5** | **Base Depth (m) :** | **1.30** |
| **Sample Type:** | **B** | | |




| | | | | | |
|---|---|---|---|---|---|
| Initial Moisture Content: | | 18 | Method of Compaction: | 2.5kg | Separate Samples |
| Particle Density (Mg/m3): | 2.65 | Assumed | Material Retained on 37.5 mm Test Sieve (%): | | 0 |
| Maximum Dry Density (Mg/m3): | | 1.82 | Material Retained on 20.0 mm Test Sieve (%): | | 0 |
| Optimum Moisture Content (%): | | 15 | | | |
| Remarks See summary of soil descriptions | | | | | |

| | | | |
|---|---|---|---|
| UKAS TESTING 4043 | PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** | **Contract** PSL22/3825 **Client Ref** GT0386 |

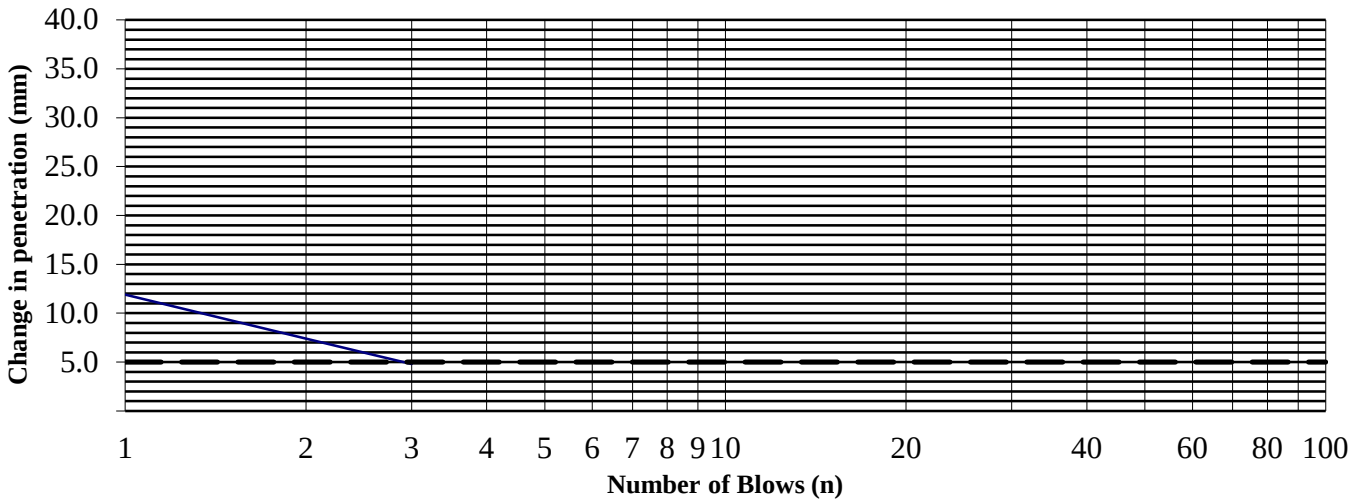
# MOISTURE CONDITION VALUE

**BS1377 : Part 4 : 1990 Clause 5.4**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP113** | **Top Depth (m):** | **3.00** |
| **Sample Number:** | **11** | **Base Depth (m):** | **3.10** |
| **Sample Type:** | **B** | | |

| | |
|---|---|
| Material Retained on the 20mm BS Test Sieve (%): | 0 |
| Interpretation based on steepest straight line intercept with 5mm change in penetration. | |

**MCV Determination**




| Blows (N) | Penetration (mm) | n to 4n (mm) |
|---|---|---|
| 1 | 59.5 | 11.9 |
| 2 | 53.0 | 7.4 |
| 3 | 49.8 | 4.8 |
| 4 | 47.6 | |
| 6 | 46.2 | |
| 8 | 45.6 | |
| 12 | 45.0 | |
| 16 | | |
| 24 | | |
| 32 | | |
| 48 | | |
| 64 | | |
| 96 | | |
| 128 | | |
| 192 | | |
| 256 | | |

**Test Results.**

| | |
|---|---|
| Moisture Content (%) | 22 |
| MCV | 4.8 |

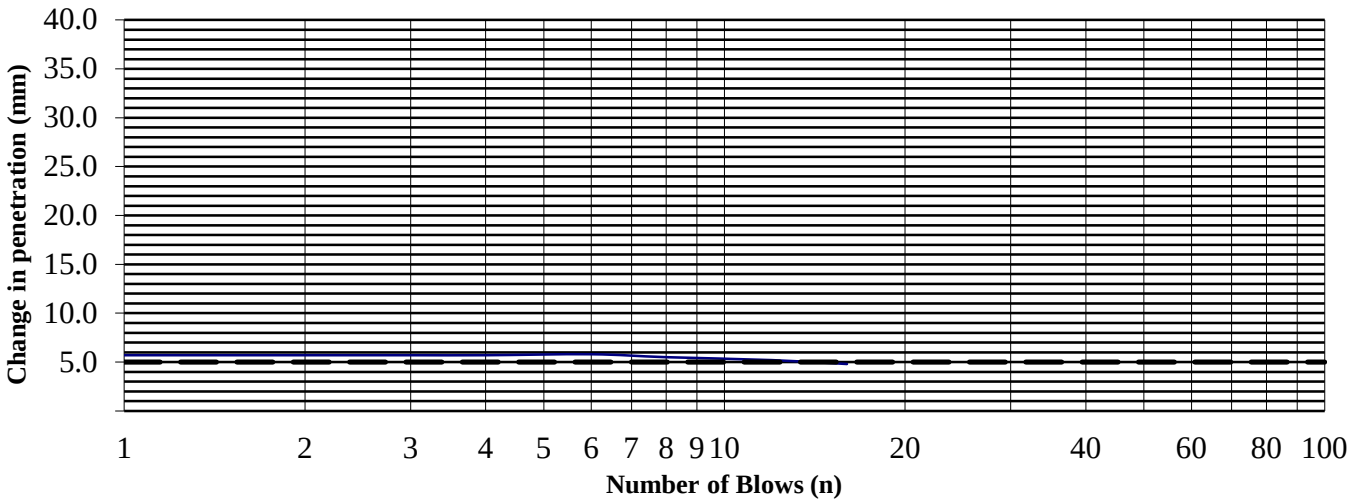
# MOISTURE CONDITION VALUE

**BS1377 : Part 4 : 1990 Clause 5.4**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP135** | **Top Depth (m):** | **1.00** |
| **Sample Number:** | **5** | **Base Depth (m):** | **1.30** |
| **Sample Type:** | **B** | | |

| Material Retained on the 20mm BS Test Sieve (%): | 7 |
|---|---|
| Interpretation based on steepest straight line intercept with 5mm change in penetration. | |

**MCV Determination**




| Blows (N) | Penetration (mm) | n to 4n (mm) |
|---|---|---|
| 1 | 52.1 | 5.7 |
| 2 | 49.2 | 5.7 |
| 3 | 47.6 | 5.7 |
| 4 | 46.4 | 5.7 |
| 6 | 44.8 | 5.8 |
| 8 | 43.5 | 5.5 |
| 12 | 41.9 | 5.2 |
| 16 | 40.7 | 4.8 |
| 24 | 39.0 | |
| 32 | 38.0 | |
| 48 | 36.7 | |
| 64 | 35.9 | |
| 96 | | |
| 128 | | |
| 192 | | |
| 256 | | |

**Test Results.**

| | |
|---|---|
| Moisture Content (%) | 8.4 |
| MCV | 12.2 |

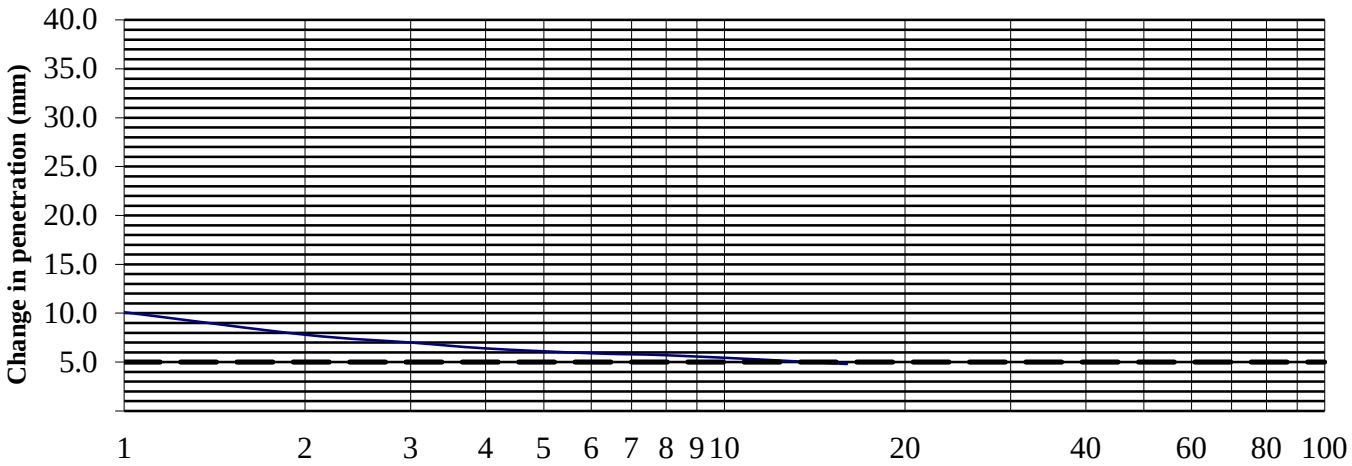
# MOISTURE CONDITION VALUE

**BS1377 : Part 4 : 1990 Clause 5.4**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP136** | **Top Depth (m):** | **2.00** |
| **Sample Number:** | **9** | **Base Depth (m):** | **2.20** |
| **Sample Type:** | **B** | | |

| Material Retained on the 20mm BS Test Sieve (%): | 8 |
|---|---|
| Interpretation based on steepest straight line intercept with 5mm change in penetration. | |

**MCV Determination**




| Blows (N) | Penetration (mm) | n to 4n (mm) |
|---|---|---|
| 1 | 53.4 | 10.1 |
| 2 | 47.8 | 7.8 |
| 3 | 45.2 | 7.0 |
| 4 | 43.3 | 6.4 |
| 6 | 41.3 | 5.9 |
| 8 | 40.0 | 5.7 |
| 12 | 38.2 | 5.2 |
| 16 | 36.9 | 4.8 |
| 24 | 35.4 | |
| 32 | 34.3 | |
| 48 | 33.0 | |
| 64 | 32.1 | |
| 96 | | |
| 128 | | |
| 192 | | |
| 256 | | |

**Test Results.**

| | |
|---|---|
| Moisture Content (%) | 9.1 |
| MCV | 11.6 |

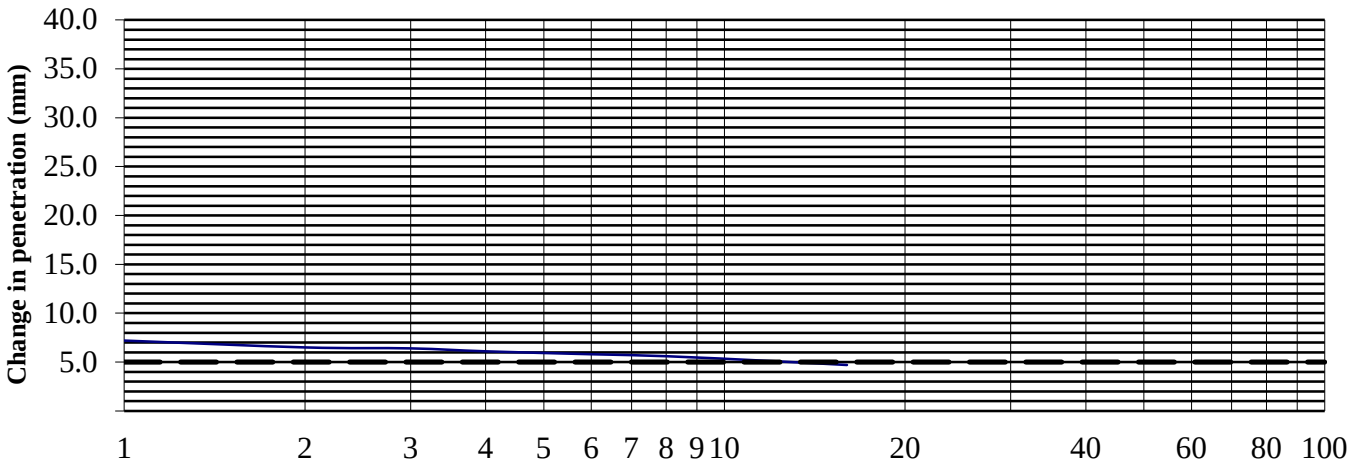
# MOISTURE CONDITION VALUE

**BS1377 : Part 4 : 1990 Clause 5.4**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP137** | **Top Depth (m):** | **2.70** |
| **Sample Number:** | **7** | **Base Depth (m):** | **3.00** |
| **Sample Type:** | **B** | | |

| Material Retained on the 20mm BS Test Sieve (%): | 6 |
|---|---|
| Interpretation based on steepest straight line intercept with 5mm change in penetration. | |

**MCV Determination**




| Blows (N) | Penetration (mm) | n to 4n (mm) |
|---|---|---|
| 1 | 50.7 | 7.2 |
| 2 | 46.8 | 6.5 |
| 3 | 44.9 | 6.4 |
| 4 | 43.5 | 6.1 |
| 6 | 41.6 | 5.8 |
| 8 | 40.3 | 5.6 |
| 12 | 38.5 | 5.1 |
| 16 | 37.4 | 4.7 |
| 24 | 35.8 | |
| 32 | 34.7 | |
| 48 | 33.4 | |
| 64 | 32.7 | |
| 96 | | |
| 128 | | |
| 192 | | |
| 256 | | |

**Test Results.**

| Moisture Content (%) | 8.0 |
|---|---|
| MCV | 11.9 |

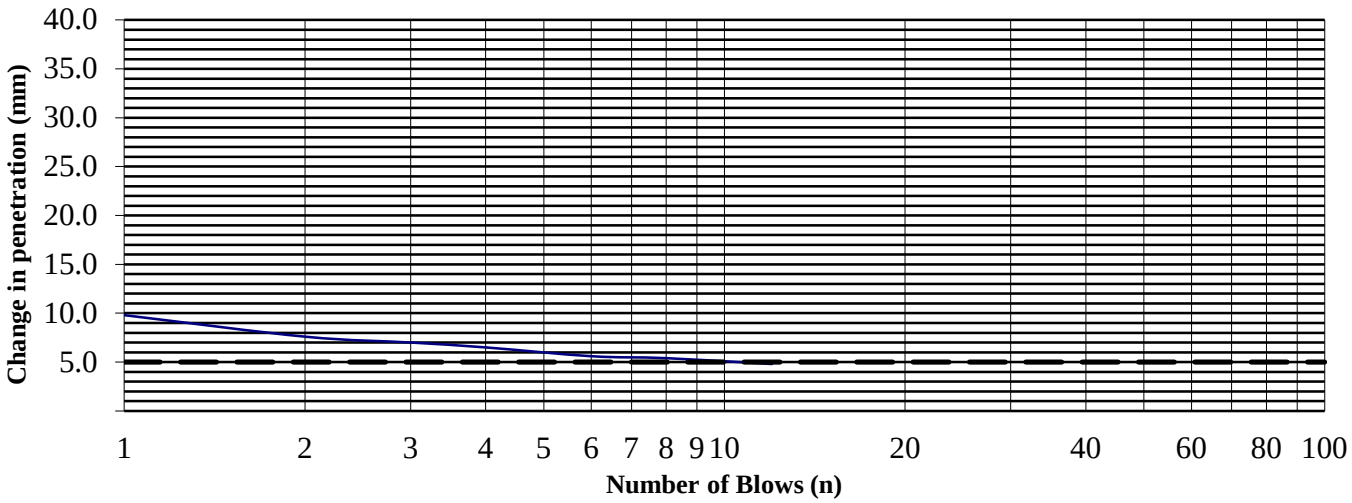
# MOISTURE CONDITION VALUE

**BS1377 : Part 4 : 1990 Clause 5.4**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP138** | **Top Depth (m):** | **1.00** |
| **Sample Number:** | **5** | **Base Depth (m):** | **1.30** |
| **Sample Type:** | **B** | | |

| Material Retained on the 20mm BS Test Sieve (%): | 9 |
|---|---|
| Interpretation based on steepest straight line intercept with 5mm change in penetration. | |

**MCV Determination**




| Blows (N) | Penetration (mm) | n to 4n (mm) |
|---|---|---|
| 1 | 53.0 | 9.8 |
| 2 | 47.5 | 7.6 |
| 3 | 45.0 | 7.0 |
| 4 | 43.2 | 6.5 |
| 6 | 41.1 | 5.6 |
| 8 | 39.9 | 5.4 |
| 12 | 38.0 | 4.8 |
| 16 | 36.7 | |
| 24 | 35.5 | |
| 32 | 34.5 | |
| 48 | 33.2 | |
| 64 | | |
| 96 | | |
| 128 | | |
| 192 | | |
| 256 | | |

**Test Results.**

| | |
|---|---|
| Moisture Content (%) | 9.3 |
| MCV | 9.5 |

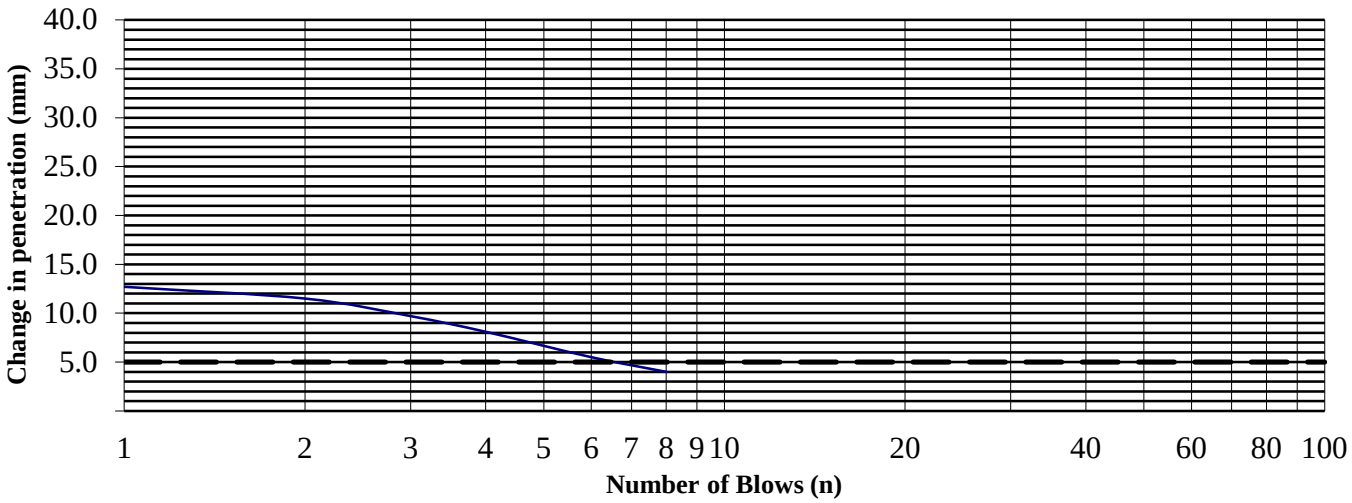
# MOISTURE CONDITION VALUE

**BS1377 : Part 4 : 1990 Clause 5.4**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP162** | **Top Depth (m):** | **0.80** |
| **Sample Number:** | **5** | **Base Depth (m):** | **1.10** |
| **Sample Type:** | **B** | | |

| Material Retained on the 20mm BS Test Sieve (%): | 38 |
|---|---|
| Interpretation based on steepest straight line intercept with 5mm change in penetration. | |

**MCV Determination**




| Blows (N) | Penetration (mm) | n to 4n (mm) |
|---|---|---|
| 1 | 57.9 | 12.7 |
| 2 | 51.7 | 11.5 |
| 3 | 47.8 | 9.7 |
| 4 | 45.2 | 8.1 |
| 6 | 42.1 | 5.5 |
| 8 | 40.2 | 4.0 |
| 12 | 38.1 | |
| 16 | 37.1 | |
| 24 | 36.6 | |
| 32 | 36.2 | |
| 48 | | |
| 64 | | |
| 96 | | |
| 128 | | |
| 192 | | |
| 256 | | |

**Test Results.**

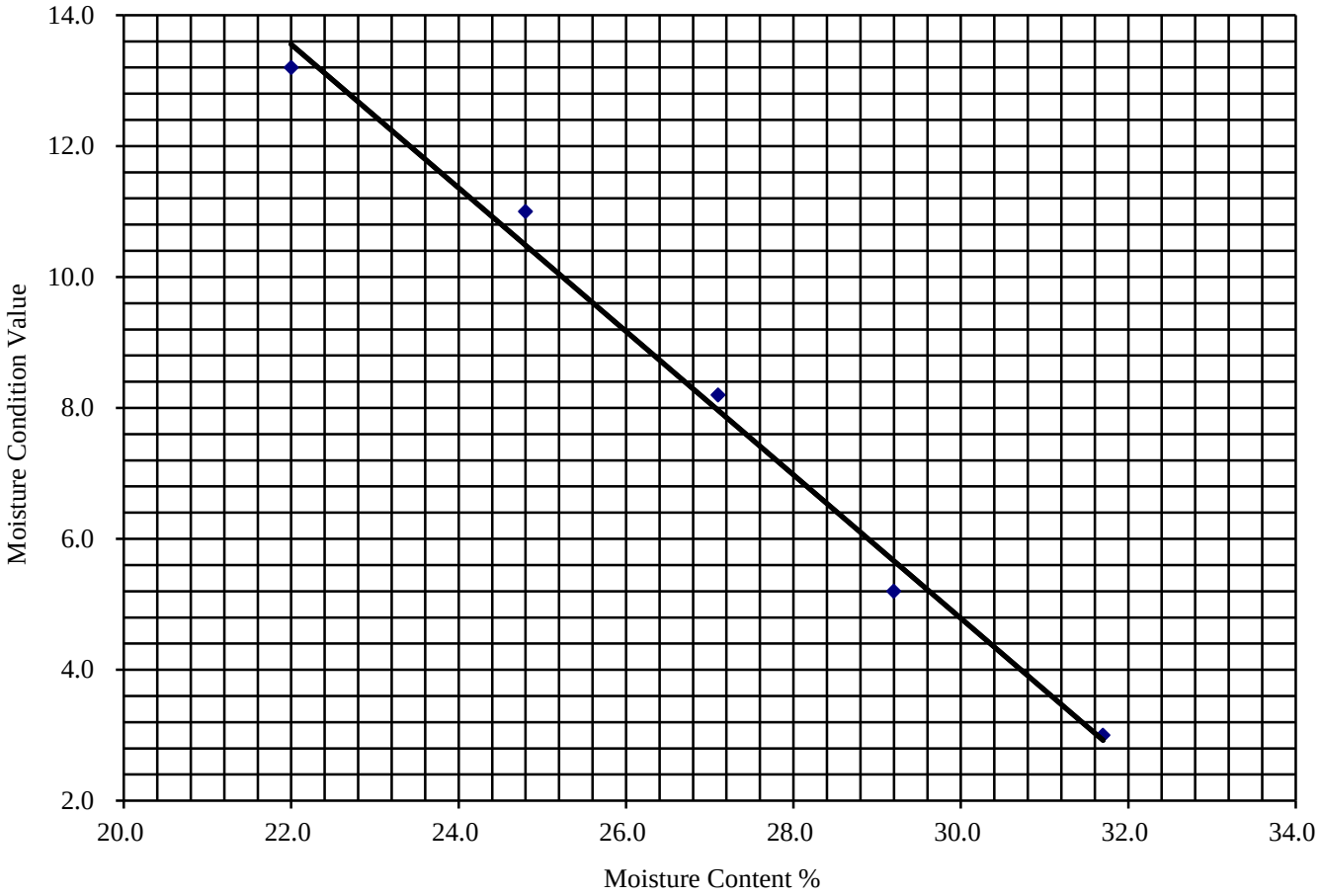
| Moisture Content (%) | 13 |
|---|---|
| MCV | 8.4 |

# MOISTURE CONDITION VALUE CALIBRATION

**BS1377 : Part 4 : 1990 Clause 5.5**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP167** | **Top Depth (m):** | **1.00** |
| **Sample Number:** | **5** | **Base Depth (m):** | **1.30** |
| **Sample Type:** | **B** | | |

| | |
|---|---|
| Initial Moisture Content (%): | 11 |
| Single/Separate Samples Tested | Separate |
| Material Retained on the 20mm BS Test Sieve (%): | 0 |




**Test Results.**

| Test Number | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| **Moisture Content (%)** | 22.0 | 24.8 | 27.1 | 29.2 | 31.7 |
| **MCV** | 13.2 | 11.0 | 8.2 | 5.2 | 3.0 |

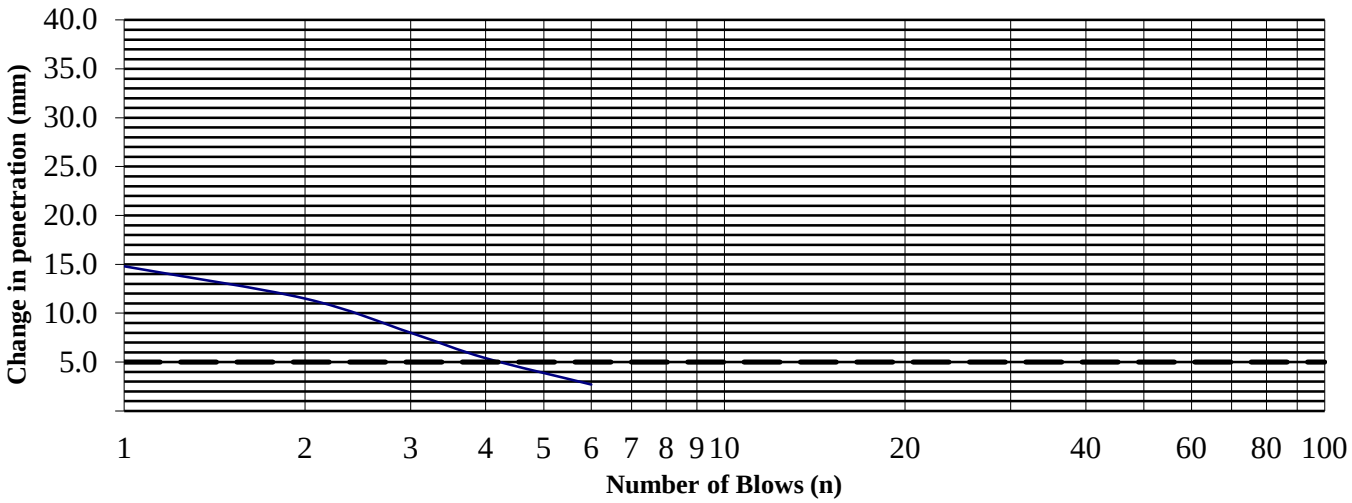
# MOISTURE CONDITION VALUE

**BS1377 : Part 4 : 1990 Clause 5.4**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP170** | **Top Depth (m):** | **0.90** |
| **Sample Number:** | **5** | **Base Depth (m):** | **1.10** |
| **Sample Type:** | **B** | | |

| | |
|---|---|
| Material Retained on the 20mm BS Test Sieve (%): | 34 |
| Interpretation based on steepest straight line intercept with 5mm change in penetration. | |

**MCV Determination**




| Blows (N) | Penetration (mm) | n to 4n (mm) |
|---|---|---|
| 1 | 56.0 | 14.8 |
| 2 | 48.2 | 11.5 |
| 3 | 43.9 | 8.0 |
| 4 | 41.2 | 5.4 |
| 6 | 38.2 | 2.7 |
| 8 | 36.7 | |
| 12 | 35.9 | |
| 16 | 35.8 | |
| 24 | 35.5 | |
| 32 | | |
| 48 | | |
| 64 | | |
| 96 | | |
| 128 | | |
| 192 | | |
| 256 | | |

**Test Results.**

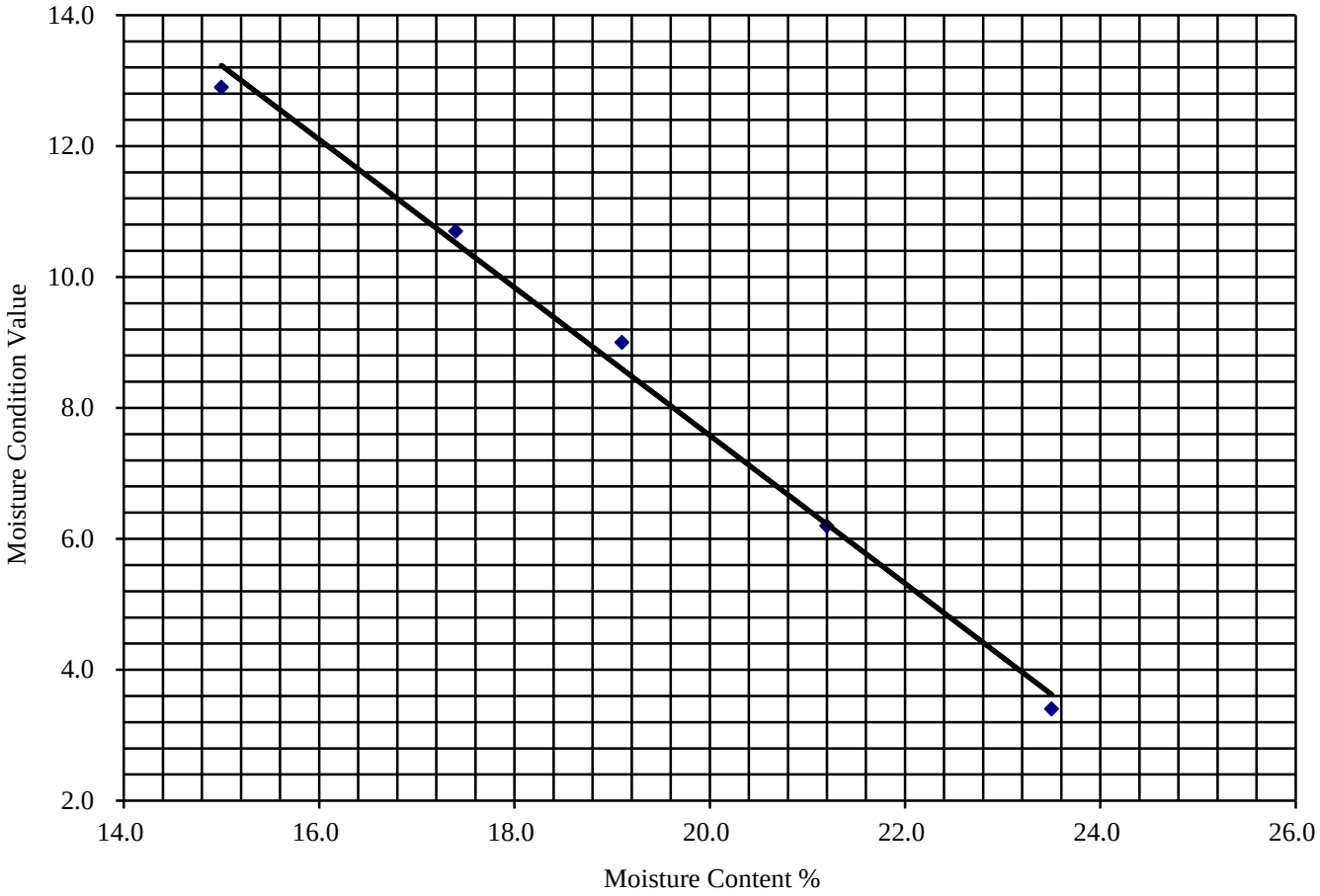
| | |
|---|---|
| Moisture Content (%) | 11 |
| MCV | 6.2 |

# MOISTURE CONDITION VALUE CALIBRATION

**BS1377 : Part 4 : 1990 Clause 5.5**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP170** | **Top Depth (m):** | **2.00** |
| **Sample Number:** | **7** | **Base Depth (m):** | **2.30** |
| **Sample Type:** | **B** | | |

| | |
|---|---|
| Initial Moisture Content (%): | 20 |
| Single/Separate Samples Tested | Separate |
| Material Retained on the 20mm BS Test Sieve (%): | 0 |




**Test Results.**

| Test Number | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| **Moisture Content (%)** | 15.0 | 17.4 | 19.1 | 21.2 | 23.5 |
| **MCV** | 12.9 | 10.7 | 9.0 | 6.2 | 3.4 |

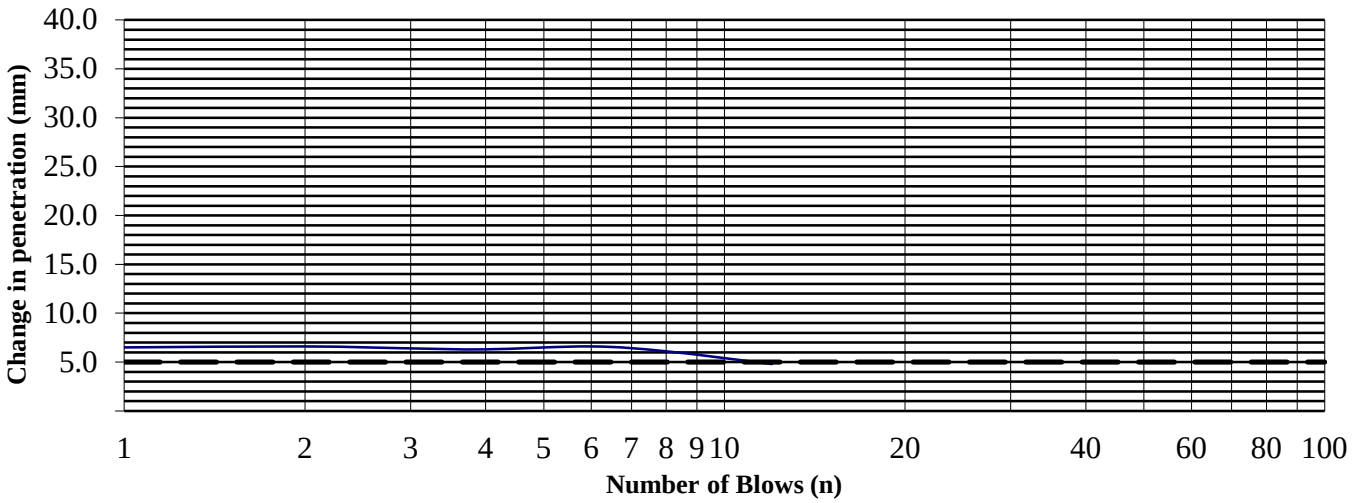
# MOISTURE CONDITION VALUE

**BS1377 : Part 4 : 1990 Clause 5.4**

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH106** | **Top Depth (m):** | **3.50** |
| **Sample Number:** | **108** | **Base Depth (m):** | **4.00** |
| **Sample Type:** | **B** | | |

| Material Retained on the 20mm BS Test Sieve (%): | 45 |
|---|---|
| Interpretation based on steepest straight line intercept with 5mm change in penetration. | |

**MCV Determination**




| Blows (N) | Penetration (mm) | n to 4n (mm) |
|---|---|---|
| 1 | 85.1 | 6.5 |
| 2 | 81.8 | 6.6 |
| 3 | 79.9 | 6.4 |
| 4 | 78.6 | 6.3 |
| 6 | 76.5 | 6.6 |
| 8 | 75.2 | 6.1 |
| 12 | 73.5 | 4.8 |
| 16 | 72.3 | |
| 24 | 69.9 | |
| 32 | 69.1 | |
| 48 | 68.7 | |
| 64 | | |
| 96 | | |
| 128 | | |
| 192 | | |
| 256 | | |

**Test Results.**

| Moisture Content (%) | 19 |
|---|---|
| MCV | 10.9 |

# MOISTURE CONDITION VALUE

**BS1377 : Part 4 : 1990 Clause 5.4**

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH108** | **Top Depth (m):** | **0.30** |
| **Sample Number:** | **3** | **Base Depth (m):** | **0.70** |
| **Sample Type:** | **B** | | |

| | |
|---|---|
| Material Retained on the 20mm BS Test Sieve (%): | 68 |
| Interpretation based on steepest straight line intercept with 5mm change in penetration. | |

**MCV Determination**

| Blows (N) | Penetration (mm) | n to 4n (mm) |
|---|---|---|
| 1 | 84.1 | 11.9 |
| 2 | 78.5 | 12.0 |
| 3 | 74.6 | 11.1 |
| 4 | 72.2 | 11.1 |
| 6 | 69.2 | 11.1 |
| 8 | 66.5 | 10.2 |
| 12 | 63.5 | 8.6 |
| 16 | 61.1 | 6.6 |
| 24 | 58.1 | 4.6 |
| 32 | 56.3 | |
| 48 | 54.9 | |
| 64 | 54.5 | |
| 96 | 53.5 | |
| 128 | | |
| 192 | | |
| 256 | | |

**Test Results.**

| | |
|---|---|
| Moisture Content (%) | 9.8 |
| MCV | 13.6 |

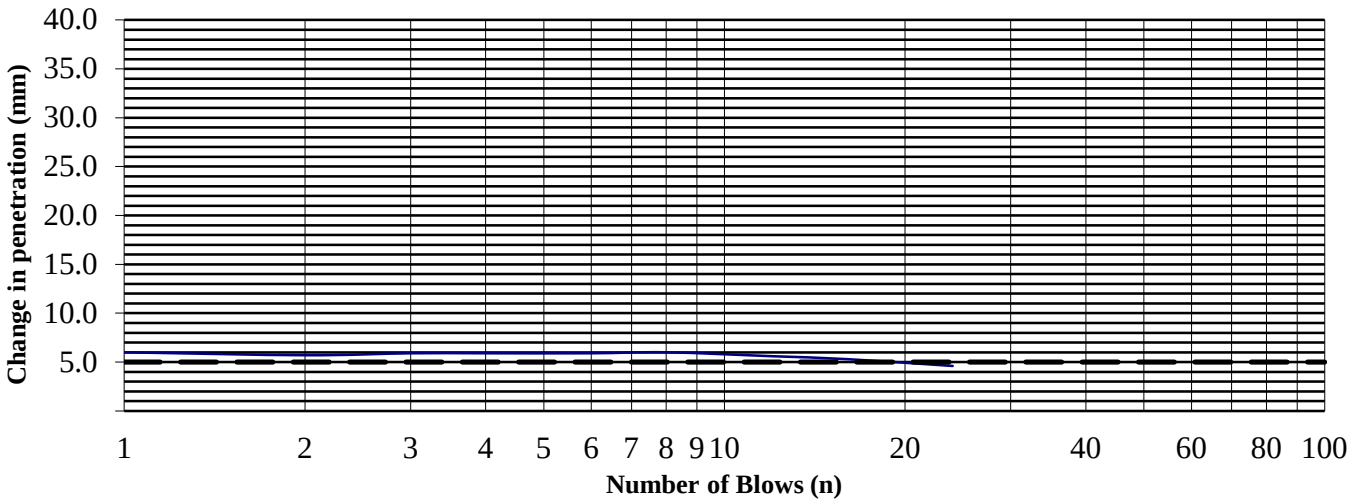
# MOISTURE CONDITION VALUE

**BS1377 : Part 4 : 1990 Clause 5.4**

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH108** | **Top Depth (m):** | **7.00** |
| **Sample Number:** | **107** | **Base Depth (m):** | **8.00** |
| **Sample Type:** | **B** | | |

| | |
|---|---|
| Material Retained on the 20mm BS Test Sieve (%): | 0 |
| Interpretation based on steepest straight line intercept with 5mm change in penetration. | |

**MCV Determination**




| Blows (N) | Penetration (mm) | n to 4n (mm) |
|---|---|---|
| 1 | 92.5 | 6.0 |
| 2 | 89.5 | 5.7 |
| 3 | 87.9 | 5.9 |
| 4 | 86.5 | 5.9 |
| 6 | 84.9 | 5.9 |
| 8 | 83.8 | 6.0 |
| 12 | 82.0 | 5.6 |
| 16 | 80.6 | 5.3 |
| 24 | 79.0 | 4.6 |
| 32 | 77.8 | |
| 48 | 76.4 | |
| 64 | 75.3 | |
| 96 | 74.4 | |
| 128 | | |
| 192 | | |
| 256 | | |

**Test Results.**

| | |
|---|---|
| Moisture Content (%) | 13 |
| MCV | 13.8 |

# MOISTURE CONDITION VALUE

**BS1377 : Part 4 : 1990 Clause 5.4**

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH109** | **Top Depth (m):** | **0.30** |
| **Sample Number:** | **6** | **Base Depth (m):** | **0.50** |
| **Sample Type:** | **B** | | |

| | |
|---|---|
| Material Retained on the 20mm BS Test Sieve (%): | 69 |
| Interpretation based on steepest straight line intercept with 5mm change in penetration. | |

**MCV Determination**

| Blows (N) | Penetration (mm) | n to 4n (mm) |
|---|---|---|
| 1 | 98.8 | 18.2 |
| 2 | 90.4 | 17.9 |
| 3 | 84.7 | 18.1 |
| 4 | 80.6 | 18.6 |
| 6 | 77.1 | 17.9 |
| 8 | 72.5 | 15.3 |
| 12 | 66.6 | 10.5 |
| 16 | 62.0 | 6.0 |
| 24 | 59.2 | 3.4 |
| 32 | 57.2 | |
| 48 | 56.1 | |
| 64 | 56.0 | |
| 96 | 55.8 | |
| 128 | | |
| 192 | | |
| 256 | | |

**Test Results.**

| | |
|---|---|
| Moisture Content (%) | 13 |
| MCV | 13.0 |

# MOISTURE CONDITION VALUE

**BS1377 : Part 4 : 1990 Clause 5.4**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP132** | **Top Depth (m):** | **2.00** |
| **Sample Number:** | **7** | **Base Depth (m):** | **2.30** |
| **Sample Type:** | **B** | | |

| Material Retained on the 20mm BS Test Sieve (%): | 15 |
|---|---|
| Interpretation based on steepest straight line intercept with 5mm change in penetration. | |

**MCV Determination**

| Blows (N) | Penetration (mm) | n to 4n (mm) |
|---|---|---|
| 1 | 82.4 | 9.9 |
| 2 | 77.9 | 10.6 |
| 3 | 74.9 | 10.5 |
| 4 | 72.5 | 9.9 |
| 6 | 69.6 | 9.7 |
| 8 | 67.3 | 9.0 |
| 12 | 64.4 | 8.3 |
| 16 | 62.6 | 7.7 |
| 24 | 59.9 | 6.3 |
| 32 | 58.3 | 4.9 |
| 48 | 56.1 | |
| 64 | 54.9 | |
| 96 | 53.6 | |
| 128 | 53.4 | |
| 192 | | |
| 256 | | |

**Test Results.**

| | |
|---|---|
| Moisture Content (%) | 8.0 |
| MCV | 14.8 |

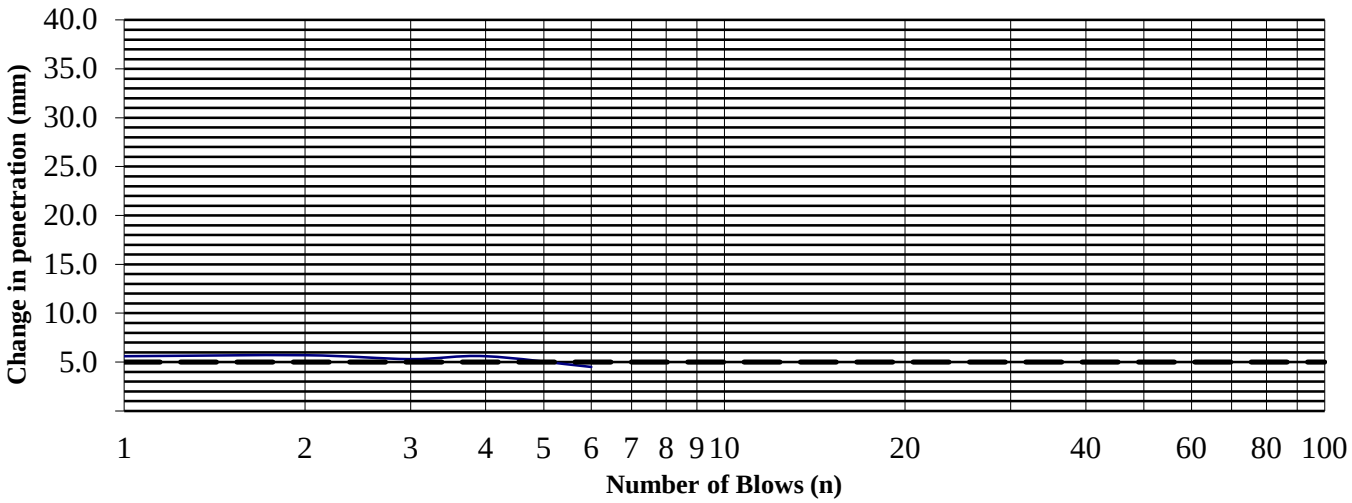
# MOISTURE CONDITION VALUE

**BS1377 : Part 4 : 1990 Clause 5.4**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP153** | **Top Depth (m):** | **2.30** |
| **Sample Number:** | **8** | **Base Depth (m):** | **2.60** |
| **Sample Type:** | **B** | | |

| Material Retained on the 20mm BS Test Sieve (%): | 2 |
|---|---|
| Interpretation based on steepest straight line intercept with 5mm change in penetration. | |

**MCV Determination**




| Blows (N) | Penetration (mm) | n to 4n (mm) |
|---|---|---|
| 1 | 72.4 | 5.6 |
| 2 | 69.6 | 5.7 |
| 3 | 67.8 | 5.3 |
| 4 | 66.8 | 5.6 |
| 6 | 64.8 | 4.5 |
| 8 | 63.9 | |
| 12 | 62.5 | |
| 16 | 61.2 | |
| 24 | 60.3 | |
| 32 | | |
| 48 | | |
| 64 | | |
| 96 | | |
| 128 | | |
| 192 | | |
| 256 | | |

**Test Results.**

| | |
|---|---|
| Moisture Content (%) | 8.2 |
| MCV | 8.1 |

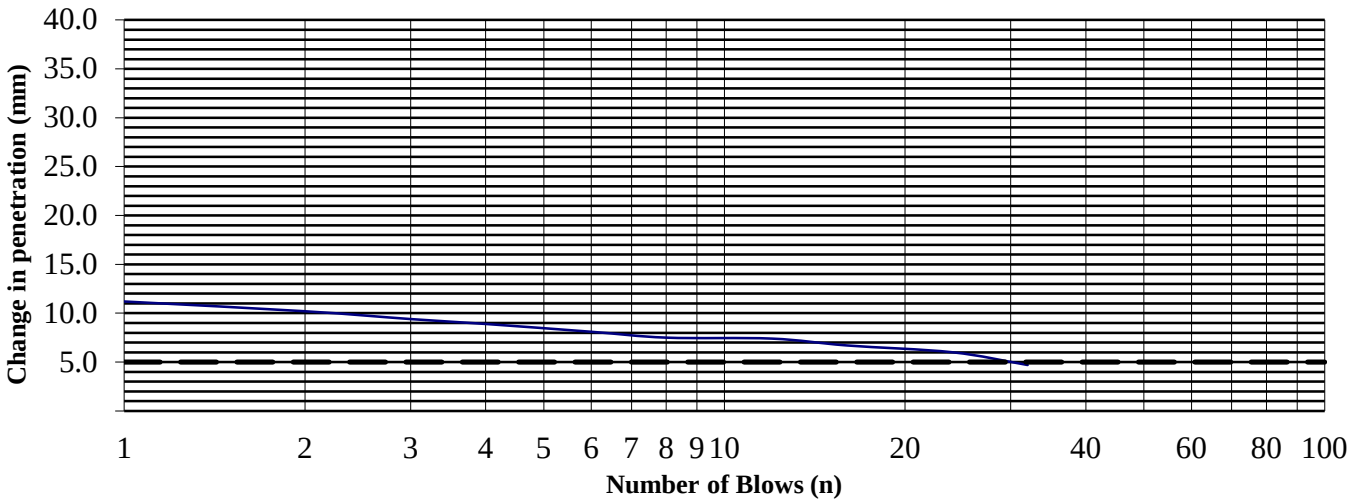
# MOISTURE CONDITION VALUE

**BS1377 : Part 4 : 1990 Clause 5.4**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP156** | **Top Depth (m):** | **2.00** |
| **Sample Number:** | **7** | **Base Depth (m):** | **2.30** |
| **Sample Type:** | **B** | | |

| Material Retained on the 20mm BS Test Sieve (%): | 9 |
|---|---|
| Interpretation based on steepest straight line intercept with 5mm change in penetration. | |

**MCV Determination**




| Blows (N) | Penetration (mm) | n to 4n (mm) |
|---|---|---|
| 1 | 81.6 | 11.2 |
| 2 | 75.8 | 10.2 |
| 3 | 72.5 | 9.4 |
| 4 | 70.4 | 8.9 |
| 6 | 67.7 | 8.1 |
| 8 | 65.6 | 7.5 |
| 12 | 63.1 | 7.4 |
| 16 | 61.5 | 6.7 |
| 24 | 59.6 | 6.0 |
| 32 | 58.1 | 4.7 |
| 48 | 55.7 | |
| 64 | 54.8 | |
| 96 | 53.6 | |
| 128 | 53.4 | |
| 192 | | |
| 256 | | |

**Test Results.**

| | |
|---|---|
| Moisture Content (%) | 8.0 |
| MCV | 11.9 |

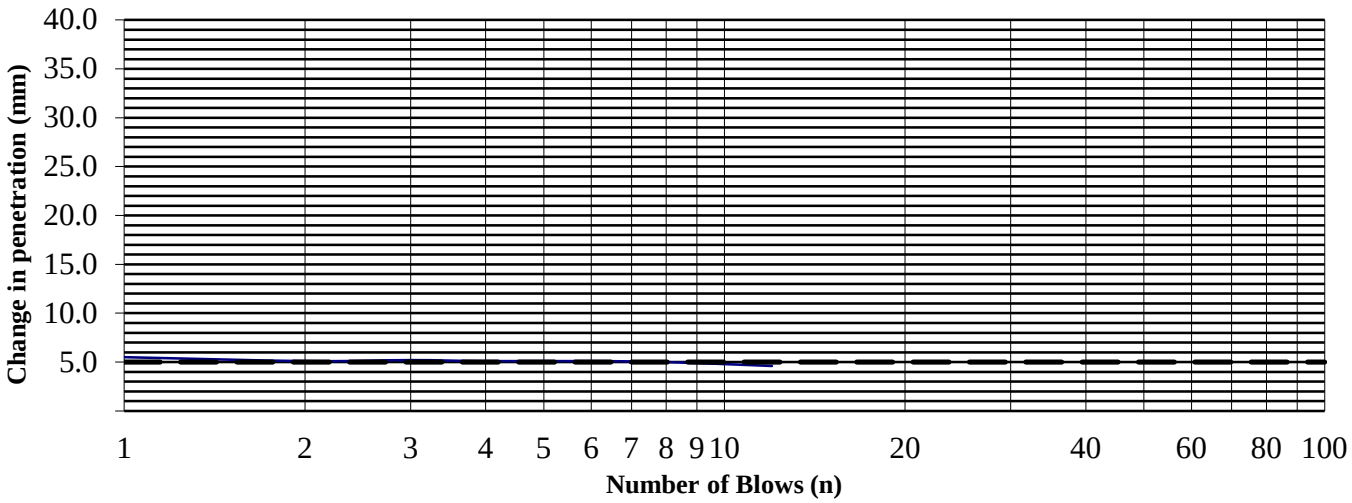
# MOISTURE CONDITION VALUE

**BS1377 : Part 4 : 1990 Clause 5.4**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP151** | **Top Depth (m):** | **2.10** |
| **Sample Number:** | **7** | **Base Depth (m):** | **2.40** |
| **Sample Type:** | **B** | | |

| Material Retained on the 20mm BS Test Sieve (%): | 1 |
|---|---|
| Interpretation based on steepest straight line intercept with 5mm change in penetration. | |

**MCV Determination**




| Blows (N) | Penetration (mm) | n to 4n (mm) |
|---|---|---|
| 1 | 71.8 | 5.5 |
| 2 | 69.0 | 5.1 |
| 3 | 67.5 | 5.2 |
| 4 | 66.3 | 5.1 |
| 6 | 65.0 | 5.1 |
| 8 | 63.9 | 5.0 |
| 12 | 62.3 | 4.6 |
| 16 | 61.2 | |
| 24 | 59.9 | |
| 32 | 58.9 | |
| 48 | 57.7 | |
| 64 | | |
| 96 | | |
| 128 | | |
| 192 | | |
| 256 | | |

**Test Results.**

| | |
|---|---|
| Moisture Content (%) | 9.1 |
| MCV | 9.1 |

# MOISTURE CONDITION VALUE

**BS1377 : Part 4 : 1990 Clause 5.4**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP152** | **Top Depth (m):** | **1.00** |
| **Sample Number:** | **5** | **Base Depth (m):** | **1.30** |
| **Sample Type:** | **B** | | |

| Material Retained on the 20mm BS Test Sieve (%): | 17 |
|---|---|
| Interpretation based on steepest straight line intercept with 5mm change in penetration. | |

**MCV Determination**

| Blows (N) | Penetration (mm) | n to 4n (mm) |
|---|---|---|
| 1 | 70.0 | 8.4 |
| 2 | 65.7 | 8.5 |
| 3 | 63.6 | 8.3 |
| 4 | 61.6 | 8.0 |
| 6 | 59.2 | 8.0 |
| 8 | 57.2 | 6.8 |
| 12 | 55.3 | 6.2 |
| 16 | 53.6 | 4.9 |
| 24 | 51.2 | |
| 32 | 50.4 | |
| 48 | 49.1 | |
| 64 | 48.7 | |
| 96 | | |
| 128 | | |
| 192 | | |
| 256 | | |

**Test Results.**

| | |
|---|---|
| Moisture Content (%) | 9.8 |
| MCV | 11.0 |

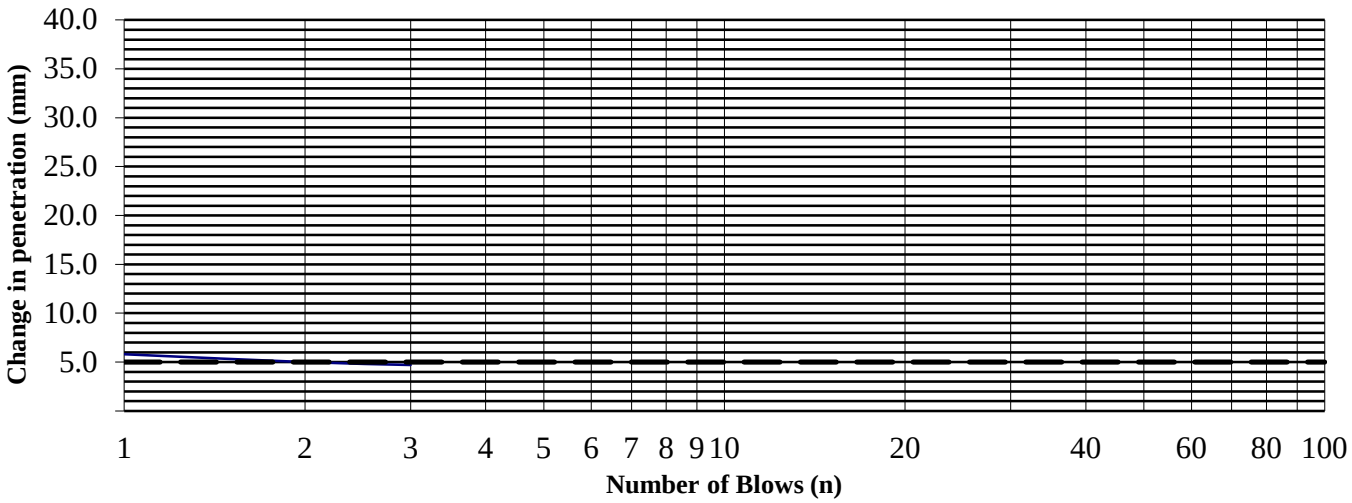
# MOISTURE CONDITION VALUE

**BS1377 : Part 4 : 1990 Clause 5.4**

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH116** | **Top Depth (m):** | **4.50** |
| **Sample Number:** | **7** | **Base Depth (m):** | **5.00** |
| **Sample Type:** | **B** | | |

| Material Retained on the 20mm BS Test Sieve (%): | 0 |
|---|---|
| Interpretation based on steepest straight line intercept with 5mm change in penetration. | |

**MCV Determination**




| Blows (N) | Penetration (mm) | n to 4n (mm) |
|---|---|---|
| 1 | 78.4 | 5.8 |
| 2 | 75.3 | 5.0 |
| 3 | 73.9 | 4.7 |
| 4 | 72.6 | |
| 6 | 71.5 | |
| 8 | 70.3 | |
| 12 | 69.2 | |
| 16 | | |
| 24 | | |
| 32 | | |
| 48 | | |
| 64 | | |
| 96 | | |
| 128 | | |
| 192 | | |
| 256 | | |

**Test Results.**

| | |
|---|---|
| Moisture Content (%) | 23 |
| MCV | 3.3 |

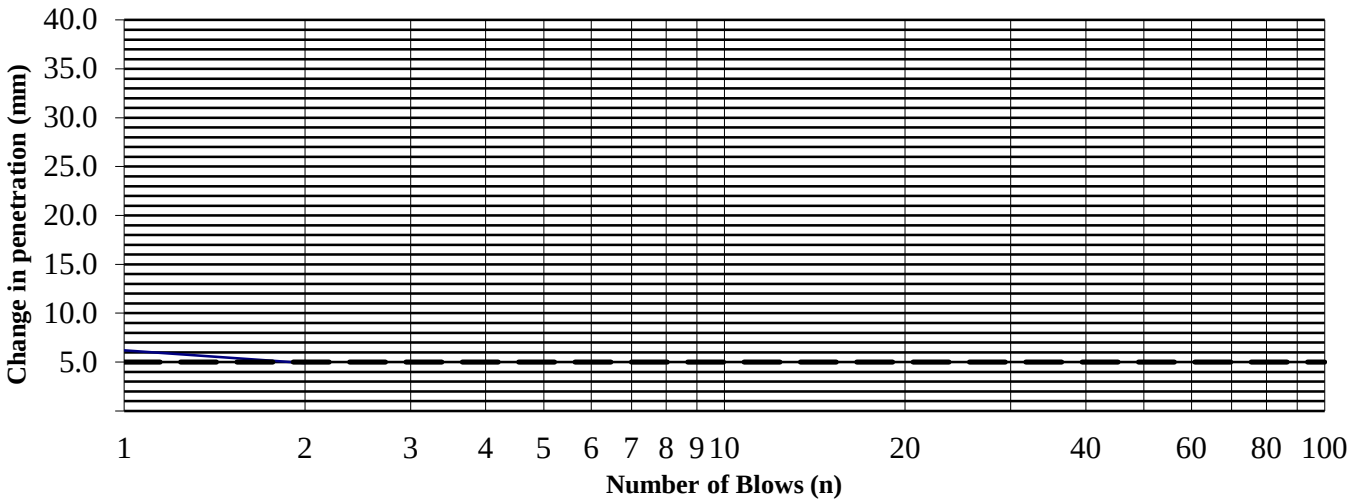
# MOISTURE CONDITION VALUE

**BS1377 : Part 4 : 1990 Clause 5.4**

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH118** | **Top Depth (m):** | **5.50** |
| **Sample Number:** | **7** | **Base Depth (m):** | **6.00** |
| **Sample Type:** | **B** | | |

| Material Retained on the 20mm BS Test Sieve (%): | 0 |
|---|---|
| Interpretation based on steepest straight line intercept with 5mm change in penetration. | |

**MCV Determination**




| Blows (N) | Penetration (mm) | n to 4n (mm) |
|---|---|---|
| 1 | 78.8 | 6.2 |
| 2 | 75.7 | 4.9 |
| 3 | 74.3 | |
| 4 | 72.6 | |
| 6 | 71.0 | |
| 8 | 70.8 | |
| 12 | | |
| 16 | | |
| 24 | | |
| 32 | | |
| 48 | | |
| 64 | | |
| 96 | | |
| 128 | | |
| 192 | | |
| 256 | | |

**Test Results.**

| | |
|---|---|
| Moisture Content (%) | 21 |
| MCV | 2.8 |

# MOISTURE CONDITION VALUE

**BS1377 : Part 4 : 1990 Clause 5.4**

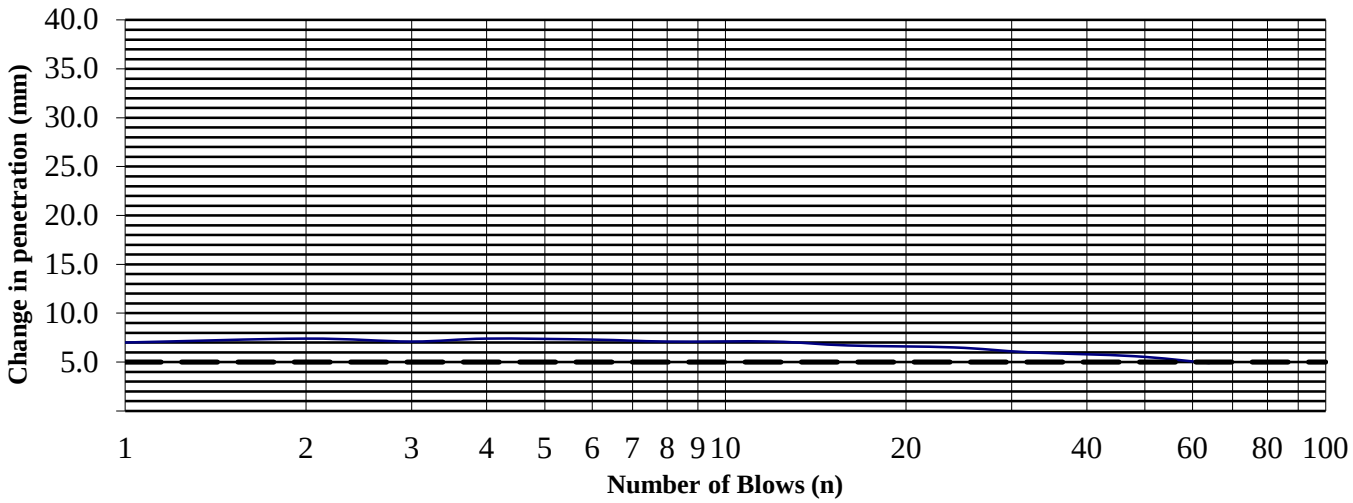
**Hole Number:** **BH120 & BH120A** **Top Depth (m):** **4.50**

**Sample Number:** **6** **Base Depth (m):** **5.00**

**Sample Type:** **B**

| Material Retained on the 20mm BS Test Sieve (%): | 10 |
|---|---|
| Interpretation based on steepest straight line intercept with 5mm change in penetration. | |

**MCV Determination**




| Blows (N) | Penetration (mm) | n to 4n (mm) |
|---|---|---|
| 1 | 74.3 | 7.0 |
| 2 | 71.0 | 7.4 |
| 3 | 68.7 | 7.1 |
| 4 | 67.3 | 7.4 |
| 6 | 65.2 | 7.3 |
| 8 | 63.6 | 7.1 |
| 12 | 61.6 | 7.1 |
| 16 | 59.9 | 6.7 |
| 24 | 57.9 | 6.5 |
| 32 | 56.5 | 6.0 |
| 48 | 54.5 | 5.6 |
| 64 | 53.2 | 4.9 |
| 96 | 51.4 | |
| 128 | 50.5 | |
| 192 | 48.9 | |
| 256 | 48.3 | |

**Test Results.**

| Moisture Content (%) | 7.4 |
|---|---|
| MCV | 17.9 |

# MOISTURE CONDITION VALUE

**BS1377 : Part 4 : 1990 Clause 5.4**

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH127** | **Top Depth (m):** | **2.20** |
| **Sample Number:** | **102** | **Base Depth (m):** | **2.70** |
| **Sample Type:** | **B** | | |

| Material Retained on the 20mm BS Test Sieve (%): | 0 |
|---|---|
| Interpretation based on steepest straight line intercept with 5mm change in penetration. | |

**MCV Determination**

| Blows (N) | Penetration (mm) | n to 4n (mm) |
|---|---|---|
| 1 | 84.0 | 6.5 |
| 2 | 80.7 | 6.9 |
| 3 | 78.8 | 7.3 |
| 4 | 77.5 | 7.4 |
| 6 | 75.2 | 7.2 |
| 8 | 73.8 | 6.6 |
| 12 | 71.5 | 5.8 |
| 16 | 70.1 | 4.9 |
| 24 | 68.0 | |
| 32 | 67.2 | |
| 48 | 65.7 | |
| 64 | 65.2 | |
| 96 | | |
| 128 | | |
| 192 | | |
| 256 | | |

**Test Results.**

| | |
|---|---|
| Moisture Content (%) | 4.8 |
| MCV | 12.1 |

# MOISTURE CONDITION VALUE

**BS1377 : Part 4 : 1990 Clause 5.4**

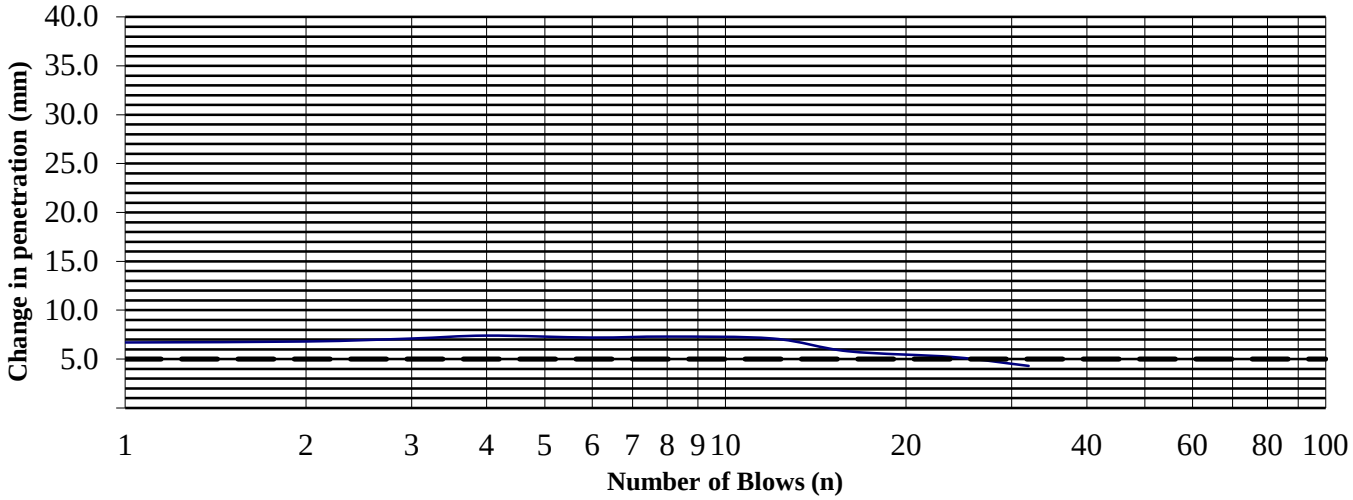
**Hole Number:** **BH127** **Top Depth (m):** **2.90**

**Sample Number:** **103** **Base Depth (m):** **4.25**

**Sample Type:** **B**

| Material Retained on the 20mm BS Test Sieve (%): | 24 |
|---|---|
| Interpretation based on steepest straight line intercept with 5mm change in penetration. | |

**MCV Determination**




| Blows (N) | Penetration (mm) | n to 4n (mm) |
|---|---|---|
| 1 | 82.1 | 6.7 |
| 2 | 78.8 | 6.8 |
| 3 | 76.8 | 7.1 |
| 4 | 75.4 | 7.4 |
| 6 | 73.7 | 7.2 |
| 8 | 72.0 | 7.3 |
| 12 | 69.7 | 7.1 |
| 16 | 68.0 | 5.8 |
| 24 | 66.5 | 5.2 |
| 32 | 64.7 | 4.3 |
| 48 | 62.6 | |
| 64 | 62.2 | |
| 96 | 61.3 | |
| 128 | 60.4 | |
| 192 | | |
| 256 | | |

**Test Results.**

| Moisture Content (%) | 4.9 |
|---|---|
| MCV | 14.6 |

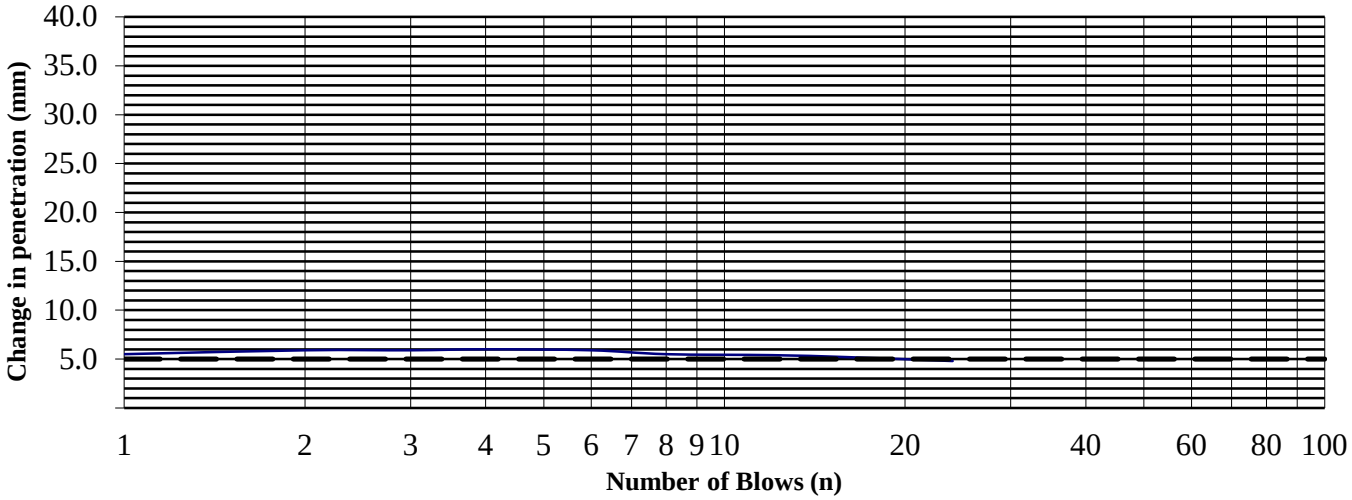
# MOISTURE CONDITION VALUE

**BS1377 : Part 4 : 1990 Clause 5.4**

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH129** | **Top Depth (m):** | **1.20** |
| **Sample Number:** | **101** | **Base Depth (m):** | **2.20** |
| **Sample Type:** | **B** | | |

| | |
|---|---|
| Material Retained on the 20mm BS Test Sieve (%): | 10 |
| Interpretation based on steepest straight line intercept with 5mm change in penetration. | |

**MCV Determination**




| Blows (N) | Penetration (mm) | n to 4n (mm) |
|---|---|---|
| 1 | 74.1 | 5.5 |
| 2 | 71.4 | 5.9 |
| 3 | 69.7 | 5.9 |
| 4 | 68.6 | 6.0 |
| 6 | 67.0 | 5.9 |
| 8 | 65.5 | 5.5 |
| 12 | 63.8 | 5.4 |
| 16 | 62.6 | 5.2 |
| 24 | 61.1 | 4.8 |
| 32 | 60.0 | |
| 48 | 58.4 | |
| 64 | 57.4 | |
| 96 | 56.3 | |
| 128 | | |
| 192 | | |
| 256 | | |

**Test Results.**

| | |
|---|---|
| Moisture Content (%) | 7.0 |
| MCV | 12.7 |

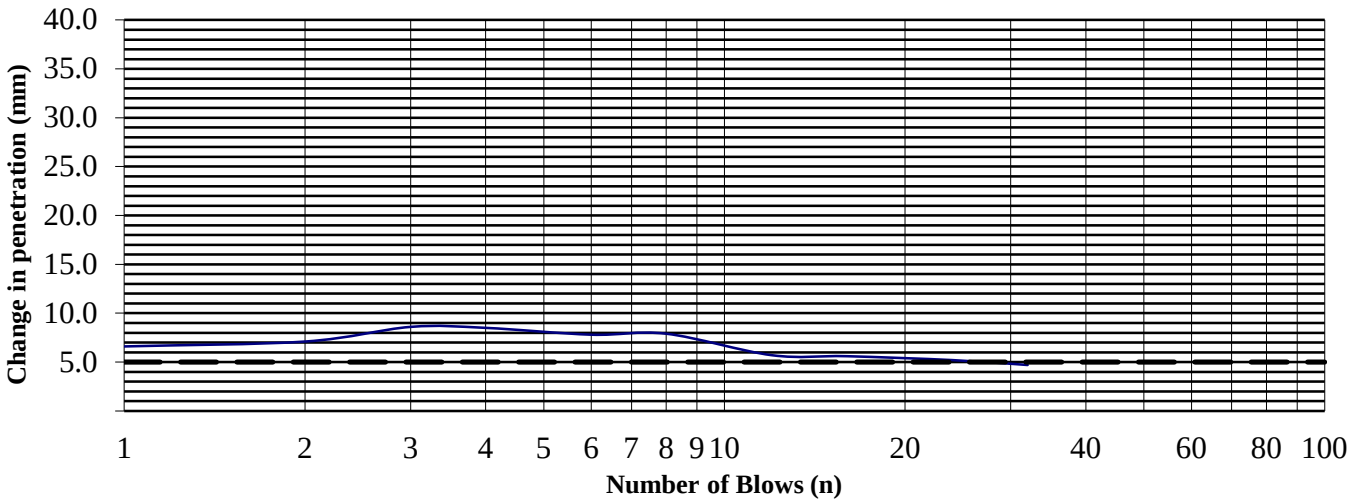
# MOISTURE CONDITION VALUE

**BS1377 : Part 4 : 1990 Clause 5.4**

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH129** | **Top Depth (m):** | **3.70** |
| **Sample Number:** | **104** | **Base Depth (m):** | **4.20** |
| **Sample Type:** | **B** | | |

| | |
|---|---|
| Material Retained on the 20mm BS Test Sieve (%): | 0 |
| Interpretation based on steepest straight line intercept with 5mm change in penetration. | |

**MCV Determination**




| Blows (N) | Penetration (mm) | n to 4n (mm) |
|---|---|---|
| 1 | 69.9 | 6.6 |
| 2 | 66.9 | 7.1 |
| 3 | 65.0 | 8.6 |
| 4 | 63.3 | 8.5 |
| 6 | 61.4 | 7.8 |
| 8 | 59.8 | 7.9 |
| 12 | 56.4 | 5.7 |
| 16 | 54.8 | 5.6 |
| 24 | 53.6 | 5.2 |
| 32 | 51.9 | 4.7 |
| 48 | 50.7 | |
| 64 | 49.2 | |
| 96 | 48.4 | |
| 128 | 47.2 | |
| 192 | | |
| 256 | | |

**Test Results.**

| | |
|---|---|
| Moisture Content (%) | 8.2 |
| MCV | 10.9 |

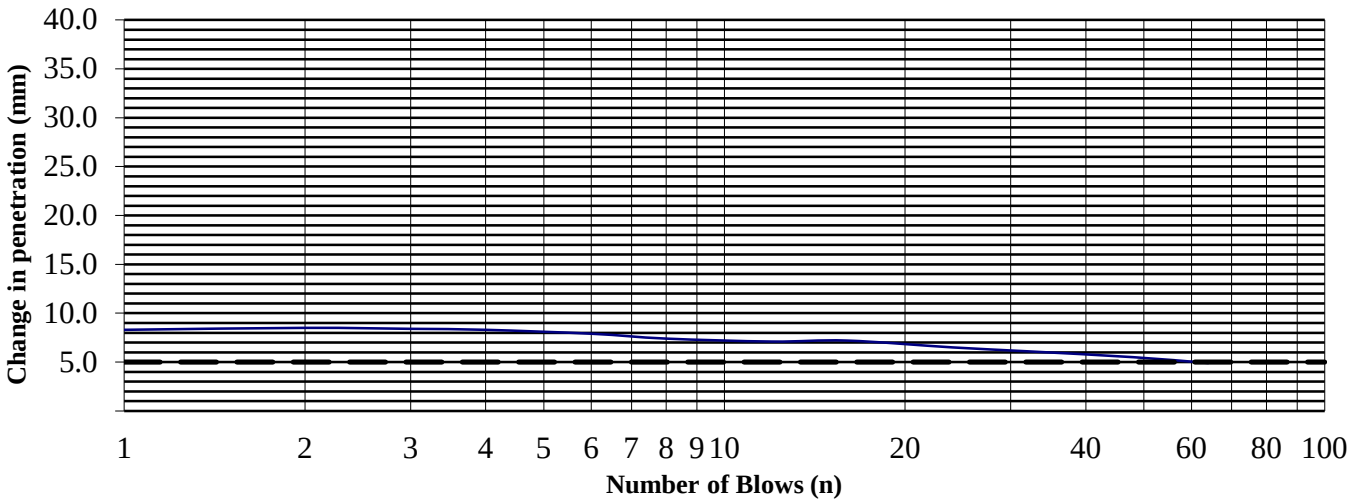
# MOISTURE CONDITION VALUE

**BS1377 : Part 4 : 1990 Clause 5.4**

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH129** | **Top Depth (m):** | **4.20** |
| **Sample Number:** | **105** | **Base Depth (m):** | **4.50** |
| **Sample Type:** | **B** | | |

| Material Retained on the 20mm BS Test Sieve (%): | 20 |
|---|---|
| Interpretation based on steepest straight line intercept with 5mm change in penetration. | |

**MCV Determination**




| Blows (N) | Penetration (mm) | n to 4n (mm) |
|---|---|---|
| 1 | 81.1 | 8.3 |
| 2 | 77.0 | 8.5 |
| 3 | 74.4 | 8.4 |
| 4 | 72.8 | 8.3 |
| 6 | 70.2 | 7.9 |
| 8 | 68.5 | 7.4 |
| 12 | 66.0 | 7.1 |
| 16 | 64.5 | 7.2 |
| 24 | 62.3 | 6.5 |
| 32 | 61.1 | 6.1 |
| 48 | 58.9 | 5.5 |
| 64 | 57.3 | 4.9 |
| 96 | 55.8 | |
| 128 | 55.0 | |
| 192 | 53.4 | |
| 256 | 52.4 | |

**Test Results.**

| | |
|---|---|
| Moisture Content (%) | 7.2 |
| MCV | 11.9 |

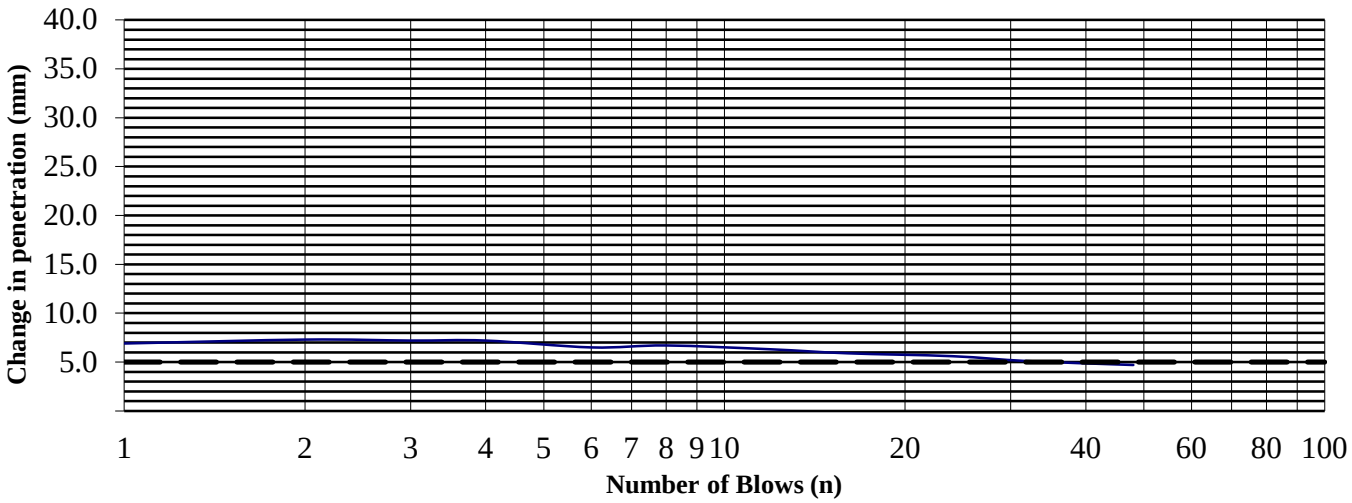
# MOISTURE CONDITION VALUE

**BS1377 : Part 4 : 1990 Clause 5.4**

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH123** | **Top Depth (m):** | **2.00** |
| **Sample Number:** | **102** | **Base Depth (m):** | **3.00** |
| **Sample Type:** | **B** | | |

| | |
|---|---|
| Material Retained on the 20mm BS Test Sieve (%): | 0 |
| Interpretation based on steepest straight line intercept with 5mm change in penetration. | |

**MCV Determination**




| Blows (N) | Penetration (mm) | n to 4n (mm) |
|---|---|---|
| 1 | 77.7 | 6.9 |
| 2 | 74.3 | 7.3 |
| 3 | 72.2 | 7.2 |
| 4 | 70.8 | 7.2 |
| 6 | 68.2 | 6.5 |
| 8 | 67.0 | 6.7 |
| 12 | 65.0 | 6.3 |
| 16 | 63.6 | 5.9 |
| 24 | 61.7 | 5.6 |
| 32 | 60.3 | 5.1 |
| 48 | 58.7 | 4.7 |
| 64 | 57.7 | |
| 96 | 56.1 | |
| 128 | 55.2 | |
| 192 | 54.0 | |
| 256 | | |

**Test Results.**

| | |
|---|---|
| Moisture Content (%) | 5.7 |
| MCV | 14.3 |

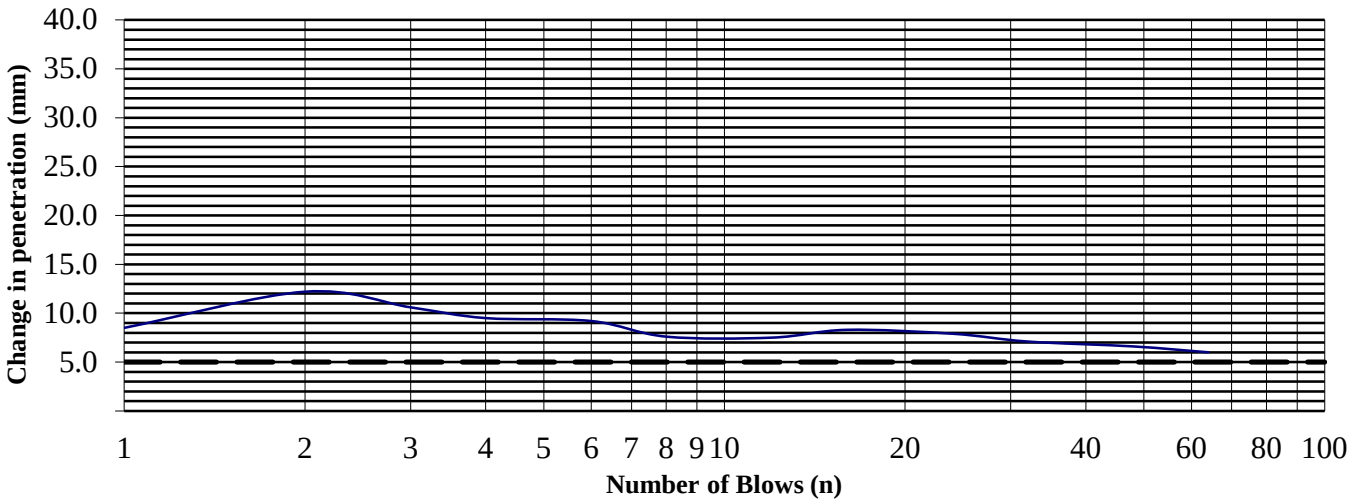
# MOISTURE CONDITION VALUE

**BS1377 : Part 4 : 1990 Clause 5.4**

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH123** | **Top Depth (m):** | **3.00** |
| **Sample Number:** | **103** | **Base Depth (m):** | **4.00** |
| **Sample Type:** | **B** | | |

| | |
|---|---|
| Material Retained on the 20mm BS Test Sieve (%): | 0 |
| Interpretation based on steepest straight line intercept with 5mm change in penetration. | |

**MCV Determination**




| Blows (N) | Penetration (mm) | n to 4n (mm) |
|---|---|---|
| 1 | 87.0 | 8.5 |
| 2 | 83.0 | 12.2 |
| 3 | 80.5 | 10.6 |
| 4 | 78.5 | 9.5 |
| 6 | 75.6 | 9.2 |
| 8 | 70.8 | 7.6 |
| 12 | 69.9 | 7.5 |
| 16 | 69.0 | 8.3 |
| 24 | 66.4 | 7.9 |
| 32 | 63.2 | 7.1 |
| 48 | 62.4 | 6.6 |
| 64 | 60.7 | 6.0 |
| 96 | 58.5 | |
| 128 | 56.1 | |
| 192 | 55.8 | |
| 256 | 54.7 | |

**Test Results.**

| | |
|---|---|
| Moisture Content (%) | 5.4 |
| MCV | >20 |

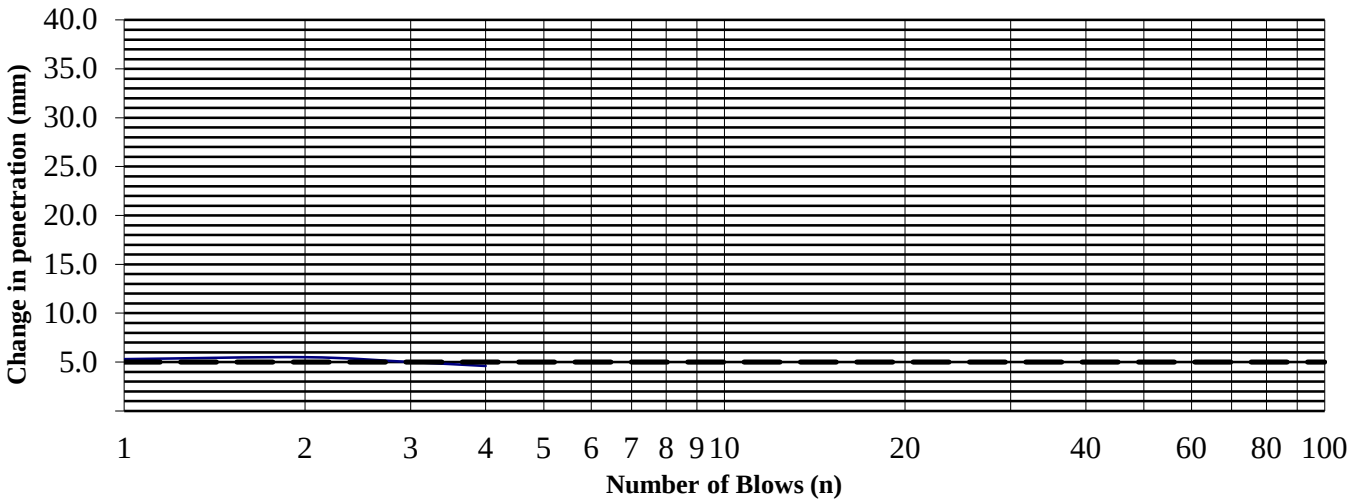
# MOISTURE CONDITION VALUE

**BS1377 : Part 4 : 1990 Clause 5.4**

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH121** | **Top Depth (m):** | **7.00** |
| **Sample Number:** | **106** | **Base Depth (m):** | **8.00** |
| **Sample Type:** | **B** | | |

| Material Retained on the 20mm BS Test Sieve (%): | 0 |
|---|---|
| Interpretation based on steepest straight line intercept with 5mm change in penetration. | |

**MCV Determination**




| Blows (N) | Penetration (mm) | n to 4n (mm) |
|---|---|---|
| 1 | 82.0 | 5.3 |
| 2 | 79.0 | 5.5 |
| 3 | 77.7 | 5.0 |
| 4 | 76.7 | 4.6 |
| 6 | 74.9 | |
| 8 | 73.5 | |
| 12 | 72.7 | |
| 16 | 72.1 | |
| 24 | | |
| 32 | | |
| 48 | | |
| 64 | | |
| 96 | | |
| 128 | | |
| 192 | | |
| 256 | | |

**Test Results.**

| Moisture Content (%) | 20 |
|---|---|
| MCV | 4.2 |

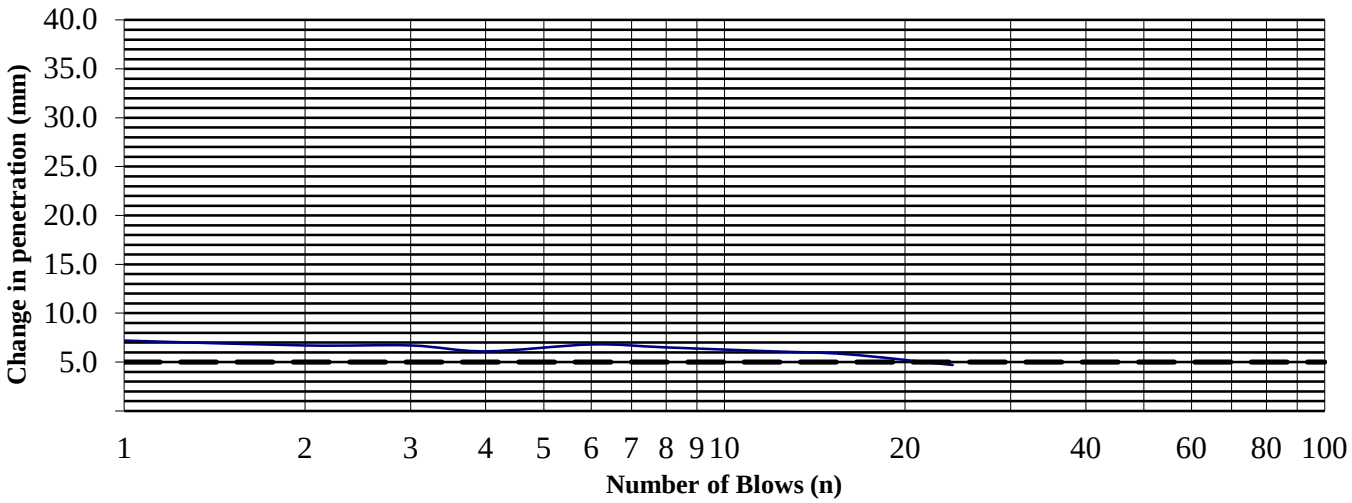
# MOISTURE CONDITION VALUE

**BS1377 : Part 4 : 1990 Clause 5.4**

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH122** | **Top Depth (m):** | **2.60** |
| **Sample Number:** | **104** | **Base Depth (m):** | **2.80** |
| **Sample Type:** | **B** | | |

| Material Retained on the 20mm BS Test Sieve (%): | 9 |
|---|---|
| Interpretation based on steepest straight line intercept with 5mm change in penetration. | |

**MCV Determination**




| Blows (N) | Penetration (mm) | n to 4n (mm) |
|---|---|---|
| 1 | 73.9 | 7.2 |
| 2 | 70.5 | 6.7 |
| 3 | 68.6 | 6.7 |
| 4 | 66.7 | 6.1 |
| 6 | 65.1 | 6.8 |
| 8 | 63.8 | 6.5 |
| 12 | 61.9 | 6.1 |
| 16 | 60.6 | 5.8 |
| 24 | 58.3 | 4.7 |
| 32 | 57.3 | |
| 48 | 55.8 | |
| 64 | 54.8 | |
| 96 | 53.6 | |
| 128 | | |
| 192 | | |
| 256 | | |

**Test Results.**

| | |
|---|---|
| Moisture Content (%) | 7.3 |
| MCV | 12.4 |

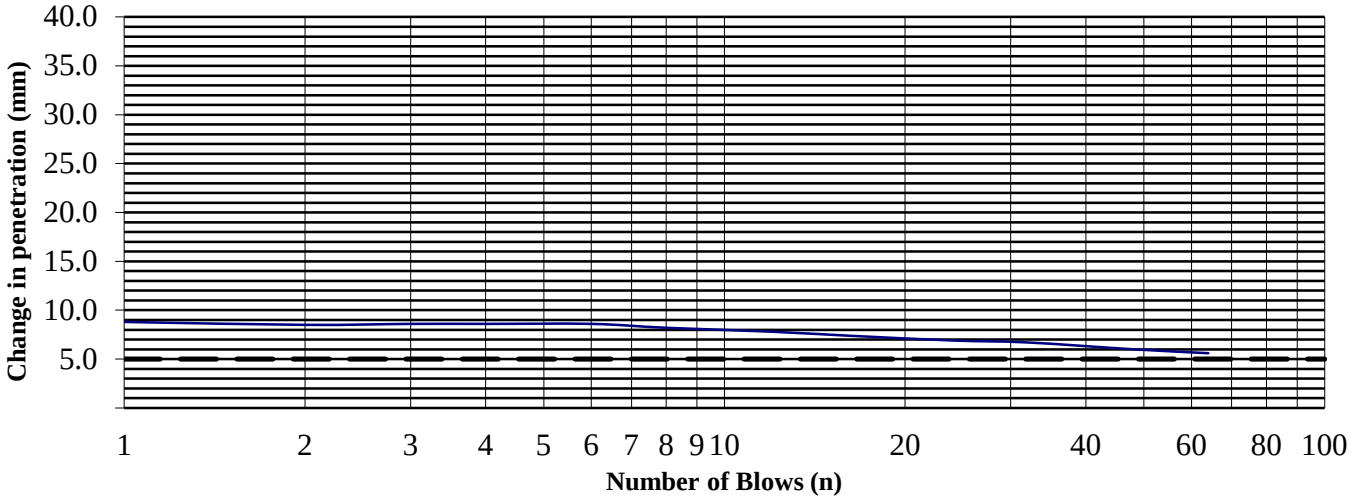
# MOISTURE CONDITION VALUE

**BS1377 : Part 4 : 1990 Clause 5.4**

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH112** | **Top Depth (m):** | **2.20** |
| **Sample Number:** | **103** | **Base Depth (m):** | **2.40** |
| **Sample Type:** | **B** | | |

| Material Retained on the 20mm BS Test Sieve (%): | 14 |
|---|---|
| Interpretation based on steepest straight line intercept with 5mm change in penetration. | |

**MCV Determination**




| Blows (N) | Penetration (mm) | n to 4n (mm) |
|---|---|---|
| 1 | 82.4 | 8.8 |
| 2 | 77.8 | 8.5 |
| 3 | 75.3 | 8.6 |
| 4 | 73.6 | 8.6 |
| 6 | 71.1 | 8.6 |
| 8 | 69.3 | 8.2 |
| 12 | 66.7 | 7.8 |
| 16 | 65.0 | 7.4 |
| 24 | 62.5 | 6.9 |
| 32 | 61.1 | 6.7 |
| 48 | 58.9 | 6.0 |
| 64 | 57.6 | 5.6 |
| 96 | 55.6 | |
| 128 | 54.4 | |
| 192 | 52.9 | |
| 256 | 52.0 | |

**Test Results.**

| | |
|---|---|
| Moisture Content (%) | 6.3 |
| MCV | >20 |

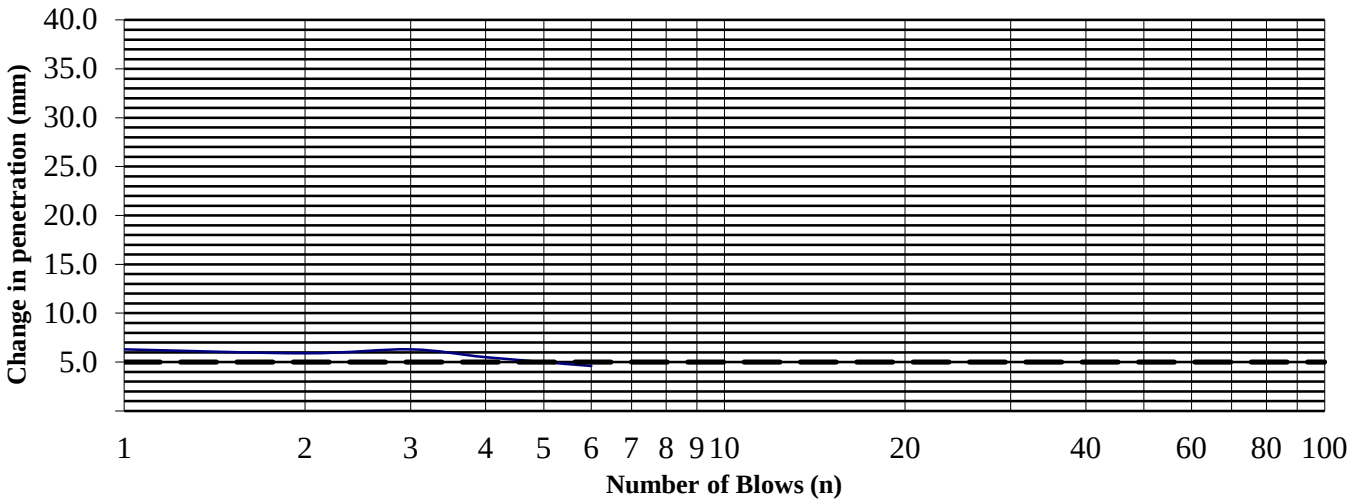
# MOISTURE CONDITION VALUE

**BS1377 : Part 4 : 1990 Clause 5.4**

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH110** | **Top Depth (m):** | **4.50** |
| **Sample Number:** | **102** | **Base Depth (m):** | **5.00** |
| **Sample Type:** | **B** | | |

| Material Retained on the 20mm BS Test Sieve (%): | 0 |
|---|---|
| Interpretation based on steepest straight line intercept with 5mm change in penetration. | |

**MCV Determination**




| Blows (N) | Penetration (mm) | n to 4n (mm) |
|---|---|---|
| 1 | 91.3 | 6.3 |
| 2 | 88.4 | 5.9 |
| 3 | 86.6 | 6.3 |
| 4 | 85.0 | 5.5 |
| 6 | 83.8 | 4.6 |
| 8 | 82.5 | |
| 12 | 80.3 | |
| 16 | 79.5 | |
| 24 | 79.2 | |
| 32 | | |
| 48 | | |
| 64 | | |
| 96 | | |
| 128 | | |
| 192 | | |
| 256 | | |

**Test Results.**

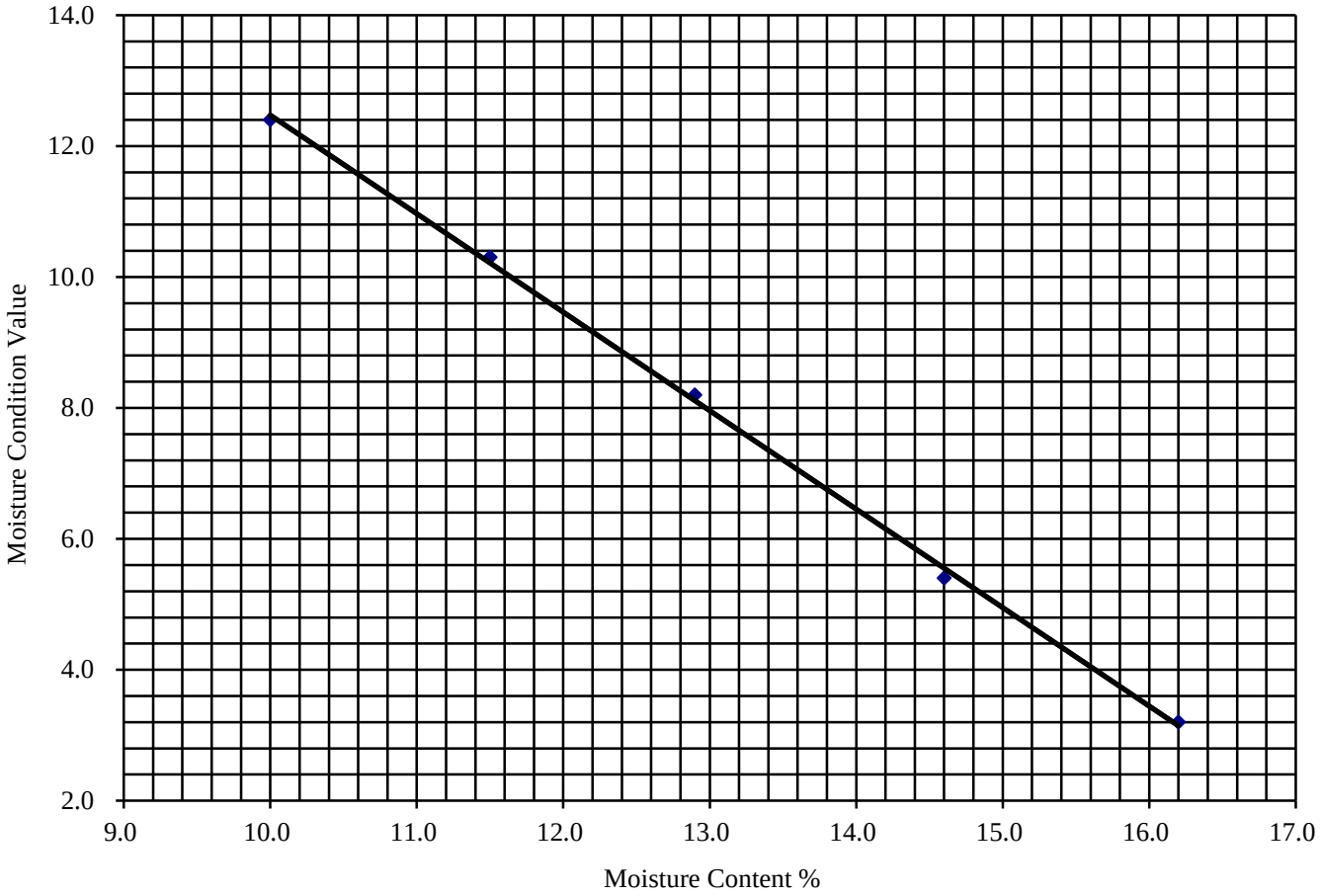
| Moisture Content (%) | 14 |
|---|---|
| MCV | 5.2 |

# MOISTURE CONDITION VALUE CALIBRATION

**BS1377 : Part 4 : 1990 Clause 5.5**

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH117** | **Top Depth (m):** | **1.50** |
| **Sample Number:** | **3** | **Base Depth (m):** | **2.00** |
| **Sample Type:** | **B** | | |

| | |
|---|---|
| Initial Moisture Content (%): | 15 |
| Single/Separate Samples Tested | Separate |
| Material Retained on the 20mm BS Test Sieve (%): | 2 |




**Test Results.**

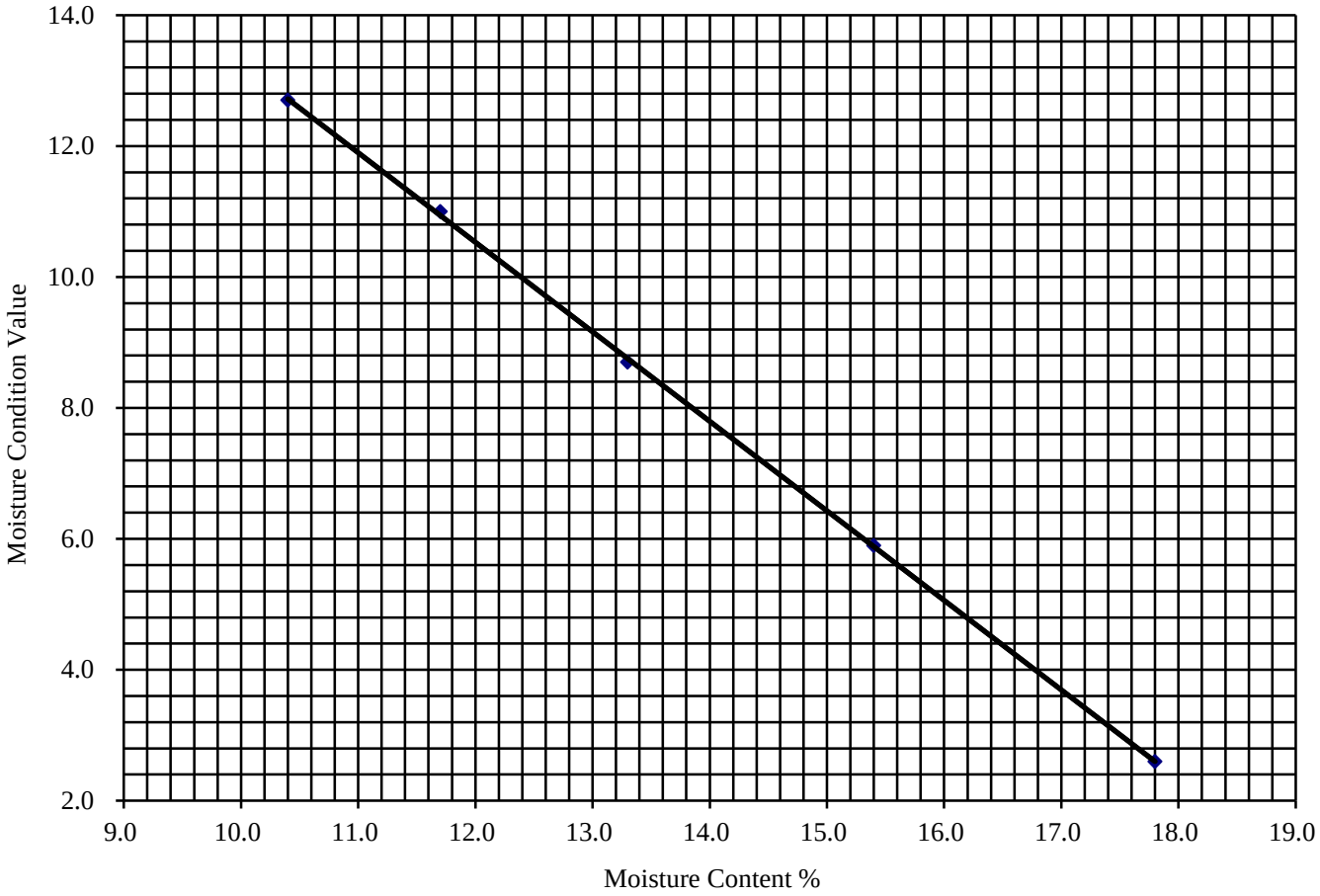
| Test Number | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| **Moisture Content (%)** | 10.0 | 11.5 | 12.9 | 14.6 | 16.2 |
| **MCV** | 12.4 | 10.3 | 8.2 | 5.4 | 3.2 |

# MOISTURE CONDITION VALUE CALIBRATION

**BS1377 : Part 4 : 1990 Clause 5.5**

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH117** | **Top Depth (m):** | **3.50** |
| **Sample Number:** | **5** | **Base Depth (m):** | **4.00** |
| **Sample Type:** | **B** | | |

| | |
|---|---|
| Initial Moisture Content (%): | 18 |
| Single/Separate Samples Tested | Separate |
| Material Retained on the 20mm BS Test Sieve (%): | 5 |




**Test Results.**

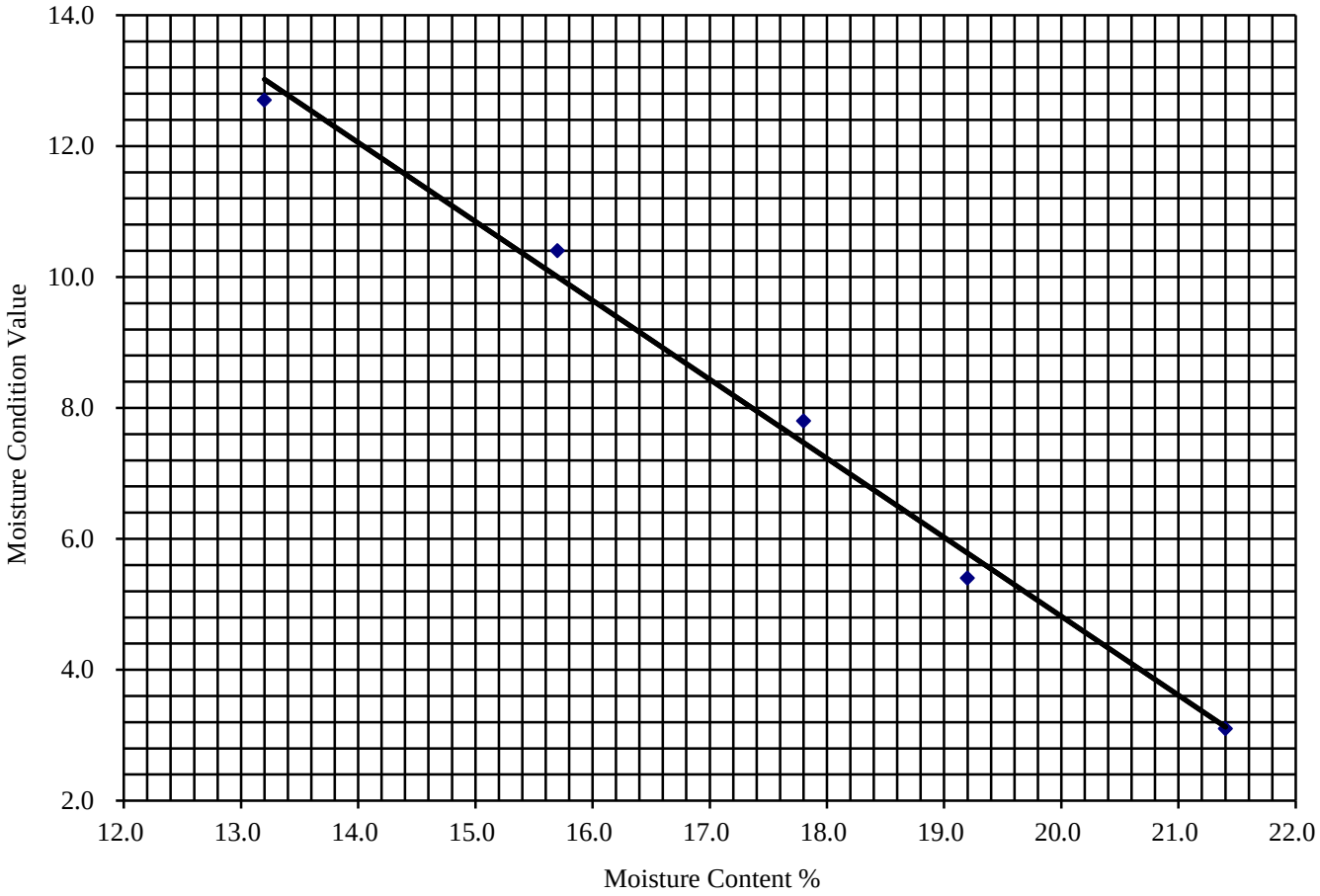
| Test Number | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| **Moisture Content (%)** | 10.4 | 11.7 | 13.3 | 15.4 | 17.8 |
| **MCV** | 12.7 | 11.0 | 8.7 | 5.9 | 2.6 |

# MOISTURE CONDITION VALUE CALIBRATION

**BS1377 : Part 4 : 1990 Clause 5.5**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP134** | **Top Depth (m):** | **0.50** |
| **Sample Number:** | **5** | **Base Depth (m):** | **0.80** |
| **Sample Type:** | **B** | | |

| | |
|---|---|
| Initial Moisture Content (%): | 19 |
| Single/Separate Samples Tested | Separate |
| Material Retained on the 20mm BS Test Sieve (%): | 2 |




**Test Results.**

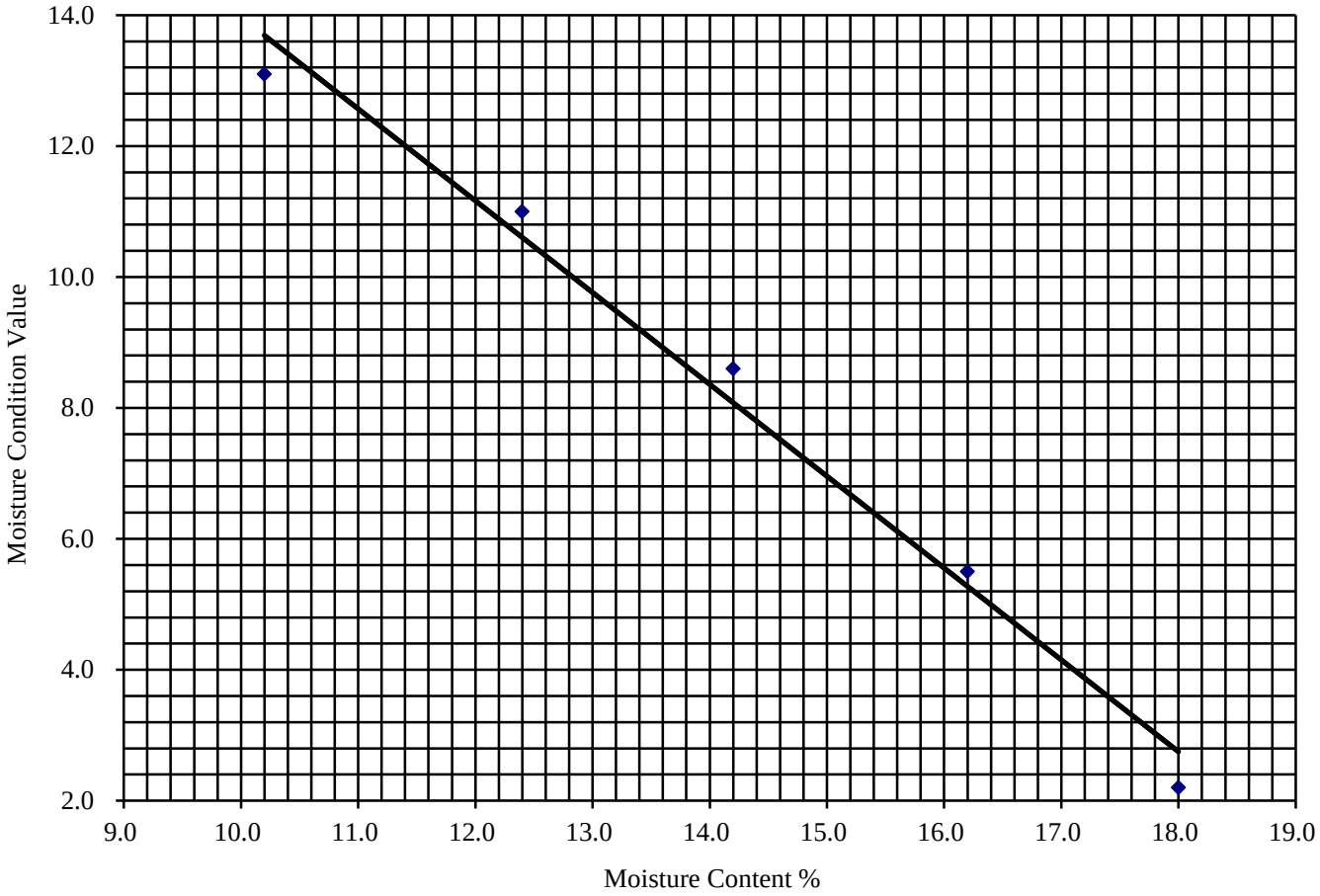
| Test Number | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| **Moisture Content (%)** | 13.2 | 15.7 | 17.8 | 19.2 | 21.4 |
| **MCV** | 12.7 | 10.4 | 7.8 | 5.4 | 3.1 |

# MOISTURE CONDITION VALUE CALIBRATION

**BS1377 : Part 4 : 1990 Clause 5.5**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP153** | **Top Depth (m):** | **1.00** |
| **Sample Number:** | **6** | **Base Depth (m):** | **1.30** |
| **Sample Type:** | **B** | | |

| | |
|---|---|
| Initial Moisture Content (%): | 16 |
| Single/Separate Samples Tested | Separate |
| Material Retained on the 20mm BS Test Sieve (%): | 0 |




**Test Results.**

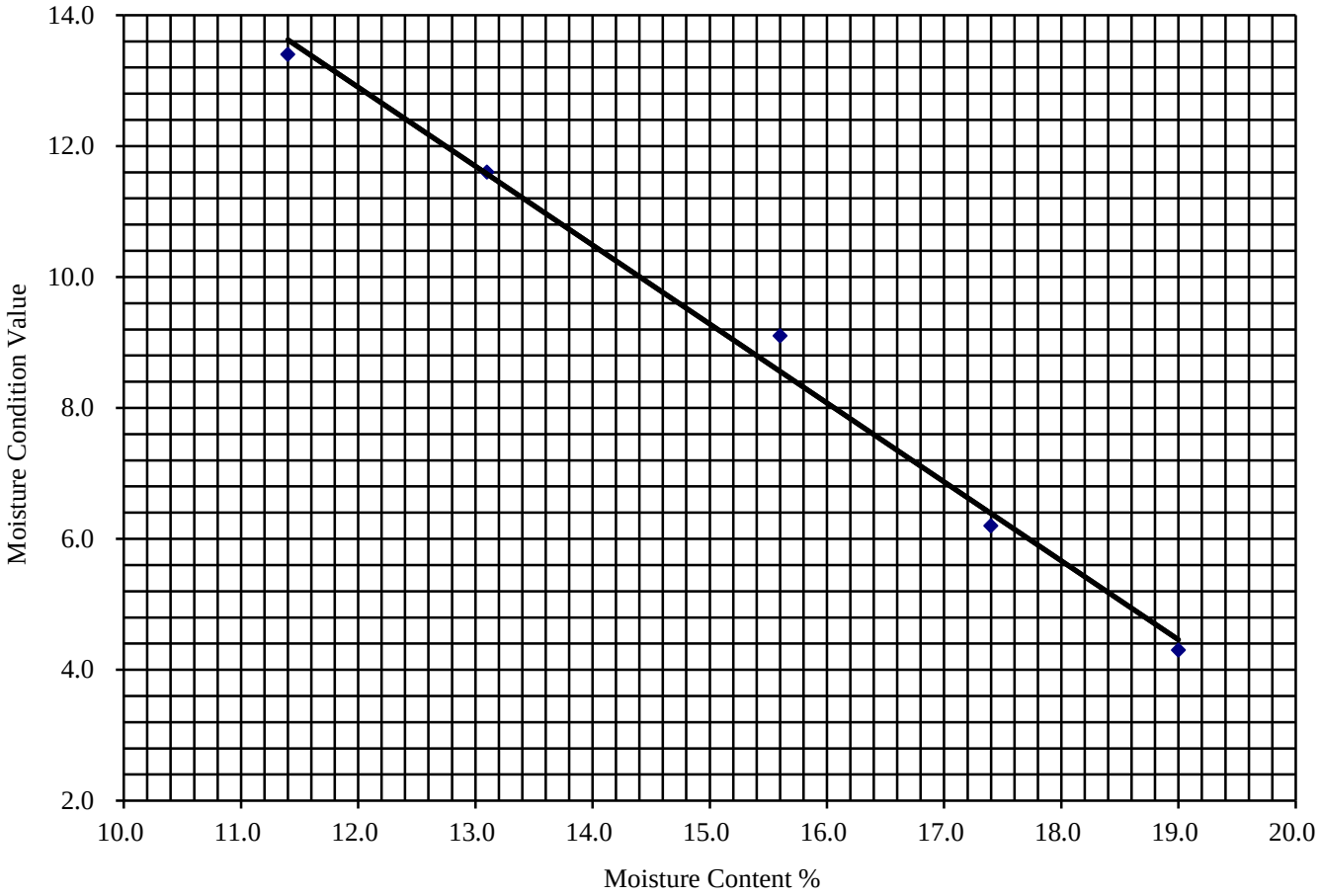
| Test Number | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| **Moisture Content (%)** | 10.2 | 12.4 | 14.2 | 16.2 | 18.0 |
| **MCV** | 13.1 | 11.0 | 8.6 | 5.5 | 2.2 |

# MOISTURE CONDITION VALUE CALIBRATION

**BS1377 : Part 4 : 1990 Clause 5.5**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP156** | **Top Depth (m):** | **1.00** |
| **Sample Number:** | **5** | **Base Depth (m):** | **1.30** |
| **Sample Type:** | **B** | | |

| | |
|---|---|
| Initial Moisture Content (%): | 16 |
| Single/Separate Samples Tested | Separate |
| Material Retained on the 20mm BS Test Sieve (%): | 2 |




**Test Results.**

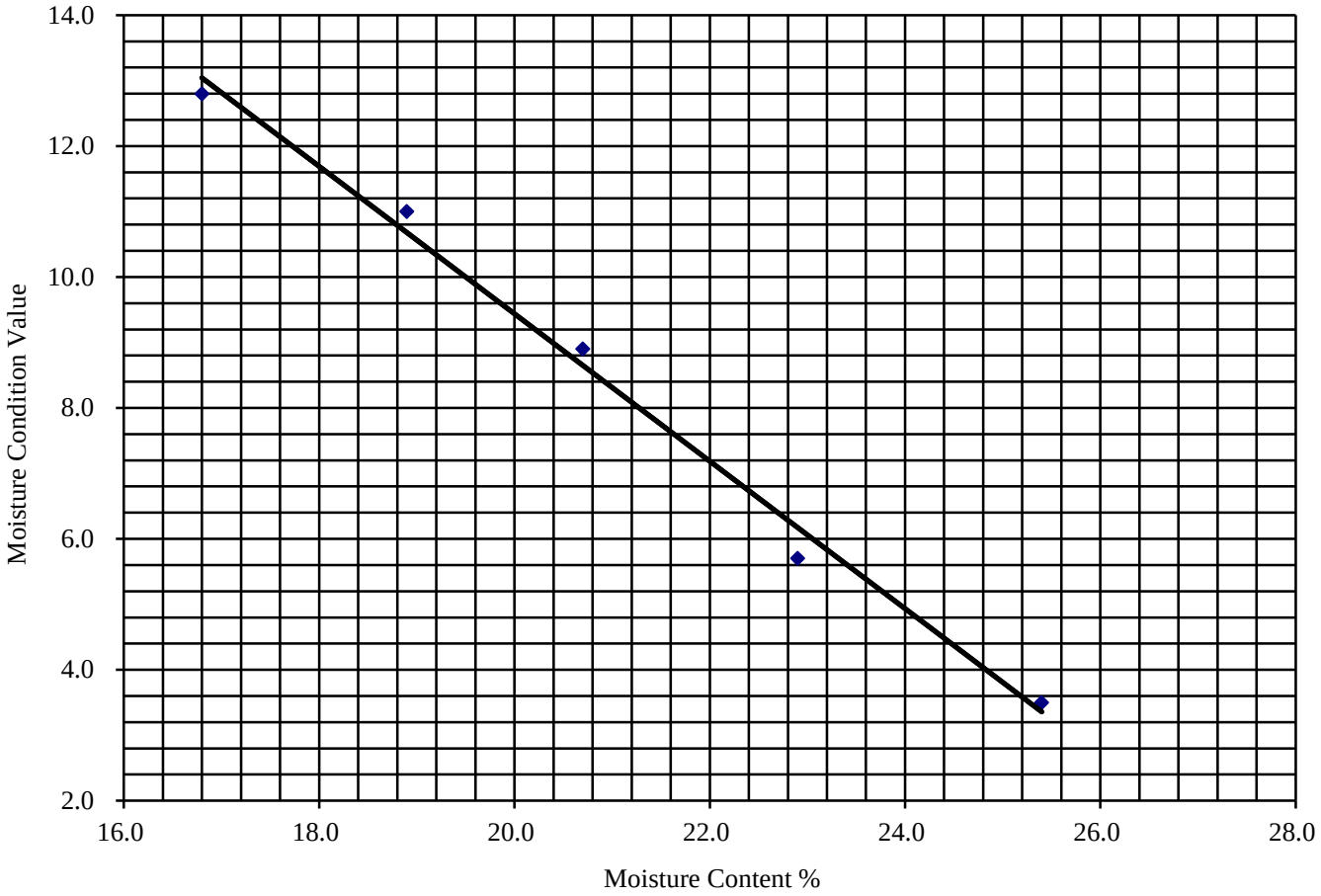
| Test Number | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| **Moisture Content (%)** | 11.4 | 13.1 | 15.6 | 17.4 | 19.0 |
| **MCV** | 13.4 | 11.6 | 9.1 | 6.2 | 4.3 |

# MOISTURE CONDITION VALUE CALIBRATION

**BS1377 : Part 4 : 1990 Clause 5.5**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP157** | **Top Depth (m):** | **1.00** |
| **Sample Number:** | **5** | **Base Depth (m):** | **1.30** |
| **Sample Type:** | **B** | | |

| | |
|---|---|
| Initial Moisture Content (%): | 23 |
| Single/Separate Samples Tested | Separate |
| Material Retained on the 20mm BS Test Sieve (%): | 0 |




**Test Results.**

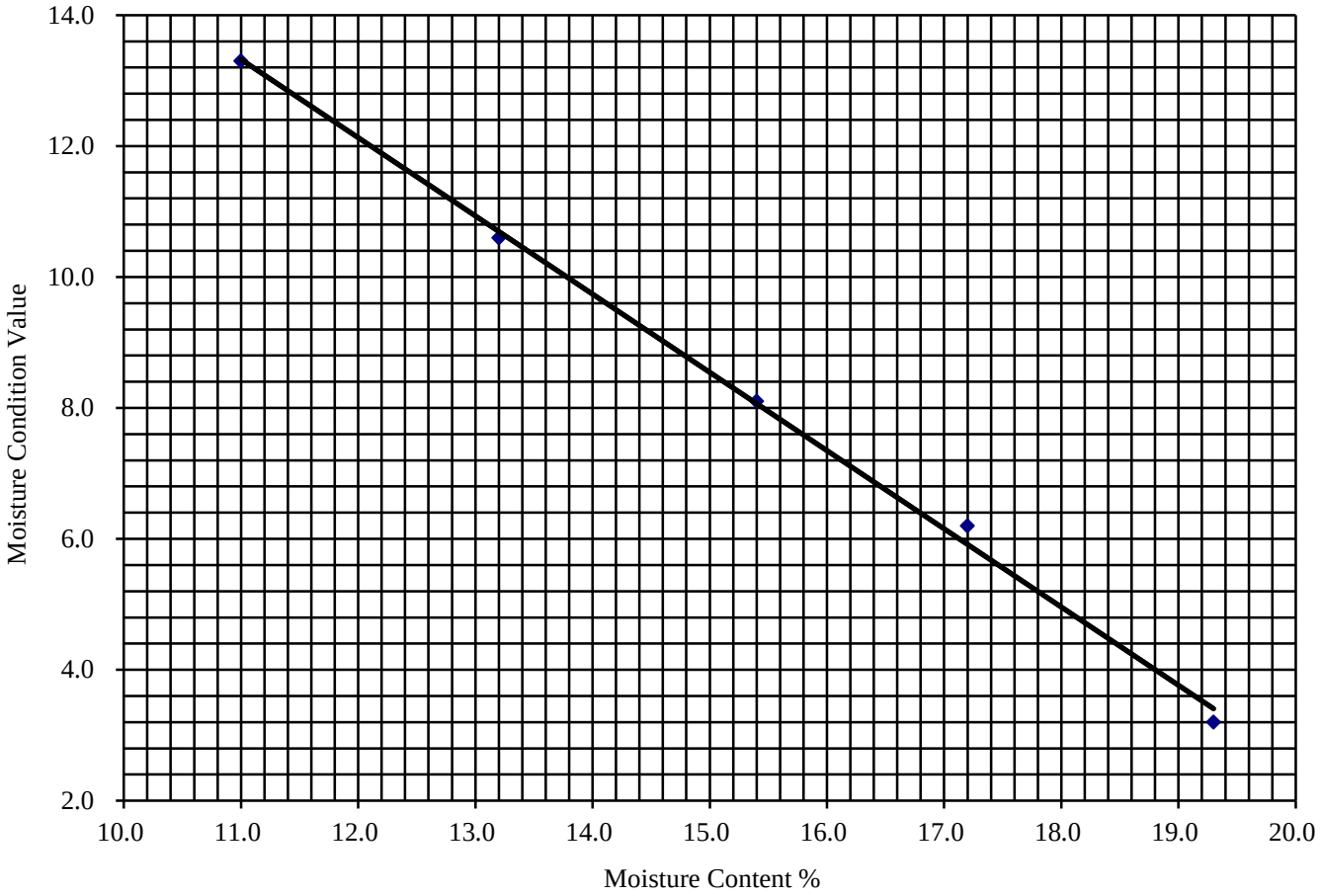
| Test Number | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| **Moisture Content (%)** | 16.8 | 18.9 | 20.7 | 22.9 | 25.4 |
| **MCV** | 12.8 | 11.0 | 8.9 | 5.7 | 3.5 |

# MOISTURE CONDITION VALUE CALIBRATION

**BS1377 : Part 4 : 1990 Clause 5.5**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP151** | **Top Depth (m):** | **1.00** |
| **Sample Number:** | **5** | **Base Depth (m):** | **1.30** |
| **Sample Type:** | **B** | | |

| | |
|---|---|
| Initial Moisture Content (%): | 17 |
| Single/Separate Samples Tested | Separate |
| Material Retained on the 20mm BS Test Sieve (%): | 0 |




**Test Results.**

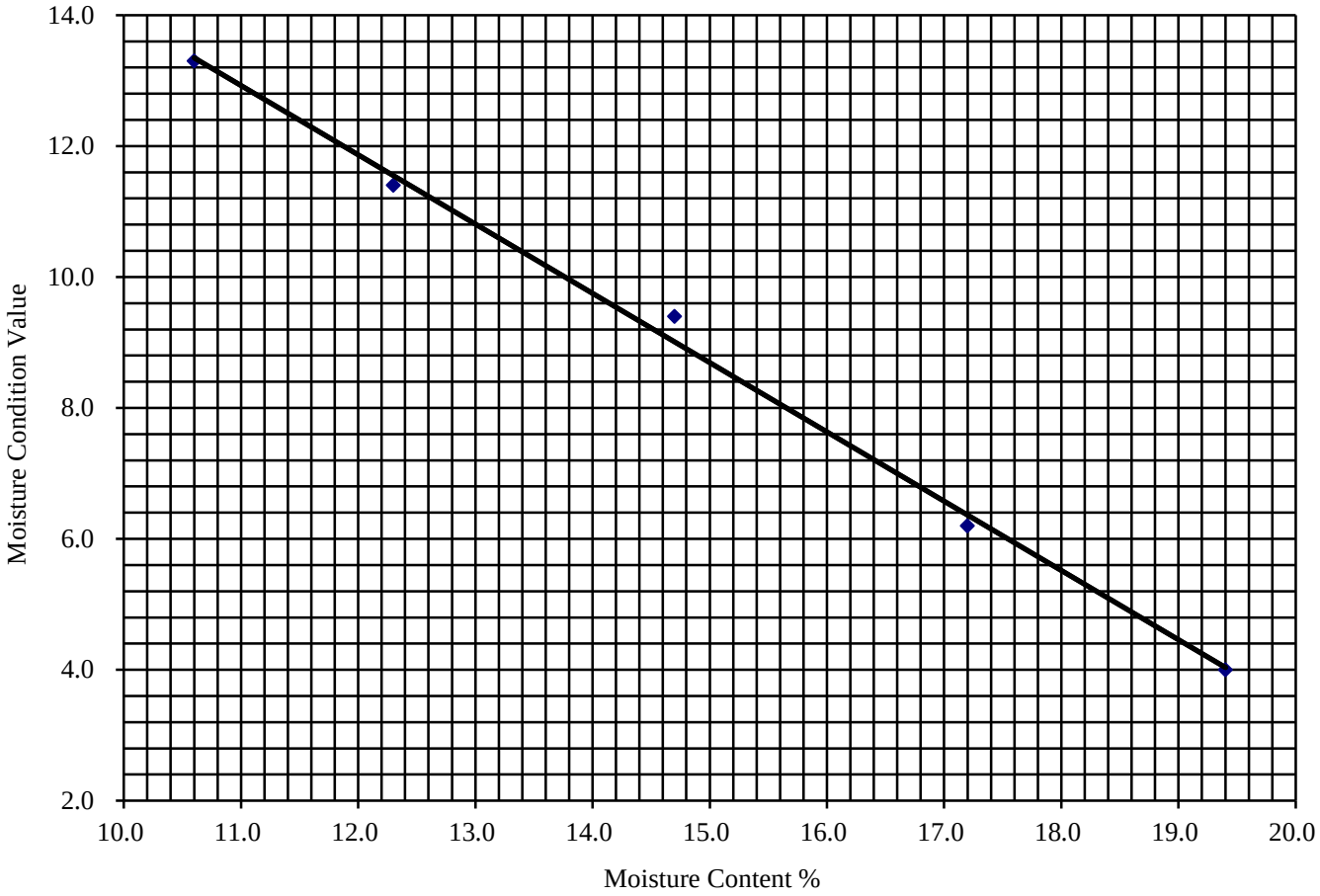
| Test Number | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| **Moisture Content (%)** | 11.0 | 13.2 | 15.4 | 17.2 | 19.3 |
| **MCV** | 13.3 | 10.6 | 8.1 | 6.2 | 3.2 |

# MOISTURE CONDITION VALUE CALIBRATION

**BS1377 : Part 4 : 1990 Clause 5.5**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP154** | **Top Depth (m):** | **1.00** |
| **Sample Number:** | **5** | **Base Depth (m):** | **1.30** |
| **Sample Type:** | **B** | | |

| | |
|---|---|
| Initial Moisture Content (%): | 15 |
| Single/Separate Samples Tested | Separate |
| Material Retained on the 20mm BS Test Sieve (%): | 2 |




**Test Results.**

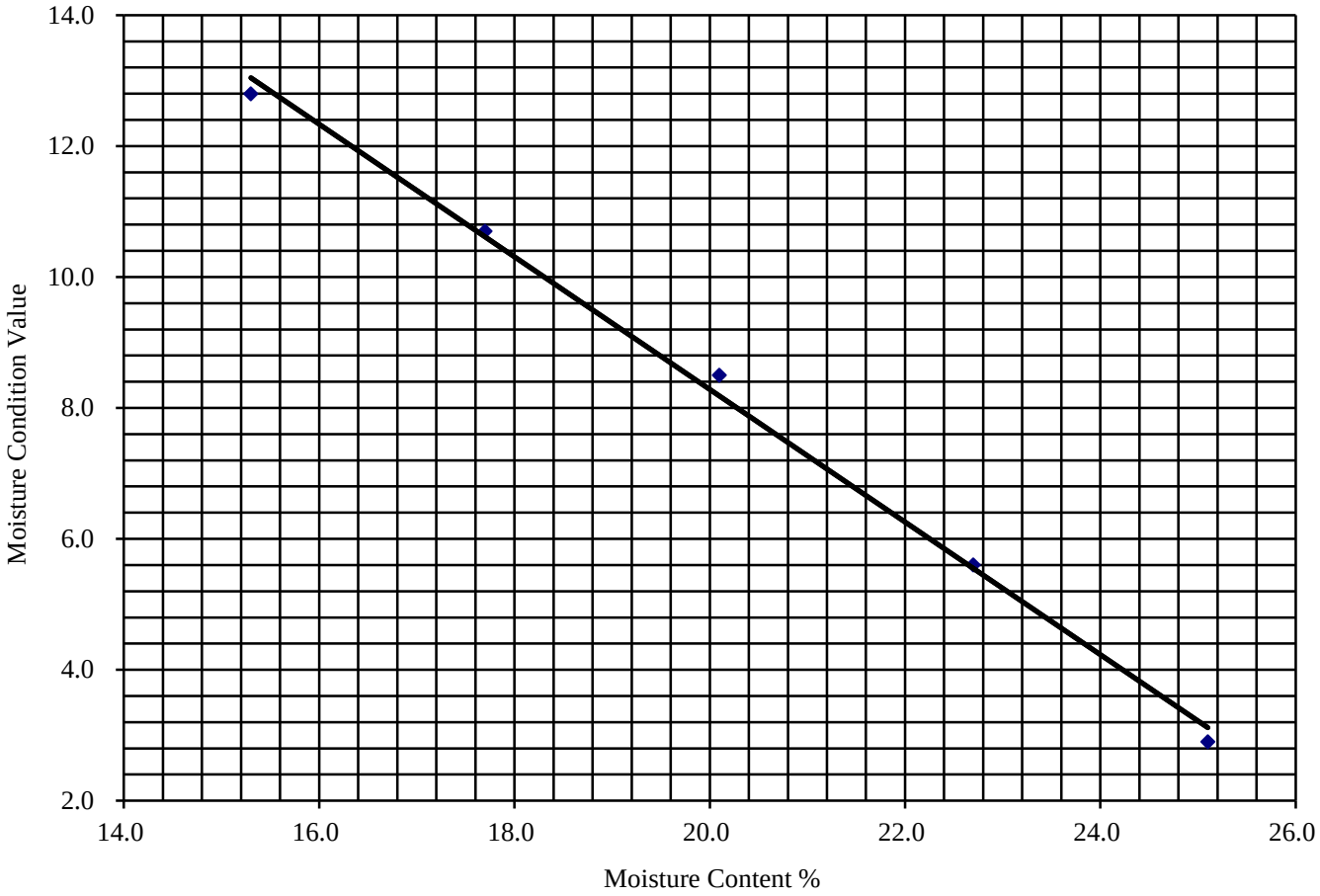
| Test Number | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| **Moisture Content (%)** | 10.6 | 12.3 | 14.7 | 17.2 | 19.4 |
| **MCV** | 13.3 | 11.4 | 9.4 | 6.2 | 4.0 |

# MOISTURE CONDITION VALUE CALIBRATION

**BS1377 : Part 4 : 1990 Clause 5.5**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP159** | **Top Depth (m):** | **1.00** |
| **Sample Number:** | **5** | **Base Depth (m):** | **1.30** |
| **Sample Type:** | **B** | | |

| | |
|---|---|
| Initial Moisture Content (%): | 25 |
| Single/Separate Samples Tested | Separate |
| Material Retained on the 20mm BS Test Sieve (%): | 0 |




**Test Results.**

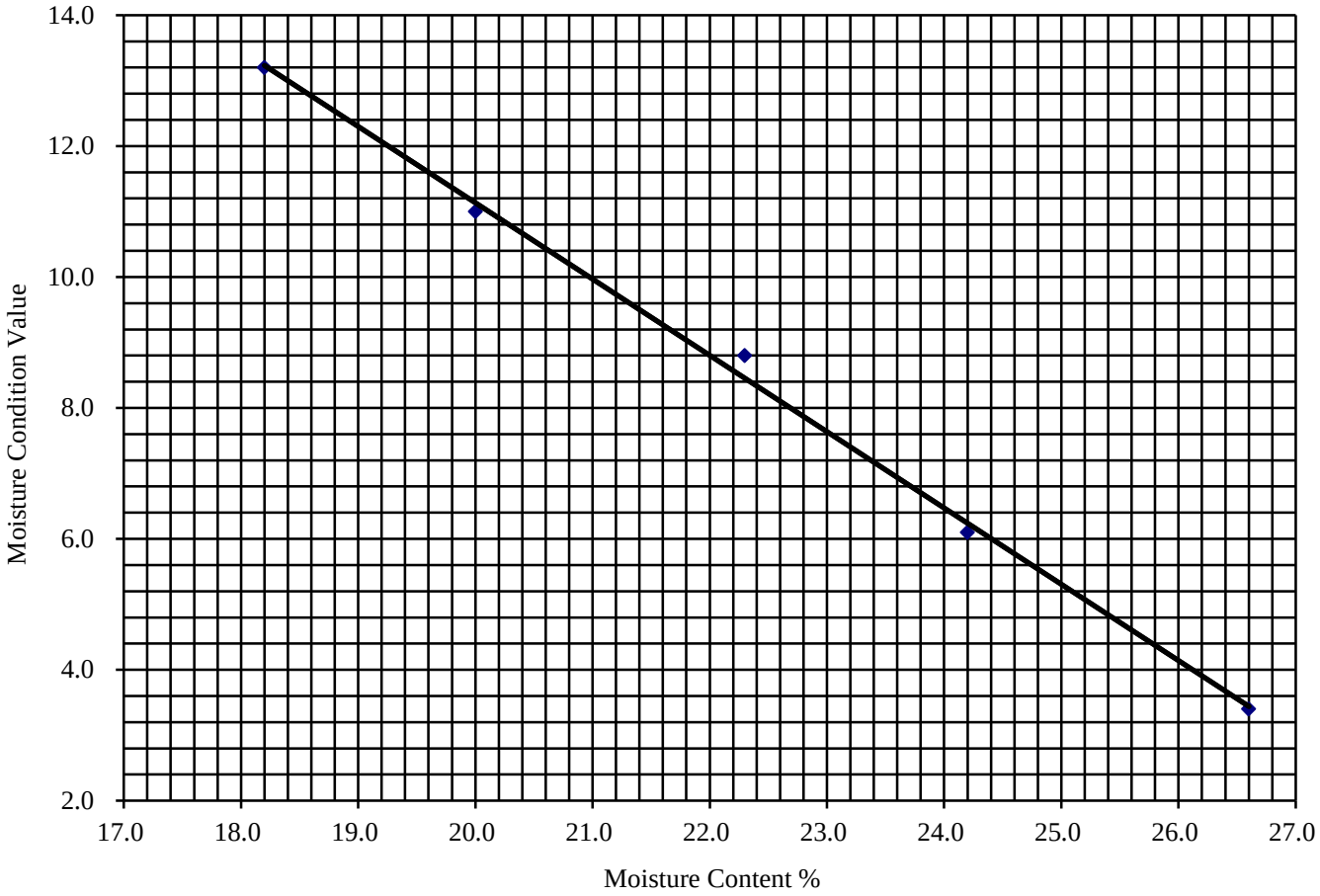
| Test Number | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| **Moisture Content (%)** | 15.3 | 17.7 | 20.1 | 22.7 | 25.1 |
| **MCV** | 12.8 | 10.7 | 8.5 | 5.6 | 2.9 |

# MOISTURE CONDITION VALUE CALIBRATION

**BS1377 : Part 4 : 1990 Clause 5.5**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP159** | **Top Depth (m):** | **2.00** |
| **Sample Number:** | **7** | **Base Depth (m):** | **2.30** |
| **Sample Type:** | **B** | | |

| | |
|---|---|
| Initial Moisture Content (%): | 24 |
| Single/Separate Samples Tested | Separate |
| Material Retained on the 20mm BS Test Sieve (%): | 0 |




**Test Results.**

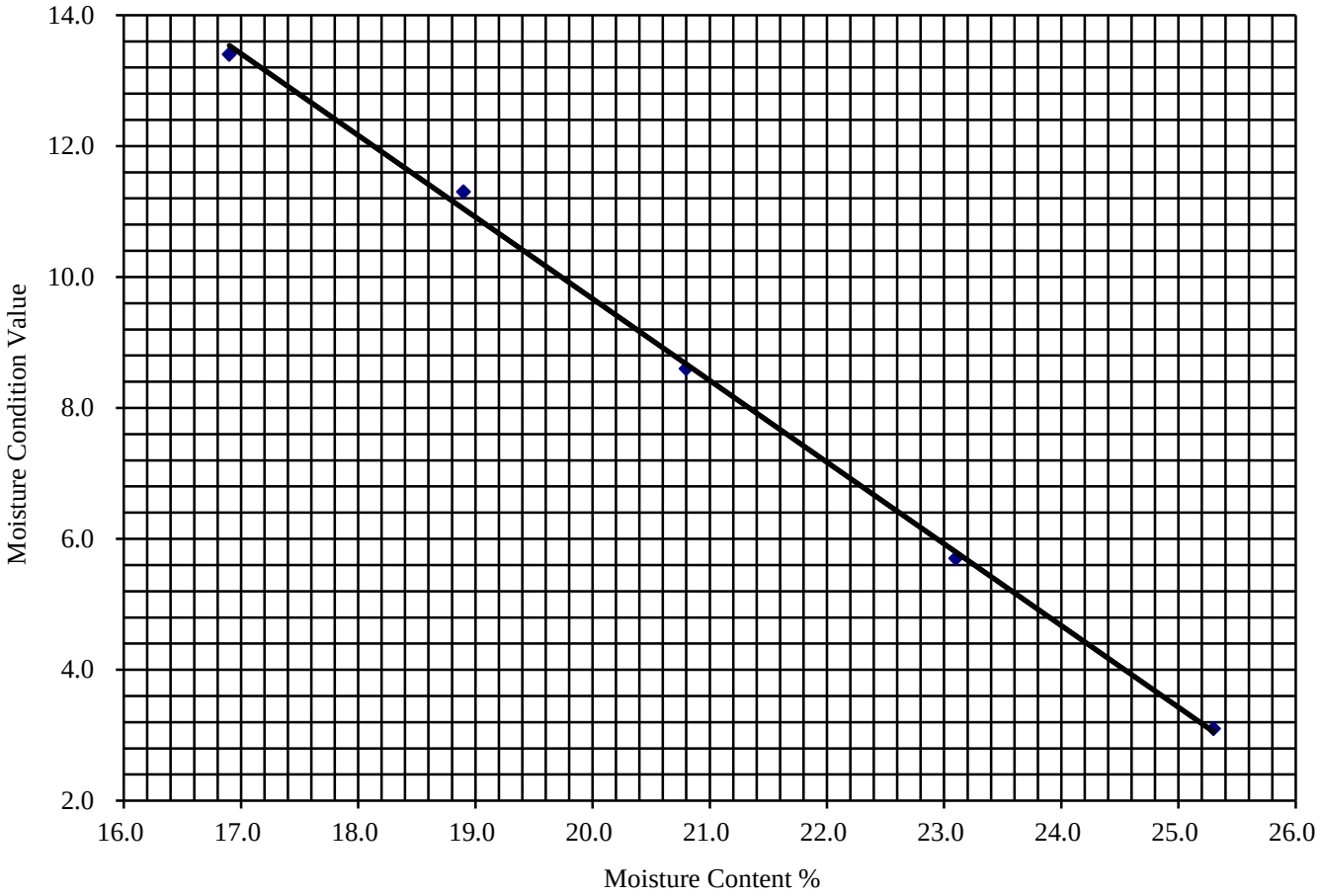
| Test Number | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| **Moisture Content (%)** | 18.2 | 20.0 | 22.3 | 24.2 | 26.6 |
| **MCV** | 13.2 | 11.0 | 8.8 | 6.1 | 3.4 |

# MOISTURE CONDITION VALUE CALIBRATION

**BS1377 : Part 4 : 1990 Clause 5.5**

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH118** | **Top Depth (m):** | **6.10** |
| **Sample Number:** | **8** | **Base Depth (m):** | |
| **Sample Type:** | **B** | | |

| | |
|---|---|
| Initial Moisture Content (%): | 25 |
| Single/Separate Samples Tested | Separate |
| Material Retained on the 20mm BS Test Sieve (%): | 0 |




**Test Results.**

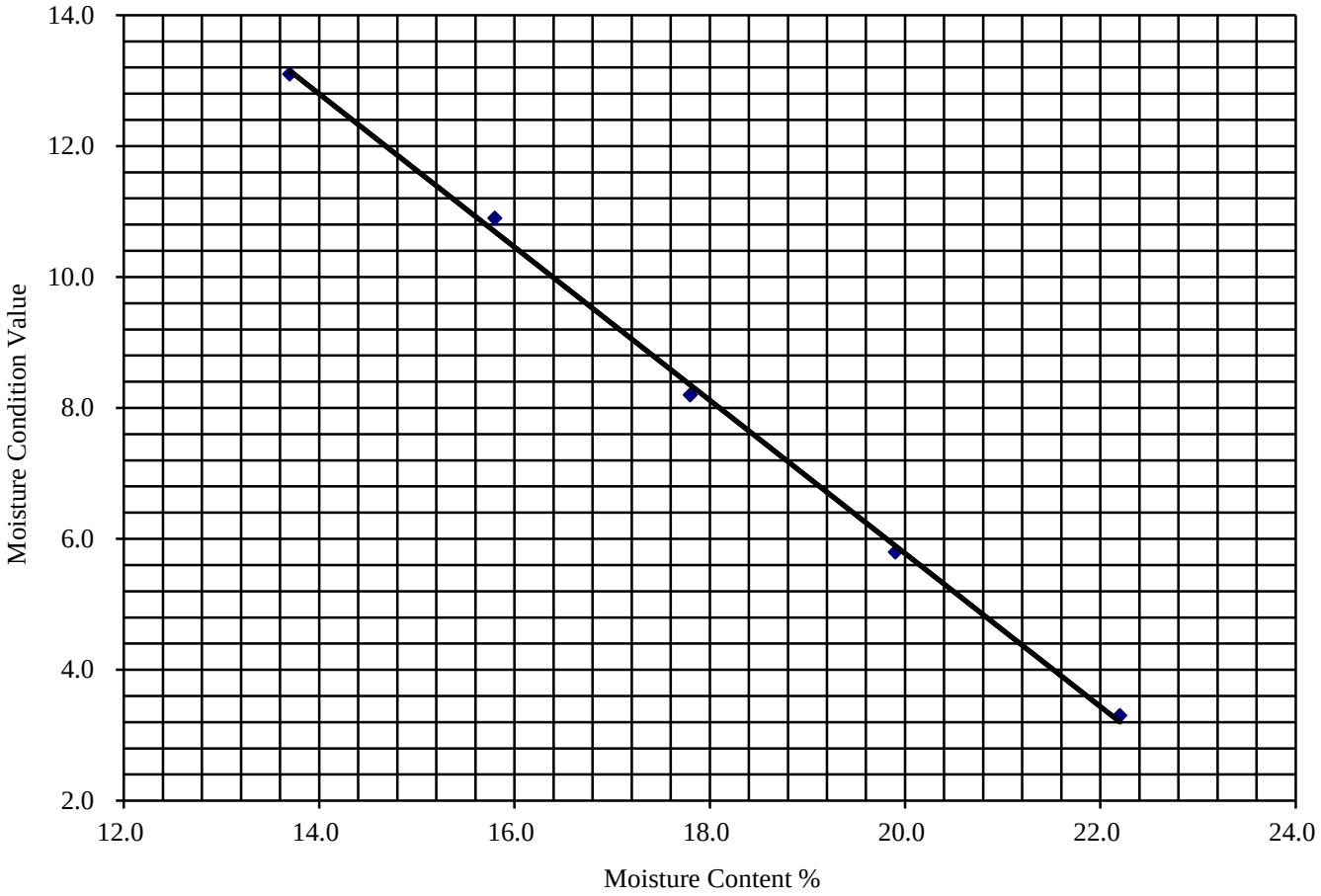
| Test Number | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| **Moisture Content (%)** | 16.9 | 18.9 | 20.8 | 23.1 | 25.3 |
| **MCV** | 13.4 | 11.3 | 8.6 | 5.7 | 3.1 |

# MOISTURE CONDITION VALUE CALIBRATION

**BS1377 : Part 4 : 1990 Clause 5.5**

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH126** | **Top Depth (m):** | **1.20** |
| **Sample Number:** | **3** | **Base Depth (m):** | |
| **Sample Type:** | **B** | | |

| | |
|---|---|
| Initial Moisture Content (%): | 22 |
| Single/Separate Samples Tested | Separate |
| Material Retained on the 20mm BS Test Sieve (%): | 2 |




**Test Results.**

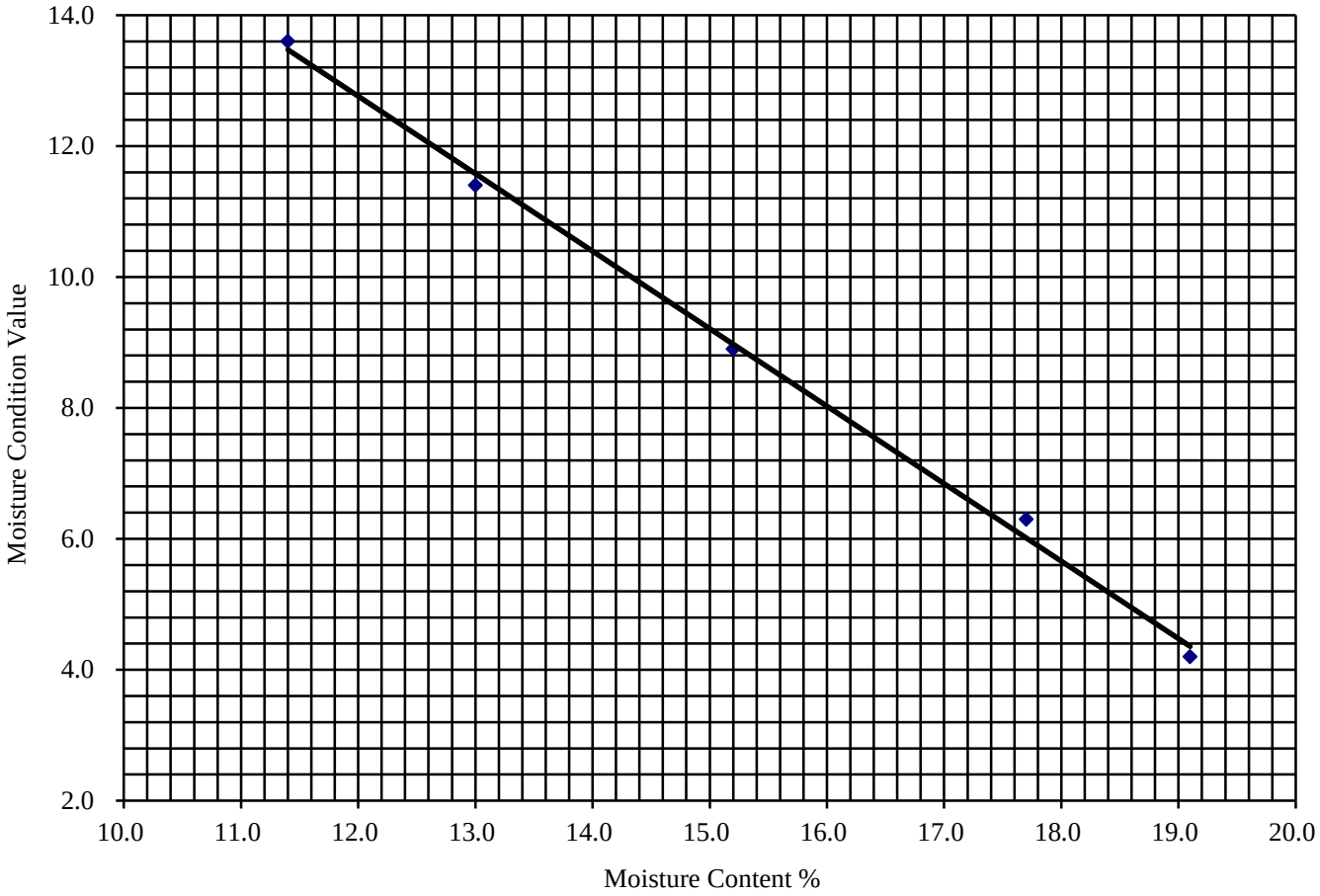
| Test Number | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| **Moisture Content (%)** | 13.7 | 15.8 | 17.8 | 19.9 | 22.2 |
| **MCV** | 13.1 | 10.9 | 8.2 | 5.8 | 3.3 |

# MOISTURE CONDITION VALUE CALIBRATION

**BS1377 : Part 4 : 1990 Clause 5.5**

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH126** | **Top Depth (m):** | **2.90** |
| **Sample Number:** | **4** | **Base Depth (m):** | **3.00** |
| **Sample Type:** | **B** | | |

| | |
|---|---|
| Initial Moisture Content (%): | 19 |
| Single/Separate Samples Tested | Separate |
| Material Retained on the 20mm BS Test Sieve (%): | 0 |




**Test Results.**

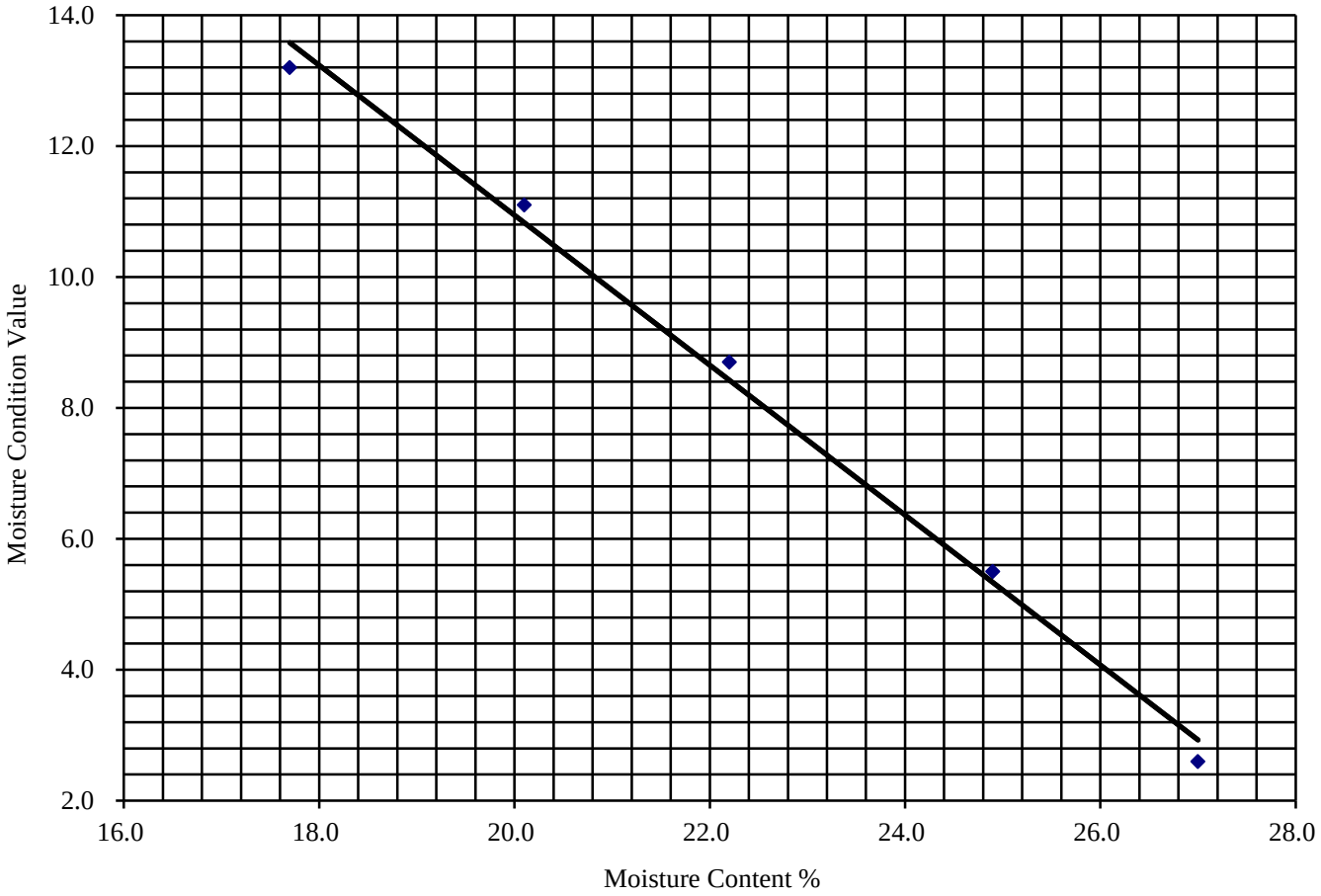
| Test Number | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| **Moisture Content (%)** | 11.4 | 13.0 | 15.2 | 17.7 | 19.1 |
| **MCV** | 13.6 | 11.4 | 8.9 | 6.3 | 4.2 |

# MOISTURE CONDITION VALUE CALIBRATION

**BS1377 : Part 4 : 1990 Clause 5.5**

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH124** | **Top Depth (m):** | **1.50** |
| **Sample Number:** | **103** | **Base Depth (m):** | **1.80** |
| **Sample Type:** | **CS** | | |

| | |
|---|---|
| Initial Moisture Content (%): | 22 |
| Single/Separate Samples Tested | Separate |
| Material Retained on the 20mm BS Test Sieve (%): | 0 |




**Test Results.**

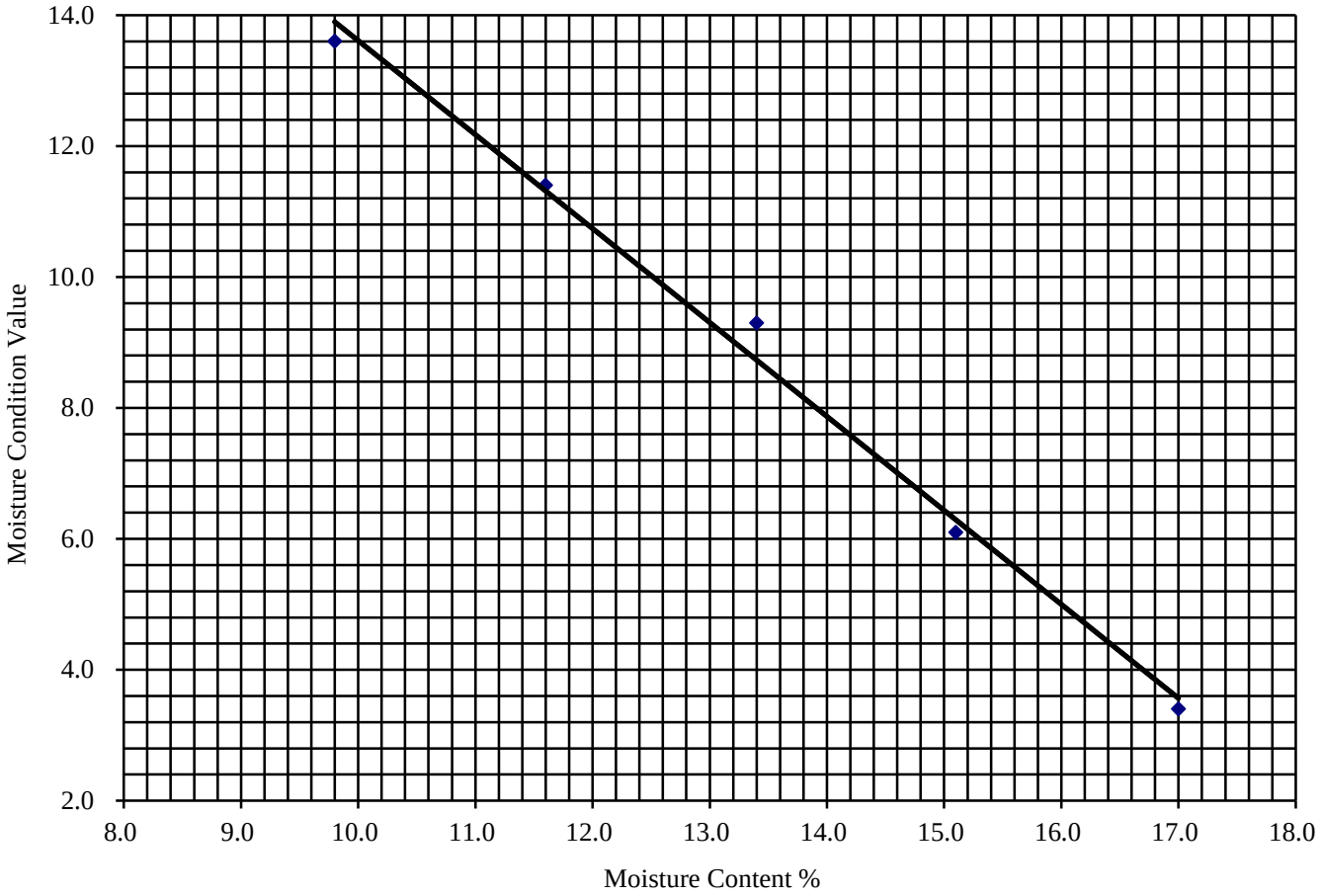
| Test Number | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| **Moisture Content (%)** | 17.7 | 20.1 | 22.2 | 24.9 | 27.0 |
| **MCV** | 13.2 | 11.1 | 8.7 | 5.5 | 2.6 |

# MOISTURE CONDITION VALUE CALIBRATION

**BS1377 : Part 4 : 1990 Clause 5.5**

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH124** | **Top Depth (m):** | **3.50** |
| **Sample Number:** | **105** | **Base Depth (m):** | **3.80** |
| **Sample Type:** | **CS** | | |

| | |
|---|---|
| Initial Moisture Content (%): | 7.8 |
| Single/Separate Samples Tested | Separate |
| Material Retained on the 20mm BS Test Sieve (%): | 0 |




**Test Results.**

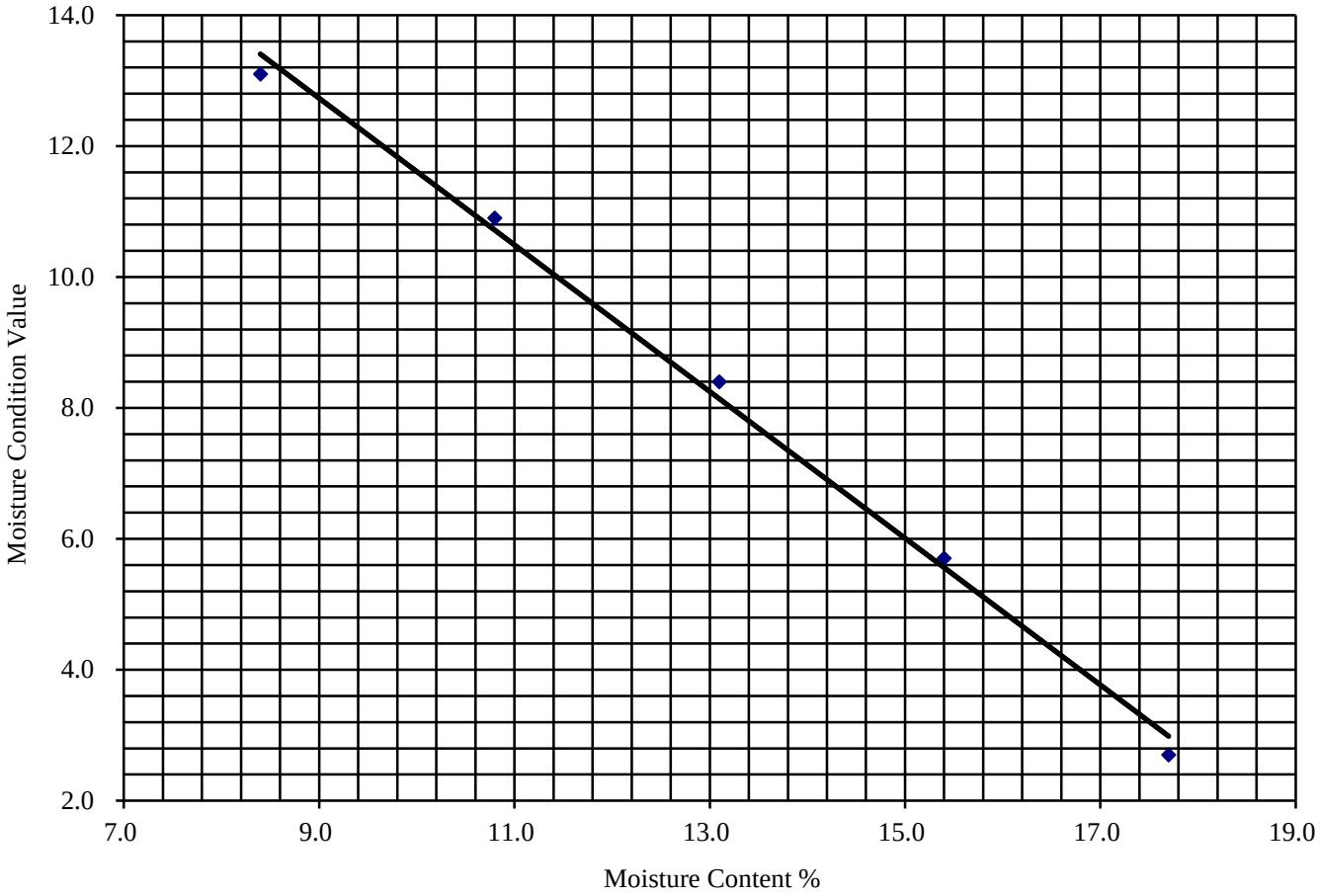
| Test Number | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| **Moisture Content (%)** | 9.8 | 11.6 | 13.4 | 15.1 | 17.0 |
| **MCV** | 13.6 | 11.4 | 9.3 | 6.1 | 3.4 |

# MOISTURE CONDITION VALUE CALIBRATION

**BS1377 : Part 4 : 1990 Clause 5.5**

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH121** | **Top Depth (m):** | **1.50** |
| **Sample Number:** | **4** | **Base Depth (m):** | **2.00** |
| **Sample Type:** | **B** | | |

| | |
|---|---|
| Initial Moisture Content (%): | 15 |
| Single/Separate Samples Tested | Separate |
| Material Retained on the 20mm BS Test Sieve (%): | 7 |




**Test Results.**

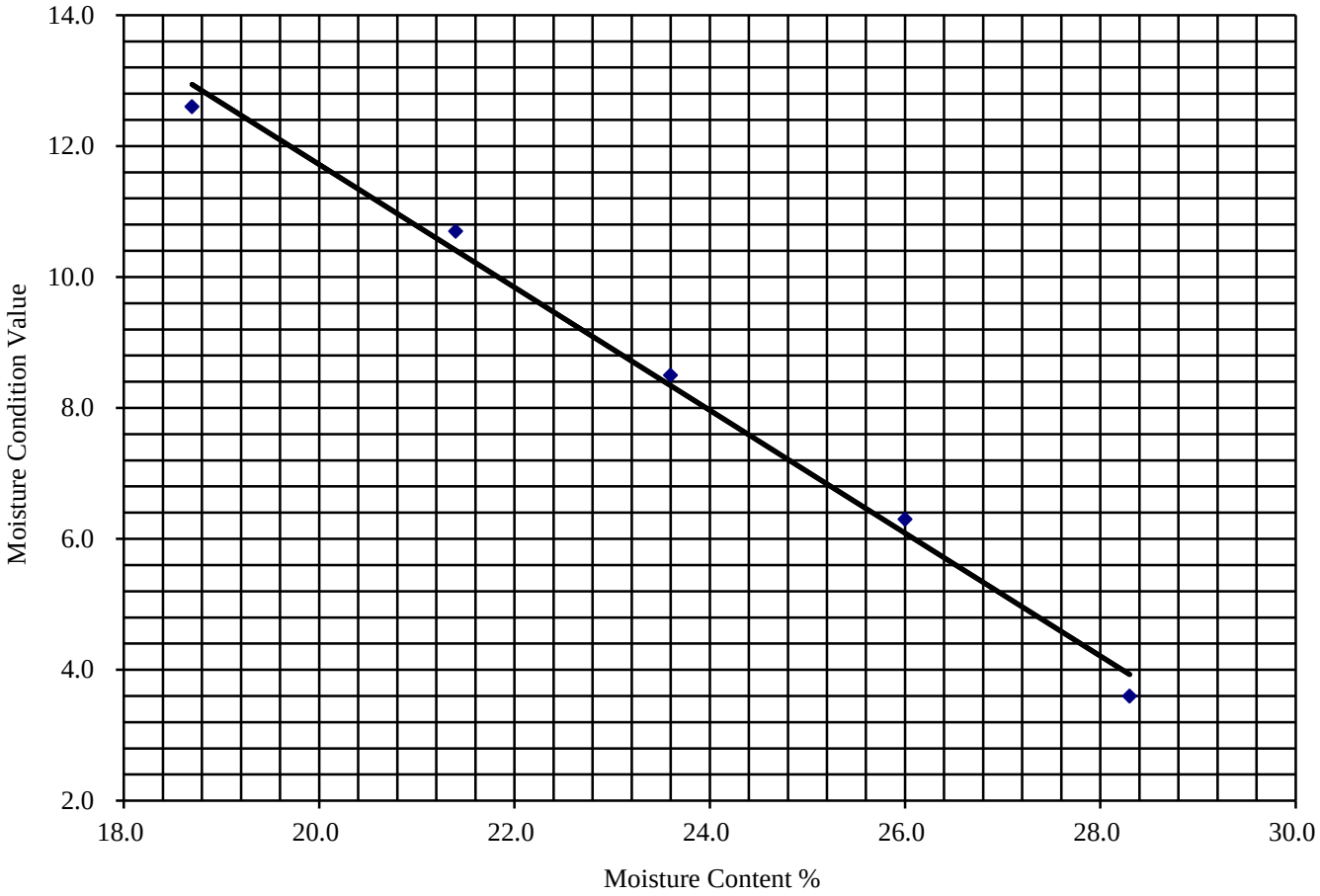
| Test Number | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| **Moisture Content (%)** | 8.4 | 10.8 | 13.1 | 15.4 | 17.7 |
| **MCV** | 13.1 | 10.9 | 8.4 | 5.7 | 2.7 |

# MOISTURE CONDITION VALUE CALIBRATION

**BS1377 : Part 4 : 1990 Clause 5.5**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP129** | **Top Depth (m):** | **1.00** |
| **Sample Number:** | **5** | **Base Depth (m):** | **1.30** |
| **Sample Type:** | **B** | | |

| | |
|---|---|
| Initial Moisture Content (%): | 35 |
| Single/Separate Samples Tested | Separate |
| Material Retained on the 20mm BS Test Sieve (%): | 6 |




**Test Results.**

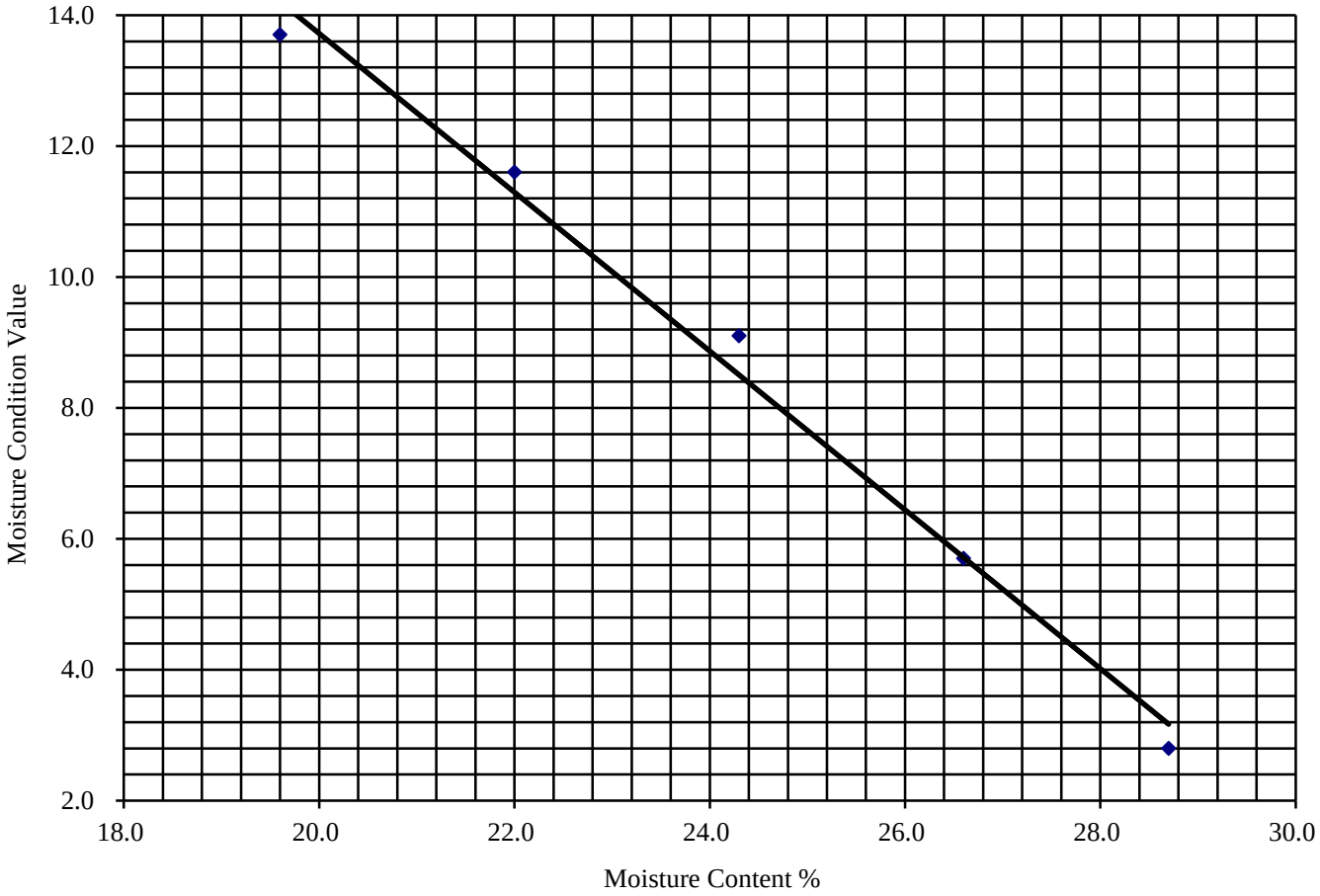
| Test Number | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| **Moisture Content (%)** | 18.7 | 21.4 | 23.6 | 26.0 | 28.3 |
| **MCV** | 12.6 | 10.7 | 8.5 | 6.3 | 3.6 |

# MOISTURE CONDITION VALUE CALIBRATION

**BS1377 : Part 4 : 1990 Clause 5.5**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP130** | **Top Depth (m):** | **0.50** |
| **Sample Number:** | **5** | **Base Depth (m):** | **0.80** |
| **Sample Type:** | **B** | | |

| | |
|---|---|
| Initial Moisture Content (%): | 27 |
| Single/Separate Samples Tested | Separate |
| Material Retained on the 20mm BS Test Sieve (%): | 12 |




**Test Results.**

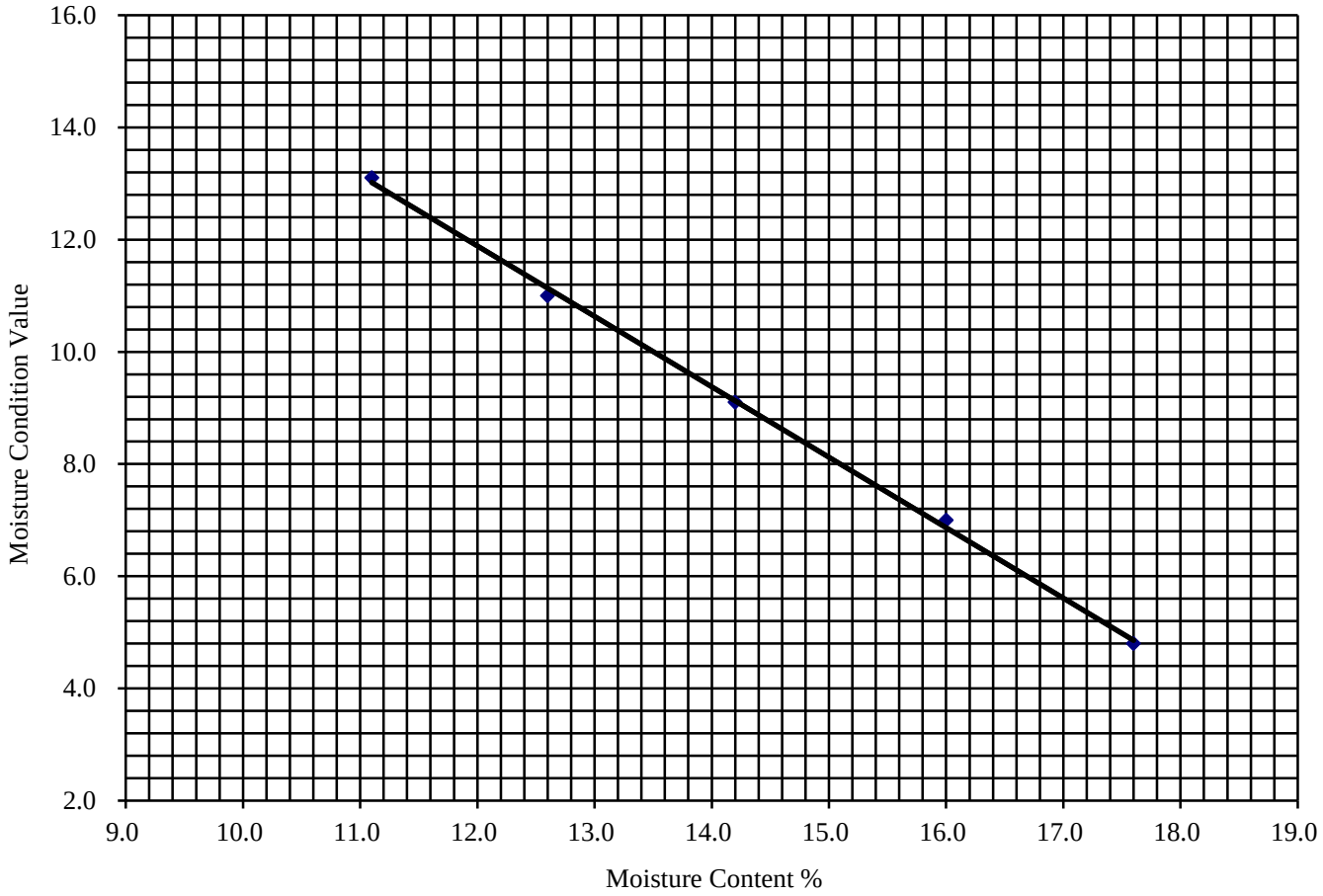
| Test Number | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| **Moisture Content (%)** | 19.6 | 22.0 | 24.3 | 26.6 | 28.7 |
| **MCV** | 13.7 | 11.6 | 9.1 | 5.7 | 2.8 |

# MOISTURE CONDITION VALUE CALIBRATION

**BS1377 : Part 4 : 1990 Clause 5.5**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP139** | **Top Depth (m):** | **0.50** |
| **Sample Number:** | **5** | **Base Depth (m):** | **0.70** |
| **Sample Type:** | **B** | | |

| | |
|---|---|
| Initial Moisture Content (%): | 11 |
| Single/Separate Samples Tested | Separate |
| Material Retained on the 20mm BS Test Sieve (%): | 0 |




**Test Results.**

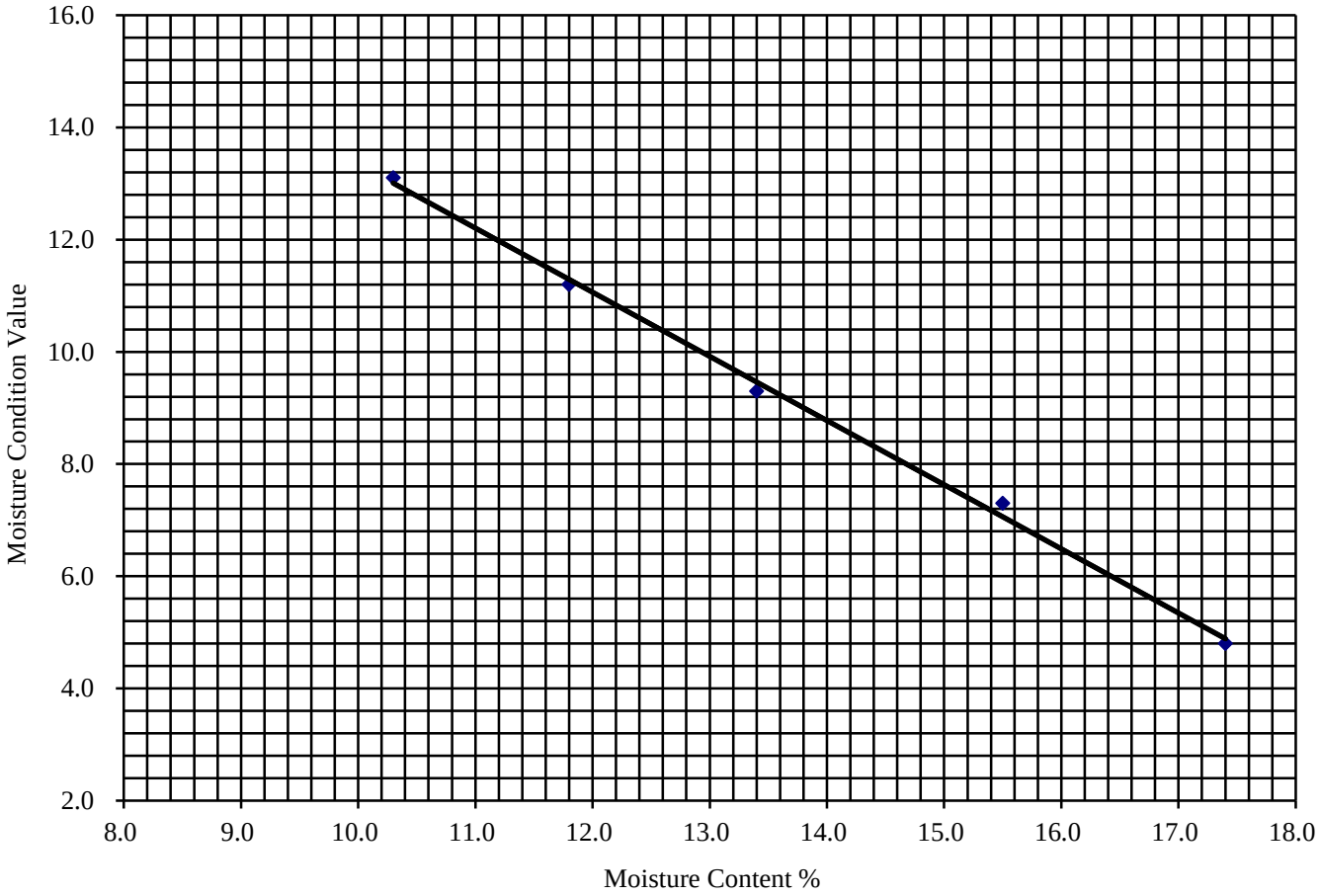
| Test Number | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| **Moisture Content (%)** | 11.1 | 12.6 | 14.2 | 16.0 | 17.6 |
| **MCV** | 13.1 | 11.0 | 9.1 | 7.0 | 4.8 |

# MOISTURE CONDITION VALUE CALIBRATION

**BS1377 : Part 4 : 1990 Clause 5.5**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP139** | **Top Depth (m):** | **1.60** |
| **Sample Number:** | **7** | **Base Depth (m):** | **1.80** |
| **Sample Type:** | **B** | | |

| | |
|---|---|
| Initial Moisture Content (%): | 16 |
| Single/Separate Samples Tested | Separate |
| Material Retained on the 20mm BS Test Sieve (%): | 15 |




**Test Results.**

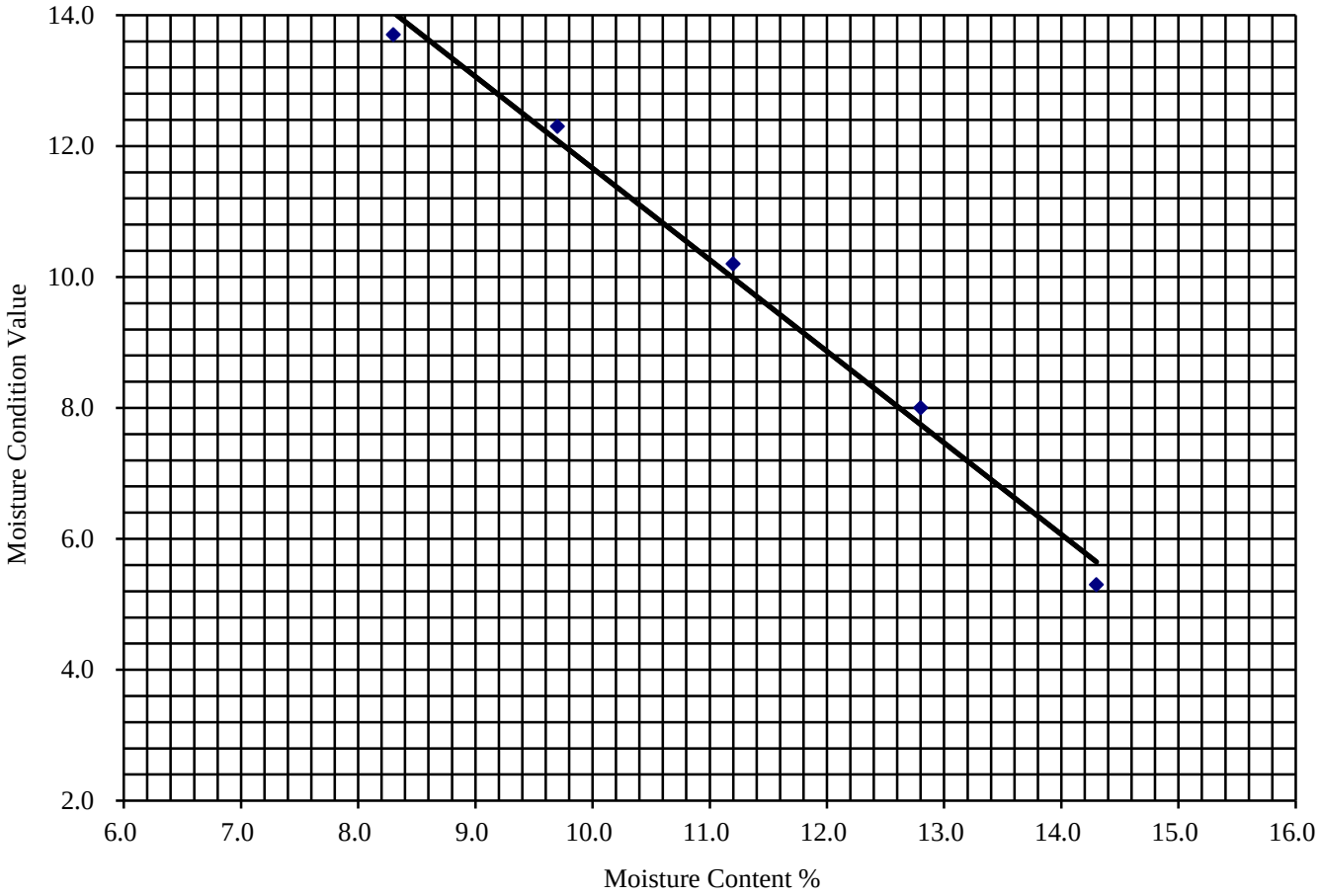
| Test Number | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| **Moisture Content (%)** | 10.3 | 11.8 | 13.4 | 15.5 | 17.4 |
| **MCV** | 13.1 | 11.2 | 9.3 | 7.3 | 4.8 |

# MOISTURE CONDITION VALUE CALIBRATION

**BS1377 : Part 4 : 1990 Clause 5.5**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP140** | **Top Depth (m):** | **1.00** |
| **Sample Number:** | **7** | **Base Depth (m):** | **1.20** |
| **Sample Type:** | **B** | | |

| | |
|---|---|
| Initial Moisture Content (%): | 11 |
| Single/Separate Samples Tested | Separate |
| Material Retained on the 20mm BS Test Sieve (%): | 12 |




**Test Results.**

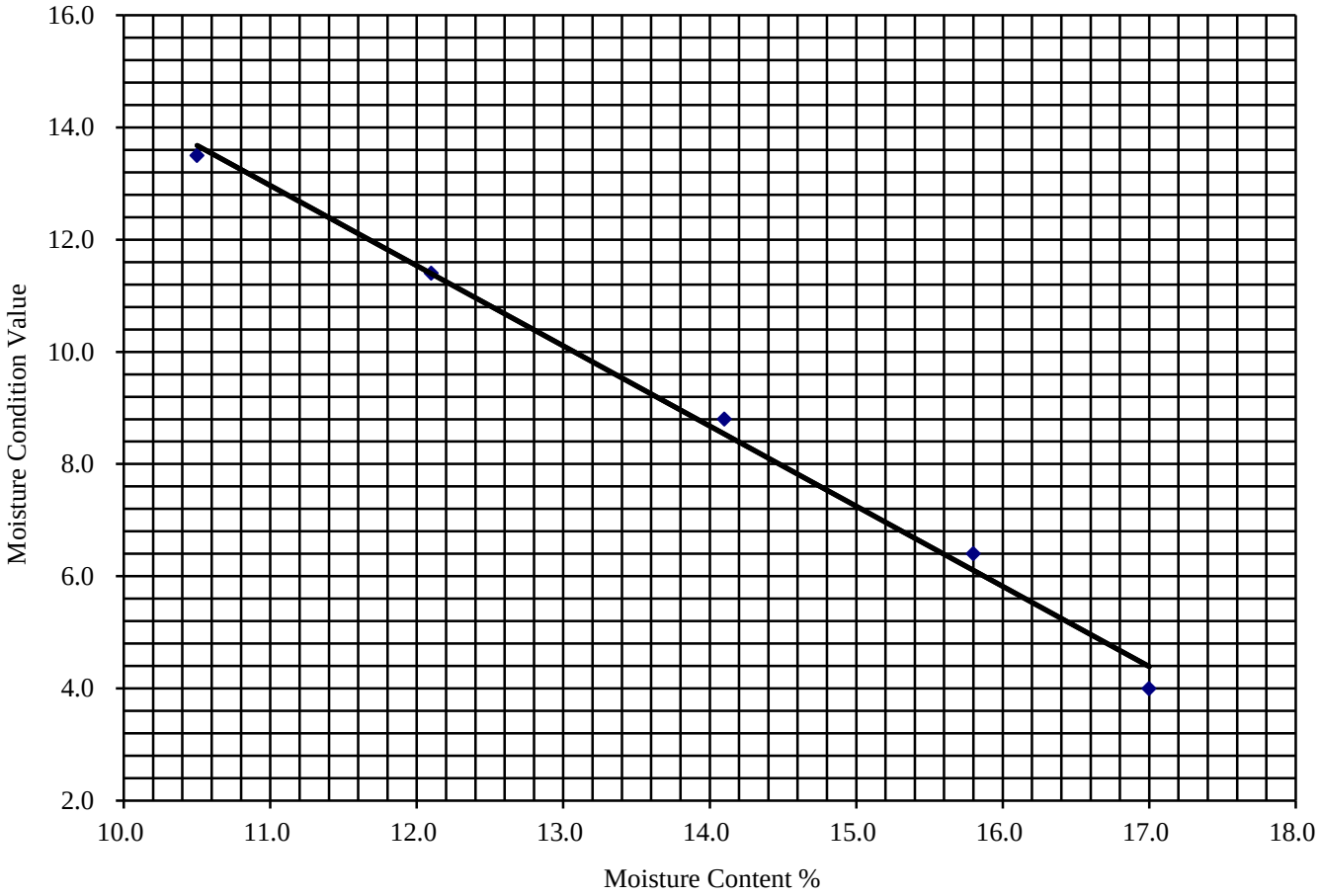
| Test Number | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| **Moisture Content (%)** | 8.3 | 9.7 | 11.2 | 12.8 | 14.3 |
| **MCV** | 13.7 | 12.3 | 10.2 | 8.0 | 5.3 |

# MOISTURE CONDITION VALUE CALIBRATION

**BS1377 : Part 4 : 1990 Clause 5.5**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP140** | **Top Depth (m):** | **1.70** |
| **Sample Number:** | **9** | **Base Depth (m):** | **1.90** |
| **Sample Type:** | **B** | | |

| | |
|---|---|
| Initial Moisture Content (%): | 11 |
| Single/Separate Samples Tested | Separate |
| Material Retained on the 20mm BS Test Sieve (%): | 0 |




**Test Results.**

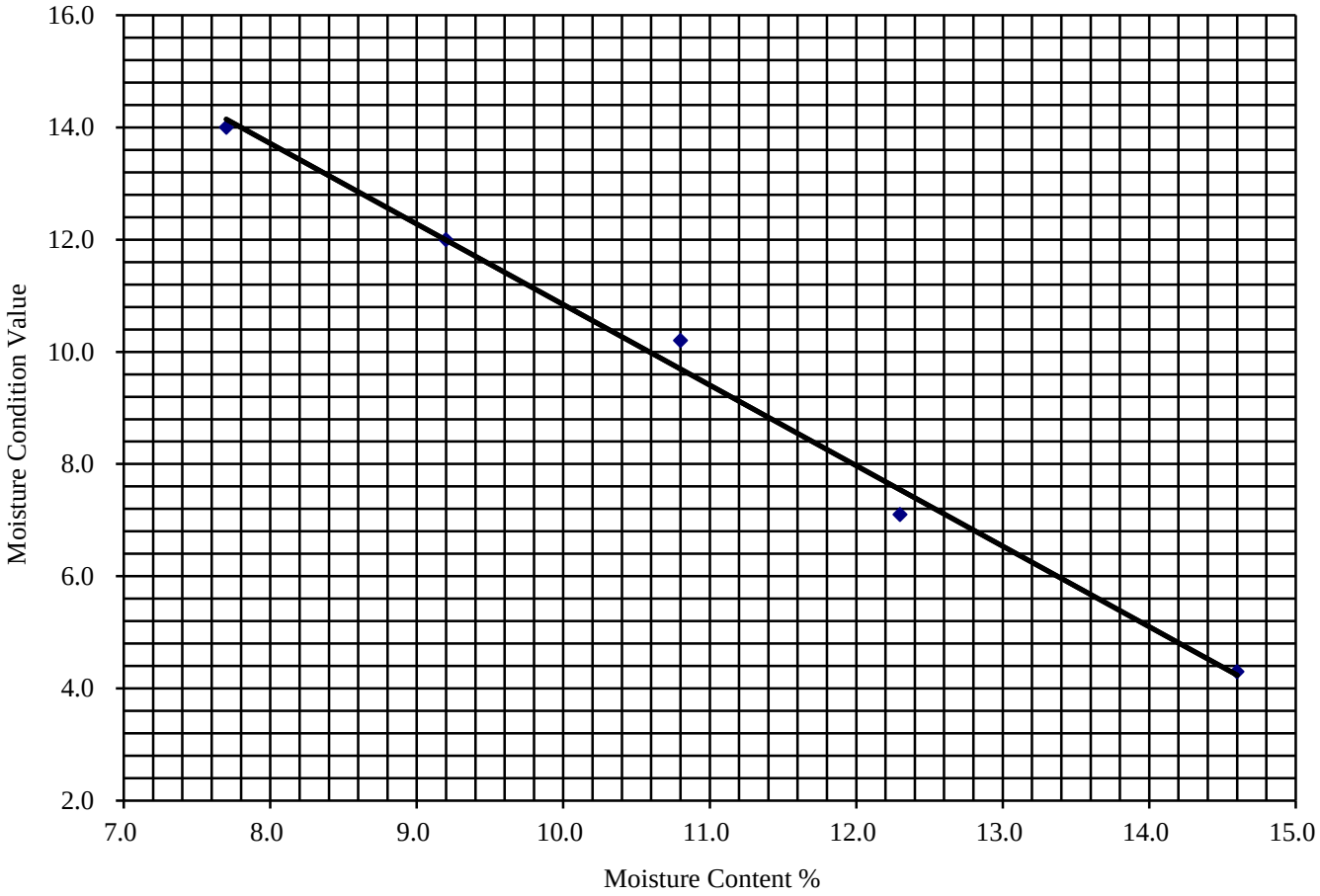
| Test Number | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| **Moisture Content (%)** | 10.5 | 12.1 | 14.1 | 15.8 | 17.0 |
| **MCV** | 13.5 | 11.4 | 8.8 | 6.4 | 4.0 |

# MOISTURE CONDITION VALUE CALIBRATION

**BS1377 : Part 4 : 1990 Clause 5.5**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP141** | **Top Depth (m):** | **0.30** |
| **Sample Number:** | **4** | **Base Depth (m):** | **0.50** |
| **Sample Type:** | **B** | | |

| | |
|---|---|
| Initial Moisture Content (%): | 11 |
| Single/Separate Samples Tested | Separate |
| Material Retained on the 20mm BS Test Sieve (%): | 18 |




**Test Results.**

| Test Number | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| **Moisture Content (%)** | 7.7 | 9.2 | 10.8 | 12.3 | 14.6 |
| **MCV** | 14.0 | 12.0 | 10.2 | 7.1 | 4.3 |

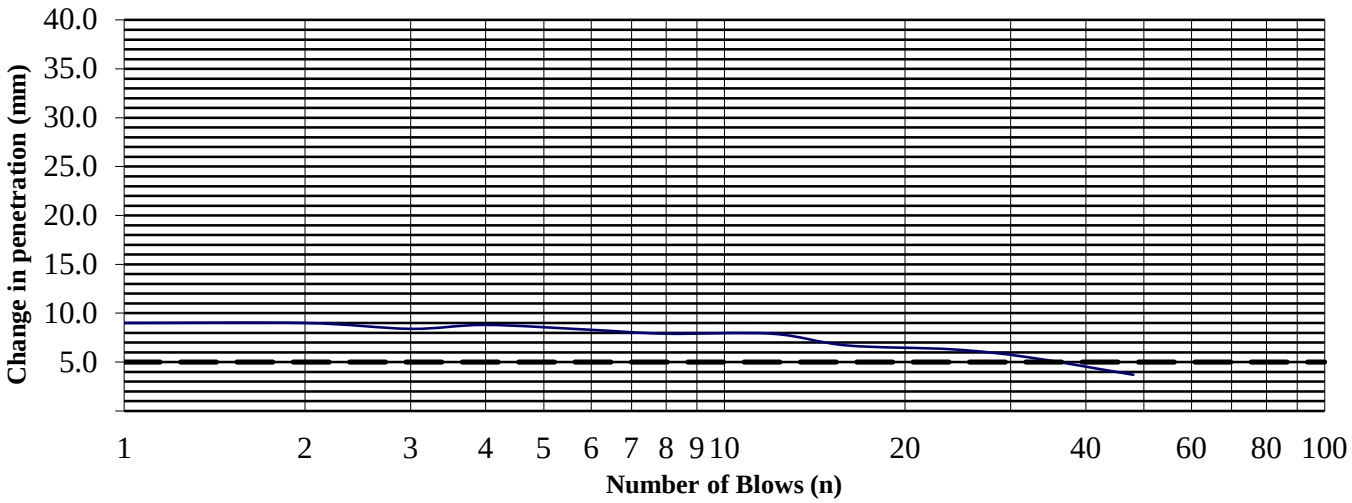
# MOISTURE CONDITION VALUE

**BS1377 : Part 4 : 1990 Clause 5.4**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP142** | **Top Depth (m):** | **0.30** |
| **Sample Number:** | **4** | **Base Depth (m):** | **0.50** |
| **Sample Type:** | **B** | | |

| | |
|---|---|
| Material Retained on the 20mm BS Test Sieve (%): | 12 |
| Interpretation based on steepest straight line intercept with 5mm change in penetration. | |

**MCV Determination**




| Blows (N) | Penetration (mm) | n to 4n (mm) |
|---|---|---|
| 1 | 76.4 | 9.0 |
| 2 | 71.9 | 9.0 |
| 3 | 69.1 | 8.4 |
| 4 | 67.4 | 8.8 |
| 6 | 65.0 | 8.3 |
| 8 | 62.9 | 7.9 |
| 12 | 60.7 | 7.9 |
| 16 | 58.6 | 6.7 |
| 24 | 56.7 | 6.3 |
| 32 | 55.0 | 5.5 |
| 48 | 52.8 | 3.7 |
| 64 | 51.9 | |
| 96 | 50.4 | |
| 128 | 49.5 | |
| 192 | 49.1 | |
| 256 | | |

**Test Results.**

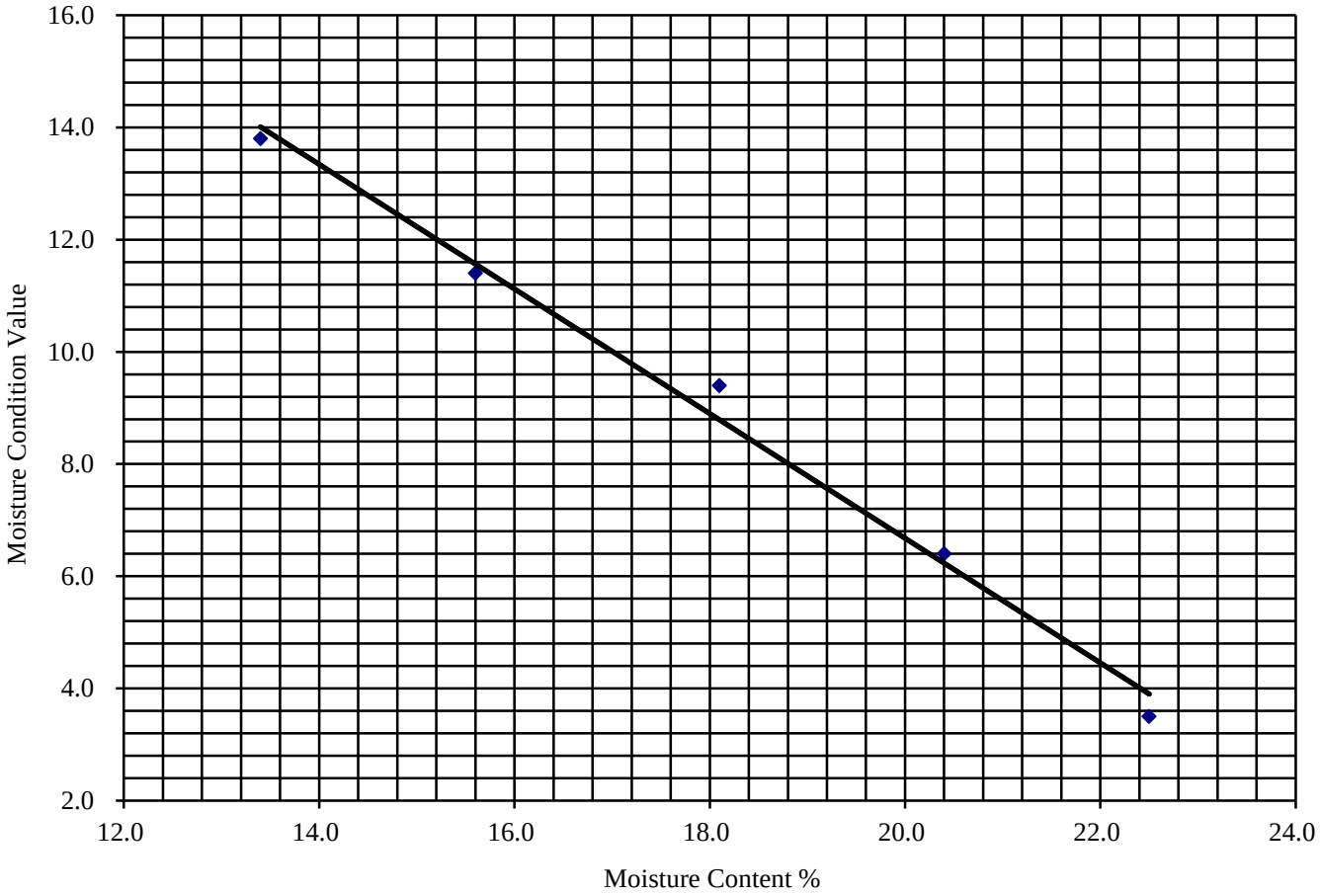
| | |
|---|---|
| Moisture Content (%) | 8.2 |
| MCV | 15.3 |

# MOISTURE CONDITION VALUE CALIBRATION

**BS1377 : Part 4 : 1990 Clause 5.5**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP142** | **Top Depth (m):** | **2.70** |
| **Sample Number:** | **9** | **Base Depth (m):** | **2.90** |
| **Sample Type:** | **B** | | |

| | |
|---|---|
| Initial Moisture Content (%): | 13 |
| Single/Separate Samples Tested | Separate |
| Material Retained on the 20mm BS Test Sieve (%): | 0 |




**Test Results.**

| Test Number | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| **Moisture Content (%)** | 13.4 | 15.6 | 18.1 | 20.4 | 22.5 |
| **MCV** | 13.8 | 11.4 | 9.4 | 6.4 | 3.5 |

# MOISTURE CONDITION VALUE

**BS1377 : Part 4 : 1990 Clause 5.4**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP143** | **Top Depth (m):** | **1.00** |
| **Sample Number:** | **5** | **Base Depth (m):** | **1.30** |
| **Sample Type:** | **B** | | |

| Material Retained on the 20mm BS Test Sieve (%): | 11 |
|---|---|
| Interpretation based on steepest straight line intercept with 5mm change in penetration. | |

**MCV Determination**

| Blows (N) | Penetration (mm) | n to 4n (mm) |
|---|---|---|
| 1 | 76.7 | 9.9 |
| 2 | 71.3 | 8.5 |
| 3 | 68.4 | 8.3 |
| 4 | 66.8 | 8.3 |
| 6 | 64.2 | 7.7 |
| 8 | 62.8 | 7.8 |
| 12 | 60.1 | 6.5 |
| 16 | 58.5 | 5.3 |
| 24 | 56.5 | 3.5 |
| 32 | 55.0 | |
| 48 | 53.6 | |
| 64 | 53.2 | |
| 96 | 53.0 | |
| 128 | | |
| 192 | | |
| 256 | | |

**Test Results.**

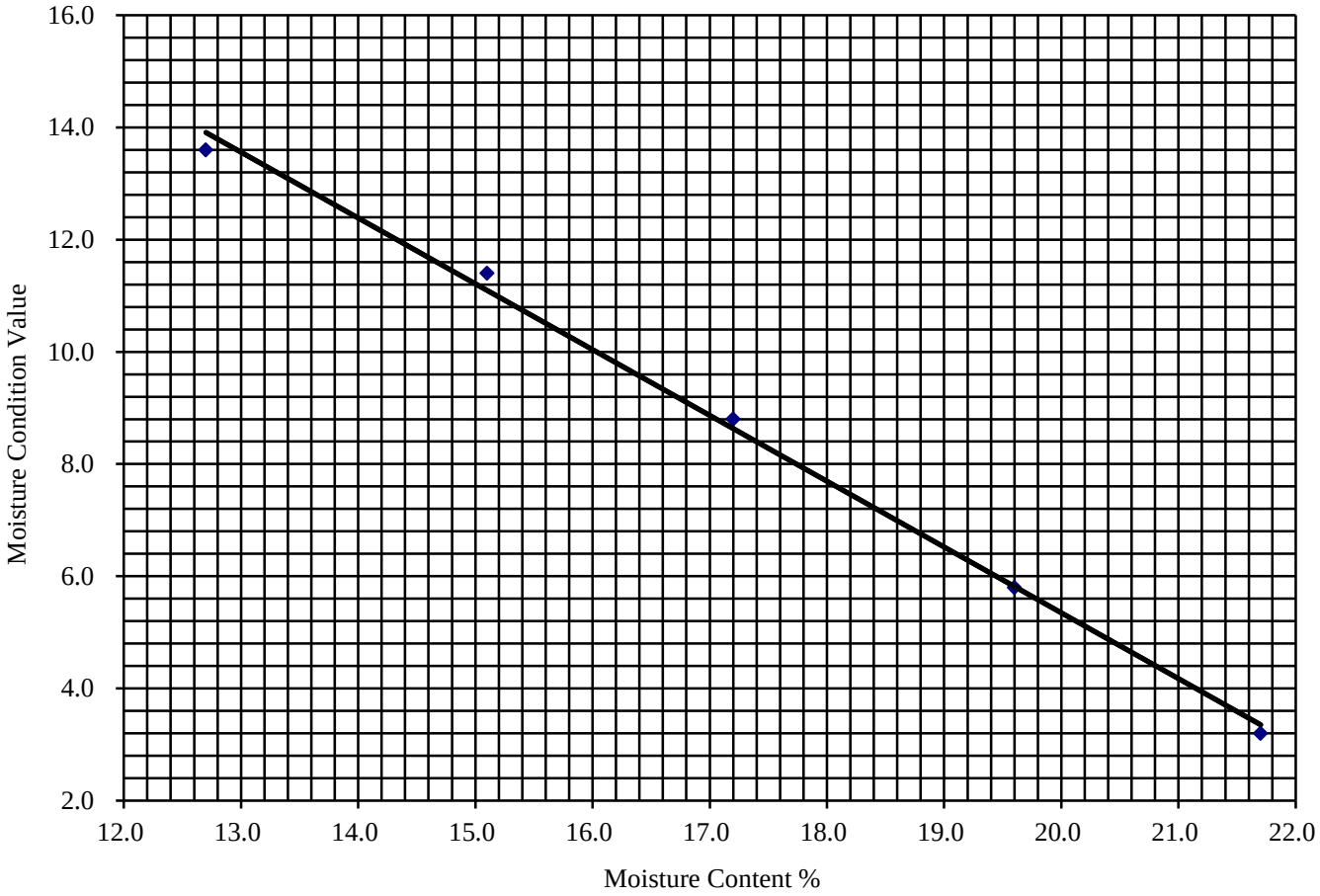
| | |
|---|---|
| Moisture Content (%) | 9.9 |
| MCV | 12.0 |

# MOISTURE CONDITION VALUE CALIBRATION

**BS1377 : Part 4 : 1990 Clause 5.5**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP143** | **Top Depth (m):** | **3.00** |
| **Sample Number:** | **9** | **Base Depth (m):** | **3.20** |
| **Sample Type:** | **B** | | |

| | |
|---|---|
| Initial Moisture Content (%): | 8.2 |
| Single/Separate Samples Tested | Separate |
| Material Retained on the 20mm BS Test Sieve (%): | 0 |




**Test Results.**

| Test Number | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| **Moisture Content (%)** | 12.7 | 15.1 | 17.2 | 19.6 | 21.7 |
| **MCV** | 13.6 | 11.4 | 8.8 | 5.8 | 3.2 |

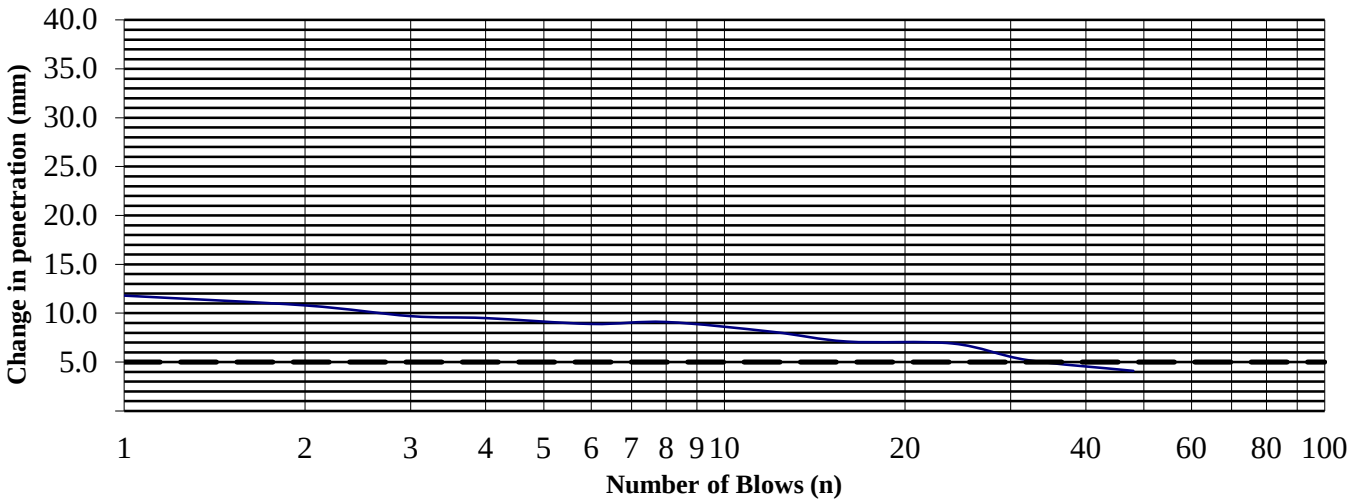
# MOISTURE CONDITION VALUE

**BS1377 : Part 4 : 1990 Clause 5.4**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP144** | **Top Depth (m):** | **0.40** |
| **Sample Number:** | **4** | **Base Depth (m):** | **0.50** |
| **Sample Type:** | **B** | | |

| Material Retained on the 20mm BS Test Sieve (%): | 17 |
|---|---|
| Interpretation based on steepest straight line intercept with 5mm change in penetration. | |

**MCV Determination**




| Blows (N) | Penetration (mm) | n to 4n (mm) |
|---|---|---|
| 1 | 80.8 | 11.8 |
| 2 | 74.9 | 10.8 |
| 3 | 70.9 | 9.7 |
| 4 | 69.0 | 9.5 |
| 6 | 66.3 | 8.9 |
| 8 | 64.1 | 9.1 |
| 12 | 61.2 | 8.1 |
| 16 | 59.5 | 7.1 |
| 24 | 57.4 | 6.9 |
| 32 | 55.0 | 5.2 |
| 48 | 53.1 | 4.1 |
| 64 | 52.4 | |
| 96 | 50.5 | |
| 128 | 49.8 | |
| 192 | 49.0 | |
| 256 | | |

**Test Results.**

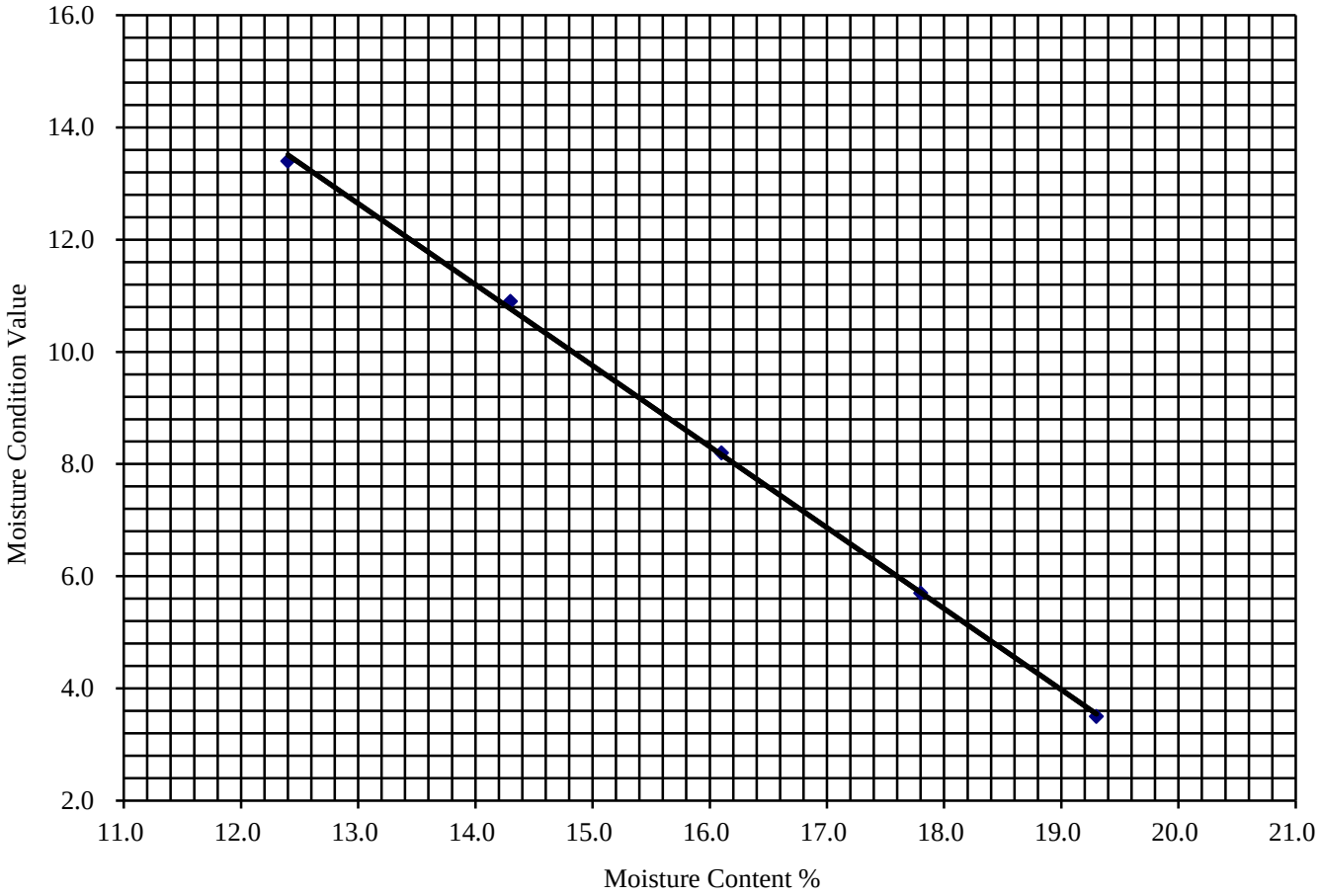
| | |
|---|---|
| Moisture Content (%) | 7.8 |
| MCV | 15.0 |

# MOISTURE CONDITION VALUE CALIBRATION

**BS1377 : Part 4 : 1990 Clause 5.5**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP144** | **Top Depth (m):** | **1.75** |
| **Sample Number:** | **7** | **Base Depth (m):** | **1.90** |
| **Sample Type:** | **B** | | |

| | |
|---|---|
| Initial Moisture Content (%): | 16 |
| Single/Separate Samples Tested | Separate |
| Material Retained on the 20mm BS Test Sieve (%): | 8 |




**Test Results.**

| Test Number | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| **Moisture Content (%)** | 12.4 | 14.3 | 16.1 | 17.8 | 19.3 |
| **MCV** | 13.4 | 10.9 | 8.2 | 5.7 | 3.5 |

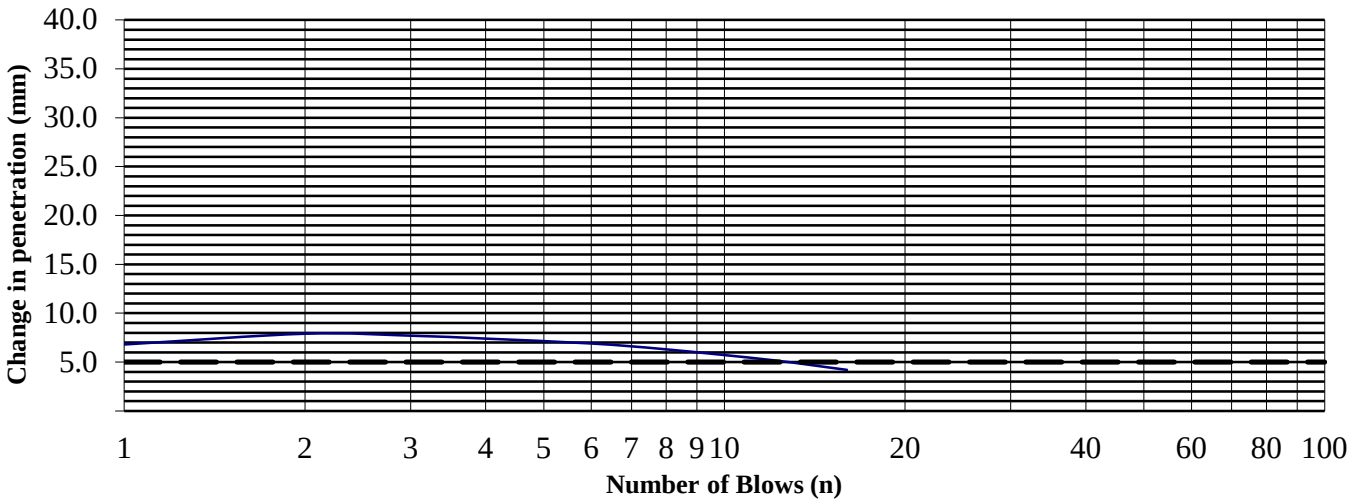
# MOISTURE CONDITION VALUE

**BS1377 : Part 4 : 1990 Clause 5.4**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP145** | **Top Depth (m):** | **2.00** |
| **Sample Number:** | **7** | **Base Depth (m):** | **2.30** |
| **Sample Type:** | **B** | | |

| Material Retained on the 20mm BS Test Sieve (%): | 11 |
|---|---|
| Interpretation based on steepest straight line intercept with 5mm change in penetration. | |

**MCV Determination**




| Blows (N) | Penetration (mm) | n to 4n (mm) |
|---|---|---|
| 1 | 69.4 | 6.8 |
| 2 | 66.3 | 7.9 |
| 3 | 64.0 | 7.7 |
| 4 | 62.6 | 7.4 |
| 6 | 60.2 | 6.9 |
| 8 | 58.4 | 6.3 |
| 12 | 56.3 | 5.2 |
| 16 | 55.2 | 4.2 |
| 24 | 53.3 | |
| 32 | 52.1 | |
| 48 | 51.1 | |
| 64 | 51.0 | |
| 96 | | |
| 128 | | |
| 192 | | |
| 256 | | |

**Test Results.**

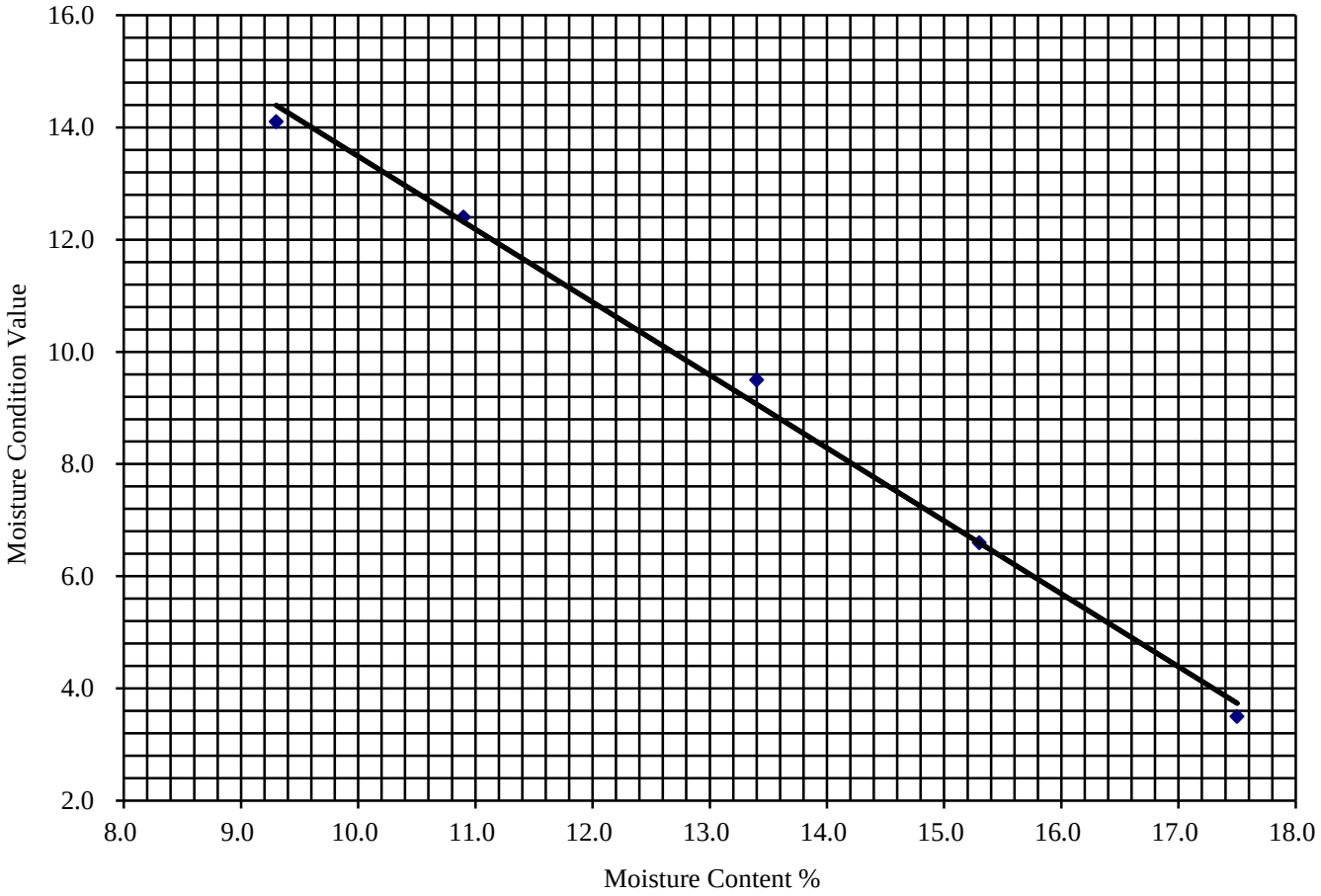
| Moisture Content (%) | 11 |
|---|---|
| MCV | 10.5 |

# MOISTURE CONDITION VALUE CALIBRATION

**BS1377 : Part 4 : 1990 Clause 5.5**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP146** | **Top Depth (m):** | **0.40** |
| **Sample Number:** | **5** | **Base Depth (m):** | **0.70** |
| **Sample Type:** | **B** | | |

| | |
|---|---|
| Initial Moisture Content (%): | 11 |
| Single/Separate Samples Tested | Separate |
| Material Retained on the 20mm BS Test Sieve (%): | 3 |




**Test Results.**

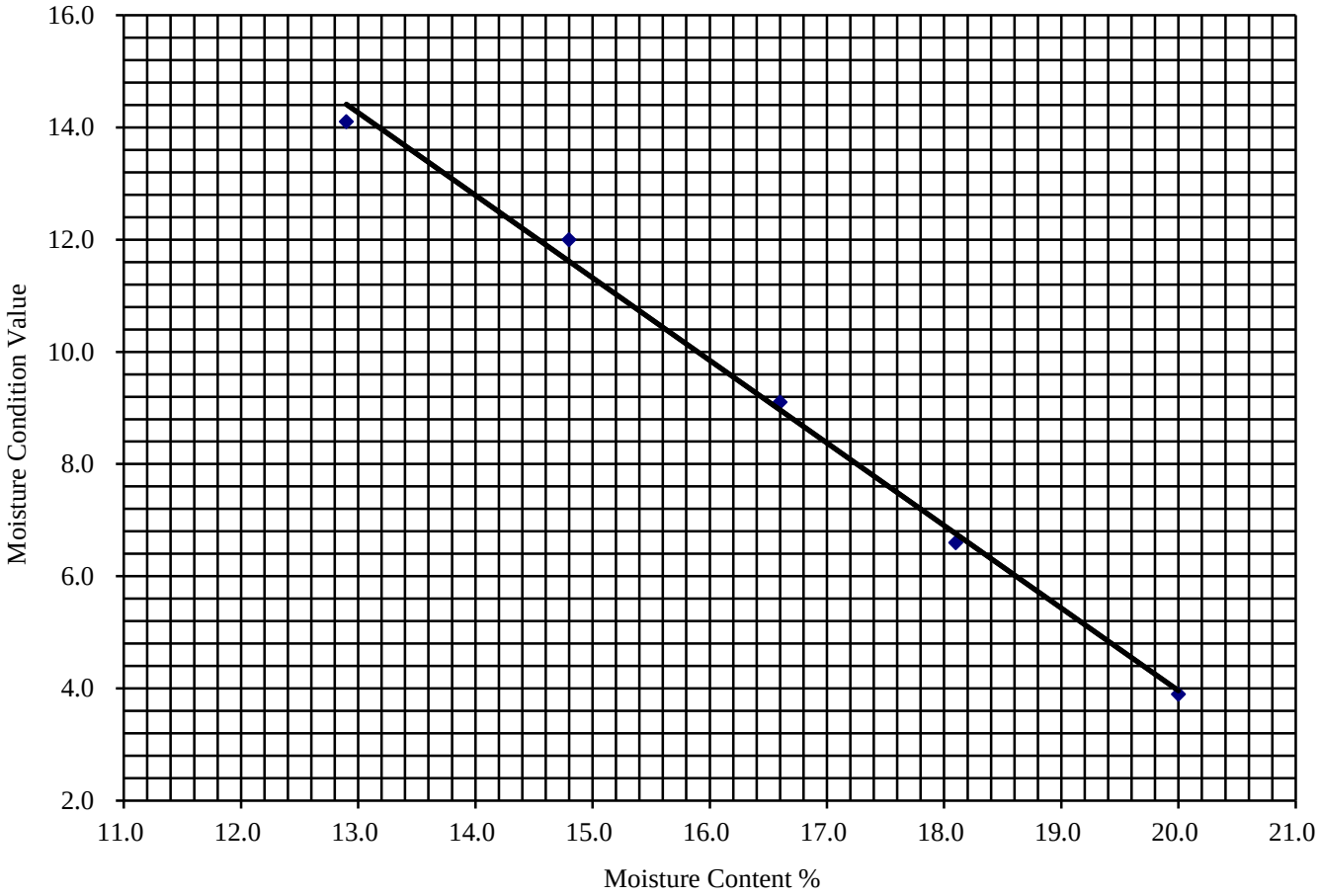
| Test Number | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| **Moisture Content (%)** | 9.3 | 10.9 | 13.4 | 15.3 | 17.5 |
| **MCV** | 14.1 | 12.4 | 9.5 | 6.6 | 3.5 |

# MOISTURE CONDITION VALUE CALIBRATION

**BS1377 : Part 4 : 1990 Clause 5.5**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP146** | **Top Depth (m):** | **1.10** |
| **Sample Number:** | **7** | **Base Depth (m):** | **1.40** |
| **Sample Type:** | **B** | | |

| | |
|---|---|
| Initial Moisture Content (%): | 11 |
| Single/Separate Samples Tested | Separate |
| Material Retained on the 20mm BS Test Sieve (%): | 0 |




**Test Results.**

| Test Number | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| **Moisture Content (%)** | 12.9 | 14.8 | 16.6 | 18.1 | 20.0 |
| **MCV** | 14.1 | 12.0 | 9.1 | 6.6 | 3.9 |

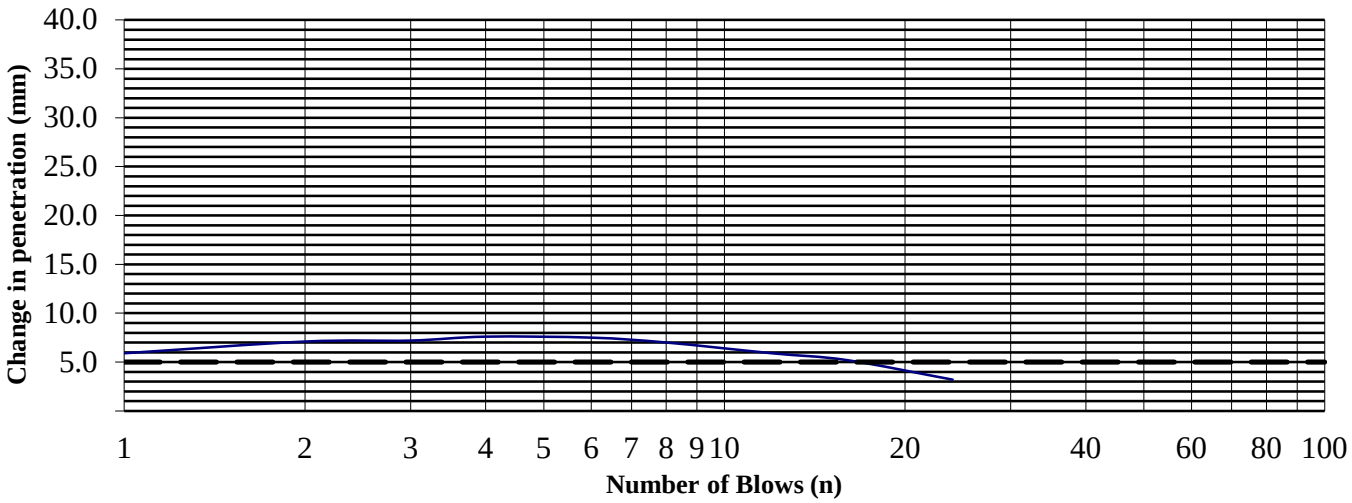
# MOISTURE CONDITION VALUE

**BS1377 : Part 4 : 1990 Clause 5.4**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP147** | **Top Depth (m):** | **0.60** |
| **Sample Number:** | **7** | **Base Depth (m):** | **0.80** |
| **Sample Type:** | **B** | | |

| Material Retained on the 20mm BS Test Sieve (%): | 21 |
|---|---|
| Interpretation based on steepest straight line intercept with 5mm change in penetration. | |

**MCV Determination**




| Blows (N) | Penetration (mm) | n to 4n (mm) |
|---|---|---|
| 1 | 78.5 | 5.9 |
| 2 | 76.1 | 7.1 |
| 3 | 74.1 | 7.2 |
| 4 | 72.6 | 7.6 |
| 6 | 70.5 | 7.5 |
| 8 | 69.0 | 7.0 |
| 12 | 66.9 | 5.9 |
| 16 | 65.0 | 5.2 |
| 24 | 63.0 | 3.2 |
| 32 | 62.0 | |
| 48 | 61.0 | |
| 64 | 59.8 | |
| 96 | 59.8 | |
| 128 | | |
| 192 | | |
| 256 | | |

**Test Results.**

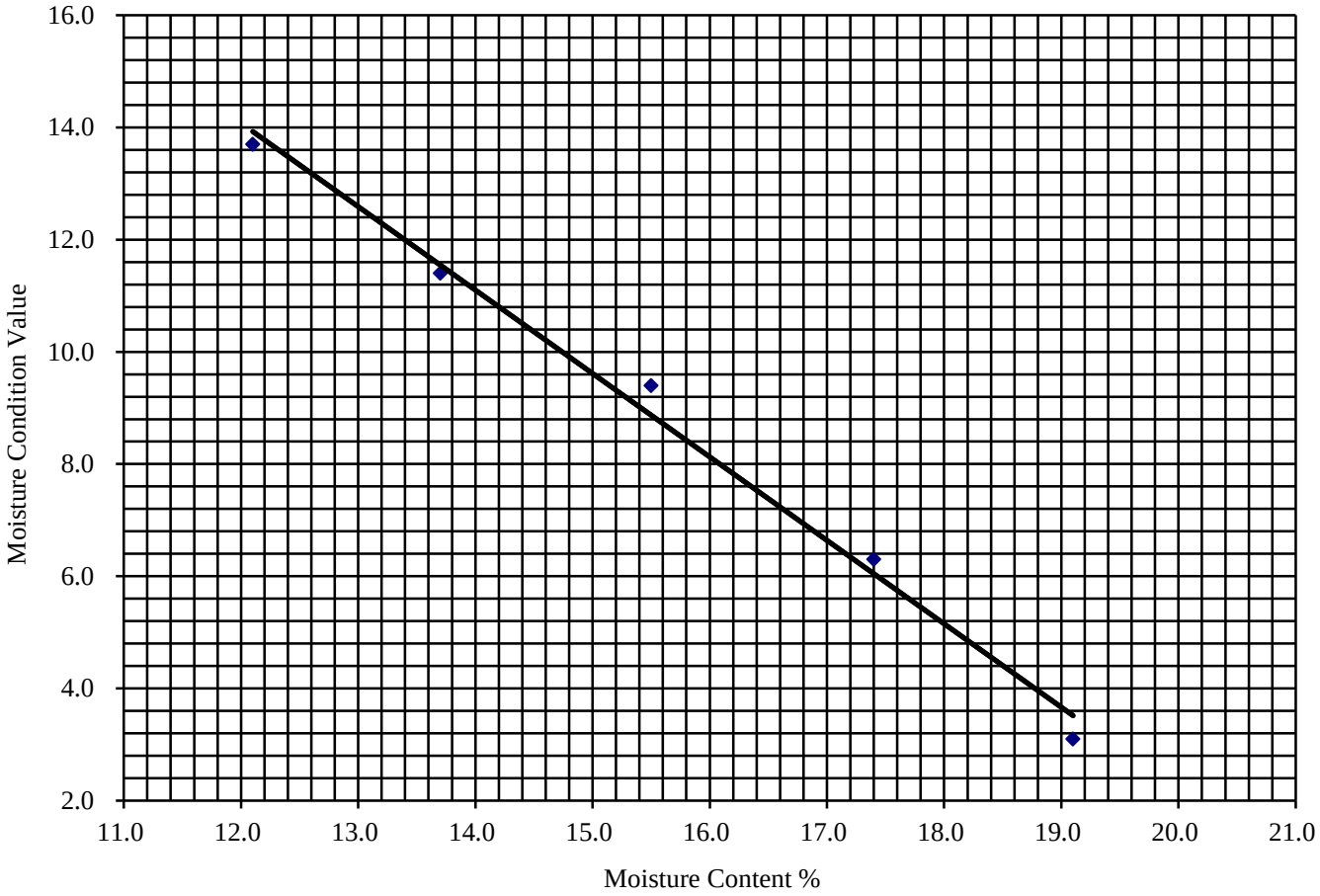
| | |
|---|---|
| Moisture Content (%) | 4.7 |
| MCV | 13.1 |

# MOISTURE CONDITION VALUE CALIBRATION

**BS1377 : Part 4 : 1990 Clause 5.5**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP148** | **Top Depth (m):** | **1.00** |
| **Sample Number:** | **5** | **Base Depth (m):** | **1.30** |
| **Sample Type:** | **B** | | |

| | |
|---|---|
| Initial Moisture Content (%): | 17 |
| Single/Separate Samples Tested | Separate |
| Material Retained on the 20mm BS Test Sieve (%): | 0 |




**Test Results.**

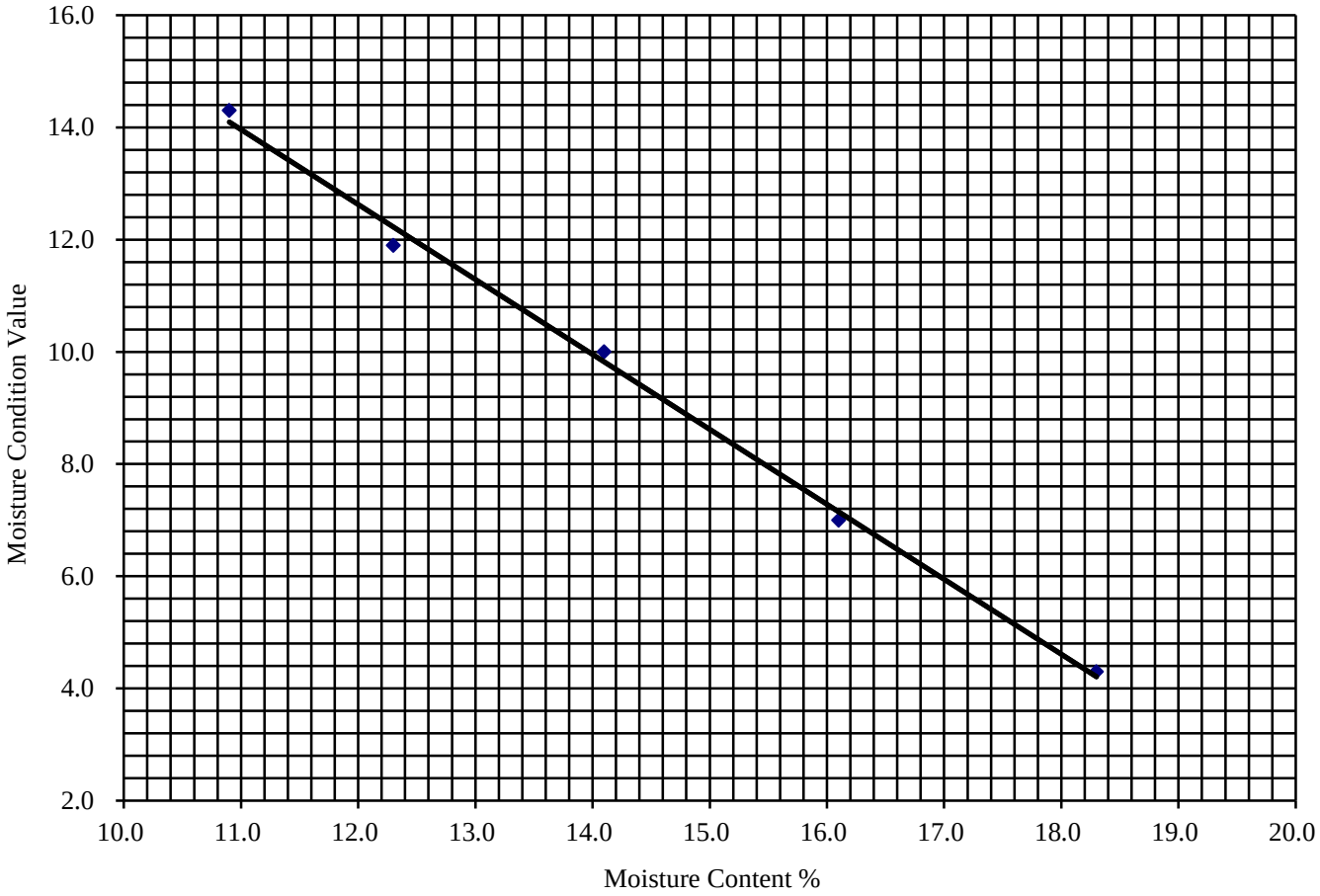
| Test Number | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| **Moisture Content (%)** | 12.1 | 13.7 | 15.5 | 17.4 | 19.1 |
| **MCV** | 13.7 | 11.4 | 9.4 | 6.3 | 3.1 |

# MOISTURE CONDITION VALUE CALIBRATION

**BS1377 : Part 4 : 1990 Clause 5.5**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP149** | **Top Depth (m):** | **1.00** |
| **Sample Number:** | **5** | **Base Depth (m):** | **1.30** |
| **Sample Type:** | **B** | | |

| | |
|---|---|
| Initial Moisture Content (%): | 16 |
| Single/Separate Samples Tested | Separate |
| Material Retained on the 20mm BS Test Sieve (%): | 4 |




**Test Results.**

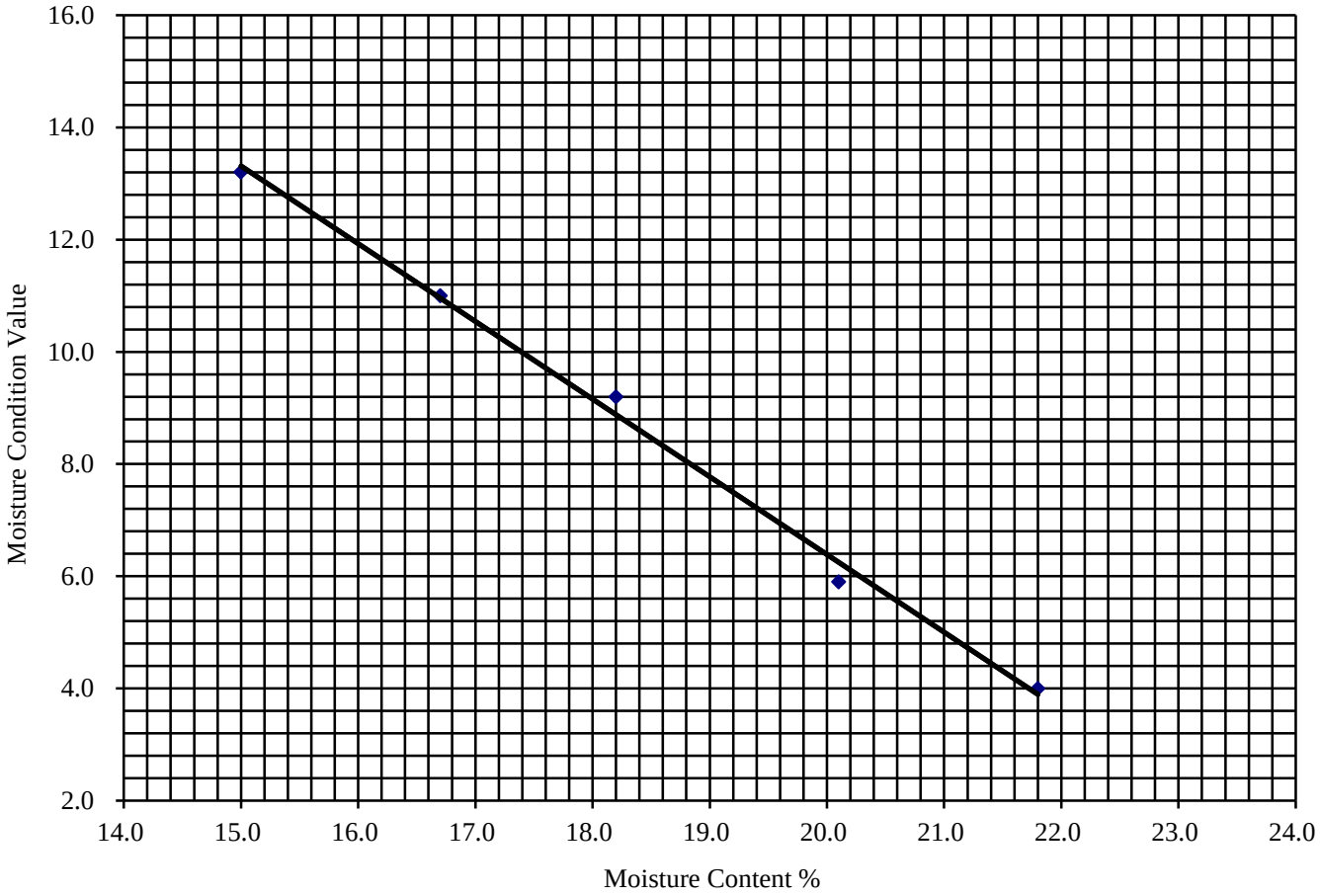
| Test Number | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| **Moisture Content (%)** | 10.9 | 12.3 | 14.1 | 16.1 | 18.3 |
| **MCV** | 14.3 | 11.9 | 10.0 | 7.0 | 4.3 |

# MOISTURE CONDITION VALUE CALIBRATION

**BS1377 : Part 4 : 1990 Clause 5.5**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP149** | **Top Depth (m):** | **2.00** |
| **Sample Number:** | **7** | **Base Depth (m):** | **2.30** |
| **Sample Type:** | **B** | | |

| | |
|---|---|
| Initial Moisture Content (%): | 18 |
| Single/Separate Samples Tested | Separate |
| Material Retained on the 20mm BS Test Sieve (%): | 7 |




**Test Results.**

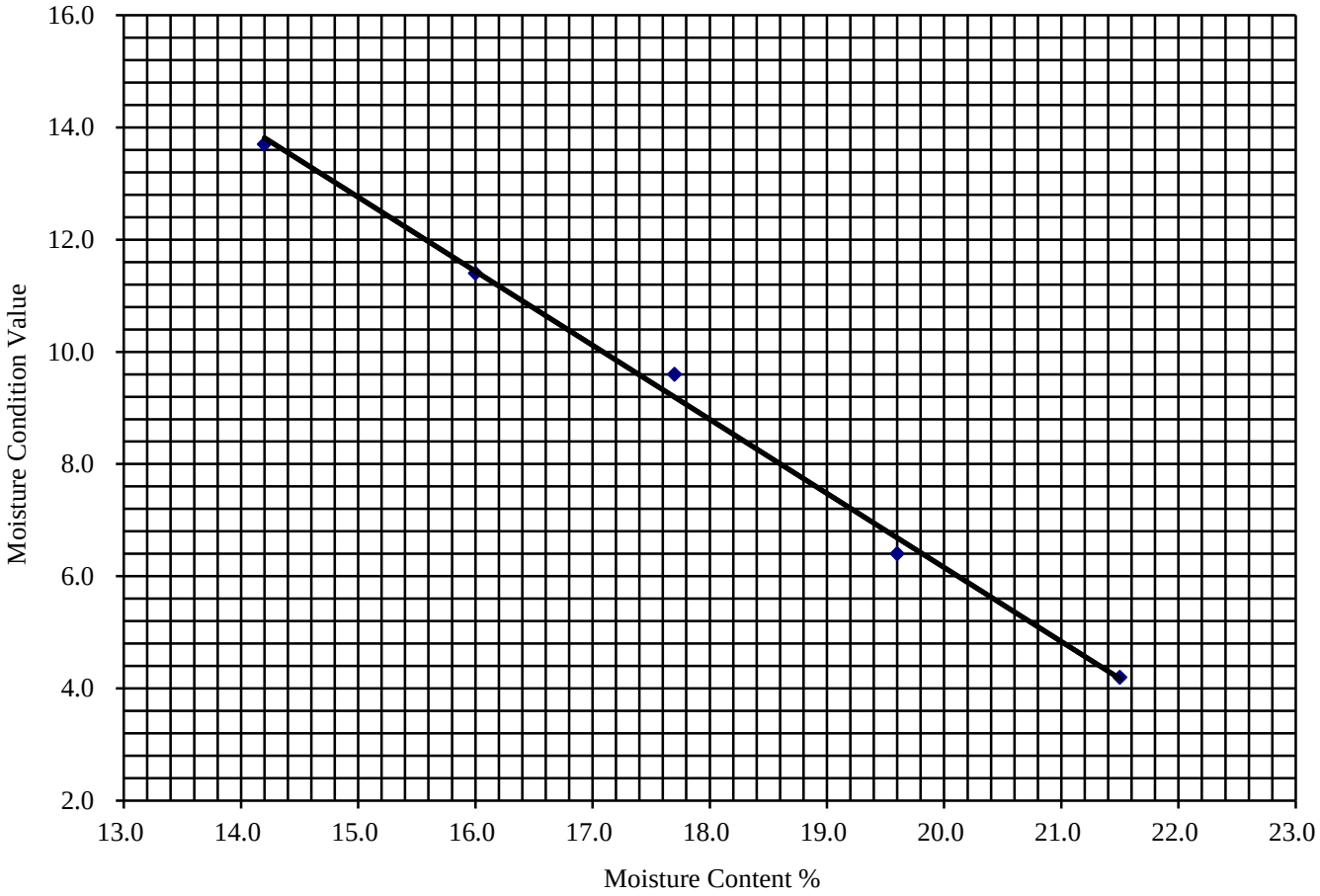
| Test Number | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| **Moisture Content (%)** | 15.0 | 16.7 | 18.2 | 20.1 | 21.8 |
| **MCV** | 13.2 | 11.0 | 9.2 | 5.9 | 4.0 |

# MOISTURE CONDITION VALUE CALIBRATION

**BS1377 : Part 4 : 1990 Clause 5.5**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP150** | **Top Depth (m):** | **1.00** |
| **Sample Number:** | **5** | **Base Depth (m):** | **1.30** |
| **Sample Type:** | **B** | | |

| | |
|---|---|
| Initial Moisture Content (%): | 20 |
| Single/Separate Samples Tested | Separate |
| Material Retained on the 20mm BS Test Sieve (%): | 0 |




**Test Results.**

| Test Number | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| **Moisture Content (%)** | 14.2 | 16.0 | 17.7 | 19.6 | 21.5 |
| **MCV** | 13.7 | 11.4 | 9.6 | 6.4 | 4.2 |

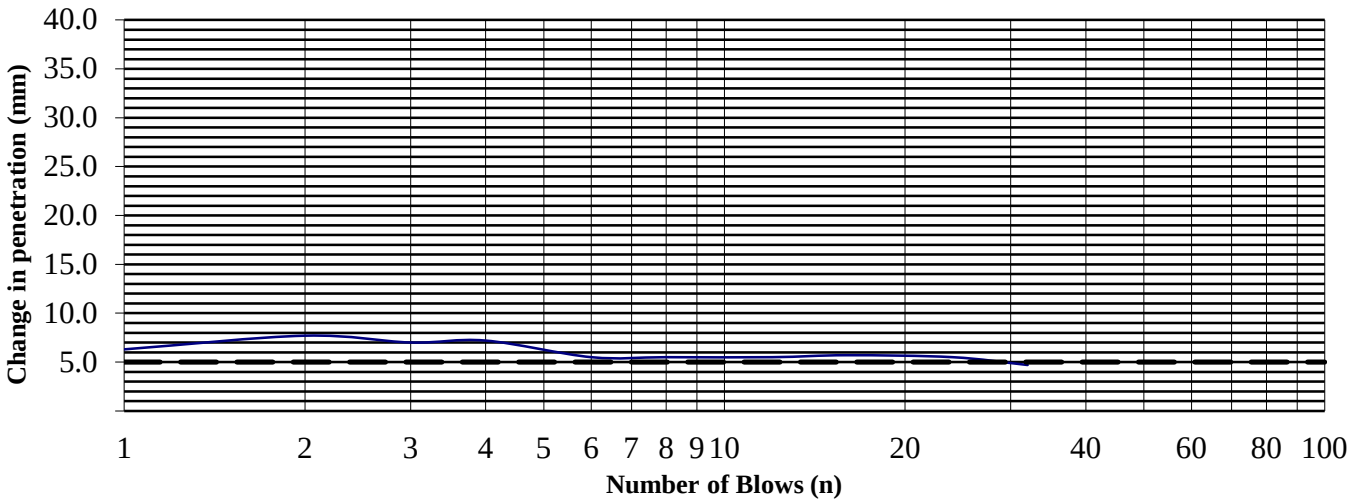
# MOISTURE CONDITION VALUE

**BS1377 : Part 4 : 1990 Clause 5.4**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP150** | **Top Depth (m):** | **2.00** |
| **Sample Number:** | **7** | **Base Depth (m):** | **2.30** |
| **Sample Type:** | **B** | | |

| Material Retained on the 20mm BS Test Sieve (%): | 15 |
|---|---|
| Interpretation based on steepest straight line intercept with 5mm change in penetration. | |

**MCV Determination**




| Blows (N) | Penetration (mm) | n to 4n (mm) |
|---|---|---|
| 1 | 74.6 | 6.3 |
| 2 | 72.2 | 7.7 |
| 3 | 70.0 | 7.0 |
| 4 | 68.3 | 7.2 |
| 6 | 66.0 | 5.5 |
| 8 | 64.5 | 5.5 |
| 12 | 63.0 | 5.5 |
| 16 | 61.1 | 5.7 |
| 24 | 60.5 | 5.5 |
| 32 | 59.0 | 4.7 |
| 48 | 57.5 | |
| 64 | 55.4 | |
| 96 | 55.0 | |
| 128 | 54.3 | |
| 192 | | |
| 256 | | |

**Test Results.**

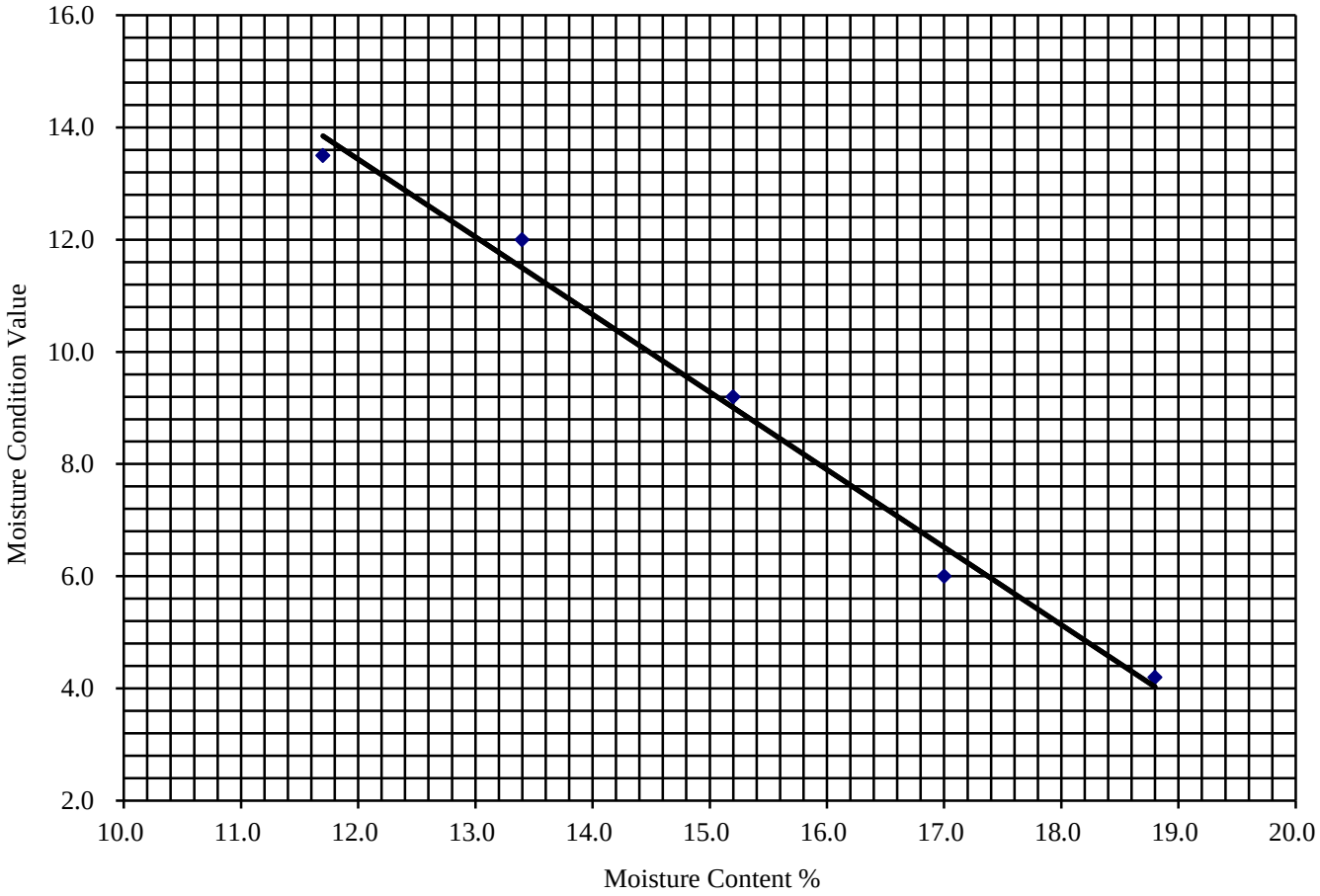
| | |
|---|---|
| Moisture Content (%) | 6.0 |
| MCV | 15.2 |

# MOISTURE CONDITION VALUE CALIBRATION

**BS1377 : Part 4 : 1990 Clause 5.5**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP160** | **Top Depth (m):** | **1.00** |
| **Sample Number:** | **5** | **Base Depth (m):** | **1.30** |
| **Sample Type:** | **B** | | |

| | |
|---|---|
| Initial Moisture Content (%): | 17 |
| Single/Separate Samples Tested | Separate |
| Material Retained on the 20mm BS Test Sieve (%): | 0 |




**Test Results.**

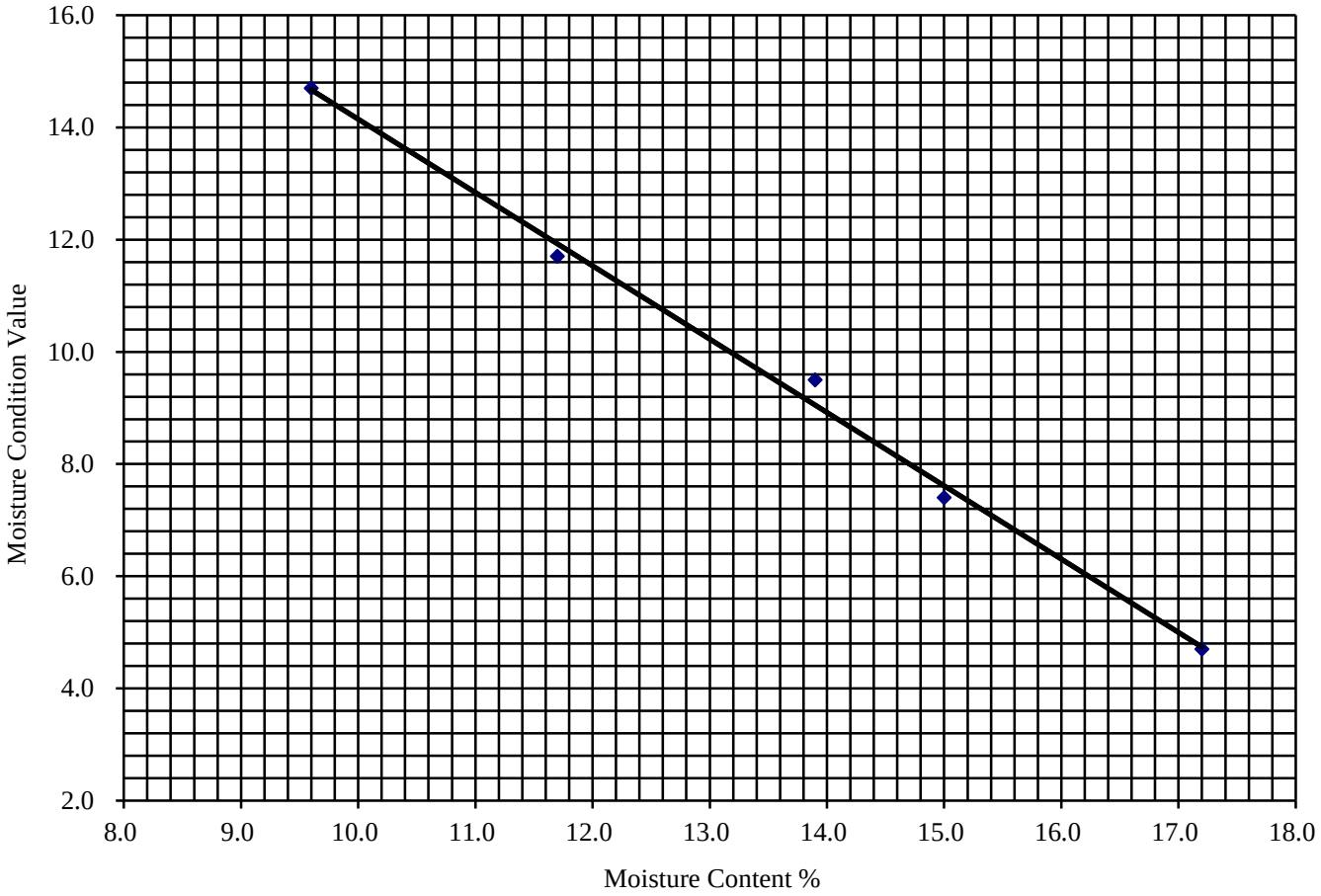
| Test Number | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| **Moisture Content (%)** | 11.7 | 13.4 | 15.2 | 17.0 | 18.8 |
| **MCV** | 13.5 | 12.0 | 9.2 | 6.0 | 4.2 |

# MOISTURE CONDITION VALUE CALIBRATION

**BS1377 : Part 4 : 1990 Clause 5.5**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP161** | **Top Depth (m):** | **1.00** |
| **Sample Number:** | **5** | **Base Depth (m):** | **1.30** |
| **Sample Type:** | **B** | | |

| | |
|---|---|
| Initial Moisture Content (%): | 9.6 |
| Single/Separate Samples Tested | Separate |
| Material Retained on the 20mm BS Test Sieve (%): | 3 |




**Test Results.**

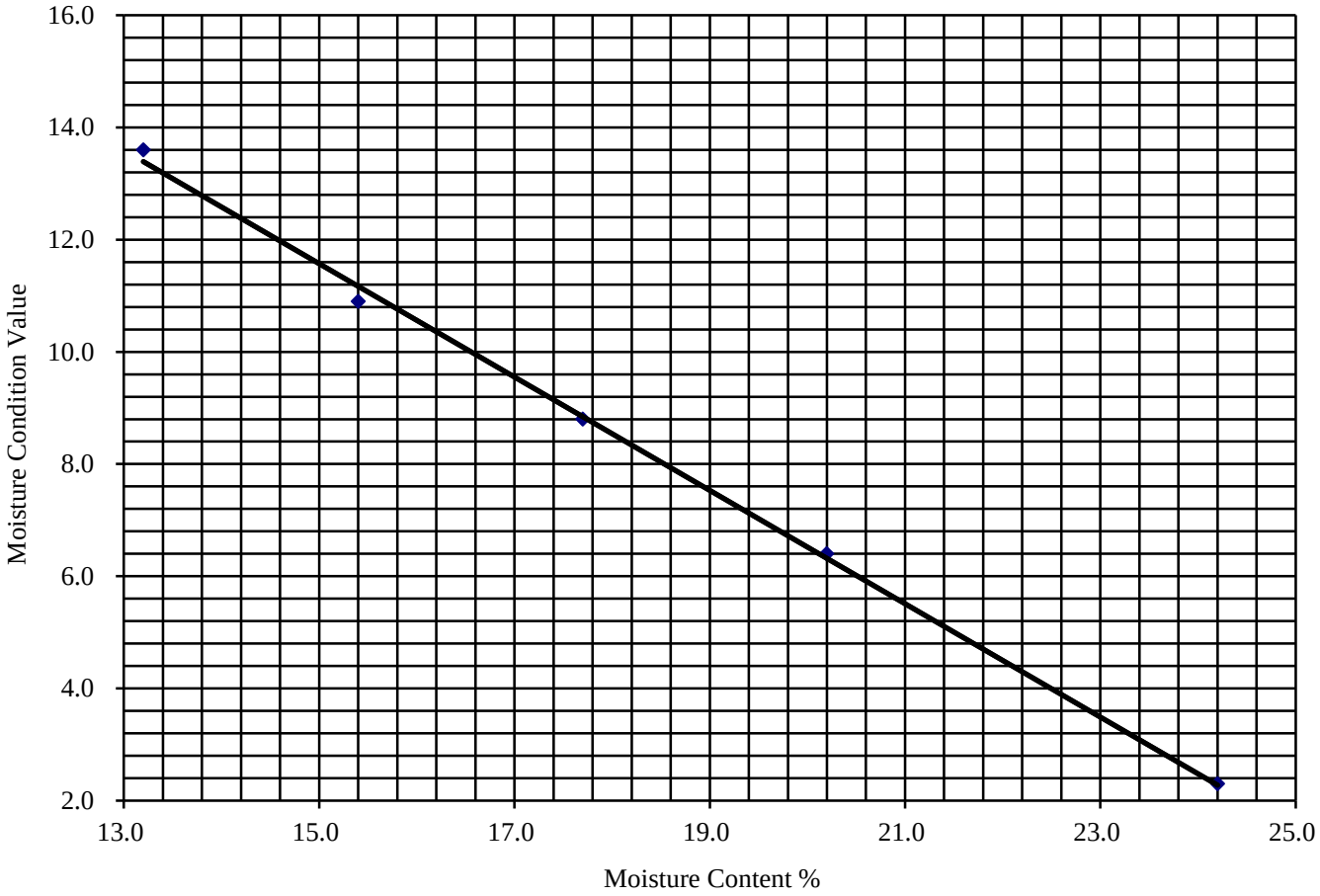
| Test Number | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| **Moisture Content (%)** | 9.6 | 11.7 | 13.9 | 15.0 | 17.2 |
| **MCV** | 14.7 | 11.7 | 9.5 | 7.4 | 4.7 |

# MOISTURE CONDITION VALUE CALIBRATION

**BS1377 : Part 4 : 1990 Clause 5.5**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP164** | **Top Depth (m):** | **0.30** |
| **Sample Number:** | **5** | **Base Depth (m):** | **0.60** |
| **Sample Type:** | **B** | | |

| | |
|---|---|
| Initial Moisture Content (%): | 24 |
| Single/Separate Samples Tested | Separate |
| Material Retained on the 20mm BS Test Sieve (%): | 15 |




**Test Results.**

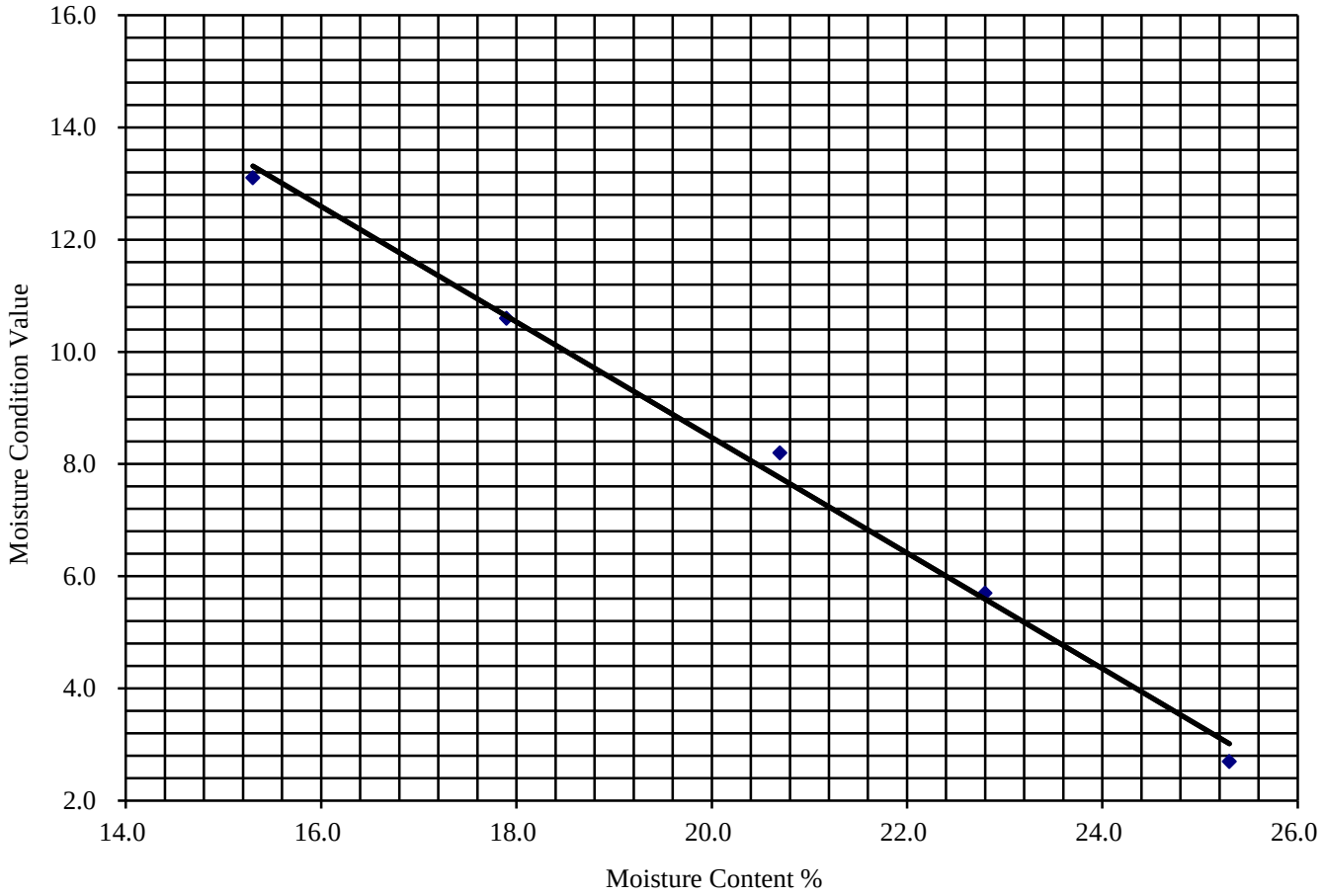
| Test Number | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| **Moisture Content (%)** | 13.2 | 15.4 | 17.7 | 20.2 | 24.2 |
| **MCV** | 13.6 | 10.9 | 8.8 | 6.4 | 2.3 |

# MOISTURE CONDITION VALUE CALIBRATION

**BS1377 : Part 4 : 1990 Clause 5.5**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP164** | **Top Depth (m):** | **1.00** |
| **Sample Number:** | **7** | **Base Depth (m):** | **1.30** |
| **Sample Type:** | **B** | | |

| | |
|---|---|
| Initial Moisture Content (%): | 25 |
| Single/Separate Samples Tested | Separate |
| Material Retained on the 20mm BS Test Sieve (%): | 4 |




**Test Results.**

| Test Number | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| **Moisture Content (%)** | 15.3 | 17.9 | 20.7 | 22.8 | 25.3 |
| **MCV** | 13.1 | 10.6 | 8.2 | 5.7 | 2.7 |

# MOISTURE CONDITION VALUE

**BS1377 : Part 4 : 1990 Clause 5.4**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP165** | **Top Depth (m):** | **1.00** |
| **Sample Number:** | **5** | **Base Depth (m):** | **1.30** |
| **Sample Type:** | **B** | | |

| Material Retained on the 20mm BS Test Sieve (%): | 21 |
|---|---|
| Interpretation based on steepest straight line intercept with 5mm change in penetration. | |

**MCV Determination**

| Blows (N) | Penetration (mm) | n to 4n (mm) |
|---|---|---|
| 1 | 83.8 | 12.3 |
| 2 | 78.6 | 13.9 |
| 3 | 74.9 | 14.0 |
| 4 | 71.5 | 13.2 |
| 6 | 67.6 | 11.9 |
| 8 | 64.7 | 9.6 |
| 12 | 60.9 | 6.3 |
| 16 | 58.3 | 3.8 |
| 24 | 55.7 | |
| 32 | 55.1 | |
| 48 | 54.6 | |
| 64 | 54.5 | |
| 96 | | |
| 128 | | |
| 192 | | |
| 256 | | |

**Test Results.**

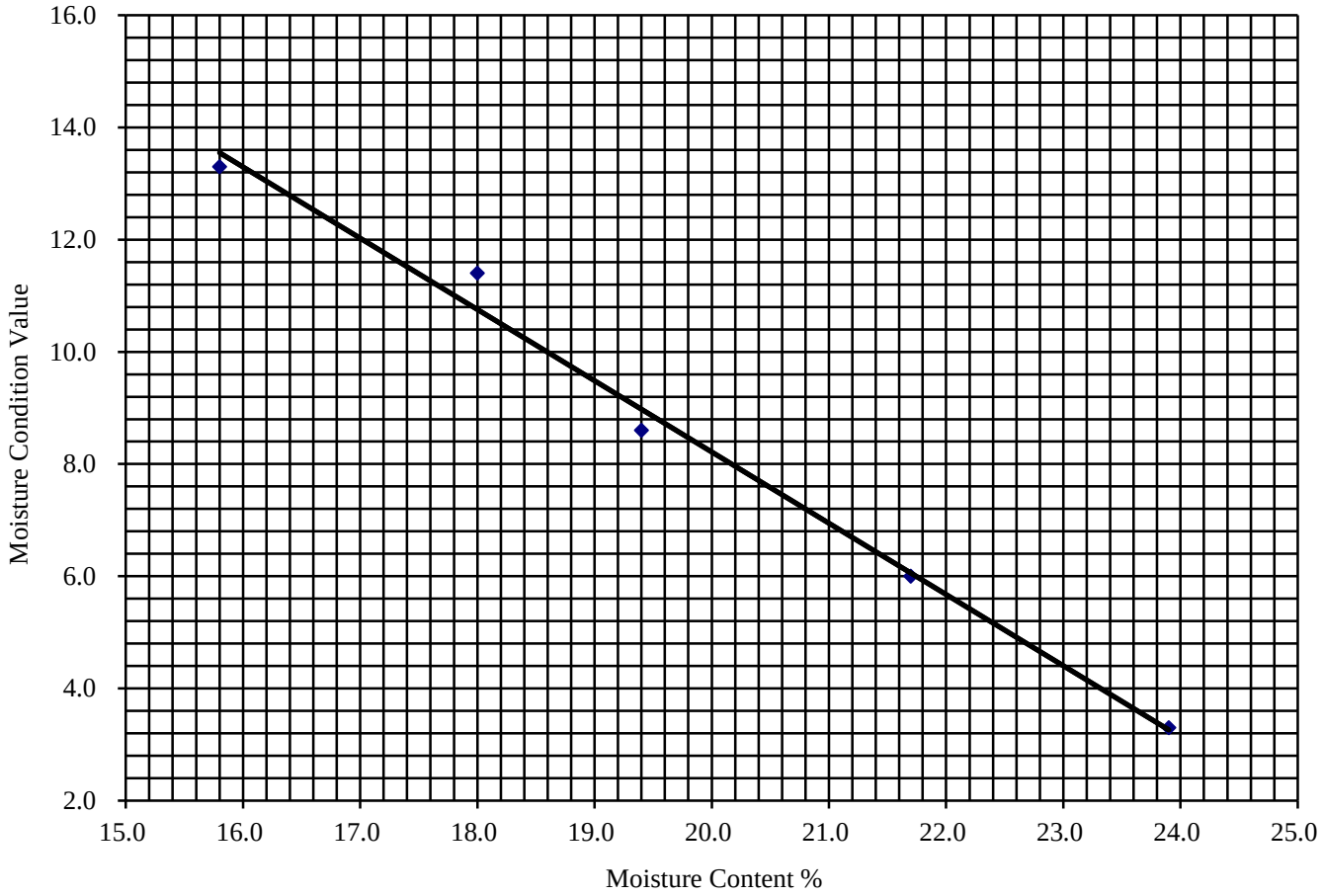
| Moisture Content (%) | 12 |
|---|---|
| MCV | 11.4 |

# MOISTURE CONDITION VALUE CALIBRATION

**BS1377 : Part 4 : 1990 Clause 5.5**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP166** | **Top Depth (m):** | **2.30** |
| **Sample Number:** | **7** | **Base Depth (m):** | **2.60** |
| **Sample Type:** | **B** | | |

| | |
|---|---|
| Initial Moisture Content (%): | 22 |
| Single/Separate Samples Tested | Separate |
| Material Retained on the 20mm BS Test Sieve (%): | 1 |




**Test Results.**

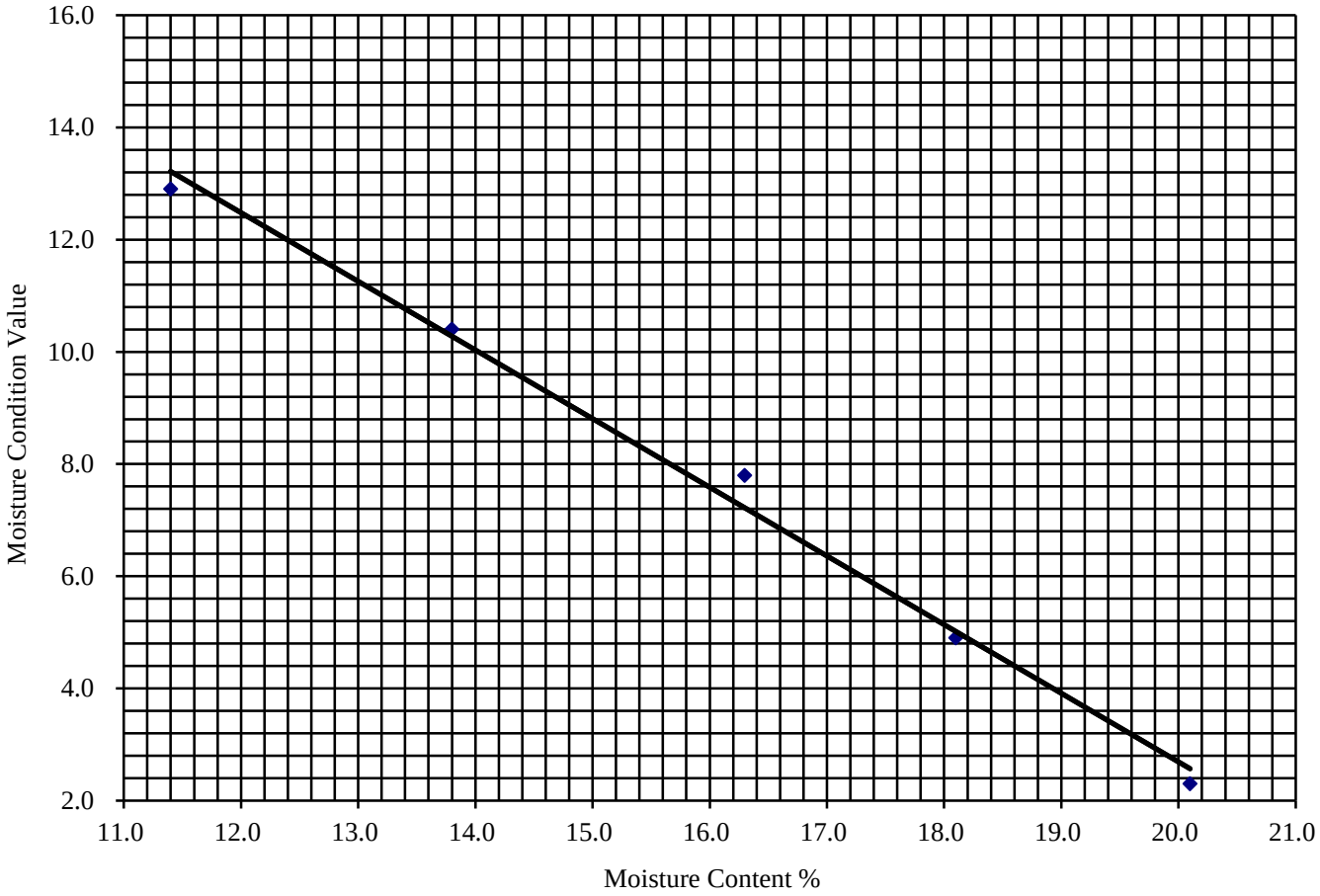
| Test Number | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| **Moisture Content (%)** | 15.8 | 18.0 | 19.4 | 21.7 | 23.9 |
| **MCV** | 13.3 | 11.4 | 8.6 | 6.0 | 3.3 |

# MOISTURE CONDITION VALUE CALIBRATION

**BS1377 : Part 4 : 1990 Clause 5.5**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP169** | **Top Depth (m):** | **1.00** |
| **Sample Number:** | **5** | **Base Depth (m):** | **1.30** |
| **Sample Type:** | **B** | | |

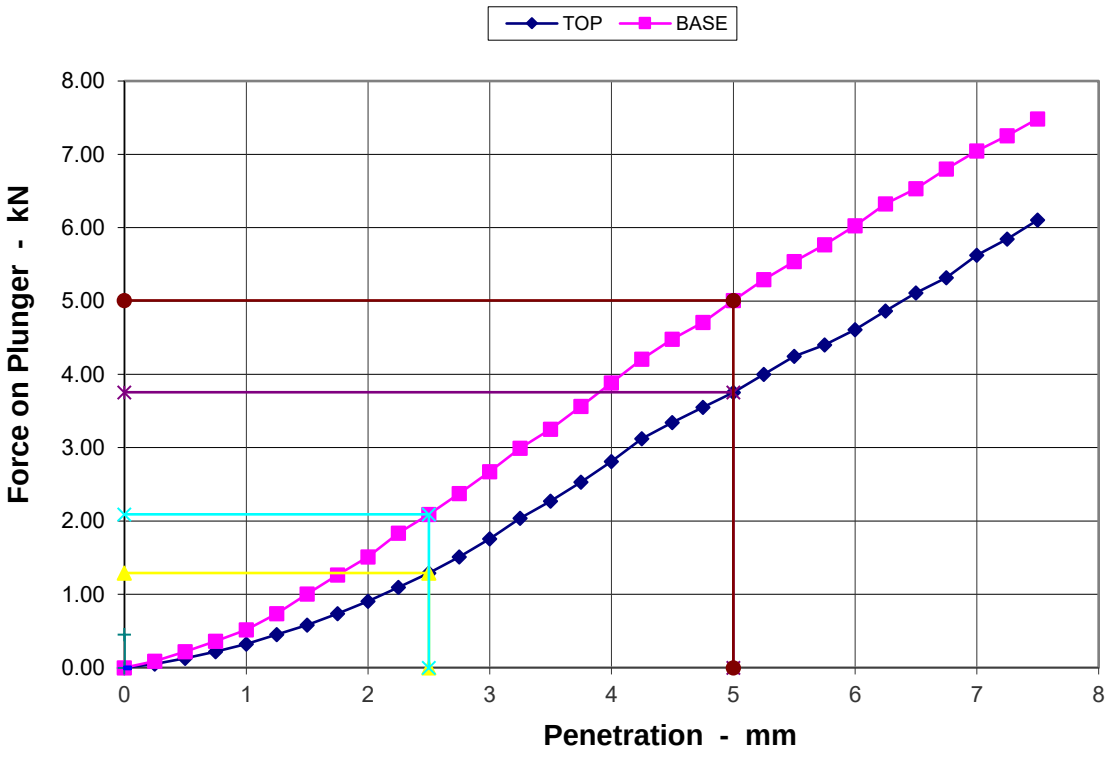
| | |
|---|---|
| Initial Moisture Content (%): | 18 |
| Single/Separate Samples Tested | Separate |
| Material Retained on the 20mm BS Test Sieve (%): | 0 |




**Test Results.**

| Test Number | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| **Moisture Content (%)** | 11.4 | 13.8 | 16.3 | 18.1 | 20.1 |
| **MCV** | 12.9 | 10.4 | 7.8 | 4.9 | 2.3 |

| | | | |
|---|---|---|---|
| | **CALIFORNIA BEARING RATIO**<br>**BS 1377 : Part 4 : 1990 : Clause 7** | **Job Ref** | **GT0386** |
| | | Borehole / Pit No | TP108 |
| Site Name | **Wansford to Sutton Dualling Supplementary GI** | Sample No | #0065753995470007 |
| | | Depth (m) | 0.5 |
| Soil Description | Light brown clayey very sandy GRAVEL. | Date | 13/06/2022 |




| Preparation | Method of Compation | | |
|---|---|---|---|
| | Rammer compaction with specified effort | | |
| | Hammer type | | 2.5kg Rammer |
| | Soaking Period | days | 4 |
| | Amount of Swell | mm | -0.03 |
| | Soaked | | Yes |

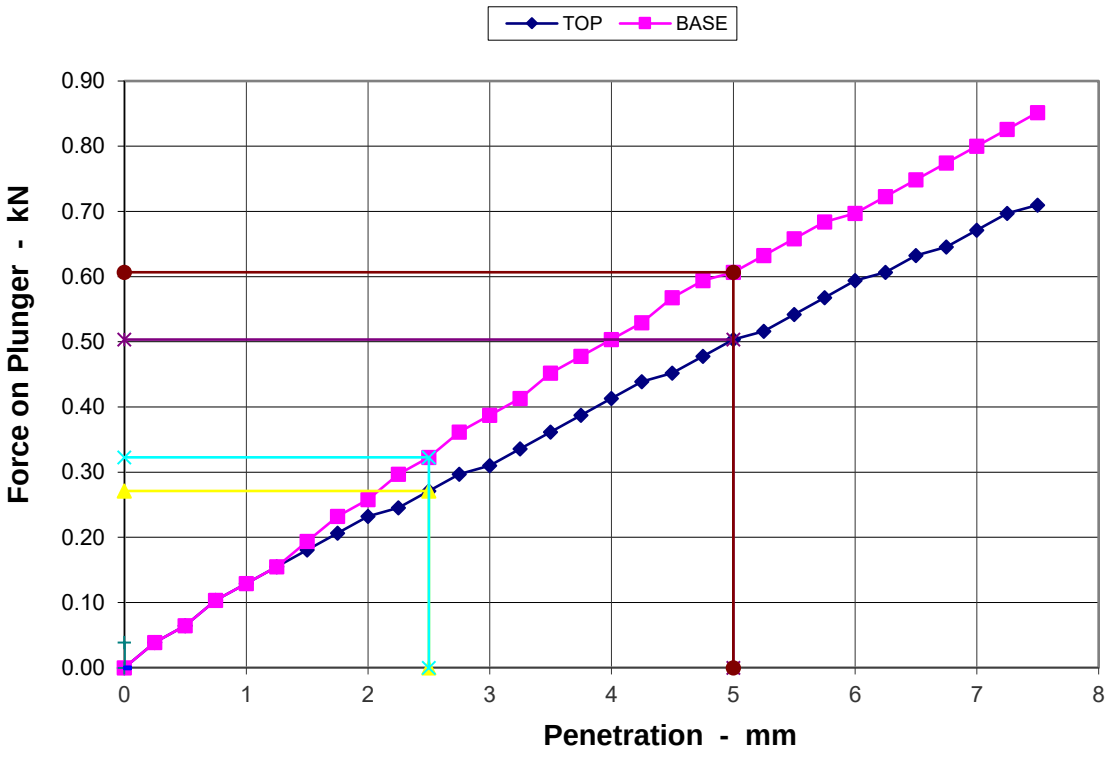
| Sample Conditions | | |
|---|---|---|
| Natural Moisture Content | % | 12.0 |
| Moisture Content - TOP | % | 13.0 |
| Moisture Content - BASE | % | 13.0 |
| Bulk Density | Mg/m³ | 2.17 |
| Dry Density | Mg/m³ | 1.94 |

| Test Conditions | | |
|---|---|---|
| Sample Retained on 20 mm sieve | % | 26.5 |
| Sample Retained on 37.5 mm sieve | % | 12.6 |
| Seating Load - TOP | N | 50 |
| Seating Load - BASE | N | 50 |
| Surcharge | kg | 6 |

| Penetration mm | CBR Values % | |
|---|---|---|
| | TOP | BASE |
| 2.5 | 6.8 | 11 |
| 5.0 | 19 | 25 |
| **Accepted CBR** | **19** | **25** |

| Operator | Checked | Approved | Remarks | Fig |
|---|---|---|---|---|
| calbon | calbon | barmstrong | | |

| | CALIFORNIA BEARING RATIO<br>BS 1377 : Part 4 : 1990 : Clause 7 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP110 |
| Site Name | Wansford to Sutton Dualling Supplementary GI | Sample No | #8496133228050003 |
| | | Depth (m) | 0.2 |
| Soil Description | Firm dark brown slightly gravelly sandy CLAY. | Date | 13/06/2022 |




| Preparation | Method of Compation | |
|---|---|---|
| | Rammer compaction with specified effort | |
| | Hammer type | 2.5kg Rammer |
| | Soaking Period (days) | 4 |
| | Amount of Swell (mm) | -0.20 |
| | Soaked | Yes |

| Sample Conditions | | |
|---|---|---|
| Natural Moisture Content | % | 17.0 |
| Moisture Content - TOP | % | 17.0 |
| Moisture Content - BASE | % | 18.0 |
| Bulk Density | Mg/m³ | 2.08 |
| Dry Density | Mg/m³ | 1.77 |

| Test Conditions | | |
|---|---|---|
| Sample Retained on 20 mm sieve | % | 4.3 |
| Sample Retained on 37.5 mm sieve | % | 0.0 |
| Seating Load - TOP | N | 10 |
| Seating Load - BASE | N | 10 |
| Surcharge | kg | 6 |

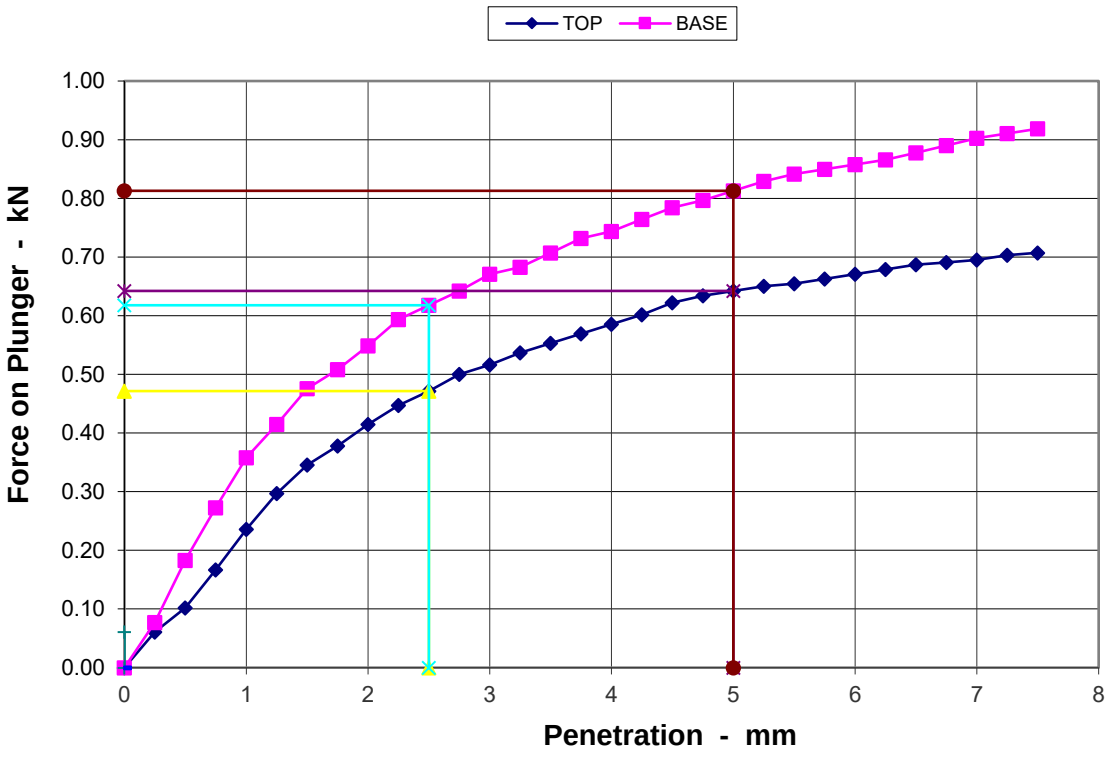
| Penetration mm | CBR Values % | |
|---|---|---|
| | TOP | BASE |
| 2.5 | 1.8 | 2 |
| 5.0 | 2.5 | 3 |
| **Accepted CBR** | **2.5** | **3** |

| Operator | Checked | Approved | Remarks | Fig |
|---|---|---|---|---|
| calbon | calbon | barmstrong | | |

# CALIFORNIA BEARING RATIO

**BS 1377 : Part 4 : 1990 : Clause 7**

| | | | |
|---|---|---|---|
| | | **Job Ref** | **GT0386** |
| | | Borehole / Pit No | TP119 |
| Site Name | **Wansford to Sutton Dualling Supplementary GI** | Sample No | #5762333579240005 |
| | | Depth (m) | 0.4 |
| Soil Description | Stiff greyish brown slightly sandy slightly gravelly CLAY. | Date | 20/06/2022 |




| Preparation | Method of Compation | |
|---|---|---|
| | Rammer compaction with specified effort | |
| | Hammer type | 2.5kg Rammer |
| | Soaking Period days | 4 |
| | Amount of Swell mm | 2.25 |
| | Soaked | Yes |

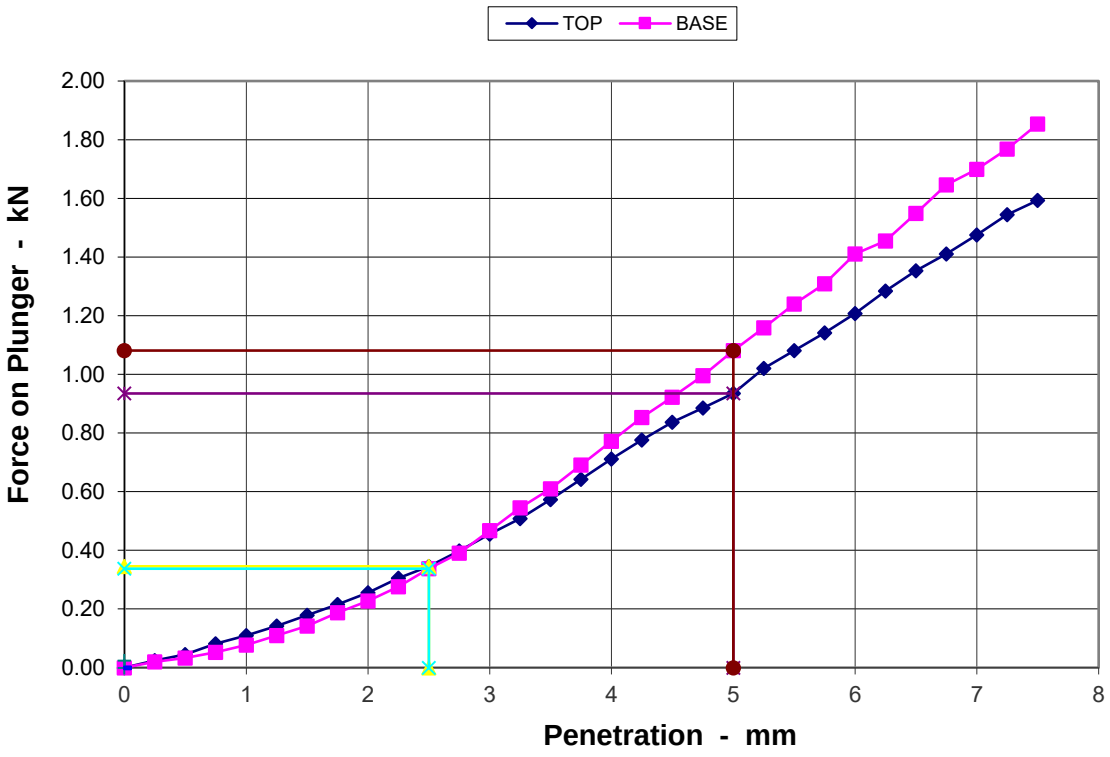
| Sample Conditions | | |
|---|---|---|
| Natural Moisture Content | % | 25.0 |
| Moisture Content - TOP | % | 26.0 |
| Moisture Content - BASE | % | 26.0 |
| Bulk Density | Mg/m³ | 1.95 |
| Dry Density | Mg/m³ | 1.56 |

| Test Conditions | | |
|---|---|---|
| Sample Retained on 20 mm sieve | % | 4.1 |
| Sample Retained on 37.5 mm sieve | % | 18.4 |
| Seating Load - TOP | N | 10 |
| Seating Load - BASE | N | 10 |
| Surcharge | kg | 6 |

| Penetration mm | CBR Values % | |
|---|---|---|
| | TOP | BASE |
| 2.5 | 3.1 | 4.2 |
| 5.0 | 3.2 | 4.1 |
| **Accepted CBR** | **3.2** | **4.2** |

| Operator | Checked | Approved | Remarks | Fig |
|---|---|---|---|---|
| calbon | calbon | barmstrong | | |

| | | | |
|---|---|---|---|
| | **CALIFORNIA BEARING RATIO**<br>**BS 1377 : Part 4 : 1990 : Clause 7** | **Job Ref** | **GT0386** |
| | | Borehole / Pit No | TP122 |
| Site Name | **Wansford to Sutton Dualling Supplementary GI** | Sample No | #6574186075730005 |
| | | Depth (m) | 0.6 |
| Soil Description | Dark brown very clayey GRAVEL and SAND. | Date | 20/06/2022 |




| Preparation | Method of Compation | |
|---|---|---|
| | Rammer compaction with specified effort | |
| | Hammer type | 2.5kg Rammer |
| | Soaking Period days | 4 |
| | Amount of Swell mm | -0.33 |
| | Soaked | Yes |

| Sample Conditions | | |
|---|---|---|
| Natural Moisture Content | % | 14.0 |
| Moisture Content - TOP | % | 14.0 |
| Moisture Content - BASE | % | 14.0 |
| Bulk Density | Mg/m³ | 2.19 |
| Dry Density | Mg/m³ | 1.92 |

| Test Conditions | | |
|---|---|---|
| Sample Retained on 20 mm sieve | % | 14.7 |
| Sample Retained on 37.5 mm sieve | % | 9.2 |
| Seating Load - TOP | N | 10 |
| Seating Load - BASE | N | 10 |
| Surcharge | kg | 6 |

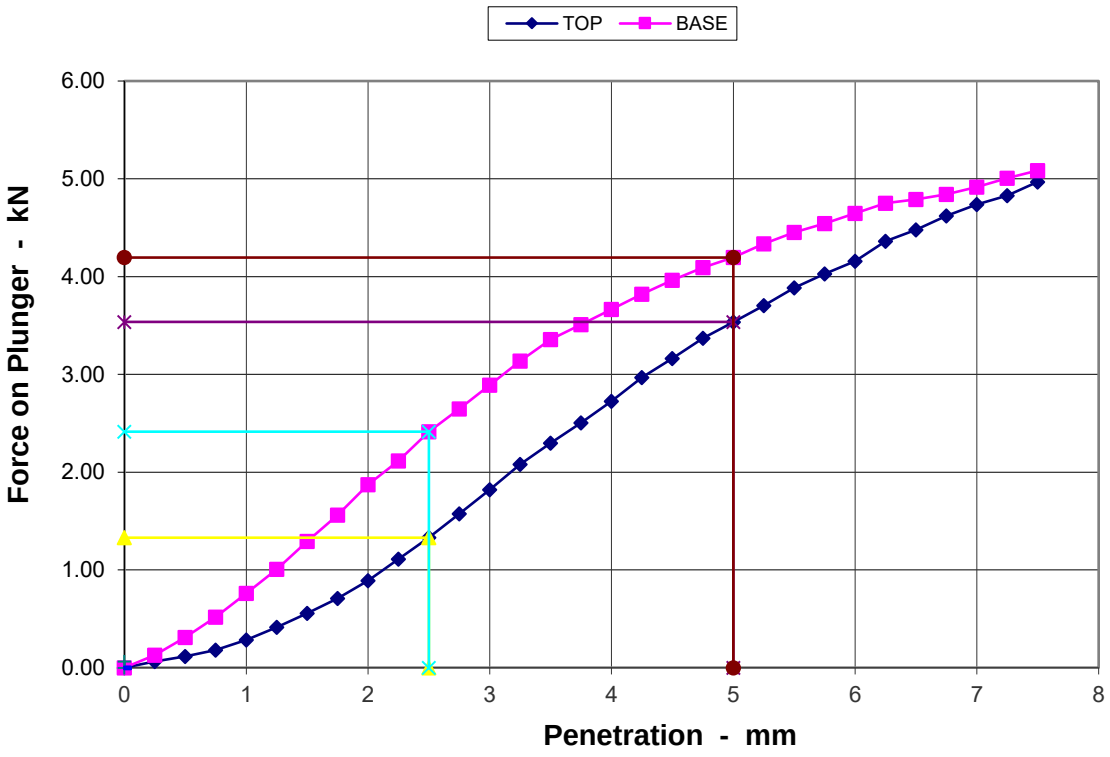
| Penetration mm | CBR Values % | |
|---|---|---|
| | TOP | BASE |
| 2.5 | 1.9 | 1.7 |
| 5.0 | 4.7 | 5.4 |
| **Accepted CBR** | **4.7** | **5.4** |

| Operator | Checked | Approved | Remarks | Fig |
|---|---|---|---|---|
| calbon | calbon | barmstrong | | |

# CALIFORNIA BEARING RATIO

**BS 1377 : Part 4 : 1990 : Clause 7**

| | | | |
|---|---|---|---|
| | | **Job Ref** | **GT0386** |
| | | Borehole / Pit No | TP124 |
| Site Name | **Wansford to Sutton Dualling Supplementary GI** | Sample No | #6609924280360005 |
| | | Depth (m) | 1 |
| Soil Description | Brownish orange clayey very gravelly SAND. | Date | 13/06/2022 |




| Preparation | Method of Compation | |
|---|---|---|
| | Rammer compaction with specified effort | |
| | Hammer type | 2.5kg Rammer |
| | Soaking Period (days) | 4 |
| | Amount of Swell (mm) | 0.01 |
| | Soaked | Yes |

| Sample Conditions | | |
|---|---|---|
| Natural Moisture Content | % | 8.5 |
| Moisture Content - TOP | % | 14.0 |
| Moisture Content - BASE | % | 15.0 |
| Bulk Density | Mg/m³ | 2.01 |
| Dry Density | Mg/m³ | 1.85 |

| Test Conditions | | |
|---|---|---|
| Sample Retained on 20 mm sieve | % | 6.3 |
| Sample Retained on 37.5 mm sieve | % | 2.0 |
| Seating Load - TOP | N | 50 |
| Seating Load - BASE | N | 50 |
| Surcharge | kg | 6 |

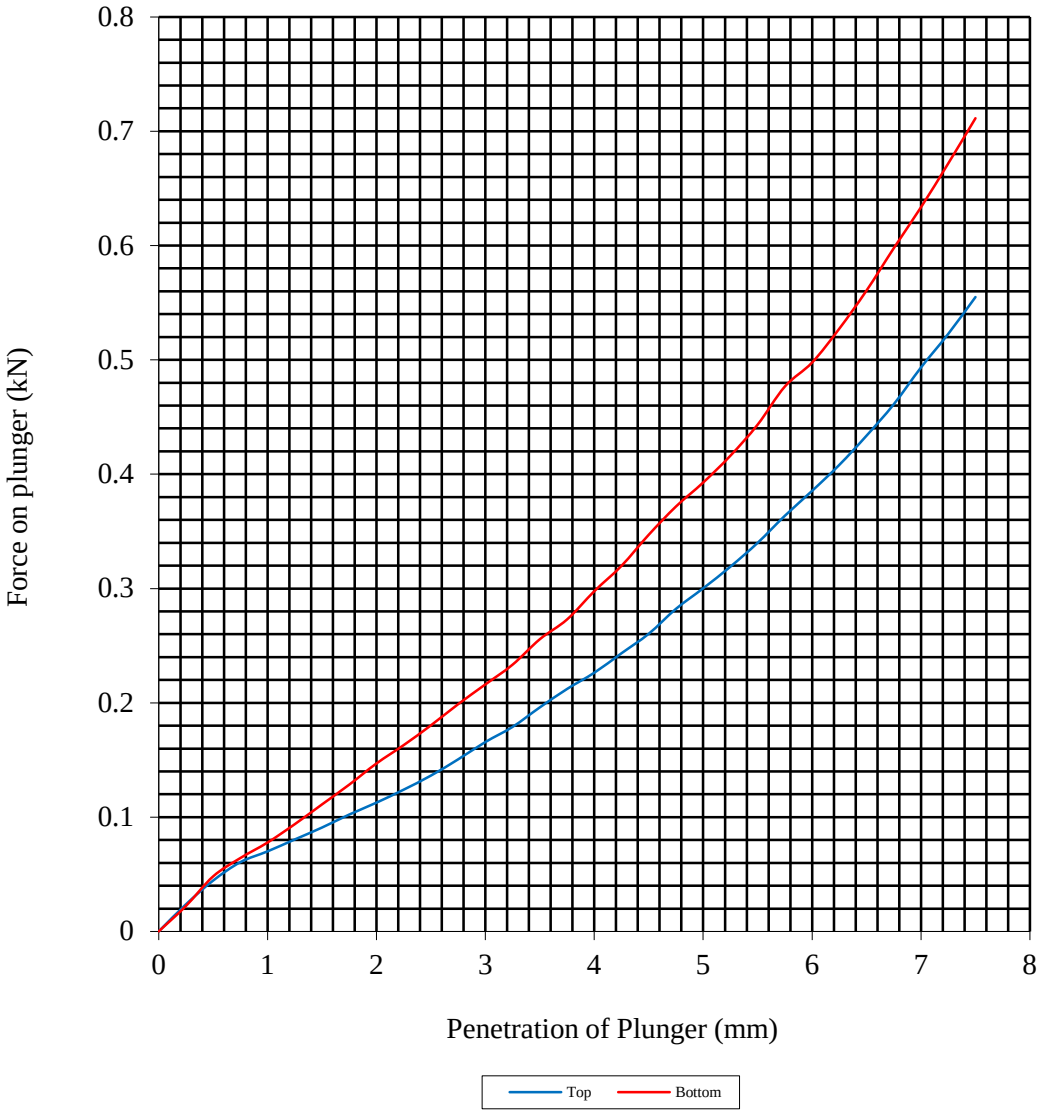
| Penetration mm | CBR Values % | |
|---|---|---|
| | TOP | BASE |
| 2.5 | 6.7 | 14 |
| 5.0 | 18 | 21 |
| **Accepted CBR** | **18** | **21** |

| Operator | Checked | Approved | Remarks | Fig |
|---|---|---|---|---|
| calbon | calbon | barmstrong | | |

# CALIFORNIA BEARING RATIO TEST

**BS 1377 : Part 4 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP113** | **Top Depth (m):** | **0.60** |
| **Sample Number:** | **5** | **Base Depth (m):** | **0.90** |
| **Sample Type:** | **B** | | |




| Initial Sample Conditions | | Sample Preparation | | Final Moisture Content % | | C.B.R. Value % | |
|---|---|---|---|---|---|---|---|
| Moisture Content: | 17 | Surcharge Kg: | 4.00 | Sample Top | 20 | Sample Top | 1.5 |
| Bulk Density Mg/m3: | 2.04 | Soaking Time hrs | 96 | Sample Bottom | 20 | Sample Bottom | 2.0 |
| Dry Density Mg/m3: | 1.74 | Swelling mm: | 3.10 | Remarks : See Summary of Soil Descriptions. | | | |
| Percentage retained on 20mm BS test sieve: | | | 20 | | | | |
| Compaction Conditions | | 2.5kg | | | | | |

UKAS TESTING 4043

PSL Professional Soils Laboratory

**Wansford to Sutton Dualling Supplementary GI**

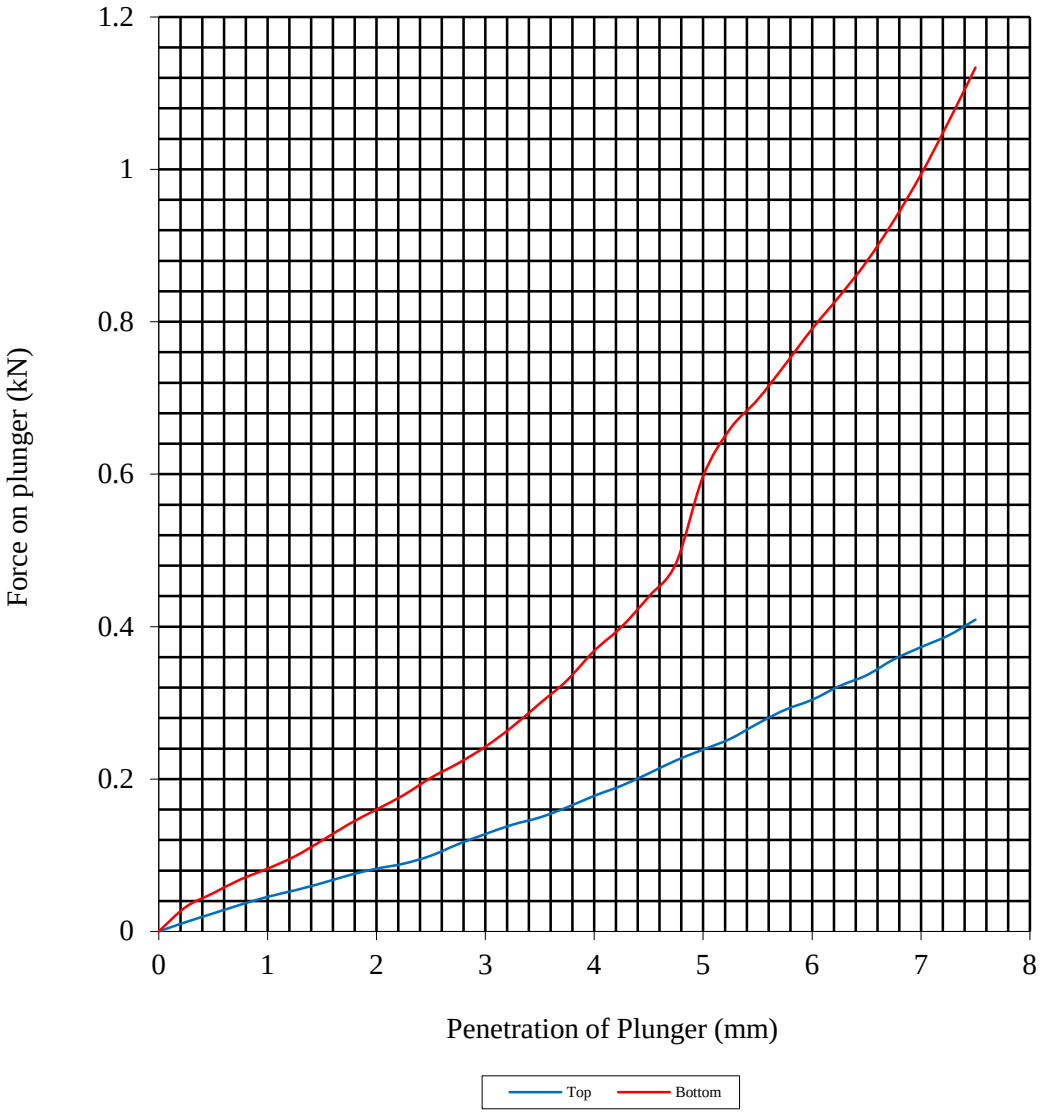
**Contract No:** PSL22/3024

**Client Ref:** GT0386

# CALIFORNIA BEARING RATIO TEST

**Non compliance with BS 1377 : Part 4 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP163** | **Top Depth (m):** | **0.50** |
| **Sample Number:** | **5** | **Base Depth (m):** | **0.80** |
| **Sample Type:** | **B** | | |




| Initial Sample Conditions | | Sample Preparation | | Final Moisture Content % | | C.B.R. Value % | |
|---|---|---|---|---|---|---|---|
| Moisture Content: | 13 | Surcharge Kg: | 4.00 | Sample Top | 17 | Sample Top | 1.2 |
| Bulk Density Mg/m3: | 2.08 | Soaking Time hrs | 96 | Sample Bottom | 17 | Sample Bottom | 3.0 |
| Dry Density Mg/m3: | 1.84 | Swelling mm: | 1.80 | Remarks : See Summary of Soil Descriptions. | | | |
| Percentage retained on 20mm BS test sieve: | | | 51 | | | | |
| Compaction Conditions | | 2.5kg | | | | | |

UKAS TESTING 4043

PSL Professional Soils Laboratory

**Wansford to Sutton Dualling Supplementary GI**

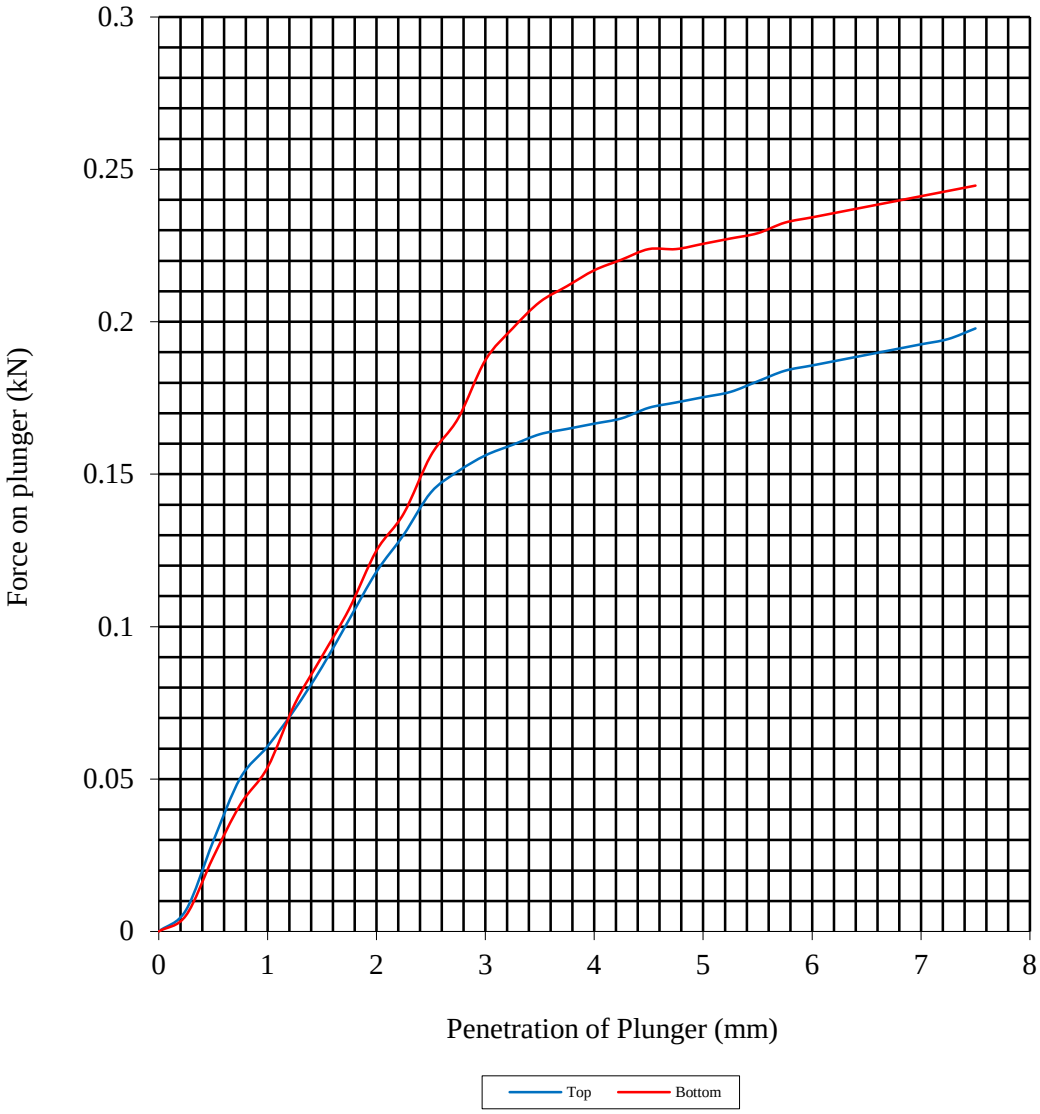
**Contract No: PSL22/3024**

**Client Ref: GT0386**

# CALIFORNIA BEARING RATIO TEST

**BS 1377 : Part 4 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP167** | **Top Depth (m):** | **1.00** |
| **Sample Number:** | **5** | **Base Depth (m):** | **1.30** |
| **Sample Type:** | **B** | | |




| Initial Sample Conditions | | Sample Preparation | | Final Moisture Content % | | C.B.R. Value % | |
|---|---|---|---|---|---|---|---|
| Moisture Content: | 32 | Surcharge Kg: | 4.00 | Sample Top | 34 | Sample Top | 1.1 |
| Bulk Density Mg/m3: | 1.89 | Soaking Time hrs | 96 | Sample Bottom | 34 | Sample Bottom | 1.2 |
| Dry Density Mg/m3: | 1.43 | Swelling mm: | 2.30 | Remarks : See Summary of Soil Descriptions. | | | |
| Percentage retained on 20mm BS test sieve: | | | 0 | | | | |
| Compaction Conditions | | 2.5kg | | | | | |

UKAS TESTING 4043

PSL Professional Soils Laboratory

**Wansford to Sutton Dualling Supplementary GI**

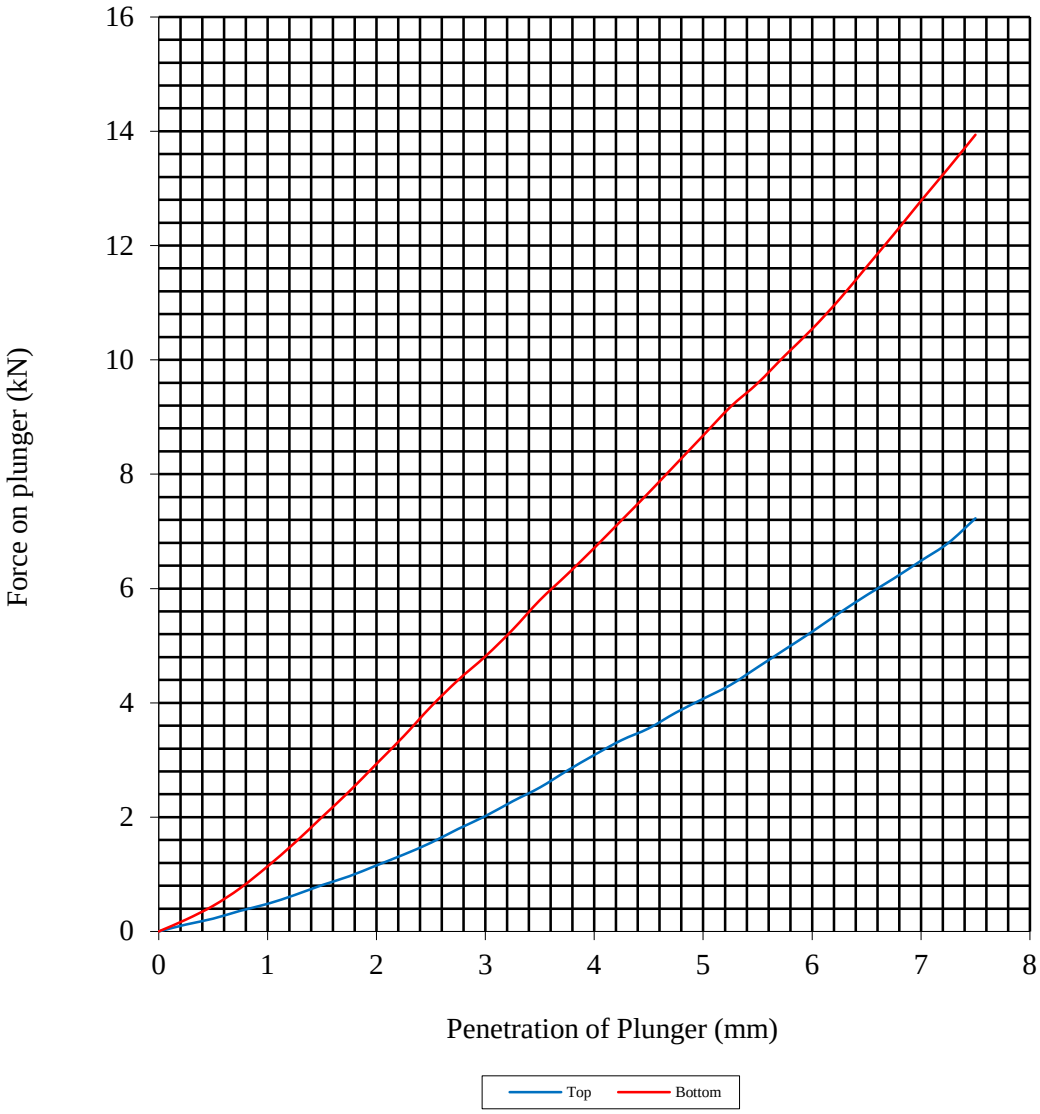
**Contract No: PSL22/3024**

**Client Ref: GT0386**

# CALIFORNIA BEARING RATIO TEST

**Non compliance with BS 1377 : Part 4 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH132** | **Top Depth (m):** | **0.20** |
| **Sample Number:** | **1** | **Base Depth (m):** | **0.60** |
| **Sample Type:** | **B** | | |




| Initial Sample Conditions | | Sample Preparation | | Final Moisture Content % | | C.B.R. Value % | |
|---|---|---|---|---|---|---|---|
| Moisture Content: | 11 | Surcharge Kg: | 4.20 | Sample Top | 14 | Sample Top | 20.4 |
| Bulk Density Mg/m3: | 2.25 | Soaking Time hrs | 96 | Sample Bottom | 13 | Sample Bottom | 43.4 |
| Dry Density Mg/m3: | 2.02 | Swelling mm: | 0.16 | Remarks : See Summary of Soil Descriptions. | | | |
| Percentage retained on 20mm BS test sieve: | | | 29 | | | | |
| Compaction Conditions | | Vibro | | | | | |

UKAS TESTING 4043

PSL Professional Soils Laboratory

**Wansford to Sutton Dualling Supplementary GI**

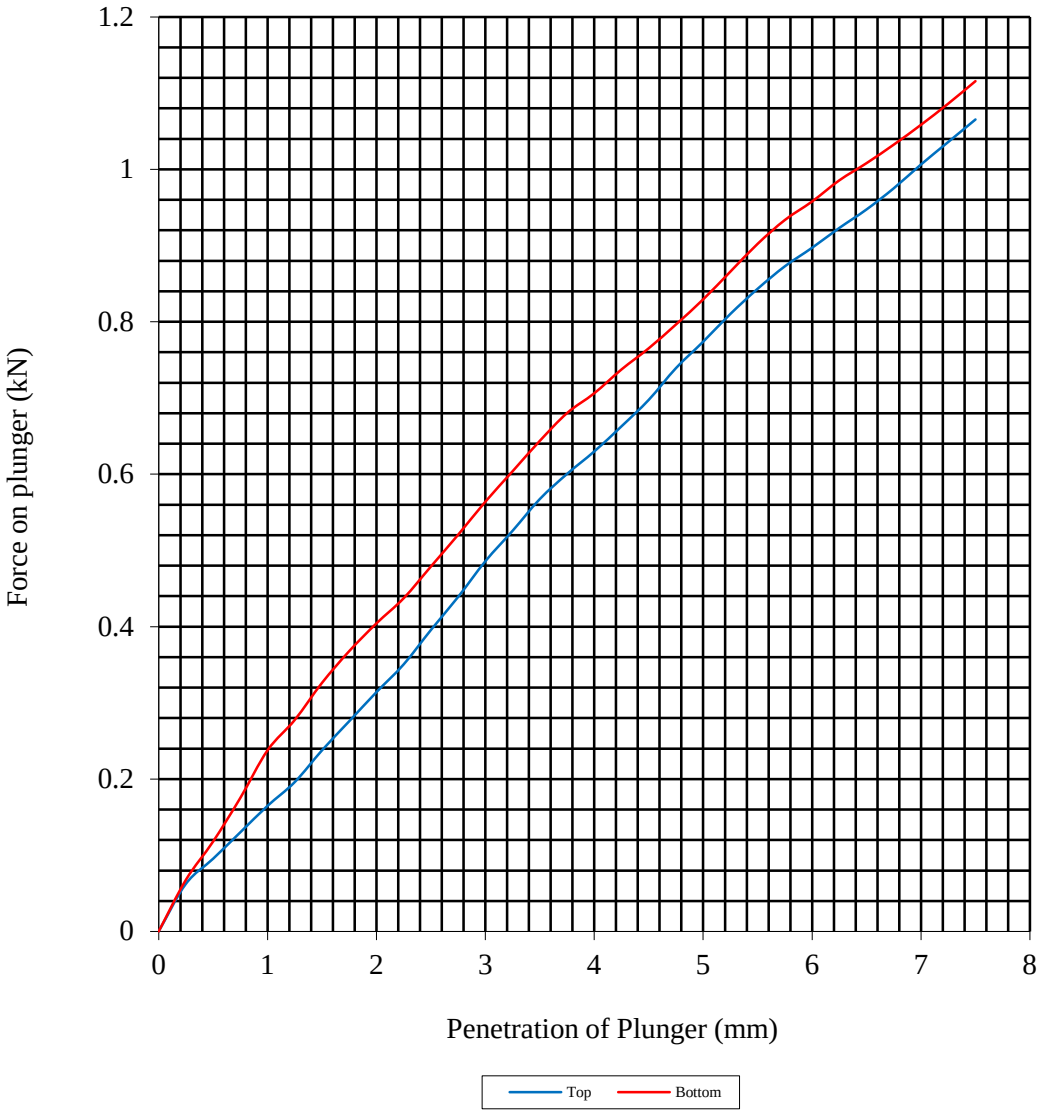
**Contract No: PSL22/3650**

**Client Ref: GT0386**

# CALIFORNIA BEARING RATIO TEST

**BS 1377 : Part 4 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP153** | **Top Depth (m):** | **1.00** |
| **Sample Number:** | **6** | **Base Depth (m):** | **1.30** |
| **Sample Type:** | **B** | | |




| Initial Sample Conditions | | Sample Preparation | | Final Moisture Content % | | C.B.R. Value % | |
|---|---|---|---|---|---|---|---|
| Moisture Content: | 16 | Surcharge Kg: | 4.20 | Sample Top | 18 | Sample Top | 3.9 |
| Bulk Density Mg/m3: | 2.12 | Soaking Time hrs | 96 | Sample Bottom | 17 | Sample Bottom | 4.1 |
| Dry Density Mg/m3: | 1.82 | Swelling mm: | 1.48 | Remarks : See Summary of Soil Descriptions. | | | |
| Percentage retained on 20mm BS test sieve: | | | 0 | | | | |
| Compaction Conditions | | 2.5kg | | | | | |

UKAS TESTING 4043

PSL Professional Soils Laboratory

**Wansford to Sutton Dualling Supplementary GI**

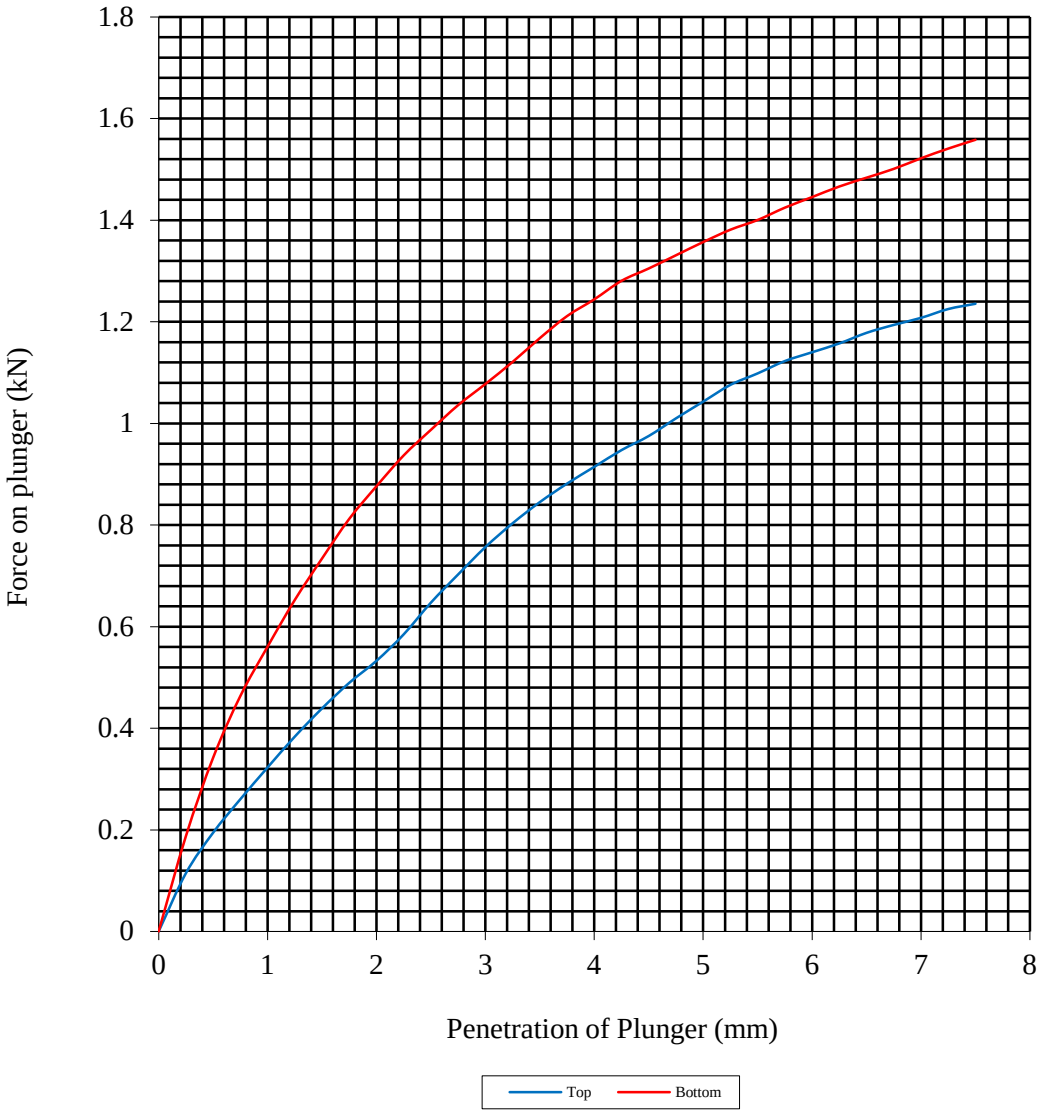
**Contract No: PSL22/3650**

**Client Ref: GT0386**

# CALIFORNIA BEARING RATIO TEST

**BS 1377 : Part 4 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP156** | **Top Depth (m):** | **1.00** |
| **Sample Number:** | **5** | **Base Depth (m):** | **1.30** |
| **Sample Type:** | **B** | | |




| Initial Sample Conditions | | Sample Preparation | | Final Moisture Content % | | C.B.R. Value % | |
|---|---|---|---|---|---|---|---|
| Moisture Content: | 16 | Surcharge Kg: | 4.20 | Sample Top | 18 | Sample Top | 5.2 |
| Bulk Density Mg/m3: | 2.10 | Soaking Time hrs | 96 | Sample Bottom | 17 | Sample Bottom | 7.5 |
| Dry Density Mg/m3: | 1.81 | Swelling mm: | 1.30 | Remarks : See Summary of Soil Descriptions. | | | |
| Percentage retained on 20mm BS test sieve: | | | 2 | | | | |
| Compaction Conditions | | 2.5kg | | | | | |

UKAS TESTING 4043

PSL Professional Soils Laboratory

**Wansford to Sutton Dualling Supplementary GI**

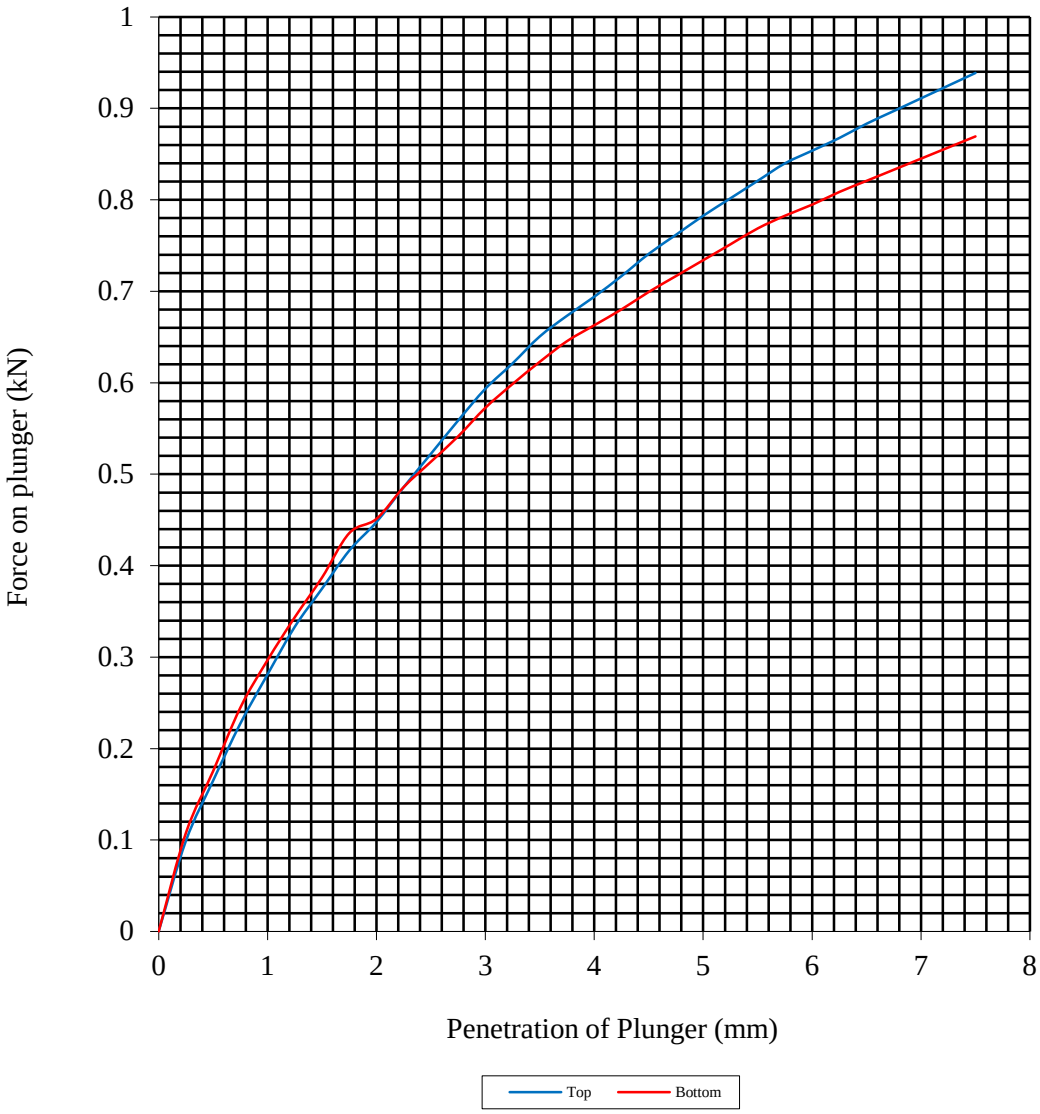
**Contract No: PSL22/3650**

**Client Ref: GT0386**

# CALIFORNIA BEARING RATIO TEST

**BS 1377 : Part 4 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP157** | **Top Depth (m):** | **1.00** |
| **Sample Number:** | **5** | **Base Depth (m):** | **1.30** |
| **Sample Type:** | **B** | | |




| Initial Sample Conditions | | Sample Preparation | | Final Moisture Content % | | C.B.R. Value % | |
|---|---|---|---|---|---|---|---|
| Moisture Content: | 23 | Surcharge Kg: | 4.20 | Sample Top | 24 | Sample Top | 4.0 |
| Bulk Density Mg/m3: | 1.97 | Soaking Time hrs | 96 | Sample Bottom | 24 | Sample Bottom | 3.9 |
| Dry Density Mg/m3: | 1.60 | Swelling mm: | 0.51 | Remarks : See Summary of Soil Descriptions. | | | |
| Percentage retained on 20mm BS test sieve: | | | 0 | | | | |
| Compaction Conditions | | 2.5kg | | | | | |

UKAS TESTING 4043

PSL Professional Soils Laboratory

**Wansford to Sutton Dualling Supplementary GI**

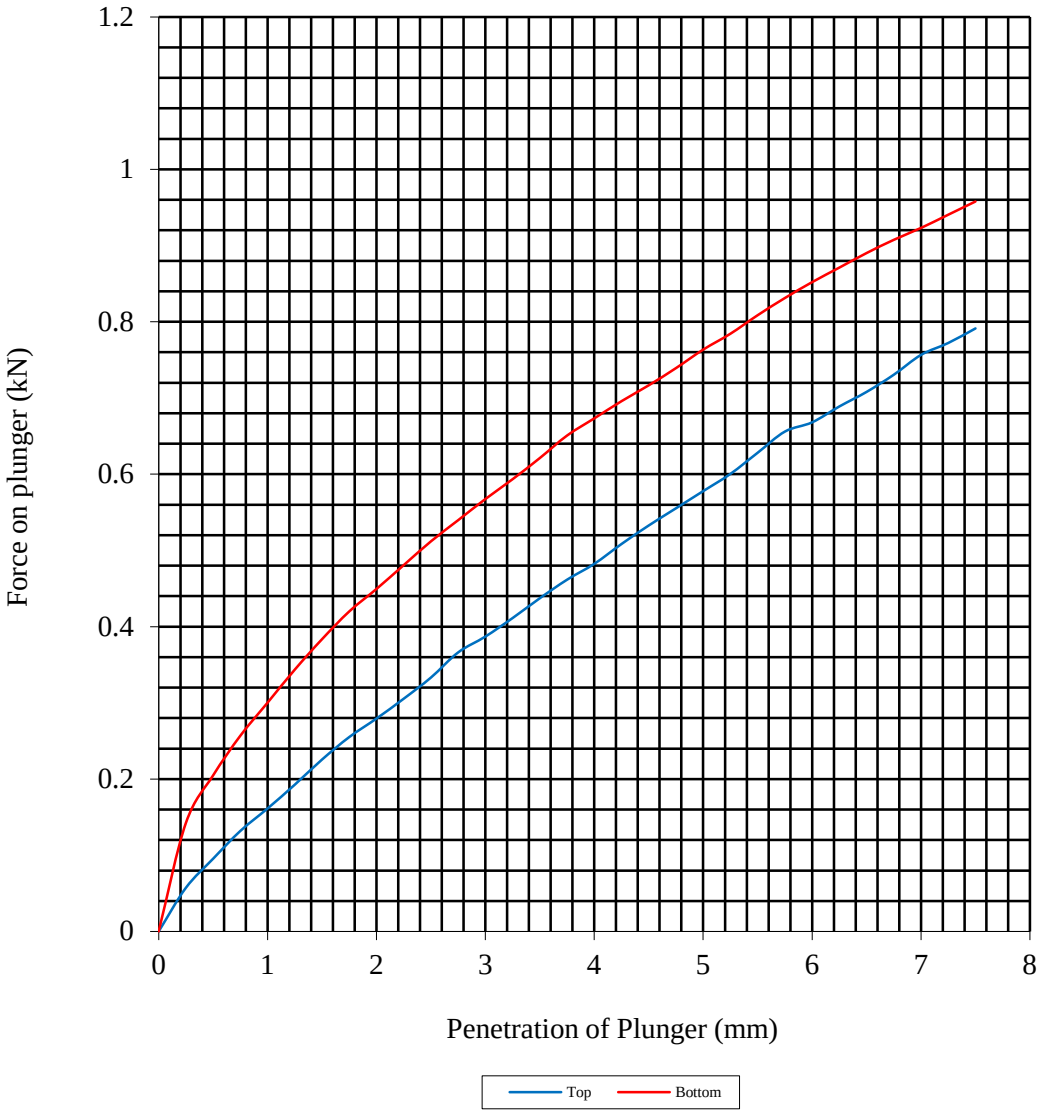
**Contract No: PSL22/3650**

**Client Ref: GT0386**

# CALIFORNIA BEARING RATIO TEST

**BS 1377 : Part 4 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP151** | **Top Depth (m):** | **1.00** |
| **Sample Number:** | **5** | **Base Depth (m):** | **1.30** |
| **Sample Type:** | **B** | | |




| Initial Sample Conditions | | Sample Preparation | | Final Moisture Content % | | C.B.R. Value % | |
|---|---|---|---|---|---|---|---|
| Moisture Content: | 17 | Surcharge Kg: | 4.20 | Sample Top | 19 | Sample Top | 2.9 |
| Bulk Density Mg/m3: | 2.10 | Soaking Time hrs | 96 | Sample Bottom | 18 | Sample Bottom | 3.9 |
| Dry Density Mg/m3: | 1.80 | Swelling mm: | 1.48 | Remarks : See Summary of Soil Descriptions. | | | |
| Percentage retained on 20mm BS test sieve: | | | 0 | | | | |
| Compaction Conditions | | 2.5kg | | | | | |

UKAS TESTING 4043

PSL Professional Soils Laboratory

**Wansford to Sutton Dualling Supplementary GI**

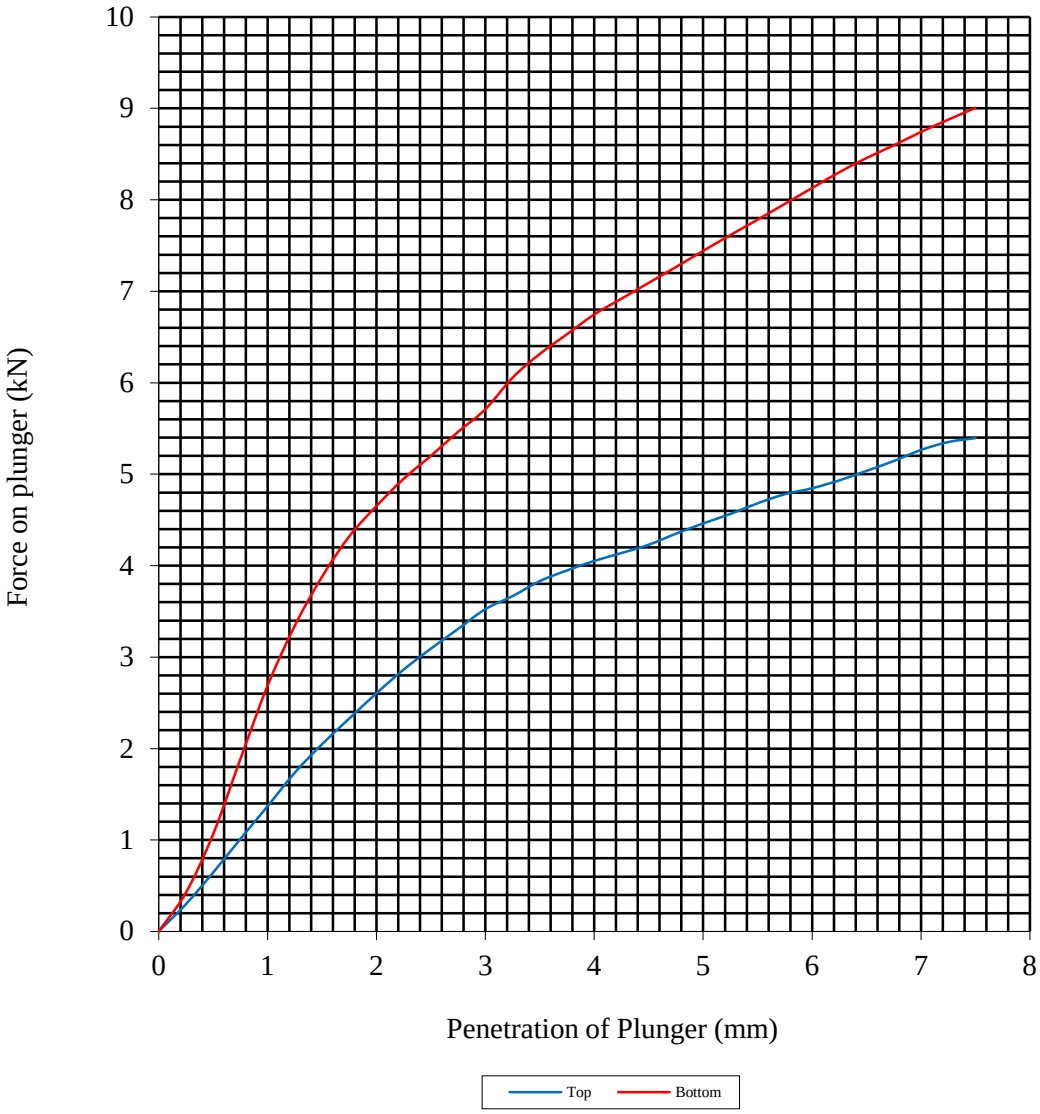
**Contract No:** PSL22/3650

**Client Ref:** GT0386

# CALIFORNIA BEARING RATIO TEST

**BS 1377 : Part 4 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP151** | **Top Depth (m):** | **2.10** |
| **Sample Number:** | **7** | **Base Depth (m):** | **2.40** |
| **Sample Type:** | **B** | | |



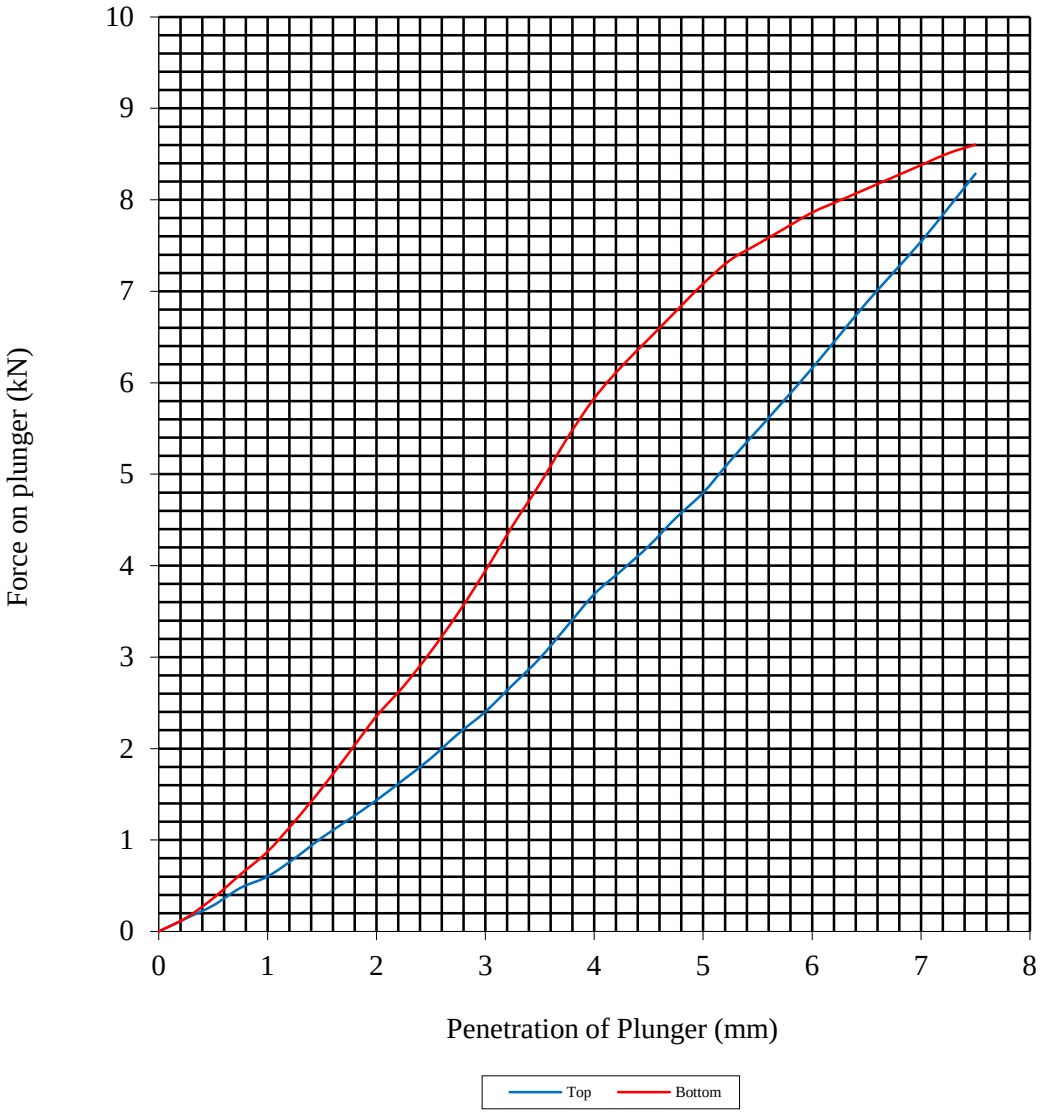

| Initial Sample Conditions | | Sample Preparation | | Final Moisture Content % | | C.B.R. Value % | |
|---|---|---|---|---|---|---|---|
| Moisture Content: | 9.1 | Surcharge Kg: | 4.20 | Sample Top | 12 | Sample Top | 23.4 |
| Bulk Density Mg/m3: | 2.24 | Soaking Time hrs | 96 | Sample Bottom | 12 | Sample Bottom | 39.4 |
| Dry Density Mg/m3: | 2.05 | Swelling mm: | 0.22 | Remarks : See Summary of Soil Descriptions. | | | |
| Percentage retained on 20mm BS test sieve: | | | 1 | | | | |
| Compaction Conditions | | Vibro | | | | | |

| | | |
|---|---|---|
| UKAS TESTING 4043 — PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** | **Contract No:** PSL22/3650<br>**Client Ref:** GT0386 |

# CALIFORNIA BEARING RATIO TEST

**BS 1377 : Part 4 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP152** | **Top Depth (m):** | **1.00** |
| **Sample Number:** | **5** | **Base Depth (m):** | **1.30** |
| **Sample Type:** | **B** | | |




| Initial Sample Conditions | | Sample Preparation | | Final Moisture Content % | | C.B.R. Value % | |
|---|---|---|---|---|---|---|---|
| Moisture Content: | 9.8 | Surcharge Kg: | 4.20 | Sample Top | 13 | Sample Top | 24.0 |
| Bulk Density Mg/m3: | 2.27 | Soaking Time hrs | 96 | Sample Bottom | 12 | Sample Bottom | 35.4 |
| Dry Density Mg/m3: | 2.07 | Swelling mm: | 0.34 | Remarks : See Summary of Soil Descriptions. | | | |
| Percentage retained on 20mm BS test sieve: | | | 17 | | | | |
| Compaction Conditions | | Vibro | | | | | |

UKAS TESTING 4043

PSL Professional Soils Laboratory

**Wansford to Sutton Dualling Supplementary GI**

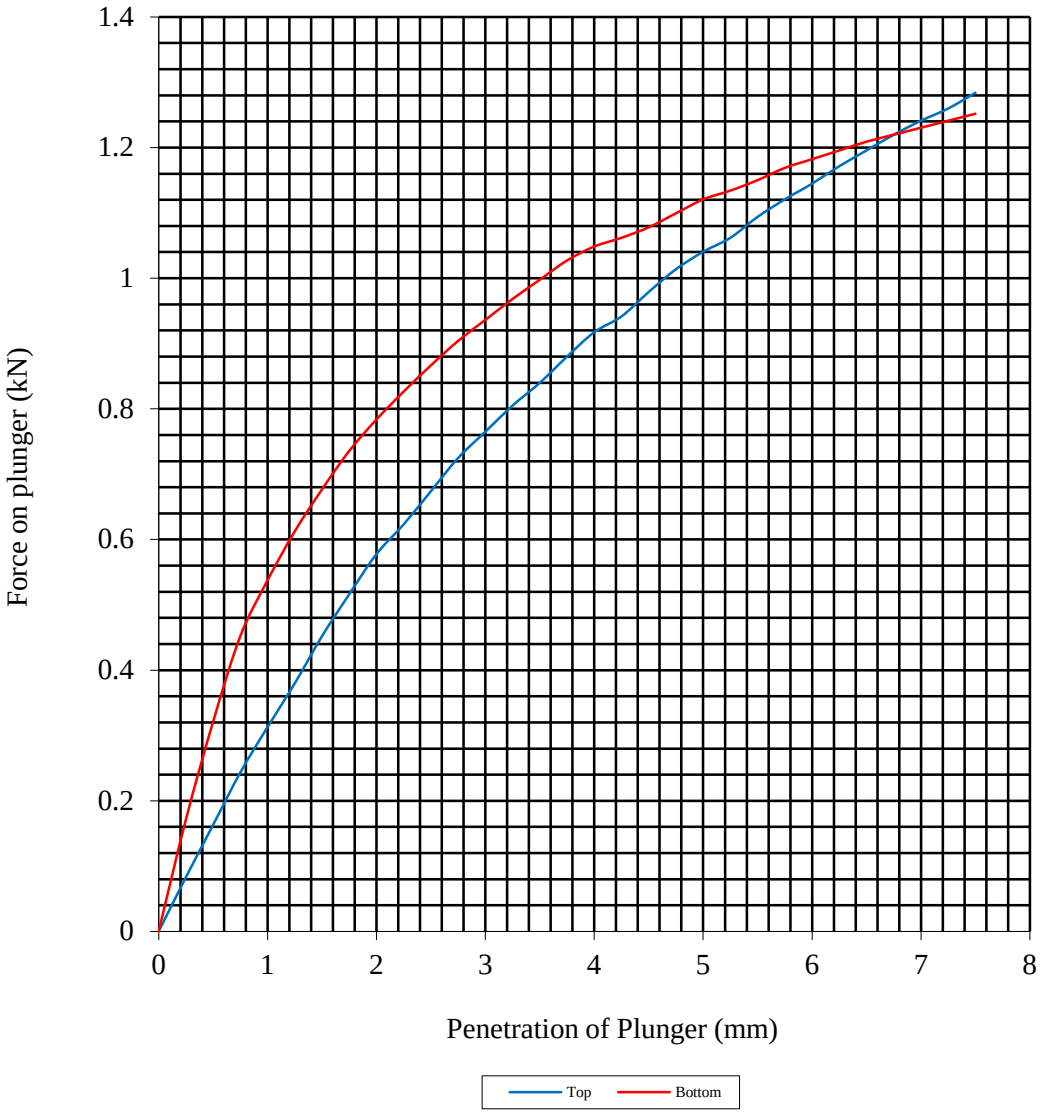
**Contract No: PSL22/3650**

**Client Ref: GT0386**

# CALIFORNIA BEARING RATIO TEST

**BS 1377 : Part 4 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP154** | **Top Depth (m):** | **1.00** |
| **Sample Number:** | **5** | **Base Depth (m):** | **1.30** |
| **Sample Type:** | **B** | | |




| Initial Sample Conditions | | Sample Preparation | | Final Moisture Content % | | C.B.R. Value % | |
|---|---|---|---|---|---|---|---|
| Moisture Content: | 15 | Surcharge Kg: | 4.20 | Sample Top | 17 | Sample Top | 5.2 |
| Bulk Density Mg/m3: | 2.17 | Soaking Time hrs | 96 | Sample Bottom | 16 | Sample Bottom | 6.6 |
| Dry Density Mg/m3: | 1.89 | Swelling mm: | 1.28 | Remarks : See Summary of Soil Descriptions. | | | |
| Percentage retained on 20mm BS test sieve: | | | 2 | | | | |
| Compaction Conditions | | 2.5kg | | | | | |

UKAS TESTING 4043

PSL Professional Soils Laboratory

**Wansford to Sutton Dualling Supplementary GI**

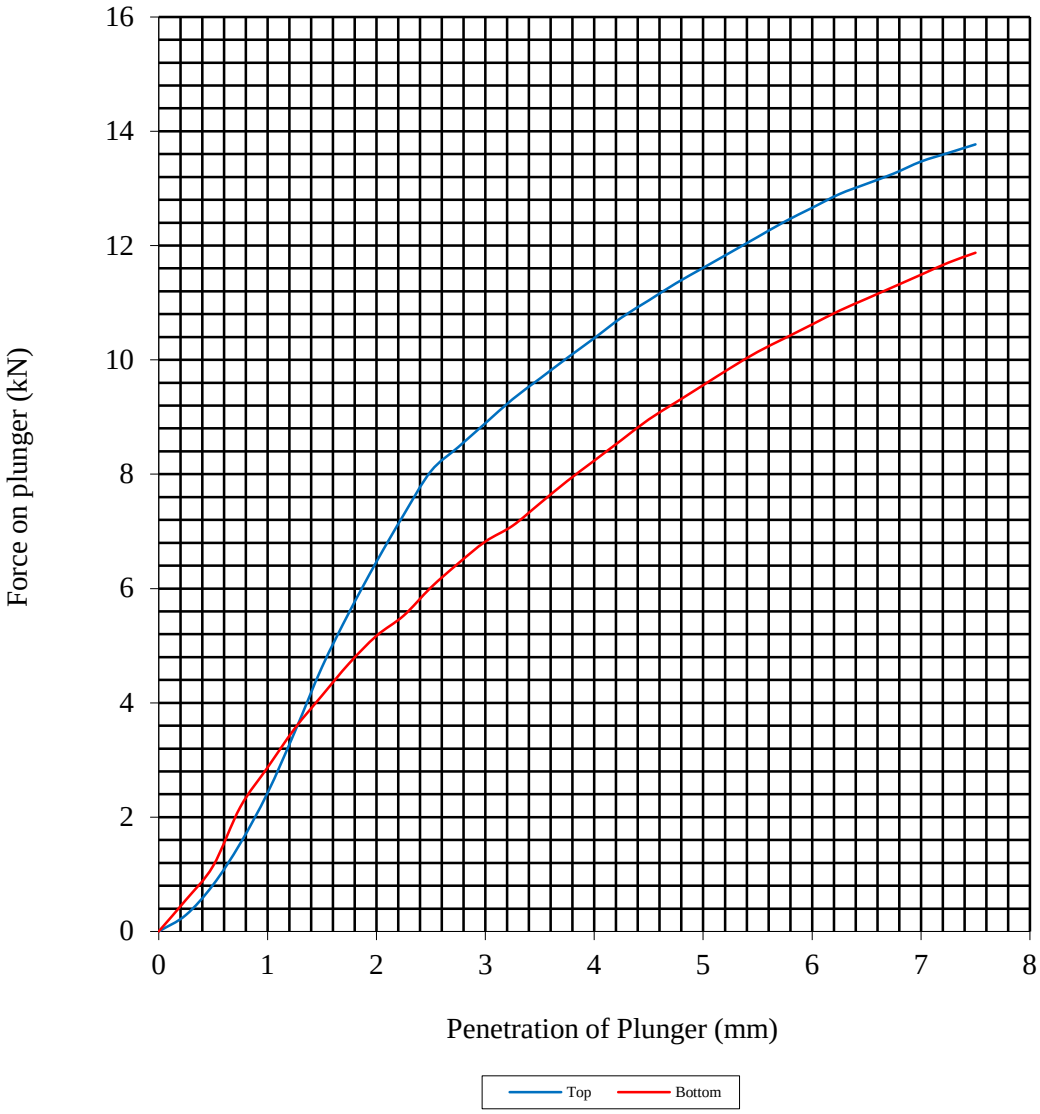
**Contract No: PSL22/3650**

**Client Ref: GT0386**

# CALIFORNIA BEARING RATIO TEST

**BS 1377 : Part 4 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP155** | **Top Depth (m):** | **1.00** |
| **Sample Number:** | **5** | **Base Depth (m):** | **1.30** |
| **Sample Type:** | **B** | | |




| Initial Sample Conditions | | Sample Preparation | | Final Moisture Content % | | C.B.R. Value % | |
|---|---|---|---|---|---|---|---|
| Moisture Content: | 6.2 | Surcharge Kg: | 4.20 | Sample Top | 14 | Sample Top | 61.0 |
| Bulk Density Mg/m3: | 2.20 | Soaking Time hrs | 96 | Sample Bottom | 14 | Sample Bottom | 47.8 |
| Dry Density Mg/m3: | 2.07 | Swelling mm: | 0.12 | Remarks : See Summary of Soil Descriptions. | | | |
| Percentage retained on 20mm BS test sieve: | | | 3 | | | | |
| Compaction Conditions | | Vibro | | | | | |

UKAS TESTING 4043

PSL Professional Soils Laboratory

**Wansford to Sutton Dualling Supplementary GI**

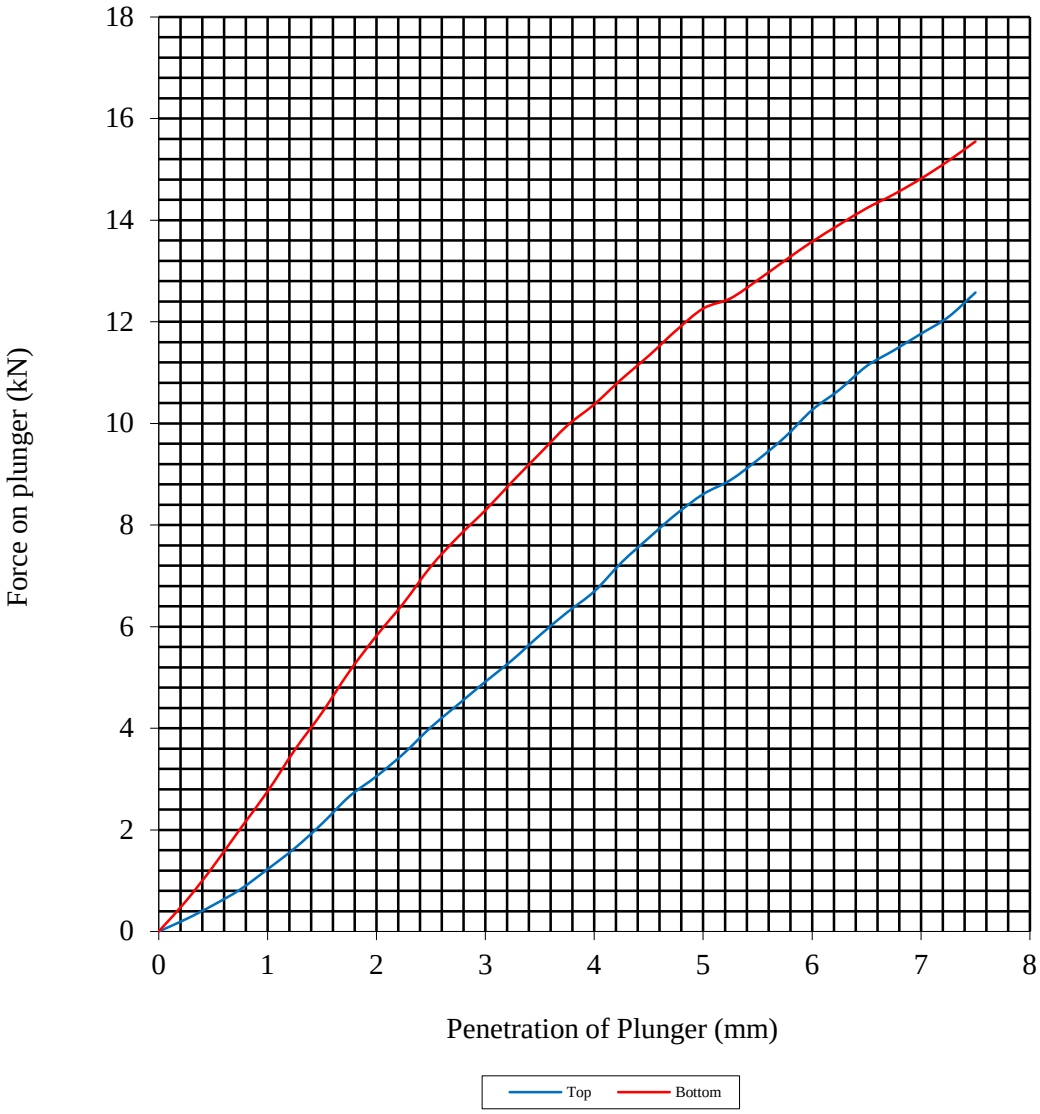
**Contract No: PSL22/3650**

**Client Ref: GT0386**

# CALIFORNIA BEARING RATIO TEST

**BS 1377 : Part 4 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP158** | **Top Depth (m):** | **1.00** |
| **Sample Number:** | **5** | **Base Depth (m):** | **1.30** |
| **Sample Type:** | **B** | | |




| Initial Sample Conditions | | Sample Preparation | | Final Moisture Content % | | C.B.R. Value % | |
|---|---|---|---|---|---|---|---|
| Moisture Content: | 10 | Surcharge Kg: | 4.20 | Sample Top | 11 | Sample Top | 43.0 |
| Bulk Density Mg/m3: | 2.27 | Soaking Time hrs | 96 | Sample Bottom | 11 | Sample Bottom | 61.3 |
| Dry Density Mg/m3: | 2.06 | Swelling mm: | 0.28 | Remarks : See Summary of Soil Descriptions. | | | |
| Percentage retained on 20mm BS test sieve: | | | 6 | | | | |
| Compaction Conditions | | Vibro | | | | | |

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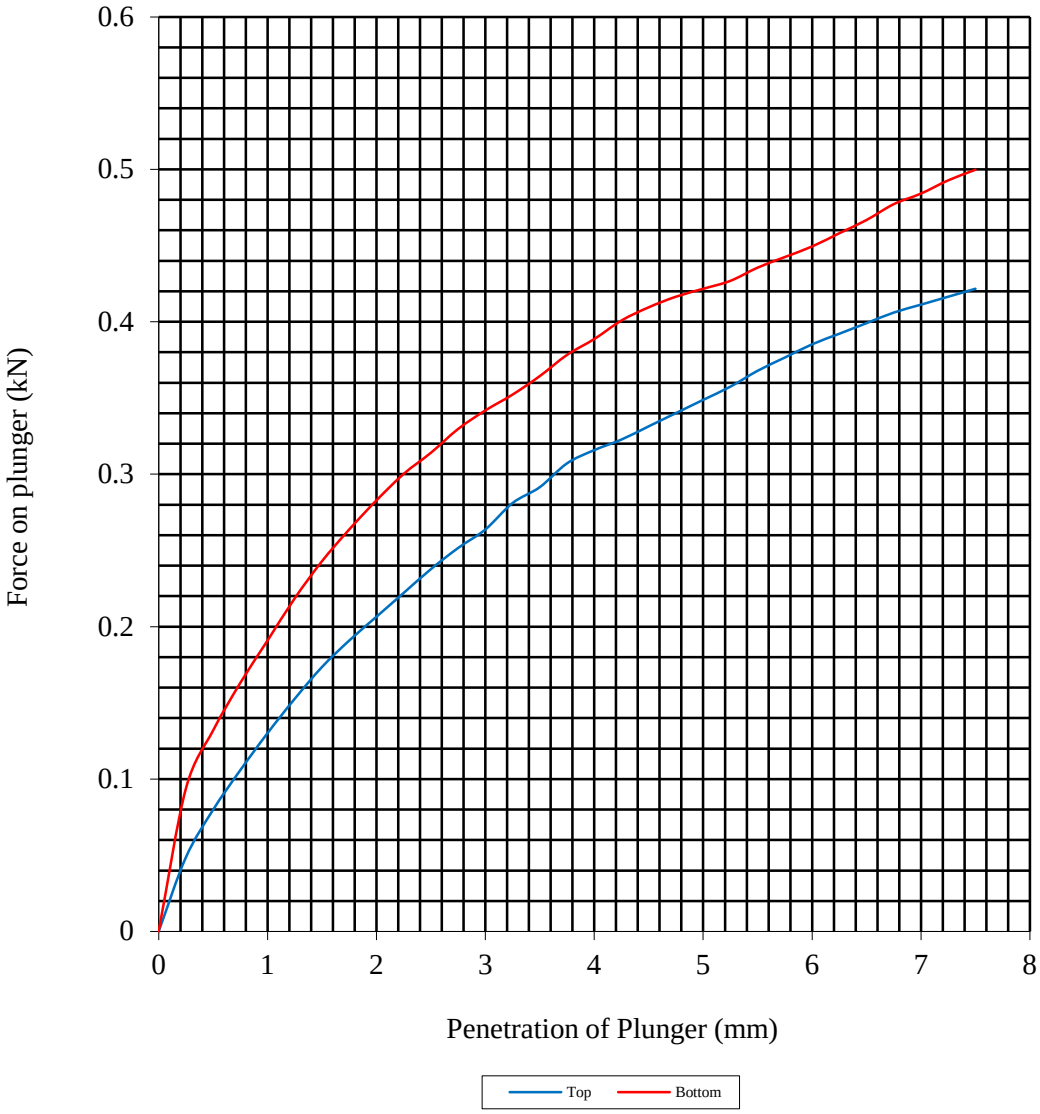
**Contract No: PSL22/3650**

**Client Ref: GT0386**

# CALIFORNIA BEARING RATIO TEST

**BS 1377 : Part 4 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP159** | **Top Depth (m):** | **1.00** |
| **Sample Number:** | **5** | **Base Depth (m):** | **1.30** |
| **Sample Type:** | **B** | | |




| Initial Sample Conditions | | Sample Preparation | | Final Moisture Content % | | C.B.R. Value % | |
|---|---|---|---|---|---|---|---|
| Moisture Content: | 25 | Surcharge Kg: | 4.20 | Sample Top | 27 | Sample Top | 1.8 |
| Bulk Density Mg/m3: | 1.99 | Soaking Time hrs | 96 | Sample Bottom | 27 | Sample Bottom | 2.4 |
| Dry Density Mg/m3: | 1.59 | Swelling mm: | 0.12 | Remarks : See Summary of Soil Descriptions. | | | |
| Percentage retained on 20mm BS test sieve: | | | 0 | | | | |
| Compaction Conditions | | 2.5kg | | | | | |

UKAS TESTING 4043

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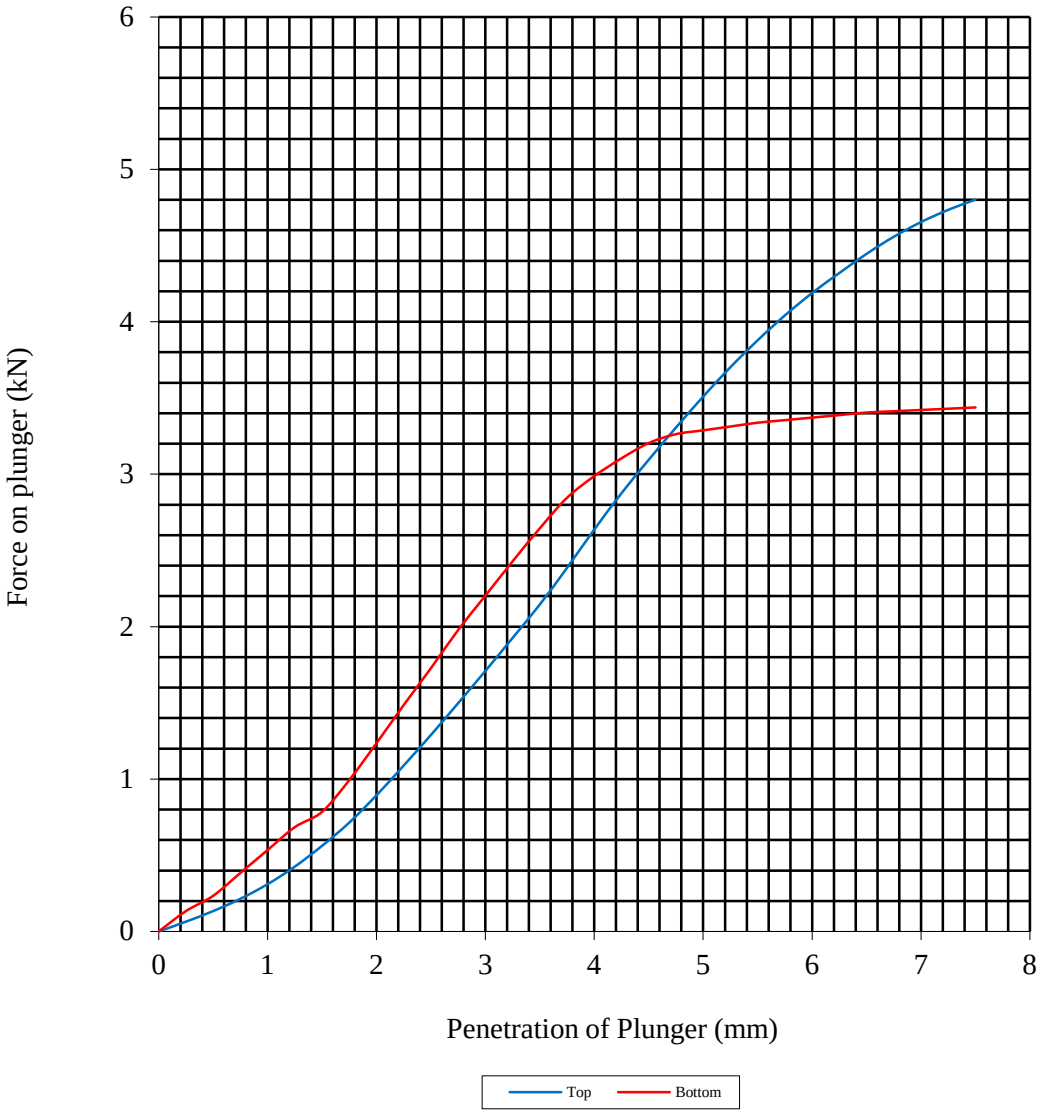
**Contract No:** PSL22/3650

**Client Ref:** GT0386

# CALIFORNIA BEARING RATIO TEST

**BS 1377 : Part 4 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH116** | **Top Depth (m):** | **3.50** |
| **Sample Number:** | **6** | **Base Depth (m):** | **4.00** |
| **Sample Type:** | **B** | | |




| Initial Sample Conditions | | Sample Preparation | | Final Moisture Content % | | C.B.R. Value % | |
|---|---|---|---|---|---|---|---|
| Moisture Content: | 19 | Surcharge Kg: | 4.20 | Sample Top | 27 | Sample Top | 17.5 |
| Bulk Density Mg/m3: | 1.91 | Soaking Time hrs | 96 | Sample Bottom | 27 | Sample Bottom | 16.4 |
| Dry Density Mg/m3: | 1.61 | Swelling mm: | 0.15 | Remarks : See Summary of Soil Descriptions. | | | |
| Percentage retained on 20mm BS test sieve: | | | 0 | | | | |
| Compaction Conditions | | 2.5kg | | | | | |

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**Client Ref: GT0386**

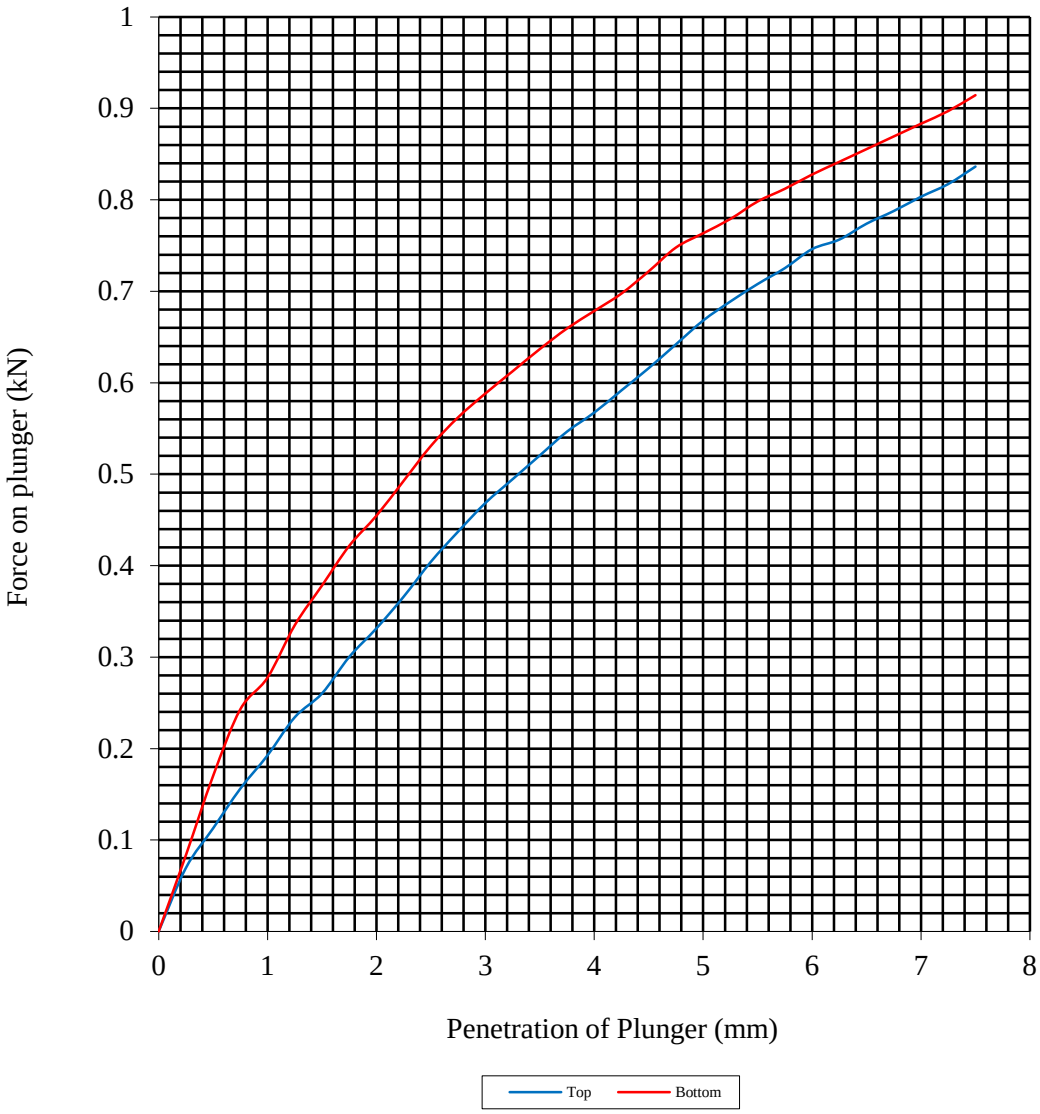
# CALIFORNIA BEARING RATIO TEST

**BS 1377 : Part 4 : 1990**

**Hole Number:** BH126 **Top Depth (m):** 0.50

**Sample Number:** 2 **Base Depth (m):**

**Sample Type:** B




| Initial Sample Conditions | | Sample Preparation | | Final Moisture Content % | | C.B.R. Value % | |
|---|---|---|---|---|---|---|---|
| Moisture Content: | 21 | Surcharge Kg: | 4.20 | Sample Top | 22 | Sample Top | 3.3 |
| Bulk Density Mg/m3: | 2.08 | Soaking Time hrs | 96 | Sample Bottom | 22 | Sample Bottom | 4.0 |
| Dry Density Mg/m3: | 1.72 | Swelling mm: | 0.84 | Remarks : See Summary of Soil Descriptions. | | | |
| Percentage retained on 20mm BS test sieve: | | | 3 | | | | |
| Compaction Conditions | | 2.5kg | | | | | |

UKAS TESTING 4043

PSL Professional Soils Laboratory

**Wansford to Sutton Dualling Supplementary GI**

**Contract No:** PSL22/3650

**Client Ref:** GT0386

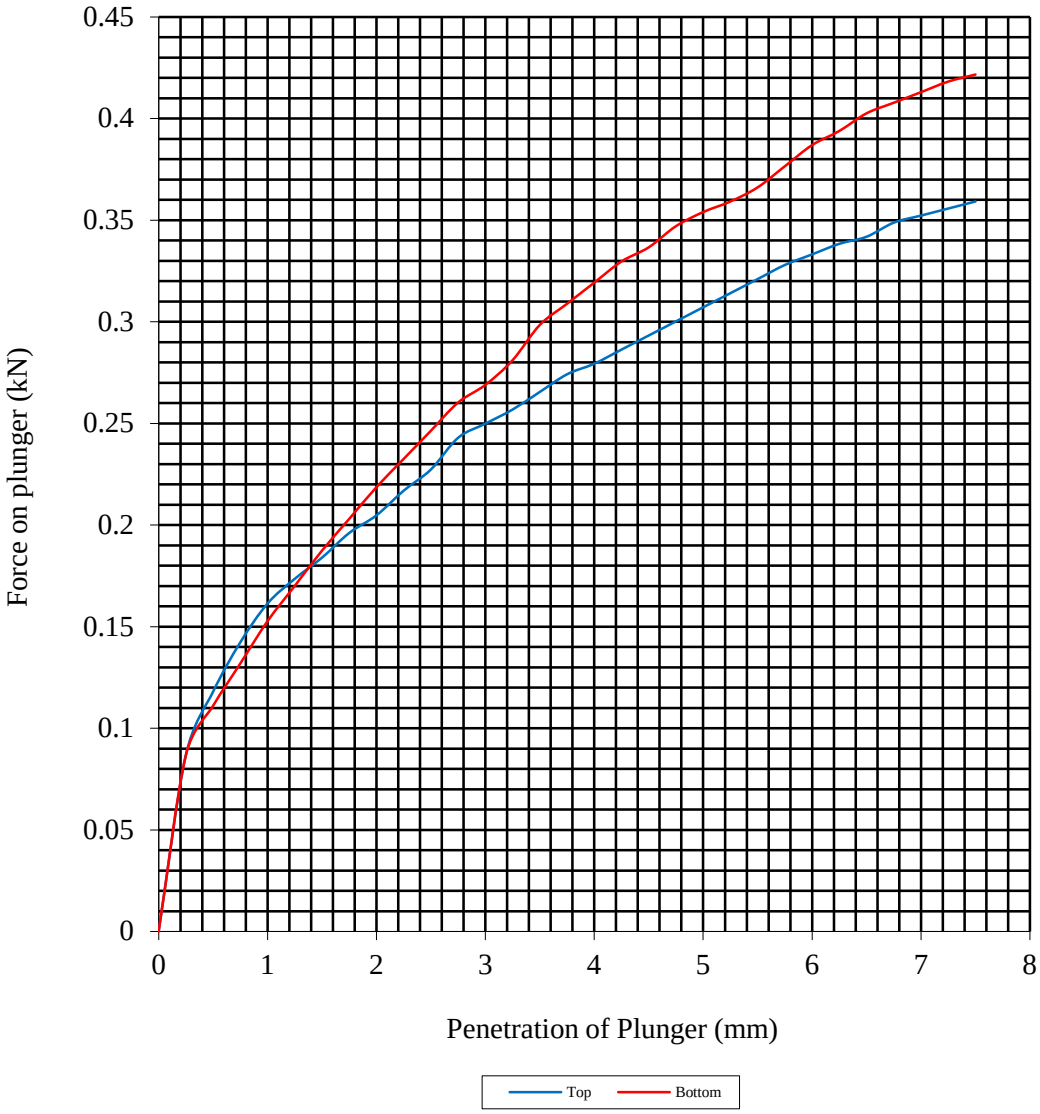
# CALIFORNIA BEARING RATIO TEST

**BS 1377 : Part 4 : 1990**

**Hole Number:** BH126 **Top Depth (m):** 1.20

**Sample Number:** 3 **Base Depth (m):**

**Sample Type:** B




| Initial Sample Conditions | | Sample Preparation | | Final Moisture Content % | | C.B.R. Value % | |
|---|---|---|---|---|---|---|---|
| Moisture Content: | 22 | Surcharge Kg: | 4.20 | Sample Top | 24 | Sample Top | 1.7 |
| Bulk Density Mg/m3: | 2.02 | Soaking Time hrs | 96 | Sample Bottom | 24 | Sample Bottom | 1.9 |
| Dry Density Mg/m3: | 1.65 | Swelling mm: | 0.44 | Remarks : See Summary of Soil Descriptions. | | | |
| Percentage retained on 20mm BS test sieve: | | | 2 | | | | |
| Compaction Conditions | | 2.5kg | | | | | |

UKAS TESTING 4043

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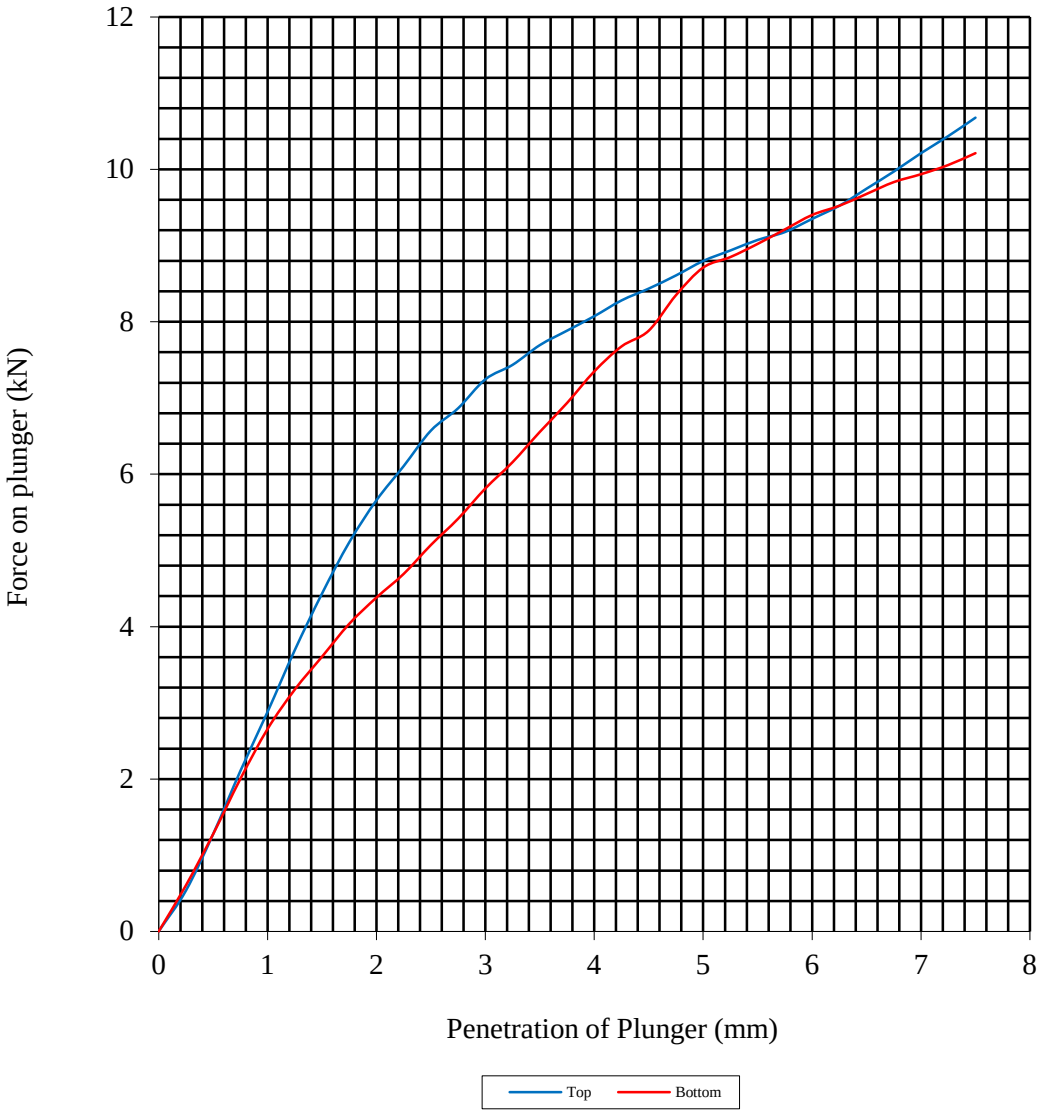
**Contract No:** PSL22/3650

**Client Ref:** GT0386

# CALIFORNIA BEARING RATIO TEST

**BS 1377 : Part 4 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH127** | **Top Depth (m):** | **1.30** |
| **Sample Number:** | **101** | **Base Depth (m):** | **1.85** |
| **Sample Type:** | **B** | | |




| Initial Sample Conditions | | Sample Preparation | | Final Moisture Content % | | C.B.R. Value % | |
|---|---|---|---|---|---|---|---|
| Moisture Content: | 7.4 | Surcharge Kg: | 4.20 | Sample Top | 11 | Sample Top | 49.8 |
| Bulk Density Mg/m3: | 2.07 | Soaking Time hrs | 96 | Sample Bottom | 11 | Sample Bottom | 43.6 |
| Dry Density Mg/m3: | 1.93 | Swelling mm: | 0.10 | Remarks : See Summary of Soil Descriptions. | | | |
| Percentage retained on 20mm BS test sieve: | | | 6 | | | | |
| Compaction Conditions | | 2.5kg | | | | | |

UKAS TESTING 4043

PSL Professional Soils Laboratory

**Wansford to Sutton Dualling Supplementary GI**

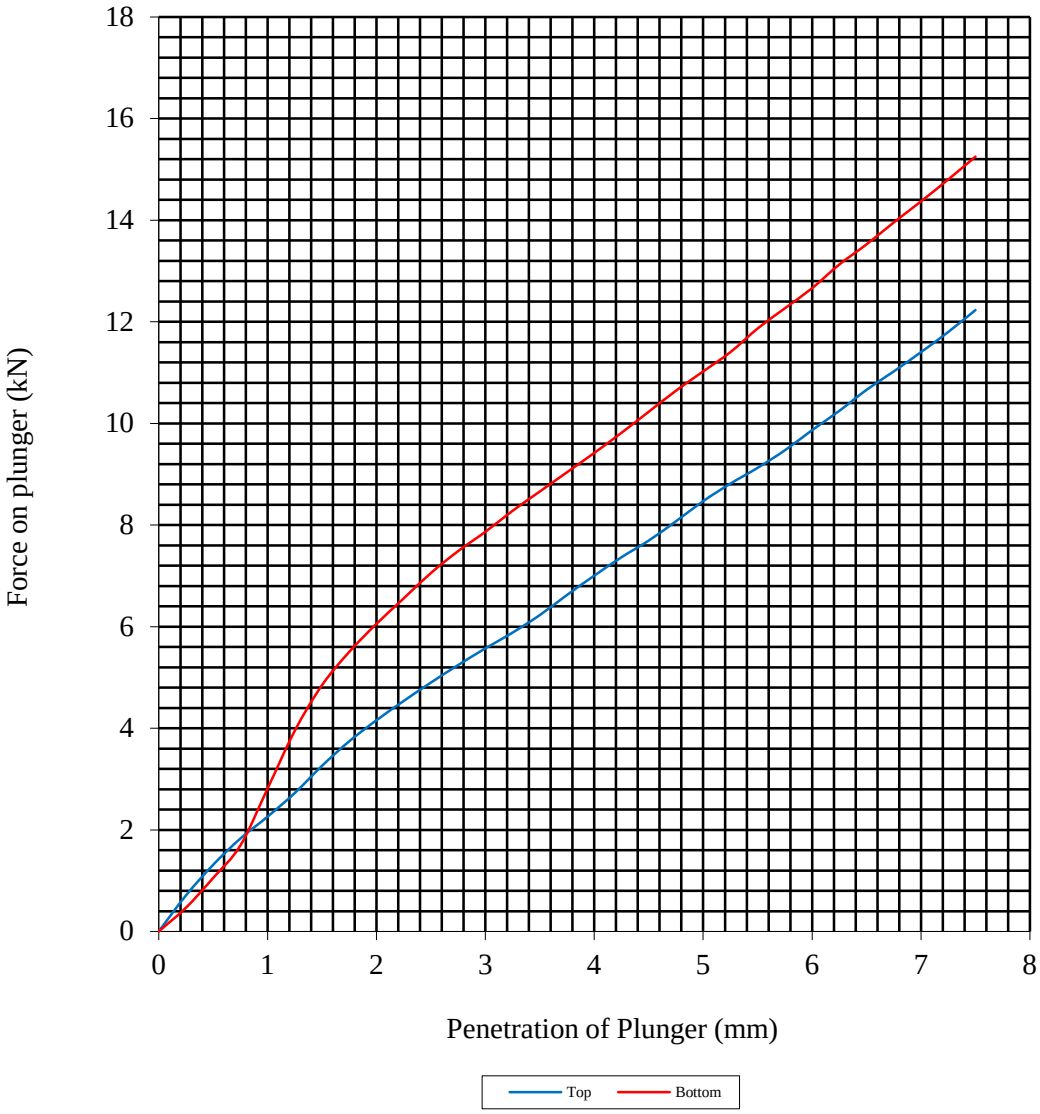
**Contract No: PSL22/3650**

**Client Ref: GT0386**

# CALIFORNIA BEARING RATIO TEST

**BS 1377 : Part 4 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH123** | **Top Depth (m):** | **2.00** |
| **Sample Number:** | **102** | **Base Depth (m):** | **3.00** |
| **Sample Type:** | **B** | | |




| Initial Sample Conditions | | Sample Preparation | | Final Moisture Content % | | C.B.R. Value % | |
|---|---|---|---|---|---|---|---|
| Moisture Content: | 5.7 | Surcharge Kg: | 4.20 | Sample Top | 11 | Sample Top | 42.3 |
| Bulk Density Mg/m3: | 2.05 | Soaking Time hrs | 96 | Sample Bottom | 11 | Sample Bottom | 55.1 |
| Dry Density Mg/m3: | 1.94 | Swelling mm: | 1.14 | Remarks : See Summary of Soil Descriptions. | | | |
| Percentage retained on 20mm BS test sieve: | | | 0 | | | | |
| Compaction Conditions | | Vibro | | | | | |

UKAS TESTING 4043

PSL Professional Soils Laboratory

**Wansford to Sutton Dualling Supplementary GI**

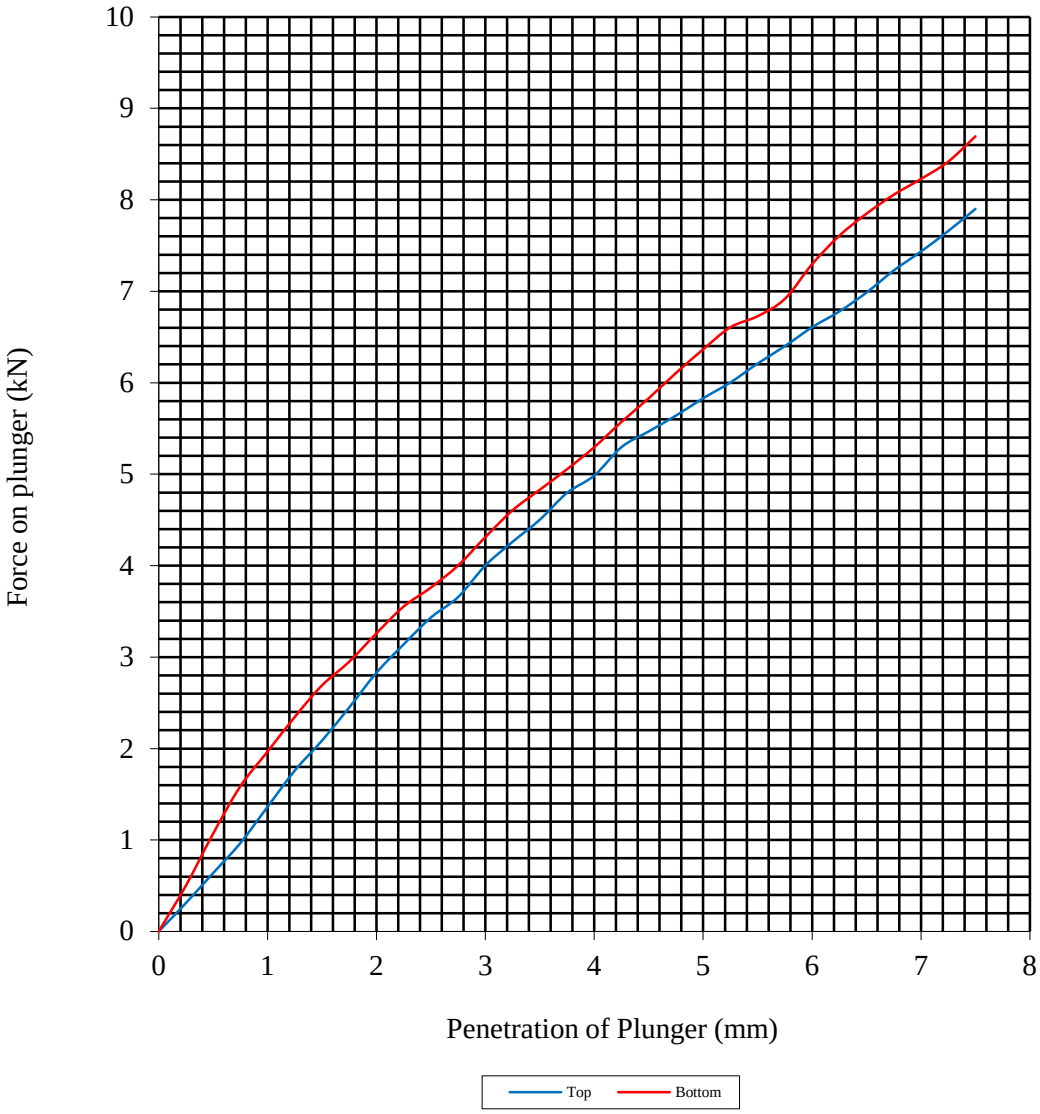
**Contract No:** PSL22/3650

**Client Ref:** GT0386

# CALIFORNIA BEARING RATIO TEST

**BS 1377 : Part 4 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH124** | **Top Depth (m):** | **1.00** |
| **Sample Number:** | **102** | **Base Depth (m):** | **1.30** |
| **Sample Type:** | **B** | | |




| Initial Sample Conditions | | Sample Preparation | | Final Moisture Content % | | C.B.R. Value % | |
|---|---|---|---|---|---|---|---|
| Moisture Content: | 8.2 | Surcharge Kg: | 4.20 | Sample Top | 12 | Sample Top | 29.2 |
| Bulk Density Mg/m3: | 2.19 | Soaking Time hrs | 96 | Sample Bottom | 11 | Sample Bottom | 31.8 |
| Dry Density Mg/m3: | 2.02 | Swelling mm: | 1.28 | Remarks : See Summary of Soil Descriptions. | | | |
| Percentage retained on 20mm BS test sieve: | | | 13 | | | | |
| Compaction Conditions | | 2.5kg | | | | | |

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**Wansford to Sutton Dualling Supplementary GI**

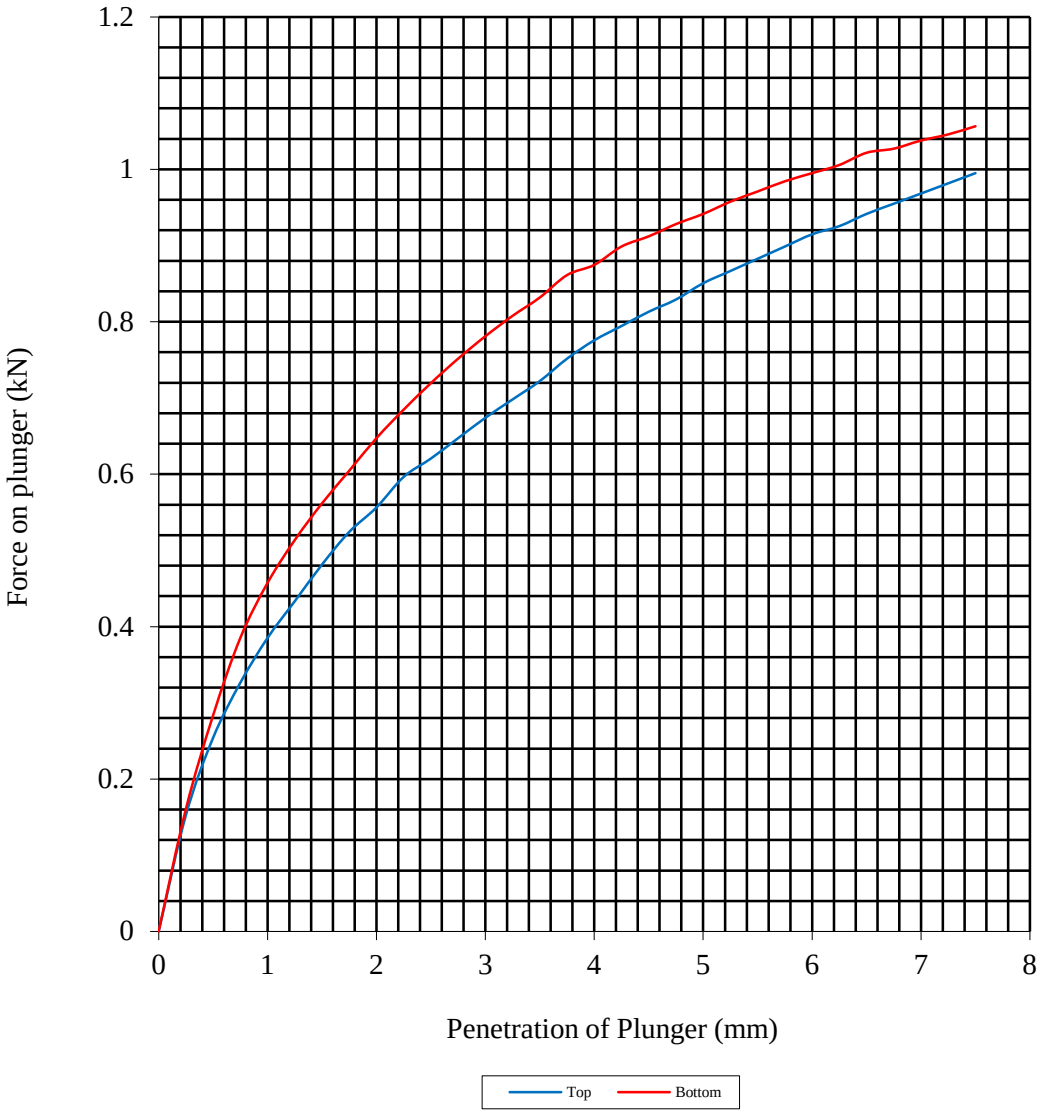
**Contract No: PSL22/3650**

**Client Ref: GT0386**

# CALIFORNIA BEARING RATIO TEST

**BS 1377 : Part 4 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH124** | **Top Depth (m):** | **1.50** |
| **Sample Number:** | **103** | **Base Depth (m):** | **1.80** |
| **Sample Type:** | **CS** | | |




| Initial Sample Conditions | | Sample Preparation | | Final Moisture Content % | | C.B.R. Value % | |
|---|---|---|---|---|---|---|---|
| Moisture Content: | 22 | Surcharge Kg: | 4.20 | Sample Top | 25 | Sample Top | 4.7 |
| Bulk Density Mg/m3: | 2.01 | Soaking Time hrs | 96 | Sample Bottom | 24 | Sample Bottom | 5.5 |
| Dry Density Mg/m3: | 1.65 | Swelling mm: | 1.10 | Remarks : See Summary of Soil Descriptions. | | | |
| Percentage retained on 20mm BS test sieve: | | | 0 | | | | |
| Compaction Conditions | | 2.5kg | | | | | |

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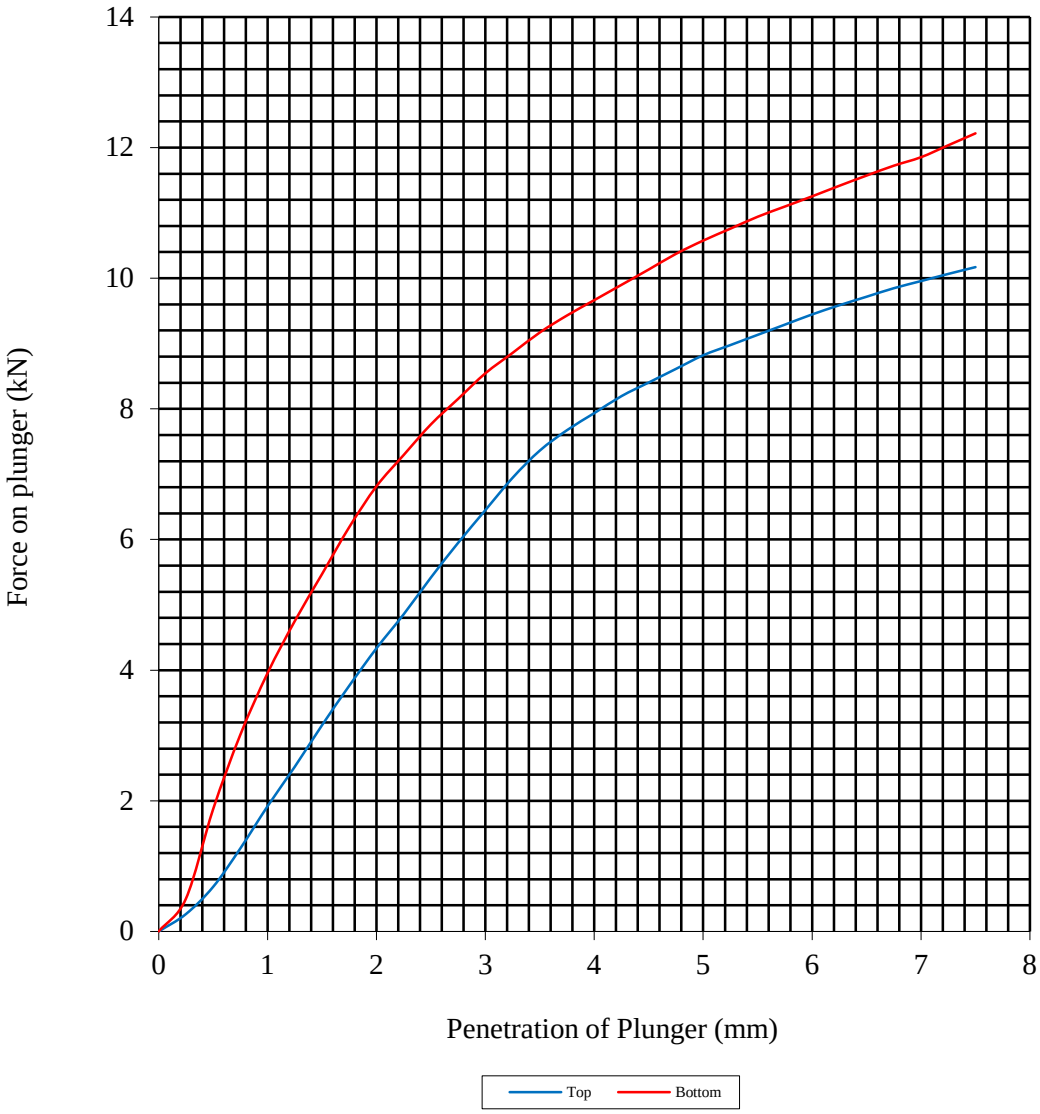
**Client Ref: GT0386**

# CALIFORNIA BEARING RATIO TEST

**BS 1377 : Part 4 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH122** | **Top Depth (m):** | **2.60** |
| **Sample Number:** | **104** | **Base Depth (m):** | **2.80** |
| **Sample Type:** | **B** | | |




| Initial Sample Conditions | | Sample Preparation | | Final Moisture Content % | | C.B.R. Value % | |
|---|---|---|---|---|---|---|---|
| Moisture Content: | 7.3 | Surcharge Kg: | 4.20 | Sample Top | 13 | Sample Top | 44.1 |
| Bulk Density Mg/m3: | 2.23 | Soaking Time hrs | 96 | Sample Bottom | 13 | Sample Bottom | 58.8 |
| Dry Density Mg/m3: | 2.08 | Swelling mm: | 1.36 | Remarks : See Summary of Soil Descriptions. | | | |
| Percentage retained on 20mm BS test sieve: | | | 9 | | | | |
| Compaction Conditions | | Vibro | | | | | |

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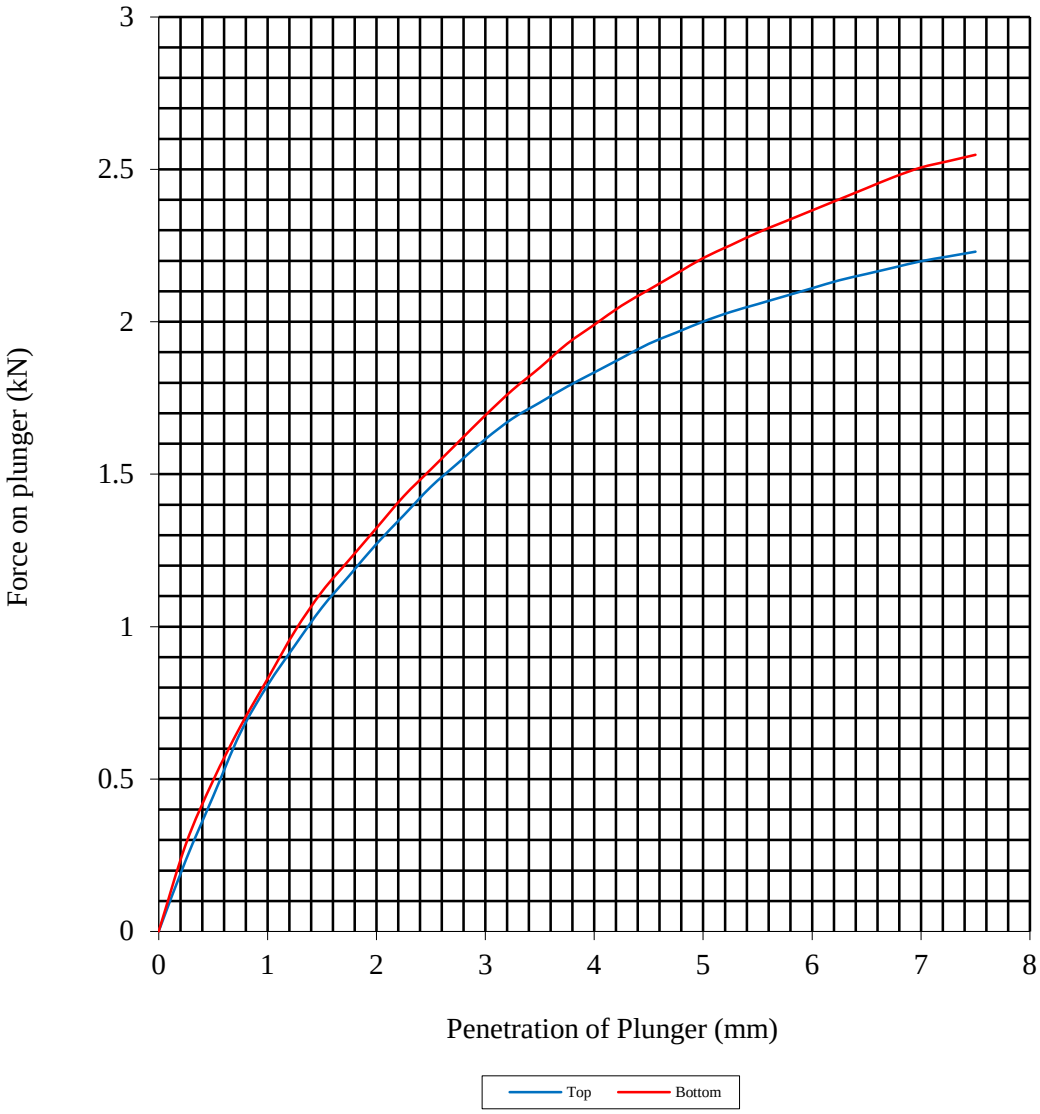
# CALIFORNIA BEARING RATIO TEST

**BS 1377 : Part 4 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH125** | **Top Depth (m):** | **1.55** |
| **Sample Number:** | **101** | **Base Depth (m):** | **1.75** |
| **Sample Type:** | **CS** | | |




| Initial Sample Conditions | | Sample Preparation | | Final Moisture Content % | | C.B.R. Value % | |
|---|---|---|---|---|---|---|---|
| Moisture Content: | 12 | Surcharge Kg: | 4.20 | Sample Top | 16 | Sample Top | 11.1 |
| Bulk Density Mg/m3: | 2.23 | Soaking Time hrs | 96 | Sample Bottom | 15 | Sample Bottom | 11.5 |
| Dry Density Mg/m3: | 2.00 | Swelling mm: | 1.42 | Remarks : See Summary of Soil Descriptions. | | | |
| Percentage retained on 20mm BS test sieve: | | | 0 | | | | |
| Compaction Conditions | | Vibro | | | | | |

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**Wansford to Sutton Dualling Supplementary GI**

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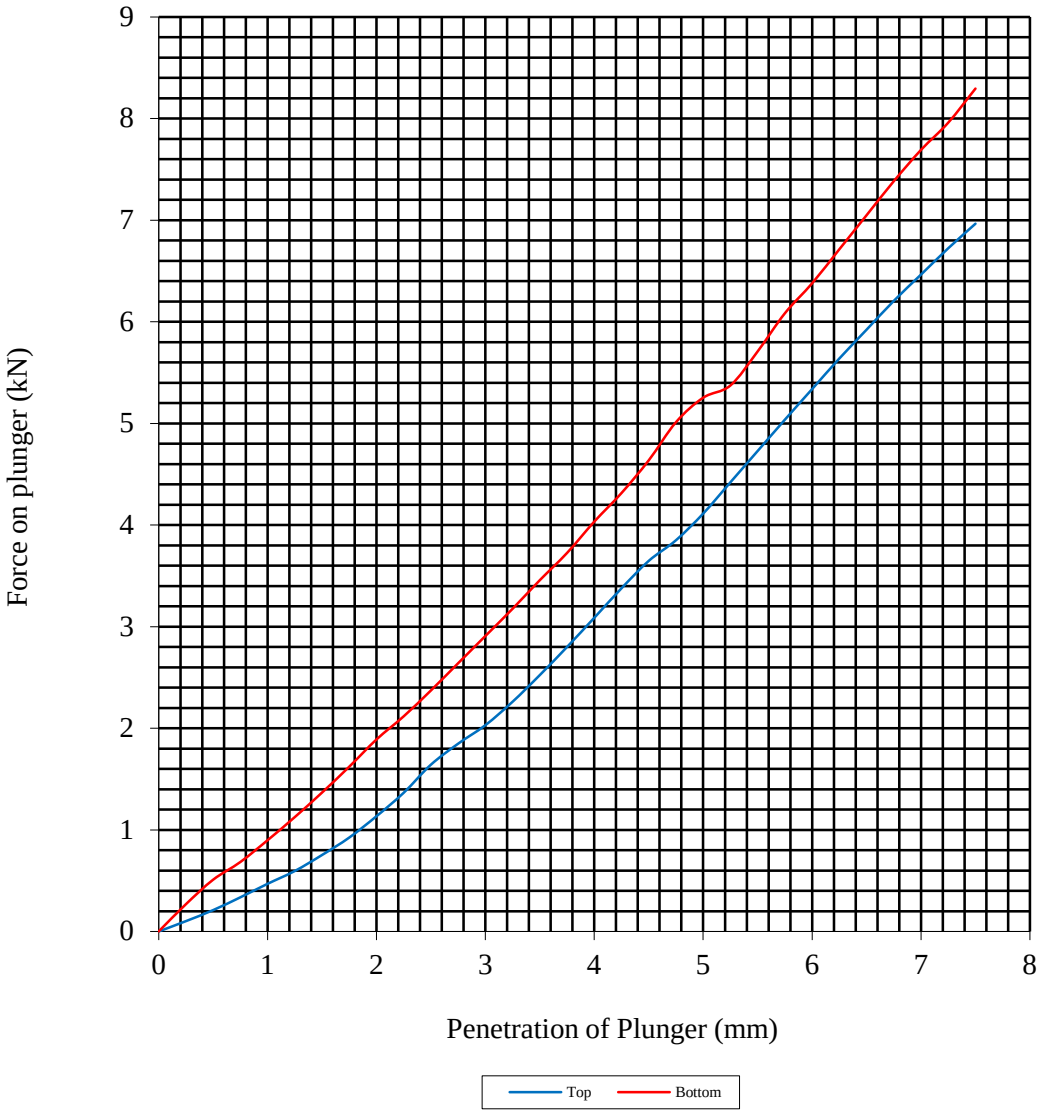
**Client Ref: GT0386**

# CALIFORNIA BEARING RATIO TEST

**BS 1377 : Part 4 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP141** | **Top Depth (m):** | **0.30** |
| **Sample Number:** | **4** | **Base Depth (m):** | **0.50** |
| **Sample Type:** | **B** | | |




| Initial Sample Conditions | | Sample Preparation | | Final Moisture Content % | | C.B.R. Value % | |
|---|---|---|---|---|---|---|---|
| Moisture Content: | 11 | Surcharge Kg: | 4.00 | Sample Top | 11 | Sample Top | 20.6 |
| Bulk Density Mg/m3: | 2.27 | Soaking Time hrs | 0 | Sample Bottom | 11 | Sample Bottom | 26.3 |
| Dry Density Mg/m3: | 2.05 | Swelling mm: | 0.00 | Remarks : See Summary of Soil Descriptions. | | | |
| Percentage retained on 20mm BS test sieve: | | | 18 | | | | |
| Compaction Conditions | | 2.5kg | | | | | |

UKAS TESTING 4043

PSL Professional Soils Laboratory

**Wansford to Sutton Dualling Supplementary GI**

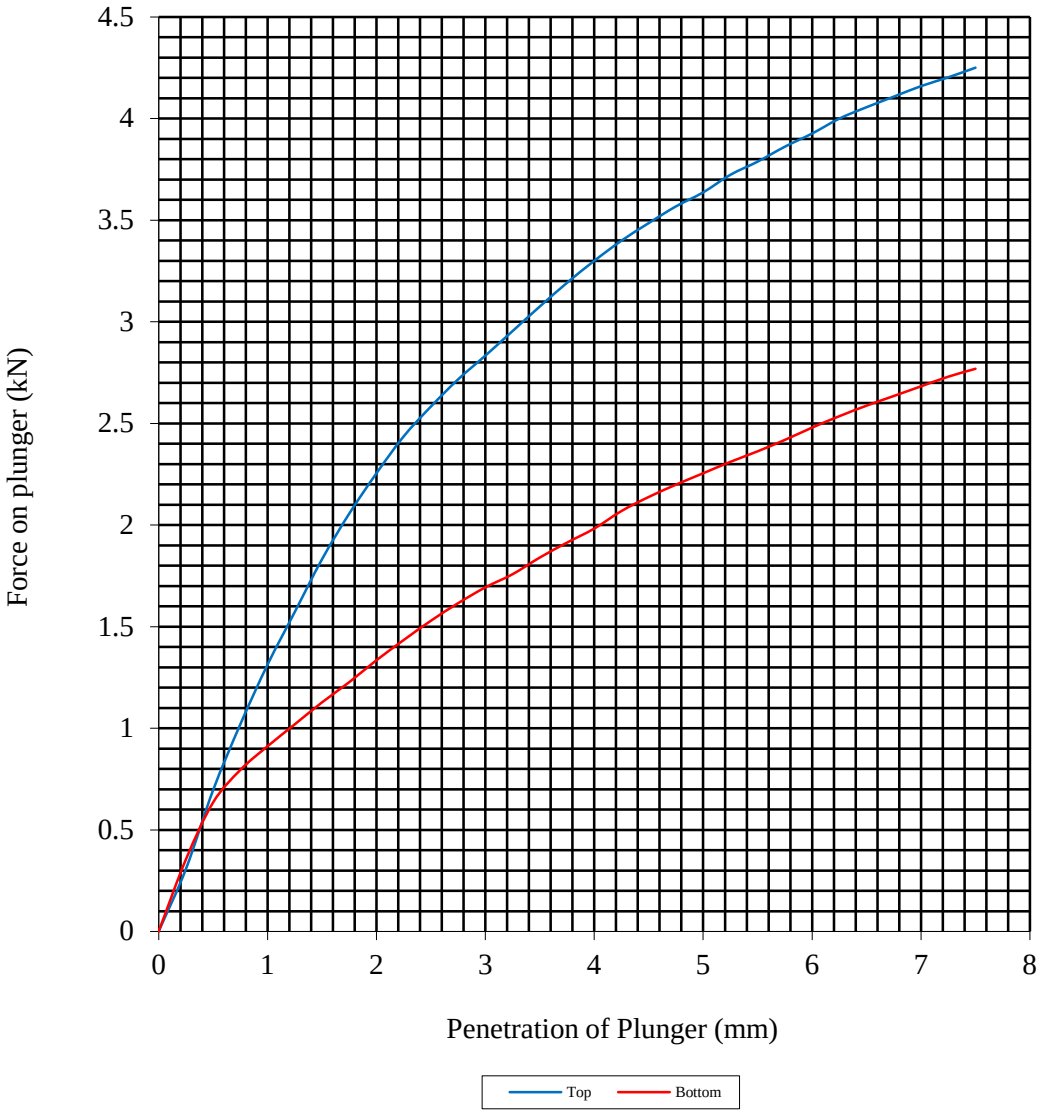
**Contract No:** PSL22/3825

**Client Ref:** GT0386

# CALIFORNIA BEARING RATIO TEST

**BS 1377 : Part 4 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP141** | **Top Depth (m):** | **0.50** |
| **Sample Number:** | **7** | **Base Depth (m):** | **0.70** |
| **Sample Type:** | **B** | | |




| Initial Sample Conditions | | Sample Preparation | | Final Moisture Content % | | C.B.R. Value % | |
|---|---|---|---|---|---|---|---|
| Moisture Content: | 12 | Surcharge Kg: | 4.00 | Sample Top | 12 | Sample Top | 19.6 |
| Bulk Density Mg/m3: | 2.06 | Soaking Time hrs | 0 | Sample Bottom | 12 | Sample Bottom | 11.6 |
| Dry Density Mg/m3: | 1.84 | Swelling mm: | 0.00 | Remarks : See Summary of Soil Descriptions. | | | |
| Percentage retained on 20mm BS test sieve: | | | 0 | | | | |
| Compaction Conditions | | 2.5kg | | | | | |

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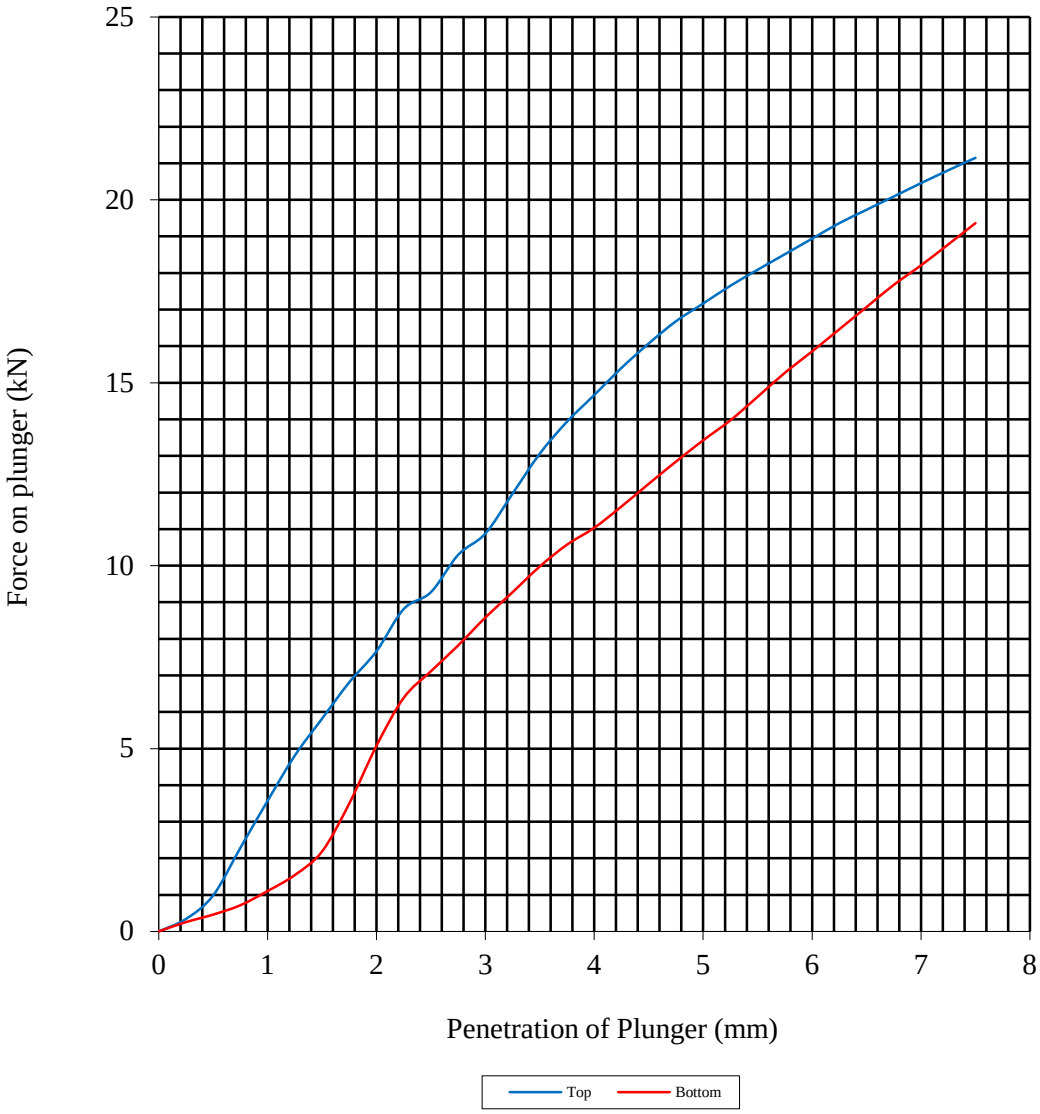
# CALIFORNIA BEARING RATIO TEST

**BS 1377 : Part 4 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP144** | **Top Depth (m):** | **0.40** |
| **Sample Number:** | **4** | **Base Depth (m):** | **0.50** |
| **Sample Type:** | **B** | | |




| Initial Sample Conditions | | Sample Preparation | | Final Moisture Content % | | C.B.R. Value % | |
|---|---|---|---|---|---|---|---|
| Moisture Content: | 7.8 | Surcharge Kg: | 4.00 | Sample Top | 10 | Sample Top | 85.8 |
| Bulk Density Mg/m3: | 2.31 | Soaking Time hrs | 96 | Sample Bottom | 9.7 | Sample Bottom | 67.1 |
| Dry Density Mg/m3: | 2.14 | Swelling mm: | 0.02 | Remarks : See Summary of Soil Descriptions. | | | |
| Percentage retained on 20mm BS test sieve: | | | 17 | | | | |
| Compaction Conditions | | Vibro | | | | | |

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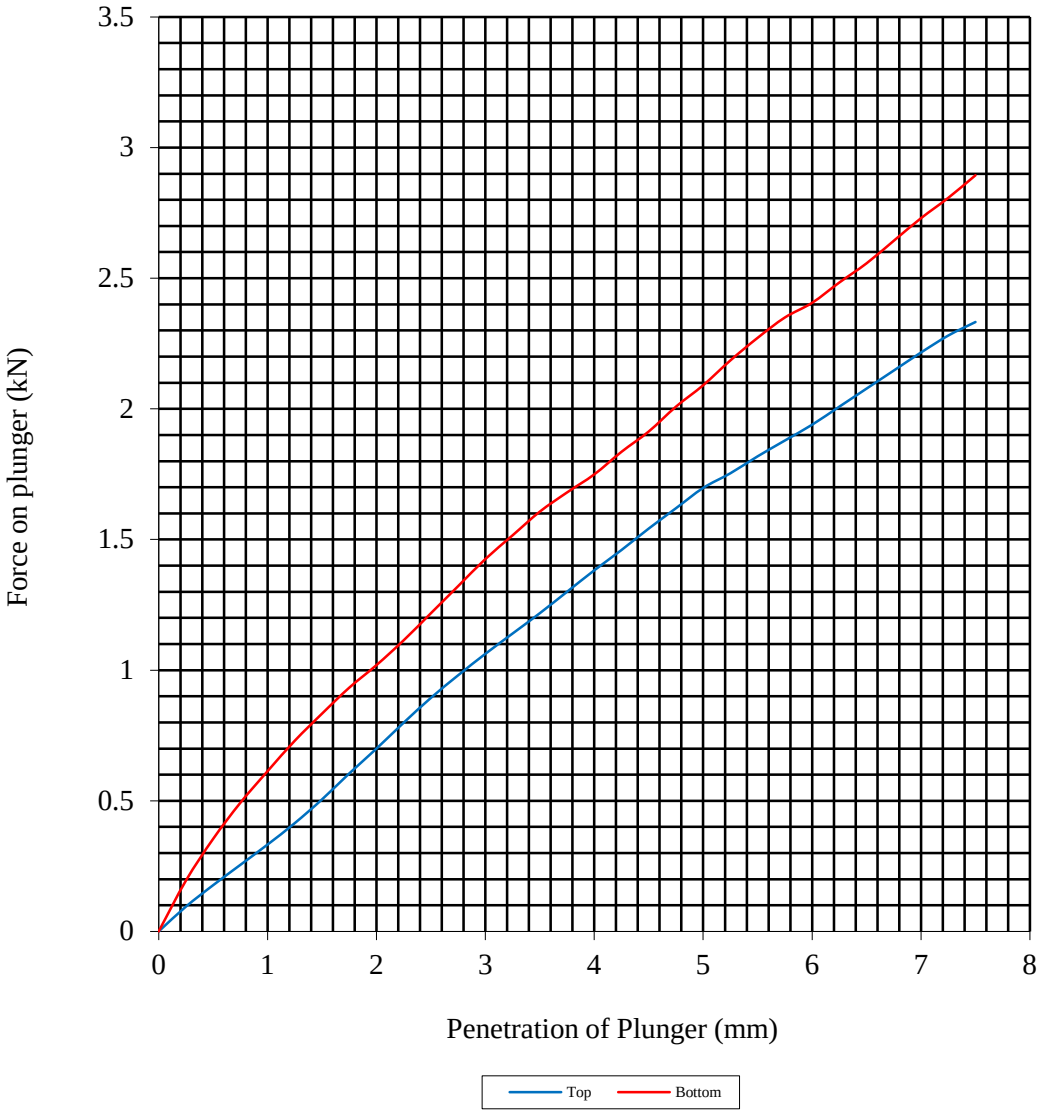
# CALIFORNIA BEARING RATIO TEST

**BS 1377 : Part 4 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP146** | **Top Depth (m):** | **0.40** |
| **Sample Number:** | **5** | **Base Depth (m):** | **0.70** |
| **Sample Type:** | **B** | | |




| Initial Sample Conditions | | Sample Preparation | | Final Moisture Content % | | C.B.R. Value % | |
|---|---|---|---|---|---|---|---|
| Moisture Content: | 11 | Surcharge Kg: | 4.00 | Sample Top | 15 | Sample Top | 8.5 |
| Bulk Density Mg/m3: | 2.11 | Soaking Time hrs | 96 | Sample Bottom | 15 | Sample Bottom | 10.5 |
| Dry Density Mg/m3: | 1.90 | Swelling mm: | 1.44 | Remarks : See Summary of Soil Descriptions. | | | |
| Percentage retained on 20mm BS test sieve: | | | 3 | | | | |
| Compaction Conditions | | 2.5kg | | | | | |

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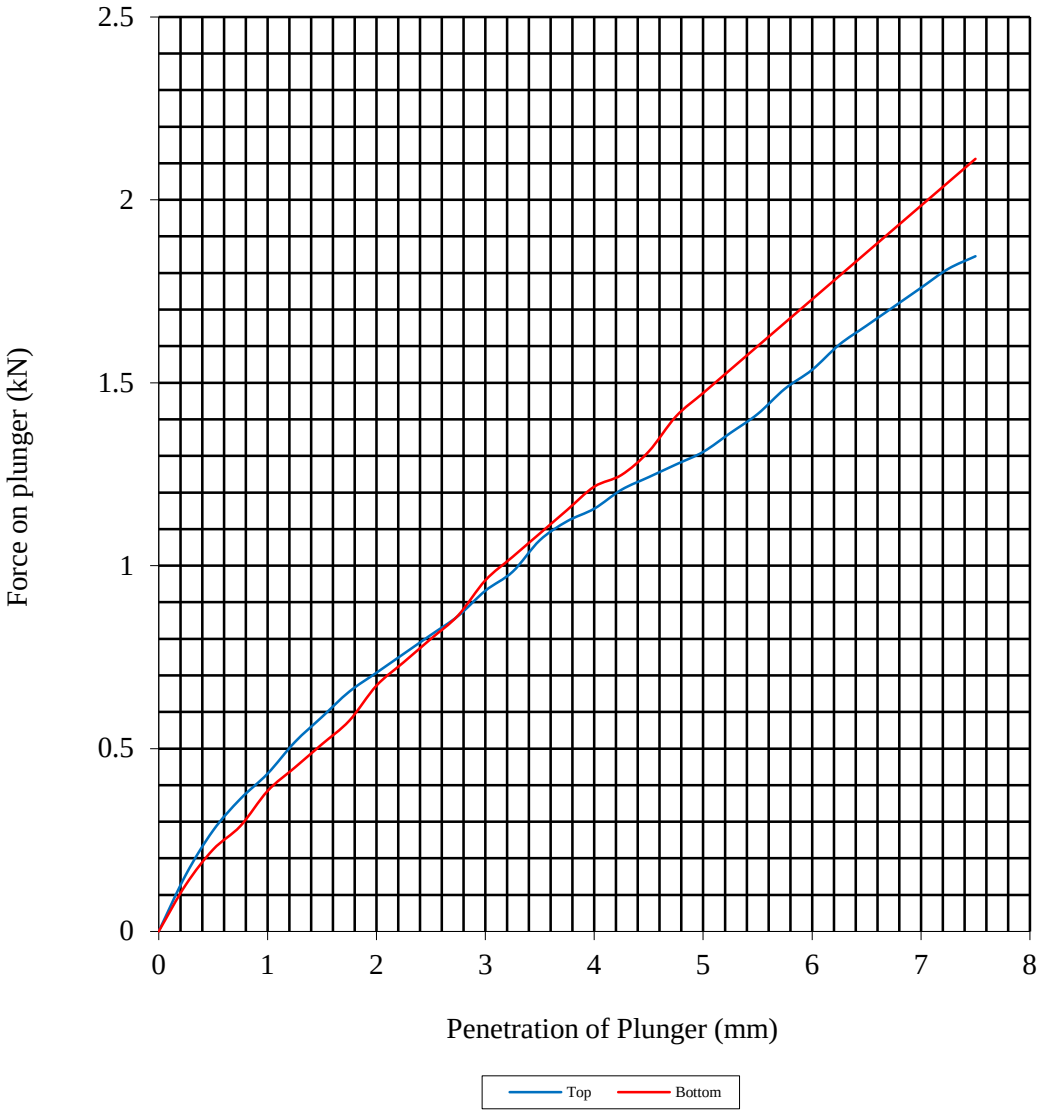
**Wansford to Sutton Dualling Supplementary GI**

| **Contract No:** |
|---|
| **PSL22/3825** |
| **Client Ref:** |
| **GT0386** |

# CALIFORNIA BEARING RATIO TEST

**BS 1377 : Part 4 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP146** | **Top Depth (m):** | **1.10** |
| **Sample Number:** | **7** | **Base Depth (m):** | **1.40** |
| **Sample Type:** | **B** | | |




| Initial Sample Conditions | | Sample Preparation | | Final Moisture Content % | | C.B.R. Value % | |
|---|---|---|---|---|---|---|---|
| Moisture Content: | 11 | Surcharge Kg: | 4.00 | Sample Top | 17 | Sample Top | 6.6 |
| Bulk Density Mg/m3: | 1.94 | Soaking Time hrs | 96 | Sample Bottom | 16 | Sample Bottom | 7.4 |
| Dry Density Mg/m3: | 1.75 | Swelling mm: | 2.28 | Remarks : See Summary of Soil Descriptions. | | | |
| Percentage retained on 20mm BS test sieve: | | | 0 | | | | |
| Compaction Conditions | | 2.5kg | | | | | |

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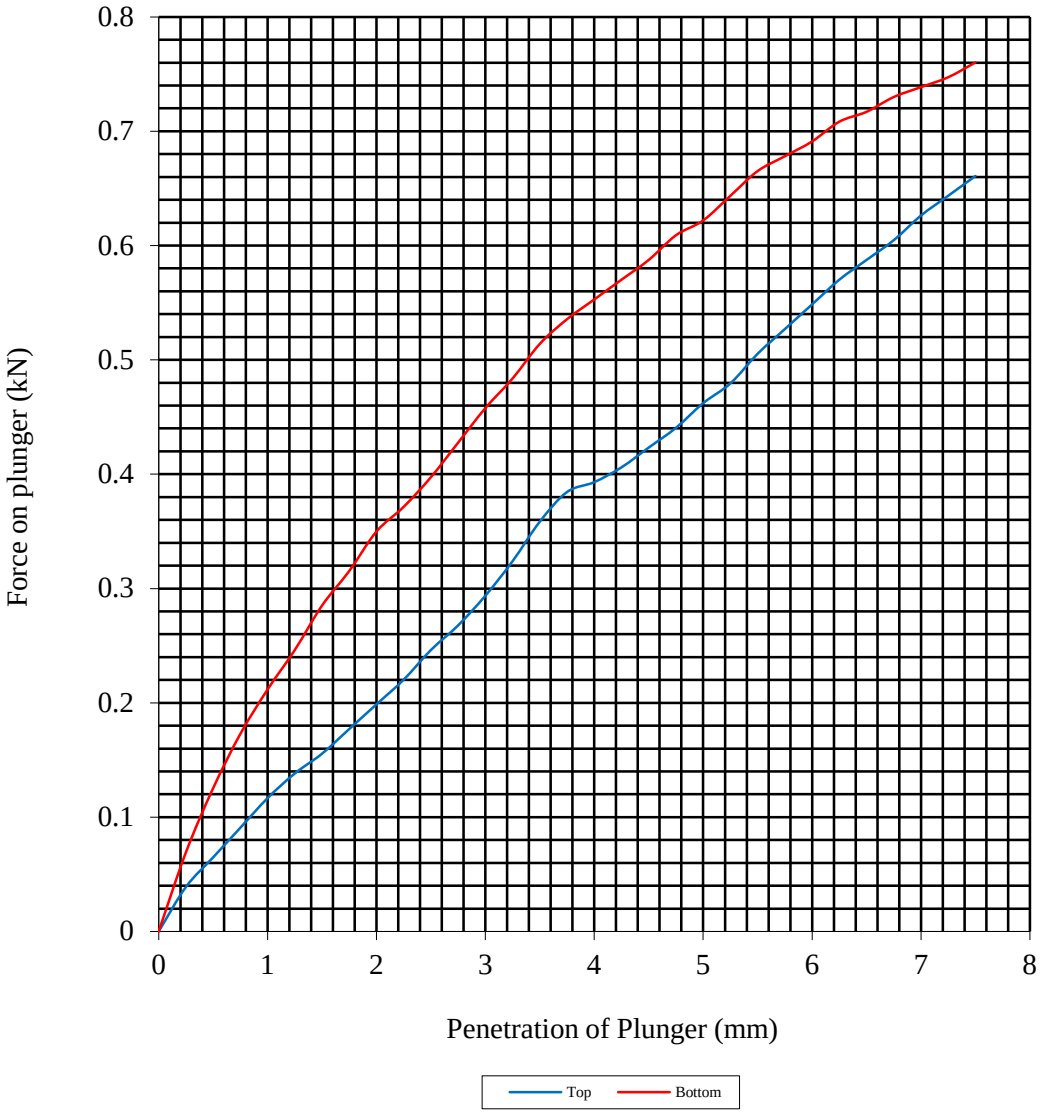
# CALIFORNIA BEARING RATIO TEST

**BS 1377 : Part 4 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP147** | **Top Depth (m):** | **0.40** |
| **Sample Number:** | **4** | **Base Depth (m):** | **0.50** |
| **Sample Type:** | **B** | | |




| Initial Sample Conditions | | Sample Preparation | | Final Moisture Content % | | C.B.R. Value % | |
|---|---|---|---|---|---|---|---|
| Moisture Content: | 17 | Surcharge Kg: | 4.00 | Sample Top | 20 | Sample Top | 2.3 |
| Bulk Density Mg/m3: | 2.13 | Soaking Time hrs | 96 | Sample Bottom | 19 | Sample Bottom | 3.1 |
| Dry Density Mg/m3: | 1.83 | Swelling mm: | 0.82 | Remarks : See Summary of Soil Descriptions. | | | |
| Percentage retained on 20mm BS test sieve: | | | 0 | | | | |
| Compaction Conditions | | 2.5kg | | | | | |

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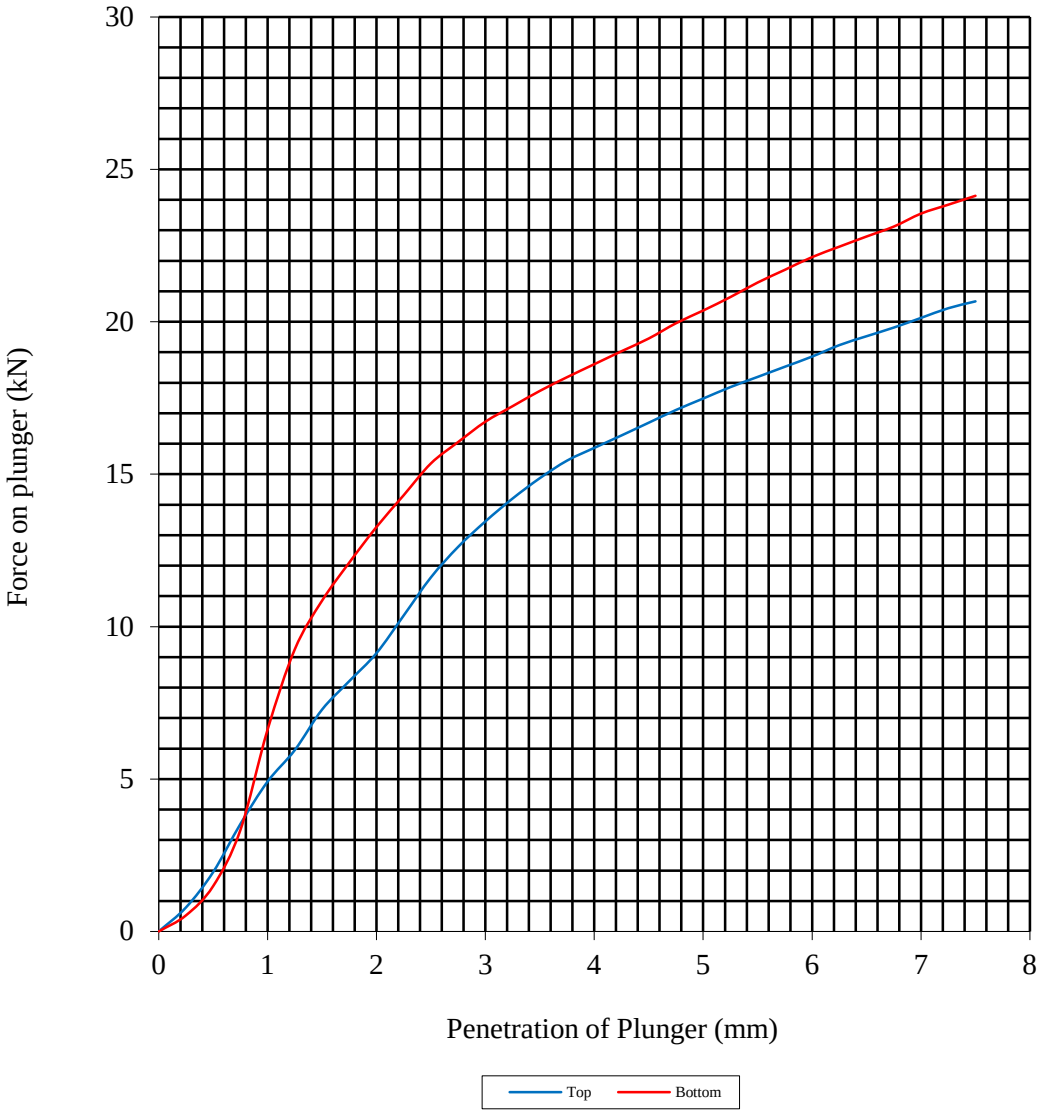
# CALIFORNIA BEARING RATIO TEST

**BS 1377 : Part 4 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP147** | **Top Depth (m):** | **0.60** |
| **Sample Number:** | **7** | **Base Depth (m):** | **0.80** |
| **Sample Type:** | **B** | | |




| Initial Sample Conditions | | Sample Preparation | | Final Moisture Content % | | C.B.R. Value % | |
|---|---|---|---|---|---|---|---|
| Moisture Content: | 4.7 | Surcharge Kg: | 4.00 | Sample Top | 8.2 | Sample Top | 88.0 |
| Bulk Density Mg/m3: | 2.11 | Soaking Time hrs | 96 | Sample Bottom | 8.1 | Sample Bottom | 116.3 |
| Dry Density Mg/m3: | 2.02 | Swelling mm: | 0.03 | Remarks : See Summary of Soil Descriptions. | | | |
| Percentage retained on 20mm BS test sieve: | | | 21 | | | | |
| Compaction Conditions | | Vibro | | | | | |

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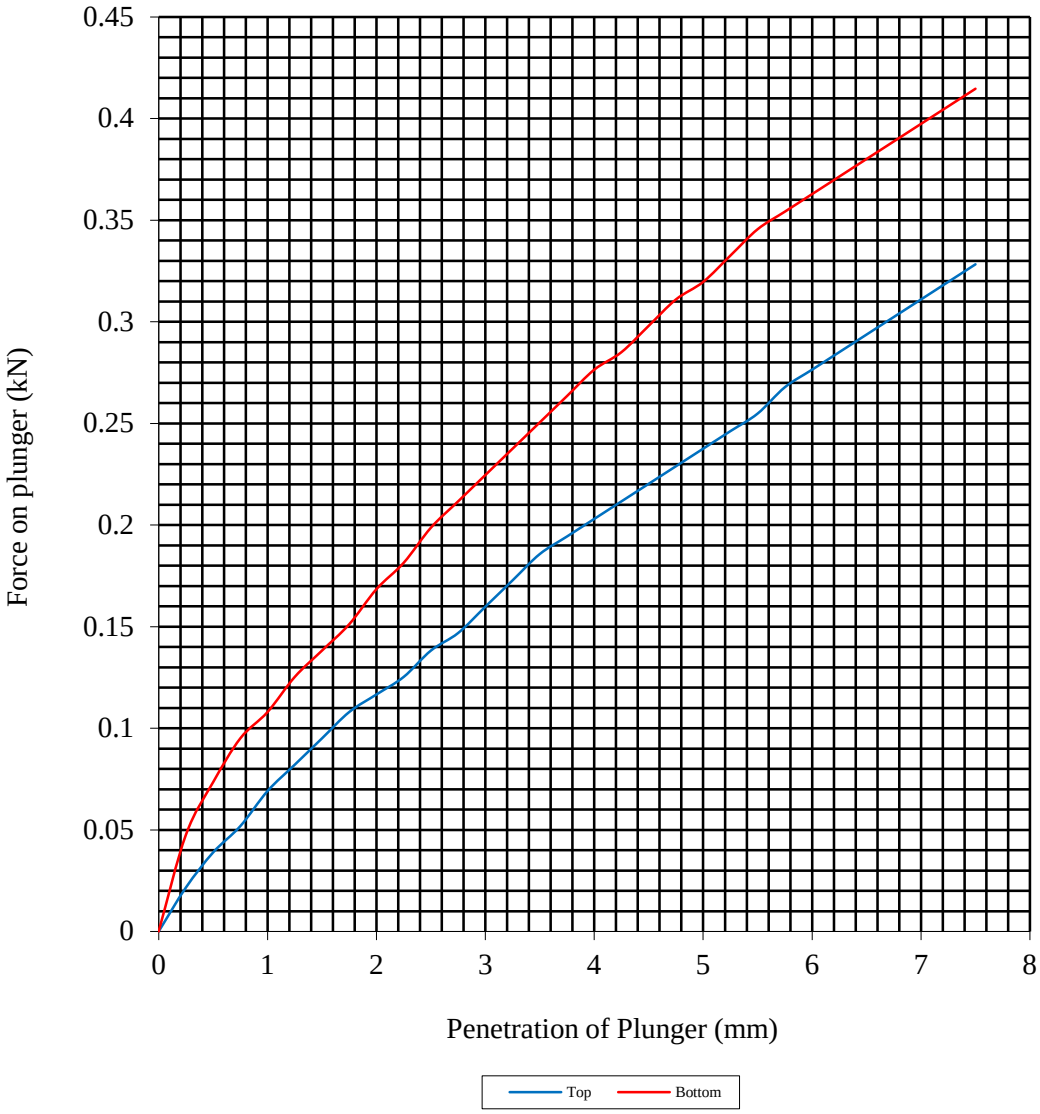
# CALIFORNIA BEARING RATIO TEST

**BS 1377 : Part 4 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP148** | **Top Depth (m):** | **1.00** |
| **Sample Number:** | **5** | **Base Depth (m):** | **1.30** |
| **Sample Type:** | **B** | | |




| Initial Sample Conditions | | Sample Preparation | | Final Moisture Content % | | C.B.R. Value % | |
|---|---|---|---|---|---|---|---|
| Moisture Content: | 17 | Surcharge Kg: | 4.00 | Sample Top | 19 | Sample Top | 1.2 |
| Bulk Density Mg/m3: | 2.11 | Soaking Time hrs | 96 | Sample Bottom | 19 | Sample Bottom | 1.6 |
| Dry Density Mg/m3: | 1.79 | Swelling mm: | 1.18 | Remarks : See Summary of Soil Descriptions. | | | |
| Percentage retained on 20mm BS test sieve: | | | 0 | | | | |
| Compaction Conditions | | 2.5kg | | | | | |

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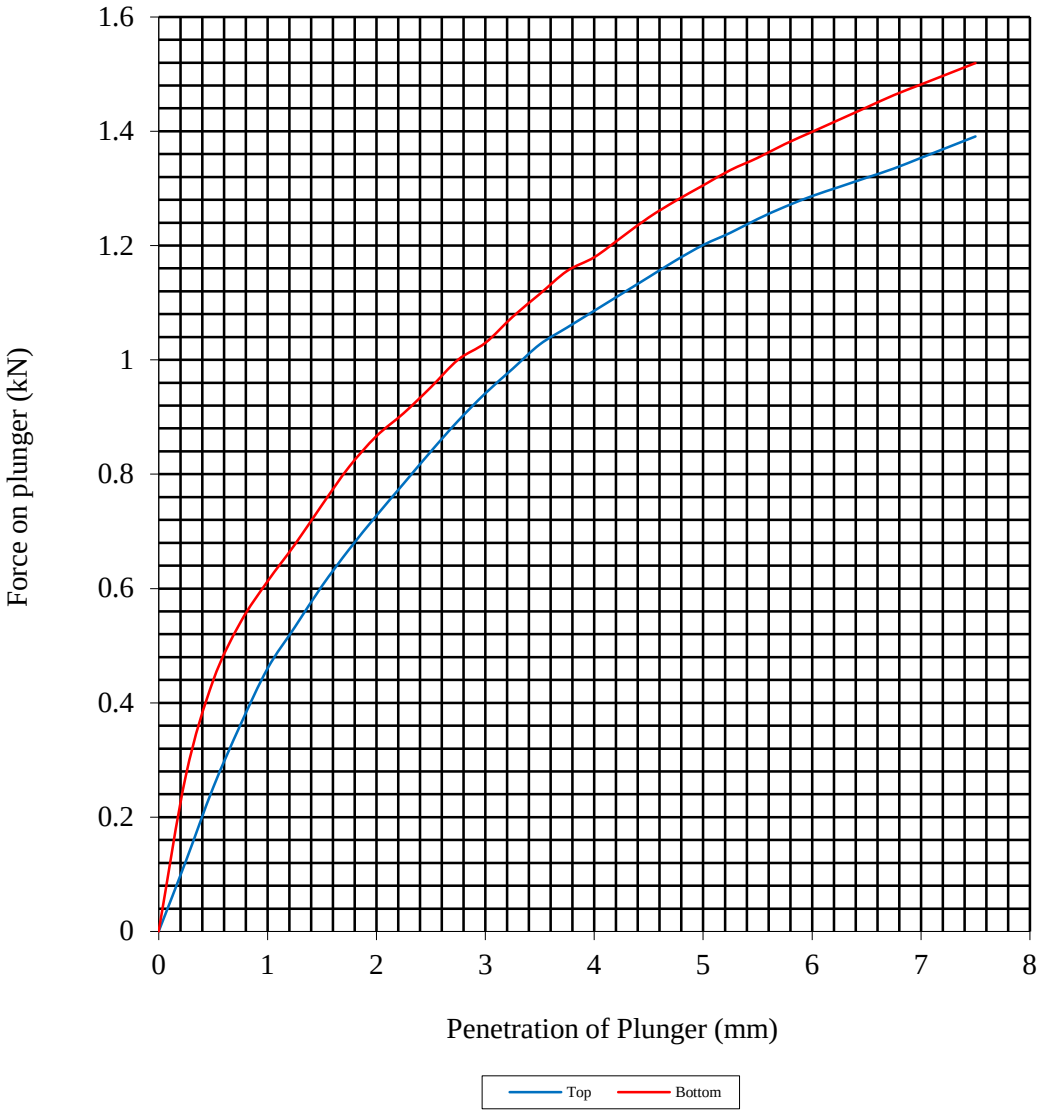
# CALIFORNIA BEARING RATIO TEST

**BS 1377 : Part 4 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP149** | **Top Depth (m):** | **1.00** |
| **Sample Number:** | **5** | **Base Depth (m):** | **1.30** |
| **Sample Type:** | **B** | | |




| Initial Sample Conditions | | Sample Preparation | | Final Moisture Content % | | C.B.R. Value % | |
|---|---|---|---|---|---|---|---|
| Moisture Content: | 16 | Surcharge Kg: | 4.00 | Sample Top | 18 | Sample Top | 6.4 |
| Bulk Density Mg/m3: | 2.07 | Soaking Time hrs | 96 | Sample Bottom | 18 | Sample Bottom | 7.2 |
| Dry Density Mg/m3: | 1.78 | Swelling mm: | 1.52 | Remarks : See Summary of Soil Descriptions. | | | |
| Percentage retained on 20mm BS test sieve: | | | 4 | | | | |
| Compaction Conditions | | 2.5kg | | | | | |

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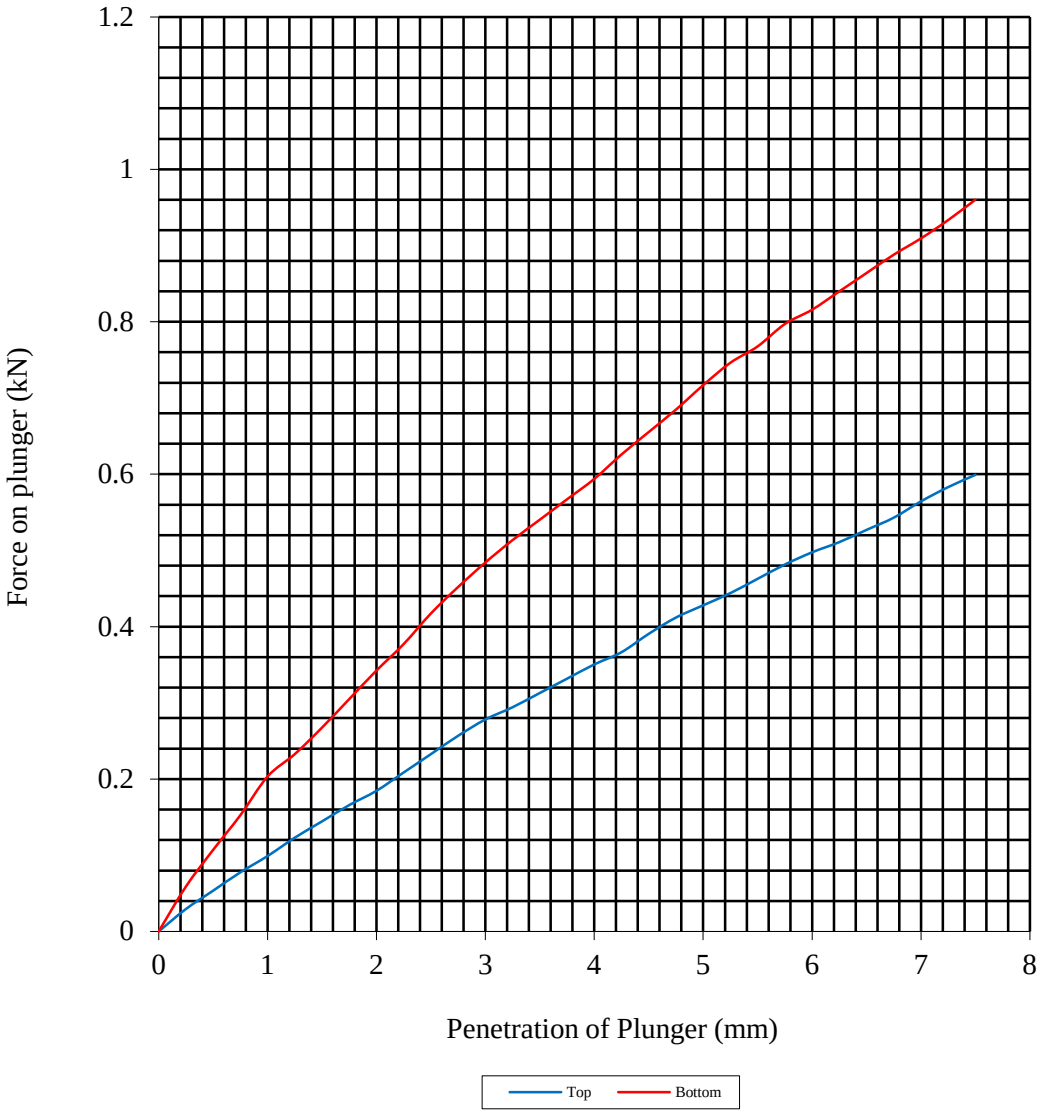
# CALIFORNIA BEARING RATIO TEST

**BS 1377 : Part 4 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP160** | **Top Depth (m):** | **1.00** |
| **Sample Number:** | **5** | **Base Depth (m):** | **1.30** |
| **Sample Type:** | **B** | | |




| Initial Sample Conditions | | Sample Preparation | | Final Moisture Content % | | C.B.R. Value % | |
|---|---|---|---|---|---|---|---|
| Moisture Content: | 17 | Surcharge Kg: | 4.00 | Sample Top | 18 | Sample Top | 2.1 |
| Bulk Density Mg/m3: | 2.11 | Soaking Time hrs | 96 | Sample Bottom | 18 | Sample Bottom | 3.6 |
| Dry Density Mg/m3: | 1.81 | Swelling mm: | 0.84 | Remarks : See Summary of Soil Descriptions. | | | |
| Percentage retained on 20mm BS test sieve: | | | 0 | | | | |
| Compaction Conditions | | 2.5kg | | | | | |

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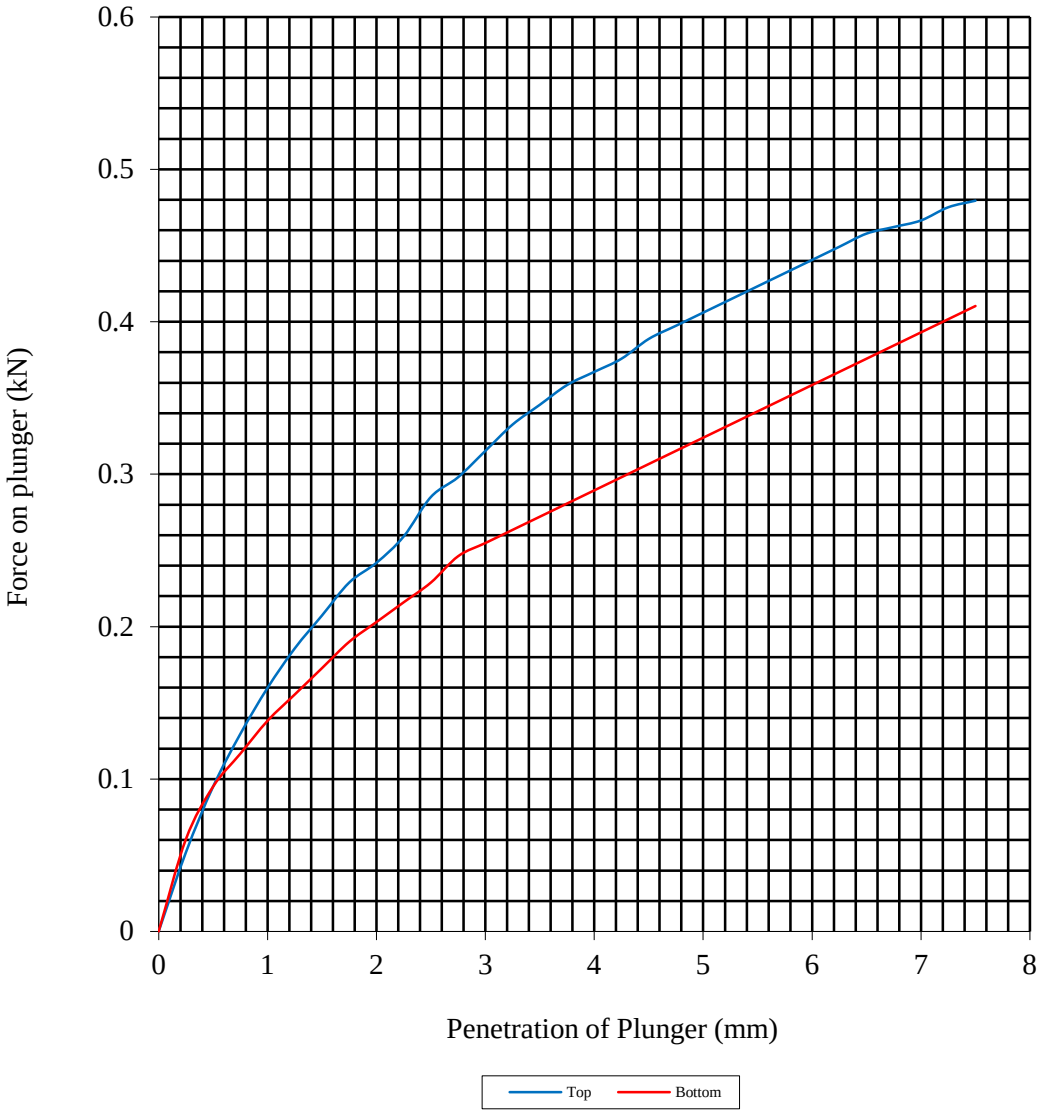
# CALIFORNIA BEARING RATIO TEST

**BS 1377 : Part 4 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP164** | **Top Depth (m):** | **0.30** |
| **Sample Number:** | **5** | **Base Depth (m):** | **0.60** |
| **Sample Type:** | **B** | | |



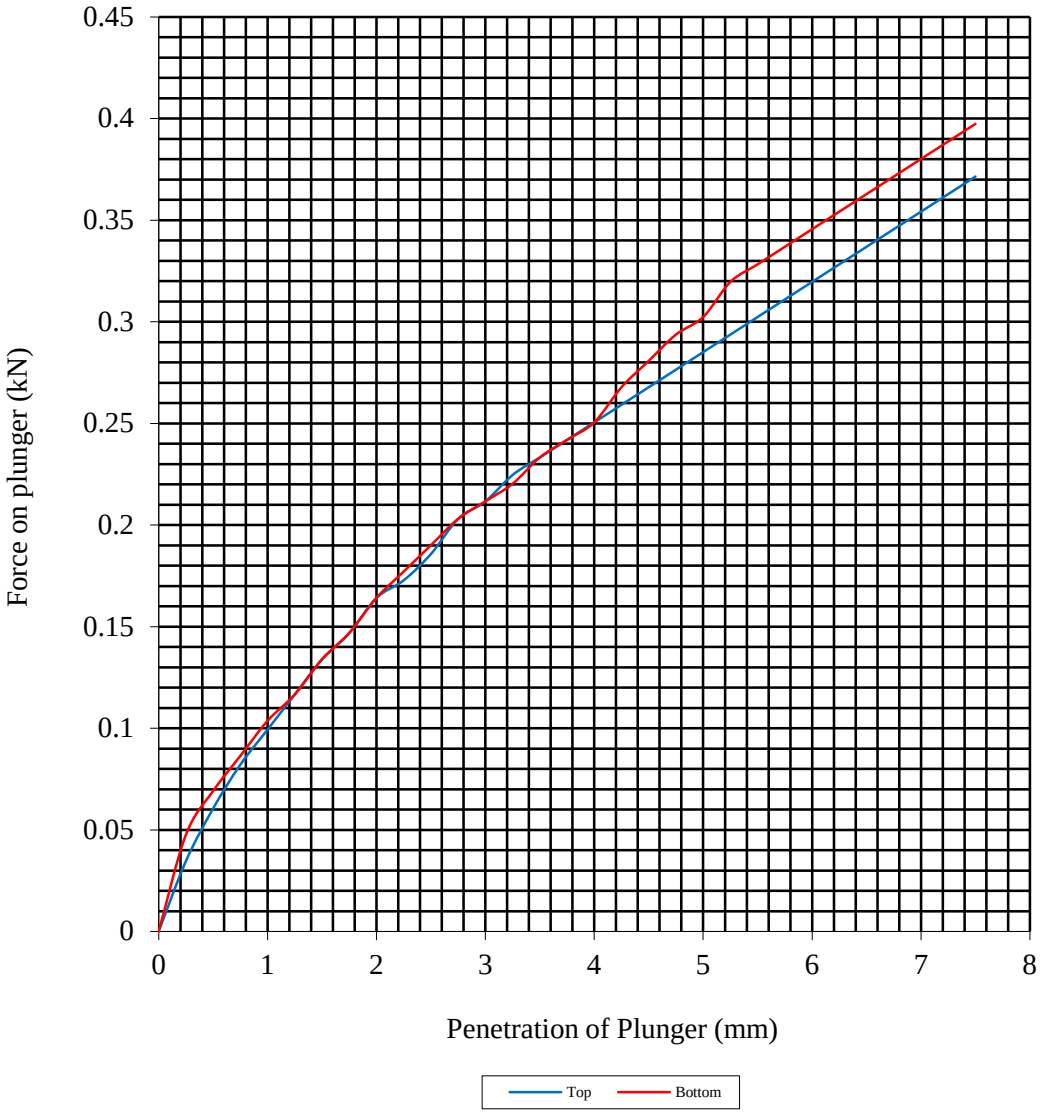

| Initial Sample Conditions | | Sample Preparation | | Final Moisture Content % | | C.B.R. Value % | |
|---|---|---|---|---|---|---|---|
| Moisture Content: | 24 | Surcharge Kg: | 4.00 | Sample Top | 26 | Sample Top | 2.2 |
| Bulk Density Mg/m3: | 2.00 | Soaking Time hrs | 96 | Sample Bottom | 25 | Sample Bottom | 1.7 |
| Dry Density Mg/m3: | 1.61 | Swelling mm: | 0.46 | Remarks : See Summary of Soil Descriptions. | | | |
| Percentage retained on 20mm BS test sieve: | | | 15 | | | | |
| Compaction Conditions | | 2.5kg | | | | | |

| | | | |
|---|---|---|---|
| UKAS TESTING 4043 | PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** | **Contract No: PSL22/3825** **Client Ref: GT0386** |

# CALIFORNIA BEARING RATIO TEST

**BS 1377 : Part 4 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP164** | **Top Depth (m):** | **1.00** |
| **Sample Number:** | **7** | **Base Depth (m):** | **1.30** |
| **Sample Type:** | **B** | | |




| Initial Sample Conditions | | Sample Preparation | | Final Moisture Content % | | C.B.R. Value % | |
|---|---|---|---|---|---|---|---|
| Moisture Content: | 25 | Surcharge Kg: | 4.00 | Sample Top | 27 | Sample Top | 1.4 |
| Bulk Density Mg/m3: | 1.98 | Soaking Time hrs | 96 | Sample Bottom | 27 | Sample Bottom | 1.5 |
| Dry Density Mg/m3: | 1.58 | Swelling mm: | 0.46 | Remarks : See Summary of Soil Descriptions. | | | |
| Percentage retained on 20mm BS test sieve: | | | 4 | | | | |
| Compaction Conditions | | 2.5kg | | | | | |

UKAS TESTING 4043

PSL Professional Soils Laboratory

**Wansford to Sutton Dualling Supplementary GI**

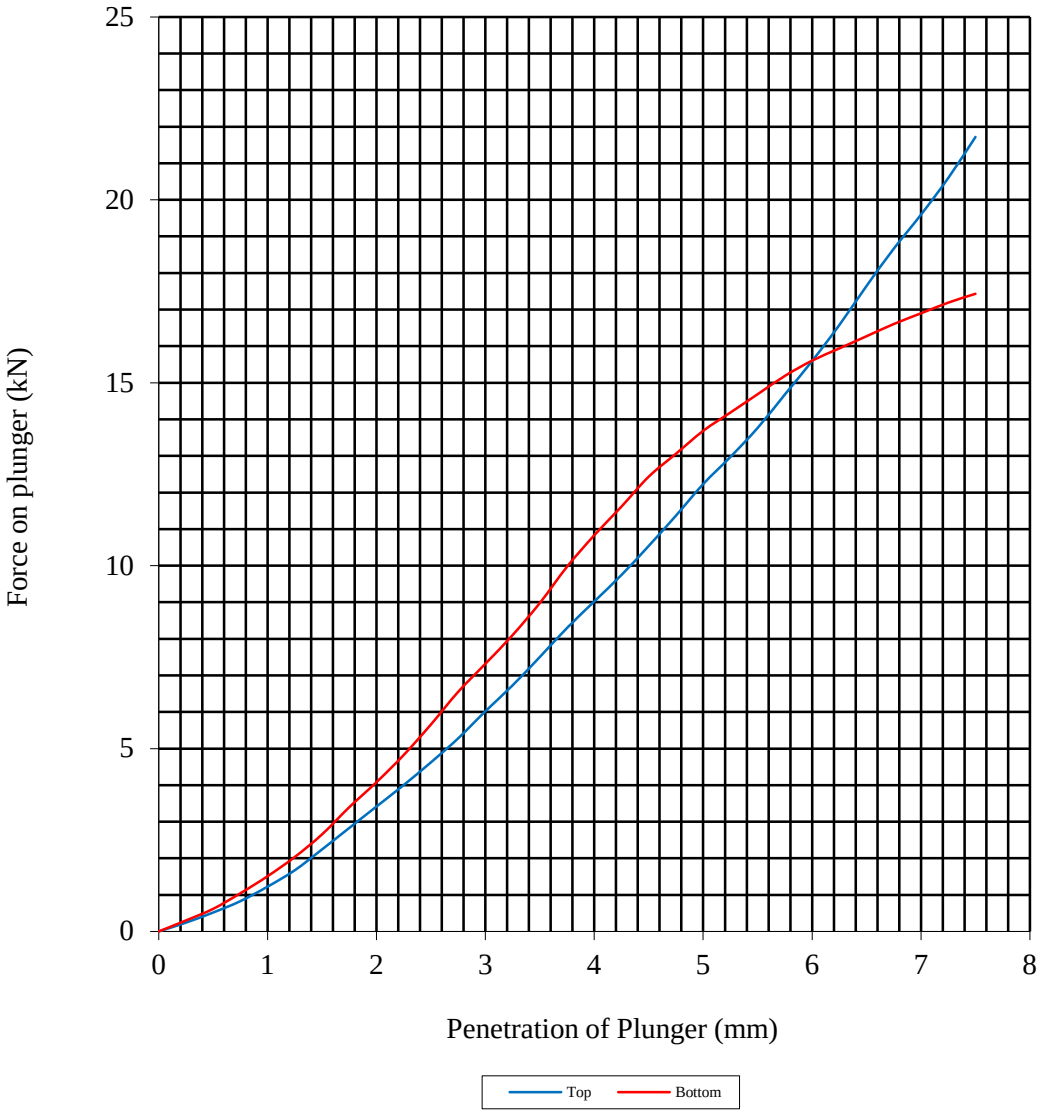
**Contract No: PSL22/3825**

**Client Ref: GT0386**

# CALIFORNIA BEARING RATIO TEST

**BS 1377 : Part 4 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP165** | **Top Depth (m):** | **1.00** |
| **Sample Number:** | **5** | **Base Depth (m):** | **1.30** |
| **Sample Type:** | **B** | | |




| Initial Sample Conditions | | Sample Preparation | | Final Moisture Content % | | C.B.R. Value % | |
|---|---|---|---|---|---|---|---|
| Moisture Content: | 12 | Surcharge Kg: | 4.00 | Sample Top | 14 | Sample Top | 61.2 |
| Bulk Density Mg/m3: | 2.30 | Soaking Time hrs | 96 | Sample Bottom | 14 | Sample Bottom | 68.4 |
| Dry Density Mg/m3: | 2.06 | Swelling mm: | 0.12 | Remarks : See Summary of Soil Descriptions. | | | |
| Percentage retained on 20mm BS test sieve: | | | 21 | | | | |
| Compaction Conditions | | Vibro | | | | | |

UKAS TESTING 4043

PSL Professional Soils Laboratory

**Wansford to Sutton Dualling Supplementary GI**

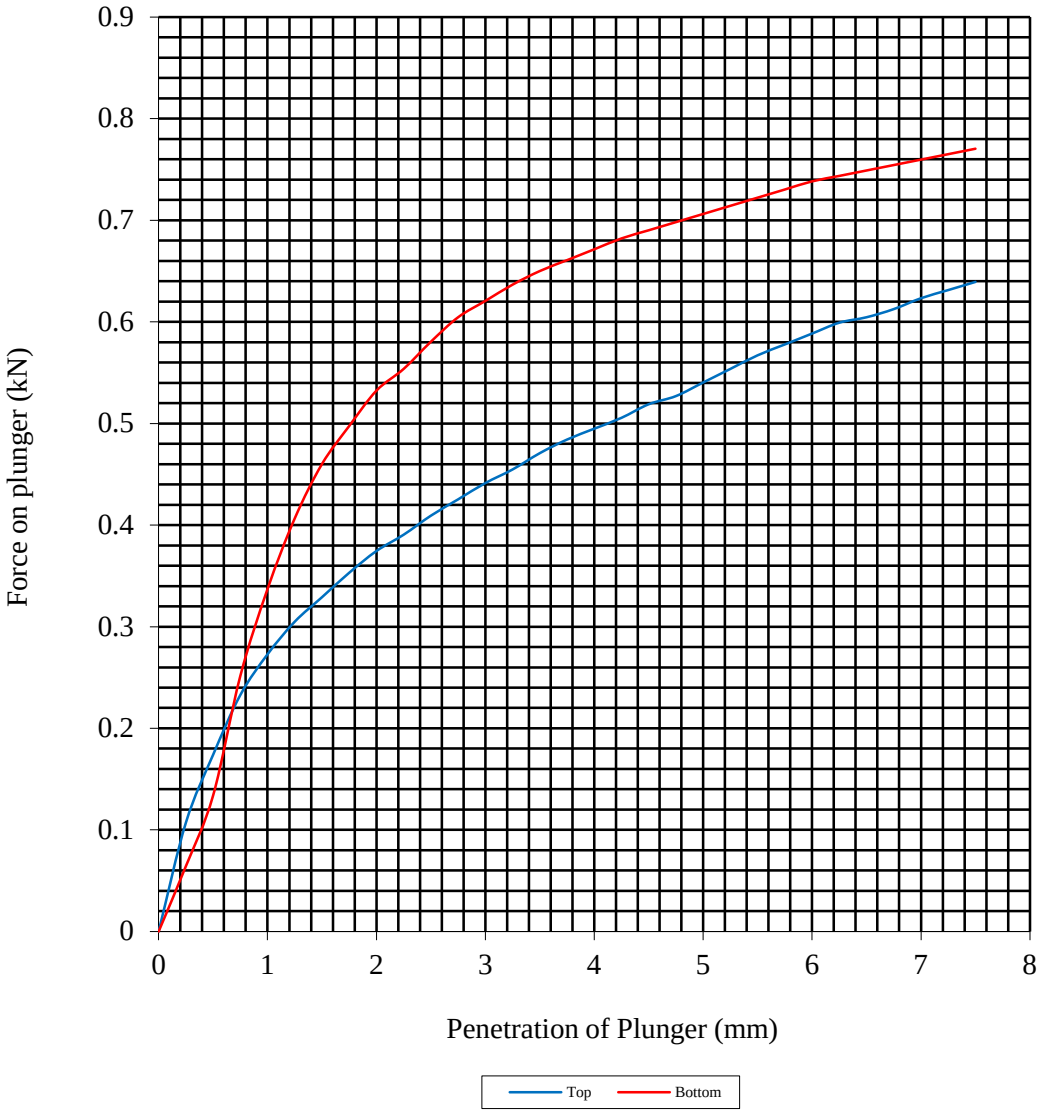
**Contract No: PSL22/3825**

**Client Ref: GT0386**

# CALIFORNIA BEARING RATIO TEST

**BS 1377 : Part 4 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP166** | **Top Depth (m):** | **2.30** |
| **Sample Number:** | **7** | **Base Depth (m):** | **2.60** |
| **Sample Type:** | **B** | | |




| Initial Sample Conditions | | Sample Preparation | | Final Moisture Content % | | C.B.R. Value % | |
|---|---|---|---|---|---|---|---|
| Moisture Content: | 22 | Surcharge Kg: | 4.00 | Sample Top | 26 | Sample Top | 3.1 |
| Bulk Density Mg/m3: | 2.02 | Soaking Time hrs | 96 | Sample Bottom | 25 | Sample Bottom | 4.4 |
| Dry Density Mg/m3: | 1.66 | Swelling mm: | 1.10 | Remarks : See Summary of Soil Descriptions. | | | |
| Percentage retained on 20mm BS test sieve: | | | 1 | | | | |
| Compaction Conditions | | 2.5kg | | | | | |

UKAS TESTING 4043

PSL Professional Soils Laboratory

**Wansford to Sutton Dualling Supplementary GI**

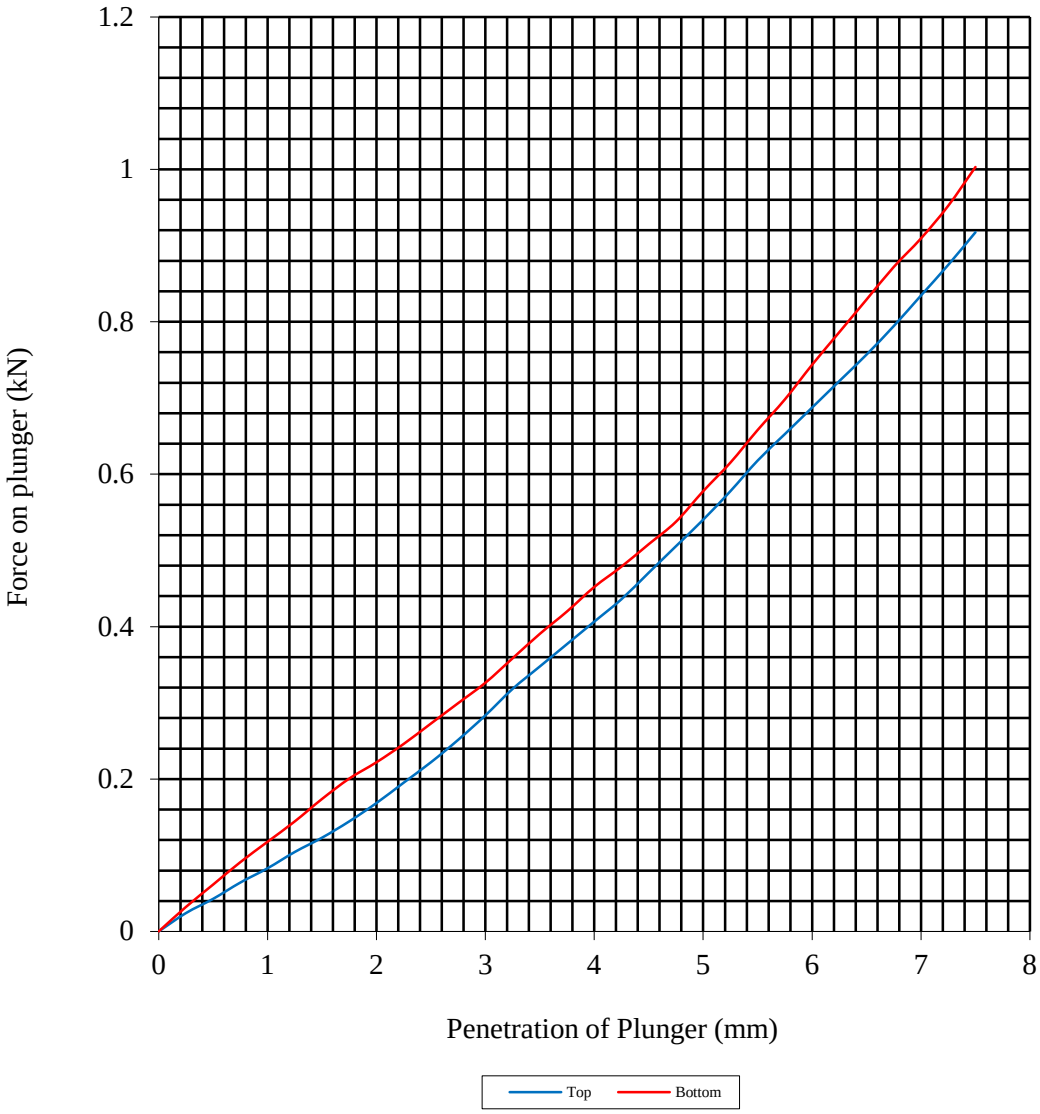
**Contract No:** PSL22/3825

**Client Ref:** GT0386

# CALIFORNIA BEARING RATIO TEST

**BS 1377 : Part 4 : 1990**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP169** | **Top Depth (m):** | **1.00** |
| **Sample Number:** | **5** | **Base Depth (m):** | **1.30** |
| **Sample Type:** | **B** | | |




| Initial Sample Conditions | | Sample Preparation | | Final Moisture Content % | | C.B.R. Value % | |
|---|---|---|---|---|---|---|---|
| Moisture Content: | 18 | Surcharge Kg: | 4.00 | Sample Top | 19 | Sample Top | 2.7 |
| Bulk Density Mg/m3: | 2.08 | Soaking Time hrs | 96 | Sample Bottom | 19 | Sample Bottom | 2.9 |
| Dry Density Mg/m3: | 1.76 | Swelling mm: | 1.30 | Remarks : See Summary of Soil Descriptions. | | | |
| Percentage retained on 20mm BS test sieve: | | | 0 | | | | |
| Compaction Conditions | | 2.5kg | | | | | |

UKAS TESTING 4043

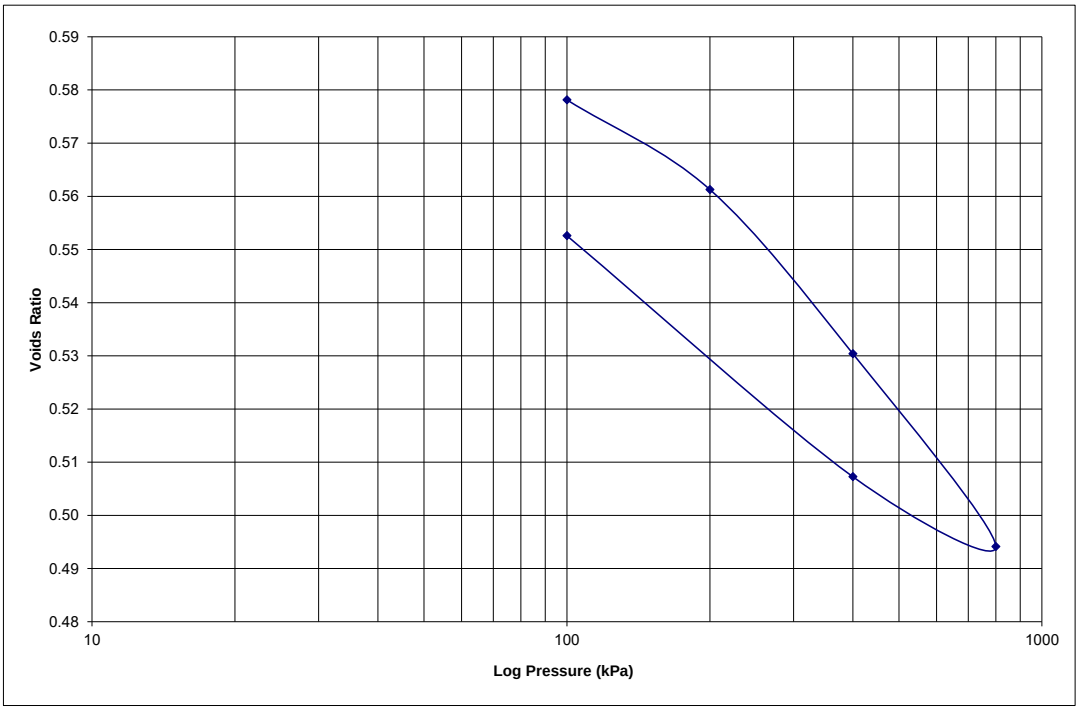
PSL Professional Soils Laboratory

**Wansford to Sutton Dualling Supplementary GI**

**Contract No: PSL22/3825**

**Client Ref: GT0386**

| | | | |
|---|---|---|---|
| | **DETERMINATION OF THE ONE DIMENSIONAL CONSOLIDATION PROPERTIES**<br>**BS 1377 : Part 5 : 1990 : Clause 3** | Job Ref | **GT0386** |
| | | Borehole / Pit No | BH118 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #3292256958440017 |
| | | Depth (m) | 12.80 |
| Soil Description | Very stiff dark grey CLAY. | Sample type | CS |




**Initial Sample Conditions:**

| | |
|---|---|
| Diameter (mm) | 74.99 |
| Height (mm) | 19.99 |
| Moisture Content (%) | 20 |
| Voids Ratio | 0.58 |
| Top depth within sample tube (m) | |
| Swelling Pressure (kPa) | |

| | |
|---|---|
| Bulk Density (Mg/m$^3$) | 2.04 |
| Dry Density (Mg/m$^3$) | 1.70 |
| Particle Density (Mg/m$^3$) | 2.70 |

Assumed

| | |
|---|---|
| Maximum Test Temperature ◦C | |
| Minimum Test Temperature ◦C | |

| Pressure Range (kPa) | Mv (m$^2$/MN) | Cv (m$^2$/year) | Time Fitting Method | Voids Ratio |
|---|---|---|---|---|
| 0 - 100 | 0.039 | Unable to assess | | 0.58 |
| 100 - 200 | 0.11 | 0.84 | t50 | 0.56 |
| 200 - 400 | 0.099 | 0.49 | t50 | 0.53 |
| 400 - 800 | 0.059 | 0.6 | t50 | 0.49 |
| 800 - 400 | -0.022 | | | 0.51 |
| 400 - 100 | -0.1 | | | 0.55 |
| | | | | |
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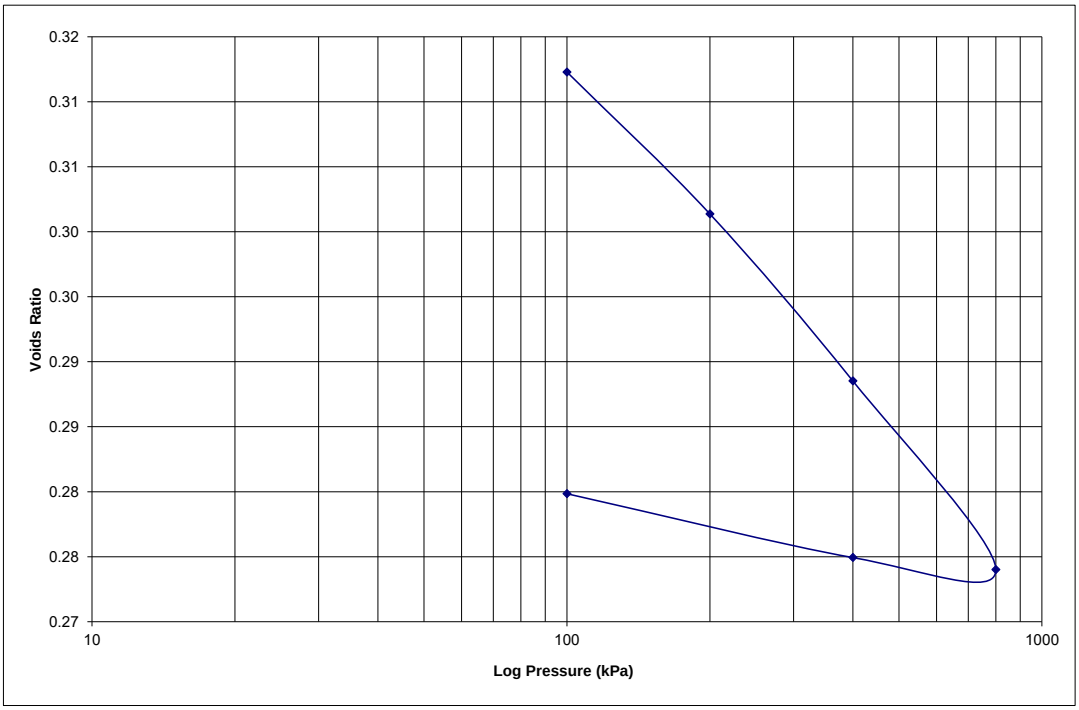
| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | barmstrong | barmstrong | |

UKAS TESTING

Test Report By: ASC Geotesting, Victory Park, Attleborough, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | DETERMINATION OF THE ONE DIMENSIONAL CONSOLIDATION PROPERTIES<br>BS 1377 : Part 5 : 1990 : Clause 3 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH111 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #5927434012250028 |
| | | Depth (m) | 9.50 |
| Soil Description | Stiff brown mottled dark grey slightly sandy CLAY. | Sample type | CS |




**Initial Sample Conditions:**

| | |
|---|---|
| Diameter (mm) | 74.99 |
| Height (mm) | 20.05 |
| Moisture Content (%) | 10 |
| Voids Ratio | 0.33 |
| Top depth within sample tube (m) | |
| Swelling Pressure (kPa) | |

| | |
|---|---|
| Bulk Density (Mg/m$^3$) | 2.23 |
| Dry Density (Mg/m$^3$) | 2.02 |
| Particle Density (Mg/m$^3$) | 2.70 |

Assumed

| | |
|---|---|
| Maximum Test Temperature ◦C | |
| Minimum Test Temperature ◦C | |

| Pressure Range (kPa) | Mv (m$^2$/MN) | Cv (m$^2$/year) | Time Fitting Method | Voids Ratio |
|---|---|---|---|---|
| 0 - 100 | 0.17 | 6.5 | t90 | 0.31 |
| 100 - 200 | 0.083 | 6.1 | t90 | 0.30 |
| 200 - 400 | 0.049 | 7.6 | t90 | 0.29 |
| 400 - 800 | 0.028 | 5.2 | t90 | 0.27 |
| 800 - 400 | -0.0018 | | | 0.27 |
| 400 - 100 | -0.013 | | | 0.28 |
| | | | | |
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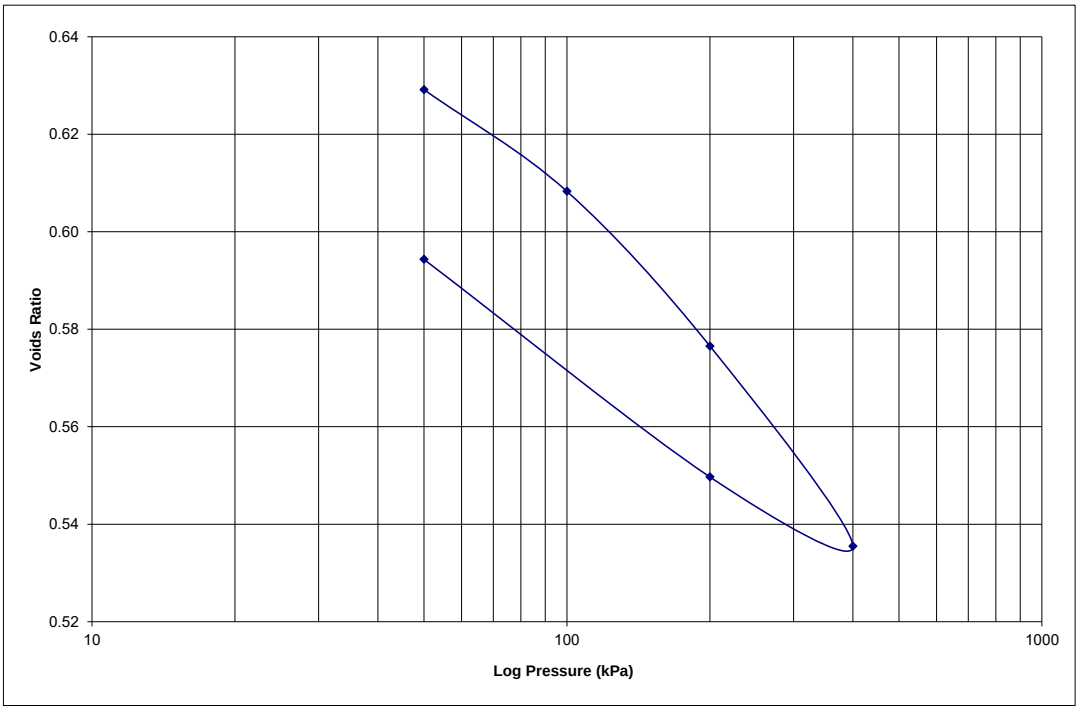
| | | | | |
| | | | | |

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | barmstrong | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | DETERMINATION OF THE ONE DIMENSIONAL CONSOLIDATION PROPERTIES<br>BS 1377 : Part 5 : 1990 : Clause 3 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH113 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #4654213425070001 |
| | | Depth (m) | 5.30 |
| Soil Description | Stiff dark grey CLAY. | Sample type | CS |




**Initial Sample Conditions:**

| | |
|---|---|
| Diameter (mm) | 74.98 |
| Height (mm) | 19.97 |
| Moisture Content (%) | 24 |
| Voids Ratio | 0.64 |
| Top depth within sample tube (m) | |
| Swelling Pressure (kPa) | |

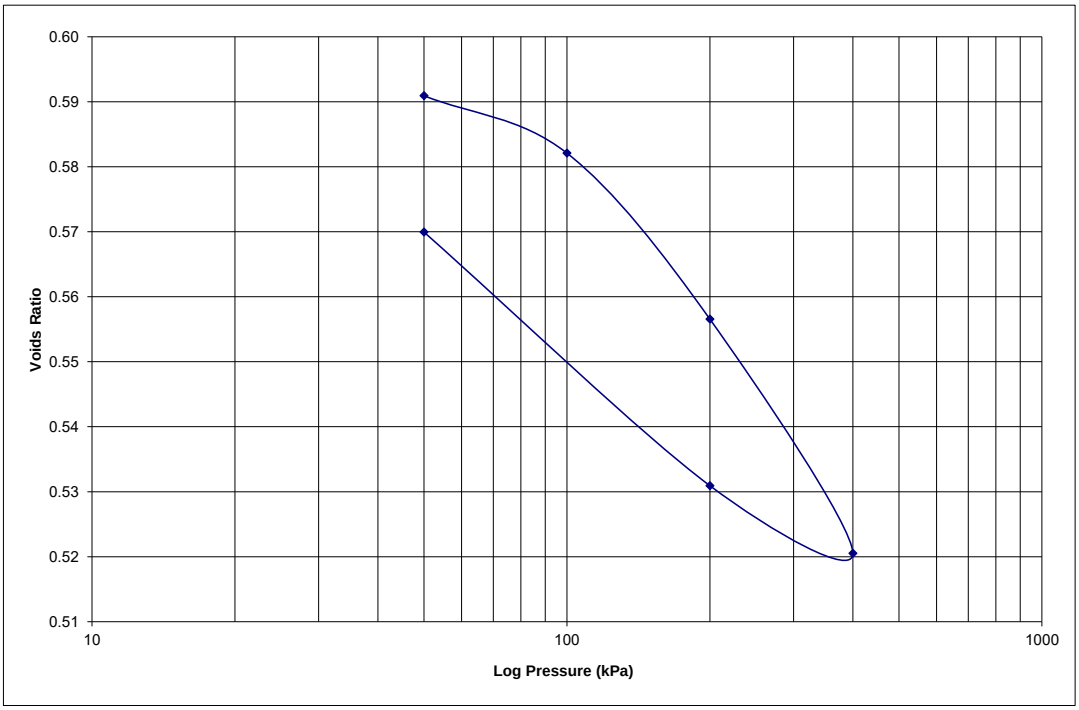
| | |
|---|---|
| Bulk Density (Mg/m$^3$) | 2.04 |
| Dry Density (Mg/m$^3$) | 1.64 |
| Particle Density (Mg/m$^3$) | 2.70 |
| Measured | |
| Maximum Test Temperature ◦C | 20.2 |
| Minimum Test Temperature ◦C | 19.5 |

| Pressure Range (kPa) | Mv (m$^2$/MN) | Cv (m$^2$/year) | Time Fitting Method | Voids Ratio |
|---|---|---|---|---|
| 0 - 50 | 0.19 | 54 | | 0.63 |
| 50 - 100 | 0.26 | 0.67 | t50 | 0.61 |
| 100 - 200 | 0.2 | 0.72 | t50 | 0.58 |
| 200 - 400 | 0.13 | 0.66 | t50 | 0.54 |
| 400 - 200 | -0.046 | | | 0.55 |
| 200 - 50 | -0.19 | | | 0.59 |
| 50 - 100 | 0.14 | 0.74 | t50 | 0.58 |
| 100 - 200 | 0.14 | 0.59 | t50 | 0.56 |
| 200 - 400 | 0.096 | 0.83 | t50 | 0.53 |
| 400 - 200 | -0.045 | | | 0.54 |
| 200 - 50 | 0.0075 | | | 0.54 |

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | barmstrong | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, NR17 1ZA
Authorised Approvers: Ben Armstrong (Quality Manager)

| | | | |
|---|---|---|---|
| | **DETERMINATION OF THE ONE DIMENSIONAL CONSOLIDATION PROPERTIES**<br>**BS 1377 : Part 5 : 1990 : Clause 3** | Job Ref | **GT0386** |
| | | Borehole / Pit No | BH114 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #7621126988710019 |
| | | Depth (m) | 4.50 |
| Soil Description | Very stiff dark grey CLAY. | Sample type | CS |




**Initial Sample Conditions:**

| | |
|---|---|
| Diameter (mm) | 74.99 |
| Height (mm) | 20.11 |
| Moisture Content (%) | 21 |
| Voids Ratio | 0.59 |
| Top depth within sample tube (m) | |
| Swelling Pressure (kPa) | |

| | |
|---|---|
| Bulk Density (Mg/m$^3$) | 2.05 |
| Dry Density (Mg/m$^3$) | 1.70 |
| Particle Density (Mg/m$^3$) | 2.70 |
| Assumed | |
| Maximum Test Temperature ◦C | |
| Minimum Test Temperature ◦C | |

| Pressure Range (kPa) | Mv (m$^2$/MN) | Cv (m$^2$/year) | Time Fitting Method | Voids Ratio |
|---|---|---|---|---|
| 0 - 50 | -0.0042 | Sample swelled | | 0.59 |
| 50 - 100 | 0.11 | 1.5 | t50 | 0.58 |
| 100 - 200 | 0.16 | 0.79 | t50 | 0.56 |
| 200 - 400 | 0.12 | 0.65 | t50 | 0.52 |
| 400 - 200 | -0.034 | | | 0.53 |
| 200 - 50 | -0.17 | | | 0.57 |
| | | | | |
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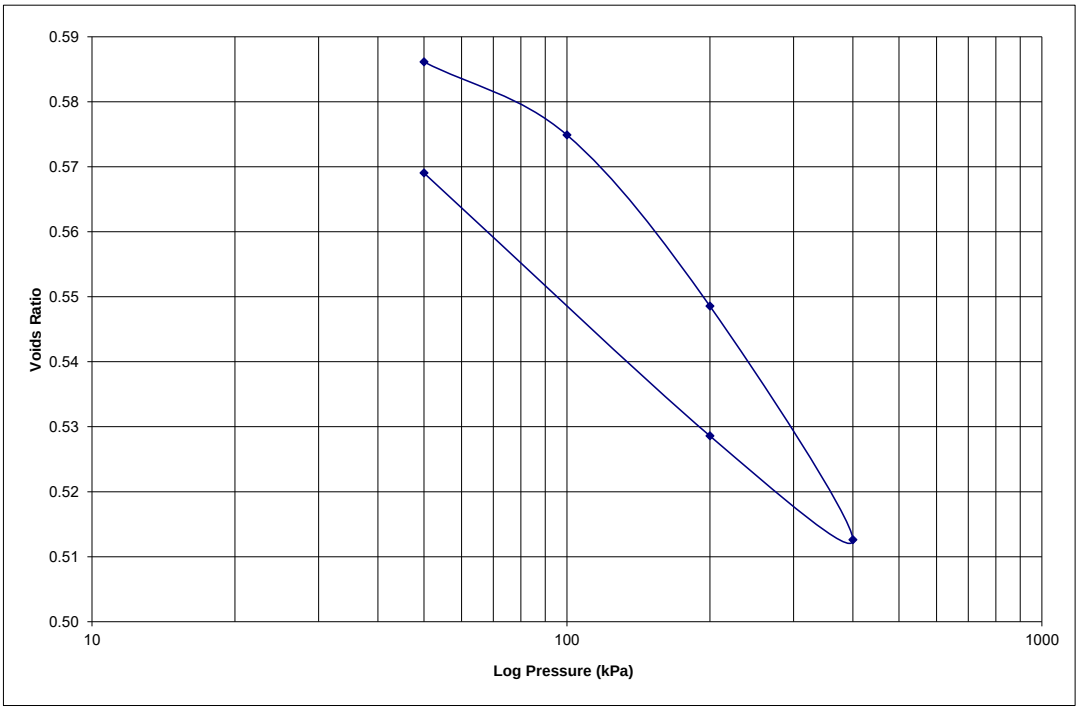
| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | barmstrong | barmstrong | |

UKAS TESTING

Test Report By: ASC Geotesting, Victory Park, Attleborough, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | DETERMINATION OF THE ONE DIMENSIONAL CONSOLIDATION PROPERTIES<br>BS 1377 : Part 5 : 1990 : Clause 3 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH114 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #7621126988710021 |
| | | Depth (m) | 6.60 |
| Soil Description | Stiff dark grey CLAY. | Sample type | CS |




**Initial Sample Conditions:**

| | |
|---|---|
| Diameter (mm) | 75.05 |
| Height (mm) | 20.04 |
| Moisture Content (%) | 22 |
| Voids Ratio | 0.60 |
| Top depth within sample tube (m) | |
| Swelling Pressure (kPa) | |

| | |
|---|---|
| Bulk Density (Mg/m$^3$) | 2.06 |
| Dry Density (Mg/m$^3$) | 1.69 |
| Particle Density (Mg/m$^3$) | 2.70 |

Assumed

| | |
|---|---|
| Maximum Test Temperature ◦C | |
| Minimum Test Temperature ◦C | |

| Pressure Range (kPa) | Mv (m$^2$/MN) | Cv (m$^2$/year) | Time Fitting Method | Voids Ratio |
|---|---|---|---|---|
| 0 - 50 | 0.18 | Unable to assess | | 0.59 |
| 50 - 100 | 0.14 | 0.78 | t50 | 0.57 |
| 100 - 200 | 0.17 | 0.45 | t50 | 0.55 |
| 200 - 400 | 0.12 | 0.45 | t50 | 0.51 |
| 400 - 200 | -0.053 | | | 0.53 |
| 200 - 50 | -0.18 | | | 0.57 |
| | | | | |
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| | | | | |

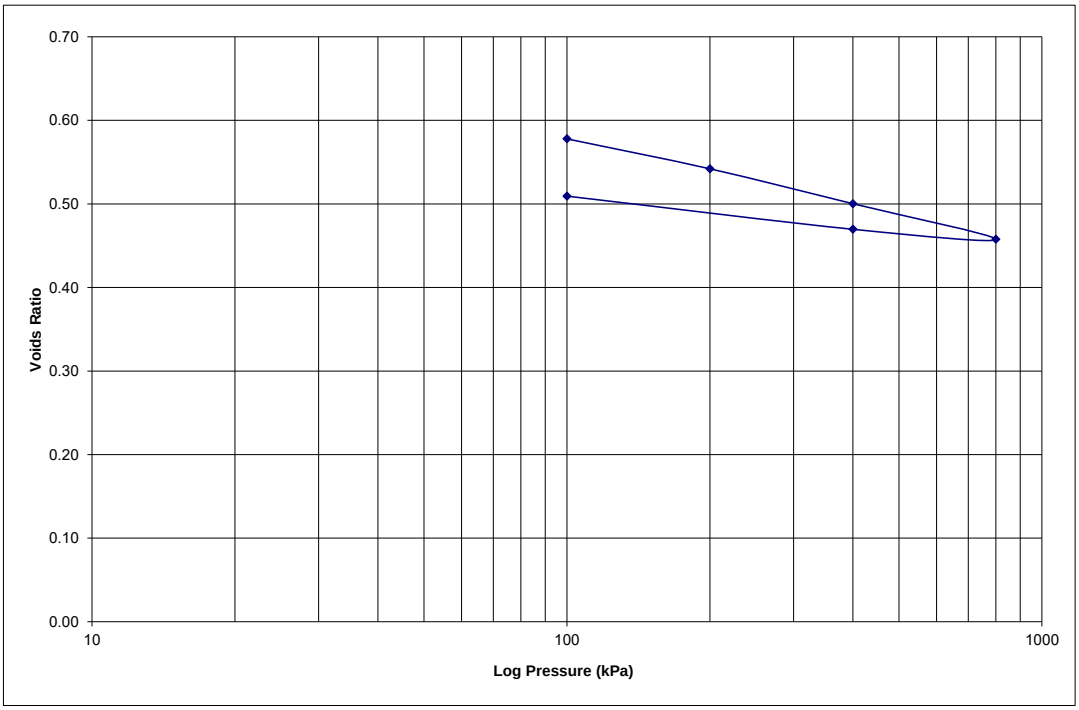
| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | barmstrong | barmstrong | |

UKAS TESTING

Test Report By: ASC Geotesting, Victory Park, Attleborough, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | | | |
|---|---|---|---|
| | **DETERMINATION OF THE ONE DIMENSIONAL CONSOLIDATION PROPERTIES**<br>**BS 1377 : Part 5 : 1990 : Clause 3** | Job Ref | **GT0386** |
| | | Borehole / Pit No | BH115 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #1274029017080024 |
| | | Depth (m) | 11.50 |
| Soil Description | Firm to stiff dark grey CLAY. | Sample type | CS |




**Initial Sample Conditions:**

| | |
|---|---|
| Diameter (mm) | 74.98 |
| Height (mm) | 19.97 |
| Moisture Content (%) | 22 |
| Voids Ratio | 0.64 |
| Top depth within sample tube (m) | |
| Swelling Pressure (kPa) | |

| | |
|---|---|
| Bulk Density (Mg/m$^3$) | 2.01 |
| Dry Density (Mg/m$^3$) | 1.64 |
| Particle Density (Mg/m$^3$) | 2.70 |
| Assumed | |
| Maximum Test Temperature ◦C | |
| Minimum Test Temperature ◦C | |

| Pressure Range (kPa) | Mv (m$^2$/MN) | Cv (m$^2$/year) | Time Fitting Method | Voids Ratio |
|---|---|---|---|---|
| 0 - 100 | 0.39 | 2 | t90 | 0.58 |
| 100 - 200 | 0.23 | 1.7 | t50 | 0.54 |
| 200 - 400 | 0.14 | 1.5 | t50 | 0.50 |
| 400 - 800 | 0.071 | 1.7 | t50 | 0.46 |
| 800 - 400 | -0.021 | | | 0.47 |
| 400 - 100 | -0.09 | | | 0.51 |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

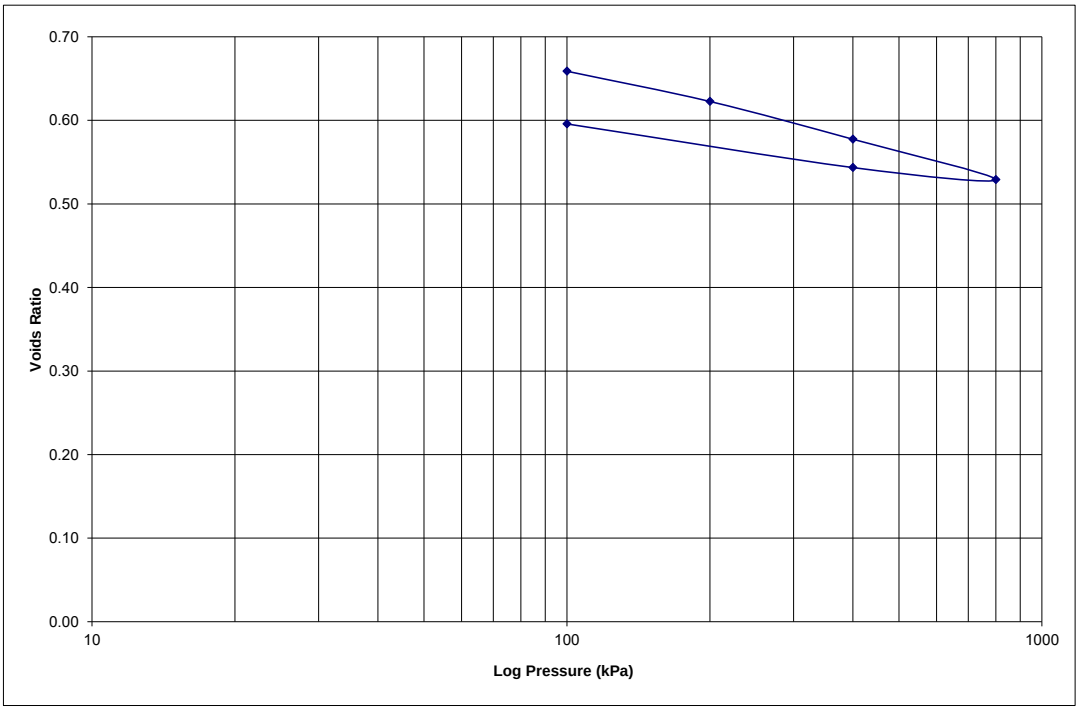
| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | barmstrong | barmstrong | |

UKAS TESTING

Test Report By: ASC Geotesting, Victory Park, Attleborough, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | | | |
|---|---|---|---|
| | **DETERMINATION OF THE ONE DIMENSIONAL CONSOLIDATION PROPERTIES**<br>**BS 1377 : Part 5 : 1990 : Clause 3** | Job Ref | **GT0386** |
| | | Borehole / Pit No | BH115 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #1274029017080026 |
| | | Depth (m) | 14.70 |
| Soil Description | Stiff dark grey rare gravel CLAY. | Sample type | CS |




**Initial Sample Conditions:**

| | |
|---|---|
| Diameter (mm) | 74.99 |
| Height (mm) | 19.99 |
| Moisture Content (%) | 24 |
| Voids Ratio | 0.69 |
| Top depth within sample tube (m) | |
| Swelling Pressure (kPa) | |

| | |
|---|---|
| Bulk Density (Mg/m$^3$) | 1.98 |
| Dry Density (Mg/m$^3$) | 1.60 |
| Particle Density (Mg/m$^3$) | 2.70 |
| Assumed | |
| Maximum Test Temperature ◦C | |
| Minimum Test Temperature ◦C | |

| Pressure Range (kPa) | Mv (m$^2$/MN) | Cv (m$^2$/year) | Time Fitting Method | Voids Ratio |
|---|---|---|---|---|
| 0 - 100 | 0.19 | 0.89 | t90 | 0.66 |
| 100 - 200 | 0.22 | 0.61 | t50 | 0.62 |
| 200 - 400 | 0.14 | 0.68 | t50 | 0.58 |
| 400 - 800 | 0.076 | 0.67 | t50 | 0.53 |
| 800 - 400 | -0.023 | | | 0.54 |
| 400 - 100 | -0.11 | | | 0.60 |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

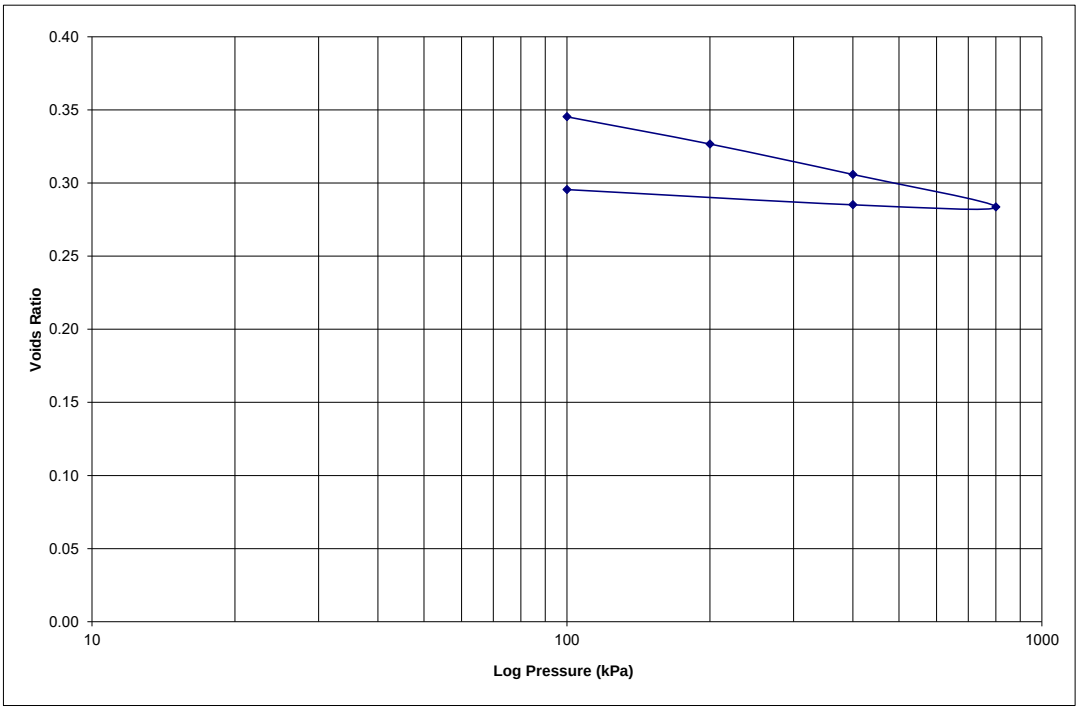
| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | barmstrong | barmstrong | |

UKAS TESTING

Test Report By: ASC Geotesting, Victory Park, Attleborough, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | | | |
|---|---|---|---|
| | **DETERMINATION OF THE ONE DIMENSIONAL CONSOLIDATION PROPERTIES**<br>**BS 1377 : Part 5 : 1990 : Clause 3** | Job Ref | **GT0386** |
| | | Borehole / Pit No | BH116 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #7773760290700013 |
| | | Depth (m) | 8.20 |
| Soil Description | Stiff light brownish grey mottled dark grey slightly sandy CLAY. | Sample type | CS |




**Initial Sample Conditions:**

| | |
|---|---|
| Diameter (mm) | 74.99 |
| Height (mm) | 20.11 |
| Moisture Content (%) | 11 |
| Voids Ratio | 0.38 |
| Top depth within sample tube (m) | |
| Swelling Pressure (kPa) | |

| | |
|---|---|
| Bulk Density (Mg/m$^3$) | 2.18 |
| Dry Density (Mg/m$^3$) | 1.96 |
| Particle Density (Mg/m$^3$) | 2.70 |
| Assumed | |
| Maximum Test Temperature ◦C | |
| Minimum Test Temperature ◦C | |

| Pressure Range (kPa) | Mv (m$^2$/MN) | Cv (m$^2$/year) | Time Fitting Method | Voids Ratio |
|---|---|---|---|---|
| 0 - 100 | 0.23 | 3.6 | t90 | 0.35 |
| 100 - 200 | 0.14 | 8 | t90 | 0.33 |
| 200 - 400 | 0.078 | 3 | t90 | 0.31 |
| 400 - 800 | 0.043 | 2.4 | t50 | 0.28 |
| 800 - 400 | -0.0029 | | | 0.29 |
| 400 - 100 | -0.027 | | | 0.30 |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

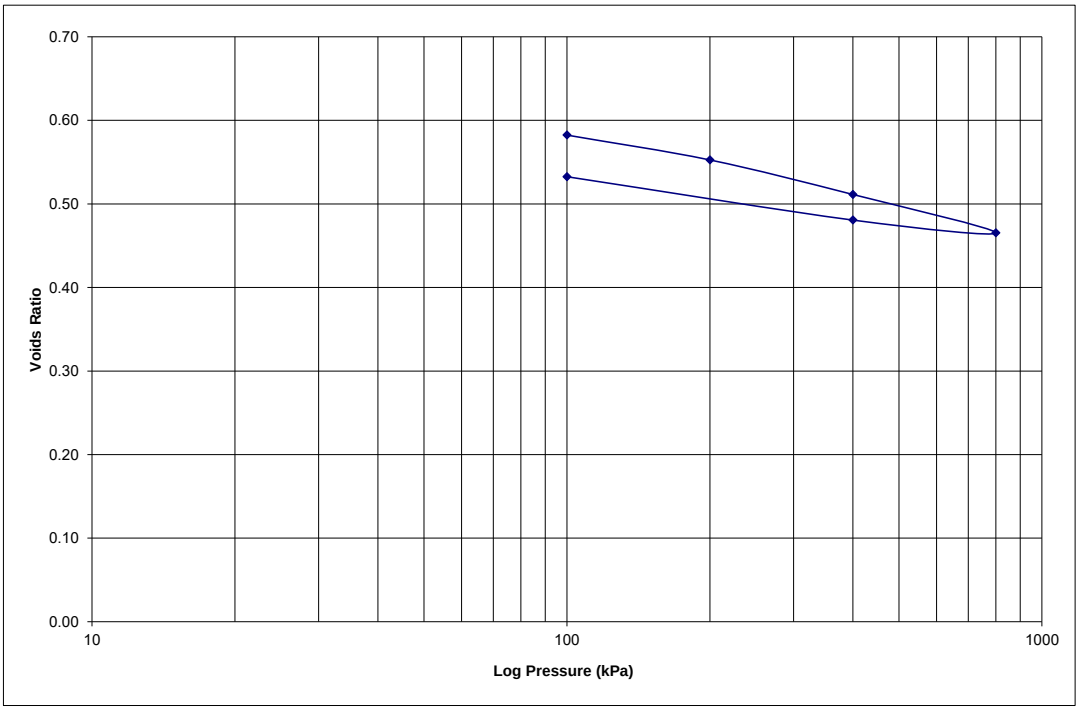
| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | barmstrong | barmstrong | |

UKAS TESTING

Test Report By: ASC Geotesting, Victory Park, Attleborough, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | DETERMINATION OF THE ONE DIMENSIONAL CONSOLIDATION PROPERTIES<br>BS 1377 : Part 5 : 1990 : Clause 3 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH116 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #7773760290700015 |
| | | Depth (m) | 9.88 |
| Soil Description | Very stiff dark grey CLAY. | Sample type | CS |




**Initial Sample Conditions:**

| | |
|---|---|
| Diameter (mm) | 75.05 |
| Height (mm) | 20.04 |
| Moisture Content (%) | 21 |
| Voids Ratio | 0.60 |
| Top depth within sample tube (m) | |
| Swelling Pressure (kPa) | |

| | |
|---|---|
| Bulk Density (Mg/m$^3$) | 2.04 |
| Dry Density (Mg/m$^3$) | 1.68 |
| Particle Density (Mg/m$^3$) | 2.70 |

Assumed

| | |
|---|---|
| Maximum Test Temperature ◦C | |
| Minimum Test Temperature ◦C | |

| Pressure Range (kPa) | Mv (m$^2$/MN) | Cv (m$^2$/year) | Time Fitting Method | Voids Ratio |
|---|---|---|---|---|
| 0 - 100 | 0.14 | 2.4 | t90 | 0.58 |
| 100 - 200 | 0.19 | 0.58 | t50 | 0.55 |
| 200 - 400 | 0.13 | 0.54 | t50 | 0.51 |
| 400 - 800 | 0.076 | 0.6 | t50 | 0.47 |
| 800 - 400 | -0.026 | | | 0.48 |
| 400 - 100 | -0.12 | | | 0.53 |
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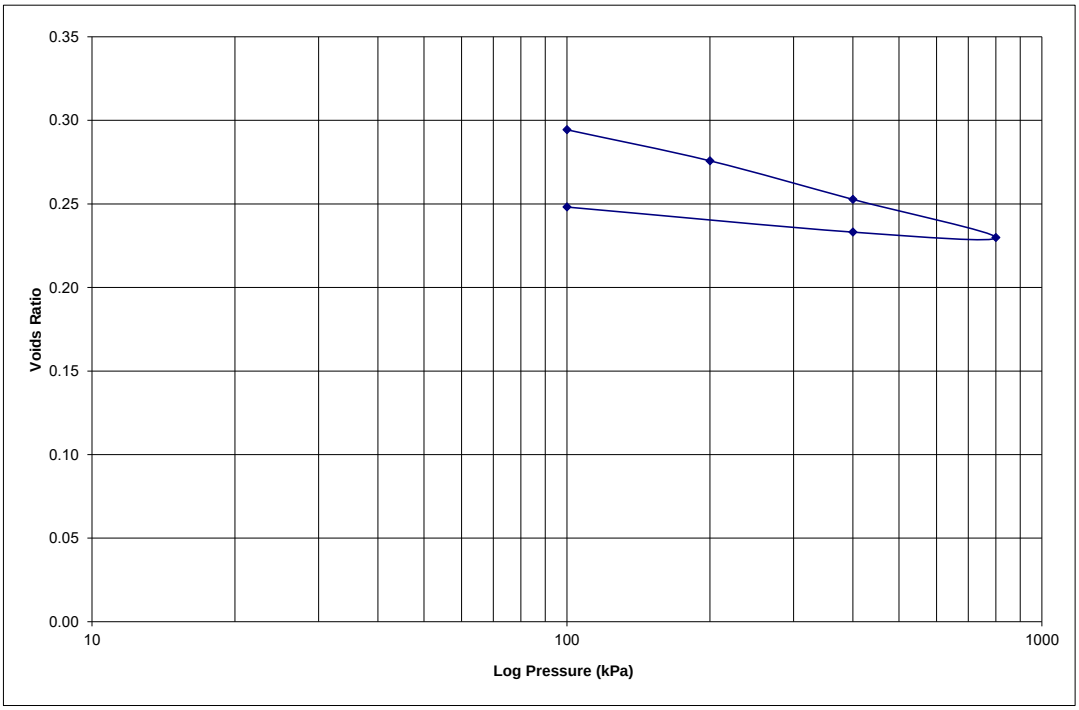
| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | barmstrong | barmstrong | |

UKAS TESTING

Test Report By: ASC Geotesting, Victory Park, Attleborough, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | | | |
|---|---|---|---|
| | **DETERMINATION OF THE ONE DIMENSIONAL CONSOLIDATION PROPERTIES**<br>**BS 1377 : Part 5 : 1990 : Clause 3** | Job Ref | **GT0386** |
| | | Borehole / Pit No | BH120 & BH120A |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #8156259710960001 |
| | | Depth (m) | 7.82 |
| Soil Description | Stiff grey mottled dark grey slightly sandy slightly gravelly CLAY. | Sample type | CS |




**Initial Sample Conditions:**

| | |
|---|---|
| Diameter (mm) | 75.14 |
| Height (mm) | 19.98 |
| Moisture Content (%) | 10 |
| Voids Ratio | 0.32 |
| Top depth within sample tube (m) | |
| Swelling Pressure (kPa) | |

| | |
|---|---|
| Bulk Density (Mg/m$^3$) | 2.21 |
| Dry Density (Mg/m$^3$) | 2.00 |
| Particle Density (Mg/m$^3$) | 2.65 |
| Assumed | |
| Maximum Test Temperature ◦C | |
| Minimum Test Temperature ◦C | |

| Pressure Range (kPa) | Mv (m$^2$/MN) | Cv (m$^2$/year) | Time Fitting Method | Voids Ratio |
|---|---|---|---|---|
| 0 - 100 | 0.21 | 11 | t90 | 0.29 |
| 100 - 200 | 0.14 | 5.2 | t90 | 0.28 |
| 200 - 400 | 0.09 | 1.7 | t50 | 0.25 |
| 400 - 800 | 0.046 | 1.5 | t50 | 0.23 |
| 800 - 400 | -0.0066 | | | 0.23 |
| 400 - 100 | -0.041 | | | 0.25 |
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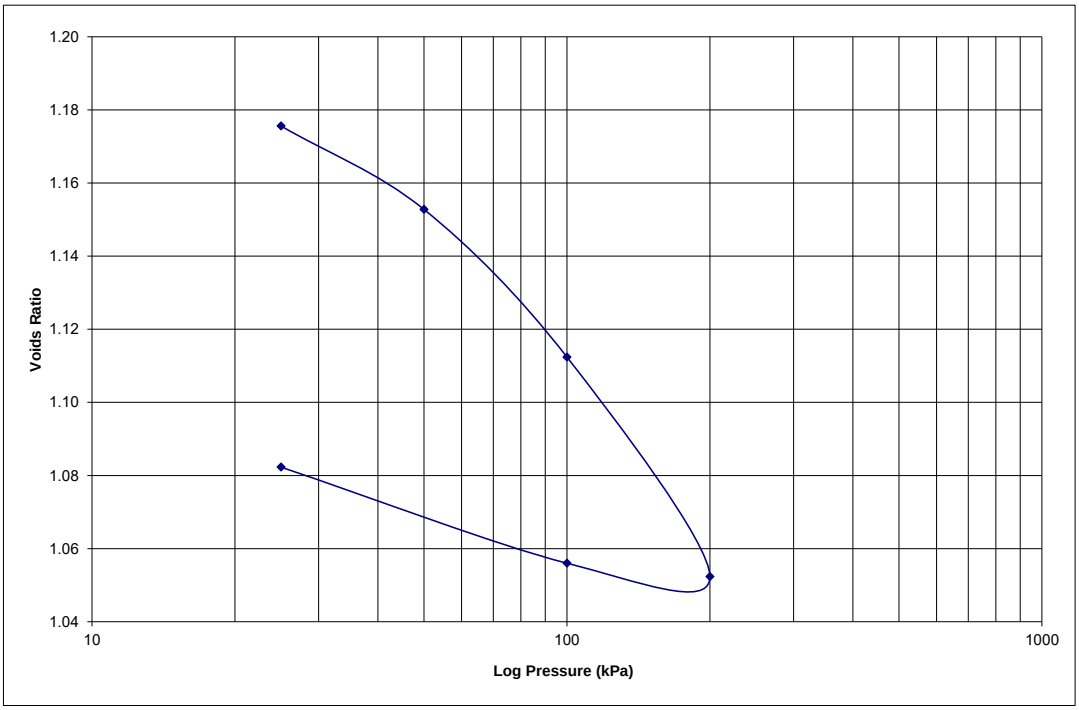
| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | barmstrong | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | | | |
|---|---|---|---|
| | **DETERMINATION OF THE ONE DIMENSIONAL CONSOLIDATION PROPERTIES**<br>**BS 1377 : Part 5 : 1990 : Clause 3** | Job Ref | **GT0386** |
| | | Borehole / Pit No | BH128 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #1766182967350005 |
| | | Depth (m) | 3.70 |
| Soil Description | Soft grey mottled brown slightly sandy slightly gravelly CLAY. | Sample type | CS |




**Initial Sample Conditions:**

| | |
|---|---|
| Diameter (mm) | 75.14 |
| Height (mm) | 19.98 |
| Moisture Content (%) | 44 |
| Voids Ratio | 1.21 |
| Top depth within sample tube (m) | |
| Swelling Pressure (kPa) | |

| | |
|---|---|
| Bulk Density (Mg/m$^3$) | 1.76 |
| Dry Density (Mg/m$^3$) | 1.22 |
| Particle Density (Mg/m$^3$) | 2.70 |
| Assumed | |
| Maximum Test Temperature ◦C | |
| Minimum Test Temperature ◦C | |

| Pressure Range (kPa) | Mv (m$^2$/MN) | Cv (m$^2$/year) | Time Fitting Method | Voids Ratio |
|---|---|---|---|---|
| 0 - 25 | 0.59 | 4.9 | t50 | 1.18 |
| 25 - 50 | 0.42 | 4.6 | t50 | 1.15 |
| 50 - 100 | 0.38 | 4.9 | t50 | 1.11 |
| 100 - 200 | 0.28 | 2.3 | t50 | 1.05 |
| 200 - 100 | -0.018 | | | 1.06 |
| 100 - 25 | -0.17 | | | 1.08 |
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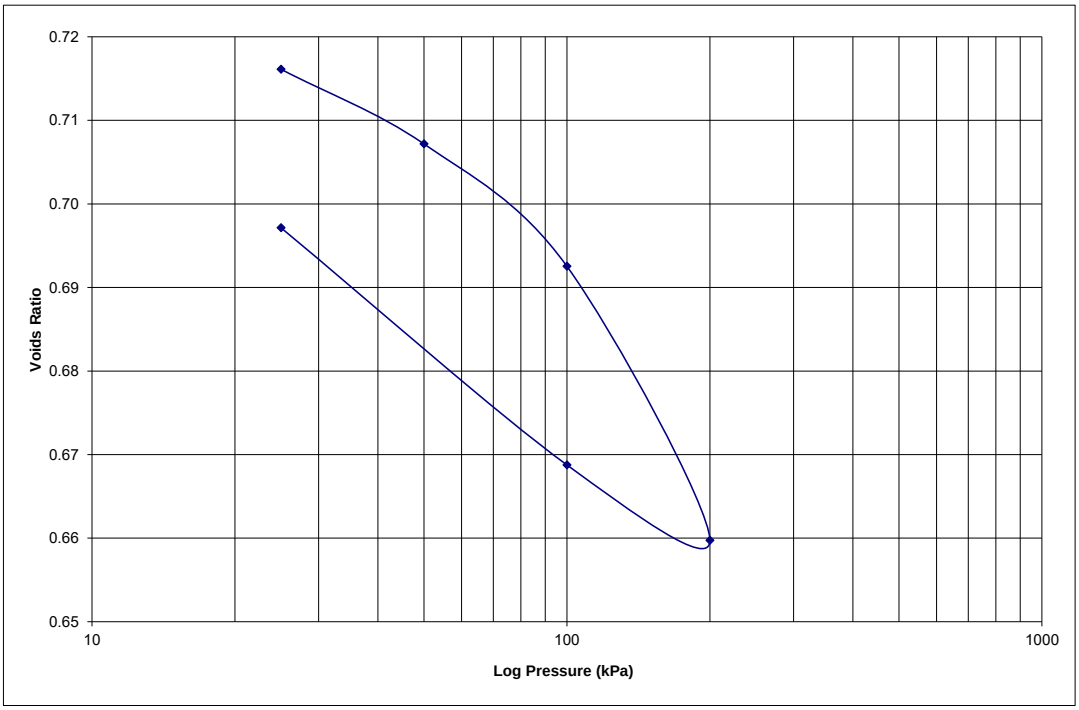
| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | barmstrong | barmstrong | |

UKAS TESTING

Test Report By: ASC Geotesting, Victory Park, Attleborough, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | | | |
|---|---|---|---|
| | **DETERMINATION OF THE ONE DIMENSIONAL CONSOLIDATION PROPERTIES**<br>**BS 1377 : Part 5 : 1990 : Clause 3** | Job Ref | **GT0386** |
| | | Borehole / Pit No | BH128 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #1766182967350010 |
| | | Depth (m) | 9.90 |
| Soil Description | Stiff dark grey CLAY. | Sample type | CS |




**Initial Sample Conditions:**

| | |
|---|---|
| Diameter (mm) | 74.99 |
| Height (mm) | 20.05 |
| Moisture Content (%) | 24 |
| Voids Ratio | 0.69 |
| Top depth within sample tube (m) | |
| Swelling Pressure (kPa) | |

| | |
|---|---|
| Bulk Density (Mg/m$^3$) | 1.98 |
| Dry Density (Mg/m$^3$) | 1.59 |
| Particle Density (Mg/m$^3$) | 2.70 |
| Assumed | |
| Maximum Test Temperature ◦C | |
| Minimum Test Temperature ◦C | |

| Pressure Range (kPa) | Mv (m$^2$/MN) | Cv (m$^2$/year) | Time Fitting Method | Voids Ratio |
|---|---|---|---|---|
| 0 - 25 | -0.52 | Sample Swelled | | 0.72 |
| 25 - 50 | 0.21 | 1.1 | t50 | 0.71 |
| 50 - 100 | 0.17 | 0.84 | t50 | 0.69 |
| 100 - 200 | 0.19 | 0.66 | t50 | 0.66 |
| 200 - 100 | -0.054 | | | 0.67 |
| 100 - 25 | -0.23 | | | 0.70 |
| | | | | |
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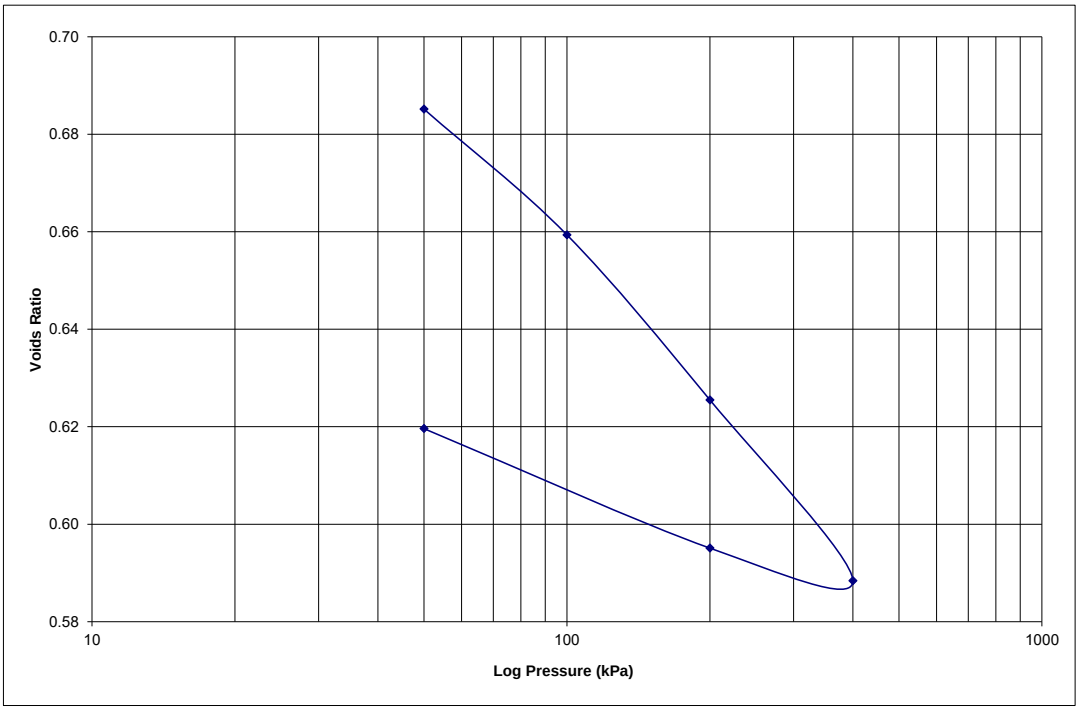
| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | barmstrong | barmstrong | |

UKAS TESTING

Test Report By: ASC Geotesting, Victory Park, Attleborough, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | DETERMINATION OF THE ONE DIMENSIONAL CONSOLIDATION PROPERTIES<br>BS 1377 : Part 5 : 1990 : Clause 3 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH130 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #2762000520130015 |
| | | Depth (m) | 5.56 |
| Soil Description | Firm greenish grey mottled light grey and dark grey slightly sandy CLAY. | Sample type | CS |




**Initial Sample Conditions:**

| | |
|---|---|
| Diameter (mm) | 75.14 |
| Height (mm) | 19.98 |
| Moisture Content (%) | 22 |
| Voids Ratio | 0.72 |
| Top depth within sample tube (m) | |
| Swelling Pressure (kPa) | |

| | |
|---|---|
| Bulk Density (Mg/m$^3$) | 1.92 |
| Dry Density (Mg/m$^3$) | 1.57 |
| Particle Density (Mg/m$^3$) | 2.70 |
| Assumed | |
| Maximum Test Temperature ◦C | |
| Minimum Test Temperature ◦C | |

| Pressure Range (kPa) | Mv (m$^2$/MN) | Cv (m$^2$/year) | Time Fitting Method | Voids Ratio |
|---|---|---|---|---|
| 0 - 50 | 0.36 | 33 | | 0.69 |
| 50 - 100 | 0.31 | 2.6 | t90 | 0.66 |
| 100 - 200 | 0.2 | 0.69 | t90 | 0.63 |
| 200 - 400 | 0.11 | 0.95 | t50 | 0.59 |
| 400 - 200 | -0.021 | | | 0.60 |
| 200 - 50 | -0.1 | | | 0.62 |
| | | | | |
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| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | barmstrong | barmstrong | |

UKAS TESTING

Test Report By: ASC Geotesting, Victory Park, Attleborough, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

# ONE DIMENSIONAL CONSOLIDATION TEST

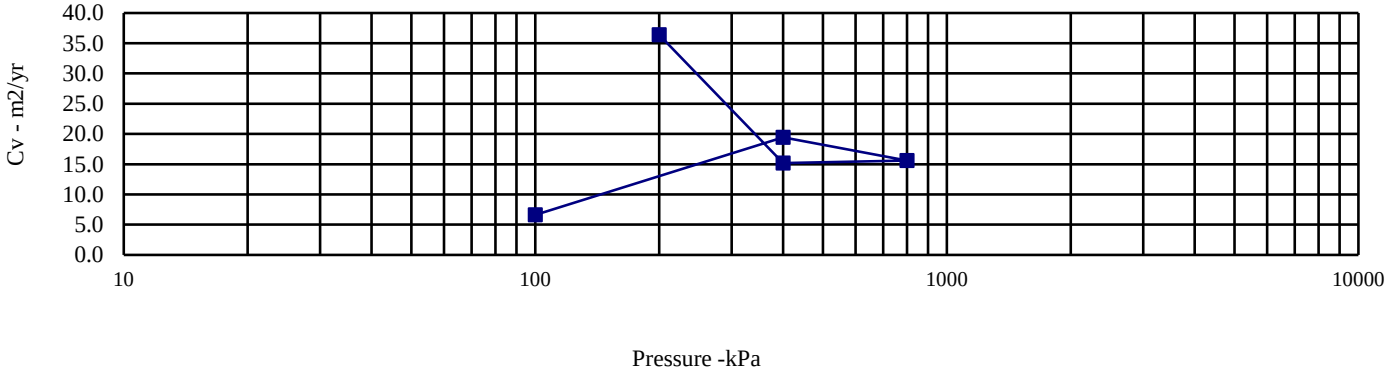
**BS 1377: Part 5: 1990: Clause 3**

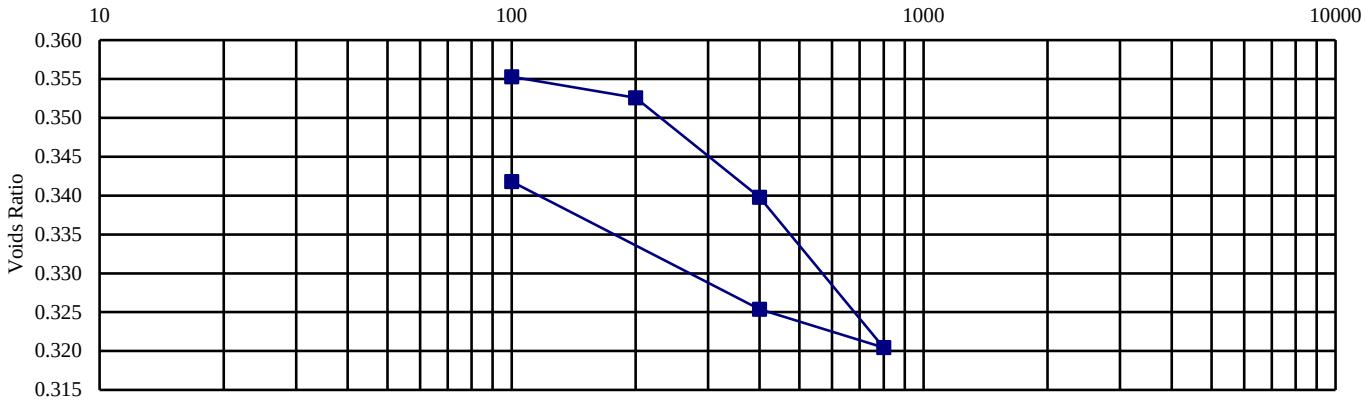
**Hole Number:** **BH108** **Top Depth (m):** **11.70**

**Sample Number:** **112** **Base Depth (m) :** **12.00**

**Sample Type:** **CS**

| Initial Conditions | | Pressure Range kPa | | Mv m2/MN | Cv m2/yr | Specimen location within tube: | Top |
|---|---|---|---|---|---|---|---|
| Moisture Content (%): | 12 | | | | | | |
| Bulk Density (Mg/m3): | 2.18 | 0 | 100 | Swelling | Swelling | Method used to | |
| Dry Density (Mg/m3): | 1.95 | 100 | 200 | 0.020 | 36.385 | determine CV: | T90 |
| Voids Ratio: | 0.358 | 200 | 400 | 0.047 | 15.183 | Nominal temperature | |
| Degree of saturation: | 87.4 | 400 | 800 | 0.036 | 15.587 | during test ' C: | 20 |
| Height (mm): | 20.07 | 800 | 400 | 0.009 | 19.463 | Remarks: | |
| Diameter (mm) | 75.05 | 400 | 100 | 0.041 | 6.620 | See summary of soil descriptions | |
| Particle Density (Mg/m3): Assumed | 2.65 | | | | | | |




| | | | |
|---|---|---|---|
| UKAS TESTING 4043 | PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** | **Contract No:** PSL22/3650 **Client Ref:** GTO386 |

# ONE DIMENSIONAL CONSOLIDATION TEST

**BS 1377: Part 5: 1990: Clause 3**

**Hole Number:** **BH115** **Top Depth (m):** **7.25**

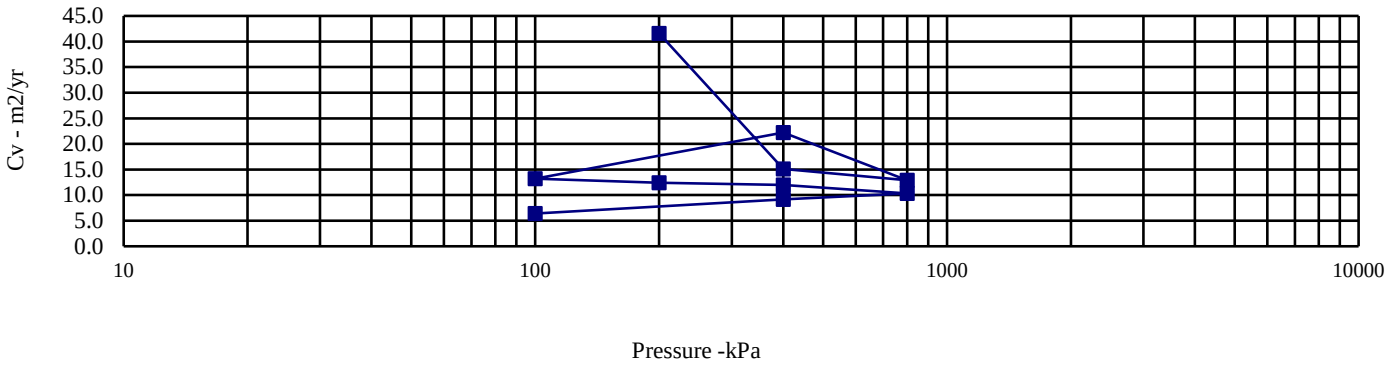
**Sample Number:** **101** **Base Depth (m) :** **7.57**

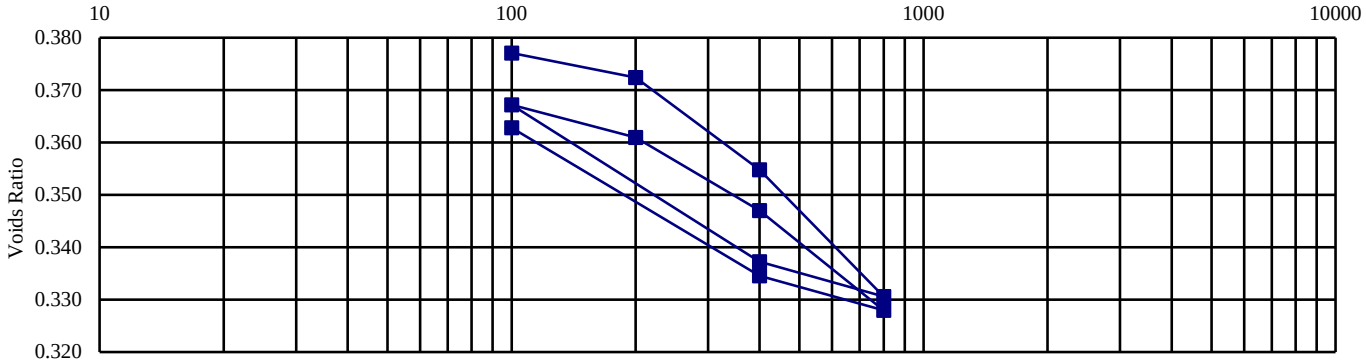
**Sample Type:** **CS**

| Initial Conditions | |
|---|---|
| Moisture Content (%): | 14 |
| Bulk Density (Mg/m3): | 2.18 |
| Dry Density (Mg/m3): | 1.91 |
| Voids Ratio: | 0.389 |
| Degree of saturation: | 97.3 |
| Height (mm): | 20.05 |
| Diameter (mm) | 75.11 |
| Particle Density (Mg/m3): Assumed | 2.65 |

| Pressure Range kPa | | Mv m2/MN | Cv m2/yr |
|---|---|---|---|
| 0 | 100 | Swelling | Swelling |
| 100 | 200 | 0.034 | 41.589 |
| 200 | 400 | 0.064 | 15.131 |
| 400 | 800 | 0.045 | 12.889 |
| 800 | 400 | 0.012 | 22.209 |
| 400 | 100 | 0.075 | 13.216 |
| 100 | 200 | 0.046 | 12.420 |
| 200 | 400 | 0.051 | 12.012 |
| 400 | 800 | 0.035 | 10.315 |
| 800 | 400 | 0.012 | 9.141 |
| 400 | 100 | 0.071 | 6.399 |

| Specimen location within tube: | Top |
|---|---|
| Method used to determine CV: | T90 |
| Nominal temperature during test ' C: | 20 |
| Remarks: See summary of soil descriptions | |




| | | | |
|---|---|---|---|
| UKAS TESTING 4043 | PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** | **Contract No:** PSL22/3650 **Client Ref:** GTO386 |

# ONE DIMENSIONAL CONSOLIDATION TEST

**BS 1377: Part 5: 1990: Clause 3**

**Hole Number:** **BH115** **Top Depth (m):** **10.30**

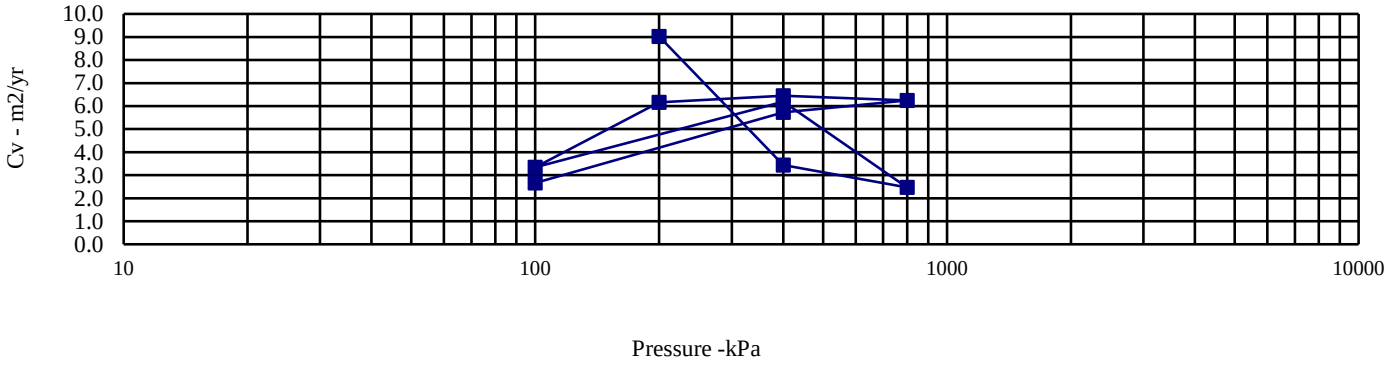
**Sample Number:** **103** **Base Depth (m) :** **10.60**

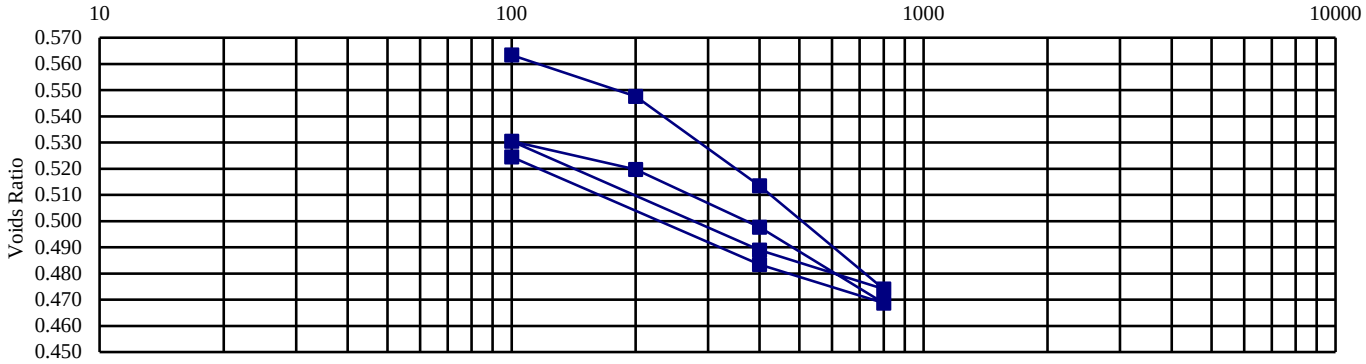
**Sample Type:** **CS**

| Initial Conditions | |
|---|---|
| Moisture Content (%): | 20 |
| Bulk Density (Mg/m3): | 1.99 |
| Dry Density (Mg/m3): | 1.65 |
| Voids Ratio: | 0.605 |
| Degree of saturation: | 89.6 |
| Height (mm): | 20.07 |
| Diameter (mm) | 75.08 |
| Particle Density (Mg/m3): Assumed | 2.65 |

| Pressure Range kPa | | Mv m2/MN | Cv m2/yr |
|---|---|---|---|
| 0 | 100 | Swelling | Swelling |
| 100 | 200 | 0.101 | 9.025 |
| 200 | 400 | 0.110 | 3.438 |
| 400 | 800 | 0.065 | 2.469 |
| 800 | 400 | 0.025 | 6.194 |
| 400 | 100 | 0.093 | 3.337 |
| 100 | 200 | 0.071 | 6.159 |
| 200 | 400 | 0.072 | 6.449 |
| 400 | 800 | 0.048 | 6.240 |
| 800 | 400 | 0.025 | 5.729 |
| 400 | 100 | 0.092 | 2.667 |

| Specimen location within tube: | Top |
|---|---|
| Method used to determine CV: | T90 |
| Nominal temperature during test ' C: | 20 |
| Remarks: See summary of soil descriptions | |

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|---|---|---|---|
| UKAS TESTING 4043 | PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** | **Contract No:** PSL22/3650 **Client Ref:** GTO386 |

# ONE DIMENSIONAL CONSOLIDATION TEST

**BS 1377: Part 5: 1990: Clause 3**

**Hole Number:** **BH116** **Top Depth (m):** **6.50**

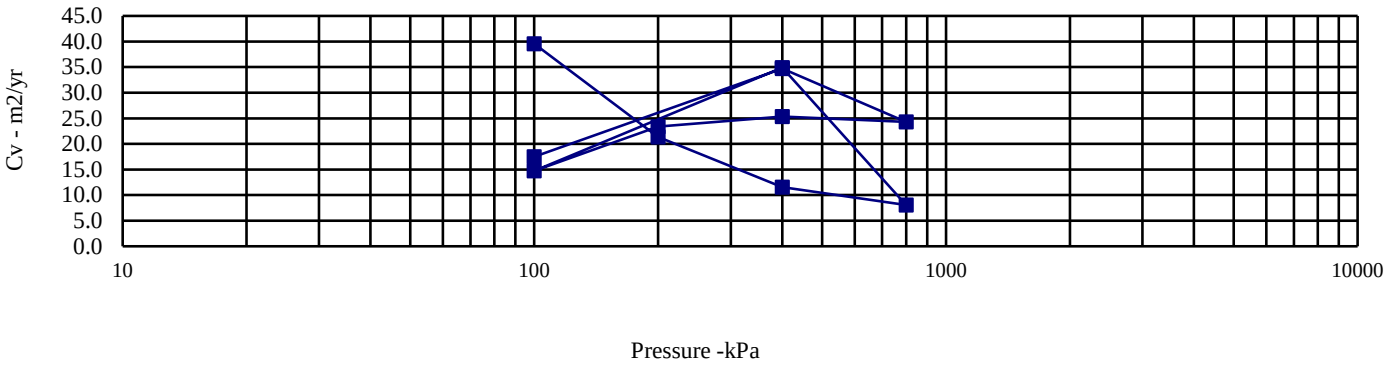
**Sample Number:** **101** **Base Depth (m) :** **6.66**

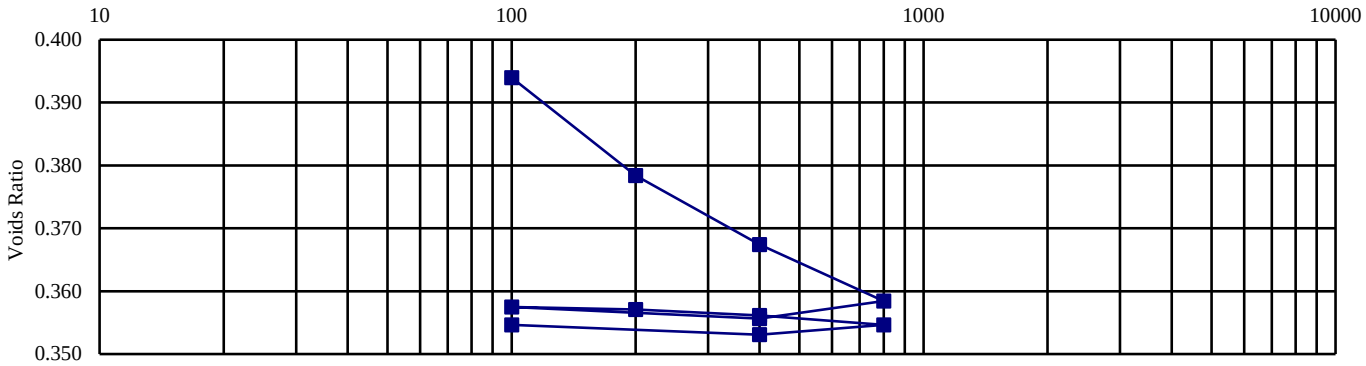
**Sample Type:** **CS**

| Initial Conditions | |
|---|---|
| Moisture Content (%): | 14 |
| Bulk Density (Mg/m3): | 2.12 |
| Dry Density (Mg/m3): | 1.85 |
| Voids Ratio: | 0.433 |
| Degree of saturation: | 88.7 |
| Height (mm): | 20.07 |
| Diameter (mm) | 75.06 |
| Particle Density (Mg/m3): Assumed | 2.65 |

| Pressure Range kPa | | Mv m2/MN | Cv m2/yr |
|---|---|---|---|
| 0 | 100 | 0.271 | 39.554 |
| 100 | 200 | 0.112 | 21.376 |
| 200 | 400 | 0.040 | 11.575 |
| 400 | 800 | 0.016 | 8.065 |
| 800 | 400 | -0.005 | 34.879 |
| 400 | 100 | 0.005 | 14.758 |
| 100 | 200 | 0.003 | 23.397 |
| 200 | 400 | 0.003 | 25.323 |
| 400 | 800 | 0.003 | 24.280 |
| 800 | 400 | -0.003 | 34.716 |
| 400 | 100 | 0.004 | 17.480 |

| | |
|---|---|
| Specimen location within tube: | Top |
| Method used to determine CV: | T90 |
| Nominal temperature during test ' C: | 20 |
| Remarks: See summary of soil descriptions | |

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|---|---|---|---|
| UKAS TESTING 4043 | PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** | **Contract No:** PSL22/3650 **Client Ref:** GTO386 |

# ONE DIMENSIONAL CONSOLIDATION TEST

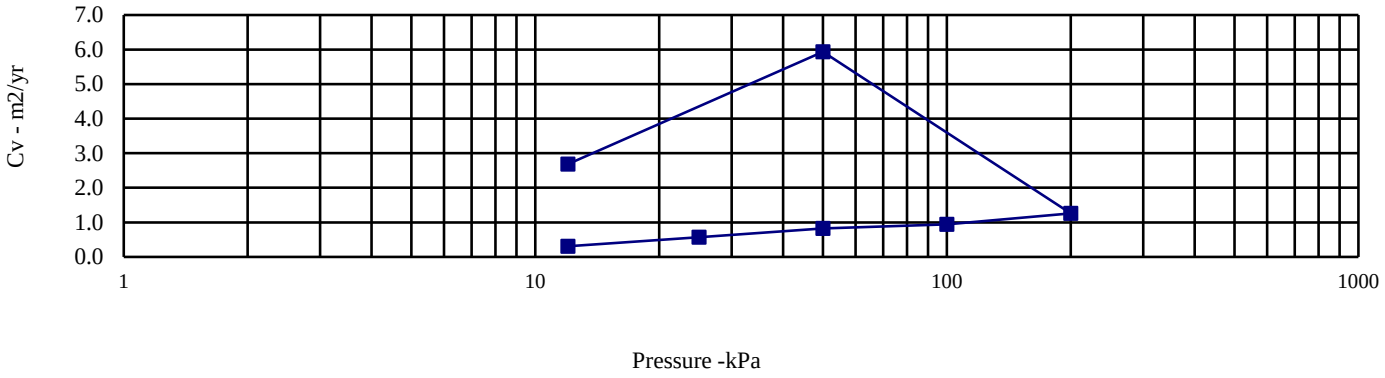
**BS 1377: Part 5: 1990: Clause 3**

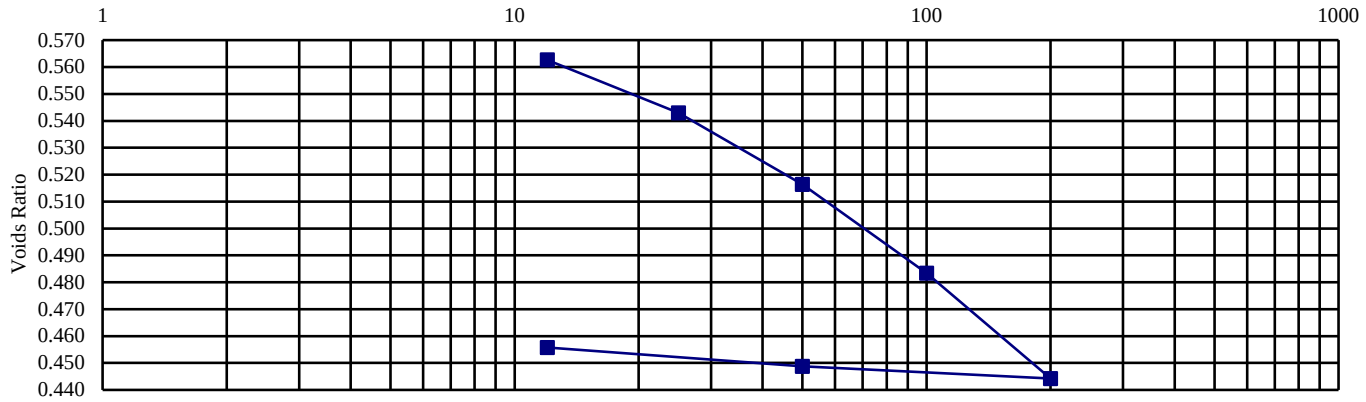
**Hole Number:** **BH119** **Top Depth (m):** **1.30**

**Sample Number:** **101** **Base Depth (m) :** **1.60**

**Sample Type:** **D**

| Initial Conditions | | Pressure Range kPa | | Mv m2/MN | Cv m2/yr | Specimen location within tube: | Top |
|---|---|---|---|---|---|---|---|
| Moisture Content (%): | 21 | | | | | | |
| Bulk Density (Mg/m3): | 2.02 | 0 | 12 | 1.237 | 0.309 | Method used to | |
| Dry Density (Mg/m3): | 1.67 | 12 | 25 | 0.969 | 0.566 | determine CV: | T90 |
| Voids Ratio: | 0.586 | 25 | 50 | 0.688 | 0.827 | Nominal temperature | |
| Degree of saturation: | 95.7 | 50 | 100 | 0.436 | 0.943 | during test ' C: | 20 |
| Height (mm): | 20.07 | 100 | 200 | 0.264 | 1.257 | Remarks: | |
| Diameter (mm) | 75.06 | 200 | 50 | 0.021 | 5.935 | See summary of soil descriptions | |
| Particle Density (Mg/m3): Assumed | 2.65 | 50 | 12 | 0.128 | 2.681 | | |

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|---|---|---|---|
| UKAS TESTING 4043 | PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** | **Contract No:** PSL22/3650 **Client Ref:** GTO386 |

# ONE DIMENSIONAL CONSOLIDATION TEST

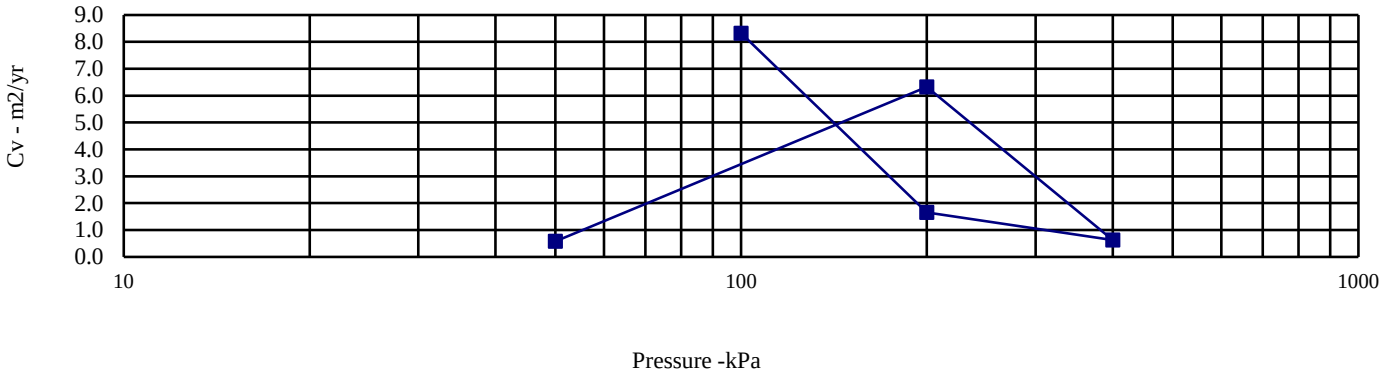
**BS 1377: Part 5: 1990: Clause 3**

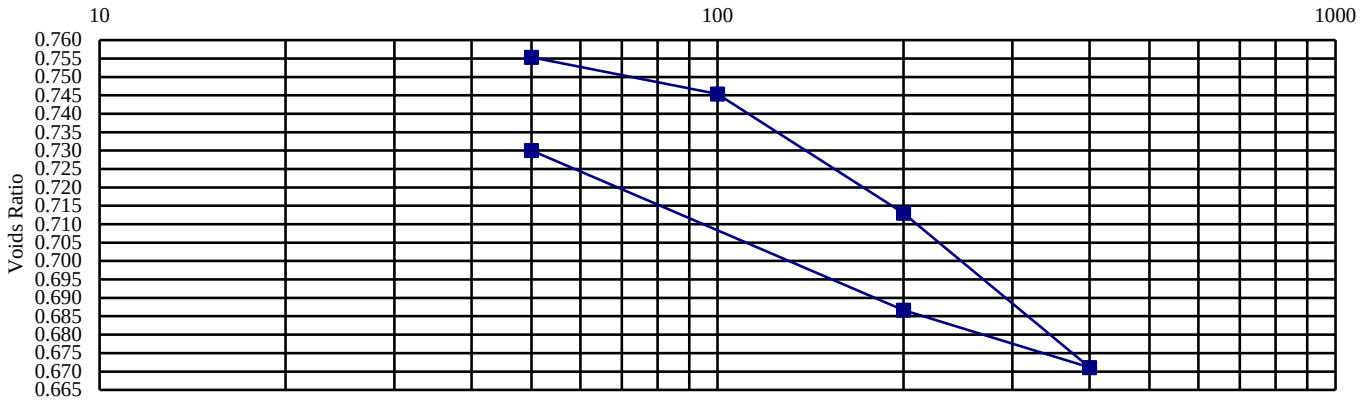
**Hole Number:** **BH119** **Top Depth (m):** **4.90**

**Sample Number:** **106** **Base Depth (m) :** **5.20**

**Sample Type:** **CS**

| Initial Conditions | | Pressure Range kPa | | Mv m2/MN | Cv m2/yr | Specimen location within tube: | Top |
|---|---|---|---|---|---|---|---|
| Moisture Content (%): | 27 | | | | | | |
| Bulk Density (Mg/m3): | 1.90 | 0 | 50 | Swelling | Swelling | Method used to | |
| Dry Density (Mg/m3): | 1.50 | 50 | 100 | 0.114 | 8.324 | determine CV: | T90 |
| Voids Ratio: | 0.769 | 100 | 200 | 0.186 | 1.660 | Nominal temperature | |
| Degree of saturation: | 93.4 | 200 | 400 | 0.122 | 0.623 | during test ' C: | 20 |
| Height (mm): | 20.04 | 400 | 200 | 0.046 | 6.319 | Remarks: | |
| Diameter (mm) | 75.11 | 200 | 50 | 0.171 | 0.578 | See summary of soil descriptions | |
| Particle Density (Mg/m3): Assumed | 2.65 | | | | | | |

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| UKAS TESTING 4043 | PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** | **Contract No:** PSL22/3650 **Client Ref:** GTO386 |

# ONE DIMENSIONAL CONSOLIDATION TEST

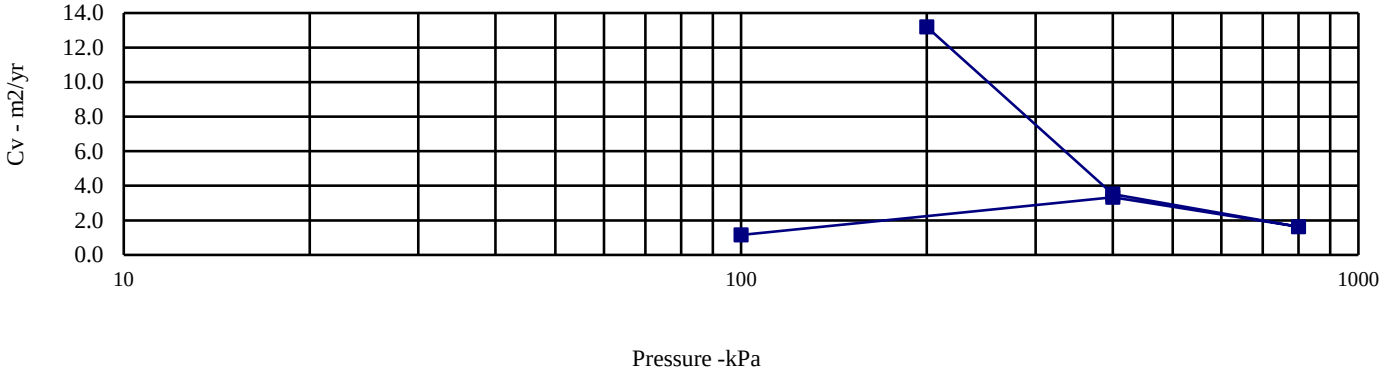
**BS 1377: Part 5: 1990: Clause 3**

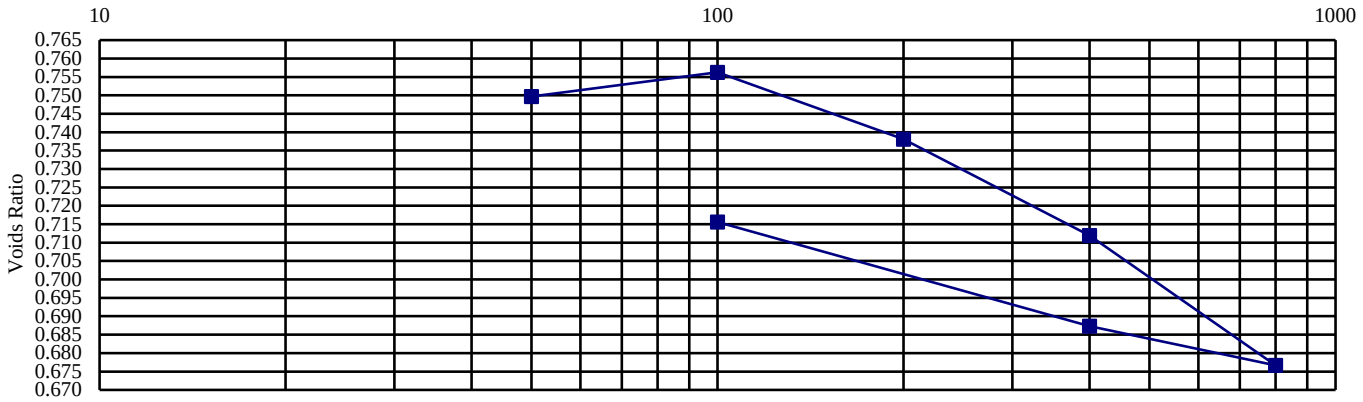
**Hole Number:** **BH119** **Top Depth (m):** **5.80**

**Sample Number:** **107** **Base Depth (m) :** **6.10**

**Sample Type:** **CS**

| Initial Conditions | | Pressure Range kPa | | Mv m2/MN | Cv m2/yr | Specimen location within tube: | Top |
|---|---|---|---|---|---|---|---|
| Moisture Content (%): | 27 | | | | | | |
| Bulk Density (Mg/m3): | 1.94 | 0 | 50 | Swelling | Swelling | Method used to | |
| Dry Density (Mg/m3): | 1.52 | 50 | 100 | Swelling | Swelling | determine CV: | T90 |
| Voids Ratio: | 0.740 | 100 | 200 | 0.103 | 13.196 | Nominal temperature | |
| Degree of saturation: | 97.0 | 200 | 400 | 0.075 | 3.515 | during test ' C: | 20 |
| Height (mm): | 20.04 | 400 | 800 | 0.051 | 1.635 | Remarks: | |
| Diameter (mm) | 75.06 | 800 | 400 | 0.016 | 3.344 | See summary of soil descriptions | |
| Particle Density (Mg/m3): Assumed | 2.65 | 400 | 100 | 0.056 | 1.156 | | |

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|---|---|---|---|
| UKAS TESTING 4043 | PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** | **Contract No:** PSL22/3650 **Client Ref:** GTO386 |

# ONE DIMENSIONAL CONSOLIDATION TEST

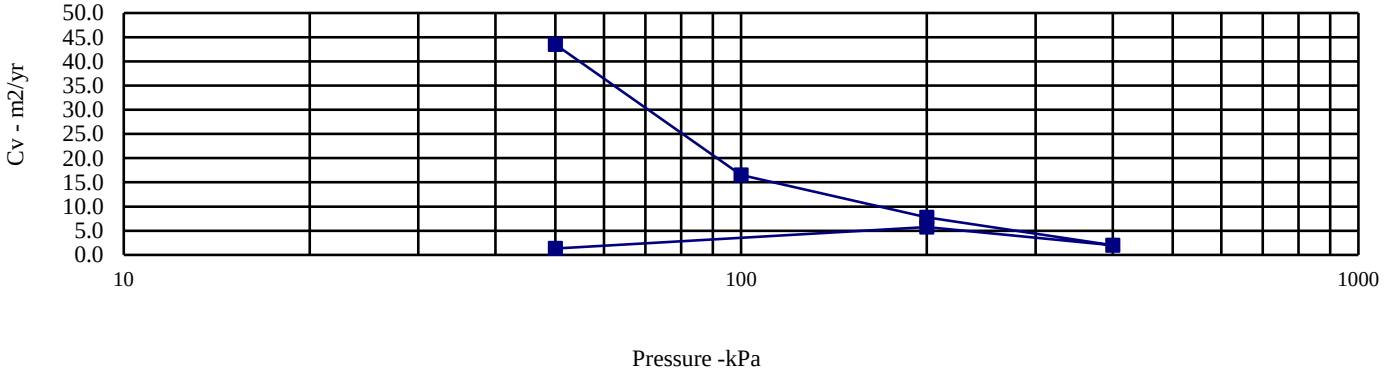
**BS 1377: Part 5: 1990: Clause 3**

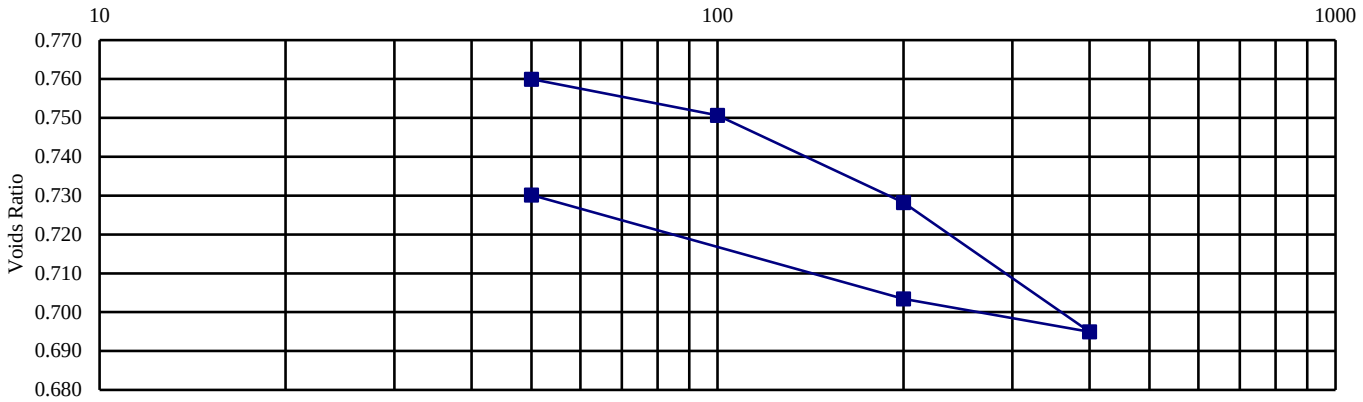
**Hole Number:** **BH119** **Top Depth (m):** **6.40**

**Sample Number:** **108** **Base Depth (m) :** **6.70**

**Sample Type:** **CS**

| Initial Conditions | | Pressure Range kPa | | Mv m2/MN | Cv m2/yr | Specimen location within tube: | Top |
|---|---|---|---|---|---|---|---|
| Moisture Content (%): | 29 | | | | | | |
| Bulk Density (Mg/m3): | 1.91 | 0 | 50 | 0.262 | 43.517 | Method used to | |
| Dry Density (Mg/m3): | 1.49 | 50 | 100 | 0.106 | 16.519 | determine CV: | T90 |
| Voids Ratio: | 0.783 | 100 | 200 | 0.128 | 7.782 | Nominal temperature | |
| Degree of saturation: | 97.1 | 200 | 400 | 0.096 | 1.968 | during test ' C: | 20 |
| Height (mm): | 20.05 | 400 | 200 | 0.025 | 5.785 | Remarks: | |
| Diameter (mm) | 75.11 | 200 | 50 | 0.105 | 1.322 | See summary of soil descriptions | |
| Particle Density (Mg/m3): Assumed | 2.65 | | | | | | |

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|---|---|---|---|
| UKAS TESTING 4043 | PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** | **Contract No:** PSL22/3650 **Client Ref:** GTO386 |

# ONE DIMENSIONAL CONSOLIDATION TEST

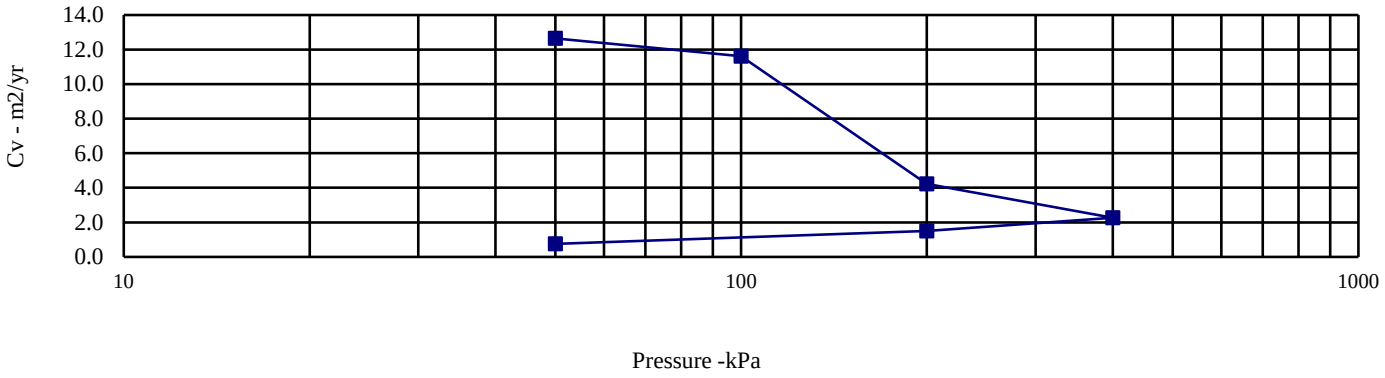
**BS 1377: Part 5: 1990: Clause 3**

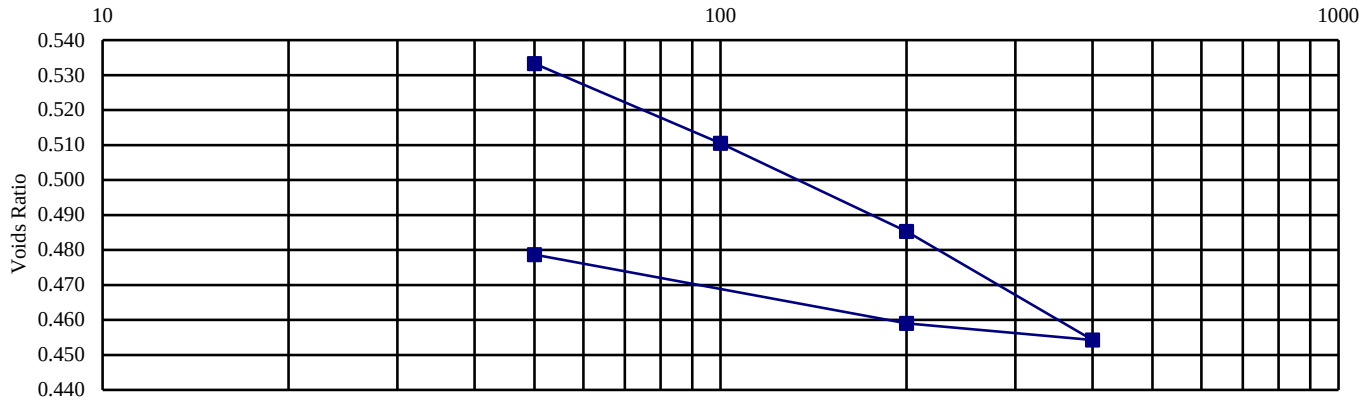
**Hole Number:** **BH134** **Top Depth (m):** **4.83**

**Sample Number:** **106** **Base Depth (m) :** **5.13**

**Sample Type:** **CS**

| Initial Conditions | | Pressure Range kPa | | Mv m2/MN | Cv m2/yr | Specimen location within tube: | Top |
|---|---|---|---|---|---|---|---|
| Moisture Content (%): | 23 | | | | | | |
| Bulk Density (Mg/m3): | 2.06 | 0 | 50 | 0.647 | 12.646 | Method used to | |
| Dry Density (Mg/m3): | 1.67 | 50 | 100 | 0.297 | 11.622 | determine CV: | T90 |
| Voids Ratio: | 0.585 | 100 | 200 | 0.167 | 4.231 | Nominal temperature | |
| Degree of saturation: | 105.7 | 200 | 400 | 0.105 | 2.260 | during test ' C: | 20 |
| Height (mm): | 20.09 | 400 | 200 | 0.017 | 1.503 | Remarks: | |
| Diameter (mm) | 75.06 | 200 | 50 | 0.089 | 0.756 | See summary of soil descriptions | |
| Particle Density (Mg/m3): Assumed | 2.65 | | | | | | |

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|---|---|---|---|
| UKAS TESTING 4043 | PSL Professional Soils Laboratory | Wansford to Sutton Dualling Supplementary GI | Contract No: PSL22/3650 |
| | | | Client Ref: GTO386 |

# ONE DIMENSIONAL CONSOLIDATION TEST

**BS 1377: Part 5: 1990: Clause 3**

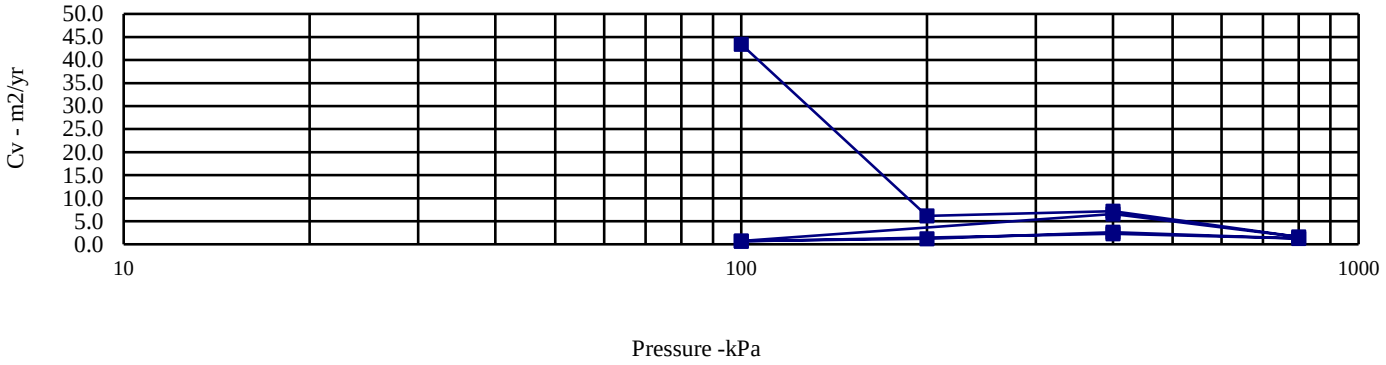
**Hole Number:** **BH113** **Top Depth (m):** **9.27**

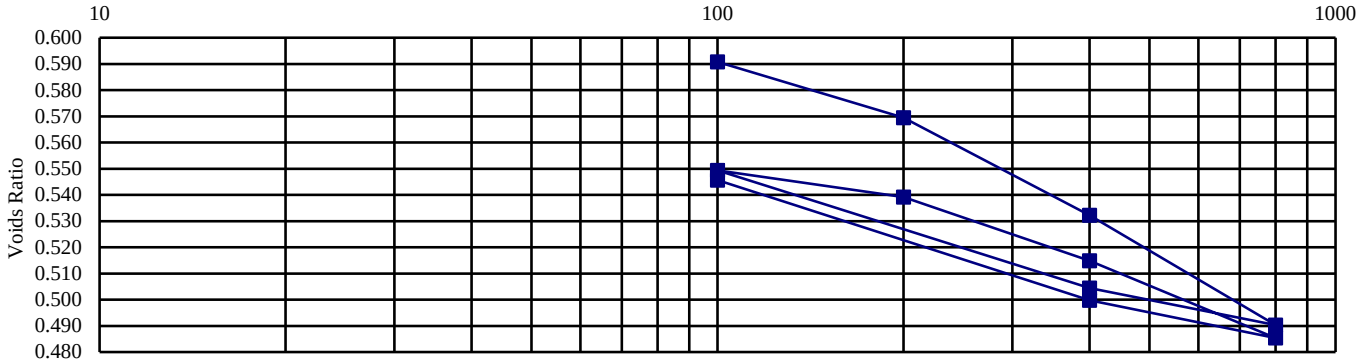
**Sample Number:** **103** **Base Depth (m) :** **9.50**

**Sample Type:** **CS**

| Initial Conditions | | Pressure Range kPa | | Mv m2/MN | Cv m2/yr |
|---|---|---|---|---|---|
| Moisture Content (%): | 22 | | | | |
| Bulk Density (Mg/m3): | 1.99 | 0 | 100 | 0.168 | 43.440 |
| Dry Density (Mg/m3): | 1.64 | 100 | 200 | 0.134 | 6.150 |
| Voids Ratio: | 0.618 | 200 | 400 | 0.119 | 7.169 |
| Degree of saturation: | 92.3 | 400 | 800 | 0.068 | 1.604 |
| Height (mm): | 20.03 | 800 | 400 | 0.024 | 6.578 |
| Diameter (mm) | 75.09 | 400 | 100 | 0.100 | 0.702 |
| Particle Density (Mg/m3): Assumed | 2.65 | 100 | 200 | 0.066 | 1.212 |
| | | 200 | 400 | 0.079 | 2.641 |
| | | 400 | 800 | 0.049 | 1.234 |
| | | 800 | 400 | 0.024 | 2.257 |
| | | 400 | 100 | 0.102 | 0.634 |

| Specimen location within tube: | Top |
|---|---|
| Method used to determine CV: | T90 |
| Nominal temperature during test ' C: | 20 |
| Remarks: See summary of soil descriptions | |

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|---|---|---|---|
| UKAS TESTING 4043 | PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** | **Contract No:** PSL22/3650 **Client Ref:** GTO386 |

# ONE DIMENSIONAL CONSOLIDATION TEST

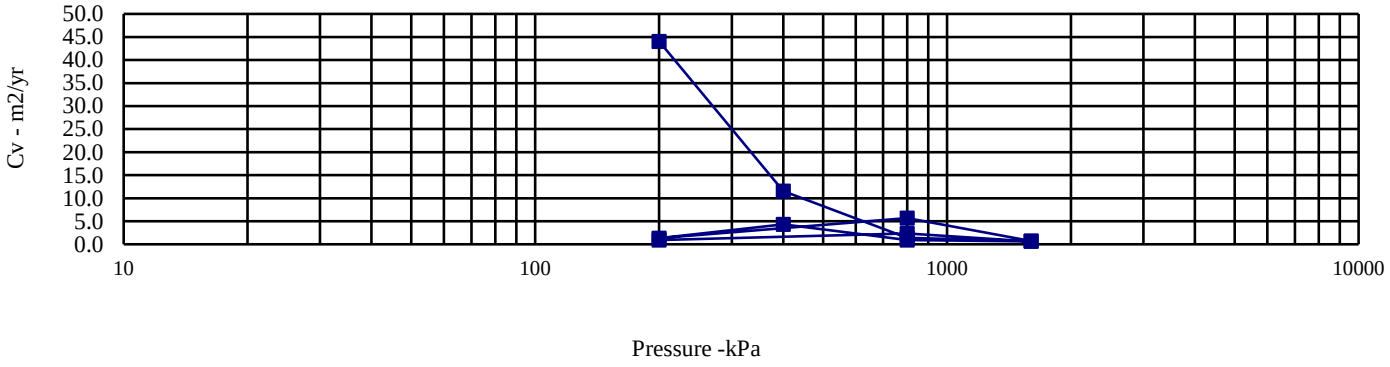
**BS 1377: Part 5: 1990: Clause 3**

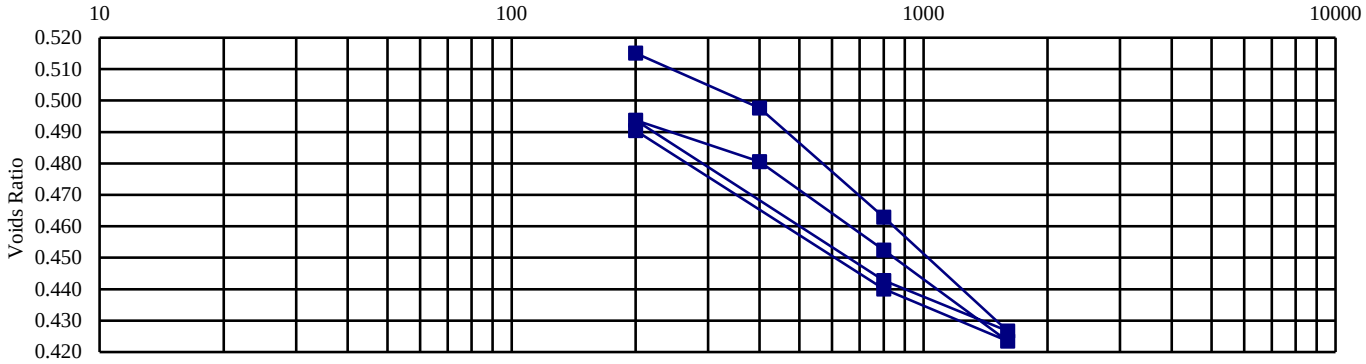
**Hole Number:** **BH113** **Top Depth (m):** **13.00**

**Sample Number:** **106** **Base Depth (m) :** **13.10**

**Sample Type:** **CS**

| Initial Conditions | | Pressure Range kPa | | Mv m2/MN | Cv m2/yr | Specimen location within tube: | Top |
|---|---|---|---|---|---|---|---|
| Moisture Content (%): | 19 | | | | | | |
| Bulk Density (Mg/m3): | 2.06 | 0 | 200 | 0.068 | 44.015 | Method used to | |
| Dry Density (Mg/m3): | 1.73 | 200 | 400 | 0.058 | 11.547 | determine CV: | T90 |
| Voids Ratio: | 0.536 | 400 | 800 | 0.058 | 1.411 | Nominal temperature | |
| Degree of saturation: | 94.9 | 800 | 1600 | 0.031 | 0.725 | during test ' C: | 20 |
| Height (mm): | 20.06 | 1600 | 800 | 0.014 | 5.716 | Remarks: | |
| Diameter (mm) | 75.11 | 800 | 200 | 0.059 | 1.307 | See summary of soil descriptions | |
| Particle Density (Mg/m3): Assumed | 2.65 | 200 | 400 | 0.044 | 4.320 | | |
| | | 400 | 800 | 0.048 | 0.912 | | |
| | | 800 | 1600 | 0.025 | 0.617 | | |
| | | 1600 | 800 | 0.015 | 2.340 | | |
| | | 800 | 200 | 0.058 | 0.925 | | |

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| UKAS TESTING 4043 | PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** | **Contract No:** PSL22/3650 **Client Ref:** GTO386 |

# SUMMARY OF LABORATORY HAND VANES

**(BS1377 : PART 7 : 1990)**

| Hole Number | Sample Number | Sample Type | Top Depth m | Base Depth m | Moisture Content % | Peak Shear Strength kPa | Remarks |
|---|---|---|---|---|---|---|---|
| TP119 | 7 | B | 1.00 | 1.30 | 19 | >150 | |
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* This test is out of our UKAS scope

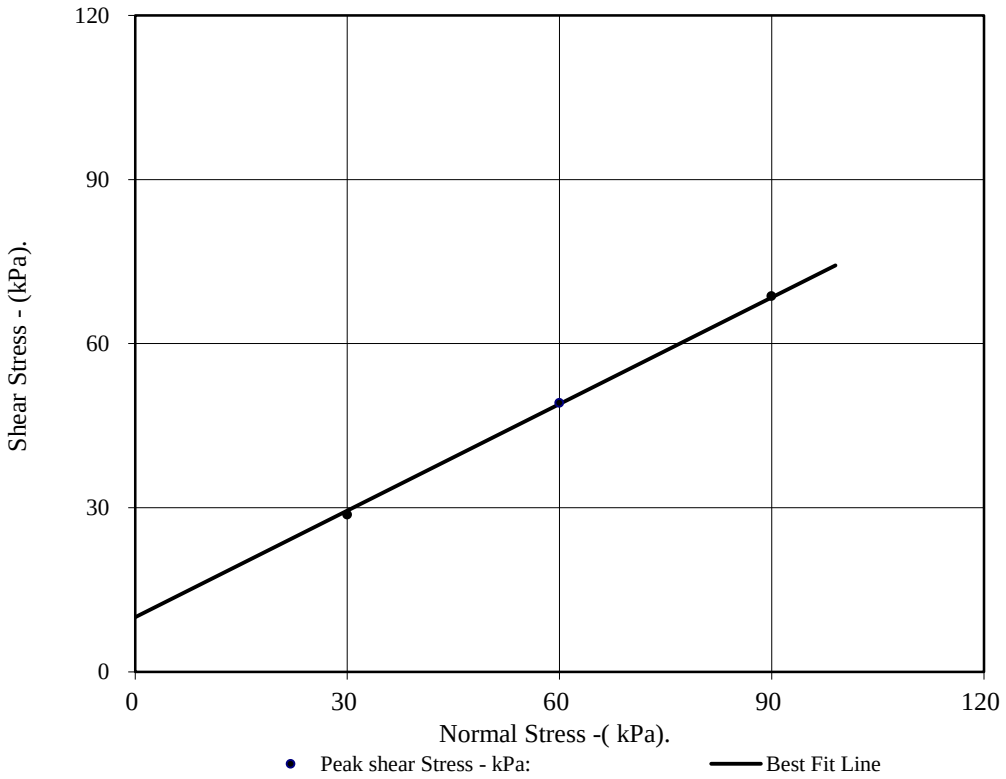
| | | |
|---|---|---|
| PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** | **Contract No:** |
| | | **PSL22/3024** |
| | | **Client Ref:** |
| | | **GT0386** |

# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 4**

| | | | | |
|---|---|---|---|---|
| Hole Number: | **TP113** | | Top Depth: | **3.00** |
| Sample Number: | **11** | | Base Depth: | **3.10** |
| Sample Conditions: | Dry | | Sample Type | **B** |
| Particle Density - Mg/m3: | 2.65 | Assumed | **Remarks:** | |
| Sample Preparation: | Material tested passing 2mm sieve<br>Remoulded using hand tamped effort | | | |
| Sample Description: | **See summary of soil descriptions** | | | |

| **STAGE** | **1** | **2** | **3** |
|---|---|---|---|
| **Initial Conditions** | | | |
| Height - mm: | 20.05 | 20.05 | 20.05 |
| Length - mm: | 59.97 | 59.97 | 59.97 |
| Moisture Content - %: | 21 | 21 | 21 |
| Bulk Density - Mg/m3: | 1.96 | 1.96 | 1.95 |
| Dry Density - Mg/m3: | 1.62 | 1.61 | 1.61 |
| Voids Ratio: | 0.638 | 0.642 | 0.645 |
| Normal Pressure- kPa | 30 | 60 | 90 |
| **Consolidation Stage** | | | |
| Consolidated Height - mm: | 19.70 | 19.52 | 19.27 |
| **Shearing Stage** | | | |
| Rate of Strain (mm/min) | 0.600 | 0.600 | 0.600 |
| Displacement at peak shear stress (mm) | 2.50 | 3.00 | 3.00 |
| Peak shear Stress - kPa: | 29 | 49 | 69 |
| **Final Consolidated Conditions** | | | |
| Moisture Content - %: | 20 | 20 | 20 |
| Bulk Density - Mg/m3: | 1.99 | 2.01 | 2.03 |
| Dry Density - Mg/m3: | 1.66 | 1.67 | 1.69 |
| **Peak** | | | |
| Angle of Shearing Resistance:(~~θ~~) | **33** | | |
| Effective Cohesion - kPa: | **10** | | |

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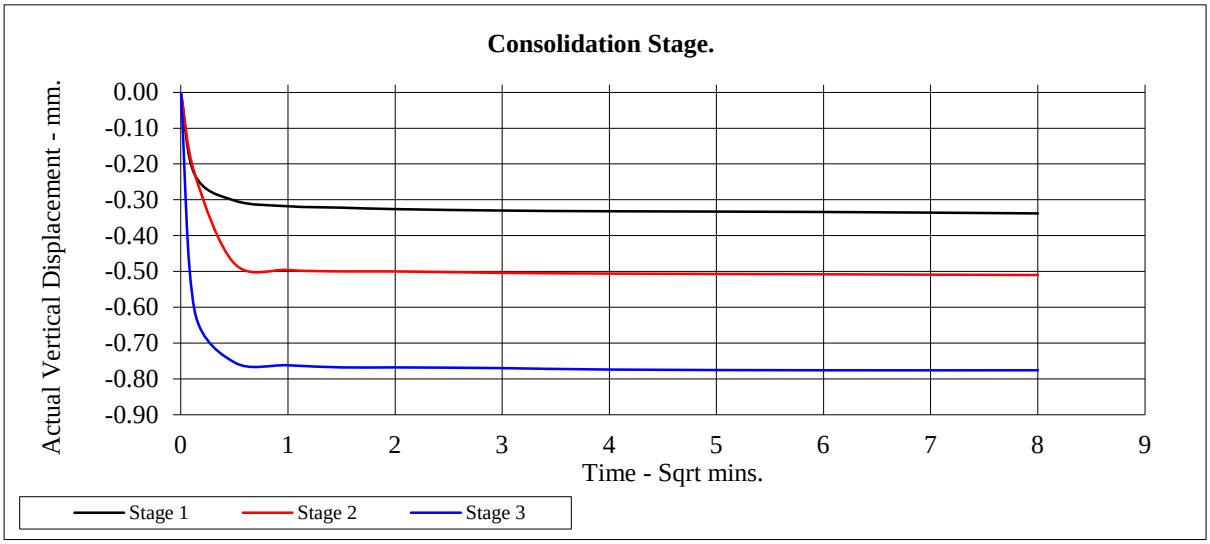
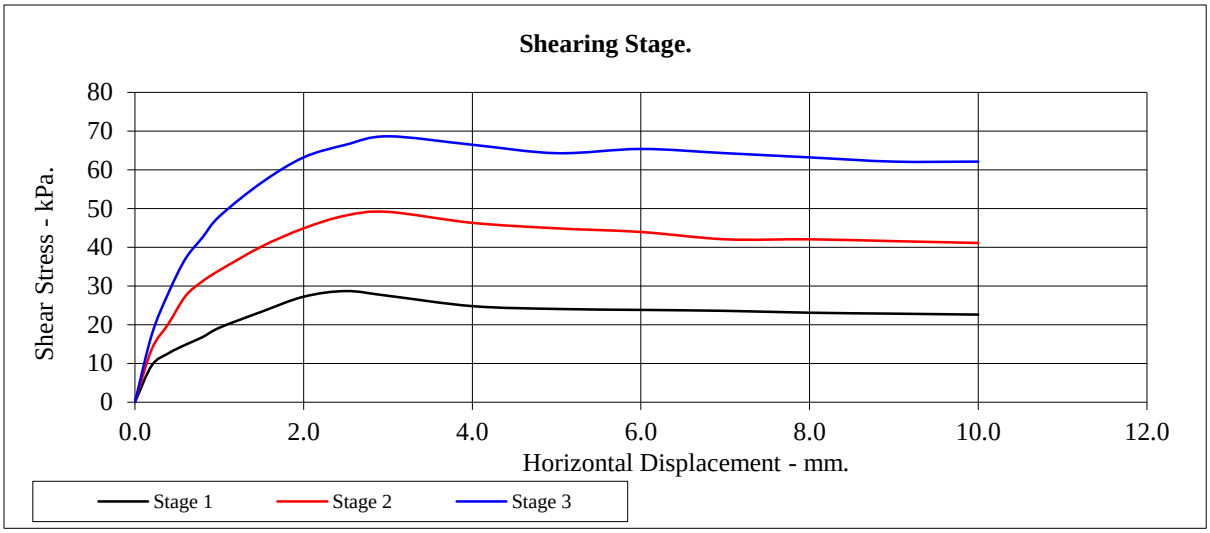
|---|---|---|---|
| UKAS TESTING 4043 | PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** | **Contract No:** PSL22/3024<br>**Client Ref:** GT0386 |

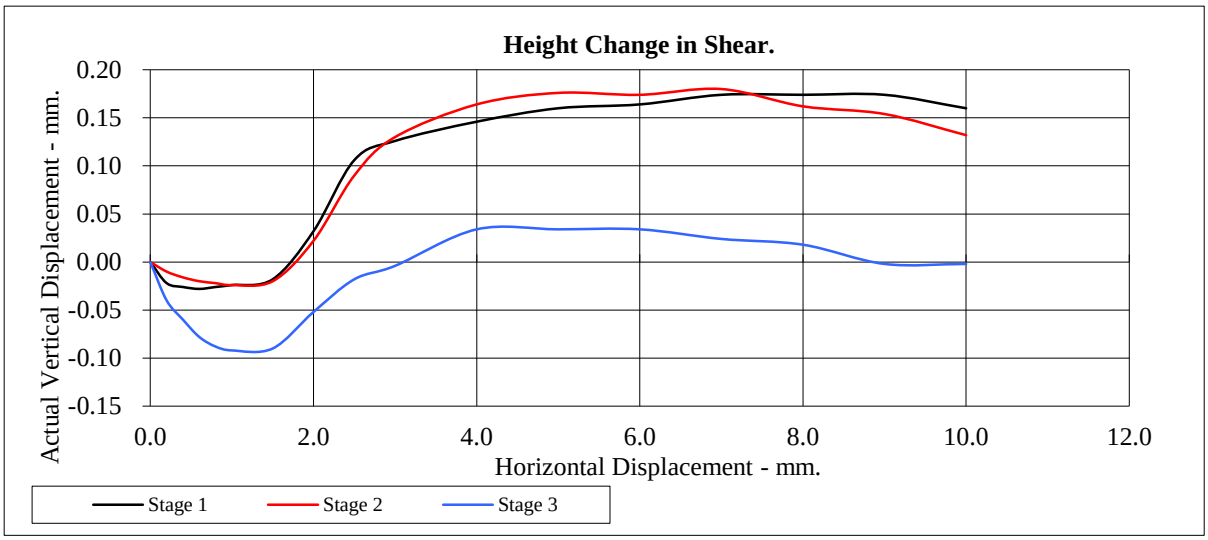
# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 4**

| | | | |
|---|---|---|---|
| Hole Number: | **TP113** | Top Depth: | **3.00** |
| Sample Number: | **11** | Base Depth: | **3.10** |

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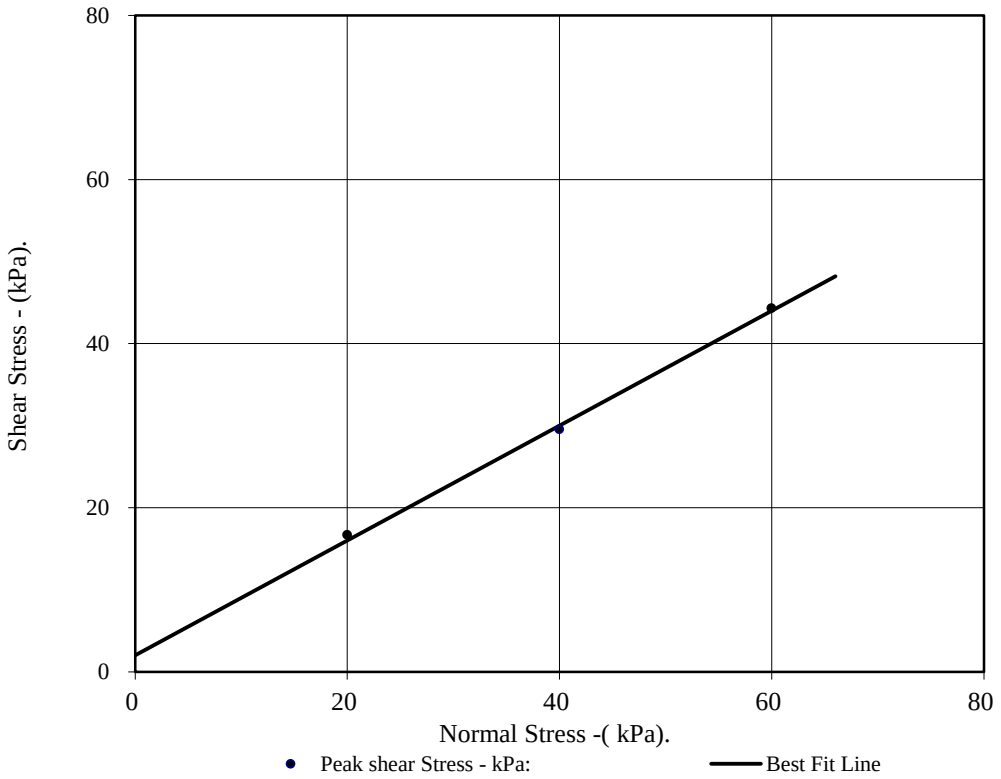
|---|---|---|
| UKAS TESTING 4043 / Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** | **Contract No:** PSL22/3024<br>**Client Ref:** GT0386 |

# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 4**

| | | | | | |
|---|---|---|---|---|---|
| Hole Number: | **TP117** | | Top Depth: | **2.00** | |
| Sample Number: | **7** | | Base Depth: | **2.30** | |
| Sample Conditions: | Dry | | Sample Type | **B** | |
| Particle Density - Mg/m3: | 2.65 | Assumed | **Remarks:** | | |
| Sample Preparation: | Material tested passing 2mm sieve<br>Remoulded using hand tamped effort | | | | |
| Sample Description: | **See summary of soil descriptions** | | | | |

| **STAGE** | **1** | **2** | **3** |
|---|---|---|---|
| **Initial Conditions** | | | |
| Height - mm: | 20.05 | 20.05 | 20.05 |
| Length - mm: | 59.97 | 59.97 | 59.97 |
| Moisture Content - %: | 19 | 19 | 19 |
| Bulk Density - Mg/m3: | 1.81 | 1.81 | 1.81 |
| Dry Density - Mg/m3: | 1.52 | 1.53 | 1.53 |
| Voids Ratio: | 0.738 | 0.733 | 0.733 |
| Normal Pressure- kPa | 20 | 40 | 60 |
| **Consolidation Stage** | | | |
| Consolidated Height - mm: | 19.70 | 19.59 | 19.46 |
| **Shearing Stage** | | | |
| Rate of Strain (mm/min) | 0.600 | 0.600 | 0.600 |
| Displacement at peak shear stress (mm) | 4.00 | 2.50 | 2.50 |
| Peak shear Stress - kPa: | 17 | 30 | 44 |
| **Final Consolidated Conditions** | | | |
| Moisture Content - %: | 19 | 21 | 21 |
| Bulk Density - Mg/m3: | 1.85 | 1.86 | 1.87 |
| Dry Density - Mg/m3: | 1.55 | 1.54 | 1.55 |
| **Peak** | | | |
| Angle of Shearing Resistance:(~~θ~~) | **35** | | |
| Effective Cohesion - kPa: | **2** | | |

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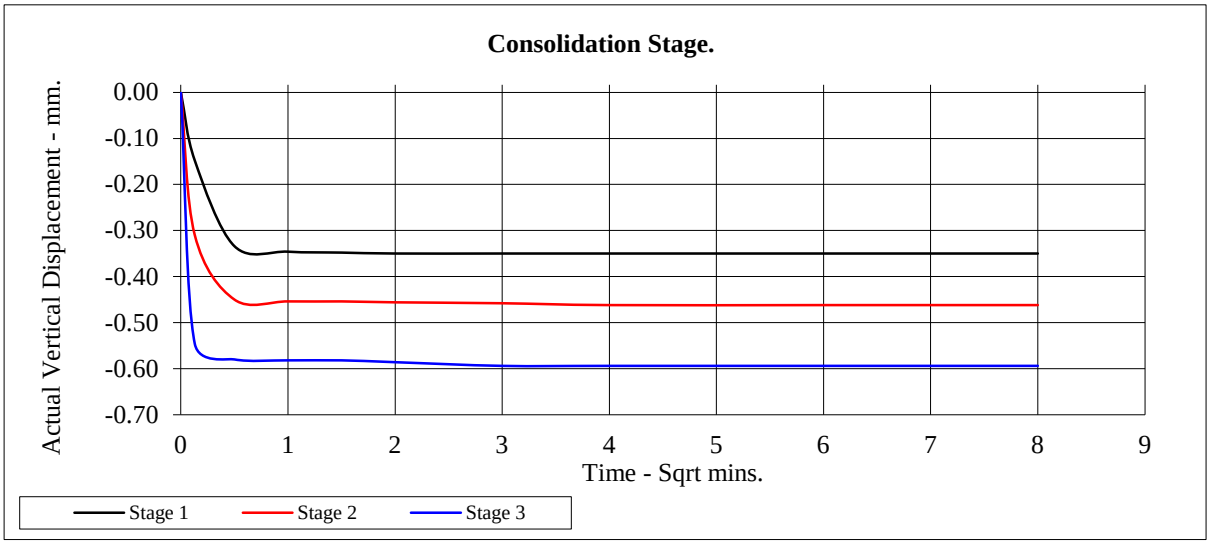
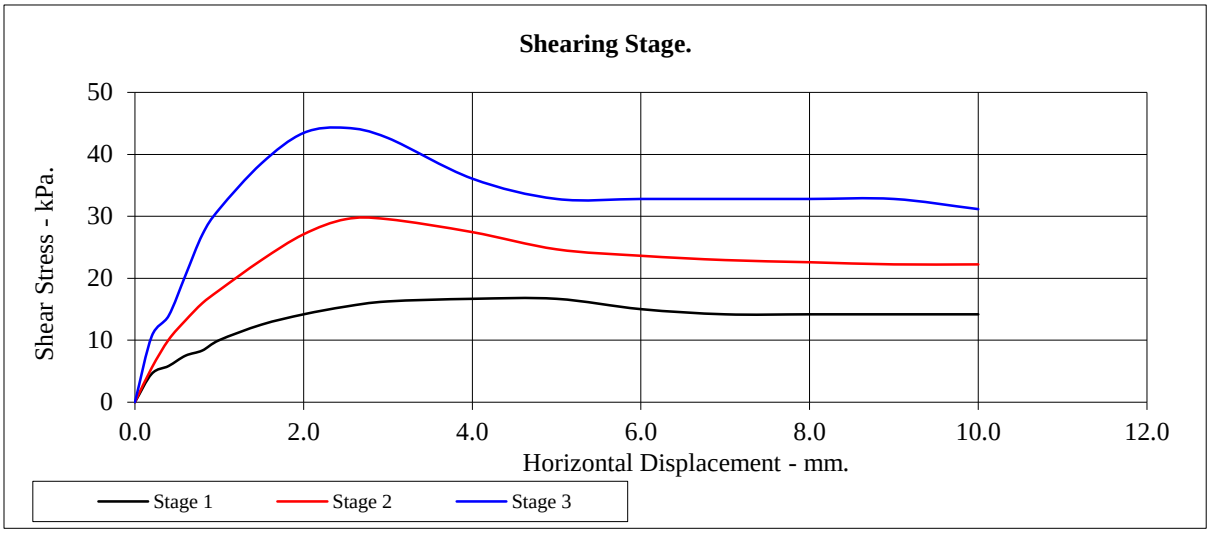
|---|---|---|---|
| UKAS TESTING 4043 | PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** | **Contract No:** PSL22/3024<br>**Client Ref:** GT0386 |

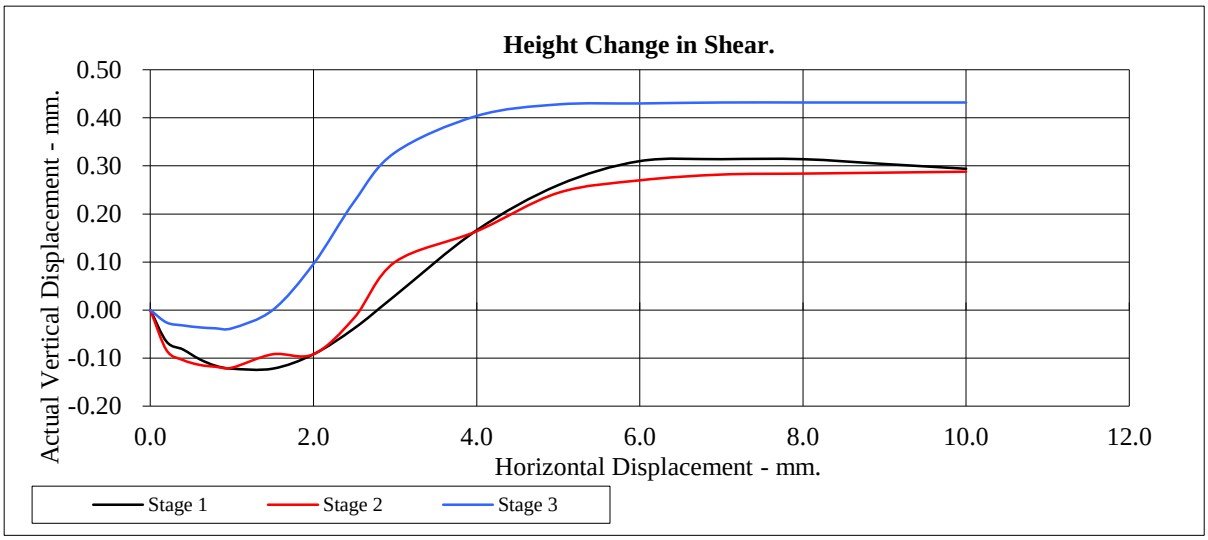
# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 4**

| | | | |
|---|---|---|---|
| Hole Number: | **TP117** | Top Depth: | **2.00** |
| Sample Number: | **7** | Base Depth: | **2.30** |

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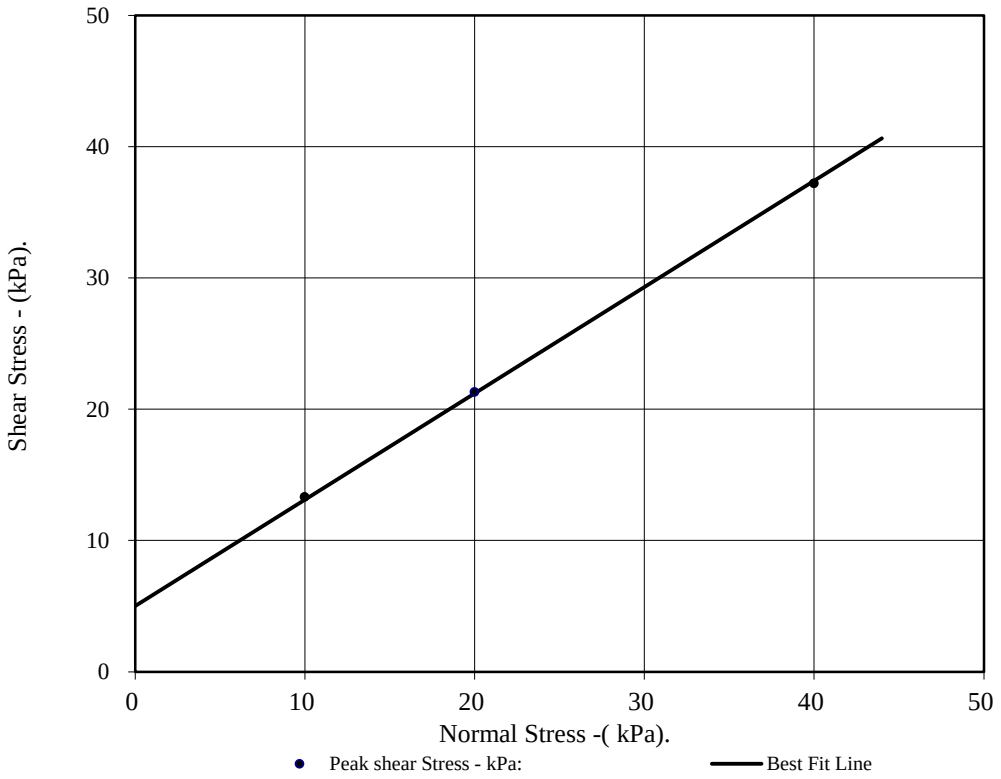
|---|---|---|
| UKAS TESTING 4043 / PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** | **Contract No:** PSL22/3024<br>**Client Ref:** GT0386 |

# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 4**

| | | | | | |
|---|---|---|---|---|---|
| Hole Number: | **TP126** | | Top Depth: | **1.00** | |
| Sample Number: | **5** | | Base Depth: | **1.20** | |
| Sample Conditions: | Dry | | Sample Type | **B** | |
| Particle Density - Mg/m3: | 2.65 | Assumed | **Remarks:** | | |
| Sample Preparation: | Material tested passing 2mm sieve<br>Remoulded using hand tamped effort. | | | | |
| Sample Description: | **See summary of soil descriptions.** | | | | |

| **STAGE** | **1** | **2** | **3** |
|---|---|---|---|
| **Initial Conditions** | | | |
| Height - mm: | 19.99 | 19.99 | 19.99 |
| Length - mm: | 60.05 | 60.05 | 60.05 |
| Moisture Content - %: | 8.0 | 8.0 | 8.0 |
| Bulk Density - Mg/m3: | 2.03 | 2.02 | 2.03 |
| Dry Density - Mg/m3: | 1.88 | 1.87 | 1.88 |
| Voids Ratio: | 0.409 | 0.414 | 0.410 |
| Normal Pressure- kPa | 10 | 20 | 40 |
| **Consolidation Stage** | | | |
| Consolidated Height - mm: | 19.91 | 19.70 | 19.63 |
| **Shearing Stage** | | | |
| Rate of Strain - mm/min | 0.60 | 0.60 | 0.60 |
| Displacement at peak shear stress - mm | 9.91 | 7.81 | 3.91 |
| Peak shear Stress - kPa: | 13 | 21 | 37 |
| **Final Consolidated Conditions** | | | |
| Moisture Content - %: | 11 | 11 | 11 |
| Bulk Density - Mg/m3: | 2.04 | 2.05 | 2.07 |
| Dry Density - Mg/m3: | 1.83 | 1.84 | 1.86 |
| **Peak** | | | |
| Angle of Shearing Resistance:(~~θ~~) | **39** | | |
| Effective Cohesion - kPa: | **5** | | |




UKAS TESTING 4043

PSL Professional Soils Laboratory

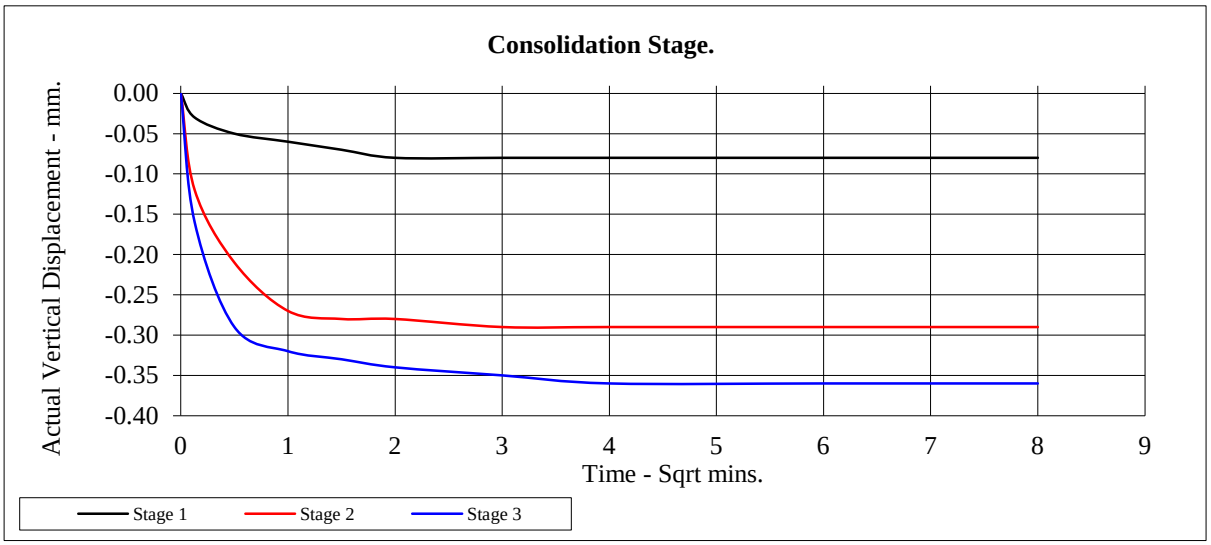
**Wansford to Sutton Dualling Supplementary GI**

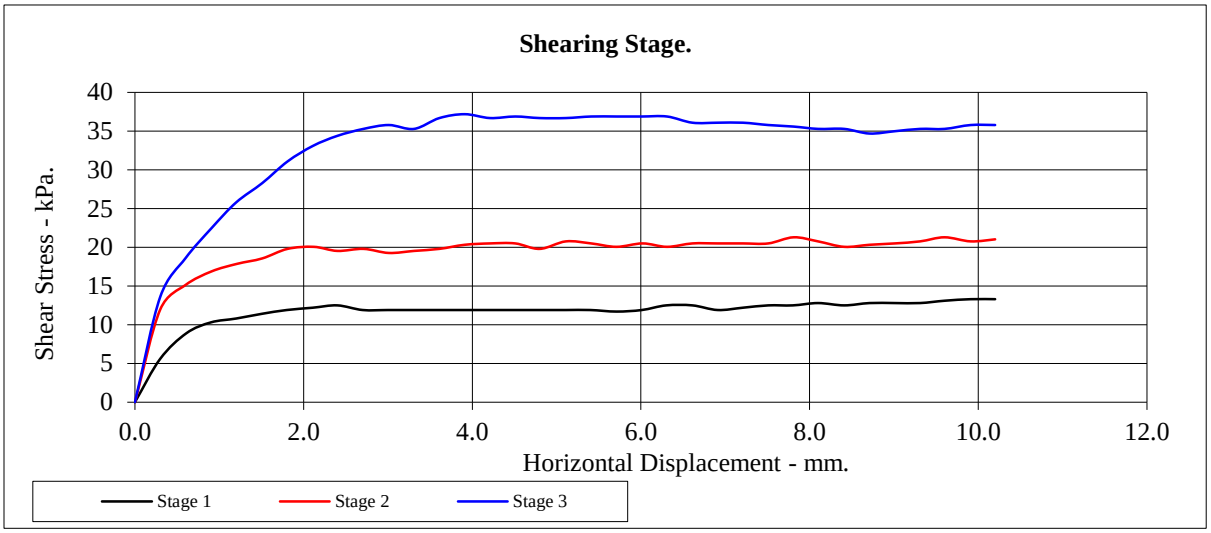
| | |
|---|---|
| **Contract No:** | |
| **PSL22/3024** | |
| **Client Ref:** | |
| **GT0386** | |

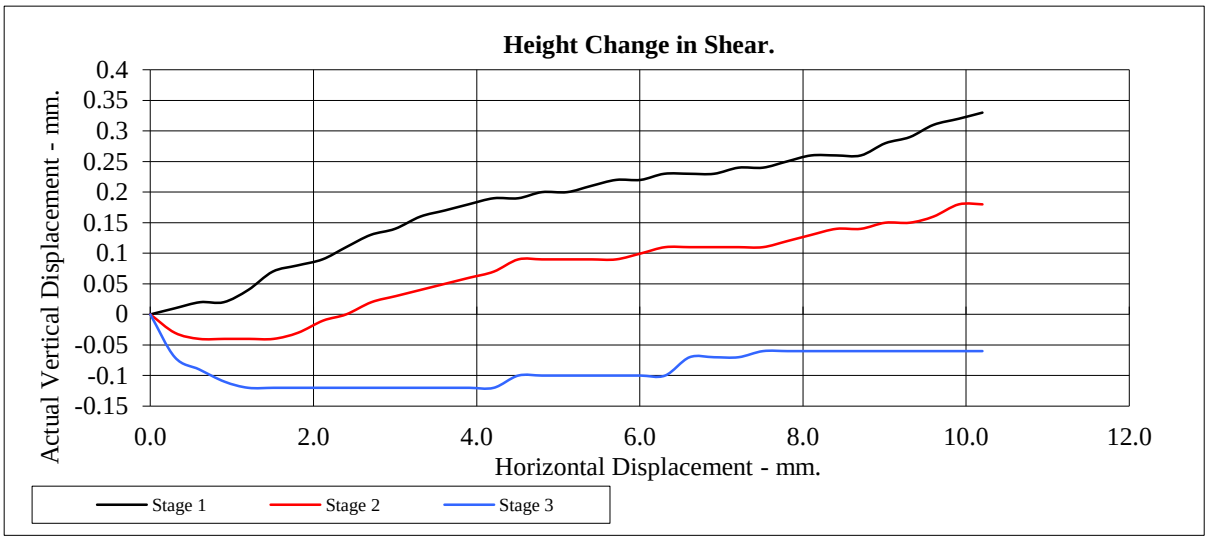
# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 4**

| | | | |
|---|---|---|---|
| Hole Number: | **TP126** | Top Depth: | **1.00** |
| Sample Number: | **5** | Base Depth: | **1.20** |



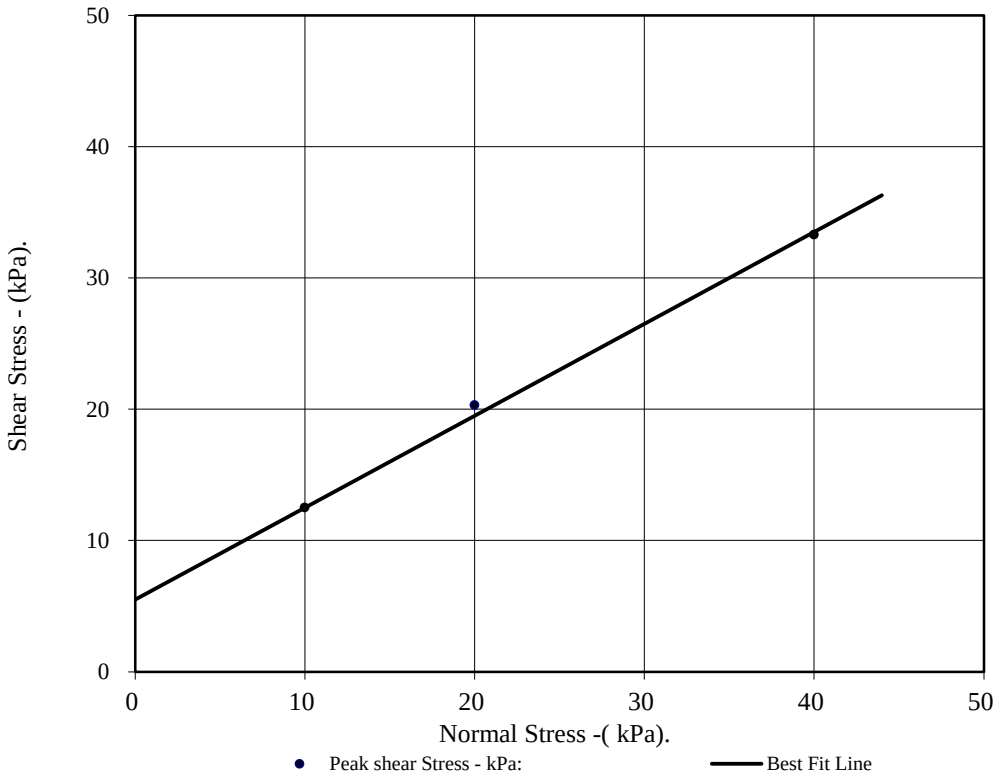



# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 4**

| | | | | |
|---|---|---|---|---|
| Hole Number: | **TP128** | | Top Depth: | **1.90** |
| Sample Number: | **7** | | Base Depth: | **2.10** |
| Sample Conditions: | Submerged | | Sample Type | **B** |
| Particle Density - Mg/m3: | 2.65 | Assumed | **Remarks:** | |
| Sample Preparation: | Material tested passing 2mm sieve<br>Remoulded using 2.5kg effort. | | | |
| Sample Description: | **See summary of soil descriptions.** | | | |

| **STAGE** | **1** | **2** | **3** |
|---|---|---|---|
| **Initial Conditions** | | | |
| Height - mm: | 20.05 | 20.05 | 20.05 |
| Length - mm: | 59.97 | 59.97 | 59.97 |
| Moisture Content - %: | 22 | 22 | 22 |
| Bulk Density - Mg/m3: | 1.96 | 1.96 | 1.96 |
| Dry Density - Mg/m3: | 1.60 | 1.60 | 1.60 |
| Voids Ratio: | 0.652 | 0.652 | 0.652 |
| Normal Pressure- kPa | 10 | 20 | 40 |
| **Consolidation Stage** | | | |
| Consolidated Height - mm: | 19.86 | 19.76 | 19.52 |
| **Shearing Stage** | | | |
| Rate of Strain - mm/min | 0.042 | 0.042 | 0.042 |
| Displacement at peak shear stress - mm | 1.81 | 2.40 | 2.71 |
| Peak shear Stress - kPa: | 13 | 20 | 33 |
| **Final Consolidated Conditions** | | | |
| Moisture Content - %: | 22 | 22 | 21 |
| Bulk Density - Mg/m3: | 1.98 | 1.99 | 2.01 |
| Dry Density - Mg/m3: | 1.63 | 1.63 | 1.66 |
| **Peak** | | | |
| Angle of Shearing Resistance:(~~θ~~) | **35** | | |
| Effective Cohesion - kPa: | **6** | | |




UKAS TESTING 4043

PSL Professional Soils Laboratory

**Wansford to Sutton Dualling Supplementary GI**

| **Contract No:** |
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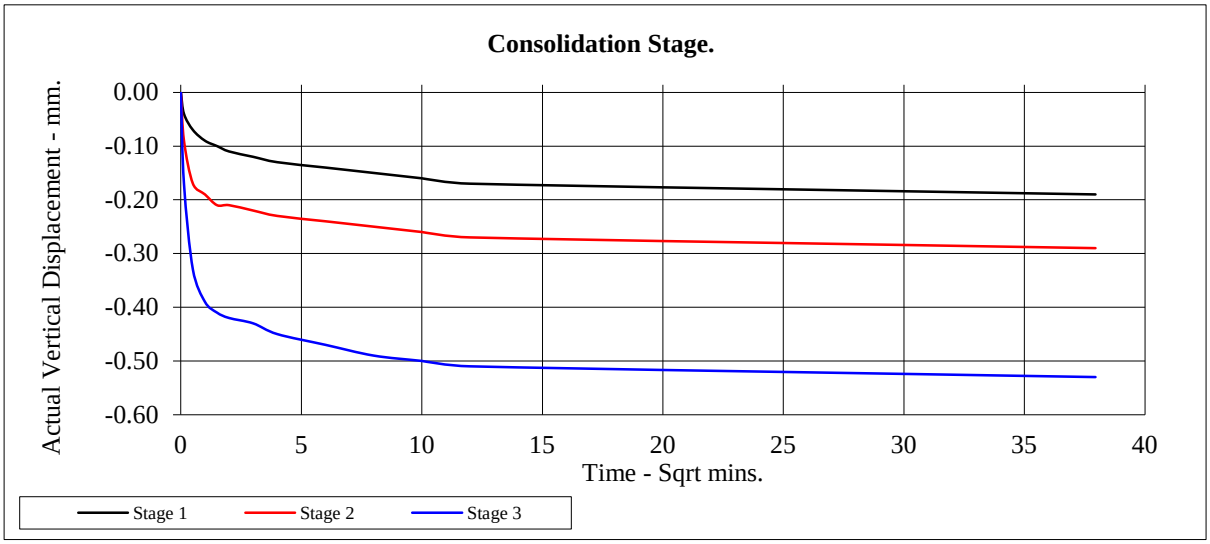
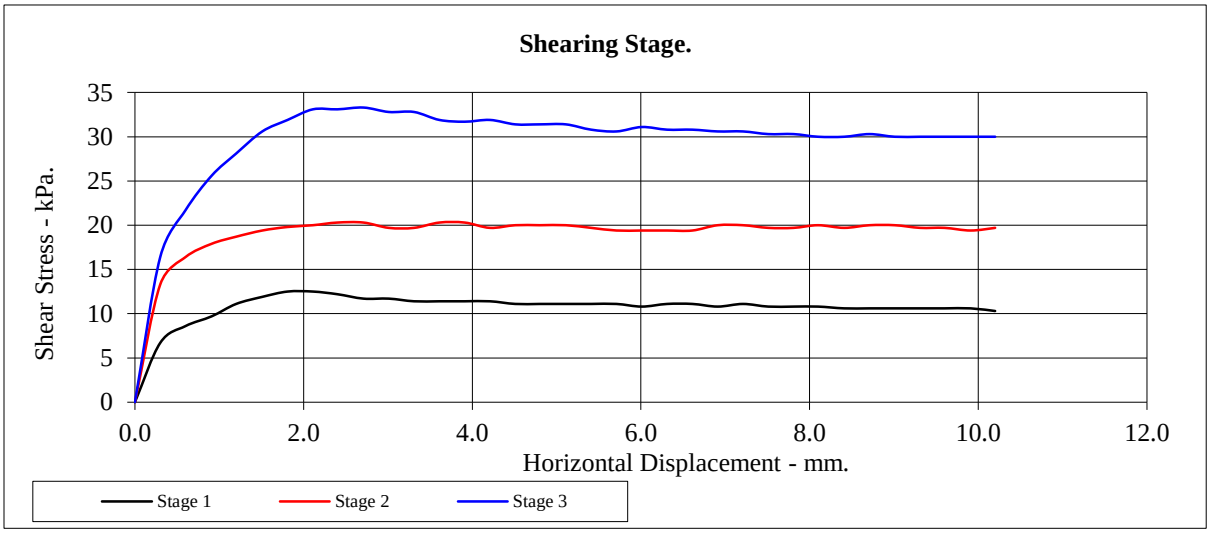
| **PSL22/3024** |
| **Client Ref:** |
| **GT0386** |

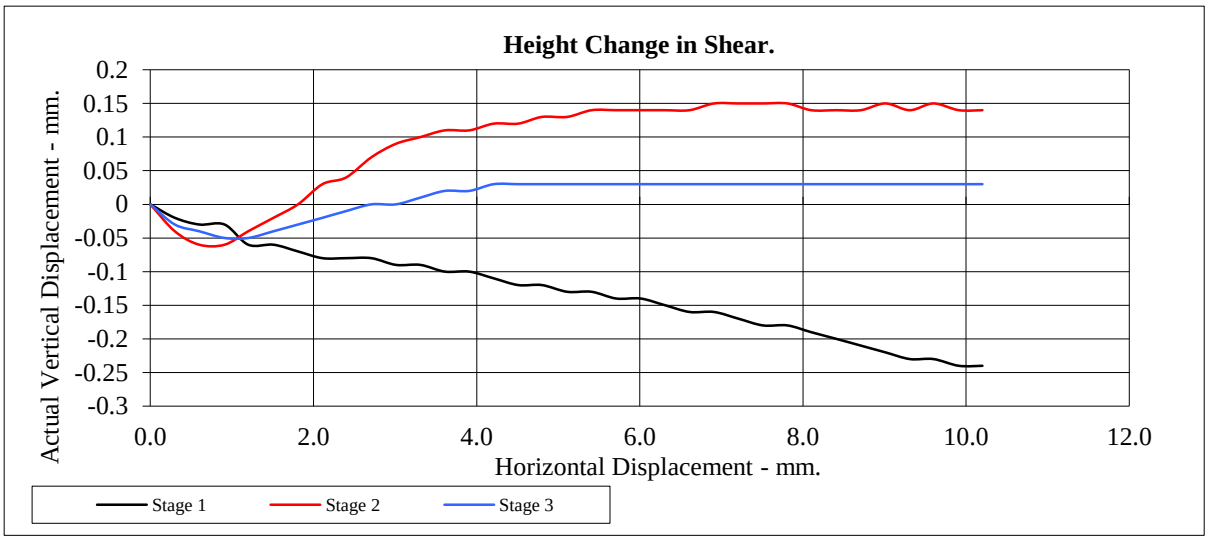
# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 4**

| | | | |
|---|---|---|---|
| Hole Number: | **TP128** | Top Depth: | **1.90** |
| Sample Number: | **7** | Base Depth: | **2.10** |



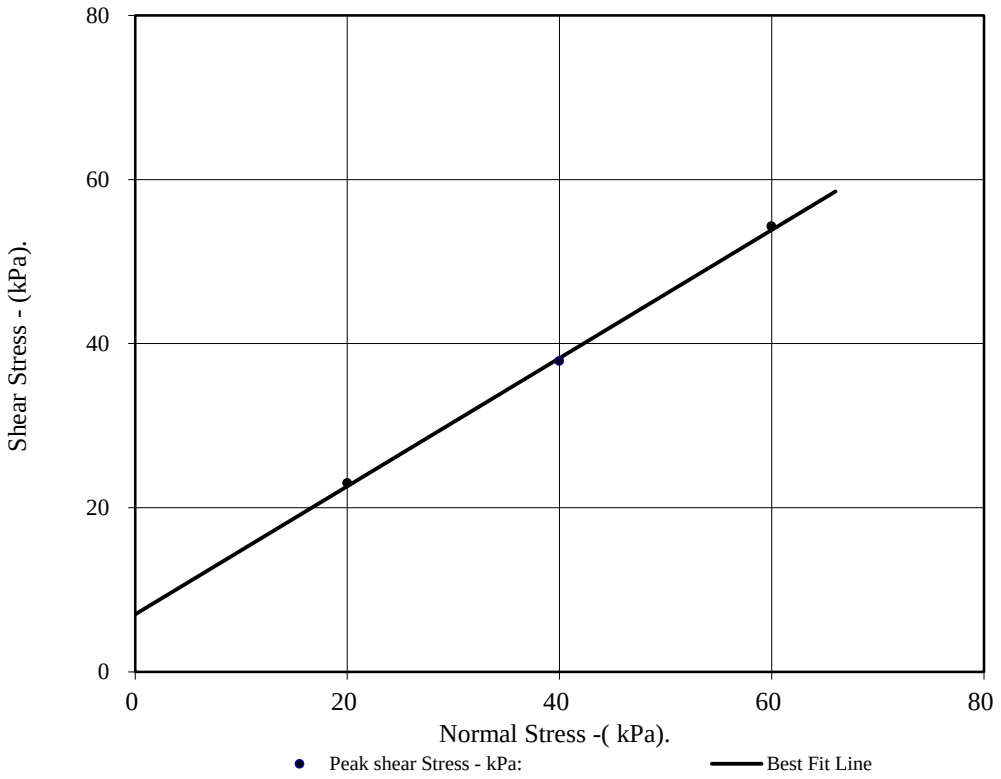



# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 5**

| | | | | | |
|---|---|---|---|---|---|
| Hole Number: | **TP107** | | Top Depth: | **0.60** | |
| Sample Number: | **5** | | Base Depth: | **0.90** | |
| Sample Conditions: | Dry | | Sample Type | **B** | |
| Particle Density - Mg/m3: | 2.65 | Assumed | **Remarks:** | | |
| Sample Preparation: | Material tested passing 20mm sieve<br>Remoulded using 2.5kg effort. | | | | |
| Sample Description: | **See summary of soil descriptions** | | | | |

| **STAGE** | **1** | **2** | **3** |
|---|---|---|---|
| **Initial Conditions** | | | |
| Height - mm: | 130 | 130 | 130 |
| Length - mm: | 300 | 300 | 300 |
| Moisture Content - %: | 12 | 12 | 12 |
| Bulk Density - Mg/m3: | 1.83 | 1.83 | 1.83 |
| Dry Density - Mg/m3: | 1.64 | 1.64 | 1.64 |
| Voids Ratio: | 0.612 | 0.612 | 0.612 |
| Normal Pressure- kPa | 20 | 40 | 60 |
| **Consolidation Stage** | | | |
| Consolidated Height - mm: | 129.57 | 129.34 | 129.24 |
| **Shearing Stage** | | | |
| Rate of Strain (mm/min) | 1.00 | 1.00 | 1.00 |
| Displacement at peak shear stress (mm) | 9.00 | 27.00 | 22.50 |
| Peak shear Stress - kPa: | 23 | 38 | 54 |
| **Final Consolidated Conditions** | | | |
| Moisture Content - %: | 11 | 10 | 10 |
| Bulk Density - Mg/m3: | 1.84 | 1.84 | 1.85 |
| Dry Density - Mg/m3: | 1.66 | 1.67 | 1.67 |
| **Peak** | | | |
| Angle of Shearing Resistance:(~~θ~~) | **38** | | |
| Effective Cohesion - kPa: | **7** | | |

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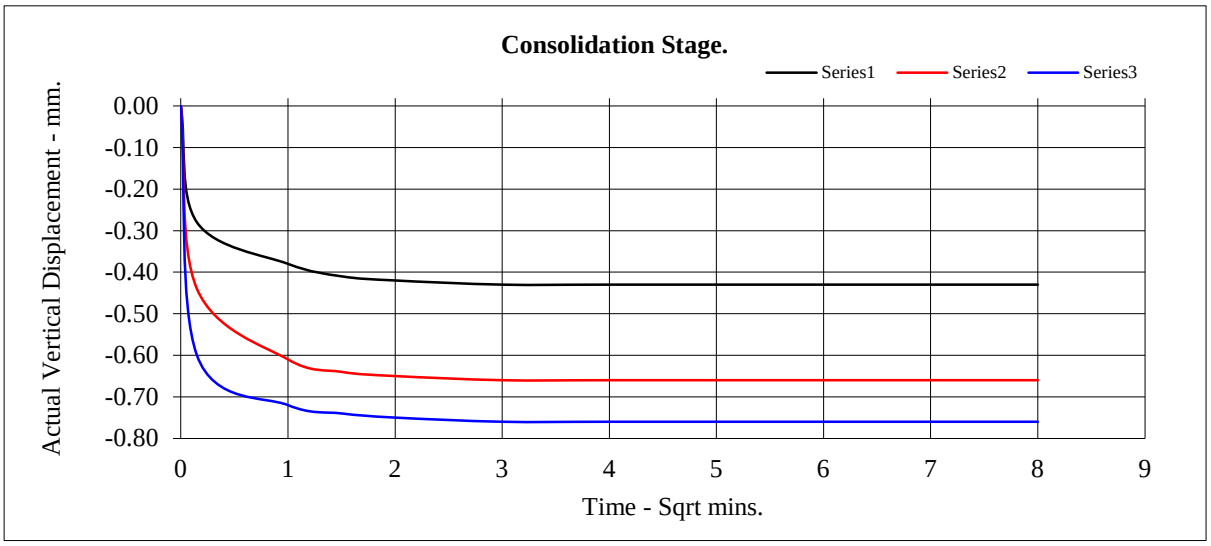
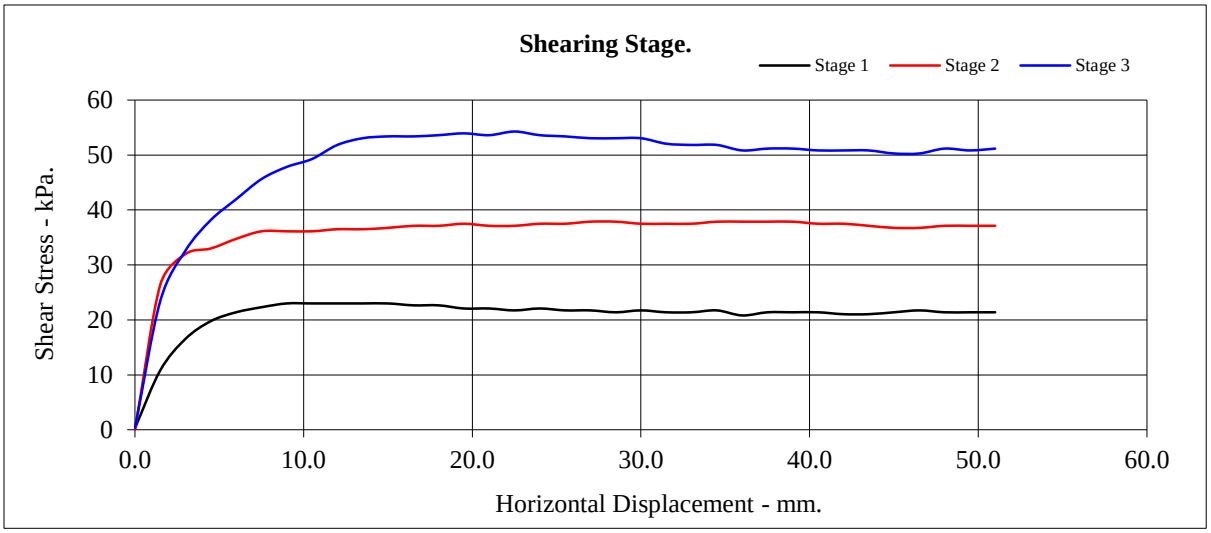
|---|---|---|---|
| UKAS TESTING 4043 | PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** | **Contract No:** PSL22/3024<br>**Client Ref:** GT0386 |

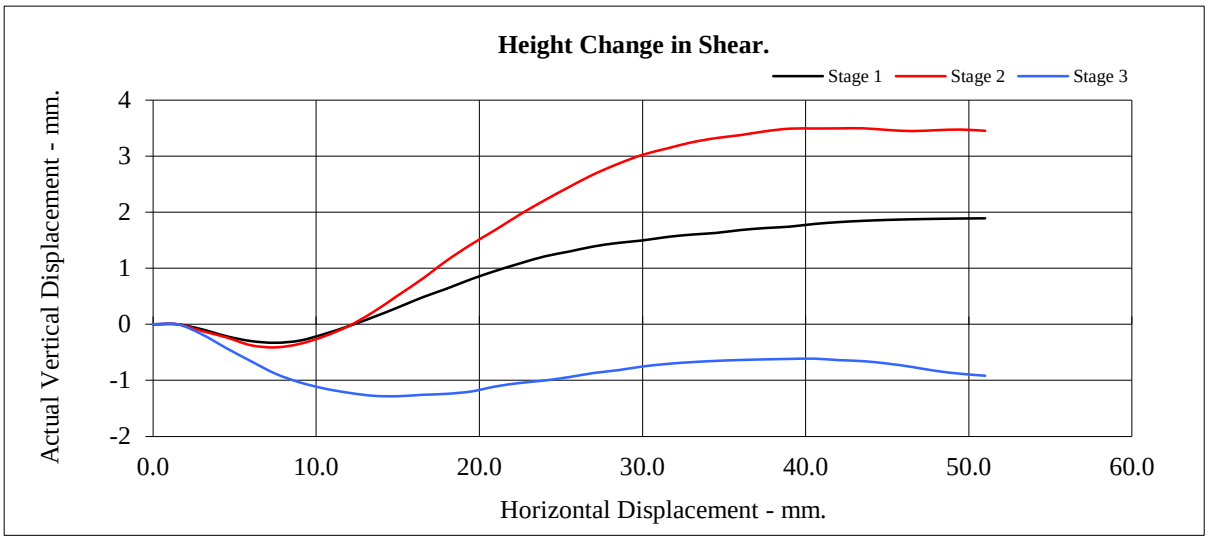
# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 5**

| | | | |
|---|---|---|---|
| Hole Number: | **TP107** | Top Depth: | **0.60** |
| Sample Number: | **5** | Base Depth: | **0.90** |

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|---|---|---|
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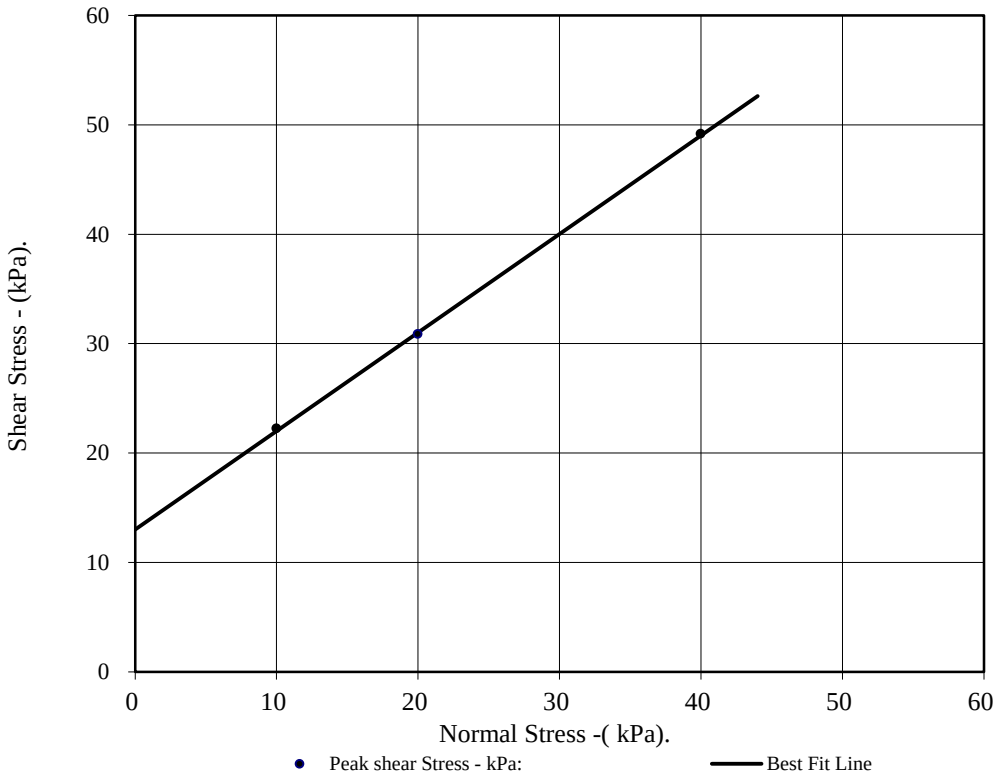
# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 5**

| | | | | | |
|---|---|---|---|---|---|
| Hole Number: | **TP113** | | Top Depth: | **0.60** | |
| Sample Number: | **5** | | Base Depth: | **0.90** | |
| Sample Conditions: | Dry | | Sample Type | **B** | |
| Particle Density - Mg/m3: | 2.65 | Assumed | **Remarks:** | | |
| Sample Preparation: | Material tested passing 20mm sieve<br>Remoulded using 2.5kg effort. | | | | |
| Sample Description: | **See summary of soil descriptions** | | | | |

| **STAGE** | **1** | **2** | **3** |
|---|---|---|---|
| **Initial Conditions** | | | |
| Height - mm: | 150 | 150 | 150 |
| Length - mm: | 300 | 300 | 300 |
| Moisture Content - %: | 17 | 17 | 17 |
| Bulk Density - Mg/m3: | 2.01 | 2.01 | 2.01 |
| Dry Density - Mg/m3: | 1.72 | 1.72 | 1.72 |
| Voids Ratio: | 0.540 | 0.540 | 0.540 |
| Normal Pressure- kPa | 10 | 20 | 40 |
| **Consolidation Stage** | | | |
| Consolidated Height - mm: | 149.89 | 149.75 | 149.65 |
| **Shearing Stage** | | | |
| Rate of Strain (mm/min) | 1.00 | 1.00 | 1.00 |
| Displacement at peak shear stress (mm) | 6.00 | 9.00 | 18.00 |
| Peak shear Stress - kPa: | 22 | 31 | 49 |
| **Final Consolidated Conditions** | | | |
| Moisture Content - %: | 15 | 15 | 14 |
| Bulk Density - Mg/m3: | 2.01 | 2.01 | 2.01 |
| Dry Density - Mg/m3: | 1.75 | 1.76 | 1.76 |
| **Peak** | | | |
| Angle of Shearing Resistance:(~~θ~~) | **42** | | |
| Effective Cohesion - kPa: | **13** | | |




| | | |
|---|---|---|
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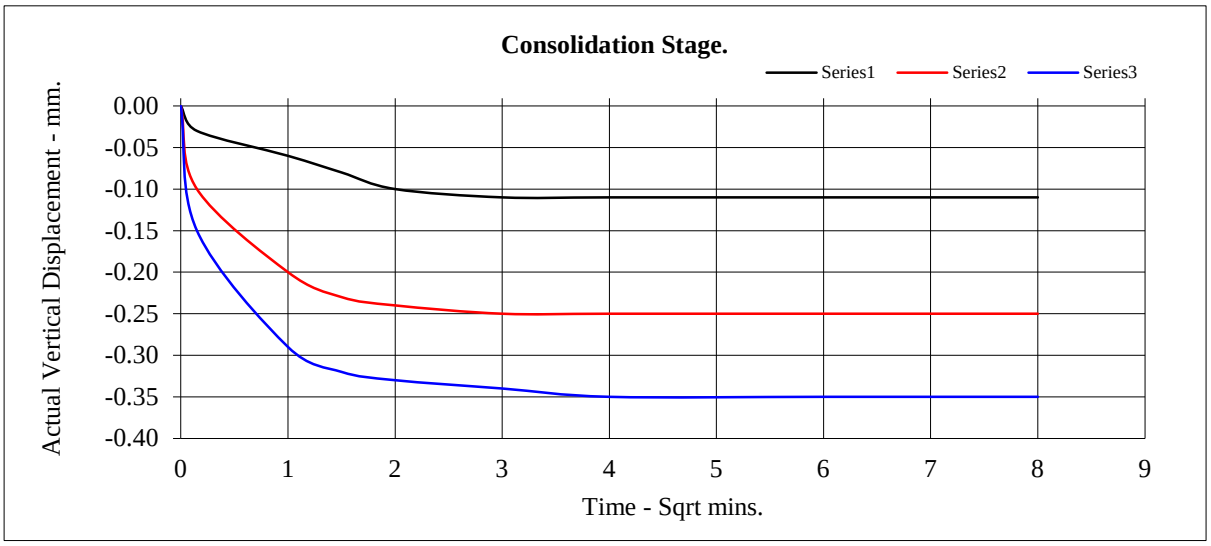
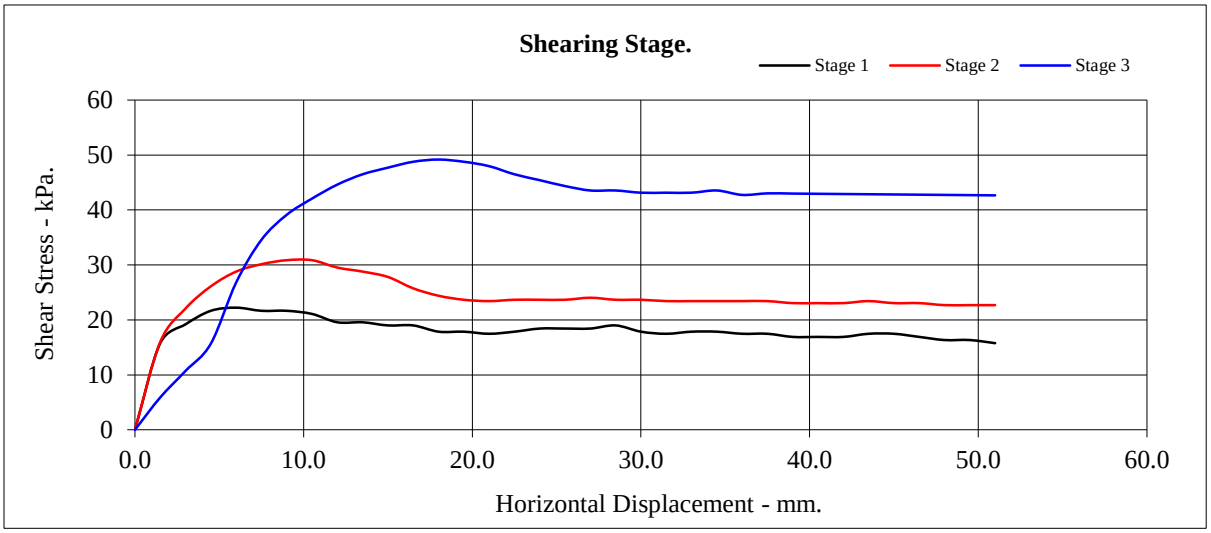
| **Client Ref:** |
| **GT0386** |

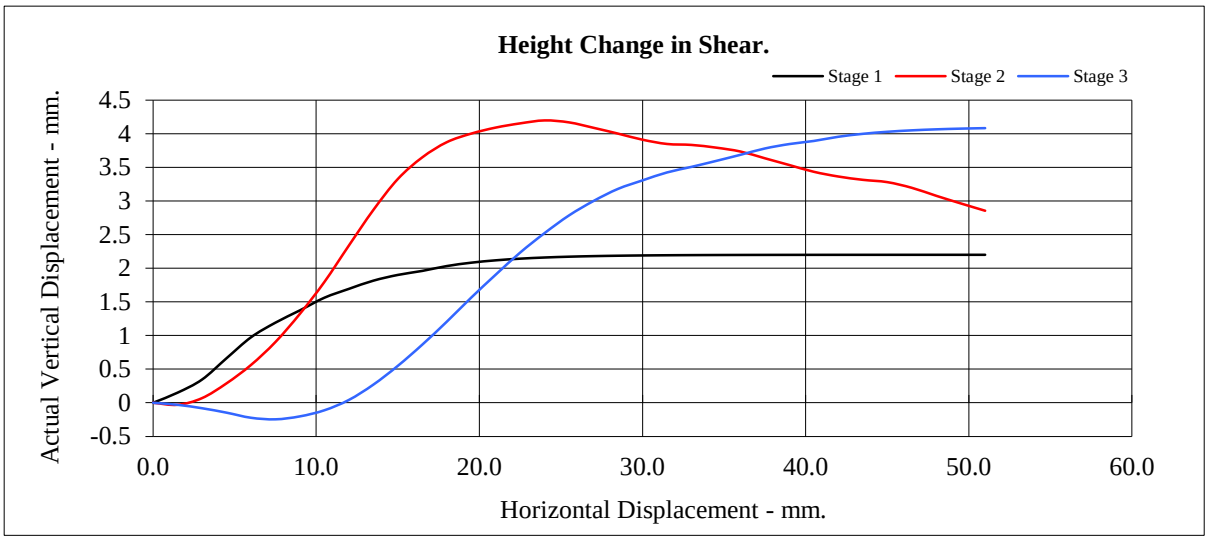
# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 5**

| | | | |
|---|---|---|---|
| Hole Number: | **TP113** | Top Depth: | **0.60** |
| Sample Number: | **5** | Base Depth: | **0.90** |




UKAS TESTING 4043

PSL Professional Soils Laboratory

**Wansford to Sutton Dualling Supplementary GI**

| | |
|---|---|
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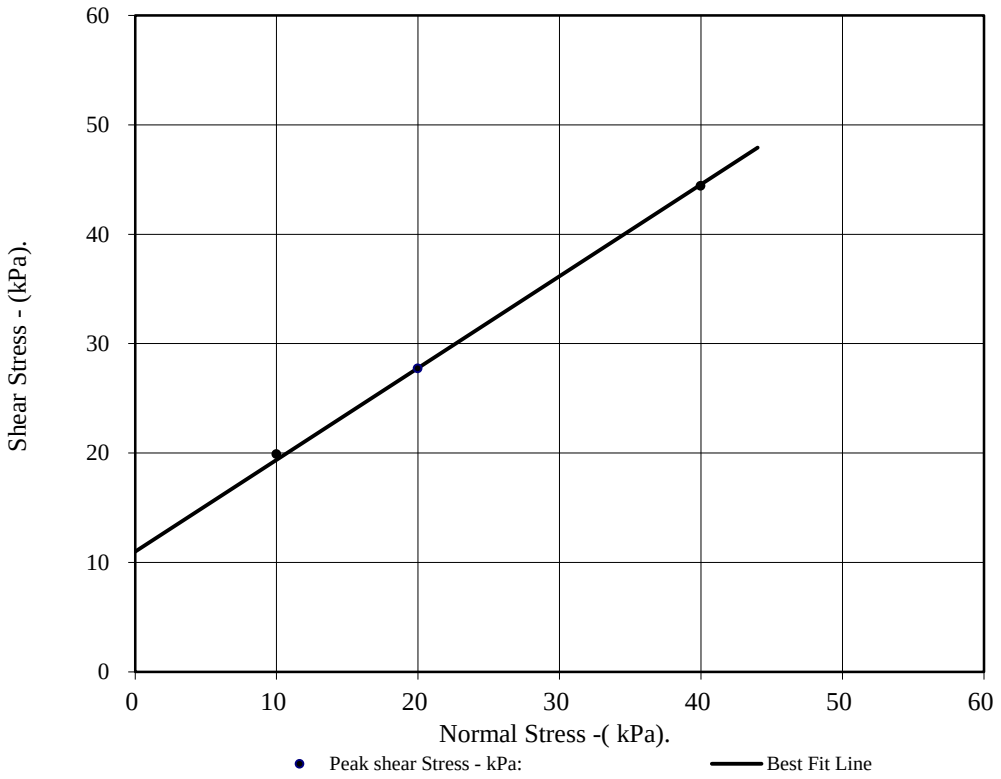
| **Client Ref:** | |
| **GT0386** | |

# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 5**

| | | | | | |
|---|---|---|---|---|---|
| Hole Number: | **TP114** | | Top Depth: | **1.05** | |
| Sample Number: | **7** | | Base Depth: | **1.20** | |
| Sample Conditions: | Dry | | Sample Type | **B** | |
| Particle Density - Mg/m3: | 2.65 | Assumed | **Remarks:** | | |
| Sample Preparation: | Material tested passing 20mm sieve<br>Remoulded using 2.5kg effort. | | | | |
| Sample Description: | **See summary of soil descriptions** | | | | |

| **STAGE** | **1** | **2** | **3** |
|---|---|---|---|
| **Initial Conditions** | | | |
| Height - mm: | 150 | 150 | 150 |
| Length - mm: | 300 | 300 | 300 |
| Moisture Content - %: | 17 | 17 | 17 |
| Bulk Density - Mg/m3: | 2.02 | 2.02 | 2.02 |
| Dry Density - Mg/m3: | 1.72 | 1.72 | 1.72 |
| Voids Ratio: | 0.544 | 0.544 | 0.544 |
| Normal Pressure- kPa | 10 | 20 | 40 |
| **Consolidation Stage** | | | |
| Consolidated Height - mm: | 149.60 | 149.36 | 149.10 |
| **Shearing Stage** | | | |
| Rate of Strain (mm/min) | 1.00 | 1.00 | 1.00 |
| Displacement at peak shear stress (mm) | 10.00 | 8.50 | 9.50 |
| Peak shear Stress - kPa: | 20 | 28 | 44 |
| **Final Consolidated Conditions** | | | |
| Moisture Content - %: | 17 | 16 | 16 |
| Bulk Density - Mg/m3: | 2.02 | 2.02 | 2.03 |
| Dry Density - Mg/m3: | 1.73 | 1.74 | 1.75 |
| **Peak** | | | |
| Angle of Shearing Resistance:(~~θ~~) | **40** | | |
| Effective Cohesion - kPa: | **11** | | |

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**Wansford to Sutton Dualling Supplementary GI**

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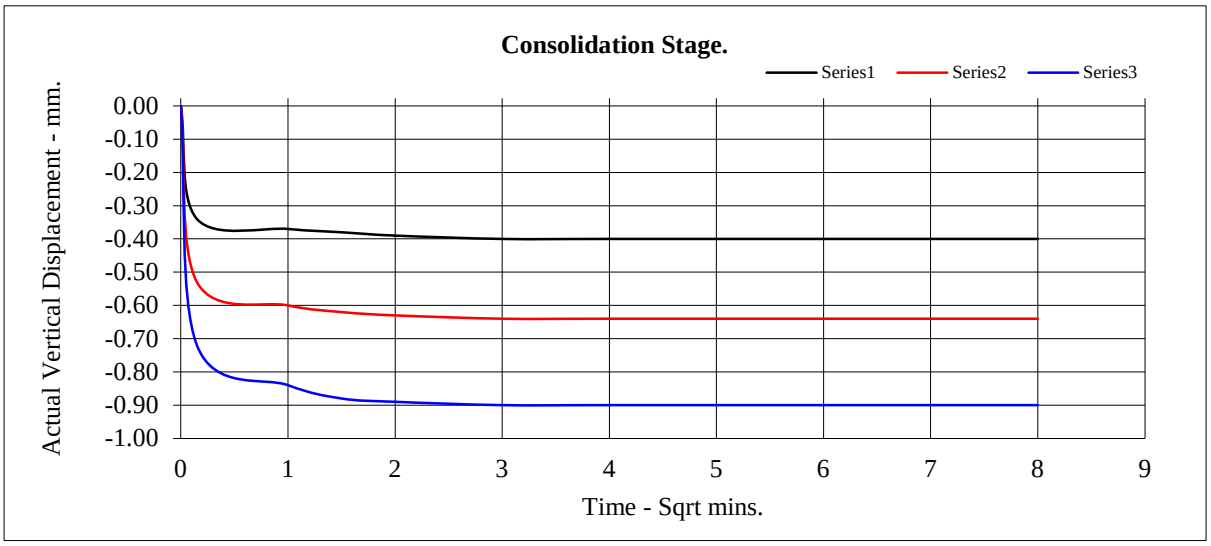
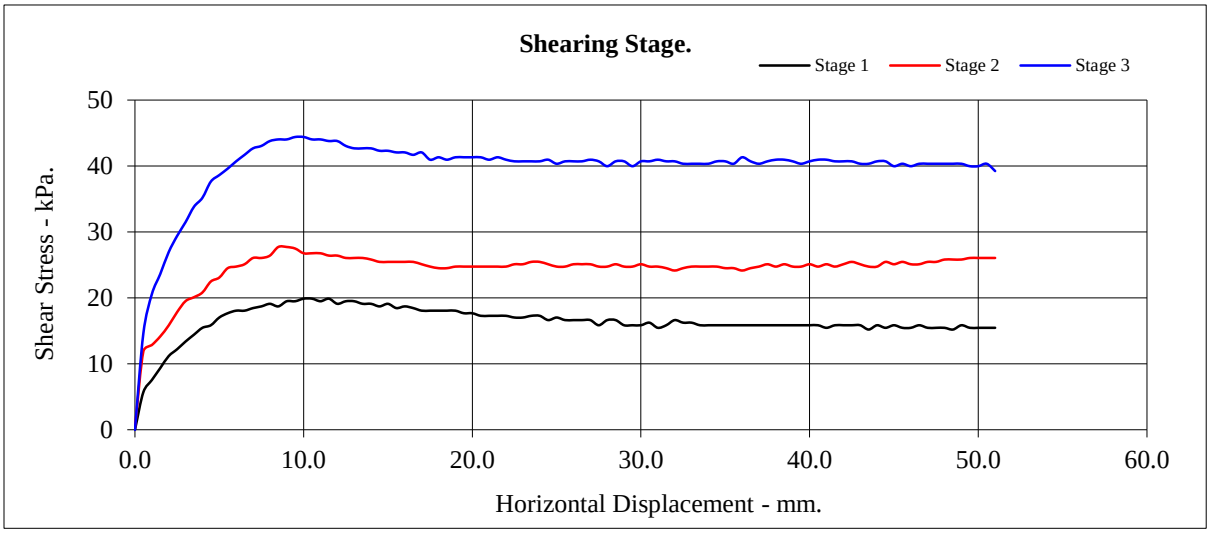
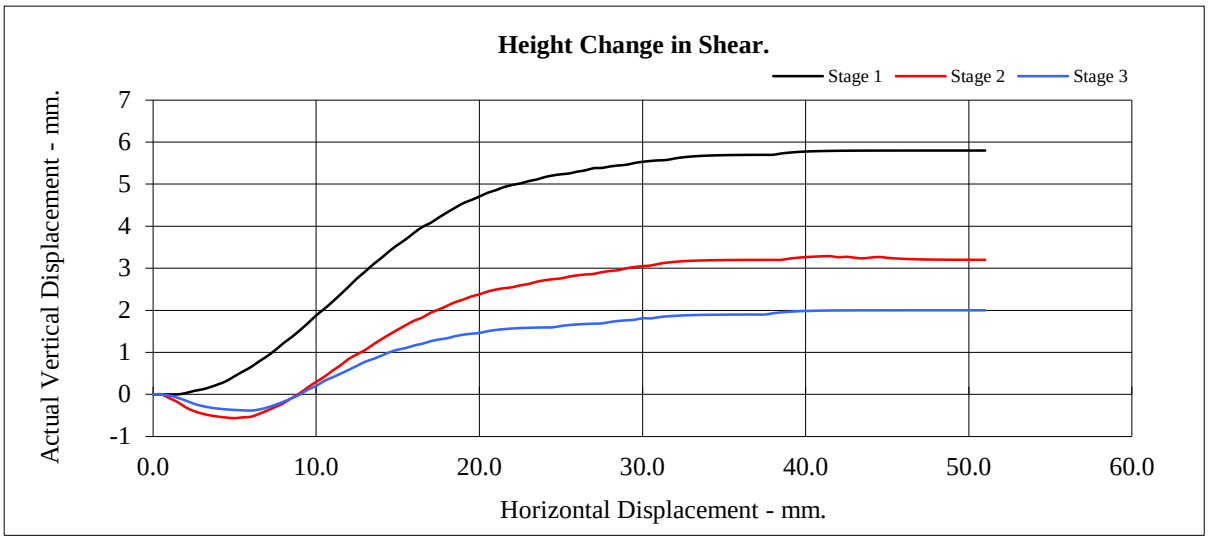
# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 5**

| | | | |
|---|---|---|---|
| Hole Number: | **TP114** | Top Depth: | **1.05** |
| Sample Number: | **7** | Base Depth: | **1.20** |



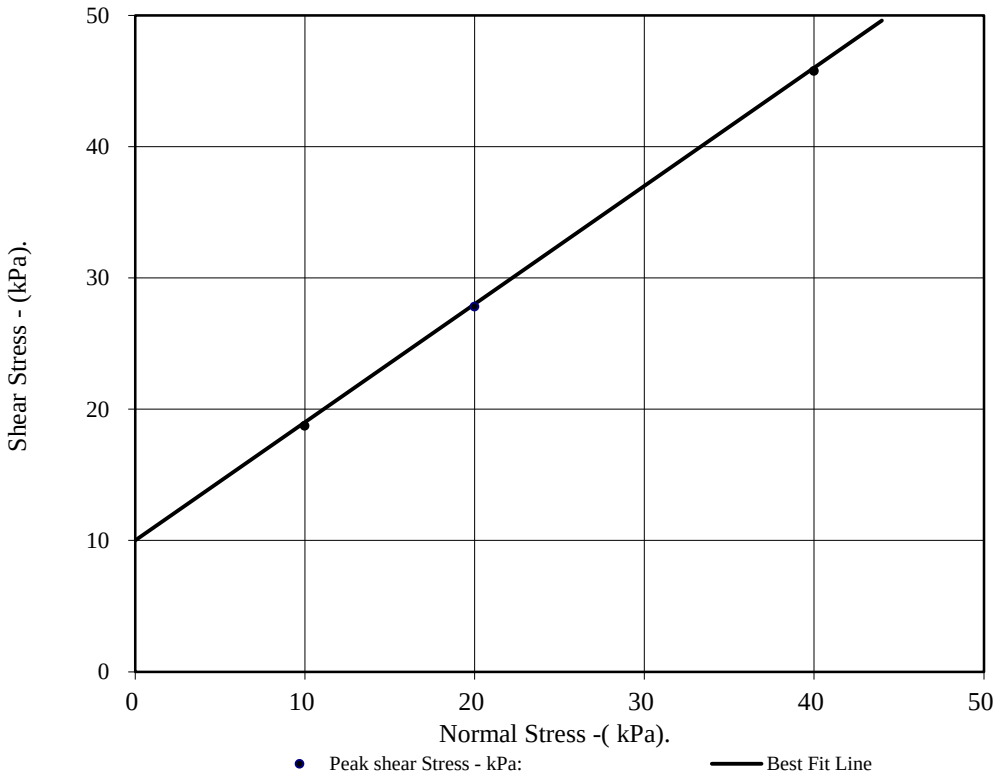



# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 5**

| | | | | |
|---|---|---|---|---|
| Hole Number: | **TP117** | | Top Depth: | **0.90** |
| Sample Number: | **5** | | Base Depth: | **1.20** |
| Sample Conditions: | Dry | | Sample Type | **B** |
| Particle Density - Mg/m3: | 2.65 | Assumed | **Remarks:** | |
| Sample Preparation: | Material tested passing 20mm sieve<br>Remoulded using 2.5kg effort. | | | |
| Sample Description: | **See summary of soil descriptions** | | | |

| **STAGE** | **1** | **2** | **3** |
|---|---|---|---|
| **Initial Conditions** | | | |
| Height - mm: | 130 | 130 | 130 |
| Length - mm: | 300 | 300 | 300 |
| Moisture Content - %: | 18 | 18 | 18 |
| Bulk Density - Mg/m3: | 2.06 | 2.06 | 2.06 |
| Dry Density - Mg/m3: | 1.75 | 1.75 | 1.75 |
| Voids Ratio: | 0.515 | 0.515 | 0.515 |
| Normal Pressure- kPa | 10 | 20 | 40 |
| **Consolidation Stage** | | | |
| Consolidated Height - mm: | 129.67 | 129.49 | 129.28 |
| **Shearing Stage** | | | |
| Rate of Strain (mm/min) | 1.00 | 1.00 | 1.00 |
| Displacement at peak shear stress (mm) | 8.00 | 51.00 | 10.50 |
| Peak shear Stress - kPa: | 19 | 28 | 46 |
| **Final Consolidated Conditions** | | | |
| Moisture Content - %: | 16 | 16 | 16 |
| Bulk Density - Mg/m3: | 2.07 | 2.07 | 2.08 |
| Dry Density - Mg/m3: | 1.78 | 1.78 | 1.79 |
| **Peak** | | | |
| Angle of Shearing Resistance:(~~θ~~) | **42** | | |
| Effective Cohesion - kPa: | **10** | | |




| | | |
|---|---|---|
| UKAS TESTING 4043 | PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** |

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| **Client Ref:** |
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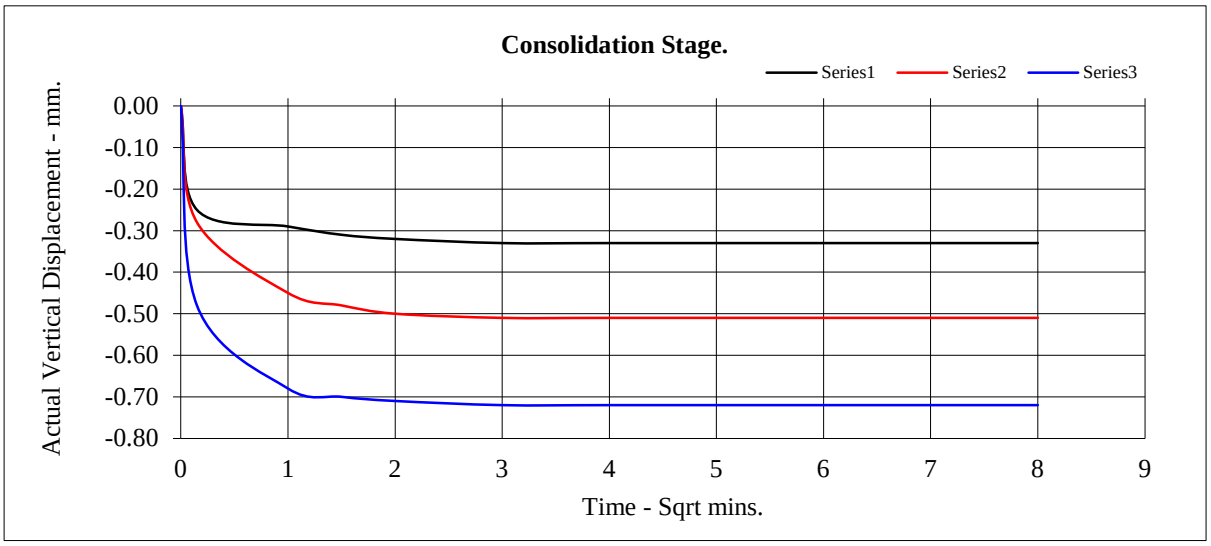
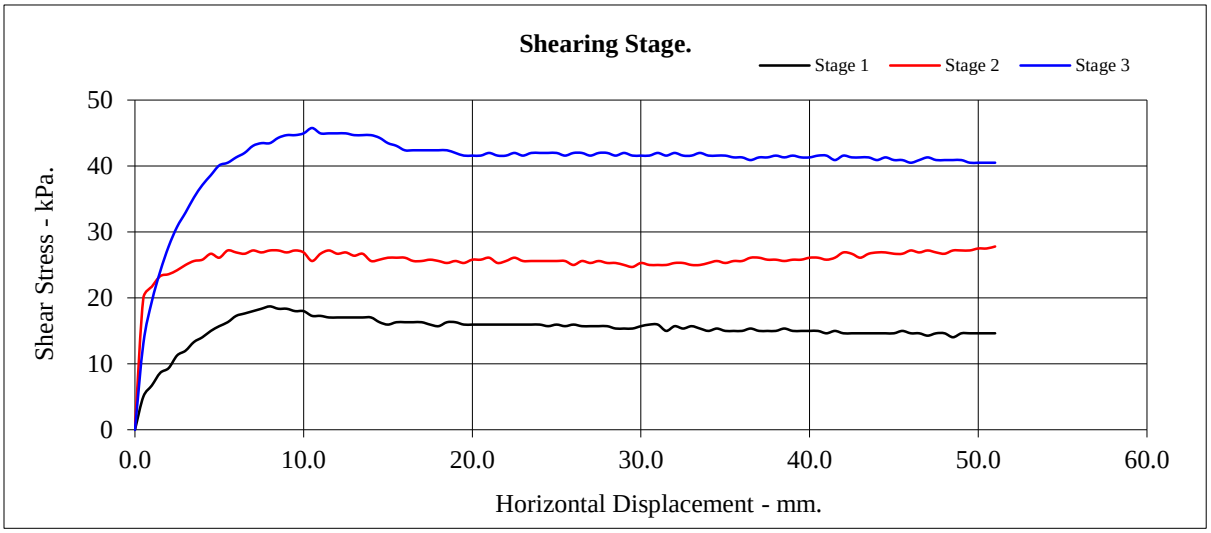
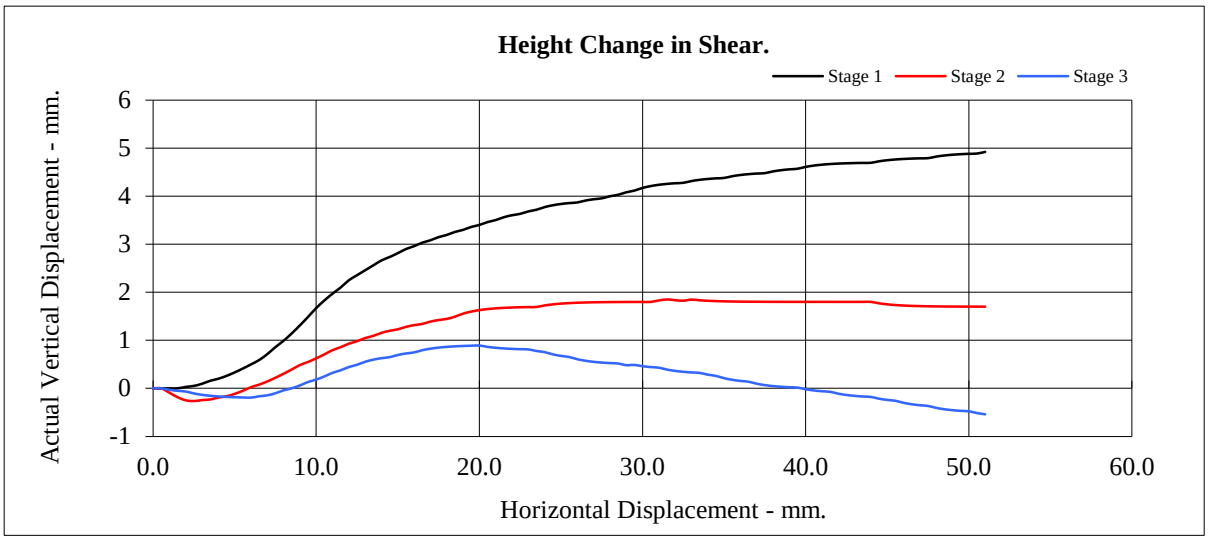
# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 5**

| | | | |
|---|---|---|---|
| Hole Number: | **TP117** | Top Depth: | **0.90** |
| Sample Number: | **5** | Base Depth: | **1.20** |

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|---|---|---|
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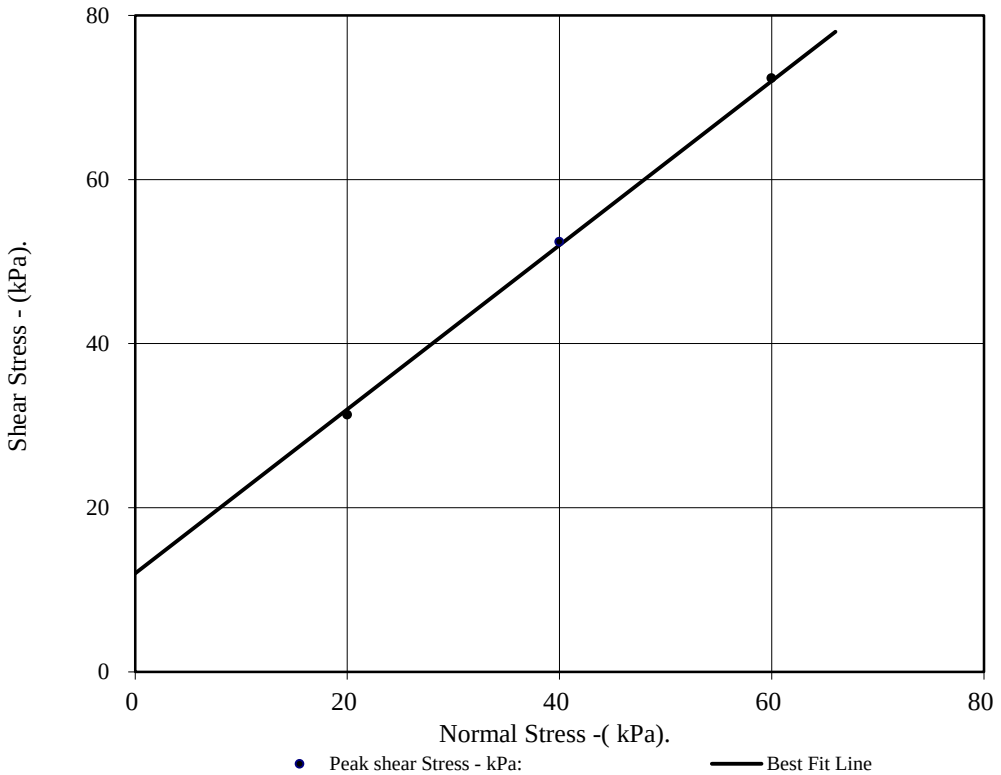
# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 5**

| | | | | | |
|---|---|---|---|---|---|
| Hole Number: | **TP118** | | Top Depth: | **1.50** | |
| Sample Number: | **5** | | Base Depth: | **2.00** | |
| Sample Conditions: | Dry | | Sample Type | **B** | |
| Particle Density - Mg/m3: | 2.65 | Assumed | **Remarks:** | | |
| Sample Preparation: | Material tested passing 20mm sieve<br>Remoulded using 2.5kg effort. | | | | |
| Sample Description: | **See summary of soil descriptions** | | | | |

| **STAGE** | **1** | **2** | **3** |
|---|---|---|---|
| **Initial Conditions** | | | |
| Height - mm: | 125 | 125 | 125 |
| Length - mm: | 300 | 300 | 300 |
| Moisture Content - %: | 12 | 12 | 12 |
| Bulk Density - Mg/m3: | 1.93 | 1.93 | 1.93 |
| Dry Density - Mg/m3: | 1.73 | 1.73 | 1.73 |
| Voids Ratio: | 0.531 | 0.531 | 0.531 |
| Normal Pressure- kPa | 20 | 40 | 60 |
| **Consolidation Stage** | | | |
| Consolidated Height - mm: | 124.81 | 124.25 | 124.05 |
| **Shearing Stage** | | | |
| Rate of Strain (mm/min) | 1.00 | 1.00 | 1.00 |
| Displacement at peak shear stress (mm) | 12.00 | 21.50 | 31.50 |
| Peak shear Stress - kPa: | 31 | 52 | 72 |
| **Final Consolidated Conditions** | | | |
| Moisture Content - %: | 11 | 11 | 10 |
| Bulk Density - Mg/m3: | 1.93 | 1.94 | 1.95 |
| Dry Density - Mg/m3: | 1.74 | 1.75 | 1.76 |
| **Peak** | | | |
| Angle of Shearing Resistance:(~~θ~~) | **45** | | |
| Effective Cohesion - kPa: | **12** | | |




| | | |
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| **Client Ref:** | |
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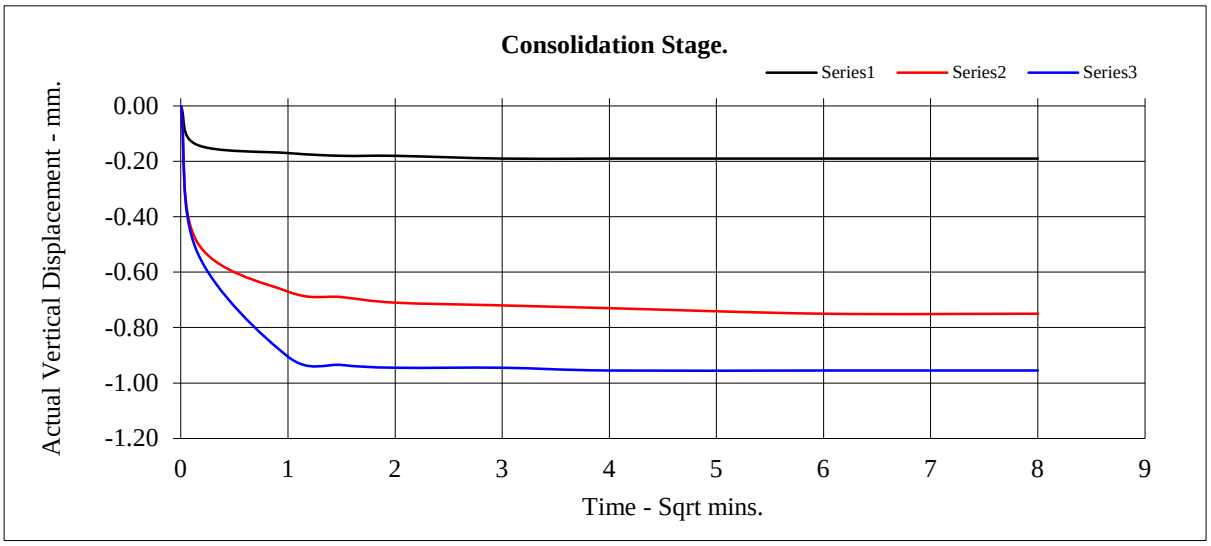
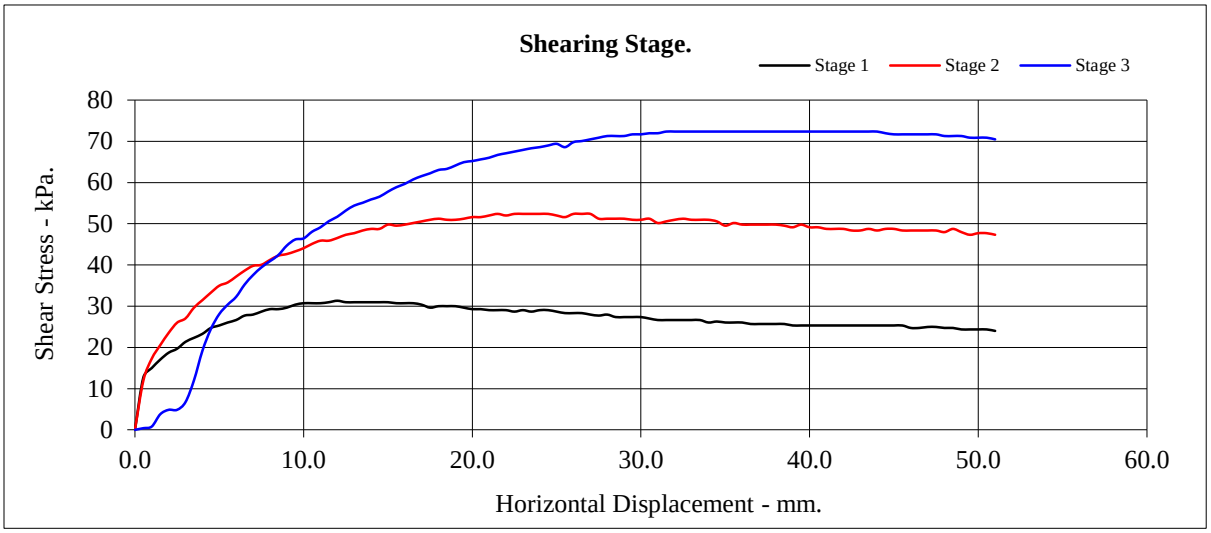
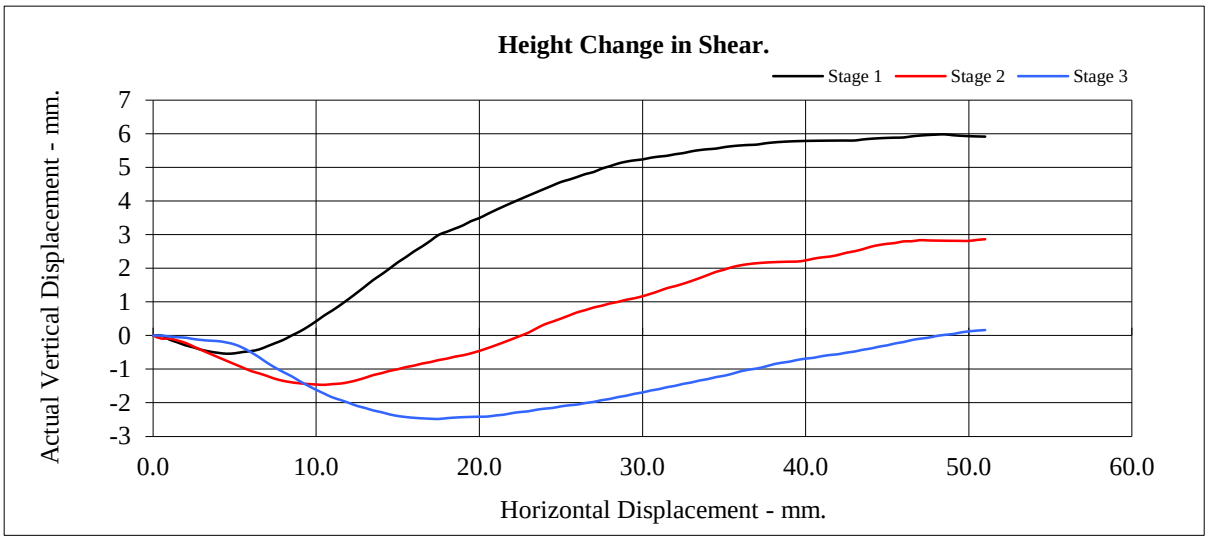
# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 5**

| | | | |
|---|---|---|---|
| Hole Number: | **TP118** | Top Depth: | **1.50** |
| Sample Number: | **5** | Base Depth: | **2.00** |



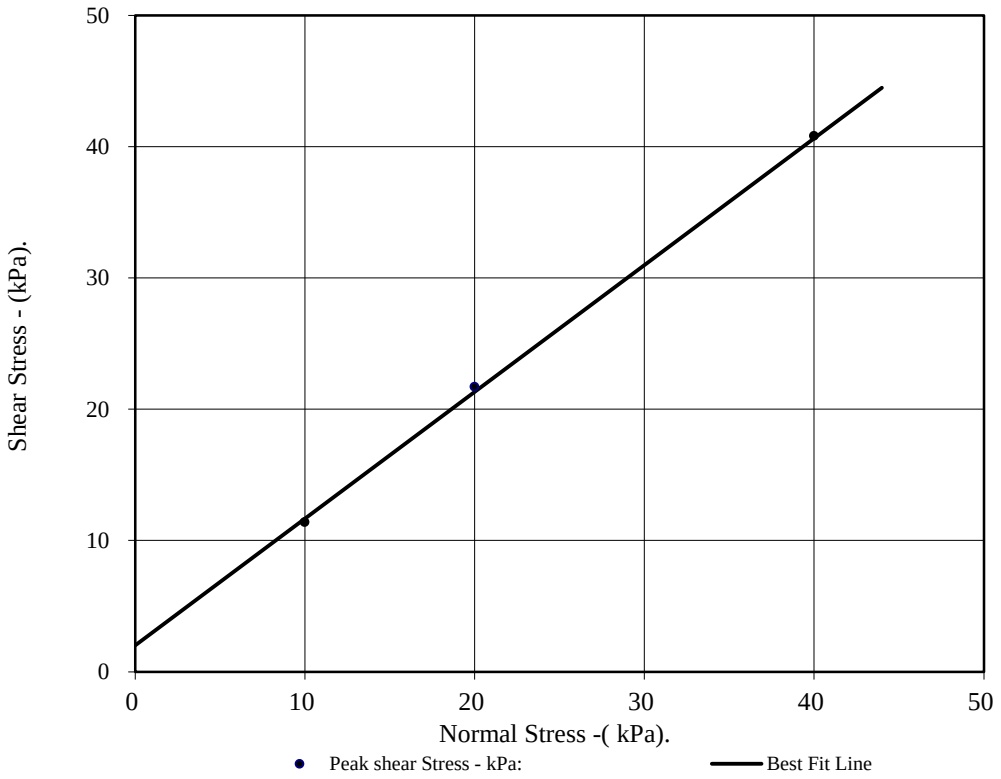



# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 5**

| | | | | |
|---|---|---|---|---|
| Hole Number: | **TP124** | | Top Depth: | **2.00** |
| Sample Number: | **7** | | Base Depth: | **2.30** |
| Sample Conditions: | Dry | | Sample Type | **B** |
| Particle Density - Mg/m3: | 2.65 | Assumed | **Remarks:** | |
| Sample Preparation: | Material tested passing 20mm sieve<br>Remoulded using 2.5kg effort. | | | |
| Sample Description: | **See summary of soil descriptions** | | | |

| **STAGE** | **1** | **2** | **3** |
|---|---|---|---|
| **Initial Conditions** | | | |
| Height - mm: | 150 | 150 | 150 |
| Length - mm: | 300 | 300 | 300 |
| Moisture Content - %: | 9.2 | 9.2 | 9.2 |
| Bulk Density - Mg/m3: | 1.69 | 1.69 | 1.69 |
| Dry Density - Mg/m3: | 1.55 | 1.55 | 1.55 |
| Voids Ratio: | 0.712 | 0.712 | 0.712 |
| Normal Pressure- kPa | 10 | 20 | 40 |
| **Consolidation Stage** | | | |
| Consolidated Height - mm: | 149.73 | 149.62 | 149.42 |
| **Shearing Stage** | | | |
| Rate of Strain (mm/min) | 1.00 | 1.00 | 1.00 |
| Displacement at peak shear stress (mm) | 19.00 | 18.00 | 35.00 |
| Peak shear Stress - kPa: | 11 | 22 | 41 |
| **Final Consolidated Conditions** | | | |
| Moisture Content - %: | 9.1 | 9.2 | 9.0 |
| Bulk Density - Mg/m3: | 1.69 | 1.69 | 1.70 |
| Dry Density - Mg/m3: | 1.55 | 1.55 | 1.56 |
| **Peak** | | | |
| Angle of Shearing Resistance:(~~θ~~) | **44** | | |
| Effective Cohesion - kPa: | **2** | | |




UKAS TESTING 4043

PSL Professional Soils Laboratory

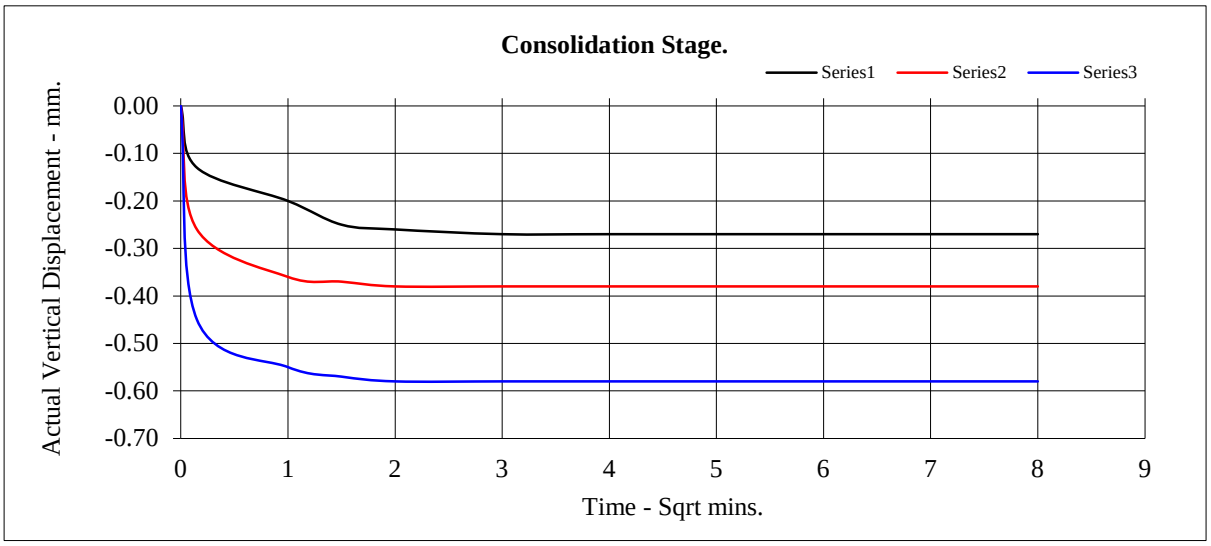
**Wansford to Sutton Dualling Supplementary GI**

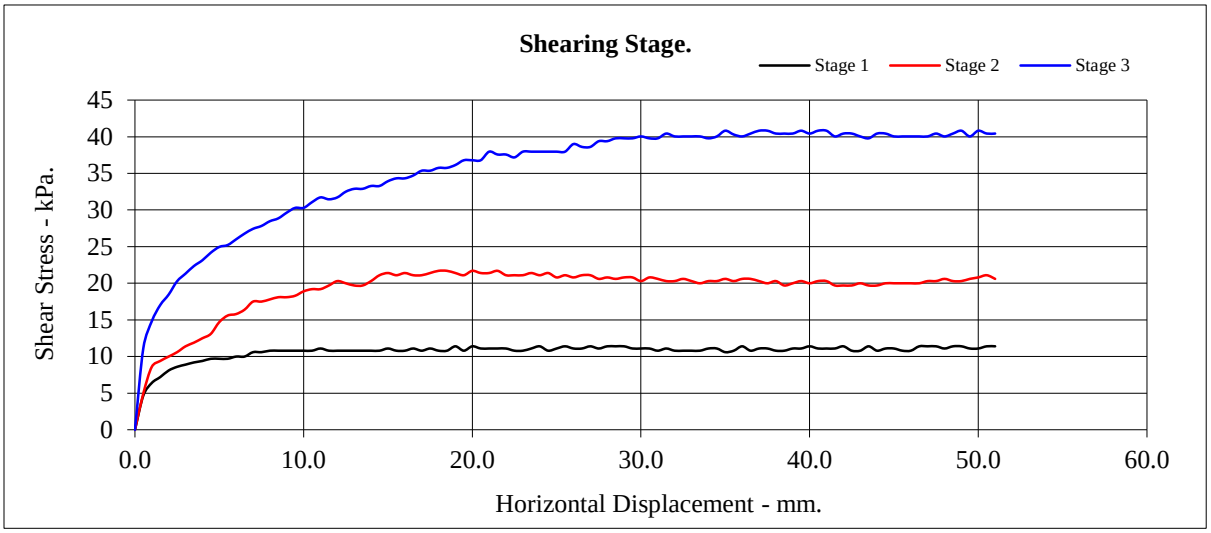
| **Contract No:** |
|---|
| **PSL22/3024** |
| **Client Ref:** |
| **GT0386** |

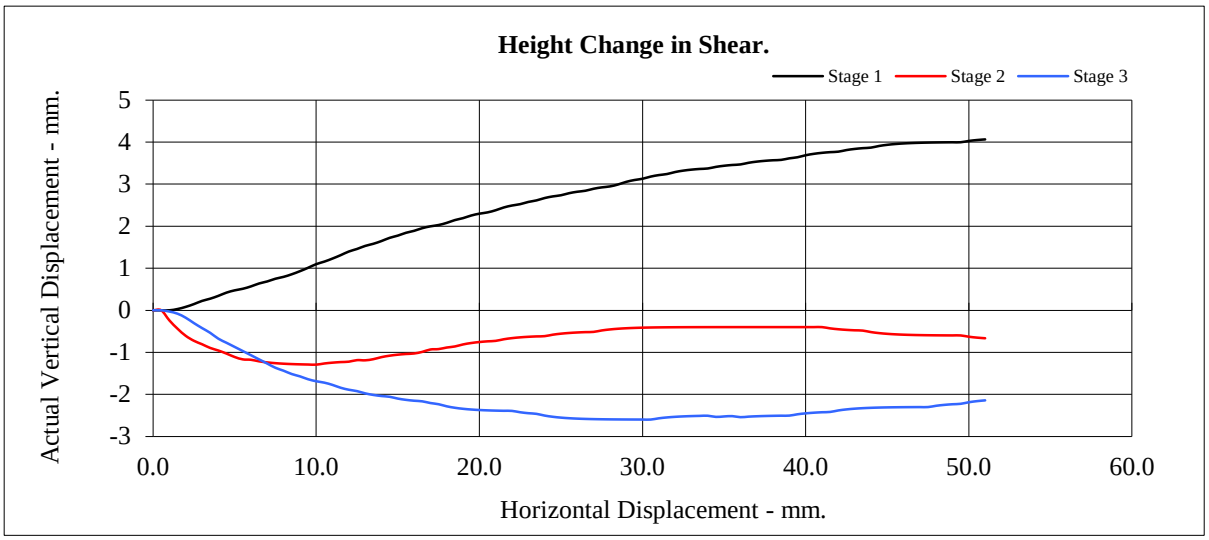
# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 5**

| | | | |
|---|---|---|---|
| Hole Number: | **TP124** | Top Depth: | **2.00** |
| Sample Number: | **7** | Base Depth: | **2.30** |



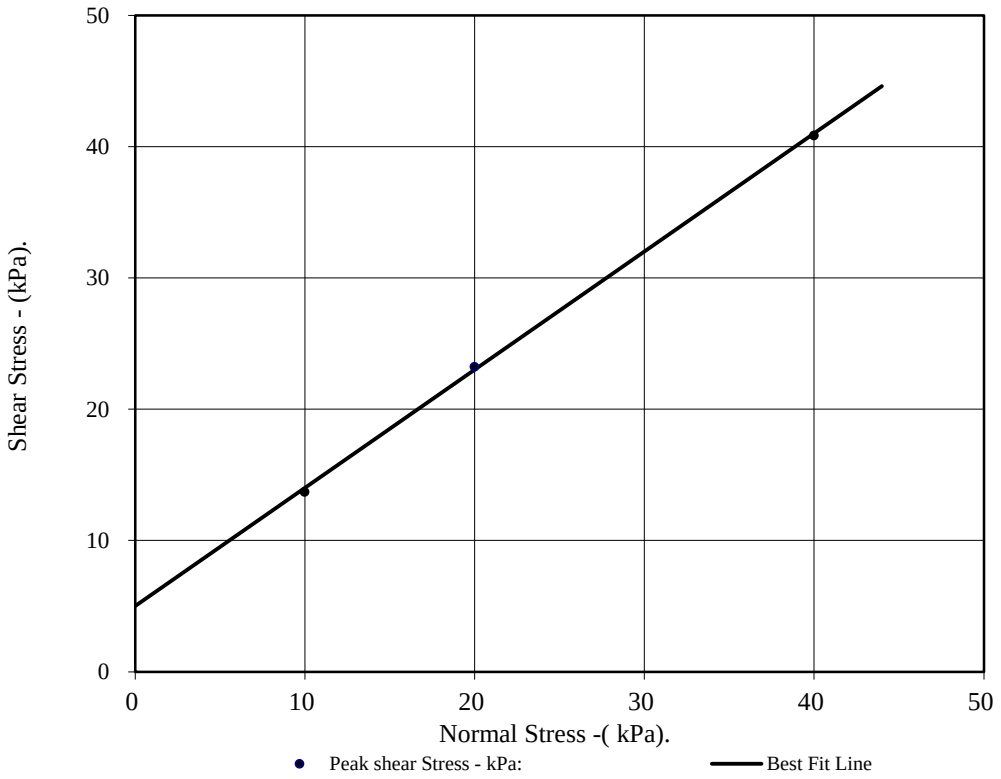



# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 5**

| | | | | |
|---|---|---|---|---|
| Hole Number: | **TP135** | | Top Depth: | **1.00** |
| Sample Number: | **5** | | Base Depth: | **1.30** |
| Sample Conditions: | Dry | | Sample Type | **B** |
| Particle Density - Mg/m3: | 2.65 | Assumed | **Remarks:** | |
| Sample Preparation: | Material tested passing 20mm sieve<br>Remoulded using 2.5kg effort. | | | |
| Sample Description: | **See summary of soil descriptions** | | | |

| **STAGE** | **1** | **2** | **3** |
|---|---|---|---|
| **Initial Conditions** | | | |
| Height - mm: | 125 | 125 | 125 |
| Length - mm: | 300 | 300 | 300 |
| Moisture Content - %: | 8.8 | 8.8 | 8.8 |
| Bulk Density - Mg/m3: | 1.99 | 1.99 | 1.99 |
| Dry Density - Mg/m3: | 1.83 | 1.83 | 1.83 |
| Voids Ratio: | 0.447 | 0.447 | 0.447 |
| Normal Pressure- kPa | 10 | 20 | 40 |
| **Consolidation Stage** | | | |
| Consolidated Height - mm: | 124.73 | 124.57 | 124.46 |
| **Shearing Stage** | | | |
| Rate of Strain (mm/min) | 1.00 | 1.00 | 1.00 |
| Displacement at peak shear stress (mm) | 12.00 | 47.00 | 31.50 |
| Peak shear Stress - kPa: | 14 | 23 | 41 |
| **Final Consolidated Conditions** | | | |
| Moisture Content - %: | 8.4 | 8.5 | 8.1 |
| Bulk Density - Mg/m3: | 2.00 | 2.00 | 2.00 |
| Dry Density - Mg/m3: | 1.84 | 1.84 | 1.85 |
| **Peak** | | | |
| Angle of Shearing Resistance:(~~θ~~) | **42** | | |
| Effective Cohesion - kPa: | **5** | | |




UKAS TESTING 4043

PSL Professional Soils Laboratory

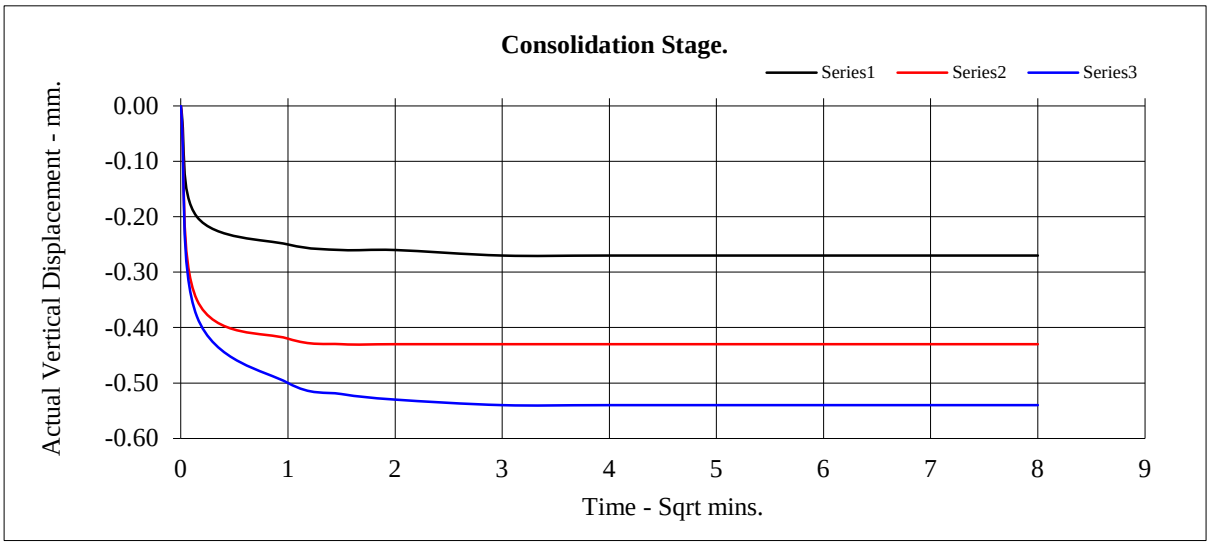
**Wansford to Sutton Dualling Supplementary GI**

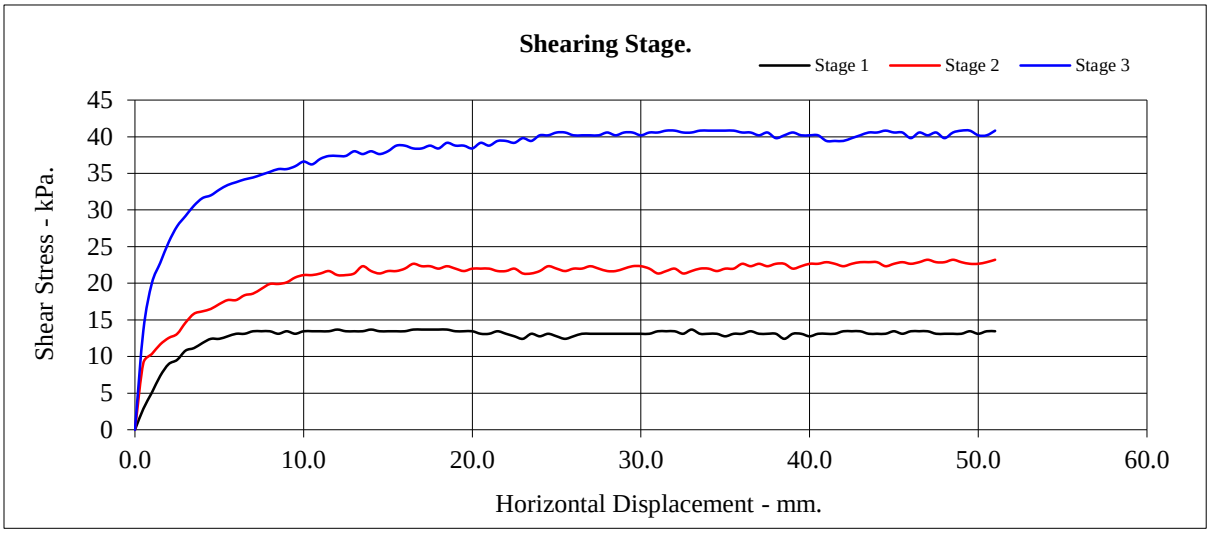
| | |
|---|---|
| **Contract No:** | |
| **PSL22/3024** | |
| **Client Ref:** | |
| **GT0386** | |

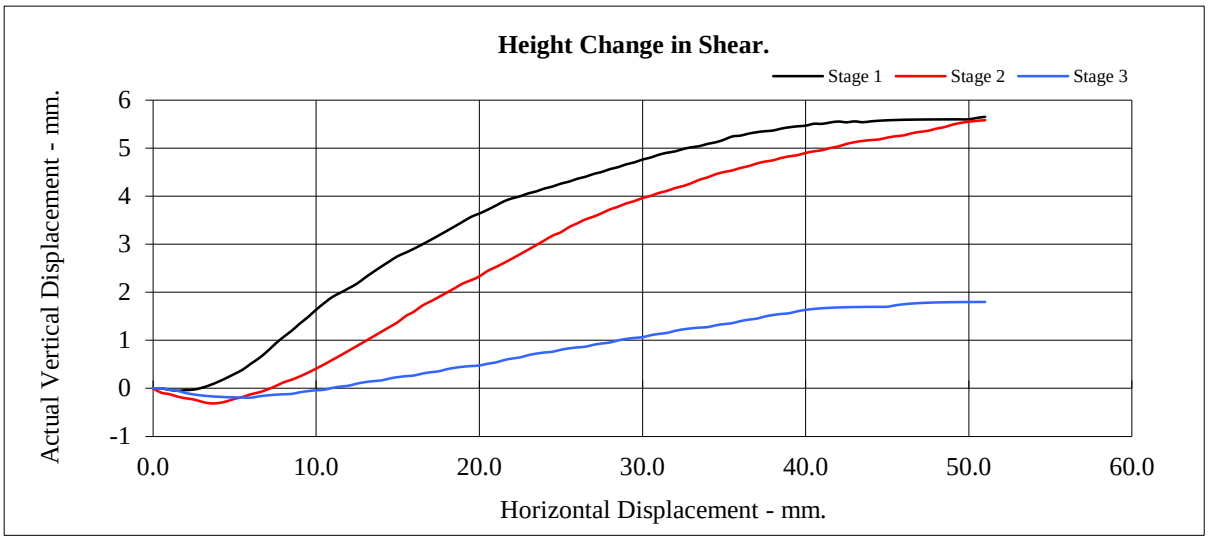
# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 5**

| | | | |
|---|---|---|---|
| Hole Number: | **TP135** | Top Depth: | **1.00** |
| Sample Number: | **5** | Base Depth: | **1.30** |




| | | |
|---|---|---|
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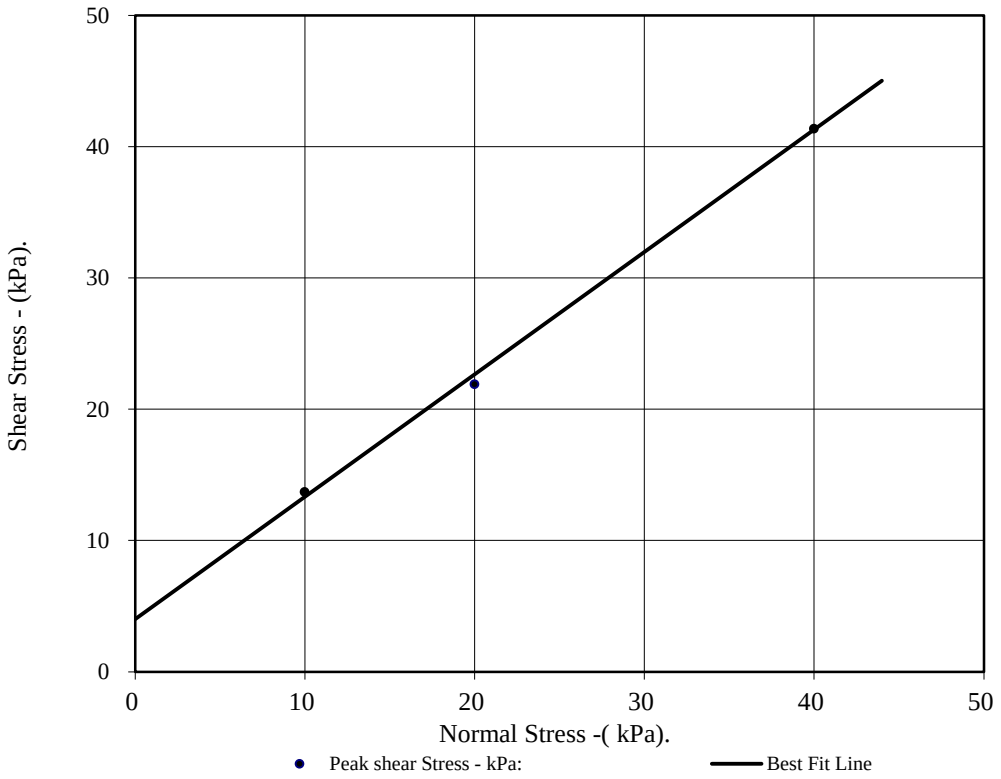
# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 5**

| | | | | |
|---|---|---|---|---|
| Hole Number: | **TP136** | | Top Depth: | **1.50** |
| Sample Number: | **7** | | Base Depth: | **1.80** |
| Sample Conditions: | Dry | | Sample Type | **B** |
| Particle Density - Mg/m3: | 2.65 | Assumed | **Remarks:** | |
| Sample Preparation: | Material tested passing 20mm sieve<br>Remoulded using 2.5kg effort. | | | |
| Sample Description: | **See summary of soil descriptions** | | | |

| **STAGE** | **1** | **2** | **3** |
|---|---|---|---|
| **Initial Conditions** | | | |
| Height - mm: | 150 | 150 | 150 |
| Length - mm: | 300 | 300 | 300 |
| Moisture Content - %: | 8.2 | 8.2 | 8.2 |
| Bulk Density - Mg/m3: | 1.92 | 1.92 | 1.92 |
| Dry Density - Mg/m3: | 1.77 | 1.77 | 1.77 |
| Voids Ratio: | 0.494 | 0.494 | 0.494 |
| Normal Pressure- kPa | 10 | 20 | 40 |
| **Consolidation Stage** | | | |
| Consolidated Height - mm: | 149.72 | 149.58 | 149.36 |
| **Shearing Stage** | | | |
| Rate of Strain (mm/min) | 1.00 | 1.00 | 1.00 |
| Displacement at peak shear stress (mm) | 9.50 | 14.00 | 15.50 |
| Peak shear Stress - kPa: | 14 | 22 | 41 |
| **Final Consolidated Conditions** | | | |
| Moisture Content - %: | 7.5 | 7.5 | 7.5 |
| Bulk Density - Mg/m3: | 1.92 | 1.93 | 1.93 |
| Dry Density - Mg/m3: | 1.79 | 1.79 | 1.79 |
| **Peak** | | | |
| Angle of Shearing Resistance:(~~θ~~) | **43** | | |
| Effective Cohesion - kPa: | **4** | | |




UKAS TESTING 4043

PSL Professional Soils Laboratory

**Wansford to Sutton Dualling Supplementary GI**

| | |
|---|---|
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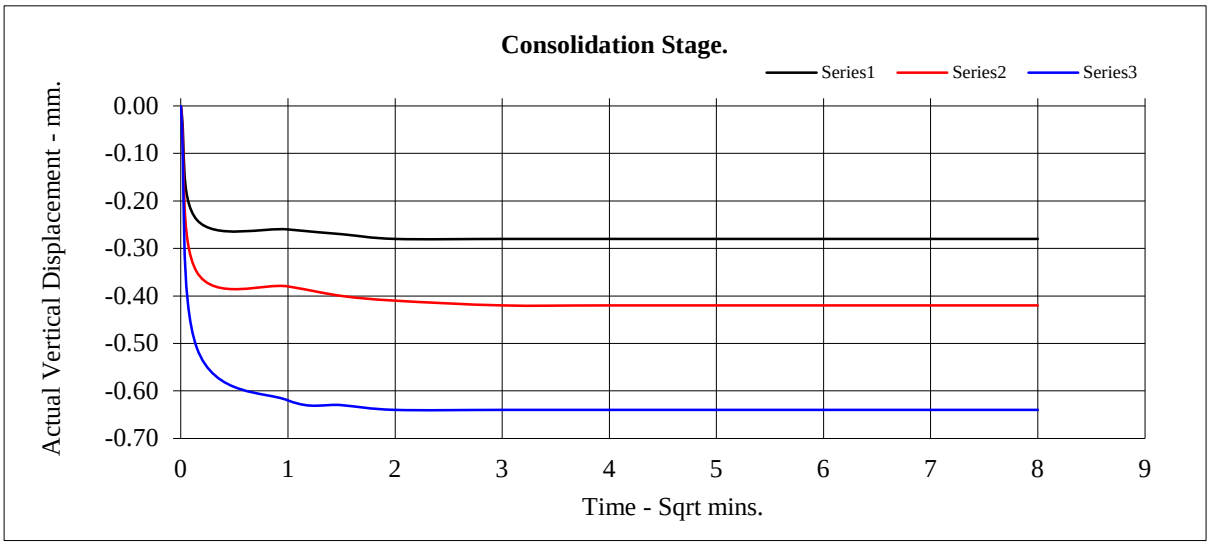
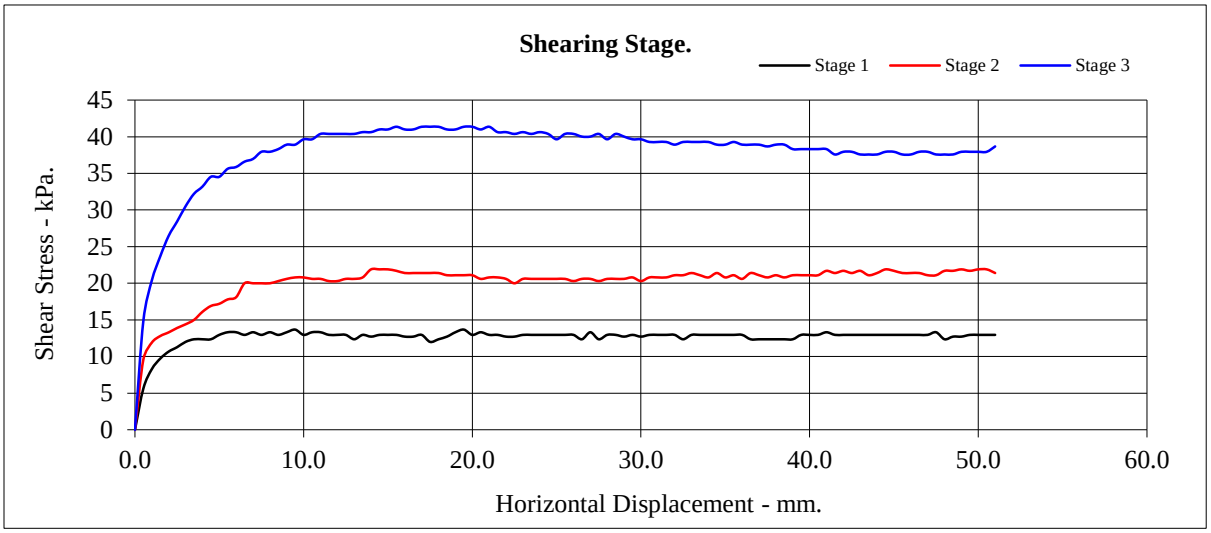
| **PSL22/3024** | |
| **Client Ref:** | |
| **GT0386** | |

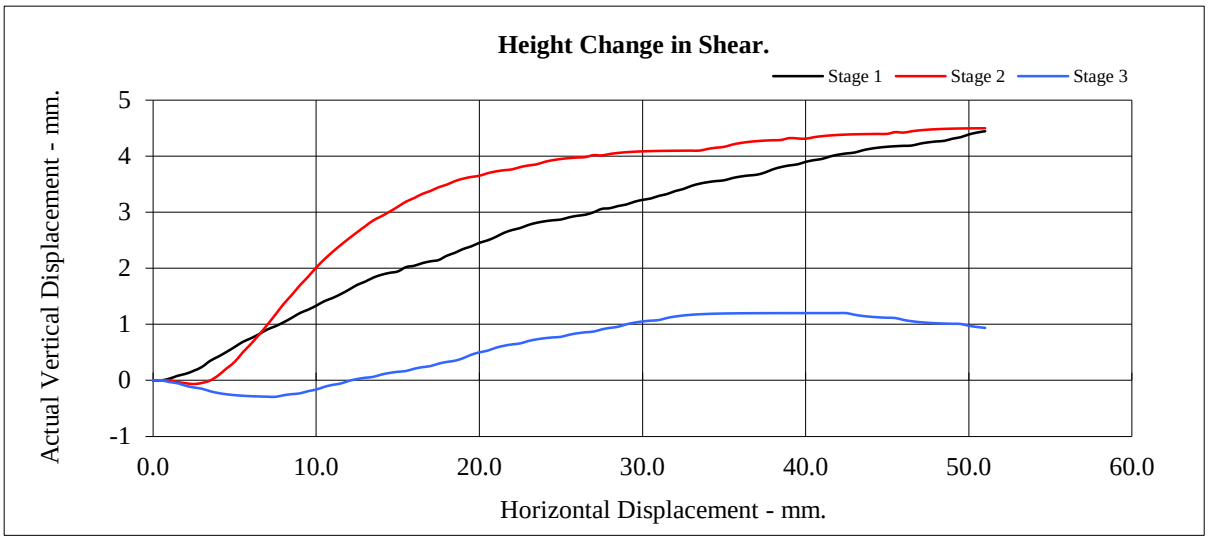
# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 5**

| | | | |
|---|---|---|---|
| Hole Number: | **TP136** | Top Depth: | **1.50** |
| Sample Number: | **7** | Base Depth: | **1.80** |



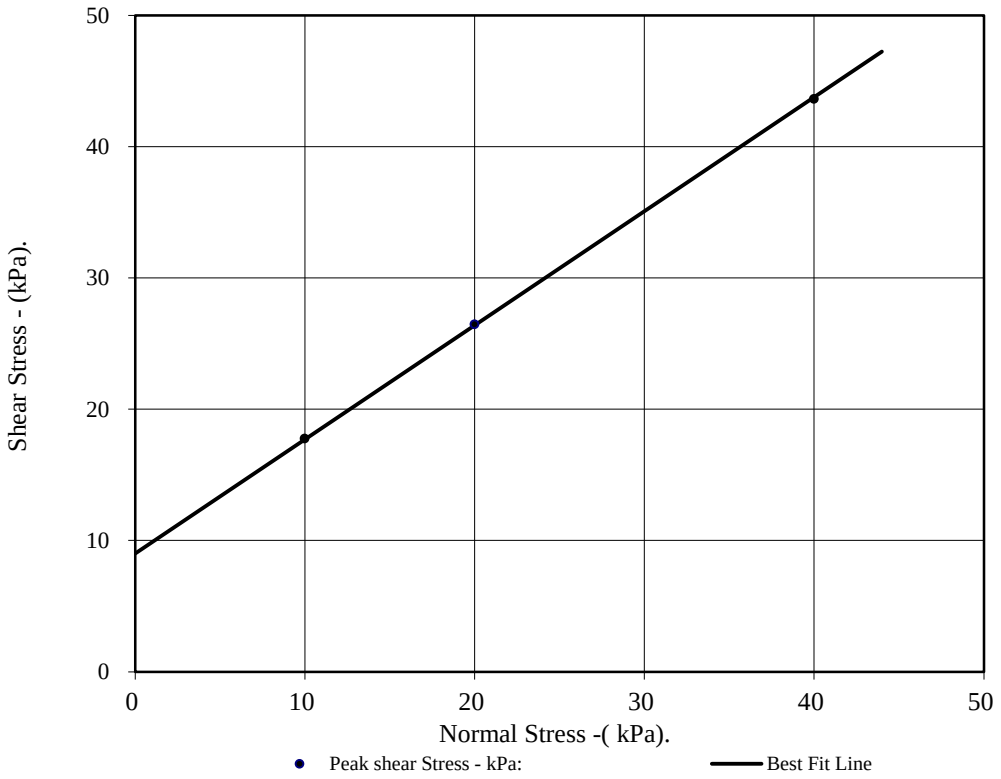

| | | | |
|---|---|---|---|
| UKAS TESTING 4043 | PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** | **Contract No:** PSL22/3024 **Client Ref:** GT0386 |

# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 5**

| | | | | |
|---|---|---|---|---|
| Hole Number: | **TP137** | | Top Depth: | **1.00** |
| Sample Number: | **5** | | Base Depth: | **1.30** |
| Sample Conditions: | Dry | | Sample Type | **B** |
| Particle Density - Mg/m3: | 2.65 | Assumed | **Remarks:** | |
| Sample Preparation: | Material tested passing 20mm sieve<br>Remoulded using 2.5kg effort. | | | |
| Sample Description: | **See summary of soil descriptions** | | | |

| **STAGE** | **1** | **2** | **3** |
|---|---|---|---|
| **Initial Conditions** | | | |
| Height - mm: | 140 | 140 | 140 |
| Length - mm: | 300 | 300 | 300 |
| Moisture Content - %: | 8.3 | 8.3 | 8.3 |
| Bulk Density - Mg/m3: | 1.94 | 1.94 | 1.94 |
| Dry Density - Mg/m3: | 1.79 | 1.79 | 1.79 |
| Voids Ratio: | 0.480 | 0.480 | 0.480 |
| Normal Pressure- kPa | 10 | 20 | 40 |
| **Consolidation Stage** | | | |
| Consolidated Height - mm: | 139.72 | 139.48 | 139.36 |
| **Shearing Stage** | | | |
| Rate of Strain (mm/min) | 1.00 | 1.00 | 1.00 |
| Displacement at peak shear stress (mm) | 47.50 | 14.00 | 48.50 |
| Peak shear Stress - kPa: | 18 | 26 | 44 |
| **Final Consolidated Conditions** | | | |
| Moisture Content - %: | 7.7 | 7.4 | 7.2 |
| Bulk Density - Mg/m3: | 1.94 | 1.95 | 1.95 |
| Dry Density - Mg/m3: | 1.80 | 1.81 | 1.82 |
| **Peak** | | | |
| Angle of Shearing Resistance:(~~θ~~) | **41** | | |
| Effective Cohesion - kPa: | **9** | | |




UKAS TESTING 4043

PSL Professional Soils Laboratory

**Wansford to Sutton Dualling Supplementary GI**

| | |
|---|---|
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| **Client Ref:** | |
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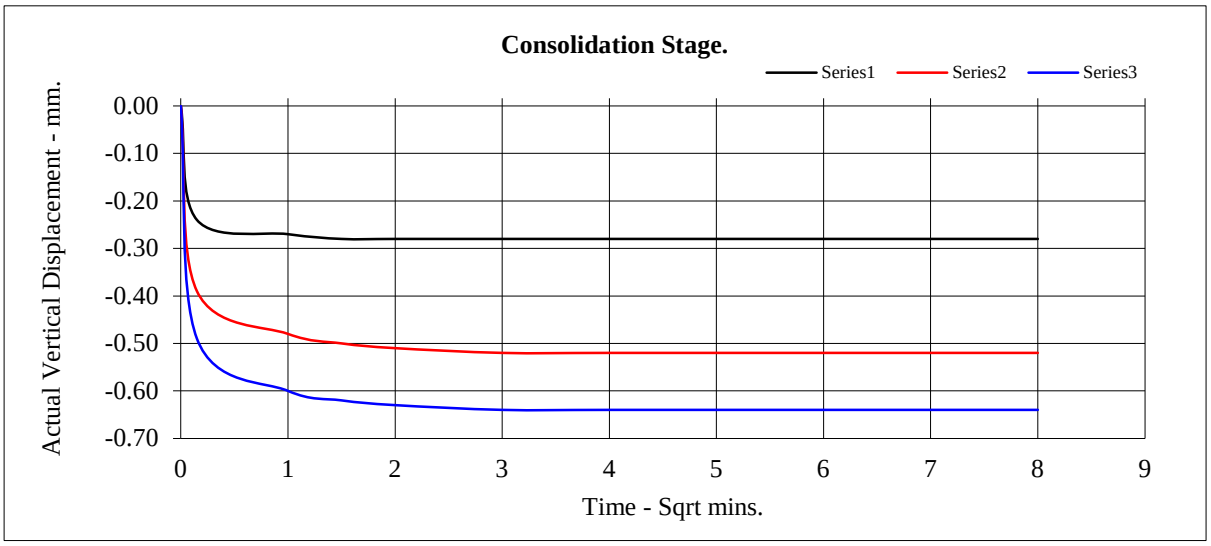
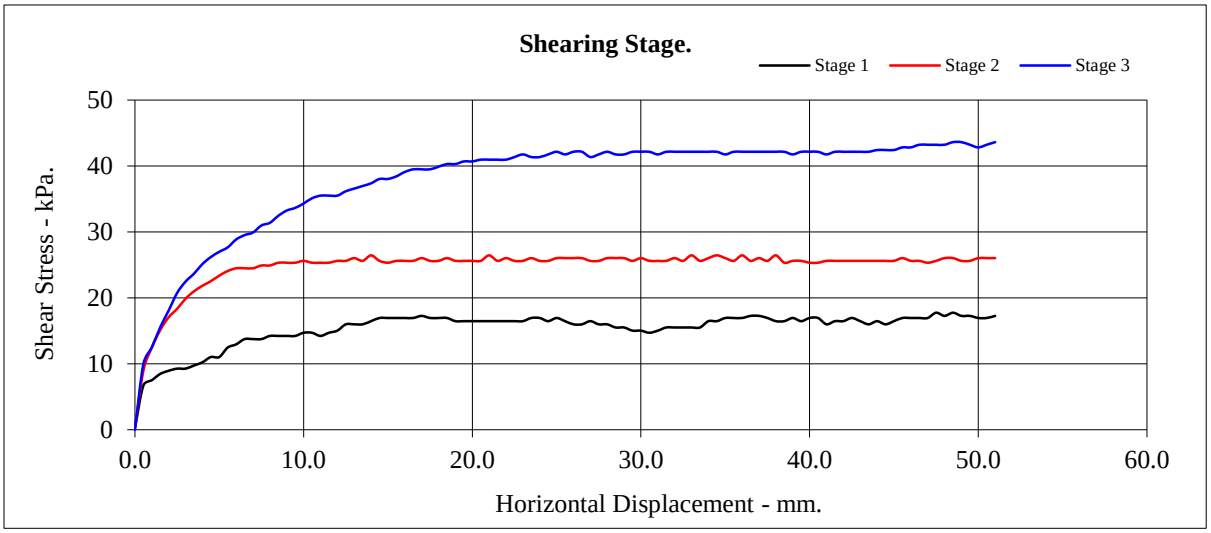
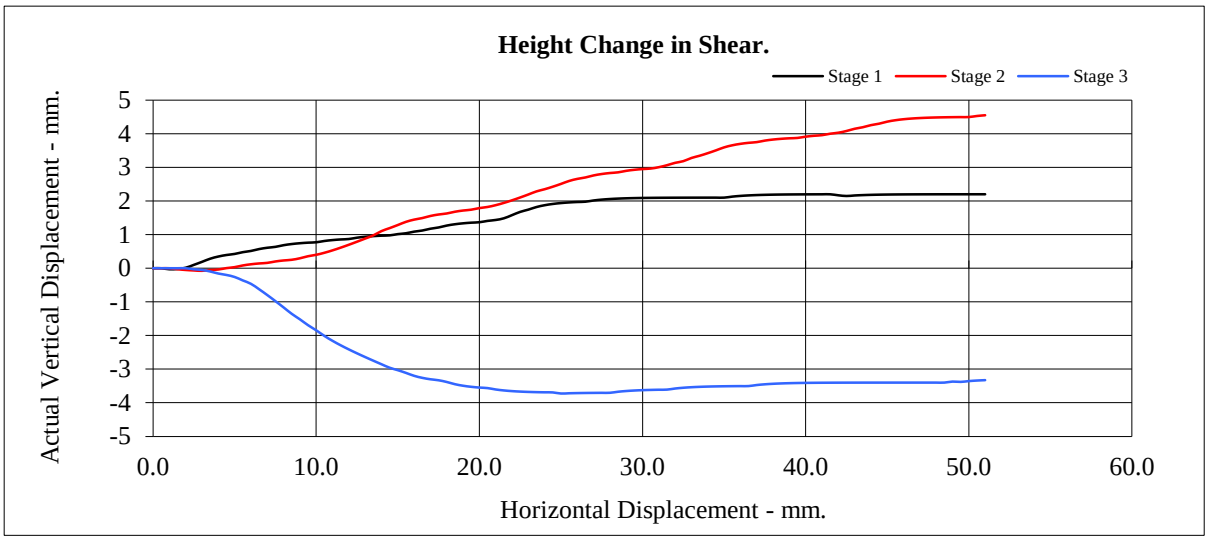
# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 5**

| | | | |
|---|---|---|---|
| Hole Number: | **TP137** | Top Depth: | **1.00** |
| Sample Number: | **5** | Base Depth: | **1.30** |



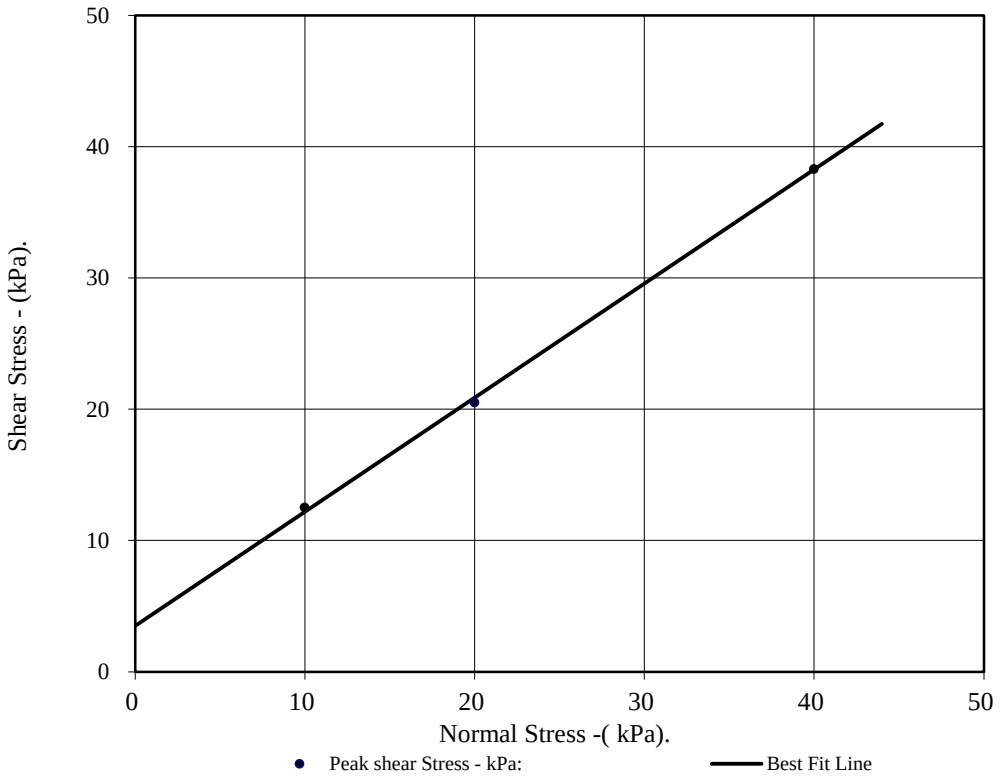



# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 5**

| | | | | |
|---|---|---|---|---|
| Hole Number: | **TP138** | | Top Depth: | **2.20** |
| Sample Number: | **7** | | Base Depth: | **2.50** |
| Sample Conditions: | Dry | | Sample Type | **B** |
| Particle Density - Mg/m3: | 2.65 | Assumed | **Remarks:** | |
| Sample Preparation: | Material tested passing 20mm sieve<br>Remoulded using 2.5kg effort. | | | |
| Sample Description: | **See summary of soil descriptions** | | | |

| **STAGE** | **1** | **2** | **3** |
|---|---|---|---|
| **Initial Conditions** | | | |
| Height - mm: | 150 | 150 | 150 |
| Length - mm: | 300 | 300 | 300 |
| Moisture Content - %: | 9.7 | 9.7 | 9.7 |
| Bulk Density - Mg/m3: | 2.00 | 2.00 | 2.00 |
| Dry Density - Mg/m3: | 1.82 | 1.82 | 1.82 |
| Voids Ratio: | 0.453 | 0.453 | 0.453 |
| Normal Pressure- kPa | 10 | 20 | 40 |
| **Consolidation Stage** | | | |
| Consolidated Height - mm: | 149.93 | 149.55 | 149.46 |
| **Shearing Stage** | | | |
| Rate of Strain (mm/min) | 1.00 | 1.00 | 1.00 |
| Displacement at peak shear stress (mm) | 36.50 | 12.50 | 15.50 |
| Peak shear Stress - kPa: | 13 | 21 | 38 |
| **Final Consolidated Conditions** | | | |
| Moisture Content - %: | 9.2 | 8.2 | 8.6 |
| Bulk Density - Mg/m3: | 2.00 | 2.01 | 2.01 |
| Dry Density - Mg/m3: | 1.83 | 1.85 | 1.85 |
| **Peak** | | | |
| Angle of Shearing Resistance:(~~θ~~) | **41** | | |
| Effective Cohesion - kPa: | **4** | | |




UKAS TESTING 4043

PSL Professional Soils Laboratory

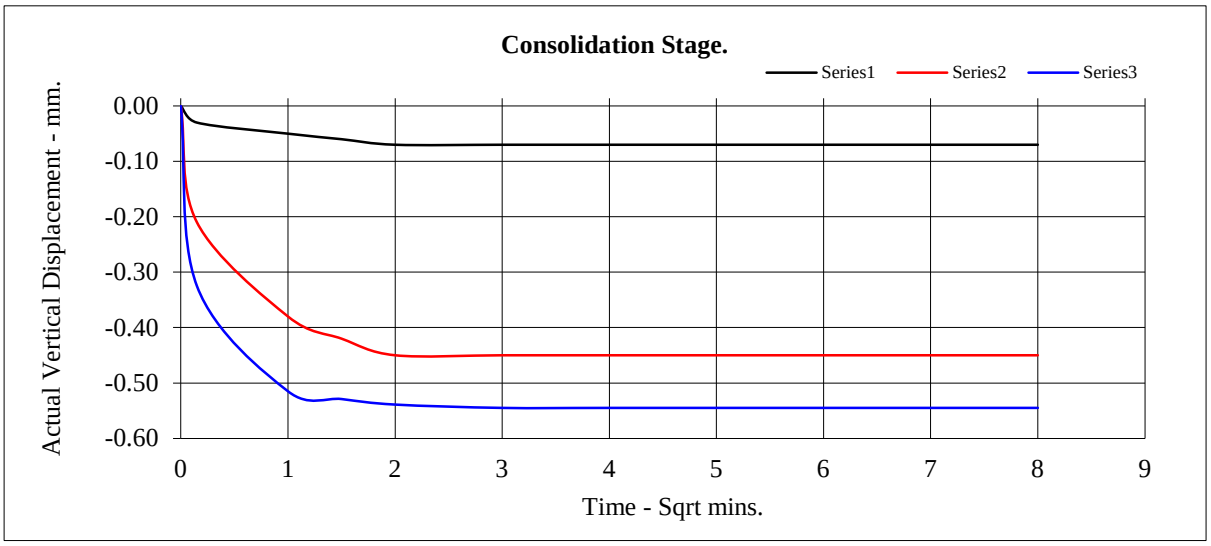
**Wansford to Sutton Dualling Supplementary GI**

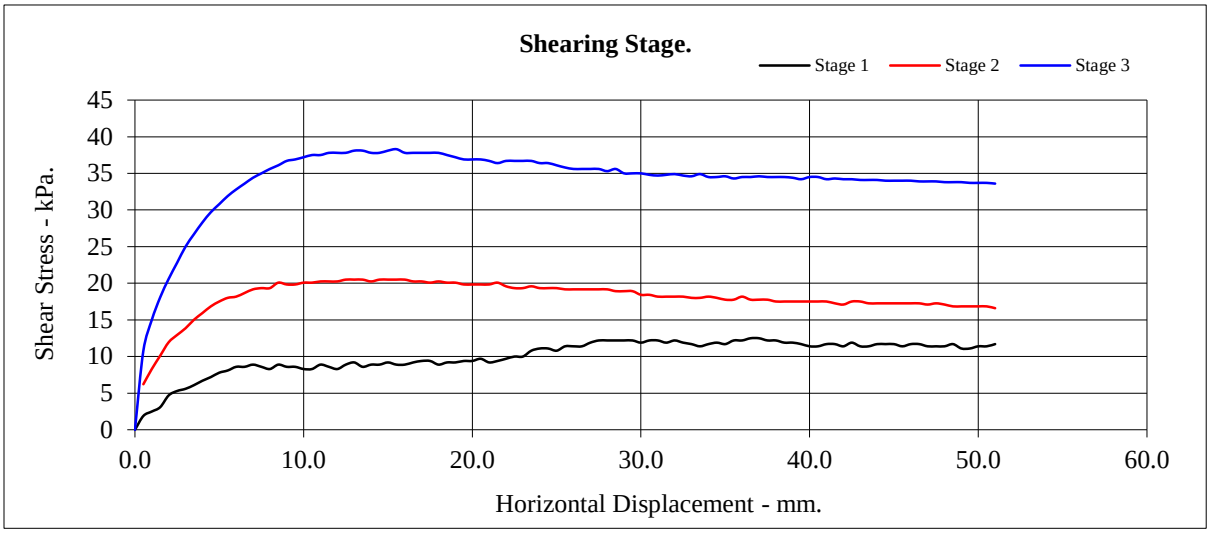
| | |
|---|---|
| **Contract No:** | |
| **PSL22/3024** | |
| **Client Ref:** | |
| **GT0386** | |

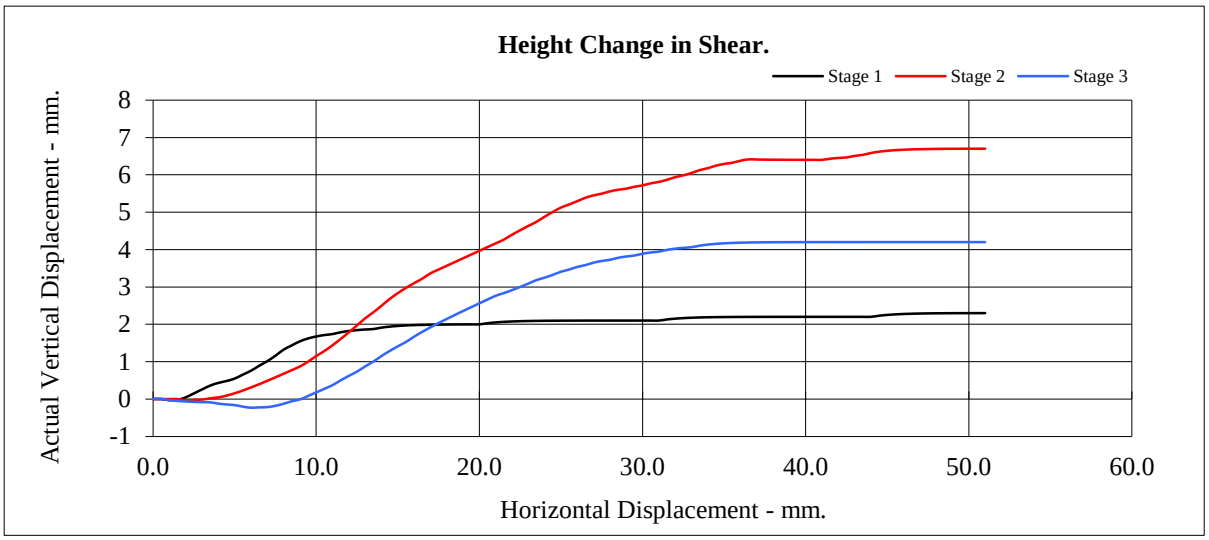
# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 5**

| | | | |
|---|---|---|---|
| Hole Number: | **TP138** | Top Depth: | **2.20** |
| Sample Number: | **7** | Base Depth: | **2.50** |



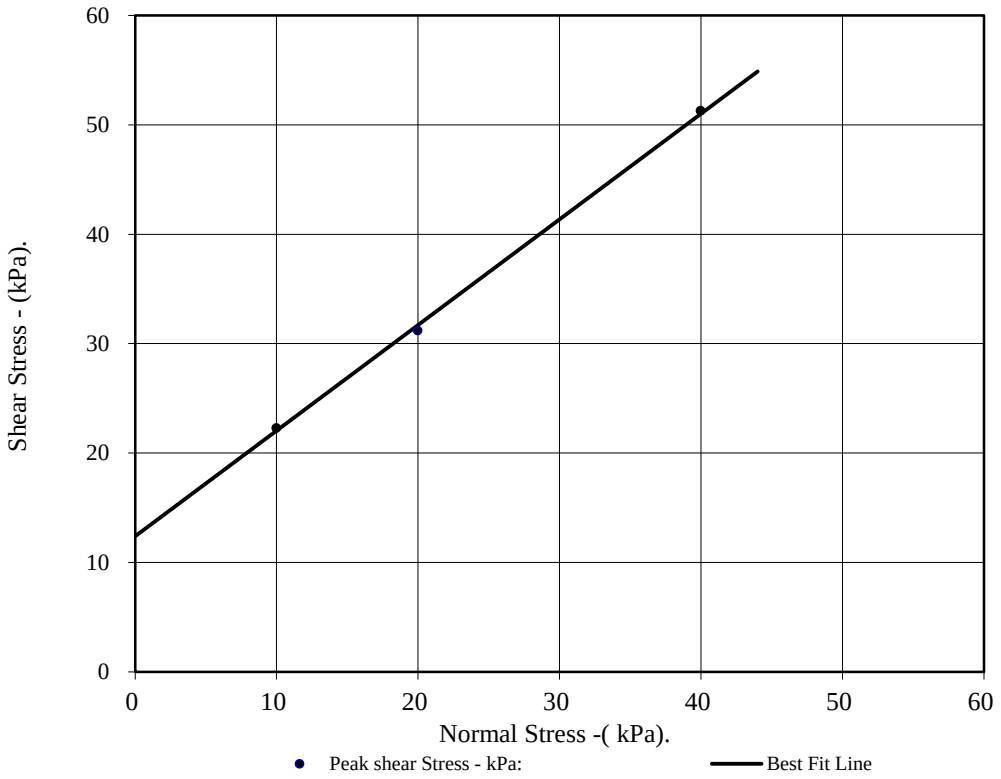



# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 5**

| | | | | | |
|---|---|---|---|---|---|
| Hole Number: | **TP163** | | Top Depth: | **0.50** | |
| Sample Number: | **5** | | Base Depth: | **0.80** | |
| Sample Conditions: | Dry | | Sample Type | **B** | |
| Particle Density - Mg/m3: | 2.65 | Assumed | **Remarks:** | | |
| Sample Preparation: | Material tested passing 20mm sieve<br>Remoulded using 2.5kg effort. | | | | |
| Sample Description: | **See summary of soil descriptions** | | | | |

| **STAGE** | **1** | **2** | **3** |
|---|---|---|---|
| **Initial Conditions** | | | |
| Height - mm: | 140 | 140 | 140 |
| Length - mm: | 300 | 300 | 300 |
| Moisture Content - %: | 13 | 13 | 13 |
| Bulk Density - Mg/m3: | 2.06 | 2.06 | 2.06 |
| Dry Density - Mg/m3: | 1.83 | 1.83 | 1.83 |
| Voids Ratio: | 0.450 | 0.450 | 0.450 |
| Normal Pressure- kPa | 10 | 20 | 40 |
| **Consolidation Stage** | | | |
| Consolidated Height - mm: | 139.70 | 139.55 | 139.40 |
| **Shearing Stage** | | | |
| Rate of Strain (mm/min) | 1.00 | 1.00 | 1.00 |
| Displacement at peak shear stress (mm) | 16.00 | 14.50 | 19.50 |
| Peak shear Stress - kPa: | 22 | 31 | 51 |
| **Final Consolidated Conditions** | | | |
| Moisture Content - %: | 13 | 12 | 12 |
| Bulk Density - Mg/m3: | 2.07 | 2.07 | 2.07 |
| Dry Density - Mg/m3: | 1.84 | 1.85 | 1.85 |
| **Peak** | | | |
| Angle of Shearing Resistance:(~~θ~~) | **44** | | |
| Effective Cohesion - kPa: | **12** | | |



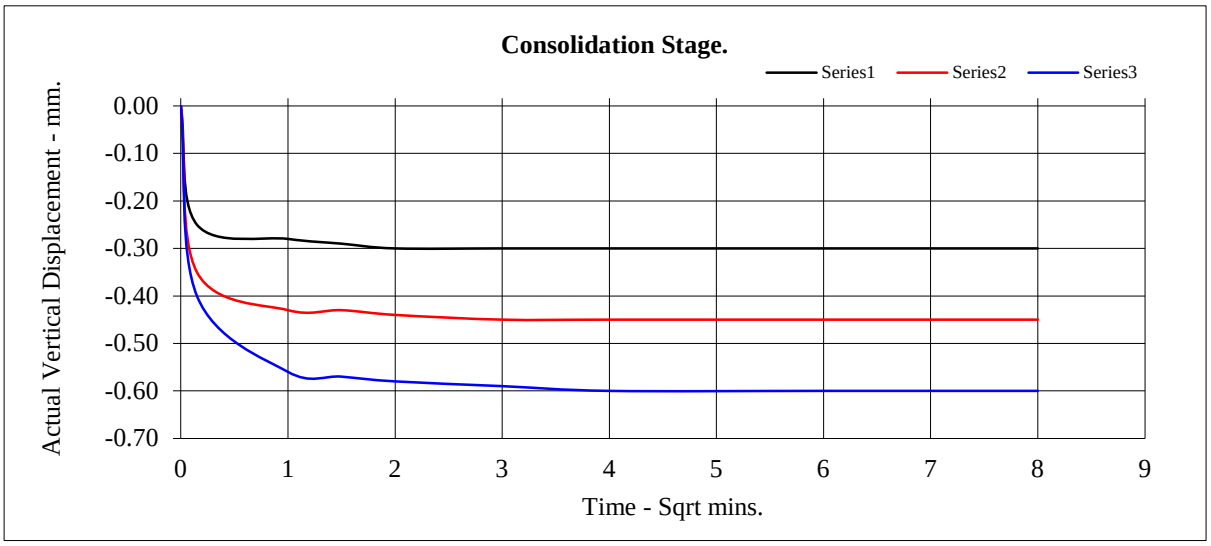

| | | |
|---|---|---|
| UKAS TESTING 4043 | PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** |

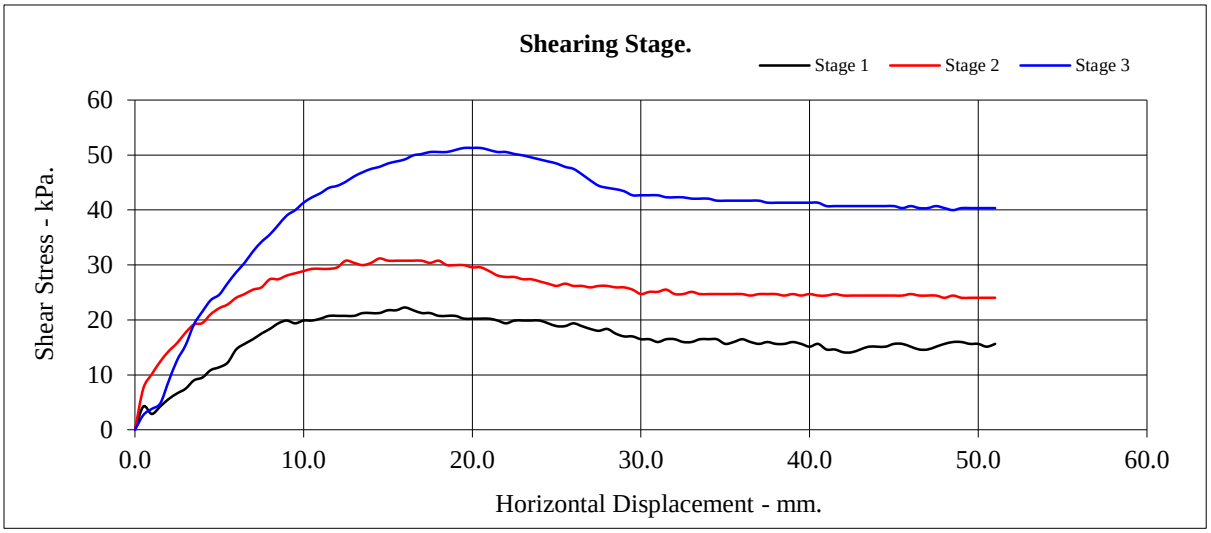
| |
|---|
| **Contract No:** |
| **PSL22/3024** |
| **Client Ref:** |
| **GT0386** |

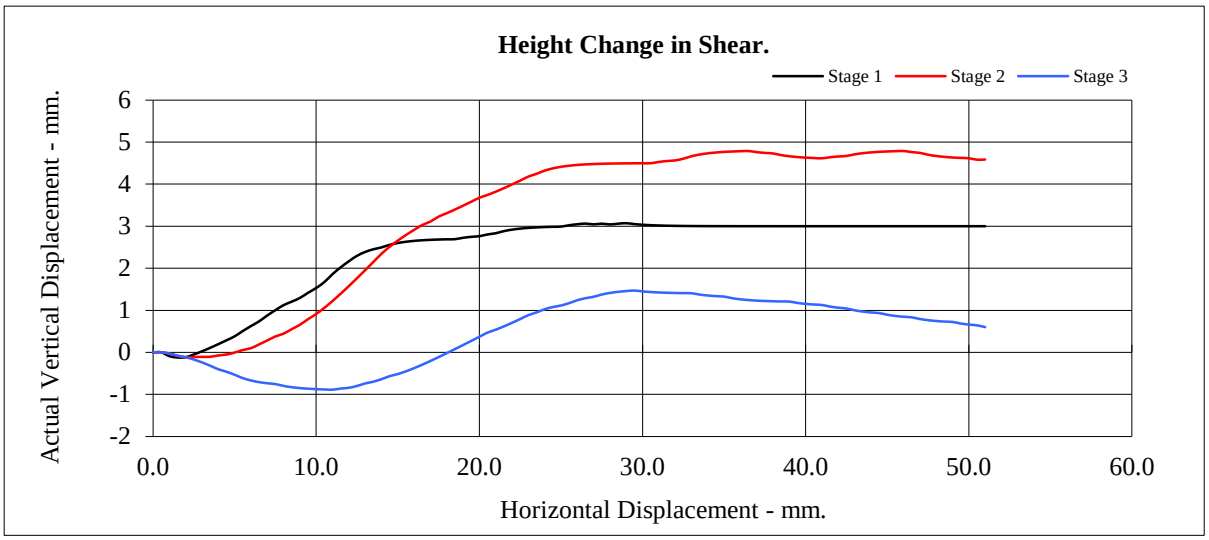
# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 5**

| | | | |
|---|---|---|---|
| Hole Number: | **TP163** | Top Depth: | **0.50** |
| Sample Number: | **5** | Base Depth: | **0.80** |



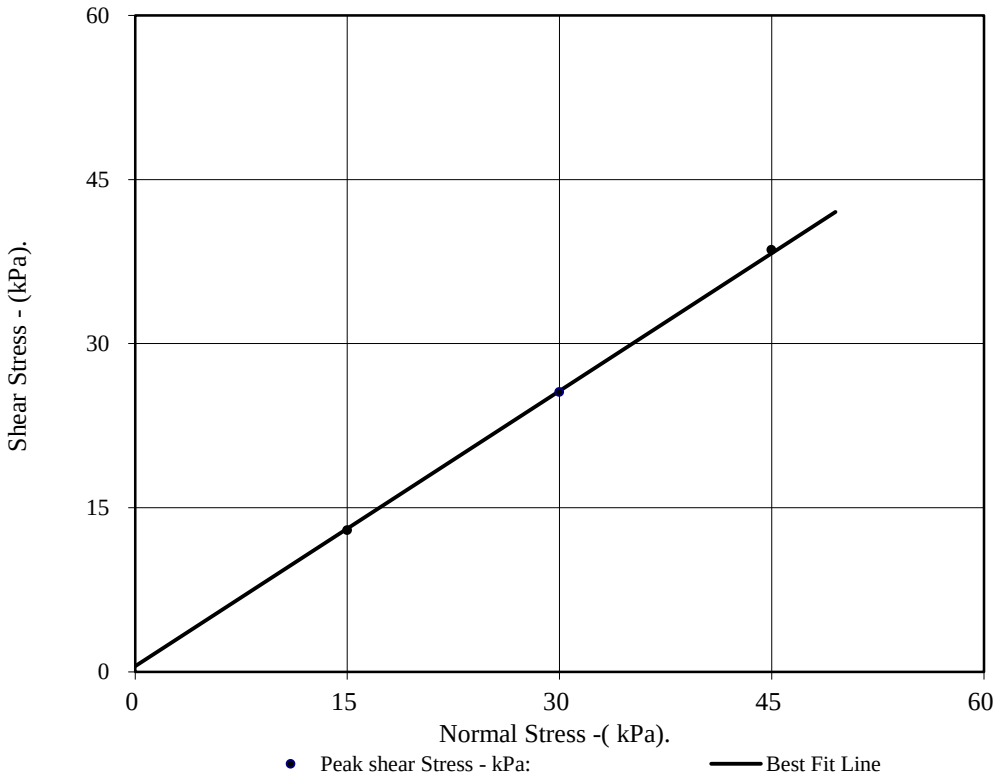



# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 4**

| | | | | | |
|---|---|---|---|---|---|
| Hole Number: | **BH106** | | Top Depth: | **1.50** | |
| Sample Number: | **102** | | Base Depth: | **2.00** | |
| Sample Conditions: | Dry | | Sample Type | **B** | |
| Particle Density - Mg/m3: | 2.65 | Assumed | **Remarks:** | | |
| Sample Preparation: | Material tested passing 2mm sieve<br>Remoulded using hand tamped effort | | | | |
| Sample Description: | **See summary of soil descriptions** | | | | |

| **STAGE** | **1** | **2** | **3** |
|---|---|---|---|
| **Initial Conditions** | | | |
| Height - mm: | 20.05 | 20.05 | 20.05 |
| Length - mm: | 59.97 | 59.97 | 59.97 |
| Moisture Content - %: | 14 | 14 | 14 |
| Bulk Density - Mg/m3: | 1.83 | 1.83 | 1.83 |
| Dry Density - Mg/m3: | 1.61 | 1.61 | 1.61 |
| Voids Ratio: | 0.649 | 0.649 | 0.649 |
| Normal Pressure- kPa | 15 | 30 | 45 |
| **Consolidation Stage** | | | |
| Consolidated Height - mm: | 19.83 | 19.81 | 19.78 |
| **Shearing Stage** | | | |
| Rate of Strain (mm/min) | 0.600 | 0.600 | 0.600 |
| Displacement at peak shear stress (mm) | 9.00 | 6.00 | 4.00 |
| Peak shear Stress - kPa: | 13 | 26 | 39 |
| **Final Consolidated Conditions** | | | |
| Moisture Content - %: | 14 | 12 | 13 |
| Bulk Density - Mg/m3: | 1.85 | 1.85 | 1.86 |
| Dry Density - Mg/m3: | 1.62 | 1.66 | 1.64 |
| **Peak** | | | |
| Angle of Shearing Resistance:(~~θ~~) | **40** | | |
| Effective Cohesion - kPa: | **1** | | |

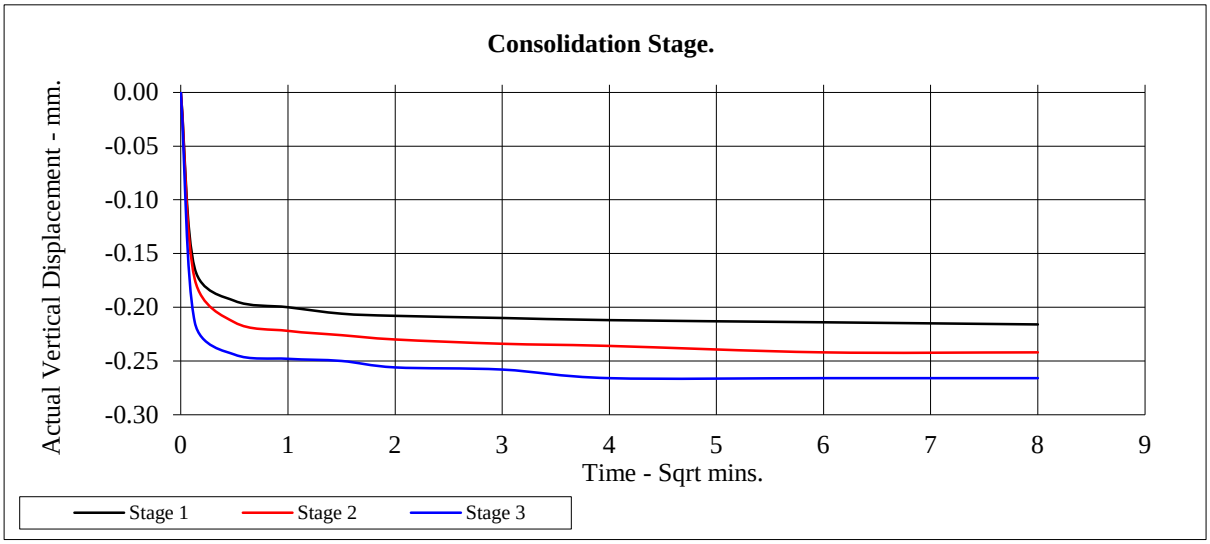


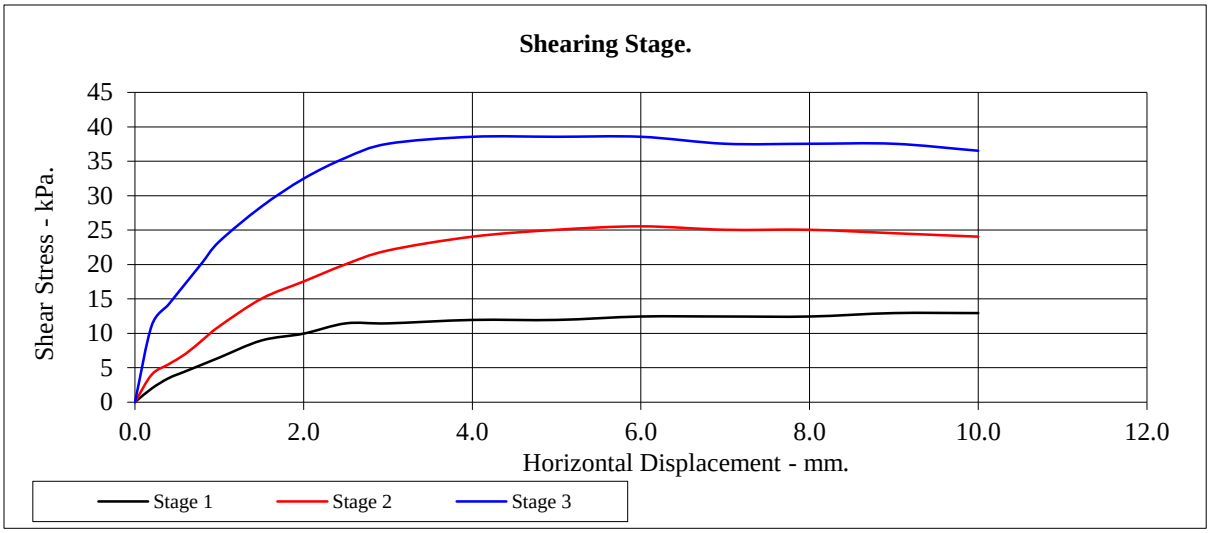

| | | | |
|---|---|---|---|
| UKAS TESTING 4043 | PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** | **Contract No:** PSL22/3650<br>**Client Ref:** GT0386 |

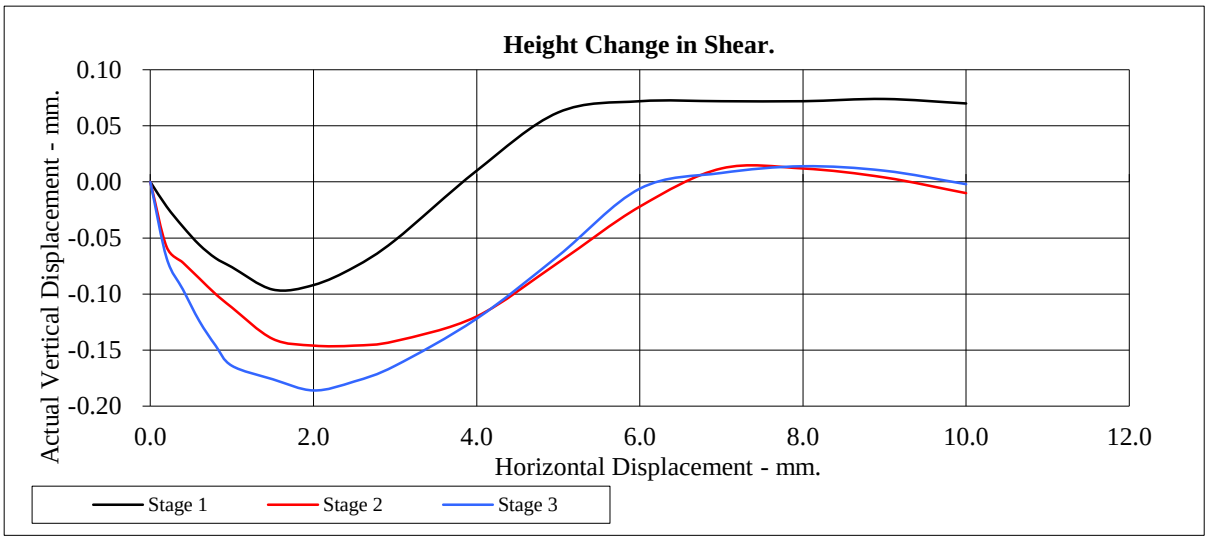
# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 4**

| | | | |
|---|---|---|---|
| Hole Number: | **BH106** | Top Depth: | **1.50** |
| Sample Number: | **102** | Base Depth: | **2.00** |



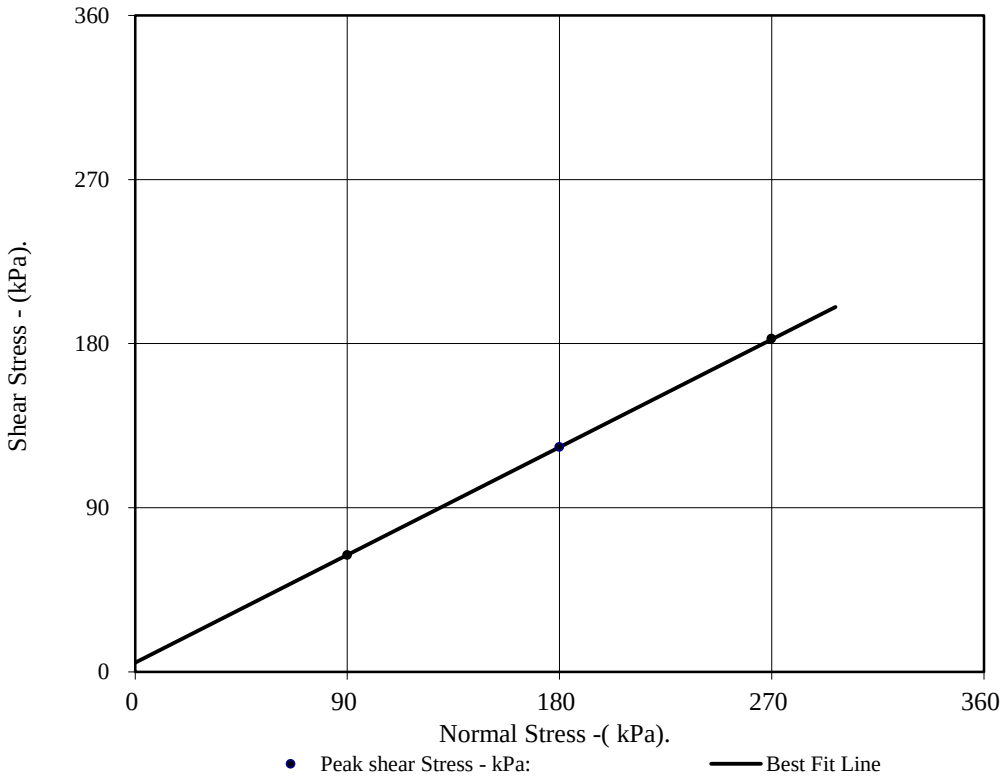

| | | |
|---|---|---|
| UKAS TESTING 4043 / Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** | **Contract No:** PSL22/3650<br>**Client Ref:** GT0386 |

# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 4**

| | | | | | |
|---|---|---|---|---|---|
| Hole Number: | **BH108** | | Top Depth: | **8.40** | |
| Sample Number: | **108** | | Base Depth: | **8.90** | |
| Sample Conditions: | Dry | | Sample Type | **B** | |
| Particle Density - Mg/m3: | 2.65 | Assumed | **Remarks:** | | |
| Sample Preparation: | Material tested passing 2mm sieve<br>Remoulded using hand tamped effort | | | | |
| Sample Description: | **See summary of soil descriptions** | | | | |

| **STAGE** | **1** | **2** | **3** |
|---|---|---|---|
| **Initial Conditions** | | | |
| Height - mm: | 20.05 | 20.05 | 20.05 |
| Length - mm: | 59.97 | 59.97 | 59.97 |
| Moisture Content - %: | 20 | 20 | 20 |
| Bulk Density - Mg/m3: | 2.01 | 2.01 | 2.01 |
| Dry Density - Mg/m3: | 1.68 | 1.68 | 1.68 |
| Voids Ratio: | 0.579 | 0.578 | 0.578 |
| Normal Pressure- kPa | 90 | 180 | 270 |
| **Consolidation Stage** | | | |
| Consolidated Height - mm: | 19.57 | 19.35 | 19.18 |
| **Shearing Stage** | | | |
| Rate of Strain (mm/min) | 0.600 | 0.600 | 0.600 |
| Displacement at peak shear stress (mm) | 4.00 | 8.00 | 5.00 |
| Peak shear Stress - kPa: | 64 | 123 | 183 |
| **Final Consolidated Conditions** | | | |
| Moisture Content - %: | 19 | 18 | 16 |
| Bulk Density - Mg/m3: | 2.06 | 2.09 | 2.11 |
| Dry Density - Mg/m3: | 1.74 | 1.77 | 1.82 |
| **Peak** | | | |
| Angle of Shearing Resistance:(~~θ~~) | **33** | | |
| Effective Cohesion - kPa: | **5** | | |

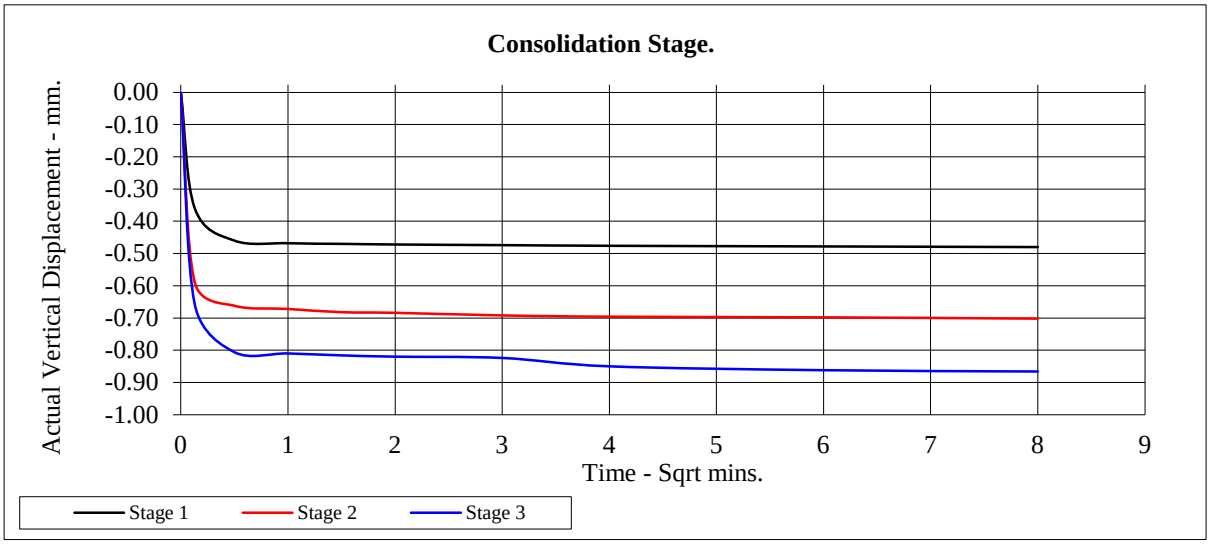


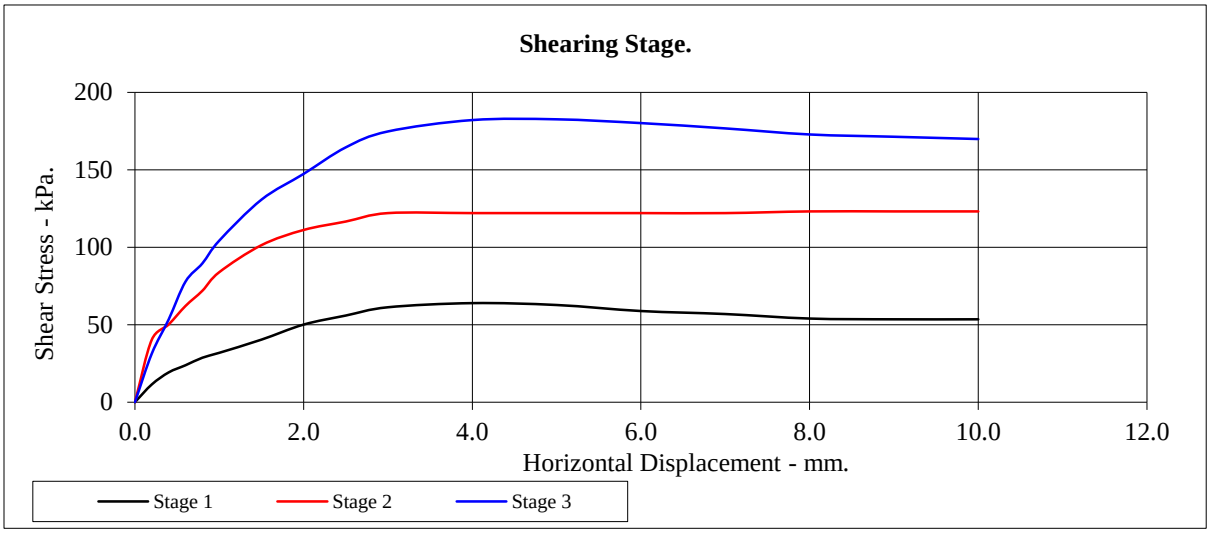

| | | | |
|---|---|---|---|
| UKAS TESTING 4043 | PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** | **Contract No:** PSL22/3650<br>**Client Ref:** GT0386 |

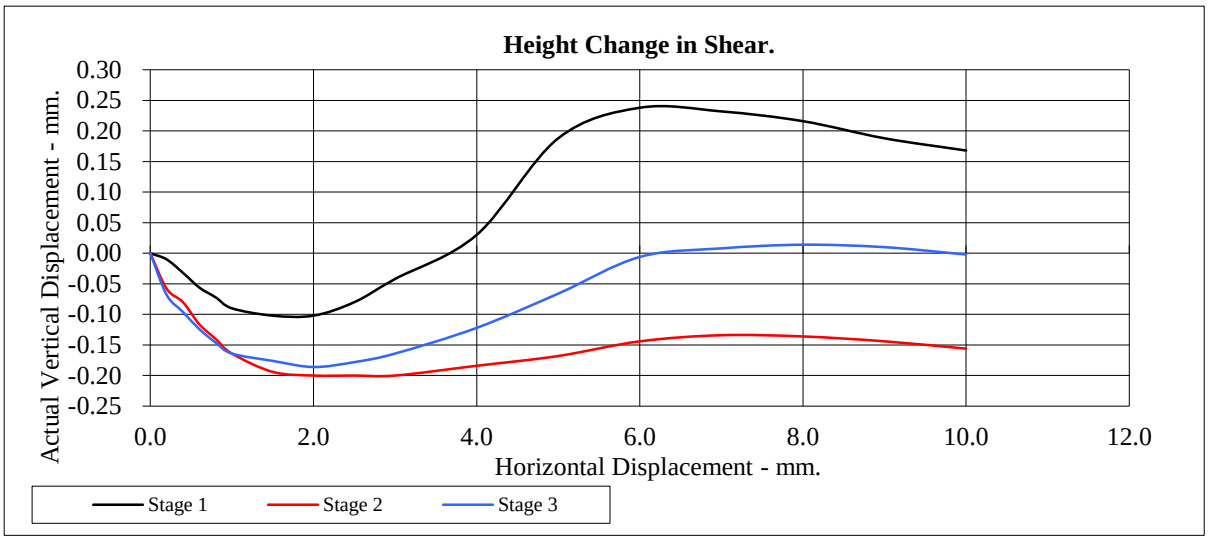
# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 4**

| | | | |
|---|---|---|---|
| Hole Number: | **BH108** | Top Depth: | **8.40** |
| Sample Number: | **108** | Base Depth: | **8.90** |



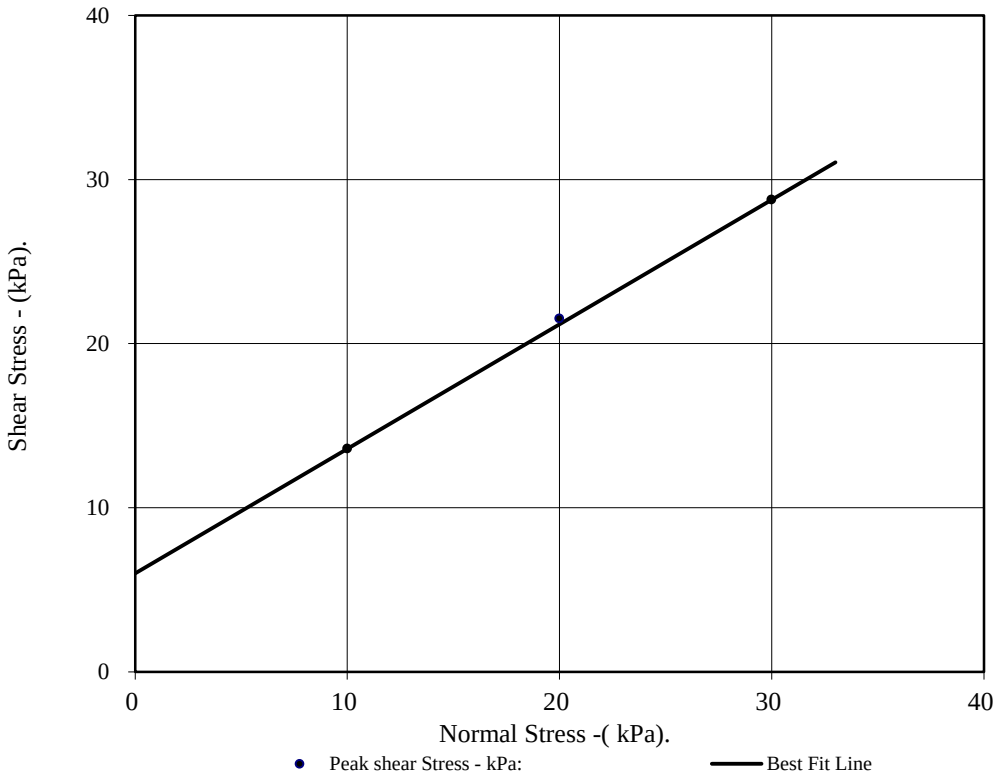



# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 4**

| | | | | | |
|---|---|---|---|---|---|
| Hole Number: | **BH111** | | Top Depth: | **0.50** | |
| Sample Number: | **B2** | | Base Depth: | **1.20** | |
| Sample Conditions: | Submerged | | Sample Type | **B** | |
| Particle Density - Mg/m3: | 2.65 | Assumed | **Remarks:** | | |
| Sample Preparation: | Material tested passing 2mm sieve<br>Remoulded using 2.5kg effort. | | | | |
| Sample Description: | **See summary of soil descriptions.** | | | | |

| **STAGE** | **1** | **2** | **3** |
|---|---|---|---|
| **Initial Conditions** | | | |
| Height - mm: | 20.05 | 20.05 | 20.05 |
| Length - mm: | 59.97 | 59.97 | 59.97 |
| Moisture Content - %: | 15 | 15 | 15 |
| Bulk Density - Mg/m3: | 2.06 | 2.06 | 2.06 |
| Dry Density - Mg/m3: | 1.80 | 1.80 | 1.80 |
| Voids Ratio: | 0.474 | 0.474 | 0.474 |
| Normal Pressure- kPa | 10 | 20 | 30 |
| **Consolidation Stage** | | | |
| Consolidated Height - mm: | 19.92 | 19.73 | 19.58 |
| **Shearing Stage** | | | |
| Rate of Strain - mm/min | 0.042 | 0.042 | 0.042 |
| Displacement at peak shear stress - mm | 3.31 | 3.61 | 3.31 |
| Peak shear Stress - kPa: | 14 | 22 | 29 |
| **Final Consolidated Conditions** | | | |
| Moisture Content - %: | 17 | 16 | 15 |
| Bulk Density - Mg/m3: | 2.07 | 2.09 | 2.11 |
| Dry Density - Mg/m3: | 1.78 | 1.80 | 1.83 |
| **Peak** | | | |
| Angle of Shearing Resistance:(~~θ~~) | **37** | | |
| Effective Cohesion - kPa: | **6** | | |




UKAS TESTING 4043

PSL Professional Soils Laboratory

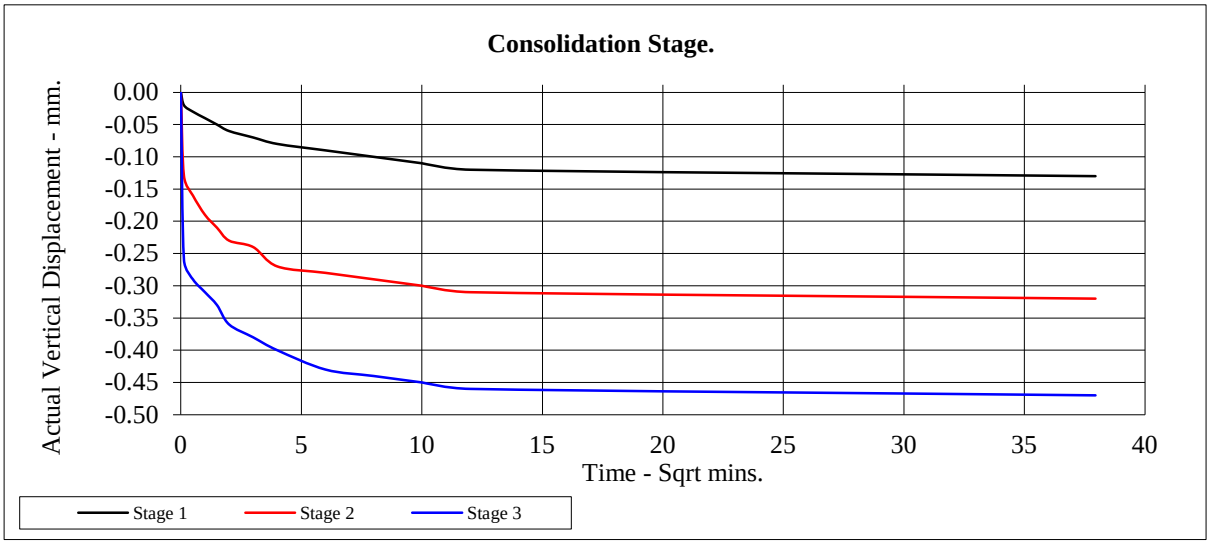
**Wansford to Sutton Dualling Supplementary GI**

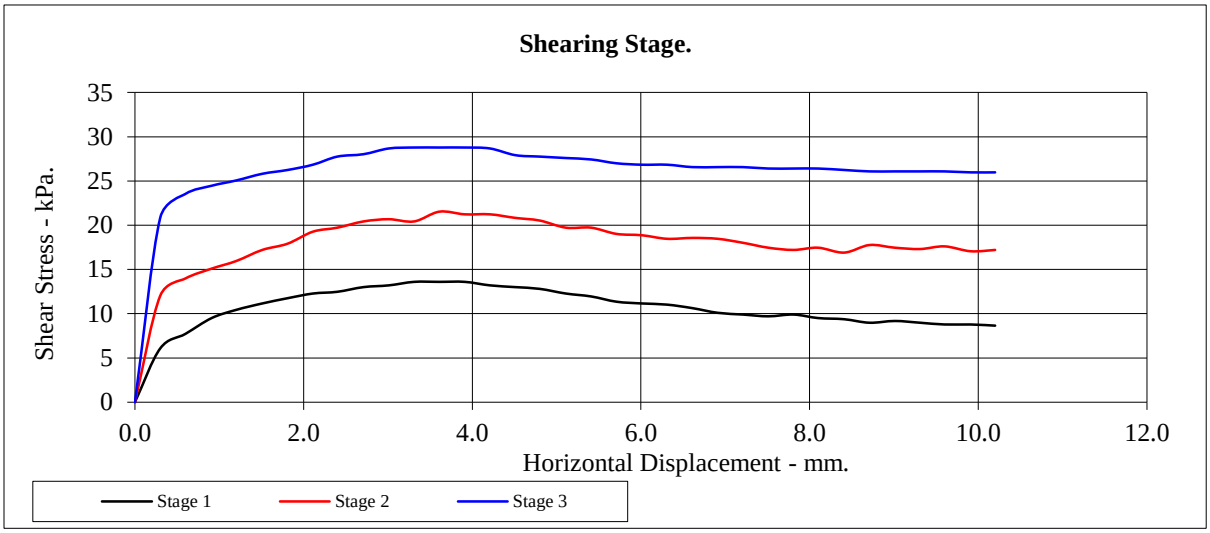
| | |
|---|---|
| **Contract No:** | |
| **PSL22/3650** | |
| **Client Ref:** | |
| **GT0386** | |

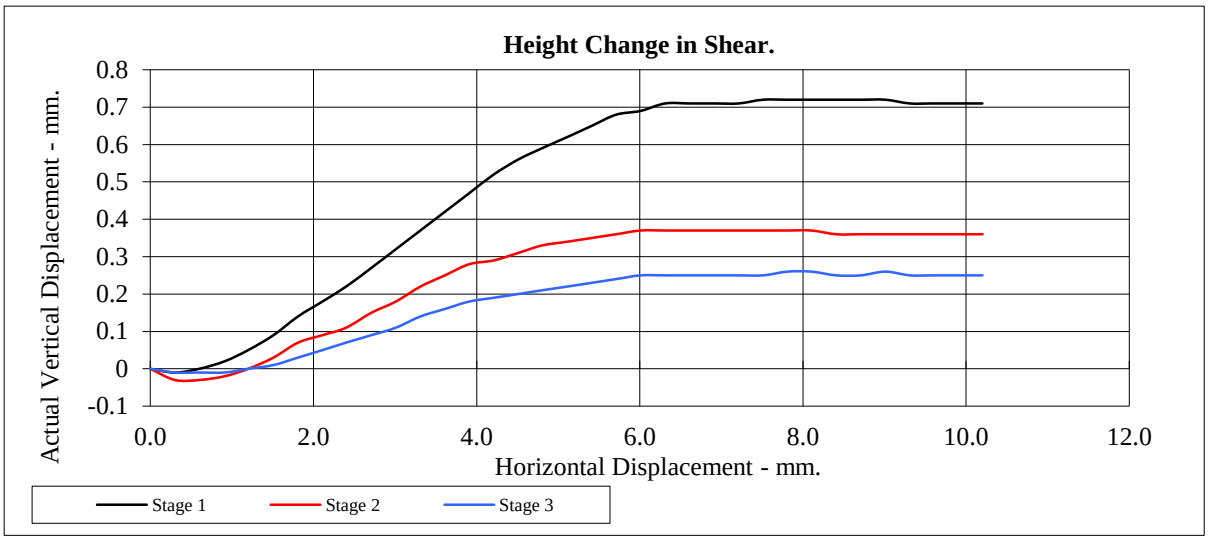
# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 4**

| | | | |
|---|---|---|---|
| Hole Number: | **BH111** | Top Depth: | **0.50** |
| Sample Number: | **B2** | Base Depth: | **1.20** |



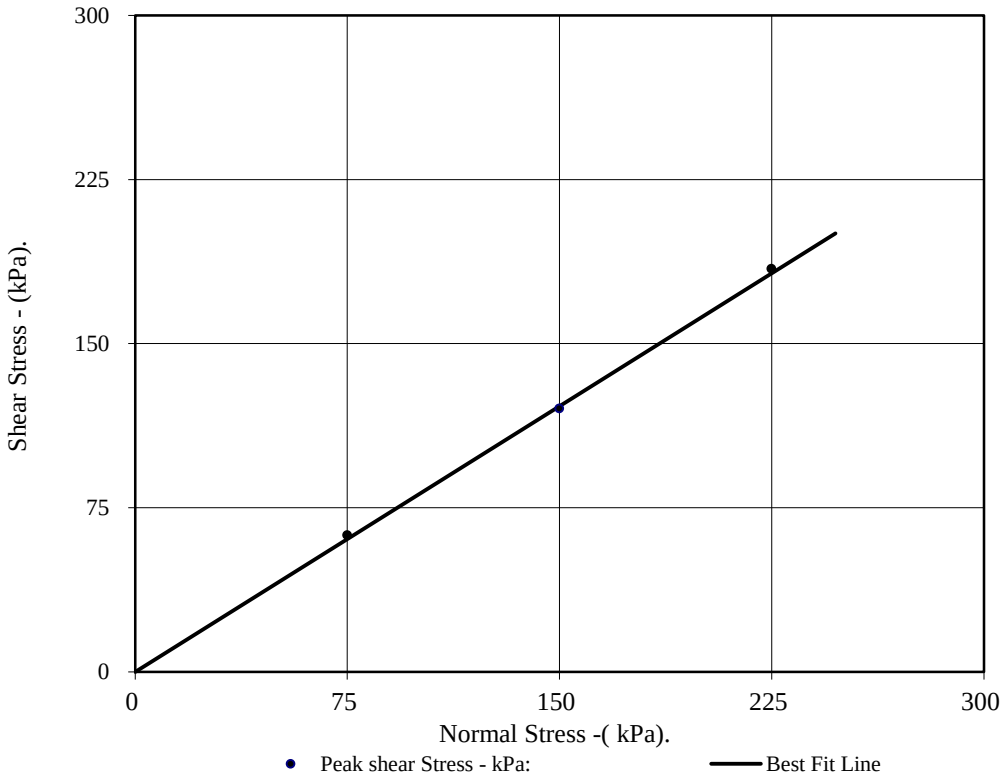



# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 4**

| | | | | | |
|---|---|---|---|---|---|
| Hole Number: | **BH117** | | Top Depth: | **7.50** | |
| Sample Number: | **1** | | Base Depth: | **7.95** | |
| Sample Conditions: | Dry | | Sample Type | **D** | |
| Particle Density - Mg/m3: | 2.65 | Assumed | **Remarks:** | | |
| Sample Preparation: | Material tested passing 2mm sieve<br>Remoulded using hand tamped effort | | | | |
| Sample Description: | **See summary of soil descriptions** | | | | |

| **STAGE** | **1** | **2** | **3** |
|---|---|---|---|
| **Initial Conditions** | | | |
| Height - mm: | 20.05 | 20.05 | 20.05 |
| Length - mm: | 59.97 | 59.97 | 59.97 |
| Moisture Content - %: | 19 | 19 | 19 |
| Bulk Density - Mg/m3: | 1.92 | 1.92 | 1.92 |
| Dry Density - Mg/m3: | 1.61 | 1.61 | 1.61 |
| Voids Ratio: | 0.646 | 0.646 | 0.646 |
| Normal Pressure- kPa | 75 | 150 | 225 |
| **Consolidation Stage** | | | |
| Consolidated Height - mm: | 19.80 | 19.56 | 18.98 |
| **Shearing Stage** | | | |
| Rate of Strain (mm/min) | 0.600 | 0.600 | 0.600 |
| Displacement at peak shear stress (mm) | 3.00 | 4.00 | 7.00 |
| Peak shear Stress - kPa: | 62 | 120 | 184 |
| **Final Consolidated Conditions** | | | |
| Moisture Content - %: | 19 | 18 | 18 |
| Bulk Density - Mg/m3: | 1.94 | 1.96 | 2.02 |
| Dry Density - Mg/m3: | 1.63 | 1.66 | 1.71 |
| **Peak** | | | |
| Angle of Shearing Resistance:(~~θ~~) | **39** | | |
| Effective Cohesion - kPa: | **0** | | |

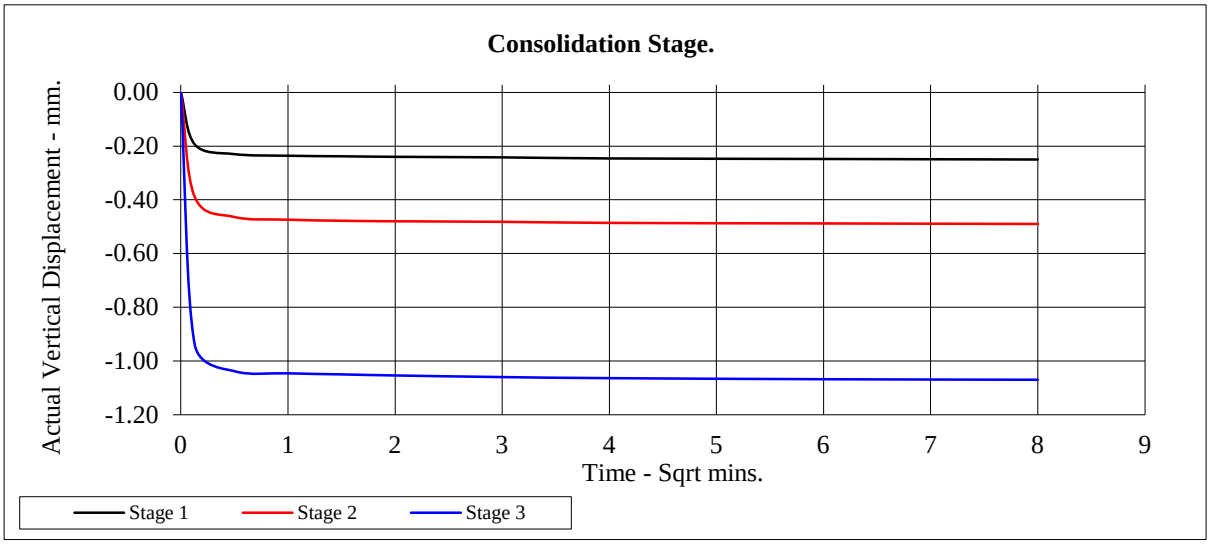


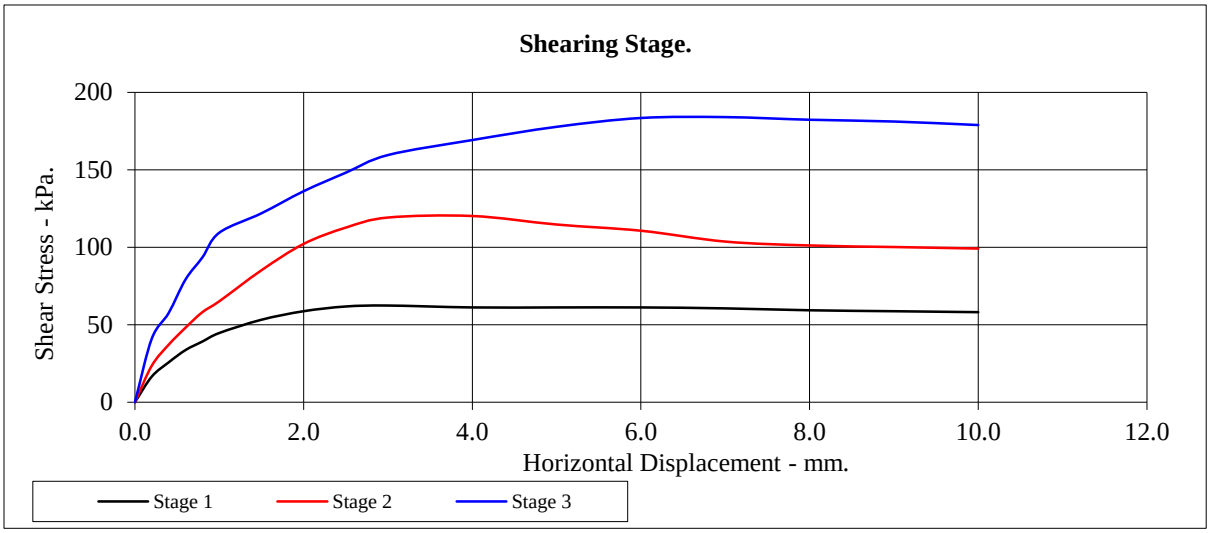

| | | | |
|---|---|---|---|
| UKAS TESTING 4043 | PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** | **Contract No:** PSL22/3650<br>**Client Ref:** GT0386 |

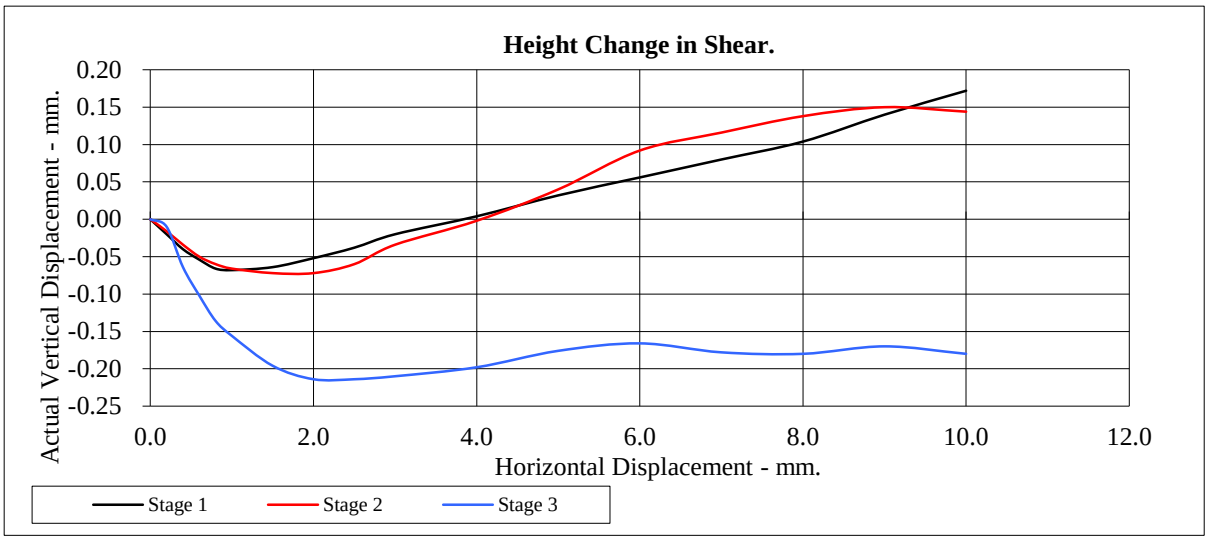
# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 4**

| | | | |
|---|---|---|---|
| Hole Number: | **BH117** | Top Depth: | **7.50** |
| Sample Number: | **1** | Base Depth: | **7.95** |



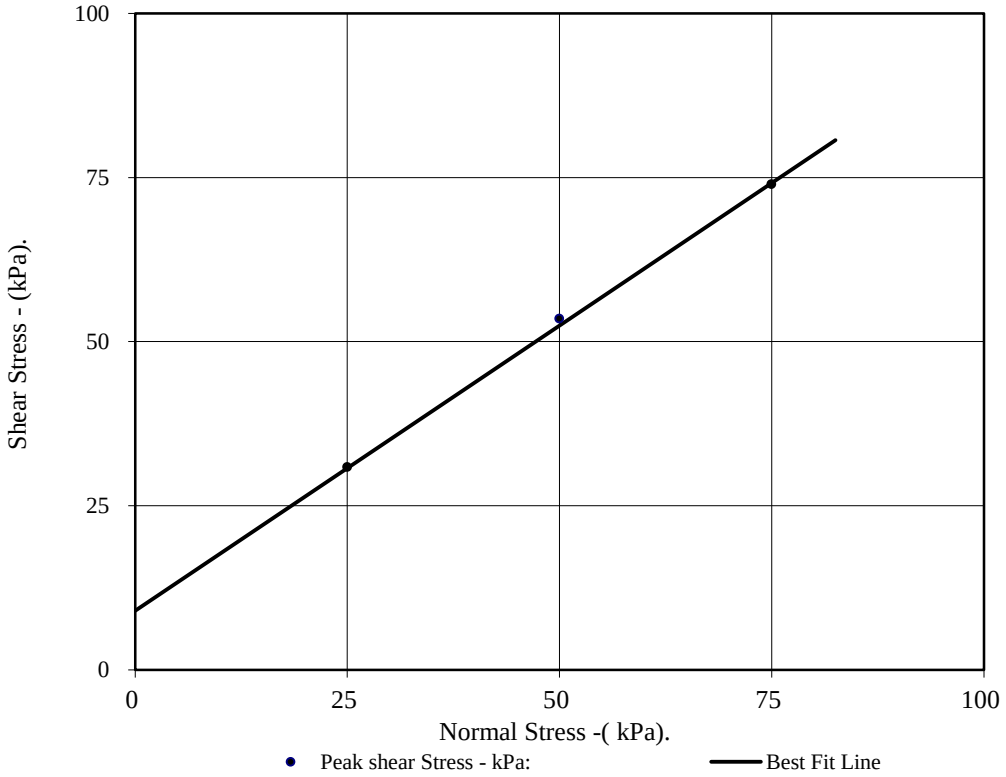



# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 4**

| | | | | | |
|---|---|---|---|---|---|
| Hole Number: | **BH132** | | Top Depth: | **5.25** | |
| Sample Number: | **105** | | Base Depth: | **5.40** | |
| Sample Conditions: | Dry | | Sample Type | **D** | |
| Particle Density - Mg/m3: | 2.65 | Assumed | **Remarks:** | | |
| Sample Preparation: | Material tested passing 2mm sieve<br>Remoulded using hand tamped effort | | | | |
| Sample Description: | **See summary of soil descriptions** | | | | |

| **STAGE** | **1** | **2** | **3** |
|---|---|---|---|
| **Initial Conditions** | | | |
| Height - mm: | 20.05 | 20.05 | 20.05 |
| Length - mm: | 59.97 | 59.97 | 59.97 |
| Moisture Content - %: | 20 | 20 | 20 |
| Bulk Density - Mg/m3: | 1.90 | 1.90 | 1.90 |
| Dry Density - Mg/m3: | 1.59 | 1.59 | 1.59 |
| Voids Ratio: | 0.671 | 0.667 | 0.667 |
| Normal Pressure- kPa | 25 | 50 | 75 |
| **Consolidation Stage** | | | |
| Consolidated Height - mm: | 19.87 | 19.71 | 19.56 |
| **Shearing Stage** | | | |
| Rate of Strain (mm/min) | 0.600 | 0.600 | 0.600 |
| Displacement at peak shear stress (mm) | 4.00 | 7.00 | 5.00 |
| Peak shear Stress - kPa: | 31 | 53 | 74 |
| **Final Consolidated Conditions** | | | |
| Moisture Content - %: | 19 | 18 | 18 |
| Bulk Density - Mg/m3: | 1.92 | 1.94 | 1.95 |
| Dry Density - Mg/m3: | 1.62 | 1.63 | 1.65 |
| **Peak** | | | |
| Angle of Shearing Resistance:(~~θ~~) | **41** | | |
| Effective Cohesion - kPa: | **9** | | |



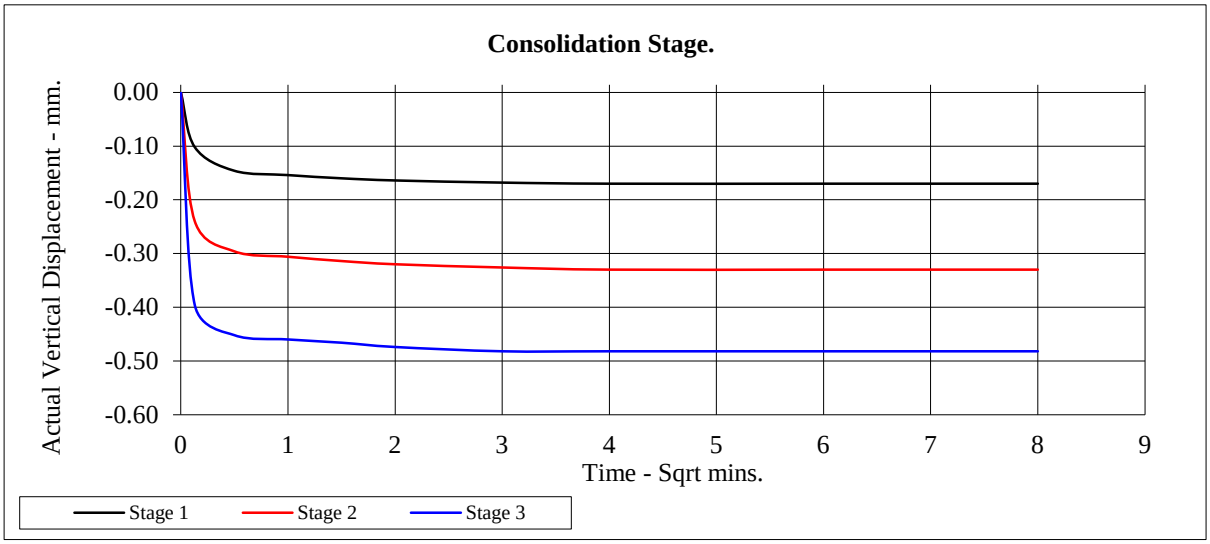

| | | |
|---|---|---|
| UKAS TESTING 4043 | PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** |

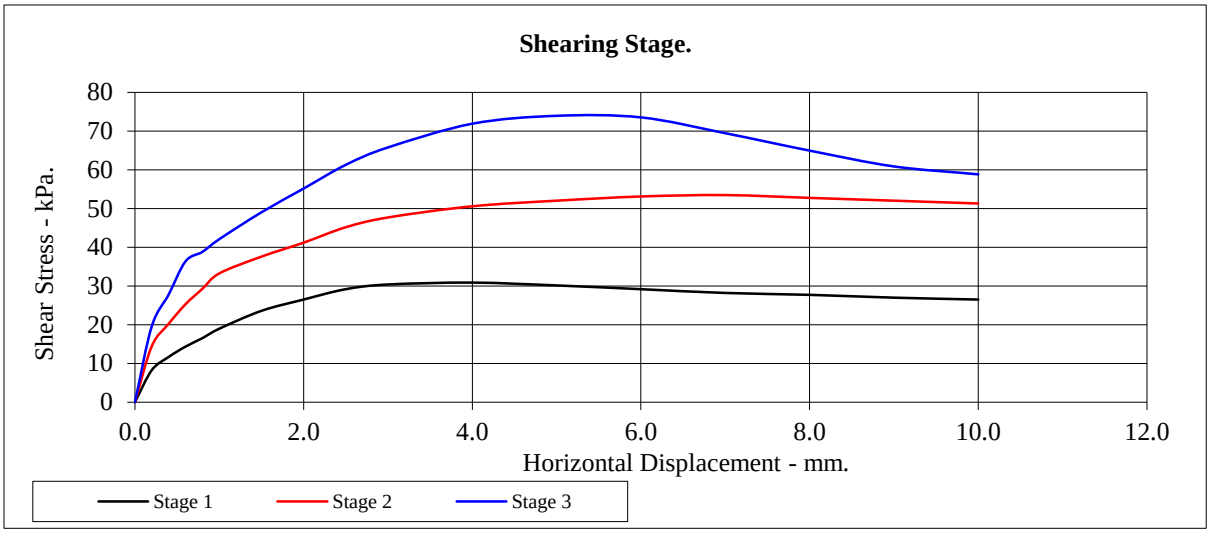
| | |
|---|---|
| **Contract No:** | |
| **PSL22/3650** | |
| **Client Ref:** | |
| **GT0386** | |

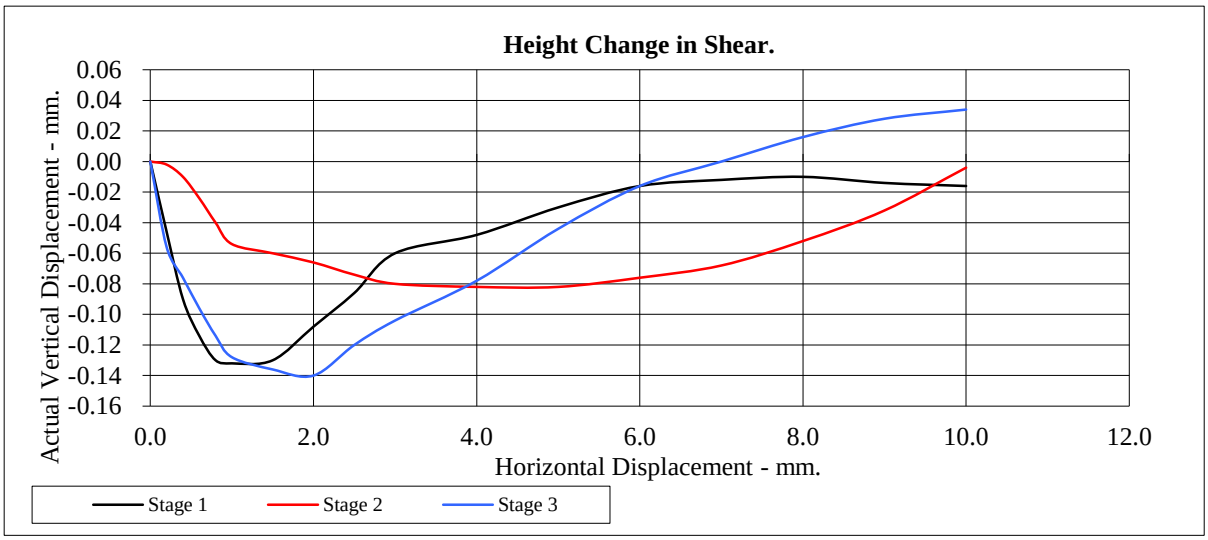
# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 4**

| | | | |
|---|---|---|---|
| Hole Number: | **BH132** | Top Depth: | **5.25** |
| Sample Number: | **105** | Base Depth: | **5.40** |



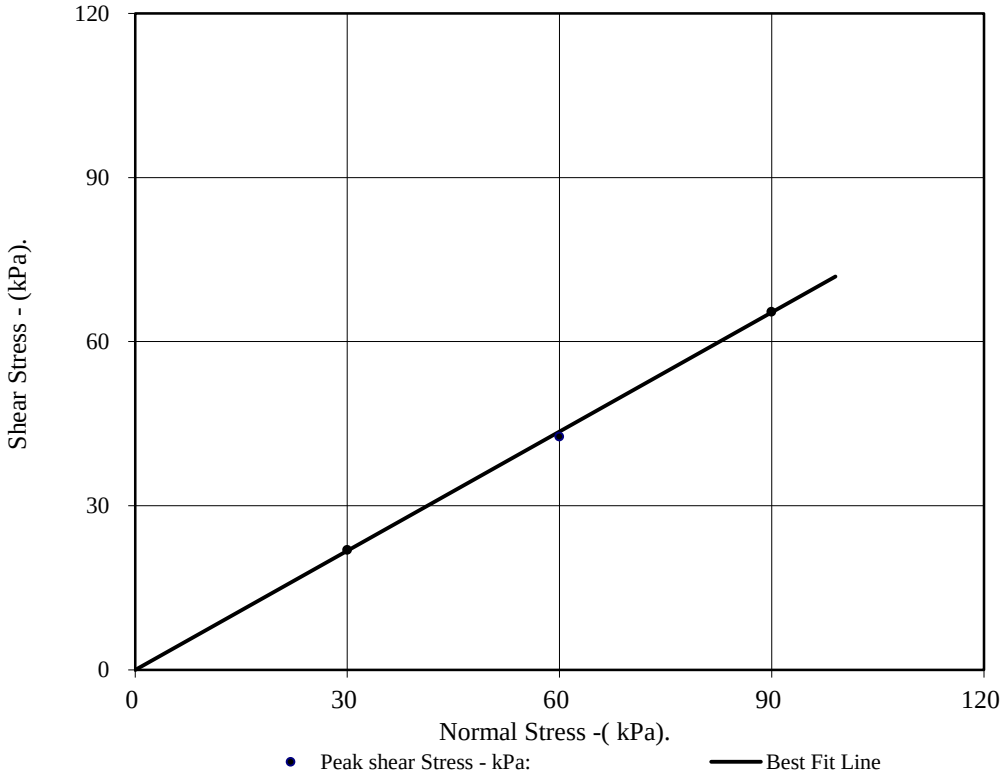



# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 4**

| | | | | | |
|---|---|---|---|---|---|
| Hole Number: | **TP156** | | Top Depth: | **2.00** | |
| Sample Number: | **7** | | Base Depth: | **2.30** | |
| Sample Conditions: | Dry | | Sample Type | **B** | |
| Particle Density - Mg/m3: | 2.65 | Assumed | **Remarks:** | | |
| Sample Preparation: | Material tested passing 2mm sieve<br>Remoulded using hand tamped effort | | | | |
| Sample Description: | **See summary of soil descriptions** | | | | |

| **STAGE** | **1** | **2** | **3** |
|---|---|---|---|
| **Initial Conditions** | | | |
| Height - mm: | 20.05 | 20.05 | 20.05 |
| Length - mm: | 59.97 | 59.97 | 59.97 |
| Moisture Content - %: | 11 | 11 | 11 |
| Bulk Density - Mg/m3: | 2.00 | 2.00 | 2.00 |
| Dry Density - Mg/m3: | 1.80 | 1.81 | 1.81 |
| Voids Ratio: | 0.468 | 0.467 | 0.467 |
| Normal Pressure- kPa | 30 | 60 | 90 |
| **Consolidation Stage** | | | |
| Consolidated Height - mm: | 19.58 | 19.18 | 18.68 |
| **Shearing Stage** | | | |
| Rate of Strain (mm/min) | 0.600 | 0.600 | 0.600 |
| Displacement at peak shear stress (mm) | 5.00 | 8.00 | 6.00 |
| Peak shear Stress - kPa: | 22 | 43 | 65 |
| **Final Consolidated Conditions** | | | |
| Moisture Content - %: | 10 | 10 | 9.4 |
| Bulk Density - Mg/m3: | 2.05 | 2.09 | 2.15 |
| Dry Density - Mg/m3: | 1.87 | 1.90 | 1.97 |
| **Peak** | | | |
| Angle of Shearing Resistance:(~~θ~~) | **36** | | |
| Effective Cohesion - kPa: | **0** | | |

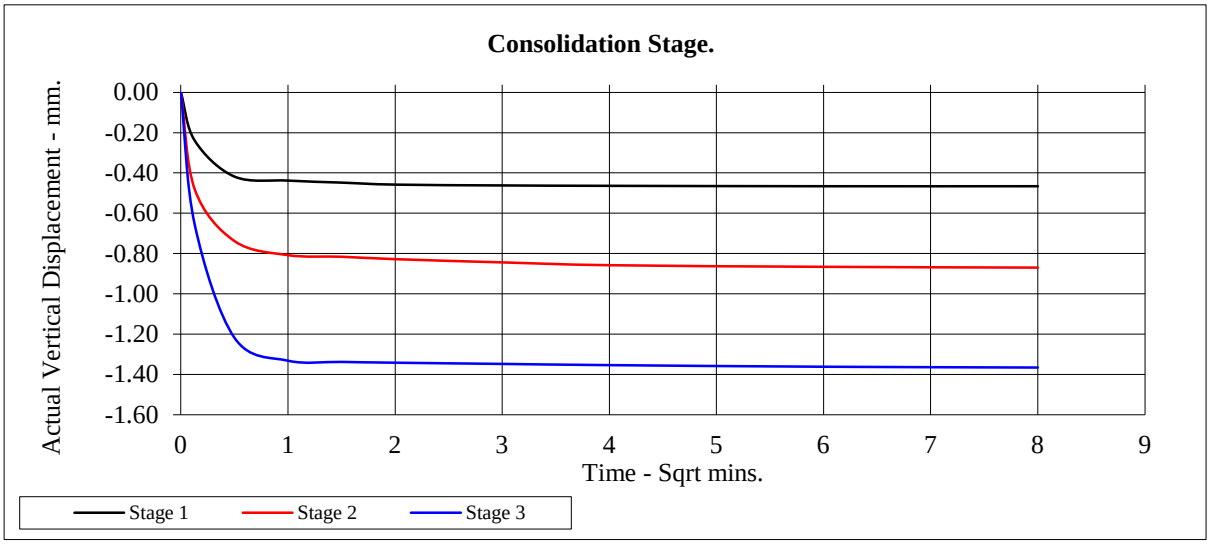


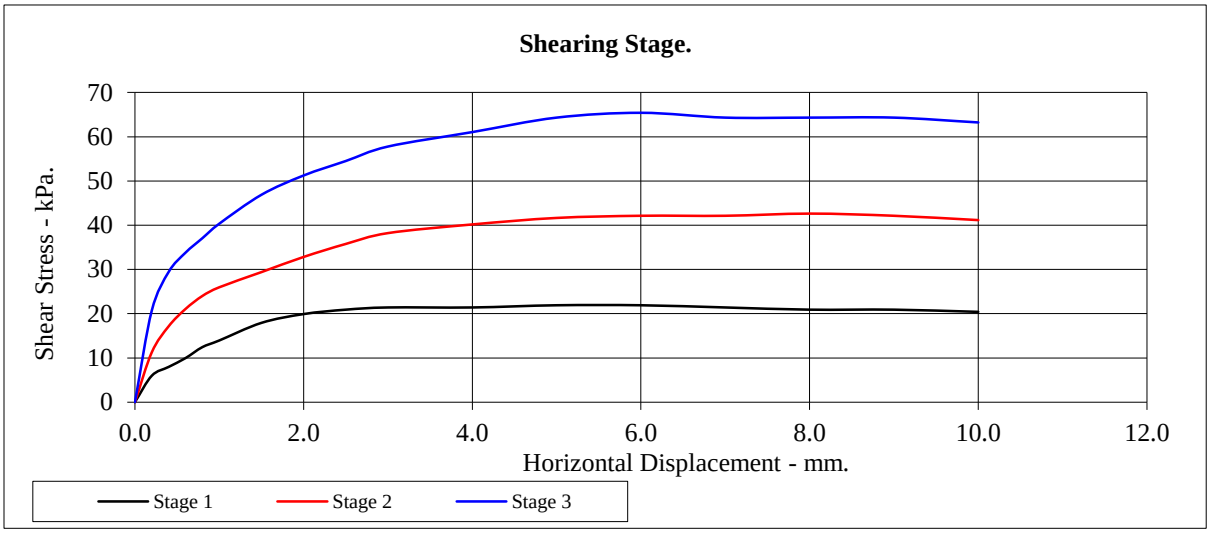

| | | | |
|---|---|---|---|
| UKAS TESTING 4043 | PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** | **Contract No:** PSL22/3650<br>**Client Ref:** GT0386 |

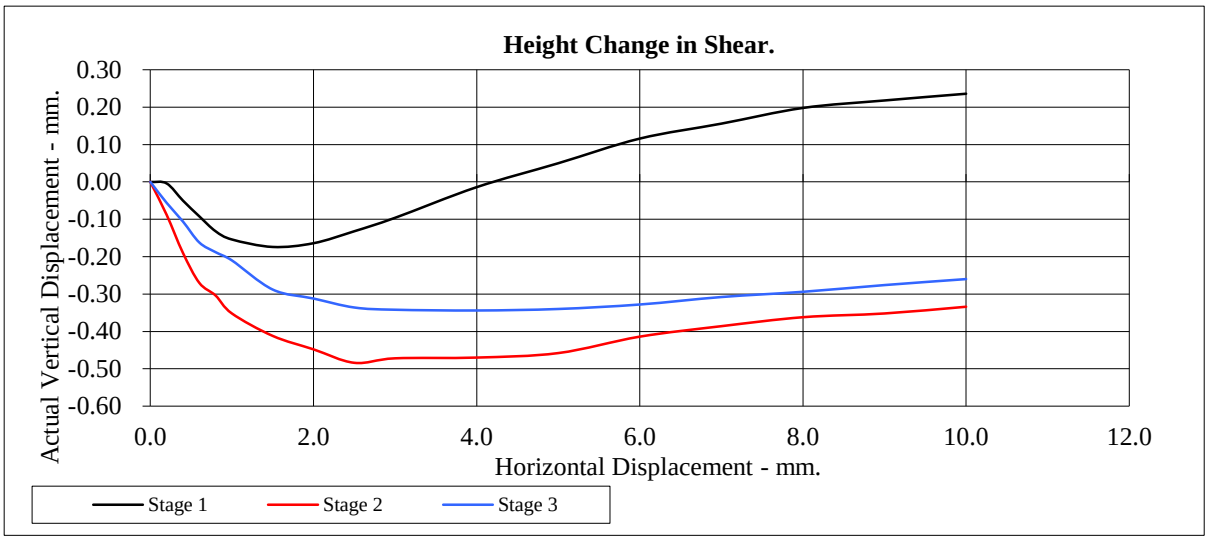
# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 4**

| | | | |
|---|---|---|---|
| Hole Number: | **TP156** | Top Depth: | **2.00** |
| Sample Number: | **7** | Base Depth: | **2.30** |



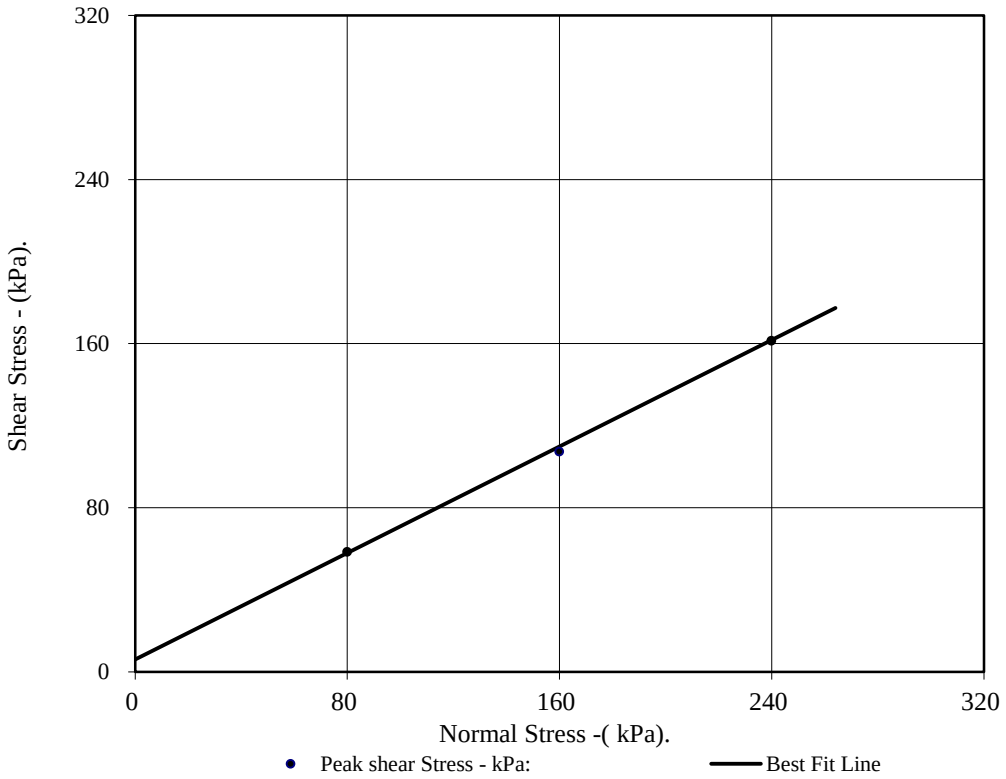



# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 4**

| | | | | | |
|---|---|---|---|---|---|
| Hole Number: | **BH121** | | Top Depth: | **8.00** | |
| Sample Number: | **107** | | Base Depth: | **9.00** | |
| Sample Conditions: | Dry | | Sample Type | **B** | |
| Particle Density - Mg/m3: | 2.65 | Assumed | **Remarks:** | | |
| Sample Preparation: | Material tested passing 2mm sieve<br>Remoulded using hand tamped effort | | | | |
| Sample Description: | **See summary of soil descriptions** | | | | |

| **STAGE** | **1** | **2** | **3** |
|---|---|---|---|
| **Initial Conditions** | | | |
| Height - mm: | 20.05 | 20.05 | 20.05 |
| Length - mm: | 59.97 | 59.97 | 59.97 |
| Moisture Content - %: | 20 | 20 | 20 |
| Bulk Density - Mg/m3: | 1.90 | 1.90 | 1.90 |
| Dry Density - Mg/m3: | 1.59 | 1.59 | 1.59 |
| Voids Ratio: | 0.671 | 0.667 | 0.667 |
| Normal Pressure- kPa | 80 | 160 | 240 |
| **Consolidation Stage** | | | |
| Consolidated Height - mm: | 19.71 | 19.59 | 19.39 |
| **Shearing Stage** | | | |
| Rate of Strain (mm/min) | 0.600 | 0.600 | 0.600 |
| Displacement at peak shear stress (mm) | 4.00 | 4.00 | 4.00 |
| Peak shear Stress - kPa: | 58 | 107 | 161 |
| **Final Consolidated Conditions** | | | |
| Moisture Content - %: | 16 | 15 | 15 |
| Bulk Density - Mg/m3: | 1.94 | 1.95 | 1.97 |
| Dry Density - Mg/m3: | 1.68 | 1.69 | 1.71 |
| **Peak** | | | |
| Angle of Shearing Resistance:(~~θ~~) | **33** | | |
| Effective Cohesion - kPa: | **6** | | |

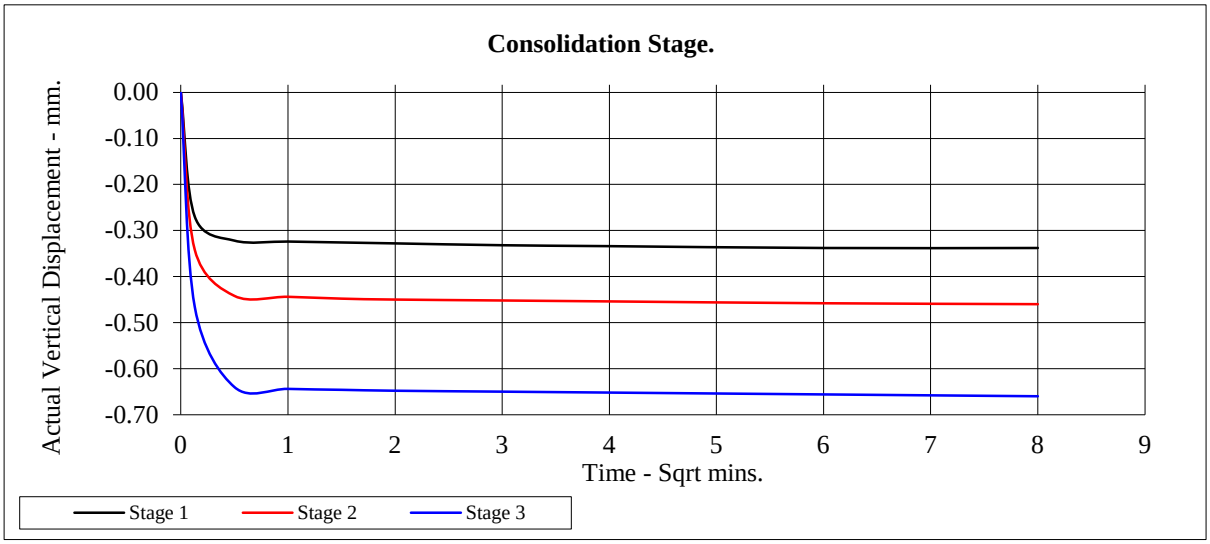


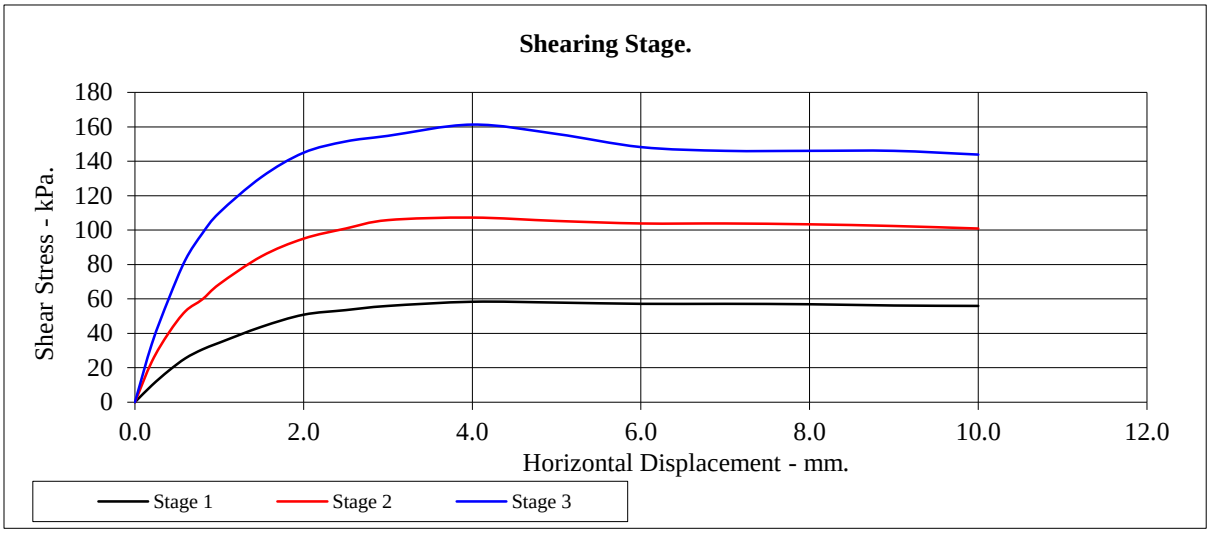

| | | | |
|---|---|---|---|
| UKAS TESTING 4043 | PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** | **Contract No:** PSL22/3650<br>**Client Ref:** GT0386 |

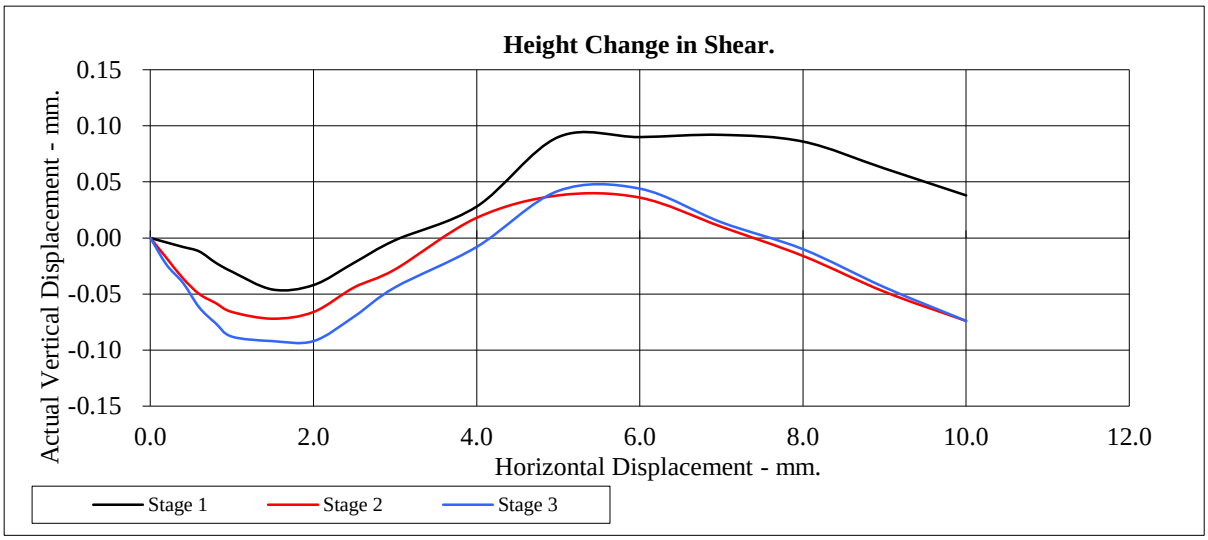
# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 4**

| | | | |
|---|---|---|---|
| Hole Number: | **BH121** | Top Depth: | **8.00** |
| Sample Number: | **107** | Base Depth: | **9.00** |



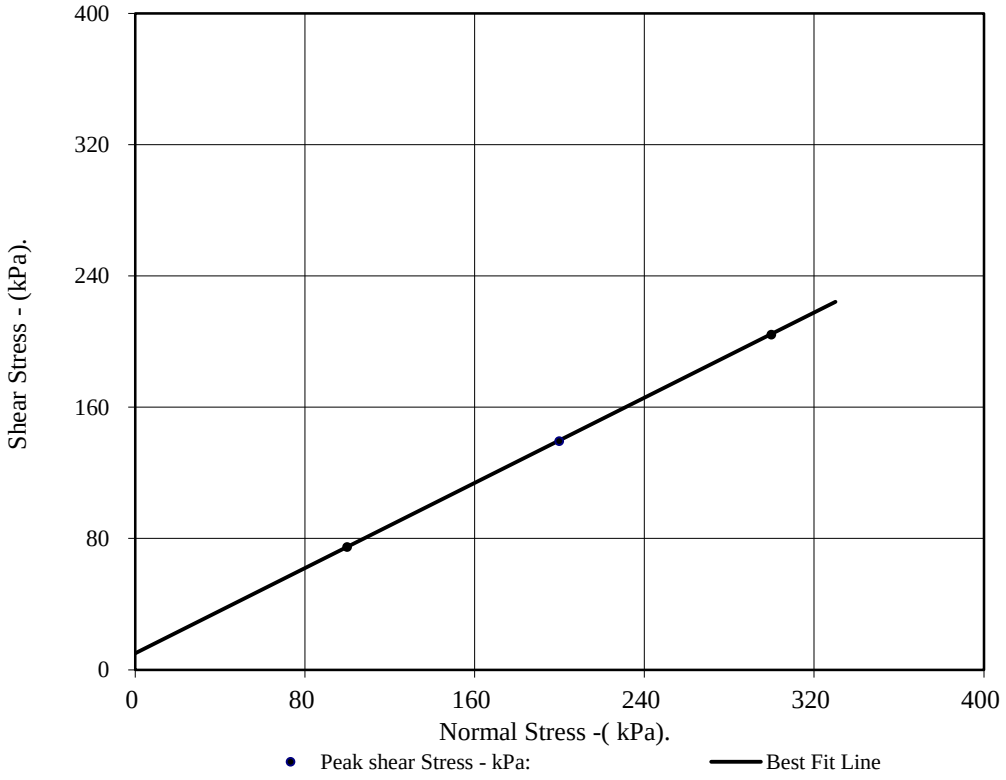



# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 4**

| | | | | | |
|---|---|---|---|---|---|
| Hole Number: | **BH121** | | Top Depth: | **10.60** | |
| Sample Number: | **111** | | Base Depth: | **11.00** | |
| Sample Conditions: | Dry | | Sample Type | **B** | |
| Particle Density - Mg/m3: | 2.65 | Assumed | **Remarks:** | | |
| Sample Preparation: | Material tested passing 2mm sieve<br>Remoulded using hand tamped effort | | | | |
| Sample Description: | **See summary of soil descriptions** | | | | |

| **STAGE** | **1** | **2** | **3** |
|---|---|---|---|
| **Initial Conditions** | | | |
| Height - mm: | 20.05 | 20.05 | 20.05 |
| Length - mm: | 59.97 | 59.97 | 59.97 |
| Moisture Content - %: | 16 | 16 | 16 |
| Bulk Density - Mg/m3: | 2.02 | 2.02 | 2.02 |
| Dry Density - Mg/m3: | 1.74 | 1.75 | 1.75 |
| Voids Ratio: | 0.522 | 0.516 | 0.516 |
| Normal Pressure- kPa | 100 | 200 | 300 |
| **Consolidation Stage** | | | |
| Consolidated Height - mm: | 19.67 | 19.49 | 19.29 |
| **Shearing Stage** | | | |
| Rate of Strain (mm/min) | 0.600 | 0.600 | 0.600 |
| Displacement at peak shear stress (mm) | 3.00 | 4.00 | 5.00 |
| Peak shear Stress - kPa: | 75 | 139 | 204 |
| **Final Consolidated Conditions** | | | |
| Moisture Content - %: | 16 | 16 | 15 |
| Bulk Density - Mg/m3: | 2.06 | 2.08 | 2.10 |
| Dry Density - Mg/m3: | 1.78 | 1.79 | 1.82 |
| **Peak** | | | |
| Angle of Shearing Resistance:(~~θ~~) | **33** | | |
| Effective Cohesion - kPa: | **10** | | |

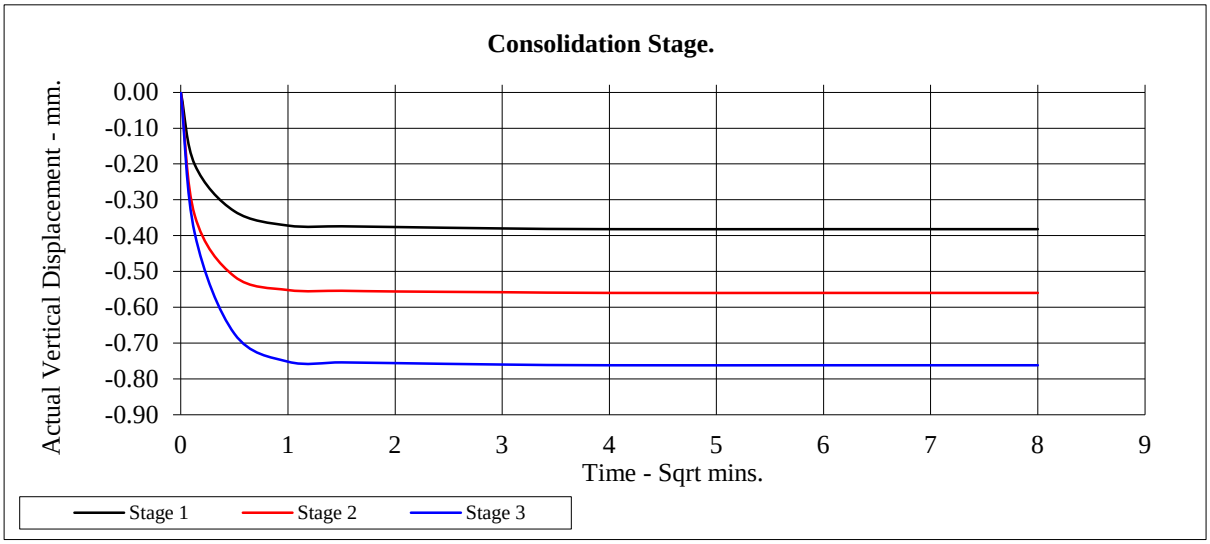


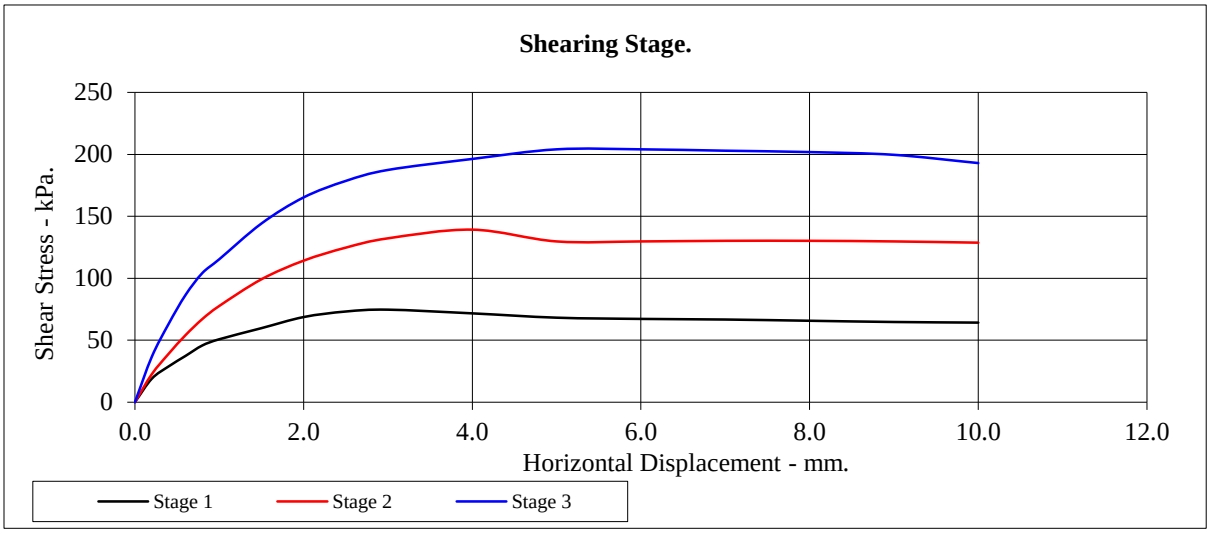

| | | | |
|---|---|---|---|
| UKAS TESTING 4043 | PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** | **Contract No:** PSL22/3650<br>**Client Ref:** GT0386 |

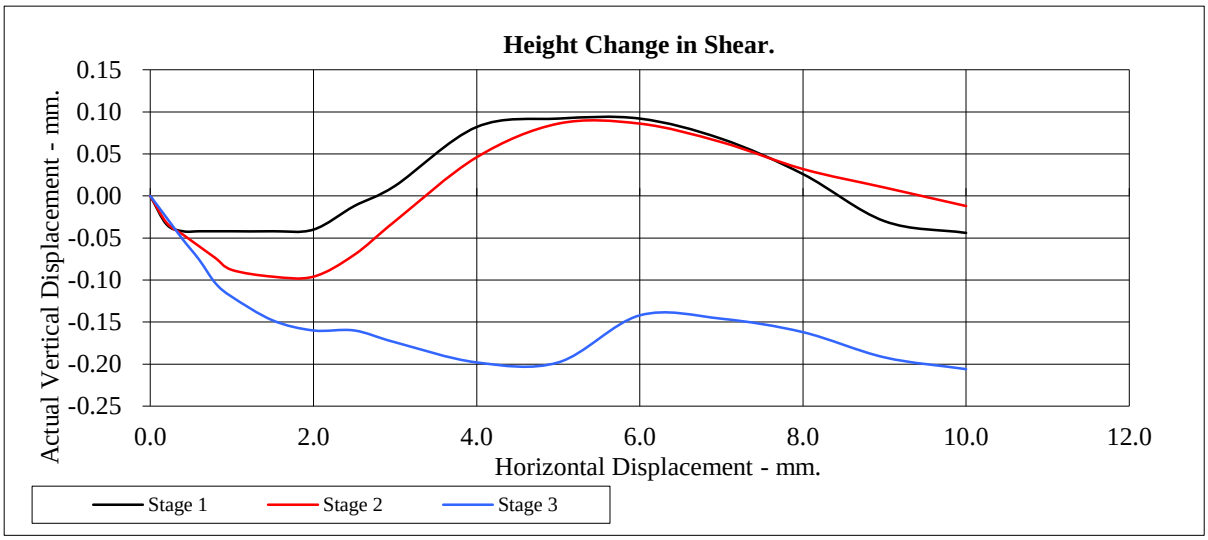
# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 4**

| | | | |
|---|---|---|---|
| Hole Number: | **BH121** | Top Depth: | **10.60** |
| Sample Number: | **111** | Base Depth: | **11.00** |



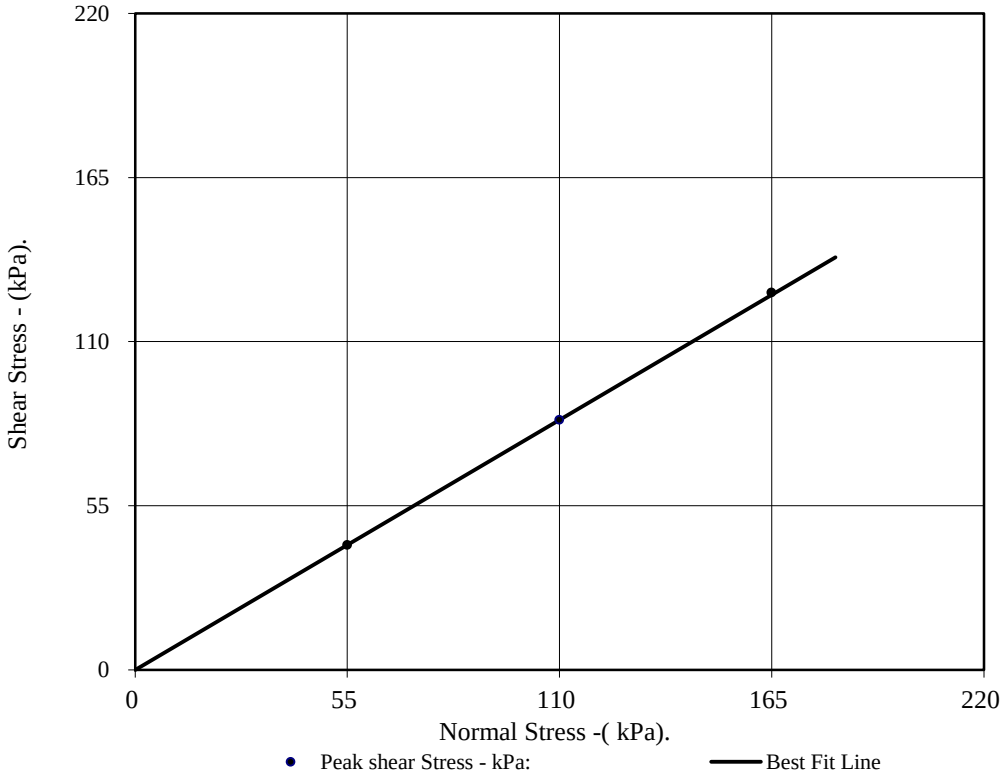



# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 4**

| | | | | | |
|---|---|---|---|---|---|
| Hole Number: | **BH110** | | Top Depth: | **6.10** | |
| Sample Number: | **104** | | Base Depth: | **6.70** | |
| Sample Conditions: | Dry | | Sample Type | **B** | |
| Particle Density - Mg/m3: | 2.65 | Assumed | **Remarks:** | | |
| Sample Preparation: | Material tested passing 2mm sieve<br>Remoulded using hand tamped effort | | | | |
| Sample Description: | **See summary of soil descriptions** | | | | |

| **STAGE** | **1** | **2** | **3** |
|---|---|---|---|
| **Initial Conditions** | | | |
| Height - mm: | 20.05 | 20.05 | 20.05 |
| Length - mm: | 59.97 | 59.97 | 59.97 |
| Moisture Content - %: | 20 | 20 | 20 |
| Bulk Density - Mg/m3: | 1.93 | 1.93 | 1.93 |
| Dry Density - Mg/m3: | 1.61 | 1.61 | 1.61 |
| Voids Ratio: | 0.651 | 0.649 | 0.649 |
| Normal Pressure- kPa | 55 | 110 | 165 |
| **Consolidation Stage** | | | |
| Consolidated Height - mm: | 19.56 | 19.38 | 19.24 |
| **Shearing Stage** | | | |
| Rate of Strain (mm/min) | 0.600 | 0.600 | 0.600 |
| Displacement at peak shear stress (mm) | 3.00 | 4.00 | 4.00 |
| Peak shear Stress - kPa: | 42 | 84 | 126 |
| **Final Consolidated Conditions** | | | |
| Moisture Content - %: | 18 | 18 | 17 |
| Bulk Density - Mg/m3: | 1.97 | 1.99 | 2.01 |
| Dry Density - Mg/m3: | 1.67 | 1.69 | 1.71 |
| **Peak** | | | |
| Angle of Shearing Resistance:(~~θ~~) | **37** | | |
| Effective Cohesion - kPa: | **0** | | |

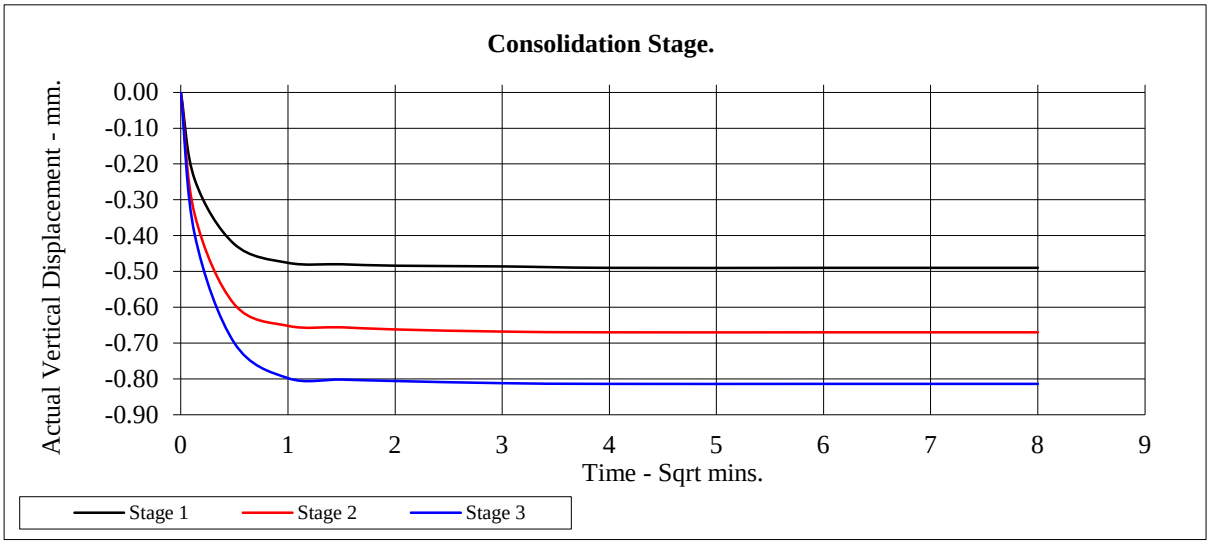


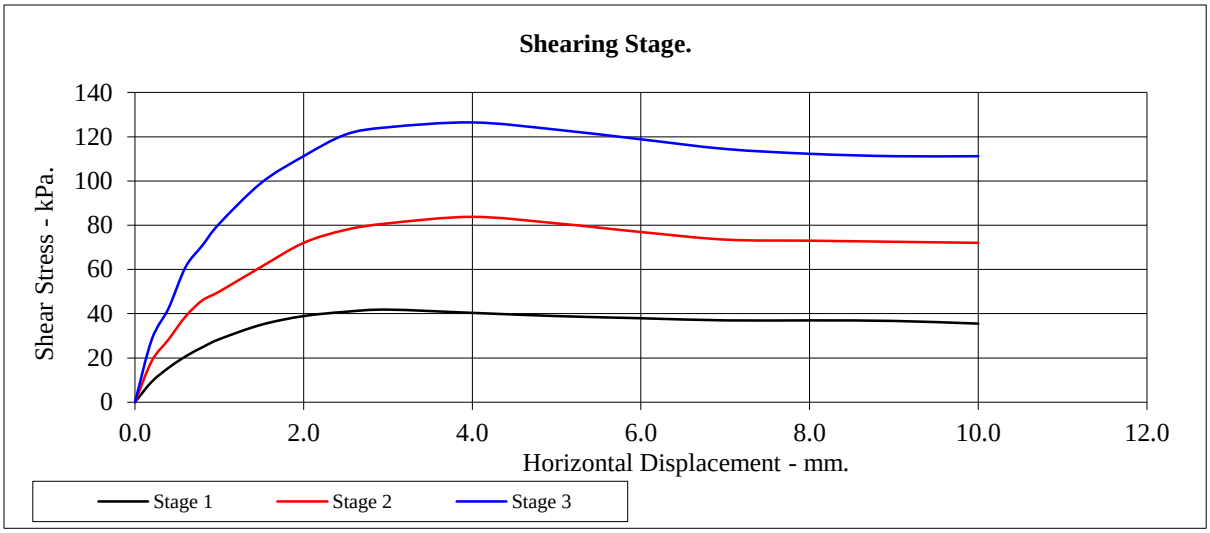

| | | | |
|---|---|---|---|
| UKAS TESTING 4043 | PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** | **Contract No:** PSL22/3650<br>**Client Ref:** GT0386 |

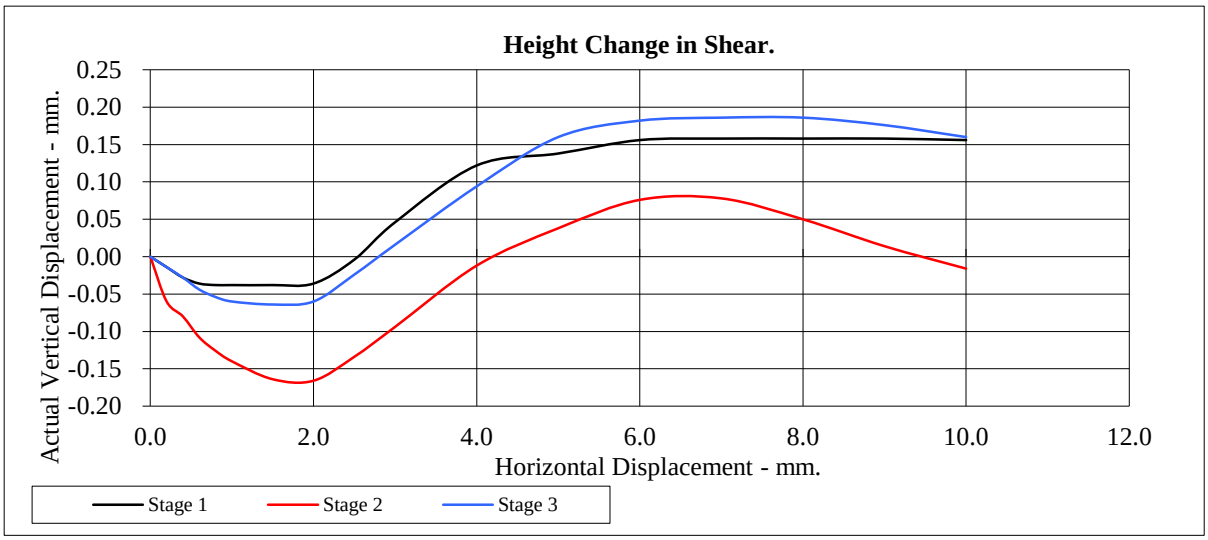
# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 4**

| | | | |
|---|---|---|---|
| Hole Number: | **BH110** | Top Depth: | **6.10** |
| Sample Number: | **104** | Base Depth: | **6.70** |



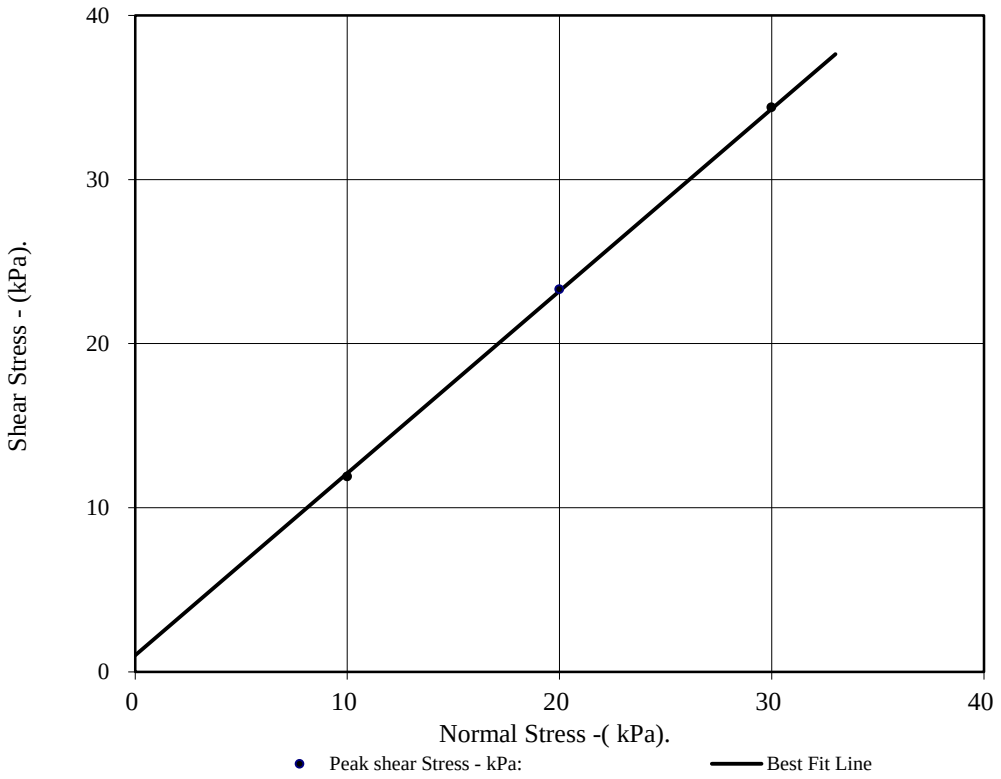



# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 5**

| | | | | | |
|---|---|---|---|---|---|
| Hole Number: | **BH132** | | Top Depth: | **0.80** | |
| Sample Number: | **2** | | Base Depth: | **1.20** | |
| Sample Conditions: | Dry | | Sample Type | **B** | |
| Particle Density - Mg/m3: | 2.65 | Assumed | **Remarks:** | | |
| Sample Preparation: | Material tested passing 20mm sieve<br>Remoulded using 2.5kg effort. | | | | |
| Sample Description: | **See summary of soil descriptions** | | | | |

| **STAGE** | **1** | **2** | **3** |
|---|---|---|---|
| **Initial Conditions** | | | |
| Height - mm: | 140 | 140 | 140 |
| Length - mm: | 300 | 300 | 300 |
| Moisture Content - %: | 12 | 12 | 12 |
| Bulk Density - Mg/m3: | 1.98 | 1.98 | 1.98 |
| Dry Density - Mg/m3: | 1.76 | 1.76 | 1.76 |
| Voids Ratio: | 0.502 | 0.502 | 0.502 |
| Normal Pressure- kPa | 10 | 20 | 30 |
| **Consolidation Stage** | | | |
| Consolidated Height - mm: | 139.81 | 139.74 | 139.64 |
| **Shearing Stage** | | | |
| Rate of Strain (mm/min) | 1.00 | 1.00 | 1.00 |
| Displacement at peak shear stress (mm) | 33.50 | 15.00 | 17.50 |
| Peak shear Stress - kPa: | 12 | 23 | 34 |
| **Final Consolidated Conditions** | | | |
| Moisture Content - %: | 12 | 12 | 11 |
| Bulk Density - Mg/m3: | 1.98 | 1.98 | 1.98 |
| Dry Density - Mg/m3: | 1.77 | 1.77 | 1.78 |
| **Peak** | | | |
| Angle of Shearing Resistance:(~~θ~~) | **48** | | |
| Effective Cohesion - kPa: | **1** | | |



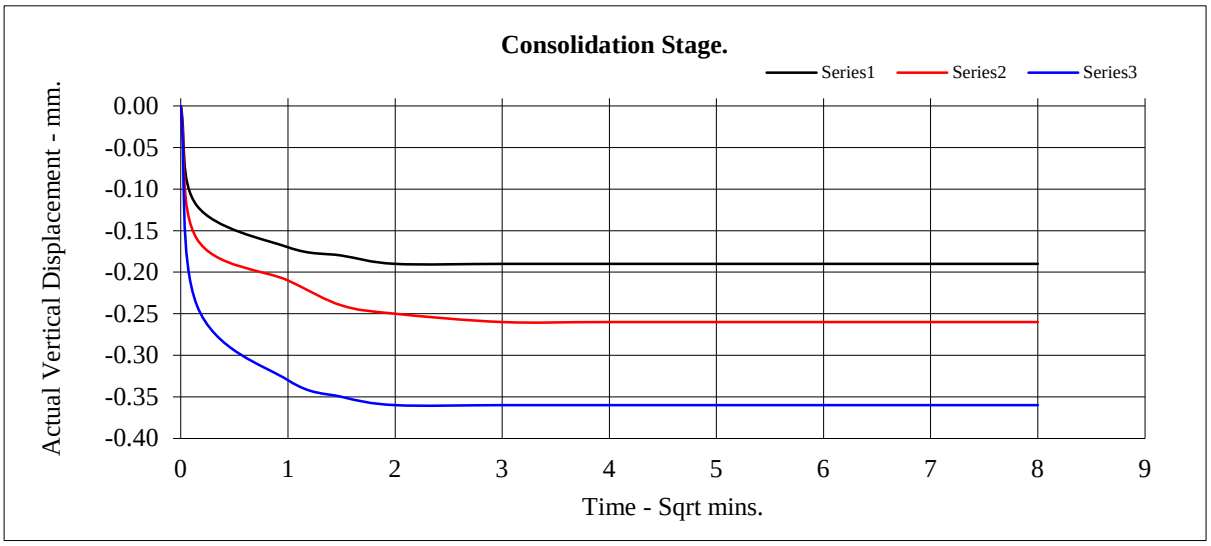

| | | |
|---|---|---|
| UKAS TESTING 4043 | PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** |

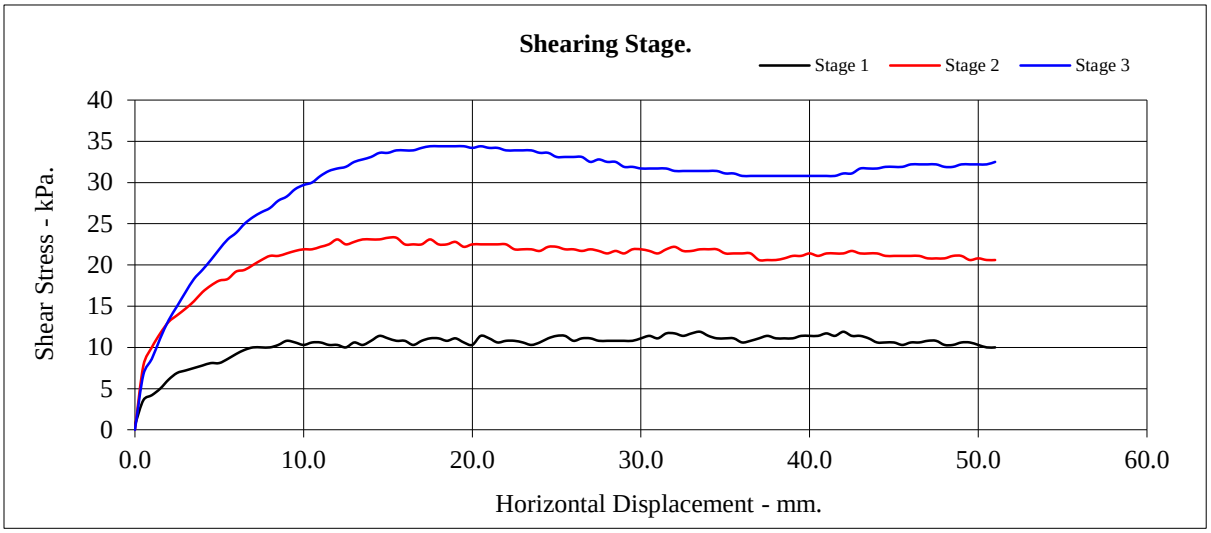
| | |
|---|---|
| **Contract No:** | |
| **PSL22/3650** | |
| **Client Ref:** | |
| **GT0386** | |

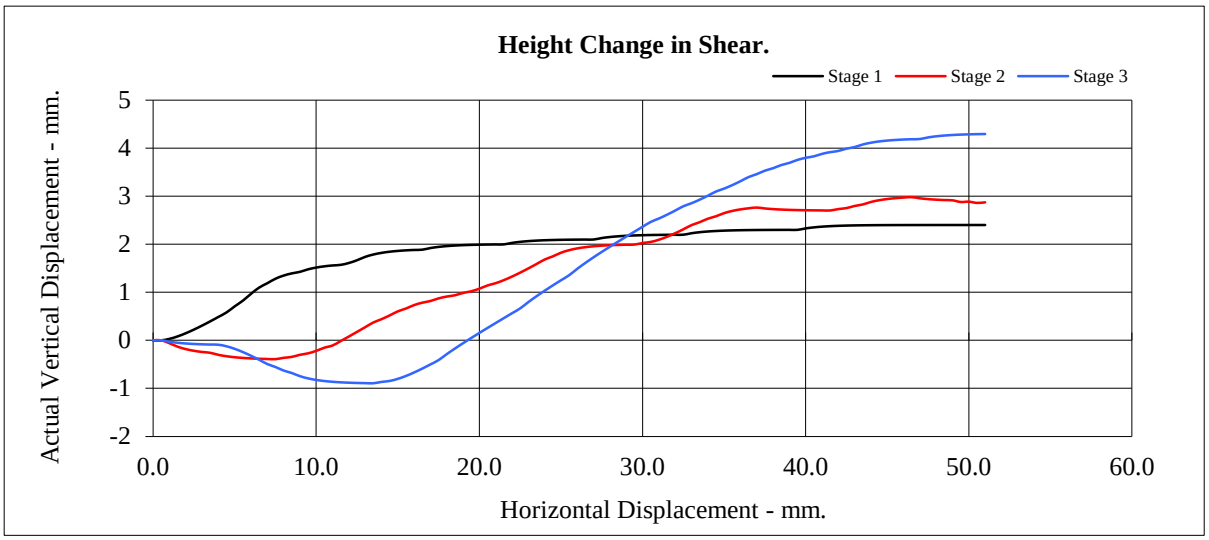
# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 5**

| | | | |
|---|---|---|---|
| Hole Number: | **BH132** | Top Depth: | **0.80** |
| Sample Number: | **2** | Base Depth: | **1.20** |



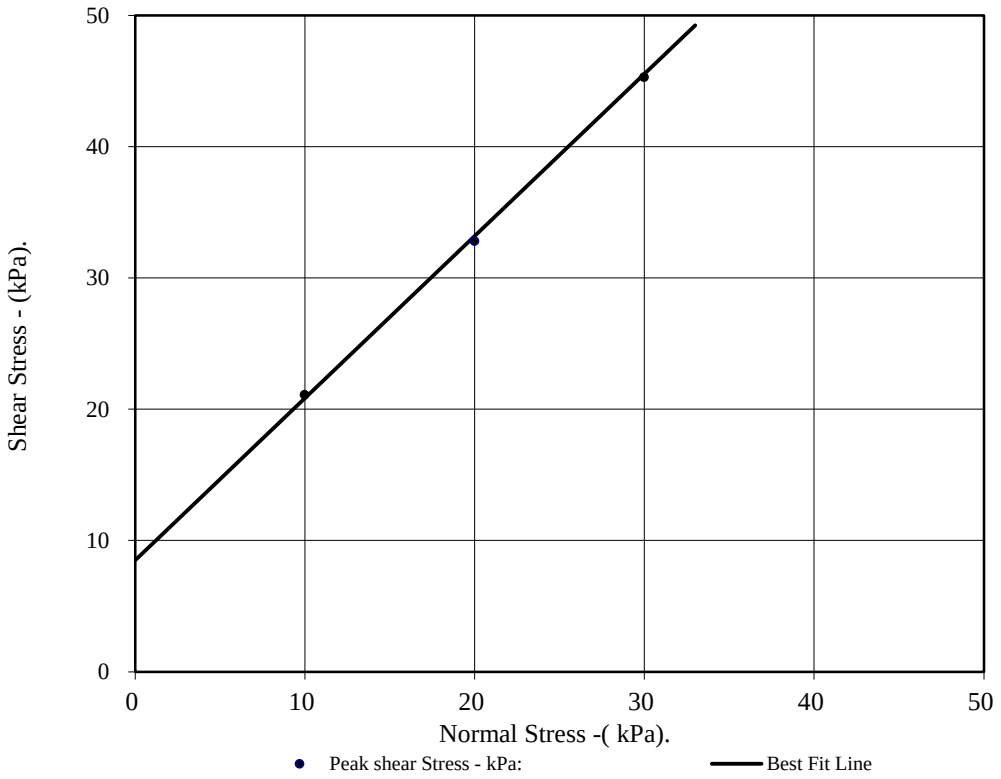

| | | |
|---|---|---|
| UKAS TESTING 4043 / PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** | **Contract No:** PSL22/3650<br>**Client Ref:** GT0386 |

# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 5**

| | | | | |
|---|---|---|---|---|
| Hole Number: | **BH123** | | Top Depth: | **1.20** |
| Sample Number: | **101** | | Base Depth: | **2.00** |
| Sample Conditions: | Dry | | Sample Type | **B** |
| Particle Density - Mg/m3: | 2.65 | Assumed | **Remarks:** | |
| Sample Preparation: | Material tested passing 20mm sieve<br>Remoulded using 2.5kg effort. | | | |
| Sample Description: | **See summary of soil descriptions** | | | |

| **STAGE** | **1** | **2** | **3** |
|---|---|---|---|
| **Initial Conditions** | | | |
| Height - mm: | 150 | 150 | 150 |
| Length - mm: | 300 | 300 | 300 |
| Moisture Content - %: | 7.0 | 7.0 | 7.0 |
| Bulk Density - Mg/m3: | 1.66 | 1.66 | 1.66 |
| Dry Density - Mg/m3: | 1.55 | 1.55 | 1.55 |
| Voids Ratio: | 0.708 | 0.708 | 0.708 |
| Normal Pressure- kPa | 10 | 20 | 30 |
| **Consolidation Stage** | | | |
| Consolidated Height - mm: | 149.91 | 149.78 | 149.73 |
| **Shearing Stage** | | | |
| Rate of Strain (mm/min) | 1.00 | 1.00 | 1.00 |
| Displacement at peak shear stress (mm) | 40.50 | 46.50 | 45.50 |
| Peak shear Stress - kPa: | 21 | 33 | 45 |
| **Final Consolidated Conditions** | | | |
| Moisture Content - %: | 5.0 | 4.7 | 4.4 |
| Bulk Density - Mg/m3: | 1.66 | 1.66 | 1.66 |
| Dry Density - Mg/m3: | 1.58 | 1.59 | 1.59 |
| **Peak** | | | |
| Angle of Shearing Resistance:(~~θ~~) | **51** | | |
| Effective Cohesion - kPa: | **9** | | |




4043

PSL Professional Soils Laboratory

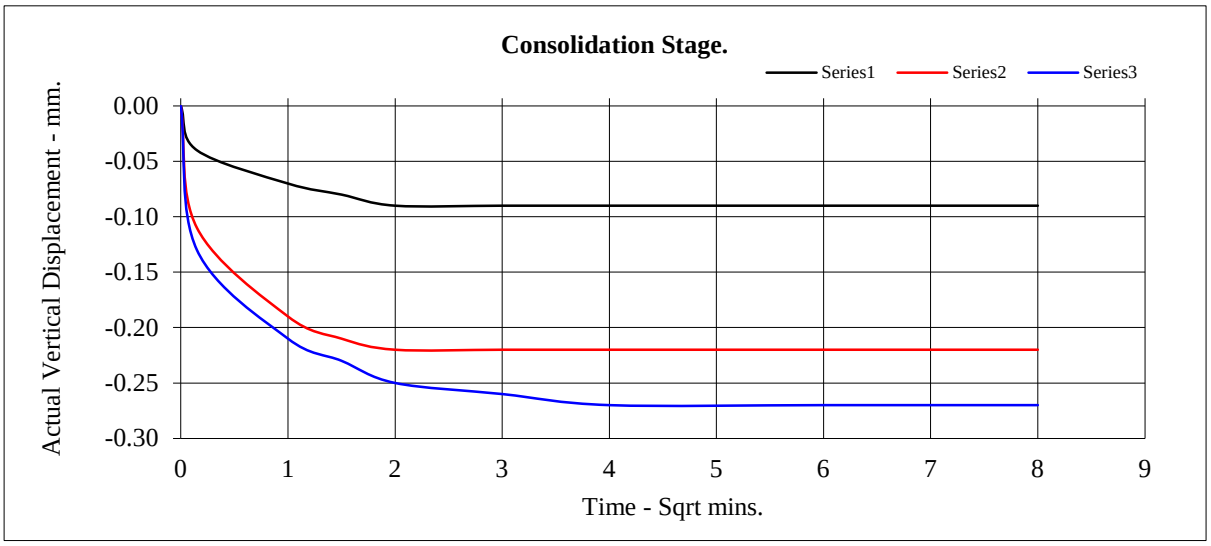
**Wansford to Sutton Dualling Supplementary GI**

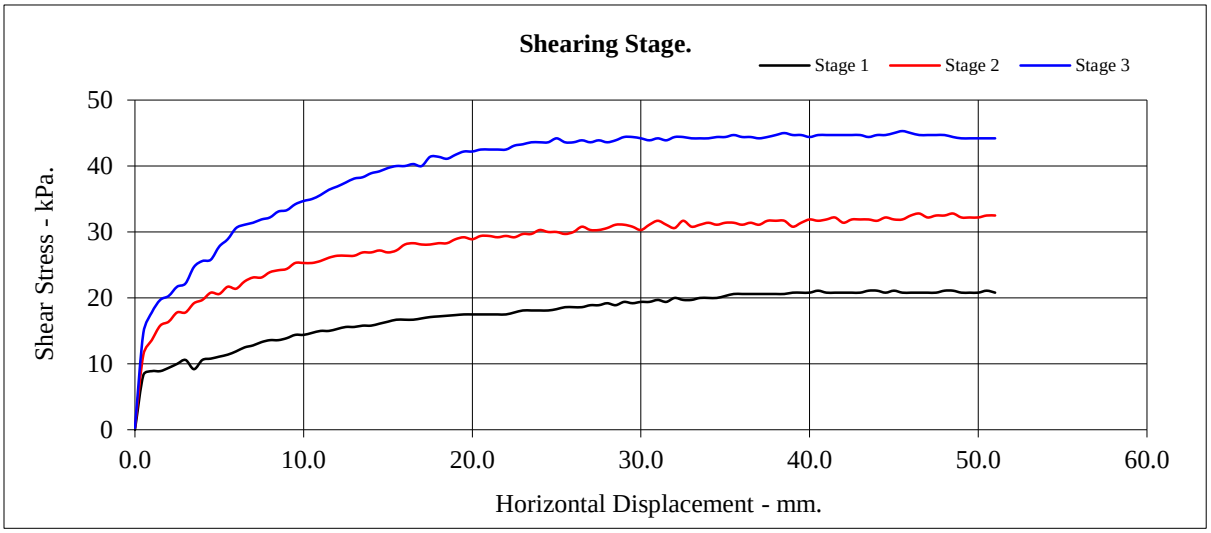
| | |
|---|---|
| **Contract No:** | |
| **PSL22/3650** | |
| **Client Ref:** | |
| **GT0386** | |

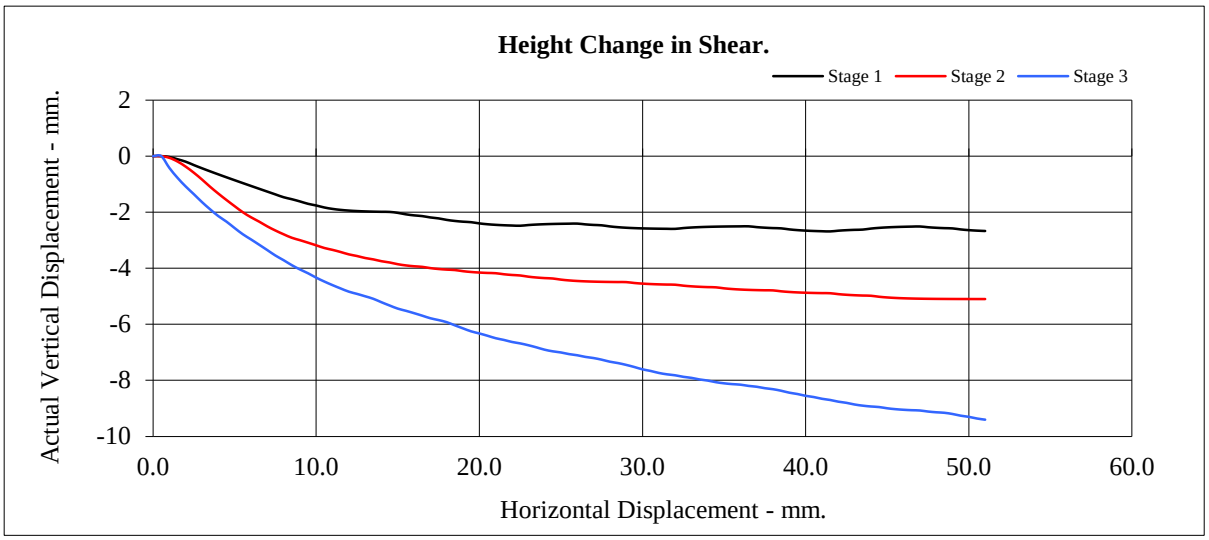
# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 5**

| | | | |
|---|---|---|---|
| Hole Number: | **BH123** | Top Depth: | **1.20** |
| Sample Number: | **101** | Base Depth: | **2.00** |



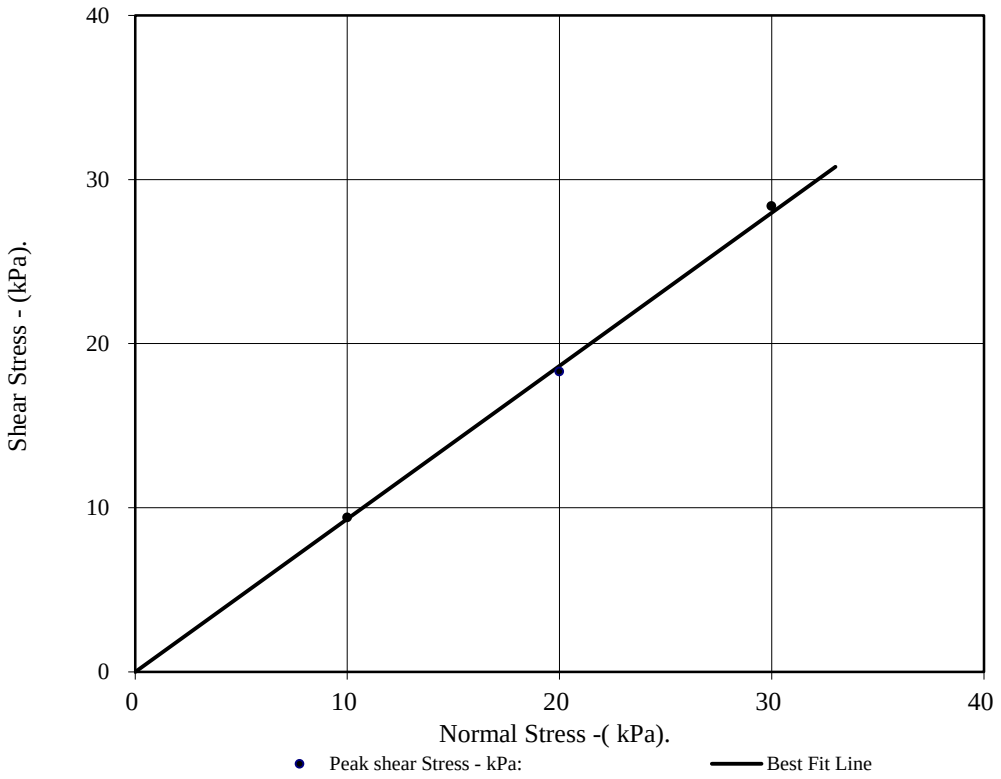



# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 5**

| | | | | | |
|---|---|---|---|---|---|
| Hole Number: | **BH124** | | Top Depth: | **1.00** | |
| Sample Number: | **102** | | Base Depth: | **1.30** | |
| Sample Conditions: | Dry | | Sample Type | **B** | |
| Particle Density - Mg/m3: | 2.65 | Assumed | **Remarks:** | | |
| Sample Preparation: | Material tested passing 20mm sieve<br>Remoulded using 2.5kg effort. | | | | |
| Sample Description: | **See summary of soil descriptions** | | | | |

| **STAGE** | **1** | **2** | **3** |
|---|---|---|---|
| **Initial Conditions** | | | |
| Height - mm: | 150 | 150 | 150 |
| Length - mm: | 300 | 300 | 300 |
| Moisture Content - %: | 7.9 | 7.9 | 7.9 |
| Bulk Density - Mg/m3: | 2.14 | 2.14 | 2.14 |
| Dry Density - Mg/m3: | 1.98 | 1.98 | 1.98 |
| Voids Ratio: | 0.339 | 0.339 | 0.339 |
| Normal Pressure- kPa | 10 | 20 | 30 |
| **Consolidation Stage** | | | |
| Consolidated Height - mm: | 149.67 | 149.53 | 149.38 |
| **Shearing Stage** | | | |
| Rate of Strain (mm/min) | 1.00 | 1.00 | 1.00 |
| Displacement at peak shear stress (mm) | 50.00 | 44.50 | 49.00 |
| Peak shear Stress - kPa: | 9 | 18 | 28 |
| **Final Consolidated Conditions** | | | |
| Moisture Content - %: | 7.2 | 7.1 | 7.5 |
| Bulk Density - Mg/m3: | 2.14 | 2.14 | 2.15 |
| Dry Density - Mg/m3: | 2.00 | 2.00 | 2.00 |
| **Peak** | | | |
| Angle of Shearing Resistance:(~~θ~~) | **43** | | |
| Effective Cohesion - kPa: | **0** | | |



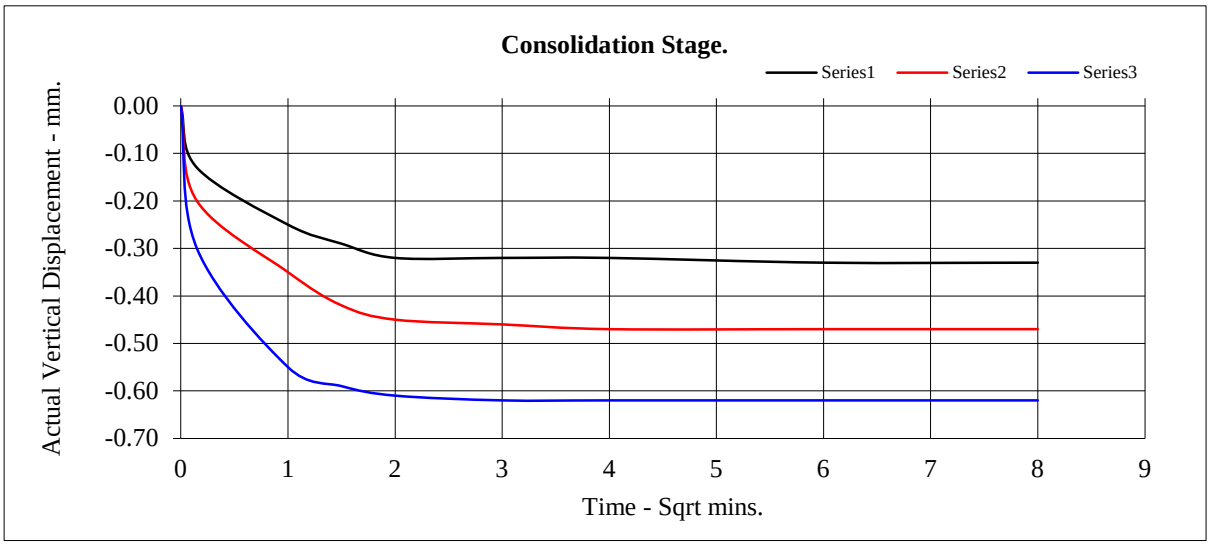

| | | |
|---|---|---|
| UKAS TESTING 4043 | PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** |

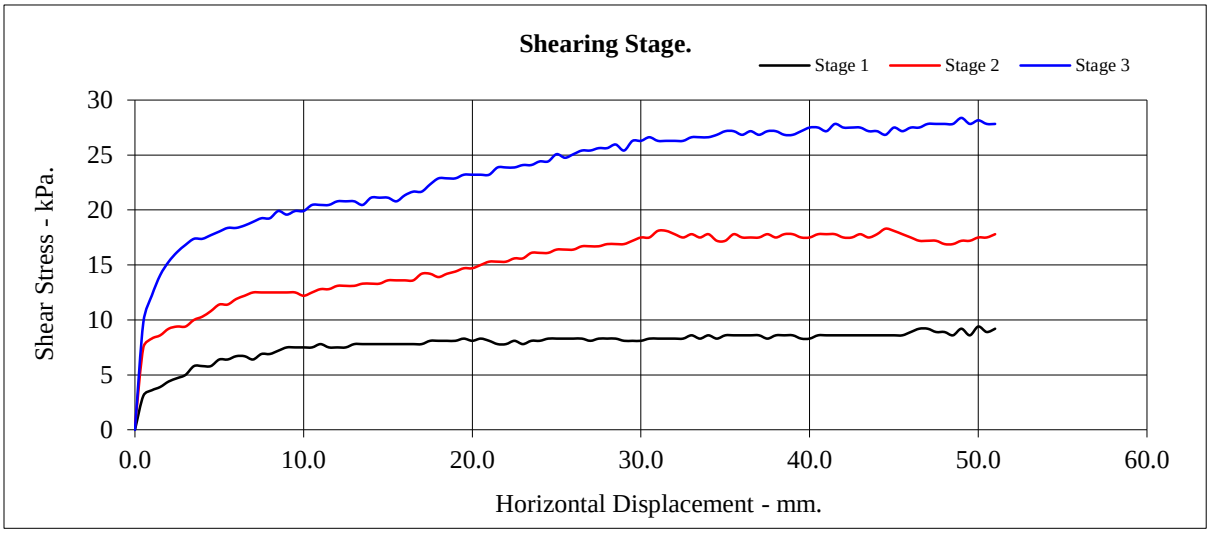
| |
|---|
| **Contract No:** |
| **PSL22/3650** |
| **Client Ref:** |
| **GT0386** |

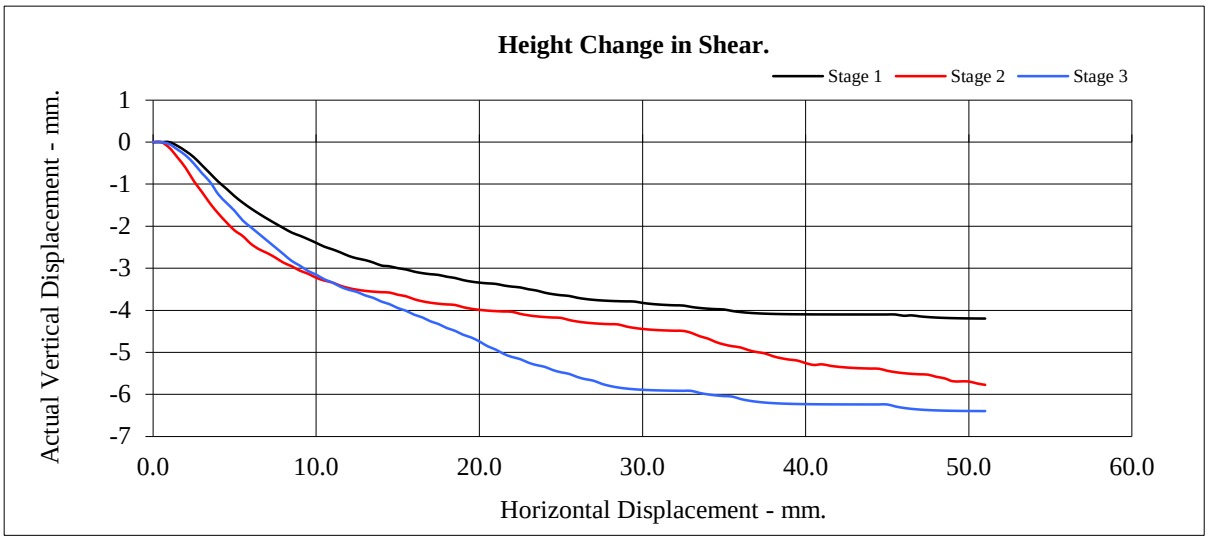
# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 5**

| | | | |
|---|---|---|---|
| Hole Number: | **BH124** | Top Depth: | **1.00** |
| Sample Number: | **102** | Base Depth: | **1.30** |



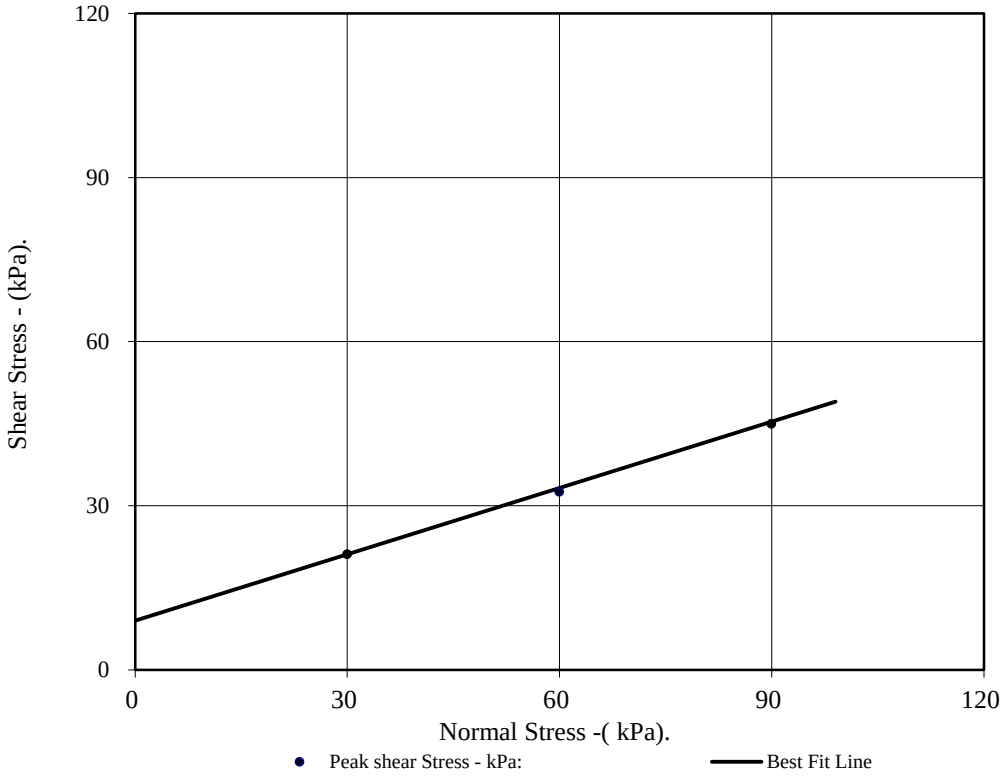

| | | |
|---|---|---|
| UKAS TESTING 4043 / PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** | **Contract No:** PSL22/3650<br>**Client Ref:** GT0386 |

# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 5**

| | | | | | |
|---|---|---|---|---|---|
| Hole Number: | **BH122** | | Top Depth: | **3.40** | |
| Sample Number: | **7** | | Base Depth: | **4.10** | |
| Sample Conditions: | Submerged | | Sample Type | **B** | |
| Particle Density - Mg/m3: | 2.65 | Assumed | **Remarks:** | | |
| Sample Preparation: | Material tested passing 20mm sieve<br>Remoulded using 2.5kg effort. | | | | |
| Sample Description: | **See summary of soil descriptions** | | | | |

| **STAGE** | **1** | **2** | **3** |
|---|---|---|---|
| **Initial Conditions** | | | |
| Height - mm: | 150 | 150 | 150 |
| Length - mm: | 300 | 300 | 300 |
| Moisture Content - %: | 12 | 12 | 12 |
| Bulk Density - Mg/m3: | 1.94 | 1.94 | 1.94 |
| Dry Density - Mg/m3: | 1.73 | 1.73 | 1.73 |
| Voids Ratio: | 0.532 | 0.532 | 0.532 |
| Normal Pressure- kPa | 30 | 60 | 90 |
| **Consolidation Stage** | | | |
| Consolidated Height - mm: | 144.30 | 143.30 | 140.80 |
| **Shearing Stage** | | | |
| Rate of Strain (mm/min) | 1.00 | 1.00 | 1.00 |
| Displacement at peak shear stress (mm) | 50.50 | 48.00 | 45.00 |
| Peak shear Stress - kPa: | 21 | 33 | 45 |
| **Final Consolidated Conditions** | | | |
| Moisture Content - %: | 19 | 18 | 17 |
| Bulk Density - Mg/m3: | 2.01 | 2.03 | 2.06 |
| Dry Density - Mg/m3: | 1.69 | 1.72 | 1.76 |
| **Peak** | | | |
| Angle of Shearing Resistance:(~~θ~~) | **22** | | |
| Effective Cohesion - kPa: | **9** | | |



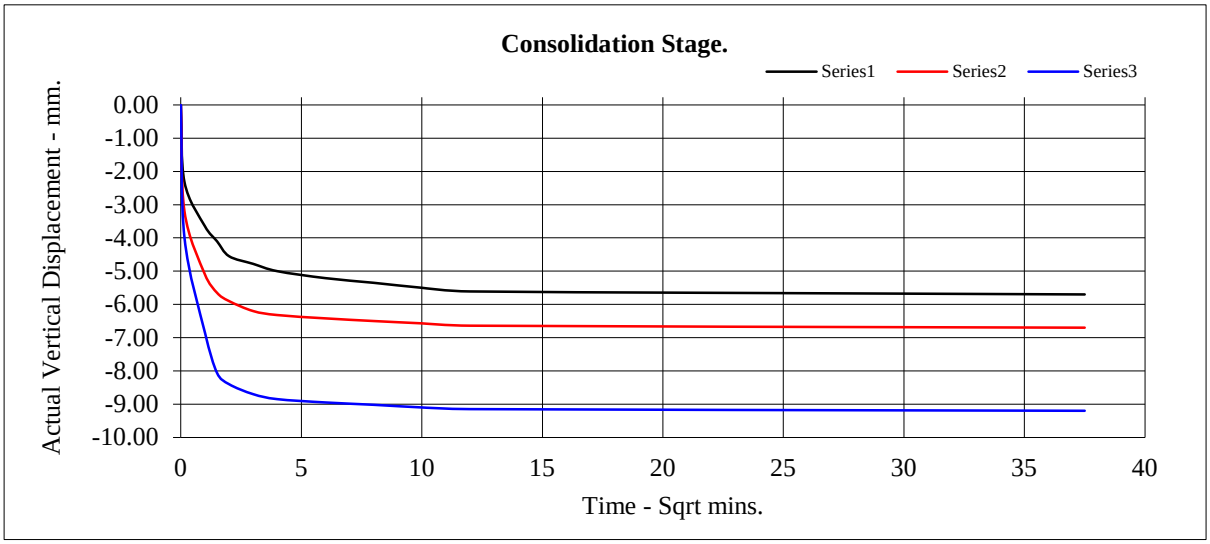

| | | |
|---|---|---|
| UKAS TESTING 4043 | PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** |

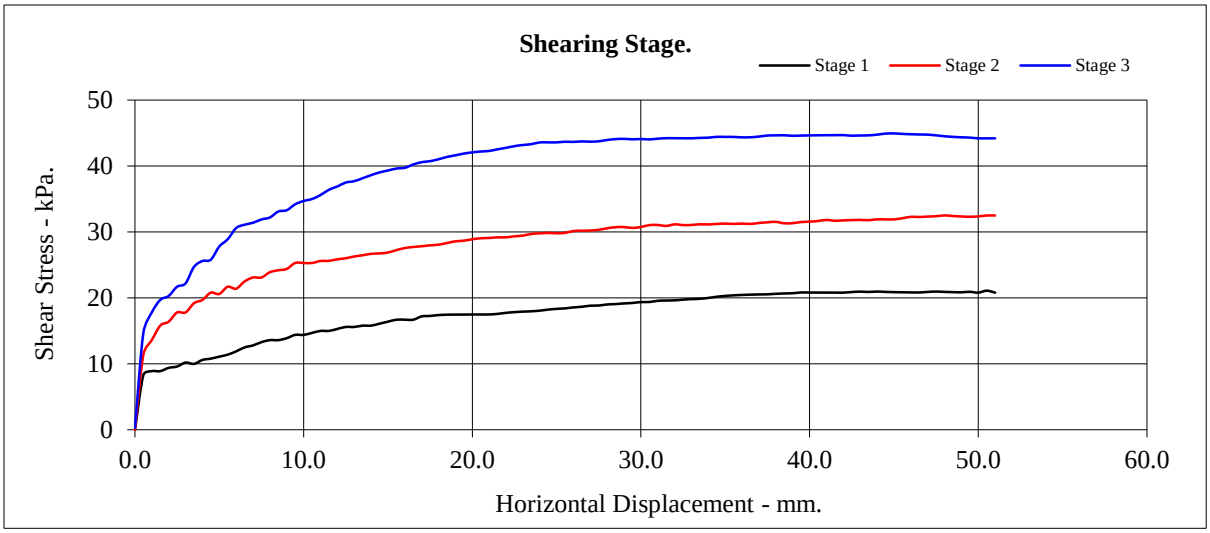
| |
|---|
| **Contract No:** |
| **PSL22/3650** |
| **Client Ref:** |
| **GT0386** |

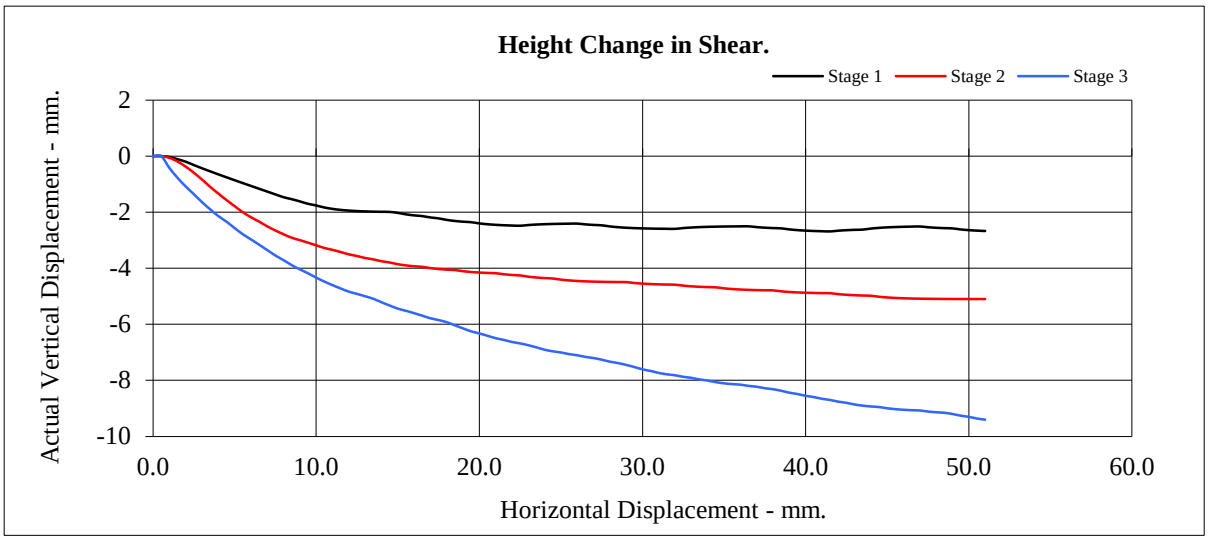
# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 5**

| | | | |
|---|---|---|---|
| Hole Number: | **BH122** | Top Depth: | **3.40** |
| Sample Number: | **7** | Base Depth: | **4.10** |



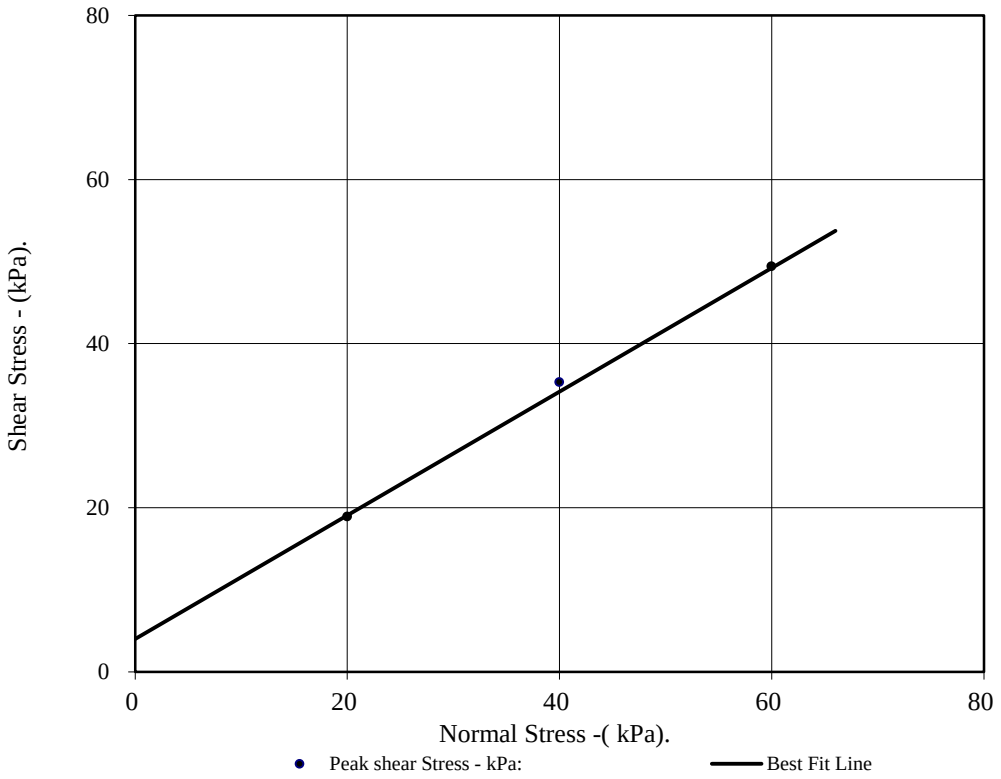



# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 5**

| | | | | | |
|---|---|---|---|---|---|
| Hole Number: | **BH110** | | Top Depth: | **2.50** | |
| Sample Number: | **101** | | Base Depth: | **3.20** | |
| Sample Conditions: | Dry | | Sample Type | **B** | |
| Particle Density - Mg/m3: | 2.65 | Assumed | **Remarks:** | | |
| Sample Preparation: | Material tested passing 20mm sieve<br>Remoulded using 2.5kg effort. | | | | |
| Sample Description: | **See summary of soil descriptions** | | | | |

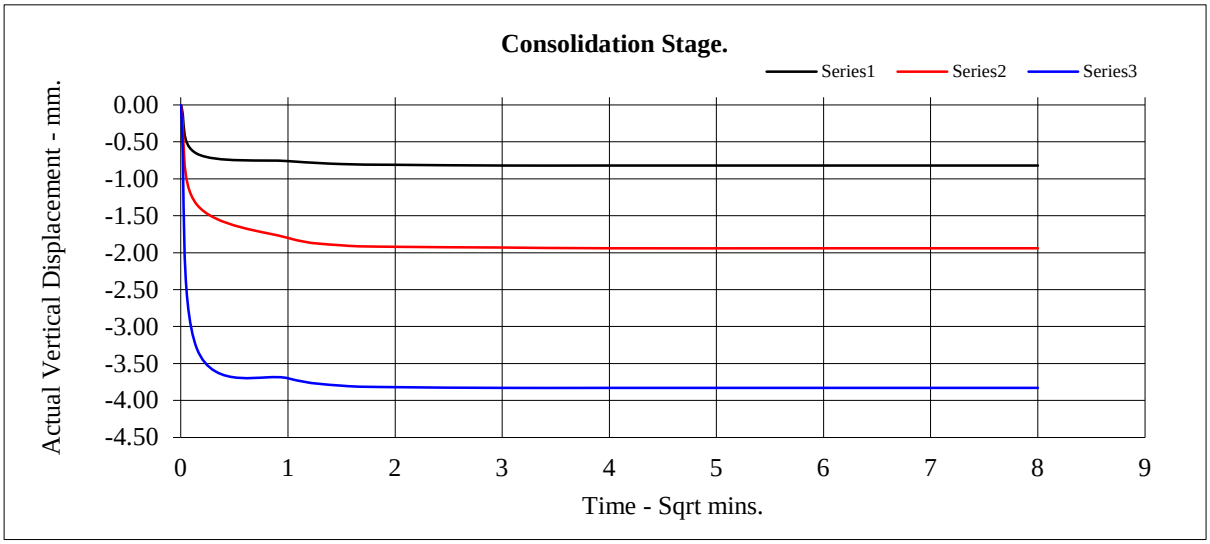
| **STAGE** | **1** | **2** | **3** |
|---|---|---|---|
| **Initial Conditions** | | | |
| Height - mm: | 120 | 120 | 120 |
| Length - mm: | 300 | 300 | 300 |
| Moisture Content - %: | 16 | 16 | 16 |
| Bulk Density - Mg/m3: | 2.05 | 2.05 | 2.05 |
| Dry Density - Mg/m3: | 1.77 | 1.77 | 1.77 |
| Voids Ratio: | 0.500 | 0.500 | 0.500 |
| Normal Pressure- kPa | 20 | 40 | 60 |
| **Consolidation Stage** | | | |
| Consolidated Height - mm: | 119.18 | 118.06 | 116.17 |
| **Shearing Stage** | | | |
| Rate of Strain (mm/min) | 1.00 | 1.00 | 1.00 |
| Displacement at peak shear stress (mm) | 10.50 | 14.00 | 18.00 |
| Peak shear Stress - kPa: | 19 | 35 | 49 |
| **Final Consolidated Conditions** | | | |
| Moisture Content - %: | 13 | 13 | 11 |
| Bulk Density - Mg/m3: | 2.06 | 2.08 | 2.12 |
| Dry Density - Mg/m3: | 1.83 | 1.85 | 1.91 |
| **Peak** | | | |
| Angle of Shearing Resistance:(~~θ~~) | **37** | | |
| Effective Cohesion - kPa: | **4** | | |

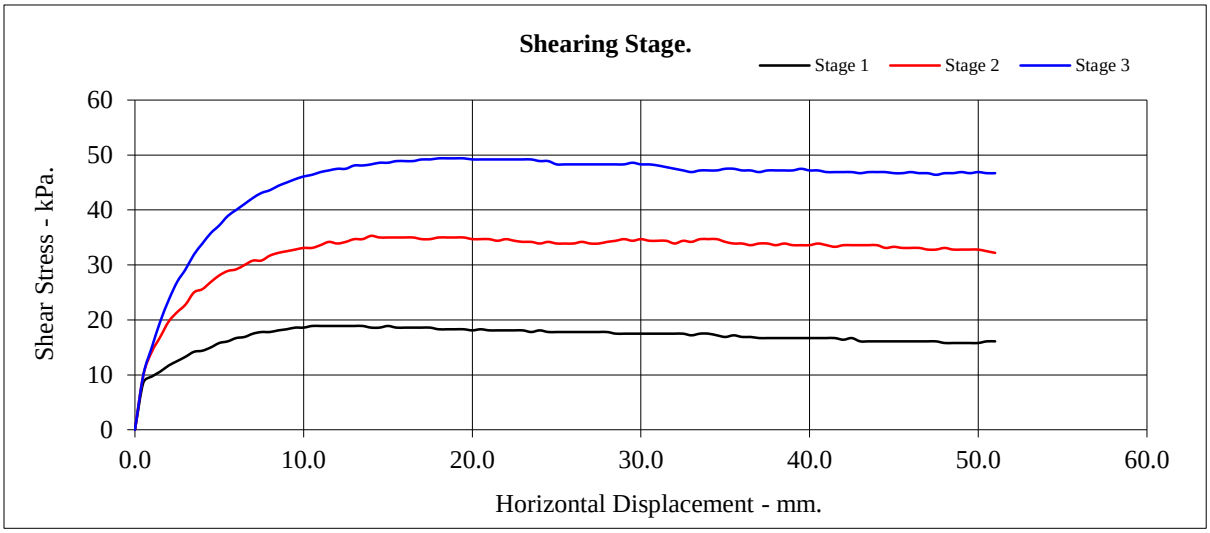


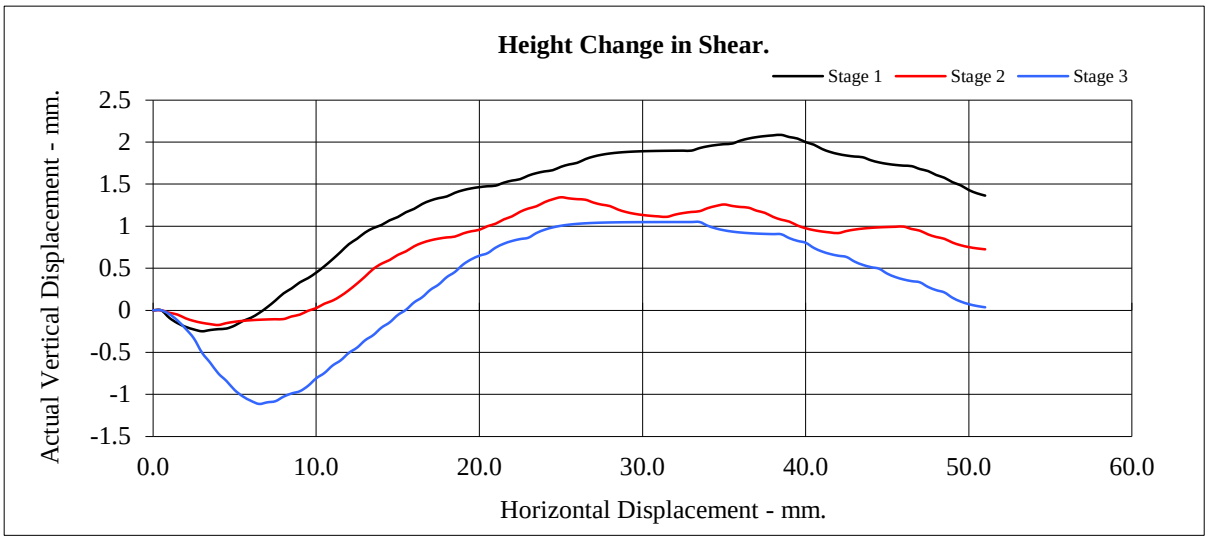
# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 5**

| | | | |
|---|---|---|---|
| Hole Number: | **BH110** | Top Depth: | **2.50** |
| Sample Number: | **101** | Base Depth: | **3.20** |



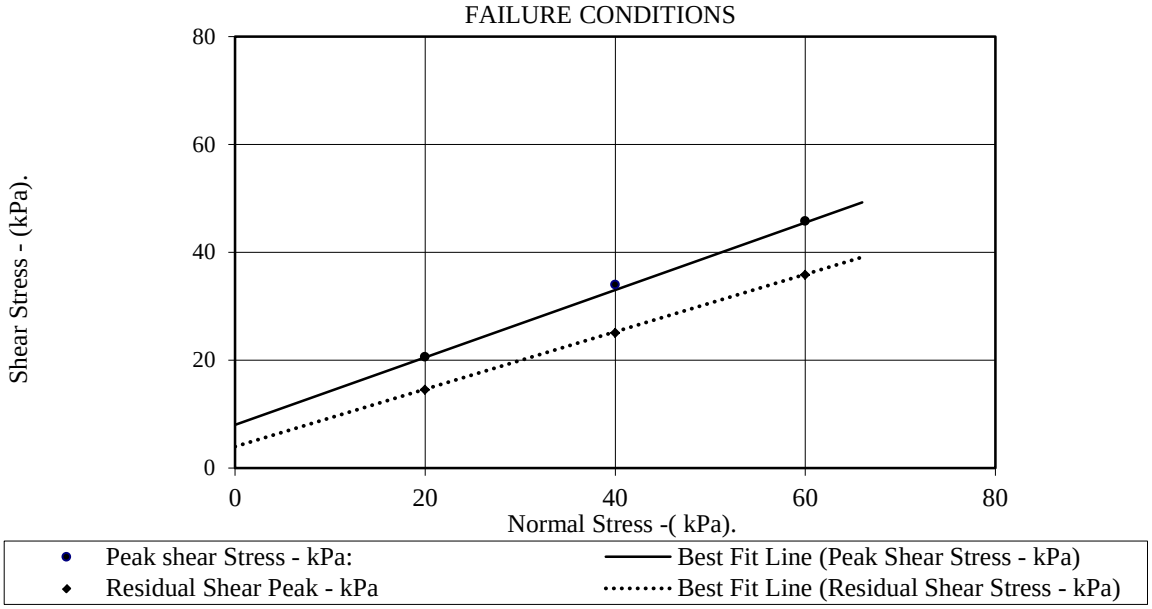



# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377 : 1990 Part 7 Clause 4**

| | | | | |
|---|---|---|---|---|
| Hole Number: | **TP131** | | Top Depth | **2.00** |
| Sample Number: | **7** | | Base Depth | **2.30** |
| Sample Conditions: | Submerged | | Sample Type | **B** |
| Particle Density - Mg/m3: | 2.65 | Assumed | **Remarks:** | |
| Specimen Preparation | Material tested passing 2mm sieve<br>Remoulded using 2.5kg effort | | | |
| Sample Description: | **See summary of soil descriptions** | | | |

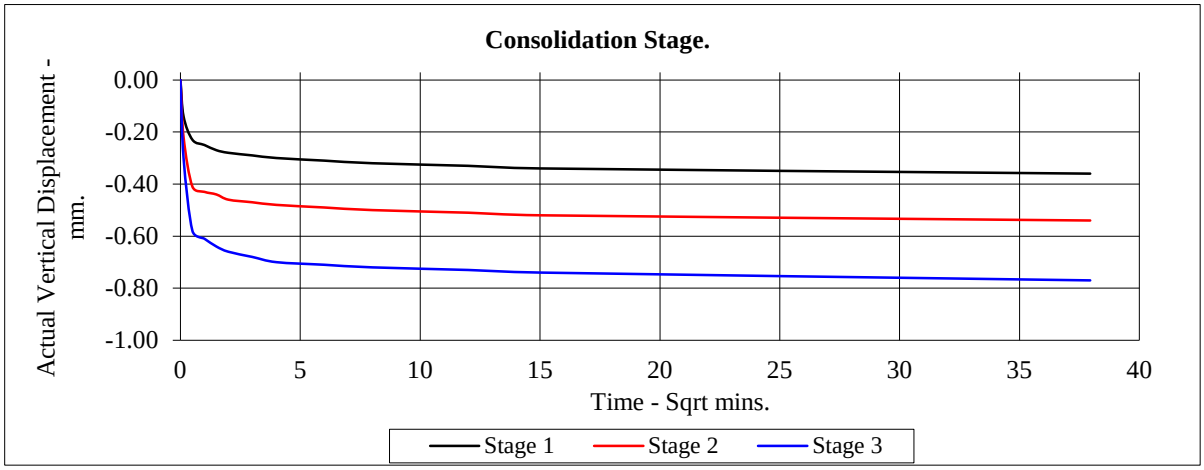
| **STAGE** | **1** | **2** | **3** |
|---|---|---|---|
| **Initial Conditions** | | | |
| Height - mm: | 19.99 | 19.99 | 19.99 |
| Length - mm: | 60.05 | 60.05 | 60.05 |
| Moisture Content - %: | 17 | 17 | 17 |
| Bulk Density - Mg/m3: | 2.01 | 2.01 | 2.01 |
| Dry Density - Mg/m3: | 1.72 | 1.72 | 1.72 |
| Voids Ratio: | 0.539 | 0.539 | 0.539 |
| Normal Pressure- kPa | 20 | 40 | 60 |
| **Consolidation Stage** | | | |
| Consolidated Height - mm: | 19.63 | 19.45 | 19.22 |
| **Peak Shear** | | | |
| Rate of Strain - mm/min | 0.047 | 0.047 | 0.047 |
| Displacement at peak shear stress - mm | 3.90 | 5.10 | 8.10 |
| Peak shear Stress - kPa: | 21 | 34 | 46 |
| **Residual Shear** | | | |
| Rate of Strain - mm/min | 0.094 | 0.094 | 0.094 |
| Displacement at residual shear stress - mm | 20.00 | 29.00 | 20.00 |
| Residual shear Stress - kPa: | 15 | 25 | 36 |
| **Final Consolidation Conditions** | | | |
| Moisture Content - %: | 21 | 20 | 20 |
| Bulk Density - Mg/m3: | 2.05 | 2.07 | 2.10 |
| Dry Density - Mg/m3: | 1.70 | 1.72 | 1.75 |
| **Peak Shear** | | | |
| Angle of Shearing Resistance:(θ) | 32 | | |
| Effective Cohesion - kPa: | 8 | | |
| **Residual Shear** | | | |
| Angle of Shearing Resistance:(θ) | 28 | | |
| Effective Cohesion - kPa: | 4 | | |

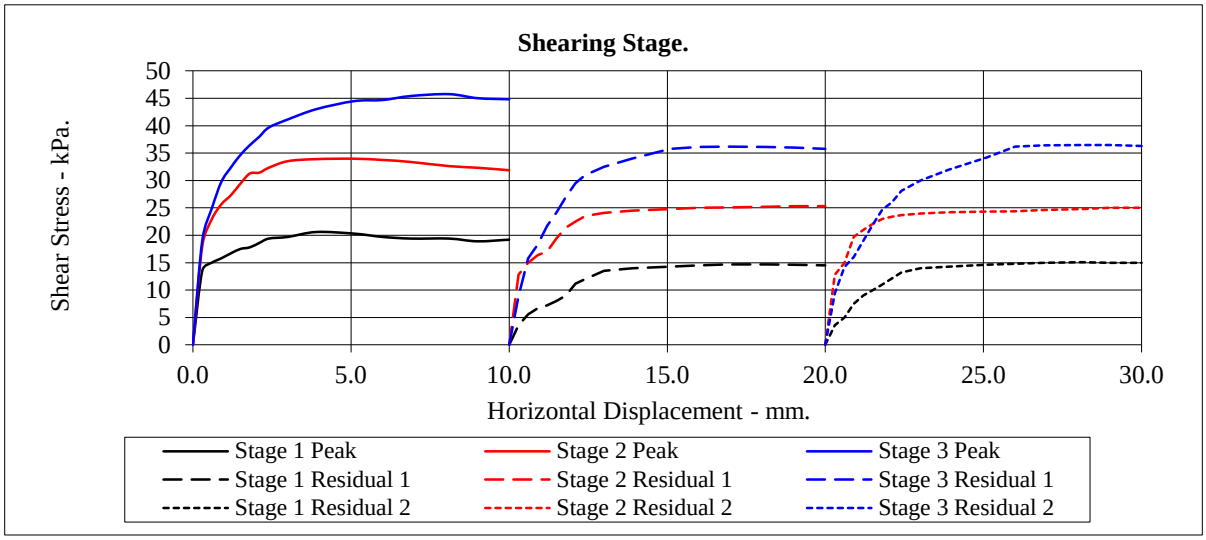


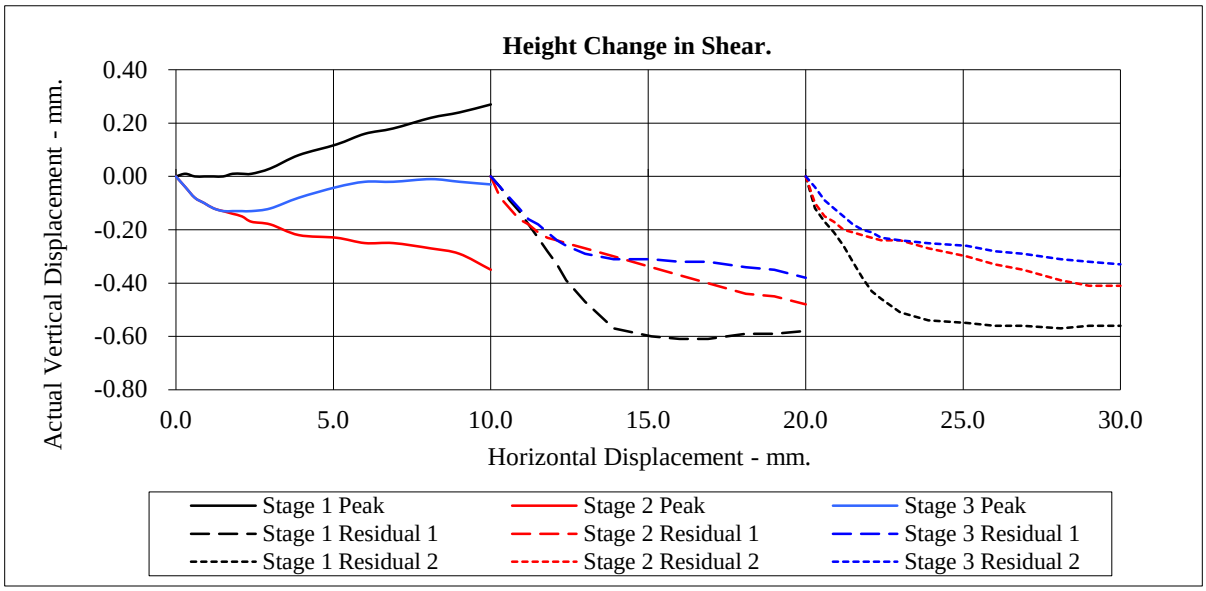
# CONSOLIDATED DRAINED SHEARBOX TEST

## BS1377 : 1990 Part 7 Clause 4

| | | | |
|---|---|---|---|
| Hole Number: | **TP131** | Top Depth: | **2.00** |
| Sample Number: | **7** | Base Depth: | **2.30** |




UKAS TESTING 4043

PSL Professional Soils Laboratory

**Wansford to Sutton Dualling Supplementary GI**

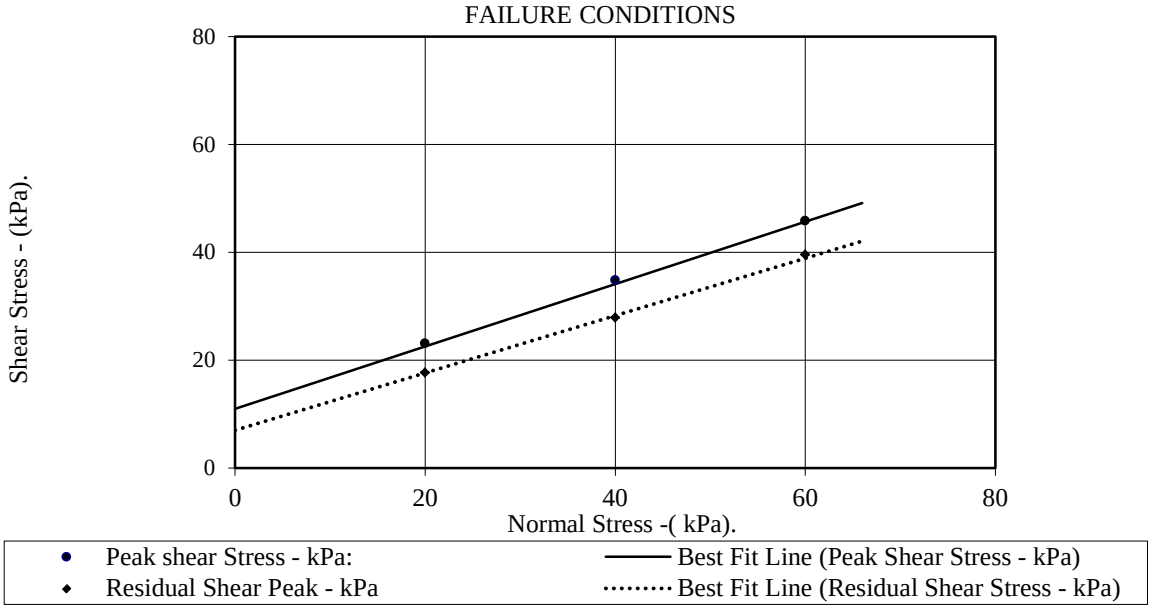
| |
|---|
| **Contract No:** |
| **PSL22/3650** |
| **Client Ref:** |
| **GT0386** |

# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377 : 1990 Part 7 Clause 4**

| | | | | |
|---|---|---|---|---|
| Hole Number: | **TP154** | | Top Depth | **2.00** |
| Sample Number: | **7** | | Base Depth | **2.30** |
| Sample Conditions: | Submerged | | Sample Type | **B** |
| Particle Density - Mg/m3: | 2.65 | Assumed | **Remarks:** | |
| Specimen Preparation | Material tested passing 2mm sieve<br>Remoulded using 2.5kg effort | | | |
| Sample Description: | **See summary of soil descriptions** | | | |

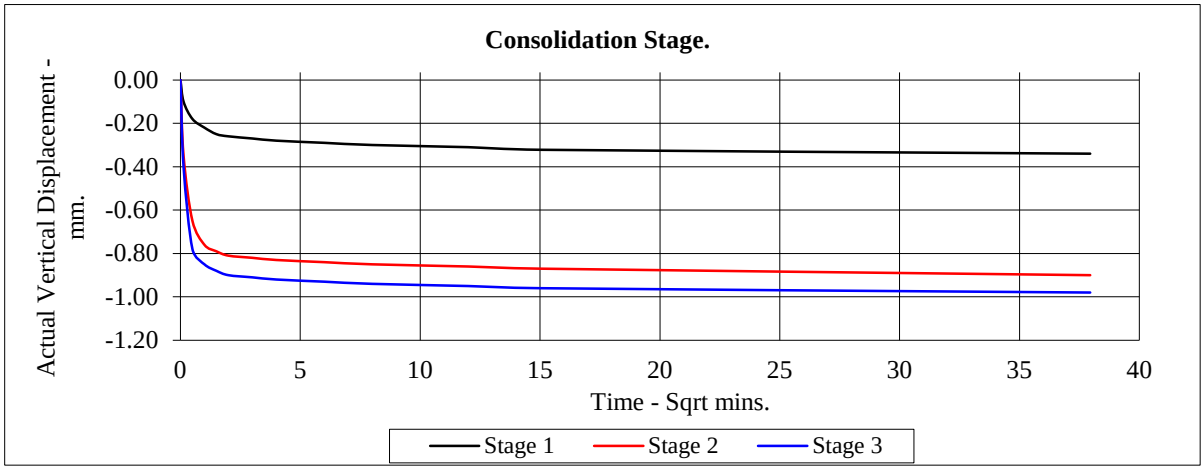
| **STAGE** | **1** | **2** | **3** |
|---|---|---|---|
| **Initial Conditions** | | | |
| Height - mm: | 19.99 | 19.99 | 19.99 |
| Length - mm: | 60.05 | 60.05 | 60.05 |
| Moisture Content - %: | 11 | 11 | 11 |
| Bulk Density - Mg/m3: | 1.90 | 1.90 | 1.90 |
| Dry Density - Mg/m3: | 1.71 | 1.71 | 1.71 |
| Voids Ratio: | 0.547 | 0.547 | 0.547 |
| Normal Pressure- kPa | 20 | 40 | 60 |
| **Consolidation Stage** | | | |
| Consolidated Height - mm: | 19.65 | 19.09 | 19.01 |
| **Peak Shear** | | | |
| Rate of Strain - mm/min | 0.061 | 0.061 | 0.061 |
| Displacement at peak shear stress - mm | 8.10 | 9.00 | 8.10 |
| Peak shear Stress - kPa: | 23 | 35 | 46 |
| **Residual Shear** | | | |
| Rate of Strain - mm/min | 0.122 | 0.122 | 0.122 |
| Displacement at residual shear stress - mm | 30.00 | 20.00 | 20.00 |
| Residual shear Stress - kPa: | 18 | 28 | 40 |
| **Final Consolidation Conditions** | | | |
| Moisture Content - %: | 16 | 15 | 15 |
| Bulk Density - Mg/m3: | 1.93 | 1.99 | 2.00 |
| Dry Density - Mg/m3: | 1.66 | 1.73 | 1.73 |
| **Peak Shear** | | | |
| Angle of Shearing Resistance:(θ) | 30 | | |
| Effective Cohesion - kPa: | 11 | | |
| **Residual Shear** | | | |
| Angle of Shearing Resistance:(θ) | 28 | | |
| Effective Cohesion - kPa: | 7 | | |

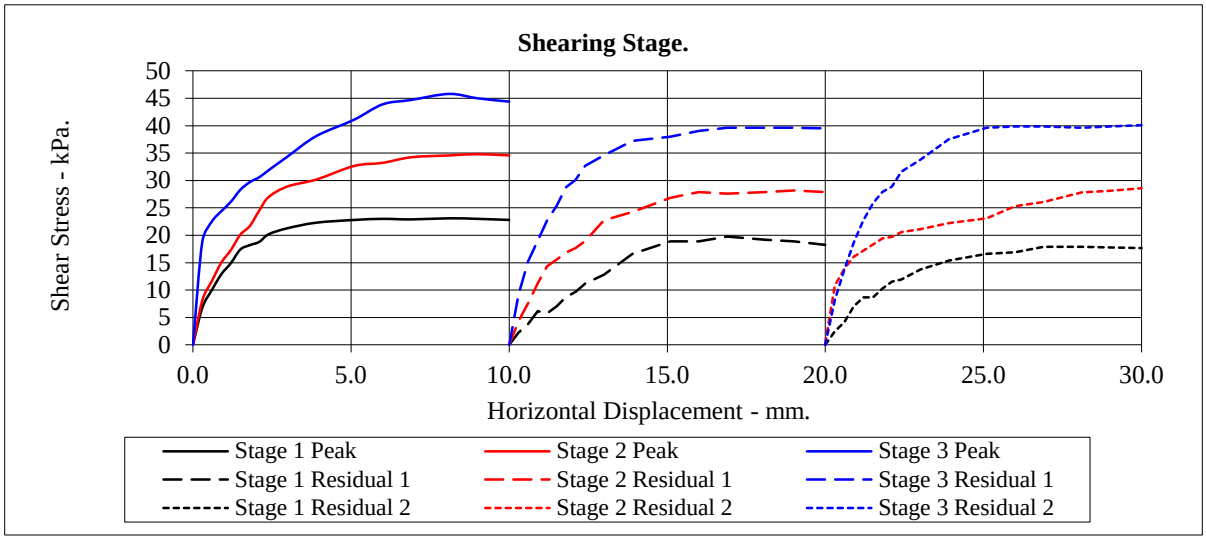


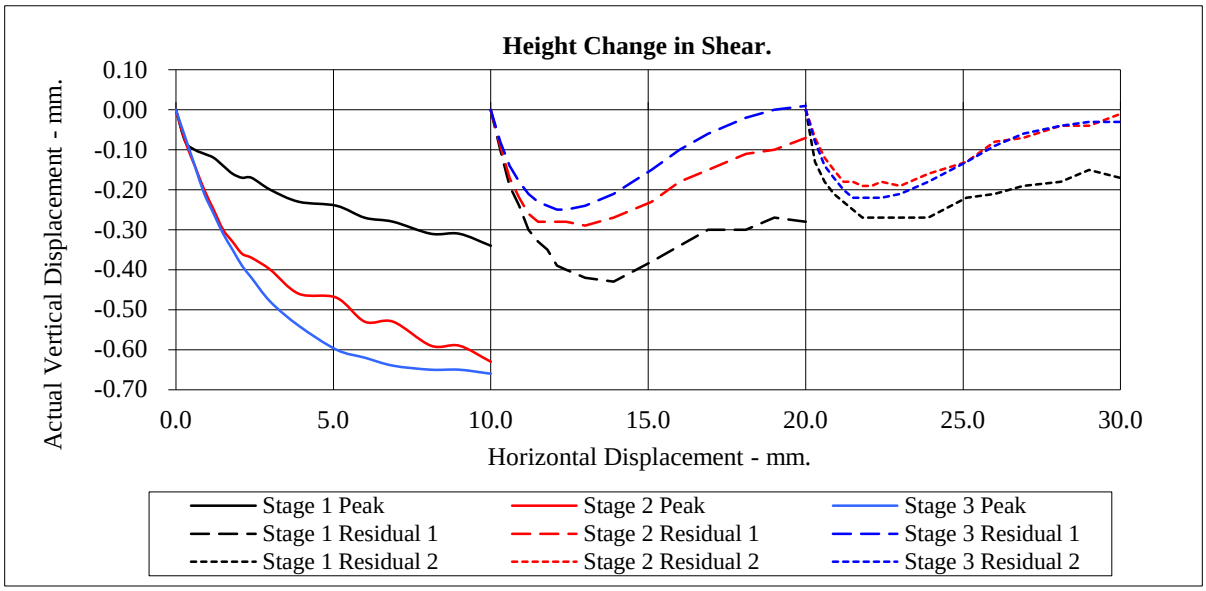
# CONSOLIDATED DRAINED SHEARBOX TEST

## BS1377 : 1990 Part 7 Clause 4

| | | | |
|---|---|---|---|
| Hole Number: | **TP154** | Top Depth: | **2.00** |
| Sample Number: | **7** | Base Depth: | **2.30** |



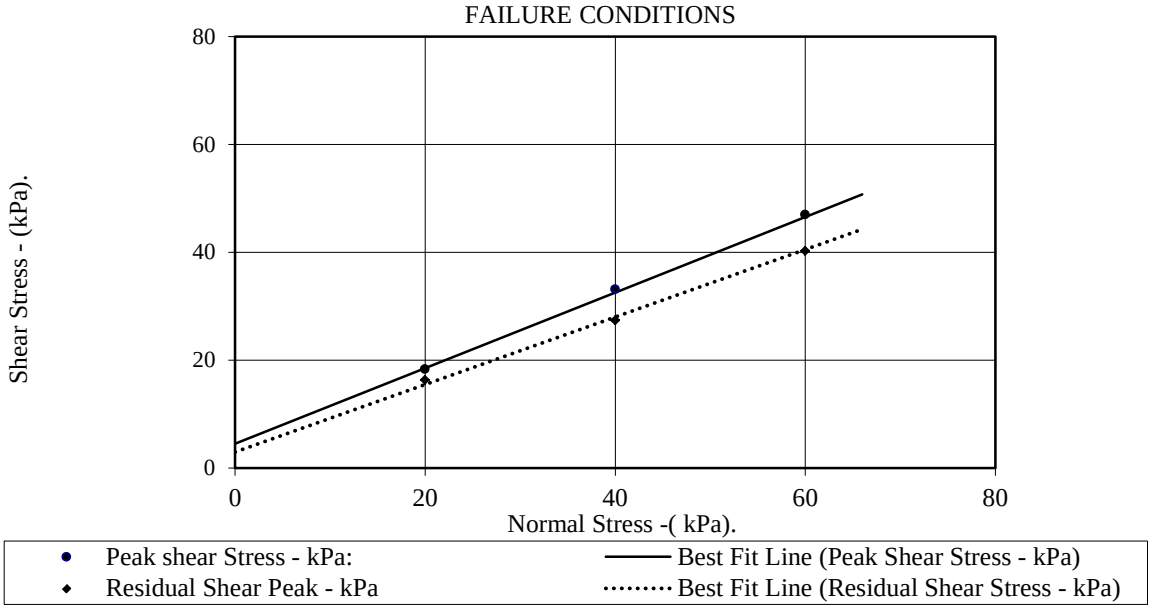



# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377 : 1990 Part 7 Clause 4**

| | | | | |
|---|---|---|---|---|
| Hole Number: | **BH116** | | Top Depth | **1.50** |
| Sample Number: | **3** | | Base Depth | **2.00** |
| Sample Conditions: | Submerged | | Sample Type | **B** |
| Particle Density - Mg/m3: | 2.65 | Assumed | **Remarks:** | |
| Specimen Preparation | Material tested passing 2mm sieve<br>Remoulded using 2.5kg effort | | | |
| Sample Description: | **See summary of soil descriptions** | | | |

| **STAGE** | **1** | **2** | **3** |
|---|---|---|---|
| **Initial Conditions** | | | |
| Height - mm: | 19.99 | 19.99 | 19.99 |
| Length - mm: | 60.05 | 60.05 | 60.05 |
| Moisture Content - %: | 14 | 14 | 14 |
| Bulk Density - Mg/m3: | 2.08 | 2.08 | 2.08 |
| Dry Density - Mg/m3: | 1.82 | 1.82 | 1.82 |
| Voids Ratio: | 0.454 | 0.454 | 0.454 |
| Normal Pressure- kPa | 20 | 40 | 60 |
| **Consolidation Stage** | | | |
| Consolidated Height - mm: | 19.38 | 18.79 | 18.72 |
| **Peak Shear** | | | |
| Rate of Strain - mm/min | 0.048 | 0.048 | 0.048 |
| Displacement at peak shear stress - mm | 5.10 | 5.10 | 6.00 |
| Peak shear Stress - kPa: | 18 | 33 | 47 |
| **Residual Shear** | | | |
| Rate of Strain - mm/min | 0.096 | 0.096 | 0.096 |
| Displacement at residual shear stress - mm | 18.10 | 20.00 | 30.00 |
| Residual shear Stress - kPa: | 16 | 27 | 40 |
| **Final Consolidation Conditions** | | | |
| Moisture Content - %: | 15 | 14 | 14 |
| Bulk Density - Mg/m3: | 2.14 | 2.21 | 2.22 |
| Dry Density - Mg/m3: | 1.86 | 1.93 | 1.94 |
| **Peak Shear** | | | |
| Angle of Shearing Resistance:(θ) | 35 | | |
| Effective Cohesion - kPa: | 5 | | |
| **Residual Shear** | | | |
| Angle of Shearing Resistance:(θ) | 32 | | |
| Effective Cohesion - kPa: | 3 | | |




UKAS TESTING 4043

PSL Professional Soils Laboratory

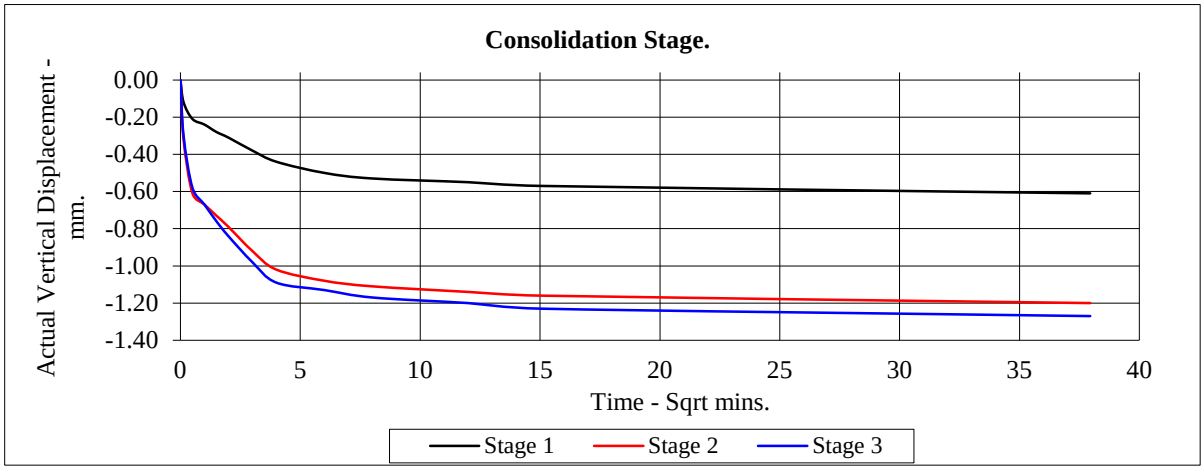
**Wansford to Sutton Dualling Supplementary GI**

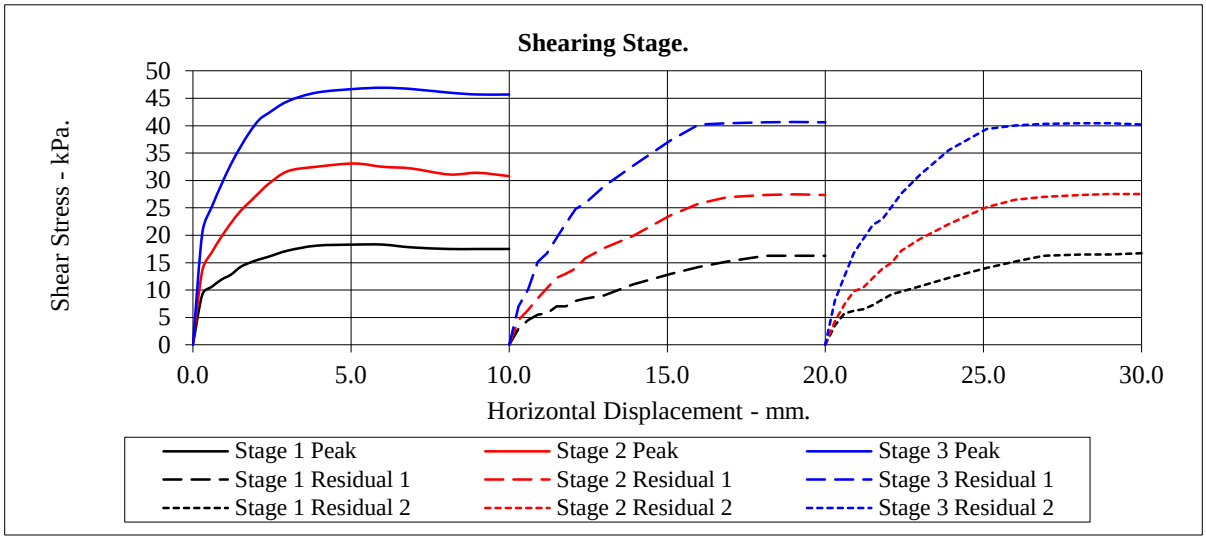
| **Contract No:** |
|---|
| **PSL22/3650** |
| **Client Ref:** |
| **GT0386** |

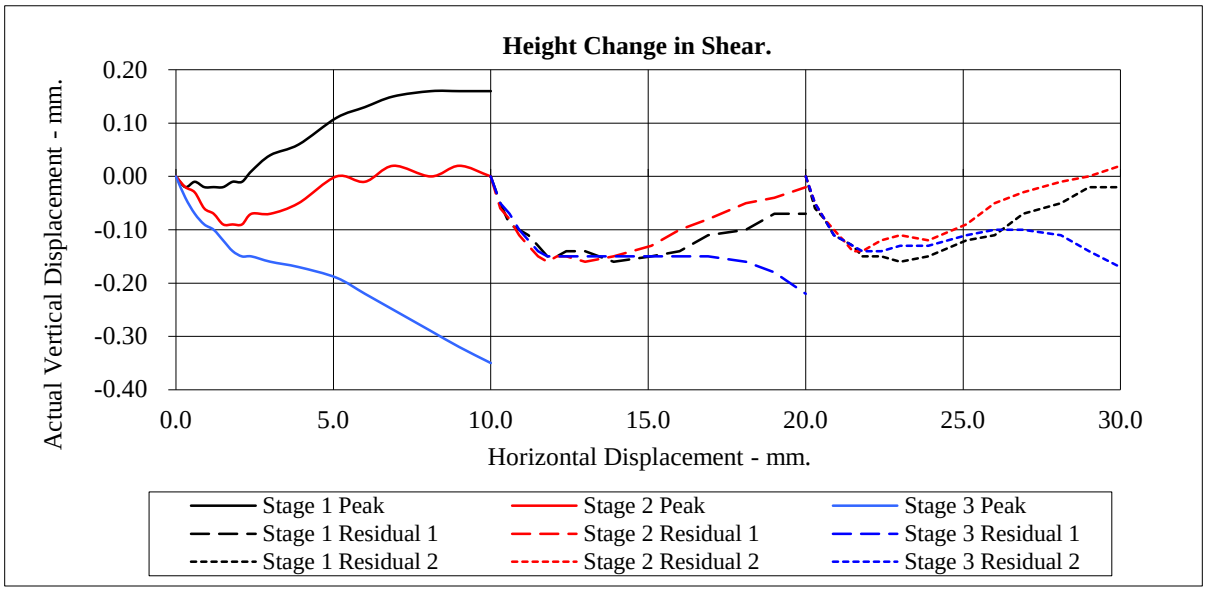
# CONSOLIDATED DRAINED SHEARBOX TEST

## BS1377 : 1990 Part 7 Clause 4

| | | | |
|---|---|---|---|
| Hole Number: | **BH116** | Top Depth: | **1.50** |
| Sample Number: | **3** | Base Depth: | **2.00** |



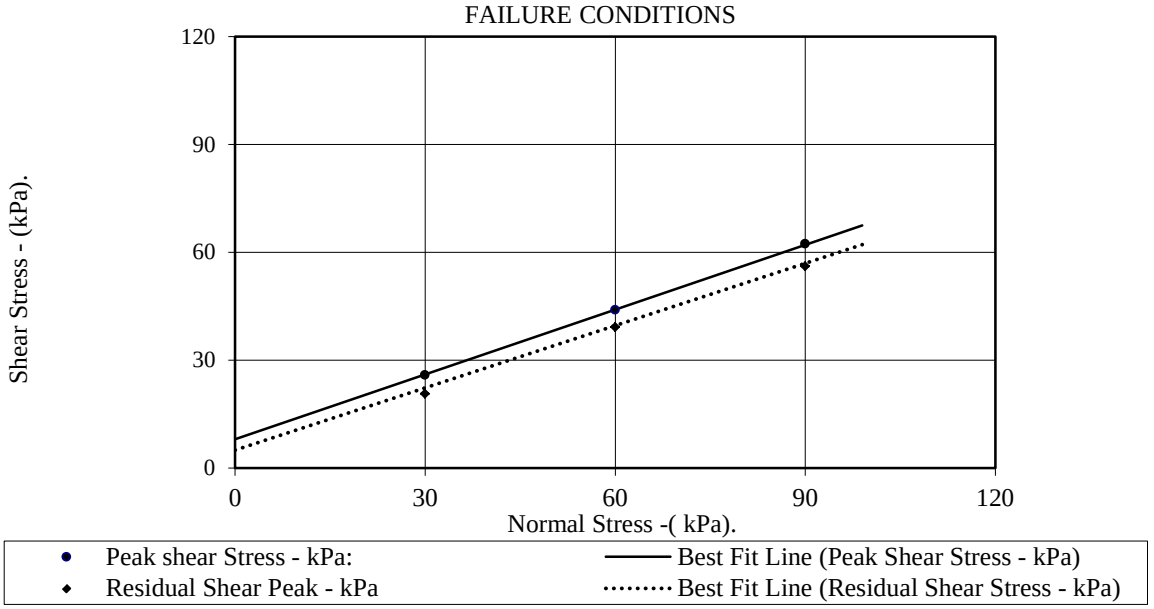



# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377 : 1990 Part 7 Clause 4**

| | | | | | |
|---|---|---|---|---|---|
| Hole Number: | **BH116** | | Top Depth | **3.50** | |
| Sample Number: | **6** | | Base Depth | **4.00** | |
| Sample Conditions: | Submerged | | Sample Type | **B** | |
| Particle Density - Mg/m3: | 2.65 | Assumed | **Remarks:** | | |
| Specimen Preparation | Material tested passing 2mm sieve<br>Remoulded using hand tamped effort | | | | |
| Sample Description: | **See summary of soil descriptions** | | | | |

| **STAGE** | **1** | **2** | **3** |
|---|---|---|---|
| **Initial Conditions** | | | |
| Height - mm: | 19.99 | 19.99 | 19.99 |
| Length - mm: | 60.05 | 60.05 | 60.05 |
| Moisture Content - %: | 20 | 20 | 20 |
| Bulk Density - Mg/m3: | 1.90 | 1.90 | 1.90 |
| Dry Density - Mg/m3: | 1.58 | 1.58 | 1.58 |
| Voids Ratio: | 0.673 | 0.673 | 0.673 |
| Normal Pressure- kPa | 30 | 60 | 90 |
| **Consolidation Stage** | | | |
| Consolidated Height - mm: | 19.83 | 19.62 | 19.42 |
| **Peak Shear** | | | |
| Rate of Strain - mm/min | 0.300 | 0.300 | 0.300 |
| Displacement at peak shear stress - mm | 3.00 | 3.90 | 2.40 |
| Peak shear Stress - kPa: | 26 | 44 | 62 |
| **Residual Shear** | | | |
| Rate of Strain - mm/min | 0.600 | 0.600 | 0.600 |
| Displacement at residual shear stress - mm | 19.00 | 19.00 | 30.00 |
| Residual shear Stress - kPa: | 21 | 39 | 56 |
| **Final Consolidation Conditions** | | | |
| Moisture Content - %: | 22 | 22 | 22 |
| Bulk Density - Mg/m3: | 1.92 | 1.94 | 1.96 |
| Dry Density - Mg/m3: | 1.57 | 1.59 | 1.61 |
| **Peak Shear** | | | |
| Angle of Shearing Resistance:(~~θ~~) | 31 | | |
| Effective Cohesion - kPa: | 8 | | |
| **Residual Shear** | | | |
| Angle of Shearing Resistance:(~~θ~~) | 30 | | |
| Effective Cohesion - kPa: | 5 | | |




UKAS TESTING 4043

PSL Professional Soils Laboratory

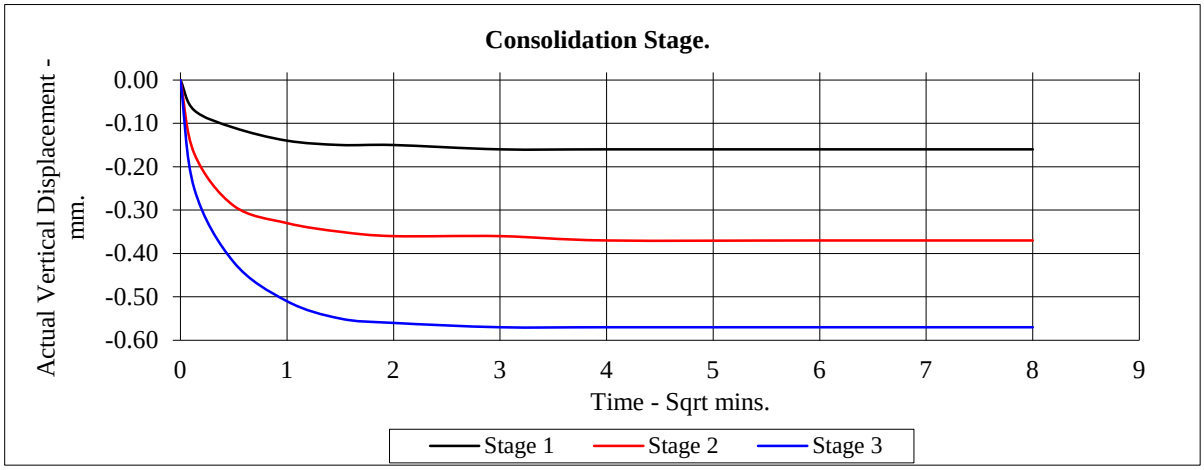
**Wansford to Sutton Dualling Supplementary GI**

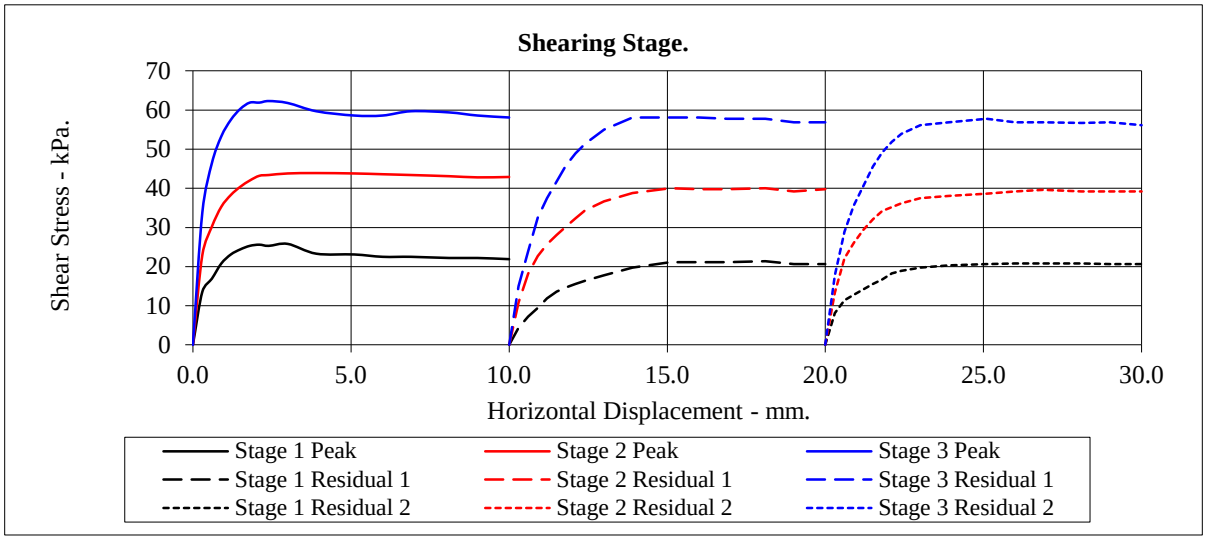
| **Contract No:** |
|---|
| **PSL22/3650** |
| **Client Ref:** |
| **GT0386** |

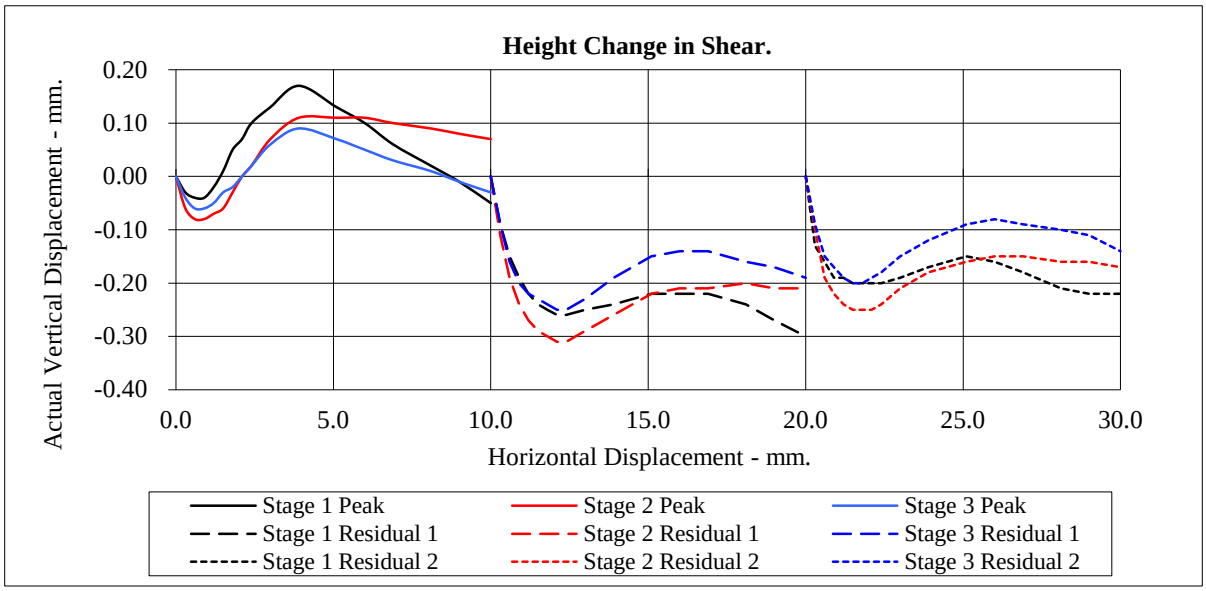
# CONSOLIDATED DRAINED SHEARBOX TEST

## BS1377 : 1990 Part 7 Clause 4

| | | | |
|---|---|---|---|
| Hole Number: | **BH116** | Top Depth: | **3.50** |
| Sample Number: | **6** | Base Depth: | **4.00** |

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PSL Professional Soils Laboratory

**Wansford to Sutton Dualling Supplementary GI**

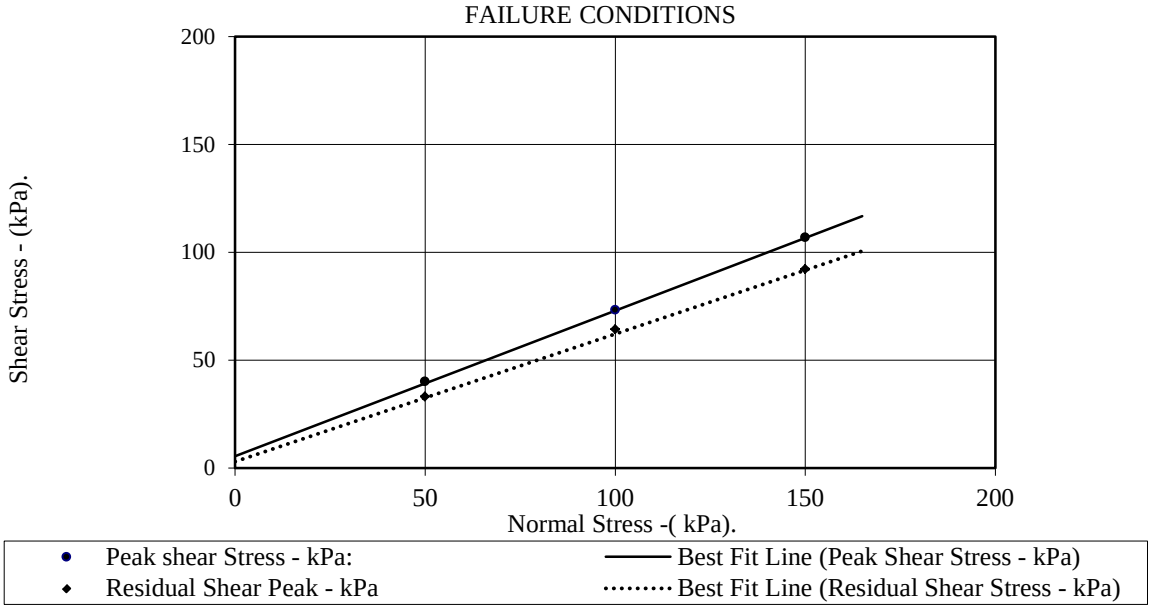
| |
|---|
| **Contract No:** |
| **PSL22/3650** |
| **Client Ref:** |
| **GT0386** |

# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377 : 1990 Part 7 Clause 4**

| | | | | |
|---|---|---|---|---|
| Hole Number: | **BH118** | | Top Depth | **4.50** |
| Sample Number: | **6** | | Base Depth | **5.00** |
| Sample Conditions: | Submerged | | Sample Type | **B** |
| Particle Density - Mg/m3: | 2.65 | Assumed | **Remarks:** | |
| Specimen Preparation | Material tested passing 2mm sieve<br>Remoulded using hand tamped effort | | | |
| Sample Description: | **See summary of soil descriptions** | | | |

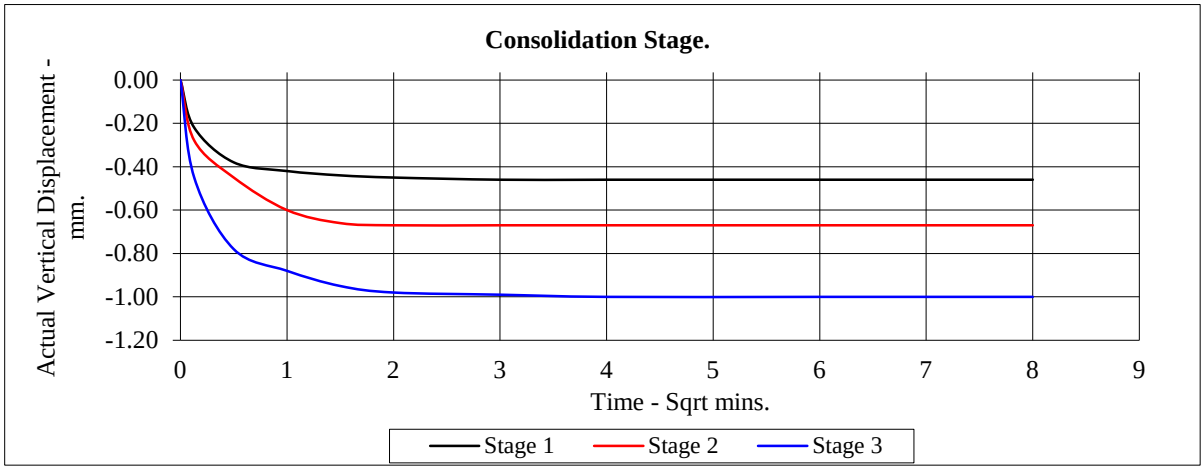
| **STAGE** | **1** | **2** | **3** |
|---|---|---|---|
| **Initial Conditions** | | | |
| Height - mm: | 19.99 | 19.99 | 19.99 |
| Length - mm: | 60.05 | 60.05 | 60.05 |
| Moisture Content - %: | 24 | 24 | 24 |
| Bulk Density - Mg/m3: | 1.91 | 1.91 | 1.91 |
| Dry Density - Mg/m3: | 1.54 | 1.54 | 1.54 |
| Voids Ratio: | 0.716 | 0.716 | 0.716 |
| Normal Pressure- kPa | 50 | 100 | 150 |
| **Consolidation Stage** | | | |
| Consolidated Height - mm: | 19.53 | 19.32 | 18.99 |
| **Peak Shear** | | | |
| Rate of Strain - mm/min | 0.300 | 0.300 | 0.300 |
| Displacement at peak shear stress - mm | 3.00 | 2.40 | 1.80 |
| Peak shear Stress - kPa: | 40 | 73 | 107 |
| **Residual Shear** | | | |
| Rate of Strain - mm/min | 0.600 | 0.600 | 0.600 |
| Displacement at residual shear stress - mm | 20.00 | 28.10 | 30.00 |
| Residual shear Stress - kPa: | 33 | 64 | 92 |
| **Final Consolidation Conditions** | | | |
| Moisture Content - %: | 24 | 23 | 23 |
| Bulk Density - Mg/m3: | 1.96 | 1.98 | 2.02 |
| Dry Density - Mg/m3: | 1.58 | 1.61 | 1.64 |
| **Peak Shear** | | | |
| Angle of Shearing Resistance:(~~θ~~) | 34 | | |
| Effective Cohesion - kPa: | 6 | | |
| **Residual Shear** | | | |
| Angle of Shearing Resistance:(~~θ~~) | 31 | | |
| Effective Cohesion - kPa: | 3 | | |

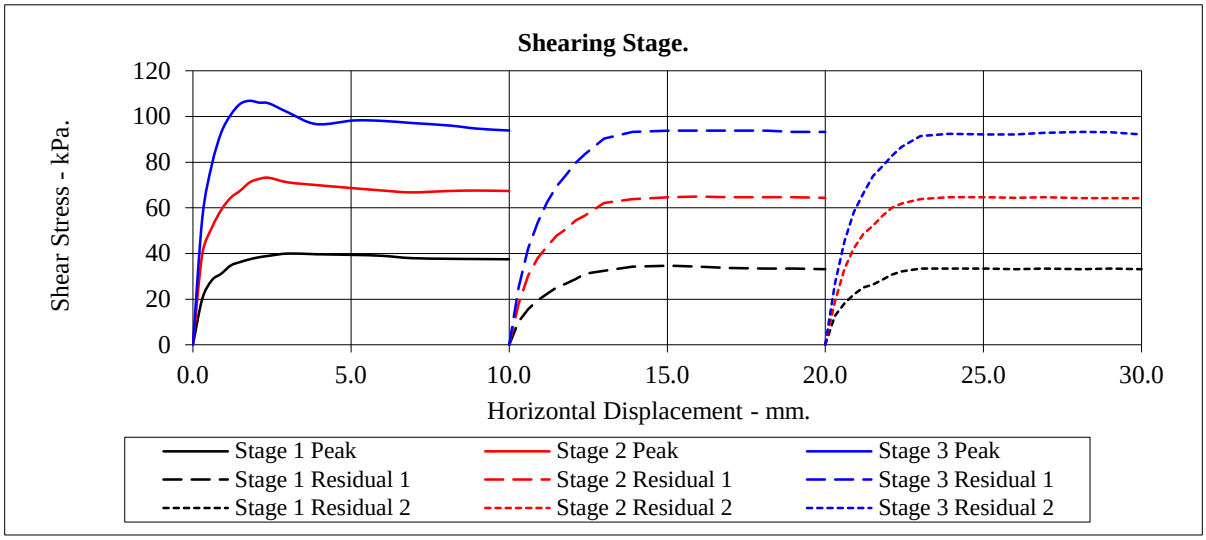


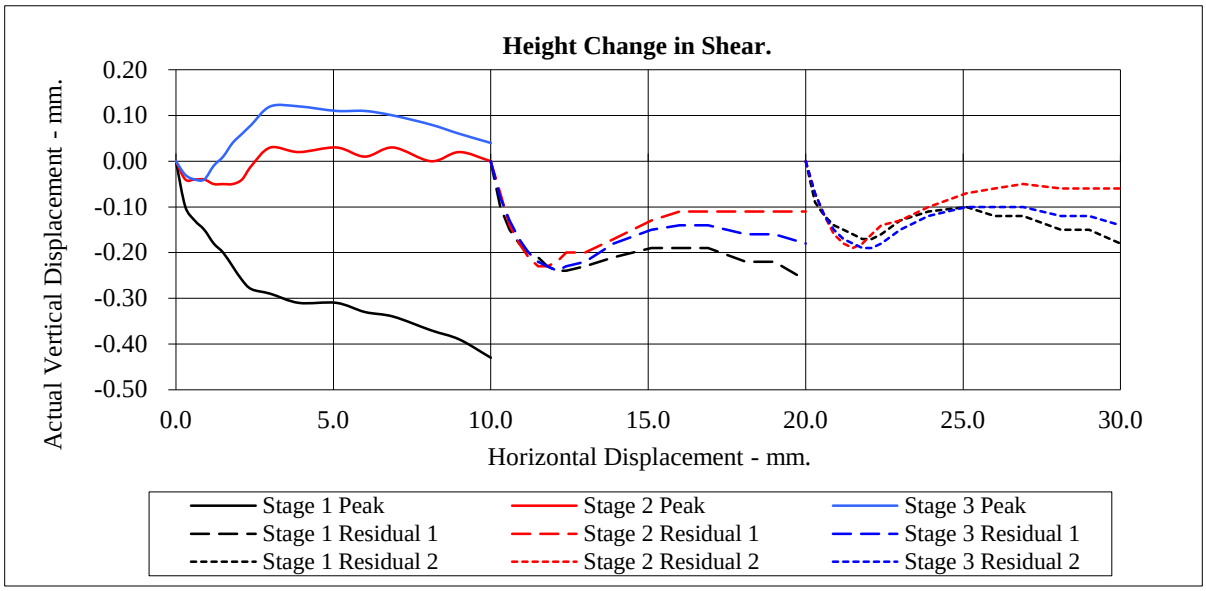
# CONSOLIDATED DRAINED SHEARBOX TEST

## BS1377 : 1990 Part 7 Clause 4

| | | | |
|---|---|---|---|
| Hole Number: | **BH118** | Top Depth: | **4.50** |
| Sample Number: | **6** | Base Depth: | **5.00** |



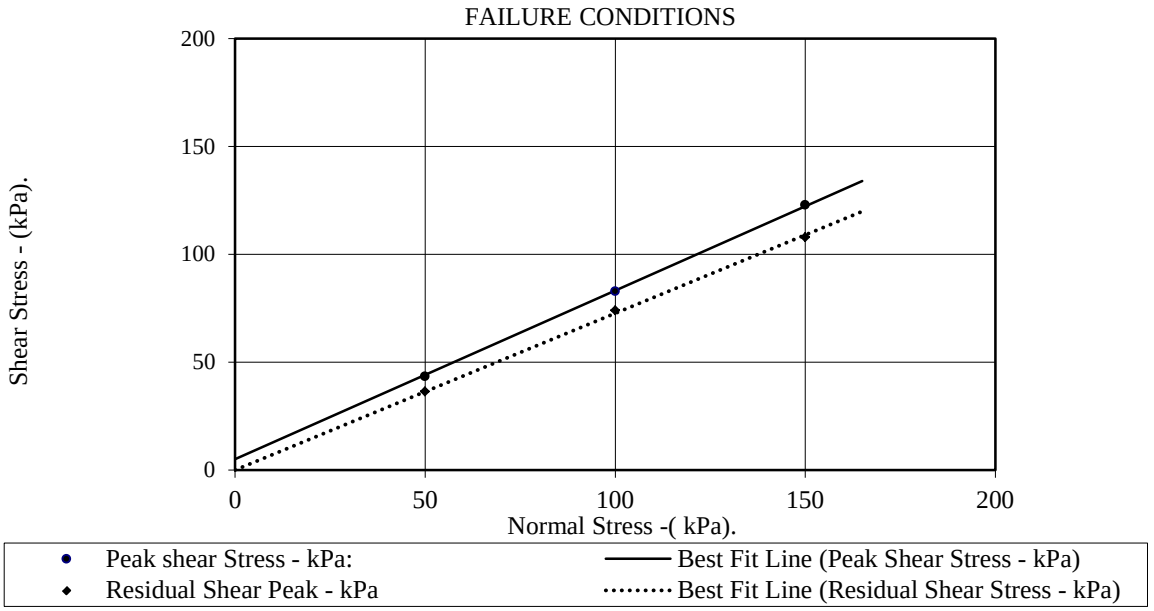

| | | | |
|---|---|---|---|
| UKAS TESTING 4043 | PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** | **Contract No:** PSL22/3650 **Client Ref:** GT0386 |

# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377 : 1990 Part 7 Clause 4**

| | | | | |
|---|---|---|---|---|
| Hole Number: | **BH120 & BH120A** | | Top Depth | **5.50** |
| Sample Number: | **7** | | Base Depth | **5.70** |
| Sample Conditions: | Submerged | | Sample Type | **B** |
| Particle Density - Mg/m3: | 2.65 | Assumed | **Remarks:** | |
| Specimen Preparation | Material tested passing 2mm sieve<br>Remoulded using hand tamped effort | | | |
| Sample Description: | **See summary of soil descriptions** | | | |

| **STAGE** | **1** | **2** | **3** |
|---|---|---|---|
| **Initial Conditions** | | | |
| Height - mm: | 19.99 | 19.99 | 19.99 |
| Length - mm: | 60.05 | 60.05 | 60.05 |
| Moisture Content - %: | 7.0 | 7.0 | 7.0 |
| Bulk Density - Mg/m3: | 1.68 | 1.68 | 1.68 |
| Dry Density - Mg/m3: | 1.57 | 1.57 | 1.57 |
| Voids Ratio: | 0.685 | 0.685 | 0.685 |
| Normal Pressure- kPa | 50 | 100 | 150 |
| **Consolidation Stage** | | | |
| Consolidated Height - mm: | 19.73 | 19.45 | 19.27 |
| **Peak Shear** | | | |
| Rate of Strain - mm/min | 0.300 | 0.300 | 0.300 |
| Displacement at peak shear stress - mm | 3.00 | 5.10 | 6.90 |
| Peak shear Stress - kPa: | 43 | 83 | 123 |
| **Residual Shear** | | | |
| Rate of Strain - mm/min | 0.600 | 0.600 | 0.600 |
| Displacement at residual shear stress - mm | 30.00 | 28.10 | 20.00 |
| Residual shear Stress - kPa: | 36 | 74 | 108 |
| **Final Consolidation Conditions** | | | |
| Moisture Content - %: | 18 | 17 | 17 |
| Bulk Density - Mg/m3: | 1.71 | 1.73 | 1.75 |
| Dry Density - Mg/m3: | 1.45 | 1.47 | 1.49 |
| **Peak Shear** | | | |
| Angle of Shearing Resistance:(~~θ~~) | 38 | | |
| Effective Cohesion - kPa: | 5 | | |
| **Residual Shear** | | | |
| Angle of Shearing Resistance:(~~θ~~) | 36 | | |
| Effective Cohesion - kPa: | 0 | | |




UKAS TESTING 4043

PSL Professional Soils Laboratory

**Wansford to Sutton Dualling Supplementary GI**

| **Contract No:** |
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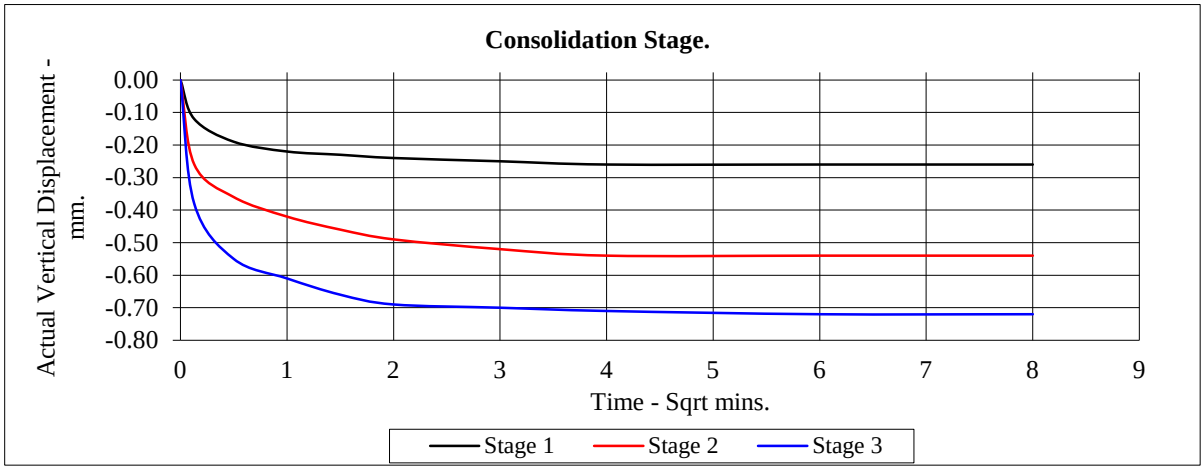
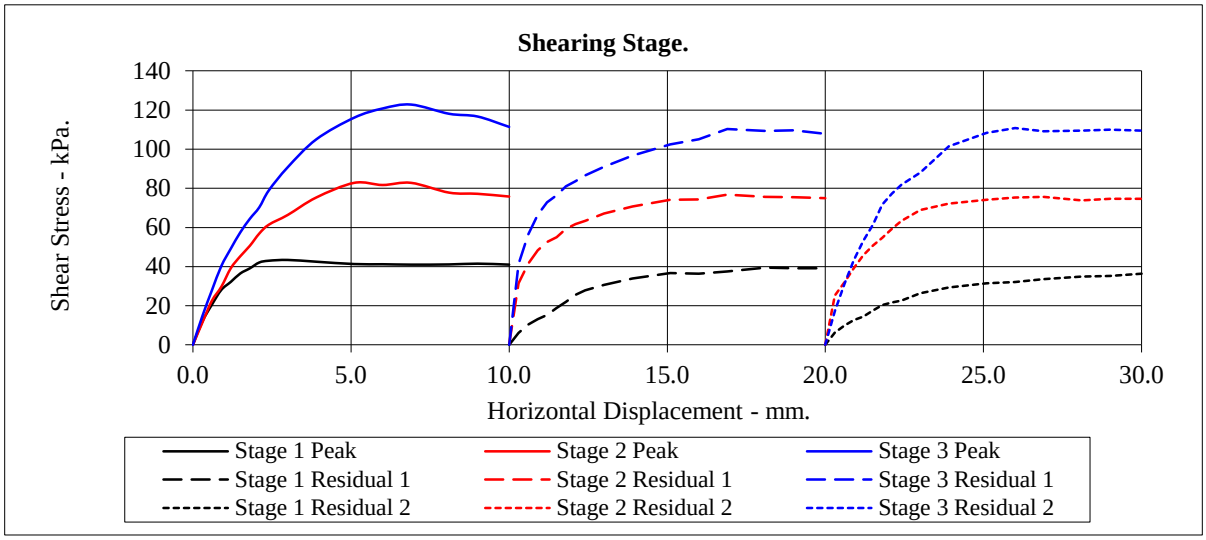
| **PSL22/3650** |
| **Client Ref:** |
| **GT0386** |

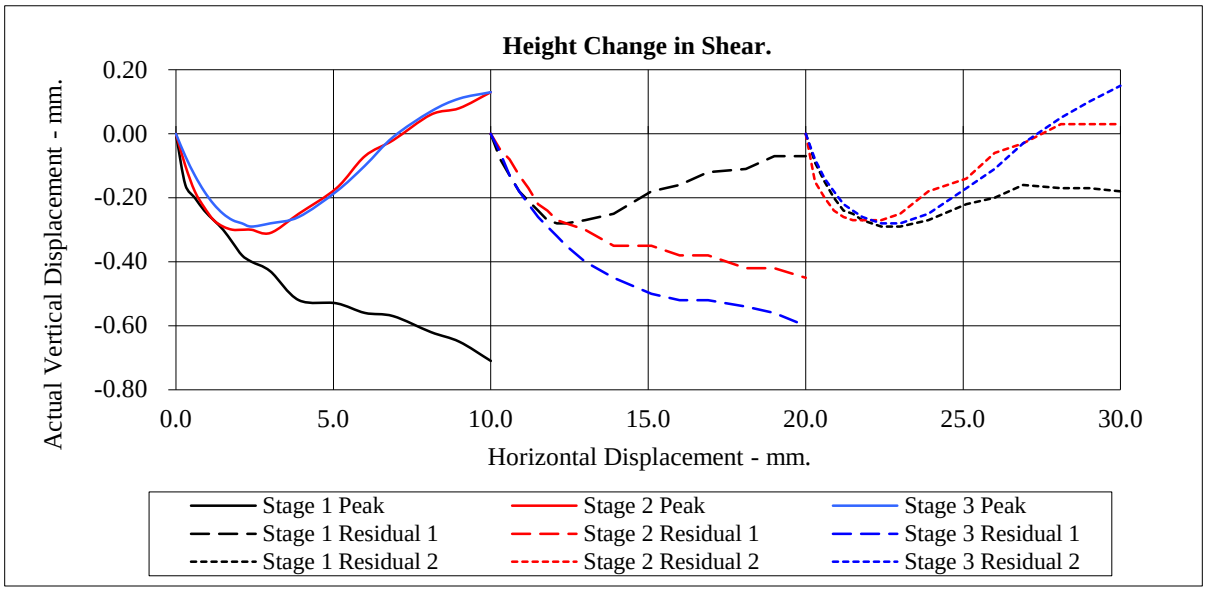
# CONSOLIDATED DRAINED SHEARBOX TEST

## BS1377 : 1990 Part 7 Clause 4

| | | | |
|---|---|---|---|
| Hole Number: | **BH120 & BH120A** | Top Depth: | **5.50** |
| Sample Number: | **7** | Base Depth: | **5.70** |




| | | |
|---|---|---|
| UKAS TESTING 4043 | PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** |

| |
|---|
| **Contract No:** |
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| **Client Ref:** |
| **GT0386** |

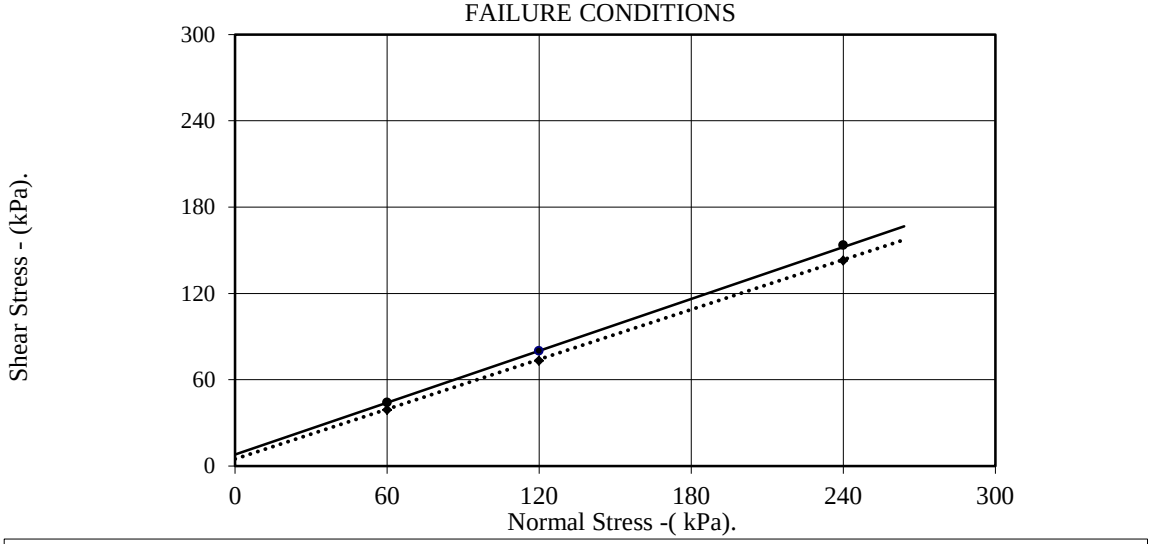
# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377 : 1990 Part 7 Clause 4**

| | | | | |
|---|---|---|---|---|
| Hole Number: | **BH107** | | Top Depth | **6.20** |
| Sample Number: | **103** | | Base Depth | **7.20** |
| Sample Conditions: | Submerged | | Sample Type | **B** |
| Particle Density - Mg/m3: | 2.65 | Assumed | **Remarks:** | |
| Specimen Preparation | Material tested passing 2mm sieve<br>Remoulded using hand tamped effort | | | |
| Sample Description: | **See summary of soil descriptions** | | | |

| **STAGE** | **1** | **2** | **3** |
|---|---|---|---|
| **Initial Conditions** | | | |
| Height - mm: | 19.99 | 19.99 | 19.99 |
| Length - mm: | 60.05 | 60.05 | 60.05 |
| Moisture Content - %: | 13 | 13 | 13 |
| Bulk Density - Mg/m3: | 1.90 | 1.90 | 1.90 |
| Dry Density - Mg/m3: | 1.68 | 1.68 | 1.68 |
| Voids Ratio: | 0.576 | 0.576 | 0.576 |
| Normal Pressure- kPa | 60 | 120 | 240 |
| **Consolidation Stage** | | | |
| Consolidated Height - mm: | 19.92 | 19.85 | 19.75 |
| **Peak Shear** | | | |
| Rate of Strain - mm/min | 0.300 | 0.300 | 0.300 |
| Displacement at peak shear stress - mm | 3.90 | 10.00 | 5.10 |
| Peak shear Stress - kPa: | 44 | 80 | 154 |
| **Residual Shear** | | | |
| Rate of Strain - mm/min | 0.600 | 0.600 | 0.600 |
| Displacement at residual shear stress - mm | 6.90 | 30.00 | 20.00 |
| Residual shear Stress - kPa: | 39 | 73 | 143 |
| **Final Consolidation Conditions** | | | |
| Moisture Content - %: | 16 | 15 | 15 |
| Bulk Density - Mg/m3: | 1.91 | 1.91 | 1.92 |
| Dry Density - Mg/m3: | 1.64 | 1.66 | 1.67 |
| **Peak Shear** | | | |
| Angle of Shearing Resistance:(~~θ~~) | 31 | | |
| Effective Cohesion - kPa: | 8 | | |
| **Residual Shear** | | | |
| Angle of Shearing Resistance:(~~θ~~) | 30 | | |
| Effective Cohesion - kPa: | 5 | | |

FAILURE CONDITIONS




UKAS TESTING 4043

PSL Professional Soils Laboratory

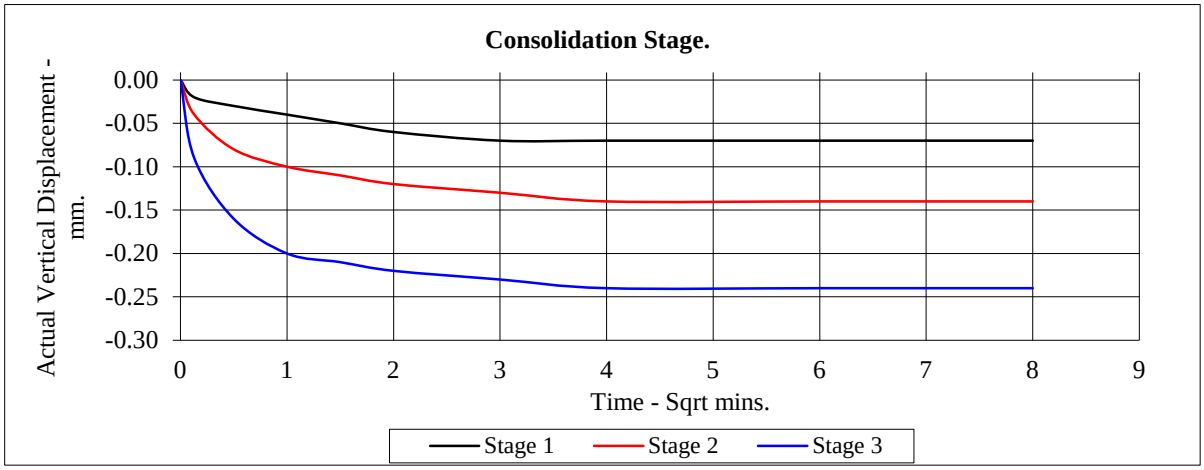
**Wansford to Sutton Dualling Supplementary GI**

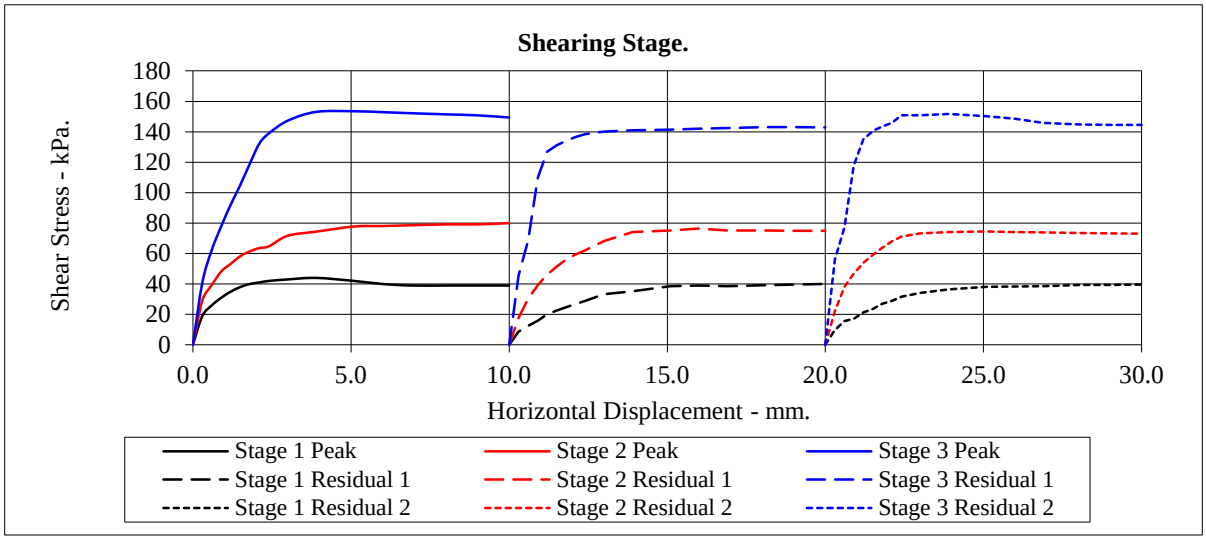
| **Contract No:** |
|---|
| **PSL22/3650** |
| **Client Ref:** |
| **GT0386** |

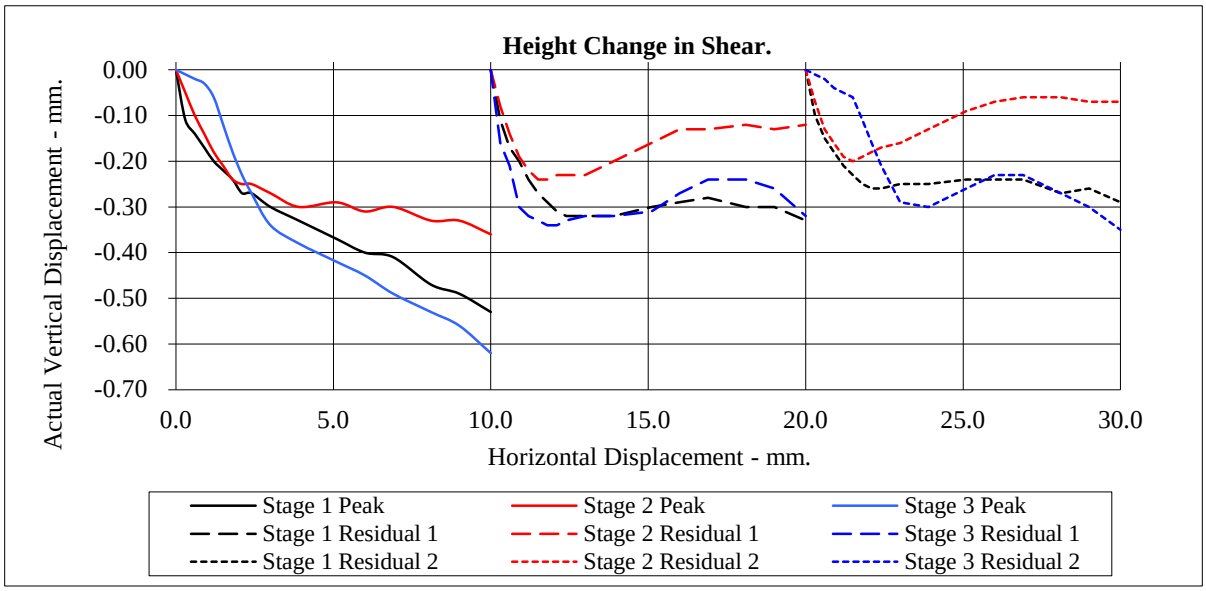
# CONSOLIDATED DRAINED SHEARBOX TEST

## BS1377 : 1990 Part 7 Clause 4

| | | | |
|---|---|---|---|
| Hole Number: | **BH107** | Top Depth: | **6.20** |
| Sample Number: | **103** | Base Depth: | **7.20** |



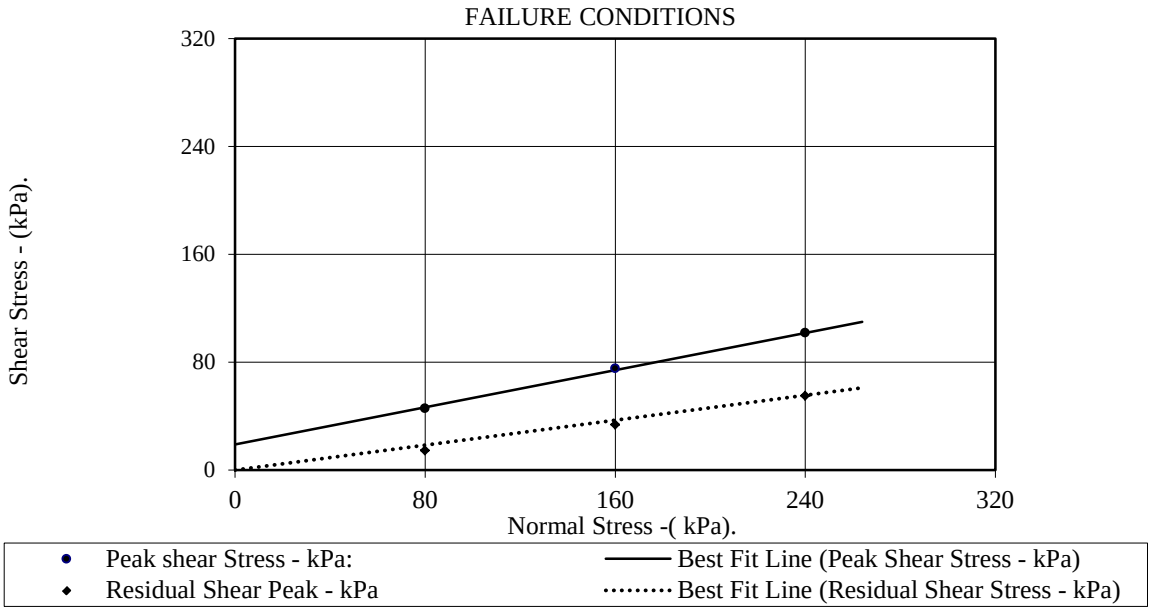



# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377 : 1990 Part 7 Clause 4**

| | | | | |
|---|---|---|---|---|
| Hole Number: | **BH107** | | Top Depth | **7.90** |
| Sample Number: | **105** | | Base Depth | **8.10** |
| Sample Conditions: | Submerged | | Sample Type | **B** |
| Particle Density - Mg/m3: | 2.65 | Assumed | **Remarks:** | |
| Specimen Preparation | Material tested passing 2mm sieve<br>Remoulded using 2.5kg effort | | | |
| Sample Description: | **See summary of soil descriptions** | | | |

| **STAGE** | **1** | **2** | **3** |
|---|---|---|---|
| **Initial Conditions** | | | |
| Height - mm: | 19.99 | 19.99 | 19.99 |
| Length - mm: | 60.05 | 60.05 | 60.05 |
| Moisture Content - %: | 23 | 23 | 23 |
| Bulk Density - Mg/m3: | 1.88 | 1.88 | 1.88 |
| Dry Density - Mg/m3: | 1.53 | 1.53 | 1.53 |
| Voids Ratio: | 0.730 | 0.730 | 0.730 |
| Normal Pressure- kPa | 80 | 160 | 240 |
| **Consolidation Stage** | | | |
| Consolidated Height - mm: | 19.04 | 18.88 | 18.49 |
| **Peak Shear** | | | |
| Rate of Strain - mm/min | 0.035 | 0.035 | 0.035 |
| Displacement at peak shear stress - mm | 2.10 | 1.50 | 2.40 |
| Peak shear Stress - kPa: | 46 | 75 | 102 |
| **Residual Shear** | | | |
| Rate of Strain - mm/min | 0.070 | 0.070 | 0.070 |
| Displacement at residual shear stress - mm | 30.00 | 30.00 | 29.00 |
| Residual shear Stress - kPa: | 14 | 34 | 55 |
| **Final Consolidation Conditions** | | | |
| Moisture Content - %: | 30 | 27 | 26 |
| Bulk Density - Mg/m3: | 1.98 | 1.99 | 2.04 |
| Dry Density - Mg/m3: | 1.52 | 1.58 | 1.62 |
| **Peak Shear** | | | |
| Angle of Shearing Resistance:(~~θ~~) | 19 | | |
| Effective Cohesion - kPa: | 19 | | |
| **Residual Shear** | | | |
| Angle of Shearing Resistance:(~~θ~~) | 13 | | |
| Effective Cohesion - kPa: | 0 | | |




UKAS TESTING 4043

PSL Professional Soils Laboratory

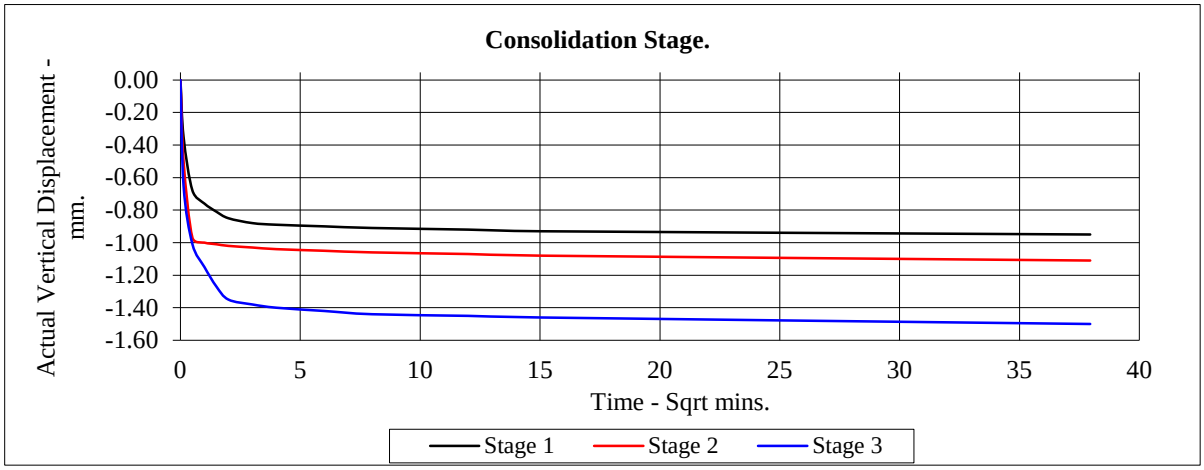
**Wansford to Sutton Dualling Supplementary GI**

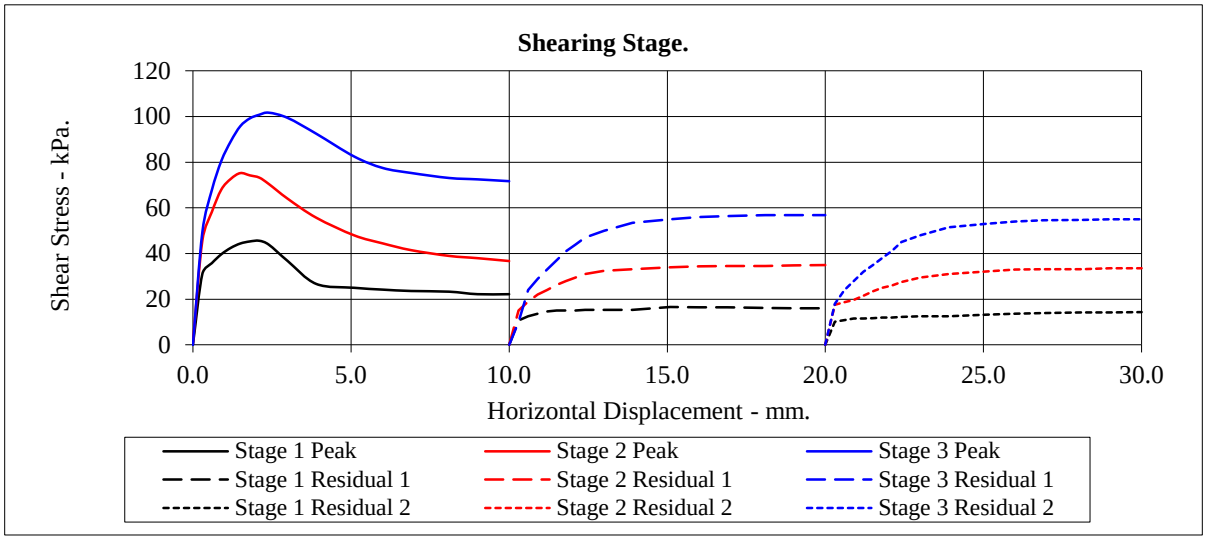
| **Contract No:** |
|---|
| **PSL22/3650** |
| **Client Ref:** |
| **GT0386** |

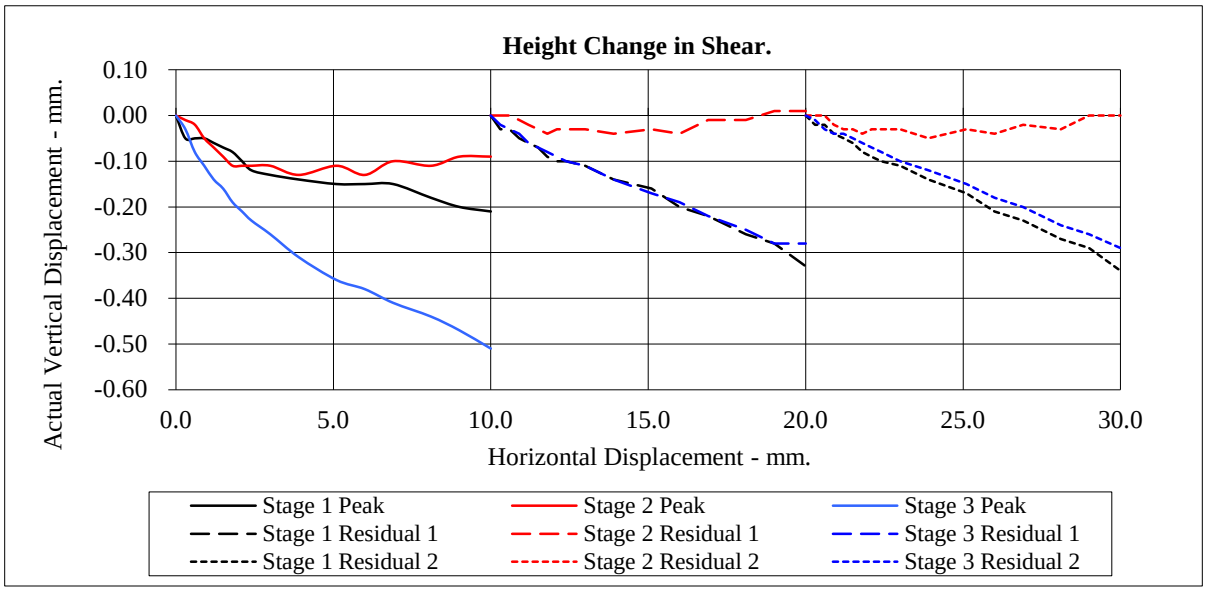
# CONSOLIDATED DRAINED SHEARBOX TEST

## BS1377 : 1990 Part 7 Clause 4

| | | | |
|---|---|---|---|
| Hole Number: | **BH107** | Top Depth: | **7.90** |
| Sample Number: | **105** | Base Depth: | **8.10** |



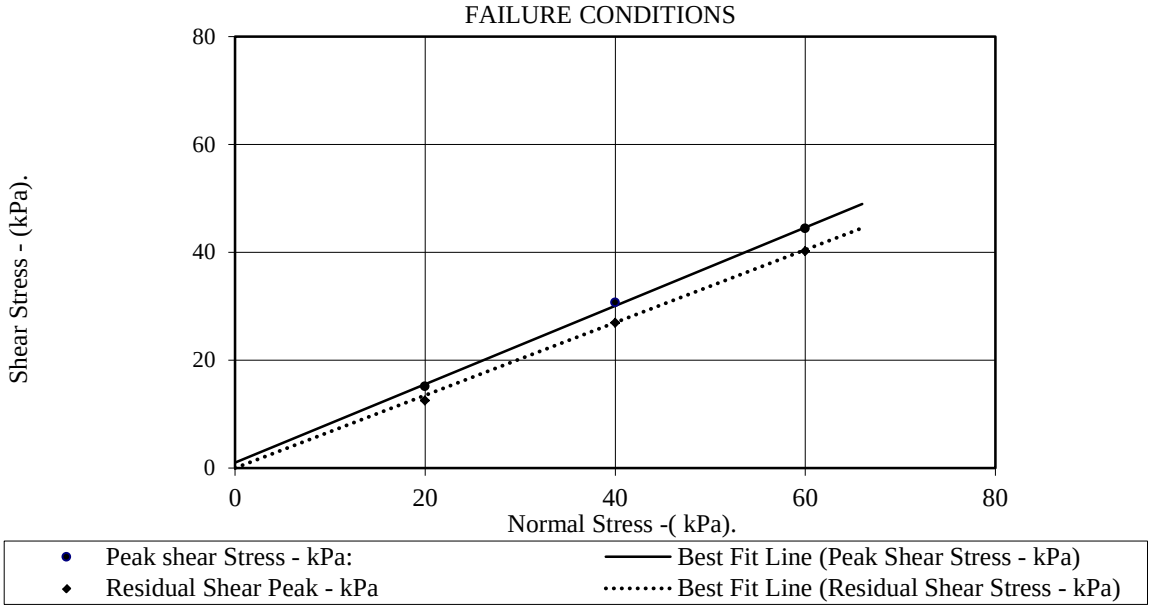



# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377 : 1990 Part 7 Clause 4**

| | | | | |
|---|---|---|---|---|
| Hole Number: | **BH119** | | Top Depth | **2.00** |
| Sample Number: | **103** | | Base Depth | **3.00** |
| Sample Conditions: | Submerged | | Sample Type | **B** |
| Particle Density - Mg/m3: | 2.65 | Assumed | **Remarks:** | |
| Specimen Preparation | Material tested passing 2mm sieve<br>Remoulded using 2.5kg effort | | | |
| Sample Description: | **See summary of soil descriptions** | | | |

| **STAGE** | **1** | **2** | **3** |
|---|---|---|---|
| **Initial Conditions** | | | |
| Height - mm: | 19.99 | 19.99 | 19.99 |
| Length - mm: | 60.05 | 60.05 | 60.05 |
| Moisture Content - %: | 10 | 10 | 10 |
| Bulk Density - Mg/m3: | 1.96 | 1.96 | 1.96 |
| Dry Density - Mg/m3: | 1.78 | 1.78 | 1.78 |
| Voids Ratio: | 0.490 | 0.490 | 0.490 |
| Normal Pressure- kPa | 20 | 40 | 60 |
| **Consolidation Stage** | | | |
| Consolidated Height - mm: | 19.44 | 18.98 | 18.59 |
| **Peak Shear** | | | |
| Rate of Strain - mm/min | 0.045 | 0.045 | 0.045 |
| Displacement at peak shear stress - mm | 6.90 | 3.90 | 10.00 |
| Peak shear Stress - kPa: | 15 | 31 | 44 |
| **Residual Shear** | | | |
| Rate of Strain - mm/min | 0.090 | 0.090 | 0.090 |
| Displacement at residual shear stress - mm | 20.00 | 30.00 | 20.00 |
| Residual shear Stress - kPa: | 13 | 27 | 40 |
| **Final Consolidation Conditions** | | | |
| Moisture Content - %: | 15 | 14 | 14 |
| Bulk Density - Mg/m3: | 2.01 | 2.06 | 2.10 |
| Dry Density - Mg/m3: | 1.75 | 1.80 | 1.85 |
| **Peak Shear** | | | |
| Angle of Shearing Resistance:(θ) | 36 | | |
| Effective Cohesion - kPa: | 1 | | |
| **Residual Shear** | | | |
| Angle of Shearing Resistance:(θ) | 34 | | |
| Effective Cohesion - kPa: | 0 | | |




UKAS TESTING 4043

PSL Professional Soils Laboratory

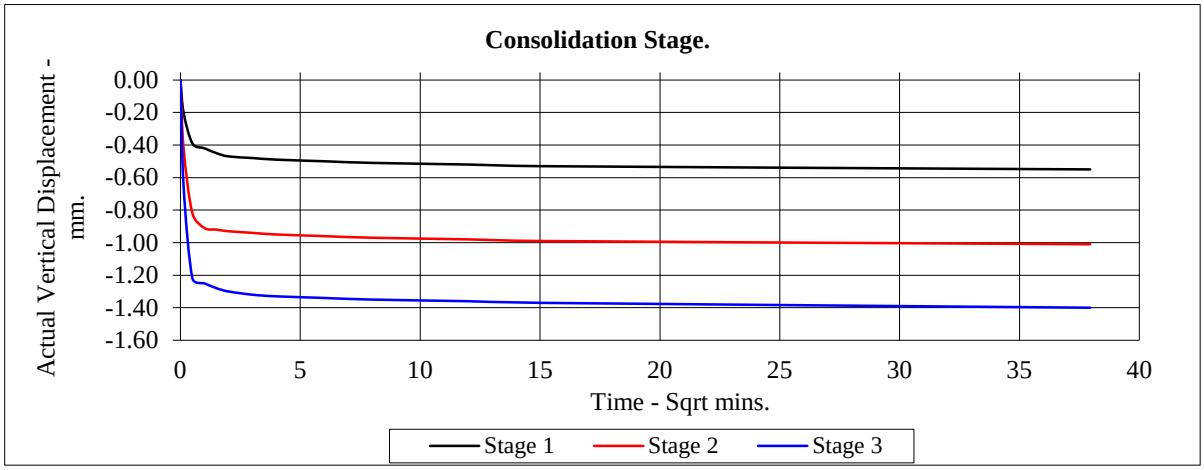
**Wansford to Sutton Dualling Supplementary GI**

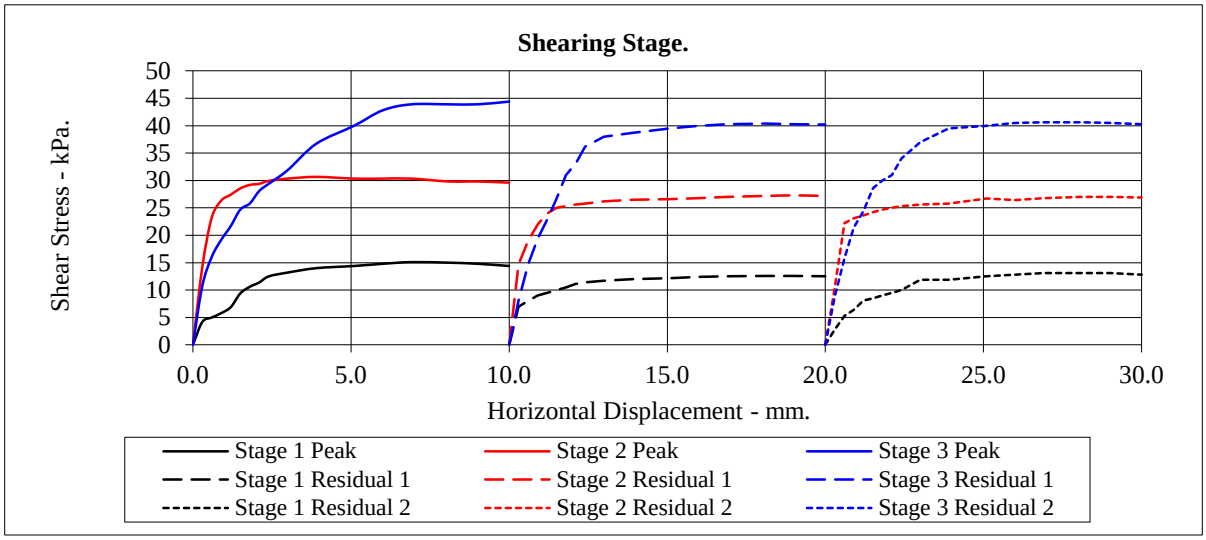
| **Contract No:** |
|---|
| **PSL22/3650** |
| **Client Ref:** |
| **GT0386** |

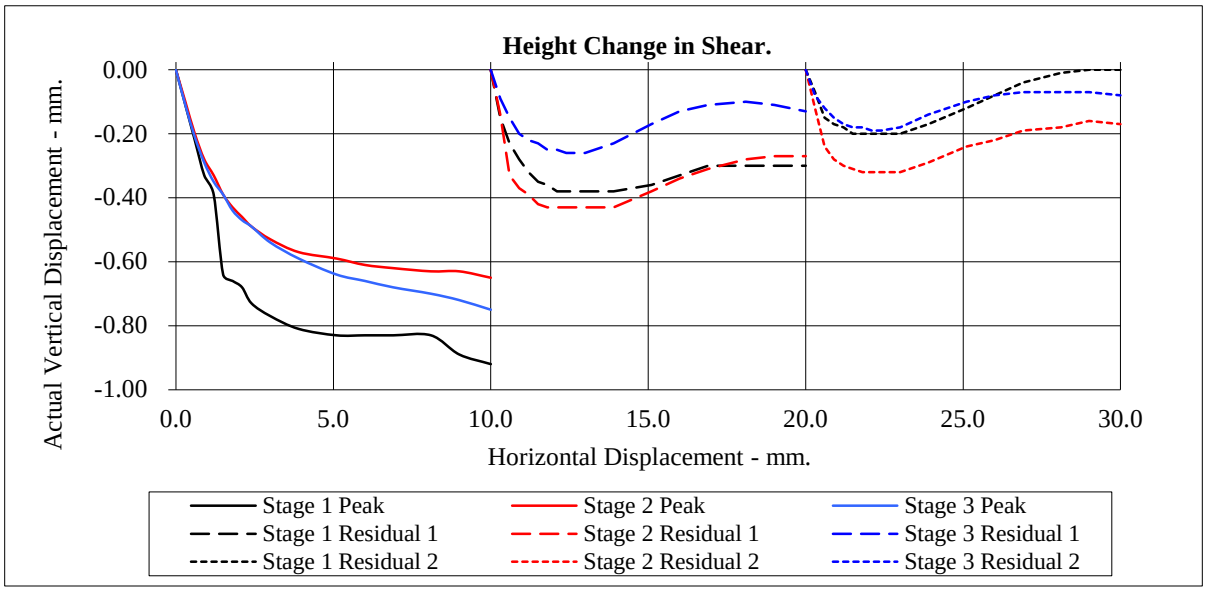
# CONSOLIDATED DRAINED SHEARBOX TEST

## BS1377 : 1990 Part 7 Clause 4

| | | | |
|---|---|---|---|
| Hole Number: | **BH119** | Top Depth: | **2.00** |
| Sample Number: | **103** | Base Depth: | **3.00** |



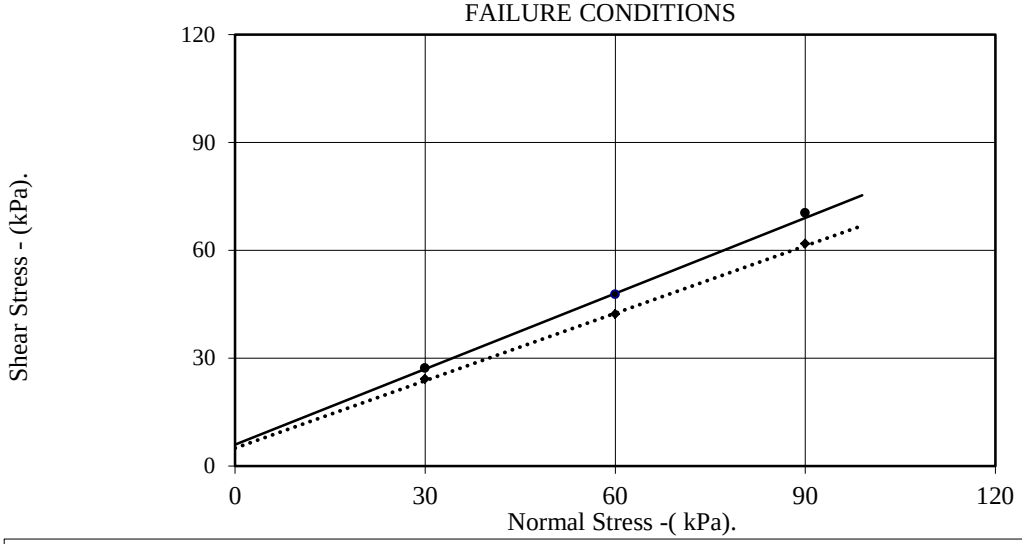
# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377 : 1990 Part 7 Clause 4**

| | | | | |
|---|---|---|---|---|
| Hole Number: | **BH119** | | Top Depth | **3.20** |
| Sample Number: | **104** | | Base Depth | **4.20** |
| Sample Conditions: | Submerged | | Sample Type | **B** |
| Particle Density - Mg/m3: | 2.65 | Assumed | **Remarks:** | |
| Specimen Preparation | Material tested passing 2mm sieve<br>Remoulded using 2.5kg effort | | | |
| Sample Description: | **See summary of soil descriptions** | | | |

| **STAGE** | **1** | **2** | **3** |
|---|---|---|---|
| **Initial Conditions** | | | |
| Height - mm: | 19.99 | 19.99 | 19.99 |
| Length - mm: | 60.05 | 60.05 | 60.05 |
| Moisture Content - %: | 11 | 11 | 11 |
| Bulk Density - Mg/m3: | 1.88 | 1.88 | 1.88 |
| Dry Density - Mg/m3: | 1.69 | 1.69 | 1.69 |
| Voids Ratio: | 0.568 | 0.568 | 0.568 |
| Normal Pressure- kPa | 30 | 60 | 90 |
| **Consolidation Stage** | | | |
| Consolidated Height - mm: | 18.81 | 18.53 | 17.73 |
| **Peak Shear** | | | |
| Rate of Strain - mm/min | 0.052 | 0.052 | 0.052 |
| Displacement at peak shear stress - mm | 10.00 | 3.90 | 8.10 |
| Peak shear Stress - kPa: | 27 | 48 | 70 |
| **Residual Shear** | | | |
| Rate of Strain - mm/min | 0.104 | 0.104 | 0.104 |
| Displacement at residual shear stress - mm | 20.00 | 19.00 | 30.00 |
| Residual shear Stress - kPa: | 24 | 42 | 62 |
| **Final Consolidation Conditions** | | | |
| Moisture Content - %: | 16 | 16 | 15 |
| Bulk Density - Mg/m3: | 1.99 | 2.02 | 2.11 |
| Dry Density - Mg/m3: | 1.71 | 1.75 | 1.84 |
| **Peak Shear** | | | |
| Angle of Shearing Resistance:(θ) | 35 | | |
| Effective Cohesion - kPa: | 6 | | |
| **Residual Shear** | | | |
| Angle of Shearing Resistance:(θ) | 32 | | |
| Effective Cohesion - kPa: | 5 | | |

FAILURE CONDITIONS




UKAS TESTING 4043

PSL Professional Soils Laboratory

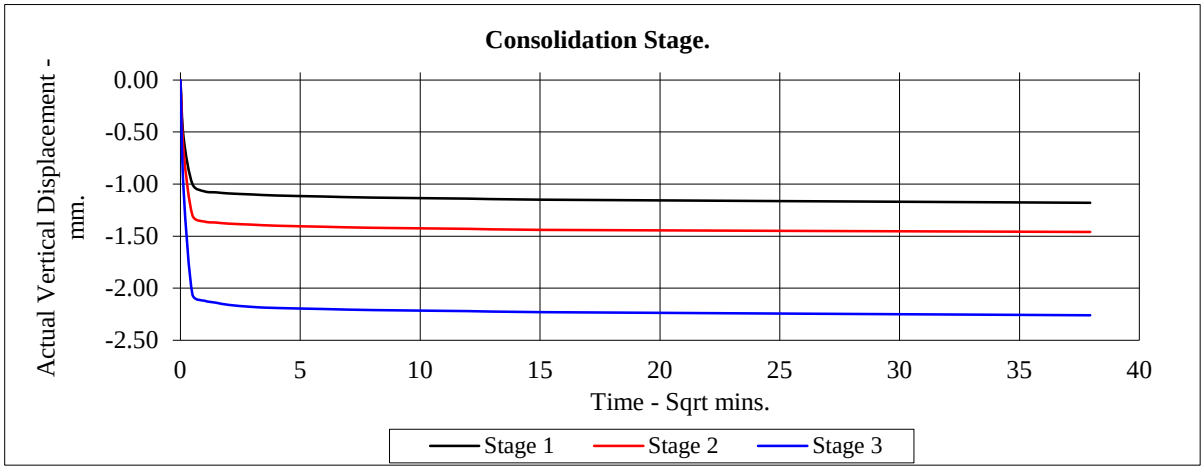
**Wansford to Sutton Dualling Supplementary GI**

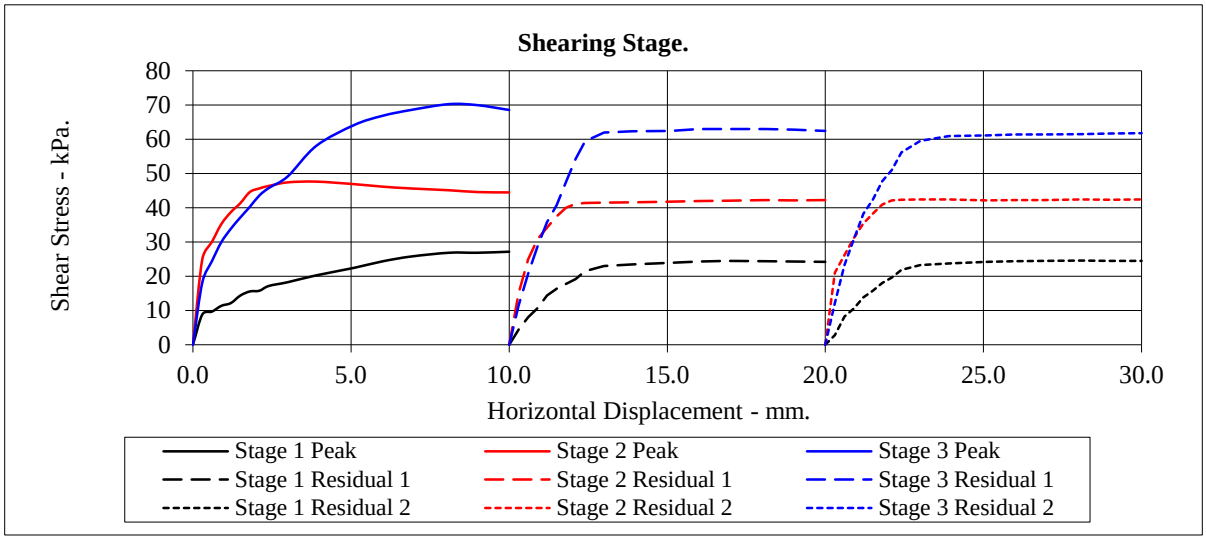
| | |
|---|---|
| **Contract No:** | |
| **PSL22/3650** | |
| **Client Ref:** | |
| **GT0386** | |

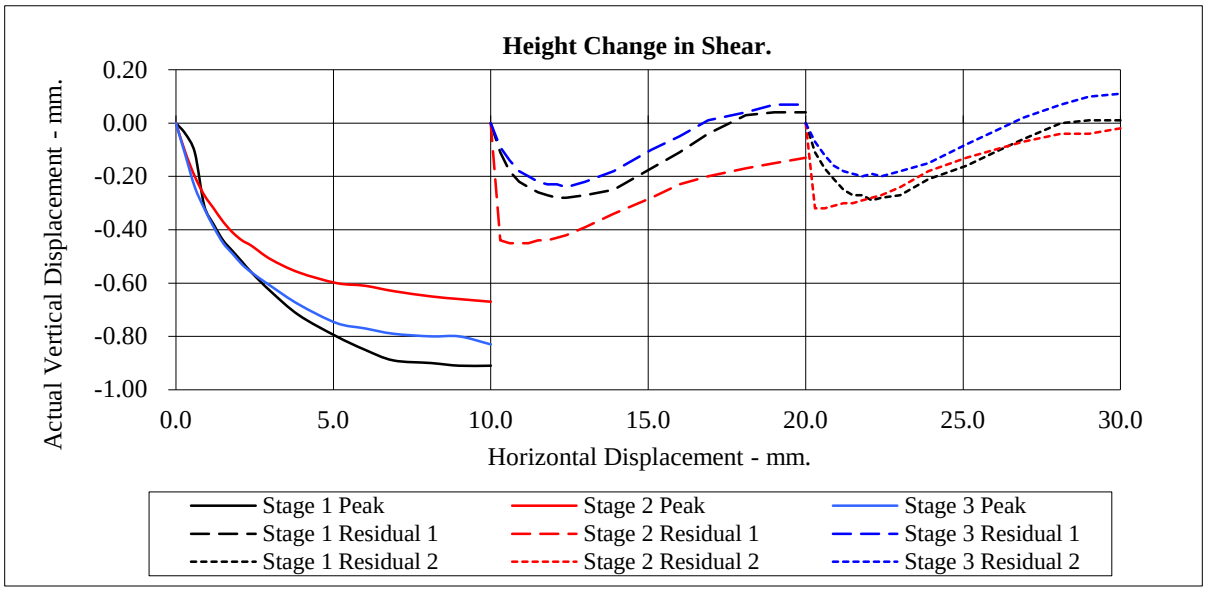
# CONSOLIDATED DRAINED SHEARBOX TEST

## BS1377 : 1990 Part 7 Clause 4

| | | | |
|---|---|---|---|
| Hole Number: | **BH119** | Top Depth: | **3.20** |
| Sample Number: | **104** | Base Depth: | **4.20** |



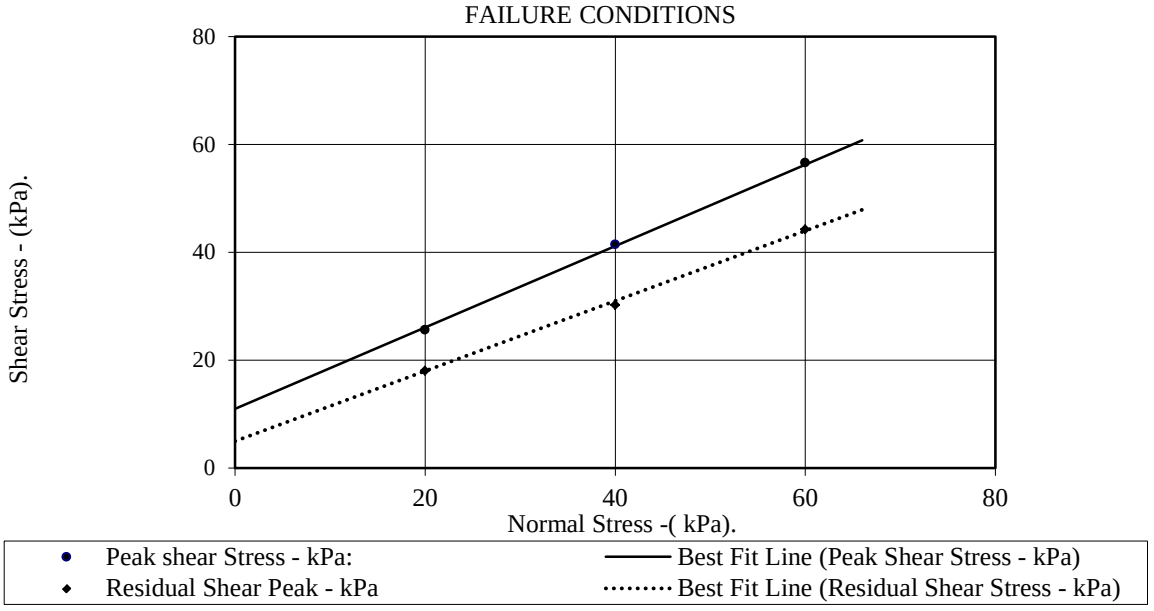



# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377 : 1990 Part 7 Clause 4**

| | | | | |
|---|---|---|---|---|
| Hole Number: | **BH121** | | Top Depth | **2.00** |
| Sample Number: | **5** | | Base Depth | |
| Sample Conditions: | Submerged | | Sample Type | **B** |
| Particle Density - Mg/m3: | 2.65 | Assumed | **Remarks:** | |
| Specimen Preparation | Material tested passing 2mm sieve<br>Remoulded using 2.5kg effort | | | |
| Sample Description: | **See summary of soil descriptions** | | | |

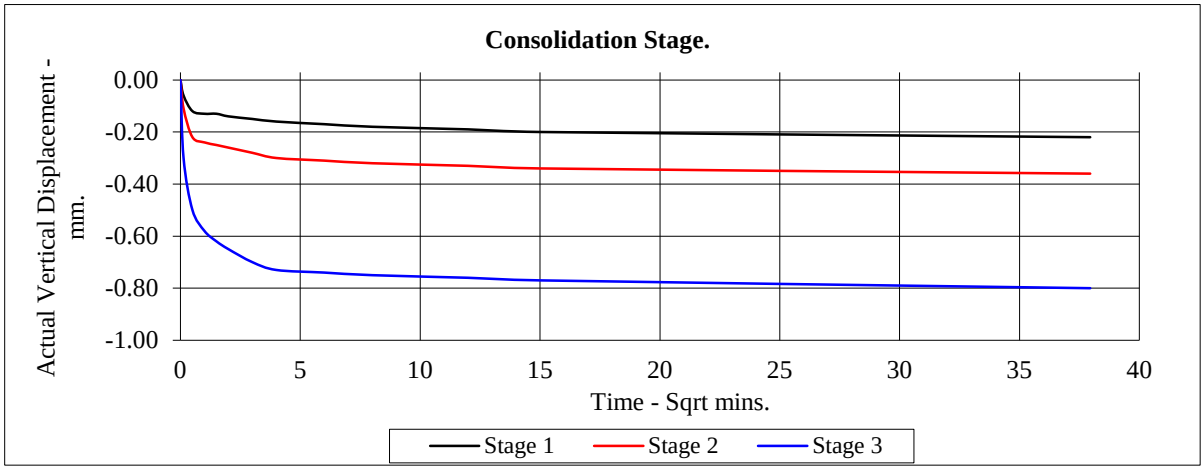
| **STAGE** | **1** | **2** | **3** |
|---|---|---|---|
| **Initial Conditions** | | | |
| Height - mm: | 19.99 | 19.99 | 19.99 |
| Length - mm: | 60.05 | 60.05 | 60.05 |
| Moisture Content - %: | 14 | 14 | 14 |
| Bulk Density - Mg/m3: | 2.03 | 2.03 | 2.03 |
| Dry Density - Mg/m3: | 1.78 | 1.78 | 1.78 |
| Voids Ratio: | 0.492 | 0.492 | 0.492 |
| Normal Pressure- kPa | 20 | 40 | 60 |
| **Consolidation Stage** | | | |
| Consolidated Height - mm: | 19.77 | 19.63 | 19.19 |
| **Peak Shear** | | | |
| Rate of Strain - mm/min | 0.042 | 0.042 | 0.042 |
| Displacement at peak shear stress - mm | 2.40 | 3.00 | 3.00 |
| Peak shear Stress - kPa: | 26 | 41 | 57 |
| **Residual Shear** | | | |
| Rate of Strain - mm/min | 0.084 | 0.084 | 0.084 |
| Displacement at residual shear stress - mm | 18.10 | 29.00 | 20.00 |
| Residual shear Stress - kPa: | 18 | 30 | 44 |
| **Final Consolidation Conditions** | | | |
| Moisture Content - %: | 22 | 21 | 21 |
| Bulk Density - Mg/m3: | 2.05 | 2.06 | 2.11 |
| Dry Density - Mg/m3: | 1.68 | 1.70 | 1.74 |
| **Peak Shear** | | | |
| Angle of Shearing Resistance:(θ) | 37 | | |
| Effective Cohesion - kPa: | 11 | | |
| **Residual Shear** | | | |
| Angle of Shearing Resistance:(θ) | 33 | | |
| Effective Cohesion - kPa: | 5 | | |

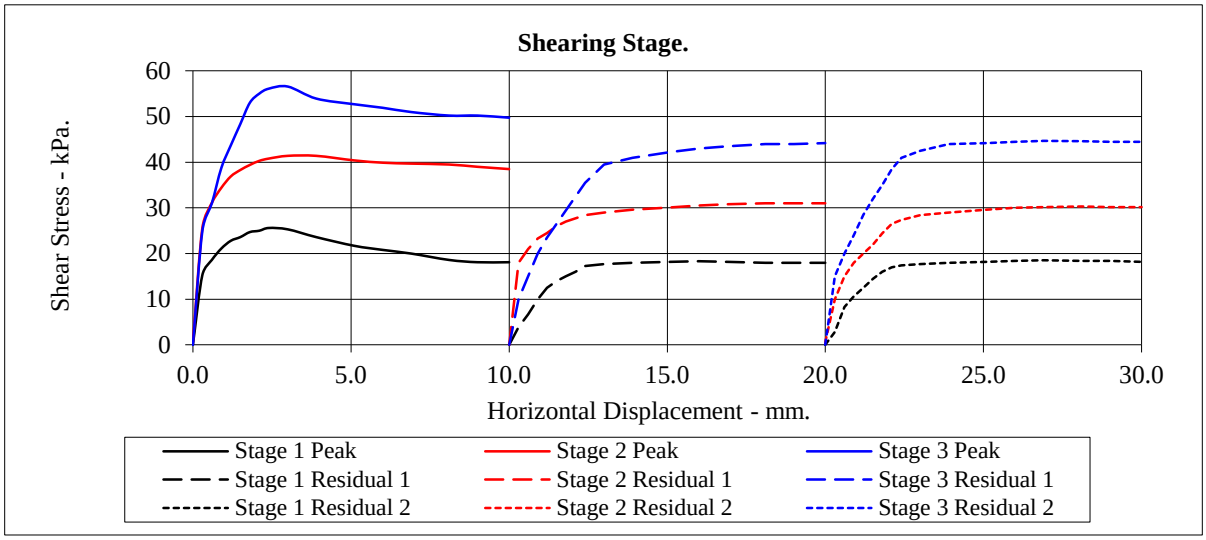


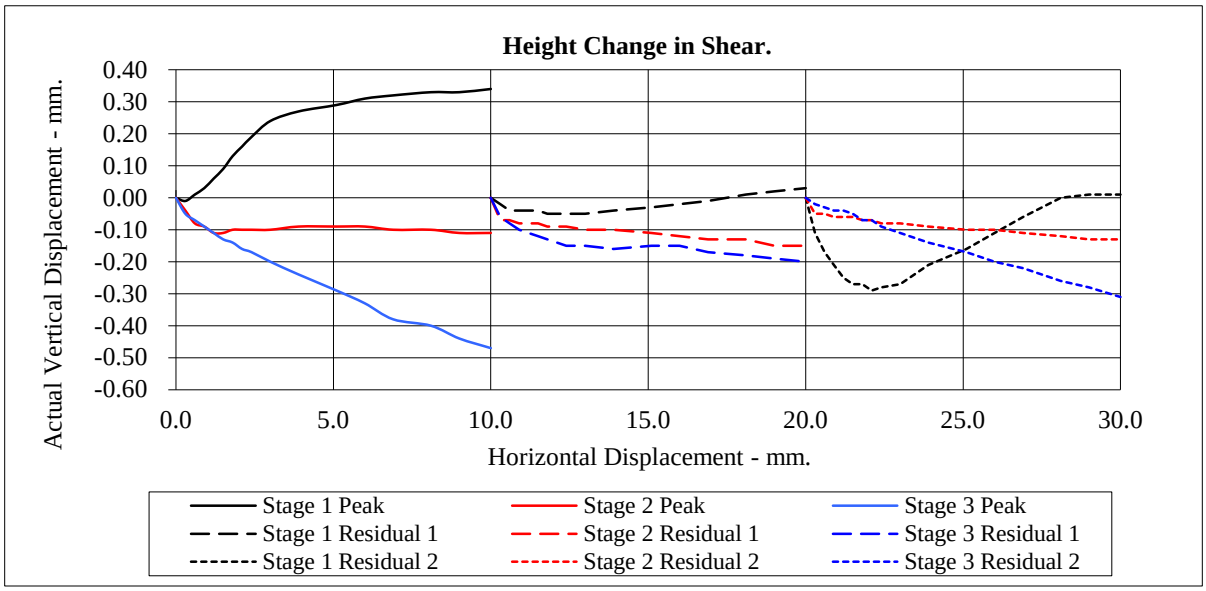
# CONSOLIDATED DRAINED SHEARBOX TEST

## BS1377 : 1990 Part 7 Clause 4

| | | | |
|---|---|---|---|
| Hole Number: | **BH121** | Top Depth: | **2.00** |
| Sample Number: | **5** | Base Depth: | |



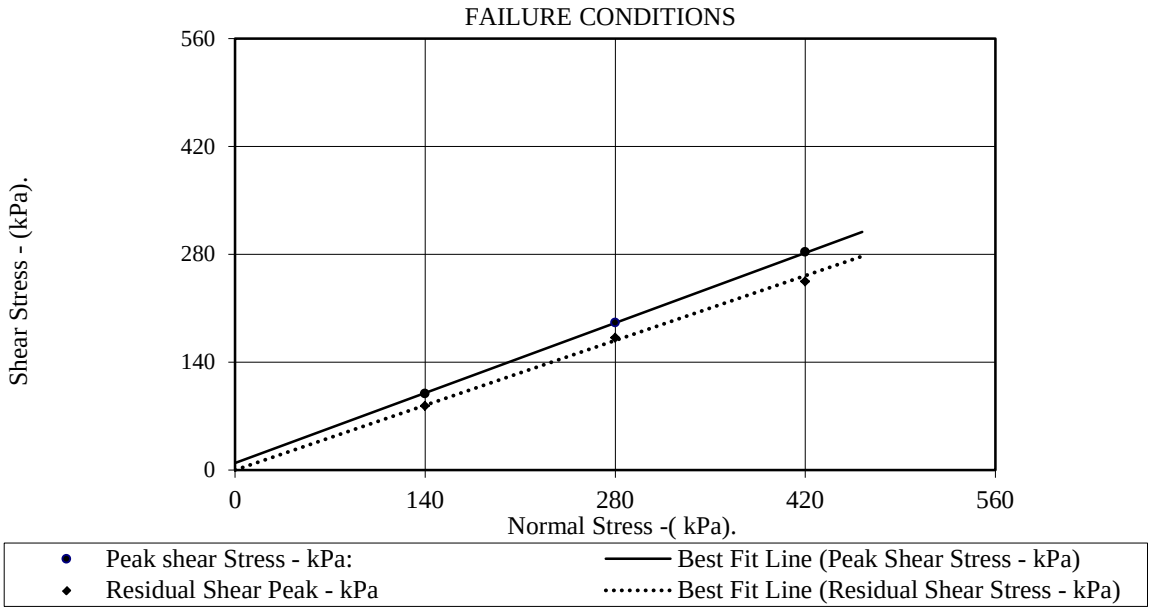



# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377 : 1990 Part 7 Clause 4**

| | | | | |
|---|---|---|---|---|
| Hole Number: | **BH122** | | Top Depth | **14.50** |
| Sample Number: | **114** | | Base Depth | **14.60** |
| Sample Conditions: | Submerged | | Sample Type | **D** |
| Particle Density - Mg/m3: | 2.65 | Assumed | **Remarks:** | |
| Specimen Preparation | Material tested passing 2mm sieve<br>Remoulded using hand tamped effort | | | |
| Sample Description: | **See summary of soil descriptions** | | | |

| **STAGE** | **1** | **2** | **3** |
|---|---|---|---|
| **Initial Conditions** | | | |
| Height - mm: | 19.99 | 19.99 | 19.99 |
| Length - mm: | 60.05 | 60.05 | 60.05 |
| Moisture Content - %: | 7.0 | 7.0 | 7.0 |
| Bulk Density - Mg/m3: | 1.88 | 1.88 | 1.88 |
| Dry Density - Mg/m3: | 1.75 | 1.75 | 1.75 |
| Voids Ratio: | 0.512 | 0.512 | 0.512 |
| Normal Pressure- kPa | 140 | 280 | 420 |
| **Consolidation Stage** | | | |
| Consolidated Height - mm: | 19.80 | 18.89 | 18.61 |
| **Peak Shear** | | | |
| Rate of Strain - mm/min | 0.300 | 0.300 | 0.300 |
| Displacement at peak shear stress - mm | 1.50 | 1.50 | 2.40 |
| Peak shear Stress - kPa: | 99 | 191 | 283 |
| **Residual Shear** | | | |
| Rate of Strain - mm/min | 0.600 | 0.600 | 0.600 |
| Displacement at residual shear stress - mm | 10.00 | 29.00 | 28.10 |
| Residual shear Stress - kPa: | 83 | 172 | 245 |
| **Final Consolidation Conditions** | | | |
| Moisture Content - %: | 18 | 17 | 17 |
| Bulk Density - Mg/m3: | 1.89 | 1.98 | 2.02 |
| Dry Density - Mg/m3: | 1.61 | 1.69 | 1.72 |
| **Peak Shear** | | | |
| Angle of Shearing Resistance:(~~θ~~) | 33 | | |
| Effective Cohesion - kPa: | 9 | | |
| **Residual Shear** | | | |
| Angle of Shearing Resistance:(~~θ~~) | 31 | | |
| Effective Cohesion - kPa: | 0 | | |




UKAS TESTING 4043

PSL Professional Soils Laboratory

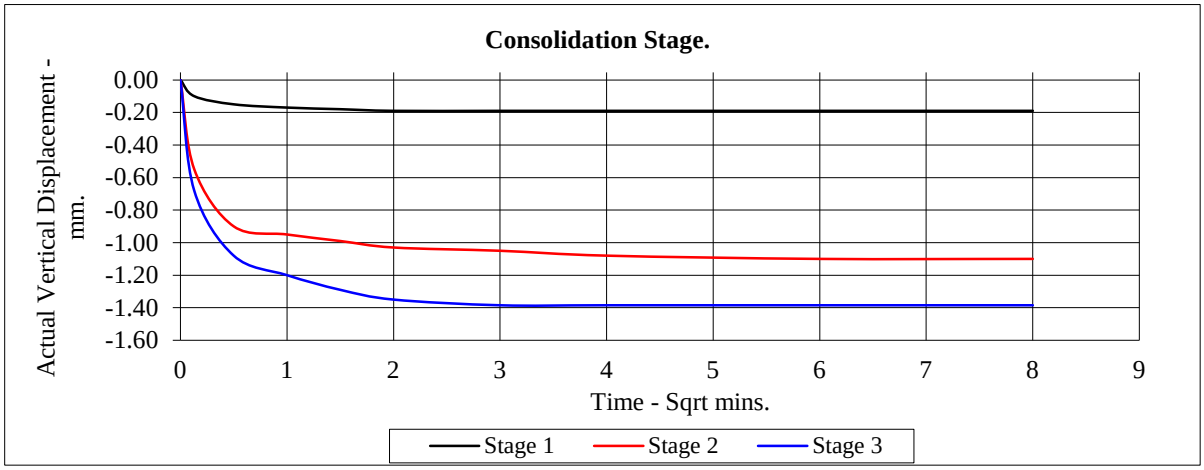
**Wansford to Sutton Dualling Supplementary GI**

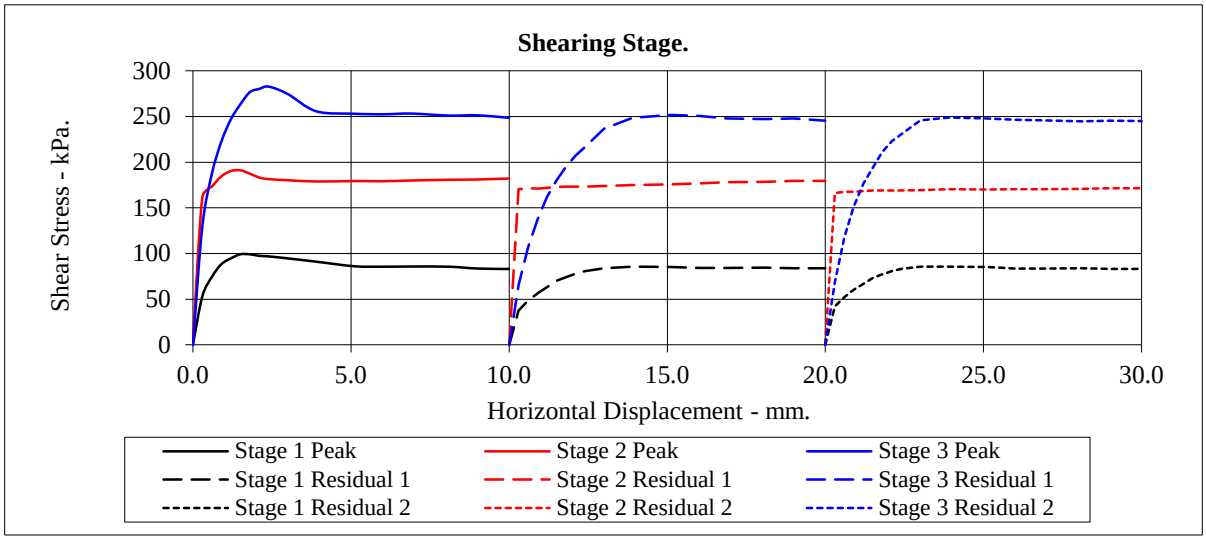
| **Contract No:** |
|---|
| **PSL22/3650** |
| **Client Ref:** |
| **GT0386** |

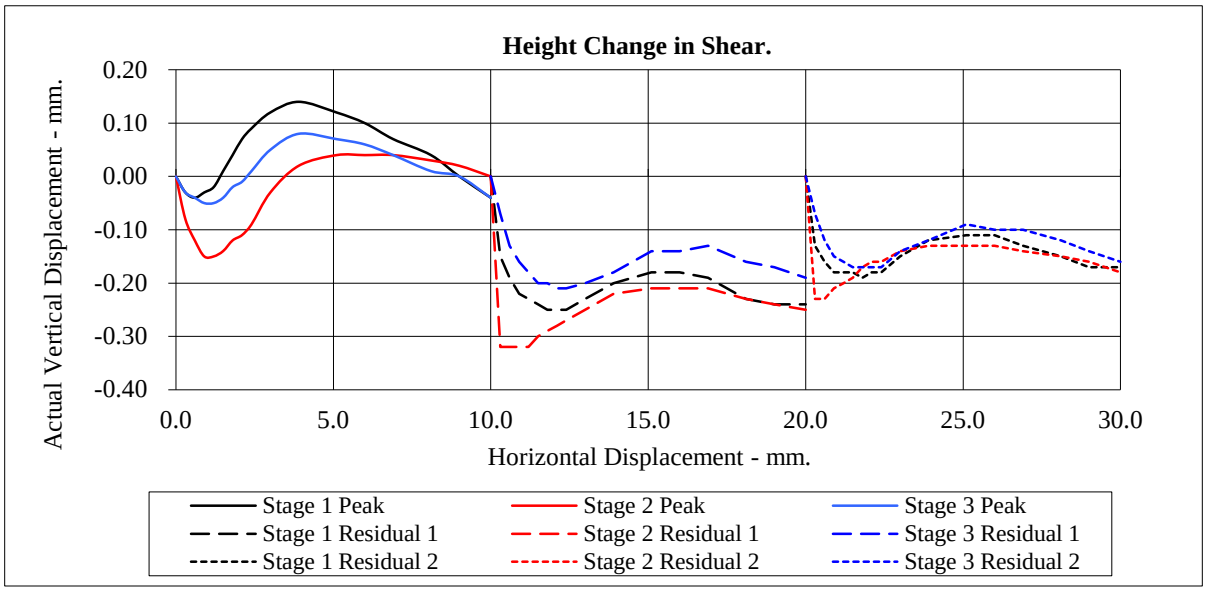
# CONSOLIDATED DRAINED SHEARBOX TEST

## BS1377 : 1990 Part 7 Clause 4

| | | | |
|---|---|---|---|
| Hole Number: | **BH122** | Top Depth: | **14.50** |
| Sample Number: | **114** | Base Depth: | **14.60** |



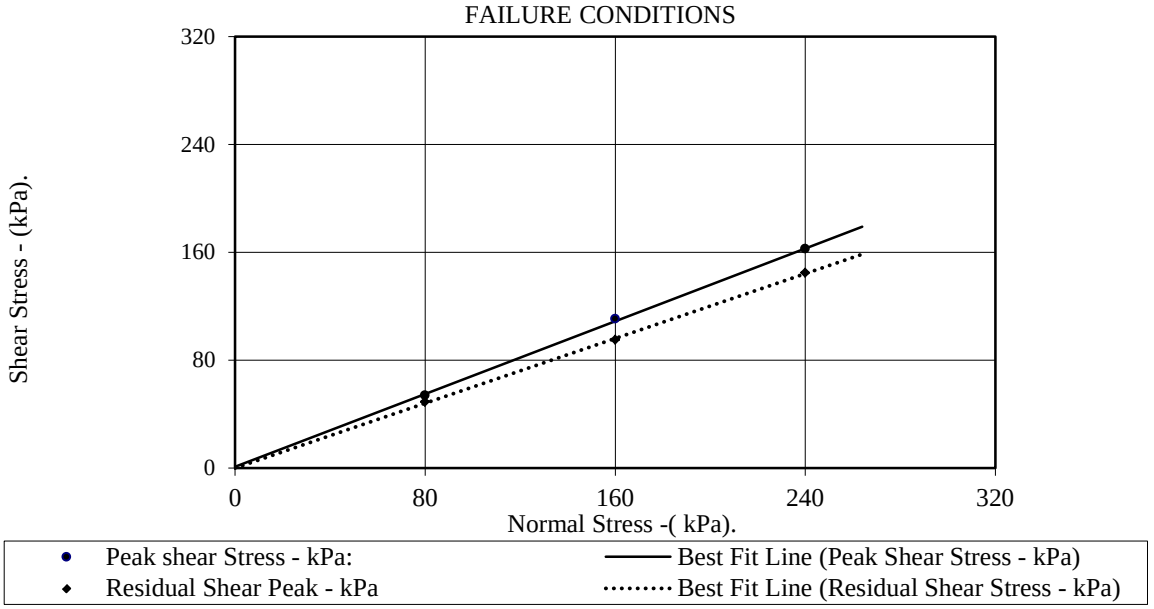



# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377 : 1990 Part 7 Clause 4**

| | | | | |
|---|---|---|---|---|
| Hole Number: | **BH131** | | Top Depth | **8.20** |
| Sample Number: | **111** | | Base Depth | **8.60** |
| Sample Conditions: | Submerged | | Sample Type | **B** |
| Particle Density - Mg/m3: | 2.65 | Assumed | **Remarks:** | |
| Specimen Preparation | Material tested passing 2mm sieve<br>Remoulded using hand tamped effort | | | |
| Sample Description: | **See summary of soil descriptions** | | | |

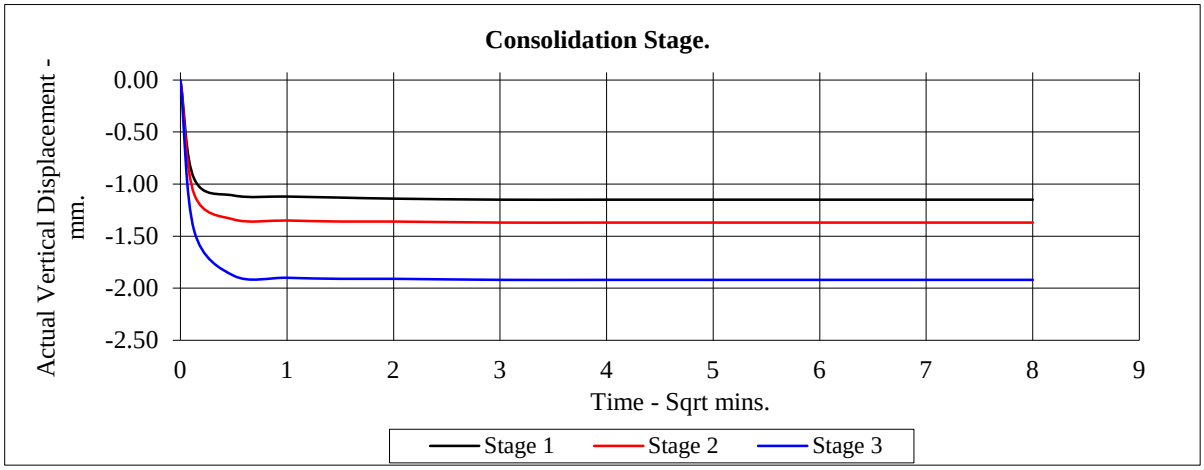
| **STAGE** | **1** | **2** | **3** |
|---|---|---|---|
| **Initial Conditions** | | | |
| Height - mm: | 19.99 | 19.99 | 19.99 |
| Length - mm: | 60.05 | 60.05 | 60.05 |
| Moisture Content - %: | 9.2 | 9.2 | 9.2 |
| Bulk Density - Mg/m3: | 1.88 | 1.88 | 1.88 |
| Dry Density - Mg/m3: | 1.72 | 1.72 | 1.72 |
| Voids Ratio: | 0.541 | 0.541 | 0.541 |
| Normal Pressure- kPa | 80 | 160 | 240 |
| **Consolidation Stage** | | | |
| Consolidated Height - mm: | 18.84 | 18.62 | 18.07 |
| **Peak Shear** | | | |
| Rate of Strain - mm/min | 0.300 | 0.300 | 0.300 |
| Displacement at peak shear stress - mm | 6.00 | 8.10 | 8.10 |
| Peak shear Stress - kPa: | 54 | 111 | 162 |
| **Residual Shear** | | | |
| Rate of Strain - mm/min | 0.600 | 0.600 | 0.600 |
| Displacement at residual shear stress - mm | 29.00 | 20.00 | 30.00 |
| Residual shear Stress - kPa: | 49 | 95 | 145 |
| **Final Consolidation Conditions** | | | |
| Moisture Content - %: | 16 | 15 | 15 |
| Bulk Density - Mg/m3: | 1.99 | 2.02 | 2.08 |
| Dry Density - Mg/m3: | 1.71 | 1.75 | 1.80 |
| **Peak Shear** | | | |
| Angle of Shearing Resistance:(θ) | 34 | | |
| Effective Cohesion - kPa: | 1 | | |
| **Residual Shear** | | | |
| Angle of Shearing Resistance:(θ) | 31 | | |
| Effective Cohesion - kPa: | 0 | | |

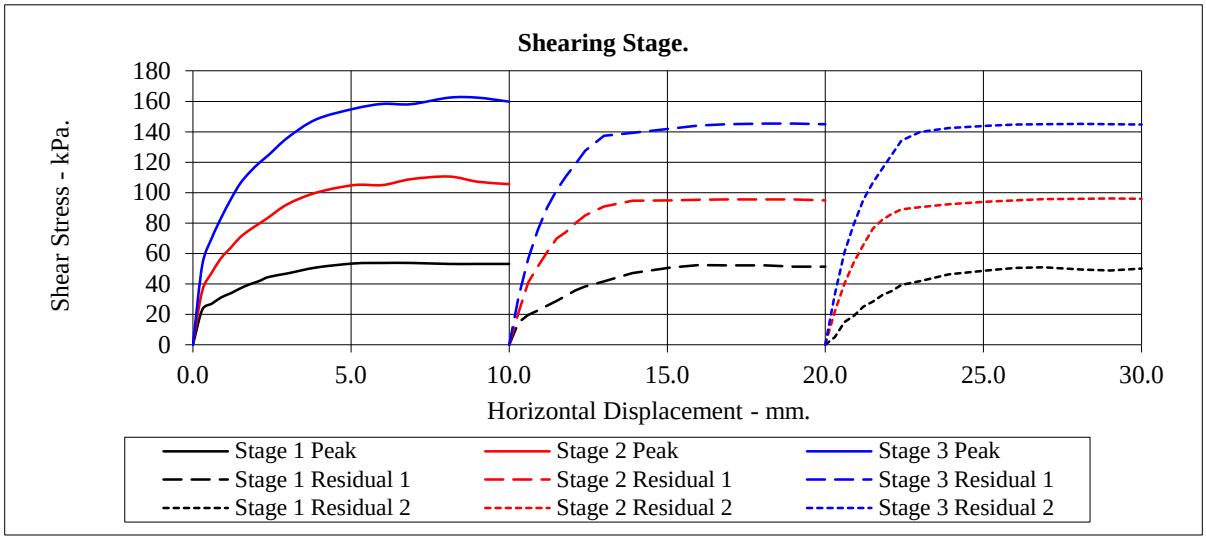


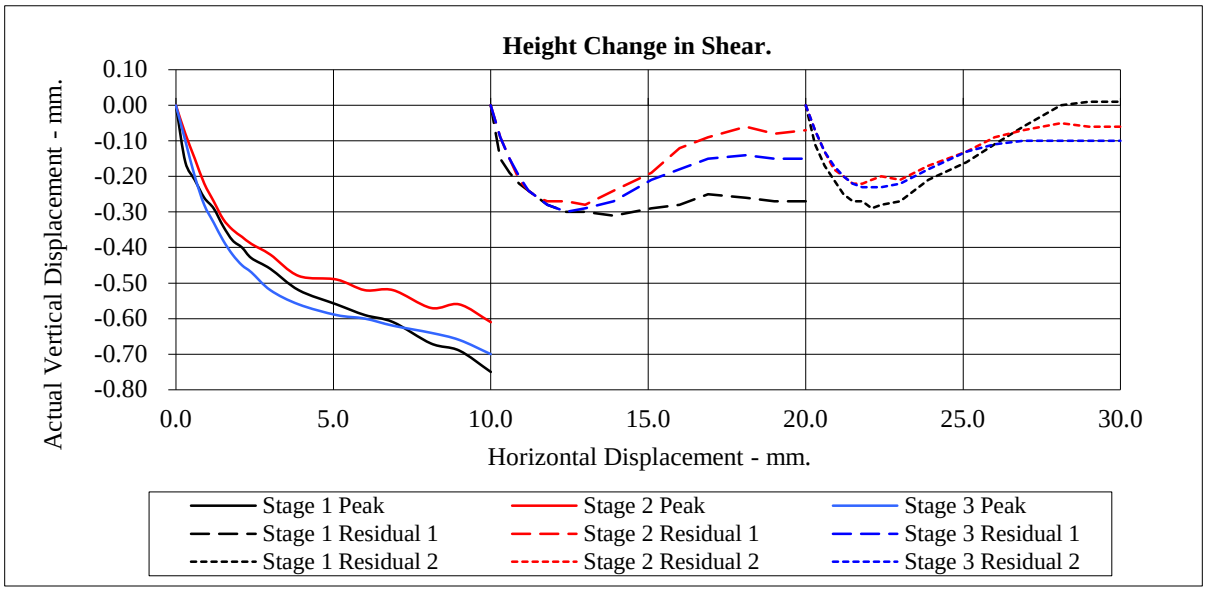
# CONSOLIDATED DRAINED SHEARBOX TEST

## BS1377 : 1990 Part 7 Clause 4

| | | | |
|---|---|---|---|
| Hole Number: | **BH131** | Top Depth: | **8.20** |
| Sample Number: | **111** | Base Depth: | **8.60** |




UKAS TESTING 4043

PSL Professional Soils Laboratory

**Wansford to Sutton Dualling Supplementary GI**

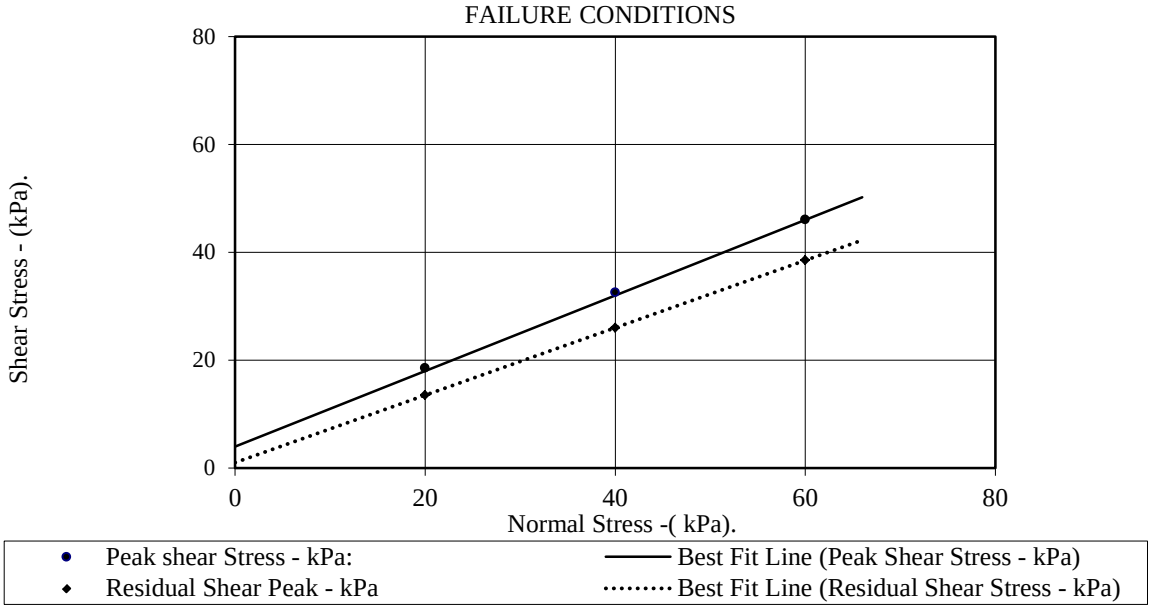
| |
|---|
| **Contract No:** |
| **PSL22/3650** |
| **Client Ref:** |
| **GT0386** |

# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377 : 1990 Part 7 Clause 4**

| | | | | |
|---|---|---|---|---|
| Hole Number: | **BH112** | | Top Depth | **2.20** |
| Sample Number: | **103** | | Base Depth | **2.40** |
| Sample Conditions: | Submerged | | Sample Type | **B** |
| Particle Density - Mg/m3: | 2.65 | Assumed | **Remarks:** | |
| Specimen Preparation | Material tested passing 2mm sieve<br>Remoulded using hand tamped effort | | | |
| Sample Description: | **See summary of soil descriptions** | | | |

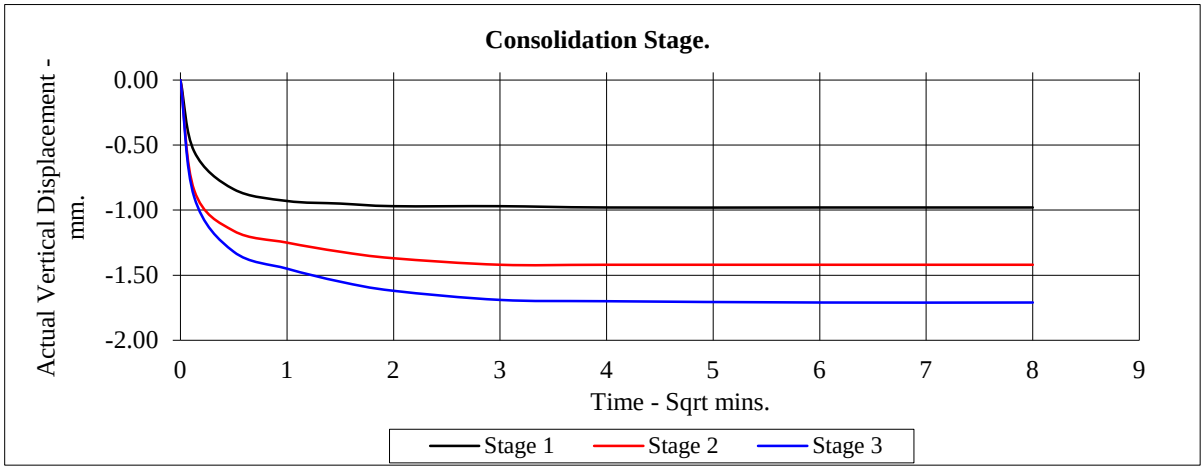
| **STAGE** | **1** | **2** | **3** |
|---|---|---|---|
| **Initial Conditions** | | | |
| Height - mm: | 19.99 | 19.99 | 19.99 |
| Length - mm: | 60.05 | 60.05 | 60.05 |
| Moisture Content - %: | 11 | 11 | 11 |
| Bulk Density - Mg/m3: | 1.97 | 1.97 | 1.97 |
| Dry Density - Mg/m3: | 1.78 | 1.78 | 1.78 |
| Voids Ratio: | 0.491 | 0.491 | 0.491 |
| Normal Pressure- kPa | 20 | 40 | 60 |
| **Consolidation Stage** | | | |
| Consolidated Height - mm: | 19.01 | 18.57 | 18.28 |
| **Peak Shear** | | | |
| Rate of Strain - mm/min | 0.300 | 0.300 | 0.300 |
| Displacement at peak shear stress - mm | 3.90 | 10.00 | 5.10 |
| Peak shear Stress - kPa: | 19 | 33 | 46 |
| **Residual Shear** | | | |
| Rate of Strain - mm/min | 0.600 | 0.600 | 0.600 |
| Displacement at residual shear stress - mm | 20.00 | 20.00 | 20.00 |
| Residual shear Stress - kPa: | 14 | 26 | 39 |
| **Final Consolidation Conditions** | | | |
| Moisture Content - %: | 18 | 18 | 17 |
| Bulk Density - Mg/m3: | 2.07 | 2.12 | 2.16 |
| Dry Density - Mg/m3: | 1.75 | 1.80 | 1.84 |
| **Peak Shear** | | | |
| Angle of Shearing Resistance:(θ) | 35 | | |
| Effective Cohesion - kPa: | 4 | | |
| **Residual Shear** | | | |
| Angle of Shearing Resistance:(θ) | 32 | | |
| Effective Cohesion - kPa: | 1 | | |

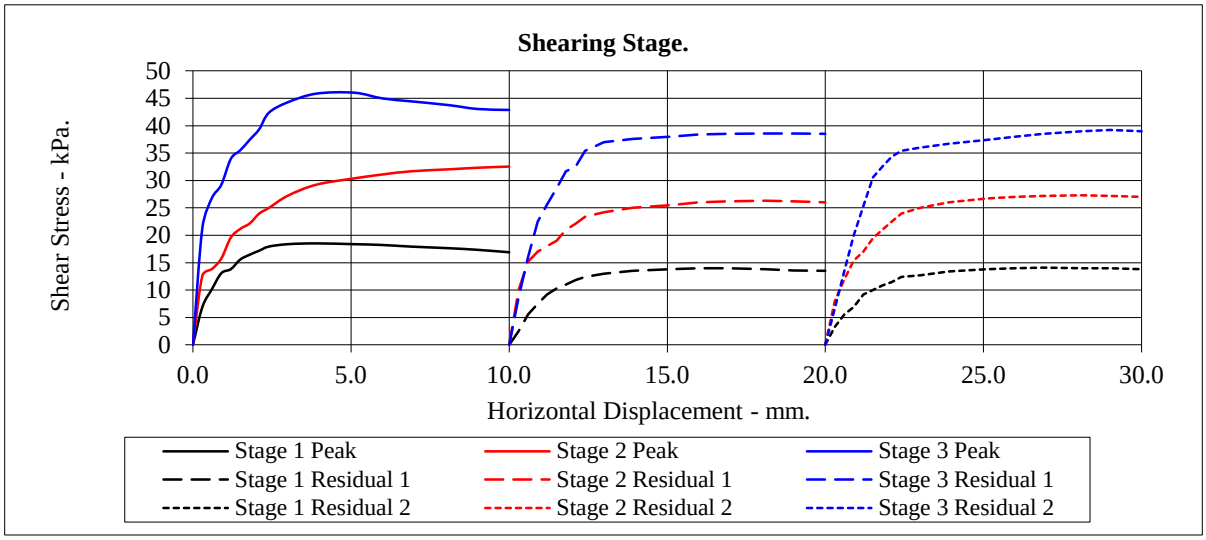


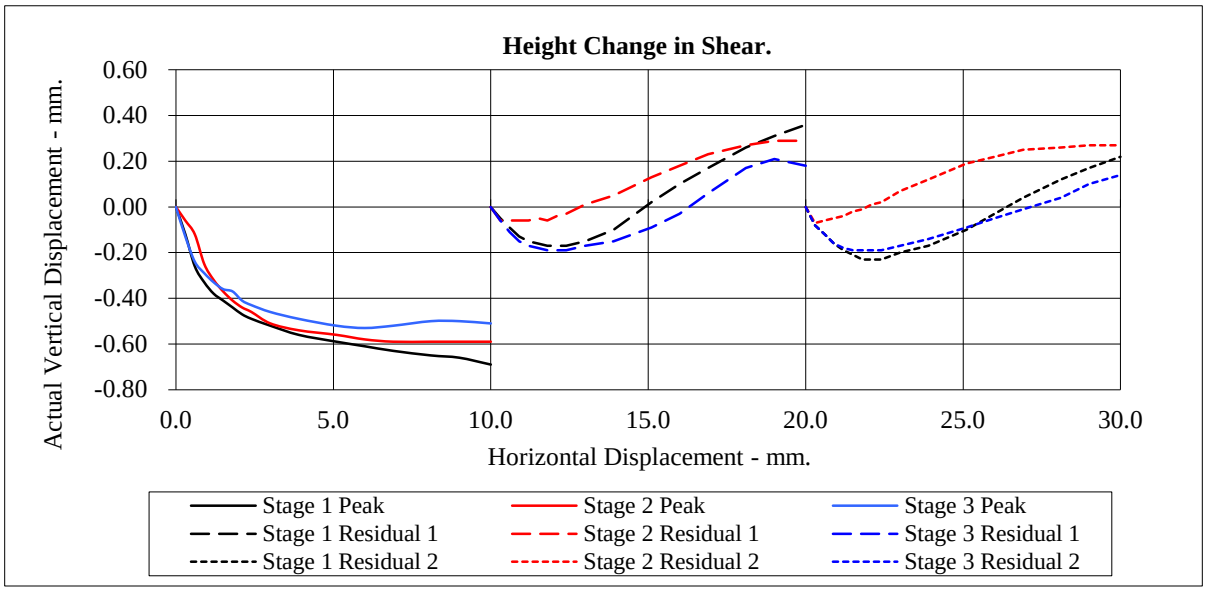
# CONSOLIDATED DRAINED SHEARBOX TEST

## BS1377 : 1990 Part 7 Clause 4

| | | | |
|---|---|---|---|
| Hole Number: | **BH112** | Top Depth: | **2.20** |
| Sample Number: | **103** | Base Depth: | **2.40** |



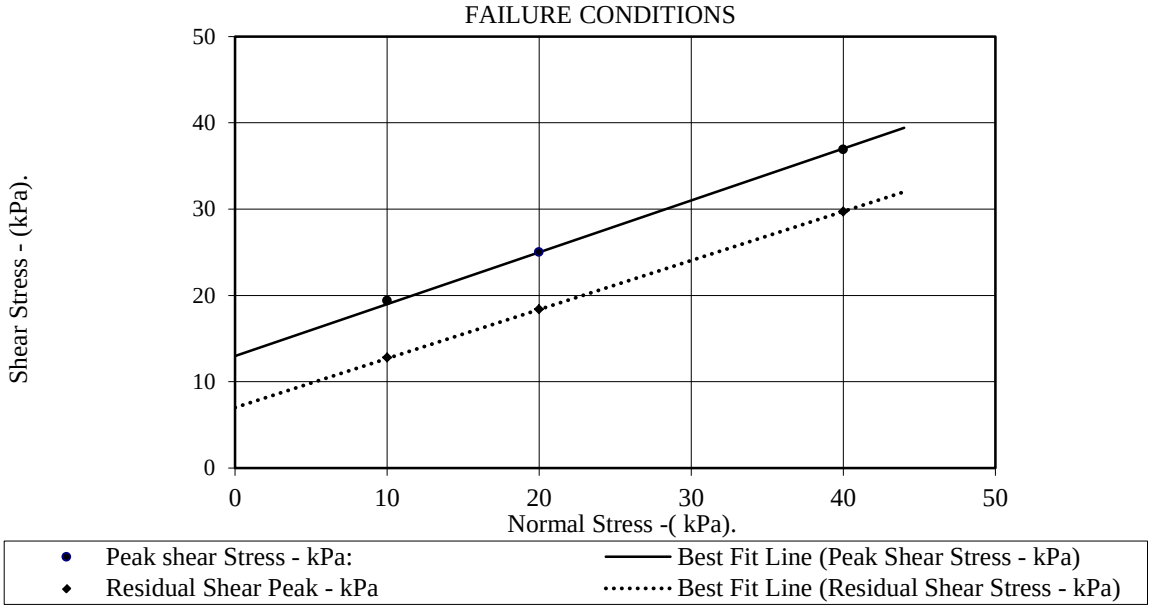

| | | |
|---|---|---|
| UKAS TESTING 4043 / PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** | **Contract No:** PSL22/3650 **Client Ref:** GT0386 |

# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377 : 1990 Part 7 Clause 4**

| | | | | |
|---|---|---|---|---|
| Hole Number: | **TP127** | | Top Depth | **1.00** |
| Sample Number: | **5** | | Base Depth | **1.30** |
| Sample Conditions: | Submerged | | Sample Type | **B** |
| Particle Density - Mg/m3: | 2.65 | Assumed | **Remarks:** | |
| Specimen Preparation | Material tested passing 2mm sieve<br>Remoulded using 2.5kg effort | | | |
| Sample Description: | **See summary of soil descriptions** | | | |

| **STAGE** | **1** | **2** | **3** |
|---|---|---|---|
| **Initial Conditions** | | | |
| Height - mm: | 19.99 | 19.99 | 19.99 |
| Length - mm: | 60.05 | 60.05 | 60.05 |
| Moisture Content - %: | 19 | 19 | 19 |
| Bulk Density - Mg/m3: | 2.05 | 2.05 | 2.05 |
| Dry Density - Mg/m3: | 1.72 | 1.72 | 1.72 |
| Voids Ratio: | 0.538 | 0.538 | 0.538 |
| Normal Pressure- kPa | 10 | 20 | 40 |
| **Consolidation Stage** | | | |
| Consolidated Height - mm: | 19.76 | 19.60 | 19.43 |
| **Peak Shear** | | | |
| Rate of Strain - mm/min | 0.051 | 0.051 | 0.051 |
| Displacement at peak shear stress - mm | 6.90 | 3.00 | 3.90 |
| Peak shear Stress - kPa: | 19 | 25 | 37 |
| **Residual Shear** | | | |
| Rate of Strain - mm/min | 0.102 | 0.102 | 0.102 |
| Displacement at residual shear stress - mm | 29.00 | 29.00 | 29.00 |
| Residual shear Stress - kPa: | 13 | 18 | 30 |
| **Final Consolidation Conditions** | | | |
| Moisture Content - %: | 25 | 23 | 22 |
| Bulk Density - Mg/m3: | 2.07 | 2.09 | 2.11 |
| Dry Density - Mg/m3: | 1.65 | 1.71 | 1.73 |
| **Peak Shear** | | | |
| Angle of Shearing Resistance:(θ) | 31 | | |
| Effective Cohesion - kPa: | 13 | | |
| **Residual Shear** | | | |
| Angle of Shearing Resistance:(θ) | 30 | | |
| Effective Cohesion - kPa: | 7 | | |




UKAS TESTING 4043

PSL Professional Soils Laboratory

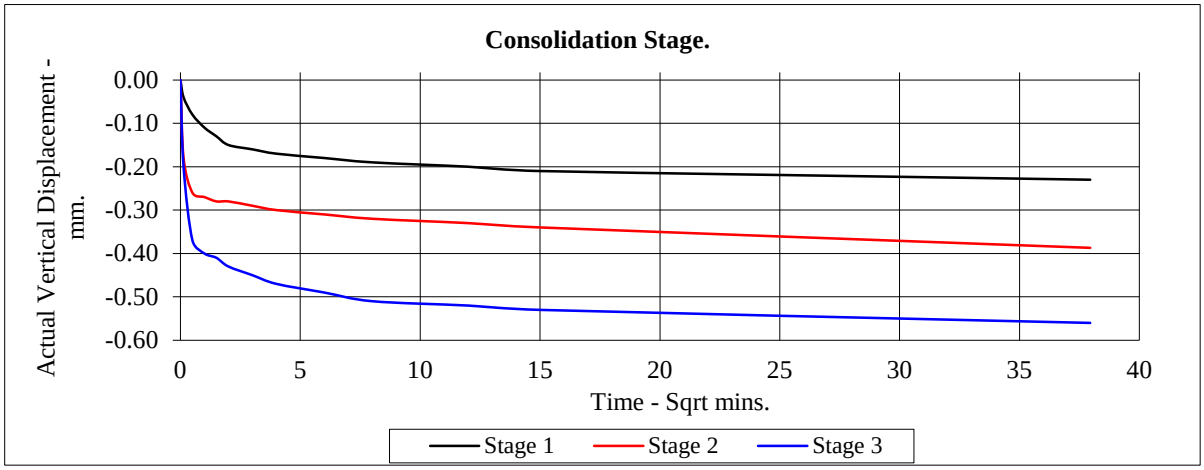
**Wansford to Sutton Dualling Supplementary GI**

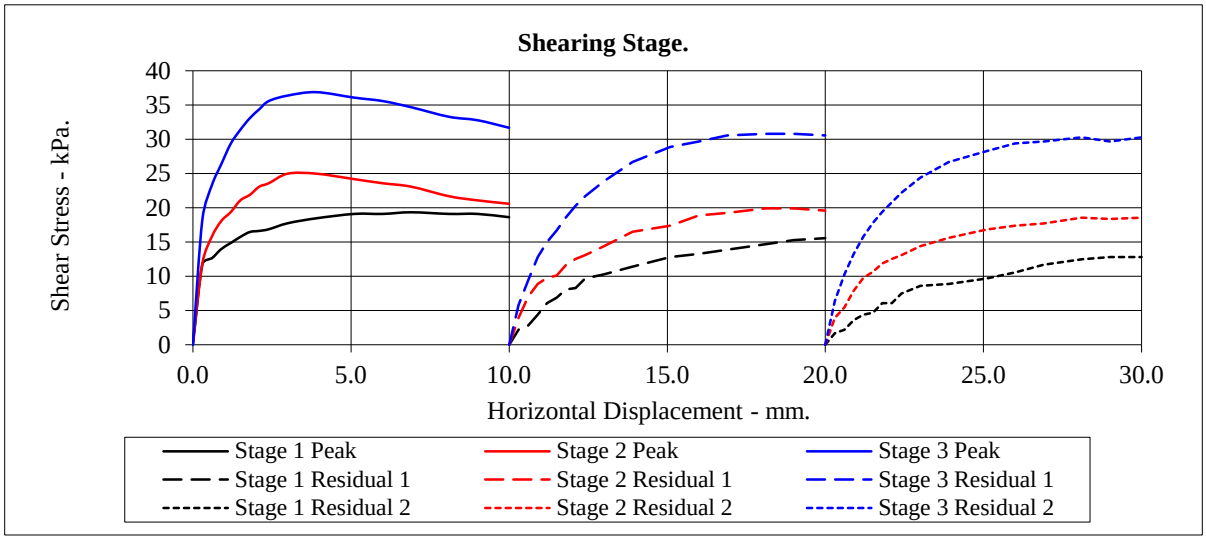
| **Contract No:** |
|---|
| **PSL22/3650** |
| **Client Ref:** |
| **GT0386** |

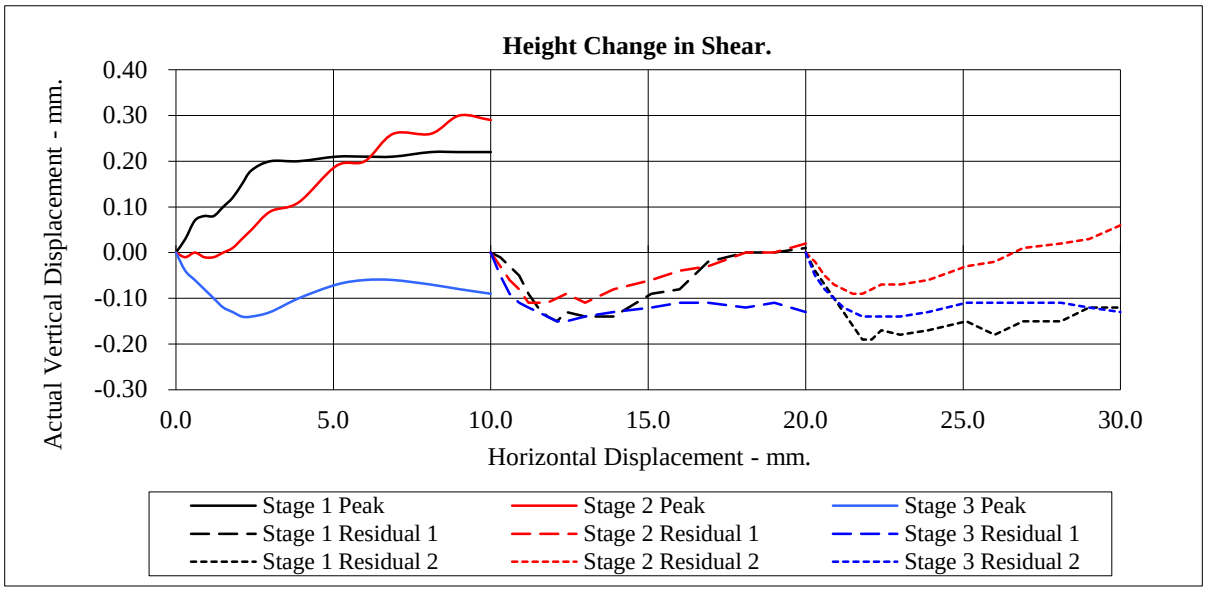
# CONSOLIDATED DRAINED SHEARBOX TEST

## BS1377 : 1990 Part 7 Clause 4

| | | | |
|---|---|---|---|
| Hole Number: | **TP127** | Top Depth: | **1.00** |
| Sample Number: | **5** | Base Depth: | **1.30** |



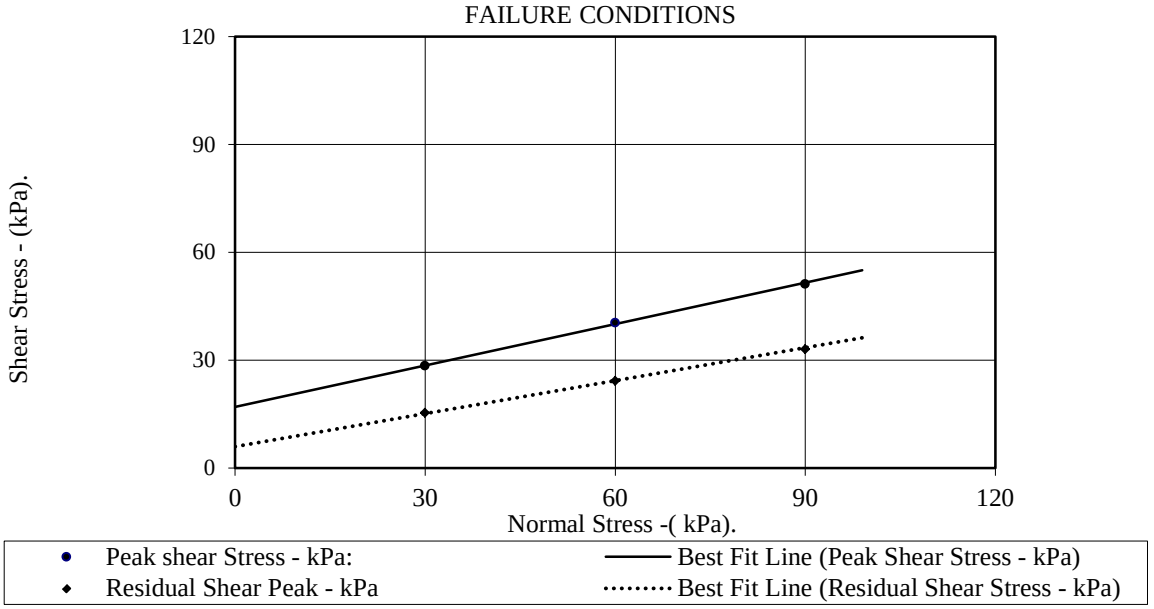



# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377 : 1990 Part 7 Clause 4**

| | | | | |
|---|---|---|---|---|
| Hole Number: | **TP127** | | Top Depth | **2.70** |
| Sample Number: | **7** | | Base Depth | **3.00** |
| Sample Conditions: | Submerged | | Sample Type | **B** |
| Particle Density - Mg/m3: | 2.65 | Assumed | **Remarks:** | |
| Specimen Preparation | Material tested passing 2mm sieve<br>Remoulded using 2.5kg effort | | | |
| Sample Description: | **See summary of soil descriptions** | | | |

| **STAGE** | **1** | **2** | **3** |
|---|---|---|---|
| **Initial Conditions** | | | |
| Height - mm: | 19.99 | 19.99 | 19.99 |
| Length - mm: | 60.05 | 60.05 | 60.05 |
| Moisture Content - %: | 27 | 27 | 27 |
| Bulk Density - Mg/m3: | 1.88 | 1.88 | 1.88 |
| Dry Density - Mg/m3: | 1.48 | 1.48 | 1.48 |
| Voids Ratio: | 0.792 | 0.792 | 0.792 |
| Normal Pressure- kPa | 30 | 60 | 90 |
| **Consolidation Stage** | | | |
| Consolidated Height - mm: | 19.64 | 19.01 | 18.39 |
| **Peak Shear** | | | |
| Rate of Strain - mm/min | 0.035 | 0.035 | 0.035 |
| Displacement at peak shear stress - mm | 1.50 | 1.20 | 1.80 |
| Peak shear Stress - kPa: | 28 | 40 | 51 |
| **Residual Shear** | | | |
| Rate of Strain - mm/min | 0.070 | 0.070 | 0.070 |
| Displacement at residual shear stress - mm | 19.00 | 20.00 | 18.10 |
| Residual shear Stress - kPa: | 15 | 24 | 33 |
| **Final Consolidation Conditions** | | | |
| Moisture Content - %: | 33 | 32 | 31 |
| Bulk Density - Mg/m3: | 1.91 | 1.98 | 2.04 |
| Dry Density - Mg/m3: | 1.44 | 1.49 | 1.55 |
| **Peak Shear** | | | |
| Angle of Shearing Resistance:(θ) | 21 | | |
| Effective Cohesion - kPa: | 17 | | |
| **Residual Shear** | | | |
| Angle of Shearing Resistance:(θ) | 17 | | |
| Effective Cohesion - kPa: | 6 | | |




UKAS TESTING 4043

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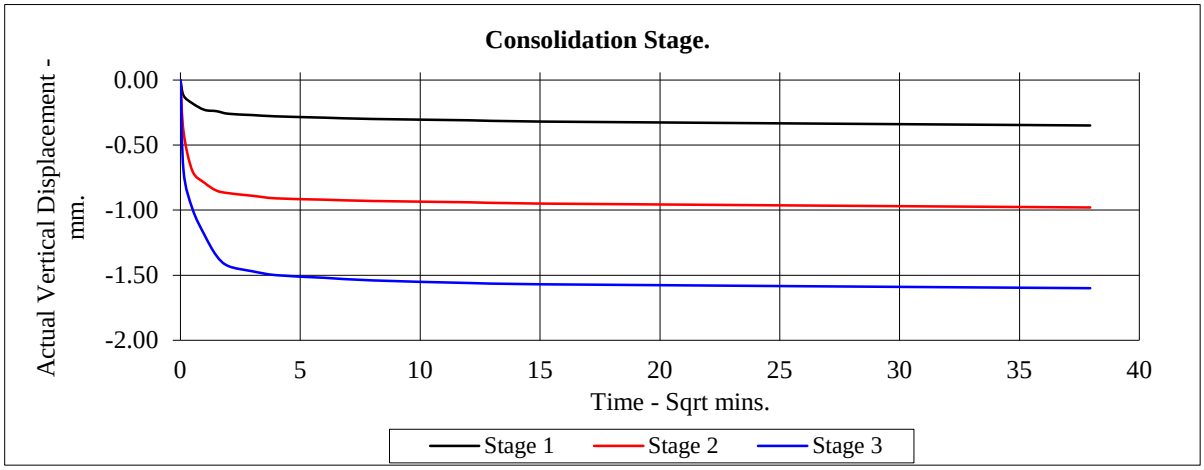
**Wansford to Sutton Dualling Supplementary GI**

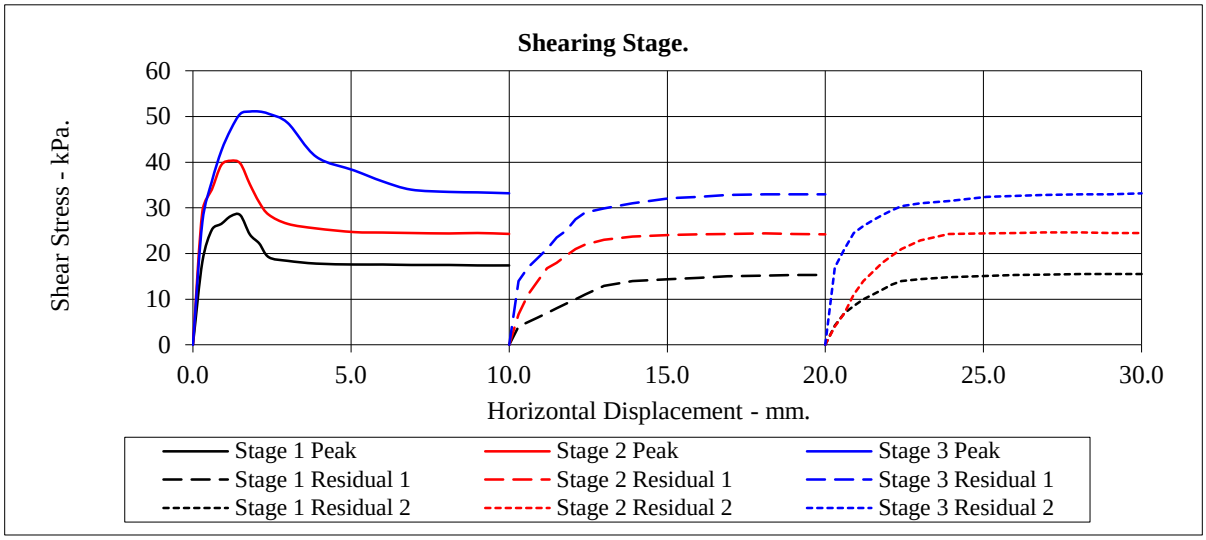
| | |
|---|---|
| **Contract No:** | |
| **PSL22/3650** | |
| **Client Ref:** | |
| **GT0386** | |

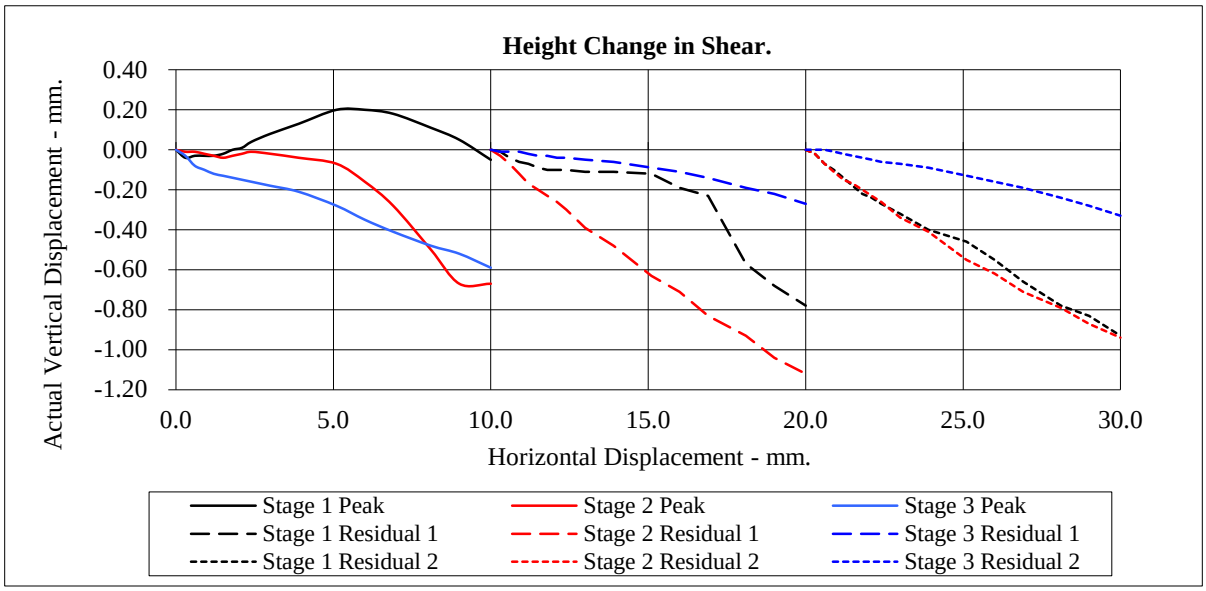
# CONSOLIDATED DRAINED SHEARBOX TEST

## BS1377 : 1990 Part 7 Clause 4

| | | | |
|---|---|---|---|
| Hole Number: | **TP127** | Top Depth: | **2.70** |
| Sample Number: | **7** | Base Depth: | **3.00** |

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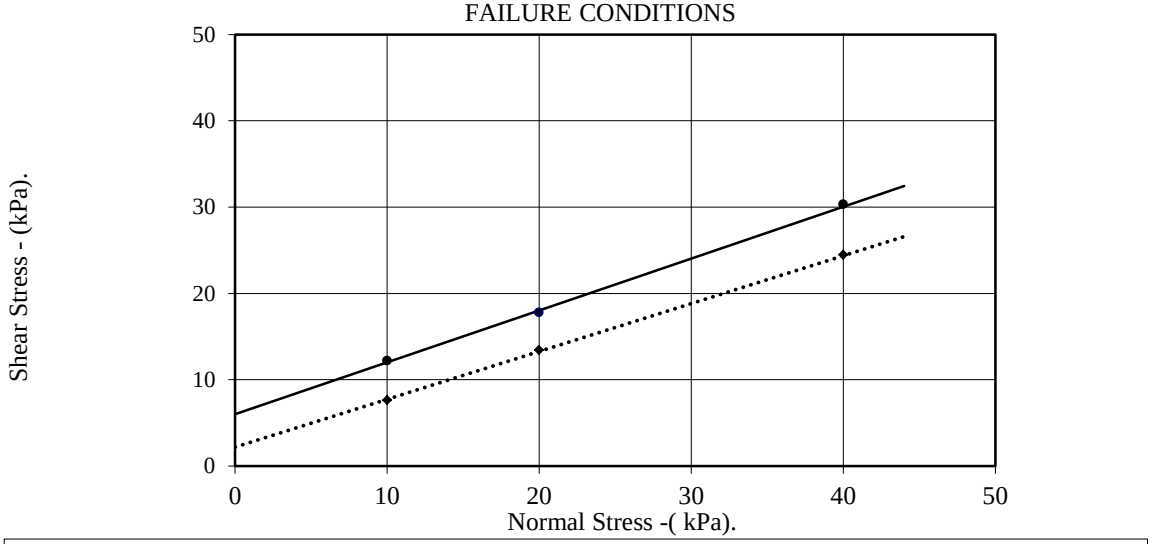
# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377 : 1990 Part 7 Clause 4**

| | | | | |
|---|---|---|---|---|
| Hole Number: | **TP129** | | Top Depth | **1.00** |
| Sample Number: | **5** | | Base Depth | **1.30** |
| Sample Condtions: | Submerged | | Sample Type | **B** |
| Particle Density - Mg/m3: | 2.65 | Assumed | **Remarks:** | |
| Specimen Preparation | Material tested passing 2mm sieve<br>Remoulded using 2.5kg effort | | | |
| Sample Description: | **See summary of soil descriptions** | | | |

| **STAGE** | **1** | **2** | **3** |
|---|---|---|---|
| **Initial Conditions** | | | |
| Height - mm: | 19.99 | 19.99 | 19.99 |
| Length - mm: | 60.05 | 60.05 | 60.05 |
| Moisture Content - %: | 35 | 35 | 35 |
| Bulk Density - Mg/m3: | 1.82 | 1.82 | 1.82 |
| Dry Density - Mg/m3: | 1.35 | 1.35 | 1.35 |
| Voids Ratio: | 0.961 | 0.961 | 0.961 |
| Normal Pressure- kPa | 10 | 20 | 40 |
| **Consolidation Stage** | | | |
| Consolidated Height - mm: | 19.63 | 19.23 | 18.70 |
| **Peak Shear** | | | |
| Rate of Strain - mm/min | 0.049 | 0.049 | 0.049 |
| Displacement at peak shear stress - mm | 2.10 | 2.10 | 3.00 |
| Peak shear Stress - kPa: | 12 | 18 | 30 |
| **Residual Shear** | | | |
| Rate of Strain - mm/min | 0.098 | 0.098 | 0.098 |
| Displacement at residual shear stress - mm | 20.00 | 18.10 | 19.00 |
| Residual shear Stress - kPa: | 8 | 13 | 24 |
| **Final Consolidation Conditions** | | | |
| Moisture Content - %: | 38 | 37 | 36 |
| Bulk Density - Mg/m3: | 1.86 | 1.90 | 1.95 |
| Dry Density - Mg/m3: | 1.35 | 1.38 | 1.43 |
| **Peak Shear** | | | |
| Angle of Shearing Resistance:(~~θ~~) | 31 | | |
| Effective Cohesion - kPa: | 6 | | |
| **Residual Shear** | | | |
| Angle of Shearing Resistance:(~~θ~~) | 29 | | |
| Effective Cohesion - kPa: | 2 | | |

FAILURE CONDITIONS

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**Wansford to Sutton Dualling Supplementary GI**

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| **PSL22/3650** |
| **Client Ref:** |
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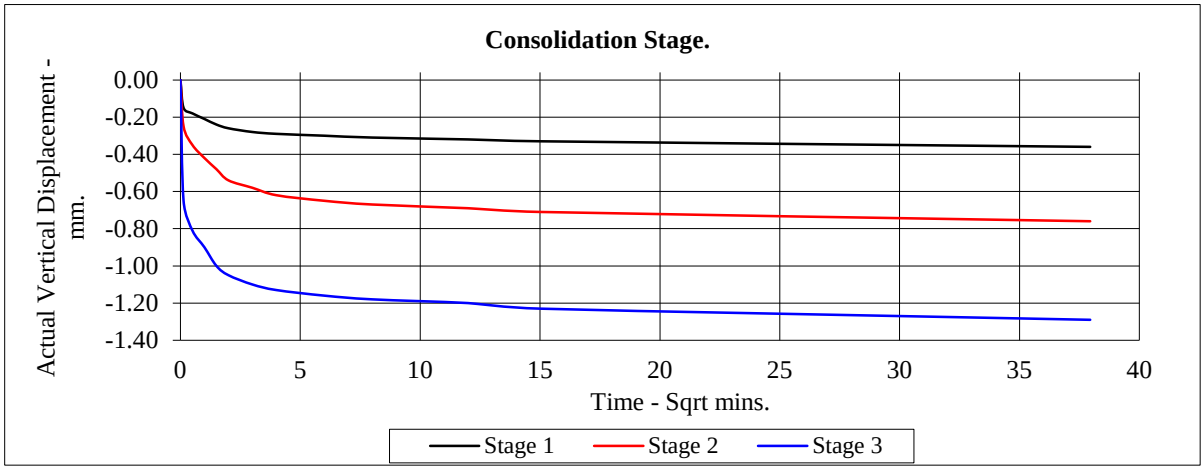
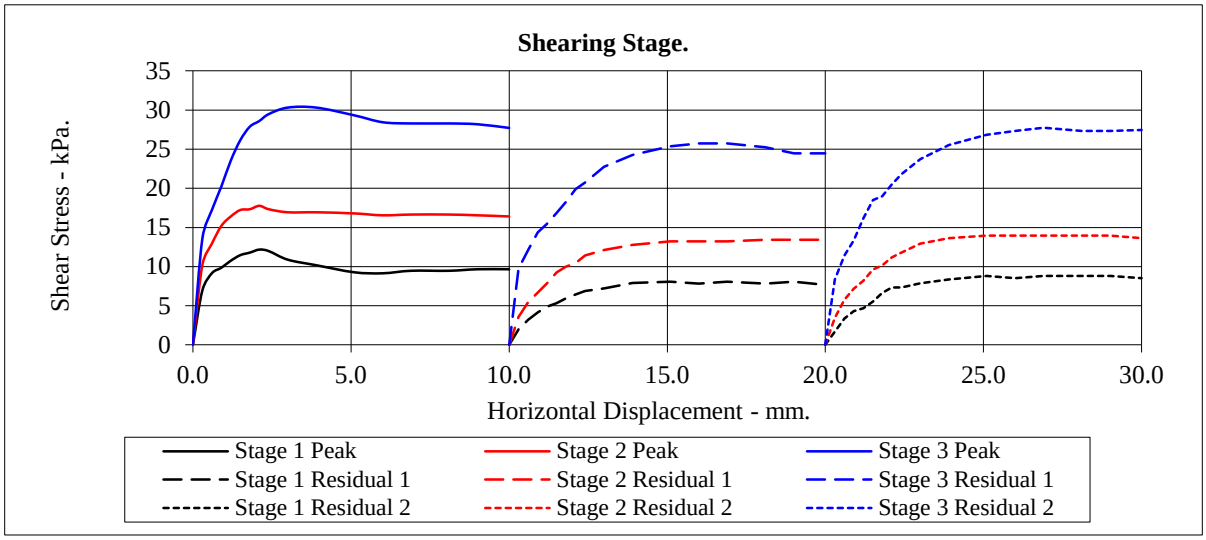
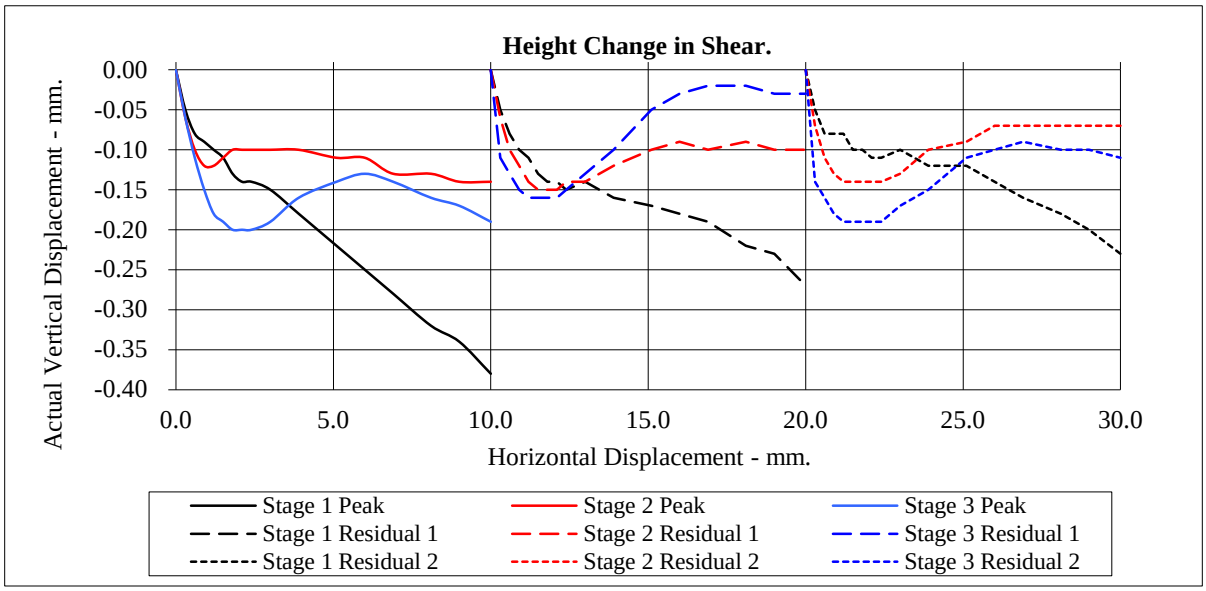
# CONSOLIDATED DRAINED SHEARBOX TEST

## BS1377 : 1990 Part 7 Clause 4

| | | | |
|---|---|---|---|
| Hole Number: | **TP129** | Top Depth: | **1.00** |
| Sample Number: | **5** | Base Depth: | **1.30** |



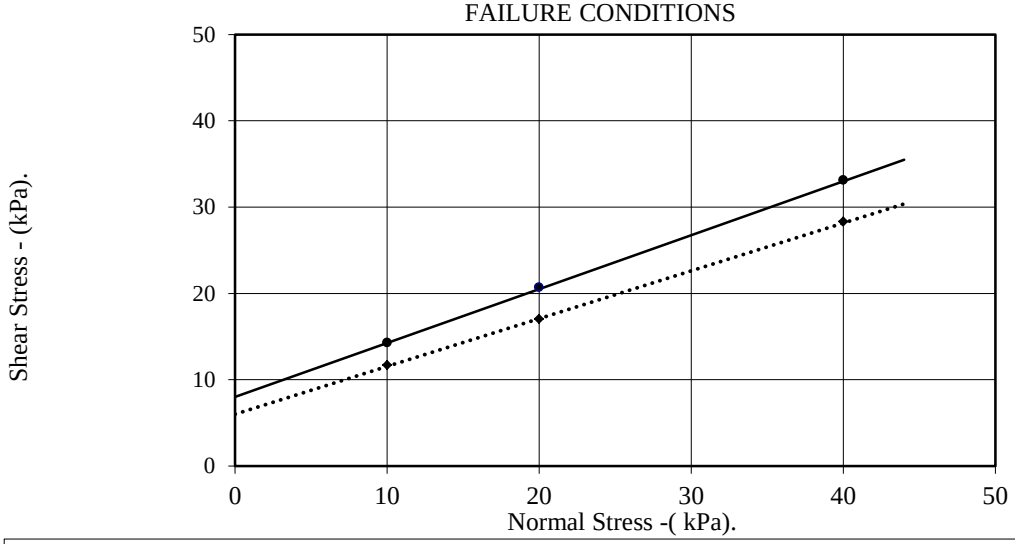
# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377 : 1990 Part 7 Clause 4**

| | | | | |
|---|---|---|---|---|
| Hole Number: | **TP130** | | Top Depth | **0.50** |
| Sample Number: | **5** | | Base Depth | **0.80** |
| Sample Conditions: | Submerged | | Sample Type | **B** |
| Particle Density - Mg/m3: | 2.65 | Assumed | **Remarks:** | |
| Specimen Preparation | Material tested passing 2mm sieve<br>Remoulded using hand tamped effort | | | |
| Sample Description: | **See summary of soil descriptions** | | | |

| **STAGE** | **1** | **2** | **3** |
|---|---|---|---|
| **Initial Conditions** | | | |
| Height - mm: | 19.99 | 19.99 | 19.99 |
| Length - mm: | 60.05 | 60.05 | 60.05 |
| Moisture Content - %: | 26 | 26 | 26 |
| Bulk Density - Mg/m3: | 1.89 | 1.89 | 1.89 |
| Dry Density - Mg/m3: | 1.50 | 1.50 | 1.50 |
| Voids Ratio: | 0.763 | 0.763 | 0.763 |
| Normal Pressure- kPa | 10 | 20 | 40 |
| **Consolidation Stage** | | | |
| Consolidated Height - mm: | 19.70 | 19.52 | 19.32 |
| **Peak Shear** | | | |
| Rate of Strain - mm/min | 0.042 | 0.042 | 0.042 |
| Displacement at peak shear stress - mm | 3.00 | 5.10 | 5.10 |
| Peak shear Stress - kPa: | 14 | 21 | 33 |
| **Residual Shear** | | | |
| Rate of Strain - mm/min | 0.084 | 0.084 | 0.084 |
| Displacement at residual shear stress - mm | 28.10 | 28.10 | 29.00 |
| Residual shear Stress - kPa: | 12 | 17 | 28 |
| **Final Consolidation Conditions** | | | |
| Moisture Content - %: | 34 | 33 | 32 |
| Bulk Density - Mg/m3: | 1.92 | 1.94 | 1.96 |
| Dry Density - Mg/m3: | 1.44 | 1.46 | 1.49 |
| **Peak Shear** | | | |
| Angle of Shearing Resistance:(θ) | 32 | | |
| Effective Cohesion - kPa: | 8 | | |
| **Residual Shear** | | | |
| Angle of Shearing Resistance:(θ) | 29 | | |
| Effective Cohesion - kPa: | 6 | | |

FAILURE CONDITIONS

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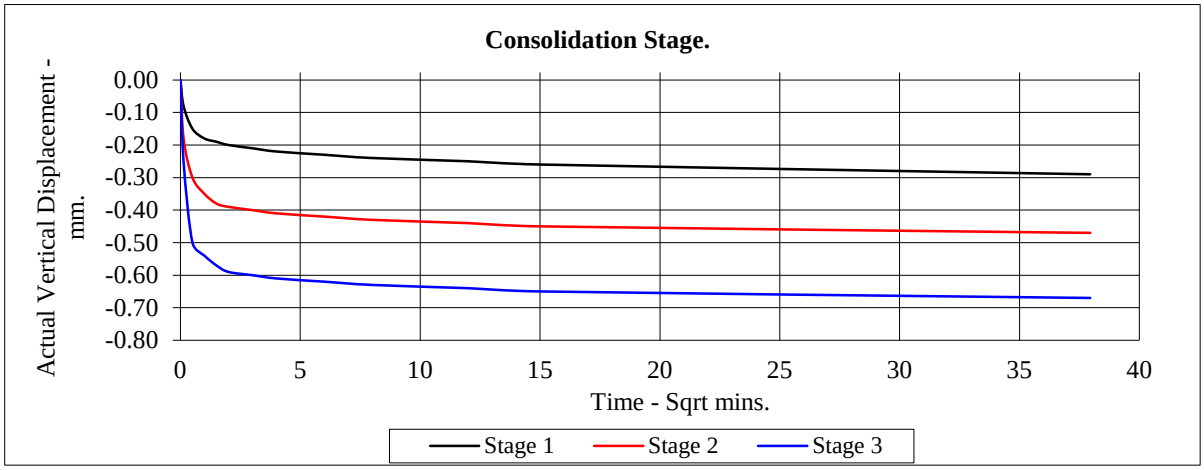
**Wansford to Sutton Dualling Supplementary GI**

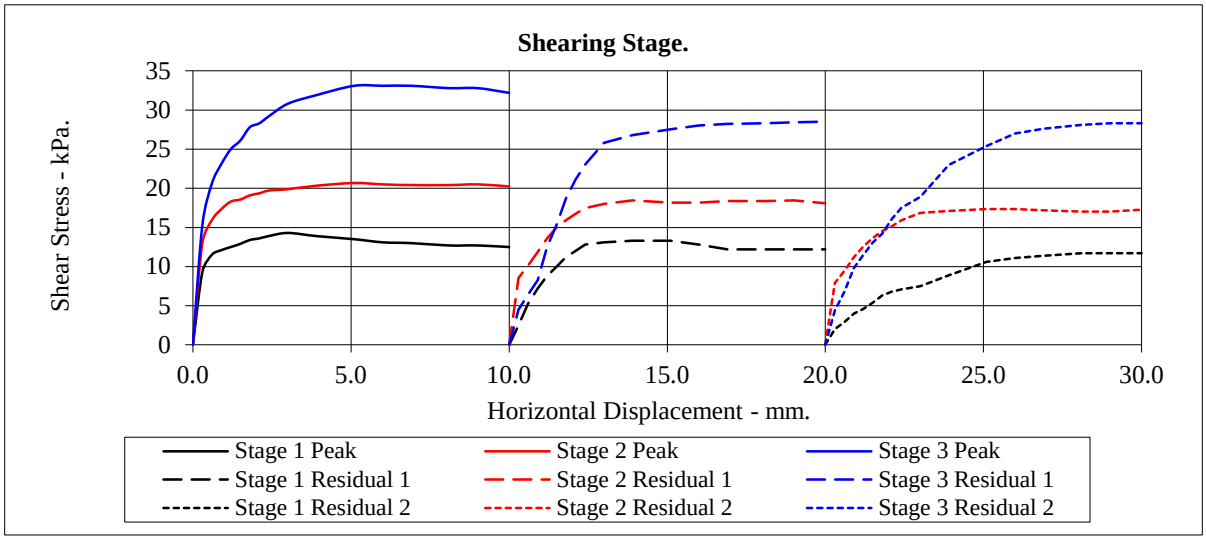
| **Contract No:** |
|---|
| **PSL22/3650** |
| **Client Ref:** |
| **GT0386** |

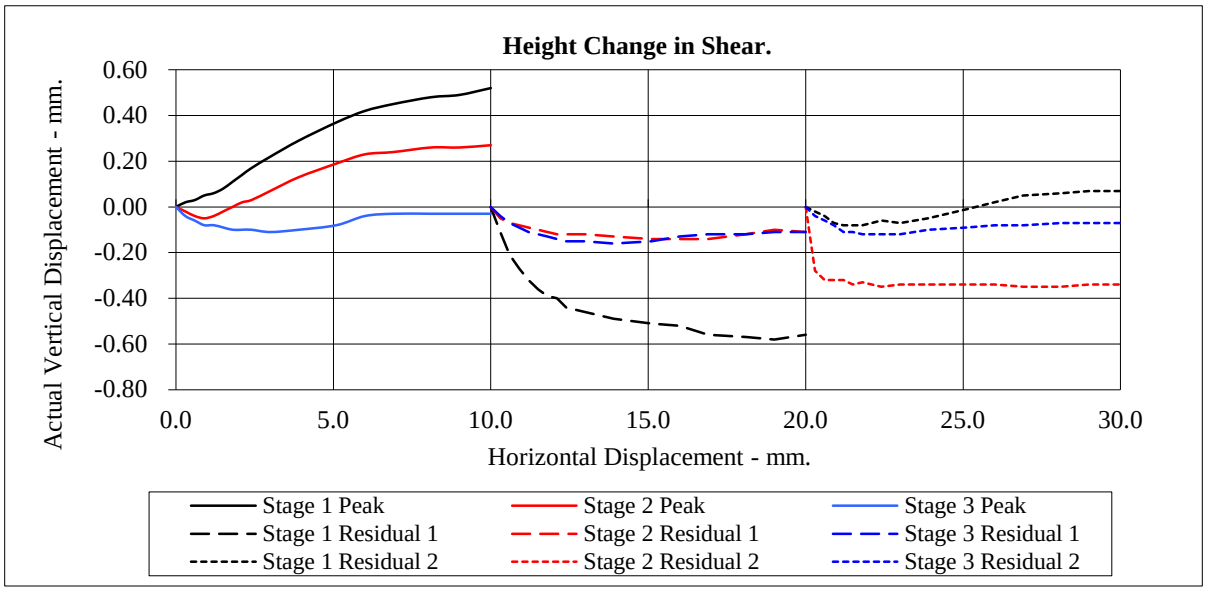
# CONSOLIDATED DRAINED SHEARBOX TEST

## BS1377 : 1990 Part 7 Clause 4

| | | | |
|---|---|---|---|
| Hole Number: | **TP130** | Top Depth: | **0.50** |
| Sample Number: | **5** | Base Depth: | **0.80** |



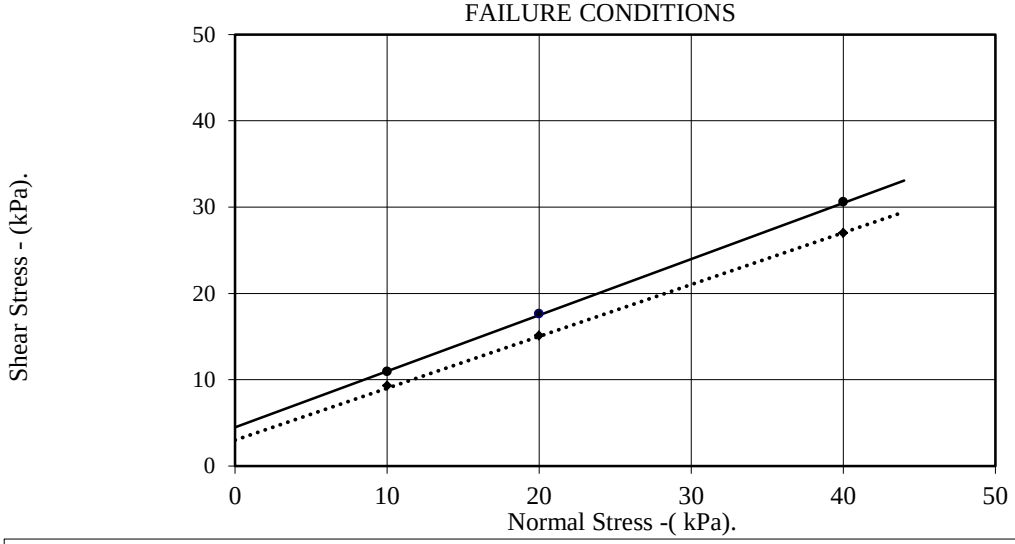
# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377 : 1990 Part 7 Clause 4**

| | | | | |
|---|---|---|---|---|
| Hole Number: | **TP131** | | Top Depth | **1.00** |
| Sample Number: | **5** | | Base Depth | **1.30** |
| Sample Conditions: | Submerged | | Sample Type | **B** |
| Particle Density - Mg/m3: | 2.65 | Assumed | **Remarks:** | |
| Specimen Preparation | Material tested passing 2mm sieve<br>Remoulded using 2.5kg effort | | | |
| Sample Description: | **See summary of soil descriptions** | | | |

| **STAGE** | **1** | **2** | **3** |
|---|---|---|---|
| **Initial Conditions** | | | |
| Height - mm: | 19.99 | 19.99 | 19.99 |
| Length - mm: | 60.05 | 60.05 | 60.05 |
| Moisture Content - %: | 13 | 13 | 13 |
| Bulk Density - Mg/m3: | 1.91 | 1.91 | 1.91 |
| Dry Density - Mg/m3: | 1.69 | 1.69 | 1.69 |
| Voids Ratio: | 0.564 | 0.564 | 0.564 |
| Normal Pressure- kPa | 10 | 20 | 40 |
| **Consolidation Stage** | | | |
| Consolidated Height - mm: | 19.72 | 19.07 | 18.70 |
| **Peak Shear** | | | |
| Rate of Strain - mm/min | 0.045 | 0.045 | 0.045 |
| Displacement at peak shear stress - mm | 10.00 | 10.00 | 9.00 |
| Peak shear Stress - kPa: | 11 | 18 | 31 |
| **Residual Shear** | | | |
| Rate of Strain - mm/min | 0.090 | 0.090 | 0.090 |
| Displacement at residual shear stress - mm | 30.00 | 19.00 | 20.00 |
| Residual shear Stress - kPa: | 9 | 15 | 27 |
| **Final Consolidation Conditions** | | | |
| Moisture Content - %: | 21 | 19 | 19 |
| Bulk Density - Mg/m3: | 1.94 | 2.01 | 2.05 |
| Dry Density - Mg/m3: | 1.61 | 1.68 | 1.73 |
| **Peak Shear** | | | |
| Angle of Shearing Resistance:(θ) | 33 | | |
| Effective Cohesion - kPa: | 5 | | |
| **Residual Shear** | | | |
| Angle of Shearing Resistance:(θ) | 31 | | |
| Effective Cohesion - kPa: | 3 | | |

FAILURE CONDITIONS

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**Wansford to Sutton Dualling Supplementary GI**

| **Contract No:** |
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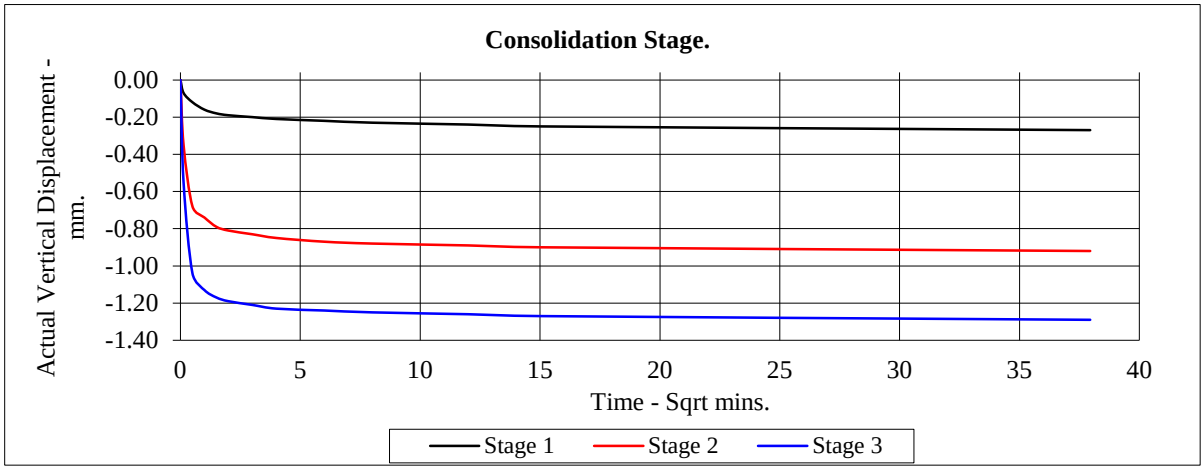
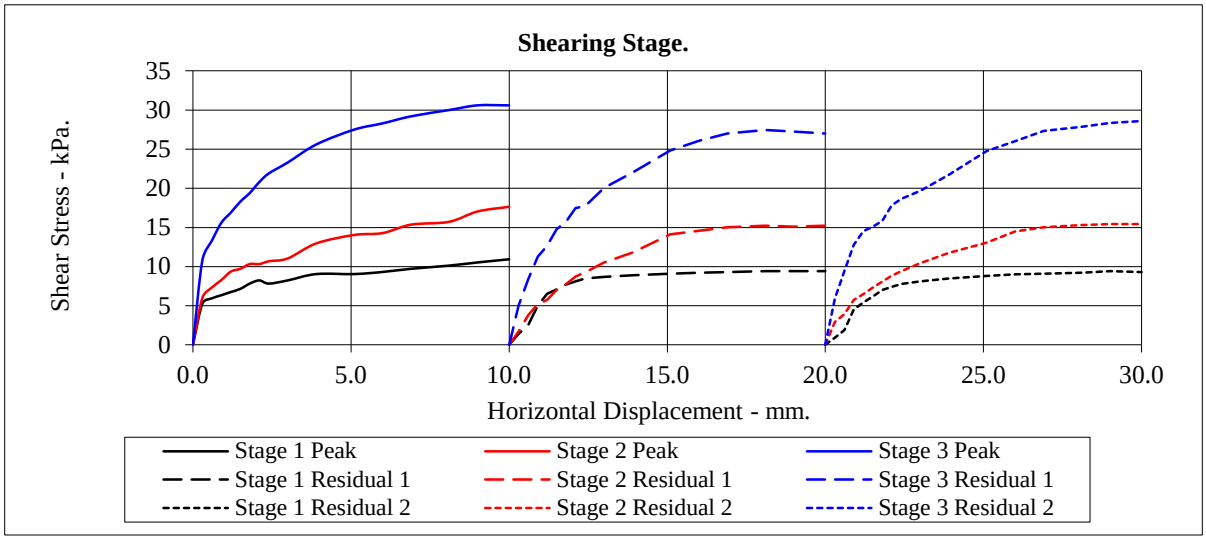
| **PSL22/3650** |
| **Client Ref:** |
| **GT0386** |

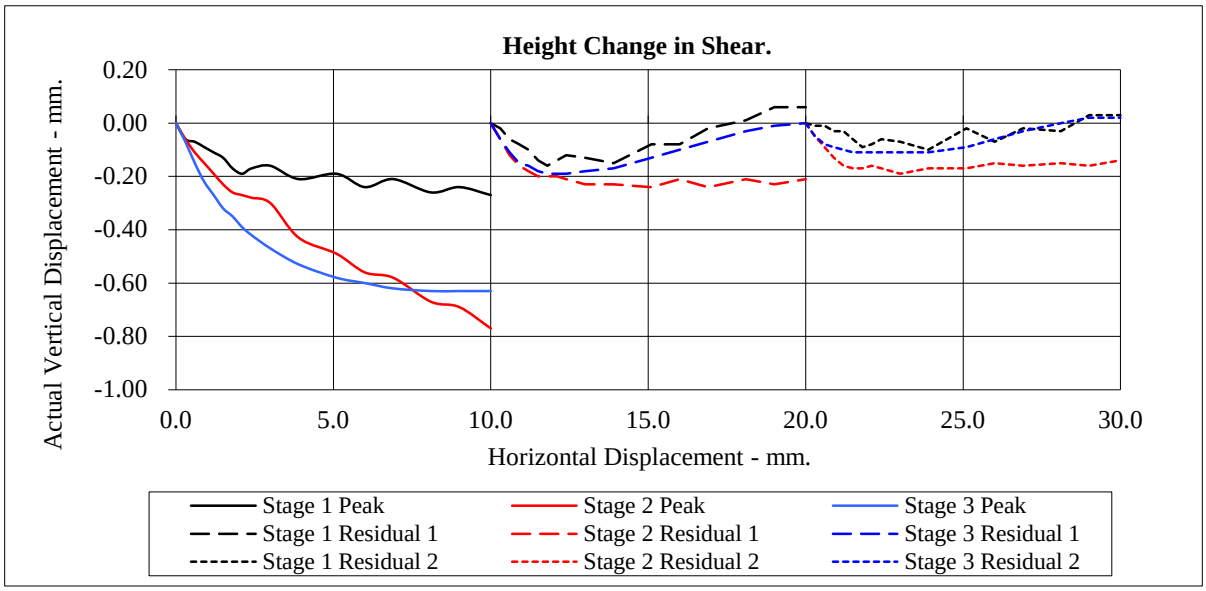
# CONSOLIDATED DRAINED SHEARBOX TEST

## BS1377 : 1990 Part 7 Clause 4

| | | | |
|---|---|---|---|
| Hole Number: | **TP131** | Top Depth: | **1.00** |
| Sample Number: | **5** | Base Depth: | **1.30** |

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| **Client Ref:** |
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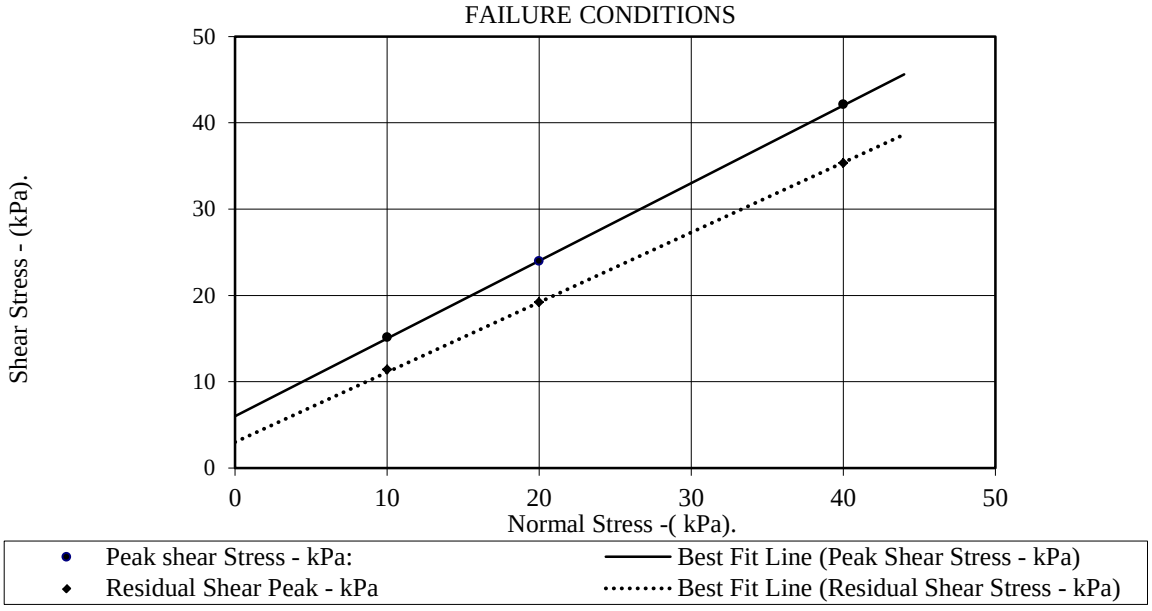
# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 5**

| | | | | |
|---|---|---|---|---|
| Hole Number: | **TP132** | | Top Depth | **1.00** |
| Sample Number: | **5** | | Base Depth | **1.30** |
| Sample Condtions: | Submerged | | Sample Type | **B** |
| Particle Density - Mg/m3: | 2.65 | Assumed | **Remarks:** | |
| Specimen Preparation | Material tested passing 20mm sieve<br>Remoulded using 2.5kg effort. | | See summary of soil descriptions | |
| Sample Description: | **See summary of soil descriptions** | | | |

| **STAGE** | **1** | **2** | **3** |
|---|---|---|---|
| **Initial Conditions** | | | |
| Height - mm: | 120.00 | 120.00 | 120.00 |
| Length - mm: | 300.00 | 300.00 | 300.00 |
| Moisture Content - %: | 7.4 | 7.4 | 7.4 |
| Bulk Density - Mg/m3: | 2.14 | 2.14 | 2.14 |
| Dry Density - Mg/m3: | 1.99 | 1.99 | 1.99 |
| Voids Ratio: | 0.331 | 0.331 | 0.331 |
| Normal Pressure- kPa | 10 | 20 | 40 |
| **Consolidation Stage** | | | |
| Consolidated Height - mm: | 119.60 | 119.05 | 118.87 |
| **Peak Shear** | | | |
| Rate of Strain - mm/min | 0.500 | 0.500 | 0.500 |
| Displacement at peak shear stress - mm | 26.00 | 21.50 | 28.00 |
| Peak shear Stress - kPa: | 15 | 24 | 42 |
| **Residual Shear** | | | |
| Rate of Strain - mm/min | 1.000 | 1.000 | 1.000 |
| Displacement at residual shear stress - mm | 152.97 | 101.98 | 151.98 |
| Residual shear Stress - kPa: | 11 | 19 | 35 |
| **Final Consolidation Conditions** | | | |
| Moisture Content - %: | 15 | 15 | 15 |
| Bulk Density - Mg/m3: | 2.49 | 3.17 | 2.55 |
| Dry Density - Mg/m3: | 2.16 | 2.75 | 2.22 |
| **Peak Shear** | | | |
| Angle of Shearing Resistance:(θ) | 42 | | |
| Effective Cohesion - kPa: | 6 | | |
| **Residual Shear** | | | |
| Angle of Shearing Resistance:(θ) | 39 | | |
| Effective Cohesion - kPa: | 3 | | |

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**Wansford to Sutton Dualling Supplementary GI**

| **Contract No:** |
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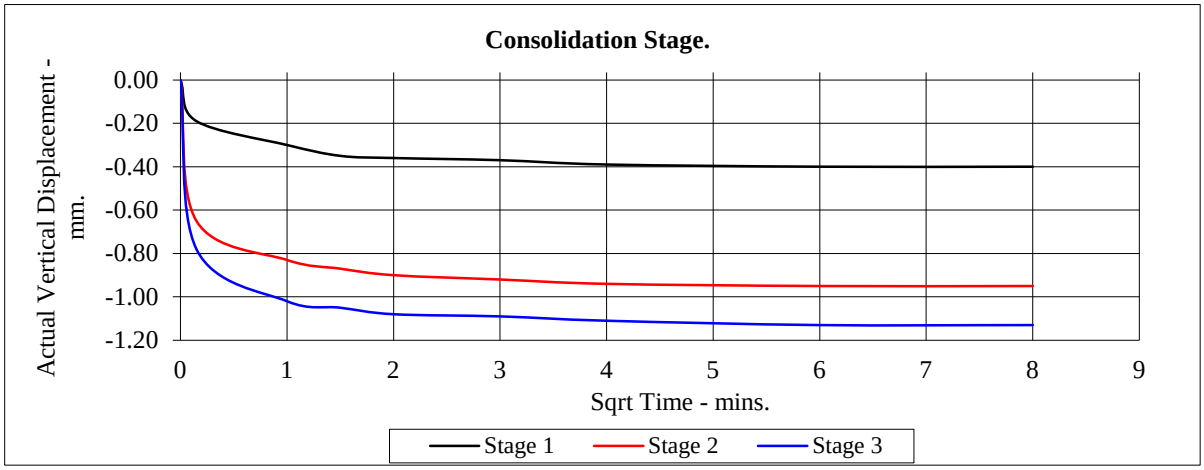
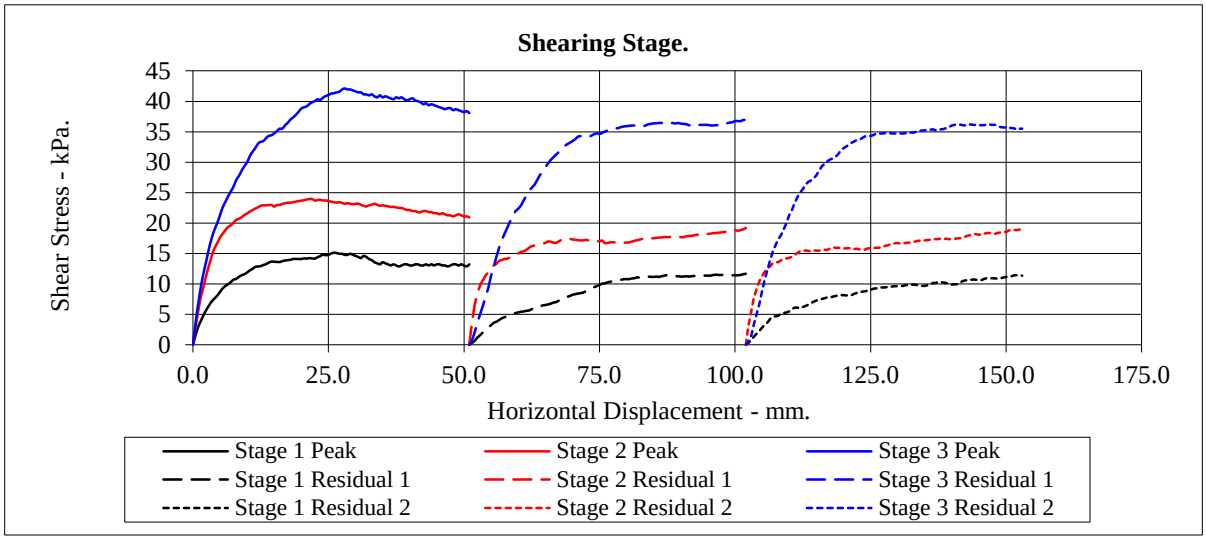
| **PSL22/3650** |
| **Client Ref:** |
| **GT0386** |

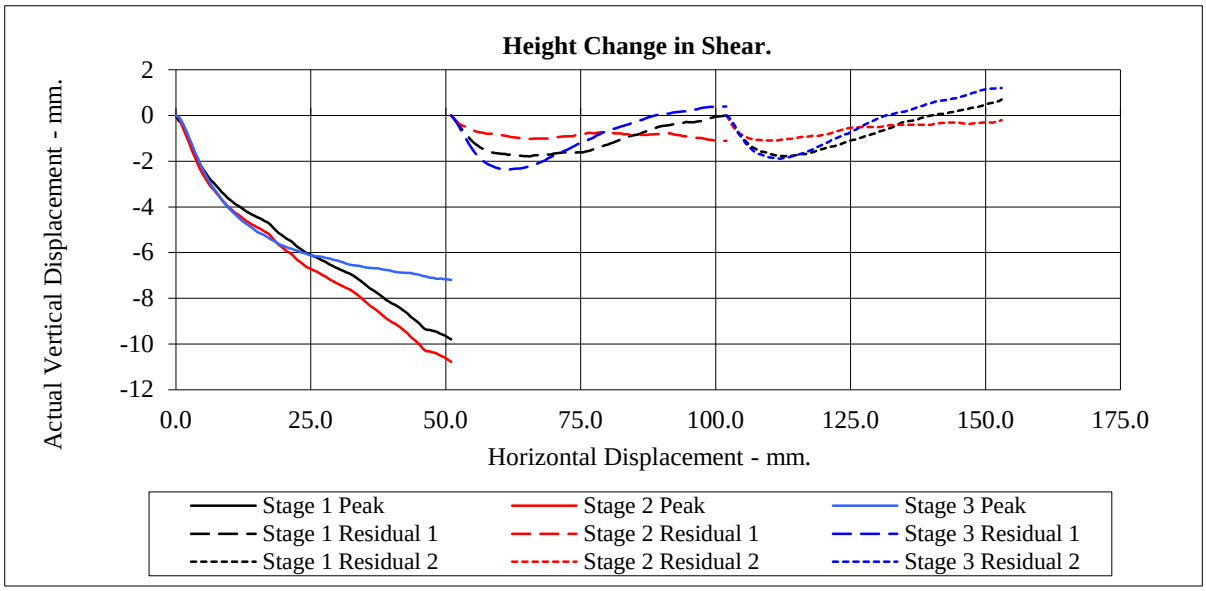
# CONSOLIDATED DRAINED SHEARBOX TEST

## BS1377:Part 7:1990 Clause 5

| | | | |
|---|---|---|---|
| Hole Number: | **TP132** | Top Depth: | **1.00** |
| Sample Number: | **5** | Base Depth: | **1.30** |



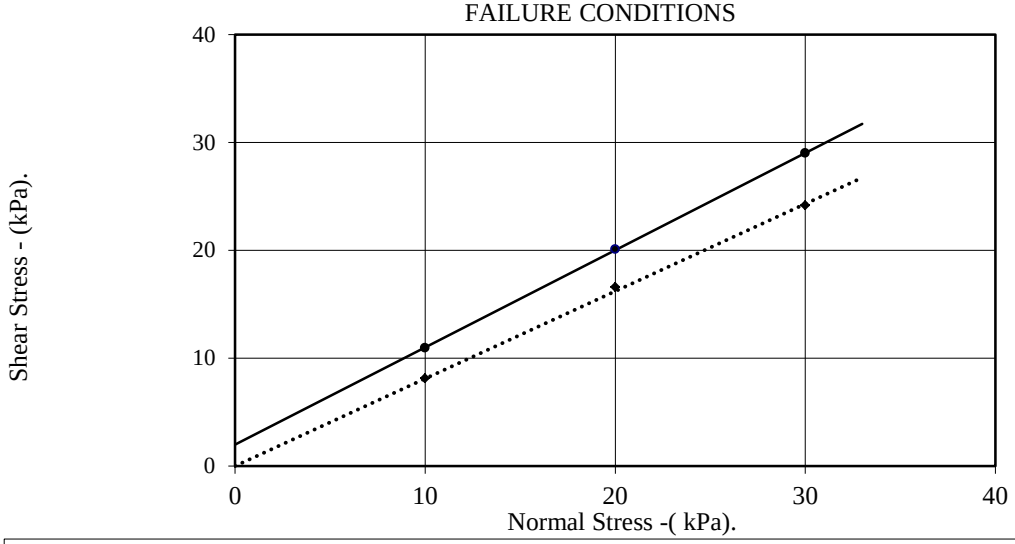
# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 5**

| | | | | |
|---|---|---|---|---|
| Hole Number: | **BH112** | | Top Depth | **0.30** |
| Sample Number: | **102** | | Base Depth | **1.20** |
| Sample Condtions: | Submerged | | Sample Type | **B** |
| Particle Density - Mg/m3: | 2.65 | Assumed | **Remarks:** | |
| Specimen Preparation | Material tested passing 20mm sieve<br>Remoulded using 2.5kg effort. | | See summary of soil descriptions | |
| Sample Description: | **See summary of soil descriptions** | | | |

| **STAGE** | **1** | **2** | **3** |
|---|---|---|---|
| **Initial Conditions** | | | |
| Height - mm: | 120.00 | 120.00 | 120.00 |
| Length - mm: | 300.00 | 300.00 | 300.00 |
| Moisture Content - %: | 8.6 | 8.6 | 8.6 |
| Bulk Density - Mg/m3: | 2.21 | 2.21 | 2.21 |
| Dry Density - Mg/m3: | 2.04 | 2.04 | 2.04 |
| Voids Ratio: | 0.300 | 0.300 | 0.300 |
| Normal Pressure- kPa | 10 | 20 | 30 |
| **Consolidation Stage** | | | |
| Consolidated Height - mm: | 119.84 | 118.67 | 118.21 |
| **Peak Shear** | | | |
| Rate of Strain - mm/min | 0.500 | 0.500 | 0.500 |
| Displacement at peak shear stress - mm | 47.00 | 48.00 | 50.50 |
| Peak shear Stress - kPa: | 11 | 20 | 29 |
| **Residual Shear** | | | |
| Rate of Strain - mm/min | 1.000 | 1.000 | 1.000 |
| Displacement at residual shear stress - mm | 101.49 | 97.99 | 100.49 |
| Residual shear Stress - kPa: | 8 | 17 | 24 |
| **Final Consolidation Conditions** | | | |
| Moisture Content - %: | 17 | 16 | 16 |
| Bulk Density - Mg/m3: | 2.53 | 2.74 | 2.69 |
| Dry Density - Mg/m3: | 2.16 | 2.35 | 2.31 |
| **Peak Shear** | | | |
| Angle of Shearing Resistance:(θ) | 42 | | |
| Effective Cohesion - kPa: | 2 | | |
| **Residual Shear** | | | |
| Angle of Shearing Resistance:(θ) | 39 | | |
| Effective Cohesion - kPa: | 0 | | |

FAILURE CONDITIONS




UKAS TESTING 4043

PSL Professional Soils Laboratory

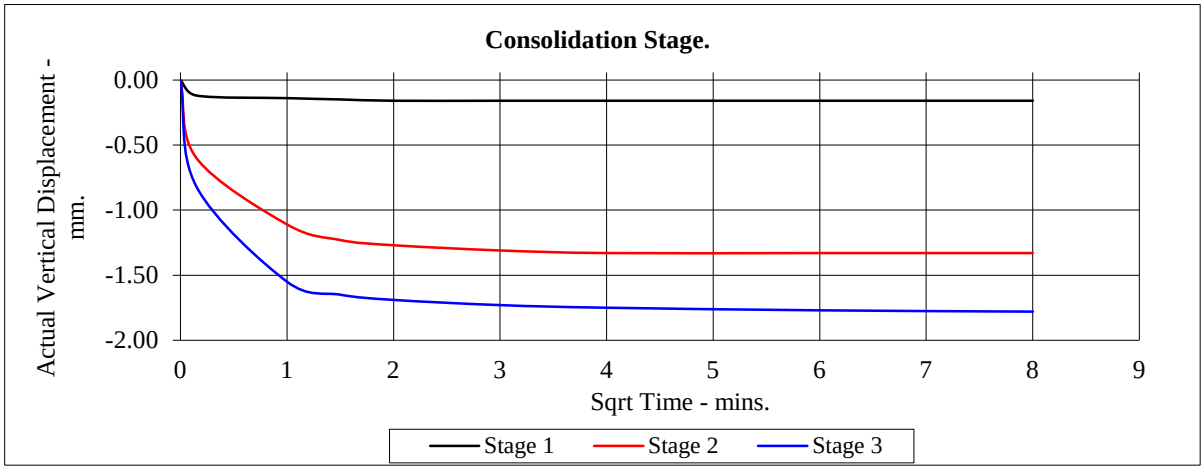
**Wansford to Sutton Dualling Supplementary GI**

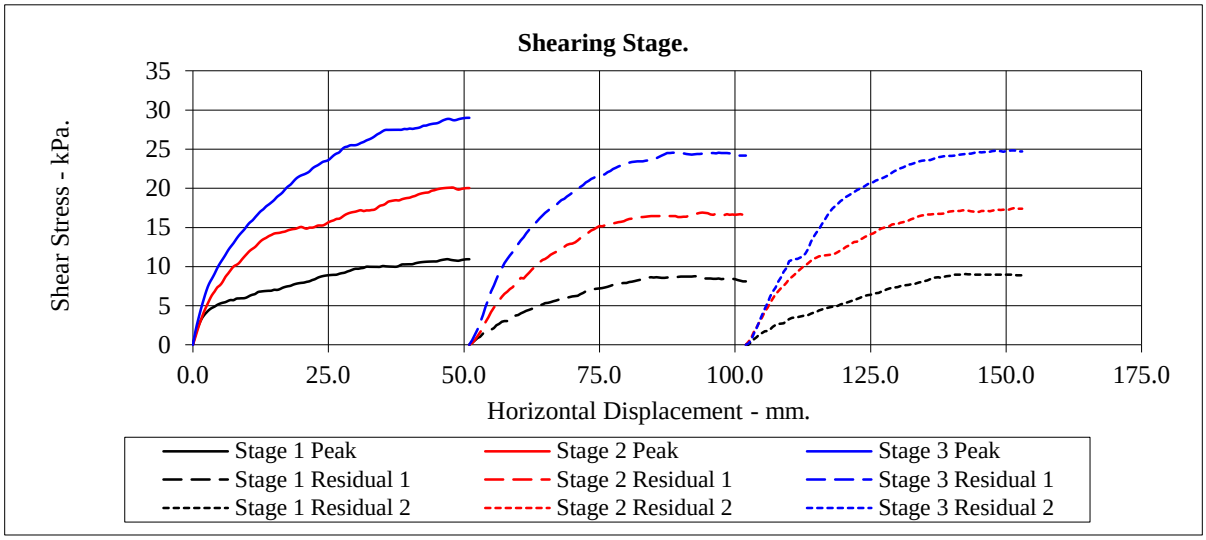
| **Contract No:** |
|---|
| **PSL22/3650** |
| **Client Ref:** |
| **GT0386** |

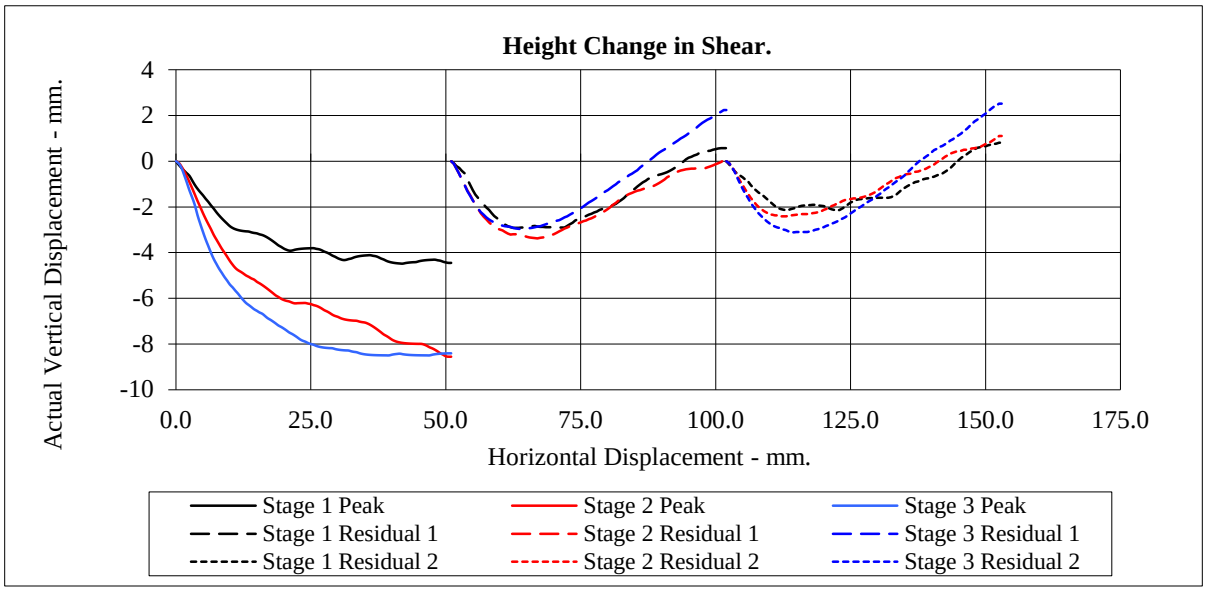
# CONSOLIDATED DRAINED SHEARBOX TEST

## BS1377:Part 7:1990 Clause 5

| | | | |
|---|---|---|---|
| Hole Number: | **BH112** | Top Depth: | **0.30** |
| Sample Number: | **102** | Base Depth: | **1.20** |



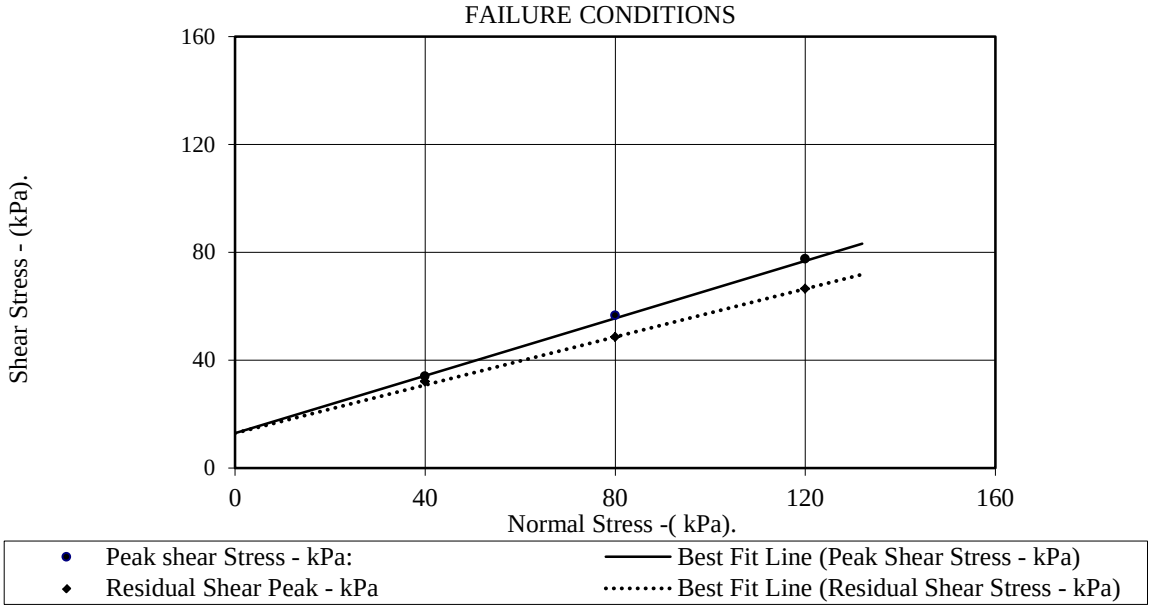

| | | | |
|---|---|---|---|
| UKAS TESTING 4043 | PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** | **Contract No:** **PSL22/3650** **Client Ref:** **GT0386** |

# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 5**

| | | | | |
|---|---|---|---|---|
| Hole Number: | **BH112** | | Top Depth | **4.40** |
| Sample Number: | **105** | | Base Depth | **4.80** |
| Sample Condtions: | Submerged | | Sample Type | **B** |
| Particle Density - Mg/m3: | 2.65 | Assumed | **Remarks:** | |
| Specimen Preparation | Material tested passing 20mm sieve<br>Remoulded using 2.5kg effort. | | See summary of soil descriptions | |
| Sample Description: | **See summary of soil descriptions** | | | |

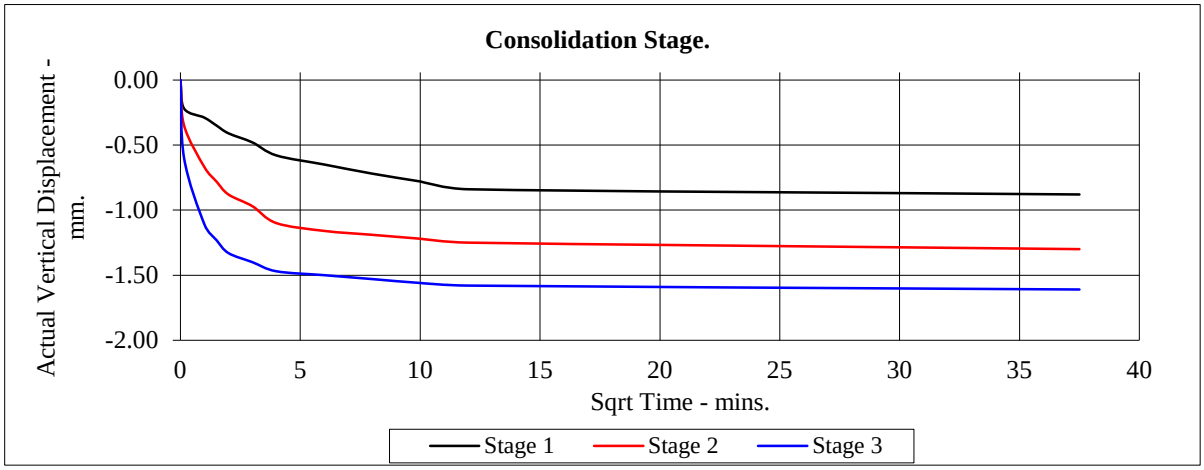
| **STAGE** | **1** | **2** | **3** |
|---|---|---|---|
| **Initial Conditions** | | | |
| Height - mm: | 120.00 | 120.00 | 120.00 |
| Length - mm: | 300.00 | 300.00 | 300.00 |
| Moisture Content - %: | 13 | 13 | 13 |
| Bulk Density - Mg/m3: | 2.18 | 2.18 | 2.18 |
| Dry Density - Mg/m3: | 1.93 | 1.93 | 1.93 |
| Voids Ratio: | 0.371 | 0.371 | 0.371 |
| Normal Pressure- kPa | 40 | 80 | 120 |
| **Consolidation Stage** | | | |
| Consolidated Height - mm: | 119.12 | 118.70 | 118.39 |
| **Peak Shear** | | | |
| Rate of Strain - mm/min | 0.080 | 0.080 | 0.080 |
| Displacement at peak shear stress - mm | 24.00 | 50.00 | 22.50 |
| Peak shear Stress - kPa: | 34 | 56 | 77 |
| **Residual Shear** | | | |
| Rate of Strain - mm/min | 0.160 | 0.160 | 0.160 |
| Displacement at residual shear stress - mm | 42.00 | 101.98 | 101.98 |
| Residual shear Stress - kPa: | 32 | 49 | 67 |
| **Final Consolidation Conditions** | | | |
| Moisture Content - %: | 14 | 13 | 13 |
| Bulk Density - Mg/m3: | 2.39 | 2.38 | 2.48 |
| Dry Density - Mg/m3: | 2.09 | 2.10 | 2.20 |
| **Peak Shear** | | | |
| Angle of Shearing Resistance:(~~θ~~) | 28 | | |
| Effective Cohesion - kPa: | 13 | | |
| **Residual Shear** | | | |
| Angle of Shearing Resistance:(~~θ~~) | 24 | | |
| Effective Cohesion - kPa: | 13 | | |

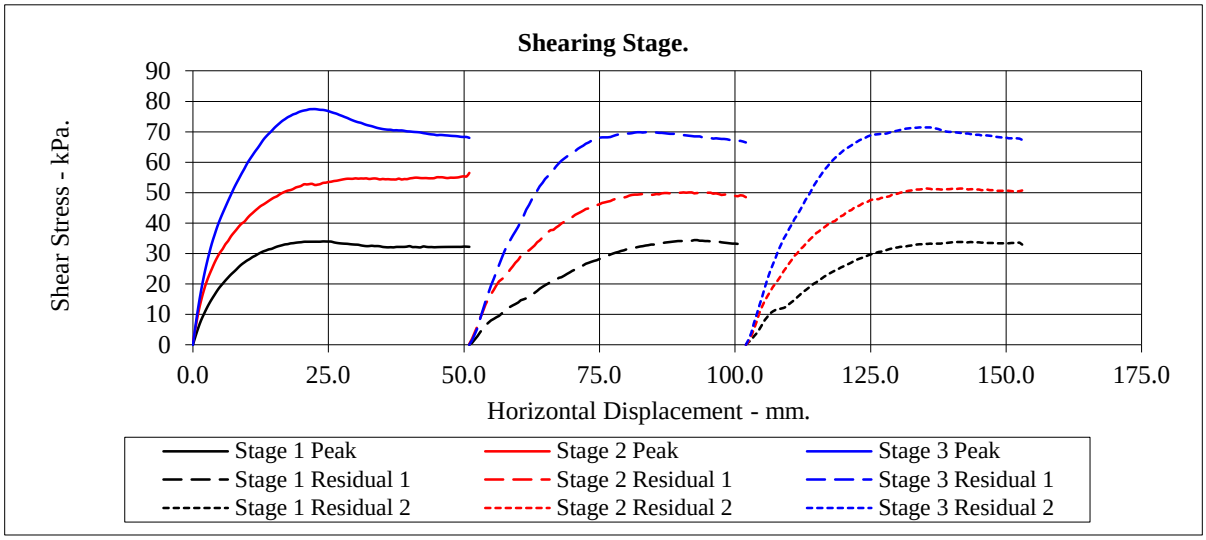


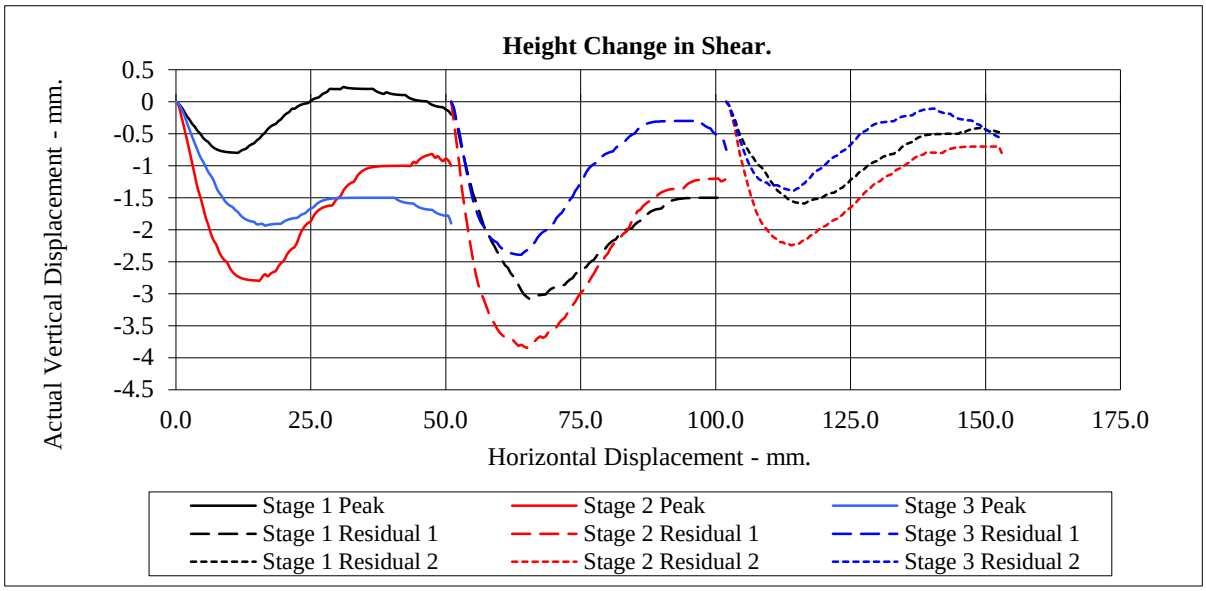
# CONSOLIDATED DRAINED SHEARBOX TEST

## BS1377:Part 7:1990 Clause 5

| | | | |
|---|---|---|---|
| Hole Number: | **BH112** | Top Depth: | **4.40** |
| Sample Number: | **105** | Base Depth: | **4.80** |



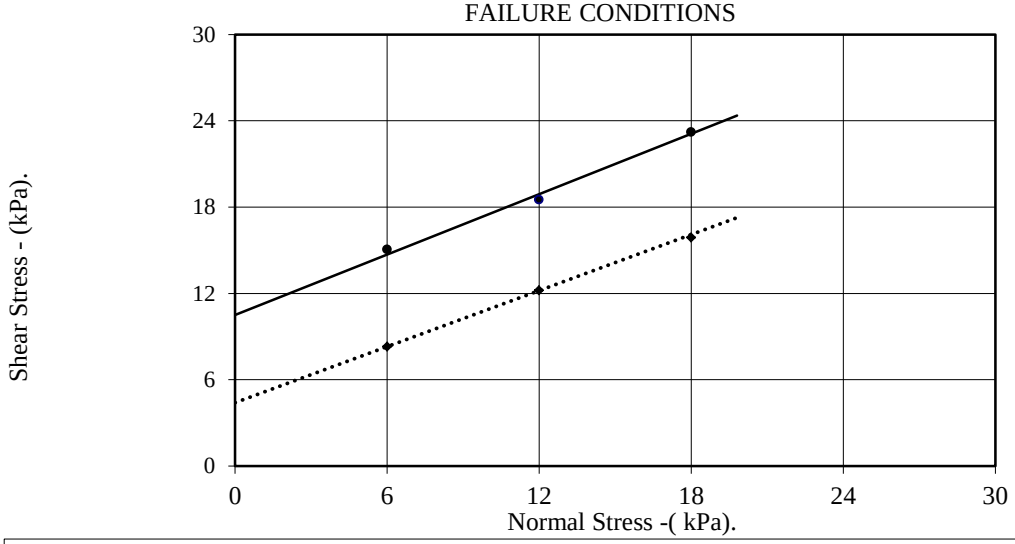
# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 5**

| | | | | |
|---|---|---|---|---|
| Hole Number: | **TP140** | | Top Depth | **0.30** |
| Sample Number: | **4** | | Base Depth | **0.50** |
| Sample Condtions: | Submerged | | Sample Type | **B** |
| Particle Density - Mg/m3: | 2.65 | Assumed | **Remarks:** | |
| Specimen Preparation | Material tested passing 20mm sieve<br>Remoulded using 2.5kg effort. | | See summary of soil descriptions | |
| Sample Description: | **See summary of soil descriptions** | | | |

| **STAGE** | **1** | **2** | **3** |
|---|---|---|---|
| **Initial Conditions** | | | |
| Height - mm: | 100.00 | 100.00 | 100.00 |
| Length - mm: | 300.00 | 300.00 | 300.00 |
| Moisture Content - %: | 21 | 21 | 21 |
| Bulk Density - Mg/m3: | 1.98 | 1.98 | 1.98 |
| Dry Density - Mg/m3: | 1.63 | 1.63 | 1.63 |
| Voids Ratio: | 0.621 | 0.621 | 0.621 |
| Normal Pressure- kPa | 6 | 12 | 18 |
| **Consolidation Stage** | | | |
| Consolidated Height - mm: | 99.80 | 99.73 | 99.64 |
| **Peak Shear** | | | |
| Rate of Strain - mm/min | 0.072 | 0.072 | 0.072 |
| Displacement at peak shear stress - mm | 18.00 | 21.50 | 20.00 |
| Peak shear Stress - kPa: | 15 | 19 | 23 |
| **Residual Shear** | | | |
| Rate of Strain - mm/min | 0.144 | 0.144 | 0.144 |
| Displacement at residual shear stress - mm | 152.97 | 152.97 | 152.97 |
| Residual shear Stress - kPa: | 8 | 12 | 16 |
| **Final Consolidation Conditions** | | | |
| Moisture Content - %: | 24 | 23 | 23 |
| Bulk Density - Mg/m3: | 2.05 | 2.11 | 2.14 |
| Dry Density - Mg/m3: | 1.65 | 1.71 | 1.74 |
| **Peak Shear** | | | |
| Angle of Shearing Resistance:(~~θ~~) | 35 | | |
| Effective Cohesion - kPa: | 11 | | |
| **Residual Shear** | | | |
| Angle of Shearing Resistance:(~~θ~~) | 33 | | |
| Effective Cohesion - kPa: | 4 | | |

FAILURE CONDITIONS




UKAS TESTING 4043

PSL Professional Soils Laboratory

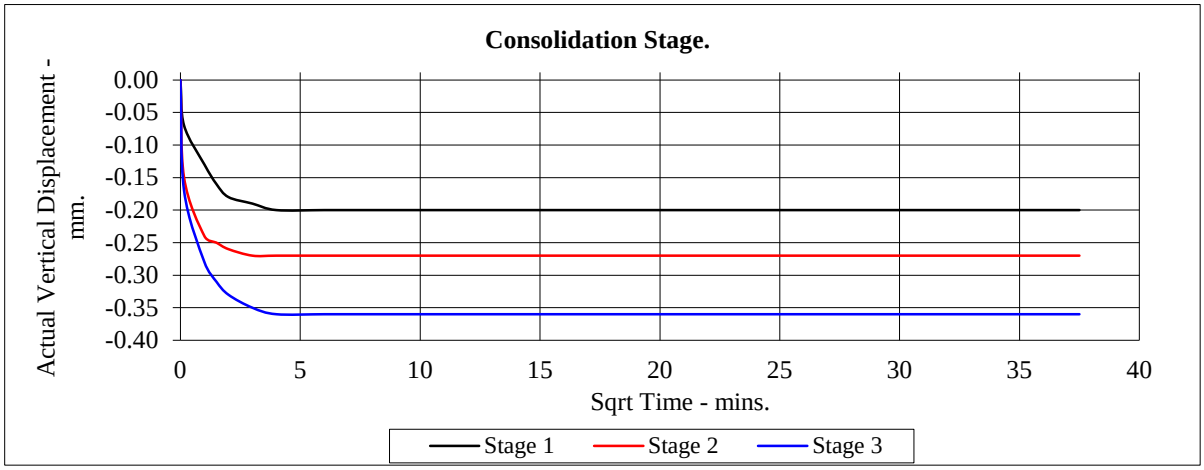
**Wansford to Sutton Dualling Supplementary GI**

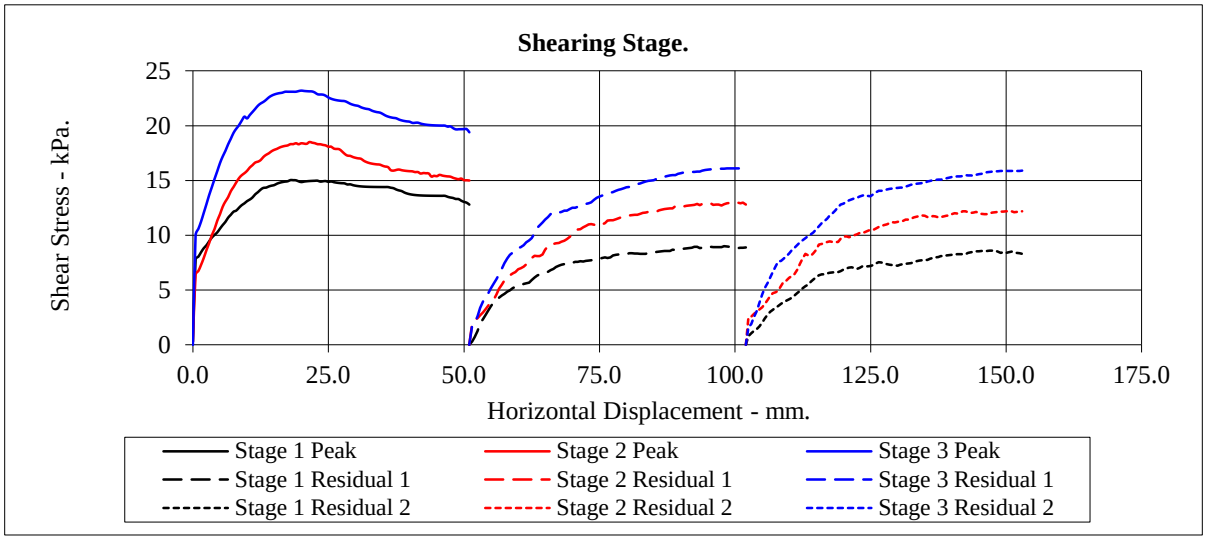
| **Contract No:** |
|---|
| **PSL22/3825** |
| **Client Ref:** |
| **GT0386** |

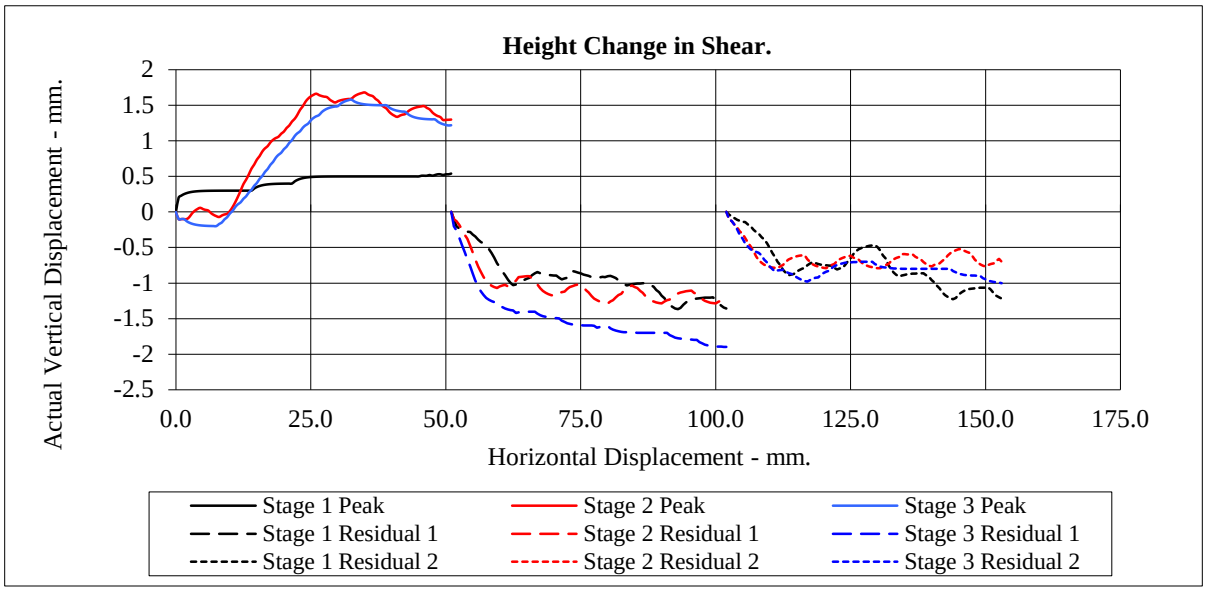
# CONSOLIDATED DRAINED SHEARBOX TEST

## BS1377:Part 7:1990 Clause 5

| | | | |
|---|---|---|---|
| Hole Number: | **TP140** | Top Depth: | **0.30** |
| Sample Number: | **4** | Base Depth: | **0.50** |



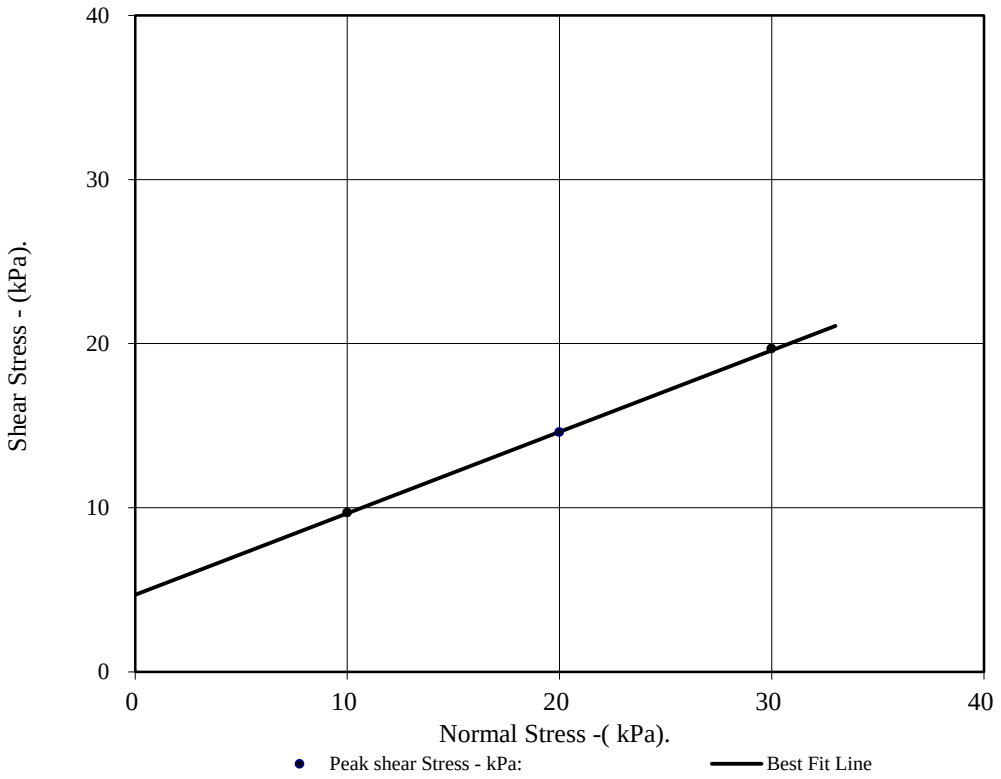



# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 4**

| | | | | | |
|---|---|---|---|---|---|
| Hole Number: | **TP141** | | Top Depth: | **0.50** | |
| Sample Number: | **7** | | Base Depth: | **0.70** | |
| Sample Conditions: | Submerged | | Sample Type | **B** | |
| Particle Density - Mg/m3: | 2.65 | Assumed | **Remarks:** | | |
| Sample Preparation: | Material tested passing 2mm sieve<br>Remoulded using 2.5kg effort. | | | | |
| Sample Description: | **See summary of soil descriptions.** | | | | |

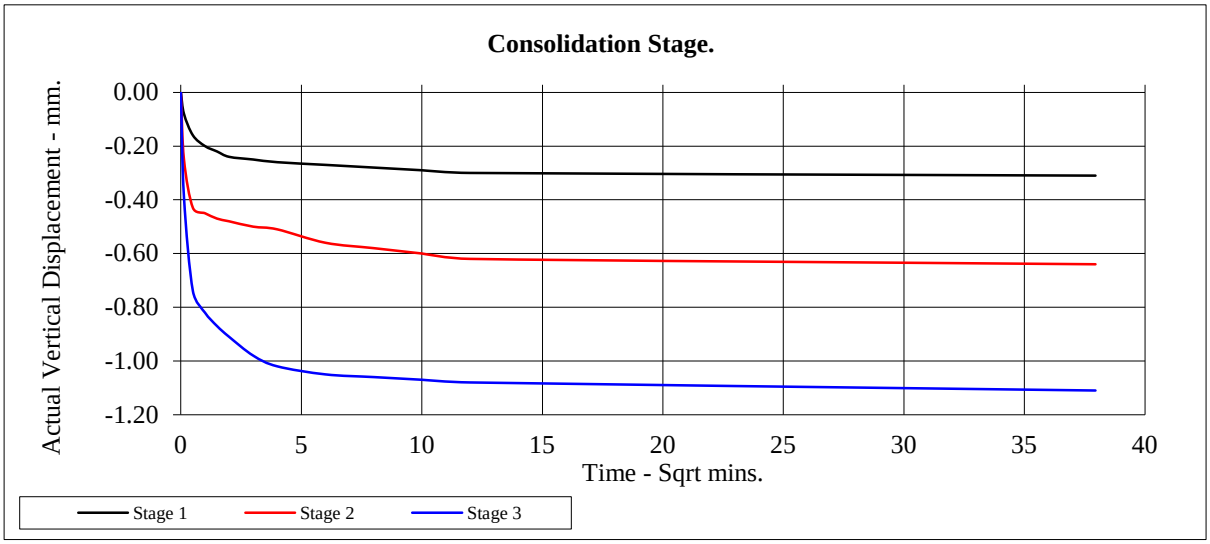
| **STAGE** | **1** | **2** | **3** |
|---|---|---|---|
| **Initial Conditions** | | | |
| Height - mm: | 20.05 | 20.05 | 20.05 |
| Length - mm: | 59.97 | 59.97 | 59.97 |
| Moisture Content - %: | 12 | 12 | 12 |
| Bulk Density - Mg/m3: | 2.04 | 2.04 | 2.04 |
| Dry Density - Mg/m3: | 1.82 | 1.82 | 1.82 |
| Voids Ratio: | 0.458 | 0.458 | 0.458 |
| Normal Pressure- kPa | 10 | 20 | 30 |
| **Consolidation Stage** | | | |
| Consolidated Height - mm: | 19.74 | 19.41 | 18.94 |
| **Shearing Stage** | | | |
| Rate of Strain - mm/min | 0.042 | 0.042 | 0.042 |
| Displacement at peak shear stress - mm | 9.60 | 8.71 | 9.91 |
| Peak shear Stress - kPa: | 10 | 15 | 20 |
| **Final Consolidated Conditions** | | | |
| Moisture Content - %: | 21 | 19 | 19 |
| Bulk Density - Mg/m3: | 2.07 | 2.10 | 2.16 |
| Dry Density - Mg/m3: | 1.71 | 1.76 | 1.81 |
| **Peak** | | | |
| Angle of Shearing Resistance:(~~θ~~) | **26** | | |
| Effective Cohesion - kPa: | **5** | | |

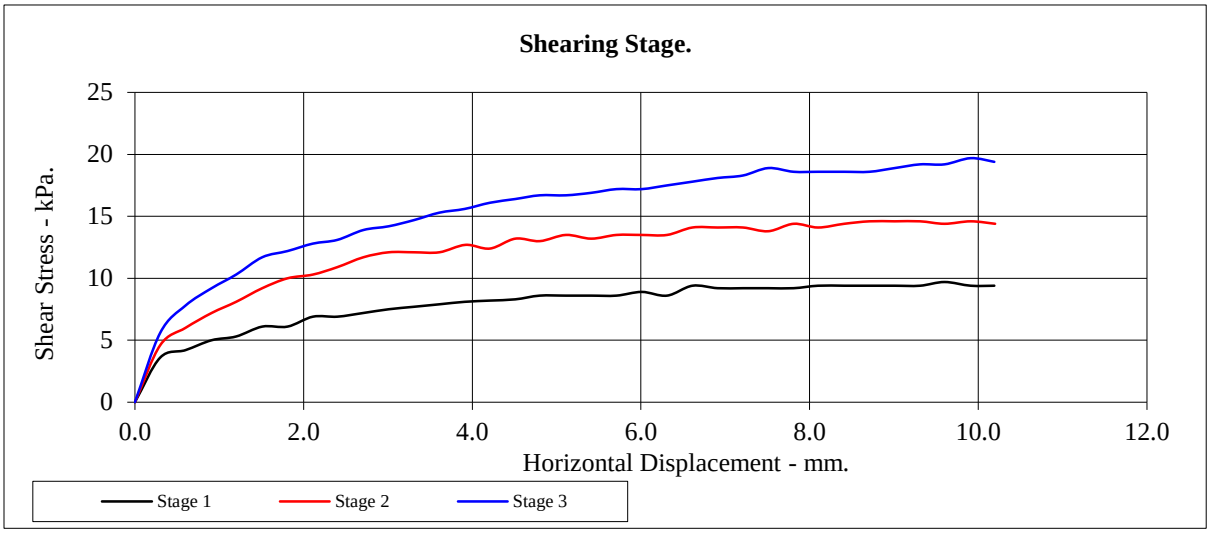


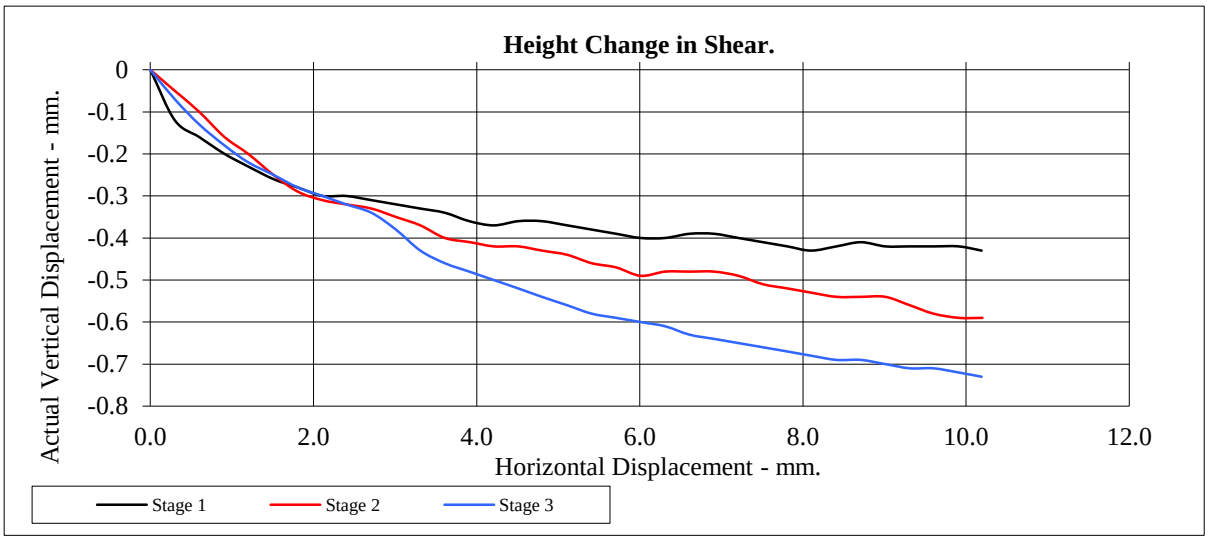
# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 4**

| | | | |
|---|---|---|---|
| Hole Number: | **TP141** | Top Depth: | **0.50** |
| Sample Number: | **7** | Base Depth: | **0.70** |



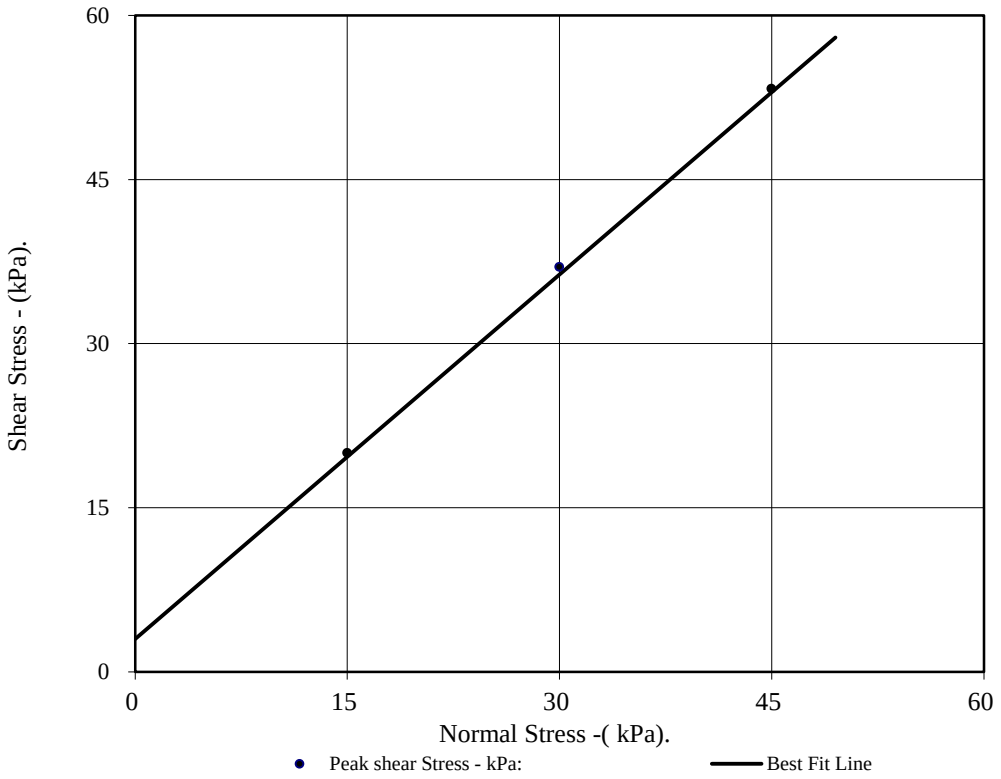

| | | |
|---|---|---|
| UKAS TESTING 4043 / Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** | **Contract No:** PSL22/3825<br>**Client Ref:** GT0386 |

# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 5**

| | | | | | |
|---|---|---|---|---|---|
| Hole Number: | **TP142** | | Top Depth: | **1.50** | |
| Sample Number: | **13** | | Base Depth: | **1.70** | |
| Sample Conditions: | Dry | | Sample Type | **B** | |
| Particle Density - Mg/m3: | 2.65 | Assumed | **Remarks:** | | |
| Sample Preparation: | Material tested passing 20mm sieve<br>Remoulded using 2.5kg effort. | | | | |
| Sample Description: | **See summary of soil descriptions** | | | | |

| **STAGE** | **1** | **2** | **3** |
|---|---|---|---|
| **Initial Conditions** | | | |
| Height - mm: | 120 | 120 | 120 |
| Length - mm: | 300 | 300 | 300 |
| Moisture Content - %: | 7.9 | 7.9 | 7.9 |
| Bulk Density - Mg/m3: | 1.99 | 1.99 | 1.99 |
| Dry Density - Mg/m3: | 1.85 | 1.85 | 1.85 |
| Voids Ratio: | 0.434 | 0.434 | 0.434 |
| Normal Pressure- kPa | 15 | 30 | 45 |
| **Consolidation Stage** | | | |
| Consolidated Height - mm: | 119.47 | 119.27 | 118.93 |
| **Shearing Stage** | | | |
| Rate of Strain (mm/min) | 1.00 | 1.00 | 1.00 |
| Displacement at peak shear stress (mm) | 13.50 | 22.50 | 21.00 |
| Peak shear Stress - kPa: | 20 | 37 | 53 |
| **Final Consolidated Conditions** | | | |
| Moisture Content - %: | 7.8 | 7.4 | 7.6 |
| Bulk Density - Mg/m3: | 2.00 | 2.01 | 2.01 |
| Dry Density - Mg/m3: | 1.86 | 1.87 | 1.87 |
| **Peak** | | | |
| Angle of Shearing Resistance:(~~θ~~) | **48** | | |
| Effective Cohesion - kPa: | **3** | | |



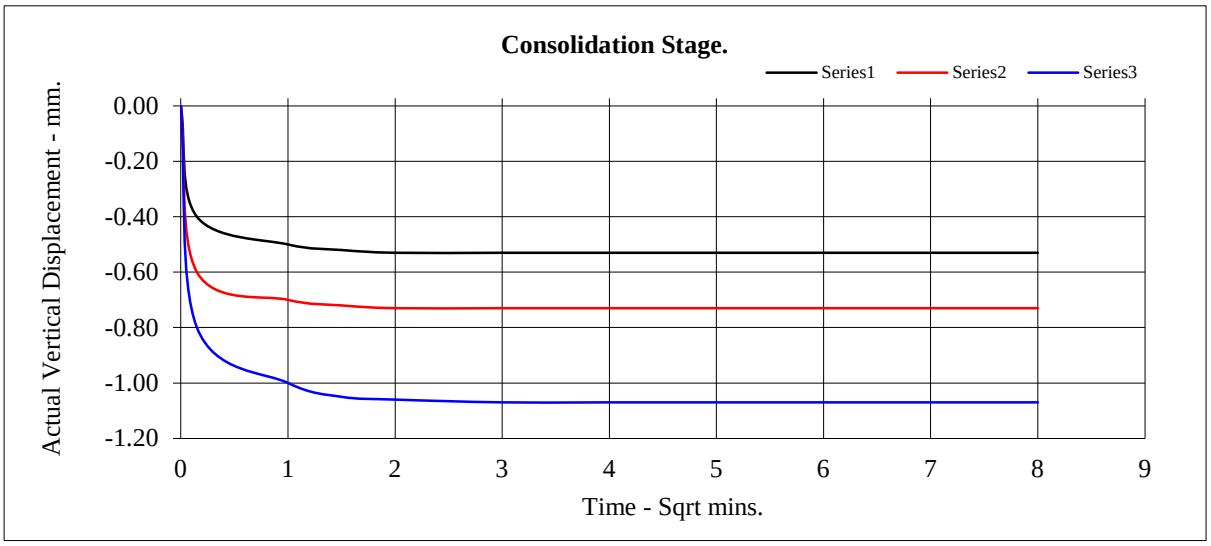

| | | |
|---|---|---|
| UKAS TESTING 4043 | PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** |

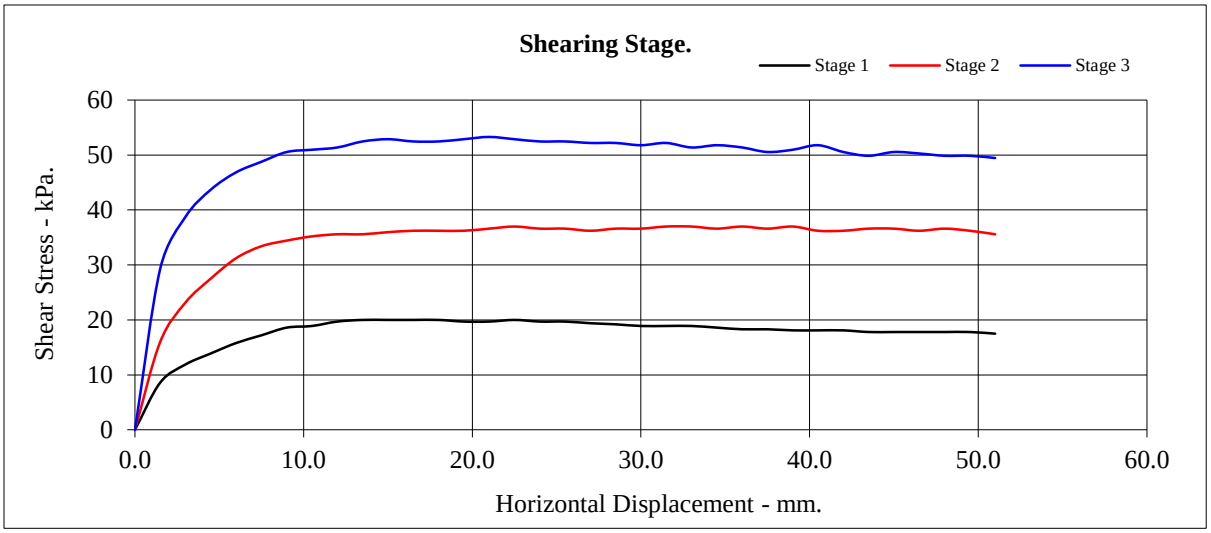
| **Contract No:** |
|---|
| **PSL22/3825** |
| **Client Ref:** |
| **GT0386** |

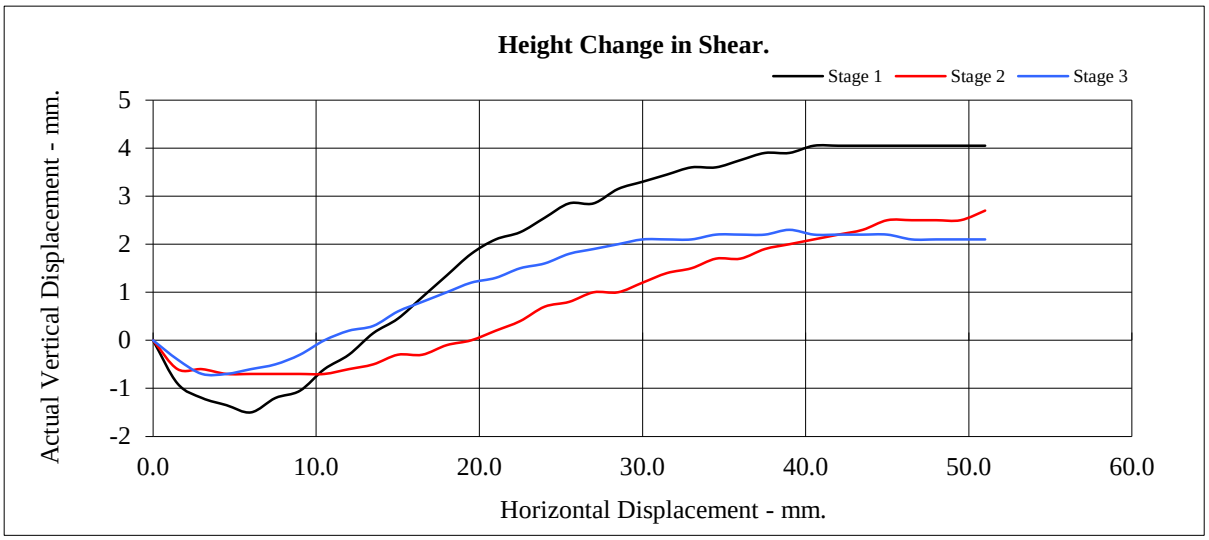
# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 5**

| | | | |
|---|---|---|---|
| Hole Number: | **TP142** | Top Depth: | **1.50** |
| Sample Number: | **13** | Base Depth: | **1.70** |



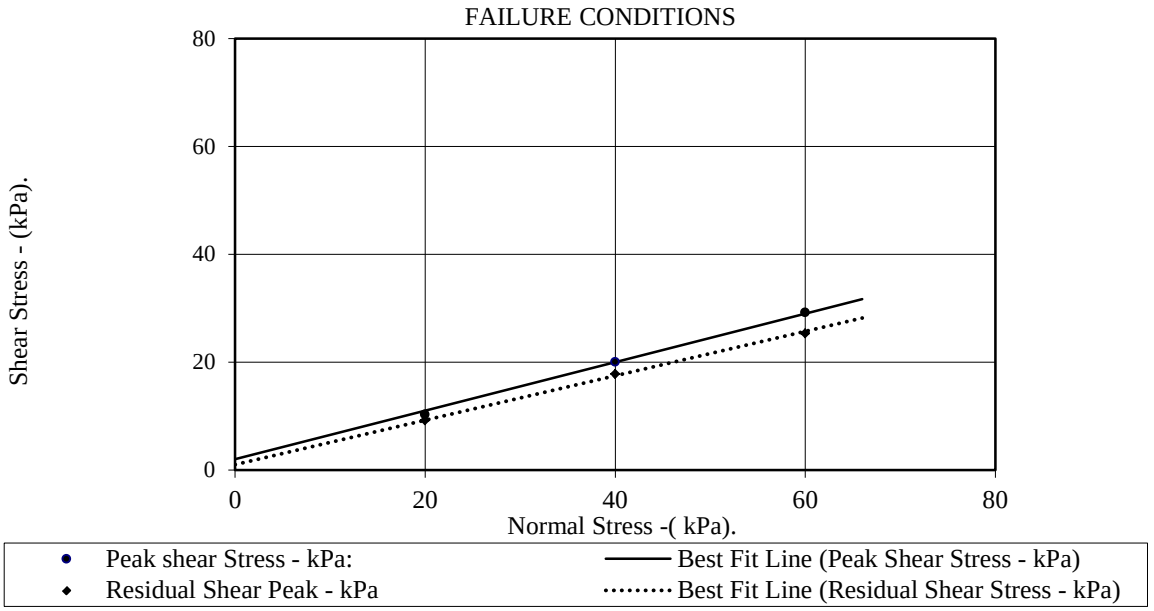



# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377 : 1990 Part 7 Clause 4**

| | | | | |
|---|---|---|---|---|
| Hole Number: | **TP143** | | Top Depth | **2.10** |
| Sample Number: | **7** | | Base Depth | **2.40** |
| Sample Conditions: | Submerged | | Sample Type | **B** |
| Particle Density - Mg/m3: | 2.65 | Assumed | **Remarks:** | |
| Specimen Preparation | Material tested passing 2mm sieve<br>Remoulded using 2.5kg effort | | | |
| Sample Description: | **See summary of soil descriptions** | | | |

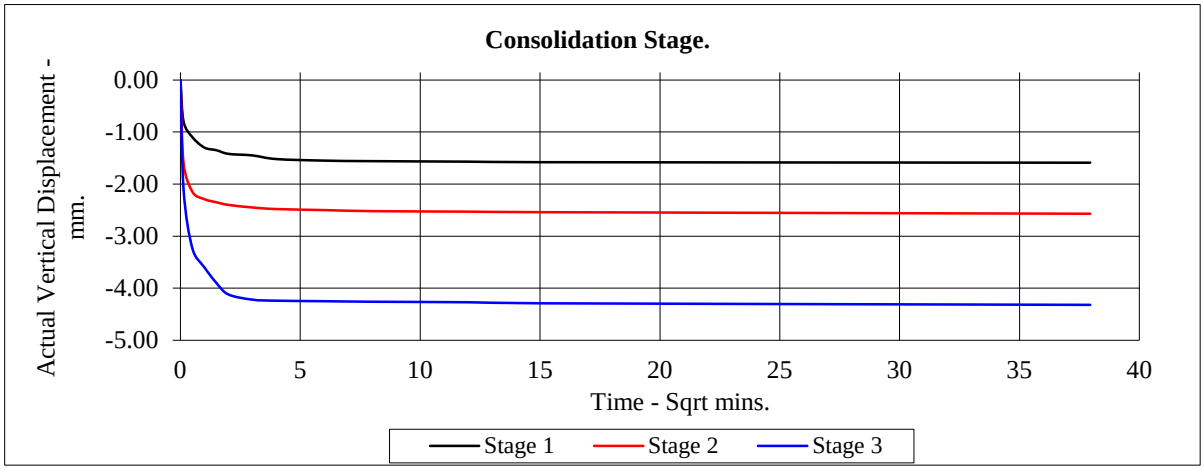
| **STAGE** | **1** | **2** | **3** |
|---|---|---|---|
| **Initial Conditions** | | | |
| Height - mm: | 19.99 | 19.99 | 19.99 |
| Length - mm: | 60.05 | 60.05 | 60.05 |
| Moisture Content - %: | 11 | 11 | 11 |
| Bulk Density - Mg/m3: | 1.86 | 1.86 | 1.86 |
| Dry Density - Mg/m3: | 1.68 | 1.68 | 1.68 |
| Voids Ratio: | 0.580 | 0.580 | 0.580 |
| Normal Pressure- kPa | 20 | 40 | 60 |
| **Consolidation Stage** | | | |
| Consolidated Height - mm: | 18.40 | 17.42 | 15.67 |
| **Peak Shear** | | | |
| Rate of Strain - mm/min | 0.045 | 0.045 | 0.045 |
| Displacement at peak shear stress - mm | 6.90 | 10.00 | 6.00 |
| Peak shear Stress - kPa: | 10 | 20 | 29 |
| **Residual Shear** | | | |
| Rate of Strain - mm/min | 0.090 | 0.090 | 0.090 |
| Displacement at residual shear stress - mm | 30.00 | 29.00 | 20.00 |
| Residual shear Stress - kPa: | 9 | 18 | 25 |
| **Final Consolidation Conditions** | | | |
| Moisture Content - %: | 21 | 19 | 17 |
| Bulk Density - Mg/m3: | 2.02 | 2.14 | 2.37 |
| Dry Density - Mg/m3: | 1.68 | 1.80 | 2.03 |
| **Peak Shear** | | | |
| Angle of Shearing Resistance:(θ) | 24 | | |
| Effective Cohesion - kPa: | 2 | | |
| **Residual Shear** | | | |
| Angle of Shearing Resistance:(θ) | 22 | | |
| Effective Cohesion - kPa: | 1 | | |

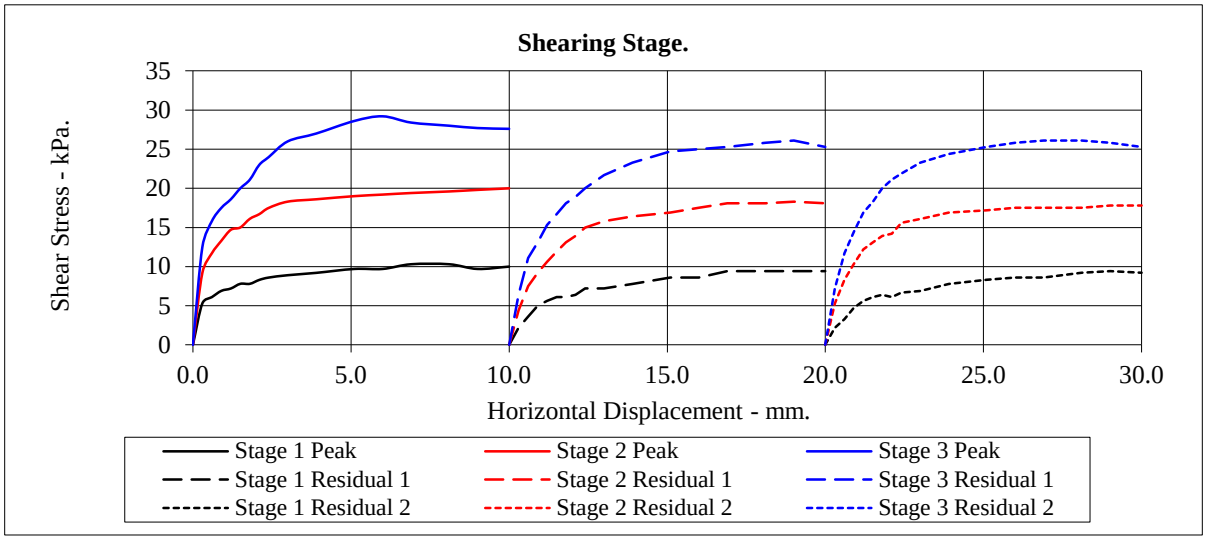


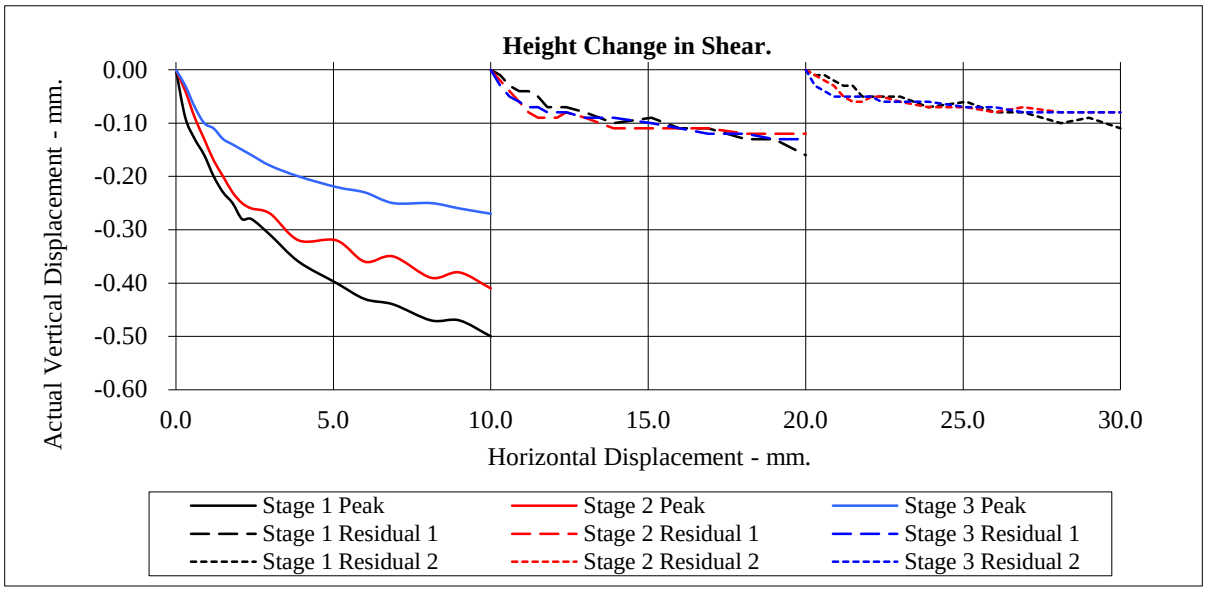
# CONSOLIDATED DRAINED SHEARBOX TEST

## BS1377 : 1990 Part 7 Clause 4

| | | | |
|---|---|---|---|
| Hole Number: | **TP143** | Top Depth: | **2.10** |
| Sample Number: | **7** | Base Depth: | **2.40** |



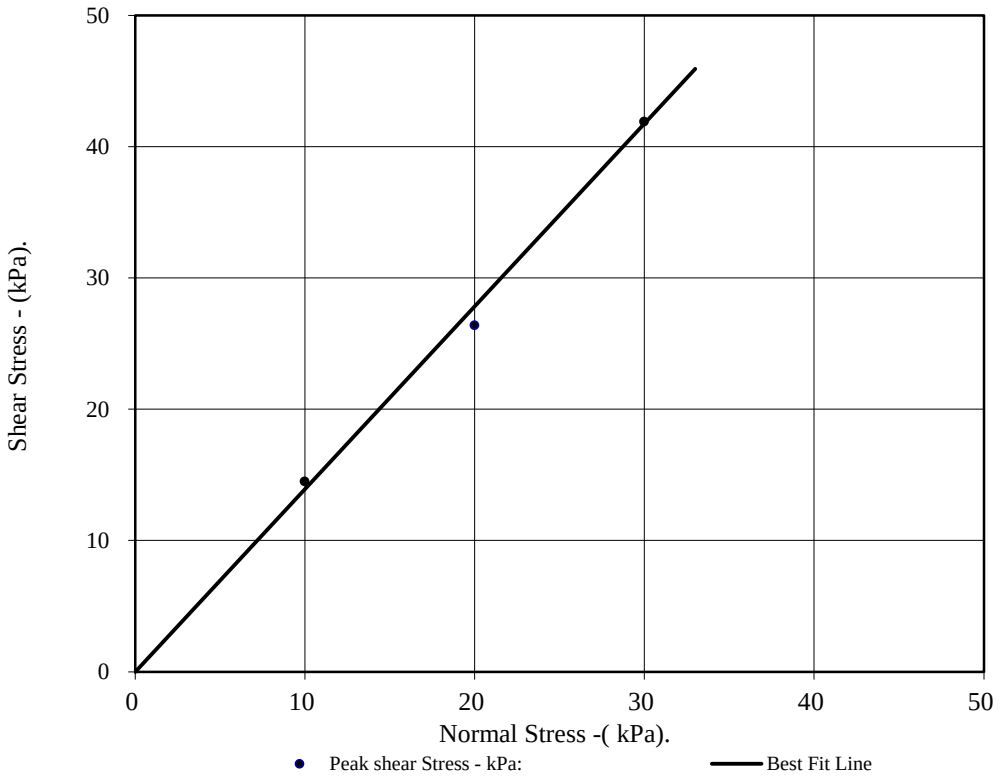



# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 5**

| | | | | | |
|---|---|---|---|---|---|
| Hole Number: | **TP145** | | Top Depth: | **1.00** | |
| Sample Number: | **5** | | Base Depth: | **1.30** | |
| Sample Conditions: | Dry | | Sample Type | **B** | |
| Particle Density - Mg/m3: | 2.65 | Assumed | **Remarks:** | | |
| Sample Preparation: | Material tested passing 20mm sieve<br>Remoulded using 2.5kg effort. | | | | |
| Sample Description: | **See summary of soil descriptions** | | | | |

| **STAGE** | **1** | **2** | **3** |
|---|---|---|---|
| **Initial Conditions** | | | |
| Height - mm: | 150 | 150 | 150 |
| Length - mm: | 300 | 300 | 300 |
| Moisture Content - %: | 10 | 10 | 10 |
| Bulk Density - Mg/m3: | 2.02 | 2.02 | 2.02 |
| Dry Density - Mg/m3: | 1.83 | 1.83 | 1.83 |
| Voids Ratio: | 0.449 | 0.449 | 0.449 |
| Normal Pressure- kPa | 10 | 20 | 30 |
| **Consolidation Stage** | | | |
| Consolidated Height - mm: | 149.84 | 149.70 | 149.41 |
| **Shearing Stage** | | | |
| Rate of Strain (mm/min) | 1.00 | 1.00 | 1.00 |
| Displacement at peak shear stress (mm) | 9.50 | 7.50 | 9.00 |
| Peak shear Stress - kPa: | 15 | 26 | 42 |
| **Final Consolidated Conditions** | | | |
| Moisture Content - %: | 10 | 9.7 | 9.6 |
| Bulk Density - Mg/m3: | 2.02 | 2.02 | 2.03 |
| Dry Density - Mg/m3: | 1.84 | 1.85 | 1.85 |
| **Peak** | | | |
| Angle of Shearing Resistance:(~~θ~~) | **54** | | |
| Effective Cohesion - kPa: | **0** | | |

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**Wansford to Sutton Dualling Supplementary GI**

| **Contract No:** |
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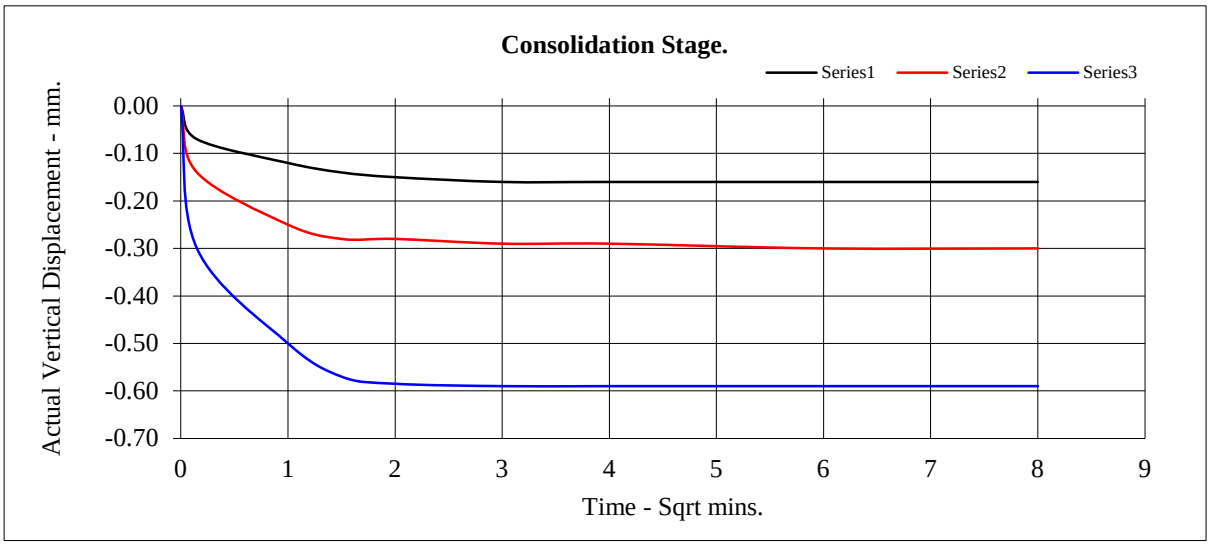
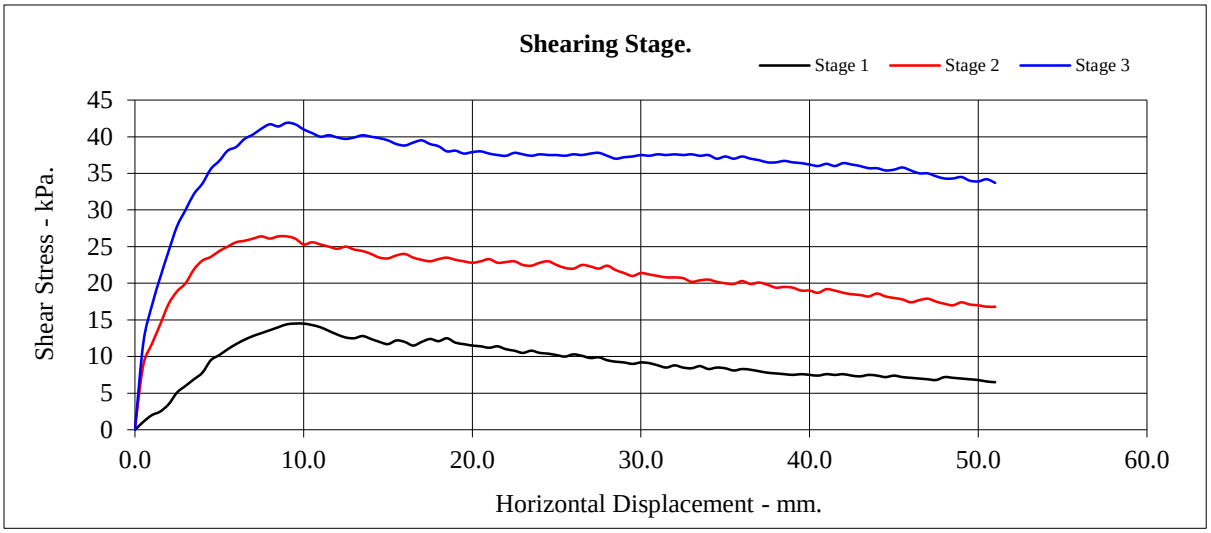
| **PSL22/3825** |
| **Client Ref:** |
| **GT0386** |

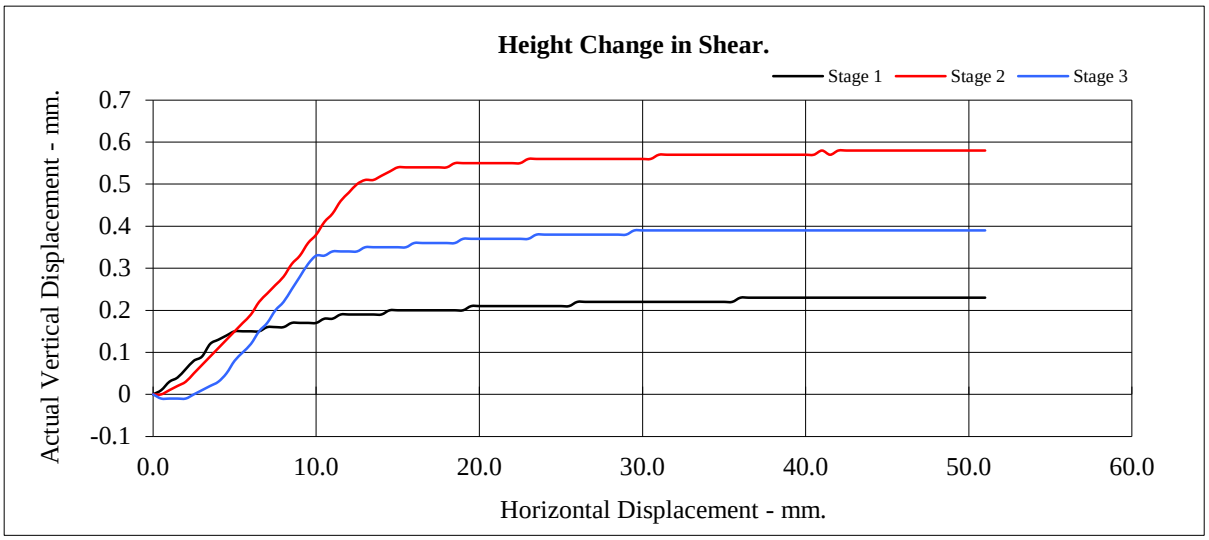
# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 5**

| | | | |
|---|---|---|---|
| Hole Number: | **TP145** | Top Depth: | **1.00** |
| Sample Number: | **5** | Base Depth: | **1.30** |




| | | | |
|---|---|---|---|
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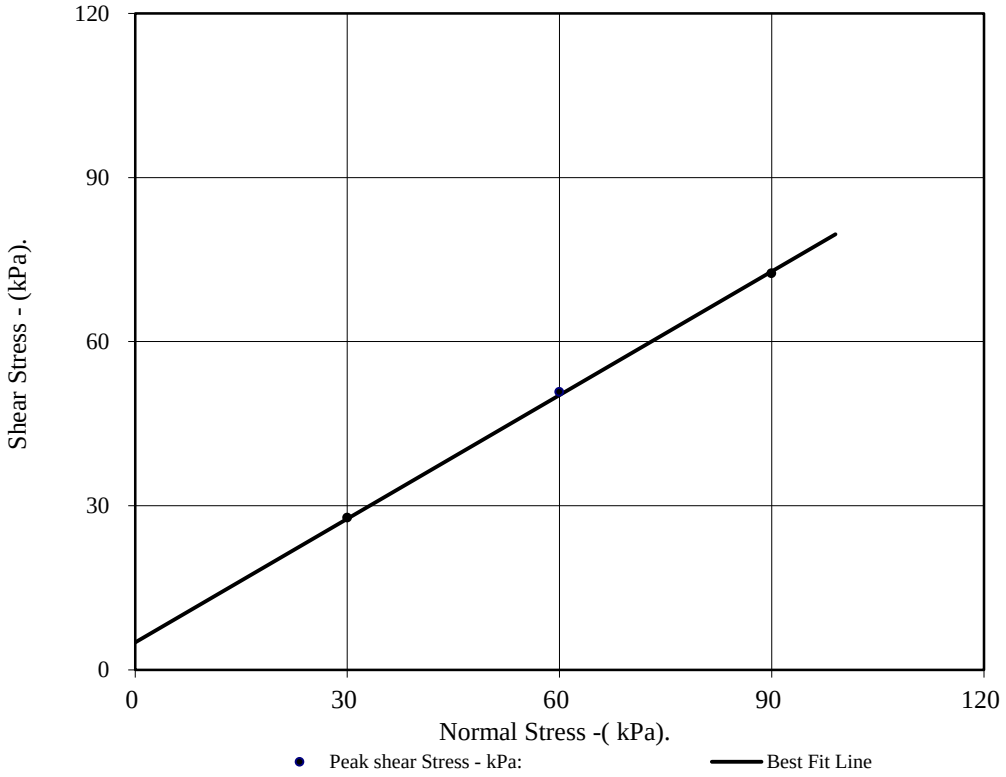
# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 4**

| | | | | | |
|---|---|---|---|---|---|
| Hole Number: | **TP149** | | Top Depth: | **3.00** | |
| Sample Number: | **9** | | Base Depth: | **3.30** | |
| Sample Conditions: | Submerged | | Sample Type | **B** | |
| Particle Density - Mg/m3: | 2.65 | Assumed | **Remarks:** | | |
| Sample Preparation: | Material tested passing 2mm sieve<br>Remoulded using 2.5kg effort. | | | | |
| Sample Description: | **See summary of soil descriptions.** | | | | |

| **STAGE** | **1** | **2** | **3** |
|---|---|---|---|
| **Initial Conditions** | | | |
| Height - mm: | 20.05 | 20.05 | 20.05 |
| Length - mm: | 59.97 | 59.97 | 59.97 |
| Moisture Content - %: | 20 | 20 | 20 |
| Bulk Density - Mg/m3: | 1.92 | 1.92 | 1.92 |
| Dry Density - Mg/m3: | 1.59 | 1.59 | 1.59 |
| Voids Ratio: | 0.665 | 0.665 | 0.665 |
| Normal Pressure- kPa | 30 | 60 | 90 |
| **Consolidation Stage** | | | |
| Consolidated Height - mm: | 19.72 | 19.37 | 18.76 |
| **Shearing Stage** | | | |
| Rate of Strain - mm/min | 0.042 | 0.042 | 0.042 |
| Displacement at peak shear stress - mm | 5.71 | 7.51 | 9.01 |
| Peak shear Stress - kPa: | 28 | 51 | 73 |
| **Final Consolidated Conditions** | | | |
| Moisture Content - %: | 23 | 23 | 22 |
| Bulk Density - Mg/m3: | 1.95 | 1.98 | 2.05 |
| Dry Density - Mg/m3: | 1.58 | 1.61 | 1.67 |
| **Peak** | | | |
| Angle of Shearing Resistance:(~~θ~~) | **37** | | |
| Effective Cohesion - kPa: | **5** | | |




UKAS TESTING 4043

PSL Professional Soils Laboratory

**Wansford to Sutton Dualling Supplementary GI**

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| **Client Ref:** | |
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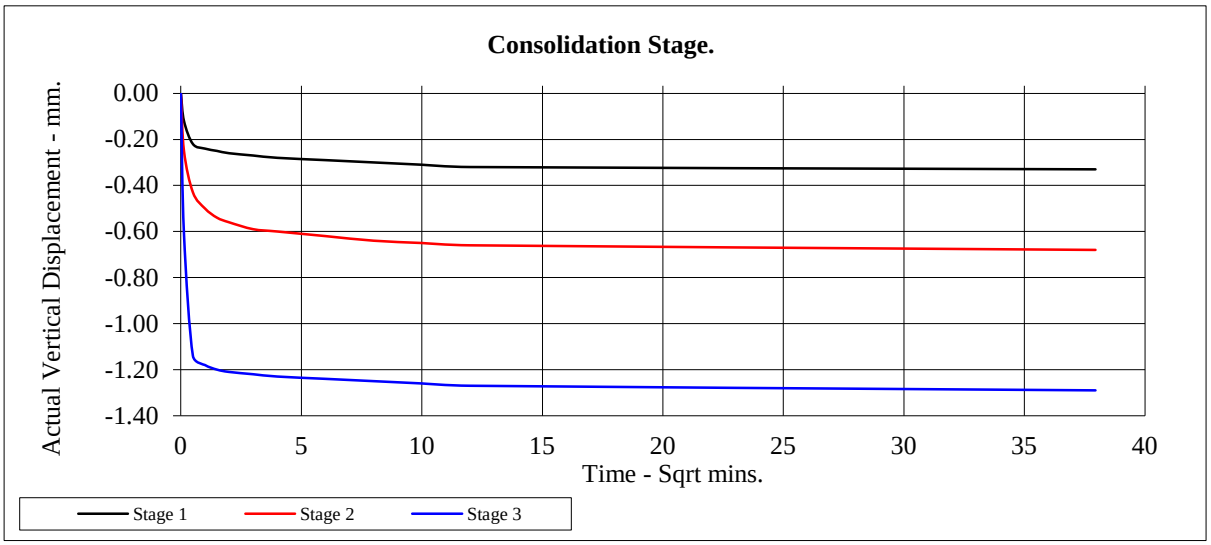
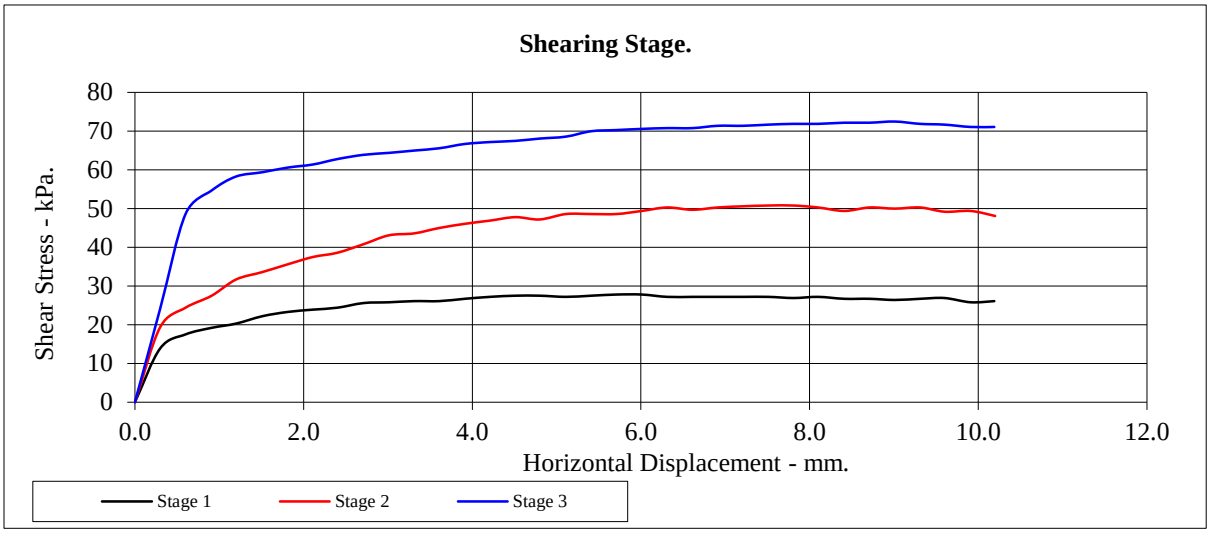
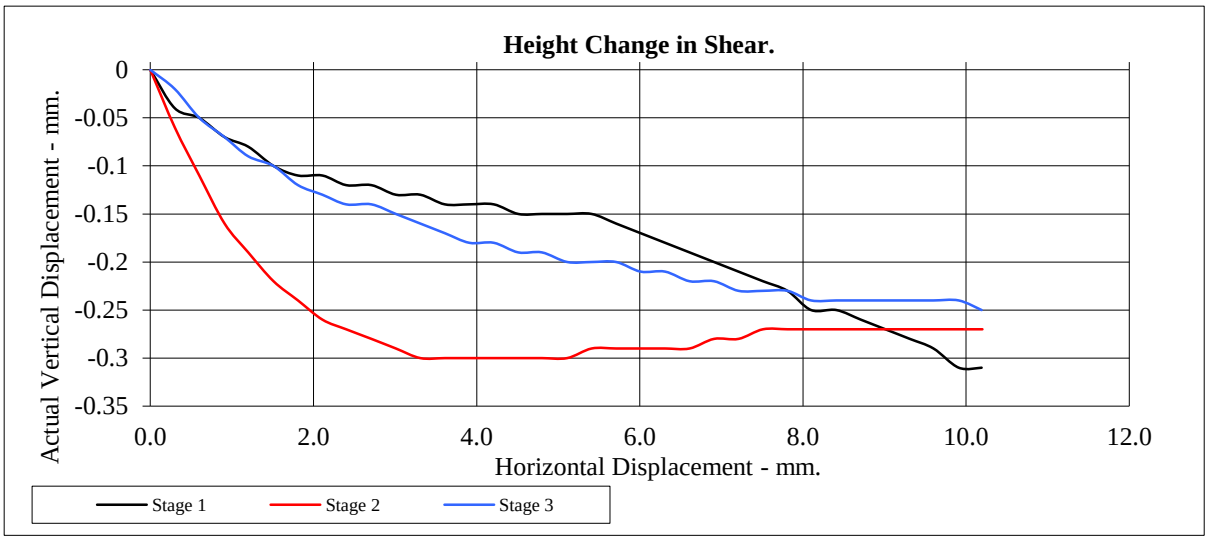
# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 4**

| | | | |
|---|---|---|---|
| Hole Number: | **TP149** | Top Depth: | **3.00** |
| Sample Number: | **9** | Base Depth: | **3.30** |



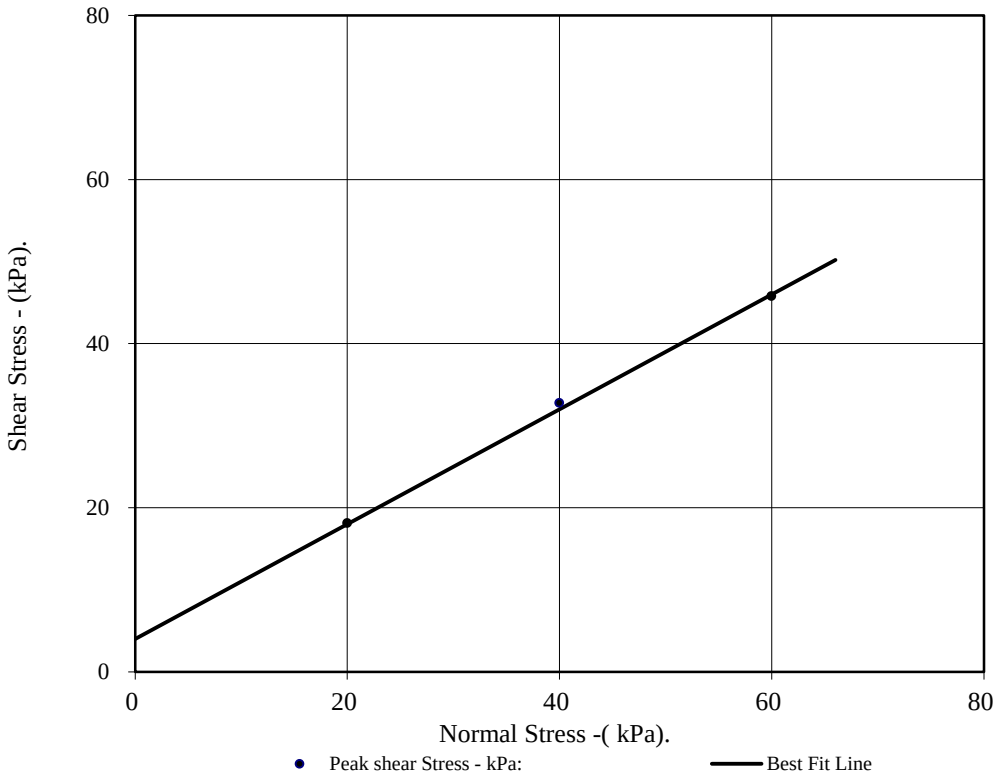



# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 4**

| | | | | | |
|---|---|---|---|---|---|
| Hole Number: | **TP160** | | Top Depth: | **2.00** | |
| Sample Number: | **7** | | Base Depth: | **2.30** | |
| Sample Conditions: | Dry | | Sample Type | **B** | |
| Particle Density - Mg/m3: | 2.65 | Assumed | **Remarks:** | | |
| Sample Preparation: | Material tested passing 2mm sieve<br>Remoulded using hand tamped effort. | | | | |
| Sample Description: | **See summary of soil descriptions.** | | | | |

| **STAGE** | **1** | **2** | **3** |
|---|---|---|---|
| **Initial Conditions** | | | |
| Height - mm: | 19.99 | 19.99 | 19.99 |
| Length - mm: | 60.05 | 60.05 | 60.05 |
| Moisture Content - %: | 11 | 11 | 11 |
| Bulk Density - Mg/m3: | 1.84 | 1.84 | 1.84 |
| Dry Density - Mg/m3: | 1.65 | 1.65 | 1.65 |
| Voids Ratio: | 0.603 | 0.603 | 0.603 |
| Normal Pressure- kPa | 20 | 40 | 60 |
| **Consolidation Stage** | | | |
| Consolidated Height - mm: | 19.87 | 19.60 | 19.24 |
| **Shearing Stage** | | | |
| Rate of Strain - mm/min | 0.60 | 0.60 | 0.60 |
| Displacement at peak shear stress - mm | 1.81 | 2.11 | 2.12 |
| Peak shear Stress - kPa: | 18 | 33 | 46 |
| **Final Consolidated Conditions** | | | |
| Moisture Content - %: | 9.6 | 8.4 | 7.9 |
| Bulk Density - Mg/m3: | 1.85 | 1.88 | 1.91 |
| Dry Density - Mg/m3: | 1.69 | 1.73 | 1.77 |
| **Peak** | | | |
| Angle of Shearing Resistance:(~~θ~~) | **35** | | |
| Effective Cohesion - kPa: | **4** | | |

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**Wansford to Sutton Dualling Supplementary GI**

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| **Contract No:** | |
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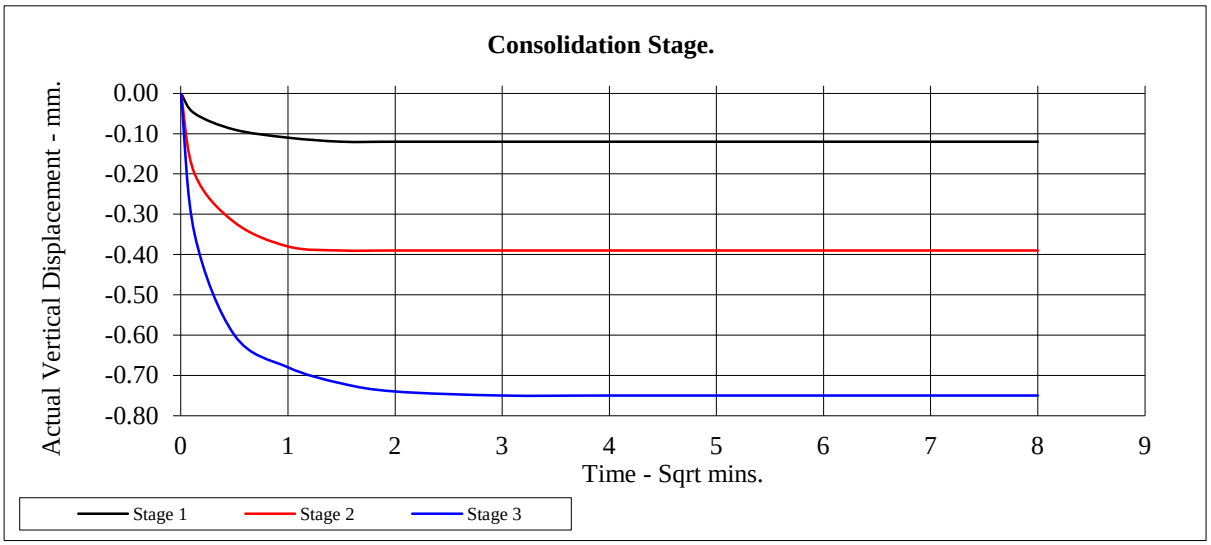
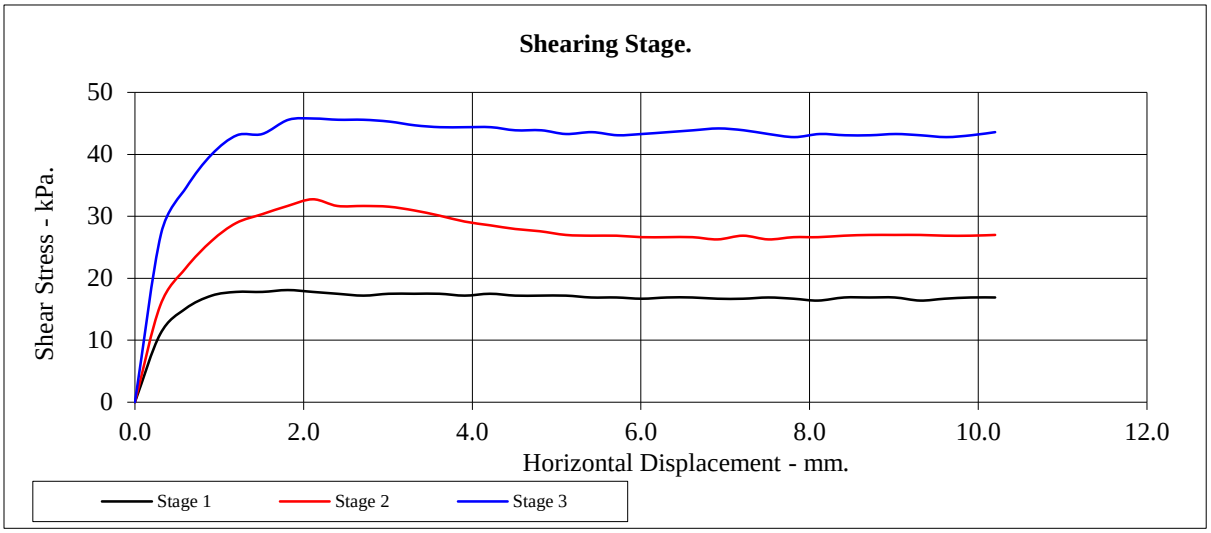
| **Client Ref:** | |
| **GT0386** | |

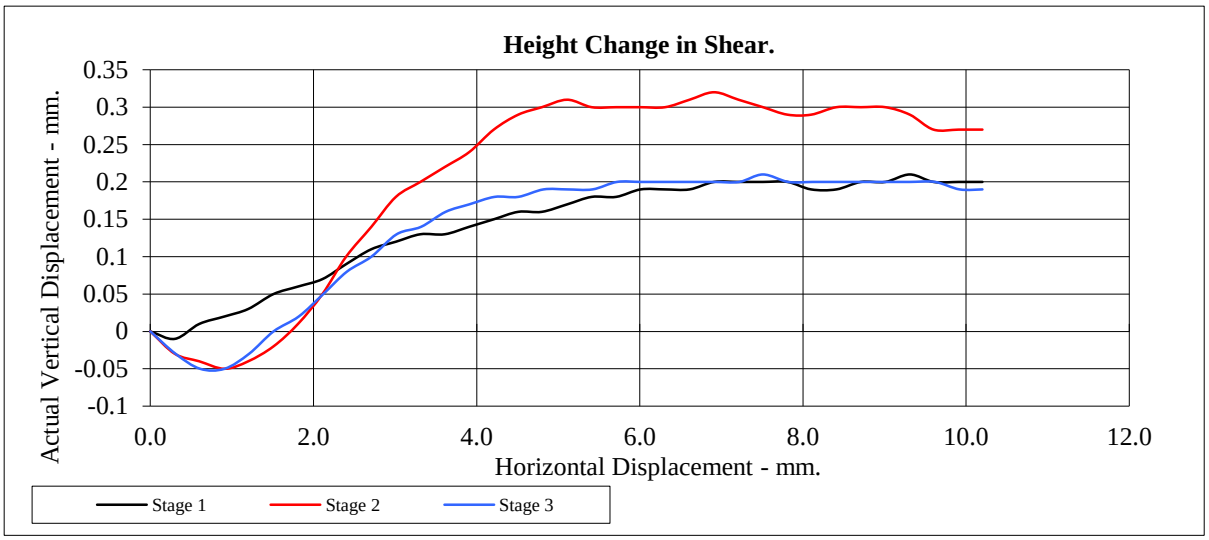
# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 4**

| | | | |
|---|---|---|---|
| Hole Number: | **TP160** | Top Depth: | **2.00** |
| Sample Number: | **7** | Base Depth: | **2.30** |

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| **Contract No:** | |
| **PSL22/3825** | |
| **Client Ref:** | |
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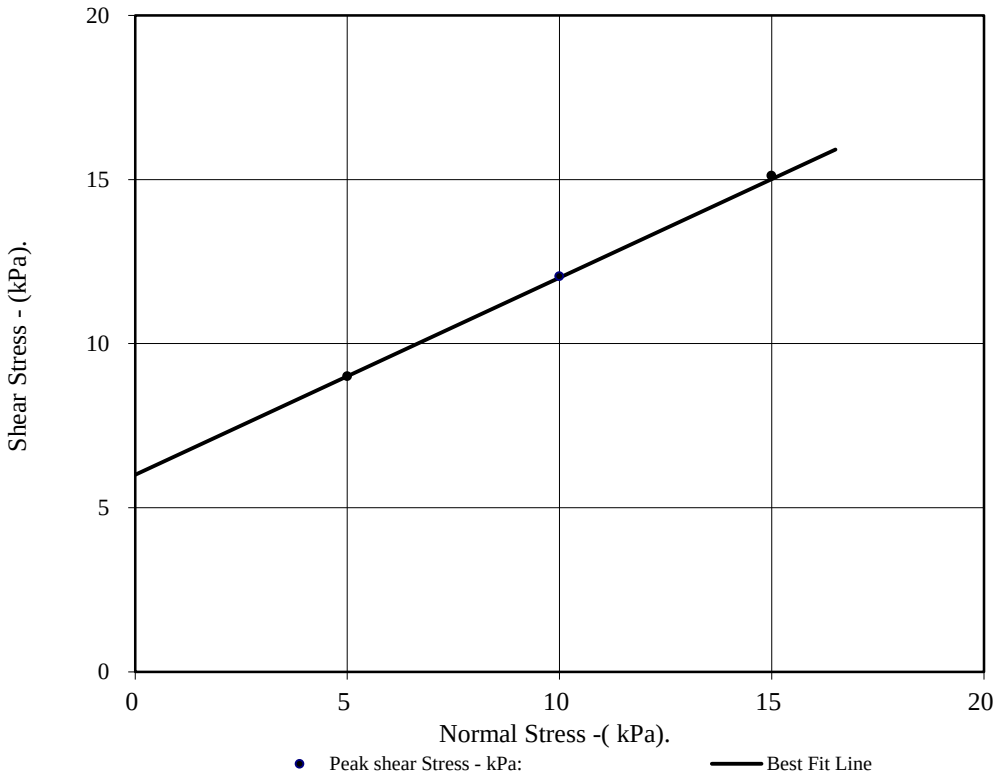
# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 4**

| | | | | | |
|---|---|---|---|---|---|
| Hole Number: | **TP164** | | Top Depth: | **0.30** | |
| Sample Number: | **5** | | Base Depth: | **0.60** | |
| Sample Conditions: | Submerged | | Sample Type | **B** | |
| Particle Density - Mg/m3: | 2.65 | Assumed | **Remarks:** | | |
| Sample Preparation: | Material tested passing 2mm sieve<br>Remoulded using 2.5kg effort. | | | | |
| Sample Description: | **See summary of soil descriptions.** | | | | |

| **STAGE** | **1** | **2** | **3** |
|---|---|---|---|
| **Initial Conditions** | | | |
| Height - mm: | 20.05 | 20.05 | 20.05 |
| Length - mm: | 59.97 | 59.97 | 59.97 |
| Moisture Content - %: | 26 | 26 | 26 |
| Bulk Density - Mg/m3: | 1.99 | 1.99 | 1.99 |
| Dry Density - Mg/m3: | 1.59 | 1.59 | 1.59 |
| Voids Ratio: | 0.671 | 0.671 | 0.671 |
| Normal Pressure- kPa | 5 | 10 | 15 |
| **Consolidation Stage** | | | |
| Consolidated Height - mm: | 19.82 | 19.70 | 19.58 |
| **Shearing Stage** | | | |
| Rate of Strain - mm/min | 0.047 | 0.047 | 0.047 |
| Displacement at peak shear stress - mm | 5.11 | 2.71 | 3.01 |
| Peak shear Stress - kPa: | 9 | 12 | 15 |
| **Final Consolidated Conditions** | | | |
| Moisture Content - %: | 33 | 28 | 28 |
| Bulk Density - Mg/m3: | 2.01 | 2.03 | 2.04 |
| Dry Density - Mg/m3: | 1.52 | 1.58 | 1.59 |
| **Peak** | | | |
| Angle of Shearing Resistance:(~~θ~~) | **31** | | |
| Effective Cohesion - kPa: | **6** | | |

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| **PSL22/3825** | |
| **Client Ref:** | |
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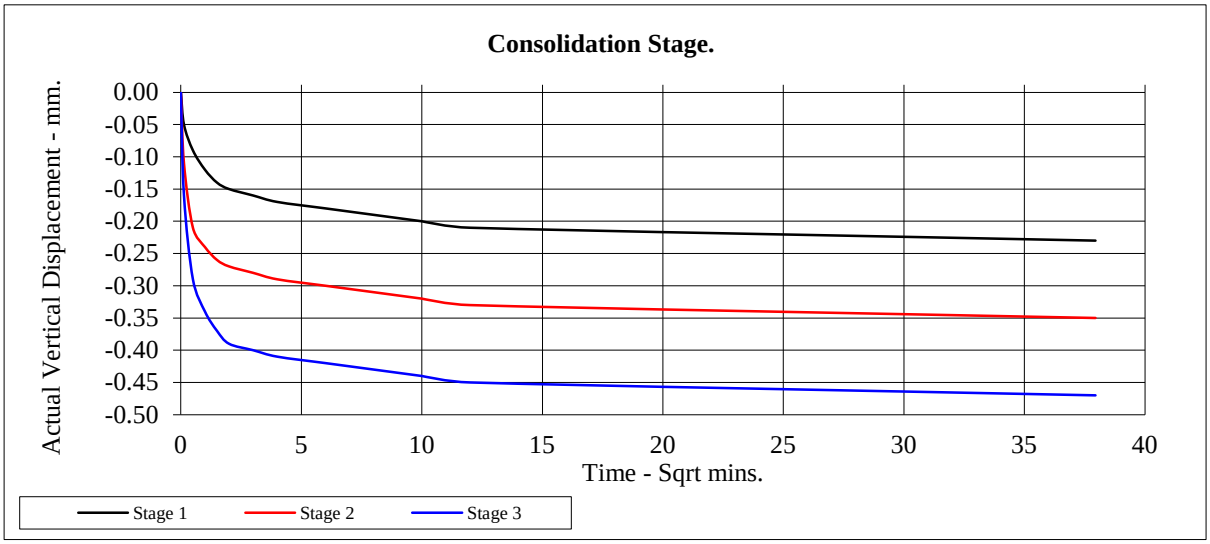
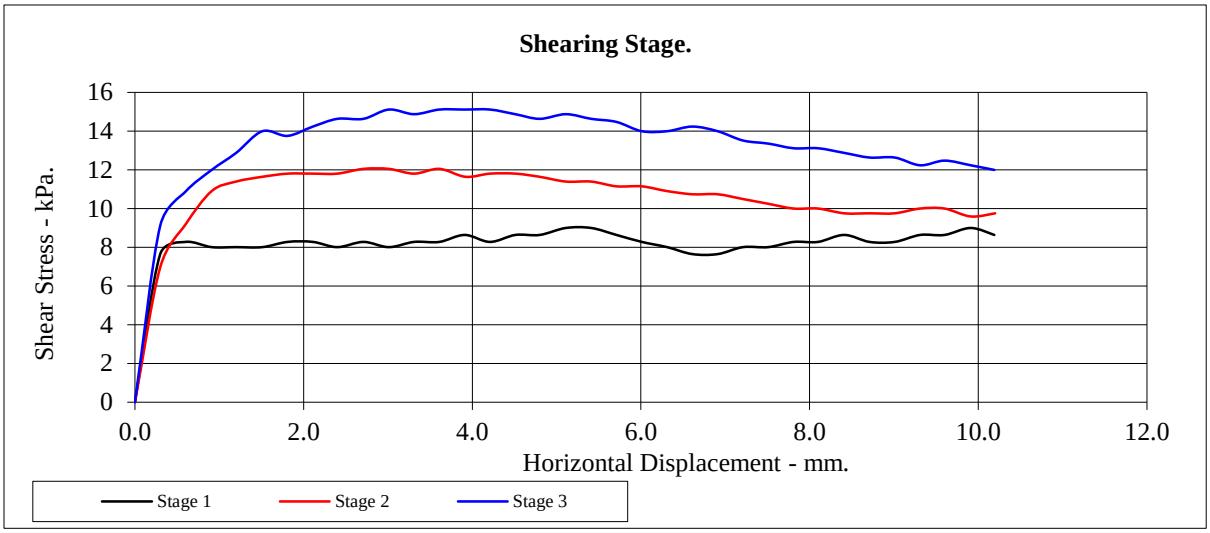
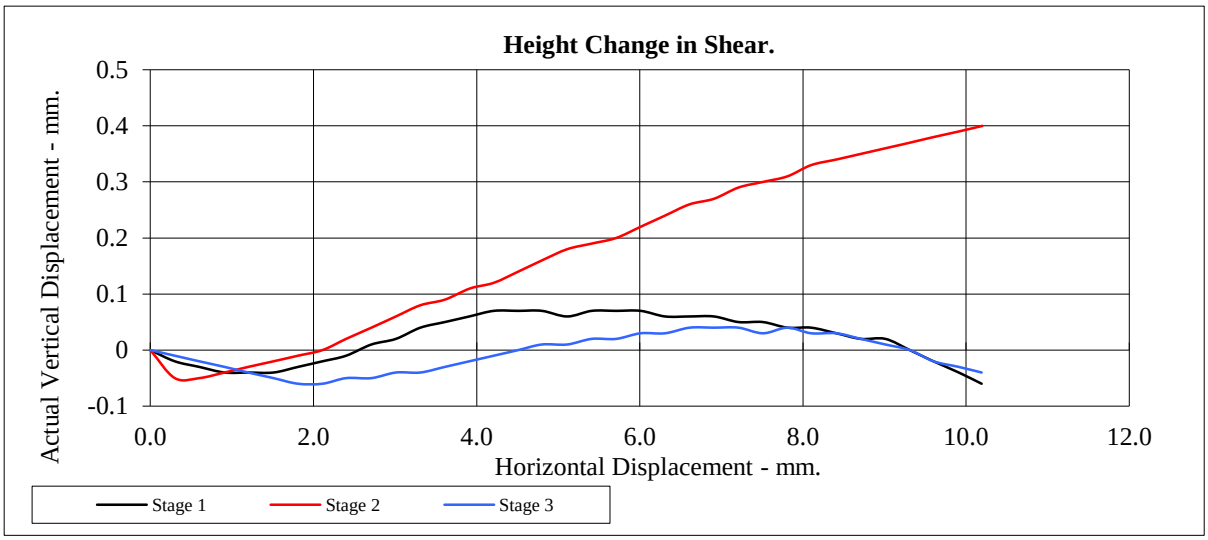
# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 4**

| | | | |
|---|---|---|---|
| Hole Number: | **TP164** | Top Depth: | **0.30** |
| Sample Number: | **5** | Base Depth: | **0.60** |



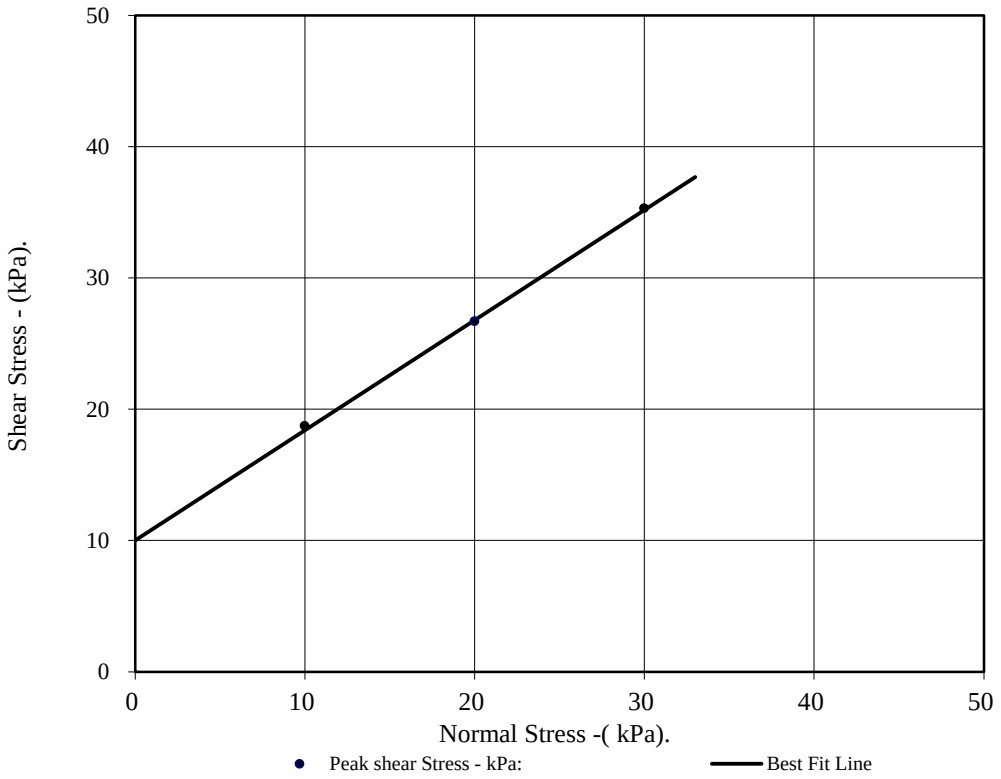



# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 4**

| | | | | | |
|---|---|---|---|---|---|
| Hole Number: | **TP165** | | Top Depth: | **1.00** | |
| Sample Number: | **5** | | Base Depth: | **1.30** | |
| Sample Conditions: | Dry | | Sample Type | **B** | |
| Particle Density - Mg/m3: | 2.65 | Assumed | **Remarks:** | | |
| Sample Preparation: | Material tested passing 2mm sieve<br>Remoulded using hand tamped effort. | | | | |
| Sample Description: | **See summary of soil descriptions.** | | | | |

| **STAGE** | **1** | **2** | **3** |
|---|---|---|---|
| **Initial Conditions** | | | |
| Height - mm: | 19.99 | 19.99 | 19.99 |
| Length - mm: | 60.05 | 60.05 | 60.05 |
| Moisture Content - %: | 14 | 14 | 14 |
| Bulk Density - Mg/m3: | 2.07 | 2.07 | 2.07 |
| Dry Density - Mg/m3: | 1.81 | 1.81 | 1.81 |
| Voids Ratio: | 0.462 | 0.462 | 0.462 |
| Normal Pressure- kPa | 10 | 20 | 30 |
| **Consolidation Stage** | | | |
| Consolidated Height - mm: | 19.91 | 19.73 | 19.57 |
| **Shearing Stage** | | | |
| Rate of Strain - mm/min | 0.60 | 0.60 | 0.60 |
| Displacement at peak shear stress - mm | 2.71 | 3.61 | 2.41 |
| Peak shear Stress - kPa: | 19 | 27 | 35 |
| **Final Consolidated Conditions** | | | |
| Moisture Content - %: | 13 | 13 | 12 |
| Bulk Density - Mg/m3: | 2.08 | 2.09 | 2.11 |
| Dry Density - Mg/m3: | 1.83 | 1.86 | 1.88 |
| **Peak** | | | |
| Angle of Shearing Resistance:(~~θ~~) | **40** | | |
| Effective Cohesion - kPa: | **10** | | |

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**Wansford to Sutton Dualling Supplementary GI**

| **Contract No:** |
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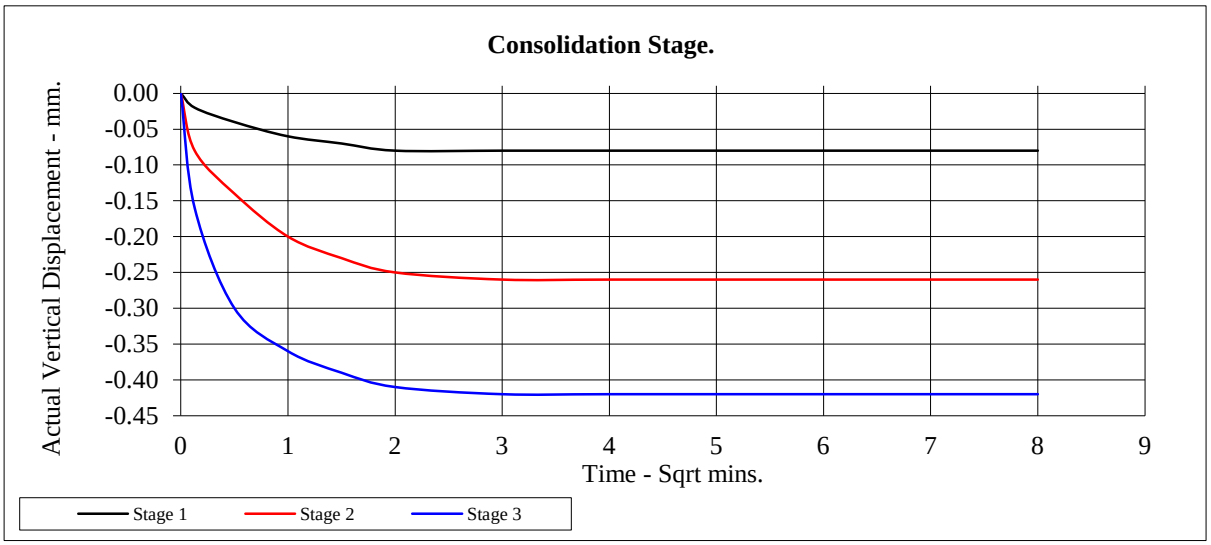
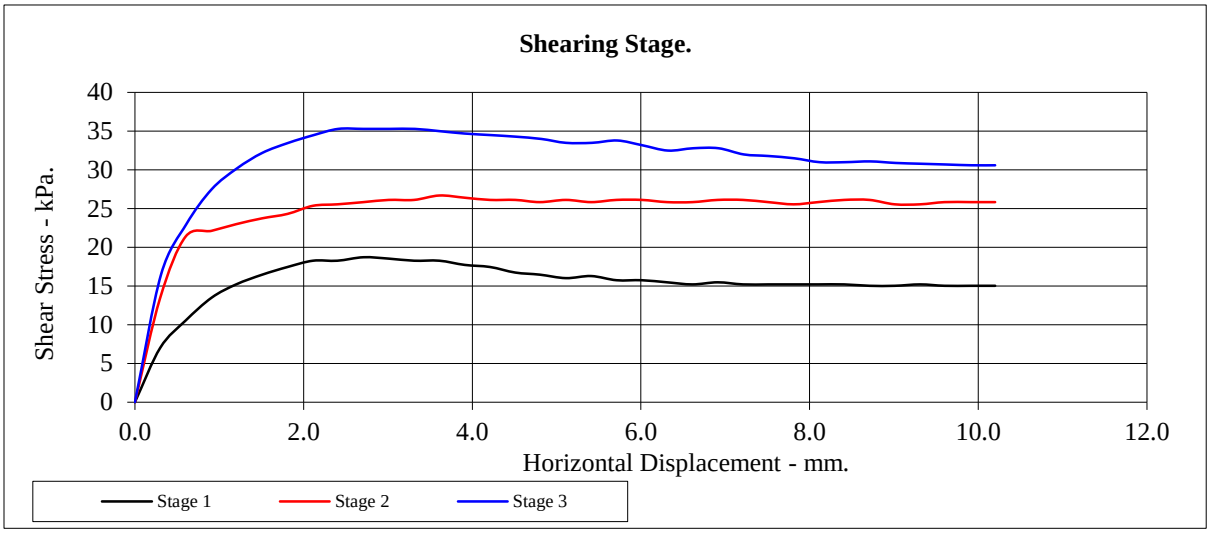
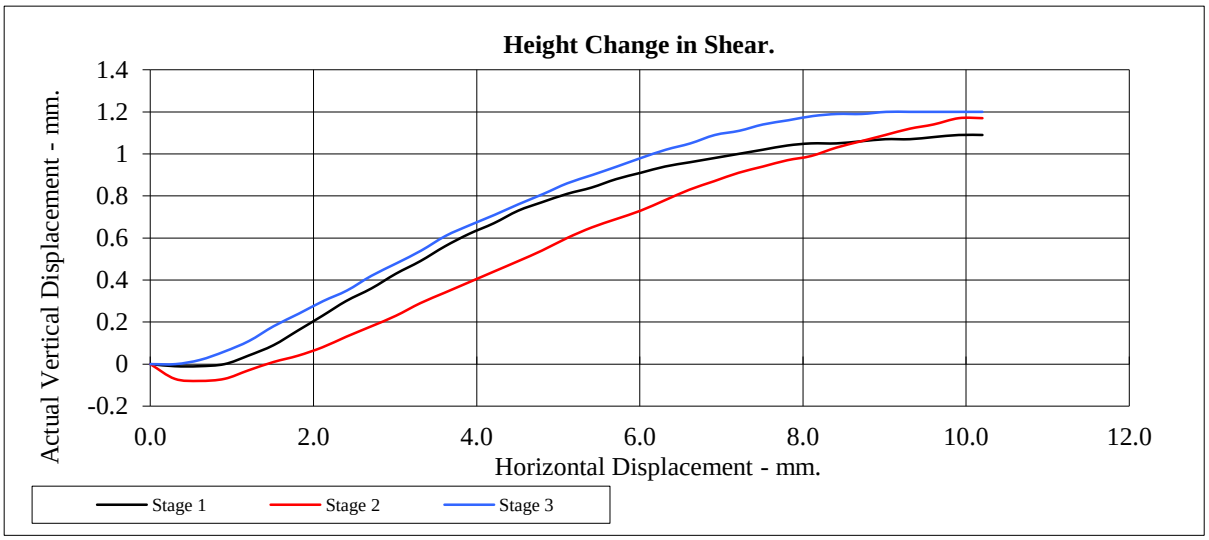
# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 4**

| | | | |
|---|---|---|---|
| Hole Number: | **TP165** | Top Depth: | **1.00** |
| Sample Number: | **5** | Base Depth: | **1.30** |



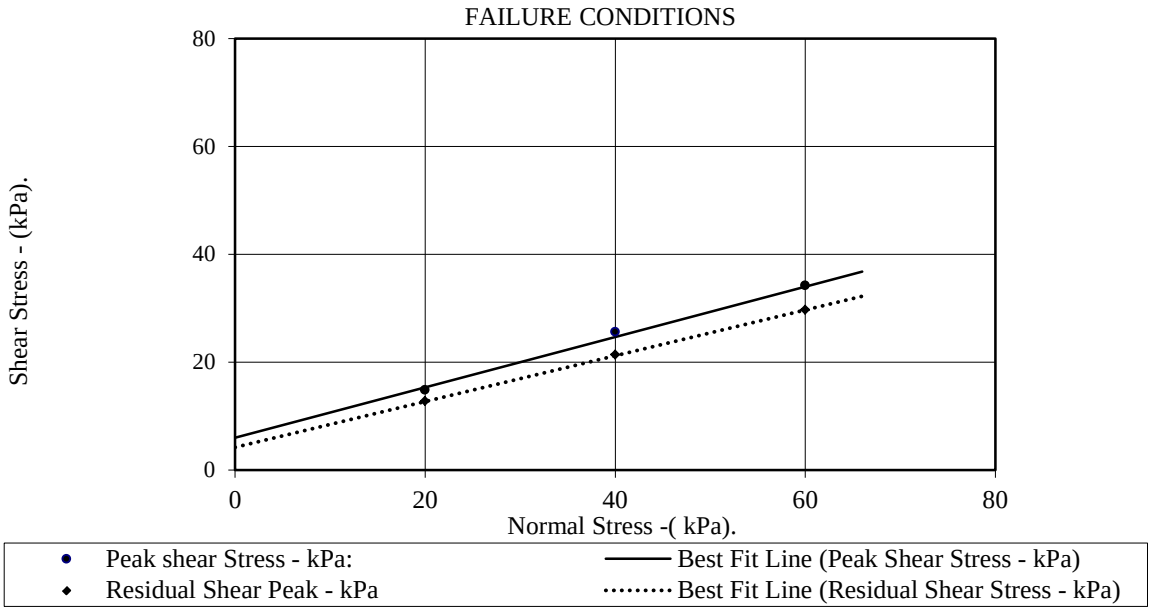



# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377 : 1990 Part 7 Clause 4**

| | | | | |
|---|---|---|---|---|
| Hole Number: | **TP169** | | Top Depth | **2.00** |
| Sample Number: | **7** | | Base Depth | **2.30** |
| Sample Conditions: | Submerged | | Sample Type | **B** |
| Particle Density - Mg/m3: | 2.65 | Assumed | **Remarks:** | |
| Specimen Preparation | Material tested passing 2mm sieve<br>Remoulded using 2.5kg effort | | | |
| Sample Description: | **See summary of soil descriptions** | | | |

| **STAGE** | **1** | **2** | **3** |
|---|---|---|---|
| **Initial Conditions** | | | |
| Height - mm: | 19.99 | 19.99 | 19.99 |
| Length - mm: | 60.05 | 60.05 | 60.05 |
| Moisture Content - %: | 22 | 22 | 22 |
| Bulk Density - Mg/m3: | 1.95 | 1.95 | 1.95 |
| Dry Density - Mg/m3: | 1.60 | 1.60 | 1.60 |
| Voids Ratio: | 0.656 | 0.656 | 0.656 |
| Normal Pressure- kPa | 20 | 40 | 60 |
| **Consolidation Stage** | | | |
| Consolidated Height - mm: | 19.72 | 19.30 | 19.15 |
| **Peak Shear** | | | |
| Rate of Strain - mm/min | 0.042 | 0.042 | 0.042 |
| Displacement at peak shear stress - mm | 3.00 | 9.00 | 3.00 |
| Peak shear Stress - kPa: | 15 | 26 | 34 |
| **Residual Shear** | | | |
| Rate of Strain - mm/min | 0.084 | 0.084 | 0.084 |
| Displacement at residual shear stress - mm | 9.00 | 26.90 | 19.00 |
| Residual shear Stress - kPa: | 13 | 21 | 30 |
| **Final Consolidation Conditions** | | | |
| Moisture Content - %: | 24 | 24 | 23 |
| Bulk Density - Mg/m3: | 1.98 | 2.02 | 2.04 |
| Dry Density - Mg/m3: | 1.60 | 1.64 | 1.66 |
| **Peak Shear** | | | |
| Angle of Shearing Resistance:(~~θ~~) | 25 | | |
| Effective Cohesion - kPa: | 6 | | |
| **Residual Shear** | | | |
| Angle of Shearing Resistance:(~~θ~~) | 23 | | |
| Effective Cohesion - kPa: | 4 | | |

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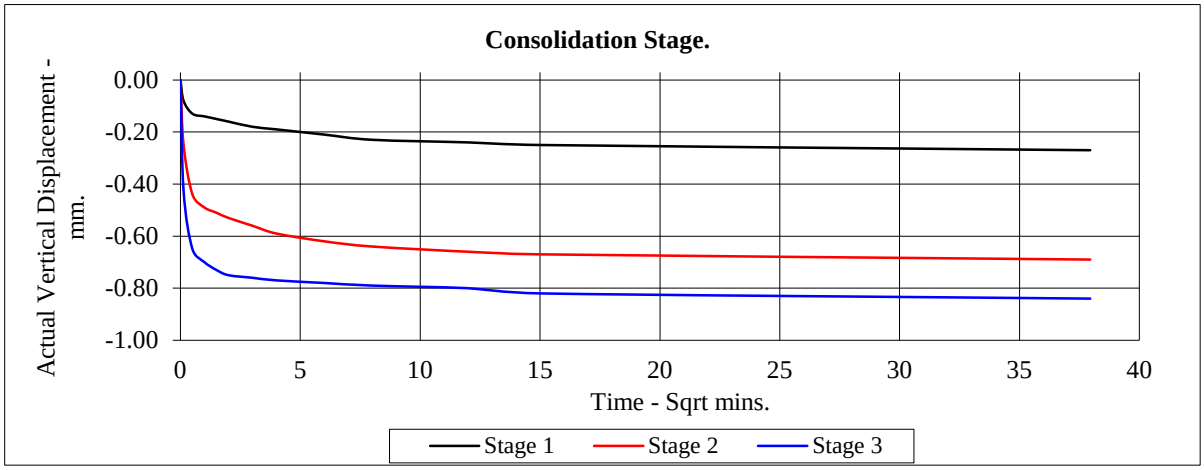
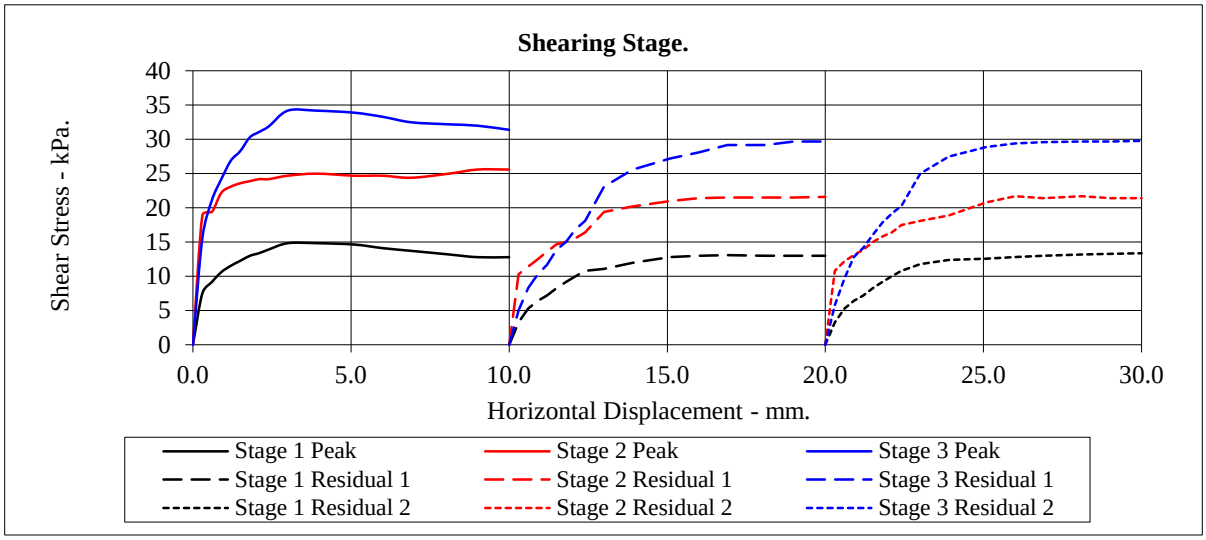
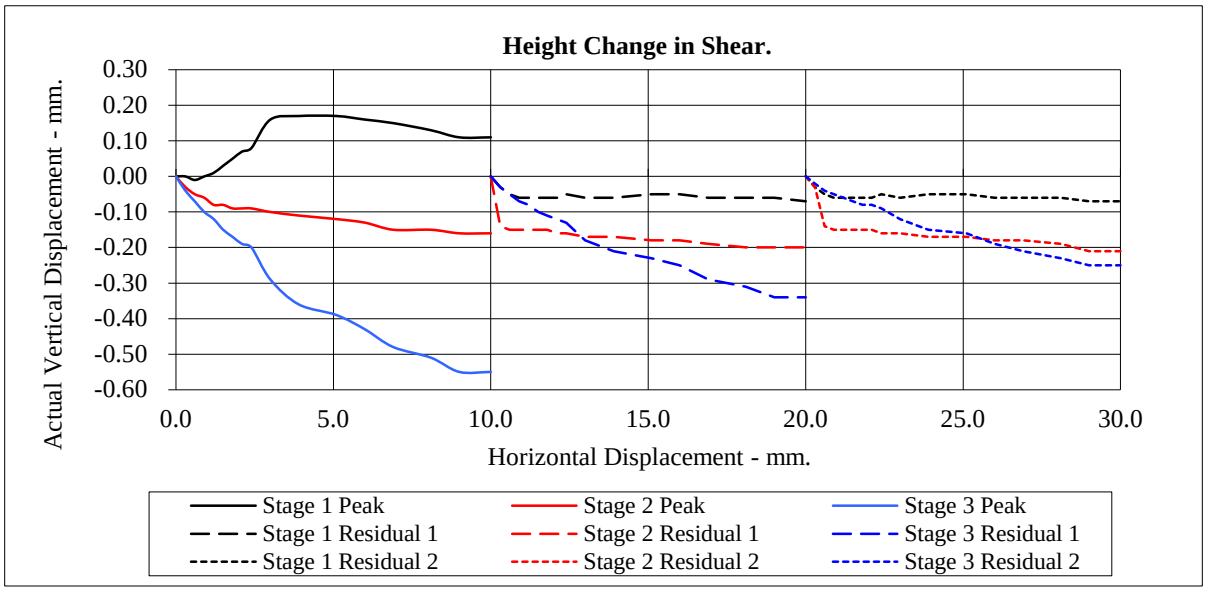
# CONSOLIDATED DRAINED SHEARBOX TEST

## BS1377 : 1990 Part 7 Clause 4

| | | | |
|---|---|---|---|
| Hole Number: | **TP169** | Top Depth: | **2.00** |
| Sample Number: | **7** | Base Depth: | **2.30** |




UKAS TESTING 4043

PSL Professional Soils Laboratory

**Wansford to Sutton Dualling Supplementary GI**

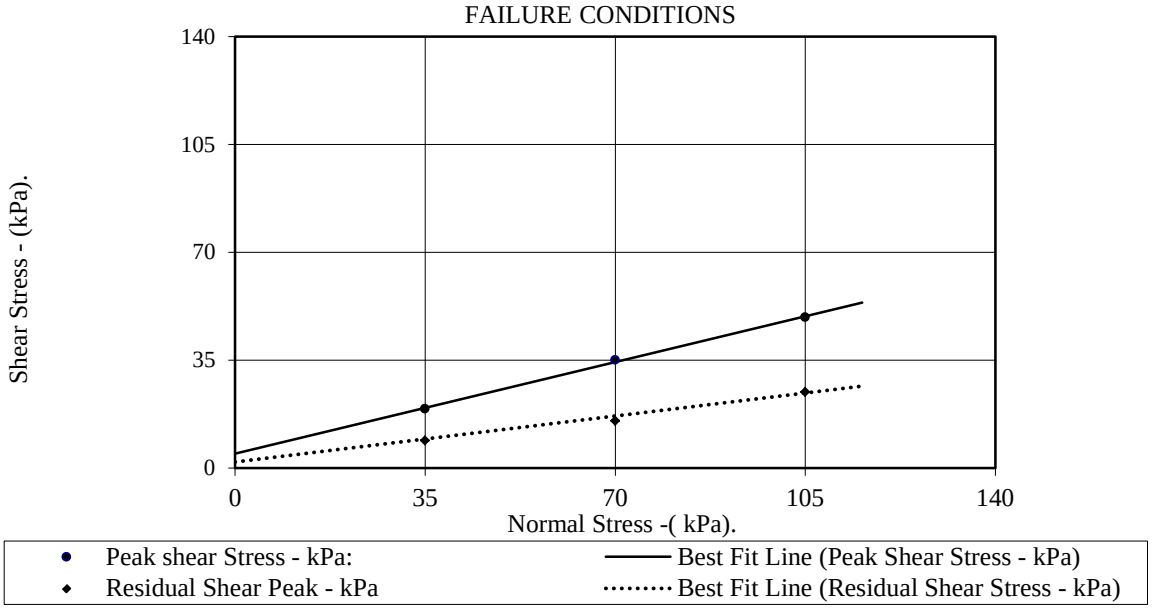
| |
|---|
| **Contract No:** |
| **PSL22/3825** |
| **Client Ref:** |
| **GT0386** |

# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377 : 1990 Part 7 Clause 4**

| | | | | |
|---|---|---|---|---|
| Hole Number: | **TP169** | | Top Depth | **3.40** |
| Sample Number: | **9** | | Base Depth | **3.70** |
| Sample Conditions: | Submerged | | Sample Type | **B** |
| Particle Density - Mg/m3: | 2.65 | Assumed | **Remarks:** | |
| Specimen Preparation | Material tested passing 2mm sieve<br>Remoulded using 2.5kg effort | | | |
| Sample Description: | **See summary of soil descriptions** | | | |

| **STAGE** | **1** | **2** | **3** |
|---|---|---|---|
| **Initial Conditions** | | | |
| Height - mm: | 19.99 | 19.99 | 19.99 |
| Length - mm: | 60.05 | 60.05 | 60.05 |
| Moisture Content - %: | 34 | 34 | 34 |
| Bulk Density - Mg/m3: | 1.75 | 1.75 | 1.75 |
| Dry Density - Mg/m3: | 1.31 | 1.31 | 1.31 |
| Voids Ratio: | 1.031 | 1.031 | 1.031 |
| Normal Pressure- kPa | 35 | 70 | 105 |
| **Consolidation Stage** | | | |
| Consolidated Height - mm: | 19.27 | 19.18 | 19.04 |
| **Peak Shear** | | | |
| Rate of Strain - mm/min | 0.038 | 0.038 | 0.038 |
| Displacement at peak shear stress - mm | 0.90 | 2.10 | 1.80 |
| Peak shear Stress - kPa: | 19 | 35 | 49 |
| **Residual Shear** | | | |
| Rate of Strain - mm/min | 0.076 | 0.076 | 0.076 |
| Displacement at residual shear stress - mm | 25.10 | 26.90 | 29.00 |
| Residual shear Stress - kPa: | 9 | 15 | 25 |
| **Final Consolidation Conditions** | | | |
| Moisture Content - %: | 39 | 38 | 36 |
| Bulk Density - Mg/m3: | 1.81 | 1.82 | 1.84 |
| Dry Density - Mg/m3: | 1.30 | 1.33 | 1.35 |
| **Peak Shear** | | | |
| Angle of Shearing Resistance:(~~θ~~) | 23 | | |
| Effective Cohesion - kPa: | 5 | | |
| **Residual Shear** | | | |
| Angle of Shearing Resistance:(~~θ~~) | 12 | | |
| Effective Cohesion - kPa: | 2 | | |




UKAS TESTING 4043

PSL Professional Soils Laboratory

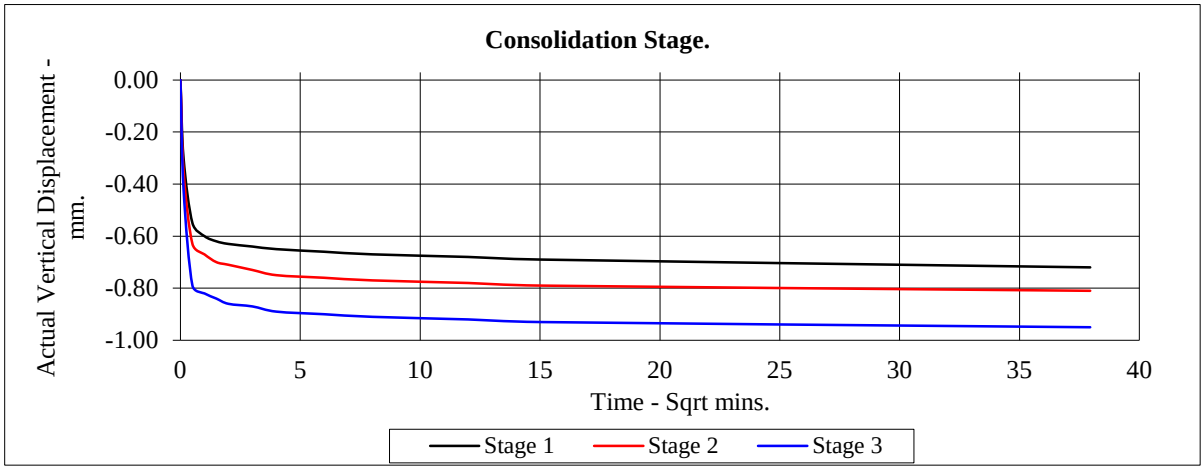
**Wansford to Sutton Dualling Supplementary GI**

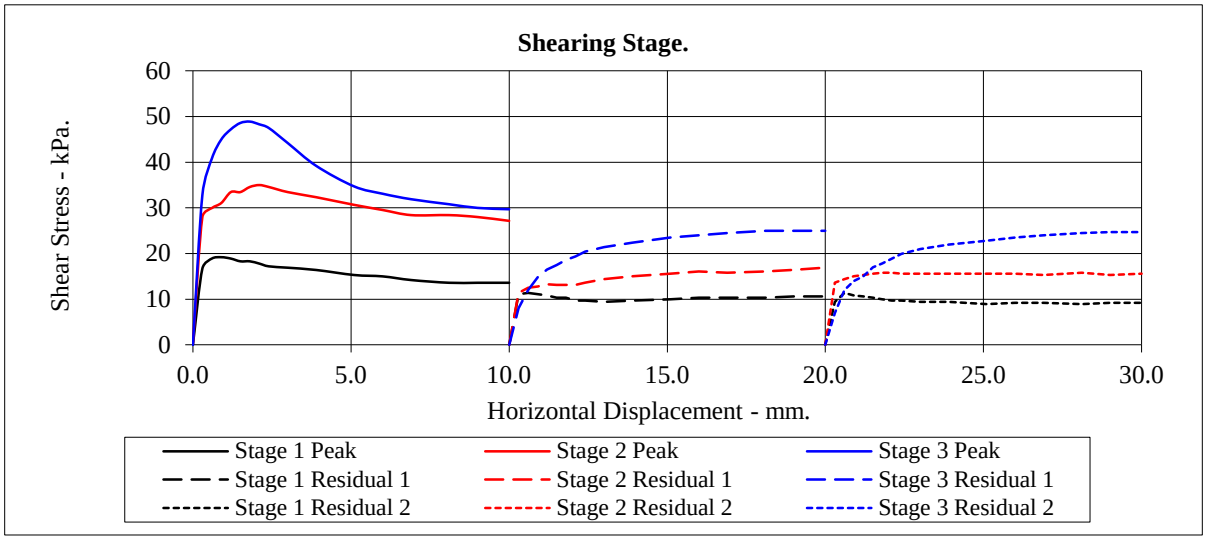
| **Contract No:** |
|---|
| **PSL22/3825** |
| **Client Ref:** |
| **GT0386** |

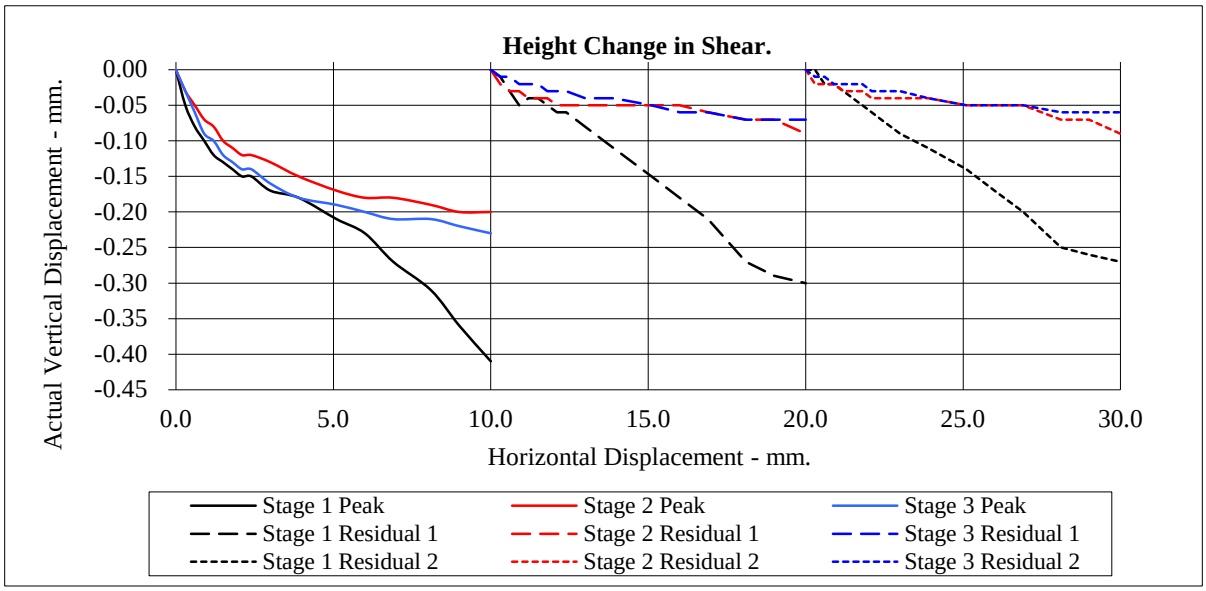
# CONSOLIDATED DRAINED SHEARBOX TEST

## BS1377 : 1990 Part 7 Clause 4

| | | | |
|---|---|---|---|
| Hole Number: | **TP169** | Top Depth: | **3.40** |
| Sample Number: | **9** | Base Depth: | **3.70** |



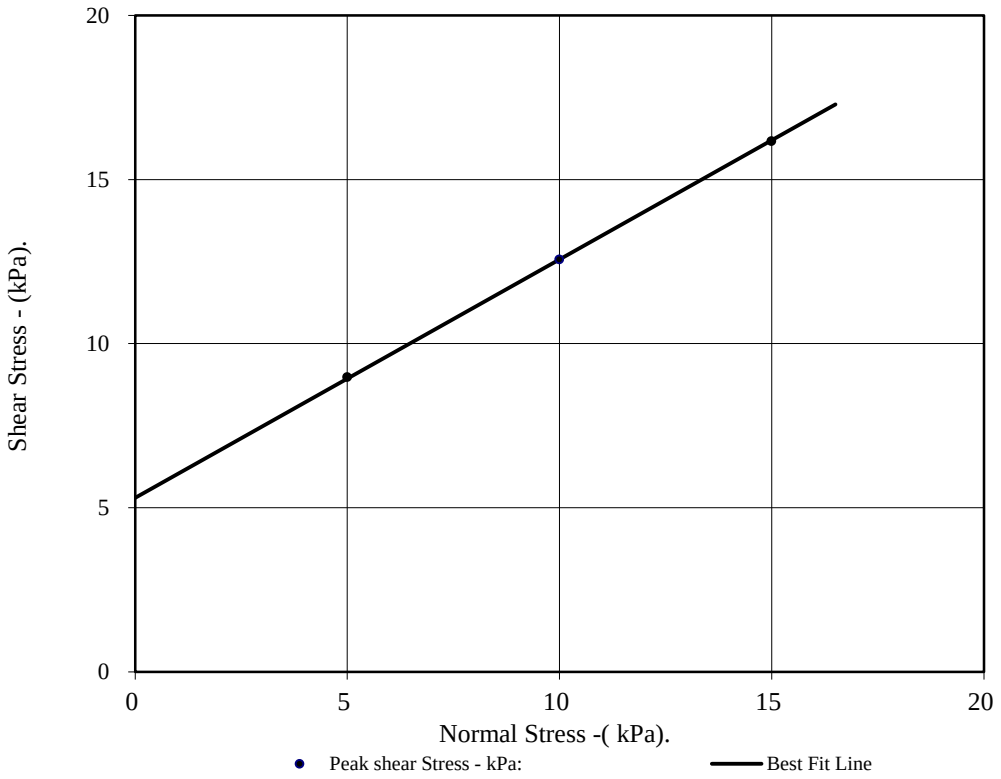



# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 5**

| | | | | | |
|---|---|---|---|---|---|
| Hole Number: | **BH135** | | Top Depth: | **0.40** | |
| Sample Number: | **6** | | Base Depth: | **0.60** | |
| Sample Conditions: | Dry | | Sample Type | **B** | |
| Particle Density - Mg/m3: | 2.65 | Assumed | **Remarks:** | | |
| Sample Preparation: | Material tested passing 20mm sieve<br>Remoulded using 2.5kg effort. | | | | |
| Sample Description: | **See summary of soil descriptions** | | | | |

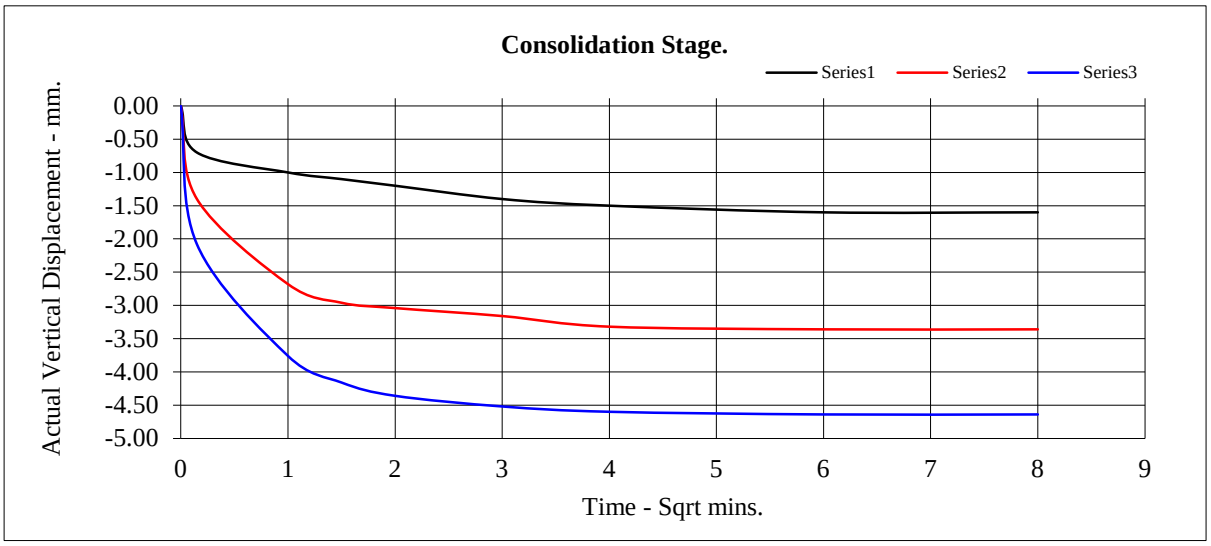
| **STAGE** | **1** | **2** | **3** |
|---|---|---|---|
| **Initial Conditions** | | | |
| Height - mm: | 135 | 135 | 135 |
| Length - mm: | 300 | 300 | 300 |
| Moisture Content - %: | 16 | 16 | 16 |
| Bulk Density - Mg/m3: | 1.95 | 1.95 | 1.95 |
| Dry Density - Mg/m3: | 1.69 | 1.69 | 1.69 |
| Voids Ratio: | 0.572 | 0.572 | 0.572 |
| Normal Pressure- kPa | 5 | 10 | 15 |
| **Consolidation Stage** | | | |
| Consolidated Height - mm: | 133.40 | 131.64 | 130.36 |
| **Shearing Stage** | | | |
| Rate of Strain (mm/min) | 1.00 | 1.00 | 1.00 |
| Displacement at peak shear stress (mm) | 45.00 | 46.50 | 50.50 |
| Peak shear Stress - kPa: | 9 | 13 | 16 |
| **Final Consolidated Conditions** | | | |
| Moisture Content - %: | 16 | 15 | 15 |
| Bulk Density - Mg/m3: | 1.97 | 2.00 | 2.02 |
| Dry Density - Mg/m3: | 1.70 | 1.73 | 1.76 |
| **Peak** | | | |
| Angle of Shearing Resistance:(~~θ~~) | **36** | | |
| Effective Cohesion - kPa: | **5** | | |

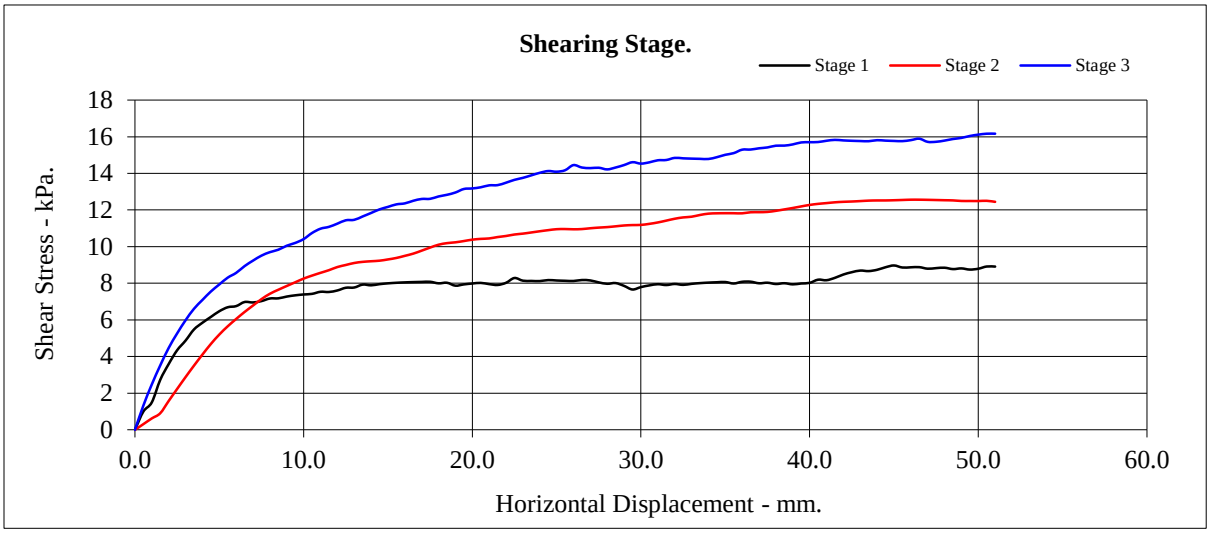


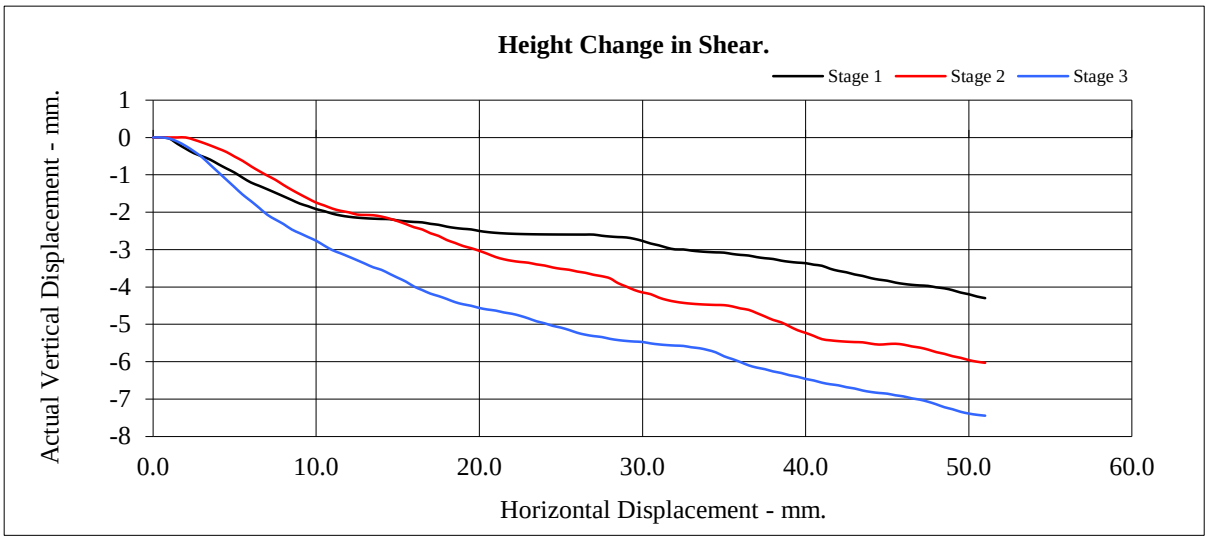
# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 5**

| | | | |
|---|---|---|---|
| Hole Number: | **BH135** | Top Depth: | **0.40** |
| Sample Number: | **6** | Base Depth: | **0.60** |



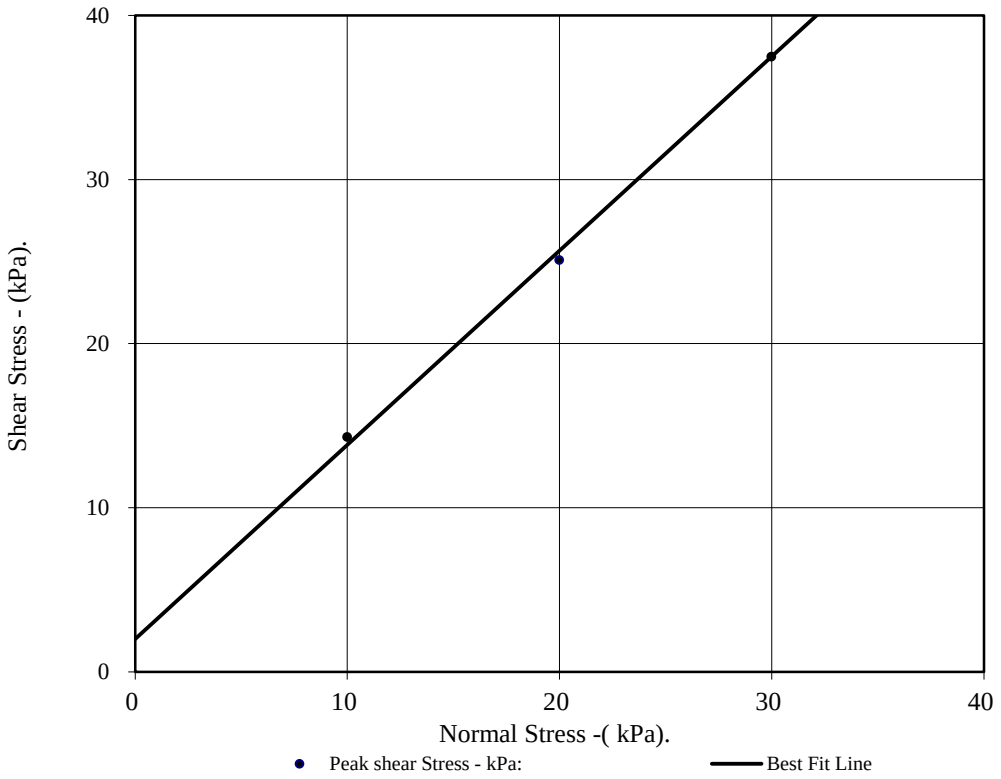



# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 5**

| | | | | | |
|---|---|---|---|---|---|
| Hole Number: | **BH135** | | Top Depth: | **1.20** | |
| Sample Number: | **7** | | Base Depth: | **1.40** | |
| Sample Conditions: | Dry | | Sample Type | **B** | |
| Particle Density - Mg/m3: | 2.65 | Assumed | **Remarks:** | | |
| Sample Preparation: | Material tested passing 20mm sieve<br>Remoulded using 2.5kg effort. | | | | |
| Sample Description: | **See summary of soil descriptions** | | | | |

| **STAGE** | **1** | **2** | **3** |
|---|---|---|---|
| **Initial Conditions** | | | |
| Height - mm: | 140 | 140 | 140 |
| Length - mm: | 300 | 300 | 300 |
| Moisture Content - %: | 8.9 | 8.9 | 8.9 |
| Bulk Density - Mg/m3: | 1.92 | 1.92 | 1.92 |
| Dry Density - Mg/m3: | 1.77 | 1.77 | 1.77 |
| Voids Ratio: | 0.501 | 0.501 | 0.501 |
| Normal Pressure- kPa | 10 | 20 | 30 |
| **Consolidation Stage** | | | |
| Consolidated Height - mm: | 138.00 | 134.85 | 133.02 |
| **Shearing Stage** | | | |
| Rate of Strain (mm/min) | 1.00 | 1.00 | 1.00 |
| Displacement at peak shear stress (mm) | 50.00 | 51.00 | 51.00 |
| Peak shear Stress - kPa: | 14 | 25 | 37 |
| **Final Consolidated Conditions** | | | |
| Moisture Content - %: | 8.7 | 8.2 | 8.5 |
| Bulk Density - Mg/m3: | 1.95 | 2.00 | 2.02 |
| Dry Density - Mg/m3: | 1.79 | 1.84 | 1.87 |
| **Peak** | | | |
| Angle of Shearing Resistance:(~~θ~~) | **50** | | |
| Effective Cohesion - kPa: | **2** | | |



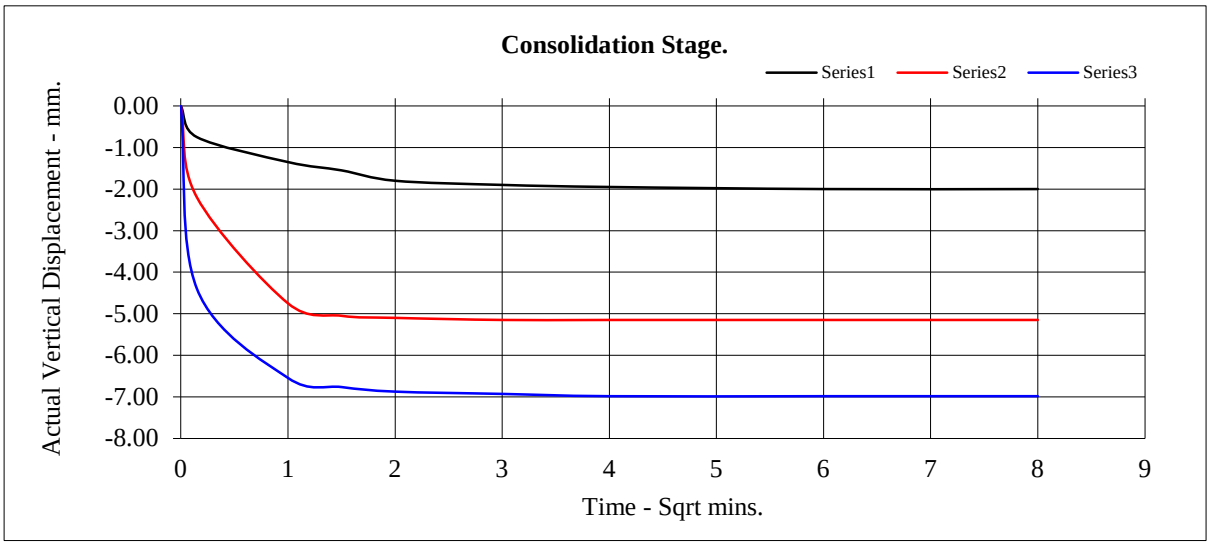

| | | |
|---|---|---|
| UKAS TESTING 4043 | PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** |

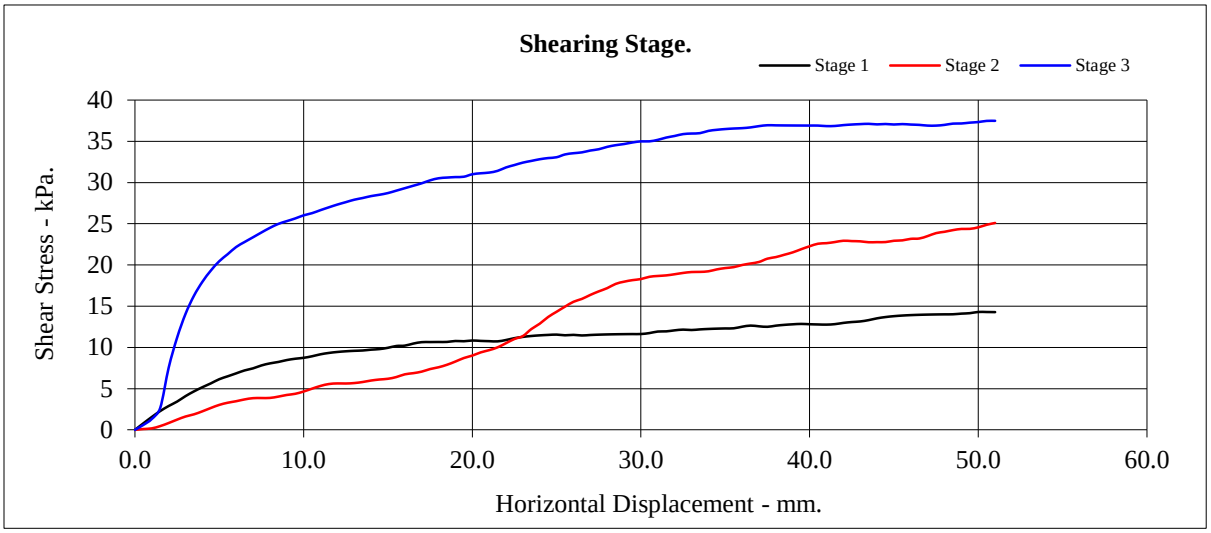
| |
|---|
| **Contract No:** |
| **PSL22/4145** |
| **Client Ref:** |
| **GT0386** |

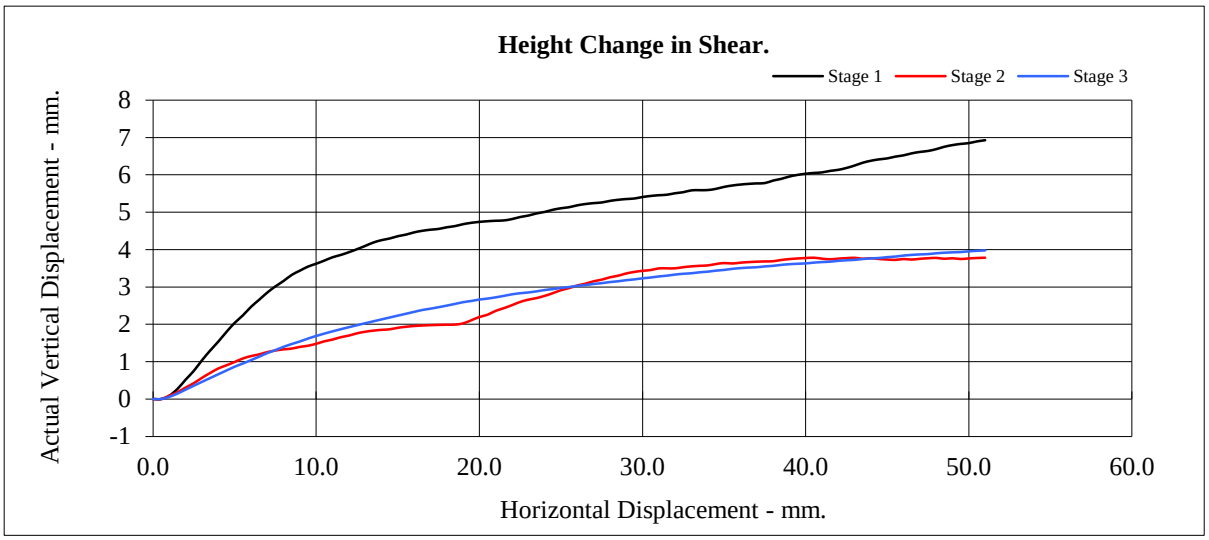
# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 5**

| | | | |
|---|---|---|---|
| Hole Number: | **BH135** | Top Depth: | **1.20** |
| Sample Number: | **7** | Base Depth: | **1.40** |



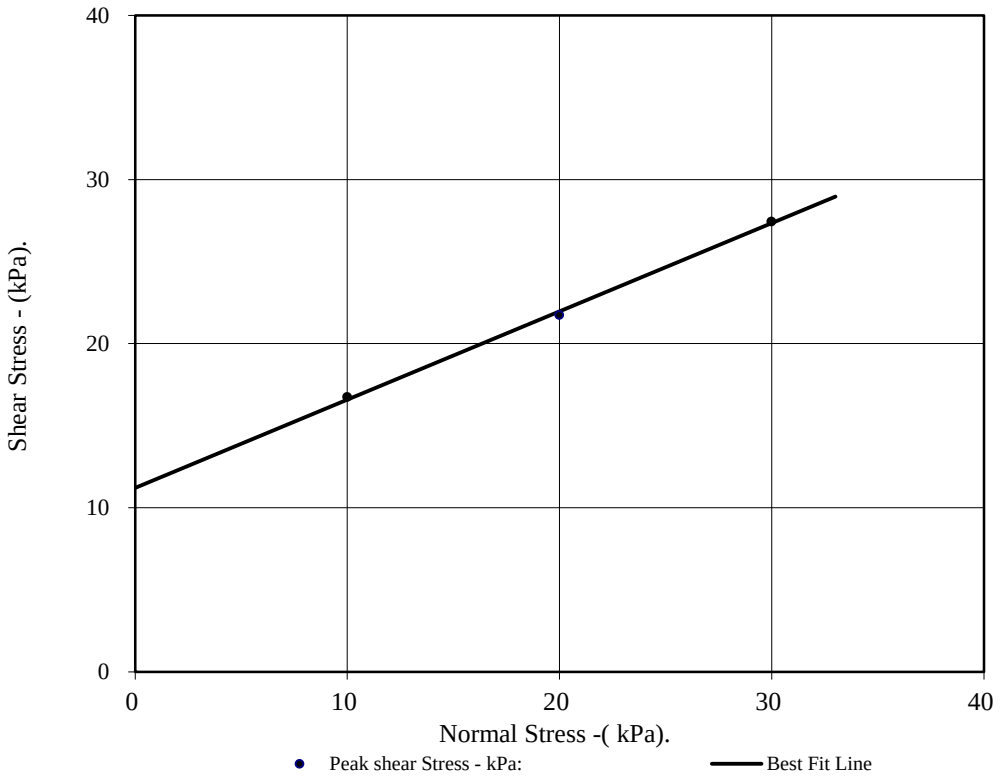



# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 5**

| | | | | | |
|---|---|---|---|---|---|
| Hole Number: | **BH136** | | Top Depth: | **0.50** | |
| Sample Number: | **6** | | Base Depth: | **0.70** | |
| Sample Conditions: | Submerged | | Sample Type | **B** | |
| Particle Density - Mg/m3: | 2.65 | Assumed | **Remarks:** | | |
| Sample Preparation: | Material tested passing 20mm sieve<br>Remoulded using 2.5kg effort. | | | | |
| Sample Description: | **See summary of soil descriptions** | | | | |

| **STAGE** | **1** | **2** | **3** |
|---|---|---|---|
| **Initial Conditions** | | | |
| Height - mm: | 131 | 131 | 131 |
| Length - mm: | 300 | 300 | 300 |
| Moisture Content - %: | 11 | 11 | 11 |
| Bulk Density - Mg/m3: | 2.02 | 2.02 | 2.02 |
| Dry Density - Mg/m3: | 1.83 | 1.83 | 1.83 |
| Voids Ratio: | 0.451 | 0.451 | 0.451 |
| Normal Pressure- kPa | 10 | 20 | 30 |
| **Consolidation Stage** | | | |
| Consolidated Height - mm: | 128.79 | 127.74 | 126.77 |
| **Shearing Stage** | | | |
| Rate of Strain (mm/min) | 0.081 | 0.081 | 0.081 |
| Displacement at peak shear stress (mm) | 50.50 | 48.00 | 42.00 |
| Peak shear Stress - kPa: | 17 | 22 | 27 |
| **Final Consolidated Conditions** | | | |
| Moisture Content - %: | 25 | 24 | 23 |
| Bulk Density - Mg/m3: | 2.06 | 2.08 | 2.09 |
| Dry Density - Mg/m3: | 1.65 | 1.68 | 1.70 |
| **Peak** | | | |
| Angle of Shearing Resistance:(~~θ~~) | **28** | | |
| Effective Cohesion - kPa: | **11** | | |



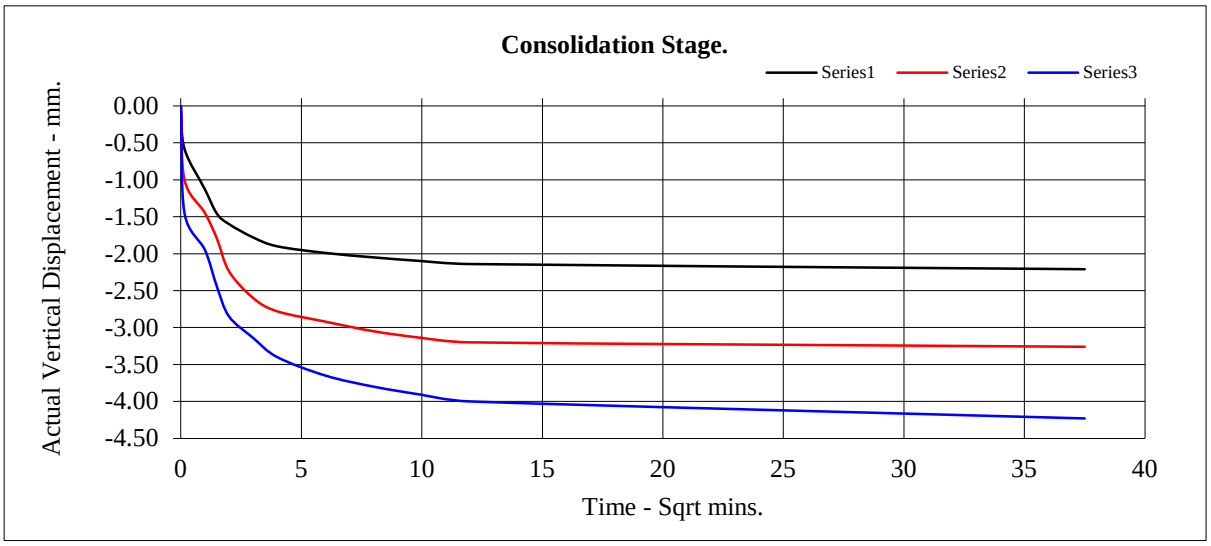

| | | |
|---|---|---|
| UKAS TESTING 4043 | PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** |

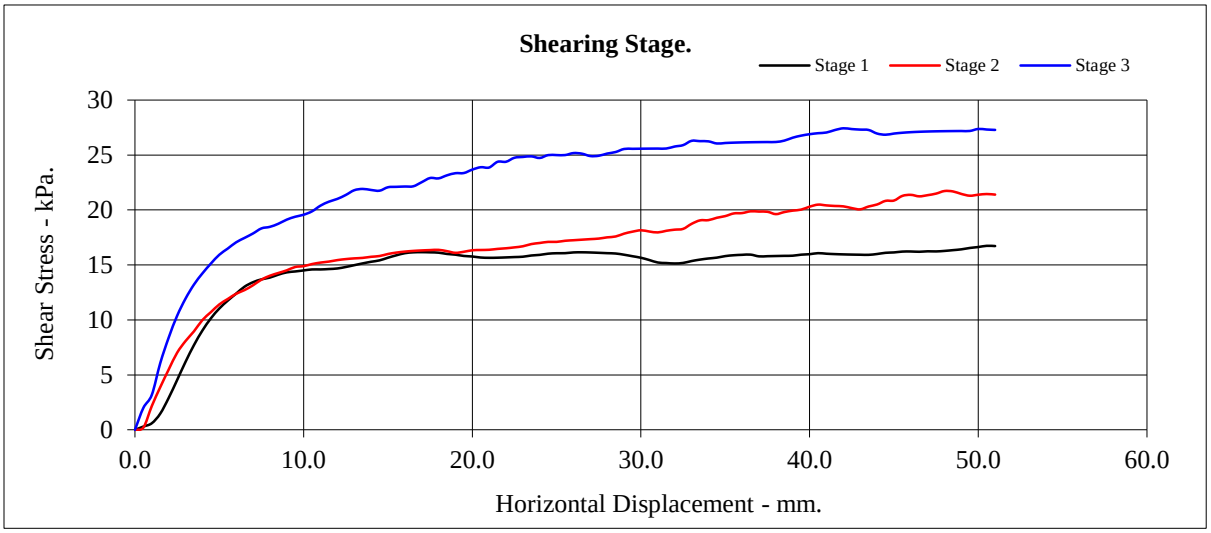
| |
|---|
| **Contract No:** |
| **PSL22/4145** |
| **Client Ref:** |
| **GT0386** |

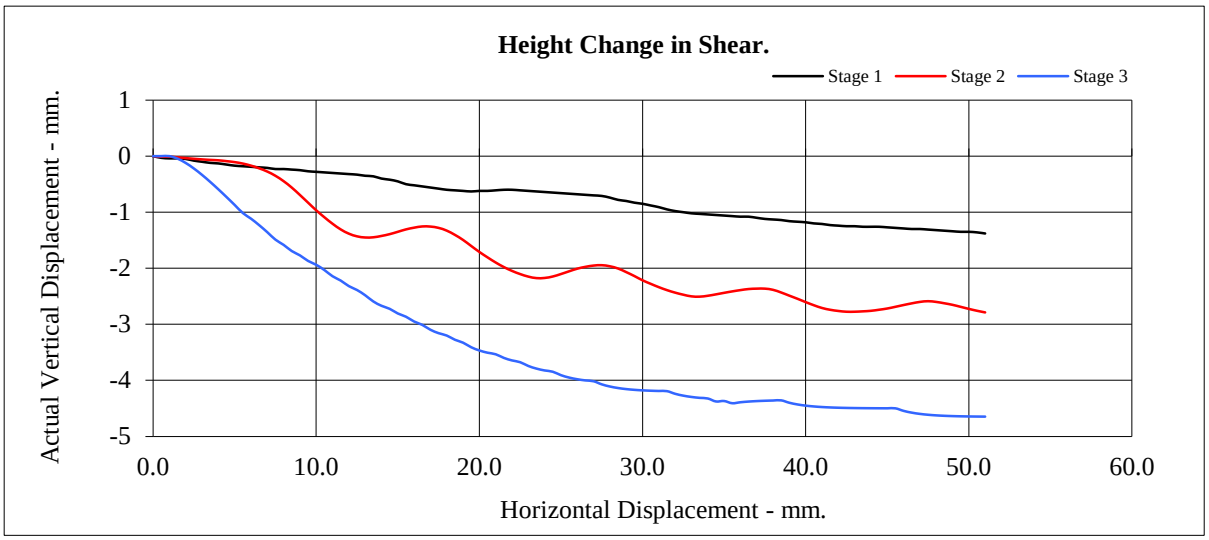
# CONSOLIDATED DRAINED SHEARBOX TEST

**BS1377:Part 7:1990 Clause 5**

| | | | |
|---|---|---|---|
| Hole Number: | **BH136** | Top Depth: | **0.50** |
| Sample Number: | **6** | Base Depth: | **0.70** |



# Determination of residual shear strength using Ring Shear Apparatus

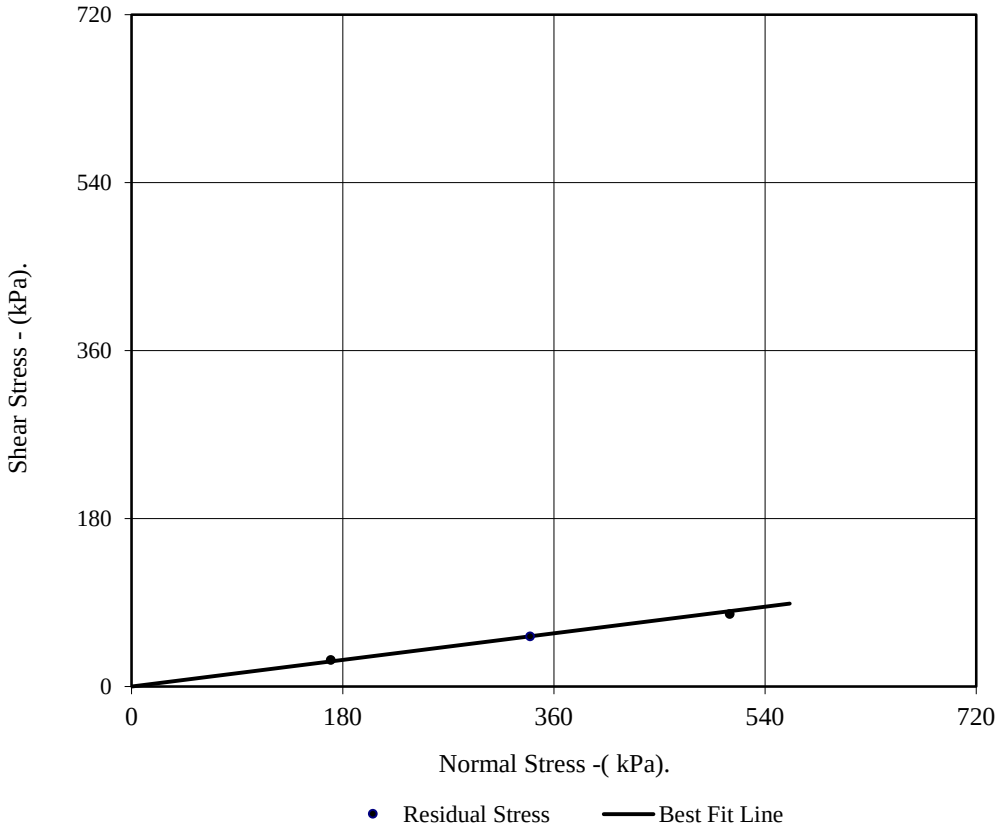
## BS1377:Part 7:1990 Clause 6

| | | | |
|---|---|---|---|
| Hole Number: | **BH104 & BH104A** | Top Depth: | **16.70** |
| Sample Number: | **111** | Base Depth: | **17.00** |
| Sample Conditions: | Submerged | Sample Type | **CS** |
| Preparation Details: | Specimen passed through 1.18mm sieve | | |
| Method of forming the shear plane: | Specimen rotated 2 revolutions by hand within 2 minutes. | | |
| Sample Description: | **See summary of soil descriptions.** | | |

| | |
|---|---|
| Outer Radius - mm: | 50.01 |
| Inner Radius - mm: | 35.00 |
| Initial Thickness - mm: | 5.00 |
| Initial Moisture Content - %: | 19 |
| Final Moisture Content - %: | 24 |

| Stage Number: | **1** | **2** | **3** |
|---|---|---|---|
| Normal Effective Stress - kPa | 170 | 340 | 510 |
| Rate of displacement - mm/min | 0.023 | 0.023 | 0.023 |
| Residual shear stress - kPa | 28 | 54 | 77 |
| Mean linear displacement at end of shearing stage - mm | 14.80 | 14.77 | 14.74 |

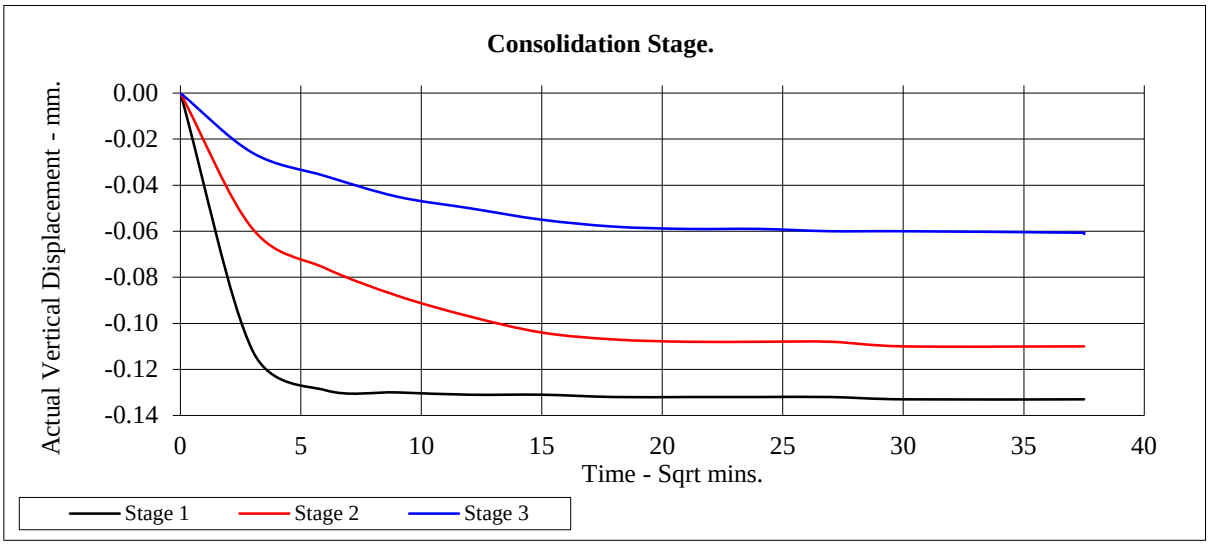
| | |
|---|---|
| Effective Cohesion - kPa: | Assumed Zero |
| Angle of Shearing Resistance:($\theta$) | 9.0 |

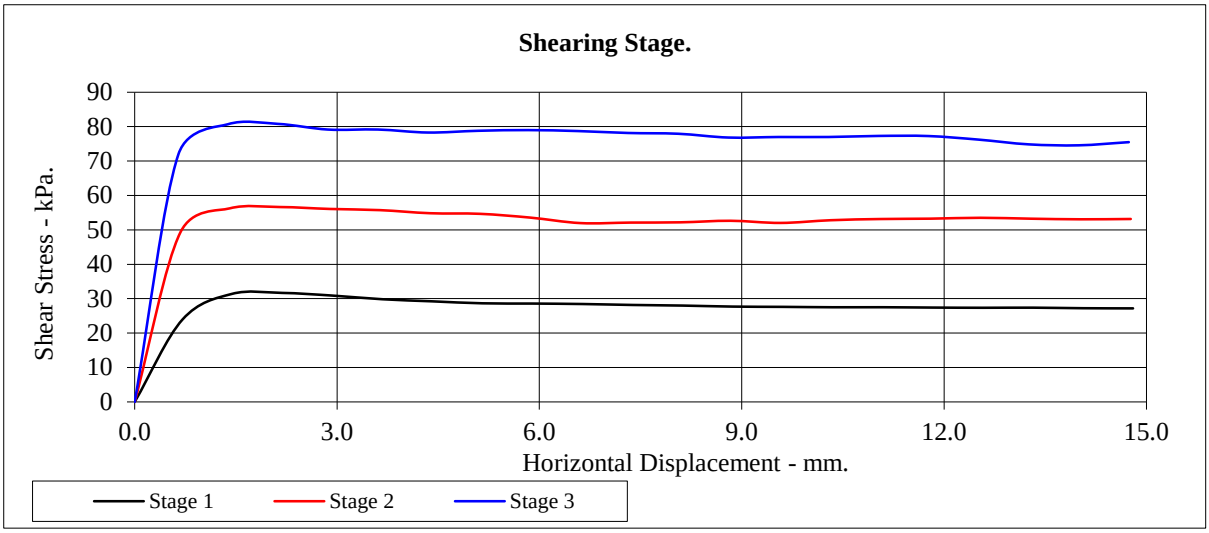


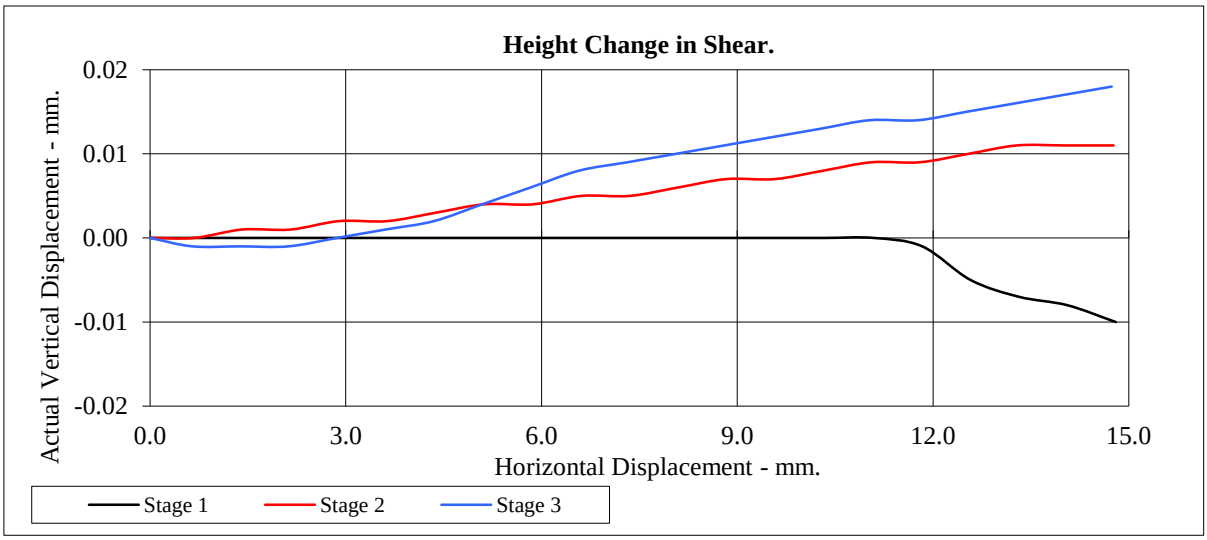
# Determination of residual shear strength using Ring Shear Apparatus

**BS1377:Part 7:1990 Clause 6**

| | | | |
|---|---|---|---|
| Hole Number: | **BH104 & BH104A** | Top Depth: | **16.70** |
| Sample Number: | **111** | Base Depth: | **17.00** |



# Determination of residual shear strength using Ring Shear Apparatus

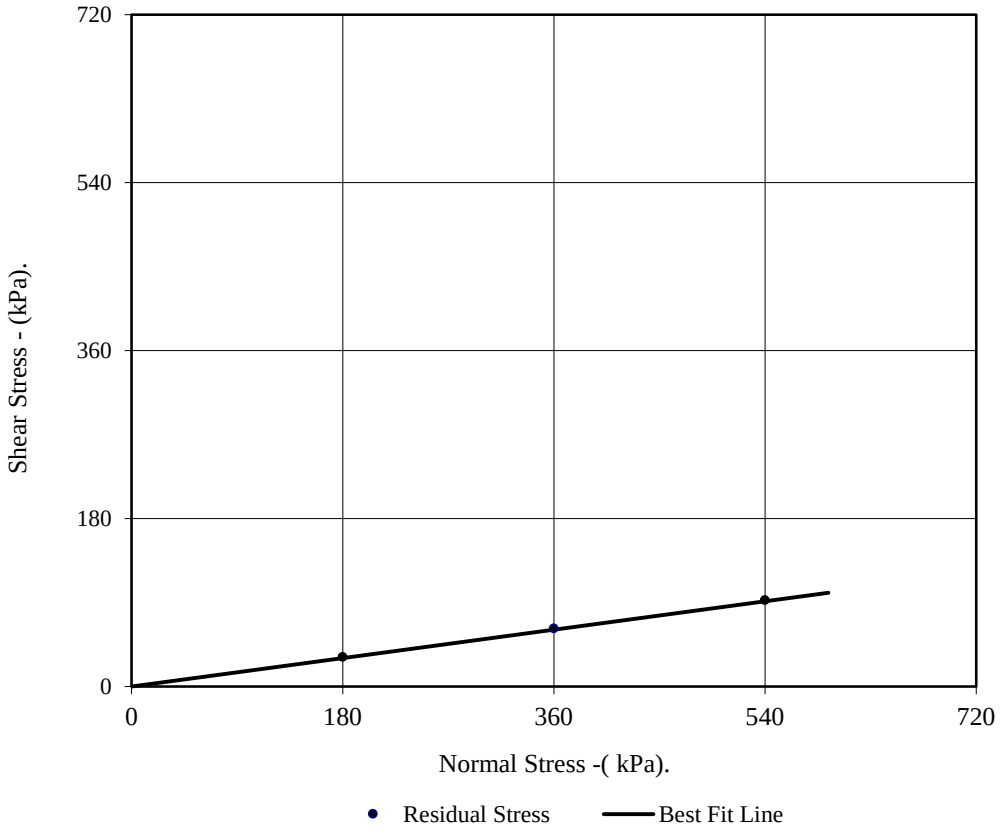
## BS1377:Part 7:1990 Clause 6

| | | | |
|---|---|---|---|
| Hole Number: | **BH104 & BH104A** | Top Depth: | **18.60** |
| Sample Number: | **114** | Base Depth: | **18.90** |
| Sample Conditions: | Submerged | Sample Type | **CS** |
| Preparation Details: | Specimen passed through 1.18mm sieve | | |
| Method of forming the shear plane: | Specimen rotated 2 revolutions by hand within 2 minutes. | | |
| Sample Description: | **See summary of soil descriptions.** | | |

| | |
|---|---|
| Outer Radius - mm: | 50.01 |
| Inner Radius - mm: | 35.00 |
| Initial Thickness - mm: | 5.00 |
| Initial Moisture Content - %: | 20 |
| Final Moisture Content - %: | 24 |

| Stage Number: | **1** | **2** | **3** |
|---|---|---|---|
| Normal Effective Stress - kPa | 180 | 360 | 540 |
| Rate of displacement - mm/min | 0.022 | 0.022 | 0.022 |
| Residual shear stress - kPa | 31 | 62 | 92 |
| Mean linear displacement at end of shearing stage - mm | 14.80 | 14.76 | 14.72 |

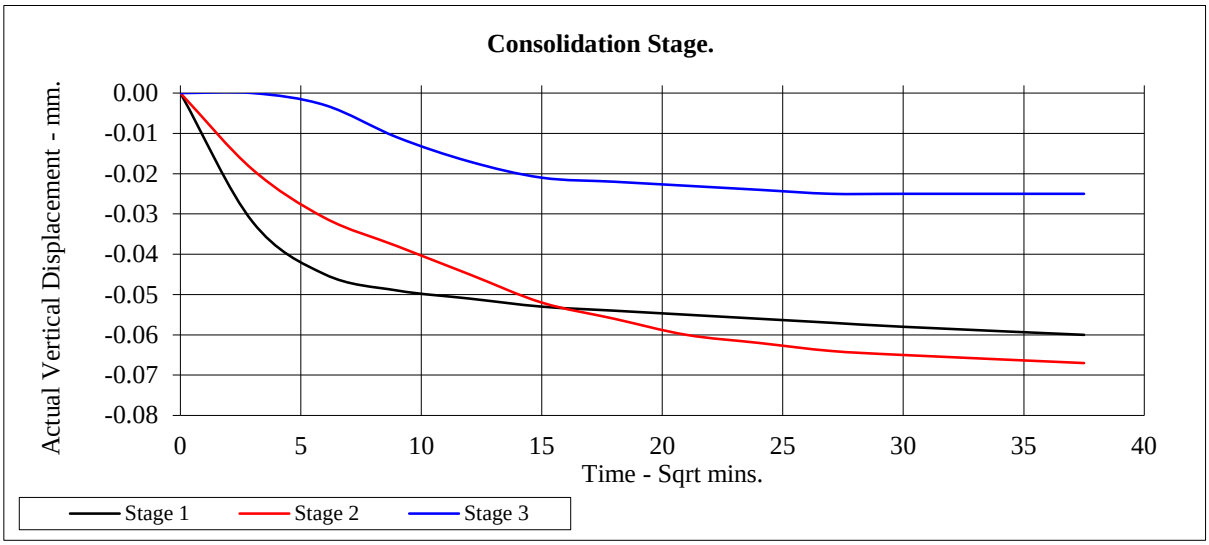
| | |
|---|---|
| Effective Cohesion - kPa: | Assumed Zero |
| Angle of Shearing Resistance:($\theta$) | 9.6 |

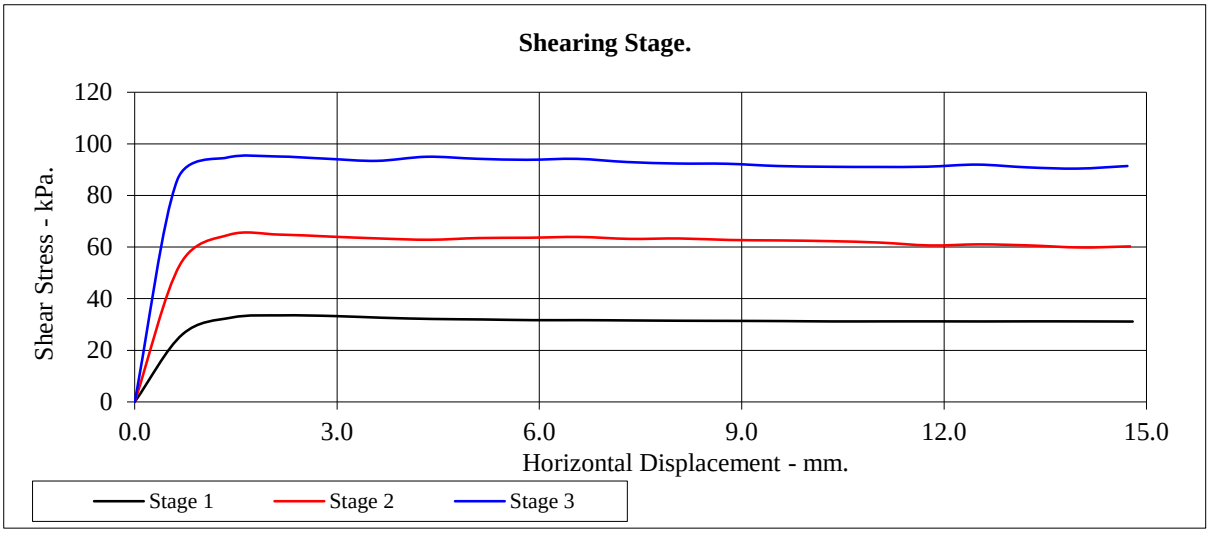


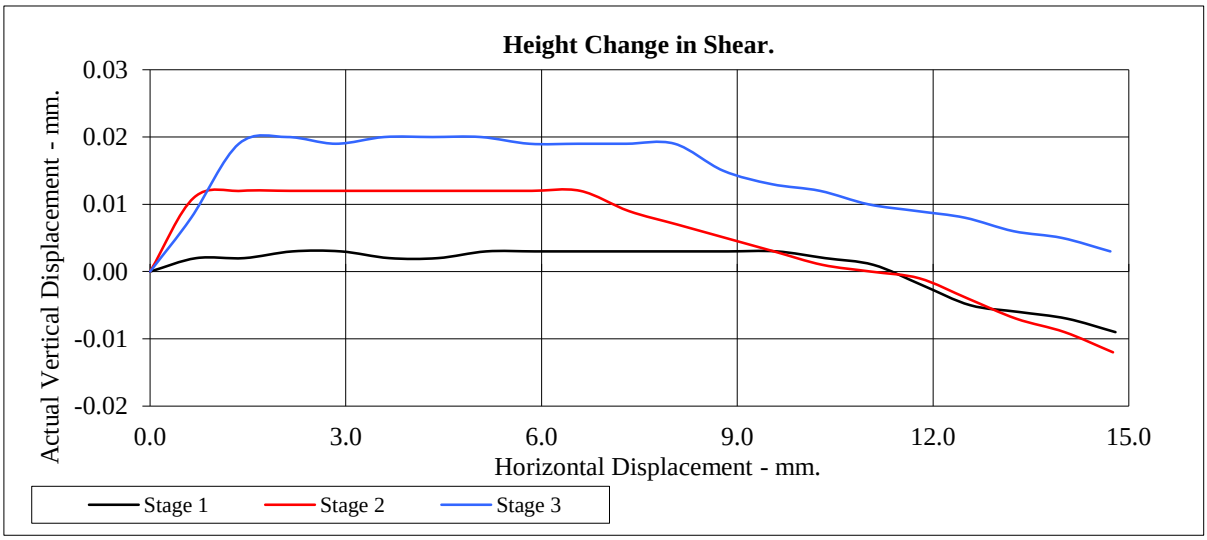
# Determination of residual shear strength using Ring Shear Apparatus

**BS1377:Part 7:1990 Clause 6**

| | | | |
|---|---|---|---|
| Hole Number: | **BH104 & BH104A** | Top Depth: | **18.60** |
| Sample Number: | **114** | Base Depth: | **18.90** |



# Determination of residual shear strength using Ring Shear Apparatus

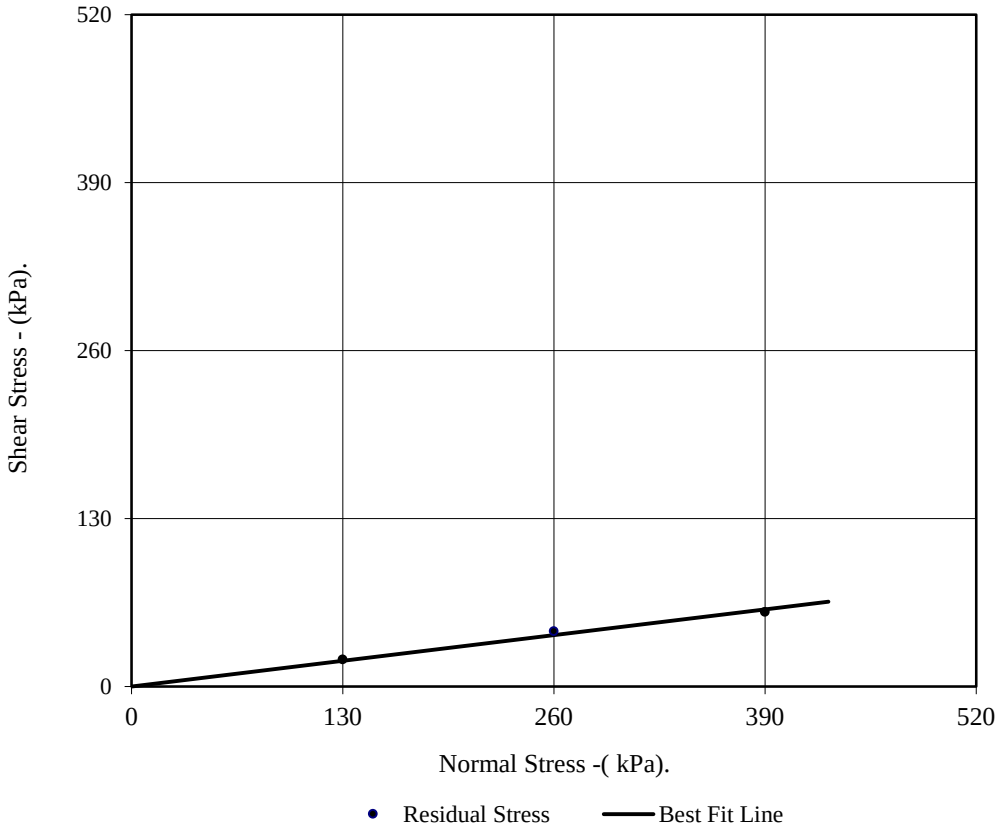
## BS1377:Part 7:1990 Clause 6

| | | | |
|---|---|---|---|
| Hole Number: | **BH105** | Top Depth: | **13.00** |
| Sample Number: | **113** | Base Depth: | **13.28** |
| Sample Conditions: | Submerged | Sample Type | **CS** |
| Preparation Details: | Specimen passed through 1.18mm sieve | | |
| Method of forming the shear plane: | Specimen rotated 2 revolutions by hand within 2 minutes. | | |
| Sample Description: | **See summary of soil descriptions.** | | |

| | |
|---|---|
| Outer Radius - mm: | 50.01 |
| Inner Radius - mm: | 35.00 |
| Initial Thickness - mm: | 5.00 |
| Initial Moisture Content - %: | 25 |
| Final Moisture Content - %: | 28 |

| Stage Number: | **1** | **2** | **3** |
|---|---|---|---|
| Normal Effective Stress - kPa | 130 | 260 | 390 |
| Rate of displacement - mm/min | 0.022 | 0.022 | 0.022 |
| Residual shear stress - kPa | 21 | 43 | 58 |
| Mean linear displacement at end of shearing stage - mm | 14.81 | 14.78 | 14.76 |

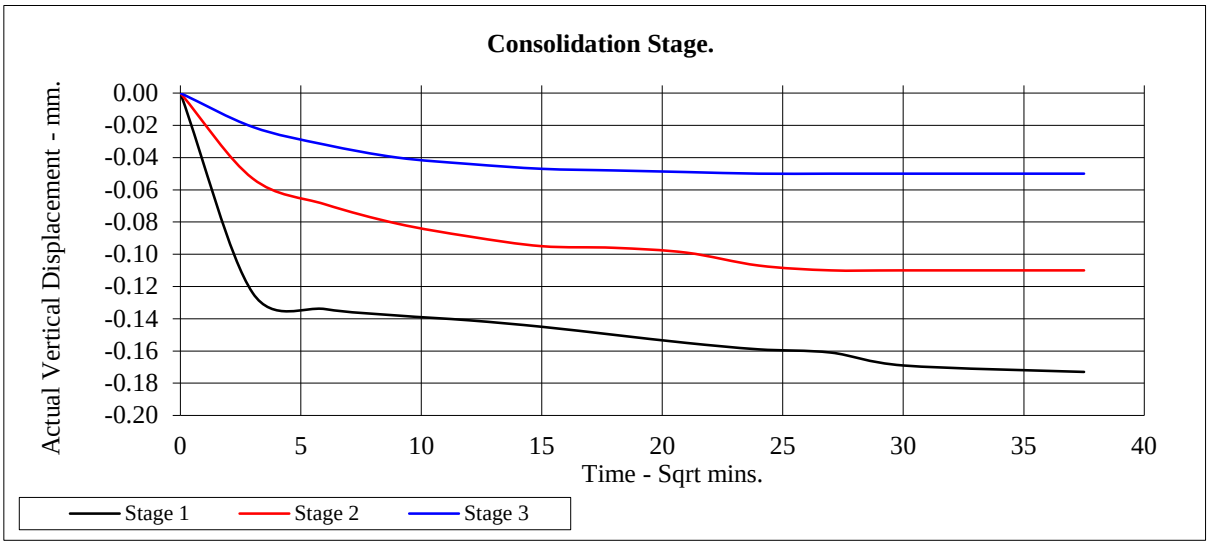
| | |
|---|---|
| Effective Cohesion - kPa: | Assumed Zero |
| Angle of Shearing Resistance:($\theta$) | 8.7 |

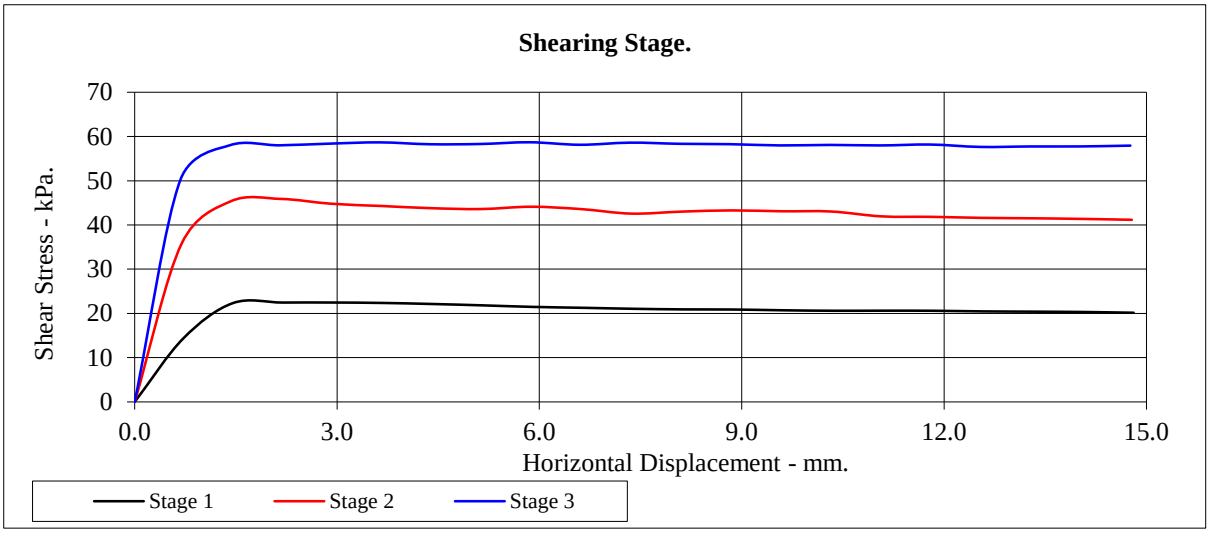


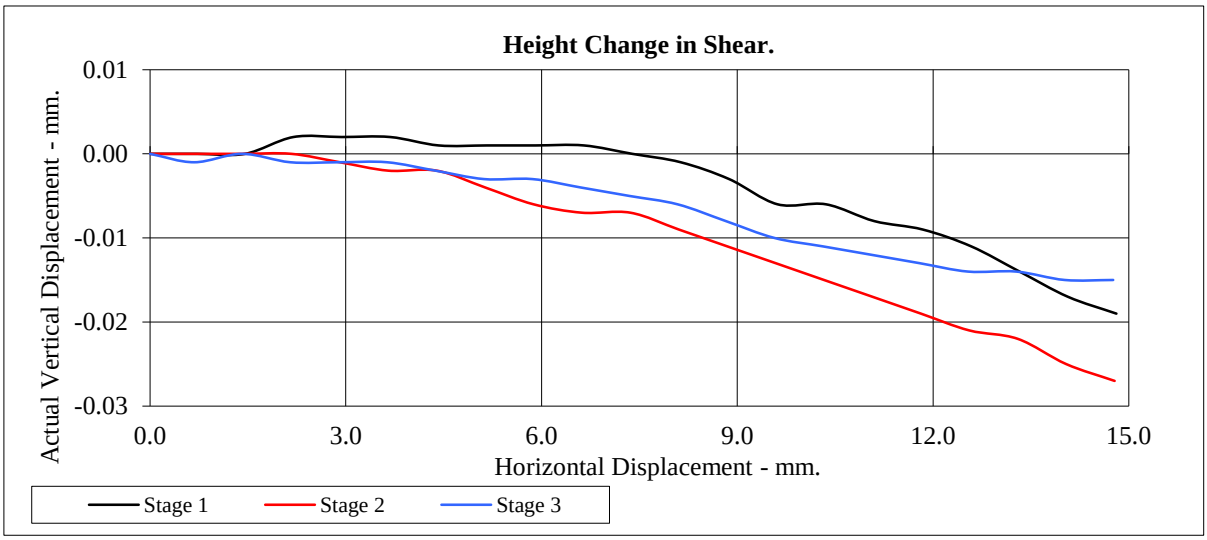
# Determination of residual shear strength using Ring Shear Apparatus

**BS1377:Part 7:1990 Clause 6**

| | | | |
|---|---|---|---|
| Hole Number: | **BH105** | Top Depth: | **13.00** |
| Sample Number: | **113** | Base Depth: | **13.28** |




| | | |
|---|---|---|
| UKAS TESTING 4043 / PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** | **Contract No:** PSL22/3650<br>**Client Ref:** GT0386 |

# Determination of residual shear strength using Ring Shear Apparatus

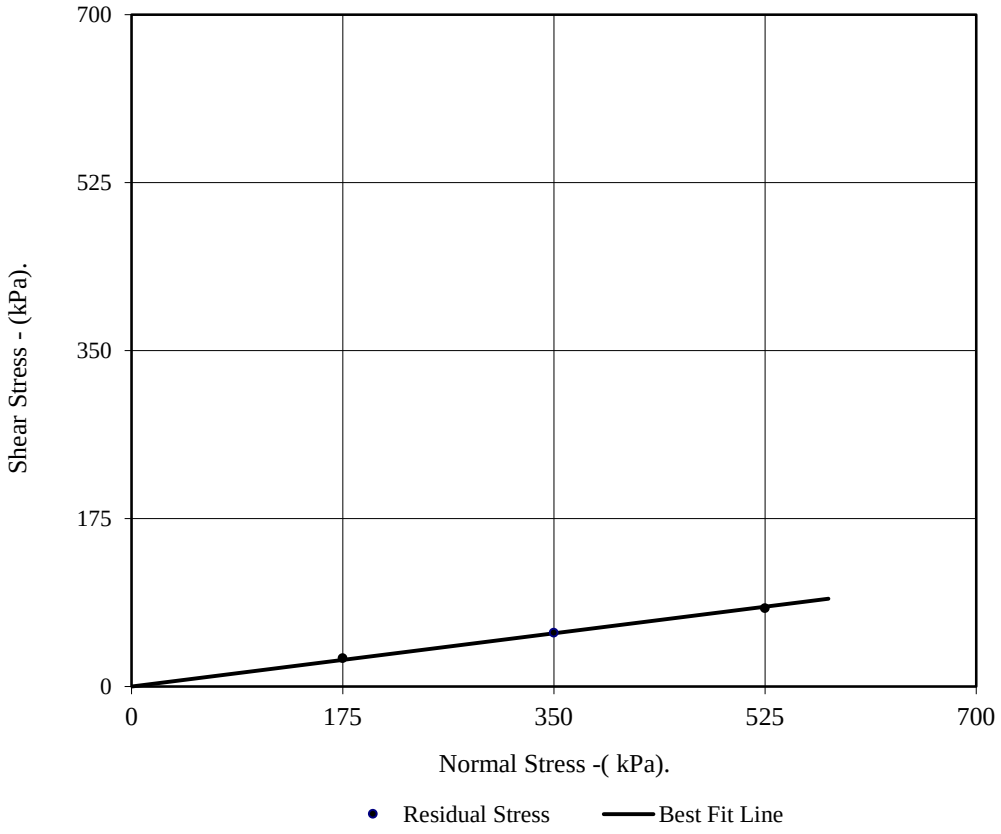
## BS1377:Part 7:1990 Clause 6

| | | | |
|---|---|---|---|
| Hole Number: | **BH105** | Top Depth: | **17.50** |
| Sample Number: | **117** | Base Depth: | **17.80** |
| Sample Conditions: | Submerged | Sample Type | **CS** |
| Preparation Details: | Specimen passed through 1.18mm sieve | | |
| Method of forming the shear plane: | Specimen rotated 2 revolutions by hand within 2 minutes. | | |
| Sample Description: | **See summary of soil descriptions.** | | |

| | |
|---|---|
| Outer Radius - mm: | 50.01 |
| Inner Radius - mm: | 35.00 |
| Initial Thickness - mm: | 5.00 |
| Initial Moisture Content - %: | 20 |
| Final Moisture Content - %: | 24 |

| Stage Number: | **1** | **2** | **3** |
|---|---|---|---|
| Normal Effective Stress - kPa | 175 | 350 | 525 |
| Rate of displacement - mm/min | 0.023 | 0.023 | 0.023 |
| Residual shear stress - kPa | 29 | 56 | 82 |
| Mean linear displacement at end of shearing stage - mm | 14.80 | 14.76 | 14.73 |

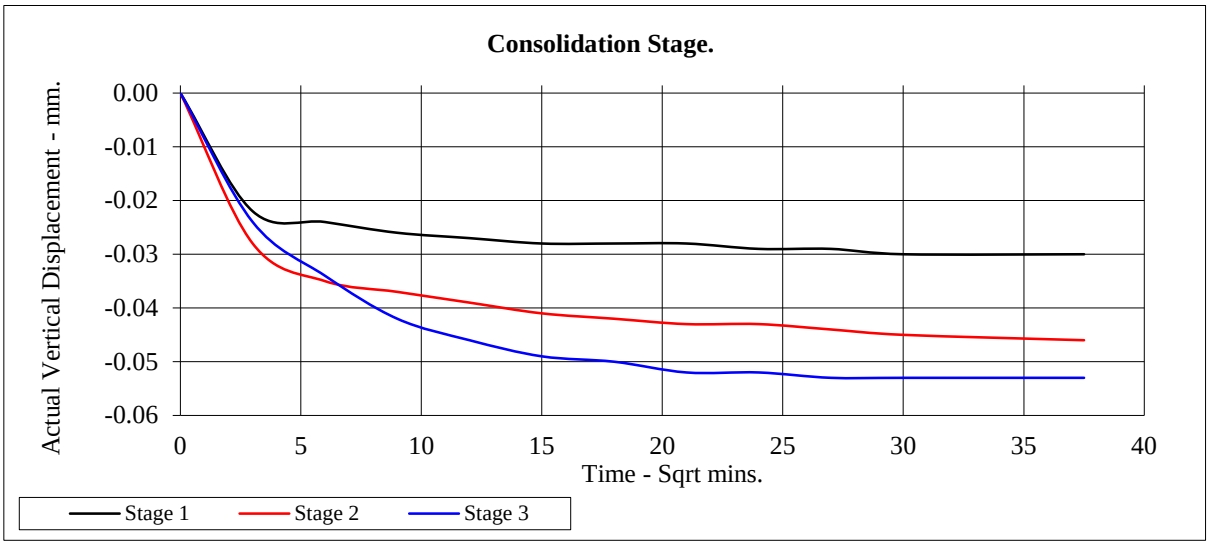
| | |
|---|---|
| Effective Cohesion - kPa: | Assumed Zero |
| Angle of Shearing Resistance:($\theta$) | 9.0 |

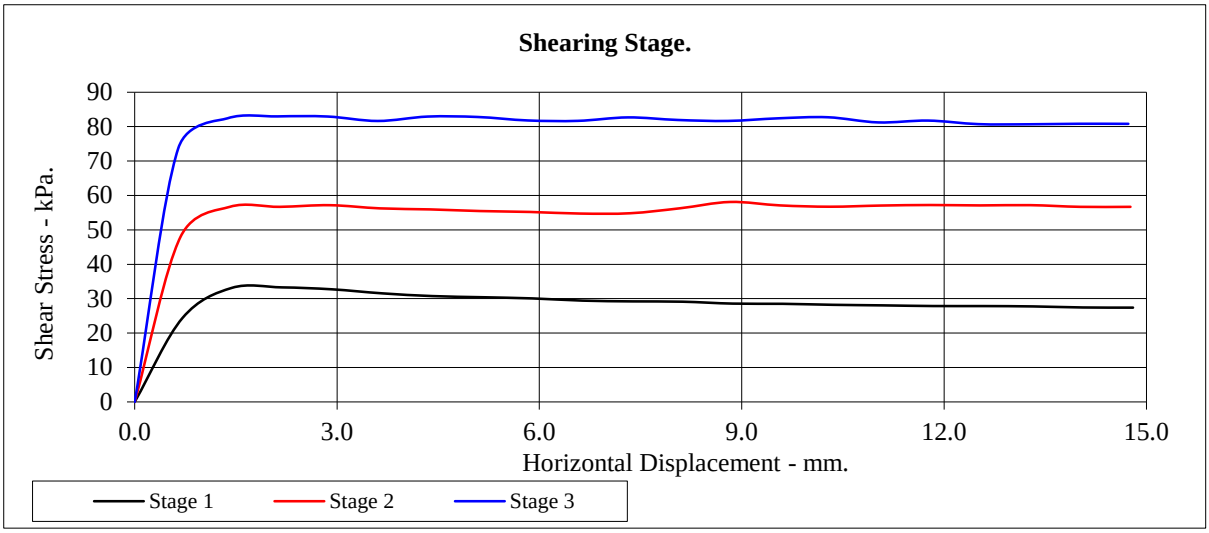


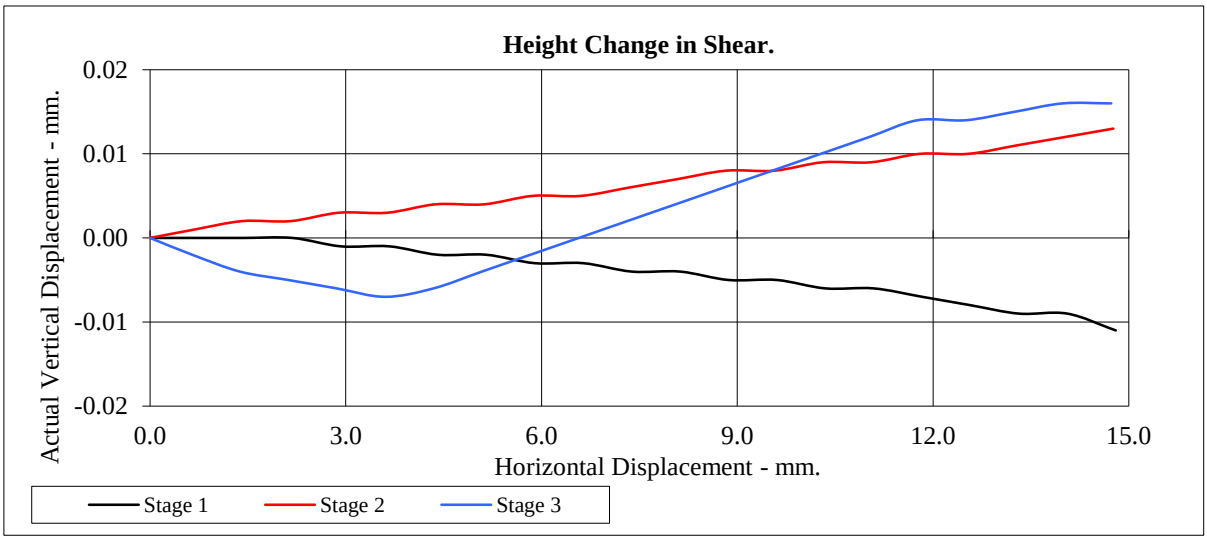
# Determination of residual shear strength using Ring Shear Apparatus

**BS1377:Part 7:1990 Clause 6**

| | | | |
|---|---|---|---|
| Hole Number: | **BH105** | Top Depth: | **17.50** |
| Sample Number: | **117** | Base Depth: | **17.80** |



# Determination of residual shear strength using Ring Shear Apparatus

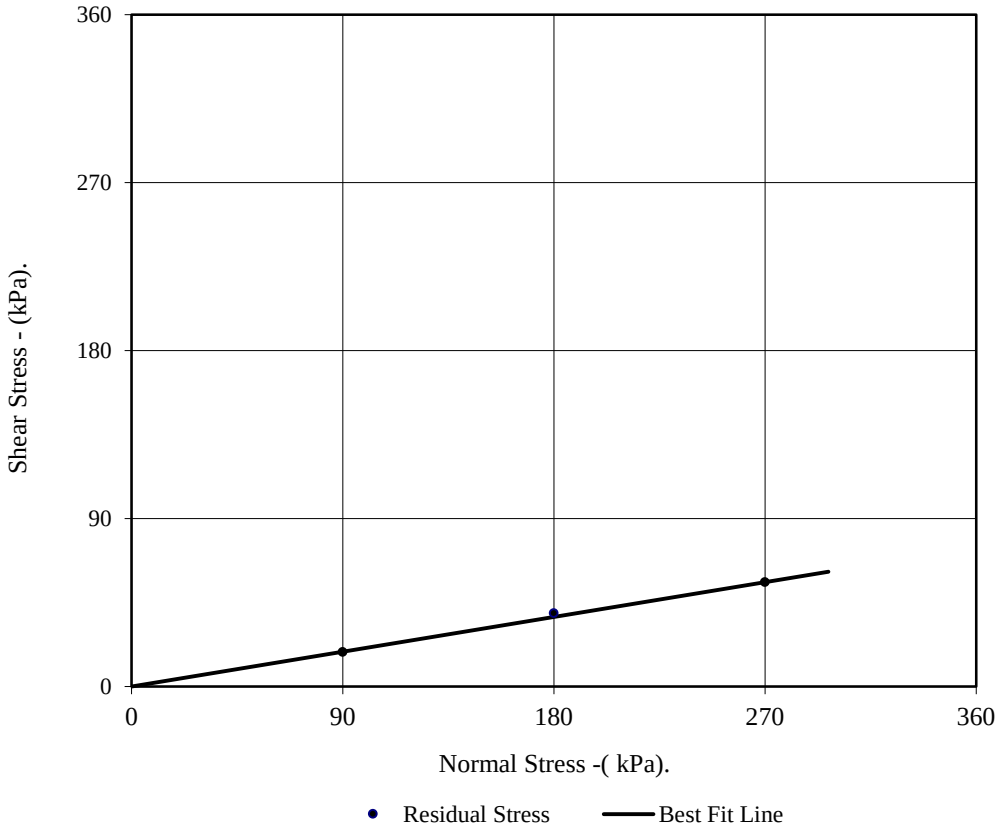
## BS1377:Part 7:1990 Clause 6

| | | | |
|---|---|---|---|
| Hole Number: | **BH106** | Top Depth: | **8.70** |
| Sample Number: | **117** | Base Depth: | **9.00** |
| Sample Conditions: | Submerged | Sample Type | **CS** |
| Preparation Details: | Specimen passed through 1.18mm sieve | | |
| Method of forming the shear plane: | Specimen rotated 2 revolutions by hand within 2 minutes. | | |
| Sample Description: | **See summary of soil descriptions.** | | |

| | |
|---|---|
| Outer Radius - mm: | 50.01 |
| Inner Radius - mm: | 35.00 |
| Initial Thickness - mm: | 5.00 |
| Initial Moisture Content - %: | 30 |
| Final Moisture Content - %: | 31 |

| Stage Number: | **1** | **2** | **3** |
|---|---|---|---|
| Normal Effective Stress - kPa | 90 | 180 | 270 |
| Rate of displacement - mm/min | 0.025 | 0.025 | 0.025 |
| Residual shear stress - kPa | 18 | 39 | 56 |
| Mean linear displacement at end of shearing stage - mm | 14.81 | 14.79 | 14.76 |

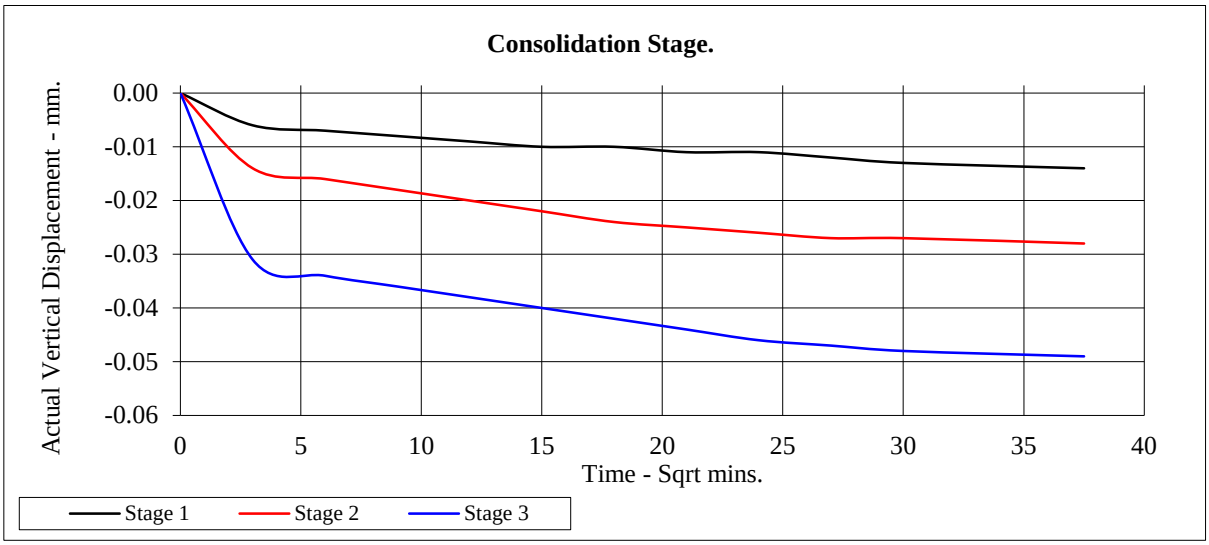
| | |
|---|---|
| Effective Cohesion - kPa: | Assumed Zero |
| Angle of Shearing Resistance:($\theta$) | 11.7 |

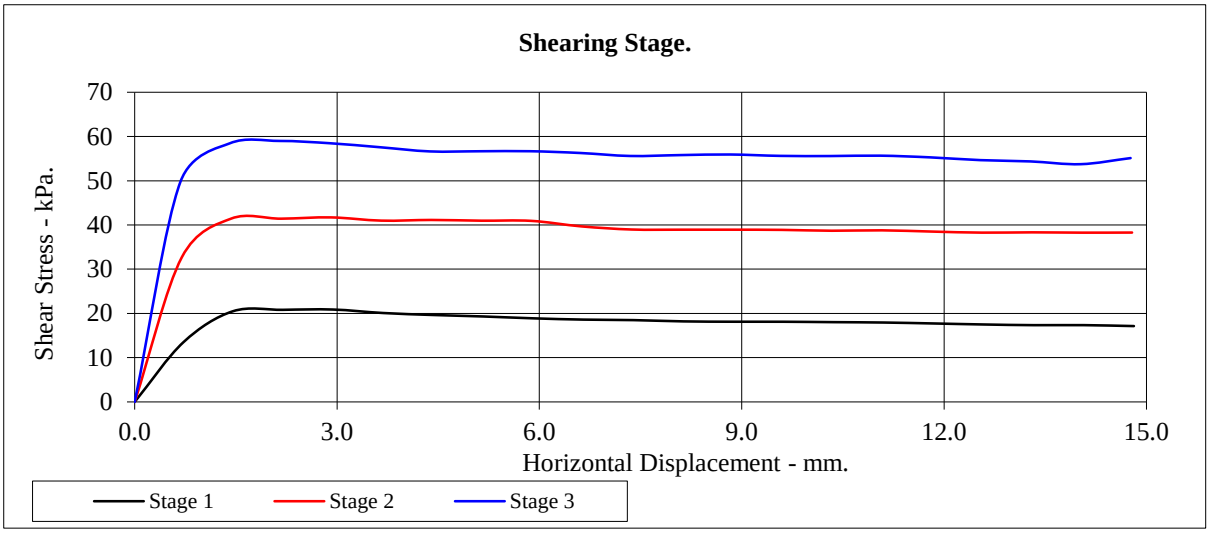


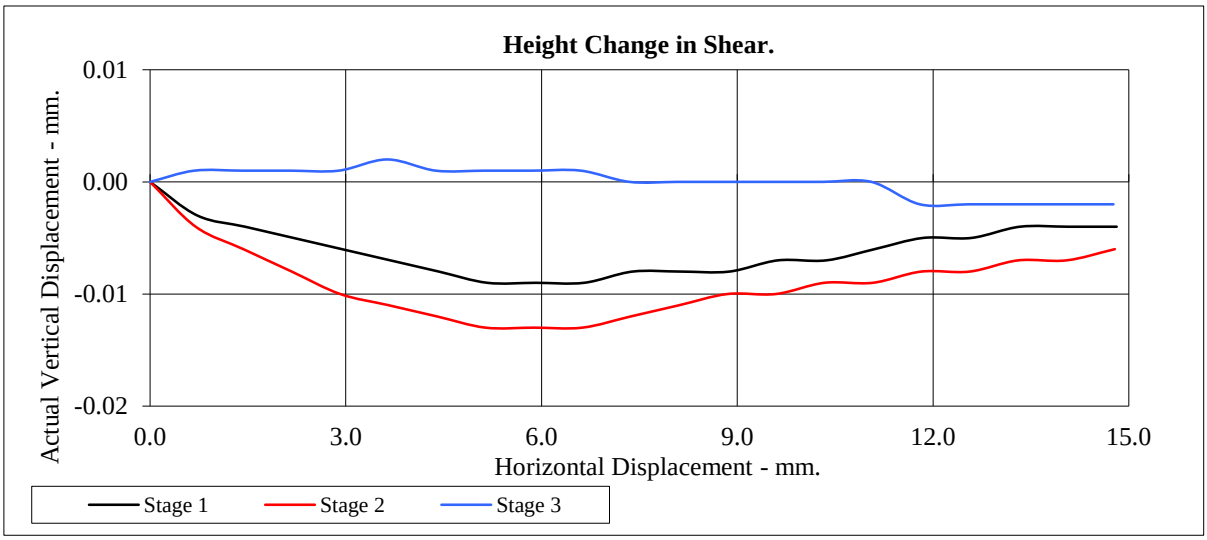
# Determination of residual shear strength using Ring Shear Apparatus

**BS1377:Part 7:1990 Clause 6**

| | | | |
|---|---|---|---|
| Hole Number: | **BH106** | Top Depth: | **8.70** |
| Sample Number: | **117** | Base Depth: | **9.00** |




UKAS TESTING 4043

PSL Professional Soils Laboratory

**Wansford to Sutton Dualling Supplementary GI**

| | |
|---|---|
| **Contract No:** | |
| **PSL22/3650** | |
| **Client Ref:** | |
| **GT0386** | |

# Determination of residual shear strength using Ring Shear Apparatus

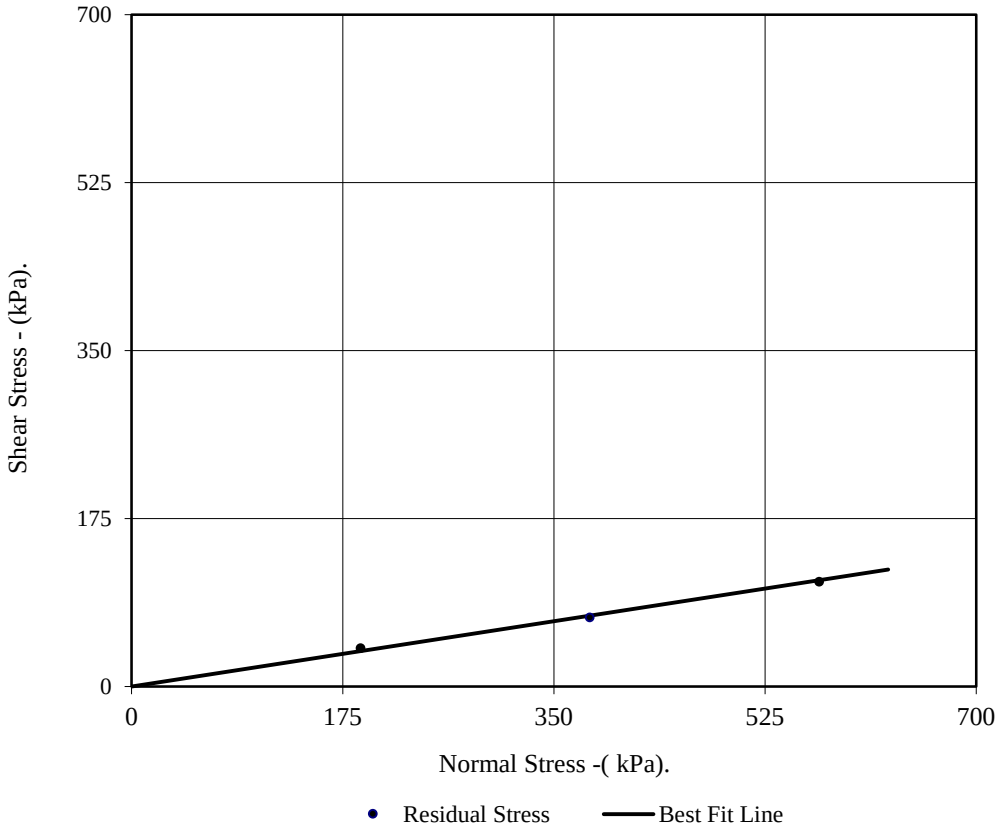
## BS1377:Part 7:1990 Clause 6

| | | | |
|---|---|---|---|
| Hole Number: | **BH108** | Top Depth: | **18.72** |
| Sample Number: | **116** | Base Depth: | **18.98** |
| Sample Conditions: | Submerged | Sample Type | **CS** |
| Preparation Details: | Specimen passed through 1.18mm sieve | | |
| Method of forming the shear plane: | Specimen rotated 2 revolutions by hand within 2 minutes. | | |
| Sample Description: | **See summary of soil descriptions.** | | |

| | |
|---|---|
| Outer Radius - mm: | 50.01 |
| Inner Radius - mm: | 35.00 |
| Initial Thickness - mm: | 5.00 |
| Initial Moisture Content - %: | 22 |
| Final Moisture Content - %: | 27 |

| Stage Number: | **1** | **2** | **3** |
|---|---|---|---|
| Normal Effective Stress - kPa | 190 | 380 | 570 |
| Rate of displacement - mm/min | 0.022 | 0.022 | 0.022 |
| Residual shear stress - kPa | 40 | 72 | 109 |
| Mean linear displacement at end of shearing stage - mm | 14.79 | 14.74 | 14.69 |

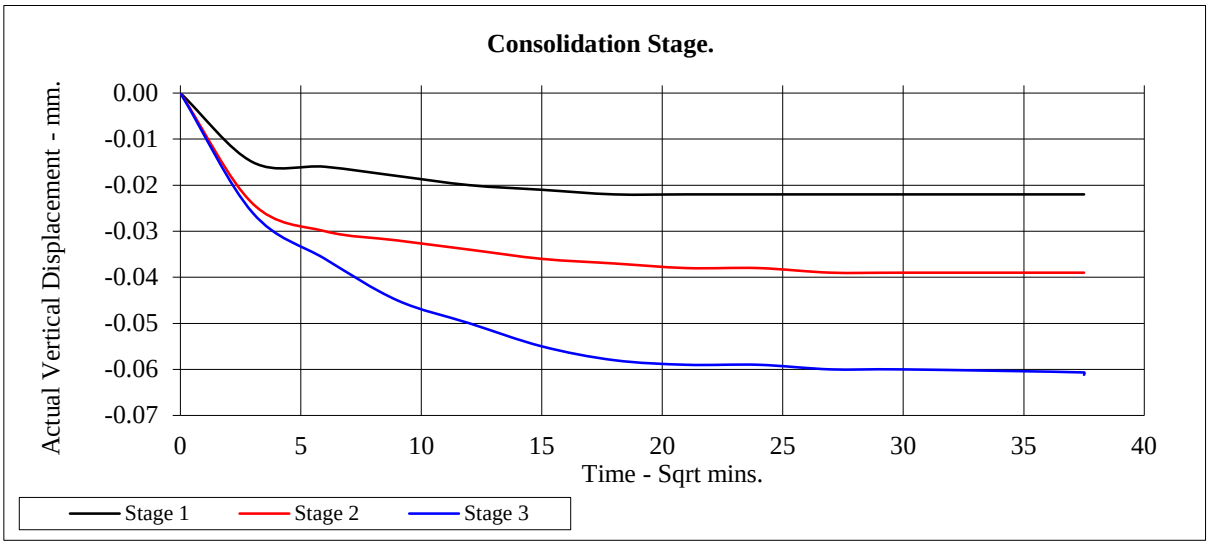
| | |
|---|---|
| Effective Cohesion - kPa: | Assumed Zero |
| Angle of Shearing Resistance:($\theta$) | 11.0 |

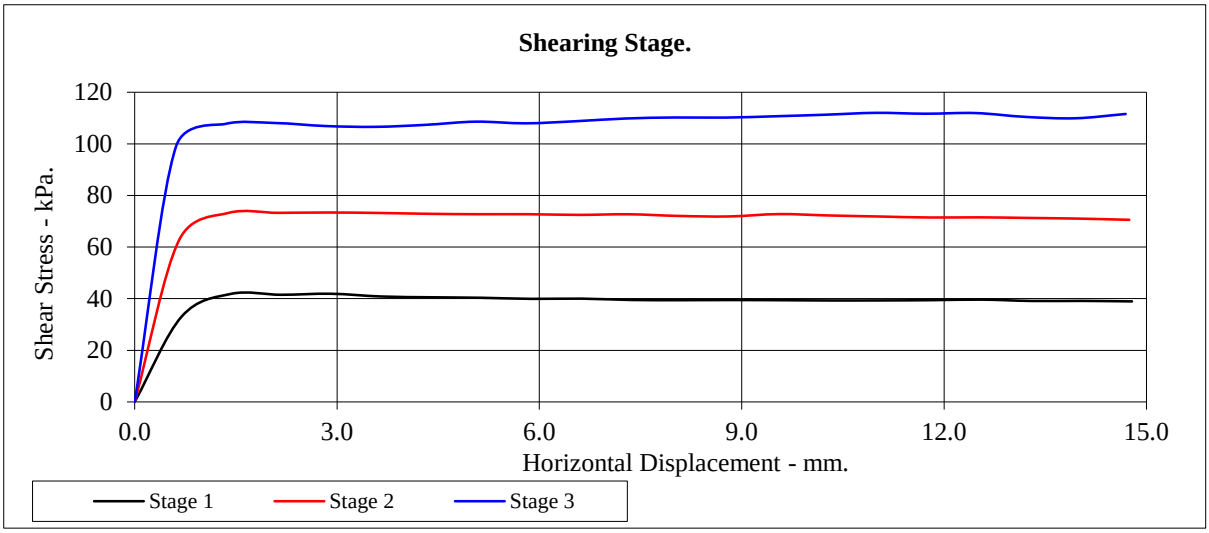


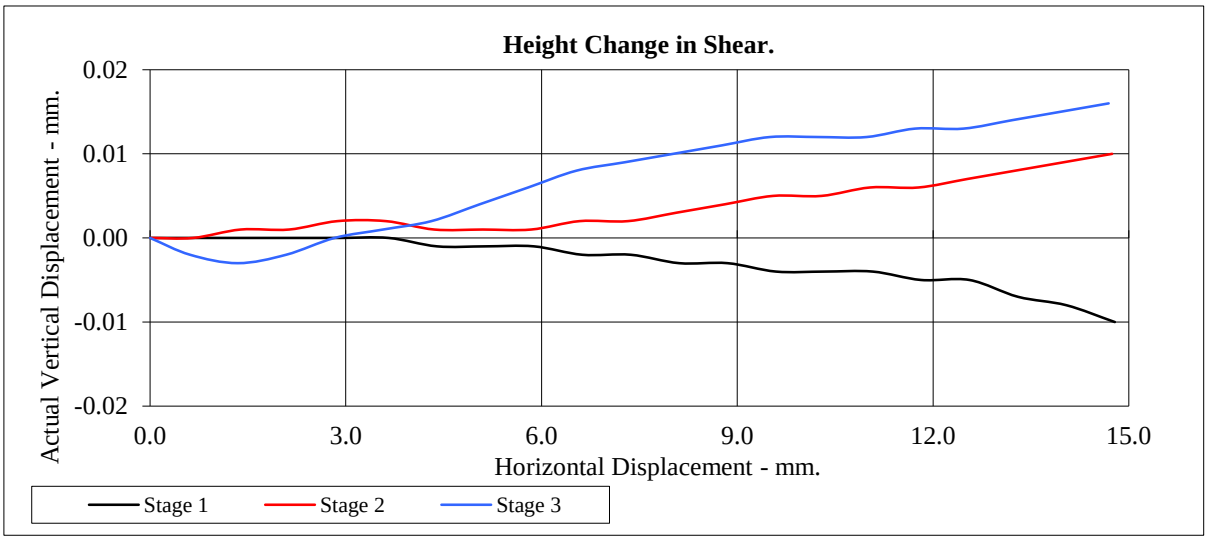
# Determination of residual shear strength using Ring Shear Apparatus

**BS1377:Part 7:1990 Clause 6**

| | | | |
|---|---|---|---|
| Hole Number: | **BH108** | Top Depth: | **18.72** |
| Sample Number: | **116** | Base Depth: | **18.98** |



# Determination of residual shear strength using Ring Shear Apparatus

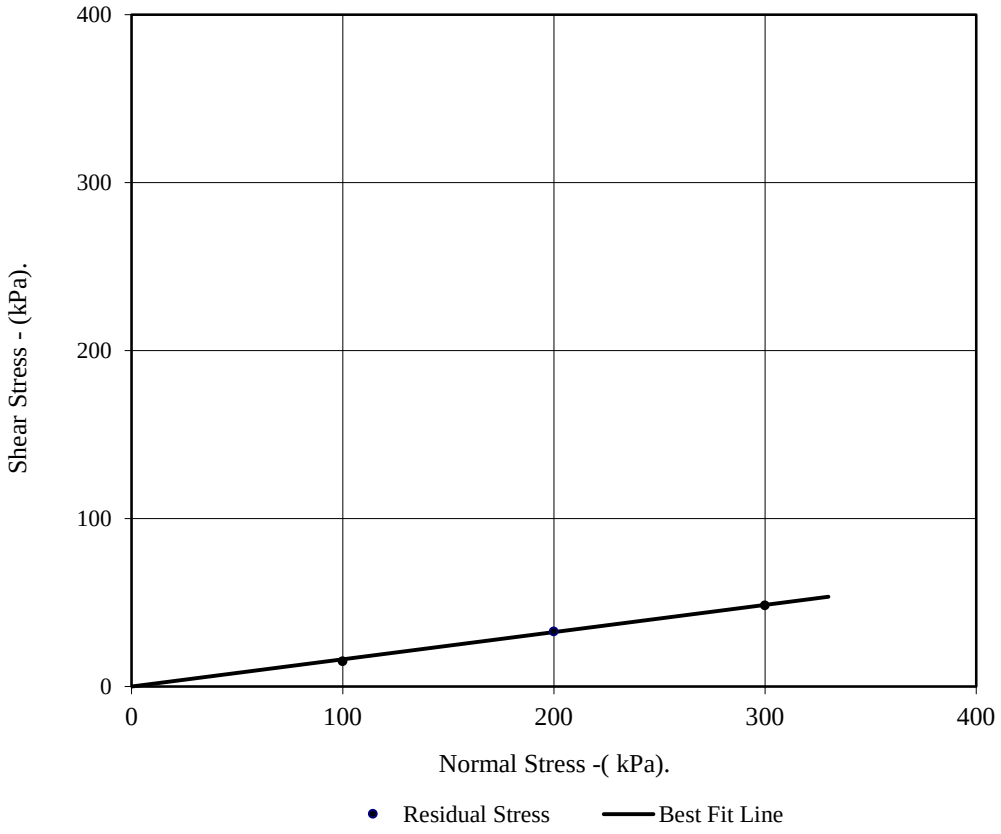
## BS1377:Part 7:1990 Clause 6

| | | | |
|---|---|---|---|
| Hole Number: | **BH114** | Top Depth: | **9.50** |
| Sample Number: | **107** | Base Depth: | **9.70** |
| Sample Conditions: | Submerged | Sample Type | **CS** |
| Preparation Details: | Specimen passed through 1.18mm sieve | | |
| Method of forming the shear plane: | Specimen rotated 2 revolutions by hand within 2 minutes. | | |
| Sample Description: | **See summary of soil descriptions.** | | |

| | |
|---|---|
| Outer Radius - mm: | 50.01 |
| Inner Radius - mm: | 35.00 |
| Initial Thickness - mm: | 5.00 |
| Initial Moisture Content - %: | 20 |
| Final Moisture Content - %: | 26 |

| Stage Number: | **1** | **2** | **3** |
|---|---|---|---|
| Normal Effective Stress - kPa | 100 | 200 | 300 |
| Rate of displacement - mm/min | 0.023 | 0.023 | 0.023 |
| Residual shear stress - kPa | 15 | 33 | 48 |
| Mean linear displacement at end of shearing stage - mm | 14.82 | 14.79 | 14.77 |

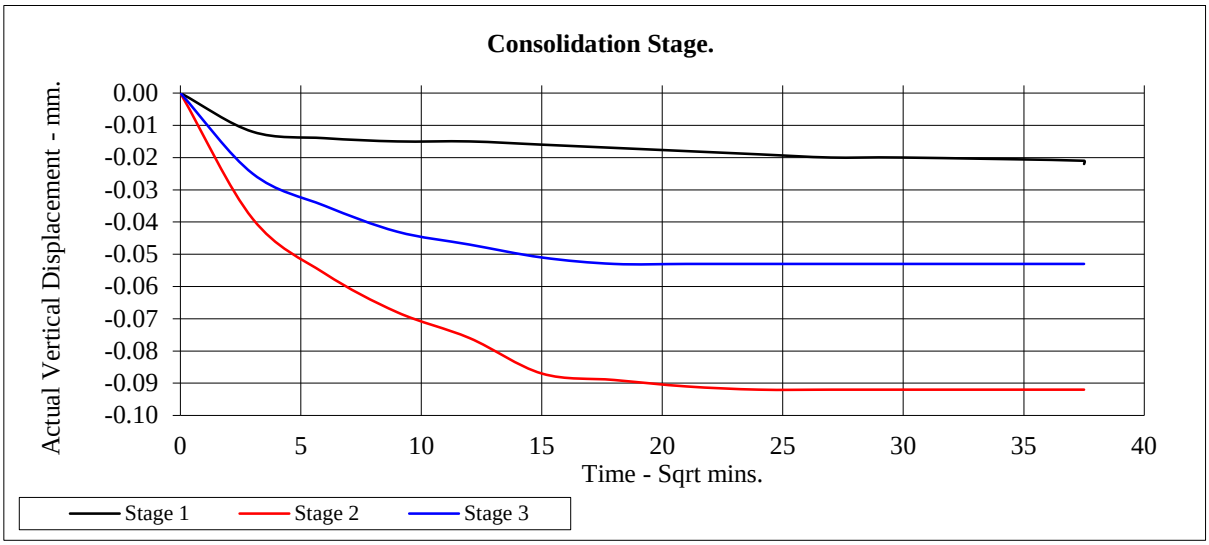
| | |
|---|---|
| Effective Cohesion - kPa: | Assumed Zero |
| Angle of Shearing Resistance:(θ) | 9.2 |

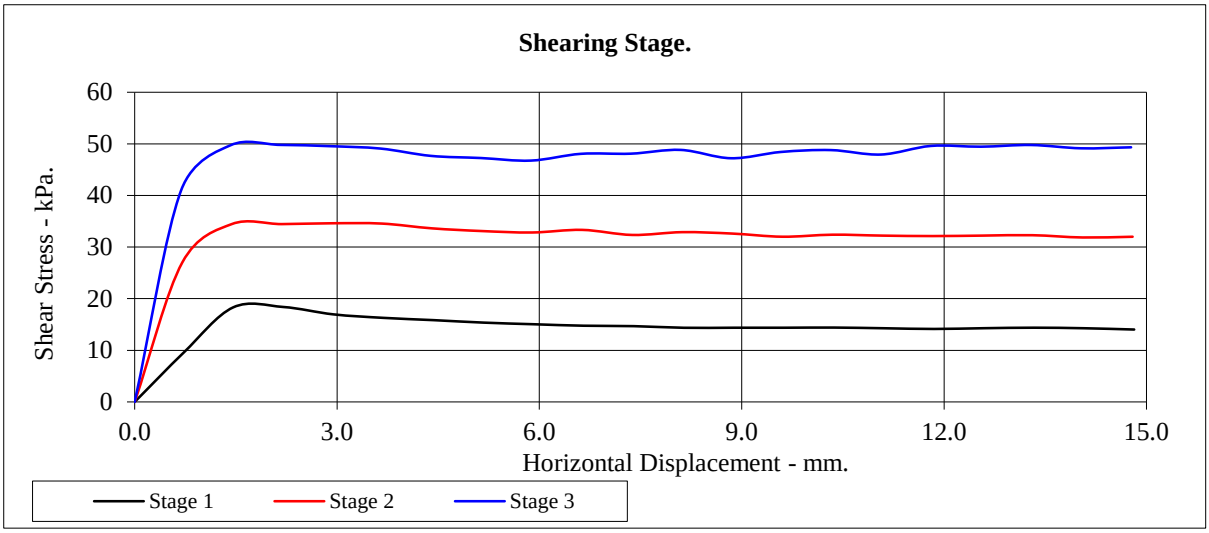


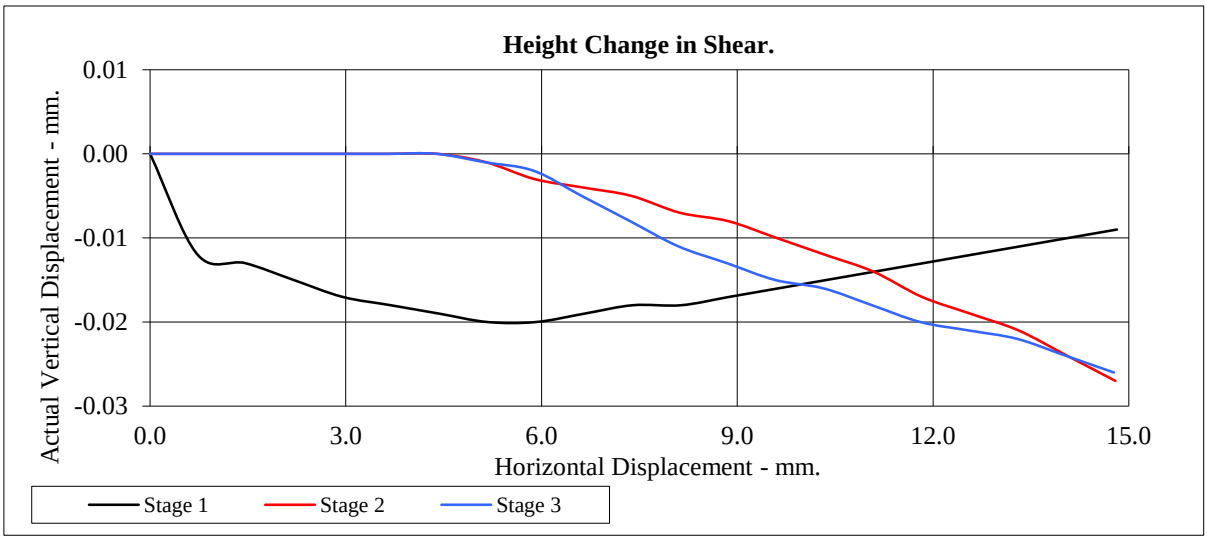
# Determination of residual shear strength using Ring Shear Apparatus

**BS1377:Part 7:1990 Clause 6**

| | | | |
|---|---|---|---|
| Hole Number: | **BH114** | Top Depth: | **9.50** |
| Sample Number: | **107** | Base Depth: | **9.70** |



# Determination of residual shear strength using Ring Shear Apparatus

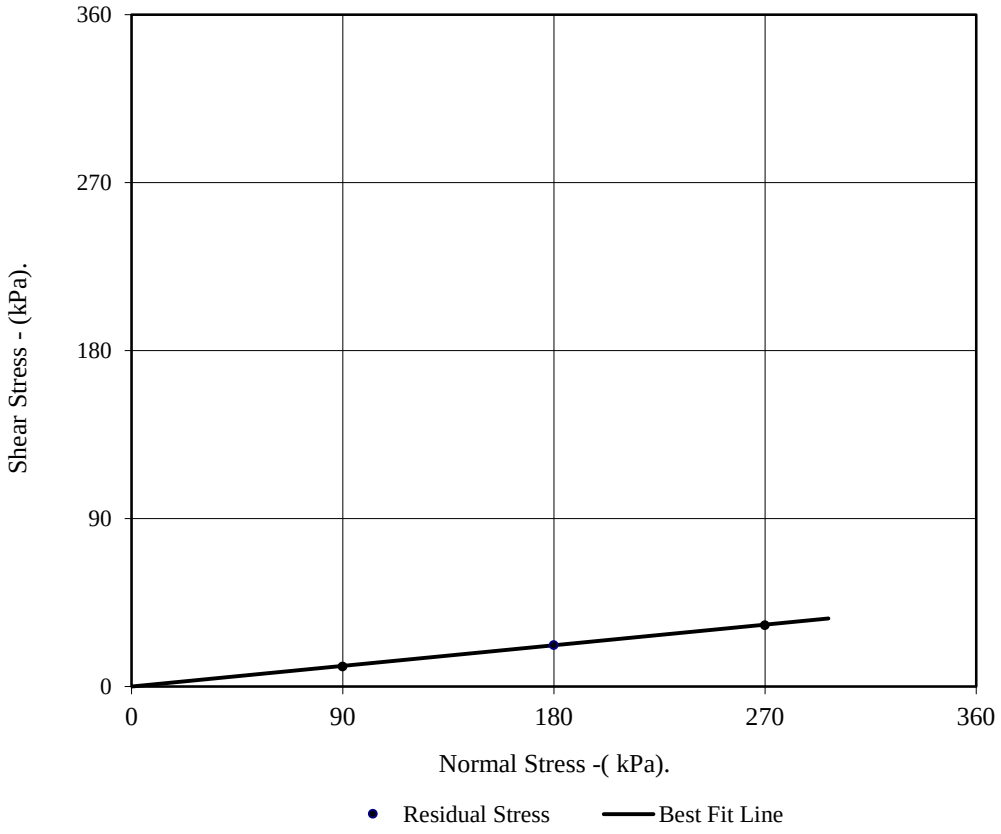
## BS1377:Part 7:1990 Clause 6

| | | | |
|---|---|---|---|
| Hole Number: | **BH128** | Top Depth: | **8.95** |
| Sample Number: | **107** | Base Depth: | **9.20** |
| Sample Conditions: | Submerged | Sample Type | **CS** |
| Preparation Details: | Specimen passed through 1.18mm sieve | | |
| Method of forming the shear plane: | Specimen rotated 2 revolutions by hand within 2 minutes. | | |
| Sample Description: | **See summary of soil descriptions.** | | |

| | |
|---|---|
| Outer Radius - mm: | 50.01 |
| Inner Radius - mm: | 35.00 |
| Initial Thickness - mm: | 5.00 |
| Initial Moisture Content - %: | 24 |
| Final Moisture Content - %: | 28 |

| Stage Number: | **1** | **2** | **3** |
|---|---|---|---|
| Normal Effective Stress - kPa | 90 | 180 | 270 |
| Rate of displacement - mm/min | 0.026 | 0.026 | 0.026 |
| Residual shear stress - kPa | 11 | 22 | 33 |
| Mean linear displacement at end of shearing stage - mm | 14.82 | 14.81 | 14.79 |

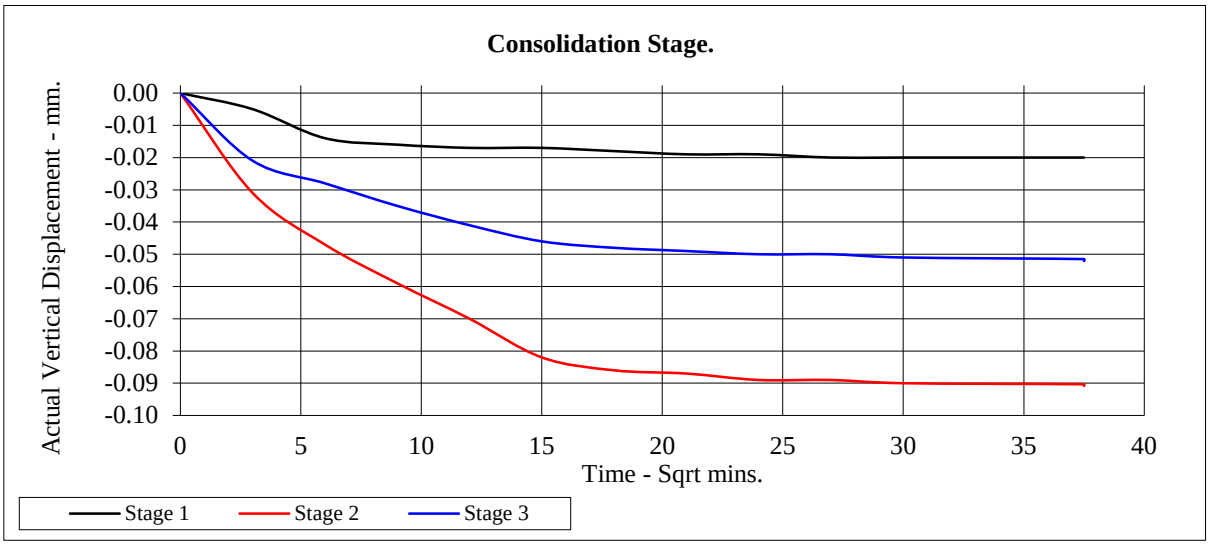
| | |
|---|---|
| Effective Cohesion - kPa: | Assumed Zero |
| Angle of Shearing Resistance:($\theta$) | 7.0 |

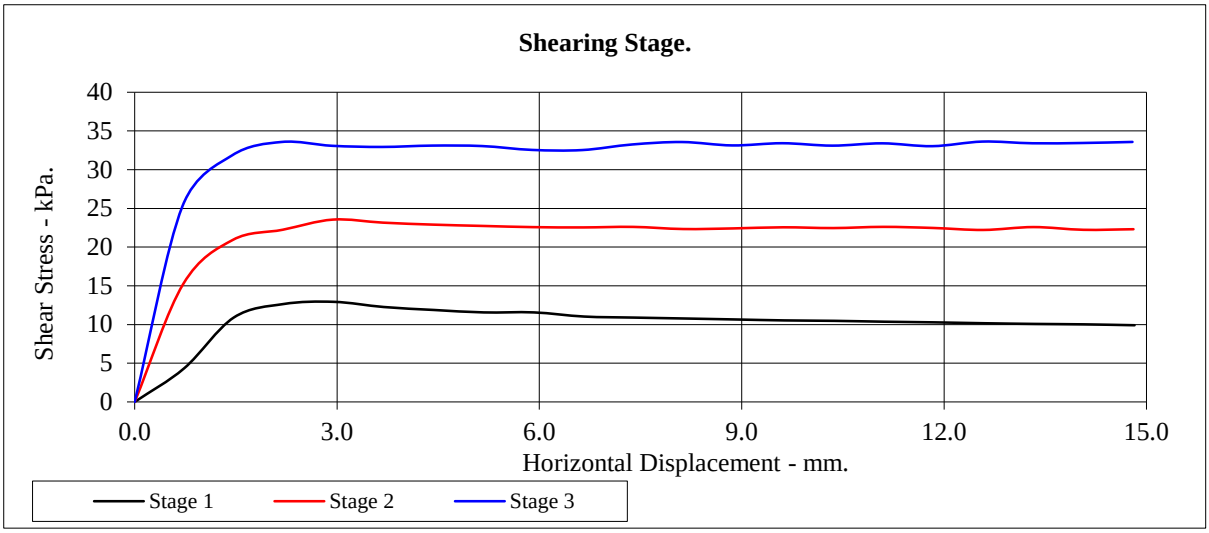


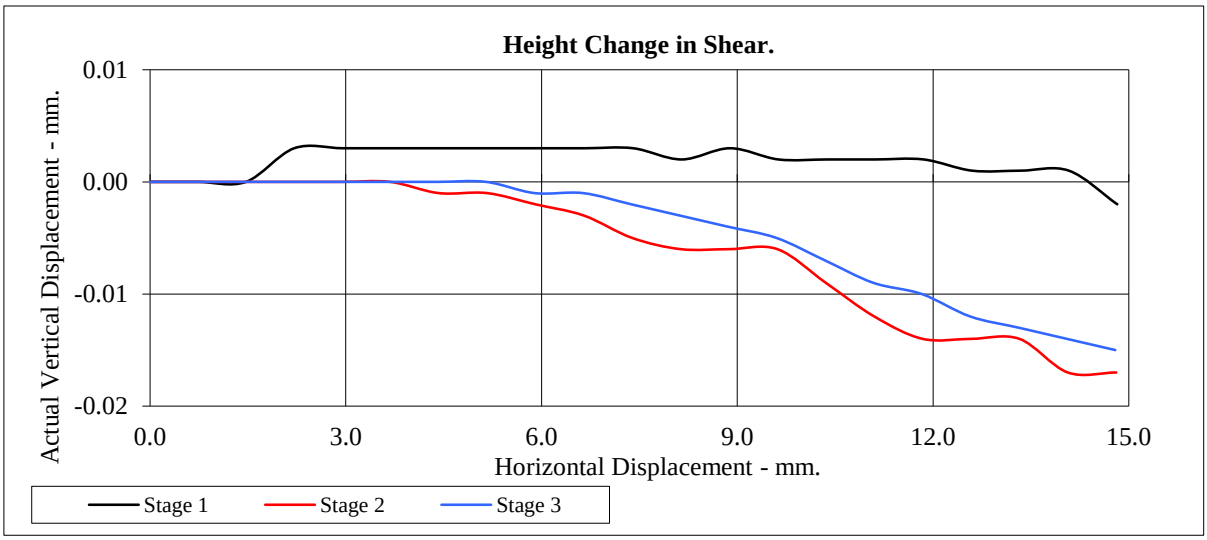
# Determination of residual shear strength using Ring Shear Apparatus

**BS1377:Part 7:1990 Clause 6**

| | | | |
|---|---|---|---|
| Hole Number: | **BH128** | Top Depth: | **8.95** |
| Sample Number: | **107** | Base Depth: | **9.20** |




| | | | |
|---|---|---|---|
| UKAS TESTING 4043 | PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** | **Contract No:** PSL22/3650 **Client Ref:** GT0386 |

# Determination of residual shear strength using Ring Shear Apparatus

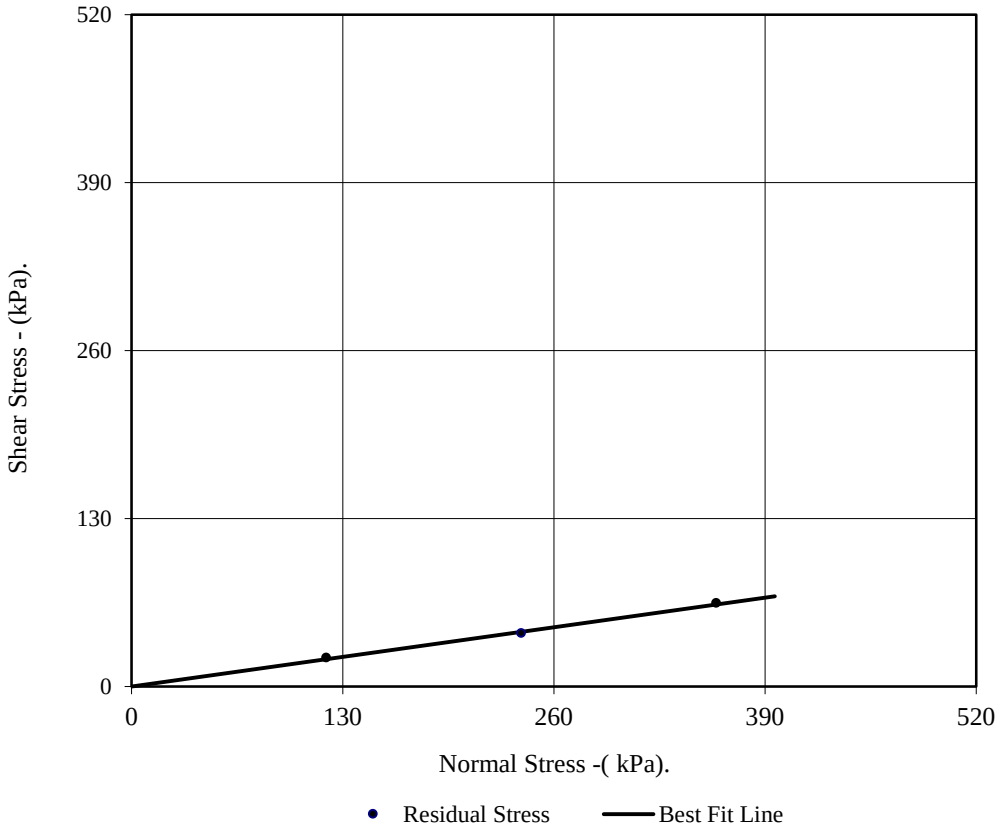
## BS1377:Part 7:1990 Clause 6

| | | | |
|---|---|---|---|
| Hole Number: | **BH128** | Top Depth: | **12.45** |
| Sample Number: | **110** | Base Depth: | **12.75** |
| Sample Conditions: | Submerged | Sample Type | **CS** |
| Preparation Details: | Specimen passed through 1.18mm sieve | | |
| Method of forming the shear plane: | Specimen rotated 2 revolutions by hand within 2 minutes. | | |
| Sample Description: | **See summary of soil descriptions.** | | |

| | |
|---|---|
| Outer Radius - mm: | 50.01 |
| Inner Radius - mm: | 35.00 |
| Initial Thickness - mm: | 5.00 |
| Initial Moisture Content - %: | 22 |
| Final Moisture Content - %: | 31 |

| Stage Number: | **1** | **2** | **3** |
|---|---|---|---|
| Normal Effective Stress - kPa | 120 | 240 | 360 |
| Rate of displacement - mm/min | 0.024 | 0.024 | 0.024 |
| Residual shear stress - kPa | 22 | 41 | 65 |
| Mean linear displacement at end of shearing stage - mm | 14.81 | 14.78 | 14.75 |

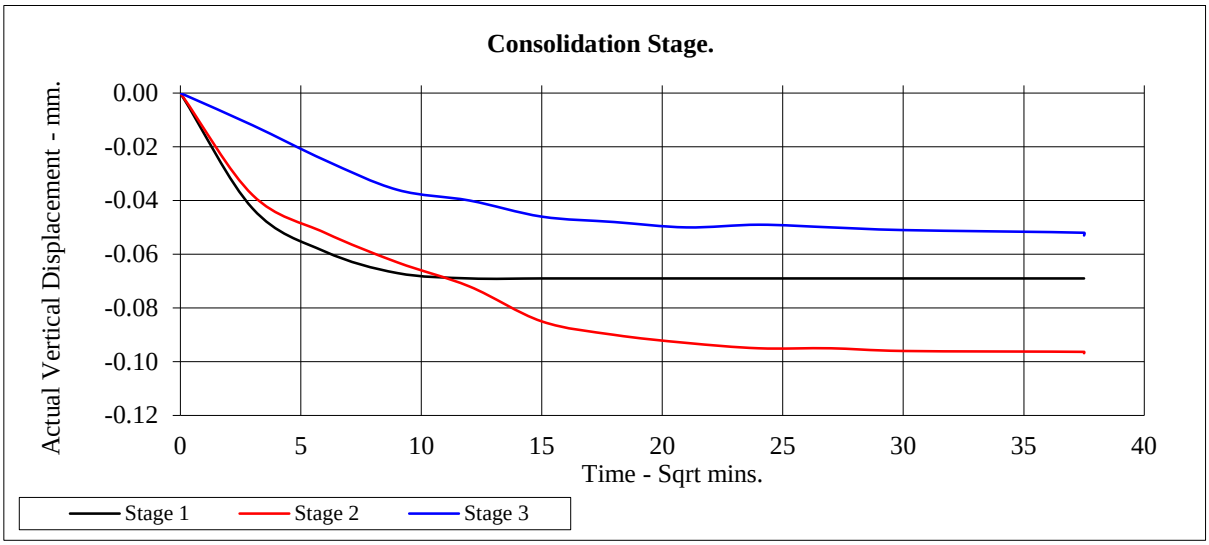
| | |
|---|---|
| Effective Cohesion - kPa: | Assumed Zero |
| Angle of Shearing Resistance:(θ) | 10.0 |

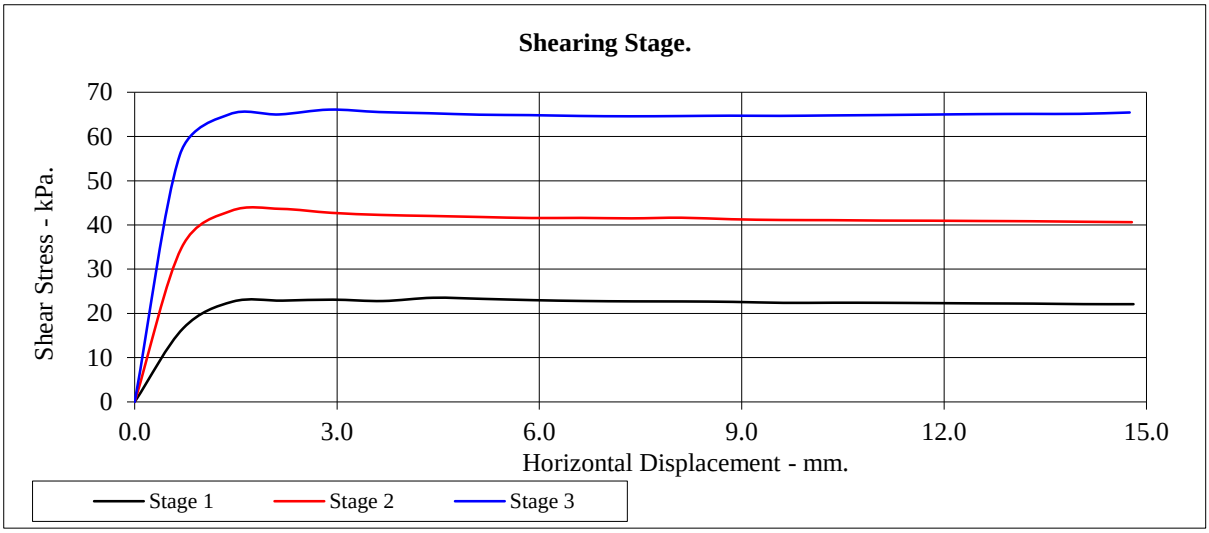


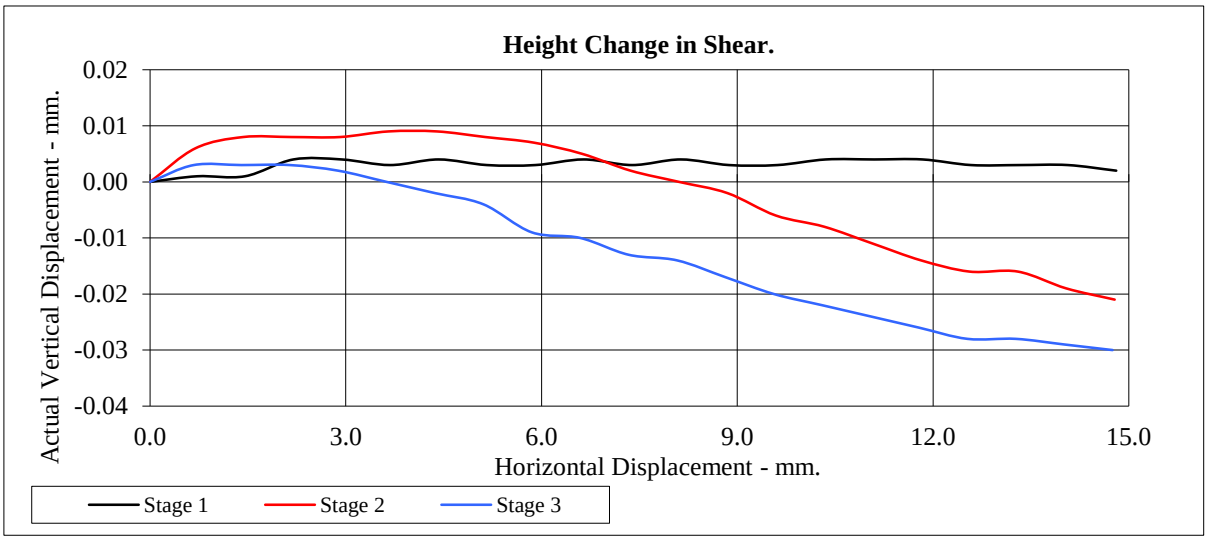
# Determination of residual shear strength using Ring Shear Apparatus

**BS1377:Part 7:1990 Clause 6**

| | | | |
|---|---|---|---|
| Hole Number: | **BH128** | Top Depth: | **12.45** |
| Sample Number: | **110** | Base Depth: | **12.75** |




| | | |
|---|---|---|
| UKAS TESTING 4043 | PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** |

| | |
|---|---|
| **Contract No:** | |
| **PSL22/3650** | |
| **Client Ref:** | |
| **GT0386** | |

# Determination of residual shear strength using Ring Shear Apparatus

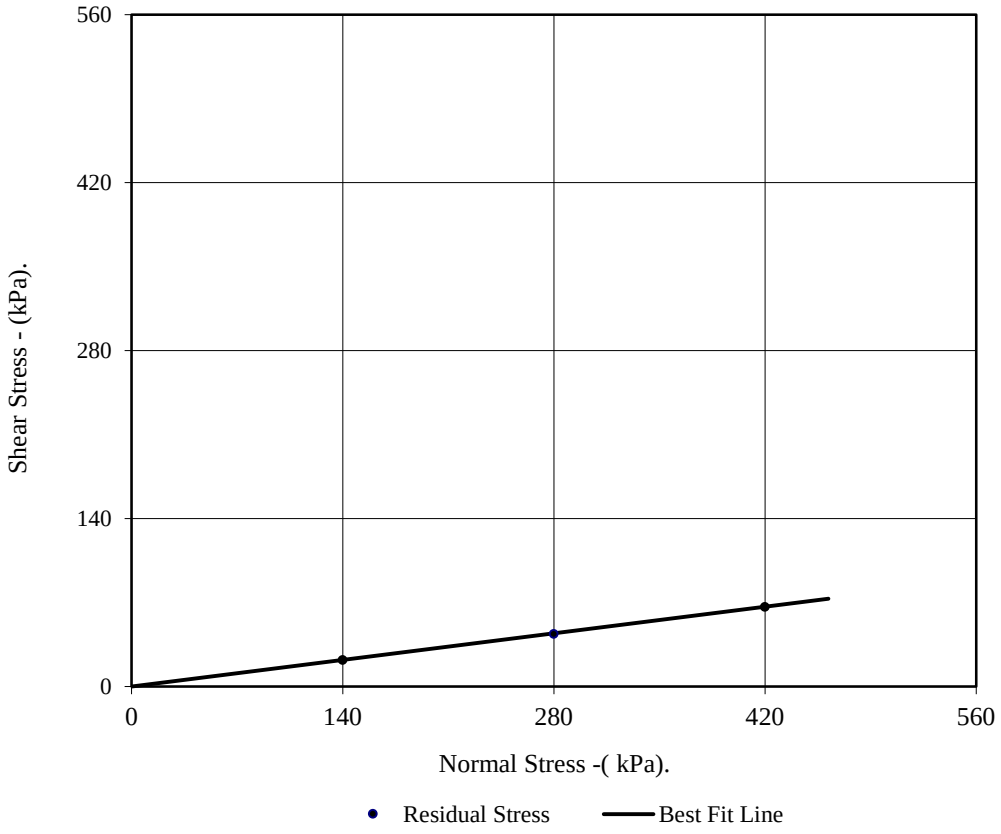
## BS1377:Part 7:1990 Clause 6

| | | | |
|---|---|---|---|
| Hole Number: | **BH128** | Top Depth: | **14.20** |
| Sample Number: | **111** | Base Depth: | **14.50** |
| Sample Conditions: | Submerged | Sample Type | **CS** |
| Preparation Details: | Specimen passed through 1.18mm sieve | | |
| Method of forming the shear plane: | Specimen rotated 2 revolutions by hand within 2 minutes. | | |
| Sample Description: | **See summary of soil descriptions.** | | |

| | |
|---|---|
| Outer Radius - mm: | 50.01 |
| Inner Radius - mm: | 35.00 |
| Initial Thickness - mm: | 5.00 |
| Initial Moisture Content - %: | 23 |
| Final Moisture Content - %: | 26 |

| Stage Number: | **1** | **2** | **3** |
|---|---|---|---|
| Normal Effective Stress - kPa | 140 | 280 | 420 |
| Rate of displacement - mm/min | 0.025 | 0.025 | 0.025 |
| Residual shear stress - kPa | 22 | 44 | 66 |
| Mean linear displacement at end of shearing stage - mm | 14.81 | 14.78 | 14.75 |

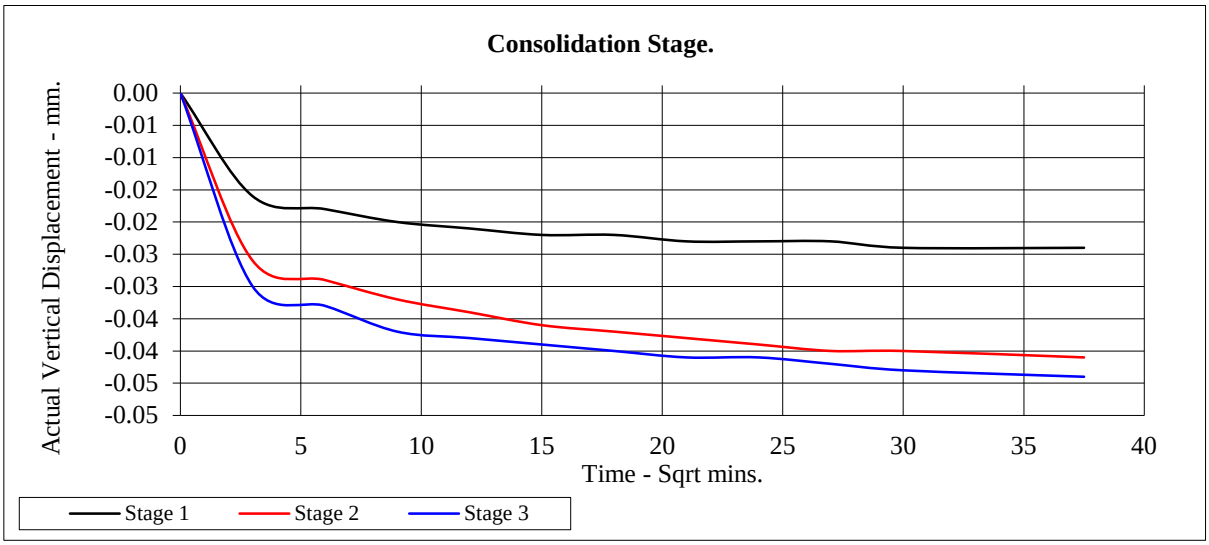
| | |
|---|---|
| Effective Cohesion - kPa: | Assumed Zero |
| Angle of Shearing Resistance:($\theta$) | 9.0 |

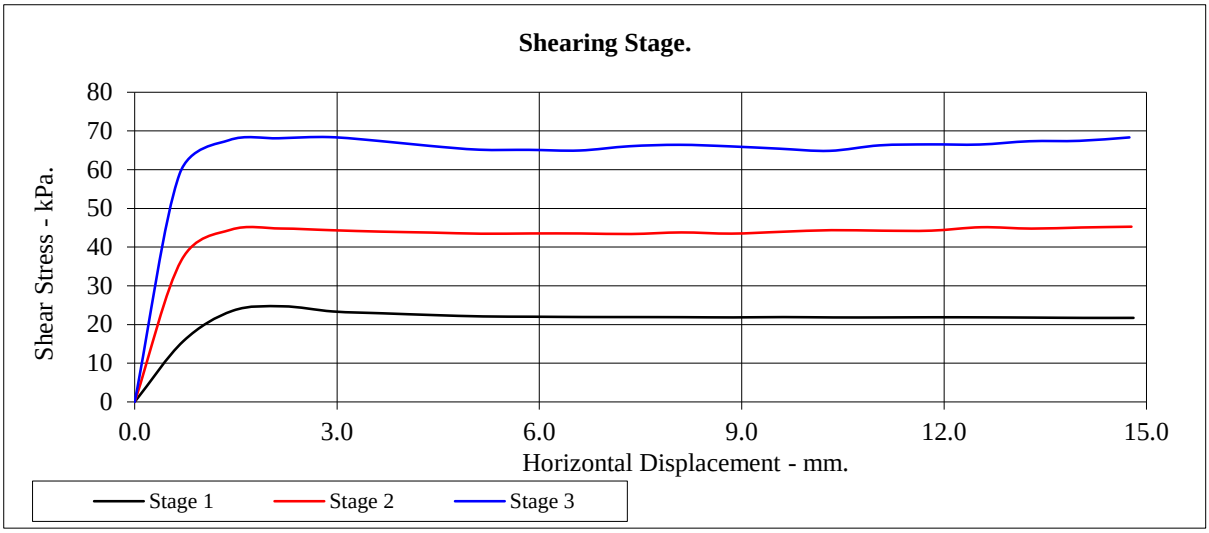


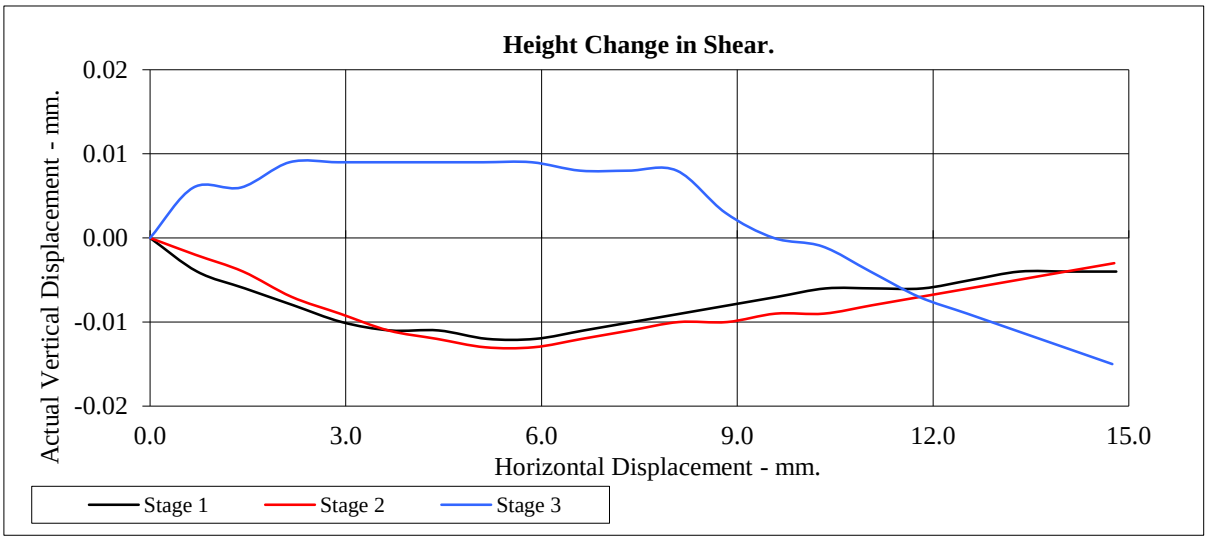
# Determination of residual shear strength using Ring Shear Apparatus

**BS1377:Part 7:1990 Clause 6**

| | | | |
|---|---|---|---|
| Hole Number: | **BH128** | Top Depth: | **14.20** |
| Sample Number: | **111** | Base Depth: | **14.50** |

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|---|---|---|
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|---|---|
| **Contract No:** | |
| **PSL22/3650** | |
| **Client Ref:** | |
| **GT0386** | |

# Determination of residual shear strength using Ring Shear Apparatus

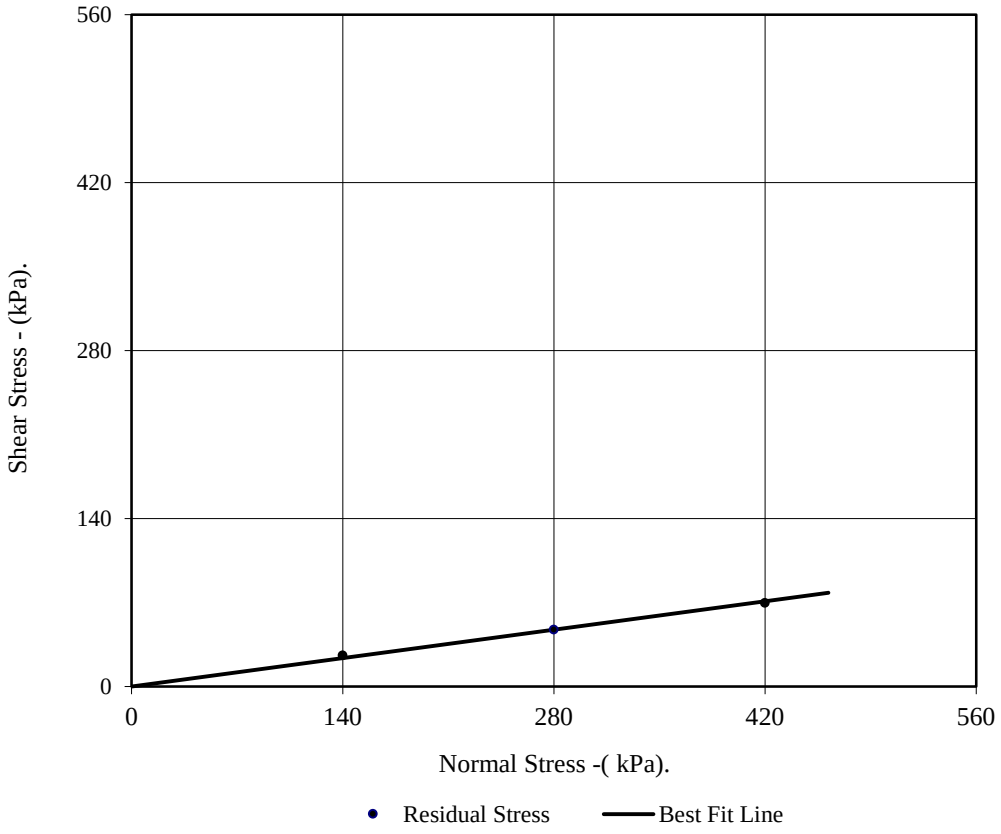
## BS1377:Part 7:1990 Clause 6

| | | | |
|---|---|---|---|
| Hole Number: | **BH132** | Top Depth: | **13.66** |
| Sample Number: | **115** | Base Depth: | **13.87** |
| Sample Conditions: | Submerged | Sample Type | **CS** |
| Preparation Details: | Specimen passed through 1.18mm sieve | | |
| Method of forming the shear plane: | Specimen rotated 2 revolutions by hand within 2 minutes. | | |
| Sample Description: | **See summary of soil descriptions.** | | |

| | |
|---|---|
| Outer Radius - mm: | 50.01 |
| Inner Radius - mm: | 35.00 |
| Initial Thickness - mm: | 5.00 |
| Initial Moisture Content - %: | 22 |
| Final Moisture Content - %: | 25 |

| Stage Number: | **1** | **2** | **3** |
|---|---|---|---|
| Normal Effective Stress - kPa | 140 | 280 | 420 |
| Rate of displacement - mm/min | 0.024 | 0.024 | 0.024 |
| Residual shear stress - kPa | 26 | 47 | 69 |
| Mean linear displacement at end of shearing stage - mm | 14.80 | 14.77 | 14.75 |

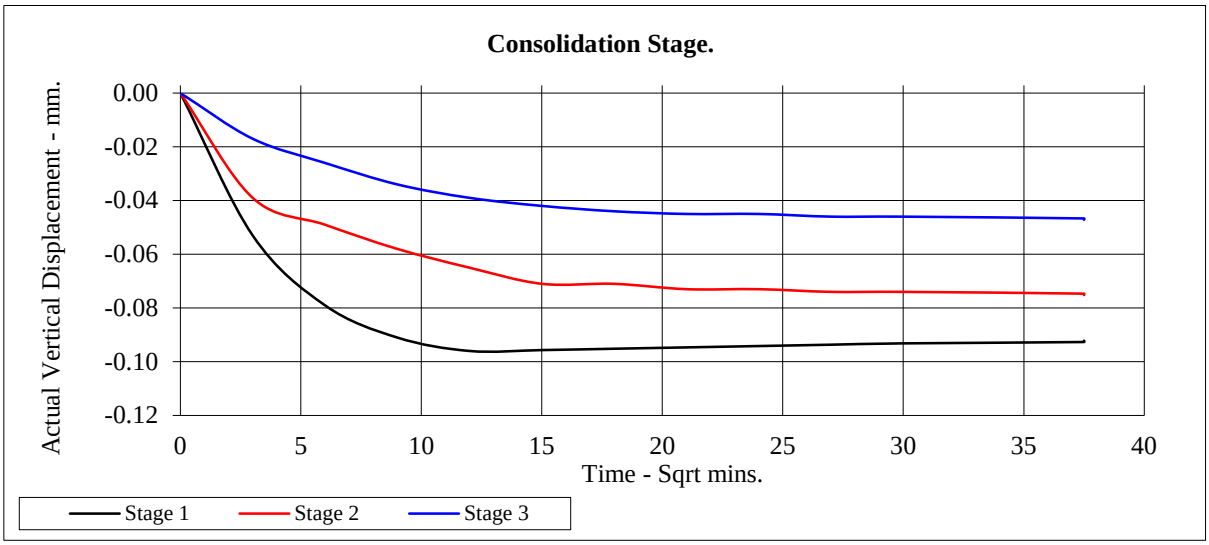
| | |
|---|---|
| Effective Cohesion - kPa: | Assumed Zero |
| Angle of Shearing Resistance:($\theta$) | 9.6 |

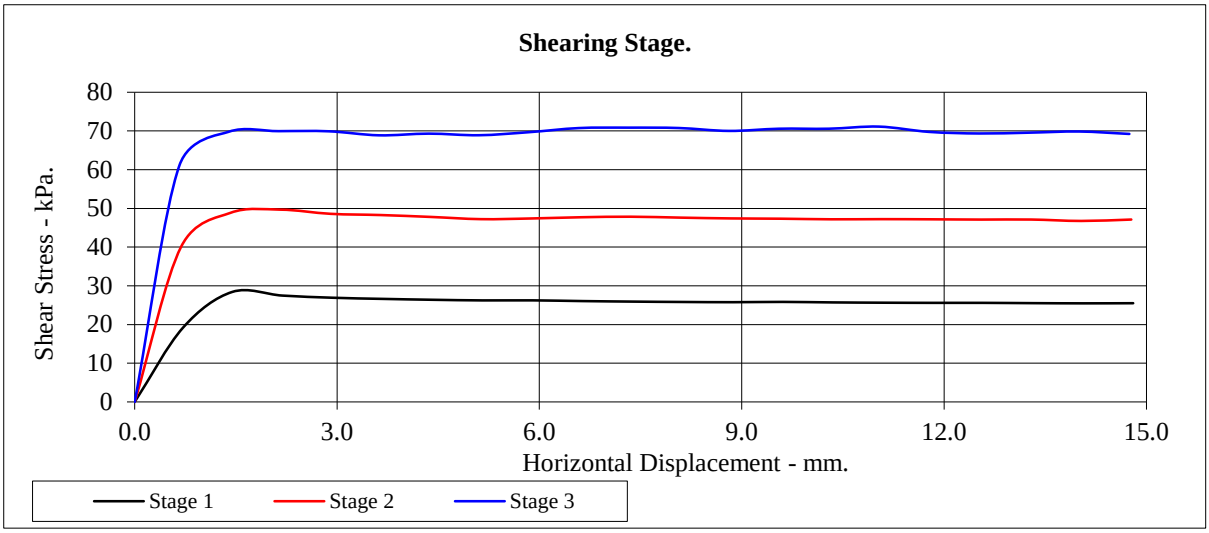


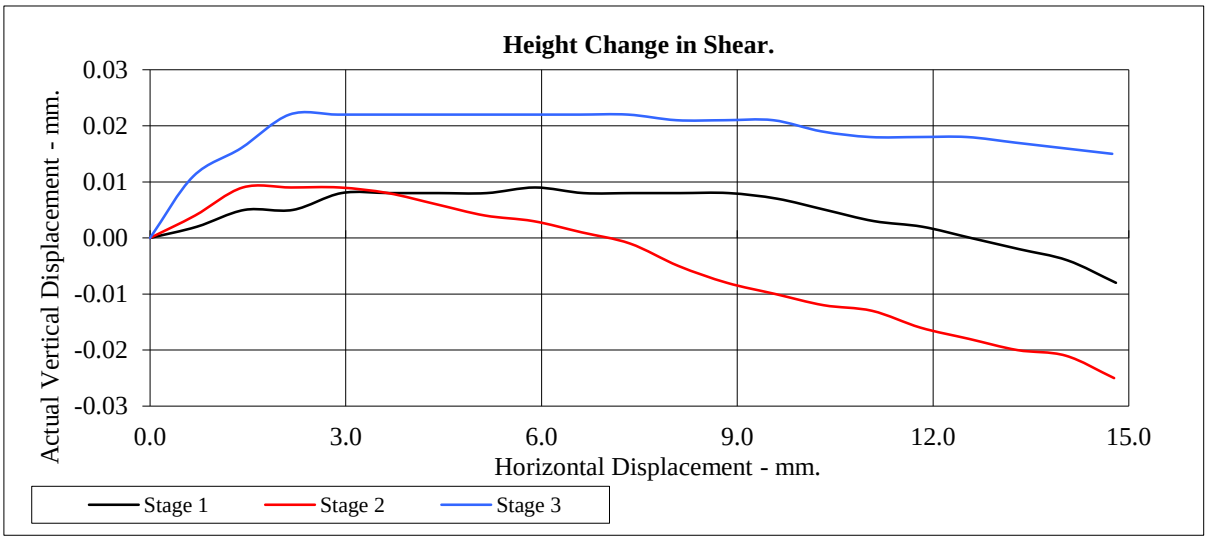
# Determination of residual shear strength using Ring Shear Apparatus

**BS1377:Part 7:1990 Clause 6**

| | | | |
|---|---|---|---|
| Hole Number: | **BH132** | Top Depth: | **13.66** |
| Sample Number: | **115** | Base Depth: | **13.87** |




| | | |
|---|---|---|
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| | |
|---|---|
| **Contract No:** | |
| **PSL22/3650** | |
| **Client Ref:** | |
| **GT0386** | |

# Determination of residual shear strength using Ring Shear Apparatus

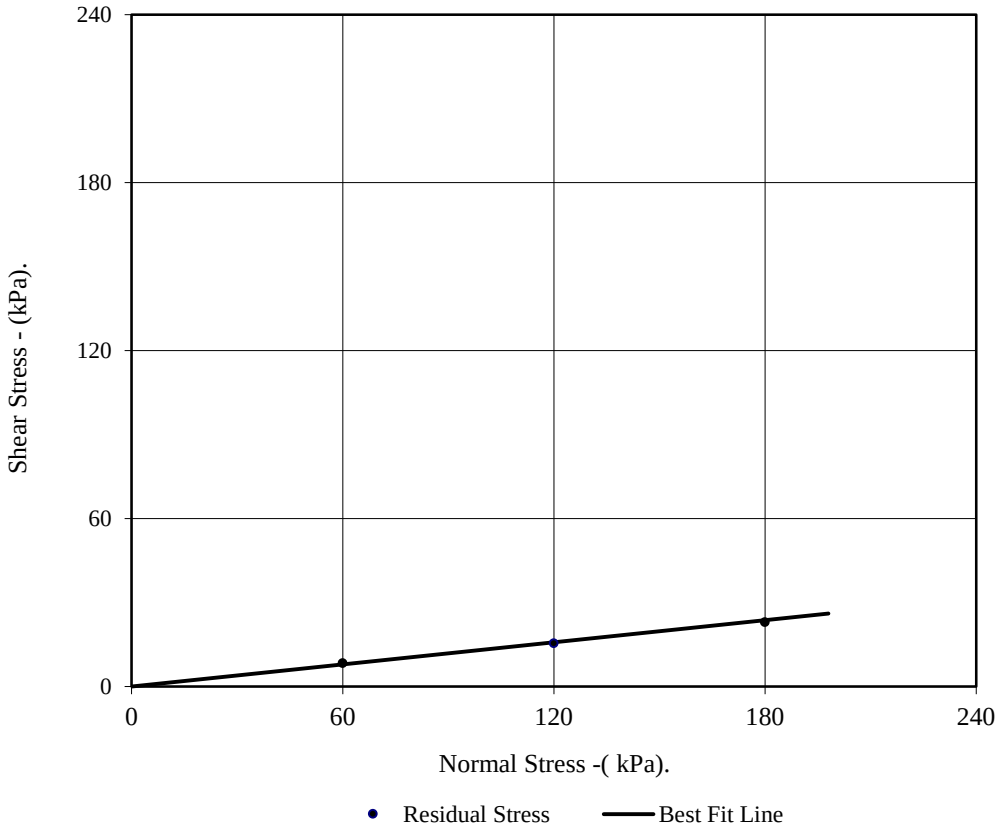
## BS1377:Part 7:1990 Clause 6

| | | | |
|---|---|---|---|
| Hole Number: | **BH133** | Top Depth: | **5.74** |
| Sample Number: | **105** | Base Depth: | **6.00** |
| Sample Conditions: | Submerged | Sample Type | **CS** |
| Preparation Details: | Specimen passed through 1.18mm sieve | | |
| Method of forming the shear plane: | Specimen rotated 2 revolutions by hand within 2 minutes. | | |
| Sample Description: | **See summary of soil descriptions.** | | |

| | |
|---|---|
| Outer Radius - mm: | 50.01 |
| Inner Radius - mm: | 35.00 |
| Initial Thickness - mm: | 5.00 |
| Initial Moisture Content - %: | 28 |
| Final Moisture Content - %: | 30 |

| Stage Number: | **1** | **2** | **3** |
|---|---|---|---|
| Normal Effective Stress - kPa | 60 | 120 | 180 |
| Rate of displacement - mm/min | 0.024 | 0.024 | 0.024 |
| Residual shear stress - kPa | 8 | 15 | 23 |
| Mean linear displacement at end of shearing stage - mm | 14.83 | 14.82 | 14.81 |

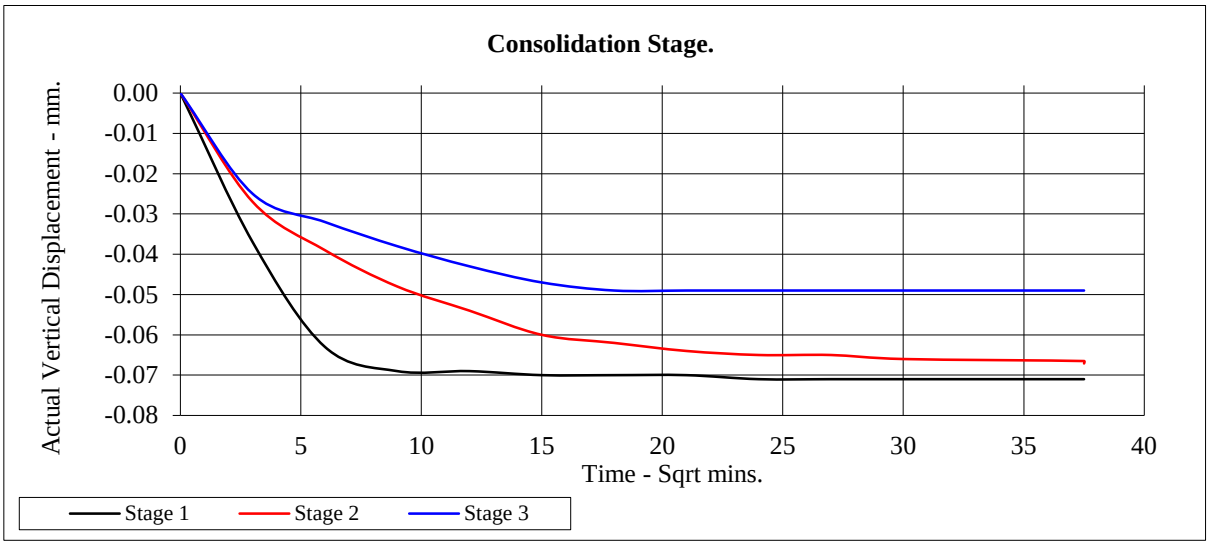
| | |
|---|---|
| Effective Cohesion - kPa: | Assumed Zero |
| Angle of Shearing Resistance:(θ) | 7.5 |

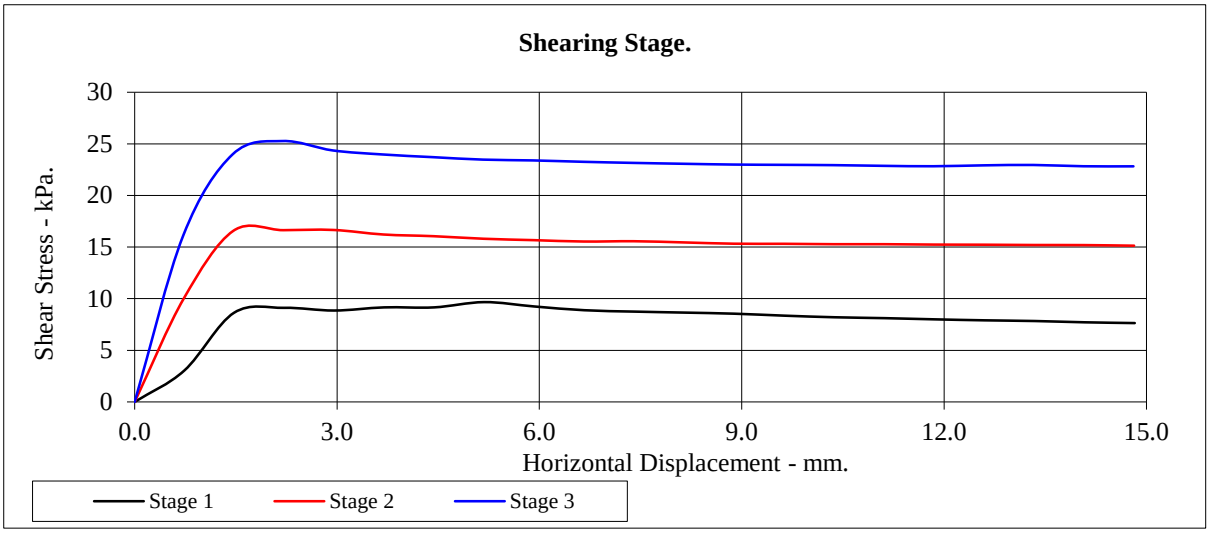


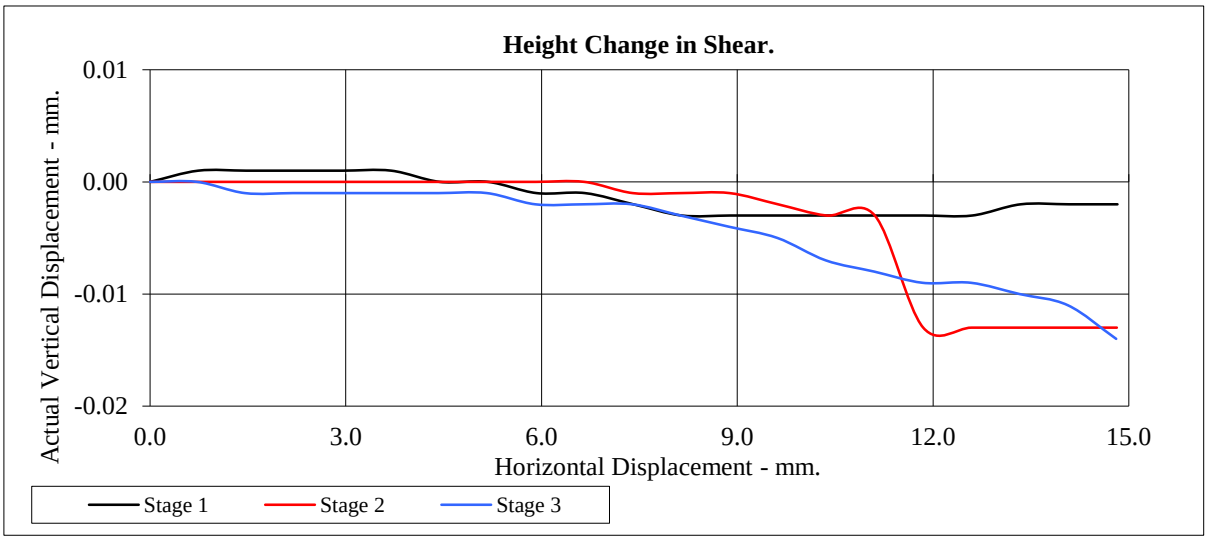
# Determination of residual shear strength using Ring Shear Apparatus

**BS1377:Part 7:1990 Clause 6**

| | | | |
|---|---|---|---|
| Hole Number: | **BH133** | Top Depth: | **5.74** |
| Sample Number: | **105** | Base Depth: | **6.00** |



# Determination of residual shear strength using Ring Shear Apparatus

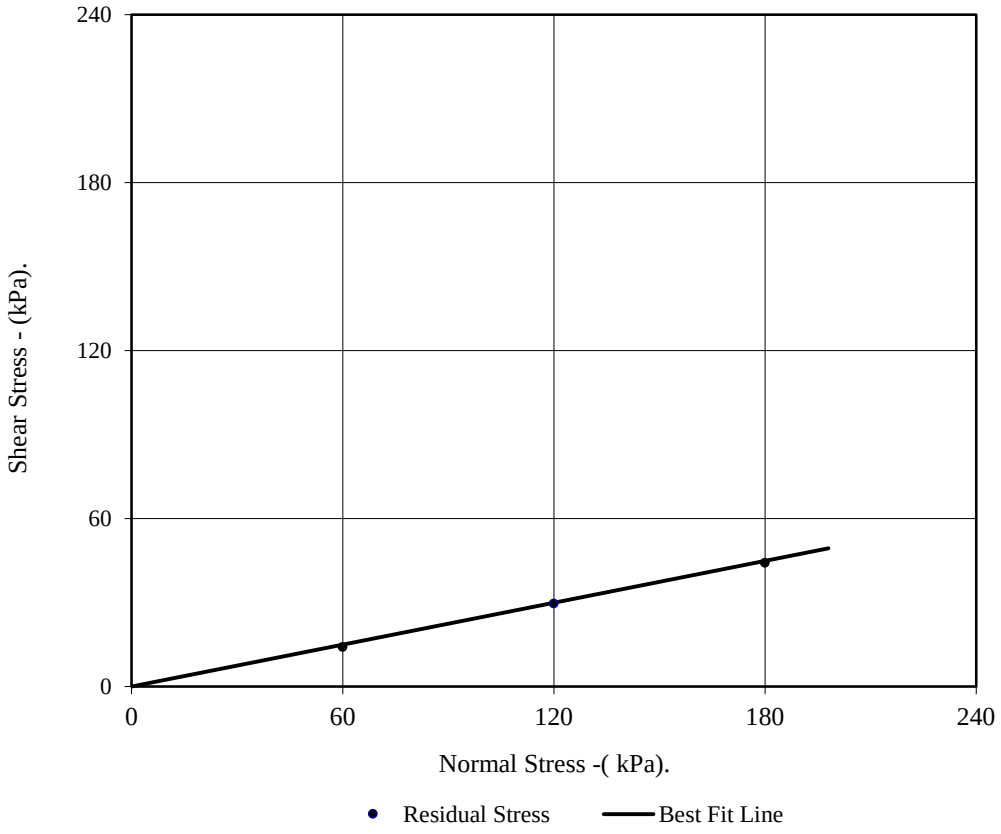
## BS1377:Part 7:1990 Clause 6

| | | | |
|---|---|---|---|
| Hole Number: | **BH133** | Top Depth: | **7.90** |
| Sample Number: | **107** | Base Depth: | **8.20** |
| Sample Conditions: | Submerged | Sample Type | **CS** |
| Preparation Details: | Specimen passed through 1.18mm sieve | | |
| Method of forming the shear plane: | Specimen rotated 2 revolutions by hand within 2 minutes. | | |
| Sample Description: | **See summary of soil descriptions.** | | |

| | |
|---|---|
| Outer Radius - mm: | 50.01 |
| Inner Radius - mm: | 35.00 |
| Initial Thickness - mm: | 5.00 |
| Initial Moisture Content - %: | 26 |
| Final Moisture Content - %: | 31 |

| Stage Number: | **1** | **2** | **3** |
|---|---|---|---|
| Normal Effective Stress - kPa | 60 | 120 | 180 |
| Rate of displacement - mm/min | 0.023 | 0.023 | 0.023 |
| Residual shear stress - kPa | 14 | 30 | 44 |
| Mean linear displacement at end of shearing stage - mm | 14.82 | 14.80 | 14.78 |

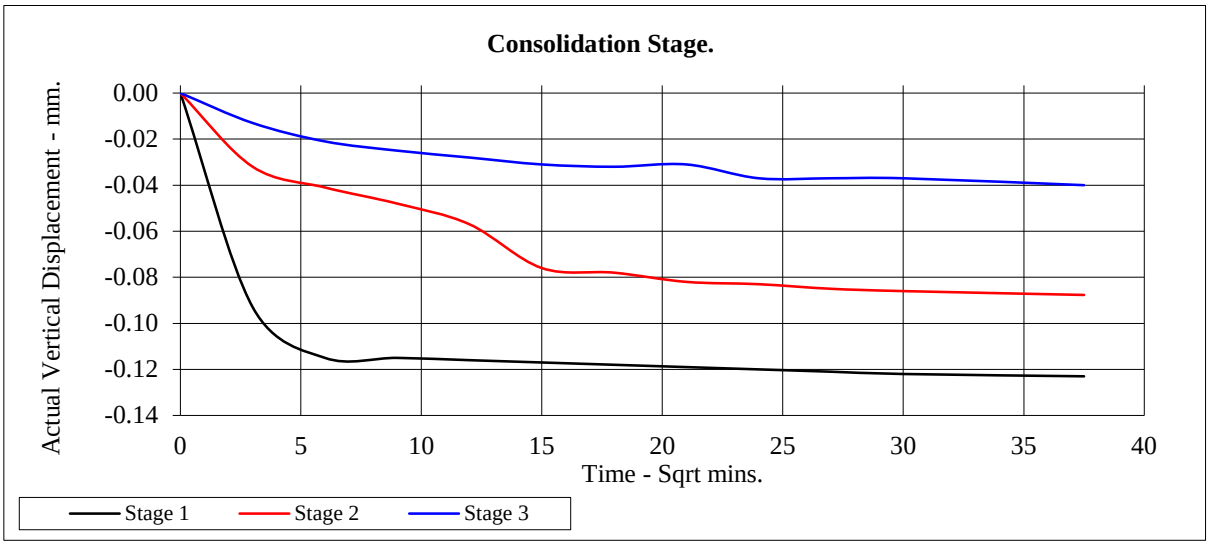
| | |
|---|---|
| Effective Cohesion - kPa: | Assumed Zero |
| Angle of Shearing Resistance:(θ) | 14.0 |

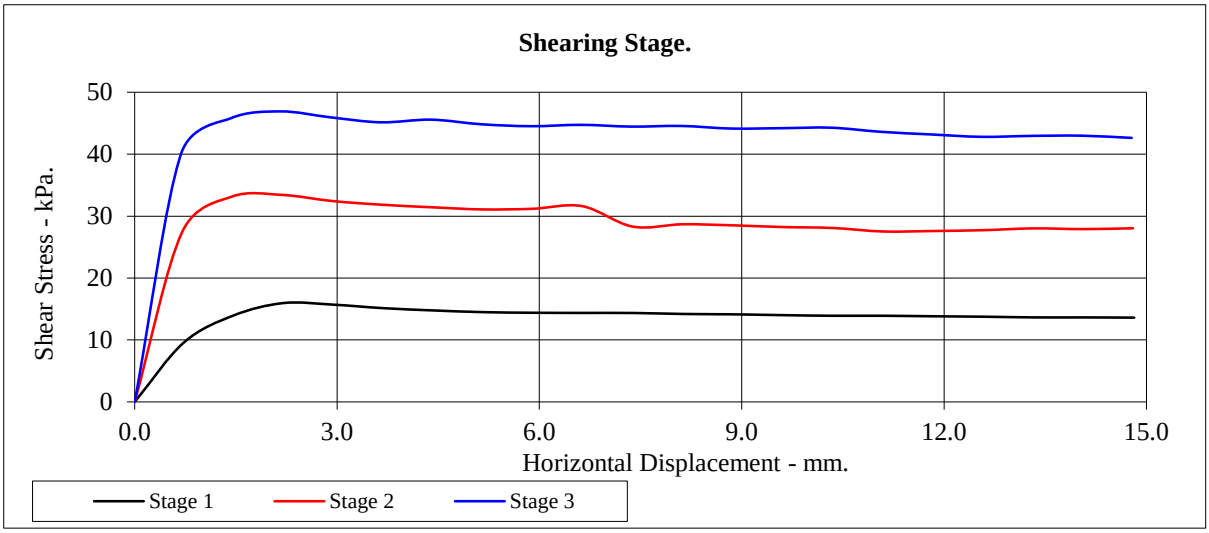


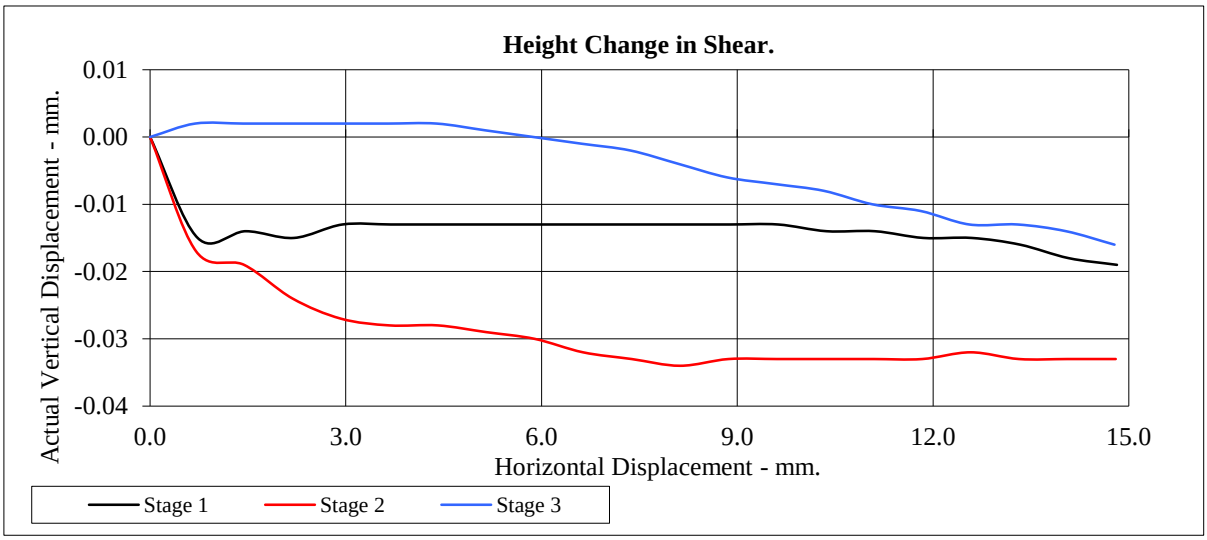
# Determination of residual shear strength using Ring Shear Apparatus

**BS1377:Part 7:1990 Clause 6**

| | | | |
|---|---|---|---|
| Hole Number: | **BH133** | Top Depth: | **7.90** |
| Sample Number: | **107** | Base Depth: | **8.20** |



# Determination of residual shear strength using Ring Shear Apparatus

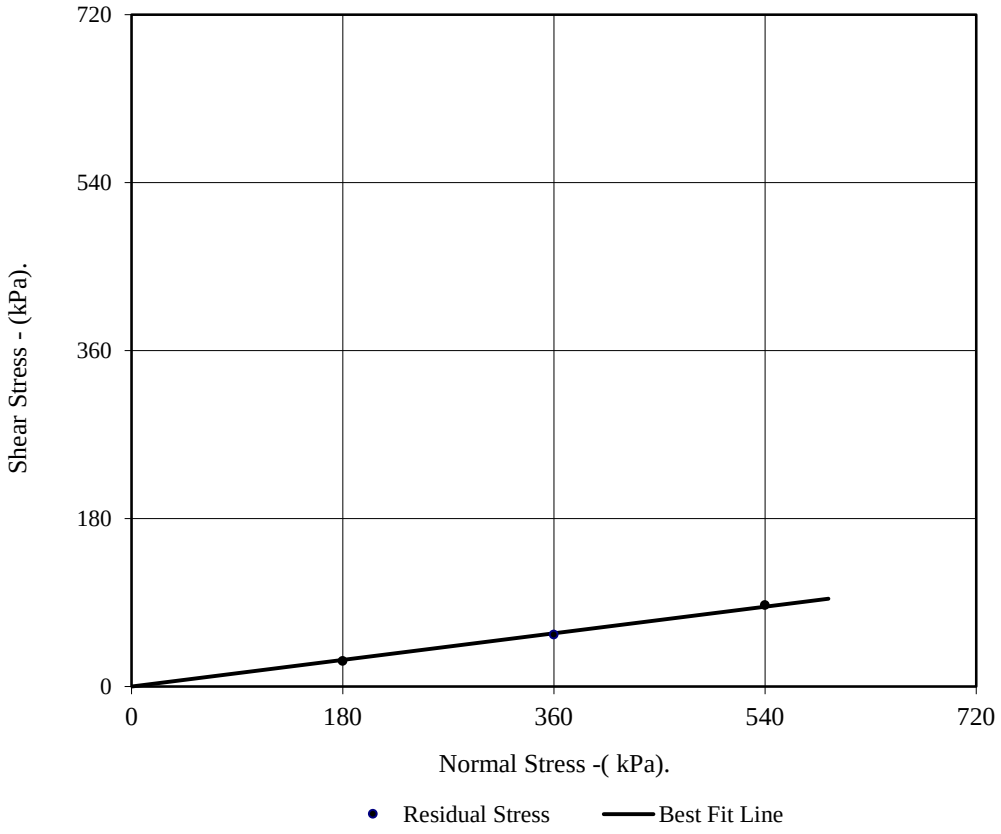
## BS1377:Part 7:1990 Clause 6

| | | | |
|---|---|---|---|
| Hole Number: | **BH115** | Top Depth: | **17.80** |
| Sample Number: | **108** | Base Depth: | **17.98** |
| Sample Conditions: | Submerged | Sample Type | **CS** |
| Preparation Details: | Specimen passed through 1.18mm sieve | | |
| Method of forming the shear plane: | Specimen rotated 2 revolutions by hand within 2 minutes. | | |
| Sample Description: | **See summary of soil descriptions.** | | |

| | |
|---|---|
| Outer Radius - mm: | 50.01 |
| Inner Radius - mm: | 35.00 |
| Initial Thickness - mm: | 5.00 |
| Initial Moisture Content - %: | 20 |
| Final Moisture Content - %: | 25 |

| Stage Number: | **1** | **2** | **3** |
|---|---|---|---|
| Normal Effective Stress - kPa | 180 | 360 | 540 |
| Rate of displacement - mm/min | 0.025 | 0.025 | 0.025 |
| Residual shear stress - kPa | 27 | 55 | 87 |
| Mean linear displacement at end of shearing stage - mm | 14.80 | 14.76 | 14.72 |

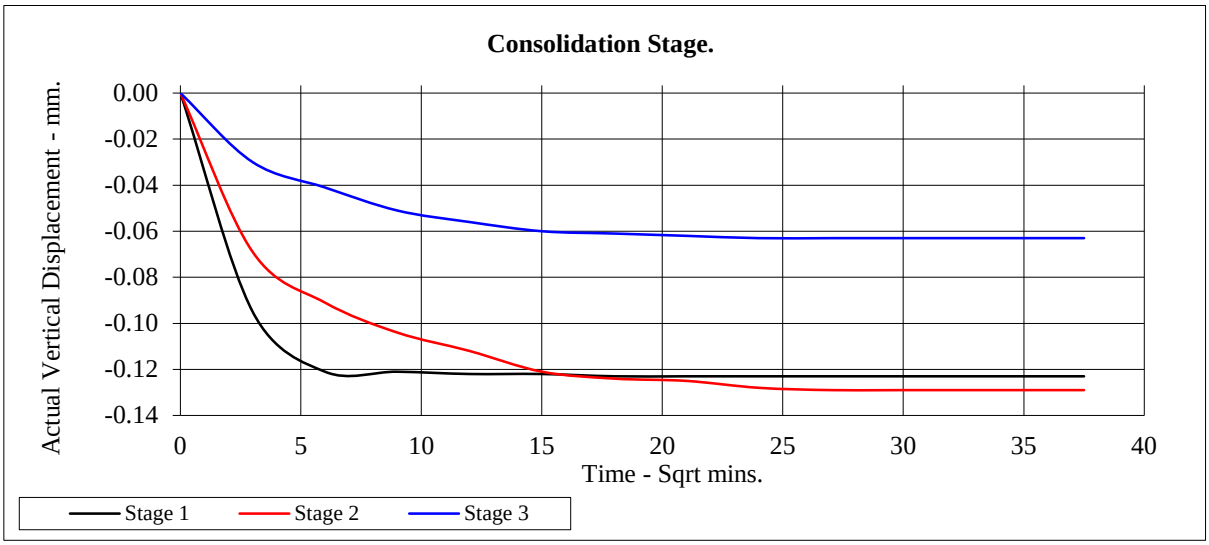
| | |
|---|---|
| Effective Cohesion - kPa: | Assumed Zero |
| Angle of Shearing Resistance:($\theta$) | 9.0 |

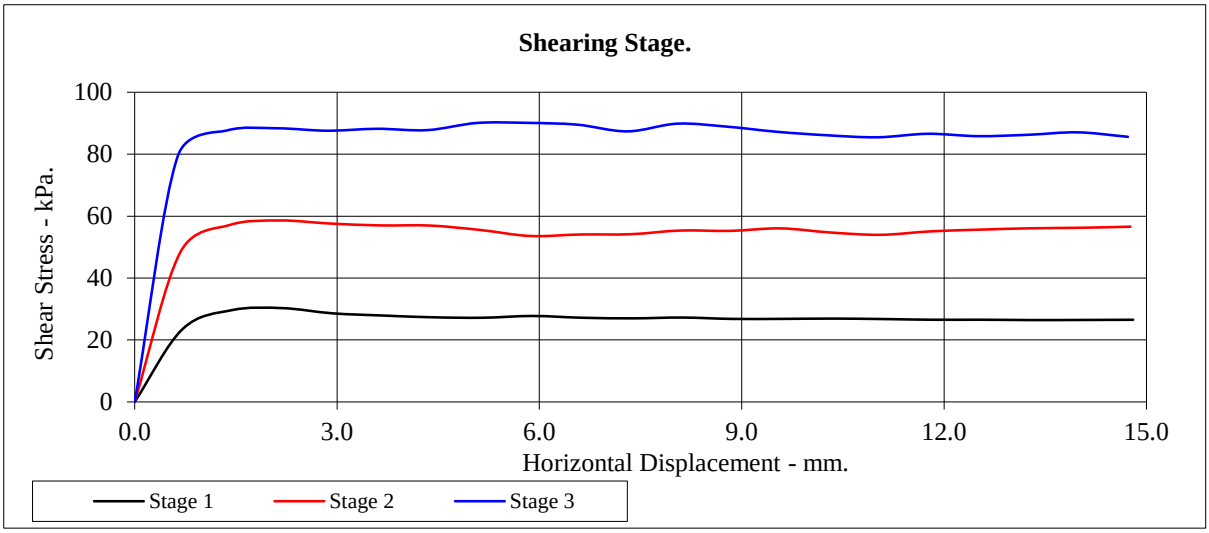


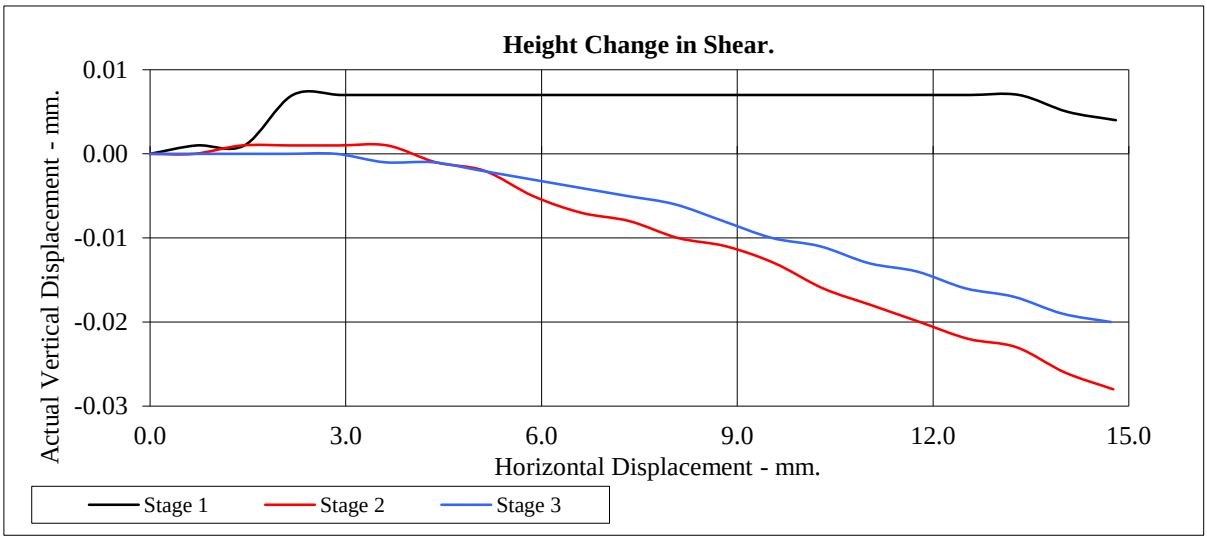
# Determination of residual shear strength using Ring Shear Apparatus

**BS1377:Part 7:1990 Clause 6**

| | | | |
|---|---|---|---|
| Hole Number: | **BH115** | Top Depth: | **17.80** |
| Sample Number: | **108** | Base Depth: | **17.98** |



# Determination of residual shear strength using Ring Shear Apparatus

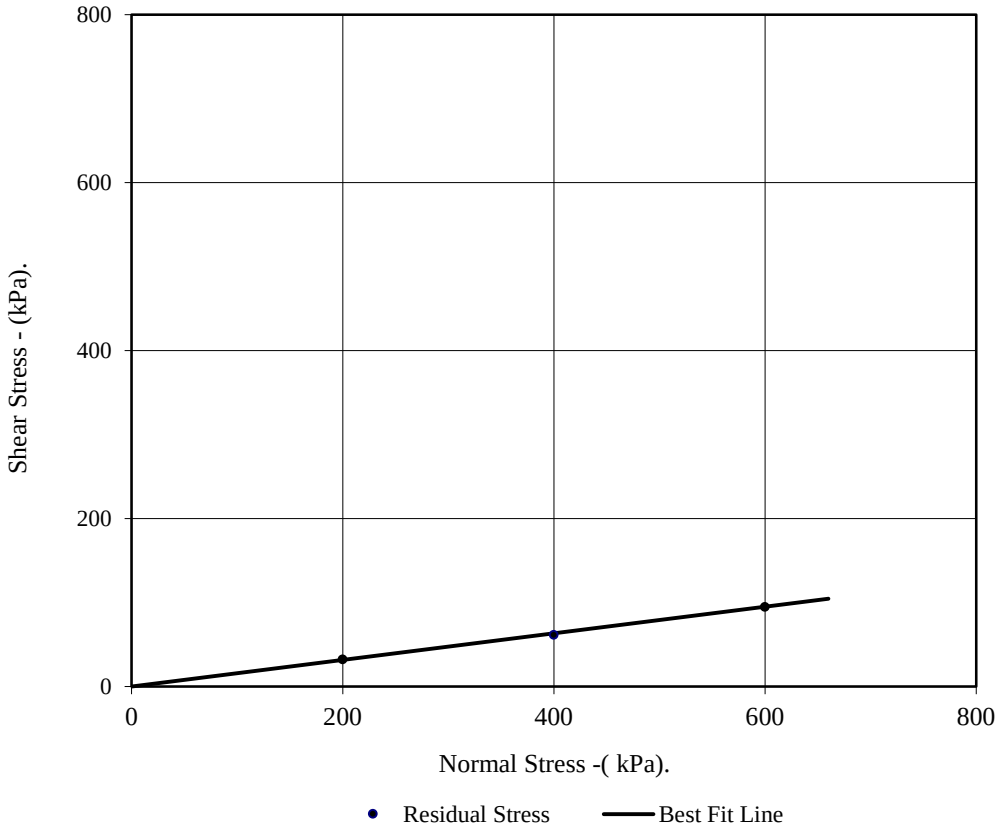
## BS1377:Part 7:1990 Clause 6

| | | | |
|---|---|---|---|
| Hole Number: | **BH116** | Top Depth: | **20.00** |
| Sample Number: | **110** | Base Depth: | **20.16** |
| Sample Conditions: | Submerged | Sample Type | **CS** |
| Preparation Details: | Specimen passed through 1.18mm sieve | | |
| Method of forming the shear plane: | Specimen rotated 2 revolutions by hand within 2 minutes. | | |
| Sample Description: | **See summary of soil descriptions.** | | |

| | |
|---|---|
| Outer Radius - mm: | 50.01 |
| Inner Radius - mm: | 35.00 |
| Initial Thickness - mm: | 5.00 |
| Initial Moisture Content - %: | 20 |
| Final Moisture Content - %: | 22 |

| Stage Number: | **1** | **2** | **3** |
|---|---|---|---|
| Normal Effective Stress - kPa | 200 | 400 | 600 |
| Rate of displacement - mm/min | 0.025 | 0.025 | 0.025 |
| Residual shear stress - kPa | 32 | 61 | 95 |
| Mean linear displacement at end of shearing stage - mm | 14.80 | 14.76 | 14.71 |

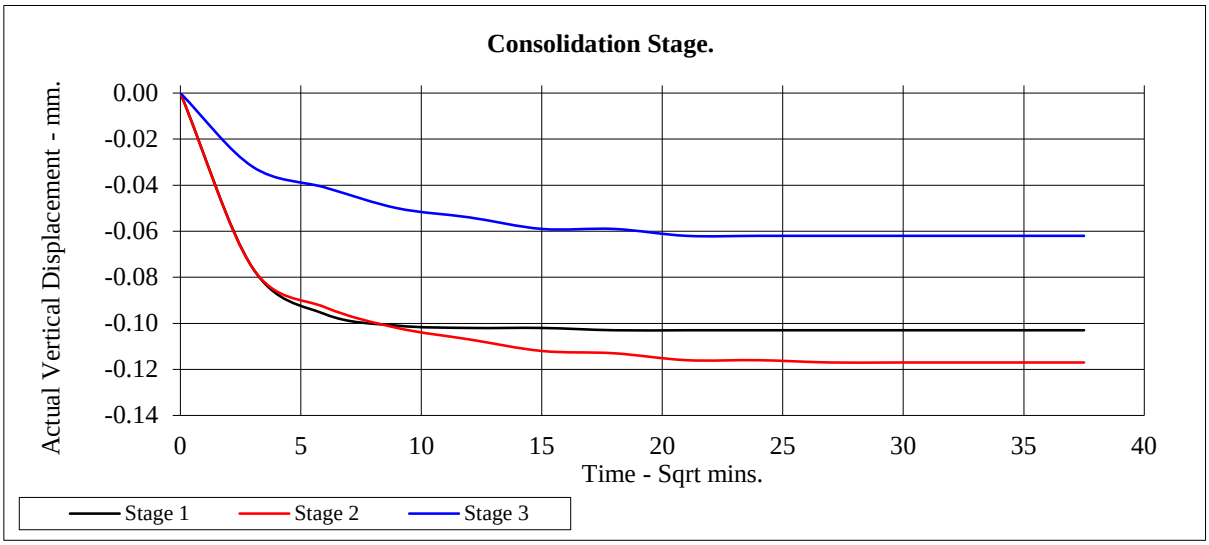
| | |
|---|---|
| Effective Cohesion - kPa: | Assumed Zero |
| Angle of Shearing Resistance:($\theta$) | 9.0 |

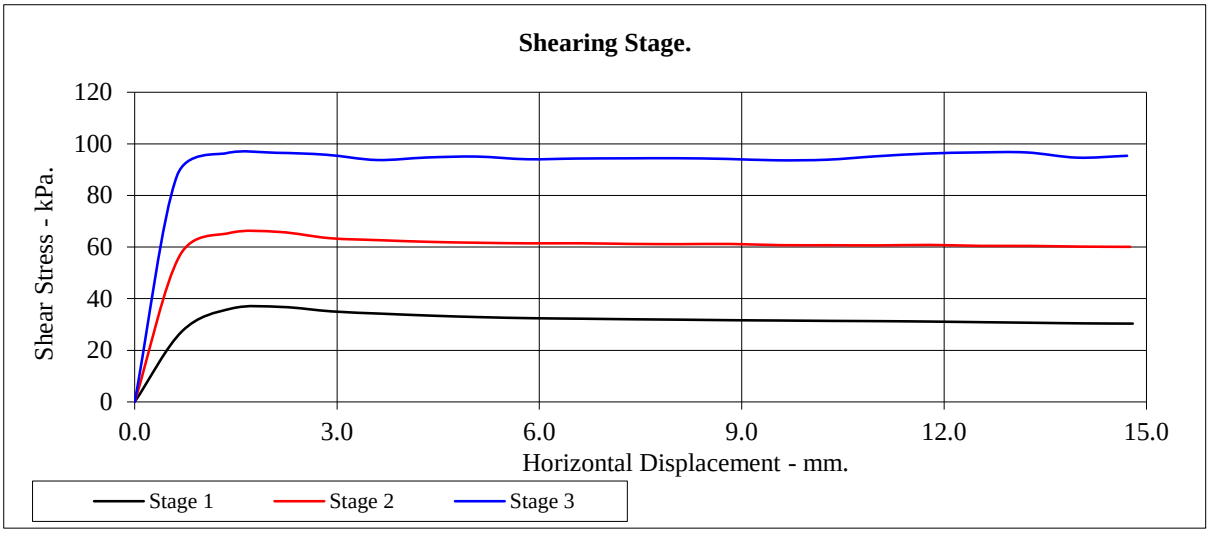


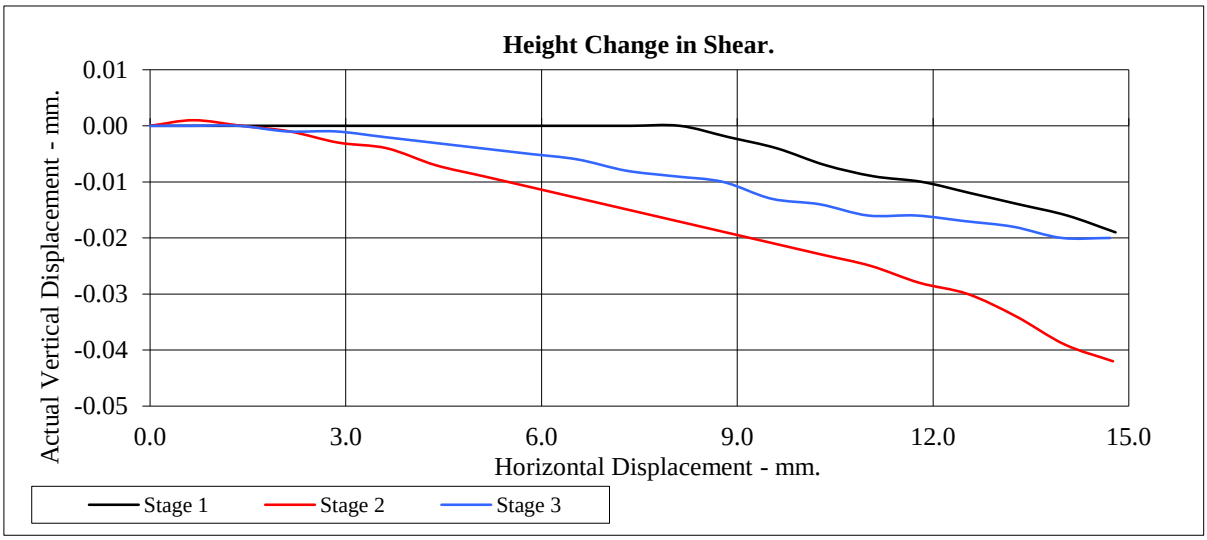
# Determination of residual shear strength using Ring Shear Apparatus

**BS1377:Part 7:1990 Clause 6**

| | | | |
|---|---|---|---|
| Hole Number: | **BH116** | Top Depth: | **20.00** |
| Sample Number: | **110** | Base Depth: | **20.16** |

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|---|---|---|
| UKAS TESTING 4043 | PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** |

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| **Client Ref:** |
| **GT0386** |

# Determination of residual shear strength using Ring Shear Apparatus

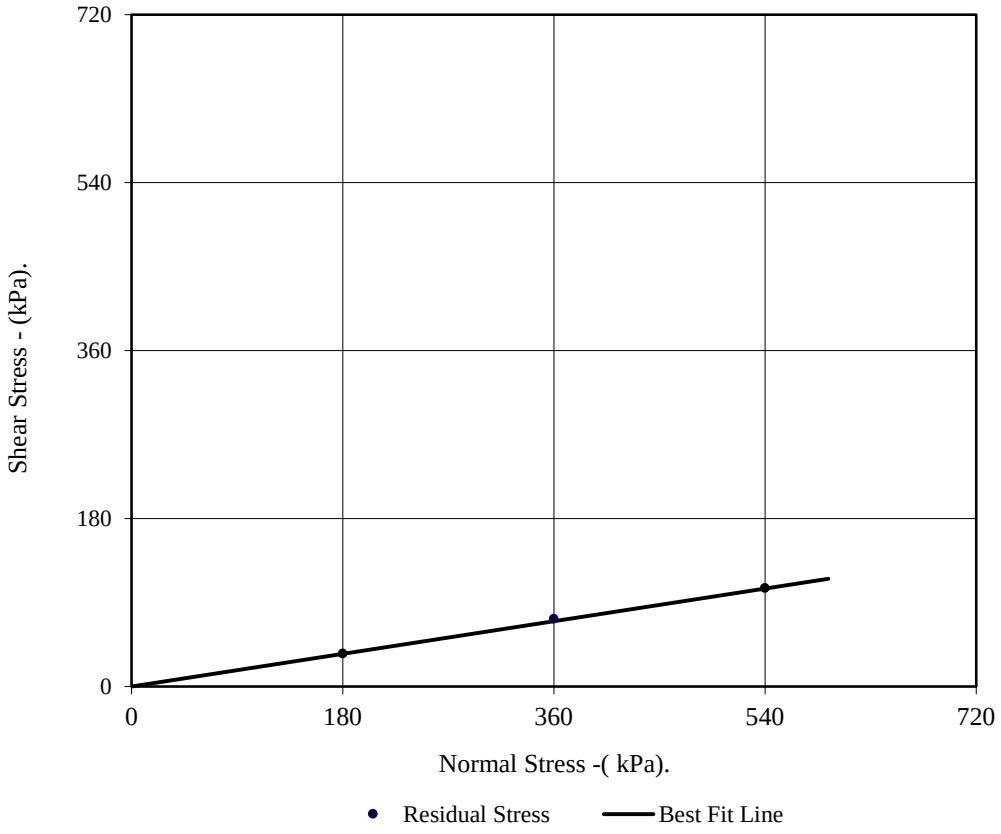
## BS1377:Part 7:1990 Clause 6

| | | | |
|---|---|---|---|
| Hole Number: | **BH107** | Top Depth: | **18.18** |
| Sample Number: | **113** | Base Depth: | **18.45** |
| Sample Conditions: | Submerged | Sample Type | **CS** |
| Preparation Details: | Specimen passed through 1.18mm sieve | | |
| Method of forming the shear plane: | Specimen rotated 2 revolutions by hand within 2 minutes. | | |
| Sample Description: | **See summary of soil descriptions.** | | |

| | |
|---|---|
| Outer Radius - mm: | 50.01 |
| Inner Radius - mm: | 35.00 |
| Initial Thickness - mm: | 5.00 |
| Initial Moisture Content - %: | 21 |
| Final Moisture Content - %: | 26 |

| Stage Number: | **1** | **2** | **3** |
|---|---|---|---|
| Normal Effective Stress - kPa | 180 | 360 | 540 |
| Rate of displacement - mm/min | 0.024 | 0.024 | 0.024 |
| Residual shear stress - kPa | 35 | 72 | 106 |
| Mean linear displacement at end of shearing stage - mm | 14.79 | 14.74 | 14.70 |

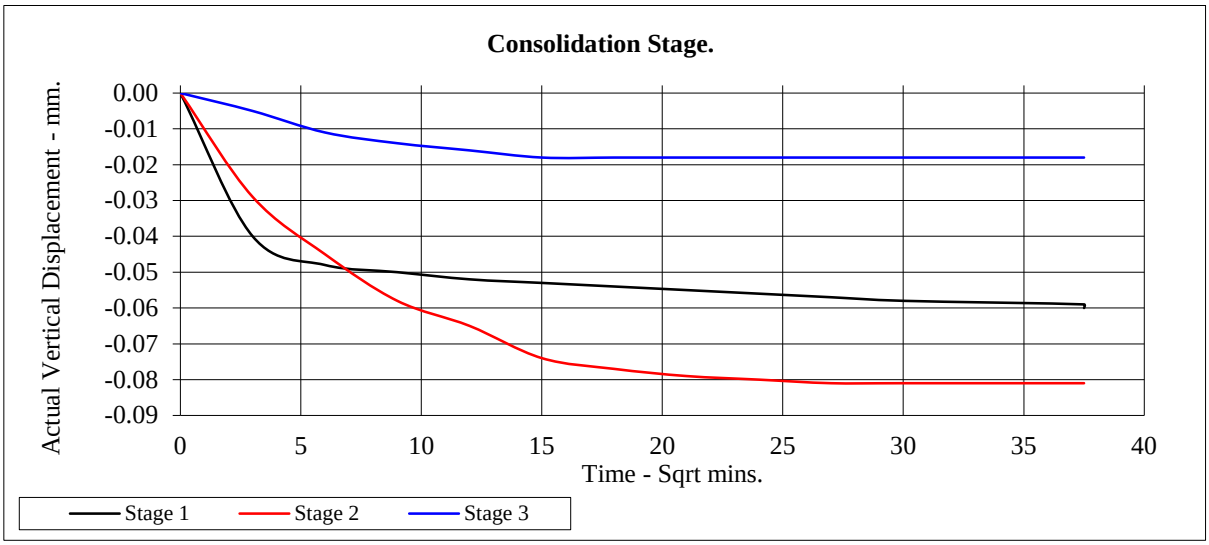
| | |
|---|---|
| Effective Cohesion - kPa: | Assumed Zero |
| Angle of Shearing Resistance:($\theta$) | 11.0 |

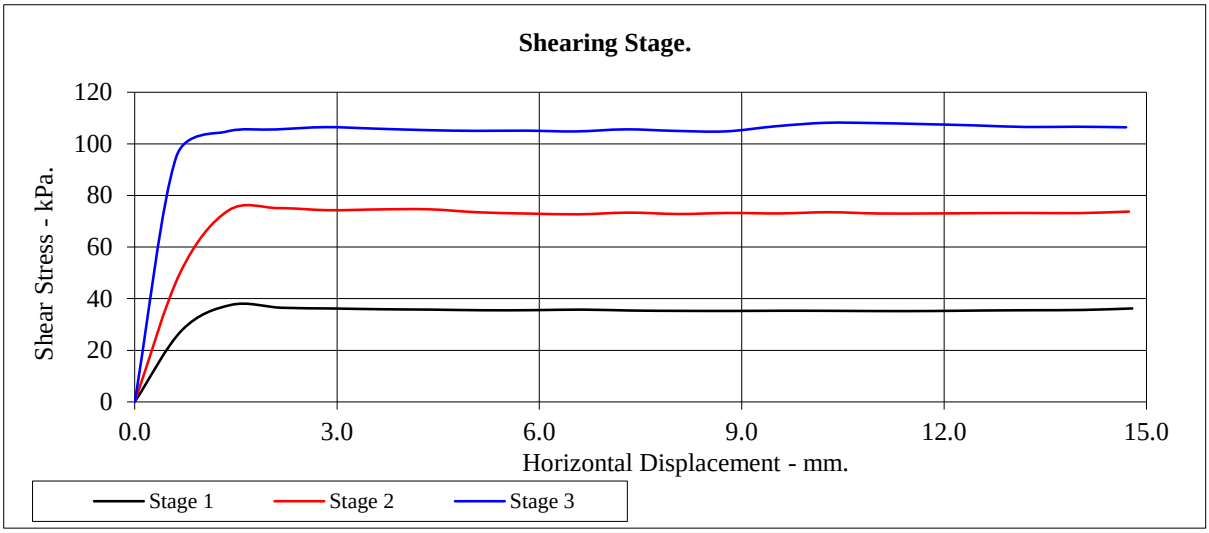


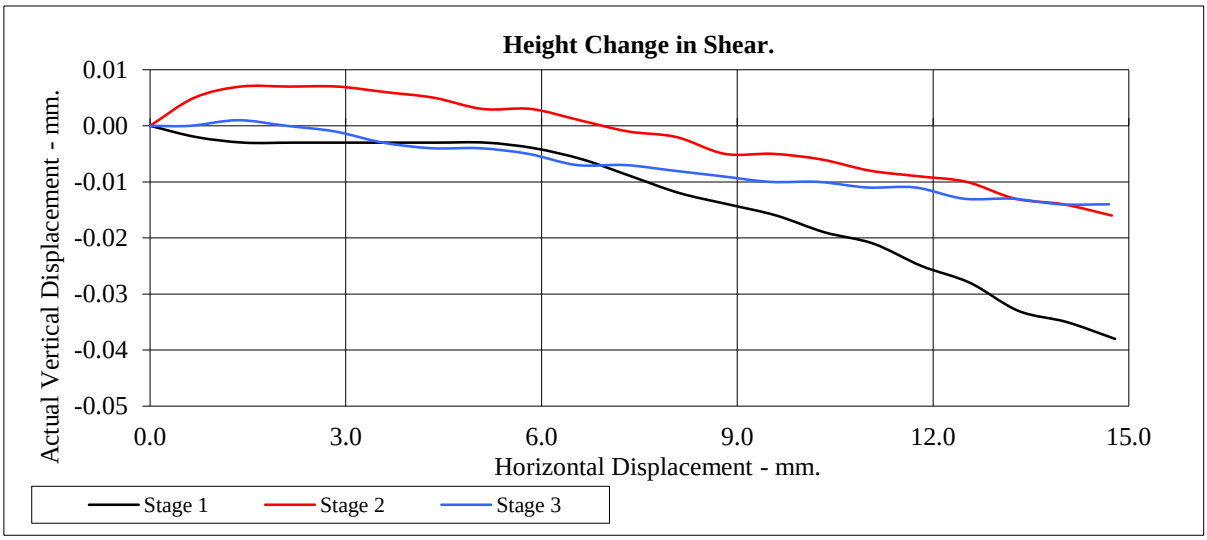
# Determination of residual shear strength using Ring Shear Apparatus

**BS1377:Part 7:1990 Clause 6**

| | | | |
|---|---|---|---|
| Hole Number: | **BH107** | Top Depth: | **18.18** |
| Sample Number: | **113** | Base Depth: | **18.45** |




UKAS TESTING 4043

PSL Professional Soils Laboratory

**Wansford to Sutton Dualling Supplementary GI**

| | |
|---|---|
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| **PSL22/3650** | |
| **Client Ref:** | |
| **GT0386** | |

# Determination of residual shear strength using Ring Shear Apparatus

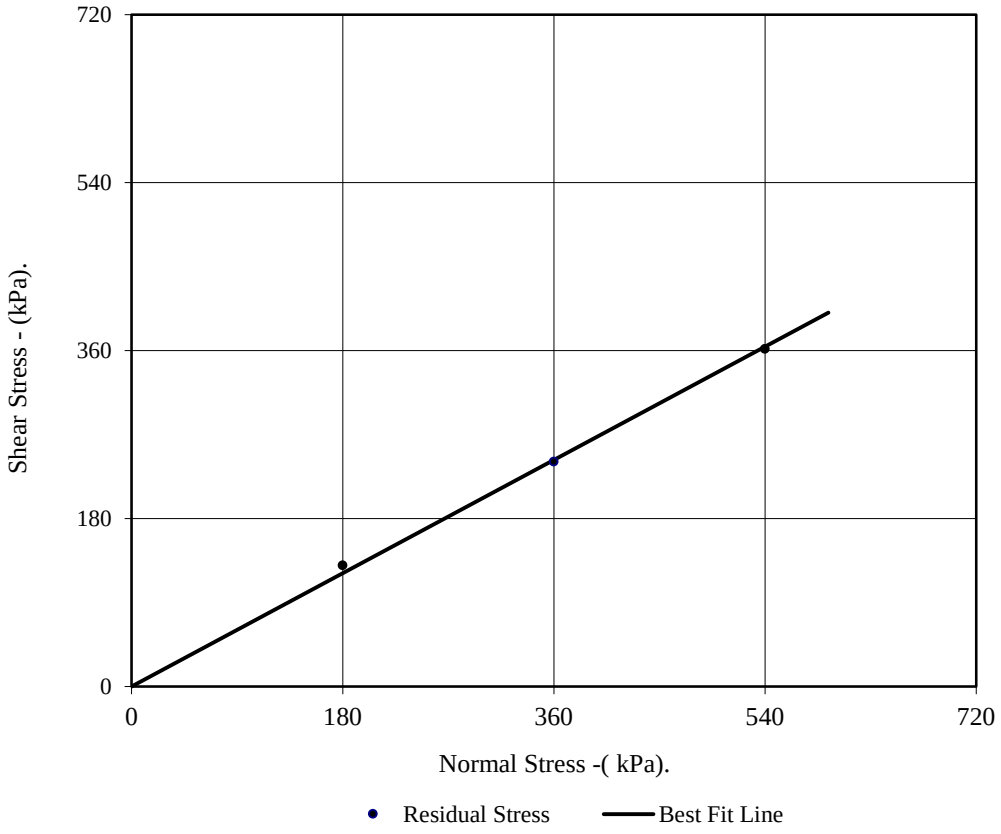
## BS1377:Part 7:1990 Clause 6

| | | | |
|---|---|---|---|
| Hole Number: | **BH121** | Top Depth: | **9.70** |
| Sample Number: | **109** | Base Depth: | **10.00** |
| Sample Conditions: | Submerged | Sample Type | **B** |
| Preparation Details: | Specimen passed through 1.18mm sieve | | |
| Method of forming the shear plane: | Specimen rotated 2 revolutions by hand within 2 minutes. | | |
| Sample Description: | **See summary of soil descriptions.** | | |

| | |
|---|---|
| Outer Radius - mm: | 50.01 |
| Inner Radius - mm: | 35.00 |
| Initial Thickness - mm: | 5.00 |
| Initial Moisture Content - %: | 21 |
| Final Moisture Content - %: | 26 |

| Stage Number: | **1** | **2** | **3** |
|---|---|---|---|
| Normal Effective Stress - kPa | 180 | 360 | 540 |
| Rate of displacement - mm/min | 0.026 | 0.026 | 0.026 |
| Residual shear stress - kPa | 130 | 241 | 362 |
| Mean linear displacement at end of shearing stage - mm | 14.67 | 14.52 | 14.36 |

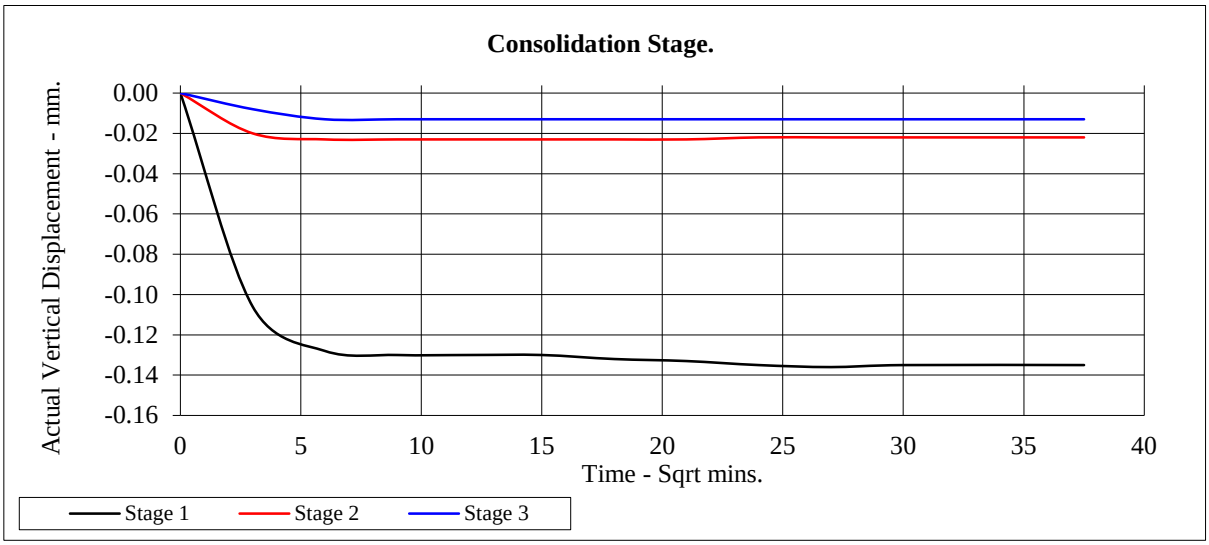
| | |
|---|---|
| Effective Cohesion - kPa: | Assumed Zero |
| Angle of Shearing Resistance:(θ) | 34.0 |

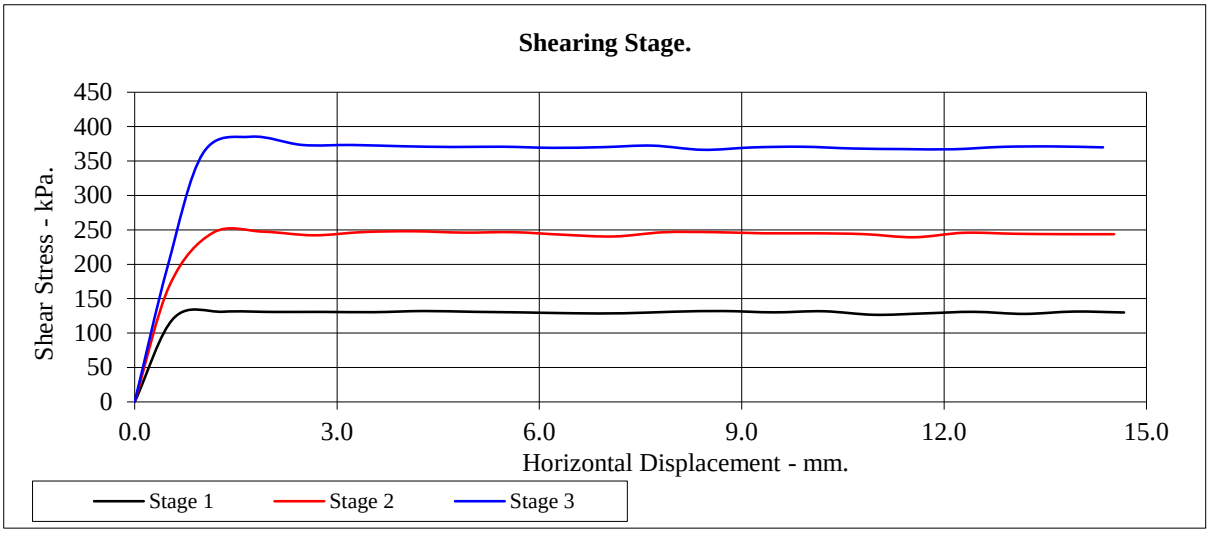


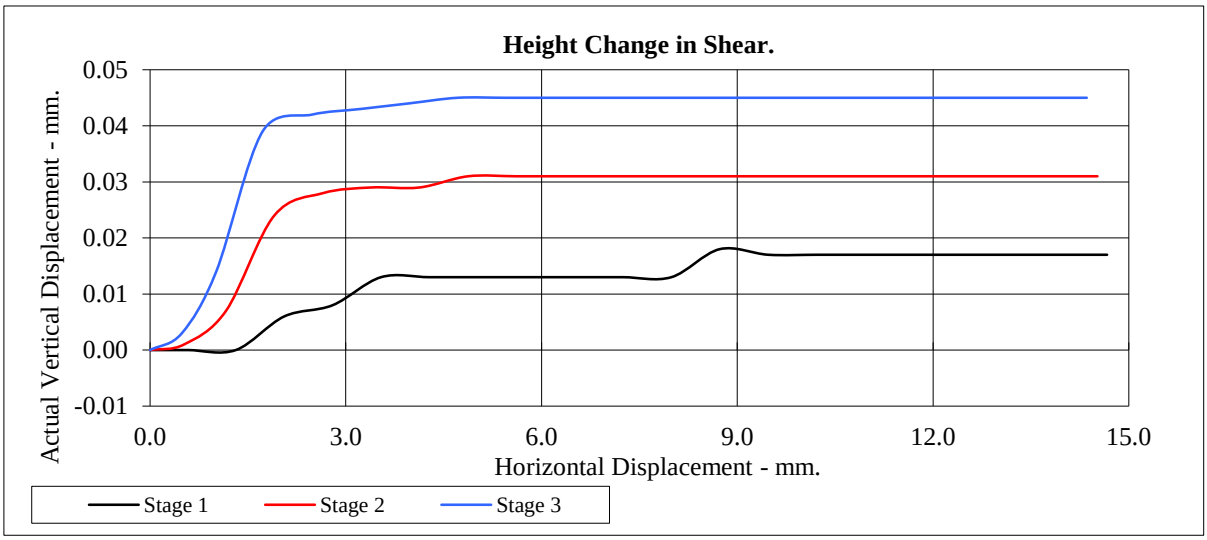
# Determination of residual shear strength using Ring Shear Apparatus

**BS1377:Part 7:1990 Clause 6**

| | | | |
|---|---|---|---|
| Hole Number: | **BH121** | Top Depth: | **9.70** |
| Sample Number: | **109** | Base Depth: | **10.00** |




| | | |
|---|---|---|
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| | |
|---|---|
| **Contract No:** | |
| **PSL22/3650** | |
| **Client Ref:** | |
| **GT0386** | |

# Determination of residual shear strength using Ring Shear Apparatus

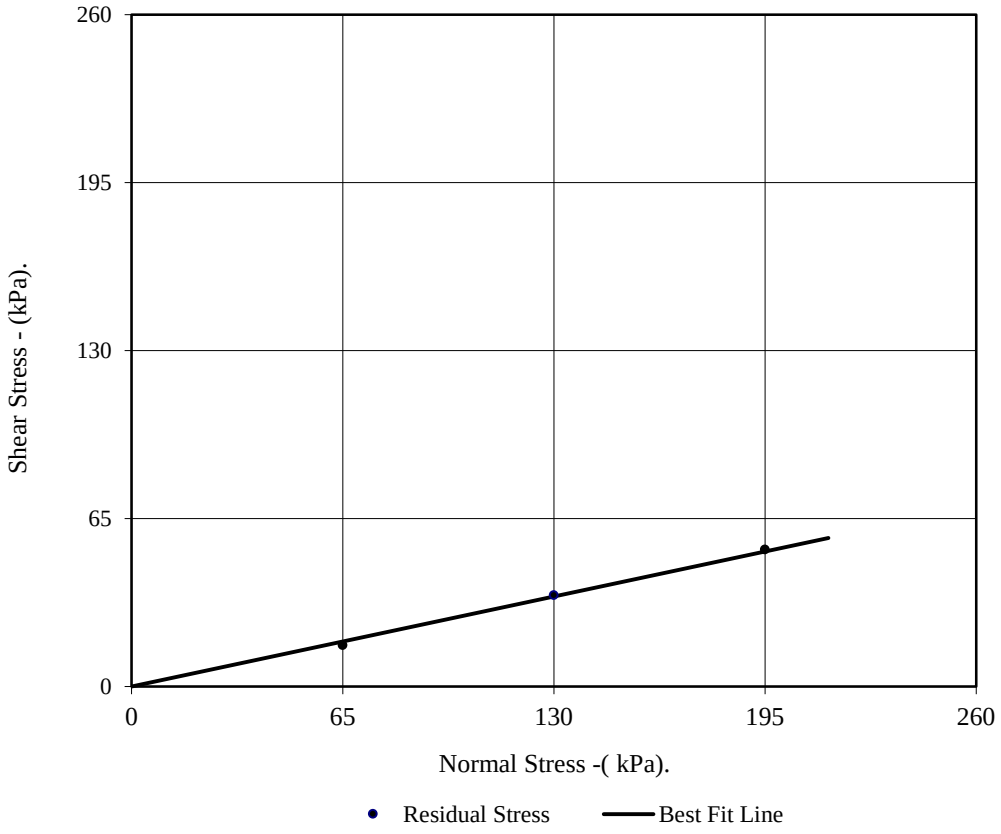
## BS1377:Part 7:1990 Clause 6

| | | | |
|---|---|---|---|
| Hole Number: | **BH131** | Top Depth: | **6.75** |
| Sample Number: | **107** | Base Depth: | **7.00** |
| Sample Conditions: | Submerged | Sample Type | **CS** |
| Preparation Details: | Specimen passed through 1.18mm sieve | | |
| Method of forming the shear plane: | Specimen rotated 2 revolutions by hand within 2 minutes. | | |
| Sample Description: | **See summary of soil descriptions.** | | |

| | |
|---|---|
| Outer Radius - mm: | 50.01 |
| Inner Radius - mm: | 35.00 |
| Initial Thickness - mm: | 5.00 |
| Initial Moisture Content - %: | 20 |
| Final Moisture Content - %: | 24 |

| Stage Number: | **1** | **2** | **3** |
|---|---|---|---|
| Normal Effective Stress - kPa | 65 | 130 | 195 |
| Rate of displacement - mm/min | 0.021 | 0.021 | 0.021 |
| Residual shear stress - kPa | 16 | 35 | 53 |
| Mean linear displacement at end of shearing stage - mm | 14.82 | 14.79 | 14.77 |

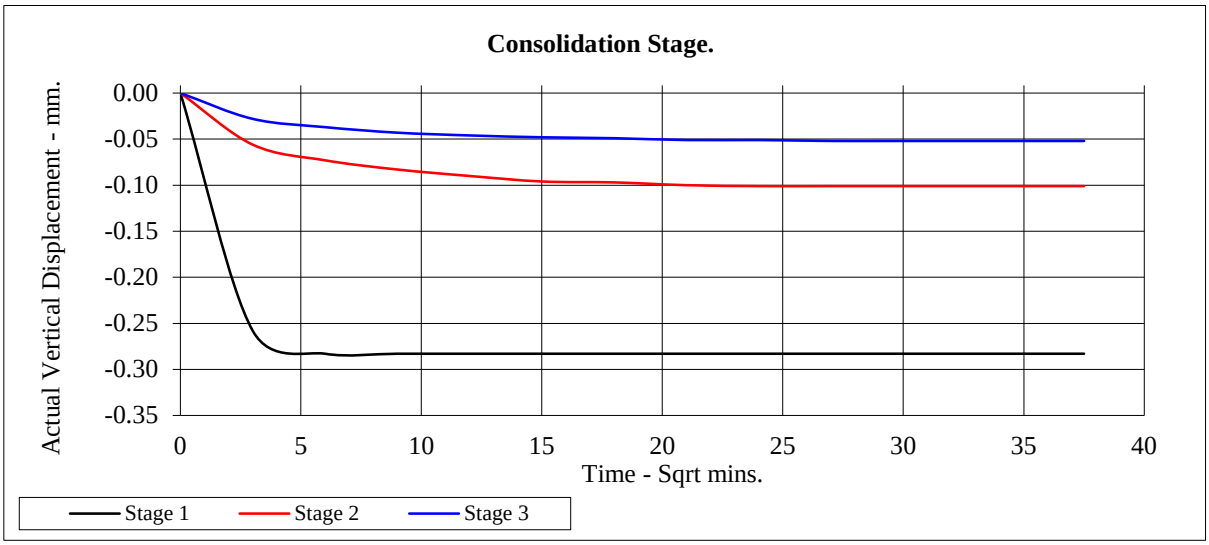
| | |
|---|---|
| Effective Cohesion - kPa: | Assumed Zero |
| Angle of Shearing Resistance:($\theta$) | 15.0 |

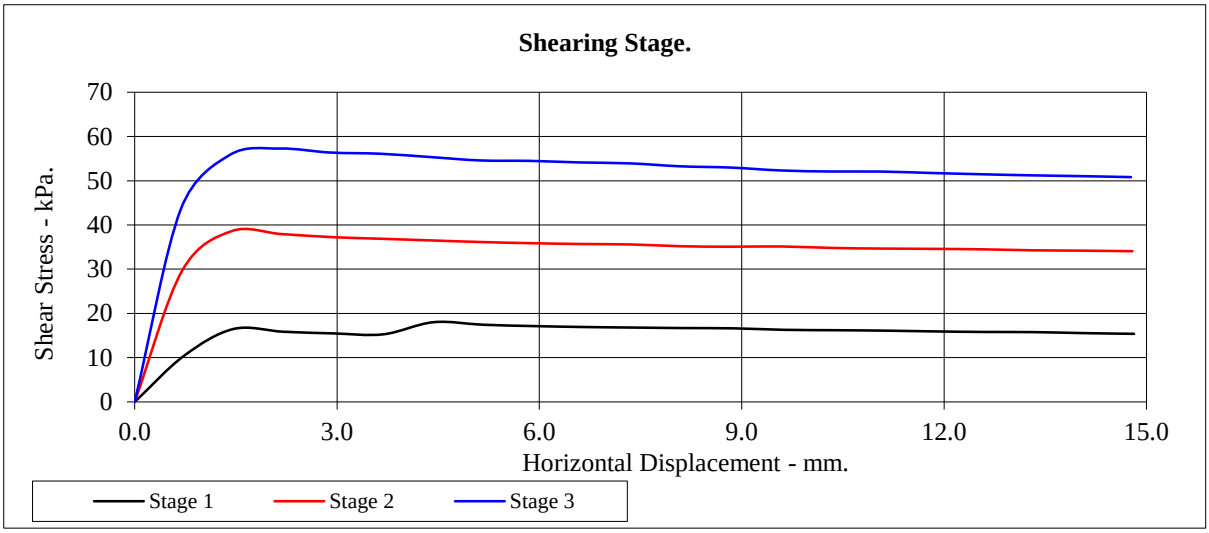


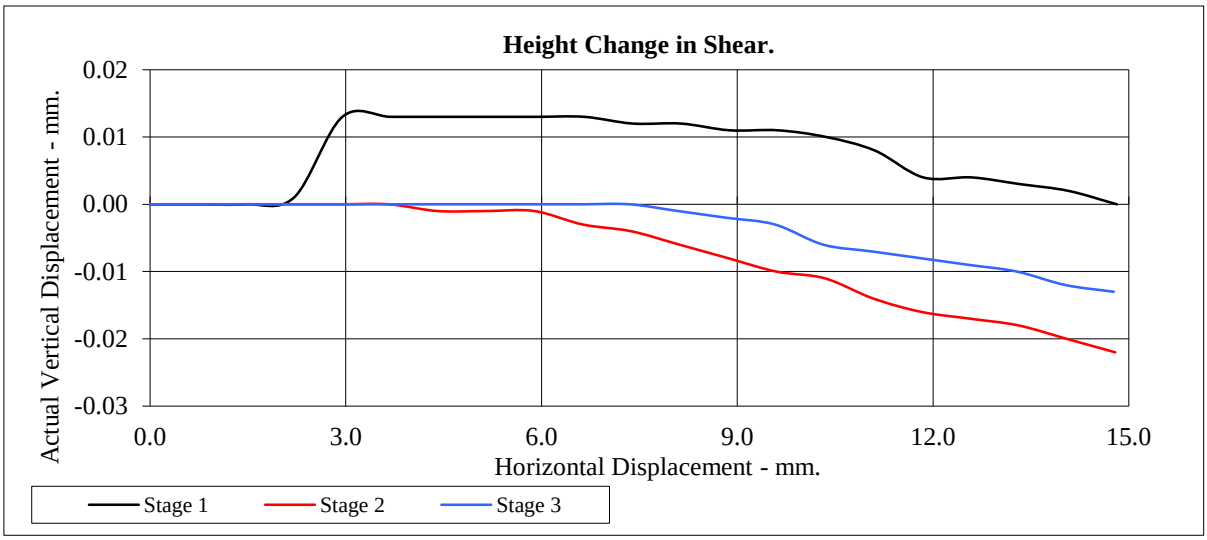
# Determination of residual shear strength using Ring Shear Apparatus

**BS1377:Part 7:1990 Clause 6**

| | | | |
|---|---|---|---|
| Hole Number: | **BH131** | Top Depth: | **6.75** |
| Sample Number: | **107** | Base Depth: | **7.00** |



# Determination of residual shear strength using Ring Shear Apparatus

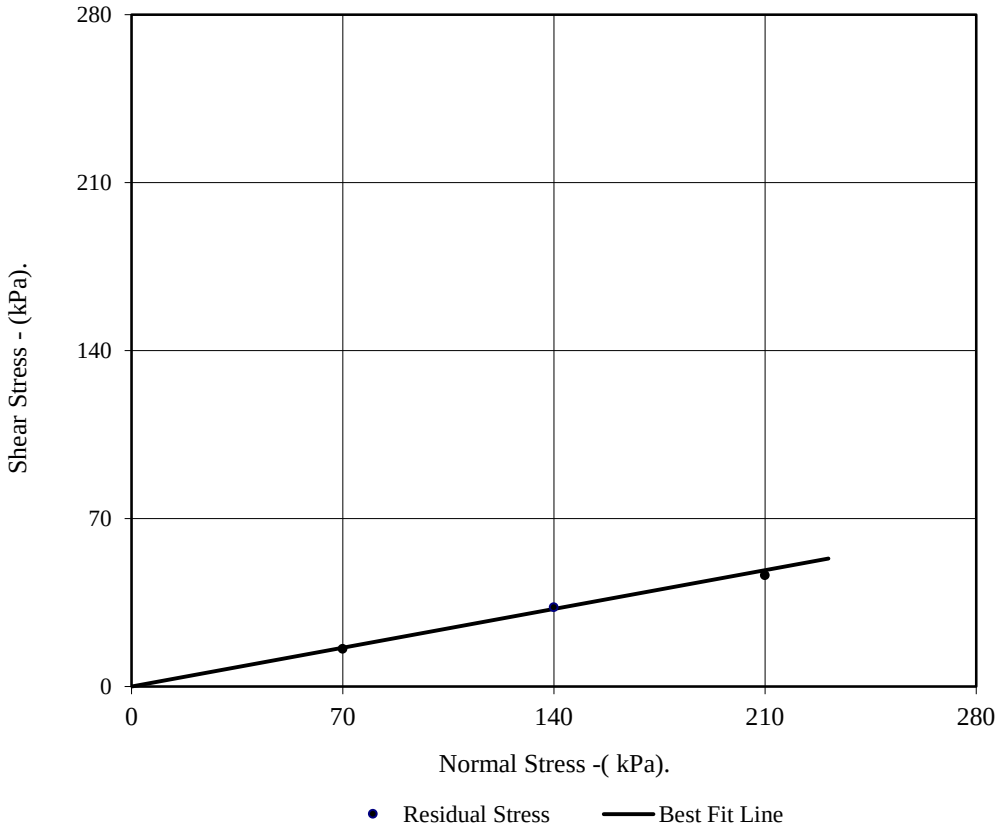
## BS1377:Part 7:1990 Clause 6

| | | | |
|---|---|---|---|
| Hole Number: | **BH131** | Top Depth: | **7.20** |
| Sample Number: | **108** | Base Depth: | **7.50** |
| Sample Conditions: | Submerged | Sample Type | **CS** |
| Preparation Details: | Specimen passed through 1.18mm sieve | | |
| Method of forming the shear plane: | Specimen rotated 2 revolutions by hand within 2 minutes. | | |
| Sample Description: | **See summary of soil descriptions.** | | |

| | |
|---|---|
| Outer Radius - mm: | 50.01 |
| Inner Radius - mm: | 35.00 |
| Initial Thickness - mm: | 5.00 |
| Initial Moisture Content - %: | 22 |
| Final Moisture Content - %: | 31 |

| Stage Number: | **1** | **2** | **3** |
|---|---|---|---|
| Normal Effective Stress - kPa | 70 | 140 | 210 |
| Rate of displacement - mm/min | 0.022 | 0.022 | 0.022 |
| Residual shear stress - kPa | 16 | 33 | 46 |
| Mean linear displacement at end of shearing stage - mm | 14.82 | 14.79 | 14.78 |

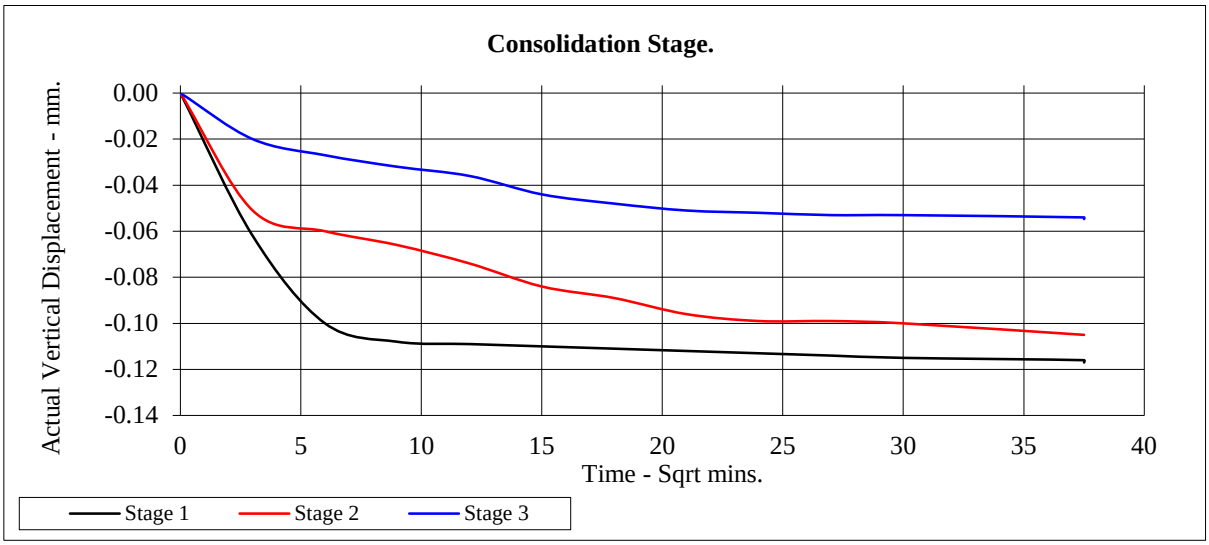
| | |
|---|---|
| Effective Cohesion - kPa: | Assumed Zero |
| Angle of Shearing Resistance:(θ) | 13.0 |

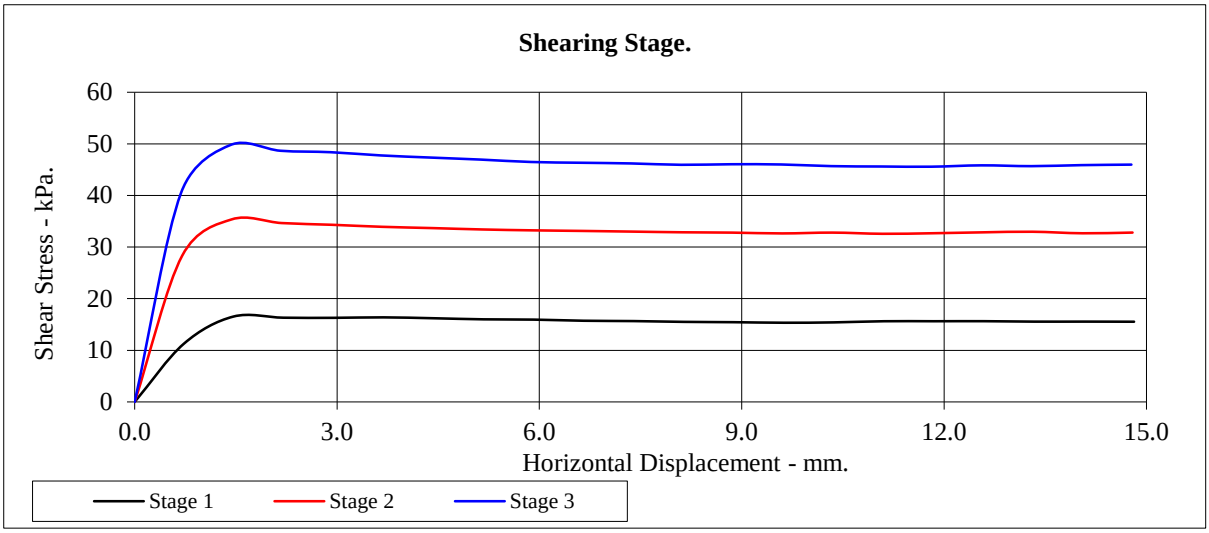


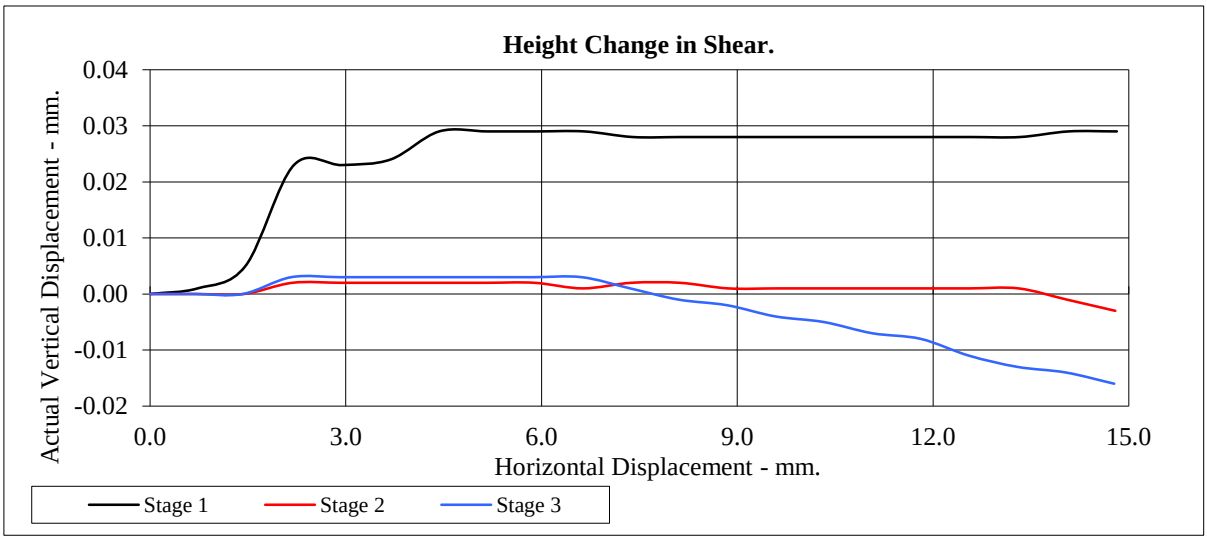
# Determination of residual shear strength using Ring Shear Apparatus

**BS1377:Part 7:1990 Clause 6**

| | | | |
|---|---|---|---|
| Hole Number: | **BH131** | Top Depth: | **7.20** |
| Sample Number: | **108** | Base Depth: | **7.50** |




UKAS TESTING 4043

PSL Professional Soils Laboratory

**Wansford to Sutton Dualling Supplementary GI**

| | |
|---|---|
| **Contract No:** | |
| **PSL22/3650** | |
| **Client Ref:** | |
| **GT0386** | |

# Determination of residual shear strength using Ring Shear Apparatus

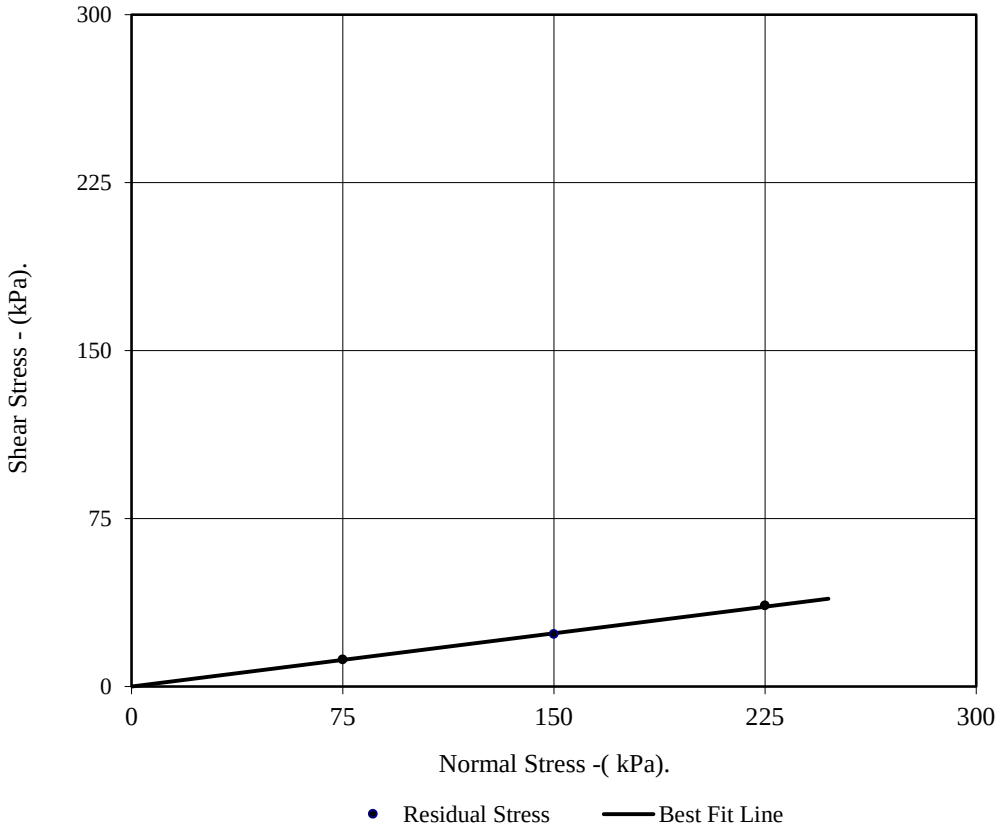
## BS1377:Part 7:1990 Clause 6

| | | | |
|---|---|---|---|
| Hole Number: | **BH134** | Top Depth: | **7.80** |
| Sample Number: | **108** | Base Depth: | **8.10** |
| Sample Conditions: | Submerged | Sample Type | **CS** |
| Preparation Details: | Specimen passed through 1.18mm sieve | | |
| Method of forming the shear plane: | Specimen rotated 2 revolutions by hand within 2 minutes. | | |
| Sample Description: | **See summary of soil descriptions.** | | |

| | |
|---|---|
| Outer Radius - mm: | 50.01 |
| Inner Radius - mm: | 35.00 |
| Initial Thickness - mm: | 5.00 |
| Initial Moisture Content - %: | 19 |
| Final Moisture Content - %: | 24 |

| Stage Number: | **1** | **2** | **3** |
|---|---|---|---|
| Normal Effective Stress - kPa | 75 | 150 | 225 |
| Rate of displacement - mm/min | 0.023 | 0.023 | 0.023 |
| Residual shear stress - kPa | 12 | 23 | 36 |
| Mean linear displacement at end of shearing stage - mm | 14.82 | 14.81 | 14.79 |

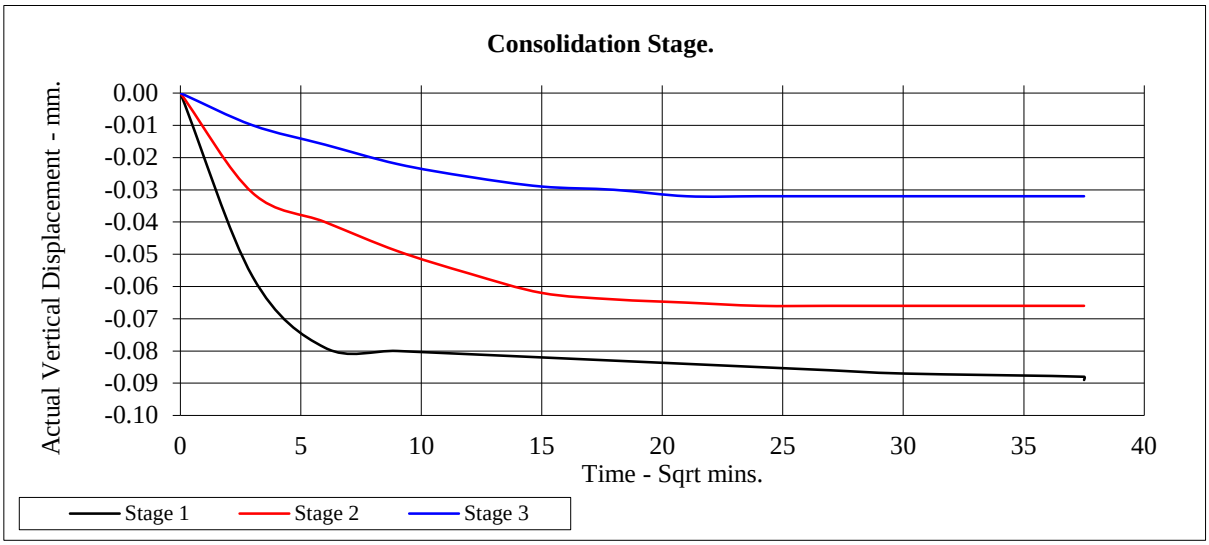
| | |
|---|---|
| Effective Cohesion - kPa: | Assumed Zero |
| Angle of Shearing Resistance:($\theta$) | 9.0 |

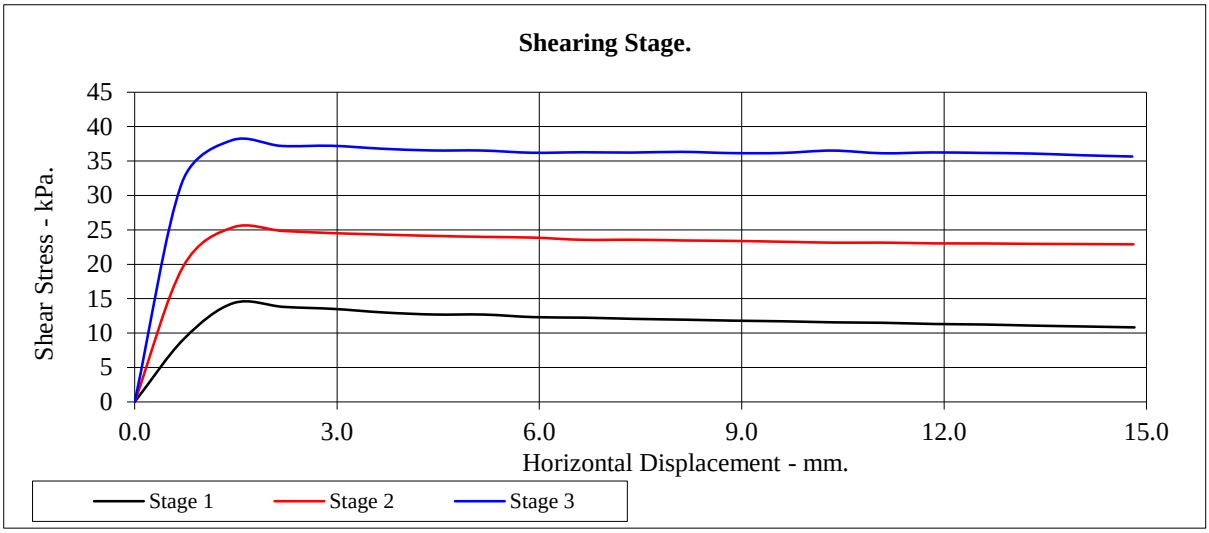


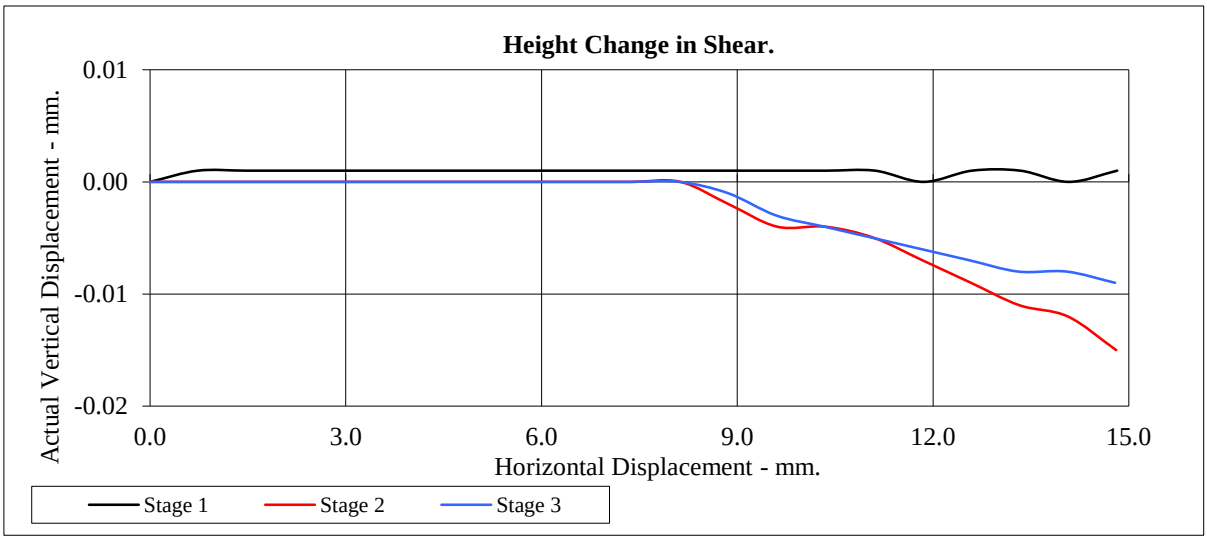
# Determination of residual shear strength using Ring Shear Apparatus

**BS1377:Part 7:1990 Clause 6**

| | | | |
|---|---|---|---|
| Hole Number: | **BH134** | Top Depth: | **7.80** |
| Sample Number: | **108** | Base Depth: | **8.10** |




| | | |
|---|---|---|
| UKAS TESTING 4043 / PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** | **Contract No:** PSL22/3650<br>**Client Ref:** GT0386 |

# Determination of residual shear strength using Ring Shear Apparatus

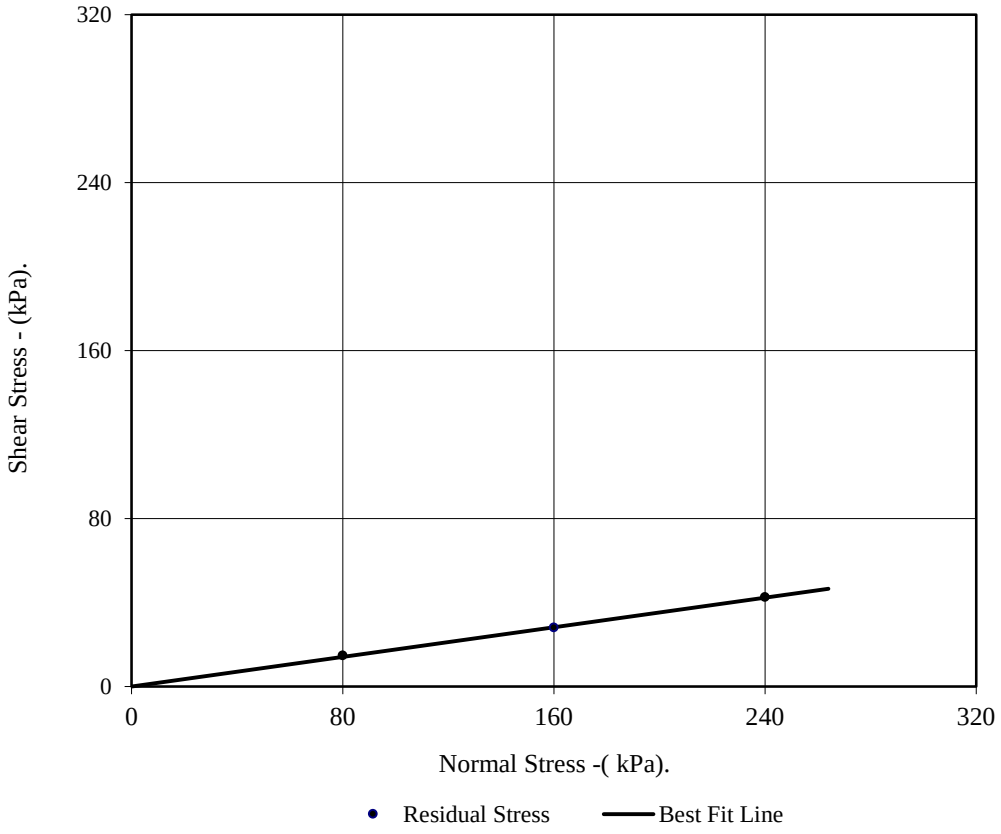
## BS1377:Part 7:1990 Clause 6

| | | | |
|---|---|---|---|
| Hole Number: | **BH134** | Top Depth: | **8.80** |
| Sample Number: | **109** | Base Depth: | **9.10** |
| Sample Conditions: | Submerged | Sample Type | **CS** |
| Preparation Details: | Specimen passed through 1.18mm sieve | | |
| Method of forming the shear plane: | Specimen rotated 2 revolutions by hand within 2 minutes. | | |
| Sample Description: | **See summary of soil descriptions.** | | |

| | |
|---|---|
| Outer Radius - mm: | 50.01 |
| Inner Radius - mm: | 35.00 |
| Initial Thickness - mm: | 5.00 |
| Initial Moisture Content - %: | 23 |
| Final Moisture Content - %: | 25 |

| Stage Number: | **1** | **2** | **3** |
|---|---|---|---|
| Normal Effective Stress - kPa | 80 | 160 | 240 |
| Rate of displacement - mm/min | 0.023 | 0.023 | 0.023 |
| Residual shear stress - kPa | 15 | 28 | 43 |
| Mean linear displacement at end of shearing stage - mm | 14.82 | 14.80 | 14.78 |

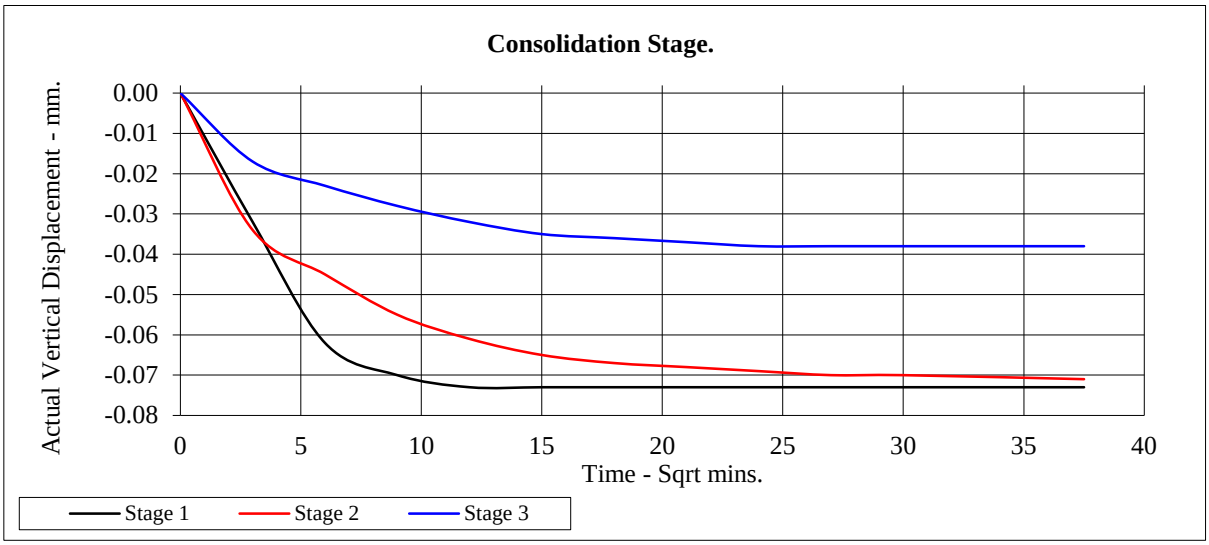
| | |
|---|---|
| Effective Cohesion - kPa: | Assumed Zero |
| Angle of Shearing Resistance:($\theta$) | 10.0 |

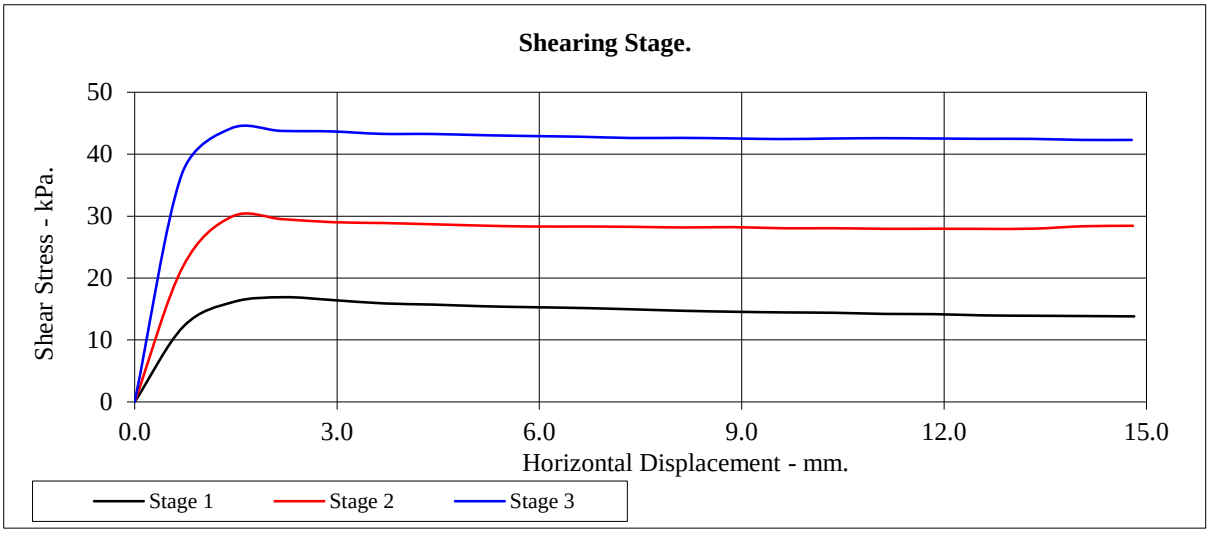


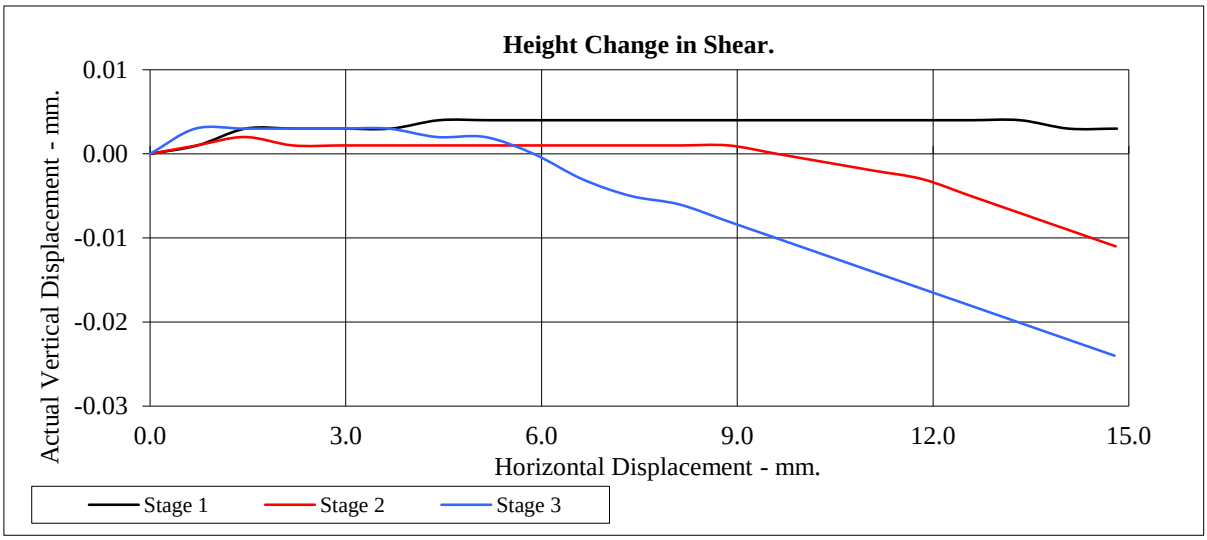
# Determination of residual shear strength using Ring Shear Apparatus

**BS1377:Part 7:1990 Clause 6**

| | | | |
|---|---|---|---|
| Hole Number: | **BH134** | Top Depth: | **8.80** |
| Sample Number: | **109** | Base Depth: | **9.10** |



# Determination of residual shear strength using Ring Shear Apparatus

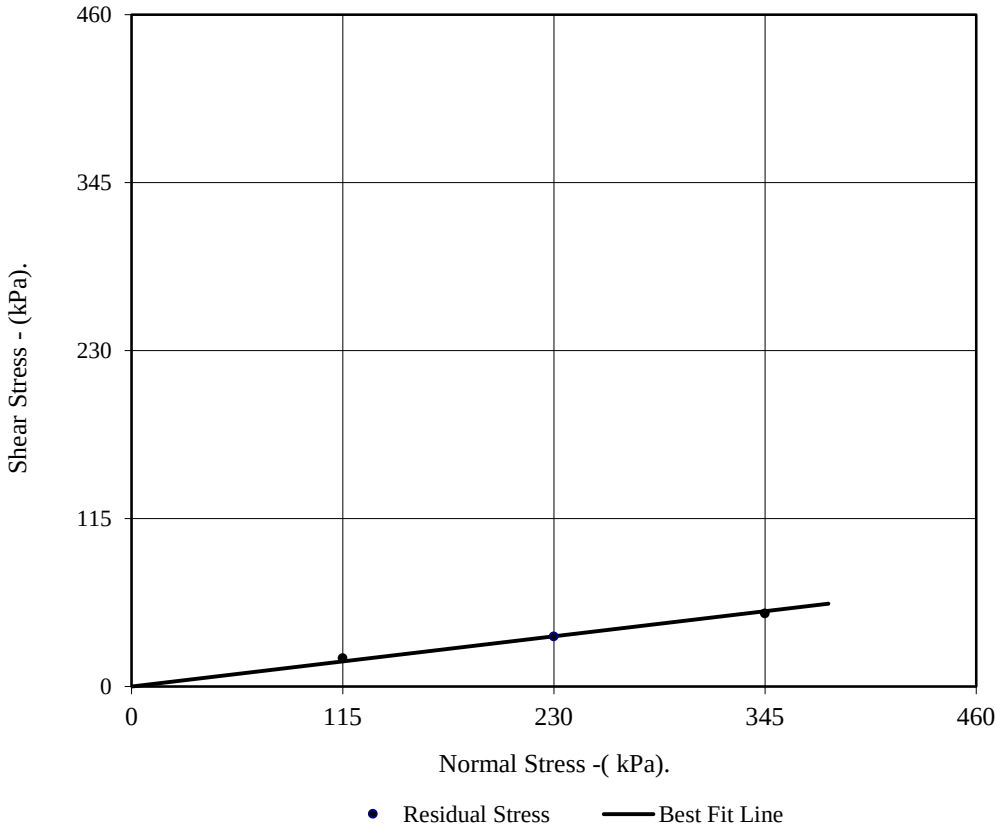
## BS1377:Part 7:1990 Clause 6

| | | | |
|---|---|---|---|
| Hole Number: | **BH134** | Top Depth: | **11.67** |
| Sample Number: | **112** | Base Depth: | **11.97** |
| Sample Conditions: | Submerged | Sample Type | **CS** |
| Preparation Details: | Specimen passed through 1.18mm sieve | | |
| Method of forming the shear plane: | Specimen rotated 2 revolutions by hand within 2 minutes. | | |
| Sample Description: | **See summary of soil descriptions.** | | |

| | |
|---|---|
| Outer Radius - mm: | 50.01 |
| Inner Radius - mm: | 35.00 |
| Initial Thickness - mm: | 5.00 |
| Initial Moisture Content - %: | 19 |
| Final Moisture Content - %: | 23 |

| Stage Number: | **1** | **2** | **3** |
|---|---|---|---|
| Normal Effective Stress - kPa | 115 | 230 | 345 |
| Rate of displacement - mm/min | 0.022 | 0.022 | 0.022 |
| Residual shear stress - kPa | 19 | 34 | 50 |
| Mean linear displacement at end of shearing stage - mm | 14.81 | 14.79 | 14.77 |

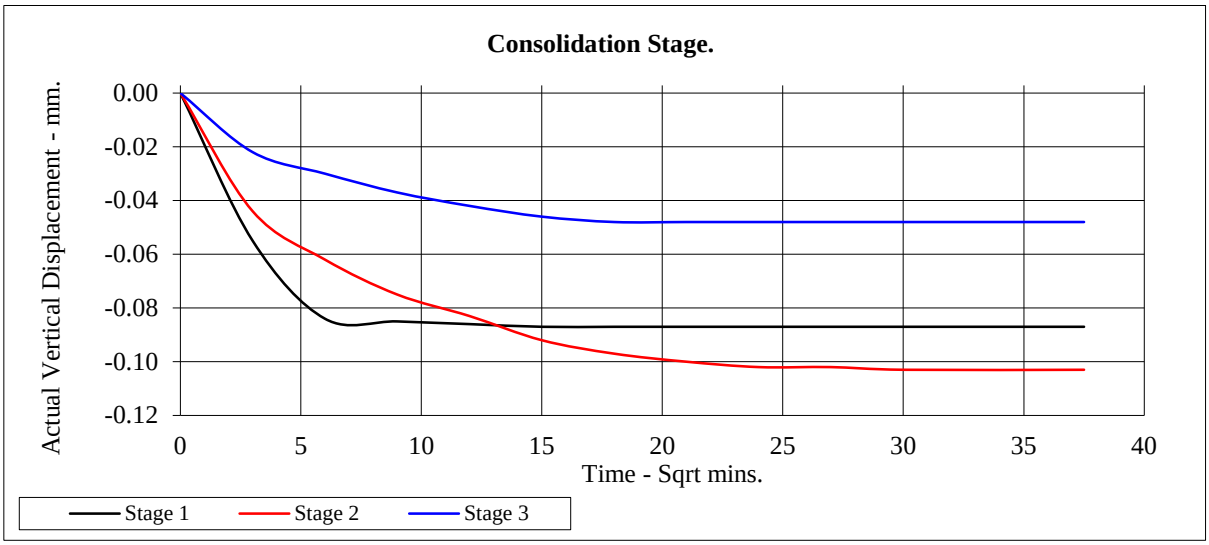
| | |
|---|---|
| Effective Cohesion - kPa: | Assumed Zero |
| Angle of Shearing Resistance:($\theta$) | 8.5 |

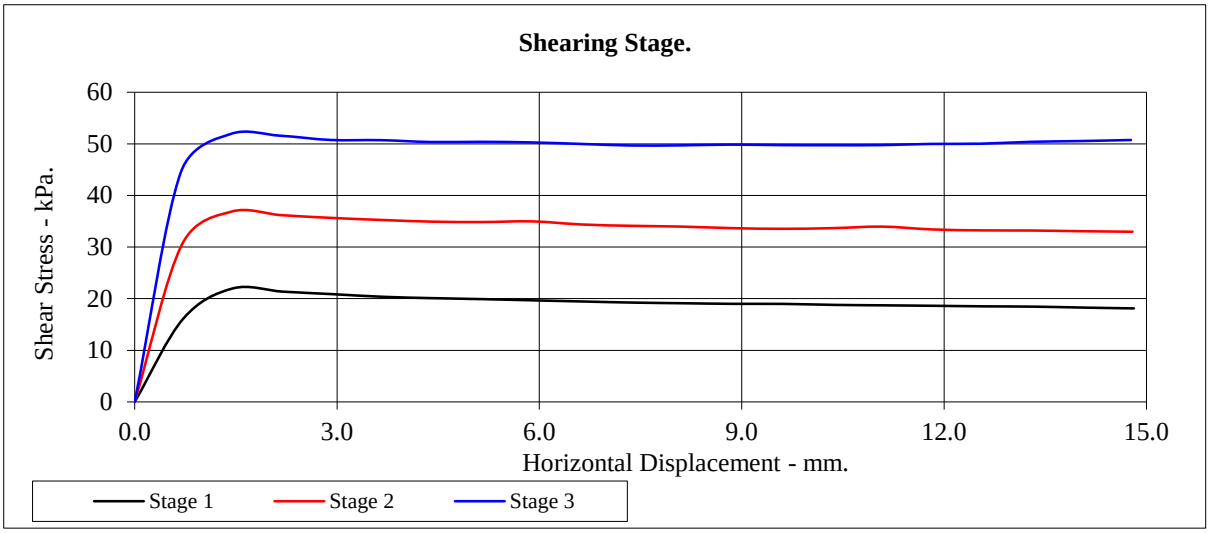


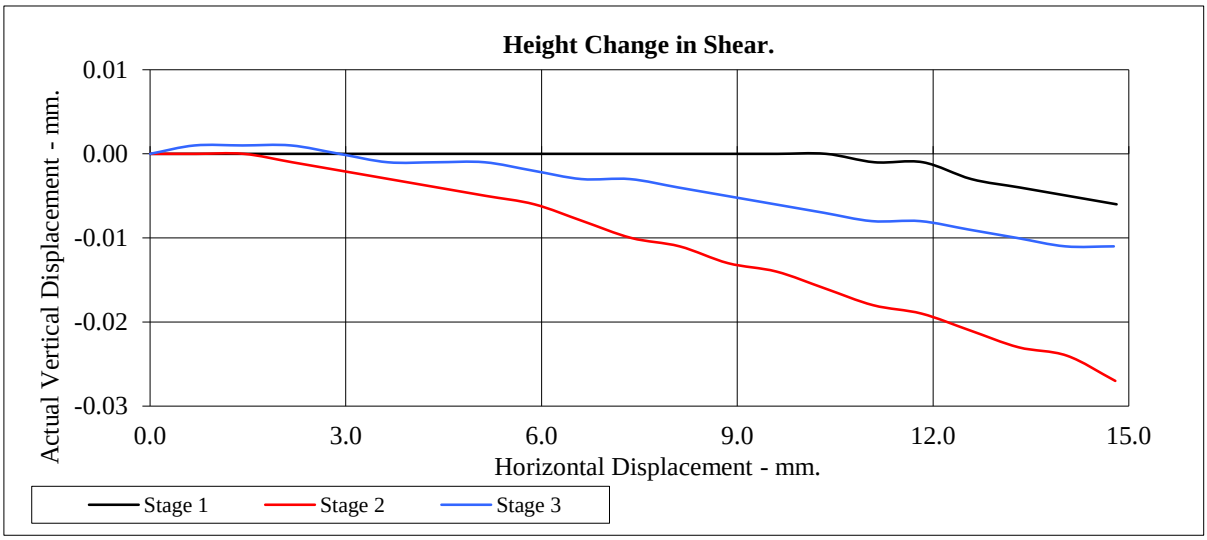
# Determination of residual shear strength using Ring Shear Apparatus

**BS1377:Part 7:1990 Clause 6**

| | | | |
|---|---|---|---|
| Hole Number: | **BH134** | Top Depth: | **11.67** |
| Sample Number: | **112** | Base Depth: | **11.97** |



# Determination of residual shear strength using Ring Shear Apparatus

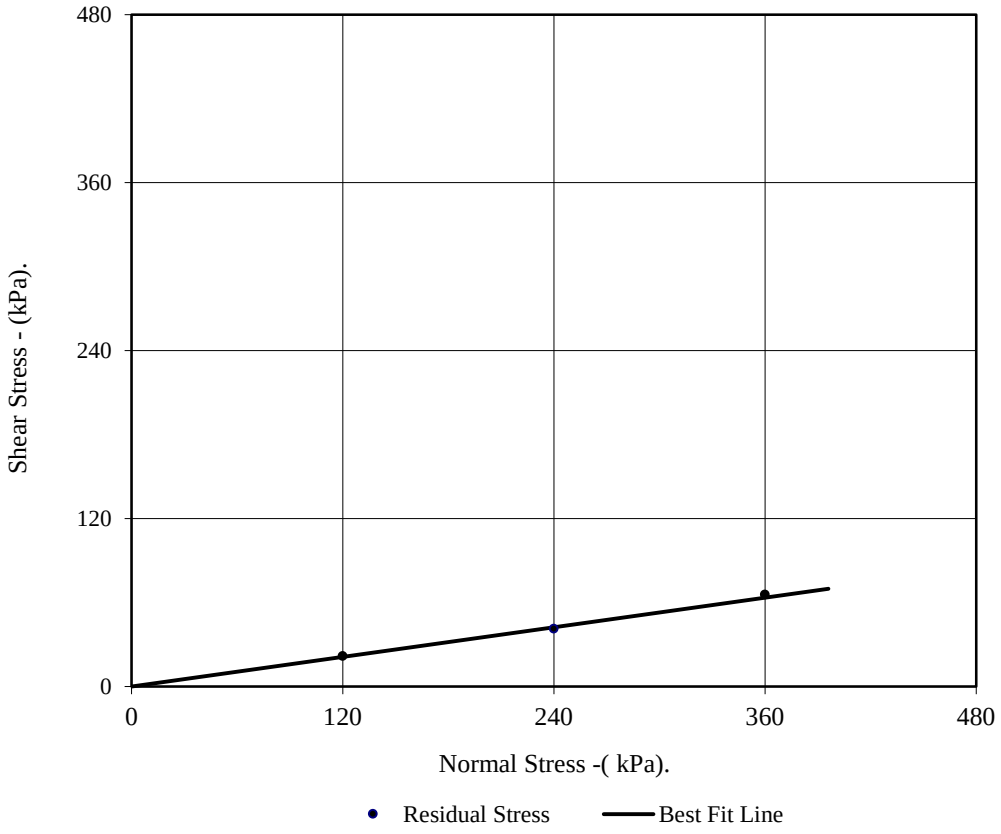
## BS1377:Part 7:1990 Clause 6

| | | | |
|---|---|---|---|
| Hole Number: | **BH134** | Top Depth: | **12.45** |
| Sample Number: | **113** | Base Depth: | **12.70** |
| Sample Conditions: | Submerged | Sample Type | **CS** |
| Preparation Details: | Specimen passed through 1.18mm sieve | | |
| Method of forming the shear plane: | Specimen rotated 2 revolutions by hand within 2 minutes. | | |
| Sample Description: | **See summary of soil descriptions.** | | |

| | |
|---|---|
| Outer Radius - mm: | 50.01 |
| Inner Radius - mm: | 35.00 |
| Initial Thickness - mm: | 5.00 |
| Initial Moisture Content - %: | 21 |
| Final Moisture Content - %: | 22 |

| Stage Number: | **1** | **2** | **3** |
|---|---|---|---|
| Normal Effective Stress - kPa | 120 | 240 | 360 |
| Rate of displacement - mm/min | 0.024 | 0.024 | 0.024 |
| Residual shear stress - kPa | 22 | 41 | 66 |
| Mean linear displacement at end of shearing stage - mm | 14.81 | 14.78 | 14.75 |

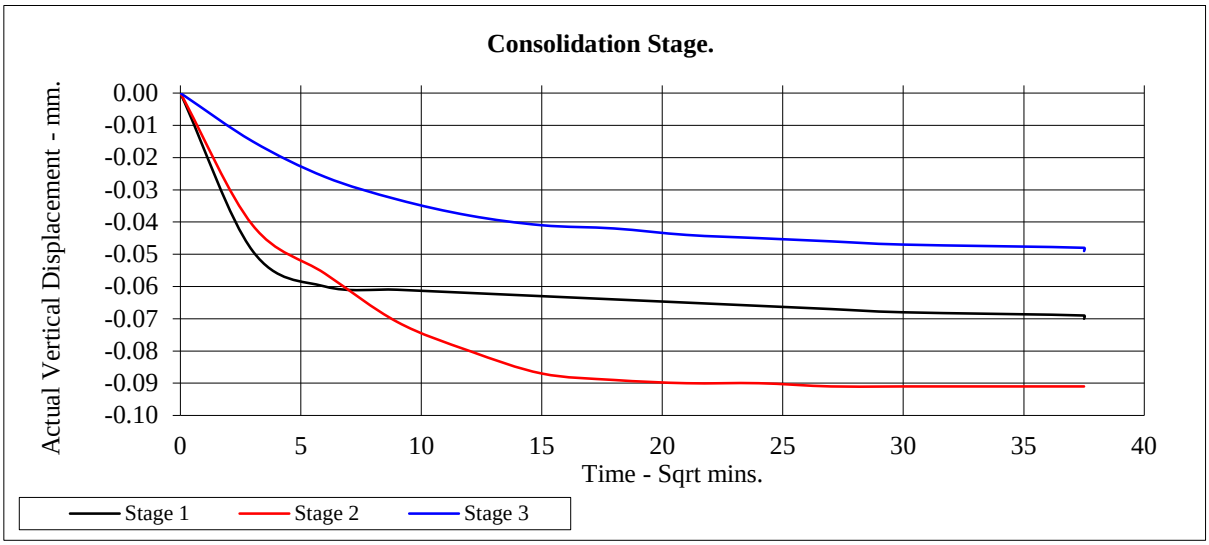
| | |
|---|---|
| Effective Cohesion - kPa: | Assumed Zero |
| Angle of Shearing Resistance:($\theta$) | 10.0 |

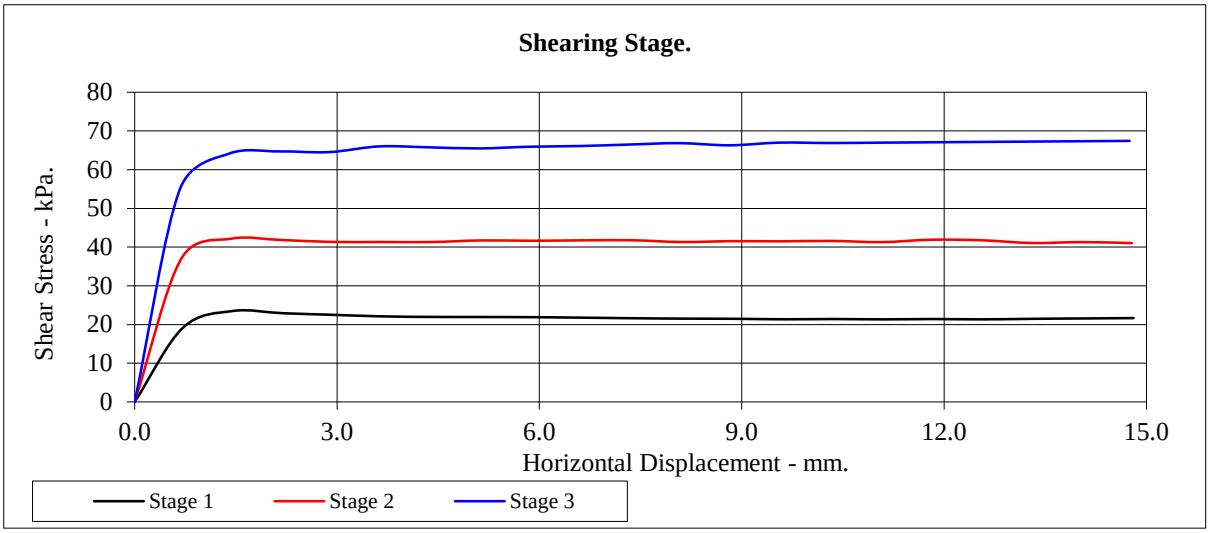


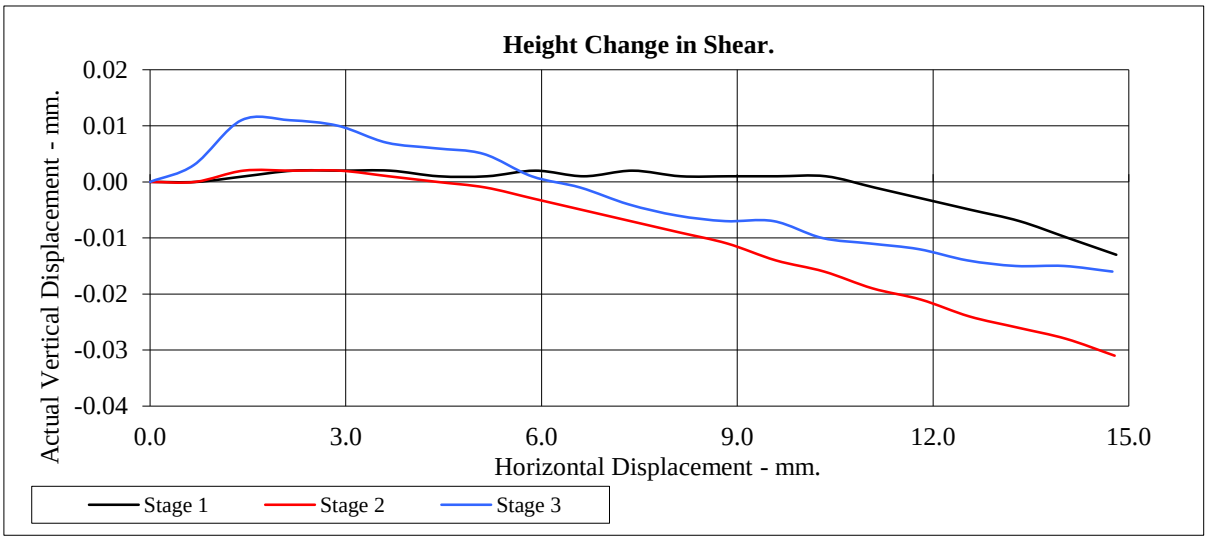
# Determination of residual shear strength using Ring Shear Apparatus

**BS1377:Part 7:1990 Clause 6**

| | | | |
|---|---|---|---|
| Hole Number: | **BH134** | Top Depth: | **12.45** |
| Sample Number: | **113** | Base Depth: | **12.70** |




| | | |
|---|---|---|
| UKAS TESTING 4043 / Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** | **Contract No:** PSL22/3650<br>**Client Ref:** GT0386 |

# Determination of residual shear strength using Ring Shear Apparatus

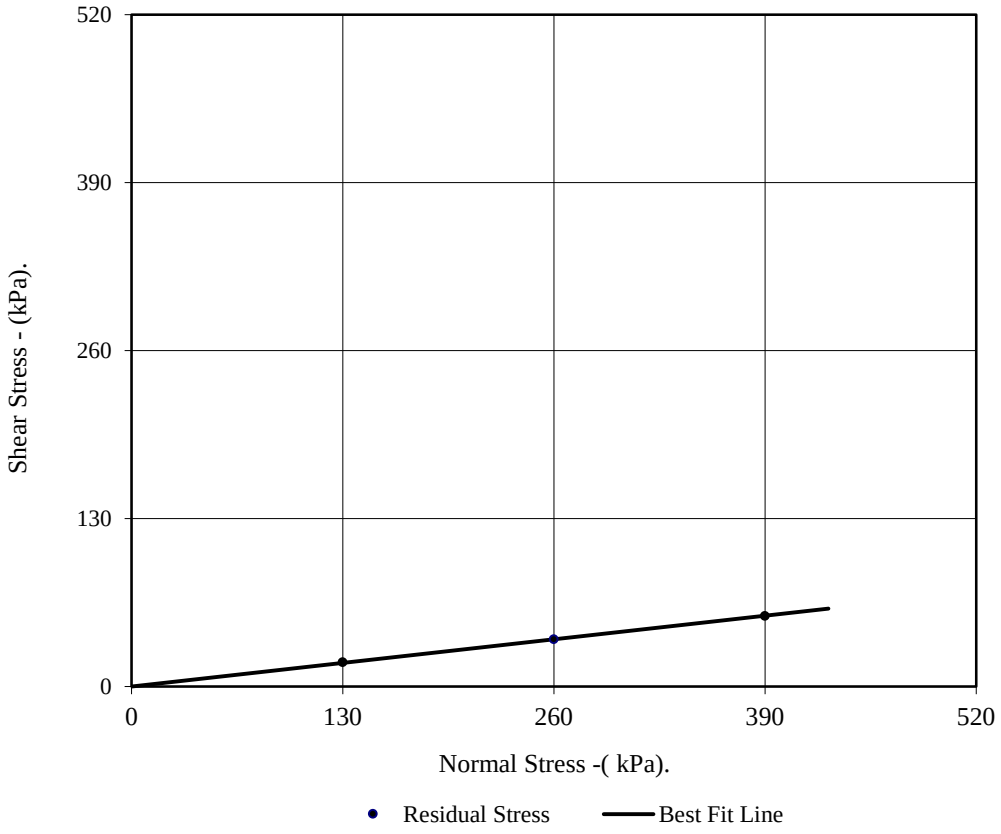
## BS1377:Part 7:1990 Clause 6

| | | | |
|---|---|---|---|
| Hole Number: | **BH112** | Top Depth: | **13.33** |
| Sample Number: | **111** | Base Depth: | **13.50** |
| Sample Conditions: | Submerged | Sample Type | **CS** |
| Preparation Details: | Specimen passed through 1.18mm sieve | | |
| Method of forming the shear plane: | Specimen rotated 2 revolutions by hand within 2 minutes. | | |
| Sample Description: | **See summary of soil descriptions.** | | |

| | |
|---|---|
| Outer Radius - mm: | 50.01 |
| Inner Radius - mm: | 35.00 |
| Initial Thickness - mm: | 5.00 |
| Initial Moisture Content - %: | 19 |
| Final Moisture Content - %: | 24 |

| Stage Number: | **1** | **2** | **3** |
|---|---|---|---|
| Normal Effective Stress - kPa | 130 | 260 | 390 |
| Rate of displacement - mm/min | 0.026 | 0.026 | 0.026 |
| Residual shear stress - kPa | 19 | 36 | 54 |
| Mean linear displacement at end of shearing stage - mm | 14.81 | 14.79 | 14.77 |

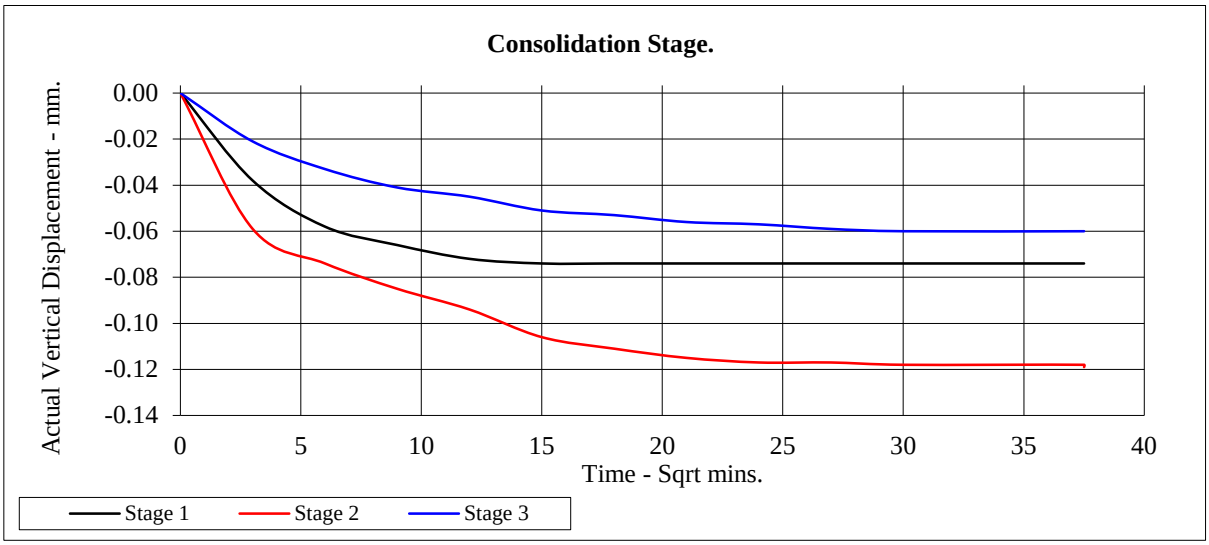
| | |
|---|---|
| Effective Cohesion - kPa: | Assumed Zero |
| Angle of Shearing Resistance:($\theta$) | 8.0 |

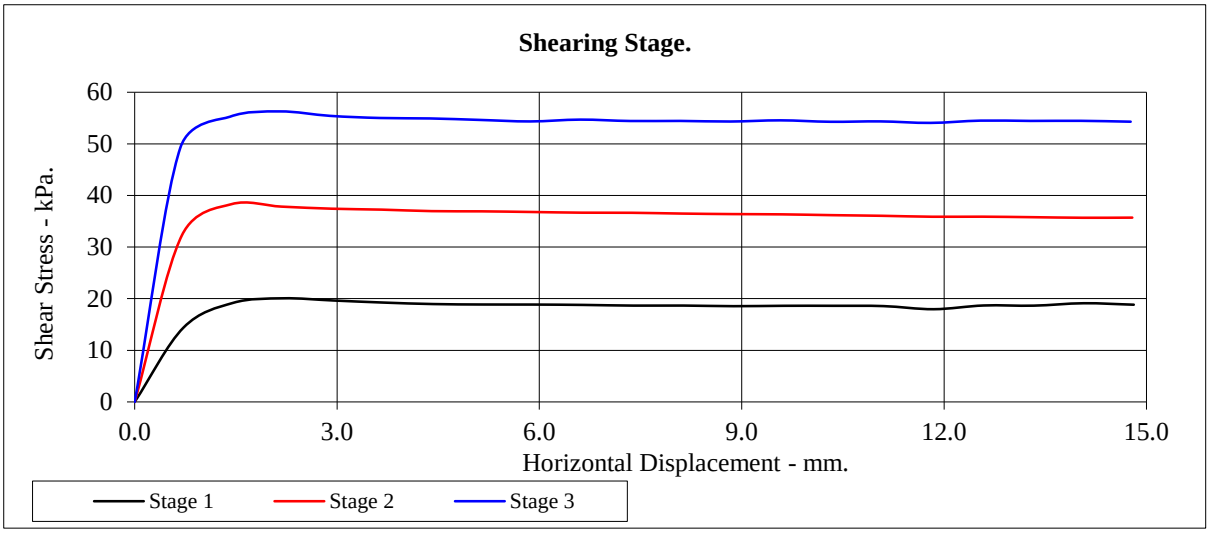


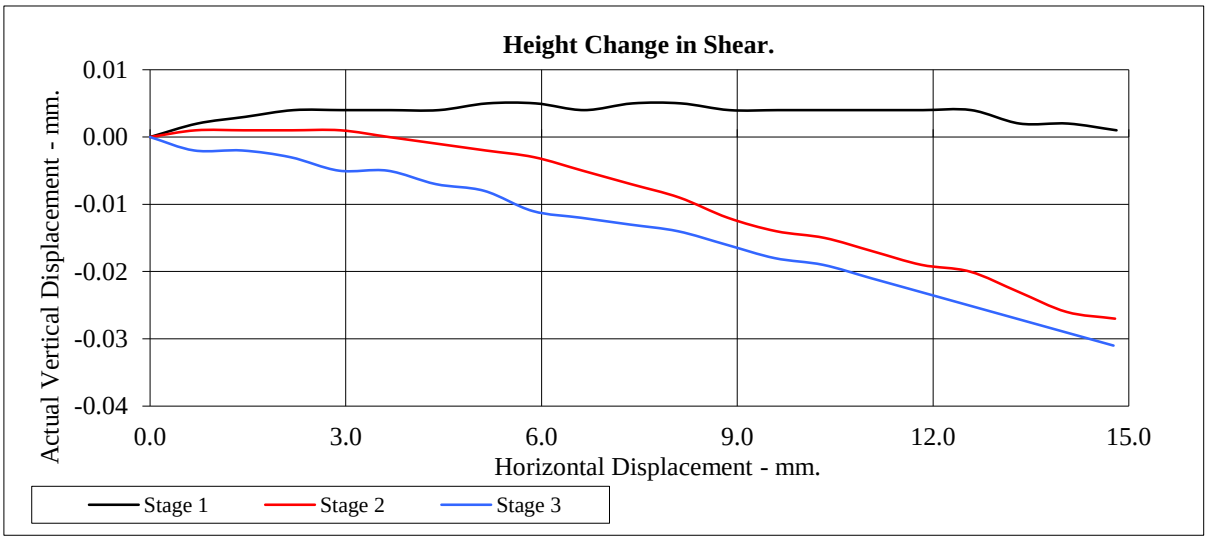
# Determination of residual shear strength using Ring Shear Apparatus

**BS1377:Part 7:1990 Clause 6**

| | | | |
|---|---|---|---|
| Hole Number: | **BH112** | Top Depth: | **13.33** |
| Sample Number: | **111** | Base Depth: | **13.50** |




| | | |
|---|---|---|
| UKAS TESTING 4043 / PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** | **Contract No:** PSL22/3650<br>**Client Ref:** GT0386 |

# Determination of residual shear strength using Ring Shear Apparatus

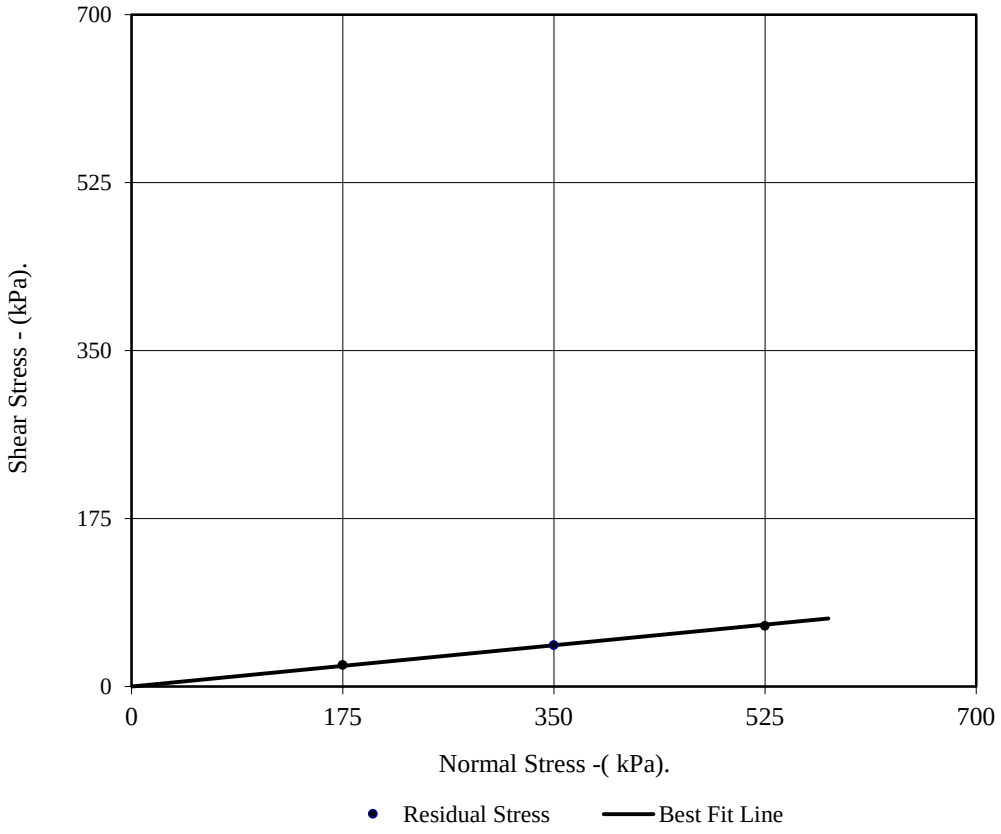
## BS1377:Part 7:1990 Clause 6

| | | | |
|---|---|---|---|
| Hole Number: | **BH112** | Top Depth: | **17.80** |
| Sample Number: | **116** | Base Depth: | **18.00** |
| Sample Conditions: | Submerged | Sample Type | **CS** |
| Preparation Details: | Specimen passed through 1.18mm sieve | | |
| Method of forming the shear plane: | Specimen rotated 2 revolutions by hand within 2 minutes. | | |
| Sample Description: | **See summary of soil descriptions.** | | |

| | |
|---|---|
| Outer Radius - mm: | 50.01 |
| Inner Radius - mm: | 35.00 |
| Initial Thickness - mm: | 5.00 |
| Initial Moisture Content - %: | 20 |
| Final Moisture Content - %: | 26 |

| Stage Number: | **1** | **2** | **3** |
|---|---|---|---|
| Normal Effective Stress - kPa | 175 | 350 | 525 |
| Rate of displacement - mm/min | 0.022 | 0.022 | 0.022 |
| Residual shear stress - kPa | 22 | 43 | 63 |
| Mean linear displacement at end of shearing stage - mm | 14.81 | 14.78 | 14.75 |

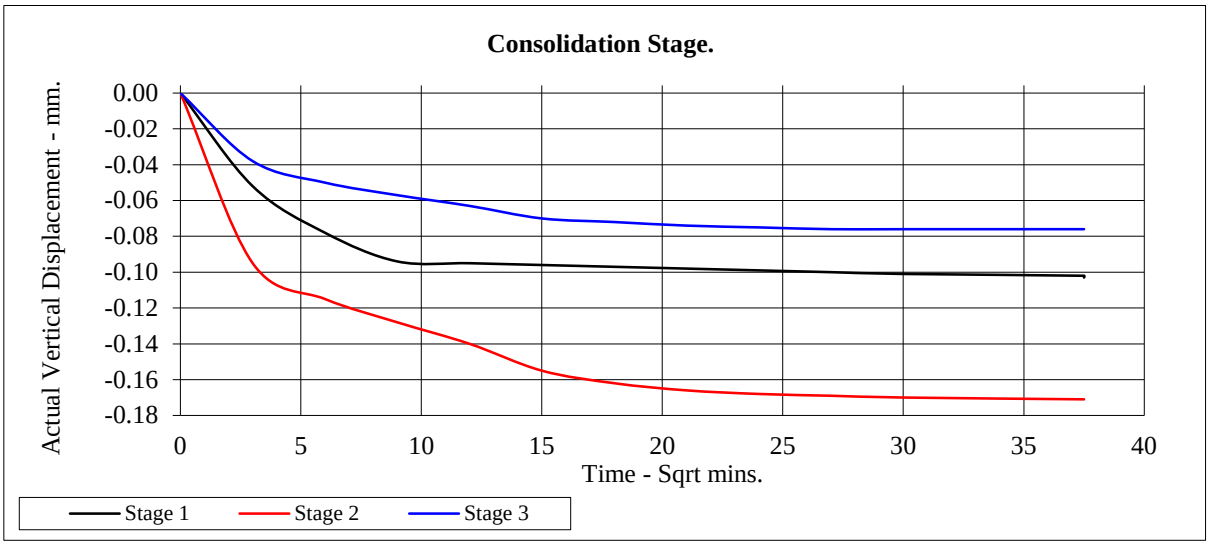
| | |
|---|---|
| Effective Cohesion - kPa: | Assumed Zero |
| Angle of Shearing Resistance:($\theta$) | 7.0 |

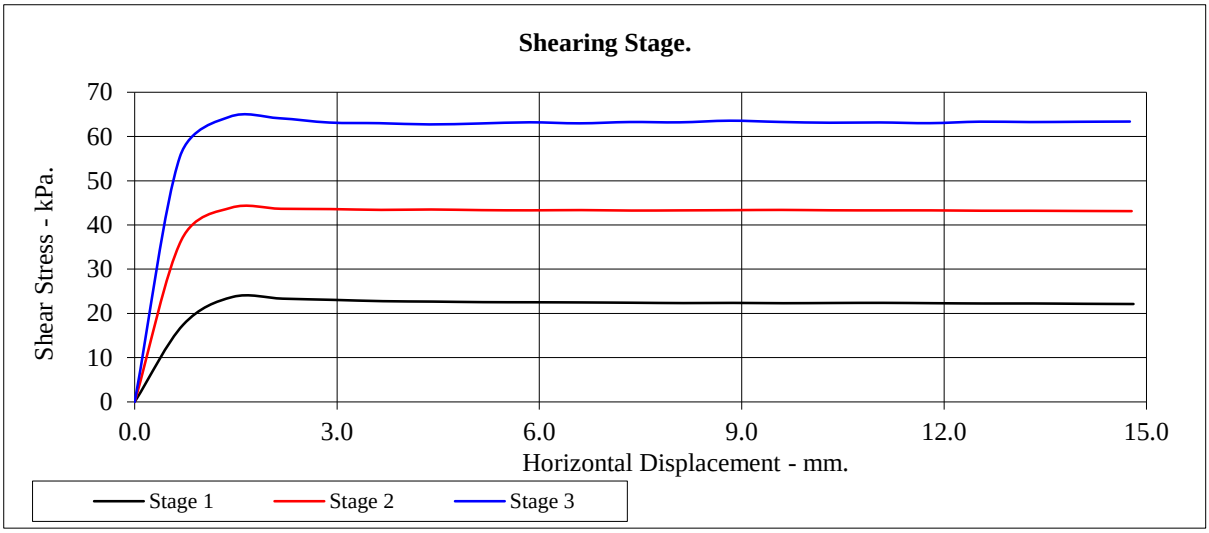


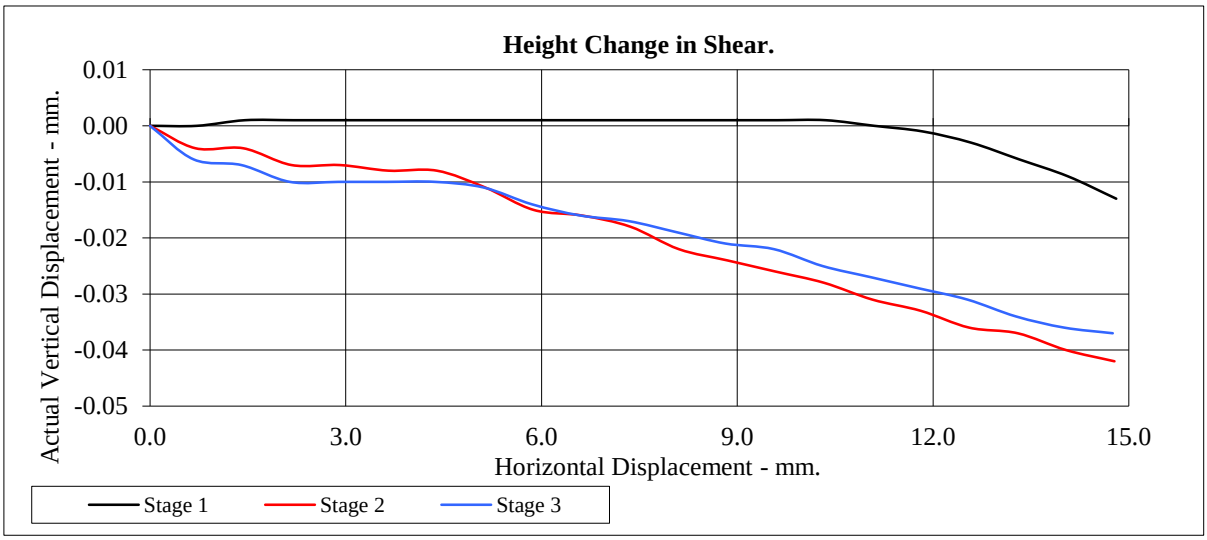
# Determination of residual shear strength using Ring Shear Apparatus

**BS1377:Part 7:1990 Clause 6**

| | | | |
|---|---|---|---|
| Hole Number: | **BH112** | Top Depth: | **17.80** |
| Sample Number: | **116** | Base Depth: | **18.00** |




| | | |
|---|---|---|
| UKAS TESTING 4043 | PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** |

| | |
|---|---|
| **Contract No:** | |
| **PSL22/3650** | |
| **Client Ref:** | |
| **GT0386** | |

# Determination of residual shear strength using Ring Shear Apparatus

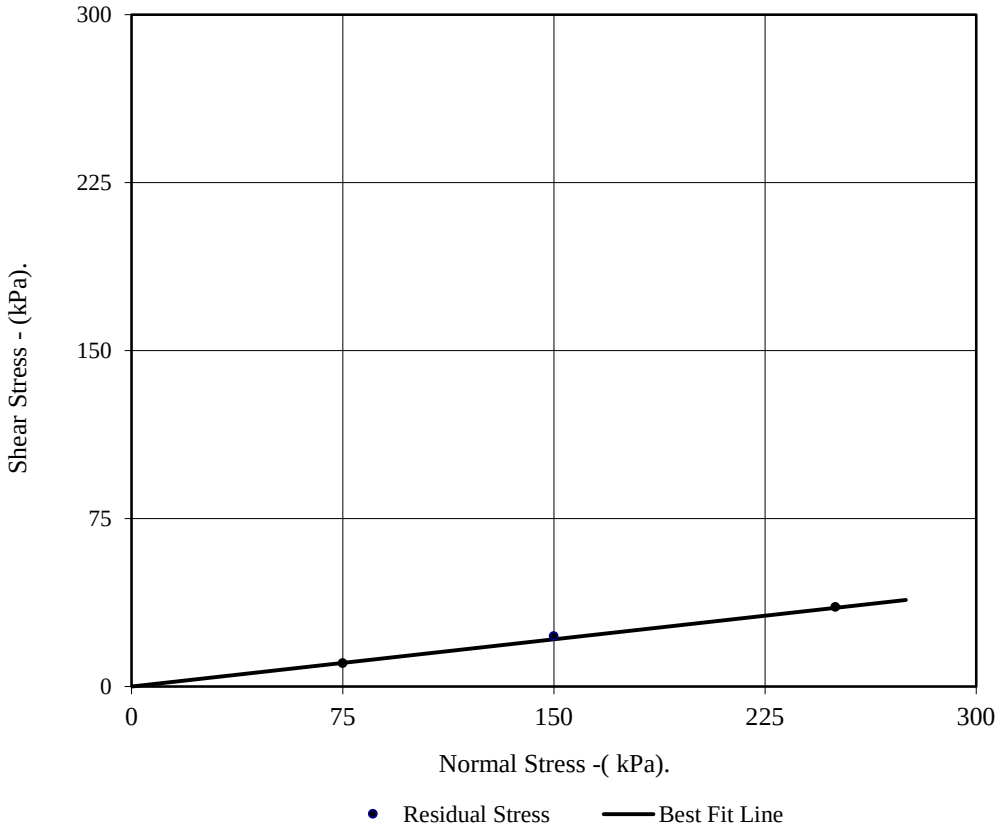
## BS1377:Part 7:1990 Clause 6

| | | | |
|---|---|---|---|
| Hole Number: | **BH113** | Top Depth: | **7.77** |
| Sample Number: | **102** | Base Depth: | **8.00** |
| Sample Conditions: | Submerged | Sample Type | **CS** |
| Preparation Details: | Specimen passed through 1.18mm sieve | | |
| Method of forming the shear plane: | Specimen rotated 2 revolutions by hand within 2 minutes. | | |
| Sample Description: | **See summary of soil descriptions.** | | |

| | |
|---|---|
| Outer Radius - mm: | 50.01 |
| Inner Radius - mm: | 35.00 |
| Initial Thickness - mm: | 5.00 |
| Initial Moisture Content - %: | 21 |
| Final Moisture Content - %: | 25 |

| Stage Number: | **1** | **2** | **3** |
|---|---|---|---|
| Normal Effective Stress - kPa | 75 | 150 | 250 |
| Rate of displacement - mm/min | 0.024 | 0.024 | 0.024 |
| Residual shear stress - kPa | 10 | 22 | 35 |
| Mean linear displacement at end of shearing stage - mm | 14.82 | 14.81 | 14.79 |

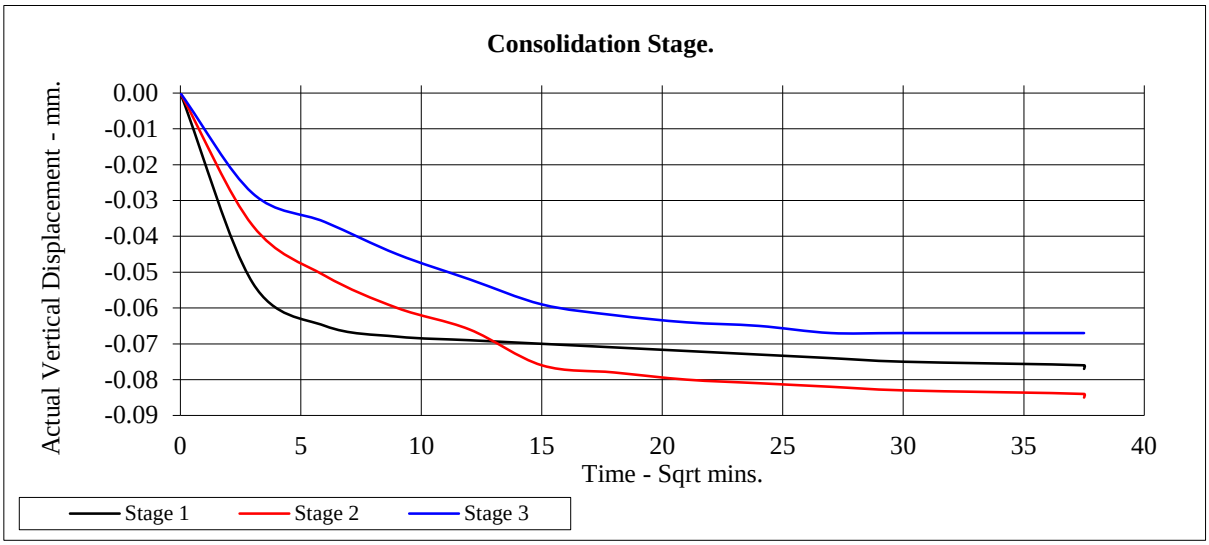
| | |
|---|---|
| Effective Cohesion - kPa: | Assumed Zero |
| Angle of Shearing Resistance:($\theta$) | 8.0 |

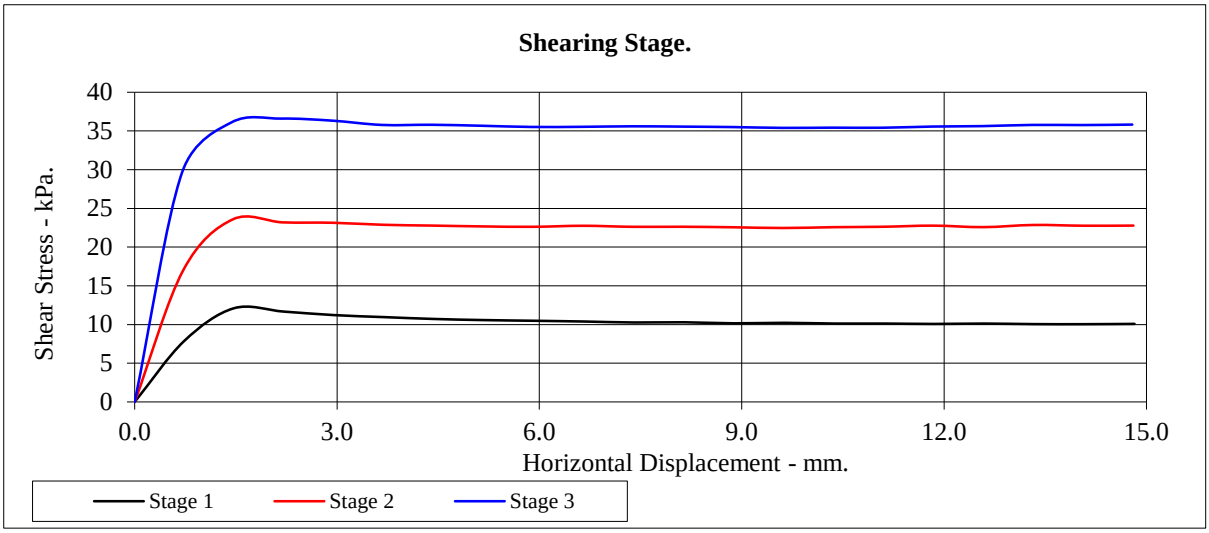


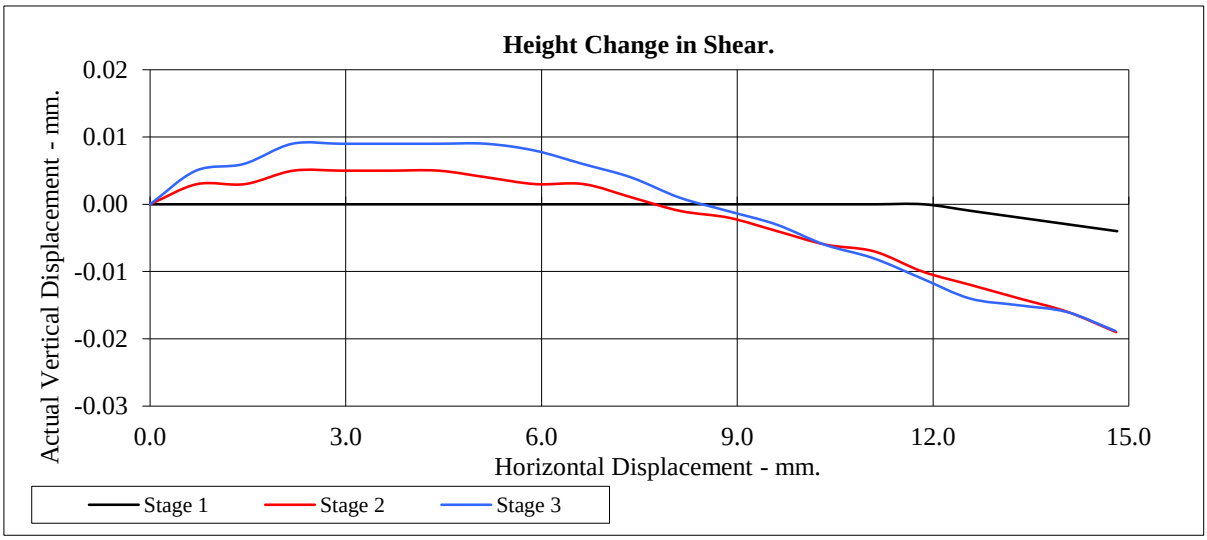
# Determination of residual shear strength using Ring Shear Apparatus

**BS1377:Part 7:1990 Clause 6**

| | | | |
|---|---|---|---|
| Hole Number: | **BH113** | Top Depth: | **7.77** |
| Sample Number: | **102** | Base Depth: | **8.00** |



# Determination of residual shear strength using Ring Shear Apparatus

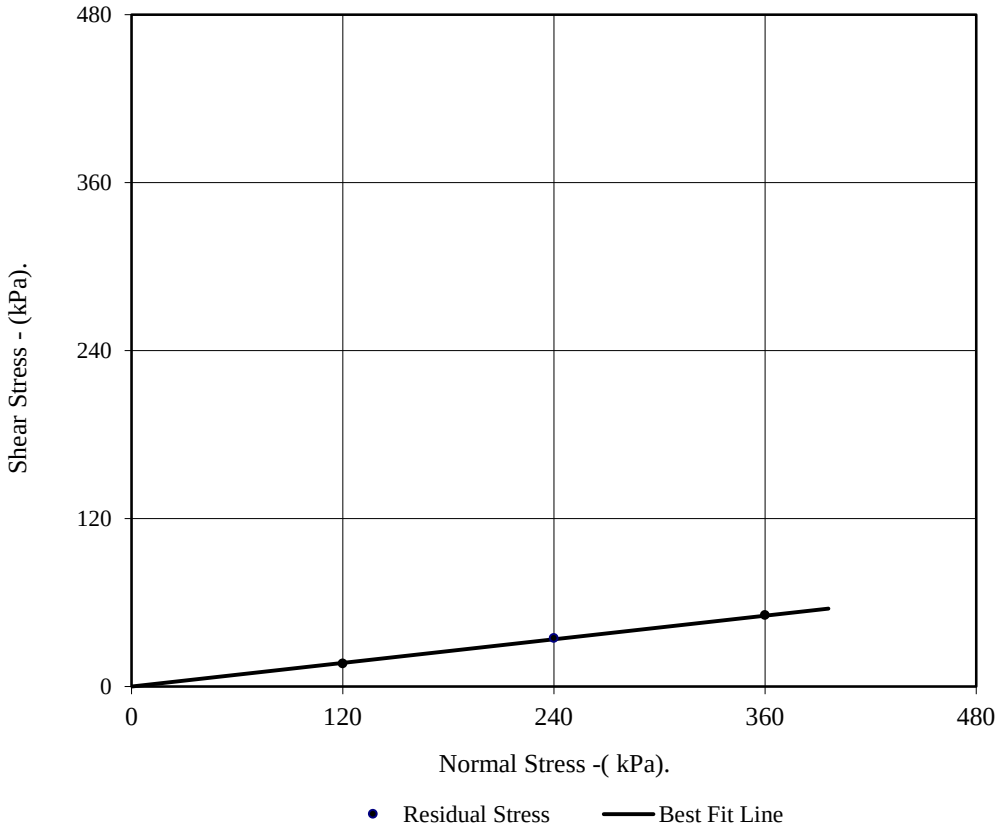
## BS1377:Part 7:1990 Clause 6

| | | | |
|---|---|---|---|
| Hole Number: | **BH113** | Top Depth: | **12.00** |
| Sample Number: | **105** | Base Depth: | **12.25** |
| Sample Conditions: | Submerged | Sample Type | **CS** |
| Preparation Details: | Specimen passed through 1.18mm sieve | | |
| Method of forming the shear plane: | Specimen rotated 2 revolutions by hand within 2 minutes. | | |
| Sample Description: | **See summary of soil descriptions.** | | |

| | |
|---|---|
| Outer Radius - mm: | 50.01 |
| Inner Radius - mm: | 35.00 |
| Initial Thickness - mm: | 5.00 |
| Initial Moisture Content - %: | 22 |
| Final Moisture Content - %: | 25 |

| Stage Number: | **1** | **2** | **3** |
|---|---|---|---|
| Normal Effective Stress - kPa | 120 | 240 | 360 |
| Rate of displacement - mm/min | 0.022 | 0.022 | 0.022 |
| Residual shear stress - kPa | 16 | 35 | 51 |
| Mean linear displacement at end of shearing stage - mm | 14.82 | 14.79 | 14.77 |

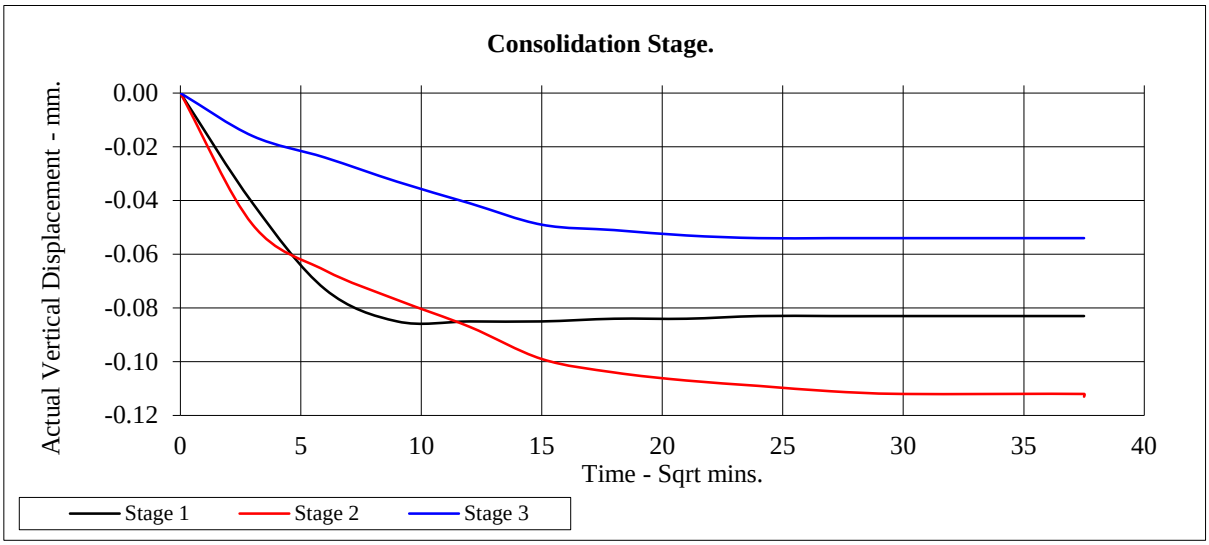
| | |
|---|---|
| Effective Cohesion - kPa: | Assumed Zero |
| Angle of Shearing Resistance:(θ) | 8.0 |

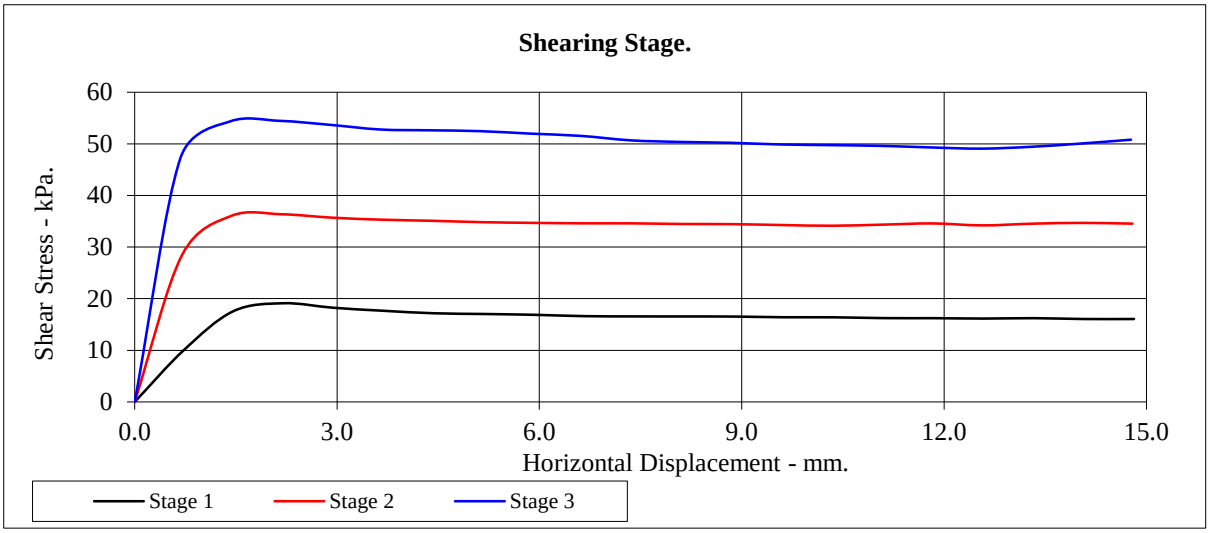


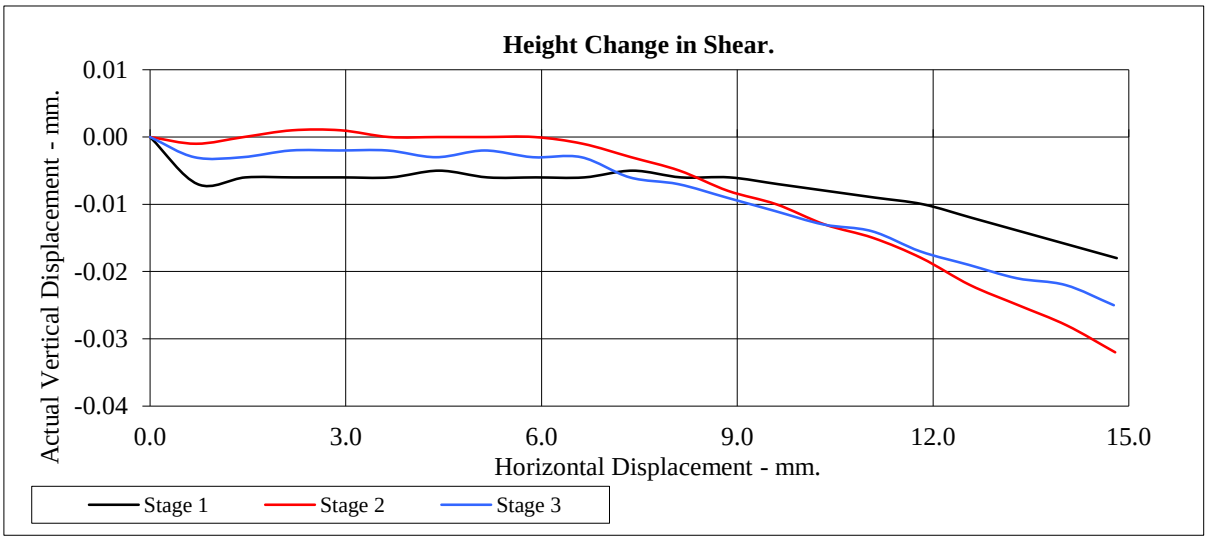
# Determination of residual shear strength using Ring Shear Apparatus

**BS1377:Part 7:1990 Clause 6**

| | | | |
|---|---|---|---|
| Hole Number: | **BH113** | Top Depth: | **12.00** |
| Sample Number: | **105** | Base Depth: | **12.25** |



# Determination of residual shear strength using Ring Shear Apparatus

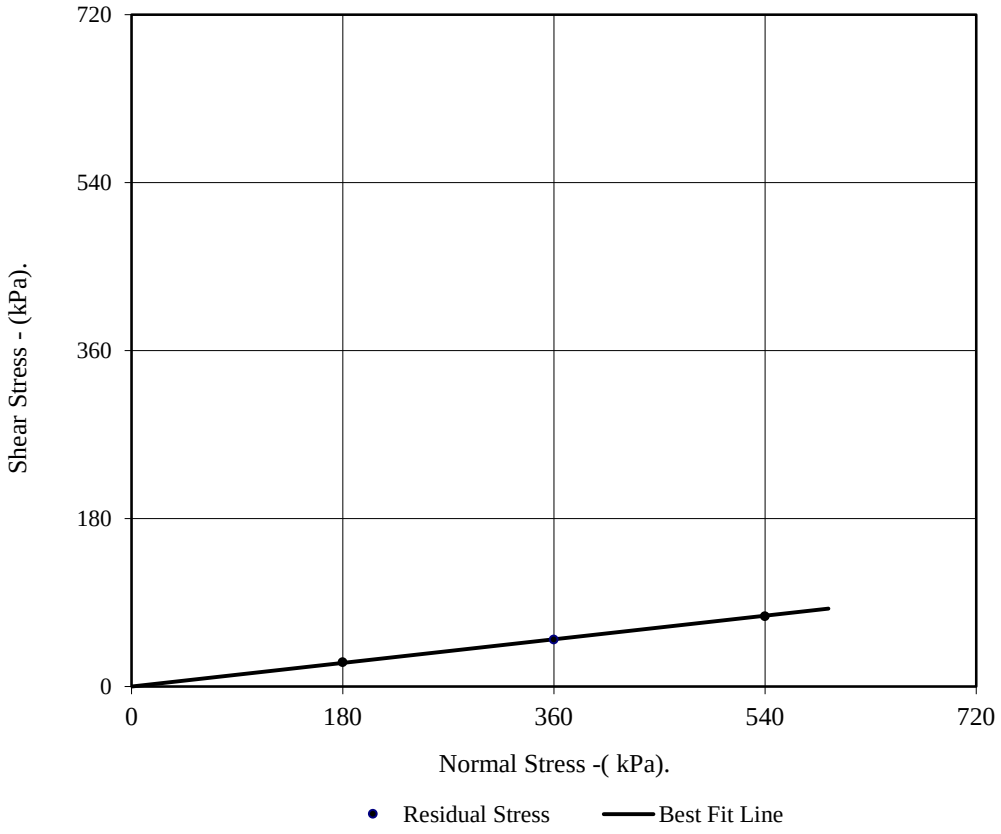
## BS1377:Part 7:1990 Clause 6

| | | | |
|---|---|---|---|
| Hole Number: | **BH113** | Top Depth: | **18.20** |
| Sample Number: | **109** | Base Depth: | **18.34** |
| Sample Conditions: | Submerged | Sample Type | **CS** |
| Preparation Details: | Specimen passed through 1.18mm sieve | | |
| Method of forming the shear plane: | Specimen rotated 2 revolutions by hand within 2 minutes. | | |
| Sample Description: | **See summary of soil descriptions.** | | |

| | |
|---|---|
| Outer Radius - mm: | 50.01 |
| Inner Radius - mm: | 35.00 |
| Initial Thickness - mm: | 5.00 |
| Initial Moisture Content - %: | 19 |
| Final Moisture Content - %: | 25 |

| Stage Number: | **1** | **2** | **3** |
|---|---|---|---|
| Normal Effective Stress - kPa | 180 | 360 | 540 |
| Rate of displacement - mm/min | 0.025 | 0.025 | 0.025 |
| Residual shear stress - kPa | 26 | 50 | 75 |
| Mean linear displacement at end of shearing stage - mm | 14.80 | 14.77 | 14.74 |

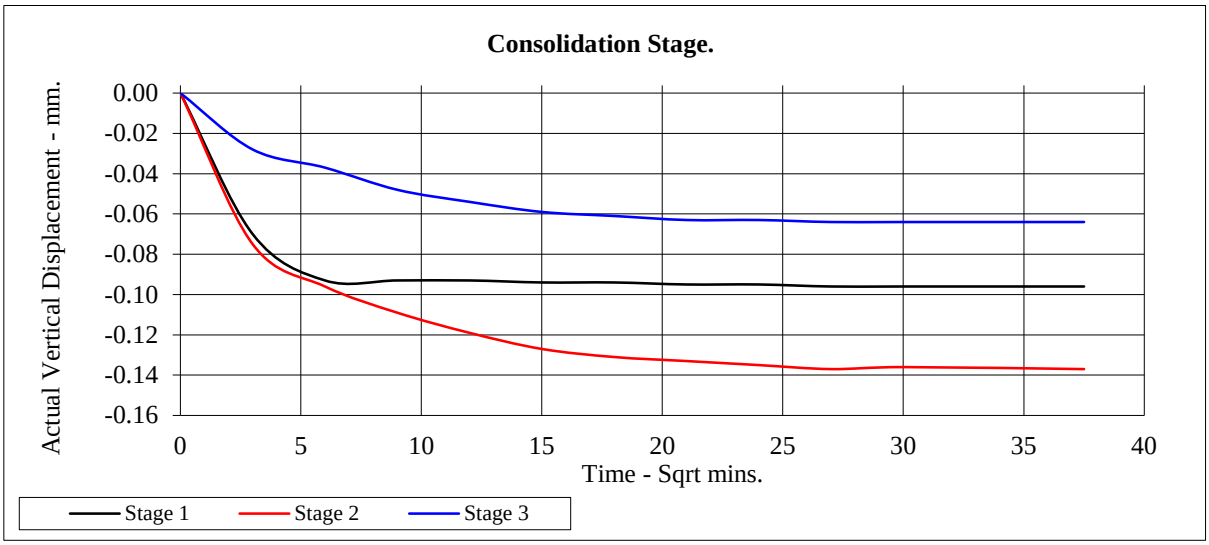
| | |
|---|---|
| Effective Cohesion - kPa: | Assumed Zero |
| Angle of Shearing Resistance:($\theta$) | 8.0 |

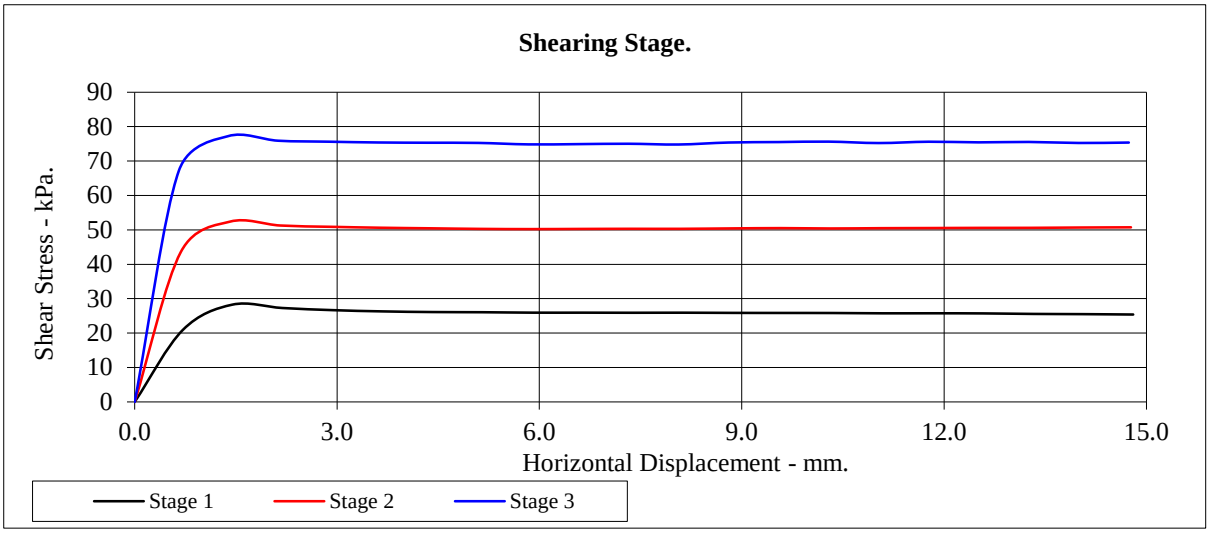


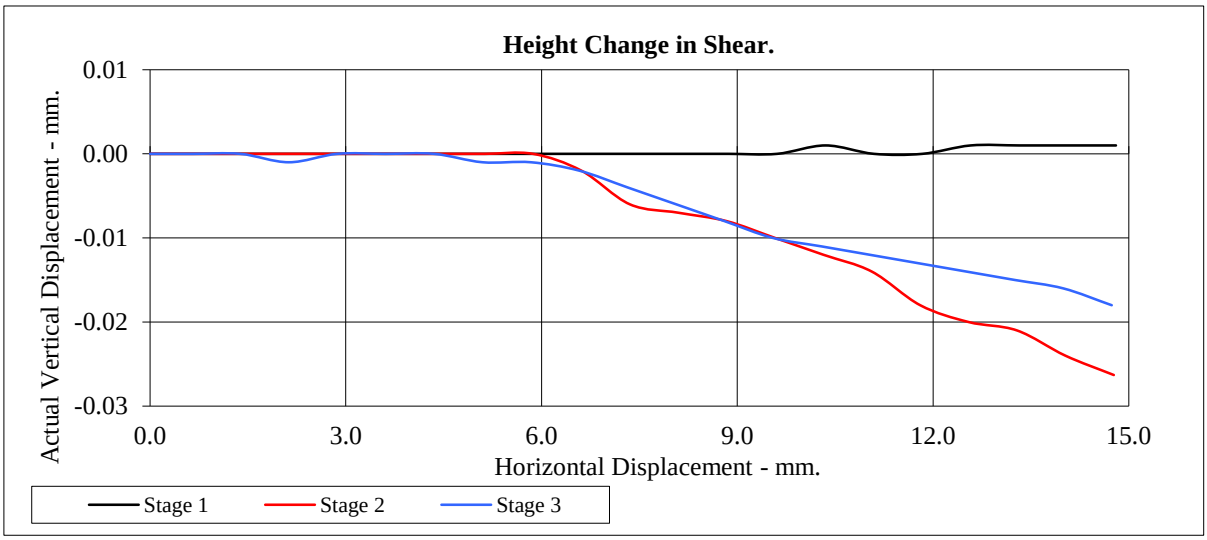
# Determination of residual shear strength using Ring Shear Apparatus

**BS1377:Part 7:1990 Clause 6**

| | | | |
|---|---|---|---|
| Hole Number: | **BH113** | Top Depth: | **18.20** |
| Sample Number: | **109** | Base Depth: | **18.34** |




| | | |
|---|---|---|
| UKAS TESTING 4043 / Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** | **Contract No:** PSL22/3650<br>**Client Ref:** GT0386 |

# Determination of residual shear strength using Ring Shear Apparatus

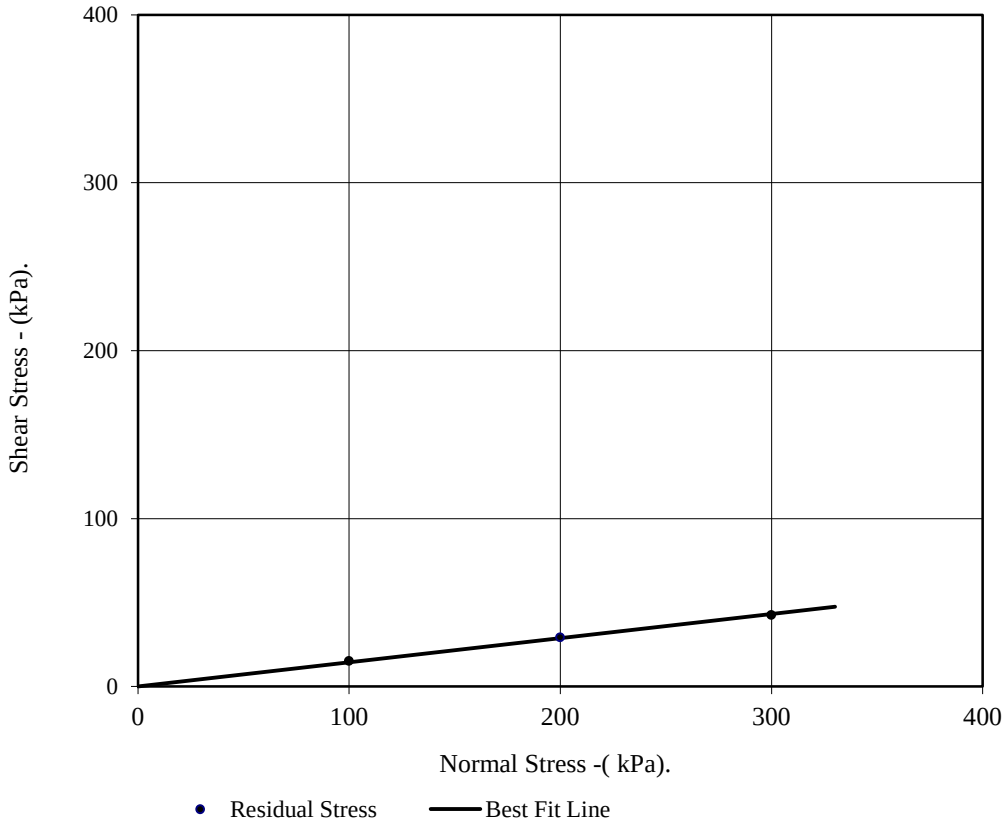
## BS1377:Part 7:1990 Clause 6

| | | | |
|---|---|---|---|
| Hole Number: | **BH135** | Top Depth: | **10.85** |
| Sample Number: | **14** | Base Depth: | **11.15** |
| Sample Conditions: | Submerged | Sample Type | **CS** |
| Preparation Details: | Specimen passed through 1.18mm sieve | | |
| Method of forming the shear plane: | Specimen rotated 2 revolutions by hand within 2 minutes. | | |
| Sample Description: | **See summary of soil descriptions.** | | |

| | |
|---|---|
| Outer Radius - mm: | 50.01 |
| Inner Radius - mm: | 35.00 |
| Initial Thickness - mm: | 5.00 |
| Initial Moisture Content - %: | 19 |
| Final Moisture Content - %: | 26 |

| Stage Number: | **1** | **2** | **3** |
|---|---|---|---|
| Normal Effective Stress - kPa | 100 | 200 | 300 |
| Rate of displacement - mm/min | 0.020 | 0.020 | 0.020 |
| Residual shear stress - kPa | 15 | 29 | 42 |
| Mean linear displacement at end of shearing stage - mm | 14.82 | 14.80 | 14.78 |

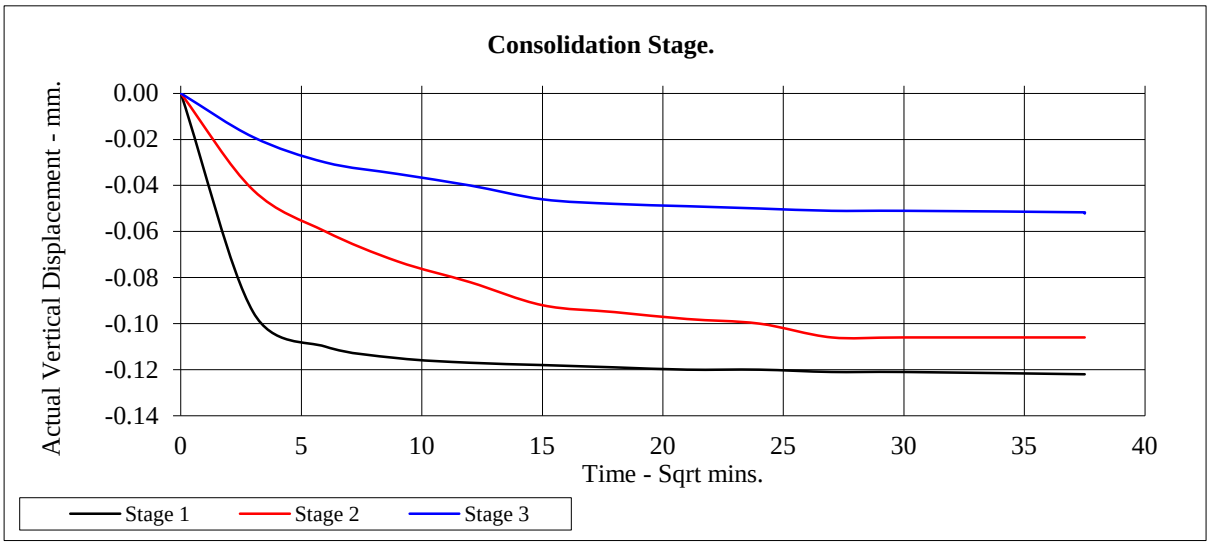
| | |
|---|---|
| Effective Cohesion - kPa: | Assumed Zero |
| Angle of Shearing Resistance:(θ) | 8.2 |

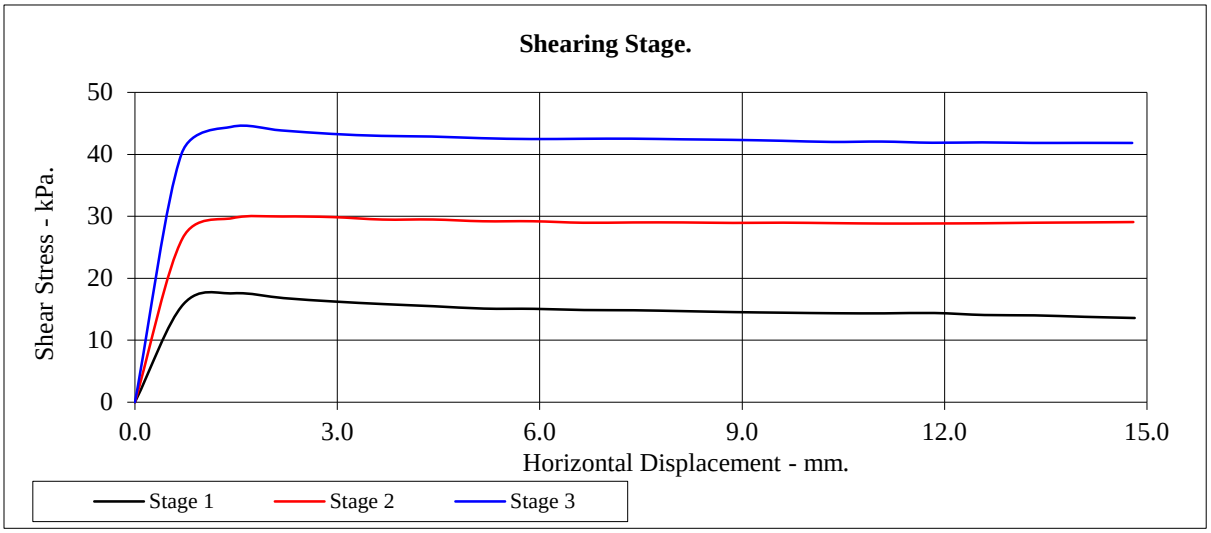


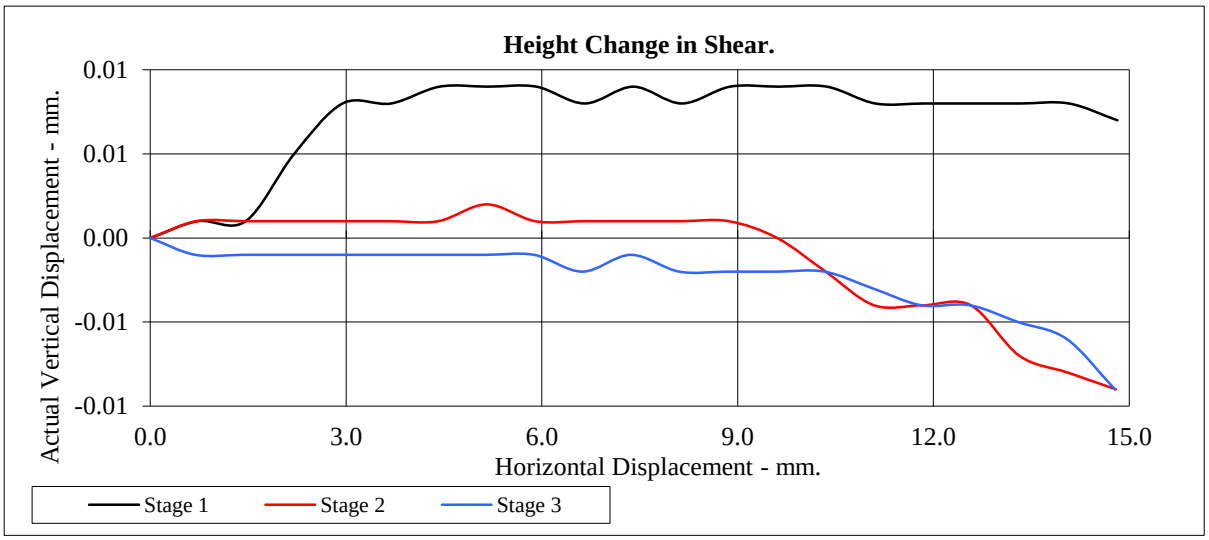
# Determination of residual shear strength using Ring Shear Apparatus

**BS1377:Part 7:1990 Clause 6**

| | | | |
|---|---|---|---|
| Hole Number: | **BH135** | Top Depth: | **10.85** |
| Sample Number: | **14** | Base Depth: | **11.15** |




| | | |
|---|---|---|
| UKAS TESTING 4043 / PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** | **Contract No:** PSL22/4145<br>**Client Ref:** GT0386 |

# Determination of residual shear strength using Ring Shear Apparatus

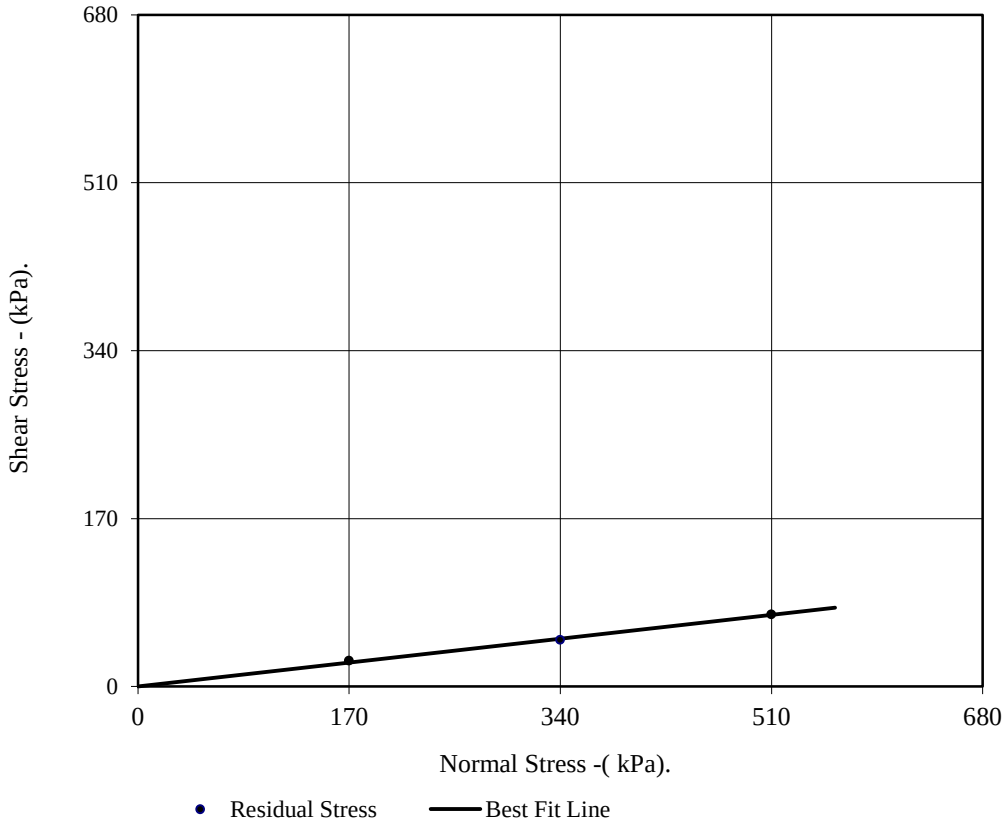
## BS1377:Part 7:1990 Clause 6

| | | | |
|---|---|---|---|
| Hole Number: | **BH135** | Top Depth: | **17.30** |
| Sample Number: | **18** | Base Depth: | **17.60** |
| Sample Conditions: | Submerged | Sample Type | **CS** |
| Preparation Details: | Specimen passed through 1.18mm sieve | | |
| Method of forming the shear plane: | Specimen rotated 2 revolutions by hand within 2 minutes. | | |
| Sample Description: | **See summary of soil descriptions.** | | |

| | |
|---|---|
| Outer Radius - mm: | 50.01 |
| Inner Radius - mm: | 35.00 |
| Initial Thickness - mm: | 5.00 |
| Initial Moisture Content - %: | 20 |
| Final Moisture Content - %: | 27 |

| Stage Number: | **1** | **2** | **3** |
|---|---|---|---|
| Normal Effective Stress - kPa | 170 | 340 | 510 |
| Rate of displacement - mm/min | 0.022 | 0.022 | 0.022 |
| Residual shear stress - kPa | 26 | 47 | 73 |
| Mean linear displacement at end of shearing stage - mm | 14.80 | 14.77 | 14.74 |

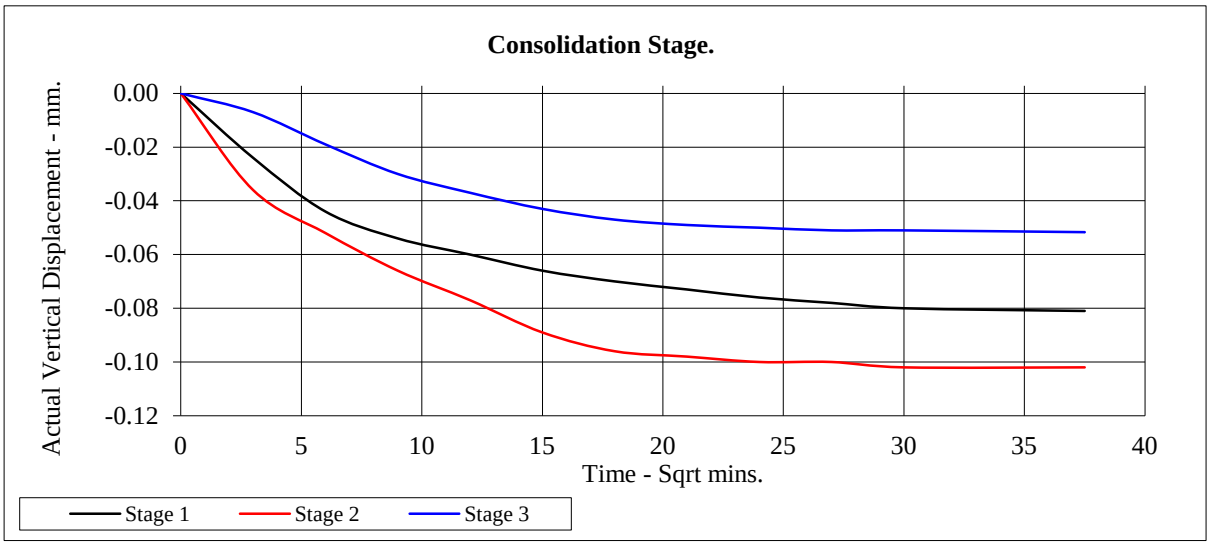
| | |
|---|---|
| Effective Cohesion - kPa: | Assumed Zero |
| Angle of Shearing Resistance:($\theta$) | 8.1 |

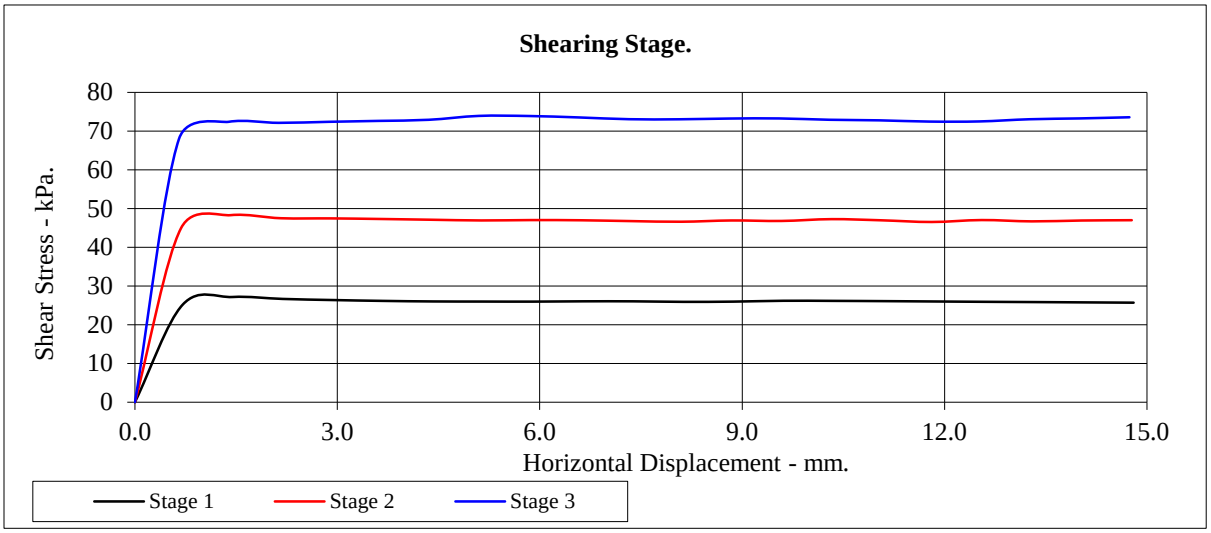


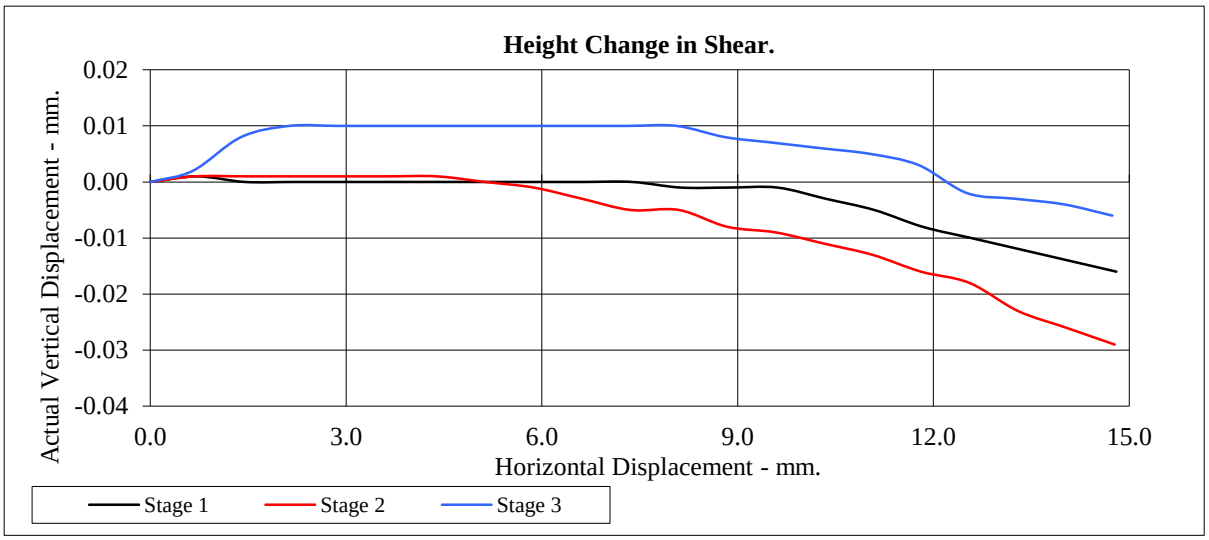
# Determination of residual shear strength using Ring Shear Apparatus

**BS1377:Part 7:1990 Clause 6**

| | | | |
|---|---|---|---|
| Hole Number: | **BH135** | Top Depth: | **17.30** |
| Sample Number: | **18** | Base Depth: | **17.60** |



# Determination of residual shear strength using Ring Shear Apparatus

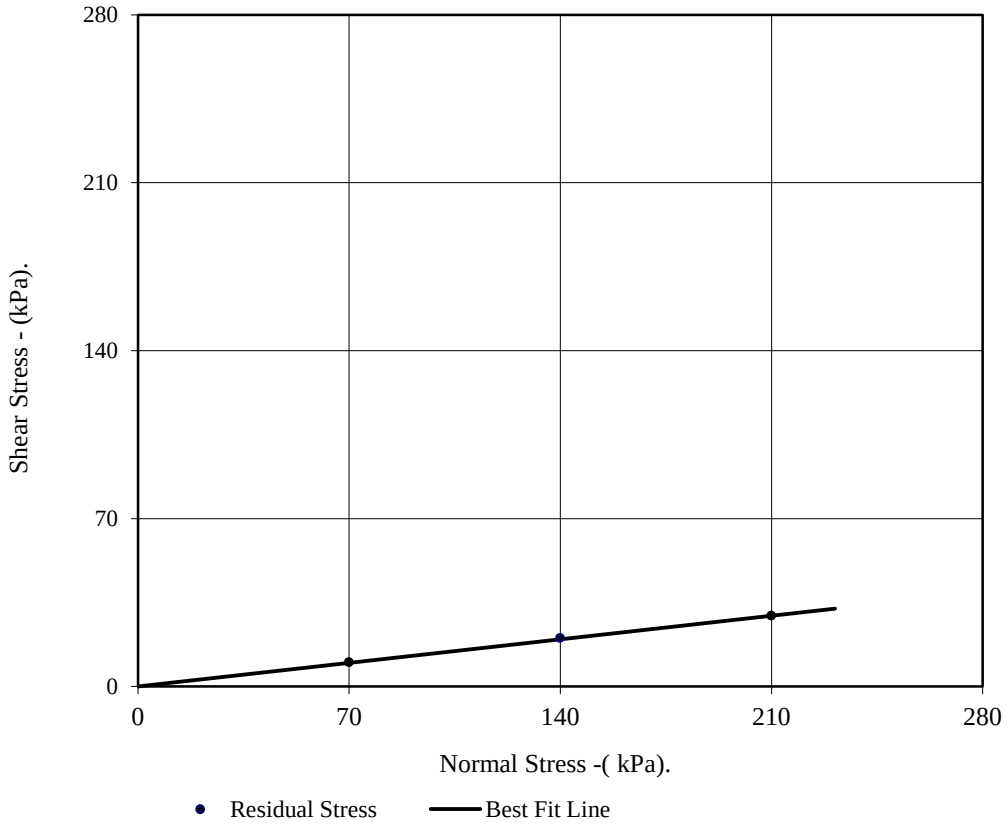
## BS1377:Part 7:1990 Clause 6

| | | | |
|---|---|---|---|
| Hole Number: | **BH136** | Top Depth: | **7.25** |
| Sample Number: | **15** | Base Depth: | **7.55** |
| Sample Conditions: | Submerged | Sample Type | **CS** |
| Preparation Details: | Specimen passed through 1.18mm sieve | | |
| Method of forming the shear plane: | Specimen rotated 2 revolutions by hand within 2 minutes. | | |
| Sample Description: | **See summary of soil descriptions.** | | |

| | |
|---|---|
| Outer Radius - mm: | 50.01 |
| Inner Radius - mm: | 35.00 |
| Initial Thickness - mm: | 5.00 |
| Initial Moisture Content - %: | 22 |
| Final Moisture Content - %: | 25 |

| Stage Number: | **1** | **2** | **3** |
|---|---|---|---|
| Normal Effective Stress - kPa | 70 | 140 | 210 |
| Rate of displacement - mm/min | 0.021 | 0.021 | 0.021 |
| Residual shear stress - kPa | 10 | 20 | 29 |
| Mean linear displacement at end of shearing stage - mm | 14.82 | 14.81 | 14.80 |

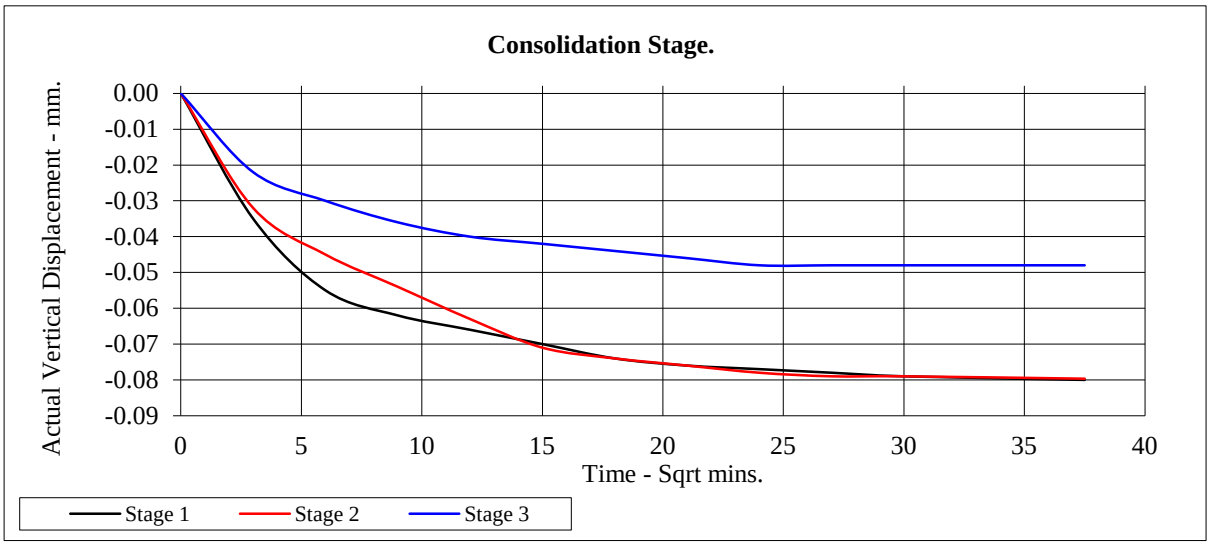
| | |
|---|---|
| Effective Cohesion - kPa: | Assumed Zero |
| Angle of Shearing Resistance:($\theta$) | 8.0 |

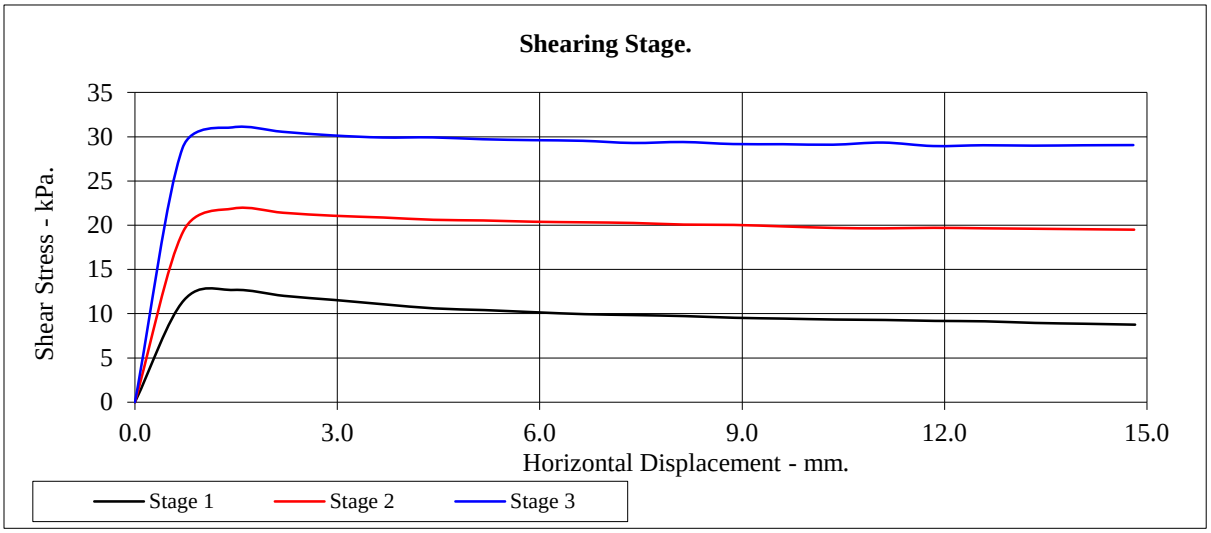


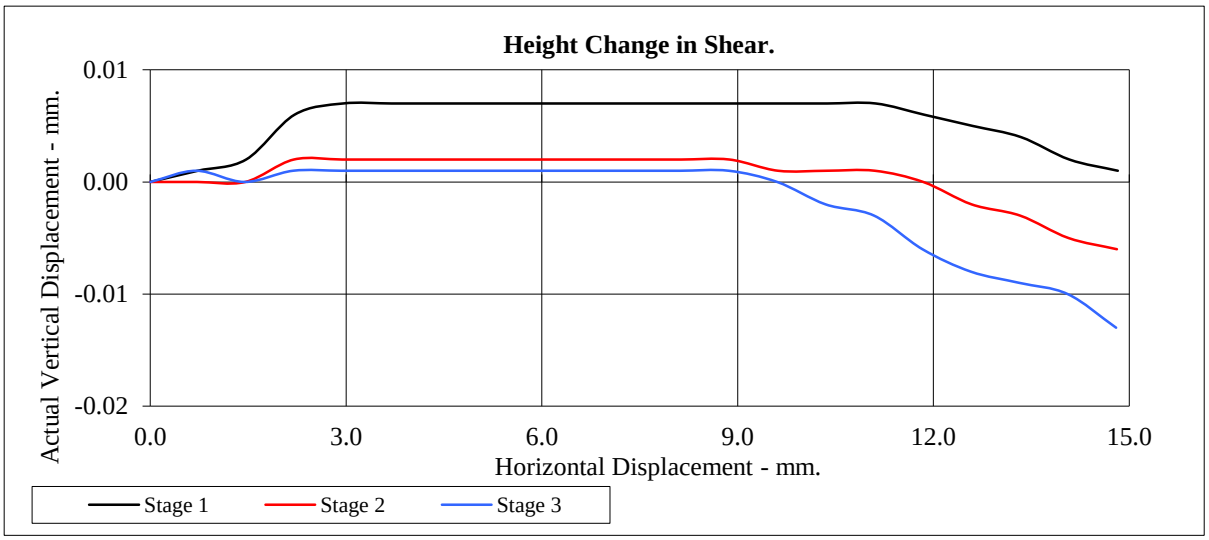
# Determination of residual shear strength using Ring Shear Apparatus

**BS1377:Part 7:1990 Clause 6**

| | | | |
|---|---|---|---|
| Hole Number: | **BH136** | Top Depth: | **7.25** |
| Sample Number: | **15** | Base Depth: | **7.55** |



# Determination of residual shear strength using Ring Shear Apparatus

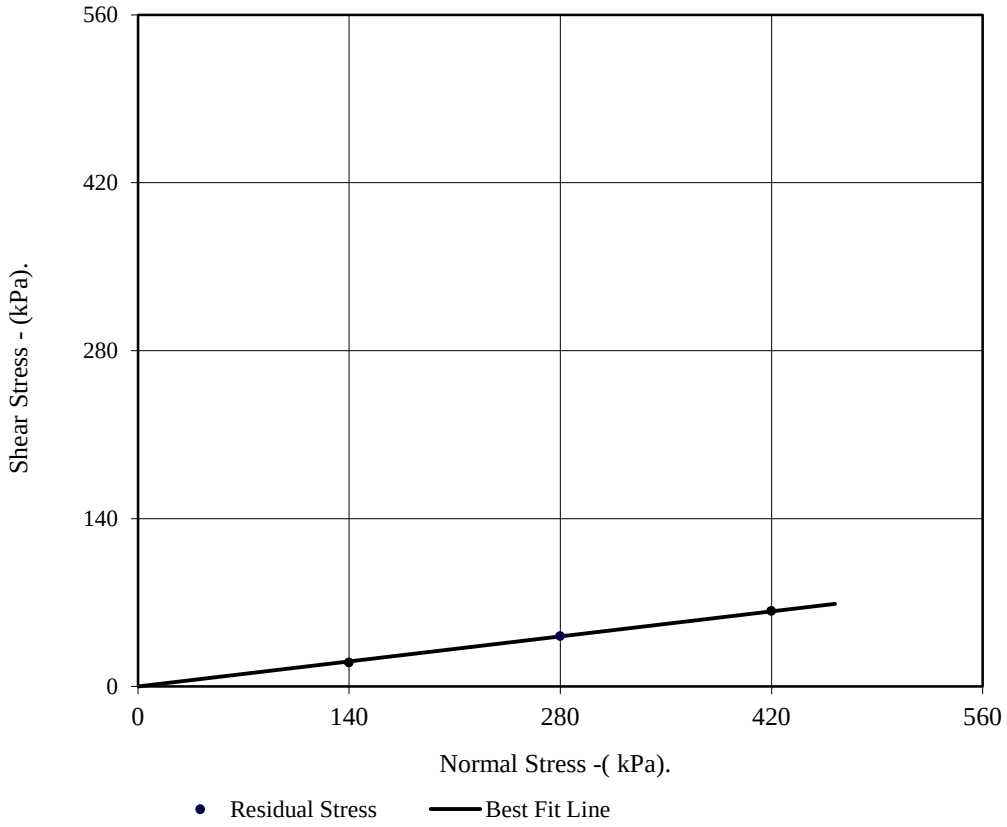
## BS1377:Part 7:1990 Clause 6

| | | | |
|---|---|---|---|
| Hole Number: | **BH136** | Top Depth: | **14.44** |
| Sample Number: | **20** | Base Depth: | **14.70** |
| Sample Conditions: | Submerged | Sample Type | **CS** |
| Preparation Details: | Specimen passed through 1.18mm sieve | | |
| Method of forming the shear plane: | Specimen rotated 2 revolutions by hand within 2 minutes. | | |
| Sample Description: | **See summary of soil descriptions.** | | |

| | |
|---|---|
| Outer Radius - mm: | 50.01 |
| Inner Radius - mm: | 35.00 |
| Initial Thickness - mm: | 5.00 |
| Initial Moisture Content - %: | 23 |
| Final Moisture Content - %: | 25 |

| Stage Number: | **1** | **2** | **3** |
|---|---|---|---|
| Normal Effective Stress - kPa | 140 | 280 | 420 |
| Rate of displacement - mm/min | 0.024 | 0.024 | 0.024 |
| Residual shear stress - kPa | 20 | 42 | 63 |
| Mean linear displacement at end of shearing stage - mm | 14.81 | 14.78 | 14.75 |

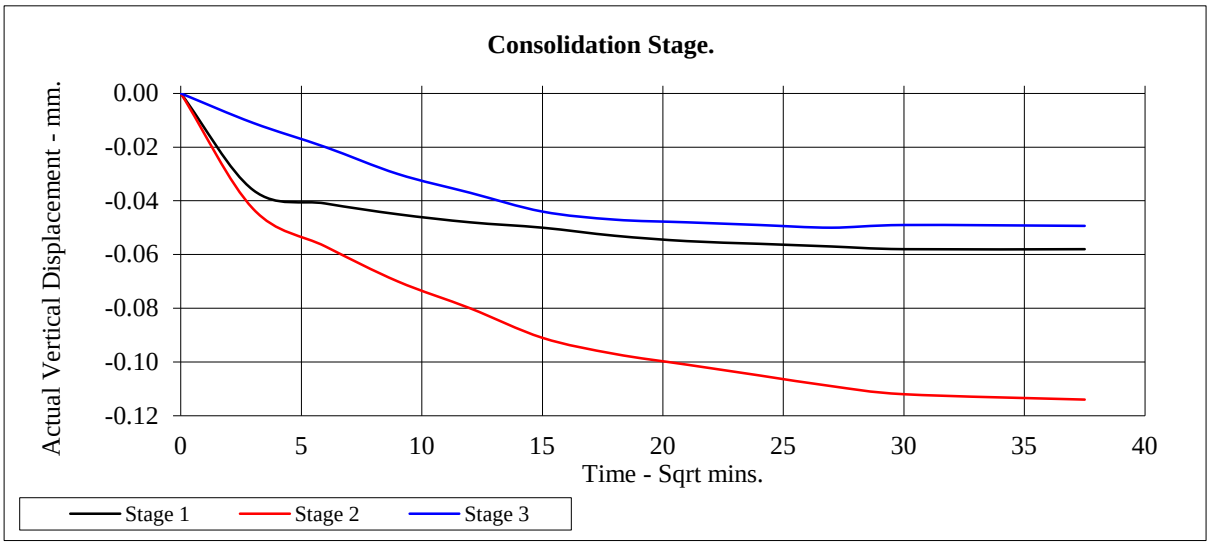
| | |
|---|---|
| Effective Cohesion - kPa: | Assumed Zero |
| Angle of Shearing Resistance:($\theta$) | 8.5 |

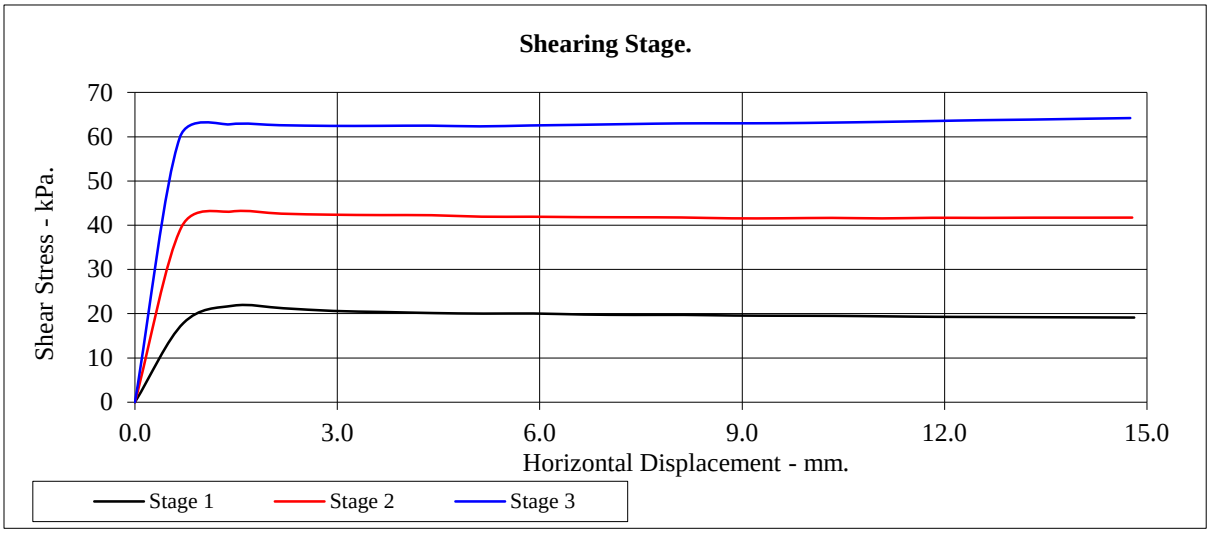


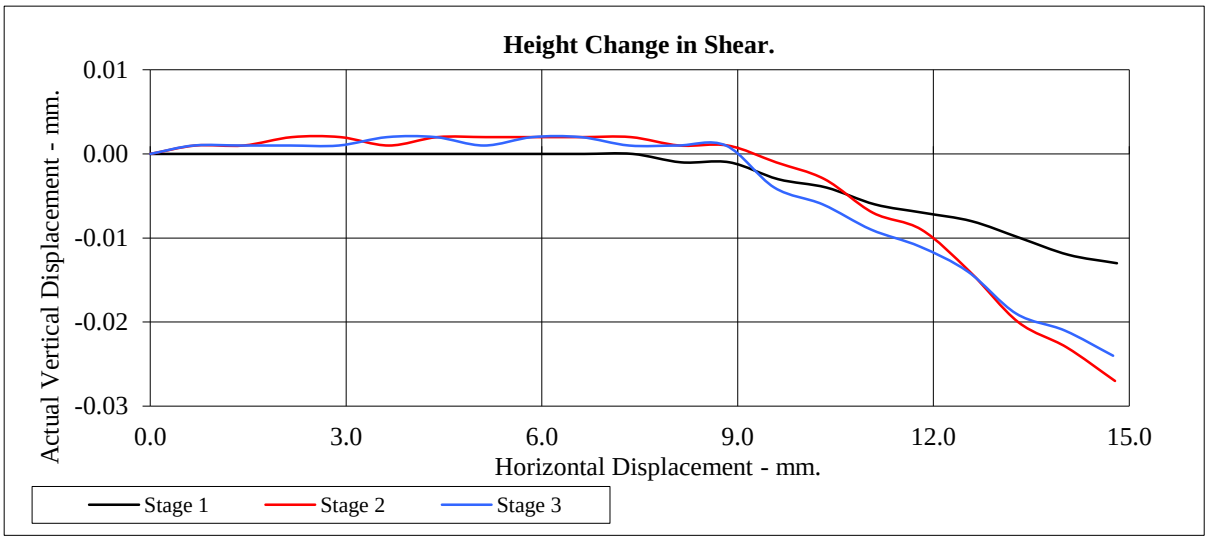
# Determination of residual shear strength using Ring Shear Apparatus

**BS1377:Part 7:1990 Clause 6**

| | | | |
|---|---|---|---|
| Hole Number: | **BH136** | Top Depth: | **14.44** |
| Sample Number: | **20** | Base Depth: | **14.70** |



# Determination of residual shear strength using Ring Shear Apparatus

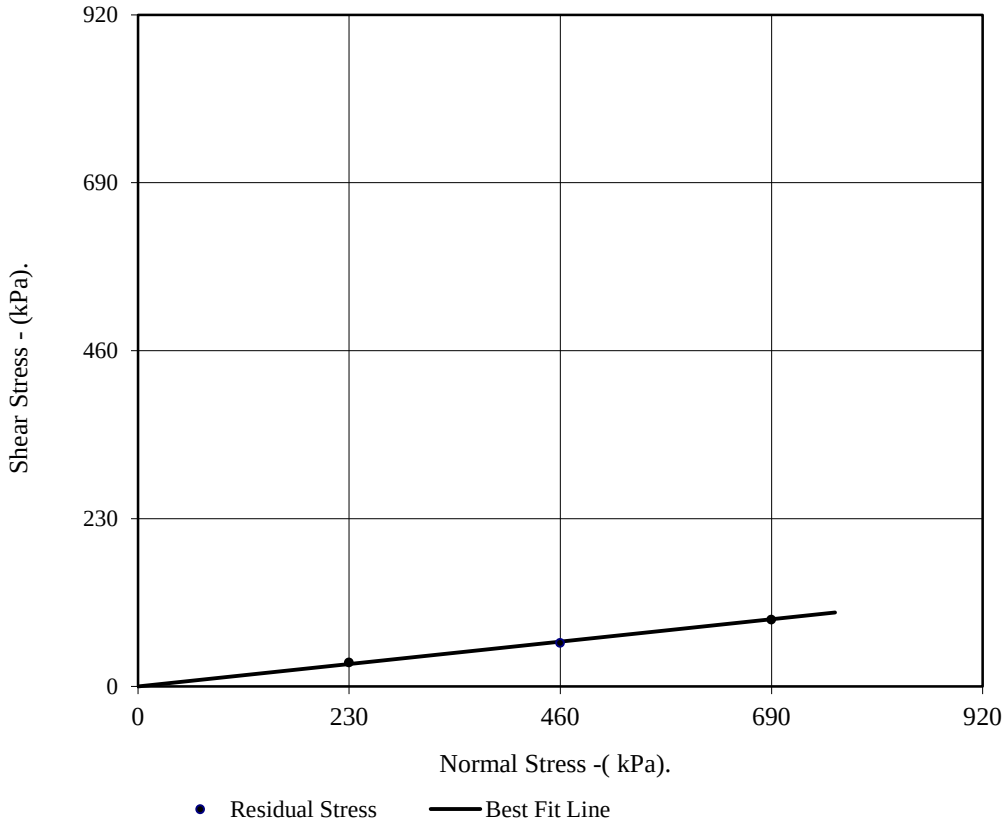
## BS1377:Part 7:1990 Clause 6

| | | | |
|---|---|---|---|
| Hole Number: | **BH136** | Top Depth: | **23.30** |
| Sample Number: | **28** | Base Depth: | **23.51** |
| Sample Conditions: | Submerged | Sample Type | **CS** |
| Preparation Details: | Specimen passed through 1.18mm sieve | | |
| Method of forming the shear plane: | Specimen rotated 2 revolutions by hand within 2 minutes. | | |
| Sample Description: | **See summary of soil descriptions.** | | |

| | |
|---|---|
| Outer Radius - mm: | 50.01 |
| Inner Radius - mm: | 35.00 |
| Initial Thickness - mm: | 5.00 |
| Initial Moisture Content - %: | 21 |
| Final Moisture Content - %: | 24 |

| Stage Number: | **1** | **2** | **3** |
|---|---|---|---|
| Normal Effective Stress - kPa | 230 | 460 | 690 |
| Rate of displacement - mm/min | 0.022 | 0.022 | 0.022 |
| Residual shear stress - kPa | 33 | 60 | 91 |
| Mean linear displacement at end of shearing stage - mm | 14.79 | 14.76 | 14.71 |

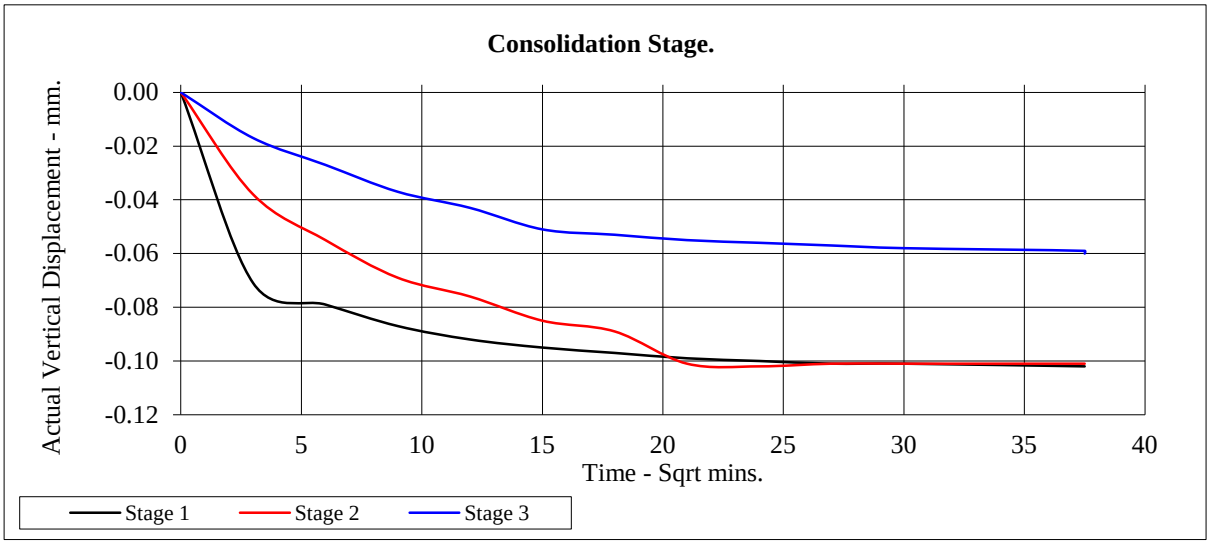
| | |
|---|---|
| Effective Cohesion - kPa: | Assumed Zero |
| Angle of Shearing Resistance:(θ) | 7.6 |

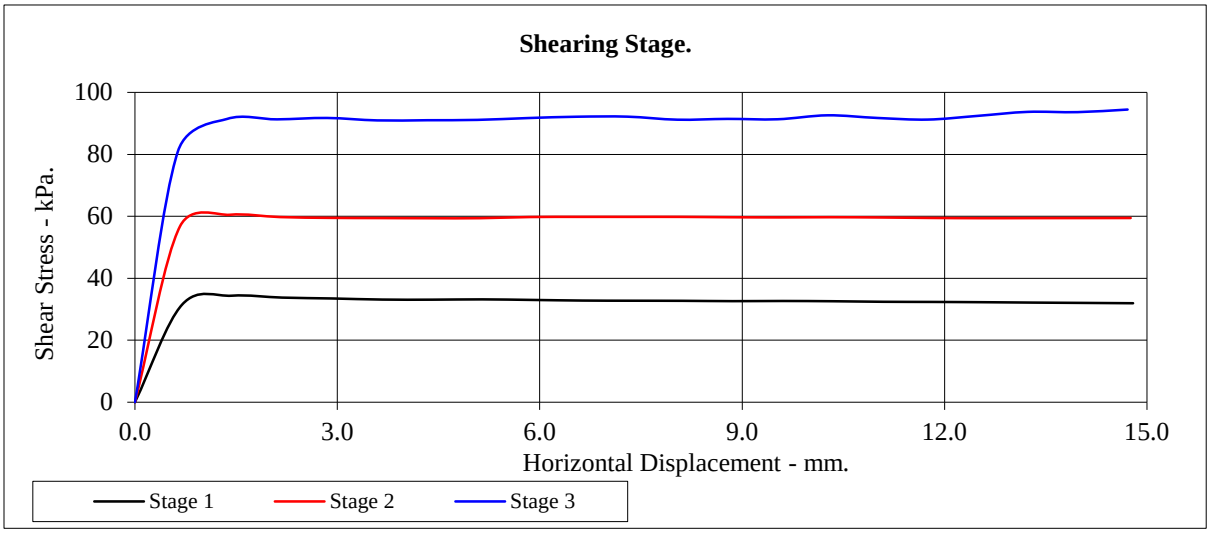


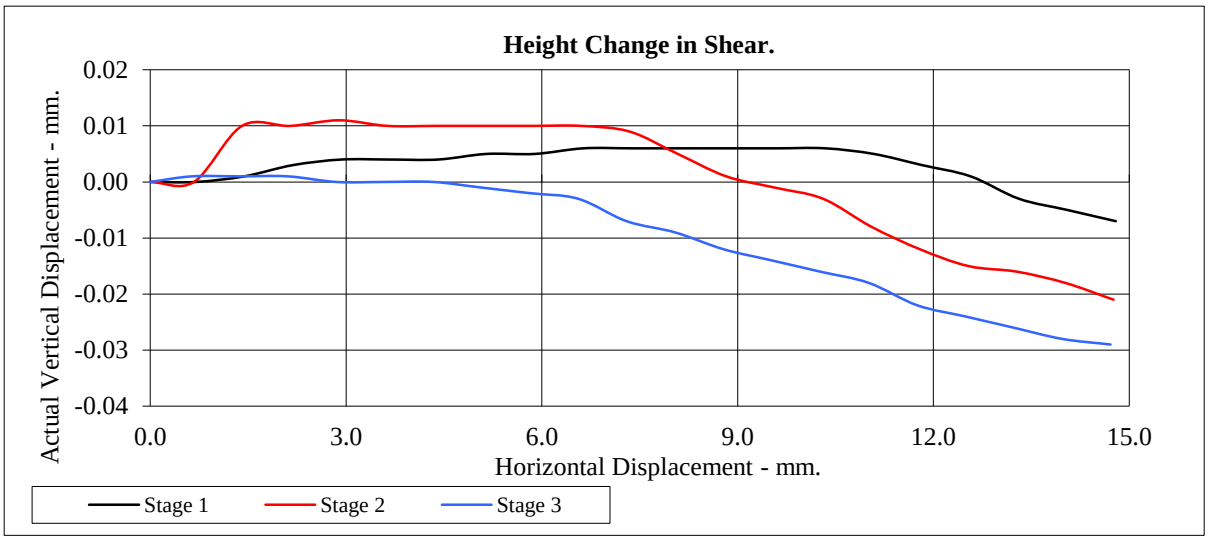
# Determination of residual shear strength using Ring Shear Apparatus

**BS1377:Part 7:1990 Clause 6**

| | | | |
|---|---|---|---|
| Hole Number: | **BH136** | Top Depth: | **23.30** |
| Sample Number: | **28** | Base Depth: | **23.51** |



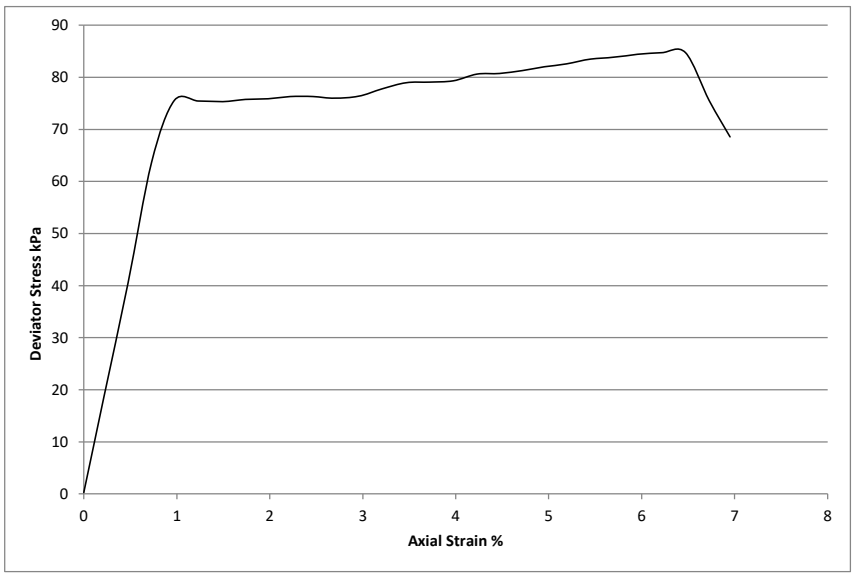

| | | | |
|---|---|---|---|
| UKAS TESTING 4043 | PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** | **Contract No:** **PSL22/4145** **Client Ref:** **GT0386** |

| | UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION<br>BS 1377 : Part 7 : 1990 : Clause 8 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH135 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | GTSL202206080 |
| | | Depth (m) | 0.00 |
| Soil Description | GROUT. 28 day test. | Sample type | UT |

| Sample Details | | Single Specimen |
|---|---|---|
| Sample Condition | | Undisturbed |
| Sample Length | (mm): | 200.1 |
| Sample Diameter | (mm): | 101.8 |
| Moisture Content | (%): | 192 |
| Bulk Density | ($Mg/m^3$) | 1.21 |
| Dry Density | ($Mg/m^3$) | 0.41 |

| Test Details | | |
|---|---|---|
| Membrane Thickness | (mm): | 0.4 |
| Membrane Correction | kPa: | 0.63 |
| Axial Displacement Rate | %/min: | 1 |
| Cell Pressure | kPa: | 20 |
| Strain at Failure | %: | 6.22 |
| Max. Corrected Deviator Stress | kPa: | 85 |
| Shear Strength | kPa: | 42 |
| Mode of Failure | | Brittle |

Orientation and position of the specimen within the original sample




| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

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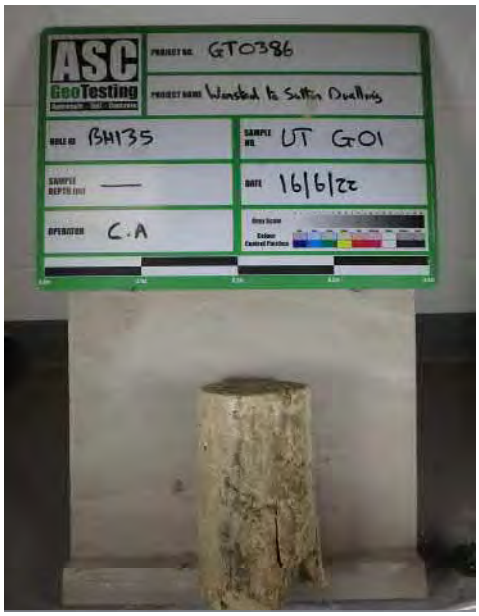
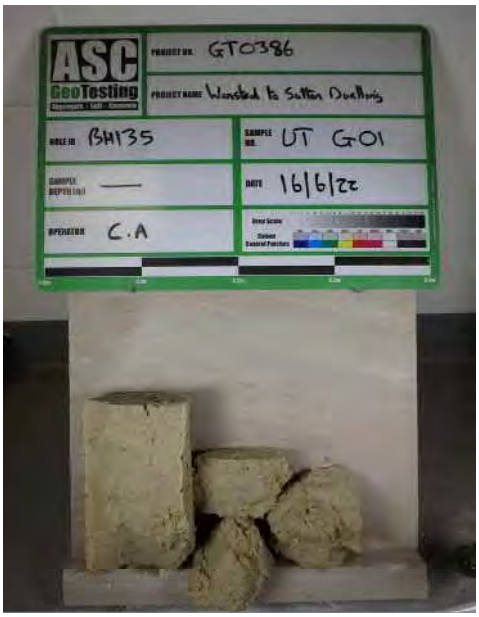
| | UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION<br>BS 1377 : Part 7 : 1990 : Clause 8 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH135 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | GTSL202206080 |
| | | Depth (m) | 0 |
| Soil Description | GROUT. 28 day test. | Sample type | UT |




| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

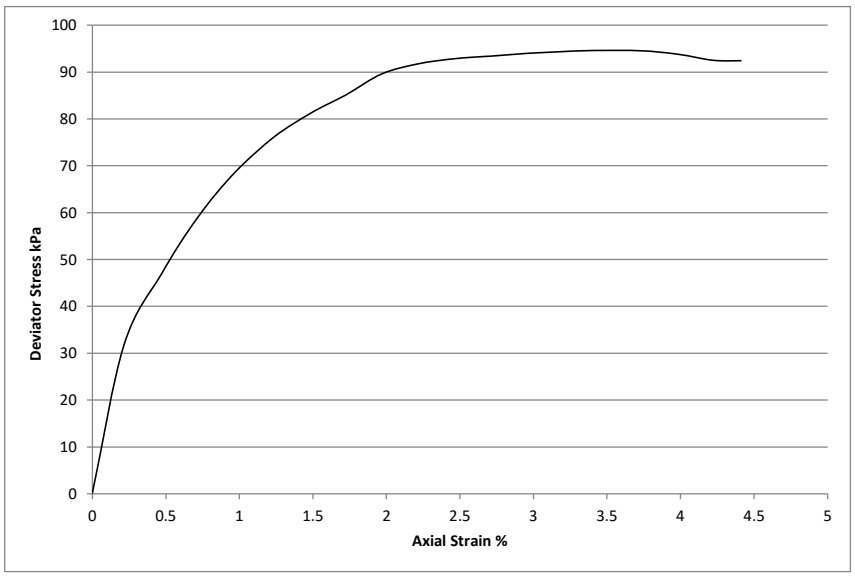
Authorised Approvers: Ben Armstrong (Quality Manager)

| | UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION<br>BS 1377 : Part 7 : 1990 : Clause 8 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH135 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | GTSL202206081 |
| | | Depth (m) | 0.00 |
| Soil Description | GROUT. 28 day test. | Sample type | UT |

| Sample Details | | Single Specimen |
|---|---|---|
| Sample Condition | | Undisturbed |
| Sample Length | (mm): | 200 |
| Sample Diameter | (mm): | 101.6 |
| Moisture Content | (%): | 201 |
| Bulk Density | ($Mg/m^3$) | 1.20 |
| Dry Density | ($Mg/m^3$) | 0.40 |

| Test Details | | |
|---|---|---|
| Membrane Thickness | (mm): | 0.4 |
| Membrane Correction | kPa: | 0.37 |
| Axial Displacement Rate | %/min: | 1 |
| Cell Pressure | kPa: | 170 |
| Strain at Failure | %: | 3.48 |
| Max. Corrected Deviator Stress | kPa: | 95 |
| Shear Strength | kPa: | 47 |
| Mode of Failure | | Brittle |

Orientation and position of the specimen within the original sample




| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

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Authorised Approvers: Ben Armstrong (Quality Manager)

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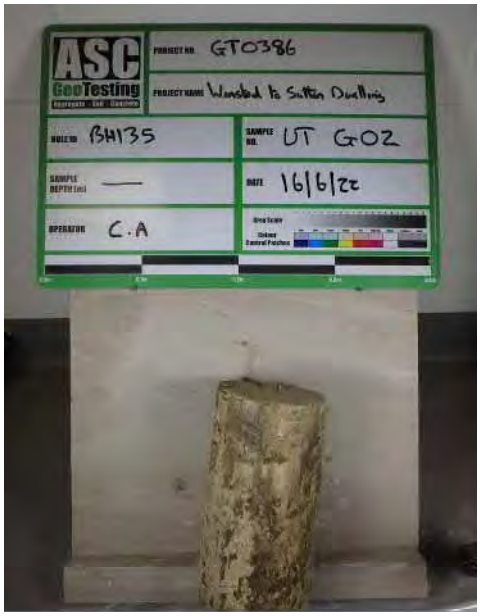
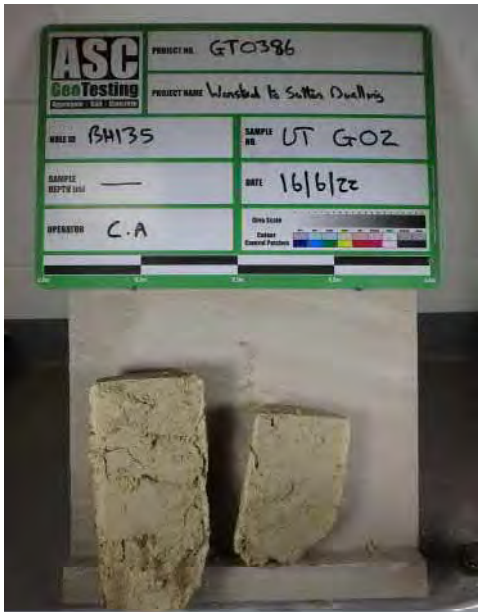
| | UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION<br>BS 1377 : Part 7 : 1990 : Clause 8 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH135 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | GTSL202206081 |
| | | Depth (m) | 0 |
| Soil Description | GROUT. 28 day test. | Sample type | UT |




| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

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Authorised Approvers: Ben Armstrong (Quality Manager)

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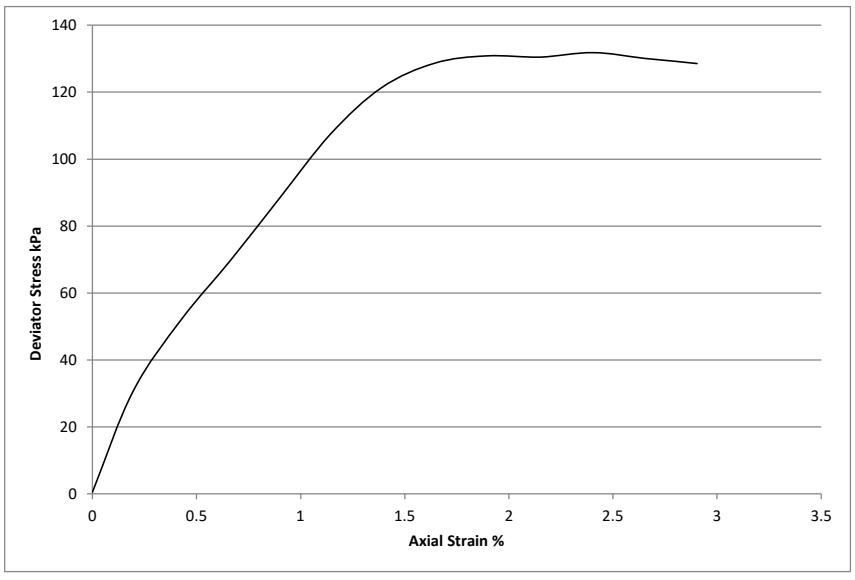
| | UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION<br>BS 1377 : Part 7 : 1990 : Clause 8 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH135 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | GTSL202206082 |
| | | Depth (m) | 0.00 |
| Soil Description | GROUT. 28 day test. | Sample type | UT |

| Sample Details | | Single Specimen |
|---|---|---|
| Sample Condition | | Undisturbed |
| Sample Length | (mm): | 200.1 |
| Sample Diameter | (mm): | 101.4 |
| Moisture Content | (%): | 194 |
| Bulk Density | ($Mg/m^3$) | 1.24 |
| Dry Density | ($Mg/m^3$) | 0.42 |

| Test Details | | |
|---|---|---|
| Membrane Thickness | (mm): | 0.4 |
| Membrane Correction | kPa: | 0.26 |
| Axial Displacement Rate | %/min: | 1 |
| Cell Pressure | kPa: | 350 |
| Strain at Failure | %: | 2.40 |
| Max. Corrected Deviator Stress | kPa: | 132 |
| Shear Strength | kPa: | 66 |
| Mode of Failure | | Brittle |

Orientation and position of the specimen within the original sample




| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

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Authorised Approvers: Ben Armstrong (Quality Manager)

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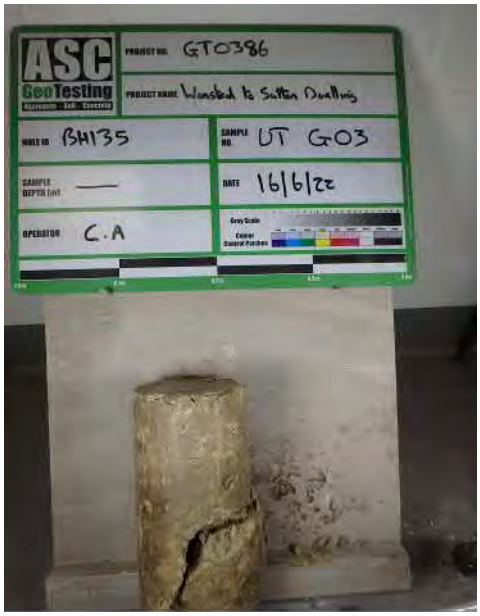
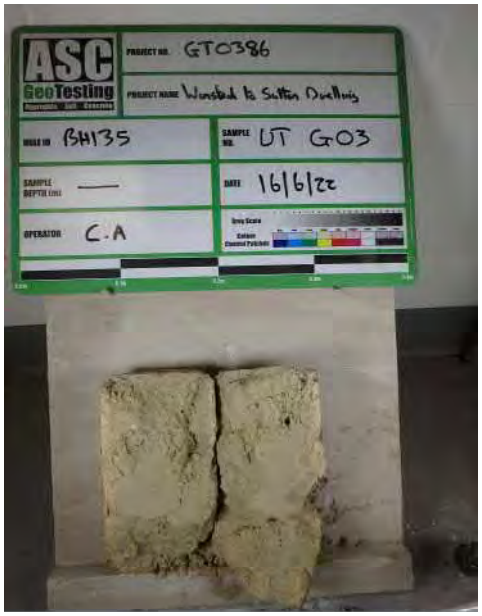
| | UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION<br>BS 1377 : Part 7 : 1990 : Clause 8 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH135 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | GTSL202206082 |
| | | Depth (m) | 0 |
| Soil Description | GROUT. 28 day test. | Sample type | UT |




| Operator | Checked | Approved | Remarks |
|---|---|---|---|
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Authorised Approvers: Ben Armstrong (Quality Manager)

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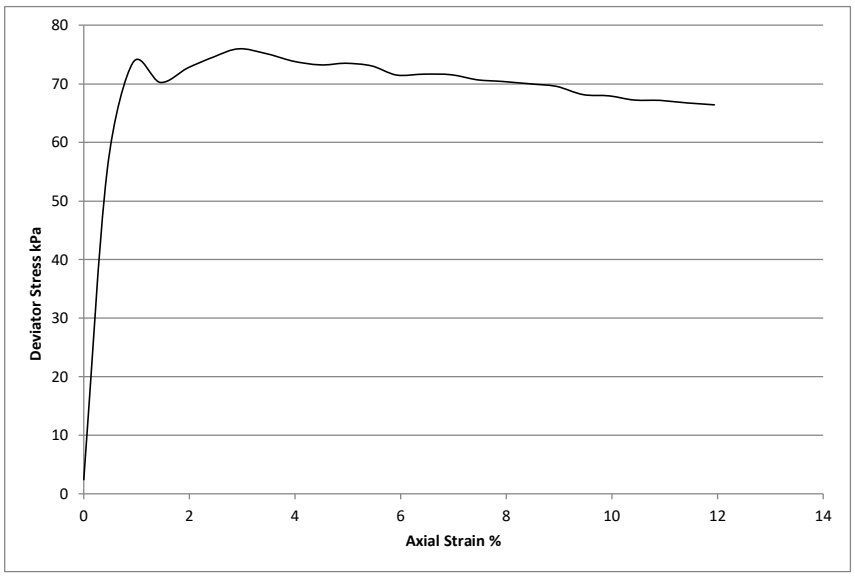
| | UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION<br>BS 1377 : Part 7 : 1990 : Clause 8 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH136 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | GTSL202206086 |
| | | Depth (m) | 0.00 |
| Soil Description | GROUT. 14 day test | Sample type | UT |

| Sample Details | | Single Specimen |
|---|---|---|
| Sample Condition | | Undisturbed |
| Sample Length | (mm): | 200 |
| Sample Diameter | (mm): | 102.2 |
| Moisture Content | (%): | 161 |
| Bulk Density | ($Mg/m^3$) | 1.19 |
| Dry Density | ($Mg/m^3$) | 0.45 |

| Test Details | | |
|---|---|---|
| Membrane Thickness | (mm): | 0.4 |
| Membrane Correction | kPa: | 0.31 |
| Axial Displacement Rate | %/min: | 1 |
| Cell Pressure | kPa: | 20 |
| Strain at Failure | %: | 2.94 |
| Max. Corrected Deviator Stress | kPa: | 76 |
| Shear Strength | kPa: | 38 |
| Mode of Failure | | Brittle |

Orientation and position of the specimen within the original sample




| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

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Authorised Approvers: Ben Armstrong (Quality Manager)

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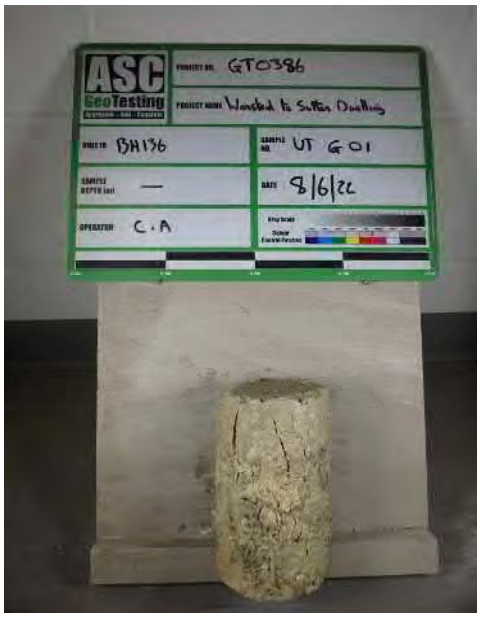
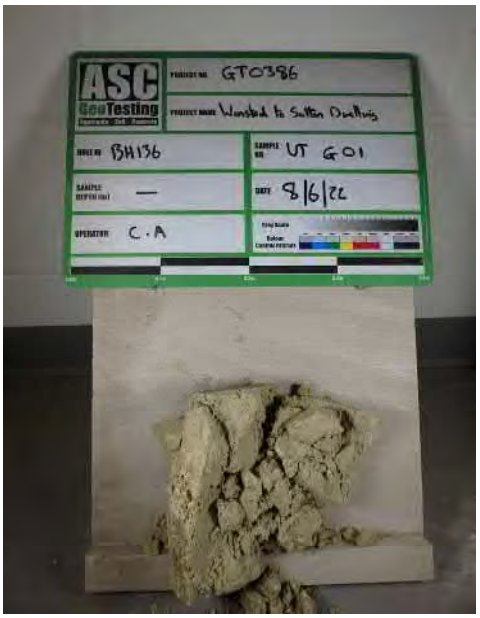
| | | | |
|---|---|---|---|
| | **UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION**<br>**BS 1377 : Part 7 : 1990 : Clause 8** | Job Ref | **GT0386** |
| | | Borehole / Pit No | BH136 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | GTSL202206086 |
| | | Depth (m) | 0 |
| Soil Description | GROUT. 14 day test | Sample type | UT |




| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

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Authorised Approvers: Ben Armstrong (Quality Manager)

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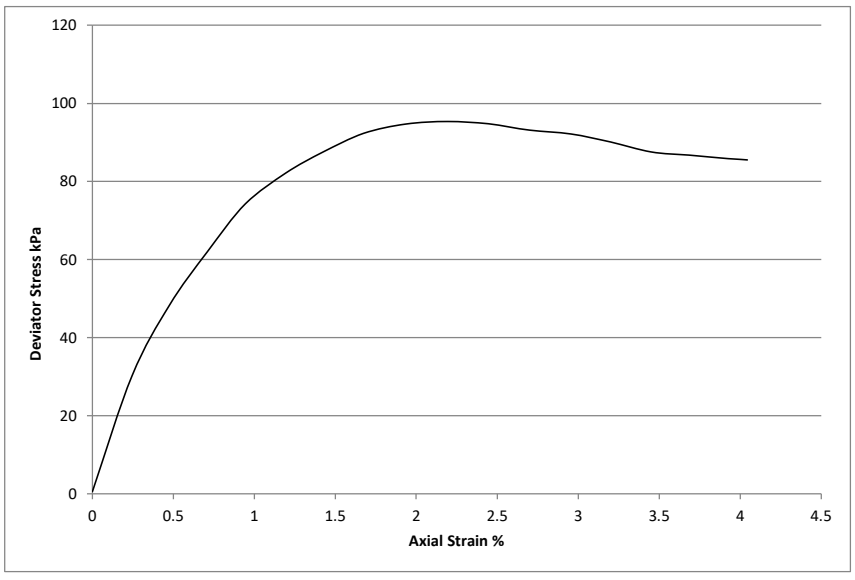
| | UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION<br>BS 1377 : Part 7 : 1990 : Clause 8 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH136 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | GTSL202206087 |
| | | Depth (m) | 0.00 |
| Soil Description | GROUT. 14 day test | Sample type | UT |

| Sample Details | | Single Specimen |
|---|---|---|
| Sample Condition | | Undisturbed |
| Sample Length | (mm): | 200 |
| Sample Diameter | (mm): | 101.3 |
| Moisture Content | (%): | 195 |
| Bulk Density | ($Mg/m^3$) | 1.22 |
| Dry Density | ($Mg/m^3$) | 0.41 |

| Test Details | | |
|---|---|---|
| Membrane Thickness | (mm): | 0.4 |
| Membrane Correction | kPa: | 0.24 |
| Axial Displacement Rate | %/min: | 1 |
| Cell Pressure | kPa: | 170 |
| Strain at Failure | %: | 2.20 |
| Max. Corrected Deviator Stress | kPa: | 95 |
| Shear Strength | kPa: | 48 |
| Mode of Failure | | Brittle |

Orientation and position of the specimen within the original sample




| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

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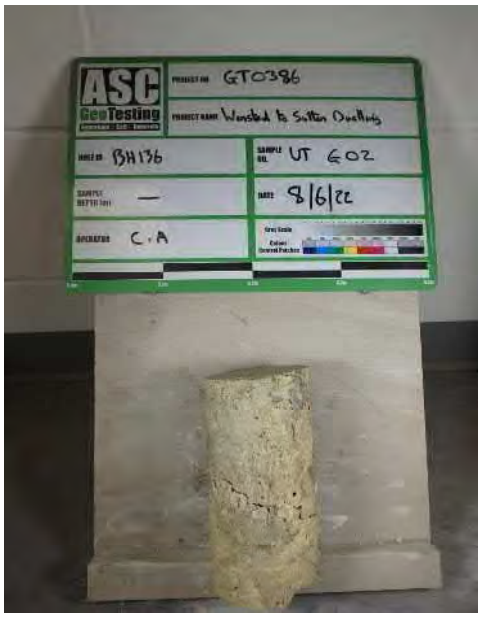
| | | | |
|---|---|---|---|
| | **UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION**<br>**BS 1377 : Part 7 : 1990 : Clause 8** | Job Ref | **GT0386** |
| | | Borehole / Pit No | BH136 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | GTSL202206087 |
| | | Depth (m) | 0 |
| Soil Description | GROUT. 14 day test | Sample type | UT |



| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

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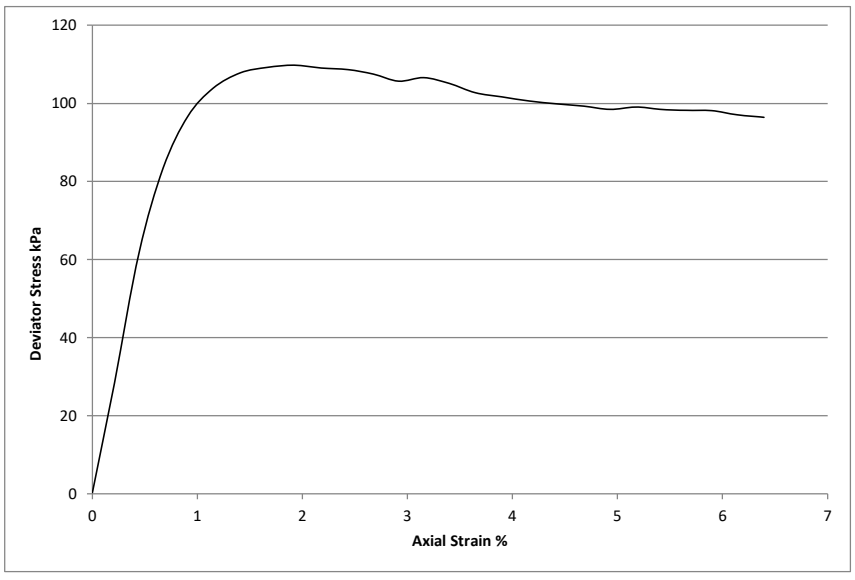
| | UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION<br>BS 1377 : Part 7 : 1990 : Clause 8 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH136 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | GTSL202206088 |
| | | Depth (m) | 0.00 |
| Soil Description | GROUT. 14 day test | Sample type | UT |

| Sample Details | | Single Specimen |
|---|---|---|
| Sample Condition | | Undisturbed |
| Sample Length | (mm): | 200 |
| Sample Diameter | (mm): | 101.6 |
| Moisture Content | (%): | 180 |
| Bulk Density | ($Mg/m^3$) | 1.23 |
| Dry Density | ($Mg/m^3$) | 0.44 |

| Test Details | | |
|---|---|---|
| Membrane Thickness | (mm): | 0.4 |
| Membrane Correction | kPa: | 0.21 |
| Axial Displacement Rate | %/min: | 1 |
| Cell Pressure | kPa: | 350 |
| Strain at Failure | %: | 1.92 |
| Max. Corrected Deviator Stress | kPa: | 110 |
| Shear Strength | kPa: | 55 |
| Mode of Failure | | Brittle |

Orientation and position of the specimen within the original sample

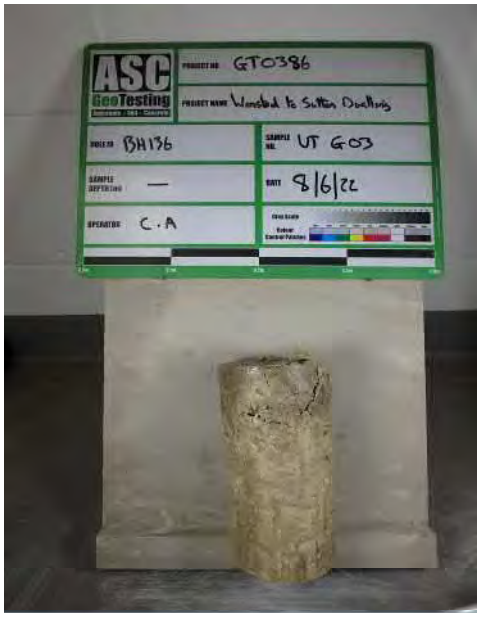


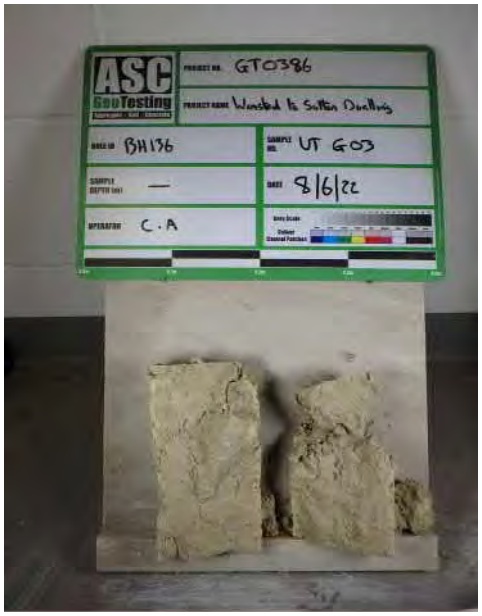

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | | | |
|---|---|---|---|
| | **UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION**<br>**BS 1377 : Part 7 : 1990 : Clause 8** | Job Ref | **GT0386** |
| | | Borehole / Pit No | BH136 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | GTSL202206088 |
| | | Depth (m) | 0 |
| Soil Description | GROUT. 14 day test | Sample type | UT |




| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

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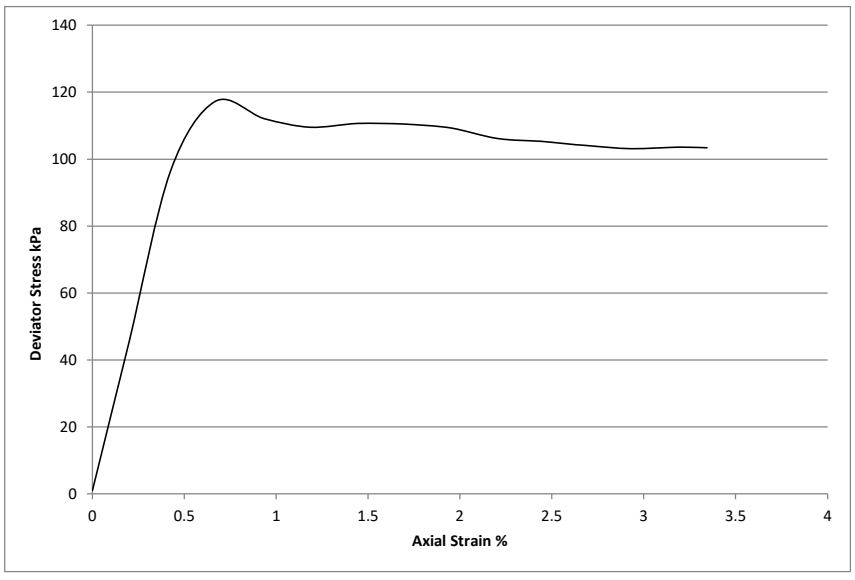
| | UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION<br>BS 1377 : Part 7 : 1990 : Clause 8 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH136 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | GTSL202206089 |
| | | Depth (m) | 0.00 |
| Soil Description | GROUT. 28 day test. | Sample type | UT |

| Sample Details | | Single Specimen |
|---|---|---|
| Sample Condition | | Undisturbed |
| Sample Length | (mm): | 200.1 |
| Sample Diameter | (mm): | 102.4 |
| Moisture Content | (%): | 191 |
| Bulk Density | ($Mg/m^3$) | 1.23 |
| Dry Density | ($Mg/m^3$) | 0.42 |

| Test Details | | |
|---|---|---|
| Membrane Thickness | (mm): | 0.4 |
| Membrane Correction | kPa: | 0.07 |
| Axial Displacement Rate | %/min: | 1 |
| Cell Pressure | kPa: | 20 |
| Strain at Failure | %: | 0.67 |
| Max. Corrected Deviator Stress | kPa: | 117 |
| Shear Strength | kPa: | 59 |
| Mode of Failure | | Brittle |

Orientation and position of the specimen within the original sample




| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

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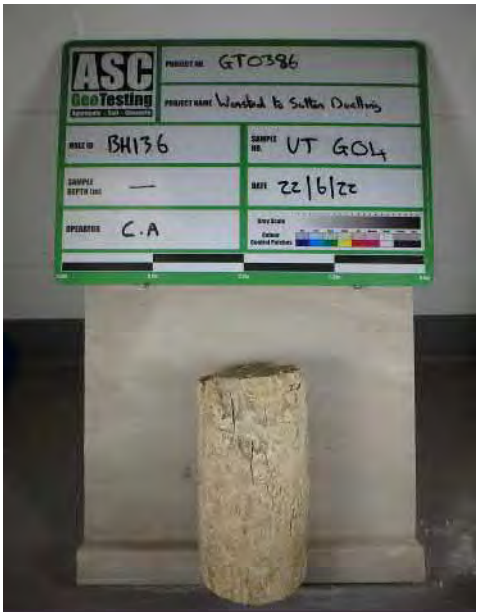
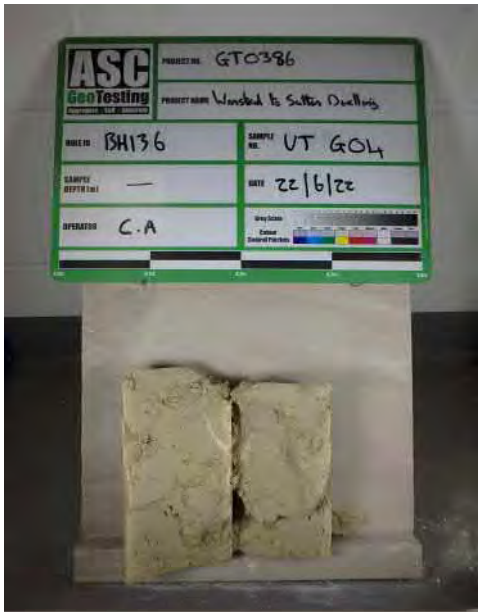
| | | | |
|---|---|---|---|
| | **UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION**<br>**BS 1377 : Part 7 : 1990 : Clause 8** | Job Ref | **GT0386** |
| | | Borehole / Pit No | BH136 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | GTSL202206089 |
| | | Depth (m) | 0 |
| Soil Description | GROUT. 28 day test. | Sample type | UT |




| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

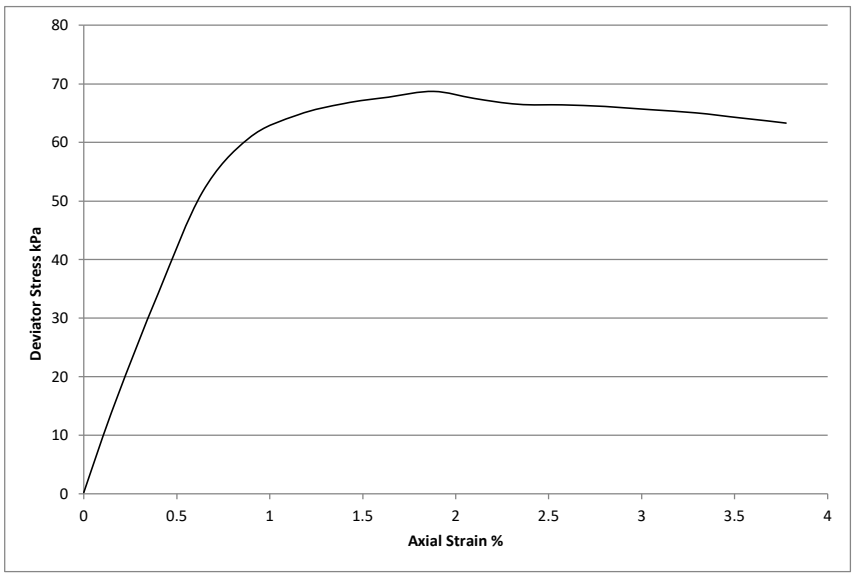
Authorised Approvers: Ben Armstrong (Quality Manager)

| | UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION<br>BS 1377 : Part 7 : 1990 : Clause 8 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH136 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | GTSL2022060810 |
| | | Depth (m) | 0.00 |
| Soil Description | GROUT. 28 day test. | Sample type | UT |

| Sample Details | | Single Specimen |
|---|---|---|
| Sample Condition | | Undisturbed |
| Sample Length | (mm): | 210 |
| Sample Diameter | (mm): | 103.5 |
| Moisture Content | (%): | 208 |
| Bulk Density | ($Mg/m^3$) | 1.18 |
| Dry Density | ($Mg/m^3$) | 0.38 |

| Test Details | | |
|---|---|---|
| Membrane Thickness | (mm): | 0.4 |
| Membrane Correction | kPa: | 0.20 |
| Axial Displacement Rate | %/min: | 1 |
| Cell Pressure | kPa: | 170 |
| Strain at Failure | %: | 1.88 |
| Max. Corrected Deviator Stress | kPa: | 69 |
| Shear Strength | kPa: | 34 |
| Mode of Failure | | Brittle |

Orientation and position of the specimen within the original sample




| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

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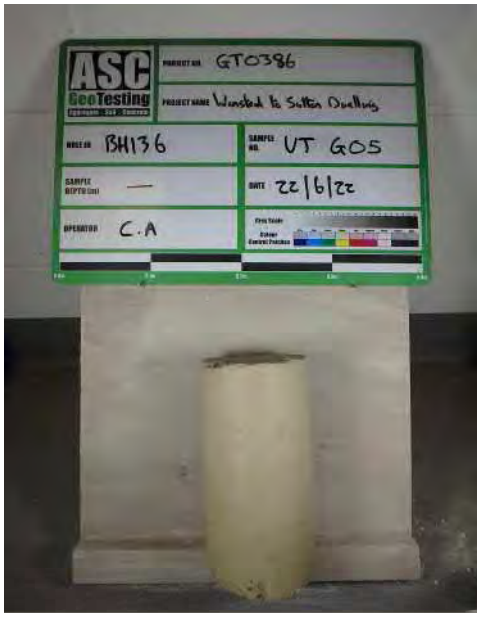
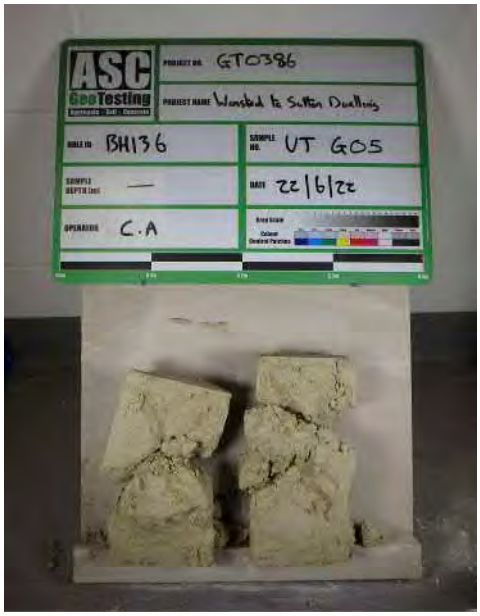
|---|---|---|---|
| | **UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION**<br>**BS 1377 : Part 7 : 1990 : Clause 8** | Job Ref | **GT0386** |
| | | Borehole / Pit No | BH136 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | GTSL2022060810 |
| | | Depth (m) | 0 |
| Soil Description | GROUT. 28 day test. | Sample type | UT |




| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

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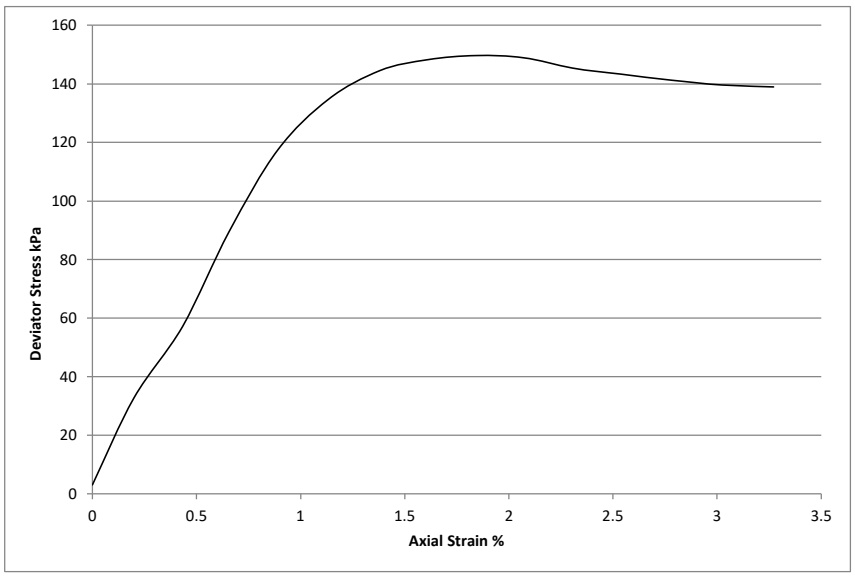
| | UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION<br>BS 1377 : Part 7 : 1990 : Clause 8 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH136 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | GTSL2022060811 |
| | | Depth (m) | 0.00 |
| Soil Description | GROUT. 28 day test. | Sample type | UT |

| Sample Details | | Single Specimen |
|---|---|---|
| Sample Condition | | Undisturbed |
| Sample Length | (mm): | 210 |
| Sample Diameter | (mm): | 103.2 |
| Moisture Content | (%): | 186 |
| Bulk Density | ($Mg/m^3$) | 1.17 |
| Dry Density | ($Mg/m^3$) | 0.41 |

| Test Details | | |
|---|---|---|
| Membrane Thickness | (mm): | 0.4 |
| Membrane Correction | kPa: | 0.20 |
| Axial Displacement Rate | %/min: | 1 |
| Cell Pressure | kPa: | 350 |
| Strain at Failure | %: | 1.84 |
| Max. Corrected Deviator Stress | kPa: | 150 |
| Shear Strength | kPa: | 75 |
| Mode of Failure | | Brittle |

Orientation and position of the specimen within the original sample




| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

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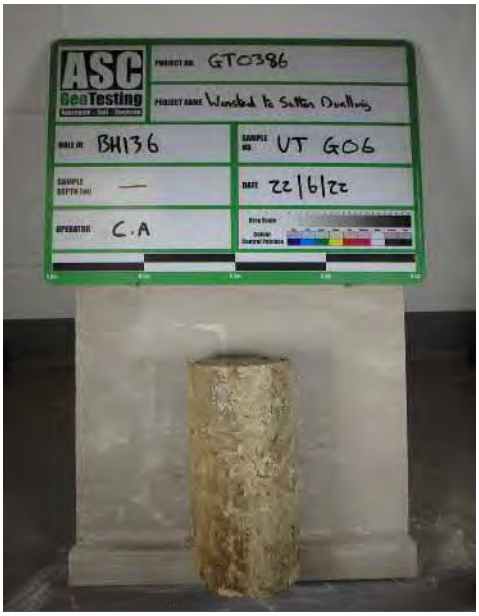
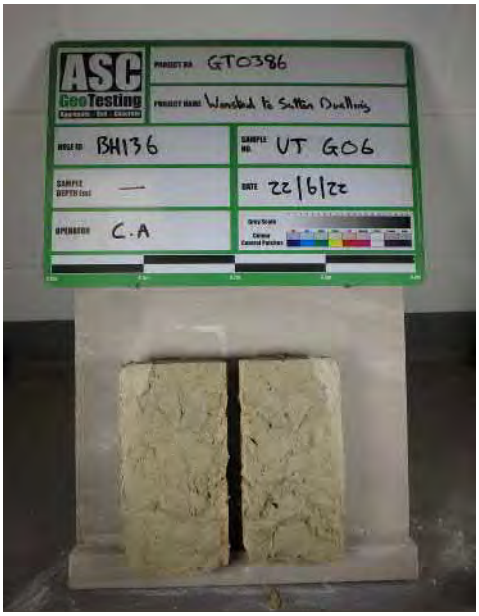
|---|---|---|---|
| | **UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION**<br>**BS 1377 : Part 7 : 1990 : Clause 8** | Job Ref | **GT0386** |
| | | Borehole / Pit No | BH136 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | GTSL2022060811 |
| | | Depth (m) | 0 |
| Soil Description | GROUT. 28 day test. | Sample type | UT |




| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

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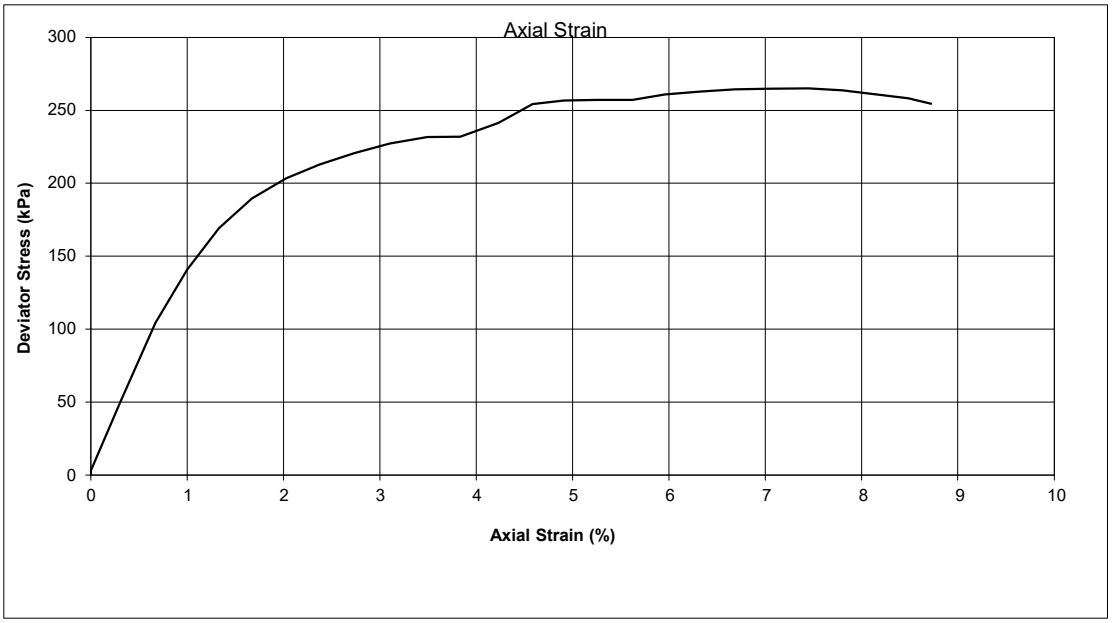
| | UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE<br>BS 1377 : Part 7 : 1990 : Clause 9 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH104 & BH104A |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #7795331435170011 |
| | | Depth (m) | 16.20 |
| Soil Description | Very stiff dark grey slightly gravelly CLAY. | Sample type | CS |

| Sample Details | | Specimen 1 |
|---|---|---|
| Sample Condition | | Undisturbed |
| Sample Length | (mm): | 140 |
| Sample Diameter | (mm): | 70 |
| Moisture Content | (%): | 20 |
| Bulk Density | ($Mg/m^3$) | 2.10 |
| Dry Density | ($Mg/m^3$) | 1.75 |

Orientation within original sample

| Test Details | | Stage 1 | Stage 2 | Stage 3 |
|---|---|---|---|---|
| Membrane Thickness | (mm): | 0.40 | 0.40 | 0.40 |
| Membrane Correction | kPa: | 0.60 | 0.83 | 1.04 |
| Axial Displacement Rate | %/min: | 1.428571429 | 1.428571429 | 1.428571429 |
| Cell Pressure | kPa: | 150 | 300 | 450 |
| Strain at Failure | %: | 3.84 | 5.25 | 7.45 |
| Max. Deviator Stress | kPa: | 232 | 257 | 265 |
| Shear Strength | kPa: | 116 | 129 | 132 |
| Failure Mode | | Brittle | | |

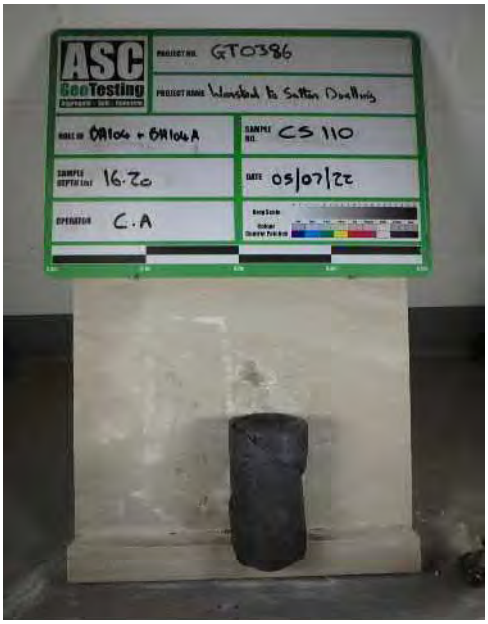


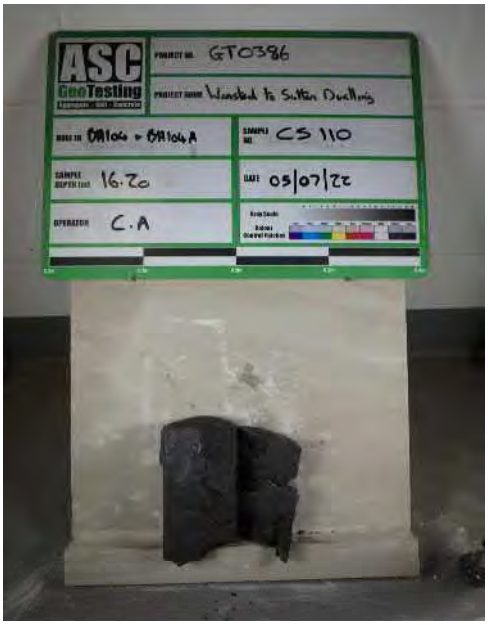

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE<br>BS 1377 : Part 7 : 1990 : Clause 9 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH104 & BH104A |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #7795331435170011 |
| | | Depth (m) | 16.20 |
| Soil Description | Very stiff dark grey slightly gravelly CLAY. | Sample type | CS |




| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA
Authorised Approvers: Ben Armstrong (Quality Manager)

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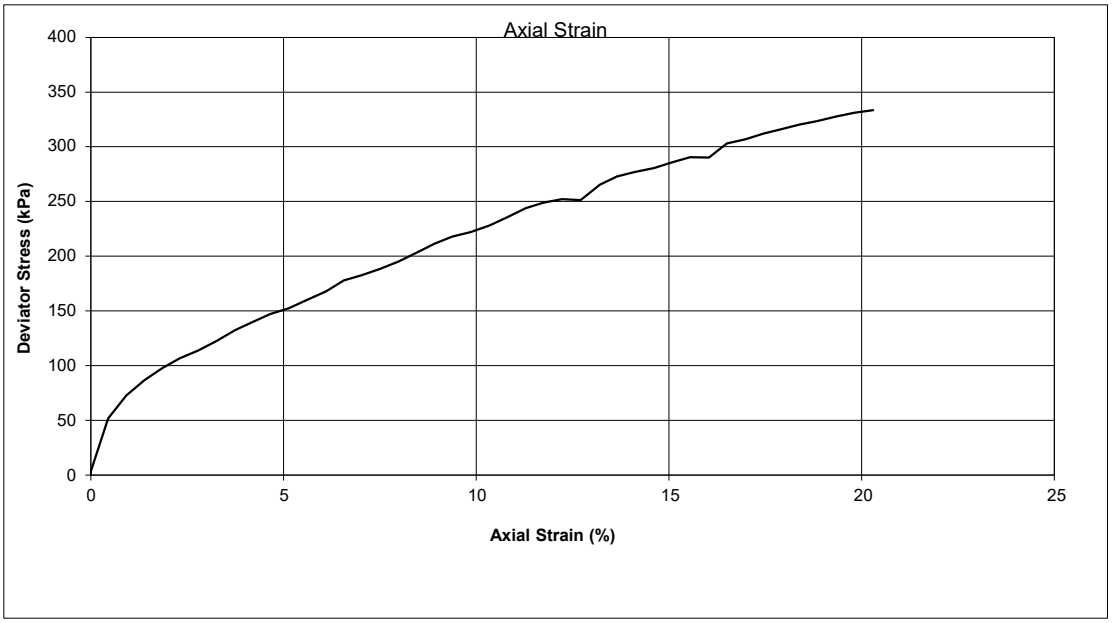
| | UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE<br>BS 1377 : Part 7 : 1990 : Clause 9 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH105 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #8062644786220008 |
| | | Depth (m) | 8.75 |
| Soil Description | Firm to stiff light brown mottled light grey & black slightly sandy CLAY. | Sample type | CS |

| Sample Details | | Specimen 1 |
|---|---|---|
| Sample Condition | | Undisturbed |
| Sample Length | (mm): | 210 |
| Sample Diameter | (mm): | 102.1 |
| Moisture Content | (%): | 12 |
| Bulk Density | ($Mg/m^3$) | 2.26 |
| Dry Density | ($Mg/m^3$) | 2.02 |

Orientation within original sample

| Test Details | | Stage 1 | Stage 2 | Stage 3 |
|---|---|---|---|---|
| Membrane Thickness | (mm): | 0.40 | 0.40 | 0.40 |
| Membrane Correction | kPa: | 1.01 | 1.22 | 1.53 |
| Axial Displacement Rate | %/min: | 0.952380952 | 0.952380952 | 0.952380952 |
| Cell Pressure | kPa: | 90 | 180 | 270 |
| Strain at Failure | %: | 12.23 | 15.55 | 20.30 |
| Max. Deviator Stress | kPa: | 252 | 290 | 334 |
| Shear Strength | kPa: | 126 | 145 | 167 |
| Failure Mode | | Compound | | |

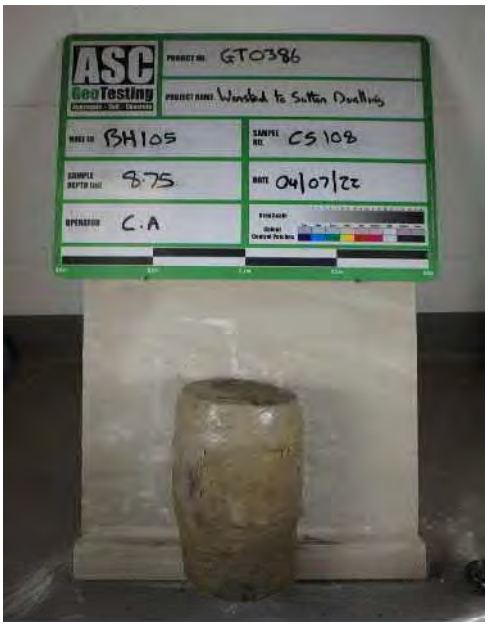


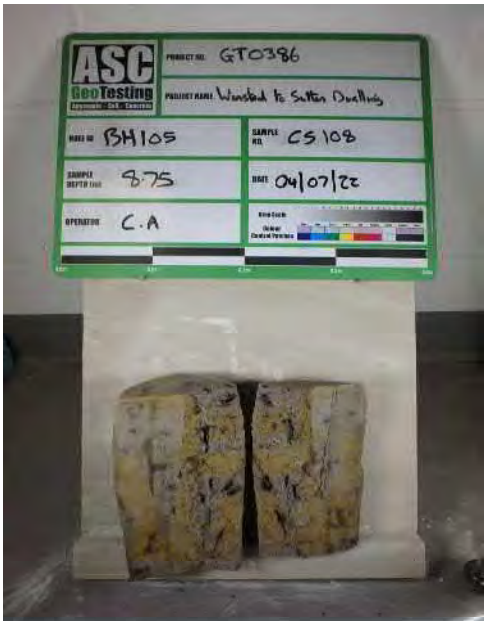

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | | | |
|---|---|---|---|
| | **UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE**<br>**BS 1377 : Part 7 : 1990 : Clause 9** | Job Ref | **GT0386** |
| | | Borehole / Pit No | BH105 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #8062644786220008 |
| | | Depth (m) | 8.75 |
| Soil Description | Firm to stiff light brown mottled light grey & black slightly sandy CLAY. | Sample type | CS |




| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

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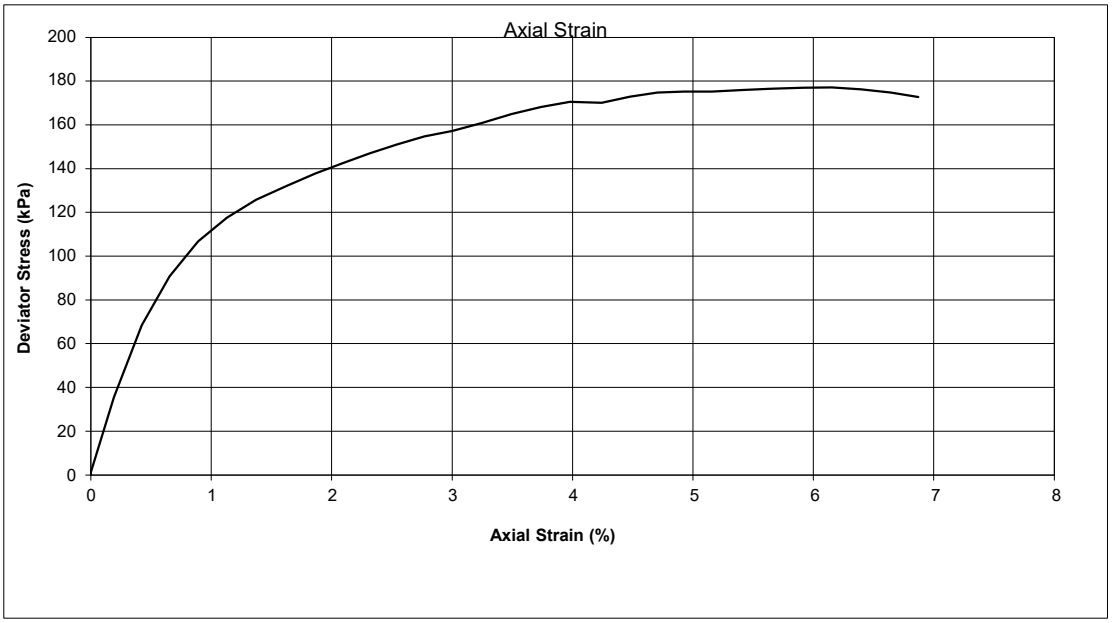
| | UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE<br>BS 1377 : Part 7 : 1990 : Clause 9 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH106 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #1338667958660028 |
| | | Depth (m) | 15.10 |
| Soil Description | Stiff dark grey CLAY. | Sample type | CS |

| Sample Details | | Specimen 1 |
|---|---|---|
| Sample Condition | | Undisturbed |
| Sample Length | (mm): | 210 |
| Sample Diameter | (mm): | 102.9 |
| Moisture Content | (%): | 20 |
| Bulk Density | ($Mg/m^3$) | 2.04 |
| Dry Density | ($Mg/m^3$) | 1.70 |

Orientation within original sample

| Test Details | | Stage 1 | Stage 2 | Stage 3 |
|---|---|---|---|---|
| Membrane Thickness | (mm): | 0.40 | 0.40 | 0.40 |
| Membrane Correction | kPa: | 0.42 | 0.56 | 0.61 |
| Axial Displacement Rate | %/min: | 0.952380952 | 0.952380952 | 0.952380952 |
| Cell Pressure | kPa: | 150 | 300 | 450 |
| Strain at Failure | %: | 3.98 | 5.16 | 5.91 |
| Max. Deviator Stress | kPa: | 171 | 175 | 177 |
| Shear Strength | kPa: | 85 | 88 | 89 |
| Failure Mode | | Compound | | |




| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE<br>BS 1377 : Part 7 : 1990 : Clause 9 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH106 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #1338667958660028 |
| | | Depth (m) | 15.10 |
| Soil Description | Stiff dark grey CLAY. | Sample type | CS |

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

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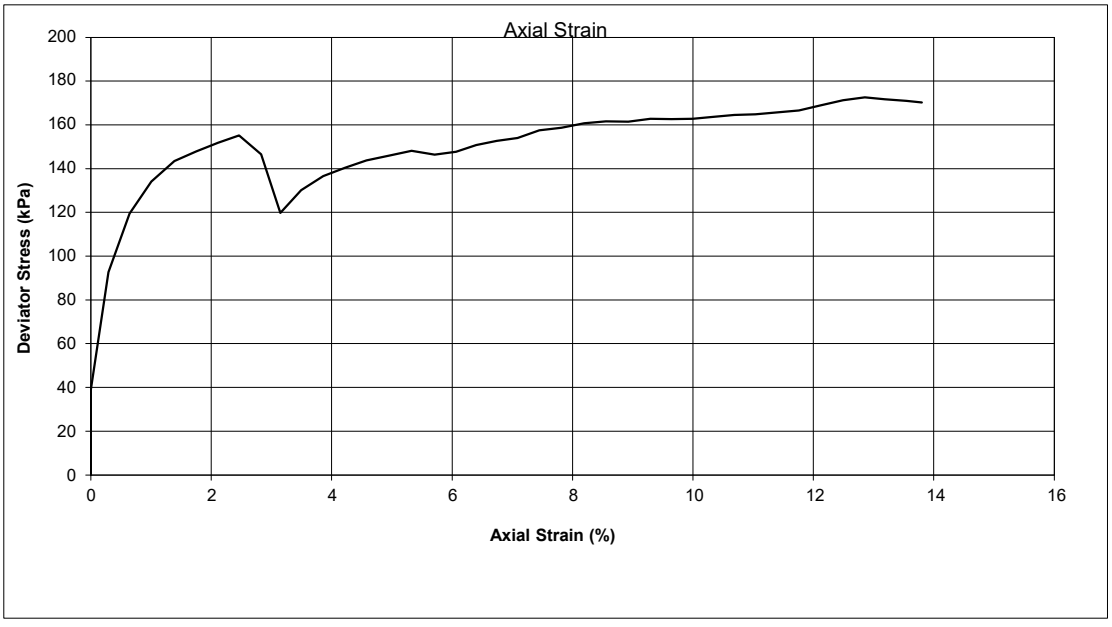
| | UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE<br>BS 1377 : Part 7 : 1990 : Clause 9 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH107 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | GTSL202205047 |
| | | Depth (m) | 11.90 |
| Soil Description | Stiff dark grey CLAY. | Sample type | CS |

| Sample Details | | Specimen 1 |
|---|---|---|
| Sample Condition | | Undisturbed |
| Sample Length | (mm): | 140 |
| Sample Diameter | (mm): | 70 |
| Moisture Content | (%): | 20 |
| Bulk Density | ($Mg/m^3$) | 2.02 |
| Dry Density | ($Mg/m^3$) | 1.69 |

Orientation within original sample

| Test Details | | Stage 1 | Stage 2 | Stage 3 |
|---|---|---|---|---|
| Membrane Thickness | (mm): | 0.40 | 0.40 | 0.40 |
| Membrane Correction | kPa: | | 0.84 | 1.54 |
| Axial Displacement Rate | %/min: | 1.428571429 | 1.428571429 | 1.428571429 |
| Cell Pressure | kPa: | 120 | 240 | 360 |
| Strain at Failure | %: | 2.46 | 5.33 | 12.86 |
| Max. Deviator Stress | kPa: | 155 | 148 | 173 |
| Shear Strength | kPa: | 78 | 74 | 86 |
| Failure Mode | | Compound | | |

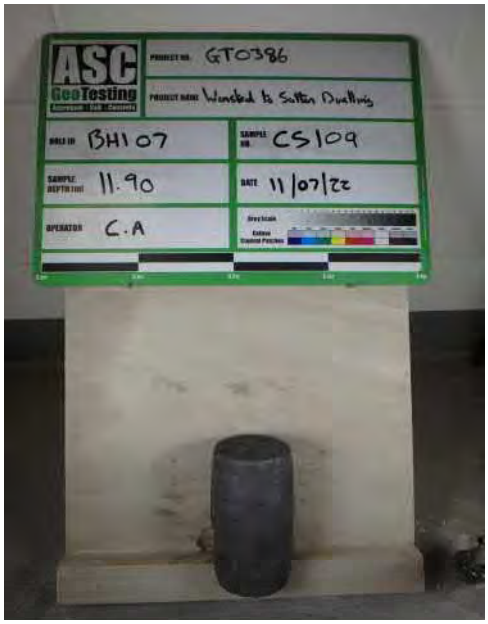


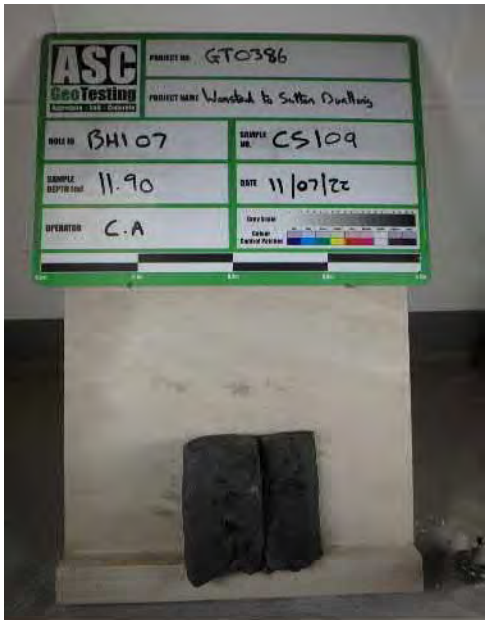

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE<br>BS 1377 : Part 7 : 1990 : Clause 9 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH107 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | GTSL202205047 |
| | | Depth (m) | 11.90 |
| Soil Description | Stiff dark grey CLAY. | Sample type | CS |




| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA
Authorised Approvers: Ben Armstrong (Quality Manager)

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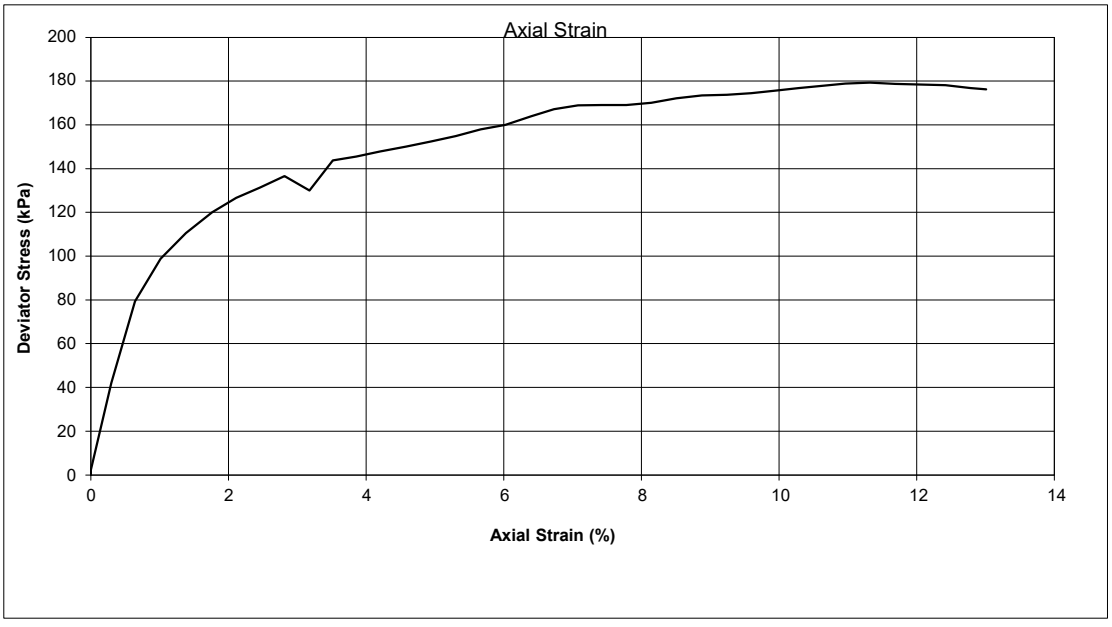
| | UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE<br>BS 1377 : Part 7 : 1990 : Clause 9 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH107 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | GTSL202205048 |
| | | Depth (m) | 12.90 |
| Soil Description | Stiff dark grey CLAY | Sample type | CS |

| Sample Details | | Specimen 1 |
|---|---|---|
| Sample Condition | | Undisturbed |
| Sample Length | (mm): | 140.1 |
| Sample Diameter | (mm): | 69.9 |
| Moisture Content | (%): | 20 |
| Bulk Density | ($Mg/m^3$) | 2.05 |
| Dry Density | ($Mg/m^3$) | 1.71 |

Orientation within original sample

| Test Details | | Stage 1 | Stage 2 | Stage 3 |
|---|---|---|---|---|
| Membrane Thickness | (mm): | 0.40 | 0.40 | 0.40 |
| Membrane Correction | kPa: | 0.44 | 0.91 | 1.40 |
| Axial Displacement Rate | %/min: | 1.427551749 | 1.427551749 | 1.427551749 |
| Cell Pressure | kPa: | 130 | 260 | 390 |
| Strain at Failure | %: | 2.81 | 6.02 | 11.32 |
| Max. Deviator Stress | kPa: | 137 | 160 | 179 |
| Shear Strength | kPa: | 68 | 80 | 90 |
| Failure Mode | | Brittle | | |




| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE<br>BS 1377 : Part 7 : 1990 : Clause 9 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH107 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | GTSL202205048 |
| | | Depth (m) | 12.90 |
| Soil Description | Stiff dark grey CLAY | Sample type | CS |

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

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# UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE

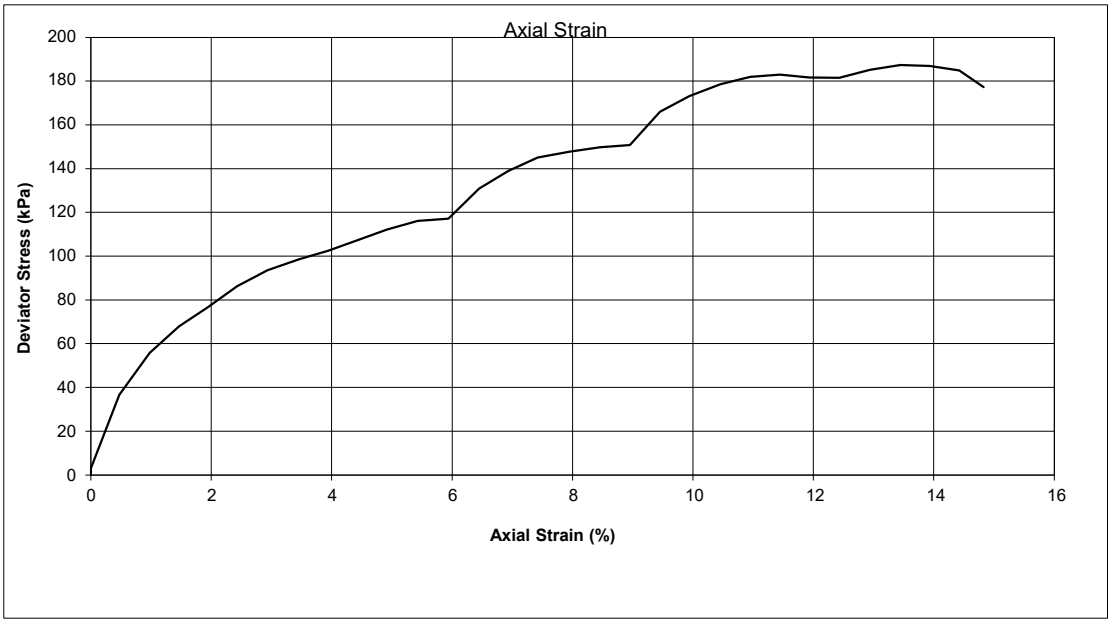
**BS 1377 : Part 7 : 1990 : Clause 9**

| | | | |
|---|---|---|---|
| | | Job Ref | **GT0386** |
| | | Borehole / Pit No | BH108 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #7104999905950015 |
| | | Depth (m) | 10.40 |
| Soil Description | Firm to stiff dark grey mottled light grey slightly gravelly slightly sandy CLAY. | Sample type | CS |

| **Sample Details** | | Specimen 1 |
|---|---|---|
| Sample Condition | | Undisturbed |
| Sample Length | (mm): | 200 |
| Sample Diameter | (mm): | 100 |
| Moisture Content | (%): | 23 |
| Bulk Density | ($Mg/m^3$) | 1.97 |
| Dry Density | ($Mg/m^3$) | 1.60 |

Orientation within original sample

| **Test Details** | | Stage 1 | Stage 2 | Stage 3 |
|---|---|---|---|---|
| Membrane Thickness | (mm): | 0.40 | 0.40 | 0.40 |
| Membrane Correction | kPa: | 0.63 | 0.82 | 1.11 |
| Axial Displacement Rate | %/min: | 1 | 1 | 1 |
| Cell Pressure | kPa: | 110 | 220 | 330 |
| Strain at Failure | %: | 5.94 | 8.95 | 13.45 |
| Max. Deviator Stress | kPa: | 117 | 151 | 187 |
| Shear Strength | kPa: | 59 | 75 | 94 |
| Failure Mode | | Compound | | |

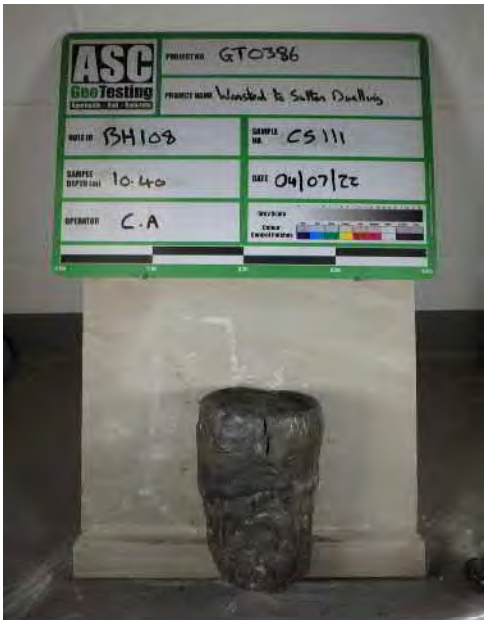


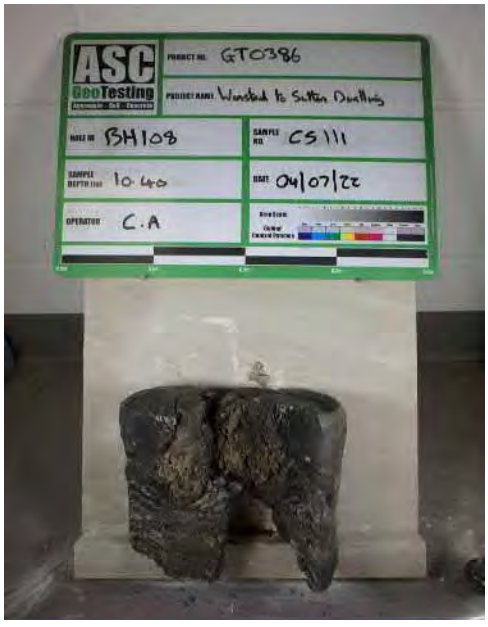

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE<br>BS 1377 : Part 7 : 1990 : Clause 9 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH108 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #7104999905950015 |
| | | Depth (m) | 10.40 |
| Soil Description | Firm to stiff dark grey mottled light grey slightly gravelly slightly sandy CLAY. | Sample type | CS |




| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

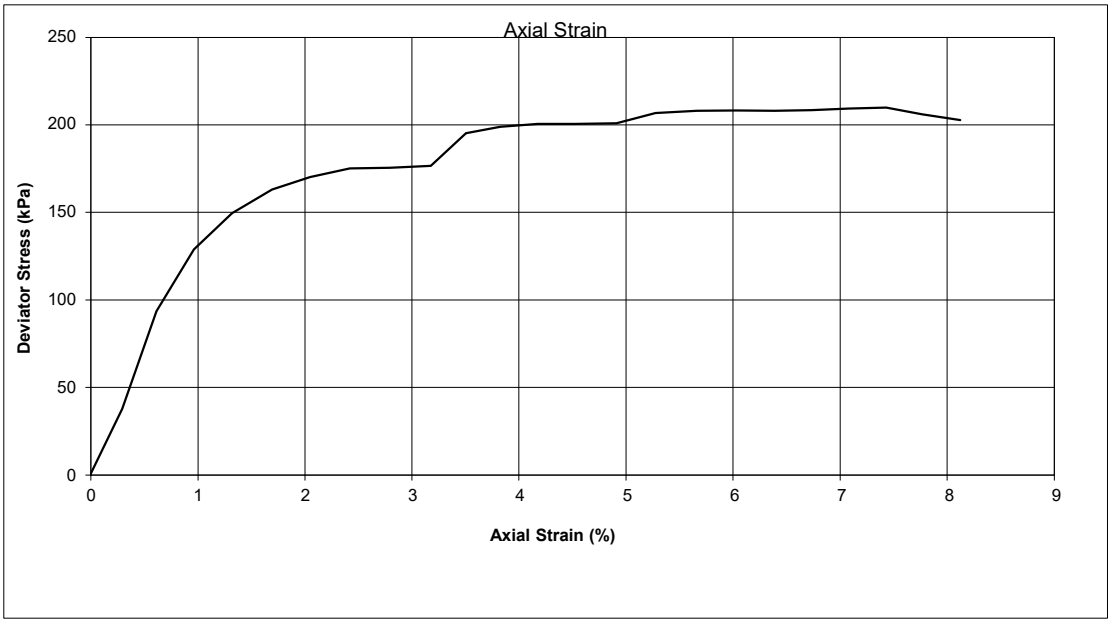
UKAS TESTING 8927

| | UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE<br>BS 1377 : Part 7 : 1990 : Clause 9 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH108 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #7104999905950019 |
| | | Depth (m) | 17.50 |
| Soil Description | Very stiff dark grey CLAY. | Sample type | CS |

| Sample Details | | Specimen 1 |
|---|---|---|
| Sample Condition | | Undisturbed |
| Sample Length | (mm): | 140.1 |
| Sample Diameter | (mm): | 70 |
| Moisture Content | (%): | 18 |
| Bulk Density | ($Mg/m^3$) | 2.12 |
| Dry Density | ($Mg/m^3$) | 1.80 |

Orientation within original sample

| Test Details | | Stage 1 | Stage 2 | Stage 3 |
|---|---|---|---|---|
| Membrane Thickness | (mm): | 0.40 | 0.40 | 0.40 |
| Membrane Correction | kPa: | 0.44 | 0.77 | 1.03 |
| Axial Displacement Rate | %/min: | 1.427551749 | 1.427551749 | 1.427551749 |
| Cell Pressure | kPa: | 170 | 340 | 510 |
| Strain at Failure | %: | 2.79 | 4.91 | 7.43 |
| Max. Deviator Stress | kPa: | 175 | 201 | 210 |
| Shear Strength | kPa: | 88 | 100 | 105 |
| Failure Mode | | Brittle | | |

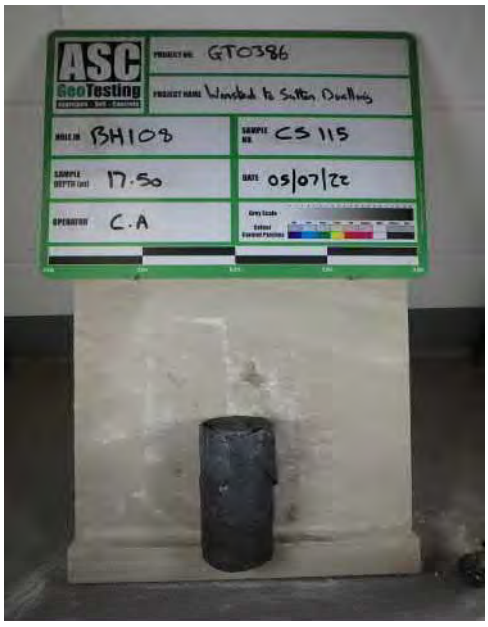


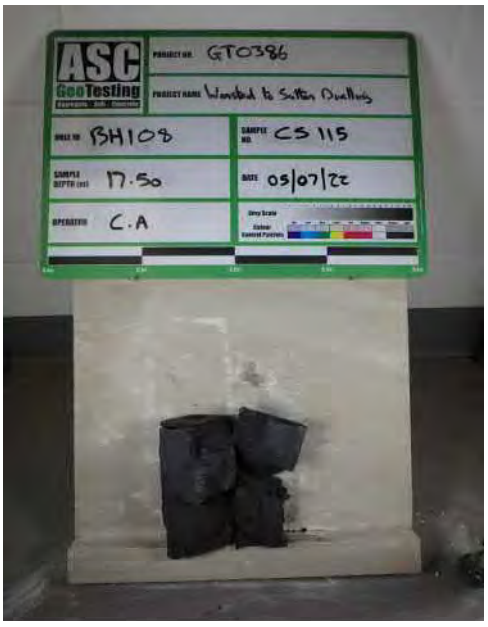

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE<br>BS 1377 : Part 7 : 1990 : Clause 9 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH108 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #7104999905950019 |
| | | Depth (m) | 17.50 |
| Soil Description | Very stiff dark grey CLAY. | Sample type | CS |




| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

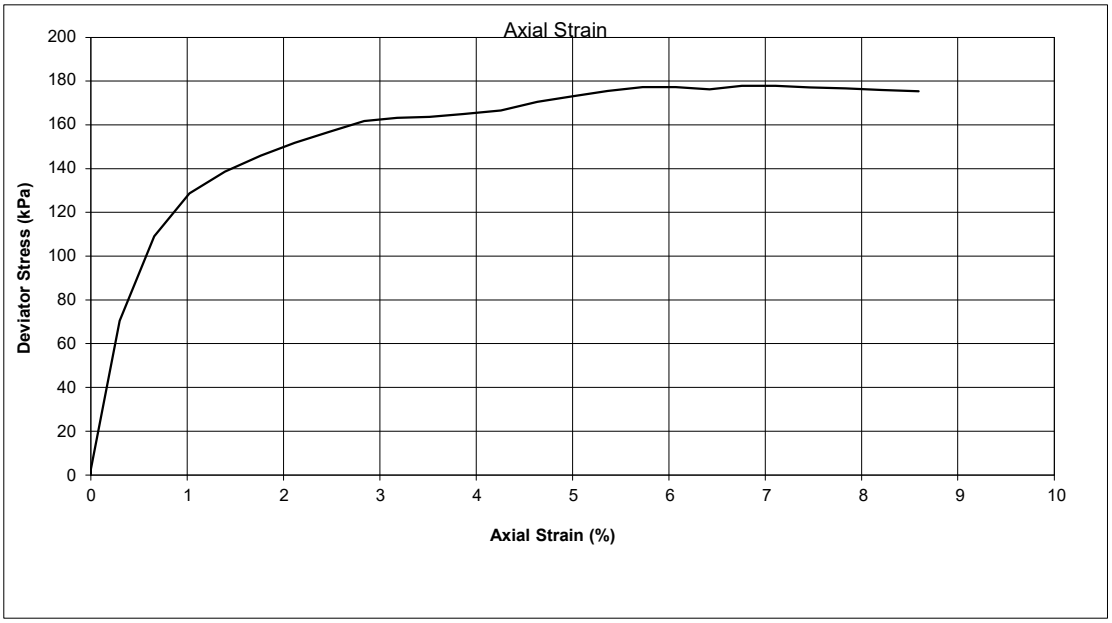
UKAS TESTING 8927

| | UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE<br>BS 1377 : Part 7 : 1990 : Clause 9 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH111 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #5927434012250030 |
| | | Depth (m) | 11.40 |
| Soil Description | Stiff dark grey CLAY. | Sample type | CS |

| Sample Details | | Specimen 1 |
|---|---|---|
| Sample Condition | | Undisturbed |
| Sample Length | (mm): | 140 |
| Sample Diameter | (mm): | 70 |
| Moisture Content | (%): | 26 |
| Bulk Density | ($Mg/m^3$) | 1.94 |
| Dry Density | ($Mg/m^3$) | 1.54 |

Orientation within original sample

| Test Details | | Stage 1 | Stage 2 | Stage 3 |
|---|---|---|---|---|
| Membrane Thickness | (mm): | 0.40 | 0.40 | 0.40 |
| Membrane Correction | kPa: | 0.39 | 0.61 | 1.00 |
| Axial Displacement Rate | %/min: | 1.428571429 | 1.428571429 | 1.428571429 |
| Cell Pressure | kPa: | 110 | 220 | 330 |
| Strain at Failure | %: | 2.47 | 3.87 | 7.11 |
| Max. Deviator Stress | kPa: | 157 | 165 | 178 |
| Shear Strength | kPa: | 78 | 83 | 89 |
| Failure Mode | | Compound | | |




| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

| | UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE<br>BS 1377 : Part 7 : 1990 : Clause 9 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH111 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #5927434012250030 |
| | | Depth (m) | 11.40 |
| Soil Description | Stiff dark grey CLAY. | Sample type | CS |

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA
Authorised Approvers: Ben Armstrong (Quality Manager)

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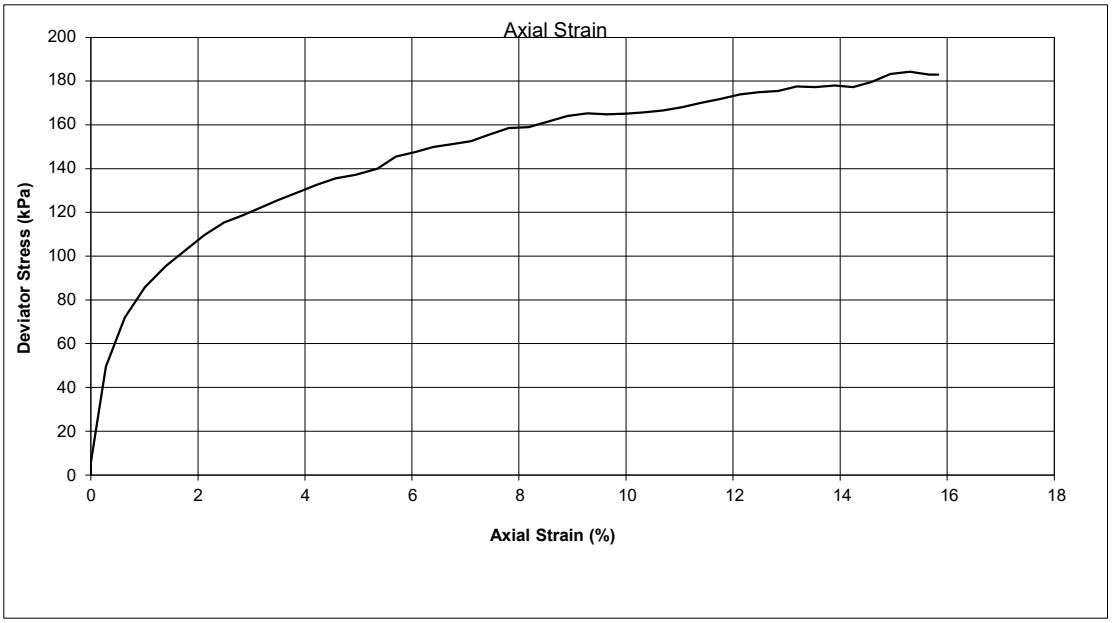
| | UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE<br>BS 1377 : Part 7 : 1990 : Clause 9 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH112 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #1351241376870010 |
| | | Depth (m) | 11.00 |
| Soil Description | Stiff dark grey CLAY. | Sample type | CS |

| Sample Details | | Specimen 1 |
|---|---|---|
| Sample Condition | | Undisturbed |
| Sample Length | (mm): | 140 |
| Sample Diameter | (mm): | 70.1 |
| Moisture Content | (%): | 21 |
| Bulk Density | ($Mg/m^3$) | 2.07 |
| Dry Density | ($Mg/m^3$) | 1.71 |

Orientation within original sample

| Test Details | | Stage 1 | Stage 2 | Stage 3 |
|---|---|---|---|---|
| Membrane Thickness | (mm): | 0.40 | 0.40 | 0.40 |
| Membrane Correction | kPa: | 0.77 | 1.10 | 1.76 |
| Axial Displacement Rate | %/min: | 1.428571429 | 1.428571429 | 1.428571429 |
| Cell Pressure | kPa: | 110 | 220 | 330 |
| Strain at Failure | %: | 4.94 | 8.18 | 15.31 |
| Max. Deviator Stress | kPa: | 137 | 159 | 184 |
| Shear Strength | kPa: | 69 | 80 | 92 |
| Failure Mode | | Brittle | | |

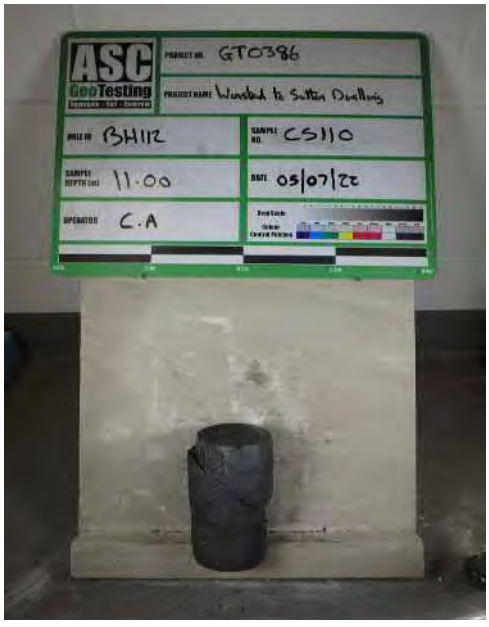


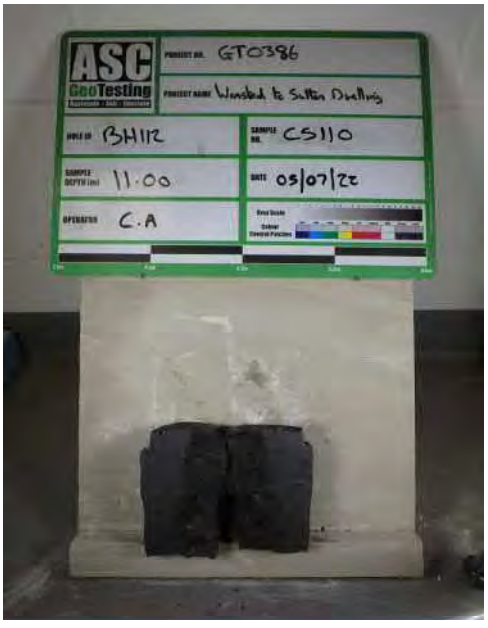

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE<br>BS 1377 : Part 7 : 1990 : Clause 9 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH112 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #1351241376870010 |
| | | Depth (m) | 11.00 |
| Soil Description | Stiff dark grey CLAY. | Sample type | CS |




| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA
Authorised Approvers: Ben Armstrong (Quality Manager)

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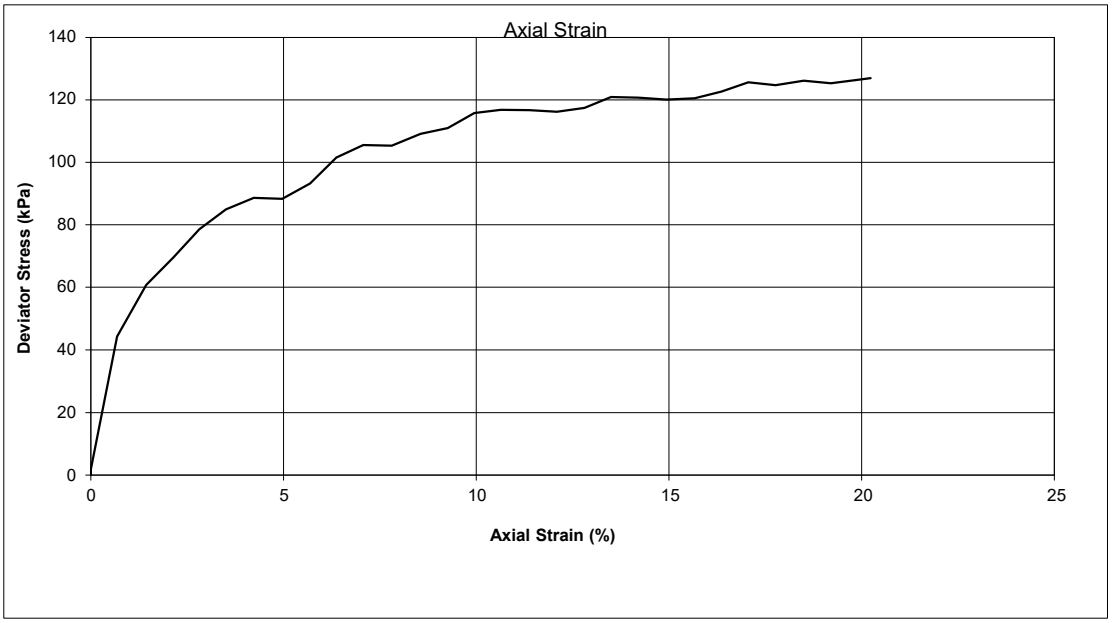
| | UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE<br>BS 1377 : Part 7 : 1990 : Clause 9 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH113 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #4654213425070001 |
| | | Depth (m) | 5.30 |
| Soil Description | Stiff dark grey CLAY. | Sample type | CS |

| Sample Details | | Specimen 1 |
|---|---|---|
| Sample Condition | | Undisturbed |
| Sample Length | (mm): | 140 |
| Sample Diameter | (mm): | 70 |
| Moisture Content | (%): | 24 |
| Bulk Density | ($Mg/m^3$) | 2.04 |
| Dry Density | ($Mg/m^3$) | 1.64 |

Orientation within original sample

| Test Details | | Stage 1 | Stage 2 | Stage 3 |
|---|---|---|---|---|
| Membrane Thickness | (mm): | 0.40 | 0.40 | 0.40 |
| Membrane Correction | kPa: | 0.66 | 1.00 | 2.22 |
| Axial Displacement Rate | %/min: | 1.428571429 | 1.428571429 | 1.428571429 |
| Cell Pressure | kPa: | 50 | 100 | 150 |
| Strain at Failure | %: | 4.23 | 7.07 | 20.24 |
| Max. Deviator Stress | kPa: | 89 | 105 | 127 |
| Shear Strength | kPa: | 44 | 53 | 63 |
| Failure Mode | | Compound | | |




| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA
Authorised Approvers: Ben Armstrong (Quality Manager)

| | | | |
|---|---|---|---|
| | **UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE**<br>**BS 1377 : Part 7 : 1990 : Clause 9** | Job Ref | **GT0386** |
| | | Borehole / Pit No | BH113 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #4654213425070001 |
| | | Depth (m) | 5.30 |
| Soil Description | Stiff dark grey CLAY. | Sample type | CS |

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

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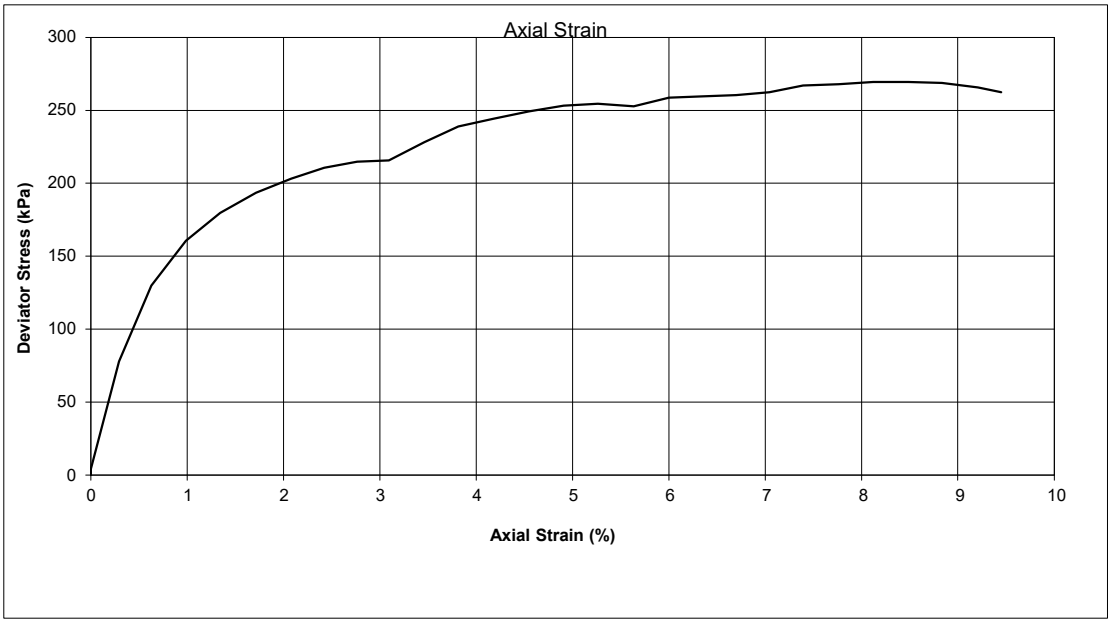
| | UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE<br>BS 1377 : Part 7 : 1990 : Clause 9 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH113 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #4654213425070004 |
| | | Depth (m) | 10.40 |
| Soil Description | Very stiff dark grey CLAY. | Sample type | CS |

| Sample Details | | Specimen 1 |
|---|---|---|
| Sample Condition | | Undisturbed |
| Sample Length | (mm): | 140 |
| Sample Diameter | (mm): | 70.1 |
| Moisture Content | (%): | 20 |
| Bulk Density | ($Mg/m^3$) | 2.07 |
| Dry Density | ($Mg/m^3$) | 1.72 |

Orientation within original sample

| Test Details | | Stage 1 | Stage 2 | Stage 3 |
|---|---|---|---|---|
| Membrane Thickness | (mm): | 0.40 | 0.40 | 0.40 |
| Membrane Correction | kPa: | 0.48 | 0.83 | 1.13 |
| Axial Displacement Rate | %/min: | 1.428571429 | 1.428571429 | 1.428571429 |
| Cell Pressure | kPa: | 100 | 200 | 300 |
| Strain at Failure | %: | 3.09 | 5.26 | 8.49 |
| Max. Deviator Stress | kPa: | 216 | 254 | 269 |
| Shear Strength | kPa: | 108 | 127 | 135 |
| Failure Mode | | Brittle | | |

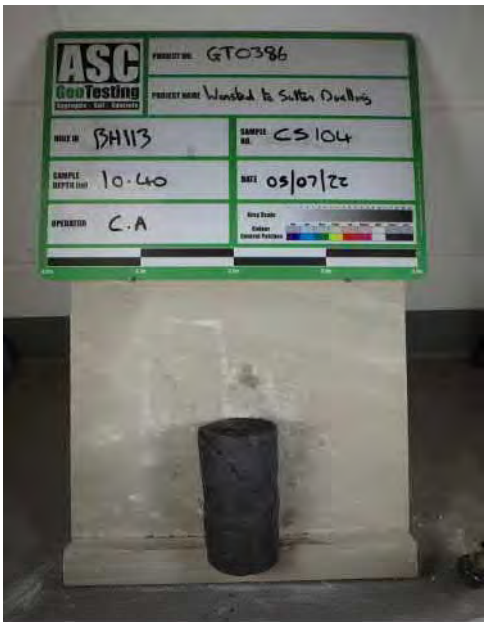


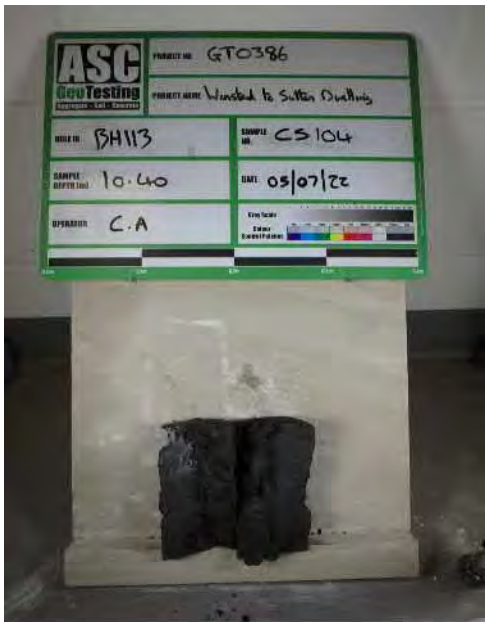

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE<br>BS 1377 : Part 7 : 1990 : Clause 9 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH113 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #4654213425070004 |
| | | Depth (m) | 10.40 |
| Soil Description | Very stiff dark grey CLAY. | Sample type | CS |




| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

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# UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE

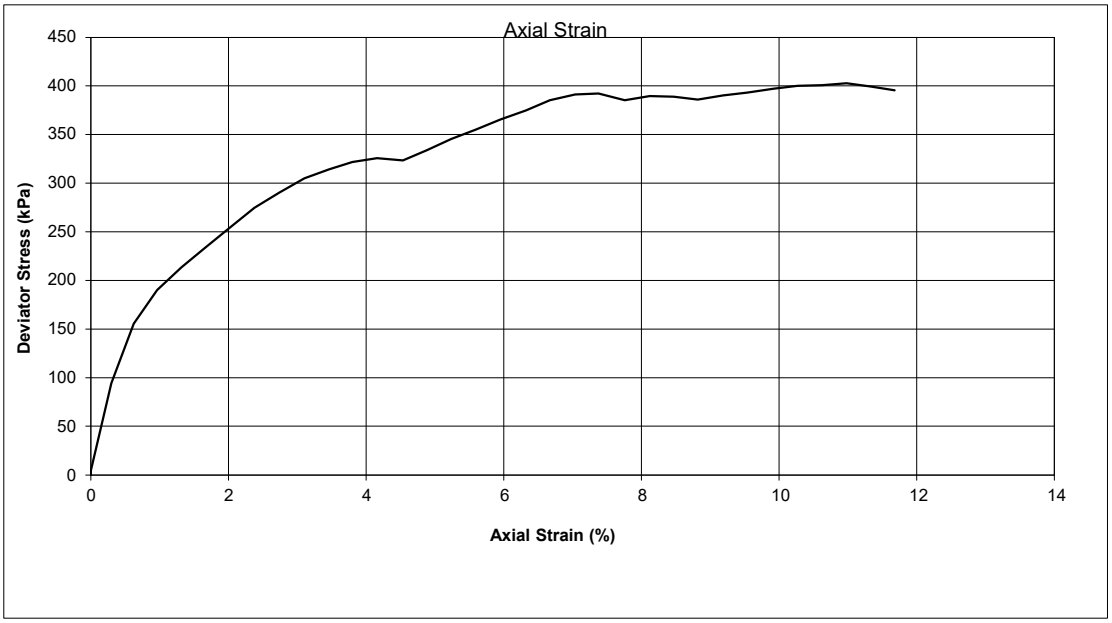
**BS 1377 : Part 7 : 1990 : Clause 9**

| | | | |
|---|---|---|---|
| | | Job Ref | **GT0386** |
| | | Borehole / Pit No | BH113 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #4654213425070008 |
| | | Depth (m) | 17.00 |
| Soil Description | Very stiff dark grey CLAY. | Sample type | CS |

| **Sample Details** | | Specimen 1 |
|---|---|---|
| Sample Condition | | Undisturbed |
| Sample Length | (mm): | 140 |
| Sample Diameter | (mm): | 70 |
| Moisture Content | (%): | 19 |
| Bulk Density | ($Mg/m^3$) | 2.05 |
| Dry Density | ($Mg/m^3$) | 1.72 |

Orientation within original sample

| **Test Details** | | Stage 1 | Stage 2 | Stage 3 |
|---|---|---|---|---|
| Membrane Thickness | (mm): | 0.40 | 0.40 | 0.40 |
| Membrane Correction | kPa: | 0.65 | 1.03 | 1.36 |
| Axial Displacement Rate | %/min: | 1.428571429 | 1.428571429 | 1.428571429 |
| Cell Pressure | kPa: | 170 | 340 | 510 |
| Strain at Failure | %: | 4.16 | 7.38 | 10.99 |
| Max. Deviator Stress | kPa: | 326 | 392 | 403 |
| Shear Strength | kPa: | 163 | 196 | 201 |
| Failure Mode | | Compound | | |

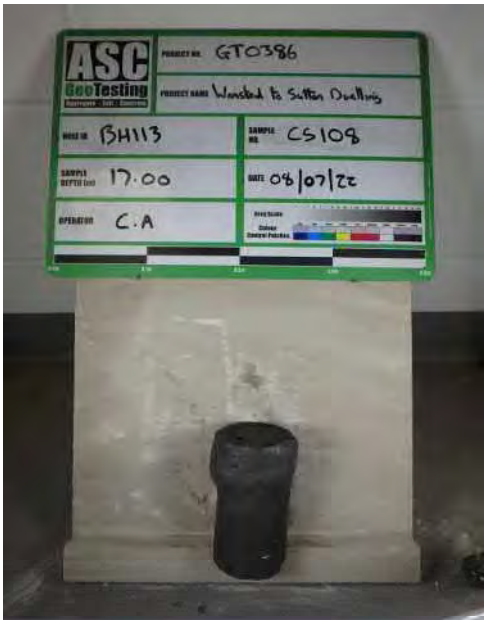


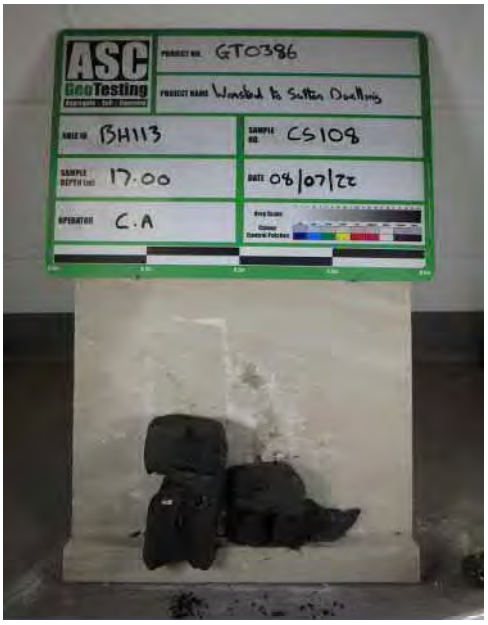

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE<br>BS 1377 : Part 7 : 1990 : Clause 9 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH113 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #4654213425070008 |
| | | Depth (m) | 17.00 |
| Soil Description | Very stiff dark grey CLAY. | Sample type | CS |




| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA
Authorised Approvers: Ben Armstrong (Quality Manager)

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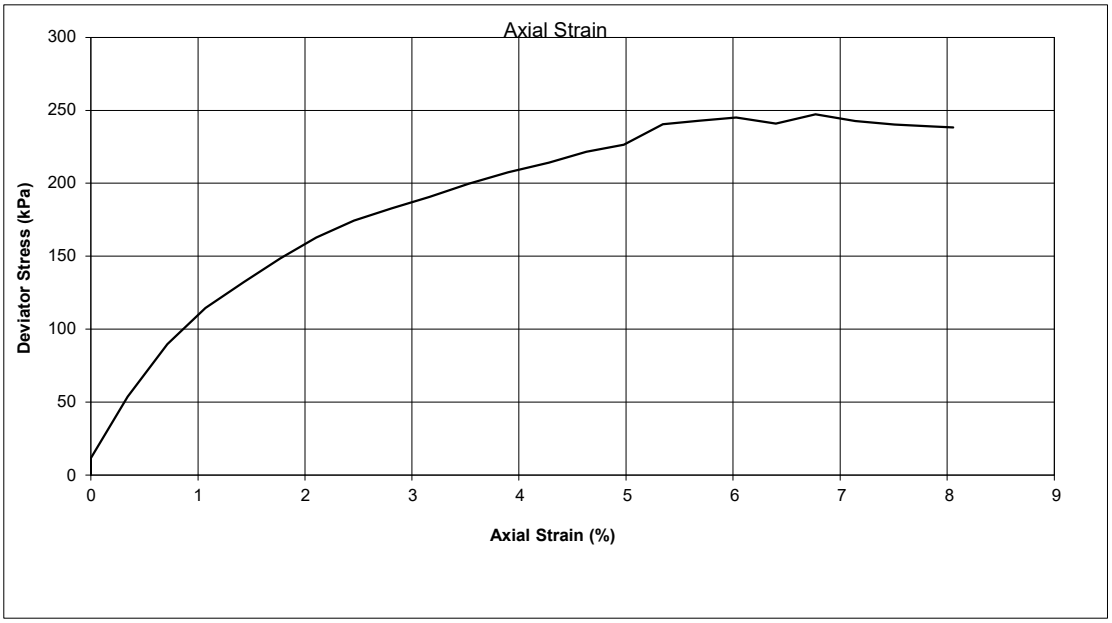
| | UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE<br>BS 1377 : Part 7 : 1990 : Clause 9 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH114 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #7621126988710022 |
| | | Depth (m) | 8.50 |
| Soil Description | Stiff dark grey CLAY. | Sample type | CS |

| Sample Details | | Specimen 1 |
|---|---|---|
| Sample Condition | | Undisturbed |
| Sample Length | (mm): | 140 |
| Sample Diameter | (mm): | 70 |
| Moisture Content | (%): | 23 |
| Bulk Density | ($Mg/m^3$) | 2.06 |
| Dry Density | ($Mg/m^3$) | 1.67 |

Orientation within original sample

| Test Details | | Stage 1 | Stage 2 | Stage 3 |
|---|---|---|---|---|
| Membrane Thickness | (mm): | 0.40 | 0.40 | 0.40 |
| Membrane Correction | kPa: | 0.78 | 0.91 | 0.97 |
| Axial Displacement Rate | %/min: | 1.428571429 | 1.428571429 | 1.428571429 |
| Cell Pressure | kPa: | 80 | 160 | 240 |
| Strain at Failure | %: | 4.98 | 6.03 | 6.77 |
| Max. Deviator Stress | kPa: | 226 | 245 | 247 |
| Shear Strength | kPa: | 113 | 122 | 124 |
| Failure Mode | | Brittle | | |




| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE<br>BS 1377 : Part 7 : 1990 : Clause 9 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH114 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #7621126988710022 |
| | | Depth (m) | 8.50 |
| Soil Description | Stiff dark grey CLAY. | Sample type | CS |

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA
Authorised Approvers: Ben Armstrong (Quality Manager)

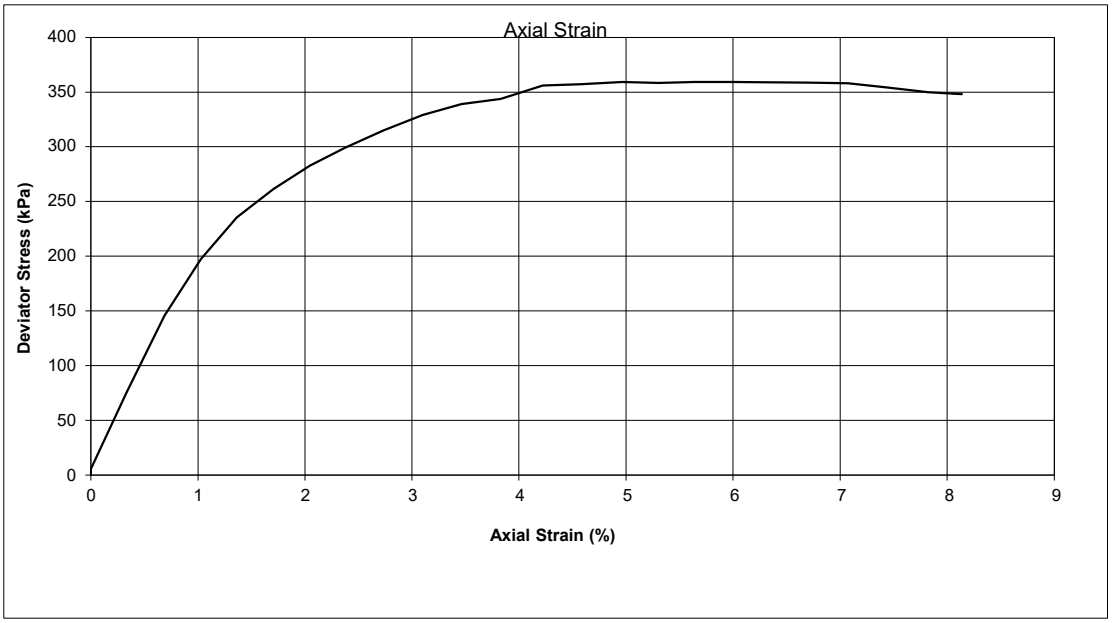
8927

| | UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE<br>BS 1377 : Part 7 : 1990 : Clause 9 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH114 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #7621126988710024 |
| | | Depth (m) | 11.00 |
| Soil Description | Very stiff dark grey CLAY. | Sample type | CS |

| Sample Details | | Specimen 1 |
|---|---|---|
| Sample Condition | | Undisturbed |
| Sample Length | (mm): | 140 |
| Sample Diameter | (mm): | 70 |
| Moisture Content | (%): | 20 |
| Bulk Density | ($Mg/m^3$) | 2.09 |
| Dry Density | ($Mg/m^3$) | 1.74 |

Orientation within original sample

| Test Details | | Stage 1 | Stage 2 | Stage 3 |
|---|---|---|---|---|
| Membrane Thickness | (mm): | 0.40 | 0.40 | 0.40 |
| Membrane Correction | kPa: | 0.60 | 0.72 | 0.87 |
| Axial Displacement Rate | %/min: | 1.428571429 | 1.428571429 | 1.428571429 |
| Cell Pressure | kPa: | 110 | 220 | 330 |
| Strain at Failure | %: | 3.83 | 4.58 | 5.64 |
| Max. Deviator Stress | kPa: | 344 | 357 | 359 |
| Shear Strength | kPa: | 172 | 179 | 180 |
| Failure Mode | | Brittle | | |




| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA
Authorised Approvers: Ben Armstrong (Quality Manager)

| | UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE<br>BS 1377 : Part 7 : 1990 : Clause 9 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH114 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #7621126988710024 |
| | | Depth (m) | 11.00 |
| Soil Description | Very stiff dark grey CLAY. | Sample type | CS |

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA
Authorised Approvers: Ben Armstrong (Quality Manager)

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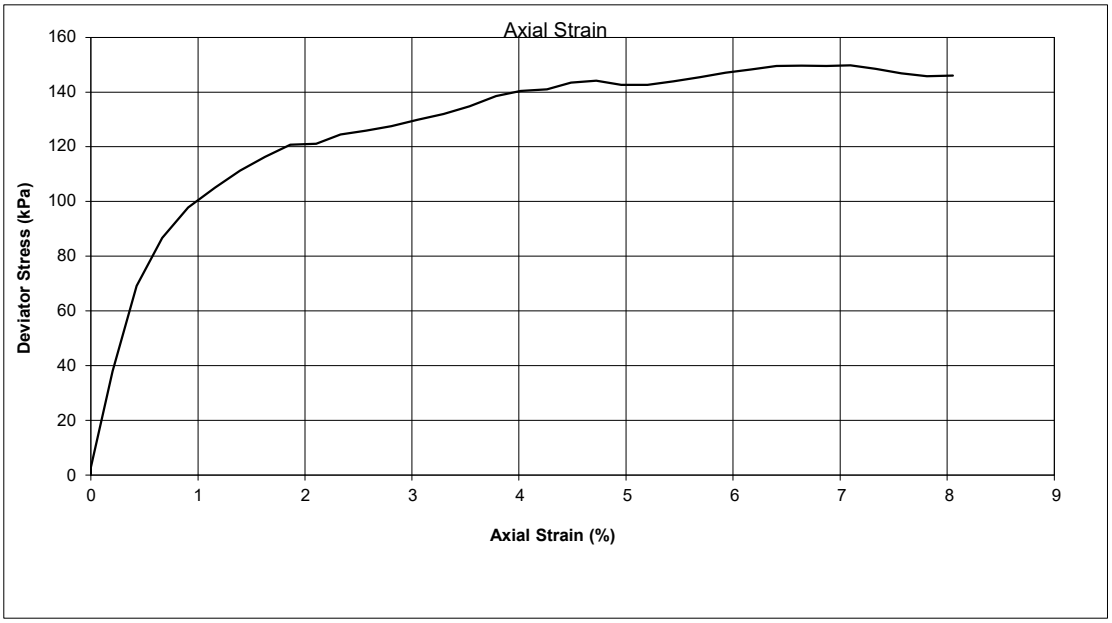
| | UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE<br>BS 1377 : Part 7 : 1990 : Clause 9 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH116 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #7773760290700017 |
| | | Depth (m) | 12.70 |
| Soil Description | Stiff dark grey CLAY. | Sample type | CS |

| Sample Details | | Specimen 1 |
|---|---|---|
| Sample Condition | | Undisturbed |
| Sample Length | (mm): | 210 |
| Sample Diameter | (mm): | 103.1 |
| Moisture Content | (%): | 22 |
| Bulk Density | ($Mg/m^3$) | 2.08 |
| Dry Density | ($Mg/m^3$) | 1.71 |

Orientation within original sample

| Test Details | | Stage 1 | Stage 2 | Stage 3 |
|---|---|---|---|---|
| Membrane Thickness | (mm): | 0.40 | 0.40 | 0.40 |
| Membrane Correction | kPa: | 0.20 | 0.43 | 0.68 |
| Axial Displacement Rate | %/min: | 0.952380952 | 0.952380952 | 0.952380952 |
| Cell Pressure | kPa: | 120 | 240 | 360 |
| Strain at Failure | %: | 1.86 | 4.01 | 7.10 |
| Max. Deviator Stress | kPa: | 121 | 140 | 150 |
| Shear Strength | kPa: | 60 | 70 | 75 |
| Failure Mode | | Compound | | |

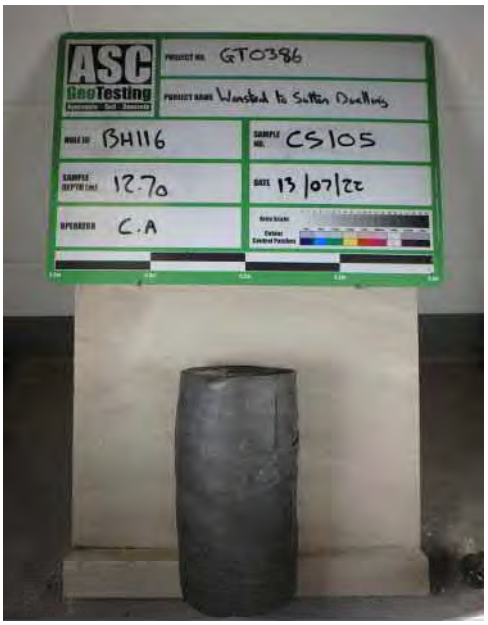



| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | | | |
|---|---|---|---|
| | **UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE**<br>**BS 1377 : Part 7 : 1990 : Clause 9** | Job Ref | **GT0386** |
| | | Borehole / Pit No | BH116 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #7773760290700017 |
| | | Depth (m) | 12.70 |
| Soil Description | Stiff dark grey CLAY. | Sample type | CS |



| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

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# UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE

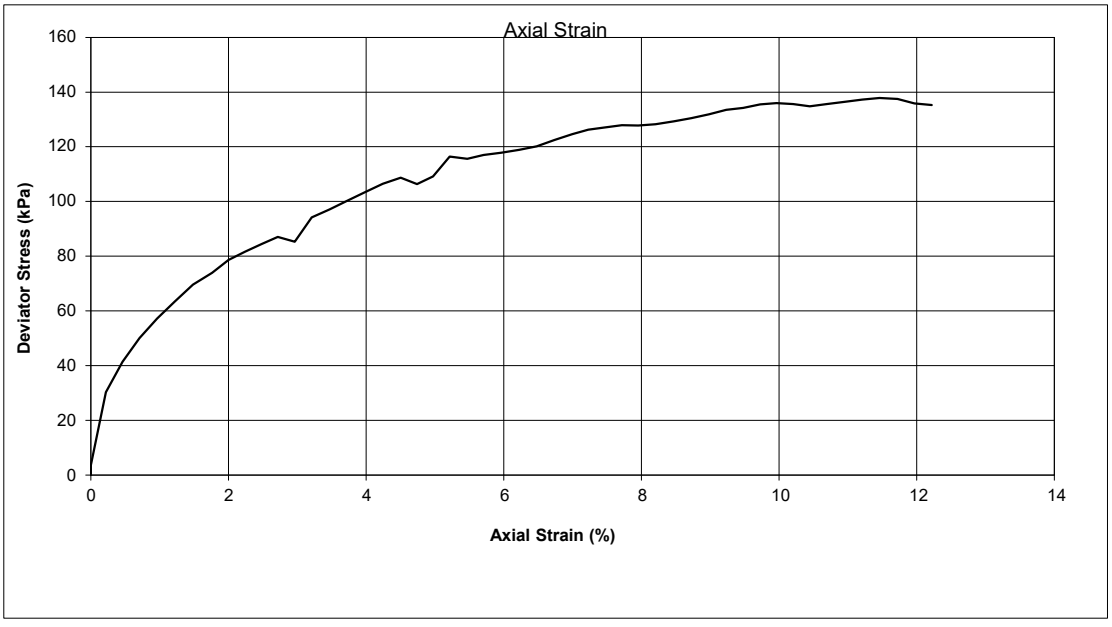
**BS 1377 : Part 7 : 1990 : Clause 9**

| | | | |
|---|---|---|---|
| | | Job Ref | **GT0386** |
| | | Borehole / Pit No | BH116 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #7773760290700018 |
| | | Depth (m) | 14.20 |
| Soil Description | Firm to stiff dark grey CLAY. | Sample type | CS |

| **Sample Details** | | Specimen 1 |
|---|---|---|
| Sample Condition | | Undisturbed |
| Sample Length | (mm): | 200 |
| Sample Diameter | (mm): | 101.9 |
| Moisture Content | (%): | 23 |
| Bulk Density | ($Mg/m^3$) | 2.00 |
| Dry Density | ($Mg/m^3$) | 1.62 |

Orientation within original sample

| **Test Details** | | Stage 1 | Stage 2 | Stage 3 |
|---|---|---|---|---|
| Membrane Thickness | (mm): | 0.40 | 0.40 | 0.40 |
| Membrane Correction | kPa: | 0.29 | 0.48 | 0.97 |
| Axial Displacement Rate | %/min: | 1 | 1 | 1 |
| Cell Pressure | kPa: | 90 | 180 | 270 |
| Strain at Failure | %: | 2.72 | 4.50 | 11.47 |
| Max. Deviator Stress | kPa: | 87 | 109 | 138 |
| Shear Strength | kPa: | 44 | 54 | 69 |
| Failure Mode | | Compound | | |

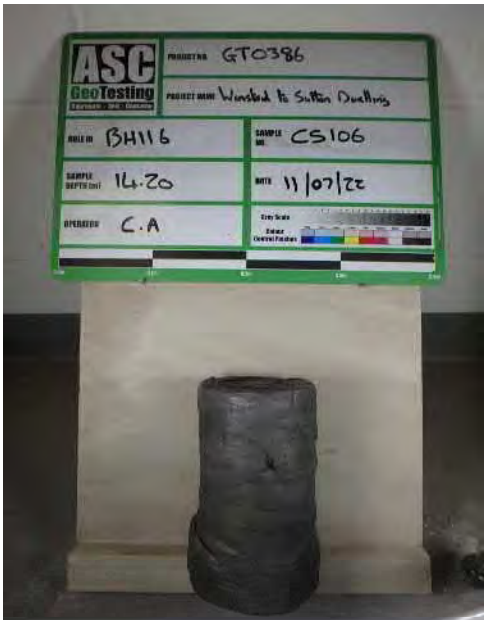



| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE<br>BS 1377 : Part 7 : 1990 : Clause 9 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH116 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #7773760290700018 |
| | | Depth (m) | 14.20 |
| Soil Description | Firm to stiff dark grey CLAY. | Sample type | CS |



| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

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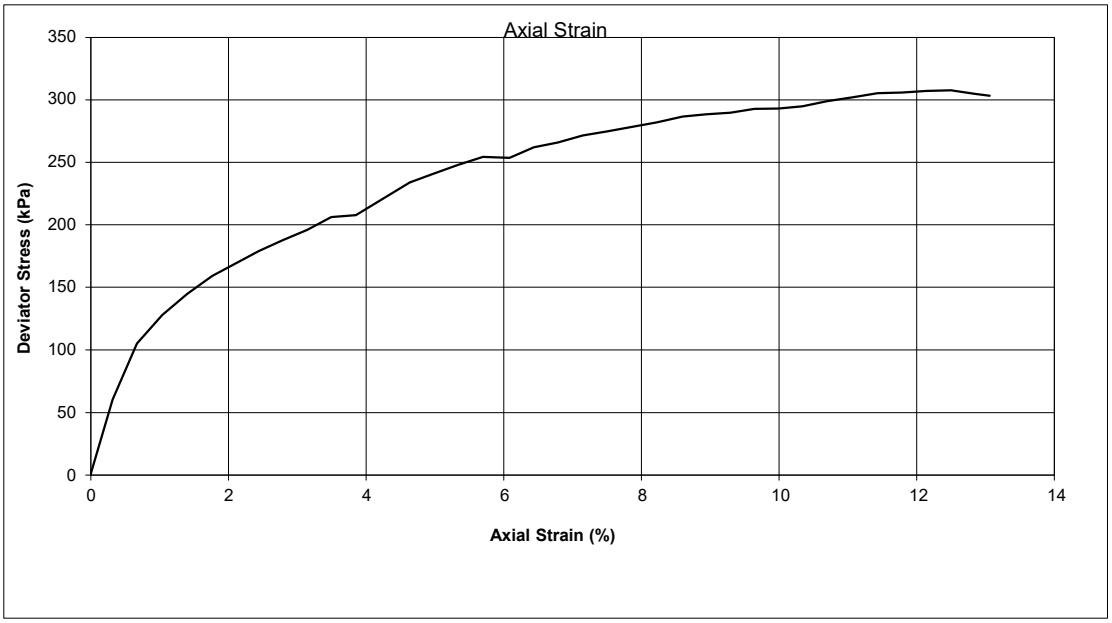
| | UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE<br>BS 1377 : Part 7 : 1990 : Clause 9 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH116 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #7773760290700023 |
| | | Depth (m) | 21.80 |
| Soil Description | Very stiff dark grey CLAY. | Sample type | CS |

| Sample Details | | Specimen 1 |
|---|---|---|
| Sample Condition | | Undisturbed |
| Sample Length | (mm): | 140 |
| Sample Diameter | (mm): | 70 |
| Moisture Content | (%): | 14 |
| Bulk Density | ($Mg/m^3$) | 2.06 |
| Dry Density | ($Mg/m^3$) | 1.81 |

Orientation within original sample

| Test Details | | Stage 1 | Stage 2 | Stage 3 |
|---|---|---|---|---|
| Membrane Thickness | (mm): | 0.40 | 0.40 | 0.40 |
| Membrane Correction | kPa: | 0.60 | 0.87 | 1.50 |
| Axial Displacement Rate | %/min: | 1.428571429 | 1.428571429 | 1.428571429 |
| Cell Pressure | kPa: | 200 | 400 | 600 |
| Strain at Failure | %: | 3.85 | 5.70 | 12.50 |
| Max. Deviator Stress | kPa: | 208 | 254 | 308 |
| Shear Strength | kPa: | 104 | 127 | 154 |
| Failure Mode | | Compound | | |




| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA
Authorised Approvers: Ben Armstrong (Quality Manager)

| | UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE<br>BS 1377 : Part 7 : 1990 : Clause 9 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH116 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #7773760290700023 |
| | | Depth (m) | 21.80 |
| Soil Description | Very stiff dark grey CLAY. | Sample type | CS |

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA
Authorised Approvers: Ben Armstrong (Quality Manager)

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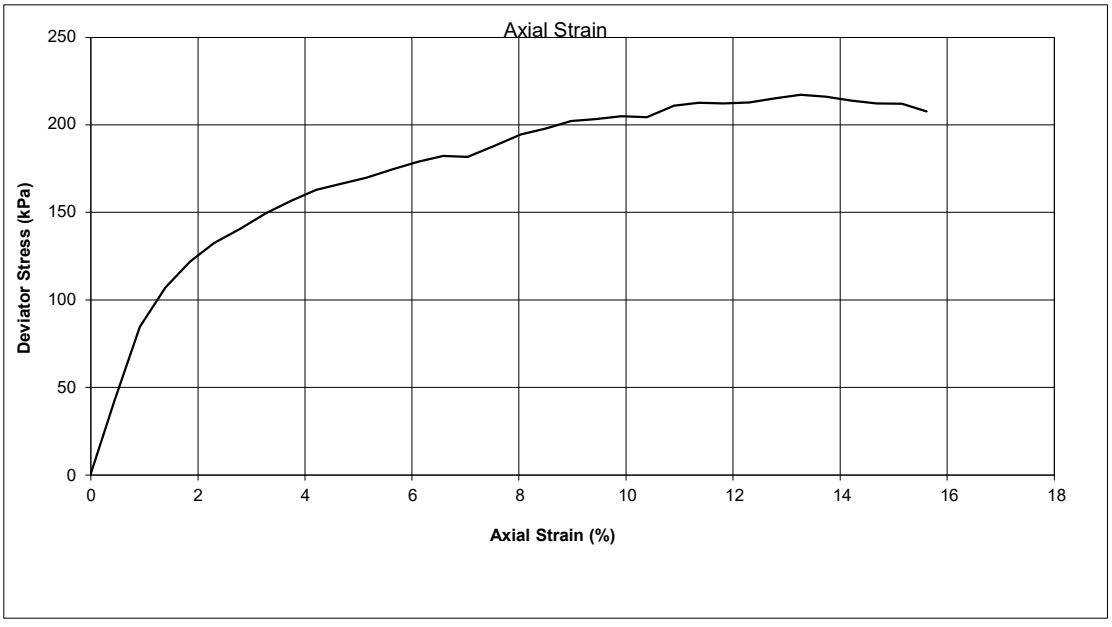
| | UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE<br>BS 1377 : Part 7 : 1990 : Clause 9 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH117 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #5515207227080019 |
| | | Depth (m) | 14.40 |
| Soil Description | Stiff dark grey slightly gravelly CLAY. | Sample type | CS |

| Sample Details | | Specimen 1 |
|---|---|---|
| Sample Condition | | Undisturbed |
| Sample Length | (mm): | 210 |
| Sample Diameter | (mm): | 103.1 |
| Moisture Content | (%): | 21 |
| Bulk Density | ($Mg/m^3$) | 2.10 |
| Dry Density | ($Mg/m^3$) | 1.73 |

Orientation within original sample

| Test Details | | Stage 1 | Stage 2 | Stage 3 |
|---|---|---|---|---|
| Membrane Thickness | (mm): | 0.40 | 0.40 | 0.40 |
| Membrane Correction | kPa: | 0.65 | 0.86 | 1.07 |
| Axial Displacement Rate | %/min: | 0.952380952 | 0.952380952 | 0.952380952 |
| Cell Pressure | kPa: | 150 | 300 | 450 |
| Strain at Failure | %: | 6.59 | 9.91 | 13.26 |
| Max. Deviator Stress | kPa: | 182 | 205 | 217 |
| Shear Strength | kPa: | 91 | 102 | 109 |
| Failure Mode | | Compound | | |

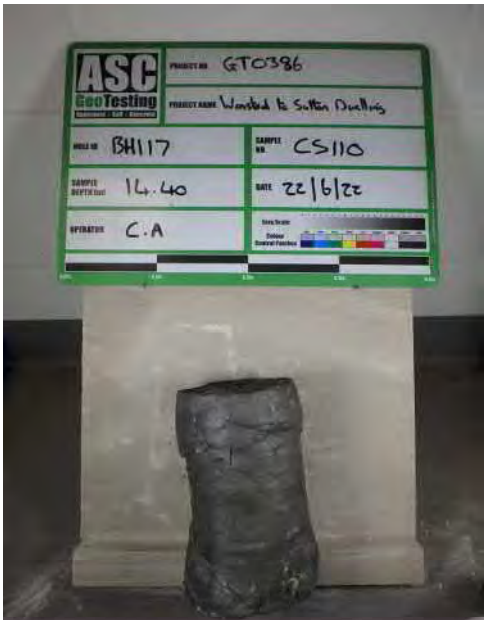



| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE<br>BS 1377 : Part 7 : 1990 : Clause 9 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH117 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #5515207227080019 |
| | | Depth (m) | 14.40 |
| Soil Description | Stiff dark grey slightly gravelly CLAY. | Sample type | CS |



| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

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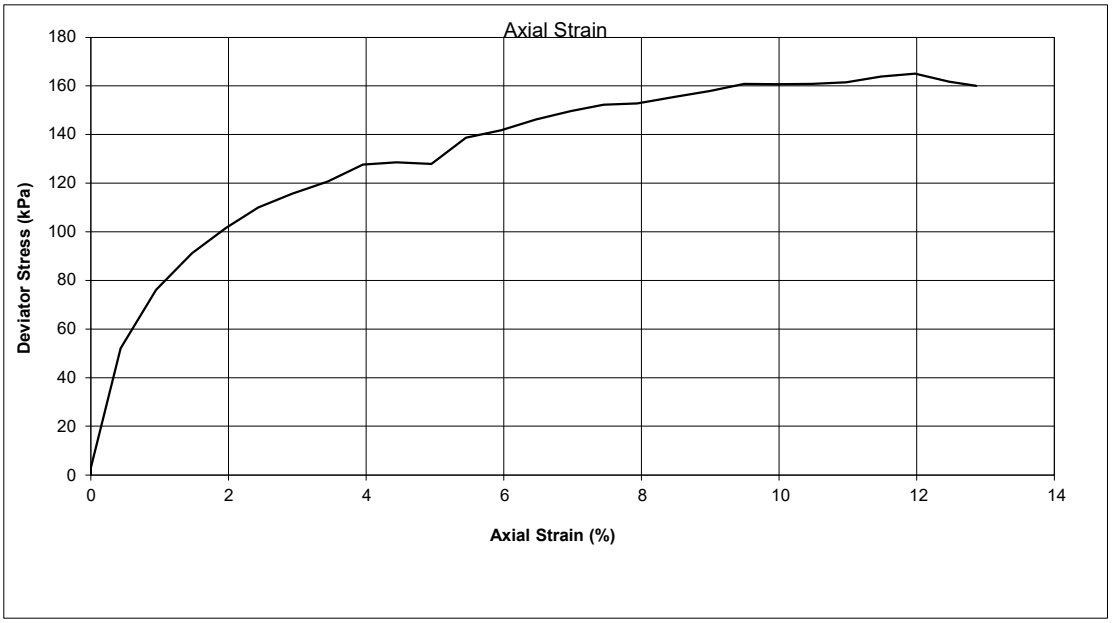
| | UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE<br>BS 1377 : Part 7 : 1990 : Clause 9 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH117 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #5515207227080024 |
| | | Depth (m) | 21.80 |
| Soil Description | Stiff dark grey mottled creamy white CLAY. | Sample type | CS |

| Sample Details | | Specimen 1 |
|---|---|---|
| Sample Condition | | Undisturbed |
| Sample Length | (mm): | 200 |
| Sample Diameter | (mm): | 102.4 |
| Moisture Content | (%): | 20 |
| Bulk Density | ($Mg/m^3$) | 2.20 |
| Dry Density | ($Mg/m^3$) | 1.83 |

Orientation within original sample

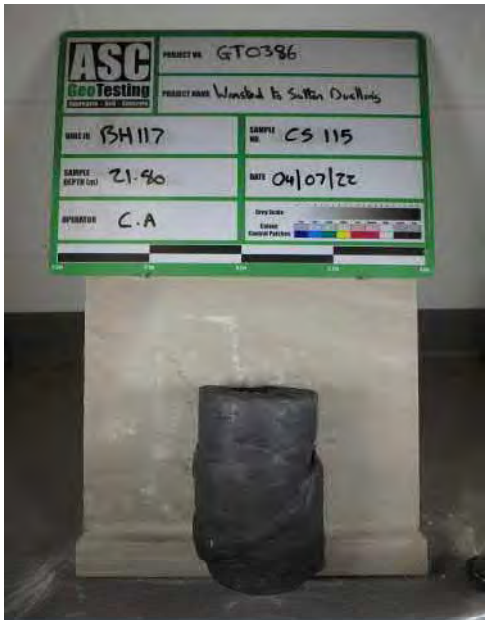
| Test Details | | Stage 1 | Stage 2 | Stage 3 |
|---|---|---|---|---|
| Membrane Thickness | (mm): | 0.40 | 0.40 | 0.40 |
| Membrane Correction | kPa: | 0.48 | 0.74 | 0.99 |
| Axial Displacement Rate | %/min: | 1 | 1 | 1 |
| Cell Pressure | kPa: | 220 | 440 | 660 |
| Strain at Failure | %: | 4.45 | 7.94 | 11.98 |
| Max. Deviator Stress | kPa: | 129 | 153 | 165 |
| Shear Strength | kPa: | 64 | 76 | 83 |
| Failure Mode | | Brittle | | |




| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA
Authorised Approvers: Ben Armstrong (Quality Manager)

| | UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE<br>BS 1377 : Part 7 : 1990 : Clause 9 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH117 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #5515207227080024 |
| | | Depth (m) | 21.80 |
| Soil Description | Stiff dark grey mottled creamy white CLAY. | Sample type | CS |



| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

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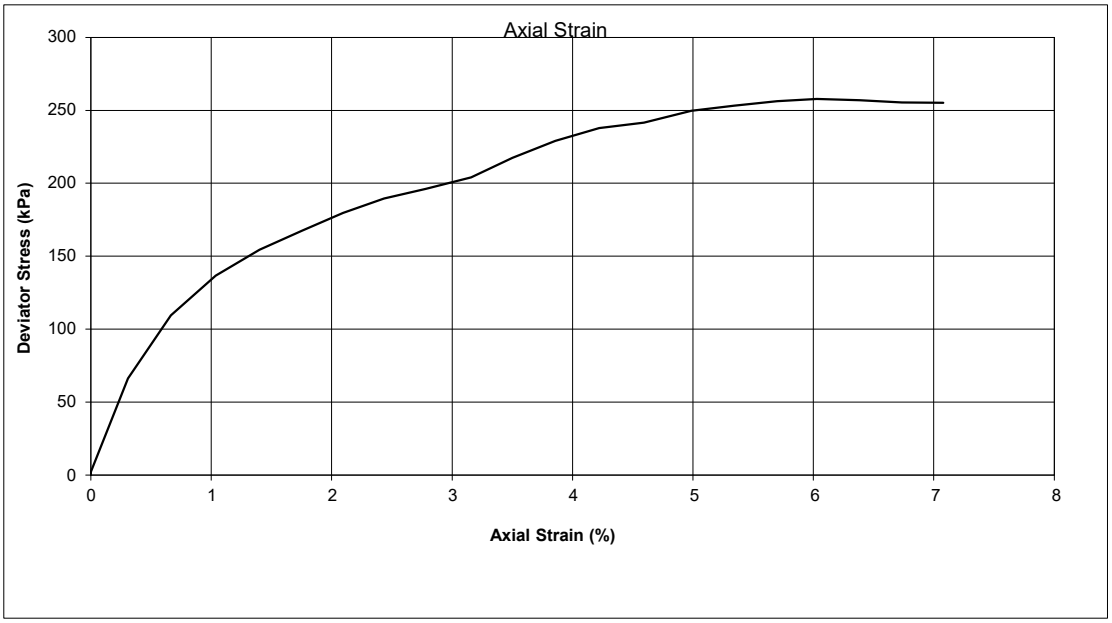
| | UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE<br>BS 1377 : Part 7 : 1990 : Clause 9 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH118 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #3292256958440018 |
| | | Depth (m) | 14.20 |
| Soil Description | Stiff dark grey CLAY. | Sample type | CS |

| Sample Details | | Specimen 1 |
|---|---|---|
| Sample Condition | | Undisturbed |
| Sample Length | (mm): | 140 |
| Sample Diameter | (mm): | 70 |
| Moisture Content | (%): | 21 |
| Bulk Density | ($Mg/m^3$) | 2.08 |
| Dry Density | ($Mg/m^3$) | 1.72 |

Orientation within original sample

| Test Details | | Stage 1 | Stage 2 | Stage 3 |
|---|---|---|---|---|
| Membrane Thickness | (mm): | 0.40 | 0.40 | 0.40 |
| Membrane Correction | kPa: | 0.43 | 0.72 | 0.91 |
| Axial Displacement Rate | %/min: | 1.428571429 | 1.428571429 | 1.428571429 |
| Cell Pressure | kPa: | 140 | 280 | 420 |
| Strain at Failure | %: | 2.78 | 4.59 | 6.03 |
| Max. Deviator Stress | kPa: | 196 | 241 | 258 |
| Shear Strength | kPa: | 98 | 121 | 129 |
| Failure Mode | | Brittle | | |

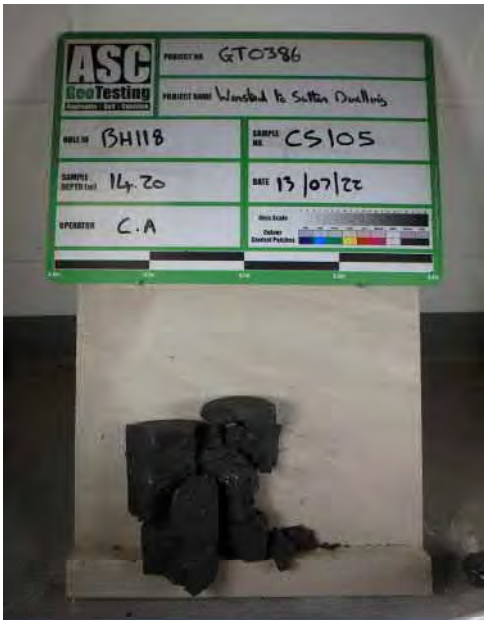



| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE<br>BS 1377 : Part 7 : 1990 : Clause 9 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH118 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #3292256958440018 |
| | | Depth (m) | 14.20 |
| Soil Description | Stiff dark grey CLAY. | Sample type | CS |




| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

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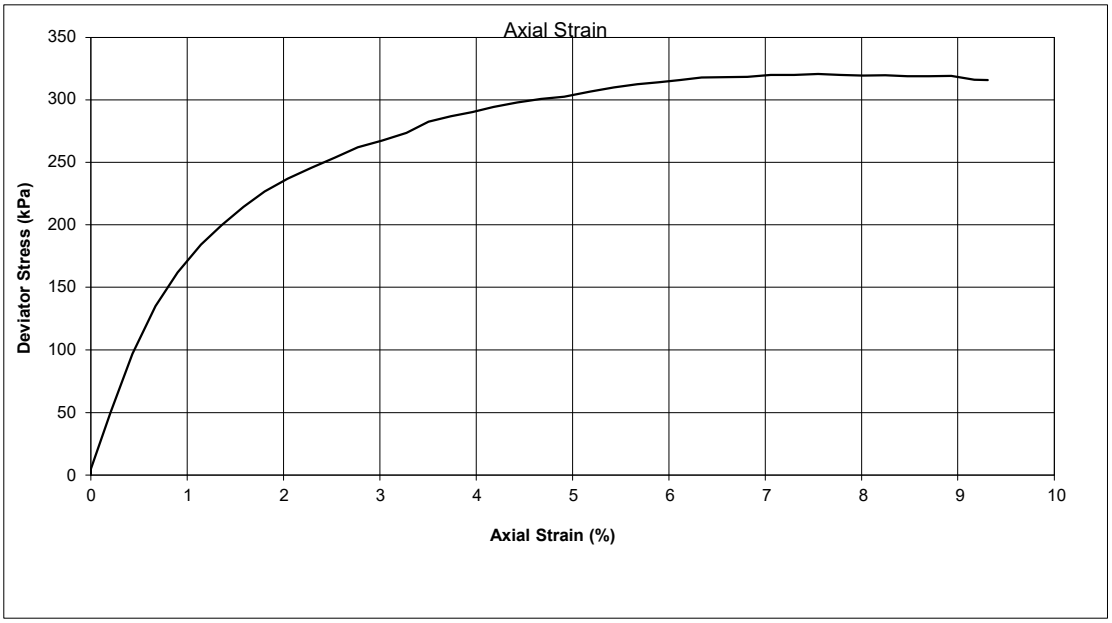
| | UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE<br>BS 1377 : Part 7 : 1990 : Clause 9 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH118 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #3292256958440022 |
| | | Depth (m) | 18.70 |
| Soil Description | Very stiff dark grey CLAY. | Sample type | CS |

| Sample Details | | Specimen 1 |
|---|---|---|
| Sample Condition | | Undisturbed |
| Sample Length | (mm): | 210 |
| Sample Diameter | (mm): | 103.2 |
| Moisture Content | (%): | 19 |
| Bulk Density | ($Mg/m^3$) | 2.06 |
| Dry Density | ($Mg/m^3$) | 1.73 |

Orientation within original sample

| Test Details | | Stage 1 | Stage 2 | Stage 3 |
|---|---|---|---|---|
| Membrane Thickness | (mm): | 0.40 | 0.40 | 0.40 |
| Membrane Correction | kPa: | 0.32 | 0.52 | 0.71 |
| Axial Displacement Rate | %/min: | 0.952380952 | 0.952380952 | 0.952380952 |
| Cell Pressure | kPa: | 190 | 380 | 570 |
| Strain at Failure | %: | 3.02 | 4.91 | 7.55 |
| Max. Deviator Stress | kPa: | 267 | 303 | 321 |
| Shear Strength | kPa: | 134 | 151 | 160 |
| Failure Mode | | Brittle | | |




| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE<br>BS 1377 : Part 7 : 1990 : Clause 9 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH118 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #3292256958440022 |
| | | Depth (m) | 18.70 |
| Soil Description | Very stiff dark grey CLAY. | Sample type | CS |

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

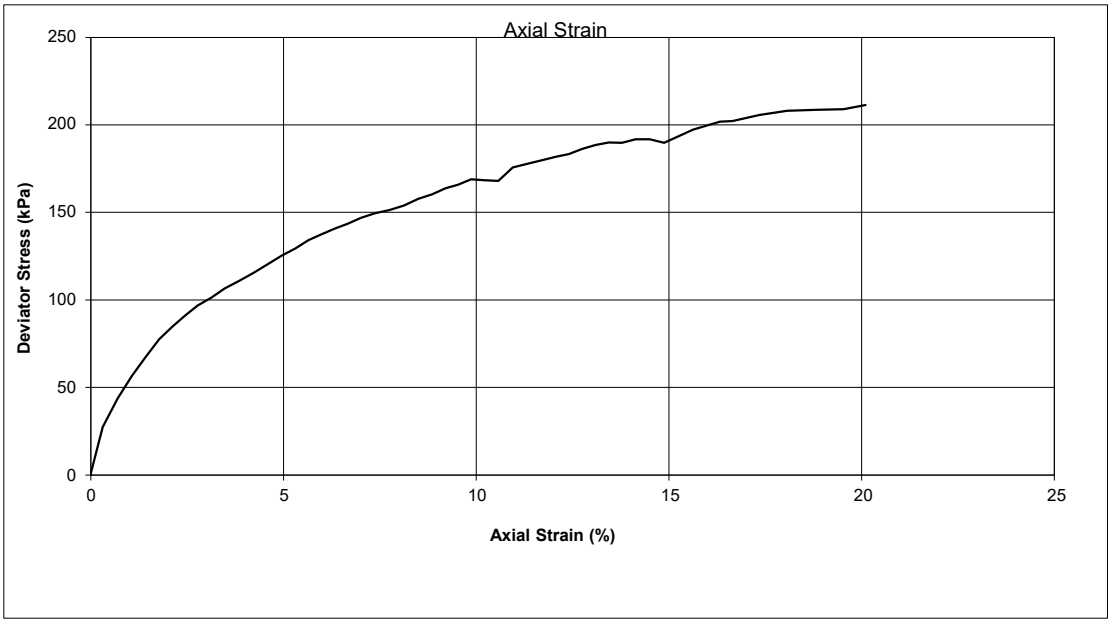
UKAS TESTING 8927

| | UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE<br>BS 1377 : Part 7 : 1990 : Clause 9 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH120 & BH120A |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #8156259710960001 |
| | | Depth (m) | 7.82 |
| Soil Description | Stiff grey mottled dark grey slightly sandy slightly gravelly CLAY. | Sample type | CS |

| Sample Details | | Specimen 1 |
|---|---|---|
| Sample Condition | | Undisturbed |
| Sample Length | (mm): | 140 |
| Sample Diameter | (mm): | 70.1 |
| Moisture Content | (%): | 10 |
| Bulk Density | ($Mg/m^3$) | 2.19 |
| Dry Density | ($Mg/m^3$) | 2.00 |

Orientation within original sample

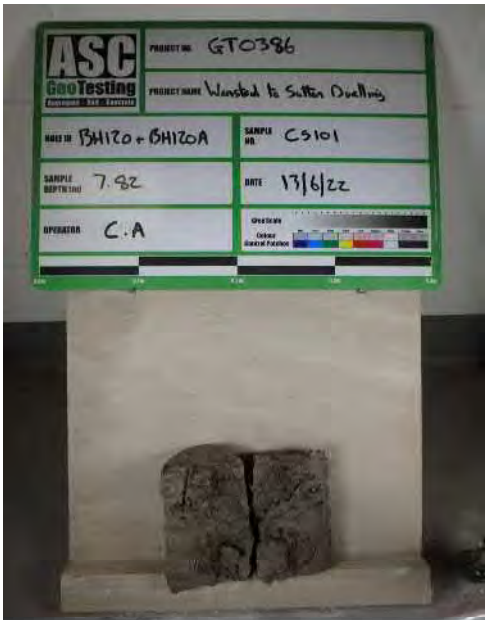
| Test Details | | Stage 1 | Stage 2 | Stage 3 |
|---|---|---|---|---|
| Membrane Thickness | (mm): | 0.40 | 0.40 | 0.40 |
| Membrane Correction | kPa: | 1.26 | 1.69 | 2.15 |
| Axial Displacement Rate | %/min: | 1.428571429 | 1.428571429 | 1.428571429 |
| Cell Pressure | kPa: | 50 | 100 | 150 |
| Strain at Failure | %: | 9.87 | 14.50 | 19.54 |
| Max. Deviator Stress | kPa: | 169 | 192 | 209 |
| Shear Strength | kPa: | 84 | 96 | 104 |
| Failure Mode | | Compound | | |




| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA
Authorised Approvers: Ben Armstrong (Quality Manager)

| | UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE<br>BS 1377 : Part 7 : 1990 : Clause 9 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH120 & BH120A |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #8156259710960001 |
| | | Depth (m) | 7.82 |
| Soil Description | Stiff grey mottled dark grey slightly sandy slightly gravelly CLAY. | Sample type | CS |




| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

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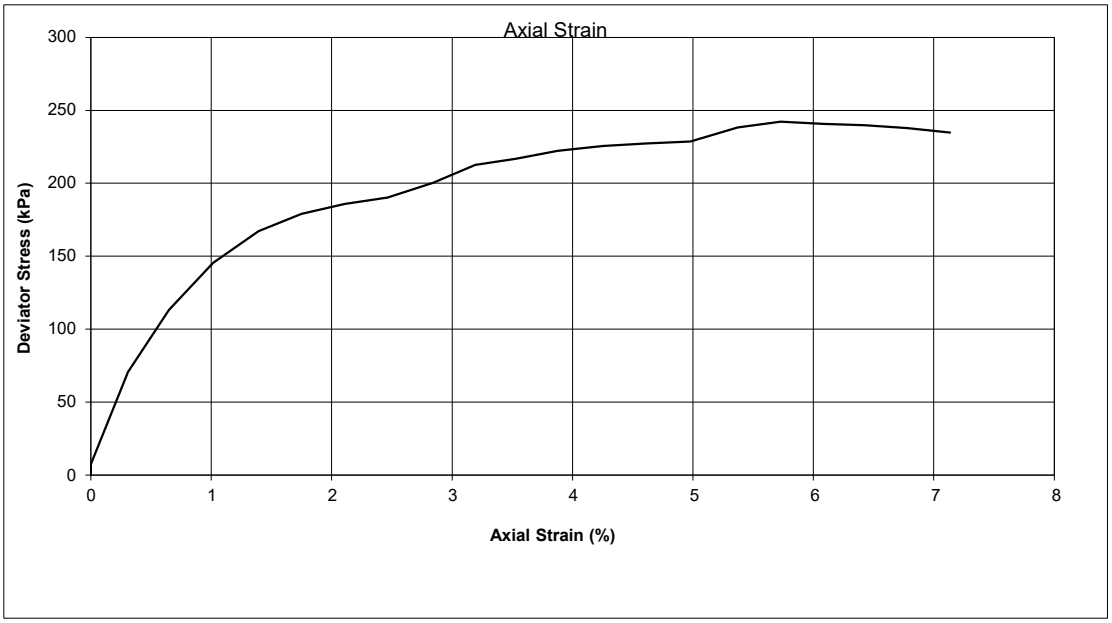
| | UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE<br>BS 1377 : Part 7 : 1990 : Clause 9 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH120 & BH120A |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #8156259710960005 |
| | | Depth (m) | 13.25 |
| Soil Description | Very stiff dark grey CLAY. | Sample type | CS |

| Sample Details | | Specimen 1 |
|---|---|---|
| Sample Condition | | Undisturbed |
| Sample Length | (mm): | 140 |
| Sample Diameter | (mm): | 70.1 |
| Moisture Content | (%): | 20 |
| Bulk Density | ($Mg/m^3$) | 2.06 |
| Dry Density | ($Mg/m^3$) | 1.72 |

Orientation within original sample

| Test Details | | Stage 1 | Stage 2 | Stage 3 |
|---|---|---|---|---|
| Membrane Thickness | (mm): | 0.40 | 0.40 | 0.40 |
| Membrane Correction | kPa: | 0.38 | 0.78 | 0.88 |
| Axial Displacement Rate | %/min: | 1.428571429 | 1.428571429 | 1.428571429 |
| Cell Pressure | kPa: | 130 | 260 | 390 |
| Strain at Failure | %: | 2.46 | 4.98 | 5.73 |
| Max. Deviator Stress | kPa: | 190 | 229 | 242 |
| Shear Strength | kPa: | 95 | 114 | 121 |
| Failure Mode | | Brittle | | |




| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | | | |
|---|---|---|---|
| | **UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE**<br>**BS 1377 : Part 7 : 1990 : Clause 9** | Job Ref | **GT0386** |
| | | Borehole / Pit No | BH120 & BH120A |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #8156259710960005 |
| | | Depth (m) | 13.25 |
| Soil Description | Very stiff dark grey CLAY. | Sample type | CS |

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

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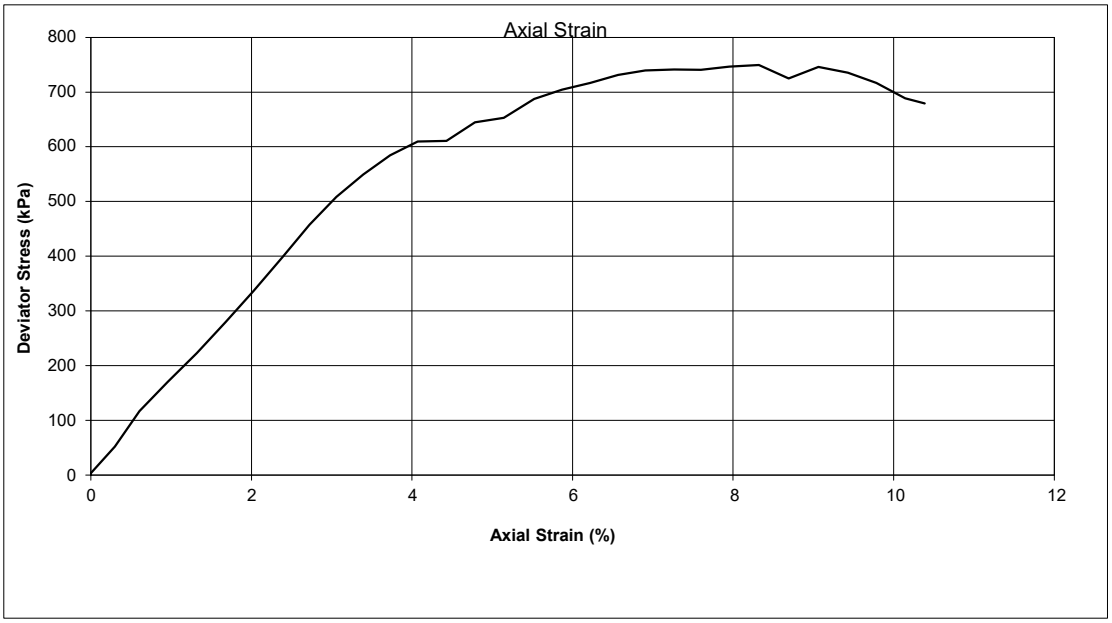
| | UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE<br>BS 1377 : Part 7 : 1990 : Clause 9 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH122 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #1215879717470006 |
| | | Depth (m) | 4.60 |
| Soil Description | Hard light grey mottled orange slightly sandy slightly gravelly CLAY. | Sample type | CS |

| Sample Details | | Specimen 1 |
|---|---|---|
| Sample Condition | | Undisturbed |
| Sample Length | (mm): | 140 |
| Sample Diameter | (mm): | 70.1 |
| Moisture Content | (%): | 10 |
| Bulk Density | ($Mg/m^3$) | 2.28 |
| Dry Density | ($Mg/m^3$) | 2.07 |

Orientation within original sample

| Test Details | | Stage 1 | Stage 2 | Stage 3 |
|---|---|---|---|---|
| Membrane Thickness | (mm): | 0.40 | 0.40 | 0.40 |
| Membrane Correction | kPa: | 0.69 | 1.02 | 1.12 |
| Axial Displacement Rate | %/min: | 1.428571429 | 1.428571429 | 1.428571429 |
| Cell Pressure | kPa: | 50 | 100 | 150 |
| Strain at Failure | %: | 4.43 | 7.26 | 8.32 |
| Max. Deviator Stress | kPa: | 611 | 741 | 750 |
| Shear Strength | kPa: | 305 | 371 | 375 |
| Failure Mode | | Brittle | | |

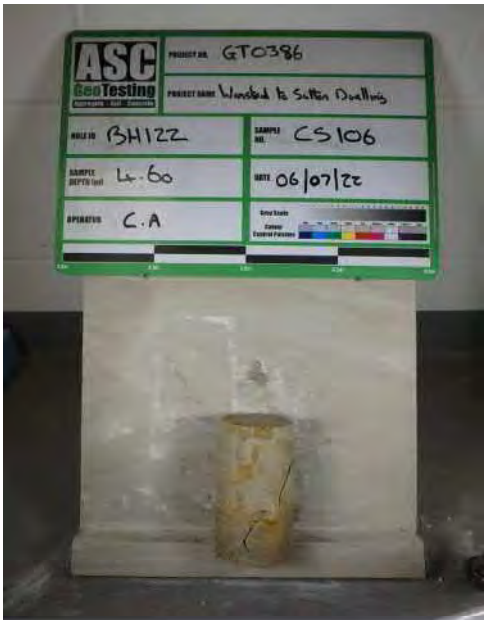



| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE<br>BS 1377 : Part 7 : 1990 : Clause 9 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH122 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #1215879717470006 |
| | | Depth (m) | 4.60 |
| Soil Description | Hard light grey mottled orange slightly sandy slightly gravelly CLAY. | Sample type | CS |



| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

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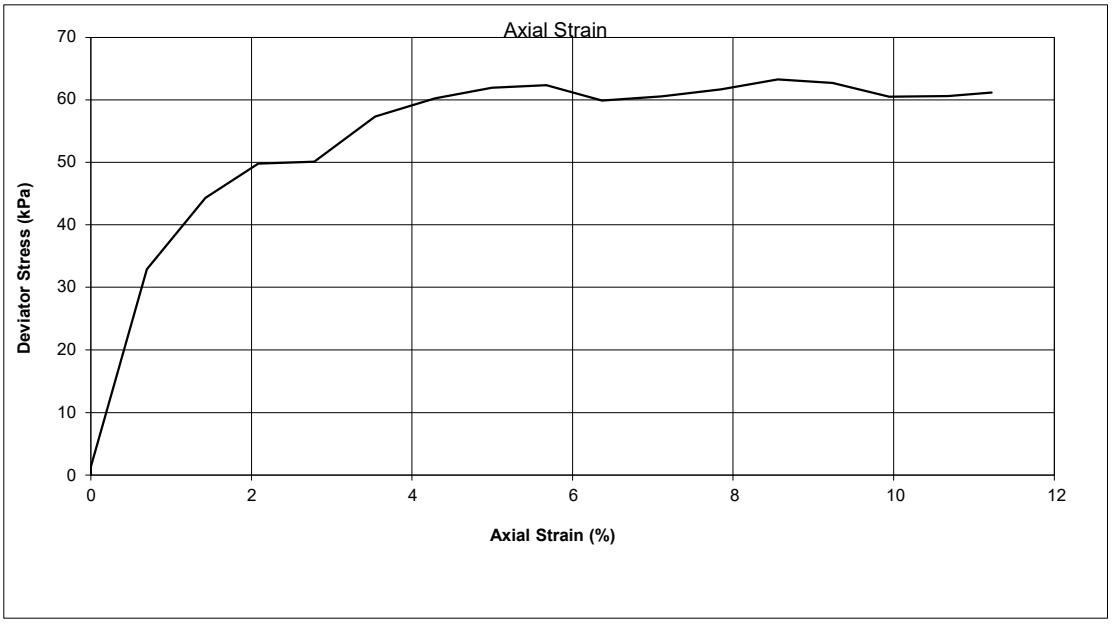
| | UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE<br>BS 1377 : Part 7 : 1990 : Clause 9 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH128 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #1766182967350006 |
| | | Depth (m) | 4.70 |
| Soil Description | Soft to firm dark grey mottled brown slightly sandy slightly gravelly CLAY. | Sample type | CS |

| Sample Details | | Specimen 1 |
|---|---|---|
| Sample Condition | | Undisturbed |
| Sample Length | (mm): | 140.1 |
| Sample Diameter | (mm): | 70 |
| Moisture Content | (%): | 41 |
| Bulk Density | ($Mg/m^3$) | 1.80 |
| Dry Density | ($Mg/m^3$) | 1.27 |

Orientation within original sample

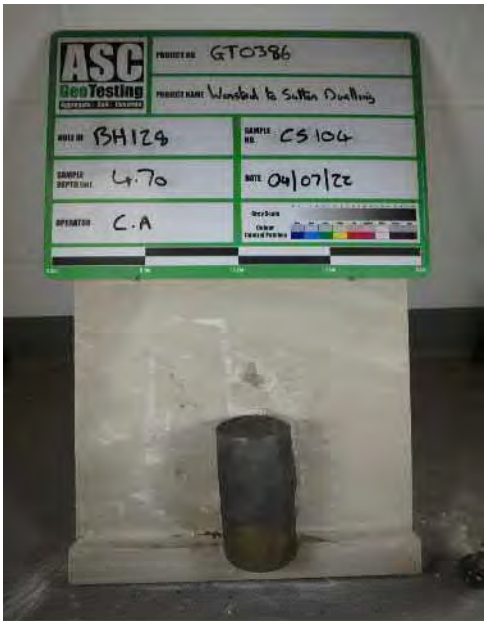
| Test Details | | Stage 1 | Stage 2 | Stage 3 |
|---|---|---|---|---|
| Membrane Thickness | (mm): | 0.40 | 0.40 | 0.40 |
| Membrane Correction | kPa: | 0.44 | 0.87 | 1.14 |
| Axial Displacement Rate | %/min: | 1.427551749 | 1.427551749 | 1.427551749 |
| Cell Pressure | kPa: | 50 | 100 | 150 |
| Strain at Failure | %: | 2.78 | 5.67 | 8.56 |
| Max. Deviator Stress | kPa: | 50 | 62 | 63 |
| Shear Strength | kPa: | 25 | 31 | 32 |
| Failure Mode | | Plastic | | |




| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA
Authorised Approvers: Ben Armstrong (Quality Manager)

| | UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE<br>BS 1377 : Part 7 : 1990 : Clause 9 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH128 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #1766182967350006 |
| | | Depth (m) | 4.70 |
| Soil Description | Soft to firm dark grey mottled brown slightly sandy slightly gravelly CLAY. | Sample type | CS |



| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA
Authorised Approvers: Ben Armstrong (Quality Manager)

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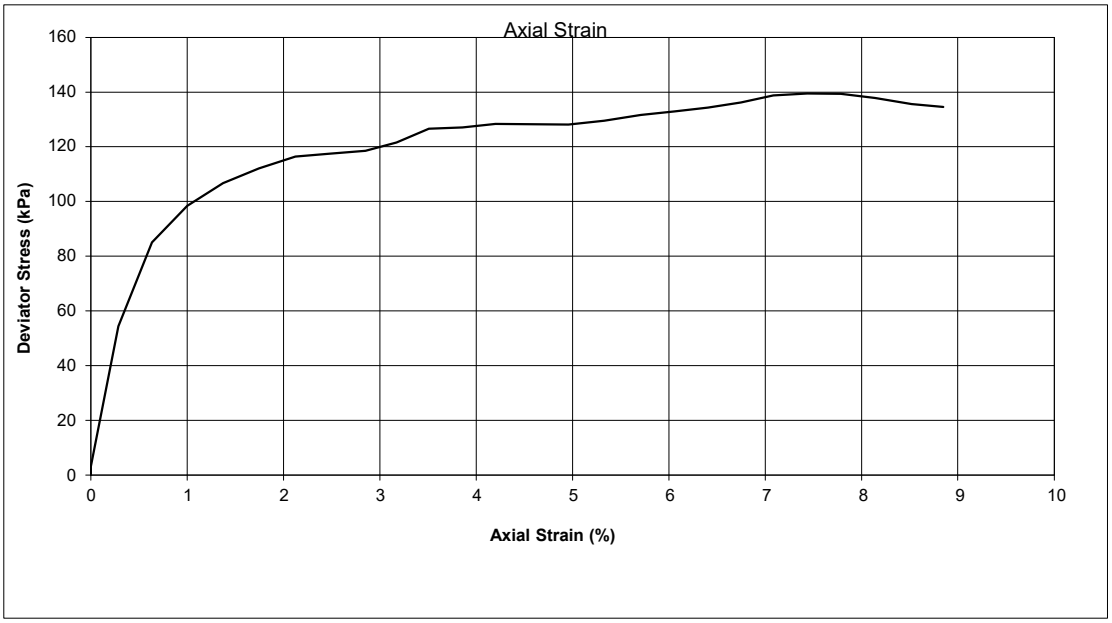
| | UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE<br>BS 1377 : Part 7 : 1990 : Clause 9 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH128 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #1766182967350011 |
| | | Depth (m) | 11.50 |
| Soil Description | Stiff dark grey CLAY. | Sample type | CS |

| Sample Details | | Specimen 1 |
|---|---|---|
| Sample Condition | | Undisturbed |
| Sample Length | (mm): | 140 |
| Sample Diameter | (mm): | 70 |
| Moisture Content | (%): | 22 |
| Bulk Density | ($Mg/m^3$) | 1.97 |
| Dry Density | ($Mg/m^3$) | 1.62 |

Orientation within original sample

| Test Details | | Stage 1 | Stage 2 | Stage 3 |
|---|---|---|---|---|
| Membrane Thickness | (mm): | 0.40 | 0.40 | 0.40 |
| Membrane Correction | kPa: | 0.39 | 0.66 | 1.04 |
| Axial Displacement Rate | %/min: | 1.428571429 | 1.428571429 | 1.428571429 |
| Cell Pressure | kPa: | 100 | 200 | 400 |
| Strain at Failure | %: | 2.48 | 4.20 | 7.44 |
| Max. Deviator Stress | kPa: | 117 | 128 | 139 |
| Shear Strength | kPa: | 59 | 64 | 70 |
| Failure Mode | | Brittle | | |




| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE<br>BS 1377 : Part 7 : 1990 : Clause 9 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH128 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #1766182967350011 |
| | | Depth (m) | 11.50 |
| Soil Description | Stiff dark grey CLAY. | Sample type | CS |

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA
Authorised Approvers: Ben Armstrong (Quality Manager)

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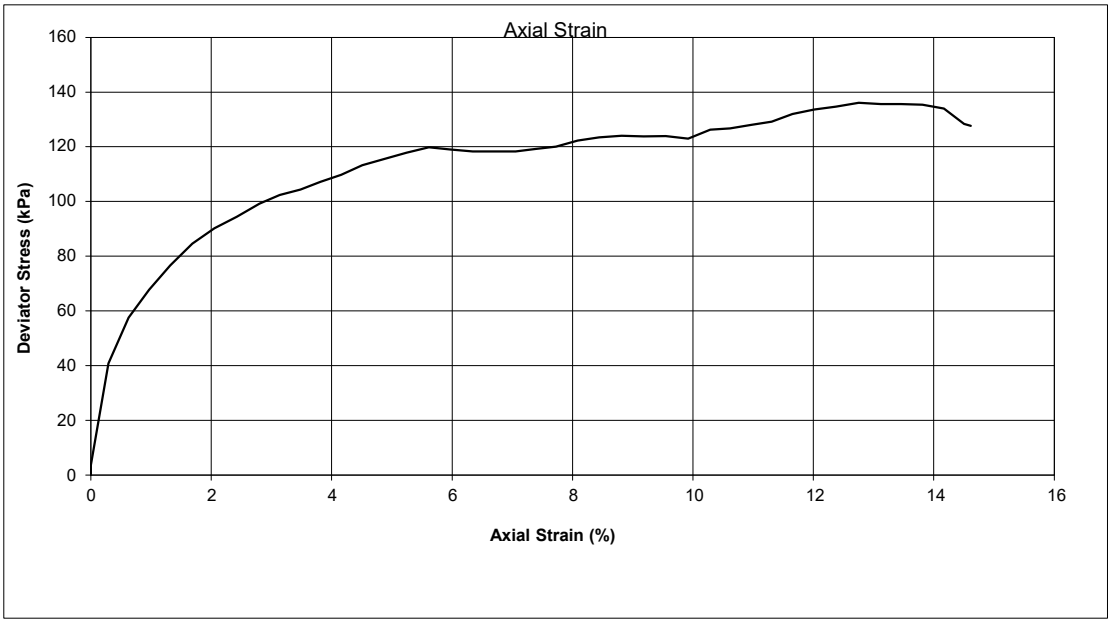
| | UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE<br>BS 1377 : Part 7 : 1990 : Clause 9 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH130 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #2762000520130016 |
| | | Depth (m) | 6.75 |
| Soil Description | Stiff greyish brown mottled brown and orangish brown slightly sandy CLAY. | Sample type | CS |

| Sample Details | | Specimen 1 |
|---|---|---|
| Sample Condition | | Undisturbed |
| Sample Length | (mm): | 140 |
| Sample Diameter | (mm): | 70.3 |
| Moisture Content | (%): | 19 |
| Bulk Density | ($Mg/m^3$) | 2.07 |
| Dry Density | ($Mg/m^3$) | 1.74 |

Orientation within original sample

| Test Details | | Stage 1 | Stage 2 | Stage 3 |
|---|---|---|---|---|
| Membrane Thickness | (mm): | 0.40 | 0.40 | 0.40 |
| Membrane Correction | kPa: | 0.86 | 1.16 | 1.52 |
| Axial Displacement Rate | %/min: | 1.428571429 | 1.428571429 | 1.428571429 |
| Cell Pressure | kPa: | 65 | 130 | 195 |
| Strain at Failure | %: | 5.61 | 8.81 | 12.75 |
| Max. Deviator Stress | kPa: | 120 | 124 | 136 |
| Shear Strength | kPa: | 60 | 62 | 68 |
| Failure Mode | | Brittle | | |

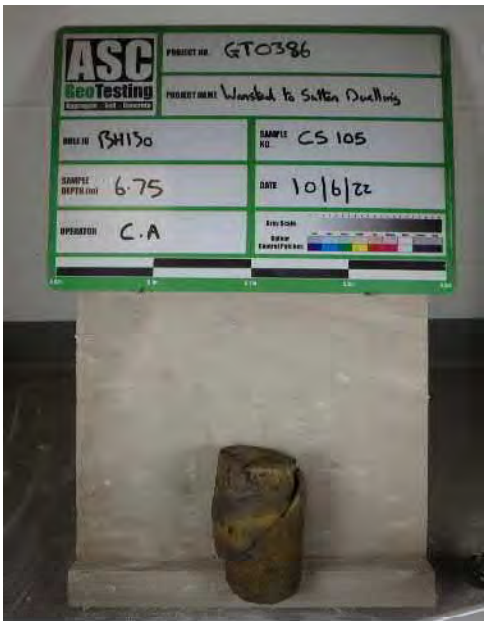


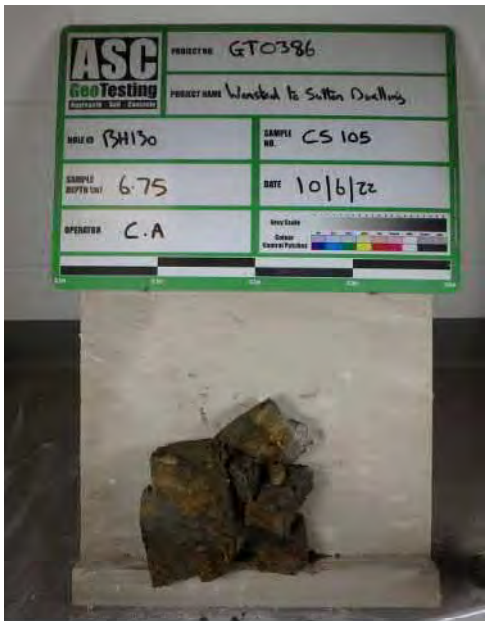

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | | | |
|---|---|---|---|
| | **UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE**<br>**BS 1377 : Part 7 : 1990 : Clause 9** | Job Ref | **GT0386** |
| | | Borehole / Pit No | BH130 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #2762000520130016 |
| | | Depth (m) | 6.75 |
| Soil Description | Stiff greyish brown mottled brown and orangish brown slightly sandy CLAY. | Sample type | CS |




| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

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# UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE

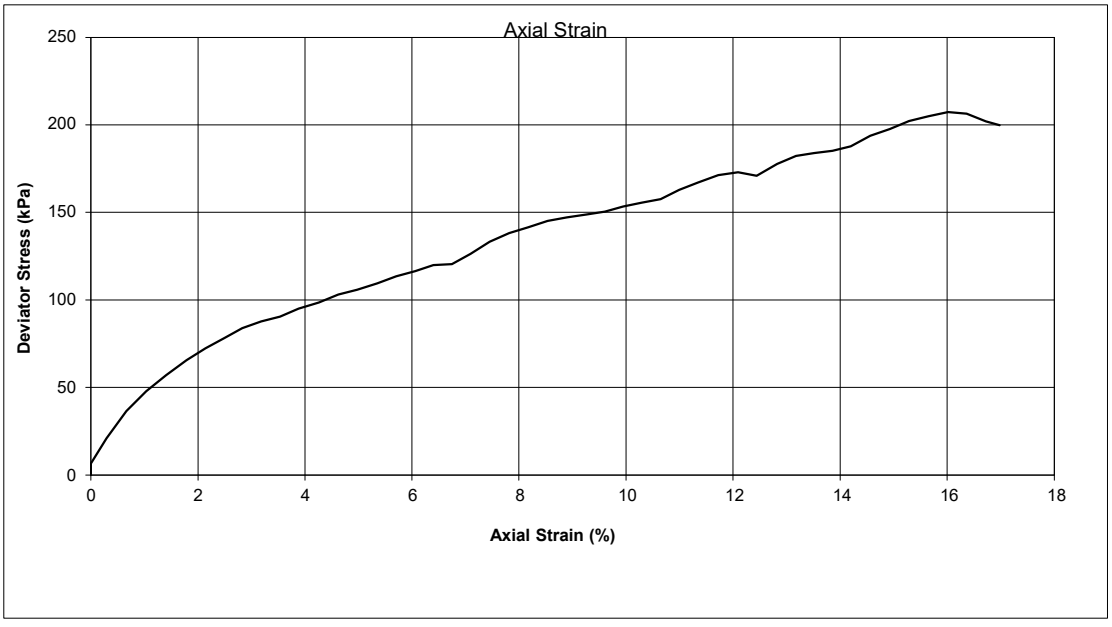
**BS 1377 : Part 7 : 1990 : Clause 9**

| | | | |
|---|---|---|---|
| | | Job Ref | **GT0386** |
| | | Borehole / Pit No | BH130 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #2762000520130020 |
| | | Depth (m) | 7.56 |
| Soil Description | Very stiff grey mottled dark grey and orangish brown slightly sandy slightly gravelly CLAY. | Sample type | CS |

| **Sample Details** | | Specimen 1 |
|---|---|---|
| Sample Condition | | Undisturbed |
| Sample Length | (mm): | 140 |
| Sample Diameter | (mm): | 70.1 |
| Moisture Content | (%): | 11 |
| Bulk Density | ($Mg/m^3$) | 2.11 |
| Dry Density | ($Mg/m^3$) | 1.90 |

Orientation within original sample

| **Test Details** | | Stage 1 | Stage 2 | Stage 3 |
|---|---|---|---|---|
| Membrane Thickness | (mm): | 0.40 | 0.40 | 0.40 |
| Membrane Correction | kPa: | 0.97 | 1.46 | 1.83 |
| Axial Displacement Rate | %/min: | 1.428571429 | 1.428571429 | 1.428571429 |
| Cell Pressure | kPa: | 75 | 150 | 225 |
| Strain at Failure | %: | 6.74 | 12.09 | 16.01 |
| Max. Deviator Stress | kPa: | 121 | 173 | 207 |
| Shear Strength | kPa: | 60 | 87 | 104 |
| Failure Mode | | Compound | | |

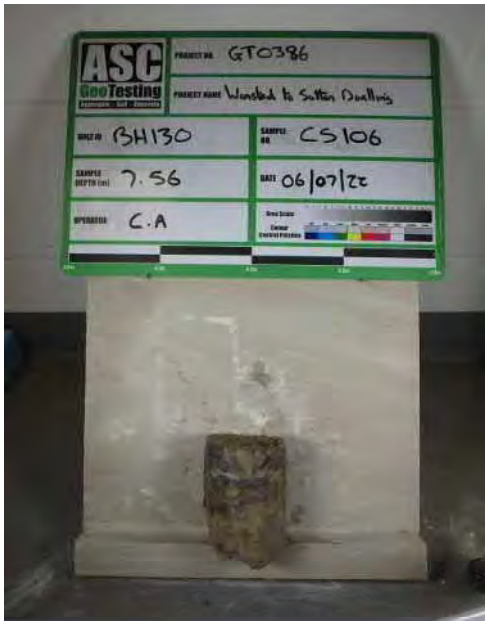


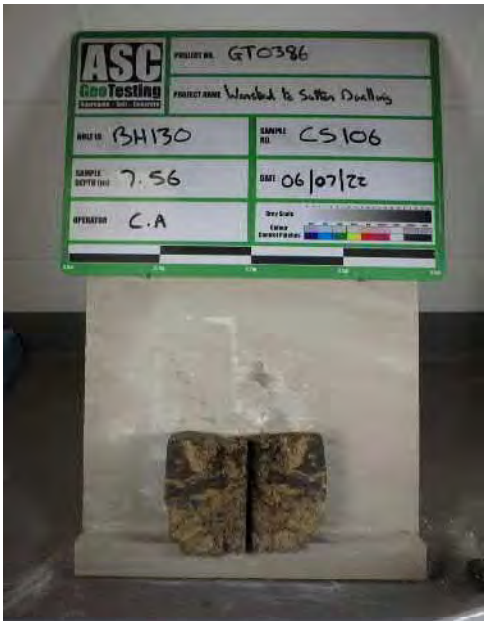

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE<br>BS 1377 : Part 7 : 1990 : Clause 9 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH130 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #2762000520130020 |
| | | Depth (m) | 7.56 |
| Soil Description | Very stiff grey mottled dark grey and orangish brown slightly sandy slightly gravelly CLAY. | Sample type | CS |




| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

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# UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE

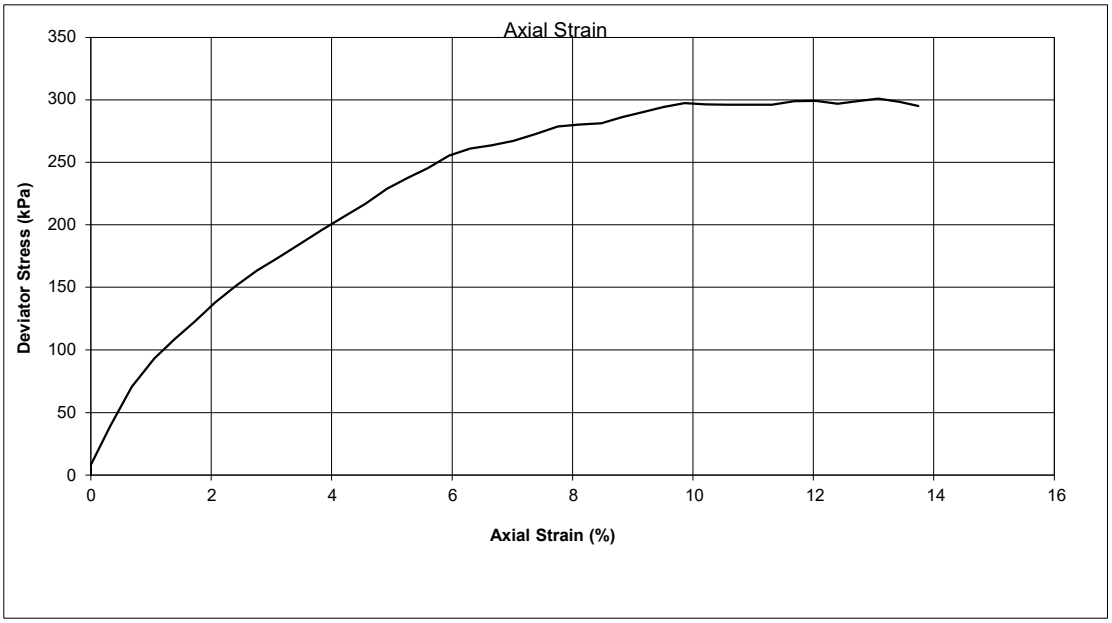
**BS 1377 : Part 7 : 1990 : Clause 9**

| | | | |
|---|---|---|---|
| | | Job Ref | **GT0386** |
| | | Borehole / Pit No | BH131 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #9315024497590010 |
| | | Depth (m) | 2.35 |
| Soil Description | Stiff light brown mottled dark brown and orangish brown slightly gravelly slightly sandy CLAY. | Sample type | CS |

| **Sample Details** | | Specimen 1 |
|---|---|---|
| Sample Condition | | Undisturbed |
| Sample Length | (mm): | 140 |
| Sample Diameter | (mm): | 70 |
| Moisture Content | (%): | 16 |
| Bulk Density | ($Mg/m^3$) | 2.10 |
| Dry Density | ($Mg/m^3$) | 1.81 |

Orientation within original sample

| **Test Details** | | Stage 1 | Stage 2 | Stage 3 |
|---|---|---|---|---|
| Membrane Thickness | (mm): | 0.40 | 0.40 | 0.40 |
| Membrane Correction | kPa: | 0.96 | 1.26 | 1.56 |
| Axial Displacement Rate | %/min: | 1.428571429 | 1.428571429 | 1.428571429 |
| Cell Pressure | kPa: | 20 | 40 | 60 |
| Strain at Failure | %: | 6.65 | 9.86 | 13.08 |
| Max. Deviator Stress | kPa: | 264 | 297 | 301 |
| Shear Strength | kPa: | 132 | 149 | 151 |
| Failure Mode | | Compound | | |

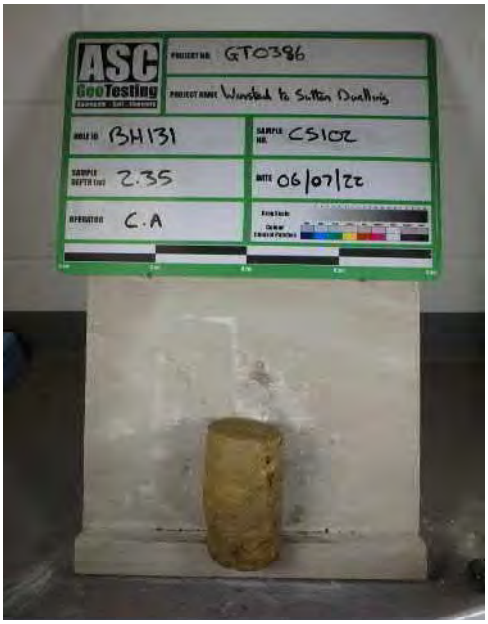



| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE<br>BS 1377 : Part 7 : 1990 : Clause 9 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH131 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #9315024497590010 |
| | | Depth (m) | 2.35 |
| Soil Description | Stiff light brown mottled dark brown and orangish brown slightly gravelly slightly sandy CLAY. | Sample type | CS |



| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

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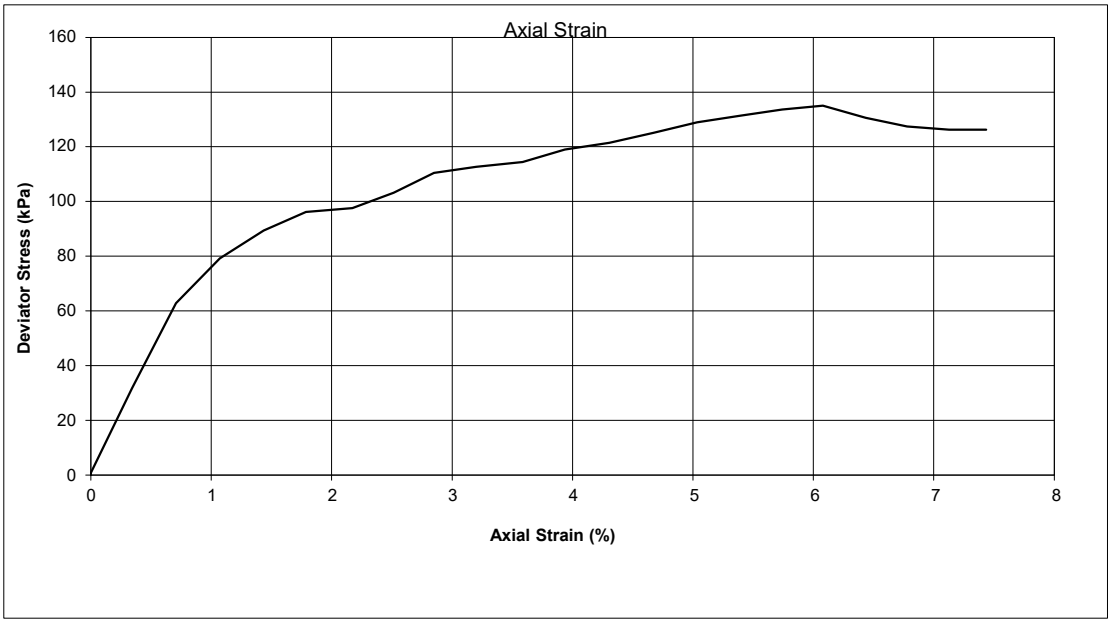
| | UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE<br>BS 1377 : Part 7 : 1990 : Clause 9 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH132 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #1837817701430033 |
| | | Depth (m) | 12.00 |
| Soil Description | Stiff dark grey CLAY. | Sample type | CS |

| Sample Details | | Specimen 1 |
|---|---|---|
| Sample Condition | | Undisturbed |
| Sample Length | (mm): | 140 |
| Sample Diameter | (mm): | 70 |
| Moisture Content | (%): | 27 |
| Bulk Density | ($Mg/m^3$) | 1.91 |
| Dry Density | ($Mg/m^3$) | 1.50 |

Orientation within original sample

| Test Details | | Stage 1 | Stage 2 | Stage 3 |
|---|---|---|---|---|
| Membrane Thickness | (mm): | 0.40 | 0.40 | 0.40 |
| Membrane Correction | kPa: | 0.34 | 0.50 | 0.91 |
| Axial Displacement Rate | %/min: | 1.428571429 | 1.428571429 | 1.428571429 |
| Cell Pressure | kPa: | 120 | 240 | 360 |
| Strain at Failure | %: | 2.17 | 3.20 | 6.08 |
| Max. Deviator Stress | kPa: | 98 | 113 | 135 |
| Shear Strength | kPa: | 49 | 56 | 68 |
| Failure Mode | | Compound | | |




| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE<br>BS 1377 : Part 7 : 1990 : Clause 9 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH132 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #1837817701430033 |
| | | Depth (m) | 12.00 |
| Soil Description | Stiff dark grey CLAY. | Sample type | CS |

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA
Authorised Approvers: Ben Armstrong (Quality Manager)

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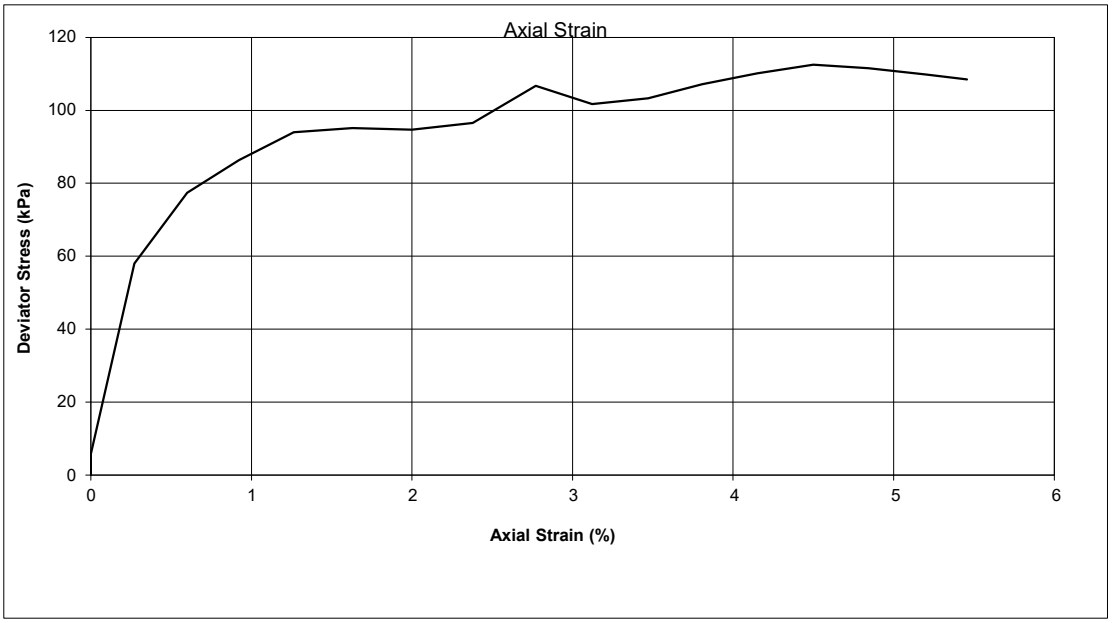
| | UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE<br>BS 1377 : Part 7 : 1990 : Clause 9 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH133 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #7602839981010008 |
| | | Depth (m) | 9.50 |
| Soil Description | Stiff dark grey CLAY. | Sample type | CS |

| Sample Details | | Specimen 1 |
|---|---|---|
| Sample Condition | | Undisturbed |
| Sample Length | (mm): | 140 |
| Sample Diameter | (mm): | 70 |
| Moisture Content | (%): | 21 |
| Bulk Density | ($Mg/m^3$) | 2.06 |
| Dry Density | ($Mg/m^3$) | 1.70 |

Orientation within original sample

| Test Details | | Stage 1 | Stage 2 | Stage 3 |
|---|---|---|---|---|
| Membrane Thickness | (mm): | 0.40 | 0.40 | 0.40 |
| Membrane Correction | kPa: | 0.25 | 0.43 | 0.70 |
| Axial Displacement Rate | %/min: | 1.428571429 | 1.428571429 | 1.428571429 |
| Cell Pressure | kPa: | 50 | 100 | 150 |
| Strain at Failure | %: | 1.63 | 2.77 | 4.50 |
| Max. Deviator Stress | kPa: | 95 | 107 | 112 |
| Shear Strength | kPa: | 48 | 53 | 56 |
| Failure Mode | | Brittle | | |




| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE<br>BS 1377 : Part 7 : 1990 : Clause 9 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH133 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #7602839981010008 |
| | | Depth (m) | 9.50 |
| Soil Description | Stiff dark grey CLAY. | Sample type | CS |

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

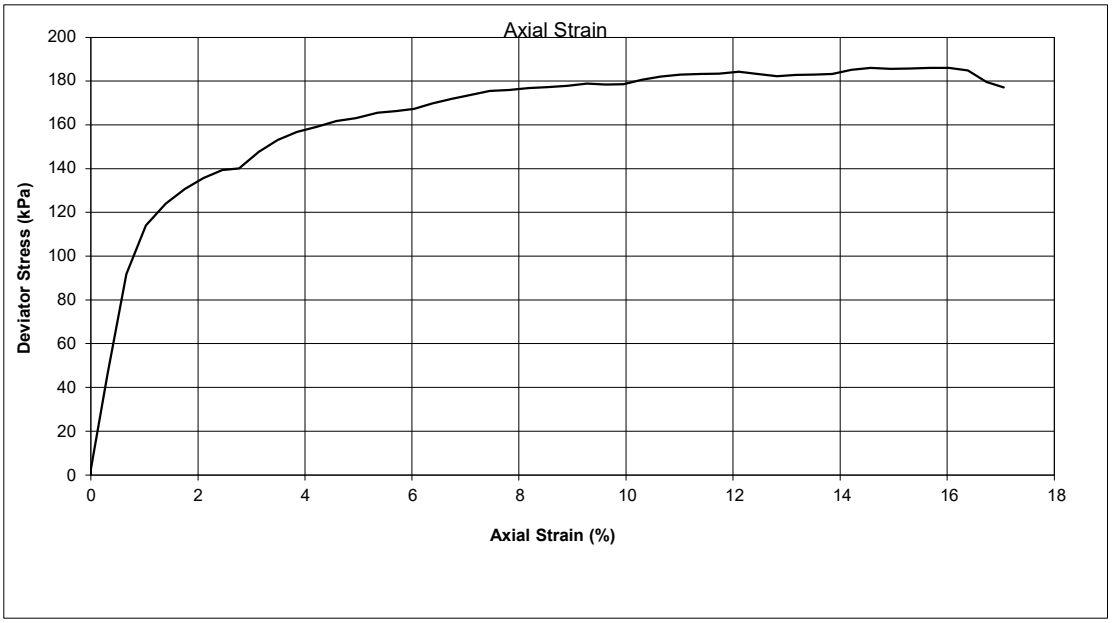
UKAS TESTING 8927

| | UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE<br>BS 1377 : Part 7 : 1990 : Clause 9 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH134 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #5825434818770016 |
| | | Depth (m) | 14.40 |
| Soil Description | Stiff dark grey CLAY. | Sample type | CS |

| Sample Details | | Specimen 1 |
|---|---|---|
| Sample Condition | | Undisturbed |
| Sample Length | (mm): | 140 |
| Sample Diameter | (mm): | 70 |
| Moisture Content | (%): | 21 |
| Bulk Density | ($Mg/m^3$) | 2.06 |
| Dry Density | ($Mg/m^3$) | 1.70 |

Orientation within original sample

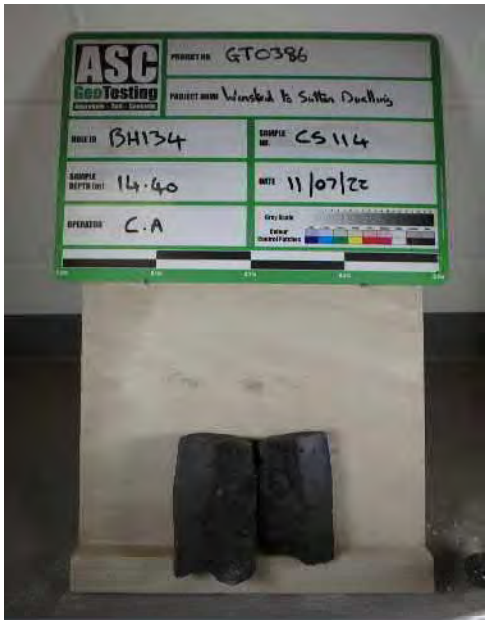
| Test Details | | Stage 1 | Stage 2 | Stage 3 |
|---|---|---|---|---|
| Membrane Thickness | (mm): | 0.40 | 0.40 | 0.40 |
| Membrane Correction | kPa: | 0.43 | 0.77 | 1.70 |
| Axial Displacement Rate | %/min: | 1.428571429 | 1.428571429 | 1.428571429 |
| Cell Pressure | kPa: | 140 | 280 | 420 |
| Strain at Failure | %: | 2.77 | 4.95 | 14.57 |
| Max. Deviator Stress | kPa: | 140 | 163 | 186 |
| Shear Strength | kPa: | 70 | 81 | 93 |
| Failure Mode | | Compound | | |




| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA
Authorised Approvers: Ben Armstrong (Quality Manager)

| | | | |
|---|---|---|---|
| | **UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE**<br>**BS 1377 : Part 7 : 1990 : Clause 9** | Job Ref | **GT0386** |
| | | Borehole / Pit No | BH134 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #5825434818770016 |
| | | Depth (m) | 14.40 |
| Soil Description | Stiff dark grey CLAY. | Sample type | CS |




| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

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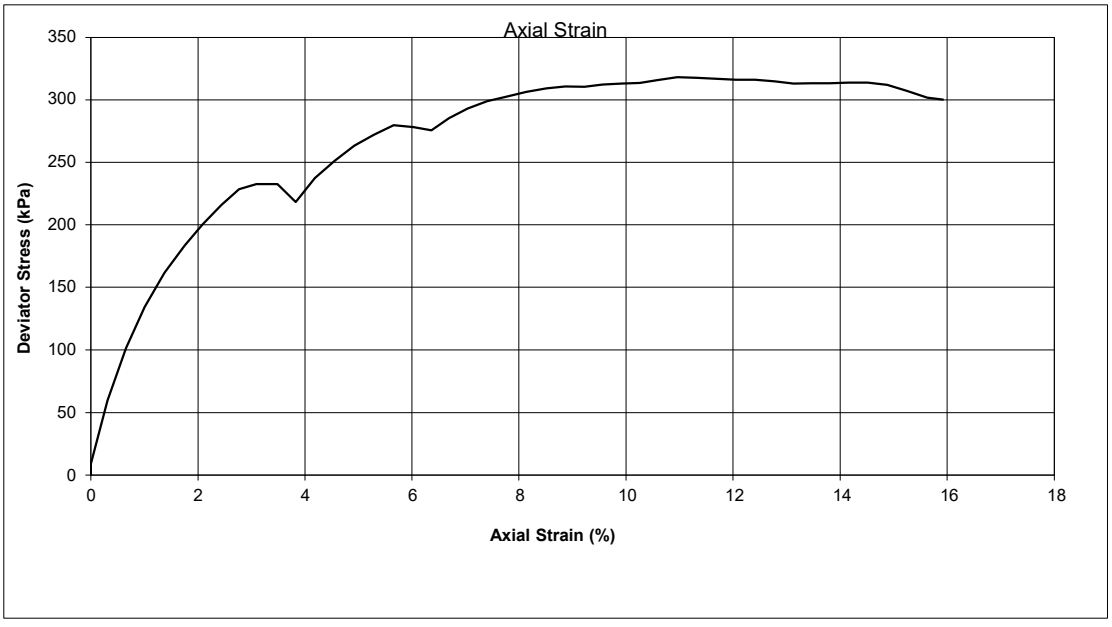
| | UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE<br>BS 1377 : Part 7 : 1990 : Clause 9 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH134 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #5825434818770018 |
| | | Depth (m) | 18.09 |
| Soil Description | Very stiff dark grey CLAY. | Sample type | CS |

| Sample Details | | Specimen 1 |
|---|---|---|
| Sample Condition | | Undisturbed |
| Sample Length | (mm): | 140 |
| Sample Diameter | (mm): | 70 |
| Moisture Content | (%): | 23 |
| Bulk Density | ($Mg/m^3$) | 1.94 |
| Dry Density | ($Mg/m^3$) | 1.58 |

Orientation within original sample

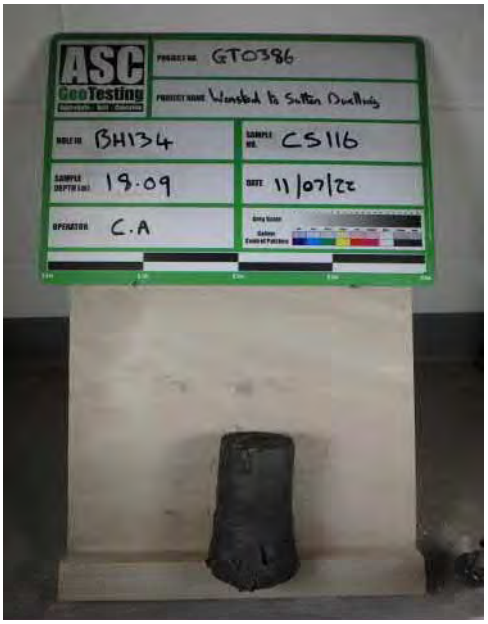
| Test Details | | Stage 1 | Stage 2 | Stage 3 |
|---|---|---|---|---|
| Membrane Thickness | (mm): | 0.40 | 0.40 | 0.40 |
| Membrane Correction | kPa: | 0.48 | 0.87 | 1.36 |
| Axial Displacement Rate | %/min: | 1.428571429 | 1.428571429 | 1.428571429 |
| Cell Pressure | kPa: | 130 | 360 | 490 |
| Strain at Failure | %: | 3.09 | 5.66 | 10.96 |
| Max. Deviator Stress | kPa: | 233 | 280 | 318 |
| Shear Strength | kPa: | 116 | 140 | 159 |
| Failure Mode | | Compound | | |




| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA
Authorised Approvers: Ben Armstrong (Quality Manager)

| | UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE<br>BS 1377 : Part 7 : 1990 : Clause 9 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH134 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #5825434818770018 |
| | | Depth (m) | 18.09 |
| Soil Description | Very stiff dark grey CLAY. | Sample type | CS |



| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA
Authorised Approvers: Ben Armstrong (Quality Manager)

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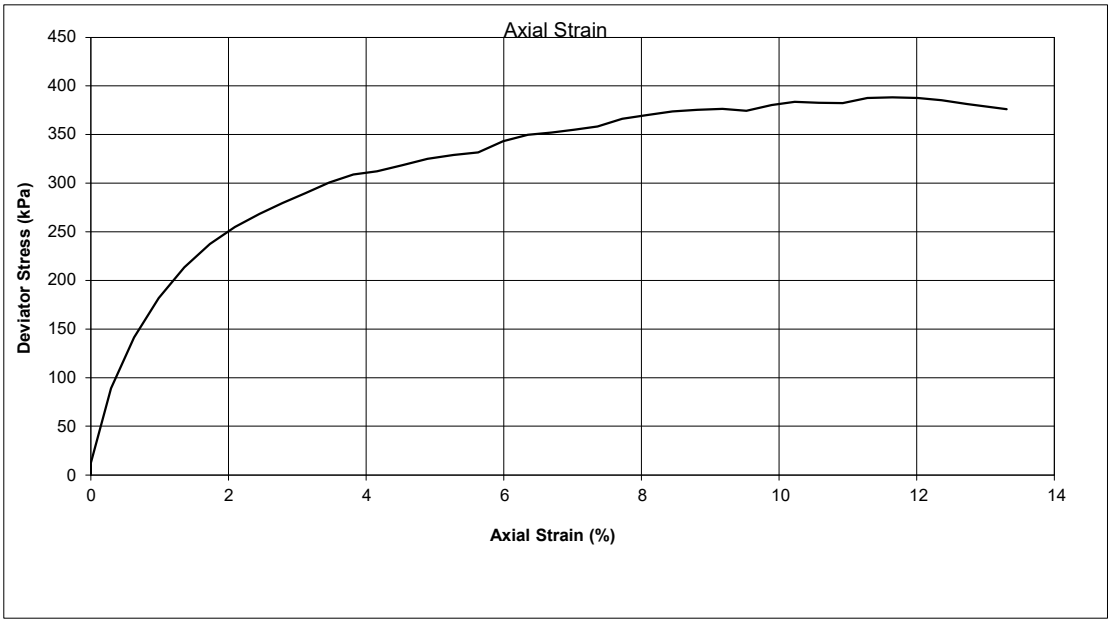
| | UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE<br>BS 1377 : Part 7 : 1990 : Clause 9 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH135 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #1980184154570010 |
| | | Depth (m) | 3.35 |
| Soil Description | Stiff light brown mottled grey and black slightly sandy CLAY. | Sample type | CS |

| Sample Details | | Specimen 1 |
|---|---|---|
| Sample Condition | | Undisturbed |
| Sample Length | (mm): | 140 |
| Sample Diameter | (mm): | 70 |
| Moisture Content | (%): | 13 |
| Bulk Density | ($Mg/m^3$) | 2.12 |
| Dry Density | ($Mg/m^3$) | 1.88 |

Orientation within original sample

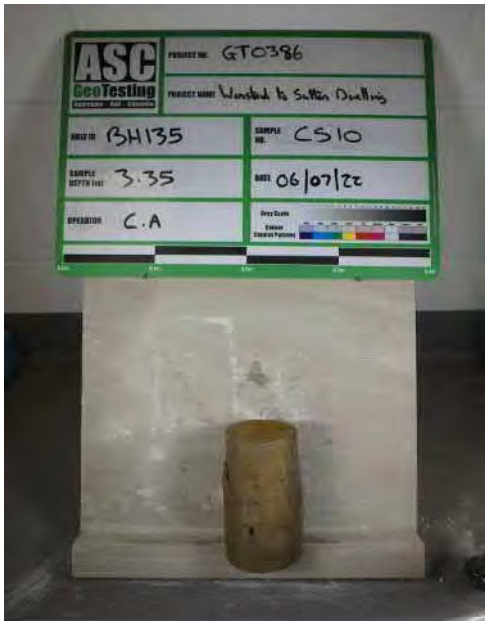
| Test Details | | Stage 1 | Stage 2 | Stage 3 |
|---|---|---|---|---|
| Membrane Thickness | (mm): | 0.40 | 0.40 | 0.40 |
| Membrane Correction | kPa: | 0.87 | 1.20 | 1.43 |
| Axial Displacement Rate | %/min: | 1.428571429 | 1.428571429 | 1.428571429 |
| Cell Pressure | kPa: | 30 | 60 | 90 |
| Strain at Failure | %: | 5.63 | 9.18 | 11.65 |
| Max. Deviator Stress | kPa: | 332 | 376 | 388 |
| Shear Strength | kPa: | 166 | 188 | 194 |
| Failure Mode | | Compound | | |




| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA
Authorised Approvers: Ben Armstrong (Quality Manager)

| | UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE<br>BS 1377 : Part 7 : 1990 : Clause 9 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH135 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #1980184154570010 |
| | | Depth (m) | 3.35 |
| Soil Description | Stiff light brown mottled grey and black slightly sandy CLAY. | Sample type | CS |



| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

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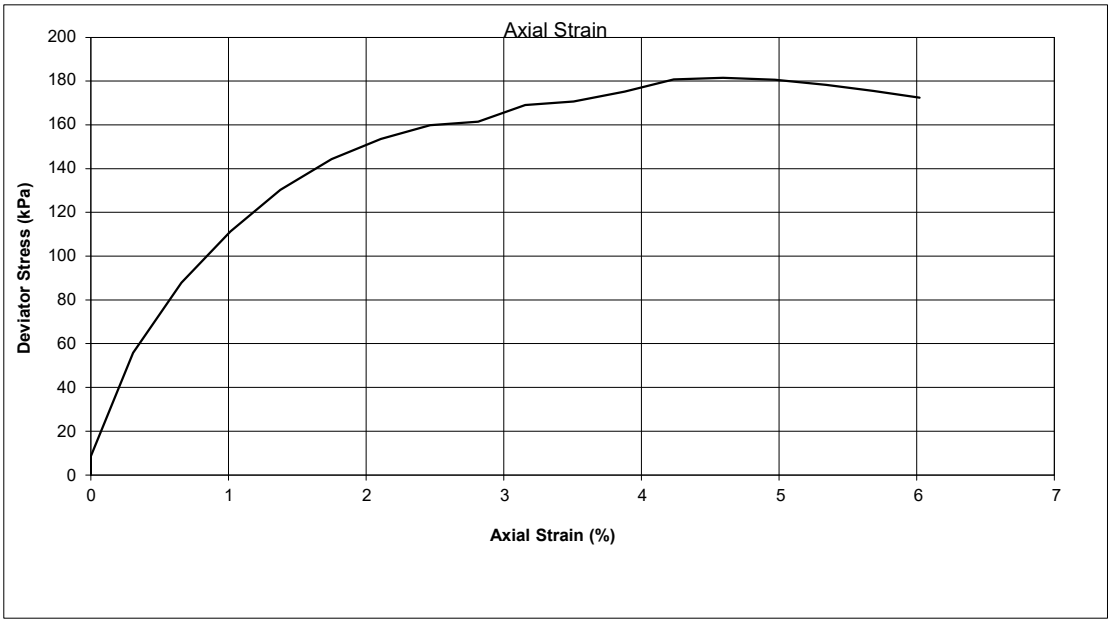
| | UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE<br>BS 1377 : Part 7 : 1990 : Clause 9 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH135 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #1980184154570012 |
| | | Depth (m) | 7.70 |
| Soil Description | Stiff dark grey CLAY. | Sample type | CS |

| Sample Details | | Specimen 1 |
|---|---|---|
| Sample Condition | | Undisturbed |
| Sample Length | (mm): | 140 |
| Sample Diameter | (mm): | 70 |
| Moisture Content | (%): | 23 |
| Bulk Density | ($Mg/m^3$) | 2.03 |
| Dry Density | ($Mg/m^3$) | 1.65 |

Orientation within original sample

| Test Details | | Stage 1 | Stage 2 | Stage 3 |
|---|---|---|---|---|
| Membrane Thickness | (mm): | 0.40 | 0.40 | 0.40 |
| Membrane Correction | kPa: | 0.39 | 0.55 | 0.72 |
| Axial Displacement Rate | %/min: | 1.428571429 | 1.428571429 | 1.428571429 |
| Cell Pressure | kPa: | 75 | 150 | 225 |
| Strain at Failure | %: | 2.46 | 3.51 | 4.59 |
| Max. Deviator Stress | kPa: | 160 | 171 | 181 |
| Shear Strength | kPa: | 80 | 85 | 91 |
| Failure Mode | | Brittle | | |

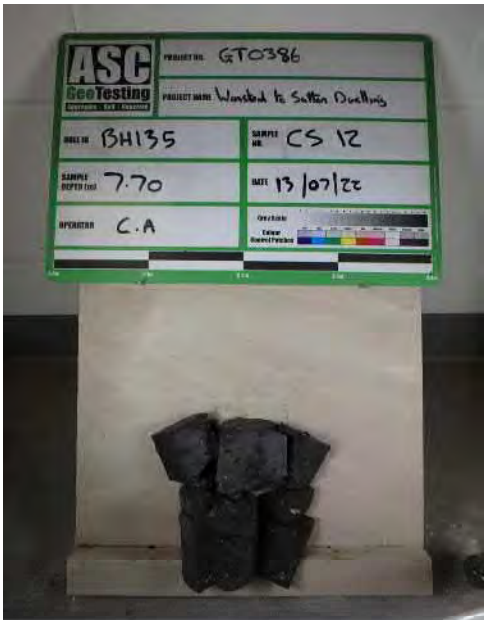



| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE<br>BS 1377 : Part 7 : 1990 : Clause 9 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH135 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #1980184154570012 |
| | | Depth (m) | 7.70 |
| Soil Description | Stiff dark grey CLAY. | Sample type | CS |




| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

8927

# UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE

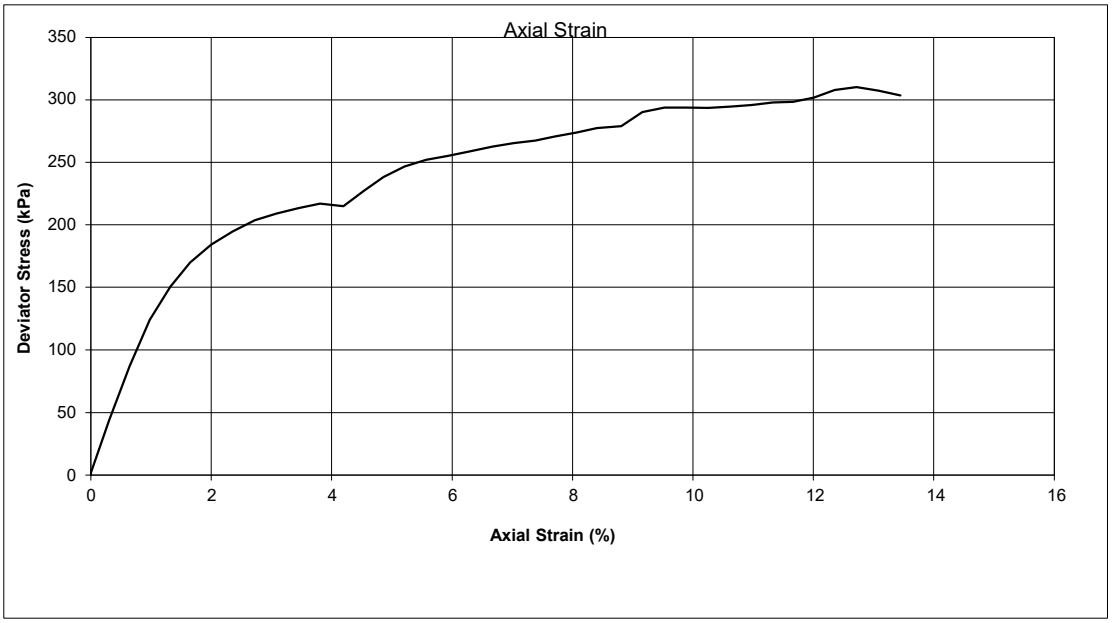
**BS 1377 : Part 7 : 1990 : Clause 9**

| | | | |
|---|---|---|---|
| | | Job Ref | **GT0386** |
| | | Borehole / Pit No | BH135 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #1980184154570020 |
| | | Depth (m) | 20.00 |
| Soil Description | Very stiff dark grey CLAY. | Sample type | CS |

| **Sample Details** | | Specimen 1 |
|---|---|---|
| Sample Condition | | Undisturbed |
| Sample Length | (mm): | 140 |
| Sample Diameter | (mm): | 70 |
| Moisture Content | (%): | 22 |
| Bulk Density | ($Mg/m^3$) | 2.09 |
| Dry Density | ($Mg/m^3$) | 1.71 |

Orientation within original sample

| **Test Details** | | Stage 1 | Stage 2 | Stage 3 |
|---|---|---|---|---|
| Membrane Thickness | (mm): | 0.40 | 0.40 | 0.40 |
| Membrane Correction | kPa: | 0.60 | 1.13 | 1.52 |
| Axial Displacement Rate | %/min: | 1.428571429 | 1.428571429 | 1.428571429 |
| Cell Pressure | kPa: | 200 | 400 | 600 |
| Strain at Failure | %: | 3.81 | 8.41 | 12.71 |
| Max. Deviator Stress | kPa: | 217 | 278 | 310 |
| Shear Strength | kPa: | 108 | 139 | 155 |
| Failure Mode | | Compound | | |




| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE<br>BS 1377 : Part 7 : 1990 : Clause 9 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH135 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #1980184154570020 |
| | | Depth (m) | 20.00 |
| Soil Description | Very stiff dark grey CLAY. | Sample type | CS |

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

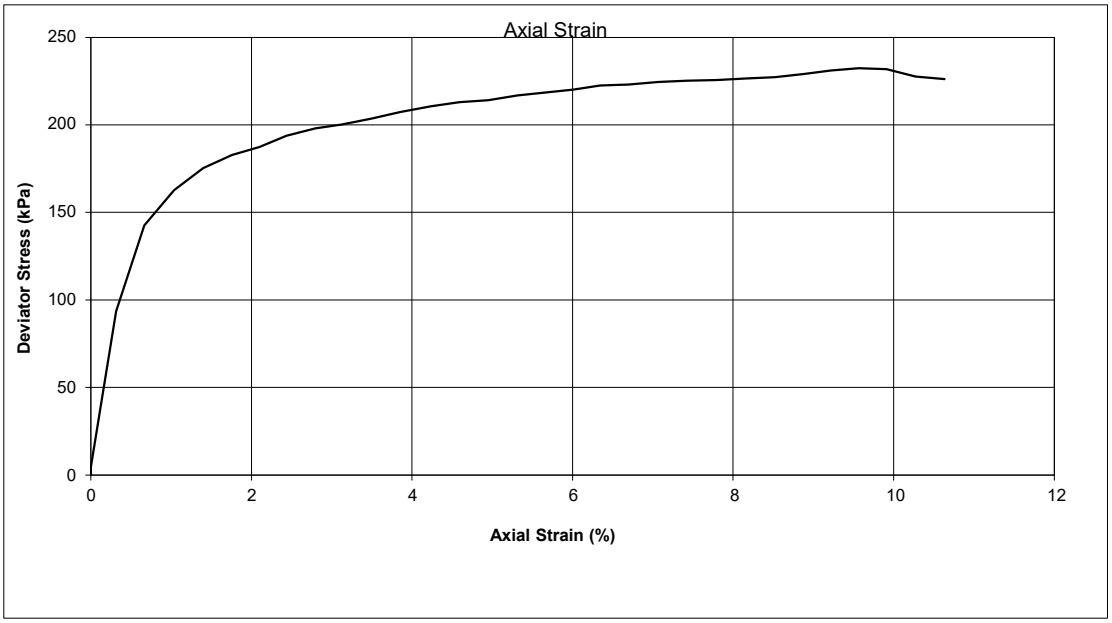
8927

| | UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE<br>BS 1377 : Part 7 : 1990 : Clause 9 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH136 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #2729839204210007 |
| | | Depth (m) | 1.70 |
| Soil Description | Stiff light brown mottled grey slightly sandy slightly gravelly CLAY. | Sample type | CS |

| Sample Details | | Specimen 1 |
|---|---|---|
| Sample Condition | | Undisturbed |
| Sample Length | (mm): | 140 |
| Sample Diameter | (mm): | 70 |
| Moisture Content | (%): | 19 |
| Bulk Density | ($Mg/m^3$) | 2.07 |
| Dry Density | ($Mg/m^3$) | 1.74 |

Orientation within original sample

| Test Details | | Stage 1 | Stage 2 | Stage 3 |
|---|---|---|---|---|
| Membrane Thickness | (mm): | 0.40 | 0.40 | 0.40 |
| Membrane Correction | kPa: | 0.77 | 0.93 | 1.23 |
| Axial Displacement Rate | %/min: | 1.428571429 | 1.428571429 | 1.428571429 |
| Cell Pressure | kPa: | 15 | 30 | 45 |
| Strain at Failure | %: | 4.95 | 6.34 | 9.56 |
| Max. Deviator Stress | kPa: | 214 | 222 | 232 |
| Shear Strength | kPa: | 107 | 111 | 116 |
| Failure Mode | | Compound | | |




| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA
Authorised Approvers: Ben Armstrong (Quality Manager)

| | UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE<br>BS 1377 : Part 7 : 1990 : Clause 9 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH136 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #2729839204210007 |
| | | Depth (m) | 1.70 |
| Soil Description | Stiff light brown mottled grey slightly sandy slightly gravelly CLAY. | Sample type | CS |

| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA
Authorised Approvers: Ben Armstrong (Quality Manager)

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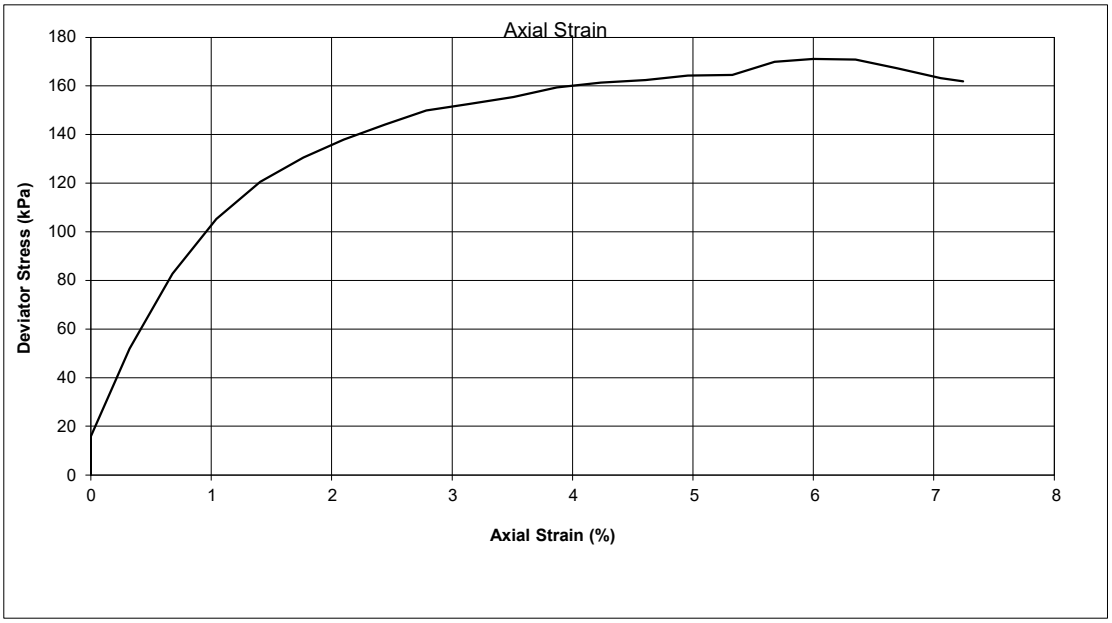
| | UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE<br>BS 1377 : Part 7 : 1990 : Clause 9 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH136 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #2729839204210014 |
| | | Depth (m) | 5.90 |
| Soil Description | Stiff dark grey CLAY. | Sample type | CS |

| Sample Details | | Specimen 1 |
|---|---|---|
| Sample Condition | | Undisturbed |
| Sample Length | (mm): | 140 |
| Sample Diameter | (mm): | 70.1 |
| Moisture Content | (%): | 19 |
| Bulk Density | ($Mg/m^3$) | 2.07 |
| Dry Density | ($Mg/m^3$) | 1.74 |

Orientation within original sample

| Test Details | | Stage 1 | Stage 2 | Stage 3 |
|---|---|---|---|---|
| Membrane Thickness | (mm): | 0.40 | 0.40 | 0.40 |
| Membrane Correction | kPa: | 0.49 | 0.77 | 0.90 |
| Axial Displacement Rate | %/min: | 1.428571429 | 1.428571429 | 1.428571429 |
| Cell Pressure | kPa: | 60 | 120 | 180 |
| Strain at Failure | %: | 3.14 | 4.96 | 6.00 |
| Max. Deviator Stress | kPa: | 153 | 164 | 171 |
| Shear Strength | kPa: | 76 | 82 | 86 |
| Failure Mode | | Brittle | | |

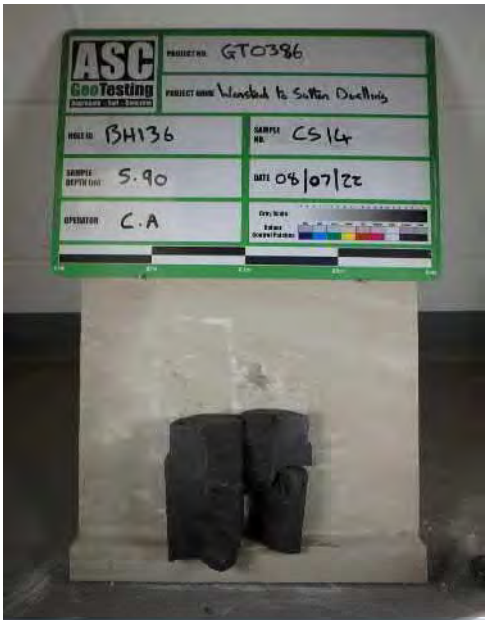



| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

| | UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE<br>BS 1377 : Part 7 : 1990 : Clause 9 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH136 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #2729839204210014 |
| | | Depth (m) | 5.90 |
| Soil Description | Stiff dark grey CLAY. | Sample type | CS |




| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

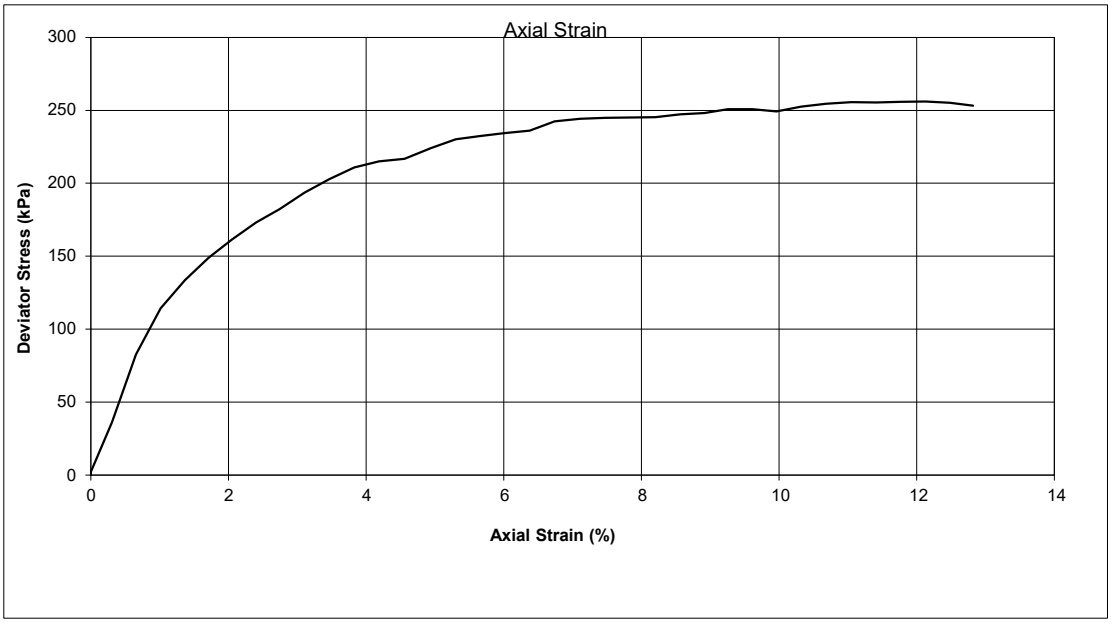
8927

| | UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE<br>BS 1377 : Part 7 : 1990 : Clause 9 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH136 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #2729839204210024 |
| | | Depth (m) | 20.78 |
| Soil Description | Stiff dark grey CLAY. | Sample type | CS |

| Sample Details | | Specimen 1 |
|---|---|---|
| Sample Condition | | Undisturbed |
| Sample Length | (mm): | 140 |
| Sample Diameter | (mm): | 70 |
| Moisture Content | (%): | 22 |
| Bulk Density | ($Mg/m^3$) | 1.98 |
| Dry Density | ($Mg/m^3$) | 1.62 |

Orientation within original sample

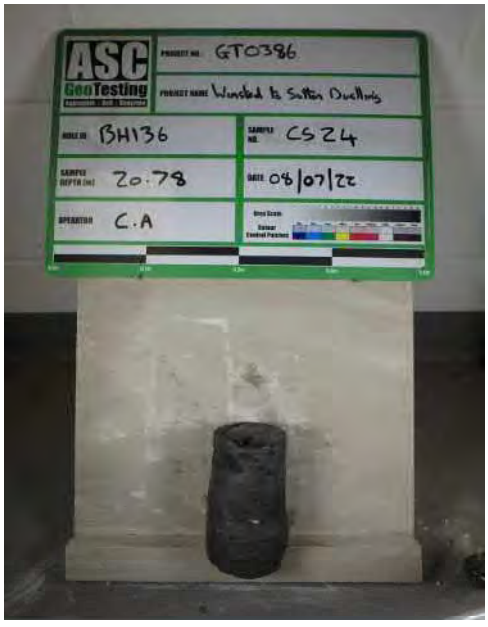
| Test Details | | Stage 1 | Stage 2 | Stage 3 |
|---|---|---|---|---|
| Membrane Thickness | (mm): | 0.40 | 0.40 | 0.40 |
| Membrane Correction | kPa: | 0.71 | 0.90 | 1.47 |
| Axial Displacement Rate | %/min: | 1.428571429 | 1.428571429 | 1.428571429 |
| Cell Pressure | kPa: | 200 | 400 | 600 |
| Strain at Failure | %: | 4.56 | 6.00 | 12.13 |
| Max. Deviator Stress | kPa: | 217 | 234 | 256 |
| Shear Strength | kPa: | 108 | 117 | 128 |
| Failure Mode | | Compound | | |

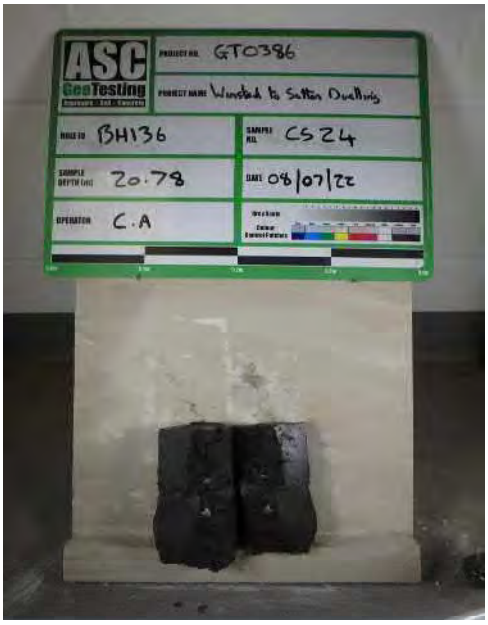



| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA
Authorised Approvers: Ben Armstrong (Quality Manager)

| | UNDRAINED TRIAXIAL COMPRESSION - MULTISTAGE<br>BS 1377 : Part 7 : 1990 : Clause 9 | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH136 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | #2729839204210024 |
| | | Depth (m) | 20.78 |
| Soil Description | Stiff dark grey CLAY. | Sample type | CS |




| Operator | Checked | Approved | Remarks |
|---|---|---|---|
| calbon | calbon | barmstrong | |

Test Report By: ASC Geotesting, Victory Park, Attleborough, Norfolk, NR17 1ZA

Authorised Approvers: Ben Armstrong (Quality Manager)

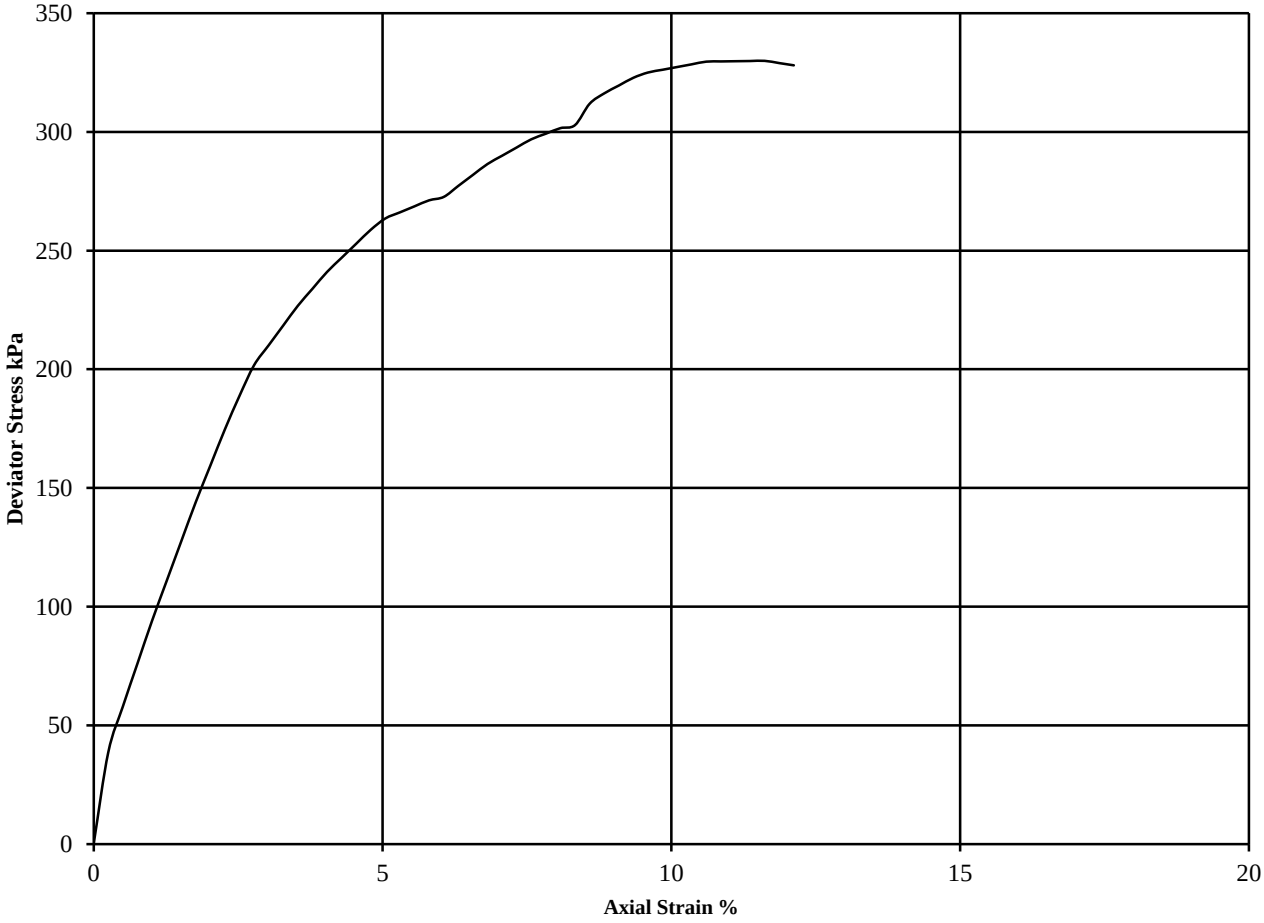
UKAS TESTING 8927

# UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

**WITHOUT MEASUREMENT OF PORE PRESSURE**

**BS1377 : Part7 : 1990: Clause 9**

| | | | |
|---|---|---|---|
| **Hole Number:** | **TP119** | **Top Depth (m):** | **1.00** |
| **Sample Number:** | **7** | **Base Depth (m):** | **1.30** |
| **Sample Type** | **B** | | |



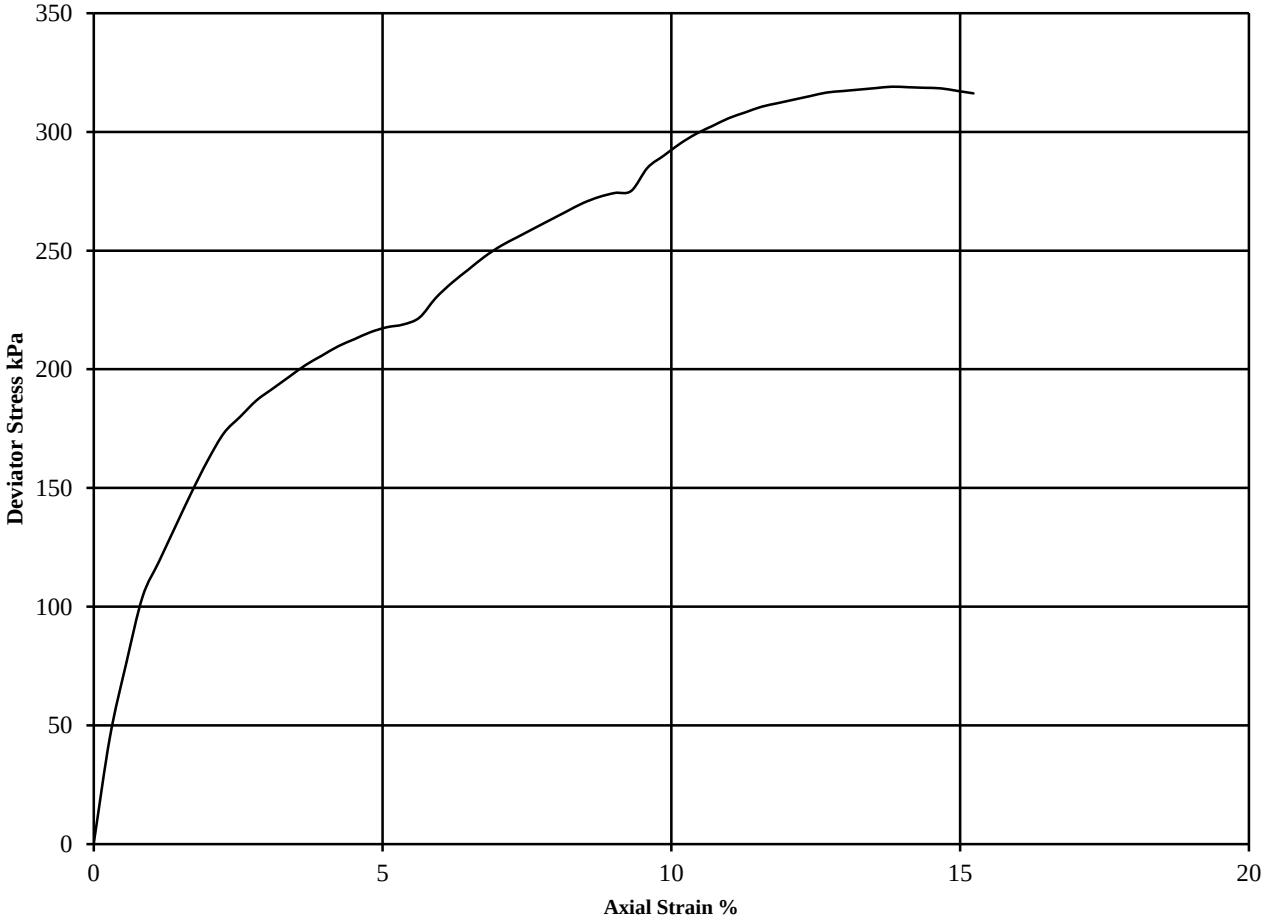

| Diameter (mm): | | 100 | Height (mm): | | 198 | Test: | UU Multistage | | Remarks |
|---|---|---|---|---|---|---|---|---|---|
| Specimen | Moisture Content (%) | Bulk Density (Mg/m3) | Dry Density (Mg/m3) | Cell Pressure (kPa) $\theta_3$ | Corr. Max. Deviator Stress (kPa) $(\theta_1-\theta_3)_f$ | Shear Strength Cu (kPa) $^1/_2(\theta_1-\theta_3)_f$ | Failure Strain (%) | Mode of Failure | Disturbed Sample<br>Remoulded with 2.5kg effort<br>Rate of strain = 2 %/min<br>Latex Membrane used 0.2 mm thick<br>Membrane Correction applied (kPa) |
| 1 | 19 | 1.99 | 1.67 | 10 | 273 | 136 | 6.1 | | 0.37 0.36 0.36 |
| | | | | 20 | 303 | 151 | 8.3 | | See summary of soil descriptions |
| | | | | 30 | 330 | 165 | 11.6 | Plastic | |

# UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

**WITHOUT MEASUREMENT OF PORE PRESSURE**

**BS1377 : Part7 : 1990: Clause 9**

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH115** | **Top Depth (m):** | **7.25** |
| **Sample Number:** | **101** | **Base Depth (m):** | **7.57** |
| **Sample Type** | **CS** | | |



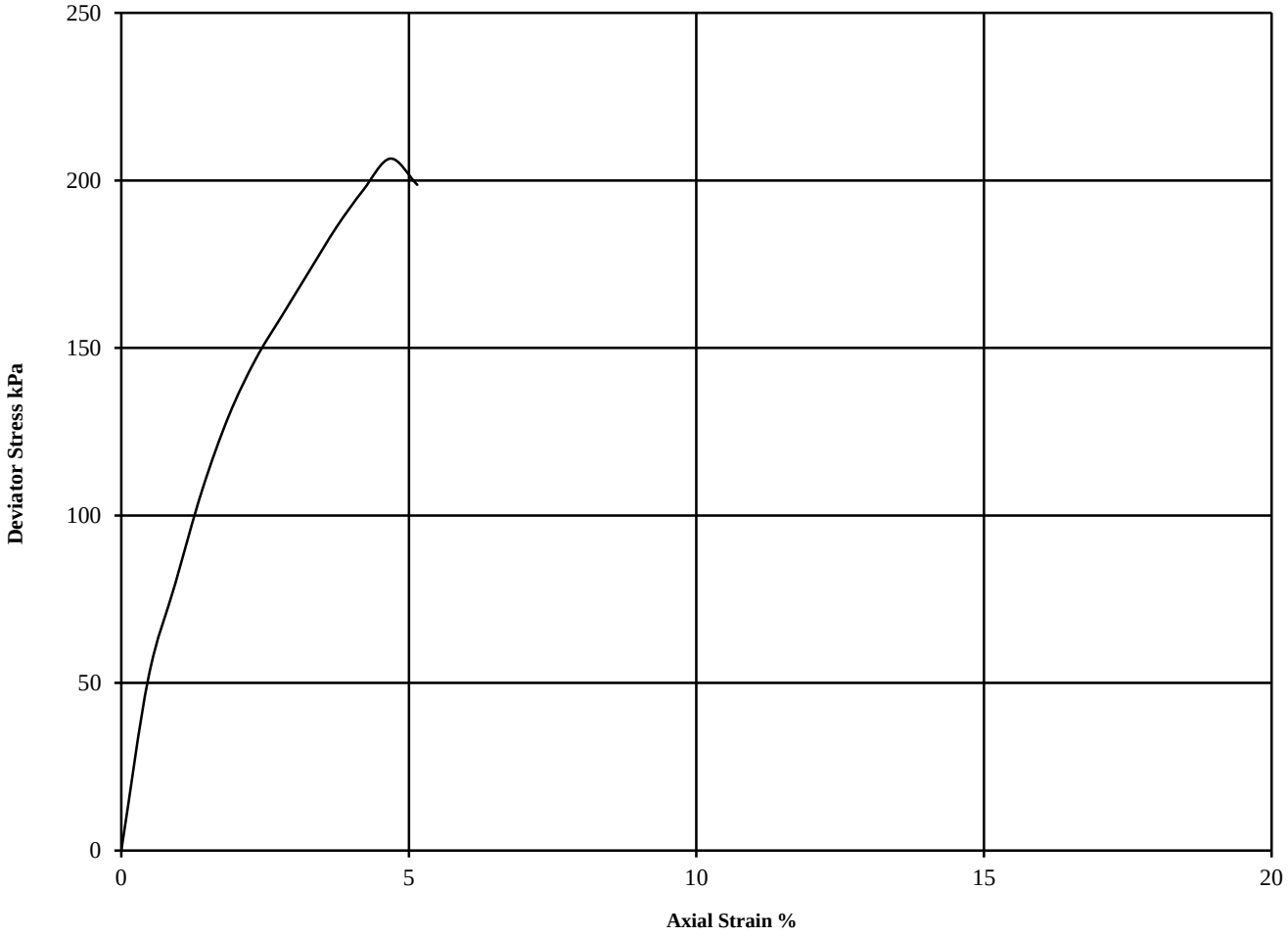

| Diameter (mm): | | 110 | Height (mm): | | 195 | Test: | UU Multistage | | Remarks |
|---|---|---|---|---|---|---|---|---|---|
| Specimen | Moisture Content (%) | Bulk Density (Mg/m3) | Dry Density (Mg/m3) | Cell Pressure (kPa) $\theta_3$ | Corr. Max. Deviator Stress (kPa) $(\theta_1-\theta_3)_f$ | Shear Strength Cu (kPa) $^1/_2(\theta_1-\theta_3)_f$ | Failure Strain (%) | Mode of Failure | Undisturbed Sample<br>Sample taken from top of tube<br>Rate of strain = 2 %/min<br>Latex Membrane used 0.2 mm thick<br>Membrane Correction applied (kPa) |
| 1 | 15 | 2.19 | 1.90 | 70 | 219 | 109 | 5.4 | | 0.34 0.33 0.32 |
| | | | | 140 | 275 | 138 | 9.3 | | See summary of soil descriptions |
| | | | | 210 | 319 | 160 | 13.8 | Intermediate | |

# UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

**WITHOUT MEASUREMENT OF PORE PRESSURE**

**BS1377 : Part7 : 1990: Clause 8**

| | | | |
|---|---|---|---|
| **Hole Number:** | **BH125** | **Top Depth (m):** | **1.55** |
| **Sample Number:** | **101** | **Base Depth (m):** | **1.75** |
| **Sample Type** | **CS** | | |




| Diameter (mm): | | 80 | Height (mm): | | 171 | Test: | UU Single Stage | | Remarks: |
|---|---|---|---|---|---|---|---|---|---|
| Specimen | Moisture Content (%) | Bulk Density (Mg/m3) | Dry Density (Mg/m3) | Cell Pressure (kPa) $\theta_3$ | Corr. Max. Deviator Stress (kPa) $(\theta_1-\theta_3)_f$ | Shear Strength Cu (kPa) $^1/_2(\theta_1-\theta_3)_f$ | Failure Strain (%) | Mode of Failure | Undisturbed Sample<br>Sample taken from top of tube<br>Rate of strain = 2 %/min<br>Latex Membrane used 0.2 mm thick,<br>Correction applied 0.46 |
| 1 | 12 | 2.22 | 1.98 | 15 | 207 | 103 | 4.7 | Brittle | See summary of soil descriptions |

*** Single stage test due to early brittle failure**

| | | | |
|---|---|---|---|
| UKAS TESTING 4043 | PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** | **Contract No:** PSL22/3650<br>**Client Ref:** GT0386 |

# Effective Stress Triaxial Compression

## Consolidated Undrained

**Summary Report**

| Sample Details | | | | |
|---|---|---|---|---|
| *sketch showing specimen location in original sample* | Depth | | | 2.87-3.20m |
| | Description | | | See summary of soil descriptions. |
| | Type | | | Undisturbed, vertical orientation. |
| | Initial Sample Length | $L_0$ | (mm) | 140.0 |
| | Initial Sample Diameter | $D_0$ | (mm) | 70.0 |
| | Initial Sample Weight | $W_0$ | (gr) | 1108.0 |
| | Initial Bulk Density | $\rho_0$ | (Mg/m3) | 2.05 |
| | Particle Density | $\rho_s$ | (Mg/m3) | 2.66 |

| **Initial Conditions** | | | Stage 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_{3i}$ | (kPa) | 680 | 710 | 740 | |
| Initial Back Pressure | $U_{bi}$ | (kPa) | 650 | 650 | 650 | |
| Membrane Thickness | $m_b$ | (mm) | 0.600 | | | |
| Displacement Input | $L_{IP}$ | (mm) | CH 2 | | | |
| Load Input | $N_{IP}$ | (N) | CH 1 | | | |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | CH 3 | | | |
| Sample Volume | $V$ | (cc) | CH 2 | | | |
| Initial Moisture | $\omega_i$ | (%) | 17 | | | |
| Initial Dry Density | $\rho_{di}$ | (Mg/m3) | 1.76 | | | |
| Initial Voids Ratio | $e_i$ | . | 0.510 | | | |
| Initial Degree of Saturation | $S_i$ | (%) | 87 | | | |
| B Value | $B$ | . | 0.95 | | | |

| **Final Conditions** | | | | | | |
|---|---|---|---|---|---|---|
| Final Moisture | $\omega_f$ | (%) | 15 | | | |
| Final Dry Density | $\rho_{df}$ | (Mg/m3) | 1.97 | | | |
| Final Voids Ratio | $e_f$ | . | 0.353 | | | |
| Final Degree of Saturation | $S_f$ | (%) | 100.0 | | | |
| | | | Stage 1 | 2 | 3 | 4 |
| Failure Criteria | | . | Max. Dev. Stress | Max. Dev. Stress | Max. Dev. Stress | |
| Strain At Failure | $\varepsilon_f$ | (%) | 4.10 | 7.33 | 19.86 | |
| Stress At Failure | $(\sigma_1-\sigma_3)$ | (kPa) | 77.5 | 105.7 | 132.1 | |
| Minor Stress At Failure | $\sigma_3'$ | (kPa) | 15.0 | 38.0 | 60.0 | |
| Major Stress At Failure | $\sigma_1'$ | (kPa) | 92.5 | 143.7 | 192.1 | |
| Principal Stress Ratio At Failure | $\sigma_1'/\sigma_3'$ | | 6.167 | 3.782 | 3.202 | |

**Notes**

*Plastic*

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 7 | Test Name | BH135 2.87-3.20m CS9 |
| | | Test Date | 12/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH135 |
| | | Sample | 2.87-3.20m CS9 |
| Client | Ground Technology | Depth | 2.87-3.20m |

UKAS TESTING 4043

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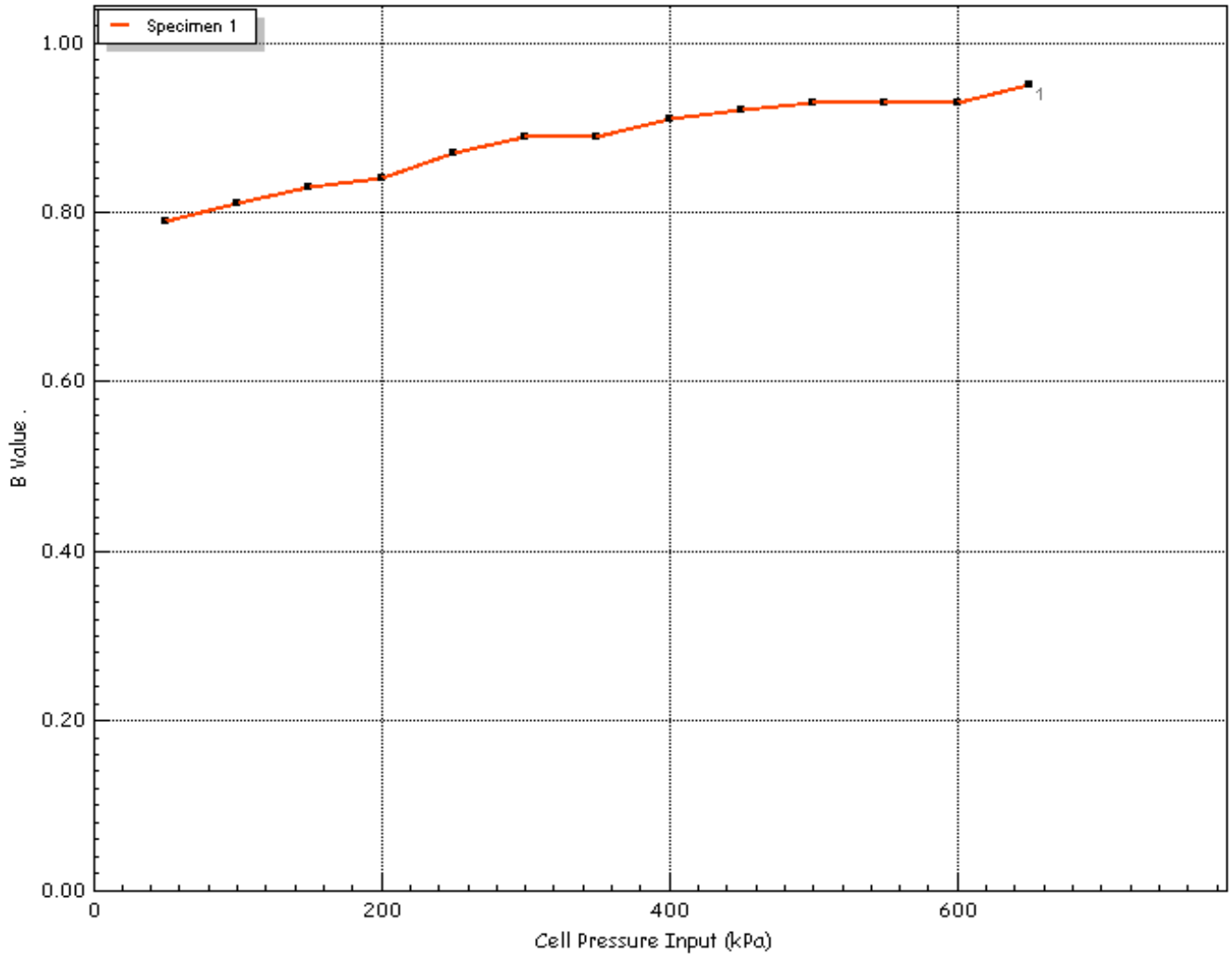
# Effective Stress Triaxial Compression

## Consolidated Undrained

**Saturation Plots**

| | | | |
|---|---|---|---|
| Saturation Method | | | Stepped |
| Cell Pressure Input | σ | (kPa) | 650 |
| Pore Water Pressure Input | u pwp | (kPa) | 635 |
| B Value | B | . | 0.95 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 7 | Test Name | BH135 2.87-3.20m CS9 |
| | | Test Date | 12/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH135 |
| | | Sample | 2.87-3.20m CS9 |
| Client | Ground Technology | Depth | 2.87-3.20m |

# Effective Stress Triaxial Compression

## Consolidated Undrained

**Consolidation Plots**

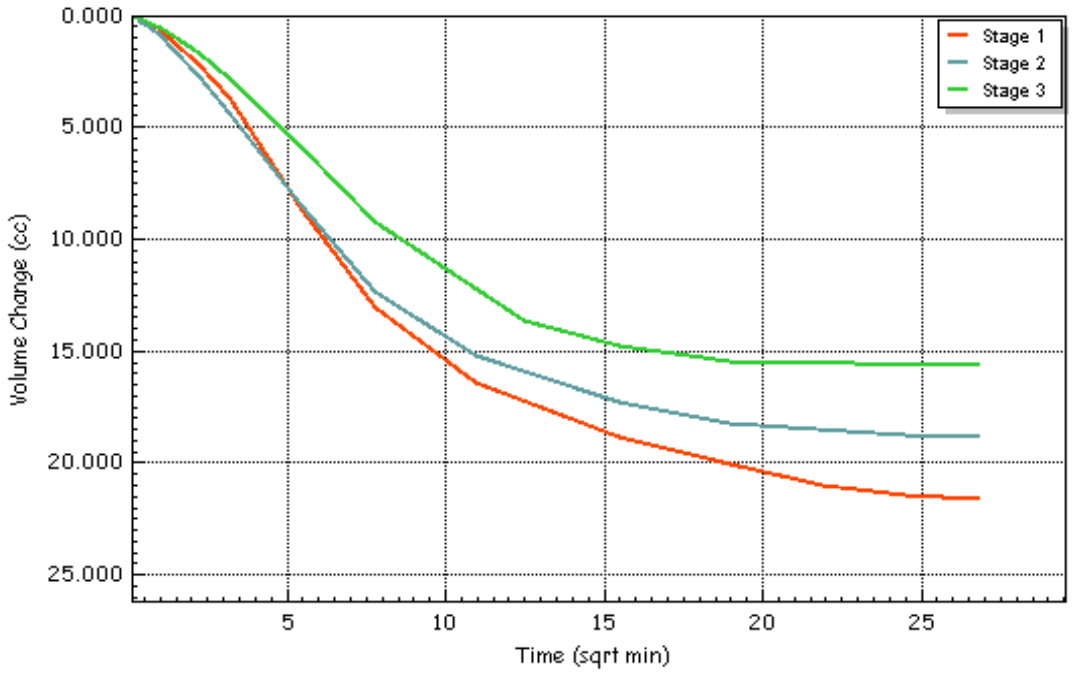
**Initial Conditions**

| | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_3$ | (kPa) | 680 | 710 | 740 |
| Initial Back Pressure | $u_{bi}$ | (kPa) | 650 | 650 | 650 |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | 662 | 689 | 724 |
| Drainage Method | | | Radial+One End | | |

**Final Conditions**

| | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| PWP Dissipation % | U% | (%) | 100.00 | 100.00 | 100.00 |
| Volumetric Strain | $\varepsilon_v$% | (%) | 4.01 | 7.50 | 10.39 |
| Corrected Length | $L_C$ | (mm) | 138.1 | 129.2 | 119.4 |
| Corrected Area | $A_C$ | (cm2) | 37.49 | 37.04 | 37.31 |
| Corrected Volume | $V_C$ | (cc) | 517.713 | 498.898 | 483.295 |
| T100 Time to Failure | $t_{100}$ | (min) | 124.13 | 128.67 | 144.80 |
| Consolidation | $c_v$ | (m2/year) | 0.816 | 0.787 | 0.700 |
| Compressibility | $m_v$ | (m2/MN) | 1.382 | 0.202 | 1.039 |
| Test Time | $t_F$ | (h:m:s) | 03:43:26 | 03:51:36 | 04:20:38 |
| Estimated Strain to Failure | $\varepsilon$% | (%) | 5.0 | 5.0 | 5.0 |
| Shear Machine Speed | $d_r$ | (mm/min) | 0.03092 | 0.03092 | 0.03092 |

**Notes**




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 7 | Test Name | BH135 2.87-3.20m CS9 |
| | | Test Date | 12/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH135 |
| | | Sample | 2.87-3.20m CS9 |
| Client | Ground Technology | Depth | 2.87-3.20m |

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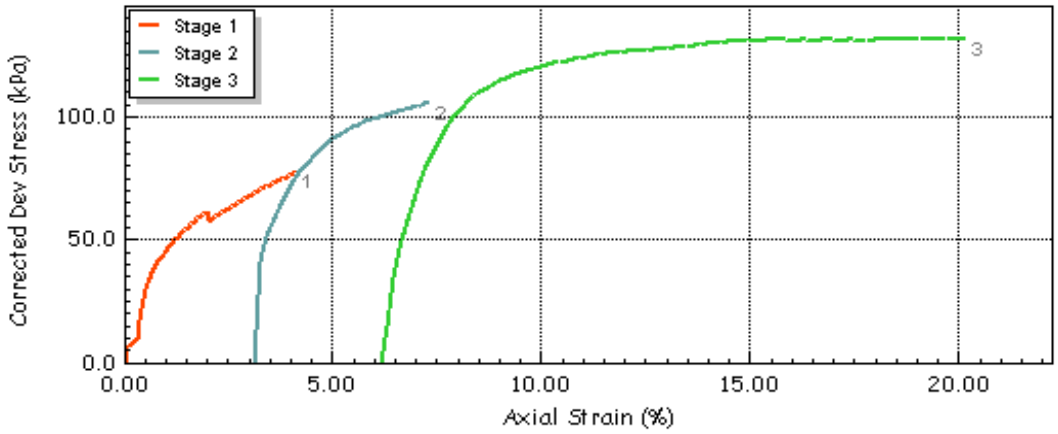
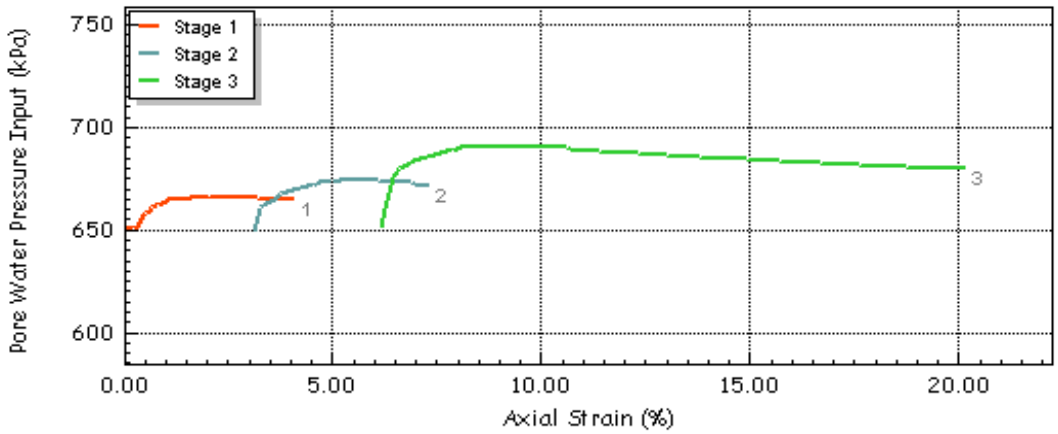
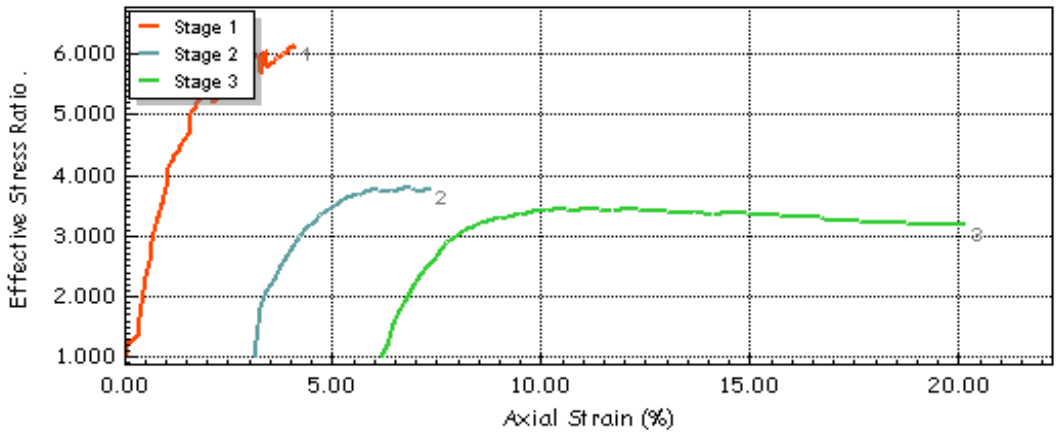
# Effective Stress Triaxial Compression

## Consolidated Undrained

**Shear Stage Plots**



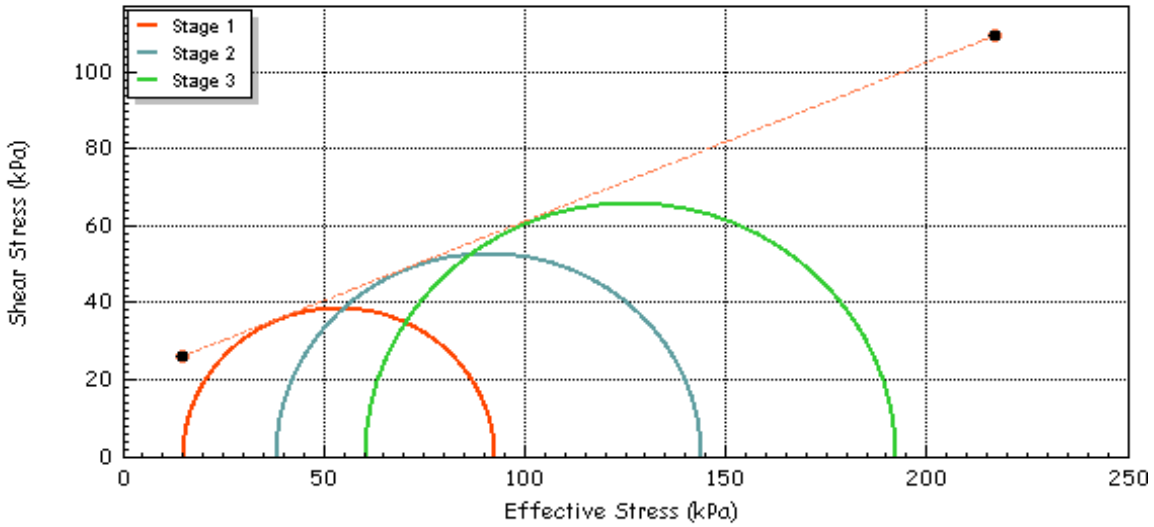

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 7 | Test Name | BH135 2.87-3.20m CS9 |
| | | Test Date | 12/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH135 |
| | | Sample | 2.87-3.20m CS9 |
| Client | Ground Technology | Depth | 2.87-3.20m |

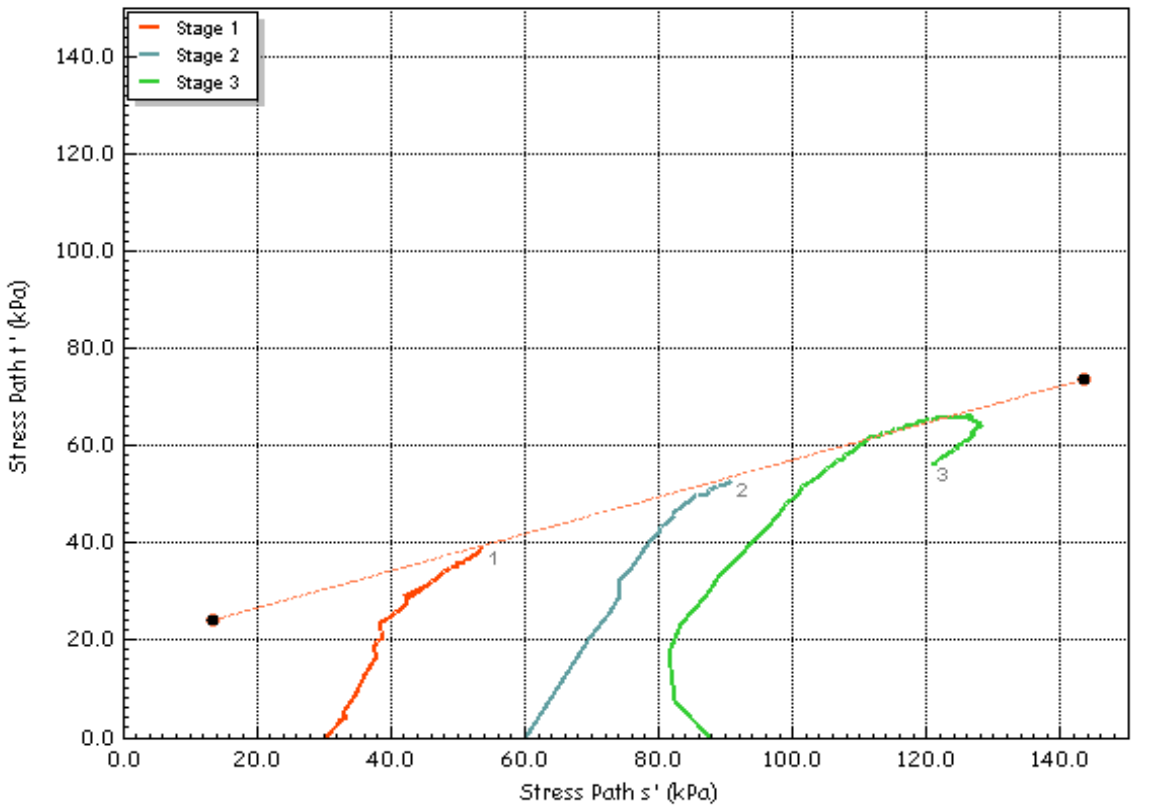
# Effective Stress Triaxial Compression

## Consolidated Undrained

**Shear Stage Plots**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Effective | c' | (kPa) | 20.11 | Effective Cohesion | c' | (kPa) | 20.11 |
| Effective Friction | ϕ' | (deg) | 22.4 | Effective Friction | ϕ' | (deg) | 22.4 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 7 | Test Name | BH135 2.87-3.20m CS9 |
| | | Test Date | 12/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH135 |
| Client | Ground Technology | Sample | 2.87-3.20m CS9 |
| | | Depth | 2.87-3.20m |

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# Effective Stress Triaxial Compression

## Consolidated Undrained

**Summary Report**

| Sample Details | | | | |
|---|---|---|---|---|
| *sketch showing specimen location in original sample* | Depth | | | 5.56-5.86m |
| | Description | | | See summary of soil descriptions. |
| | Type | | | Undisturbed, vertical orientation. |
| | Initial Sample Length | $L_0$ | (mm) | 140.0 |
| | Initial Sample Diameter | $D_0$ | (mm) | 70.0 |
| | Initial Sample Weight | $W_0$ | (gr) | 1052.0 |
| | Initial Bulk Density | $\rho_0$ | (Mg/m3) | 1.95 |
| | Particle Density | $\rho_s$ | (Mg/m3) | 2.66 |

| **Initial Conditions** | | | Stage 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_{3i}$ | (kPa) | 500 | 550 | 600 | |
| Initial Back Pressure | $U_{bi}$ | (kPa) | 450 | 450 | 450 | |
| Membrane Thickness | $m_b$ | (mm) | 0.600 | | | |
| Displacement Input | $L_{IP}$ | (mm) | CH 2 | | | |
| Load Input | $N_{IP}$ | (N) | CH 1 | | | |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | CH 3 | | | |
| Sample Volume | $V$ | (cc) | CH 2 | | | |
| Initial Moisture | $\omega_i$ | (%) | 25 | | | |
| Initial Dry Density | $\rho_{di}$ | (Mg/m3) | 1.56 | | | |
| Initial Voids Ratio | $e_i$ | . | 0.706 | | | |
| Initial Degree of Saturation | $S_i$ | (%) | 95 | | | |
| B Value | $B$ | . | 0.99 | | | |

| **Final Conditions** | | | | | | |
|---|---|---|---|---|---|---|
| Final Moisture | $\omega_f$ | (%) | 21 | | | |
| Final Dry Density | $\rho_{df}$ | (Mg/m3) | 1.70 | | | |
| Final Voids Ratio | $e_f$ | . | 0.562 | | | |
| Final Degree of Saturation | $S_f$ | (%) | 99.2 | | | |
| | | | Stage 1 | 2 | 3 | 4 |
| Failure Criteria | | . | Max. Dev. Stress | Max. Dev. Stress | Max. Dev. Stress | |
| Strain At Failure | $\varepsilon_f$ | (%) | 5.92 | 10.31 | 16.03 | |
| Stress At Failure | $(\sigma_1-\sigma_3)$ | (kPa) | 110.9 | 167.2 | 187.3 | |
| Minor Stress At Failure | $\sigma_3'$ | (kPa) | 39.0 | 72.9 | 87.5 | |
| Major Stress At Failure | $\sigma_1'$ | (kPa) | 149.9 | 240.1 | 274.8 | |
| Principal Stress Ratio At Failure | $\sigma_1'/\sigma_3'$ | | 3.843 | 3.293 | 3.141 | |

**Notes**

*Plastic*

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 7 | Test Name | BH135 5.56-5.86m CS11 |
| | | Test Date | 11/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplimentary GI | Borehole | BH135 |
| | | Sample | 5.56-5.86m CS11 |
| Client | Dunelm | Depth | 5.56-5.86m |

UKAS TESTING 4043

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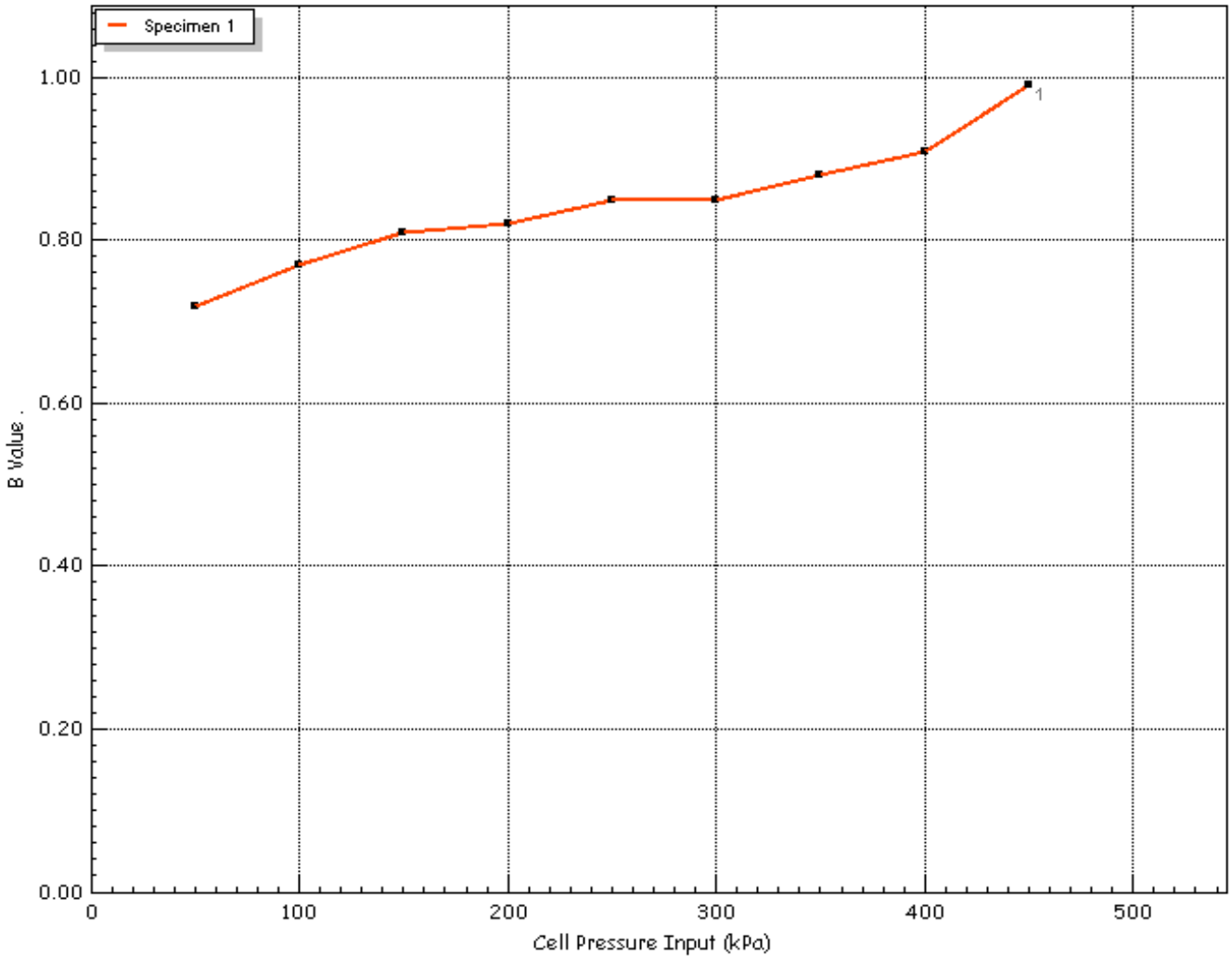
# Effective Stress Triaxial Compression

## Consolidated Undrained

**Saturation Plots**

| | | | |
|---|---|---|---|
| Saturation Method | | | Stepped |
| Cell Pressure Input | σ | (kPa) | 450 |
| Pore Water Pressure Input | u pwp | (kPa) | 365 |
| B Value | B | . | 0.99 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 7 | Test Name | BH135 5.56-5.86m CS11 |
| | | Test Date | 11/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplimentary GI | Borehole | BH135 |
| | | Sample | 5.56-5.86m CS11 |
| Client | Dunelm | Depth | 5.56-5.86m |

# Effective Stress Triaxial Compression

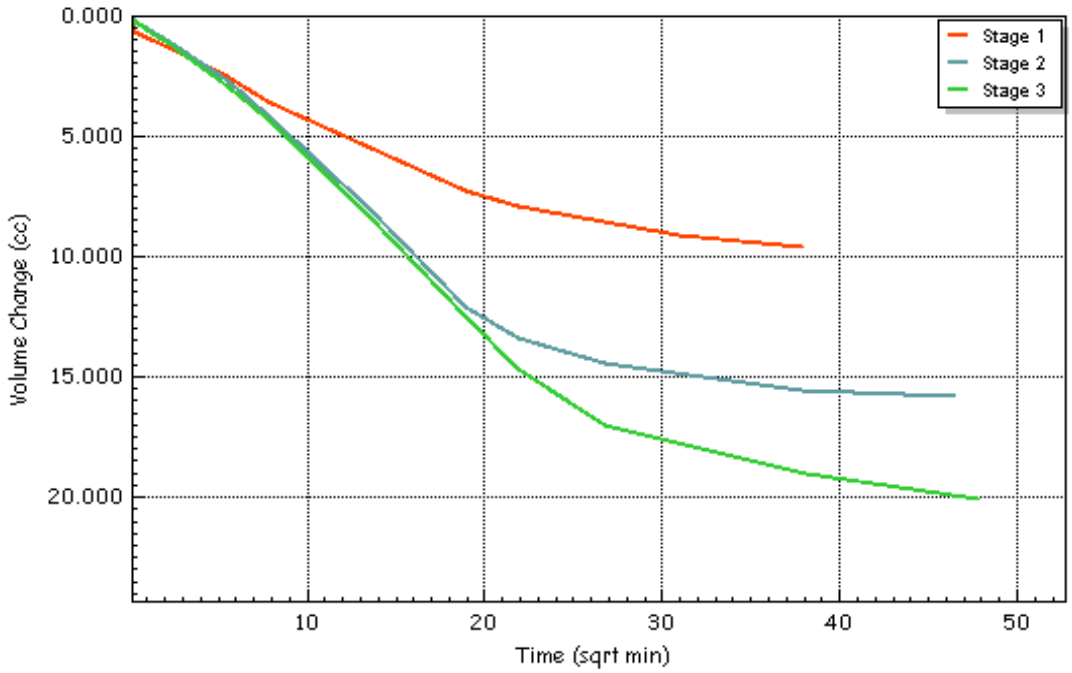
## Consolidated Undrained

**Consolidation Plots**

| **Initial Conditions** | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_3$ | (kPa) | 500 | 550 | 600 |
| Initial Back Pressure | $u_{bi}$ | (kPa) | 450 | 450 | 450 |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | 482 | 478 | 527 |
| Drainage Method | | | Radial+One End | | |

| **Final Conditions** | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| PWP Dissipation % | U% | (%) | 100.00 | 100.00 | 100.00 |
| Volumetric Strain | $\varepsilon_v$% | (%) | 1.78 | 2.94 | 3.73 |
| Corrected Length | $L_C$ | (mm) | 139.2 | 129.3 | 124.1 |
| Corrected Area | $A_C$ | (cm2) | 38.03 | 39.71 | 39.77 |
| Corrected Volume | $V_C$ | (cc) | 529.204 | 513.362 | 493.284 |
| t100 | $t_{100}$ | (min) | 520.87 | 638.01 | 834.01 |
| Consolidation | $c_v$ | (m2/year) | 0.194 | 0.159 | 0.121 |
| Compressibility | $m_v$ | (m2/MN) | 0.556 | 2.146 | 0.484 |
| Test Time | $t_F$ | (h:m:s) | 15:37:33 | 19:08:25 | 25:01:13 |
| Estimated Strain to Failure | $\varepsilon$% | (%) | 5.0 | 5.0 | 5.0 |
| Shear Machine Speed | $d_r$ | (mm/min) | 0.00742 | 0.00742 | 0.00742 |

**Notes**




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 7 | Test Name | BH135 5.56-5.86m CS11 |
| | | Test Date | 11/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplimentary GI | Borehole | BH135 |
| | | Sample | 5.56-5.86m CS11 |
| Client | Dunelm | Depth | 5.56-5.86m |

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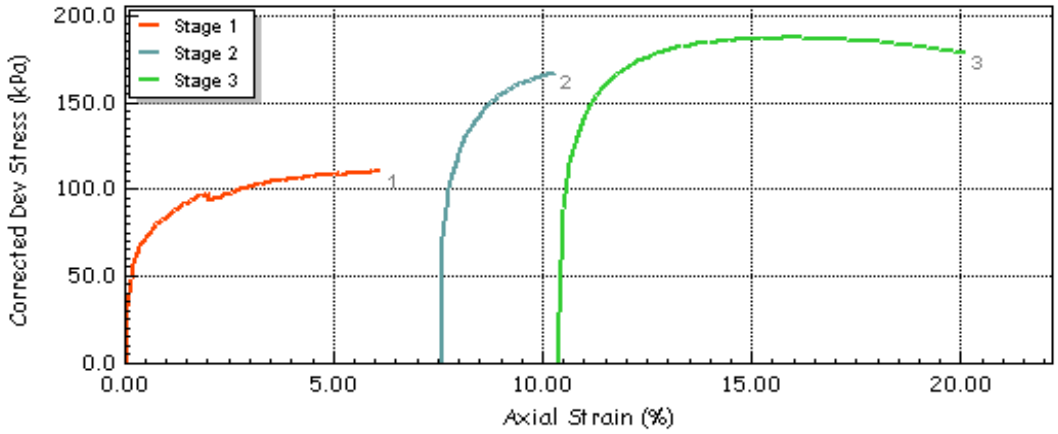
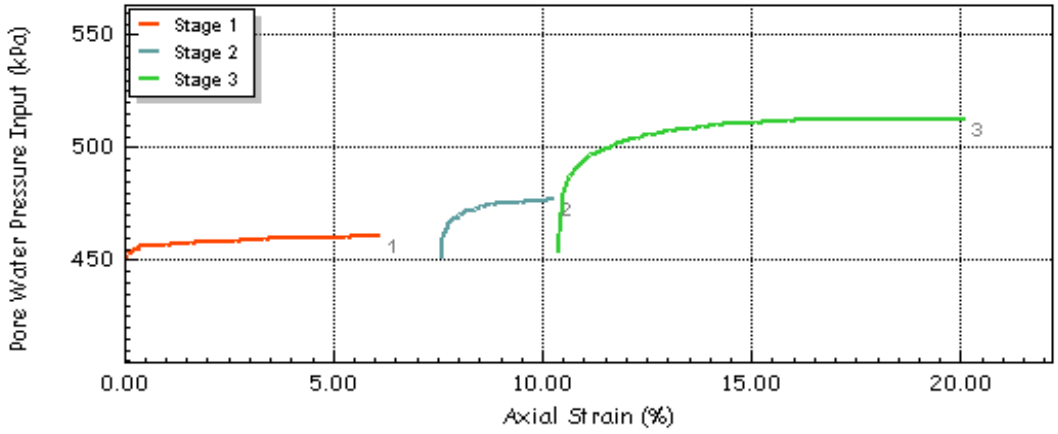
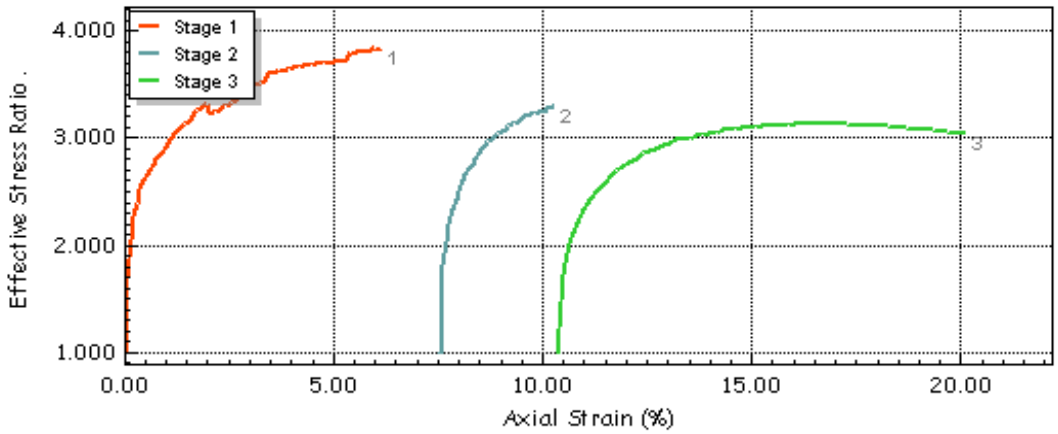
# Effective Stress Triaxial Compression

## Consolidated Undrained

**Shear Stage Plots**



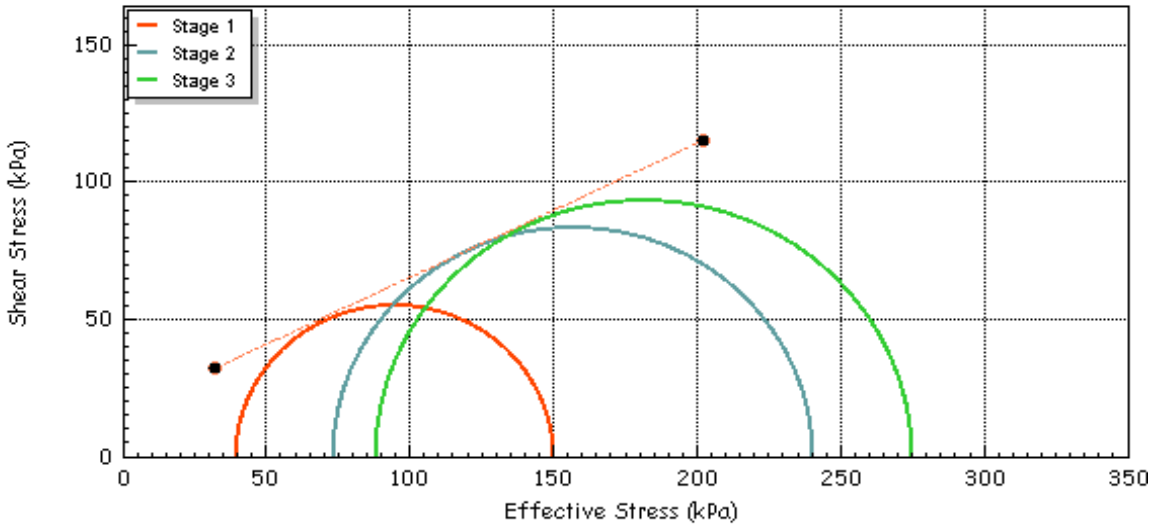

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 7 | Test Name | BH135 5.56-5.86m CS11 |
| | | Test Date | 11/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplimentary GI | Borehole | BH135 |
| | | Sample | 5.56-5.86m CS11 |
| Client | Dunelm | Depth | 5.56-5.86m |

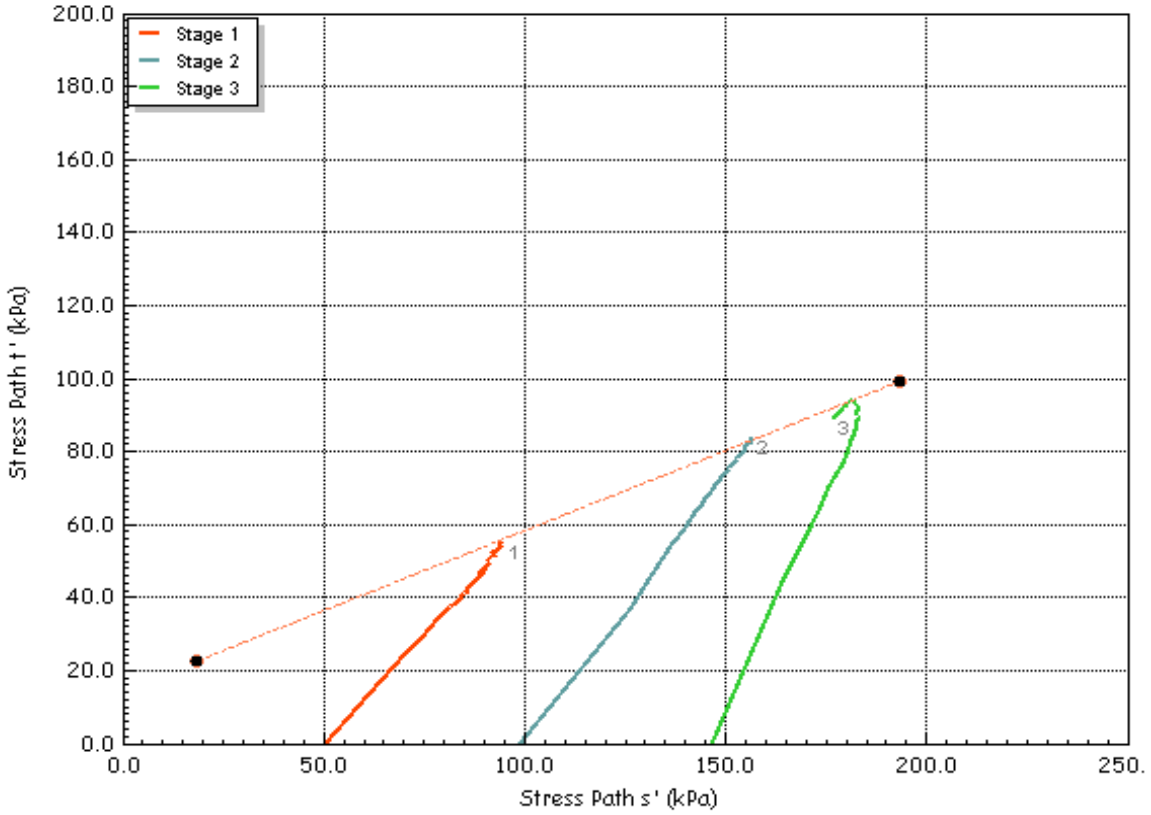
# Effective Stress Triaxial Compression

## Consolidated Undrained

**Shear Stage Plots**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Effective | c' | (kPa) | 16.89 | Effective Cohesion | c' | (kPa) | 16.89 |
| Effective Friction | ϕ' | (deg) | 25.9 | Effective Friction | ϕ' | (deg) | 25.9 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 7 | Test Name | BH135 5.56-5.86m CS11 |
| | | Test Date | 11/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplimentary GI | Borehole | BH135 |
| | | Sample | 5.56-5.86m CS11 |
| Client | Dunelm | Depth | 5.56-5.86m |

# Effective Stress Triaxial Compression

## Consolidated Undrained

**Summary Report**

| Sample Details | | | | |
|---|---|---|---|---|
| *sketch showing specimen location in original sample* | Depth | | 13.67-13.97m | |
| | Description | | See summary of soil descriptions. | |
| | Type | | Undisturbed, vertical orientation. | |
| | Initial Sample Length | $L_0$ | (mm) | 140.0 |
| | Initial Sample Diameter | $D_0$ | (mm) | 70.0 |
| | Initial Sample Weight | $W_0$ | (gr) | 1085.0 |
| | Initial Bulk Density | $\rho_0$ | (Mg/m3) | 2.01 |
| | Particle Density | $\rho_s$ | (Mg/m3) | 2.66 |

| **Initial Conditions** | | | Stage 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_{3i}$ | (kPa) | 980 | 1110 | 1240 | |
| Initial Back Pressure | $U_{bi}$ | (kPa) | 850 | 850 | 850 | |
| Membrane Thickness | $m_b$ | (mm) | 0.600 | | | |
| Displacement Input | $L_{IP}$ | (mm) | CH 2 | | | |
| Load Input | $N_{IP}$ | (N) | CH 1 | | | |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | CH 3 | | | |
| Sample Volume | $V$ | (cc) | CH 2 | | | |
| Initial Moisture | $\omega_i$ | (%) | 23 | | | |
| Initial Dry Density | $\rho_{di}$ | (Mg/m3) | 1.63 | | | |
| Initial Voids Ratio | $e_i$ | . | 0.629 | | | |
| Initial Degree of Saturation | $S_i$ | (%) | 99 | | | |
| B Value | $B$ | . | 0.96 | | | |

| **Final Conditions** | | | | | | |
|---|---|---|---|---|---|---|
| Final Moisture | $\omega_f$ | (%) | 19 | | | |
| Final Dry Density | $\rho_{df}$ | (Mg/m3) | 1.77 | | | |
| Final Voids Ratio | $e_f$ | . | 0.506 | | | |
| Final Degree of Saturation | $S_f$ | (%) | 98.6 | | | |
| | | | Stage 1 | 2 | 3 | 4 |
| Failure Criteria | | . | Max. Dev. Stress | Max. Dev. Stress | Max. Dev. Stress | |
| Strain At Failure | $\varepsilon_f$ | (%) | 3.97 | 5.54 | 14.68 | |
| Stress At Failure | $(\sigma_1-\sigma_3)$ | (kPa) | 184.4 | 326.4 | 512.0 | |
| Minor Stress At Failure | $\sigma_3'$ | (kPa) | 76.0 | 176.0 | 303.0 | |
| Major Stress At Failure | $\sigma_1'$ | (kPa) | 260.4 | 502.4 | 815.0 | |
| Principal Stress Ratio At Failure | $\sigma_1'/\sigma_3'$ | | 3.427 | 2.855 | 2.690 | |

**Notes**

*Plastic*

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 7 | Test Name | BH135 13.67-13.97m CS16 |
| | | Test Date | 13/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplimentary GI | Borehole | BH135 |
| Client | Ground Technology | Sample | 13.67-13.97m CS16 |
| | | Depth | 13.67-13.97m |

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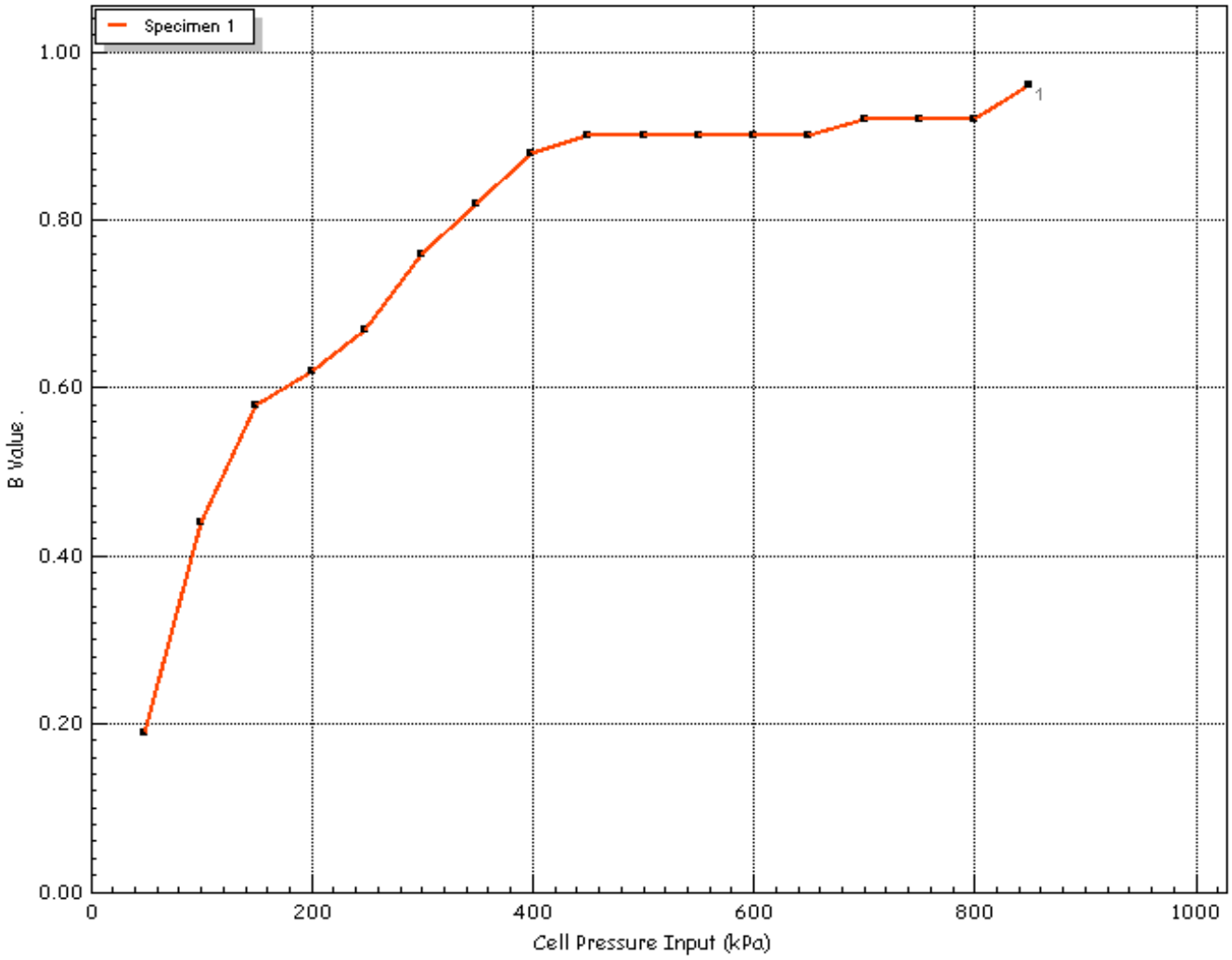
# Effective Stress Triaxial Compression

## Consolidated Undrained

**Saturation Plots**

| | | | |
|---|---|---|---|
| Saturation Method | | | Stepped |
| Cell Pressure Input | σ | (kPa) | 849 |
| Pore Water Pressure Input | u pwp | (kPa) | 835 |
| B Value | B | . | 0.96 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 7 | Test Name | BH135 13.67-13.97m CS16 |
| | | Test Date | 13/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplimentary GI | Borehole | BH135 |
| | | Sample | 13.67-13.97m CS16 |
| Client | Ground Technology | Depth | 13.67-13.97m |

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# Effective Stress Triaxial Compression

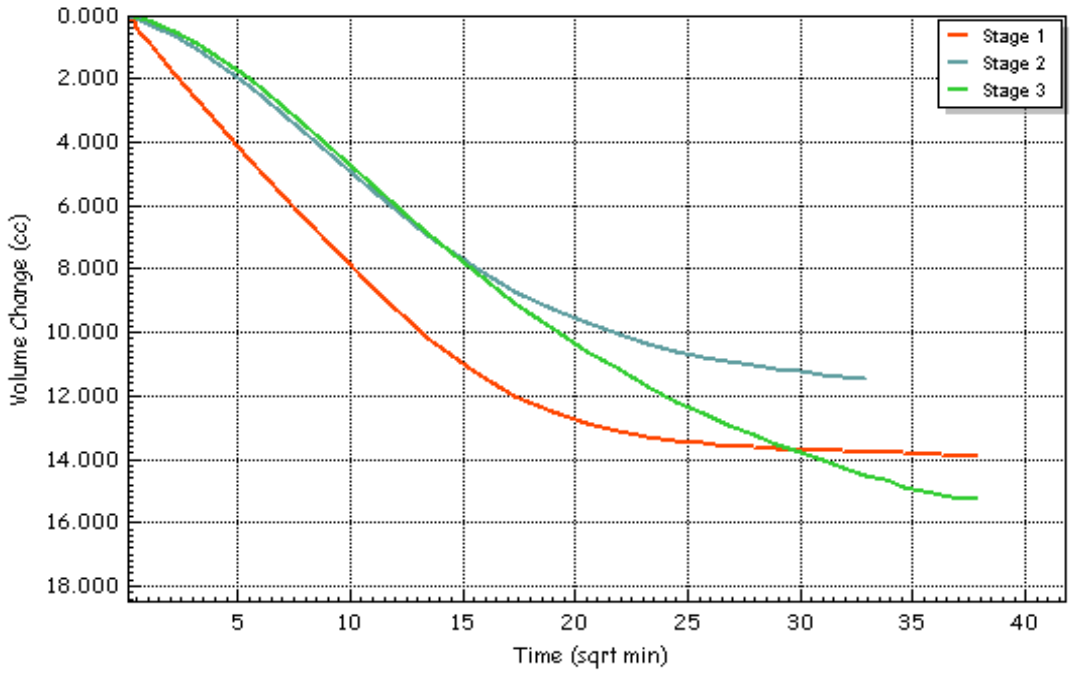
## Consolidated Undrained

**Consolidation Plots**

| **Initial Conditions** | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_3$ | (kPa) | 980 | 1110 | 1240 |
| Initial Back Pressure | $u_{bi}$ | (kPa) | 850 | 850 | 850 |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | 952 | 1052 | 1198 |
| Drainage Method | | | Radial+One End | | |

| **Final Conditions** | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| PWP Dissipation % | U% | (%) | 100.00 | 100.00 | 100.00 |
| Volumetric Strain | $\varepsilon_v$% | (%) | 2.58 | 2.13 | 2.83 |
| Corrected Length | $L_C$ | (mm) | 138.8 | 132.3 | 127.4 |
| Corrected Area | $A_C$ | (cm2) | 37.82 | 38.81 | 39.10 |
| Corrected Volume | $V_C$ | (cc) | 524.868 | 513.407 | 498.153 |
| t100 | $t_{100}$ | (min) | 293.52 | 427.94 | 704.28 |
| Consolidation | $c_v$ | (m2/year) | 0.345 | 0.236 | 0.144 |
| Compressibility | $m_v$ | (m2/MN) | 0.253 | 0.105 | 0.081 |
| Test Time | $t_F$ | (h:m:s) | 08:48:20 | 12:50:17 | 21:07:42 |
| Estimated Strain to Failure | $\varepsilon$% | (%) | 5.0 | 5.0 | 5.0 |
| Shear Machine Speed | $d_r$ | (mm/min) | 0.01314 | 0.01314 | 0.01314 |

**Notes**




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 7 | Test Name | BH135 13.67-13.97m CS16 |
| | | Test Date | 13/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplimentary GI | Borehole | BH135 |
| | | Sample | 13.67-13.97m CS16 |
| Client | Ground Technology | Depth | 13.67-13.97m |

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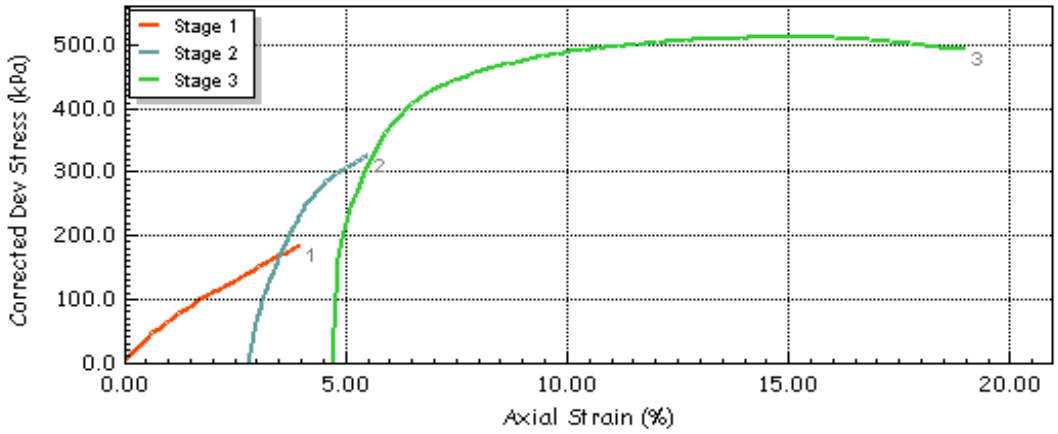
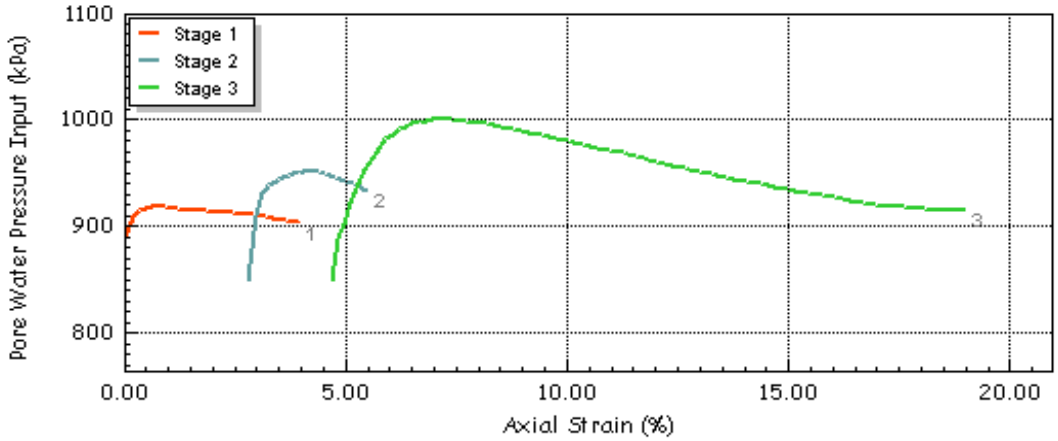
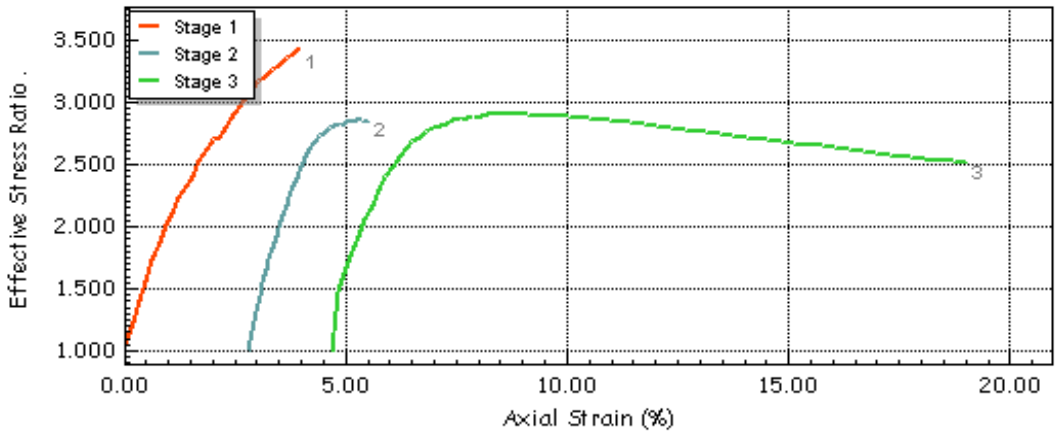
# Effective Stress Triaxial Compression

## Consolidated Undrained

**Shear Stage Plots**



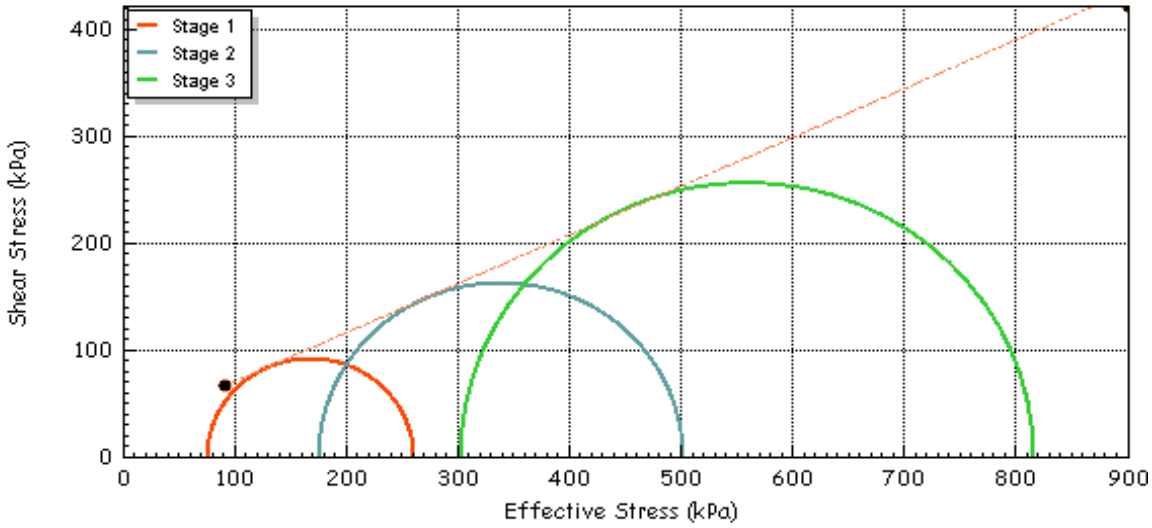

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 7 | Test Name | BH135 13.67-13.97m CS16 |
| | | Test Date | 13/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplimentary GI | Borehole | BH135 |
| | | Sample | 13.67-13.97m CS16 |
| Client | Ground Technology | Depth | 13.67-13.97m |

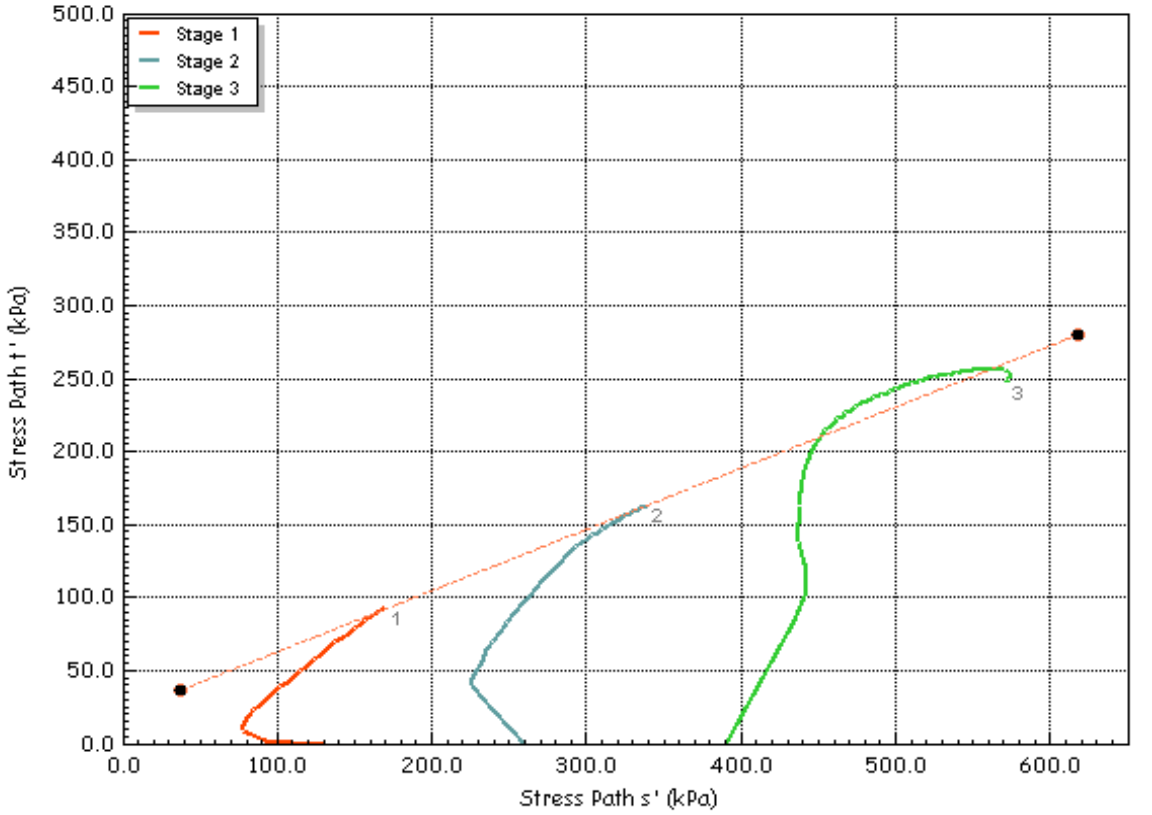
# Effective Stress Triaxial Compression

## Consolidated Undrained

**Shear Stage Plots**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Effective | c' | (kPa) | 23.82 | Effective Cohesion | c' | (kPa) | 23.82 |
| Effective Friction | ϕ' | (deg) | 24.7 | Effective Friction | ϕ' | (deg) | 24.7 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 7 | Test Name | BH135 13.67-13.97m CS16 |
| | | Test Date | 13/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplimentary GI | Borehole | BH135 |
| | | Sample | 13.67-13.97m CS16 |
| Client | Ground Technology | Depth | 13.67-13.97m |

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# Effective Stress Triaxial Compression

## Consolidated Drained

**Summary Report**

| Sample Details | | | | |
|---|---|---|---|---|
| *sketch showing specimen location in original sample* | Depth | | | 15.20-15.50m |
| | Description | | | See summary of soil descriptions. |
| | Type | | | Undisturbed, vertical orientation. |
| | Initial Sample Length | $L_0$ | (mm) | 140.0 |
| | Initial Sample Diameter | $D_0$ | (mm) | 70.0 |
| | Initial Sample Weight | $W_0$ | (gr) | 1086.0 |
| | Initial Bulk Density | $\rho_0$ | (Mg/m3) | 2.02 |
| | Particle Density | $\rho_s$ | (Mg/m3) | 2.66 |

| **Initial Conditions** | | | Stage 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_{3i}$ | (kPa) | 900 | 1050 | 1200 | |
| Initial Back Pressure | $U_{bi}$ | (kPa) | 750 | 750 | 750 | |
| Membrane Thickness | $m_b$ | (mm) | 0.600 | | | |
| Displacement Input | $L_{IP}$ | (mm) | CH 2 | | | |
| Load Input | $N_{IP}$ | (N) | CH 1 | | | |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | CH 3 | | | |
| Sample Volume | $V$ | (cc) | CH 2 | | | |
| Initial Moisture | $\omega_i$ | (%) | 20 | | | |
| Initial Dry Density | $\rho_{di}$ | (Mg/m3) | 1.68 | | | |
| Initial Voids Ratio | $e_i$ | . | 0.584 | | | |
| Initial Degree of Saturation | $S_i$ | (%) | 91 | | | |
| B Value | B | . | 0.96 | | | |

| **Final Conditions** | | | | | | |
|---|---|---|---|---|---|---|
| Final Moisture | $\omega_f$ | (%) | 17 | | | |
| Final Dry Density | $\rho_{df}$ | (Mg/m3) | 1.75 | | | |
| Final Voids Ratio | $e_f$ | . | 0.516 | | | |
| Final Degree of Saturation | $S_f$ | (%) | 89.4 | | | |
| | | | Stage 1 | 2 | 3 | 4 |
| Failure Criteria | | . | Max. Dev. Stress | Max. Dev. Stress | Max. Dev. Stress | |
| Strain At Failure | $\varepsilon_f$ | (%) | 8.67 | 11.90 | 16.42 | |
| Stress At Failure | $(\sigma_1-\sigma_3)$ | (kPa) | 315.9 | 551.4 | 801.8 | |
| Minor Stress At Failure | $\sigma_3'$ | (kPa) | 150.0 | 300.0 | 450.0 | |
| Major Stress At Failure | $\sigma_1'$ | (kPa) | 465.9 | 851.4 | 1251.8 | |
| Principal Stress Ratio At Failure | $\sigma_1'/\sigma_3'$ | | 3.106 | 2.838 | 2.782 | |

**Notes**

*Brittle*

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH135 15.20-15.50m CS17 |
| | | Test Date | 08/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH135 |
| | | Sample | 15.20-15.50m CS17 |
| Client | Ground Technology | Depth | 15.20-15.50m |

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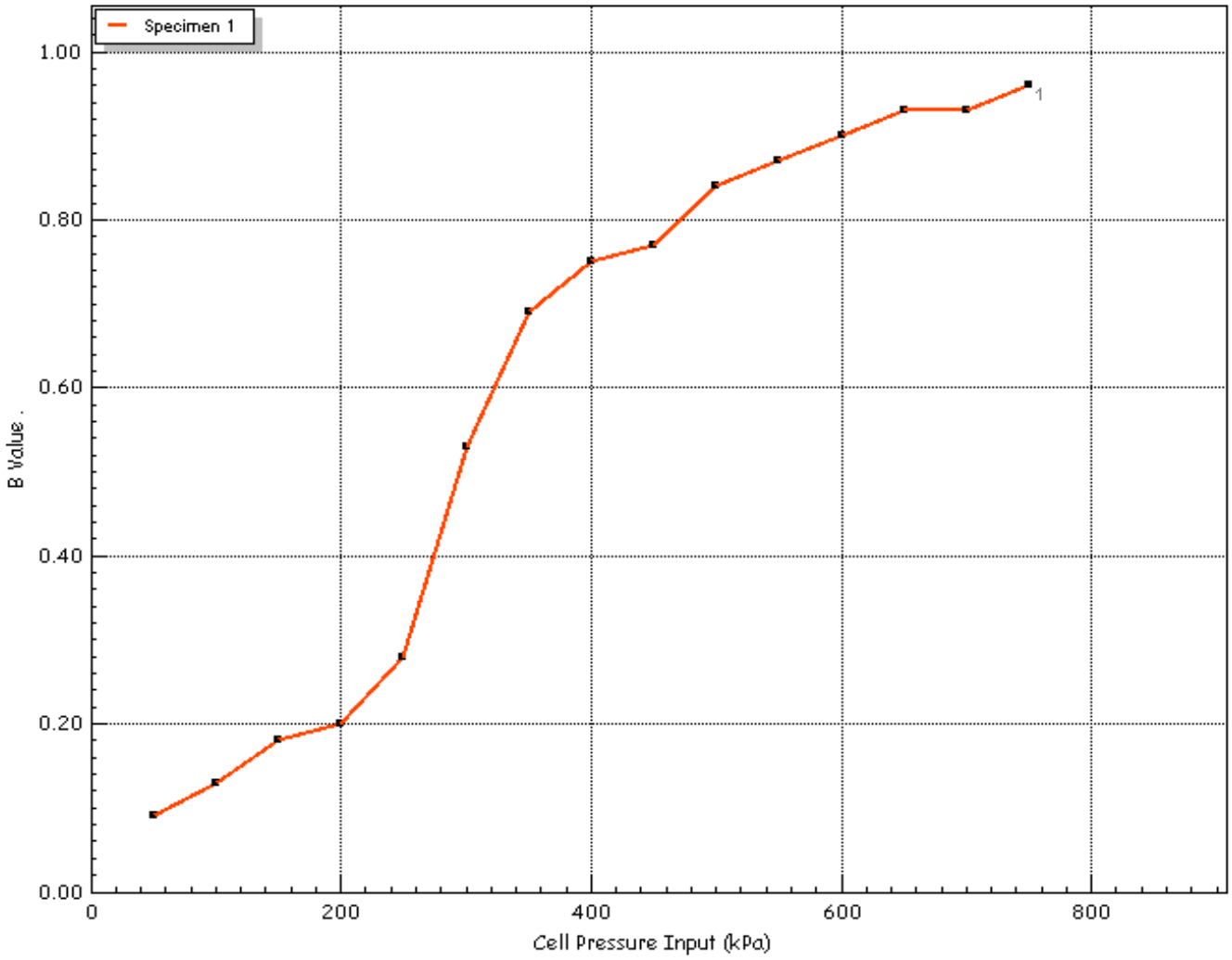
# Effective Stress Triaxial Compression

## Consolidated Drained

**Saturation Plots**

| | | | |
|---|---|---|---|
| Saturation Method | | | Stepped |
| Cell Pressure Input | σ | (kPa) | 750 |
| Pore Water Pressure Input | u pwp | (kPa) | 735 |
| B Value | B | . | 0.96 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH135 15.20-15.50m CS17 |
| | | Test Date | 08/07/2022 |
| | Wansford to Sutton Dualling | Borehole | BH135 |
| Jobfile | Supplementary GI | Sample | 15.20-15.50m CS17 |
| Client | Ground Technology | Depth | 15.20-15.50m |

# Effective Stress Triaxial Compression

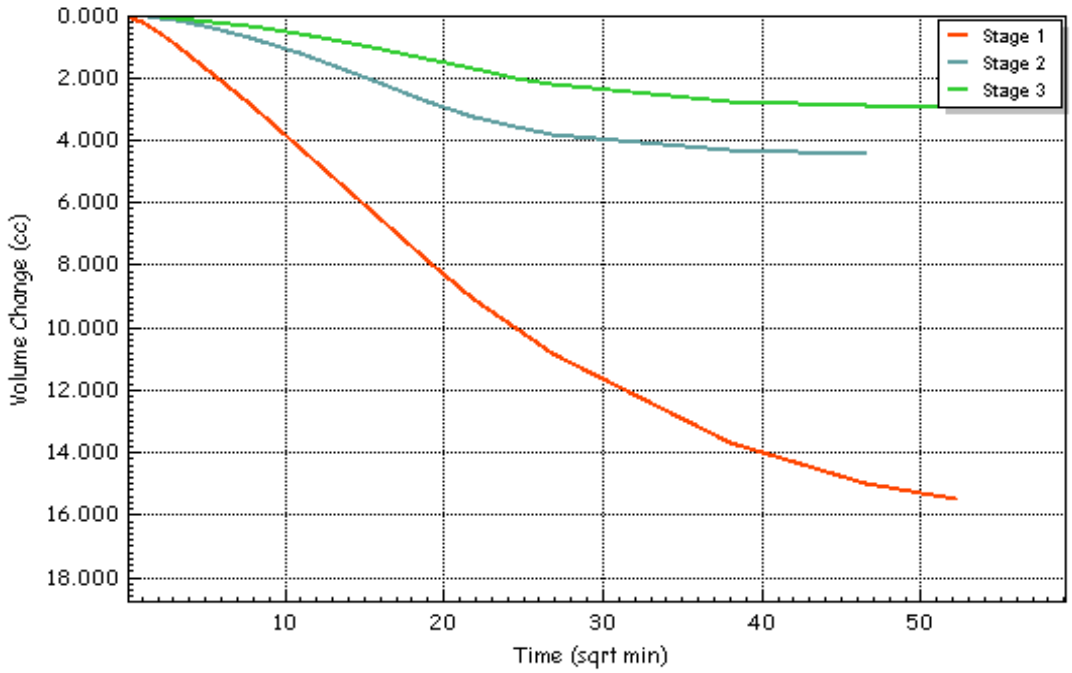
## Consolidated Drained

**Consolidation Plots**

| **Initial Conditions** | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_3$ | (kPa) | 900 | 1050 | 1200 |
| Initial Back Pressure | $u_{bi}$ | (kPa) | 750 | 750 | 750 |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | 868 | 998 | 1138 |
| Drainage Method | | | Radial+One End | | |

| **Final Conditions** | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| PWP Dissipation % | U% | (%) | 100.00 | 95.42 | 95.86 |
| Volumetric Strain | $\varepsilon_v$% | (%) | 2.87 | 3.70 | 4.25 |
| Corrected Length | $L_C$ | (mm) | 138.7 | 124.4 | 116.7 |
| Corrected Area | $A_C$ | (cm2) | 37.75 | 40.51 | 42.53 |
| Corrected Volume | $V_C$ | (cc) | 523.294 | 518.863 | 515.892 |
| T100 Time to Failure | $t_{100}$ | (min) | 1044.55 | 821.28 | 1113.52 |
| Consolidation | $c_v$ | (m2/year) | 0.097 | 0.123 | 0.091 |
| Compressibility | $m_v$ | (m2/MN) | 0.244 | 0.149 | 0.110 |
| Test Time | $t_F$ | (h:m:s) | 243:43:42 | 191:37:55 | 259:49:16 |
| Estimated Strain to Failure | $\varepsilon$% | (%) | 15.0 | 5.0 | 5.0 |
| Shear Machine Speed | $d_r$ | (mm/min) | 0.00142 | 0.00142 | 0.00142 |

**Notes**

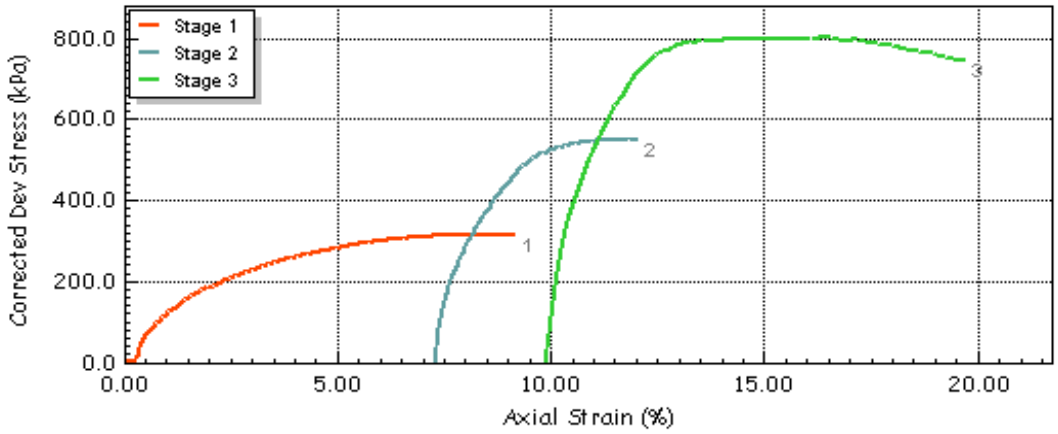


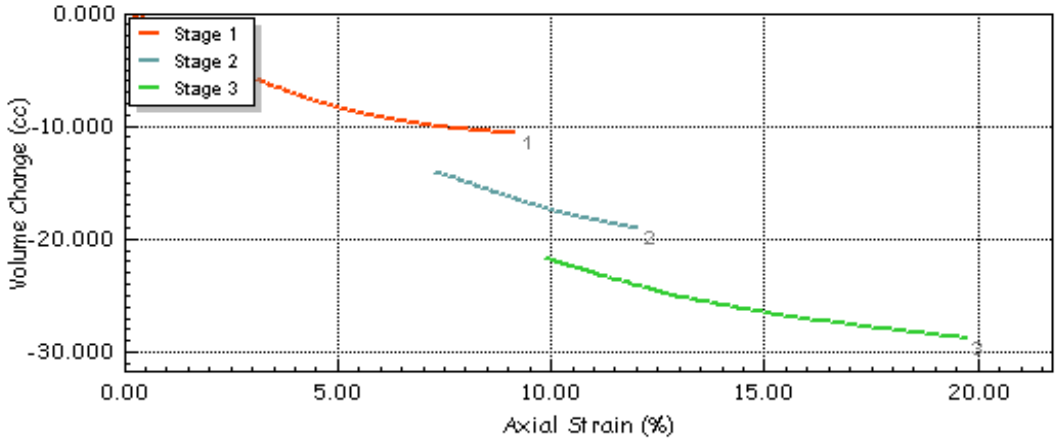

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH135 15.20-15.50m CS17 |
| | | Test Date | 08/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH135 |
| | | Sample | 15.20-15.50m CS17 |
| Client | Ground Technology | Depth | 15.20-15.50m |

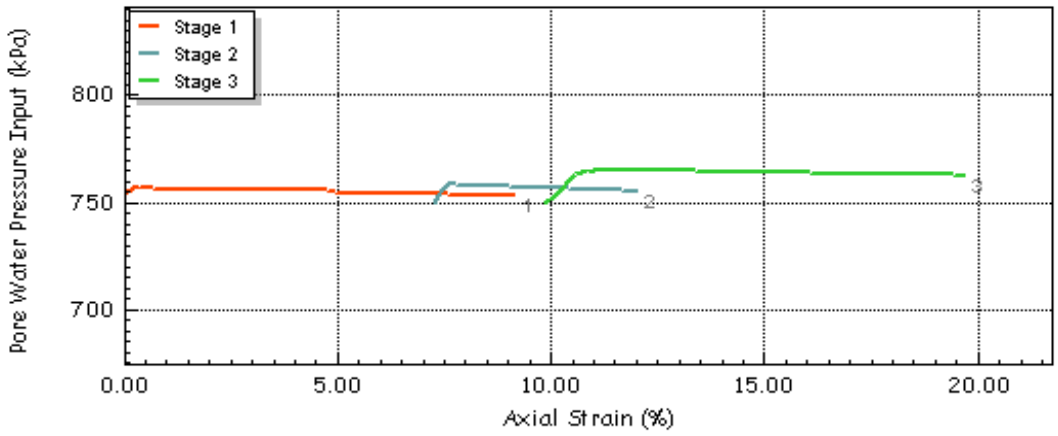
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH135 15.20-15.50m CS17 |
| | | Test Date | 08/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH135 |
| | | Sample | 15.20-15.50m CS17 |
| Client | Ground Technology | Depth | 15.20-15.50m |

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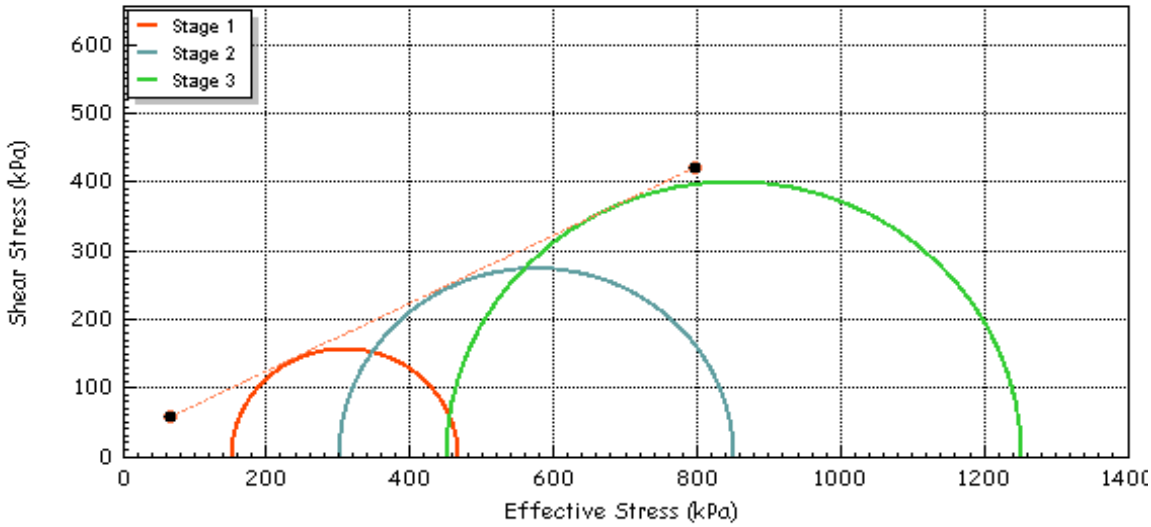
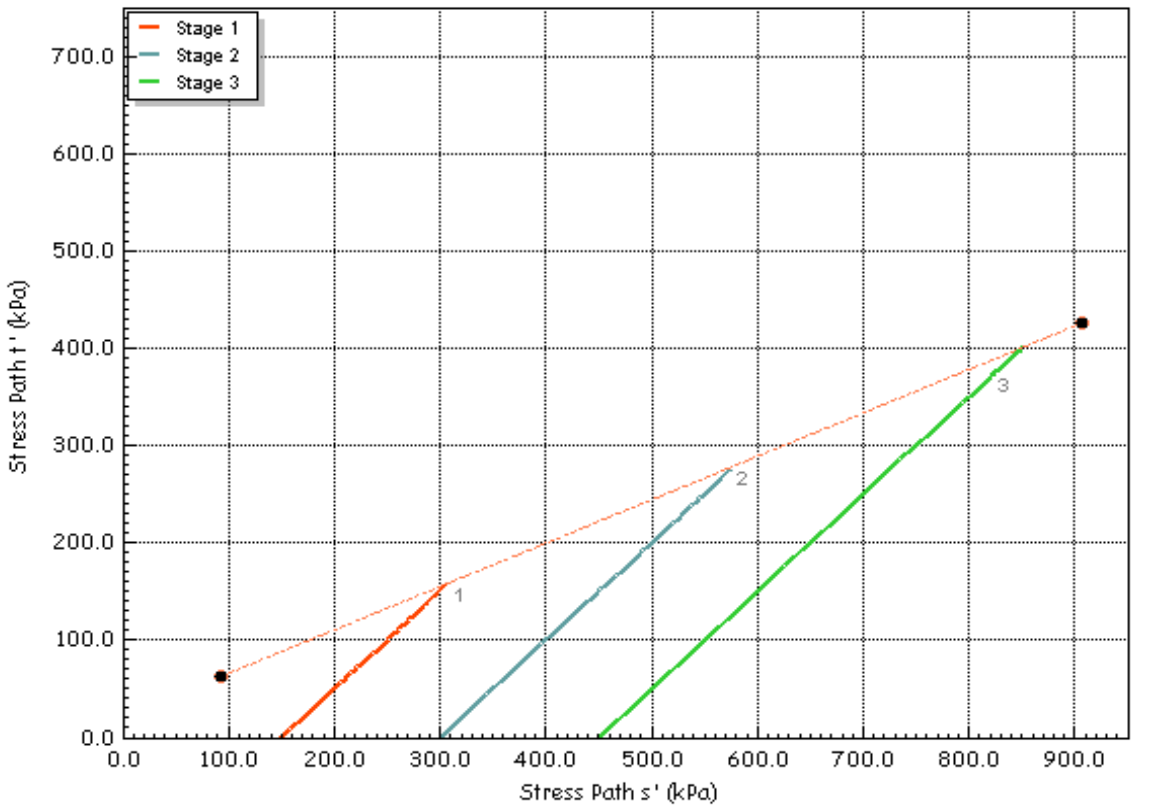
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Effective | c' | (kPa) | 25.12 | Effective Cohesion | c' | (kPa) | 25.12 |
| Effective Friction | ϕ' | (deg) | 26.4 | Effective Friction | ϕ' | (deg) | 26.4 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH135 15.20-15.50m CS17 |
| | | Test Date | 08/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH135 |
| Client | Ground Technology | Sample | 15.20-15.50m CS17 |
| | | Depth | 15.20-15.50m |

UKAS TESTING 4043

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# Effective Stress Triaxial Compression

## Consolidated Drained

**Summary Report**

| Sample Details | | | | |
|---|---|---|---|---|
| *sketch showing specimen location in original sample* | Depth | | | 23.20-23.50m |
| | Description | | | See summary of soil descriptions. |
| | Type | | | Undisturbed, vertical orientation. |
| | Initial Sample Length | $L_0$ | (mm) | 140.0 |
| | Initial Sample Diameter | $D_0$ | (mm) | 70.1 |
| | Initial Sample Weight | $W_0$ | (gr) | 1092.0 |
| | Initial Bulk Density | $\rho_0$ | (Mg/m3) | 2.02 |
| | Particle Density | $\rho_s$ | (Mg/m3) | 2.66 |

| **Initial Conditions** | | | Stage 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_{3i}$ | (kPa) | 1230 | 1460 | 1690 | |
| Initial Back Pressure | $U_{bi}$ | (kPa) | 1000 | 1000 | 1000 | |
| Membrane Thickness | $m_b$ | (mm) | 0.600 | | | |
| Displacement Input | $L_{IP}$ | (mm) | CH 2 | | | |
| Load Input | $N_{IP}$ | (N) | CH 1 | | | |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | CH 3 | | | |
| Sample Volume | $V$ | (cc) | CH 2 | | | |
| Initial Moisture | $\omega_i$ | (%) | 23 | | | |
| Initial Dry Density | $\rho_{di}$ | (Mg/m3) | 1.64 | | | |
| Initial Voids Ratio | $e_i$ | . | 0.624 | | | |
| Initial Degree of Saturation | $S_i$ | (%) | 100 | | | |
| B Value | $B$ | . | 0.96 | | | |

| **Final Conditions** | | | | | | |
|---|---|---|---|---|---|---|
| Final Moisture | $\omega_f$ | (%) | 20 | | | |
| Final Dry Density | $\rho_{df}$ | (Mg/m3) | 1.79 | | | |
| Final Voids Ratio | $e_f$ | . | 0.490 | | | |
| Final Degree of Saturation | $S_f$ | (%) | 100.0 | | | |
| | | | Stage 1 | 2 | 3 | 4 |
| Failure Criteria | | . | Max. Dev. Stress | Max. Dev. Stress | Max. Dev. Stress | |
| Strain At Failure | $\varepsilon_f$ | (%) | 6.61 | 10.14 | 14.34 | |
| Stress At Failure | $(\sigma_1-\sigma_3)$ | (kPa) | 454.1 | 847.1 | 1246.1 | |
| Minor Stress At Failure | $\sigma_3'$ | (kPa) | 222.0 | 451.0 | 680.0 | |
| Major Stress At Failure | $\sigma_1'$ | (kPa) | 676.1 | 1298.1 | 1926.1 | |
| Principal Stress Ratio At Failure | $\sigma_1'/\sigma_3'$ | | 3.046 | 2.878 | 2.832 | |

**Notes**

*Brittle*

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH135 23.20-23.50m CS22 |
| | | Test Date | 12/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH135 |
| | | Sample | 23.20-23.50m CS22 |
| Client | Ground Technology | Depth | 23.20-23.50m |

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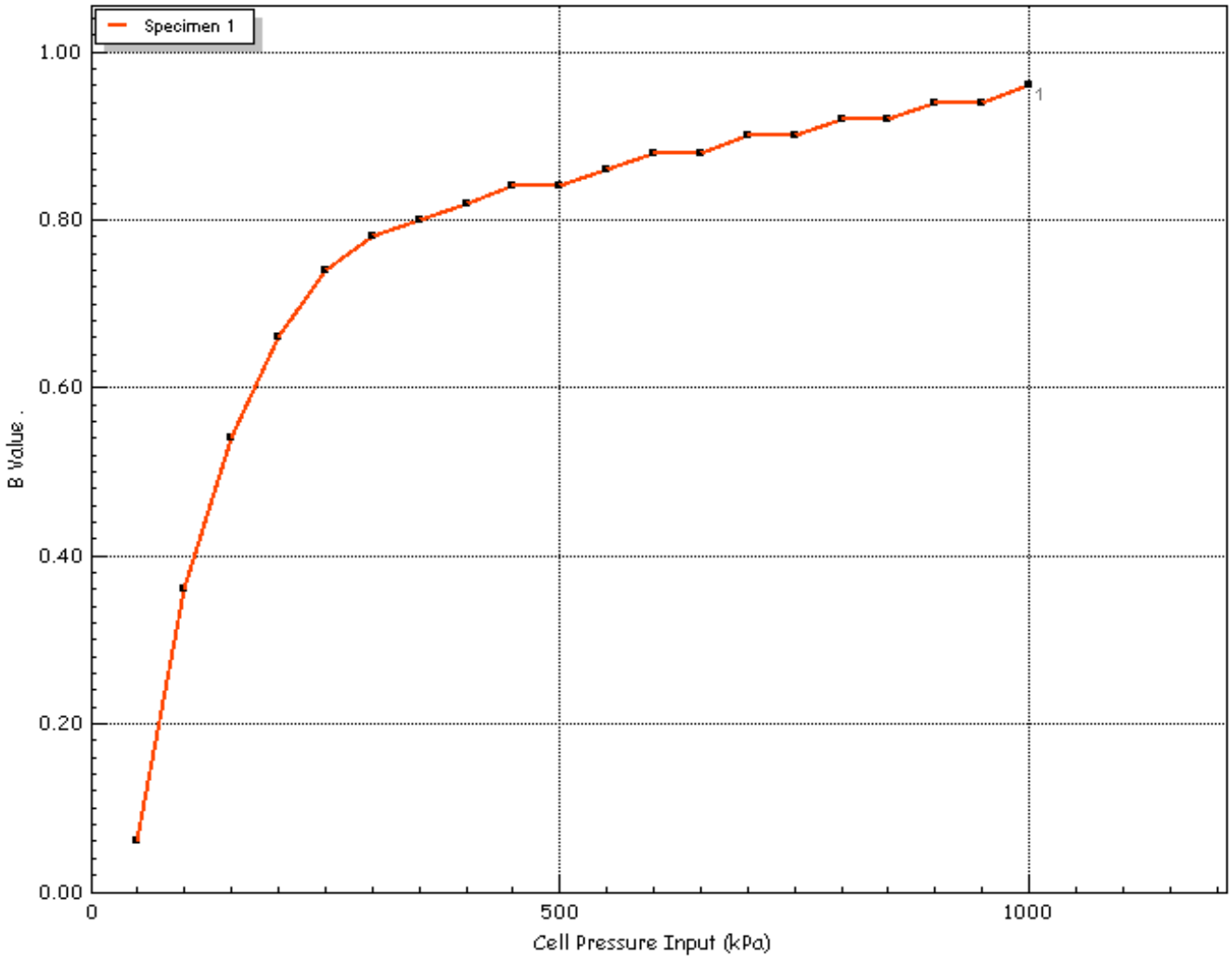
# Effective Stress Triaxial Compression

## Consolidated Drained

**Saturation Plots**

| | | | |
|---|---|---|---|
| Saturation Method | | | Stepped |
| Cell Pressure Input | σ | (kPa) | 1000 |
| Pore Water Pressure Input | u pwp | (kPa) | 978 |
| B Value | B | . | 0.96 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH135 23.20-23.50m CS22 |
| | | Test Date | 12/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH135 |
| Client | Ground Technology | Sample | 23.20-23.50m CS22 |
| | | Depth | 23.20-23.50m |

# Effective Stress Triaxial Compression

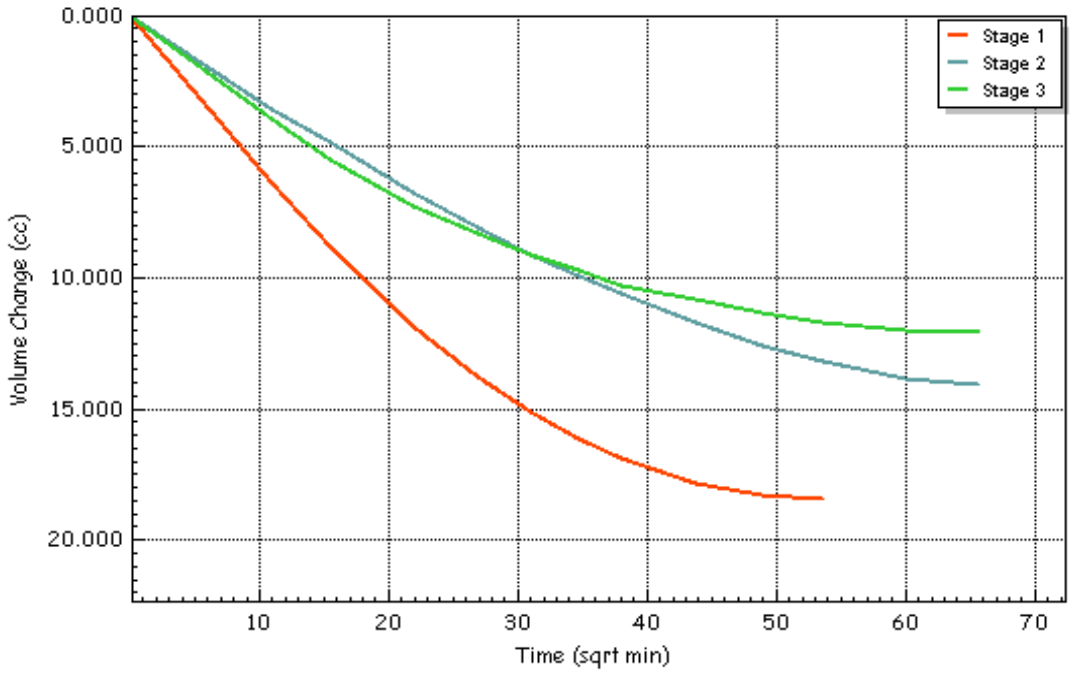
## Consolidated Drained

**Consolidation Plots**

| Initial Conditions | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_3$ | (kPa) | 1230 | 1460 | 1690 |
| Initial Back Pressure | $u_{bi}$ | (kPa) | 1000 | 1000 | 1000 |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | 1180 | 1356 | 1503 |
| Drainage Method | | | Radial+One End | | |

| Final Conditions | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| PWP Dissipation % | U% | (%) | 100.00 | 100.00 | 100.00 |
| Volumetric Strain | $\varepsilon_v$% | (%) | 3.41 | 6.02 | 8.26 |
| Corrected Length | $L_C$ | (mm) | 138.4 | 126.7 | 118.2 |
| Corrected Area | $A_C$ | (cm2) | 37.72 | 38.70 | 39.32 |
| Corrected Volume | $V_C$ | (cc) | 521.884 | 507.822 | 495.706 |
| T100 Time to Failure | $t_{100}$ | (min) | 1063.14 | 2009.51 | 1198.65 |
| Consolidation | $c_v$ | (m2/year) | 0.096 | 0.051 | 0.085 |
| Compressibility | $m_v$ | (m2/MN) | 0.190 | 0.169 | 0.164 |
| Test Time | $t_F$ | (h:m:s) | 248:03:57 | 468:53:08 | 279:41:06 |
| Estimated Strain to Failure | $\varepsilon$% | (%) | 10.0 | 10.0 | 10.0 |
| Shear Machine Speed | $d_r$ | (mm/min) | 0.00342 | 0.00342 | 0.00342 |

**Notes**




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH135 23.20-23.50m CS22 |
| | | Test Date | 12/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH135 |
| | | Sample | 23.20-23.50m CS22 |
| Client | Ground Technology | Depth | 23.20-23.50m |

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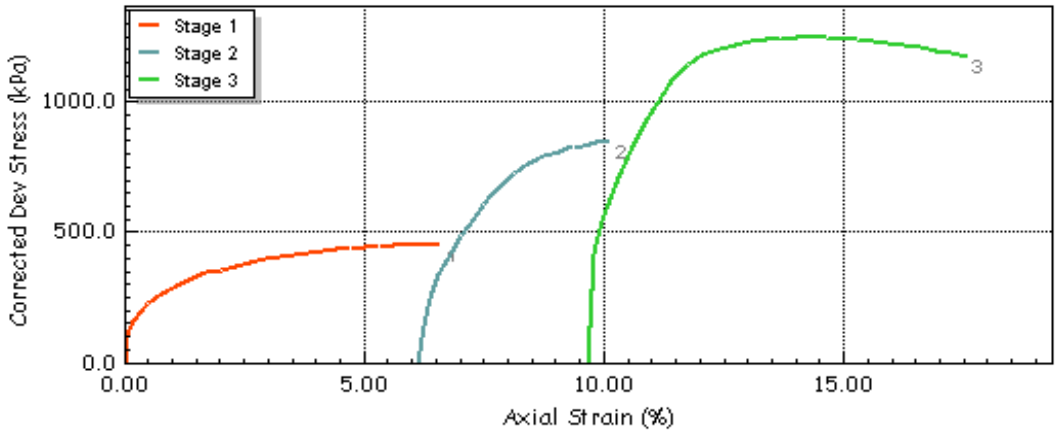
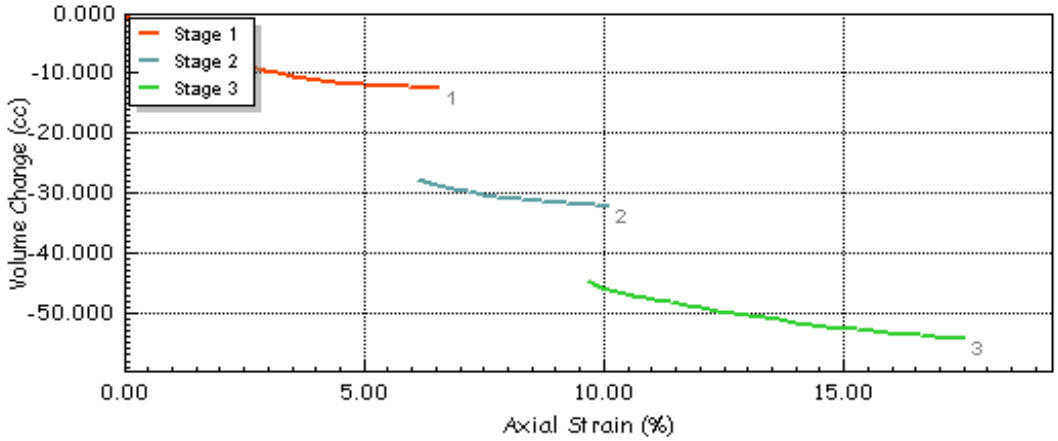
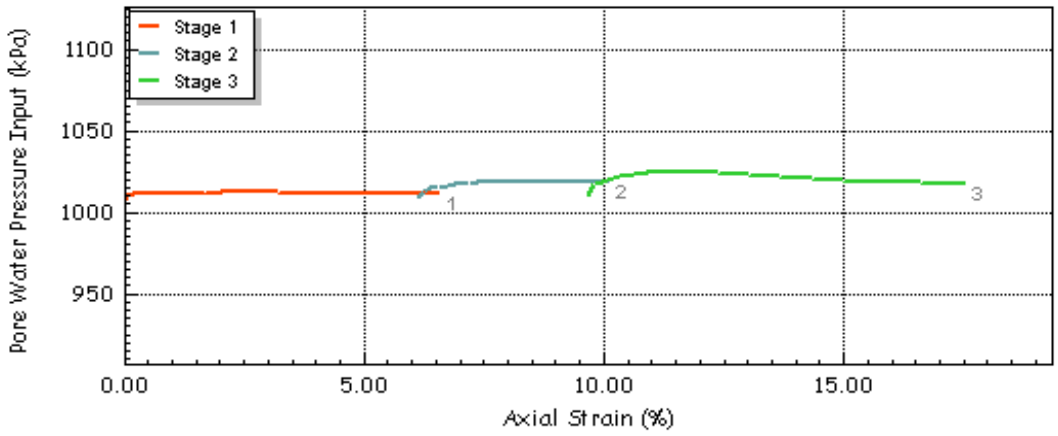
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**



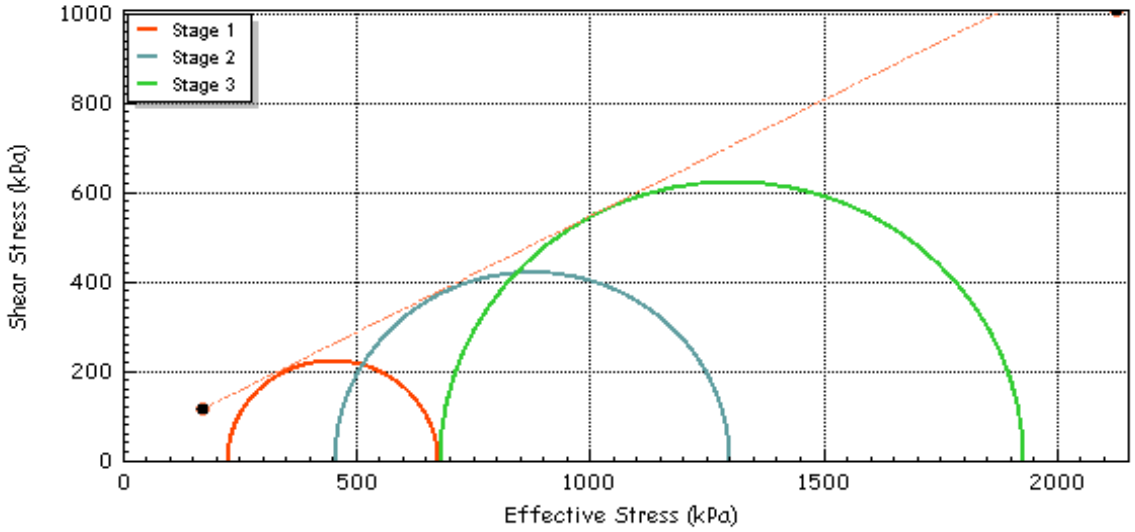

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH135 23.20-23.50m CS22 |
| | | Test Date | 12/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH135 |
| | | Sample | 23.20-23.50m CS22 |
| Client | Ground Technology | Depth | 23.20-23.50m |

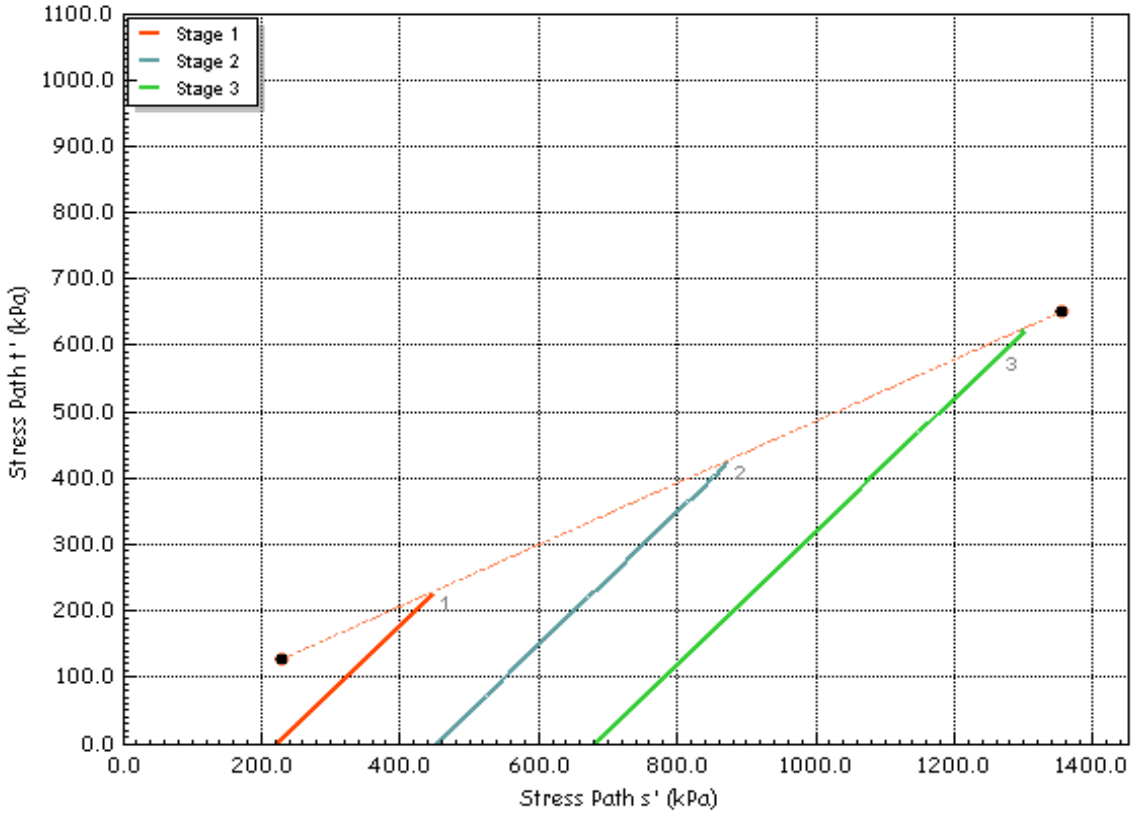
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Effective | c' | (kPa) | 23.06 | Effective Cohesion | c' | (kPa) | 23.06 |
| Effective Friction | ϕ' | (deg) | 27.7 | Effective Friction | ϕ' | (deg) | 27.7 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH135 23.20-23.50m CS22 |
| | | Test Date | 12/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH135 |
| Client | Ground Technology | Sample | 23.20-23.50m CS22 |
| | | Depth | 23.20-23.50m |

# Effective Stress Triaxial Compression

## Consolidated Drained

**Summary Report**

| Sample Details | | | | |
|---|---|---|---|---|
| *sketch showing specimen location in original sample* | Depth | | 4.80-5.10m | |
| | Description | | See summary of soil descriptions. | |
| | Type | | Undisturbed, vertical orientation. | |
| | Initial Sample Length | $L_0$ | (mm) | 140.0 |
| | Initial Sample Diameter | $D_0$ | (mm) | 70.0 |
| | Initial Sample Weight | $W_0$ | (gr) | 1088.0 |
| | Initial Bulk Density | $\rho_0$ | (Mg/m3) | 2.02 |
| | Particle Density | $\rho_s$ | (Mg/m3) | 2.66 |

| **Initial Conditions** | | | Stage 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_{3i}$ | (kPa) | 700 | 750 | 800 | |
| Initial Back Pressure | $U_{bi}$ | (kPa) | 650 | 650 | 650 | |
| Membrane Thickness | $m_b$ | (mm) | 0.600 | | | |
| Displacement Input | $L_{IP}$ | (mm) | CH 2 | | | |
| Load Input | $N_{IP}$ | (N) | CH 1 | | | |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | CH 3 | | | |
| Sample Volume | $V$ | (cc) | CH 2 | | | |
| Initial Moisture | $\omega_i$ | (%) | 22 | | | |
| Initial Dry Density | $\rho_{di}$ | (Mg/m3) | 1.65 | | | |
| Initial Voids Ratio | $e_i$ | . | 0.610 | | | |
| Initial Degree of Saturation | $S_i$ | (%) | 97 | | | |
| B Value | $B$ | . | 0.95 | | | |

| **Final Conditions** | | | | | | |
|---|---|---|---|---|---|---|
| Final Moisture | $\omega_f$ | (%) | 18 | | | |
| Final Dry Density | $\rho_{df}$ | (Mg/m3) | 1.71 | | | |
| Final Voids Ratio | $e_f$ | . | 0.553 | | | |
| Final Degree of Saturation | $S_f$ | (%) | 88.0 | | | |
| | | | Stage 1 | 2 | 3 | 4 |
| Failure Criteria | | . | Max. Dev. Stress | Max. Dev. Stress | Max. Dev. Stress | |
| Strain At Failure | $\varepsilon_f$ | (%) | 5.27 | 8.20 | 10.07 | |
| Stress At Failure | $(\sigma_1-\sigma_3)$ | (kPa) | 146.5 | 235.5 | 317.6 | |
| Minor Stress At Failure | $\sigma_3'$ | (kPa) | 50.0 | 100.0 | 149.0 | |
| Major Stress At Failure | $\sigma_1'$ | (kPa) | 196.5 | 335.5 | 466.6 | |
| Principal Stress Ratio At Failure | $\sigma_1'/\sigma_3'$ | | 3.931 | 3.355 | 3.132 | |

**Notes**

*Brittle*

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH136 4.80-5.10m CS13 |
| | | Test Date | 14/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH136 |
| | | Sample | 4.80-5.10m CS13 |
| Client | Ground Technology | Depth | 4.80-5.10m |

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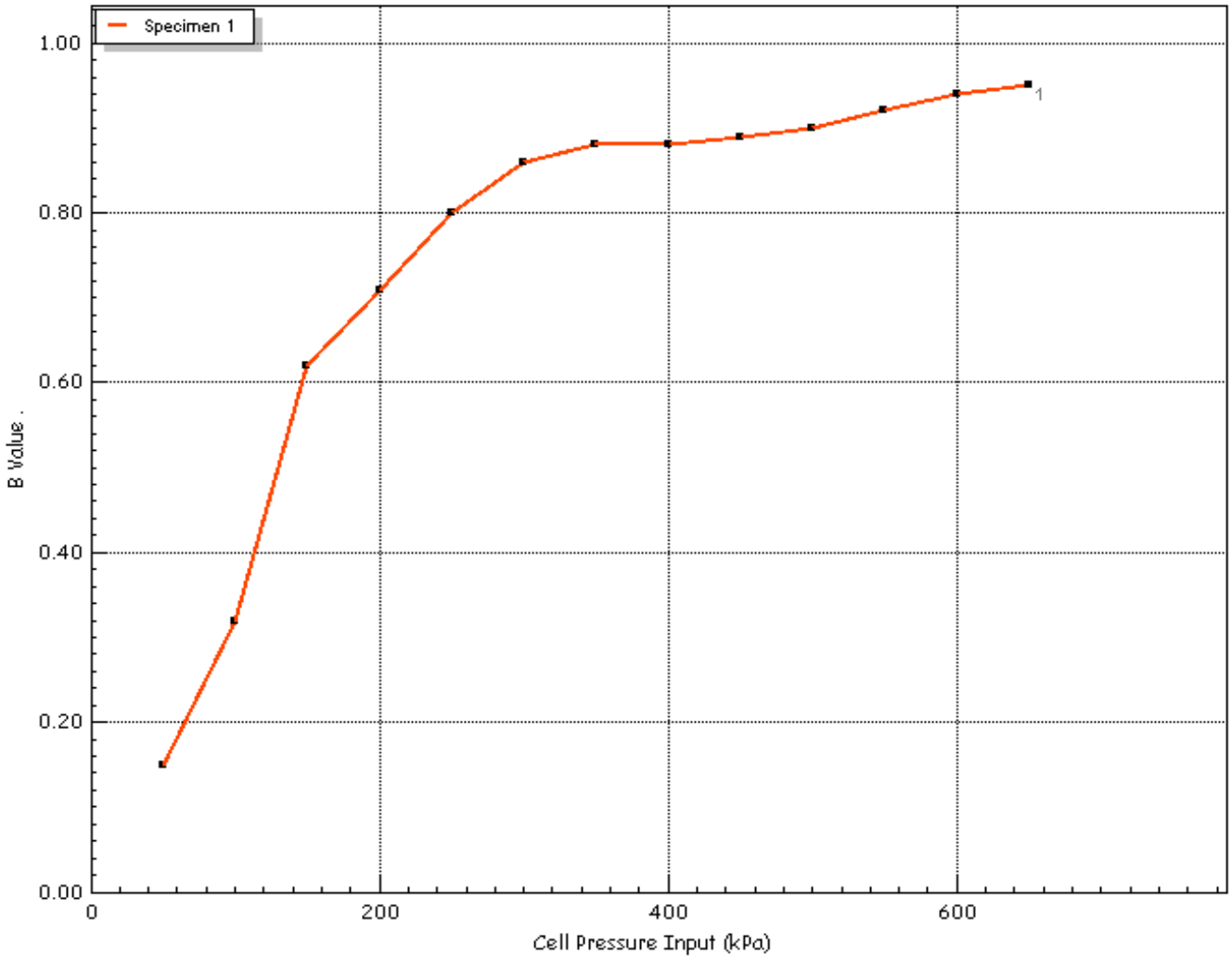
# Effective Stress Triaxial Compression

## Consolidated Drained

**Saturation Plots**

| | | | |
|---|---|---|---|
| Saturation Method | | | Stepped |
| Cell Pressure Input | σ | (kPa) | 650 |
| Pore Water Pressure Input | u pwp | (kPa) | 635 |
| B Value | B | . | 0.95 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH136 4.80-5.10m CS13 |
| | | Test Date | 14/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH136 |
| Client | Ground Technology | Sample | 4.80-5.10m CS13 |
| | | Depth | 4.80-5.10m |

# Effective Stress Triaxial Compression

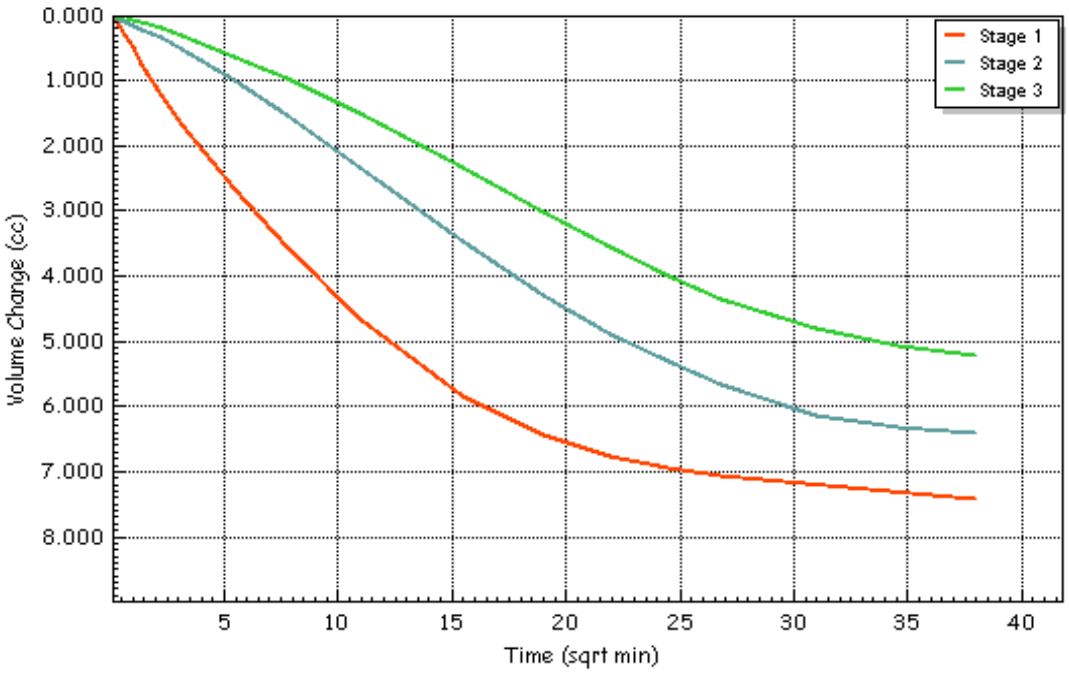
## Consolidated Drained

**Consolidation Plots**

| **Initial Conditions** | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_3$ | (kPa) | 700 | 750 | 800 |
| Initial Back Pressure | $u_{bi}$ | (kPa) | 650 | 650 | 650 |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | 671 | 698 | 732 |
| Drainage Method | | | Radial+One End | | |

| **Final Conditions** | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| PWP Dissipation % | U% | (%) | 100.00 | 100.00 | 100.00 |
| Volumetric Strain | $\varepsilon_v$% | (%) | 1.38 | 2.57 | 3.53 |
| Corrected Length | $L_C$ | (mm) | 139.4 | 130.9 | 122.7 |
| Corrected Area | $A_C$ | (cm2) | 38.13 | 39.55 | 41.25 |
| Corrected Volume | $V_C$ | (cc) | 531.362 | 524.958 | 519.749 |
| T100 Time to Failure | $t_{100}$ | (min) | 237.42 | 713.01 | 966.97 |
| Consolidation | $c_v$ | (m2/year) | 0.426 | 0.142 | 0.105 |
| Compressibility | $m_v$ | (m2/MN) | 0.653 | 1.234 | 3.183 |
| Test Time | $t_F$ | (h:m:s) | 55:23:52 | 166:22:08 | 225:37:34 |
| Estimated Strain to Failure | $\varepsilon$% | (%) | 7.5 | 5.0 | 5.0 |
| Shear Machine Speed | $d_r$ | (mm/min) | 0.00314 | 0.00314 | 0.00314 |

**Notes**

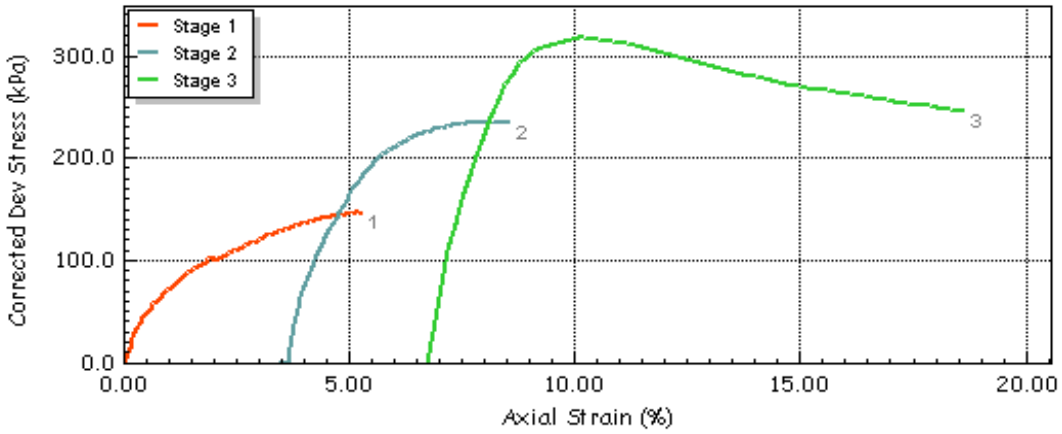


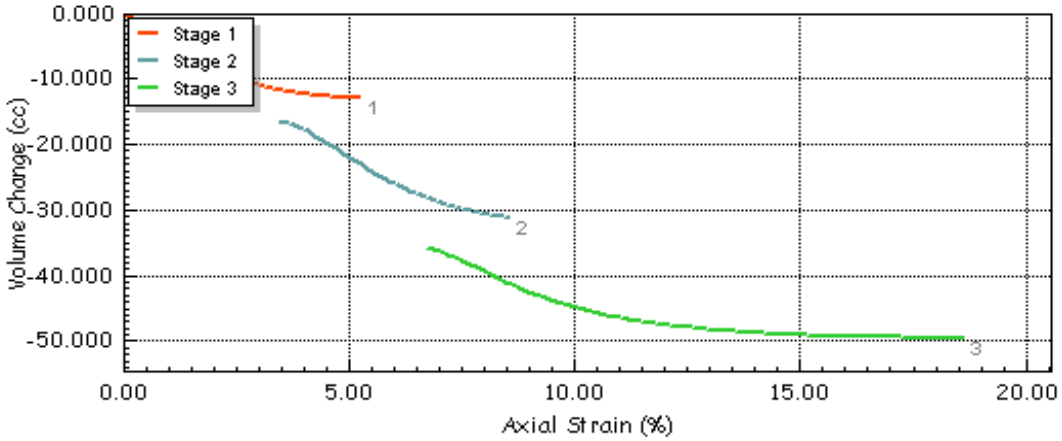

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH136 4.80-5.10m CS13 |
| | | Test Date | 14/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH136 |
| | | Sample | 4.80-5.10m CS13 |
| Client | Ground Technology | Depth | 4.80-5.10m |

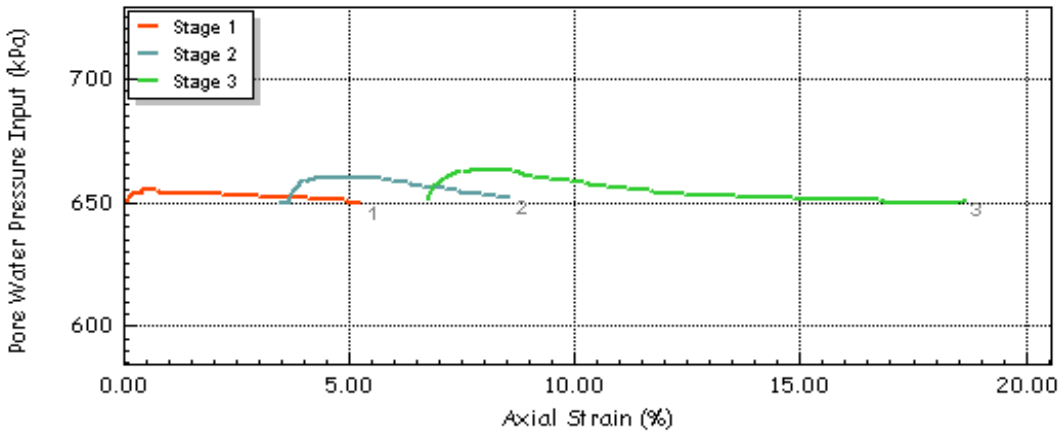
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**



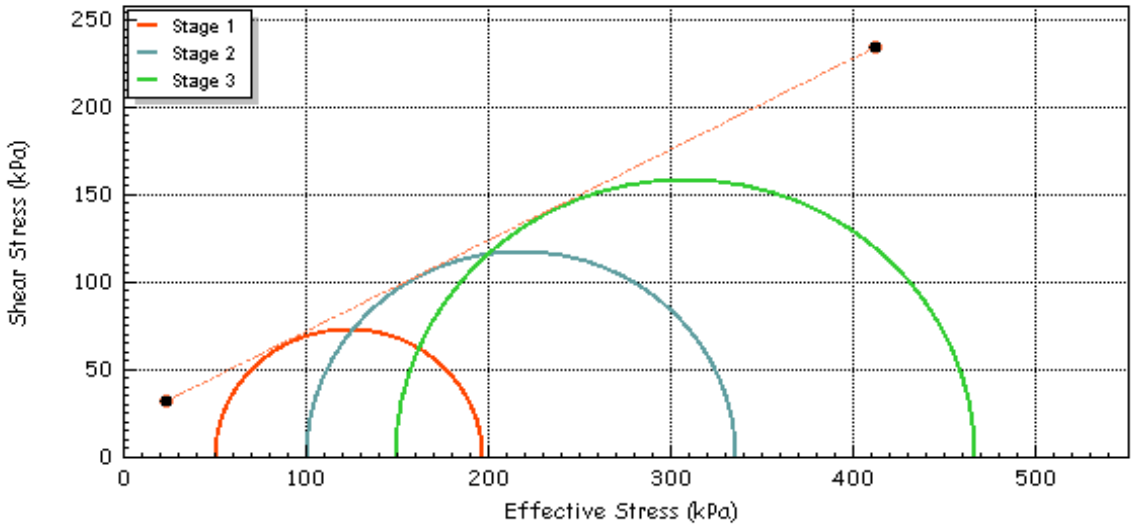

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH136 4.80-5.10m CS13 |
| | | Test Date | 14/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH136 |
| | | Sample | 4.80-5.10m CS13 |
| Client | Ground Technology | Depth | 4.80-5.10m |

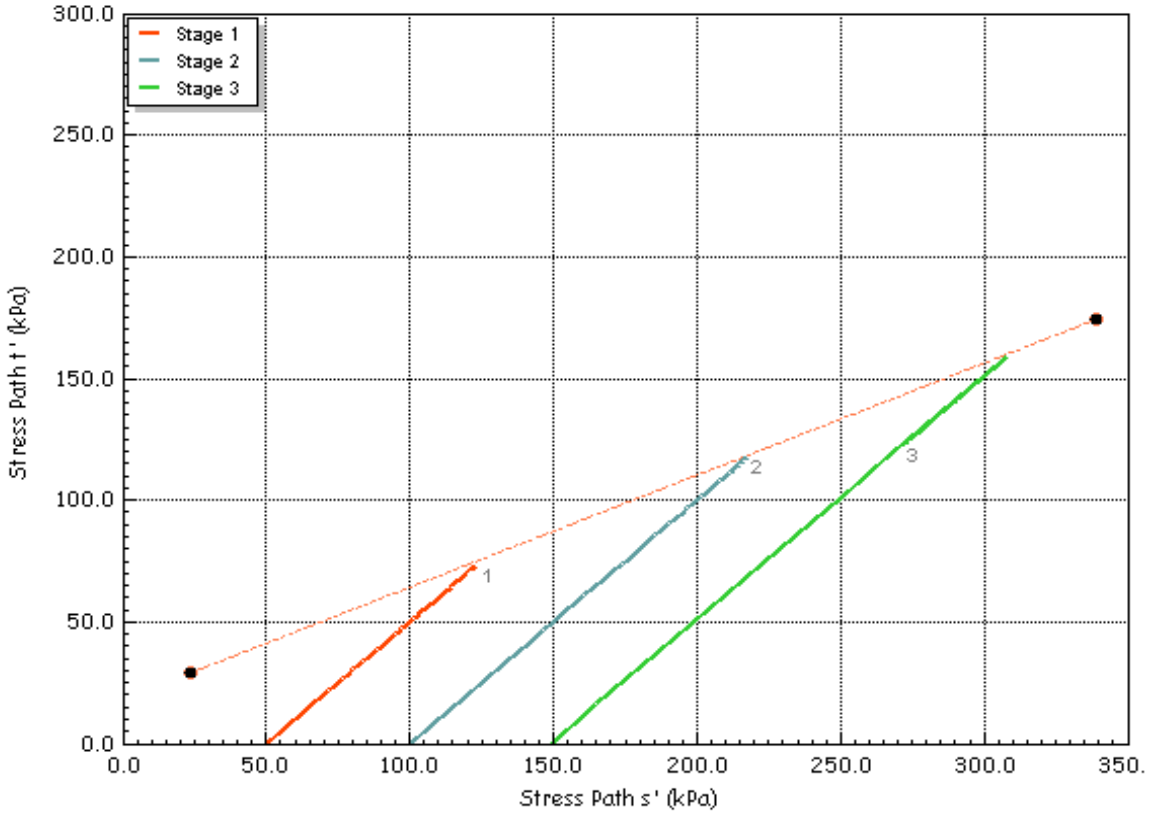
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Effective | c' | (kPa) | 19.95 | Effective Cohesion | c' | (kPa) | 19.95 |
| Effective Friction | ϕ' | (deg) | 27.5 | Effective Friction | ϕ' | (deg) | 27.5 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH136 4.80-5.10m CS13 |
| | | Test Date | 14/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH136 |
| Client | Ground Technology | Sample | 4.80-5.10m CS13 |
| | | Depth | 4.80-5.10m |

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# Effective Stress Triaxial Compression

## Consolidated Undrained

**Summary Report**

| Sample Details | | | | |
|---|---|---|---|---|
| *sketch showing specimen location in original sample* | Depth | | 10.40-10.70m | |
| | Description | | See summary of soil descriptions. | |
| | Type | | Undisturbed, vertical orientation. | |
| | Initial Sample Length | $L_0$ | (mm) | 140.1 |
| | Initial Sample Diameter | $D_0$ | (mm) | 70.2 |
| | Initial Sample Weight | $W_0$ | (gr) | 1095.0 |
| | Initial Bulk Density | $\rho_0$ | (Mg/m3) | 2.02 |
| | Particle Density | $\rho_s$ | (Mg/m3) | 2.66 |

| **Initial Conditions** | | | Stage 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_{3i}$ | (kPa) | 400 | 500 | 600 | |
| Initial Back Pressure | $U_{bi}$ | (kPa) | 333 | 300 | 300 | |
| Membrane Thickness | $m_b$ | (mm) | 0.600 | | | |
| Displacement Input | $L_{IP}$ | (mm) | CH 2 | | | |
| Load Input | $N_{IP}$ | (N) | CH 1 | | | |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | CH 3 | | | |
| Sample Volume | $V$ | (cc) | CH 2 | | | |
| Initial Moisture | $\omega_i$ | (%) | 22 | | | |
| Initial Dry Density | $\rho_{di}$ | (Mg/m3) | 1.66 | | | |
| Initial Voids Ratio | $e_i$ | . | 0.606 | | | |
| Initial Degree of Saturation | $S_i$ | (%) | 96 | | | |
| B Value | B | . | 0.98 | | | |

| **Final Conditions** | | | | | | |
|---|---|---|---|---|---|---|
| Final Moisture | $\omega_f$ | (%) | 17 | | | |
| Final Dry Density | $\rho_{df}$ | (Mg/m3) | 1.80 | | | |
| Final Voids Ratio | $e_f$ | . | 0.478 | | | |
| Final Degree of Saturation | $S_f$ | (%) | 95.4 | | | |
| | | | Stage 1 | 2 | 3 | 4 |
| Failure Criteria | | . | Max. Dev. Stress | Max. Dev. Stress | Max. Dev. Stress | |
| Strain At Failure | $\varepsilon_f$ | (%) | 7.21 | 10.89 | 20.00 | |
| Stress At Failure | $(\sigma_1-\sigma_3)$ | (kPa) | 143.2 | 294.3 | 570.7 | |
| Minor Stress At Failure | $\sigma_3'$ | (kPa) | 56.0 | 142.0 | 312.0 | |
| Major Stress At Failure | $\sigma_1'$ | (kPa) | 199.2 | 436.3 | 882.7 | |
| Principal Stress Ratio At Failure | $\sigma_1'/\sigma_3'$ | | 3.558 | 3.073 | 2.829 | |

**Notes**

*Plastic*

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 7 | Test Name | BH136 10.40-10.70m CS17 |
| | | Test Date | 14/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH136 |
| | | Sample | 10.40-10.70m CS17 |
| Client | MATtest Limited | Depth | 10.40-10.70m |

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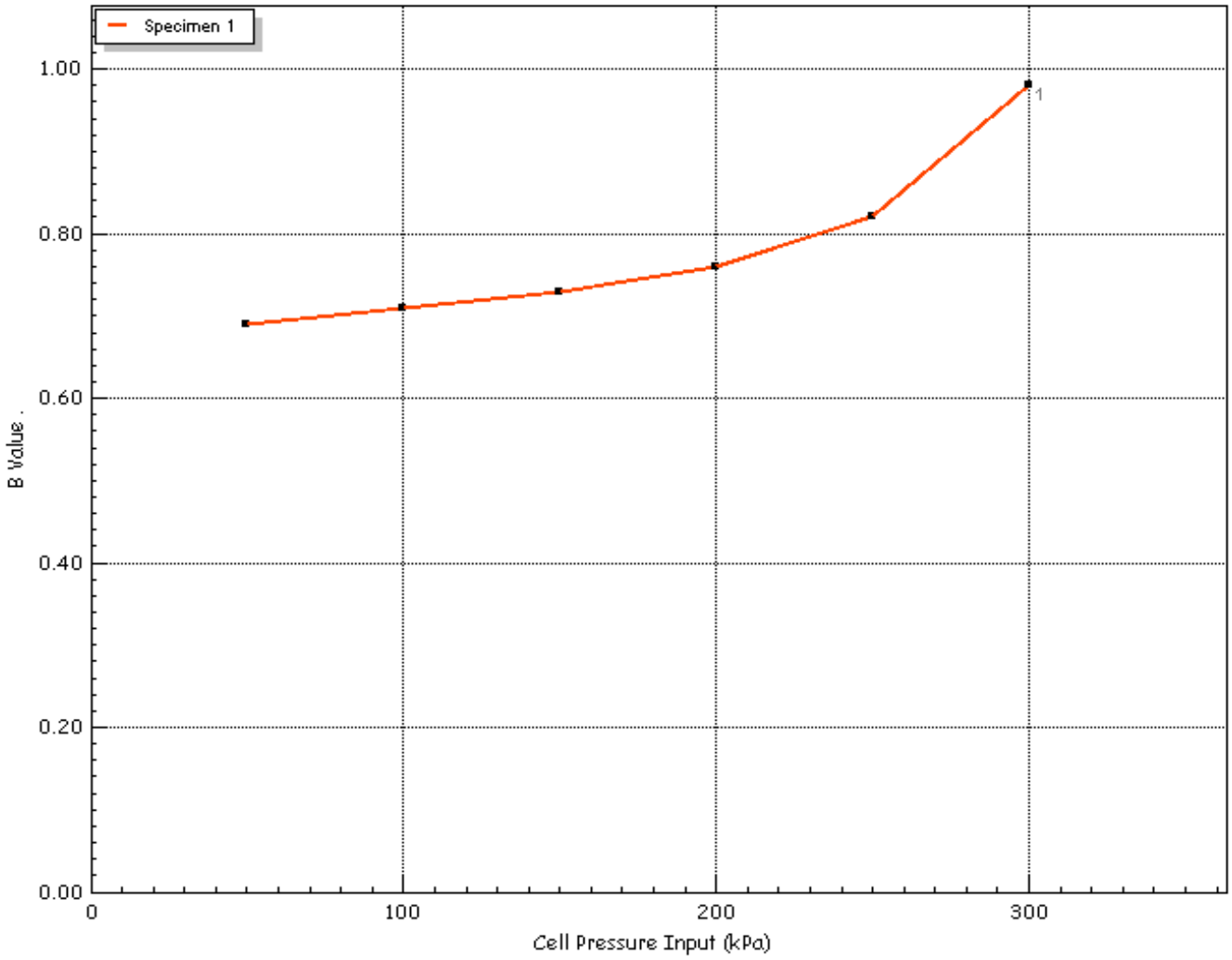
# Effective Stress Triaxial Compression

## Consolidated Undrained

**Saturation Plots**

| | | | |
|---|---|---|---|
| Saturation Method | | | Stepped |
| Cell Pressure Input | σ | (kPa) | 300 |
| Pore Water Pressure Input | u pwp | (kPa) | 286 |
| B Value | B | . | 0.98 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 7 | Test Name | BH136 10.40-10.70m CS17 |
| | | Test Date | 14/07/2022 |
| | Wansford to Sutton Dualling | Borehole | BH136 |
| Jobfile | Supplementary GI | Sample | 10.40-10.70m CS17 |
| Client | MATtest Limited | Depth | 10.40-10.70m |

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# Effective Stress Triaxial Compression

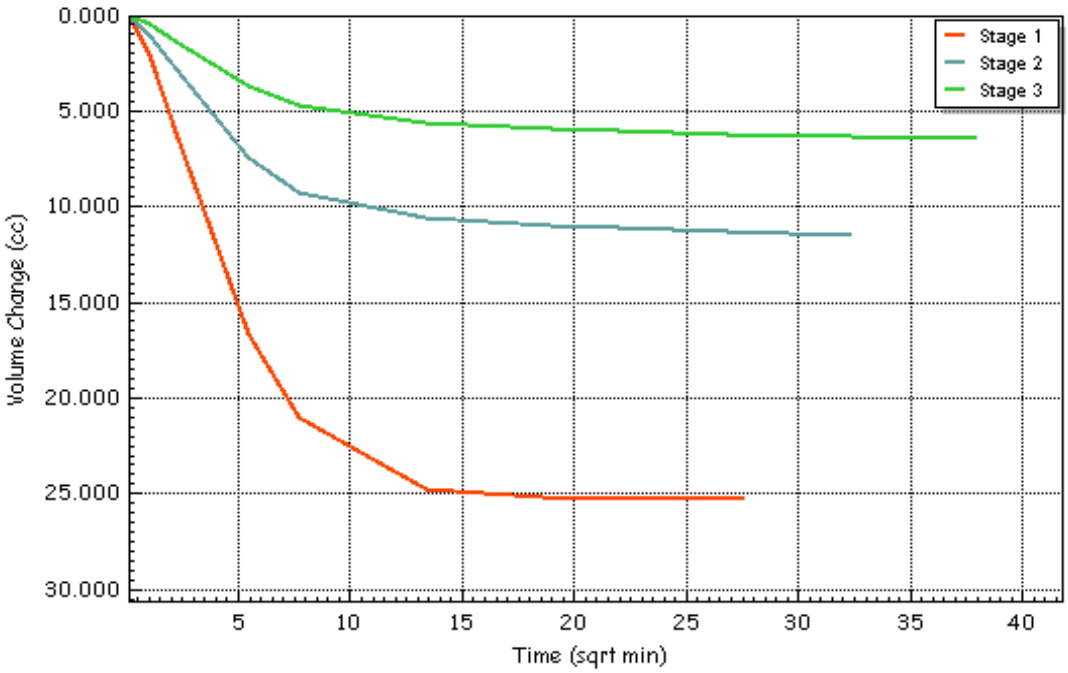
## Consolidated Undrained

**Consolidation Plots**

| **Initial Conditions** | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_3$ | (kPa) | 400 | 500 | 600 |
| Initial Back Pressure | $u_{bi}$ | (kPa) | 300 | 300 | 300 |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | 389 | 470 | 531 |
| Drainage Method | | | Radial+One End | | |

| **Final Conditions** | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| PWP Dissipation % | U% | (%) | 100.00 | 100.00 | 100.00 |
| Volumetric Strain | $\varepsilon_v$% | (%) | 4.66 | 2.12 | 1.19 |
| Corrected Length | $L_C$ | (mm) | 137.9 | 127.0 | 120.3 |
| Corrected Area | $A_C$ | (cm2) | 37.50 | 39.80 | 41.48 |
| Corrected Volume | $V_C$ | (cc) | 516.965 | 505.492 | 499.055 |
| t100 | $t_{100}$ | (min) | 64.79 | 65.84 | 76.90 |
| Consolidation | $c_v$ | (m2/year) | 1.576 | 1.551 | 1.328 |
| Compressibility | $m_v$ | (m2/MN) | 0.522 | 0.125 | 0.062 |
| Test Time | $t_F$ | (h:m:s) | 02:00:00 | 02:00:00 | 02:18:25 |
| Estimated Strain to Failure | $\varepsilon$% | (%) | 5.0 | 5.0 | 5.0 |
| Shear Machine Speed | $d_r$ | (mm/min) | 0.05747 | 0.05747 | 0.05747 |

**Notes**




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 7 | Test Name | BH136 10.40-10.70m CS17 |
| | | Test Date | 15/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH136 |
| | | Sample | 10.40-10.70m CS17 |
| Client | MATtest Limited | Depth | 10.40-10.70m |

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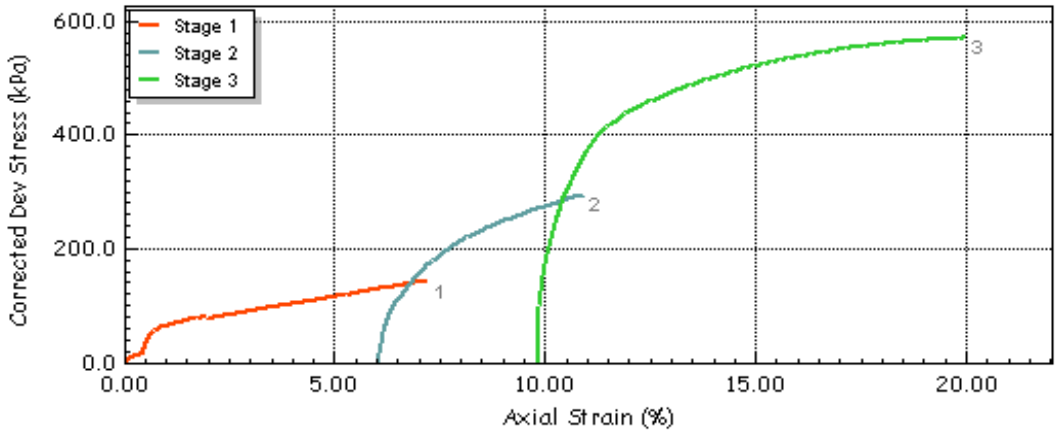
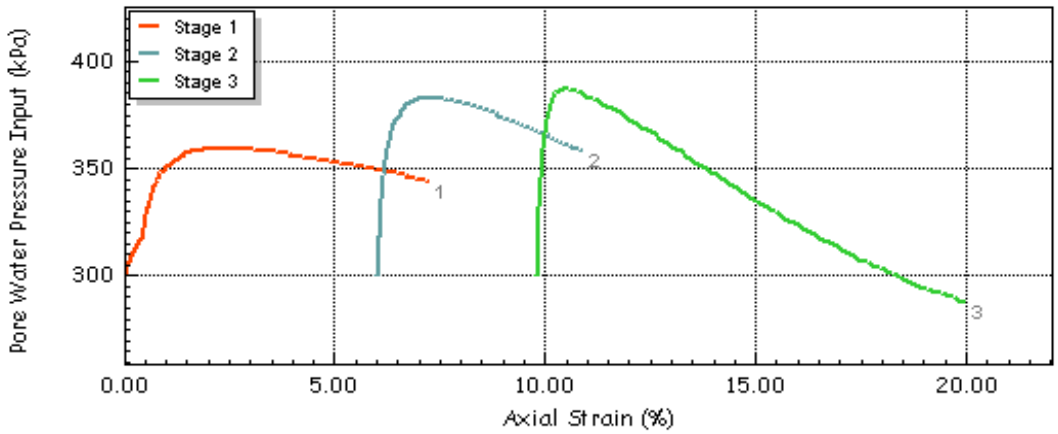
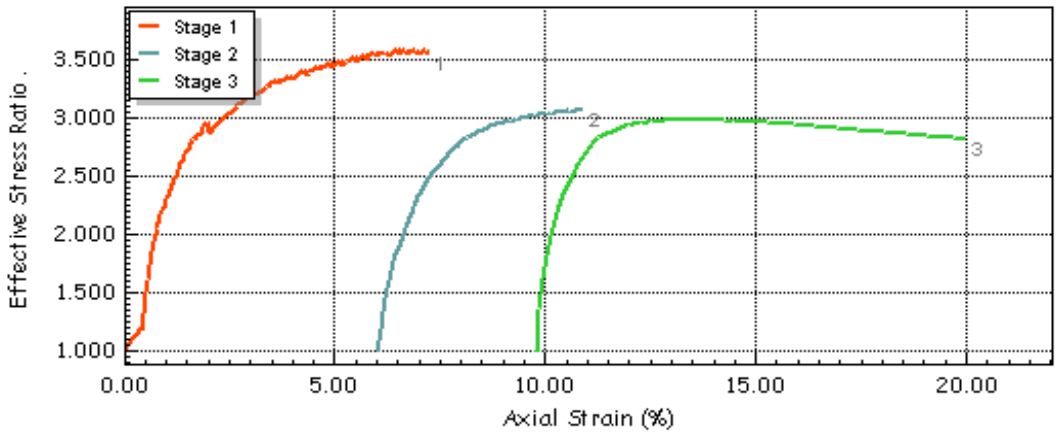
# Effective Stress Triaxial Compression

## Consolidated Undrained

**Shear Stage Plots**



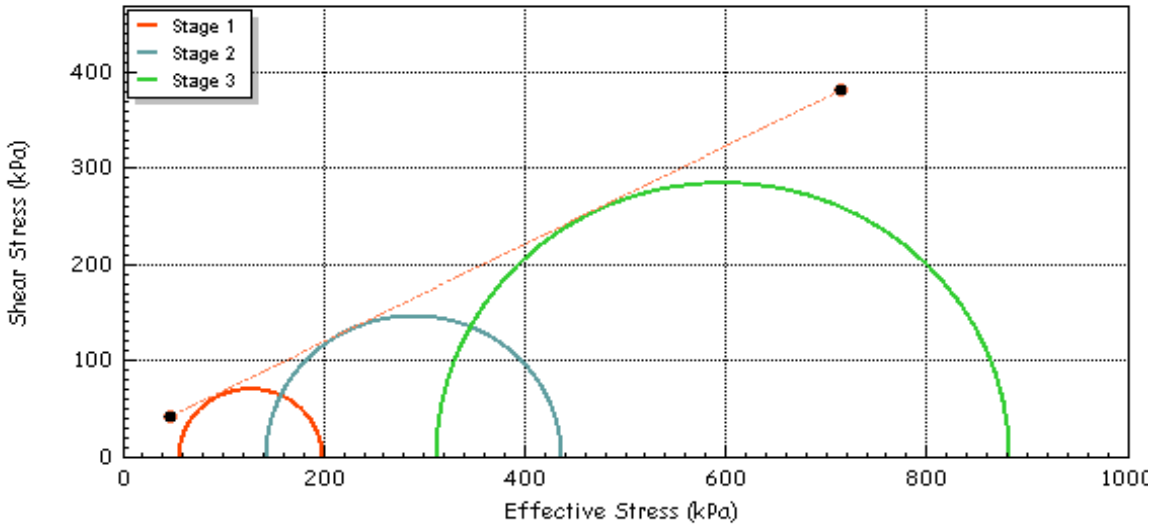

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 7 | Test Name | BH136 10.40-10.70m CS17 |
| | | Test Date | 14/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH136 |
| | | Sample | 10.40-10.70m CS17 |
| Client | MATtest Limited | Depth | 10.40-10.70m |

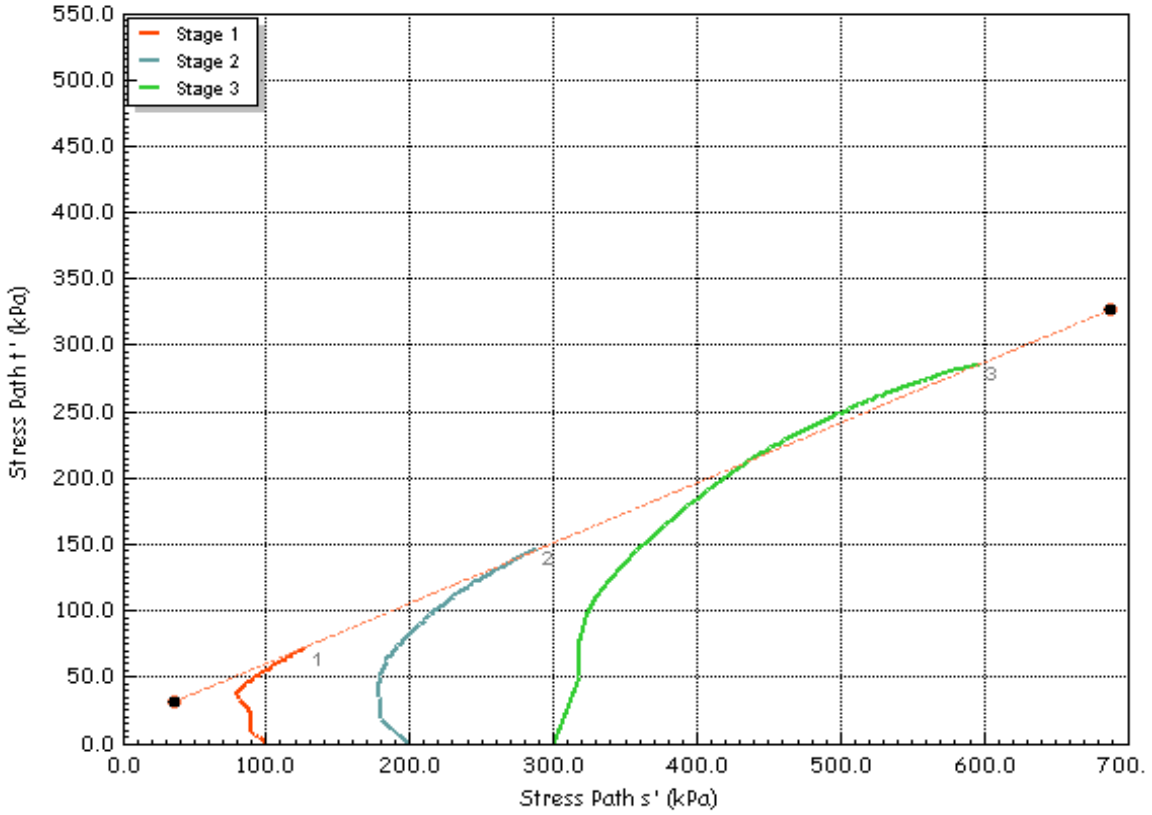
# Effective Stress Triaxial Compression

## Consolidated Undrained

**Shear Stage Plots**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Effective | c' | (kPa) | 17.77 | Effective Cohesion | c' | (kPa) | 17.77 |
| Effective Friction | ϕ' | (deg) | 27.0 | Effective Friction | ϕ' | (deg) | 27.0 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 7 | Test Name | BH136 10.40-10.70m CS17 |
| | | Test Date | 14/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH136 |
| | | Sample | 10.40-10.70m CS17 |
| Client | MATtest Limited | Depth | 10.40-10.70m |

*

# Effective Stress Triaxial Compression

## Consolidated Drained

**Summary Report**

| Sample Details | | | | |
|---|---|---|---|---|
| *sketch showing specimen location in original sample* | Depth | | 16.47-16.61m | |
| | Description | | See summary of soil descriptions. | |
| | Type | | Undisturbed, vertical orientation. | |
| | Initial Sample Length | $L_0$ | (mm) | 140.0 |
| | Initial Sample Diameter | $D_0$ | (mm) | 70.0 |
| | Initial Sample Weight | $W_0$ | (gr) | 1088.0 |
| | Initial Bulk Density | $\rho_0$ | (Mg/m3) | 2.02 |
| | Particle Density | $\rho_s$ | (Mg/m3) | 2.66 |

| **Initial Conditions** | | | Stage 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_{3i}$ | (kPa) | 815 | 980 | 1145 | |
| Initial Back Pressure | $U_{bi}$ | (kPa) | 650 | 650 | 650 | |
| Membrane Thickness | $m_b$ | (mm) | 0.600 | | | |
| Displacement Input | $L_{IP}$ | (mm) | CH 2 | | | |
| Load Input | $N_{IP}$ | (N) | CH 4 | | | |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | CH 3 | | | |
| Sample Volume | $V$ | (cc) | CH 2 | | | |
| Initial Moisture | $\omega_i$ | (%) | 22 | | | |
| Initial Dry Density | $\rho_{di}$ | (Mg/m3) | 1.65 | | | |
| Initial Voids Ratio | $e_i$ | . | 0.610 | | | |
| Initial Degree of Saturation | $S_i$ | (%) | 97 | | | |
| B Value | $B$ | . | 0.96 | | | |

| **Final Conditions** | | | | | | |
|---|---|---|---|---|---|---|
| Final Moisture | $\omega_f$ | (%) | 17 | | | |
| Final Dry Density | $\rho_{df}$ | (Mg/m3) | 1.80 | | | |
| Final Voids Ratio | $e_f$ | . | 0.478 | | | |
| Final Degree of Saturation | $S_f$ | (%) | 94.9 | | | |
| | | | Stage 1 | 2 | 3 | 4 |
| Failure Criteria | | . | Max. Dev. Stress | Max. Dev. Stress | Max. Dev. Stress | |
| Strain At Failure | $\varepsilon_f$ | (%) | 9.43 | 17.15 | 20.00 | |
| Stress At Failure | $(\sigma_1-\sigma_3)$ | (kPa) | 375.5 | 667.8 | 953.7 | |
| Minor Stress At Failure | $\sigma_3'$ | (kPa) | 165.0 | 330.0 | 495.0 | |
| Major Stress At Failure | $\sigma_1'$ | (kPa) | 540.5 | 997.8 | 1448.7 | |
| Principal Stress Ratio At Failure | $\sigma_1'/\sigma_3'$ | | 3.276 | 3.024 | 2.927 | |

**Notes**

*Brittle*

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH136 16.47-16.61m CS27 |
| | | Test Date | 11/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH136 |
| | | Sample | 16.47-16.61m CS27 |
| Client | Ground Technology | Depth | 16.47-16.61m |

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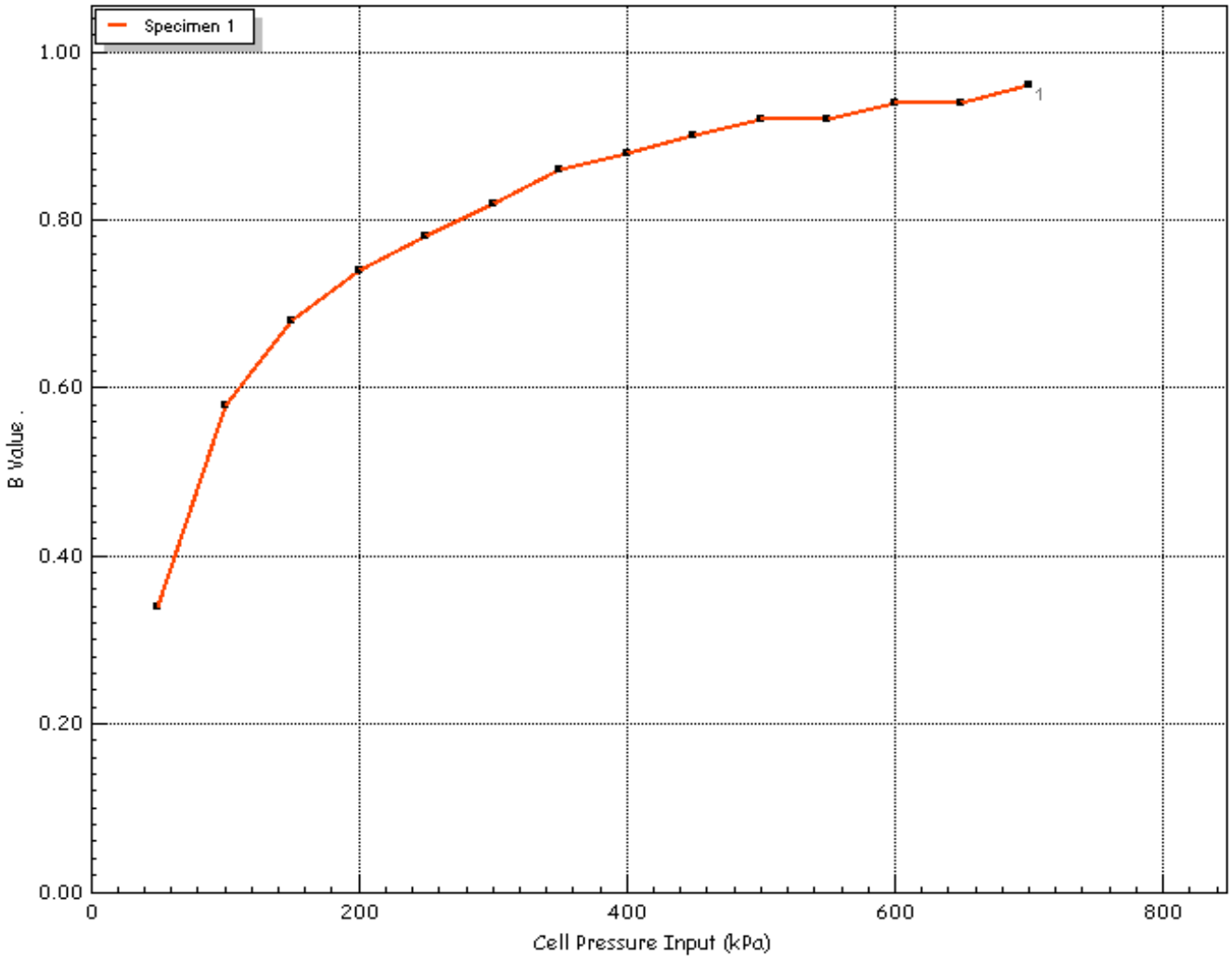
# Effective Stress Triaxial Compression

## Consolidated Drained

**Saturation Plots**

| | | | |
|---|---|---|---|
| Saturation Method | | | Stepped |
| Cell Pressure Input | σ | (kPa) | 700 |
| Pore Water Pressure Input | u pwp | (kPa) | 685 |
| B Value | B | . | 0.96 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH136 16.47-16.61m CS27 |
| | | Test Date | 11/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH136 |
| | | Sample | 16.47-16.61m CS27 |
| Client | Ground Technology | Depth | 16.47-16.61m |

# Effective Stress Triaxial Compression

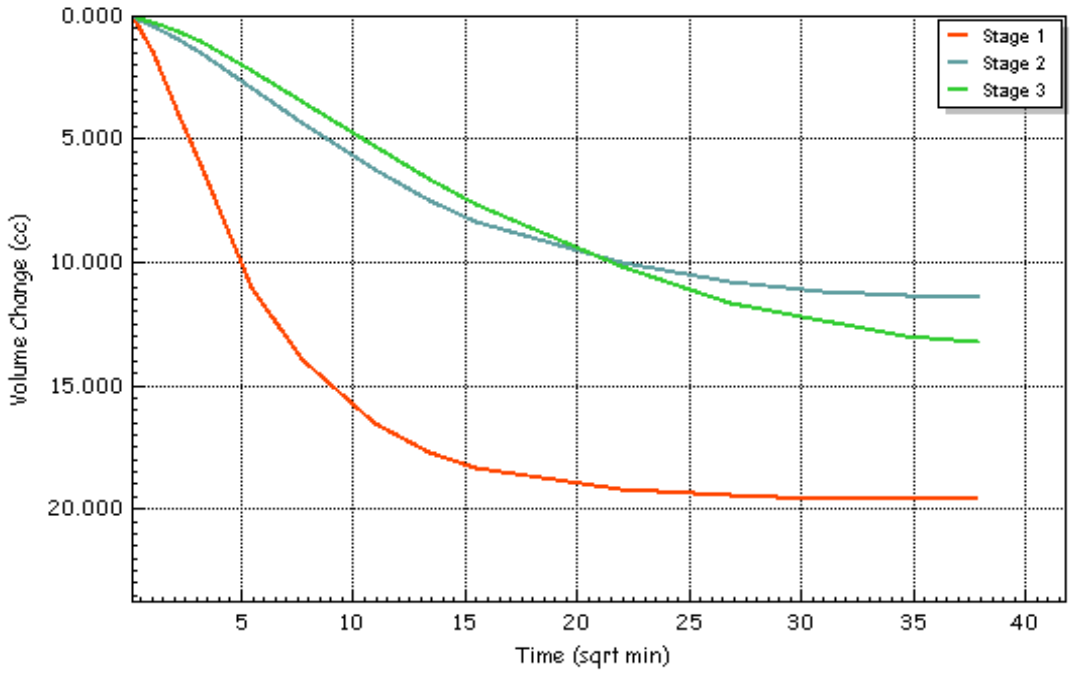
## Consolidated Drained

**Consolidation Plots**

| Initial Conditions | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_3$ | (kPa) | 815 | 980 | 1145 |
| Initial Back Pressure | $u_{bi}$ | (kPa) | 650 | 650 | 650 |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | 768 | 902 | 1097 |
| Drainage Method | | | Radial+One End | | |

| Final Conditions | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| PWP Dissipation % | U% | (%) | 100.00 | 100.00 | 100.00 |
| Volumetric Strain | $\varepsilon_v$% | (%) | 3.64 | 5.75 | 8.21 |
| Corrected Length | $L_C$ | (mm) | 138.3 | 122.9 | 108.9 |
| Corrected Area | $A_C$ | (cm2) | 37.55 | 39.80 | 42.70 |
| Corrected Volume | $V_C$ | (cc) | 519.186 | 507.781 | 494.540 |
| T100 Time to Failure | $t_{100}$ | (min) | 83.48 | 344.82 | 618.81 |
| Consolidation | $c_V$ | (m2/year) | 1.212 | 0.293 | 0.164 |
| Compressibility | $m_V$ | (m2/MN) | 0.308 | 0.228 | 0.184 |
| Test Time | $t_F$ | (h:m:s) | 19:28:43 | 80:27:28 | 144:23:20 |
| Estimated Strain to Failure | $\varepsilon$% | (%) | 10.0 | 10.0 | 10.0 |
| Shear Machine Speed | $d_r$ | (mm/min) | 0.01183 | 0.01183 | 0.01183 |

**Notes**




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH136 16.47-16.61m CS27 |
| | | Test Date | 11/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH136 |
| | | Sample | 16.47-16.61m CS27 |
| Client | Ground Technology | Depth | 16.47-16.61m |

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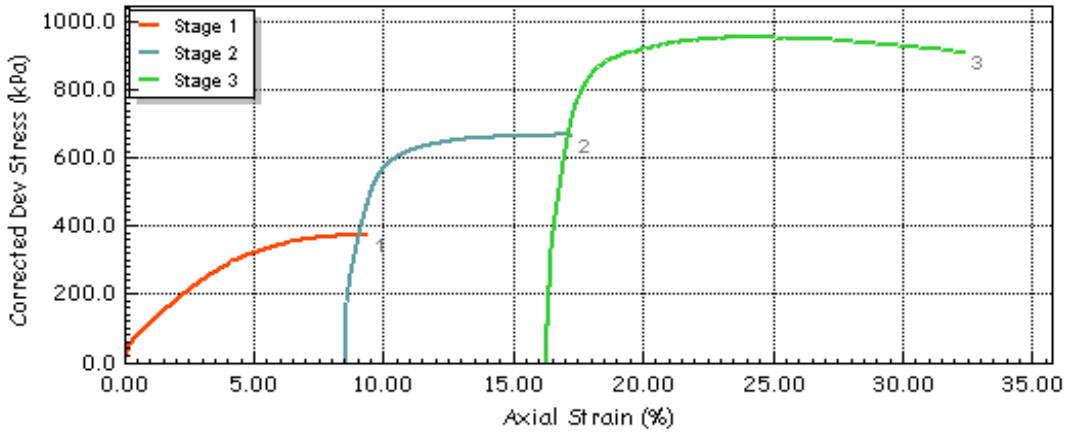
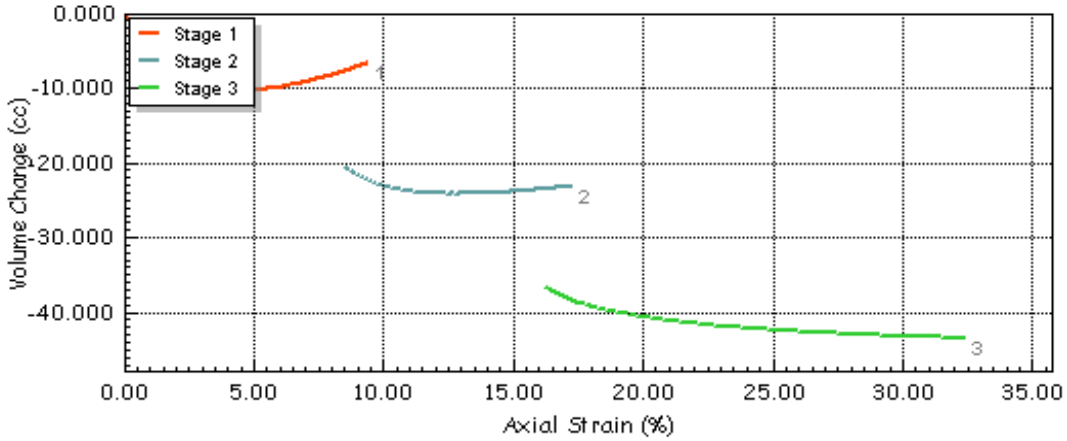
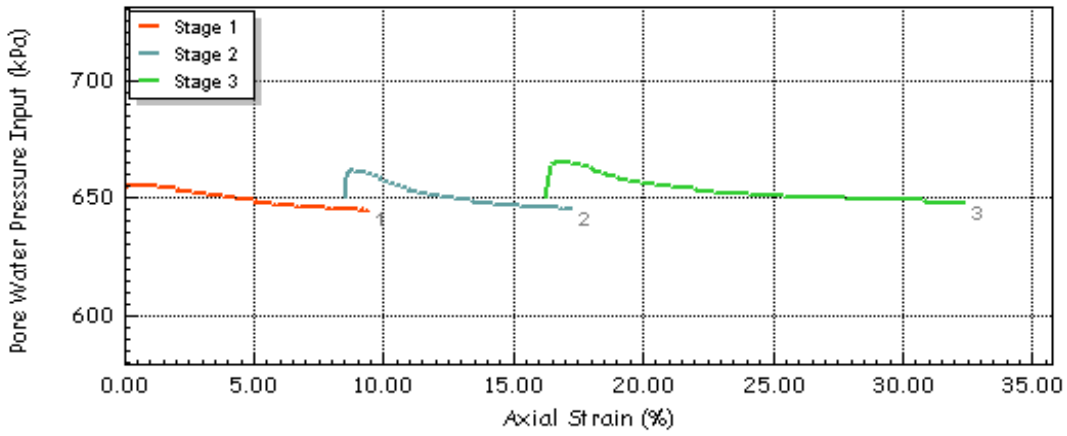
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**



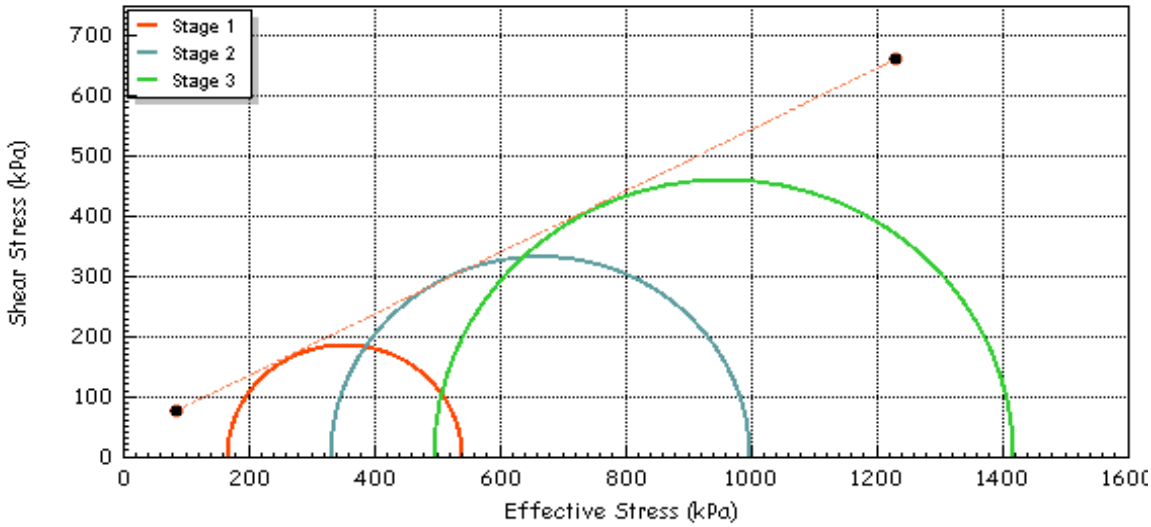

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH136 16.47-16.61m CS27 |
| | | Test Date | 11/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH136 |
| | | Sample | 16.47-16.61m CS27 |
| Client | Ground Technology | Depth | 16.47-16.61m |

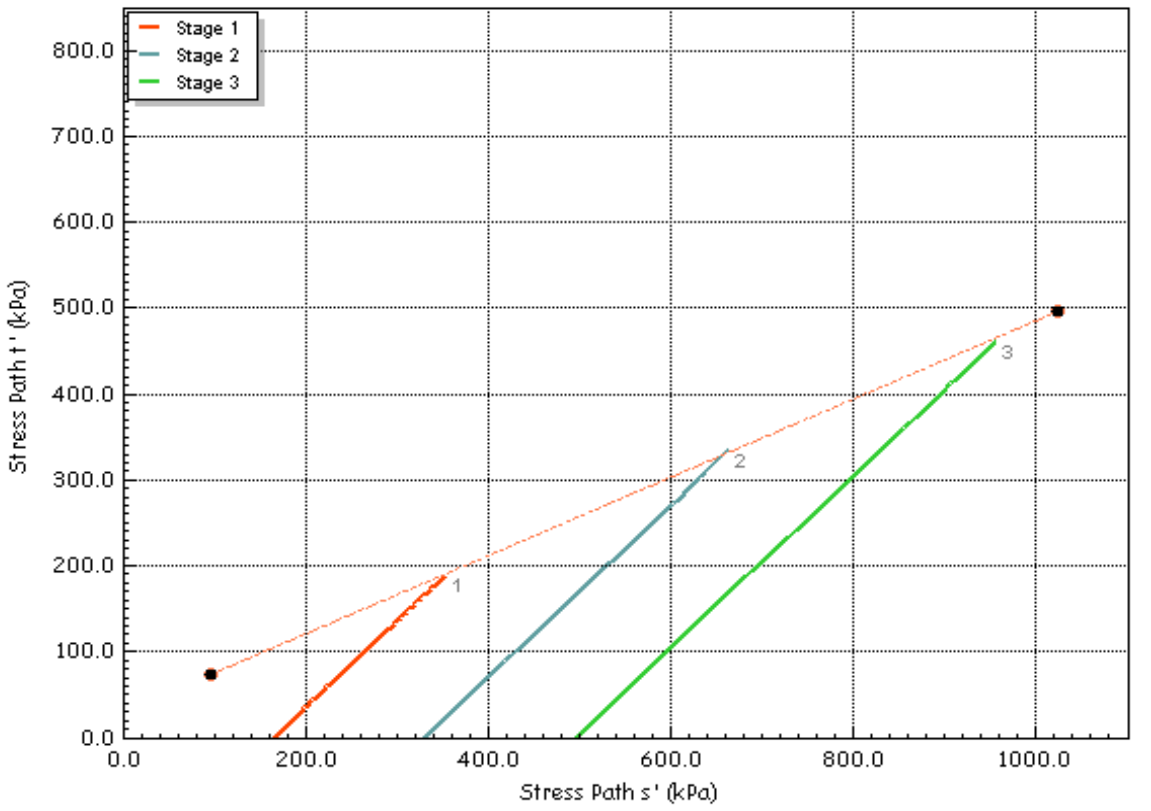
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Effective | c' | (kPa) | 33.08 | Effective Cohesion | c' | (kPa) | 33.08 |
| Effective Friction | ϕ' | (deg) | 27.1 | Effective Friction | ϕ' | (deg) | 27.1 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH136 16.47-16.61m CS27 |
| | | Test Date | 11/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH136 |
| | | Sample | 16.47-16.61m CS27 |
| Client | Ground Technology | Depth | 16.47-16.61m |

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# Effective Stress Triaxial Compression

## Consolidated Undrained

**Summary Report**

| Sample Details | | | | |
|---|---|---|---|---|
| *sketch showing specimen location in original sample* | Depth | | 24.42-24.64m | |
| | Description | | See summary of soil descriptions. | |
| | Type | | Undisturbed, vertical orientation. | |
| | Initial Sample Length | $L_0$ | (mm) | 140.0 |
| | Initial Sample Diameter | $D_0$ | (mm) | 70.0 |
| | Initial Sample Weight | $W_0$ | (gr) | 1109.0 |
| | Initial Bulk Density | $\rho_0$ | (Mg/m3) | 2.06 |
| | Particle Density | $\rho_s$ | (Mg/m3) | 2.66 |

| **Initial Conditions** | | | Stage 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_{3i}$ | (kPa) | 840 | 1080 | 1320 | |
| Initial Back Pressure | $U_{bi}$ | (kPa) | 600 | 600 | 600 | |
| Membrane Thickness | $m_b$ | (mm) | 0.600 | | | |
| Displacement Input | $L_{IP}$ | (mm) | CH 2 | | | |
| Load Input | $N_{IP}$ | (N) | CH 4 | | | |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | CH 3 | | | |
| Sample Volume | $V$ | (cc) | CH 6 | | | |
| Initial Moisture | $\omega_i$ | (%) | 19 | | | |
| Initial Dry Density | $\rho_{di}$ | (Mg/m3) | 1.73 | | | |
| Initial Voids Ratio | $e_i$ | . | 0.541 | | | |
| Initial Degree of Saturation | $S_i$ | (%) | 95 | | | |
| B Value | $B$ | . | 0.96 | | | |

| **Final Conditions** | | | | | | |
|---|---|---|---|---|---|---|
| Final Moisture | $\omega_f$ | (%) | 15 | | | |
| Final Dry Density | $\rho_{df}$ | (Mg/m3) | 1.95 | | | |
| Final Voids Ratio | $e_f$ | . | 0.361 | | | |
| Final Degree of Saturation | $S_f$ | (%) | 100.0 | | | |
| | | | Stage 1 | 2 | 3 | 4 |
| Failure Criteria | | . | Max. Dev. Stress | Max. Dev. Stress | Max. Dev. Stress | |
| Strain At Failure | $\varepsilon_f$ | (%) | 5.66 | 9.56 | 13.70 | |
| Stress At Failure | $(\sigma_1-\sigma_3)$ | (kPa) | 174.0 | 410.8 | 604.5 | |
| Minor Stress At Failure | $\sigma_3'$ | (kPa) | 101.0 | 276.0 | 425.0 | |
| Major Stress At Failure | $\sigma_1'$ | (kPa) | 275.0 | 686.8 | 1029.5 | |
| Principal Stress Ratio At Failure | $\sigma_1'/\sigma_3'$ | | 2.723 | 2.488 | 2.422 | |

**Notes**

*Brittle*

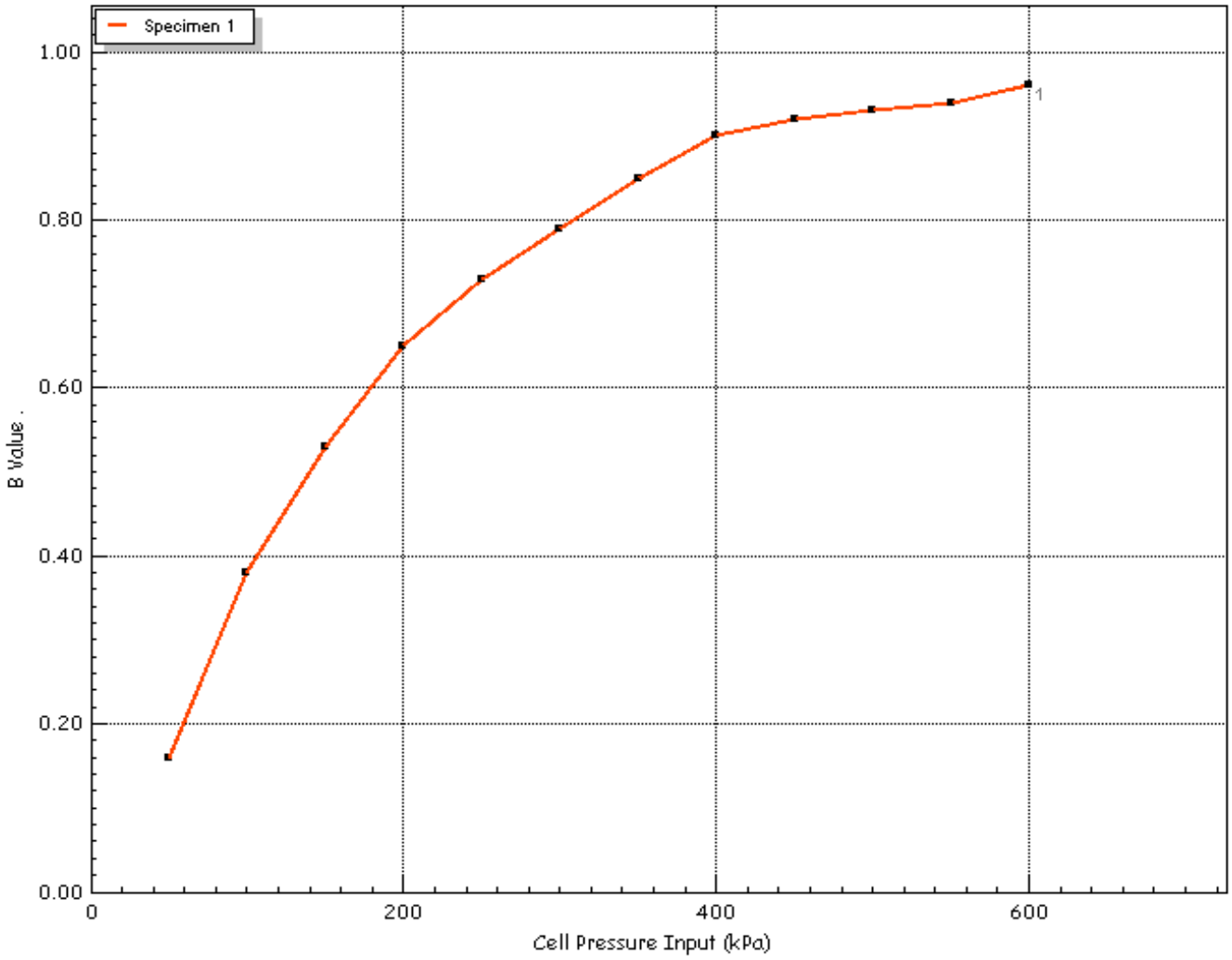
| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 7 | Test Name | BH136 24.42-24.64m CS29 |
| | | Test Date | 12/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH136 |
| | | Sample | 24.42-24.64m CS29 |
| Client | Ground Technology | Depth | 24.42-24.64m |

# Effective Stress Triaxial Compression

## Consolidated Undrained

**Saturation Plots**

| | | | |
|---|---|---|---|
| Saturation Method | | | Stepped |
| Cell Pressure Input | σ | (kPa) | 600 |
| Pore Water Pressure Input | u pwp | (kPa) | 569 |
| B Value | B | . | 0.96 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 7 | Test Name | BH136 24.42-24.64m CS29 |
| | | Test Date | 12/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH136 |
| Client | Ground Technology | Sample | 24.42-24.64m CS29 |
| | | Depth | 24.42-24.64m |

# Effective Stress Triaxial Compression

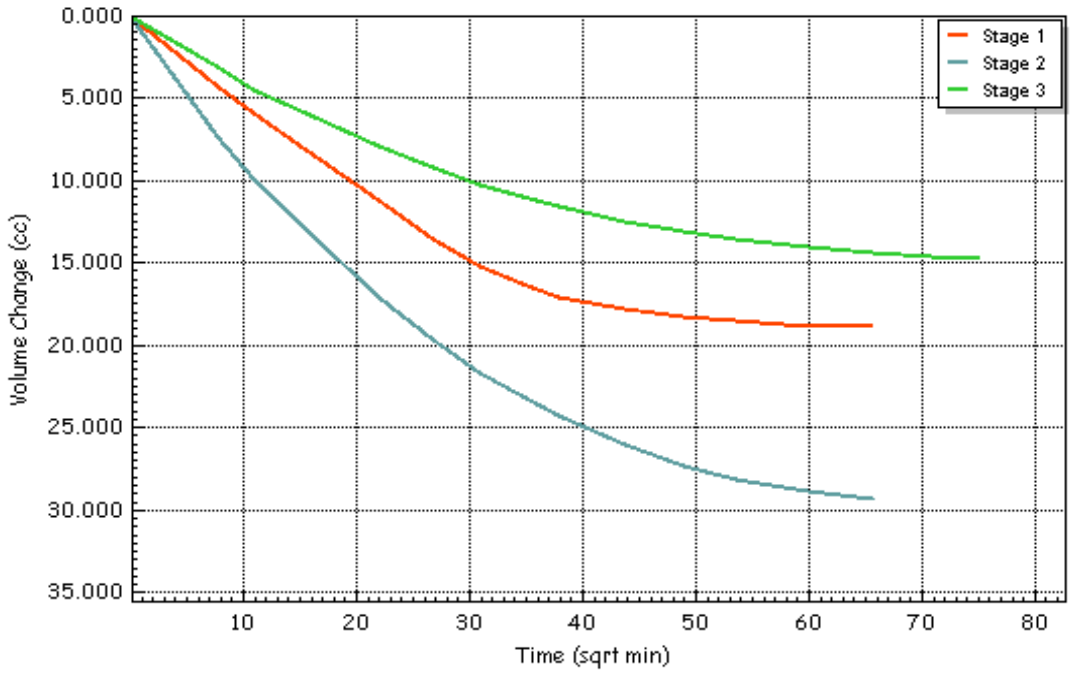
## Consolidated Undrained

**Consolidation Plots**

| **Initial Conditions** | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_3$ | (kPa) | 840 | 1080 | 1320 |
| Initial Back Pressure | $u_{bi}$ | (kPa) | 600 | 600 | 600 |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | 819 | 972 | 1245 |
| Drainage Method | | | Radial+One End | | |

| **Final Conditions** | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| PWP Dissipation % | U% | (%) | 97.26 | 98.12 | 98.76 |
| Volumetric Strain | $\varepsilon_v$% | (%) | 3.51 | 8.95 | 11.70 |
| Corrected Length | $L_C$ | (mm) | 138.4 | 126.6 | 116.2 |
| Corrected Area | $A_C$ | (cm2) | 37.58 | 37.36 | 37.10 |
| Corrected Volume | $V_C$ | (cc) | 519.871 | 490.538 | 475.769 |
| T100 Time to Failure | $t_{100}$ | (min) | 1353.46 | 1403.70 | 1557.72 |
| Consolidation | $c_v$ | (m2/year) | 0.075 | 0.072 | 0.065 |
| Compressibility | $m_v$ | (m2/MN) | 0.165 | 0.245 | 0.184 |
| Test Time | $t_F$ | (h:m:s) | 40:36:13 | 42:06:39 | 46:43:53 |
| Estimated Strain to Failure | $\varepsilon$% | (%) | 10.0 | 10.0 | 10.0 |
| Shear Machine Speed | $d_r$ | (mm/min) | 0.00568 | 0.00568 | 0.00568 |

**Notes**




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 7 | Test Name | BH136 24.42-24.64m CS29 |
| | | Test Date | 12/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH136 |
| | | Sample | 24.42-24.64m CS29 |
| Client | Ground Technology | Depth | 24.42-24.64m |

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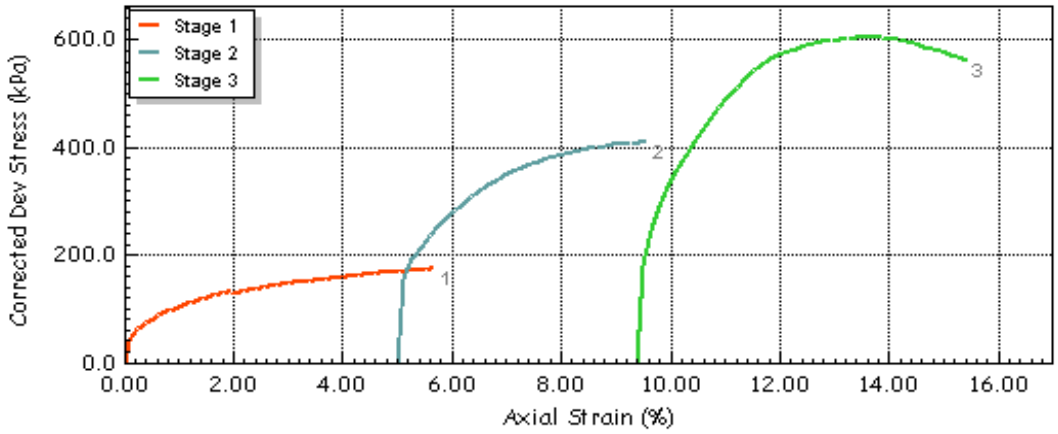
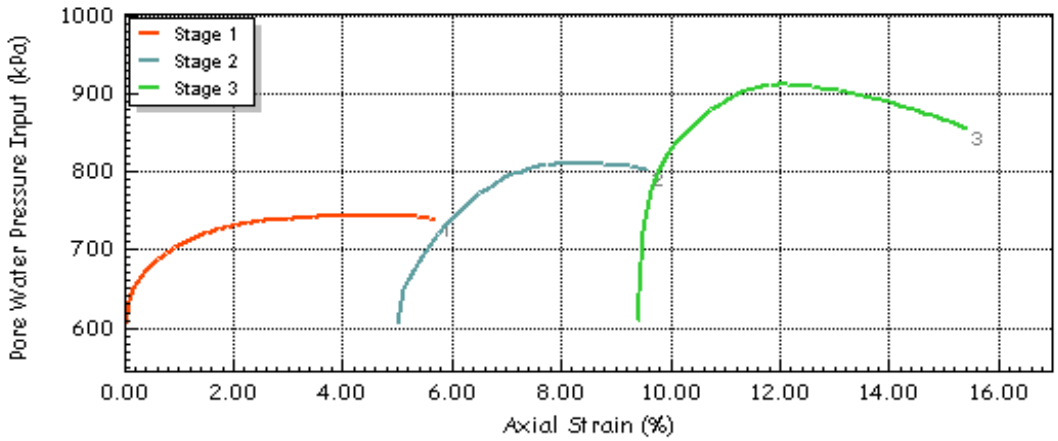
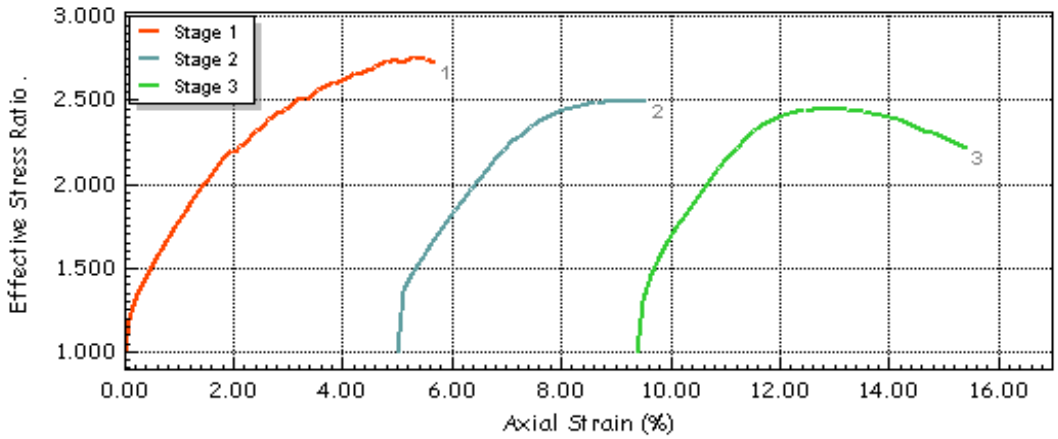
# Effective Stress Triaxial Compression

## Consolidated Undrained

**Shear Stage Plots**




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 7 | Test Name | BH136 24.42-24.64m CS29 |
| | | Test Date | 12/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH136 |
| | | Sample | 24.42-24.64m CS29 |
| Client | Ground Technology | Depth | 24.42-24.64m |

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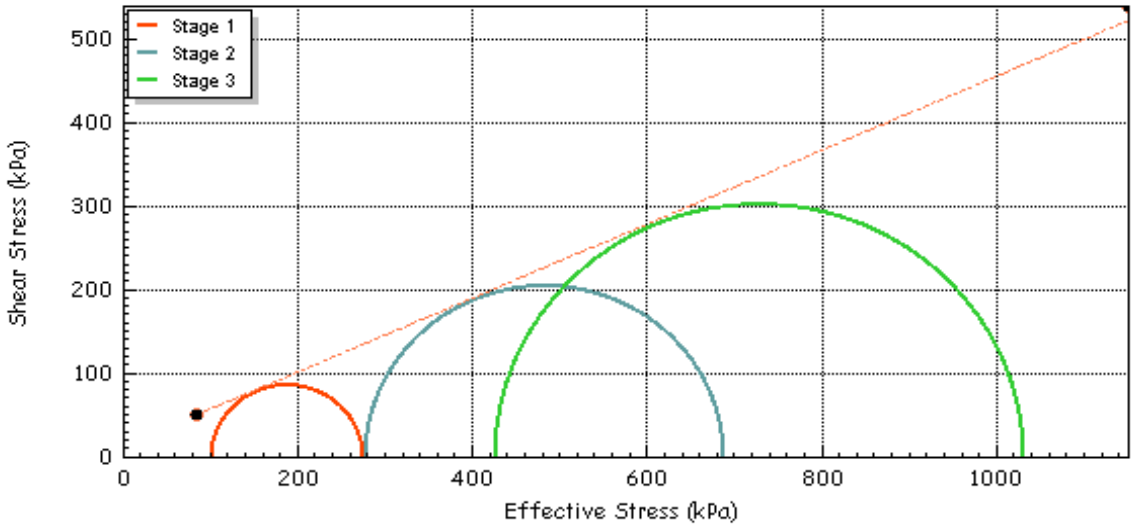
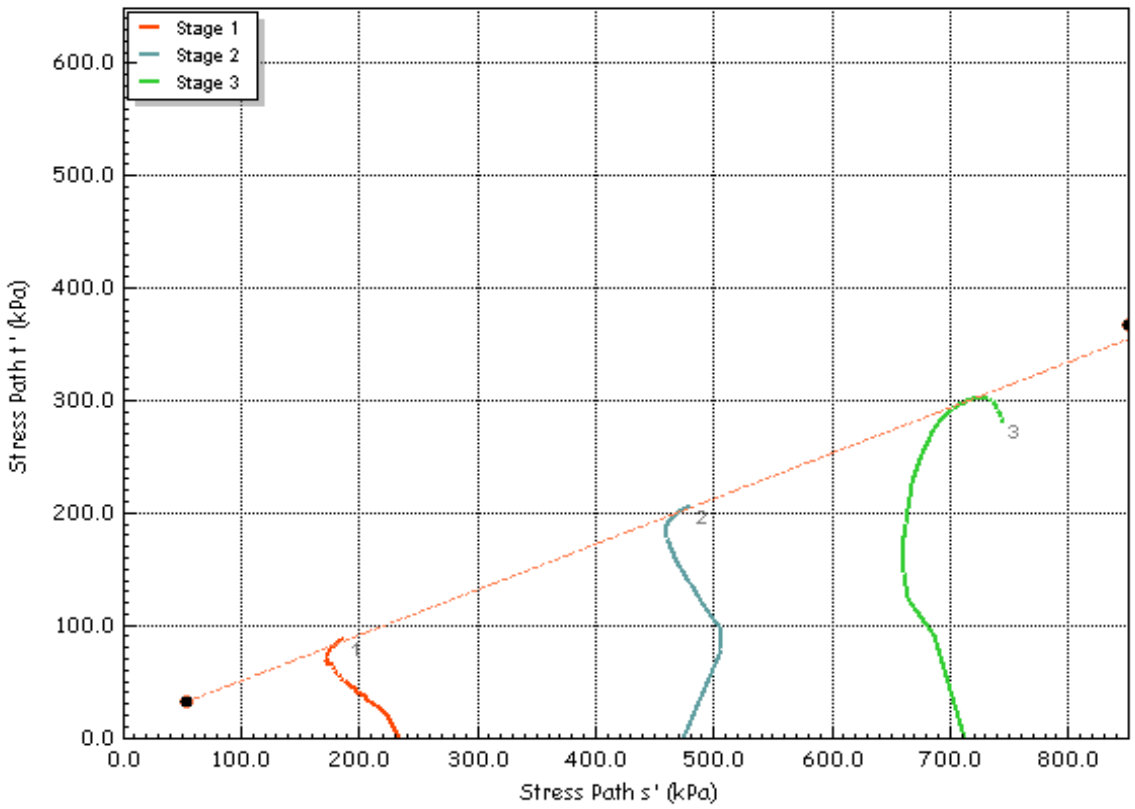
# Effective Stress Triaxial Compression

## Consolidated Undrained

**Shear Stage Plots**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Effective | c' | (kPa) | 13.20 | Effective Cohesion | c' | (kPa) | 13.20 |
| Effective Friction | ϕ' | (deg) | 23.9 | Effective Friction | ϕ' | (deg) | 23.9 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 7 | Test Name | BH136 24.42-24.64m CS29 |
| | | Test Date | 12/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH136 |
| | | Sample | 24.42-24.64m CS29 |
| Client | Ground Technology | Depth | 24.42-24.64m |

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# Effective Stress Triaxial Compression

## Consolidated Drained

**Summary Report**

| Sample Details | | | | |
|---|---|---|---|---|
| *sketch showing specimen location in original sample* | Depth | | 11.60-11.78m | |
| | Description | | See summary of soil descriptions. | |
| | Type | | Undisturbed, vertical orientation. | |
| | Initial Sample Length | $L_0$ | (mm) | 200.1 |
| | Initial Sample Diameter | $D_0$ | (mm) | 100.0 |
| | Initial Sample Weight | $W_0$ | (gr) | 3075.0 |
| | Initial Bulk Density | $\rho_0$ | (Mg/m3) | 1.96 |
| | Particle Density | $\rho_s$ | (Mg/m3) | 2.66 |

| **Initial Conditions** | | | Stage 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_{3i}$ | (kPa) | 720 | 840 | 960 | |
| Initial Back Pressure | $U_{bi}$ | (kPa) | 600 | 600 | 600 | |
| Membrane Thickness | $m_b$ | (mm) | 0.600 | | | |
| Displacement Input | $L_{IP}$ | (mm) | CH 2 | | | |
| Load Input | $N_{IP}$ | (N) | CH 4 | | | |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | CH 3 | | | |
| Sample Volume | $V$ | (cc) | CH 6 | | | |
| Initial Moisture | $\omega_i$ | (%) | 26 | | | |
| Initial Dry Density | $\rho_{di}$ | (Mg/m3) | 1.55 | | | |
| Initial Voids Ratio | $e_i$ | . | 0.718 | | | |
| Initial Degree of Saturation | $S_i$ | (%) | 98 | | | |
| B Value | $B$ | . | 0.96 | | | |

| **Final Conditions** | | | | | | |
|---|---|---|---|---|---|---|
| Final Moisture | $\omega_f$ | (%) | 27 | | | |
| Final Dry Density | $\rho_{df}$ | (Mg/m3) | 1.55 | | | |
| Final Voids Ratio | $e_f$ | . | 0.711 | | | |
| Final Degree of Saturation | $S_f$ | (%) | 100.0 | | | |
| | | | Stage 1 | 2 | 3 | 4 |
| Failure Criteria | | . | Max. Dev. Stress | Max. Dev. Stress | Max. Dev. Stress | |
| Strain At Failure | $\varepsilon_f$ | (%) | 4.80 | 12.63 | 19.96 | |
| Stress At Failure | $(\sigma_1-\sigma_3)$ | (kPa) | 181.6 | 305.2 | 429.5 | |
| Minor Stress At Failure | $\sigma_3'$ | (kPa) | 121.0 | 241.0 | 360.0 | |
| Major Stress At Failure | $\sigma_1'$ | (kPa) | 302.6 | 546.2 | 789.5 | |
| Principal Stress Ratio At Failure | $\sigma_1'/\sigma_3'$ | | 2.501 | 2.266 | 2.193 | |

**Notes**

*Plastic*

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH105 11.60-11.78m CS112 |
| | | Test Date | 26/05/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH105 |
| | | Sample | 11.60-11.78m CS112 |
| Client | Ground Technology | Depth | 11.60-11.78m |

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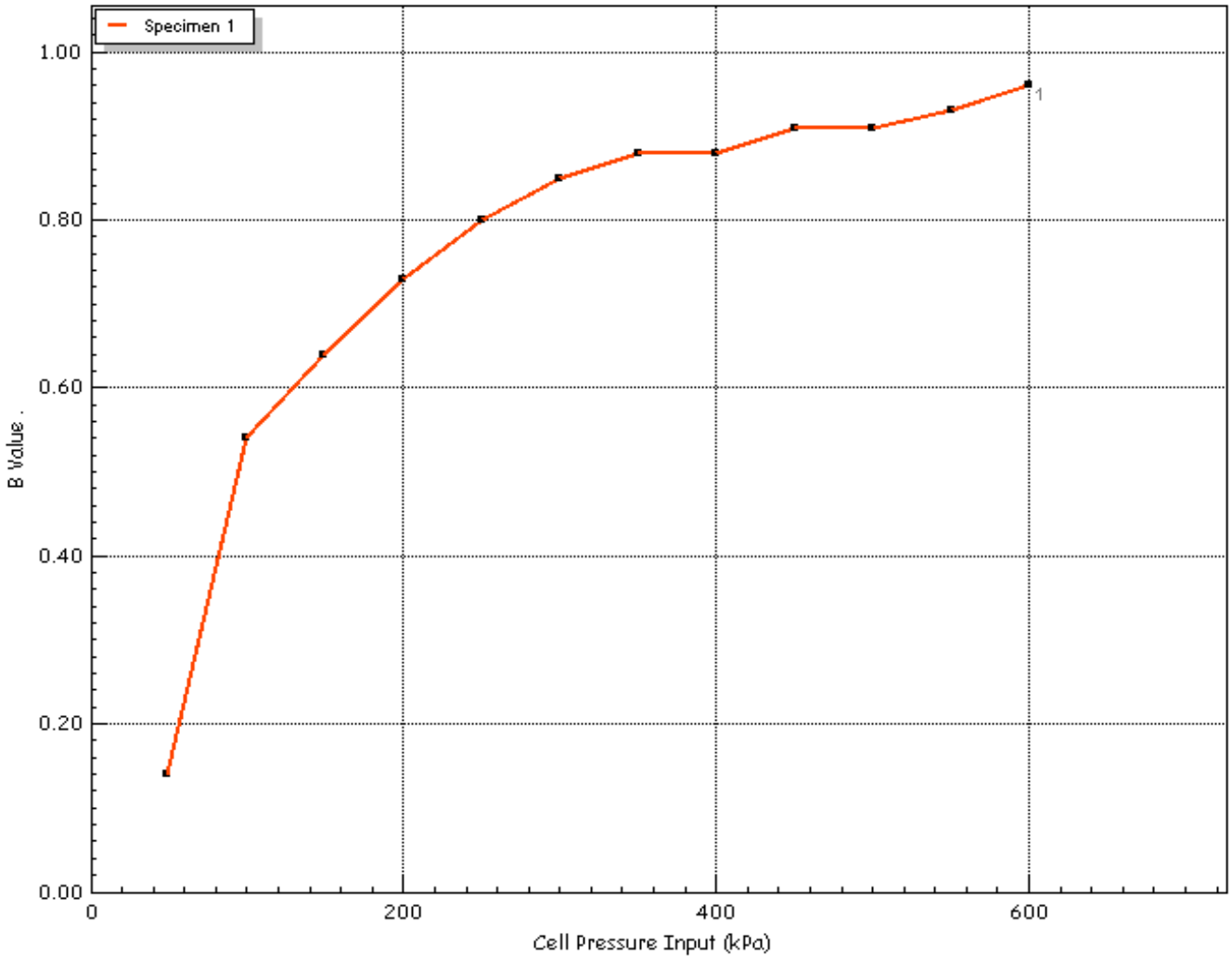
# Effective Stress Triaxial Compression

## Consolidated Drained

**Saturation Plots**

| | | | |
|---|---|---|---|
| Saturation Method | | | Stepped |
| Cell Pressure Input | σ | (kPa) | 600 |
| Pore Water Pressure Input | u pwp | (kPa) | 586 |
| B Value | B | . | 0.96 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH105 11.60-11.78m CS112 |
| | | Test Date | 26/05/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH105 |
| | | Sample | 11.60-11.78m CS112 |
| Client | Ground Technology | Depth | 11.60-11.78m |

# Effective Stress Triaxial Compression

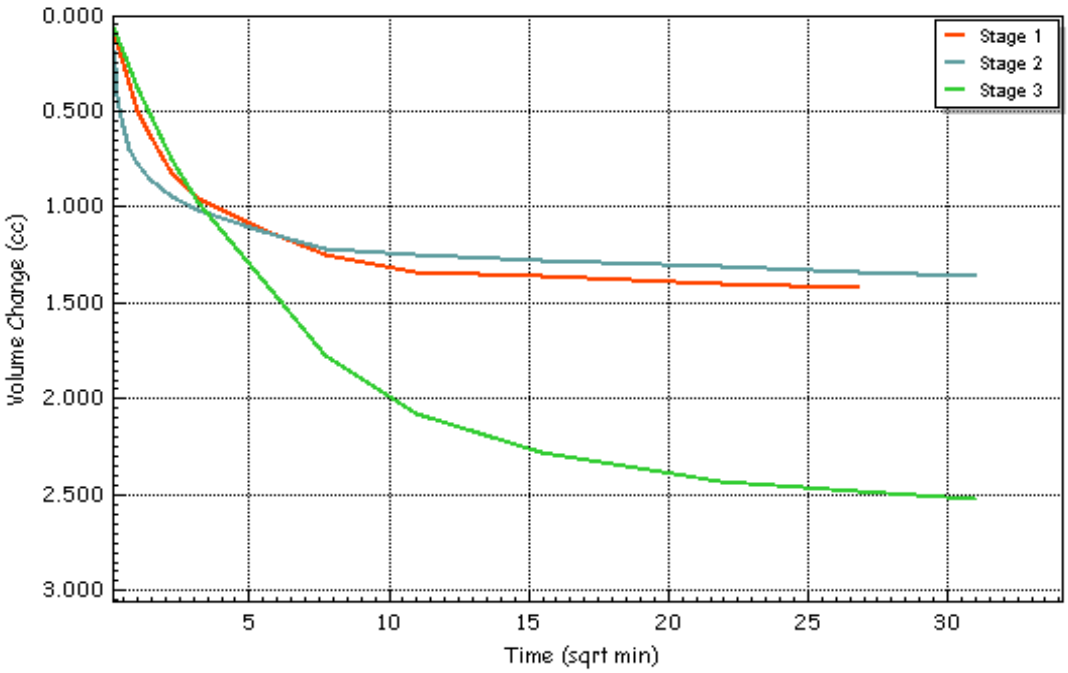
## Consolidated Drained

**Consolidation Plots**

| **Initial Conditions** | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_3$ | (kPa) | 720 | 840 | 960 |
| Initial Back Pressure | $u_{bi}$ | (kPa) | 600 | 600 | 600 |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | 682 | 812 | 914 |
| Drainage Method | | | Radial+One End | | |

| **Final Conditions** | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| PWP Dissipation % | U% | (%) | 100.00 | 100.00 | 100.00 |
| Volumetric Strain | $\varepsilon_v$% | (%) | 0.09 | 0.18 | 0.34 |
| Corrected Length | $L_C$ | (mm) | 200.0 | 190.0 | 173.4 |
| Corrected Area | $A_C$ | (cm2) | 78.49 | 82.48 | 90.16 |
| Corrected Volume | $V_C$ | (cc) | 1570.164 | 1568.802 | 1566.279 |
| T100 Time to Failure | $t_{100}$ | (min) | 16.03 | 60.66 | 71.23 |
| Consolidation | $c_V$ | (m2/year) | 12.882 | 3.404 | 2.899 |
| Compressibility | $m_V$ | (m2/MN) | 0.011 | 0.008 | 0.011 |
| Test Time | $t_F$ | (h:m:s) | 03:44:25 | 14:09:14 | 16:37:13 |
| Estimated Strain to Failure | $\varepsilon$% | (%) | 5.0 | 5.0 | 5.0 |
| Shear Machine Speed | $d_r$ | (mm/min) | 0.04457 | 0.04457 | 0.04457 |

**Notes**




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH105 11.60-11.78m CS112 |
| | | Test Date | 26/05/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH105 |
| | | Sample | 11.60-11.78m CS112 |
| Client | Ground Technology | Depth | 11.60-11.78m |

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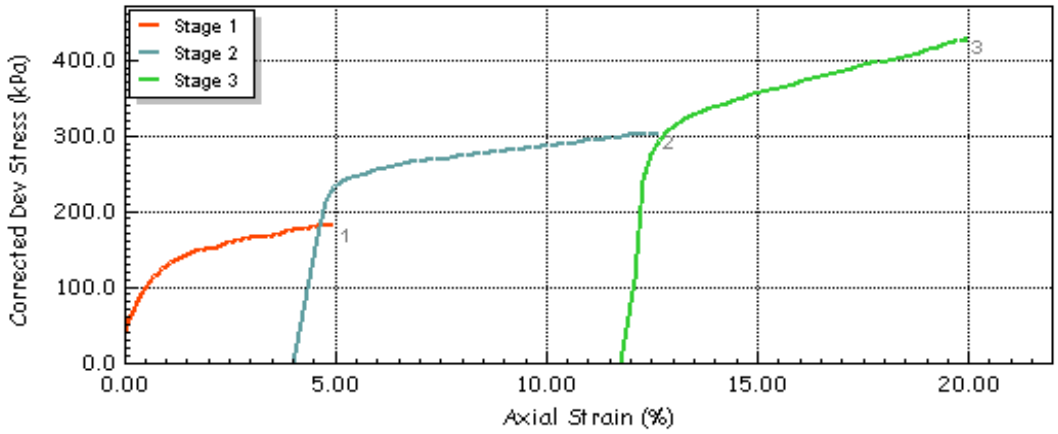
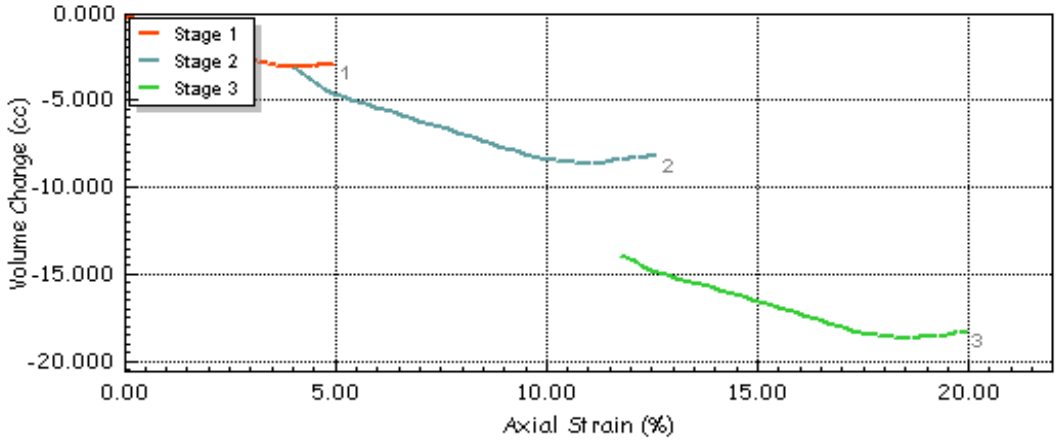
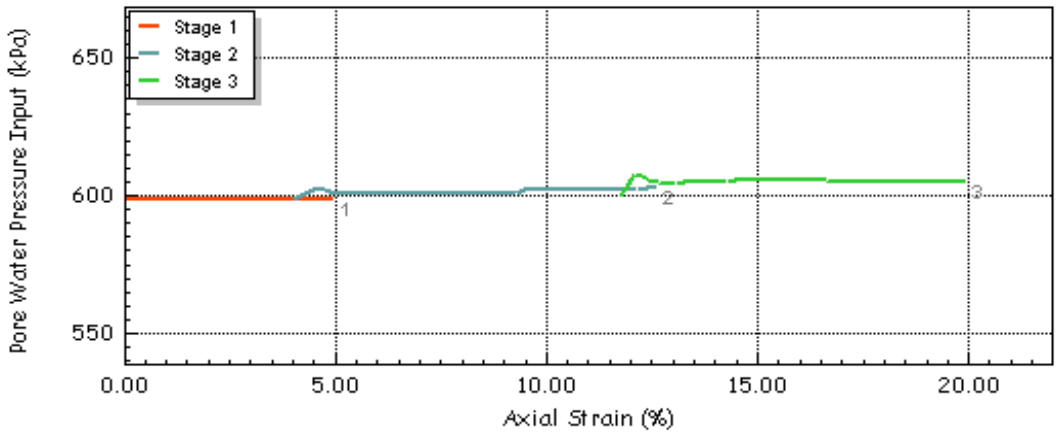
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**



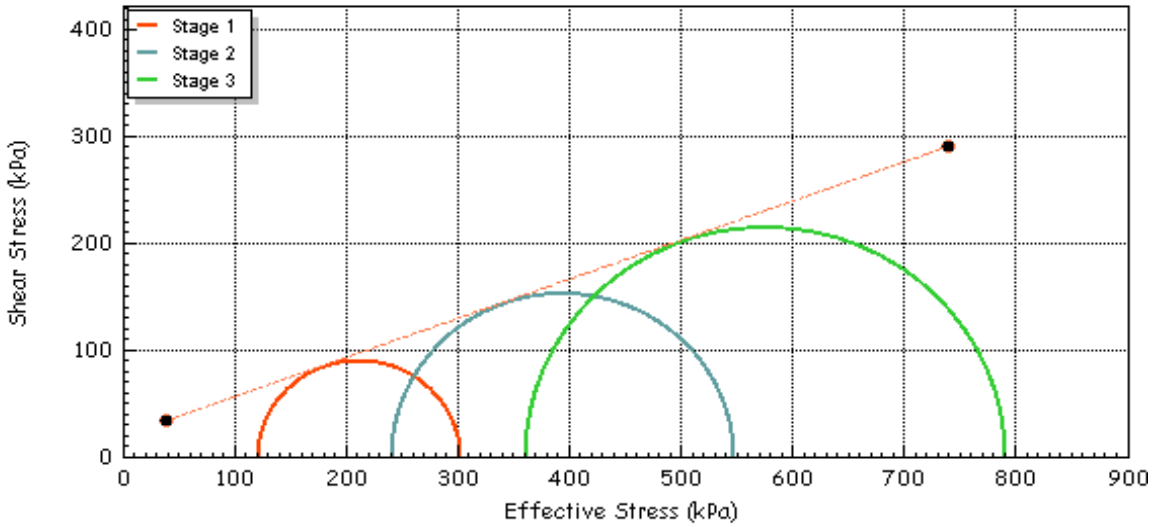

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH105 11.60-11.78m CS112 |
| | | Test Date | 26/05/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH105 |
| | | Sample | 11.60-11.78m CS112 |
| Client | Ground Technology | Depth | 11.60-11.78m |

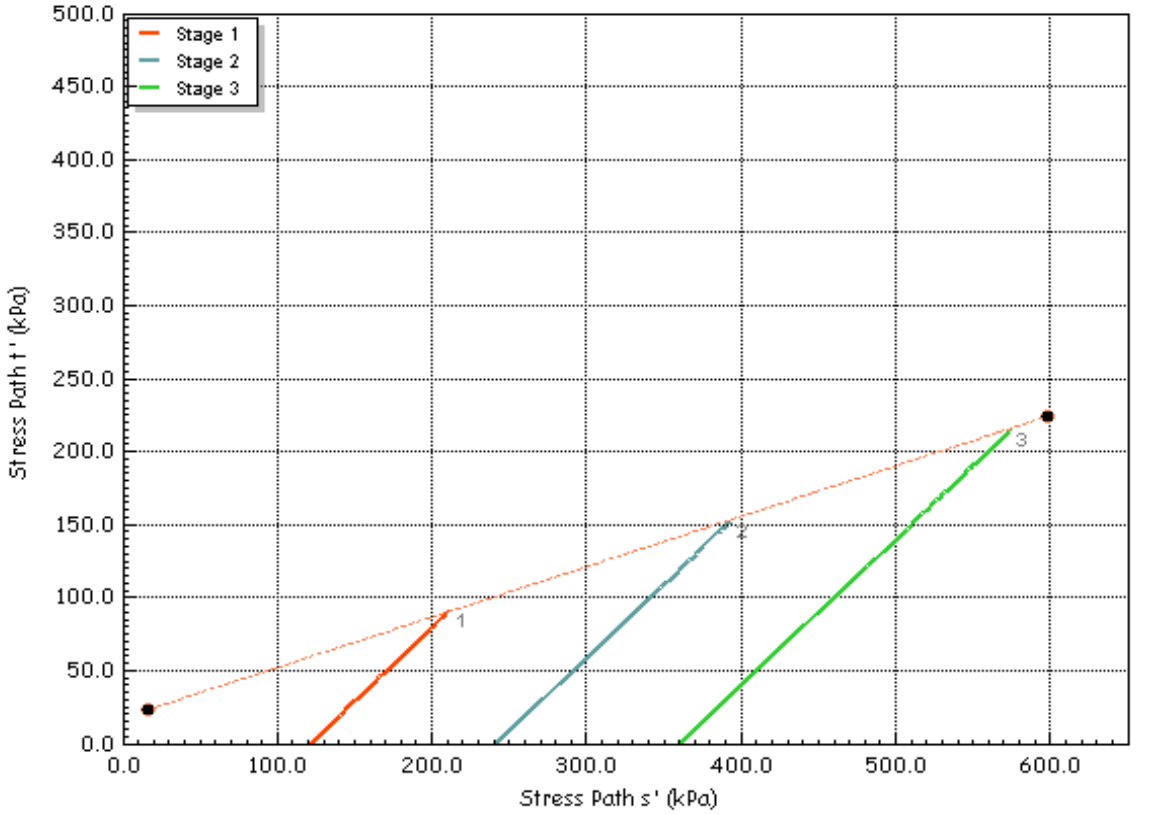
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Effective | c' | (kPa) | 18.88 | Effective Cohesion | c' | (kPa) | 18.88 |
| Effective Friction | ϕ' | (deg) | 20.2 | Effective Friction | ϕ' | (deg) | 20.2 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH105 11.60-11.78m CS112 |
| | | Test Date | 26/05/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH105 |
| | | Sample | 11.60-11.78m CS112 |
| Client | Ground Technology | Depth | 11.60-11.78m |

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# Effective Stress Triaxial Compression

## Consolidated Drained

**Summary Report**

| Sample Details | | | | |
|---|---|---|---|---|
| *sketch showing specimen location in original sample* | Depth | | | 15.18-15.50m |
| | Description | | | See summary of soil descriptions. |
| | Type | | | Undisturbed, vertical orientation. |
| | Initial Sample Length | $L_0$ | (mm) | 211.5 |
| | Initial Sample Diameter | $D_0$ | (mm) | 102.5 |
| | Initial Sample Weight | $W_0$ | (gr) | 3559.0 |
| | Initial Bulk Density | $\rho_0$ | (Mg/m3) | 2.04 |
| | Particle Density | $\rho_s$ | (Mg/m3) | 2.66 |

| **Initial Conditions** | | | Stage 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_{3i}$ | (kPa) | 600 | 750 | 900 | |
| Initial Back Pressure | $U_{bi}$ | (kPa) | 450 | 450 | 450 | |
| Membrane Thickness | $m_b$ | (mm) | 0.600 | | | |
| Displacement Input | $L_{IP}$ | (mm) | CH 2 | | | |
| Load Input | $N_{IP}$ | (N) | CH 4 | | | |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | CH 3 | | | |
| Sample Volume | $V$ | (cc) | CH 6 | | | |
| Initial Moisture | $\omega_i$ | (%) | 20 | | | |
| Initial Dry Density | $\rho_{di}$ | (Mg/m3) | 1.70 | | | |
| Initial Voids Ratio | $e_i$ | . | 0.561 | | | |
| Initial Degree of Saturation | $S_i$ | (%) | 93 | | | |
| B Value | $B$ | . | 0.95 | | | |

| **Final Conditions** | | | | | | |
|---|---|---|---|---|---|---|
| Final Moisture | $\omega_f$ | (%) | 19 | | | |
| Final Dry Density | $\rho_{df}$ | (Mg/m3) | 1.76 | | | |
| Final Voids Ratio | $e_f$ | . | 0.514 | | | |
| Final Degree of Saturation | $S_f$ | (%) | 97.5 | | | |
| | | | Stage 1 | 2 | 3 | 4 |
| Failure Criteria | | . | Max. Dev. Stress | Max. Dev. Stress | Max. Dev. Stress | |
| Strain At Failure | $\varepsilon_f$ | (%) | 3.12 | 5.37 | 7.08 | |
| Stress At Failure | $(\sigma_1-\sigma_3)$ | (kPa) | 157.5 | 277.1 | 392.1 | |
| Minor Stress At Failure | $\sigma_3'$ | (kPa) | 151.0 | 299.0 | 443.0 | |
| Major Stress At Failure | $\sigma_1'$ | (kPa) | 308.5 | 576.1 | 835.1 | |
| Principal Stress Ratio At Failure | $\sigma_1'/\sigma_3'$ | | 2.043 | 1.927 | 1.885 | |

**Notes**

*Brittle*

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH105 15.18-15.50m CS115 |
| | | Test Date | 27/05/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH105 |
| | | Sample | 15.18-15.50m CS115 |
| Client | Ground Technology | Depth | 15.18-15.50m |

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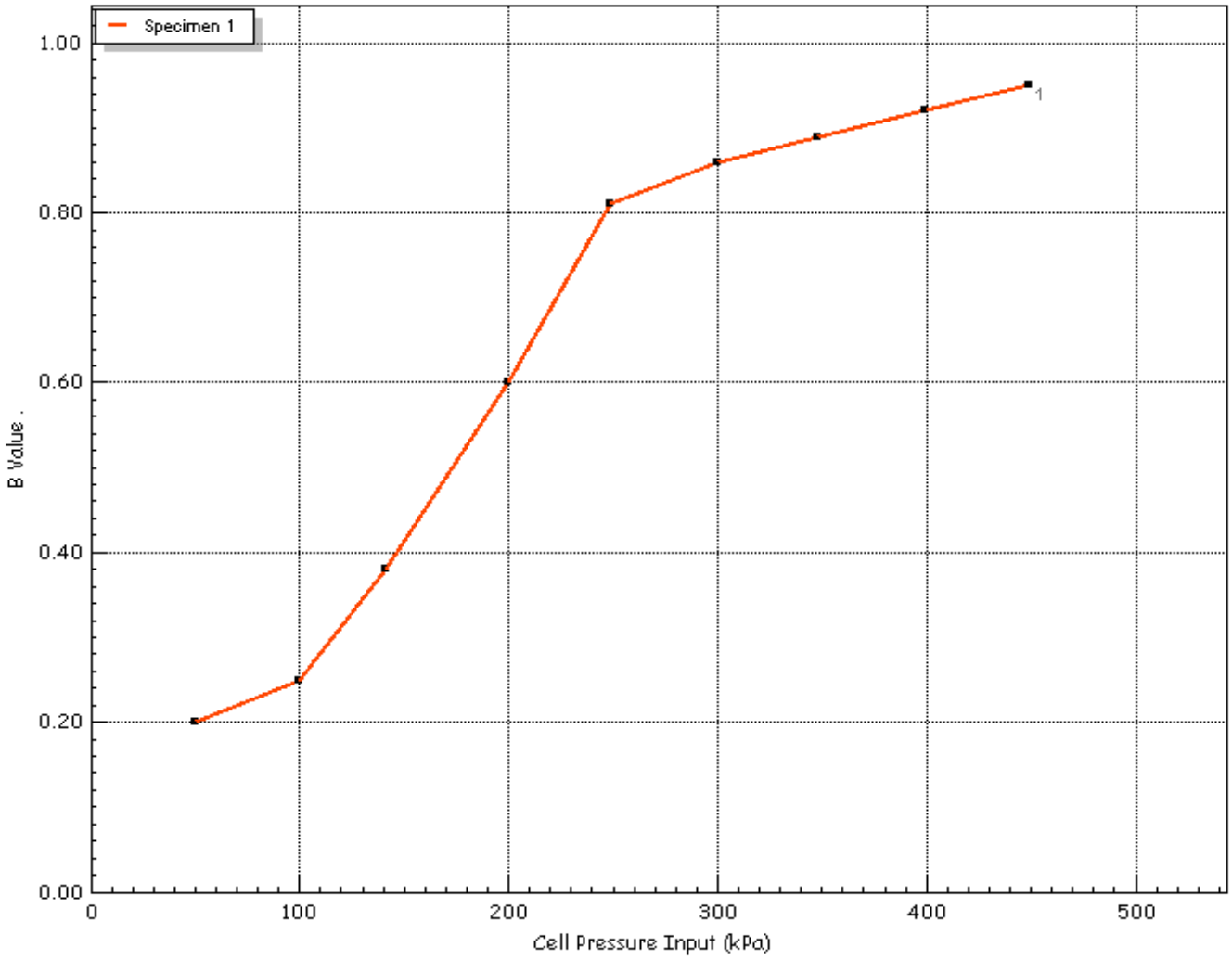
# Effective Stress Triaxial Compression

## Consolidated Drained

**Saturation Plots**

| | | | |
|---|---|---|---|
| Saturation Method | | | Stepped |
| Cell Pressure Input | σ | (kPa) | 449 |
| Pore Water Pressure Input | u pwp | (kPa) | 425 |
| B Value | B | . | 0.95 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH105 15.18-15.50m CS115 |
| | | Test Date | 27/05/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH105 |
| | | Sample | 15.18-15.50m CS115 |
| Client | Ground Technology | Depth | 15.18-15.50m |

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# Effective Stress Triaxial Compression

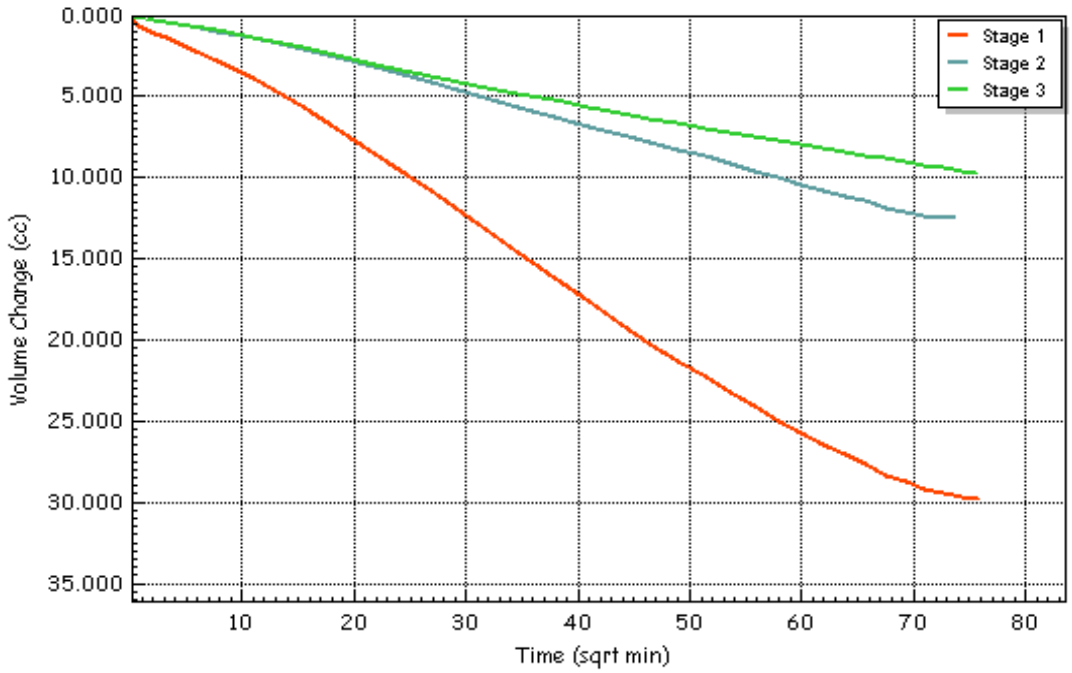
## Consolidated Drained

**Consolidation Plots**

| **Initial Conditions** | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_3$ | (kPa) | 600 | 750 | 900 |
| Initial Back Pressure | $u_{bi}$ | (kPa) | 450 | 450 | 451 |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | 573 | 632 | 872 |
| Drainage Method | | | Radial+One End | | |

| **Final Conditions** | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| PWP Dissipation % | U% | (%) | 95.95 | 95.60 | 95.96 |
| Volumetric Strain | $\varepsilon_v$% | (%) | 1.71 | 2.42 | 2.98 |
| Corrected Length | $L_C$ | (mm) | 210.3 | 201.9 | 196.2 |
| Corrected Area | $A_C$ | (cm2) | 81.58 | 82.90 | 84.18 |
| Corrected Volume | $V_C$ | (cc) | 1715.401 | 1702.916 | 1693.195 |
| T100 Time to Failure | $t_{100}$ | (min) | 4525.31 | 5043.22 | 4210.75 |
| Consolidation | $c_v$ | (m2/year) | 0.048 | 0.043 | 0.052 |
| Compressibility | $m_v$ | (m2/MN) | 0.144 | 0.139 | 0.074 |
| Test Time | $t_F$ | (h:m:s) | 1055:54:20 | 1176:45:05 | 982:30:30 |
| Estimated Strain to Failure | $\varepsilon$% | (%) | 5.0 | 5.0 | 5.0 |
| Shear Machine Speed | $d_r$ | (mm/min) | 0.00452 | 0.00452 | 0.00452 |

**Notes**




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH105 15.18-15.50m CS115 |
| | | Test Date | 27/05/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH105 |
| | | Sample | 15.18-15.50m CS115 |
| Client | Ground Technology | Depth | 15.18-15.50m |

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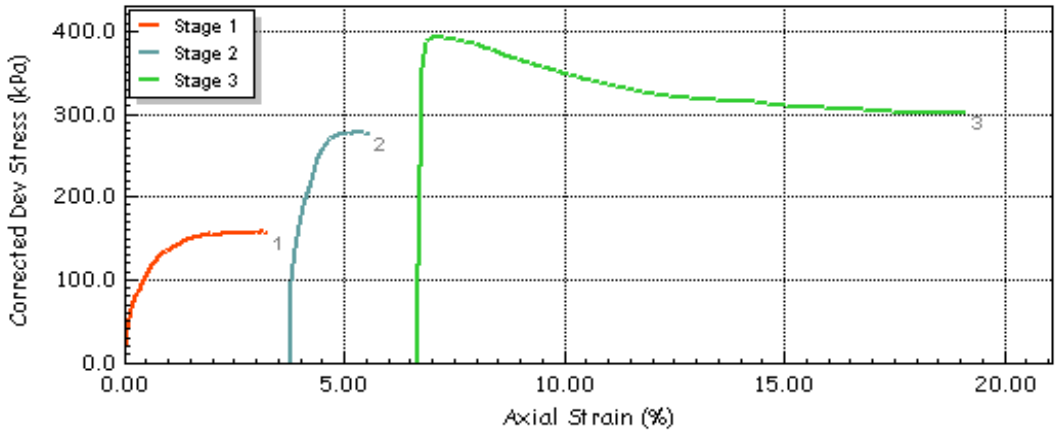
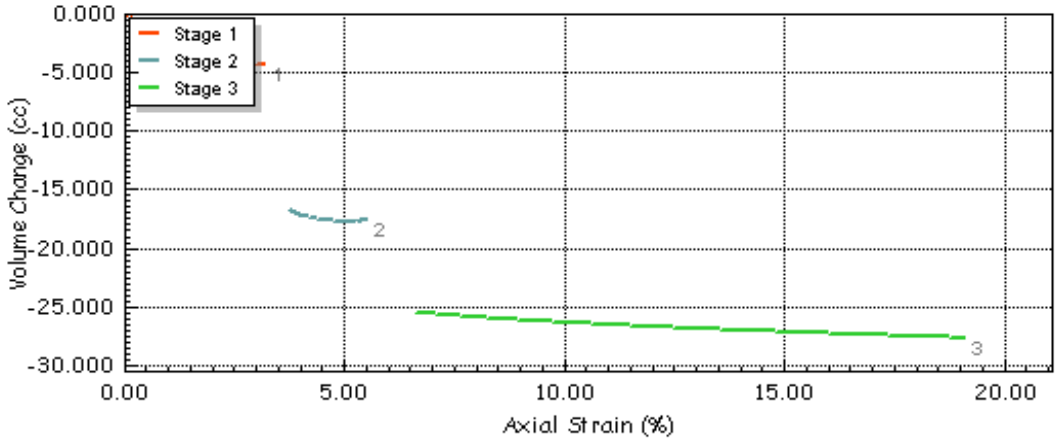
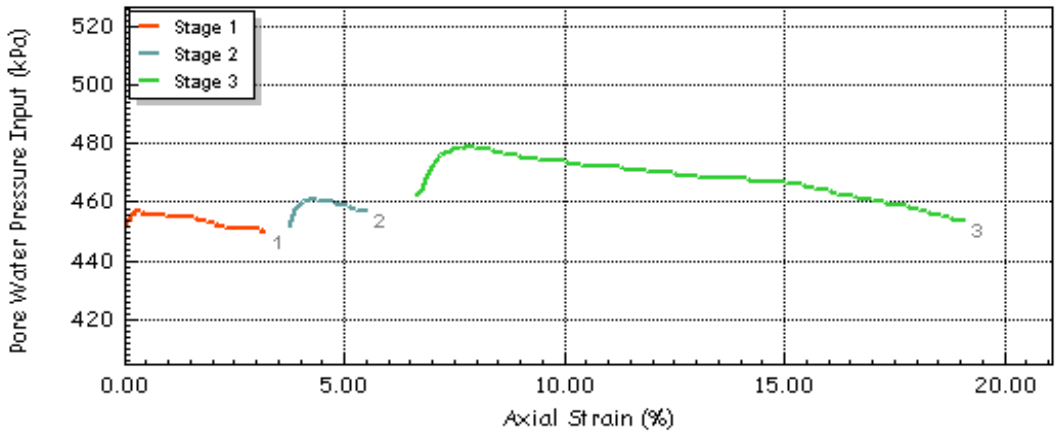
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**



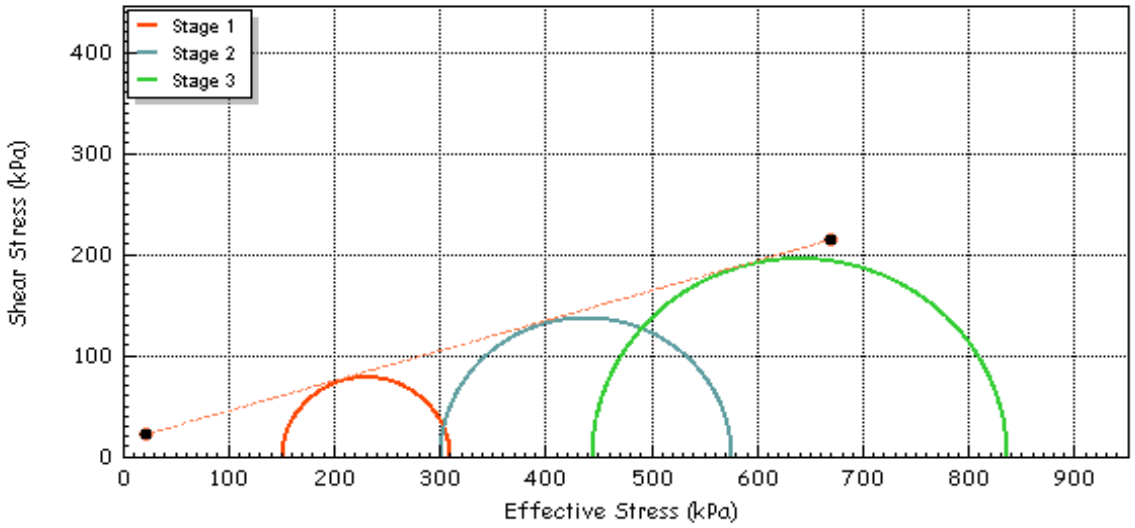

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH105 15.18-15.50m CS115 |
| | | Test Date | 27/05/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH105 |
| | | Sample | 15.18-15.50m CS115 |
| Client | Ground Technology | Depth | 15.18-15.50m |

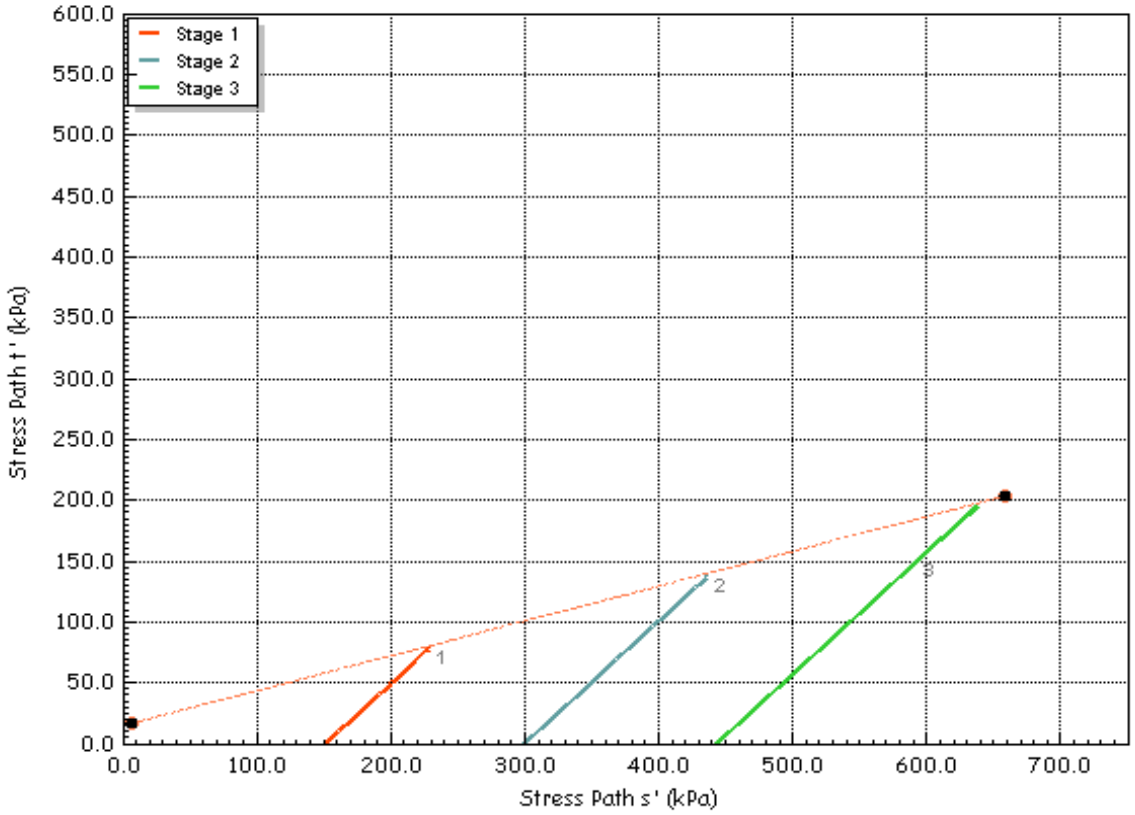
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Effective | c' | (kPa) | 14.89 | Effective Cohesion | c' | (kPa) | 14.89 |
| Effective Friction | ϕ' | (deg) | 16.7 | Effective Friction | ϕ' | (deg) | 16.7 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH105 15.18-15.50m CS115 |
| | | Test Date | 27/05/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH105 |
| Client | Ground Technology | Sample | 15.18-15.50m CS115 |
| | | Depth | 15.18-15.50m |

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# Effective Stress Triaxial Compression

## Consolidated Undrained

**Summary Report**

| Sample Details | | | | |
|---|---|---|---|---|
| *sketch showing specimen location in original sample* | Depth | | 10.95-11.20m | |
| | Description | | See summary of soil descriptions. | |
| | Type | | Undisturbed, vertical orientation. | |
| | Initial Sample Length | $L_0$ | (mm) | 140.1 |
| | Initial Sample Diameter | $D_0$ | (mm) | 70.2 |
| | Initial Sample Weight | $W_0$ | (gr) | 1088.0 |
| | Initial Bulk Density | $\rho_0$ | (Mg/m3) | 2.01 |
| | Particle Density | $\rho_s$ | (Mg/m3) | 2.66 |

| **Initial Conditions** | | | Stage 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_{3i}$ | (kPa) | 760 | 870 | 980 | |
| Initial Back Pressure | $U_{bi}$ | (kPa) | 650 | 650 | 650 | |
| Membrane Thickness | $m_b$ | (mm) | 0.600 | | | |
| Displacement Input | $L_{IP}$ | (mm) | CH 2 | | | |
| Load Input | $N_{IP}$ | (N) | CH 1 | | | |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | CH 3 | | | |
| Sample Volume | $V$ | (cc) | CH 2 | | | |
| Initial Moisture | $\omega_i$ | (%) | 24 | | | |
| Initial Dry Density | $\rho_{di}$ | (Mg/m3) | 1.61 | | | |
| Initial Voids Ratio | $e_i$ | . | 0.650 | | | |
| Initial Degree of Saturation | $S_i$ | (%) | 100 | | | |
| B Value | B | . | 0.98 | | | |

| **Final Conditions** | | | | | | |
|---|---|---|---|---|---|---|
| Final Moisture | $\omega_f$ | (%) | 21 | | | |
| Final Dry Density | $\rho_{df}$ | (Mg/m3) | 1.71 | | | |
| Final Voids Ratio | $e_f$ | . | 0.557 | | | |
| Final Degree of Saturation | $S_f$ | (%) | 100.0 | | | |
| | | | Stage 1 | 2 | 3 | 4 |
| Failure Criteria | | . | Max. Dev. Stress | Max. Dev. Stress | Max. Dev. Stress | |
| Strain At Failure | $\varepsilon_f$ | (%) | 1.97 | 3.88 | 6.60 | |
| Stress At Failure | $(\sigma_1-\sigma_3)$ | (kPa) | 95.4 | 173.7 | 236.7 | |
| Minor Stress At Failure | $\sigma_3'$ | (kPa) | 79.7 | 179.4 | 258.9 | |
| Major Stress At Failure | $\sigma_1'$ | (kPa) | 175.1 | 353.1 | 495.6 | |
| Principal Stress Ratio At Failure | $\sigma_1'/\sigma_3'$ | | 2.197 | 1.968 | 1.914 | |

**Notes**

*Plastic*

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 7 | Test Name | BH107 10.95-11.20m_Copy |
| | | Test Date | 13/06/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH107 |
| | | Sample | CS108 |
| Client | Ground Technology | Depth | 10.95-11.20m |

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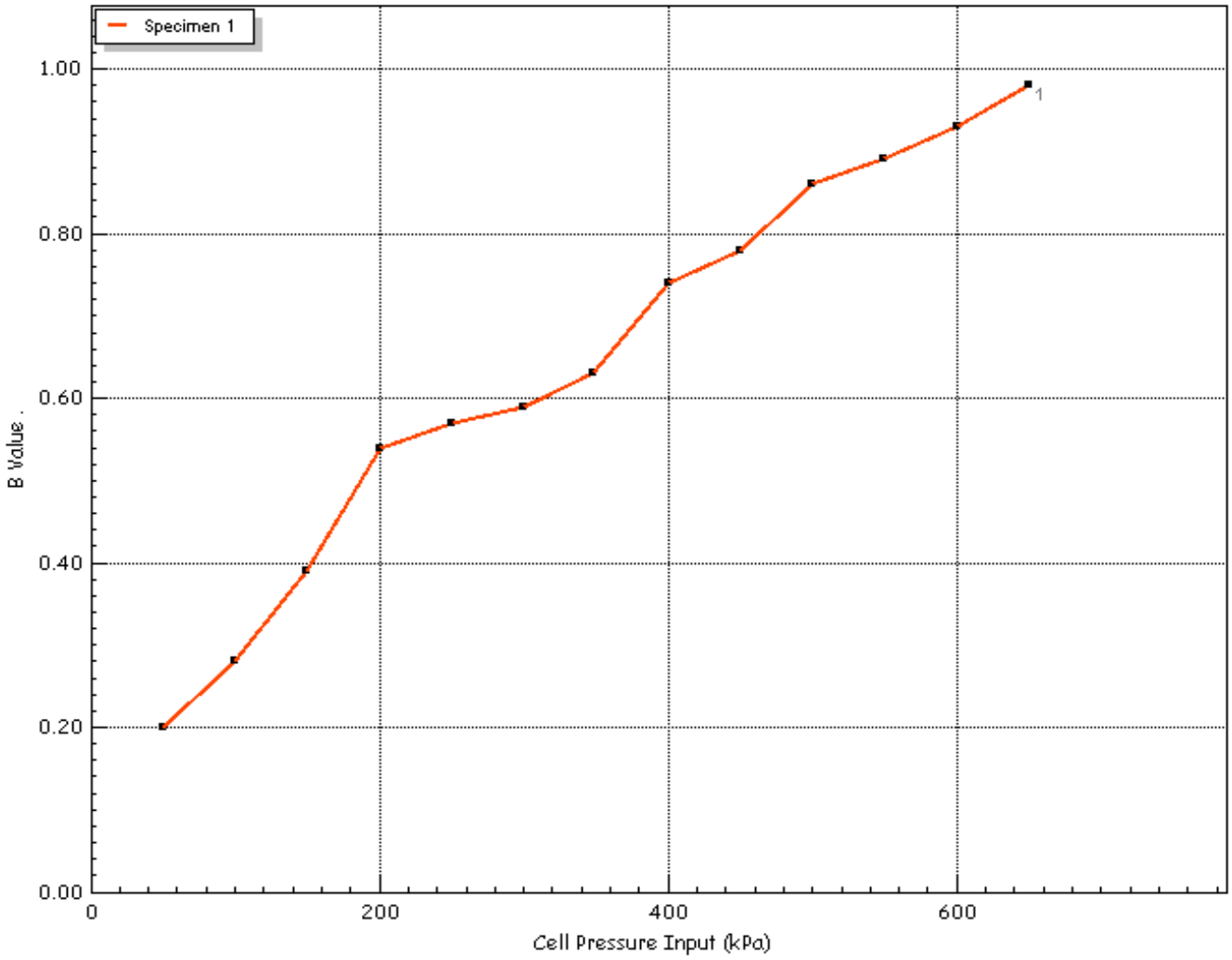
# Effective Stress Triaxial Compression

## Consolidated Undrained

**Saturation Plots**

| | | | |
|---|---|---|---|
| Saturation Method | | | Stepped |
| Cell Pressure Input | σ | (kPa) | 650 |
| Pore Water Pressure Input | u pwp | (kPa) | 633 |
| B Value | B | . | 0.98 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 7 | Test Name | BH107 10.95-11.20m_Copy |
| | | Test Date | 13/06/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH107 |
| | | Sample | CS108 |
| Client | Ground Technology | Depth | 10.95-11.20m |

# Effective Stress Triaxial Compression

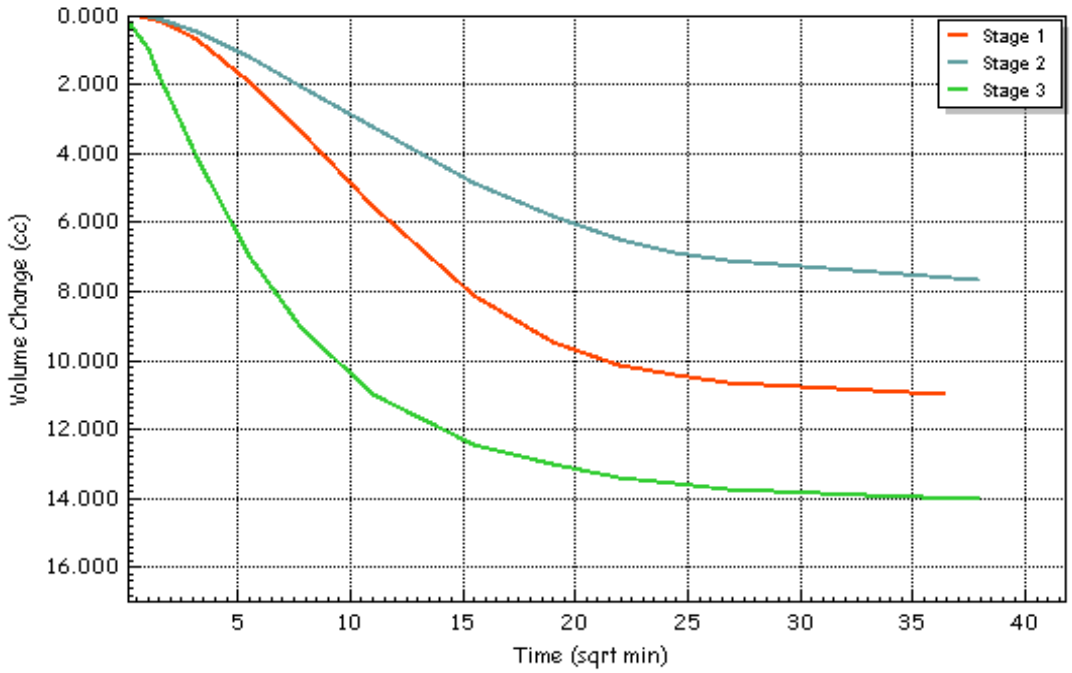
## Consolidated Undrained

**Consolidation Plots**

| **Initial Conditions** | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_3$ | (kPa) | 760 | 870 | 980 |
| Initial Back Pressure | $u_{bi}$ | (kPa) | 650 | 650 | 650 |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | 689 | 759 | 676 |
| Drainage Method | | | Radial+One End | | |

| **Final Conditions** | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| PWP Dissipation % | U% | (%) | 100.00 | 100.00 | 100.00 |
| Volumetric Strain | $\varepsilon_v$% | (%) | 2.03 | 3.44 | 6.03 |
| Corrected Length | $L_C$ | (mm) | 139.2 | 134.1 | 129.0 |
| Corrected Area | $A_C$ | (cm2) | 38.18 | 38.24 | 38.12 |
| Corrected Volume | $V_C$ | (cc) | 531.258 | 523.573 | 509.555 |
| T100 Time to Failure | $t_{100}$ | (min) | 371.65 | 458.32 | 92.03 |
| Consolidation | $c_v$ | (m2/year) | 0.275 | 0.223 | 1.110 |
| Compressibility | $m_v$ | (m2/MN) | 0.515 | 0.316 | 2.337 |
| Test Time | $t_F$ | (h:m:s) | 11:08:58 | 13:44:58 | 02:45:39 |
| Estimated Strain to Failure | $\varepsilon$% | (%) | 5.0 | 5.0 | 5.0 |
| Shear Machine Speed | $d_r$ | (mm/min) | 0.01040 | 0.01040 | 0.01040 |

**Notes**




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 7 | Test Name | BH107 10.95-11.20m_Copy |
| | | Test Date | 13/06/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH107 |
| | | Sample | CS108 |
| Client | Ground Technology | Depth | 10.95-11.20m |

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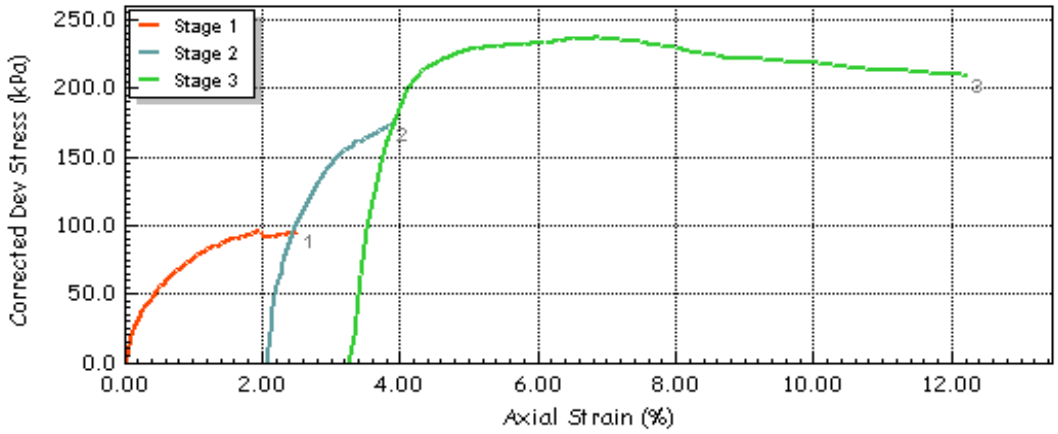
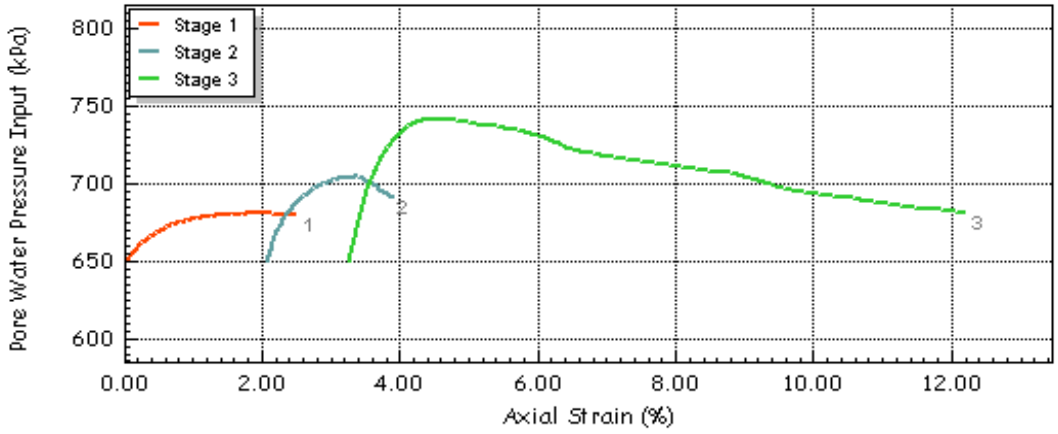
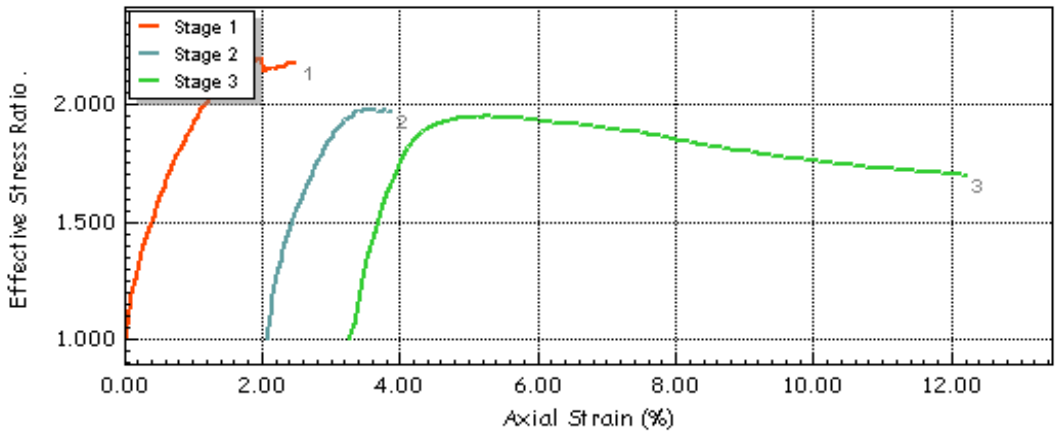
# Effective Stress Triaxial Compression

## Consolidated Undrained

**Shear Stage Plots**



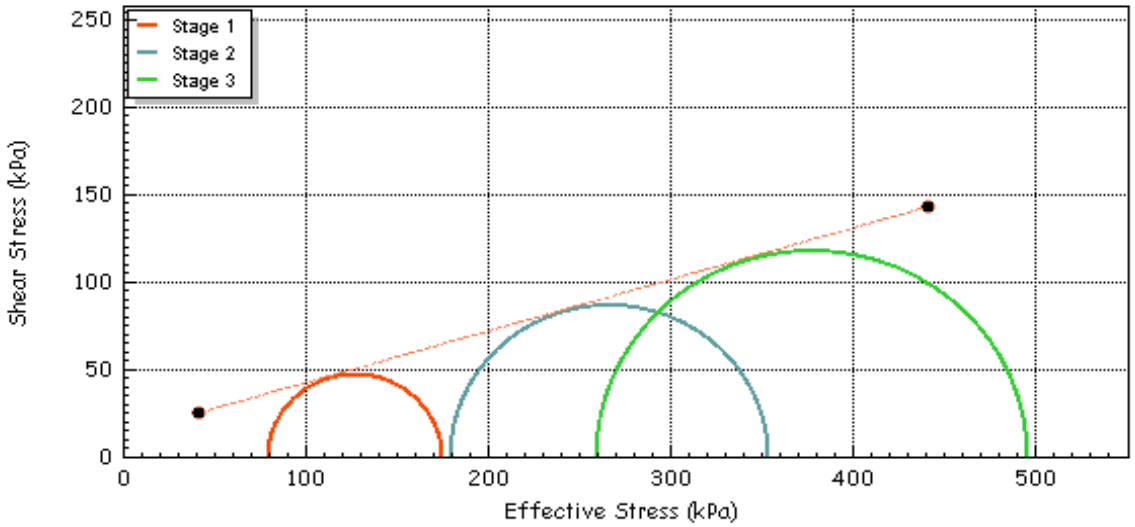

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 7 | Test Name | BH107 10.95-11.20m_Copy |
| | | Test Date | 13/06/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH107 |
| | | Sample | CS108 |
| Client | Ground Technology | Depth | 10.95-11.20m |

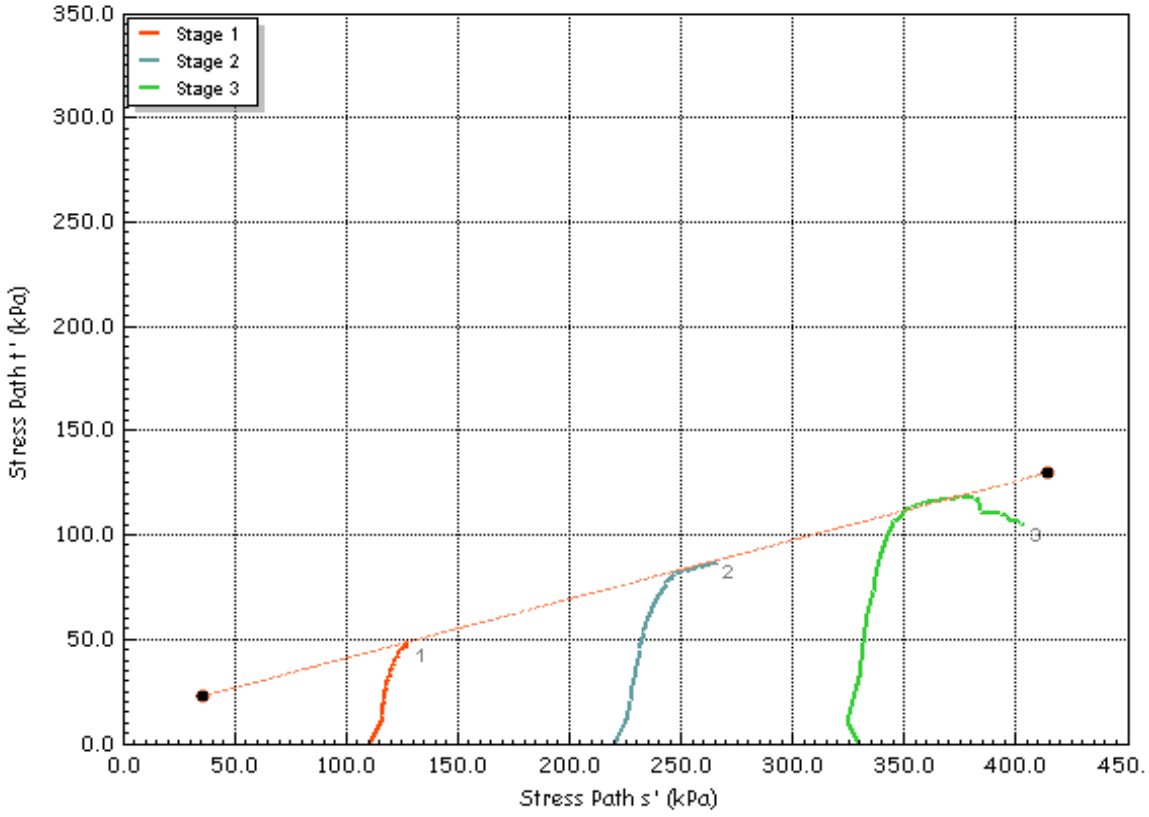
# Effective Stress Triaxial Compression

## Consolidated Undrained

**Shear Stage Plots**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Effective | c' | (kPa) | 12.95 | Effective Cohesion | c' | (kPa) | 12.95 |
| Effective Friction | ϕ' | (deg) | 16.4 | Effective Friction | ϕ' | (deg) | 16.4 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 7 | Test Name | BH107 10.95-11.20m_Copy |
| | | Test Date | 13/06/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH107 |
| | | Sample | CS108 |
| Client | Ground Technology | Depth | 10.95-11.20m |

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# Effective Stress Triaxial Compression

## Consolidated Drained

**Summary Report**

| Sample Details | | | | |
|---|---|---|---|---|
| *sketch showing specimen location in original sample* | Depth | | | 16.20-16.50m |
| | Description | | | See summary of soil descriptions. |
| | Type | | | Undisturbed, vertical orientation. |
| | Initial Sample Length | $L_0$ | (mm) | 140.0 |
| | Initial Sample Diameter | $D_0$ | (mm) | 70.0 |
| | Initial Sample Weight | $W_0$ | (gr) | 1067.0 |
| | Initial Bulk Density | $\rho_0$ | (Mg/m3) | 1.98 |
| | Particle Density | $\rho_s$ | (Mg/m3) | 2.66 |

| **Initial Conditions** | | | Stage 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_{3i}$ | (kPa) | 690 | 780 | 870 | |
| Initial Back Pressure | $U_{bi}$ | (kPa) | 600 | 600 | 600 | |
| Membrane Thickness | $m_b$ | (mm) | 0.600 | | | |
| Displacement Input | $L_{IP}$ | (mm) | CH 2 | | | |
| Load Input | $N_{IP}$ | (N) | CH 1 | | | |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | CH 3 | | | |
| Sample Volume | $V$ | (cc) | CH 2 | | | |
| Initial Moisture | $\omega_i$ | (%) | 24 | | | |
| Initial Dry Density | $\rho_{di}$ | (Mg/m3) | 1.60 | | | |
| Initial Voids Ratio | $e_i$ | . | 0.661 | | | |
| Initial Degree of Saturation | $S_i$ | (%) | 95 | | | |
| B Value | $B$ | . | 0.96 | | | |

| **Final Conditions** | | | | | | |
|---|---|---|---|---|---|---|
| Final Moisture | $\omega_f$ | (%) | 21 | | | |
| Final Dry Density | $\rho_{df}$ | (Mg/m3) | 1.67 | | | |
| Final Voids Ratio | $e_f$ | . | 0.595 | | | |
| Final Degree of Saturation | $S_f$ | (%) | 92.7 | | | |
| | | | Stage 1 | 2 | 3 | 4 |
| Failure Criteria | | . | Max. Dev. Stress | Max. Dev. Stress | Max. Dev. Stress | |
| Strain At Failure | $\varepsilon_f$ | (%) | 3.98 | 7.63 | 15.73 | |
| Stress At Failure | $(\sigma_1-\sigma_3)$ | (kPa) | 141.2 | 225.1 | 310.8 | |
| Minor Stress At Failure | $\sigma_3'$ | (kPa) | 90.8 | 177.8 | 269.0 | |
| Major Stress At Failure | $\sigma_1'$ | (kPa) | 232.0 | 402.9 | 579.8 | |
| Principal Stress Ratio At Failure | $\sigma_1'/\sigma_3'$ | | 2.555 | 2.266 | 2.155 | |

**Notes**

*Plastic*

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH108 16.20-16.50m CS114_Copy |
| | | Test Date | 27/05/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH108 |
| | | Sample | 16.20-16.50m CS114 |
| Client | Ground Technology | Depth | 16.20-16.50m |

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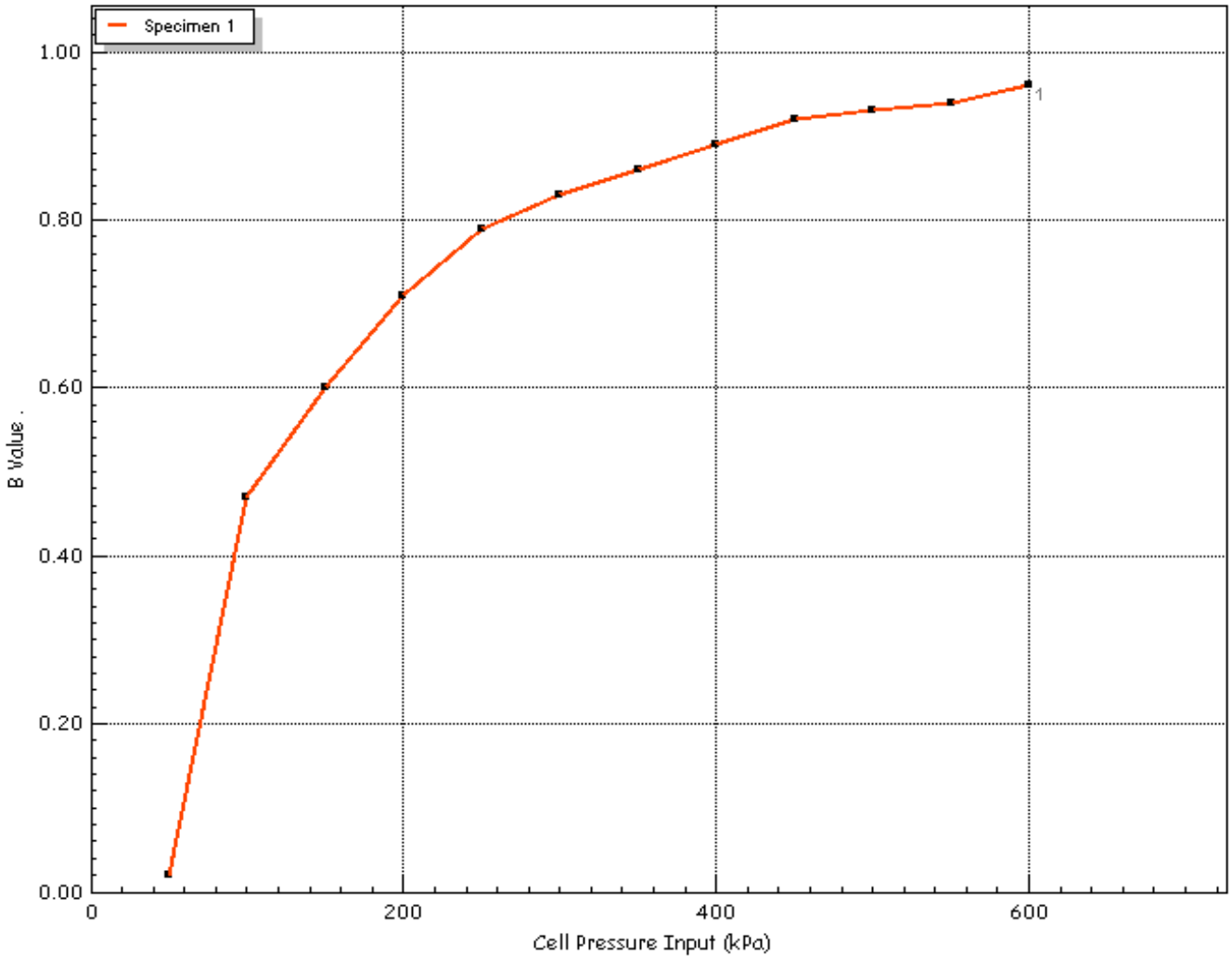
# Effective Stress Triaxial Compression

## Consolidated Drained

**Saturation Plots**

| | | | |
|---|---|---|---|
| Saturation Method | | | Stepped |
| Cell Pressure Input | σ | (kPa) | 600 |
| Pore Water Pressure Input | u pwp | (kPa) | 585 |
| B Value | B | . | 0.96 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH108 16.20-16.50m CS114_Copy |
| | | Test Date | 27/05/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH108 |
| | | Sample | 16.20-16.50m CS114 |
| Client | Ground Technology | Depth | 16.20-16.50m |

# Effective Stress Triaxial Compression

## Consolidated Drained

**Consolidation Plots**

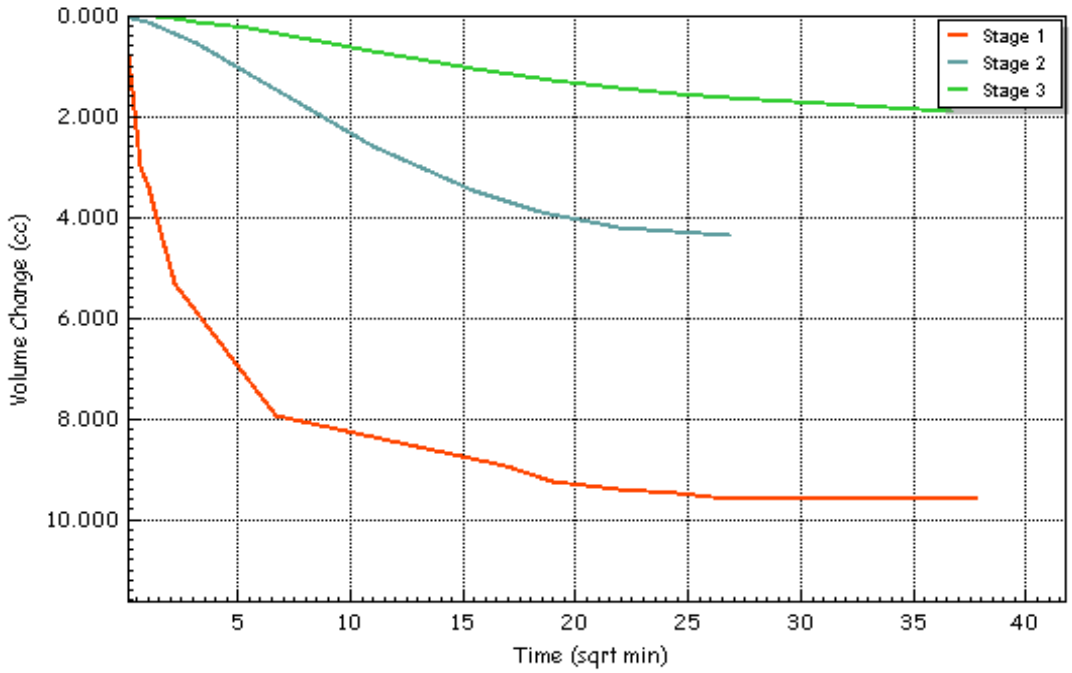
**Initial Conditions**

| | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_3$ | (kPa) | 690 | 780 | 870 |
| Initial Back Pressure | $u_{bi}$ | (kPa) | 600 | 600 | 600 |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | 669 | 728 | 834 |
| Drainage Method | | | Radial+One End | | |

**Final Conditions**

| | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| PWP Dissipation % | U% | (%) | 100.00 | 100.00 | 100.00 |
| Volumetric Strain | $\varepsilon_v$% | (%) | 1.78 | 2.59 | 2.94 |
| Corrected Length | $L_C$ | (mm) | 139.2 | 132.4 | 125.5 |
| Corrected Area | $A_C$ | (cm2) | 38.03 | 38.93 | 40.57 |
| Corrected Volume | $V_C$ | (cc) | 529.184 | 524.817 | 522.925 |
| T100 Time to Failure | $t_{100}$ | (min) | 27.53 | 271.87 | 473.51 |
| Consolidation | $c_V$ | (m2/year) | 3.675 | 0.372 | 0.214 |
| Compressibility | $m_V$ | (m2/MN) | 0.258 | 0.203 | 0.879 |
| Test Time | $t_F$ | (h:m:s) | 06:25:25 | 63:26:10 | 110:29:08 |
| Estimated Strain to Failure | $\varepsilon$% | (%) | 10.0 | 10.0 | 10.0 |
| Shear Machine Speed | $d_r$ | (mm/min) | 0.03611 | 0.03611 | 0.03611 |

**Notes**




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH108 16.20-16.50m CS114_Copy |
| | | Test Date | 27/05/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH108 |
| | | Sample | 16.20-16.50m CS114 |
| Client | Ground Technology | Depth | 16.20-16.50m |

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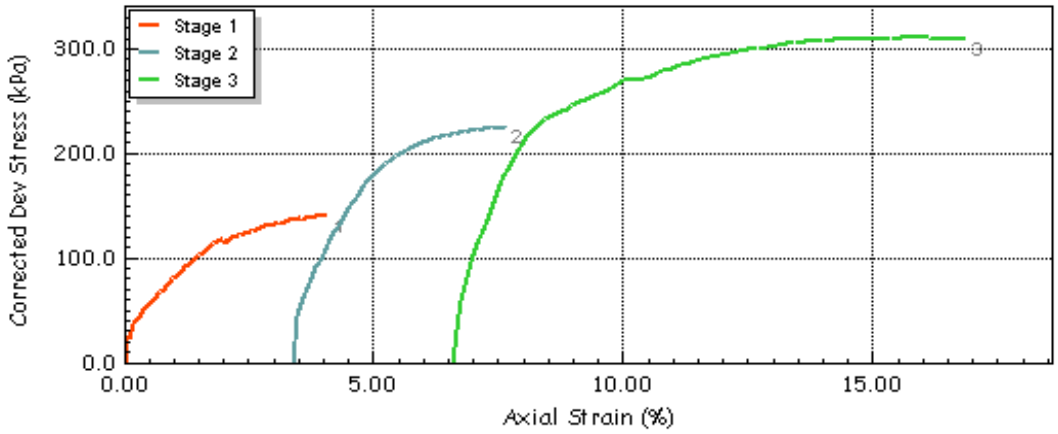
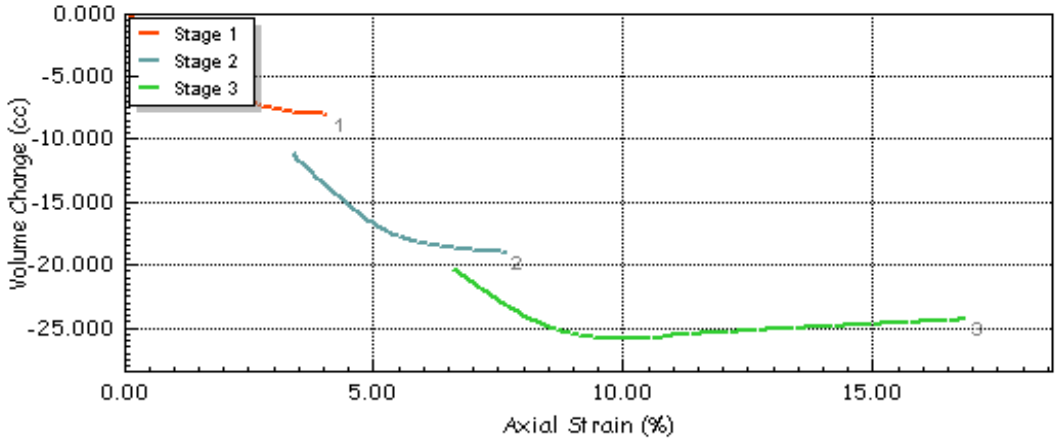
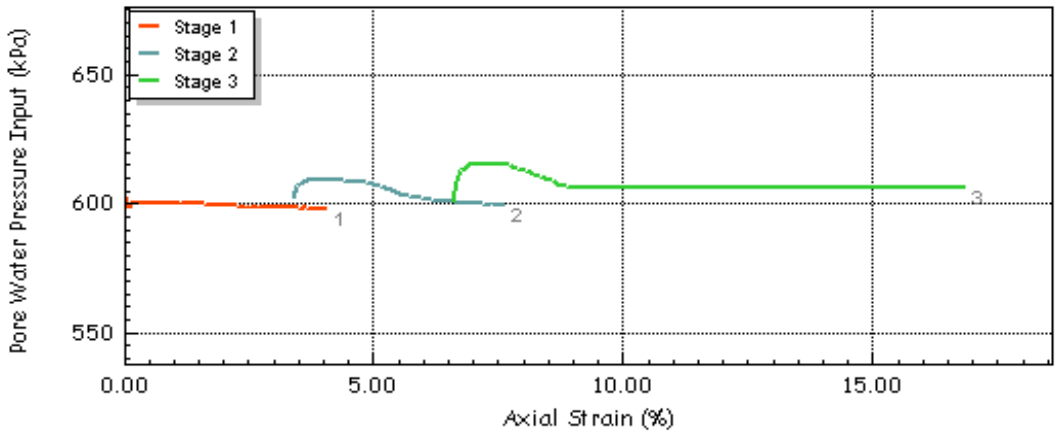
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**



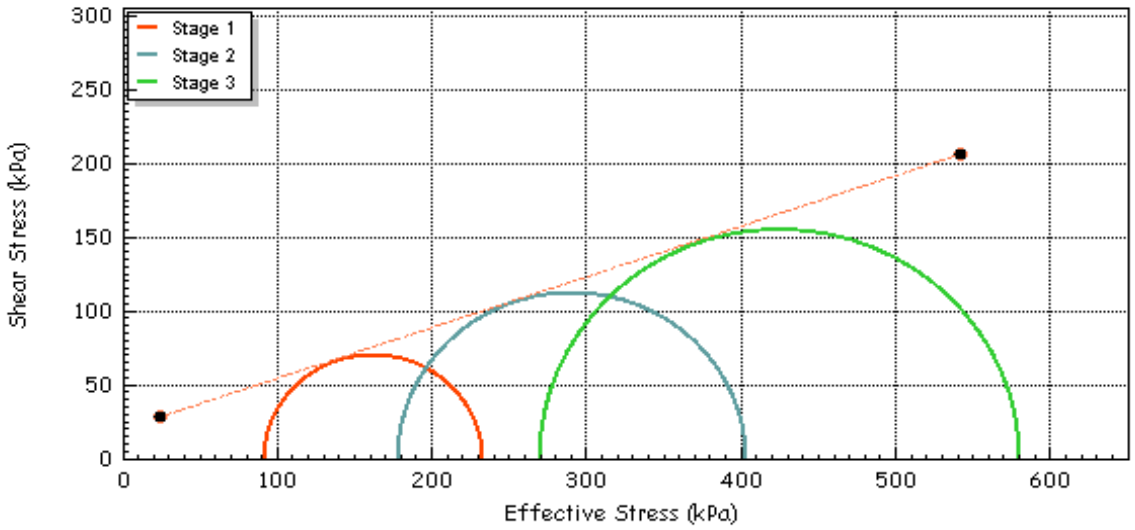

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH108 16.20-16.50m CS114_Copy |
| | | Test Date | 27/05/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH108 |
| | | Sample | 16.20-16.50m CS114 |
| Client | Ground Technology | Depth | 16.20-16.50m |

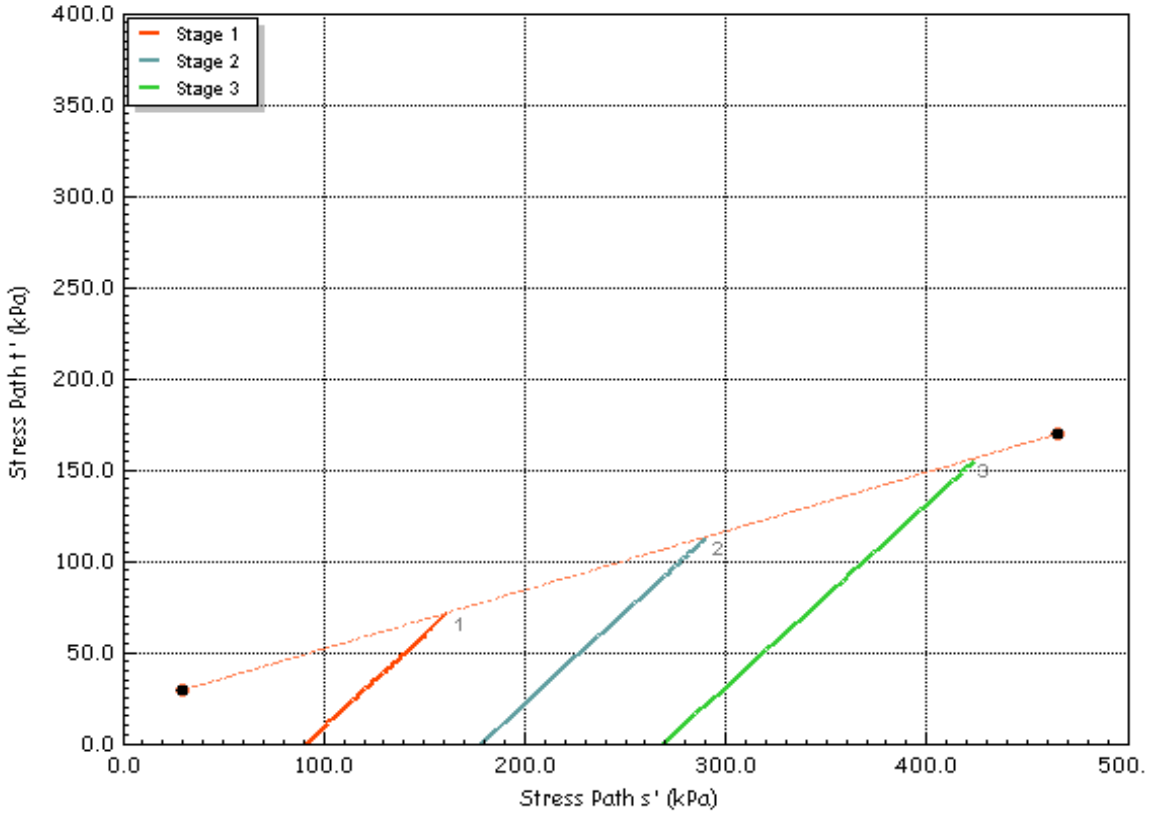
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Effective | c' | (kPa) | 20.20 | Effective Cohesion | c' | (kPa) | 20.20 |
| Effective Friction | ϕ' | (deg) | 18.9 | Effective Friction | ϕ' | (deg) | 18.9 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH108 16.20-16.50m CS114_Copy |
| | | Test Date | 27/05/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH108 |
| | | Sample | 16.20-16.50m CS114 |
| Client | Ground Technology | Depth | 16.20-16.50m |

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# Effective Stress Triaxial Compression

## Consolidated Drained

**Summary Report**

| Sample Details | | | | |
|---|---|---|---|---|
| *sketch showing specimen location in original sample* | Depth | | 17.00-17.22m | |
| | Description | | See summary of soil descriptions. | |
| | Type | | Undisturbed, vertical orientation. | |
| | Initial Sample Length | $L_0$ | (mm) | 140.0 |
| | Initial Sample Diameter | $D_0$ | (mm) | 70.1 |
| | Initial Sample Weight | $W_0$ | (gr) | 1087.0 |
| | Initial Bulk Density | $\rho_0$ | (Mg/m3) | 2.01 |
| | Particle Density | $\rho_s$ | (Mg/m3) | 2.66 |

| **Initial Conditions** | | | Stage 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_{3i}$ | (kPa) | 620 | 789 | 960 | |
| Initial Back Pressure | $U_{bi}$ | (kPa) | 450 | 450 | 450 | |
| Membrane Thickness | $m_b$ | (mm) | 0.600 | | | |
| Displacement Input | $L_{IP}$ | (mm) | CH 2 | | | |
| Load Input | $N_{IP}$ | (N) | CH 1 | | | |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | CH 3 | | | |
| Sample Volume | $V$ | (cc) | CH 2 | | | |
| Initial Moisture | $\omega_i$ | (%) | 24 | | | |
| Initial Dry Density | $\rho_{di}$ | (Mg/m3) | 1.62 | | | |
| Initial Voids Ratio | $e_i$ | . | 0.637 | | | |
| Initial Degree of Saturation | $S_i$ | (%) | 99 | | | |
| B Value | $B$ | . | 0.96 | | | |

| **Final Conditions** | | | | | | |
|---|---|---|---|---|---|---|
| Final Moisture | $\omega_f$ | (%) | 24 | | | |
| Final Dry Density | $\rho_{df}$ | (Mg/m3) | 1.70 | | | |
| Final Voids Ratio | $e_f$ | . | 0.566 | | | |
| Final Degree of Saturation | $S_f$ | (%) | 100.0 | | | |
| | | | Stage 1 | 2 | 3 | 4 |
| Failure Criteria | | . | Max. Dev. Stress | Max. Dev. Stress | Max. Dev. Stress | |
| Strain At Failure | $\varepsilon_f$ | (%) | 4.98 | 8.52 | 10.11 | |
| Stress At Failure | $(\sigma_1-\sigma_3)$ | (kPa) | 265.6 | 450.4 | 642.9 | |
| Minor Stress At Failure | $\sigma_3'$ | (kPa) | 174.0 | 339.0 | 509.0 | |
| Major Stress At Failure | $\sigma_1'$ | (kPa) | 439.6 | 789.4 | 1151.9 | |
| Principal Stress Ratio At Failure | $\sigma_1'/\sigma_3'$ | | 2.526 | 2.329 | 2.263 | |

**Notes**

*Plastic*

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH114 17.00-17.22m CS_Copy |
| | | Test Date | 27/05/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH114 |
| | | Sample | 17.00-17.22m |
| Client | Ground Technology | Depth | 17.00-17.22m |

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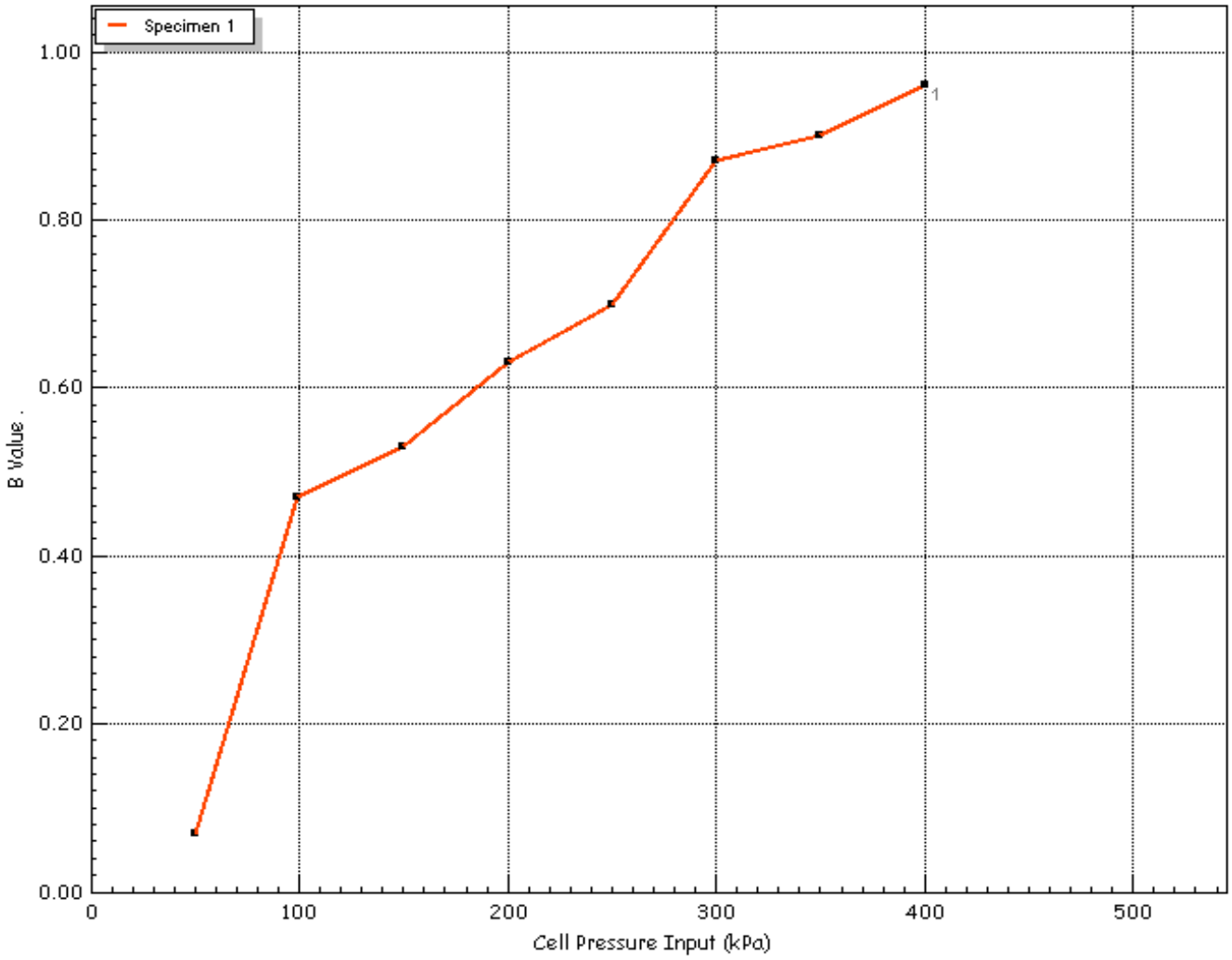
# Effective Stress Triaxial Compression

## Consolidated Drained

**Saturation Plots**

| | | | |
|---|---|---|---|
| Saturation Method | | | Stepped |
| Cell Pressure Input | σ | (kPa) | 450 |
| Pore Water Pressure Input | u pwp | (kPa) | 437 |
| B Value | B | . | 0.96 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH114 17.00-17.22m CS_Copy |
| | | Test Date | 27/05/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH114 |
| | | Sample | CS113 |
| Client | Ground Technology | Depth | 17.00-17.22m |

# Effective Stress Triaxial Compression

## Consolidated Drained

**Consolidation Plots**

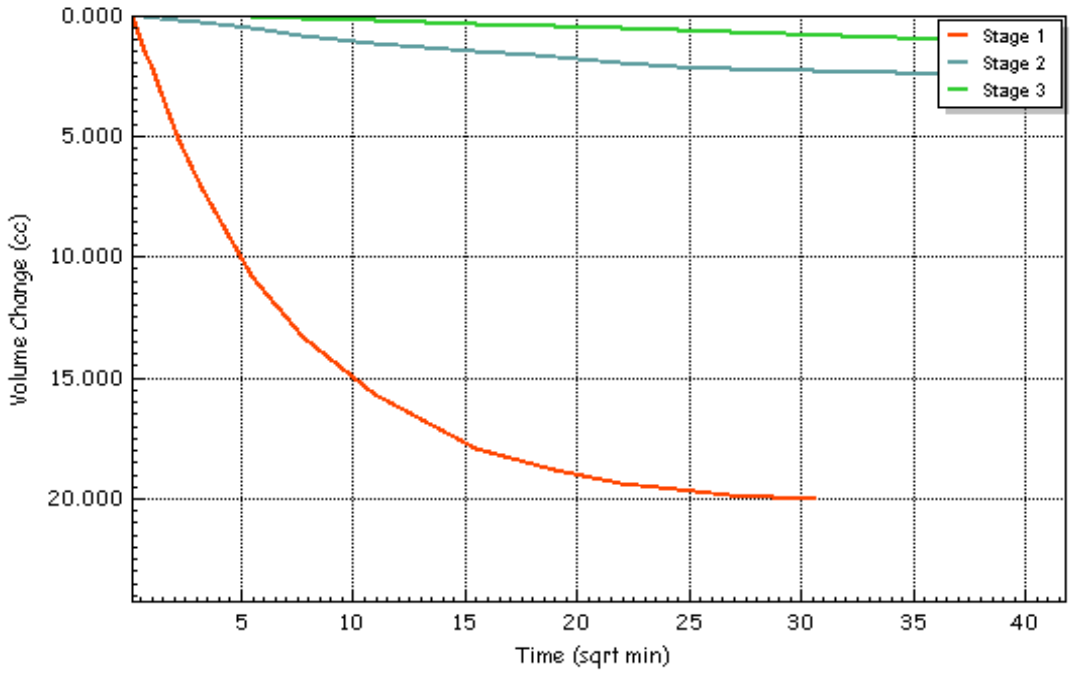
**Initial Conditions**

| | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_3$ | (kPa) | 620 | 790 | 960 |
| Initial Back Pressure | $u_{bi}$ | (kPa) | 450 | 450 | 450 |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | 600 | 522 | 492 |
| Drainage Method | | | Radial+One End | | |

**Final Conditions**

| | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| PWP Dissipation % | U% | (%) | 100.00 | 100.00 | 100.00 |
| Volumetric Strain | $\varepsilon_v$% | (%) | 3.70 | 4.15 | 4.33 |
| Corrected Length | $L_C$ | (mm) | 138.3 | 129.5 | 121.9 |
| Corrected Area | $A_C$ | (cm2) | 37.64 | 38.50 | 40.60 |
| Corrected Volume | $V_C$ | (cc) | 520.315 | 517.898 | 516.916 |
| T100 Time to Failure | $t_{100}$ | (min) | 75.81 | 388.72 | 430.50 |
| Consolidation | $c_v$ | (m2/year) | 1.342 | 0.262 | 0.236 |
| Compressibility | $m_v$ | (m2/MN) | 0.246 | 0.576 | 1.031 |
| Test Time | $t_F$ | (h:m:s) | 17:41:20 | 90:42:04 | 100:27:00 |
| Estimated Strain to Failure | $\varepsilon$% | (%) | 5.0 | 5.0 | 5.0 |
| Shear Machine Speed | $d_r$ | (mm/min) | 0.00651 | 0.00651 | 0.00651 |

**Notes**




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH114 17.00-17.22m CS_Copy |
| | | Test Date | 27/05/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH114 |
| | | Sample | CS113 |
| Client | Ground Technology | Depth | 17.00-17.22m |

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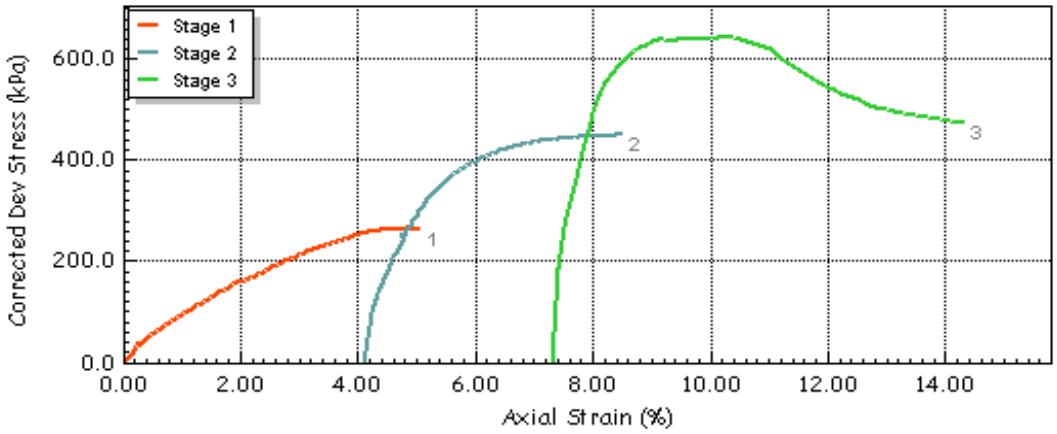
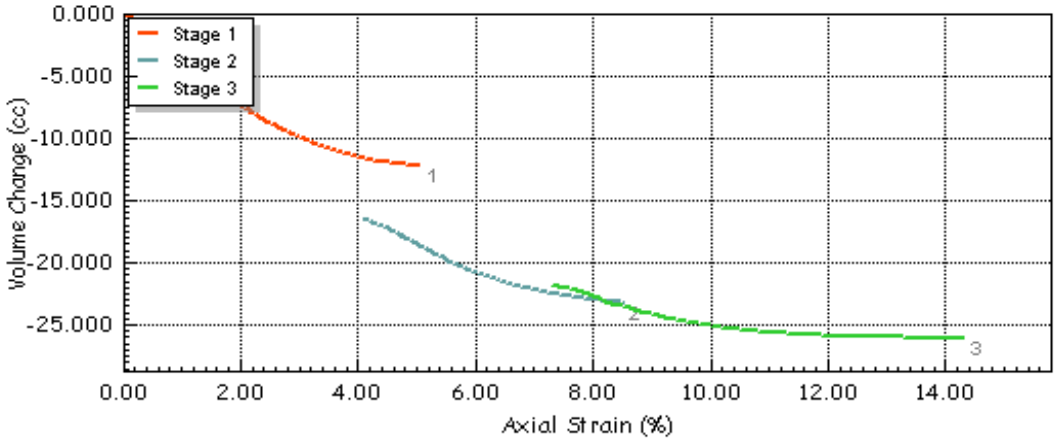
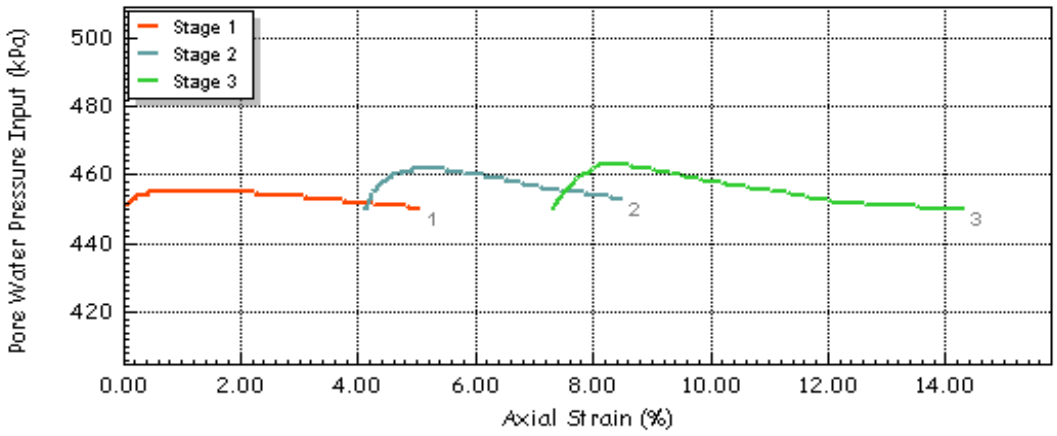
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**



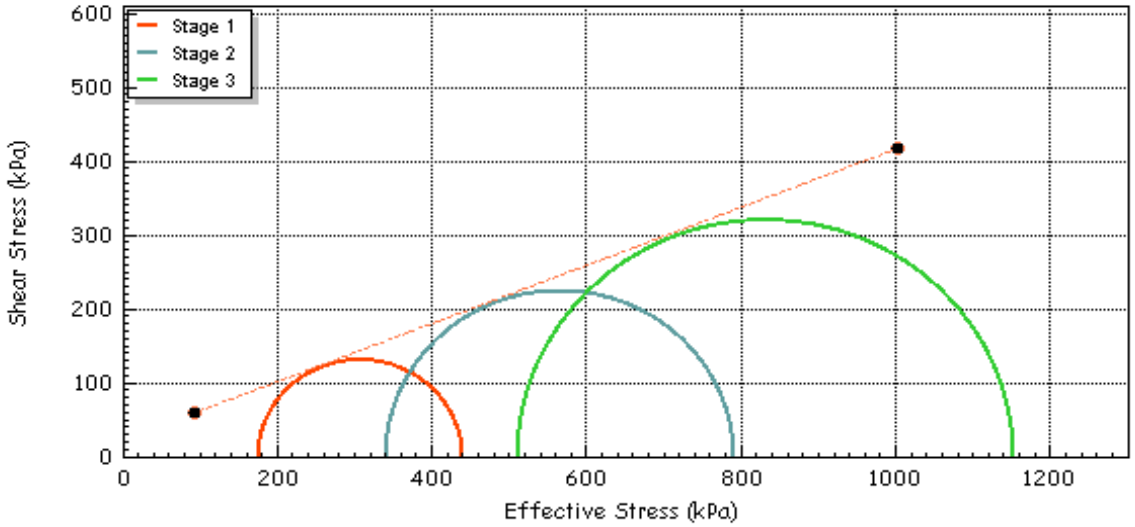

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH114 17.00-17.22m CS_Copy |
| | | Test Date | 27/05/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH114 |
| | | Sample | CS113 |
| Client | Ground Technology | Depth | 17.00-17.22m |

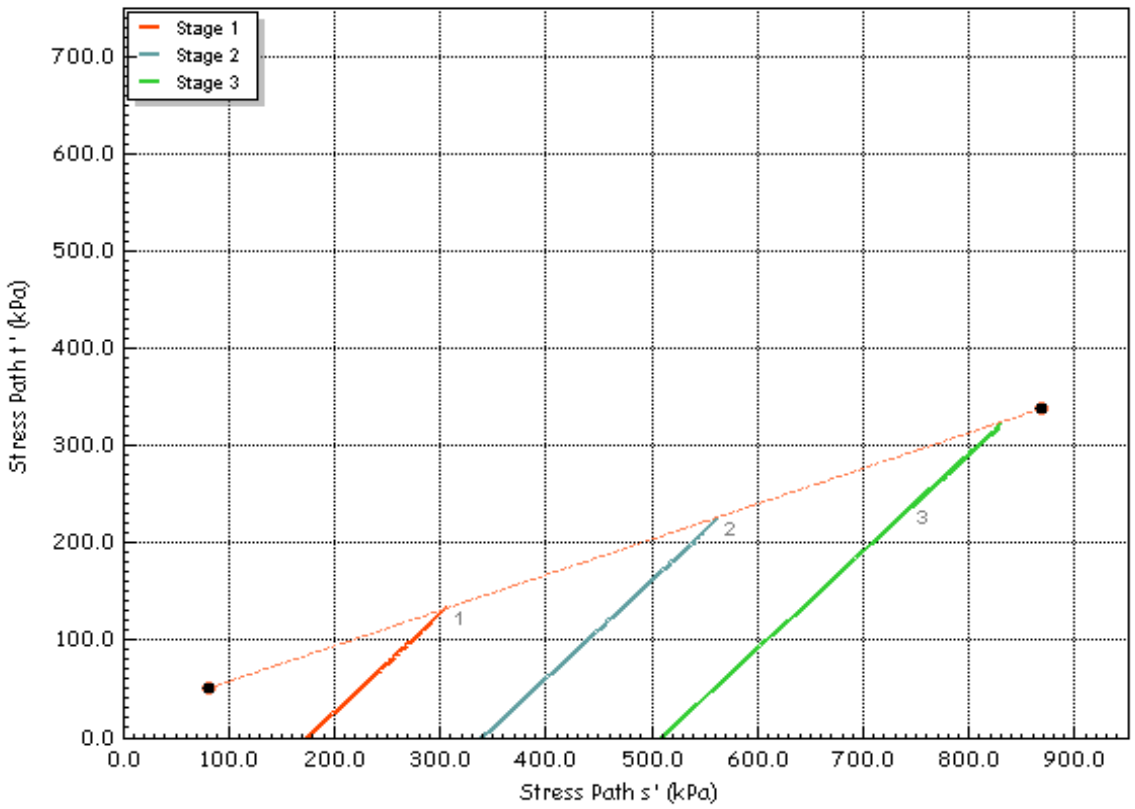
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Effective | c' | (kPa) | 22.63 | Effective Cohesion | c' | (kPa) | 22.63 |
| Effective Friction | ϕ' | (deg) | 21.4 | Effective Friction | ϕ' | (deg) | 21.4 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH114 17.00-17.22m CS_Copy |
| | | Test Date | 27/05/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH114 |
| | | Sample | CS113 |
| Client | Ground Technology | Depth | 17.00-17.22m |

*

# Effective Stress Triaxial Compression

## Consolidated Drained

**Summary Report**

| Sample Details | | | | |
|---|---|---|---|---|
| *sketch showing specimen location in original sample* | Depth | | | 10.30-10.60m |
| | Description | | | See summary of soil descriptions. |
| | Type | | | Undisturbed, vertical orientation. |
| | Initial Sample Length | $L_0$ | (mm) | 200.0 |
| | Initial Sample Diameter | $D_0$ | (mm) | 100.0 |
| | Initial Sample Weight | $W_0$ | (gr) | 3154.0 |
| | Initial Bulk Density | $\rho_0$ | (Mg/m3) | 2.01 |
| | Particle Density | $\rho_s$ | (Mg/m3) | 2.66 |

| **Initial Conditions** | | | Stage 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_{3i}$ | (kPa) | 400 | 499 | 600 | |
| Initial Back Pressure | $U_{bi}$ | (kPa) | 300 | 309 | 301 | |
| Membrane Thickness | $m_b$ | (mm) | 0.600 | | | |
| Displacement Input | $L_{IP}$ | (mm) | CH 2 | | | |
| Load Input | $N_{IP}$ | (N) | CH 1 | | | |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | CH 3 | | | |
| Sample Volume | $V$ | (cc) | CH 6 | | | |
| Initial Moisture | $\omega_i$ | (%) | 21 | | | |
| Initial Dry Density | $\rho_{di}$ | (Mg/m3) | 1.65 | | | |
| Initial Voids Ratio | $e_i$ | . | 0.610 | | | |
| Initial Degree of Saturation | $S_i$ | (%) | 94 | | | |
| B Value | B | . | 0.96 | | | |

| **Final Conditions** | | | | | | |
|---|---|---|---|---|---|---|
| Final Moisture | $\omega_f$ | (%) | 19 | | | |
| Final Dry Density | $\rho_{df}$ | (Mg/m3) | 1.72 | | | |
| Final Voids Ratio | $e_f$ | . | 0.549 | | | |
| Final Degree of Saturation | $S_f$ | (%) | 90.0 | | | |
| | | | Stage 1 | 2 | 3 | 4 |
| Failure Criteria | | . | Max. Dev. Stress | Max. Dev. Stress | Max. Dev. Stress | |
| Strain At Failure | $\varepsilon_f$ | (%) | 7.82 | 11.97 | 14.98 | |
| Stress At Failure | $(\sigma_1-\sigma_3)$ | (kPa) | 156.8 | 279.1 | 394.1 | |
| Minor Stress At Failure | $\sigma_3'$ | (kPa) | 99.0 | 200.0 | 300.0 | |
| Major Stress At Failure | $\sigma_1'$ | (kPa) | 255.8 | 479.1 | 694.1 | |
| Principal Stress Ratio At Failure | $\sigma_1'/\sigma_3'$ | | 2.584 | 2.396 | 2.314 | |

**Notes**

*Plastic*

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH115 10.30-10.60m CS103 |
| | | Test Date | 30/05/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH115 |
| | | Sample | 10.30-10.60m |
| Client | Ground Technology | Depth | 10.30-10.60m |

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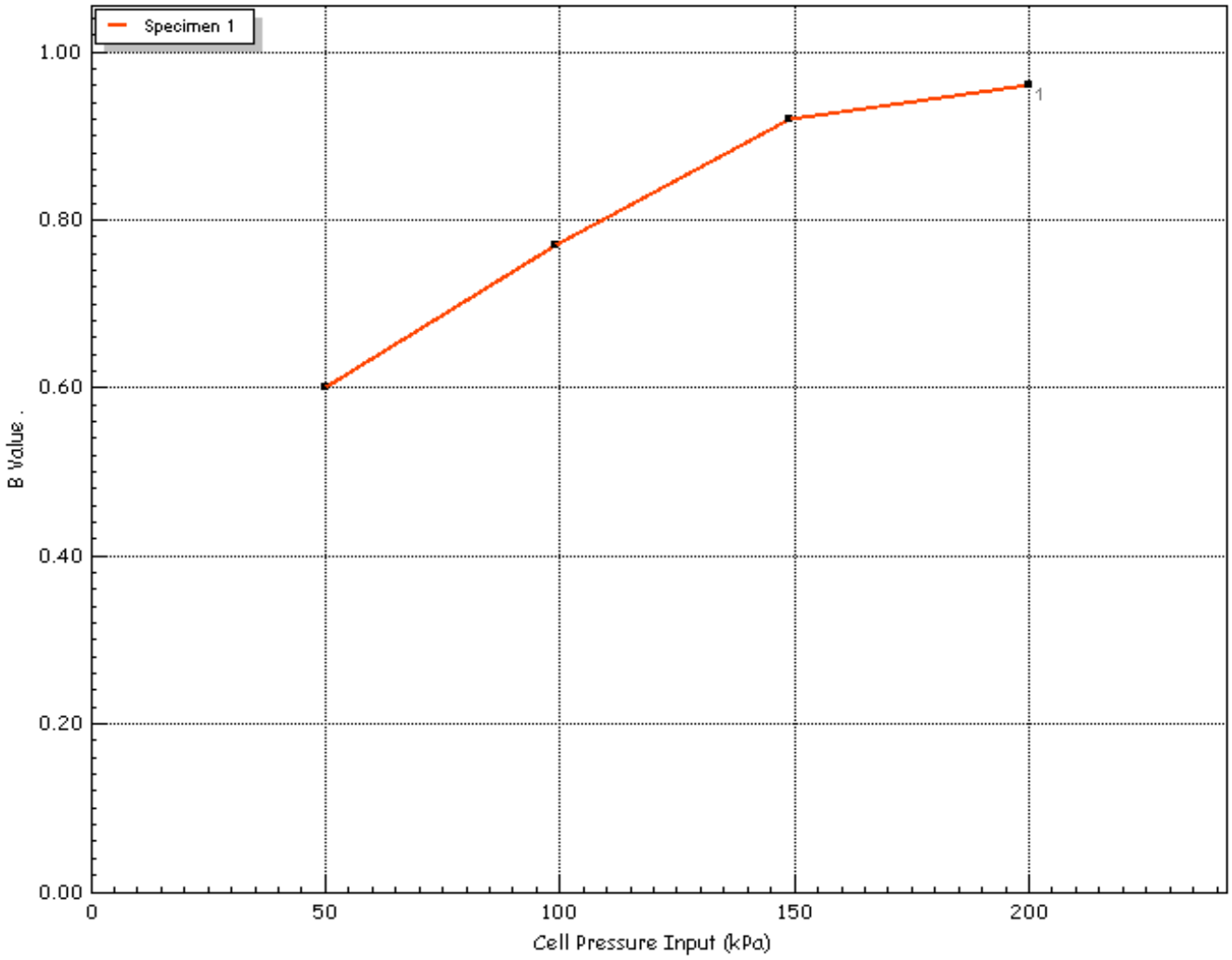
# Effective Stress Triaxial Compression

## Consolidated Drained

**Saturation Plots**

| | | | |
|---|---|---|---|
| Saturation Method | | | Stepped |
| Cell Pressure Input | σ | (kPa) | 200 |
| Pore Water Pressure Input | u pwp | (kPa) | 183 |
| B Value | B | . | 0.96 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH115 10.30-10.60m CS103 |
| | | Test Date | 30/05/2022 |
| | Wansford to Sutton Dualling | Borehole | BH115 |
| Jobfile | Supplementary GI | Sample | 10.30-10.60m |
| Client | Ground Technology | Depth | 10.30-10.60m |

# Effective Stress Triaxial Compression

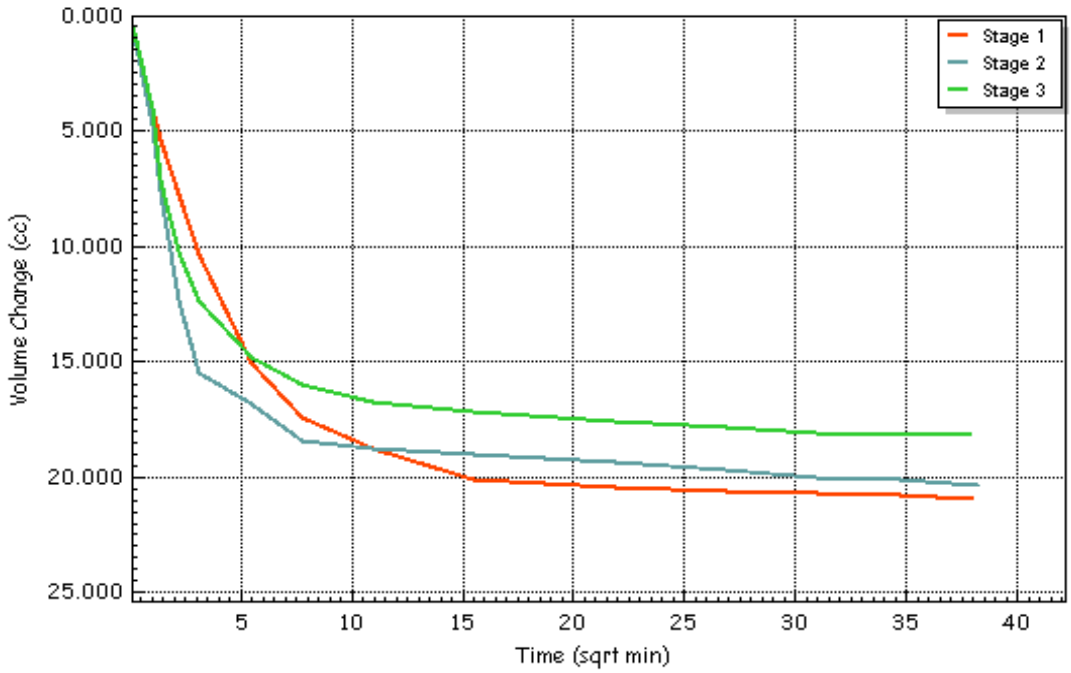
## Consolidated Drained

**Consolidation Plots**

| **Initial Conditions** | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_3$ | (kPa) | 400 | 500 | 600 |
| Initial Back Pressure | $u_{bi}$ | (kPa) | 300 | 300 | 300 |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | 371 | 424 | 546 |
| Drainage Method | | | Radial+One End | | |

| **Final Conditions** | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| PWP Dissipation % | U% | (%) | 100.00 | 98.39 | 99.80 |
| Volumetric Strain | $\varepsilon_v$% | (%) | 1.33 | 1.30 | 1.16 |
| Corrected Length | $L_C$ | (mm) | 199.1 | 182.7 | 172.9 |
| Corrected Area | $A_C$ | (cm2) | 77.84 | 83.70 | 87.42 |
| Corrected Volume | $V_C$ | (cc) | 1549.839 | 1529.492 | 1511.281 |
| t100 | $t_{100}$ | (min) | 42.90 | 10.29 | 8.41 |
| Consolidation | $c_v$ | (m2/year) | 4.814 | 20.068 | 24.554 |
| Compressibility | $m_v$ | (m2/MN) | 0.187 | 0.106 | 0.047 |
| Test Time | $t_F$ | (h:m:s) | 10:00:36 | 02:24:03 | 02:00:00 |
| Estimated Strain to Failure | $\varepsilon$% | (%) | 5.0 | 5.0 | 5.0 |
| Shear Machine Speed | $d_r$ | (mm/min) | 0.01658 | 0.01658 | 0.01658 |

**Notes**

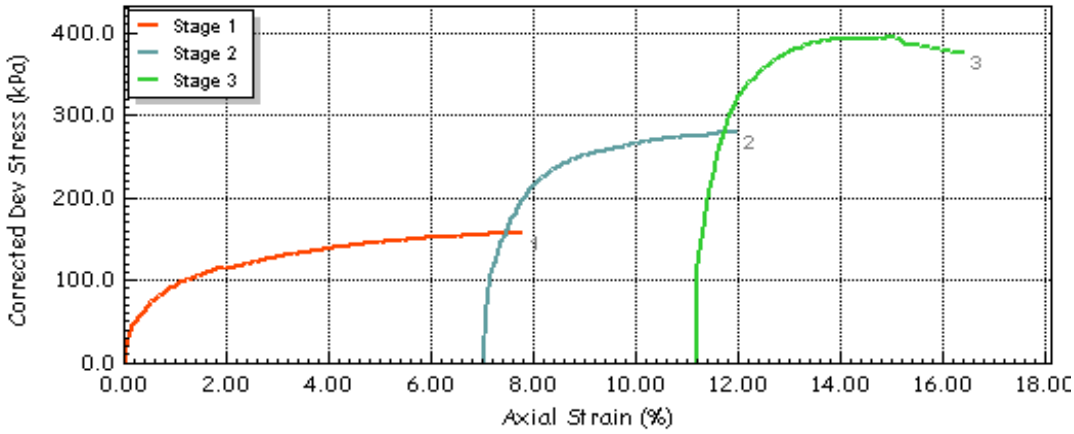


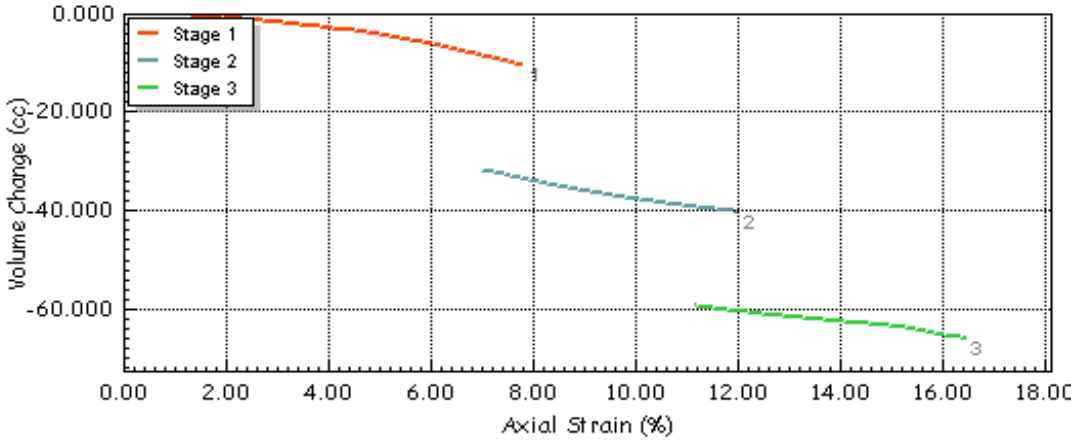

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH115 10.30-10.60m CS103 |
| | | Test Date | 30/05/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH115 |
| | | Sample | 10.30-10.60m |
| Client | Ground Technology | Depth | 10.30-10.60m |

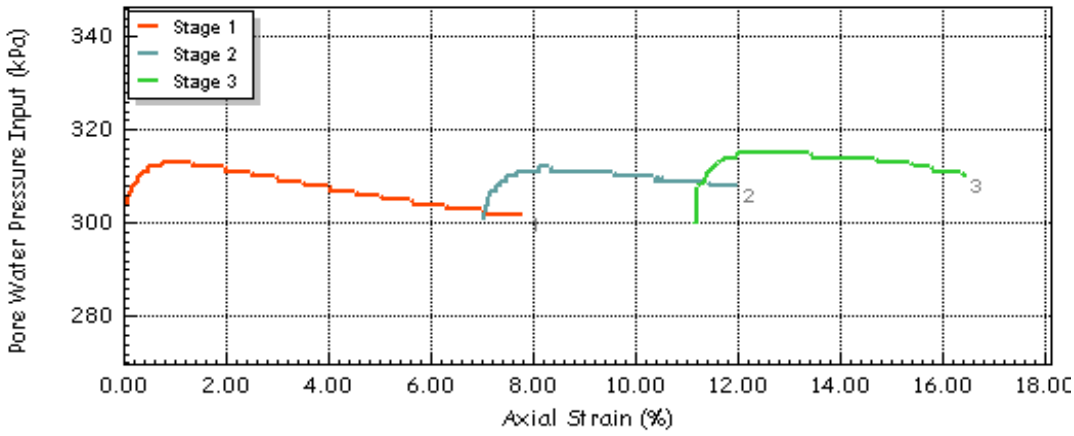
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**



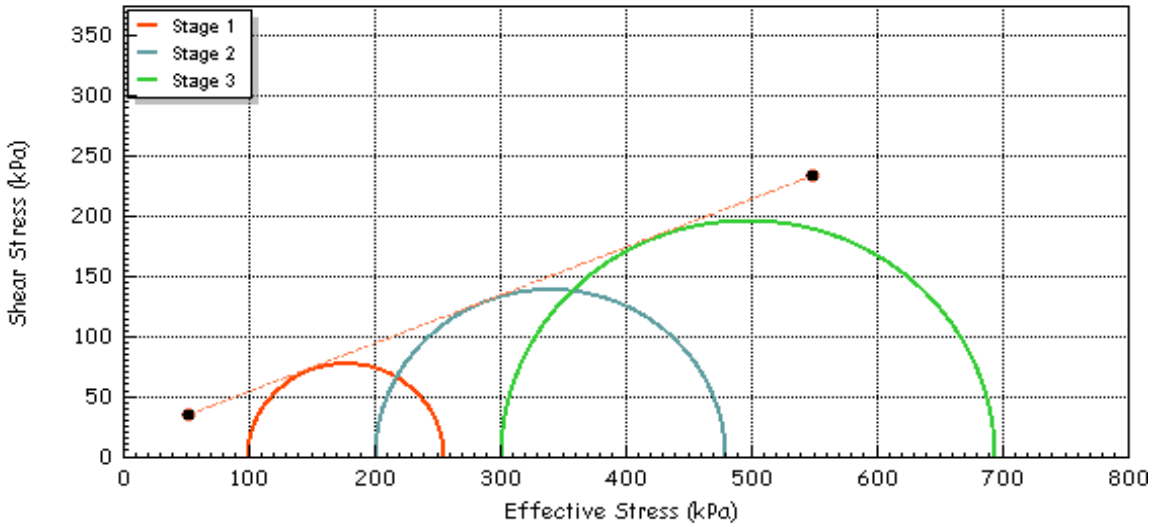

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH115 10.30-10.60m CS103 |
| | | Test Date | 30/05/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH115 |
| | | Sample | 10.30-10.60m |
| Client | Ground Technology | Depth | 10.30-10.60m |

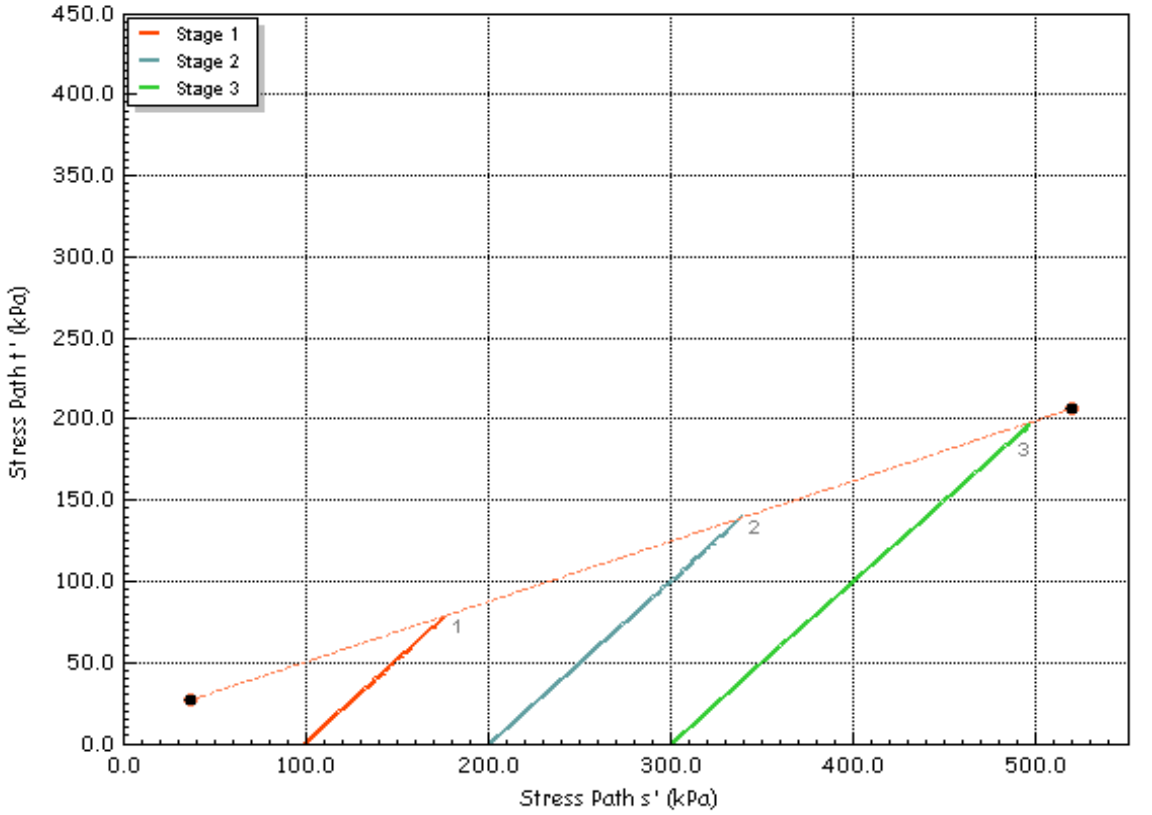
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Effective | c' | (kPa) | 14.87 | Effective Cohesion | c' | (kPa) | 14.87 |
| Effective Friction | ϕ' | (deg) | 21.8 | Effective Friction | ϕ' | (deg) | 21.8 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH115 10.30-10.60m CS103 |
| | | Test Date | 30/05/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH115 |
| | | Sample | 10.30-10.60m |
| Client | Ground Technology | Depth | 10.30-10.60m |

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# Effective Stress Triaxial Compression

## Consolidated Drained

**Summary Report**

| Sample Details | | | | |
|---|---|---|---|---|
| *sketch showing specimen location in original sample* | Depth | | | 2.50-2.80m |
| | Description | | | See summary of soil descriptions. |
| | Type | | | Undisturbed, vertical orientation. |
| | Initial Sample Length | $L_0$ | (mm) | 140.0 |
| | Initial Sample Diameter | $D_0$ | (mm) | 70.1 |
| | Initial Sample Weight | $W_0$ | (gr) | 1023.0 |
| | Initial Bulk Density | $\rho_0$ | (Mg/m3) | 1.89 |
| | Particle Density | $\rho_s$ | (Mg/m3) | 2.66 |

| **Initial Conditions** | | | Stage 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_{3i}$ | (kPa) | 725 | 750 | 775 | |
| Initial Back Pressure | $U_{bi}$ | (kPa) | 700 | 700 | 700 | |
| Membrane Thickness | $m_b$ | (mm) | 0.600 | | | |
| Displacement Input | $L_{IP}$ | (mm) | CH 2 | | | |
| Load Input | $N_{IP}$ | (N) | CH 1 | | | |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | CH 3 | | | |
| Sample Volume | $V$ | (cc) | CH 2 | | | |
| Initial Moisture | $\omega_i$ | (%) | 31 | | | |
| Initial Dry Density | $\rho_{di}$ | (Mg/m3) | 1.45 | | | |
| Initial Voids Ratio | $e_i$ | . | 0.840 | | | |
| Initial Degree of Saturation | $S_i$ | (%) | 98 | | | |
| B Value | $B$ | . | 0.97 | | | |

| **Final Conditions** | | | | | | |
|---|---|---|---|---|---|---|
| Final Moisture | $\omega_f$ | (%) | 32 | | | |
| Final Dry Density | $\rho_{df}$ | (Mg/m3) | 1.45 | | | |
| Final Voids Ratio | $e_f$ | . | 0.830 | | | |
| Final Degree of Saturation | $S_f$ | (%) | 100.0 | | | |
| | | | Stage 1 | 2 | 3 | 4 |
| Failure Criteria | | . | Max. Dev. Stress | Max. Dev. Stress | Max. Dev. Stress | |
| Strain At Failure | $\varepsilon_f$ | (%) | 1.98 | 6.03 | 8.42 | |
| Stress At Failure | $(\sigma_1-\sigma_3)$ | (kPa) | 62.9 | 83.4 | 101.6 | |
| Minor Stress At Failure | $\sigma_3'$ | (kPa) | 25.0 | 49.7 | 72.2 | |
| Major Stress At Failure | $\sigma_1'$ | (kPa) | 87.9 | 133.1 | 173.8 | |
| Principal Stress Ratio At Failure | $\sigma_1'/\sigma_3'$ | | 3.518 | 2.678 | 2.407 | |

**Notes**

*Plastic*

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH124 2.50-2.80m |
| | | Test Date | 02/06/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH124 |
| | | Sample | CS104 |
| Client | Ground Technology | Depth | 2.50-2.80m |

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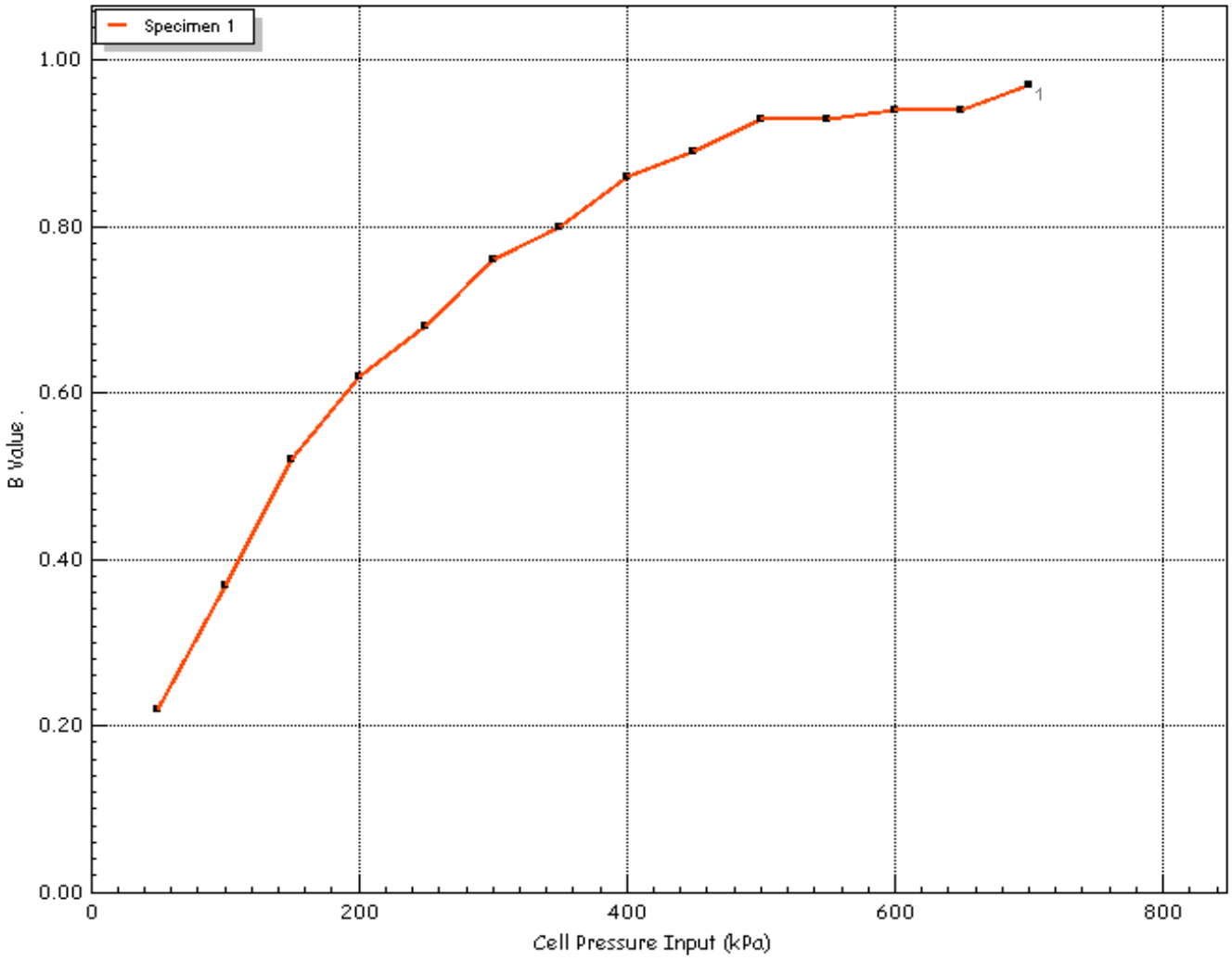
# Effective Stress Triaxial Compression

## Consolidated Drained

**Saturation Plots**

| | | | |
|---|---|---|---|
| Saturation Method | | | Stepped |
| Cell Pressure Input | σ | (kPa) | 700 |
| Pore Water Pressure Input | u pwp | (kPa) | 688 |
| B Value | B | . | 0.97 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH124 2.50-2.80m |
| | | Test Date | 02/06/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH124 |
| | | Sample | CS104 |
| Client | Ground Technology | Depth | 2.50-2.80m |

# Effective Stress Triaxial Compression

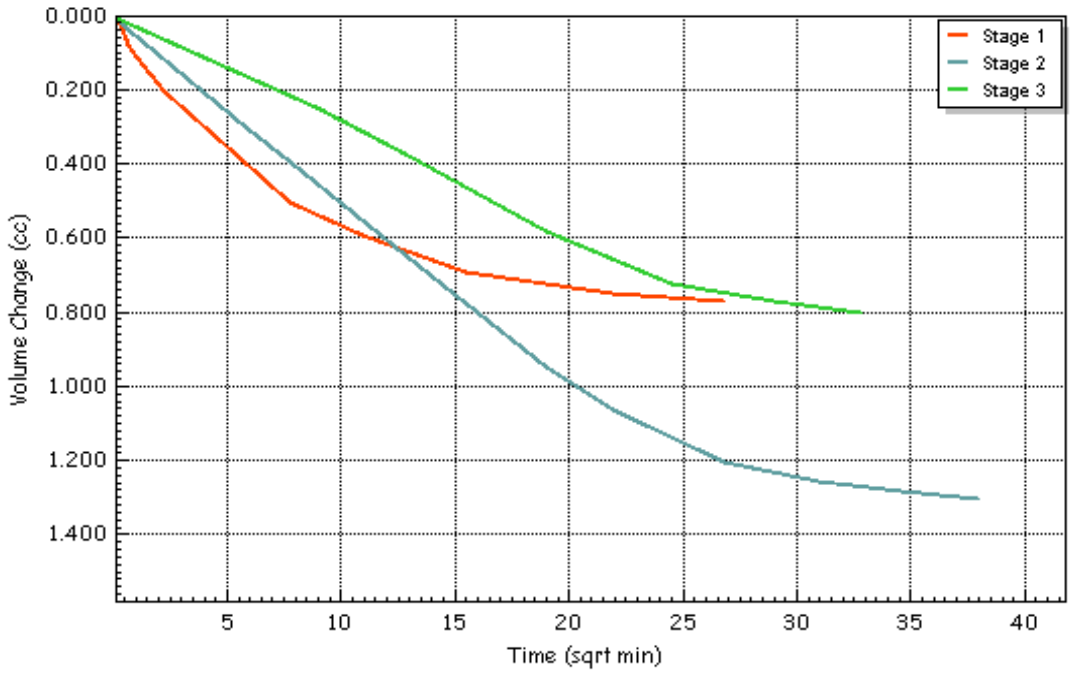
## Consolidated Drained

**Consolidation Plots**

| **Initial Conditions** | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_3$ | (kPa) | 725 | 750 | 775 |
| Initial Back Pressure | $u_{bi}$ | (kPa) | 700 | 700 | 700 |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | 709 | 714 | 711 |
| Drainage Method | | | Radial+One End | | |

| **Final Conditions** | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| PWP Dissipation % | U% | (%) | 100.00 | 100.00 | 100.00 |
| Volumetric Strain | $\varepsilon_v$% | (%) | 0.14 | 0.24 | 0.15 |
| Corrected Length | $L_C$ | (mm) | 139.9 | 135.2 | 130.5 |
| Corrected Area | $A_C$ | (cm2) | 38.56 | 39.80 | 41.19 |
| Corrected Volume | $V_C$ | (cc) | 539.552 | 538.248 | 537.445 |
| t100 | $t_{100}$ | (min) | 74.33 | 655.52 | 470.92 |
| Consolidation | $c_v$ | (m2/year) | 1.368 | 0.155 | 0.216 |
| Compressibility | $m_v$ | (m2/MN) | 0.164 | 0.179 | 0.135 |
| Test Time | $t_F$ | (h:m:s) | 17:20:37 | 152:57:16 | 109:52:52 |
| Estimated Strain to Failure | $\varepsilon$% | (%) | 5.0 | 5.0 | 5.0 |
| Shear Machine Speed | $d_r$ | (mm/min) | 0.00672 | 0.00672 | 0.00672 |

**Notes**




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH124 2.50-2.80m |
| | | Test Date | 02/06/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH124 |
| | | Sample | CS104 |
| Client | Ground Technology | Depth | 2.50-2.80m |

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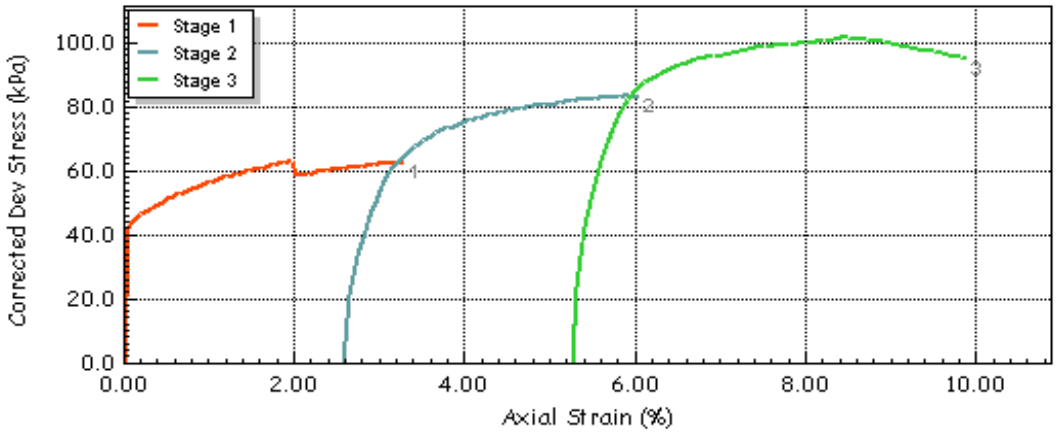
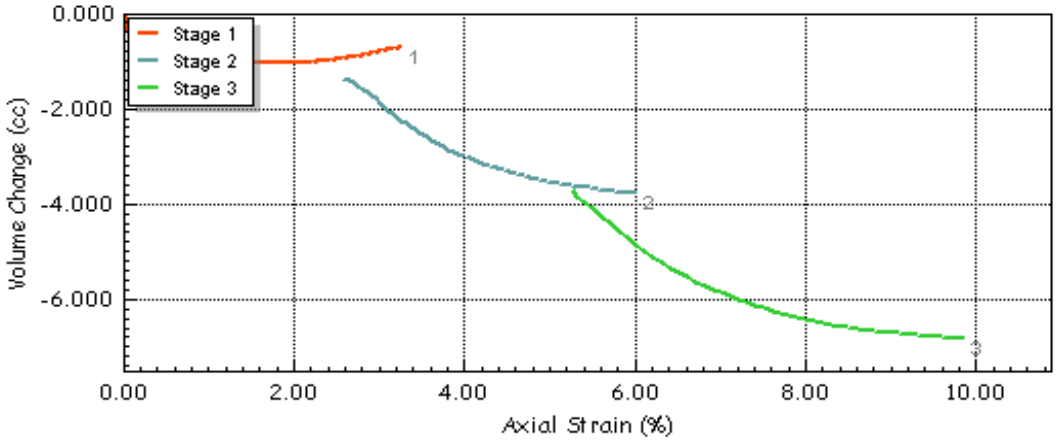
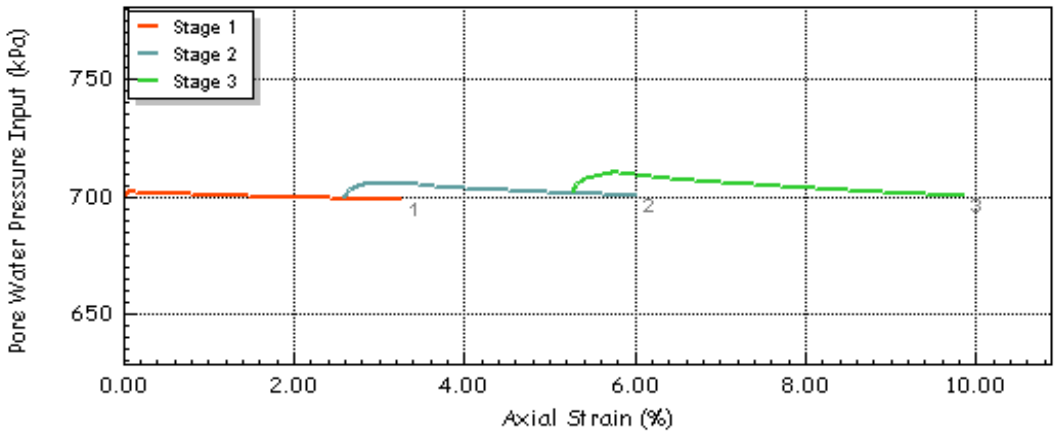
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**



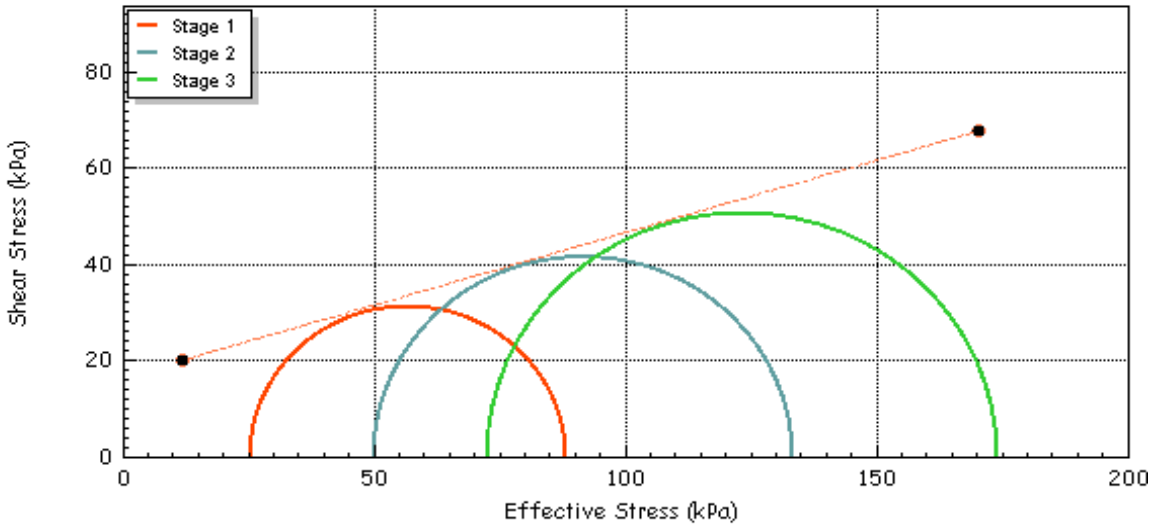

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH124 2.50-2.80m |
| | | Test Date | 02/06/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH124 |
| | | Sample | CS104 |
| Client | Ground Technology | Depth | 2.50-2.80m |

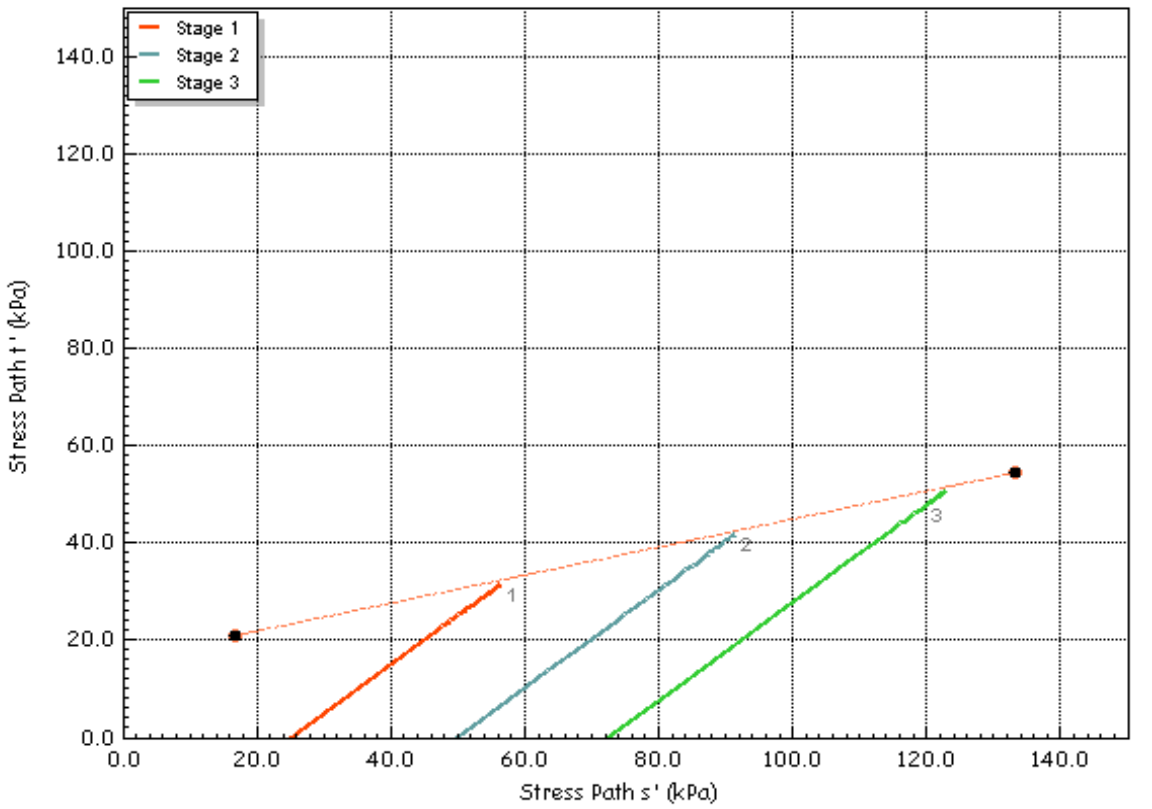
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Effective | c' | (kPa) | 16.77 | Effective Cohesion | c' | (kPa) | 16.77 |
| Effective Friction | ϕ' | (deg) | 16.8 | Effective Friction | ϕ' | (deg) | 16.8 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH124 2.50-2.80m |
| | | Test Date | 02/06/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH124 |
| | | Sample | CS104 |
| Client | Ground Technology | Depth | 2.50-2.80m |

# Effective Stress Triaxial Compression

## Consolidated Drained

**Summary Report**

| Sample Details | | | | |
|---|---|---|---|---|
| *sketch showing specimen location in original sample* | Depth | | 10.30-10.60m | |
| | Description | | See summary of soil descriptions. | |
| | Type | | Undisturbed, vertical orientation. | |
| | Initial Sample Length | $L_0$ | (mm) | 211.0 |
| | Initial Sample Diameter | $D_0$ | (mm) | 104.2 |
| | Initial Sample Weight | $W_0$ | (gr) | 3397.0 |
| | Initial Bulk Density | $\rho_0$ | (Mg/m3) | 1.89 |
| | Particle Density | $\rho_s$ | (Mg/m3) | 2.66 |

| **Initial Conditions** | | | Stage 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_{3i}$ | (kPa) | 800 | 900 | 1000 | |
| Initial Back Pressure | $U_{bi}$ | (kPa) | 700 | 700 | 700 | |
| Membrane Thickness | $m_b$ | (mm) | 0.600 | | | |
| Displacement Input | $L_{IP}$ | (mm) | CH 2 | | | |
| Load Input | $N_{IP}$ | (N) | CH 4 | | | |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | CH 3 | | | |
| Sample Volume | $V$ | (cc) | CH 2 | | | |
| Initial Moisture | $\omega_i$ | (%) | 30 | | | |
| Initial Dry Density | $\rho_{di}$ | (Mg/m3) | 1.45 | | | |
| Initial Voids Ratio | $e_i$ | . | 0.837 | | | |
| Initial Degree of Saturation | $S_i$ | (%) | 97 | | | |
| B Value | $B$ | . | 0.96 | | | |

| **Final Conditions** | | | | | | |
|---|---|---|---|---|---|---|
| Final Moisture | $\omega_f$ | (%) | 27 | | | |
| Final Dry Density | $\rho_{df}$ | (Mg/m3) | 1.53 | | | |
| Final Voids Ratio | $e_f$ | . | 0.737 | | | |
| Final Degree of Saturation | $S_f$ | (%) | 98.6 | | | |
| | | | Stage 1 | 2 | 3 | 4 |
| Failure Criteria | | . | Max. Dev. Stress | Max. Dev. Stress | Max. Dev. Stress | |
| Strain At Failure | $\varepsilon_f$ | (%) | 4.88 | 8.15 | 14.07 | |
| Stress At Failure | $(\sigma_1-\sigma_3)$ | (kPa) | 145.1 | 242.2 | 334.6 | |
| Minor Stress At Failure | $\sigma_3'$ | (kPa) | 98.0 | 200.0 | 296.0 | |
| Major Stress At Failure | $\sigma_1'$ | (kPa) | 243.1 | 442.2 | 630.6 | |
| Principal Stress Ratio At Failure | $\sigma_1'/\sigma_3'$ | | 2.480 | 2.211 | 2.131 | |

**Notes**

*Plastic*

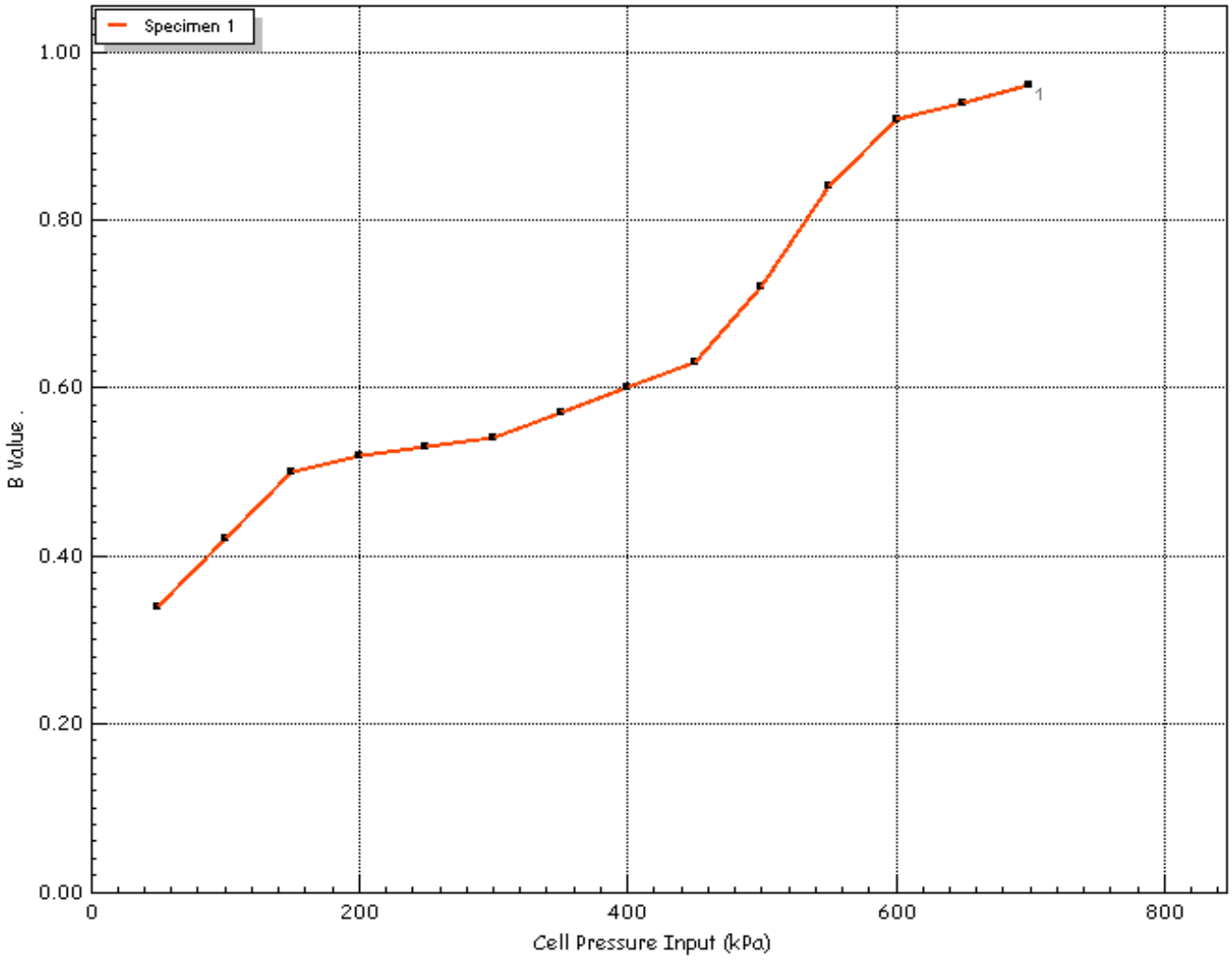
| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH132 10.30-10.60m |
| | | Test Date | 02/06/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH132 |
| | | Sample | CS113 |
| Client | Ground Technology | Depth | 10.30-10.60m |

# Effective Stress Triaxial Compression

## Consolidated Drained

**Saturation Plots**

| | | | |
|---|---|---|---|
| Saturation Method | | | Stepped |
| Cell Pressure Input | σ | (kPa) | 699 |
| Pore Water Pressure Input | u pwp | (kPa) | 682 |
| B Value | B | . | 0.96 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH132 10.30-10.60m |
| | | Test Date | 02/06/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH132 |
| | | Sample | CS113 |
| Client | Ground Technology | Depth | 10.30-10.60m |

*

# Effective Stress Triaxial Compression

## Consolidated Drained

**Consolidation Plots**

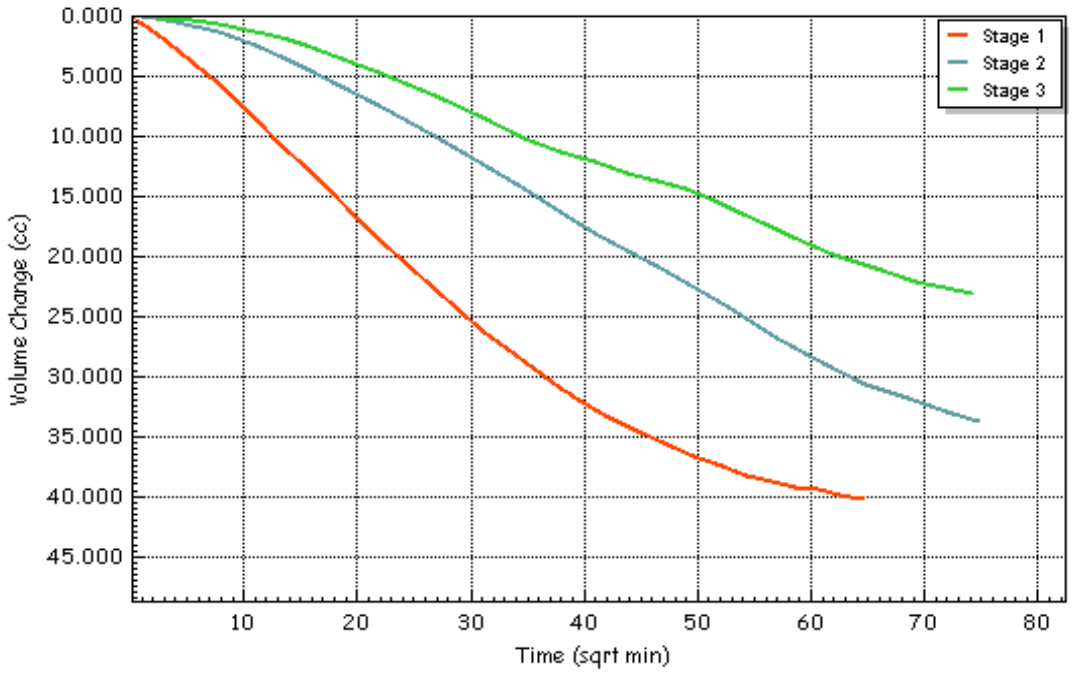
**Initial Conditions**

| | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_3$ | (kPa) | 800 | 900 | 1000 |
| Initial Back Pressure | $u_{bi}$ | (kPa) | 700 | 700 | 700 |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | 773 | 794 | 824 |
| Drainage Method | | | Radial+One End | | |

**Final Conditions**

| | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| PWP Dissipation % | U% | (%) | 95.89 | 95.74 | 95.16 |
| Volumetric Strain | $\varepsilon_v$% | (%) | 2.23 | 4.11 | 5.39 |
| Corrected Length | $L_C$ | (mm) | 209.5 | 196.1 | 184.9 |
| Corrected Area | $A_C$ | (cm2) | 84.04 | 86.05 | 88.24 |
| Corrected Volume | $V_C$ | (cc) | 1760.126 | 1726.398 | 1703.252 |
| T100 Time to Failure | $t_{100}$ | (min) | 1165.86 | 4586.79 | 4125.99 |
| Consolidation | $c_v$ | (m2/year) | 0.192 | 0.049 | 0.054 |
| Compressibility | $m_v$ | (m2/MN) | 0.319 | 0.456 | 0.457 |
| Test Time | $t_F$ | (h:m:s) | 272:02:02 | 1070:15:03 | 962:43:51 |
| Estimated Strain to Failure | $\varepsilon$% | (%) | 5.0 | 5.0 | 5.0 |
| Shear Machine Speed | $d_r$ | (mm/min) | 0.00425 | 0.00425 | 0.00425 |

**Notes**




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH132 10.30-10.60m |
| | | Test Date | 02/06/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH132 |
| | | Sample | CS113 |
| Client | Ground Technology | Depth | 10.30-10.60m |

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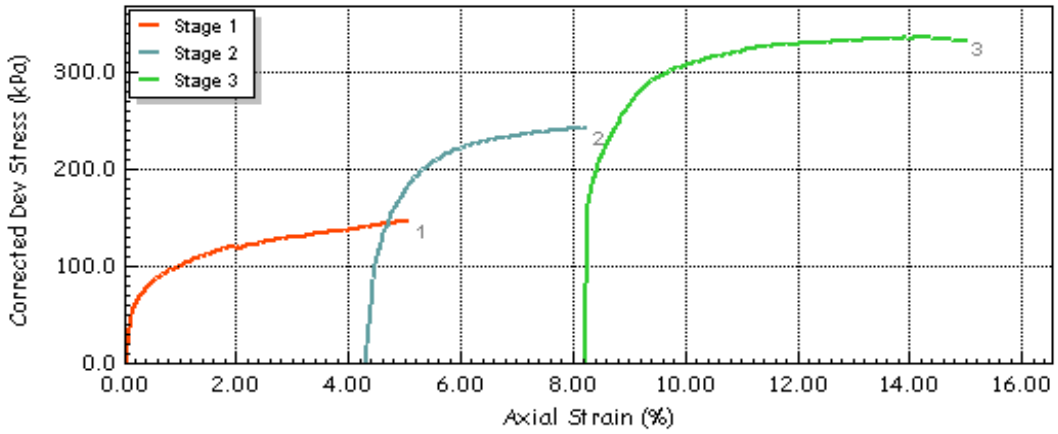
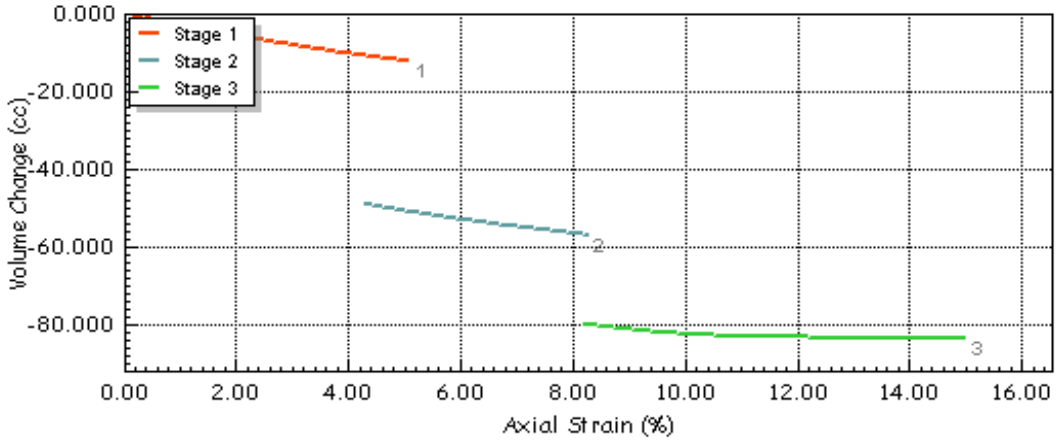
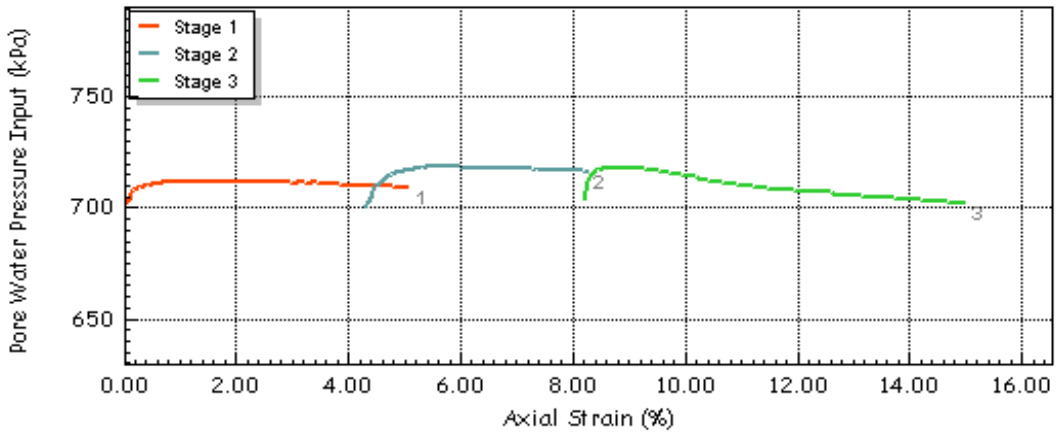
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**



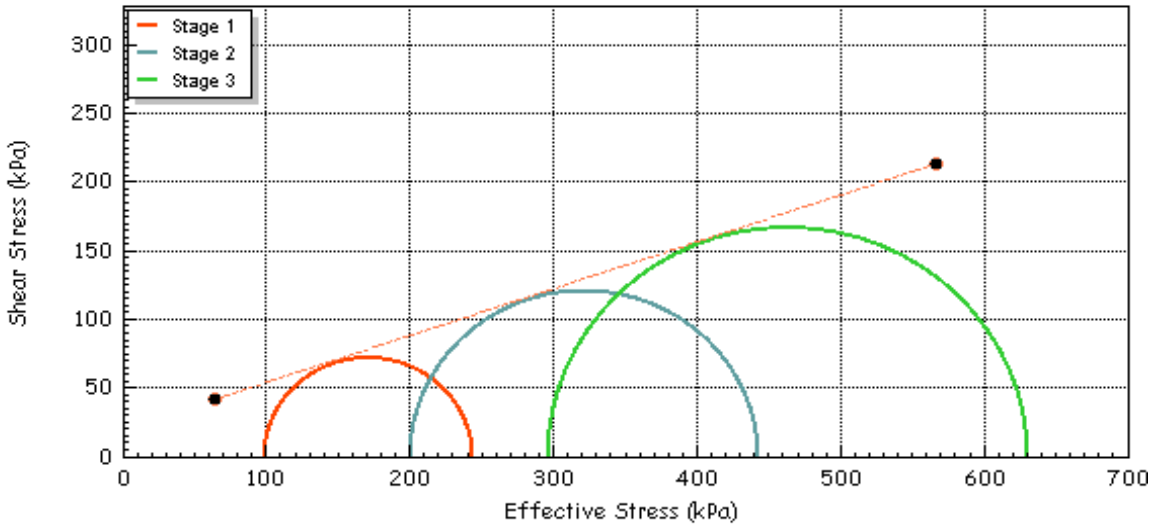

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH132 10.30-10.60m |
| | | Test Date | 02/06/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH132 |
| | | Sample | CS113 |
| Client | Ground Technology | Depth | 10.30-10.60m |

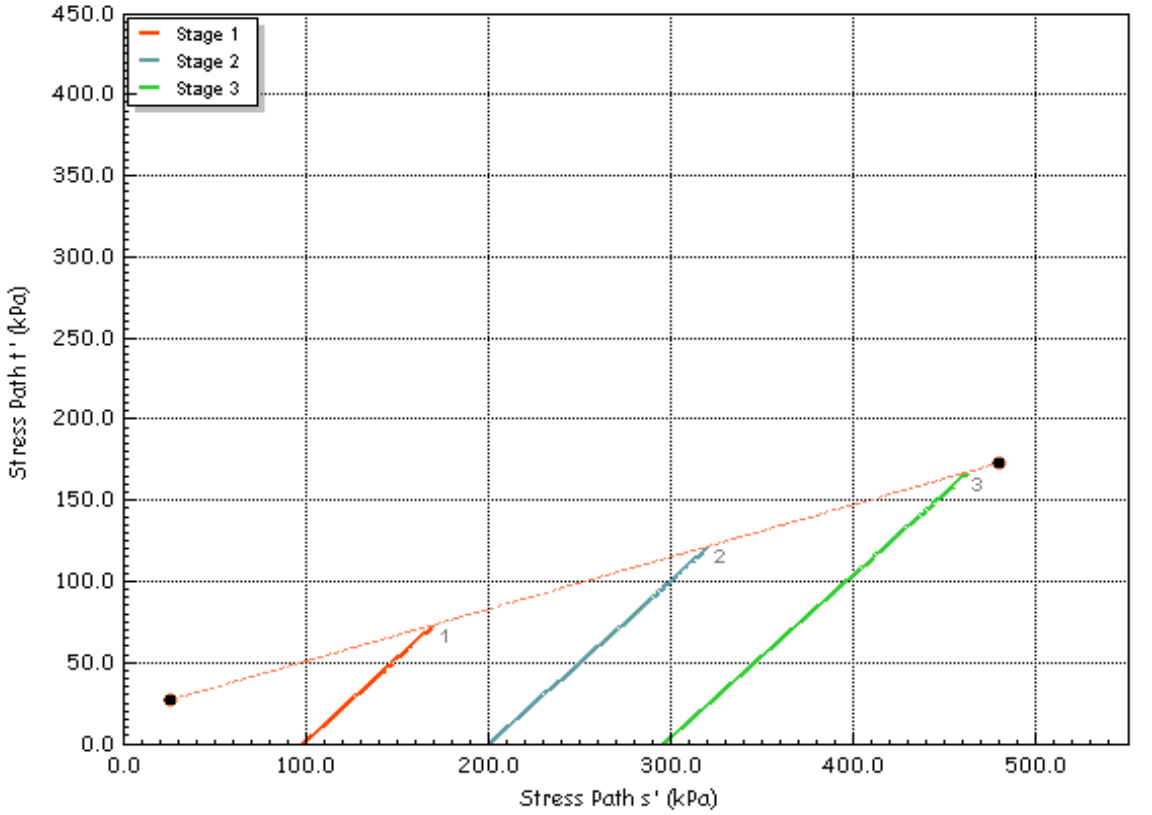
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Effective | c' | (kPa) | 19.93 | Effective Cohesion | c' | (kPa) | 19.93 |
| Effective Friction | ϕ' | (deg) | 18.8 | Effective Friction | ϕ' | (deg) | 18.8 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH132 10.30-10.60m |
| | | Test Date | 02/06/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH132 |
| | | Sample | CS113 |
| Client | Ground Technology | Depth | 10.30-10.60m |

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# Effective Stress Triaxial Compression

## Consolidated Undrained

**Summary Report**

| Sample Details | | | | |
|---|---|---|---|---|
| *sketch showing specimen location in original sample* | Depth | | 6.74-7.00m | |
| | Description | | See summary of soil descriptions. | |
| | Type | | Undisturbed, vertical orientation. | |
| | Initial Sample Length | $L_0$ | (mm) | 200.1 |
| | Initial Sample Diameter | $D_0$ | (mm) | 100.0 |
| | Initial Sample Weight | $W_0$ | (gr) | 3072.0 |
| | Initial Bulk Density | $\rho_0$ | (Mg/m3) | 1.95 |
| | Particle Density | $\rho_s$ | (Mg/m3) | 2.66 |

| **Initial Conditions** | | | Stage 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_{3i}$ | (kPa) | 1270 | 1340 | 1410 | |
| Initial Back Pressure | $U_{bi}$ | (kPa) | 1200 | 1200 | 1200 | |
| Membrane Thickness | $m_b$ | (mm) | 0.600 | | | |
| Displacement Input | $L_{IP}$ | (mm) | CH 2 | | | |
| Load Input | $N_{IP}$ | (N) | CH 1 | | | |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | CH 3 | | | |
| Sample Volume | $V$ | (cc) | CH 2 | | | |
| Initial Moisture | $\omega_i$ | (%) | 25 | | | |
| Initial Dry Density | $\rho_{di}$ | (Mg/m3) | 1.56 | | | |
| Initial Voids Ratio | $e_i$ | . | 0.708 | | | |
| Initial Degree of Saturation | $S_i$ | (%) | 96 | | | |
| B Value | B | . | 0.98 | | | |

| **Final Conditions** | | | | | | |
|---|---|---|---|---|---|---|
| Final Moisture | $\omega_f$ | (%) | 26 | | | |
| Final Dry Density | $\rho_{df}$ | (Mg/m3) | 1.68 | | | |
| Final Voids Ratio | $e_f$ | . | 0.584 | | | |
| Final Degree of Saturation | $S_f$ | (%) | 100.0 | | | |
| | | | Stage 1 | 2 | 3 | 4 |
| Failure Criteria | | . | Max. Dev. Stress | Max. Dev. Stress | Max. Dev. Stress | |
| Strain At Failure | $\varepsilon_f$ | (%) | 1.95 | 5.14 | 7.97 | |
| Stress At Failure | $(\sigma_1-\sigma_3)$ | (kPa) | 68.6 | 127.3 | 182.7 | |
| Minor Stress At Failure | $\sigma_3'$ | (kPa) | 45.0 | 103.0 | 156.0 | |
| Major Stress At Failure | $\sigma_1'$ | (kPa) | 113.6 | 230.3 | 338.7 | |
| Principal Stress Ratio At Failure | $\sigma_1'/\sigma_3'$ | | 2.525 | 2.236 | 2.171 | |

**Notes**

*Brittle*

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 7 | Test Name | BH133 6.74-7.00m CS106 |
| | | Test Date | 30/05/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH133 |
| | | Sample | 6.74-7.00m |
| Client | Ground Technology | Depth | 6.74-7.00m |

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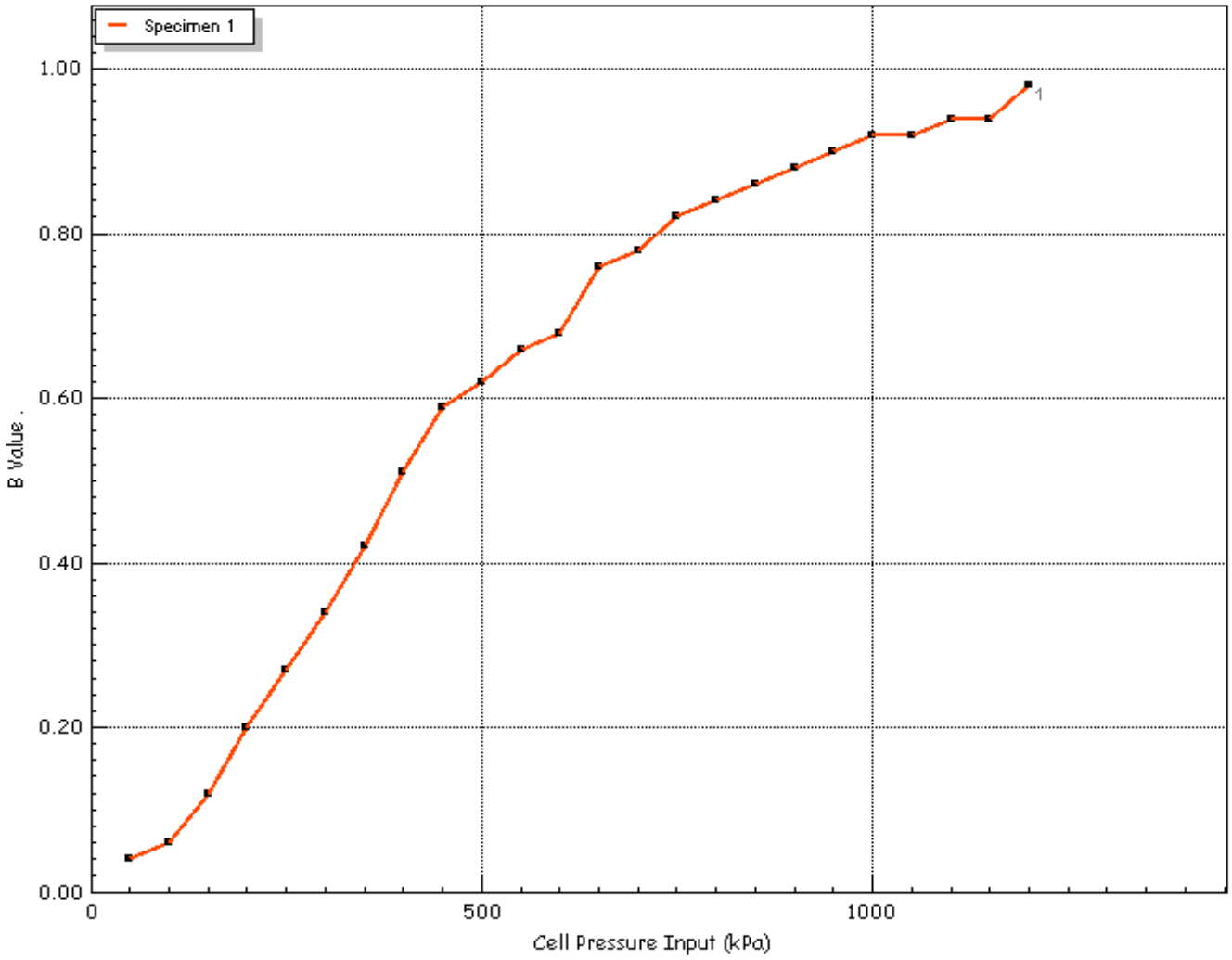
PSL Professional Soils Laboratory

# Effective Stress Triaxial Compression

## Consolidated Undrained

**Saturation Plots**

| | | | |
|---|---|---|---|
| Saturation Method | | | Stepped |
| Cell Pressure Input | σ | (kPa) | 1200 |
| Pore Water Pressure Input | u pwp | (kPa) | 1180 |
| B Value | B | . | 0.98 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 7 | Test Name | BH133 6.74-7.00m CS106 |
| | | Test Date | 30/05/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH133 |
| | | Sample | 6.74-7.00m |
| Client | Ground Technology | Depth | 6.74-7.00m |

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# Effective Stress Triaxial Compression

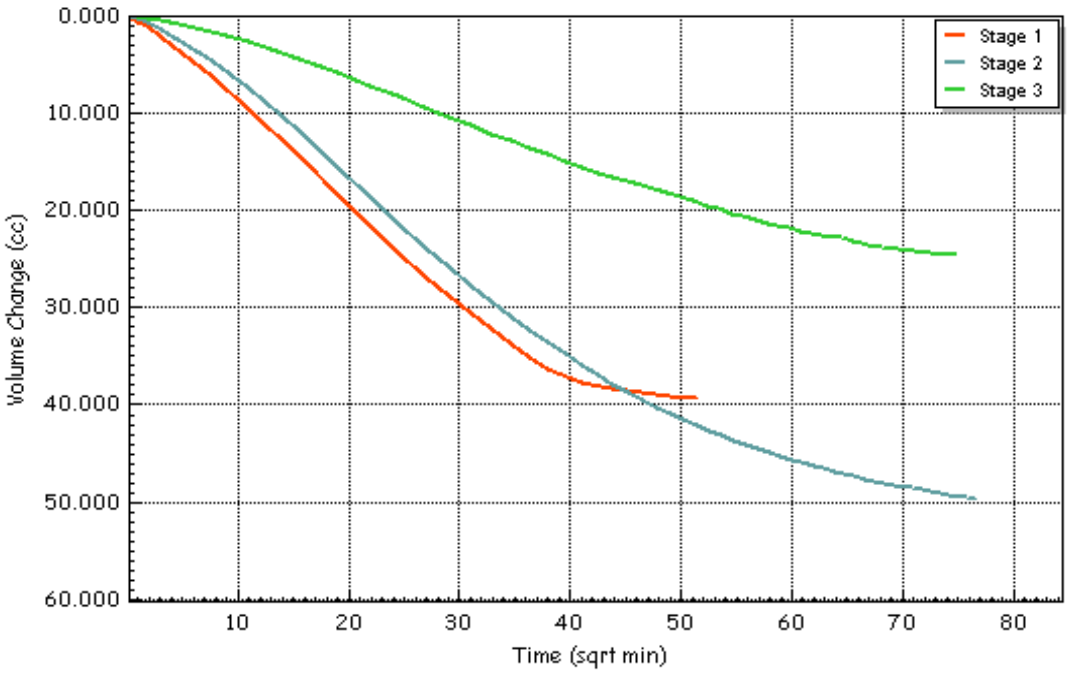
## Consolidated Undrained

**Consolidation Plots**

| **Initial Conditions** | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_3$ | (kPa) | 1270 | 1340 | 1410 |
| Initial Back Pressure | $u_{bi}$ | (kPa) | 1200 | 1200 | 1200 |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | 1251 | 1281 | 1281 |
| Drainage Method | | | Radial+One End | | |

| **Final Conditions** | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| PWP Dissipation % | U% | (%) | 100.00 | 100.00 | 95.06 |
| Volumetric Strain | $\varepsilon_v$% | (%) | 2.50 | 3.16 | 1.57 |
| Corrected Length | $L_C$ | (mm) | 198.4 | 192.3 | 184.8 |
| Corrected Area | $A_C$ | (cm2) | 77.23 | 77.14 | 78.89 |
| Corrected Volume | $V_C$ | (cc) | 1532.349 | 1482.679 | 1458.078 |
| t100 | $t_{100}$ | (min) | 1189.27 | 2614.26 | 27.84 |
| Consolidation | $c_v$ | (m2/year) | 0.174 | 0.079 | 7.417 |
| Compressibility | $m_v$ | (m2/MN) | 0.489 | 0.390 | 0.203 |
| Test Time | $t_F$ | (h:m:s) | 35:40:41 | 78:25:40 | 02:00:00 |
| Estimated Strain to Failure | $\varepsilon$% | (%) | 5.0 | 5.0 | 5.0 |
| Shear Machine Speed | $d_r$ | (mm/min) | 0.00463 | 0.00463 | 0.00463 |

**Notes**




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 7 | Test Name | BH133 6.74-7.00m CS106 |
| | | Test Date | 30/05/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH133 |
| | | Sample | 6.74-7.00m |
| Client | Ground Technology | Depth | 6.74-7.00m |

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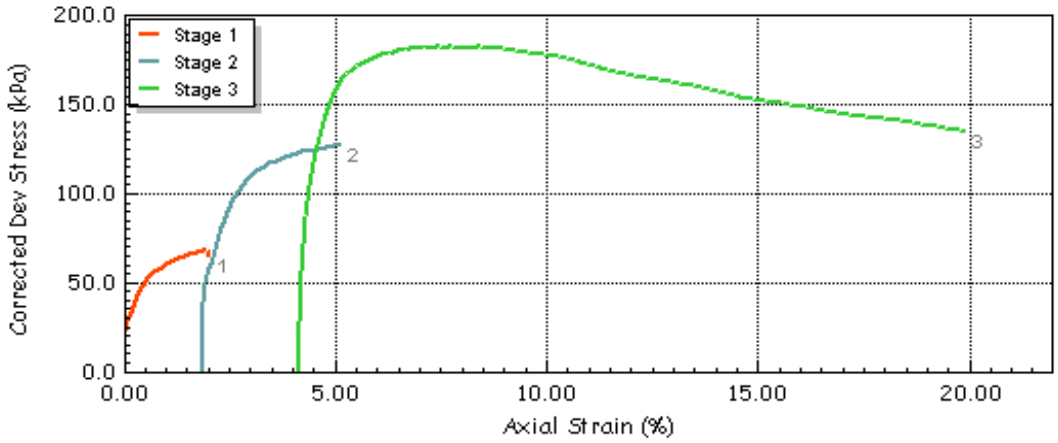
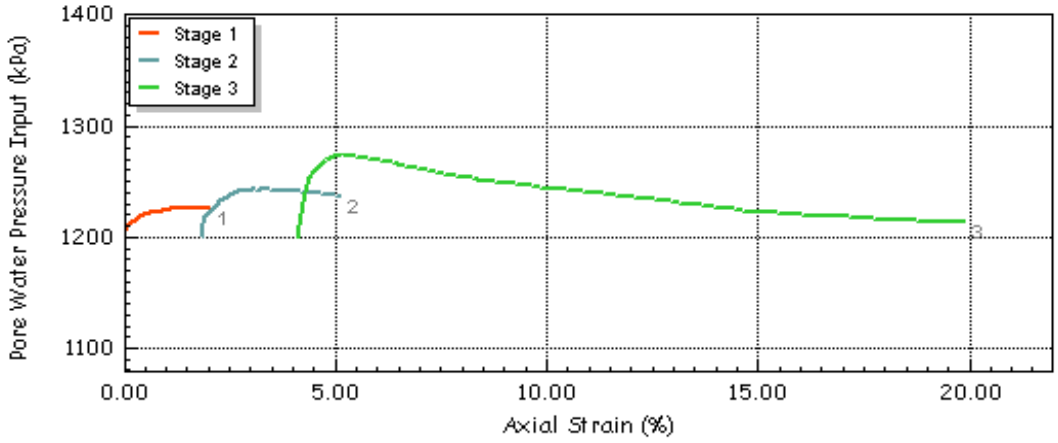
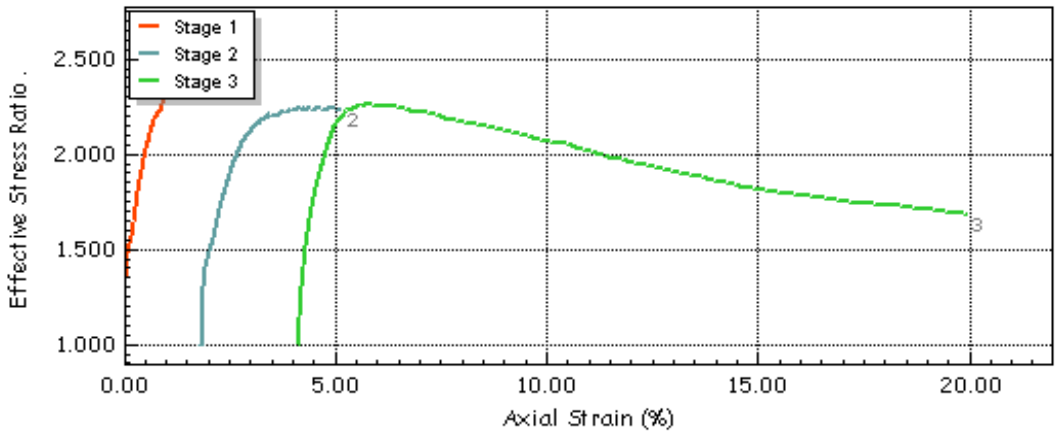
# Effective Stress Triaxial Compression

## Consolidated Undrained

**Shear Stage Plots**



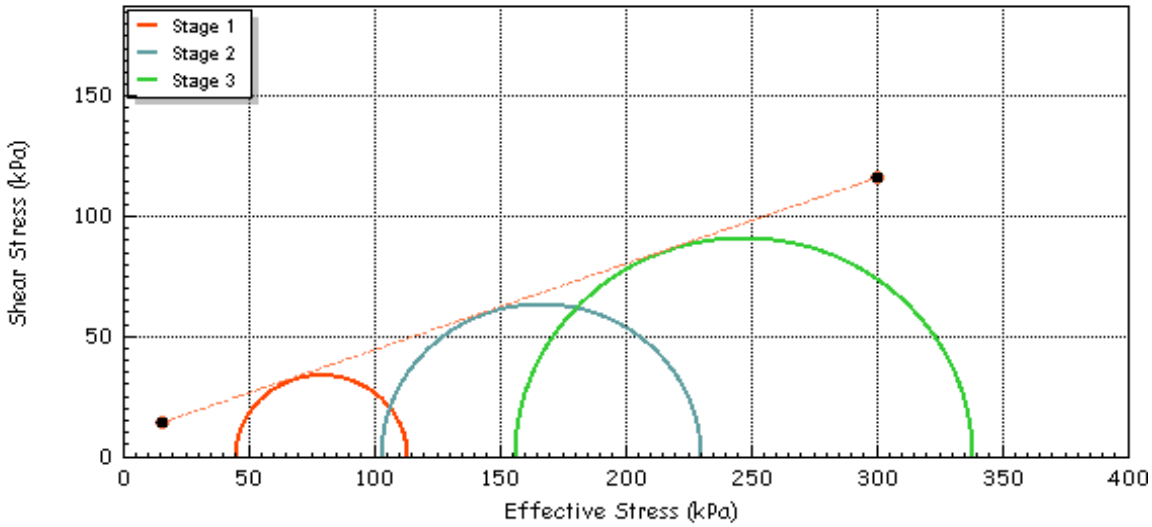

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 7 | Test Name | BH133 6.74-7.00m CS106 |
| | | Test Date | 30/05/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH133 |
| | | Sample | 6.74-7.00m |
| Client | Ground Technology | Depth | 6.74-7.00m |

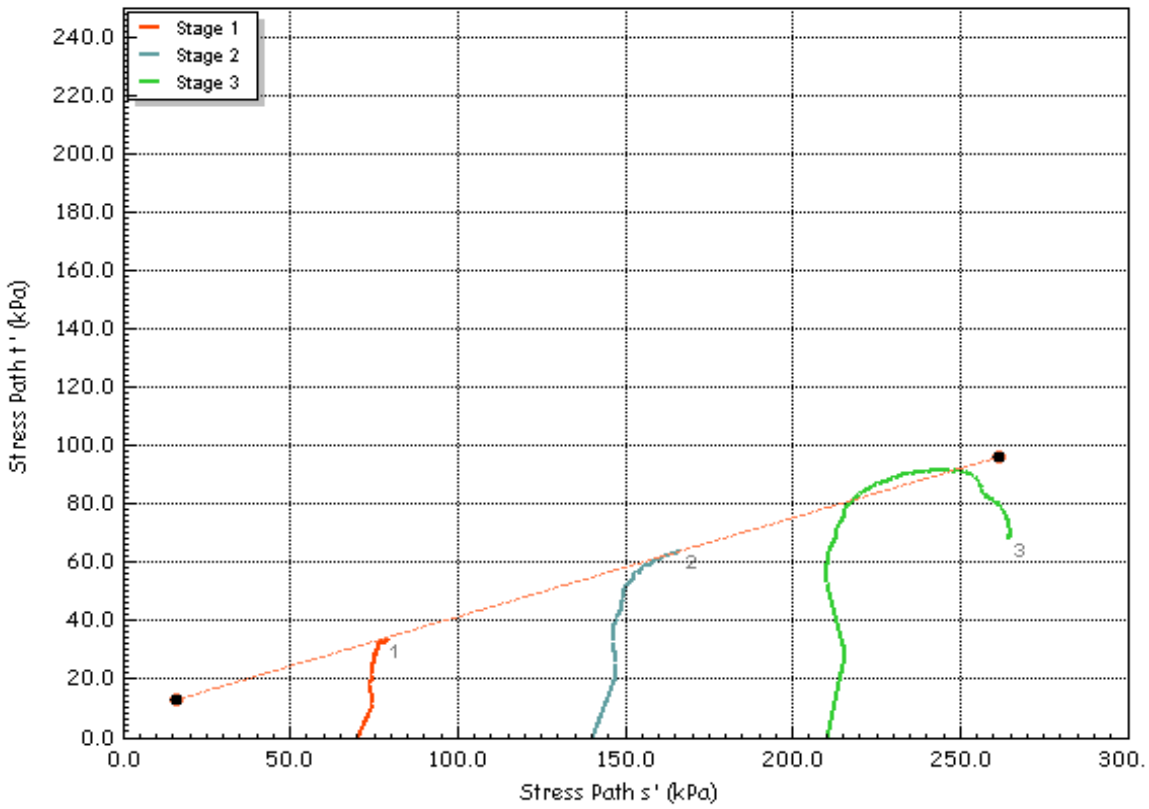
# Effective Stress Triaxial Compression

## Consolidated Undrained

**Shear Stage Plots**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Effective | c' | (kPa) | 8.29 | Effective Cohesion | c' | (kPa) | 8.29 |
| Effective Friction | ϕ' | (deg) | 19.7 | Effective Friction | ϕ' | (deg) | 19.7 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 7 | Test Name | BH133 6.74-7.00m CS106 |
| | | Test Date | 30/05/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH133 |
| | | Sample | 6.74-7.00m |
| Client | Ground Technology | Depth | 6.74-7.00m |

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# Effective Stress Triaxial Compression

## Consolidated Drained

**Summary Report**

| Sample Details | | | | |
|---|---|---|---|---|
| *sketch showing specimen location in original sample* | Depth | | 11.60-11.78m | |
| | Description | | See summary of soil descriptions. | |
| | Type | | Undisturbed, vertical orientation. | |
| | Initial Sample Length | $L_0$ | (mm) | 200.1 |
| | Initial Sample Diameter | $D_0$ | (mm) | 100.0 |
| | Initial Sample Weight | $W_0$ | (gr) | 3075.0 |
| | Initial Bulk Density | $\rho_0$ | (Mg/m3) | 1.96 |
| | Particle Density | $\rho_s$ | (Mg/m3) | 2.66 |

| **Initial Conditions** | | | Stage 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_{3i}$ | (kPa) | 720 | 840 | 960 | |
| Initial Back Pressure | $U_{bi}$ | (kPa) | 600 | 600 | 600 | |
| Membrane Thickness | $m_b$ | (mm) | 0.600 | | | |
| Displacement Input | $L_{IP}$ | (mm) | CH 2 | | | |
| Load Input | $N_{IP}$ | (N) | CH 4 | | | |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | CH 3 | | | |
| Sample Volume | $V$ | (cc) | CH 6 | | | |
| Initial Moisture | $\omega_i$ | (%) | 26 | | | |
| Initial Dry Density | $\rho_{di}$ | (Mg/m3) | 1.55 | | | |
| Initial Voids Ratio | $e_i$ | . | 0.718 | | | |
| Initial Degree of Saturation | $S_i$ | (%) | 98 | | | |
| B Value | $B$ | . | 0.96 | | | |

| **Final Conditions** | | | | | | |
|---|---|---|---|---|---|---|
| Final Moisture | $\omega_f$ | (%) | 27 | | | |
| Final Dry Density | $\rho_{df}$ | (Mg/m3) | 1.55 | | | |
| Final Voids Ratio | $e_f$ | . | 0.711 | | | |
| Final Degree of Saturation | $S_f$ | (%) | 100.0 | | | |
| | | | Stage 1 | 2 | 3 | 4 |
| Failure Criteria | | . | Max. Dev. Stress | Max. Dev. Stress | Max. Dev. Stress | |
| Strain At Failure | $\varepsilon_f$ | (%) | 4.80 | 12.63 | 19.96 | |
| Stress At Failure | $(\sigma_1-\sigma_3)$ | (kPa) | 181.6 | 305.2 | 429.5 | |
| Minor Stress At Failure | $\sigma_3'$ | (kPa) | 121.0 | 241.0 | 360.0 | |
| Major Stress At Failure | $\sigma_1'$ | (kPa) | 302.6 | 546.2 | 789.5 | |
| Principal Stress Ratio At Failure | $\sigma_1'/\sigma_3'$ | | 2.501 | 2.266 | 2.193 | |

**Notes**

*Plastic*

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH105 11.60-11.78m CS112 |
| | | Test Date | 26/05/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH105 |
| | | Sample | 11.60-11.78m CS112 |
| Client | Ground Technology | Depth | 11.60-11.78m |

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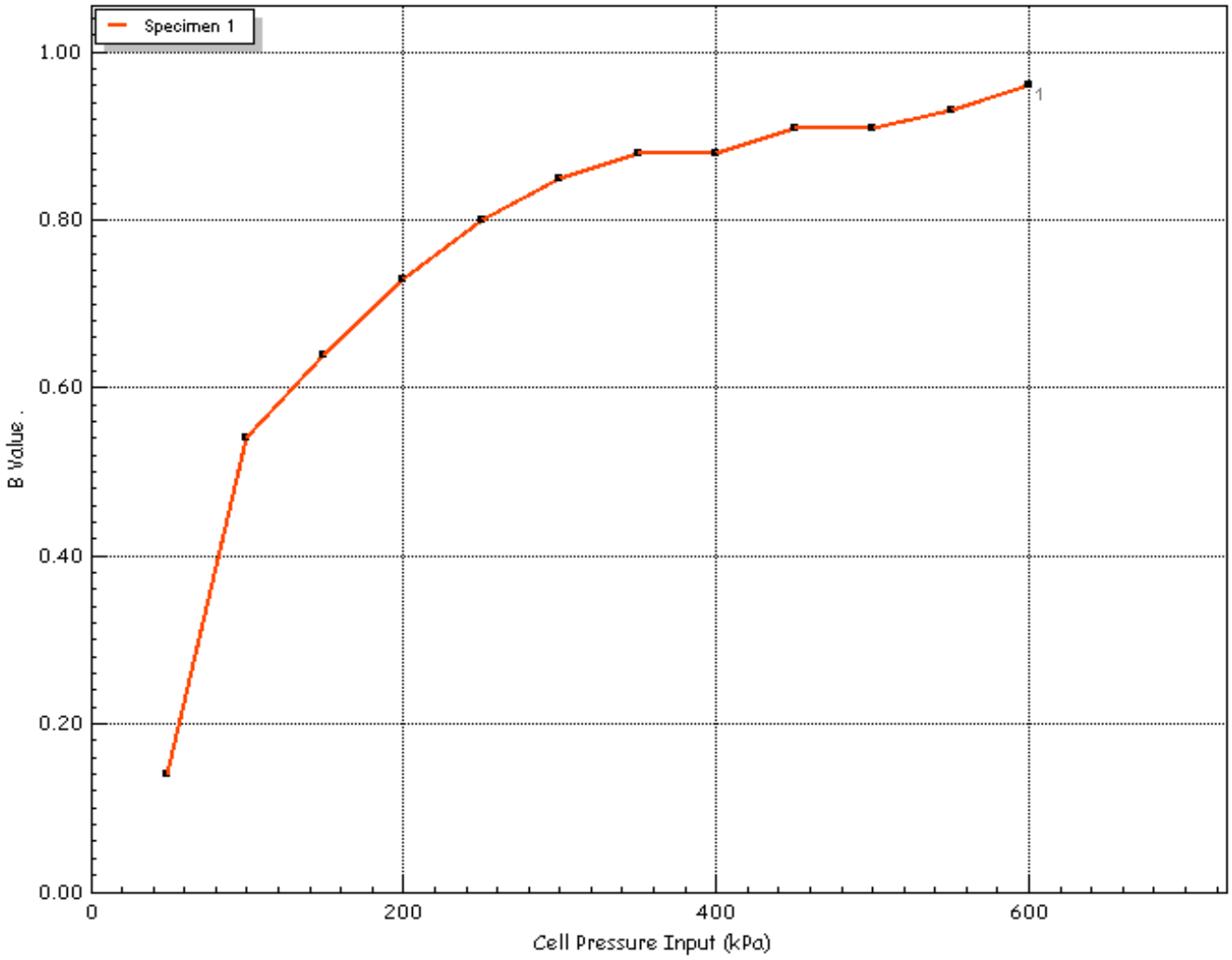
# Effective Stress Triaxial Compression

## Consolidated Drained

**Saturation Plots**

| | | | |
|---|---|---|---|
| Saturation Method | | | Stepped |
| Cell Pressure Input | σ | (kPa) | 600 |
| Pore Water Pressure Input | u pwp | (kPa) | 586 |
| B Value | B | . | 0.96 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH105 11.60-11.78m CS112 |
| | | Test Date | 26/05/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH105 |
| | | Sample | 11.60-11.78m CS112 |
| Client | Ground Technology | Depth | 11.60-11.78m |

# Effective Stress Triaxial Compression

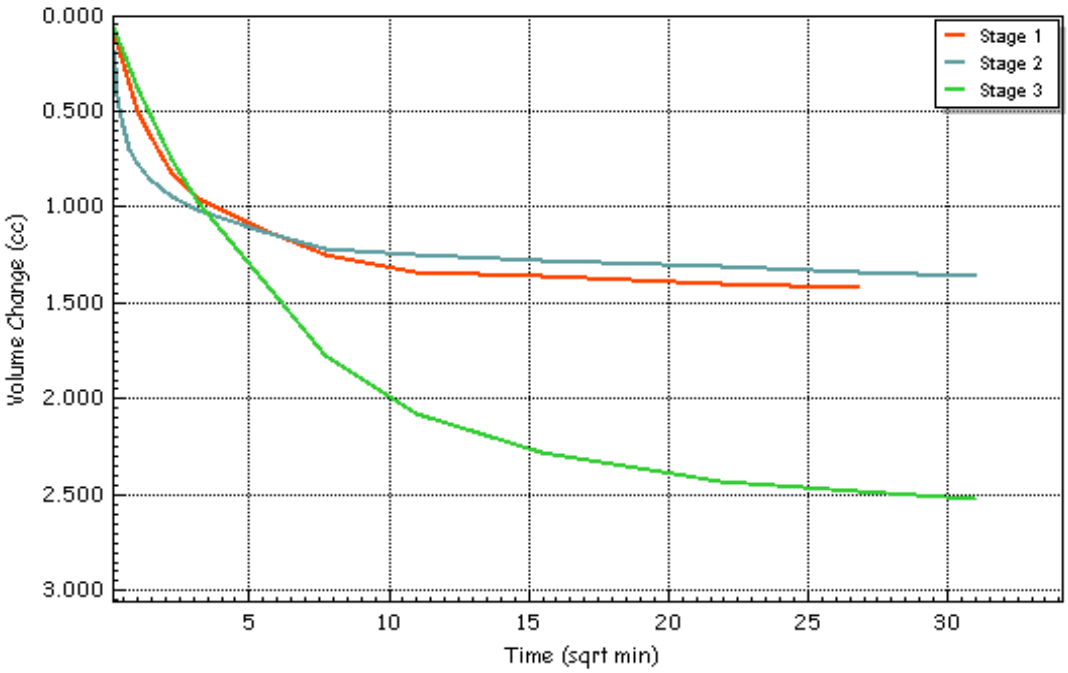
## Consolidated Drained

**Consolidation Plots**

| **Initial Conditions** | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_3$ | (kPa) | 720 | 840 | 960 |
| Initial Back Pressure | $u_{bi}$ | (kPa) | 600 | 600 | 600 |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | 682 | 812 | 914 |
| Drainage Method | | | Radial+One End | | |

| **Final Conditions** | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| PWP Dissipation % | U% | (%) | 100.00 | 100.00 | 100.00 |
| Volumetric Strain | $\varepsilon_v$% | (%) | 0.09 | 0.18 | 0.34 |
| Corrected Length | $L_C$ | (mm) | 200.0 | 190.0 | 173.4 |
| Corrected Area | $A_C$ | (cm2) | 78.49 | 82.48 | 90.16 |
| Corrected Volume | $V_C$ | (cc) | 1570.164 | 1568.802 | 1566.279 |
| T100 Time to Failure | $t_{100}$ | (min) | 16.03 | 60.66 | 71.23 |
| Consolidation | $c_V$ | (m2/year) | 12.882 | 3.404 | 2.899 |
| Compressibility | $m_V$ | (m2/MN) | 0.011 | 0.008 | 0.011 |
| Test Time | $t_F$ | (h:m:s) | 03:44:25 | 14:09:14 | 16:37:13 |
| Estimated Strain to Failure | $\varepsilon$% | (%) | 5.0 | 5.0 | 5.0 |
| Shear Machine Speed | $d_r$ | (mm/min) | 0.04457 | 0.04457 | 0.04457 |

**Notes**




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH105 11.60-11.78m CS112 |
| | | Test Date | 26/05/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH105 |
| | | Sample | 11.60-11.78m CS112 |
| Client | Ground Technology | Depth | 11.60-11.78m |

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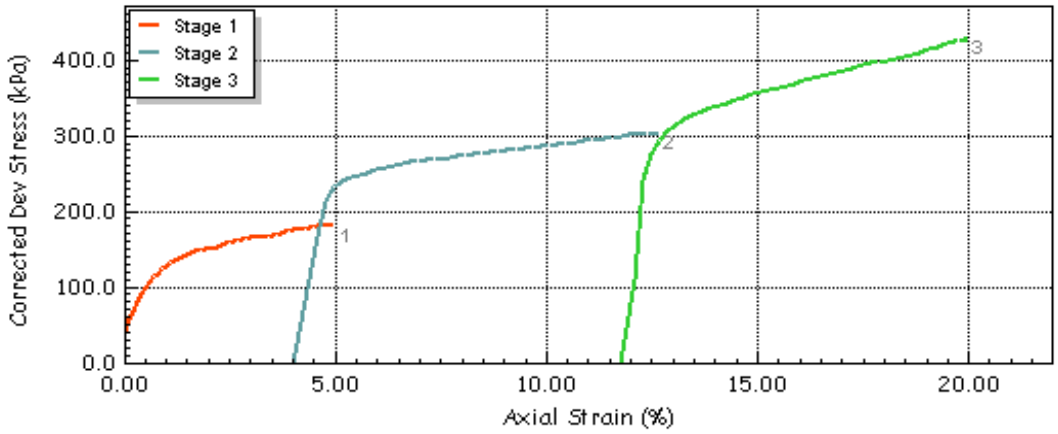
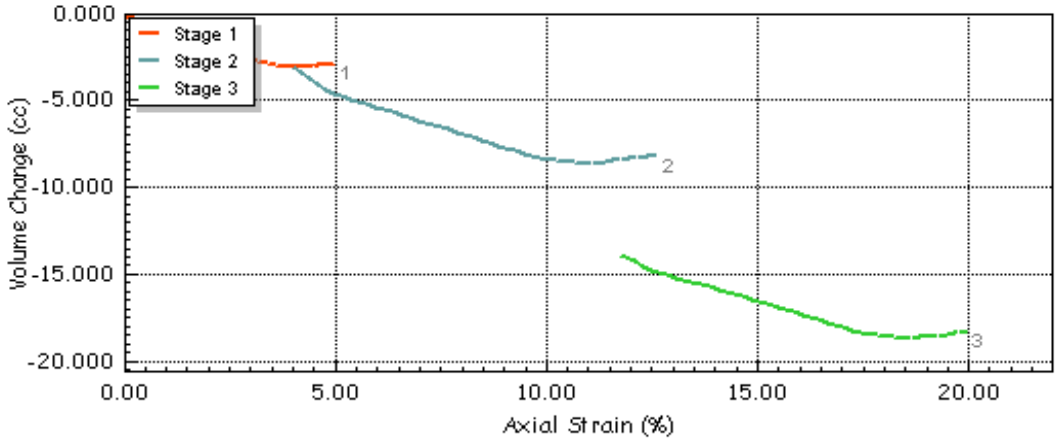
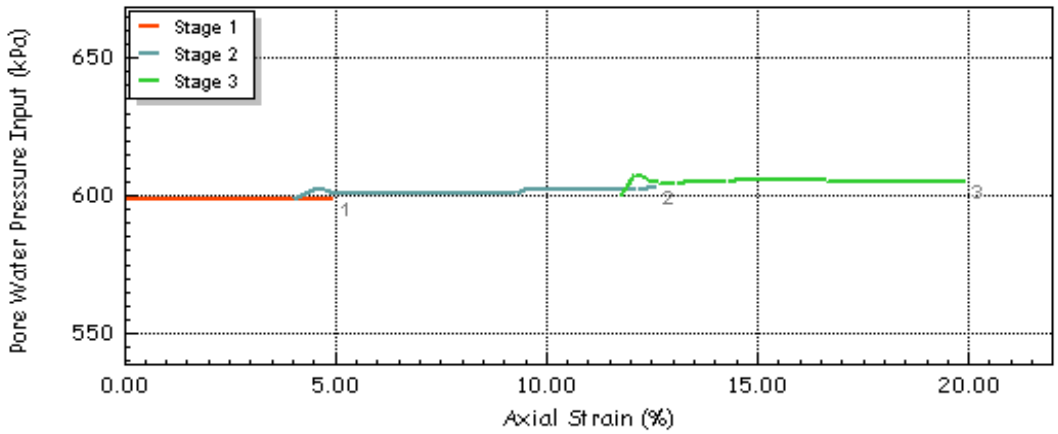
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**



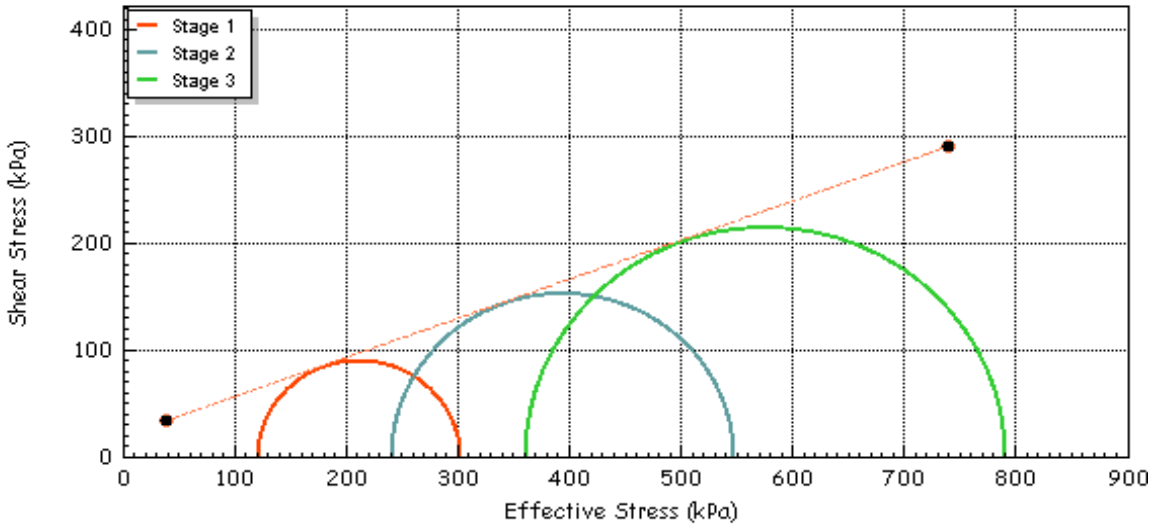

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH105 11.60-11.78m CS112 |
| | | Test Date | 26/05/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH105 |
| | | Sample | 11.60-11.78m CS112 |
| Client | Ground Technology | Depth | 11.60-11.78m |

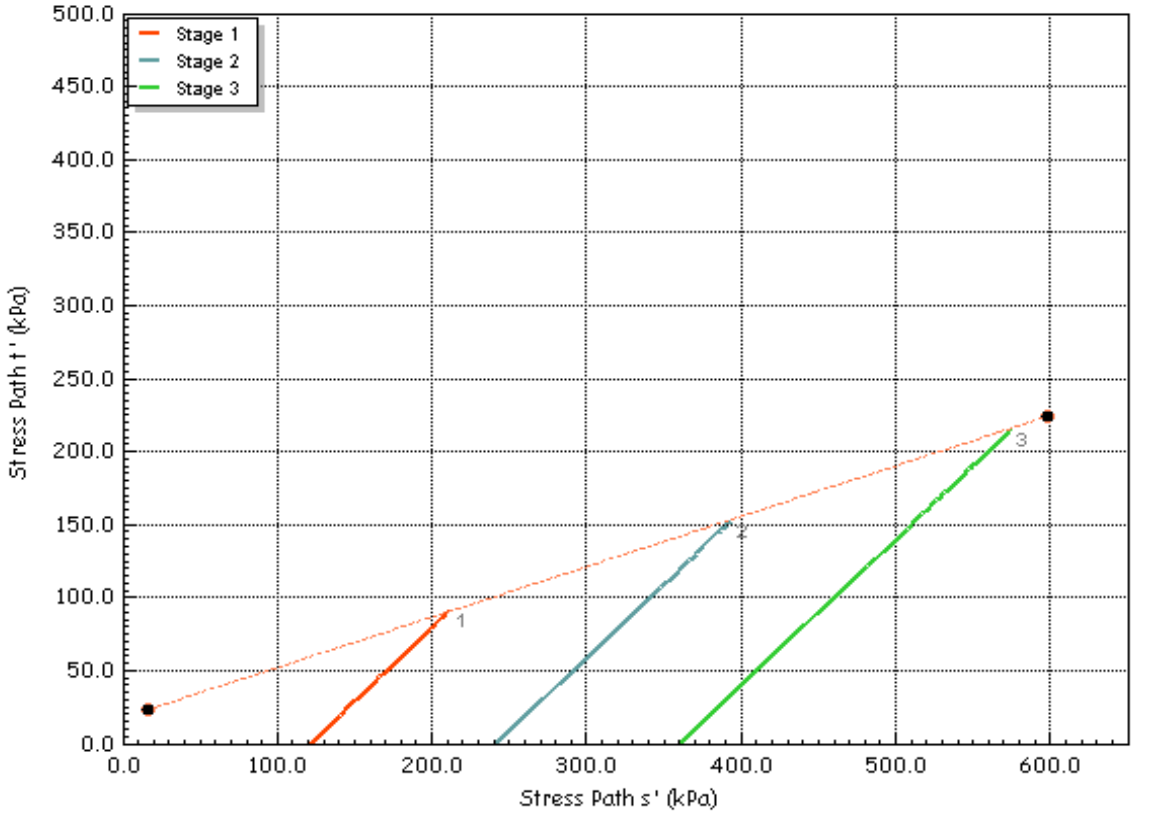
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Effective | c' | (kPa) | 18.88 | Effective Cohesion | c' | (kPa) | 18.88 |
| Effective Friction | ϕ' | (deg) | 20.2 | Effective Friction | ϕ' | (deg) | 20.2 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH105 11.60-11.78m CS112 |
| | | Test Date | 26/05/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH105 |
| | | Sample | 11.60-11.78m CS112 |
| Client | Ground Technology | Depth | 11.60-11.78m |

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# Effective Stress Triaxial Compression

## Consolidated Drained

**Summary Report**

| Sample Details | | | | |
|---|---|---|---|---|
| *sketch showing specimen location in original sample* | Depth | | | 15.18-15.50m |
| | Description | | | See summary of soil descriptions. |
| | Type | | | Undisturbed, vertical orientation. |
| | Initial Sample Length | $L_0$ | (mm) | 211.5 |
| | Initial Sample Diameter | $D_0$ | (mm) | 102.5 |
| | Initial Sample Weight | $W_0$ | (gr) | 3559.0 |
| | Initial Bulk Density | $\rho_0$ | (Mg/m3) | 2.04 |
| | Particle Density | $\rho_s$ | (Mg/m3) | 2.66 |

| **Initial Conditions** | | | Stage 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_{3i}$ | (kPa) | 600 | 750 | 900 | |
| Initial Back Pressure | $U_{bi}$ | (kPa) | 450 | 450 | 450 | |
| Membrane Thickness | $m_b$ | (mm) | 0.600 | | | |
| Displacement Input | $L_{IP}$ | (mm) | CH 2 | | | |
| Load Input | $N_{IP}$ | (N) | CH 4 | | | |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | CH 3 | | | |
| Sample Volume | $V$ | (cc) | CH 6 | | | |
| Initial Moisture | $\omega_i$ | (%) | 20 | | | |
| Initial Dry Density | $\rho_{di}$ | (Mg/m3) | 1.70 | | | |
| Initial Voids Ratio | $e_i$ | . | 0.561 | | | |
| Initial Degree of Saturation | $S_i$ | (%) | 93 | | | |
| B Value | $B$ | . | 0.95 | | | |

| **Final Conditions** | | | | | | |
|---|---|---|---|---|---|---|
| Final Moisture | $\omega_f$ | (%) | 19 | | | |
| Final Dry Density | $\rho_{df}$ | (Mg/m3) | 1.76 | | | |
| Final Voids Ratio | $e_f$ | . | 0.514 | | | |
| Final Degree of Saturation | $S_f$ | (%) | 97.5 | | | |
| | | | Stage 1 | 2 | 3 | 4 |
| Failure Criteria | | . | Max. Dev. Stress | Max. Dev. Stress | Max. Dev. Stress | |
| Strain At Failure | $\varepsilon_f$ | (%) | 3.12 | 5.37 | 7.08 | |
| Stress At Failure | $(\sigma_1-\sigma_3)$ | (kPa) | 157.5 | 277.1 | 392.1 | |
| Minor Stress At Failure | $\sigma_3'$ | (kPa) | 151.0 | 299.0 | 443.0 | |
| Major Stress At Failure | $\sigma_1'$ | (kPa) | 308.5 | 576.1 | 835.1 | |
| Principal Stress Ratio At Failure | $\sigma_1'/\sigma_3'$ | | 2.043 | 1.927 | 1.885 | |

**Notes**

*Brittle*

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH105 15.18-15.50m CS115 |
| | | Test Date | 27/05/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH105 |
| | | Sample | 15.18-15.50m CS115 |
| Client | Ground Technology | Depth | 15.18-15.50m |

UKAS TESTING 4043

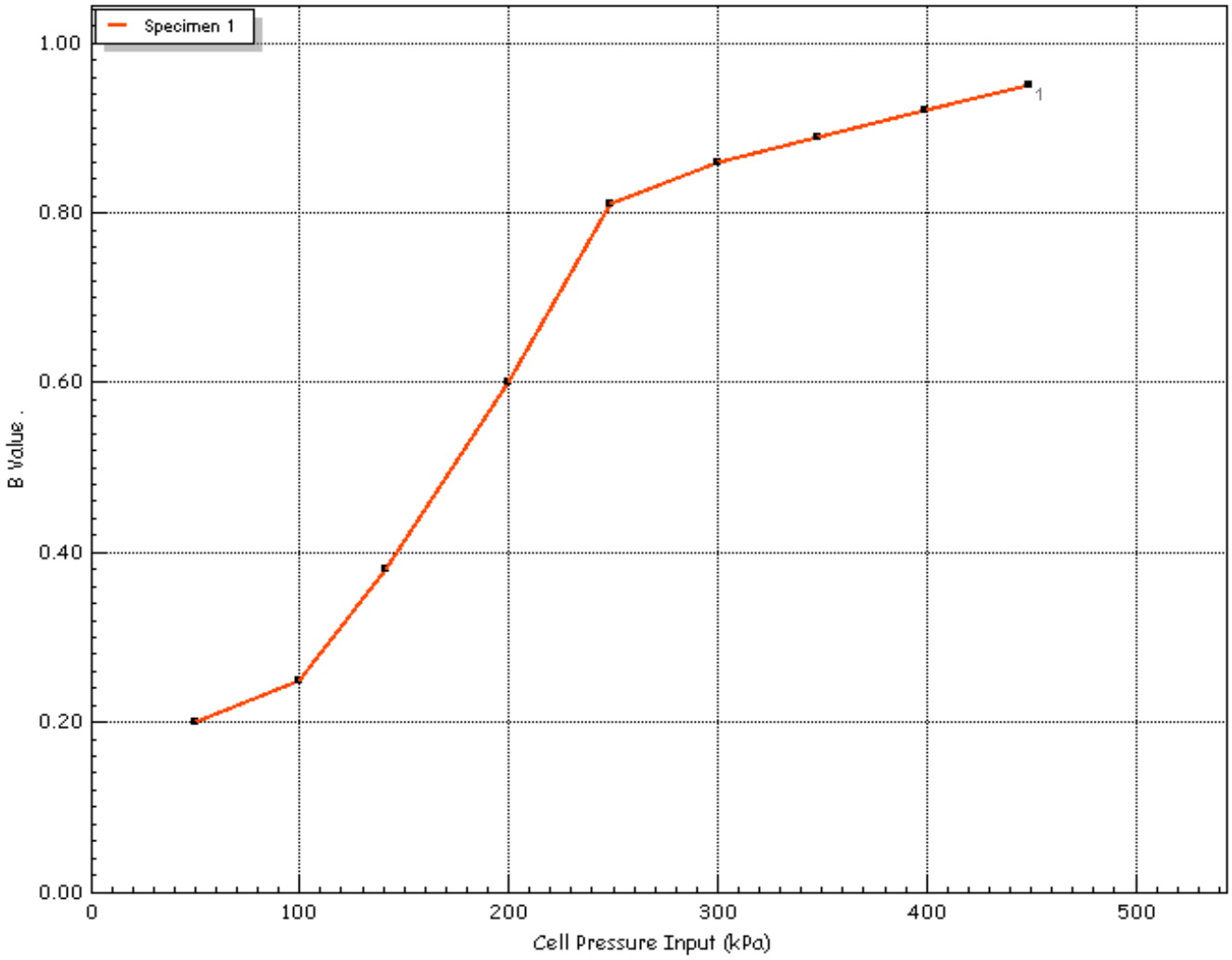
PSL Physical Soils Laboratory

# Effective Stress Triaxial Compression

## Consolidated Drained

**Saturation Plots**

| | | | |
|---|---|---|---|
| Saturation Method | | | Stepped |
| Cell Pressure Input | σ | (kPa) | 449 |
| Pore Water Pressure Input | u pwp | (kPa) | 425 |
| B Value | B | . | 0.95 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH105 15.18-15.50m CS115 |
| | | Test Date | 27/05/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH105 |
| | | Sample | 15.18-15.50m CS115 |
| Client | Ground Technology | Depth | 15.18-15.50m |

UKAS TESTING 4043

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# Effective Stress Triaxial Compression

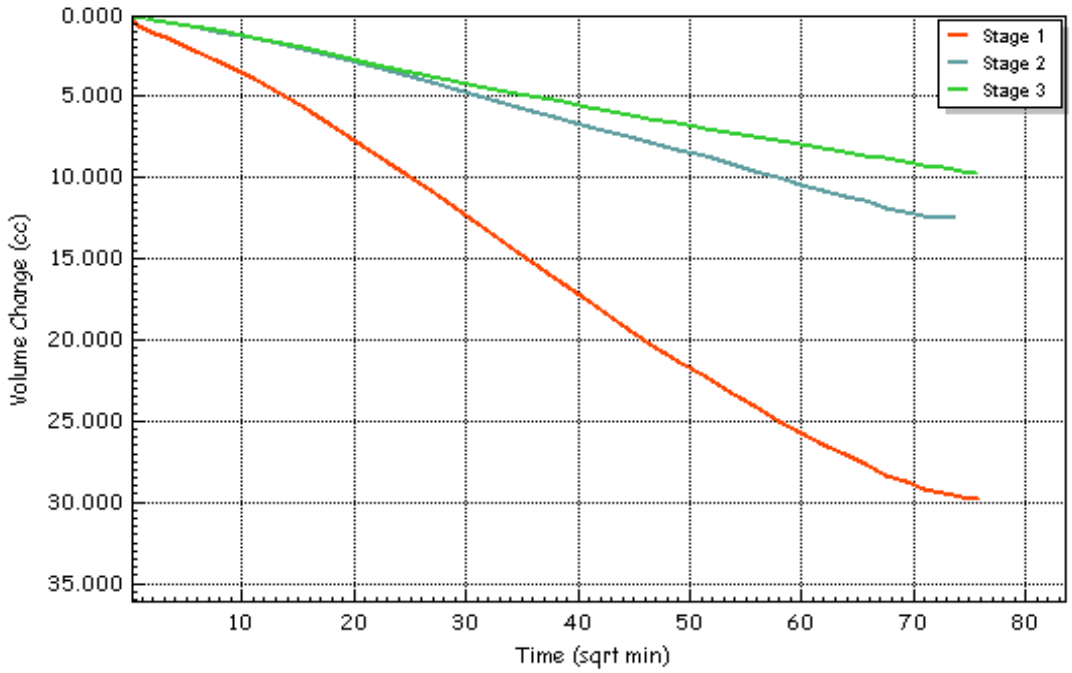
## Consolidated Drained

**Consolidation Plots**

| **Initial Conditions** | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_3$ | (kPa) | 600 | 750 | 900 |
| Initial Back Pressure | $u_{bi}$ | (kPa) | 450 | 450 | 451 |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | 573 | 632 | 872 |
| Drainage Method | | | Radial+One End | | |

| **Final Conditions** | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| PWP Dissipation % | U% | (%) | 95.95 | 95.60 | 95.96 |
| Volumetric Strain | $\varepsilon_v$% | (%) | 1.71 | 2.42 | 2.98 |
| Corrected Length | $L_C$ | (mm) | 210.3 | 201.9 | 196.2 |
| Corrected Area | $A_C$ | (cm2) | 81.58 | 82.90 | 84.18 |
| Corrected Volume | $V_C$ | (cc) | 1715.401 | 1702.916 | 1693.195 |
| T100 Time to Failure | $t_{100}$ | (min) | 4525.31 | 5043.22 | 4210.75 |
| Consolidation | $c_v$ | (m2/year) | 0.048 | 0.043 | 0.052 |
| Compressibility | $m_v$ | (m2/MN) | 0.144 | 0.139 | 0.074 |
| Test Time | $t_F$ | (h:m:s) | 1055:54:20 | 1176:45:05 | 982:30:30 |
| Estimated Strain to Failure | $\varepsilon$% | (%) | 5.0 | 5.0 | 5.0 |
| Shear Machine Speed | $d_r$ | (mm/min) | 0.00452 | 0.00452 | 0.00452 |

**Notes**




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH105 15.18-15.50m CS115 |
| | | Test Date | 27/05/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH105 |
| | | Sample | 15.18-15.50m CS115 |
| Client | Ground Technology | Depth | 15.18-15.50m |

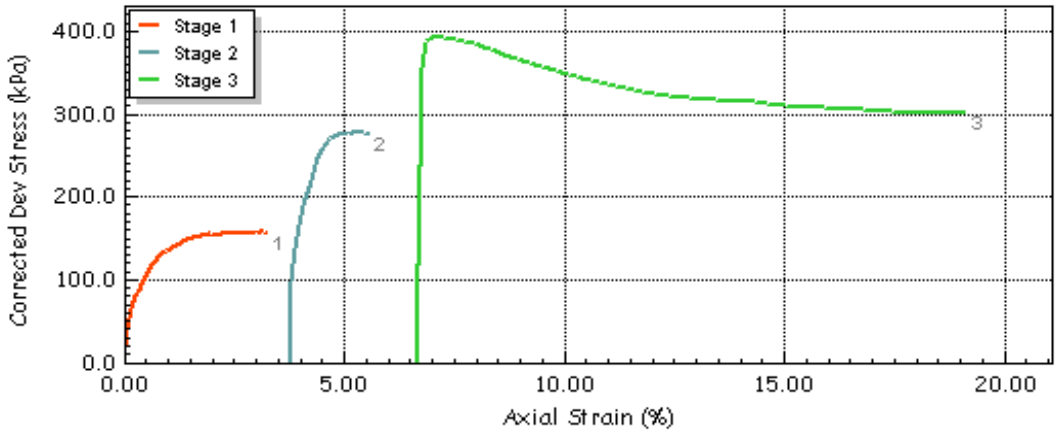
UKAS TESTING 4043

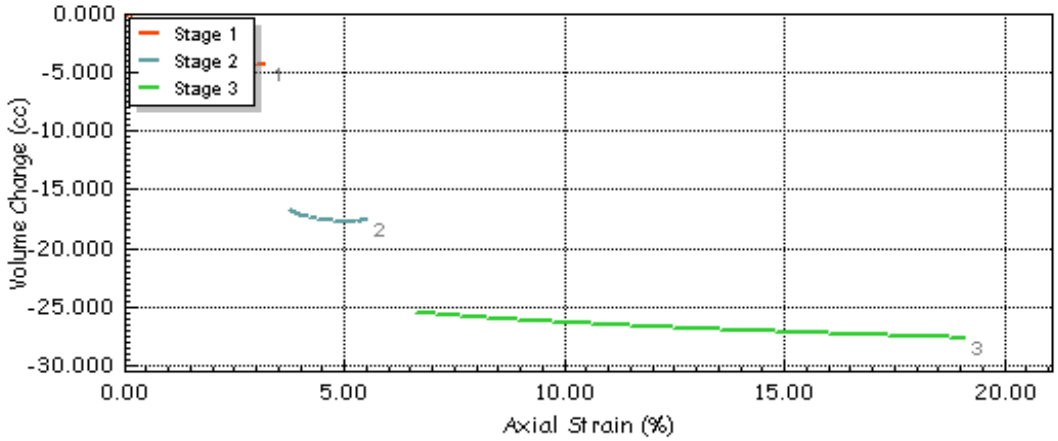
PSL Professional Soils Laboratory

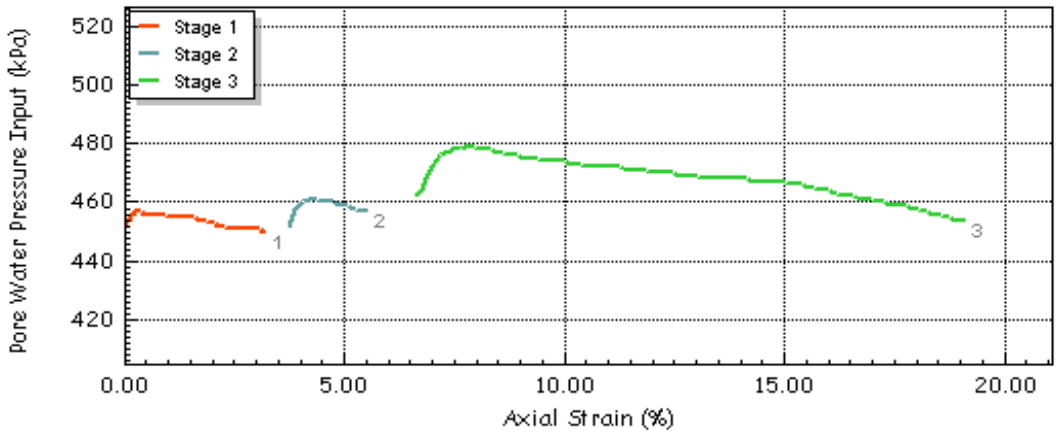
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**



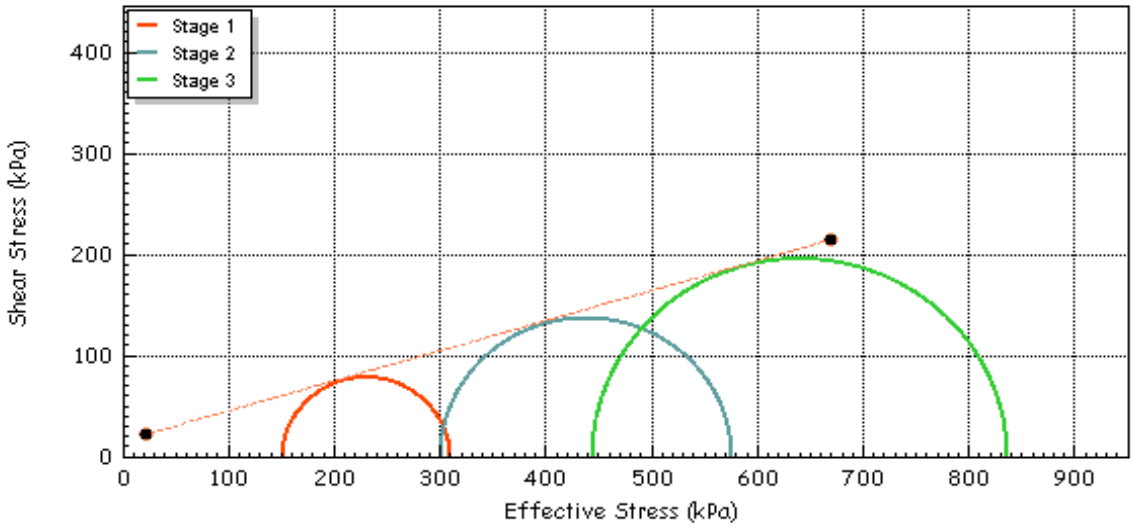

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH105 15.18-15.50m CS115 |
| | | Test Date | 27/05/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH105 |
| | | Sample | 15.18-15.50m CS115 |
| Client | Ground Technology | Depth | 15.18-15.50m |

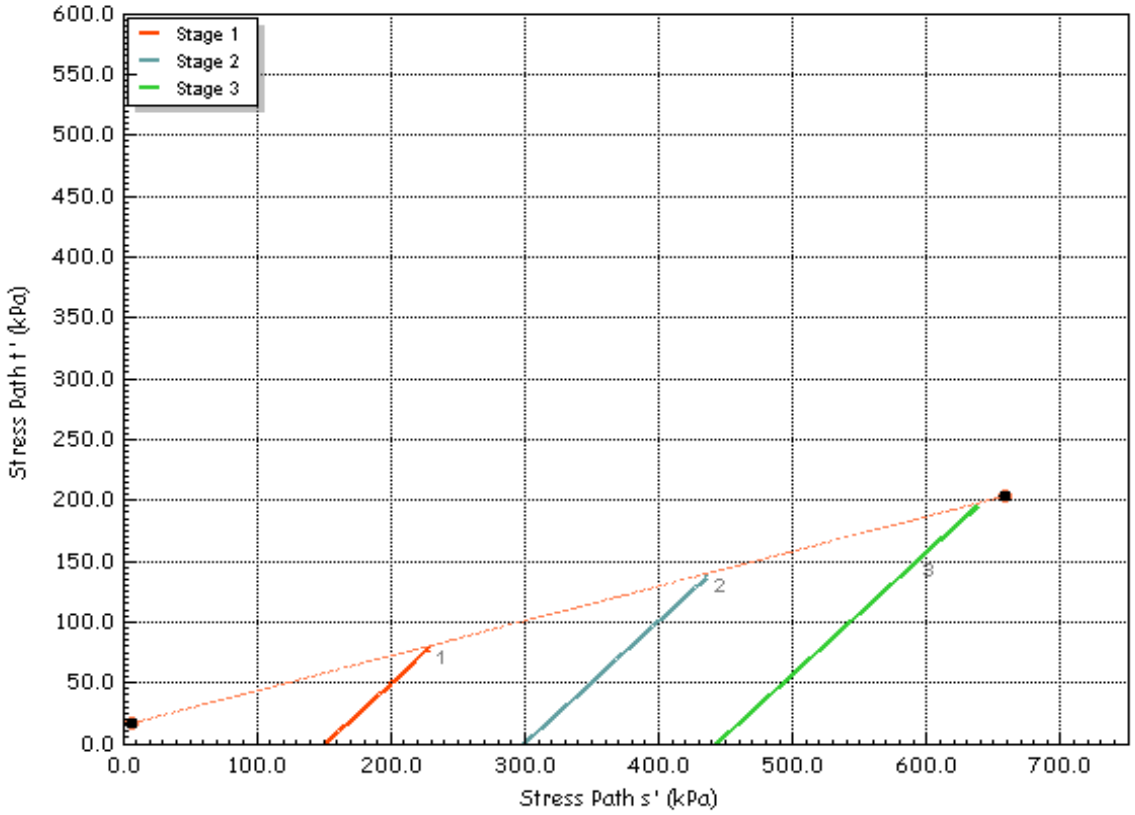
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Effective | c' | (kPa) | 14.89 | Effective Cohesion | c' | (kPa) | 14.89 |
| Effective Friction | ϕ' | (deg) | 16.7 | Effective Friction | ϕ' | (deg) | 16.7 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH105 15.18-15.50m CS115 |
| | | Test Date | 27/05/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH105 |
| Client | Ground Technology | Sample | 15.18-15.50m CS115 |
| | | Depth | 15.18-15.50m |

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# Effective Stress Triaxial Compression

## Consolidated Drained

**Summary Report**

| Sample Details | | | | |
|---|---|---|---|---|
| *sketch showing specimen location in original sample* | Depth | | | 10.65-10.95m |
| | Description | | | See summary of soil descriptions. |
| | Type | | | Undisturbed, vertical orientation. |
| | Initial Sample Length | $L_0$ | (mm) | 211.6 |
| | Initial Sample Diameter | $D_0$ | (mm) | 103.2 |
| | Initial Sample Weight | $W_0$ | (gr) | 3255.0 |
| | Initial Bulk Density | $\rho_0$ | (Mg/m3) | 1.84 |
| | Particle Density | $\rho_s$ | (Mg/m3) | 2.66 |

| **Initial Conditions** | | | Stage 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_{3i}$ | (kPa) | 950 | 1050 | 1150 | |
| Initial Back Pressure | $U_{bi}$ | (kPa) | 850 | 850 | 850 | |
| Membrane Thickness | $m_b$ | (mm) | 0.600 | | | |
| Displacement Input | $L_{IP}$ | (mm) | CH 2 | | | |
| Load Input | $N_{IP}$ | (N) | CH 4 | | | |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | CH 3 | | | |
| Sample Volume | $V$ | (cc) | CH 6 | | | |
| Initial Moisture | $\omega_i$ | (%) | 25 | | | |
| Initial Dry Density | $\rho_{di}$ | (Mg/m3) | 1.47 | | | |
| Initial Voids Ratio | $e_i$ | . | 0.811 | | | |
| Initial Degree of Saturation | $S_i$ | (%) | 83 | | | |
| B Value | B | . | 0.95 | | | |

| **Final Conditions** | | | | | | |
|---|---|---|---|---|---|---|
| Final Moisture | $\omega_f$ | (%) | 22 | | | |
| Final Dry Density | $\rho_{df}$ | (Mg/m3) | 1.52 | | | |
| Final Voids Ratio | $e_f$ | . | 0.751 | | | |
| Final Degree of Saturation | $S_f$ | (%) | 76.7 | | | |
| | | | Stage 1 | 2 | 3 | 4 |
| Failure Criteria | | . | Max. Dev. Stress | Max. Dev. Stress | Max. Dev. Stress | |
| Strain At Failure | $\varepsilon_f$ | (%) | 4.73 | 7.69 | 9.39 | |
| Stress At Failure | $(\sigma_1-\sigma_3)$ | (kPa) | 129.1 | 213.0 | 301.3 | |
| Minor Stress At Failure | $\sigma_3'$ | (kPa) | 105.0 | 200.0 | 300.0 | |
| Major Stress At Failure | $\sigma_1'$ | (kPa) | 234.1 | 413.0 | 601.3 | |
| Principal Stress Ratio At Failure | $\sigma_1'/\sigma_3'$ | | 2.229 | 2.065 | 2.004 | |

**Notes**

*Brittle*

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH106 10.65-10.95m CS118 |
| | | Test Date | 26/05/2022 |
| Jobfile | Wansford to Sutton Dualling | Borehole | BH106 |
| Client | Ground Technology | Sample | 10.65-10.95m CS118 |
| | | Depth | 10.65-10.95m |

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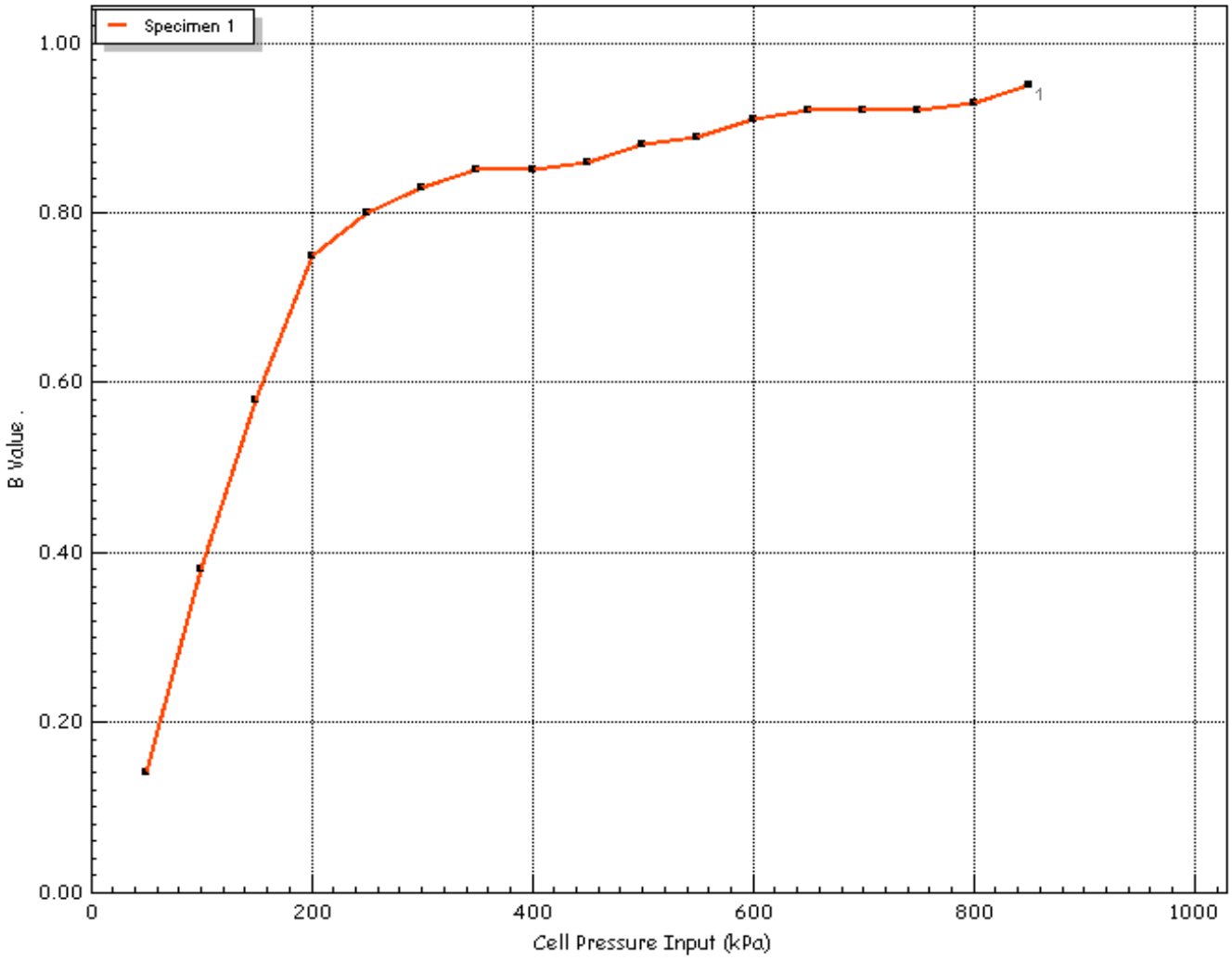
# Effective Stress Triaxial Compression

## Consolidated Drained

**Saturation Plots**

| | | | |
|---|---|---|---|
| Saturation Method | | | Stepped |
| Cell Pressure Input | σ | (kPa) | 850 |
| Pore Water Pressure Input | u pwp | (kPa) | 830 |
| B Value | B | . | 0.95 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH106 10.65-10.95m CS118 |
| | | Test Date | 26/05/2022 |
| Jobfile | Wansford to Sutton Dualling | Borehole | BH106 |
| Client | Ground Technology | Sample | 10.65-10.95m CS118 |
| | | Depth | 10.65-10.95m |

# Effective Stress Triaxial Compression

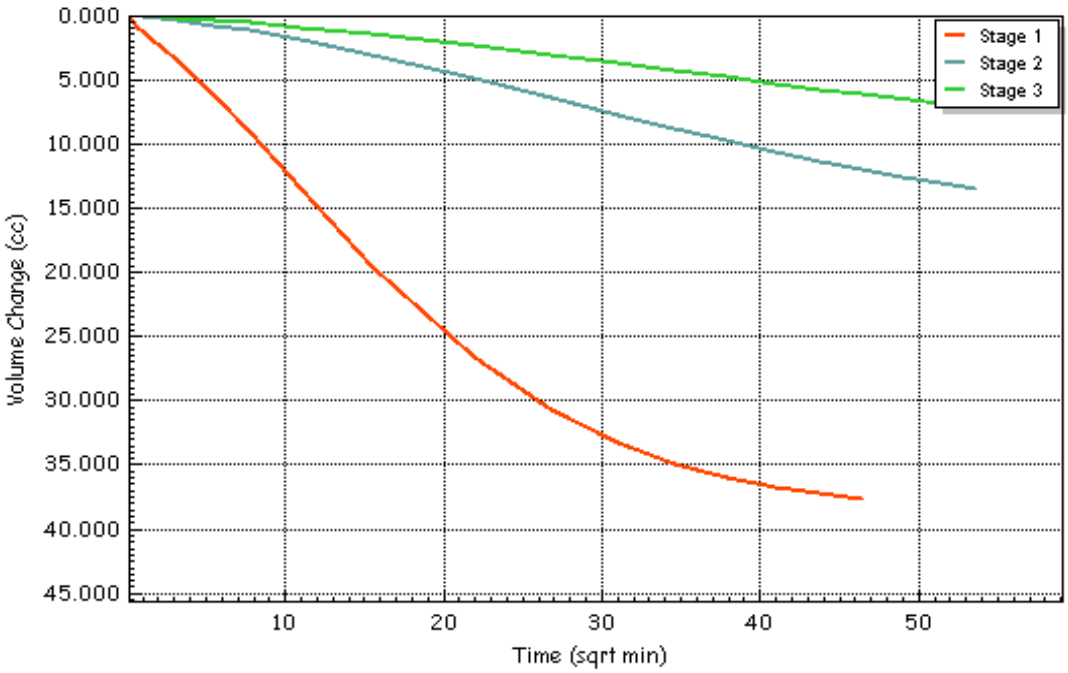
## Consolidated Drained

**Consolidation Plots**

| **Initial Conditions** | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_3$ | (kPa) | 950 | 1050 | 1150 |
| Initial Back Pressure | $u_{bi}$ | (kPa) | 850 | 850 | 850 |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | 928 | 995 | 1098 |
| Drainage Method | | | Radial+One End | | |

| **Final Conditions** | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| PWP Dissipation % | U% | (%) | 100.00 | 97.93 | 98.39 |
| Volumetric Strain | $\varepsilon_v$% | (%) | 2.13 | 2.89 | 3.29 |
| Corrected Length | $L_C$ | (mm) | 210.1 | 198.0 | 188.2 |
| Corrected Area | $A_C$ | (cm2) | 82.46 | 84.93 | 88.29 |
| Corrected Volume | $V_C$ | (cc) | 1732.311 | 1718.755 | 1711.719 |
| T100 Time to Failure | $t_{100}$ | (min) | 865.45 | 2368.61 | 2748.16 |
| Consolidation | $c_v$ | (m2/year) | 0.254 | 0.093 | 0.080 |
| Compressibility | $m_v$ | (m2/MN) | 0.274 | 0.204 | 0.135 |
| Test Time | $t_F$ | (h:m:s) | 201:56:18 | 552:40:32 | 641:14:14 |
| Estimated Strain to Failure | $\varepsilon$% | (%) | 10.0 | 10.0 | 10.0 |
| Shear Machine Speed | $d_r$ | (mm/min) | 0.00173 | 0.00173 | 0.00173 |

**Notes**




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH106 10.65-10.95m CS118 |
| | | Test Date | 26/05/2022 |
| | | Borehole | BH106 |
| Jobfile | Wansford to Sutton Dualling | Sample | 10.65-10.95m CS118 |
| Client | Ground Technology | Depth | 10.65-10.95m |

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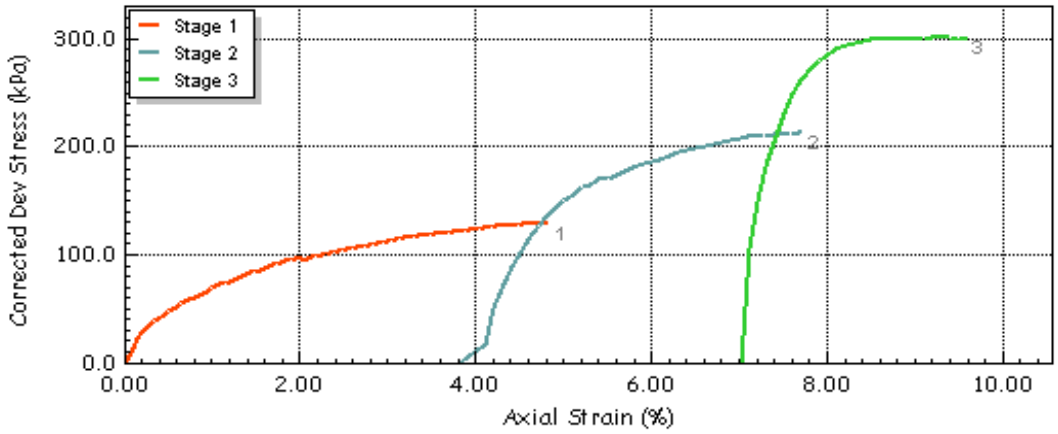
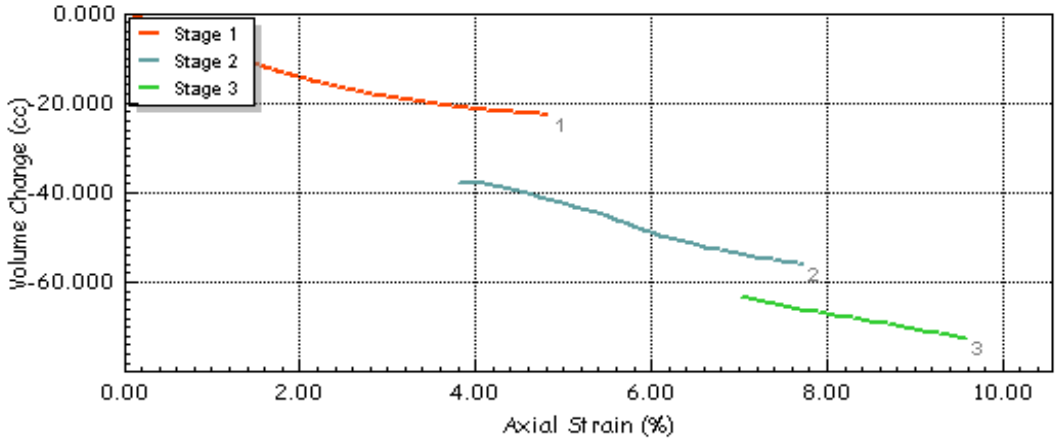
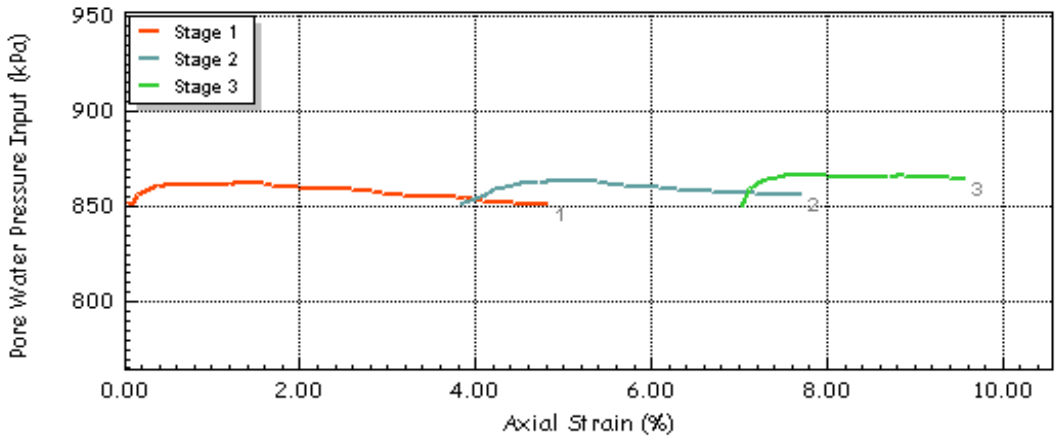
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**




| | | | | |
|---|---|---|---|---|
| UKAS TESTING 4043 | Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH106 10.65-10.95m CS118 |
| | | | Test Date | 26/05/2022 |
| | Jobfile | Wansford to Sutton Dualling | Borehole | BH106 |
| | | | Sample | 10.65-10.95m CS118 |
| | Client | Ground Technology | Depth | 10.65-10.95m |

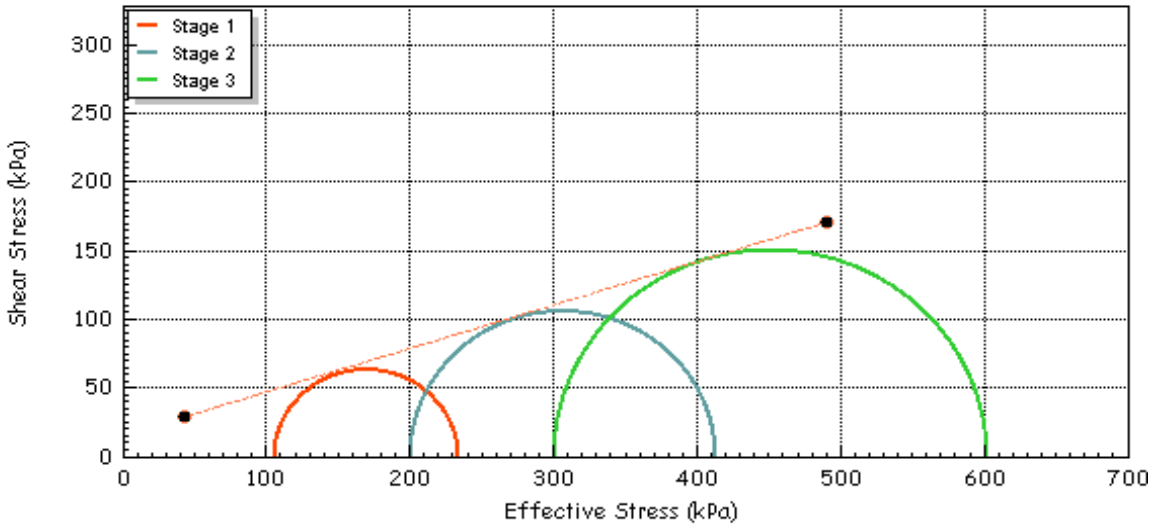
PSL Professional Soils Laboratory

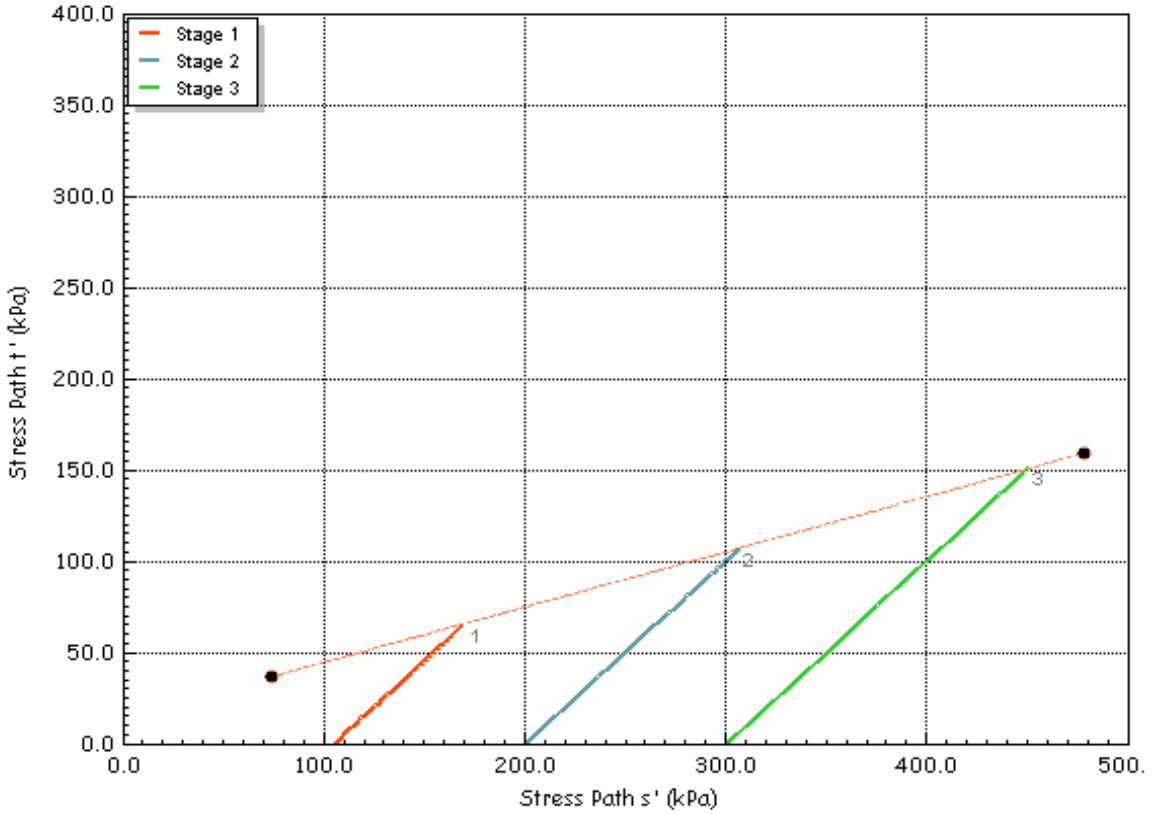
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Effective | c' | (kPa) | 15.20 | Effective Cohesion | c' | (kPa) | 15.20 |
| Effective Friction | ϕ' | (deg) | 17.6 | Effective Friction | ϕ' | (deg) | 17.6 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH106 10.65-10.95m CS118 |
| | | Test Date | 26/05/2022 |
| Jobfile | Wansford to Sutton Dualling | Borehole | BH106 |
| Client | Ground Technology | Sample | 10.65-10.95m CS118 |
| | | Depth | 10.65-10.95m |

UKAS TESTING 4043

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# Effective Stress Triaxial Compression

## Consolidated Drained

**Summary Report**

| Sample Details | | | | |
|---|---|---|---|---|
| *sketch showing specimen location in original sample* | Depth | | | 16.20-16.50m |
| | Description | | | See summary of soil descriptions. |
| | Type | | | Undisturbed, vertical orientation. |
| | Initial Sample Length | $L_0$ | (mm) | 140.0 |
| | Initial Sample Diameter | $D_0$ | (mm) | 70.0 |
| | Initial Sample Weight | $W_0$ | (gr) | 1067.0 |
| | Initial Bulk Density | $\rho_0$ | (Mg/m3) | 1.98 |
| | Particle Density | $\rho_s$ | (Mg/m3) | 2.66 |

| **Initial Conditions** | | | Stage 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_{3i}$ | (kPa) | 690 | 780 | 870 | |
| Initial Back Pressure | $U_{bi}$ | (kPa) | 600 | 600 | 600 | |
| Membrane Thickness | $m_b$ | (mm) | 0.600 | | | |
| Displacement Input | $L_{IP}$ | (mm) | CH 2 | | | |
| Load Input | $N_{IP}$ | (N) | CH 1 | | | |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | CH 3 | | | |
| Sample Volume | $V$ | (cc) | CH 2 | | | |
| Initial Moisture | $\omega_i$ | (%) | 24 | | | |
| Initial Dry Density | $\rho_{di}$ | (Mg/m3) | 1.60 | | | |
| Initial Voids Ratio | $e_i$ | . | 0.661 | | | |
| Initial Degree of Saturation | $S_i$ | (%) | 95 | | | |
| B Value | $B$ | . | 0.96 | | | |

| **Final Conditions** | | | | | | |
|---|---|---|---|---|---|---|
| Final Moisture | $\omega_f$ | (%) | 21 | | | |
| Final Dry Density | $\rho_{df}$ | (Mg/m3) | 1.67 | | | |
| Final Voids Ratio | $e_f$ | . | 0.595 | | | |
| Final Degree of Saturation | $S_f$ | (%) | 92.7 | | | |
| | | | Stage 1 | 2 | 3 | 4 |
| Failure Criteria | | . | Max. Dev. Stress | Max. Dev. Stress | Max. Dev. Stress | |
| Strain At Failure | $\varepsilon_f$ | (%) | 3.98 | 7.63 | 15.73 | |
| Stress At Failure | $(\sigma_1-\sigma_3)$ | (kPa) | 141.2 | 225.1 | 310.8 | |
| Minor Stress At Failure | $\sigma_3'$ | (kPa) | 90.8 | 177.8 | 269.0 | |
| Major Stress At Failure | $\sigma_1'$ | (kPa) | 232.0 | 402.9 | 579.8 | |
| Principal Stress Ratio At Failure | $\sigma_1'/\sigma_3'$ | | 2.555 | 2.266 | 2.155 | |

**Notes**

*Plastic*

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH108 16.20-16.50m CS114_Copy |
| | | Test Date | 27/05/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH108 |
| | | Sample | 16.20-16.50m CS114 |
| Client | Ground Technology | Depth | 16.20-16.50m |

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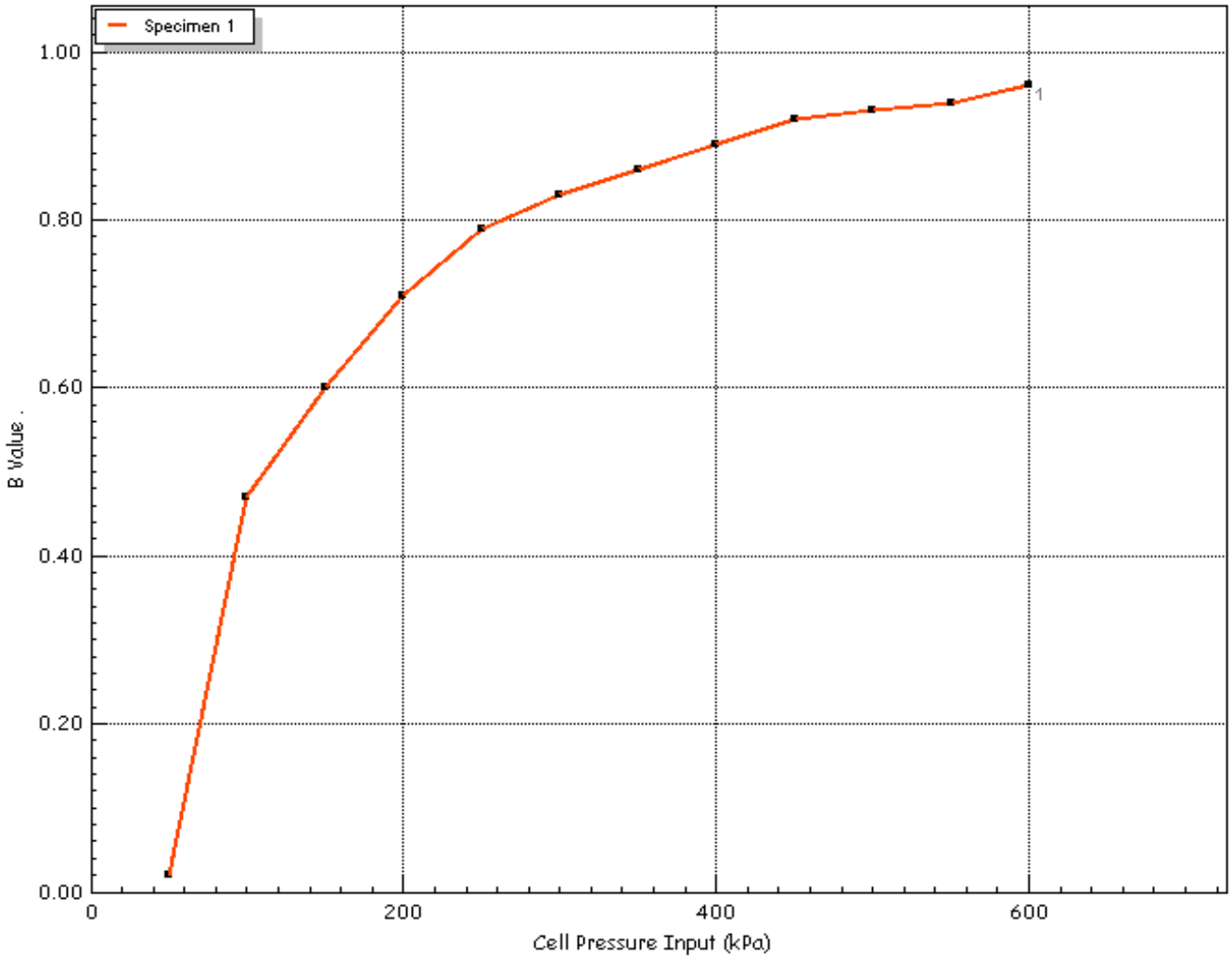
# Effective Stress Triaxial Compression

## Consolidated Drained

**Saturation Plots**

| | | | |
|---|---|---|---|
| Saturation Method | | | Stepped |
| Cell Pressure Input | σ | (kPa) | 600 |
| Pore Water Pressure Input | u pwp | (kPa) | 585 |
| B Value | B | . | 0.96 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH108 16.20-16.50m CS114_Copy |
| | | Test Date | 27/05/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH108 |
| | | Sample | 16.20-16.50m CS114 |
| Client | Ground Technology | Depth | 16.20-16.50m |

# Effective Stress Triaxial Compression

## Consolidated Drained

**Consolidation Plots**

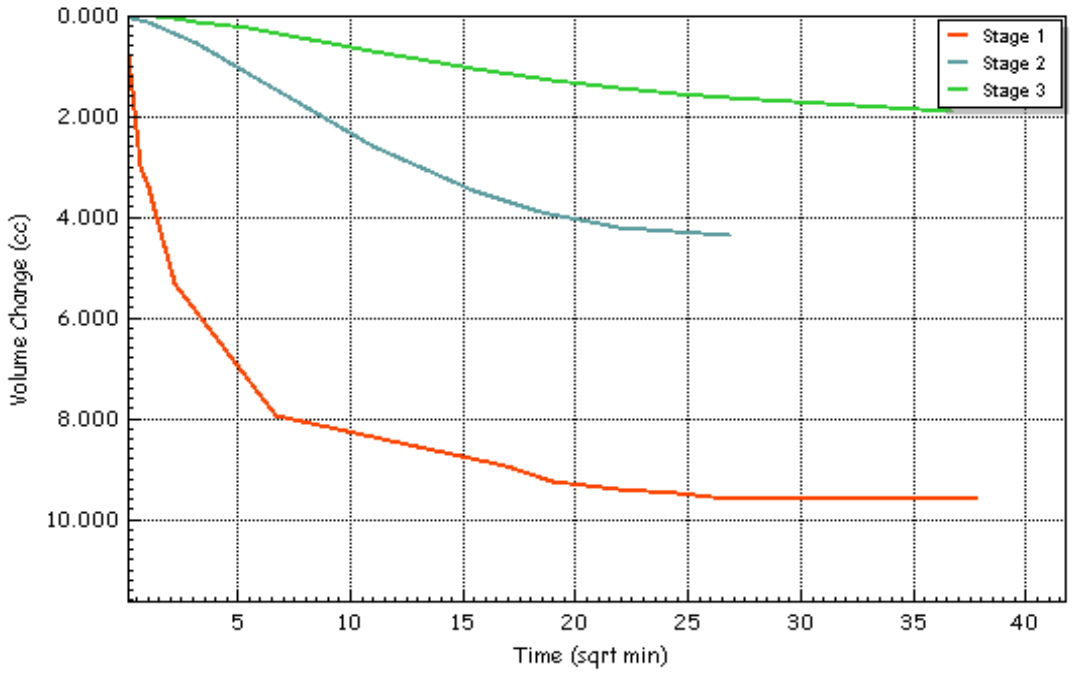
**Initial Conditions**

| | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_3$ | (kPa) | 690 | 780 | 870 |
| Initial Back Pressure | $u_{bi}$ | (kPa) | 600 | 600 | 600 |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | 669 | 728 | 834 |
| Drainage Method | | | Radial+One End | | |

**Final Conditions**

| | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| PWP Dissipation % | U% | (%) | 100.00 | 100.00 | 100.00 |
| Volumetric Strain | $\varepsilon_v$% | (%) | 1.78 | 2.59 | 2.94 |
| Corrected Length | $L_C$ | (mm) | 139.2 | 132.4 | 125.5 |
| Corrected Area | $A_C$ | (cm2) | 38.03 | 38.93 | 40.57 |
| Corrected Volume | $V_C$ | (cc) | 529.184 | 524.817 | 522.925 |
| T100 Time to Failure | $t_{100}$ | (min) | 27.53 | 271.87 | 473.51 |
| Consolidation | $c_V$ | (m2/year) | 3.675 | 0.372 | 0.214 |
| Compressibility | $m_V$ | (m2/MN) | 0.258 | 0.203 | 0.879 |
| Test Time | $t_F$ | (h:m:s) | 06:25:25 | 63:26:10 | 110:29:08 |
| Estimated Strain to Failure | $\varepsilon$% | (%) | 10.0 | 10.0 | 10.0 |
| Shear Machine Speed | $d_r$ | (mm/min) | 0.03611 | 0.03611 | 0.03611 |

**Notes**




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH108 16.20-16.50m CS114_Copy |
| | | Test Date | 27/05/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH108 |
| | | Sample | 16.20-16.50m CS114 |
| Client | Ground Technology | Depth | 16.20-16.50m |

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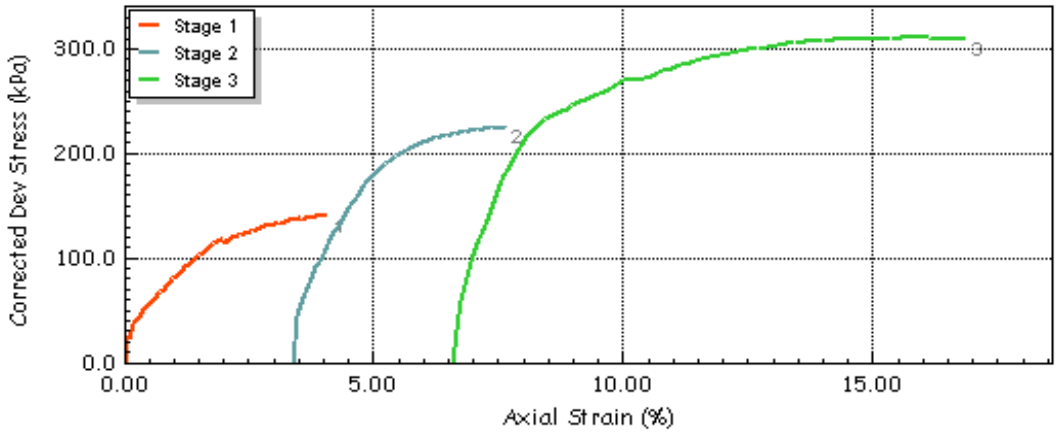
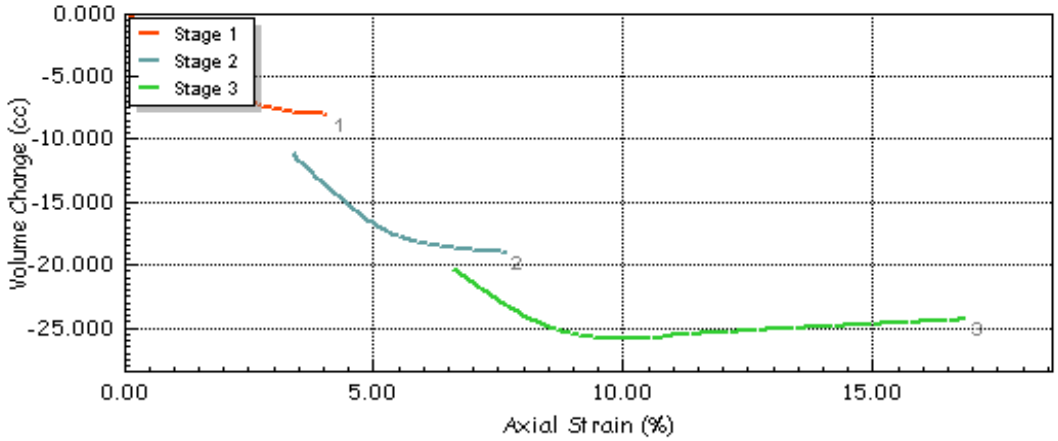
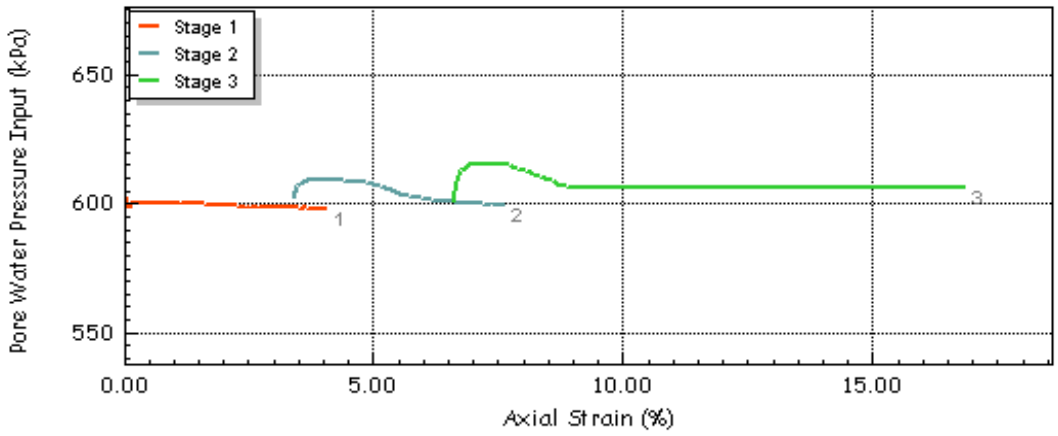
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**



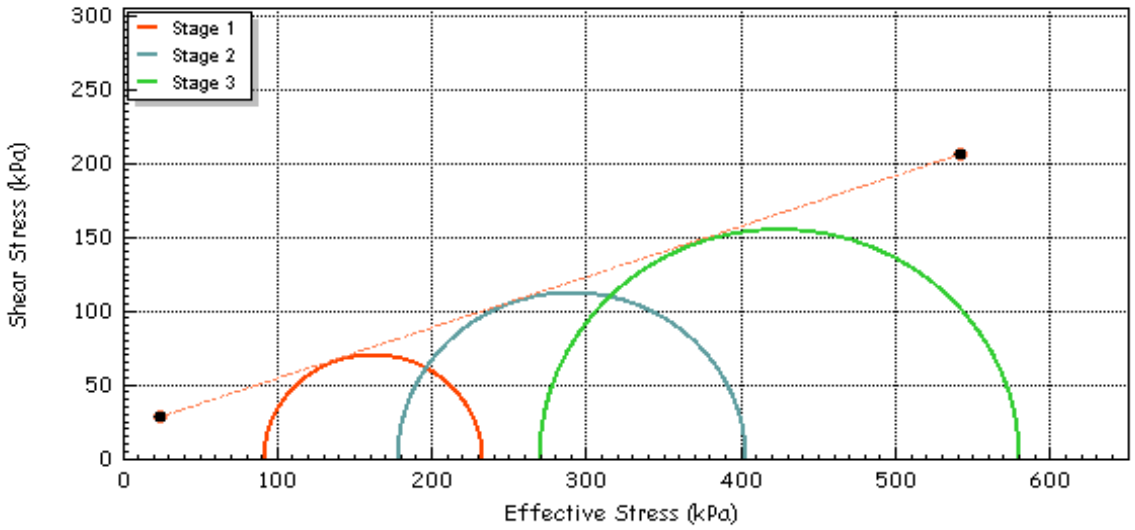

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH108 16.20-16.50m CS114_Copy |
| | | Test Date | 27/05/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH108 |
| | | Sample | 16.20-16.50m CS114 |
| Client | Ground Technology | Depth | 16.20-16.50m |

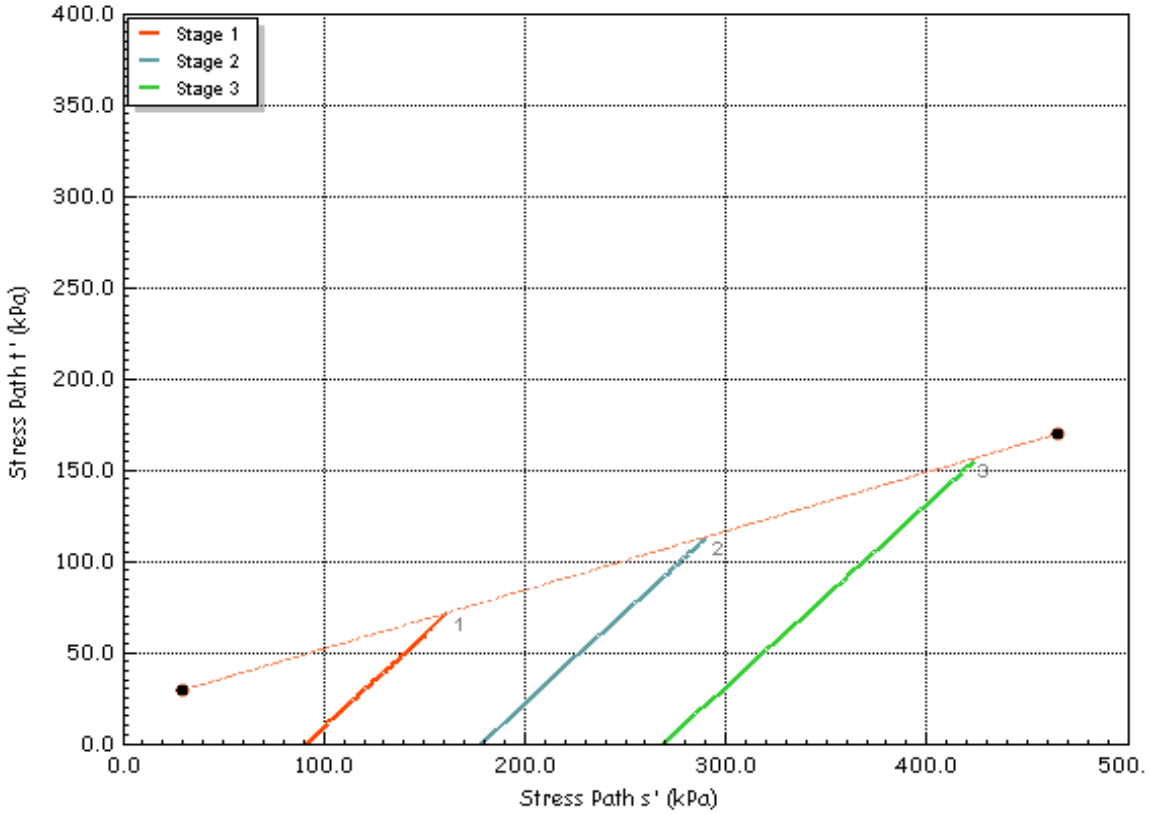
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Effective | c' | (kPa) | 20.20 | Effective Cohesion | c' | (kPa) | 20.20 |
| Effective Friction | ϕ' | (deg) | 18.9 | Effective Friction | ϕ' | (deg) | 18.9 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH108 16.20-16.50m CS114_Copy |
| | | Test Date | 27/05/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH108 |
| | | Sample | 16.20-16.50m CS114 |
| Client | Ground Technology | Depth | 16.20-16.50m |

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# Effective Stress Triaxial Compression

## Consolidated Drained

**Summary Report**

| Sample Details | | | | |
|---|---|---|---|---|
| *sketch showing specimen location in original sample* | Depth | | 5.50-5.80m | |
| | Description | | See summary of soil descriptions. | |
| | Type | | Undisturbed, vertical orientation. | |
| | Initial Sample Length | $L_0$ | (mm) | 200.1 |
| | Initial Sample Diameter | $D_0$ | (mm) | 100.4 |
| | Initial Sample Weight | $W_0$ | (gr) | 3202.0 |
| | Initial Bulk Density | $\rho_0$ | (Mg/m3) | 2.02 |
| | Particle Density | $\rho_s$ | (Mg/m3) | 2.66 |

| **Initial Conditions** | | | Stage 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_{3i}$ | (kPa) | 810 | 870 | 990 | |
| Initial Back Pressure | $U_{bi}$ | (kPa) | 750 | 750 | 750 | |
| Membrane Thickness | $m_b$ | (mm) | 0.600 | | | |
| Displacement Input | $L_{IP}$ | (mm) | CH 2 | | | |
| Load Input | $N_{IP}$ | (N) | CH 4 | | | |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | CH 3 | | | |
| Sample Volume | $V$ | (cc) | CH 2 | | | |
| Initial Moisture | $\omega_i$ | (%) | 21 | | | |
| Initial Dry Density | $\rho_{di}$ | (Mg/m3) | 1.67 | | | |
| Initial Voids Ratio | $e_i$ | . | 0.596 | | | |
| Initial Degree of Saturation | $S_i$ | (%) | 95 | | | |
| B Value | $B$ | . | 0.99 | | | |

| **Final Conditions** | | | | | | |
|---|---|---|---|---|---|---|
| Final Moisture | $\omega_f$ | (%) | 20 | | | |
| Final Dry Density | $\rho_{df}$ | (Mg/m3) | 1.75 | | | |
| Final Voids Ratio | $e_f$ | . | 0.524 | | | |
| Final Degree of Saturation | $S_f$ | (%) | 100.0 | | | |
| | | | Stage 1 | 2 | 3 | 4 |
| Failure Criteria | | . | Max. Dev. Stress | Max. Dev. Stress | Max. Dev. Stress | |
| Strain At Failure | $\varepsilon_f$ | (%) | 1.95 | 3.03 | 4.75 | |
| Stress At Failure | $(\sigma_1-\sigma_3)$ | (kPa) | 90.3 | 146.5 | 230.2 | |
| Minor Stress At Failure | $\sigma_3'$ | (kPa) | 60.0 | 120.0 | 234.0 | |
| Major Stress At Failure | $\sigma_1'$ | (kPa) | 150.3 | 266.5 | 464.2 | |
| Principal Stress Ratio At Failure | $\sigma_1'/\sigma_3'$ | | 2.505 | 2.221 | 1.984 | |

**Notes**

*Plastic*

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH114 5.50-5.80m CS104 |
| | | Test Date | 26/05/2022 |
| Jobfile | Wansford to Sutton Dualling | Borehole | BH114 |
| Client | Ground Technology | Sample | 5.50-5.80m |
| | | Depth | 5.50-5.80m |

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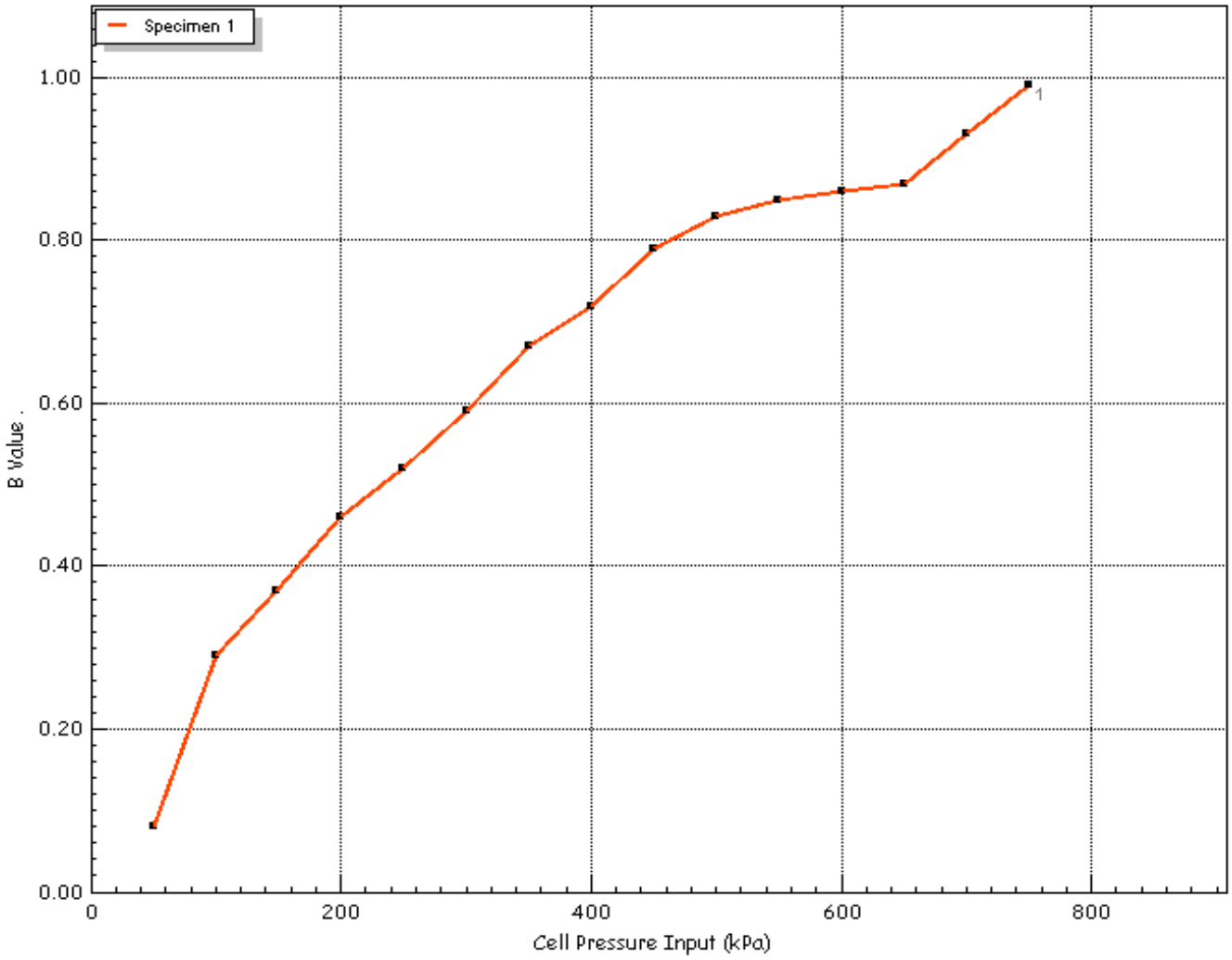
# Effective Stress Triaxial Compression

## Consolidated Drained

**Saturation Plots**

| | | | |
|---|---|---|---|
| Saturation Method | | | Stepped |
| Cell Pressure Input | σ | (kPa) | 750 |
| Pore Water Pressure Input | u pwp | (kPa) | 738 |
| B Value | B | . | 0.99 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH114 5.50-5.80m CS104 |
| | | Test Date | 26/05/2022 |
| | | Borehole | BH114 |
| Jobfile | Wansford to Sutton Dualling | Sample | 5.50-5.80m |
| Client | Ground Technology | Depth | 5.50-5.80m |

# Effective Stress Triaxial Compression

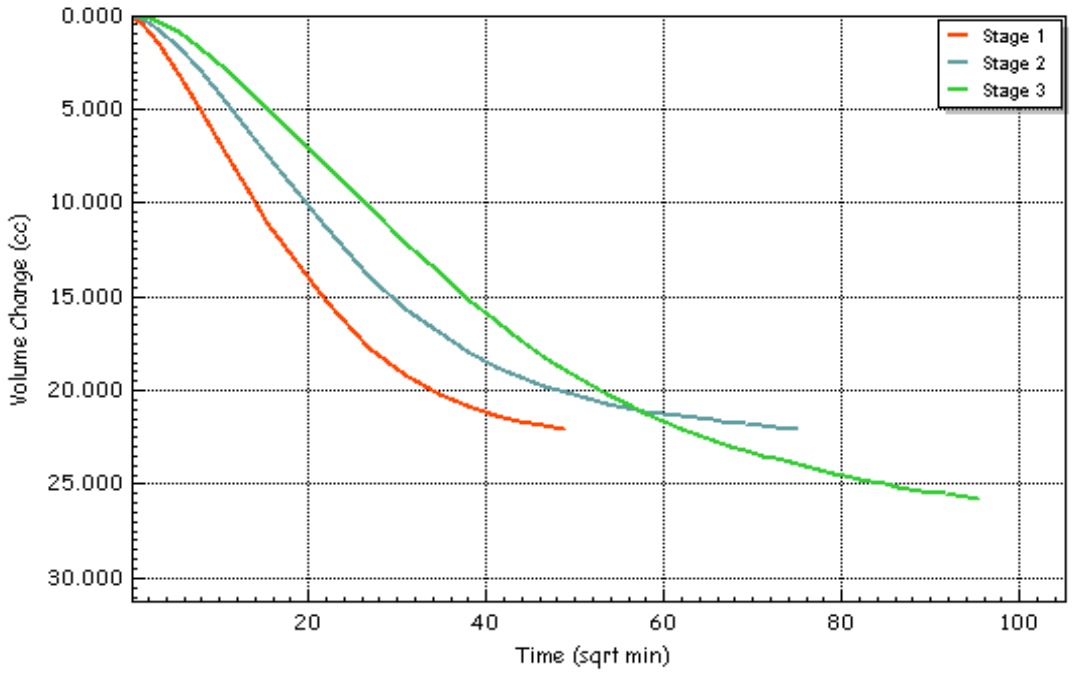
## Consolidated Drained

**Consolidation Plots**

| **Initial Conditions** | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_3$ | (kPa) | 810 | 870 | 990 |
| Initial Back Pressure | $u_{bi}$ | (kPa) | 750 | 750 | 750 |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | 784 | 795 | 855 |
| Drainage Method | | | Radial+One End | | |

| **Final Conditions** | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| PWP Dissipation % | U% | (%) | 100.00 | 99.78 | 95.24 |
| Volumetric Strain | $\varepsilon_v$% | (%) | 1.39 | 2.79 | 4.42 |
| Corrected Length | $L_C$ | (mm) | 199.2 | 193.3 | 187.2 |
| Corrected Area | $A_C$ | (cm2) | 78.43 | 78.56 | 78.58 |
| Corrected Volume | $V_C$ | (cc) | 1562.122 | 1540.020 | 1514.230 |
| T100 Time to Failure | $t_{100}$ | (min) | 813.63 | 1510.88 | 3558.61 |
| Consolidation | $c_v$ | (m2/year) | 0.257 | 0.139 | 0.059 |
| Compressibility | $m_v$ | (m2/MN) | 0.414 | 0.615 | 0.442 |
| Test Time | $t_F$ | (h:m:s) | 189:50:49 | 352:32:19 | 830:20:32 |
| Estimated Strain to Failure | $\varepsilon$% | (%) | 10.0 | 10.0 | 10.0 |
| Shear Machine Speed | $d_r$ | (mm/min) | 0.00175 | 0.00175 | 0.00175 |

**Notes**




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH114 5.50-5.80m CS104 |
| | | Test Date | 26/05/2022 |
| | | Borehole | BH114 |
| Jobfile | Wansford to Sutton Dualling | Sample | 5.50-5.80m |
| Client | Ground Technology | Depth | 5.50-5.80m |

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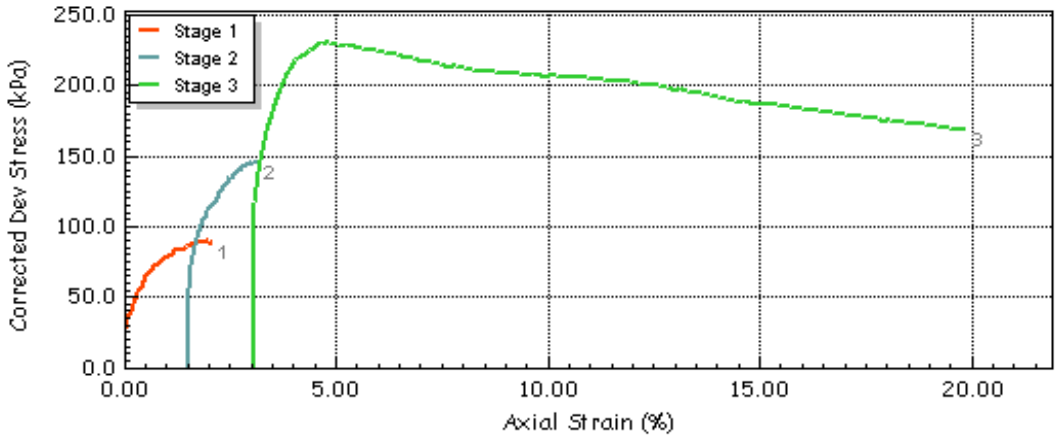
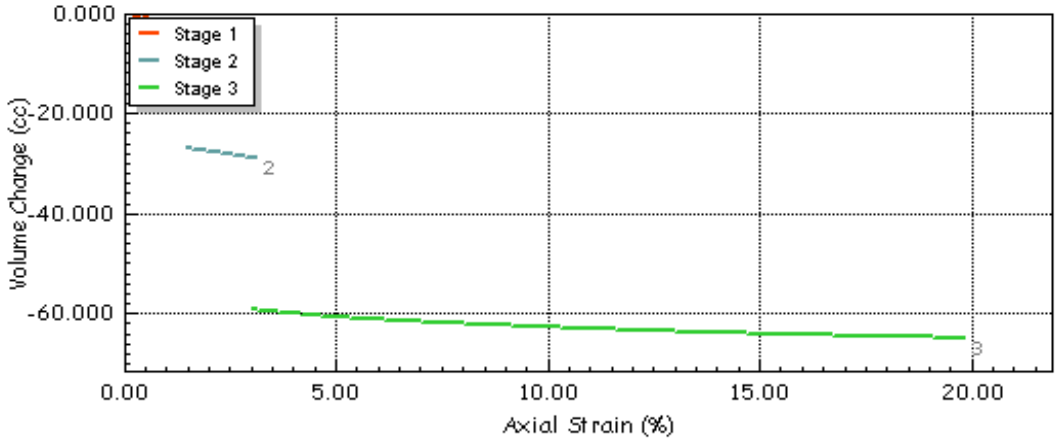
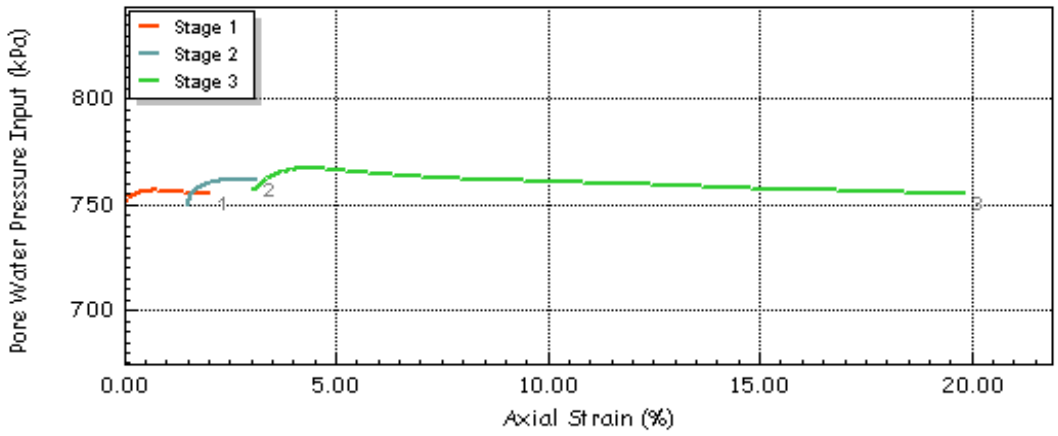
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**



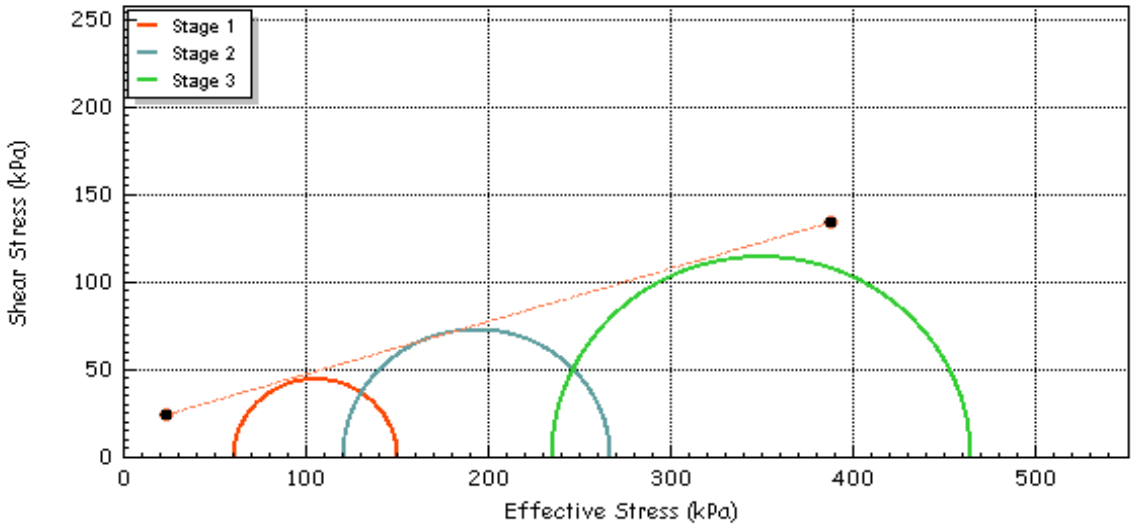

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH114 5.50-5.80m CS104 |
| | | Test Date | 26/05/2022 |
| Jobfile | Wansford to Sutton Dualling | Borehole | BH114 |
| Client | Ground Technology | Sample | 5.50-5.80m |
| | | Depth | 5.50-5.80m |

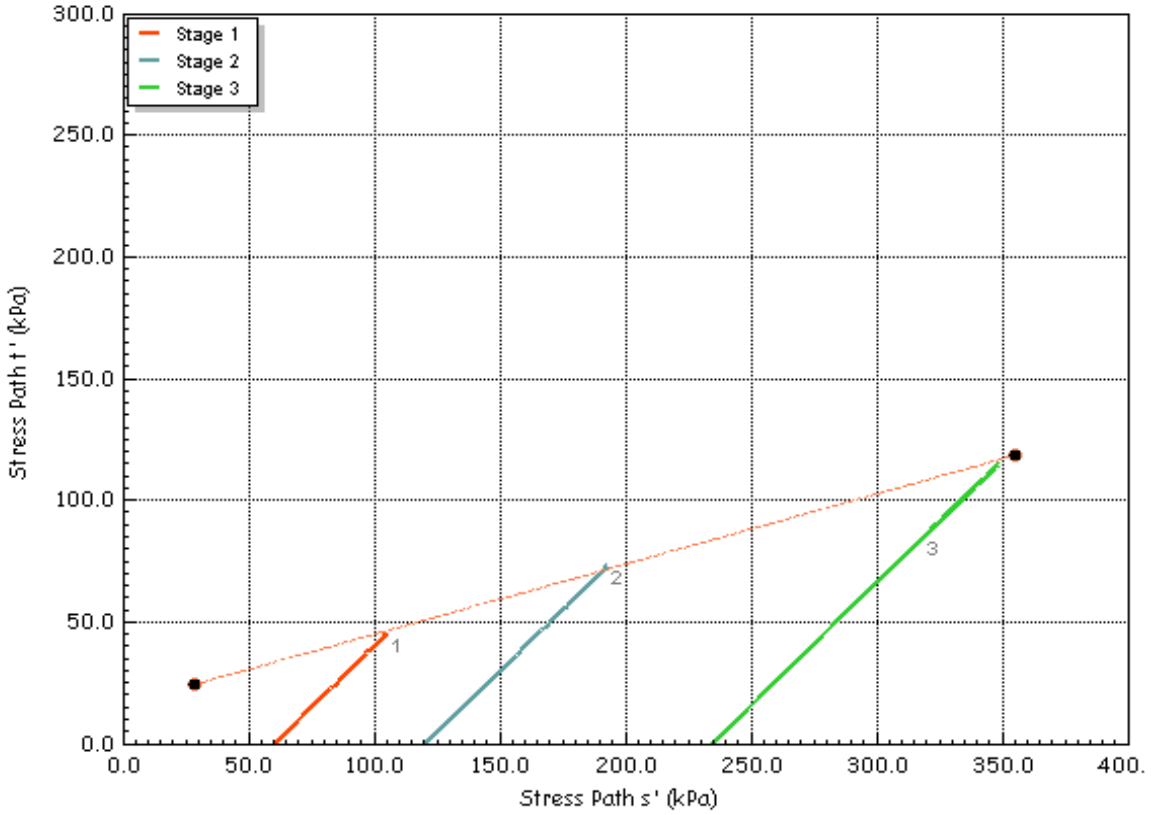
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Effective | c' | (kPa) | 16.92 | Effective Cohesion | c' | (kPa) | 16.92 |
| Effective Friction | ϕ' | (deg) | 16.8 | Effective Friction | ϕ' | (deg) | 16.8 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH114 5.50-5.80m CS104 |
| | | Test Date | 26/05/2022 |
| Jobfile | Wansford to Sutton Dualling | Borehole | BH114 |
| Client | Ground Technology | Sample | 5.50-5.80m |
| | | Depth | 5.50-5.80m |

# Effective Stress Triaxial Compression

## Consolidated Drained

**Summary Report**

| Sample Details | | | | |
|---|---|---|---|---|
| *sketch showing specimen location in original sample* | Depth | | 17.00-17.22m | |
| | Description | | See summary of soil descriptions. | |
| | Type | | Undisturbed, vertical orientation. | |
| | Initial Sample Length | $L_0$ | (mm) | 140.0 |
| | Initial Sample Diameter | $D_0$ | (mm) | 70.1 |
| | Initial Sample Weight | $W_0$ | (gr) | 1087.0 |
| | Initial Bulk Density | $\rho_0$ | (Mg/m3) | 2.01 |
| | Particle Density | $\rho_s$ | (Mg/m3) | 2.66 |

| **Initial Conditions** | | | Stage 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_{3i}$ | (kPa) | 620 | 789 | 960 | |
| Initial Back Pressure | $U_{bi}$ | (kPa) | 450 | 450 | 450 | |
| Membrane Thickness | $m_b$ | (mm) | 0.600 | | | |
| Displacement Input | $L_{IP}$ | (mm) | CH 2 | | | |
| Load Input | $N_{IP}$ | (N) | CH 1 | | | |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | CH 3 | | | |
| Sample Volume | $V$ | (cc) | CH 2 | | | |
| Initial Moisture | $\omega_i$ | (%) | 24 | | | |
| Initial Dry Density | $\rho_{di}$ | (Mg/m3) | 1.62 | | | |
| Initial Voids Ratio | $e_i$ | . | 0.637 | | | |
| Initial Degree of Saturation | $S_i$ | (%) | 99 | | | |
| B Value | $B$ | . | 0.96 | | | |

| **Final Conditions** | | | | | | |
|---|---|---|---|---|---|---|
| Final Moisture | $\omega_f$ | (%) | 24 | | | |
| Final Dry Density | $\rho_{df}$ | (Mg/m3) | 1.70 | | | |
| Final Voids Ratio | $e_f$ | . | 0.566 | | | |
| Final Degree of Saturation | $S_f$ | (%) | 100.0 | | | |
| | | | Stage 1 | 2 | 3 | 4 |
| Failure Criteria | | . | Max. Dev. Stress | Max. Dev. Stress | Max. Dev. Stress | |
| Strain At Failure | $\varepsilon_f$ | (%) | 4.98 | 8.52 | 10.11 | |
| Stress At Failure | $(\sigma_1-\sigma_3)$ | (kPa) | 265.6 | 450.4 | 642.9 | |
| Minor Stress At Failure | $\sigma_3'$ | (kPa) | 174.0 | 339.0 | 509.0 | |
| Major Stress At Failure | $\sigma_1'$ | (kPa) | 439.6 | 789.4 | 1151.9 | |
| Principal Stress Ratio At Failure | $\sigma_1'/\sigma_3'$ | | 2.526 | 2.329 | 2.263 | |

**Notes**

*Plastic*

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH114 17.00-17.22m CS_Copy |
| | | Test Date | 27/05/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH114 |
| | | Sample | 17.00-17.22m |
| Client | Ground Technology | Depth | 17.00-17.22m |

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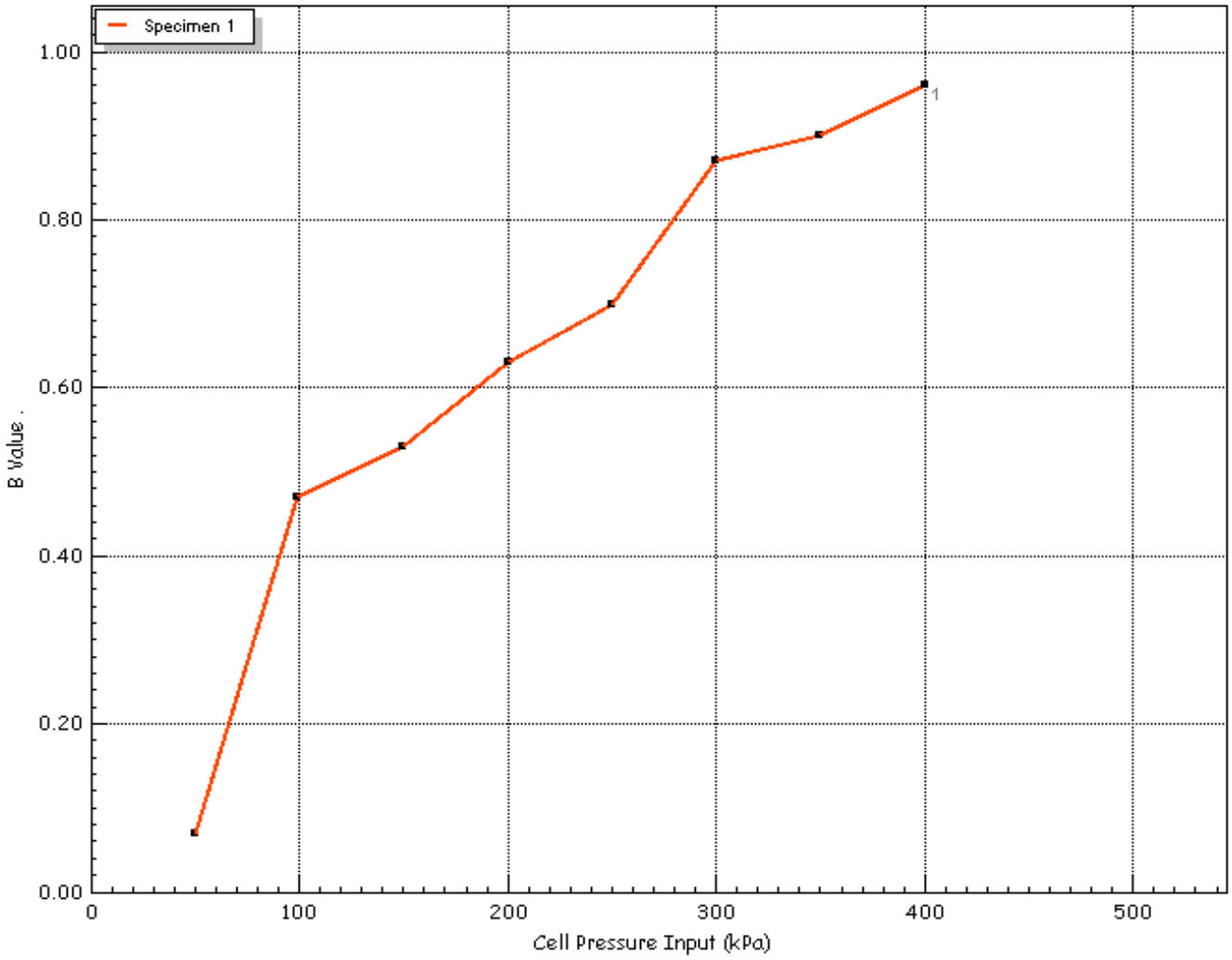
# Effective Stress Triaxial Compression

## Consolidated Drained

**Saturation Plots**

| | | | |
|---|---|---|---|
| Saturation Method | | | Stepped |
| Cell Pressure Input | σ | (kPa) | 450 |
| Pore Water Pressure Input | u pwp | (kPa) | 437 |
| B Value | B | . | 0.96 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH114 17.00-17.22m CS_Copy |
| | | Test Date | 27/05/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH114 |
| | | Sample | CS113 |
| Client | Ground Technology | Depth | 17.00-17.22m |

# Effective Stress Triaxial Compression

## Consolidated Drained

**Consolidation Plots**

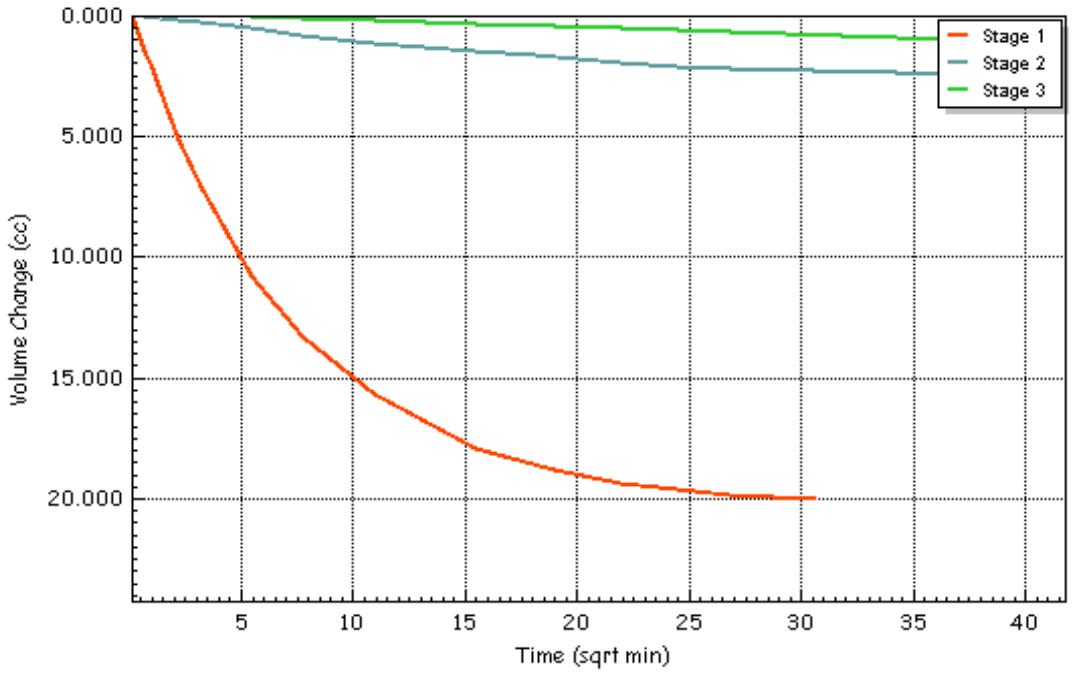
**Initial Conditions**

| | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_3$ | (kPa) | 620 | 790 | 960 |
| Initial Back Pressure | $u_{bi}$ | (kPa) | 450 | 450 | 450 |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | 600 | 522 | 492 |
| Drainage Method | | | Radial+One End | | |

**Final Conditions**

| | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| PWP Dissipation % | U% | (%) | 100.00 | 100.00 | 100.00 |
| Volumetric Strain | $\varepsilon_v$% | (%) | 3.70 | 4.15 | 4.33 |
| Corrected Length | $L_C$ | (mm) | 138.3 | 129.5 | 121.9 |
| Corrected Area | $A_C$ | (cm2) | 37.64 | 38.50 | 40.60 |
| Corrected Volume | $V_C$ | (cc) | 520.315 | 517.898 | 516.916 |
| T100 Time to Failure | $t_{100}$ | (min) | 75.81 | 388.72 | 430.50 |
| Consolidation | $c_v$ | (m2/year) | 1.342 | 0.262 | 0.236 |
| Compressibility | $m_v$ | (m2/MN) | 0.246 | 0.576 | 1.031 |
| Test Time | $t_F$ | (h:m:s) | 17:41:20 | 90:42:04 | 100:27:00 |
| Estimated Strain to Failure | $\varepsilon$% | (%) | 5.0 | 5.0 | 5.0 |
| Shear Machine Speed | $d_r$ | (mm/min) | 0.00651 | 0.00651 | 0.00651 |

**Notes**




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH114 17.00-17.22m CS_Copy |
| | | Test Date | 27/05/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH114 |
| | | Sample | CS113 |
| Client | Ground Technology | Depth | 17.00-17.22m |

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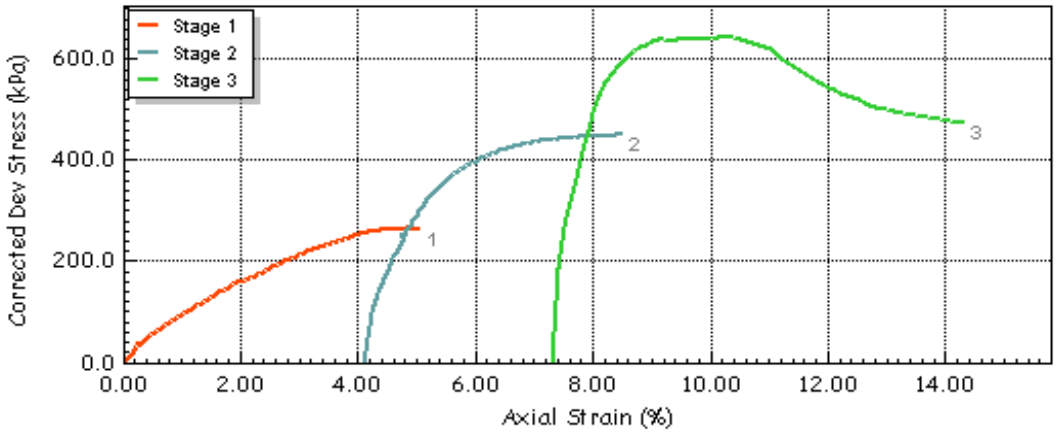
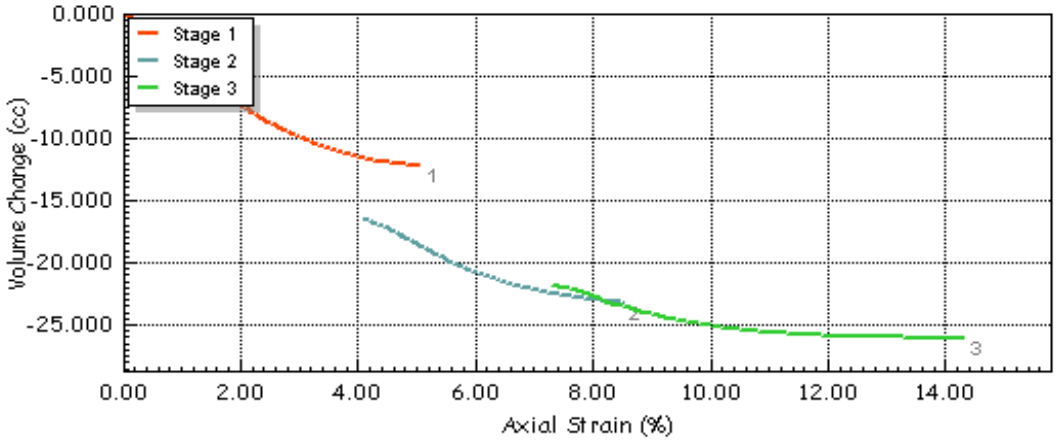
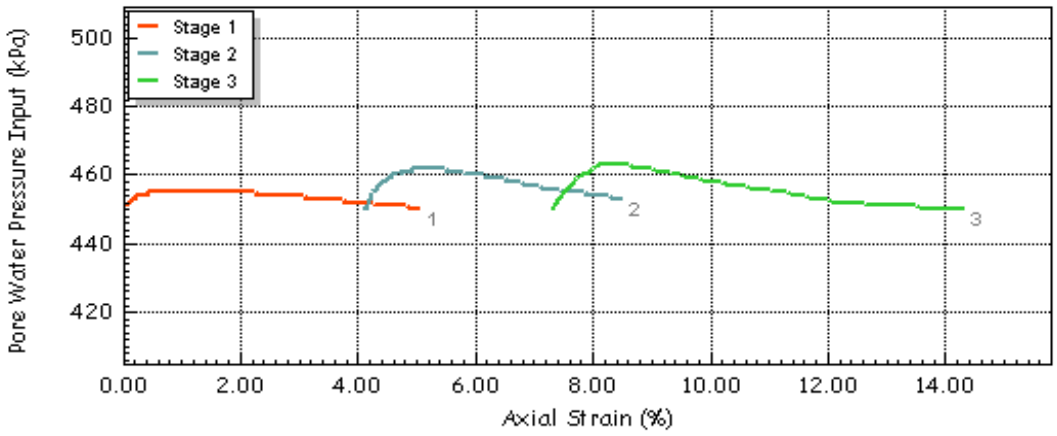
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**



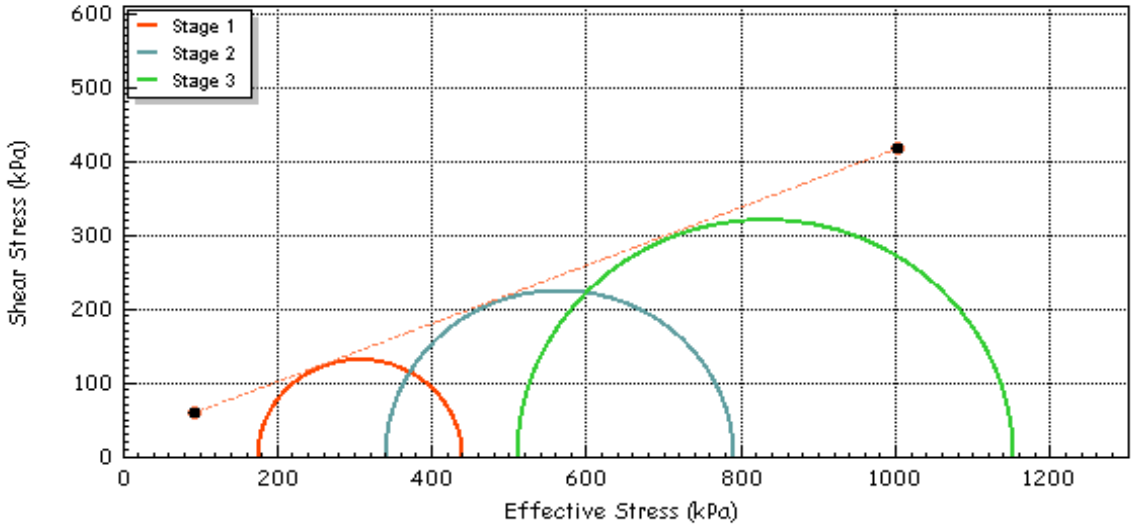

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH114 17.00-17.22m CS_Copy |
| | | Test Date | 27/05/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH114 |
| | | Sample | CS113 |
| Client | Ground Technology | Depth | 17.00-17.22m |

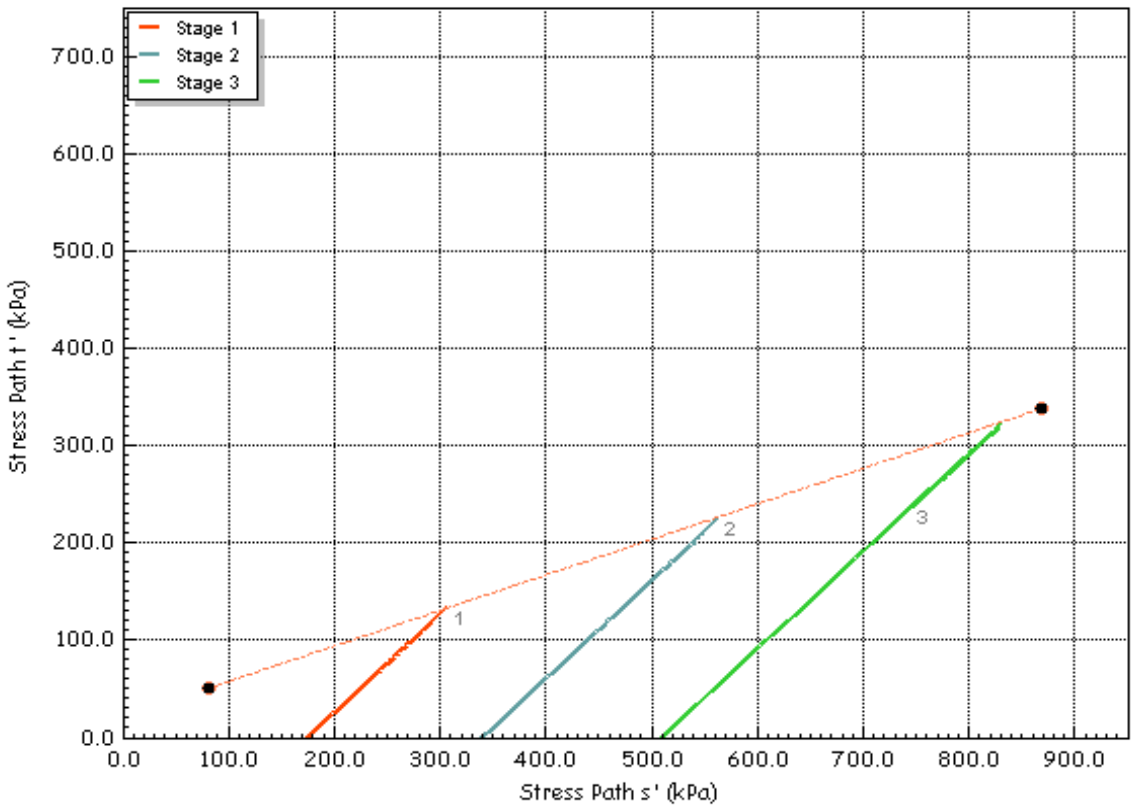
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Effective | c' | (kPa) | 22.63 | Effective Cohesion | c' | (kPa) | 22.63 |
| Effective Friction | ϕ' | (deg) | 21.4 | Effective Friction | ϕ' | (deg) | 21.4 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH114 17.00-17.22m CS_Copy |
| | | Test Date | 27/05/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH114 |
| | | Sample | CS113 |
| Client | Ground Technology | Depth | 17.00-17.22m |

*

# Effective Stress Triaxial Compression

## Consolidated Drained

**Summary Report**

| Sample Details | | | | |
|---|---|---|---|---|
| *sketch showing specimen location in original sample* | Depth | | | 2.50-3.00m |
| | Description | | | See summary of soil descriptions. |
| | Type | | | Recompacted at 2.5kg effort, natural moisture content. |
| | Initial Sample Length | $L_0$ | (mm) | 200.0 |
| | Initial Sample Diameter | $D_0$ | (mm) | 100.0 |
| | Initial Sample Weight | $W_0$ | (gr) | 3389.0 |
| | Initial Bulk Density | $\rho_0$ | (Mg/m3) | 2.16 |
| | Particle Density | $\rho_s$ | (Mg/m3) | 2.66 |

| **Initial Conditions** | | | Stage 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_{3i}$ | (kPa) | 325 | 350 | 375 | |
| Initial Back Pressure | $U_{bi}$ | (kPa) | 300 | 300 | 300 | |
| Membrane Thickness | $m_b$ | (mm) | 0.600 | | | |
| Displacement Input | $L_{IP}$ | (mm) | CH 2 | | | |
| Load Input | $N_{IP}$ | (N) | CH 1 | | | |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | CH 3 | | | |
| Sample Volume | $V$ | (cc) | CH 2 | | | |
| Initial Moisture | $\omega_i$ | (%) | 17 | | | |
| Initial Dry Density | $\rho_{di}$ | (Mg/m3) | 1.84 | | | |
| Initial Voids Ratio | $e_i$ | . | 0.444 | | | |
| Initial Degree of Saturation | $S_i$ | (%) | 100 | | | |
| B Value | B | . | 0.96 | | | |

| **Final Conditions** | | | | | | |
|---|---|---|---|---|---|---|
| Final Moisture | $\omega_f$ | (%) | 15 | | | |
| Final Dry Density | $\rho_{df}$ | (Mg/m3) | 1.91 | | | |
| Final Voids Ratio | $e_f$ | . | 0.396 | | | |
| Final Degree of Saturation | $S_f$ | (%) | 97.6 | | | |
| | | | Stage 1 | 2 | 3 | 4 |
| Failure Criteria | | . | Max. Dev. Stress | Max. Dev. Stress | Max. Dev. Stress | |
| Strain At Failure | $\varepsilon_f$ | (%) | 3.99 | 8.23 | 11.48 | |
| Stress At Failure | $(\sigma_1-\sigma_3)$ | (kPa) | 92.1 | 135.6 | 178.1 | |
| Minor Stress At Failure | $\sigma_3'$ | (kPa) | 26.0 | 51.0 | 76.0 | |
| Major Stress At Failure | $\sigma_1'$ | (kPa) | 118.1 | 186.6 | 254.1 | |
| Principal Stress Ratio At Failure | $\sigma_1'/\sigma_3'$ | | 4.542 | 3.658 | 3.343 | |

**Notes**

*Plastic*

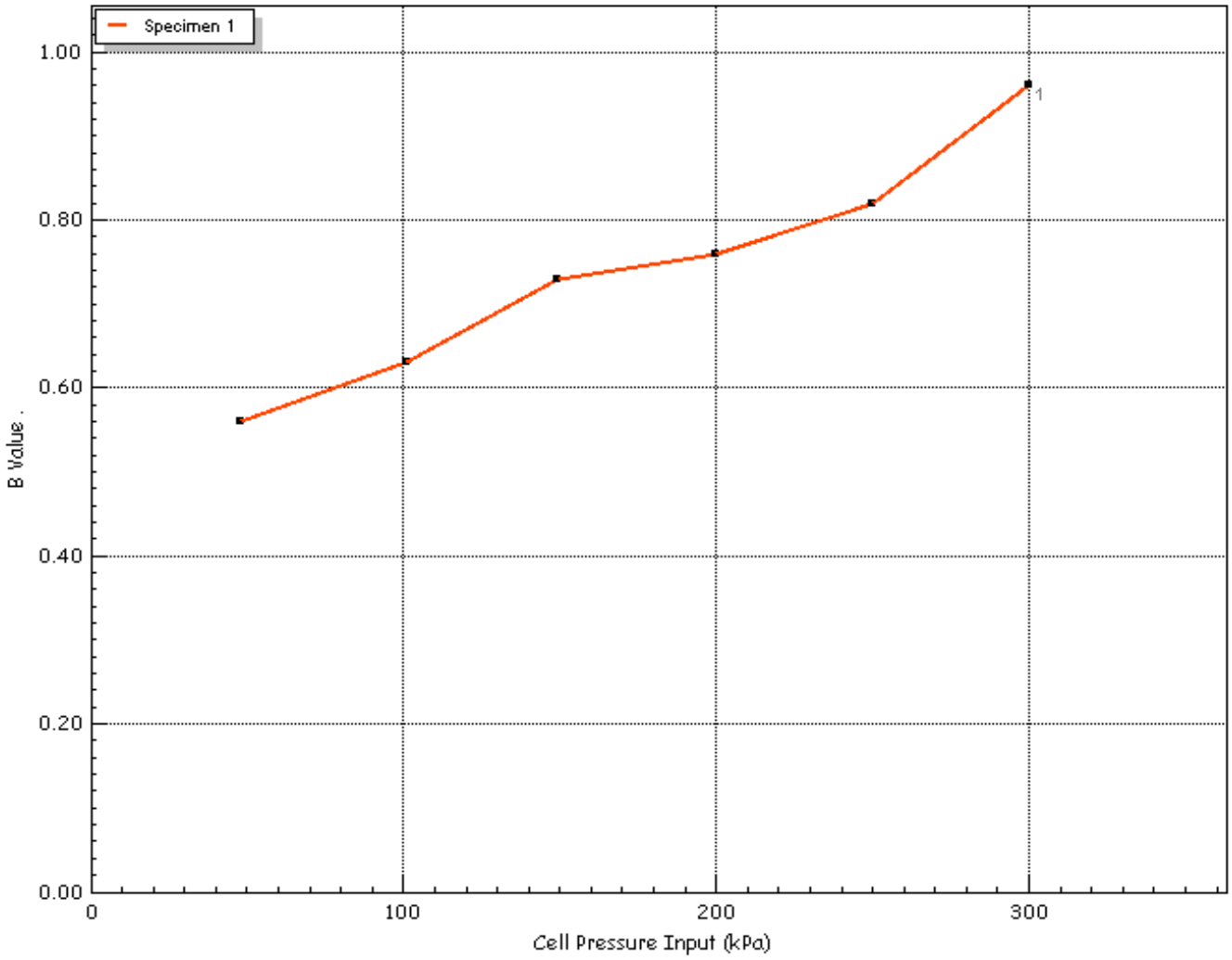
| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH117 2.50-3.00m B4 |
| | | Test Date | 29/05/2022 |
| Jobfile | Wansford to Sutton Dualling | Borehole | BH117 |
| Client | Ground Technology | Sample | 2.50-3.00m |
| | | Depth | 2.50-3.00m |

# Effective Stress Triaxial Compression

## Consolidated Drained

**Saturation Plots**

| | | | |
|---|---|---|---|
| Saturation Method | | | Stepped |
| Cell Pressure Input | σ | (kPa) | 300 |
| Pore Water Pressure Input | u pwp | (kPa) | 285 |
| B Value | B | . | 0.96 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH117 2.50-3.00m B4 |
| | | Test Date | 29/05/2022 |
| | | Borehole | BH117 |
| Jobfile | Wansford to Sutton Dualling | Sample | 2.50-3.00m |
| Client | Ground Technology | Depth | 2.50-3.00m |

# Effective Stress Triaxial Compression

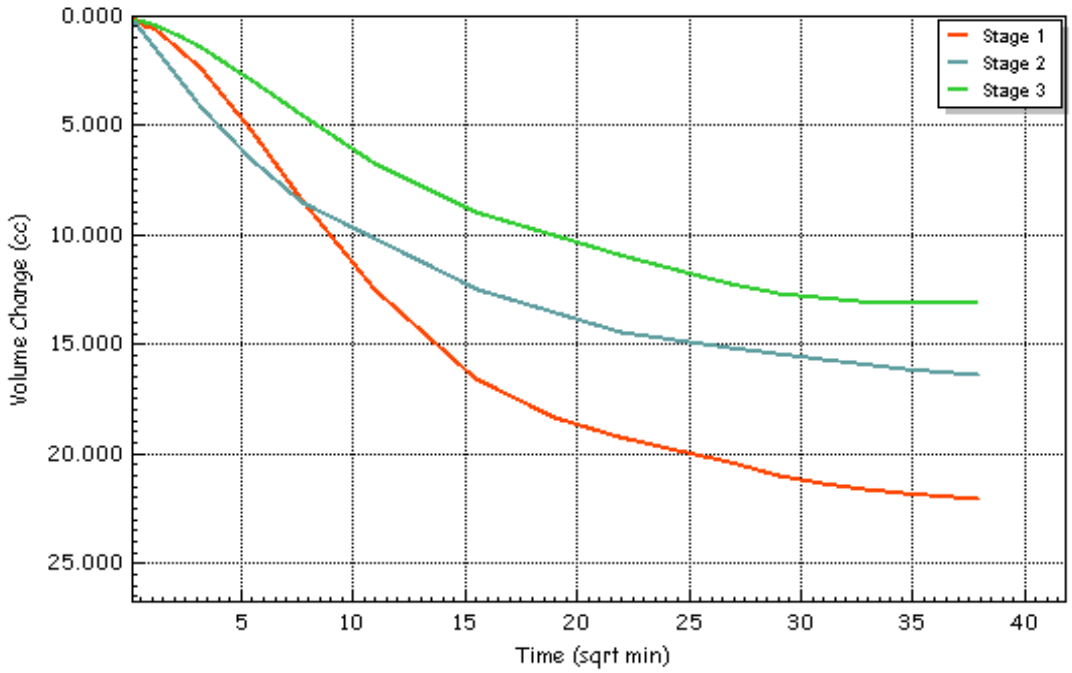
## Consolidated Drained

**Consolidation Plots**

| **Initial Conditions** | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_3$ | (kPa) | 325 | 351 | 375 |
| Initial Back Pressure | $u_{bi}$ | (kPa) | 300 | 301 | 300 |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | 306 | 328 | 346 |
| Drainage Method | | | Radial+One End | | |

| **Final Conditions** | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| PWP Dissipation % | U% | (%) | 100.00 | 100.00 | 100.00 |
| Volumetric Strain | $\varepsilon_v$% | (%) | 1.40 | 2.45 | 3.28 |
| Corrected Length | $L_C$ | (mm) | 199.1 | 189.5 | 179.8 |
| Corrected Area | $A_C$ | (cm2) | 77.84 | 79.76 | 82.46 |
| Corrected Volume | $V_C$ | (cc) | 1549.672 | 1533.250 | 1520.134 |
| T100 Time to Failure | $t_{100}$ | (min) | 294.30 | 210.37 | 377.90 |
| Consolidation | $c_v$ | (m2/year) | 0.702 | 0.982 | 0.547 |
| Compressibility | $m_v$ | (m2/MN) | 2.302 | 0.875 | 0.714 |
| Test Time | $t_F$ | (h:m:s) | 68:40:11 | 49:05:10 | 88:10:36 |
| Estimated Strain to Failure | $\varepsilon$% | (%) | 10.0 | 10.0 | 10.0 |
| Shear Machine Speed | $d_r$ | (mm/min) | 0.00483 | 0.00483 | 0.00483 |

**Notes**

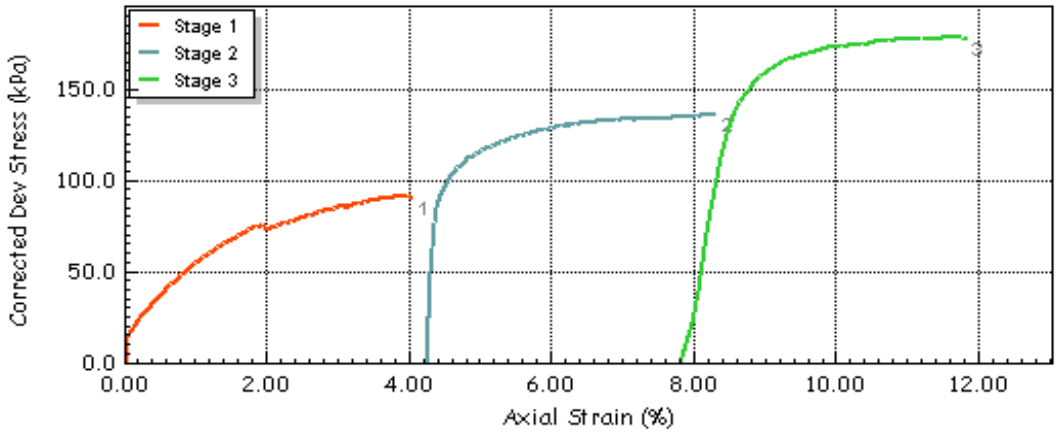


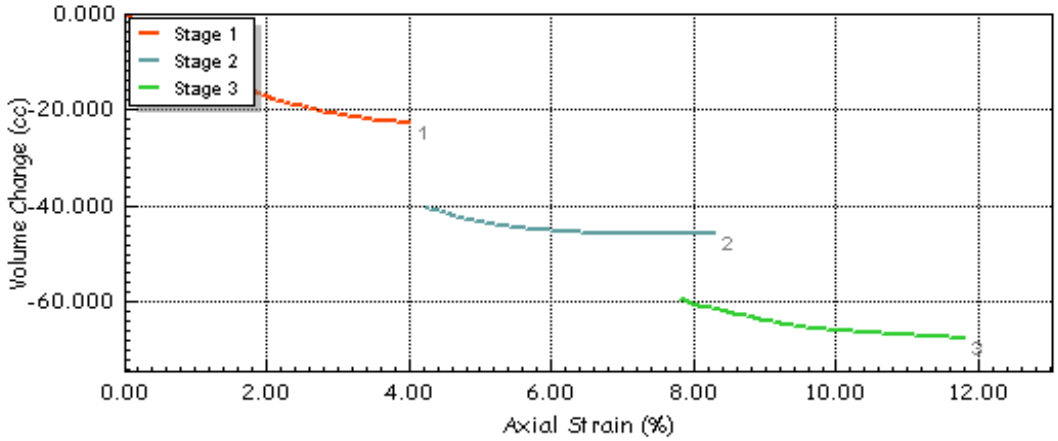

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH117 2.50-3.00m B4 |
| | | Test Date | 29/05/2022 |
| | | Borehole | BH117 |
| Jobfile | Wansford to Sutton Dualling | Sample | 2.50-3.00m |
| Client | Ground Technology | Depth | 2.50-3.00m |

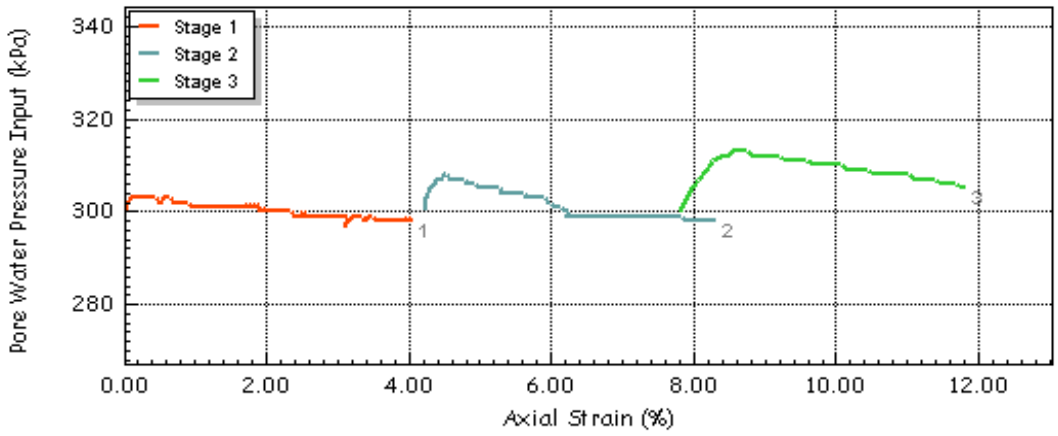
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**



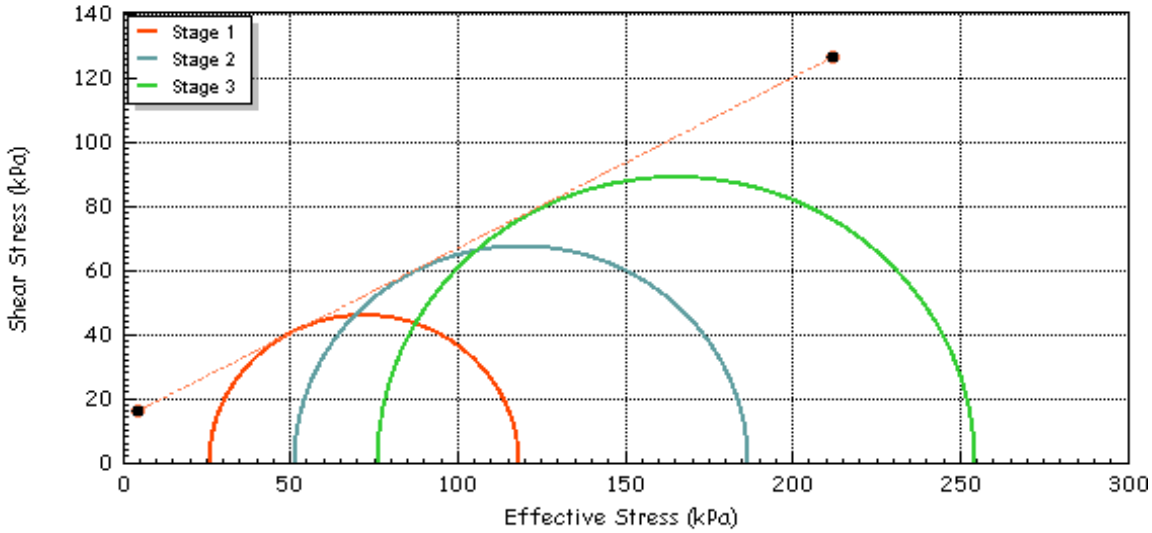

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH117 2.50-3.00m B4 |
| | | Test Date | 29/05/2022 |
| Jobfile | Wansford to Sutton Dualling | Borehole | BH117 |
| Client | Ground Technology | Sample | 2.50-3.00m |
| | | Depth | 2.50-3.00m |

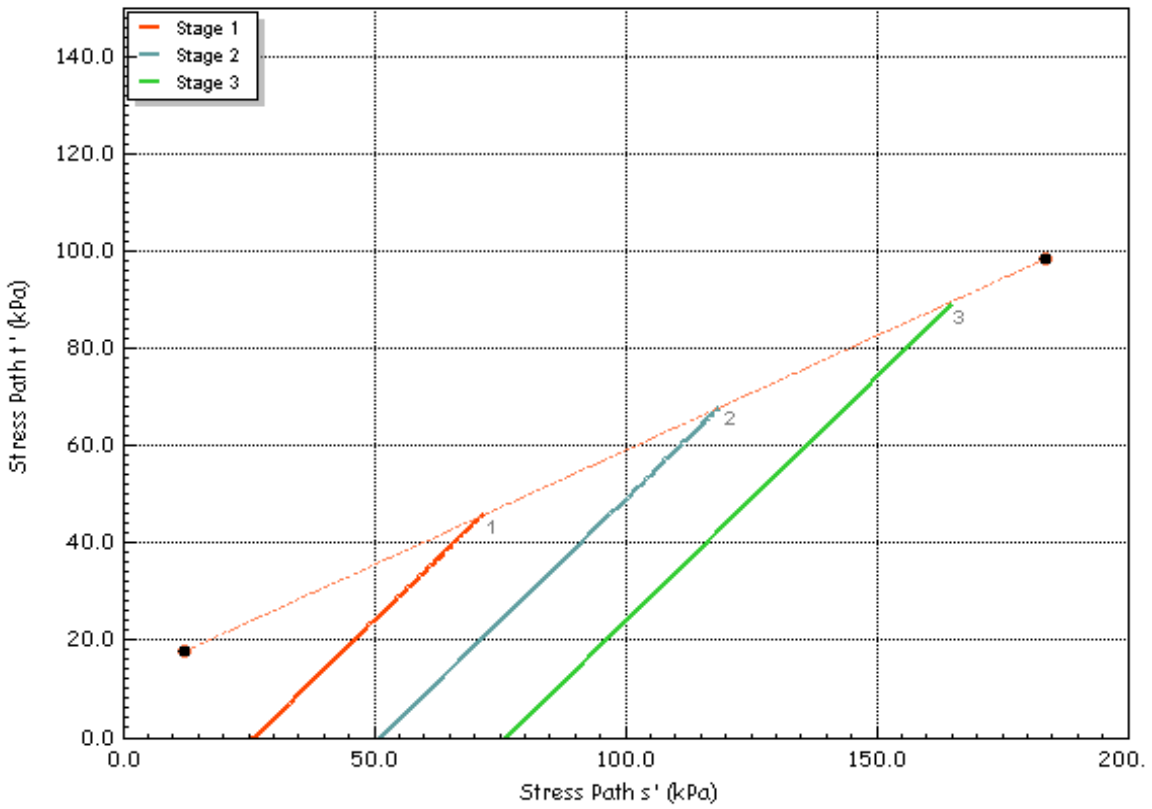
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Effective | c' | (kPa) | 13.64 | Effective Cohesion | c' | (kPa) | 13.64 |
| Effective Friction | ϕ' | (deg) | 28.0 | Effective Friction | ϕ' | (deg) | 28.0 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH117 2.50-3.00m B4 |
| | | Test Date | 29/05/2022 |
| Jobfile | Wansford to Sutton Dualling | Borehole | BH117 |
| Client | Ground Technology | Sample | 2.50-3.00m |
| | | Depth | 2.50-3.00m |

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# Effective Stress Triaxial Compression

## Consolidated Drained

**Summary Report**

| Sample Details | | | | |
|---|---|---|---|---|
| *sketch showing specimen location in original sample* | Depth | | 10.30-10.60m | |
| | Description | | See summary of soil descriptions. | |
| | Type | | Undisturbed, vertical orientation. | |
| | Initial Sample Length | $L_0$ | (mm) | 211.0 |
| | Initial Sample Diameter | $D_0$ | (mm) | 104.2 |
| | Initial Sample Weight | $W_0$ | (gr) | 3397.0 |
| | Initial Bulk Density | $\rho_0$ | (Mg/m3) | 1.89 |
| | Particle Density | $\rho_s$ | (Mg/m3) | 2.66 |

| **Initial Conditions** | | | Stage 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_{3i}$ | (kPa) | 800 | 900 | 1000 | |
| Initial Back Pressure | $U_{bi}$ | (kPa) | 700 | 700 | 700 | |
| Membrane Thickness | $m_b$ | (mm) | 0.600 | | | |
| Displacement Input | $L_{IP}$ | (mm) | CH 2 | | | |
| Load Input | $N_{IP}$ | (N) | CH 4 | | | |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | CH 3 | | | |
| Sample Volume | $V$ | (cc) | CH 2 | | | |
| Initial Moisture | $\omega_i$ | (%) | 30 | | | |
| Initial Dry Density | $\rho_{di}$ | (Mg/m3) | 1.45 | | | |
| Initial Voids Ratio | $e_i$ | . | 0.837 | | | |
| Initial Degree of Saturation | $S_i$ | (%) | 97 | | | |
| B Value | $B$ | . | 0.96 | | | |

| **Final Conditions** | | | | | | |
|---|---|---|---|---|---|---|
| Final Moisture | $\omega_f$ | (%) | 27 | | | |
| Final Dry Density | $\rho_{df}$ | (Mg/m3) | 1.53 | | | |
| Final Voids Ratio | $e_f$ | . | 0.737 | | | |
| Final Degree of Saturation | $S_f$ | (%) | 98.6 | | | |
| | | | Stage 1 | 2 | 3 | 4 |
| Failure Criteria | | . | Max. Dev. Stress | Max. Dev. Stress | Max. Dev. Stress | |
| Strain At Failure | $\varepsilon_f$ | (%) | 4.88 | 8.15 | 14.07 | |
| Stress At Failure | $(\sigma_1-\sigma_3)$ | (kPa) | 145.1 | 242.2 | 334.6 | |
| Minor Stress At Failure | $\sigma_3'$ | (kPa) | 98.0 | 200.0 | 296.0 | |
| Major Stress At Failure | $\sigma_1'$ | (kPa) | 243.1 | 442.2 | 630.6 | |
| Principal Stress Ratio At Failure | $\sigma_1'/\sigma_3'$ | | 2.480 | 2.211 | 2.131 | |

**Notes**

*Plastic*

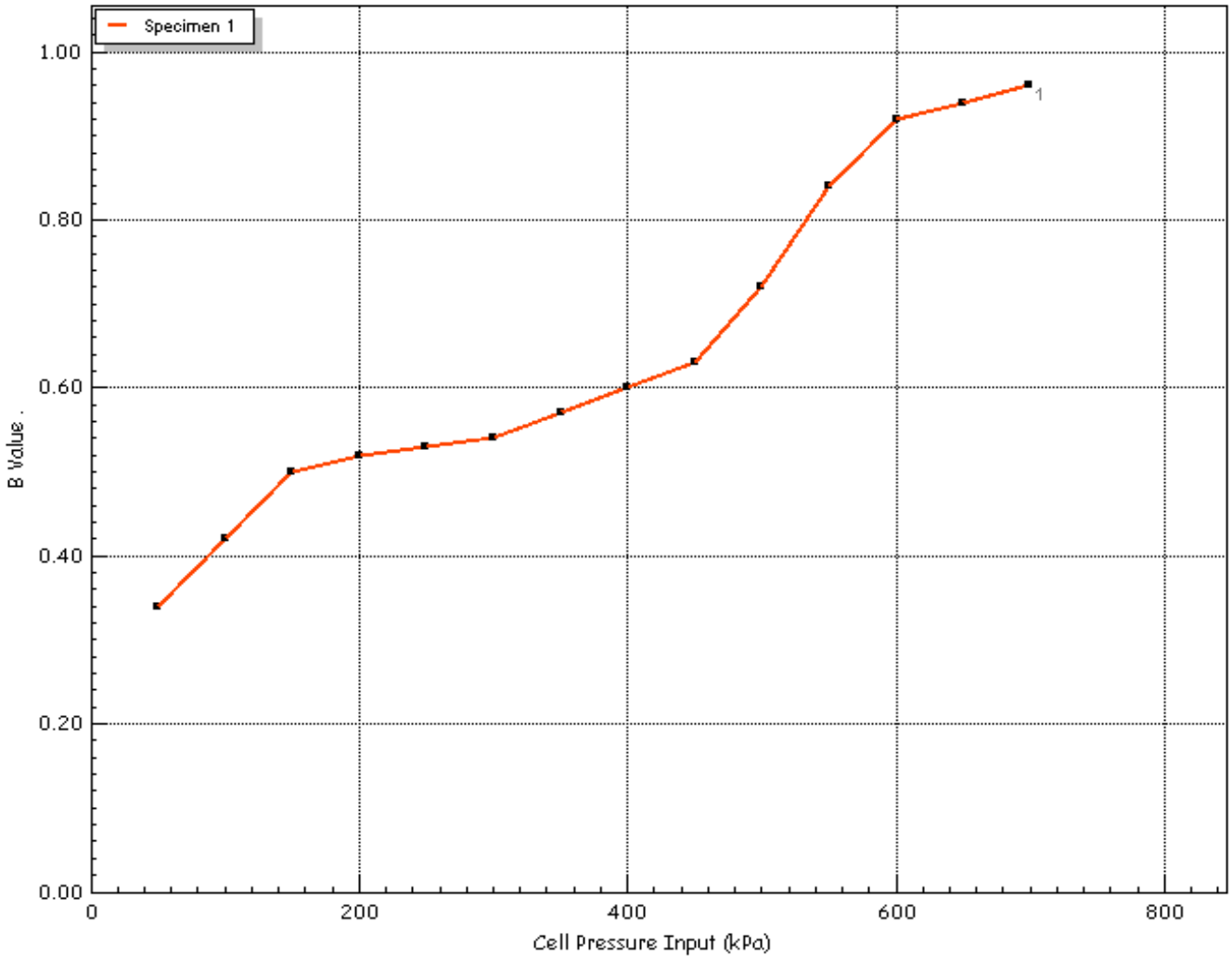
| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH132 10.30-10.60m |
| | | Test Date | 02/06/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH132 |
| | | Sample | CS113 |
| Client | Ground Technology | Depth | 10.30-10.60m |

# Effective Stress Triaxial Compression

## Consolidated Drained

**Saturation Plots**

| | | | |
|---|---|---|---|
| Saturation Method | | | Stepped |
| Cell Pressure Input | σ | (kPa) | 699 |
| Pore Water Pressure Input | u pwp | (kPa) | 682 |
| B Value | B | . | 0.96 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH132 10.30-10.60m |
| | | Test Date | 02/06/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH132 |
| | | Sample | CS113 |
| Client | Ground Technology | Depth | 10.30-10.60m |

*

# Effective Stress Triaxial Compression

## Consolidated Drained

**Consolidation Plots**

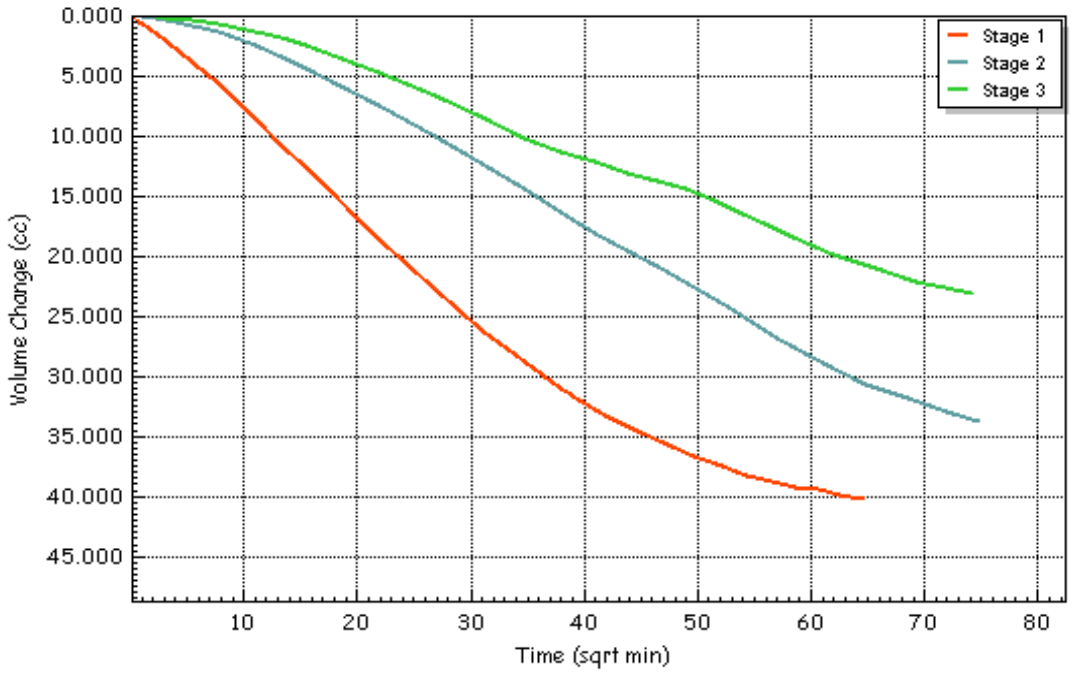
**Initial Conditions**

| | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_3$ | (kPa) | 800 | 900 | 1000 |
| Initial Back Pressure | $u_{bi}$ | (kPa) | 700 | 700 | 700 |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | 773 | 794 | 824 |
| Drainage Method | | | Radial+One End | | |

**Final Conditions**

| | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| PWP Dissipation % | U% | (%) | 95.89 | 95.74 | 95.16 |
| Volumetric Strain | $\varepsilon_v$% | (%) | 2.23 | 4.11 | 5.39 |
| Corrected Length | $L_C$ | (mm) | 209.5 | 196.1 | 184.9 |
| Corrected Area | $A_C$ | (cm2) | 84.04 | 86.05 | 88.24 |
| Corrected Volume | $V_C$ | (cc) | 1760.126 | 1726.398 | 1703.252 |
| T100 Time to Failure | $t_{100}$ | (min) | 1165.86 | 4586.79 | 4125.99 |
| Consolidation | $c_v$ | (m2/year) | 0.192 | 0.049 | 0.054 |
| Compressibility | $m_v$ | (m2/MN) | 0.319 | 0.456 | 0.457 |
| Test Time | $t_F$ | (h:m:s) | 272:02:02 | 1070:15:03 | 962:43:51 |
| Estimated Strain to Failure | $\varepsilon$% | (%) | 5.0 | 5.0 | 5.0 |
| Shear Machine Speed | $d_r$ | (mm/min) | 0.00425 | 0.00425 | 0.00425 |

**Notes**




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH132 10.30-10.60m |
| | | Test Date | 02/06/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH132 |
| | | Sample | CS113 |
| Client | Ground Technology | Depth | 10.30-10.60m |

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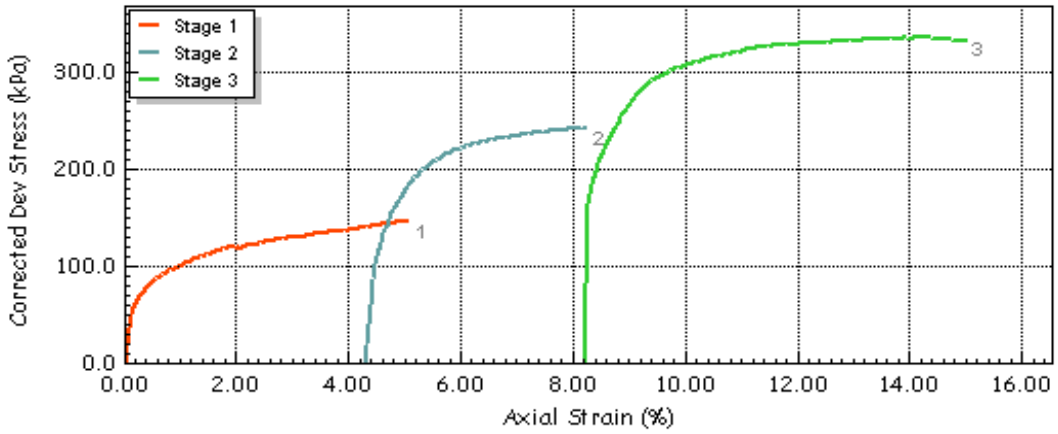
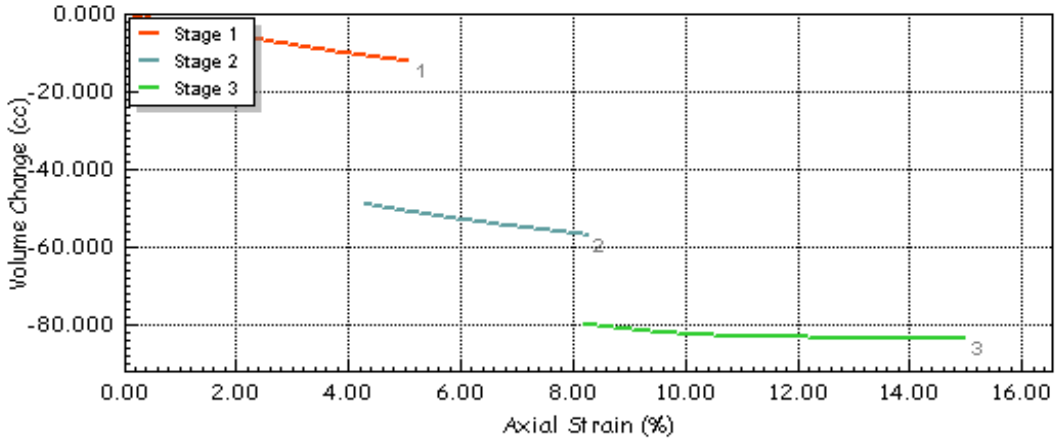
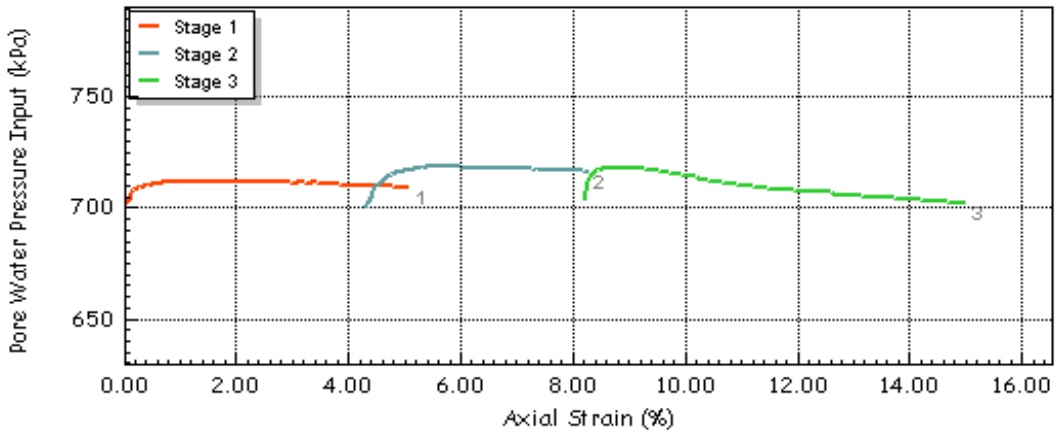
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**



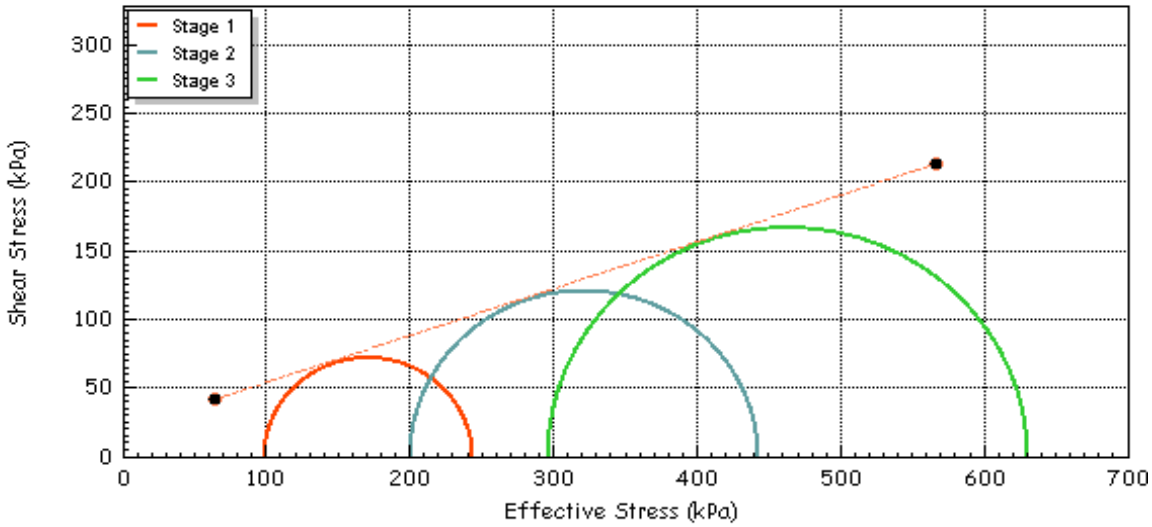

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH132 10.30-10.60m |
| | | Test Date | 02/06/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH132 |
| | | Sample | CS113 |
| Client | Ground Technology | Depth | 10.30-10.60m |

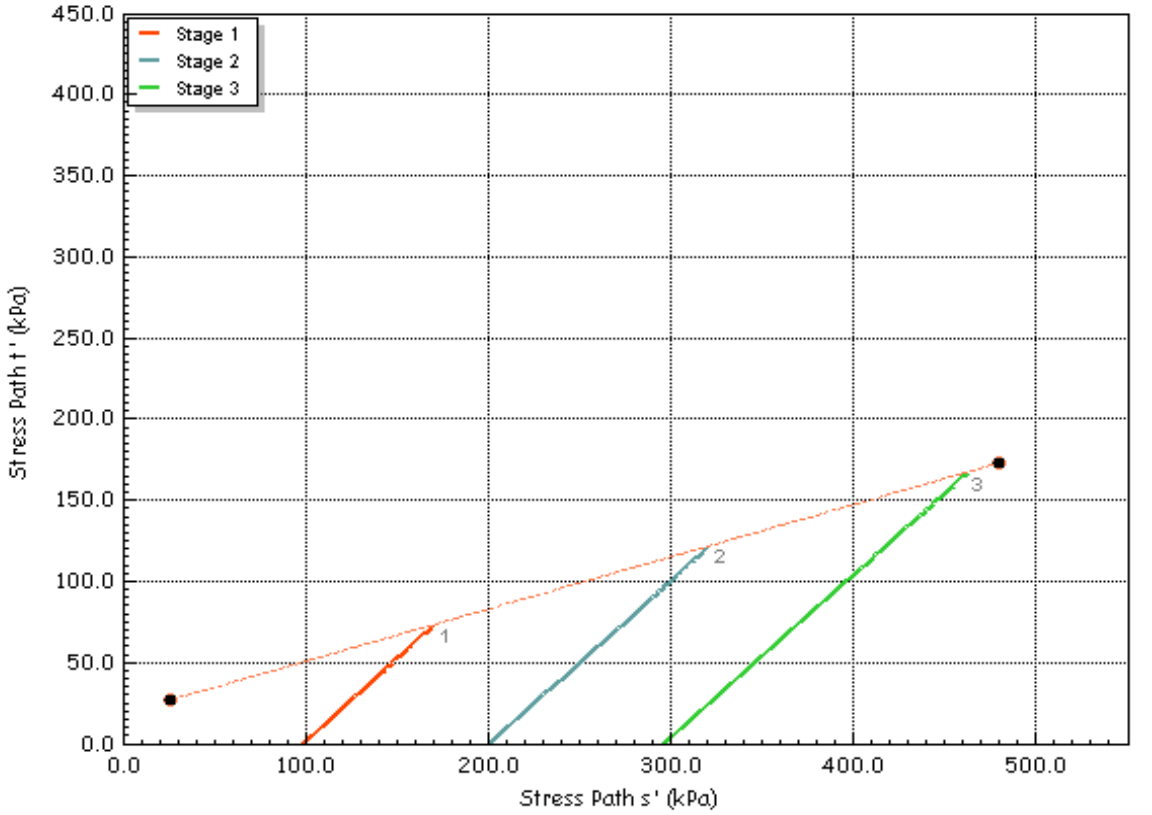
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Effective | c' | (kPa) | 19.93 | Effective Cohesion | c' | (kPa) | 19.93 |
| Effective Friction | ϕ' | (deg) | 18.8 | Effective Friction | ϕ' | (deg) | 18.8 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH132 10.30-10.60m |
| | | Test Date | 02/06/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH132 |
| | | Sample | CS113 |
| Client | Ground Technology | Depth | 10.30-10.60m |

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# Effective Stress Triaxial Compression

## Consolidated Undrained

**Summary Report**

| Sample Details | | | | |
|---|---|---|---|---|
| *sketch showing specimen location in original sample* | Depth | | 6.74-7.00m | |
| | Description | | See summary of soil descriptions. | |
| | Type | | Undisturbed, vertical orientation. | |
| | Initial Sample Length | $L_0$ | (mm) | 200.1 |
| | Initial Sample Diameter | $D_0$ | (mm) | 100.0 |
| | Initial Sample Weight | $W_0$ | (gr) | 3072.0 |
| | Initial Bulk Density | $\rho_0$ | (Mg/m3) | 1.95 |
| | Particle Density | $\rho_s$ | (Mg/m3) | 2.66 |

| **Initial Conditions** | | | Stage 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_{3i}$ | (kPa) | 1270 | 1340 | 1410 | |
| Initial Back Pressure | $U_{bi}$ | (kPa) | 1200 | 1200 | 1200 | |
| Membrane Thickness | $m_b$ | (mm) | 0.600 | | | |
| Displacement Input | $L_{IP}$ | (mm) | CH 2 | | | |
| Load Input | $N_{IP}$ | (N) | CH 1 | | | |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | CH 3 | | | |
| Sample Volume | $V$ | (cc) | CH 2 | | | |
| Initial Moisture | $\omega_i$ | (%) | 25 | | | |
| Initial Dry Density | $\rho_{di}$ | (Mg/m3) | 1.56 | | | |
| Initial Voids Ratio | $e_i$ | . | 0.708 | | | |
| Initial Degree of Saturation | $S_i$ | (%) | 96 | | | |
| B Value | B | . | 0.98 | | | |

| **Final Conditions** | | | | | | |
|---|---|---|---|---|---|---|
| Final Moisture | $\omega_f$ | (%) | 26 | | | |
| Final Dry Density | $\rho_{df}$ | (Mg/m3) | 1.68 | | | |
| Final Voids Ratio | $e_f$ | . | 0.584 | | | |
| Final Degree of Saturation | $S_f$ | (%) | 100.0 | | | |
| | | | Stage 1 | 2 | 3 | 4 |
| Failure Criteria | | . | Max. Dev. Stress | Max. Dev. Stress | Max. Dev. Stress | |
| Strain At Failure | $\varepsilon_f$ | (%) | 1.95 | 5.14 | 7.97 | |
| Stress At Failure | $(\sigma_1-\sigma_3)$ | (kPa) | 68.6 | 127.3 | 182.7 | |
| Minor Stress At Failure | $\sigma_3'$ | (kPa) | 45.0 | 103.0 | 156.0 | |
| Major Stress At Failure | $\sigma_1'$ | (kPa) | 113.6 | 230.3 | 338.7 | |
| Principal Stress Ratio At Failure | $\sigma_1'/\sigma_3'$ | | 2.525 | 2.236 | 2.171 | |

**Notes**

*Brittle*

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 7 | Test Name | BH133 6.74-7.00m CS106 |
| | | Test Date | 30/05/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH133 |
| | | Sample | 6.74-7.00m |
| Client | Ground Technology | Depth | 6.74-7.00m |

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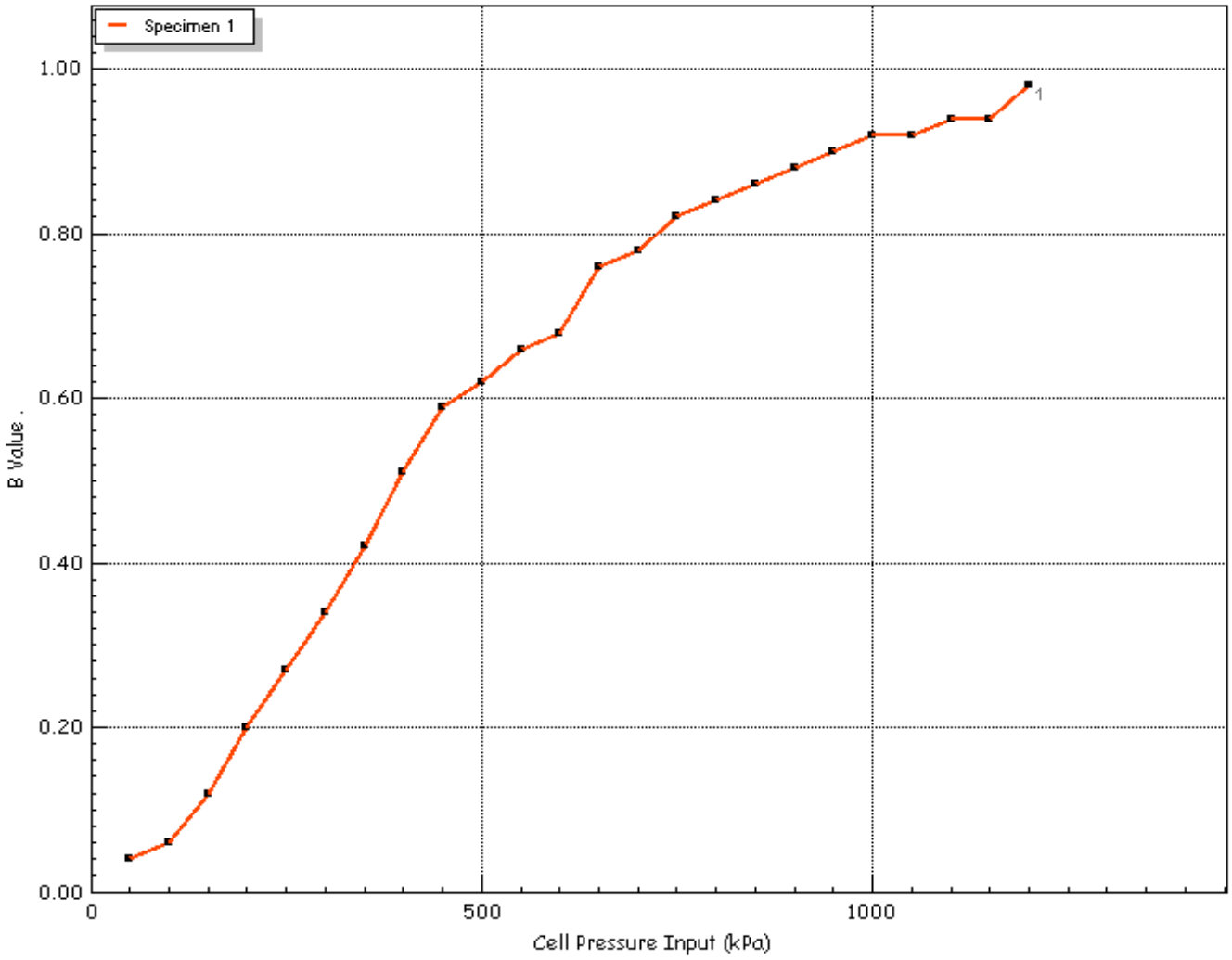
# Effective Stress Triaxial Compression

## Consolidated Undrained

**Saturation Plots**

| | | | |
|---|---|---|---|
| Saturation Method | | | Stepped |
| Cell Pressure Input | σ | (kPa) | 1200 |
| Pore Water Pressure Input | u pwp | (kPa) | 1180 |
| B Value | B | . | 0.98 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 7 | Test Name | BH133 6.74-7.00m CS106 |
| | | Test Date | 30/05/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH133 |
| | | Sample | 6.74-7.00m |
| Client | Ground Technology | Depth | 6.74-7.00m |

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# Effective Stress Triaxial Compression

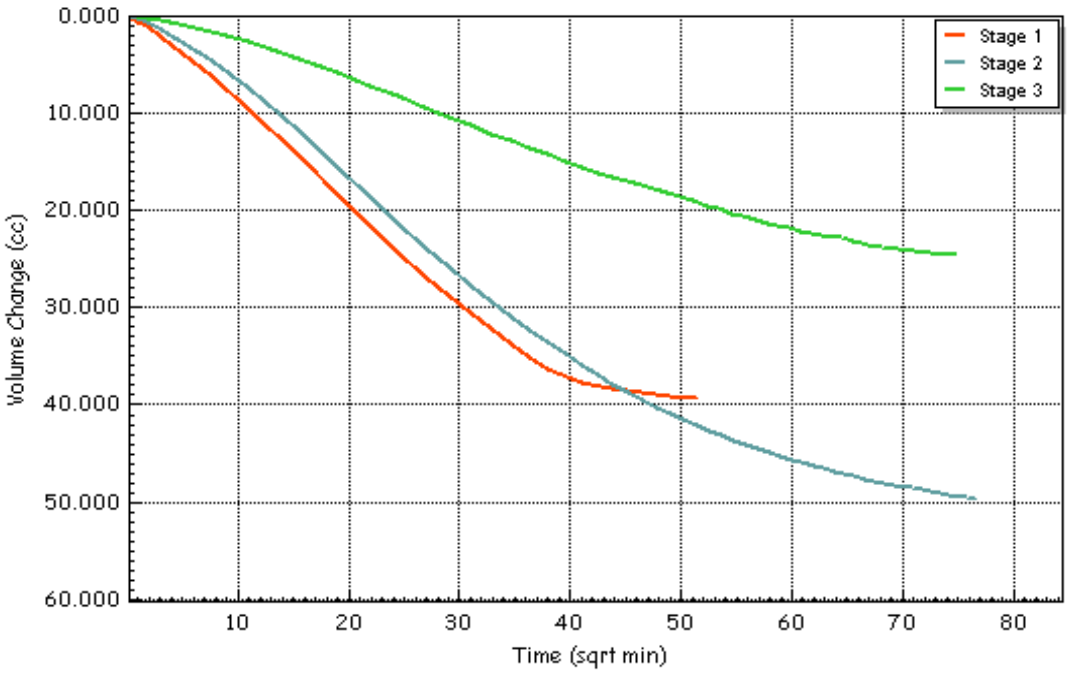
## Consolidated Undrained

**Consolidation Plots**

| **Initial Conditions** | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_3$ | (kPa) | 1270 | 1340 | 1410 |
| Initial Back Pressure | $u_{bi}$ | (kPa) | 1200 | 1200 | 1200 |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | 1251 | 1281 | 1281 |
| Drainage Method | | | Radial+One End | | |

| **Final Conditions** | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| PWP Dissipation % | U% | (%) | 100.00 | 100.00 | 95.06 |
| Volumetric Strain | $\varepsilon_v$% | (%) | 2.50 | 3.16 | 1.57 |
| Corrected Length | $L_C$ | (mm) | 198.4 | 192.3 | 184.8 |
| Corrected Area | $A_C$ | (cm2) | 77.23 | 77.14 | 78.89 |
| Corrected Volume | $V_C$ | (cc) | 1532.349 | 1482.679 | 1458.078 |
| t100 | $t_{100}$ | (min) | 1189.27 | 2614.26 | 27.84 |
| Consolidation | $c_v$ | (m2/year) | 0.174 | 0.079 | 7.417 |
| Compressibility | $m_v$ | (m2/MN) | 0.489 | 0.390 | 0.203 |
| Test Time | $t_F$ | (h:m:s) | 35:40:41 | 78:25:40 | 02:00:00 |
| Estimated Strain to Failure | $\varepsilon$% | (%) | 5.0 | 5.0 | 5.0 |
| Shear Machine Speed | $d_r$ | (mm/min) | 0.00463 | 0.00463 | 0.00463 |

**Notes**




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 7 | Test Name | BH133 6.74-7.00m CS106 |
| | | Test Date | 30/05/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH133 |
| | | Sample | 6.74-7.00m |
| Client | Ground Technology | Depth | 6.74-7.00m |

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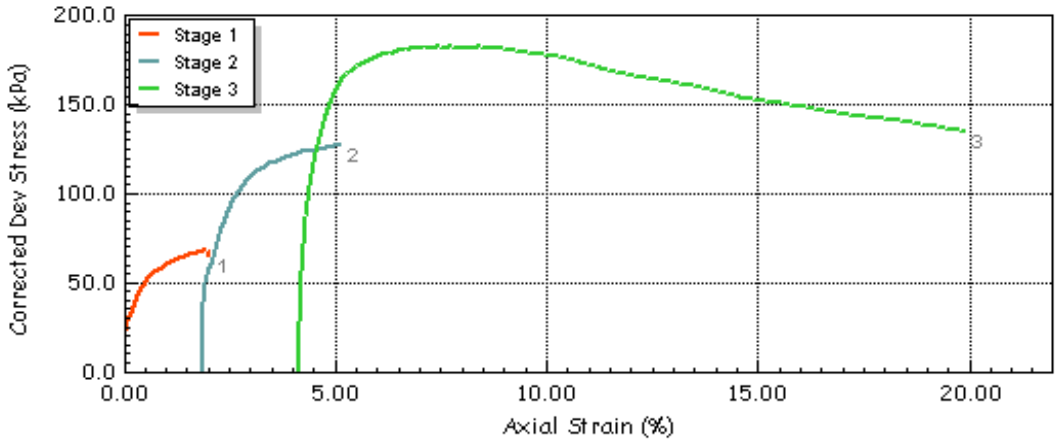
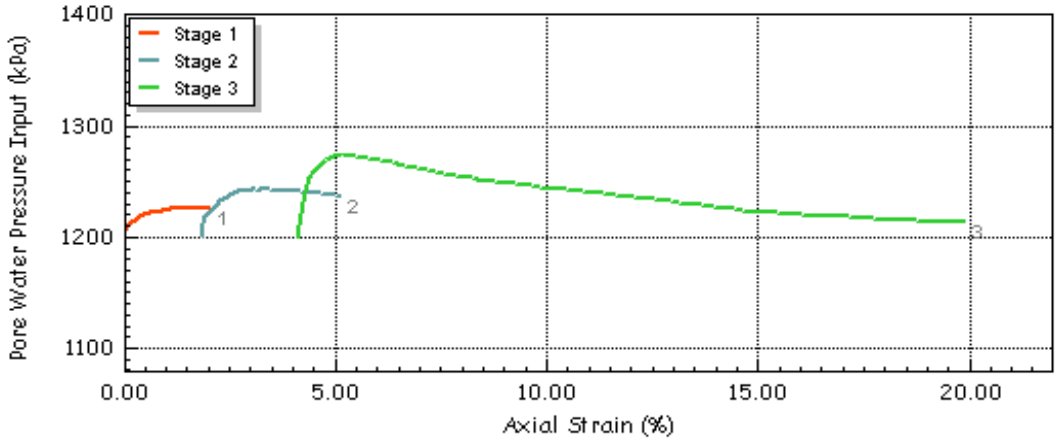
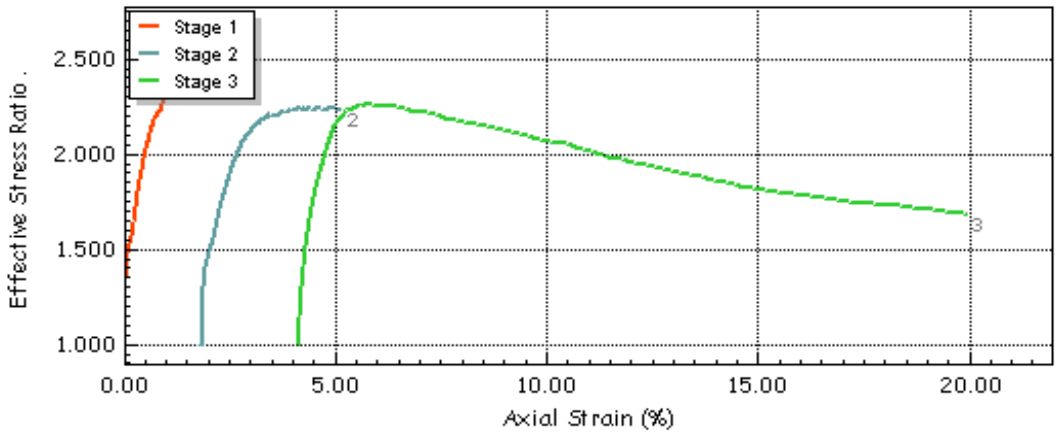
# Effective Stress Triaxial Compression

## Consolidated Undrained

**Shear Stage Plots**



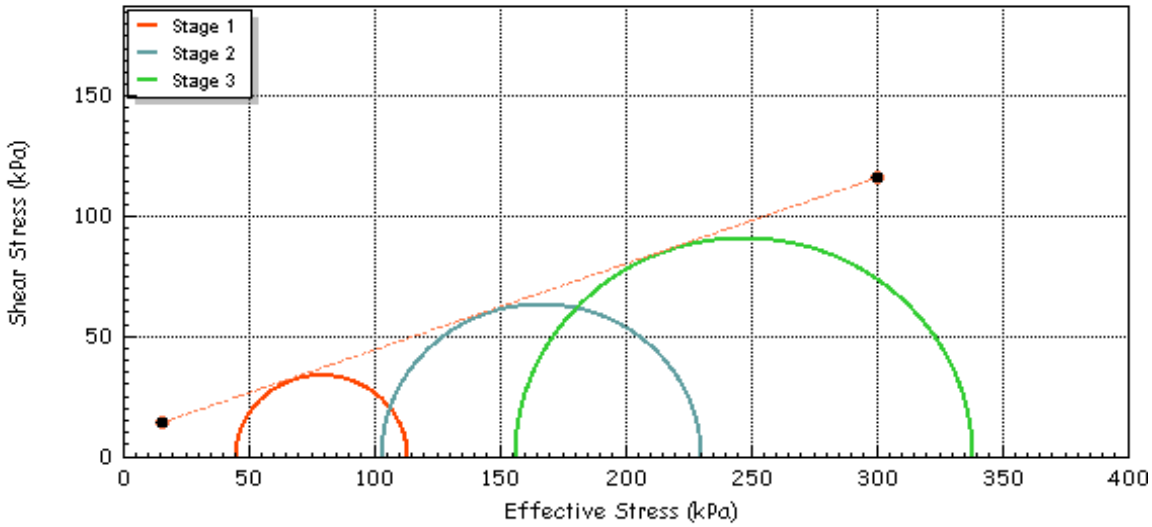

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 7 | Test Name | BH133 6.74-7.00m CS106 |
| | | Test Date | 30/05/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH133 |
| | | Sample | 6.74-7.00m |
| Client | Ground Technology | Depth | 6.74-7.00m |

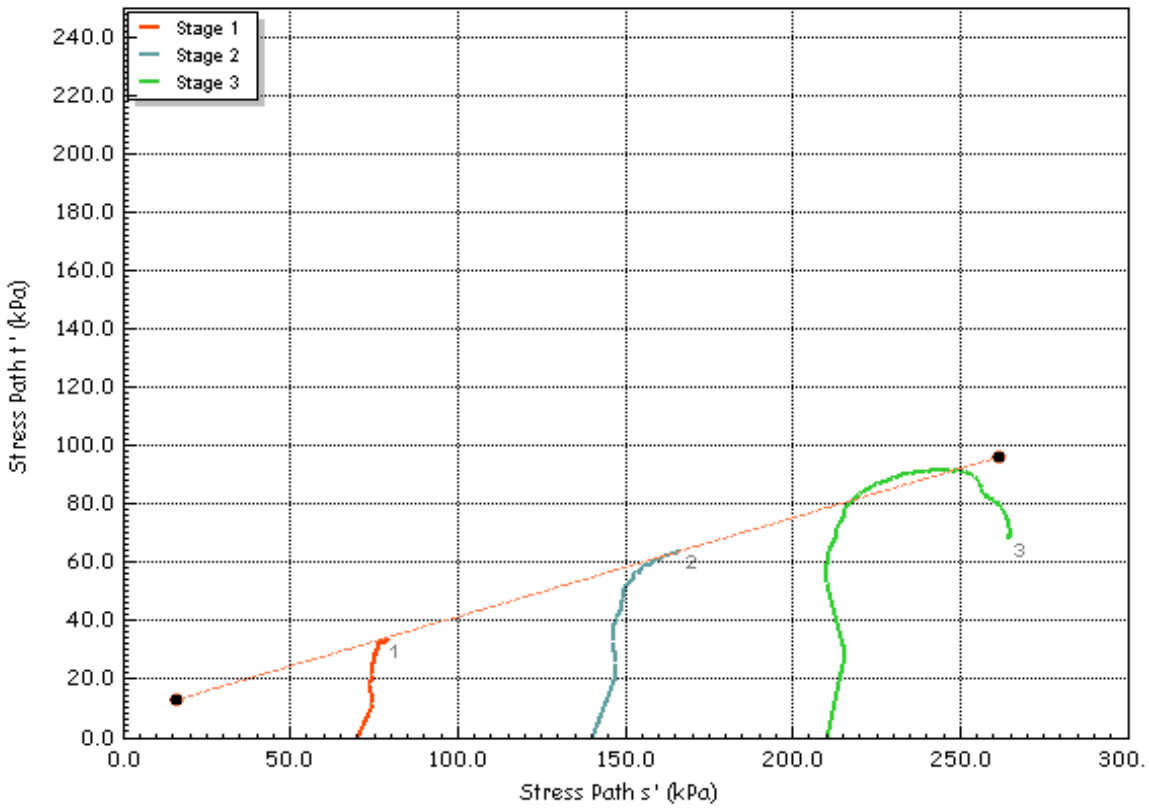
# Effective Stress Triaxial Compression

## Consolidated Undrained

**Shear Stage Plots**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Effective | c' | (kPa) | 8.29 | Effective Cohesion | c' | (kPa) | 8.29 |
| Effective Friction | ϕ' | (deg) | 19.7 | Effective Friction | ϕ' | (deg) | 19.7 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 7 | Test Name | BH133 6.74-7.00m CS106 |
| | | Test Date | 30/05/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH133 |
| | | Sample | 6.74-7.00m |
| Client | Ground Technology | Depth | 6.74-7.00m |

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# Effective Stress Triaxial Compression

## Consolidated Drained

**Summary Report**

| Sample Details | | | | |
|---|---|---|---|---|
| *sketch showing specimen location in original sample* | Depth | | | 10.30-10.60m |
| | Description | | | See summary of soil descriptions. |
| | Type | | | Undisturbed, vertical orientation. |
| | Initial Sample Length | $L_0$ | (mm) | 200.0 |
| | Initial Sample Diameter | $D_0$ | (mm) | 100.0 |
| | Initial Sample Weight | $W_0$ | (gr) | 3154.0 |
| | Initial Bulk Density | $\rho_0$ | (Mg/m3) | 2.01 |
| | Particle Density | $\rho_s$ | (Mg/m3) | 2.66 |

| **Initial Conditions** | | | Stage 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_{3i}$ | (kPa) | 400 | 499 | 600 | |
| Initial Back Pressure | $U_{bi}$ | (kPa) | 300 | 309 | 301 | |
| Membrane Thickness | $m_b$ | (mm) | 0.600 | | | |
| Displacement Input | $L_{IP}$ | (mm) | CH 2 | | | |
| Load Input | $N_{IP}$ | (N) | CH 1 | | | |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | CH 3 | | | |
| Sample Volume | $V$ | (cc) | CH 6 | | | |
| Initial Moisture | $\omega_i$ | (%) | 21 | | | |
| Initial Dry Density | $\rho_{di}$ | (Mg/m3) | 1.65 | | | |
| Initial Voids Ratio | $e_i$ | . | 0.610 | | | |
| Initial Degree of Saturation | $S_i$ | (%) | 94 | | | |
| B Value | B | . | 0.96 | | | |

| **Final Conditions** | | | | | | |
|---|---|---|---|---|---|---|
| Final Moisture | $\omega_f$ | (%) | 19 | | | |
| Final Dry Density | $\rho_{df}$ | (Mg/m3) | 1.72 | | | |
| Final Voids Ratio | $e_f$ | . | 0.549 | | | |
| Final Degree of Saturation | $S_f$ | (%) | 90.0 | | | |
| | | | Stage 1 | 2 | 3 | 4 |
| Failure Criteria | | . | Max. Dev. Stress | Max. Dev. Stress | Max. Dev. Stress | |
| Strain At Failure | $\varepsilon_f$ | (%) | 7.82 | 11.97 | 14.98 | |
| Stress At Failure | $(\sigma_1-\sigma_3)$ | (kPa) | 156.8 | 279.1 | 394.1 | |
| Minor Stress At Failure | $\sigma_3'$ | (kPa) | 99.0 | 200.0 | 300.0 | |
| Major Stress At Failure | $\sigma_1'$ | (kPa) | 255.8 | 479.1 | 694.1 | |
| Principal Stress Ratio At Failure | $\sigma_1'/\sigma_3'$ | | 2.584 | 2.396 | 2.314 | |

**Notes**

*Plastic*

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH115 10.30-10.60m CS103 |
| | | Test Date | 30/05/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH115 |
| | | Sample | 10.30-10.60m |
| Client | Ground Technology | Depth | 10.30-10.60m |

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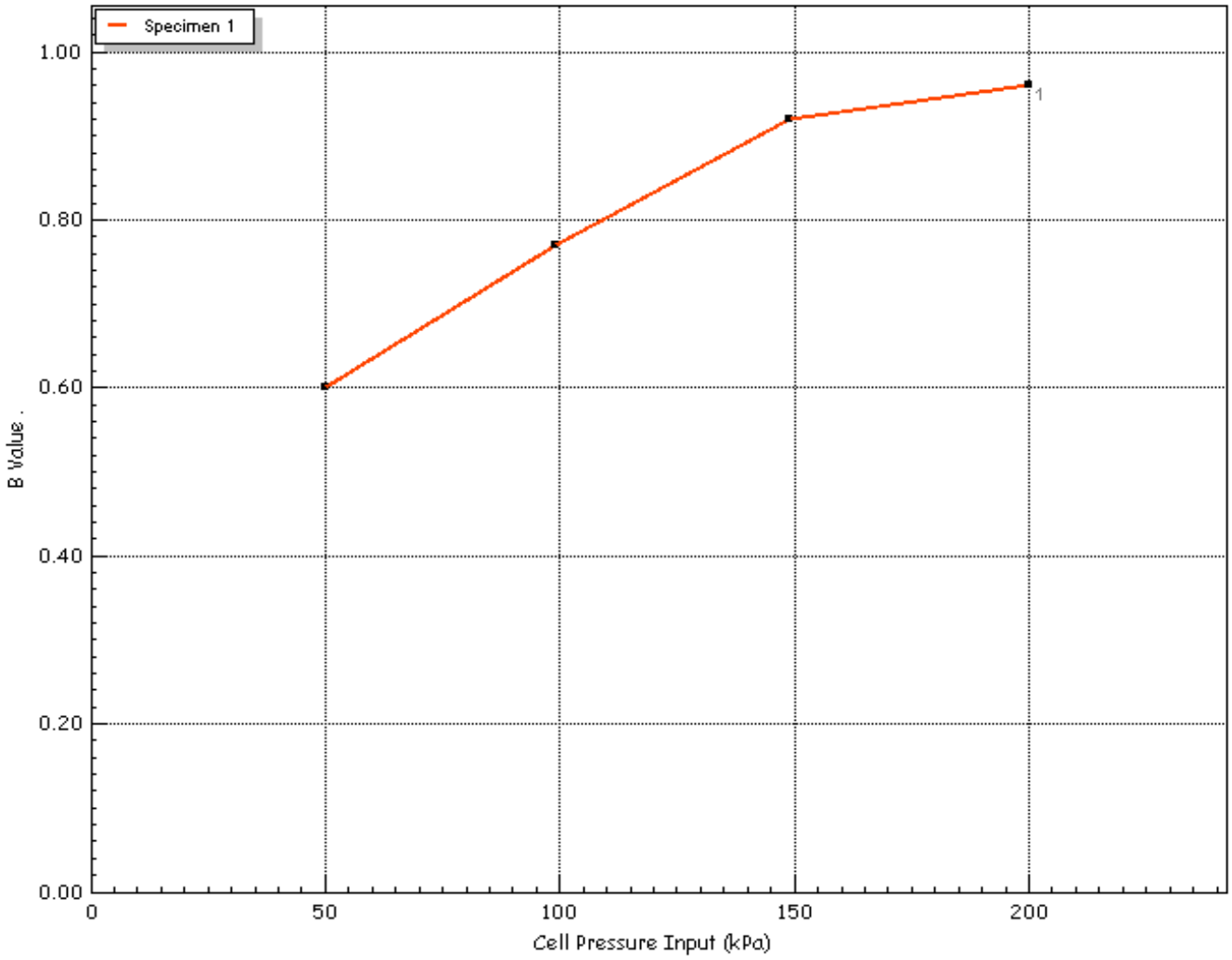
# Effective Stress Triaxial Compression

## Consolidated Drained

**Saturation Plots**

| | | | |
|---|---|---|---|
| Saturation Method | | | Stepped |
| Cell Pressure Input | σ | (kPa) | 200 |
| Pore Water Pressure Input | u pwp | (kPa) | 183 |
| B Value | B | . | 0.96 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH115 10.30-10.60m CS103 |
| | | Test Date | 30/05/2022 |
| | Wansford to Sutton Dualling | Borehole | BH115 |
| Jobfile | Supplementary GI | Sample | 10.30-10.60m |
| Client | Ground Technology | Depth | 10.30-10.60m |

# Effective Stress Triaxial Compression

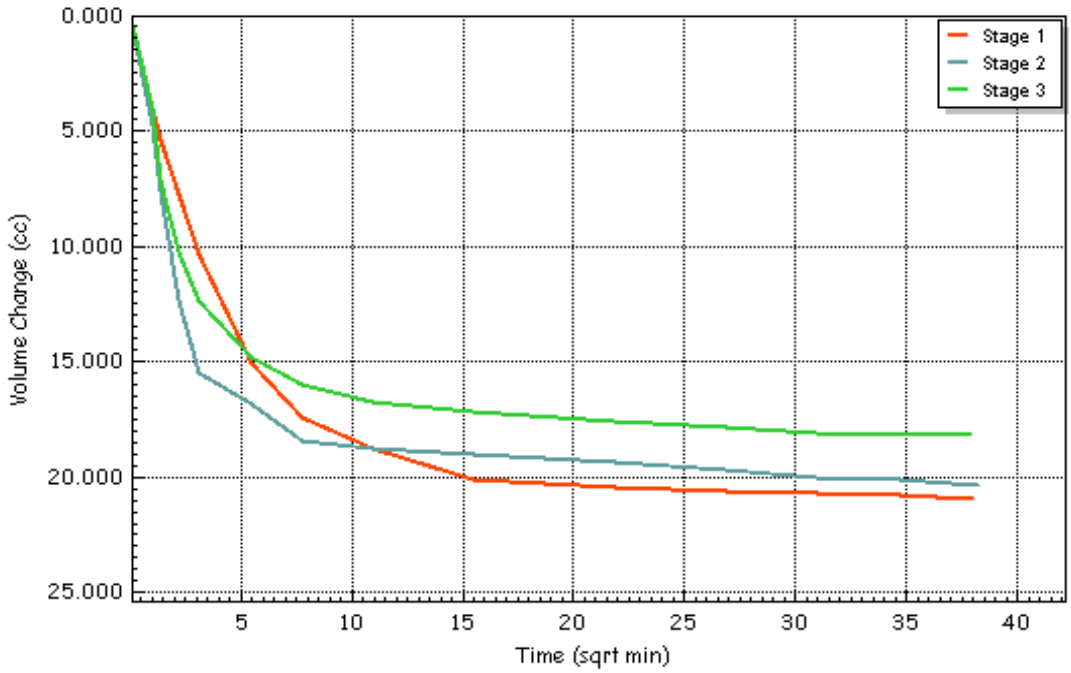
## Consolidated Drained

**Consolidation Plots**

| **Initial Conditions** | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_3$ | (kPa) | 400 | 500 | 600 |
| Initial Back Pressure | $u_{bi}$ | (kPa) | 300 | 300 | 300 |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | 371 | 424 | 546 |
| Drainage Method | | | Radial+One End | | |

| **Final Conditions** | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| PWP Dissipation % | U% | (%) | 100.00 | 98.39 | 99.80 |
| Volumetric Strain | $\varepsilon_v$% | (%) | 1.33 | 1.30 | 1.16 |
| Corrected Length | $L_C$ | (mm) | 199.1 | 182.7 | 172.9 |
| Corrected Area | $A_C$ | (cm2) | 77.84 | 83.70 | 87.42 |
| Corrected Volume | $V_C$ | (cc) | 1549.839 | 1529.492 | 1511.281 |
| t100 | $t_{100}$ | (min) | 42.90 | 10.29 | 8.41 |
| Consolidation | $c_v$ | (m2/year) | 4.814 | 20.068 | 24.554 |
| Compressibility | $m_v$ | (m2/MN) | 0.187 | 0.106 | 0.047 |
| Test Time | $t_F$ | (h:m:s) | 10:00:36 | 02:24:03 | 02:00:00 |
| Estimated Strain to Failure | $\varepsilon$% | (%) | 5.0 | 5.0 | 5.0 |
| Shear Machine Speed | $d_r$ | (mm/min) | 0.01658 | 0.01658 | 0.01658 |

**Notes**

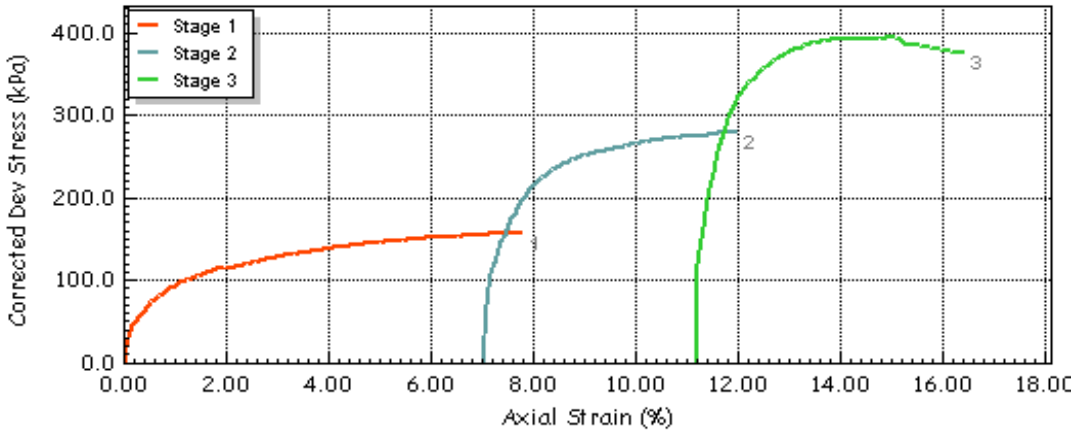


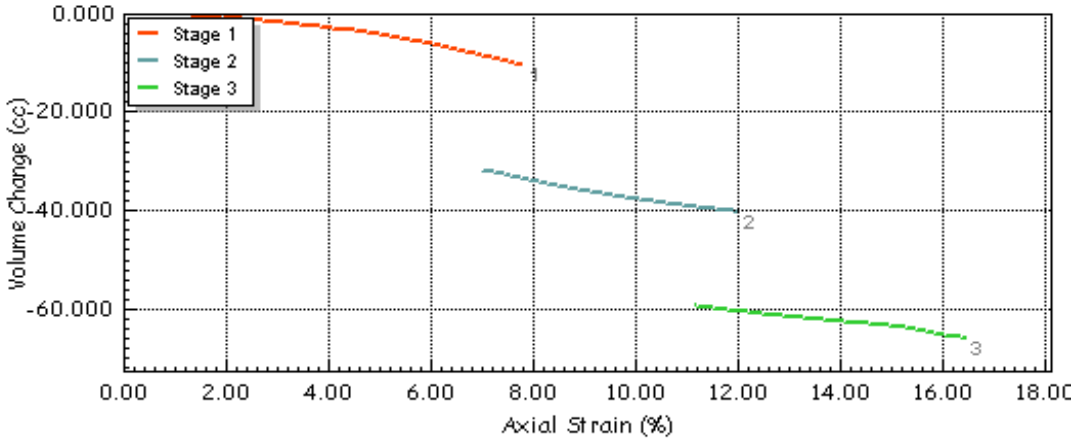

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH115 10.30-10.60m CS103 |
| | | Test Date | 30/05/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH115 |
| | | Sample | 10.30-10.60m |
| Client | Ground Technology | Depth | 10.30-10.60m |

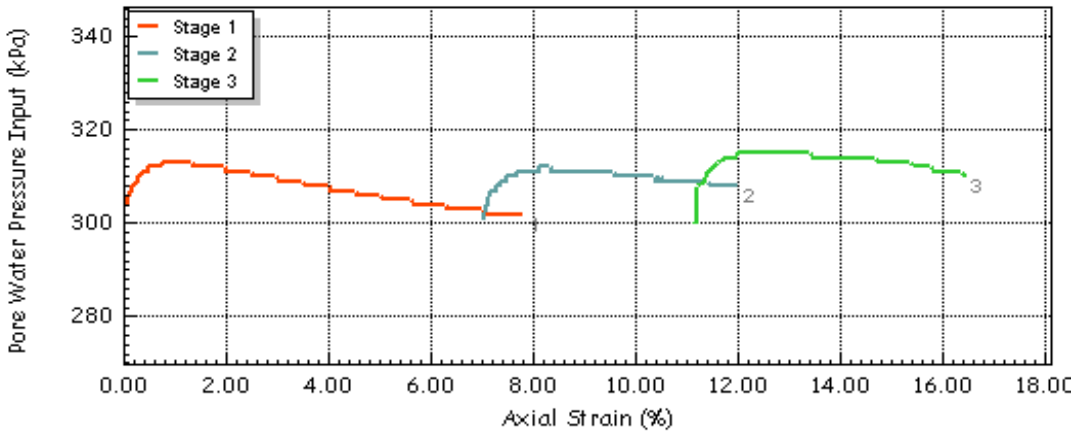
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**



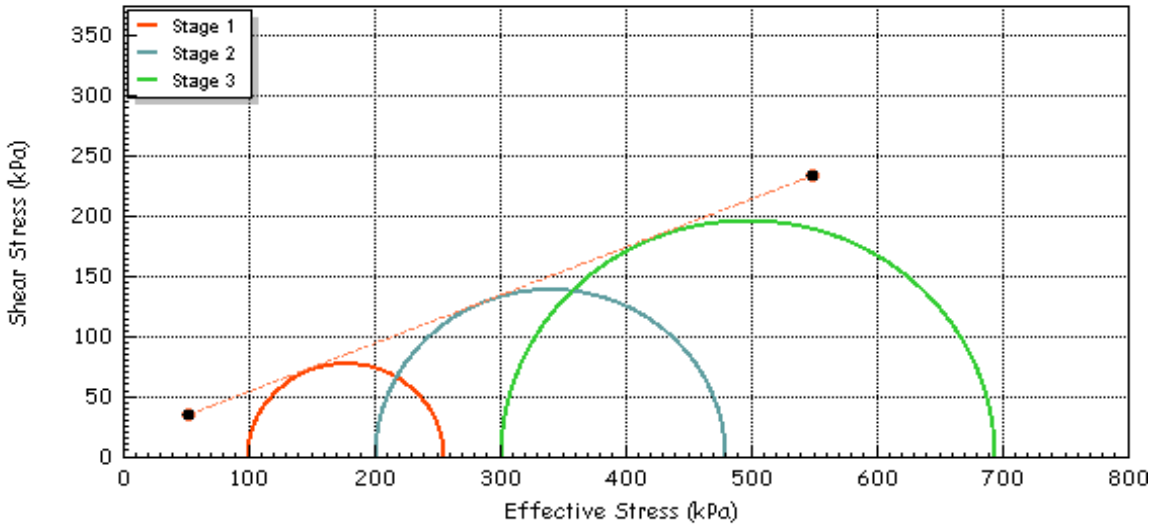

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH115 10.30-10.60m CS103 |
| | | Test Date | 30/05/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH115 |
| | | Sample | 10.30-10.60m |
| Client | Ground Technology | Depth | 10.30-10.60m |

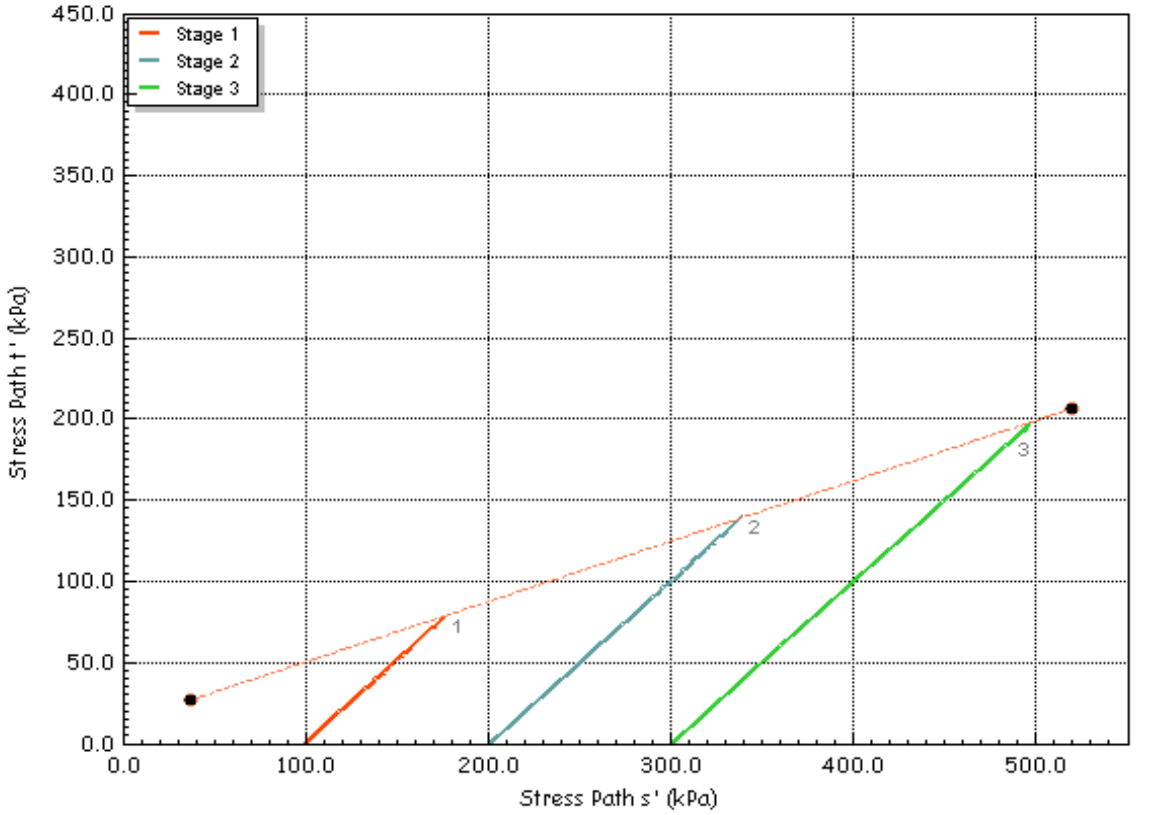
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Effective | c' | (kPa) | 14.87 | Effective Cohesion | c' | (kPa) | 14.87 |
| Effective Friction | ϕ' | (deg) | 21.8 | Effective Friction | ϕ' | (deg) | 21.8 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH115 10.30-10.60m CS103 |
| | | Test Date | 30/05/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH115 |
| | | Sample | 10.30-10.60m |
| Client | Ground Technology | Depth | 10.30-10.60m |

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# Effective Stress Triaxial Compression

## Consolidated Drained

**Summary Report**

| Sample Details | | | | |
|---|---|---|---|---|
| *sketch showing specimen location in original sample* | Depth | | | 10.73-11.00m |
| | Description | | | See summary of soil descriptions. |
| | Type | | | Undisturbed, vertical orientation. |
| | Initial Sample Length | $L_0$ | (mm) | 200.0 |
| | Initial Sample Diameter | $D_0$ | (mm) | 100.0 |
| | Initial Sample Weight | $W_0$ | (gr) | 3135.0 |
| | Initial Bulk Density | $\rho_0$ | (Mg/m3) | 2.00 |
| | Particle Density | $\rho_s$ | (Mg/m3) | 2.66 |

| **Initial Conditions** | | | Stage 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_{3i}$ | (kPa) | 800 | 900 | 1000 | |
| Initial Back Pressure | $U_{bi}$ | (kPa) | 700 | 700 | 700 | |
| Membrane Thickness | $m_b$ | (mm) | 0.600 | | | |
| Displacement Input | $L_{IP}$ | (mm) | CH 2 | | | |
| Load Input | $N_{IP}$ | (N) | CH 1 | | | |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | CH 3 | | | |
| Sample Volume | $V$ | (cc) | CH 2 | | | |
| Initial Moisture | $\omega_i$ | (%) | 22 | | | |
| Initial Dry Density | $\rho_{di}$ | (Mg/m3) | 1.64 | | | |
| Initial Voids Ratio | $e_i$ | . | 0.622 | | | |
| Initial Degree of Saturation | $S_i$ | (%) | 93 | | | |
| B Value | $B$ | . | 0.98 | | | |

| **Final Conditions** | | | | | | |
|---|---|---|---|---|---|---|
| Final Moisture | $\omega_f$ | (%) | 19 | | | |
| Final Dry Density | $\rho_{df}$ | (Mg/m3) | 1.67 | | | |
| Final Voids Ratio | $e_f$ | . | 0.593 | | | |
| Final Degree of Saturation | $S_f$ | (%) | 86.9 | | | |
| | | | Stage 1 | 2 | 3 | 4 |
| Failure Criteria | | . | Max. Dev. Stress | Max. Dev. Stress | Max. Dev. Stress | |
| Strain At Failure | $\varepsilon_f$ | (%) | 4.84 | 7.03 | 8.41 | |
| Stress At Failure | $(\sigma_1-\sigma_3)$ | (kPa) | 200.6 | 325.4 | 444.7 | |
| Minor Stress At Failure | $\sigma_3'$ | (kPa) | 99.6 | 200.0 | 300.0 | |
| Major Stress At Failure | $\sigma_1'$ | (kPa) | 300.2 | 525.4 | 744.7 | |
| Principal Stress Ratio At Failure | $\sigma_1'/\sigma_3'$ | | 3.014 | 2.627 | 2.482 | |

**Notes**

*Brittle*

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH116 10.73-11.00m CS104 |
| | | Test Date | 31/05/2022 |
| Jobfile | Wansford to Sutton Dualling | Borehole | BH116 |
| Client | Ground Technology | Sample | 10.73-11.00m |
| | | Depth | 10.73-11.00m |

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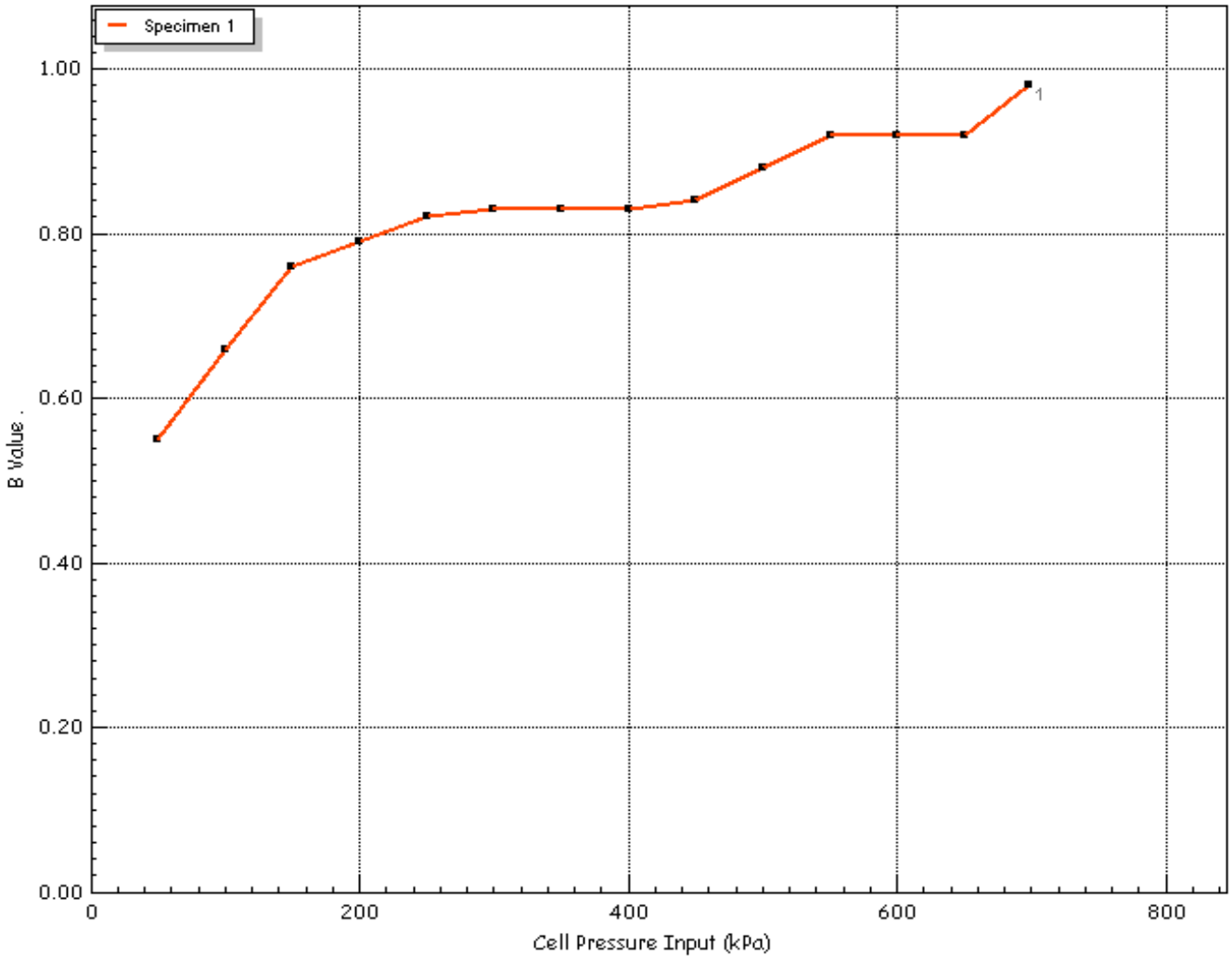
# Effective Stress Triaxial Compression

## Consolidated Drained

**Saturation Plots**

| | | | |
|---|---|---|---|
| Saturation Method | | | Stepped |
| Cell Pressure Input | σ | (kPa) | 698 |
| Pore Water Pressure Input | u pwp | (kPa) | 683 |
| B Value | B | . | 0.98 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH116 10.73-11.00m CS104 |
| | | Test Date | 31/05/2022 |
| | | Borehole | BH116 |
| Jobfile | Wansford to Sutton Dualling | Sample | 10.73-11.00m |
| Client | Ground Technology | Depth | 10.73-11.00m |

# Effective Stress Triaxial Compression

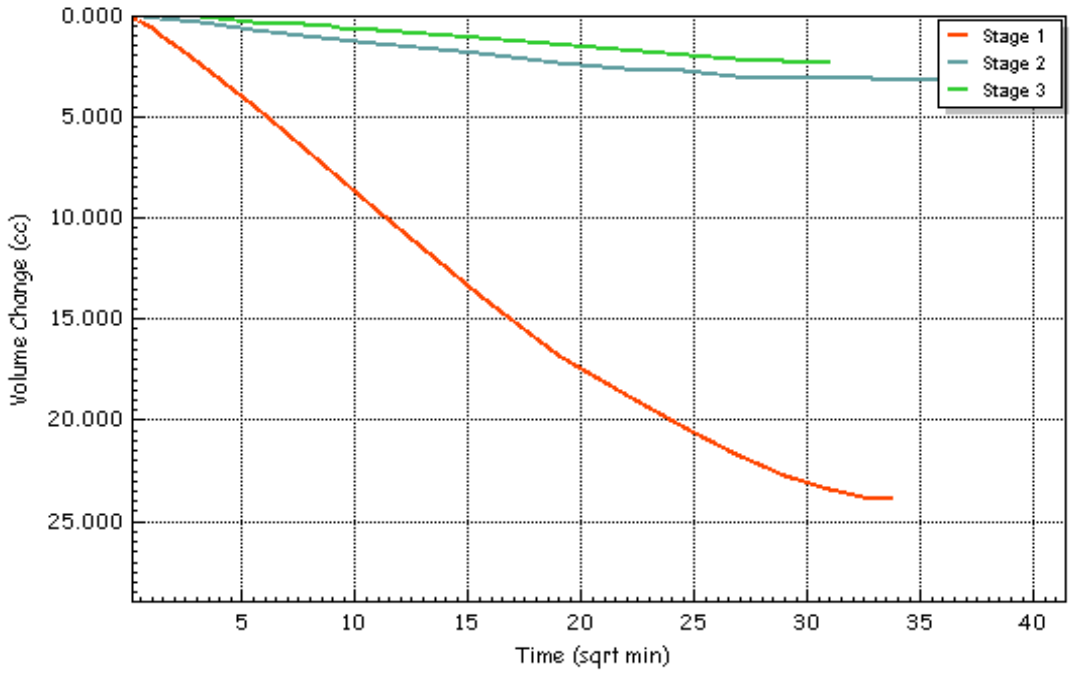
## Consolidated Drained

**Consolidation Plots**

| **Initial Conditions** | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_3$ | (kPa) | 800 | 900 | 1000 |
| Initial Back Pressure | $u_{bi}$ | (kPa) | 700 | 700 | 700 |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | 766 | 837 | 943 |
| Drainage Method | | | Radial+One End | | |

| **Final Conditions** | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| PWP Dissipation % | U% | (%) | 100.00 | 100.00 | 100.00 |
| Volumetric Strain | $\varepsilon_v$% | (%) | 1.52 | 1.72 | 1.87 |
| Corrected Length | $L_C$ | (mm) | 199.0 | 188.1 | 181.0 |
| Corrected Area | $A_C$ | (cm2) | 77.74 | 80.83 | 83.68 |
| Corrected Volume | $V_C$ | (cc) | 1546.906 | 1543.764 | 1541.393 |
| T100 Time to Failure | $t_{100}$ | (min) | 669.55 | 705.80 | 640.99 |
| Consolidation | $c_v$ | (m2/year) | 0.308 | 0.293 | 0.322 |
| Compressibility | $m_v$ | (m2/MN) | 0.230 | 0.471 | 0.328 |
| Test Time | $t_F$ | (h:m:s) | 156:13:42 | 164:41:12 | 149:33:51 |
| Estimated Strain to Failure | $\varepsilon$% | (%) | 10.0 | 10.0 | 10.0 |
| Shear Machine Speed | $d_r$ | (mm/min) | 0.00212 | 0.00212 | 0.00212 |

**Notes**




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH116 10.73-11.00m CS104 |
| | | Test Date | 31/05/2022 |
| | | Borehole | BH116 |
| Jobfile | Wansford to Sutton Dualling | Sample | 10.73-11.00m |
| Client | Ground Technology | Depth | 10.73-11.00m |

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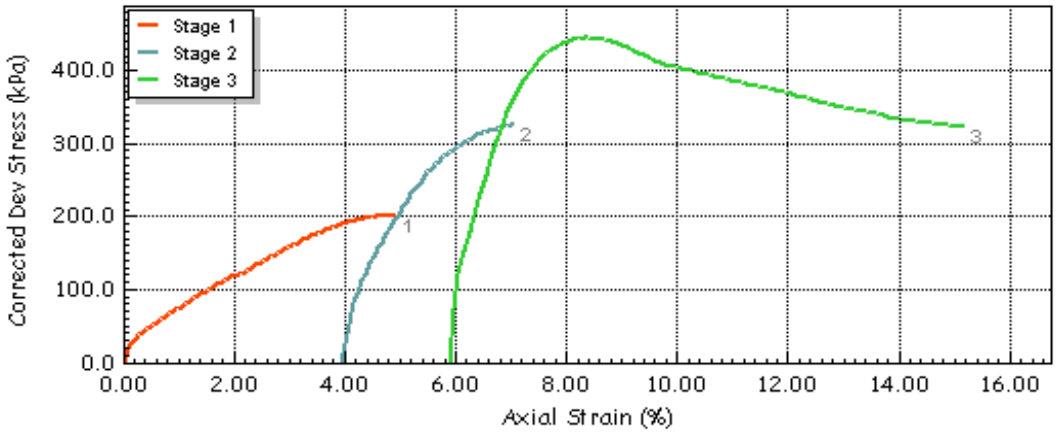
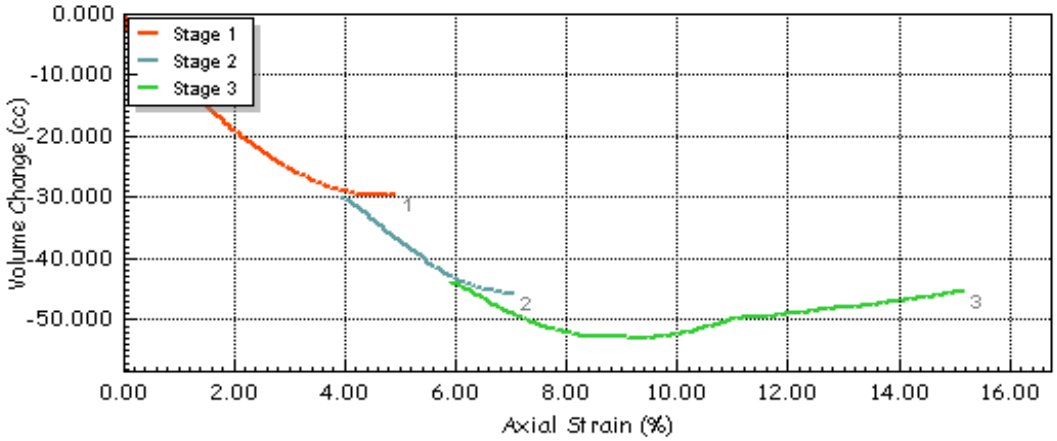
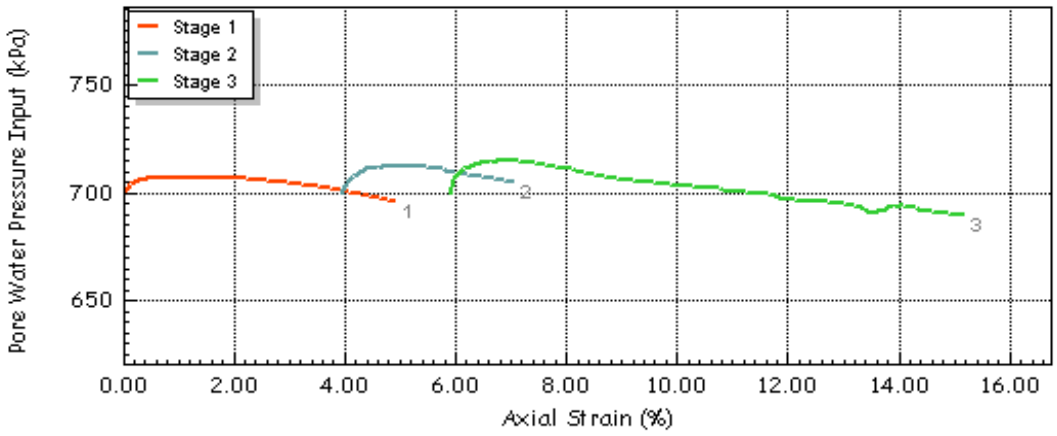
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**



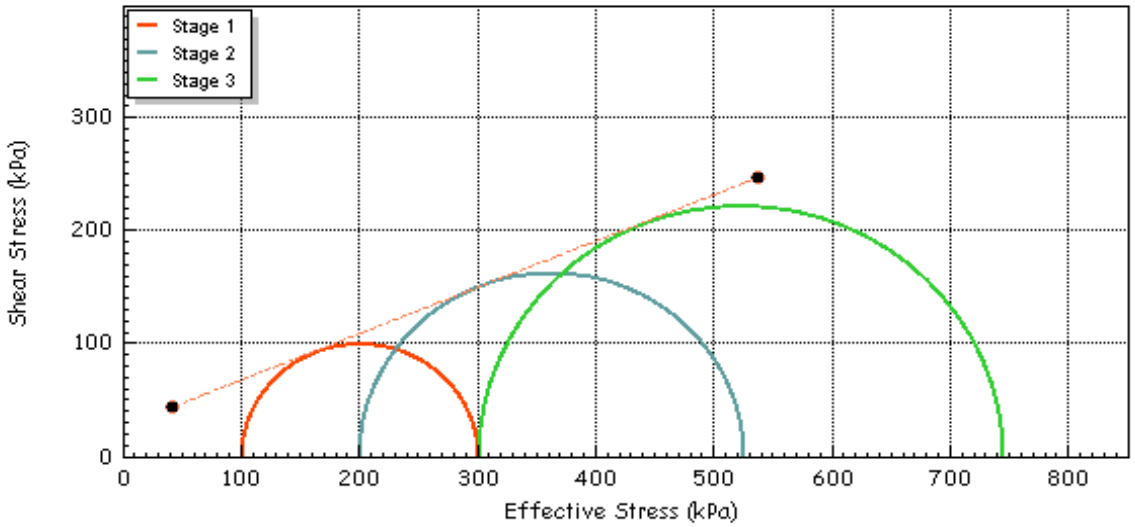

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH116 10.73-11.00m CS104 |
| | | Test Date | 31/05/2022 |
| Jobfile | Wansford to Sutton Dualling | Borehole | BH116 |
| Client | Ground Technology | Sample | 10.73-11.00m |
| | | Depth | 10.73-11.00m |

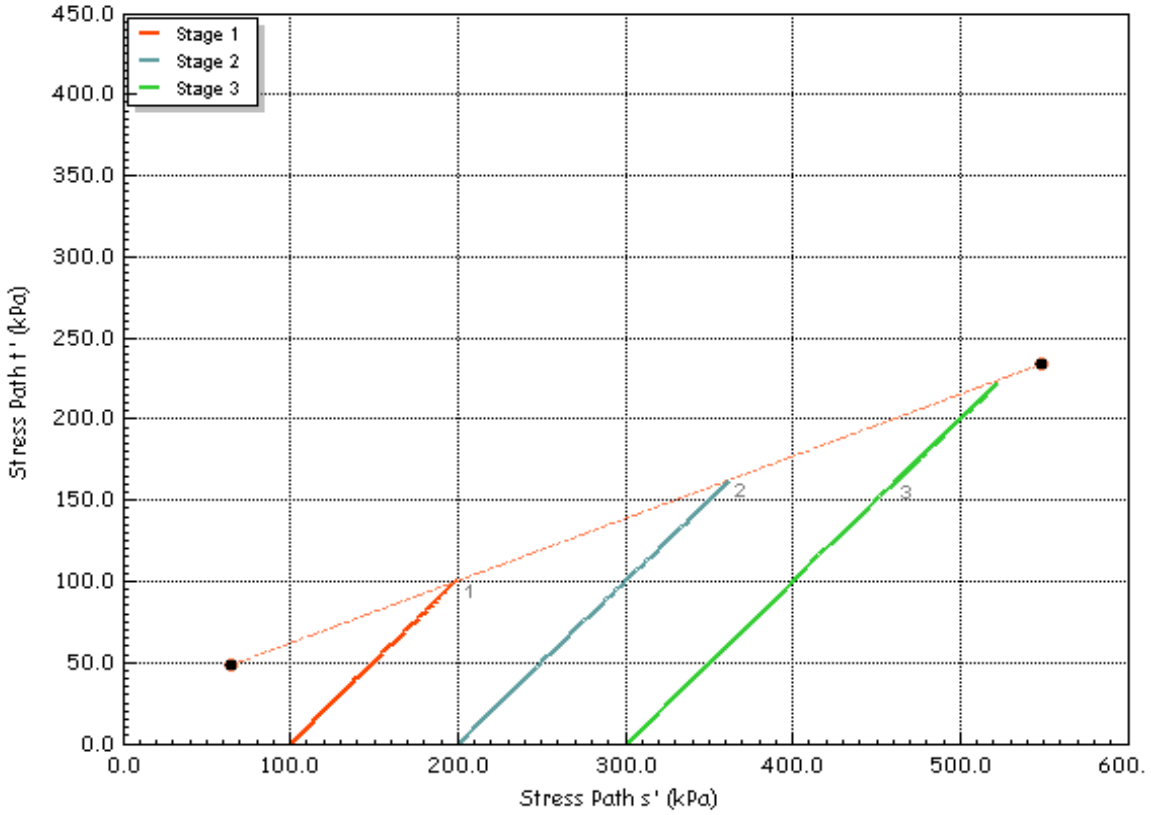
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Effective | c' | (kPa) | 26.96 | Effective Cohesion | c' | (kPa) | 26.96 |
| Effective Friction | ϕ' | (deg) | 22.4 | Effective Friction | ϕ' | (deg) | 22.4 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH116 10.73-11.00m CS104 |
| | | Test Date | 31/05/2022 |
| Jobfile | Wansford to Sutton Dualling | Borehole | BH116 |
| Client | Ground Technology | Sample | 10.73-11.00m |
| | | Depth | 10.73-11.00m |

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# Effective Stress Triaxial Compression

## Consolidated Drained

**Summary Report**

| Sample Details | | | | |
|---|---|---|---|---|
| *sketch showing specimen location in original sample* | Depth | | 15.85-16.00m | |
| | Description | | See summary of soil descriptions. | |
| | Type | | Undisturbed, vertical orientation. | |
| | Initial Sample Length | $L_0$ | (mm) | 200.1 |
| | Initial Sample Diameter | $D_0$ | (mm) | 100.2 |
| | Initial Sample Weight | $W_0$ | (gr) | 3173.0 |
| | Initial Bulk Density | $\rho_0$ | (Mg/m3) | 2.01 |
| | Particle Density | $\rho_s$ | (Mg/m3) | 2.66 |

| **Initial Conditions** | | | Stage 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_{3i}$ | (kPa) | 600 | 750 | 900 | |
| Initial Back Pressure | $U_{bi}$ | (kPa) | 450 | 450 | 450 | |
| Membrane Thickness | $m_b$ | (mm) | 0.600 | | | |
| Displacement Input | $L_{IP}$ | (mm) | CH 2 | | | |
| Load Input | $N_{IP}$ | (N) | CH 4 | | | |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | CH 3 | | | |
| Sample Volume | $V$ | (cc) | CH 2 | | | |
| Initial Moisture | $\omega_i$ | (%) | 24 | | | |
| Initial Dry Density | $\rho_{di}$ | (Mg/m3) | 1.62 | | | |
| Initial Voids Ratio | $e_i$ | . | 0.645 | | | |
| Initial Degree of Saturation | $S_i$ | (%) | 100 | | | |
| B Value | $B$ | . | 0.96 | | | |

| **Final Conditions** | | | | | | |
|---|---|---|---|---|---|---|
| Final Moisture | $\omega_f$ | (%) | 17 | | | |
| Final Dry Density | $\rho_{df}$ | (Mg/m3) | 1.87 | | | |
| Final Voids Ratio | $e_f$ | . | 0.426 | | | |
| Final Degree of Saturation | $S_f$ | (%) | 100.0 | | | |
| | | | Stage 1 | 2 | 3 | 4 |
| Failure Criteria | | . | Max. Dev. Stress | Max. Dev. Stress | Max. Dev. Stress | |
| Strain At Failure | $\varepsilon_f$ | (%) | 3.35 | 7.22 | 10.98 | |
| Stress At Failure | $(\sigma_1-\sigma_3)$ | (kPa) | 214.0 | 364.8 | 490.2 | |
| Minor Stress At Failure | $\sigma_3'$ | (kPa) | 144.0 | 289.0 | 412.0 | |
| Major Stress At Failure | $\sigma_1'$ | (kPa) | 358.0 | 653.8 | 902.2 | |
| Principal Stress Ratio At Failure | $\sigma_1'/\sigma_3'$ | | 2.486 | 2.262 | 2.190 | |

**Notes**

*Brittle*

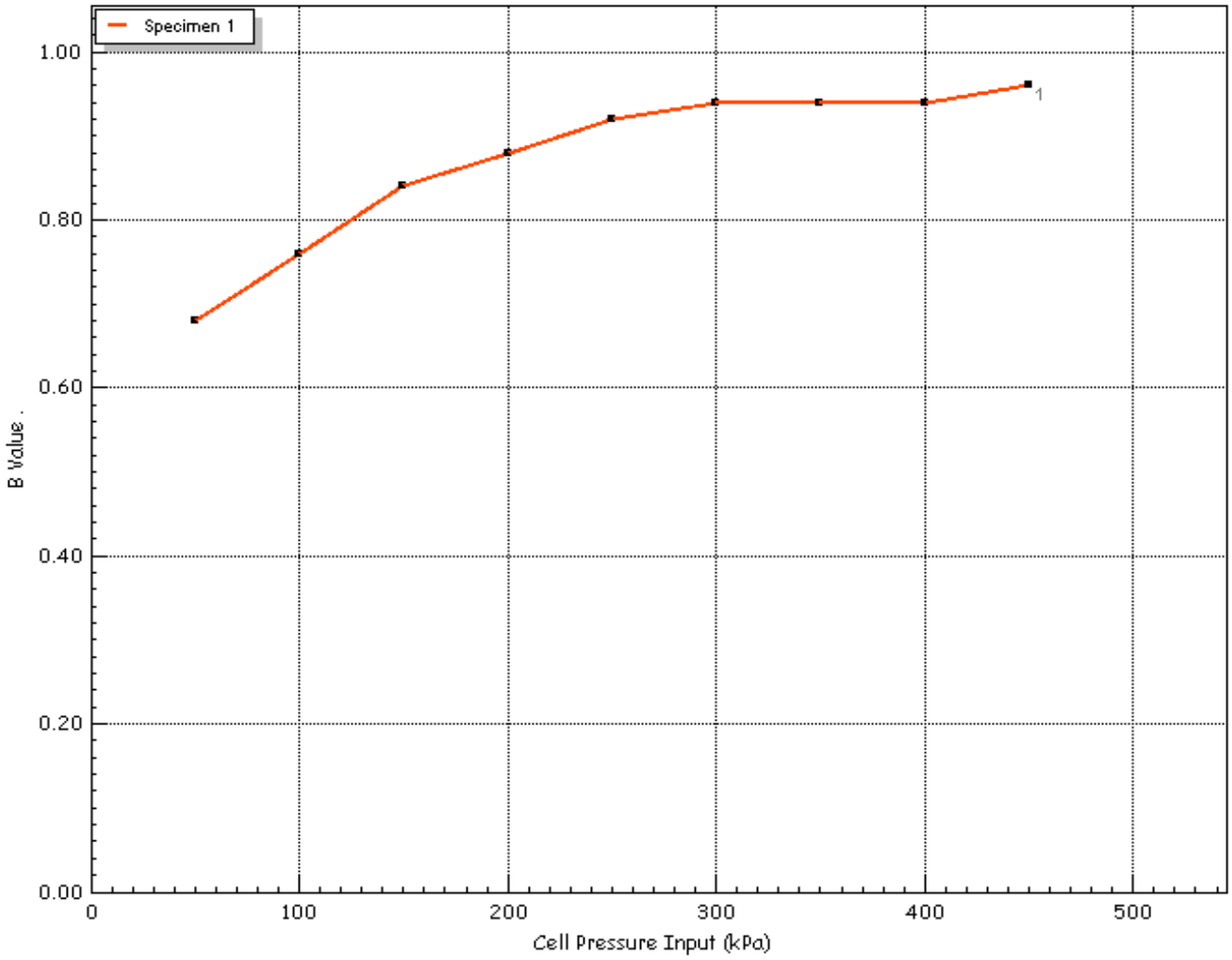
| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH116 15.85-16.00m |
| | | Test Date | 02/06/2022 |
| Jobfile | Wansford to Sutton Dualling | Borehole | BH116 |
| Client | Ground Technology | Sample | CS118 |
| | | Depth | 15.85-16.00m |

# Effective Stress Triaxial Compression

## Consolidated Drained

**Saturation Plots**

| | | | |
|---|---|---|---|
| Saturation Method | | | Stepped |
| Cell Pressure Input | σ | (kPa) | 450 |
| Pore Water Pressure Input | u pwp | (kPa) | 425 |
| B Value | B | . | 0.96 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH116 15.85-16.00m |
| | | Test Date | 02/06/2022 |
| Jobfile | Wansford to Sutton Dualling | Borehole | BH116 |
| Client | Ground Technology | Sample | CS118 |
| | | Depth | 15.85-16.00m |

# Effective Stress Triaxial Compression

## Consolidated Drained

**Consolidation Plots**

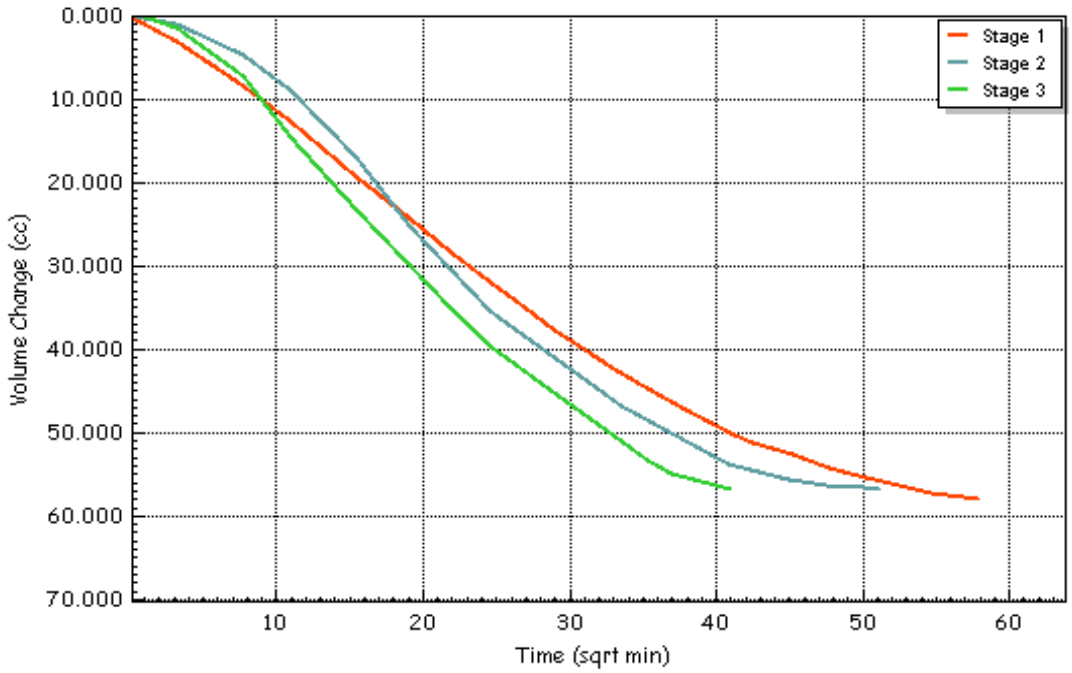
**Initial Conditions**

| | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_3$ | (kPa) | 600 | 750 | 900 |
| Initial Back Pressure | $u_{bi}$ | (kPa) | 450 | 450 | 450 |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | 577 | 687 | 819 |
| Drainage Method | | | Radial+One End | | |

**Final Conditions**

| | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| PWP Dissipation % | U% | (%) | 95.28 | 95.36 | 95.39 |
| Volumetric Strain | $\varepsilon_v$% | (%) | 3.67 | 3.60 | 3.60 |
| Corrected Length | $L_C$ | (mm) | 197.6 | 188.6 | 180.5 |
| Corrected Area | $A_C$ | (cm2) | 76.92 | 77.59 | 77.95 |
| Corrected Volume | $V_C$ | (cc) | 1519.909 | 1463.160 | 1406.291 |
| t100 | $t_{100}$ | (min) | 1739.96 | 1197.28 | 1027.90 |
| Consolidation | $c_v$ | (m2/year) | 0.119 | 0.174 | 0.202 |
| Compressibility | $m_v$ | (m2/MN) | 0.304 | 0.159 | 0.102 |
| Test Time | $t_F$ | (h:m:s) | 405:59:26 | 279:21:55 | 239:50:36 |
| Estimated Strain to Failure | $\varepsilon$% | (%) | 5.0 | 5.0 | 5.0 |
| Shear Machine Speed | $d_r$ | (mm/min) | 0.00251 | 0.00251 | 0.00251 |

**Notes**




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH116 15.85-16.00m |
| | | Test Date | 02/06/2022 |
| | | Borehole | BH116 |
| Jobfile | Wansford to Sutton Dualling | Sample | CS118 |
| Client | Ground Technology | Depth | 15.85-16.00m |

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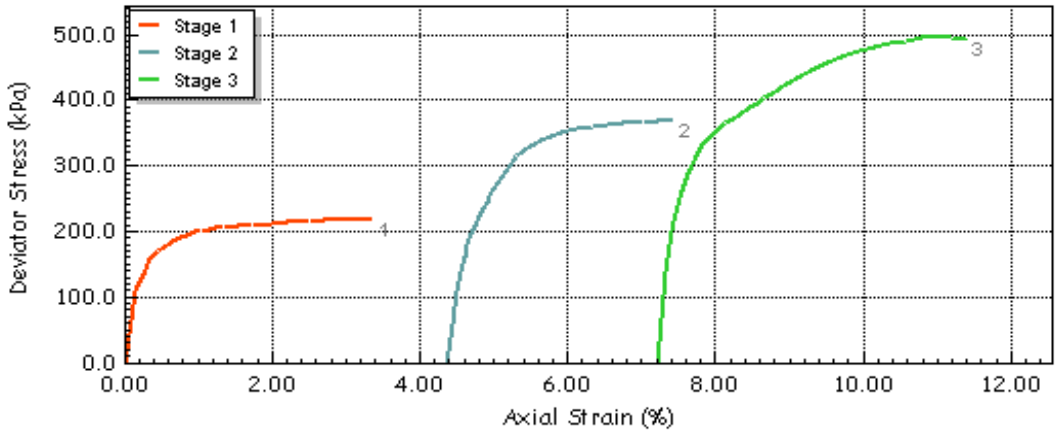
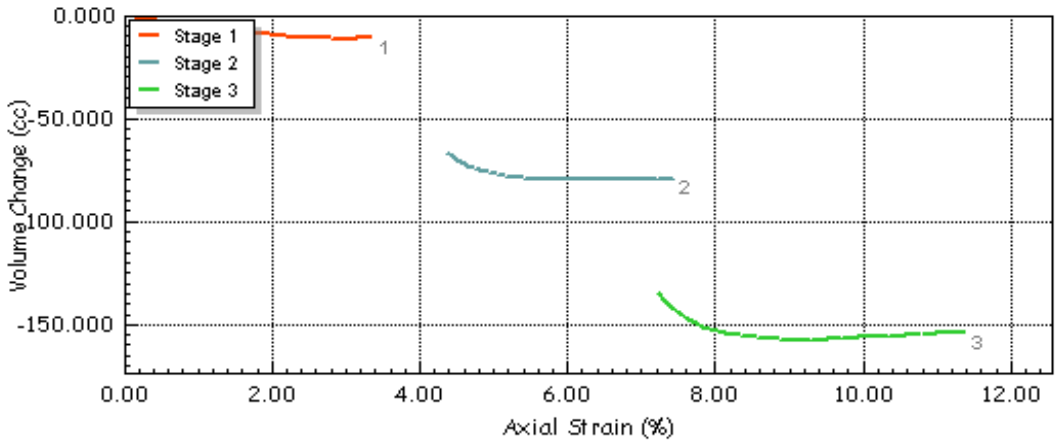
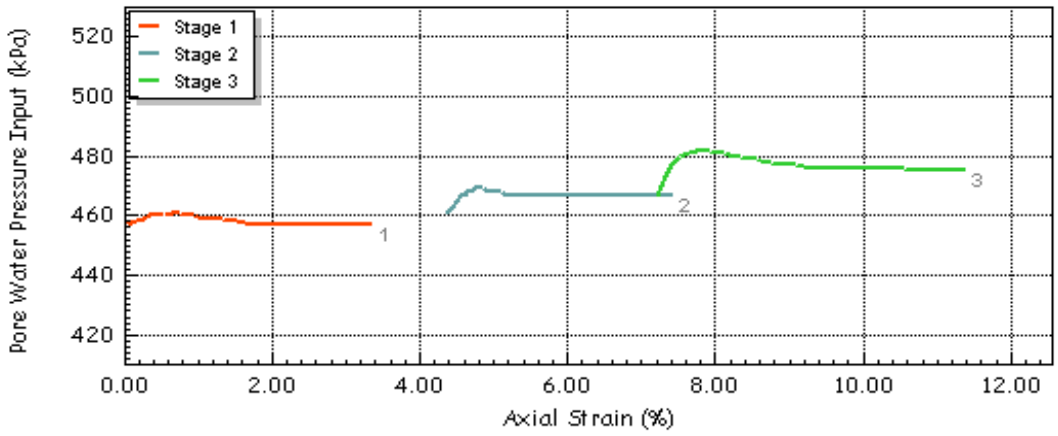
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**



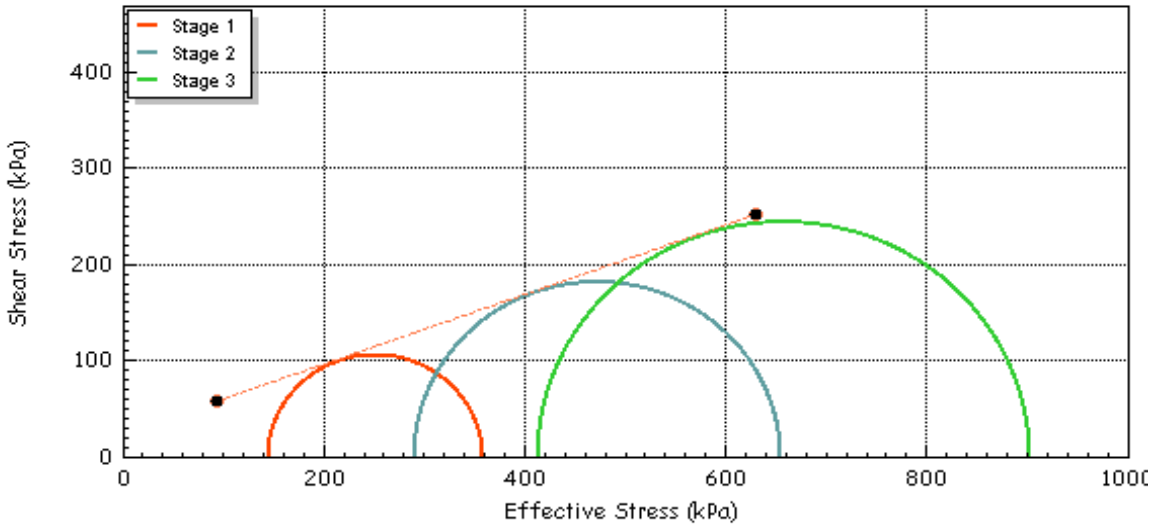

| | | | | |
|---|---|---|---|---|
| | Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH116 15.85-16.00m |
| | | | Test Date | 02/06/2022 |
| | Jobfile | Wansford to Sutton Dualling | Borehole | BH116 |
| | Client | Ground Technology | Sample | CS118 |
| | | | Depth | 15.85-16.00m |

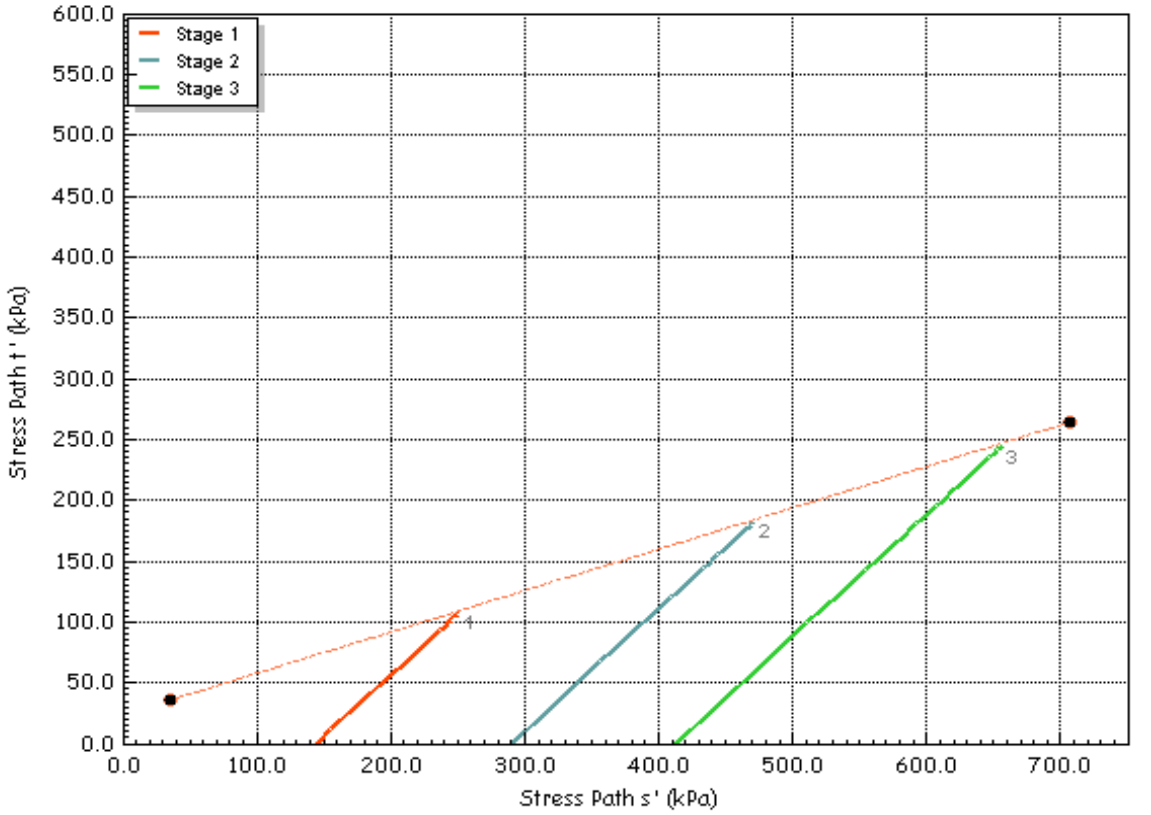
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Effective | c' | (kPa) | 24.62 | Effective Cohesion | c' | (kPa) | 24.62 |
| Effective Friction | ϕ' | (deg) | 19.9 | Effective Friction | ϕ' | (deg) | 19.9 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH116 15.85-16.00m |
| | | Test Date | 02/06/2022 |
| Jobfile | Wansford to Sutton Dualling | Borehole | BH116 |
| Client | Ground Technology | Sample | CS118 |
| | | Depth | 15.85-16.00m |

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# Effective Stress Triaxial Compression

## Consolidated Drained

**Summary Report**

| Sample Details | | | | |
|---|---|---|---|---|
| *sketch showing specimen location in original sample* | Depth | | 15.80-16.00m | |
| | Description | | See summary of soil descritions. | |
| | Type | | Undisturbed, vertical orientation. | |
| | Initial Sample Length | $L_0$ | (mm) | 200.0 |
| | Initial Sample Diameter | $D_0$ | (mm) | 100.1 |
| | Initial Sample Weight | $W_0$ | (gr) | 3125.0 |
| | Initial Bulk Density | $\rho_0$ | (Mg/m3) | 1.99 |
| | Particle Density | $\rho_s$ | (Mg/m3) | 2.66 |

| **Initial Conditions** | | | Stage 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_{3i}$ | (kPa) | 950 | 1100 | 1250 | |
| Initial Back Pressure | $U_{bi}$ | (kPa) | 800 | 801 | 800 | |
| Membrane Thickness | $m_b$ | (mm) | 0.600 | | | |
| Displacement Input | $L_{IP}$ | (mm) | CH 2 | | | |
| Load Input | $N_{IP}$ | (N) | CH 1 | | | |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | CH 3 | | | |
| Sample Volume | $V$ | (cc) | CH 2 | | | |
| Initial Moisture | $\omega_i$ | (%) | 23 | | | |
| Initial Dry Density | $\rho_{di}$ | (Mg/m3) | 1.62 | | | |
| Initial Voids Ratio | $e_i$ | . | 0.642 | | | |
| Initial Degree of Saturation | $S_i$ | (%) | 93 | | | |
| B Value | $B$ | . | 0.96 | | | |

| **Final Conditions** | | | | | | |
|---|---|---|---|---|---|---|
| Final Moisture | $\omega_f$ | (%) | 21 | | | |
| Final Dry Density | $\rho_{df}$ | (Mg/m3) | 1.68 | | | |
| Final Voids Ratio | $e_f$ | . | 0.580 | | | |
| Final Degree of Saturation | $S_f$ | (%) | 94.9 | | | |
| | | | Stage 1 | 2 | 3 | 4 |
| Failure Criteria | | . | Max. Dev. Stress | Max. Dev. Stress | Max. Dev. Stress | |
| Strain At Failure | $\varepsilon_f$ | (%) | 1.97 | 5.07 | 10.07 | |
| Stress At Failure | $(\sigma_1-\sigma_3)$ | (kPa) | 208.9 | 365.6 | 519.5 | |
| Minor Stress At Failure | $\sigma_3'$ | (kPa) | 150.0 | 300.0 | 450.0 | |
| Major Stress At Failure | $\sigma_1'$ | (kPa) | 358.9 | 665.6 | 969.5 | |
| Principal Stress Ratio At Failure | $\sigma_1'/\sigma_3'$ | | 2.393 | 2.219 | 2.154 | |

**Notes**

*Brittle*

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH118 15.80-16.00m |
| | | Test Date | 02/06/2022 |
| Jobfile | Wansford to Sutton Dualling | Borehole | BH118 |
| Client | Ground Technology | Sample | CS106 |
| | | Depth | 15.80-16.00m |

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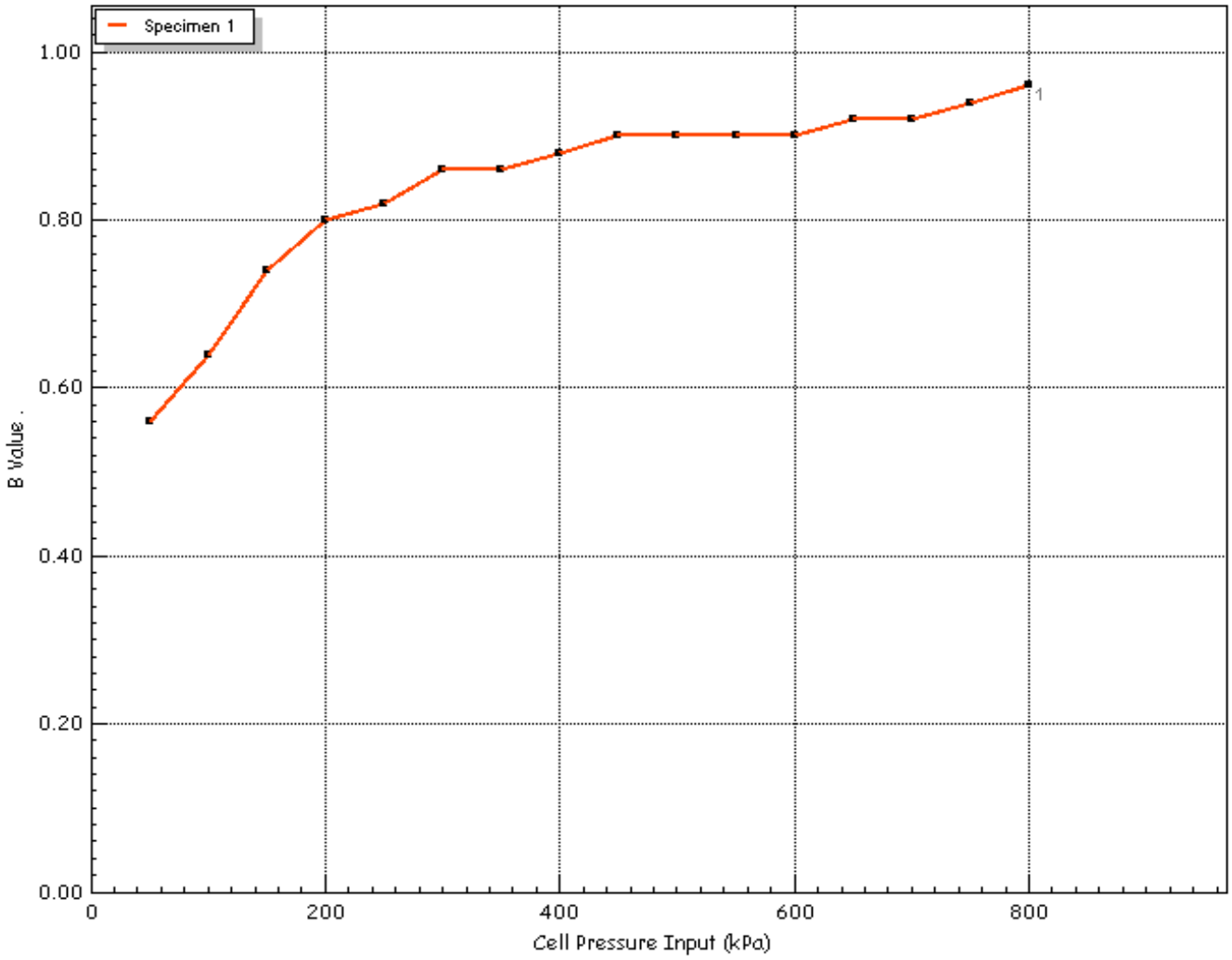
# Effective Stress Triaxial Compression

## Consolidated Drained

**Saturation Plots**

| | | | |
|---|---|---|---|
| Saturation Method | | | Stepped |
| Cell Pressure Input | σ | (kPa) | 800 |
| Pore Water Pressure Input | u pwp | (kPa) | 779 |
| B Value | B | . | 0.96 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH118 15.80-16.00m |
| | | Test Date | 02/06/2022 |
| Jobfile | Wansford to Sutton Dualling | Borehole | BH118 |
| Client | Ground Technology | Sample | CS106 |
| | | Depth | 15.80-16.00m |

# Effective Stress Triaxial Compression

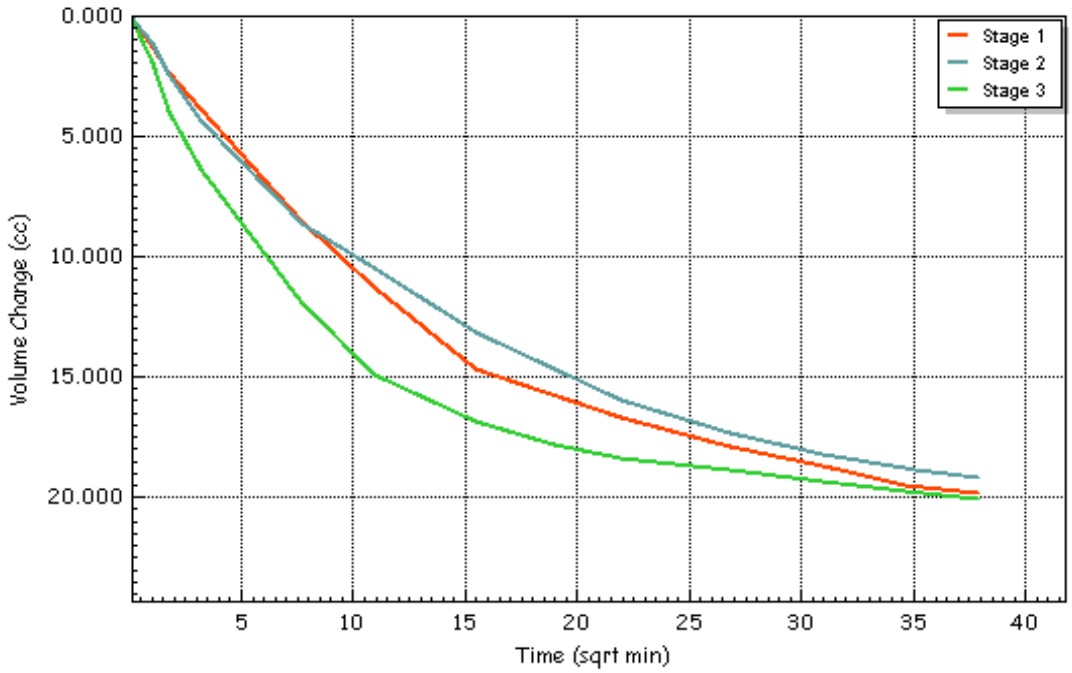
## Consolidated Drained

**Consolidation Plots**

| **Initial Conditions** | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_3$ | (kPa) | 950 | 1100 | 1250 |
| Initial Back Pressure | $u_{bi}$ | (kPa) | 800 | 800 | 800 |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | 912 | 1062 | 1207 |
| Drainage Method | | | Radial+One End | | |

| **Final Conditions** | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| PWP Dissipation % | U% | (%) | 98.21 | 100.00 | 98.03 |
| Volumetric Strain | $\varepsilon_v$% | (%) | 1.26 | 1.22 | 1.28 |
| Corrected Length | $L_C$ | (mm) | 199.2 | 194.3 | 187.3 |
| Corrected Area | $A_C$ | (cm2) | 78.04 | 79.02 | 80.86 |
| Corrected Volume | $V_C$ | (cc) | 1554.081 | 1534.937 | 1514.868 |
| t100 | $t_{100}$ | (min) | 323.18 | 331.17 | 120.80 |
| Consolidation | $c_v$ | (m2/year) | 0.641 | 0.626 | 1.716 |
| Compressibility | $m_v$ | (m2/MN) | 0.115 | 0.046 | 0.032 |
| Test Time | $t_F$ | (h:m:s) | 75:24:31 | 77:16:22 | 28:11:12 |
| Estimated Strain to Failure | $\varepsilon$% | (%) | 5.0 | 5.0 | 5.0 |
| Shear Machine Speed | $d_r$ | (mm/min) | 0.00220 | 0.00220 | 0.00220 |

**Notes**




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH118 15.80-16.00m |
| | | Test Date | 02/06/2022 |
| | | Borehole | BH118 |
| Jobfile | Wansford to Sutton Dualling | Sample | CS106 |
| Client | Ground Technology | Depth | 15.80-16.00m |

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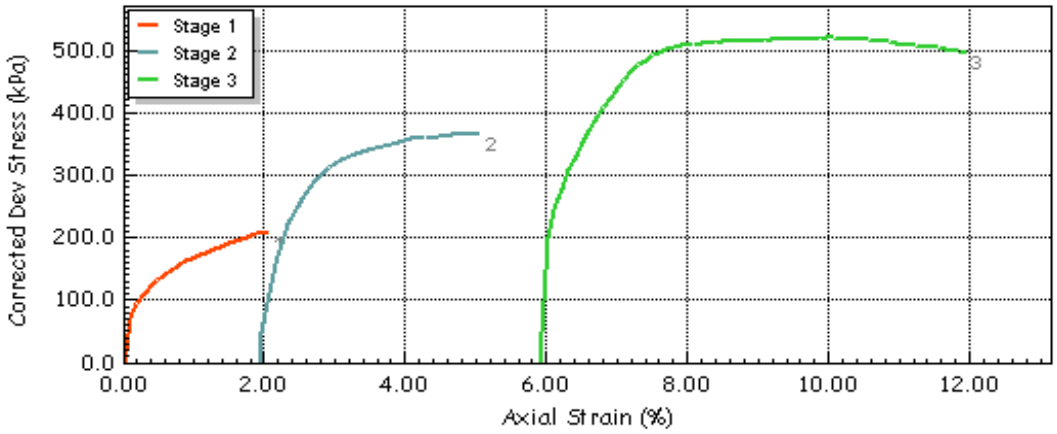
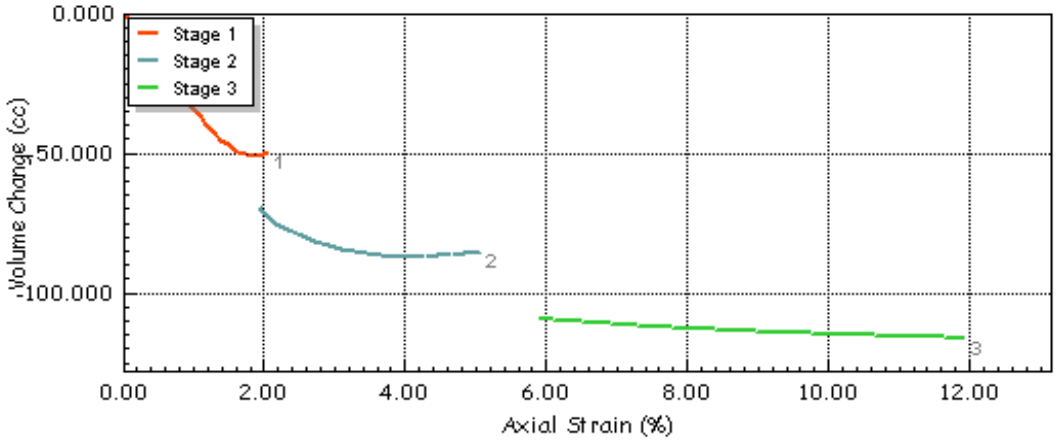
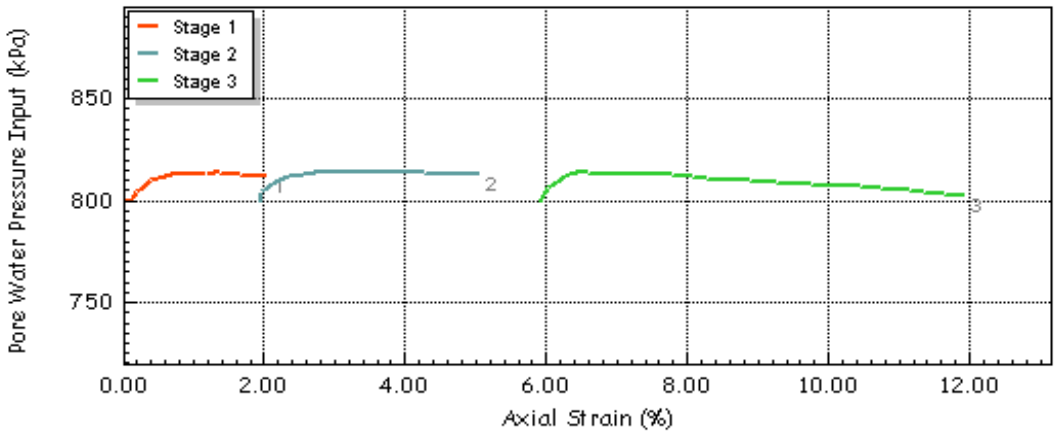
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**



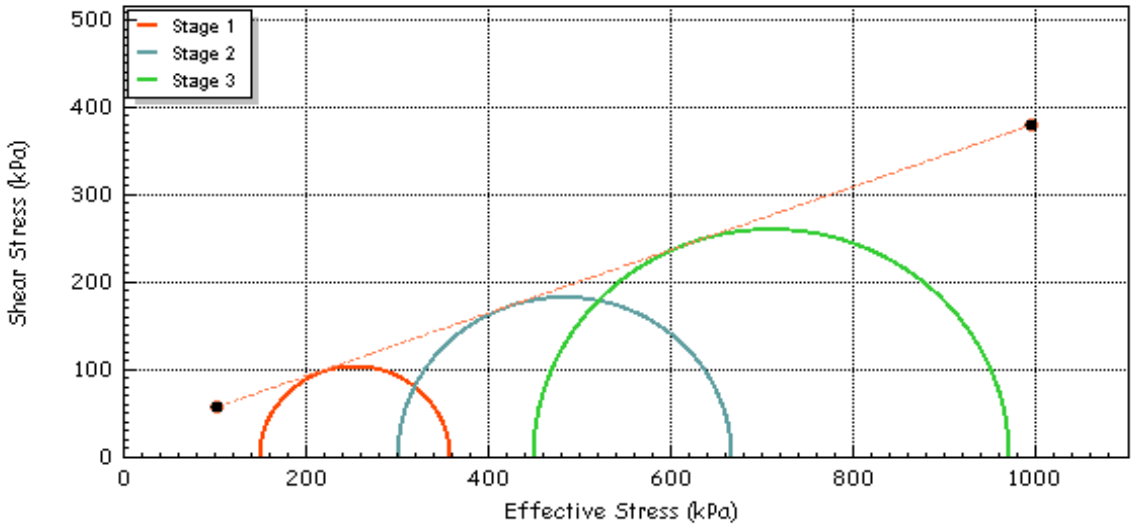

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH118 15.80-16.00m |
| | | Test Date | 02/06/2022 |
| Jobfile | Wansford to Sutton Dualling | Borehole | BH118 |
| Client | Ground Technology | Sample | CS106 |
| | | Depth | 15.80-16.00m |

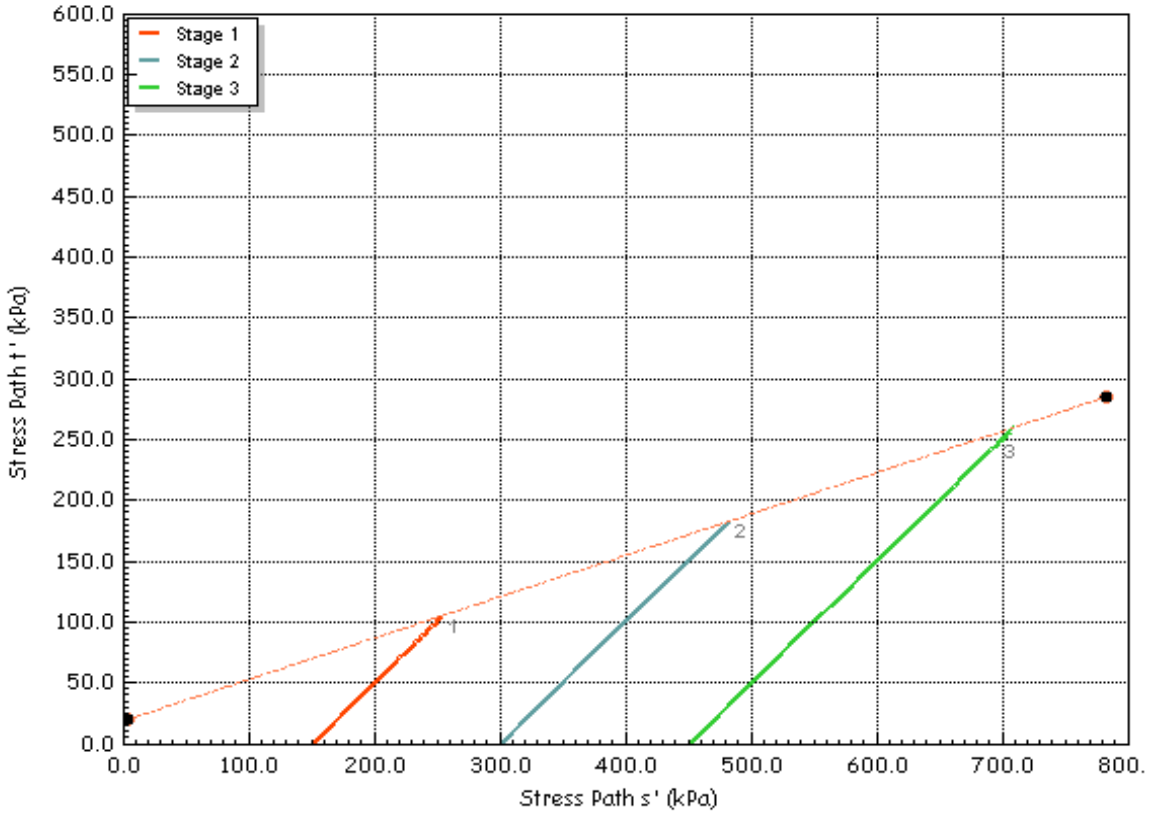
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Effective | c' | (kPa) | 20.91 | Effective Cohesion | c' | (kPa) | 20.91 |
| Effective Friction | ϕ' | (deg) | 19.8 | Effective Friction | ϕ' | (deg) | 19.8 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH118 15.80-16.00m |
| | | Test Date | 02/06/2022 |
| Jobfile | Wansford to Sutton Dualling | Borehole | BH118 |
| Client | Ground Technology | Sample | CS106 |
| | | Depth | 15.80-16.00m |

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# Effective Stress Triaxial Compression

## Consolidated Undrained

**Summary Report**

| Sample Details | | | | |
|---|---|---|---|---|
| *sketch showing specimen location in original sample* | Depth | | | 9.20-9.50m |
| | Description | | | See summary of soil descriptions. |
| | Type | | | Undisturbed, vertical orientation. |
| | Initial Sample Length | $L_0$ | (mm) | 140.1 |
| | Initial Sample Diameter | $D_0$ | (mm) | 72.0 |
| | Initial Sample Weight | $W_0$ | (gr) | 1167.0 |
| | Initial Bulk Density | $\rho_0$ | (Mg/m3) | 2.05 |
| | Particle Density | $\rho_s$ | (Mg/m3) | 2.66 |

| **Initial Conditions** | | | Stage 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_{3i}$ | (kPa) | 490 | 580 | 670 | |
| Initial Back Pressure | $U_{bi}$ | (kPa) | 400 | 400 | 400 | |
| Membrane Thickness | $m_b$ | (mm) | 0.600 | | | |
| Displacement Input | $L_{IP}$ | (mm) | CH 2 | | | |
| Load Input | $N_{IP}$ | (N) | CH 1 | | | |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | CH 3 | | | |
| Sample Volume | $V$ | (cc) | CH 2 | | | |
| Initial Moisture | $\omega_i$ | (%) | 22 | | | |
| Initial Dry Density | $\rho_{di}$ | (Mg/m3) | 1.68 | | | |
| Initial Voids Ratio | $e_i$ | . | 0.581 | | | |
| Initial Degree of Saturation | $S_i$ | (%) | 99 | | | |
| B Value | $B$ | . | 0.98 | | | |

| **Final Conditions** | | | | | | |
|---|---|---|---|---|---|---|
| Final Moisture | $\omega_f$ | (%) | 20 | | | |
| Final Dry Density | $\rho_{df}$ | (Mg/m3) | 1.72 | | | |
| Final Voids Ratio | $e_f$ | . | 0.543 | | | |
| Final Degree of Saturation | $S_f$ | (%) | 100.0 | | | |
| | | | Stage 1 | 2 | 3 | 4 |
| Failure Criteria | | . | Max. Dev. Stress | Max. Dev. Stress | Max. Dev. Stress | |
| Strain At Failure | $\varepsilon_f$ | (%) | 3.21 | 6.20 | 12.58 | |
| Stress At Failure | $(\sigma_1-\sigma_3)$ | (kPa) | 156.1 | 259.6 | 379.4 | |
| Minor Stress At Failure | $\sigma_3'$ | (kPa) | 50.0 | 110.0 | 179.0 | |
| Major Stress At Failure | $\sigma_1'$ | (kPa) | 206.1 | 369.6 | 558.4 | |
| Principal Stress Ratio At Failure | $\sigma_1'/\sigma_3'$ | | 4.122 | 3.360 | 3.119 | |

**Notes**

*Plastic*

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 7 | Test Name | BH120-BH120A 9.20-9.50m |
| | | Test Date | 13/06/2022 |
| Jobfile | Wansford to Sutton Dualling | Borehole | BH120-BH120A |
| Client | Ground Technology | Sample | CS103 |
| | | Depth | 9.20-9.50m |

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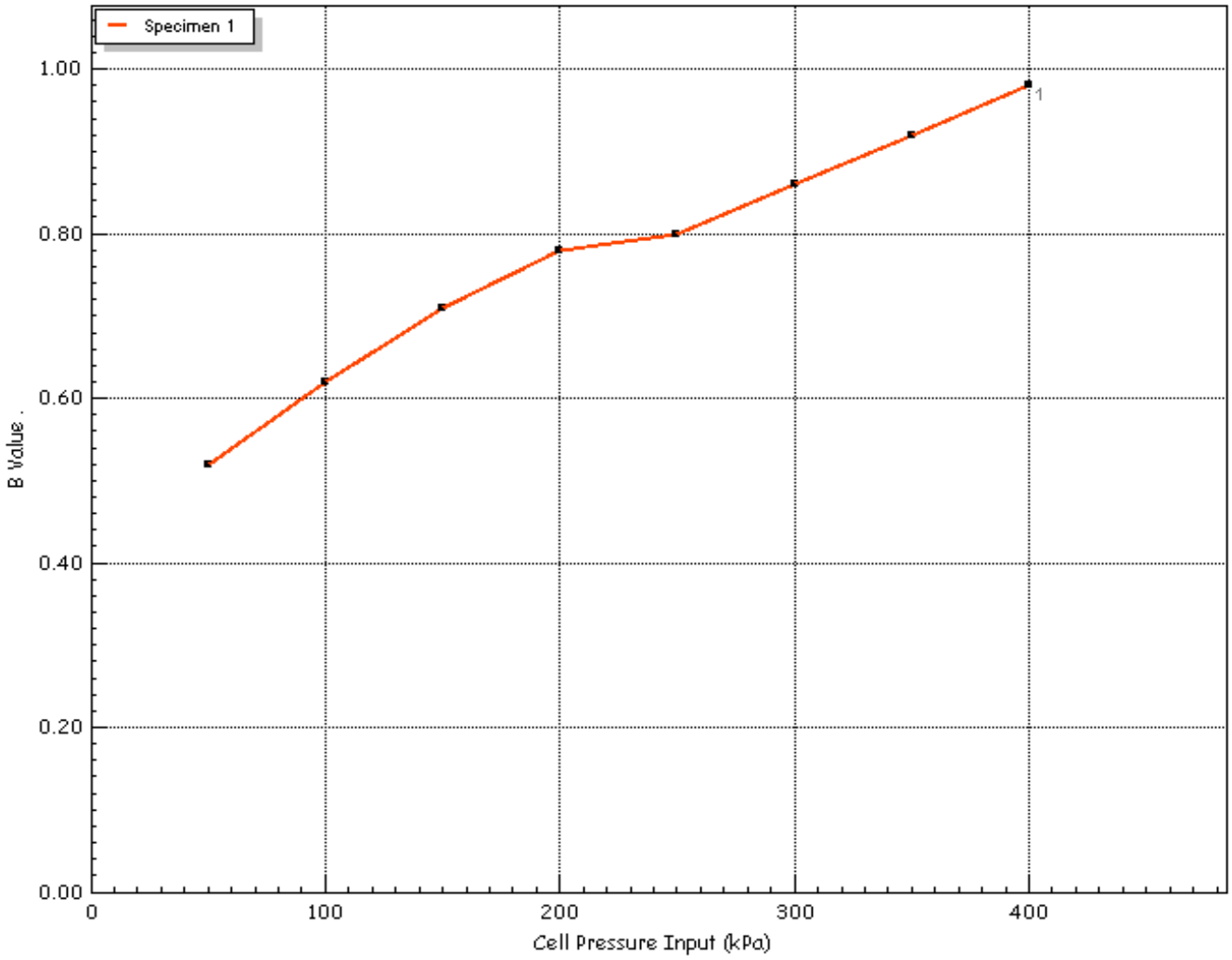
# Effective Stress Triaxial Compression

## Consolidated Undrained

**Saturation Plots**

| | | | |
|---|---|---|---|
| Saturation Method | | | Stepped |
| Cell Pressure Input | σ | (kPa) | 400 |
| Pore Water Pressure Input | u pwp | (kPa) | 354 |
| B Value | B | . | 0.98 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 7 | Test Name | BH120-BH120A 9.20-9.50m |
| | | Test Date | 13/06/2022 |
| Jobfile | Wansford to Sutton Dualling | Borehole | BH120-BH120A |
| Client | Ground Technology | Sample | CS103 |
| | | Depth | 9.20-9.50m |

# Effective Stress Triaxial Compression

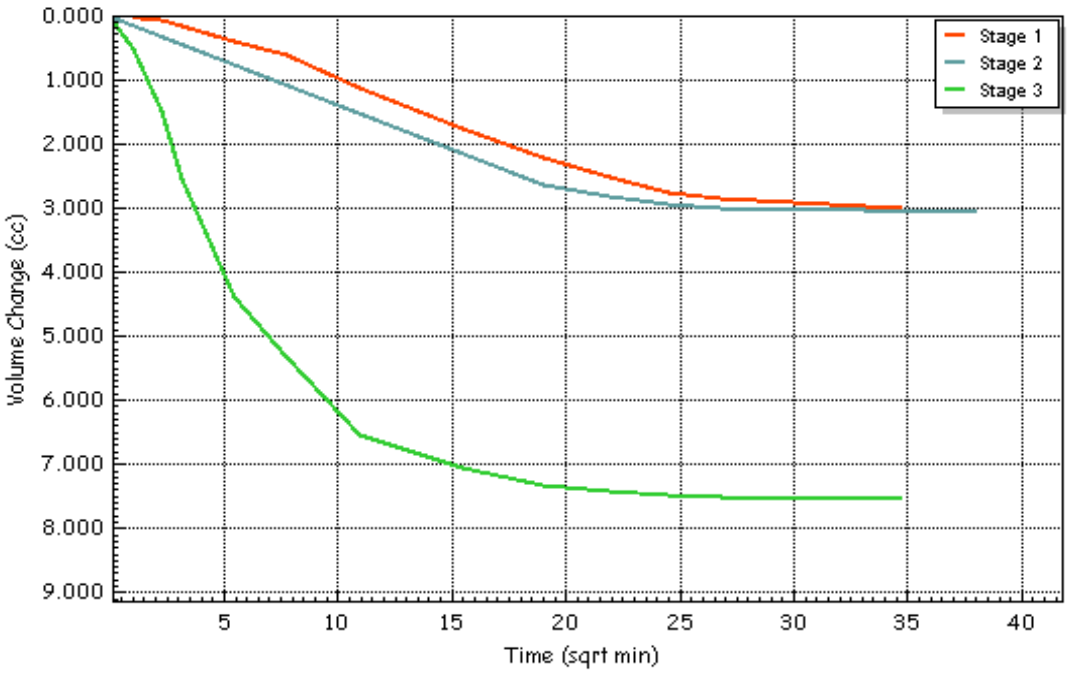
## Consolidated Undrained

**Consolidation Plots**

| **Initial Conditions** | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_3$ | (kPa) | 490 | 580 | 670 |
| Initial Back Pressure | $u_{bi}$ | (kPa) | 400 | 400 | 400 |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | 452 | 522 | 612 |
| Drainage Method | | | Radial+One End | | |

| **Final Conditions** | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| PWP Dissipation % | U% | (%) | 100.00 | 100.00 | 100.00 |
| Volumetric Strain | $\varepsilon_v$% | (%) | 0.53 | 1.06 | 2.39 |
| Corrected Length | $L_C$ | (mm) | 139.9 | 134.9 | 129.1 |
| Corrected Area | $A_C$ | (cm2) | 40.57 | 41.62 | 42.68 |
| Corrected Volume | $V_C$ | (cc) | 567.418 | 564.351 | 556.811 |
| T100 Time to Failure | $t_{100}$ | (min) | 462.51 | 471.48 | 54.69 |
| Consolidation | $c_v$ | (m2/year) | 0.242 | 0.237 | 2.045 |
| Compressibility | $m_v$ | (m2/MN) | 0.101 | 0.087 | 0.113 |
| Test Time | $t_F$ | (h:m:s) | 13:52:31 | 14:08:39 | 02:00:00 |
| Estimated Strain to Failure | $\varepsilon$% | (%) | 5.0 | 5.0 | 5.0 |
| Shear Machine Speed | $d_r$ | (mm/min) | 0.00840 | 0.00840 | 0.00840 |

**Notes**




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 7 | Test Name | BH120-BH120A 9.20-9.50m |
| | | Test Date | 13/06/2022 |
| | | Borehole | BH120-BH120A |
| Jobfile | Wansford to Sutton Dualling | Sample | CS103 |
| Client | Ground Technology | Depth | 9.20-9.50m |

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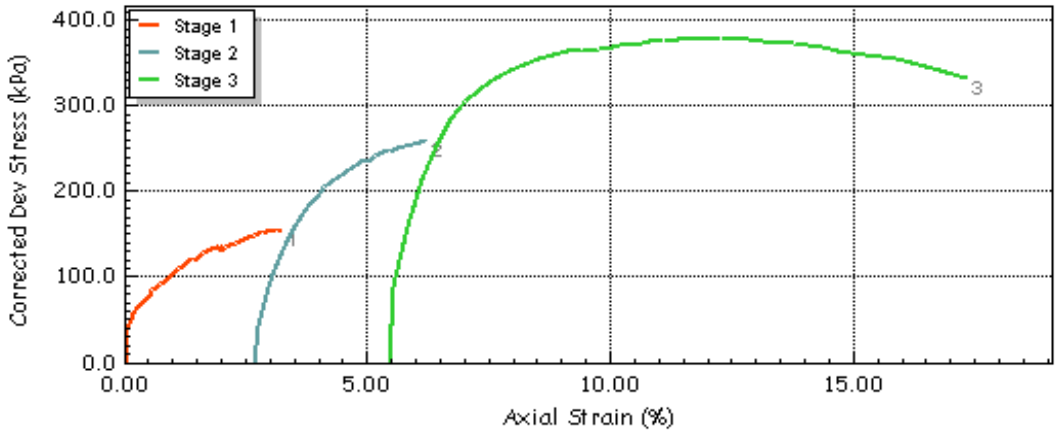
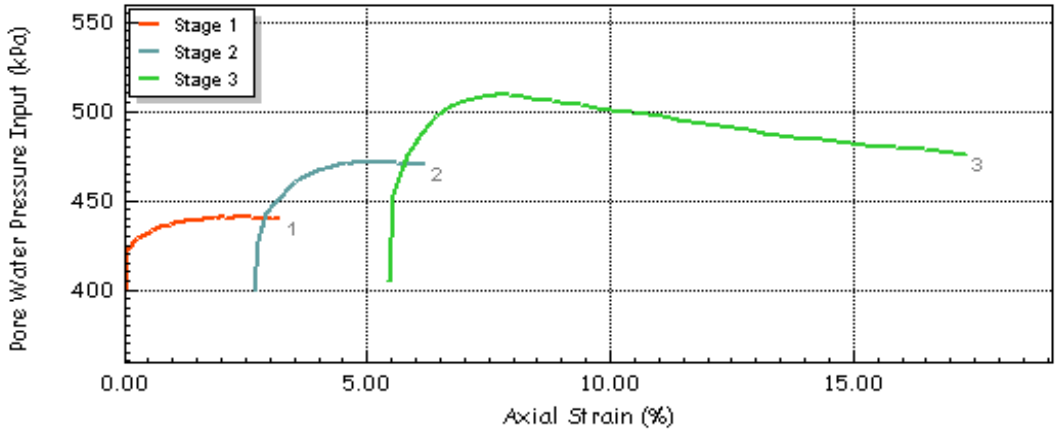
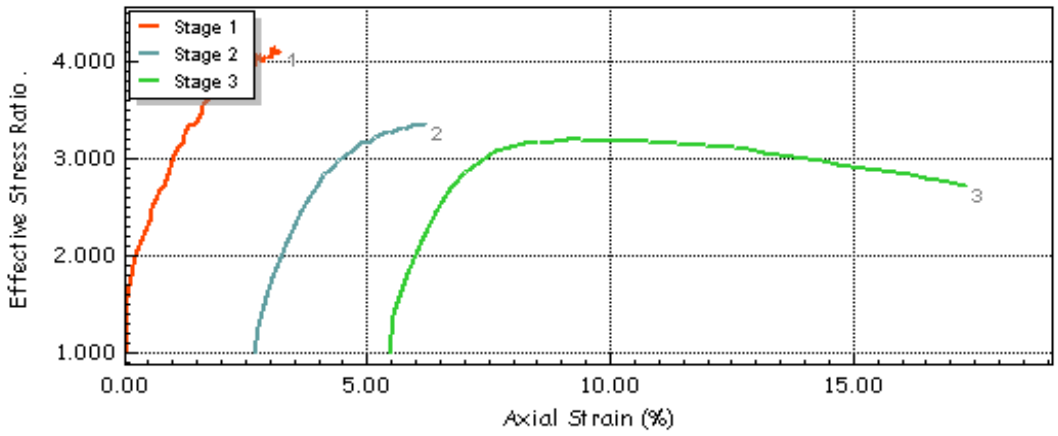
# Effective Stress Triaxial Compression

## Consolidated Undrained

**Shear Stage Plots**




| | | | | |
|---|---|---|---|---|
| UKAS TESTING 4043 | Test Method | BS1377-8 : 1990 : Clause 7 | Test Name | BH120-BH120A 9.20-9.50m |
| | | | Test Date | 13/06/2022 |
| | Jobfile | Wansford to Sutton Dualling | Borehole | BH120-BH120A |
| | | | Sample | CS103 |
| | Client | Ground Technology | Depth | 9.20-9.50m |

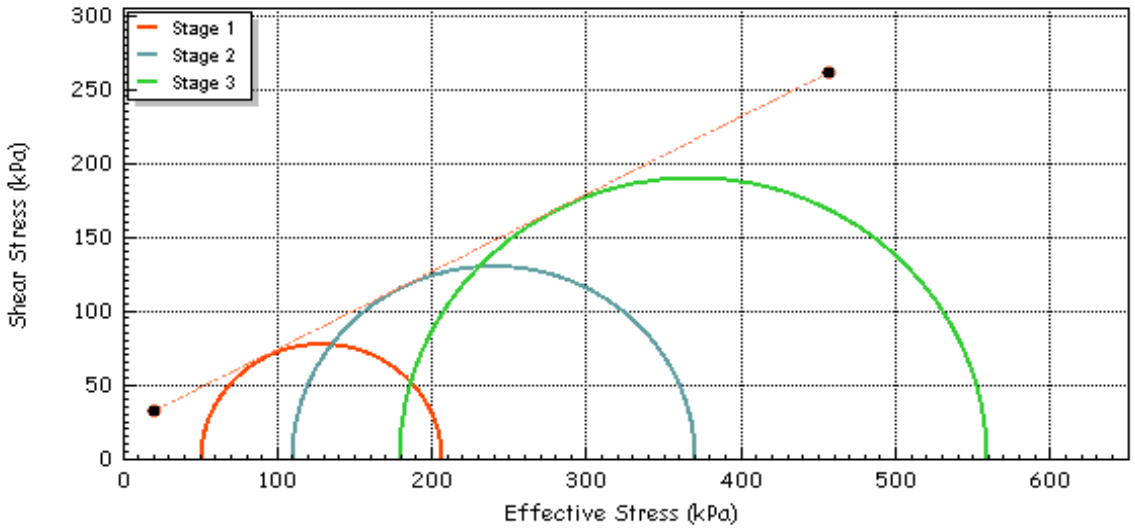
PSL Professional Soils Laboratory

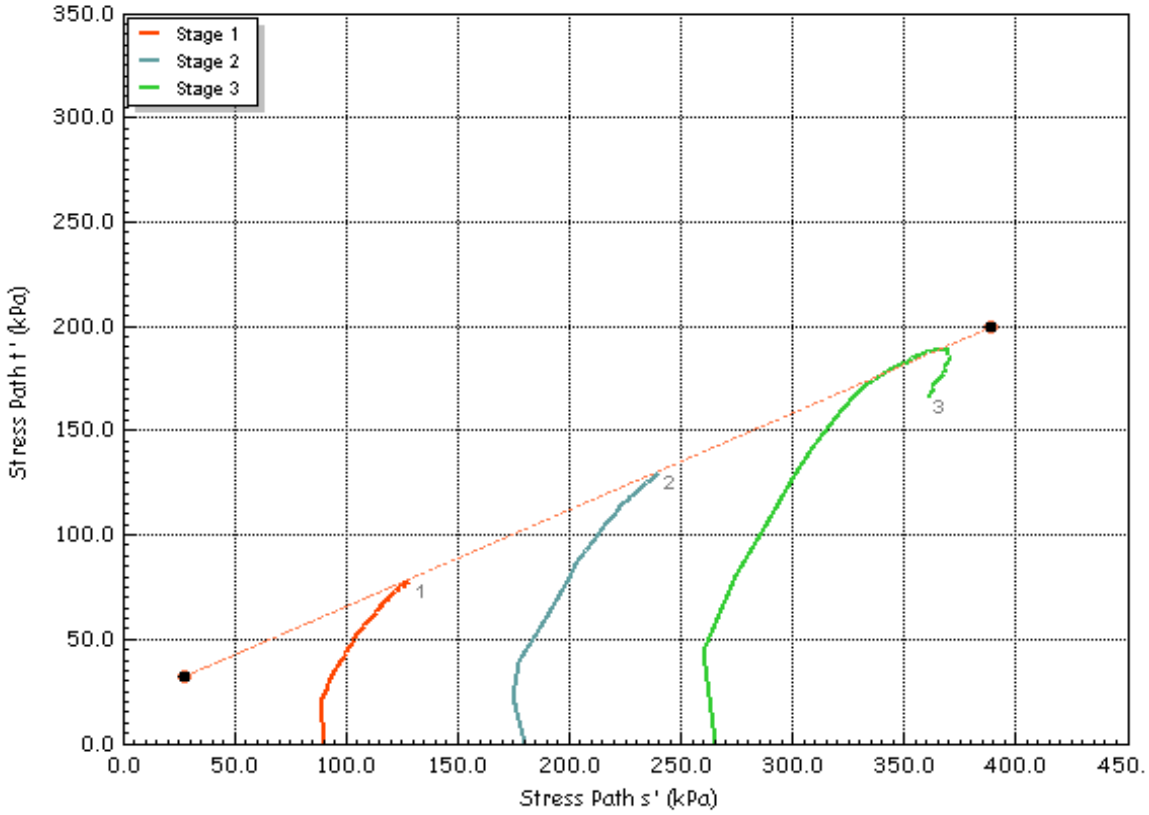
# Effective Stress Triaxial Compression

## Consolidated Undrained

**Shear Stage Plots**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Effective | c' | (kPa) | 21.76 | Effective Cohesion | c' | (kPa) | 21.76 |
| Effective Friction | ϕ' | (deg) | 27.7 | Effective Friction | ϕ' | (deg) | 27.7 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 7 | Test Name | BH120-BH120A 9.20-9.50m |
| | | Test Date | 13/06/2022 |
| Jobfile | Wansford to Sutton Dualling | Borehole | BH120-BH120A |
| Client | Ground Technology | Sample | CS103 |
| | | Depth | 9.20-9.50m |

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# Effective Stress Triaxial Compression

## Consolidated Undrained

**Summary Report**

| Sample Details | | | | |
|---|---|---|---|---|
| *sketch showing specimen location in original sample* | Depth | | | 13.70-13.95m |
| | Description | | | See summary of soil descripitons. |
| | Type | | | Undisturbed, vertical orientation. |
| | Initial Sample Length | $L_0$ | (mm) | 140.0 |
| | Initial Sample Diameter | $D_0$ | (mm) | 70.1 |
| | Initial Sample Weight | $W_0$ | (gr) | 1099.0 |
| | Initial Bulk Density | $\rho_0$ | (Mg/m3) | 2.03 |
| | Particle Density | $\rho_s$ | (Mg/m3) | 2.66 |

| **Initial Conditions** | | | Stage 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_{3i}$ | (kPa) | 685 | 820 | 955 | |
| Initial Back Pressure | $U_{bi}$ | (kPa) | 550 | 550 | 550 | |
| Membrane Thickness | $m_b$ | (mm) | 0.600 | | | |
| Displacement Input | $L_{IP}$ | (mm) | CH 2 | | | |
| Load Input | $N_{IP}$ | (N) | CH 1 | | | |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | CH 3 | | | |
| Sample Volume | $V$ | (cc) | CH 2 | | | |
| Initial Moisture | $\omega_i$ | (%) | 19 | | | |
| Initial Dry Density | $\rho_{di}$ | (Mg/m3) | 1.71 | | | |
| Initial Voids Ratio | $e_i$ | . | 0.555 | | | |
| Initial Degree of Saturation | $S_i$ | (%) | 91 | | | |
| B Value | $B$ | . | 0.95 | | | |

| **Final Conditions** | | | | | | |
|---|---|---|---|---|---|---|
| Final Moisture | $\omega_f$ | (%) | 19 | | | |
| Final Dry Density | $\rho_{df}$ | (Mg/m3) | 1.83 | | | |
| Final Voids Ratio | $e_f$ | . | 0.453 | | | |
| Final Degree of Saturation | $S_f$ | (%) | 100.0 | | | |
| | | | Stage 1 | 2 | 3 | 4 |
| Failure Criteria | | . | Max. Dev. Stress | Max. Dev. Stress | Max. Dev. Stress | |
| Strain At Failure | $\varepsilon_f$ | (%) | 3.41 | 6.08 | 8.21 | |
| Stress At Failure | $(\sigma_1-\sigma_3)$ | (kPa) | 160.2 | 273.3 | 370.9 | |
| Minor Stress At Failure | $\sigma_3'$ | (kPa) | 53.7 | 118.9 | 196.9 | |
| Major Stress At Failure | $\sigma_1'$ | (kPa) | 213.9 | 392.2 | 567.8 | |
| Principal Stress Ratio At Failure | $\sigma_1'/\sigma_3'$ | | 3.983 | 3.299 | 2.883 | |

**Notes**

*Plastic*

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 7 | Test Name | BH120-BH120A 13.70-13.95m |
| | | Test Date | 01/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH120 - BH120A |
| | | Sample | CS107 |
| Client | Ground Technology | Depth | 13.70-13.95m |

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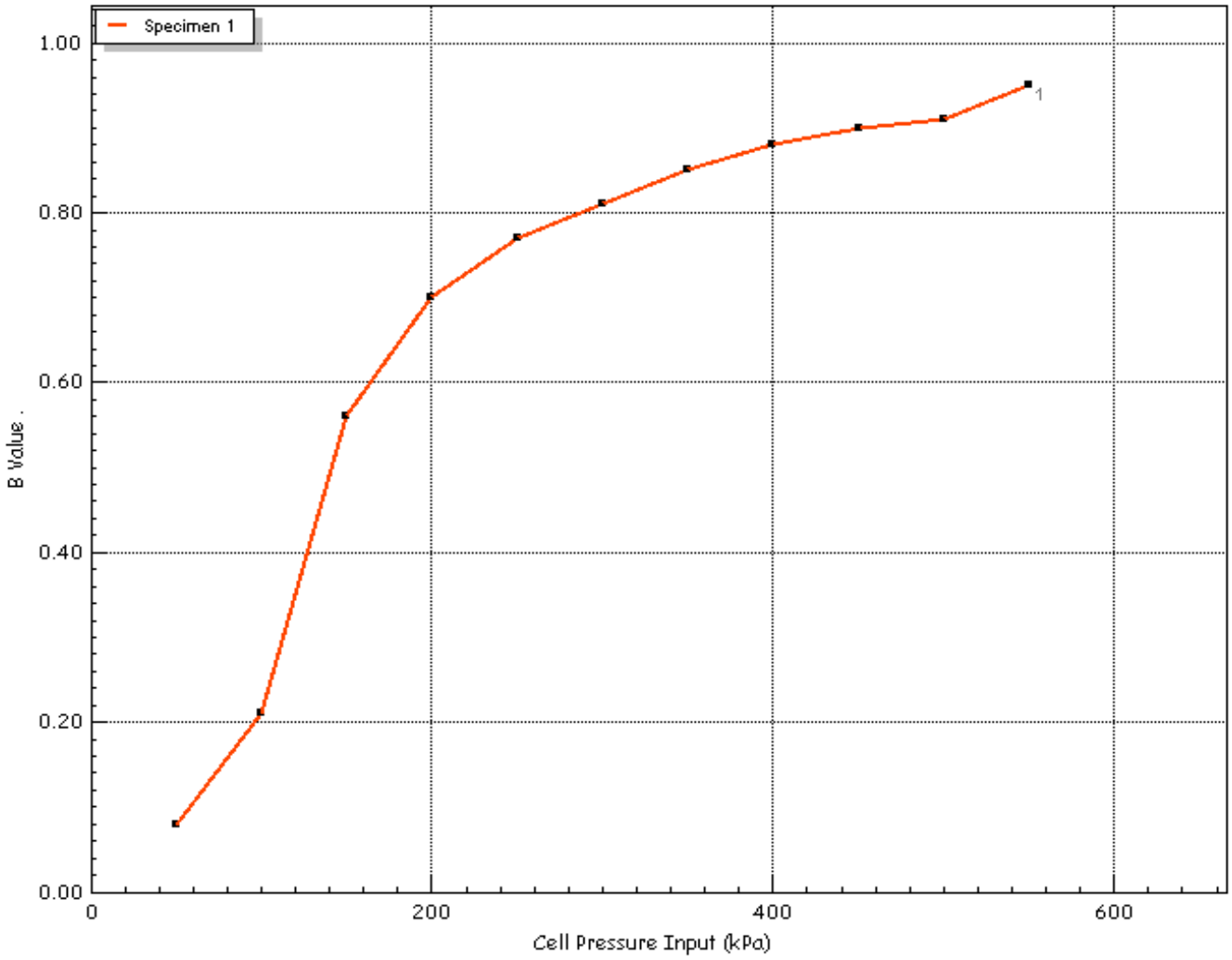
PSL Physical Soils Laboratory

# Effective Stress Triaxial Compression

## Consolidated Undrained

**Saturation Plots**

| | | | |
|---|---|---|---|
| Saturation Method | | | Stepped |
| Cell Pressure Input | σ | (kPa) | 550 |
| Pore Water Pressure Input | u pwp | (kPa) | 538 |
| B Value | B | . | 0.95 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 7 | Test Name | BH120-BH120A 13.70-13.95m |
| | | Test Date | 01/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH120 - BH120A |
| | | Sample | CS107 |
| Client | Ground Technology | Depth | 13.70-13.95m |

# Effective Stress Triaxial Compression

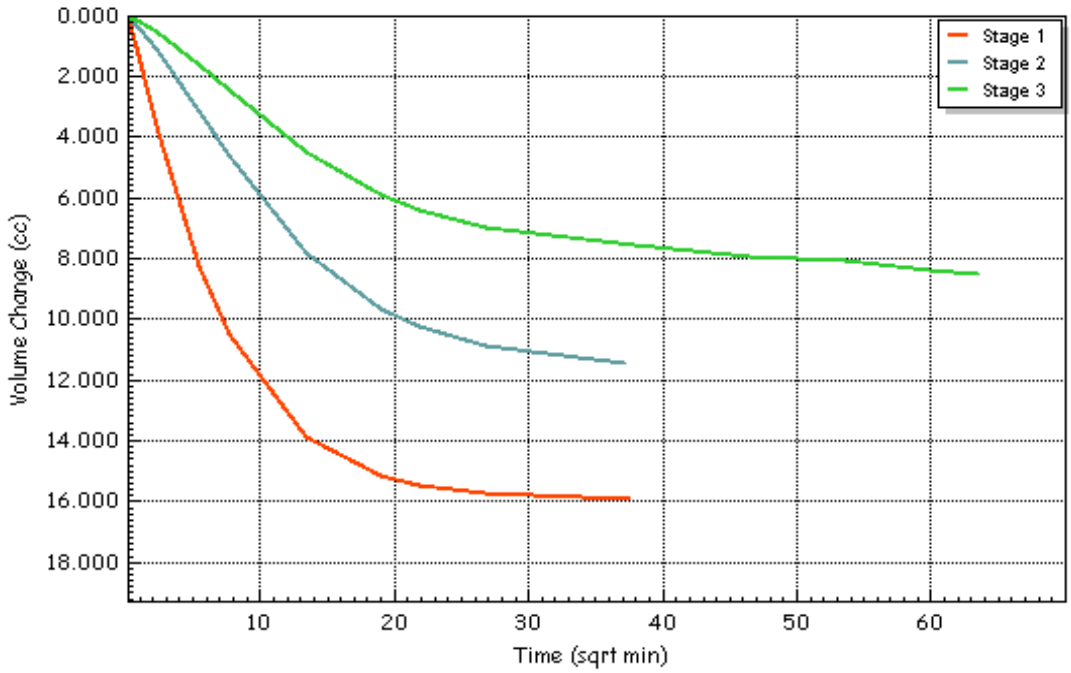
## Consolidated Undrained

**Consolidation Plots**

| Initial Conditions | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_3$ | (kPa) | 685 | 820 | 955 |
| Initial Back Pressure | $u_{bi}$ | (kPa) | 550 | 550 | 550 |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | 666 | 700 | 711 |
| Drainage Method | | | Radial+One End | | |

| Final Conditions | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| PWP Dissipation % | U% | (%) | 100.00 | 100.00 | 100.00 |
| Volumetric Strain | $\varepsilon_v$% | (%) | 2.95 | 2.12 | 1.57 |
| Corrected Length | $L_C$ | (mm) | 138.6 | 132.9 | 128.7 |
| Corrected Area | $A_C$ | (cm2) | 37.84 | 38.59 | 39.21 |
| Corrected Volume | $V_C$ | (cc) | 524.406 | 512.928 | 504.427 |
| t100 | $t_{100}$ | (min) | 114.36 | 281.87 | 516.84 |
| Consolidation | $c_v$ | (m2/year) | 0.889 | 0.361 | 0.197 |
| Compressibility | $m_v$ | (m2/MN) | 0.254 | 0.142 | 0.098 |
| Test Time | $t_F$ | (h:m:s) | 03:25:50 | 08:27:21 | 15:30:18 |
| Estimated Strain to Failure | $\varepsilon$% | (%) | 5.0 | 5.0 | 5.0 |
| Shear Machine Speed | $d_r$ | (mm/min) | 0.03367 | 0.03367 | 0.03367 |

**Notes**

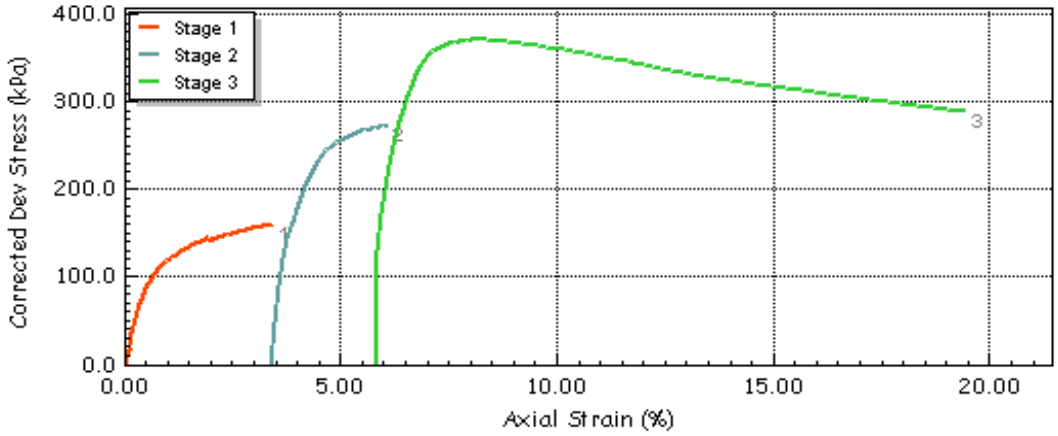


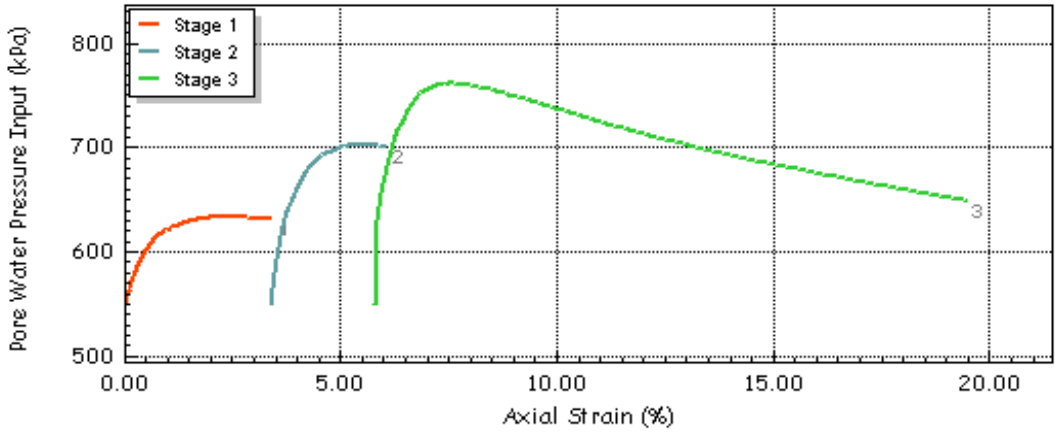

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 7 | Test Name | BH120-BH120A 13.70-13.95m |
| | | Test Date | 01/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH120 - BH120A |
| | | Sample | CS107 |
| Client | Ground Technology | Depth | 13.70-13.95m |

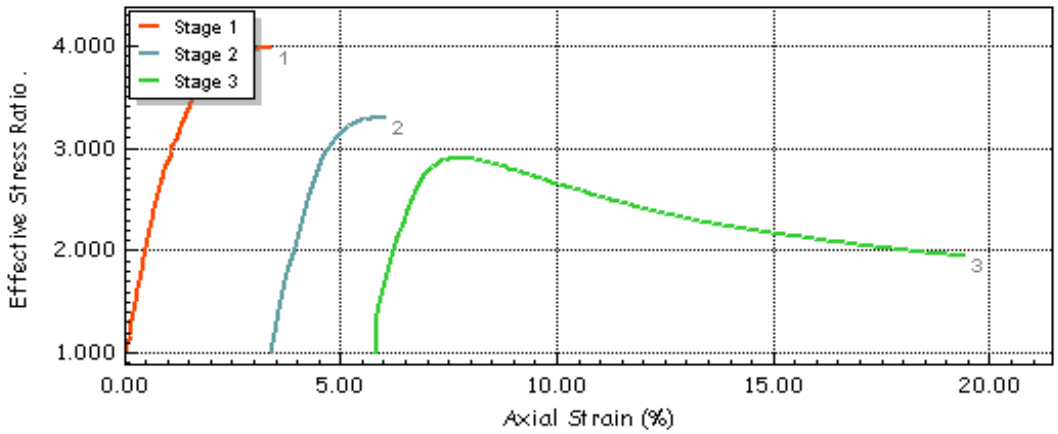
# Effective Stress Triaxial Compression

## Consolidated Undrained

**Shear Stage Plots**



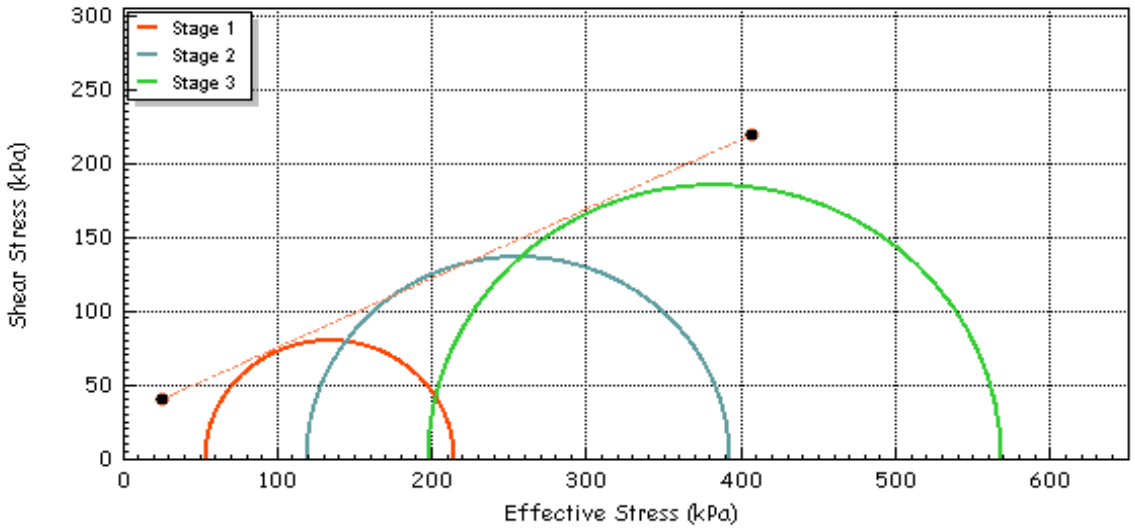

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 7 | Test Name | BH120-BH120A 13.70-13.95m |
| | | Test Date | 01/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH120 - BH120A |
| | | Sample | CS107 |
| Client | Ground Technology | Depth | 13.70-13.95m |

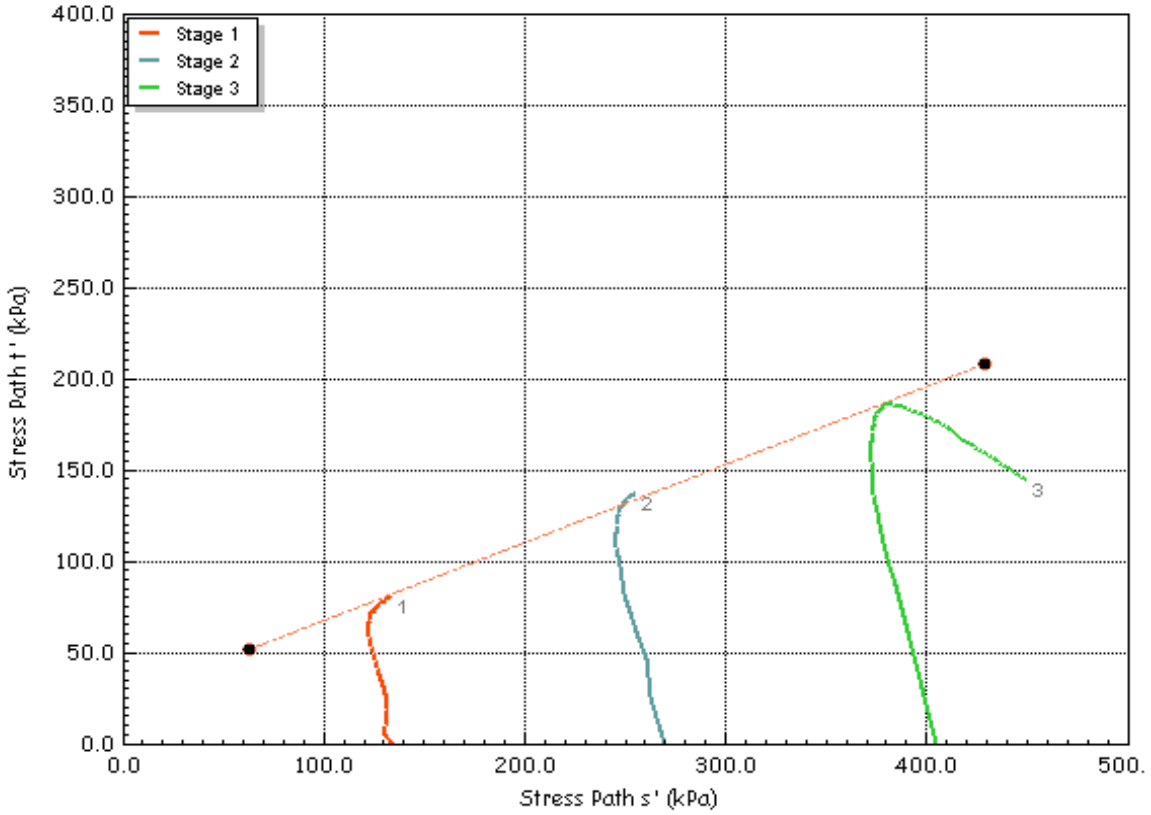
# Effective Stress Triaxial Compression

## Consolidated Undrained

**Shear Stage Plots**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Effective | c' | (kPa) | 27.19 | Effective Cohesion | c' | (kPa) | 27.19 |
| Effective Friction | ϕ' | (deg) | 25.2 | Effective Friction | ϕ' | (deg) | 25.3 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 7 | Test Name | BH120-BH120A 13.70-13.95m |
| | | Test Date | 01/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH120 - BH120A |
| | | Sample | CS107 |
| Client | Ground Technology | Depth | 13.70-13.95m |

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# Effective Stress Triaxial Compression

## Consolidated Undrained

**Summary Report**

| Sample Details | | | | |
|---|---|---|---|---|
| *sketch showing specimen location in original sample* | Depth | | 10.95-11.20m | |
| | Description | | See summary of soil descriptions. | |
| | Type | | Undisturbed, vertical orientation. | |
| | Initial Sample Length | $L_0$ | (mm) | 140.1 |
| | Initial Sample Diameter | $D_0$ | (mm) | 70.2 |
| | Initial Sample Weight | $W_0$ | (gr) | 1088.0 |
| | Initial Bulk Density | $\rho_0$ | (Mg/m3) | 2.01 |
| | Particle Density | $\rho_s$ | (Mg/m3) | 2.66 |

| **Initial Conditions** | | | Stage 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_{3i}$ | (kPa) | 760 | 870 | 980 | |
| Initial Back Pressure | $U_{bi}$ | (kPa) | 650 | 650 | 650 | |
| Membrane Thickness | $m_b$ | (mm) | 0.600 | | | |
| Displacement Input | $L_{IP}$ | (mm) | CH 2 | | | |
| Load Input | $N_{IP}$ | (N) | CH 1 | | | |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | CH 3 | | | |
| Sample Volume | $V$ | (cc) | CH 2 | | | |
| Initial Moisture | $\omega_i$ | (%) | 24 | | | |
| Initial Dry Density | $\rho_{di}$ | (Mg/m3) | 1.61 | | | |
| Initial Voids Ratio | $e_i$ | . | 0.650 | | | |
| Initial Degree of Saturation | $S_i$ | (%) | 100 | | | |
| B Value | B | . | 0.98 | | | |

| **Final Conditions** | | | | | | |
|---|---|---|---|---|---|---|
| Final Moisture | $\omega_f$ | (%) | 21 | | | |
| Final Dry Density | $\rho_{df}$ | (Mg/m3) | 1.71 | | | |
| Final Voids Ratio | $e_f$ | . | 0.557 | | | |
| Final Degree of Saturation | $S_f$ | (%) | 100.0 | | | |
| | | | Stage 1 | 2 | 3 | 4 |
| Failure Criteria | | . | Max. Dev. Stress | Max. Dev. Stress | Max. Dev. Stress | |
| Strain At Failure | $\varepsilon_f$ | (%) | 1.97 | 3.88 | 6.60 | |
| Stress At Failure | $(\sigma_1-\sigma_3)$ | (kPa) | 95.4 | 173.7 | 236.7 | |
| Minor Stress At Failure | $\sigma_3'$ | (kPa) | 79.7 | 179.4 | 258.9 | |
| Major Stress At Failure | $\sigma_1'$ | (kPa) | 175.1 | 353.1 | 495.6 | |
| Principal Stress Ratio At Failure | $\sigma_1'/\sigma_3'$ | | 2.197 | 1.968 | 1.914 | |

**Notes**

*Plastic*

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 7 | Test Name | BH107 10.95-11.20m_Copy |
| | | Test Date | 13/06/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH107 |
| | | Sample | CS108 |
| Client | Ground Technology | Depth | 10.95-11.20m |

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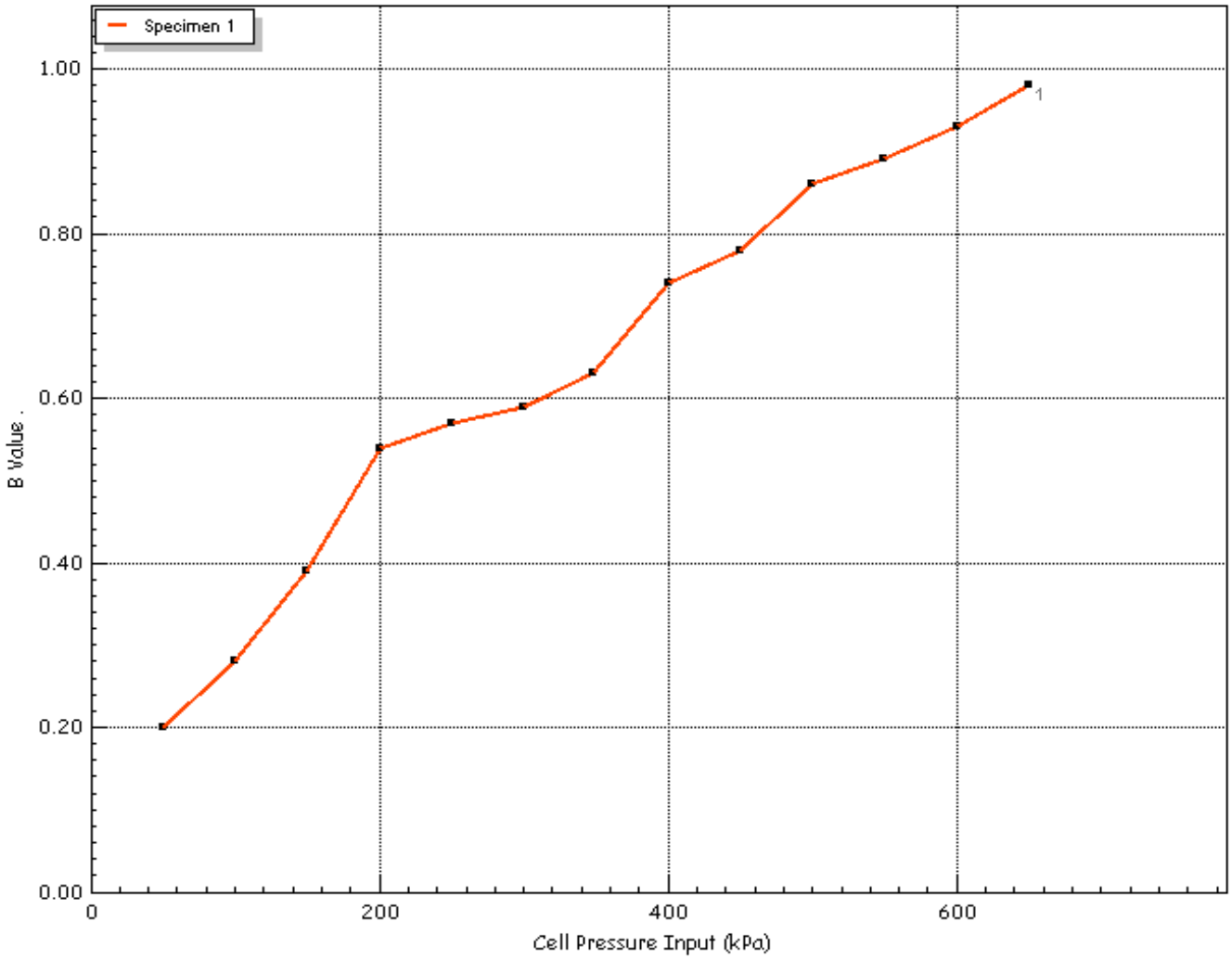
# Effective Stress Triaxial Compression

## Consolidated Undrained

**Saturation Plots**

| | | | |
|---|---|---|---|
| Saturation Method | | | Stepped |
| Cell Pressure Input | σ | (kPa) | 650 |
| Pore Water Pressure Input | u pwp | (kPa) | 633 |
| B Value | B | . | 0.98 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 7 | Test Name | BH107 10.95-11.20m_Copy |
| | | Test Date | 13/06/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH107 |
| | | Sample | CS108 |
| Client | Ground Technology | Depth | 10.95-11.20m |

# Effective Stress Triaxial Compression

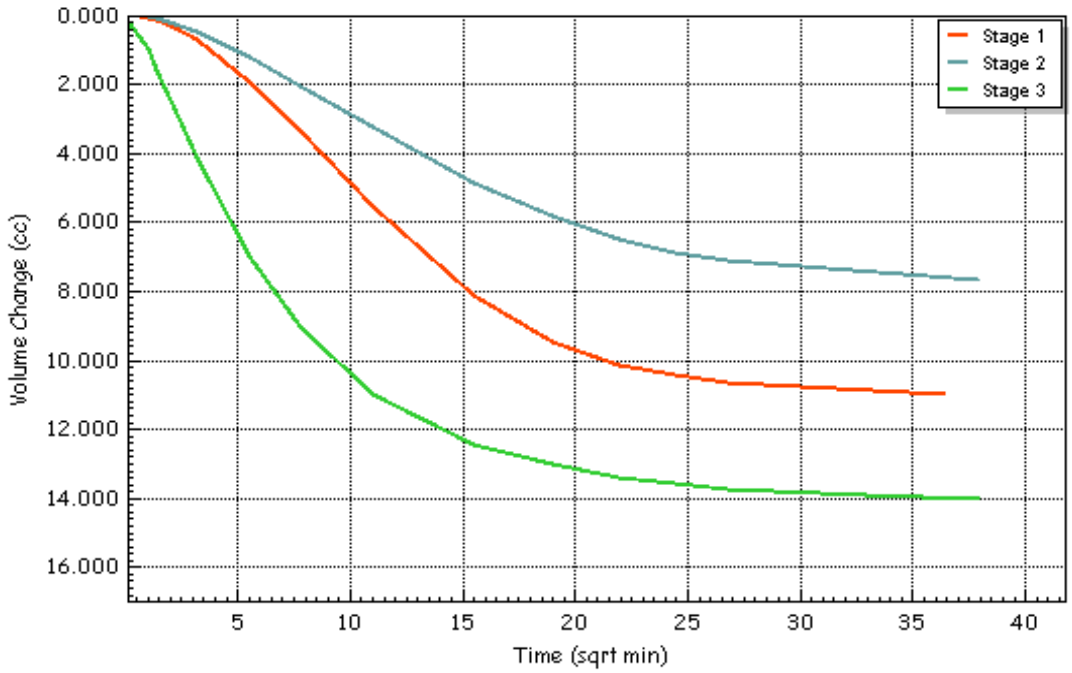
## Consolidated Undrained

**Consolidation Plots**

| **Initial Conditions** | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_3$ | (kPa) | 760 | 870 | 980 |
| Initial Back Pressure | $u_{bi}$ | (kPa) | 650 | 650 | 650 |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | 689 | 759 | 676 |
| Drainage Method | | | Radial+One End | | |

| **Final Conditions** | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| PWP Dissipation % | U% | (%) | 100.00 | 100.00 | 100.00 |
| Volumetric Strain | $\varepsilon_v$% | (%) | 2.03 | 3.44 | 6.03 |
| Corrected Length | $L_C$ | (mm) | 139.2 | 134.1 | 129.0 |
| Corrected Area | $A_C$ | (cm2) | 38.18 | 38.24 | 38.12 |
| Corrected Volume | $V_C$ | (cc) | 531.258 | 523.573 | 509.555 |
| T100 Time to Failure | $t_{100}$ | (min) | 371.65 | 458.32 | 92.03 |
| Consolidation | $c_v$ | (m2/year) | 0.275 | 0.223 | 1.110 |
| Compressibility | $m_v$ | (m2/MN) | 0.515 | 0.316 | 2.337 |
| Test Time | $t_F$ | (h:m:s) | 11:08:58 | 13:44:58 | 02:45:39 |
| Estimated Strain to Failure | $\varepsilon$% | (%) | 5.0 | 5.0 | 5.0 |
| Shear Machine Speed | $d_r$ | (mm/min) | 0.01040 | 0.01040 | 0.01040 |

**Notes**




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 7 | Test Name | BH107 10.95-11.20m_Copy |
| | | Test Date | 13/06/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH107 |
| | | Sample | CS108 |
| Client | Ground Technology | Depth | 10.95-11.20m |

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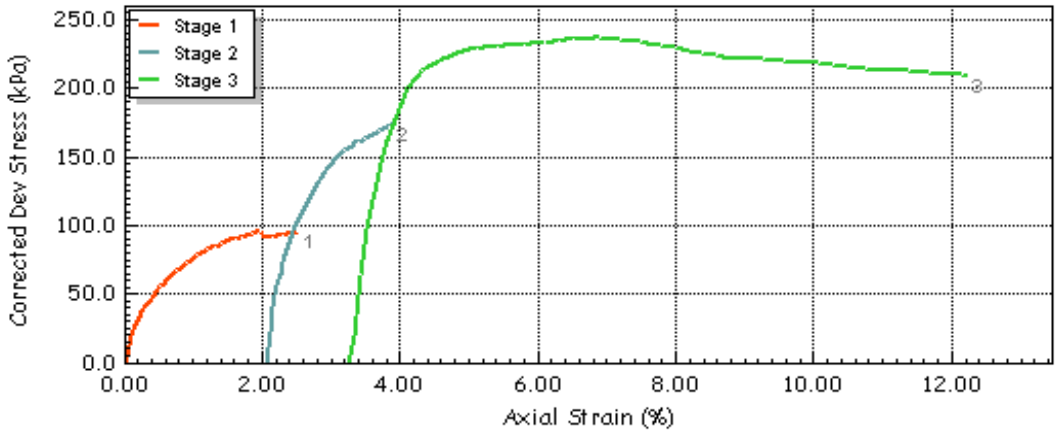
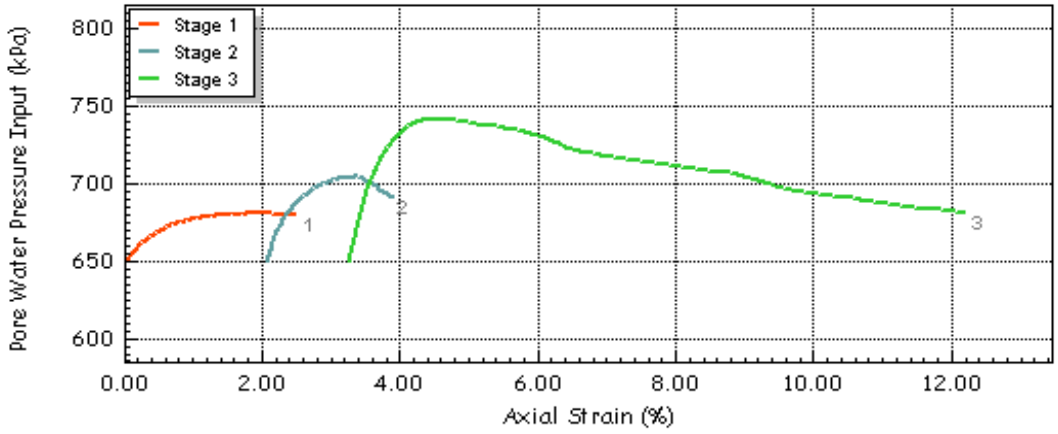
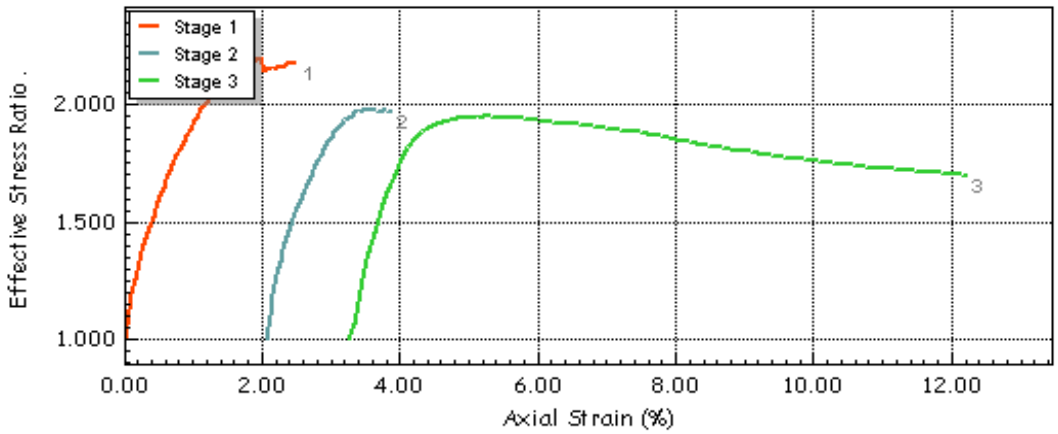
# Effective Stress Triaxial Compression

## Consolidated Undrained

**Shear Stage Plots**



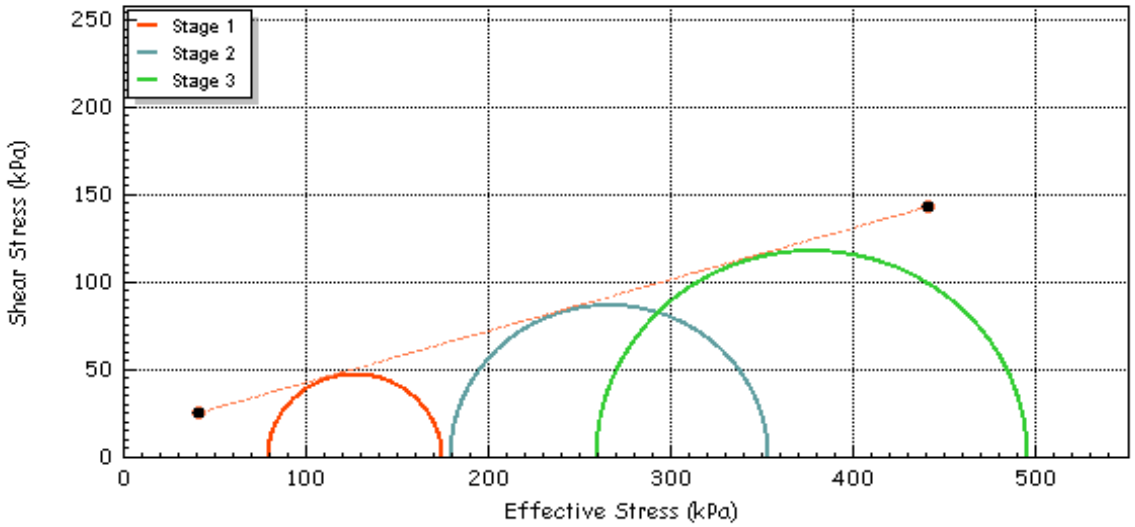

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 7 | Test Name | BH107 10.95-11.20m_Copy |
| | | Test Date | 13/06/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH107 |
| | | Sample | CS108 |
| Client | Ground Technology | Depth | 10.95-11.20m |

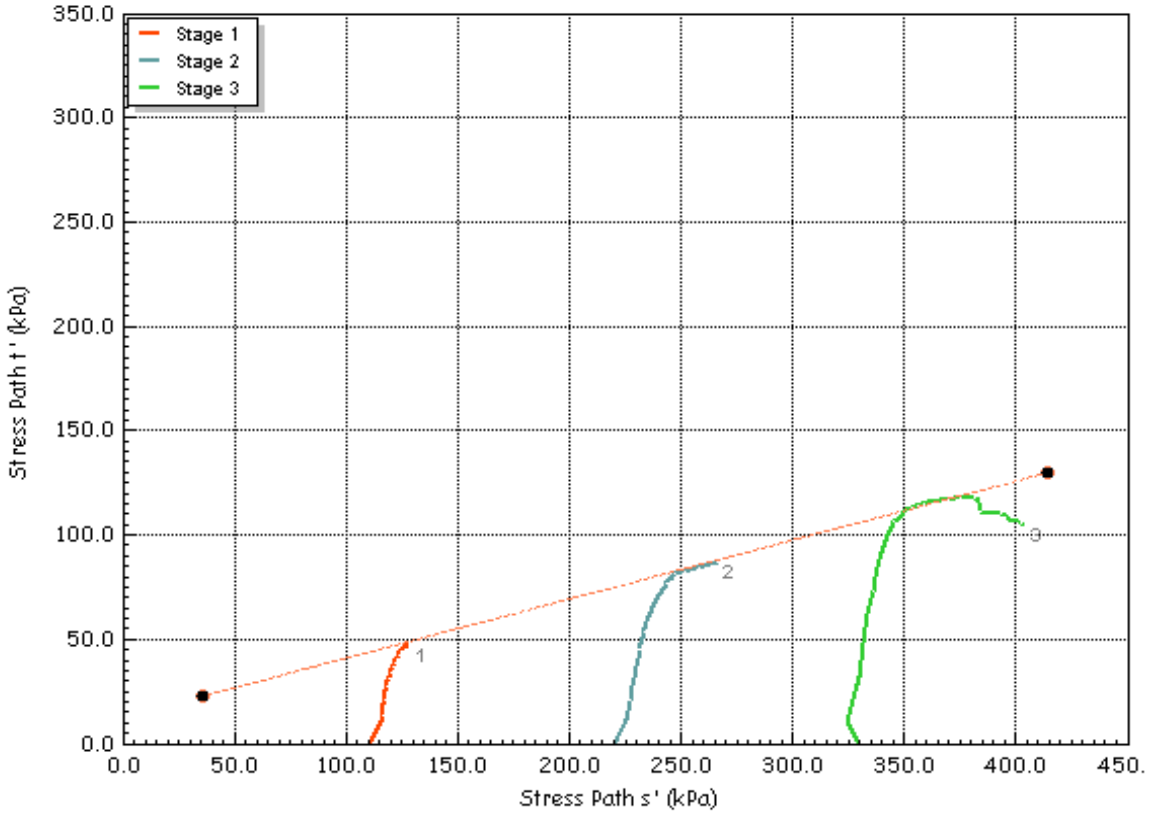
# Effective Stress Triaxial Compression

## Consolidated Undrained

**Shear Stage Plots**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Effective | c' | (kPa) | 12.95 | Effective Cohesion | c' | (kPa) | 12.95 |
| Effective Friction | ϕ' | (deg) | 16.4 | Effective Friction | ϕ' | (deg) | 16.4 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 7 | Test Name | BH107 10.95-11.20m_Copy |
| | | Test Date | 13/06/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH107 |
| | | Sample | CS108 |
| Client | Ground Technology | Depth | 10.95-11.20m |

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# Effective Stress Triaxial Compression

## Consolidated Drained

**Summary Report**

| Sample Details | | | | |
|---|---|---|---|---|
| *sketch showing specimen location in original sample* | Depth | | | 13.90-14.20m |
| | Description | | | See summary of soil descripitons. |
| | Type | | | Undisturbed, vertical orientation. |
| | Initial Sample Length | $L_0$ | (mm) | 140.0 |
| | Initial Sample Diameter | $D_0$ | (mm) | 70.0 |
| | Initial Sample Weight | $W_0$ | (gr) | 1109.0 |
| | Initial Bulk Density | $\rho_0$ | (Mg/m3) | 2.06 |
| | Particle Density | $\rho_s$ | (Mg/m3) | 2.66 |

| **Initial Conditions** | | | Stage 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_{3i}$ | (kPa) | 440 | 580 | 720 | |
| Initial Back Pressure | $U_{bi}$ | (kPa) | 300 | 300 | 300 | |
| Membrane Thickness | $m_b$ | (mm) | 0.600 | | | |
| Displacement Input | $L_{IP}$ | (mm) | CH 2 | | | |
| Load Input | $N_{IP}$ | (N) | CH 1 | | | |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | CH 3 | | | |
| Sample Volume | $V$ | (cc) | CH 6 | | | |
| Initial Moisture | $\omega_i$ | (%) | 24 | | | |
| Initial Dry Density | $\rho_{di}$ | (Mg/m3) | 1.66 | | | |
| Initial Voids Ratio | $e_i$ | . | 0.603 | | | |
| Initial Degree of Saturation | $S_i$ | (%) | 100 | | | |
| B Value | $B$ | . | 0.96 | | | |

| **Final Conditions** | | | | | | |
|---|---|---|---|---|---|---|
| Final Moisture | $\omega_f$ | (%) | 14 | | | |
| Final Dry Density | $\rho_{df}$ | (Mg/m3) | 2.03 | | | |
| Final Voids Ratio | $e_f$ | . | 0.311 | | | |
| Final Degree of Saturation | $S_f$ | (%) | 100.0 | | | |
| | | | Stage 1 | 2 | 3 | 4 |
| Failure Criteria | | . | Max. Dev. Stress | Max. Dev. Stress | Max. Dev. Stress | |
| Strain At Failure | $\varepsilon_f$ | (%) | 6.84 | 9.76 | 19.76 | |
| Stress At Failure | $(\sigma_1-\sigma_3)$ | (kPa) | 218.0 | 383.1 | 540.8 | |
| Minor Stress At Failure | $\sigma_3'$ | (kPa) | 140.0 | 280.0 | 420.0 | |
| Major Stress At Failure | $\sigma_1'$ | (kPa) | 358.0 | 663.1 | 960.8 | |
| Principal Stress Ratio At Failure | $\sigma_1'/\sigma_3'$ | | 2.557 | 2.368 | 2.288 | |

**Notes**

*Plastic*

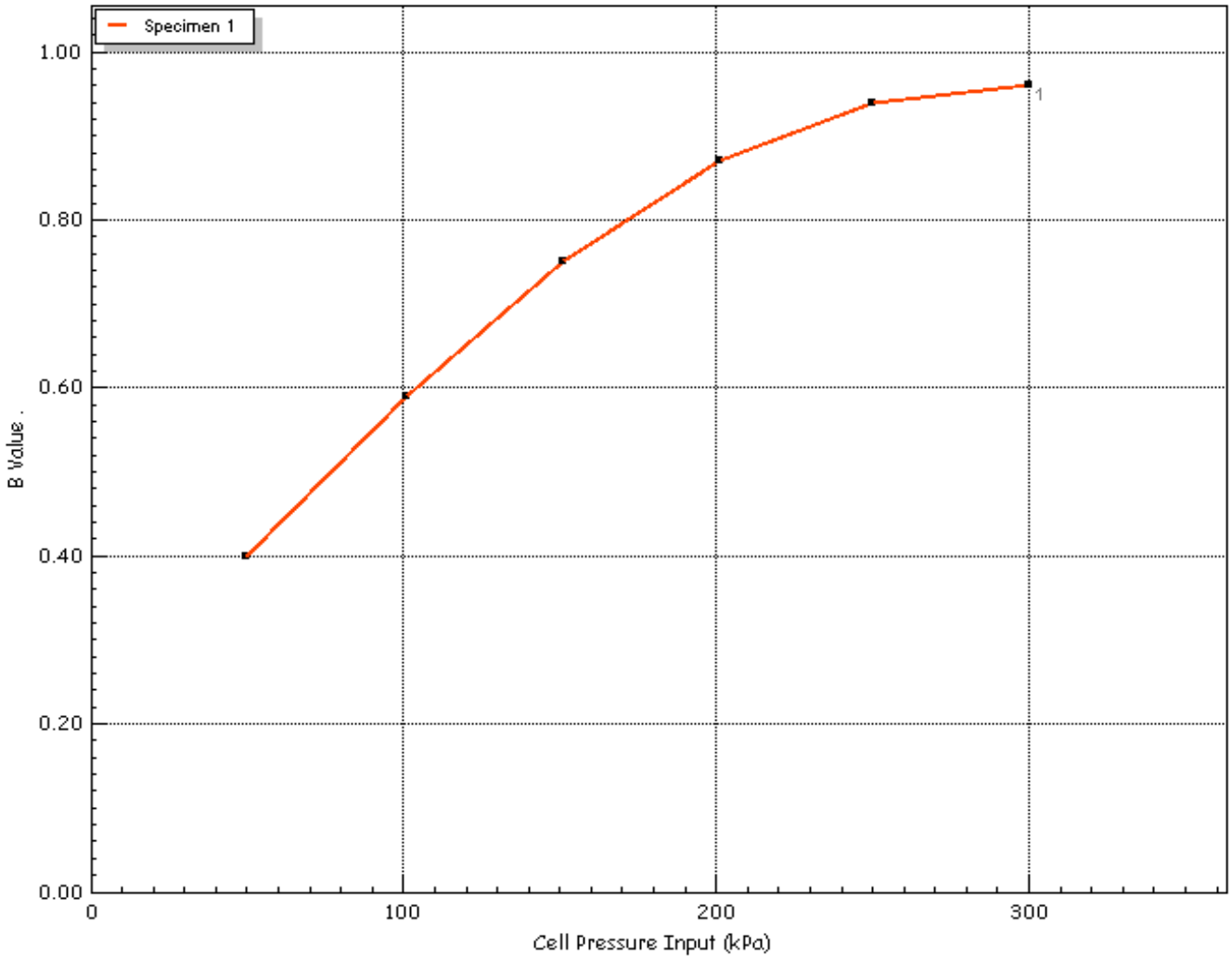
| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH107 13.90-14.20m U |
| | | Test Date | 09/06/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH107 |
| | | Sample | CS111 |
| Client | Ground Technology | Depth | 13.90-14.20m |

# Effective Stress Triaxial Compression

## Consolidated Drained

**Saturation Plots**

| | | | |
|---|---|---|---|
| Saturation Method | | | Stepped |
| Cell Pressure Input | σ | (kPa) | 300 |
| Pore Water Pressure Input | u pwp | (kPa) | 285 |
| B Value | B | . | 0.96 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH107 13.90-14.20m U |
| | | Test Date | 09/06/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH107 |
| | | Sample | CS111 |
| Client | Ground Technology | Depth | 13.90-14.20m |

# Effective Stress Triaxial Compression

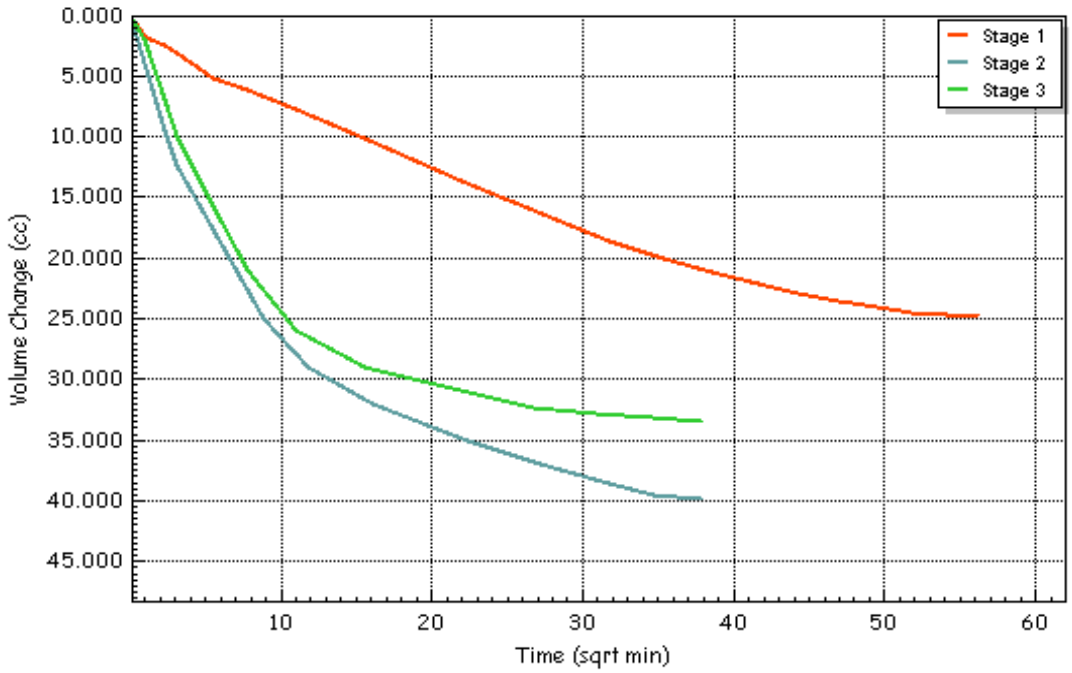
## Consolidated Drained

**Consolidation Plots**

| **Initial Conditions** | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_3$ | (kPa) | 440 | 580 | 720 |
| Initial Back Pressure | $u_{bi}$ | (kPa) | 300 | 300 | 300 |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | 415 | 534 | 671 |
| Drainage Method | | | Radial+One End | | |

| **Final Conditions** | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| PWP Dissipation % | U% | (%) | 100.00 | 100.00 | 100.00 |
| Volumetric Strain | $\varepsilon_v$% | (%) | 4.61 | 12.00 | 18.22 |
| Corrected Length | $L_C$ | (mm) | 137.9 | 123.3 | 112.6 |
| Corrected Area | $A_C$ | (cm2) | 37.30 | 36.67 | 34.08 |
| Corrected Volume | $V_C$ | (cc) | 513.970 | 474.110 | 440.642 |
| T100 Time to Failure | $t_{100}$ | (min) | 530.51 | 134.38 | 105.23 |
| Consolidation | $c_v$ | (m2/year) | 0.191 | 0.753 | 0.962 |
| Compressibility | $m_v$ | (m2/MN) | 0.400 | 0.513 | 0.491 |
| Test Time | $t_F$ | (h:m:s) | 123:47:08 | 31:21:19 | 24:33:13 |
| Estimated Strain to Failure | $\varepsilon$% | (%) | 5.0 | 5.0 | 5.0 |
| Shear Machine Speed | $d_r$ | (mm/min) | 0.00254 | 0.00254 | 0.00254 |

**Notes**




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH107 13.90-14.20m U |
| | | Test Date | 09/06/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH107 |
| | | Sample | CS111 |
| Client | Ground Technology | Depth | 13.90-14.20m |

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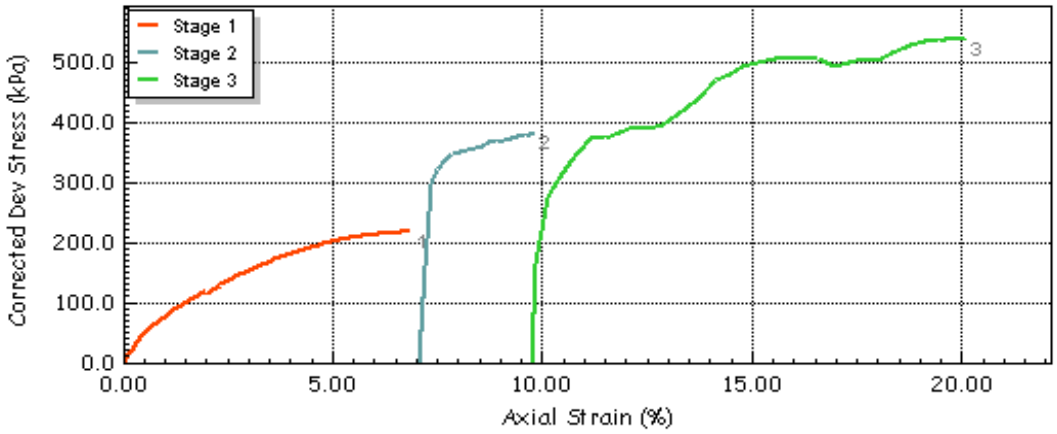
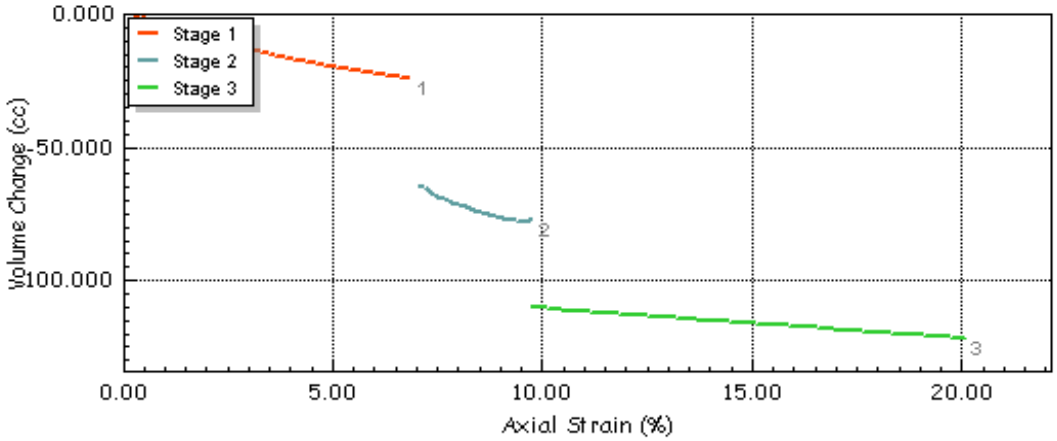
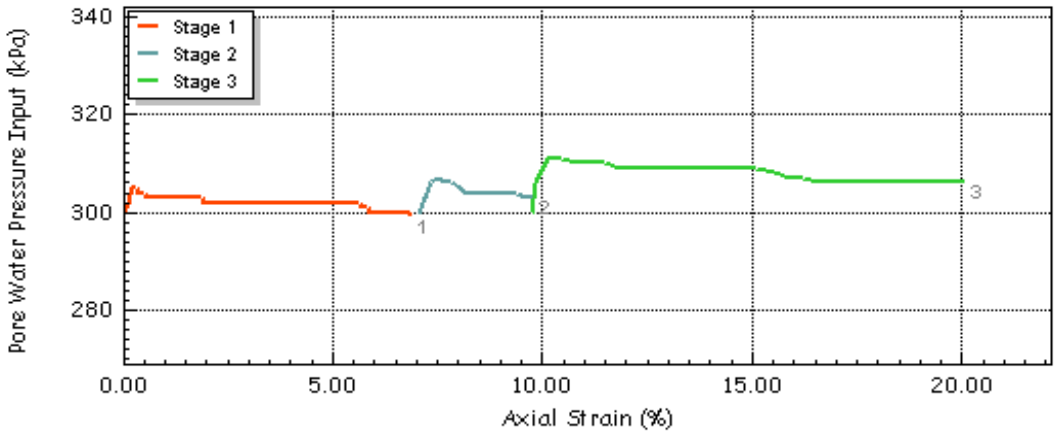
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**



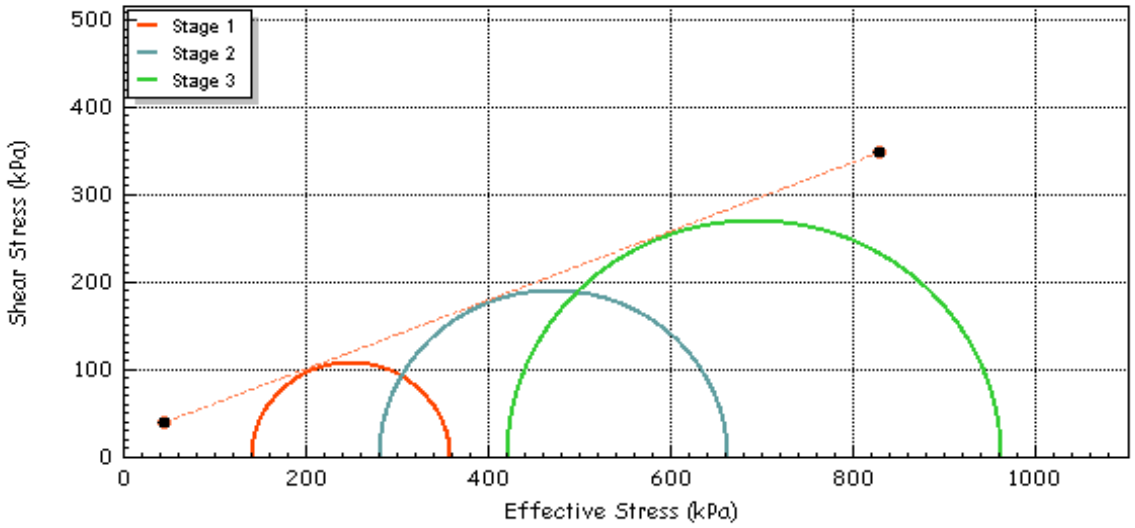

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH107 13.90-14.20m U |
| | | Test Date | 09/06/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH107 |
| | | Sample | CS111 |
| Client | Ground Technology | Depth | 13.90-14.20m |

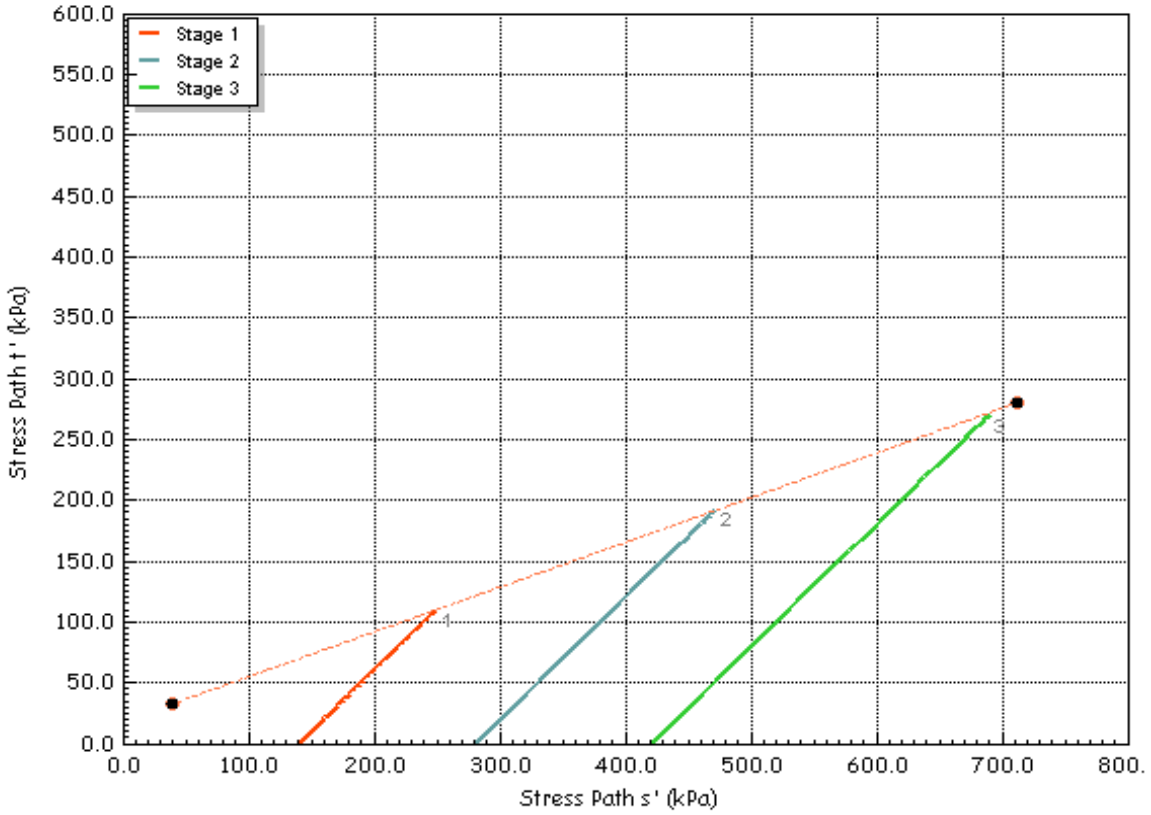
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Effective | c' | (kPa) | 19.60 | Effective Cohesion | c' | (kPa) | 19.60 |
| Effective Friction | ϕ' | (deg) | 21.6 | Effective Friction | ϕ' | (deg) | 21.6 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH107 13.90-14.20m U |
| | | Test Date | 09/06/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH107 |
| | | Sample | CS111 |
| Client | Ground Technology | Depth | 13.90-14.20m |

# Effective Stress Triaxial Compression

## Consolidated Drained

**Summary Report**

| Sample Details | | | | |
|---|---|---|---|---|
| *sketch showing specimen location in original sample* | Depth | | | 2.50-2.80m |
| | Description | | | See summary of soil descriptions. |
| | Type | | | Undisturbed, vertical orientation. |
| | Initial Sample Length | $L_0$ | (mm) | 140.0 |
| | Initial Sample Diameter | $D_0$ | (mm) | 70.1 |
| | Initial Sample Weight | $W_0$ | (gr) | 1023.0 |
| | Initial Bulk Density | $\rho_0$ | (Mg/m3) | 1.89 |
| | Particle Density | $\rho_s$ | (Mg/m3) | 2.66 |

| **Initial Conditions** | | | Stage 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_{3i}$ | (kPa) | 725 | 750 | 775 | |
| Initial Back Pressure | $U_{bi}$ | (kPa) | 700 | 700 | 700 | |
| Membrane Thickness | $m_b$ | (mm) | 0.600 | | | |
| Displacement Input | $L_{IP}$ | (mm) | CH 2 | | | |
| Load Input | $N_{IP}$ | (N) | CH 1 | | | |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | CH 3 | | | |
| Sample Volume | $V$ | (cc) | CH 2 | | | |
| Initial Moisture | $\omega_i$ | (%) | 31 | | | |
| Initial Dry Density | $\rho_{di}$ | (Mg/m3) | 1.45 | | | |
| Initial Voids Ratio | $e_i$ | . | 0.840 | | | |
| Initial Degree of Saturation | $S_i$ | (%) | 98 | | | |
| B Value | $B$ | . | 0.97 | | | |

| **Final Conditions** | | | | | | |
|---|---|---|---|---|---|---|
| Final Moisture | $\omega_f$ | (%) | 32 | | | |
| Final Dry Density | $\rho_{df}$ | (Mg/m3) | 1.45 | | | |
| Final Voids Ratio | $e_f$ | . | 0.830 | | | |
| Final Degree of Saturation | $S_f$ | (%) | 100.0 | | | |
| | | | Stage 1 | 2 | 3 | 4 |
| Failure Criteria | | . | Max. Dev. Stress | Max. Dev. Stress | Max. Dev. Stress | |
| Strain At Failure | $\varepsilon_f$ | (%) | 1.98 | 6.03 | 8.42 | |
| Stress At Failure | $(\sigma_1-\sigma_3)$ | (kPa) | 62.9 | 83.4 | 101.6 | |
| Minor Stress At Failure | $\sigma_3'$ | (kPa) | 25.0 | 49.7 | 72.2 | |
| Major Stress At Failure | $\sigma_1'$ | (kPa) | 87.9 | 133.1 | 173.8 | |
| Principal Stress Ratio At Failure | $\sigma_1'/\sigma_3'$ | | 3.518 | 2.678 | 2.407 | |

**Notes**

*Plastic*

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH124 2.50-2.80m |
| | | Test Date | 02/06/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH124 |
| | | Sample | CS104 |
| Client | Ground Technology | Depth | 2.50-2.80m |

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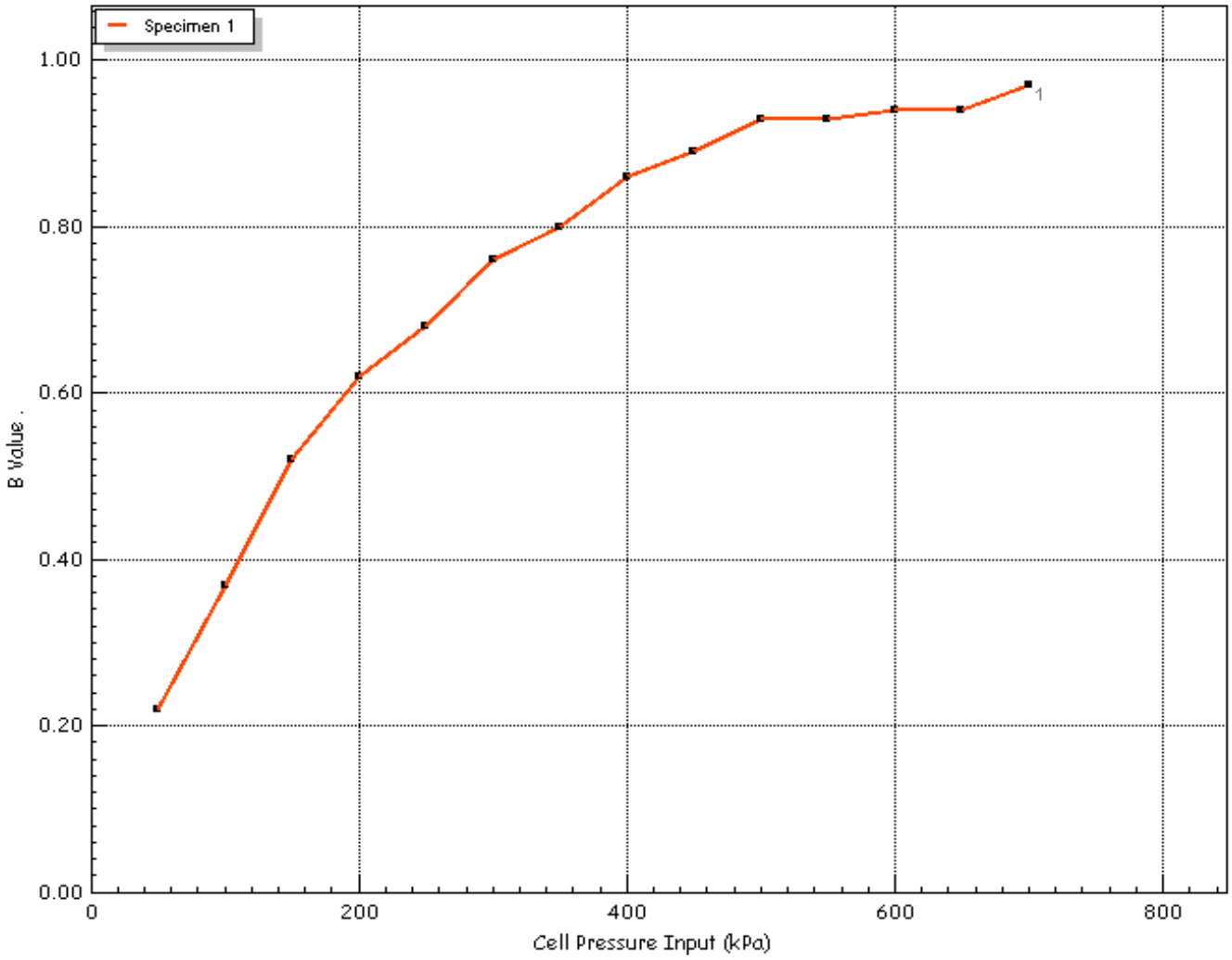
# Effective Stress Triaxial Compression

## Consolidated Drained

**Saturation Plots**

| | | | |
|---|---|---|---|
| Saturation Method | | | Stepped |
| Cell Pressure Input | σ | (kPa) | 700 |
| Pore Water Pressure Input | u pwp | (kPa) | 688 |
| B Value | B | . | 0.97 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH124 2.50-2.80m |
| | | Test Date | 02/06/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH124 |
| | | Sample | CS104 |
| Client | Ground Technology | Depth | 2.50-2.80m |

# Effective Stress Triaxial Compression

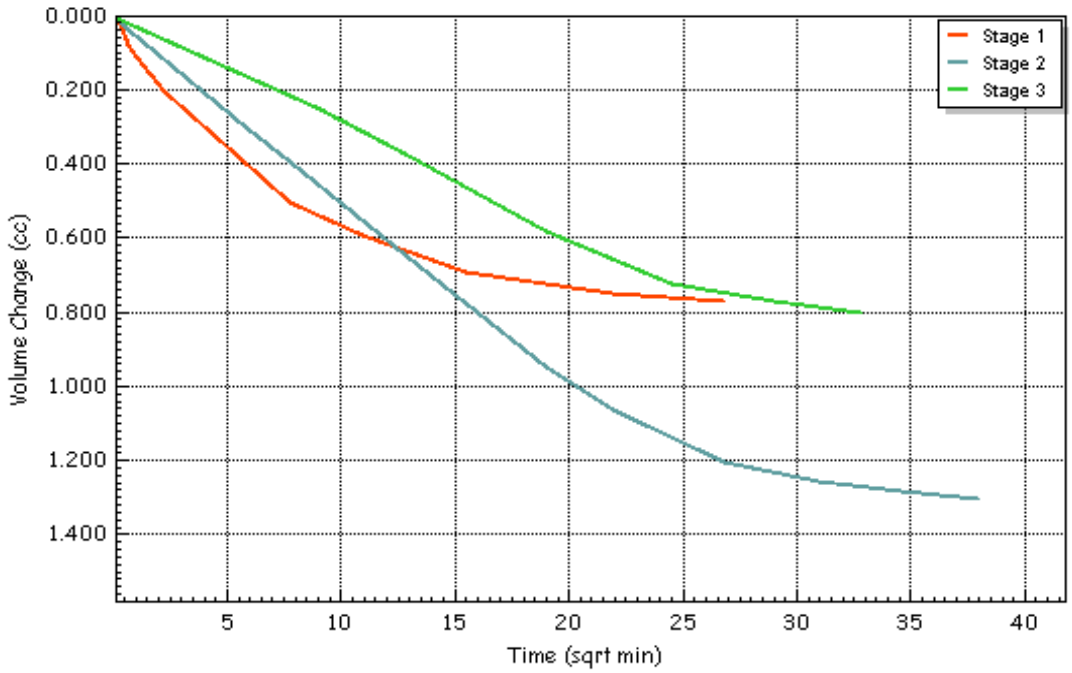
## Consolidated Drained

**Consolidation Plots**

| **Initial Conditions** | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_3$ | (kPa) | 725 | 750 | 775 |
| Initial Back Pressure | $u_{bi}$ | (kPa) | 700 | 700 | 700 |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | 709 | 714 | 711 |
| Drainage Method | | | Radial+One End | | |

| **Final Conditions** | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| PWP Dissipation % | U% | (%) | 100.00 | 100.00 | 100.00 |
| Volumetric Strain | $\varepsilon_v$% | (%) | 0.14 | 0.24 | 0.15 |
| Corrected Length | $L_C$ | (mm) | 139.9 | 135.2 | 130.5 |
| Corrected Area | $A_C$ | (cm2) | 38.56 | 39.80 | 41.19 |
| Corrected Volume | $V_C$ | (cc) | 539.552 | 538.248 | 537.445 |
| t100 | $t_{100}$ | (min) | 74.33 | 655.52 | 470.92 |
| Consolidation | $c_v$ | (m2/year) | 1.368 | 0.155 | 0.216 |
| Compressibility | $m_v$ | (m2/MN) | 0.164 | 0.179 | 0.135 |
| Test Time | $t_F$ | (h:m:s) | 17:20:37 | 152:57:16 | 109:52:52 |
| Estimated Strain to Failure | $\varepsilon$% | (%) | 5.0 | 5.0 | 5.0 |
| Shear Machine Speed | $d_r$ | (mm/min) | 0.00672 | 0.00672 | 0.00672 |

**Notes**




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH124 2.50-2.80m |
| | | Test Date | 02/06/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH124 |
| | | Sample | CS104 |
| Client | Ground Technology | Depth | 2.50-2.80m |

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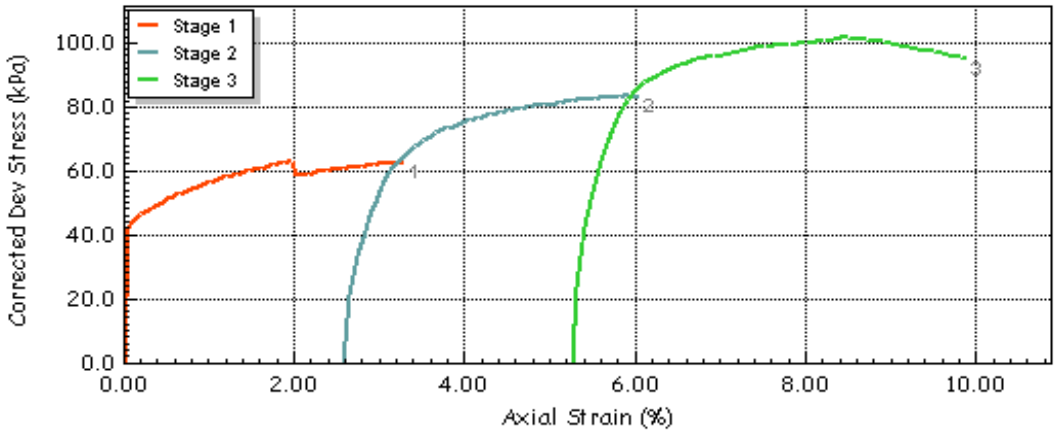
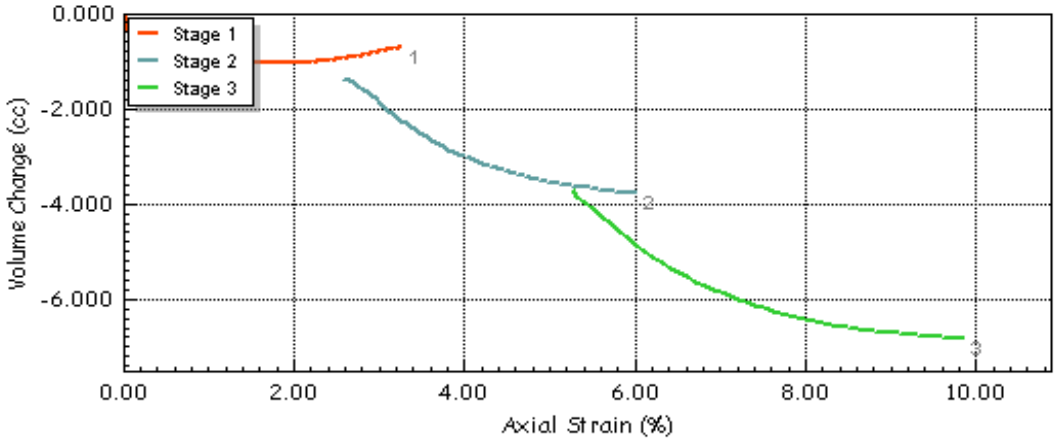
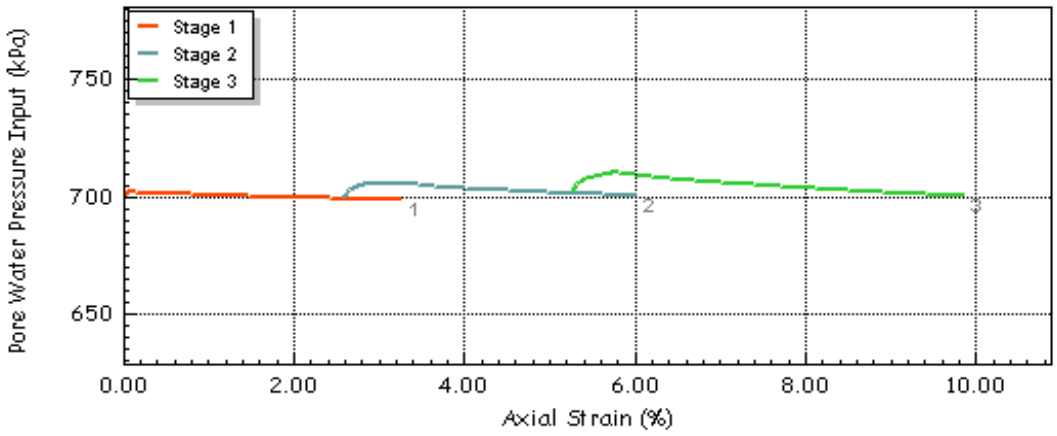
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**



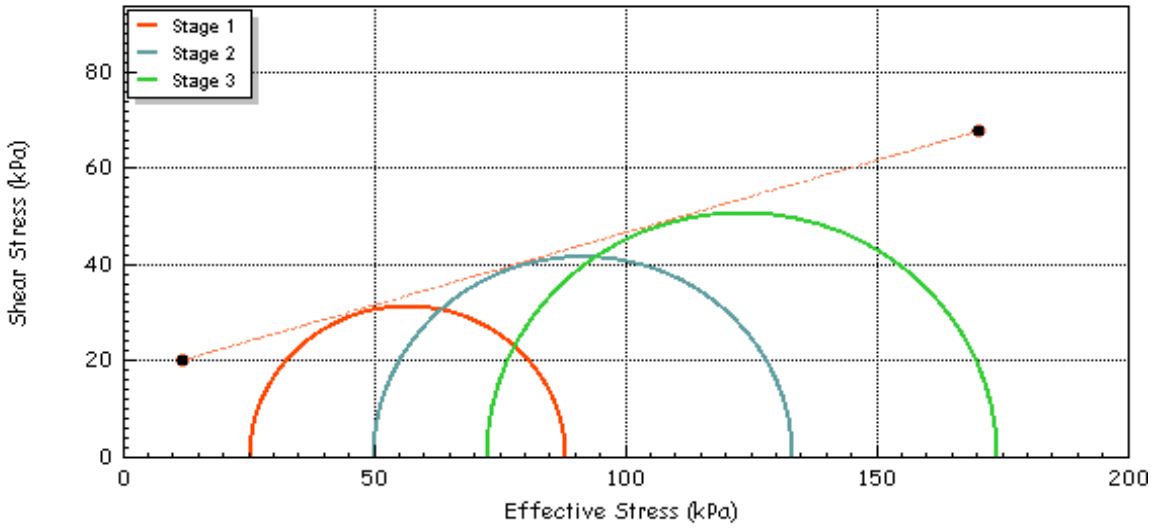

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH124 2.50-2.80m |
| | | Test Date | 02/06/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH124 |
| | | Sample | CS104 |
| Client | Ground Technology | Depth | 2.50-2.80m |

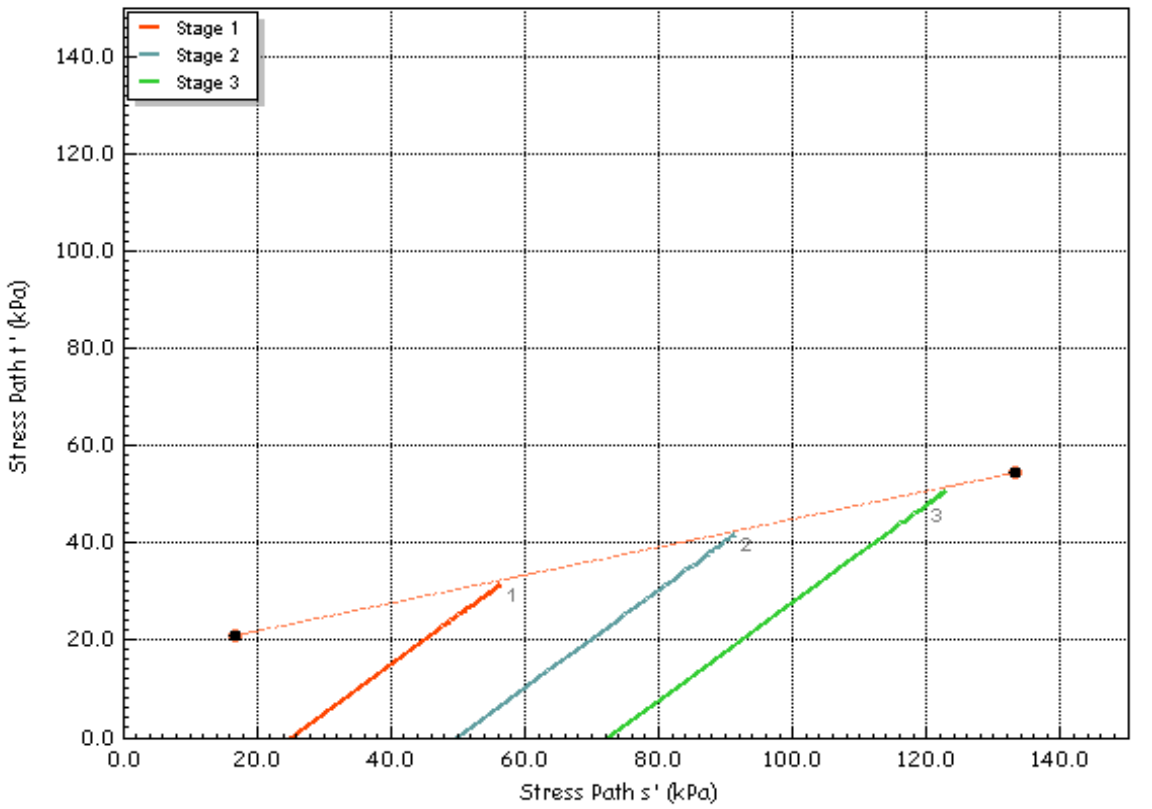
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Effective | c' | (kPa) | 16.77 | Effective Cohesion | c' | (kPa) | 16.77 |
| Effective Friction | ϕ' | (deg) | 16.8 | Effective Friction | ϕ' | (deg) | 16.8 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH124 2.50-2.80m |
| | | Test Date | 02/06/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH124 |
| | | Sample | CS104 |
| Client | Ground Technology | Depth | 2.50-2.80m |

# Effective Stress Triaxial Compression

## Consolidated Drained

**Summary Report**

| Sample Details | | | | |
|---|---|---|---|---|
| *sketch showing specimen location in original sample* | Depth | | | 4.50-4.65m |
| | Description | | | See summary of soil descriptions. |
| | Type | | | Undisturbed, vertical orientation. |
| | Initial Sample Length | $L_0$ | (mm) | 140.1 |
| | Initial Sample Diameter | $D_0$ | (mm) | 70.2 |
| | Initial Sample Weight | $W_0$ | (gr) | 1061.0 |
| | Initial Bulk Density | $\rho_0$ | (Mg/m3) | 1.96 |
| | Particle Density | $\rho_s$ | (Mg/m3) | 2.66 |

| **Initial Conditions** | | | Stage 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_{3i}$ | (kPa) | 695 | 740 | 785 | |
| Initial Back Pressure | $U_{bi}$ | (kPa) | 650 | 650 | 650 | |
| Membrane Thickness | $m_b$ | (mm) | 0.600 | | | |
| Displacement Input | $L_{IP}$ | (mm) | CH 2 | | | |
| Load Input | $N_{IP}$ | (N) | CH 4 | | | |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | CH 3 | | | |
| Sample Volume | $V$ | (cc) | CH 2 | | | |
| Initial Moisture | $\omega_i$ | (%) | 10 | | | |
| Initial Dry Density | $\rho_{di}$ | (Mg/m3) | 1.78 | | | |
| Initial Voids Ratio | $e_i$ | . | 0.498 | | | |
| Initial Degree of Saturation | $S_i$ | (%) | 54 | | | |
| B Value | $B$ | . | 0.96 | | | |

| **Final Conditions** | | | | | | |
|---|---|---|---|---|---|---|
| Final Moisture | $\omega_f$ | (%) | 13 | | | |
| Final Dry Density | $\rho_{df}$ | (Mg/m3) | 1.82 | | | |
| Final Voids Ratio | $e_f$ | . | 0.460 | | | |
| Final Degree of Saturation | $S_f$ | (%) | 77.4 | | | |
| | | | Stage 1 | 2 | 3 | 4 |
| Failure Criteria | | . | Max. Dev. Stress | Max. Dev. Stress | Max. Dev. Stress | |
| Strain At Failure | $\varepsilon_f$ | (%) | 4.43 | 12.04 | 18.84 | |
| Stress At Failure | $(\sigma_1-\sigma_3)$ | (kPa) | 76.2 | 160.9 | 214.5 | |
| Minor Stress At Failure | $\sigma_3'$ | (kPa) | 43.0 | 90.0 | 135.0 | |
| Major Stress At Failure | $\sigma_1'$ | (kPa) | 119.2 | 250.9 | 349.5 | |
| Principal Stress At Failure | $\sigma_1'/\sigma_3'$ | | 2.772 | 2.788 | 2.589 | |

**Notes**

*Compound*

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH124 4.50-4.65m |
| | | Test Date | 01/07/2022 |
| Site Reference | | Borehole | BH124 |
| Jobfile | Wansford to Sutton Dualling | Sample | CS106 |
| Client | Ground Technology | Depth | 4.50-4.65m |

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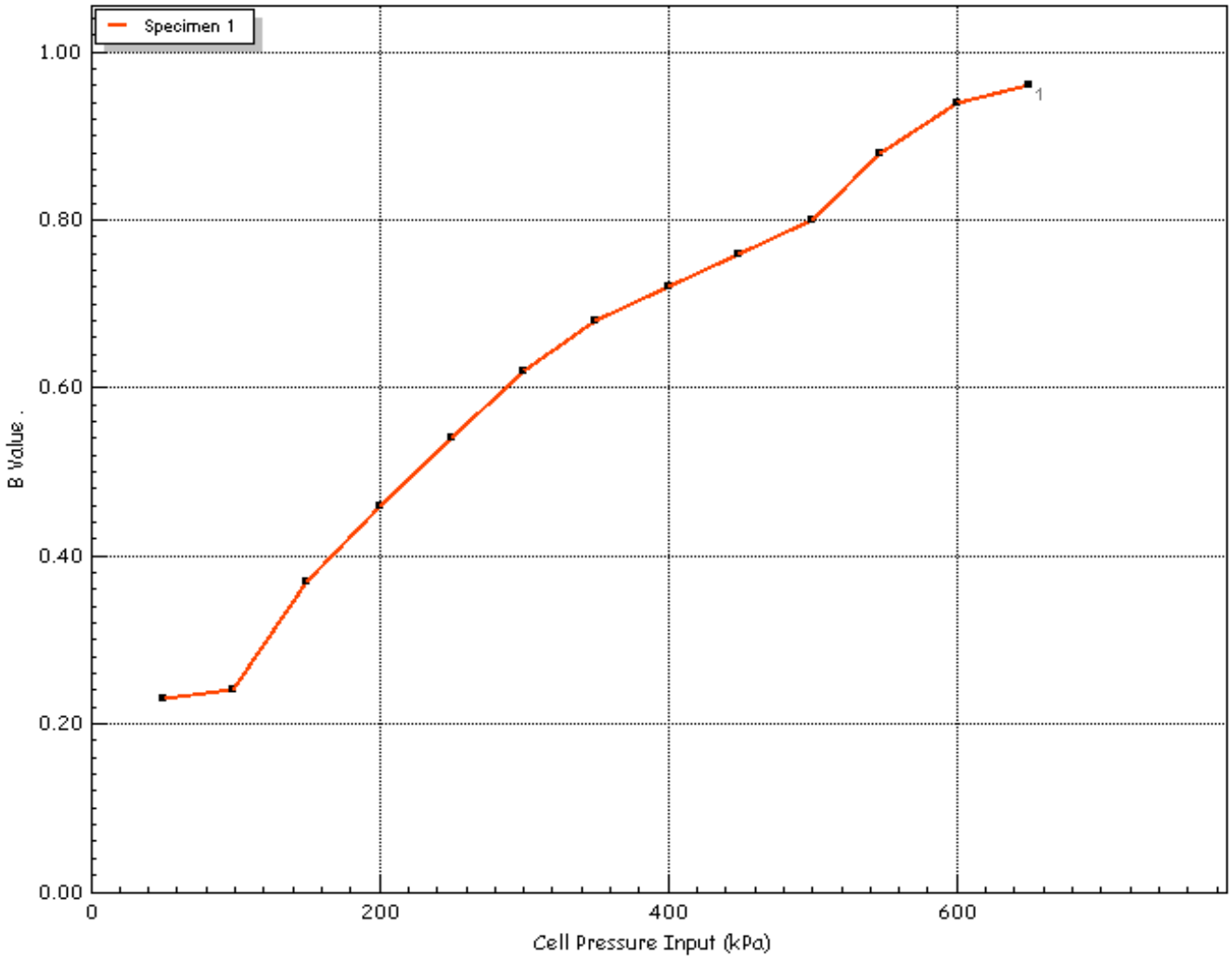
# Effective Stress Triaxial Compression

## Consolidated Drained

**Saturation Plots**

| | | | |
|---|---|---|---|
| Saturation Method | | | Stepped |
| Cell Pressure Input | σ | (kPa) | 650 |
| Pore Water Pressure Input | u pwp | (kPa) | 637 |
| B Value | B | . | 0.96 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH124 4.50-4.65m |
| | | Test Date | 01/07/2022 |
| Jobfile | Wansford to Sutton Dualling | Borehole | BH124 |
| Client | Ground Technology | Sample | CS106 |
| | | Depth | 4.50-4.65m |

# Effective Stress Triaxial Compression

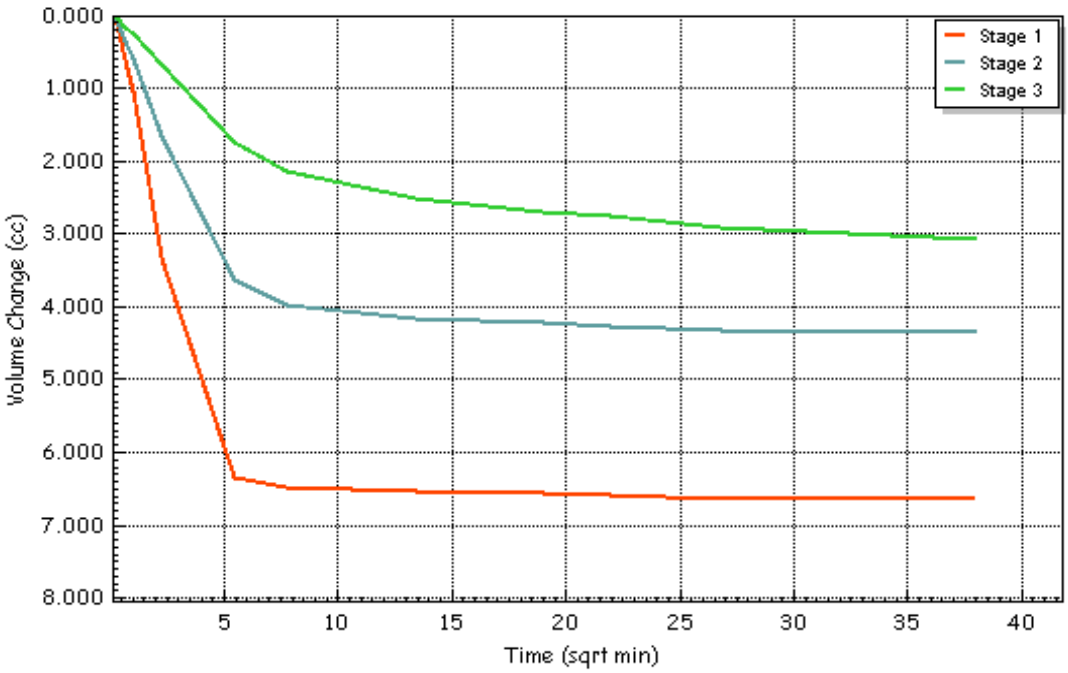
## Consolidated Drained

**Consolidation Plots**

| **Initial Conditions** | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_3$ | (kPa) | 695 | 740 | 785 |
| Initial Back Pressure | $u_{bi}$ | (kPa) | 650 | 650 | 650 |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | 680 | 695 | 698 |
| Drainage Method | | | Radial+One End | | |

| **Final Conditions** | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| PWP Dissipation % | U% | (%) | 100.00 | 100.00 | 100.00 |
| Volumetric Strain | $\varepsilon_v$% | (%) | 1.22 | 0.80 | 0.57 |
| Corrected Length | $L_C$ | (mm) | 139.5 | 133.0 | 121.8 |
| Corrected Area | $A_C$ | (cm2) | 38.39 | 39.95 | 43.38 |
| Corrected Volume | $V_C$ | (cc) | 535.612 | 531.268 | 528.187 |
| t100 | $t_{100}$ | (min) | 16.11 | 43.23 | 78.90 |
| Consolidation | $c_v$ | (m2/year) | 6.338 | 2.362 | 1.294 |
| Compressibility | $m_v$ | (m2/MN) | 0.408 | 0.178 | 0.118 |
| Test Time | $t_F$ | (h:m:s) | 03:45:32 | 10:05:13 | 18:24:36 |
| Estimated Strain to Failure | $\varepsilon$% | (%) | 5.0 | 5.0 | 5.0 |
| Shear Machine Speed | $d_r$ | (mm/min) | 0.03093 | 0.03093 | 0.03093 |

**Notes**

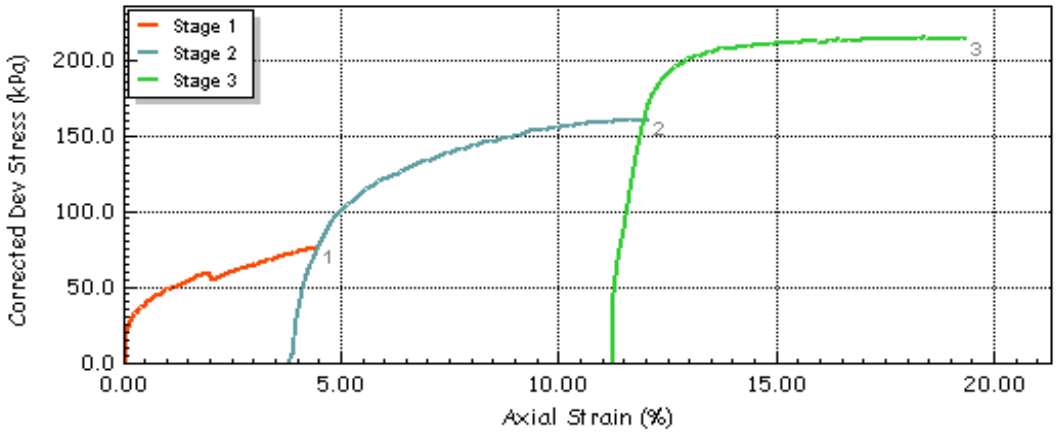


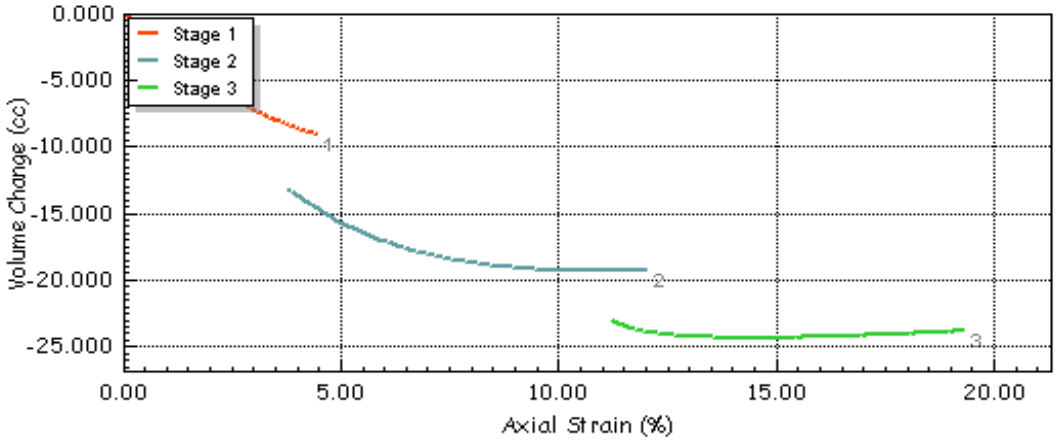

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH124 4.50-4.65m |
| | | Test Date | 01/07/2022 |
| | | Borehole | BH124 |
| Jobfile | Wansford to Sutton Dualling | Sample | CS106 |
| Client | Ground Technology | Depth | 4.50-4.65m |

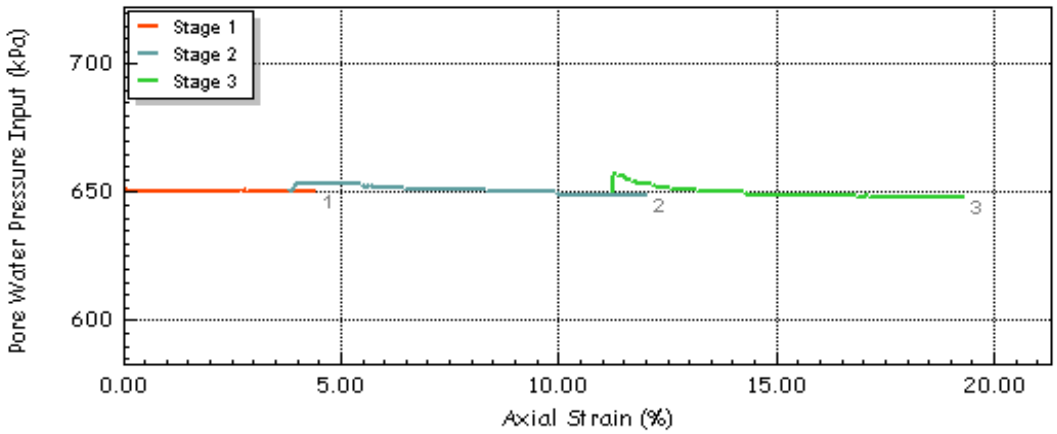
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**




| | | | | |
|---|---|---|---|---|
| UKAS TESTING 4043 | Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH124 4.50-4.65m |
| | | | Test Date | 01/07/2022 |
| | Jobfile | Wansford to Sutton Dualling | Borehole | BH124 |
| | | | Sample | CS106 |
| | Client | Ground Technology | Depth | 4.50-4.65m |

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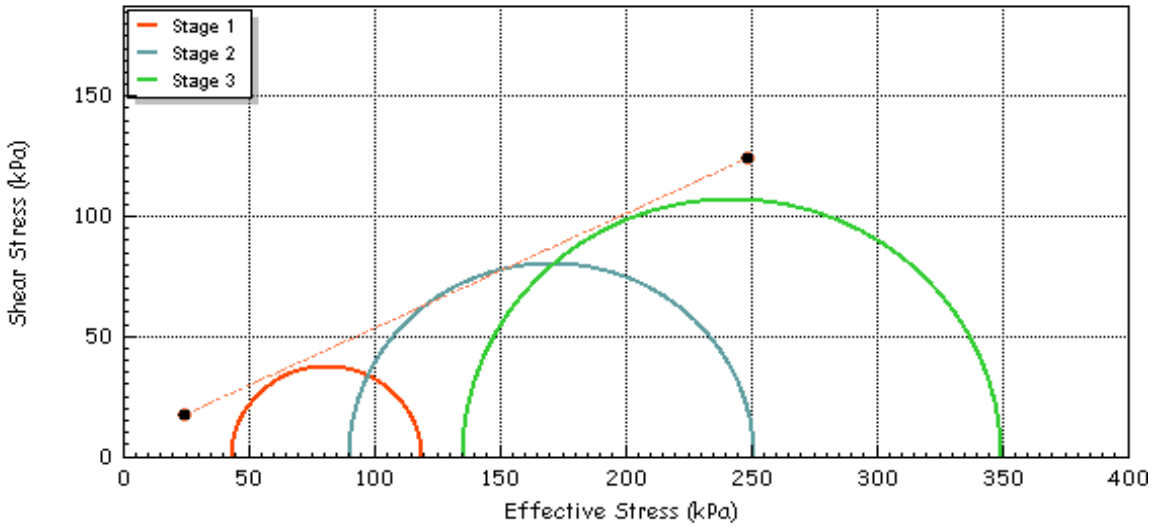
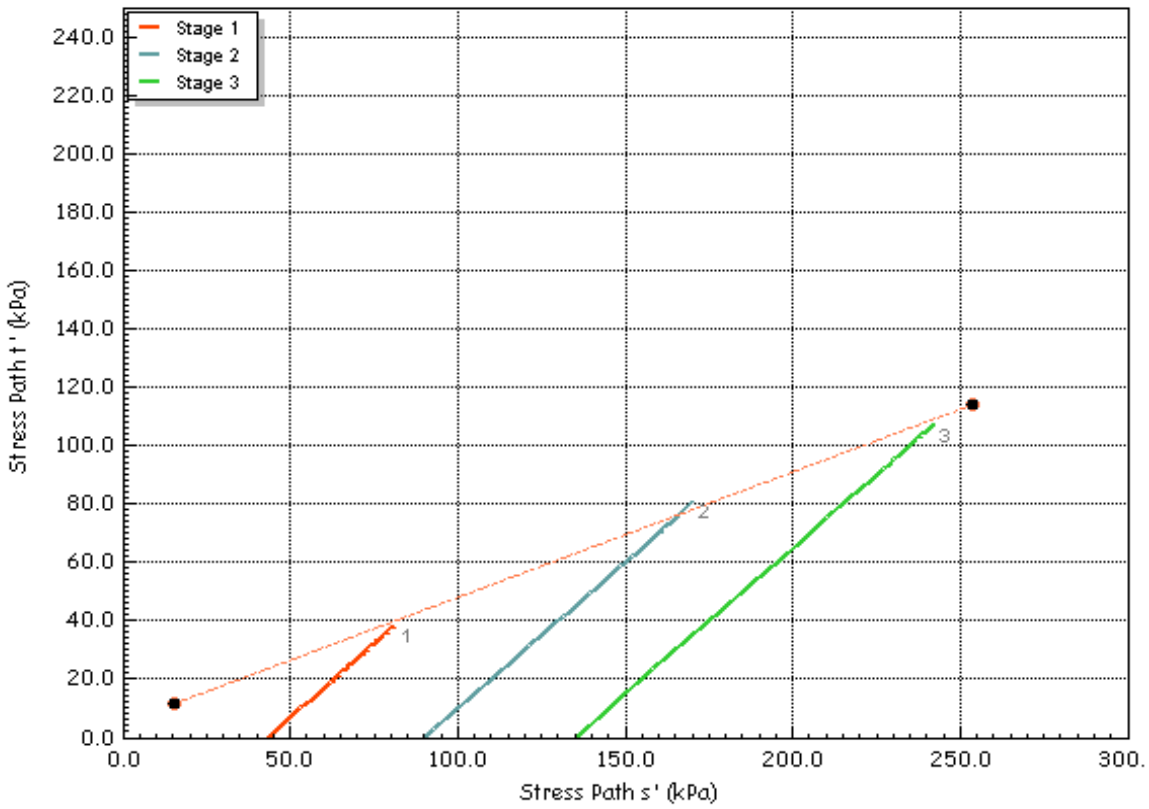
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Effective | c' | (kPa) | 5.30 | Effective Cohesion | c' | (kPa) | 5.30 |
| Effective Friction | ϕ' | (deg) | 25.5 | Effective Friction | ϕ' | (deg) | 25.5 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH124 4.50-4.65m |
| | | Test Date | 01/07/2022 |
| Jobfile | Wansford to Sutton Dualling | Borehole | BH124 |
| Client | Ground Technology | Sample | CS106 |
| | | Depth | 4.50-4.65m |

UKAS TESTING 4043

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# Effective Stress Triaxial Compression

## Consolidated Drained

**Summary Report**

| Sample Details | | | | |
|---|---|---|---|---|
| *sketch showing specimen location in original sample* | Depth | | | 4.90-5.20m |
| | Description | | | See summary of soil descriptions. |
| | Type | | | Undisturbed, vertical orientation. |
| | Initial Sample Length | $L_0$ | (mm) | 200.1 |
| | Initial Sample Diameter | $D_0$ | (mm) | 94.9 |
| | Initial Sample Weight | $W_0$ | (gr) | 2753.0 |
| | Initial Bulk Density | $\rho_0$ | (Mg/m3) | 1.95 |
| | Particle Density | $\rho_s$ | (Mg/m3) | 2.66 |

| **Initial Conditions** | | | Stage 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_{3i}$ | (kPa) | 850 | 900 | 950 | |
| Initial Back Pressure | $U_{bi}$ | (kPa) | 800 | 800 | 800 | |
| Membrane Thickness | $m_b$ | (mm) | 0.600 | | | |
| Displacement Input | $L_{IP}$ | (mm) | CH 2 | | | |
| Load Input | $N_{IP}$ | (N) | CH 4 | | | |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | CH 3 | | | |
| Sample Volume | $V$ | (cc) | CH 6 | | | |
| Initial Moisture | $\omega_i$ | (%) | 27 | | | |
| Initial Dry Density | $\rho_{di}$ | (Mg/m3) | 1.53 | | | |
| Initial Voids Ratio | $e_i$ | . | 0.735 | | | |
| Initial Degree of Saturation | $S_i$ | (%) | 97 | | | |
| B Value | $B$ | . | 0.96 | | | |

| **Final Conditions** | | | | | | |
|---|---|---|---|---|---|---|
| Final Moisture | $\omega_f$ | (%) | 25 | | | |
| Final Dry Density | $\rho_{df}$ | (Mg/m3) | 1.55 | | | |
| Final Voids Ratio | $e_f$ | . | 0.713 | | | |
| Final Degree of Saturation | $S_f$ | (%) | 94.8 | | | |
| | | | Stage 1 | 2 | 3 | 4 |
| Failure Criteria | | . | Max. Dev. Stress | Max. Dev. Stress | Max. Dev. Stress | |
| Strain At Failure | $\varepsilon_f$ | (%) | 6.29 | 13.40 | 19.57 | |
| Stress At Failure | $(\sigma_1-\sigma_3)$ | (kPa) | 103.4 | 165.1 | 212.9 | |
| Minor Stress At Failure | $\sigma_3'$ | (kPa) | 50.0 | 100.0 | 150.0 | |
| Major Stress At Failure | $\sigma_1'$ | (kPa) | 153.4 | 265.1 | 362.9 | |
| Principal Stress Ratio At Failure | $\sigma_1'/\sigma_3'$ | | 3.068 | 2.651 | 2.420 | |

**Notes**

*Plastic*

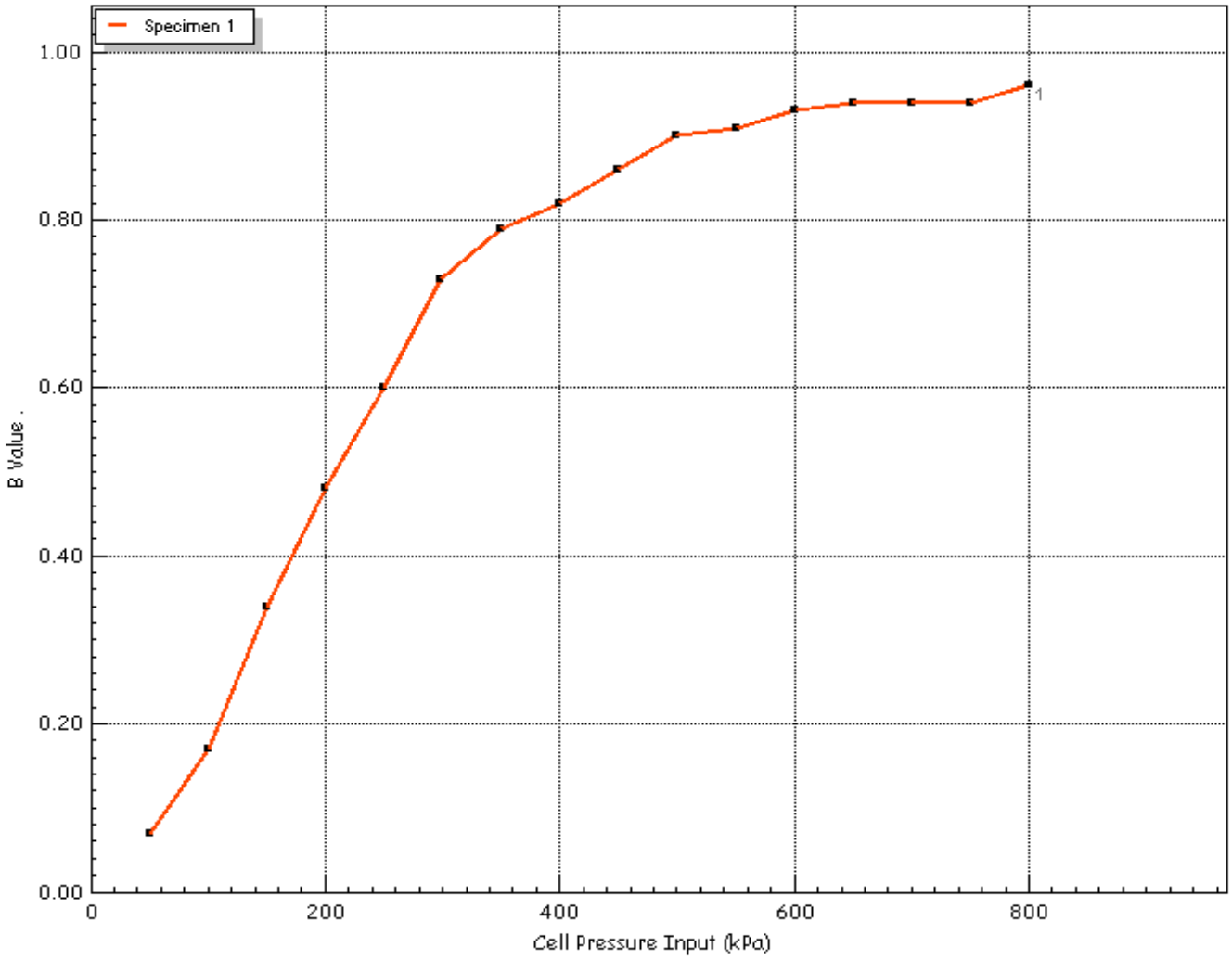
| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH119 4.90-5.20m C |
| | | Test Date | 06/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH119 |
| | | Sample | CS106 |
| Client | Ground Technology | Depth | 4.90-5.20m |

# Effective Stress Triaxial Compression

## Consolidated Drained

**Saturation Plots**

| | | | |
|---|---|---|---|
| Saturation Method | | | Stepped |
| Cell Pressure Input | σ | (kPa) | 800 |
| Pore Water Pressure Input | u pwp | (kPa) | 621 |
| B Value | B | . | 0.96 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH119 4.90-5.20m C |
| | | Test Date | 06/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH119 |
| | | Sample | CS106 |
| Client | Ground Technology | Depth | 4.90-5.20m |

# Effective Stress Triaxial Compression

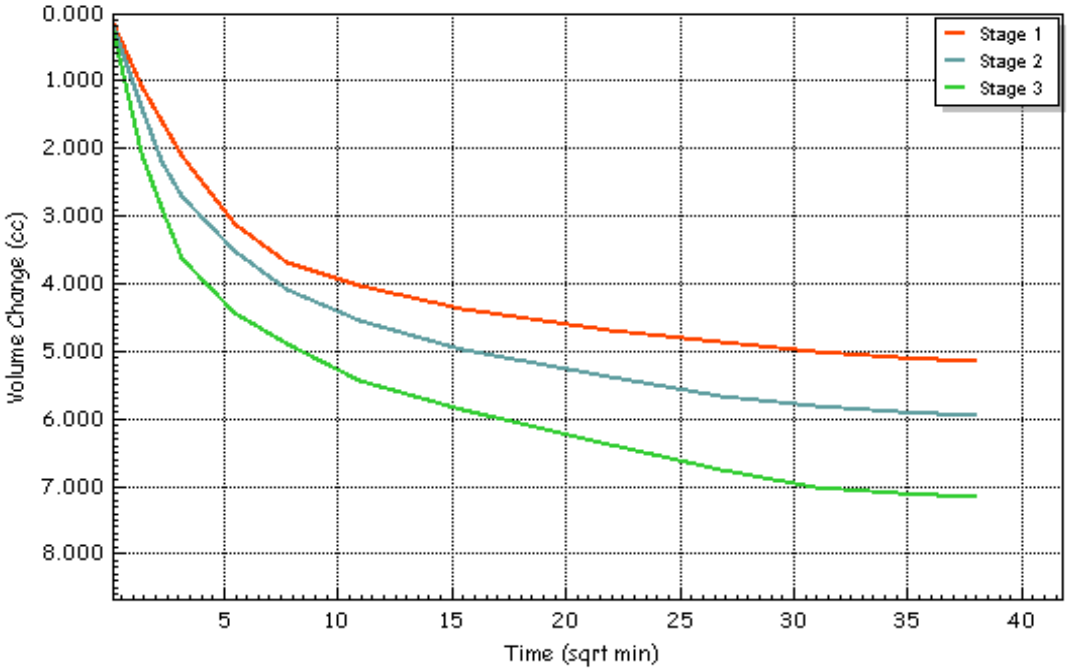
## Consolidated Drained

**Consolidation Plots**

| **Initial Conditions** | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_3$ | (kPa) | 850 | 900 | 950 |
| Initial Back Pressure | $u_{bi}$ | (kPa) | 800 | 800 | 800 |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | 821 | 872 | 913 |
| Drainage Method | | | Radial+One End | | |

| **Final Conditions** | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| PWP Dissipation % | U% | (%) | 100.00 | 100.00 | 100.00 |
| Volumetric Strain | $\varepsilon_v$% | (%) | 0.36 | 0.79 | 1.29 |
| Corrected Length | $L_C$ | (mm) | 199.9 | 186.8 | 173.0 |
| Corrected Area | $A_C$ | (cm2) | 70.56 | 74.90 | 80.10 |
| Corrected Volume | $V_C$ | (cc) | 1410.209 | 1404.251 | 1397.092 |
| T100 Time to Failure | $t_{100}$ | (min) | 64.39 | 27.84 | 27.84 |
| Consolidation | $c_v$ | (m2/year) | 2.888 | 6.680 | 6.680 |
| Compressibility | $m_v$ | (m2/MN) | 0.174 | 0.109 | 0.114 |
| Test Time | $t_F$ | (h:m:s) | 15:01:27 | 06:29:45 | 06:29:45 |
| Estimated Strain to Failure | $\varepsilon$% | (%) | 5.0 | 5.0 | 5.0 |
| Shear Machine Speed | $d_r$ | (mm/min) | 0.01109 | 0.01109 | 0.01109 |

**Notes**




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH119 4.90-5.20m C |
| | | Test Date | 06/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH119 |
| | | Sample | CS106 |
| Client | Ground Technology | Depth | 4.90-5.20m |

UKAS TESTING 4043

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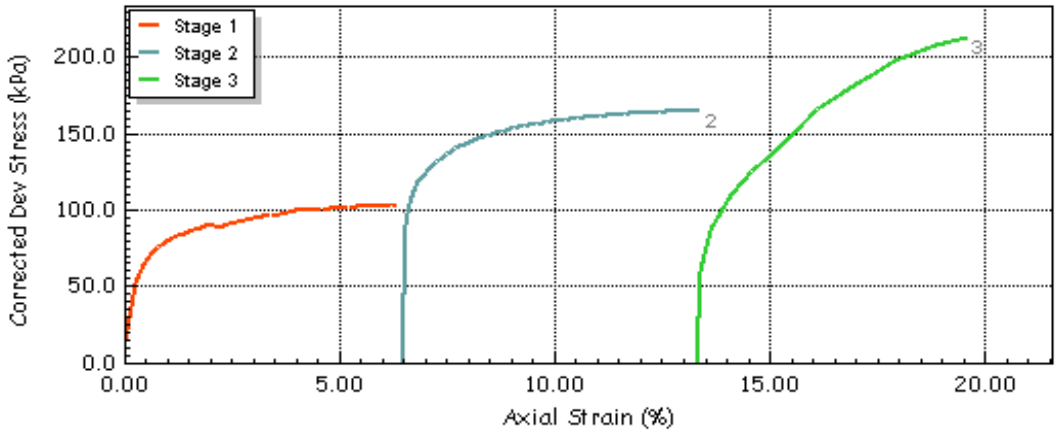
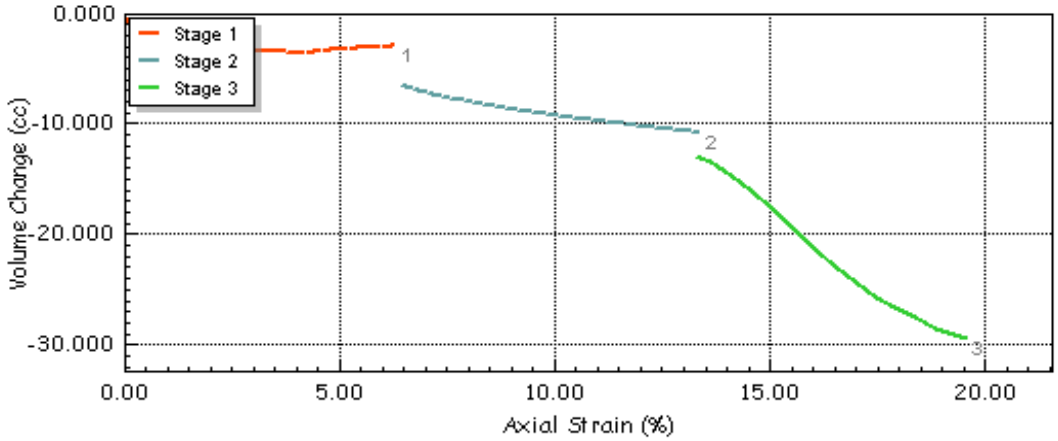
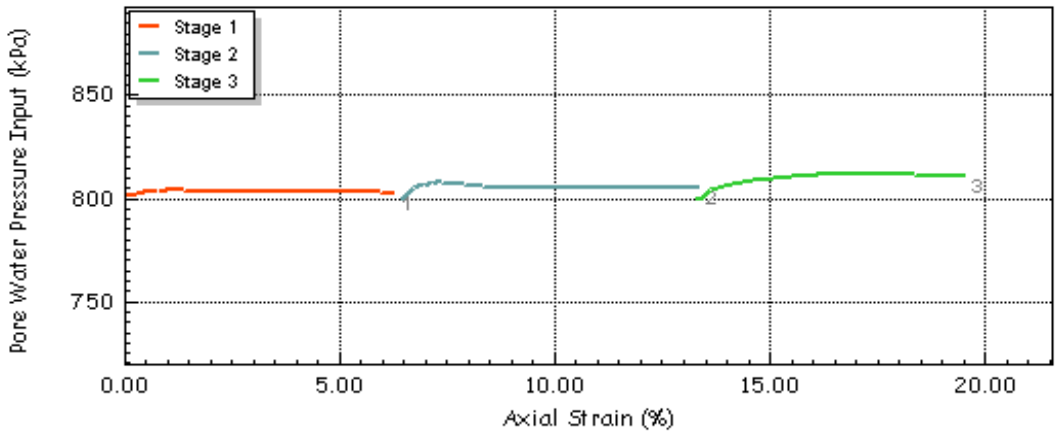
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**




| | | | | |
|---|---|---|---|---|
| UKAS TESTING 4043 | Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH119 4.90-5.20m C |
| | | | Test Date | 06/07/2022 |
| | Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH119 |
| | | | Sample | CS106 |
| | Client | Ground Technology | Depth | 4.90-5.20m |

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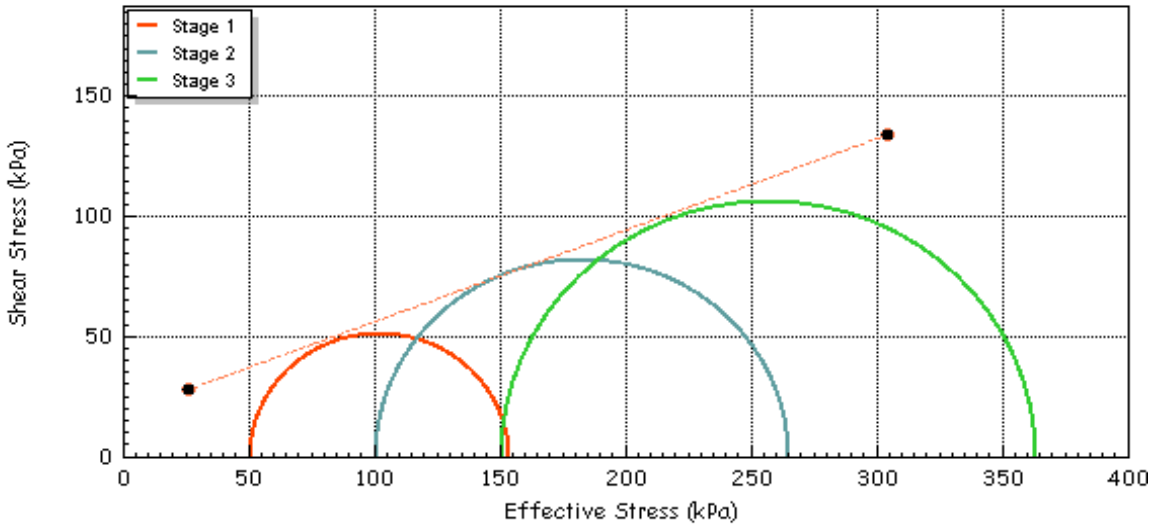
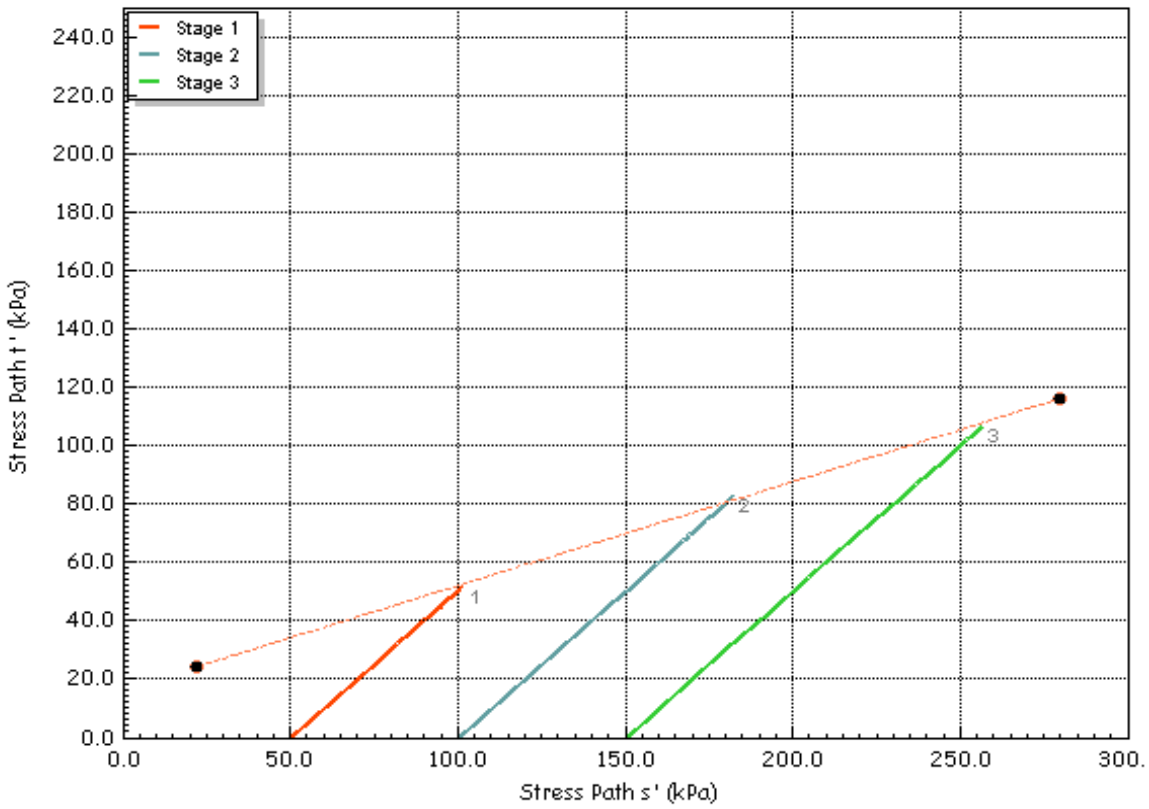
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Effective | c' | (kPa) | 17.69 | Effective Cohesion | c' | (kPa) | 17.69 |
| Effective Friction | ϕ' | (deg) | 20.9 | Effective Friction | ϕ' | (deg) | 20.9 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH119 4.90-5.20m C |
| | | Test Date | 06/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH119 |
| | | Sample | CS106 |
| Client | Ground Technology | Depth | 4.90-5.20m |

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# Effective Stress Triaxial Compression

## Consolidated Drained

**Summary Report**

| Sample Details | | | | |
|---|---|---|---|---|
| *sketch showing specimen location in original sample* | Depth | | | 5.80-6.10m |
| | Description | | | See summary of soil descriptions. |
| | Type | | | Undisturbed, vertical orientation. |
| | Initial Sample Length | $L_0$ | (mm) | 200.1 |
| | Initial Sample Diameter | $D_0$ | (mm) | 96.1 |
| | Initial Sample Weight | $W_0$ | (gr) | 2863.0 |
| | Initial Bulk Density | $\rho_0$ | (Mg/m3) | 1.97 |
| | Particle Density | $\rho_s$ | (Mg/m3) | 2.66 |

| **Initial Conditions** | | | Stage 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_{3i}$ | (kPa) | 610 | 670 | 730 | |
| Initial Back Pressure | $U_{bi}$ | (kPa) | 550 | 550 | 550 | |
| Membrane Thickness | $m_b$ | (mm) | 0.600 | | | |
| Displacement Input | $L_{IP}$ | (mm) | CH 2 | | | |
| Load Input | $N_{IP}$ | (N) | CH 4 | | | |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | CH 3 | | | |
| Sample Volume | $V$ | (cc) | CH 2 | | | |
| Initial Moisture | $\omega_i$ | (%) | 27 | | | |
| Initial Dry Density | $\rho_{di}$ | (Mg/m3) | 1.55 | | | |
| Initial Voids Ratio | $e_i$ | . | 0.716 | | | |
| Initial Degree of Saturation | $S_i$ | (%) | 100 | | | |
| B Value | $B$ | . | 0.96 | | | |

| **Final Conditions** | | | | | | |
|---|---|---|---|---|---|---|
| Final Moisture | $\omega_f$ | (%) | 26 | | | |
| Final Dry Density | $\rho_{df}$ | (Mg/m3) | 1.58 | | | |
| Final Voids Ratio | $e_f$ | . | 0.684 | | | |
| Final Degree of Saturation | $S_f$ | (%) | 100.0 | | | |
| | | | Stage 1 | 2 | 3 | 4 |
| Failure Criteria | | . | Max. Dev. Stress | Max. Dev. Stress | Max. Dev. Stress | |
| Strain At Failure | $\varepsilon_f$ | (%) | 1.95 | 9.33 | 16.84 | |
| Stress At Failure | $(\sigma_1-\sigma_3)$ | (kPa) | 172.1 | 290.6 | 404.8 | |
| Minor Stress At Failure | $\sigma_3'$ | (kPa) | 60.0 | 120.0 | 180.0 | |
| Major Stress At Failure | $\sigma_1'$ | (kPa) | 232.1 | 410.6 | 584.8 | |
| Principal Stress Ratio At Failure | $\sigma_1'/\sigma_3'$ | | 3.868 | 3.422 | 3.249 | |

**Notes**

*Plastic*

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH119 5.80-6.10m |
| | | Test Date | 06/07/2022 |
| Jobfile | Wansford to Sutton Dualling | Borehole | BH119 |
| Client | Ground Technology | Sample | CS107 |
| | | Depth | 5.80-6.10m |

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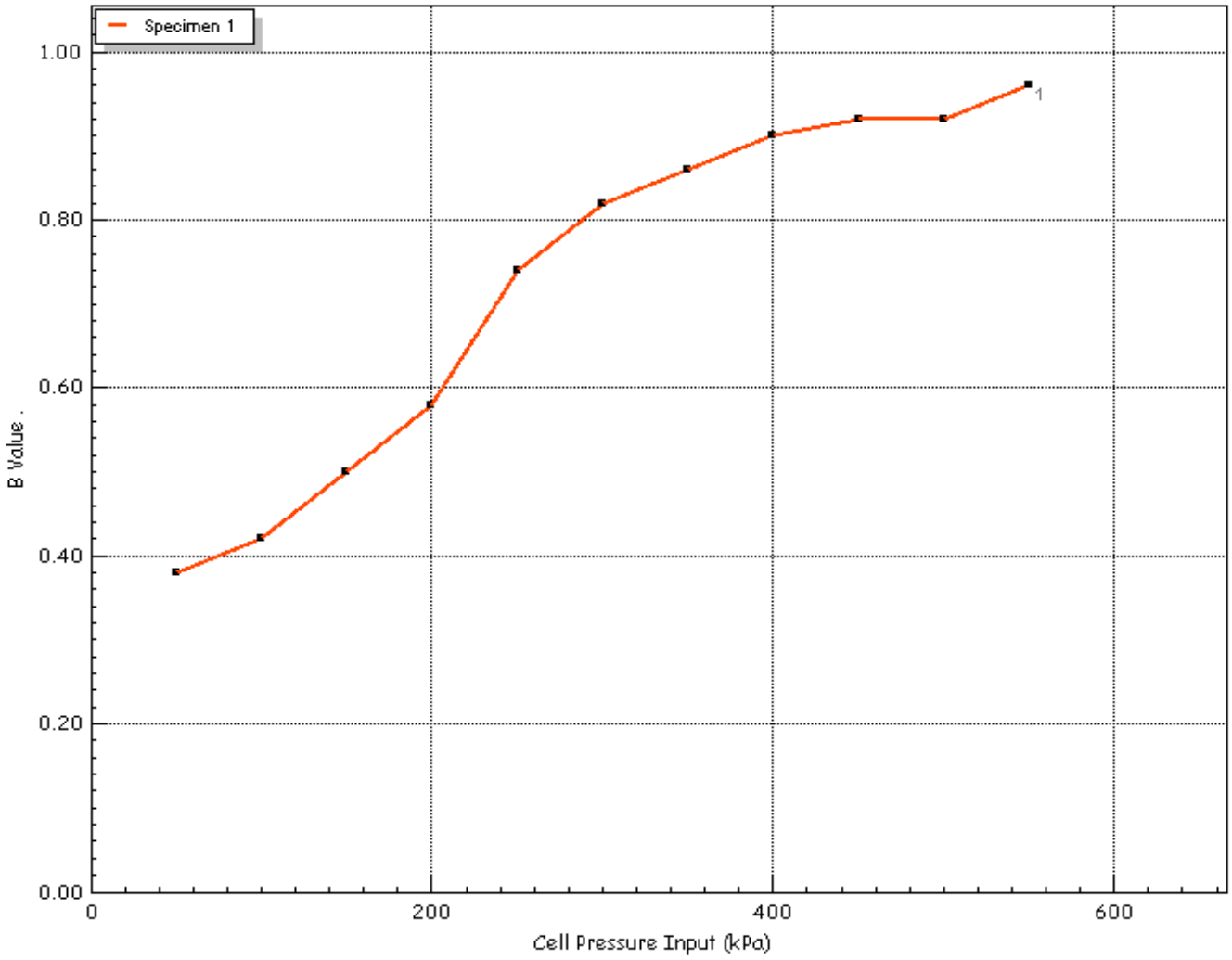
# Effective Stress Triaxial Compression

## Consolidated Drained

**Saturation Plots**

| | | | |
|---|---|---|---|
| Saturation Method | | | Stepped |
| Cell Pressure Input | σ | (kPa) | 550 |
| Pore Water Pressure Input | u pwp | (kPa) | 526 |
| B Value | B | . | 0.96 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH119 5.80-6.10m |
| | | Test Date | 06/07/2022 |
| Jobfile | Wansford to Sutton Dualling | Borehole | BH119 |
| Client | Ground Technology | Sample | CS107 |
| | | Depth | 5.80-6.10m |

# Effective Stress Triaxial Compression

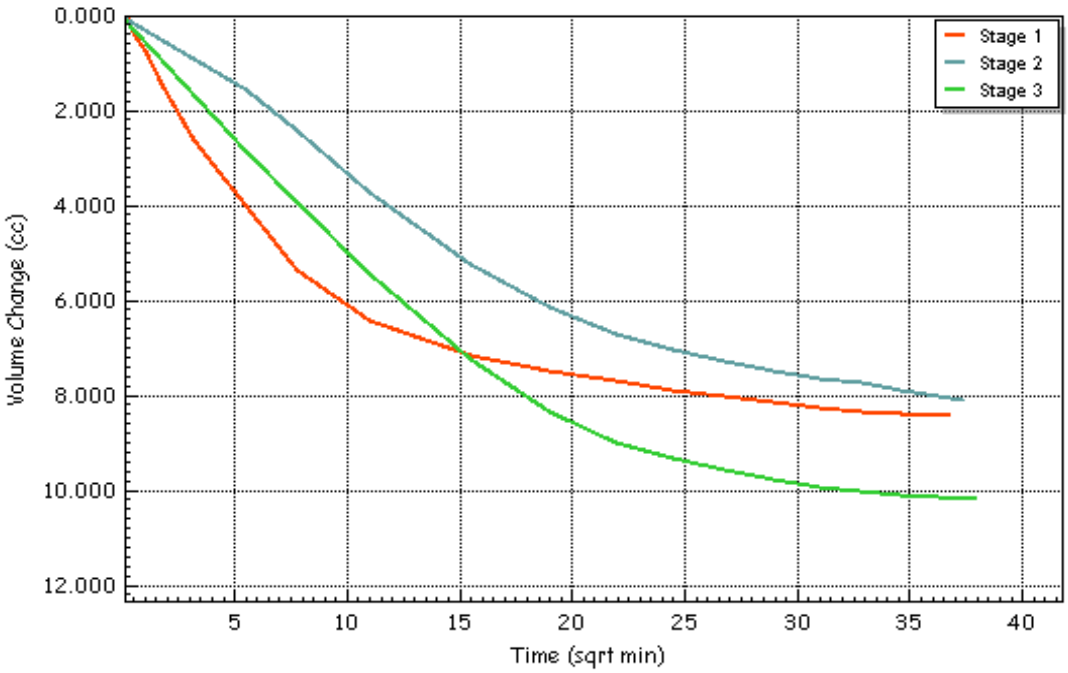
## Consolidated Drained

**Consolidation Plots**

| **Initial Conditions** | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_3$ | (kPa) | 610 | 670 | 730 |
| Initial Back Pressure | $u_{bi}$ | (kPa) | 550 | 550 | 550 |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | 579 | 585 | 687 |
| Drainage Method | | | Radial+One End | | |

| **Final Conditions** | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| PWP Dissipation % | U% | (%) | 100.00 | 100.00 | 100.00 |
| Volumetric Strain | $\varepsilon_v$% | (%) | 0.58 | 0.56 | 0.70 |
| Corrected Length | $L_C$ | (mm) | 199.7 | 194.4 | 180.6 |
| Corrected Area | $A_C$ | (cm2) | 72.25 | 73.79 | 78.88 |
| Corrected Volume | $V_C$ | (cc) | 1442.966 | 1434.879 | 1424.692 |
| t100 | $t_{100}$ | (min) | 102.74 | 461.44 | 404.23 |
| Consolidation | $c_v$ | (m2/year) | 1.856 | 0.413 | 0.472 |
| Compressibility | $m_v$ | (m2/MN) | 0.200 | 0.159 | 0.051 |
| Test Time | $t_F$ | (h:m:s) | 23:58:21 | 107:40:09 | 94:19:13 |
| Estimated Strain to Failure | $\varepsilon$% | (%) | 5.0 | 5.0 | 5.0 |
| Shear Machine Speed | $d_r$ | (mm/min) | 0.00694 | 0.00694 | 0.00694 |

**Notes**




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH119 5.80-6.10m |
| | | Test Date | 06/07/2022 |
| | | Borehole | BH119 |
| Jobfile | Wansford to Sutton Dualling | Sample | CS107 |
| Client | Ground Technology | Depth | 5.80-6.10m |

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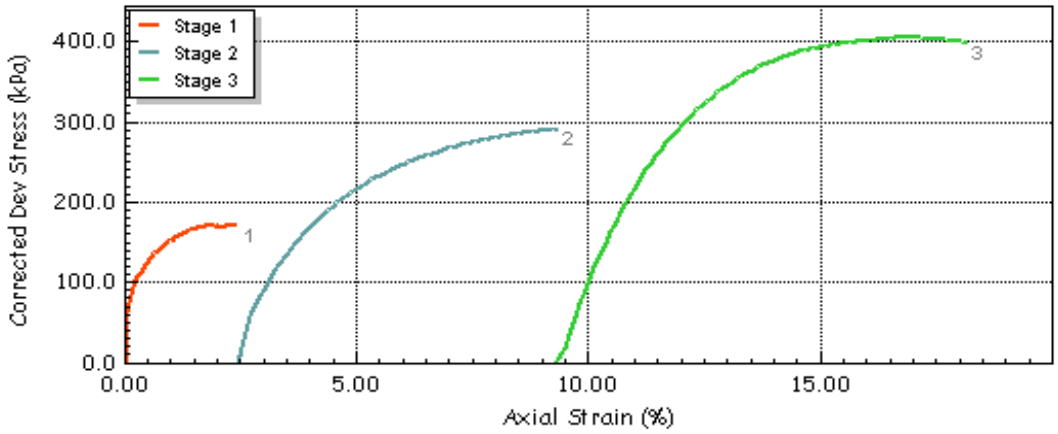
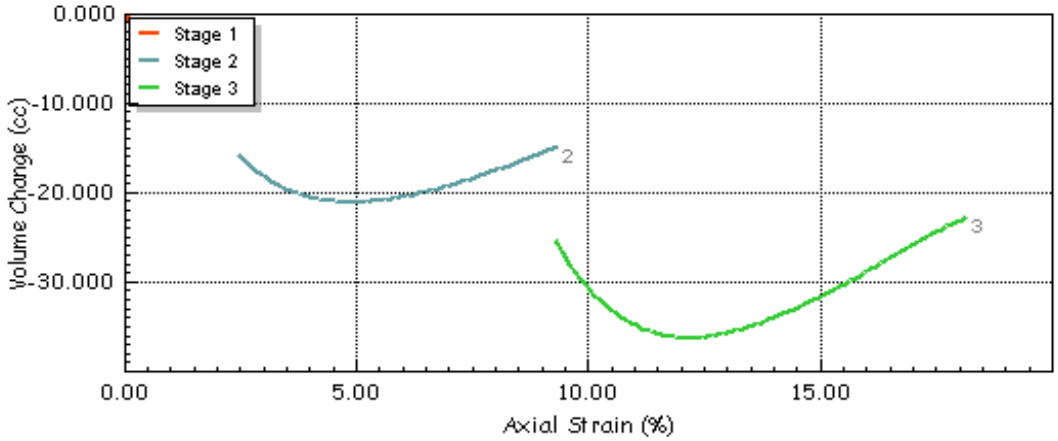
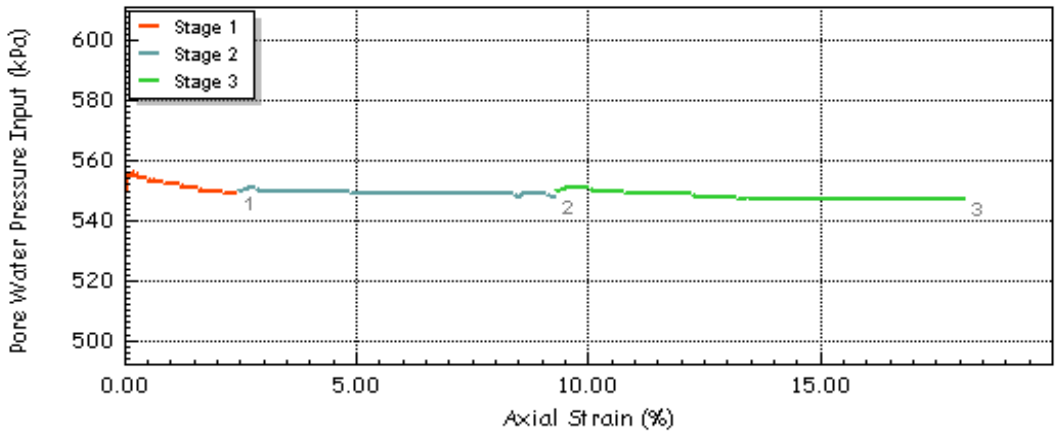
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**



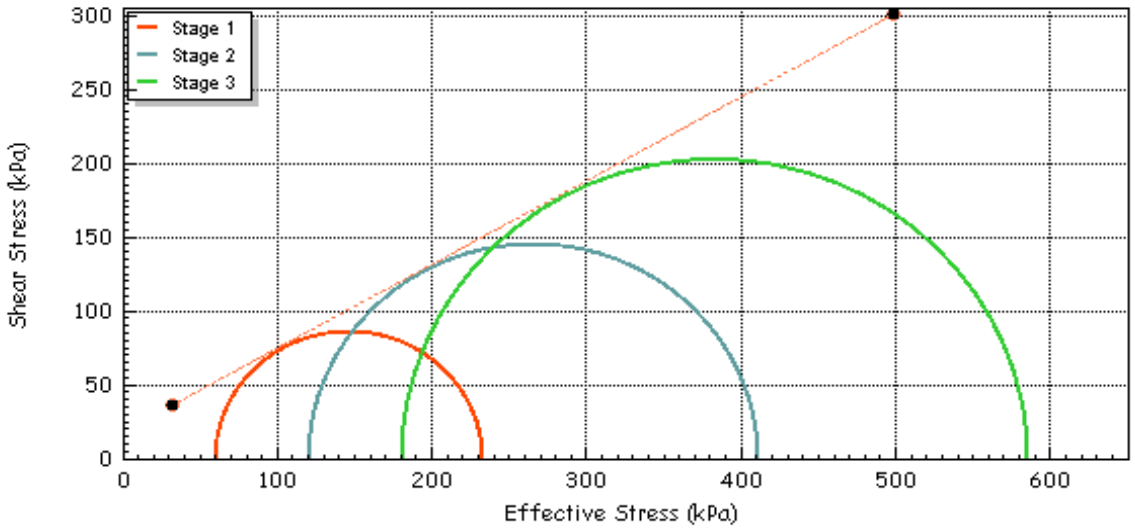

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH119 5.80-6.10m |
| | | Test Date | 06/07/2022 |
| Jobfile | Wansford to Sutton Dualling | Borehole | BH119 |
| Client | Ground Technology | Sample | CS107 |
| | | Depth | 5.80-6.10m |

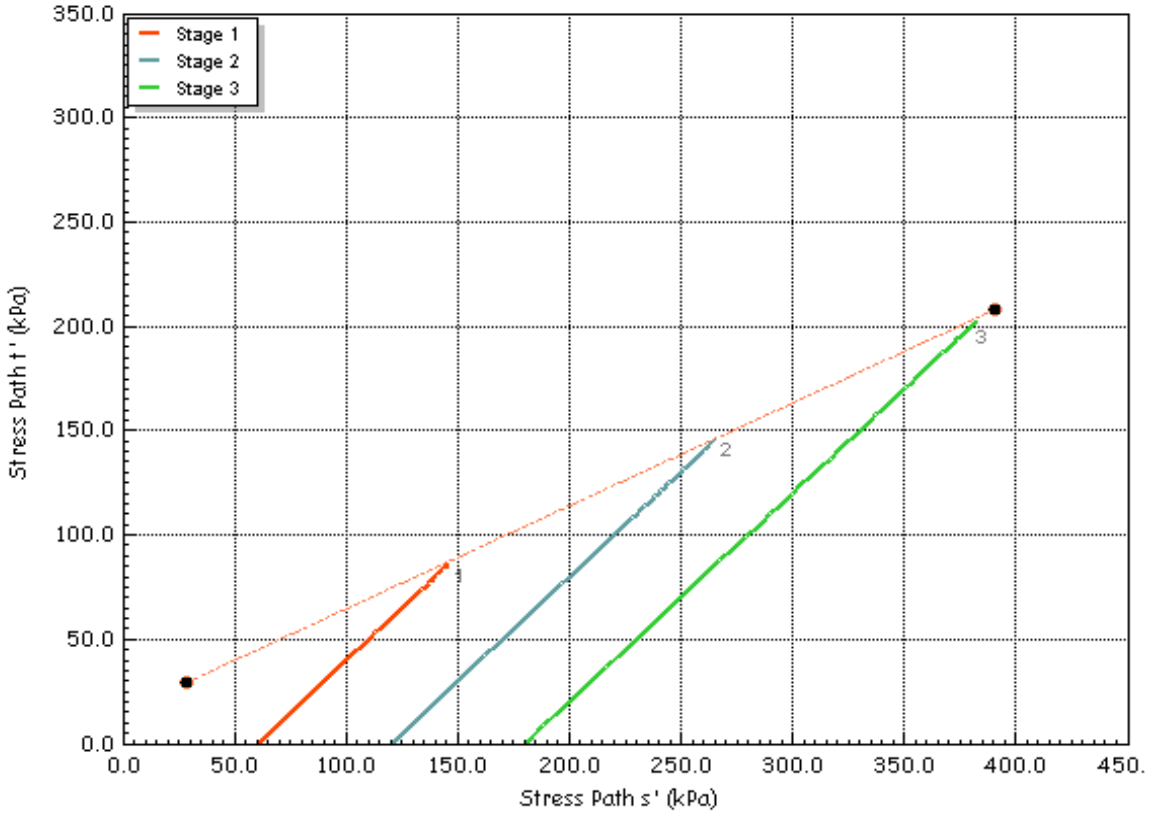
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Effective | c' | (kPa) | 17.53 | Effective Cohesion | c' | (kPa) | 17.53 |
| Effective Friction | ϕ' | (deg) | 29.6 | Effective Friction | ϕ' | (deg) | 29.6 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH119 5.80-6.10m |
| | | Test Date | 06/07/2022 |
| Jobfile | Wansford to Sutton Dualling | Borehole | BH119 |
| Client | Ground Technology | Sample | CS107 |
| | | Depth | 5.80-6.10m |

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# Effective Stress Triaxial Compression

## Consolidated Undrained

**Summary Report**

| Sample Details | | | | |
|---|---|---|---|---|
| | Depth | | | 6.40-6.70m |
| | Description | | | See summary of soil descriptions. |
| | Type | | | Undisturbed, vertical orientation. |
| | Initial Sample Length | $L_0$ | (mm) | 188.0 |
| | Initial Sample Diameter | $D_0$ | (mm) | 94.8 |
| | Initial Sample Weight | $W_0$ | (gr) | 2571.0 |
| | Initial Bulk Density | $\rho_0$ | (Mg/m3) | 1.94 |
| | Particle Density | $\rho_s$ | (Mg/m3) | 2.66 |

*sketch showing specimen location in original sample*

| **Initial Conditions** | | | Stage 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_{3i}$ | (kPa) | 865 | 930 | 995 | |
| Initial Back Pressure | $U_{bi}$ | (kPa) | 800 | 800 | 800 | |
| Membrane Thickness | $m_b$ | (mm) | 0.600 | | | |
| Displacement Input | $L_{IP}$ | (mm) | CH 2 | | | |
| Load Input | $N_{IP}$ | (N) | CH 1 | | | |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | CH 3 | | | |
| Sample Volume | $V$ | (cc) | CH 2 | | | |
| Initial Moisture | $\omega_i$ | (%) | 29 | | | |
| Initial Dry Density | $\rho_{di}$ | (Mg/m3) | 1.50 | | | |
| Initial Voids Ratio | $e_i$ | . | 0.774 | | | |
| Initial Degree of Saturation | $S_i$ | (%) | 100 | | | |
| B Value | B | . | 0.97 | | | |

| **Final Conditions** | | | | | | |
|---|---|---|---|---|---|---|
| Final Moisture | $\omega_f$ | (%) | 27 | | | |
| Final Dry Density | $\rho_{df}$ | (Mg/m3) | 1.55 | | | |
| Final Voids Ratio | $e_f$ | . | 0.719 | | | |
| Final Degree of Saturation | $S_f$ | (%) | 100.0 | | | |
| | | | Stage 1 | 2 | 3 | 4 |
| Failure Criteria | | . | Max. Dev. Stress | Max. Dev. Stress | Max. Dev. Stress | |
| Strain At Failure | $\varepsilon_f$ | (%) | 1.66 | 2.79 | 5.83 | |
| Stress At Failure | $(\sigma_1-\sigma_3)$ | (kPa) | 81.9 | 119.3 | 176.6 | |
| Minor Stress At Failure | $\sigma_3'$ | (kPa) | 36.6 | 69.8 | 118.0 | |
| Major Stress At Failure | $\sigma_1'$ | (kPa) | 118.5 | 189.1 | 294.6 | |
| Principal Stress Ratio At Failure | $\sigma_1'/\sigma_3'$ | | 3.237 | 2.708 | 2.496 | |

**Notes**

*Brittle*

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 7 | Test Name | BH119 6.40-6.70m |
| | | Test Date | 07/07/2022 |
| | | Borehole | BH119 |
| Jobfile | Wansford to Sutton Dualling | Sample | CS108 |
| Client | Ground Technology | Depth | 6.40-6.70m |

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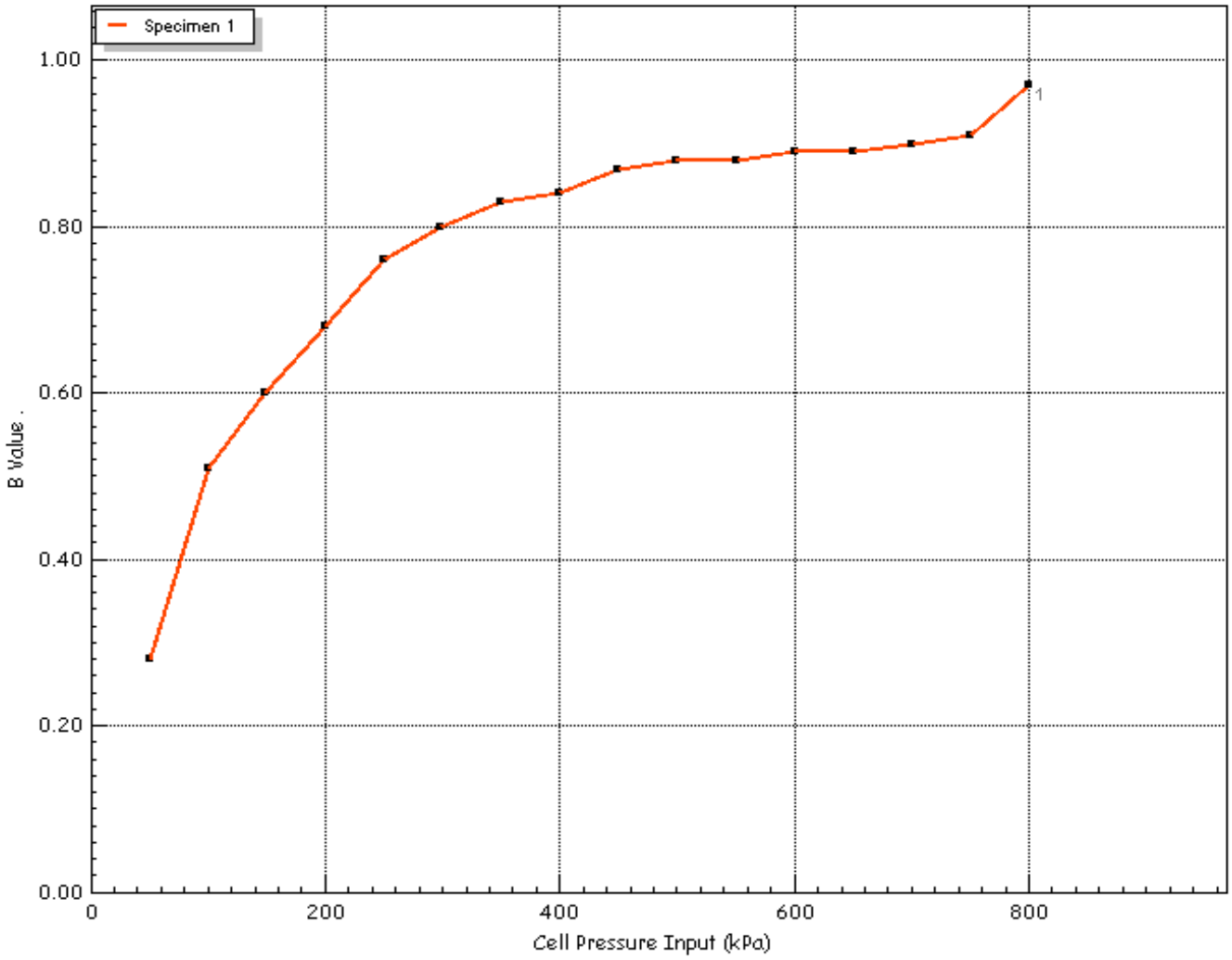
# Effective Stress Triaxial Compression

## Consolidated Undrained

**Saturation Plots**

| | | | |
|---|---|---|---|
| Saturation Method | | | Stepped |
| Cell Pressure Input | σ | (kPa) | 800 |
| Pore Water Pressure Input | u pwp | (kPa) | 788 |
| B Value | B | . | 0.97 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 7 | Test Name | BH119 6.40-6.70m |
| | | Test Date | 07/07/2022 |
| Jobfile | Wansford to Sutton Dualling | Borehole | BH119 |
| Client | Ground Technology | Sample | CS108 |
| | | Depth | 6.40-6.70m |

# Effective Stress Triaxial Compression

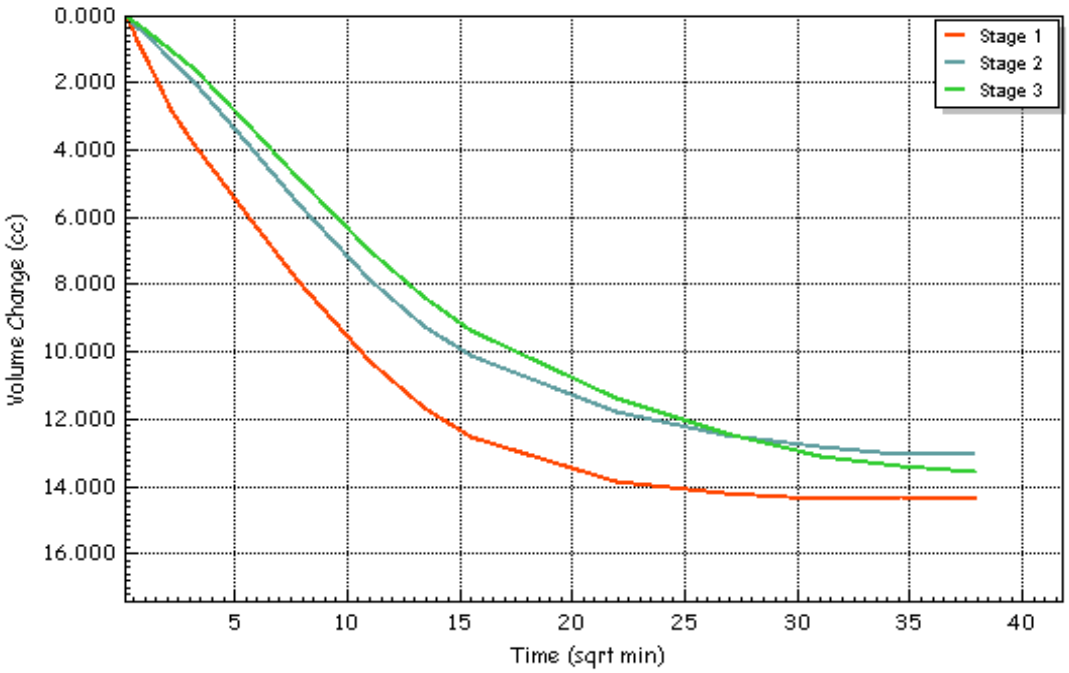
## Consolidated Undrained

**Consolidation Plots**

| **Initial Conditions** | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_3$ | (kPa) | 865 | 930 | 995 |
| Initial Back Pressure | $u_{bi}$ | (kPa) | 800 | 800 | 800 |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | 847 | 863 | 886 |
| Drainage Method | | | Radial+One End | | |

| **Final Conditions** | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| PWP Dissipation % | U% | (%) | 100.00 | 100.00 | 100.00 |
| Volumetric Strain | $\varepsilon_v$% | (%) | 1.08 | 2.07 | 3.09 |
| Corrected Length | $L_C$ | (mm) | 187.3 | 182.9 | 178.0 |
| Corrected Area | $A_C$ | (cm2) | 70.08 | 70.26 | 70.76 |
| Corrected Volume | $V_C$ | (cc) | 1312.642 | 1299.572 | 1285.983 |
| T100 Time to Failure | $t_{100}$ | (min) | 210.27 | 296.17 | 373.56 |
| Consolidation | $c_V$ | (m2/year) | 0.895 | 0.635 | 0.504 |
| Compressibility | $m_V$ | (m2/MN) | 0.232 | 0.329 | 0.358 |
| Test Time | $t_F$ | (h:m:s) | 06:18:29 | 08:53:06 | 11:12:24 |
| Estimated Strain to Failure | $\varepsilon$% | (%) | 5.0 | 5.0 | 5.0 |
| Shear Machine Speed | $d_r$ | (mm/min) | 0.02475 | 0.02475 | 0.02475 |

**Notes**

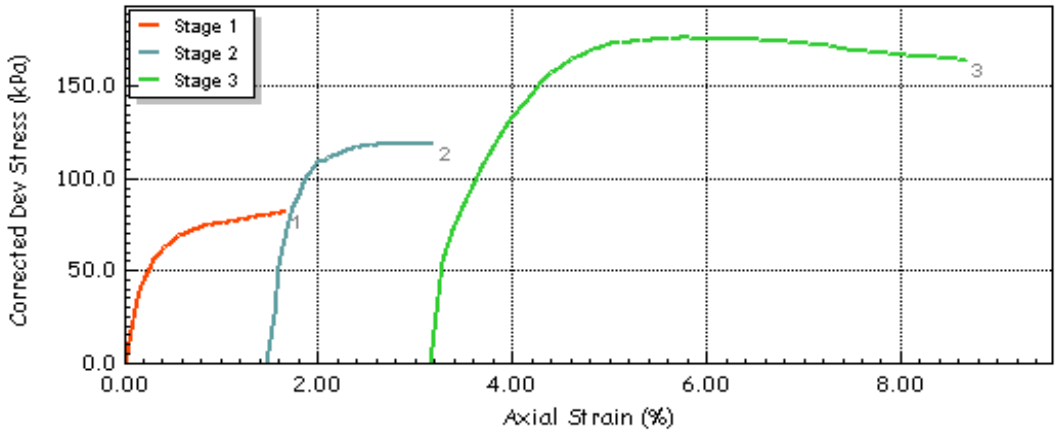


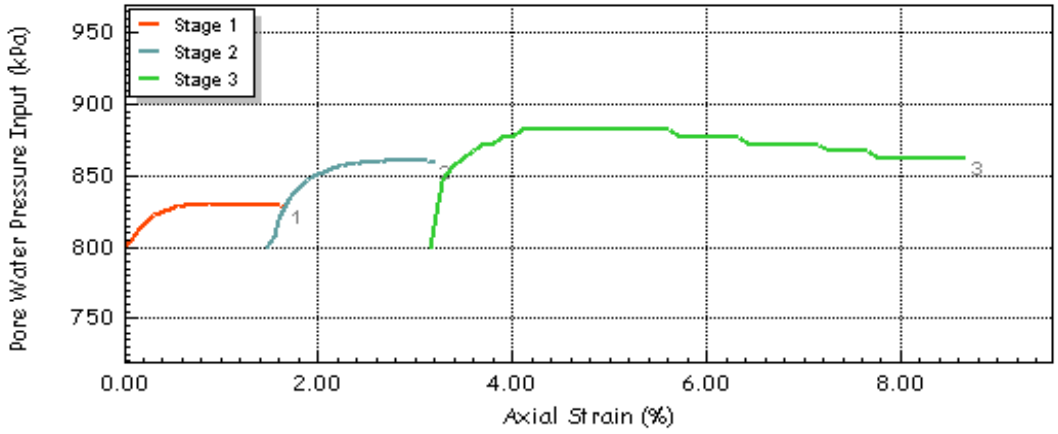

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 7 | Test Name | BH119 6.40-6.70m |
| | | Test Date | 07/07/2022 |
| | | Borehole | BH119 |
| Jobfile | Wansford to Sutton Dualling | Sample | CS108 |
| Client | Ground Technology | Depth | 6.40-6.70m |

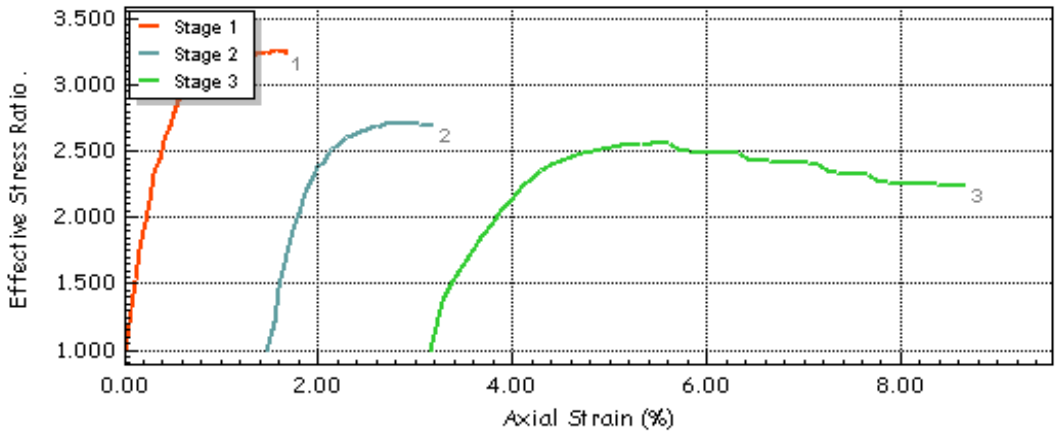
# Effective Stress Triaxial Compression

## Consolidated Undrained

**Shear Stage Plots**



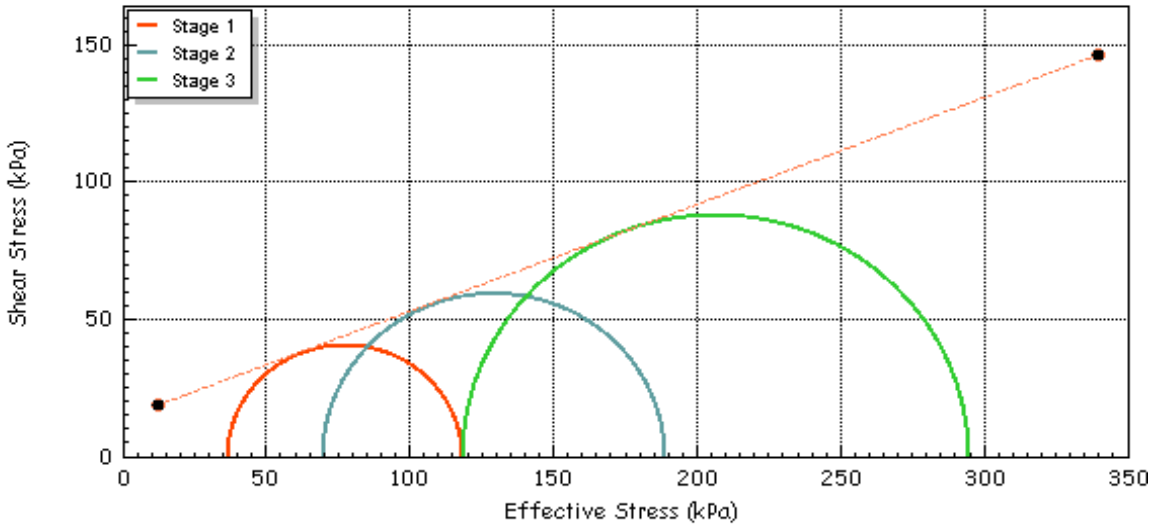

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 7 | Test Name | BH119 6.40-6.70m |
| | | Test Date | 07/07/2022 |
| Jobfile | Wansford to Sutton Dualling | Borehole | BH119 |
| Client | Ground Technology | Sample | CS108 |
| | | Depth | 6.40-6.70m |

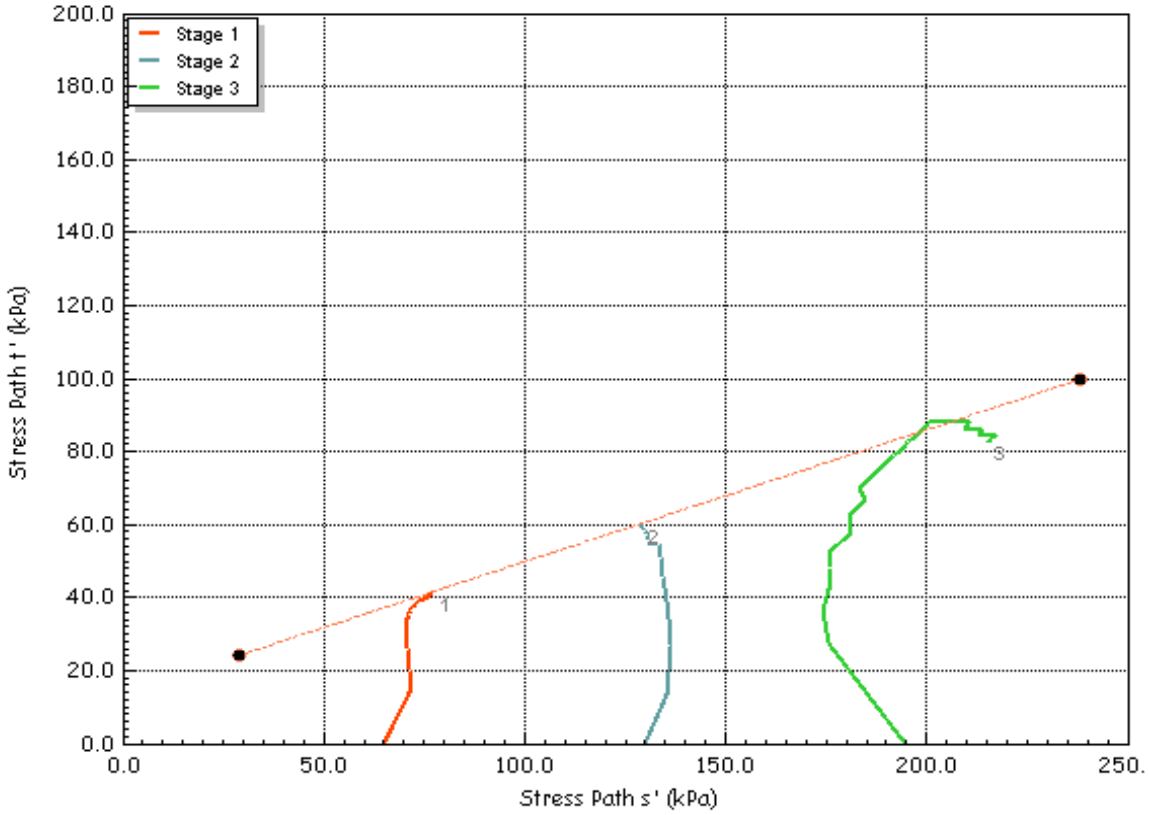
# Effective Stress Triaxial Compression

## Consolidated Undrained

**Shear Stage Plots**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Effective | c' | (kPa) | 14.38 | Effective Cohesion | c' | (kPa) | 14.38 |
| Effective Friction | ϕ' | (deg) | 21.3 | Effective Friction | ϕ' | (deg) | 21.3 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 7 | Test Name | BH119 6.40-6.70m |
| | | Test Date | 07/07/2022 |
| Jobfile | Wansford to Sutton Dualling | Borehole | BH119 |
| Client | Ground Technology | Sample | CS108 |
| | | Depth | 6.40-6.70m |

# Effective Stress Triaxial Compression

## Consolidated Drained

**Summary Report**

| Sample Details | | | | |
|---|---|---|---|---|
| *sketch showing specimen location in original sample* | Depth | | | 5.24-5.54m |
| | Description | | | See summary of soil descriptions. |
| | Type | | | Undisturbed, vertical orientation. |
| | Initial Sample Length | $L_0$ | (mm) | 140.1 |
| | Initial Sample Diameter | $D_0$ | (mm) | 70.1 |
| | Initial Sample Weight | $W_0$ | (gr) | 1090.0 |
| | Initial Bulk Density | $\rho_0$ | (Mg/m3) | 2.02 |
| | Particle Density | $\rho_s$ | (Mg/m3) | 2.66 |

| **Initial Conditions** | | | Stage 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_{3i}$ | (kPa) | 450 | 500 | 550 | |
| Initial Back Pressure | $U_{bi}$ | (kPa) | 400 | 400 | 400 | |
| Membrane Thickness | $m_b$ | (mm) | 0.600 | | | |
| Displacement Input | $L_{IP}$ | (mm) | CH 4 | | | |
| Load Input | $N_{IP}$ | (N) | CH 1 | | | |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | CH 3 | | | |
| Sample Volume | $V$ | (cc) | CH 2 | | | |
| Initial Moisture | $\omega_i$ | (%) | 20 | | | |
| Initial Dry Density | $\rho_{di}$ | (Mg/m3) | 1.68 | | | |
| Initial Voids Ratio | $e_i$ | . | 0.581 | | | |
| Initial Degree of Saturation | $S_i$ | (%) | 91 | | | |
| B Value | $B$ | . | 0.98 | | | |

| **Final Conditions** | | | | | | |
|---|---|---|---|---|---|---|
| Final Moisture | $\omega_f$ | (%) | 16 | | | |
| Final Dry Density | $\rho_{df}$ | (Mg/m3) | 1.83 | | | |
| Final Voids Ratio | $e_f$ | . | 0.452 | | | |
| Final Degree of Saturation | $S_f$ | (%) | 95.1 | | | |
| | | | Stage 1 | 2 | 3 | 4 |
| Failure Criteria | | . | Max. Dev. Stress | Max. Dev. Stress | Max. Dev. Stress | |
| Strain At Failure | $\varepsilon_f$ | (%) | 1.61 | 2.76 | 3.58 | |
| Stress At Failure | $(\sigma_1-\sigma_3)$ | (kPa) | 133.6 | 199.4 | 268.9 | |
| Minor Stress At Failure | $\sigma_3'$ | (kPa) | 50.0 | 100.0 | 150.0 | |
| Major Stress At Failure | $\sigma_1'$ | (kPa) | 183.6 | 299.4 | 418.9 | |
| Principal Stress Ratio At Failure | $\sigma_1'/\sigma_3'$ | | 3.672 | 2.994 | 2.793 | |

**Notes**

*Brittle*

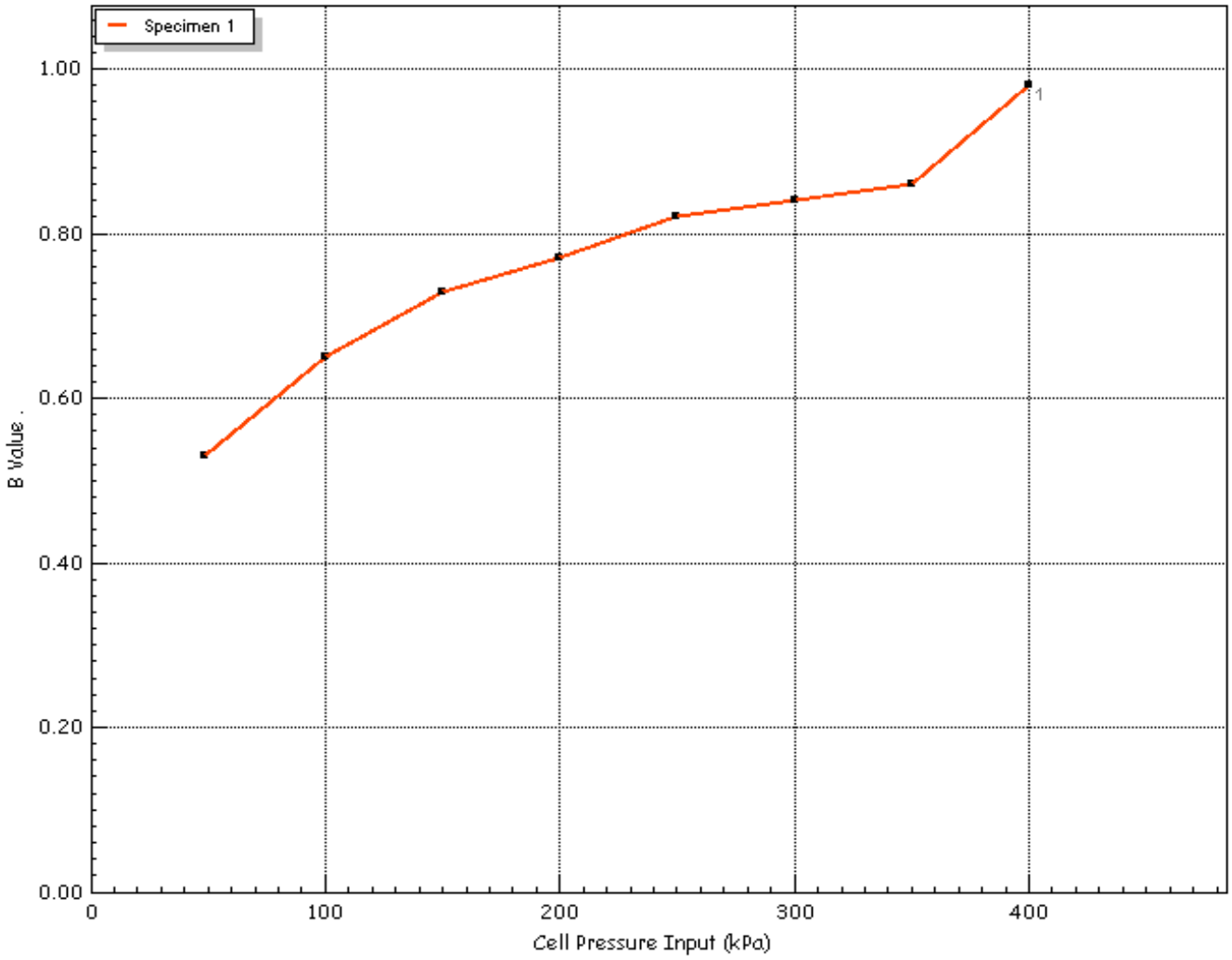
| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH131 5.24-5.54m |
| | | Test Date | 07/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH131 |
| | | Sample | CS106 |
| Client | Ground Technology | Depth | 5.24-5.54m |

# Effective Stress Triaxial Compression

## Consolidated Drained

**Saturation Plots**

| | | | |
|---|---|---|---|
| Saturation Method | | | Stepped |
| Cell Pressure Input | σ | (kPa) | 400 |
| Pore Water Pressure Input | u pwp | (kPa) | 386 |
| B Value | B | . | 0.98 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH131 5.24-5.54m |
| | | Test Date | 07/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH131 |
| | | Sample | CS106 |
| Client | Ground Technology | Depth | 5.24-5.54m |

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# Effective Stress Triaxial Compression

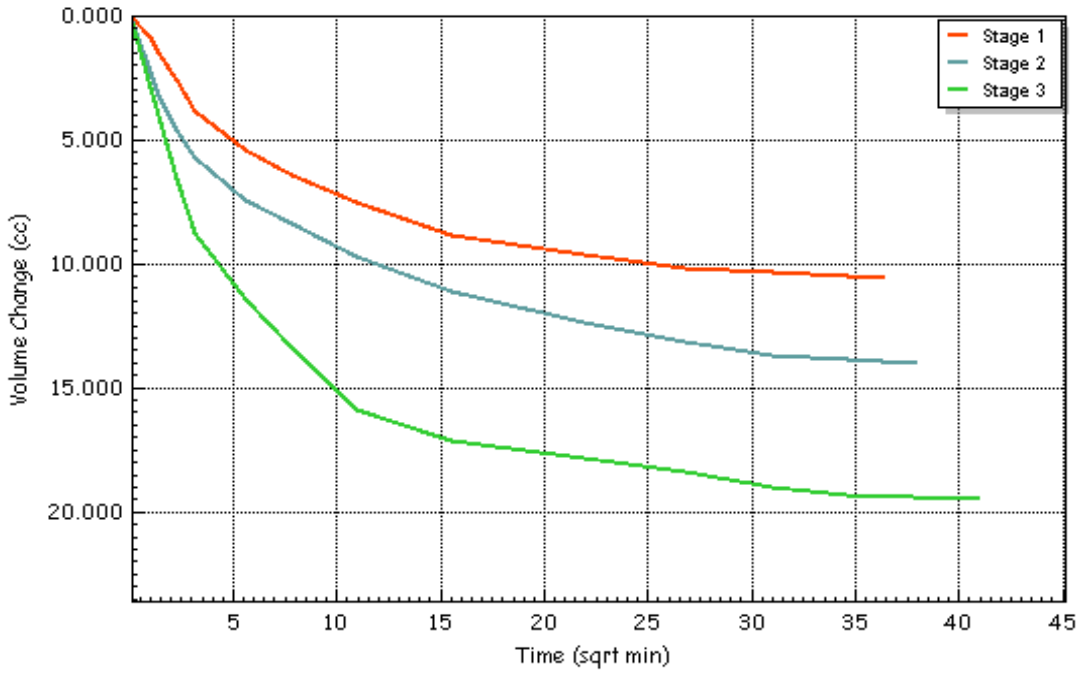
## Consolidated Drained

**Consolidation Plots**

| **Initial Conditions** | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_3$ | (kPa) | 450 | 500 | 550 |
| Initial Back Pressure | $u_{bi}$ | (kPa) | 400 | 400 | 400 |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | 422 | 468 | 511 |
| Drainage Method | | | Radial+One End | | |

| **Final Conditions** | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| PWP Dissipation % | U% | (%) | 100.00 | 100.00 | 100.00 |
| Volumetric Strain | $\varepsilon_v$% | (%) | 1.96 | 4.54 | 8.15 |
| Corrected Length | $L_C$ | (mm) | 139.2 | 134.3 | 128.6 |
| Corrected Area | $A_C$ | (cm2) | 38.09 | 37.67 | 36.81 |
| Corrected Volume | $V_C$ | (cc) | 530.129 | 516.148 | 496.667 |
| T100 Time to Failure | $t_{100}$ | (min) | 63.78 | 65.02 | 40.45 |
| Consolidation | $c_v$ | (m2/year) | 1.593 | 1.562 | 2.512 |
| Compressibility | $m_v$ | (m2/MN) | 0.889 | 0.668 | 0.734 |
| Test Time | $t_F$ | (h:m:s) | 14:52:55 | 15:10:16 | 09:26:18 |
| Estimated Strain to Failure | $\varepsilon$% | (%) | 5.0 | 5.0 | 5.0 |
| Shear Machine Speed | $d_r$ | (mm/min) | 0.00779 | 0.00779 | 0.00779 |

**Notes**




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH131 5.24-5.54m |
| | | Test Date | 07/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH131 |
| | | Sample | CS106 |
| Client | Ground Technology | Depth | 5.24-5.54m |

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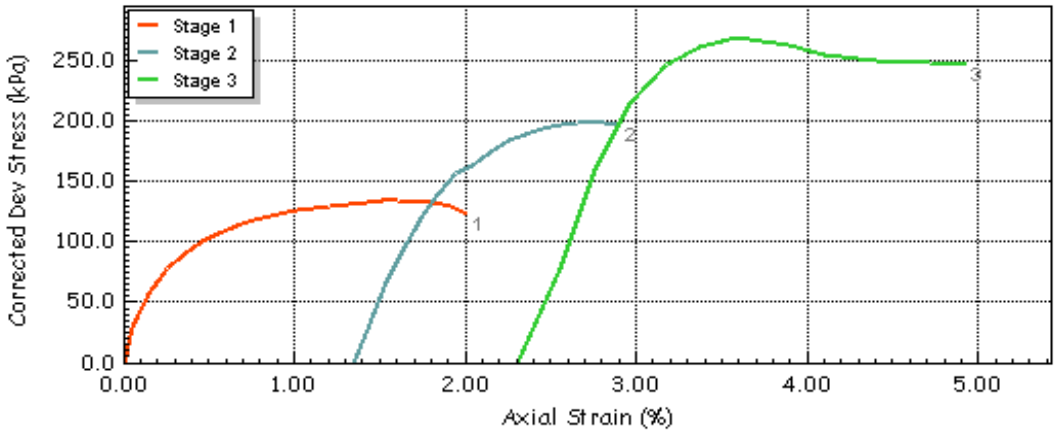
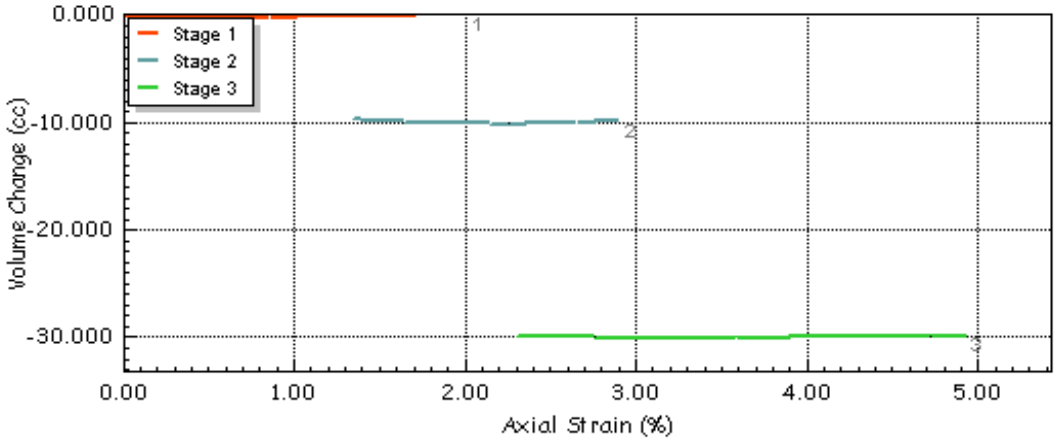
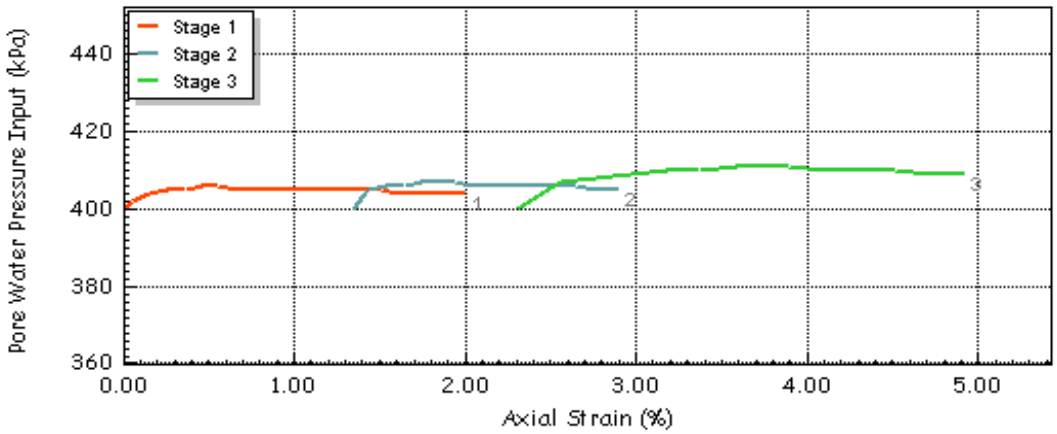
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**



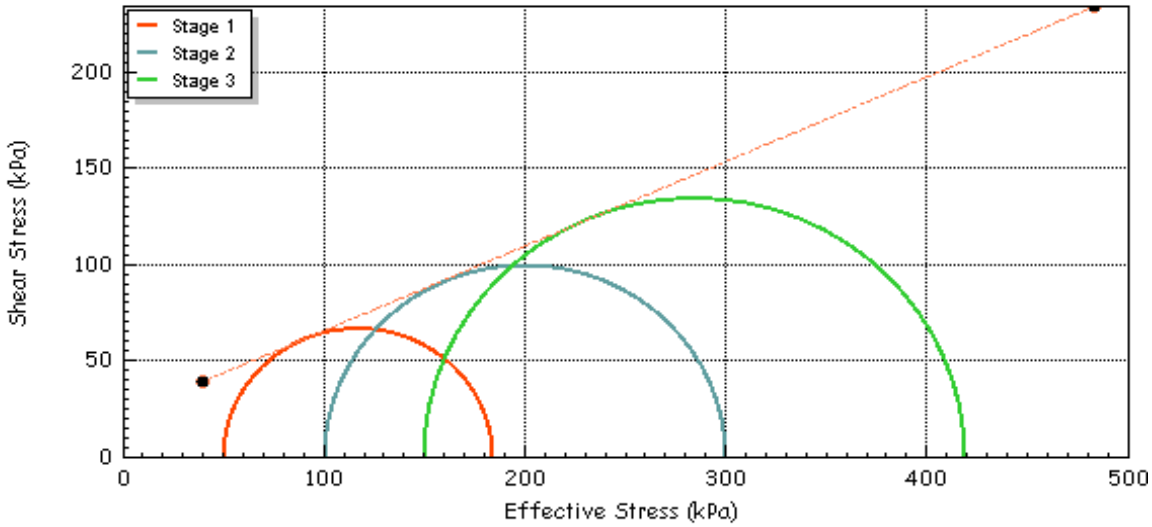

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH131 5.24-5.54m |
| | | Test Date | 07/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH131 |
| | | Sample | CS106 |
| Client | Ground Technology | Depth | 5.24-5.54m |

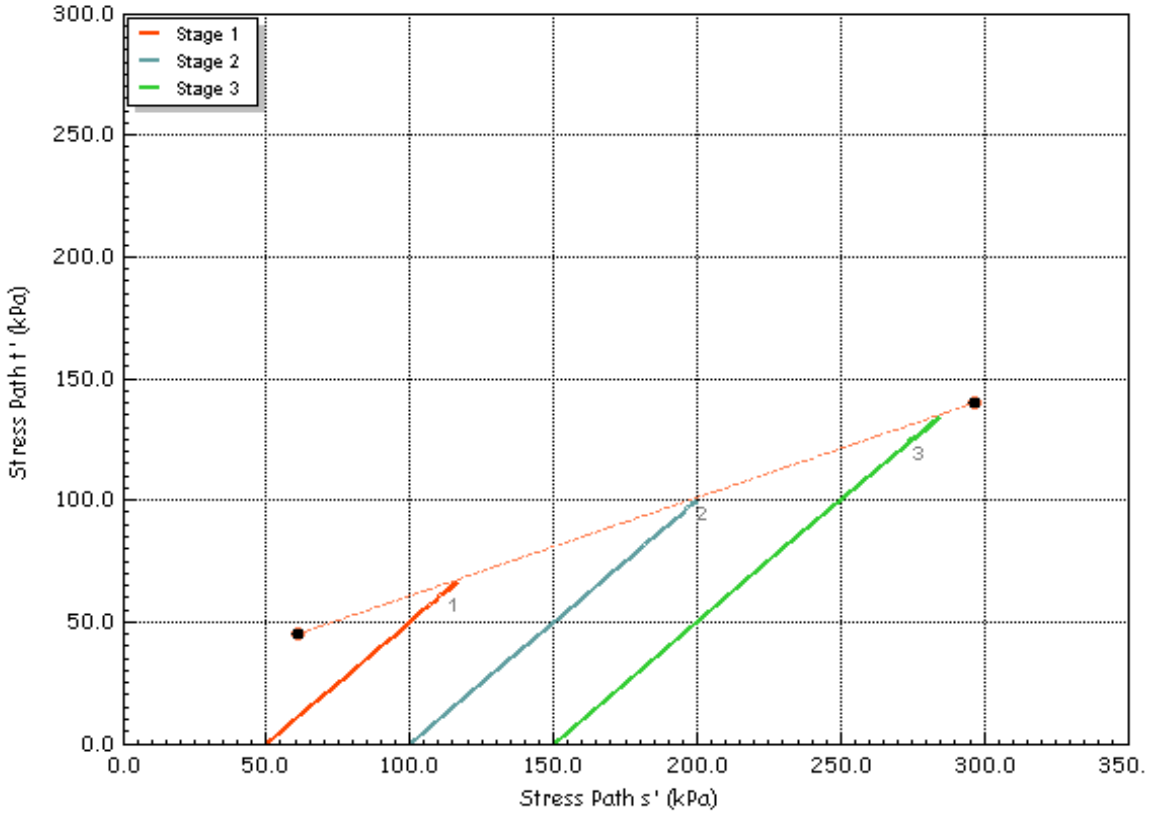
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Effective | c' | (kPa) | 22.65 | Effective Cohesion | c' | (kPa) | 22.65 |
| Effective Friction | ϕ' | (deg) | 23.7 | Effective Friction | ϕ' | (deg) | 23.7 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH131 5.24-5.54m |
| | | Test Date | 07/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH131 |
| Client | Ground Technology | Sample | CS106 |
| | | Depth | 5.24-5.54m |

4043

# Effective Stress Triaxial Compression

## Consolidated Drained

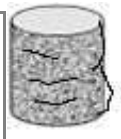
**Summary Report**

| Sample Details | | | | |
|---|---|---|---|---|
| *sketch showing specimen location in original sample* | Depth | | | 2.66-2.91m |
| | Description | | | See summary of soil descripitons. |
| | Type | | | Undisturbed, vertical orientation. |
| | Initial Sample Length | $L_0$ | (mm) | 200.0 |
| | Initial Sample Diameter | $D_0$ | (mm) | 100.1 |
| | Initial Sample Weight | $W_0$ | (gr) | 3249.0 |
| | Initial Bulk Density | $\rho_0$ | (Mg/m3) | 2.06 |
| | Particle Density | $\rho_s$ | (Mg/m3) | 2.66 |

| **Initial Conditions** | | | Stage 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_{3i}$ | (kPa) | 325 | 350 | 375 | |
| Initial Back Pressure | $U_{bi}$ | (kPa) | 300 | 300 | 300 | |
| Membrane Thickness | $m_b$ | (mm) | 0.400 | | | |
| Displacement Input | $L_{IP}$ | (mm) | CH 2 | | | |
| Load Input | $N_{IP}$ | (N) | CH 1 | | | |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | CH 3 | | | |
| Sample Volume | $V$ | (cc) | CH 6 | | | |
| Initial Moisture | $\omega_i$ | (%) | 21 | | | |
| Initial Dry Density | $\rho_{di}$ | (Mg/m3) | 1.70 | | | |
| Initial Voids Ratio | $e_i$ | . | 0.562 | | | |
| Initial Degree of Saturation | $S_i$ | (%) | 100 | | | |
| B Value | $B$ | . | 0.99 | | | |

| **Final Conditions** | | | | | | |
|---|---|---|---|---|---|---|
| Final Moisture | $\omega_f$ | (%) | 20 | | | |
| Final Dry Density | $\rho_{df}$ | (Mg/m3) | 1.73 | | | |
| Final Voids Ratio | $e_f$ | . | 0.538 | | | |
| Final Degree of Saturation | $S_f$ | (%) | 99.3 | | | |
| | | | Stage 1 | 2 | 3 | 4 |
| Failure Criteria | | . | Max. Dev. Stress | Max. Dev. Stress | Max. Dev. Stress | |
| Strain At Failure | $\varepsilon_f$ | (%) | 1.95 | 6.36 | 12.47 | |
| Stress At Failure | $(\sigma_1-\sigma_3)$ | (kPa) | 53.4 | 85.1 | 113.6 | |
| Minor Stress At Failure | $\sigma_3'$ | (kPa) | 25.0 | 51.0 | 75.0 | |
| Major Stress At Failure | $\sigma_1'$ | (kPa) | 78.4 | 136.1 | 188.6 | |
| Principal Stress Ratio At Failure | $\sigma_1'/\sigma_3'$ | | 3.136 | 2.668 | 2.514 | |

**Notes**



*Plastic*

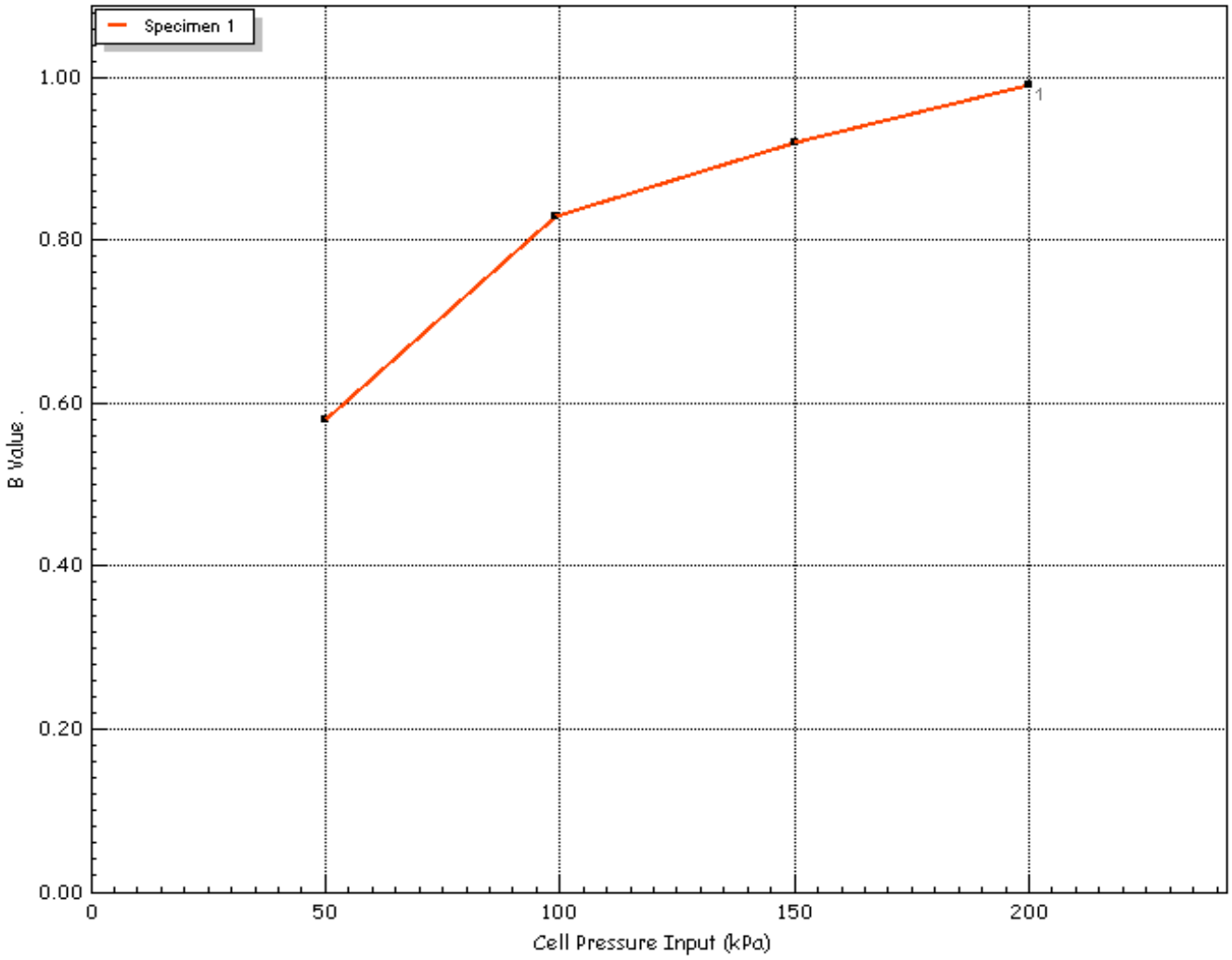
| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH134 2.66-2.91m U |
| | | Test Date | 04/07/2022 |
| Jobfile | Wansford to Sutton Dualling | Borehole | BH134 |
| Client | Ground Technology | Sample | CS103 |
| | | Depth | 2.66-2.91m |

# Effective Stress Triaxial Compression

## Consolidated Drained

**Saturation Plots**

| | | | |
|---|---|---|---|
| Saturation Method | | | Stepped |
| Cell Pressure Input | σ | (kPa) | 200 |
| Pore Water Pressure Input | u pwp | (kPa) | 187 |
| B Value | B | . | 0.99 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH134 2.66-2.91m U |
| | | Test Date | 04/07/2022 |
| Jobfile | Wansford to Sutton Dualling | Borehole | BH134 |
| Client | Ground Technology | Sample | CS103 |
| | | Depth | 2.66-2.91m |

# Effective Stress Triaxial Compression

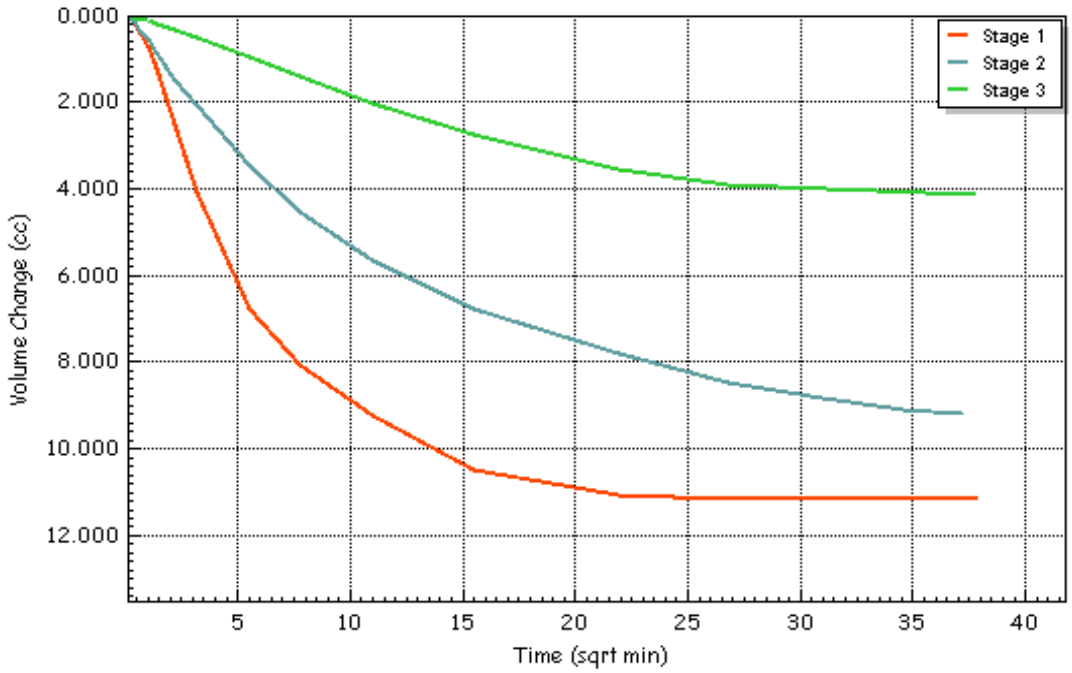
## Consolidated Drained

**Consolidation Plots**

| **Initial Conditions** | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_3$ | (kPa) | 325 | 350 | 375 |
| Initial Back Pressure | $u_{bi}$ | (kPa) | 300 | 300 | 300 |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | 310 | 328 | 355 |
| Drainage Method | | | Radial+One End | | |

| **Final Conditions** | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| PWP Dissipation % | U% | (%) | 100.00 | 100.00 | 100.00 |
| Volumetric Strain | $\varepsilon_v$% | (%) | 0.71 | 0.58 | 0.26 |
| Corrected Length | $L_C$ | (mm) | 199.5 | 194.8 | 184.9 |
| Corrected Area | $A_C$ | (cm2) | 78.33 | 79.77 | 83.80 |
| Corrected Volume | $V_C$ | (cc) | 1562.783 | 1553.579 | 1549.430 |
| t100 | $t_{100}$ | (min) | 54.00 | 211.31 | 340.40 |
| Consolidation | $c_v$ | (m2/year) | 3.838 | 0.981 | 0.609 |
| Compressibility | $m_v$ | (m2/MN) | 0.742 | 0.209 | 0.048 |
| Test Time | $t_F$ | (h:m:s) | 12:36:00 | 49:18:20 | 79:25:36 |
| Estimated Strain to Failure | $\varepsilon$% | (%) | 5.0 | 5.0 | 5.0 |
| Shear Machine Speed | $d_r$ | (mm/min) | 0.01320 | 0.01320 | 0.01320 |

**Notes**




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH134 2.66-2.91m U |
| | | Test Date | 04/07/2022 |
| | | Borehole | BH134 |
| Jobfile | Wansford to Sutton Dualling | Sample | CS103 |
| Client | Ground Technology | Depth | 2.66-2.91m |

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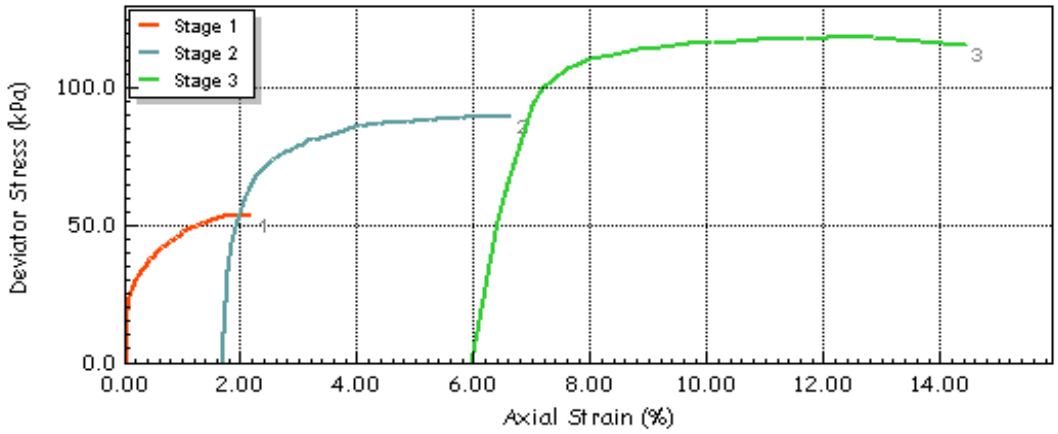
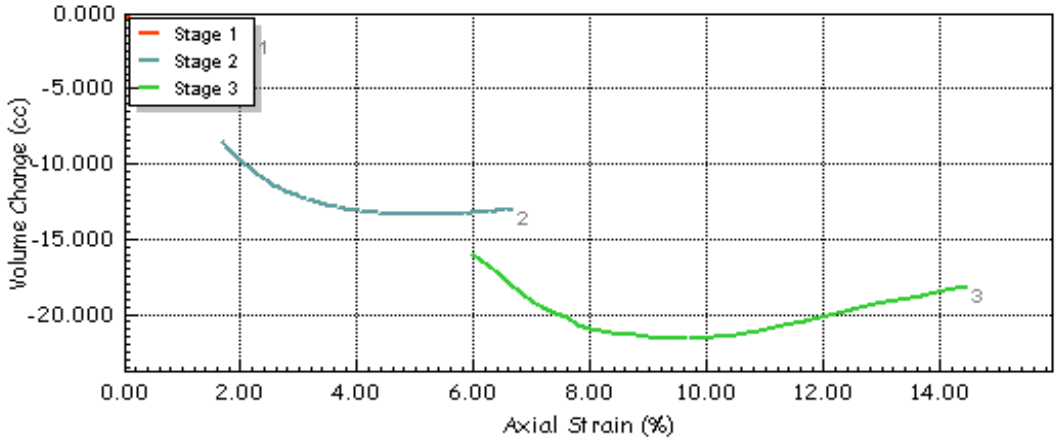
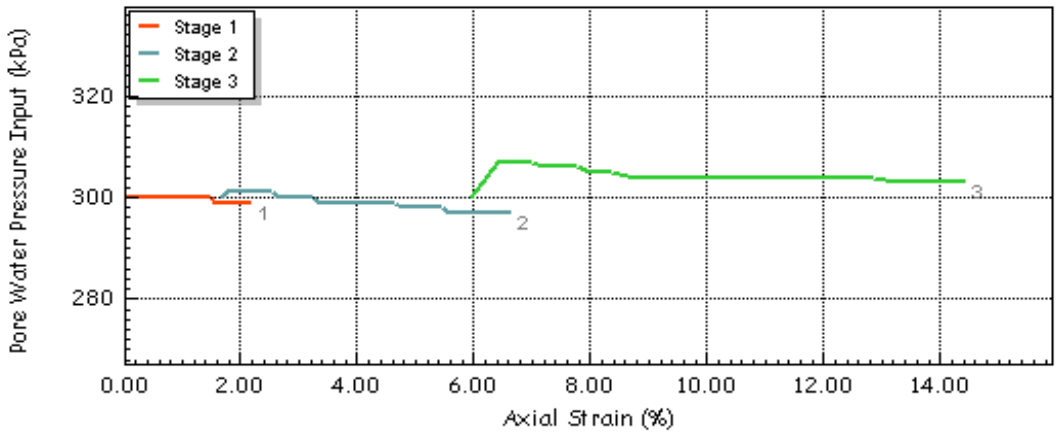
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**



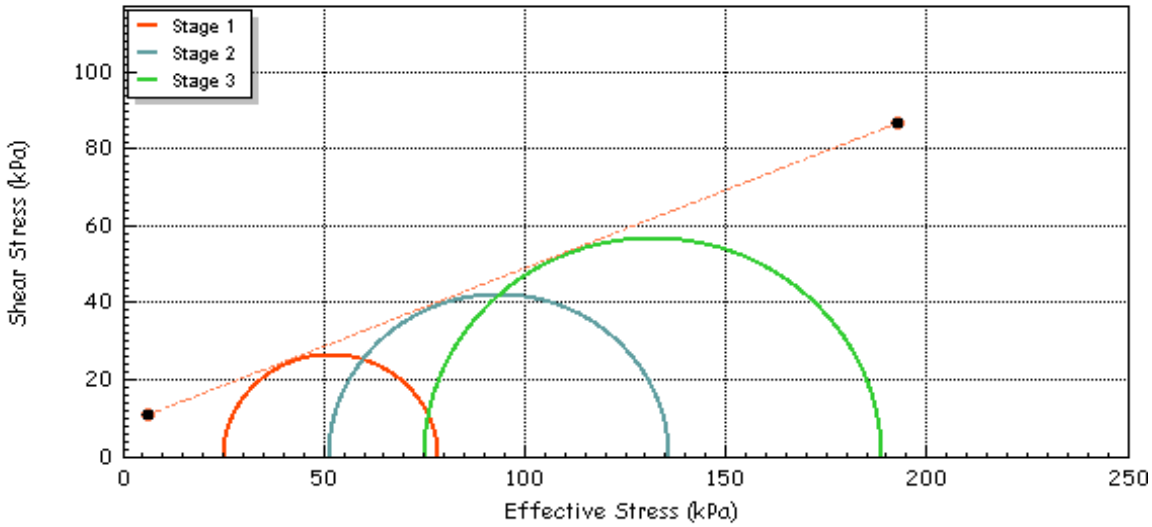

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH134 2.66-2.91m U |
| | | Test Date | 04/07/2022 |
| Jobfile | Wansford to Sutton Dualling | Borehole | BH134 |
| Client | Ground Technology | Sample | CS103 |
| | | Depth | 2.66-2.91m |

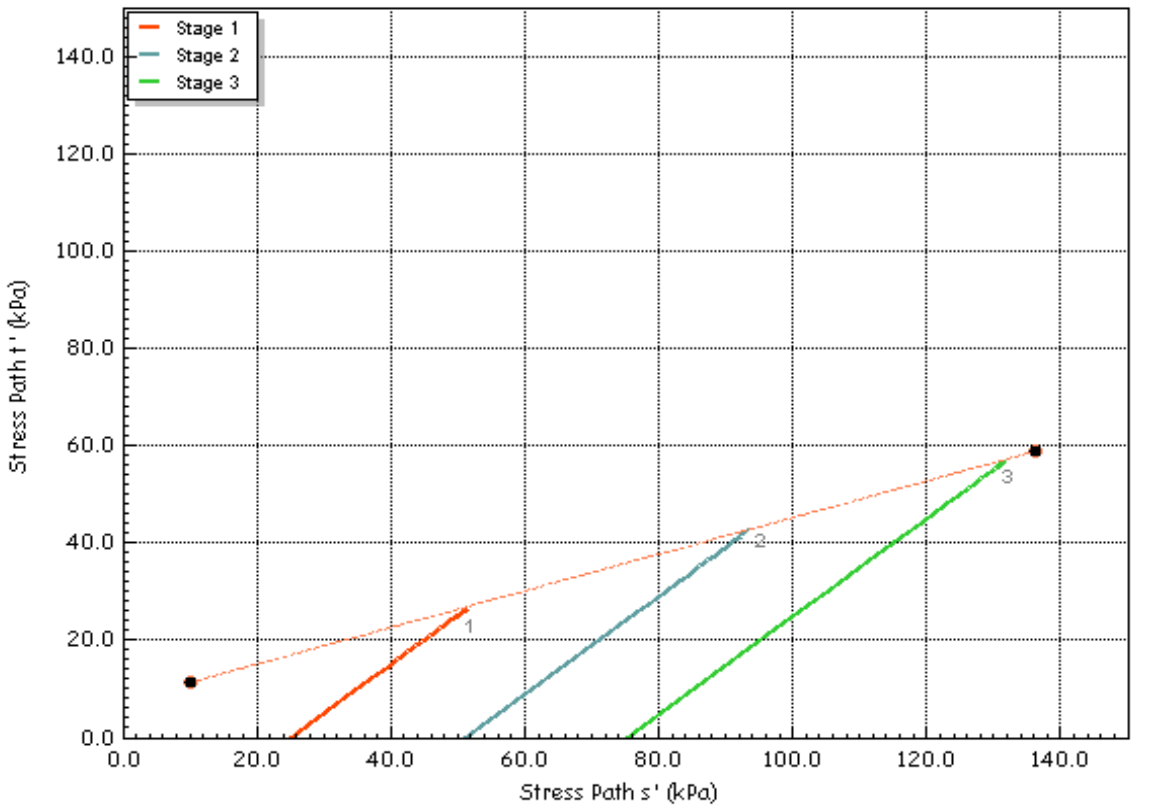
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Effective | c' | (kPa) | 8.17 | Effective Cohesion | c' | (kPa) | 8.17 |
| Effective Friction | ϕ' | (deg) | 22.2 | Effective Friction | ϕ' | (deg) | 22.2 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH134 2.66-2.91m U |
| | | Test Date | 04/07/2022 |
| Jobfile | Wansford to Sutton Dualling | Borehole | BH134 |
| Client | Ground Technology | Sample | CS103 |
| | | Depth | 2.66-2.91m |

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# Effective Stress Triaxial Compression

## Consolidated Drained

**Summary Report**

| Sample Details | | | | |
|---|---|---|---|---|
| *sketch showing specimen location in original sample* | Depth | | | 4.83-5.13m |
| | Description | | | See summary of soil descripitons. |
| | Type | | | Undisturbed, vertical orientation. |
| | Initial Sample Length | $L_0$ | (mm) | 200.0 |
| | Initial Sample Diameter | $D_0$ | (mm) | 99.6 |
| | Initial Sample Weight | $W_0$ | (gr) | 3047.0 |
| | Initial Bulk Density | $\rho_0$ | (Mg/m3) | 1.96 |
| | Particle Density | $\rho_s$ | (Mg/m3) | 2.66 |

| **Initial Conditions** | | | Stage 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_{3i}$ | (kPa) | 745 | 790 | 835 | |
| Initial Back Pressure | $U_{bi}$ | (kPa) | 700 | 700 | 700 | |
| Membrane Thickness | $m_b$ | (mm) | 0.600 | | | |
| Displacement Input | $L_{IP}$ | (mm) | CH 2 | | | |
| Load Input | $N_{IP}$ | (N) | CH 4 | | | |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | CH 3 | | | |
| Sample Volume | $V$ | (cc) | CH 6 | | | |
| Initial Moisture | $\omega_i$ | (%) | 23 | | | |
| Initial Dry Density | $\rho_{di}$ | (Mg/m3) | 1.59 | | | |
| Initial Voids Ratio | $e_i$ | . | 0.674 | | | |
| Initial Degree of Saturation | $S_i$ | (%) | 91 | | | |
| B Value | $B$ | . | 0.95 | | | |

| **Final Conditions** | | | | | | |
|---|---|---|---|---|---|---|
| Final Moisture | $\omega_f$ | (%) | 22 | | | |
| Final Dry Density | $\rho_{df}$ | (Mg/m3) | 1.61 | | | |
| Final Voids Ratio | $e_f$ | . | 0.651 | | | |
| Final Degree of Saturation | $S_f$ | (%) | 91.3 | | | |
| | | | Stage 1 | 2 | 3 | 4 |
| Failure Criteria | | . | Max. Dev. Stress | Max. Dev. Stress | Max. Dev. Stress | |
| Strain At Failure | $\varepsilon_f$ | (%) | 5.40 | 9.17 | 11.28 | |
| Stress At Failure | $(\sigma_1-\sigma_3)$ | (kPa) | 111.5 | 163.5 | 219.0 | |
| Minor Stress At Failure | $\sigma_3'$ | (kPa) | 48.0 | 90.0 | 135.0 | |
| Major Stress At Failure | $\sigma_1'$ | (kPa) | 159.5 | 253.5 | 354.0 | |
| Principal Stress Ratio At Failure | $\sigma_1'/\sigma_3'$ | | 3.324 | 2.817 | 2.622 | |

**Notes**

*Plastic*

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH134 4.83-5.13m C |
| | | Test Date | 05/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH134 |
| | | Sample | CS106 |
| Client | Ground Technology | Depth | 4.83-5.13m |

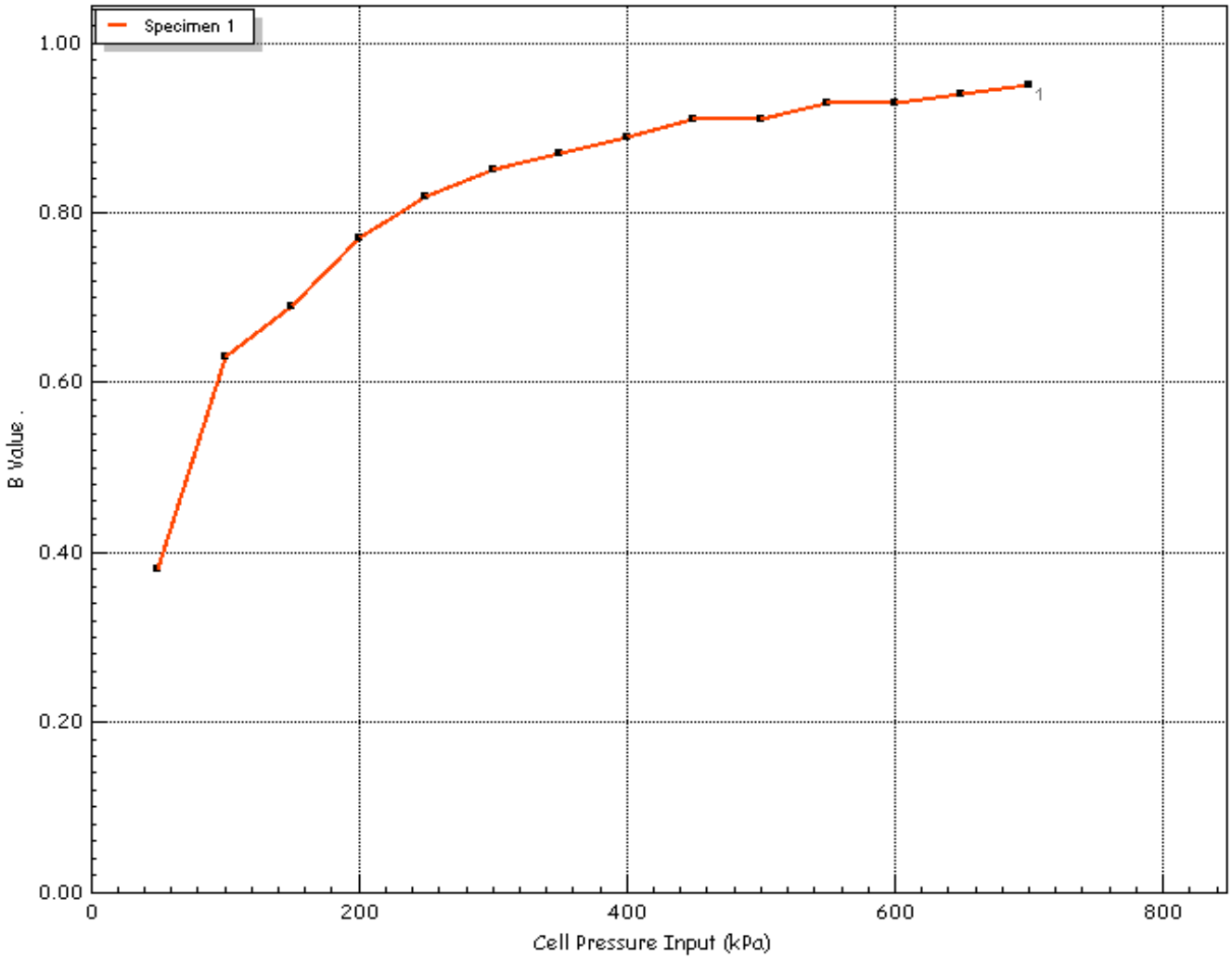
*

# Effective Stress Triaxial Compression

## Consolidated Drained

**Saturation Plots**

| | | | |
|---|---|---|---|
| Saturation Method | | | Stepped |
| Cell Pressure Input | σ | (kPa) | 700 |
| Pore Water Pressure Input | u pwp | (kPa) | 681 |
| B Value | B | . | 0.95 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH134 4.83-5.13m C |
| | | Test Date | 05/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH134 |
| | | Sample | CS106 |
| Client | Ground Technology | Depth | 4.83-5.13m |

# Effective Stress Triaxial Compression

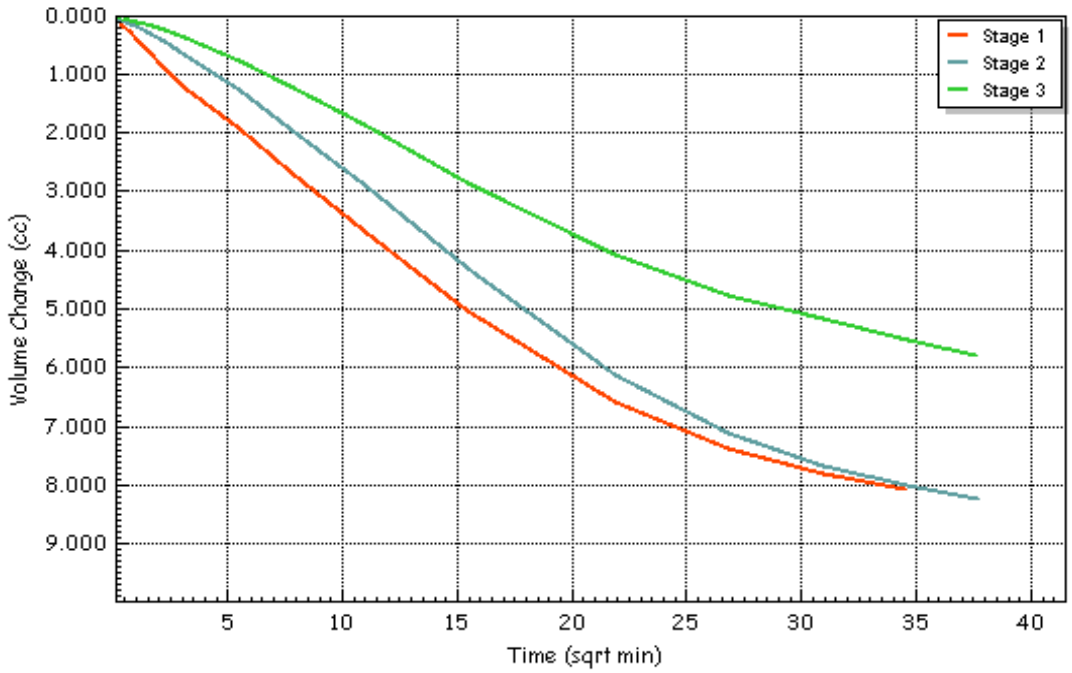
## Consolidated Drained

**Consolidation Plots**

| **Initial Conditions** | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_3$ | (kPa) | 745 | 790 | 835 |
| Initial Back Pressure | $u_{bi}$ | (kPa) | 700 | 700 | 700 |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | 724 | 740 | 738 |
| Drainage Method | | | Radial+One End | | |

| **Final Conditions** | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| PWP Dissipation % | U% | (%) | 100.00 | 100.00 | 100.00 |
| Volumetric Strain | $\varepsilon_v$% | (%) | 0.52 | 1.05 | 1.42 |
| Corrected Length | $L_C$ | (mm) | 199.7 | 188.0 | 179.1 |
| Corrected Area | $A_C$ | (cm2) | 77.64 | 81.58 | 84.88 |
| Corrected Volume | $V_C$ | (cc) | 1550.191 | 1541.953 | 1536.151 |
| T100 Time to Failure | $t_{100}$ | (min) | 533.20 | 754.81 | 755.28 |
| Consolidation | $c_V$ | (m2/year) | 0.384 | 0.271 | 0.271 |
| Compressibility | $m_V$ | (m2/MN) | 0.217 | 0.261 | 0.371 |
| Test Time | $t_F$ | (h:m:s) | 124:24:48 | 176:07:20 | 176:13:55 |
| Estimated Strain to Failure | $\varepsilon$% | (%) | 5.0 | 5.0 | 5.0 |
| Shear Machine Speed | $d_r$ | (mm/min) | 0.00134 | 0.00134 | 0.00134 |

**Notes**




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH134 4.83-5.13m C |
| | | Test Date | 05/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH134 |
| | | Sample | CS106 |
| Client | Ground Technology | Depth | 4.83-5.13m |

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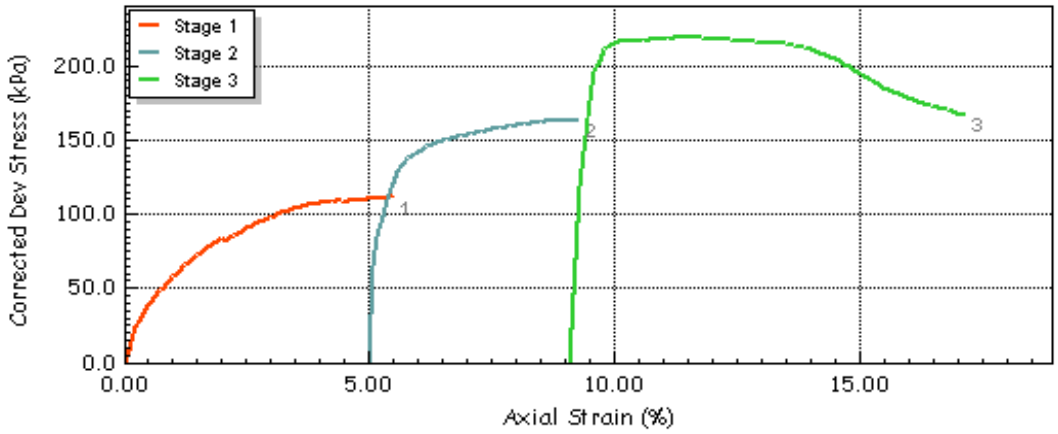
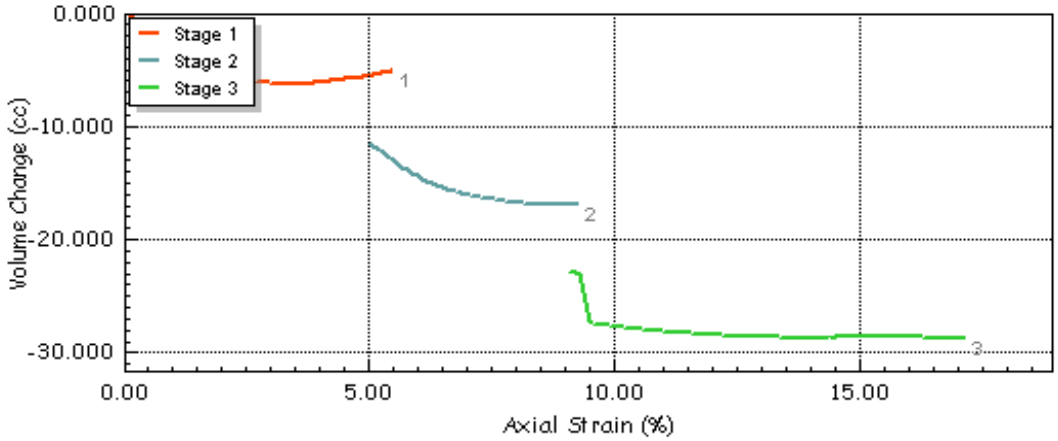
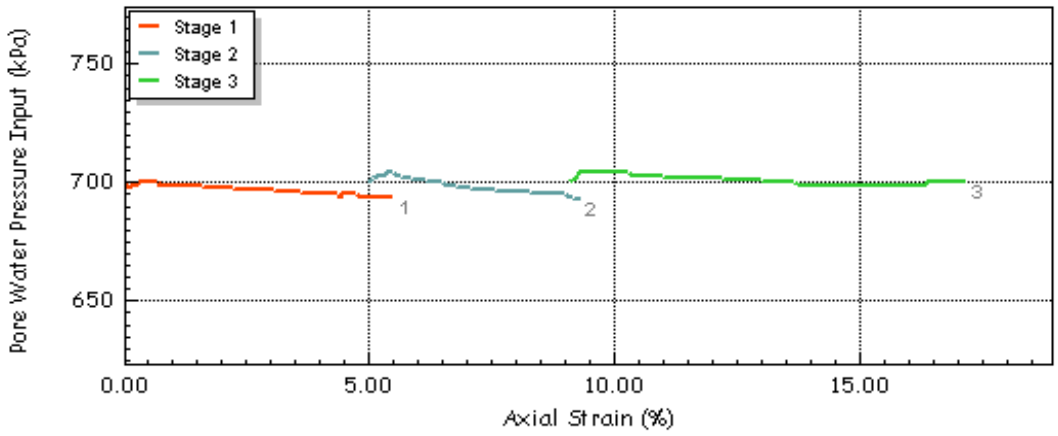
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**



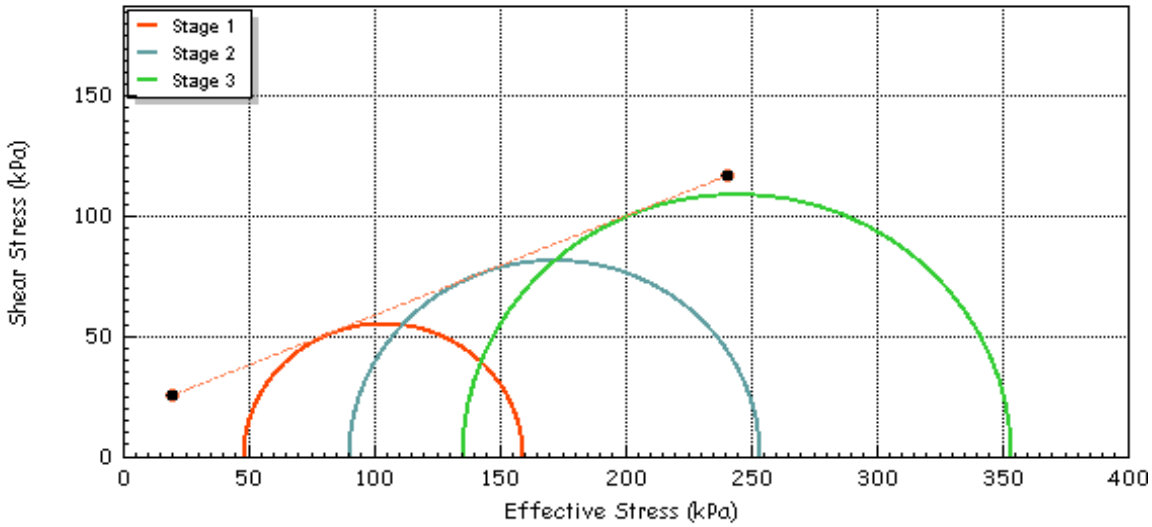

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH134 4.83-5.13m C |
| | | Test Date | 05/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH134 |
| | | Sample | CS106 |
| Client | Ground Technology | Depth | 4.83-5.13m |

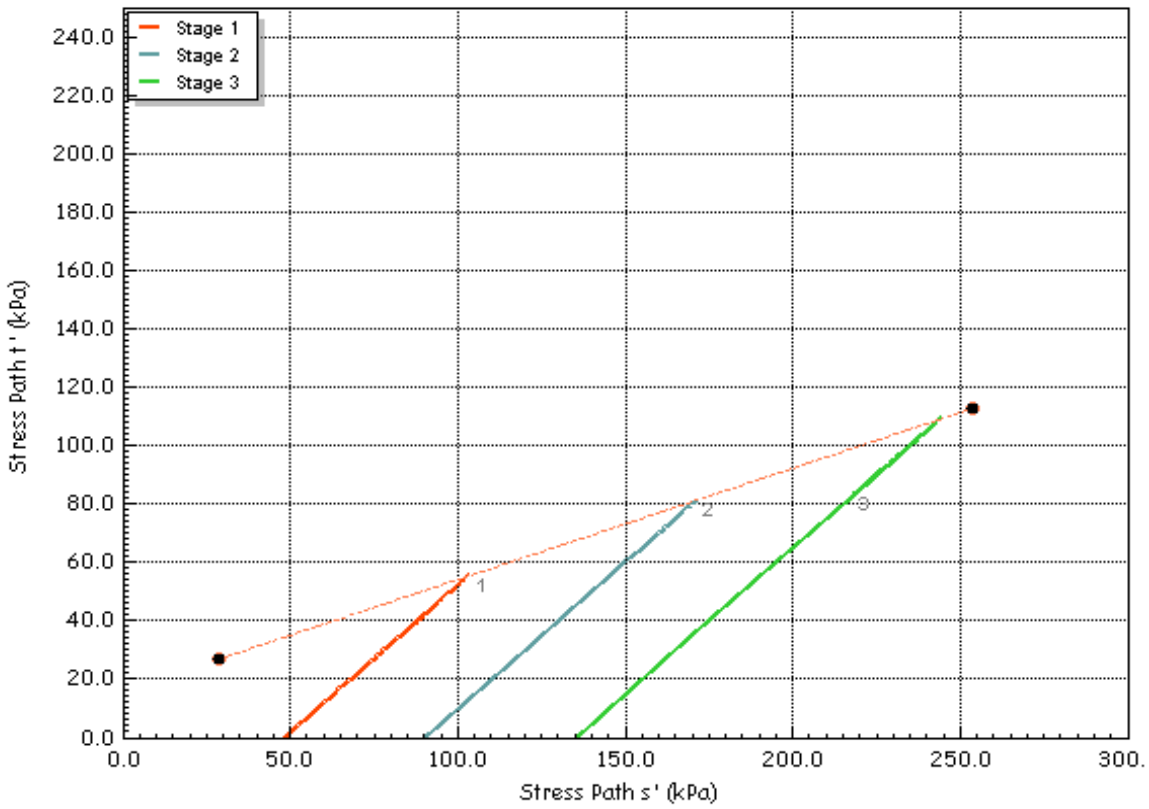
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Effective | c' | (kPa) | 17.60 | Effective Cohesion | c' | (kPa) | 17.60 |
| Effective Friction | ϕ' | (deg) | 22.5 | Effective Friction | ϕ' | (deg) | 22.5 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH134 4.83-5.13m C |
| | | Test Date | 05/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH134 |
| | | Sample | CS106 |
| Client | Ground Technology | Depth | 4.83-5.13m |

# Effective Stress Triaxial Compression

## Consolidated Drained

**Summary Report**

| Sample Details | | | | |
|---|---|---|---|---|
| *sketch showing specimen location in original sample* | Depth | | | 6.80-7.10m |
| | Description | | | See summary of soil descriptions. |
| | Type | | | Undisturbed, vertical orientation. |
| | Initial Sample Length | $L_0$ | (mm) | 200.0 |
| | Initial Sample Diameter | $D_0$ | (mm) | 95.4 |
| | Initial Sample Weight | $W_0$ | (gr) | 2727.0 |
| | Initial Bulk Density | $\rho_0$ | (Mg/m3) | 1.91 |
| | Particle Density | $\rho_s$ | (Mg/m3) | 2.66 |

| **Initial Conditions** | | | Stage 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_{3i}$ | (kPa) | 1265 | 1330 | 1395 | |
| Initial Back Pressure | $U_{bi}$ | (kPa) | 1200 | 1200 | 1200 | |
| Membrane Thickness | $m_b$ | (mm) | 0.400 | | | |
| Displacement Input | $L_{IP}$ | (mm) | CH 2 | | | |
| Load Input | $N_{IP}$ | (N) | CH 1 | | | |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | CH 3 | | | |
| Sample Volume | $V$ | (cc) | CH 2 | | | |
| Initial Moisture | $\omega_i$ | (%) | 32 | | | |
| Initial Dry Density | $\rho_{di}$ | (Mg/m3) | 1.45 | | | |
| Initial Voids Ratio | $e_i$ | . | 0.837 | | | |
| Initial Degree of Saturation | $S_i$ | (%) | 100 | | | |
| B Value | $B$ | . | 0.96 | | | |

| **Final Conditions** | | | | | | |
|---|---|---|---|---|---|---|
| Final Moisture | $\omega_f$ | (%) | 30 | | | |
| Final Dry Density | $\rho_{df}$ | (Mg/m3) | 1.48 | | | |
| Final Voids Ratio | $e_f$ | . | 0.796 | | | |
| Final Degree of Saturation | $S_f$ | (%) | 100.0 | | | |
| | | | Stage 1 | 2 | 3 | 4 |
| Failure Criteria | | . | Max. Dev. Stress | Max. Dev. Stress | Max. Dev. Stress | |
| Strain At Failure | $\varepsilon_f$ | (%) | 3.71 | 6.00 | 11.48 | |
| Stress At Failure | $(\sigma_1-\sigma_3)$ | (kPa) | 136.2 | 224.2 | 305.1 | |
| Minor Stress At Failure | $\sigma_3'$ | (kPa) | 66.0 | 133.0 | 195.0 | |
| Major Stress At Failure | $\sigma_1'$ | (kPa) | 202.2 | 357.2 | 500.1 | |
| Principal Stress Ratio At Failure | $\sigma_1'/\sigma_3'$ | | 3.064 | 2.686 | 2.564 | |

**Notes**

*Plastic*

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH134 6.80-7.10m C |
| | | Test Date | 05/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH134 |
| | | Sample | CS107 |
| Client | Ground Technology | Depth | 6.80-7.10m |

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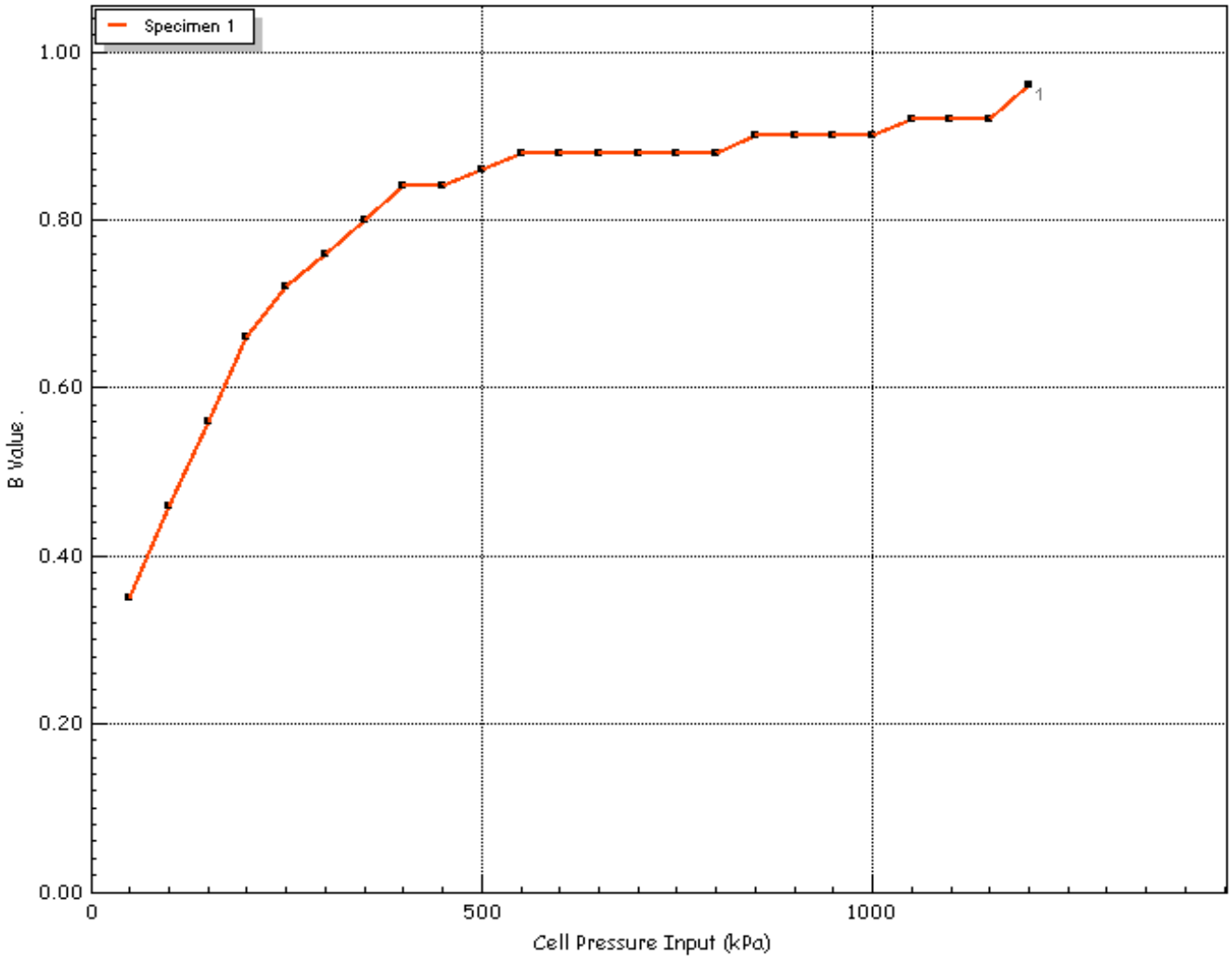
# Effective Stress Triaxial Compression

## Consolidated Drained

**Saturation Plots**

| | | | |
|---|---|---|---|
| Saturation Method | | | Stepped |
| Cell Pressure Input | σ | (kPa) | 1200 |
| Pore Water Pressure Input | u pwp | (kPa) | 1182 |
| B Value | B | . | 0.96 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH134 6.80-7.10m C |
| | | Test Date | 05/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH134 |
| | | Sample | CS107 |
| Client | Ground Technology | Depth | 6.80-7.10m |

# Effective Stress Triaxial Compression

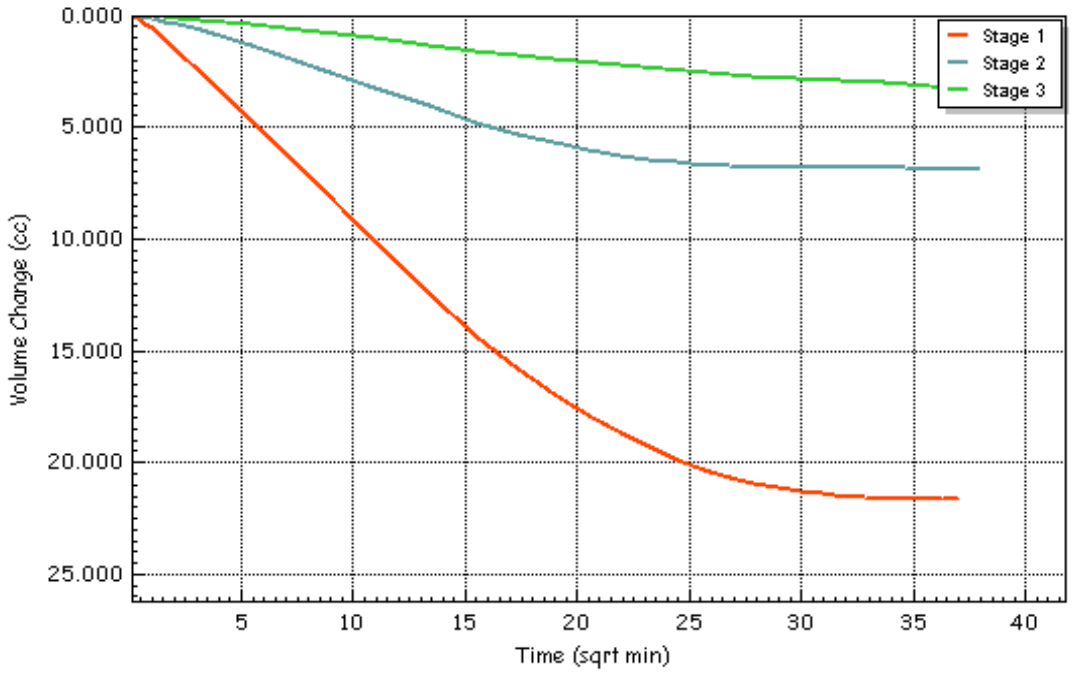
## Consolidated Drained

**Consolidation Plots**

| Initial Conditions | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_3$ | (kPa) | 1265 | 1330 | 1395 |
| Initial Back Pressure | $u_{bi}$ | (kPa) | 1200 | 1200 | 1200 |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | 1244 | 1238 | 1231 |
| Drainage Method | | | Radial+One End | | |

| Final Conditions | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| PWP Dissipation % | U% | (%) | 100.00 | 100.00 | 100.00 |
| Volumetric Strain | $\varepsilon_v$% | (%) | 1.51 | 0.48 | 0.23 |
| Corrected Length | $L_C$ | (mm) | 199.0 | 190.6 | 184.6 |
| Corrected Area | $A_C$ | (cm2) | 70.76 | 73.51 | 75.73 |
| Corrected Volume | $V_C$ | (cc) | 1408.048 | 1401.166 | 1397.867 |
| t100 | $t_{100}$ | (min) | 528.96 | 482.84 | 639.78 |
| Consolidation | $c_v$ | (m2/year) | 0.355 | 0.389 | 0.294 |
| Compressibility | $m_v$ | (m2/MN) | 0.343 | 0.127 | 0.074 |
| Test Time | $t_F$ | (h:m:s) | 123:25:26 | 112:39:45 | 149:16:55 |
| Estimated Strain to Failure | $\varepsilon$% | (%) | 5.0 | 5.0 | 5.0 |
| Shear Machine Speed | $d_r$ | (mm/min) | 0.00134 | 0.00134 | 0.00134 |

**Notes**




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH134 6.80-7.10m C |
| | | Test Date | 05/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH134 |
| | | Sample | CS107 |
| Client | Ground Technology | Depth | 6.80-7.10m |

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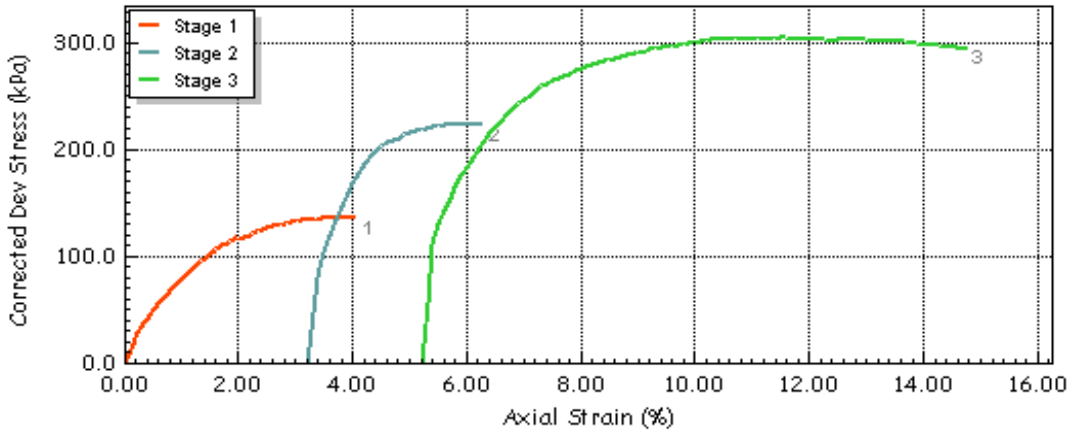
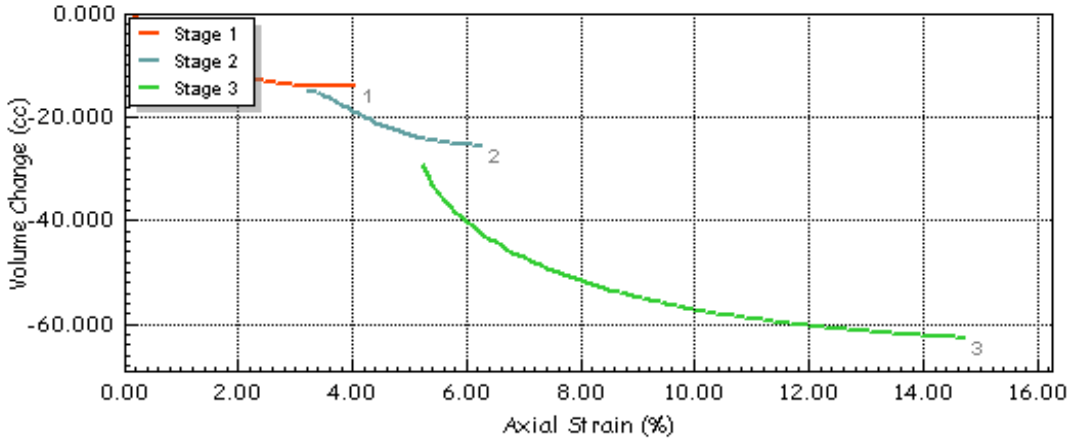
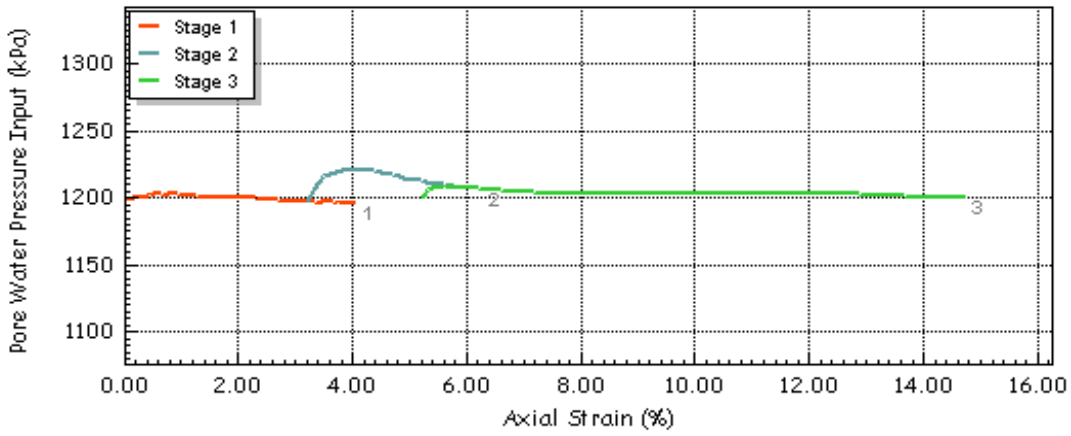
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**



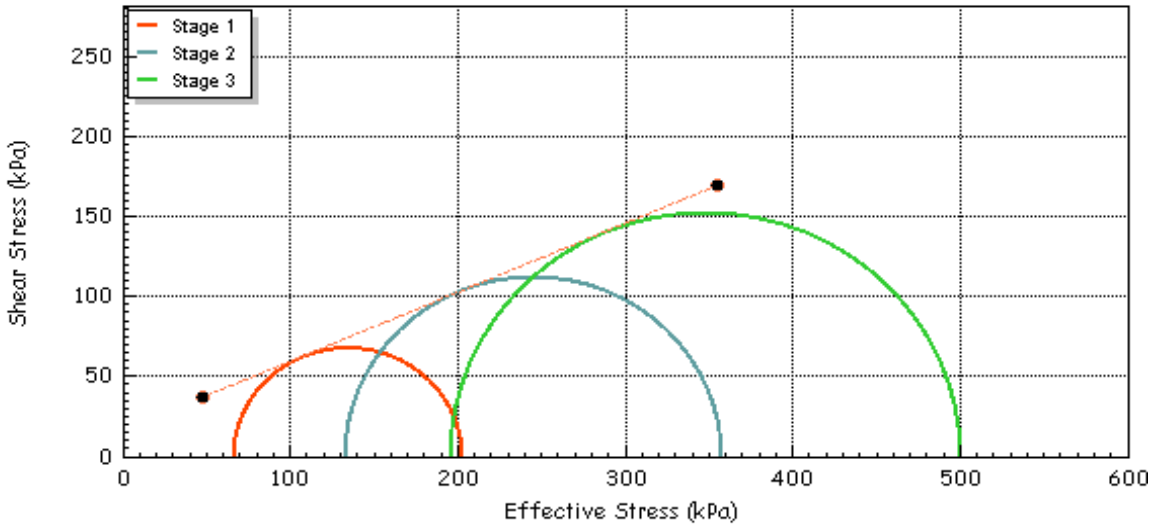

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH134 6.80-7.10m C |
| | | Test Date | 05/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH134 |
| | | Sample | CS107 |
| Client | Ground Technology | Depth | 6.80-7.10m |

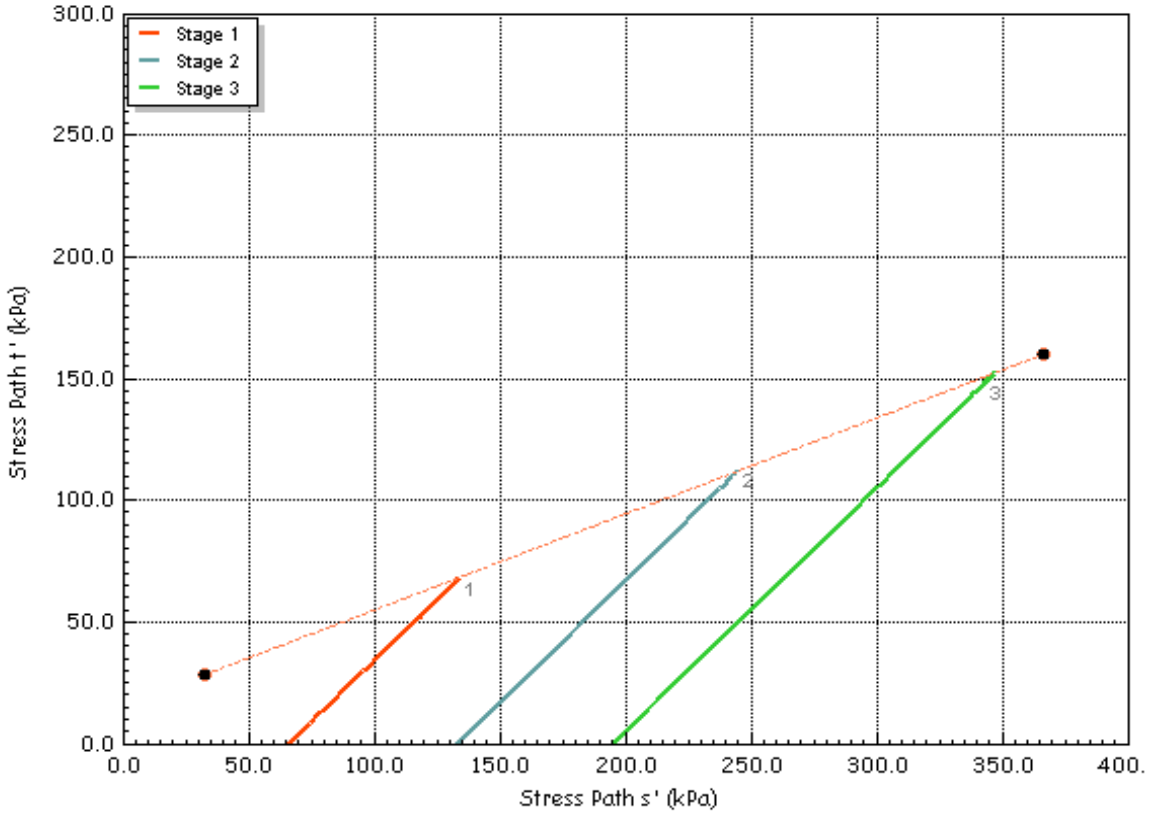
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Effective | c' | (kPa) | 16.78 | Effective Cohesion | c' | (kPa) | 16.78 |
| Effective Friction | ϕ' | (deg) | 23.3 | Effective Friction | ϕ' | (deg) | 23.3 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH134 6.80-7.10m C |
| | | Test Date | 05/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH134 |
| | | Sample | CS107 |
| Client | Ground Technology | Depth | 6.80-7.10m |

# Effective Stress Triaxial Compression

## Consolidated Drained

**Summary Report**

| Sample Details | | | | |
|---|---|---|---|---|
| *sketch showing specimen location in original sample* | Depth | | 9.92-10.20m | |
| | Description | | See summary of soil descriptions. | |
| | Type | | Undisturbed, vertical orientation. | |
| | Initial Sample Length | $L_0$ | (mm) | 200.0 |
| | Initial Sample Diameter | $D_0$ | (mm) | 102.8 |
| | Initial Sample Weight | $W_0$ | (gr) | 3047.0 |
| | Initial Bulk Density | $\rho_0$ | (Mg/m3) | 1.84 |
| | Particle Density | $\rho_s$ | (Mg/m3) | 2.66 |

| **Initial Conditions** | | | Stage 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_{3i}$ | (kPa) | 800 | 900 | 1000 | |
| Initial Back Pressure | $U_{bi}$ | (kPa) | 700 | 700 | 700 | |
| Membrane Thickness | $m_b$ | (mm) | 0.600 | | | |
| Displacement Input | $L_{IP}$ | (mm) | CH 2 | | | |
| Load Input | $N_{IP}$ | (N) | CH 4 | | | |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | CH 3 | | | |
| Sample Volume | $V$ | (cc) | CH 2 | | | |
| Initial Moisture | $\omega_i$ | (%) | 22 | | | |
| Initial Dry Density | $\rho_{di}$ | (Mg/m3) | 1.50 | | | |
| Initial Voids Ratio | $e_i$ | . | 0.771 | | | |
| Initial Degree of Saturation | $S_i$ | (%) | 77 | | | |
| B Value | B | . | 0.96 | | | |

| **Final Conditions** | | | | | | |
|---|---|---|---|---|---|---|
| Final Moisture | $\omega_f$ | (%) | 21 | | | |
| Final Dry Density | $\rho_{df}$ | (Mg/m3) | 1.86 | | | |
| Final Voids Ratio | $e_f$ | . | 0.430 | | | |
| Final Degree of Saturation | $S_f$ | (%) | 100.0 | | | |
| | | | Stage 1 | 2 | 3 | 4 |
| Failure Criteria | | . | Max. Dev. Stress | Max. Dev. Stress | Max. Dev. Stress | |
| Strain At Failure | $\varepsilon_f$ | (%) | 5.20 | 8.78 | 11.43 | |
| Stress At Failure | $(\sigma_1-\sigma_3)$ | (kPa) | 232.7 | 395.0 | 557.8 | |
| Minor Stress At Failure | $\sigma_3'$ | (kPa) | 98.0 | 196.0 | 294.0 | |
| Major Stress At Failure | $\sigma_1'$ | (kPa) | 330.7 | 591.0 | 851.8 | |
| Principal Stress Ratio At Failure | $\sigma_1'/\sigma_3'$ | | 3.375 | 3.015 | 2.897 | |

**Notes**

*Brittle*

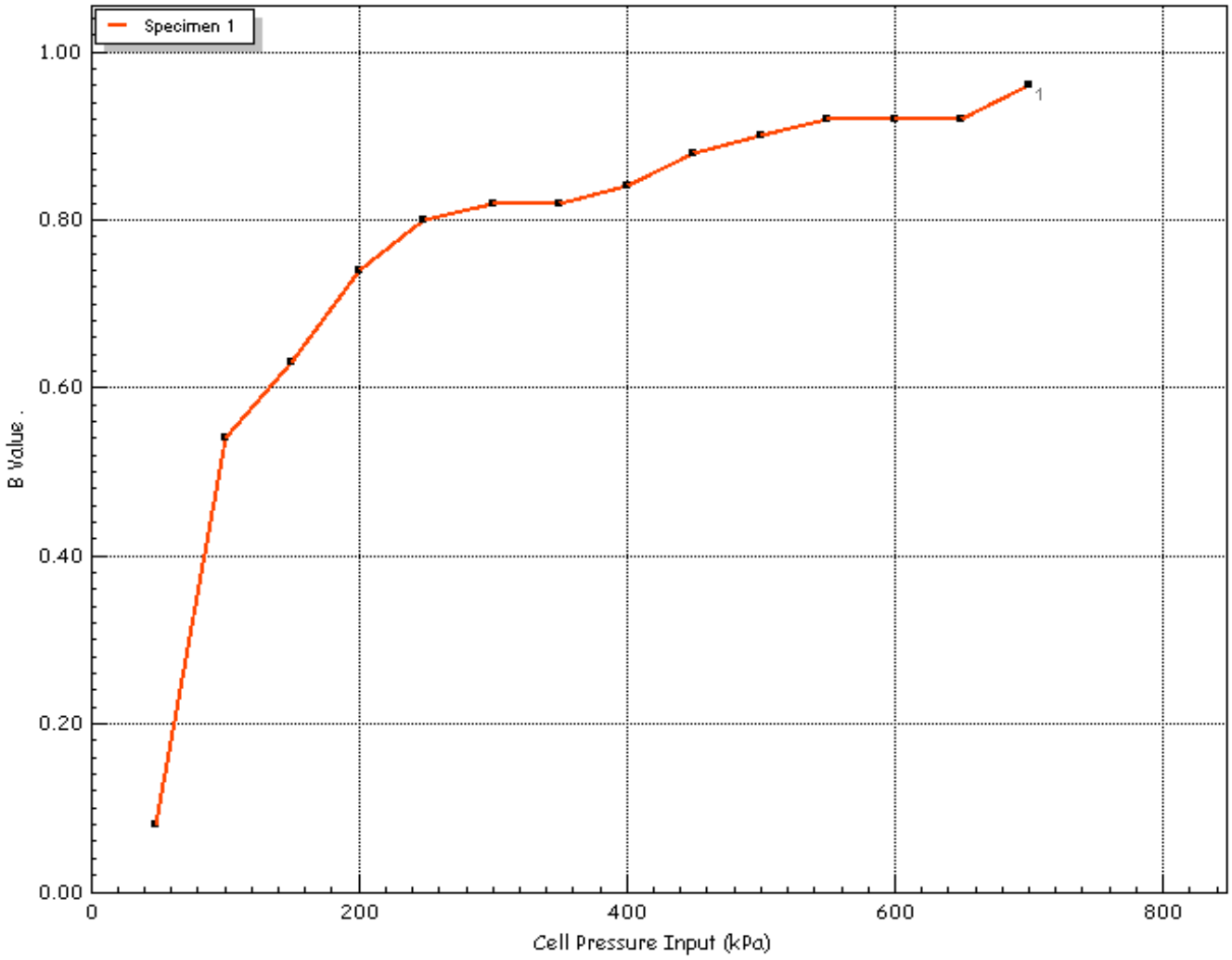
| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH134 9.92-10.20m U_Copy |
| | | Test Date | 05/07/2022 |
| Jobfile | Wansford to Sutton Dualling | Borehole | BH134 |
| Client | Causeway | Sample | CS110 |
| | | Depth | 9.92-10.20m |

# Effective Stress Triaxial Compression

## Consolidated Drained

**Saturation Plots**

| | | | |
|---|---|---|---|
| Saturation Method | | | Stepped |
| Cell Pressure Input | σ | (kPa) | 700 |
| Pore Water Pressure Input | u pwp | (kPa) | 688 |
| B Value | B | . | 0.96 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH134 9.92-10.20m U_Copy |
| | | Test Date | 05/07/2022 |
| Jobfile | Wansford to Sutton Dualling | Borehole | BH134 |
| Client | Causeway | Sample | CS110 |
| | | Depth | 9.92-10.20m |

# Effective Stress Triaxial Compression

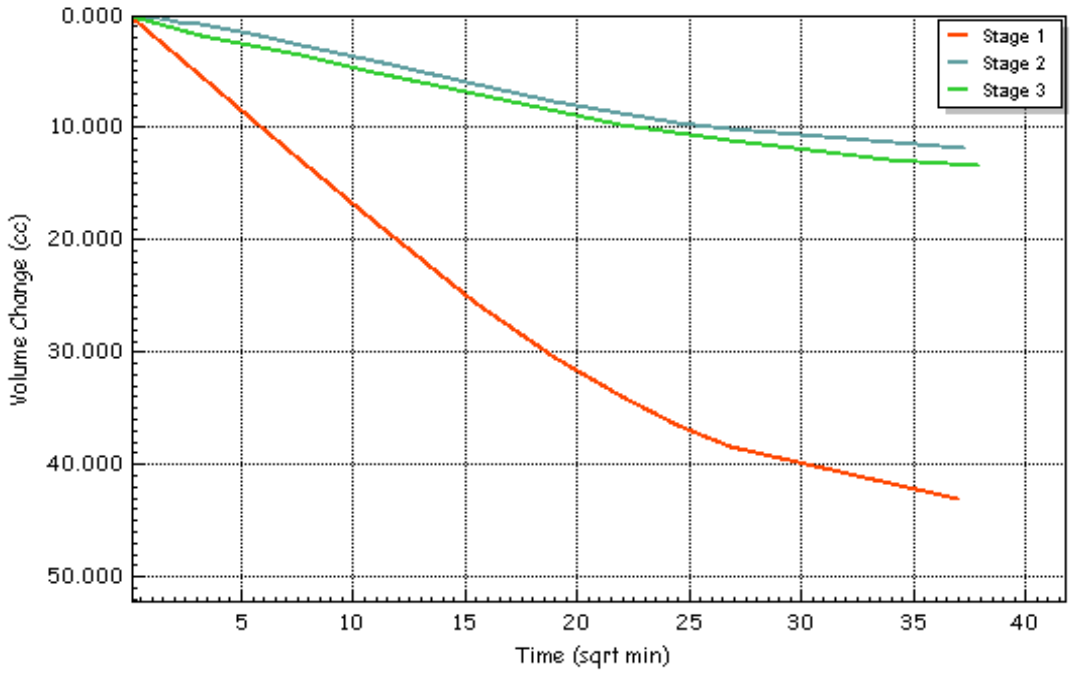
## Consolidated Drained

**Consolidation Plots**

| **Initial Conditions** | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_3$ | (kPa) | 800 | 900 | 1000 |
| Initial Back Pressure | $u_{bi}$ | (kPa) | 700 | 700 | 700 |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | 789 | 770 | 924 |
| Drainage Method | | | Radial+One End | | |

| **Final Conditions** | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| PWP Dissipation % | U% | (%) | 96.63 | 95.71 | 96.43 |
| Volumetric Strain | $\varepsilon_v$% | (%) | 2.60 | 3.31 | 4.12 |
| Corrected Length | $L_C$ | (mm) | 198.3 | 185.3 | 176.2 |
| Corrected Area | $A_C$ | (cm2) | 81.56 | 84.33 | 87.32 |
| Corrected Volume | $V_C$ | (cc) | 1616.912 | 1605.038 | 1591.664 |
| T100 Time to Failure | $t_{100}$ | (min) | 506.66 | 612.58 | 746.90 |
| Consolidation | $c_v$ | (m2/year) | 0.450 | 0.372 | 0.305 |
| Compressibility | $m_v$ | (m2/MN) | 0.302 | 0.494 | 0.191 |
| Test Time | $t_F$ | (h:m:s) | 118:13:14 | 142:56:07 | 174:16:36 |
| Estimated Strain to Failure | $\varepsilon$% | (%) | 5.0 | 5.0 | 5.0 |
| Shear Machine Speed | $d_r$ | (mm/min) | 0.00140 | 0.00108 | 0.00084 |

**Notes**

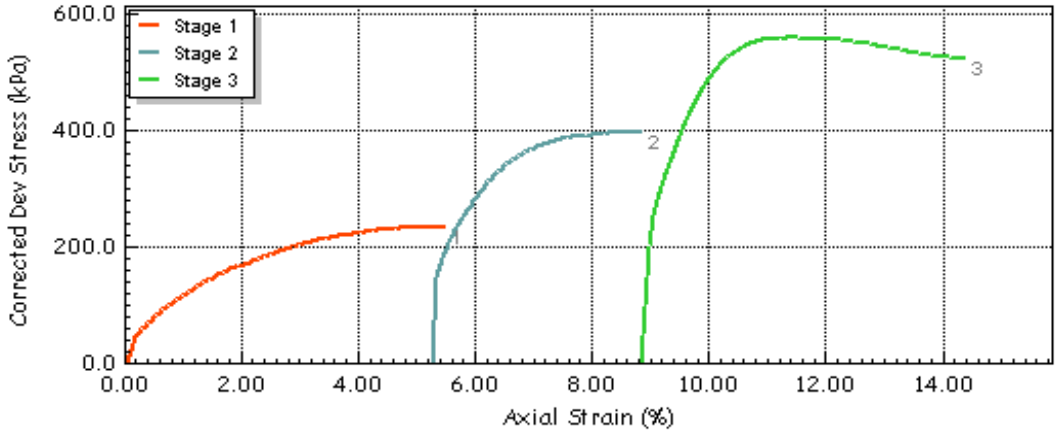


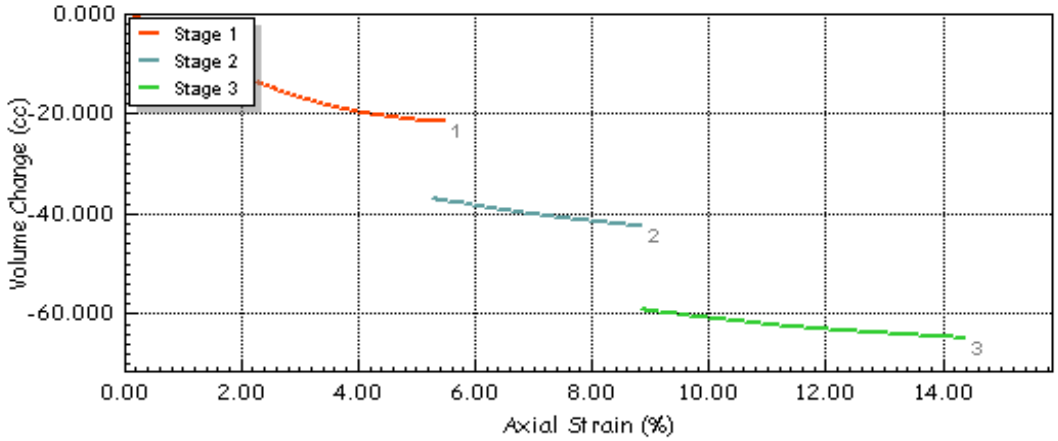

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH134 9.92-10.20m U_Copy |
| | | Test Date | 05/07/2022 |
| Jobfile | Wansford to Sutton Dualling | Borehole | BH134 |
| Client | Causeway | Sample | CS110 |
| | | Depth | 9.92-10.20m |

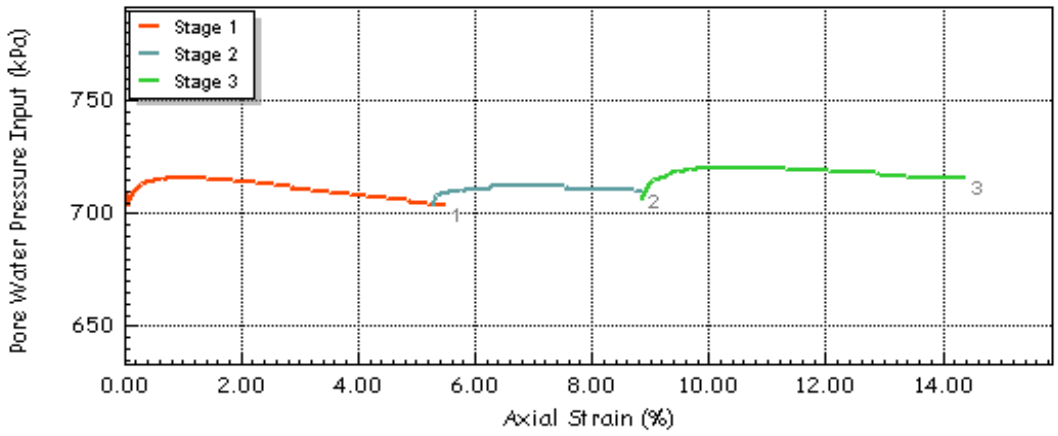
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**



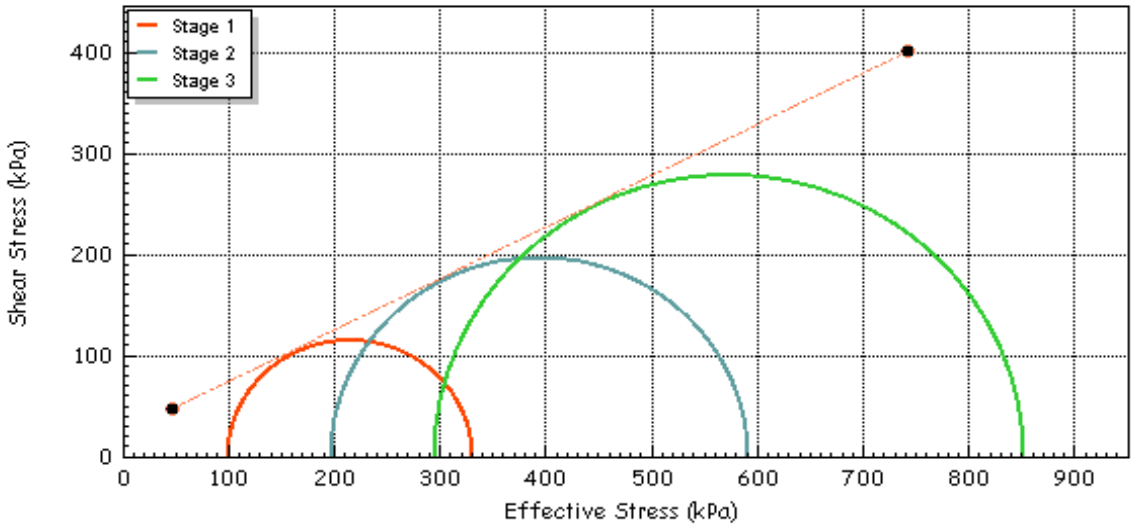

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH134 9.92-10.20m U_Copy |
| | | Test Date | 05/07/2022 |
| Jobfile | Wansford to Sutton Dualling | Borehole | BH134 |
| Client | Causeway | Sample | CS110 |
| | | Depth | 9.92-10.20m |

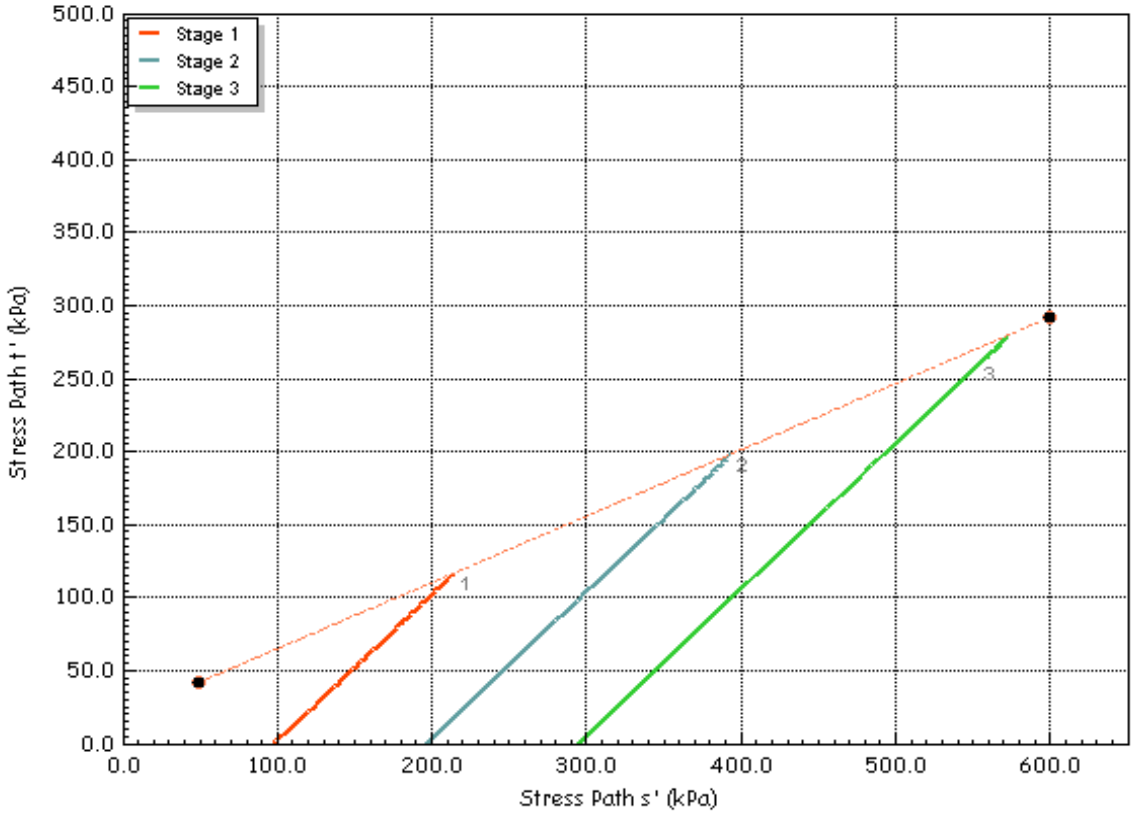
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Effective | c' | (kPa) | 23.88 | Effective Cohesion | c' | (kPa) | 23.88 |
| Effective Friction | ϕ' | (deg) | 26.9 | Effective Friction | ϕ' | (deg) | 26.9 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH134 9.92-10.20m U_Copy |
| | | Test Date | 05/07/2022 |
| Jobfile | Wansford to Sutton Dualling | Borehole | BH134 |
| Client | Causeway | Sample | CS110 |
| | | Depth | 9.92-10.20m |

# Effective Stress Triaxial Compression

## Consolidated Drained

**Summary Report**

| Sample Details | | | | |
|---|---|---|---|---|
| *sketch showing specimen location in original sample* | Depth | | | 5.67-6.00m |
| | Description | | | See summary of soil descriptions. |
| | Type | | | Undisturbed, vertical orientation. |
| | Initial Sample Length | $L_0$ | (mm) | 200.1 |
| | Initial Sample Diameter | $D_0$ | (mm) | 100.0 |
| | Initial Sample Weight | $W_0$ | (gr) | 3047.0 |
| | Initial Bulk Density | $\rho_0$ | (Mg/m3) | 1.94 |
| | Particle Density | $\rho_s$ | (Mg/m3) | 2.66 |

| **Initial Conditions** | | | Stage 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_{3i}$ | (kPa) | 355 | 410 | 465 | |
| Initial Back Pressure | $U_{bi}$ | (kPa) | 300 | 300 | 300 | |
| Membrane Thickness | $m_b$ | (mm) | 0.600 | | | |
| Displacement Input | $L_{IP}$ | (mm) | CH 2 | | | |
| Load Input | $N_{IP}$ | (N) | CH 1 | | | |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | CH 3 | | | |
| Sample Volume | $V$ | (cc) | CH 2 | | | |
| Initial Moisture | $\omega_i$ | (%) | 22 | | | |
| Initial Dry Density | $\rho_{di}$ | (Mg/m3) | 1.59 | | | |
| Initial Voids Ratio | $e_i$ | . | 0.670 | | | |
| Initial Degree of Saturation | $S_i$ | (%) | 86 | | | |
| B Value | $B$ | . | 0.96 | | | |

| **Final Conditions** | | | | | | |
|---|---|---|---|---|---|---|
| Final Moisture | $\omega_f$ | (%) | 21 | | | |
| Final Dry Density | $\rho_{df}$ | (Mg/m3) | 1.61 | | | |
| Final Voids Ratio | $e_f$ | . | 0.650 | | | |
| Final Degree of Saturation | $S_f$ | (%) | 86.1 | | | |
| | | | Stage 1 | 2 | 3 | 4 |
| Failure Criteria | | . | Max. Dev. Stress | Max. Dev. Stress | Max. Dev. Stress | |
| Strain At Failure | $\varepsilon_f$ | (%) | 3.57 | 7.21 | 9.95 | |
| Stress At Failure | $(\sigma_1-\sigma_3)$ | (kPa) | 64.2 | 112.7 | 162.8 | |
| Minor Stress At Failure | $\sigma_3'$ | (kPa) | 55.0 | 110.0 | 165.0 | |
| Major Stress At Failure | $\sigma_1'$ | (kPa) | 119.2 | 222.7 | 327.8 | |
| Principal Stress Ratio At Failure | $\sigma_1'/\sigma_3'$ | | 2.167 | 2.025 | 1.987 | |

**Notes**

*Brittle*

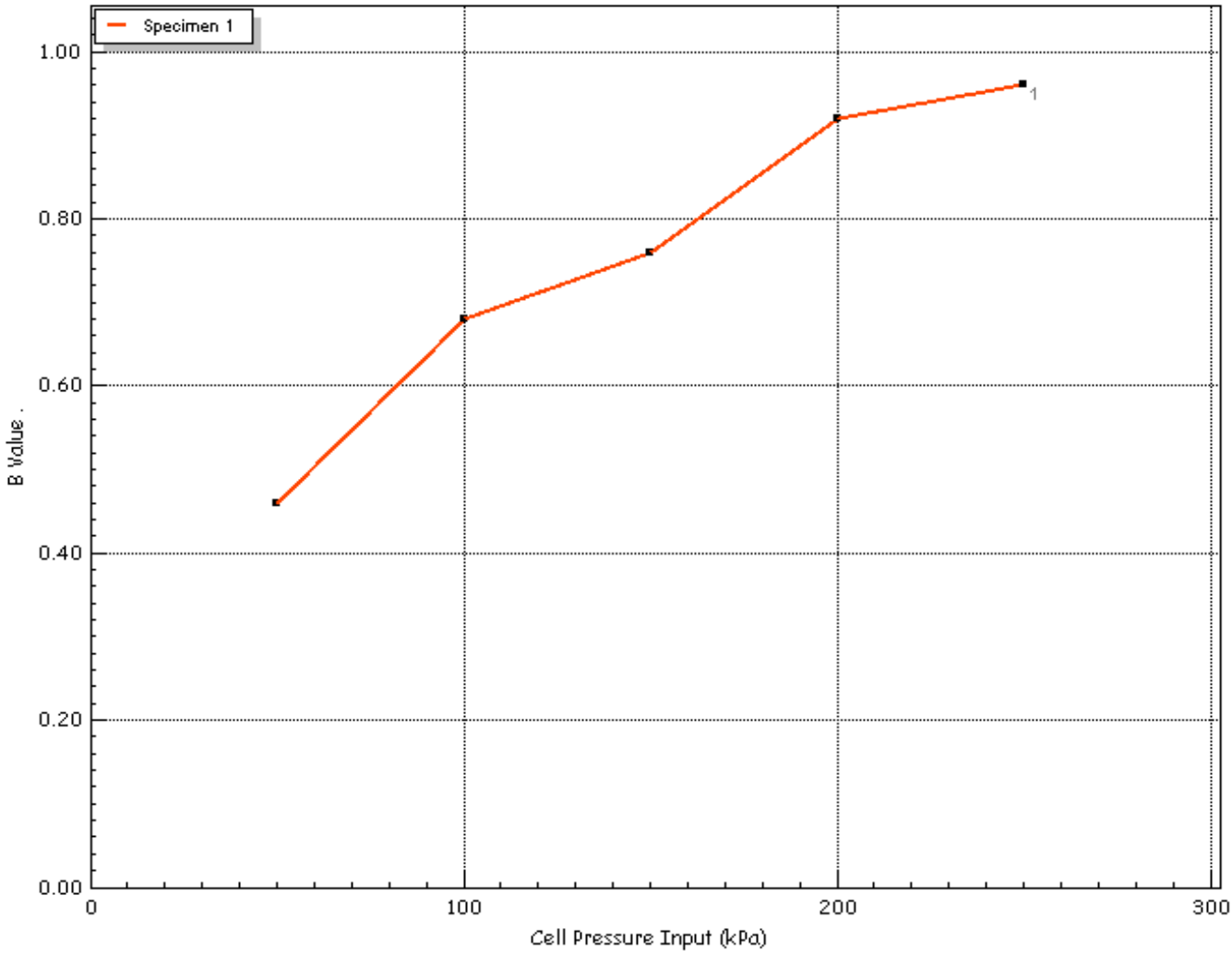
| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH112 5.67-6.00m |
| | | Test Date | 04/07/2022 |
| Jobfile | Wansford to Sutton Dualling | Borehole | BH112 |
| Client | Ground Technology | Sample | CS106 |
| | | Depth | 5.67-6.00m |

# Effective Stress Triaxial Compression

## Consolidated Drained

**Saturation Plots**

| | | | |
|---|---|---|---|
| Saturation Method | | | Stepped |
| Cell Pressure Input | σ | (kPa) | 250 |
| Pore Water Pressure Input | u pwp | (kPa) | 248 |
| B Value | B | . | 0.96 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH112 5.67-6.00m |
| | | Test Date | 04/07/2022 |
| Jobfile | Wansford to Sutton Dualling | Borehole | BH112 |
| Client | Ground Technology | Sample | CS106 |
| | | Depth | 5.67-6.00m |

# Effective Stress Triaxial Compression

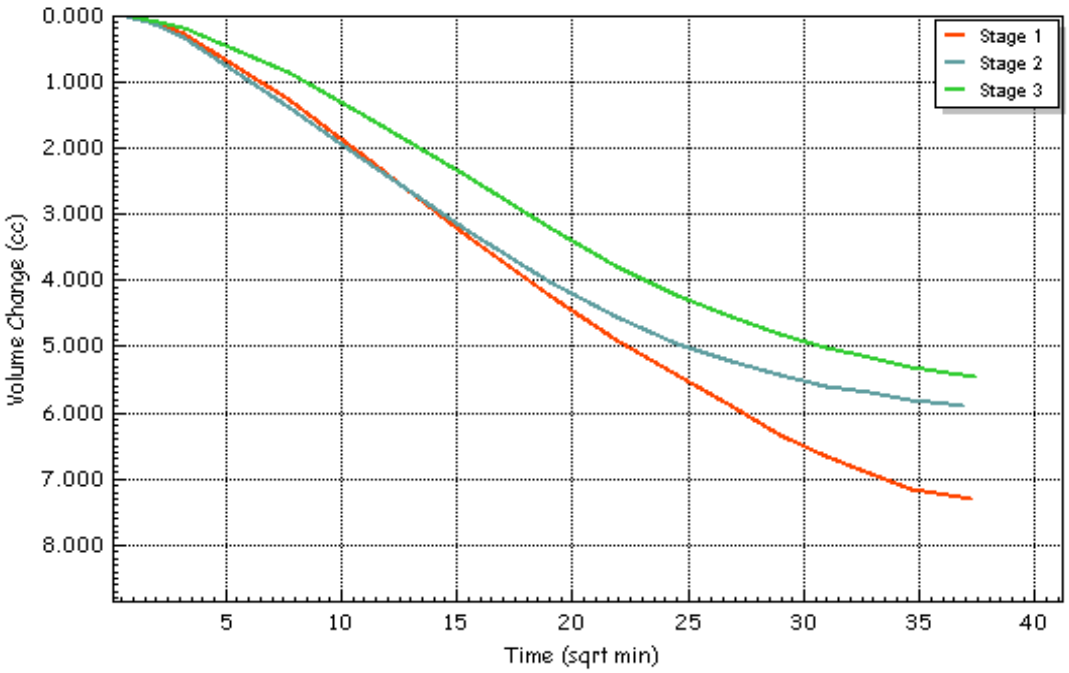
## Consolidated Drained

**Consolidation Plots**

| **Initial Conditions** | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_3$ | (kPa) | 355 | 410 | 465 |
| Initial Back Pressure | $u_{bi}$ | (kPa) | 300 | 300 | 300 |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | 317 | 372 | 424 |
| Drainage Method | | | Radial+One End | | |

| **Final Conditions** | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| PWP Dissipation % | U% | (%) | 100.00 | 100.00 | 100.00 |
| Volumetric Strain | $\varepsilon_v$% | (%) | 0.46 | 0.37 | 0.35 |
| Corrected Length | $L_C$ | (mm) | 199.8 | 192.4 | 183.1 |
| Corrected Area | $A_C$ | (cm2) | 78.30 | 80.99 | 84.81 |
| Corrected Volume | $V_C$ | (cc) | 1564.278 | 1558.394 | 1552.946 |
| t100 | $t_{100}$ | (min) | 898.13 | 643.94 | 927.02 |
| Consolidation | $c_v$ | (m2/year) | 0.230 | 0.321 | 0.223 |
| Compressibility | $m_v$ | (m2/MN) | 0.273 | 0.052 | 0.028 |
| Test Time | $t_F$ | (h:m:s) | 209:33:49 | 150:15:09 | 216:18:16 |
| Estimated Strain to Failure | $\varepsilon$% | (%) | 5.0 | 5.0 | 5.0 |
| Shear Machine Speed | $d_r$ | (mm/min) | 0.00348 | 0.00348 | 0.00348 |

**Notes**




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH112 5.67-6.00m |
| | | Test Date | 04/07/2022 |
| | | Borehole | BH112 |
| Jobfile | Wansford to Sutton Dualling | Sample | CS106 |
| Client | Ground Technology | Depth | 5.67-6.00m |

UKAS TESTING 4043

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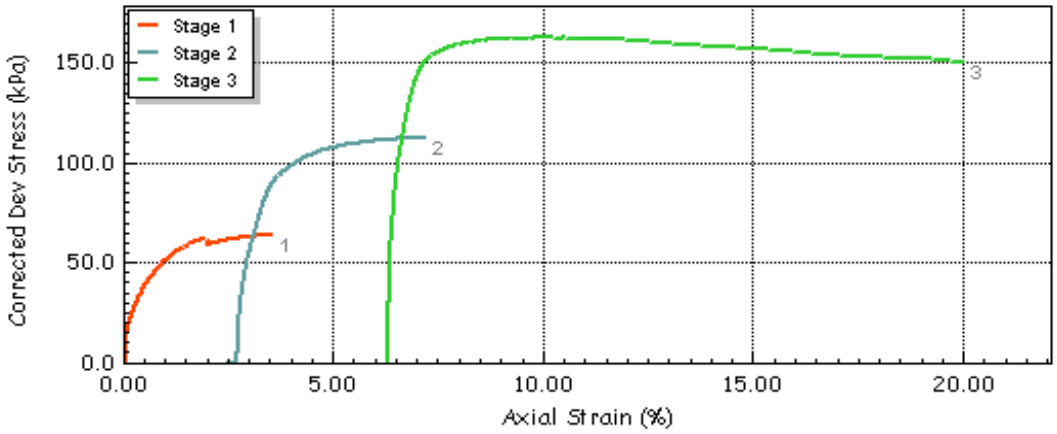
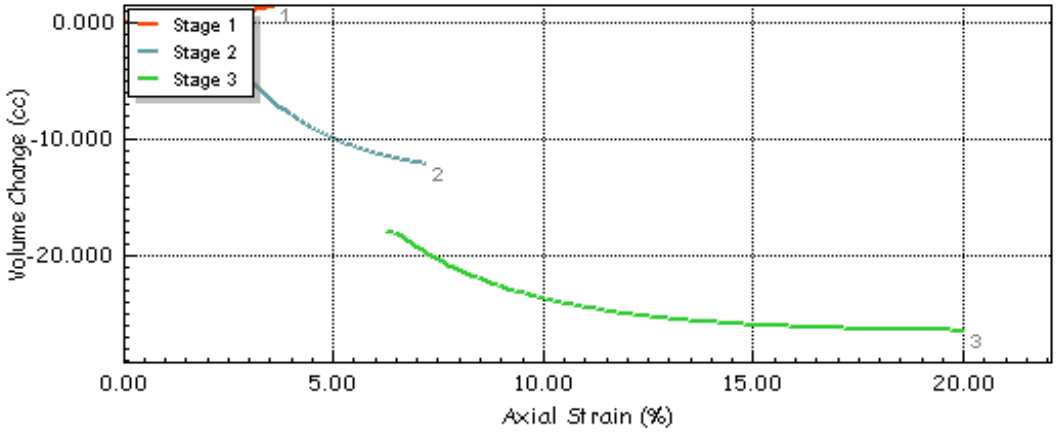
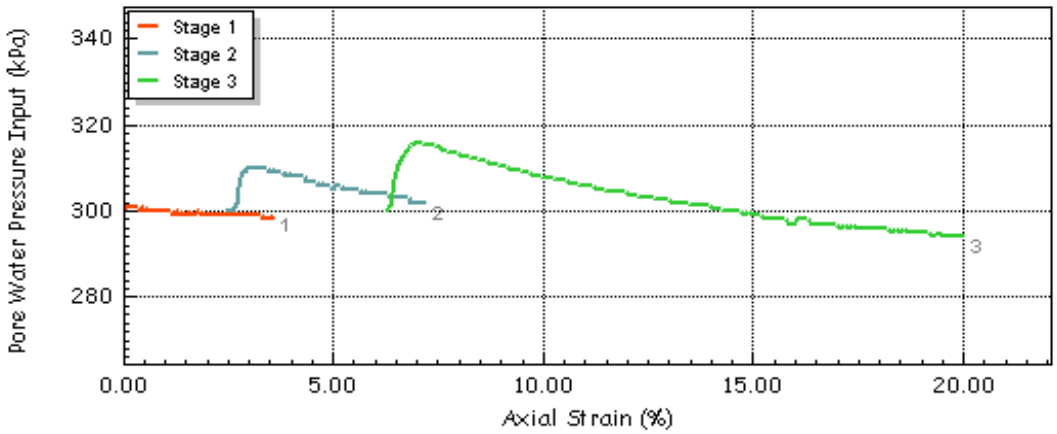
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**




| | | | | |
|---|---|---|---|---|
| UKAS TESTING 4043 | Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH112 5.67-6.00m |
| | | | Test Date | 04/07/2022 |
| | Jobfile | Wansford to Sutton Dualling | Borehole | BH112 |
| | | | Sample | CS106 |
| | Client | Ground Technology | Depth | 5.67-6.00m |

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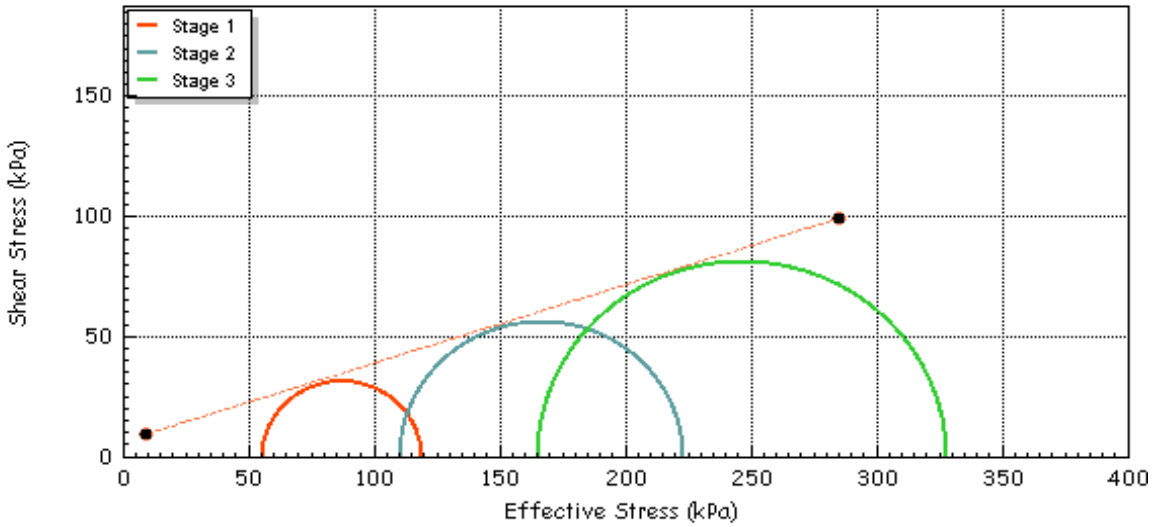
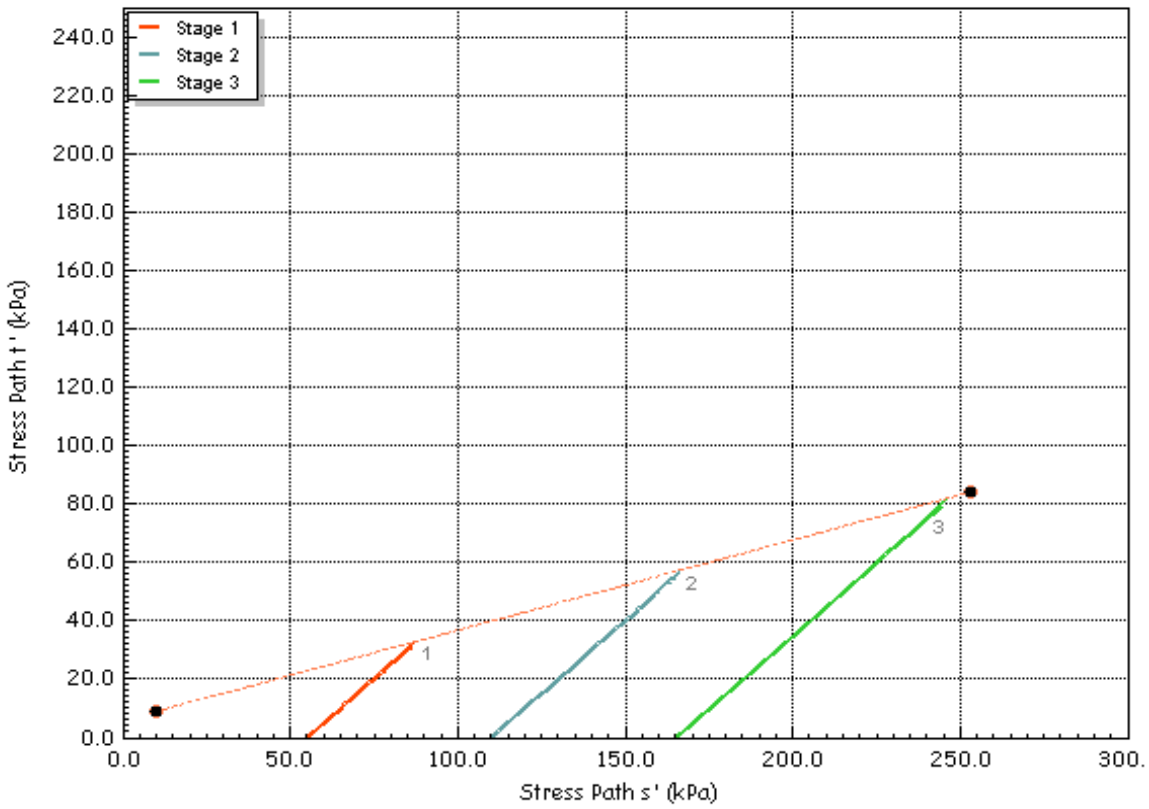
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Effective | c' | (kPa) | 6.27 | Effective Cohesion | c' | (kPa) | 6.27 |
| Effective Friction | ϕ' | (deg) | 18.0 | Effective Friction | ϕ' | (deg) | 18.0 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH112 5.67-6.00m |
| | | Test Date | 04/07/2022 |
| Jobfile | Wansford to Sutton Dualling | Borehole | BH112 |
| Client | Ground Technology | Sample | CS106 |
| | | Depth | 5.67-6.00m |

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# Effective Stress Triaxial Compression

## Consolidated Undrained

**Summary Report**

| Sample Details | | | | |
|---|---|---|---|---|
| *sketch showing specimen location in original sample* | Depth | | | 8.00-8.22m |
| | Description | | | See summary of soil descriptions. |
| | Type | | | Undisturbed, vertical orientation. |
| | Initial Sample Length | $L_0$ | (mm) | 211.5 |
| | Initial Sample Diameter | $D_0$ | (mm) | 103.5 |
| | Initial Sample Weight | $W_0$ | (gr) | 3489.0 |
| | Initial Bulk Density | $\rho_0$ | (Mg/m3) | 1.96 |
| | Particle Density | $\rho_s$ | (Mg/m3) | 2.66 |

| **Initial Conditions** | | | Stage 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_{3i}$ | (kPa) | 830 | 910 | 990 | |
| Initial Back Pressure | $U_{bi}$ | (kPa) | 750 | 750 | 750 | |
| Membrane Thickness | $m_b$ | (mm) | 0.600 | | | |
| Displacement Input | $L_{IP}$ | (mm) | CH 2 | | | |
| Load Input | $N_{IP}$ | (N) | CH 4 | | | |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | CH 3 | | | |
| Sample Volume | $V$ | (cc) | CH 2 | | | |
| Initial Moisture | $\omega_i$ | (%) | 24 | | | |
| Initial Dry Density | $\rho_{di}$ | (Mg/m3) | 1.58 | | | |
| Initial Voids Ratio | $e_i$ | . | 0.680 | | | |
| Initial Degree of Saturation | $S_i$ | (%) | 93 | | | |
| B Value | B | . | 0.96 | | | |

| **Final Conditions** | | | | | | |
|---|---|---|---|---|---|---|
| Final Moisture | $\omega_f$ | (%) | 22 | | | |
| Final Dry Density | $\rho_{df}$ | (Mg/m3) | 1.67 | | | |
| Final Voids Ratio | $e_f$ | . | 0.593 | | | |
| Final Degree of Saturation | $S_f$ | (%) | 97.4 | | | |
| | | | Stage 1 | 2 | 3 | 4 |
| Failure Criteria | | . | Max. Dev. Stress | Max. Dev. Stress | Max. Dev. Stress | |
| Strain At Failure | $\varepsilon_f$ | (%) | 1.97 | 4.47 | 18.18 | |
| Stress At Failure | $(\sigma_1-\sigma_3)$ | (kPa) | 98.2 | 159.9 | 226.5 | |
| Minor Stress At Failure | $\sigma_3'$ | (kPa) | 46.0 | 100.0 | 156.0 | |
| Major Stress At Failure | $\sigma_1'$ | (kPa) | 144.2 | 259.9 | 382.5 | |
| Principal Stress Ratio At Failure | $\sigma_1'/\sigma_3'$ | | 3.135 | 2.599 | 2.452 | |

**Notes**

*Plastic*

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 7 | Test Name | BH112 8.00-8.22m CS108 |
| | | Test Date | 07/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH112 |
| | | Sample | CS108 |
| Client | Ground Technology | Depth | 8.00-8.22m |

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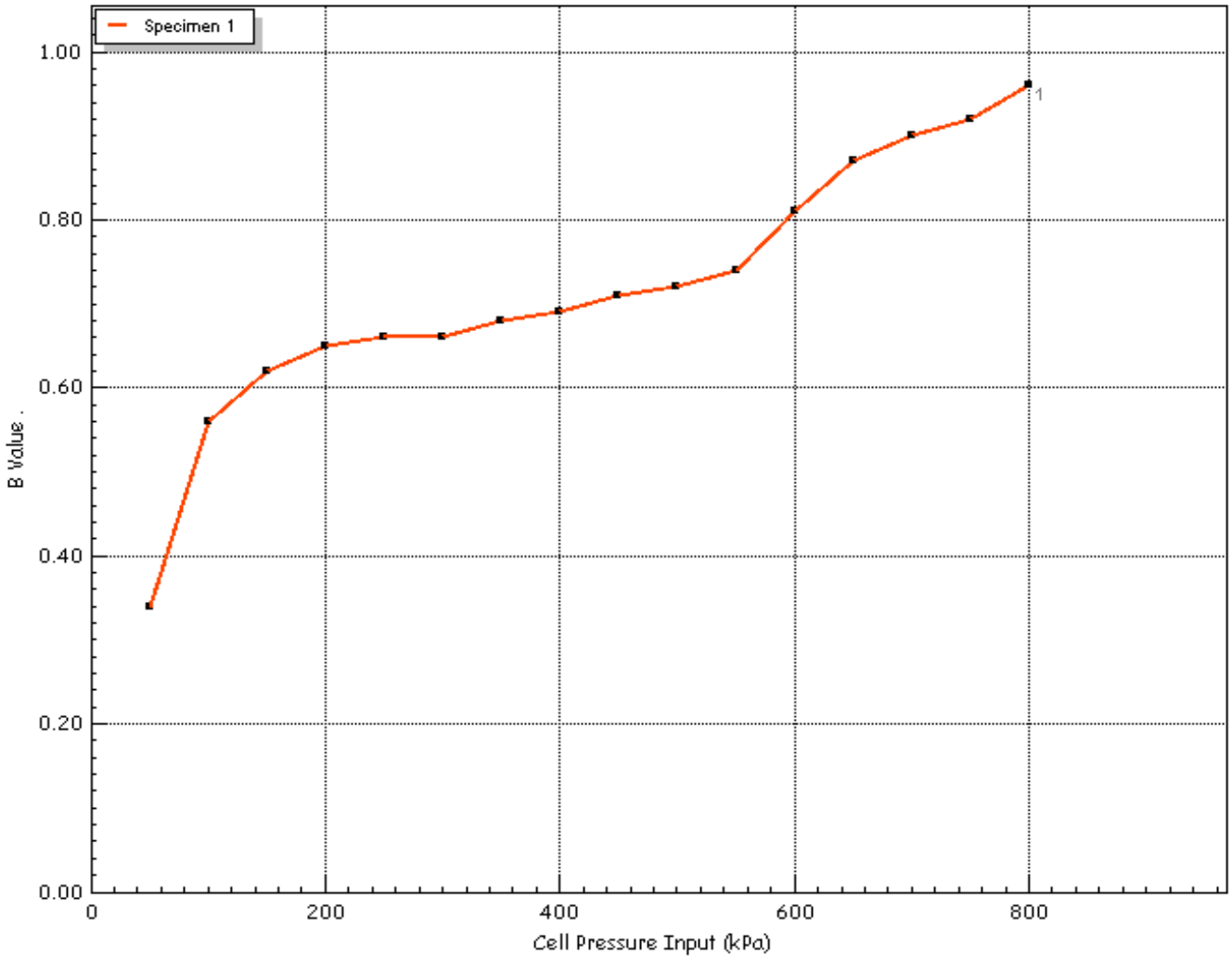
# Effective Stress Triaxial Compression

## Consolidated Undrained

**Saturation Plots**

| | | | |
|---|---|---|---|
| Saturation Method | | | Stepped |
| Cell Pressure Input | σ | (kPa) | 800 |
| Pore Water Pressure Input | u pwp | (kPa) | 786 |
| B Value | B | . | 0.96 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 7 | Test Name | BH112 8.00-8.22m CS108 |
| | | Test Date | 07/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH112 |
| | | Sample | CS108 |
| Client | Ground Technology | Depth | 8.00-8.22m |

# Effective Stress Triaxial Compression

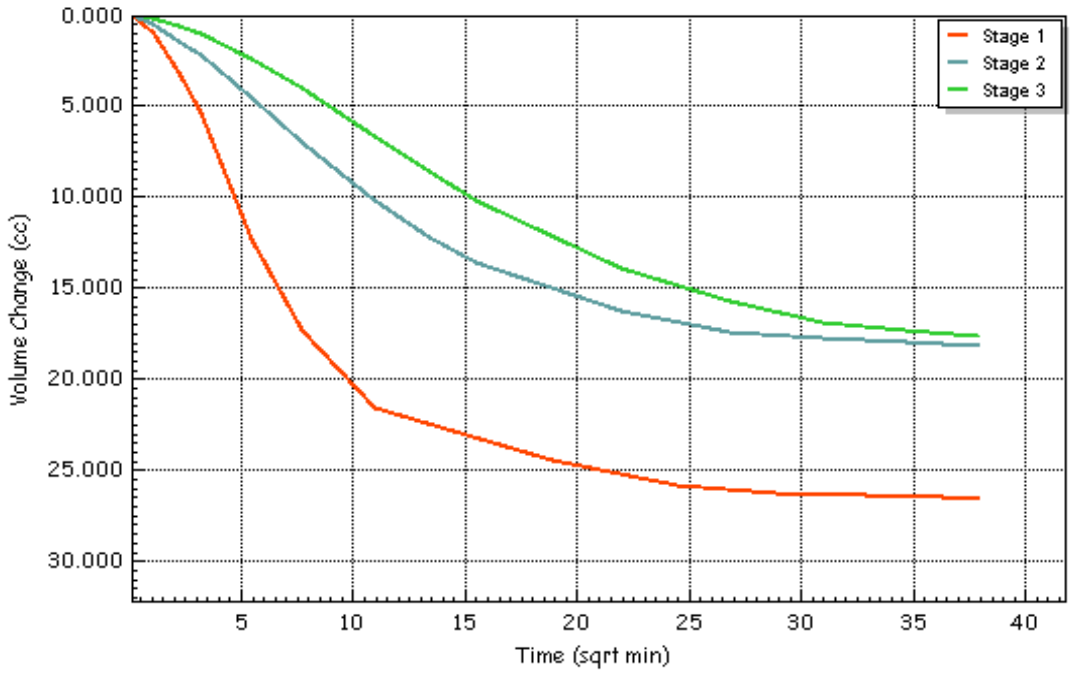
## Consolidated Undrained

**Consolidation Plots**

| **Initial Conditions** | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_3$ | (kPa) | 810 | 870 | 990 |
| Initial Back Pressure | $u_{bi}$ | (kPa) | 750 | 750 | 750 |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | 802 | 875 | 924 |
| Drainage Method | | | Radial+One End | | |

| **Final Conditions** | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| PWP Dissipation % | U% | (%) | 100.00 | 100.00 | 100.00 |
| Volumetric Strain | $\varepsilon_v$% | (%) | 1.49 | 2.51 | 3.50 |
| Corrected Length | $L_C$ | (mm) | 210.4 | 204.4 | 196.5 |
| Corrected Area | $A_C$ | (cm2) | 83.30 | 83.61 | 85.16 |
| Corrected Volume | $V_C$ | (cc) | 1752.858 | 1734.713 | 1717.072 |
| T100 Time to Failure | $t_{100}$ | (min) | 105.21 | 323.55 | 548.54 |
| Consolidation | $c_v$ | (m2/year) | 2.103 | 0.684 | 0.403 |
| Compressibility | $m_v$ | (m2/MN) | 0.287 | 0.201 | 0.201 |
| Test Time | $t_F$ | (h:m:s) | 03:09:22 | 09:42:23 | 16:27:22 |
| Estimated Strain to Failure | $\varepsilon$% | (%) | 5.0 | 5.0 | 5.0 |
| Shear Machine Speed | $d_r$ | (mm/min) | 0.05556 | 0.05556 | 0.05556 |

**Notes**




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 7 | Test Name | BH112 8.00-8.22m CS108 |
| | | Test Date | 07/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH112 |
| | | Sample | CS108 |
| Client | Ground Technology | Depth | 8.00-8.22m |

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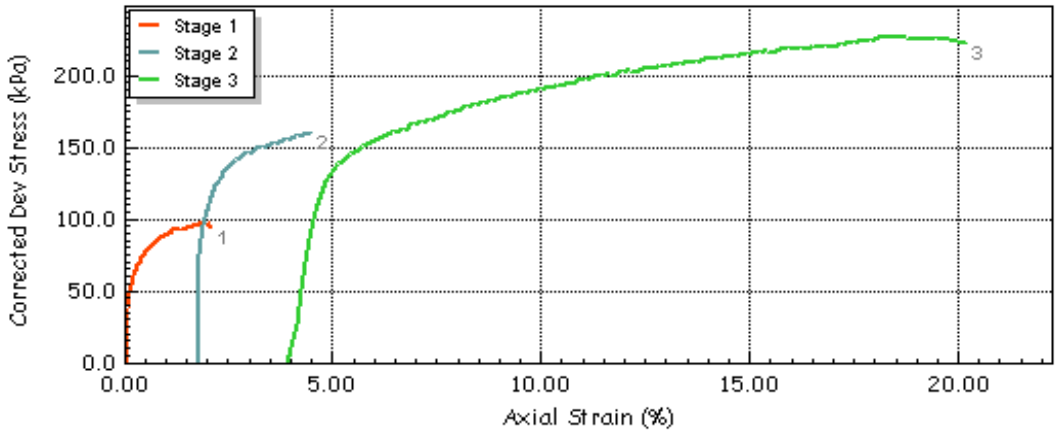
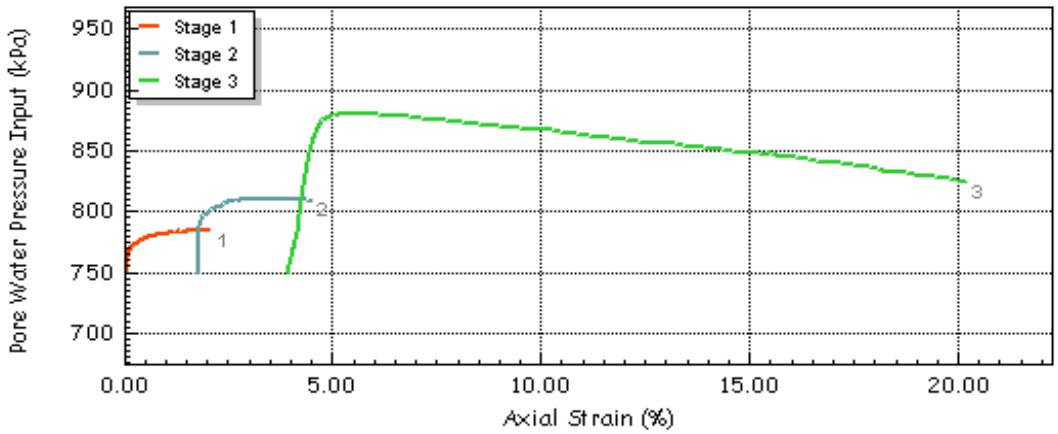
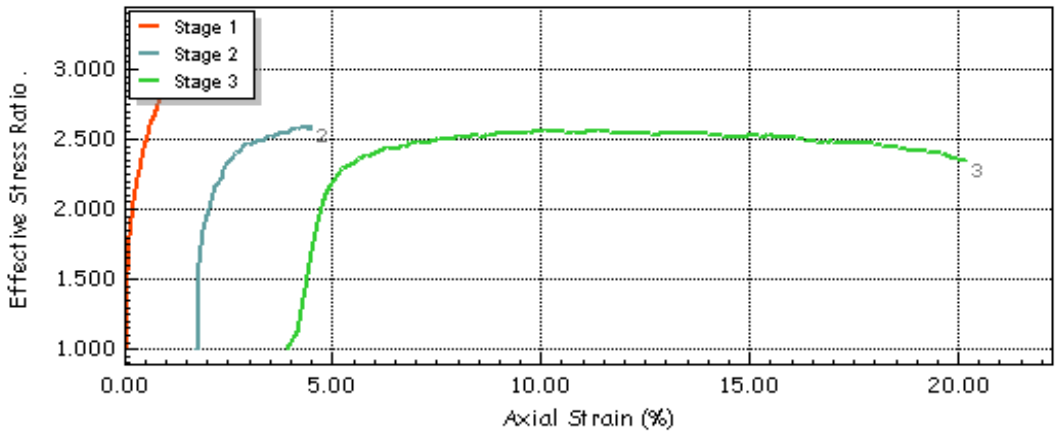
# Effective Stress Triaxial Compression

## Consolidated Undrained

**Shear Stage Plots**



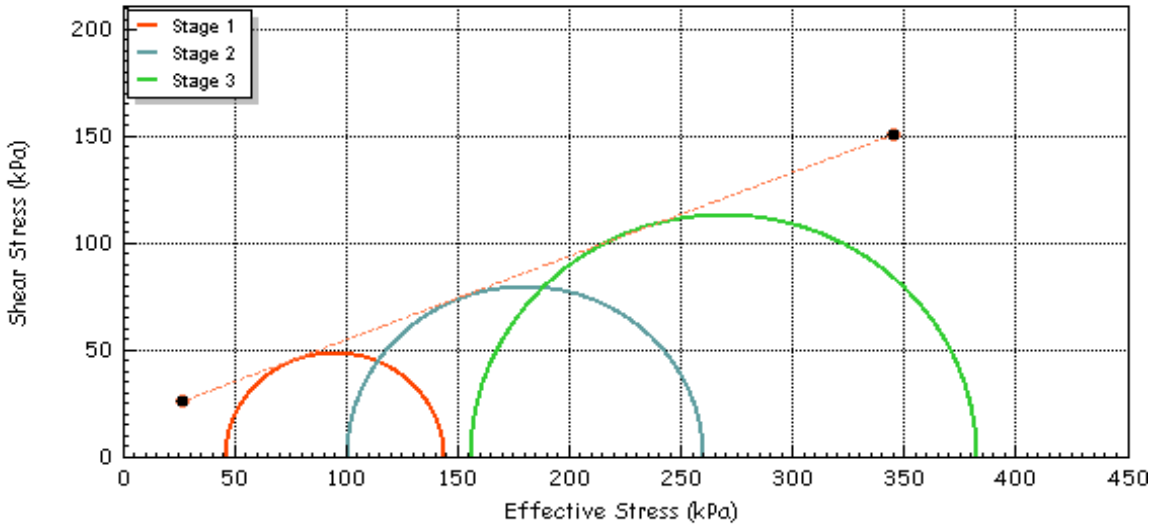

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 7 | Test Name | BH112 8.00-8.22m CS108 |
| | | Test Date | 07/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH112 |
| | | Sample | CS108 |
| Client | Ground Technology | Depth | 8.00-8.22m |

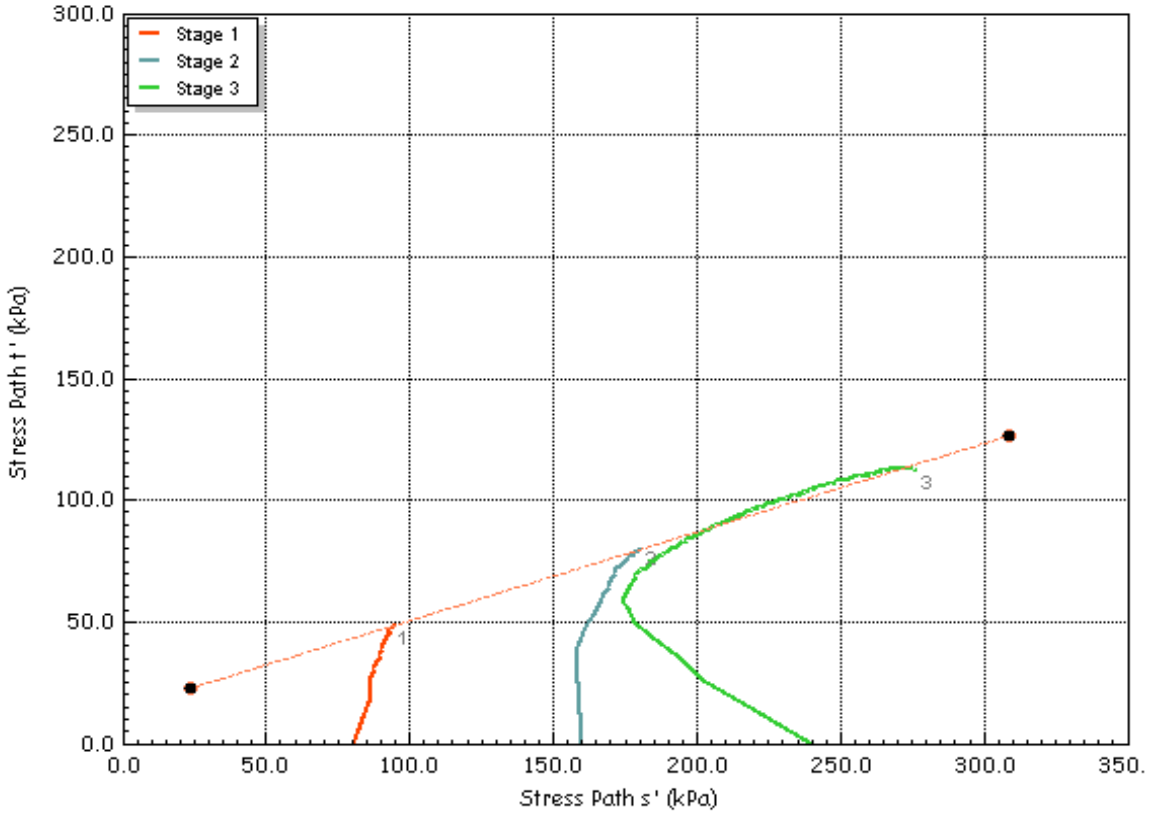
# Effective Stress Triaxial Compression

## Consolidated Undrained

**Shear Stage Plots**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Effective | c' | (kPa) | 15.95 | Effective Cohesion | c' | (kPa) | 15.95 |
| Effective Friction | ϕ' | (deg) | 21.4 | Effective Friction | ϕ' | (deg) | 21.4 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 7 | Test Name | BH112 8.00-8.22m CS108 |
| | | Test Date | 07/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH112 |
| | | Sample | CS108 |
| Client | Ground Technology | Depth | 8.00-8.22m |

UKAS TESTING 4043

PSL Professional Soils Laboratory

# Effective Stress Triaxial Compression

## Consolidated Drained

**Summary Report**

| Sample Details | | | | |
|---|---|---|---|---|
| *sketch showing specimen location in original sample* | Depth | | | 15.50-15.72m |
| | Description | | | See summary of soil descriptions. |
| | Type | | | Undisturbed, vertical orientation. |
| | Initial Sample Length | $L_0$ | (mm) | 178.3 |
| | Initial Sample Diameter | $D_0$ | (mm) | 86.4 |
| | Initial Sample Weight | $W_0$ | (gr) | 2126.0 |
| | Initial Bulk Density | $\rho_0$ | (Mg/m3) | 2.03 |
| | Particle Density | $\rho_s$ | (Mg/m3) | 2.66 |

| **Initial Conditions** | | | Stage 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_{3i}$ | (kPa) | 955 | 1110 | 1265 | |
| Initial Back Pressure | $U_{bi}$ | (kPa) | 800 | 800 | 800 | |
| Membrane Thickness | $m_b$ | (mm) | 0.400 | | | |
| Displacement Input | $L_{IP}$ | (mm) | CH 2 | | | |
| Load Input | $N_{IP}$ | (N) | CH 4 | | | |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | CH 3 | | | |
| Sample Volume | $V$ | (cc) | CH 6 | | | |
| Initial Moisture | $\omega_i$ | (%) | 23 | | | |
| Initial Dry Density | $\rho_{di}$ | (Mg/m3) | 1.65 | | | |
| Initial Voids Ratio | $e_i$ | . | 0.607 | | | |
| Initial Degree of Saturation | $S_i$ | (%) | 100 | | | |
| B Value | $B$ | . | 0.95 | | | |

| **Final Conditions** | | | | | | |
|---|---|---|---|---|---|---|
| Final Moisture | $\omega_f$ | (%) | 19 | | | |
| Final Dry Density | $\rho_{df}$ | (Mg/m3) | 1.76 | | | |
| Final Voids Ratio | $e_f$ | . | 0.514 | | | |
| Final Degree of Saturation | $S_f$ | (%) | 97.5 | | | |
| | | | Stage 1 | 2 | 3 | 4 |
| Failure Criteria | | . | Max. Dev. Stress | Max. Dev. Stress | Max. Dev. Stress | |
| Strain At Failure | $\varepsilon_f$ | (%) | 7.41 | 14.07 | 19.90 | |
| Stress At Failure | $(\sigma_1-\sigma_3)$ | (kPa) | 279.4 | 529.2 | 752.5 | |
| Minor Stress At Failure | $\sigma_3'$ | (kPa) | 155.0 | 310.0 | 465.0 | |
| Major Stress At Failure | $\sigma_1'$ | (kPa) | 434.4 | 839.2 | 1217.5 | |
| Principal Stress Ratio At Failure | $\sigma_1'/\sigma_3'$ | | 2.802 | 2.707 | 2.618 | |

**Notes**

*Brittle*

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH112 15.50-15.72m CS113 |
| | | Test Date | 11/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH112 |
| | | Sample | 15.50-15.72m CS113 |
| Client | Ground Technology | Depth | 15.50-15.72m |

UKAS TESTING 4043

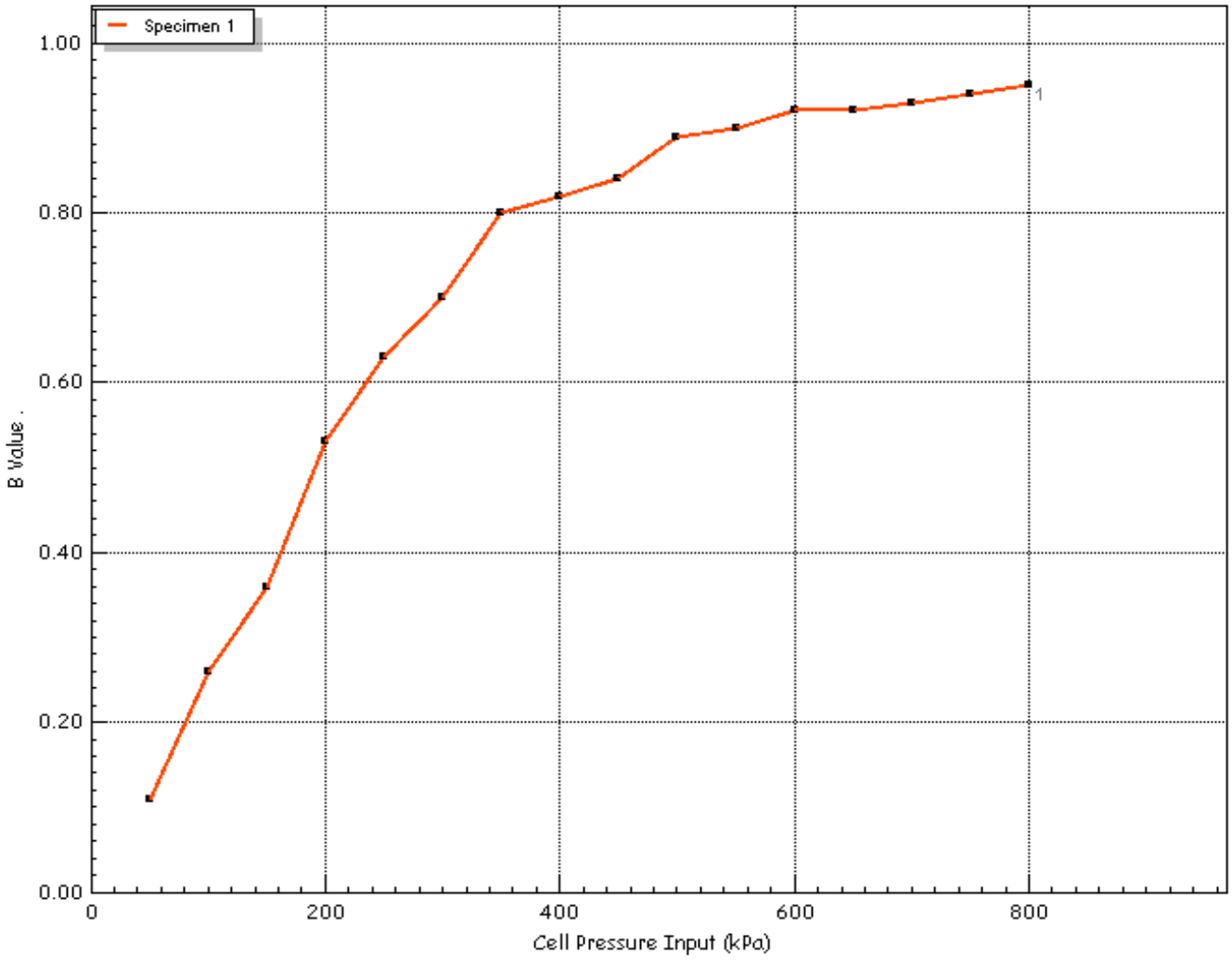
PSL Professional Soils Laboratory

# Effective Stress Triaxial Compression

## Consolidated Drained

**Saturation Plots**

| | | | |
|---|---|---|---|
| Saturation Method | | | Stepped |
| Cell Pressure Input | σ | (kPa) | 800 |
| Pore Water Pressure Input | u pwp | (kPa) | 793 |
| B Value | B | . | 0.95 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH112 15.50-15.72m CS113 |
| | | Test Date | 11/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH112 |
| | | Sample | 15.50-15.72m CS113 |
| Client | Ground Technology | Depth | 15.50-15.72m |

# Effective Stress Triaxial Compression

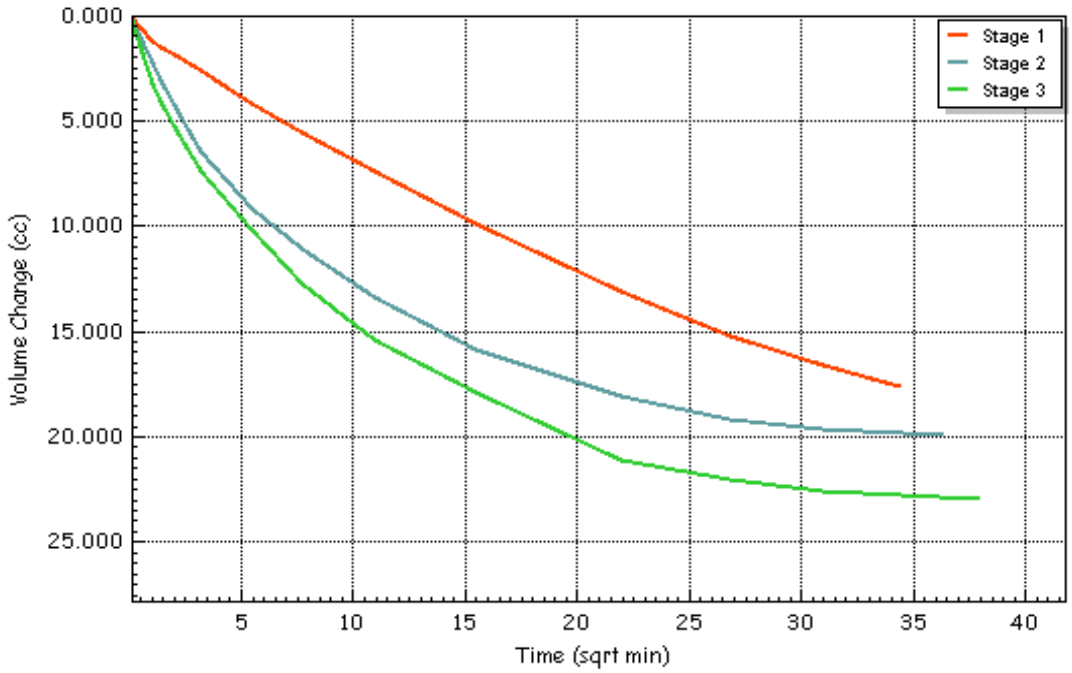
## Consolidated Drained

**Consolidation Plots**

| Initial Conditions | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_3$ | (kPa) | 955 | 1110 | 1265 |
| Initial Back Pressure | $u_{bi}$ | (kPa) | 800 | 800 | 800 |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | 923 | 1063 | 1205 |
| Drainage Method | | | Radial+One End | | |

| Final Conditions | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| PWP Dissipation % | U% | (%) | 100.00 | 100.00 | 100.00 |
| Volumetric Strain | $\varepsilon_v$% | (%) | 1.69 | 1.91 | 2.20 |
| Corrected Length | $L_C$ | (mm) | 177.3 | 163.1 | 151.8 |
| Corrected Area | $A_C$ | (cm2) | 57.97 | 61.80 | 64.89 |
| Corrected Volume | $V_C$ | (cc) | 1027.714 | 1007.760 | 984.807 |
| t100 | $t_{100}$ | (min) | 554.88 | 96.47 | 117.16 |
| Consolidation | $c_v$ | (m2/year) | 0.278 | 1.598 | 1.316 |
| Compressibility | $m_v$ | (m2/MN) | 0.137 | 0.073 | 0.054 |
| Test Time | $t_F$ | (h:m:s) | 129:28:19 | 22:30:34 | 27:20:14 |
| Estimated Strain to Failure | $\varepsilon$% | (%) | 5.0 | 5.0 | 5.0 |
| Shear Machine Speed | $d_r$ | (mm/min) | 0.00114 | 0.00114 | 0.00114 |

**Notes**




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH112 15.50-15.72m CS113 |
| | | Test Date | 11/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH112 |
| | | Sample | 15.50-15.72m CS113 |
| Client | Ground Technology | Depth | 15.50-15.72m |

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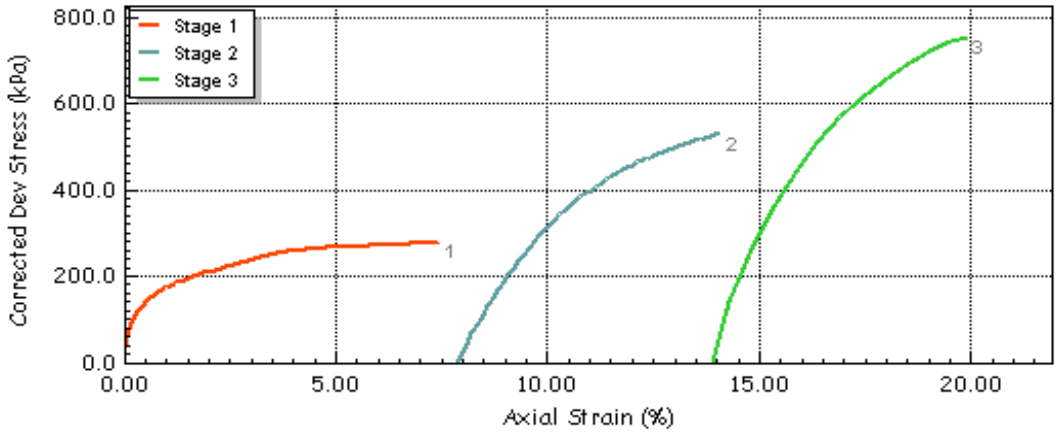
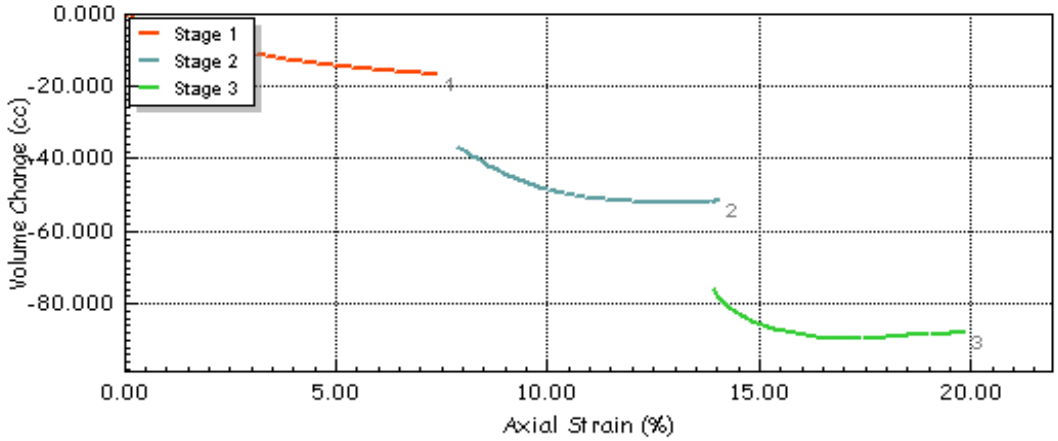
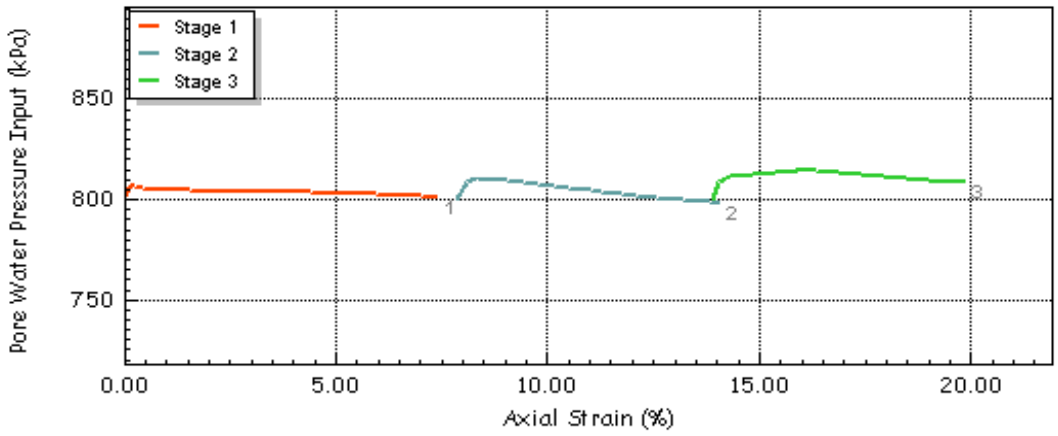
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**




| | | | | |
|---|---|---|---|---|
| UKAS TESTING 4043 | Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH112 15.50-15.72m CS113 |
| | | | Test Date | 11/07/2022 |
| | Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH112 |
| | | | Sample | 15.50-15.72m CS113 |
| | Client | Ground Technology | Depth | 15.50-15.72m |

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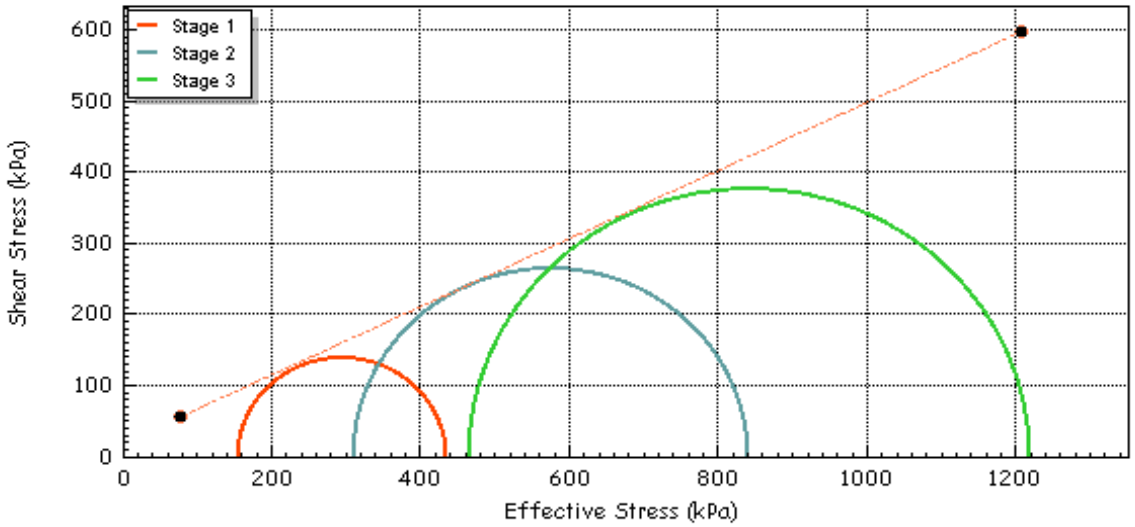
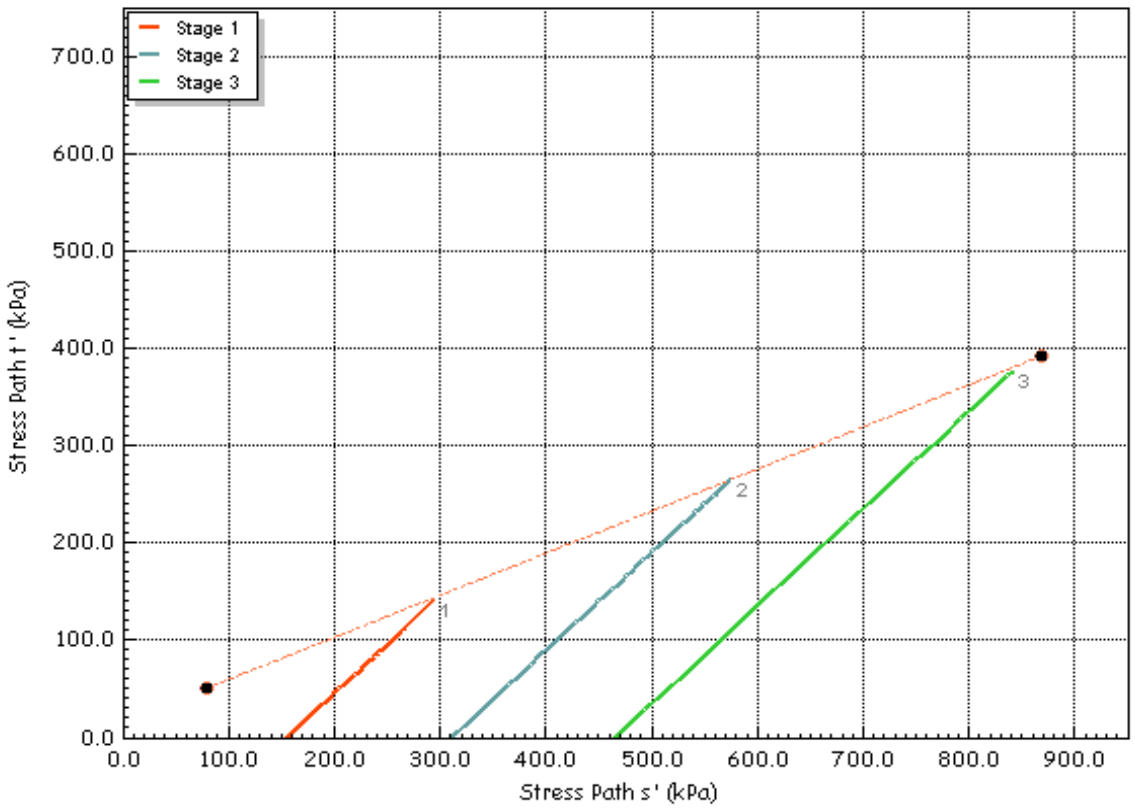
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Effective | c' | (kPa) | 17.72 | Effective Cohesion | c' | (kPa) | 17.72 |
| Effective Friction | ϕ' | (deg) | 25.7 | Effective Friction | ϕ' | (deg) | 25.7 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH112 15.50-15.72m CS113 |
| | | Test Date | 11/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH112 |
| | | Sample | 15.50-15.72m CS113 |
| Client | Ground Technology | Depth | 15.50-15.72m |

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# Effective Stress Triaxial Compression

## Consolidated Drained

**Summary Report**

| Sample Details | | | | |
|---|---|---|---|---|
| *sketch showing specimen location in original sample* | Depth | | | 9.27-9.50m |
| | Description | | | See summary of soil descripitons. |
| | Type | | | Undisturbed, vertical orientation. |
| | Initial Sample Length | $L_0$ | (mm) | 179.3 |
| | Initial Sample Diameter | $D_0$ | (mm) | 87.4 |
| | Initial Sample Weight | $W_0$ | (gr) | 2191.0 |
| | Initial Bulk Density | $\rho_0$ | (Mg/m3) | 2.04 |
| | Particle Density | $\rho_s$ | (Mg/m3) | 2.66 |

| **Initial Conditions** | | | Stage 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_{3i}$ | (kPa) | 790 | 880 | 970 | |
| Initial Back Pressure | $U_{bi}$ | (kPa) | 700 | 700 | 700 | |
| Membrane Thickness | $m_b$ | (mm) | 0.600 | | | |
| Displacement Input | $L_{IP}$ | (mm) | CH 2 | | | |
| Load Input | $N_{IP}$ | (N) | CH 4 | | | |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | CH 3 | | | |
| Sample Volume | $V$ | (cc) | CH 2 | | | |
| Initial Moisture | $\omega_i$ | (%) | 22 | | | |
| Initial Dry Density | $\rho_{di}$ | (Mg/m3) | 1.67 | | | |
| Initial Voids Ratio | $e_i$ | . | 0.590 | | | |
| Initial Degree of Saturation | $S_i$ | (%) | 98 | | | |
| B Value | B | . | 0.97 | | | |

| **Final Conditions** | | | | | | |
|---|---|---|---|---|---|---|
| Final Moisture | $\omega_f$ | (%) | 18 | | | |
| Final Dry Density | $\rho_{df}$ | (Mg/m3) | 1.70 | | | |
| Final Voids Ratio | $e_f$ | . | 0.565 | | | |
| Final Degree of Saturation | $S_f$ | (%) | 83.5 | | | |
| | | | Stage 1 | 2 | 3 | 4 |
| Failure Criteria | | . | Max. Dev. Stress | Max. Dev. Stress | Max. Dev. Stress | |
| Strain At Failure | $\varepsilon_f$ | (%) | 9.80 | 13.23 | 15.80 | |
| Stress At Failure | $(\sigma_1-\sigma_3)$ | (kPa) | 174.4 | 280.3 | 384.6 | |
| Minor Stress At Failure | $\sigma_3'$ | (kPa) | 90.0 | 180.0 | 268.0 | |
| Major Stress At Failure | $\sigma_1'$ | (kPa) | 264.4 | 460.3 | 652.6 | |
| Principal Stress Ratio At Failure | $\sigma_1'/\sigma_3'$ | | 2.938 | 2.557 | 2.435 | |

**Notes**

*Brittle*

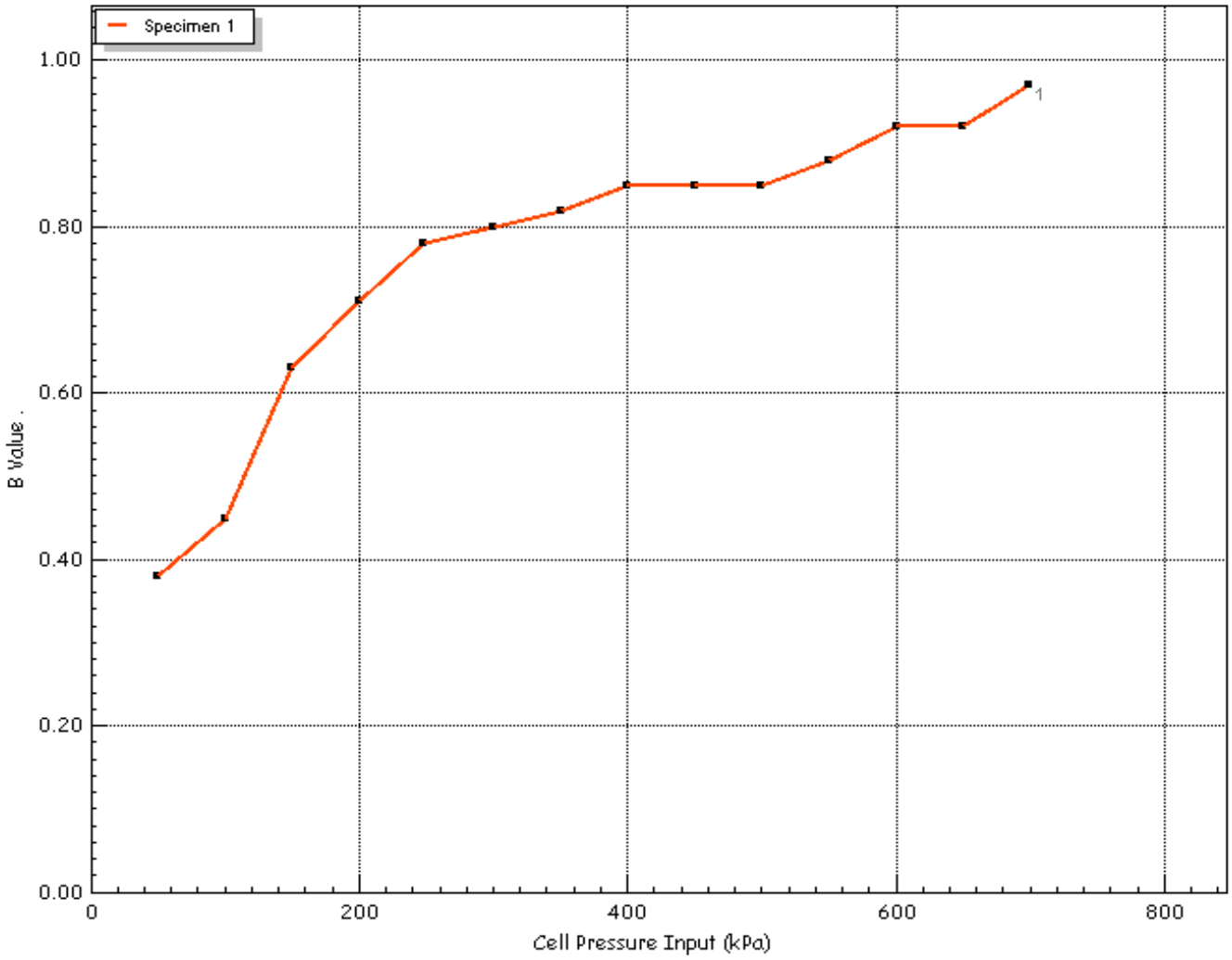
| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH113 9.27-9.50m |
| | | Test Date | 08/07/2022 |
| Site Reference | Wansford to Sutton Dualling | Borehole | BH113 |
| Jobfile | Supplementary GI | Sample | CS103 |
| Client | Ground Technology | Depth | 9.27-9.50m |

# Effective Stress Triaxial Compression

## Consolidated Drained

**Saturation Plots**

| | | | |
|---|---|---|---|
| Saturation Method | | | Stepped |
| Cell Pressure Input | σ | (kPa) | 699 |
| Pore Water Pressure Input | u pwp | (kPa) | 687 |
| B Value | B | . | 0.97 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH113 9.27-9.50m |
| | | Test Date | 08/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH113 |
| | | Sample | CS103 |
| Client | Ground Technology | Depth | 9.27-9.50m |

# Effective Stress Triaxial Compression

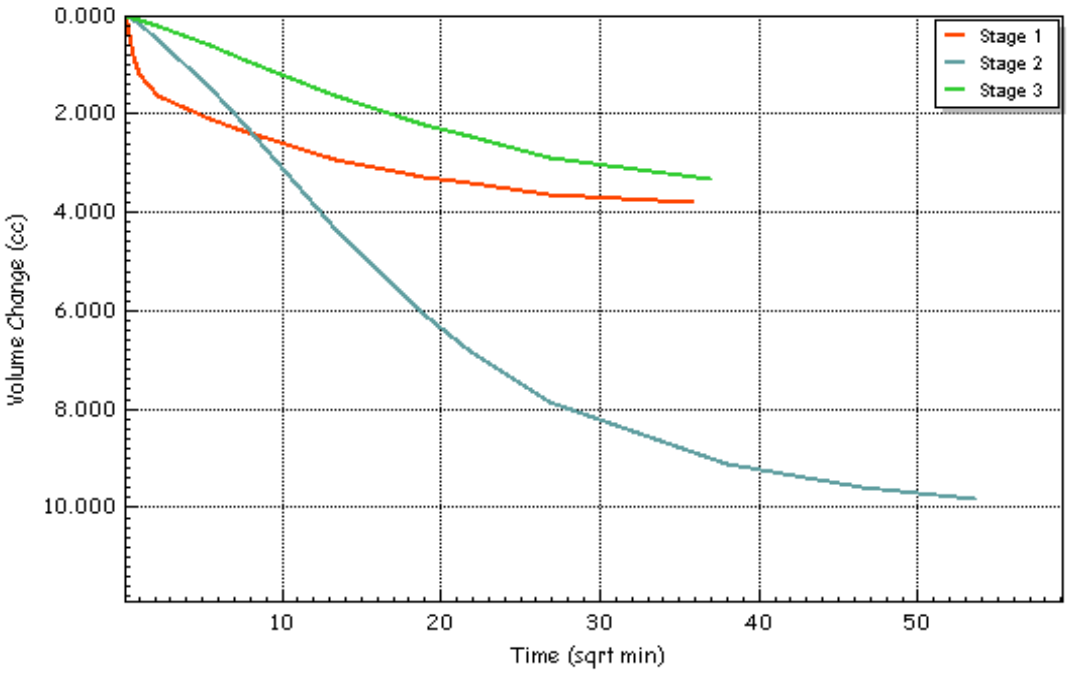
## Consolidated Drained

**Consolidation Plots**

| Initial Conditions | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_3$ | (kPa) | 790 | 880 | 970 |
| Initial Back Pressure | $u_{bi}$ | (kPa) | 700 | 700 | 700 |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | 764 | 822 | 912 |
| Drainage Method | | | Radial+One End | | |

| Final Conditions | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| PWP Dissipation % | U% | (%) | 100.00 | 99.67 | 100.00 |
| Volumetric Strain | $\varepsilon_v$% | (%) | 0.35 | 0.91 | 0.31 |
| Corrected Length | $L_C$ | (mm) | 179.1 | 160.8 | 153.9 |
| Corrected Area | $A_C$ | (cm2) | 59.85 | 66.07 | 68.80 |
| Corrected Volume | $V_C$ | (cc) | 1071.912 | 1062.083 | 1058.744 |
| t100 | $t_{100}$ | (min) | 67.93 | 716.61 | 441.13 |
| Consolidation | $c_v$ | (m2/year) | 2.322 | 0.220 | 0.358 |
| Compressibility | $m_v$ | (m2/MN) | 0.055 | 0.075 | 0.015 |
| Test Time | $t_F$ | (h:m:s) | 15:51:01 | 167:12:32 | 102:55:49 |
| Estimated Strain to Failure | $\varepsilon$% | (%) | 5.0 | 5.0 | 5.0 |
| Shear Machine Speed | $d_r$ | (mm/min) | 0.00942 | 0.00942 | 0.00942 |

**Notes**




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH113 9.27-9.50m |
| | | Test Date | 08/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH113 |
| | | Sample | CS103 |
| Client | Ground Technology | Depth | 9.27-9.50m |

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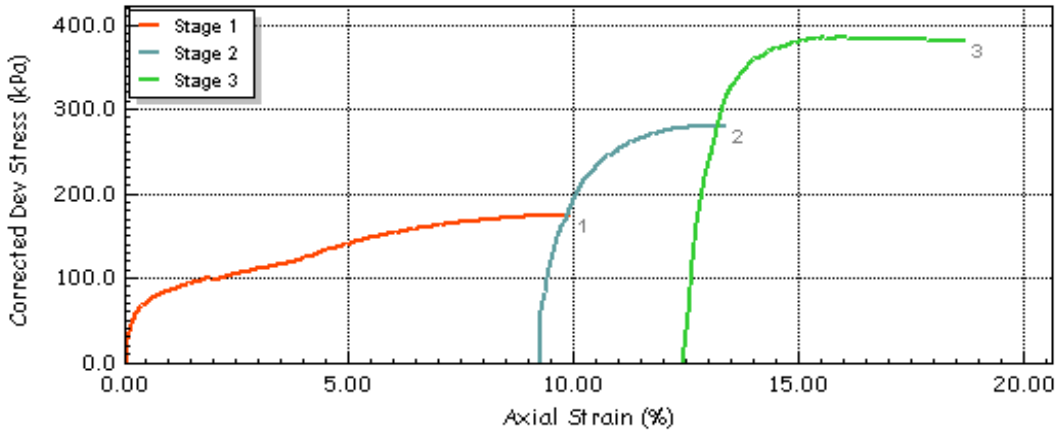
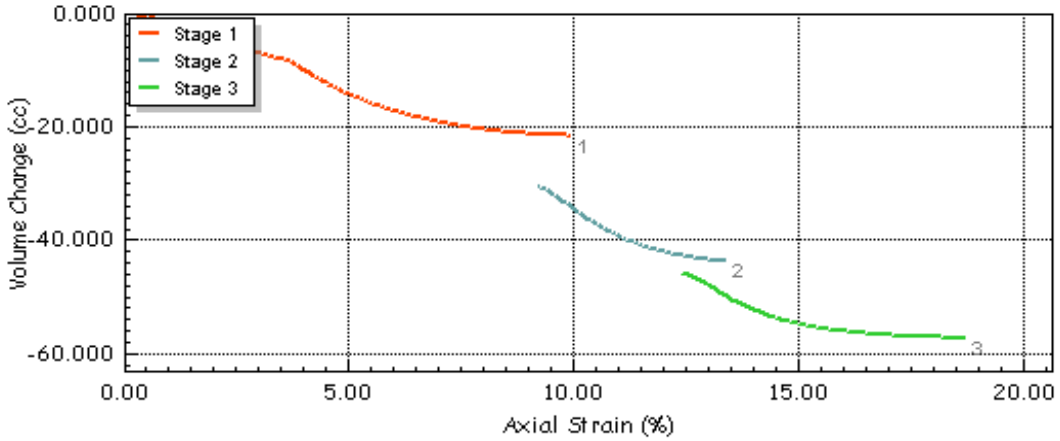
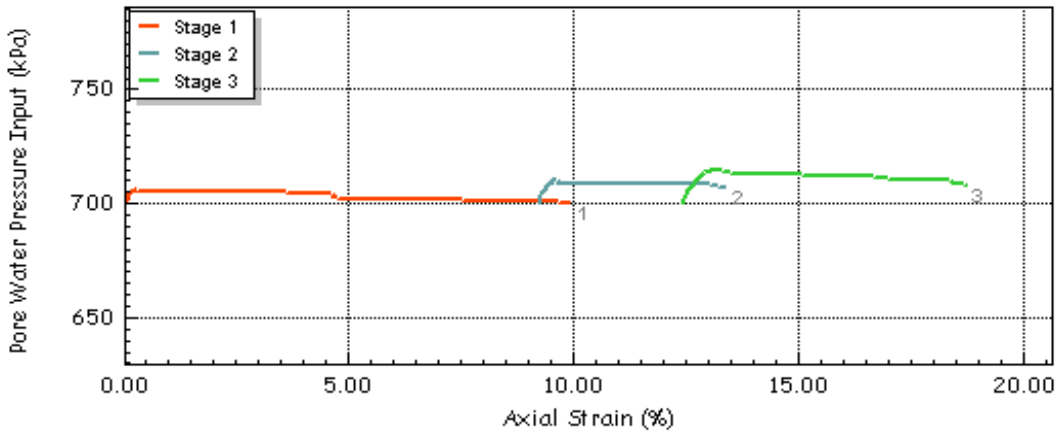
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**



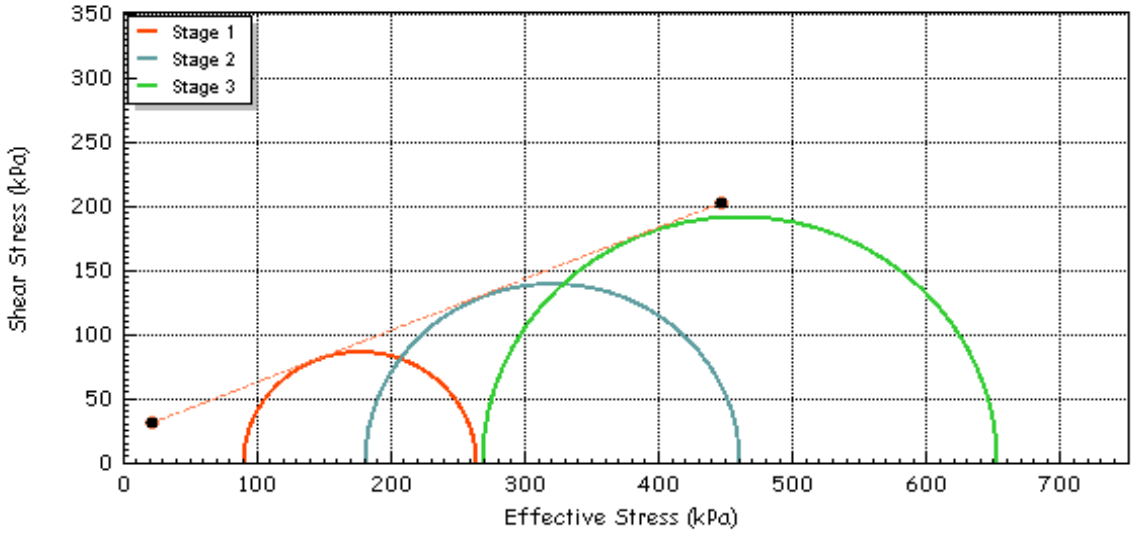

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH113 9.27-9.50m |
| | | Test Date | 08/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH113 |
| | | Sample | CS103 |
| Client | Ground Technology | Depth | 9.27-9.50m |

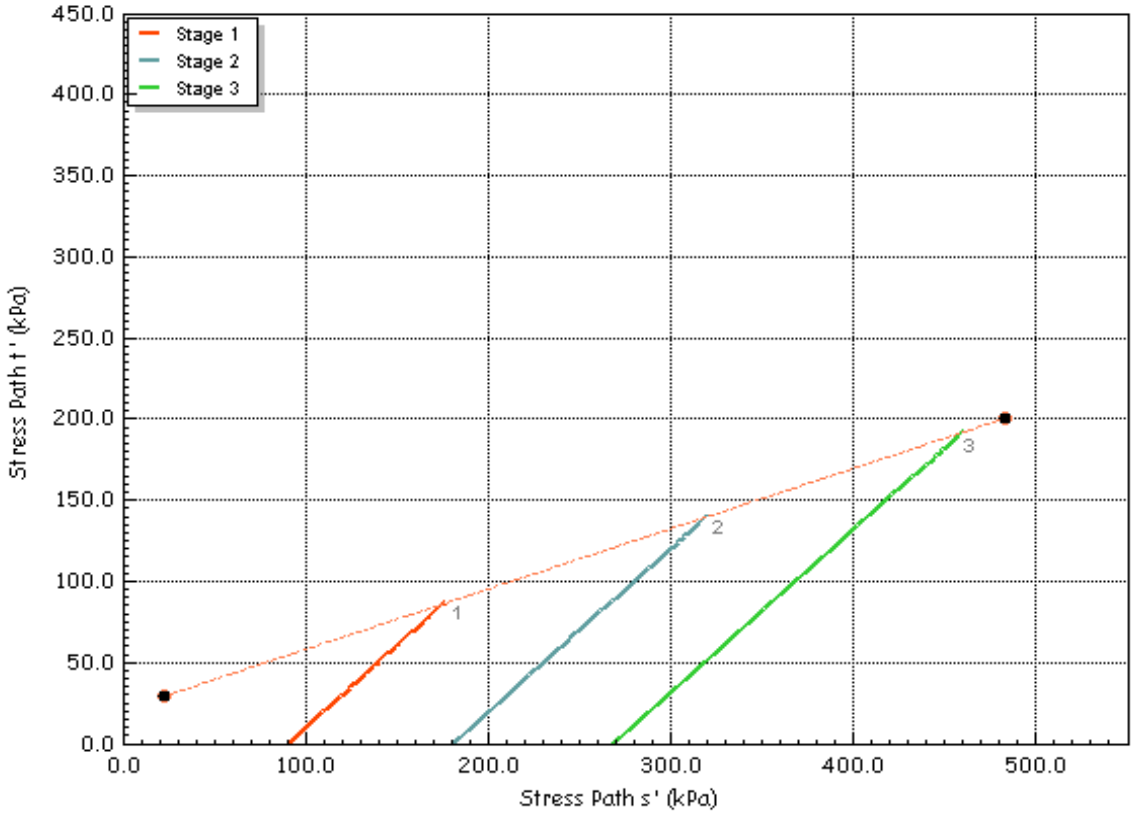
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Effective | c' | (kPa) | 22.82 | Effective Cohesion | c' | (kPa) | 22.82 |
| Effective Friction | ϕ' | (deg) | 21.9 | Effective Friction | ϕ' | (deg) | 21.9 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH113 9.27-9.50m |
| | | Test Date | 08/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH113 |
| | | Sample | CS103 |
| Client | Ground Technology | Depth | 9.27-9.50m |

UKAS TESTING 4043

PSL Professional Soils Laboratory

# Effective Stress Triaxial Compression

## Consolidated Drained

**Summary Report**

| Sample Details | | | | |
|---|---|---|---|---|
| *sketch showing specimen location in original sample* | Depth | | | 15.00-15.24m |
| | Description | | | See summary of soil descripitons. |
| | Type | | | Undisturbed, vertical orientation. |
| | Initial Sample Length | $L_0$ | (mm) | 140.0 |
| | Initial Sample Diameter | $D_0$ | (mm) | 70.1 |
| | Initial Sample Weight | $W_0$ | (gr) | 1061.0 |
| | Initial Bulk Density | $\rho_0$ | (Mg/m3) | 1.96 |
| | Particle Density | $\rho_s$ | (Mg/m3) | 2.66 |

| **Initial Conditions** | | | Stage 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_{3i}$ | (kPa) | 700 | 850 | 1000 | |
| Initial Back Pressure | $U_{bi}$ | (kPa) | 550 | 550 | 550 | |
| Membrane Thickness | $m_b$ | (mm) | 0.400 | | | |
| Displacement Input | $L_{IP}$ | (mm) | CH 2 | | | |
| Load Input | $N_{IP}$ | (N) | CH 4 | | | |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | CH 3 | | | |
| Sample Volume | $V$ | (cc) | CH 2 | | | |
| Initial Moisture | $\omega_i$ | (%) | 25 | | | |
| Initial Dry Density | $\rho_{di}$ | (Mg/m3) | 1.57 | | | |
| Initial Voids Ratio | $e_i$ | . | 0.691 | | | |
| Initial Degree of Saturation | $S_i$ | (%) | 96 | | | |
| B Value | $B$ | . | 0.98 | | | |

| **Final Conditions** | | | | | | |
|---|---|---|---|---|---|---|
| Final Moisture | $\omega_f$ | (%) | 20 | | | |
| Final Dry Density | $\rho_{df}$ | (Mg/m3) | 0.21 | | | |
| Final Voids Ratio | $e_f$ | . | 11.966 | | | |
| Final Degree of Saturation | $S_f$ | (%) | 4.3 | | | |
| | | | Stage 1 | 2 | 3 | 4 |
| Failure Criteria | | . | Max. Dev. Stress | Max. Dev. Stress | Max. Dev. Stress | |
| Strain At Failure | $\varepsilon_f$ | (%) | 5.53 | 8.57 | 12.02 | |
| Stress At Failure | $(\sigma_1-\sigma_3)$ | (kPa) | 285.9 | 517.1 | 751.6 | |
| Minor Stress At Failure | $\sigma_3'$ | (kPa) | 150.0 | 300.0 | 450.0 | |
| Major Stress At Failure | $\sigma_1'$ | (kPa) | 435.9 | 817.1 | 1201.6 | |
| Principal Stress Ratio At Failure | $\sigma_1'/\sigma_3'$ | | 2.906 | 2.724 | 2.670 | |

**Notes**

*Plastic*

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH113 15.00-15.24m |
| | | Test Date | 11/07/2022 |
| Site Reference | Wansford to Sutton Dualling | Borehole | BH113 |
| Jobfile | Supplementary GI | Sample | CS107 |
| Client | Ground Technology | Depth | 15.00-15.24m |

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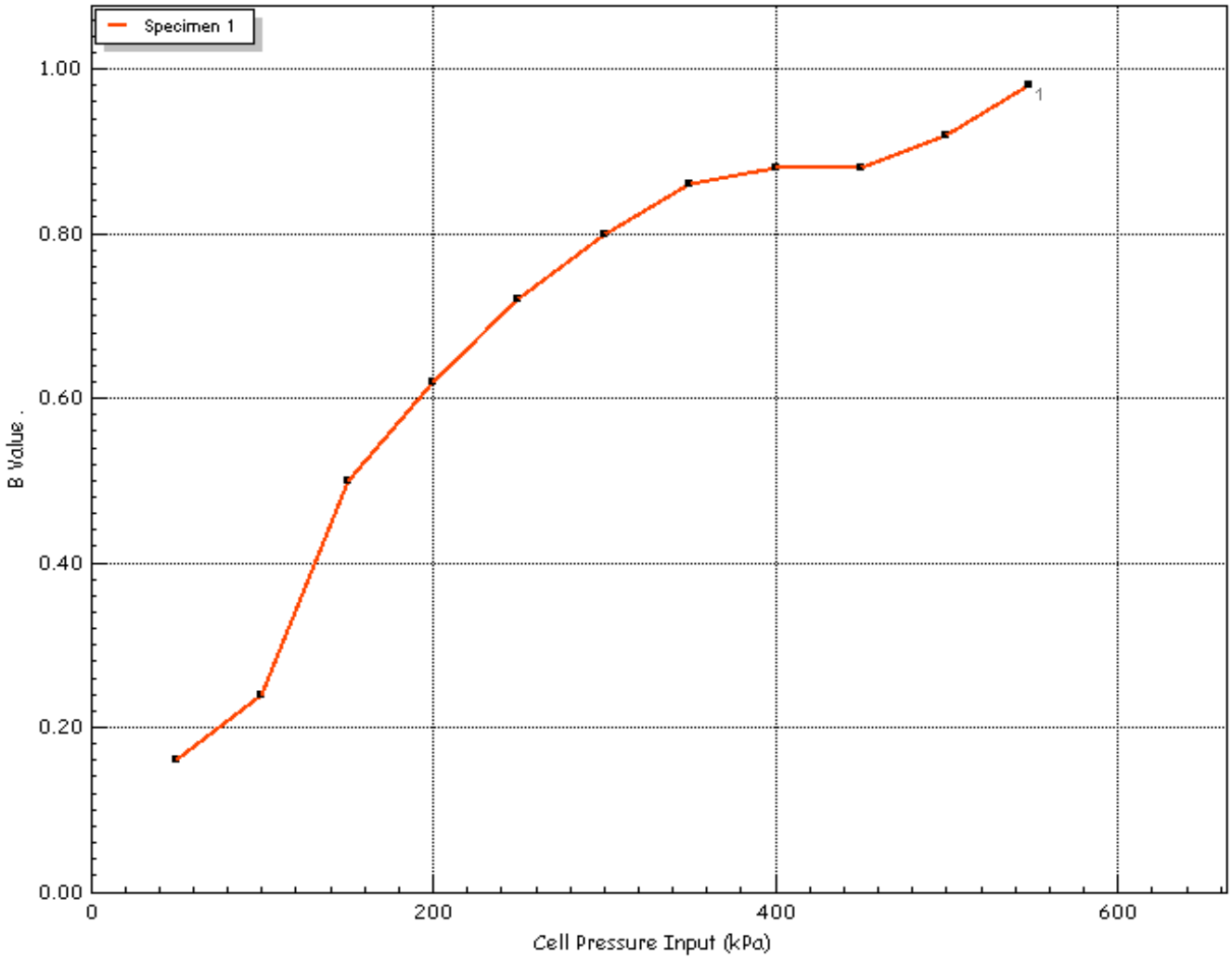
# Effective Stress Triaxial Compression

## Consolidated Drained

**Saturation Plots**

| | | | |
|---|---|---|---|
| Saturation Method | | | Stepped |
| Cell Pressure Input | σ | (kPa) | 548 |
| Pore Water Pressure Input | u pwp | (kPa) | 527 |
| B Value | B | . | 0.98 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH113 15.00-15.24m |
| | | Test Date | 11/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH113 |
| | | Sample | CS107 |
| Client | Ground Technology | Depth | 15.00-15.24m |

# Effective Stress Triaxial Compression

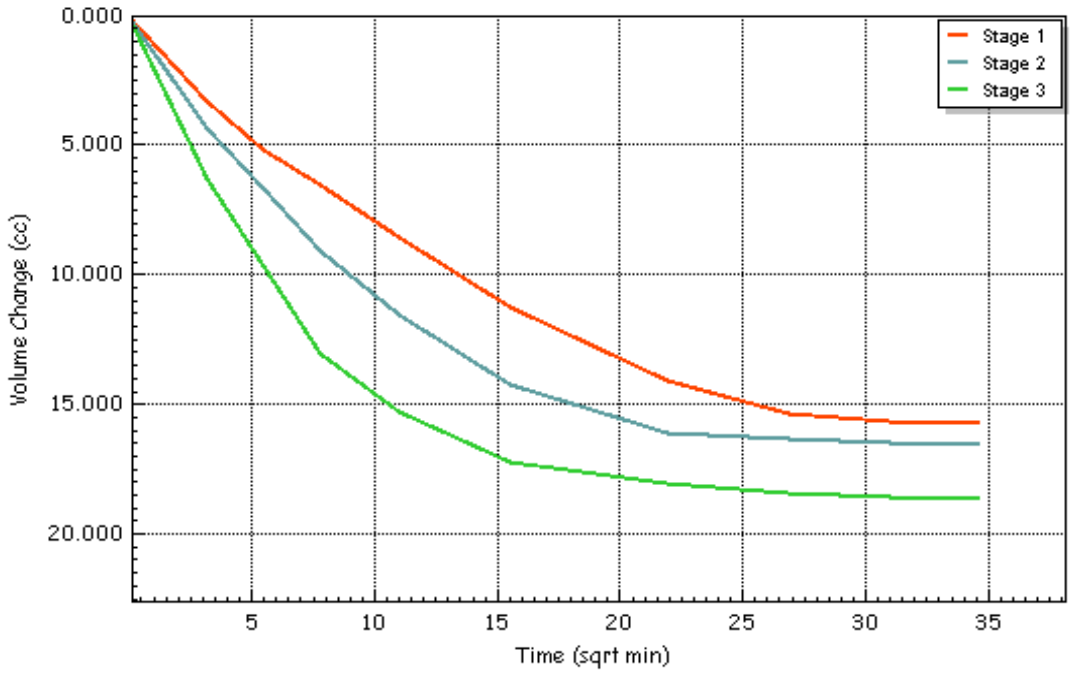
## Consolidated Drained

**Consolidation Plots**

| Initial Conditions | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_3$ | (kPa) | 800 | 950 | 1100 |
| Initial Back Pressure | $u_{bi}$ | (kPa) | 650 | 650 | 650 |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | 687 | 813 | 927 |
| Drainage Method | | | Radial+One End | | |

| Final Conditions | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| PWP Dissipation % | U% | (%) | 100.00 | 100.00 | 100.00 |
| Volumetric Strain | $\varepsilon_v$% | (%) | 2.92 | 3.06 | 3.45 |
| Corrected Length | $L_C$ | (mm) | 138.6 | 129.6 | 124.2 |
| Corrected Area | $A_C$ | (cm2) | 37.84 | 39.21 | 39.42 |
| Corrected Volume | $V_C$ | (cc) | 524.570 | 508.017 | 489.364 |
| t100 | $t_{100}$ | (min) | 398.62 | 227.93 | 133.77 |
| Consolidation | $c_v$ | (m2/year) | 0.255 | 0.446 | 0.760 |
| Compressibility | $m_v$ | (m2/MN) | 0.213 | 0.116 | 0.092 |
| Test Time | $t_F$ | (h:m:s) | 93:00:40 | 53:11:01 | 31:12:46 |
| Estimated Strain to Failure | $\varepsilon$% | (%) | 5.0 | 5.0 | 5.0 |
| Shear Machine Speed | $d_r$ | (mm/min) | 0.00124 | 0.00124 | 0.00124 |

**Notes**




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH113 15.00-15.24m |
| | | Test Date | 11/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH113 |
| | | Sample | CS107 |
| Client | Ground Technology | Depth | 15.00-15.24m |

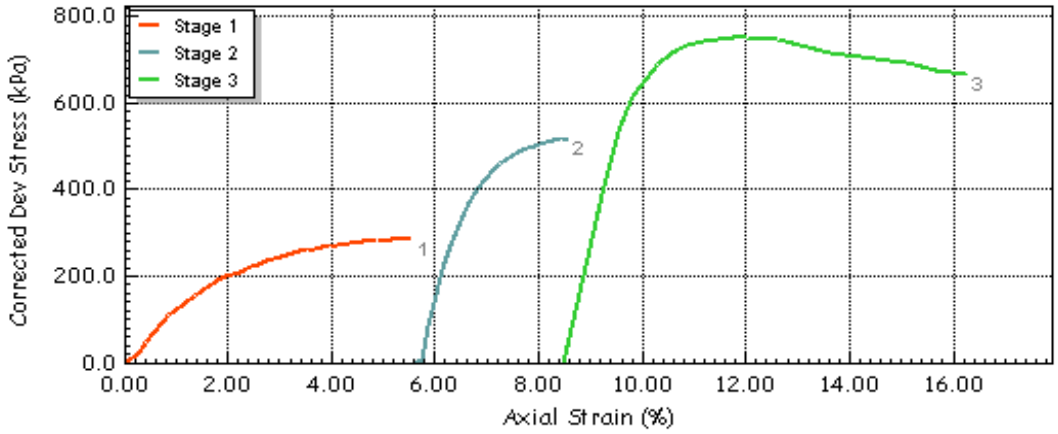
UKAS TESTING 4043

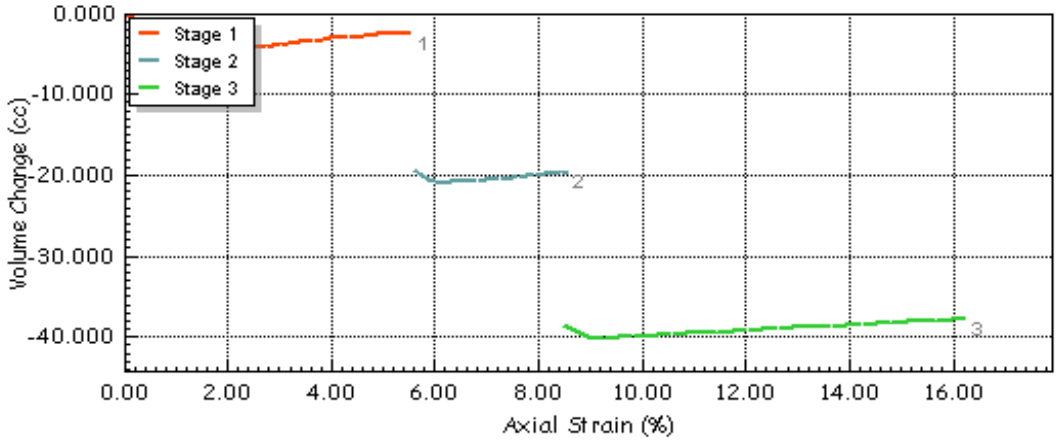
PSL Physical Soils Laboratory

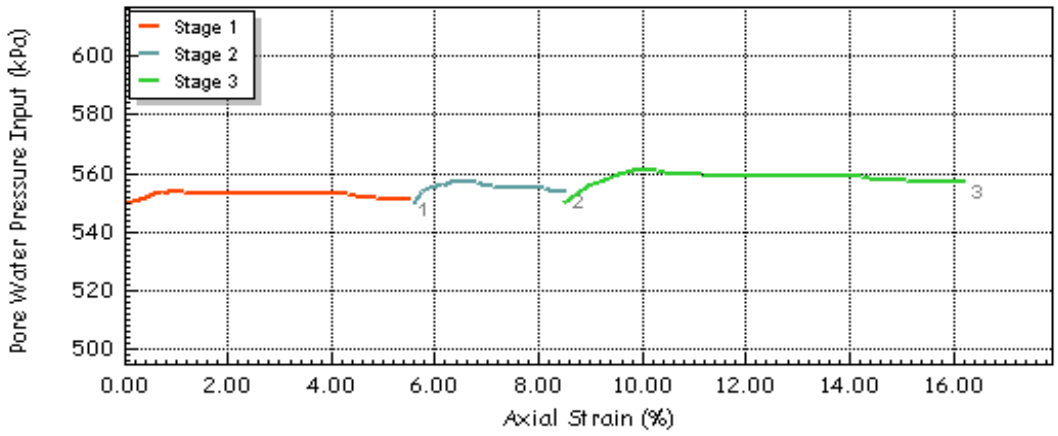
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**



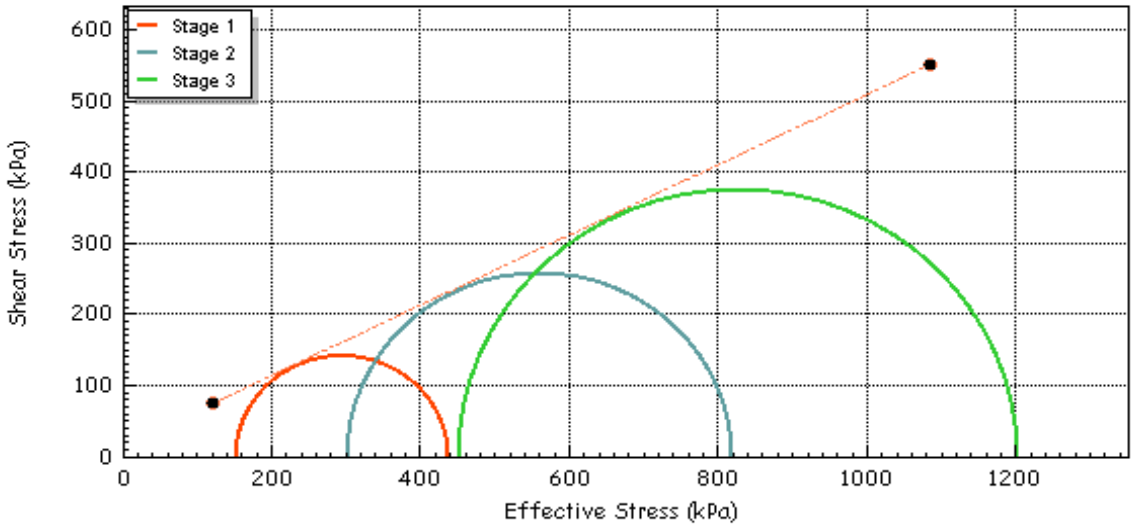

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH113 15.00-15.24m |
| | | Test Date | 11/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH113 |
| | | Sample | CS107 |
| Client | Ground Technology | Depth | 15.00-15.24m |

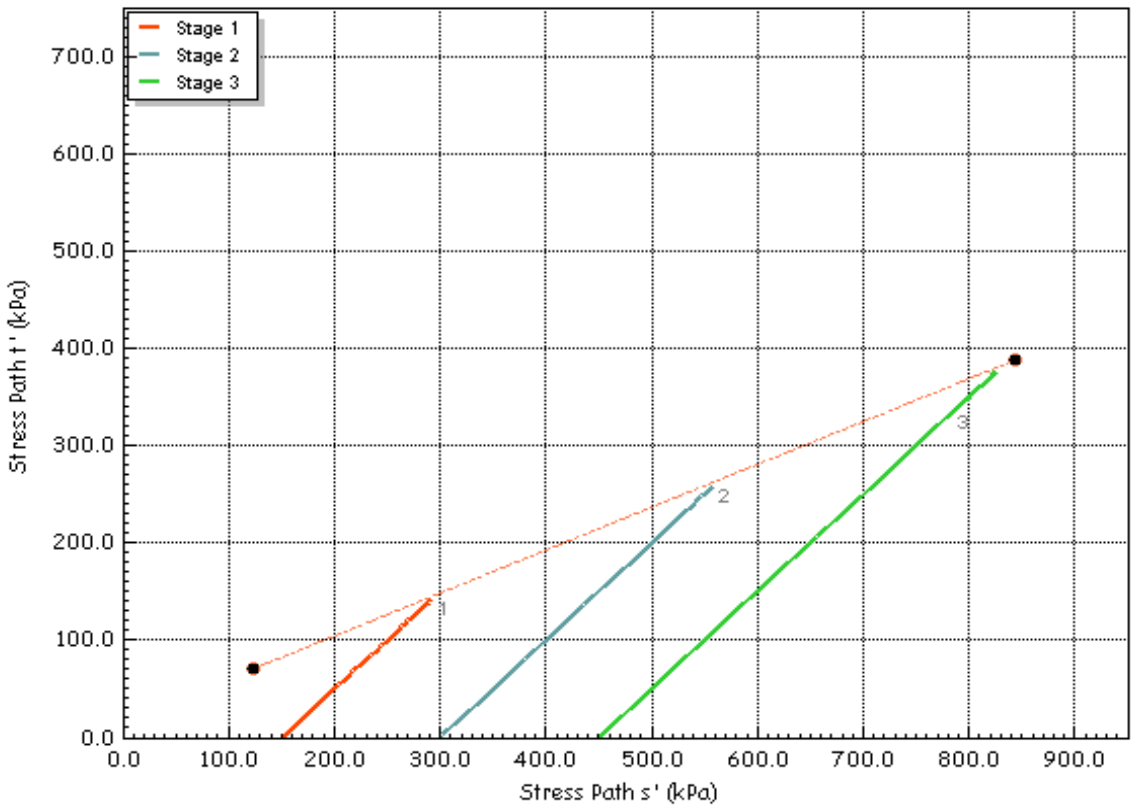
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Effective | c' | (kPa) | 16.68 | Effective Cohesion | c' | (kPa) | 16.68 |
| Effective Friction | ϕ' | (deg) | 26.2 | Effective Friction | ϕ' | (deg) | 26.2 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH113 15.00-15.24m |
| | | Test Date | 11/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH113 |
| | | Sample | CS107 |
| Client | Ground Technology | Depth | 15.00-15.24m |

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# Effective Stress Triaxial Compression

## Consolidated Drained

**Summary Report**

| Sample Details | | | | |
|---|---|---|---|---|
| *sketch showing specimen location in original sample* | Depth | | | 7.57-7.87m |
| | Description | | | See summary of soil descripitons. |
| | Type | | | Undisturbed, vertical orientation. |
| | Initial Sample Length | $L_0$ | (mm) | 199.8 |
| | Initial Sample Diameter | $D_0$ | (mm) | 82.5 |
| | Initial Sample Weight | $W_0$ | (gr) | 2211.0 |
| | Initial Bulk Density | $\rho_0$ | (Mg/m3) | 2.07 |
| | Particle Density | $\rho_s$ | (Mg/m3) | 2.66 |

| **Initial Conditions** | | | Stage 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_{3i}$ | (kPa) | 370 | 440 | 510 | |
| Initial Back Pressure | $U_{bi}$ | (kPa) | 300 | 300 | 300 | |
| Membrane Thickness | $m_b$ | (mm) | 0.600 | | | |
| Displacement Input | $L_{IP}$ | (mm) | CH 2 | | | |
| Load Input | $N_{IP}$ | (N) | CH 1 | | | |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | CH 3 | | | |
| Sample Volume | $V$ | (cc) | CH 2 | | | |
| Initial Moisture | $\omega_i$ | (%) | 15 | | | |
| Initial Dry Density | $\rho_{di}$ | (Mg/m3) | 1.80 | | | |
| Initial Voids Ratio | $e_i$ | . | 0.480 | | | |
| Initial Degree of Saturation | $S_i$ | (%) | 84 | | | |
| B Value | B | . | 0.98 | | | |

| **Final Conditions** | | | | | | |
|---|---|---|---|---|---|---|
| Final Moisture | $\omega_f$ | (%) | 15 | | | |
| Final Dry Density | $\rho_{df}$ | (Mg/m3) | 1.83 | | | |
| Final Voids Ratio | $e_f$ | . | 0.457 | | | |
| Final Degree of Saturation | $S_f$ | (%) | 85.2 | | | |
| | | | Stage 1 | 2 | 3 | 4 |
| Failure Criteria | | . | Max. Dev. Stress | Max. Dev. Stress | Max. Dev. Stress | |
| Strain At Failure | $\varepsilon_f$ | (%) | 5.25 | 7.56 | 13.54 | |
| Stress At Failure | $(\sigma_1-\sigma_3)$ | (kPa) | 130.4 | 205.7 | 279.4 | |
| Minor Stress At Failure | $\sigma_3'$ | (kPa) | 71.3 | 140.0 | 210.0 | |
| Major Stress At Failure | $\sigma_1'$ | (kPa) | 201.7 | 345.7 | 489.4 | |
| Principal Stress Ratio At Failure | $\sigma_1'/\sigma_3'$ | | 2.829 | 2.469 | 2.331 | |

**Notes**

*Brittle*

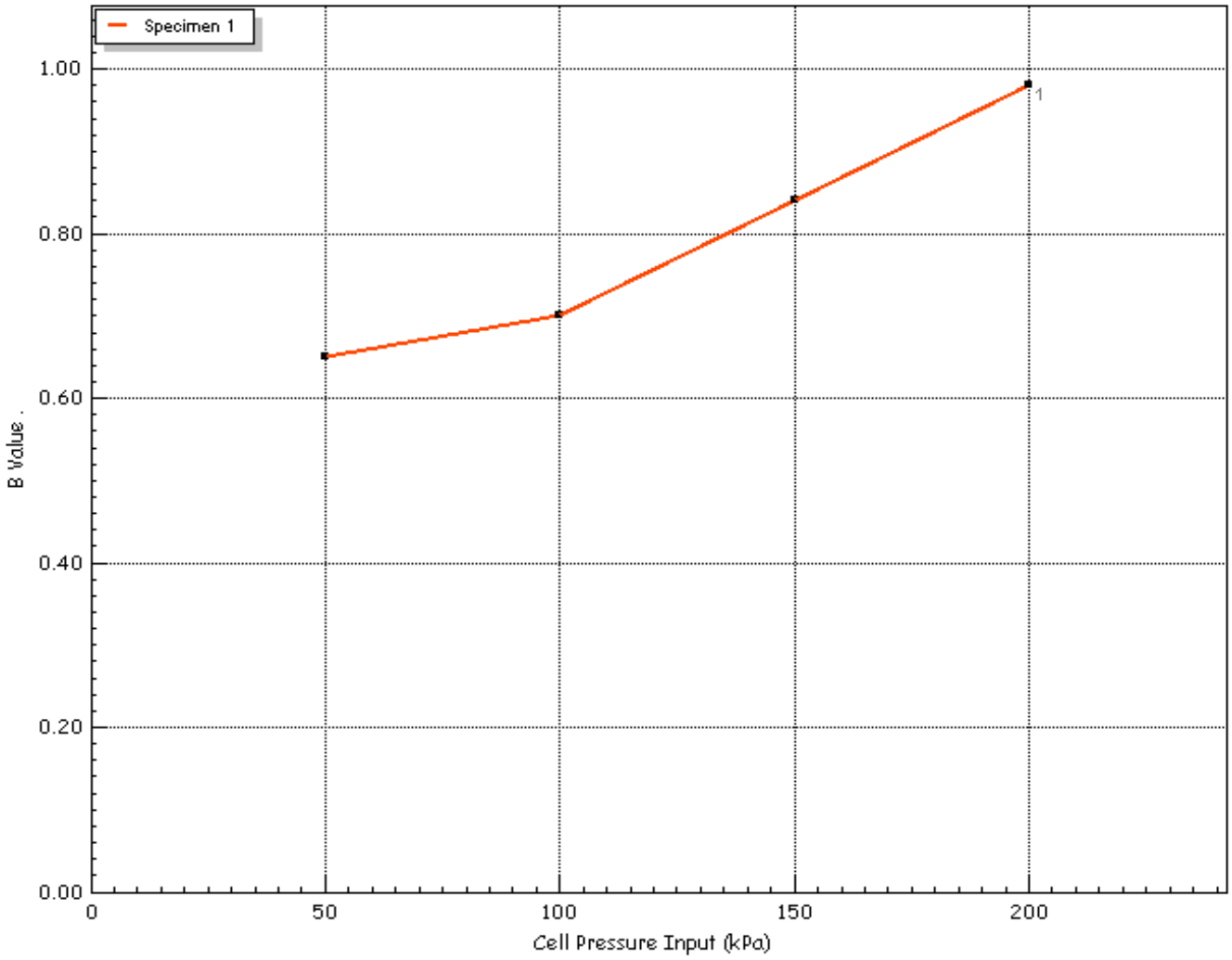
| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH110 7.57-7.87m |
| | | Test Date | 11/07/2022 |
| Site Reference | Wansford to Sutton Dualling | Borehole | BH110 |
| Jobfile | Supplementary GI | Sample | CS106 |
| Client | Ground Technology | Depth | 7.57-7.87m |

# Effective Stress Triaxial Compression

## Consolidated Drained

**Saturation Plots**

| | | | |
|---|---|---|---|
| Saturation Method | | | Stepped |
| Cell Pressure Input | σ | (kPa) | 200 |
| Pore Water Pressure Input | u pwp | (kPa) | 199 |
| B Value | B | . | 0.98 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH110 7.57-7.87m |
| | | Test Date | 11/07/2022 |
| | Wansford to Sutton Dualling | Borehole | BH110 |
| Jobfile | Supplementary GI | Sample | CS106 |
| Client | Ground Technology | Depth | 7.57-7.87m |

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# Effective Stress Triaxial Compression

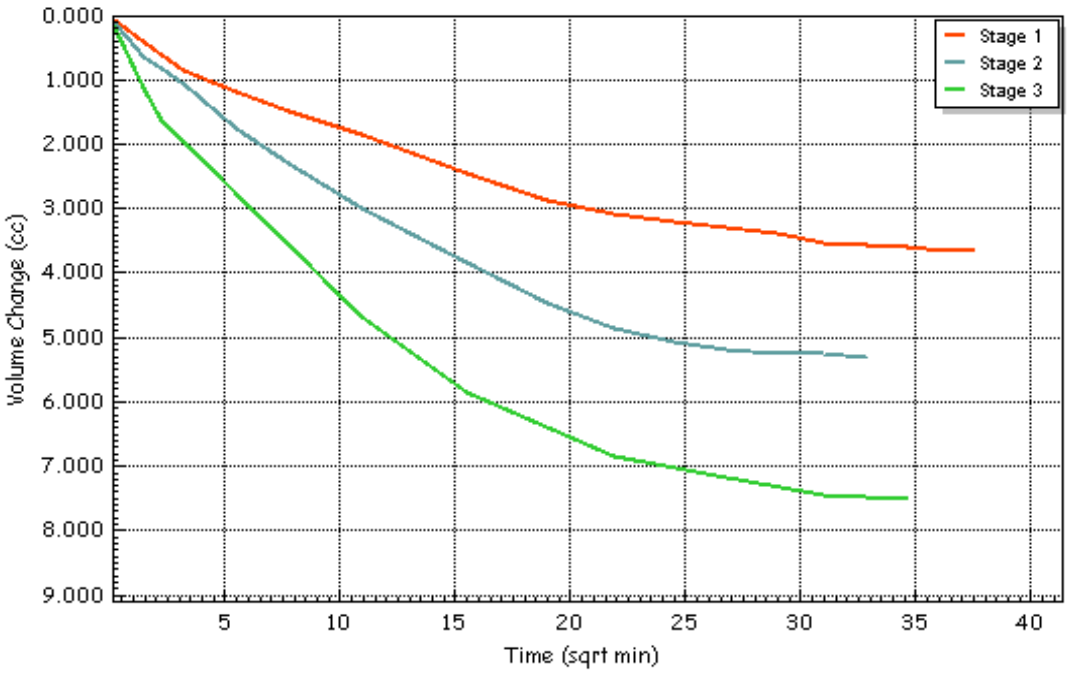
## Consolidated Drained

**Consolidation Plots**

| **Initial Conditions** | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_3$ | (kPa) | 370 | 440 | 510 |
| Initial Back Pressure | $u_{bi}$ | (kPa) | 300 | 300 | 300 |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | 351 | 387 | 487 |
| Drainage Method | | | Radial+One End | | |

| **Final Conditions** | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| PWP Dissipation % | U% | (%) | 100.00 | 100.00 | 100.00 |
| Volumetric Strain | $\varepsilon_v$% | (%) | 0.34 | 0.84 | 1.54 |
| Corrected Length | $L_C$ | (mm) | 199.6 | 188.4 | 181.9 |
| Corrected Area | $A_C$ | (cm2) | 53.33 | 56.03 | 57.31 |
| Corrected Volume | $V_C$ | (cc) | 1064.399 | 1059.091 | 1051.583 |
| T100 Time to Failure | $t_{100}$ | (min) | 473.00 | 342.55 | 201.00 |
| Consolidation | $c_v$ | (m2/year) | 0.297 | 0.410 | 0.699 |
| Compressibility | $m_v$ | (m2/MN) | 0.070 | 0.285 | 0.082 |
| Test Time | $t_F$ | (h:m:s) | 110:22:00 | 79:55:42 | 46:54:00 |
| Estimated Strain to Failure | $\varepsilon$% | (%) | 5.0 | 5.0 | 5.0 |
| Shear Machine Speed | $d_r$ | (mm/min) | 0.00151 | 0.00151 | 0.00151 |

**Notes**

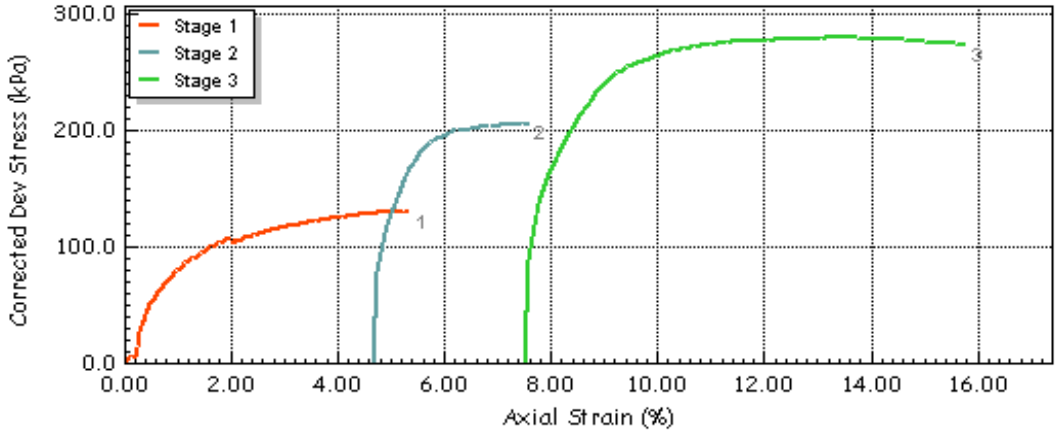


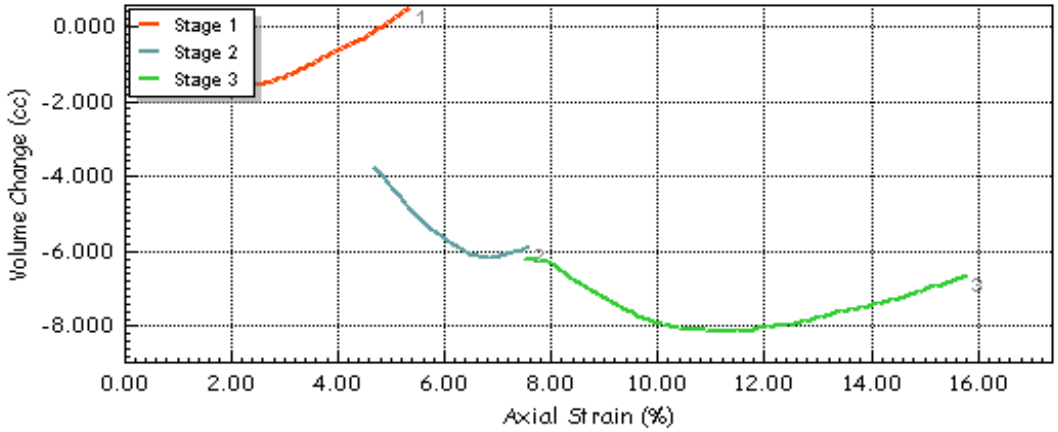

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH110 7.57-7.87m |
| | | Test Date | 11/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH110 |
| | | Sample | CS106 |
| Client | Ground Technology | Depth | 7.57-7.87m |

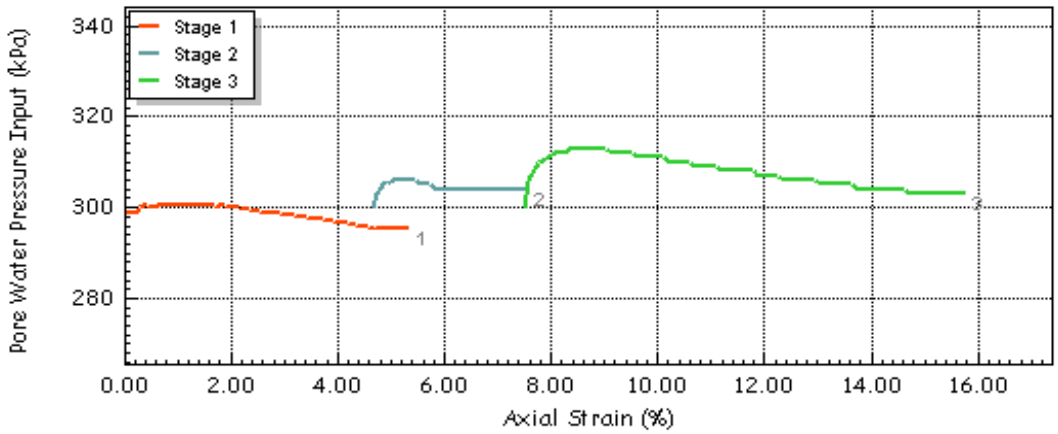
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**



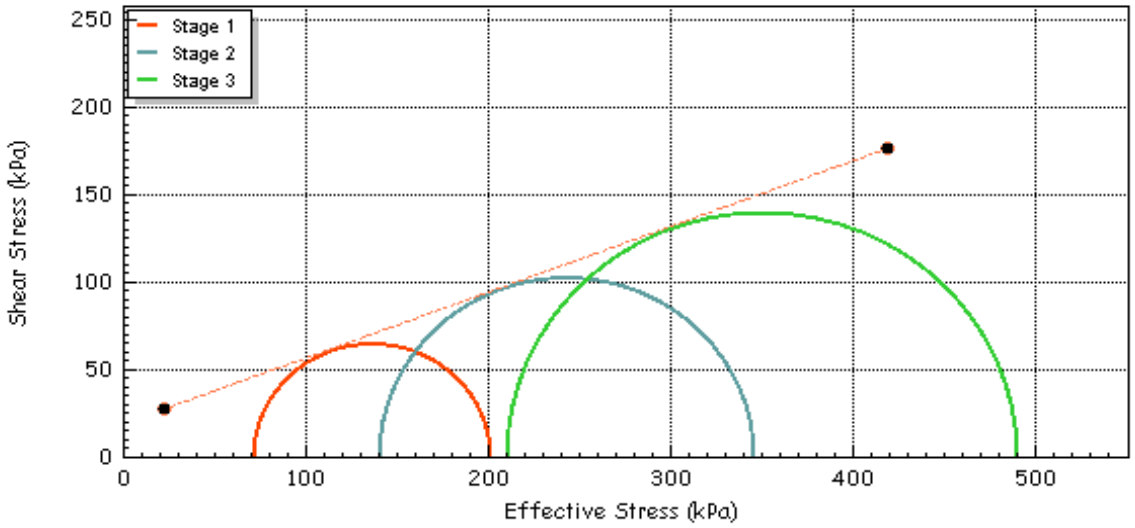

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH110 7.57-7.87m |
| | | Test Date | 11/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH110 |
| | | Sample | CS106 |
| Client | Ground Technology | Depth | 7.57-7.87m |

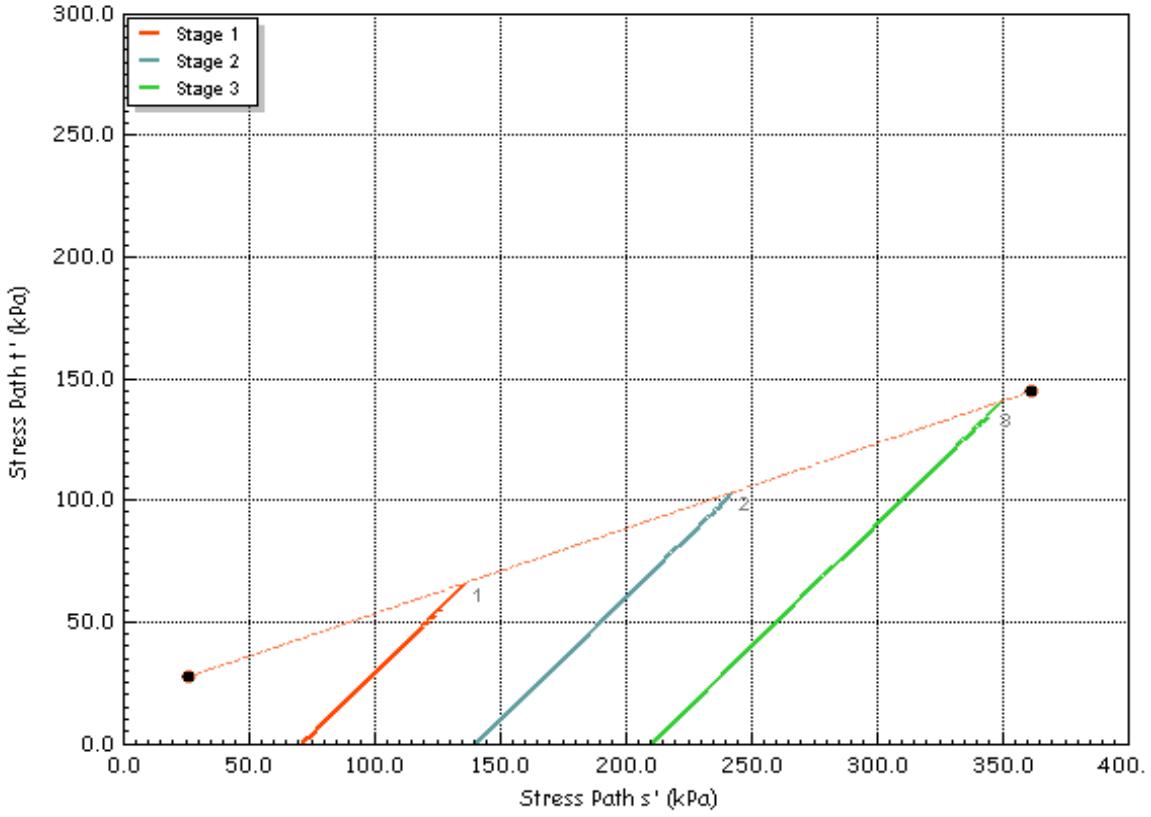
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Effective | c' | (kPa) | 19.41 | Effective Cohesion | c' | (kPa) | 19.41 |
| Effective Friction | ϕ' | (deg) | 20.5 | Effective Friction | ϕ' | (deg) | 20.5 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH110 7.57-7.87m |
| | | Test Date | 11/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH110 |
| | | Sample | CS106 |
| Client | Ground Technology | Depth | 7.57-7.87m |

# Effective Stress Triaxial Compression

## Consolidated Drained

**Summary Report**

| Sample Details | | | | |
|---|---|---|---|---|
| *sketch showing specimen location in original sample* | Depth | | | 9.43-9.73m |
| | Description | | | See summary of soil descriptions. |
| | Type | | | Undisturbed, vertical orientation. |
| | Initial Sample Length | $L_0$ | (mm) | 201.2 |
| | Initial Sample Diameter | $D_0$ | (mm) | 91.8 |
| | Initial Sample Weight | $W_0$ | (gr) | 2635.0 |
| | Initial Bulk Density | $\rho_0$ | (Mg/m3) | 1.98 |
| | Particle Density | $\rho_s$ | (Mg/m3) | 2.66 |

| **Initial Conditions** | | | Stage 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_{3i}$ | (kPa) | 1140 | 1230 | 1320 | |
| Initial Back Pressure | $U_{bi}$ | (kPa) | 1050 | 1050 | 1050 | |
| Membrane Thickness | $m_b$ | (mm) | 0.400 | | | |
| Displacement Input | $L_{IP}$ | (mm) | CH 2 | | | |
| Load Input | $N_{IP}$ | (N) | CH 4 | | | |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | CH 3 | | | |
| Sample Volume | $V$ | (cc) | CH 6 | | | |
| Initial Moisture | $\omega_i$ | (%) | 26 | | | |
| Initial Dry Density | $\rho_{di}$ | (Mg/m3) | 1.57 | | | |
| Initial Voids Ratio | $e_i$ | . | 0.695 | | | |
| Initial Degree of Saturation | $S_i$ | (%) | 100 | | | |
| B Value | B | . | 0.98 | | | |

| **Final Conditions** | | | | | | |
|---|---|---|---|---|---|---|
| Final Moisture | $\omega_f$ | (%) | 22 | | | |
| Final Dry Density | $\rho_{df}$ | (Mg/m3) | 1.61 | | | |
| Final Voids Ratio | $e_f$ | . | 0.649 | | | |
| Final Degree of Saturation | $S_f$ | (%) | 89.6 | | | |
| | | | Stage 1 | 2 | 3 | 4 |
| Failure Criteria | | . | Max. Dev. Stress | Max. Dev. Stress | Max. Dev. Stress | |
| Strain At Failure | $\varepsilon_f$ | (%) | 2.90 | 4.24 | 5.88 | |
| Stress At Failure | $(\sigma_1-\sigma_3)$ | (kPa) | 140.3 | 234.2 | 329.0 | |
| Minor Stress At Failure | $\sigma_3'$ | (kPa) | 90.0 | 180.0 | 270.0 | |
| Major Stress At Failure | $\sigma_1'$ | (kPa) | 230.3 | 414.2 | 599.0 | |
| Principal Stress Ratio At Failure | $\sigma_1'/\sigma_3'$ | | 2.558 | 2.301 | 2.218 | |

**Notes**

*Brittle*

| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH110 9.43-9.73m CS109. |
| | | Test Date | 07/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH110 |
| | | Sample | 9.43-9.73m CS109 |
| Client | Ground Technology | Depth | 9.43-9.73m |

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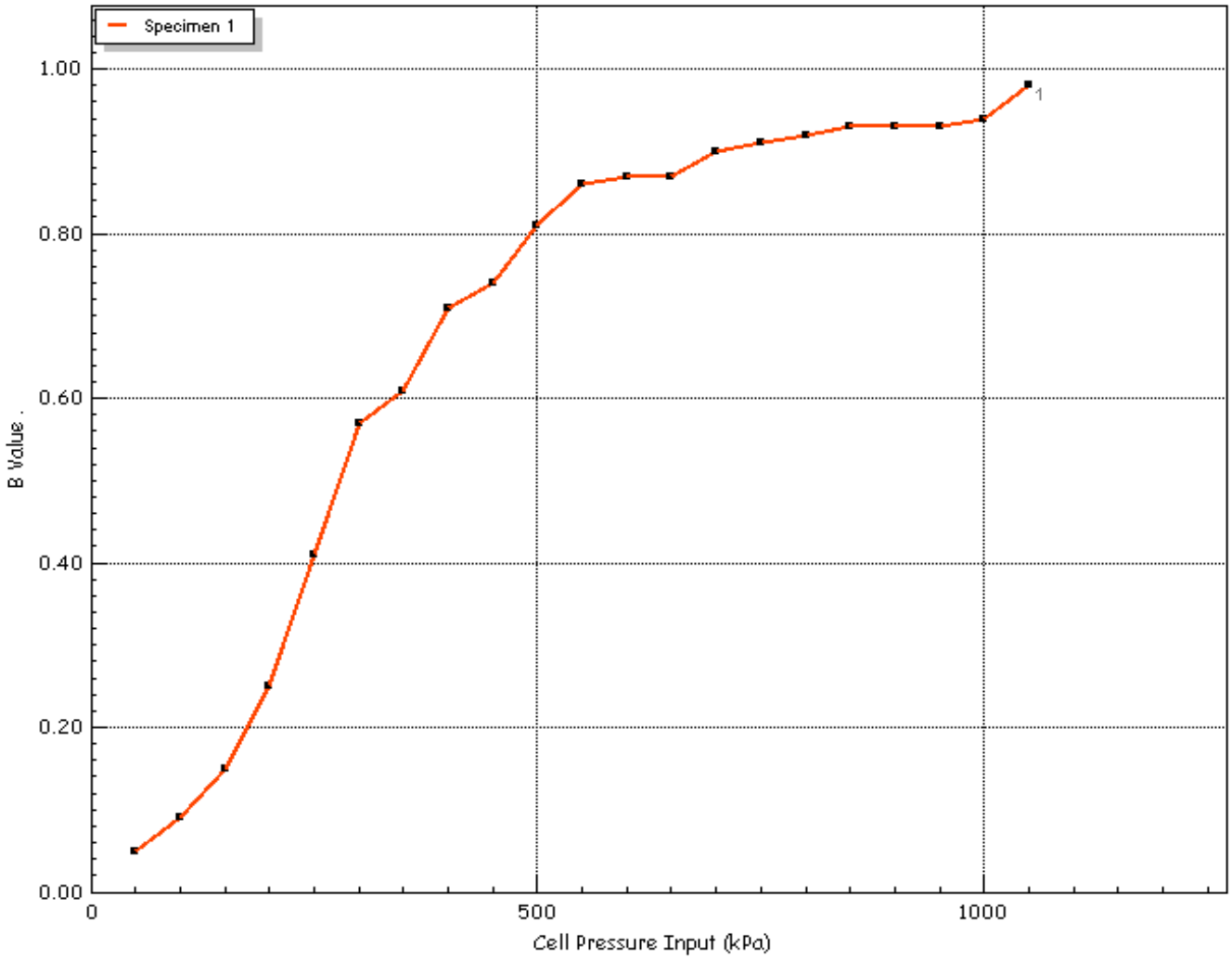
# Effective Stress Triaxial Compression

## Consolidated Drained

**Saturation Plots**

| | | | |
|---|---|---|---|
| Saturation Method | | | Stepped |
| Cell Pressure Input | σ | (kPa) | 1050 |
| Pore Water Pressure Input | u pwp | (kPa) | 1024 |
| B Value | B | . | 0.98 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH110 9.43-9.73m CS109. |
| | | Test Date | 07/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH110 |
| | | Sample | 9.43-9.73m CS109 |
| Client | Ground Technology | Depth | 9.43-9.73m |

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# Effective Stress Triaxial Compression

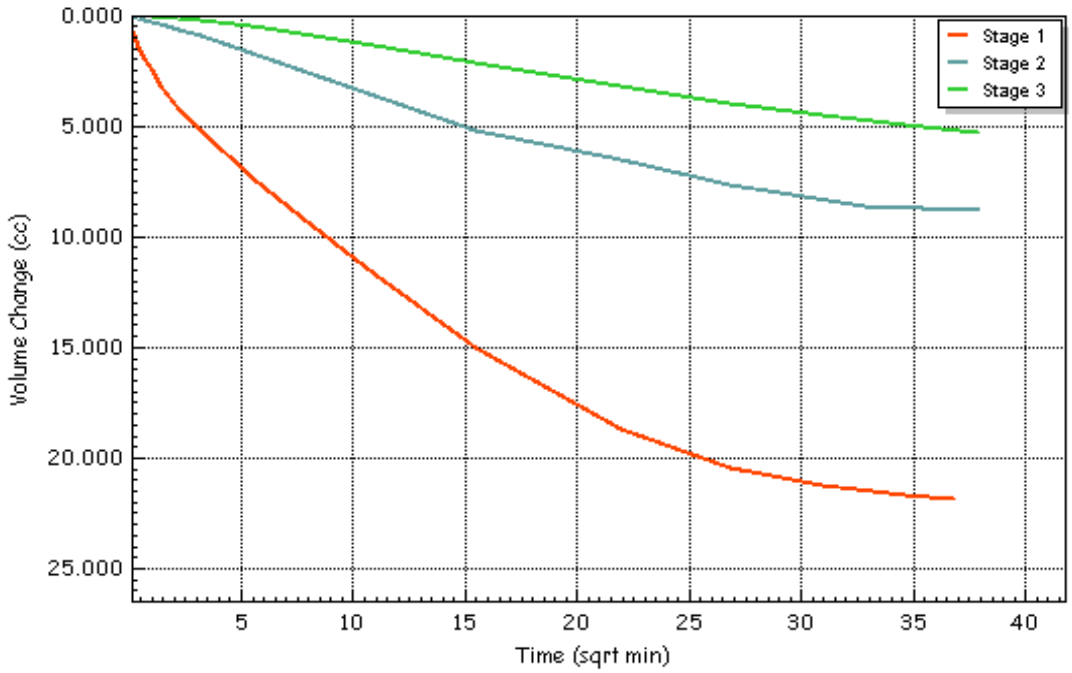
## Consolidated Drained

**Consolidation Plots**

| **Initial Conditions** | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| Initial Cell Pressure | $\sigma_3$ | (kPa) | 1140 | 1230 | 1320 |
| Initial Back Pressure | $u_{bi}$ | (kPa) | 1050 | 1050 | 1050 |
| Pore Water Pressure Input | $u_{pwp}$ | (kPa) | 1114 | 1195 | 1287 |
| Drainage Method | | | Radial+One End | | |

| **Final Conditions** | | | Stage 1 | 2 | 3 |
|---|---|---|---|---|---|
| PWP Dissipation % | U% | (%) | 100.00 | 100.00 | 100.00 |
| Volumetric Strain | $\varepsilon_v$% | (%) | 1.64 | 0.66 | 0.39 |
| Corrected Length | $L_C$ | (mm) | 200.1 | 193.8 | 189.9 |
| Corrected Area | $A_C$ | (cm2) | 65.46 | 67.14 | 68.25 |
| Corrected Volume | $V_C$ | (cc) | 1309.837 | 1301.055 | 1295.800 |
| t100 | $t_{100}$ | (min) | 451.39 | 514.20 | 1018.12 |
| Consolidation | $c_v$ | (m2/year) | 0.386 | 0.338 | 0.171 |
| Compressibility | $m_v$ | (m2/MN) | 0.256 | 0.045 | 0.017 |
| Test Time | $t_F$ | (h:m:s) | 105:19:27 | 119:58:48 | 237:33:40 |
| Estimated Strain to Failure | $\varepsilon$% | (%) | 5.0 | 5.0 | 5.0 |
| Shear Machine Speed | $d_r$ | (mm/min) | 0.00158 | 0.00158 | 0.00158 |

**Notes**




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH110 9.43-9.73m CS109. |
| | | Test Date | 07/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH110 |
| | | Sample | 9.43-9.73m CS109 |
| Client | Ground Technology | Depth | 9.43-9.73m |

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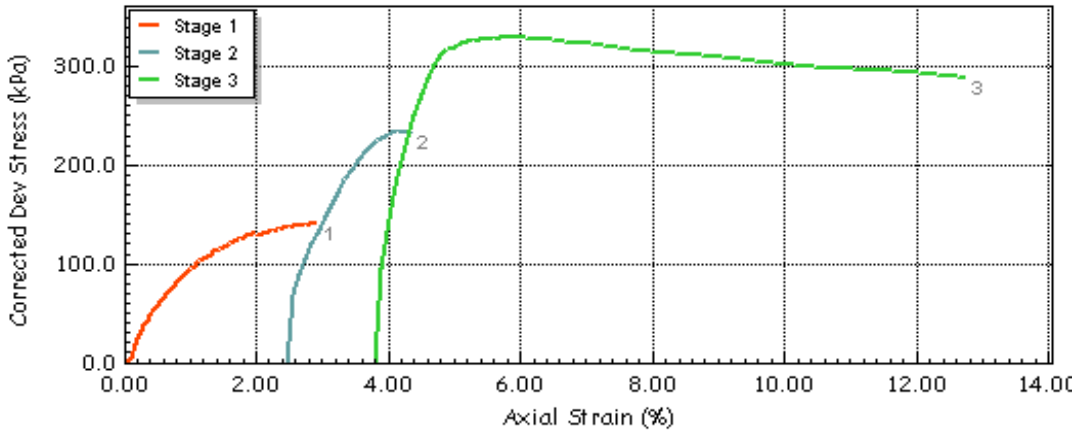
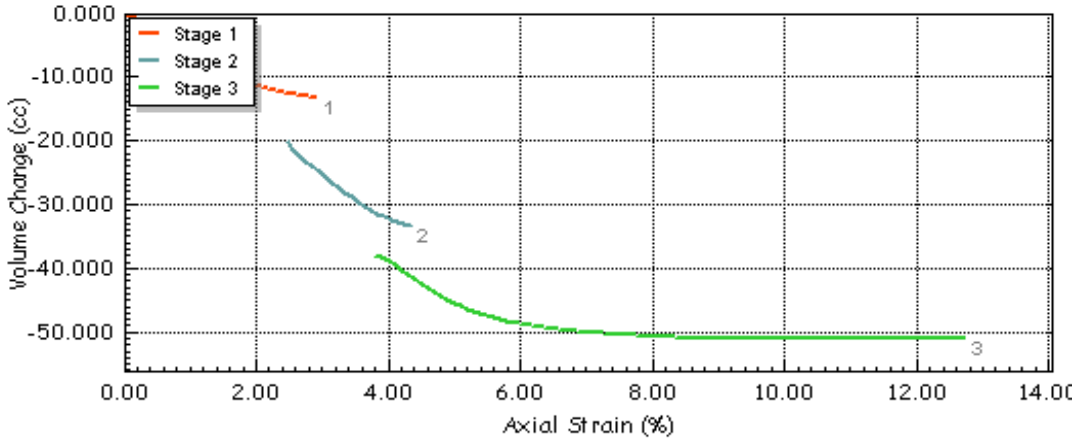
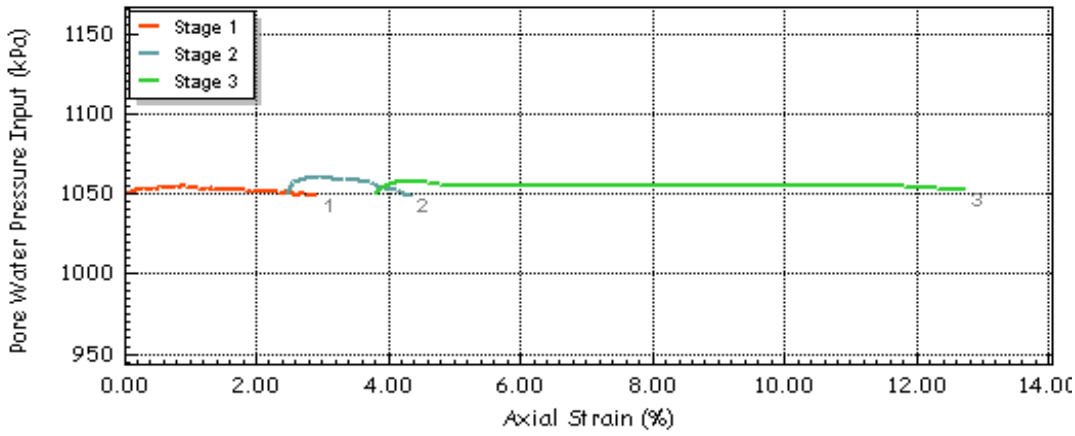
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH110 9.43-9.73m CS109. |
| | | Test Date | 07/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH110 |
| | | Sample | 9.43-9.73m CS109 |
| Client | Ground Technology | Depth | 9.43-9.73m |

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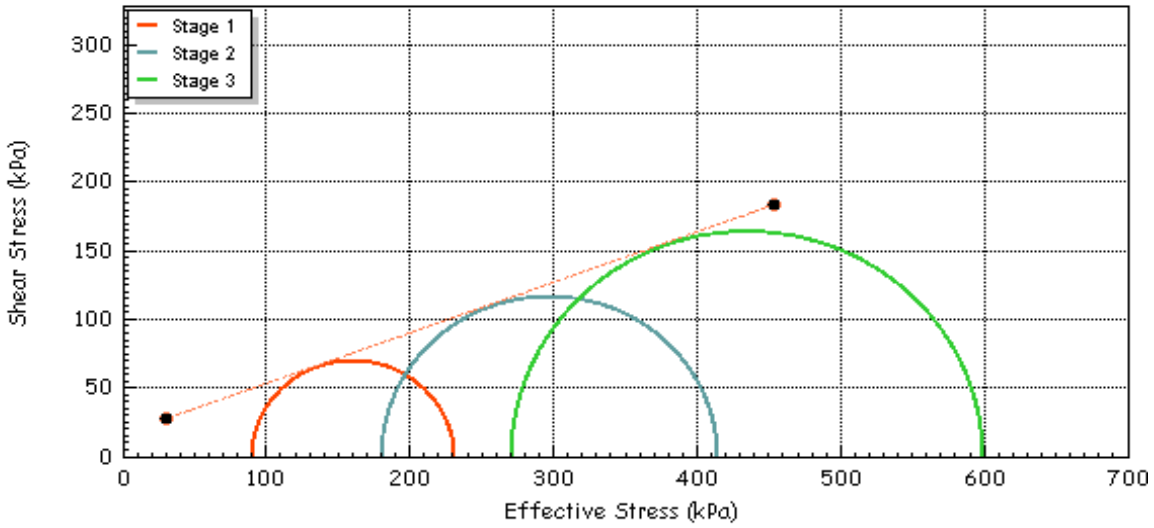
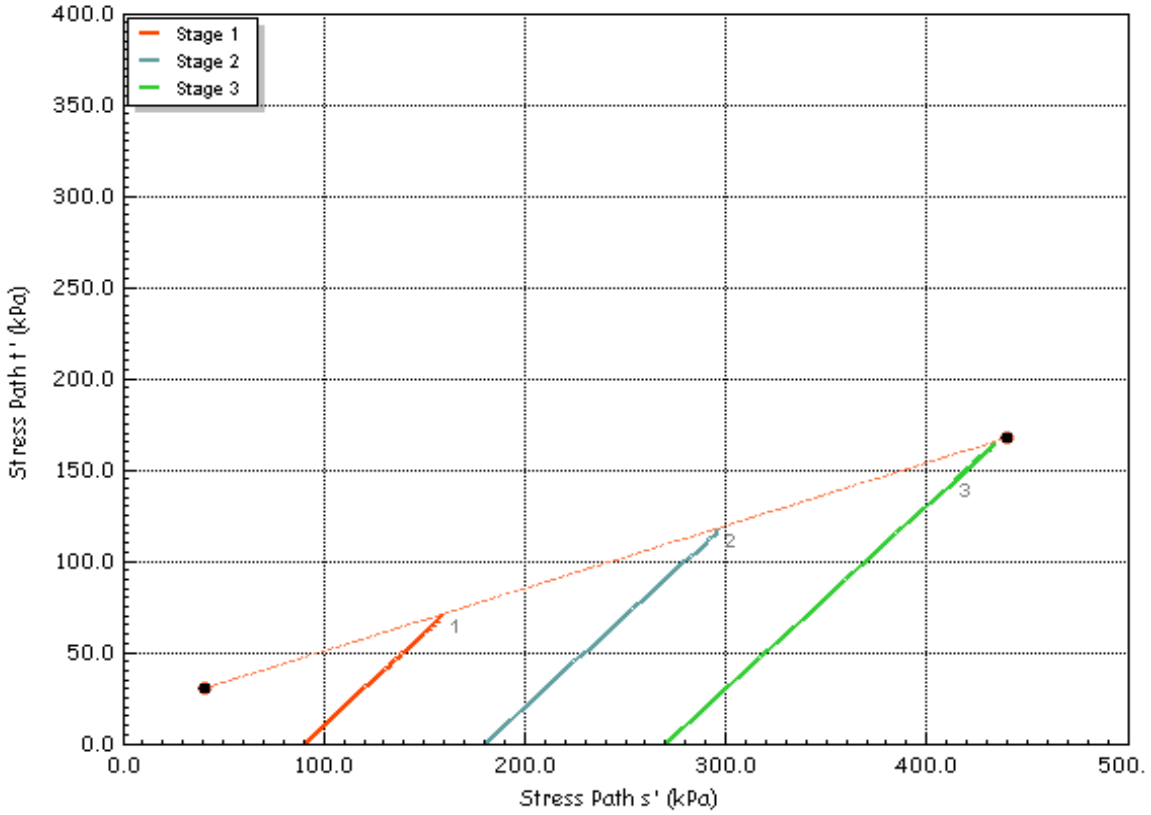
# Effective Stress Triaxial Compression

## Consolidated Drained

**Shear Stage Plots**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Effective | c' | (kPa) | 16.59 | Effective Cohesion | c' | (kPa) | 16.59 |
| Effective Friction | ϕ' | (deg) | 20.2 | Effective Friction | ϕ' | (deg) | 20.2 |




| | | | |
|---|---|---|---|
| Test Method | BS1377-8 : 1990 : Clause 8 | Test Name | BH110 9.43-9.73m CS109. |
| | | Test Date | 07/07/2022 |
| Jobfile | Wansford to Sutton Dualling Supplementary GI | Borehole | BH110 |
| | | Sample | 9.43-9.73m CS109 |
| Client | Ground Technology | Depth | 9.43-9.73m |

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# Point Load Strength Index Tests Summary

| Project No. | Project Name |
|---|---|
| GT0386 | Wansford to Sutton Dualling Supplementary GI |

| Borehole No. | Sample | | | Specimen | | Rock Type and Test condition | Test Type see ISRM | | Failure Valid (Y/N) | Dimensions | | | | Force P | Equivalent diameter, De | Point Load Strength Index | | Remarks (including water content if measured) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Depth | Ref. | Type | Ref. | Depth | | Type (D, A, I, B) | Direction (L, P or U) | | Lne | W | Dps | Dps' | | | $I_s$ | $I_{s(50)}$ | |
| | m | | | | m | | | | | mm | mm | mm | mm | kN | mm | MPa | MPa | |
| TP166 | 1.00 | 5 | B | 1 | 1.00 | Limestone | I | U | YES | 36.8 | 45.1 | 44.0 | 38.0 | 4.9 | 46.7 | 2.3 | 2.2 | w = 1.2% |
| TP166 | 1.00 | 5 | B | 2 | 1.00 | Limestone | I | U | YES | 38.7 | 51.2 | 48.0 | 42.0 | 8.4 | 52.3 | 3.1 | 3.1 | w = 2.0% |
| TP166 | 1.00 | 5 | B | 3 | 1.00 | Limestone | I | U | YES | 27.3 | 41.9 | 30.0 | 27.0 | 3.6 | 37.9 | 2.5 | 2.2 | w = 1.8% |
| TP144 | 1.90 | 9 | B | 1 | 1.90 | Limestone | I | U | YES | 38.0 | 57.9 | 39.0 | 35.0 | 7.0 | 50.8 | 2.7 | 2.7 | w = 3.8% |
| TP144 | 1.90 | 9 | B | 2 | 1.90 | Limestone | I | U | YES | 39.0 | 59.5 | 43.5 | 38.0 | 8.7 | 53.6 | 3.0 | 3.1 | w = 4.2% |
| TP144 | 1.90 | 9 | B | 3 | 1.90 | Limestone | I | U | YES | 36.1 | 55.7 | 51.0 | 45.0 | 5.2 | 56.5 | 1.6 | 1.7 | w = 4.7% |
| TP141 | 1.90 | 9 | B | 1 | 1.90 | Limestone | I | U | YES | 36.8 | 41.0 | 30.0 | 27.0 | 1.5 | 37.5 | 1.1 | 1.0 | w = 11.0% |
| TP141 | 1.90 | 9 | B | 2 | 1.90 | Limestone | I | U | YES | 41.8 | 45.8 | 39.5 | 36.5 | 2.0 | 46.1 | 1.0 | 0.9 | w = 11.6% |
| TP141 | 1.90 | 9 | B | 3 | 1.90 | Limestone | I | U | YES | 40.0 | 49.8 | 48.0 | 43.0 | 1.5 | 52.2 | 0.6 | 0.6 | w = 13.9% |
| TP139 | 2.40 | 9 | B | 1 | 2.40 | Limestone | I | U | YES | 40.1 | 47.1 | 38.0 | 35.0 | 0.8 | 45.8 | 0.4 | 0.4 | w = 10.0% |
| TP139 | 2.40 | 9 | B | 2 | 2.40 | Limestone | I | U | YES | 35.2 | 48.4 | 47.5 | 42.5 | 0.8 | 51.2 | 0.3 | 0.3 | w = 4.1% |
| TP139 | 2.40 | 9 | B | 3 | 2.40 | Limestone | I | U | YES | 42.6 | 44.5 | 42.0 | 39.0 | 1.4 | 47.0 | 0.6 | 0.6 | w = 5.7% |
| | | | | | | | | | | | | | | | | | | |
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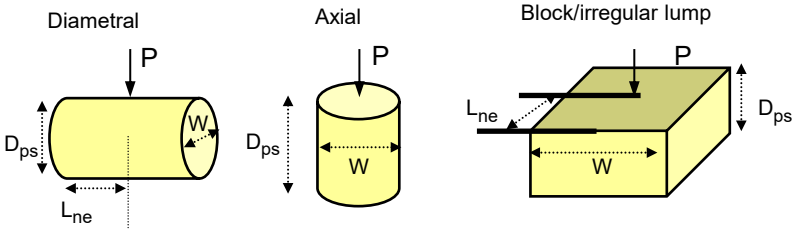
Test Type
D - Diametral, A - Axial, I - Irregular Lump, B - Block
Direction
L - parallel to planes of weakness
P - perpendicular to planes of weakness
U - unknown or random
Dimensions
Dps - Distance between platens ( platen separation )
Dps' - at failure ( see ISRM note 6)
Lne - Length from platens to nearest free end
W - Width of shortest dimension perpendicular to load, P




Test performed in accordance with ISRM Suggested Methods : 2007, unless noted otherwise
Detailed legend for test and dimensions, based on ISRM, is shown above.

| Date Printed | Approved By | |
|---|---|---|
| 01/08/2022 | | 1 |

# SUMMARY OF POINT LOAD TEST RESULTS

**ISRM Suggested Methods : 2007**

| Borehole Number | Depth (m) | Sample Ref | Test Type | Orientation | Dimensions (mm) | | Area | $D_e^2$ | $D_e$ | Failure Load (P) | | $I_s$ | Corr Fac | $I_{s50}$ | Failure Type | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Par / Perp | W | D | (mm2) | | (mm) | (Mpa) | (kN) | (MPa) | F | (MPa) | | |
| BH103 | 3.91 | 103 | A | Perp | 85 | 31 | 2635 | 3354.99 | 57.92 | - | 2.72 | 0.81 | 1.068 | 0.87 | Valid | |
| BH103 | 4.95 | 104 | A | Perp | 85 | 55 | 4675 | 5952.39 | 77.15 | - | 14.35 | 2.41 | 1.216 | 2.93 | Valid | |
| BH104/104A | 3.40 | 102 | A | Perp | 85 | 53 | 4505 | 5735.94 | 75.74 | - | 11.48 | 2.00 | 1.205 | 2.41 | Valid | |
| BH104/104A | 4.25 | 104 | A | Perp | 85 | 84 | 7140 | 9090.93 | 95.35 | - | 13.46 | 1.48 | 1.337 | 1.98 | Valid | |
| BH108 | 2.17 | 102 | A | Perp | 90 | 25 | 2250 | 2864.79 | 53.52 | - | 7.21 | 2.52 | 1.031 | 2.60 | Valid | |
| BH108 | 4.36 | 103 | A | Perp | 85 | 70 | 5950 | 7575.78 | 87.04 | - | 14.07 | 1.86 | 1.283 | 2.38 | Valid | |
| BH105 | 3.00 | 103 | A | Perp | 100 | 50 | 5000 | 6366.20 | 79.79 | - | 3.14 | 0.49 | 1.234 | 0.61 | Valid | |
| BH105 | 9.10 | 109 | A | Perp | 100 | 73 | 7300 | 9294.65 | 96.41 | - | 2.52 | 0.27 | 1.344 | 0.36 | Valid | |
| BH106 | 7.60 | 116 | A | Perp | 81 | 60 | 4860 | 6187.94 | 78.66 | - | 9.49 | 1.53 | 1.226 | 1.88 | Valid | |
| BH109 | 4.16 | 104 | A | Perp | 90 | 65 | 5850 | 7448.45 | 86.30 | - | 7.34 | 0.99 | 1.278 | 1.26 | Valid | |
| BH111 | 3.40 | 103 | A | Perp | 86 | 75 | 6450 | 8212.40 | 90.62 | - | 11.54 | 1.41 | 1.307 | 1.84 | Valid | |
| BH111 | 4.48 | 104 | A | Perp | 90 | 65 | 5850 | 7448.45 | 86.30 | - | 12.41 | 1.67 | 1.278 | 2.13 | Valid | |
| BH117 | 13.50 | 109 | A | Perp | 100 | 64 | 6400 | 8148.73 | 90.27 | - | 3.12 | 0.38 | 1.305 | 0.50 | Valid | |
| BH109 | 3.00 | 103 | A | Perp | 85 | 60 | 5100 | 6493.52 | 80.58 | - | 1.22 | 0.19 | 1.240 | 0.23 | Valid | |
| BH132 | 3.54 | 103 | A | Perp | 100 | 70 | 7000 | 8912.68 | 94.41 | - | 2.88 | 0.32 | 1.331 | 0.43 | Valid | |
| BH118 | 10.60 | 103 | A | Perp | 100 | 47 | 4700 | 5984.23 | 77.36 | - | 13.89 | 2.32 | 1.217 | 2.82 | Valid | |
| BH120/120A | 8.83 | 102 | A | Perp | 80 | 41 | 3280 | 4176.23 | 64.62 | - | 5.14 | 1.23 | 1.122 | 1.38 | Valid | |
| BH126 | 3.90 | 101 | A | Perp | 80 | 38 | 3040 | 3870.65 | 62.21 | - | 0.88 | 0.23 | 1.103 | 0.25 | Valid | |
| BH126 | 6.61 | 103 | A | Perp | 85 | 45 | 3825 | 4870.14 | 69.79 | - | 1.23 | 0.25 | 1.162 | 0.29 | Valid | |
| BH126 | 7.99 | 104 | A | Perp | 85 | 48 | 4080 | 5194.82 | 72.08 | - | 5.12 | 0.99 | 1.179 | 1.16 | Valid | |
| BH126 | 9.68 | 105 | A | Perp | 90 | 60 | 5400 | 6875.49 | 82.92 | - | 5.84 | 0.85 | 1.256 | 1.07 | Valid | |
| BH127 | 9.19 | 105 | A | Perp | 90 | 60 | 5400 | 6875.49 | 82.92 | - | 13.43 | 1.95 | 1.256 | 2.45 | Valid | |

***Note** All testing carried out on samples at as received water content  Par = parallel, Perp = perpendicular, U = Random  A = Axial, D = Diametral, I = Irregular

UKAS TESTING
4043

PSL
Professional Soils Laboratory

**Wansford to Sutton Dualling Supplementary GI**

**Contract No:**
**PSL22/3650**
**Client Ref:**
**GT0386**

# SUMMARY OF POINT LOAD TEST RESULTS

**ISRM Suggested Methods : 2007**

| Borehole Number | Depth (m) | Sample Ref | Test Type | Orientation | Dimensions (mm) | | $D_e^2$ | $D_e$ | Failure Load | | $I_s$ | Corr Fac | $I_{s50}$ | Failure Type | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Par / Perp | L | D | | (mm) | (Mpa) | (kN) | (MPa) | F | (MPa) | | |
| BH103 | 3.91 | 103 | D | Par | - | 85 | 7225 | 85.00 | - | 12.75 | 1.765 | 1.270 | 2.24 | Valid | |
| BH103 | 4.95 | 104 | D | Par | - | 85 | 7225 | 85.00 | - | 0.90 | 0.125 | 1.270 | 0.16 | Valid | |
| BH104/104A | 3.40 | 102 | D | Par | - | 85 | 7225 | 85.00 | - | 8.23 | 1.139 | 1.270 | 1.45 | Valid | |
| BH104/104A | 4.25 | 104 | D | Par | - | 85 | 7225 | 85.00 | - | 11.63 | 1.610 | 1.270 | 2.04 | Valid | |
| BH108 | 2.17 | 102 | D | Par | - | 90 | 8100 | 90.00 | - | 9.21 | 1.137 | 1.303 | 1.48 | Valid | |
| BH108 | 4.36 | 103 | D | Par | - | 85 | 7225 | 85.00 | - | 1.06 | 0.147 | 1.270 | 0.19 | Valid | |
| BH105 | 3.00 | 103 | D | Par | - | 100 | 10000 | 100.00 | - | 2.76 | 0.276 | 1.366 | 0.38 | Valid | |
| BH105 | 9.10 | 109 | D | Par | - | 100 | 10000 | 100.00 | - | 3.53 | 0.353 | 1.366 | 0.48 | Valid | |
| BH106 | 7.60 | 116 | D | Par | - | 81 | 6561 | 81.00 | - | 9.49 | 1.446 | 1.242 | 1.80 | Valid | |
| BH109 | 4.16 | 104 | D | Par | - | 90 | 8100 | 90.00 | - | 11.33 | 1.399 | 1.303 | 1.82 | Valid | |
| BH111 | 3.40 | 103 | D | Par | - | 86 | 7396 | 86.00 | - | 3.30 | 0.446 | 1.276 | 0.57 | Valid | |
| BH111 | 4.48 | 104 | D | Par | - | 90 | 8100 | 90.00 | - | 2.53 | 0.312 | 1.303 | 0.41 | Valid | |
| BH117 | 13.50 | 109 | D | Par | - | 100 | 10000 | 100.00 | - | 2.77 | 0.277 | 1.366 | 0.38 | Valid | |
| BH109 | 3.00 | 103 | D | Par | - | 85 | 7225 | 85.00 | - | 0.75 | 0.104 | 1.270 | 0.13 | Valid | |
| BH132 | 3.54 | 103 | D | Par | - | 100 | 10000 | 100.00 | - | 3.01 | 0.301 | 1.366 | 0.41 | Valid | |
| BH118 | 10.60 | 103 | D | Par | - | 100 | 10000 | 100.00 | - | 13.34 | 1.334 | 1.366 | 1.82 | Valid | |
| BH120/120A | 8.83 | 102 | D | Par | - | 80 | 6400 | 80.00 | - | 4.15 | 0.648 | 1.236 | 0.80 | Valid | |
| BH126 | 3.90 | 101 | D | Par | - | 80 | 6400 | 80.00 | - | 0.45 | 0.070 | 1.236 | 0.09 | Valid | |
| BH126 | 6.61 | 103 | D | Par | - | 85 | 7225 | 85.00 | - | 1.17 | 0.162 | 1.270 | 0.21 | Valid | |
| BH126 | 7.99 | 104 | D | Par | - | 85 | 7225 | 85.00 | - | 6.69 | 0.926 | 1.270 | 1.18 | Valid | |
| BH126 | 9.68 | 105 | D | Par | - | 90 | 8100 | 90.00 | - | 6.75 | 0.833 | 1.303 | 1.09 | Valid | |
| BH127 | 9.19 | 105 | D | Par | - | 90 | 8100 | 90.00 | - | 10.83 | 1.337 | 1.303 | 1.74 | Valid | |

***Note*** All testing carried out on samples at as received water content

Par = parallel, Perp = perpendicular, U = Random

UKAS TESTING 4043

PSL Professional Soils Laboratory

**Wansford to Sutton Dualling Supplementary GI**

**Contract No:**

**PSL22/3650**

**Client Ref:**

**GT0386**

# SUMMARY OF POINT LOAD TEST RESULTS

**ISRM Suggested Methods : 2007**

| Borehole Number | Depth (m) | Sample Ref | Test Type | Orientation | Dimensions (mm) | | Area | $D_e^2$ | $D_e$ | Failure Load (P) | | $I_s$ | Corr Fac | $I_{s50}$ | Failure Type | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Par / Perp | W | D | (mm2) | | (mm) | (Mpa) | (kN) | (MPa) | F | (MPa) | | |
| BH129 | 5.83 | 108 | A | Perp | 90 | 48 | 4320 | 5500.39 | 74.16 | - | 19.24 | 3.50 | 1.194 | 4.18 | Valid | |
| BH129 | 7.07 | 109 | A | Perp | 90 | 47 | 4230 | 5385.80 | 73.39 | - | 8.74 | 1.62 | 1.188 | 1.93 | Valid | |
| BH129 | 9.14 | 111 | A | Perp | 90 | 48 | 4320 | 5500.39 | 74.16 | - | 1.01 | 0.18 | 1.194 | 0.22 | Valid | |
| BH123 | 6.30 | 105 | A | Perp | 90 | 73 | 6570 | 8365.18 | 91.46 | - | 18.79 | 2.25 | 1.312 | 2.95 | Valid | |
| BH124 | 6.50 | 108 | A | Perp | 90 | 46 | 4140 | 5271.21 | 72.60 | - | 5.84 | 1.11 | 1.183 | 1.31 | Valid | |
| BH121 | 5.34 | 102 | A | Perp | 85 | 47 | 3995 | 5086.59 | 71.32 | - | 9.98 | 1.96 | 1.173 | 2.30 | Valid | |
| BH121 | 6.40 | 104 | A | Perp | 85 | 38 | 3230 | 4112.56 | 64.13 | - | 8.98 | 2.18 | 1.119 | 2.44 | Valid | |
| BH121 | 6.65 | 105 | A | Perp | 85 | 37 | 3145 | 4004.34 | 63.28 | - | 11.24 | 2.81 | 1.112 | 3.12 | Valid | |
| BH122 | 6.02 | 107 | A | Perp | 85 | 47 | 3995 | 5086.59 | 71.32 | - | 9.57 | 1.88 | 1.173 | 2.21 | Valid | |
| BH122 | 8.30 | 109 | A | Perp | 85 | 50 | 4250 | 5411.27 | 73.56 | - | 4.68 | 0.86 | 1.190 | 1.03 | Valid | |
| BH125 | 5.85 | 104 | A | Perp | 85 | 48 | 4080 | 5194.82 | 72.08 | - | 12.85 | 2.47 | 1.179 | 2.92 | Valid | |
| BH125 | 9.24 | 107 | A | Perp | 85 | 55 | 4675 | 5952.39 | 77.15 | - | 12.58 | 2.11 | 1.216 | 2.57 | Valid | |
| BH110 | 8.81 | 108 | A | Perp | 85 | 63 | 5355 | 6818.20 | 82.57 | - | 14.88 | 2.18 | 1.253 | 2.74 | Valid | |
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***Note*** All testing carried out on samples at as received water content

Par = parallel, Perp = perpendicular, U = Random

A = Axial, D = Diametral, I = Irregular

UKAS TESTING 4043

PSL Professional Soils Laboratory

**Wansford to Sutton Dualling Supplementary GI**

**Contract No:**

**PSL22/3650**

**Client Ref:**

**GT0386**

# SUMMARY OF POINT LOAD TEST RESULTS

**ISRM Suggested Methods : 2007**

| Borehole Number | Depth (m) | Sample Ref | Test Type | Orientation | Dimensions (mm) | | $D_e^2$ | $D_e$ | Failure Load | | $I_s$ | Corr Fac | $I_{s50}$ | Failure Type | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Par / Perp | L | D | | (mm) | (Mpa) | (kN) | (MPa) | F | (MPa) | | |
| BH129 | 5.83 | 108 | D | Par | - | 90 | 8100 | 90.00 | - | 14.62 | 1.805 | 1.303 | 2.35 | Valid | |
| BH129 | 7.07 | 109 | D | Par | - | 90 | 8100 | 90.00 | - | 9.58 | 1.183 | 1.303 | 1.54 | Valid | |
| BH129 | 9.14 | 111 | D | Par | - | 90 | 8100 | 90.00 | - | 1.16 | 0.143 | 1.303 | 0.19 | Valid | |
| BH123 | 6.30 | 105 | D | Par | - | 90 | 8100 | 90.00 | - | 10.54 | 1.301 | 1.303 | 1.70 | Valid | |
| BH124 | 6.50 | 108 | D | Par | - | 90 | 8100 | 90.00 | - | 5.63 | 0.695 | 1.303 | 0.91 | Valid | |
| BH121 | 5.34 | 102 | D | Par | - | 85 | 7225 | 85.00 | - | 6.10 | 0.844 | 1.270 | 1.07 | Valid | |
| BH121 | 6.40 | 104 | D | Par | - | 85 | 7225 | 85.00 | - | 5.78 | 0.800 | 1.270 | 1.02 | Valid | |
| BH121 | 6.65 | 105 | D | Par | - | 85 | 7225 | 85.00 | - | 11.70 | 1.619 | 1.270 | 2.06 | Valid | |
| BH122 | 6.02 | 107 | D | Par | - | 85 | 7225 | 85.00 | - | 7.80 | 1.080 | 1.270 | 1.37 | Valid | |
| BH122 | 8.30 | 109 | D | Par | - | 85 | 7225 | 85.00 | - | 14.08 | 1.949 | 1.270 | 2.47 | Valid | |
| BH125 | 5.85 | 104 | D | Par | - | 85 | 7225 | 85.00 | - | 10.11 | 1.399 | 1.270 | 1.78 | Valid | |
| BH125 | 9.24 | 107 | D | Par | - | 85 | 7225 | 85.00 | - | 11.24 | 1.556 | 1.270 | 1.98 | Valid | |
| BH110 | 8.81 | 108 | D | Par | - | 85 | 7225 | 85.00 | - | 13.27 | 1.837 | 1.270 | 2.33 | Valid | |
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***Note*** All testing carried out on samples at as received water content

Par = parallel, Perp = perpendicular, U = Random

UKAS TESTING 4043

PSL Professional Soils Laboratory

**Wansford to Sutton Dualling Supplementary GI**

**Contract No:**

**PSL22/3650**

**Client Ref:**

**GT0386**

# SUMMARY OF POROSITY TESTS

**(ISRM Suggested Method for Porosity Determination)**

| Hole Number | Sample Number | Sample Type | Sample Depth (m) | Water Content (%) | Bulk Density (Mg/m3) | Dry Density (Mg/m3) | Porosity % | Remarks |
|---|---|---|---|---|---|---|---|---|
| BH126 | 102 | CS | 5.20 | 13 | 2.20 | 1.94 | 23 | |
| BH126 | 105 | CS | 9.68 | 6.8 | 2.38 | 2.23 | 16 | |
| BH127 | 104 | CS | 7.89 | 6.2 | 2.34 | 2.20 | 12 | |
| BH127 | 105 | CS | 9.19 | 5.4 | 2.35 | 2.23 | 13 | |
| BH129 | 108 | CS | 5.83 | 3.4 | 2.56 | 2.48 | 8.8 | |
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PSL Professional Soils Laboratory

**Wansford to Sutton Dualling Supplementary GI**

**Contract No:**

**PSL22/3650**

**Client Ref:**

**GT0386**

# SUMMARY OF ROCK TESTS

**(ISRM Suggested Method for the Determination of the Water Content of Rock)**

| Hole Number | Sample Number | Sample Type | Sample Depth (m) | Water Content (%) | Bulk Density (Mg/m3) | Dry Density (Mg/m3) | Porosity % | Remarks |
|---|---|---|---|---|---|---|---|---|
| BH101 | 7 | CS | 5.60 | 5.6 | | | | |
| BH103 | 103 | CS | 3.91 | 3.7 | | | | |
| BH103 | 104 | CS | 4.95 | 5.1 | | | | |
| BH104/BH104A | 102 | CS | 3.40 | 2.9 | | | | |
| BH104/BH104A | 104 | CS | 4.25 | 5.0 | | | | |
| BH105 | 103 | CS | 3.00 | 6.4 | | | | |
| BH105 | 109 | CS | 9.10 | 4.6 | | | | |
| BH106 | 116 | CS | 7.60 | 3.7 | | | | |
| BH108 | 102 | CS | 2.17 | 3.2 | | | | |
| BH108 | 103 | CS | 4.36 | 2.8 | | | | |
| BH109 | 103 | CS | 3.00 | 11 | | | | |
| BH109 | 104 | CS | 4.16 | 3.9 | | | | |
| BH109 | 105 | CS | 5.64 | 5.1 | | | | |
| BH109 | 110 | CS | 11.10 | 3.3 | | | | |
| BH111 | 103 | CS | 3.40 | 5.0 | | | | |
| BH111 | 104 | CS | 4.48 | 5.7 | | | | |
| BH117 | 108 | CS | 13.00 | 4.0 | | | | |
| BH132 | 103 | CS | 3.54 | 4.4 | | | | |
| BH118 | 103 | CS | 10.60 | | | | | |

**Wansford to Sutton Dualling Supplementary GI**

**Contract No:**

**PSL22/3650**

**Client Ref:**

**GTO386**

# SUMMARY OF ROCK TESTS

**(ISRM Suggested Method for the Determination of the Water Content of Rock)**

| Hole Number | Sample Number | Sample Type | Sample Depth (m) | Water Content (%) | Bulk Density (Mg/m3) | Dry Density (Mg/m3) | Porosity % | Remarks |
|---|---|---|---|---|---|---|---|---|
| BH120/BH120A | 102 | CS | 8.83 | 3.8 | | | | |
| BH126 | 101 | CS | 3.90 | 8.0 | | | | |
| BH126 | 102 | CS | 5.20 | 3.8 | | | | |
| BH126 | 103 | CS | 6.61 | 5.3 | | | | |
| BH126 | 104 | CS | 7.99 | 6.7 | | | | |
| BH126 | 105 | CS | 9.68 | 8.5 | | | | |
| BH127 | 104 | CS | 7.89 | 0.3 | | | | |
| BH127 | 105 | CS | 9.19 | 3.9 | | | | |
| BH129 | 108 | CS | 5.83 | 3.8 | | | | |
| BH129 | 109 | CS | 7.07 | 8.5 | | | | |
| BH129 | 110 | CS | 8.56 | 6.8 | | | | |
| BH129 | 111 | CS | 9.14 | 11 | | | | |
| BH107 | 101 | CS | 3.83 | 2.8 | | | | |
| BH123 | 105 | CS | 6.30 | 4.7 | | | | |
| BH123 | 106 | CS | 8.22 | 3.7 | | | | |
| BH124 | 107 | CS | 6.00 | 7.5 | | | | |
| BH124 | 108 | CS | 6.50 | 2.2 | | | | |
| BH121 | 102 | CS | 5.34 | 2.7 | | | | |
| BH121 | 103 | CS | 5.80 | 6.7 | | | | |

# SUMMARY OF ROCK TESTS

**(ISRM Suggested Method for the Determination of the Water Content of Rock)**

| Hole Number | Sample Number | Sample Type | Sample Depth (m) | Water Content (%) | Bulk Density (Mg/m3) | Dry Density (Mg/m3) | Porosity % | Remarks |
|---|---|---|---|---|---|---|---|---|
| BH121 | 104 | CS | 6.40 | 2.6 | | | | |
| BH121 | 105 | CS | 6.65 | 6.6 | | | | |
| BH122 | 107 | CS | 6.02 | 15 | | | | |
| BH122 | 108 | CS | 7.00 | 3.9 | | | | |
| BH122 | 109 | CS | 8.30 | 2.9 | | | | |
| BH125 | 104 | CS | 5.85 | 8.3 | | | | |
| BH125 | 106 | CS | 7.00 | 11 | | | | |
| BH125 | 107 | CS | 9.24 | 5.4 | | | | |
| BH110 | 108 | CS | 8.81 | 3.3 | | | | |
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PSL Professional Soils Laboratory

**Wansford to Sutton Dualling Supplementary GI**

**Contract No:**

**PSL22/3650**

**Client Ref:**

**GTO386**

# SUMMARY OF ROCK TESTS

**(ISRM Suggested Method for the Determination of the Water Content of Rock)**

| Hole Number | Sample Number | Sample Type | Sample Depth (m) | Water Content (%) | Bulk Density (Mg/m3) | Dry Density (Mg/m3) | Porosity % | Remarks |
|---|---|---|---|---|---|---|---|---|
| BH136 | 11 | CS | 3.54 | 6.9 | | | | |
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Professional Soils Laboratory

**Wansford to Sutton Dualling Supplementary GI**

**Contract No:**

**PSL22/4145**

**Client Ref:**

**GT0386**

# DETERMINATION OF UNCONFINED COMPRESSIVE STRENGTH

**ISRM Suggested Methods, pp 111 –116, 1981.**

| Hole Number | Sample Number | Sample Type | Top Depth (m) | Base Depth (m) | Sample Diameter (mm) | Sample Length (mm) | Height Ratio | Initial Mass (g) | Bulk Density (Mg/m) | Moisture Content (%) | Dry Density (Mg/m) | Load Failure (kN) | UCS (MPa) | Failure Mode | Date Tested | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BH136 | 11 | CS | 3.54 | 3.70 | 85 | 130 | 1.5 | 1879 | 2.55 | 6.9 | 2.38 | 53.4 | 9.4 | Brittle | 20/07/22 | |
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|---|---|---|
| PSL Professional Soils Laboratory | **Wansford to Sutton Dualling Supplementary GI** | **Contract No:** |
| | | **PSL22/4145** |
| | | **Client Ref:** |
| | | **GT0386** |

# DETERMINATION OF UNCONFINED COMPRESSIVE STRENGTH

**ISRM Suggested Methods, pp 111 –116, 1981.**

| Hole Number | Sample Number | Sample Type | Top Depth (m) | Base Depth (m) | Sample Diameter (mm) | Sample Length (mm) | Height Ratio | Initial Mass (g) | Bulk Density (Mg/m) | Moisture Content (%) | Dry Density (Mg/m) | Load Failure (kN) | UCS (MPa) | Failure Mode | Date Tested | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BH101 | 7 | CS | 5.60 | 5.77 | 85 | 160 | 1.9 | 2298 | 2.53 | 5.6 | 2.40 | 171.0 | 30.1 | Brittle | 01/06/22 | |
| BH109 | 105 | CS | 5.64 | 5.84 | 85 | 180 | 2.1 | 2586 | 2.53 | 5.1 | 2.41 | 78.6 | 13.8 | Brittle | 01/06/22 | |
| BH109 | 110 | CS | 11.10 | 11.50 | 85 | 185 | 2.2 | 2790 | 2.66 | 3.3 | 2.57 | 311.3 | 54.9 | Brittle | 01/06/22 | |
| BH117 | 108 | CS | 13.00 | 13.35 | 100 | 185 | 1.9 | 3866 | 2.66 | 4.1 | 2.56 | 201.0 | 25.6 | Brittle | 01/06/22 | |
| BH123 | 106 | CS | 8.22 | 8.50 | 85 | 185 | 2.2 | 2789 | 2.66 | 3.7 | 2.56 | 258.4 | 45.5 | Brittle | 01/06/22 | |
| BH126 | 102 | CS | 5.20 | 5.44 | 80 | 185 | 2.3 | 2081 | 2.24 | 8.0 | 2.07 | 39.8 | 7.9 | Brittle | 01/06/22 | |
| BH127 | 104 | CS | 7.89 | 8.10 | 85 | 165 | 1.9 | 2184 | 2.33 | 5.7 | 2.21 | 91.3 | 16.1 | Brittle | 01/06/22 | |
| BH129 | 110 | CS | 8.56 | 8.79 | 80 | 160 | 2.0 | 2200 | 2.74 | 6.8 | 2.56 | 126.2 | 25.1 | Brittle | 01/06/22 | |
| BH107 | 101 | CS | 3.83 | 4.01 | 85 | 160 | 1.9 | 2188 | 2.41 | 2.8 | 2.34 | 101.4 | 17.9 | Brittle | 01/06/22 | |
| BH121 | 103 | CS | 5.80 | 5.96 | 80 | 155 | 1.9 | 2116 | 2.72 | 6.7 | 2.55 | 79.8 | 15.9 | Brittle | 07/07/22 | |
| BH122 | 108 | CS | 7.00 | 7.20 | 80 | 170 | 2.1 | 2315 | 2.71 | 3.9 | 2.61 | 139.8 | 27.8 | Brittle | 07/07/22 | |
| BH125 | 106 | CS | 7.00 | 7.35 | 80 | 170 | 2.1 | 2179 | 2.55 | 11 | 2.29 | 45.0 | 9.0 | Brittle | 07/07/22 | |
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PSL Professional Soils Laboratory

**Wansford to Sutton Dualling Supplementary GI**

**Contract No:**

**PSL22/3650**

**Client Ref:**

**GT0386**

Chantal Cousins
Ground Technology Services
Victory Park
London Road
Attlebborough
Norfolk
NR17 1ZA

Derwentside Environmental Testing Services Ltd
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410

# DETS Report No: 22-03699

| | |
|---|---|
| Site Reference: | Wansford to Sutton dualling supplementary GI |
| Project / Job Ref: | GT0386 |
| Order No: | M-GT0386/000016 |
| Sample Receipt Date: | 26/04/2022 |
| Sample Scheduled Date: | 26/04/2022 |
| Report Issue Number: | 1 |
| Reporting Date: | 29/04/2022 |

[redacted]

Technical Manager

Dates of laboratory activities for each tested analyte are available upon request.

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

| Soil Analysis Certificate | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-03699 | Date Sampled | None Supplied | | | | |
| Ground Technology Services | Time Sampled | None Supplied | | | | |
| Site Reference: Wansford to Sutton dualling supplementary GI | TP / BH No | TP171 | | | | |
| Project / Job Ref: GT0386 | Additional Refs | 5 | | | | |
| Order No: M-GT0386/000016 | Depth (m) | 1.30 | | | | |
| Reporting Date: 29/04/2022 | DETS Sample No | 595581 | | | | |

| Determinand | Unit | RL | Accreditation | (n) | | | | |
|---|---|---|---|---|---|---|---|---|
| pH | pH Units | N/a | ISO17025 | 8.2 | | | | |
| W/S Sulphate as $SO_4$ (2:1) | mg/l | < 10 | ISO17025 | < 10 | | | | |
| W/S Sulphate as $SO_4$ (2:1) | g/l | < 0.01 | ISO17025 | < 0.01 | | | | |
| W/S Magnesium | mg/l | < 0.1 | NONE | 0.8 | | | | |

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion
Subcontracted analysis (S)
(n) Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation

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Tel : 01622 850410

UKAS TESTING
4480

| Soil Analysis Certificate - Sample Descriptions | |
|---|---|
| DETS Report No: 22-03699 | |
| Ground Technology Services | |
| Site Reference: Wansford to Sutton dualling supplementary GI | |
| Project / Job Ref: GT0386 | |
| Order No: M-GT0386/000016 | |
| Reporting Date: 29/04/2022 | |

| DETS Sample No | TP / BH No | Additional Refs | Depth (m) | Moisture Content (%) | Sample Matrix Description |
|---|---|---|---|---|---|
| ^ 595581 | TP171 | 5 | 1.30 | 8.2 | Light brown sandy gravel 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

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Maidstone
Kent ME17 2JN
Tel : 01622 850410

UKAS TESTING 4480

| Soil Analysis Certificate - Methodology & Miscellaneous Information |
|---|
| DETS Report No: 22-03699 |
| Ground Technology Services |
| Site Reference: Wansford to Sutton dualling supplementary GI |
| Project / Job Ref: GT0386 |
| Order No: M-GT0386/000016 |
| Reporting Date: 29/04/2022 |

| 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 | Fraction Organic Carbon (FOC) | Determination of TOC by combustion analyser. | E027 |
| Soil | D | Organic Matter (SOM) | Determination of TOC by combustion analyser. | E027 |
| Soil | D | TOC (Total Organic Carbon) | Determination of TOC by combustion analyser. | E027 |
| Soil | AR | Exchangeable Ammonium | Determination of ammonium by discrete analyser. | E029 |
| 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

Chantal Cousins
Ground Technology Services
Victory Park
London Road
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Norfolk
NR17 1ZA

Derwentside Environmental Testing Services Ltd
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410

# DETS Report No: 22-05277

| | |
|---|---|
| Site Reference: | Wansford to Sutton Dualling Supplementary GI |
| Project / Job Ref: | GT0386 |
| Order No: | M-GT0386/000016 |
| Sample Receipt Date: | 16/06/2022 |
| Sample Scheduled Date: | 16/06/2022 |
| Report Issue Number: | 1 |
| Reporting Date: | 22/06/2022 |

[redacted]

Dates of laboratory activities for each tested analyte are available upon request.

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.

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Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

| Soil Analysis Certificate | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-05277 | Date Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Site Reference: Wansford to Sutton Dualling Supplementary GI | TP / BH No | BH105 | BH105 | BH105 | BH106 | BH106 |
| Project / Job Ref: GT0386 | Additional Refs | 105 | 106 | 11 | 105 | 107 |
| Order No: M-GT0386/000016 | Depth (m) | 6.10 | 7.10 | 18.50 | 2.80 | 3.60 |
| Reporting Date: 22/06/2022 | DETS Sample No | 601573 | 601574 | 601575 | 601576 | 601577 |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| pH | pH Units | N/a | MCERTS | 8.0 | 7.9 | 3.8 | 8.5 | 8.4 |
| Total Sulphate as $SO_4$ | mg/kg | < 200 | MCERTS | < 200 | < 200 | 7311 | < 200 | < 200 |
| Total Sulphate as $SO_4$ | % | < 0.02 | MCERTS | < 0.02 | < 0.02 | 0.73 | < 0.02 | < 0.02 |
| W/S Sulphate as $SO_4$ (2:1) | mg/l | < 10 | MCERTS | 12 | 10 | 2700 | 16 | 28 |
| Total Sulphur | % | < 0.02 | NONE | < 0.02 | < 0.02 | 3.87 | < 0.02 | < 0.02 |
| Organic Matter (SOM) | % | < 0.1 | MCERTS | 0.7 | 2.2 | | | |
| W/S Chloride (2:1) | mg/kg | < 1 | MCERTS | | | 16 | | |
| W/S Chloride (2:1) | mg/l | < 0.5 | MCERTS | | | 8.1 | | |
| 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 | | |

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion
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: 22-05277 | Date Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Site Reference: Wansford to Sutton Dualling Supplementary GI | TP / BH No | BH106 | BH106 | BH108 | BH109 | BH109 |
| Project / Job Ref: GT0386 | Additional Refs | 109 | 113 | 110 | 108 | 109 |
| Order No: M-GT0386/000016 | Depth (m) | 4.35 | 5.70 | 9.60 | 7.65 | 9.30 |
| Reporting Date: 22/06/2022 | DETS Sample No | 601578 | 601579 | 601580 | 601581 | 601582 |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| pH | pH Units | N/a | MCERTS | | 8.3 | 8.1 | 8.1 | 7.7 |
| Total Sulphate as $SO_4$ | mg/kg | < 200 | MCERTS | | < 200 | < 200 | < 200 | 974 |
| Total Sulphate as $SO_4$ | % | < 0.02 | MCERTS | | < 0.02 | < 0.02 | < 0.02 | 0.10 |
| W/S Sulphate as $SO_4$ (2:1) | mg/l | < 10 | MCERTS | | 18 | 11 | 14 | 398 |
| Total Sulphur | % | < 0.02 | NONE | | < 0.02 | < 0.02 | < 0.02 | 0.09 |
| Organic Matter (SOM) | % | < 0.1 | MCERTS | 3.7 | 0.9 | 1.6 | 1.4 | |
| 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 | | | | | |

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion
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: 22-05277 | Date Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Site Reference: Wansford to Sutton Dualling Supplementary GI | TP / BH No | BH111 | BH111 | BH111 | BH111 | BH111 |
| Project / Job Ref: GT0386 | Additional Refs | 101 | 105 | 109 | 110 | 111 |
| Order No: M-GT0386/000016 | Depth (m) | 1.20 | 4.85 | 8.20 | 9.00 | 12.90 |
| Reporting Date: 22/06/2022 | DETS Sample No | 601583 | 601584 | 601585 | 601586 | 601587 |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| pH | pH Units | N/a | MCERTS | 8.7 | 8.9 | 8.3 | 8.1 | 7.4 |
| Total Sulphate as $SO_4$ | mg/kg | < 200 | MCERTS | 802 | 718 | < 200 | < 200 | 7917 |
| Total Sulphate as $SO_4$ | % | < 0.02 | MCERTS | 0.08 | 0.07 | < 0.02 | < 0.02 | 0.79 |
| W/S Sulphate as $SO_4$ (2:1) | mg/l | < 10 | MCERTS | 13 | 15 | 16 | < 10 | 327 |
| Total Sulphur | % | < 0.02 | NONE | 0.04 | 0.02 | < 0.02 | < 0.02 | 0.29 |
| Organic Matter (SOM) | % | < 0.1 | MCERTS | | | 0.9 | | |
| 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 | | | | | |

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion

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: 22-05277 | Date Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Site Reference: Wansford to Sutton Dualling Supplementary GI | TP / BH No | BH114 | BH114 | BH114 | BH117 | BH117 |
| Project / Job Ref: GT0386 | Additional Refs | 102 | 103 | 105 | 4 | 3 |
| Order No: M-GT0386/000016 | Depth (m) | 2.60 | 4.50 | 6.60 | 2.50 | 10.50 |
| Reporting Date: 22/06/2022 | DETS Sample No | 601588 | 601589 | 601590 | 601591 | 601592 |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| pH | pH Units | N/a | MCERTS | 5.1 | 6.2 | 6.8 | 7.9 | |
| Total Sulphate as $SO_4$ | mg/kg | < 200 | MCERTS | 6172 | 5509 | 2944 | 1333 | |
| Total Sulphate as $SO_4$ | % | < 0.02 | MCERTS | 0.62 | 0.55 | 0.29 | 0.13 | |
| W/S Sulphate as $SO_4$ (2:1) | mg/l | < 10 | MCERTS | 2410 | 2370 | 1780 | 43 | |
| Total Sulphur | % | < 0.02 | NONE | 4.01 | 2.74 | 4.01 | 0.05 | |
| Organic Matter (SOM) | % | < 0.1 | MCERTS | | | | | 0.5 |
| W/S Chloride (2:1) | mg/kg | < 1 | MCERTS | 15 | | | | |
| W/S Chloride (2:1) | mg/l | < 0.5 | MCERTS | 7.6 | | | | |
| 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 | | | | |

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion

Subcontracted analysis (S)

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Rose Lane
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Maidstone
Kent ME17 2JN
Tel : 01622 850410

| Soil Analysis Certificate - Sample Descriptions |
|---|
| DETS Report No: 22-05277 |
| Ground Technology Services |
| Site Reference: Wansford to Sutton Dualling Supplementary GI |
| Project / Job Ref: GT0386 |
| Order No: M-GT0386/000016 |
| Reporting Date: 22/06/2022 |

| DETS Sample No | TP / BH No | Additional Refs | Depth (m) | Moisture Content (%) | Sample Matrix Description |
|---|---|---|---|---|---|
| ^ 601573 | BH105 | 105 | 6.10 | 15 | Grey clay |
| ^ 601574 | BH105 | 106 | 7.10 | 15.1 | Grey clay |
| ^ 601575 | BH105 | 11 | 18.50 | 12.9 | Grey clay |
| ^ 601576 | BH106 | 105 | 2.80 | 12.8 | Brown sand |
| ^ 601577 | BH106 | 107 | 3.60 | 19.6 | Brown sand |
| ^ 601578 | BH106 | 109 | 4.35 | 16.7 | Grey clay |
| ^ 601579 | BH106 | 113 | 5.70 | 11.5 | Brown sandy clay |
| ^ 601580 | BH108 | 110 | 9.60 | 12.7 | Grey clay |
| ^ 601581 | BH109 | 108 | 7.65 | 15.2 | Grey clay |
| ^ 601582 | BH109 | 109 | 9.30 | 9.8 | Brown clay |
| ^ 601583 | BH111 | 101 | 1.20 | 8 | Light brown sand |
| ^ 601584 | BH111 | 105 | 4.85 | 13.1 | Beige sand |
| ^ 601585 | BH111 | 109 | 8.20 | 16.7 | Grey sandy clay |
| ^ 601586 | BH111 | 110 | 9.00 | 13.1 | Brown clay |
| ^ 601587 | BH111 | 111 | 12.90 | 20.6 | Grey clay |
| ^ 601588 | BH114 | 102 | 2.60 | 16.5 | Grey clay |
| ^ 601589 | BH114 | 103 | 4.50 | 16.4 | Grey clay |
| ^ 601590 | BH114 | 105 | 6.60 | 15.2 | Grey clay |
| ^ 601591 | BH117 | 4 | 2.50 | 13.2 | Light brown clayey sand |
| ^ 601592 | BH117 | 3 | 10.50 | 10.4 | Grey 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

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| Soil Analysis Certificate - Methodology & Miscellaneous Information |
|---|
| DETS Report No: 22-05277 |
| Ground Technology Services |
| Site Reference: Wansford to Sutton Dualling Supplementary GI |
| Project / Job Ref: GT0386 |
| Order No: M-GT0386/000016 |
| Reporting Date: 22/06/2022 |

| 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 | Fraction Organic Carbon (FOC) | Determination of TOC by combustion analyser. | E027 |
| Soil | D | Organic Matter (SOM) | Determination of TOC by combustion analyser. | E027 |
| Soil | D | TOC (Total Organic Carbon) | Determination of TOC by combustion analyser. | E027 |
| Soil | AR | Exchangeable Ammonium | Determination of ammonium by discrete analyser. | E029 |
| 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

Chantal Cousins
Ground Technology Services
Victory Park
London Road
Attlebborough
Norfolk
NR17 1ZA

Derwentside Environmental Testing Services Ltd
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410

# DETS Report No: 22-05278

| | |
|---|---|
| Site Reference: | Wansford to Sutton Dualling Supplementary GI |
| Project / Job Ref: | GT0386 |
| Order No: | M-GT0386/000016 |
| Sample Receipt Date: | 16/06/2022 |
| Sample Scheduled Date: | 16/06/2022 |
| Report Issue Number: | 1 |
| Reporting Date: | 22/06/2022 |

[redacted]

Dates of laboratory activities for each tested analyte are available upon request.

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.

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Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

| Soil Analysis Certificate | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-05278 | Date Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Site Reference: Wansford to Sutton Dualling Supplementary GI | TP / BH No | BH117 | BH117 | BH117 | BH117 | BH128 |
| Project / Job Ref: GT0386 | Additional Refs | 105 | 107 | 109 | 9 | 101 |
| Order No: M-GT0386/000016 | Depth (m) | 11.20 | 12.60 | 13.50 | 19.50 | 1.50 |
| Reporting Date: 22/06/2022 | DETS Sample No | 601593 | 601594 | 601595 | 601596 | 601597 |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| pH | pH Units | N/a | MCERTS | 7.3 | 7.2 | 7.8 | 7.1 | 7.3 |
| Total Sulphate as $SO_4$ | mg/kg | < 200 | MCERTS | 302 | 723 | 2231 | 3602 | 4374 |
| Total Sulphate as $SO_4$ | % | < 0.02 | MCERTS | 0.03 | 0.07 | 0.22 | 0.36 | 0.44 |
| W/S Sulphate as $SO_4$ (2:1) | mg/l | < 10 | MCERTS | 110 | 282 | 1710 | 2390 | 1510 |
| Total Sulphur | % | < 0.02 | NONE | 0.13 | 0.73 | 7.63 | 5.71 | 0.55 |
| Organic Matter (SOM) | % | < 0.1 | MCERTS | | | | | 9 |

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion
Subcontracted analysis (S)
(n) Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation

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Maidstone
Kent ME17 2JN
Tel : 01622 850410

| Soil Analysis Certificate | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-05278 | Date Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Site Reference: Wansford to Sutton Dualling Supplementary GI | TP / BH No | BH128 | BH132 | BH132 | BH132 | BH133 |
| Project / Job Ref: GT0386 | Additional Refs | 102 | 1 | 6 | 111 | 6 |
| Order No: M-GT0386/000016 | Depth (m) | 3.00 | 0.20 | 4.00 | 8.80 | 1.15 |
| Reporting Date: 22/06/2022 | DETS Sample No | 601598 | 601599 | 601600 | 601601 | 601602 |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| pH | pH Units | N/a | MCERTS | 7.5 | 9.5 | 8.1 | 7.7 | 7.7 |
| Total Sulphate as $SO_4$ | mg/kg | < 200 | MCERTS | 386 | 843 | 266 | < 200 | 831 |
| Total Sulphate as $SO_4$ | % | < 0.02 | MCERTS | 0.04 | 0.08 | 0.03 | < 0.02 | 0.08 |
| W/S Sulphate as $SO_4$ (2:1) | mg/l | < 10 | MCERTS | 87 | 28 | 19 | 22 | 70 |
| Total Sulphur | % | < 0.02 | NONE | 0.09 | 0.05 | 0.02 | < 0.02 | 0.05 |
| Organic Matter (SOM) | % | < 0.1 | MCERTS | 1.8 | | | | |

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion
Subcontracted analysis (S)

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| Soil Analysis Certificate | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-05278 | Date Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Site Reference: Wansford to Sutton Dualling Supplementary GI | TP / BH No | BH133 | TP131 | TP132 | TP134 | TP157 |
| Project / Job Ref: GT0386 | Additional Refs | 101 | 6 | 6 | 6 | 6 |
| Order No: M-GT0386/000016 | Depth (m) | 1.80 | 1.50 | 1.50 | 0.80 | 1.95 |
| Reporting Date: 22/06/2022 | DETS Sample No | 601603 | 601604 | 601605 | 601606 | 601607 |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| pH | pH Units | N/a | MCERTS | 7.0 | 8.1 | 8.1 | 7.7 | 7.7 |
| Total Sulphate as $SO_4$ | mg/kg | < 200 | MCERTS | 16280 | 692 | 801 | 1186 | 241 |
| Total Sulphate as $SO_4$ | % | < 0.02 | MCERTS | 1.63 | 0.07 | 0.08 | 0.12 | 0.02 |
| W/S Sulphate as $SO_4$ (2:1) | mg/l | < 10 | MCERTS | 1570 | 50 | 12 | 173 | 14 |
| Total Sulphur | % | < 0.02 | NONE | 1.31 | 0.03 | 0.03 | 0.07 | < 0.02 |
| Organic Matter (SOM) | % | < 0.1 | MCERTS | 28.6 | | | 4.8 | 0.9 |

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion
Subcontracted analysis (S)

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Maidstone
Kent ME17 2JN
Tel : 01622 850410

| Soil Analysis Certificate | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-05278 | Date Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Site Reference: Wansford to Sutton Dualling Supplementary GI | TP / BH No | TP157 | TP151 | TP155 | TP158 | TP159 |
| Project / Job Ref: GT0386 | Additional Refs | 7 | 6 | 6 | 6 | 6 |
| Order No: M-GT0386/000016 | Depth (m) | 2.50 | 1.30 | 1.30 | 1.30 | 1.30 |
| Reporting Date: 22/06/2022 | DETS Sample No | 601608 | 601609 | 601610 | 601611 | 601612 |

| Determinand | Unit | RL | Accreditation | | | (n) | (n) | |
|---|---|---|---|---|---|---|---|---|
| pH | pH Units | N/a | MCERTS | | 7.9 | 8.2 | 8.1 | 7.8 |
| Total Sulphate as $SO_4$ | mg/kg | < 200 | MCERTS | | < 200 | 570 | 464 | 216 |
| Total Sulphate as $SO_4$ | % | < 0.02 | MCERTS | | < 0.02 | 0.06 | 0.05 | 0.02 |
| W/S Sulphate as $SO_4$ (2:1) | mg/l | < 10 | MCERTS | | < 10 | 11 | 10 | 24 |
| Total Sulphur | % | < 0.02 | NONE | | < 0.02 | 0.02 | < 0.02 | < 0.02 |
| Organic Matter (SOM) | % | < 0.1 | MCERTS | 0.6 | | | | |

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion
Subcontracted analysis (S)

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| Soil Analysis Certificate - Sample Descriptions |
|---|
| DETS Report No: 22-05278 |
| Ground Technology Services |
| Site Reference: Wansford to Sutton Dualling Supplementary GI |
| Project / Job Ref: GT0386 |
| Order No: M-GT0386/000016 |
| Reporting Date: 22/06/2022 |

| DETS Sample No | TP / BH No | Additional Refs | Depth (m) | Moisture Content (%) | Sample Matrix Description |
|---|---|---|---|---|---|
| ^ 601593 | BH117 | 105 | 11.20 | 11.6 | Grey clay |
| ^ 601594 | BH117 | 107 | 12.60 | 14.4 | Light brown clay |
| ^ 601595 | BH117 | 109 | 13.50 | 2.6 | Grey sandy clay |
| ^ 601596 | BH117 | 9 | 19.50 | 15.6 | Grey clay |
| ^ 601597 | BH128 | 101 | 1.50 | 48.1 | Brown clay |
| ^ 601598 | BH128 | 102 | 3.00 | 26 | Brown clay |
| ^ 601599 | BH132 | 1 | 0.20 | 8.5 | Light brown sand |
| ^ 601600 | BH132 | 6 | 4.00 | 10.8 | Light brown clay |
| ^ 601601 | BH132 | 111 | 8.80 | 10.2 | Brown clay |
| ^ 601602 | BH133 | 6 | 1.15 | 35.8 | Brown clay |
| ^ 601603 | BH133 | 101 | 1.80 | 63.9 | Brown loamy clay |
| ^ 601604 | TP131 | 6 | 1.50 | 10.3 | Light brown sandy clay |
| ^ 601605 | TP132 | 6 | 1.50 | 7.6 | Light brown clayey sand with stones |
| ^ 601606 | TP134 | 6 | 0.80 | 29.7 | Brown sandy clay |
| ^ 601607 | TP157 | 6 | 1.95 | 15.4 | Light brown sandy clay |
| ^ 601608 | TP157 | 7 | 2.50 | 16.1 | Light brown clay |
| ^ 601609 | TP151 | 6 | 1.30 | 14.3 | Light brown sandy clay |
| ^ 601610 | TP155 | 6 | 1.30 | 5.2 | Light brown sand with stones |
| ^ 601611 | TP158 | 6 | 1.30 | 5.7 | Light brown sand with stones |
| ^ 601612 | TP159 | 6 | 1.30 | 16.9 | Light 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

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Kent ME17 2JN
Tel : 01622 850410

| Soil Analysis Certificate - Methodology & Miscellaneous Information |
|---|
| DETS Report No: 22-05278 |
| Ground Technology Services |
| Site Reference: Wansford to Sutton Dualling Supplementary GI |
| Project / Job Ref: GT0386 |
| Order No: M-GT0386/000016 |
| Reporting Date: 22/06/2022 |

| 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 | Fraction Organic Carbon (FOC) | Determination of TOC by combustion analyser. | E027 |
| Soil | D | Organic Matter (SOM) | Determination of TOC by combustion analyser. | E027 |
| Soil | D | TOC (Total Organic Carbon) | Determination of TOC by combustion analyser. | E027 |
| Soil | AR | Exchangeable Ammonium | Determination of ammonium by discrete analyser. | E029 |
| 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

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t: 01622 850410

# DETS Report No: 22-05279

| | |
|---|---|
| Site Reference: | Wansford to Sutton Dualling Supplementary GI |
| Project / Job Ref: | GT0386 |
| Order No: | M-GT0386/000016 |
| Sample Receipt Date: | 16/06/2022 |
| Sample Scheduled Date: | 16/06/2022 |
| Report Issue Number: | 1 |
| Reporting Date: | 22/06/2022 |

[redacted]
Technical Manager

Dates of laboratory activities for each tested analyte are available upon request.

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.

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Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

| Soil Analysis Certificate | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-05279 | Date Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Site Reference: Wansford to Sutton Dualling Supplementary GI | TP / BH No | BH115 | BH116 | BH116 | BH116 | BH116 |
| Project / Job Ref: GT0386 | Additional Refs | 102 | 5 | 101 | 3 | 7 |
| Order No: M-GT0386/000016 | Depth (m) | 8.80 | 3.20 | 6.50 | 10.00 | 16.00 |
| Reporting Date: 22/06/2022 | DETS Sample No | 601613 | 601614 | 601615 | 601616 | 601617 |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| pH | pH Units | N/a | MCERTS | 7.9 | 8.2 | 7.2 | 7.0 | 7.4 |
| Total Sulphate as $SO_4$ | mg/kg | < 200 | MCERTS | 1539 | < 200 | 598 | 6031 | 2050 |
| Total Sulphate as $SO_4$ | % | < 0.02 | MCERTS | 0.15 | < 0.02 | 0.06 | 0.60 | 0.21 |
| W/S Sulphate as $SO_4$ (2:1) | mg/l | < 10 | MCERTS | 119 | 10 | 267 | 2160 | 1590 |
| Total Sulphur | % | < 0.02 | NONE | 0.34 | < 0.02 | 0.15 | 3.91 | 3.16 |
| Organic Matter (SOM) | % | < 0.1 | MCERTS | | | | | |
| 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 | | | | | |

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion

Subcontracted analysis (S)

(n) Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation

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Tel : 01622 850410

| Soil Analysis Certificate | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-05279 | Date Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Site Reference: Wansford to Sutton Dualling Supplementary GI | TP / BH No | BH118 | BH118 | BH118 | BH118 | BH120 & BH120A |
| Project / Job Ref: GT0386 | Additional Refs | 1 | 102 | 6 | 7 | 101 |
| Order No: M-GT0386/000016 | Depth (m) | 8.50 | 9.57 | 16.00 | 17.50 | 7.82 |
| Reporting Date: 22/06/2022 | DETS Sample No | 601618 | 601619 | 601620 | 601621 | 601622 |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| pH | pH Units | N/a | MCERTS | 7.6 | 7.5 | 7.6 | 7.2 | 4.6 |
| Total Sulphate as $SO_4$ | mg/kg | < 200 | MCERTS | 525 | 322 | 1609 | 4823 | 721 |
| Total Sulphate as $SO_4$ | % | < 0.02 | MCERTS | 0.05 | 0.03 | 0.16 | 0.48 | 0.07 |
| W/S Sulphate as $SO_4$ (2:1) | mg/l | < 10 | MCERTS | 178 | 144 | 1040 | 2400 | 417 |
| Total Sulphur | % | < 0.02 | NONE | 0.18 | 0.63 | 3.39 | 3.36 | 0.80 |
| Organic Matter (SOM) | % | < 0.1 | MCERTS | 0.6 | 0.6 | | | 0.8 |
| W/S Chloride (2:1) | mg/kg | < 1 | MCERTS | | | | | 13 |
| W/S Chloride (2:1) | mg/l | < 0.5 | MCERTS | | | | | 6.6 |
| 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 |

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion

Subcontracted analysis (S)

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Maidstone
Kent ME17 2JN
Tel : 01622 850410

| Soil Analysis Certificate | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-05279 | Date Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Site Reference: Wansford to Sutton Dualling Supplementary GI | TP / BH No | BH126 | BH126 | BH127 | BH129 | BH129 |
| Project / Job Ref: GT0386 | Additional Refs | 2 | 1 | 101 | 103 | 107 |
| Order No: M-GT0386/000016 | Depth (m) | 0.50 | 1.50 | 1.30 | 3.40 | 5.20 |
| Reporting Date: 22/06/2022 | DETS Sample No | 601623 | 601624 | 601625 | 601626 | 601627 |

| Determinand | Unit | RL | Accreditation | | | | (n) | |
|---|---|---|---|---|---|---|---|---|
| pH | pH Units | N/a | MCERTS | 7.7 | 7.9 | 8.1 | 8.0 | 7.9 |
| Total Sulphate as $SO_4$ | mg/kg | < 200 | MCERTS | < 200 | < 200 | 524 | < 200 | 712 |
| Total Sulphate as $SO_4$ | % | < 0.02 | MCERTS | < 0.02 | < 0.02 | 0.05 | < 0.02 | 0.07 |
| W/S Sulphate as $SO_4$ (2:1) | mg/l | < 10 | MCERTS | 28 | 17 | 40 | < 10 | 14 |
| Total Sulphur | % | < 0.02 | NONE | 0.02 | < 0.02 | 0.02 | < 0.02 | 0.02 |
| Organic Matter (SOM) | % | < 0.1 | MCERTS | | | | | |
| 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 | | | | | |

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion

Subcontracted analysis (S)

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Kent ME17 2JN
Tel : 01622 850410

| Soil Analysis Certificate | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-05279 | Date Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Site Reference: Wansford to Sutton Dualling Supplementary GI | TP / BH No | BH107 | BH107 | BH124 | BH119 | BH121 |
| Project / Job Ref: GT0386 | Additional Refs | 103 | 105 | 110 | 101 | 4 |
| Order No: M-GT0386/000016 | Depth (m) | 6.20 | 7.90 | 10.80 | 1.30 | 1.50 |
| Reporting Date: 22/06/2022 | DETS Sample No | 601628 | 601629 | 601630 | 601631 | 601632 |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| pH | pH Units | N/a | MCERTS | 8.2 | 7.5 | | 8.0 | |
| Total Sulphate as $SO_4$ | mg/kg | < 200 | MCERTS | < 200 | 3148 | | 556 | |
| Total Sulphate as $SO_4$ | % | < 0.02 | MCERTS | < 0.02 | 0.31 | | 0.06 | |
| W/S Sulphate as $SO_4$ (2:1) | mg/l | < 10 | MCERTS | 16 | 1570 | | 19 | |
| Total Sulphur | % | < 0.02 | NONE | < 0.02 | 3.34 | | 0.04 | |
| Organic Matter (SOM) | % | < 0.1 | MCERTS | | 2.8 | 0.6 | | 0.9 |
| 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 | | | | | |

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion

Subcontracted analysis (S)

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Maidstone
Kent ME17 2JN
Tel : 01622 850410

| Soil Analysis Certificate - Sample Descriptions |
|---|
| DETS Report No: 22-05279 |
| Ground Technology Services |
| Site Reference: Wansford to Sutton Dualling Supplementary GI |
| Project / Job Ref: GT0386 |
| Order No: M-GT0386/000016 |
| Reporting Date: 22/06/2022 |

| DETS Sample No | TP / BH No | Additional Refs | Depth (m) | Moisture Content (%) | Sample Matrix Description |
|---|---|---|---|---|---|
| ^ 601613 | BH115 | 102 | 8.80 | 14.4 | Light brown sandy clay |
| ^ 601614 | BH116 | 5 | 3.20 | 21.3 | Light brown sand |
| ^ 601615 | BH116 | 101 | 6.50 | 14.1 | Grey clay |
| ^ 601616 | BH116 | 3 | 10.00 | 13.8 | Grey clay |
| ^ 601617 | BH116 | 7 | 16.00 | 16.7 | Grey clay |
| ^ 601618 | BH118 | 1 | 8.50 | 9.1 | Grey clay |
| ^ 601619 | BH118 | 102 | 9.57 | 9.4 | Grey clay |
| ^ 601620 | BH118 | 6 | 16.00 | 16.4 | Grey clay |
| ^ 601621 | BH118 | 7 | 17.50 | 13.4 | Grey clay |
| ^ 601622 | BH120 & BH120A | 101 | 7.82 | 10.5 | Grey clay |
| ^ 601623 | BH126 | 2 | 0.50 | 15.5 | Light brown clay |
| ^ 601624 | BH126 | 1 | 1.50 | 12.6 | Light brown clay |
| ^ 601625 | BH127 | 101 | 1.30 | 7.1 | Light brown sand |
| ^ 601626 | BH129 | 103 | 3.40 | 1 | Brown gravel with stones |
| ^ 601627 | BH129 | 107 | 5.20 | 7.4 | Light brown gravelly sand with stones |
| ^ 601628 | BH107 | 103 | 6.20 | 11.8 | Light brown sand |
| ^ 601629 | BH107 | 105 | 7.90 | 16 | Grey clay |
| ^ 601630 | BH124 | 110 | 10.80 | 9.5 | Light brown sand |
| ^ 601631 | BH119 | 101 | 1.30 | 14.1 | Brown clay |
| ^ 601632 | BH121 | 4 | 1.50 | 11.9 | Light brown 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

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| Soil Analysis Certificate - Methodology & Miscellaneous Information |
|---|
| DETS Report No: 22-05279 |
| Ground Technology Services |
| Site Reference: Wansford to Sutton Dualling Supplementary GI |
| Project / Job Ref: GT0386 |
| Order No: M-GT0386/000016 |
| Reporting Date: 22/06/2022 |

| 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 | Fraction Organic Carbon (FOC) | Determination of TOC by combustion analyser. | E027 |
| Soil | D | Organic Matter (SOM) | Determination of TOC by combustion analyser. | E027 |
| Soil | D | TOC (Total Organic Carbon) | Determination of TOC by combustion analyser. | E027 |
| Soil | AR | Exchangeable Ammonium | Determination of ammonium by discrete analyser. | E029 |
| 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

Chantal Cousins
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London Road
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Derwentside Environmental Testing Services Ltd
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410

# DETS Report No: 22-05280

| | |
|---|---|
| Site Reference: | Wansford to Sutton Dualling Supplementary GI |
| Project / Job Ref: | GT0386 |
| Order No: | M-GT0386/000016 |
| Sample Receipt Date: | 16/06/2022 |
| Sample Scheduled Date: | 16/06/2022 |
| Report Issue Number: | 1 |
| Reporting Date: | 22/06/2022 |

[redacted]

Dave Ashworth
Technical Manager

Dates of laboratory activities for each tested analyte are available upon request.

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.

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Maidstone
Kent ME17 2JN
Tel : 01622 850410

| Soil Analysis Certificate | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-05280 | Date Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Site Reference: Wansford to Sutton Dualling Supplementary GI | TP / BH No | BH121 | BH121 | BH121 | BH122 | BH125 |
| Project / Job Ref: GT0386 | Additional Refs | 1 | 108 | 114 | 103 | 102 |
| Order No: M-GT0386/000016 | Depth (m) | 2.50 | 9.00 | 13.00 | 1.50 | 2.85 |
| Reporting Date: 22/06/2022 | DETS Sample No | 601633 | 601634 | 601635 | 601636 | 601637 |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| pH | pH Units | N/a | MCERTS | 8.0 | 8.4 | 7.9 | 8.2 | 7.9 |
| Total Sulphate as $SO_4$ | mg/kg | < 200 | MCERTS | < 200 | < 200 | 666 | 583 | 254 |
| Total Sulphate as $SO_4$ | % | < 0.02 | MCERTS | < 0.02 | < 0.02 | 0.07 | 0.06 | 0.03 |
| W/S Sulphate as $SO_4$ (2:1) | mg/l | < 10 | MCERTS | 10 | < 10 | 147 | < 10 | 14 |
| Total Sulphur | % | < 0.02 | NONE | < 0.02 | < 0.02 | 0.06 | < 0.02 | < 0.02 |
| Organic Matter (SOM) | % | < 0.1 | MCERTS | | | | | |

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion
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: 22-05280 | Date Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Site Reference: Wansford to Sutton Dualling Supplementary GI | TP / BH No | BH130 | BH130 | BH131 | BH131 | BH112 |
| Project / Job Ref: GT0386 | Additional Refs | 102 | 105 | 103 | 106 | 101 |
| Order No: M-GT0386/000016 | Depth (m) | 4.50 | 6.75 | 2.80 | 5.24 | 0.35 |
| Reporting Date: 22/06/2022 | DETS Sample No | 601638 | 601639 | 601640 | 601641 | 601642 |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| pH | pH Units | N/a | MCERTS | 8.1 | | 8.2 | | 7.9 |
| Total Sulphate as $SO_4$ | mg/kg | < 200 | MCERTS | 1008 | | 707 | | 659 |
| Total Sulphate as $SO_4$ | % | < 0.02 | MCERTS | 0.10 | | 0.07 | | 0.07 |
| W/S Sulphate as $SO_4$ (2:1) | mg/l | < 10 | MCERTS | 21 | | 148 | | 36 |
| Total Sulphur | % | < 0.02 | NONE | 0.04 | | 0.08 | | 0.04 |
| Organic Matter (SOM) | % | < 0.1 | MCERTS | | 1.3 | 1.7 | 2.9 | |

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion
Subcontracted analysis (S)

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Maidstone
Kent ME17 2JN
Tel : 01622 850410

| Soil Analysis Certificate | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-05280 | Date Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Site Reference: Wansford to Sutton Dualling Supplementary GI | TP / BH No | BH112 | TP127 | TP127 | TP129 | TP130 |
| Project / Job Ref: GT0386 | Additional Refs | 106 | 6 | 7 | 6 | 6 |
| Order No: M-GT0386/000016 | Depth (m) | 5.67 | 1.95 | 2.70 | 1.50 | 0.80 |
| Reporting Date: 22/06/2022 | DETS Sample No | 601643 | 601644 | 601645 | 601646 | 601647 |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| pH | pH Units | N/a | MCERTS | 7.6 | 8.0 | 7.8 | 7.9 | 7.9 |
| Total Sulphate as $SO_4$ | mg/kg | < 200 | MCERTS | 7775 | 1308 | 17240 | 1207 | 718 |
| Total Sulphate as $SO_4$ | % | < 0.02 | MCERTS | 0.78 | 0.13 | 1.72 | 0.12 | 0.07 |
| W/S Sulphate as $SO_4$ (2:1) | mg/l | < 10 | MCERTS | 27 | 38 | 277 | 34 | 22 |
| Total Sulphur | % | < 0.02 | NONE | 0.26 | 0.05 | 0.67 | 0.04 | 0.04 |
| Organic Matter (SOM) | % | < 0.1 | MCERTS | | | | | |

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion
Subcontracted analysis (S)

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Kent ME17 2JN
Tel : 01622 850410

| Soil Analysis Certificate | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-05280 | Date Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Site Reference: Wansford to Sutton Dualling Supplementary GI | TP / BH No | BH110 | BH110 | BH110 | TP140 | TP140 |
| Project / Job Ref: GT0386 | Additional Refs | 103 | 105 | 107 | 8 | 10 |
| Order No: M-GT0386/000016 | Depth (m) | 5.00 | 6.80 | 7.30 | 1.00 | 1.70 |
| Reporting Date: 22/06/2022 | DETS Sample No | 601648 | 601649 | 601650 | 601651 | 601652 |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| pH | pH Units | N/a | MCERTS | 8.3 | 7.9 | | 8.1 | 6.5 |
| Total Sulphate as $SO_4$ | mg/kg | < 200 | MCERTS | < 200 | < 200 | | 427 | < 200 |
| Total Sulphate as $SO_4$ | % | < 0.02 | MCERTS | < 0.02 | < 0.02 | | 0.04 | < 0.02 |
| W/S Sulphate as $SO_4$ (2:1) | mg/l | < 10 | MCERTS | < 10 | 22 | | < 10 | < 10 |
| Total Sulphur | % | < 0.02 | NONE | < 0.02 | 0.05 | | < 0.02 | < 0.02 |
| Organic Matter (SOM) | % | < 0.1 | MCERTS | | 11.4 | 0.9 | | |

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion
Subcontracted analysis (S)

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| Soil Analysis Certificate - Sample Descriptions |
|---|
| DETS Report No: 22-05280 |
| Ground Technology Services |
| Site Reference: Wansford to Sutton Dualling Supplementary GI |
| Project / Job Ref: GT0386 |
| Order No: M-GT0386/000016 |
| Reporting Date: 22/06/2022 |

| DETS Sample No | TP / BH No | Additional Refs | Depth (m) | Moisture Content (%) | Sample Matrix Description |
|---|---|---|---|---|---|
| ^ 601633 | BH121 | 1 | 2.50 | 14 | Brown clay |
| ^ 601634 | BH121 | 108 | 9.00 | 14.1 | Light brown sand |
| ^ 601635 | BH121 | 114 | 13.00 | 17.9 | Brown sand |
| ^ 601636 | BH122 | 103 | 1.50 | 6.8 | Light brown sandy clay with stones |
| ^ 601637 | BH125 | 102 | 2.85 | 15.3 | Light brown clay |
| ^ 601638 | BH130 | 102 | 4.50 | 2.1 | Beige clay |
| ^ 601639 | BH130 | 105 | 6.75 | 15.6 | Brown clay |
| ^ 601640 | BH131 | 103 | 2.80 | 16.6 | Grey clay |
| ^ 601641 | BH131 | 106 | 5.24 | 15 | Grey clay |
| ^ 601642 | BH112 | 101 | 0.35 | 11.7 | Brown sandy clay |
| ^ 601643 | BH112 | 106 | 5.67 | 17.9 | Grey clay |
| ^ 601644 | TP127 | 6 | 1.95 | 15.6 | Light brown sandy clay |
| ^ 601645 | TP127 | 7 | 2.70 | 19 | Grey clay |
| ^ 601646 | TP129 | 6 | 1.50 | 21.8 | Light brown sandy clay |
| ^ 601647 | TP130 | 6 | 0.80 | 17.2 | Light brown sandy clay |
| ^ 601648 | BH110 | 103 | 5.00 | 17.6 | Light brown sand |
| ^ 601649 | BH110 | 105 | 6.80 | 25.1 | Brown clayey sand |
| ^ 601650 | BH110 | 107 | 7.30 | 9.8 | Brown sandy clay |
| ^ 601651 | TP140 | 8 | 1.00 | 6.8 | Light brown sandy clay |
| ^ 601652 | TP140 | 10 | 1.70 | 9.1 | Light brown 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

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Tel : 01622 850410

| Soil Analysis Certificate - Methodology & Miscellaneous Information |
|---|
| DETS Report No: 22-05280 |
| Ground Technology Services |
| Site Reference: Wansford to Sutton Dualling Supplementary GI |
| Project / Job Ref: GT0386 |
| Order No: M-GT0386/000016 |
| Reporting Date: 22/06/2022 |

| 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 | Fraction Organic Carbon (FOC) | Determination of TOC by combustion analyser. | E027 |
| Soil | D | Organic Matter (SOM) | Determination of TOC by combustion analyser. | E027 |
| Soil | D | TOC (Total Organic Carbon) | Determination of TOC by combustion analyser. | E027 |
| Soil | AR | Exchangeable Ammonium | Determination of ammonium by discrete analyser. | E029 |
| 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

Chantal Cousins
Ground Technology Services
Victory Park
London Road
Attlebborough
Norfolk
NR17 1ZA

Derwentside Environmental Testing Services Ltd
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410

# DETS Report No: 22-05281

| | |
|---|---|
| Site Reference: | Wansford to Sutton Dualling Supplementary GI |
| Project / Job Ref: | GT0386 |
| Order No: | M-GT0386/000016 |
| Sample Receipt Date: | 16/06/2022 |
| Sample Scheduled Date: | 16/06/2022 |
| Report Issue Number: | 1 |
| Reporting Date: | 22/06/2022 |

[redacted]
Technical Manager

Dates of laboratory activities for each tested analyte are available upon request.

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.

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Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

| Soil Analysis Certificate | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-05281 | Date Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Site Reference: Wansford to Sutton Dualling Supplementary GI | TP / BH No | TP140 | TP141 | TP141 | TP142 | TP143 |
| Project / Job Ref: GT0386 | Additional Refs | 14 | 5 | 4 | 12 | 6 |
| Order No: M-GT0386/000016 | Depth (m) | 3.50 | 0.30 | 0.30 | 3.40 | 1.30 |
| Reporting Date: 22/06/2022 | DETS Sample No | 601653 | 601654 | 601655 | 601656 | 601657 |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| pH | pH Units | N/a | MCERTS | 8.2 | | 8.0 | 8.1 | 8.1 |
| Total Sulphate as $SO_4$ | mg/kg | < 200 | MCERTS | < 200 | | < 200 | < 200 | 234 |
| Total Sulphate as $SO_4$ | % | < 0.02 | MCERTS | < 0.02 | | < 0.02 | < 0.02 | 0.02 |
| W/S Sulphate as $SO_4$ (2:1) | mg/l | < 10 | MCERTS | < 10 | | < 10 | < 10 | < 10 |
| Total Sulphur | % | < 0.02 | NONE | < 0.02 | | < 0.02 | < 0.02 | < 0.02 |
| Organic Matter (SOM) | % | < 0.1 | MCERTS | | 1 | | | |

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion
Subcontracted analysis (S)

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Unit 1, Rose Lane Industrial Estate
Rose Lane
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Maidstone
Kent ME17 2JN
Tel : 01622 850410

| Soil Analysis Certificate | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-05281 | Date Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Site Reference: Wansford to Sutton Dualling Supplementary GI | TP / BH No | TP144 | TP145 | TP146 | TP148 | TP169 |
| Project / Job Ref: GT0386 | Additional Refs | 8 | 8 | 8 | 6 | 6 |
| Order No: M-GT0386/000016 | Depth (m) | 1.75 | 2.85 | 1.40 | 1.30 | 1.30 |
| Reporting Date: 22/06/2022 | DETS Sample No | 601658 | 601659 | 601660 | 601661 | 601662 |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| pH | pH Units | N/a | MCERTS | | 8.1 | 8.1 | 8.0 | 7.9 |
| Total Sulphate as $SO_4$ | mg/kg | < 200 | MCERTS | | 472 | < 200 | 299 | 227 |
| Total Sulphate as $SO_4$ | % | < 0.02 | MCERTS | | 0.05 | < 0.02 | 0.03 | 0.02 |
| W/S Sulphate as $SO_4$ (2:1) | mg/l | < 10 | MCERTS | | < 10 | < 10 | < 10 | 10 |
| Total Sulphur | % | < 0.02 | NONE | | < 0.02 | < 0.02 | < 0.02 | < 0.02 |
| Organic Matter (SOM) | % | < 0.1 | MCERTS | 0.6 | | | | |

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion
Subcontracted analysis (S)

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Maidstone
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Tel : 01622 850410

| Soil Analysis Certificate - Sample Descriptions |
|---|
| DETS Report No: 22-05281 |
| Ground Technology Services |
| Site Reference: Wansford to Sutton Dualling Supplementary GI |
| Project / Job Ref: GT0386 |
| Order No: M-GT0386/000016 |
| Reporting Date: 22/06/2022 |

| DETS Sample No | TP / BH No | Additional Refs | Depth (m) | Moisture Content (%) | Sample Matrix Description |
|---|---|---|---|---|---|
| ^ 601653 | TP140 | 14 | 3.50 | 8.8 | Light brown clay |
| ^ 601654 | TP141 | 5 | 0.30 | 9.6 | Brown sandy clay |
| ^ 601655 | TP141 | 4 | 0.30 | 7.6 | Light brown sandy clay with stones |
| ^ 601656 | TP142 | 12 | 3.40 | 16.7 | Grey clay |
| ^ 601657 | TP143 | 6 | 1.30 | 7.5 | Light brown sand |
| ^ 601658 | TP144 | 8 | 1.75 | 21.2 | Light brown sandy clay |
| ^ 601659 | TP145 | 8 | 2.85 | 8.2 | Light brown clayey sand with stones |
| ^ 601660 | TP146 | 8 | 1.40 | 8.8 | Light grey clay |
| ^ 601661 | TP148 | 6 | 1.30 | 7.5 | Light brown clayey sand with stones |
| ^ 601662 | TP169 | 6 | 1.30 | 22.7 | Light brown 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

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Tel : 01622 850410

| Soil Analysis Certificate - Methodology & Miscellaneous Information |
|---|
| DETS Report No: 22-05281 |
| Ground Technology Services |
| Site Reference: Wansford to Sutton Dualling Supplementary GI |
| Project / Job Ref: GT0386 |
| Order No: M-GT0386/000016 |
| Reporting Date: 22/06/2022 |

| 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 | Fraction Organic Carbon (FOC) | Determination of TOC by combustion analyser. | E027 |
| Soil | D | Organic Matter (SOM) | Determination of TOC by combustion analyser. | E027 |
| Soil | D | TOC (Total Organic Carbon) | Determination of TOC by combustion analyser. | E027 |
| Soil | AR | Exchangeable Ammonium | Determination of ammonium by discrete analyser. | E029 |
| 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

Chantal Cousins
Ground Technology Services
Victory Park
London Road
Attlebborough
Norfolk
NR17 1ZA

Derwentside Environmental Testing Services Ltd
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410

# DETS Report No: 22-05331

| | |
|---|---|
| Site Reference: | Wansford to Sutton dualling supplementary GI |
| Project / Job Ref: | GT0386 |
| Order No: | M-GT0386/000016 |
| Sample Receipt Date: | 17/06/2022 |
| Sample Scheduled Date: | 17/06/2022 |
| Report Issue Number: | 1 |
| Reporting Date: | 23/06/2022 |

[redacted]

Dave Ashworth
Technical Manager

Dates of laboratory activities for each tested analyte are available upon request.

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: 22-05331 | Date Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Site Reference: Wansford to Sutton dualling supplementary GI | TP / BH No | BH135 | BH135 | BH135 | BH135 | BH135 |
| Project / Job Ref: GT0386 | Additional Refs | 6 | 7 | 10 | 12 | 20 |
| Order No: M-GT0386/000016 | Depth (m) | 0.40 | 1.20 | 3.35 | 7.70 | 20.00 |
| Reporting Date: 23/06/2022 | DETS Sample No | 601920 | 601921 | 601922 | 601923 | 601924 |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| pH | pH Units | N/a | MCERTS | 7.6 | 7.8 | 7.6 | 7.3 | 7.7 |
| Total Sulphate as $SO_4$ | mg/kg | < 200 | MCERTS | 759 | 629 | < 200 | 2523 | 6106 |
| Total Sulphate as $SO_4$ | % | < 0.02 | MCERTS | 0.08 | 0.06 | < 0.02 | 0.25 | 0.61 |
| W/S Sulphate as $SO_4$ (2:1) | mg/l | < 10 | MCERTS | 20 | 21 | 26 | 949 | 2040 |
| Total Sulphur | % | < 0.02 | NONE | 0.04 | 0.03 | < 0.02 | 3.71 | 1.96 |
| Organic Matter (SOM) | % | < 0.1 | MCERTS | 4.1 | 1.8 | 0.6 | | |

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion
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: 22-05331 | Date Sampled | None Supplied | None Supplied | | | |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | | | |
| Site Reference: Wansford to Sutton dualling supplementary GI | TP / BH No | BH136 | BH136 | | | |
| Project / Job Ref: GT0386 | Additional Refs | 12 | 22 | | | |
| Order No: M-GT0386/000016 | Depth (m) | 4.10 | 18.20 | | | |
| Reporting Date: 23/06/2022 | DETS Sample No | 601925 | 601926 | | | |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| pH | pH Units | N/a | MCERTS | 7.4 | 8.5 | | | |
| Total Sulphate as $SO_4$ | mg/kg | < 200 | MCERTS | 32890 | 3723 | | | |
| Total Sulphate as $SO_4$ | % | < 0.02 | MCERTS | 3.29 | 0.37 | | | |
| W/S Sulphate as $SO_4$ (2:1) | mg/l | < 10 | MCERTS | 426 | 1110 | | | |
| Total Sulphur | % | < 0.02 | NONE | 1.00 | 1.79 | | | |
| Organic Matter (SOM) | % | < 0.1 | MCERTS | 2.3 | | | | |

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion
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: 22-05331 |
| Ground Technology Services |
| Site Reference: Wansford to Sutton dualling supplementary GI |
| Project / Job Ref: GT0386 |
| Order No: M-GT0386/000016 |
| Reporting Date: 23/06/2022 |

| DETS Sample No | TP / BH No | Additional Refs | Depth (m) | Moisture Content (%) | Sample Matrix Description |
|---|---|---|---|---|---|
| ^ 601920 | BH135 | 6 | 0.40 | 8.7 | Brown sandy clay with stones and vegetation |
| ^ 601921 | BH135 | 7 | 1.20 | 8.6 | Brown gravelly sand with stones |
| ^ 601922 | BH135 | 10 | 3.35 | 9.1 | Brown sandy clay |
| ^ 601923 | BH135 | 12 | 7.70 | 15.9 | Black clay |
| ^ 601924 | BH135 | 20 | 20.00 | 15.8 | Black clay |
| ^ 601925 | BH136 | 12 | 4.10 | 21.7 | Grey clay |
| ^ 601926 | BH136 | 22 | 18.20 | 14.3 | Black 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
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Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

| Soil Analysis Certificate - Methodology & Miscellaneous Information |
|---|
| DETS Report No: 22-05331 |
| Ground Technology Services |
| Site Reference: Wansford to Sutton dualling supplementary GI |
| Project / Job Ref: GT0386 |
| Order No: M-GT0386/000016 |
| Reporting Date: 23/06/2022 |

| 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 | Fraction Organic Carbon (FOC) | Determination of TOC by combustion analyser. | E027 |
| Soil | D | Organic Matter (SOM) | Determination of TOC by combustion analyser. | E027 |
| Soil | D | TOC (Total Organic Carbon) | Determination of TOC by combustion analyser. | E027 |
| Soil | AR | Exchangeable Ammonium | Determination of ammonium by discrete analyser. | E029 |
| 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

List of HWOL Acronyms and Operators

| Acronym | Description |
|---|---|
| HS | Headspace analysis |
| EH | Extractable Hydrocarbons - i.e. everything extracted by the solvent |
| CU | Clean-up - e.g. by florisil, silica gel |
| 1D | GC - Single coil gas chromatography |
| 2D | GC-GC - Double coil gas chromatography |
| Total | Aliphatics & Aromatics |
| AL | Aliphatics only |
| AR | Aromatics only |
| #1 | EH_2D_Total but with humics mathematically subtracted |
| #2 | EH_2D_Total but with fatty acids mathematically subtracted |
| _ | Operator - underscore to separate acronyms (exception for +) |
| + | Operator to indicate cumulative eg. EH+HS_Total or EH_CU+HS_Total |

Det - Acronym

| | DEVIATING SAMPLE REPORT | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH104 & BH104A |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 8 |
| | | Depth (m) | 3.50 |
| Client | Galliford Try | Sample type | D |

**The sample listed above cannot be tested for the following scheduled test:**

Atterberg Limits

**Date Of Issue: 09/06/2022**

**The sample cannot be tested for the following reason:**

| | |
|---|---|
| | The sample has not been received. |
| | There is insufficient material for BS1377: 1990 Testing requirements. |

| | | | | | |
|---|---|---|---|---|---|
| | Fine | | Medium | | Coarse |

| | |
|---|---|
| Sample Mass Received (kg) | |
| Sample Mass Required (kg) | |
| Maximum Grain Size | |

| | |
|---|---|
| | The sample has been used for higher priority tests scheduled on the same sample. |
| X | The sample is not suitable for the testing scheduled. |
| | The sample has exceeded maximum holding time. |
| | Vital information is missing from the sample. |
| | The sample shows signs that it has been exposed to high / low temperatures. |
| | Damaged container. |
| | Split bag. |
| | The sample shows signs of / has become cross contaminated. |
| | The sample has been damaged in transit. |

**Further information:**

The sample is rock and is not suitable for this test.

**Please advise of further action for this sample / alternative sample for testing or to continue with the test within 5 working days of the issue date. Failure to reply within the required timescale will lead to cancellation of the test.**

**Please note: continued testing will include a disclaimer in the report for this sample and as such, the result may be invalid.**

ASC
GeoTesting
Aggregate • Soil • Concrete
PROJECT NO. GT0386
PROJECT NAME Worsted to Sutton Dwelling
HOLE ID BH104 + BH104A
SAMPLE NO. D8
SAMPLE DEPTH (m) 3.50
DATE 9/6/22
OPERATOR C.A
Grey Scale
Colour Control Patches

| | DEVIATING SAMPLE REPORT | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH106 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 119 |
| | | Depth (m) | 12.10 |
| Client | Galliford Try | Sample type | CS |

**The sample listed above cannot be tested for the following scheduled test:**

Triaxial

**Date Of Issue: 20/06/2022**

**The sample cannot be tested for the following reason:**

| | |
|---|---|
| | The sample has not been received. |
| X | There is insufficient material for BS1377: 1990 Testing requirements. |

| | | | | | |
|---|---|---|---|---|---|
| | Fine | | Medium | | Coarse |

| | |
|---|---|
| Sample Mass Received (kg) | |
| Sample Mass Required (kg) | |
| Maximum Grain Size | |

| | |
|---|---|
| | The sample has been used for higher priority tests scheduled on the same sample. |
| | The sample is not suitable for the testing scheduled. |
| | The sample has exceeded maximum holding time. |
| | Vital information is missing from the sample. |
| | The sample shows signs that it has been exposed to high / low temperatures. |
| | Damaged container. |
| | Split bag. |
| | The sample shows signs of / has become cross contaminated. |
| | The sample has been damaged in transit. |

**Further information:**

The sample is of insufficient length to be able to carry out the test.

**Please advise of further action for this sample / alternative sample for testing or to continue with the test within 5 working days of the issue date. Failure to reply within the required timescale will lead to cancellation of the test.**

**Please note: continued testing will include a disclaimer in the report for this sample and as such, the result may be invalid.**

ASC GeoTesting
Aggregate • Soil • Concrete

PROJECT NO. GT0386

PROJECT NAME Wansted to Sutton Dualling

HOLE ID BH106

SAMPLE NO. CS 119

SAMPLE DEPTH (m) 12.10

DATE 17/6/22

OPERATOR C.A

Grey Scale

Colour Control Patches

| | DEVIATING SAMPLE REPORT | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH109 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 4 |
| | | Depth (m) | 0.40 |
| Client | Galliford Try | Sample type | D |

**The sample listed above cannot be tested for the following scheduled test:**

Density by linear measurment

**Date Of Issue: 20/06/2022**

**The sample cannot be tested for the following reason:**

| | |
|---|---|
| | The sample has not been received. |
| | There is insufficient material for BS1377: 1990 Testing requirements. |

| | | | | | |
|---|---|---|---|---|---|
| | Fine | | Medium | | Coarse |

| | |
|---|---|
| Sample Mass Received (kg) | |
| Sample Mass Required (kg) | |
| Maximum Grain Size | |

| | |
|---|---|
| | The sample has been used for higher priority tests scheduled on the same sample. |
| X | The sample is not suitable for the testing scheduled. |
| | The sample has exceeded maximum holding time. |
| | Vital information is missing from the sample. |
| | The sample shows signs that it has been exposed to high / low temperatures. |
| | Damaged container. |
| | Split bag. |
| | The sample shows signs of / has become cross contaminated. |
| | The sample has been damaged in transit. |

**Further information:**

There are no lumps of sufficient size to be able to carry out the test.

**Please advise of further action for this sample / alternative sample for testing or to continue with the test within 5 working days of the issue date. Failure to reply within the required timescale will lead to cancellation of the test.**

**Please note: continued testing will include a disclaimer in the report for this sample and as such, the result may be invalid.**

ASC GeoTesting
Aggregate • Soil • Concrete

PROJECT NO. GT0386

PROJECT NAME Wansted to Sutton Dualling

HOLE ID BH109

SAMPLE NO. D4

SAMPLE DEPTH (m) 0.40

DATE 17/6/22

OPERATOR C.A

Grey Scale

Colour Control Patches

0.0m 0.1m 0.2m 0.3m 0.4m

| | DEVIATING SAMPLE REPORT | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH111 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 101 |
| | | Depth (m) | 1.20 |
| Client | Galliford Try | Sample type | D |

**The sample listed above cannot be tested for the following scheduled test:**

Density by linear measurment

**Date Of Issue: 20/06/2022**

**The sample cannot be tested for the following reason:**

| | |
|---|---|
| | The sample has not been received. |
| | There is insufficient material for BS1377: 1990 Testing requirements. |

| | | | | | |
|---|---|---|---|---|---|
| | Fine | | Medium | | Coarse |

| | |
|---|---|
| Sample Mass Received (kg) | |
| Sample Mass Required (kg) | |
| Maximum Grain Size | |

| | |
|---|---|
| | The sample has been used for higher priority tests scheduled on the same sample. |
| X | The sample is not suitable for the testing scheduled. |
| | The sample has exceeded maximum holding time. |
| | Vital information is missing from the sample. |
| | The sample shows signs that it has been exposed to high / low temperatures. |
| | Damaged container. |
| | Split bag. |
| | The sample shows signs of / has become cross contaminated. |
| | The sample has been damaged in transit. |

**Further information:**

There are no lumps of sufficient size to be able to carry out the test.

**Please advise of further action for this sample / alternative sample for testing or to continue with the test within 5 working days of the issue date. Failure to reply within the required timescale will lead to cancellation of the test.**

**Please note: continued testing will include a disclaimer in the report for this sample and as such, the result may be invalid.**

ASC GeoTesting
Aggregate • Soil • Concrete

PROJECT NO. GT0386

PROJECT NAME Wanstead to Sutton Dwellings

HOLE ID BH111

SAMPLE NO. D101

SAMPLE DEPTH (m) 1.20

DATE 17/6/22

OPERATOR C.A

Grey Scale

Colour Control Patches

0.0m 0.1m 0.2m 0.3m 0.4m

| | DEVIATING SAMPLE REPORT | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH111 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 106 |
| | | Depth (m) | 5.90 |
| Client | Galliford Try | Sample type | D |

**The sample listed above cannot be tested for the following scheduled test:**

Density by linear measurment

**Date Of Issue: 09/06/2022**

**The sample cannot be tested for the following reason:**

| | |
|---|---|
| | The sample has not been received. |
| | There is insufficient material for BS1377: 1990 Testing requirements. |

| | | | | | |
|---|---|---|---|---|---|
| | Fine | | Medium | | Coarse |

| | |
|---|---|
| Sample Mass Received (kg) | |
| Sample Mass Required (kg) | |
| Maximum Grain Size | |

| | |
|---|---|
| | The sample has been used for higher priority tests scheduled on the same sample. |
| X | The sample is not suitable for the testing scheduled. |
| | The sample has exceeded maximum holding time. |
| | Vital information is missing from the sample. |
| | The sample shows signs that it has been exposed to high / low temperatures. |
| | Damaged container. |
| | Split bag. |
| | The sample shows signs of / has become cross contaminated. |
| | The sample has been damaged in transit. |

**Further information:**

The sample is a non-cohesive granular soil and is not suitable for this test.

**Please advise of further action for this sample / alternative sample for testing or to continue with the test within 5 working days of the issue date. Failure to reply within the required timescale will lead to cancellation of the test.**

**Please note: continued testing will include a disclaimer in the report for this sample and as such, the result may be invalid.**

ASC
GeoTesting
Aggregate • Soil • Concrete
PROJECT NO. GT0386
PROJECT NAME Worsted to Sutton Dwellings
HOLE ID BH111
SAMPLE NO. D106
SAMPLE DEPTH (m) 5.90
DATE 9/6/22
OPERATOR C.A
Grey Scale
Colour Control Patches

| | DEVIATING SAMPLE REPORT | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH112 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 107 |
| | | Depth (m) | 6.70 |
| Client | Galliford Try | Sample type | CS |

**The sample listed above cannot be tested for the following scheduled test:**

Triaxial

**Date Of Issue: 20/06/2022**

**The sample cannot be tested for the following reason:**

| | |
|---|---|
| | The sample has not been received. |
| X | There is insufficient material for BS1377: 1990 Testing requirements. |

| | | | | | |
|---|---|---|---|---|---|
| | Fine | | Medium | | Coarse |

| | |
|---|---|
| Sample Mass Received (kg) | |
| Sample Mass Required (kg) | |
| Maximum Grain Size | |

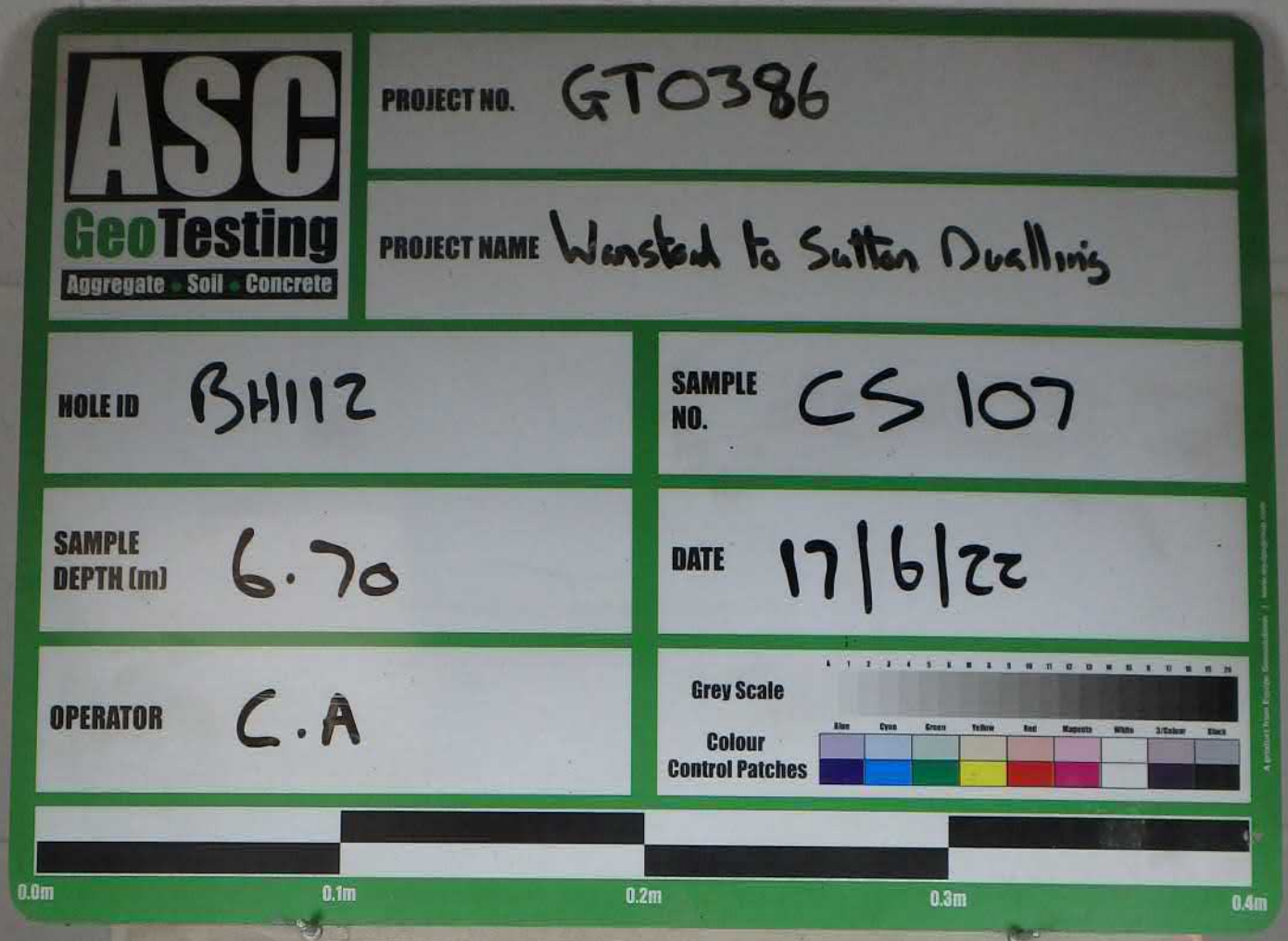
| | |
|---|---|
| | The sample has been used for higher priority tests scheduled on the same sample. |
| | The sample is not suitable for the testing scheduled. |
| | The sample has exceeded maximum holding time. |
| | Vital information is missing from the sample. |
| | The sample shows signs that it has been exposed to high / low temperatures. |
| | Damaged container. |
| | Split bag. |
| | The sample shows signs of / has become cross contaminated. |
| | The sample has been damaged in transit. |

**Further information:**

The sample is of insufficient length to be able to carry out the test.

**Please advise of further action for this sample / alternative sample for testing or to continue with the test within 5 working days of the issue date. Failure to reply within the required timescale will lead to cancellation of the test.**

**Please note: continued testing will include a disclaimer in the report for this sample and as such, the result may be invalid.**


ASC
GeoTesting
Aggregate • Soil • Concrete
PROJECT NO. GT0386
PROJECT NAME Wanstead to Sutton Dwellings
HOLE ID BH112
SAMPLE NO. CS 107
SAMPLE DEPTH (m) 6.70
DATE 17/6/22
OPERATOR C.A
Grey Scale
Colour Control Patches
0.0m
0.1m
0.2m
0.3m
0.4m

| | DEVIATING SAMPLE REPORT | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH115 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 1 |
| | | Depth (m) | 8.50 |
| Client | Galliford Try | Sample type | D |

**The sample listed above cannot be tested for the following scheduled test:**

Density by linear measurment

**Date Of Issue: 20/06/2022**

**The sample cannot be tested for the following reason:**

| | |
|---|---|
| | The sample has not been received. |
| | There is insufficient material for BS1377: 1990 Testing requirements. |

| | | | | | |
|---|---|---|---|---|---|
| | Fine | | Medium | | Coarse |

| | |
|---|---|
| Sample Mass Received (kg) | |
| Sample Mass Required (kg) | |
| Maximum Grain Size | |

| | |
|---|---|
| | The sample has been used for higher priority tests scheduled on the same sample. |
| X | The sample is not suitable for the testing scheduled. |
| | The sample has exceeded maximum holding time. |
| | Vital information is missing from the sample. |
| | The sample shows signs that it has been exposed to high / low temperatures. |
| | Damaged container. |
| | Split bag. |
| | The sample shows signs of / has become cross contaminated. |
| | The sample has been damaged in transit. |

**Further information:**

There are no lumps of sufficient size to be able to carry out the test.

**Please advise of further action for this sample / alternative sample for testing or to continue with the test within 5 working days of the issue date. Failure to reply within the required timescale will lead to cancellation of the test.**

**Please note: continued testing will include a disclaimer in the report for this sample and as such, the result may be invalid.**

ASC GeoTesting
Aggregate • Soil • Concrete

PROJECT NO. GT0386

PROJECT NAME Wansted to Sutton Dualling

HOLE ID BH115

SAMPLE NO. D1

SAMPLE DEPTH (m) 8.50

DATE 17/6/22

OPERATOR C.A

Grey Scale

Colour Control Patches

0.0m 0.1m 0.2m 0.3m 0.4m

| | DEVIATING SAMPLE REPORT | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH115 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 106 |
| | | Depth (m) | 14.70 |
| Client | Galliford Try | Sample type | CS |

**The sample listed above cannot be tested for the following scheduled test:**

Triaxial

**Date Of Issue: 20/06/2022**

**The sample cannot be tested for the following reason:**

| | |
|---|---|
| | The sample has not been received. |
| X | There is insufficient material for BS1377: 1990 Testing requirements. |

| | | | | | |
|---|---|---|---|---|---|
| | Fine | | Medium | | Coarse |

| | |
|---|---|
| Sample Mass Received (kg) | |
| Sample Mass Required (kg) | |
| Maximum Grain Size | |

| | |
|---|---|
| | The sample has been used for higher priority tests scheduled on the same sample. |
| | The sample is not suitable for the testing scheduled. |
| | The sample has exceeded maximum holding time. |
| | Vital information is missing from the sample. |
| | The sample shows signs that it has been exposed to high / low temperatures. |
| | Damaged container. |
| | Split bag. |
| | The sample shows signs of / has become cross contaminated. |
| | The sample has been damaged in transit. |

**Further information:**

The sample is of insufficient length to be able to carry out the test.

**Please advise of further action for this sample / alternative sample for testing or to continue with the test within 5 working days of the issue date. Failure to reply within the required timescale will lead to cancellation of the test.**

**Please note: continued testing will include a disclaimer in the report for this sample and as such, the result may be invalid.**

ASC GeoTesting
Aggregate • Soil • Concrete

PROJECT NO. GT0386

PROJECT NAME Wansted to Sutton Dualling

HOLE ID BH115

SAMPLE NO. CS106

SAMPLE DEPTH (m) 14.70

DATE 16/6/22

OPERATOR C.A

Grey Scale

Colour Control Patches

0.0m 0.1m 0.2m 0.3m 0.4m

| | DEVIATING SAMPLE REPORT | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH117 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 101 |
| | | Depth (m) | 7.00 |
| Client | Galliford Try | Sample type | D |

**The sample listed above cannot be tested for the following scheduled test:**

Atterberg Limits

**Date Of Issue: 09/06/2022**

**The sample cannot be tested for the following reason:**

| | |
|---|---|
| | The sample has not been received. |
| | There is insufficient material for BS1377: 1990 Testing requirements. |

| | | | | | |
|---|---|---|---|---|---|
| | Fine | | Medium | | Coarse |

| | |
|---|---|
| Sample Mass Received (kg) | |
| Sample Mass Required (kg) | |
| Maximum Grain Size | |

| | |
|---|---|
| | The sample has been used for higher priority tests scheduled on the same sample. |
| X | The sample is not suitable for the testing scheduled. |
| | The sample has exceeded maximum holding time. |
| | Vital information is missing from the sample. |
| | The sample shows signs that it has been exposed to high / low temperatures. |
| | Damaged container. |
| | Split bag. |
| | The sample shows signs of / has become cross contaminated. |
| | The sample has been damaged in transit. |

**Further information:**

The samples is a slightly sandy clayey gravel, is non-cohesive and is not suitable for this test.

**Please advise of further action for this sample / alternative sample for testing or to continue with the test within 5 working days of the issue date. Failure to reply within the required timescale will lead to cancellation of the test.**

**Please note: continued testing will include a disclaimer in the report for this sample and as such, the result may be invalid.**

ASC
GeoTesting
Aggregate - Soil - Concrete
PROJECT NO. GT0386
PROJECT NAME Wonsted to Sutton Dwellings
HOLE ID BH117
SAMPLE NO. D101
SAMPLE DEPTH (m) 7.00
DATE 9/6/22
OPERATOR C.A
Grey Scale
Colour Control Patches

| | DEVIATING SAMPLE REPORT | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH117 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 6 |
| | | Depth (m) | 15.00 |
| Client | Galliford Try | Sample type | D |

**The sample listed above cannot be tested for the following scheduled test:**

Natural moisture content of rock

**Date Of Issue: 09/06/2022**

**The sample cannot be tested for the following reason:**

| | |
|---|---|
| | The sample has not been received. |
| | There is insufficient material for BS1377: 1990 Testing requirements. |

| | | | | | |
|---|---|---|---|---|---|
| | Fine | | Medium | | Coarse |

| | |
|---|---|
| Sample Mass Received (kg) | |
| Sample Mass Required (kg) | |
| Maximum Grain Size | |

| | |
|---|---|
| | The sample has been used for higher priority tests scheduled on the same sample. |
| X | The sample is not suitable for the testing scheduled. |
| | The sample has exceeded maximum holding time. |
| | Vital information is missing from the sample. |
| | The sample shows signs that it has been exposed to high / low temperatures. |
| | Damaged container. |
| | Split bag. |
| | The sample shows signs of / has become cross contaminated. |
| | The sample has been damaged in transit. |

**Further information:**

The sample is clay and is not suitable for this test.

**Please advise of further action for this sample / alternative sample for testing or to continue with the test within 5 working days of the issue date. Failure to reply within the required timescale will lead to cancellation of the test.**

**Please note: continued testing will include a disclaimer in the report for this sample and as such, the result may be invalid.**

| | DEVIATING SAMPLE REPORT | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH117 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 6 |
| | | Depth (m) | 15.00 |
| Client | Galliford Try | Sample type | D |

**The sample listed above cannot be tested for the following scheduled test:**

Point load

**Date Of Issue: 09/06/2022**

**The sample cannot be tested for the following reason:**

| | |
|---|---|
| | The sample has not been received. |
| | There is insufficient material for BS1377: 1990 Testing requirements. |

| | | | | | |
|---|---|---|---|---|---|
| | Fine | | Medium | | Coarse |

| | |
|---|---|
| Sample Mass Received (kg) | |
| Sample Mass Required (kg) | |
| Maximum Grain Size | |

| | |
|---|---|
| | The sample has been used for higher priority tests scheduled on the same sample. |
| X | The sample is not suitable for the testing scheduled. |
| | The sample has exceeded maximum holding time. |
| | Vital information is missing from the sample. |
| | The sample shows signs that it has been exposed to high / low temperatures. |
| | Damaged container. |
| | Split bag. |
| | The sample shows signs of / has become cross contaminated. |
| | The sample has been damaged in transit. |

**Further information:**

The sample is clay and is not suitable for this test.

**Please advise of further action for this sample / alternative sample for testing or to continue with the test within 5 working days of the issue date. Failure to reply within the required timescale will lead to cancellation of the test.**

**Please note: continued testing will include a disclaimer in the report for this sample and as such, the result may be invalid.**

ASC
GeoTesting
Aggregate • Soil • Concrete
PROJECT NO. GT0386
PROJECT NAME Wanstead to Sutton Dwellings
HOLE ID BH117
SAMPLE NO. D6
SAMPLE DEPTH (m) 15.00
DATE 9/6/22
OPERATOR C.A
Grey Scale
Colour Control Patches

| | DEVIATING SAMPLE REPORT | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH118 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 1 |
| | | Depth (m) | 7.00 |
| Client | Galliford Try | Sample type | D |

**The sample listed above cannot be tested for the following scheduled test:**

Density by linear measurment

**Date Of Issue: 20/06/2022**

**The sample cannot be tested for the following reason:**

| | |
|---|---|
| | The sample has not been received. |
| | There is insufficient material for BS1377: 1990 Testing requirements. |

| | | | | | |
|---|---|---|---|---|---|
| | Fine | | Medium | | Coarse |

| | |
|---|---|
| Sample Mass Received (kg) | |
| Sample Mass Required (kg) | |
| Maximum Grain Size | |

| | |
|---|---|
| | The sample has been used for higher priority tests scheduled on the same sample. |
| X | The sample is not suitable for the testing scheduled. |
| | The sample has exceeded maximum holding time. |
| | Vital information is missing from the sample. |
| | The sample shows signs that it has been exposed to high / low temperatures. |
| | Damaged container. |
| | Split bag. |
| | The sample shows signs of / has become cross contaminated. |
| | The sample has been damaged in transit. |

**Further information:**

There are no lumps of sufficient size to be able to carry out the test.

**Please advise of further action for this sample / alternative sample for testing or to continue with the test within 5 working days of the issue date. Failure to reply within the required timescale will lead to cancellation of the test.**

**Please note: continued testing will include a disclaimer in the report for this sample and as such, the result may be invalid.**

ASC GeoTesting
Aggregate • Soil • Concrete

PROJECT NO. GT0386

PROJECT NAME Wansted to Sutton Dualling

HOLE ID BH118

SAMPLE NO. D1

SAMPLE DEPTH (m) 7.00

DATE 17/6/22

OPERATOR C.A

Grey Scale

Colour Control Patches

0.0m 0.1m 0.2m 0.3m 0.4m

| | DEVIATING SAMPLE REPORT | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH120 & BH120A |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 5 |
| | | Depth (m) | 3.50 |
| Client | Galliford Try | Sample type | B |

**The sample listed above cannot be tested for the following scheduled test:**

Density by linear measurment

**Date Of Issue: 09/06/2022**

**The sample cannot be tested for the following reason:**

- [ ] The sample has not been received.
- [ ] There is insufficient material for BS1377: 1990 Testing requirements.

- [ ] Fine
- [ ] Medium
- [ ] Coarse

Sample Mass Received (kg) [ ]

Sample Mass Required (kg) [ ]

Maximum Grain Size [ ]

- [ ] The sample has been used for higher priority tests scheduled on the same sample.
- [X] The sample is not suitable for the testing scheduled.
- [ ] The sample has exceeded maximum holding time.
- [ ] Vital information is missing from the sample.
- [ ] The sample shows signs that it has been exposed to high / low temperatures.
- [ ] Damaged container.
- [ ] Split bag.
- [ ] The sample shows signs of / has become cross contaminated.
- [ ] The sample has been damaged in transit.

**Further information:**

The sample is a non-cohesive granular soil and is not suitable for this test.

**Please advise of further action for this sample / alternative sample for testing or to continue with the test within 5 working days of the issue date. Failure to reply within the required timescale will lead to cancellation of the test.**

**Please note: continued testing will include a disclaimer in the report for this sample and as such, the result may be invalid.**

ASC
GeoTesting
Aggregate - Soil - Concrete
PROJECT NO. GT0386
PROJECT NAME Wansted to Sutton Dualling
HOLE ID BH120 + BH120A
SAMPLE NO. B5
SAMPLE DEPTH (m) 3.50
DATE 9/6/22
OPERATOR C.A
Grey Scale
Colour Control Patches

| | DEVIATING SAMPLE REPORT | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH121 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 108 |
| | | Depth (m) | 9.00 |
| Client | Galliford Try | Sample type | B |

**The sample listed above cannot be tested for the following scheduled test:**

Density by linear measurment

**Date Of Issue: 09/06/2022**

**The sample cannot be tested for the following reason:**

| | |
|---|---|
| | The sample has not been received. |
| | There is insufficient material for BS1377: 1990 Testing requirements. |

| | | | | | |
|---|---|---|---|---|---|
| | Fine | | Medium | | Coarse |

| | |
|---|---|
| Sample Mass Received (kg) | |
| Sample Mass Required (kg) | |
| Maximum Grain Size | |

| | |
|---|---|
| | The sample has been used for higher priority tests scheduled on the same sample. |
| X | The sample is not suitable for the testing scheduled. |
| | The sample has exceeded maximum holding time. |
| | Vital information is missing from the sample. |
| | The sample shows signs that it has been exposed to high / low temperatures. |
| | Damaged container. |
| | Split bag. |
| | The sample shows signs of / has become cross contaminated. |
| | The sample has been damaged in transit. |

**Further information:**

The sample is a non-cohesive granular soil and is not suitable for this test.

**Please advise of further action for this sample / alternative sample for testing or to continue with the test within 5 working days of the issue date. Failure to reply within the required timescale will lead to cancellation of the test.**

**Please note: continued testing will include a disclaimer in the report for this sample and as such, the result may be invalid.**

ASC
GeoTesting
Aggregate • Soil • Concrete
PROJECT NO. GT0386
PROJECT NAME Wansted to Sutton Dwellings
HOLE ID BH121
SAMPLE NO. B108
SAMPLE DEPTH (m) 9.00
DATE 9/6/22
OPERATOR C.A
Grey Scale
Colour Control Patches

| | DEVIATING SAMPLE REPORT | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH121 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 115 |
| | | Depth (m) | 13.70 |
| Client | Galliford Try | Sample type | B |

**The sample listed above cannot be tested for the following scheduled test:**

Atterberg Limits

**Date Of Issue: 09/06/2022**

**The sample cannot be tested for the following reason:**

| | |
|---|---|
| | The sample has not been received. |
| | There is insufficient material for BS1377: 1990 Testing requirements. |

| | | | | | |
|---|---|---|---|---|---|
| | Fine | | Medium | | Coarse |

| | |
|---|---|
| Sample Mass Received (kg) | |
| Sample Mass Required (kg) | |
| Maximum Grain Size | |

| | |
|---|---|
| | The sample has been used for higher priority tests scheduled on the same sample. |
| X | The sample is not suitable for the testing scheduled. |
| | The sample has exceeded maximum holding time. |
| | Vital information is missing from the sample. |
| | The sample shows signs that it has been exposed to high / low temperatures. |
| | Damaged container. |
| | Split bag. |
| | The sample shows signs of / has become cross contaminated. |
| | The sample has been damaged in transit. |

**Further information:**

The samples is a very silty sand, is non-cohesive and is not suitable for this test.

**Please advise of further action for this sample / alternative sample for testing or to continue with the test within 5 working days of the issue date. Failure to reply within the required timescale will lead to cancellation of the test.**

**Please note: continued testing will include a disclaimer in the report for this sample and as such, the result may be invalid.**

ASC
GeoTesting
Aggregate - Soil - Concrete
PROJECT NO. GT0386
PROJECT NAME Wansted to Sutton Dwelling
HOLE ID BH121
SAMPLE NO. B115
SAMPLE DEPTH (m) 13.70
DATE 9/6/22
OPERATOR C.A
Grey Scale
Colour Control Patches

| | DEVIATING SAMPLE REPORT | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH122 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 103 |
| | | Depth (m) | 1.50 |
| Client | Galliford Try | Sample type | D |

**The sample listed above cannot be tested for the following scheduled test:**

Density by linear measurment

**Date Of Issue: 09/06/2022**

**The sample cannot be tested for the following reason:**

| | |
|---|---|
| | The sample has not been received. |
| | There is insufficient material for BS1377: 1990 Testing requirements. |

| | | | | | |
|---|---|---|---|---|---|
| | Fine | | Medium | | Coarse |

| | |
|---|---|
| Sample Mass Received (kg) | |
| Sample Mass Required (kg) | |
| Maximum Grain Size | |

| | |
|---|---|
| | The sample has been used for higher priority tests scheduled on the same sample. |
| X | The sample is not suitable for the testing scheduled. |
| | The sample has exceeded maximum holding time. |
| | Vital information is missing from the sample. |
| | The sample shows signs that it has been exposed to high / low temperatures. |
| | Damaged container. |
| | Split bag. |
| | The sample shows signs of / has become cross contaminated. |
| | The sample has been damaged in transit. |

**Further information:**

The sample is a non-cohesive granular soil and is not suitable for this test.

**Please advise of further action for this sample / alternative sample for testing or to continue with the test within 5 working days of the issue date. Failure to reply within the required timescale will lead to cancellation of the test.**

**Please note: continued testing will include a disclaimer in the report for this sample and as such, the result may be invalid.**

ASC
GeoTesting
Aggregate - Soil - Concrete
PROJECT NO. GT0386
PROJECT NAME Worsted to Sutton Dwelling
HOLE ID BH122
SAMPLE NO. D103
SAMPLE DEPTH (m) 1.50
DATE 9/6/22
OPERATOR C.A
Grey Scale
Colour Control Patches

| | DEVIATING SAMPLE REPORT | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH122 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 113 |
| | | Depth (m) | 13.50 |
| Client | Galliford Try | Sample type | D |

**The sample listed above cannot be tested for the following scheduled test:**

Density by linear measurment

**Date Of Issue: 09/06/2022**

**The sample cannot be tested for the following reason:**

| | |
|---|---|
| | The sample has not been received. |
| | There is insufficient material for BS1377: 1990 Testing requirements. |

| | | | | | |
|---|---|---|---|---|---|
| | Fine | | Medium | | Coarse |

| | |
|---|---|
| Sample Mass Received (kg) | |
| Sample Mass Required (kg) | |
| Maximum Grain Size | |

| | |
|---|---|
| | The sample has been used for higher priority tests scheduled on the same sample. |
| X | The sample is not suitable for the testing scheduled. |
| | The sample has exceeded maximum holding time. |
| | Vital information is missing from the sample. |
| | The sample shows signs that it has been exposed to high / low temperatures. |
| | Damaged container. |
| | Split bag. |
| | The sample shows signs of / has become cross contaminated. |
| | The sample has been damaged in transit. |

**Further information:**

The sample is a non-cohesive granular soil and is not suitable for this test.

**Please advise of further action for this sample / alternative sample for testing or to continue with the test within 5 working days of the issue date. Failure to reply within the required timescale will lead to cancellation of the test.**

**Please note: continued testing will include a disclaimer in the report for this sample and as such, the result may be invalid.**

ASC
GeoTesting
Aggregate - Soil - Concrete
PROJECT NO. GT0386
PROJECT NAME Wansted to Sutton Dwellings
HOLE ID BH122
SAMPLE NO. D113
SAMPLE DEPTH (m) 13.50
DATE 9/6/22
OPERATOR C.A
Grey Scale
Colour Control Patches

| | DEVIATING SAMPLE REPORT | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH123 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 104 |
| | | Depth (m) | 4.00 |
| Client | Galliford Try | Sample type | D |

**The sample listed above cannot be tested for the following scheduled test:**

Density by linear measurment

**Date Of Issue: 20/06/2022**

**The sample cannot be tested for the following reason:**

| | |
|---|---|
| | The sample has not been received. |
| | There is insufficient material for BS1377: 1990 Testing requirements. |

| | | | | | |
|---|---|---|---|---|---|
| | Fine | | Medium | | Coarse |

| | |
|---|---|
| Sample Mass Received (kg) | |
| Sample Mass Required (kg) | |
| Maximum Grain Size | |

| | |
|---|---|
| | The sample has been used for higher priority tests scheduled on the same sample. |
| X | The sample is not suitable for the testing scheduled. |
| | The sample has exceeded maximum holding time. |
| | Vital information is missing from the sample. |
| | The sample shows signs that it has been exposed to high / low temperatures. |
| | Damaged container. |
| | Split bag. |
| | The sample shows signs of / has become cross contaminated. |
| | The sample has been damaged in transit. |

**Further information:**

There are no lumps of sufficient size to be able to carry out the test.

**Please advise of further action for this sample / alternative sample for testing or to continue with the test within 5 working days of the issue date. Failure to reply within the required timescale will lead to cancellation of the test.**

**Please note: continued testing will include a disclaimer in the report for this sample and as such, the result may be invalid.**

ASC GeoTesting
Aggregate • Soil • Concrete

PROJECT NO. GT0386

PROJECT NAME Wansted to Sutton Dualling

HOLE ID BH123

SAMPLE NO. D 104

SAMPLE DEPTH (m) 4.00

DATE 17/6/22

OPERATOR C.A

Grey Scale

Colour Control Patches

0.0m 0.1m 0.2m 0.3m 0.4m

| | DEVIATING SAMPLE REPORT | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH130 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 102 |
| | | Depth (m) | 4.50 |
| Client | Galliford Try | Sample type | D |

**The sample listed above cannot be tested for the following scheduled test:**

Atterberg Limits

**Date Of Issue: 09/06/2022**

**The sample cannot be tested for the following reason:**

| | |
|---|---|
| | The sample has not been received. |
| | There is insufficient material for BS1377: 1990 Testing requirements. |

| | | | | | |
|---|---|---|---|---|---|
| | Fine | | Medium | | Coarse |

| | |
|---|---|
| Sample Mass Received (kg) | |
| Sample Mass Required (kg) | |
| Maximum Grain Size | |

| | |
|---|---|
| | The sample has been used for higher priority tests scheduled on the same sample. |
| X | The sample is not suitable for the testing scheduled. |
| | The sample has exceeded maximum holding time. |
| | Vital information is missing from the sample. |
| | The sample shows signs that it has been exposed to high / low temperatures. |
| | Damaged container. |
| | Split bag. |
| | The sample shows signs of / has become cross contaminated. |
| | The sample has been damaged in transit. |

**Further information:**

The sample is rock and is not suitable for this test.

**Please advise of further action for this sample / alternative sample for testing or to continue with the test within 5 working days of the issue date. Failure to reply within the required timescale will lead to cancellation of the test.**

**Please note: continued testing will include a disclaimer in the report for this sample and as such, the result may be invalid.**

ASC
GeoTesting
Aggregate • Soil • Concrete
PROJECT NO. GT0386
PROJECT NAME Wanstead to Sutton Dwellings
HOLE ID BH130
SAMPLE NO. D102
SAMPLE DEPTH (m) 4.50
DATE 9/6/22
OPERATOR C.A
Grey Scale
Colour Control Patches

| | DEVIATING SAMPLE REPORT | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH130 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 103 |
| | | Depth (m) | 4.80 |
| Client | Galliford Try | Sample type | D |

**The sample listed above cannot be tested for the following scheduled test:**

Density by linear measurment

**Date Of Issue: 20/06/2022**

**The sample cannot be tested for the following reason:**

| | |
|---|---|
| | The sample has not been received. |
| | There is insufficient material for BS1377: 1990 Testing requirements. |

| | | | | | |
|---|---|---|---|---|---|
| | Fine | | Medium | | Coarse |

| | |
|---|---|
| Sample Mass Received (kg) | |
| Sample Mass Required (kg) | |
| Maximum Grain Size | |

| | |
|---|---|
| | The sample has been used for higher priority tests scheduled on the same sample. |
| X | The sample is not suitable for the testing scheduled. |
| | The sample has exceeded maximum holding time. |
| | Vital information is missing from the sample. |
| | The sample shows signs that it has been exposed to high / low temperatures. |
| | Damaged container. |
| | Split bag. |
| | The sample shows signs of / has become cross contaminated. |
| | The sample has been damaged in transit. |

**Further information:**

There are no lumps of sufficient size to be able to carry out the test.

**Please advise of further action for this sample / alternative sample for testing or to continue with the test within 5 working days of the issue date. Failure to reply within the required timescale will lead to cancellation of the test.**

**Please note: continued testing will include a disclaimer in the report for this sample and as such, the result may be invalid.**

ASC GeoTesting
Aggregate • Soil • Concrete

PROJECT NO. GT0386

PROJECT NAME Wansted to Sutton Dualling

HOLE ID BH130

SAMPLE NO. D103

SAMPLE DEPTH (m) 4.80

DATE 17/6/22

OPERATOR C.A

Grey Scale

Colour Control Patches

0.0m 0.1m 0.2m 0.3m 0.4m

| | DEVIATING SAMPLE REPORT | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH131 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 101 |
| | | Depth (m) | 1.85 |
| Client | Galliford Try | Sample type | CS |

**The sample listed above cannot be tested for the following scheduled test:**

Atterberg Limits

**Date Of Issue: 09/06/2022**

**The sample cannot be tested for the following reason:**

| | |
|---|---|
| | The sample has not been received. |
| | There is insufficient material for BS1377: 1990 Testing requirements. |

| | | | | | |
|---|---|---|---|---|---|
| | Fine | | Medium | | Coarse |

| | |
|---|---|
| Sample Mass Received (kg) | |
| Sample Mass Required (kg) | |
| Maximum Grain Size | |

| | |
|---|---|
| | The sample has been used for higher priority tests scheduled on the same sample. |
| X | The sample is not suitable for the testing scheduled. |
| | The sample has exceeded maximum holding time. |
| | Vital information is missing from the sample. |
| | The sample shows signs that it has been exposed to high / low temperatures. |
| | Damaged container. |
| | Split bag. |
| | The sample shows signs of / has become cross contaminated. |
| | The sample has been damaged in transit. |

**Further information:**

The sample is rock and is not suitable for this test.

**Please advise of further action for this sample / alternative sample for testing or to continue with the test within 5 working days of the issue date. Failure to reply within the required timescale will lead to cancellation of the test.**

**Please note: continued testing will include a disclaimer in the report for this sample and as such, the result may be invalid.**

ASC
GeoTesting
Aggregate - Soil - Concrete
PROJECT NO. GT0386
PROJECT NAME Wonsted to Sutton Dwellings
HOLE ID BH131
SAMPLE NO. CS101
SAMPLE DEPTH (m) 1.85m
DATE 9/6/22
OPERATOR C.A
Grey Scale
Colour Control Patches

| | DEVIATING SAMPLE REPORT | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | BH136 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 26 |
| | | Depth (m) | 17.50 |
| Client | Galliford Try | Sample type | D |

**The sample listed above cannot be tested for the following scheduled test:**

Triaxial

**Date Of Issue: 24/06/2022**

**The sample cannot be tested for the following reason:**

| | |
|---|---|
| | The sample has not been received. |
| | There is insufficient material for BS1377: 1990 Testing requirements. |

| | | | | | |
|---|---|---|---|---|---|
| | Fine | | Medium | | Coarse |

| | |
|---|---|
| Sample Mass Received (kg) | |
| Sample Mass Required (kg) | |
| Maximum Grain Size | |

| | |
|---|---|
| | The sample has been used for higher priority tests scheduled on the same sample. |
| X | The sample is not suitable for the testing scheduled. |
| | The sample has exceeded maximum holding time. |
| | Vital information is missing from the sample. |
| | The sample shows signs that it has been exposed to high / low temperatures. |
| | Damaged container. |
| | Split bag. |
| | The sample shows signs of / has become cross contaminated. |
| | The sample has been damaged in transit. |

**Further information:**

The sample is not suitable for this test.

**Please advise of further action for this sample / alternative sample for testing or to continue with the test within 5 working days of the issue date. Failure to reply within the required timescale will lead to cancellation of the test.**

**Please note: continued testing will include a disclaimer in the report for this sample and as such, the result may be invalid.**

ASC GeoTesting
Aggregate • Soil • Concrete

PROJECT NO. GT0386

PROJECT NAME Wanstead to Sutton Dwelling

HOLE ID BH136

SAMPLE NO. D26

SAMPLE DEPTH (m) 17.50

DATE 24/6/22

OPERATOR C.A

Grey Scale

Colour Control Patches

0.0m 0.1m 0.2m 0.3m 0.4m

| | DEVIATING SAMPLE REPORT | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP109 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 6 |
| | | Depth (m) | 1.00 |
| Client | Galliford Try | Sample type | B |

**The sample listed above cannot be tested for the following scheduled test:**

CBR

**Date Of Issue: 22/04/2022**

**The sample cannot be tested for the following reason:**

| | |
|---|---|
| | The sample has not been received. |
| | There is insufficient material for BS1377: 1990 Testing requirements. |

| | | | | | |
|---|---|---|---|---|---|
| | Fine | | Medium | | Coarse |

| | |
|---|---|
| Sample Mass Received (kg) | |
| Sample Mass Required (kg) | |
| Maximum Grain Size | |

| | |
|---|---|
| | The sample has been used for higher priority tests scheduled on the same sample. |
| X | The sample is not suitable for the testing scheduled. |
| | The sample has exceeded maximum holding time. |
| | Vital information is missing from the sample. |
| | The sample shows signs that it has been exposed to high / low temperatures. |
| | Damaged container. |
| | Split bag. |
| | The sample shows signs of / has become cross contaminated. |
| | The sample has been damaged in transit. |

**Further information:** There is more than 25% of the sample retained on a 20mm test sieve so therefore under BS1377-4:1990 (7.2.1.2) the test is not applicable.

**Please advise of further action for this sample / alternative sample for testing or to continue with the test within 5 working days of the issue date. Failure to reply within the required timescale will lead to cancellation of the test.**

**Please note: continued testing will include a disclaimer in the report for this sample and as such, the result may be invalid.**

ASC
GeoTesting
PROJECT NO. GT0386
PROJECT NAME Wanstead to Sutton Dwelling
HOLE ID TP109
SAMPLE NO. B6
SAMPLE DEPTH (m) 1.00
DATE 20/4/22
OPERATOR C.A
Grey Scale
Colour Control Patches

| | DEVIATING SAMPLE REPORT | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP110 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 5 |
| | | Depth (m) | 1.10 |
| Client | Galliford Try | Sample type | B |

**The sample listed above cannot be tested for the following scheduled test:**

CBR

**Date Of Issue: 22/04/2022**

**The sample cannot be tested for the following reason:**

| | |
|---|---|
| | The sample has not been received. |
| | There is insufficient material for BS1377: 1990 Testing requirements. |

| | | | | | |
|---|---|---|---|---|---|
| | Fine | | Medium | | Coarse |

| | |
|---|---|
| Sample Mass Received (kg) | |
| Sample Mass Required (kg) | |
| Maximum Grain Size | |

| | |
|---|---|
| | The sample has been used for higher priority tests scheduled on the same sample. |
| X | The sample is not suitable for the testing scheduled. |
| | The sample has exceeded maximum holding time. |
| | Vital information is missing from the sample. |
| | The sample shows signs that it has been exposed to high / low temperatures. |
| | Damaged container. |
| | Split bag. |
| | The sample shows signs of / has become cross contaminated. |
| | The sample has been damaged in transit. |

**Further information:** There is more than 25% of the sample retained on a 20mm test sieve so therefore under BS1377-4:1990 (7.2.1.2) the test is not applicable.

**Please advise of further action for this sample / alternative sample for testing or to continue with the test within 5 working days of the issue date. Failure to reply within the required timescale will lead to cancellation of the test.**

**Please note: continued testing will include a disclaimer in the report for this sample and as such, the result may be invalid.**

ASC
GeoTesting
PROJECT NO. GT0386
PROJECT NAME Wansted to Sutton Dualling
HOLE ID TP110
SAMPLE NO. B5
SAMPLE DEPTH (m) 1.10
DATE 20/4/22
OPERATOR C.A
Grey Scale
Colour Control Patches

| | DEVIATING SAMPLE REPORT | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP110 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 7 |
| | | Depth (m) | 2.50 |
| Client | Galliford Try | Sample type | B |

**The sample listed above cannot be tested for the following scheduled test:**

Compaction

**Date Of Issue: 22/04/2022**

**The sample cannot be tested for the following reason:**

| | |
|---|---|
| | The sample has not been received. |
| | There is insufficient material for BS1377: 1990 Testing requirements. |

| | | | | | |
|---|---|---|---|---|---|
| | Fine | | Medium | | Coarse |

| | |
|---|---|
| Sample Mass Received (kg) | |
| Sample Mass Required (kg) | |
| Maximum Grain Size | |

| | |
|---|---|
| | The sample has been used for higher priority tests scheduled on the same sample. |
| X | The sample is not suitable for the testing scheduled. |
| | The sample has exceeded maximum holding time. |
| | Vital information is missing from the sample. |
| | The sample shows signs that it has been exposed to high / low temperatures. |
| | Damaged container. |
| | Split bag. |
| | The sample shows signs of / has become cross contaminated. |
| | The sample has been damaged in transit. |

**Further information:** There is less than the required amount of sample passing the test sieves so therefore under BS1377-4:1990 (3.2.6 - Table 2) the test is not applicable.

**Please advise of further action for this sample / alternative sample for testing or to continue with the test within 5 working days of the issue date. Failure to reply within the required timescale will lead to cancellation of the test.**

**Please note: continued testing will include a disclaimer in the report for this sample and as such, the result may be invalid.**

ASC
GeoTesting
PROJECT NO. GT0386
PROJECT NAME Wanstead to Sutton Dwellings
TP110
SAMPLE NO. B7
SAMPLE DEPTH (m) 2.50
DATE 20/4/22
OPERATOR C.A
Grey Scale
Colour Control Patches

| | DEVIATING SAMPLE REPORT | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP111 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 5 |
| | | Depth (m) | 0.80 |
| Client | Galliford Try | Sample type | B |

**The sample listed above cannot be tested for the following scheduled test:**

Compaction

**Date Of Issue: 19/04/2022**

**The sample cannot be tested for the following reason:**

| | |
|---|---|
| | The sample has not been received. |
| | There is insufficient material for BS1377: 1990 Testing requirements. |

| | | | | | |
|---|---|---|---|---|---|
| | Fine | | Medium | | Coarse |

| | |
|---|---|
| Sample Mass Received (kg) | |
| Sample Mass Required (kg) | |
| Maximum Grain Size | |

| | |
|---|---|
| | The sample has been used for higher priority tests scheduled on the same sample. |
| X | The sample is not suitable for the testing scheduled. |
| | The sample has exceeded maximum holding time. |
| | Vital information is missing from the sample. |
| | The sample shows signs that it has been exposed to high / low temperatures. |
| | Damaged container. |
| | Split bag. |
| | The sample shows signs of / has become cross contaminated. |
| | The sample has been damaged in transit. |

**Further information:** There is less than the required amount of sample passing the test sieves so therefore under BS1377-4: 1990 (3.2.6 - Table 2) the test is not applicable.

**Please advise of further action for this sample / alternative sample for testing or to continue with the test within 5 working days of the issue date. Failure to reply within the required timescale will leac to cancellation of the test.**

**Please note: continued testing will include a disclaimer in the report for this sample and as such, the result may be invalid.**

ASC
GeoTesting
PROJECT NO. GT0386
PROJECT NAME Wanstead to Sutton Dwellings
HOLE ID TP111
SAMPLE NO. B5
SAMPLE DEPTH (m) 0.8
DATE 19/4/22
OPERATOR C.A
Grey Scale
Colour Control Patches

| | DEVIATING SAMPLE REPORT | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP112 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 5 |
| | | Depth (m) | 0.60 |
| Client | Galliford Try | Sample type | B |

**The sample listed above cannot be tested for the following scheduled test:**

CBR

**Date Of Issue: 19/04/2022**

**The sample cannot be tested for the following reason:**

| | |
|---|---|
| | The sample has not been received. |
| | There is insufficient material for BS1377: 1990 Testing requirements. |

| | | | | | |
|---|---|---|---|---|---|
| | Fine | | Medium | | Coarse |

| | |
|---|---|
| Sample Mass Received (kg) | |
| Sample Mass Required (kg) | |
| Maximum Grain Size | |

| | |
|---|---|
| | The sample has been used for higher priority tests scheduled on the same sample. |
| X | The sample is not suitable for the testing scheduled. |
| | The sample has exceeded maximum holding time. |
| | Vital information is missing from the sample. |
| | The sample shows signs that it has been exposed to high / low temperatures. |
| | Damaged container. |
| | Split bag. |
| | The sample shows signs of / has become cross contaminated. |
| | The sample has been damaged in transit. |

**Further information:** There is more than 25% of the sample retained on a 20mm test sieve so therefore under BS1377-4: 1990 (7.2.1.2) the test is not applicable.

**Please advise of further action for this sample / alternative sample for testing or to continue with the test within 5 working days of the issue date. Failure to reply within the required timescale will leac to cancellation of the test.**

**Please note: continued testing will include a disclaimer in the report for this sample and as such, the result may be invalid.**

| | DEVIATING SAMPLE REPORT | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP112 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 5 |
| | | Depth (m) | 0.60 |
| Client | Galliford Try | Sample type | B |

**The sample listed above cannot be tested for the following scheduled test:**

Large shearbox

**Date Of Issue: 19/04/2022**

**The sample cannot be tested for the following reason:**

| | |
|---|---|
| | The sample has not been received. |
| | There is insufficient material for BS1377: 1990 Testing requirements. |

| | | | | | |
|---|---|---|---|---|---|
| | Fine | | Medium | | Coarse |

| | |
|---|---|
| Sample Mass Received (kg) | |
| Sample Mass Required (kg) | |
| Maximum Grain Size | |

| | |
|---|---|
| | The sample has been used for higher priority tests scheduled on the same sample. |
| X | The sample is not suitable for the testing scheduled. |
| | The sample has exceeded maximum holding time. |
| | Vital information is missing from the sample. |
| | The sample shows signs that it has been exposed to high / low temperatures. |
| | Damaged container. |
| | Split bag. |
| | The sample shows signs of / has become cross contaminated. |
| | The sample has been damaged in transit. |

**Further information:** A very large portion of the sample contains particles that exceed the maximum allowed particle diameter of 20mm under BS1377-7:1990 (5.4.2.2). Therefore the test cannot be carried out as any data obtained would not be representative.

**Please advise of further action for this sample / alternative sample for testing or to continue with the test within 5 working days of the issue date. Failure to reply within the required timescale will leac to cancellation of the test.**

**Please note: continued testing will include a disclaimer in the report for this sample and as such, the result may be invalid.**

| | DEVIATING SAMPLE REPORT | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP112 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 5 |
| | | Depth (m) | 0.60 |
| Client | Galliford Try | Sample type | B |

**The sample listed above cannot be tested for the following scheduled test:**

PSD - coarse

**Date Of Issue: 19/04/2022**

**The sample cannot be tested for the following reason:**

| | |
|---|---|
| | The sample has not been received. |
| X | There is insufficient material for BS1377: 1990 Testing requirements. |

| | | | | | |
|---|---|---|---|---|---|
| | Fine | | Medium | | Coarse |

| | |
|---|---|
| Sample Mass Received (kg) | 10 |
| Sample Mass Required (kg) | 55 |
| Maximum Grain Size | |

| | |
|---|---|
| | The sample has been used for higher priority tests scheduled on the same sample. |
| | The sample is not suitable for the testing scheduled. |
| | The sample has exceeded maximum holding time. |
| | Vital information is missing from the sample. |
| | The sample shows signs that it has been exposed to high / low temperatures. |
| | Damaged container. |
| | Split bag. |
| | The sample shows signs of / has become cross contaminated. |
| | The sample has been damaged in transit. |

**Further information:**

There is insufficient sample to carry out the test under BS1377-2:1990 (9.2.4 Table 3)

**Please advise of further action for this sample / alternative sample for testing or to continue with the test within 5 working days of the issue date. Failure to reply within the required timescale will leac to cancellation of the test.**

**Please note: continued testing will include a disclaimer in the report for this sample and as such, the result may be invalid.**

ASC
GeoTesting
Aggregate - Soil - Concrete
PROJECT NO. GT0386
PROJECT NAME Wanstead to Sutton Dwellings
HOLE ID TP112
SAMPLE NO. B5
SAMPLE DEPTH (m) 0.6
DATE 19/4/22
OPERATOR C.A
Grey Scale
Colour Control Patches

| | DEVIATING SAMPLE REPORT | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP112 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 8 |
| | | Depth (m) | 1.95 |
| Client | Galliford Try | Sample type | D |

**The sample listed above cannot be tested for the following scheduled test:**

PSD - coarse

**Date Of Issue: 19/04/2022**

**The sample cannot be tested for the following reason:**

| | |
|---|---|
| | The sample has not been received. |
| X | There is insufficient material for BS1377: 1990 Testing requirements. |

| | | | | | |
|---|---|---|---|---|---|
| | Fine | | Medium | | Coarse |

| | |
|---|---|
| Sample Mass Received (kg) | 0.8 |
| Sample Mass Required (kg) | 8 |
| Maximum Grain Size | |

| | |
|---|---|
| | The sample has been used for higher priority tests scheduled on the same sample. |
| | The sample is not suitable for the testing scheduled. |
| | The sample has exceeded maximum holding time. |
| | Vital information is missing from the sample. |
| | The sample shows signs that it has been exposed to high / low temperatures. |
| | Damaged container. |
| | Split bag. |
| | The sample shows signs of / has become cross contaminated. |
| | The sample has been damaged in transit. |

**Further information:**

There is insufficient sample to carry out the test under BS1377-2:1990 (9.2.4 Table 3)

**Please advise of further action for this sample / alternative sample for testing or to continue with the test within 5 working days of the issue date. Failure to reply within the required timescale will leac to cancellation of the test.**

**Please note: continued testing will include a disclaimer in the report for this sample and as such, the result may be invalid.**

ASC
GeoTesting
Aggregate • Soil • Concrete
PROJECT NO. GT0386
PROJECT NAME Wansted to Sutton Dualling
HOLE ID TP112
SAMPLE NO. D8
SAMPLE DEPTH (m) 1.95
DATE 19/4/22
OPERATOR C.A
Grey Scale
Colour Control Patches

| | DEVIATING SAMPLE REPORT | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP114 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 5 |
| | | Depth (m) | 0.50 |
| Client | Galliford Try | Sample type | B |

**The sample listed above cannot be tested for the following scheduled test:**

CBR

**Date Of Issue: 19/04/2022**

**The sample cannot be tested for the following reason:**

| | |
|---|---|
| | The sample has not been received. |
| | There is insufficient material for BS1377: 1990 Testing requirements. |

| | | | | | |
|---|---|---|---|---|---|
| | Fine | | Medium | | Coarse |

| | |
|---|---|
| Sample Mass Received (kg) | |
| Sample Mass Required (kg) | |
| Maximum Grain Size | |

| | |
|---|---|
| | The sample has been used for higher priority tests scheduled on the same sample. |
| X | The sample is not suitable for the testing scheduled. |
| | The sample has exceeded maximum holding time. |
| | Vital information is missing from the sample. |
| | The sample shows signs that it has been exposed to high / low temperatures. |
| | Damaged container. |
| | Split bag. |
| | The sample shows signs of / has become cross contaminated. |
| | The sample has been damaged in transit. |

**Further information:** There is more than 25% of the sample retained on a 20mm test sieve so therefore under BS1377-4:1990 (7.2.1.2) the test is not applicable.

**Please advise of further action for this sample / alternative sample for testing or to continue with the test within 5 working days of the issue date. Failure to reply within the required timescale will leac to cancellation of the test.**

**Please note: continued testing will include a disclaimer in the report for this sample and as such, the result may be invalid.**

| | DEVIATING SAMPLE REPORT | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP114 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 5 |
| | | Depth (m) | 0.50 |
| Client | Galliford Try | Sample type | B |

**The sample listed above cannot be tested for the following scheduled test:**

Compaction

**Date Of Issue: 19/04/2022**

**The sample cannot be tested for the following reason:**

| | |
|---|---|
| | The sample has not been received. |
| | There is insufficient material for BS1377: 1990 Testing requirements. |

| | | | | | |
|---|---|---|---|---|---|
| | Fine | | Medium | | Coarse |

| | |
|---|---|
| Sample Mass Received (kg) | |
| Sample Mass Required (kg) | |
| Maximum Grain Size | |

| | |
|---|---|
| | The sample has been used for higher priority tests scheduled on the same sample. |
| X | The sample is not suitable for the testing scheduled. |
| | The sample has exceeded maximum holding time. |
| | Vital information is missing from the sample. |
| | The sample shows signs that it has been exposed to high / low temperatures. |
| | Damaged container. |
| | Split bag. |
| | The sample shows signs of / has become cross contaminated. |
| | The sample has been damaged in transit. |

**Further information:** There is less than the required amount of sample passing the test sieves so therefore under BS1377-4:1990 (3.2.6 - Table 2) the test is not applicable.

**Please advise of further action for this sample / alternative sample for testing or to continue with the test within 5 working days of the issue date. Failure to reply within the required timescale will leac to cancellation of the test.**

**Please note: continued testing will include a disclaimer in the report for this sample and as such, the result may be invalid.**

| | DEVIATING SAMPLE REPORT | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP114 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 5 |
| | | Depth (m) | 0.50 |
| Client | Galliford Try | Sample type | B |

**The sample listed above cannot be tested for the following scheduled test:**

Large shearbox

**Date Of Issue: 19/04/2022**

**The sample cannot be tested for the following reason:**

| | |
|---|---|
| | The sample has not been received. |
| | There is insufficient material for BS1377: 1990 Testing requirements. |

| | | | | | |
|---|---|---|---|---|---|
| | Fine | | Medium | | Coarse |

| | |
|---|---|
| Sample Mass Received (kg) | |
| Sample Mass Required (kg) | |
| Maximum Grain Size | |

| | |
|---|---|
| | The sample has been used for higher priority tests scheduled on the same sample. |
| X | The sample is not suitable for the testing scheduled. |
| | The sample has exceeded maximum holding time. |
| | Vital information is missing from the sample. |
| | The sample shows signs that it has been exposed to high / low temperatures. |
| | Damaged container. |
| | Split bag. |
| | The sample shows signs of / has become cross contaminated. |
| | The sample has been damaged in transit. |

**Further information:** A very large portion of the sample contains particles that exceed the maximum allowed particle diameter of 20mm under BS1377-7:1990 (5.4.2.2). Therefore the test cannot be carried out as any data obtained would not be representative.

**Please advise of further action for this sample / alternative sample for testing or to continue with the test within 5 working days of the issue date. Failure to reply within the required timescale will leac to cancellation of the test.**

**Please note: continued testing will include a disclaimer in the report for this sample and as such, the result may be invalid.**

ASC
GeoTesting
Aggregate - Soil - Concrete
PROJECT NO. GT0386
PROJECT NAME Wansted to Sutton Dualling
HOLE ID TP114
SAMPLE NO. B5
SAMPLE DEPTH (m) 0.5
DATE 19/4/22
OPERATOR C.A
Grey Scale
Colour Control Patches

| | DEVIATING SAMPLE REPORT | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP116 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 5 |
| | | Depth (m) | 0.40 |
| Client | Galliford Try | Sample type | B |

**The sample listed above cannot be tested for the following scheduled test:**

Large shearbox

**Date Of Issue: 19/04/2022**

**The sample cannot be tested for the following reason:**

| | |
|---|---|
| | The sample has not been received. |
| | There is insufficient material for BS1377: 1990 Testing requirements. |

| | | | | | |
|---|---|---|---|---|---|
| | Fine | | Medium | | Coarse |

| | |
|---|---|
| Sample Mass Received (kg) | |
| Sample Mass Required (kg) | |
| Maximum Grain Size | |

| | |
|---|---|
| | The sample has been used for higher priority tests scheduled on the same sample. |
| X | The sample is not suitable for the testing scheduled. |
| | The sample has exceeded maximum holding time. |
| | Vital information is missing from the sample. |
| | The sample shows signs that it has been exposed to high / low temperatures. |
| | Damaged container. |
| | Split bag. |
| | The sample shows signs of / has become cross contaminated. |
| | The sample has been damaged in transit. |

**Further information:** A very large portion of the sample contains particles that exceed the maximum allowed particle diameter of 20mm under BS1377-7:1990 (5.4.2.2). Therefore the test cannot be carried out as any data obtained would not be representative.

**Please advise of further action for this sample / alternative sample for testing or to continue with the test within 5 working days of the issue date. Failure to reply within the required timescale will leac to cancellation of the test.**

**Please note: continued testing will include a disclaimer in the report for this sample and as such, the result may be invalid.**

ASC
GeoTesting
Aggregate • Soil • Concrete
PROJECT NO. GT0386
PROJECT NAME Wansted to Sutton Dualling
HOLE ID TP116
SAMPLE NO. B5
SAMPLE DEPTH (m) 0.4
DATE 19/4/22
OPERATOR C.A
Grey Scale
Colour Control Patches

| | DEVIATING SAMPLE REPORT | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP120 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 5 |
| | | Depth (m) | 1.10 |
| Client | Galliford Try | Sample type | B |

**The sample listed above cannot be tested for the following scheduled test:**

Compaction

**Date Of Issue: 22/04/2022**

**The sample cannot be tested for the following reason:**

| | |
|---|---|
| | The sample has not been received. |
| | There is insufficient material for BS1377: 1990 Testing requirements. |

| | | | | | |
|---|---|---|---|---|---|
| | Fine | | Medium | | Coarse |

| | |
|---|---|
| Sample Mass Received (kg) | |
| Sample Mass Required (kg) | |
| Maximum Grain Size | |

| | |
|---|---|
| | The sample has been used for higher priority tests scheduled on the same sample. |
| X | The sample is not suitable for the testing scheduled. |
| | The sample has exceeded maximum holding time. |
| | Vital information is missing from the sample. |
| | The sample shows signs that it has been exposed to high / low temperatures. |
| | Damaged container. |
| | Split bag. |
| | The sample shows signs of / has become cross contaminated. |
| | The sample has been damaged in transit. |

**Further information:** There is less than the required amount of sample passing the test sieves so therefore under BS1377-4:1990 (3.2.6 - Table 2) the test is not applicable.

**Please advise of further action for this sample / alternative sample for testing or to continue with the test within 5 working days of the issue date. Failure to reply within the required timescale will lead to cancellation of the test.**

**Please note: continued testing will include a disclaimer in the report for this sample and as such, the result may be invalid.**

ASC
GeoTesting
Aggregate - Soil - Concrete
PROJECT NO. GT0386
PROJECT NAME Worsted to Sutton Dwellings
HOLE ID TP120
SAMPLE NO. B5
SAMPLE DEPTH (m) 1.10
DATE 20/4/22
OPERATOR C.A
Grey Scale
Colour Control Patches

| | DEVIATING SAMPLE REPORT | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP121 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 5 |
| | | Depth (m) | 0.70 |
| Client | Galliford Try | Sample type | B |

**The sample listed above cannot be tested for the following scheduled test:**

Compaction

**Date Of Issue: 22/04/2022**

**The sample cannot be tested for the following reason:**

| | |
|---|---|
| | The sample has not been received. |
| | There is insufficient material for BS1377: 1990 Testing requirements. |

| | | | | | |
|---|---|---|---|---|---|
| | Fine | | Medium | | Coarse |

| | |
|---|---|
| Sample Mass Received (kg) | |
| Sample Mass Required (kg) | |
| Maximum Grain Size | |

| | |
|---|---|
| | The sample has been used for higher priority tests scheduled on the same sample. |
| X | The sample is not suitable for the testing scheduled. |
| | The sample has exceeded maximum holding time. |
| | Vital information is missing from the sample. |
| | The sample shows signs that it has been exposed to high / low temperatures. |
| | Damaged container. |
| | Split bag. |
| | The sample shows signs of / has become cross contaminated. |
| | The sample has been damaged in transit. |

**Further information:** There is less than the required amount of sample passing the test sieves so therefore under BS1377-4:1990 (3.2.6 - Table 2) the test is not applicable.

**Please advise of further action for this sample / alternative sample for testing or to continue with the test within 5 working days of the issue date. Failure to reply within the required timescale will lead to cancellation of the test.**

**Please note: continued testing will include a disclaimer in the report for this sample and as such, the result may be invalid.**

ASC
GeoTesting
Aggregate - Soil - Concrete
PROJECT NO. GT0386
PROJECT NAME Wanstead to Sutton Dwellings
HOLE ID TP121
SAMPLE NO. B5
SAMPLE DEPTH (m) 0.7
DATE 20/4/22
OPERATOR C.A
Grey Scale
Colour Control Patches

| | DEVIATING SAMPLE REPORT | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP123 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 5 |
| | | Depth (m) | 1.00 |
| Client | Galliford Try | Sample type | B |

**The sample listed above cannot be tested for the following scheduled test:**

Large shearbox

**Date Of Issue: 22/04/2022**

**The sample cannot be tested for the following reason:**

| | |
|---|---|
| | The sample has not been received. |
| | There is insufficient material for BS1377: 1990 Testing requirements. |

| | | | | | |
|---|---|---|---|---|---|
| | Fine | | Medium | | Coarse |

| | |
|---|---|
| Sample Mass Received (kg) | |
| Sample Mass Required (kg) | |
| Maximum Grain Size | |

| | |
|---|---|
| | The sample has been used for higher priority tests scheduled on the same sample. |
| X | The sample is not suitable for the testing scheduled. |
| | The sample has exceeded maximum holding time. |
| | Vital information is missing from the sample. |
| | The sample shows signs that it has been exposed to high / low temperatures. |
| | Damaged container. |
| | Split bag. |
| | The sample shows signs of / has become cross contaminated. |
| | The sample has been damaged in transit. |

**Further information:** A very large portion of the sample contains particles that exceed the maximum allowed particle diameter of 20mm under BS1377-7:1990 (5.4.2.2). Therefore the test cannot be carried out as any data obtained would not be representative.

**Please advise of further action for this sample / alternative sample for testing or to continue with the test within 5 working days of the issue date. Failure to reply within the required timescale will lead to cancellation of the test.**

**Please note: continued testing will include a disclaimer in the report for this sample and as such, the result may be invalid.**

ASC
GeoTesting
Aggregate – Soil – Concrete
PROJECT NO. GT0386
PROJECT NAME Wanstead to Sutton Dwellings
HOLE ID TP123
SAMPLE NO. B5
SAMPLE DEPTH (m) 1.00
DATE 20/4/22
OPERATOR C.A
Grey Scale
Colour Control Patches

| | DEVIATING SAMPLE REPORT | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP125 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 5 |
| | | Depth (m) | 0.30 |
| Client | Galliford Try | Sample type | B |

**The sample listed above cannot be tested for the following scheduled test:**

Large shearbox

**Date Of Issue: 22/04/2022**

**The sample cannot be tested for the following reason:**

| | |
|---|---|
| | The sample has not been received. |
| | There is insufficient material for BS1377: 1990 Testing requirements. |

| | | | | | |
|---|---|---|---|---|---|
| | Fine | | Medium | | Coarse |

| | |
|---|---|
| Sample Mass Received (kg) | |
| Sample Mass Required (kg) | |
| Maximum Grain Size | |

| | |
|---|---|
| | The sample has been used for higher priority tests scheduled on the same sample. |
| X | The sample is not suitable for the testing scheduled. |
| | The sample has exceeded maximum holding time. |
| | Vital information is missing from the sample. |
| | The sample shows signs that it has been exposed to high / low temperatures. |
| | Damaged container. |
| | Split bag. |
| | The sample shows signs of / has become cross contaminated. |
| | The sample has been damaged in transit. |

**Further information:** A very large portion of the sample contains particles that exceed the maximum allowed particle diameter of 20mm under BS1377-7:1990 (5.4.2.2). Therefore the test cannot be carried out as any data obtained would not be representative.

**Please advise of further action for this sample / alternative sample for testing or to continue with the test within 5 working days of the issue date. Failure to reply within the required timescale will lead to cancellation of the test.**

**Please note: continued testing will include a disclaimer in the report for this sample and as such, the result may be invalid.**

ASC
GeoTesting
Aggregate • Soil • Concrete
PROJECT NO. GT0386
PROJECT NAME Worsted to Sutton Dwellings
HOLE ID TP125
SAMPLE NO. B5
SAMPLE DEPTH (m) 0.30
DATE 20/4/22
OPERATOR C.A
Grey Scale
Colour Control Patches

| | DEVIATING SAMPLE REPORT | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP139 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 9 |
| | | Depth (m) | 2.40 |
| Client | Galliford Try | Sample type | B |

**The sample listed above cannot be tested for the following scheduled test:**

Large shearbox

**Date Of Issue: 09/06/2022**

**The sample cannot be tested for the following reason:**

| | |
|---|---|
| | The sample has not been received. |
| | There is insufficient material for BS1377: 1990 Testing requirements. |

| | | | | | |
|---|---|---|---|---|---|
| | Fine | | Medium | | Coarse |

| | |
|---|---|
| Sample Mass Received (kg) | |
| Sample Mass Required (kg) | |
| Maximum Grain Size | |

| | |
|---|---|
| | The sample has been used for higher priority tests scheduled on the same sample. |
| X | The sample is not suitable for the testing scheduled. |
| | The sample has exceeded maximum holding time. |
| | Vital information is missing from the sample. |
| | The sample shows signs that it has been exposed to high / low temperatures. |
| | Damaged container. |
| | Split bag. |
| | The sample shows signs of / has become cross contaminated. |
| | The sample has been damaged in transit. |

**Further information:** A very large portion of the sample contains particles that exceed the maximum allowed particle diameter of 20mm under BS1377-7:1990 (5.4.2.2). Therefore the test cannot be carried out as any data obtained would not be representative.

**Please advise of further action for this sample / alternative sample for testing or to continue with the test within 5 working days of the issue date. Failure to reply within the required timescale will lead to cancellation of the test.**

**Please note: continued testing will include a disclaimer in the report for this sample and as such, the result may be invalid.**

ASC
GeoTesting
Aggregate - Soil - Concrete
PROJECT NO. GT0386
PROJECT NAME Wansted to Sutton Dualling
HOLE ID TP139
SAMPLE NO. B9
SAMPLE DEPTH (m) 2.40
DATE 9/6/22
OPERATOR C.A
Grey Scale
Colour Control Patches

| | DEVIATING SAMPLE REPORT | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP140 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 11 |
| | | Depth (m) | 2.50 |
| Client | Galliford Try | Sample type | B |

**The sample listed above cannot be tested for the following scheduled test:**

Density by linear measurment

**Date Of Issue: 20/06/2022**

**The sample cannot be tested for the following reason:**

| | |
|---|---|
| | The sample has not been received. |
| | There is insufficient material for BS1377: 1990 Testing requirements. |

| | | | | | |
|---|---|---|---|---|---|
| | Fine | | Medium | | Coarse |

| | |
|---|---|
| Sample Mass Received (kg) | |
| Sample Mass Required (kg) | |
| Maximum Grain Size | |

| | |
|---|---|
| | The sample has been used for higher priority tests scheduled on the same sample. |
| X | The sample is not suitable for the testing scheduled. |
| | The sample has exceeded maximum holding time. |
| | Vital information is missing from the sample. |
| | The sample shows signs that it has been exposed to high / low temperatures. |
| | Damaged container. |
| | Split bag. |
| | The sample shows signs of / has become cross contaminated. |
| | The sample has been damaged in transit. |

**Further information:**

There are no lumps of sufficient size to be able to carry out the test.

**Please advise of further action for this sample / alternative sample for testing or to continue with the test within 5 working days of the issue date. Failure to reply within the required timescale will lead to cancellation of the test.**

**Please note: continued testing will include a disclaimer in the report for this sample and as such, the result may be invalid.**

ASC GeoTesting
Aggregate • Soil • Concrete

PROJECT NO. GT0386

PROJECT NAME Wanstead to Sutton Dwellings

HOLE ID TP140

SAMPLE NO. B11

SAMPLE DEPTH (m) 2.50

DATE 17/6/22

OPERATOR C.A

Grey Scale

Colour Control Patches

0.0m 0.1m 0.2m 0.3m 0.4m

| | DEVIATING SAMPLE REPORT | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP141 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 9 |
| | | Depth (m) | 1.90 |
| Client | Galliford Try | Sample type | B |

**The sample listed above cannot be tested for the following scheduled test:**

Compaction

**Date Of Issue: 09/06/2022**

**The sample cannot be tested for the following reason:**

| | |
|---|---|
| | The sample has not been received. |
| | There is insufficient material for BS1377: 1990 Testing requirements. |

| | | | | | |
|---|---|---|---|---|---|
| | Fine | | Medium | | Coarse |

| | |
|---|---|
| Sample Mass Received (kg) | |
| Sample Mass Required (kg) | |
| Maximum Grain Size | |

| | |
|---|---|
| | The sample has been used for higher priority tests scheduled on the same sample. |
| X | The sample is not suitable for the testing scheduled. |
| | The sample has exceeded maximum holding time. |
| | Vital information is missing from the sample. |
| | The sample shows signs that it has been exposed to high / low temperatures. |
| | Damaged container. |
| | Split bag. |
| | The sample shows signs of / has become cross contaminated. |
| | The sample has been damaged in transit. |

**Further information:** There is less than the required amount of sample passing the test sieves so therefore under BS1377-4:1990 (3.2.6 - Table 2) the test is not applicable.

**Please advise of further action for this sample / alternative sample for testing or to continue with the test within 5 working days of the issue date. Failure to reply within the required timescale will lead to cancellation of the test.**

**Please note: continued testing will include a disclaimer in the report for this sample and as such, the result may be invalid.**

| | DEVIATING SAMPLE REPORT | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP141 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 9 |
| | | Depth (m) | 1.90 |
| Client | Galliford Try | Sample type | B |

**The sample listed above cannot be tested for the following scheduled test:**

MCV

**Date Of Issue: 09/06/2022**

**The sample cannot be tested for the following reason:**

| | |
|---|---|
| | The sample has not been received. |
| | There is insufficient material for BS1377: 1990 Testing requirements. |

| | | | | | |
|---|---|---|---|---|---|
| | Fine | | Medium | | Coarse |

| | |
|---|---|
| Sample Mass Received (kg) | |
| Sample Mass Required (kg) | |
| Maximum Grain Size | |

| | |
|---|---|
| | The sample has been used for higher priority tests scheduled on the same sample. |
| X | The sample is not suitable for the testing scheduled. |
| | The sample has exceeded maximum holding time. |
| | Vital information is missing from the sample. |
| | The sample shows signs that it has been exposed to high / low temperatures. |
| | Damaged container. |
| | Split bag. |
| | The sample shows signs of / has become cross contaminated. |
| | The sample has been damaged in transit. |

**Further information:** There is insufficient suitable material present within the sample (particle diameter less than 20mm) to be able to carry out the test under BS1377-4:1990 (5.5.1)

**Please advise of further action for this sample / alternative sample for testing or to continue with the test within 5 working days of the issue date. Failure to reply within the required timescale will lead to cancellation of the test.**

**Please note: continued testing will include a disclaimer in the report for this sample and as such, the result may be invalid.**

ASC
GeoTesting
Aggregate - Soil - Concrete
PROJECT NO. GT0386
PROJECT NAME Wanstead to Sutton Dwellings
HOLE ID TP14
SAMPLE NO. B9
SAMPLE DEPTH (m) 1.90
DATE 9/6/22
OPERATOR C.A
Grey Scale
Colour Control Patches

| | DEVIATING SAMPLE REPORT | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP141 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 10 |
| | | Depth (m) | 1.90 |
| Client | Galliford Try | Sample type | D |

**The sample listed above cannot be tested for the following scheduled test:**

Atterberg Limits

**Date Of Issue: 09/06/2022**

**The sample cannot be tested for the following reason:**

| | |
|---|---|
| | The sample has not been received. |
| | There is insufficient material for BS1377: 1990 Testing requirements. |

| | | | | | |
|---|---|---|---|---|---|
| | Fine | | Medium | | Coarse |

| | |
|---|---|
| Sample Mass Received (kg) | |
| Sample Mass Required (kg) | |
| Maximum Grain Size | |

| | |
|---|---|
| | The sample has been used for higher priority tests scheduled on the same sample. |
| X | The sample is not suitable for the testing scheduled. |
| | The sample has exceeded maximum holding time. |
| | Vital information is missing from the sample. |
| | The sample shows signs that it has been exposed to high / low temperatures. |
| | Damaged container. |
| | Split bag. |
| | The sample shows signs of / has become cross contaminated. |
| | The sample has been damaged in transit. |

**Further information:**

The sample is rock and is not suitable for this test.

**Please advise of further action for this sample / alternative sample for testing or to continue with the test within 5 working days of the issue date. Failure to reply within the required timescale will lead to cancellation of the test.**

**Please note: continued testing will include a disclaimer in the report for this sample and as such, the result may be invalid.**

| | DEVIATING SAMPLE REPORT | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP141 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 10 |
| | | Depth (m) | 1.90 |
| Client | Galliford Try | Sample type | D |

**The sample listed above cannot be tested for the following scheduled test:**

Density by linear measurment

**Date Of Issue: 09/06/2022**

**The sample cannot be tested for the following reason:**

| | |
|---|---|
| | The sample has not been received. |
| | There is insufficient material for BS1377: 1990 Testing requirements. |

| | | | | | |
|---|---|---|---|---|---|
| | Fine | | Medium | | Coarse |

| | |
|---|---|
| Sample Mass Received (kg) | |
| Sample Mass Required (kg) | |
| Maximum Grain Size | |

| | |
|---|---|
| | The sample has been used for higher priority tests scheduled on the same sample. |
| X | The sample is not suitable for the testing scheduled. |
| | The sample has exceeded maximum holding time. |
| | Vital information is missing from the sample. |
| | The sample shows signs that it has been exposed to high / low temperatures. |
| | Damaged container. |
| | Split bag. |
| | The sample shows signs of / has become cross contaminated. |
| | The sample has been damaged in transit. |

**Further information:**

The sample is an irregularly shaped rock and is not suitable for this test.

**Please advise of further action for this sample / alternative sample for testing or to continue with the test within 5 working days of the issue date. Failure to reply within the required timescale will lead to cancellation of the test.**

**Please note: continued testing will include a disclaimer in the report for this sample and as such, the result may be invalid.**

ASC
GeoTesting
Aggregate - Soil - Concrete
PROJECT NO. GT0386
PROJECT NAME Wansted to Sutton Dwellings
HOLE ID TP141
SAMPLE NO. D10
SAMPLE DEPTH (m) 1.90
DATE 9/6/22
OPERATOR C.A
Grey Scale
Colour Control Patches

| | DEVIATING SAMPLE REPORT | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP142 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 12 |
| | | Depth (m) | 3.40 |
| Client | Galliford Try | Sample type | D |

**The sample listed above cannot be tested for the following scheduled test:**

Density by linear measurment

**Date Of Issue: 20/06/2022**

**The sample cannot be tested for the following reason:**

| | |
|---|---|
| | The sample has not been received. |
| | There is insufficient material for BS1377: 1990 Testing requirements. |

| | | | | | |
|---|---|---|---|---|---|
| | Fine | | Medium | | Coarse |

| | |
|---|---|
| Sample Mass Received (kg) | |
| Sample Mass Required (kg) | |
| Maximum Grain Size | |

| | |
|---|---|
| | The sample has been used for higher priority tests scheduled on the same sample. |
| X | The sample is not suitable for the testing scheduled. |
| | The sample has exceeded maximum holding time. |
| | Vital information is missing from the sample. |
| | The sample shows signs that it has been exposed to high / low temperatures. |
| | Damaged container. |
| | Split bag. |
| | The sample shows signs of / has become cross contaminated. |
| | The sample has been damaged in transit. |

**Further information:**

There are no lumps of sufficient size to be able to carry out the test.

**Please advise of further action for this sample / alternative sample for testing or to continue with the test within 5 working days of the issue date. Failure to reply within the required timescale will lead to cancellation of the test.**

**Please note: continued testing will include a disclaimer in the report for this sample and as such, the result may be invalid.**

ASC GeoTesting
Aggregate • Soil • Concrete

PROJECT NO. GT0386

PROJECT NAME Wansted to Sutton Dualling

HOLE ID TP142

SAMPLE NO. D12

SAMPLE DEPTH (m) 3.40

DATE 17/6/22

OPERATOR C.A

Grey Scale

Colour Control Patches

0.0m 0.1m 0.2m 0.3m 0.4m

| | DEVIATING SAMPLE REPORT | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP144 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 5 |
| | | Depth (m) | 0.40 |
| Client | Galliford Try | Sample type | D |

**The sample listed above cannot be tested for the following scheduled test:**

Density by linear measurment

**Date Of Issue: 09/06/2022**

**The sample cannot be tested for the following reason:**

| | |
|---|---|
| | The sample has not been received. |
| | There is insufficient material for BS1377: 1990 Testing requirements. |

| | | | | | |
|---|---|---|---|---|---|
| | Fine | | Medium | | Coarse |

| | |
|---|---|
| Sample Mass Received (kg) | |
| Sample Mass Required (kg) | |
| Maximum Grain Size | |

| | |
|---|---|
| | The sample has been used for higher priority tests scheduled on the same sample. |
| X | The sample is not suitable for the testing scheduled. |
| | The sample has exceeded maximum holding time. |
| | Vital information is missing from the sample. |
| | The sample shows signs that it has been exposed to high / low temperatures. |
| | Damaged container. |
| | Split bag. |
| | The sample shows signs of / has become cross contaminated. |
| | The sample has been damaged in transit. |

**Further information:**

The sample is a non-cohesive granular soil and is not suitable for this test.

**Please advise of further action for this sample / alternative sample for testing or to continue with the test within 5 working days of the issue date. Failure to reply within the required timescale will lead to cancellation of the test.**

**Please note: continued testing will include a disclaimer in the report for this sample and as such, the result may be invalid.**

ASC
GeoTesting
Aggregate • Soil • Concrete
PROJECT NO. GT0386
PROJECT NAME Wansted to Sutton Dualling
HOLE ID TP144
SAMPLE NO. D5
SAMPLE DEPTH (m) 0.40
DATE 9/6/22
OPERATOR C.A
Grey Scale
Colour Control Patches
45

| | DEVIATING SAMPLE REPORT | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP144 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 9 |
| | | Depth (m) | 1.90 |
| Client | Galliford Try | Sample type | B |

**The sample listed above cannot be tested for the following scheduled test:**

PSD - coarse

**Date Of Issue: 09/06/2022**

**The sample cannot be tested for the following reason:**

| | |
|---|---|
| | The sample has not been received. |
| X | There is insufficient material for BS1377: 1990 Testing requirements. |

| | | | | | |
|---|---|---|---|---|---|
| | Fine | | Medium | | Coarse |

| | |
|---|---|
| Sample Mass Received (kg) | 35 |
| Sample Mass Required (kg) | 150 |
| Maximum Grain Size | |

| | |
|---|---|
| | The sample has been used for higher priority tests scheduled on the same sample. |
| | The sample is not suitable for the testing scheduled. |
| | The sample has exceeded maximum holding time. |
| | Vital information is missing from the sample. |
| | The sample shows signs that it has been exposed to high / low temperatures. |
| | Damaged container. |
| | Split bag. |
| | The sample shows signs of / has become cross contaminated. |
| | The sample has been damaged in transit. |

**Further information:**

There is insufficient sample to carry out the test under BS1377-2:1990 (9.2.4 Table 3)

**Please advise of further action for this sample / alternative sample for testing or to continue with the test within 5 working days of the issue date. Failure to reply within the required timescale will lead to cancellation of the test.**

**Please note: continued testing will include a disclaimer in the report for this sample and as such, the result may be invalid.**

ASC
GeoTesting
Aggregate - Soil - Concrete
PROJECT NO. GT0386
PROJECT NAME Worsted to Sutton Duallings
HOLE ID TP144
SAMPLE NO. B9
SAMPLE DEPTH (m) 1.90
DATE 9/6/22
OPERATOR C.A
Grey Scale
Colour Control Patches

| | DEVIATING SAMPLE REPORT | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP148 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 6 |
| | | Depth (m) | 1.30 |
| Client | Galliford Try | Sample type | D |

**The sample listed above cannot be tested for the following scheduled test:**

Atterberg Limits

**Date Of Issue: 09/06/2022**

**The sample cannot be tested for the following reason:**

| | |
|---|---|
| | The sample has not been received. |
| | There is insufficient material for BS1377: 1990 Testing requirements. |

| | | | | | |
|---|---|---|---|---|---|
| | Fine | | Medium | | Coarse |

| | |
|---|---|
| Sample Mass Received (kg) | |
| Sample Mass Required (kg) | |
| Maximum Grain Size | |

| | |
|---|---|
| | The sample has been used for higher priority tests scheduled on the same sample. |
| X | The sample is not suitable for the testing scheduled. |
| | The sample has exceeded maximum holding time. |
| | Vital information is missing from the sample. |
| | The sample shows signs that it has been exposed to high / low temperatures. |
| | Damaged container. |
| | Split bag. |
| | The sample shows signs of / has become cross contaminated. |
| | The sample has been damaged in transit. |

**Further information:**

The samples is a clayey very gravelly sand, is non-cohesive and is not suitable for this test.

**Please advise of further action for this sample / alternative sample for testing or to continue with the test within 5 working days of the issue date. Failure to reply within the required timescale will lead to cancellation of the test.**

**Please note: continued testing will include a disclaimer in the report for this sample and as such, the result may be invalid.**

ASC
GeoTesting
Aggregate - Soil - Concrete
PROJECT NO. GT0386
PROJECT NAME Wansted to Sutton Dualling
HOLE ID TP148
SAMPLE NO. D6
SAMPLE DEPTH (m) 1.30
DATE 9/6/22
OPERATOR C.A
Grey Scale
Colour Control Patches

| | DEVIATING SAMPLE REPORT | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP149 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 6 |
| | | Depth (m) | 1.30 |
| Client | Galliford Try | Sample type | D |

**The sample listed above cannot be tested for the following scheduled test:**

Density by linear measurment

**Date Of Issue: 20/06/2022**

**The sample cannot be tested for the following reason:**

| | |
|---|---|
| | The sample has not been received. |
| | There is insufficient material for BS1377: 1990 Testing requirements. |

| | | | | | |
|---|---|---|---|---|---|
| | Fine | | Medium | | Coarse |

| | |
|---|---|
| Sample Mass Received (kg) | |
| Sample Mass Required (kg) | |
| Maximum Grain Size | |

| | |
|---|---|
| | The sample has been used for higher priority tests scheduled on the same sample. |
| X | The sample is not suitable for the testing scheduled. |
| | The sample has exceeded maximum holding time. |
| | Vital information is missing from the sample. |
| | The sample shows signs that it has been exposed to high / low temperatures. |
| | Damaged container. |
| | Split bag. |
| | The sample shows signs of / has become cross contaminated. |
| | The sample has been damaged in transit. |

**Further information:**

There are no lumps of sufficient size to be able to carry out the test.

**Please advise of further action for this sample / alternative sample for testing or to continue with the test within 5 working days of the issue date. Failure to reply within the required timescale will lead to cancellation of the test.**

**Please note: continued testing will include a disclaimer in the report for this sample and as such, the result may be invalid.**

ASC GeoTesting
Aggregate • Soil • Concrete

PROJECT NO. GT0386

PROJECT NAME Wansted to Sutton Dualling

HOLE ID TP149

SAMPLE NO. D6

SAMPLE DEPTH (m) 1.30

DATE 17/6/22

OPERATOR C.A

Grey Scale

Colour Control Patches

0.0m 0.1m 0.2m 0.3m 0.4m

| | DEVIATING SAMPLE REPORT | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP160 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 6 |
| | | Depth (m) | 1.30 |
| Client | Galliford Try | Sample type | D |

**The sample listed above cannot be tested for the following scheduled test:**

Density by linear measurment

**Date Of Issue: 20/06/2022**

**The sample cannot be tested for the following reason:**

| | |
|---|---|
| | The sample has not been received. |
| | There is insufficient material for BS1377: 1990 Testing requirements. |

| | | | | | |
|---|---|---|---|---|---|
| | Fine | | Medium | | Coarse |

| | |
|---|---|
| Sample Mass Received (kg) | |
| Sample Mass Required (kg) | |
| Maximum Grain Size | |

| | |
|---|---|
| | The sample has been used for higher priority tests scheduled on the same sample. |
| X | The sample is not suitable for the testing scheduled. |
| | The sample has exceeded maximum holding time. |
| | Vital information is missing from the sample. |
| | The sample shows signs that it has been exposed to high / low temperatures. |
| | Damaged container. |
| | Split bag. |
| | The sample shows signs of / has become cross contaminated. |
| | The sample has been damaged in transit. |

**Further information:**

There are no lumps of sufficient size to be able to carry out the test.

**Please advise of further action for this sample / alternative sample for testing or to continue with the test within 5 working days of the issue date. Failure to reply within the required timescale will lead to cancellation of the test.**

**Please note: continued testing will include a disclaimer in the report for this sample and as such, the result may be invalid.**

ASC GeoTesting
Aggregate • Soil • Concrete

PROJECT NO. GT0386

PROJECT NAME Wansted to Sutton Dwellings

HOLE ID TP160

SAMPLE NO. D6

SAMPLE DEPTH (m) 1.30m

DATE 17/6/22

OPERATOR C.A

Grey Scale

Colour Control Patches

0.0m 0.1m 0.2m 0.3m 0.4m

| | DEVIATING SAMPLE REPORT | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP162 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 5 |
| | | Depth (m) | 0.80 |
| Client | Galliford Try | Sample type | B |

**The sample listed above cannot be tested for the following scheduled test:**

Compaction

**Date Of Issue: 22/04/2022**

**The sample cannot be tested for the following reason:**

| | |
|---|---|
| | The sample has not been received. |
| | There is insufficient material for BS1377: 1990 Testing requirements. |

| | | | | | |
|---|---|---|---|---|---|
| | Fine | | Medium | | Coarse |

| | |
|---|---|
| Sample Mass Received (kg) | |
| Sample Mass Required (kg) | |
| Maximum Grain Size | |

| | |
|---|---|
| | The sample has been used for higher priority tests scheduled on the same sample. |
| X | The sample is not suitable for the testing scheduled. |
| | The sample has exceeded maximum holding time. |
| | Vital information is missing from the sample. |
| | The sample shows signs that it has been exposed to high / low temperatures. |
| | Damaged container. |
| | Split bag. |
| | The sample shows signs of / has become cross contaminated. |
| | The sample has been damaged in transit. |

**Further information:** There is less than the required amount of sample passing the test sieves so therefore under BS1377-4:1990 (3.2.6 - Table 2) the test is not applicable.

**Please advise of further action for this sample / alternative sample for testing or to continue with the test within 5 working days of the issue date. Failure to reply within the required timescale will lead to cancellation of the test.**

**Please note: continued testing will include a disclaimer in the report for this sample and as such, the result may be invalid.**

ASC
GeoTesting
Aggregate · Soil · Concrete
PROJECT NO. GT0386
PROJECT NAME Worsted to Sutton Dwellings
HOLE ID TP162
SAMPLE NO. B5
SAMPLE DEPTH (m) 0.80
DATE 21/4/22
OPERATOR C.A
Grey Scale
Colour Control Patches

| | DEVIATING SAMPLE REPORT | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP166 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 5 |
| | | Depth (m) | 1.00 |
| Client | Galliford Try | Sample type | B |

**The sample listed above cannot be tested for the following scheduled test:**

CBR

**Date Of Issue: 09/06/2022**

**The sample cannot be tested for the following reason:**

| | |
|---|---|
| | The sample has not been received. |
| | There is insufficient material for BS1377: 1990 Testing requirements. |

| | | | | | |
|---|---|---|---|---|---|
| | Fine | | Medium | | Coarse |

| | |
|---|---|
| Sample Mass Received (kg) | |
| Sample Mass Required (kg) | |
| Maximum Grain Size | |

| | |
|---|---|
| | The sample has been used for higher priority tests scheduled on the same sample. |
| X | The sample is not suitable for the testing scheduled. |
| | The sample has exceeded maximum holding time. |
| | Vital information is missing from the sample. |
| | The sample shows signs that it has been exposed to high / low temperatures. |
| | Damaged container. |
| | Split bag. |
| | The sample shows signs of / has become cross contaminated. |
| | The sample has been damaged in transit. |

**Further information:** There is more than 25% of the sample retained on a 20mm test sieve so therefore under BS1377-4:1990 (7.2.1.2) the test is not applicable.

**Please advise of further action for this sample / alternative sample for testing or to continue with the test within 5 working days of the issue date. Failure to reply within the required timescale will lead to cancellation of the test.**

**Please note: continued testing will include a disclaimer in the report for this sample and as such, the result may be invalid.**

| | DEVIATING SAMPLE REPORT | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP166 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 5 |
| | | Depth (m) | 1.00 |
| Client | Galliford Try | Sample type | B |

**The sample listed above cannot be tested for the following scheduled test:**

Compaction

**Date Of Issue: 09/06/2022**

**The sample cannot be tested for the following reason:**

| | |
|---|---|
| | The sample has not been received. |
| | There is insufficient material for BS1377: 1990 Testing requirements. |

| | | | | | |
|---|---|---|---|---|---|
| | Fine | | Medium | | Coarse |

| | |
|---|---|
| Sample Mass Received (kg) | |
| Sample Mass Required (kg) | |
| Maximum Grain Size | |

| | |
|---|---|
| | The sample has been used for higher priority tests scheduled on the same sample. |
| X | The sample is not suitable for the testing scheduled. |
| | The sample has exceeded maximum holding time. |
| | Vital information is missing from the sample. |
| | The sample shows signs that it has been exposed to high / low temperatures. |
| | Damaged container. |
| | Split bag. |
| | The sample shows signs of / has become cross contaminated. |
| | The sample has been damaged in transit. |

**Further information:** There is less than the required amount of sample passing the test sieves so therefore under BS1377-4:1990 (3.2.6 - Table 2) the test is not applicable.

**Please advise of further action for this sample / alternative sample for testing or to continue with the test within 5 working days of the issue date. Failure to reply within the required timescale will lead to cancellation of the test.**

**Please note: continued testing will include a disclaimer in the report for this sample and as such, the result may be invalid.**

ASC GeoTesting
Aggregate • Soil • Concrete

| | DEVIATING SAMPLE REPORT | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP166 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 5 |
| | | Depth (m) | 1.00 |
| Client | Galliford Try | Sample type | B |

**The sample listed above cannot be tested for the following scheduled test:**

MCV

**Date Of Issue: 09/06/2022**

**The sample cannot be tested for the following reason:**

| | |
|---|---|
| | The sample has not been received. |
| | There is insufficient material for BS1377: 1990 Testing requirements. |

| | | | | | |
|---|---|---|---|---|---|
| | Fine | | Medium | | Coarse |

| | |
|---|---|
| Sample Mass Received (kg) | |
| Sample Mass Required (kg) | |
| Maximum Grain Size | |

| | |
|---|---|
| | The sample has been used for higher priority tests scheduled on the same sample. |
| X | The sample is not suitable for the testing scheduled. |
| | The sample has exceeded maximum holding time. |
| | Vital information is missing from the sample. |
| | The sample shows signs that it has been exposed to high / low temperatures. |
| | Damaged container. |
| | Split bag. |
| | The sample shows signs of / has become cross contaminated. |
| | The sample has been damaged in transit. |

**Further information:** There is insufficient suitable material present within the sample (particle diameter less than 20mm) to be able to carry out the test under BS1377-4:1990 (5.5.1)

**Please advise of further action for this sample / alternative sample for testing or to continue with the test within 5 working days of the issue date. Failure to reply within the required timescale will lead to cancellation of the test.**

**Please note: continued testing will include a disclaimer in the report for this sample and as such, the result may be invalid.**

| | DEVIATING SAMPLE REPORT | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP166 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 5 |
| | | Depth (m) | 1.00 |
| Client | Galliford Try | Sample type | B |

**The sample listed above cannot be tested for the following scheduled test:**

PSD - coarse

**Date Of Issue: 09/06/2022**

**The sample cannot be tested for the following reason:**

| | |
|---|---|
| | The sample has not been received. |
| X | There is insufficient material for BS1377: 1990 Testing requirements. |

| | | | | | |
|---|---|---|---|---|---|
| | Fine | | Medium | | Coarse |

| | |
|---|---|
| Sample Mass Received (kg) | 30 |
| Sample Mass Required (kg) | 150 |
| Maximum Grain Size | |

| | |
|---|---|
| | The sample has been used for higher priority tests scheduled on the same sample. |
| | The sample is not suitable for the testing scheduled. |
| | The sample has exceeded maximum holding time. |
| | Vital information is missing from the sample. |
| | The sample shows signs that it has been exposed to high / low temperatures. |
| | Damaged container. |
| | Split bag. |
| | The sample shows signs of / has become cross contaminated. |
| | The sample has been damaged in transit. |

**Further information:**

There is insufficient sample to carry out the test under BS1377-2:1990 (9.2.4 Table 3)

**Please advise of further action for this sample / alternative sample for testing or to continue with the test within 5 working days of the issue date. Failure to reply within the required timescale will lead to cancellation of the test.**

**Please note: continued testing will include a disclaimer in the report for this sample and as such, the result may be invalid.**

ASC
GeoTesting
Aggregate • Soil • Concrete
PROJECT NO. GT0386
PROJECT NAME Worsted to Sutton Dwellings
HOLE ID TP166
SAMPLE NO. B5
SAMPLE DEPTH (m) 1.00
DATE 9/6/22
OPERATOR C.A
Grey Scale
Colour Control Patches

| | DEVIATING SAMPLE REPORT | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP168 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 5 |
| | | Depth (m) | 1.00 |
| Client | Galliford Try | Sample type | B |

**The sample listed above cannot be tested for the following scheduled test:**

CBR

**Date Of Issue: 22/04/2022**

**The sample cannot be tested for the following reason:**

| | |
|---|---|
| | The sample has not been received. |
| | There is insufficient material for BS1377: 1990 Testing requirements. |

| | | | | | |
|---|---|---|---|---|---|
| | Fine | | Medium | | Coarse |

| | |
|---|---|
| Sample Mass Received (kg) | |
| Sample Mass Required (kg) | |
| Maximum Grain Size | |

| | |
|---|---|
| | The sample has been used for higher priority tests scheduled on the same sample. |
| X | The sample is not suitable for the testing scheduled. |
| | The sample has exceeded maximum holding time. |
| | Vital information is missing from the sample. |
| | The sample shows signs that it has been exposed to high / low temperatures. |
| | Damaged container. |
| | Split bag. |
| | The sample shows signs of / has become cross contaminated. |
| | The sample has been damaged in transit. |

**Further information:** There is more than 25% of the sample retained on a 20mm test sieve so therefore under BS1377-4:1990 (7.2.1.2) the test is not applicable.

**Please advise of further action for this sample / alternative sample for testing or to continue with the test within 5 working days of the issue date. Failure to reply within the required timescale will lead to cancellation of the test.**

**Please note: continued testing will include a disclaimer in the report for this sample and as such, the result may be invalid.**

ASC
GeoTesting
Aggregate • Soil • Concrete
PROJECT NO. GT0386
PROJECT NAME Wanstead to Sutton Dwellings
HOLE ID TP168
SAMPLE NO. B5
SAMPLE DEPTH (m) 1.00
DATE 21/4/22
OPERATOR C.A
Grey Scale
Colour Control Patches

| | DEVIATING SAMPLE REPORT | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP170 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 5 |
| | | Depth (m) | 0.90 |
| Client | Galliford Try | Sample type | B |

**The sample listed above cannot be tested for the following scheduled test:**

Compaction

**Date Of Issue: 22/04/2022**

**The sample cannot be tested for the following reason:**

| | |
|---|---|
| | The sample has not been received. |
| | There is insufficient material for BS1377: 1990 Testing requirements. |

| | | | | | |
|---|---|---|---|---|---|
| | Fine | | Medium | | Coarse |

| | |
|---|---|
| Sample Mass Received (kg) | |
| Sample Mass Required (kg) | |
| Maximum Grain Size | |

| | |
|---|---|
| | The sample has been used for higher priority tests scheduled on the same sample. |
| X | The sample is not suitable for the testing scheduled. |
| | The sample has exceeded maximum holding time. |
| | Vital information is missing from the sample. |
| | The sample shows signs that it has been exposed to high / low temperatures. |
| | Damaged container. |
| | Split bag. |
| | The sample shows signs of / has become cross contaminated. |
| | The sample has been damaged in transit. |

**Further information:** There is less than the required amount of sample passing the test sieves so therefore under BS1377-4:1990 (3.2.6 - Table 2) the test is not applicable.

**Please advise of further action for this sample / alternative sample for testing or to continue with the test within 5 working days of the issue date. Failure to reply within the required timescale will lead to cancellation of the test.**

**Please note: continued testing will include a disclaimer in the report for this sample and as such, the result may be invalid.**

| | DEVIATING SAMPLE REPORT | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP170 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 5 |
| | | Depth (m) | 0.90 |
| Client | Galliford Try | Sample type | B |

**The sample listed above cannot be tested for the following scheduled test:**

Large shearbox

**Date Of Issue: 22/04/2022**

**The sample cannot be tested for the following reason:**

| | |
|---|---|
| | The sample has not been received. |
| | There is insufficient material for BS1377: 1990 Testing requirements. |

| | | | | | |
|---|---|---|---|---|---|
| | Fine | | Medium | | Coarse |

| | |
|---|---|
| Sample Mass Received (kg) | |
| Sample Mass Required (kg) | |
| Maximum Grain Size | |

| | |
|---|---|
| | The sample has been used for higher priority tests scheduled on the same sample. |
| X | The sample is not suitable for the testing scheduled. |
| | The sample has exceeded maximum holding time. |
| | Vital information is missing from the sample. |
| | The sample shows signs that it has been exposed to high / low temperatures. |
| | Damaged container. |
| | Split bag. |
| | The sample shows signs of / has become cross contaminated. |
| | The sample has been damaged in transit. |

**Further information:** A very large portion of the sample contains particles that exceed the maximum allowed particle diameter of 20mm under BS1377-7:1990 (5.4.2.2). Therefore the test cannot be carried out as any data obtained would not be representative.

**Please advise of further action for this sample / alternative sample for testing or to continue with the test within 5 working days of the issue date. Failure to reply within the required timescale will lead to cancellation of the test.**

**Please note: continued testing will include a disclaimer in the report for this sample and as such, the result may be invalid.**

ASC
GeoTesting
Aggregate - Soil - Concrete
PROJECT NO. GT0386
PROJECT NAME Wansted to Sutton Dualling
HOLE ID TP170
SAMPLE NO. B5
SAMPLE DEPTH (m) 0.90
DATE 21/4/22
OPERATOR C.A
Grey Scale
Colour Control Patches

| | DEVIATING SAMPLE REPORT | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP170 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 7 |
| | | Depth (m) | 1.20 |
| Client | Galliford Try | Sample type | B |

**The sample listed above cannot be tested for the following scheduled test:**

Compaction

**Date Of Issue: 22/04/2022**

**The sample cannot be tested for the following reason:**

| | |
|---|---|
| | The sample has not been received. |
| | There is insufficient material for BS1377: 1990 Testing requirements. |

| | | | | | |
|---|---|---|---|---|---|
| | Fine | | Medium | | Coarse |

| | |
|---|---|
| Sample Mass Received (kg) | |
| Sample Mass Required (kg) | |
| Maximum Grain Size | |

| | |
|---|---|
| | The sample has been used for higher priority tests scheduled on the same sample. |
| X | The sample is not suitable for the testing scheduled. |
| | The sample has exceeded maximum holding time. |
| | Vital information is missing from the sample. |
| | The sample shows signs that it has been exposed to high / low temperatures. |
| | Damaged container. |
| | Split bag. |
| | The sample shows signs of / has become cross contaminated. |
| | The sample has been damaged in transit. |

**Further information:** There is less than the required amount of sample passing the test sieves so therefore under BS1377-4:1990 (3.2.6 - Table 2) the test is not applicable.

**Please advise of further action for this sample / alternative sample for testing or to continue with the test within 5 working days of the issue date. Failure to reply within the required timescale will lead to cancellation of the test.**

**Please note: continued testing will include a disclaimer in the report for this sample and as such, the result may be invalid.**

| | DEVIATING SAMPLE REPORT | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP170 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 7 |
| | | Depth (m) | 1.20 |
| Client | Galliford Try | Sample type | B |

**The sample listed above cannot be tested for the following scheduled test:**

MCV

**Date Of Issue: 22/04/2022**

**The sample cannot be tested for the following reason:**

| | |
|---|---|
| | The sample has not been received. |
| | There is insufficient material for BS1377: 1990 Testing requirements. |

| | | | | | |
|---|---|---|---|---|---|
| | Fine | | Medium | | Coarse |

| | |
|---|---|
| Sample Mass Received (kg) | |
| Sample Mass Required (kg) | |
| Maximum Grain Size | |

| | |
|---|---|
| | The sample has been used for higher priority tests scheduled on the same sample. |
| X | The sample is not suitable for the testing scheduled. |
| | The sample has exceeded maximum holding time. |
| | Vital information is missing from the sample. |
| | The sample shows signs that it has been exposed to high / low temperatures. |
| | Damaged container. |
| | Split bag. |
| | The sample shows signs of / has become cross contaminated. |
| | The sample has been damaged in transit. |

**Further information:** There is insufficient suitable material present within the sample (particle diameter less than 20mm) to be able to carry out the test under BS1377-4:1990 (5.5.1)

**Please advise of further action for this sample / alternative sample for testing or to continue with the test within 5 working days of the issue date. Failure to reply within the required timescale will lead to cancellation of the test.**

**Please note: continued testing will include a disclaimer in the report for this sample and as such, the result may be invalid.**

ASC
GeoTesting
Aggregate - Soil - Concrete
PROJECT NO. GT0386
PROJECT NAME Wanstead to Sutton Dwellings
HOLE ID TP170
SAMPLE NO. B7
SAMPLE DEPTH (m) 1.20
DATE 21/4/22
OPERATOR C.A
Grey Scale
Colour Control Patches

| | DEVIATING SAMPLE REPORT | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP171 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 2 |
| | | Depth (m) | 0.20 |
| Client | Galliford Try | Sample type | B |

**The sample listed above cannot be tested for the following scheduled test:**

Compaction

**Date Of Issue: 22/04/2022**

**The sample cannot be tested for the following reason:**

| | |
|---|---|
| | The sample has not been received. |
| | There is insufficient material for BS1377: 1990 Testing requirements. |

| | | | | | |
|---|---|---|---|---|---|
| | Fine | | Medium | | Coarse |

| | |
|---|---|
| Sample Mass Received (kg) | |
| Sample Mass Required (kg) | |
| Maximum Grain Size | |

| | |
|---|---|
| | The sample has been used for higher priority tests scheduled on the same sample. |
| X | The sample is not suitable for the testing scheduled. |
| | The sample has exceeded maximum holding time. |
| | Vital information is missing from the sample. |
| | The sample shows signs that it has been exposed to high / low temperatures. |
| | Damaged container. |
| | Split bag. |
| | The sample shows signs of / has become cross contaminated. |
| | The sample has been damaged in transit. |

**Further information:** There is less than the required amount of sample passing the test sieves so therefore under BS1377-4:1990 (3.2.6 - Table 2) the test is not applicable.

**Please advise of further action for this sample / alternative sample for testing or to continue with the test within 5 working days of the issue date. Failure to reply within the required timescale will lead to cancellation of the test.**

**Please note: continued testing will include a disclaimer in the report for this sample and as such, the result may be invalid.**

| | DEVIATING SAMPLE REPORT | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP171 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 2 |
| | | Depth (m) | 0.20 |
| Client | Galliford Try | Sample type | B |

**The sample listed above cannot be tested for the following scheduled test:**

MCV

**Date Of Issue: 22/04/2022**

**The sample cannot be tested for the following reason:**

| | |
|---|---|
| | The sample has not been received. |
| | There is insufficient material for BS1377: 1990 Testing requirements. |

| | | | | | |
|---|---|---|---|---|---|
| | Fine | | Medium | | Coarse |

| | |
|---|---|
| Sample Mass Received (kg) | |
| Sample Mass Required (kg) | |
| Maximum Grain Size | |

| | |
|---|---|
| | The sample has been used for higher priority tests scheduled on the same sample. |
| X | The sample is not suitable for the testing scheduled. |
| | The sample has exceeded maximum holding time. |
| | Vital information is missing from the sample. |
| | The sample shows signs that it has been exposed to high / low temperatures. |
| | Damaged container. |
| | Split bag. |
| | The sample shows signs of / has become cross contaminated. |
| | The sample has been damaged in transit. |

**Further information:** There is insufficient suitable material present within the sample (particle diameter less than 20mm) to be able to carry out the test under BS1377-4:1990 (5.5.1)

**Please advise of further action for this sample / alternative sample for testing or to continue with the test within 5 working days of the issue date. Failure to reply within the required timescale will lead to cancellation of the test.**

**Please note: continued testing will include a disclaimer in the report for this sample and as such, the result may be invalid.**

| | DEVIATING SAMPLE REPORT | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP171 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 2 |
| | | Depth (m) | 0.20 |
| Client | Galliford Try | Sample type | B |

**The sample listed above cannot be tested for the following scheduled test:**

PSD - coarse

**Date Of Issue: 22/04/2022**

**The sample cannot be tested for the following reason:**

| | |
|---|---|
| | The sample has not been received. |
| X | There is insufficient material for BS1377: 1990 Testing requirements. |

| | | | | | |
|---|---|---|---|---|---|
| | Fine | | Medium | | Coarse |

| | |
|---|---|
| Sample Mass Received (kg) | 20 |
| Sample Mass Required (kg) | 150 |
| Maximum Grain Size | |

| | |
|---|---|
| | The sample has been used for higher priority tests scheduled on the same sample. |
| | The sample is not suitable for the testing scheduled. |
| | The sample has exceeded maximum holding time. |
| | Vital information is missing from the sample. |
| | The sample shows signs that it has been exposed to high / low temperatures. |
| | Damaged container. |
| | Split bag. |
| | The sample shows signs of / has become cross contaminated. |
| | The sample has been damaged in transit. |

**Further information:**

There is insufficient sample to carry out the test under BS1377-2:1990 (9.2.4 Table 3)

**Please advise of further action for this sample / alternative sample for testing or to continue with the test within 5 working days of the issue date. Failure to reply within the required timescale will lead to cancellation of the test.**

**Please note: continued testing will include a disclaimer in the report for this sample and as such, the result may be invalid.**

ASC
GeoTesting
Aggregate - Soil - Concrete
PROJECT NO. GT0386
PROJECT NAME Wanstead to Sutton Dwellings
HOLE ID TP171
SAMPLE NO. B2
SAMPLE DEPTH (m) 0.20
DATE 21/4/22
OPERATOR C.A
Grey Scale
Colour Control Patches

| | DEVIATING SAMPLE REPORT | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP171 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 4 |
| | | Depth (m) | 1.00 |
| Client | Galliford Try | Sample type | B |

**The sample listed above cannot be tested for the following scheduled test:**

Large shearbox

**Date Of Issue: 22/04/2022**

**The sample cannot be tested for the following reason:**

| | |
|---|---|
| | The sample has not been received. |
| | There is insufficient material for BS1377: 1990 Testing requirements. |

| | | | | | |
|---|---|---|---|---|---|
| | Fine | | Medium | | Coarse |

| | |
|---|---|
| Sample Mass Received (kg) | |
| Sample Mass Required (kg) | |
| Maximum Grain Size | |

| | |
|---|---|
| | The sample has been used for higher priority tests scheduled on the same sample. |
| X | The sample is not suitable for the testing scheduled. |
| | The sample has exceeded maximum holding time. |
| | Vital information is missing from the sample. |
| | The sample shows signs that it has been exposed to high / low temperatures. |
| | Damaged container. |
| | Split bag. |
| | The sample shows signs of / has become cross contaminated. |
| | The sample has been damaged in transit. |

**Further information:** A very large portion of the sample contains particles that exceed the maximum allowed particle diameter of 20mm under BS1377-7:1990 (5.4.2.2). Therefore the test cannot be carried out as any data obtained would not be representative.

**Please advise of further action for this sample / alternative sample for testing or to continue with the test within 5 working days of the issue date. Failure to reply within the required timescale will lead to cancellation of the test.**

**Please note: continued testing will include a disclaimer in the report for this sample and as such, the result may be invalid.**

| | DEVIATING SAMPLE REPORT | Job Ref | GT0386 |
|---|---|---|---|
| | | Borehole / Pit No | TP171 |
| Location | Wansford to Sutton Dualling Supplementary GI | Sample No | 4 |
| | | Depth (m) | 1.00 |
| Client | Galliford Try | Sample type | B |

**The sample listed above cannot be tested for the following scheduled test:**

PSD - coarse

**Date Of Issue: 22/04/2022**

**The sample cannot be tested for the following reason:**

| | |
|---|---|
| | The sample has not been received. |
| X | There is insufficient material for BS1377: 1990 Testing requirements. |

| | | | | | |
|---|---|---|---|---|---|
| | Fine | | Medium | | Coarse |

| | |
|---|---|
| Sample Mass Received (kg) | 20 |
| Sample Mass Required (kg) | 150 |
| Maximum Grain Size | |

| | |
|---|---|
| | The sample has been used for higher priority tests scheduled on the same sample. |
| | The sample is not suitable for the testing scheduled. |
| | The sample has exceeded maximum holding time. |
| | Vital information is missing from the sample. |
| | The sample shows signs that it has been exposed to high / low temperatures. |
| | Damaged container. |
| | Split bag. |
| | The sample shows signs of / has become cross contaminated. |
| | The sample has been damaged in transit. |

**Further information:**

There is insufficient sample to carry out the test under BS1377-2:1990 (9.2.4 Table 3)

**Please advise of further action for this sample / alternative sample for testing or to continue with the test within 5 working days of the issue date. Failure to reply within the required timescale will lead to cancellation of the test.**

**Please note: continued testing will include a disclaimer in the report for this sample and as such, the result may be invalid.**

ASC
GeoTesting
Aggregate • Soil • Concrete
PROJECT NO. GT0386
PROJECT NAME Wansted to Sutton Dualling
HOLE ID TP171
SAMPLE NO. B4
SAMPLE DEPTH (m) 1.00
DATE 21/4/22
OPERATOR C.A
Grey Scale
Colour Control Patches

GROUND TECHNOLOGY

# Appendix V – Chemical test results

Adam Barnard
Ground Technology Services
Victory Park
London Road
Attlebborough
Norfolk
NR17 1ZA

Derwentside Environmental Testing Services Ltd
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410

# DETS Report No: 22-01754

| | |
|---|---|
| Site Reference: | A47 Wansford to Sutton |
| Project / Job Ref: | GT0386 |
| Order No: | M-GT0386/000016 |
| Sample Receipt Date: | 24/02/2022 |
| Sample Scheduled Date: | 24/02/2022 |
| Report Issue Number: | 1 |
| Reporting Date: | 07/03/2022 |

Technical Manager

Dates of laboratory activities for each tested analyte are available upon request.

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: 22-01754 | Date Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Site Reference: A47 Wansford to Sutton | TP / BH No | BH101 | BH101 | BH101 | BH104 | BH104 |
| Project / Job Ref: GT0386 | Additional Refs | ES2 | ES4 | ES4 | ES6 | ES6 |
| Order No: M-GT0386/000016 | Depth (m) | GL - 0.30 | 0.50 - 0.70 | 0.50 - 0.70 | 0.50 - 1.00 | 0.50 - 1.00 |
| Reporting Date: 07/03/2022 | DETS Sample No | 587571 | 587572 | 587573 | 587574 | 587575 |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| Asbestos Screen (S) | N/a | N/a | ISO17025 | Not Detected | | | | |
| pH | pH Units | N/a | MCERTS | 7.7 | 8.3 | | 8.2 | |
| Total Cyanide | mg/kg | < 2 | NONE | < 2 | < 2 | | < 2 | |
| Complex 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 | MCERTS | 966 | 805 | | 782 | |
| Total Sulphate as $SO_4$ | % | < 0.02 | MCERTS | 0.10 | 0.08 | | 0.08 | |
| TOC (Total Organic Carbon) | % | < 0.1 | MCERTS | 3.7 | 6.3 | | 2.1 | |
| Arsenic (As) | mg/kg | < 2 | MCERTS | 10 | 5 | | 6 | |
| W/S Boron | mg/kg | < 1 | NONE | < 1 | < 1 | | < 1 | |
| Cadmium (Cd) | mg/kg | < 0.2 | MCERTS | 0.4 | < 0.2 | | < 0.2 | |
| Chromium (Cr) | mg/kg | < 2 | MCERTS | 14 | 5 | | 6 | |
| Chromium (III) | mg/kg | < 2 | NONE | 14 | 5 | | 6 | |
| Chromium (hexavalent) | mg/kg | < 2 | NONE | < 2 | < 2 | | < 2 | |
| Copper (Cu) | mg/kg | < 4 | MCERTS | 14 | < 4 | | 4 | |
| Lead (Pb) | mg/kg | < 3 | MCERTS | 26 | 3 | | 7 | |
| Mercury (Hg) | mg/kg | < 1 | MCERTS | < 1 | < 1 | | < 1 | |
| Nickel (Ni) | mg/kg | < 3 | MCERTS | 11 | 4 | | 5 | |
| Selenium (Se) | mg/kg | < 2 | MCERTS | < 3 | < 3 | | < 3 | |
| Zinc (Zn) | mg/kg | < 3 | MCERTS | 51 | 7 | | 13 | |
| 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°C. The Method Description page describes if the test is performed on the dried or as-received portion
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: 22-01754 | Date Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Site Reference: A47 Wansford to Sutton | TP / BH No | BH105 | BH105 | BH105 | TP111 | TP111 |
| Project / Job Ref: GT0386 | Additional Refs | ES2 | ES3 | ES3 | ES1 | ES4 |
| Order No: M-GT0386/000016 | Depth (m) | 0.20 - 0.30 | 0.40 - 0.50 | 0.40 - 0.50 | 0.05 - 0.15 | 0.70 - 0.80 |
| Reporting Date: 07/03/2022 | DETS Sample No | 587576 | 587577 | 587578 | 587579 | 587580 |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| Asbestos Screen (S) | N/a | N/a | ISO17025 | Not Detected | | | | |
| pH | pH Units | N/a | MCERTS | 7.8 | 8.2 | | 7.8 | 8.3 |
| Total Cyanide | mg/kg | < 2 | NONE | < 2 | < 2 | | < 2 | < 2 |
| Complex 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 | MCERTS | 881 | 861 | | 974 | 737 |
| Total Sulphate as $SO_4$ | % | < 0.02 | MCERTS | 0.09 | 0.09 | | 0.10 | 0.07 |
| TOC (Total Organic Carbon) | % | < 0.1 | MCERTS | 2.4 | 3.4 | | 2.7 | 5.4 |
| Arsenic (As) | mg/kg | < 2 | MCERTS | 10 | 5 | | 13 | 5 |
| W/S Boron | mg/kg | < 1 | NONE | < 1 | < 1 | | < 1 | < 1 |
| Cadmium (Cd) | mg/kg | < 0.2 | MCERTS | 0.4 | < 0.2 | | 0.4 | < 0.2 |
| Chromium (Cr) | mg/kg | < 2 | MCERTS | 13 | 9 | | 14 | 4 |
| Chromium (III) | mg/kg | < 2 | NONE | 13 | 9 | | 14 | 4 |
| Chromium (hexavalent) | mg/kg | < 2 | NONE | < 2 | < 2 | | < 2 | < 2 |
| Copper (Cu) | mg/kg | < 4 | MCERTS | 16 | 7 | | 15 | < 4 |
| Lead (Pb) | mg/kg | < 3 | MCERTS | 25 | 6 | | 35 | < 3 |
| Mercury (Hg) | mg/kg | < 1 | MCERTS | < 1 | < 1 | | < 1 | < 1 |
| Nickel (Ni) | mg/kg | < 3 | MCERTS | 11 | 10 | | 11 | < 3 |
| Selenium (Se) | mg/kg | < 2 | MCERTS | < 3 | < 3 | | < 3 | < 3 |
| Zinc (Zn) | mg/kg | < 3 | MCERTS | 42 | 17 | | 47 | < 3 |
| 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°C. The Method Description page describes if the test is performed on the dried or as-received portion
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: 22-01754 | Date Sampled | None Supplied | None Supplied | None Supplied | | |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | | |
| Site Reference: A47 Wansford to Sutton | TP / BH No | TP115 | TP115 | TP115 | | |
| Project / Job Ref: GT0386 | Additional Refs | ES3 | ES4 | ES4 | | |
| Order No: M-GT0386/000016 | Depth (m) | 0.10 - 0.20 | 0.20 - 0.30 | 0.20 - 0.30 | | |
| Reporting Date: 07/03/2022 | DETS Sample No | 587581 | 587582 | 587583 | | |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| Asbestos Screen (S) | N/a | N/a | ISO17025 | Not Detected | | | | |
| pH | pH Units | N/a | MCERTS | 7.8 | 8.3 | | | |
| Total Cyanide | mg/kg | < 2 | NONE | < 2 | < 2 | | | |
| Complex Cyanide | mg/kg | < 2 | NONE | < 2 | < 2 | | | |
| Free Cyanide | mg/kg | < 2 | NONE | < 2 | < 2 | | | |
| Total Sulphate as $SO_4$ | mg/kg | < 200 | MCERTS | 902 | 701 | | | |
| Total Sulphate as $SO_4$ | % | < 0.02 | MCERTS | 0.09 | 0.07 | | | |
| TOC (Total Organic Carbon) | % | < 0.1 | MCERTS | 3.1 | 1.8 | | | |
| Arsenic (As) | mg/kg | < 2 | MCERTS | 11 | 7 | | | |
| W/S Boron | mg/kg | < 1 | NONE | < 1 | < 1 | | | |
| Cadmium (Cd) | mg/kg | < 0.2 | MCERTS | 0.4 | < 0.2 | | | |
| Chromium (Cr) | mg/kg | < 2 | MCERTS | 14 | 4 | | | |
| Chromium (III) | mg/kg | < 2 | NONE | 14 | 4 | | | |
| Chromium (hexavalent) | mg/kg | < 2 | NONE | < 2 | < 2 | | | |
| Copper (Cu) | mg/kg | < 4 | MCERTS | 17 | < 4 | | | |
| Lead (Pb) | mg/kg | < 3 | MCERTS | 35 | < 3 | | | |
| Mercury (Hg) | mg/kg | < 1 | MCERTS | < 1 | < 1 | | | |
| Nickel (Ni) | mg/kg | < 3 | MCERTS | 13 | 9 | | | |
| Selenium (Se) | mg/kg | < 2 | MCERTS | < 3 | < 3 | | | |
| Zinc (Zn) | mg/kg | < 3 | MCERTS | 52 | 8 | | | |
| 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°C. The Method Description page describes if the test is performed on the dried or as-received portion
Subcontracted analysis (S)

DETS Ltd
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Maidstone
Kent ME17 2JN
Tel : 01622 850410

| Soil Analysis Certificate - Speciated PAHs | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-01754 | Date Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Site Reference: A47 Wansford to Sutton | TP / BH No | BH101 | BH101 | BH104 | BH105 | BH105 |
| Project / Job Ref: GT0386 | Additional Refs | ES2 | ES4 | ES6 | ES2 | ES3 |
| Order No: M-GT0386/000016 | Depth (m) | GL - 0.30 | 0.50 - 0.70 | 0.50 - 1.00 | 0.20 - 0.30 | 0.40 - 0.50 |
| Reporting Date: 07/03/2022 | DETS Sample No | 587571 | 587572 | 587574 | 587576 | 587577 |

| 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 | < 0.1 | < 0.1 | < 0.1 |
| Pyrene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| Benzo(a)anthracene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 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 | < 0.1 | < 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 | < 0.1 | < 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 |

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Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

| Soil Analysis Certificate - Speciated PAHs | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-01754 | Date Sampled | None Supplied | None Supplied | None Supplied | None Supplied | |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | |
| Site Reference: A47 Wansford to Sutton | TP / BH No | TP111 | TP111 | TP115 | TP115 | |
| Project / Job Ref: GT0386 | Additional Refs | ES1 | ES4 | ES3 | ES4 | |
| Order No: M-GT0386/000016 | Depth (m) | 0.05 - 0.15 | 0.70 - 0.80 | 0.10 - 0.20 | 0.20 - 0.30 | |
| Reporting Date: 07/03/2022 | DETS Sample No | 587579 | 587580 | 587581 | 587582 | |

| 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 | < 0.1 | < 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 | < 0.1 | < 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 | |

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Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

| Soil Analysis Certificate - EPH Texas Banded | | | | | | | |
|---|---|---|---|---|---|---|---|
| DETS Report No: 22-01754 | Date Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Site Reference: A47 Wansford to Sutton | TP / BH No | BH101 | BH101 | BH104 | BH105 | BH105 |
| Project / Job Ref: GT0386 | Additional Refs | ES2 | ES4 | ES6 | ES2 | ES3 |
| Order No: M-GT0386/000016 | Depth (m) | GL - 0.30 | 0.50 - 0.70 | 0.50 - 1.00 | 0.20 - 0.30 | 0.40 - 0.50 |
| Reporting Date: 07/03/2022 | DETS Sample No | 587571 | 587572 | 587574 | 587576 | 587577 |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| EPH Texas (C6 - C8) | mg/kg | < 0.05 | NONE | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| EPH Texas (>C8 - C10) | mg/kg | < 1 | MCERTS | < 1 | < 1 | < 1 | < 1 | < 1 |
| EPH Texas (>C10 - C12) | mg/kg | < 1 | MCERTS | < 1 | < 1 | < 1 | < 1 | < 1 |
| EPH Texas (>C12 - C16) | mg/kg | < 1 | MCERTS | < 1 | < 1 | < 1 | < 1 | < 1 |
| EPH Texas (>C16 - C21) | mg/kg | < 1 | MCERTS | < 1 | < 1 | < 1 | < 1 | < 1 |
| EPH Texas (>C21 - C40) | mg/kg | < 6 | MCERTS | < 6 | < 6 | < 6 | < 6 | < 6 |
| EPH Texas (C6 - C40) | mg/kg | < 6 | NONE | < 6 | < 6 | < 6 | < 6 | < 6 |

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| Soil Analysis Certificate - EPH Texas Banded | | | | | | | |
|---|---|---|---|---|---|---|---|
| DETS Report No: 22-01754 | Date Sampled | None Supplied | None Supplied | None Supplied | None Supplied | |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | |
| Site Reference: A47 Wansford to Sutton | TP / BH No | TP111 | TP111 | TP115 | TP115 | |
| Project / Job Ref: GT0386 | Additional Refs | ES1 | ES4 | ES3 | ES4 | |
| Order No: M-GT0386/000016 | Depth (m) | 0.05 - 0.15 | 0.70 - 0.80 | 0.10 - 0.20 | 0.20 - 0.30 | |
| Reporting Date: 07/03/2022 | DETS Sample No | 587579 | 587580 | 587581 | 587582 | |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| EPH Texas (C6 - C8) | mg/kg | < 0.05 | NONE | < 0.05 | < 0.05 | < 0.05 | < 0.05 | |
| EPH Texas (>C8 - C10) | mg/kg | < 1 | MCERTS | < 1 | < 1 | < 1 | < 1 | |
| EPH Texas (>C10 - C12) | mg/kg | < 1 | MCERTS | < 1 | < 1 | < 1 | < 1 | |
| EPH Texas (>C12 - C16) | mg/kg | < 1 | MCERTS | < 1 | < 1 | < 1 | < 1 | |
| EPH Texas (>C16 - C21) | mg/kg | < 1 | MCERTS | < 1 | < 1 | < 1 | < 1 | |
| EPH Texas (>C21 - C40) | mg/kg | < 6 | MCERTS | < 6 | < 6 | < 6 | < 6 | |
| EPH Texas (C6 - C40) | mg/kg | < 6 | NONE | < 6 | < 6 | < 6 | < 6 | |

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| Soil Analysis Certificate - BTEX / MTBE | | | | | | | |
|---|---|---|---|---|---|---|---|
| DETS Report No: 22-01754 | Date Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Site Reference: A47 Wansford to Sutton | TP / BH No | BH101 | BH101 | BH104 | BH105 | BH105 |
| Project / Job Ref: GT0386 | Additional Refs | ES2 | ES4 | ES6 | ES2 | ES3 |
| Order No: M-GT0386/000016 | Depth (m) | GL - 0.30 | 0.50 - 0.70 | 0.50 - 1.00 | 0.20 - 0.30 | 0.40 - 0.50 |
| Reporting Date: 07/03/2022 | DETS Sample No | 587571 | 587572 | 587574 | 587576 | 587577 |

| 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 |

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| Soil Analysis Certificate - BTEX / MTBE | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-01754 | Date Sampled | None Supplied | None Supplied | None Supplied | None Supplied | |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | |
| Site Reference: A47 Wansford to Sutton | TP / BH No | TP111 | TP111 | TP115 | TP115 | |
| Project / Job Ref: GT0386 | Additional Refs | ES1 | ES4 | ES3 | ES4 | |
| Order No: M-GT0386/000016 | Depth (m) | 0.05 - 0.15 | 0.70 - 0.80 | 0.10 - 0.20 | 0.20 - 0.30 | |
| Reporting Date: 07/03/2022 | DETS Sample No | 587579 | 587580 | 587581 | 587582 | |

| 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 | |

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UKAS TESTING 4480

| Leachate Analysis Certificate | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-01754 | Date Sampled | None Supplied | None Supplied | None Supplied | None Supplied | |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | |
| Site Reference: A47 Wansford to Sutton | TP / BH No | BH101 | BH104 | BH105 | TP115 | |
| Project / Job Ref: GT0386 | Additional Refs | ES4 | ES6 | ES3 | ES4 | |
| Order No: M-GT0386/000016 | Depth (m) | 0.50 - 0.70 | 0.50 - 1.00 | 0.40 - 0.50 | 0.20 - 0.30 | |
| Reporting Date: 07/03/2022 | DETS Sample No | 587573 | 587575 | 587578 | 587583 | |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| pH | pH Units | N/a | ISO17025 | 8.7 | 8.8 | 8.6 | 8.6 | |
| Total Cyanide | ug/l | < 5 | ISO17025 | < 5 | < 5 | < 5 | < 5 | |
| Complex Cyanide | ug/l | < 5 | NONE | < 5 | < 5 | < 5 | < 5 | |
| Free Cyanide | ug/l | < 5 | ISO17025 | < 5 | < 5 | < 5 | < 5 | |
| Sulphate as $SO_4$ | mg/l | < 1 | ISO17025 | 2 | 2 | 3 | 2 | |
| Ammonia as $NH_4$ | ug/l | < 50 | ISO17025 | 252 | 139 | 325 | 305 | |
| Arsenic | ug/l | < 5 | ISO17025 | < 5 | < 5 | < 5 | < 5 | |
| Boron | ug/l | < 5 | ISO17025 | < 5 | 5 | < 5 | < 5 | |
| Cadmium | ug/l | < 0.4 | ISO17025 | < 0.4 | < 0.4 | < 0.4 | < 0.4 | |
| Chromium | ug/l | < 5 | ISO17025 | < 5 | < 5 | < 5 | < 5 | |
| Copper | ug/l | < 5 | ISO17025 | < 5 | < 5 | < 5 | < 5 | |
| Lead | ug/l | < 5 | ISO17025 | < 5 | < 5 | < 5 | < 5 | |
| Mercury | ug/l | < 0.05 | ISO17025 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | |
| Nickel | ug/l | < 5 | ISO17025 | < 5 | < 5 | < 5 | < 5 | |
| Selenium | ug/l | < 5 | ISO17025 | < 5 | < 5 | < 5 | < 5 | |
| Zinc | ug/l | < 2 | ISO17025 | 6 | 3 | 3 | < 2 | |
| Total Phenols (monohydric) | ug/l | < 10 | ISO17025 | < 10 | < 10 | < 10 | < 10 | |

Subcontracted analysis (S)

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| Leachate Analysis Certificate - Speciated PAH | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-01754 | Date Sampled | None Supplied | None Supplied | None Supplied | None Supplied | |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | |
| Site Reference: A47 Wansford to Sutton | TP / BH No | BH101 | BH104 | BH105 | TP115 | |
| Project / Job Ref: GT0386 | Additional Refs | ES4 | ES6 | ES3 | ES4 | |
| Order No: M-GT0386/000016 | Depth (m) | 0.50 - 0.70 | 0.50 - 1.00 | 0.40 - 0.50 | 0.20 - 0.30 | |
| Reporting Date: 07/03/2022 | DETS Sample No | 587573 | 587575 | 587578 | 587583 | |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| Naphthalene | ug/l | < 0.01 | NONE | 0.01 | 0.01 | 0.06 | 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 | 0.02 | < 0.01 | |
| Phenanthrene | ug/l | < 0.01 | NONE | 0.03 | 0.02 | 0.10 | 0.02 | |
| Anthracene | ug/l | < 0.01 | NONE | < 0.01 | < 0.01 | 0.02 | < 0.01 | |
| Fluoranthene | ug/l | < 0.01 | NONE | 0.02 | 0.02 | 0.10 | 0.02 | |
| Pyrene | ug/l | < 0.01 | NONE | 0.01 | 0.01 | 0.07 | 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 | < 0.16 | NONE | < 0.16 | < 0.16 | 0.39 | < 0.16 | |

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| Leachate Analysis Certificate - EPH Texas Banded | | | | | | | |
|---|---|---|---|---|---|---|---|
| DETS Report No: 22-01754 | Date Sampled | None Supplied | None Supplied | None Supplied | None Supplied | |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | |
| Site Reference: A47 Wansford to Sutton | TP / BH No | BH101 | BH104 | BH105 | TP115 | |
| Project / Job Ref: GT0386 | Additional Refs | ES4 | ES6 | ES3 | ES4 | |
| Order No: M-GT0386/000016 | Depth (m) | 0.50 - 0.70 | 0.50 - 1.00 | 0.40 - 0.50 | 0.20 - 0.30 | |
| Reporting Date: 07/03/2022 | DETS Sample No | 587573 | 587575 | 587578 | 587583 | |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| EPH Texas (C6 - C8) | ug/l | < 10 | NONE | < 10 | < 10 | < 10 | < 10 | |
| EPH Texas (>C8 - C10) | ug/l | < 10 | NONE | < 10 | < 10 | < 10 | < 10 | |
| EPH Texas (>C10 - C12) | ug/l | < 10 | NONE | < 10 | < 10 | < 10 | < 10 | |
| EPH Texas (>C12 - C16) | ug/l | < 10 | NONE | < 10 | 35 | < 10 | 30 | |
| EPH Texas (>C16 - C21) | ug/l | < 10 | NONE | 49 | 26 | 31 | 22 | |
| EPH Texas (>C21 - C40) | ug/l | < 10 | NONE | 15 | < 10 | 10 | 12 | |
| EPH Texas (C6 - C40) | ug/l | < 10 | NONE | 64 | 60 | 41 | 64 | |

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UKAS TESTING
4480

| Leachate Analysis Certificate - BTEX / MTBE | | | | | | | |
|---|---|---|---|---|---|---|---|
| DETS Report No: 22-01754 | Date Sampled | None Supplied | None Supplied | None Supplied | None Supplied | |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | |
| Site Reference: A47 Wansford to Sutton | TP / BH No | BH101 | BH104 | BH105 | TP115 | |
| Project / Job Ref: GT0386 | Additional Refs | ES4 | ES6 | ES3 | ES4 | |
| Order No: M-GT0386/000016 | Depth (m) | 0.50 - 0.70 | 0.50 - 1.00 | 0.40 - 0.50 | 0.20 - 0.30 | |
| Reporting Date: 07/03/2022 | DETS Sample No | 587573 | 587575 | 587578 | 587583 | |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| 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 | |

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| Soil Analysis Certificate - Sample Descriptions |
|---|
| DETS Report No: 22-01754 |
| Ground Technology Services |
| Site Reference: A47 Wansford to Sutton |
| Project / Job Ref: GT0386 |
| Order No: M-GT0386/000016 |
| Reporting Date: 07/03/2022 |

| DETS Sample No | TP / BH No | Additional Refs | Depth (m) | Moisture Content (%) | Sample Matrix Description |
|---|---|---|---|---|---|
| ^ 587571 | BH101 | ES2 | GL - 0.30 | 13.8 | Brown sandy clay with stones |
| ^ 587572 | BH101 | ES4 | 0.50 - 0.70 | 8 | Light brown sandy clay with stones |
| ^ 587574 | BH104 | ES6 | 0.50 - 1.00 | 7.4 | Light brown sandy clay with stones |
| ^ 587576 | BH105 | ES2 | 0.20 - 0.30 | 10.2 | Brown sandy clay with stones |
| ^ 587577 | BH105 | ES3 | 0.40 - 0.50 | 9.7 | Light brown gravelly sand with stones |
| ^ 587579 | TP111 | ES1 | 0.05 - 0.15 | 12.5 | Brown sandy clay with stones |
| ^ 587580 | TP111 | ES4 | 0.70 - 0.80 | 6.9 | Light brown sandy clay with stones |
| ^ 587581 | TP115 | ES3 | 0.10 - 0.20 | 11.9 | Brown sandy clay with stones |
| ^ 587582 | TP115 | ES4 | 0.20 - 0.30 | 11 | Light 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

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| Soil Analysis Certificate - Methodology & Miscellaneous Information |
|---|
| DETS Report No: 22-01754 |
| Ground Technology Services |
| Site Reference: A47 Wansford to Sutton |
| Project / Job Ref: GT0386 |
| Order No: M-GT0386/000016 |
| Reporting Date: 07/03/2022 |

| 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 | Fraction Organic Carbon (FOC) | Determination of TOC by combustion analyser. | E027 |
| Soil | D | Organic Matter (SOM) | Determination of TOC by combustion analyser. | E027 |
| Soil | D | TOC (Total Organic Carbon) | Determination of TOC by combustion analyser. | E027 |
| Soil | AR | Exchangeable Ammonium | Determination of ammonium by discrete analyser. | E029 |
| 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

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UKAS TESTING 4480

| Water Analysis Certificate - Methodology & Miscellaneous Information |
|---|
| DETS Report No: 22-01754 |
| Ground Technology Services |
| Site Reference: A47 Wansford to Sutton |
| Project / Job Ref: GT0386 |
| Order No: M-GT0386/000016 |
| Reporting Date: 07/03/2022 |

| 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 | F | Ammoniacal Nitrogen | Determination of ammoniacal nitrogen by discrete analyser. | E126 |
| 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 | 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 dete | 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 dichlorometha | 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

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Ground Technology Services
Victory Park
London Road
Attlebborough
Norfolk
NR17 1ZA

Derwentside Environmental Testing Services Ltd
Unit 1
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Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410

# DETS Report No: 22-01984

| | |
|---|---|
| Site Reference: | A47 Wansford to Sutton |
| Project / Job Ref: | GT0386 |
| Order No: | M-GT0386/000016 |
| Sample Receipt Date: | 02/03/2022 |
| Sample Scheduled Date: | 02/03/2022 |
| Report Issue Number: | 1 |
| Reporting Date: | 08/03/2022 |

[redacted]
Dave Ashworth
Technical Manager

Dates of laboratory activities for each tested analyte are available upon request.

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.

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| Soil Analysis Certificate | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-01984 | Date Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Site Reference: A47 Wansford to Sutton | TP / BH No | BH108 | BH108 | BH108 | BH109 | BH109 |
| Project / Job Ref: GT0386 | Additional Refs | ES2 | ES4 | ES4 | ES1 | ES3 |
| Order No: M-GT0386/000016 | Depth (m) | GL - 0.30 | 0.30 - 0.70 | 0.30 - 0.70 | 0.10 - 0.20 | 0.30 - 0.40 |
| Reporting Date: 08/03/2022 | DETS Sample No | 588549 | 588550 | 588551 | 588552 | 588553 |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| pH | pH Units | N/a | MCERTS | 7.8 | 8.4 | | 7.9 | 8.2 |
| Total Cyanide | mg/kg | < 2 | NONE | < 2 | < 2 | | < 2 | < 2 |
| Complex 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 | MCERTS | 948 | 873 | | 343 | 912 |
| Total Sulphate as $SO_4$ | % | < 0.02 | MCERTS | 0.09 | 0.09 | | 0.03 | 0.09 |
| TOC (Total Organic Carbon) | % | < 0.1 | MCERTS | 2.4 | 4.9 | | 0.7 | 3.5 |
| Arsenic (As) | mg/kg | < 2 | MCERTS | 10 | 5 | | 4 | 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 | 15 | 5 | | 5 | 11 |
| Chromium (III) | mg/kg | < 2 | NONE | 15 | 5 | | 5 | 11 |
| Chromium (hexavalent) | mg/kg | < 2 | NONE | < 2 | < 2 | | < 2 | < 2 |
| Copper (Cu) | mg/kg | < 4 | MCERTS | 12 | 5 | | 4 | 10 |
| Lead (Pb) | mg/kg | < 3 | MCERTS | 23 | 4 | | 8 | 12 |
| Mercury (Hg) | mg/kg | < 1 | MCERTS | < 1 | < 1 | | < 1 | < 1 |
| Nickel (Ni) | mg/kg | < 3 | MCERTS | 12 | < 3 | | 4 | 11 |
| Selenium (Se) | mg/kg | < 2 | MCERTS | < 3 | < 3 | | < 3 | < 3 |
| Zinc (Zn) | mg/kg | < 3 | MCERTS | 45 | 7 | | 21 | 28 |
| 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°C. The Method Description page describes if the test is performed on the dried or as-received portion

Subcontracted analysis (S)

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Tel : 01622 850410

| Soil Analysis Certificate | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-01984 | Date Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Site Reference: A47 Wansford to Sutton | TP / BH No | BH116 | BH116 | BH117 | BH117 | BH117 |
| Project / Job Ref: GT0386 | Additional Refs | ES4 | ES4 | ES1 | ES4 | ES4 |
| Order No: M-GT0386/000016 | Depth (m) | 0.40 - 0.50 | 0.40 - 0.50 | 0.10 - 0.20 | 0.75 - 0.85 | 0.75 - 0.85 |
| Reporting Date: 08/03/2022 | DETS Sample No | 588554 | 588555 | 588556 | 588557 | 588558 |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| pH | pH Units | N/a | MCERTS | 8.7 | | 8.2 | 8.5 | |
| Total Cyanide | mg/kg | < 2 | NONE | < 2 | | < 2 | < 2 | |
| Complex 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 | MCERTS | 726 | | 705 | < 200 | |
| Total Sulphate as $SO_4$ | % | < 0.02 | MCERTS | 0.07 | | 0.07 | < 0.02 | |
| TOC (Total Organic Carbon) | % | < 0.1 | MCERTS | 3.3 | | 1.5 | 0.4 | |
| Arsenic (As) | mg/kg | < 2 | MCERTS | 6 | | 8 | 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 | 5 | | 13 | 3 | |
| Chromium (III) | mg/kg | < 2 | NONE | 5 | | 13 | 3 | |
| Chromium (hexavalent) | mg/kg | < 2 | NONE | < 2 | | < 2 | < 2 | |
| Copper (Cu) | mg/kg | < 4 | MCERTS | 5 | | 13 | < 4 | |
| Lead (Pb) | mg/kg | < 3 | MCERTS | < 3 | | 18 | 3 | |
| Mercury (Hg) | mg/kg | < 1 | MCERTS | < 1 | | < 1 | < 1 | |
| Nickel (Ni) | mg/kg | < 3 | MCERTS | < 3 | | 9 | 4 | |
| Selenium (Se) | mg/kg | < 2 | MCERTS | < 3 | | < 3 | < 3 | |
| Zinc (Zn) | mg/kg | < 3 | MCERTS | 7 | | 44 | 13 | |
| 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°C. The Method Description page describes if the test is performed on the dried or as-received portion

Subcontracted analysis (S)

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| Soil Analysis Certificate - Speciated PAHs | | | | | | | |
|---|---|---|---|---|---|---|---|
| DETS Report No: 22-01984 | Date Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Site Reference: A47 Wansford to Sutton | TP / BH No | BH108 | BH108 | BH109 | BH109 | BH116 |
| Project / Job Ref: GT0386 | Additional Refs | ES2 | ES4 | ES1 | ES3 | ES4 |
| Order No: M-GT0386/000016 | Depth (m) | GL - 0.30 | 0.30 - 0.70 | 0.10 - 0.20 | 0.30 - 0.40 | 0.40 - 0.50 |
| Reporting Date: 08/03/2022 | DETS Sample No | 588549 | 588550 | 588552 | 588553 | 588554 |

| 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 | < 0.1 | < 0.1 | < 0.1 |
| Pyrene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| Benzo(a)anthracene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 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 | < 0.1 | < 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 | < 0.1 | < 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 |

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| Soil Analysis Certificate - Speciated PAHs | | | | | | | |
|---|---|---|---|---|---|---|---|
| DETS Report No: 22-01984 | Date Sampled | None Supplied | None Supplied | | | | |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | | | | |
| Site Reference: A47 Wansford to Sutton | TP / BH No | BH117 | BH117 | | | | |
| Project / Job Ref: GT0386 | Additional Refs | ES1 | ES4 | | | | |
| Order No: M-GT0386/000016 | Depth (m) | 0.10 - 0.20 | 0.75 - 0.85 | | | | |
| Reporting Date: 08/03/2022 | DETS Sample No | 588556 | 588557 | | | | |

| 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 | < 0.1 | < 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 | | | |

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| Soil Analysis Certificate - EPH Texas Banded | | | | | | | |
|---|---|---|---|---|---|---|---|
| DETS Report No: 22-01984 | Date Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Site Reference: A47 Wansford to Sutton | TP / BH No | BH108 | BH108 | BH109 | BH109 | BH116 |
| Project / Job Ref: GT0386 | Additional Refs | ES2 | ES4 | ES1 | ES3 | ES4 |
| Order No: M-GT0386/000016 | Depth (m) | GL - 0.30 | 0.30 - 0.70 | 0.10 - 0.20 | 0.30 - 0.40 | 0.40 - 0.50 |
| Reporting Date: 08/03/2022 | DETS Sample No | 588549 | 588550 | 588552 | 588553 | 588554 |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| EPH Texas (C6 - C8) | mg/kg | < 0.05 | NONE | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| EPH Texas (>C8 - C10) | mg/kg | < 1 | MCERTS | < 1 | < 1 | < 1 | < 1 | < 1 |
| EPH Texas (>C10 - C12) | mg/kg | < 1 | MCERTS | < 1 | < 1 | < 1 | < 1 | < 1 |
| EPH Texas (>C12 - C16) | mg/kg | < 1 | MCERTS | < 1 | < 1 | < 1 | < 1 | < 1 |
| EPH Texas (>C16 - C21) | mg/kg | < 1 | MCERTS | < 1 | < 1 | < 1 | < 1 | < 1 |
| EPH Texas (>C21 - C40) | mg/kg | < 6 | MCERTS | < 6 | < 6 | < 6 | < 6 | < 6 |
| EPH Texas (C6 - C40) | mg/kg | < 6 | NONE | < 6 | < 6 | < 6 | < 6 | < 6 |

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| Soil Analysis Certificate - EPH Texas Banded | | | | | | | |
|---|---|---|---|---|---|---|---|
| DETS Report No: 22-01984 | Date Sampled | None Supplied | None Supplied | | | | |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | | | | |
| Site Reference: A47 Wansford to Sutton | TP / BH No | BH117 | BH117 | | | | |
| Project / Job Ref: GT0386 | Additional Refs | ES1 | ES4 | | | | |
| Order No: M-GT0386/000016 | Depth (m) | 0.10 - 0.20 | 0.75 - 0.85 | | | | |
| Reporting Date: 08/03/2022 | DETS Sample No | 588556 | 588557 | | | | |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| EPH Texas (C6 - C8) | mg/kg | < 0.05 | NONE | < 0.05 | < 0.05 | | | |
| EPH Texas (>C8 - C10) | mg/kg | < 1 | MCERTS | < 1 | < 1 | | | |
| EPH Texas (>C10 - C12) | mg/kg | < 1 | MCERTS | < 1 | < 1 | | | |
| EPH Texas (>C12 - C16) | mg/kg | < 1 | MCERTS | < 1 | < 1 | | | |
| EPH Texas (>C16 - C21) | mg/kg | < 1 | MCERTS | < 1 | < 1 | | | |
| EPH Texas (>C21 - C40) | mg/kg | < 6 | MCERTS | < 6 | < 6 | | | |
| EPH Texas (C6 - C40) | mg/kg | < 6 | NONE | < 6 | < 6 | | | |

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| Soil Analysis Certificate - BTEX / MTBE | | | | | | | |
|---|---|---|---|---|---|---|---|
| DETS Report No: 22-01984 | Date Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Site Reference: A47 Wansford to Sutton | TP / BH No | BH108 | BH108 | BH109 | BH109 | BH116 |
| Project / Job Ref: GT0386 | Additional Refs | ES2 | ES4 | ES1 | ES3 | ES4 |
| Order No: M-GT0386/000016 | Depth (m) | GL - 0.30 | 0.30 - 0.70 | 0.10 - 0.20 | 0.30 - 0.40 | 0.40 - 0.50 |
| Reporting Date: 08/03/2022 | DETS Sample No | 588549 | 588550 | 588552 | 588553 | 588554 |

| 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 |

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| Soil Analysis Certificate - BTEX / MTBE | | | | | | | |
|---|---|---|---|---|---|---|---|
| DETS Report No: 22-01984 | Date Sampled | None Supplied | None Supplied | | | | |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | | | | |
| Site Reference: A47 Wansford to Sutton | TP / BH No | BH117 | BH117 | | | | |
| Project / Job Ref: GT0386 | Additional Refs | ES1 | ES4 | | | | |
| Order No: M-GT0386/000016 | Depth (m) | 0.10 - 0.20 | 0.75 - 0.85 | | | | |
| Reporting Date: 08/03/2022 | DETS Sample No | 588556 | 588557 | | | | |

| 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 | | | |

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UKAS TESTING
4480

| Leachate Analysis Certificate | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-01984 | Date Sampled | None Supplied | None Supplied | None Supplied | | |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | | |
| Site Reference: A47 Wansford to Sutton | TP / BH No | BH108 | BH116 | BH117 | | |
| Project / Job Ref: GT0386 | Additional Refs | ES4 | ES4 | ES4 | | |
| Order No: M-GT0386/000016 | Depth (m) | 0.30 - 0.70 | 0.40 - 0.50 | 0.75 - 0.85 | | |
| Reporting Date: 08/03/2022 | DETS Sample No | 588551 | 588555 | 588558 | | |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| pH | pH Units | N/a | ISO17025 | 8.6 | 8.6 | 8.5 | | |
| Total Cyanide | ug/l | < 5 | ISO17025 | < 5 | < 5 | < 5 | | |
| Complex Cyanide | ug/l | < 5 | NONE | < 5 | < 5 | < 5 | | |
| Free Cyanide | ug/l | < 5 | ISO17025 | < 5 | < 5 | < 5 | | |
| Sulphate as $SO_4$ | mg/l | < 1 | ISO17025 | 3 | 2 | 2 | | |
| Ammonia as $NH_4$ | ug/l | < 50 | ISO17025 | 161 | 140 | 126 | | |
| Arsenic | ug/l | < 5 | ISO17025 | < 5 | < 5 | < 5 | | |
| 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 | | |
| Copper | 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 | | |
| Nickel | ug/l | < 5 | ISO17025 | < 5 | < 5 | < 5 | | |
| Selenium | ug/l | < 5 | ISO17025 | < 5 | < 5 | < 5 | | |
| Zinc | ug/l | < 2 | ISO17025 | < 2 | 58 | 2 | | |
| Total Phenols (monohydric) | ug/l | < 10 | ISO17025 | < 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

| Leachate Analysis Certificate - Speciated PAH | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-01984 | Date Sampled | None Supplied | None Supplied | None Supplied | | |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | | |
| Site Reference: A47 Wansford to Sutton | TP / BH No | BH108 | BH116 | BH117 | | |
| Project / Job Ref: GT0386 | Additional Refs | ES4 | ES4 | ES4 | | |
| Order No: M-GT0386/000016 | Depth (m) | 0.30 - 0.70 | 0.40 - 0.50 | 0.75 - 0.85 | | |
| Reporting Date: 08/03/2022 | DETS Sample No | 588551 | 588555 | 588558 | | |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| Naphthalene | ug/l | < 0.01 | NONE | 0.17 | 0.02 | 0.03 | | |
| Acenaphthylene | ug/l | < 0.01 | NONE | 0.03 | < 0.01 | < 0.01 | | |
| Acenaphthene | ug/l | < 0.01 | NONE | 0.03 | < 0.01 | 0.01 | | |
| Fluorene | ug/l | < 0.01 | NONE | 0.05 | 0.02 | 0.02 | | |
| Phenanthrene | ug/l | < 0.01 | NONE | 0.09 | 0.07 | 0.05 | | |
| Anthracene | ug/l | < 0.01 | NONE | 0.03 | 0.01 | 0.01 | | |
| Fluoranthene | ug/l | < 0.01 | NONE | 0.02 | 0.04 | 0.01 | | |
| Pyrene | ug/l | < 0.01 | NONE | 0.02 | 0.03 | < 0.01 | | |
| Benzo(a)anthracene | ug/l | < 0.01 | NONE | < 0.01 | < 0.01 | < 0.01 | | |
| Chrysene | ug/l | < 0.01 | NONE | < 0.01 | < 0.01 | < 0.01 | | |
| Benzo(b)fluoranthene | ug/l | < 0.01 | NONE | < 0.01 | < 0.01 | < 0.01 | | |
| Benzo(k)fluoranthene | ug/l | < 0.01 | NONE | < 0.01 | < 0.01 | < 0.01 | | |
| Benzo(a)pyrene | ug/l | < 0.01 | NONE | < 0.01 | < 0.01 | < 0.01 | | |
| Indeno(1,2,3-cd)pyrene | ug/l | < 0.01 | NONE | < 0.01 | < 0.01 | < 0.01 | | |
| Dibenz(a,h)anthracene | ug/l | < 0.01 | NONE | < 0.01 | < 0.01 | < 0.01 | | |
| Benzo(ghi)perylene | ug/l | < 0.008 | NONE | < 0.008 | < 0.008 | < 0.008 | | |
| Total EPA-16 PAHs | ug/l | < 0.16 | NONE | 0.44 | 0.19 | < 0.16 | | |

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| Leachate Analysis Certificate - EPH Texas Banded | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-01984 | Date Sampled | None Supplied | None Supplied | None Supplied | | |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | | |
| Site Reference: A47 Wansford to Sutton | TP / BH No | BH108 | BH116 | BH117 | | |
| Project / Job Ref: GT0386 | Additional Refs | ES4 | ES4 | ES4 | | |
| Order No: M-GT0386/000016 | Depth (m) | 0.30 - 0.70 | 0.40 - 0.50 | 0.75 - 0.85 | | |
| Reporting Date: 08/03/2022 | DETS Sample No | 588551 | 588555 | 588558 | | |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| EPH Texas (C6 - C8) | ug/l | < 10 | NONE | < 10 | < 10 | < 10 | | |
| EPH Texas (>C8 - C10) | ug/l | < 10 | NONE | < 10 | < 10 | 111 | | |
| EPH Texas (>C10 - C12) | ug/l | < 10 | NONE | < 10 | < 10 | 36 | | |
| EPH Texas (>C12 - C16) | ug/l | < 10 | NONE | < 10 | < 10 | 12 | | |
| EPH Texas (>C16 - C21) | ug/l | < 10 | NONE | < 10 | < 10 | < 10 | | |
| EPH Texas (>C21 - C40) | ug/l | < 10 | NONE | < 10 | < 10 | < 10 | | |
| EPH Texas (C6 - C40) | ug/l | < 10 | NONE | < 10 | < 10 | 160 | | |

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Tel : 01622 850410

UKAS TESTING
4480

| Leachate Analysis Certificate - BTEX / MTBE | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-01984 | Date Sampled | None Supplied | None Supplied | None Supplied | | |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | | |
| Site Reference: A47 Wansford to Sutton | TP / BH No | BH108 | BH116 | BH117 | | |
| Project / Job Ref: GT0386 | Additional Refs | ES4 | ES4 | ES4 | | |
| Order No: M-GT0386/000016 | Depth (m) | 0.30 - 0.70 | 0.40 - 0.50 | 0.75 - 0.85 | | |
| Reporting Date: 08/03/2022 | DETS Sample No | 588551 | 588555 | 588558 | | |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| Benzene | ug/l | < 1 | ISO17025 | < 1 | < 1 | < 1 | | |
| Toluene | ug/l | < 5 | ISO17025 | < 5 | < 5 | < 5 | | |
| Ethylbenzene | ug/l | < 5 | ISO17025 | < 5 | < 5 | < 5 | | |
| p & m-xylene | ug/l | < 10 | ISO17025 | < 10 | < 10 | < 10 | | |
| o-xylene | ug/l | < 5 | ISO17025 | < 5 | < 5 | < 5 | | |
| MTBE | ug/l | < 10 | ISO17025 | < 10 | < 10 | < 10 | | |

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| Soil Analysis Certificate - Sample Descriptions |
|---|
| DETS Report No: 22-01984 |
| Ground Technology Services |
| Site Reference: A47 Wansford to Sutton |
| Project / Job Ref: GT0386 |
| Order No: M-GT0386/000016 |
| Reporting Date: 08/03/2022 |

| DETS Sample No | TP / BH No | Additional Refs | Depth (m) | Moisture Content (%) | Sample Matrix Description |
|---|---|---|---|---|---|
| ^ 588549 | BH108 | ES2 | GL - 0.30 | 14.4 | Brown sandy clay with stones |
| ^ 588550 | BH108 | ES4 | 0.30 - 0.70 | 6.7 | Light brown sandy clay with stones |
| ^ 588552 | BH109 | ES1 | 0.10 - 0.20 | 11.3 | Brown sandy clay with stones and vegetation |
| ^ 588553 | BH109 | ES3 | 0.30 - 0.40 | 9.9 | Brown sandy clay with stones |
| ^ 588554 | BH116 | ES4 | 0.40 - 0.50 | 7.7 | Light brown gravelly sand with stones |
| ^ 588556 | BH117 | ES1 | 0.10 - 0.20 | 13.5 | Brown sandy clay with stones |
| ^ 588557 | BH117 | ES4 | 0.75 - 0.85 | 15.5 | Light 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

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| Soil Analysis Certificate - Methodology & Miscellaneous Information |
|---|
| DETS Report No: 22-01984 |
| Ground Technology Services |
| Site Reference: A47 Wansford to Sutton |
| Project / Job Ref: GT0386 |
| Order No: M-GT0386/000016 |
| Reporting Date: 08/03/2022 |

| 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 | Fraction Organic Carbon (FOC) | Determination of TOC by combustion analyser. | E027 |
| Soil | D | Organic Matter (SOM) | Determination of TOC by combustion analyser. | E027 |
| Soil | D | TOC (Total Organic Carbon) | Determination of TOC by combustion analyser. | E027 |
| Soil | AR | Exchangeable Ammonium | Determination of ammonium by discrete analyser. | E029 |
| 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

| Water Analysis Certificate - Methodology & Miscellaneous Information |
|---|
| DETS Report No: 22-01984 |
| Ground Technology Services |
| Site Reference: A47 Wansford to Sutton |
| Project / Job Ref: GT0386 |
| Order No: M-GT0386/000016 |
| Reporting Date: 08/03/2022 |

| 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 | F | Ammoniacal Nitrogen | Determination of ammoniacal nitrogen by discrete analyser. | E126 |
| 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 | 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 dete | 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 dichlorometha | 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

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Ground Technology Services
Victory Park
London Road
Attlebborough
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Derwentside Environmental Testing Services Ltd
Unit 1
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Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410

# DETS Report No: 22-02239

| | |
|---|---|
| Site Reference: | A47 Wansford to Sutton |
| Project / Job Ref: | GT0386 |
| Order No: | M-GT0386/000016 |
| Sample Receipt Date: | 09/03/2022 |
| Sample Scheduled Date: | 09/03/2022 |
| Report Issue Number: | 1 |
| Reporting Date: | 14/03/2022 |

[redacted]

Dave Ashworth
Technical Manager

Dates of laboratory activities for each tested analyte are available upon request.

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DETS Ltd
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Maidstone
Kent ME17 2JN
Tel : 01622 850410

| Soil Analysis Certificate | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-02239 | Date Sampled | 24/02/22 | 24/02/22 | 24/02/22 | | |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | | |
| Site Reference: A47 Wansford to Sutton | TP / BH No | TP167 | TP167 | TP167 | | |
| Project / Job Ref: GT0386 | Additional Refs | ES1 | ES4 | ES4 | | |
| Order No: M-GT0386/000016 | Depth (m) | 0.05 - 0.15 | 0.30 - 0.40 | 0.30 - 0.40 | | |
| Reporting Date: 14/03/2022 | DETS Sample No | 589546 | 589547 | 589548 | | |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| pH | pH Units | N/a | MCERTS | 7.4 | 7.7 | | | |
| Total Cyanide | mg/kg | < 2 | NONE | < 2 | < 2 | | | |
| Complex Cyanide | mg/kg | < 2 | NONE | < 2 | < 2 | | | |
| Free Cyanide | mg/kg | < 2 | NONE | < 2 | < 2 | | | |
| Total Sulphate as $SO_4$ | mg/kg | < 200 | MCERTS | 871 | 617 | | | |
| Total Sulphate as $SO_4$ | % | < 0.02 | MCERTS | 0.09 | 0.06 | | | |
| TOC (Total Organic Carbon) | % | < 0.1 | MCERTS | 3.1 | 1.2 | | | |
| Arsenic (As) | mg/kg | < 2 | MCERTS | 15 | 24 | | | |
| 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 | 20 | 24 | | | |
| Chromium (III) | mg/kg | < 2 | NONE | 20 | 24 | | | |
| Chromium (hexavalent) | mg/kg | < 2 | NONE | < 2 | < 2 | | | |
| Copper (Cu) | mg/kg | < 4 | MCERTS | 23 | 24 | | | |
| Lead (Pb) | mg/kg | < 3 | MCERTS | 24 | 18 | | | |
| Mercury (Hg) | mg/kg | < 1 | MCERTS | < 1 | < 1 | | | |
| Nickel (Ni) | mg/kg | < 3 | MCERTS | 24 | 34 | | | |
| Selenium (Se) | mg/kg | < 2 | MCERTS | < 3 | < 3 | | | |
| Zinc (Zn) | mg/kg | < 3 | MCERTS | 68 | 80 | | | |
| 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°C. The Method Description page describes if the test is performed on the dried or as-received portion

Subcontracted analysis (S)

DETS Ltd
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Kent ME17 2JN
Tel : 01622 850410

| Soil Analysis Certificate - Speciated PAHs | | | | | | | |
|---|---|---|---|---|---|---|---|
| DETS Report No: 22-02239 | Date Sampled | 24/02/22 | 24/02/22 | | | |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | | | |
| Site Reference: A47 Wansford to Sutton | TP / BH No | TP167 | TP167 | | | |
| Project / Job Ref: GT0386 | Additional Refs | ES1 | ES4 | | | |
| Order No: M-GT0386/000016 | Depth (m) | 0.05 - 0.15 | 0.30 - 0.40 | | | |
| Reporting Date: 14/03/2022 | DETS Sample No | 589546 | 589547 | | | |

| 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 | < 0.1 | < 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 | | | |

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Kent ME17 2JN
Tel : 01622 850410

| Soil Analysis Certificate - EPH Texas Banded | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-02239 | Date Sampled | 24/02/22 | 24/02/22 | | | |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | | | |
| Site Reference: A47 Wansford to Sutton | TP / BH No | TP167 | TP167 | | | |
| Project / Job Ref: GT0386 | Additional Refs | ES1 | ES4 | | | |
| Order No: M-GT0386/000016 | Depth (m) | 0.05 - 0.15 | 0.30 - 0.40 | | | |
| Reporting Date: 14/03/2022 | DETS Sample No | 589546 | 589547 | | | |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| EPH Texas (C6 - C8) | mg/kg | < 0.05 | NONE | < 0.05 | < 0.05 | | | |
| EPH Texas (>C8 - C10) | mg/kg | < 1 | MCERTS | < 1 | < 1 | | | |
| EPH Texas (>C10 - C12) | mg/kg | < 1 | MCERTS | < 1 | < 1 | | | |
| EPH Texas (>C12 - C16) | mg/kg | < 1 | MCERTS | < 1 | < 1 | | | |
| EPH Texas (>C16 - C21) | mg/kg | < 1 | MCERTS | < 1 | < 1 | | | |
| EPH Texas (>C21 - C40) | mg/kg | < 6 | MCERTS | < 6 | < 6 | | | |
| EPH Texas (C6 - C40) | mg/kg | < 6 | NONE | < 6 | < 6 | | | |

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| Soil Analysis Certificate - BTEX / MTBE | | | | | | | |
|---|---|---|---|---|---|---|---|
| DETS Report No: 22-02239 | Date Sampled | 24/02/22 | 24/02/22 | | | | |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | | | | |
| Site Reference: A47 Wansford to Sutton | TP / BH No | TP167 | TP167 | | | | |
| Project / Job Ref: GT0386 | Additional Refs | ES1 | ES4 | | | | |
| Order No: M-GT0386/000016 | Depth (m) | 0.05 - 0.15 | 0.30 - 0.40 | | | | |
| Reporting Date: 14/03/2022 | DETS Sample No | 589546 | 589547 | | | | |

| 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 | | | |

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UKAS TESTING 4480

| Leachate Analysis Certificate | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-02239 | Date Sampled | 24/02/22 | | | | |
| Ground Technology Services | Time Sampled | None Supplied | | | | |
| Site Reference: A47 Wansford to Sutton | TP / BH No | TP167 | | | | |
| Project / Job Ref: GT0386 | Additional Refs | ES4 | | | | |
| Order No: M-GT0386/000016 | Depth (m) | 0.30 - 0.40 | | | | |
| Reporting Date: 14/03/2022 | DETS Sample No | 589548 | | | | |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| pH | pH Units | N/a | ISO17025 | 7.5 | | | | |
| Total Cyanide | ug/l | < 5 | ISO17025 | < 5 | | | | |
| Complex Cyanide | ug/l | < 5 | NONE | < 5 | | | | |
| Free Cyanide | ug/l | < 5 | ISO17025 | < 5 | | | | |
| Sulphate as $SO_4$ | mg/l | < 1 | ISO17025 | 5 | | | | |
| Ammonia as $NH_4$ | ug/l | < 50 | ISO17025 | 442 | | | | |
| Arsenic | ug/l | < 5 | ISO17025 | < 5 | | | | |
| Boron | ug/l | < 5 | ISO17025 | 15 | | | | |
| Cadmium | ug/l | < 0.4 | ISO17025 | < 0.4 | | | | |
| Chromium | ug/l | < 5 | ISO17025 | < 5 | | | | |
| Copper | ug/l | < 5 | ISO17025 | < 5 | | | | |
| Lead | ug/l | < 5 | ISO17025 | < 5 | | | | |
| Mercury | ug/l | < 0.05 | ISO17025 | 0.07 | | | | |
| Nickel | ug/l | < 5 | ISO17025 | < 5 | | | | |
| Selenium | ug/l | < 5 | ISO17025 | < 5 | | | | |
| Zinc | ug/l | < 2 | ISO17025 | 4 | | | | |
| Total Phenols (monohydric) | ug/l | < 10 | ISO17025 | < 10 | | | | |

Subcontracted analysis (S)

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| Leachate Analysis Certificate - Speciated PAH | | | | | | | |
|---|---|---|---|---|---|---|---|
| DETS Report No: 22-02239 | Date Sampled | 24/02/22 | | | | | |
| Ground Technology Services | Time Sampled | None Supplied | | | | | |
| Site Reference: A47 Wansford to Sutton | TP / BH No | TP167 | | | | | |
| Project / Job Ref: GT0386 | Additional Refs | ES4 | | | | | |
| Order No: M-GT0386/000016 | Depth (m) | 0.30 - 0.40 | | | | | |
| Reporting Date: 14/03/2022 | DETS Sample No | 589548 | | | | | |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| Naphthalene | ug/l | < 0.01 | NONE | 0.03 | | | | |
| Acenaphthylene | ug/l | < 0.01 | NONE | < 0.01 | | | | |
| Acenaphthene | ug/l | < 0.01 | NONE | 0.02 | | | | |
| Fluorene | ug/l | < 0.01 | NONE | 0.02 | | | | |
| Phenanthrene | ug/l | < 0.01 | NONE | 0.06 | | | | |
| Anthracene | ug/l | < 0.01 | NONE | 0.02 | | | | |
| Fluoranthene | ug/l | < 0.01 | NONE | 0.02 | | | | |
| Pyrene | ug/l | < 0.01 | NONE | 0.01 | | | | |
| Benzo(a)anthracene | ug/l | < 0.01 | NONE | < 0.01 | | | | |
| Chrysene | ug/l | < 0.01 | NONE | < 0.01 | | | | |
| Benzo(b)fluoranthene | ug/l | < 0.01 | NONE | < 0.01 | | | | |
| Benzo(k)fluoranthene | ug/l | < 0.01 | NONE | < 0.01 | | | | |
| Benzo(a)pyrene | ug/l | < 0.01 | NONE | < 0.01 | | | | |
| Indeno(1,2,3-cd)pyrene | ug/l | < 0.01 | NONE | < 0.01 | | | | |
| Dibenz(a,h)anthracene | ug/l | < 0.01 | NONE | < 0.01 | | | | |
| Benzo(ghi)perylene | ug/l | < 0.008 | NONE | < 0.008 | | | | |
| Total EPA-16 PAHs | ug/l | < 0.16 | NONE | 0.18 | | | | |

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| Leachate Analysis Certificate - EPH Texas Banded | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-02239 | Date Sampled | 24/02/22 | | | | |
| Ground Technology Services | Time Sampled | None Supplied | | | | |
| Site Reference: A47 Wansford to Sutton | TP / BH No | TP167 | | | | |
| Project / Job Ref: GT0386 | Additional Refs | ES4 | | | | |
| Order No: M-GT0386/000016 | Depth (m) | 0.30 - 0.40 | | | | |
| Reporting Date: 14/03/2022 | DETS Sample No | 589548 | | | | |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| EPH Texas (C6 - C8) | ug/l | < 10 | NONE | < 10 | | | | |
| EPH Texas (>C8 - C10) | ug/l | < 10 | NONE | < 10 | | | | |
| EPH Texas (>C10 - C12) | ug/l | < 10 | NONE | < 10 | | | | |
| EPH Texas (>C12 - C16) | ug/l | < 10 | NONE | < 10 | | | | |
| EPH Texas (>C16 - C21) | ug/l | < 10 | NONE | < 10 | | | | |
| EPH Texas (>C21 - C40) | ug/l | < 10 | NONE | < 10 | | | | |
| EPH Texas (C6 - C40) | ug/l | < 10 | NONE | < 10 | | | | |

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UKAS TESTING
4480

| Leachate Analysis Certificate - BTEX / MTBE | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-02239 | Date Sampled | 24/02/22 | | | | |
| Ground Technology Services | Time Sampled | None Supplied | | | | |
| Site Reference: A47 Wansford to Sutton | TP / BH No | TP167 | | | | |
| Project / Job Ref: GT0386 | Additional Refs | ES4 | | | | |
| Order No: M-GT0386/000016 | Depth (m) | 0.30 - 0.40 | | | | |
| Reporting Date: 14/03/2022 | DETS Sample No | 589548 | | | | |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| Benzene | ug/l | < 1 | ISO17025 | < 1 | | | | |
| Toluene | ug/l | < 5 | ISO17025 | < 5 | | | | |
| Ethylbenzene | ug/l | < 5 | ISO17025 | < 5 | | | | |
| p & m-xylene | ug/l | < 10 | ISO17025 | < 10 | | | | |
| o-xylene | ug/l | < 5 | ISO17025 | < 5 | | | | |
| MTBE | ug/l | < 10 | ISO17025 | < 10 | | | | |

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| Soil Analysis Certificate - Sample Descriptions |
|---|
| DETS Report No: 22-02239 |
| Ground Technology Services |
| Site Reference: A47 Wansford to Sutton |
| Project / Job Ref: GT0386 |
| Order No: M-GT0386/000016 |
| Reporting Date: 14/03/2022 |

| DETS Sample No | TP / BH No | Additional Refs | Depth (m) | Moisture Content (%) | Sample Matrix Description |
|---|---|---|---|---|---|
| $ 589546 | TP167 | ES1 | 0.05 - 0.15 | 20.3 | Brown sandy clay with vegetation |
| $ 589547 | TP167 | ES4 | 0.30 - 0.40 | 21.3 | 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*

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| Soil Analysis Certificate - Methodology & Miscellaneous Information |
|---|
| DETS Report No: 22-02239 |
| Ground Technology Services |
| Site Reference: A47 Wansford to Sutton |
| Project / Job Ref: GT0386 |
| Order No: M-GT0386/000016 |
| Reporting Date: 14/03/2022 |

| 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 | Fraction Organic Carbon (FOC) | Determination of TOC by combustion analyser. | E027 |
| Soil | D | Organic Matter (SOM) | Determination of TOC by combustion analyser. | E027 |
| Soil | D | TOC (Total Organic Carbon) | Determination of TOC by combustion analyser. | E027 |
| Soil | AR | Exchangeable Ammonium | Determination of ammonium by discrete analyser. | E029 |
| 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

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UKAS TESTING
4480

| Water Analysis Certificate - Methodology & Miscellaneous Information |
|---|
| DETS Report No: 22-02239 |
| Ground Technology Services |
| Site Reference: A47 Wansford to Sutton |
| Project / Job Ref: GT0386 |
| Order No: M-GT0386/000016 |
| Reporting Date: 14/03/2022 |

| 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 | F | Ammoniacal Nitrogen | Determination of ammoniacal nitrogen by discrete analyser. | E126 |
| 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 | 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 dete | 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 dichlorometha | 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

Adam Barnard
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Victory Park
London Road
Attlebborough
Norfolk
NR17 1ZA

Derwentside Environmental Testing Services Ltd
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410

# DETS Report No: 22-02416

| | |
|---|---|
| Site Reference: | A47 Wansford to Sutton |
| Project / Job Ref: | GT0386 |
| Order No: | M-GT0386/000016 |
| Sample Receipt Date: | 14/03/2022 |
| Sample Scheduled Date: | 14/03/2022 |
| Report Issue Number: | 1 |
| Reporting Date: | 18/03/2022 |

[redacted]
Dave Ashworth
Technical Manager

Dates of laboratory activities for each tested analyte are available upon request.

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: 22-02416 | Date Sampled | 03/03/22 | 28/02/22 | 28/02/22 | 28/02/22 | 01/03/22 |
| Ground Technology Services | Time Sampled | 0857 | 0930 | 0930 | 0930 | 1053 |
| Site Reference: A47 Wansford to Sutton | TP / BH No | BH110 | BH111 | BH111 | BH111 | TP119 |
| Project / Job Ref: GT0386 | Additional Refs | ES1 | ES1 | ES2 | ES2 | ES1 |
| Order No: M-GT0386/000016 | Depth (m) | 0.50 - 1.00 | GL - 0.50 | 0.50 - 1.20 | 0.50 - 1.20 | 0.10 - 0.20 |
| Reporting Date: 18/03/2022 | DETS Sample No | 590166 | 590167 | 590168 | 590169 | 590170 |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| pH | pH Units | N/a | MCERTS | 8.5 | 8.0 | 8.5 | | 8.1 |
| Total Cyanide | mg/kg | < 2 | NONE | < 2 | < 2 | < 2 | | < 2 |
| Complex 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 | MCERTS | 751 | 824 | 768 | | 757 |
| Total Sulphate as $SO_4$ | % | < 0.02 | MCERTS | 0.08 | 0.08 | 0.08 | | 0.08 |
| TOC (Total Organic Carbon) | % | < 0.1 | MCERTS | 1.9 | 2 | 2.8 | | 1.8 |
| Arsenic (As) | mg/kg | < 2 | MCERTS | 9 | 11 | 6 | | 9 |
| 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 | 9 | 16 | 7 | | 14 |
| Chromium (III) | mg/kg | < 2 | NONE | 9 | 16 | 7 | | 14 |
| Chromium (hexavalent) | mg/kg | < 2 | NONE | < 2 | < 2 | < 2 | | < 2 |
| Copper (Cu) | mg/kg | < 4 | MCERTS | 8 | 15 | 7 | | 13 |
| Lead (Pb) | mg/kg | < 3 | MCERTS | 16 | 24 | 5 | | 17 |
| Mercury (Hg) | mg/kg | < 1 | MCERTS | < 1 | < 1 | < 1 | | < 1 |
| Nickel (Ni) | mg/kg | < 3 | MCERTS | 7 | 12 | 14 | | 12 |
| Selenium (Se) | mg/kg | < 2 | MCERTS | < 3 | < 3 | < 3 | | < 3 |
| Zinc (Zn) | mg/kg | < 3 | MCERTS | 24 | 65 | 16 | | 39 |
| 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°C. The Method Description page describes if the test is performed on the dried or as-received portion

Subcontracted analysis (S)

(n) Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation

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| Soil Analysis Certificate | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-02416 | Date Sampled | 01/03/22 | 08/03/22 | 08/03/22 | 08/03/22 | 09/03/22 |
| Ground Technology Services | Time Sampled | 1053 | 1044 | 1314 | 1314 | 0903 |
| Site Reference: A47 Wansford to Sutton | TP / BH No | TP119 | TP126 | TP135 | TP135 | TP135 |
| Project / Job Ref: GT0386 | Additional Refs | ES4 | ES4 | ES1 | ES1 | ES4 |
| Order No: M-GT0386/000016 | Depth (m) | 0.40 - 0.50 | 0.40 - 0.50 | 0.10 - 0.20 | 0.10 - 0.20 | 0.60 - 0.70 |
| Reporting Date: 18/03/2022 | DETS Sample No | 590171 | 590177 | 590180 | 590181 | 590182 |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| pH | pH Units | N/a | MCERTS | 8.1 | 8.5 | 8.0 | | 8.6 |
| Total Cyanide | mg/kg | < 2 | NONE | < 2 | < 2 | < 2 | | < 2 |
| Complex 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 | MCERTS | 718 | 540 | 466 | | 730 |
| Total Sulphate as $SO_4$ | % | < 0.02 | MCERTS | 0.07 | 0.05 | 0.05 | | 0.07 |
| TOC (Total Organic Carbon) | % | < 0.1 | MCERTS | 1.2 | 1.1 | 0.9 | | 0.4 |
| Arsenic (As) | mg/kg | < 2 | MCERTS | 9 | 28 | 12 | | 13 |
| 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 | 16 | 15 | 14 | | 11 |
| Chromium (III) | mg/kg | < 2 | NONE | 16 | 15 | 14 | | 11 |
| Chromium (hexavalent) | mg/kg | < 2 | NONE | < 2 | < 2 | < 2 | | < 2 |
| Copper (Cu) | mg/kg | < 4 | MCERTS | 14 | 8 | 10 | | 8 |
| Lead (Pb) | mg/kg | < 3 | MCERTS | 17 | 10 | 10 | | 7 |
| Mercury (Hg) | mg/kg | < 1 | MCERTS | < 1 | < 1 | < 1 | | < 1 |
| Nickel (Ni) | mg/kg | < 3 | MCERTS | 13 | 11 | 12 | | 11 |
| Selenium (Se) | mg/kg | < 2 | MCERTS | < 3 | < 3 | < 3 | | < 3 |
| Zinc (Zn) | mg/kg | < 3 | MCERTS | 39 | 43 | 36 | | 35 |
| 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°C. The Method Description page describes if the test is performed on the dried or as-received portion

Subcontracted analysis (S)

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| Soil Analysis Certificate | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-02416 | Date Sampled | 09/03/22 | 09/03/22 | 02/03/22 | 02/03/22 | 02/03/22 |
| Ground Technology Services | Time Sampled | 0952 | 0952 | 1233 | 1240 | 1050 |
| Site Reference: A47 Wansford to Sutton | TP / BH No | TP136 | TP136 | TP136 | TP137 | TP137 |
| Project / Job Ref: GT0386 | Additional Refs | ES1 | ES1 | ES4 | ES1 | ES4 |
| Order No: M-GT0386/000016 | Depth (m) | 0.10 - 0.20 | 0.10 - 0.20 | 0.50 - 0.60 | 0.10 - 0.20 | 0.10 - 0.20 |
| Reporting Date: 18/03/2022 | DETS Sample No | 590183 | 590184 | 590185 | 590186 | 590187 |

| Determinand | Unit | RL | Accreditation | | | | | (n) |
|---|---|---|---|---|---|---|---|---|
| pH | pH Units | N/a | MCERTS | 7.2 | | 8.3 | 8.1 | 8.6 |
| Total Cyanide | mg/kg | < 2 | NONE | < 2 | | < 2 | < 2 | < 2 |
| Complex 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 | MCERTS | 319 | | 240 | 502 | 535 |
| Total Sulphate as $SO_4$ | % | < 0.02 | MCERTS | 0.03 | | 0.02 | 0.05 | 0.05 |
| TOC (Total Organic Carbon) | % | < 0.1 | MCERTS | 1.1 | | 0.6 | 0.9 | 0.8 |
| Arsenic (As) | mg/kg | < 2 | MCERTS | 13 | | 14 | 12 | 9 |
| 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 | 18 | | 18 | 14 | 7 |
| Chromium (III) | mg/kg | < 2 | NONE | 18 | | 18 | 14 | 7 |
| Chromium (hexavalent) | mg/kg | < 2 | NONE | < 2 | | < 2 | < 2 | < 2 |
| Copper (Cu) | mg/kg | < 4 | MCERTS | 10 | | 10 | 9 | 5 |
| Lead (Pb) | mg/kg | < 3 | MCERTS | 13 | | 10 | 10 | 4 |
| Mercury (Hg) | mg/kg | < 1 | MCERTS | < 1 | | < 1 | < 1 | < 1 |
| Nickel (Ni) | mg/kg | < 3 | MCERTS | 15 | | 17 | 12 | 7 |
| Selenium (Se) | mg/kg | < 2 | MCERTS | < 3 | | < 3 | < 3 | < 3 |
| Zinc (Zn) | mg/kg | < 3 | MCERTS | 44 | | 41 | 35 | 22 |
| 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°C. The Method Description page describes if the test is performed on the dried or as-received portion

Subcontracted analysis (S)

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Tel : 01622 850410

| Soil Analysis Certificate - Speciated PAHs | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-02416 | Date Sampled | 03/03/22 | 28/02/22 | 28/02/22 | 01/03/22 | 01/03/22 |
| Ground Technology Services | Time Sampled | 0857 | 0930 | 0930 | 1053 | 1053 |
| Site Reference: A47 Wansford to Sutton | TP / BH No | BH110 | BH111 | BH111 | TP119 | TP119 |
| Project / Job Ref: GT0386 | Additional Refs | ES1 | ES1 | ES2 | ES1 | ES4 |
| Order No: M-GT0386/000016 | Depth (m) | 0.50 - 1.00 | GL - 0.50 | 0.50 - 1.20 | 0.10 - 0.20 | 0.40 - 0.50 |
| Reporting Date: 18/03/2022 | DETS Sample No | 590166 | 590167 | 590168 | 590170 | 590171 |

| 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 | < 0.1 | < 0.1 | < 0.1 |
| Pyrene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| Benzo(a)anthracene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 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 | < 0.1 | < 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 | < 0.1 | < 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 |

(n) Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation

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| Soil Analysis Certificate - Speciated PAHs | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-02416 | Date Sampled | 08/03/22 | 08/03/22 | 09/03/22 | 09/03/22 | 02/03/22 |
| Ground Technology Services | Time Sampled | 1044 | 1314 | 0903 | 0952 | 1233 |
| Site Reference: A47 Wansford to Sutton | TP / BH No | TP126 | TP135 | TP135 | TP136 | TP136 |
| Project / Job Ref: GT0386 | Additional Refs | ES4 | ES1 | ES4 | ES1 | ES4 |
| Order No: M-GT0386/000016 | Depth (m) | 0.40 - 0.50 | 0.10 - 0.20 | 0.60 - 0.70 | 0.10 - 0.20 | 0.50 - 0.60 |
| Reporting Date: 18/03/2022 | DETS Sample No | 590177 | 590180 | 590182 | 590183 | 590185 |

| 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 | < 0.1 | < 0.1 | < 0.1 |
| Pyrene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| Benzo(a)anthracene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 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 | < 0.1 | < 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 | < 0.1 | < 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 |

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| Soil Analysis Certificate - Speciated PAHs | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-02416 | Date Sampled | 02/03/22 | 02/03/22 | | | |
| Ground Technology Services | Time Sampled | 1240 | 1050 | | | |
| Site Reference: A47 Wansford to Sutton | TP / BH No | TP137 | TP137 | | | |
| Project / Job Ref: GT0386 | Additional Refs | ES1 | ES4 | | | |
| Order No: M-GT0386/000016 | Depth (m) | 0.10 - 0.20 | 0.10 - 0.20 | | | |
| Reporting Date: 18/03/2022 | DETS Sample No | 590186 | 590187 | | | |

| Determinand | Unit | RL | Accreditation | (n) | | | | |
|---|---|---|---|---|---|---|---|---|
| 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 | < 0.1 | < 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 | | | |

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| Soil Analysis Certificate - EPH Texas Banded | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-02416 | Date Sampled | 03/03/22 | 28/02/22 | 28/02/22 | 01/03/22 | 01/03/22 |
| Ground Technology Services | Time Sampled | 0857 | 0930 | 0930 | 1053 | 1053 |
| Site Reference: A47 Wansford to Sutton | TP / BH No | BH110 | BH111 | BH111 | TP119 | TP119 |
| Project / Job Ref: GT0386 | Additional Refs | ES1 | ES1 | ES2 | ES1 | ES4 |
| Order No: M-GT0386/000016 | Depth (m) | 0.50 - 1.00 | GL - 0.50 | 0.50 - 1.20 | 0.10 - 0.20 | 0.40 - 0.50 |
| Reporting Date: 18/03/2022 | DETS Sample No | 590166 | 590167 | 590168 | 590170 | 590171 |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| EPH Texas (C6 - C8) | mg/kg | < 0.05 | NONE | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| EPH Texas (>C8 - C10) | mg/kg | < 1 | MCERTS | < 1 | < 1 | < 1 | < 1 | < 1 |
| EPH Texas (>C10 - C12) | mg/kg | < 1 | MCERTS | < 1 | < 1 | < 1 | < 1 | < 1 |
| EPH Texas (>C12 - C16) | mg/kg | < 1 | MCERTS | < 1 | < 1 | < 1 | < 1 | < 1 |
| EPH Texas (>C16 - C21) | mg/kg | < 1 | MCERTS | < 1 | < 1 | < 1 | < 1 | < 1 |
| EPH Texas (>C21 - C40) | mg/kg | < 6 | MCERTS | < 6 | < 6 | < 6 | < 6 | < 6 |
| EPH Texas (C6 - C40) | mg/kg | < 6 | NONE | < 6 | < 6 | < 6 | < 6 | < 6 |

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| Soil Analysis Certificate - EPH Texas Banded | | | | | | | |
|---|---|---|---|---|---|---|---|
| DETS Report No: 22-02416 | Date Sampled | 08/03/22 | 08/03/22 | 09/03/22 | 09/03/22 | 02/03/22 |
| Ground Technology Services | Time Sampled | 1044 | 1314 | 0903 | 0952 | 1233 |
| Site Reference: A47 Wansford to Sutton | TP / BH No | TP126 | TP135 | TP135 | TP136 | TP136 |
| Project / Job Ref: GT0386 | Additional Refs | ES4 | ES1 | ES4 | ES1 | ES4 |
| Order No: M-GT0386/000016 | Depth (m) | 0.40 - 0.50 | 0.10 - 0.20 | 0.60 - 0.70 | 0.10 - 0.20 | 0.50 - 0.60 |
| Reporting Date: 18/03/2022 | DETS Sample No | 590177 | 590180 | 590182 | 590183 | 590185 |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| EPH Texas (C6 - C8) | mg/kg | < 0.05 | NONE | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| EPH Texas (>C8 - C10) | mg/kg | < 1 | MCERTS | < 1 | < 1 | < 1 | < 1 | < 1 |
| EPH Texas (>C10 - C12) | mg/kg | < 1 | MCERTS | < 1 | < 1 | < 1 | < 1 | < 1 |
| EPH Texas (>C12 - C16) | mg/kg | < 1 | MCERTS | < 1 | < 1 | < 1 | < 1 | < 1 |
| EPH Texas (>C16 - C21) | mg/kg | < 1 | MCERTS | < 1 | < 1 | < 1 | < 1 | < 1 |
| EPH Texas (>C21 - C40) | mg/kg | < 6 | MCERTS | < 6 | < 6 | < 6 | < 6 | < 6 |
| EPH Texas (C6 - C40) | mg/kg | < 6 | NONE | < 6 | < 6 | < 6 | < 6 | < 6 |

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| Soil Analysis Certificate - EPH Texas Banded | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-02416 | Date Sampled | 02/03/22 | 02/03/22 | | | |
| Ground Technology Services | Time Sampled | 1240 | 1050 | | | |
| Site Reference: A47 Wansford to Sutton | TP / BH No | TP137 | TP137 | | | |
| Project / Job Ref: GT0386 | Additional Refs | ES1 | ES4 | | | |
| Order No: M-GT0386/000016 | Depth (m) | 0.10 - 0.20 | 0.10 - 0.20 | | | |
| Reporting Date: 18/03/2022 | DETS Sample No | 590186 | 590187 | | | |

| Determinand | Unit | RL | Accreditation | (n) | | | | |
|---|---|---|---|---|---|---|---|---|
| EPH Texas (C6 - C8) | mg/kg | < 0.05 | NONE | < 0.05 | < 0.05 | | | |
| EPH Texas (>C8 - C10) | mg/kg | < 1 | MCERTS | < 1 | < 1 | | | |
| EPH Texas (>C10 - C12) | mg/kg | < 1 | MCERTS | < 1 | < 1 | | | |
| EPH Texas (>C12 - C16) | mg/kg | < 1 | MCERTS | < 1 | < 1 | | | |
| EPH Texas (>C16 - C21) | mg/kg | < 1 | MCERTS | < 1 | < 1 | | | |
| EPH Texas (>C21 - C40) | mg/kg | < 6 | MCERTS | < 6 | < 6 | | | |
| EPH Texas (C6 - C40) | mg/kg | < 6 | NONE | < 6 | < 6 | | | |

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| Soil Analysis Certificate - BTEX / MTBE | | | | | | | |
|---|---|---|---|---|---|---|---|
| DETS Report No: 22-02416 | Date Sampled | 03/03/22 | 28/02/22 | 28/02/22 | 01/03/22 | 01/03/22 |
| Ground Technology Services | Time Sampled | 0857 | 0930 | 0930 | 1053 | 1053 |
| Site Reference: A47 Wansford to Sutton | TP / BH No | BH110 | BH111 | BH111 | TP119 | TP119 |
| Project / Job Ref: GT0386 | Additional Refs | ES1 | ES1 | ES2 | ES1 | ES4 |
| Order No: M-GT0386/000016 | Depth (m) | 0.50 - 1.00 | GL - 0.50 | 0.50 - 1.20 | 0.10 - 0.20 | 0.40 - 0.50 |
| Reporting Date: 18/03/2022 | DETS Sample No | 590166 | 590167 | 590168 | 590170 | 590171 |

| 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 |

(n) Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation

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| Soil Analysis Certificate - BTEX / MTBE | | | | | | | |
|---|---|---|---|---|---|---|---|
| DETS Report No: 22-02416 | Date Sampled | 08/03/22 | 08/03/22 | 09/03/22 | 09/03/22 | 02/03/22 |
| Ground Technology Services | Time Sampled | 1044 | 1314 | 0903 | 0952 | 1233 |
| Site Reference: A47 Wansford to Sutton | TP / BH No | TP126 | TP135 | TP135 | TP136 | TP136 |
| Project / Job Ref: GT0386 | Additional Refs | ES4 | ES1 | ES4 | ES1 | ES4 |
| Order No: M-GT0386/000016 | Depth (m) | 0.40 - 0.50 | 0.10 - 0.20 | 0.60 - 0.70 | 0.10 - 0.20 | 0.50 - 0.60 |
| Reporting Date: 18/03/2022 | DETS Sample No | 590177 | 590180 | 590182 | 590183 | 590185 |

| 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 |

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| Soil Analysis Certificate - BTEX / MTBE | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-02416 | Date Sampled | 02/03/22 | 02/03/22 | | | |
| Ground Technology Services | Time Sampled | 1240 | 1050 | | | |
| Site Reference: A47 Wansford to Sutton | TP / BH No | TP137 | TP137 | | | |
| Project / Job Ref: GT0386 | Additional Refs | ES1 | ES4 | | | |
| Order No: M-GT0386/000016 | Depth (m) | 0.10 - 0.20 | 0.10 - 0.20 | | | |
| Reporting Date: 18/03/2022 | DETS Sample No | 590186 | 590187 | | | |

| Determinand | Unit | RL | Accreditation | (n) | | | | |
|---|---|---|---|---|---|---|---|---|
| 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 | | | |

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| Leachate Analysis Certificate | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-02416 | Date Sampled | 28/02/22 | 08/03/22 | 09/03/22 | | |
| Ground Technology Services | Time Sampled | 0930 | 1314 | 0952 | | |
| Site Reference: A47 Wansford to Sutton | TP / BH No | BH111 | TP135 | TP136 | | |
| Project / Job Ref: GT0386 | Additional Refs | ES2 | ES1 | ES1 | | |
| Order No: M-GT0386/000016 | Depth (m) | 0.50 - 1.20 | 0.10 - 0.20 | 0.10 - 0.20 | | |
| Reporting Date: 18/03/2022 | DETS Sample No | 590169 | 590181 | 590184 | | |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| pH | pH Units | N/a | ISO17025 | 8.3 | 8.6 | 8.2 | | |
| Total Cyanide | ug/l | < 5 | ISO17025 | < 5 | < 5 | < 5 | | |
| Complex Cyanide | ug/l | < 5 | NONE | < 5 | < 5 | < 5 | | |
| Free Cyanide | ug/l | < 5 | ISO17025 | < 5 | < 5 | < 5 | | |
| Sulphate as $SO_4$ | mg/l | < 1 | ISO17025 | 5 | 7 | 5 | | |
| Ammonia as $NH_4$ | ug/l | < 50 | ISO17025 | 408 | 491 | 389 | | |
| Arsenic | ug/l | < 5 | ISO17025 | < 5 | < 5 | < 5 | | |
| Boron | ug/l | < 5 | ISO17025 | 6 | 6 | 16 | | |
| Cadmium | ug/l | < 0.4 | ISO17025 | < 0.4 | < 0.4 | < 0.4 | | |
| Chromium | ug/l | < 5 | ISO17025 | < 5 | < 5 | < 5 | | |
| Copper | 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 | | |
| Nickel | ug/l | < 5 | ISO17025 | < 5 | < 5 | < 5 | | |
| Selenium | ug/l | < 5 | ISO17025 | < 5 | < 5 | < 5 | | |
| Zinc | ug/l | < 2 | ISO17025 | 8 | 6 | 12 | | |
| Total Phenols (monohydric) | ug/l | < 10 | ISO17025 | < 10 | < 10 | < 10 | | |

Subcontracted analysis (S)

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| Leachate Analysis Certificate - Speciated PAH | | | | | | | |
|---|---|---|---|---|---|---|---|
| DETS Report No: 22-02416 | Date Sampled | 28/02/22 | 08/03/22 | 09/03/22 | | |
| Ground Technology Services | Time Sampled | 0930 | 1314 | 0952 | | |
| Site Reference: A47 Wansford to Sutton | TP / BH No | BH111 | TP135 | TP136 | | |
| Project / Job Ref: GT0386 | Additional Refs | ES2 | ES1 | ES1 | | |
| Order No: M-GT0386/000016 | Depth (m) | 0.50 - 1.20 | 0.10 - 0.20 | 0.10 - 0.20 | | |
| Reporting Date: 18/03/2022 | DETS Sample No | 590169 | 590181 | 590184 | | |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| Naphthalene | ug/l | < 0.01 | NONE | < 0.01 | < 0.01 | 0.14 | | |
| Acenaphthylene | ug/l | < 0.01 | NONE | < 0.01 | < 0.01 | < 0.01 | | |
| Acenaphthene | ug/l | < 0.01 | NONE | 0.01 | < 0.01 | 0.06 | | |
| Fluorene | ug/l | < 0.01 | NONE | 0.01 | < 0.01 | 0.05 | | |
| Phenanthrene | ug/l | < 0.01 | NONE | 0.03 | 0.03 | 0.09 | | |
| Anthracene | ug/l | < 0.01 | NONE | < 0.01 | < 0.01 | < 0.01 | | |
| Fluoranthene | ug/l | < 0.01 | NONE | 0.02 | < 0.01 | 0.02 | | |
| Pyrene | ug/l | < 0.01 | NONE | 0.02 | < 0.01 | 0.02 | | |
| Benzo(a)anthracene | ug/l | < 0.01 | NONE | < 0.01 | < 0.01 | < 0.01 | | |
| Chrysene | ug/l | < 0.01 | NONE | < 0.01 | < 0.01 | < 0.01 | | |
| Benzo(b)fluoranthene | ug/l | < 0.01 | NONE | < 0.01 | < 0.01 | < 0.01 | | |
| Benzo(k)fluoranthene | ug/l | < 0.01 | NONE | < 0.01 | < 0.01 | < 0.01 | | |
| Benzo(a)pyrene | ug/l | < 0.01 | NONE | < 0.01 | < 0.01 | < 0.01 | | |
| Indeno(1,2,3-cd)pyrene | ug/l | < 0.01 | NONE | < 0.01 | < 0.01 | < 0.01 | | |
| Dibenz(a,h)anthracene | ug/l | < 0.01 | NONE | < 0.01 | < 0.01 | < 0.01 | | |
| Benzo(ghi)perylene | ug/l | < 0.008 | NONE | < 0.008 | < 0.008 | < 0.008 | | |
| Total EPA-16 PAHs | ug/l | < 0.16 | NONE | < 0.16 | < 0.16 | 0.38 | | |

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| Leachate Analysis Certificate - EPH Texas Banded | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-02416 | Date Sampled | 28/02/22 | 08/03/22 | 09/03/22 | | |
| Ground Technology Services | Time Sampled | 0930 | 1314 | 0952 | | |
| Site Reference: A47 Wansford to Sutton | TP / BH No | BH111 | TP135 | TP136 | | |
| Project / Job Ref: GT0386 | Additional Refs | ES2 | ES1 | ES1 | | |
| Order No: M-GT0386/000016 | Depth (m) | 0.50 - 1.20 | 0.10 - 0.20 | 0.10 - 0.20 | | |
| Reporting Date: 18/03/2022 | DETS Sample No | 590169 | 590181 | 590184 | | |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| EPH Texas (C6 - C8) | ug/l | < 10 | NONE | < 10 | < 10 | < 10 | | |
| EPH Texas (>C8 - C10) | ug/l | < 10 | NONE | < 10 | < 10 | < 10 | | |
| EPH Texas (>C10 - C12) | ug/l | < 10 | NONE | < 10 | < 10 | < 10 | | |
| EPH Texas (>C12 - C16) | ug/l | < 10 | NONE | < 10 | < 10 | < 10 | | |
| EPH Texas (>C16 - C21) | ug/l | < 10 | NONE | < 10 | < 10 | 16 | | |
| EPH Texas (>C21 - C40) | ug/l | < 10 | NONE | < 10 | < 10 | < 10 | | |
| EPH Texas (C6 - C40) | ug/l | < 10 | NONE | < 10 | < 10 | 16 | | |

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| Leachate Analysis Certificate - BTEX / MTBE | | | | | | | |
|---|---|---|---|---|---|---|---|
| DETS Report No: 22-02416 | Date Sampled | 28/02/22 | 08/03/22 | 09/03/22 | | | |
| Ground Technology Services | Time Sampled | 0930 | 1314 | 0952 | | | |
| Site Reference: A47 Wansford to Sutton | TP / BH No | BH111 | TP135 | TP136 | | | |
| Project / Job Ref: GT0386 | Additional Refs | ES2 | ES1 | ES1 | | | |
| Order No: M-GT0386/000016 | Depth (m) | 0.50 - 1.20 | 0.10 - 0.20 | 0.10 - 0.20 | | | |
| Reporting Date: 18/03/2022 | DETS Sample No | 590169 | 590181 | 590184 | | | |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| Benzene | ug/l | < 1 | ISO17025 | < 1 | < 1 | < 1 | | |
| Toluene | ug/l | < 5 | ISO17025 | < 5 | < 5 | < 5 | | |
| Ethylbenzene | ug/l | < 5 | ISO17025 | < 5 | < 5 | < 5 | | |
| p & m-xylene | ug/l | < 10 | ISO17025 | < 10 | < 10 | < 10 | | |
| o-xylene | ug/l | < 5 | ISO17025 | < 5 | < 5 | < 5 | | |
| MTBE | ug/l | < 10 | ISO17025 | < 10 | < 10 | < 10 | | |

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| Soil Analysis Certificate - Sample Descriptions |
|---|
| DETS Report No: 22-02416 |
| Ground Technology Services |
| Site Reference: A47 Wansford to Sutton |
| Project / Job Ref: GT0386 |
| Order No: M-GT0386/000016 |
| Reporting Date: 18/03/2022 |

| DETS Sample No | TP / BH No | Additional Refs | Depth (m) | Moisture Content (%) | Sample Matrix Description |
|---|---|---|---|---|---|
| $ 590166 | BH110 | ES1 | 0.50 - 1.00 | 13.6 | Light brown sandy clay with stones |
| $ 590167 | BH111 | ES1 | GL - 0.50 | 12.2 | Brown sandy clay with stones and vegetation |
| $ 590168 | BH111 | ES2 | 0.50 - 1.20 | 6.9 | Light brown sandy clay with stones |
| $ 590170 | TP119 | ES1 | 0.10 - 0.20 | 11.1 | Brown sandy clay with stones |
| $ 590171 | TP119 | ES4 | 0.40 - 0.50 | 10.4 | Brown sandy clay with stones |
| 590177 | TP126 | ES4 | 0.40 - 0.50 | 8 | Light brown sandy clay with stones |
| 590180 | TP135 | ES1 | 0.10 - 0.20 | 13.6 | Brown sandy clay with stones and vegetation |
| 590182 | TP135 | ES4 | 0.60 - 0.70 | 9 | Brown gravelly sand with stones |
| 590183 | TP136 | ES1 | 0.10 - 0.20 | 14.1 | Brown sandy clay |
| $ 590185 | TP136 | ES4 | 0.50 - 0.60 | 12.5 | Light brown sandy clay |
| $ 590186 | TP137 | ES1 | 0.10 - 0.20 | 12.2 | Brown sandy clay with stones |
| $ 590187 | TP137 | ES4 | 0.10 - 0.20 | 12.1 | Light brown sandy gravel 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*

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| Soil Analysis Certificate - Methodology & Miscellaneous Information |
|---|
| DETS Report No: 22-02416 |
| Ground Technology Services |
| Site Reference: A47 Wansford to Sutton |
| Project / Job Ref: GT0386 |
| Order No: M-GT0386/000016 |
| Reporting Date: 18/03/2022 |

| 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 | Fraction Organic Carbon (FOC) | Determination of TOC by combustion analyser. | E027 |
| Soil | D | Organic Matter (SOM) | Determination of TOC by combustion analyser. | E027 |
| Soil | D | TOC (Total Organic Carbon) | Determination of TOC by combustion analyser. | E027 |
| Soil | AR | Exchangeable Ammonium | Determination of ammonium by discrete analyser. | E029 |
| 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

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| Water Analysis Certificate - Methodology & Miscellaneous Information |
|---|
| DETS Report No: 22-02416 |
| Ground Technology Services |
| Site Reference: A47 Wansford to Sutton |
| Project / Job Ref: GT0386 |
| Order No: M-GT0386/000016 |
| Reporting Date: 18/03/2022 |

| 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 | F | Ammoniacal Nitrogen | Determination of ammoniacal nitrogen by discrete analyser. | E126 |
| 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 | 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 dete | 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 dichlorometha | 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

Adam Barnard
Ground Technology Services
Victory Park
London Road
Attlebborough
Norfolk
NR17 1ZA

Derwentside Environmental Testing Services Ltd
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410

# DETS Report No: 22-02745

| | |
|---|---|
| Site Reference: | A47 Wansford To Sutton |
| Project / Job Ref: | GT0386 |
| Order No: | M-GT0386/000016 |
| Sample Receipt Date: | 23/03/2022 |
| Sample Scheduled Date: | 23/03/2022 |
| Report Issue Number: | 1 |
| Reporting Date: | 30/03/2022 |

[redacted]

Dave Ashworth
Technical Manager

Dates of laboratory activities for each tested analyte are available upon request.

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.

For Topsoil and WAC analysis the expanded uncertainty measurement should be considered while evaluating results against compliance values.

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| Soil Analysis Certificate | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-02745 | Date Sampled | 16/03/22 | 16/03/22 | 16/03/22 | 07/03/22 | 07/03/22 |
| Ground Technology Services | Time Sampled | 0148 | 0149 | 0149 | 0312 | 0313 |
| Site Reference: A47 Wansford To Sutton | TP / BH No | BH115 | BH115 | BH115 | BH116 | BH116 |
| Project / Job Ref: GT0386 | Additional Refs | ES1 | ES2 | ES2 | ES1 | ES2 |
| Order No: M-GT0386/000016 | Depth (m) | 0.2 - 0.2 | 0.6 - 0.6 | 0.6 - 0.6 | 0.1 - 0.1 | 0.5 - 0.5 |
| Reporting Date: 30/03/2022 | DETS Sample No | 591655 | 591656 | 591657 | 591658 | 591659 |

| 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 | 8.8 | 8.6 | | 8.4 | 8.2 |
| Total Cyanide | mg/kg | < 2 | NONE | < 2 | < 2 | | < 2 | < 2 |
| Complex 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 | MCERTS | 382 | 607 | | 542 | 363 |
| Total Sulphate as $SO_4$ | % | < 0.02 | MCERTS | 0.04 | 0.06 | | 0.05 | 0.04 |
| TOC (Total Organic Carbon) | % | < 0.1 | MCERTS | 0.3 | 2.1 | | 1.2 | 0.2 |
| Arsenic (As) | mg/kg | < 2 | MCERTS | 5 | 8 | | 13 | 13 |
| 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 | 5 | 10 | | 13 | 13 |
| Chromium (III) | mg/kg | < 2 | NONE | 5 | 10 | | 13 | 13 |
| Chromium (hexavalent) | mg/kg | < 2 | NONE | < 2 | < 2 | | < 2 | < 2 |
| Copper (Cu) | mg/kg | < 4 | MCERTS | 7 | 9 | | 12 | 7 |
| Lead (Pb) | mg/kg | < 3 | MCERTS | 11 | 7 | | 18 | 7 |
| Mercury (Hg) | mg/kg | < 1 | MCERTS | < 1 | < 1 | | < 1 | < 1 |
| Nickel (Ni) | mg/kg | < 3 | MCERTS | 3 | 9 | | 10 | 8 |
| Selenium (Se) | mg/kg | < 2 | MCERTS | < 3 | < 3 | | < 3 | < 3 |
| Zinc (Zn) | mg/kg | < 3 | MCERTS | 16 | 21 | | 40 | 39 |
| 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°C. The Method Description page describes if the test is performed on the dried or as-received portion

Subcontracted analysis (S)

(n) Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation

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| Soil Analysis Certificate | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-02745 | Date Sampled | 07/03/22 | 11/03/22 | 11/03/22 | 11/03/22 | 11/03/22 |
| Ground Technology Services | Time Sampled | 0313 | 0127 | 0127 | 0128 | 0128 |
| Site Reference: A47 Wansford To Sutton | TP / BH No | BH116 | BH118 | BH118 | BH118 | BH118 |
| Project / Job Ref: GT0386 | Additional Refs | ES2 | ES1 | ES1 | ES2 | ES2 |
| Order No: M-GT0386/000016 | Depth (m) | 0.5 - 0.5 | 0.5 - 0.5 | 0.5 - 0.5 | 1.0 - 1.0 | 1.0 - 1.0 |
| Reporting Date: 30/03/2022 | DETS Sample No | 591660 | 591661 | 591662 | 591663 | 591664 |

| Determinand | Unit | RL | Accreditation | | (n) | | | |
|---|---|---|---|---|---|---|---|---|
| Asbestos Screen (S) | N/a | N/a | ISO17025 | | Not Detected | | | |
| pH | pH Units | N/a | MCERTS | | 7.5 | | 7.9 | |
| Total Cyanide | mg/kg | < 2 | NONE | | < 2 | | < 2 | |
| Complex Cyanide | mg/kg | < 2 | NONE | | < 2 | | < 2 | |
| Free Cyanide | mg/kg | < 2 | NONE | | < 2 | | < 2 | |
| Total Sulphate as $SO_4$ | mg/kg | < 200 | MCERTS | | 1017 | | 703 | |
| Total Sulphate as $SO_4$ | % | < 0.02 | MCERTS | | 0.10 | | 0.07 | |
| TOC (Total Organic Carbon) | % | < 0.1 | MCERTS | | 5.2 | | 0.9 | |
| Arsenic (As) | mg/kg | < 2 | MCERTS | | 13 | | 10 | |
| 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 | | 9 | | 12 | |
| Chromium (III) | mg/kg | < 2 | NONE | | 9 | | 12 | |
| Chromium (hexavalent) | mg/kg | < 2 | NONE | | < 2 | | < 2 | |
| Copper (Cu) | mg/kg | < 4 | MCERTS | | 29 | | 12 | |
| Lead (Pb) | mg/kg | < 3 | MCERTS | | 31 | | 10 | |
| Mercury (Hg) | mg/kg | < 1 | MCERTS | | < 1 | | < 1 | |
| Nickel (Ni) | mg/kg | < 3 | MCERTS | | 5 | | 12 | |
| Selenium (Se) | mg/kg | < 2 | MCERTS | | < 3 | | < 3 | |
| Zinc (Zn) | mg/kg | < 3 | MCERTS | | 59 | | 28 | |
| 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°C. The Method Description page describes if the test is performed on the dried or as-received portion
Subcontracted analysis (S)

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Tel : 01622 850410

| Soil Analysis Certificate | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-02745 | Date Sampled | 17/03/22 | 17/03/22 | 17/03/22 | 09/03/22 | 09/03/22 |
| Ground Technology Services | Time Sampled | 1230 | 1229 | 1229 | 0939 | 0952 |
| Site Reference: A47 Wansford To Sutton | TP / BH No | BH119 | BH119 | BH119 | BH128 | BH128 |
| Project / Job Ref: GT0386 | Additional Refs | ES2 | ES1 | ES1 | ES1 | ES4 |
| Order No: M-GT0386/000016 | Depth (m) | 0.1 - 0.2 | 0.5 - 0.6 | 0.5 - 0.6 | 0.1 - 0.2 | 0.6 - 0.7 |
| Reporting Date: 30/03/2022 | DETS Sample No | 591665 | 591666 | 591667 | 591668 | 591669 |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| Asbestos Screen (S) | N/a | N/a | ISO17025 | | | | | |
| pH | pH Units | N/a | MCERTS | 7.6 | 7.7 | | 7.6 | 7.8 |
| Total Cyanide | mg/kg | < 2 | NONE | < 2 | < 2 | | < 2 | < 2 |
| Complex 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 | MCERTS | 533 | 256 | | 545 | 451 |
| Total Sulphate as $SO_4$ | % | < 0.02 | MCERTS | 0.05 | 0.03 | | 0.05 | 0.05 |
| TOC (Total Organic Carbon) | % | < 0.1 | MCERTS | 1.5 | 0.5 | | 1.9 | 0.6 |
| Arsenic (As) | mg/kg | < 2 | MCERTS | 21 | 11 | | 15 | 25 |
| 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 | 22 | 12 | | 19 | 22 |
| Chromium (III) | mg/kg | < 2 | NONE | 22 | 12 | | 19 | 22 |
| Chromium (hexavalent) | mg/kg | < 2 | NONE | < 2 | < 2 | | < 2 | < 2 |
| Copper (Cu) | mg/kg | < 4 | MCERTS | 18 | 8 | | 18 | 14 |
| Lead (Pb) | mg/kg | < 3 | MCERTS | 23 | 7 | | 23 | 13 |
| Mercury (Hg) | mg/kg | < 1 | MCERTS | < 1 | < 1 | | < 1 | < 1 |
| Nickel (Ni) | mg/kg | < 3 | MCERTS | 17 | 9 | | 13 | 20 |
| Selenium (Se) | mg/kg | < 2 | MCERTS | < 3 | < 3 | | < 3 | < 3 |
| Zinc (Zn) | mg/kg | < 3 | MCERTS | 66 | 34 | | 60 | 60 |
| 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°C. The Method Description page describes if the test is performed on the dried or as-received portion
Subcontracted analysis (S)

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Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

| Soil Analysis Certificate | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-02745 | Date Sampled | 09/03/22 | 09/03/22 | 09/03/22 | 09/03/22 | |
| Ground Technology Services | Time Sampled | 0952 | 1451 | 1502 | 1502 | |
| Site Reference: A47 Wansford To Sutton | TP / BH No | BH128 | BH132 | BH132 | BH132 | |
| Project / Job Ref: GT0386 | Additional Refs | ES4 | ES1 | ES4 | ES4 | |
| Order No: M-GT0386/000016 | Depth (m) | 0.6 - 0.7 | 0.1 - 0.2 | 0.6 - 0.7 | 0.6 - 0.7 | |
| Reporting Date: 30/03/2022 | DETS Sample No | 591670 | 591671 | 591672 | 591673 | |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| Asbestos Screen (S) | N/a | N/a | ISO17025 | | | | | |
| pH | pH Units | N/a | MCERTS | | 7.5 | 7.7 | | |
| Total Cyanide | mg/kg | < 2 | NONE | | < 2 | < 2 | | |
| Complex Cyanide | mg/kg | < 2 | NONE | | < 2 | < 2 | | |
| Free Cyanide | mg/kg | < 2 | NONE | | < 2 | < 2 | | |
| Total Sulphate as $SO_4$ | mg/kg | < 200 | MCERTS | | 377 | 939 | | |
| Total Sulphate as $SO_4$ | % | < 0.02 | MCERTS | | 0.04 | 0.09 | | |
| TOC (Total Organic Carbon) | % | < 0.1 | MCERTS | | 1 | 1.1 | | |
| Arsenic (As) | mg/kg | < 2 | MCERTS | | 14 | 9 | | |
| 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 | | 19 | 10 | | |
| Chromium (III) | mg/kg | < 2 | NONE | | 19 | 10 | | |
| Chromium (hexavalent) | mg/kg | < 2 | NONE | | < 2 | < 2 | | |
| Copper (Cu) | mg/kg | < 4 | MCERTS | | 13 | 7 | | |
| Lead (Pb) | mg/kg | < 3 | MCERTS | | 18 | 4 | | |
| Mercury (Hg) | mg/kg | < 1 | MCERTS | | < 1 | < 1 | | |
| Nickel (Ni) | mg/kg | < 3 | MCERTS | | 13 | 6 | | |
| Selenium (Se) | mg/kg | < 2 | MCERTS | | < 3 | < 3 | | |
| Zinc (Zn) | mg/kg | < 3 | MCERTS | | 48 | 30 | | |
| 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°C. The Method Description page describes if the test is performed on the dried or as-received portion
Subcontracted analysis (S)

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Maidstone
Kent ME17 2JN
Tel : 01622 850410

| Soil Analysis Certificate - Speciated PAHs | | | | | | | |
|---|---|---|---|---|---|---|---|
| DETS Report No: 22-02745 | Date Sampled | 16/03/22 | 16/03/22 | 07/03/22 | 07/03/22 | 11/03/22 |
| Ground Technology Services | Time Sampled | 0148 | 0149 | 0312 | 0313 | 0127 |
| Site Reference: A47 Wansford To Sutton | TP / BH No | BH115 | BH115 | BH116 | BH116 | BH118 |
| Project / Job Ref: GT0386 | Additional Refs | ES1 | ES2 | ES1 | ES2 | ES1 |
| Order No: M-GT0386/000016 | Depth (m) | 0.2 - 0.2 | 0.6 - 0.6 | 0.1 - 0.1 | 0.5 - 0.5 | 0.5 - 0.5 |
| Reporting Date: 30/03/2022 | DETS Sample No | 591655 | 591656 | 591658 | 591659 | 591661 |

| Determinand | Unit | RL | Accreditation | | | | | (n) |
|---|---|---|---|---|---|---|---|---|
| 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 | 0.39 | 0.25 |
| 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 | < 0.1 | 0.96 | 0.61 |
| Pyrene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | 0.87 | 0.51 |
| Benzo(a)anthracene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | 0.49 | 0.31 |
| Chrysene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | 0.58 | 0.42 |
| Benzo(b)fluoranthene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | 0.68 | 0.44 |
| Benzo(k)fluoranthene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | 0.20 | < 0.1 |
| Benzo(a)pyrene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | 0.48 | 0.31 |
| Indeno(1,2,3-cd)pyrene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | 0.36 | 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 | 0.30 | 0.22 |
| Total EPA-16 PAHs | mg/kg | < 1.6 | MCERTS | < 1.6 | < 1.6 | < 1.6 | 5.3 | 3.3 |

(n) Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation

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Maidstone
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| Soil Analysis Certificate - Speciated PAHs | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-02745 | Date Sampled | 11/03/22 | 17/03/22 | 17/03/22 | 09/03/22 | 09/03/22 |
| Ground Technology Services | Time Sampled | 0128 | 1230 | 1229 | 0939 | 0952 |
| Site Reference: A47 Wansford To Sutton | TP / BH No | BH118 | BH119 | BH119 | BH128 | BH128 |
| Project / Job Ref: GT0386 | Additional Refs | ES2 | ES2 | ES1 | ES1 | ES4 |
| Order No: M-GT0386/000016 | Depth (m) | 1.0 - 1.0 | 0.1 - 0.2 | 0.5 - 0.6 | 0.1 - 0.2 | 0.6 - 0.7 |
| Reporting Date: 30/03/2022 | DETS Sample No | 591663 | 591665 | 591666 | 591668 | 591669 |

| 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 | < 0.1 | 0.24 | < 0.1 |
| Pyrene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | 0.21 | < 0.1 |
| Benzo(a)anthracene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| Chrysene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | 0.16 | < 0.1 |
| Benzo(b)fluoranthene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | 0.16 | < 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 | < 0.1 | < 0.1 | 0.12 | < 0.1 |
| Indeno(1,2,3-cd)pyrene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | 0.12 | < 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 |

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| Soil Analysis Certificate - Speciated PAHs | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-02745 | Date Sampled | 09/03/22 | 09/03/22 | | | |
| Ground Technology Services | Time Sampled | 1451 | 1502 | | | |
| Site Reference: A47 Wansford To Sutton | TP / BH No | BH132 | BH132 | | | |
| Project / Job Ref: GT0386 | Additional Refs | ES1 | ES4 | | | |
| Order No: M-GT0386/000016 | Depth (m) | 0.1 - 0.2 | 0.6 - 0.7 | | | |
| Reporting Date: 30/03/2022 | DETS Sample No | 591671 | 591672 | | | |

| 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 | 0.20 | 0.12 | | | |
| Pyrene | mg/kg | < 0.1 | MCERTS | 0.18 | < 0.1 | | | |
| Benzo(a)anthracene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | | | |
| Chrysene | mg/kg | < 0.1 | MCERTS | 0.13 | < 0.1 | | | |
| Benzo(b)fluoranthene | mg/kg | < 0.1 | MCERTS | 0.14 | < 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 | | | |

DETS Ltd
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Maidstone
Kent ME17 2JN
Tel : 01622 850410

| Soil Analysis Certificate - EPH Texas Banded | | | | | | | |
|---|---|---|---|---|---|---|---|
| DETS Report No: 22-02745 | Date Sampled | 16/03/22 | 16/03/22 | 07/03/22 | 07/03/22 | 11/03/22 |
| Ground Technology Services | Time Sampled | 0148 | 0149 | 0312 | 0313 | 0127 |
| Site Reference: A47 Wansford To Sutton | TP / BH No | BH115 | BH115 | BH116 | BH116 | BH118 |
| Project / Job Ref: GT0386 | Additional Refs | ES1 | ES2 | ES1 | ES2 | ES1 |
| Order No: M-GT0386/000016 | Depth (m) | 0.2 - 0.2 | 0.6 - 0.6 | 0.1 - 0.1 | 0.5 - 0.5 | 0.5 - 0.5 |
| Reporting Date: 30/03/2022 | DETS Sample No | 591655 | 591656 | 591658 | 591659 | 591661 |

| Determinand | Unit | RL | Accreditation | | | | | (n) |
|---|---|---|---|---|---|---|---|---|
| EPH Texas (C6 - C8) | mg/kg | < 0.05 | NONE | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| EPH Texas (>C8 - C10) | mg/kg | < 1 | MCERTS | < 1 | < 1 | < 1 | < 1 | < 1 |
| EPH Texas (>C10 - C12) | mg/kg | < 1 | MCERTS | < 1 | < 1 | < 1 | < 1 | < 1 |
| EPH Texas (>C12 - C16) | mg/kg | < 1 | MCERTS | < 1 | 2 | < 1 | 2 | < 1 |
| EPH Texas (>C16 - C21) | mg/kg | < 1 | MCERTS | < 1 | < 1 | < 1 | 9 | 5 |
| EPH Texas (>C21 - C40) | mg/kg | < 6 | MCERTS | 8 | < 6 | < 6 | 22 | 16 |
| EPH Texas (C6 - C40) | mg/kg | < 6 | NONE | 8 | < 6 | < 6 | 32 | 21 |

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| Soil Analysis Certificate - EPH Texas Banded | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-02745 | Date Sampled | 11/03/22 | 17/03/22 | 17/03/22 | 09/03/22 | 09/03/22 |
| Ground Technology Services | Time Sampled | 0128 | 1230 | 1229 | 0939 | 0952 |
| Site Reference: A47 Wansford To Sutton | TP / BH No | BH118 | BH119 | BH119 | BH128 | BH128 |
| Project / Job Ref: GT0386 | Additional Refs | ES2 | ES2 | ES1 | ES1 | ES4 |
| Order No: M-GT0386/000016 | Depth (m) | 1.0 - 1.0 | 0.1 - 0.2 | 0.5 - 0.6 | 0.1 - 0.2 | 0.6 - 0.7 |
| Reporting Date: 30/03/2022 | DETS Sample No | 591663 | 591665 | 591666 | 591668 | 591669 |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| EPH Texas (C6 - C8) | mg/kg | < 0.05 | NONE | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| EPH Texas (>C8 - C10) | mg/kg | < 1 | MCERTS | < 1 | < 1 | < 1 | < 1 | < 1 |
| EPH Texas (>C10 - C12) | mg/kg | < 1 | MCERTS | < 1 | < 1 | < 1 | < 1 | < 1 |
| EPH Texas (>C12 - C16) | mg/kg | < 1 | MCERTS | < 1 | < 1 | < 1 | < 1 | < 1 |
| EPH Texas (>C16 - C21) | mg/kg | < 1 | MCERTS | < 1 | 1 | < 1 | 1 | < 1 |
| EPH Texas (>C21 - C40) | mg/kg | < 6 | MCERTS | < 6 | < 6 | < 6 | < 6 | < 6 |
| EPH Texas (C6 - C40) | mg/kg | < 6 | NONE | < 6 | < 6 | < 6 | < 6 | < 6 |

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| Soil Analysis Certificate - EPH Texas Banded | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-02745 | Date Sampled | 09/03/22 | 09/03/22 | | | |
| Ground Technology Services | Time Sampled | 1451 | 1502 | | | |
| Site Reference: A47 Wansford To Sutton | TP / BH No | BH132 | BH132 | | | |
| Project / Job Ref: GT0386 | Additional Refs | ES1 | ES4 | | | |
| Order No: M-GT0386/000016 | Depth (m) | 0.1 - 0.2 | 0.6 - 0.7 | | | |
| Reporting Date: 30/03/2022 | DETS Sample No | 591671 | 591672 | | | |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| EPH Texas (C6 - C8) | mg/kg | < 0.05 | NONE | < 0.05 | < 0.05 | | | |
| EPH Texas (>C8 - C10) | mg/kg | < 1 | MCERTS | < 1 | < 1 | | | |
| EPH Texas (>C10 - C12) | mg/kg | < 1 | MCERTS | < 1 | < 1 | | | |
| EPH Texas (>C12 - C16) | mg/kg | < 1 | MCERTS | < 1 | < 1 | | | |
| EPH Texas (>C16 - C21) | mg/kg | < 1 | MCERTS | < 1 | < 1 | | | |
| EPH Texas (>C21 - C40) | mg/kg | < 6 | MCERTS | 8 | < 6 | | | |
| EPH Texas (C6 - C40) | mg/kg | < 6 | NONE | 8 | < 6 | | | |

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Tel : 01622 850410

| Soil Analysis Certificate - BTEX / MTBE | | | | | | | |
|---|---|---|---|---|---|---|---|
| DETS Report No: 22-02745 | Date Sampled | 16/03/22 | 16/03/22 | 07/03/22 | 07/03/22 | 11/03/22 |
| Ground Technology Services | Time Sampled | 0148 | 0149 | 0312 | 0313 | 0127 |
| Site Reference: A47 Wansford To Sutton | TP / BH No | BH115 | BH115 | BH116 | BH116 | BH118 |
| Project / Job Ref: GT0386 | Additional Refs | ES1 | ES2 | ES1 | ES2 | ES1 |
| Order No: M-GT0386/000016 | Depth (m) | 0.2 - 0.2 | 0.6 - 0.6 | 0.1 - 0.1 | 0.5 - 0.5 | 0.5 - 0.5 |
| Reporting Date: 30/03/2022 | DETS Sample No | 591655 | 591656 | 591658 | 591659 | 591661 |

| Determinand | Unit | RL | Accreditation | | | | | (n) |
|---|---|---|---|---|---|---|---|---|
| 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 |

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| Soil Analysis Certificate - BTEX / MTBE | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-02745 | Date Sampled | 11/03/22 | 17/03/22 | 17/03/22 | 09/03/22 | 09/03/22 |
| Ground Technology Services | Time Sampled | 0128 | 1230 | 1229 | 0939 | 0952 |
| Site Reference: A47 Wansford To Sutton | TP / BH No | BH118 | BH119 | BH119 | BH128 | BH128 |
| Project / Job Ref: GT0386 | Additional Refs | ES2 | ES2 | ES1 | ES1 | ES4 |
| Order No: M-GT0386/000016 | Depth (m) | 1.0 - 1.0 | 0.1 - 0.2 | 0.5 - 0.6 | 0.1 - 0.2 | 0.6 - 0.7 |
| Reporting Date: 30/03/2022 | DETS Sample No | 591663 | 591665 | 591666 | 591668 | 591669 |

| 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 |

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Kent ME17 2JN
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| Soil Analysis Certificate - BTEX / MTBE | | | | | | | |
|---|---|---|---|---|---|---|---|
| DETS Report No: 22-02745 | Date Sampled | 09/03/22 | 09/03/22 | | | | |
| Ground Technology Services | Time Sampled | 1451 | 1502 | | | | |
| Site Reference: A47 Wansford To Sutton | TP / BH No | BH132 | BH132 | | | | |
| Project / Job Ref: GT0386 | Additional Refs | ES1 | ES4 | | | | |
| Order No: M-GT0386/000016 | Depth (m) | 0.1 - 0.2 | 0.6 - 0.7 | | | | |
| Reporting Date: 30/03/2022 | DETS Sample No | 591671 | 591672 | | | | |

| 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 | | | |

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UKAS TESTING 4480

| Leachate Analysis Certificate | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-02745 | Date Sampled | 16/03/22 | 16/03/22 | 07/03/22 | 07/03/22 | 11/03/22 |
| Ground Technology Services | Time Sampled | 0149 | 0149 | 0313 | 0313 | 0127 |
| Site Reference: A47 Wansford To Sutton | TP / BH No | BH115 | BH115 | BH116 | BH116 | BH118 |
| Project / Job Ref: GT0386 | Additional Refs | ES2 | ES2 | ES2 | ES2 | ES1 |
| Order No: M-GT0386/000016 | Depth (m) | 0.6 - 0.6 | 0.6 - 0.6 | 0.5 - 0.5 | 0.5 - 0.5 | 0.5 - 0.5 |
| Reporting Date: 30/03/2022 | DETS Sample No | 591656 | 591657 | 591659 | 591660 | 591661 |

| Determinand | Unit | RL | Accreditation | | | | | (n) |
|---|---|---|---|---|---|---|---|---|
| pH | pH Units | N/a | ISO17025 | | 8.3 | | 8.2 | |
| Total Cyanide | ug/l | < 5 | ISO17025 | | < 5 | | < 5 | |
| Complex Cyanide | ug/l | < 5 | NONE | | < 5 | | < 5 | |
| Free Cyanide | ug/l | < 5 | ISO17025 | | < 5 | | < 5 | |
| Sulphate as $SO_4$ | mg/l | < 1 | ISO17025 | | 4 | | 1 | |
| Ammonia as $NH_4$ | ug/l | < 50 | ISO17025 | | 257 | | 188 | |
| Arsenic | ug/l | < 5 | ISO17025 | | < 5 | | < 5 | |
| Boron | ug/l | < 5 | ISO17025 | | 10 | | 9 | |
| Cadmium | ug/l | < 0.4 | ISO17025 | | < 0.4 | | < 0.4 | |
| Chromium | ug/l | < 5 | ISO17025 | | < 5 | | < 5 | |
| Copper | ug/l | < 5 | ISO17025 | | < 5 | | < 5 | |
| Lead | ug/l | < 5 | ISO17025 | | < 5 | | < 5 | |
| Mercury | ug/l | < 0.05 | ISO17025 | | < 0.05 | | < 0.05 | |
| Nickel | ug/l | < 5 | ISO17025 | | < 5 | | < 5 | |
| Selenium | ug/l | < 5 | ISO17025 | | < 5 | | < 5 | |
| Zinc | ug/l | < 2 | ISO17025 | | 10 | | 5 | |
| Total Phenols (monohydric) | ug/l | < 10 | ISO17025 | | < 10 | | < 10 | |

Subcontracted analysis (S)
(n) Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation

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UKAS TESTING 4480

| Leachate Analysis Certificate | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-02745 | Date Sampled | 11/03/22 | 11/03/22 | 17/03/22 | 09/03/22 | 09/03/22 |
| Ground Technology Services | Time Sampled | 0127 | 0128 | 1229 | 0952 | 1502 |
| Site Reference: A47 Wansford To Sutton | TP / BH No | BH118 | BH118 | BH119 | BH128 | BH132 |
| Project / Job Ref: GT0386 | Additional Refs | ES1 | ES2 | ES1 | ES4 | ES4 |
| Order No: M-GT0386/000016 | Depth (m) | 0.5 - 0.5 | 1.0 - 1.0 | 0.5 - 0.6 | 0.6 - 0.7 | 0.6 - 0.7 |
| Reporting Date: 30/03/2022 | DETS Sample No | 591662 | 591664 | 591667 | 591670 | 591673 |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| pH | pH Units | N/a | ISO17025 | 8.0 | 8.0 | 7.9 | 8.0 | 8.1 |
| Total Cyanide | ug/l | < 5 | ISO17025 | < 5 | < 5 | < 5 | < 5 | < 5 |
| Complex Cyanide | ug/l | < 5 | NONE | < 5 | < 5 | < 5 | < 5 | < 5 |
| Free Cyanide | ug/l | < 5 | ISO17025 | < 5 | < 5 | < 5 | < 5 | < 5 |
| Sulphate as $SO_4$ | mg/l | < 1 | ISO17025 | 2 | 4 | 2 | 2 | 1 |
| Ammonia as $NH_4$ | ug/l | < 50 | ISO17025 | 219 | 211 | 193 | 204 | 159 |
| Arsenic | ug/l | < 5 | ISO17025 | < 5 | < 5 | < 5 | < 5 | < 5 |
| Boron | ug/l | < 5 | ISO17025 | 17 | 9 | 14 | 10 | 8 |
| 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 |
| Copper | ug/l | < 5 | ISO17025 | 5 | < 5 | < 5 | < 5 | < 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 |
| 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 | 7 | 9 | 8 | 2 | 3 |
| Total Phenols (monohydric) | ug/l | < 10 | ISO17025 | < 10 | < 10 | < 10 | < 10 | < 10 |

Subcontracted analysis (S)

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Maidstone
Kent ME17 2JN
Tel : 01622 850410

| Leachate Analysis Certificate - Speciated PAH | | | | | | | |
|---|---|---|---|---|---|---|---|
| DETS Report No: 22-02745 | Date Sampled | 16/03/22 | 07/03/22 | 11/03/22 | 11/03/22 | 17/03/22 |
| Ground Technology Services | Time Sampled | 0149 | 0313 | 0127 | 0128 | 1229 |
| Site Reference: A47 Wansford To Sutton | TP / BH No | BH115 | BH116 | BH118 | BH118 | BH119 |
| Project / Job Ref: GT0386 | Additional Refs | ES2 | ES2 | ES1 | ES2 | ES1 |
| Order No: M-GT0386/000016 | Depth (m) | 0.6 - 0.6 | 0.5 - 0.5 | 0.5 - 0.5 | 1.0 - 1.0 | 0.5 - 0.6 |
| Reporting Date: 30/03/2022 | DETS Sample No | 591657 | 591660 | 591662 | 591664 | 591667 |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| Naphthalene | ug/l | < 0.01 | NONE | 0.03 | 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 | 0.05 | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Fluorene | ug/l | < 0.01 | NONE | 0.05 | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Phenanthrene | ug/l | < 0.01 | NONE | 0.13 | 0.03 | 0.02 | 0.02 | 0.04 |
| Anthracene | ug/l | < 0.01 | NONE | 0.03 | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Fluoranthene | ug/l | < 0.01 | NONE | 0.05 | 0.01 | 0.01 | 0.01 | 0.03 |
| Pyrene | ug/l | < 0.01 | NONE | 0.03 | < 0.01 | < 0.01 | < 0.01 | 0.02 |
| 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 | < 0.16 | NONE | 0.37 | < 0.16 | < 0.16 | < 0.16 | < 0.16 |

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Tel : 01622 850410

| Leachate Analysis Certificate - Speciated PAH | | | | | | | |
|---|---|---|---|---|---|---|---|
| DETS Report No: 22-02745 | Date Sampled | 09/03/22 | 09/03/22 | | | |
| Ground Technology Services | Time Sampled | 0952 | 1502 | | | |
| Site Reference: A47 Wansford To Sutton | TP / BH No | BH128 | BH132 | | | |
| Project / Job Ref: GT0386 | Additional Refs | ES4 | ES4 | | | |
| Order No: M-GT0386/000016 | Depth (m) | 0.6 - 0.7 | 0.6 - 0.7 | | | |
| Reporting Date: 30/03/2022 | DETS Sample No | 591670 | 591673 | | | |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| Naphthalene | ug/l | < 0.01 | NONE | 0.01 | 0.01 | | | |
| Acenaphthylene | ug/l | < 0.01 | NONE | < 0.01 | < 0.01 | | | |
| Acenaphthene | ug/l | < 0.01 | NONE | 0.01 | < 0.01 | | | |
| Fluorene | ug/l | < 0.01 | NONE | 0.01 | < 0.01 | | | |
| Phenanthrene | ug/l | < 0.01 | NONE | 0.05 | 0.04 | | | |
| Anthracene | ug/l | < 0.01 | NONE | 0.01 | < 0.01 | | | |
| Fluoranthene | ug/l | < 0.01 | NONE | 0.05 | 0.02 | | | |
| Pyrene | ug/l | < 0.01 | NONE | 0.03 | 0.01 | | | |
| Benzo(a)anthracene | ug/l | < 0.01 | NONE | < 0.01 | < 0.01 | | | |
| Chrysene | ug/l | < 0.01 | NONE | < 0.01 | < 0.01 | | | |
| Benzo(b)fluoranthene | ug/l | < 0.01 | NONE | < 0.01 | < 0.01 | | | |
| Benzo(k)fluoranthene | ug/l | < 0.01 | NONE | < 0.01 | < 0.01 | | | |
| Benzo(a)pyrene | ug/l | < 0.01 | NONE | < 0.01 | < 0.01 | | | |
| Indeno(1,2,3-cd)pyrene | ug/l | < 0.01 | NONE | < 0.01 | < 0.01 | | | |
| Dibenz(a,h)anthracene | ug/l | < 0.01 | NONE | < 0.01 | < 0.01 | | | |
| Benzo(ghi)perylene | ug/l | < 0.008 | NONE | < 0.008 | < 0.008 | | | |
| Total EPA-16 PAHs | ug/l | < 0.16 | NONE | 0.17 | < 0.16 | | | |

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Kent ME17 2JN
Tel : 01622 850410

| Leachate Analysis Certificate - EPH Texas Banded | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-02745 | Date Sampled | 16/03/22 | 07/03/22 | 11/03/22 | 11/03/22 | 17/03/22 |
| Ground Technology Services | Time Sampled | 0149 | 0313 | 0127 | 0128 | 1229 |
| Site Reference: A47 Wansford To Sutton | TP / BH No | BH115 | BH116 | BH118 | BH118 | BH119 |
| Project / Job Ref: GT0386 | Additional Refs | ES2 | ES2 | ES1 | ES2 | ES1 |
| Order No: M-GT0386/000016 | Depth (m) | 0.6 - 0.6 | 0.5 - 0.5 | 0.5 - 0.5 | 1.0 - 1.0 | 0.5 - 0.6 |
| Reporting Date: 30/03/2022 | DETS Sample No | 591657 | 591660 | 591662 | 591664 | 591667 |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| EPH Texas (C6 - C8) | ug/l | < 10 | NONE | < 10 | < 10 | < 10 | < 10 | < 10 |
| EPH Texas (>C8 - C10) | ug/l | < 10 | NONE | < 10 | < 10 | < 10 | < 10 | < 10 |
| EPH Texas (>C10 - C12) | ug/l | < 10 | NONE | < 10 | < 10 | < 10 | < 10 | < 10 |
| EPH Texas (>C12 - C16) | ug/l | < 10 | NONE | < 10 | < 10 | < 10 | 12 | < 10 |
| EPH Texas (>C16 - C21) | ug/l | < 10 | NONE | 14 | 15 | 13 | < 10 | < 10 |
| EPH Texas (>C21 - C40) | ug/l | < 10 | NONE | < 10 | < 10 | 29 | < 10 | < 10 |
| EPH Texas (C6 - C40) | ug/l | < 10 | NONE | 14 | 15 | 42 | 12 | < 10 |

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| Leachate Analysis Certificate - EPH Texas Banded | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-02745 | Date Sampled | 09/03/22 | 09/03/22 | | | |
| Ground Technology Services | Time Sampled | 0952 | 1502 | | | |
| Site Reference: A47 Wansford To Sutton | TP / BH No | BH128 | BH132 | | | |
| Project / Job Ref: GT0386 | Additional Refs | ES4 | ES4 | | | |
| Order No: M-GT0386/000016 | Depth (m) | 0.6 - 0.7 | 0.6 - 0.7 | | | |
| Reporting Date: 30/03/2022 | DETS Sample No | 591670 | 591673 | | | |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| EPH Texas (C6 - C8) | ug/l | < 10 | NONE | < 10 | < 10 | | | |
| EPH Texas (>C8 - C10) | ug/l | < 10 | NONE | < 10 | < 10 | | | |
| EPH Texas (>C10 - C12) | ug/l | < 10 | NONE | < 10 | < 10 | | | |
| EPH Texas (>C12 - C16) | ug/l | < 10 | NONE | 23 | < 10 | | | |
| EPH Texas (>C16 - C21) | ug/l | < 10 | NONE | 53 | 15 | | | |
| EPH Texas (>C21 - C40) | ug/l | < 10 | NONE | 25 | < 10 | | | |
| EPH Texas (C6 - C40) | ug/l | < 10 | NONE | 101 | 15 | | | |

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UKAS TESTING 4480

| Leachate Analysis Certificate - BTEX / MTBE | | | | | | | |
|---|---|---|---|---|---|---|---|
| DETS Report No: 22-02745 | Date Sampled | 16/03/22 | 07/03/22 | 11/03/22 | 11/03/22 | 17/03/22 |
| Ground Technology Services | Time Sampled | 0149 | 0313 | 0127 | 0128 | 1229 |
| Site Reference: A47 Wansford To Sutton | TP / BH No | BH115 | BH116 | BH118 | BH118 | BH119 |
| Project / Job Ref: GT0386 | Additional Refs | ES2 | ES2 | ES1 | ES2 | ES1 |
| Order No: M-GT0386/000016 | Depth (m) | 0.6 - 0.6 | 0.5 - 0.5 | 0.5 - 0.5 | 1.0 - 1.0 | 0.5 - 0.6 |
| Reporting Date: 30/03/2022 | DETS Sample No | 591657 | 591660 | 591662 | 591664 | 591667 |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| 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 |

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UKAS TESTING
4480

| Leachate Analysis Certificate - BTEX / MTBE | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-02745 | Date Sampled | 09/03/22 | 09/03/22 | | | |
| Ground Technology Services | Time Sampled | 0952 | 1502 | | | |
| Site Reference: A47 Wansford To Sutton | TP / BH No | BH128 | BH132 | | | |
| Project / Job Ref: GT0386 | Additional Refs | ES4 | ES4 | | | |
| Order No: M-GT0386/000016 | Depth (m) | 0.6 - 0.7 | 0.6 - 0.7 | | | |
| Reporting Date: 30/03/2022 | DETS Sample No | 591670 | 591673 | | | |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| Benzene | ug/l | < 1 | ISO17025 | < 1 | < 1 | | | |
| Toluene | ug/l | < 5 | ISO17025 | < 5 | < 5 | | | |
| Ethylbenzene | ug/l | < 5 | ISO17025 | < 5 | < 5 | | | |
| p & m-xylene | ug/l | < 10 | ISO17025 | < 10 | < 10 | | | |
| o-xylene | ug/l | < 5 | ISO17025 | < 5 | < 5 | | | |
| MTBE | ug/l | < 10 | ISO17025 | < 10 | < 10 | | | |

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## Waste Acceptance Criteria Analytical Certificate - BS EN 12457/3

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| DETS Report No: 22-02745 | | Date Sampled | 16/03/22 | | | | Landfill Waste Acceptance Criteria Limits | | |
| Ground Technology Services | | Time Sampled | 0149 | | | | Inert Waste Landfill | Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill | Hazardous Waste Landfill |
| Site Reference: A47 Wansford To Sutton | | TP / BH No | BH115 | | | | | | |
| Project / Job Ref: GT0386 | | Additional Refs | ES2 | | | | | | |
| Order No: M-GT0386/000016 | | Depth (m) | 0.6 - 0.6 | | | | | | |
| Reporting Date: 30/03/2022 | | DETS Sample No | 591656 | | | | | | |
| Determinand | Unit | MDL | | | | | | | |
| TOC[MU] | % | < 0.1 | 2.1 | | | | 3% | 5% | 6% |
| Loss on Ignition | % | < 0.01 | 2.20 | | | | -- | -- | 10% |
| BTEX[MU] | mg/kg | < 0.05 | < 0.05 | | | | 6 | -- | -- |
| Sum of PCBs | mg/kg | < 0.1 | < 0.1 | | | | 1 | -- | -- |
| Mineral Oil[MU] | mg/kg | < 10 | < 10 | | | | 500 | -- | -- |
| Total PAH[MU] | mg/kg | < 1.7 | < 1.7 | | | | 100 | -- | -- |
| pH[MU] | pH Units | N/a | 8.6 | | | | -- | >6 | -- |
| Acid Neutralisation Capacity | mol/kg (+/-) | < 1 | 2.2 | | | | -- | To be evaluated | To be evaluated |
| Eluate Analysis | | | 2:1 mg/l | 8:1 mg/l | | Cumulative 10:1 mg/kg | Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg (mg/kg) | | |
| Arsenic[U] | | | < 0.01 | < 0.01 | | < 0.2 | 0.5 | 2 | 25 |
| Barium[U] | | | < 0.02 | < 0.02 | | < 0.1 | 20 | 100 | 300 |
| Cadmium[U] | | | < 0.0005 | < 0.0005 | | < 0.02 | 0.04 | 1 | 5 |
| Chromium[U] | | | < 0.005 | < 0.005 | | < 0.20 | 0.5 | 10 | 70 |
| Copper[U] | | | < 0.01 | < 0.01 | | < 0.5 | 2 | 50 | 100 |
| Mercury[U] | | | < 0.0005 | < 0.0005 | | < 0.005 | 0.01 | 0.2 | 2 |
| Molybdenum[U] | | | 0.002 | 0.001 | | < 0.1 | 0.5 | 10 | 30 |
| Nickel[U] | | | < 0.007 | < 0.007 | | < 0.2 | 0.4 | 10 | 40 |
| Lead[U] | | | < 0.005 | < 0.005 | | < 0.2 | 0.5 | 10 | 50 |
| Antimony[U] | | | < 0.005 | < 0.005 | | < 0.05 | 0.06 | 0.7 | 5 |
| Selenium[U] | | | < 0.005 | < 0.005 | | < 0.05 | 0.1 | 0.5 | 7 |
| Zinc[U] | | | 0.030 | 0.011 | | < 0.2 | 4 | 50 | 200 |
| Chloride[U] | | | 51 | 15 | | 190 | 800 | 15000 | 25000 |
| Fluoride[U] | | | < 0.5 | < 0.5 | | < 1 | 10 | 150 | 500 |
| Sulphate[U] | | | 9 | 4 | | 43 | 1000 | 20000 | 50000 |
| TDS | | | 178 | 127 | | 1323 | 4000 | 60000 | 100000 |
| Phenol Index | | | < 0.01 | < 0.01 | | < 0.5 | 1 | - | - |
| DOC | | | 9.4 | 14.2 | | 137 | 500 | 800 | 1000 |
| Leach Test Information | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| Sample Mass (kg) | | | 0.20 | | | | | | |
| Dry Matter (%) | | | 88.4 | | | | | | |
| Moisture (%) | | | 13.2 | | | | | | |
| Stage 1 | | | | | | | | | |
| Volume Eluate L2 (litres) | | | 0.33 | | | | | | |
| Filtered Eluate VE1 (litres) | | | 0.18 | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Samples Descriptions page describes if the test is performed on the dried or as-received portion
Stated limits are for guidance only and DETS Ltd cannot be held responsible for any discrepencies with current legislation
M Denotes MCERTS accredited test
U Denotes ISO17025 accredited test

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## Waste Acceptance Criteria Analytical Certificate - BS EN 12457/3

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| DETS Report No: 22-02745 | | Date Sampled | 07/03/22 | | | | Landfill Waste Acceptance Criteria Limits | | |
| Ground Technology Services | | Time Sampled | 0313 | | | | Inert Waste Landfill | Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill | Hazardous Waste Landfill |
| Site Reference: A47 Wansford To Sutton | | TP / BH No | BH116 | | | | | | |
| Project / Job Ref: GT0386 | | Additional Refs | ES2 | | | | | | |
| Order No: M-GT0386/000016 | | Depth (m) | 0.5 - 0.5 | | | | | | |
| Reporting Date: 30/03/2022 | | DETS Sample No | 591659 | | | | | | |
| Determinand | Unit | MDL | | | | | | | |
| TOC[MU] | % | < 0.1 | 0.2 | | | | 3% | 5% | 6% |
| Loss on Ignition | % | < 0.01 | 1.60 | | | | -- | -- | 10% |
| BTEX[MU] | mg/kg | < 0.05 | < 0.05 | | | | 6 | -- | -- |
| Sum of PCBs | mg/kg | < 0.1 | < 0.1 | | | | 1 | -- | -- |
| Mineral Oil[MU] | mg/kg | < 10 | < 10 | | | | 500 | -- | -- |
| Total PAH[MU] | mg/kg | < 1.7 | 5.3 | | | | 100 | -- | -- |
| pH[MU] | pH Units | N/a | 8.2 | | | | -- | >6 | -- |
| Acid Neutralisation Capacity | mol/kg (+/-) | < 1 | 1.7 | | | | -- | To be evaluated | To be evaluated |
| Eluate Analysis | | | 2:1 mg/l | 8:1 mg/l | | Cumulative 10:1 mg/kg | Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg (mg/kg) | | |
| Arsenic[U] | | | < 0.01 | < 0.01 | | < 0.2 | 0.5 | 2 | 25 |
| Barium[U] | | | < 0.02 | < 0.02 | | < 0.1 | 20 | 100 | 300 |
| Cadmium[U] | | | < 0.0005 | < 0.0005 | | < 0.02 | 0.04 | 1 | 5 |
| Chromium[U] | | | < 0.005 | < 0.005 | | < 0.20 | 0.5 | 10 | 70 |
| Copper[U] | | | < 0.01 | < 0.01 | | < 0.5 | 2 | 50 | 100 |
| Mercury[U] | | | < 0.0005 | < 0.0005 | | < 0.005 | 0.01 | 0.2 | 2 |
| Molybdenum[U] | | | 0.002 | 0.001 | | < 0.1 | 0.5 | 10 | 30 |
| Nickel[U] | | | < 0.007 | < 0.007 | | < 0.2 | 0.4 | 10 | 40 |
| Lead[U] | | | < 0.005 | < 0.005 | | < 0.2 | 0.5 | 10 | 50 |
| Antimony[U] | | | < 0.005 | < 0.005 | | < 0.05 | 0.06 | 0.7 | 5 |
| Selenium[U] | | | < 0.005 | < 0.005 | | < 0.05 | 0.1 | 0.5 | 7 |
| Zinc[U] | | | 0.026 | 0.007 | | < 0.2 | 4 | 50 | 200 |
| Chloride[U] | | | 3 | 5 | | 50 | 800 | 15000 | 25000 |
| Fluoride[U] | | | < 0.5 | < 0.5 | | < 1 | 10 | 150 | 500 |
| Sulphate[U] | | | 4 | 2 | | 22 | 1000 | 20000 | 50000 |
| TDS | | | 82 | 82 | | 820 | 4000 | 60000 | 100000 |
| Phenol Index | | | < 0.01 | < 0.01 | | < 0.5 | 1 | - | - |
| DOC | | | 6.6 | 14.6 | | 136 | 500 | 800 | 1000 |
| Leach Test Information | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| Sample Mass (kg) | | | 0.19 | | | | | | |
| Dry Matter (%) | | | 89.7 | | | | | | |
| Moisture (%) | | | 11.4 | | | | | | |
| Stage 1 | | | | | | | | | |
| Volume Eluate L2 (litres) | | | 0.33 | | | | | | |
| Filtered Eluate VE1 (litres) | | | 0.22 | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Samples Descriptions page describes if the test is performed on the dried or as-received portion
Stated limits are for guidance only and DETS Ltd cannot be held responsible for any discrepencies with current legislation
M Denotes MCERTS accredited test
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## Waste Acceptance Criteria Analytical Certificate - BS EN 12457/3

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| DETS Report No: 22-02745 | | Date Sampled | 11/03/22 | | | | Landfill Waste Acceptance Criteria Limits | | |
| Ground Technology Services | | Time Sampled | 0127 | | | | Inert Waste Landfill | Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill | Hazardous Waste Landfill |
| Site Reference: A47 Wansford To Sutton | | TP / BH No | BH118 | | | | | | |
| Project / Job Ref: GT0386 | | Additional Refs | ES1 | | | | | | |
| Order No: M-GT0386/000016 | | Depth (m) | 0.5 - 0.5 | | | | | | |
| Reporting Date: 30/03/2022 | | DETS Sample No | 591661 | | | | | | |
| Determinand | Unit | MDL | | | | | | | |
| TOC[MU] | % | < 0.1 | 5.2 | | | | 3% | 5% | 6% |
| Loss on Ignition | % | < 0.01 | 10.50 | | | | -- | -- | 10% |
| BTEX[MU] | mg/kg | < 0.05 | < 0.05 | | | | 6 | -- | -- |
| Sum of PCBs | mg/kg | < 0.1 | < 0.1 | | | | 1 | -- | -- |
| Mineral Oil[MU] | mg/kg | < 10 | < 10 | | | | 500 | -- | -- |
| Total PAH[MU] | mg/kg | < 1.7 | 3.3 | | | | 100 | -- | -- |
| pH[MU] | pH Units | N/a | 7.5 | | | | -- | >6 | -- |
| Acid Neutralisation Capacity | mol/kg (+/-) | < 1 | 2.2 | | | | -- | To be evaluated | To be evaluated |
| Eluate Analysis | | | 2:1 mg/l | 8:1 mg/l | | Cumulative 10:1 mg/kg | Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg (mg/kg) | | |
| Arsenic[U] | | | < 0.01 | < 0.01 | | < 0.2 | 0.5 | 2 | 25 |
| Barium[U] | | | 0.04 | 0.03 | | 0.3 | 20 | 100 | 300 |
| Cadmium[U] | | | < 0.0005 | < 0.0005 | | < 0.02 | 0.04 | 1 | 5 |
| Chromium[U] | | | < 0.005 | < 0.005 | | < 0.20 | 0.5 | 10 | 70 |
| Copper[U] | | | < 0.01 | 0.02 | | < 0.5 | 2 | 50 | 100 |
| Mercury[U] | | | < 0.0005 | < 0.0005 | | < 0.005 | 0.01 | 0.2 | 2 |
| Molybdenum[U] | | | 0.006 | 0.002 | | < 0.1 | 0.5 | 10 | 30 |
| Nickel[U] | | | < 0.007 | < 0.007 | | < 0.2 | 0.4 | 10 | 40 |
| Lead[U] | | | < 0.005 | < 0.005 | | < 0.2 | 0.5 | 10 | 50 |
| Antimony[U] | | | < 0.005 | < 0.005 | | < 0.05 | 0.06 | 0.7 | 5 |
| Selenium[U] | | | < 0.005 | < 0.005 | | < 0.05 | 0.1 | 0.5 | 7 |
| Zinc[U] | | | 0.048 | 0.013 | | < 0.2 | 4 | 50 | 200 |
| Chloride[U] | | | 23 | 13 | | 148 | 800 | 15000 | 25000 |
| Fluoride[U] | | | < 0.5 | < 0.5 | | < 1 | 10 | 150 | 500 |
| Sulphate[U] | | | 10 | 5 | | 53 | 1000 | 20000 | 50000 |
| TDS | | | 79 | 163 | | 1520 | 4000 | 60000 | 100000 |
| Phenol Index | | | < 0.01 | < 0.01 | | < 0.5 | 1 | - | - |
| DOC | | | 21.9 | 20.2 | | 205 | 500 | 800 | 1000 |
| Leach Test Information | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| Sample Mass (kg) | | | 0.20 | | | | | | |
| Dry Matter (%) | | | 88 | | | | | | |
| Moisture (%) | | | 13.8 | | | | | | |
| Stage 1 | | | | | | | | | |
| Volume Eluate L2 (litres) | | | 0.33 | | | | | | |
| Filtered Eluate VE1 (litres) | | | 0.23 | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Samples Descriptions page describes if the test is performed on the dried or as-received portion
Stated limits are for guidance only and DETS Ltd cannot be held responsible for any discrepencies with current legislation
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| Soil Analysis Certificate - Sample Descriptions |
|---|
| DETS Report No: 22-02745 |
| Ground Technology Services |
| Site Reference: A47 Wansford To Sutton |
| Project / Job Ref: GT0386 |
| Order No: M-GT0386/000016 |
| Reporting Date: 30/03/2022 |

| DETS Sample No | TP / BH No | Additional Refs | Depth (m) | Moisture Content (%) | Sample Matrix Description |
|---|---|---|---|---|---|
| 591655 | BH115 | ES1 | 0.2 - 0.2 | 9.4 | Brown gravelly sand with stones |
| 591656 | BH115 | ES2 | 0.6 - 0.6 | 11.6 | Brown gravelly sand with stones |
| $ 591658 | BH116 | ES1 | 0.1 - 0.1 | 13.2 | Brown sandy clay with stones |
| $ 591659 | BH116 | ES2 | 0.5 - 0.5 | 10.3 | Brown gravelly sand with stones |
| $ 591661 | BH118 | ES1 | 0.5 - 0.5 | 12 | Brown clayey gravel with stones |
| $ 591663 | BH118 | ES2 | 1.0 - 1.0 | 13.4 | Brown sandy clay with stones |
| 591665 | BH119 | ES2 | 0.1 - 0.2 | 14.9 | Brown sandy clay |
| 591666 | BH119 | ES1 | 0.5 - 0.6 | 11.2 | Brown sandy clay with stones |
| $ 591668 | BH128 | ES1 | 0.1 - 0.2 | 17.8 | Brown sandy clay |
| $ 591669 | BH128 | ES4 | 0.6 - 0.7 | 9.3 | Brown clayey sand with stones |
| $ 591671 | BH132 | ES1 | 0.1 - 0.2 | 12.1 | Brown sandy clay with vegetation |
| $ 591672 | BH132 | ES4 | 0.6 - 0.7 | 8.1 | Brown gravelly sand 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*

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| Soil Analysis Certificate - Methodology & Miscellaneous Information |
|---|
| DETS Report No: 22-02745 |
| Ground Technology Services |
| Site Reference: A47 Wansford To Sutton |
| Project / Job Ref: GT0386 |
| Order No: M-GT0386/000016 |
| Reporting Date: 30/03/2022 |

| 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 | Fraction Organic Carbon (FOC) | Determination of TOC by combustion analyser. | E027 |
| Soil | D | Organic Matter (SOM) | Determination of TOC by combustion analyser. | E027 |
| Soil | D | TOC (Total Organic Carbon) | Determination of TOC by combustion analyser. | E027 |
| Soil | AR | Exchangeable Ammonium | Determination of ammonium by discrete analyser. | E029 |
| 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
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Rose Lane
Lenham Heath
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Tel : 01622 850410

UKAS TESTING
4480

| Water Analysis Certificate - Methodology & Miscellaneous Information |
|---|
| DETS Report No: 22-02745 |
| Ground Technology Services |
| Site Reference: A47 Wansford To Sutton |
| Project / Job Ref: GT0386 |
| Order No: M-GT0386/000016 |
| Reporting Date: 30/03/2022 |

| 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 | F | Ammoniacal Nitrogen | Determination of ammoniacal nitrogen by discrete analyser. | E126 |
| 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 | 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 dete | 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 dichlorometha | 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

| Parameter | Matrix Type | Suite Reference | Expanded Uncertainity Measurement | Unit |
|---|---|---|---|---|
| TOC | Soil | BS EN 12457 | 12.1 | % |
| Loss on Ignition | Soil | BS EN 12457 | 20.4 | % |
| BTEX | Soil | BS EN 12457 | 14.0 | % |
| Sum of PCBs | Soil | BS EN 12457 | 21.1 | % |
| Mineral Oil | Soil | BS EN 12457 | 9.0 | % |
| Total PAH | Soil | BS EN 12457 | 13.9 | % |
| pH | Soil | BS EN 12457 | 0.248 | Units |
| Acid Neutralisation Capacity | Soil | BS EN 12457 | 18.0 | % |
| Arsenic | Leachate | BS EN 12457 | 15.9 | % |
| Barium | Leachate | BS EN 12457 | 14.4 | % |
| Cadmium | Leachate | BS EN 12457 | 12.6 | % |
| Chromium | Leachate | BS EN 12457 | 13.4 | % |
| Copper | Leachate | BS EN 12457 | 13.1 | % |
| Mercury | Leachate | BS EN 12457 | 16.2 | % |
| Molybdenum | Leachate | BS EN 12457 | 13.6 | % |
| Nickel | Leachate | BS EN 12457 | 16.0 | % |
| Lead | Leachate | BS EN 12457 | 12.4 | % |
| Antimony | Leachate | BS EN 12457 | 14.6 | % |
| Selenium | Leachate | BS EN 12457 | 16.5 | % |
| Zinc | Leachate | BS EN 12457 | 14.5 | % |
| Chloride | Leachate | BS EN 12457 | 17.0 | % |
| Fluoride | Leachate | BS EN 12457 | 12.0 | % |
| Sulphate | Leachate | BS EN 12457 | 25.1 | % |
| TDS | Leachate | BS EN 12457 | 10.0 | % |
| Phenol Index | Leachate | BS EN 12457 | 12.9 | % |
| DOC | Leachate | BS EN 12457 | 10.0 | % |
| Clay Content | Soil | BS 3882: 2015 | 15.0 | % |
| Silt Content | Soil | BS 3882: 2015 | 14.0 | % |
| Sand Content | Soil | BS 3882: 2015 | 13.0 | % |
| Loss on Ignition | Soil | BS 3882: 2015 | 20.4 | % |
| pH | Soil | BS 3882: 2015 | 0.248 | Units |
| Carbonate | Soil | BS 3882: 2015 | 12.0 | % |
| Total Nitrogen | Soil | BS 3882: 2015 | 12.0 | % |
| Phosphorus (Extractable) | Soil | BS 3882: 2015 | 24.0 | % |
| Potassium (Extractable) | Soil | BS 3882: 2015 | 20.0 | % |
| Magnesium (Extractable) | Soil | BS 3882: 2015 | 26.0 | % |
| Zinc | Soil | BS 3882: 2015 | 14.9 | % |
| Copper | Soil | BS 3882: 2015 | 16.0 | % |
| Nickel | Soil | BS 3882: 2015 | 17.7 | % |
| Available Sodium | Soil | BS 3882: 2015 | 23.0 | % |
| Available Calcium | Soil | BS 3882: 2015 | 23.0 | % |
| Electrical Conductivity | Soil | BS 3882: 2015 | 10.0 | % |

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London Road
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NR17 1ZA

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# DETS Report No: 22-02783

| | |
|---|---|
| Site Reference: | A47 Wansford to Sutton |
| Project / Job Ref: | GT0386 |
| Order No: | M-GT0386/000016 |
| Sample Receipt Date: | 24/03/2022 |
| Sample Scheduled Date: | 24/03/2022 |
| Report Issue Number: | 1 |
| Reporting Date: | 30/03/2022 |

[redacted]

Technical Manager

Dates of laboratory activities for each tested analyte are available upon request.

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.

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| Soil Analysis Certificate | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-02783 | Date Sampled | 21/03/22 | 21/03/22 | 21/03/22 | 21/03/22 | 21/03/22 |
| Ground Technology Services | Time Sampled | 1530 | 1540 | 1540 | 1326 | 1332 |
| Site Reference: A47 Wansford to Sutton | TP / BH No | TP127 | TP127 | TP127 | TP129 | TP129 |
| Project / Job Ref: GT0386 | Additional Refs | ES1 | ES4 | ES4 | ES1 | ES4 |
| Order No: M-GT0386/000016 | Depth (m) | 0.10 - 0.20 | 0.40 - 0.50 | 0.40 - 0.50 | 0.10 - 0.20 | 0.50 - 0.60 |
| Reporting Date: 30/03/2022 | DETS Sample No | 591801 | 591802 | 591803 | 591804 | 591805 |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| pH | pH Units | N/a | MCERTS | 7.7 | 8.4 | | 7.7 | 7.8 |
| Total Cyanide | mg/kg | < 2 | NONE | < 2 | < 2 | | < 2 | < 2 |
| Complex 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 | MCERTS | 437 | 973 | | 916 | 950 |
| Total Sulphate as $SO_4$ | % | < 0.02 | MCERTS | 0.04 | 0.10 | | 0.09 | 0.10 |
| TOC (Total Organic Carbon) | % | < 0.1 | MCERTS | 1.8 | 0.8 | | 3 | 1.5 |
| Arsenic (As) | mg/kg | < 2 | MCERTS | 14 | 14 | | 14 | 20 |
| 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 | 14 | 15 | | 28 | 22 |
| Chromium (III) | mg/kg | < 2 | NONE | 14 | 15 | | 28 | 22 |
| Chromium (hexavalent) | mg/kg | < 2 | NONE | < 2 | < 2 | | < 2 | < 2 |
| Copper (Cu) | mg/kg | < 4 | MCERTS | 10 | 6 | | 16 | 8 |
| Lead (Pb) | mg/kg | < 3 | MCERTS | 16 | 6 | | 29 | 10 |
| Mercury (Hg) | mg/kg | < 1 | MCERTS | < 1 | < 1 | | < 1 | < 1 |
| Nickel (Ni) | mg/kg | < 3 | MCERTS | 9 | 8 | | 13 | 23 |
| Selenium (Se) | mg/kg | < 2 | MCERTS | < 3 | < 3 | | < 3 | < 3 |
| Zinc (Zn) | mg/kg | < 3 | MCERTS | 46 | 26 | | 68 | 49 |
| 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°C. The Method Description page describes if the test is performed on the dried or as-received portion

Subcontracted analysis (S)

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Maidstone
Kent ME17 2JN
Tel : 01622 850410

| Soil Analysis Certificate | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-02783 | Date Sampled | 21/03/22 | | | | |
| Ground Technology Services | Time Sampled | 1332 | | | | |
| Site Reference: A47 Wansford to Sutton | TP / BH No | TP129 | | | | |
| Project / Job Ref: GT0386 | Additional Refs | ES4 | | | | |
| Order No: M-GT0386/000016 | Depth (m) | 0.50 - 0.60 | | | | |
| Reporting Date: 30/03/2022 | DETS Sample No | 591806 | | | | |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| pH | pH Units | N/a | MCERTS | | | | | |
| Total Cyanide | mg/kg | < 2 | NONE | | | | | |
| Complex Cyanide | mg/kg | < 2 | NONE | | | | | |
| Free Cyanide | mg/kg | < 2 | NONE | | | | | |
| Total Sulphate as $SO_4$ | mg/kg | < 200 | MCERTS | | | | | |
| Total Sulphate as $SO_4$ | % | < 0.02 | MCERTS | | | | | |
| TOC (Total Organic Carbon) | % | < 0.1 | MCERTS | | | | | |
| Arsenic (As) | mg/kg | < 2 | MCERTS | | | | | |
| W/S Boron | mg/kg | < 1 | NONE | | | | | |
| Cadmium (Cd) | mg/kg | < 0.2 | MCERTS | | | | | |
| Chromium (Cr) | mg/kg | < 2 | MCERTS | | | | | |
| Chromium (III) | mg/kg | < 2 | NONE | | | | | |
| Chromium (hexavalent) | mg/kg | < 2 | NONE | | | | | |
| Copper (Cu) | mg/kg | < 4 | MCERTS | | | | | |
| Lead (Pb) | mg/kg | < 3 | MCERTS | | | | | |
| Mercury (Hg) | mg/kg | < 1 | MCERTS | | | | | |
| Nickel (Ni) | mg/kg | < 3 | MCERTS | | | | | |
| Selenium (Se) | mg/kg | < 2 | MCERTS | | | | | |
| Zinc (Zn) | mg/kg | < 3 | MCERTS | | | | | |
| Total Phenols (monohydric) | mg/kg | < 2 | NONE | | | | | |

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion

Subcontracted analysis (S)

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| Soil Analysis Certificate - Speciated PAHs | | | | | | | |
|---|---|---|---|---|---|---|---|
| DETS Report No: 22-02783 | Date Sampled | 21/03/22 | 21/03/22 | 21/03/22 | 21/03/22 | | |
| Ground Technology Services | Time Sampled | 1530 | 1540 | 1326 | 1332 | | |
| Site Reference: A47 Wansford to Sutton | TP / BH No | TP127 | TP127 | TP129 | TP129 | | |
| Project / Job Ref: GT0386 | Additional Refs | ES1 | ES4 | ES1 | ES4 | | |
| Order No: M-GT0386/000016 | Depth (m) | 0.10 - 0.20 | 0.40 - 0.50 | 0.10 - 0.20 | 0.50 - 0.60 | | |
| Reporting Date: 30/03/2022 | DETS Sample No | 591801 | 591802 | 591804 | 591805 | | |

| 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 | < 0.1 | < 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 | < 0.1 | < 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 | |

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| Soil Analysis Certificate - EPH Texas Banded | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-02783 | Date Sampled | 21/03/22 | 21/03/22 | 21/03/22 | 21/03/22 | |
| Ground Technology Services | Time Sampled | 1530 | 1540 | 1326 | 1332 | |
| Site Reference: A47 Wansford to Sutton | TP / BH No | TP127 | TP127 | TP129 | TP129 | |
| Project / Job Ref: GT0386 | Additional Refs | ES1 | ES4 | ES1 | ES4 | |
| Order No: M-GT0386/000016 | Depth (m) | 0.10 - 0.20 | 0.40 - 0.50 | 0.10 - 0.20 | 0.50 - 0.60 | |
| Reporting Date: 30/03/2022 | DETS Sample No | 591801 | 591802 | 591804 | 591805 | |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| EPH Texas (C6 - C8) | mg/kg | < 0.05 | NONE | < 0.05 | < 0.05 | < 0.05 | < 0.05 | |
| EPH Texas (>C8 - C10) | mg/kg | < 1 | MCERTS | < 1 | < 1 | < 1 | < 1 | |
| EPH Texas (>C10 - C12) | mg/kg | < 1 | MCERTS | < 1 | < 1 | < 1 | < 1 | |
| EPH Texas (>C12 - C16) | mg/kg | < 1 | MCERTS | < 1 | < 1 | < 1 | < 1 | |
| EPH Texas (>C16 - C21) | mg/kg | < 1 | MCERTS | < 1 | < 1 | < 1 | < 1 | |
| EPH Texas (>C21 - C40) | mg/kg | < 6 | MCERTS | < 6 | < 6 | < 6 | < 6 | |
| EPH Texas (C6 - C40) | mg/kg | < 6 | NONE | < 6 | < 6 | < 6 | < 6 | |

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| Soil Analysis Certificate - BTEX / MTBE | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-02783 | Date Sampled | 21/03/22 | 21/03/22 | 21/03/22 | 21/03/22 | |
| Ground Technology Services | Time Sampled | 1530 | 1540 | 1326 | 1332 | |
| Site Reference: A47 Wansford to Sutton | TP / BH No | TP127 | TP127 | TP129 | TP129 | |
| Project / Job Ref: GT0386 | Additional Refs | ES1 | ES4 | ES1 | ES4 | |
| Order No: M-GT0386/000016 | Depth (m) | 0.10 - 0.20 | 0.40 - 0.50 | 0.10 - 0.20 | 0.50 - 0.60 | |
| Reporting Date: 30/03/2022 | DETS Sample No | 591801 | 591802 | 591804 | 591805 | |

| 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 | |

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Kent ME17 2JN
Tel : 01622 850410

UKAS TESTING 4480

| Leachate Analysis Certificate | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-02783 | Date Sampled | 21/03/22 | 21/03/22 | | | |
| Ground Technology Services | Time Sampled | 1540 | 1332 | | | |
| Site Reference: A47 Wansford to Sutton | TP / BH No | TP127 | TP129 | | | |
| Project / Job Ref: GT0386 | Additional Refs | ES4 | ES4 | | | |
| Order No: M-GT0386/000016 | Depth (m) | 0.40 - 0.50 | 0.50 - 0.60 | | | |
| Reporting Date: 30/03/2022 | DETS Sample No | 591803 | 591806 | | | |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| pH | pH Units | N/a | ISO17025 | 8.5 | 8.3 | | | |
| Total Cyanide | ug/l | < 5 | ISO17025 | < 5 | < 5 | | | |
| Complex Cyanide | ug/l | < 5 | NONE | < 5 | < 5 | | | |
| Free Cyanide | ug/l | < 5 | ISO17025 | < 5 | < 5 | | | |
| Sulphate as $SO_4$ | mg/l | < 1 | ISO17025 | 3 | 3 | | | |
| Ammonia as $NH_4$ | ug/l | < 50 | ISO17025 | 193 | 266 | | | |
| Arsenic | ug/l | < 5 | ISO17025 | < 5 | < 5 | | | |
| Boron | ug/l | < 5 | ISO17025 | 11 | 15 | | | |
| Cadmium | ug/l | < 0.4 | ISO17025 | < 0.4 | < 0.4 | | | |
| Chromium | ug/l | < 5 | ISO17025 | < 5 | < 5 | | | |
| Copper | ug/l | < 5 | ISO17025 | < 5 | 6 | | | |
| Lead | ug/l | < 5 | ISO17025 | < 5 | < 5 | | | |
| Mercury | ug/l | < 0.05 | ISO17025 | < 0.05 | < 0.05 | | | |
| Nickel | ug/l | < 5 | ISO17025 | < 5 | < 5 | | | |
| Selenium | ug/l | < 5 | ISO17025 | < 5 | < 5 | | | |
| Zinc | ug/l | < 2 | ISO17025 | < 2 | < 2 | | | |
| Total Phenols (monohydric) | ug/l | < 10 | ISO17025 | < 10 | < 10 | | | |

Subcontracted analysis (S)

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Maidstone
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Tel : 01622 850410

| Leachate Analysis Certificate - Speciated PAH | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-02783 | Date Sampled | 21/03/22 | 21/03/22 | | | |
| Ground Technology Services | Time Sampled | 1540 | 1332 | | | |
| Site Reference: A47 Wansford to Sutton | TP / BH No | TP127 | TP129 | | | |
| Project / Job Ref: GT0386 | Additional Refs | ES4 | ES4 | | | |
| Order No: M-GT0386/000016 | Depth (m) | 0.40 - 0.50 | 0.50 - 0.60 | | | |
| Reporting Date: 30/03/2022 | DETS Sample No | 591803 | 591806 | | | |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| Naphthalene | ug/l | < 0.01 | NONE | 0.01 | 0.01 | | | |
| Acenaphthylene | ug/l | < 0.01 | NONE | < 0.01 | < 0.01 | | | |
| Acenaphthene | ug/l | < 0.01 | NONE | < 0.01 | 0.01 | | | |
| Fluorene | ug/l | < 0.01 | NONE | < 0.01 | 0.02 | | | |
| Phenanthrene | ug/l | < 0.01 | NONE | 0.07 | 0.11 | | | |
| Anthracene | ug/l | < 0.01 | NONE | < 0.01 | 0.03 | | | |
| Fluoranthene | ug/l | < 0.01 | NONE | 0.03 | 0.04 | | | |
| Pyrene | ug/l | < 0.01 | NONE | 0.02 | 0.02 | | | |
| Benzo(a)anthracene | ug/l | < 0.01 | NONE | < 0.01 | < 0.01 | | | |
| Chrysene | ug/l | < 0.01 | NONE | < 0.01 | < 0.01 | | | |
| Benzo(b)fluoranthene | ug/l | < 0.01 | NONE | < 0.01 | < 0.01 | | | |
| Benzo(k)fluoranthene | ug/l | < 0.01 | NONE | < 0.01 | < 0.01 | | | |
| Benzo(a)pyrene | ug/l | < 0.01 | NONE | < 0.01 | < 0.01 | | | |
| Indeno(1,2,3-cd)pyrene | ug/l | < 0.01 | NONE | < 0.01 | < 0.01 | | | |
| Dibenz(a,h)anthracene | ug/l | < 0.01 | NONE | < 0.01 | < 0.01 | | | |
| Benzo(ghi)perylene | ug/l | < 0.008 | NONE | < 0.008 | < 0.008 | | | |
| Total EPA-16 PAHs | ug/l | < 0.16 | NONE | < 0.16 | 0.24 | | | |

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| Leachate Analysis Certificate - EPH Texas Banded | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-02783 | Date Sampled | 21/03/22 | 21/03/22 | | | |
| Ground Technology Services | Time Sampled | 1540 | 1332 | | | |
| Site Reference: A47 Wansford to Sutton | TP / BH No | TP127 | TP129 | | | |
| Project / Job Ref: GT0386 | Additional Refs | ES4 | ES4 | | | |
| Order No: M-GT0386/000016 | Depth (m) | 0.40 - 0.50 | 0.50 - 0.60 | | | |
| Reporting Date: 30/03/2022 | DETS Sample No | 591803 | 591806 | | | |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| EPH Texas (C6 - C8) | ug/l | < 10 | NONE | < 10 | < 10 | | | |
| EPH Texas (>C8 - C10) | ug/l | < 10 | NONE | < 10 | < 10 | | | |
| EPH Texas (>C10 - C12) | ug/l | < 10 | NONE | < 10 | < 10 | | | |
| EPH Texas (>C12 - C16) | ug/l | < 10 | NONE | 31 | < 10 | | | |
| EPH Texas (>C16 - C21) | ug/l | < 10 | NONE | 99 | 73 | | | |
| EPH Texas (>C21 - C40) | ug/l | < 10 | NONE | 32 | 25 | | | |
| EPH Texas (C6 - C40) | ug/l | < 10 | NONE | 162 | 98 | | | |

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4480

| Leachate Analysis Certificate - BTEX / MTBE | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-02783 | Date Sampled | 21/03/22 | 21/03/22 | | | |
| Ground Technology Services | Time Sampled | 1540 | 1332 | | | |
| Site Reference: A47 Wansford to Sutton | TP / BH No | TP127 | TP129 | | | |
| Project / Job Ref: GT0386 | Additional Refs | ES4 | ES4 | | | |
| Order No: M-GT0386/000016 | Depth (m) | 0.40 - 0.50 | 0.50 - 0.60 | | | |
| Reporting Date: 30/03/2022 | DETS Sample No | 591803 | 591806 | | | |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| Benzene | ug/l | < 1 | ISO17025 | < 1 | < 1 | | | |
| Toluene | ug/l | < 5 | ISO17025 | < 5 | < 5 | | | |
| Ethylbenzene | ug/l | < 5 | ISO17025 | < 5 | < 5 | | | |
| p & m-xylene | ug/l | < 10 | ISO17025 | < 10 | < 10 | | | |
| o-xylene | ug/l | < 5 | ISO17025 | < 5 | < 5 | | | |
| MTBE | ug/l | < 10 | ISO17025 | < 10 | < 10 | | | |

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Tel : 01622 850410

| Soil Analysis Certificate - Sample Descriptions |
|---|
| DETS Report No: 22-02783 |
| Ground Technology Services |
| Site Reference: A47 Wansford to Sutton |
| Project / Job Ref: GT0386 |
| Order No: M-GT0386/000016 |
| Reporting Date: 30/03/2022 |

| DETS Sample No | TP / BH No | Additional Refs | Depth (m) | Moisture Content (%) | Sample Matrix Description |
|---|---|---|---|---|---|
| 591801 | TP127 | ES1 | 0.10 - 0.20 | 14.8 | Brown sandy clay with stones and vegetation |
| 591802 | TP127 | ES4 | 0.40 - 0.50 | 17.3 | Brown sandy clay with stones |
| 591804 | TP129 | ES1 | 0.10 - 0.20 | 31 | Brown sandy clay with vegetation |
| 591805 | TP129 | ES4 | 0.50 - 0.60 | 21.9 | Brown clay |

*Moisture content is part of procedure E003 & is not an accredited test*

Insufficient Sample I/S

Unsuitable Sample U/S

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Tel : 01622 850410

| Soil Analysis Certificate - Methodology & Miscellaneous Information |
|---|
| DETS Report No: 22-02783 |
| Ground Technology Services |
| Site Reference: A47 Wansford to Sutton |
| Project / Job Ref: GT0386 |
| Order No: M-GT0386/000016 |
| Reporting Date: 30/03/2022 |

| 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 | Fraction Organic Carbon (FOC) | Determination of TOC by combustion analyser. | E027 |
| Soil | D | Organic Matter (SOM) | Determination of TOC by combustion analyser. | E027 |
| Soil | D | TOC (Total Organic Carbon) | Determination of TOC by combustion analyser. | E027 |
| Soil | AR | Exchangeable Ammonium | Determination of ammonium by discrete analyser. | E029 |
| 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
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Rose Lane
Lenham Heath
Maidstone
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Tel : 01622 850410

UKAS TESTING 4480

| Water Analysis Certificate - Methodology & Miscellaneous Information |
|---|
| DETS Report No: 22-02783 |
| Ground Technology Services |
| Site Reference: A47 Wansford to Sutton |
| Project / Job Ref: GT0386 |
| Order No: M-GT0386/000016 |
| Reporting Date: 30/03/2022 |

| 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 | F | Ammoniacal Nitrogen | Determination of ammoniacal nitrogen by discrete analyser. | E126 |
| 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 | 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 dete | 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 dichlorometha | 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

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Derwentside Environmental Testing Services Ltd
Unit 1
Rose Lane Industrial Estate
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Kent
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t: 01622 850410

# DETS Report No: 22-03110

| | |
|---|---|
| Site Reference: | A47 Wansford to Sutton |
| Project / Job Ref: | GT0386 |
| Order No: | M-GT0386/000016 |
| Sample Receipt Date: | 04/04/2022 |
| Sample Scheduled Date: | 04/04/2022 |
| Report Issue Number: | 1 |
| Reporting Date: | 12/04/2022 |

Nick Watson
General Manager

Dates of laboratory activities for each tested analyte are available upon request.

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.

For Topsoil and WAC analysis the expanded uncertainty measurement should be considered while evaluating results against compliance values.

DETS Ltd
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Tel : 01622 850410

| Soil Analysis Certificate | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-03110 | Date Sampled | 21/03/22 | 21/03/22 | 21/03/22 | 25/03/22 | 25/03/22 |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Site Reference: A47 Wansford to Sutton | TP / BH No | BH127 | BH127 | BH127 | TP140 | TP140 |
| Project / Job Ref: GT0386 | Additional Refs | ES1 | ES2 | ES2 | ES3 | ES6 |
| Order No: M-GT0386/000016 | Depth (m) | GL - 0.40 | 0.40 - 1.20 | 0.40 - 1.20 | GL - 0.10 | 0.30 - 0.40 |
| Reporting Date: 12/04/2022 | DETS Sample No | 593220 | 593221 | 593222 | 593223 | 593224 |

| Determinand | Unit | RL | Accreditation | | | | | (n) |
|---|---|---|---|---|---|---|---|---|
| Asbestos Screen (S) | N/a | N/a | ISO17025 | | | | | |
| pH | pH Units | N/a | MCERTS | 7.6 | 7.8 | | 7.7 | 7.8 |
| Total Cyanide | mg/kg | < 2 | NONE | < 2 | < 2 | | < 2 | < 2 |
| Complex Cyanide | mg/kg | < 2 | NONE | < 2 | < 2 | | < 2 | < 2 |
| Free Cyanide | mg/kg | < 2 | NONE | < 2 | < 2 | | < 2 | < 2 |
| Total Sulphate as $SO_4$ (S) | mg/kg | < 200 | MCERTS | 487 | 446 | | 388 | 467 |
| Total Sulphate as $SO_4$ (S) | % | < 0.02 | MCERTS | 0.05 | 0.04 | | 0.04 | 0.05 |
| TOC (Total Organic Carbon) | % | < 0.1 | MCERTS | 1.3 | 0.6 | | 1.3 | 1.1 |
| Arsenic (As) (S) | mg/kg | < 2 | MCERTS | 21 | 23 | | 26 | 28 |
| W/S Boron (S) | mg/kg | < 1 | NONE | < 1 | < 1 | | < 1 | < 1 |
| Cadmium (Cd) (S) | mg/kg | < 0.2 | MCERTS | 0.2 | < 0.2 | | 0.3 | 0.2 |
| Chromium (Cr) (S) | mg/kg | < 2 | MCERTS | 26 | 22 | | 20 | 16 |
| Chromium (III) (S) | mg/kg | < 2 | NONE | 26 | 22 | | 20 | 16 |
| Chromium (hexavalent) | mg/kg | < 2 | NONE | < 2 | < 2 | | < 2 | < 2 |
| Copper (Cu) (S) | mg/kg | < 4 | MCERTS | 18 | 15 | | 25 | 15 |
| Lead (Pb) (S) | mg/kg | < 3 | MCERTS | 18 | 10 | | 15 | 9 |
| Mercury (Hg) (S) | mg/kg | < 1 | MCERTS | < 1 | < 1 | | < 1 | < 1 |
| Nickel (Ni) (S) | mg/kg | < 3 | MCERTS | 25 | 23 | | 19 | 20 |
| Selenium (Se) (S) | mg/kg | < 2 | MCERTS | < 3 | < 3 | | < 3 | < 3 |
| Zinc (Zn) (S) | mg/kg | < 3 | MCERTS | 69 | 59 | | 64 | 57 |
| 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°C. The Method Description page describes if the test is performed on the dried or as-received portion

Subcontracted analysis (S)

(n) Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation

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Maidstone
Kent ME17 2JN
Tel : 01622 850410

| Soil Analysis Certificate | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-03110 | Date Sampled | 25/03/22 | 24/03/22 | 24/03/22 | 24/03/22 | 24/03/22 |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Site Reference: A47 Wansford to Sutton | TP / BH No | TP140 | TP146 | TP146 | TP146 | TP148 |
| Project / Job Ref: GT0386 | Additional Refs | ES6 | ES1 | ES4 | ES4 | ES1 |
| Order No: M-GT0386/000016 | Depth (m) | 0.30 - 0.40 | 0.10 - 0.20 | 0.30 - 0.40 | 0.30 - 0.40 | 0.10 - 0.20 |
| Reporting Date: 12/04/2022 | DETS Sample No | 593225 | 593226 | 593227 | 593228 | 593229 |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| Asbestos Screen (S) | N/a | N/a | ISO17025 | | | | | |
| pH | pH Units | N/a | MCERTS | | 6.9 | 7.4 | | 7.2 |
| Total Cyanide | mg/kg | < 2 | NONE | | < 2 | < 2 | | < 2 |
| Complex Cyanide | mg/kg | < 2 | NONE | | < 2 | < 2 | | < 2 |
| Free Cyanide | mg/kg | < 2 | NONE | | < 2 | < 2 | | < 2 |
| Total Sulphate as $SO_4$ (S) | mg/kg | < 200 | MCERTS | | 541 | 369 | | 526 |
| Total Sulphate as $SO_4$ (S) | % | < 0.02 | MCERTS | | 0.05 | 0.04 | | 0.05 |
| TOC (Total Organic Carbon) | % | < 0.1 | MCERTS | | 1.9 | 0.3 | | 1.6 |
| Arsenic (As) (S) | mg/kg | < 2 | MCERTS | | 16 | 3 | | 18 |
| W/S Boron (S) | mg/kg | < 1 | NONE | | < 1 | < 1 | | 1 |
| Cadmium (Cd) (S) | mg/kg | < 0.2 | MCERTS | | 0.3 | 0.2 | | 0.2 |
| Chromium (Cr) (S) | mg/kg | < 2 | MCERTS | | 24 | 7 | | 23 |
| Chromium (III) (S) | mg/kg | < 2 | NONE | | 24 | 7 | | 23 |
| Chromium (hexavalent) | mg/kg | < 2 | NONE | | < 2 | < 2 | | < 2 |
| Copper (Cu) (S) | mg/kg | < 4 | MCERTS | | 21 | 19 | | 18 |
| Lead (Pb) (S) | mg/kg | < 3 | MCERTS | | 22 | 11 | | 23 |
| Mercury (Hg) (S) | mg/kg | < 1 | MCERTS | | < 1 | < 1 | | < 1 |
| Nickel (Ni) (S) | mg/kg | < 3 | MCERTS | | 22 | 13 | | 21 |
| Selenium (Se) (S) | mg/kg | < 2 | MCERTS | | < 3 | < 3 | | < 3 |
| Zinc (Zn) (S) | mg/kg | < 3 | MCERTS | | 59 | 31 | | 60 |
| 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°C. The Method Description page describes if the test is performed on the dried or as-received portion
Subcontracted analysis (S)

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| Soil Analysis Certificate | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-03110 | Date Sampled | 24/03/22 | 24/03/22 | 24/03/22 | 24/03/22 | 23/03/22 |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Site Reference: A47 Wansford to Sutton | TP / BH No | TP148 | TP148 | TP149 | TP149 | TP151 |
| Project / Job Ref: GT0386 | Additional Refs | ES4 | ES4 | ES1 | ES4 | ES1 |
| Order No: M-GT0386/000016 | Depth (m) | 0.40 - 0.50 | 0.40 - 0.50 | 0.10 - 0.20 | 0.30 - 0.40 | 0.10 - 0.20 |
| Reporting Date: 12/04/2022 | DETS Sample No | 593230 | 593231 | 593232 | 593233 | 593234 |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| Asbestos Screen (S) | N/a | N/a | ISO17025 | | | | | |
| pH | pH Units | N/a | MCERTS | 7.2 | | 7.4 | 7.5 | 6.8 |
| Total Cyanide | mg/kg | < 2 | NONE | < 2 | | < 2 | < 2 | < 2 |
| Complex Cyanide | mg/kg | < 2 | NONE | < 2 | | < 2 | < 2 | < 2 |
| Free Cyanide | mg/kg | < 2 | NONE | < 2 | | < 2 | < 2 | < 2 |
| Total Sulphate as $SO_4$ (S) | mg/kg | < 200 | MCERTS | 474 | | 623 | 714 | 548 |
| Total Sulphate as $SO_4$ (S) | % | < 0.02 | MCERTS | 0.05 | | 0.06 | 0.07 | 0.05 |
| TOC (Total Organic Carbon) | % | < 0.1 | MCERTS | 0.4 | | 1.8 | 2 | 1.7 |
| Arsenic (As) (S) | mg/kg | < 2 | MCERTS | 18 | | 13 | 7 | 16 |
| W/S Boron (S) | mg/kg | < 1 | NONE | < 1 | | < 1 | < 1 | < 1 |
| Cadmium (Cd) (S) | mg/kg | < 0.2 | MCERTS | 0.3 | | 0.2 | < 0.2 | 0.3 |
| Chromium (Cr) (S) | mg/kg | < 2 | MCERTS | 22 | | 19 | 10 | 25 |
| Chromium (III) (S) | mg/kg | < 2 | NONE | 22 | | 19 | 10 | 25 |
| Chromium (hexavalent) | mg/kg | < 2 | NONE | < 2 | | < 2 | < 2 | < 2 |
| Copper (Cu) (S) | mg/kg | < 4 | MCERTS | 18 | | 16 | 17 | 20 |
| Lead (Pb) (S) | mg/kg | < 3 | MCERTS | 22 | | 17 | 8 | 22 |
| Mercury (Hg) (S) | mg/kg | < 1 | MCERTS | < 1 | | < 1 | < 1 | < 1 |
| Nickel (Ni) (S) | mg/kg | < 3 | MCERTS | 21 | | 19 | 41 | 24 |
| Selenium (Se) (S) | mg/kg | < 2 | MCERTS | < 3 | | < 3 | < 3 | < 3 |
| Zinc (Zn) (S) | mg/kg | < 3 | MCERTS | 60 | | 52 | 42 | 63 |
| 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°C. The Method Description page describes if the test is performed on the dried or as-received portion
Subcontracted analysis (S)

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| Soil Analysis Certificate | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-03110 | Date Sampled | 23/03/22 | 23/03/22 | 22/03/22 | 22/03/22 | 29/03/22 |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Site Reference: A47 Wansford to Sutton | TP / BH No | TP151 | TP151 | TP153 | TP153 | TP160 |
| Project / Job Ref: GT0386 | Additional Refs | ES4 | ES4 | ES1 | ES5 | ES1 |
| Order No: M-GT0386/000016 | Depth (m) | 0.40 - 0.50 | 0.40 - 0.50 | 0.10 - 0.20 | 0.40 - 0.50 | 0.10 - 0.20 |
| Reporting Date: 12/04/2022 | DETS Sample No | 593235 | 593236 | 593237 | 593238 | 593239 |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| Asbestos Screen (S) | N/a | N/a | ISO17025 | | | | | |
| pH | pH Units | N/a | MCERTS | 7.3 | | 7.3 | 7.7 | 7.3 |
| Total Cyanide | mg/kg | < 2 | NONE | < 2 | | < 2 | < 2 | < 2 |
| Complex Cyanide | mg/kg | < 2 | NONE | < 2 | | < 2 | < 2 | < 2 |
| Free Cyanide | mg/kg | < 2 | NONE | < 2 | | < 2 | < 2 | < 2 |
| Total Sulphate as $SO_4$ (S) | mg/kg | < 200 | MCERTS | 222 | | 650 | 386 | 302 |
| Total Sulphate as $SO_4$ (S) | % | < 0.02 | MCERTS | 0.02 | | 0.07 | 0.04 | 0.03 |
| TOC (Total Organic Carbon) | % | < 0.1 | MCERTS | 0.4 | | 1.8 | 0.5 | 0.7 |
| Arsenic (As) (S) | mg/kg | < 2 | MCERTS | 21 | | 24 | 21 | 18 |
| W/S Boron (S) | mg/kg | < 1 | NONE | < 1 | | < 1 | < 1 | < 1 |
| Cadmium (Cd) (S) | mg/kg | < 0.2 | MCERTS | 0.2 | | 0.3 | 0.2 | 0.2 |
| Chromium (Cr) (S) | mg/kg | < 2 | MCERTS | 27 | | 24 | 24 | 21 |
| Chromium (III) (S) | mg/kg | < 2 | NONE | 27 | | 24 | 24 | 21 |
| Chromium (hexavalent) | mg/kg | < 2 | NONE | < 2 | | < 2 | < 2 | < 2 |
| Copper (Cu) (S) | mg/kg | < 4 | MCERTS | 20 | | 21 | 19 | 16 |
| Lead (Pb) (S) | mg/kg | < 3 | MCERTS | 14 | | 19 | 12 | 14 |
| Mercury (Hg) (S) | mg/kg | < 1 | MCERTS | < 1 | | < 1 | < 1 | < 1 |
| Nickel (Ni) (S) | mg/kg | < 3 | MCERTS | 31 | | 28 | 30 | 21 |
| Selenium (Se) (S) | mg/kg | < 2 | MCERTS | < 3 | | < 3 | < 3 | < 3 |
| Zinc (Zn) (S) | mg/kg | < 3 | MCERTS | 60 | | 68 | 55 | 56 |
| 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°C. The Method Description page describes if the test is performed on the dried or as-received portion
Subcontracted analysis (S)

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| Soil Analysis Certificate | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-03110 | Date Sampled | 29/03/22 | 28/03/22 | 28/03/22 | 23/03/22 | 23/03/22 |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Site Reference: A47 Wansford to Sutton | TP / BH No | TP160 | TP161 | TP161 | TP169 | TP169 |
| Project / Job Ref: GT0386 | Additional Refs | ES4 | ES1 | ES4 | ES1 | ES4 |
| Order No: M-GT0386/000016 | Depth (m) | 0.40 - 0.50 | 0.10 - 0.20 | 0.40 - 0.50 | 0.10 - 0.20 | 0.50 - 0.60 |
| Reporting Date: 12/04/2022 | DETS Sample No | 593240 | 593241 | 593242 | 593243 | 593244 |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| Asbestos Screen (S) | N/a | N/a | ISO17025 | | Not Detected | Not Detected | | |
| pH | pH Units | N/a | MCERTS | 7.3 | 7.4 | 7.8 | 7.7 | 7.6 |
| Total Cyanide | mg/kg | < 2 | NONE | < 2 | < 2 | < 2 | < 2 | < 2 |
| Complex Cyanide | mg/kg | < 2 | NONE | < 2 | < 2 | < 2 | < 2 | < 2 |
| Free Cyanide | mg/kg | < 2 | NONE | < 2 | < 2 | < 2 | < 2 | < 2 |
| Total Sulphate as $SO_4$ (S) | mg/kg | < 200 | MCERTS | 275 | 435 | 507 | 770 | 264 |
| Total Sulphate as $SO_4$ (S) | % | < 0.02 | MCERTS | 0.03 | 0.04 | 0.05 | 0.08 | 0.03 |
| TOC (Total Organic Carbon) | % | < 0.1 | MCERTS | 0.7 | 1.6 | 0.8 | 2.3 | 0.8 |
| Arsenic (As) (S) | mg/kg | < 2 | MCERTS | 30 | 21 | 28 | 14 | 35 |
| W/S Boron (S) | mg/kg | < 1 | NONE | < 1 | < 1 | < 1 | < 1 | < 1 |
| Cadmium (Cd) (S) | mg/kg | < 0.2 | MCERTS | 0.2 | 0.3 | 0.3 | 0.3 | 0.3 |
| Chromium (Cr) (S) | mg/kg | < 2 | MCERTS | 35 | 23 | 27 | 24 | 35 |
| Chromium (III) (S) | mg/kg | < 2 | NONE | 35 | 23 | 27 | 24 | 35 |
| Chromium (hexavalent) | mg/kg | < 2 | NONE | < 2 | < 2 | < 2 | < 2 | < 2 |
| Copper (Cu) (S) | mg/kg | < 4 | MCERTS | 24 | 19 | 17 | 21 | 21 |
| Lead (Pb) (S) | mg/kg | < 3 | MCERTS | 15 | 19 | 14 | 22 | 15 |
| Mercury (Hg) (S) | mg/kg | < 1 | MCERTS | < 1 | < 1 | < 1 | < 1 | < 1 |
| Nickel (Ni) (S) | mg/kg | < 3 | MCERTS | 34 | 22 | 28 | 22 | 40 |
| Selenium (Se) (S) | mg/kg | < 2 | MCERTS | < 3 | < 3 | < 3 | < 3 | < 3 |
| Zinc (Zn) (S) | mg/kg | < 3 | MCERTS | 75 | 75 | 76 | 60 | 79 |
| 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°C. The Method Description page describes if the test is performed on the dried or as-received portion
Subcontracted analysis (S)

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| Soil Analysis Certificate | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-03110 | Date Sampled | 29/03/22 | 29/03/22 | 29/03/22 | 29/03/22 | 24/03/22 |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Site Reference: A47 Wansford to Sutton | TP / BH No | BH121 | BH121 | BH121 | BH121 | BH122 |
| Project / Job Ref: GT0386 | Additional Refs | ES1 | ES2 | ES3 | ES3 | ES5 |
| Order No: M-GT0386/000016 | Depth (m) | 0.20 | 0.50 | 1.00 | 1.00 | GL - 0.30 |
| Reporting Date: 12/04/2022 | DETS Sample No | 593245 | 593246 | 593247 | 593248 | 593249 |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| Asbestos Screen (S) | N/a | N/a | ISO17025 | | | | | |
| pH | pH Units | N/a | MCERTS | 7.7 | 7.8 | 7.9 | | 7.7 |
| Total Cyanide | mg/kg | < 2 | NONE | < 2 | < 2 | < 2 | | < 2 |
| Complex Cyanide | mg/kg | < 2 | NONE | < 2 | < 2 | < 2 | | < 2 |
| Free Cyanide | mg/kg | < 2 | NONE | < 2 | < 2 | < 2 | | < 2 |
| Total Sulphate as $SO_4$ (S) | mg/kg | < 200 | MCERTS | 357 | 234 | 354 | | 381 |
| Total Sulphate as $SO_4$ (S) | % | < 0.02 | MCERTS | 0.04 | 0.02 | 0.04 | | 0.04 |
| TOC (Total Organic Carbon) | % | < 0.1 | MCERTS | 0.9 | 0.6 | 1.7 | | 1.8 |
| Arsenic (As) (S) | mg/kg | < 2 | MCERTS | 45 | 14 | 38 | | 28 |
| W/S Boron (S) | mg/kg | < 1 | NONE | < 1 | < 1 | < 1 | | < 1 |
| Cadmium (Cd) (S) | mg/kg | < 0.2 | MCERTS | 0.4 | < 0.2 | 0.3 | | 0.3 |
| Chromium (Cr) (S) | mg/kg | < 2 | MCERTS | 36 | 11 | 26 | | 21 |
| Chromium (III) (S) | mg/kg | < 2 | NONE | 36 | 11 | 26 | | 21 |
| Chromium (hexavalent) | mg/kg | < 2 | NONE | < 2 | < 2 | < 2 | | < 2 |
| Copper (Cu) (S) | mg/kg | < 4 | MCERTS | 24 | 8 | 19 | | 17 |
| Lead (Pb) (S) | mg/kg | < 3 | MCERTS | 18 | 7 | 14 | | 18 |
| Mercury (Hg) (S) | mg/kg | < 1 | MCERTS | < 1 | < 1 | < 1 | | < 1 |
| Nickel (Ni) (S) | mg/kg | < 3 | MCERTS | 39 | 11 | 29 | | 22 |
| Selenium (Se) (S) | mg/kg | < 2 | MCERTS | < 3 | < 3 | < 3 | | < 3 |
| Zinc (Zn) (S) | mg/kg | < 3 | MCERTS | 84 | 31 | 79 | | 65 |
| 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°C. The Method Description page describes if the test is performed on the dried or as-received portion
Subcontracted analysis (S)

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| Soil Analysis Certificate | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-03110 | Date Sampled | 24/03/22 | 24/03/22 | 24/03/22 | 24/03/22 | 24/03/22 |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Site Reference: A47 Wansford to Sutton | TP / BH No | BH122 | BH126 | BH126 | BH126 | BH126 |
| Project / Job Ref: GT0386 | Additional Refs | ES6 | ES1 | ES2 | ES3 | ES3 |
| Order No: M-GT0386/000016 | Depth (m) | 0.30 - 1.20 | 0.10 | 0.50 | 1.20 | 1.20 |
| Reporting Date: 12/04/2022 | DETS Sample No | 593250 | 593251 | 593252 | 593253 | 593254 |

| Determinand | Unit | RL | Accreditation | (n) | | | | |
|---|---|---|---|---|---|---|---|---|
| Asbestos Screen (S) | N/a | N/a | ISO17025 | | | | | |
| pH | pH Units | N/a | MCERTS | 8.0 | 7.1 | 7.9 | 7.6 | |
| Total Cyanide | mg/kg | < 2 | NONE | < 2 | < 2 | < 2 | < 2 | |
| Complex Cyanide | mg/kg | < 2 | NONE | < 2 | < 2 | < 2 | < 2 | |
| Free Cyanide | mg/kg | < 2 | NONE | < 2 | < 2 | < 2 | < 2 | |
| Total Sulphate as $SO_4$ (S) | mg/kg | < 200 | MCERTS | 508 | 404 | < 200 | 353 | |
| Total Sulphate as $SO_4$ (S) | % | < 0.02 | MCERTS | 0.05 | 0.04 | < 0.02 | 0.04 | |
| TOC (Total Organic Carbon) | % | < 0.1 | MCERTS | 2.5 | 2.2 | 0.7 | 1.3 | |
| Arsenic (As) (S) | mg/kg | < 2 | MCERTS | 16 | 11 | 3 | 8 | |
| W/S Boron (S) | mg/kg | < 1 | NONE | < 1 | < 1 | < 1 | < 1 | |
| Cadmium (Cd) (S) | mg/kg | < 0.2 | MCERTS | 0.2 | 0.2 | < 0.2 | 0.2 | |
| Chromium (Cr) (S) | mg/kg | < 2 | MCERTS | 11 | 21 | 11 | 20 | |
| Chromium (III) (S) | mg/kg | < 2 | NONE | 11 | 21 | 11 | 20 | |
| Chromium (hexavalent) | mg/kg | < 2 | NONE | < 2 | < 2 | < 2 | < 2 | |
| Copper (Cu) (S) | mg/kg | < 4 | MCERTS | 8 | 18 | 18 | 22 | |
| Lead (Pb) (S) | mg/kg | < 3 | MCERTS | 6 | 16 | 10 | 18 | |
| Mercury (Hg) (S) | mg/kg | < 1 | MCERTS | < 1 | < 1 | < 1 | < 1 | |
| Nickel (Ni) (S) | mg/kg | < 3 | MCERTS | 12 | 20 | 5 | 14 | |
| Selenium (Se) (S) | mg/kg | < 2 | MCERTS | < 3 | < 3 | < 3 | < 3 | |
| Zinc (Zn) (S) | mg/kg | < 3 | MCERTS | 33 | 48 | 16 | 41 | |
| 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°C. The Method Description page describes if the test is performed on the dried or as-received portion
Subcontracted analysis (S)

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Tel : 01622 850410

| Soil Analysis Certificate | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-03110 | Date Sampled | 30/03/22 | 30/03/22 | 30/03/22 | | |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | | |
| Site Reference: A47 Wansford to Sutton | TP / BH No | TP159 | TP159 | TP159 | | |
| Project / Job Ref: GT0386 | Additional Refs | ES1 | ES4 | ES4 | | |
| Order No: M-GT0386/000016 | Depth (m) | 0.10 - 0.20 | 0.30 - 0.40 | 0.30 - 0.40 | | |
| Reporting Date: 12/04/2022 | DETS Sample No | 593255 | 593256 | 593257 | | |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| Asbestos Screen (S) | N/a | N/a | ISO17025 | | | | | |
| pH | pH Units | N/a | MCERTS | 7.6 | 7.8 | | | |
| Total Cyanide | mg/kg | < 2 | NONE | < 2 | < 2 | | | |
| Complex Cyanide | mg/kg | < 2 | NONE | < 2 | < 2 | | | |
| Free Cyanide | mg/kg | < 2 | NONE | < 2 | < 2 | | | |
| Total Sulphate as $SO_4$ (S) | mg/kg | < 200 | MCERTS | 473 | 251 | | | |
| Total Sulphate as $SO_4$ (S) | % | < 0.02 | MCERTS | 0.05 | 0.03 | | | |
| TOC (Total Organic Carbon) | % | < 0.1 | MCERTS | 1 | 0.4 | | | |
| Arsenic (As) (S) | mg/kg | < 2 | MCERTS | 25 | 21 | | | |
| W/S Boron (S) | mg/kg | < 1 | NONE | < 1 | < 1 | | | |
| Cadmium (Cd) (S) | mg/kg | < 0.2 | MCERTS | 0.4 | 0.2 | | | |
| Chromium (Cr) (S) | mg/kg | < 2 | MCERTS | 28 | 38 | | | |
| Chromium (III) (S) | mg/kg | < 2 | NONE | 28 | 38 | | | |
| Chromium (hexavalent) | mg/kg | < 2 | NONE | < 2 | < 2 | | | |
| Copper (Cu) (S) | mg/kg | < 4 | MCERTS | 23 | 30 | | | |
| Lead (Pb) (S) | mg/kg | < 3 | MCERTS | 24 | 18 | | | |
| Mercury (Hg) (S) | mg/kg | < 1 | MCERTS | < 1 | < 1 | | | |
| Nickel (Ni) (S) | mg/kg | < 3 | MCERTS | 26 | 34 | | | |
| Selenium (Se) (S) | mg/kg | < 2 | MCERTS | < 3 | < 3 | | | |
| Zinc (Zn) (S) | mg/kg | < 3 | MCERTS | 78 | 85 | | | |
| 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°C. The Method Description page describes if the test is performed on the dried or as-received portion
Subcontracted analysis (S)

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Kent ME17 2JN
Tel : 01622 850410

| Soil Analysis Certificate - Speciated PAHs | | | | | | | |
|---|---|---|---|---|---|---|---|
| DETS Report No: 22-03110 | Date Sampled | 21/03/22 | 21/03/22 | 25/03/22 | 25/03/22 | 24/03/22 |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Site Reference: A47 Wansford to Sutton | TP / BH No | BH127 | BH127 | TP140 | TP140 | TP146 |
| Project / Job Ref: GT0386 | Additional Refs | ES1 | ES2 | ES3 | ES6 | ES1 |
| Order No: M-GT0386/000016 | Depth (m) | GL - 0.40 | 0.40 - 1.20 | GL - 0.10 | 0.30 - 0.40 | 0.10 - 0.20 |
| Reporting Date: 12/04/2022 | DETS Sample No | 593220 | 593221 | 593223 | 593224 | 593226 |

| Determinand | Unit | RL | Accreditation | | | | (n) | |
|---|---|---|---|---|---|---|---|---|
| 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 | < 0.1 | < 0.1 | < 0.1 |
| Pyrene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| Benzo(a)anthracene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 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 | < 0.1 | < 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 | < 0.1 | < 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 |

(n) Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation

DETS Ltd
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| Soil Analysis Certificate - Speciated PAHs | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-03110 | Date Sampled | 24/03/22 | 24/03/22 | 24/03/22 | 24/03/22 | 24/03/22 |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Site Reference: A47 Wansford to Sutton | TP / BH No | TP146 | TP148 | TP148 | TP149 | TP149 |
| Project / Job Ref: GT0386 | Additional Refs | ES4 | ES1 | ES4 | ES1 | ES4 |
| Order No: M-GT0386/000016 | Depth (m) | 0.30 - 0.40 | 0.10 - 0.20 | 0.40 - 0.50 | 0.10 - 0.20 | 0.30 - 0.40 |
| Reporting Date: 12/04/2022 | DETS Sample No | 593227 | 593229 | 593230 | 593232 | 593233 |

| 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 | < 0.1 | < 0.1 | < 0.1 |
| Pyrene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| Benzo(a)anthracene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 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 | < 0.1 | < 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 | < 0.1 | < 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 |

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| Soil Analysis Certificate - Speciated PAHs | | | | | | | |
|---|---|---|---|---|---|---|---|
| DETS Report No: 22-03110 | Date Sampled | 23/03/22 | 23/03/22 | 22/03/22 | 22/03/22 | 29/03/22 |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Site Reference: A47 Wansford to Sutton | TP / BH No | TP151 | TP151 | TP153 | TP153 | TP160 |
| Project / Job Ref: GT0386 | Additional Refs | ES1 | ES4 | ES1 | ES5 | ES1 |
| Order No: M-GT0386/000016 | Depth (m) | 0.10 - 0.20 | 0.40 - 0.50 | 0.10 - 0.20 | 0.40 - 0.50 | 0.10 - 0.20 |
| Reporting Date: 12/04/2022 | DETS Sample No | 593234 | 593235 | 593237 | 593238 | 593239 |

| 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 | < 0.1 | < 0.1 | < 0.1 |
| Pyrene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| Benzo(a)anthracene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 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 | < 0.1 | < 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 | < 0.1 | < 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 |

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| Soil Analysis Certificate - Speciated PAHs | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-03110 | Date Sampled | 29/03/22 | 28/03/22 | 28/03/22 | 23/03/22 | 23/03/22 |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Site Reference: A47 Wansford to Sutton | TP / BH No | TP160 | TP161 | TP161 | TP169 | TP169 |
| Project / Job Ref: GT0386 | Additional Refs | ES4 | ES1 | ES4 | ES1 | ES4 |
| Order No: M-GT0386/000016 | Depth (m) | 0.40 - 0.50 | 0.10 - 0.20 | 0.40 - 0.50 | 0.10 - 0.20 | 0.50 - 0.60 |
| Reporting Date: 12/04/2022 | DETS Sample No | 593240 | 593241 | 593242 | 593243 | 593244 |

| 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 | 0.16 | 0.69 | < 0.1 | < 0.1 |
| Anthracene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | 0.21 | < 0.1 | < 0.1 |
| Fluoranthene | mg/kg | < 0.1 | MCERTS | < 0.1 | 0.44 | 1.38 | < 0.1 | < 0.1 |
| Pyrene | mg/kg | < 0.1 | MCERTS | < 0.1 | 0.39 | 1.23 | < 0.1 | < 0.1 |
| Benzo(a)anthracene | mg/kg | < 0.1 | MCERTS | < 0.1 | 0.19 | 0.67 | < 0.1 | < 0.1 |
| Chrysene | mg/kg | < 0.1 | MCERTS | < 0.1 | 0.23 | 0.67 | < 0.1 | < 0.1 |
| Benzo(b)fluoranthene | mg/kg | < 0.1 | MCERTS | < 0.1 | 0.31 | 0.86 | < 0.1 | < 0.1 |
| Benzo(k)fluoranthene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | 0.31 | < 0.1 | < 0.1 |
| Benzo(a)pyrene | mg/kg | < 0.1 | MCERTS | < 0.1 | 0.24 | 0.77 | < 0.1 | < 0.1 |
| Indeno(1,2,3-cd)pyrene | mg/kg | < 0.1 | MCERTS | < 0.1 | 0.14 | 0.47 | < 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 | 0.15 | 0.46 | < 0.1 | < 0.1 |
| Total EPA-16 PAHs | mg/kg | < 1.6 | MCERTS | < 1.6 | 2.3 | 7.7 | < 1.6 | < 1.6 |

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| Soil Analysis Certificate - Speciated PAHs | | | | | | | |
|---|---|---|---|---|---|---|---|
| DETS Report No: 22-03110 | Date Sampled | 29/03/22 | 29/03/22 | 29/03/22 | 24/03/22 | 24/03/22 |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Site Reference: A47 Wansford to Sutton | TP / BH No | BH121 | BH121 | BH121 | BH122 | BH122 |
| Project / Job Ref: GT0386 | Additional Refs | ES1 | ES2 | ES3 | ES5 | ES6 |
| Order No: M-GT0386/000016 | Depth (m) | 0.20 | 0.50 | 1.00 | GL - 0.30 | 0.30 - 1.20 |
| Reporting Date: 12/04/2022 | DETS Sample No | 593245 | 593246 | 593247 | 593249 | 593250 |

| Determinand | Unit | RL | Accreditation | | | | | (n) |
|---|---|---|---|---|---|---|---|---|
| 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 | < 0.1 | < 0.1 | < 0.1 |
| Pyrene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| Benzo(a)anthracene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 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 | < 0.1 | < 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 | < 0.1 | < 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 |

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| Soil Analysis Certificate - Speciated PAHs | | | | | | | |
|---|---|---|---|---|---|---|---|
| DETS Report No: 22-03110 | Date Sampled | 24/03/22 | 24/03/22 | 24/03/22 | 30/03/22 | 30/03/22 |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Site Reference: A47 Wansford to Sutton | TP / BH No | BH126 | BH126 | BH126 | TP159 | TP159 |
| Project / Job Ref: GT0386 | Additional Refs | ES1 | ES2 | ES3 | ES1 | ES4 |
| Order No: M-GT0386/000016 | Depth (m) | 0.10 | 0.50 | 1.20 | 0.10 - 0.20 | 0.30 - 0.40 |
| Reporting Date: 12/04/2022 | DETS Sample No | 593251 | 593252 | 593253 | 593255 | 593256 |

| 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 | < 0.1 | 0.19 | < 0.1 |
| Pyrene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | 0.16 | < 0.1 |
| Benzo(a)anthracene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 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 | < 0.1 | < 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 | < 0.1 | < 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 |

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| Soil Analysis Certificate - EPH Texas Banded | | | | | | | |
|---|---|---|---|---|---|---|---|
| DETS Report No: 22-03110 | Date Sampled | 21/03/22 | 21/03/22 | 25/03/22 | 25/03/22 | 24/03/22 |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Site Reference: A47 Wansford to Sutton | TP / BH No | BH127 | BH127 | TP140 | TP140 | TP146 |
| Project / Job Ref: GT0386 | Additional Refs | ES1 | ES2 | ES3 | ES6 | ES1 |
| Order No: M-GT0386/000016 | Depth (m) | GL - 0.40 | 0.40 - 1.20 | GL - 0.10 | 0.30 - 0.40 | 0.10 - 0.20 |
| Reporting Date: 12/04/2022 | DETS Sample No | 593220 | 593221 | 593223 | 593224 | 593226 |

| Determinand | Unit | RL | Accreditation | | | | (n) | |
|---|---|---|---|---|---|---|---|---|
| EPH Texas (C6 - C8) | mg/kg | < 0.05 | NONE | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| EPH Texas (>C8 - C10) | mg/kg | < 1 | MCERTS | < 1 | < 1 | < 1 | < 1 | < 1 |
| EPH Texas (>C10 - C12) | mg/kg | < 1 | MCERTS | < 1 | < 1 | < 1 | < 1 | < 1 |
| EPH Texas (>C12 - C16) | mg/kg | < 1 | MCERTS | < 1 | < 1 | < 1 | < 1 | < 1 |
| EPH Texas (>C16 - C21) | mg/kg | < 1 | MCERTS | < 1 | < 1 | < 1 | < 1 | < 1 |
| EPH Texas (>C21 - C40) | mg/kg | < 6 | MCERTS | < 6 | < 6 | < 6 | < 6 | < 6 |
| EPH Texas (C6 - C40) | mg/kg | < 6 | NONE | < 6 | < 6 | < 6 | < 6 | < 6 |

(n) Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation

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| Soil Analysis Certificate - EPH Texas Banded | | | | | | | |
|---|---|---|---|---|---|---|---|
| DETS Report No: 22-03110 | Date Sampled | 24/03/22 | 24/03/22 | 24/03/22 | 24/03/22 | 24/03/22 |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Site Reference: A47 Wansford to Sutton | TP / BH No | TP146 | TP148 | TP148 | TP149 | TP149 |
| Project / Job Ref: GT0386 | Additional Refs | ES4 | ES1 | ES4 | ES1 | ES4 |
| Order No: M-GT0386/000016 | Depth (m) | 0.30 - 0.40 | 0.10 - 0.20 | 0.40 - 0.50 | 0.10 - 0.20 | 0.30 - 0.40 |
| Reporting Date: 12/04/2022 | DETS Sample No | 593227 | 593229 | 593230 | 593232 | 593233 |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| EPH Texas (C6 - C8) | mg/kg | < 0.05 | NONE | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| EPH Texas (>C8 - C10) | mg/kg | < 1 | MCERTS | < 1 | < 1 | < 1 | < 1 | < 1 |
| EPH Texas (>C10 - C12) | mg/kg | < 1 | MCERTS | < 1 | < 1 | < 1 | < 1 | < 1 |
| EPH Texas (>C12 - C16) | mg/kg | < 1 | MCERTS | < 1 | < 1 | < 1 | < 1 | < 1 |
| EPH Texas (>C16 - C21) | mg/kg | < 1 | MCERTS | < 1 | < 1 | < 1 | < 1 | < 1 |
| EPH Texas (>C21 - C40) | mg/kg | < 6 | MCERTS | < 6 | < 6 | < 6 | < 6 | < 6 |
| EPH Texas (C6 - C40) | mg/kg | < 6 | NONE | < 6 | < 6 | < 6 | < 6 | < 6 |

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| Soil Analysis Certificate - EPH Texas Banded | | | | | | | |
|---|---|---|---|---|---|---|---|
| DETS Report No: 22-03110 | Date Sampled | 23/03/22 | 23/03/22 | 22/03/22 | 22/03/22 | 29/03/22 |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Site Reference: A47 Wansford to Sutton | TP / BH No | TP151 | TP151 | TP153 | TP153 | TP160 |
| Project / Job Ref: GT0386 | Additional Refs | ES1 | ES4 | ES1 | ES5 | ES1 |
| Order No: M-GT0386/000016 | Depth (m) | 0.10 - 0.20 | 0.40 - 0.50 | 0.10 - 0.20 | 0.40 - 0.50 | 0.10 - 0.20 |
| Reporting Date: 12/04/2022 | DETS Sample No | 593234 | 593235 | 593237 | 593238 | 593239 |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| EPH Texas (C6 - C8) | mg/kg | < 0.05 | NONE | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| EPH Texas (>C8 - C10) | mg/kg | < 1 | MCERTS | < 1 | < 1 | < 1 | < 1 | < 1 |
| EPH Texas (>C10 - C12) | mg/kg | < 1 | MCERTS | < 1 | < 1 | < 1 | < 1 | < 1 |
| EPH Texas (>C12 - C16) | mg/kg | < 1 | MCERTS | < 1 | < 1 | < 1 | < 1 | < 1 |
| EPH Texas (>C16 - C21) | mg/kg | < 1 | MCERTS | < 1 | < 1 | < 1 | < 1 | < 1 |
| EPH Texas (>C21 - C40) | mg/kg | < 6 | MCERTS | < 6 | < 6 | < 6 | < 6 | < 6 |
| EPH Texas (C6 - C40) | mg/kg | < 6 | NONE | < 6 | < 6 | < 6 | < 6 | < 6 |

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Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

| Soil Analysis Certificate - EPH Texas Banded | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-03110 | Date Sampled | 29/03/22 | 28/03/22 | 28/03/22 | 23/03/22 | 23/03/22 |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Site Reference: A47 Wansford to Sutton | TP / BH No | TP160 | TP161 | TP161 | TP169 | TP169 |
| Project / Job Ref: GT0386 | Additional Refs | ES4 | ES1 | ES4 | ES1 | ES4 |
| Order No: M-GT0386/000016 | Depth (m) | 0.40 - 0.50 | 0.10 - 0.20 | 0.40 - 0.50 | 0.10 - 0.20 | 0.50 - 0.60 |
| Reporting Date: 12/04/2022 | DETS Sample No | 593240 | 593241 | 593242 | 593243 | 593244 |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| EPH Texas (C6 - C8) | mg/kg | < 0.05 | NONE | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| EPH Texas (>C8 - C10) | mg/kg | < 1 | MCERTS | < 1 | < 1 | < 1 | < 1 | < 1 |
| EPH Texas (>C10 - C12) | mg/kg | < 1 | MCERTS | < 1 | < 1 | < 1 | < 1 | < 1 |
| EPH Texas (>C12 - C16) | mg/kg | < 1 | MCERTS | < 1 | < 1 | < 1 | < 1 | < 1 |
| EPH Texas (>C16 - C21) | mg/kg | < 1 | MCERTS | < 1 | 3 | 10 | < 1 | < 1 |
| EPH Texas (>C21 - C40) | mg/kg | < 6 | MCERTS | < 6 | 12 | 28 | < 6 | < 6 |
| EPH Texas (C6 - C40) | mg/kg | < 6 | NONE | < 6 | 15 | 37 | < 6 | < 6 |

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| Soil Analysis Certificate - EPH Texas Banded | | | | | | | |
|---|---|---|---|---|---|---|---|
| DETS Report No: 22-03110 | Date Sampled | 29/03/22 | 29/03/22 | 29/03/22 | 24/03/22 | 24/03/22 |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Site Reference: A47 Wansford to Sutton | TP / BH No | BH121 | BH121 | BH121 | BH122 | BH122 |
| Project / Job Ref: GT0386 | Additional Refs | ES1 | ES2 | ES3 | ES5 | ES6 |
| Order No: M-GT0386/000016 | Depth (m) | 0.20 | 0.50 | 1.00 | GL - 0.30 | 0.30 - 1.20 |
| Reporting Date: 12/04/2022 | DETS Sample No | 593245 | 593246 | 593247 | 593249 | 593250 |

| Determinand | Unit | RL | Accreditation | | | | | (n) |
|---|---|---|---|---|---|---|---|---|
| EPH Texas (C6 - C8) | mg/kg | < 0.05 | NONE | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| EPH Texas (>C8 - C10) | mg/kg | < 1 | MCERTS | < 1 | < 1 | < 1 | < 1 | < 1 |
| EPH Texas (>C10 - C12) | mg/kg | < 1 | MCERTS | < 1 | < 1 | < 1 | < 1 | < 1 |
| EPH Texas (>C12 - C16) | mg/kg | < 1 | MCERTS | < 1 | < 1 | < 1 | < 1 | < 1 |
| EPH Texas (>C16 - C21) | mg/kg | < 1 | MCERTS | < 1 | < 1 | < 1 | < 1 | < 1 |
| EPH Texas (>C21 - C40) | mg/kg | < 6 | MCERTS | < 6 | < 6 | < 6 | < 6 | < 6 |
| EPH Texas (C6 - C40) | mg/kg | < 6 | NONE | < 6 | < 6 | < 6 | < 6 | < 6 |

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Tel : 01622 850410

| Soil Analysis Certificate - EPH Texas Banded | | | | | | | |
|---|---|---|---|---|---|---|---|
| DETS Report No: 22-03110 | Date Sampled | 24/03/22 | 24/03/22 | 24/03/22 | 30/03/22 | 30/03/22 |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Site Reference: A47 Wansford to Sutton | TP / BH No | BH126 | BH126 | BH126 | TP159 | TP159 |
| Project / Job Ref: GT0386 | Additional Refs | ES1 | ES2 | ES3 | ES1 | ES4 |
| Order No: M-GT0386/000016 | Depth (m) | 0.10 | 0.50 | 1.20 | 0.10 - 0.20 | 0.30 - 0.40 |
| Reporting Date: 12/04/2022 | DETS Sample No | 593251 | 593252 | 593253 | 593255 | 593256 |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| EPH Texas (C6 - C8) | mg/kg | < 0.05 | NONE | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| EPH Texas (>C8 - C10) | mg/kg | < 1 | MCERTS | < 1 | < 1 | < 1 | < 1 | < 1 |
| EPH Texas (>C10 - C12) | mg/kg | < 1 | MCERTS | < 1 | < 1 | < 1 | < 1 | < 1 |
| EPH Texas (>C12 - C16) | mg/kg | < 1 | MCERTS | < 1 | < 1 | < 1 | < 1 | < 1 |
| EPH Texas (>C16 - C21) | mg/kg | < 1 | MCERTS | < 1 | < 1 | < 1 | < 1 | < 1 |
| EPH Texas (>C21 - C40) | mg/kg | < 6 | MCERTS | < 6 | < 6 | < 6 | < 6 | < 6 |
| EPH Texas (C6 - C40) | mg/kg | < 6 | NONE | < 6 | < 6 | < 6 | < 6 | < 6 |

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Tel : 01622 850410

| Soil Analysis Certificate - BTEX / MTBE | | | | | | | |
|---|---|---|---|---|---|---|---|
| DETS Report No: 22-03110 | Date Sampled | 21/03/22 | 21/03/22 | 25/03/22 | 25/03/22 | 24/03/22 |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Site Reference: A47 Wansford to Sutton | TP / BH No | BH127 | BH127 | TP140 | TP140 | TP146 |
| Project / Job Ref: GT0386 | Additional Refs | ES1 | ES2 | ES3 | ES6 | ES1 |
| Order No: M-GT0386/000016 | Depth (m) | GL - 0.40 | 0.40 - 1.20 | GL - 0.10 | 0.30 - 0.40 | 0.10 - 0.20 |
| Reporting Date: 12/04/2022 | DETS Sample No | 593220 | 593221 | 593223 | 593224 | 593226 |

| Determinand | Unit | RL | Accreditation | | | | (n) | |
|---|---|---|---|---|---|---|---|---|
| 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 |

(n) Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation

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| Soil Analysis Certificate - BTEX / MTBE | | | | | | | |
|---|---|---|---|---|---|---|---|
| DETS Report No: 22-03110 | Date Sampled | 24/03/22 | 24/03/22 | 24/03/22 | 24/03/22 | 24/03/22 |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Site Reference: A47 Wansford to Sutton | TP / BH No | TP146 | TP148 | TP148 | TP149 | TP149 |
| Project / Job Ref: GT0386 | Additional Refs | ES4 | ES1 | ES4 | ES1 | ES4 |
| Order No: M-GT0386/000016 | Depth (m) | 0.30 - 0.40 | 0.10 - 0.20 | 0.40 - 0.50 | 0.10 - 0.20 | 0.30 - 0.40 |
| Reporting Date: 12/04/2022 | DETS Sample No | 593227 | 593229 | 593230 | 593232 | 593233 |

| 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 |

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| Soil Analysis Certificate - BTEX / MTBE | | | | | | | |
|---|---|---|---|---|---|---|---|
| DETS Report No: 22-03110 | Date Sampled | 23/03/22 | 23/03/22 | 22/03/22 | 22/03/22 | 29/03/22 | |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied | |
| Site Reference: A47 Wansford to Sutton | TP / BH No | TP151 | TP151 | TP153 | TP153 | TP160 | |
| Project / Job Ref: GT0386 | Additional Refs | ES1 | ES4 | ES1 | ES5 | ES1 | |
| Order No: M-GT0386/000016 | Depth (m) | 0.10 - 0.20 | 0.40 - 0.50 | 0.10 - 0.20 | 0.40 - 0.50 | 0.10 - 0.20 | |
| Reporting Date: 12/04/2022 | DETS Sample No | 593234 | 593235 | 593237 | 593238 | 593239 | |

| 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 |

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| Soil Analysis Certificate - BTEX / MTBE | | | | | | | |
|---|---|---|---|---|---|---|---|
| DETS Report No: 22-03110 | Date Sampled | 29/03/22 | 28/03/22 | 28/03/22 | 23/03/22 | 23/03/22 |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Site Reference: A47 Wansford to Sutton | TP / BH No | TP160 | TP161 | TP161 | TP169 | TP169 |
| Project / Job Ref: GT0386 | Additional Refs | ES4 | ES1 | ES4 | ES1 | ES4 |
| Order No: M-GT0386/000016 | Depth (m) | 0.40 - 0.50 | 0.10 - 0.20 | 0.40 - 0.50 | 0.10 - 0.20 | 0.50 - 0.60 |
| Reporting Date: 12/04/2022 | DETS Sample No | 593240 | 593241 | 593242 | 593243 | 593244 |

| 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 |

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| Soil Analysis Certificate - BTEX / MTBE | | | | | | | |
|---|---|---|---|---|---|---|---|
| DETS Report No: 22-03110 | Date Sampled | 29/03/22 | 29/03/22 | 29/03/22 | 24/03/22 | 24/03/22 |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Site Reference: A47 Wansford to Sutton | TP / BH No | BH121 | BH121 | BH121 | BH122 | BH122 |
| Project / Job Ref: GT0386 | Additional Refs | ES1 | ES2 | ES3 | ES5 | ES6 |
| Order No: M-GT0386/000016 | Depth (m) | 0.20 | 0.50 | 1.00 | GL - 0.30 | 0.30 - 1.20 |
| Reporting Date: 12/04/2022 | DETS Sample No | 593245 | 593246 | 593247 | 593249 | 593250 |

| Determinand | Unit | RL | Accreditation | | | | | (n) |
|---|---|---|---|---|---|---|---|---|
| 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 |

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Maidstone
Kent ME17 2JN
Tel : 01622 850410

| Soil Analysis Certificate - BTEX / MTBE | | | | | | | |
|---|---|---|---|---|---|---|---|
| DETS Report No: 22-03110 | Date Sampled | 24/03/22 | 24/03/22 | 24/03/22 | 30/03/22 | 30/03/22 |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Site Reference: A47 Wansford to Sutton | TP / BH No | BH126 | BH126 | BH126 | TP159 | TP159 |
| Project / Job Ref: GT0386 | Additional Refs | ES1 | ES2 | ES3 | ES1 | ES4 |
| Order No: M-GT0386/000016 | Depth (m) | 0.10 | 0.50 | 1.20 | 0.10 - 0.20 | 0.30 - 0.40 |
| Reporting Date: 12/04/2022 | DETS Sample No | 593251 | 593252 | 593253 | 593255 | 593256 |

| 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 |

DETS Ltd
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Kent ME17 2JN
Tel : 01622 850410

UKAS TESTING 4480

| Leachate Analysis Certificate | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-03110 | Date Sampled | 21/03/22 | 25/03/22 | 24/03/22 | 24/03/22 | 23/03/22 |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Site Reference: A47 Wansford to Sutton | TP / BH No | BH127 | TP140 | TP146 | TP148 | TP151 |
| Project / Job Ref: GT0386 | Additional Refs | ES2 | ES6 | ES4 | ES4 | ES4 |
| Order No: M-GT0386/000016 | Depth (m) | 0.40 - 1.20 | 0.30 - 0.40 | 0.30 - 0.40 | 0.40 - 0.50 | 0.40 - 0.50 |
| Reporting Date: 12/04/2022 | DETS Sample No | 593222 | 593225 | 593228 | 593231 | 593236 |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| pH | pH Units | N/a | ISO17025 | 7.7 | 8.0 | 7.3 | 7.0 | 7.4 |
| Total Cyanide | ug/l | < 5 | ISO17025 | < 5 | < 5 | < 5 | < 5 | < 5 |
| Complex Cyanide | ug/l | < 5 | NONE | < 5 | < 5 | < 5 | < 5 | < 5 |
| Free Cyanide | ug/l | < 5 | ISO17025 | < 5 | < 5 | < 5 | < 5 | < 5 |
| Sulphate as $SO_4$ | mg/l | < 1 | ISO17025 | 3 | 2 | 4 | 2 | 2 |
| Ammonia as $NH_4$ | ug/l | < 50 | ISO17025 | 649 | 897 | 795 | 1060 | 551 |
| Arsenic | ug/l | < 5 | ISO17025 | < 5 | < 5 | < 5 | < 5 | < 5 |
| Boron | ug/l | < 5 | ISO17025 | 14 | 8 | 8 | 12 | 19 |
| 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 |
| Copper | ug/l | < 5 | ISO17025 | < 5 | < 5 | < 5 | < 5 | < 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 |
| 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 | 5 | 2 | < 2 | 2 | 6 |
| Total Phenols (monohydric) | ug/l | < 10 | ISO17025 | < 10 | < 10 | < 10 | < 10 | < 10 |

Subcontracted analysis (S)

DETS Ltd
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Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

UKAS TESTING 4480

| Leachate Analysis Certificate | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-03110 | Date Sampled | 28/03/22 | 28/03/22 | 29/03/22 | 24/03/22 | 30/03/22 |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Site Reference: A47 Wansford to Sutton | TP / BH No | TP161 | TP161 | BH121 | BH126 | TP159 |
| Project / Job Ref: GT0386 | Additional Refs | ES1 | ES4 | ES3 | ES3 | ES4 |
| Order No: M-GT0386/000016 | Depth (m) | 0.10 - 0.20 | 0.40 - 0.50 | 1.00 | 1.20 | 0.30 - 0.40 |
| Reporting Date: 12/04/2022 | DETS Sample No | 593241 | 593242 | 593248 | 593254 | 593257 |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| pH | pH Units | N/a | ISO17025 | | | 7.9 | 7.1 | 7.1 |
| Total Cyanide | ug/l | < 5 | ISO17025 | | | < 5 | < 5 | < 5 |
| Complex Cyanide | ug/l | < 5 | NONE | | | < 5 | < 5 | < 5 |
| Free Cyanide | ug/l | < 5 | ISO17025 | | | < 5 | < 5 | < 5 |
| Sulphate as $SO_4$ | mg/l | < 1 | ISO17025 | | | 3 | 4 | 3 |
| Ammonia as $NH_4$ | ug/l | < 50 | ISO17025 | | | 1490 | 993 | 2510 |
| Arsenic | ug/l | < 5 | ISO17025 | | | < 5 | < 5 | < 5 |
| Boron | ug/l | < 5 | ISO17025 | | | 8 | 26 | 9 |
| Cadmium | ug/l | < 0.4 | ISO17025 | | | < 0.4 | < 0.4 | < 0.4 |
| Chromium | ug/l | < 5 | ISO17025 | | | < 5 | < 5 | < 5 |
| Copper | 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 |
| Nickel | ug/l | < 5 | ISO17025 | | | < 5 | < 5 | < 5 |
| Selenium | ug/l | < 5 | ISO17025 | | | < 5 | < 5 | < 5 |
| Zinc | ug/l | < 2 | ISO17025 | | | 4 | 7 | 2 |
| Total Phenols (monohydric) | ug/l | < 10 | ISO17025 | | | < 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

| Leachate Analysis Certificate - Speciated PAH | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-03110 | Date Sampled | 21/03/22 | 25/03/22 | 24/03/22 | 24/03/22 | 23/03/22 |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Site Reference: A47 Wansford to Sutton | TP / BH No | BH127 | TP140 | TP146 | TP148 | TP151 |
| Project / Job Ref: GT0386 | Additional Refs | ES2 | ES6 | ES4 | ES4 | ES4 |
| Order No: M-GT0386/000016 | Depth (m) | 0.40 - 1.20 | 0.30 - 0.40 | 0.30 - 0.40 | 0.40 - 0.50 | 0.40 - 0.50 |
| Reporting Date: 12/04/2022 | DETS Sample No | 593222 | 593225 | 593228 | 593231 | 593236 |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| Naphthalene | ug/l | < 0.01 | NONE | 0.01 | 0.02 | 0.02 | 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 | 0.02 | 0.02 |
| Fluorene | ug/l | < 0.01 | NONE | < 0.01 | 0.01 | 0.01 | 0.02 | 0.06 |
| Phenanthrene | ug/l | < 0.01 | NONE | 0.29 | 0.05 | 0.03 | 0.04 | 0.10 |
| Anthracene | ug/l | < 0.01 | NONE | 0.06 | < 0.01 | < 0.01 | 0.01 | 0.02 |
| Fluoranthene | ug/l | < 0.01 | NONE | 0.29 | 0.01 | < 0.01 | 0.02 | 0.03 |
| Pyrene | ug/l | < 0.01 | NONE | 0.19 | 0.01 | < 0.01 | 0.01 | 0.02 |
| Benzo(a)anthracene | ug/l | < 0.01 | NONE | 0.04 | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Chrysene | ug/l | < 0.01 | NONE | 0.03 | < 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 | < 0.16 | NONE | 0.92 | < 0.16 | < 0.16 | < 0.16 | 0.26 |

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| Leachate Analysis Certificate - Speciated PAH | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-03110 | Date Sampled | 29/03/22 | 24/03/22 | 30/03/22 | | |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | | |
| Site Reference: A47 Wansford to Sutton | TP / BH No | BH121 | BH126 | TP159 | | |
| Project / Job Ref: GT0386 | Additional Refs | ES3 | ES3 | ES4 | | |
| Order No: M-GT0386/000016 | Depth (m) | 1.00 | 1.20 | 0.30 - 0.40 | | |
| Reporting Date: 12/04/2022 | DETS Sample No | 593248 | 593254 | 593257 | | |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| Naphthalene | ug/l | < 0.01 | NONE | 0.11 | 0.02 | 0.01 | | |
| Acenaphthylene | ug/l | < 0.01 | NONE | 0.02 | < 0.01 | < 0.01 | | |
| Acenaphthene | ug/l | < 0.01 | NONE | 0.02 | 0.02 | 0.01 | | |
| Fluorene | ug/l | < 0.01 | NONE | 0.04 | 0.02 | < 0.01 | | |
| Phenanthrene | ug/l | < 0.01 | NONE | 0.11 | 0.05 | 0.07 | | |
| Anthracene | ug/l | < 0.01 | NONE | 0.03 | 0.01 | 0.01 | | |
| Fluoranthene | ug/l | < 0.01 | NONE | 0.03 | 0.02 | 0.02 | | |
| Pyrene | ug/l | < 0.01 | NONE | 0.02 | 0.01 | 0.01 | | |
| Benzo(a)anthracene | ug/l | < 0.01 | NONE | < 0.01 | < 0.01 | < 0.01 | | |
| Chrysene | ug/l | < 0.01 | NONE | < 0.01 | < 0.01 | < 0.01 | | |
| Benzo(b)fluoranthene | ug/l | < 0.01 | NONE | < 0.01 | < 0.01 | < 0.01 | | |
| Benzo(k)fluoranthene | ug/l | < 0.01 | NONE | < 0.01 | < 0.01 | < 0.01 | | |
| Benzo(a)pyrene | ug/l | < 0.01 | NONE | < 0.01 | < 0.01 | < 0.01 | | |
| Indeno(1,2,3-cd)pyrene | ug/l | < 0.01 | NONE | < 0.01 | < 0.01 | < 0.01 | | |
| Dibenz(a,h)anthracene | ug/l | < 0.01 | NONE | < 0.01 | < 0.01 | < 0.01 | | |
| Benzo(ghi)perylene | ug/l | < 0.008 | NONE | < 0.008 | < 0.008 | < 0.008 | | |
| Total EPA-16 PAHs | ug/l | < 0.16 | NONE | 0.38 | < 0.16 | < 0.16 | | |

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| Leachate Analysis Certificate - EPH Texas Banded | | | | | | | |
|---|---|---|---|---|---|---|---|
| DETS Report No: 22-03110 | Date Sampled | 21/03/22 | 25/03/22 | 24/03/22 | 24/03/22 | 23/03/22 |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Site Reference: A47 Wansford to Sutton | TP / BH No | BH127 | TP140 | TP146 | TP148 | TP151 |
| Project / Job Ref: GT0386 | Additional Refs | ES2 | ES6 | ES4 | ES4 | ES4 |
| Order No: M-GT0386/000016 | Depth (m) | 0.40 - 1.20 | 0.30 - 0.40 | 0.30 - 0.40 | 0.40 - 0.50 | 0.40 - 0.50 |
| Reporting Date: 12/04/2022 | DETS Sample No | 593222 | 593225 | 593228 | 593231 | 593236 |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| EPH Texas (C6 - C8) | ug/l | < 10 | NONE | < 10 | < 10 | < 10 | < 10 | < 10 |
| EPH Texas (>C8 - C10) | ug/l | < 10 | NONE | < 10 | < 10 | < 10 | < 10 | < 10 |
| EPH Texas (>C10 - C12) | ug/l | < 10 | NONE | < 10 | < 10 | < 10 | < 10 | < 10 |
| EPH Texas (>C12 - C16) | ug/l | < 10 | NONE | 13 | < 10 | < 10 | < 10 | < 10 |
| EPH Texas (>C16 - C21) | ug/l | < 10 | NONE | 77 | 22 | 16 | 34 | 28 |
| EPH Texas (>C21 - C40) | ug/l | < 10 | NONE | 18 | < 10 | < 10 | < 10 | < 10 |
| EPH Texas (C6 - C40) | ug/l | < 10 | NONE | 108 | 22 | 16 | 34 | 28 |

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| Leachate Analysis Certificate - EPH Texas Banded | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-03110 | Date Sampled | 29/03/22 | 24/03/22 | 30/03/22 | | |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | | |
| Site Reference: A47 Wansford to Sutton | TP / BH No | BH121 | BH126 | TP159 | | |
| Project / Job Ref: GT0386 | Additional Refs | ES3 | ES3 | ES4 | | |
| Order No: M-GT0386/000016 | Depth (m) | 1.00 | 1.20 | 0.30 - 0.40 | | |
| Reporting Date: 12/04/2022 | DETS Sample No | 593248 | 593254 | 593257 | | |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| EPH Texas (C6 - C8) | ug/l | < 10 | NONE | < 10 | < 10 | < 10 | | |
| EPH Texas (>C8 - C10) | ug/l | < 10 | NONE | < 10 | < 10 | < 10 | | |
| EPH Texas (>C10 - C12) | ug/l | < 10 | NONE | < 10 | < 10 | < 10 | | |
| EPH Texas (>C12 - C16) | ug/l | < 10 | NONE | 11 | 29 | 22 | | |
| EPH Texas (>C16 - C21) | ug/l | < 10 | NONE | 53 | 80 | 96 | | |
| EPH Texas (>C21 - C40) | ug/l | < 10 | NONE | < 10 | 21 | 136 | | |
| EPH Texas (C6 - C40) | ug/l | < 10 | NONE | 65 | 129 | 254 | | |

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UKAS TESTING 4480

| Leachate Analysis Certificate - BTEX / MTBE | | | | | | | |
|---|---|---|---|---|---|---|---|
| DETS Report No: 22-03110 | Date Sampled | 21/03/22 | 25/03/22 | 24/03/22 | 24/03/22 | 23/03/22 |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Site Reference: A47 Wansford to Sutton | TP / BH No | BH127 | TP140 | TP146 | TP148 | TP151 |
| Project / Job Ref: GT0386 | Additional Refs | ES2 | ES6 | ES4 | ES4 | ES4 |
| Order No: M-GT0386/000016 | Depth (m) | 0.40 - 1.20 | 0.30 - 0.40 | 0.30 - 0.40 | 0.40 - 0.50 | 0.40 - 0.50 |
| Reporting Date: 12/04/2022 | DETS Sample No | 593222 | 593225 | 593228 | 593231 | 593236 |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| 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 |

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UKAS TESTING 4480

| Leachate Analysis Certificate - BTEX / MTBE | | | | | | | |
|---|---|---|---|---|---|---|---|
| DETS Report No: 22-03110 | Date Sampled | 29/03/22 | 24/03/22 | 30/03/22 | | | |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | | | |
| Site Reference: A47 Wansford to Sutton | TP / BH No | BH121 | BH126 | TP159 | | | |
| Project / Job Ref: GT0386 | Additional Refs | ES3 | ES3 | ES4 | | | |
| Order No: M-GT0386/000016 | Depth (m) | 1.00 | 1.20 | 0.30 - 0.40 | | | |
| Reporting Date: 12/04/2022 | DETS Sample No | 593248 | 593254 | 593257 | | | |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| Benzene | ug/l | < 1 | ISO17025 | < 1 | < 1 | < 1 | | |
| Toluene | ug/l | < 5 | ISO17025 | < 5 | < 5 | < 5 | | |
| Ethylbenzene | ug/l | < 5 | ISO17025 | < 5 | < 5 | < 5 | | |
| p & m-xylene | ug/l | < 10 | ISO17025 | < 10 | < 10 | < 10 | | |
| o-xylene | ug/l | < 5 | ISO17025 | < 5 | < 5 | < 5 | | |
| MTBE | ug/l | < 10 | ISO17025 | < 10 | < 10 | < 10 | | |

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## Waste Acceptance Criteria Analytical Certificate - BS EN 12457/3

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| DETS Report No: 22-03110 | | Date Sampled | 28/03/22 | | | | Landfill Waste Acceptance Criteria Limits | | |
| Ground Technology Services | | Time Sampled | None Supplied | | | | Inert Waste Landfill | Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill | Hazardous Waste Landfill |
| Site Reference: A47 Wansford to Sutton | | TP / BH No | TP161 | | | | | | |
| Project / Job Ref: GT0386 | | Additional Refs | ES1 | | | | | | |
| Order No: M-GT0386/000016 | | Depth (m) | 0.10 - 0.20 | | | | | | |
| Reporting Date: 12/04/2022 | | DETS Sample No | 593241 | | | | | | |
| Determinand | Unit | MDL | | | | | | | |
| TOC[MU] | % | < 0.1 | 1.6 | | | | 3% | 5% | 6% |
| Loss on Ignition | % | < 0.01 | 4.20 | | | | -- | -- | 10% |
| BTEX[MU] | mg/kg | < 0.05 | < 0.05 | | | | 6 | -- | -- |
| Sum of PCBs | mg/kg | < 0.1 | < 0.1 | | | | 1 | -- | -- |
| Mineral Oil[MU] | mg/kg | < 10 | < 10 | | | | 500 | -- | -- |
| Total PAH[MU] | mg/kg | < 1.7 | 2.3 | | | | 100 | -- | -- |
| pH[MU] | pH Units | N/a | 7.4 | | | | -- | >6 | -- |
| Acid Neutralisation Capacity | mol/kg (+/-) | < 1 | < 1 | | | | -- | To be evaluated | To be evaluated |
| Eluate Analysis | | | 2:1 mg/l | 8:1 mg/l | | Cumulative 10:1 mg/kg | Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg (mg/kg) | | |
| Arsenic[U] | | | < 0.01 | < 0.01 | | < 0.2 | 0.5 | 2 | 25 |
| Barium[U] | | | < 0.02 | < 0.02 | | < 0.1 | 20 | 100 | 300 |
| Cadmium[U] | | | < 0.0005 | < 0.0005 | | < 0.02 | 0.04 | 1 | 5 |
| Chromium[U] | | | < 0.005 | < 0.005 | | < 0.20 | 0.5 | 10 | 70 |
| Copper[U] | | | < 0.01 | < 0.01 | | < 0.5 | 2 | 50 | 100 |
| Mercury[U] | | | < 0.0005 | < 0.0005 | | < 0.005 | 0.01 | 0.2 | 2 |
| Molybdenum[U] | | | 0.003 | 0.001 | | < 0.1 | 0.5 | 10 | 30 |
| Nickel[U] | | | < 0.007 | < 0.007 | | < 0.2 | 0.4 | 10 | 40 |
| Lead[U] | | | < 0.005 | < 0.005 | | < 0.2 | 0.5 | 10 | 50 |
| Antimony[U] | | | < 0.005 | < 0.005 | | < 0.05 | 0.06 | 0.7 | 5 |
| Selenium[U] | | | < 0.005 | < 0.005 | | < 0.05 | 0.1 | 0.5 | 7 |
| Zinc[U] | | | 0.034 | < 0.005 | | < 0.2 | 4 | 50 | 200 |
| Chloride[U] | | | 3 | 3 | | 28 | 800 | 15000 | 25000 |
| Fluoride[U] | | | 1.3 | 0.8 | | 8.6 | 10 | 150 | 500 |
| Sulphate[U] | | | 4 | 2 | | 26 | 1000 | 20000 | 50000 |
| TDS | | | 96 | 66 | | 690 | 4000 | 60000 | 100000 |
| Phenol Index | | | < 0.01 | < 0.01 | | < 0.5 | 1 | - | - |
| DOC | | | 18.8 | 9.9 | | 108 | 500 | 800 | 1000 |
| Leach Test Information | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| Sample Mass (kg) | | | 0.20 | | | | | | |
| Dry Matter (%) | | | 86.5 | | | | | | |
| Moisture (%) | | | 15.8 | | | | | | |
| Stage 1 | | | | | | | | | |
| Volume Eluate L2 (litres) | | | 0.32 | | | | | | |
| Filtered Eluate VE1 (litres) | | | 0.17 | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Samples Descriptions page describes if the test is performed on the dried or as-received portion
Stated limits are for guidance only and DETS Ltd cannot be held responsible for any discrepencies with current legislation
M Denotes MCERTS accredited test
U Denotes ISO17025 accredited test

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## Waste Acceptance Criteria Analytical Certificate - BS EN 12457/3

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| DETS Report No: 22-03110 | | Date Sampled | 28/03/22 | | | | Landfill Waste Acceptance Criteria Limits | | |
| Ground Technology Services | | Time Sampled | None Supplied | | | | Inert Waste Landfill | Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill | Hazardous Waste Landfill |
| Site Reference: A47 Wansford to Sutton | | TP / BH No | TP161 | | | | | | |
| Project / Job Ref: GT0386 | | Additional Refs | ES4 | | | | | | |
| Order No: M-GT0386/000016 | | Depth (m) | 0.40 - 0.50 | | | | | | |
| Reporting Date: 12/04/2022 | | DETS Sample No | 593242 | | | | | | |
| Determinand | Unit | MDL | | | | | | | |
| TOC[MU] | % | < 0.1 | 0.8 | | | | 3% | 5% | 6% |
| Loss on Ignition | % | < 0.01 | 4.20 | | | | -- | -- | 10% |
| BTEX[MU] | mg/kg | < 0.05 | < 0.05 | | | | 6 | -- | -- |
| Sum of PCBs | mg/kg | < 0.1 | < 0.1 | | | | 1 | -- | -- |
| Mineral Oil[MU] | mg/kg | < 10 | < 10 | | | | 500 | -- | -- |
| Total PAH[MU] | mg/kg | < 1.7 | 7.8 | | | | 100 | -- | -- |
| pH[MU] | pH Units | N/a | 7.8 | | | | -- | >6 | -- |
| Acid Neutralisation Capacity | mol/kg (+/-) | < 1 | 1 | | | | -- | To be evaluated | To be evaluated |
| Eluate Analysis | | | 2:1 mg/l | 8:1 mg/l | | Cumulative 10:1 mg/kg | Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg (mg/kg) | | |
| Arsenic[U] | | | < 0.01 | < 0.01 | | < 0.2 | 0.5 | 2 | 25 |
| Barium[U] | | | < 0.02 | < 0.02 | | < 0.1 | 20 | 100 | 300 |
| Cadmium[U] | | | < 0.0005 | < 0.0005 | | < 0.02 | 0.04 | 1 | 5 |
| Chromium[U] | | | < 0.005 | < 0.005 | | < 0.20 | 0.5 | 10 | 70 |
| Copper[U] | | | < 0.01 | < 0.01 | | < 0.5 | 2 | 50 | 100 |
| Mercury[U] | | | < 0.0005 | < 0.0005 | | < 0.005 | 0.01 | 0.2 | 2 |
| Molybdenum[U] | | | 0.002 | 0.002 | | < 0.1 | 0.5 | 10 | 30 |
| Nickel[U] | | | < 0.007 | < 0.007 | | < 0.2 | 0.4 | 10 | 40 |
| Lead[U] | | | < 0.005 | < 0.005 | | < 0.2 | 0.5 | 10 | 50 |
| Antimony[U] | | | < 0.005 | < 0.005 | | < 0.05 | 0.06 | 0.7 | 5 |
| Selenium[U] | | | < 0.005 | < 0.005 | | < 0.05 | 0.1 | 0.5 | 7 |
| Zinc[U] | | | 0.026 | < 0.005 | | < 0.2 | 4 | 50 | 200 |
| Chloride[U] | | | 2 | 2 | | 22 | 800 | 15000 | 25000 |
| Fluoride[U] | | | 0.5 | < 0.5 | | < 1 | 10 | 150 | 500 |
| Sulphate[U] | | | 36 | 5 | | 82 | 1000 | 20000 | 50000 |
| TDS | | | 129 | 74 | | 800 | 4000 | 60000 | 100000 |
| Phenol Index | | | < 0.01 | < 0.01 | | < 0.5 | 1 | - | - |
| DOC | | | 13.5 | 11.9 | | 120 | 500 | 800 | 1000 |
| Leach Test Information | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| Sample Mass (kg) | | | 0.19 | | | | | | |
| Dry Matter (%) | | | 94.1 | | | | | | |
| Moisture (%) | | | 6.4 | | | | | | |
| Stage 1 | | | | | | | | | |
| Volume Eluate L2 (litres) | | | 0.34 | | | | | | |
| Filtered Eluate VE1 (litres) | | | 0.19 | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Samples Descriptions page describes if the test is performed on the dried or as-received portion
Stated limits are for guidance only and DETS Ltd cannot be held responsible for any discrepencies with current legislation
M Denotes MCERTS accredited test
U Denotes ISO17025 accredited test

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| Soil Analysis Certificate - Sample Descriptions |
|---|
| DETS Report No: 22-03110 |
| Ground Technology Services |
| Site Reference: A47 Wansford to Sutton |
| Project / Job Ref: GT0386 |
| Order No: M-GT0386/000016 |
| Reporting Date: 12/04/2022 |

| DETS Sample No | TP / BH No | Additional Refs | Depth (m) | Moisture Content (%) | Sample Matrix Description |
|---|---|---|---|---|---|
| $ 593220 | BH127 | ES1 | GL - 0.40 | 12.9 | Brown sandy clay with stones |
| $ 593221 | BH127 | ES2 | 0.40 - 1.20 | 9.5 | Brown sandy clay with stones |
| 593223 | TP140 | ES3 | GL - 0.10 | 9.7 | Brown sandy clay with stones |
| 593224 | TP140 | ES6 | 0.30 - 0.40 | 8.2 | Brown sandy gravel with stones |
| $ 593226 | TP146 | ES1 | 0.10 - 0.20 | 15.2 | Brown sandy clay |
| $ 593227 | TP146 | ES4 | 0.30 - 0.40 | 7.6 | Light brown sandy clay |
| $ 593229 | TP148 | ES1 | 0.10 - 0.20 | 13.4 | Brown sandy clay with stones |
| $ 593230 | TP148 | ES4 | 0.40 - 0.50 | 11.3 | Light brown sandy clay |
| $ 593232 | TP149 | ES1 | 0.10 - 0.20 | 15.7 | Brown sandy clay |
| $ 593233 | TP149 | ES4 | 0.30 - 0.40 | 17 | Brown sandy clay |
| $ 593234 | TP151 | ES1 | 0.10 - 0.20 | 15.1 | Brown sandy clay with stones |
| $ 593235 | TP151 | ES4 | 0.40 - 0.50 | 10.7 | Light brown sandy clay |
| $ 593237 | TP153 | ES1 | 0.10 - 0.20 | 15.5 | Brown sandy clay with stones |
| $ 593238 | TP153 | ES5 | 0.40 - 0.50 | 10.5 | Light brown sandy clay with stones |
| 593239 | TP160 | ES1 | 0.10 - 0.20 | 10.7 | Brown sandy clay with stones |
| 593240 | TP160 | ES4 | 0.40 - 0.50 | 11.8 | Light brown sandy clay with stones |
| 593241 | TP161 | ES1 | 0.10 - 0.20 | 13.5 | Brown sandy clay with stones and vegetation |
| 593242 | TP161 | ES4 | 0.40 - 0.50 | 5.9 | Brown gravelly sand with stones and concrete |
| $ 593243 | TP169 | ES1 | 0.10 - 0.20 | 15.5 | Brown sandy clay |
| $ 593244 | TP169 | ES4 | 0.50 - 0.60 | 12.5 | Light brown sandy clay with stones |
| 593245 | BH121 | ES1 | 0.20 | 10.3 | Light brown sandy clay with stones |
| 593246 | BH121 | ES2 | 0.50 | 11.2 | Brown sandy clay with stones |
| 593247 | BH121 | ES3 | 1.00 | 10.6 | Brown gravelly sand with stones |
| $ 593249 | BH122 | ES5 | GL - 0.30 | 10.9 | Brown sandy clay with stones and vegetation |
| $ 593250 | BH122 | ES6 | 0.30 - 1.20 | 6.9 | Light brown sandy gravel with stones |
| $ 593251 | BH126 | ES1 | 0.10 | 16.7 | Brown loamy sand with stones and vegetation |
| $ 593252 | BH126 | ES2 | 0.50 | 14 | Brown sandy clay |
| $ 593253 | BH126 | ES3 | 1.20 | 14.6 | Brown clay |
| 593255 | TP159 | ES1 | 0.10 - 0.20 | 12.2 | Brown sandy clay |
| 593256 | TP159 | ES4 | 0.30 - 0.40 | 15 | Light brown 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*

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| Soil Analysis Certificate - Methodology & Miscellaneous Information |
|---|
| DETS Report No: 22-03110 |
| Ground Technology Services |
| Site Reference: A47 Wansford to Sutton |
| Project / Job Ref: GT0386 |
| Order No: M-GT0386/000016 |
| Reporting Date: 12/04/2022 |

| 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 | Fraction Organic Carbon (FOC) | Determination of TOC by combustion analyser. | E027 |
| Soil | D | Organic Matter (SOM) | Determination of TOC by combustion analyser. | E027 |
| Soil | D | TOC (Total Organic Carbon) | Determination of TOC by combustion analyser. | E027 |
| Soil | AR | Exchangeable Ammonium | Determination of ammonium by discrete analyser. | E029 |
| 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

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UKAS TESTING 4480

| Water Analysis Certificate - Methodology & Miscellaneous Information |
|---|
| DETS Report No: 22-03110 |
| Ground Technology Services |
| Site Reference: A47 Wansford to Sutton |
| Project / Job Ref: GT0386 |
| Order No: M-GT0386/000016 |
| Reporting Date: 12/04/2022 |

| 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 | F | Ammoniacal Nitrogen | Determination of ammoniacal nitrogen by discrete analyser. | E126 |
| 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 | 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 dete | 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 dichlorometha | 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

| Parameter | Matrix Type | Suite Reference | Expanded Uncertainity Measurement | Unit |
|---|---|---|---|---|
| TOC | Soil | BS EN 12457 | 12.1 | % |
| Loss on Ignition | Soil | BS EN 12457 | 20.4 | % |
| BTEX | Soil | BS EN 12457 | 14.0 | % |
| Sum of PCBs | Soil | BS EN 12457 | 21.1 | % |
| Mineral Oil | Soil | BS EN 12457 | 9.0 | % |
| Total PAH | Soil | BS EN 12457 | 13.9 | % |
| pH | Soil | BS EN 12457 | 0.248 | Units |
| Acid Neutralisation Capacity | Soil | BS EN 12457 | 18.0 | % |
| Arsenic | Leachate | BS EN 12457 | 15.9 | % |
| Barium | Leachate | BS EN 12457 | 14.4 | % |
| Cadmium | Leachate | BS EN 12457 | 12.6 | % |
| Chromium | Leachate | BS EN 12457 | 13.4 | % |
| Copper | Leachate | BS EN 12457 | 13.1 | % |
| Mercury | Leachate | BS EN 12457 | 16.2 | % |
| Molybdenum | Leachate | BS EN 12457 | 13.6 | % |
| Nickel | Leachate | BS EN 12457 | 16.0 | % |
| Lead | Leachate | BS EN 12457 | 12.4 | % |
| Antimony | Leachate | BS EN 12457 | 14.6 | % |
| Selenium | Leachate | BS EN 12457 | 16.5 | % |
| Zinc | Leachate | BS EN 12457 | 14.5 | % |
| Chloride | Leachate | BS EN 12457 | 17.0 | % |
| Fluoride | Leachate | BS EN 12457 | 12.0 | % |
| Sulphate | Leachate | BS EN 12457 | 25.1 | % |
| TDS | Leachate | BS EN 12457 | 10.0 | % |
| Phenol Index | Leachate | BS EN 12457 | 12.9 | % |
| DOC | Leachate | BS EN 12457 | 10.0 | % |
| Clay Content | Soil | BS 3882: 2015 | 15.0 | % |
| Silt Content | Soil | BS 3882: 2015 | 14.0 | % |
| Sand Content | Soil | BS 3882: 2015 | 13.0 | % |
| Loss on Ignition | Soil | BS 3882: 2015 | 20.4 | % |
| pH | Soil | BS 3882: 2015 | 0.248 | Units |
| Carbonate | Soil | BS 3882: 2015 | 12.0 | % |
| Total Nitrogen | Soil | BS 3882: 2015 | 12.0 | % |
| Phosphorus (Extractable) | Soil | BS 3882: 2015 | 24.0 | % |
| Potassium (Extractable) | Soil | BS 3882: 2015 | 20.0 | % |
| Magnesium (Extractable) | Soil | BS 3882: 2015 | 26.0 | % |
| Zinc | Soil | BS 3882: 2015 | 14.9 | % |
| Copper | Soil | BS 3882: 2015 | 16.0 | % |
| Nickel | Soil | BS 3882: 2015 | 17.7 | % |
| Available Sodium | Soil | BS 3882: 2015 | 23.0 | % |
| Available Calcium | Soil | BS 3882: 2015 | 23.0 | % |
| Electrical Conductivity | Soil | BS 3882: 2015 | 10.0 | % |

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t: 01622 850410

# DETS Report No: 22-03138

| | |
|---|---|
| Site Reference: | A47 Wansford to Sutton |
| Project / Job Ref: | GT0386 |
| Order No: | M-GT0386/000016 |
| Sample Receipt Date: | 05/04/2022 |
| Sample Scheduled Date: | 05/04/2022 |
| Report Issue Number: | 1 |
| Reporting Date: | 21/04/2022 |

[redacted]
Dave Ashworth
Technical Manager

Dates of laboratory activities for each tested analyte are available upon request.

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.

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Lenham Heath
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Tel : 01622 850410

| Soil Analysis Certificate | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-03138 | Date Sampled | 31/03/22 | 31/03/22 | 31/03/22 | 31/03/22 | 31/03/22 |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Site Reference: A47 Wansford to Sutton | TP / BH No | TP164 | TP164 | TP164 | TP165 | TP165 |
| Project / Job Ref: GT0386 | Additional Refs | ES1 | ES4 | ES4 | ES1 | ES4 |
| Order No: M-GT0386/000016 | Depth (m) | 0.10 - 0.20 | 0.30 - 0.40 | 0.30 - 0.40 | 0.10 - 0.20 | 0.30 - 0.40 |
| Reporting Date: 21/04/2022 | DETS Sample No | 593423 | 593424 | 593425 | 593426 | 593427 |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| Asbestos Screen (S) | N/a | N/a | ISO17025 | | | | | |
| pH | pH Units | N/a | MCERTS | 8.1 | 7.9 | | 7.7 | 8.1 |
| Total Cyanide | mg/kg | < 2 | NONE | < 2 | < 2 | | < 2 | < 2 |
| Complex Cyanide | mg/kg | < 2 | NONE | < 2 | < 2 | | < 2 | < 2 |
| Free Cyanide | mg/kg | < 2 | NONE | < 2 | < 2 | | < 2 | < 2 |
| Total Sulphate as $SO_4$ (S) | mg/kg | < 200 | MCERTS | 1000 | 1100 | | 1000 | 1500 |
| Total Sulphate as $SO_4$ (S) | % | < 0.02 | MCERTS | 0.10 | 0.11 | | 0.10 | 0.15 |
| TOC (Total Organic Carbon) | % | < 0.1 | MCERTS | 2.2 | 2.9 | | 1.9 | 5.6 |
| Arsenic (As) (S) | mg/kg | < 2 | MCERTS | 17 | 18 | | 14 | 6 |
| W/S Boron (S) | mg/kg | < 1 | NONE | < 1 | < 1 | | < 1 | < 1 |
| Cadmium (Cd) (S) | mg/kg | < 0.2 | MCERTS | 0.2 | 0.2 | | 0.2 | < 0.2 |
| Chromium (Cr) (S) | mg/kg | < 2 | MCERTS | 21 | 18 | | 23 | 3 |
| Chromium (III) | mg/kg | < 2 | NONE | 21 | 18 | | 23 | 3 |
| Chromium (hexavalent) | mg/kg | < 2 | NONE | < 2 | < 2 | | < 2 | < 2 |
| Copper (Cu) (S) | mg/kg | < 4 | MCERTS | 17 | 13 | | 23 | 10 |
| Lead (Pb) (S) | mg/kg | < 3 | MCERTS | 17 | 12 | | 17 | < 3 |
| Mercury (Hg) (S) | mg/kg | < 1 | MCERTS | < 1 | < 1 | | < 1 | < 1 |
| Nickel (Ni) (S) | mg/kg | < 3 | MCERTS | 24 | 42 | | 27 | 11 |
| Selenium (Se) (S) | mg/kg | < 2 | MCERTS | < 3 | < 3 | | < 3 | < 3 |
| Zinc (Zn) (S) | mg/kg | < 3 | MCERTS | 56 | 72 | | 63 | 19 |
| 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°C. The Method Description page describes if the test is performed on the dried or as-received portion
Subcontracted analysis (S)

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| Soil Analysis Certificate | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-03138 | Date Sampled | 31/03/22 | 31/03/22 | 31/03/22 | 31/03/22 | 31/03/22 |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Site Reference: A47 Wansford to Sutton | TP / BH No | TP165 | BH123 | BH123 | BH123 | BH123 |
| Project / Job Ref: GT0386 | Additional Refs | ES4 | ES1 | ES1 | ES2 | ES2 |
| Order No: M-GT0386/000016 | Depth (m) | 0.30 - 0.40 | 0.10 - 0.20 | 0.10 - 0.20 | 0.40 - 0.50 | 0.40 - 0.50 |
| Reporting Date: 21/04/2022 | DETS Sample No | 593428 | 593429 | 593430 | 593431 | 593432 |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| Asbestos Screen (S) | N/a | N/a | ISO17025 | | Not Detected | | Not Detected | |
| pH | pH Units | N/a | MCERTS | | 7.7 | | 7.8 | |
| Total Cyanide | mg/kg | < 2 | NONE | | < 2 | | < 2 | |
| Complex Cyanide | mg/kg | < 2 | NONE | | < 2 | | < 2 | |
| Free Cyanide | mg/kg | < 2 | NONE | | < 2 | | < 2 | |
| Total Sulphate as $SO_4$ (S) | mg/kg | < 200 | MCERTS | | < 200 | | 1100 | |
| Total Sulphate as $SO_4$ (S) | % | < 0.02 | MCERTS | | < 0.02 | | 0.11 | |
| TOC (Total Organic Carbon) | % | < 0.1 | MCERTS | | 0.2 | | 2.2 | |
| Arsenic (As) (S) | mg/kg | < 2 | MCERTS | | < 2 | | 6 | |
| W/S Boron (S) | mg/kg | < 1 | NONE | | < 1 | | < 1 | |
| Cadmium (Cd) (S) | mg/kg | < 0.2 | MCERTS | | < 0.2 | | < 0.2 | |
| Chromium (Cr) (S) | mg/kg | < 2 | MCERTS | | 3 | | 9 | |
| Chromium (III) | mg/kg | < 2 | NONE | | 3 | | 9 | |
| Chromium (hexavalent) | mg/kg | < 2 | NONE | | < 2 | | < 2 | |
| Copper (Cu) (S) | mg/kg | < 4 | MCERTS | | < 4 | | 12 | |
| Lead (Pb) (S) | mg/kg | < 3 | MCERTS | | < 3 | | 5 | |
| Mercury (Hg) (S) | mg/kg | < 1 | MCERTS | | < 1 | | < 1 | |
| Nickel (Ni) (S) | mg/kg | < 3 | MCERTS | | 3 | | 19 | |
| Selenium (Se) (S) | mg/kg | < 2 | MCERTS | | < 3 | | < 3 | |
| Zinc (Zn) (S) | mg/kg | < 3 | MCERTS | | 6 | | 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°C. The Method Description page describes if the test is performed on the dried or as-received portion
Subcontracted analysis (S)

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Lenham Heath
Maidstone
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Tel : 01622 850410

| Soil Analysis Certificate | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-03138 | Date Sampled | 31/03/22 | 31/03/22 | 31/03/22 | 30/03/22 | 30/03/22 |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Site Reference: A47 Wansford to Sutton | TP / BH No | BH125 | BH125 | BH125 | BH131 | BH131 |
| Project / Job Ref: GT0386 | Additional Refs | ES1 | ES2 | ES2 | ES1 | ES2 |
| Order No: M-GT0386/000016 | Depth (m) | GL - 0.40 | 0.40 - 0.70 | 0.40 - 0.70 | GL - 0.30 | 0.30 - 0.70 |
| Reporting Date: 21/04/2022 | DETS Sample No | 593433 | 593434 | 593435 | 593436 | 593437 |

| 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 | | 7.6 | 8.4 |
| Total Cyanide | mg/kg | < 2 | NONE | < 2 | < 2 | | < 2 | < 2 |
| Complex Cyanide | mg/kg | < 2 | NONE | < 2 | < 2 | | < 2 | < 2 |
| Free Cyanide | mg/kg | < 2 | NONE | < 2 | < 2 | | < 2 | < 2 |
| Total Sulphate as $SO_4$ (S) | mg/kg | < 200 | MCERTS | 600 | 300 | | 1100 | 1100 |
| Total Sulphate as $SO_4$ (S) | % | < 0.02 | MCERTS | 0.06 | 0.03 | | 0.11 | 0.11 |
| TOC (Total Organic Carbon) | % | < 0.1 | MCERTS | 1.8 | 0.6 | | 2.3 | 5.2 |
| Arsenic (As) (S) | mg/kg | < 2 | MCERTS | 13 | 4 | | 11 | 4 |
| W/S Boron (S) | mg/kg | < 1 | NONE | < 1 | < 1 | | < 1 | < 1 |
| Cadmium (Cd) (S) | mg/kg | < 0.2 | MCERTS | 0.2 | < 0.2 | | 0.2 | < 0.2 |
| Chromium (Cr) (S) | mg/kg | < 2 | MCERTS | 24 | 26 | | 17 | 7 |
| Chromium (III) | mg/kg | < 2 | NONE | 24 | 26 | | 17 | 7 |
| Chromium (hexavalent) | mg/kg | < 2 | NONE | < 2 | < 2 | | < 2 | < 2 |
| Copper (Cu) (S) | mg/kg | < 4 | MCERTS | 20 | 27 | | 17 | 10 |
| Lead (Pb) (S) | mg/kg | < 3 | MCERTS | 19 | 14 | | 14 | 5 |
| Mercury (Hg) (S) | mg/kg | < 1 | MCERTS | < 1 | < 1 | | < 1 | < 1 |
| Nickel (Ni) (S) | mg/kg | < 3 | MCERTS | 22 | 13 | | 18 | 8 |
| Selenium (Se) (S) | mg/kg | < 2 | MCERTS | < 3 | < 3 | | < 3 | < 3 |
| Zinc (Zn) (S) | mg/kg | < 3 | MCERTS | 53 | 25 | | 46 | 20 |
| 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°C. The Method Description page describes if the test is performed on the dried or as-received portion
Subcontracted analysis (S)

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| Soil Analysis Certificate | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-03138 | Date Sampled | 30/03/22 | | | | |
| Ground Technology Services | Time Sampled | None Supplied | | | | |
| Site Reference: A47 Wansford to Sutton | TP / BH No | BH131 | | | | |
| Project / Job Ref: GT0386 | Additional Refs | ES2 | | | | |
| Order No: M-GT0386/000016 | Depth (m) | 0.30 - 0.70 | | | | |
| Reporting Date: 21/04/2022 | DETS Sample No | 593438 | | | | |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| Asbestos Screen (S) | N/a | N/a | ISO17025 | | | | | |
| pH | pH Units | N/a | MCERTS | | | | | |
| Total Cyanide | mg/kg | < 2 | NONE | | | | | |
| Complex Cyanide | mg/kg | < 2 | NONE | | | | | |
| Free Cyanide | mg/kg | < 2 | NONE | | | | | |
| Total Sulphate as $SO_4$ (S) | mg/kg | < 200 | MCERTS | | | | | |
| Total Sulphate as $SO_4$ (S) | % | < 0.02 | MCERTS | | | | | |
| TOC (Total Organic Carbon) | % | < 0.1 | MCERTS | | | | | |
| Arsenic (As) (S) | mg/kg | < 2 | MCERTS | | | | | |
| W/S Boron (S) | mg/kg | < 1 | NONE | | | | | |
| Cadmium (Cd) (S) | mg/kg | < 0.2 | MCERTS | | | | | |
| Chromium (Cr) (S) | mg/kg | < 2 | MCERTS | | | | | |
| Chromium (III) | mg/kg | < 2 | NONE | | | | | |
| Chromium (hexavalent) | mg/kg | < 2 | NONE | | | | | |
| Copper (Cu) (S) | mg/kg | < 4 | MCERTS | | | | | |
| Lead (Pb) (S) | mg/kg | < 3 | MCERTS | | | | | |
| Mercury (Hg) (S) | mg/kg | < 1 | MCERTS | | | | | |
| Nickel (Ni) (S) | mg/kg | < 3 | MCERTS | | | | | |
| Selenium (Se) (S) | mg/kg | < 2 | MCERTS | | | | | |
| Zinc (Zn) (S) | mg/kg | < 3 | MCERTS | | | | | |
| Total Phenols (monohydric) | mg/kg | < 2 | NONE | | | | | |

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion
Subcontracted analysis (S)

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Tel : 01622 850410

| Soil Analysis Certificate - Speciated PAHs | | | | | | | |
|---|---|---|---|---|---|---|---|
| DETS Report No: 22-03138 | Date Sampled | 31/03/22 | 31/03/22 | 31/03/22 | 31/03/22 | 31/03/22 |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Site Reference: A47 Wansford to Sutton | TP / BH No | TP164 | TP164 | TP165 | TP165 | BH123 |
| Project / Job Ref: GT0386 | Additional Refs | ES1 | ES4 | ES1 | ES4 | ES1 |
| Order No: M-GT0386/000016 | Depth (m) | 0.10 - 0.20 | 0.30 - 0.40 | 0.10 - 0.20 | 0.30 - 0.40 | 0.10 - 0.20 |
| Reporting Date: 21/04/2022 | DETS Sample No | 593423 | 593424 | 593426 | 593427 | 593429 |

| 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 | < 0.1 | < 0.1 | < 0.1 |
| Pyrene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| Benzo(a)anthracene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 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 | < 0.1 | < 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 | < 0.1 | < 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 |

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| Soil Analysis Certificate - Speciated PAHs | | | | | | | |
|---|---|---|---|---|---|---|---|
| DETS Report No: 22-03138 | Date Sampled | 31/03/22 | 31/03/22 | 31/03/22 | 30/03/22 | 30/03/22 |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Site Reference: A47 Wansford to Sutton | TP / BH No | BH123 | BH125 | BH125 | BH131 | BH131 |
| Project / Job Ref: GT0386 | Additional Refs | ES2 | ES1 | ES2 | ES1 | ES2 |
| Order No: M-GT0386/000016 | Depth (m) | 0.40 - 0.50 | GL - 0.40 | 0.40 - 0.70 | GL - 0.30 | 0.30 - 0.70 |
| Reporting Date: 21/04/2022 | DETS Sample No | 593431 | 593433 | 593434 | 593436 | 593437 |

| 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 | < 0.1 | < 0.1 | < 0.1 |
| Pyrene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| Benzo(a)anthracene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 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 | < 0.1 | < 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 | < 0.1 | < 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 |

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| Soil Analysis Certificate - EPH Texas Banded | | | | | | | |
|---|---|---|---|---|---|---|---|
| DETS Report No: 22-03138 | Date Sampled | 31/03/22 | 31/03/22 | 31/03/22 | 31/03/22 | 31/03/22 |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Site Reference: A47 Wansford to Sutton | TP / BH No | TP164 | TP164 | TP165 | TP165 | BH123 |
| Project / Job Ref: GT0386 | Additional Refs | ES1 | ES4 | ES1 | ES4 | ES1 |
| Order No: M-GT0386/000016 | Depth (m) | 0.10 - 0.20 | 0.30 - 0.40 | 0.10 - 0.20 | 0.30 - 0.40 | 0.10 - 0.20 |
| Reporting Date: 21/04/2022 | DETS Sample No | 593423 | 593424 | 593426 | 593427 | 593429 |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| EPH Texas (C6 - C8) | mg/kg | < 0.05 | NONE | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| EPH Texas (>C8 - C10) | mg/kg | < 1 | MCERTS | < 1 | < 1 | < 1 | < 1 | < 1 |
| EPH Texas (>C10 - C12) | mg/kg | < 1 | MCERTS | < 1 | < 1 | < 1 | < 1 | < 1 |
| EPH Texas (>C12 - C16) | mg/kg | < 1 | MCERTS | < 1 | < 1 | < 1 | < 1 | < 1 |
| EPH Texas (>C16 - C21) | mg/kg | < 1 | MCERTS | < 1 | < 1 | < 1 | < 1 | < 1 |
| EPH Texas (>C21 - C40) | mg/kg | < 6 | MCERTS | < 6 | < 6 | < 6 | < 6 | < 6 |
| EPH Texas (C6 - C40) | mg/kg | < 6 | NONE | < 6 | < 6 | < 6 | < 6 | < 6 |

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| Soil Analysis Certificate - EPH Texas Banded | | | | | | | |
|---|---|---|---|---|---|---|---|
| DETS Report No: 22-03138 | Date Sampled | 31/03/22 | 31/03/22 | 31/03/22 | 30/03/22 | 30/03/22 |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Site Reference: A47 Wansford to Sutton | TP / BH No | BH123 | BH125 | BH125 | BH131 | BH131 |
| Project / Job Ref: GT0386 | Additional Refs | ES2 | ES1 | ES2 | ES1 | ES2 |
| Order No: M-GT0386/000016 | Depth (m) | 0.40 - 0.50 | GL - 0.40 | 0.40 - 0.70 | GL - 0.30 | 0.30 - 0.70 |
| Reporting Date: 21/04/2022 | DETS Sample No | 593431 | 593433 | 593434 | 593436 | 593437 |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| EPH Texas (C6 - C8) | mg/kg | < 0.05 | NONE | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| EPH Texas (>C8 - C10) | mg/kg | < 1 | MCERTS | < 1 | < 1 | < 1 | < 1 | < 1 |
| EPH Texas (>C10 - C12) | mg/kg | < 1 | MCERTS | < 1 | < 1 | < 1 | < 1 | 2 |
| EPH Texas (>C12 - C16) | mg/kg | < 1 | MCERTS | < 1 | < 1 | < 1 | < 1 | < 1 |
| EPH Texas (>C16 - C21) | mg/kg | < 1 | MCERTS | < 1 | < 1 | < 1 | < 1 | 2 |
| EPH Texas (>C21 - C40) | mg/kg | < 6 | MCERTS | < 6 | < 6 | < 6 | < 6 | 13 |
| EPH Texas (C6 - C40) | mg/kg | < 6 | NONE | < 6 | < 6 | < 6 | < 6 | 18 |

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| Soil Analysis Certificate - BTEX / MTBE | | | | | | | |
|---|---|---|---|---|---|---|---|
| DETS Report No: 22-03138 | Date Sampled | 31/03/22 | 31/03/22 | 31/03/22 | 31/03/22 | 31/03/22 |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Site Reference: A47 Wansford to Sutton | TP / BH No | TP164 | TP164 | TP165 | TP165 | BH123 |
| Project / Job Ref: GT0386 | Additional Refs | ES1 | ES4 | ES1 | ES4 | ES1 |
| Order No: M-GT0386/000016 | Depth (m) | 0.10 - 0.20 | 0.30 - 0.40 | 0.10 - 0.20 | 0.30 - 0.40 | 0.10 - 0.20 |
| Reporting Date: 21/04/2022 | DETS Sample No | 593423 | 593424 | 593426 | 593427 | 593429 |

| 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 |

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| Soil Analysis Certificate - BTEX / MTBE | | | | | | | |
|---|---|---|---|---|---|---|---|
| DETS Report No: 22-03138 | Date Sampled | 31/03/22 | 31/03/22 | 31/03/22 | 30/03/22 | 30/03/22 |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Site Reference: A47 Wansford to Sutton | TP / BH No | BH123 | BH125 | BH125 | BH131 | BH131 |
| Project / Job Ref: GT0386 | Additional Refs | ES2 | ES1 | ES2 | ES1 | ES2 |
| Order No: M-GT0386/000016 | Depth (m) | 0.40 - 0.50 | GL - 0.40 | 0.40 - 0.70 | GL - 0.30 | 0.30 - 0.70 |
| Reporting Date: 21/04/2022 | DETS Sample No | 593431 | 593433 | 593434 | 593436 | 593437 |

| 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 |

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UKAS TESTING 4480

| Leachate Analysis Certificate | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-03138 | Date Sampled | 31/03/22 | 31/03/22 | 31/03/22 | 31/03/22 | 31/03/22 |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Site Reference: A47 Wansford to Sutton | TP / BH No | TP164 | TP165 | BH123 | BH123 | BH125 |
| Project / Job Ref: GT0386 | Additional Refs | ES4 | ES4 | ES1 | ES2 | ES2 |
| Order No: M-GT0386/000016 | Depth (m) | 0.30 - 0.40 | 0.30 - 0.40 | 0.10 - 0.20 | 0.40 - 0.50 | 0.40 - 0.70 |
| Reporting Date: 21/04/2022 | DETS Sample No | 593425 | 593428 | 593430 | 593432 | 593435 |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| pH | pH Units | N/a | ISO17025 | 8.0 | 8.1 | 8.0 | 8.1 | 7.8 |
| Total Cyanide | ug/l | < 5 | ISO17025 | < 5 | < 5 | < 5 | < 5 | < 5 |
| Complex Cyanide | ug/l | < 5 | NONE | < 5 | < 5 | < 5 | < 5 | < 5 |
| Free Cyanide | ug/l | < 5 | ISO17025 | < 5 | < 5 | < 5 | < 5 | < 5 |
| Sulphate as $SO_4$ | mg/l | < 1 | ISO17025 | 2 | < 1 | < 1 | < 1 | < 1 |
| Ammonia as $NH_4$ | ug/l | < 50 | ISO17025 | 188 | 195 | 182 | 172 | 187 |
| Arsenic | ug/l | < 5 | ISO17025 | < 5 | < 5 | < 5 | < 5 | < 5 |
| Boron | ug/l | < 5 | ISO17025 | 21 | 11 | 17 | 19 | 37 |
| 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 |
| Copper | ug/l | < 5 | ISO17025 | < 5 | < 5 | < 5 | < 5 | < 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 |
| 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 | < 2 | < 2 | < 2 | < 2 | < 2 |
| Total Phenols (monohydric) | ug/l | < 10 | ISO17025 | < 10 | < 10 | < 10 | < 10 | < 10 |

Subcontracted analysis (S)

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Maidstone
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Tel : 01622 850410

UKAS TESTING 4480

| Leachate Analysis Certificate | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-03138 | Date Sampled | 30/03/22 | | | | |
| Ground Technology Services | Time Sampled | None Supplied | | | | |
| Site Reference: A47 Wansford to Sutton | TP / BH No | BH131 | | | | |
| Project / Job Ref: GT0386 | Additional Refs | ES2 | | | | |
| Order No: M-GT0386/000016 | Depth (m) | 0.30 - 0.70 | | | | |
| Reporting Date: 21/04/2022 | DETS Sample No | 593438 | | | | |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| pH | pH Units | N/a | ISO17025 | 8.0 | | | | |
| Total Cyanide | ug/l | < 5 | ISO17025 | < 5 | | | | |
| Complex Cyanide | ug/l | < 5 | NONE | < 5 | | | | |
| Free Cyanide | ug/l | < 5 | ISO17025 | < 5 | | | | |
| Sulphate as $SO_4$ | mg/l | < 1 | ISO17025 | 1 | | | | |
| Ammonia as $NH_4$ | ug/l | < 50 | ISO17025 | 196 | | | | |
| Arsenic | ug/l | < 5 | ISO17025 | < 5 | | | | |
| Boron | ug/l | < 5 | ISO17025 | 11 | | | | |
| Cadmium | ug/l | < 0.4 | ISO17025 | < 0.4 | | | | |
| Chromium | ug/l | < 5 | ISO17025 | < 5 | | | | |
| Copper | ug/l | < 5 | ISO17025 | < 5 | | | | |
| Lead | ug/l | < 5 | ISO17025 | < 5 | | | | |
| Mercury | ug/l | < 0.05 | ISO17025 | 0.11 | | | | |
| Nickel | ug/l | < 5 | ISO17025 | < 5 | | | | |
| Selenium | ug/l | < 5 | ISO17025 | < 5 | | | | |
| Zinc | ug/l | < 2 | ISO17025 | < 2 | | | | |
| Total Phenols (monohydric) | ug/l | < 10 | ISO17025 | < 10 | | | | |

Subcontracted analysis (S)

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Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

| Leachate Analysis Certificate - Speciated PAH | | | | | | | |
|---|---|---|---|---|---|---|---|
| DETS Report No: 22-03138 | Date Sampled | 31/03/22 | 31/03/22 | 31/03/22 | 31/03/22 | 31/03/22 |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Site Reference: A47 Wansford to Sutton | TP / BH No | TP164 | TP165 | BH123 | BH123 | BH125 |
| Project / Job Ref: GT0386 | Additional Refs | ES4 | ES4 | ES1 | ES2 | ES2 |
| Order No: M-GT0386/000016 | Depth (m) | 0.30 - 0.40 | 0.30 - 0.40 | 0.10 - 0.20 | 0.40 - 0.50 | 0.40 - 0.70 |
| Reporting Date: 21/04/2022 | DETS Sample No | 593425 | 593428 | 593430 | 593432 | 593435 |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| Naphthalene | ug/l | < 0.01 | NONE | 0.02 | < 0.01 | 0.01 | 0.03 | < 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 | 0.02 | 0.01 |
| Phenanthrene | ug/l | < 0.01 | NONE | 0.02 | 0.05 | 0.03 | 0.07 | 0.06 |
| Anthracene | ug/l | < 0.01 | NONE | < 0.01 | < 0.01 | < 0.01 | 0.02 | 0.01 |
| Fluoranthene | ug/l | < 0.01 | NONE | < 0.01 | 0.02 | 0.02 | 0.04 | 0.03 |
| Pyrene | ug/l | < 0.01 | NONE | < 0.01 | 0.01 | 0.01 | 0.02 | 0.02 |
| 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 | < 0.16 | NONE | < 0.16 | < 0.16 | < 0.16 | 0.20 | < 0.16 |

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| Leachate Analysis Certificate - Speciated PAH | | | | | | | |
|---|---|---|---|---|---|---|---|
| DETS Report No: 22-03138 | Date Sampled | 30/03/22 | | | | | |
| Ground Technology Services | Time Sampled | None Supplied | | | | | |
| Site Reference: A47 Wansford to Sutton | TP / BH No | BH131 | | | | | |
| Project / Job Ref: GT0386 | Additional Refs | ES2 | | | | | |
| Order No: M-GT0386/000016 | Depth (m) | 0.30 - 0.70 | | | | | |
| Reporting Date: 21/04/2022 | DETS Sample No | 593438 | | | | | |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| Naphthalene | ug/l | < 0.01 | NONE | 0.02 | | | | |
| Acenaphthylene | ug/l | < 0.01 | NONE | < 0.01 | | | | |
| Acenaphthene | ug/l | < 0.01 | NONE | 0.02 | | | | |
| Fluorene | ug/l | < 0.01 | NONE | 0.06 | | | | |
| Phenanthrene | ug/l | < 0.01 | NONE | 0.16 | | | | |
| Anthracene | ug/l | < 0.01 | NONE | 0.03 | | | | |
| Fluoranthene | ug/l | < 0.01 | NONE | 0.05 | | | | |
| Pyrene | ug/l | < 0.01 | NONE | 0.03 | | | | |
| Benzo(a)anthracene | ug/l | < 0.01 | NONE | < 0.01 | | | | |
| Chrysene | ug/l | < 0.01 | NONE | < 0.01 | | | | |
| Benzo(b)fluoranthene | ug/l | < 0.01 | NONE | < 0.01 | | | | |
| Benzo(k)fluoranthene | ug/l | < 0.01 | NONE | < 0.01 | | | | |
| Benzo(a)pyrene | ug/l | < 0.01 | NONE | < 0.01 | | | | |
| Indeno(1,2,3-cd)pyrene | ug/l | < 0.01 | NONE | < 0.01 | | | | |
| Dibenz(a,h)anthracene | ug/l | < 0.01 | NONE | < 0.01 | | | | |
| Benzo(ghi)perylene | ug/l | < 0.008 | NONE | < 0.008 | | | | |
| Total EPA-16 PAHs | ug/l | < 0.16 | NONE | 0.37 | | | | |

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| Leachate Analysis Certificate - EPH Texas Banded | | | | | | | |
|---|---|---|---|---|---|---|---|
| DETS Report No: 22-03138 | Date Sampled | 31/03/22 | 31/03/22 | 31/03/22 | 31/03/22 | 31/03/22 |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Site Reference: A47 Wansford to Sutton | TP / BH No | TP164 | TP165 | BH123 | BH123 | BH125 |
| Project / Job Ref: GT0386 | Additional Refs | ES4 | ES4 | ES1 | ES2 | ES2 |
| Order No: M-GT0386/000016 | Depth (m) | 0.30 - 0.40 | 0.30 - 0.40 | 0.10 - 0.20 | 0.40 - 0.50 | 0.40 - 0.70 |
| Reporting Date: 21/04/2022 | DETS Sample No | 593425 | 593428 | 593430 | 593432 | 593435 |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| EPH Texas (C6 - C8) | ug/l | < 10 | NONE | < 10 | < 10 | < 10 | < 10 | < 10 |
| EPH Texas (>C8 - C10) | ug/l | < 10 | NONE | < 10 | < 10 | < 10 | < 10 | < 10 |
| EPH Texas (>C10 - C12) | ug/l | < 10 | NONE | < 10 | < 10 | < 10 | < 10 | < 10 |
| EPH Texas (>C12 - C16) | ug/l | < 10 | NONE | < 10 | < 10 | < 10 | < 10 | < 10 |
| EPH Texas (>C16 - C21) | ug/l | < 10 | NONE | < 10 | 30 | 35 | < 10 | < 10 |
| EPH Texas (>C21 - C40) | ug/l | < 10 | NONE | < 10 | < 10 | < 10 | < 10 | < 10 |
| EPH Texas (C6 - C40) | ug/l | < 10 | NONE | < 10 | 30 | 35 | < 10 | < 10 |

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| Leachate Analysis Certificate - EPH Texas Banded | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-03138 | Date Sampled | 30/03/22 | | | | |
| Ground Technology Services | Time Sampled | None Supplied | | | | |
| Site Reference: A47 Wansford to Sutton | TP / BH No | BH131 | | | | |
| Project / Job Ref: GT0386 | Additional Refs | ES2 | | | | |
| Order No: M-GT0386/000016 | Depth (m) | 0.30 - 0.70 | | | | |
| Reporting Date: 21/04/2022 | DETS Sample No | 593438 | | | | |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| EPH Texas (C6 - C8) | ug/l | < 10 | NONE | < 10 | | | | |
| EPH Texas (>C8 - C10) | ug/l | < 10 | NONE | < 10 | | | | |
| EPH Texas (>C10 - C12) | ug/l | < 10 | NONE | < 10 | | | | |
| EPH Texas (>C12 - C16) | ug/l | < 10 | NONE | < 10 | | | | |
| EPH Texas (>C16 - C21) | ug/l | < 10 | NONE | < 10 | | | | |
| EPH Texas (>C21 - C40) | ug/l | < 10 | NONE | < 10 | | | | |
| EPH Texas (C6 - C40) | ug/l | < 10 | NONE | < 10 | | | | |

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4480

| Leachate Analysis Certificate - BTEX / MTBE | | | | | | | |
|---|---|---|---|---|---|---|---|
| DETS Report No: 22-03138 | Date Sampled | 31/03/22 | 31/03/22 | 31/03/22 | 31/03/22 | 31/03/22 |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Site Reference: A47 Wansford to Sutton | TP / BH No | TP164 | TP165 | BH123 | BH123 | BH125 |
| Project / Job Ref: GT0386 | Additional Refs | ES4 | ES4 | ES1 | ES2 | ES2 |
| Order No: M-GT0386/000016 | Depth (m) | 0.30 - 0.40 | 0.30 - 0.40 | 0.10 - 0.20 | 0.40 - 0.50 | 0.40 - 0.70 |
| Reporting Date: 21/04/2022 | DETS Sample No | 593425 | 593428 | 593430 | 593432 | 593435 |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| 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 |

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UKAS TESTING
4480

| Leachate Analysis Certificate - BTEX / MTBE | | | | | | | |
|---|---|---|---|---|---|---|---|
| DETS Report No: 22-03138 | Date Sampled | 30/03/22 | | | | | |
| Ground Technology Services | Time Sampled | None Supplied | | | | | |
| Site Reference: A47 Wansford to Sutton | TP / BH No | BH131 | | | | | |
| Project / Job Ref: GT0386 | Additional Refs | ES2 | | | | | |
| Order No: M-GT0386/000016 | Depth (m) | 0.30 - 0.70 | | | | | |
| Reporting Date: 21/04/2022 | DETS Sample No | 593438 | | | | | |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| Benzene | ug/l | < 1 | ISO17025 | < 1 | | | | |
| Toluene | ug/l | < 5 | ISO17025 | < 5 | | | | |
| Ethylbenzene | ug/l | < 5 | ISO17025 | < 5 | | | | |
| p & m-xylene | ug/l | < 10 | ISO17025 | < 10 | | | | |
| o-xylene | ug/l | < 5 | ISO17025 | < 5 | | | | |
| MTBE | ug/l | < 10 | ISO17025 | < 10 | | | | |

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| Soil Analysis Certificate - Sample Descriptions |
|---|
| DETS Report No: 22-03138 |
| Ground Technology Services |
| Site Reference: A47 Wansford to Sutton |
| Project / Job Ref: GT0386 |
| Order No: M-GT0386/000016 |
| Reporting Date: 21/04/2022 |

| DETS Sample No | TP / BH No | Additional Refs | Depth (m) | Moisture Content (%) | Sample Matrix Description |
|---|---|---|---|---|---|
| 593423 | TP164 | ES1 | 0.10 - 0.20 | 16.1 | Brown sandy clay with stones |
| 593424 | TP164 | ES4 | 0.30 - 0.40 | 13.4 | Brown sandy clay with stones |
| 593426 | TP165 | ES1 | 0.10 - 0.20 | 15.9 | Brown sandy clay with stones |
| 593427 | TP165 | ES4 | 0.30 - 0.40 | 7.9 | Light brown gravelly sand with stones |
| 593429 | BH123 | ES1 | 0.10 - 0.20 | 9.3 | Brown sandy clay with stones |
| 593431 | BH123 | ES2 | 0.40 - 0.50 | 13.6 | Brown sandy clay with stones |
| 593433 | BH125 | ES1 | GL - 0.40 | 17.9 | Brown sandy clay |
| 593434 | BH125 | ES2 | 0.40 - 0.70 | 21.9 | Brown clay |
| 593436 | BH131 | ES1 | GL - 0.30 | 10.7 | Brown sandy clay with stones and vegetation |
| 593437 | BH131 | ES2 | 0.30 - 0.70 | 6.6 | Brown sandy clay with stones |

*Moisture content is part of procedure E003 & is not an accredited test*

Insufficient Sample $^{I/S}$

Unsuitable Sample $^{U/S}$

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| Soil Analysis Certificate - Methodology & Miscellaneous Information |
|---|
| DETS Report No: 22-03138 |
| Ground Technology Services |
| Site Reference: A47 Wansford to Sutton |
| Project / Job Ref: GT0386 |
| Order No: M-GT0386/000016 |
| Reporting Date: 21/04/2022 |

| 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 | Fraction Organic Carbon (FOC) | Determination of TOC by combustion analyser. | E027 |
| Soil | D | Organic Matter (SOM) | Determination of TOC by combustion analyser. | E027 |
| Soil | D | TOC (Total Organic Carbon) | Determination of TOC by combustion analyser. | E027 |
| Soil | AR | Exchangeable Ammonium | Determination of ammonium by discrete analyser. | E029 |
| 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

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Tel : 01622 850410

UKAS TESTING 4480

| Water Analysis Certificate - Methodology & Miscellaneous Information |
|---|
| DETS Report No: 22-03138 |
| Ground Technology Services |
| Site Reference: A47 Wansford to Sutton |
| Project / Job Ref: GT0386 |
| Order No: M-GT0386/000016 |
| Reporting Date: 21/04/2022 |

| 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 | F | Ammoniacal Nitrogen | Determination of ammoniacal nitrogen by discrete analyser. | E126 |
| 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 | 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 dete | 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 dichlorometha | 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

Adam Barnard
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London Road
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NR17 1ZA

Derwentside Environmental Testing Services Ltd
Unit 1
Rose Lane Industrial Estate
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Kent
ME17 2JN
t: 01622 850410

# DETS Report No: 22-03256

| | |
|---|---|
| Site Reference: | A47 Wansford to Sutton |
| Project / Job Ref: | GT0386 |
| Order No: | M-GT0386/000016 |
| Sample Receipt Date: | 07/04/2022 |
| Sample Scheduled Date: | 07/04/2022 |
| Report Issue Number: | 1 |
| Reporting Date: | 13/04/2022 |

Nick Watson
General Manager

Dates of laboratory activities for each tested analyte are available upon request.

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DETS Ltd
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Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

| Soil Analysis Certificate | | | | | | | |
|---|---|---|---|---|---|---|---|
| DETS Report No: 22-03256 | Date Sampled | 01/04/22 | 01/04/22 | 01/04/22 | | | |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | None Supplied | | | |
| Site Reference: A47 Wansford to Sutton | TP / BH No | BH134 | BH134 | BH134 | | | |
| Project / Job Ref: GT0386 | Additional Refs | ES2 | ES4 | ES4 | | | |
| Order No: M-GT0386/000016 | Depth (m) | GL - 0.10 | 0.30 - 0.40 | 0.30 - 0.40 | | | |
| Reporting Date: 13/04/2022 | DETS Sample No | 593866 | 593867 | 593868 | | | |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| pH | pH Units | N/a | MCERTS | 7.9 | 7.9 | | | |
| Total Cyanide | mg/kg | < 2 | NONE | < 2 | < 2 | | | |
| Complex Cyanide | mg/kg | < 2 | NONE | < 2 | < 2 | | | |
| Free Cyanide | mg/kg | < 2 | NONE | < 2 | < 2 | | | |
| Total Sulphate as $SO_4$ (S) | mg/kg | < 200 | MCERTS | 772 | < 200 | | | |
| Total Sulphate as $SO_4$ (S) | % | < 0.02 | MCERTS | 0.08 | < 0.02 | | | |
| TOC (Total Organic Carbon) | % | < 0.1 | MCERTS | 2.1 | 0.4 | | | |
| Arsenic (As) (S) | mg/kg | < 2 | MCERTS | 14 | 6 | | | |
| W/S Boron (S) | mg/kg | < 1 | NONE | < 1 | < 1 | | | |
| Cadmium (Cd) (S) | mg/kg | < 0.2 | MCERTS | < 0.2 | < 0.2 | | | |
| Chromium (Cr) (S) | mg/kg | < 2 | MCERTS | 20 | 12 | | | |
| Chromium (III) (S) | mg/kg | < 2 | NONE | 20 | 12 | | | |
| Chromium (hexavalent) | mg/kg | < 2 | NONE | < 2 | < 2 | | | |
| Copper (Cu) (S) | mg/kg | < 4 | MCERTS | 19 | 8 | | | |
| Lead (Pb) (S) | mg/kg | < 3 | MCERTS | 26 | 7 | | | |
| Mercury (Hg) (S) | mg/kg | < 1 | MCERTS | < 1 | < 1 | | | |
| Nickel (Ni) (S) | mg/kg | < 3 | MCERTS | 16 | 9 | | | |
| Selenium (Se) (S) | mg/kg | < 2 | MCERTS | < 3 | < 3 | | | |
| Zinc (Zn) (S) | mg/kg | < 3 | MCERTS | 57 | 27 | | | |
| 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°C. The Method Description page describes if the test is performed on the dried or as-received portion
Subcontracted analysis (S)

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Maidstone
Kent ME17 2JN
Tel : 01622 850410

| Soil Analysis Certificate - Speciated PAHs | | | | | | | |
|---|---|---|---|---|---|---|---|
| DETS Report No: 22-03256 | Date Sampled | 01/04/22 | 01/04/22 | | | | |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | | | | |
| Site Reference: A47 Wansford to Sutton | TP / BH No | BH134 | BH134 | | | | |
| Project / Job Ref: GT0386 | Additional Refs | ES2 | ES4 | | | | |
| Order No: M-GT0386/000016 | Depth (m) | GL - 0.10 | 0.30 - 0.40 | | | | |
| Reporting Date: 13/04/2022 | DETS Sample No | 593866 | 593867 | | | | |

| 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 | 0.21 | < 0.1 | | | |
| Pyrene | mg/kg | < 0.1 | MCERTS | 0.19 | < 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 | | | |

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| Soil Analysis Certificate - EPH Texas Banded | | | | | | | |
|---|---|---|---|---|---|---|---|
| DETS Report No: 22-03256 | Date Sampled | 01/04/22 | 01/04/22 | | | | |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | | | | |
| Site Reference: A47 Wansford to Sutton | TP / BH No | BH134 | BH134 | | | | |
| Project / Job Ref: GT0386 | Additional Refs | ES2 | ES4 | | | | |
| Order No: M-GT0386/000016 | Depth (m) | GL - 0.10 | 0.30 - 0.40 | | | | |
| Reporting Date: 13/04/2022 | DETS Sample No | 593866 | 593867 | | | | |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| EPH Texas (C6 - C8) | mg/kg | < 0.05 | NONE | < 0.05 | < 0.05 | | | |
| EPH Texas (>C8 - C10) | mg/kg | < 1 | MCERTS | < 1 | < 1 | | | |
| EPH Texas (>C10 - C12) | mg/kg | < 1 | MCERTS | < 1 | < 1 | | | |
| EPH Texas (>C12 - C16) | mg/kg | < 1 | MCERTS | < 1 | < 1 | | | |
| EPH Texas (>C16 - C21) | mg/kg | < 1 | MCERTS | < 1 | < 1 | | | |
| EPH Texas (>C21 - C40) | mg/kg | < 6 | MCERTS | < 6 | < 6 | | | |
| EPH Texas (C6 - C40) | mg/kg | < 6 | NONE | < 6 | < 6 | | | |

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| Soil Analysis Certificate - BTEX / MTBE | | | | | | | |
|---|---|---|---|---|---|---|---|
| DETS Report No: 22-03256 | Date Sampled | 01/04/22 | 01/04/22 | | | | |
| Ground Technology Services | Time Sampled | None Supplied | None Supplied | | | | |
| Site Reference: A47 Wansford to Sutton | TP / BH No | BH134 | BH134 | | | | |
| Project / Job Ref: GT0386 | Additional Refs | ES2 | ES4 | | | | |
| Order No: M-GT0386/000016 | Depth (m) | GL - 0.10 | 0.30 - 0.40 | | | | |
| Reporting Date: 13/04/2022 | DETS Sample No | 593866 | 593867 | | | | |

| 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 | | | |

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UKAS TESTING 4480

| Leachate Analysis Certificate | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-03256 | Date Sampled | 01/04/22 | | | | |
| Ground Technology Services | Time Sampled | None Supplied | | | | |
| Site Reference: A47 Wansford to Sutton | TP / BH No | BH134 | | | | |
| Project / Job Ref: GT0386 | Additional Refs | ES4 | | | | |
| Order No: M-GT0386/000016 | Depth (m) | 0.30 - 0.40 | | | | |
| Reporting Date: 13/04/2022 | DETS Sample No | 593868 | | | | |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| pH | pH Units | N/a | ISO17025 | 8.7 | | | | |
| Total Cyanide | ug/l | < 5 | ISO17025 | < 5 | | | | |
| Complex Cyanide | ug/l | < 5 | NONE | < 5 | | | | |
| Free Cyanide | ug/l | < 5 | ISO17025 | < 5 | | | | |
| Sulphate as $SO_4$ | mg/l | < 1 | ISO17025 | 4 | | | | |
| Ammonia as $NH_4$ | ug/l | < 50 | ISO17025 | 393 | | | | |
| Arsenic | ug/l | < 5 | ISO17025 | < 5 | | | | |
| Boron | ug/l | < 5 | ISO17025 | 31 | | | | |
| Cadmium | ug/l | < 0.4 | ISO17025 | < 0.4 | | | | |
| Chromium | ug/l | < 5 | ISO17025 | < 5 | | | | |
| Copper | ug/l | < 5 | ISO17025 | < 5 | | | | |
| Lead | ug/l | < 5 | ISO17025 | < 5 | | | | |
| Mercury | ug/l | < 0.05 | ISO17025 | < 0.05 | | | | |
| Nickel | ug/l | < 5 | ISO17025 | < 5 | | | | |
| Selenium | ug/l | < 5 | ISO17025 | < 5 | | | | |
| Zinc | ug/l | < 2 | ISO17025 | 12 | | | | |
| Total Phenols (monohydric) | ug/l | < 10 | ISO17025 | < 10 | | | | |

Subcontracted analysis (S)

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| Leachate Analysis Certificate - Speciated PAH | | | | | | | |
|---|---|---|---|---|---|---|---|
| DETS Report No: 22-03256 | Date Sampled | 01/04/22 | | | | | |
| Ground Technology Services | Time Sampled | None Supplied | | | | | |
| Site Reference: A47 Wansford to Sutton | TP / BH No | BH134 | | | | | |
| Project / Job Ref: GT0386 | Additional Refs | ES4 | | | | | |
| Order No: M-GT0386/000016 | Depth (m) | 0.30 - 0.40 | | | | | |
| Reporting Date: 13/04/2022 | DETS Sample No | 593868 | | | | | |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| Naphthalene | ug/l | < 0.01 | NONE | < 0.01 | | | | |
| Acenaphthylene | ug/l | < 0.01 | NONE | < 0.01 | | | | |
| Acenaphthene | ug/l | < 0.01 | NONE | < 0.01 | | | | |
| Fluorene | ug/l | < 0.01 | NONE | < 0.01 | | | | |
| Phenanthrene | ug/l | < 0.01 | NONE | 0.02 | | | | |
| Anthracene | ug/l | < 0.01 | NONE | < 0.01 | | | | |
| Fluoranthene | ug/l | < 0.01 | NONE | 0.01 | | | | |
| Pyrene | ug/l | < 0.01 | NONE | < 0.01 | | | | |
| Benzo(a)anthracene | ug/l | < 0.01 | NONE | < 0.01 | | | | |
| Chrysene | ug/l | < 0.01 | NONE | < 0.01 | | | | |
| Benzo(b)fluoranthene | ug/l | < 0.01 | NONE | < 0.01 | | | | |
| Benzo(k)fluoranthene | ug/l | < 0.01 | NONE | < 0.01 | | | | |
| Benzo(a)pyrene | ug/l | < 0.01 | NONE | < 0.01 | | | | |
| Indeno(1,2,3-cd)pyrene | ug/l | < 0.01 | NONE | < 0.01 | | | | |
| Dibenz(a,h)anthracene | ug/l | < 0.01 | NONE | < 0.01 | | | | |
| Benzo(ghi)perylene | ug/l | < 0.008 | NONE | < 0.008 | | | | |
| Total EPA-16 PAHs | ug/l | < 0.16 | NONE | < 0.16 | | | | |

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| Leachate Analysis Certificate - EPH Texas Banded | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-03256 | Date Sampled | 01/04/22 | | | | |
| Ground Technology Services | Time Sampled | None Supplied | | | | |
| Site Reference: A47 Wansford to Sutton | TP / BH No | BH134 | | | | |
| Project / Job Ref: GT0386 | Additional Refs | ES4 | | | | |
| Order No: M-GT0386/000016 | Depth (m) | 0.30 - 0.40 | | | | |
| Reporting Date: 13/04/2022 | DETS Sample No | 593868 | | | | |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| EPH Texas (C6 - C8) | ug/l | < 10 | NONE | < 10 | | | | |
| EPH Texas (>C8 - C10) | ug/l | < 10 | NONE | < 10 | | | | |
| EPH Texas (>C10 - C12) | ug/l | < 10 | NONE | < 10 | | | | |
| EPH Texas (>C12 - C16) | ug/l | < 10 | NONE | < 10 | | | | |
| EPH Texas (>C16 - C21) | ug/l | < 10 | NONE | 12 | | | | |
| EPH Texas (>C21 - C40) | ug/l | < 10 | NONE | 10 | | | | |
| EPH Texas (C6 - C40) | ug/l | < 10 | NONE | 23 | | | | |

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UKAS TESTING 4480

| Leachate Analysis Certificate - BTEX / MTBE | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-03256 | Date Sampled | 01/04/22 | | | | |
| Ground Technology Services | Time Sampled | None Supplied | | | | |
| Site Reference: A47 Wansford to Sutton | TP / BH No | BH134 | | | | |
| Project / Job Ref: GT0386 | Additional Refs | ES4 | | | | |
| Order No: M-GT0386/000016 | Depth (m) | 0.30 - 0.40 | | | | |
| Reporting Date: 13/04/2022 | DETS Sample No | 593868 | | | | |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| Benzene | ug/l | < 1 | ISO17025 | < 1 | | | | |
| Toluene | ug/l | < 5 | ISO17025 | < 5 | | | | |
| Ethylbenzene | ug/l | < 5 | ISO17025 | < 5 | | | | |
| p & m-xylene | ug/l | < 10 | ISO17025 | < 10 | | | | |
| o-xylene | ug/l | < 5 | ISO17025 | < 5 | | | | |
| MTBE | ug/l | < 10 | ISO17025 | < 10 | | | | |

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| Soil Analysis Certificate - Sample Descriptions |
|---|
| DETS Report No: 22-03256 |
| Ground Technology Services |
| Site Reference: A47 Wansford to Sutton |
| Project / Job Ref: GT0386 |
| Order No: M-GT0386/000016 |
| Reporting Date: 13/04/2022 |

| DETS Sample No | TP / BH No | Additional Refs | Depth (m) | Moisture Content (%) | Sample Matrix Description |
|---|---|---|---|---|---|
| 593866 | BH134 | ES2 | GL - 0.10 | 14.5 | Brown sandy clay with stones |
| 593867 | BH134 | ES4 | 0.30 - 0.40 | 14.4 | 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

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| Soil Analysis Certificate - Methodology & Miscellaneous Information |
|---|
| DETS Report No: 22-03256 |
| Ground Technology Services |
| Site Reference: A47 Wansford to Sutton |
| Project / Job Ref: GT0386 |
| Order No: M-GT0386/000016 |
| Reporting Date: 13/04/2022 |

| 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 | Fraction Organic Carbon (FOC) | Determination of TOC by combustion analyser. | E027 |
| Soil | D | Organic Matter (SOM) | Determination of TOC by combustion analyser. | E027 |
| Soil | D | TOC (Total Organic Carbon) | Determination of TOC by combustion analyser. | E027 |
| Soil | AR | Exchangeable Ammonium | Determination of ammonium by discrete analyser. | E029 |
| 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

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UKAS TESTING 4480

| Water Analysis Certificate - Methodology & Miscellaneous Information |
|---|
| DETS Report No: 22-03256 |
| Ground Technology Services |
| Site Reference: A47 Wansford to Sutton |
| Project / Job Ref: GT0386 |
| Order No: M-GT0386/000016 |
| Reporting Date: 13/04/2022 |

| 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 | F | Ammoniacal Nitrogen | Determination of ammoniacal nitrogen by discrete analyser. | E126 |
| 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 | 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 dete | 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 dichlorometha | 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

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Derwentside Environmental Testing Services Ltd
Unit 1
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# DETS Report No: 22-03884

| | |
|---|---|
| Site Reference: | A47 Wansford to Sutton |
| Project / Job Ref: | GT0386 |
| Order No: | M-GT0386/000016 |
| Sample Receipt Date: | 03/05/2022 |
| Sample Scheduled Date: | 03/05/2022 |
| Report Issue Number: | 1 |
| Reporting Date: | 10/05/2022 |

[redacted]

Ela Mysiara
Quality Manager

Dates of laboratory activities for each tested analyte are available upon request.

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.

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| Soil Analysis Certificate | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-03884 | Date Sampled | 25/04/22 | 25/04/22 | 25/04/22 | | |
| Ground Technology Services | Time Sampled | 1030 | 1041 | 1041 | | |
| Site Reference: A47 Wansford to Sutton | TP / BH No | BH112 | BH112 | BH112 | | |
| Project / Job Ref: GT0386 | Additional Refs | ES1 | ES2 | ES2 | | |
| Order No: M-GT0386/000016 | Depth (m) | 0.10 - 0.20 | 0.50 - 0.60 | 0.50 - 0.60 | | |
| Reporting Date: 10/05/2022 | DETS Sample No | 596349 | 596350 | 596351 | | |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| pH | pH Units | N/a | MCERTS | 8.1 | 8.0 | | | |
| Total Cyanide | mg/kg | < 2 | NONE | < 2 | < 2 | | | |
| Complex Cyanide | mg/kg | < 2 | NONE | < 2 | < 2 | | | |
| Free Cyanide | mg/kg | < 2 | NONE | < 2 | < 2 | | | |
| Total Sulphate as $SO_4$ | mg/kg | < 200 | MCERTS | 557 | 455 | | | |
| Total Sulphate as $SO_4$ | % | < 0.02 | MCERTS | 0.06 | 0.05 | | | |
| TOC (Total Organic Carbon) | % | < 0.1 | MCERTS | 0.9 | 1.4 | | | |
| Arsenic (As) | mg/kg | < 2 | MCERTS | 19 | 20 | | | |
| 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 | 22 | 22 | | | |
| Chromium (III) | mg/kg | < 2 | NONE | 22 | 22 | | | |
| Chromium (hexavalent) | mg/kg | < 2 | NONE | < 2 | < 2 | | | |
| Copper (Cu) | mg/kg | < 4 | MCERTS | 15 | 18 | | | |
| Lead (Pb) | mg/kg | < 3 | MCERTS | 19 | 21 | | | |
| Mercury (Hg) | mg/kg | < 1 | MCERTS | < 1 | < 1 | | | |
| Nickel (Ni) | mg/kg | < 3 | MCERTS | 18 | 19 | | | |
| Selenium (Se) | mg/kg | < 2 | MCERTS | < 3 | < 3 | | | |
| Zinc (Zn) | mg/kg | < 3 | MCERTS | 57 | 57 | | | |
| 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°C. The Method Description page describes if the test is performed on the dried or as-received portion
Subcontracted analysis (S)

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| Soil Analysis Certificate - Speciated PAHs | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-03884 | Date Sampled | 25/04/22 | 25/04/22 | | | |
| Ground Technology Services | Time Sampled | 1030 | 1041 | | | |
| Site Reference: A47 Wansford to Sutton | TP / BH No | BH112 | BH112 | | | |
| Project / Job Ref: GT0386 | Additional Refs | ES1 | ES2 | | | |
| Order No: M-GT0386/000016 | Depth (m) | 0.10 - 0.20 | 0.50 - 0.60 | | | |
| Reporting Date: 10/05/2022 | DETS Sample No | 596349 | 596350 | | | |

| 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 | < 0.1 | < 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 | | | |

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| Soil Analysis Certificate - EPH Texas Banded | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-03884 | Date Sampled | 25/04/22 | 25/04/22 | | | |
| Ground Technology Services | Time Sampled | 1030 | 1041 | | | |
| Site Reference: A47 Wansford to Sutton | TP / BH No | BH112 | BH112 | | | |
| Project / Job Ref: GT0386 | Additional Refs | ES1 | ES2 | | | |
| Order No: M-GT0386/000016 | Depth (m) | 0.10 - 0.20 | 0.50 - 0.60 | | | |
| Reporting Date: 10/05/2022 | DETS Sample No | 596349 | 596350 | | | |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| EPH Texas (C6 - C8) | mg/kg | < 0.05 | NONE | < 0.05 | < 0.05 | | | |
| EPH Texas (>C8 - C10) | mg/kg | < 1 | MCERTS | < 1 | < 1 | | | |
| EPH Texas (>C10 - C12) | mg/kg | < 1 | MCERTS | < 1 | < 1 | | | |
| EPH Texas (>C12 - C16) | mg/kg | < 1 | MCERTS | < 1 | < 1 | | | |
| EPH Texas (>C16 - C21) | mg/kg | < 1 | MCERTS | < 1 | 3 | | | |
| EPH Texas (>C21 - C40) | mg/kg | < 6 | MCERTS | < 6 | < 6 | | | |
| EPH Texas (C6 - C40) | mg/kg | < 6 | NONE | < 6 | < 6 | | | |

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| Soil Analysis Certificate - BTEX / MTBE | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-03884 | Date Sampled | 25/04/22 | 25/04/22 | | | |
| Ground Technology Services | Time Sampled | 1030 | 1041 | | | |
| Site Reference: A47 Wansford to Sutton | TP / BH No | BH112 | BH112 | | | |
| Project / Job Ref: GT0386 | Additional Refs | ES1 | ES2 | | | |
| Order No: M-GT0386/000016 | Depth (m) | 0.10 - 0.20 | 0.50 - 0.60 | | | |
| Reporting Date: 10/05/2022 | DETS Sample No | 596349 | 596350 | | | |

| 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 | | | |

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UKAS TESTING 4480

| Leachate Analysis Certificate | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-03884 | Date Sampled | 25/04/22 | | | | |
| Ground Technology Services | Time Sampled | 1041 | | | | |
| Site Reference: A47 Wansford to Sutton | TP / BH No | BH112 | | | | |
| Project / Job Ref: GT0386 | Additional Refs | ES2 | | | | |
| Order No: M-GT0386/000016 | Depth (m) | 0.50 - 0.60 | | | | |
| Reporting Date: 10/05/2022 | DETS Sample No | 596351 | | | | |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| pH | pH Units | N/a | ISO17025 | 8.2 | | | | |
| Total Cyanide | ug/l | < 5 | ISO17025 | < 5 | | | | |
| Complex Cyanide | ug/l | < 5 | NONE | < 5 | | | | |
| Free Cyanide | ug/l | < 5 | ISO17025 | < 5 | | | | |
| Sulphate as $SO_4$ | mg/l | < 1 | ISO17025 | 1 | | | | |
| Ammonia as $NH_4$ | ug/l | < 50 | ISO17025 | 70 | | | | |
| Arsenic | ug/l | < 5 | ISO17025 | < 5 | | | | |
| Boron | ug/l | < 5 | ISO17025 | 13 | | | | |
| Cadmium | ug/l | < 0.4 | ISO17025 | < 0.4 | | | | |
| Chromium | ug/l | < 5 | ISO17025 | < 5 | | | | |
| Copper | ug/l | < 5 | ISO17025 | < 5 | | | | |
| Lead | ug/l | < 5 | ISO17025 | 6 | | | | |
| Mercury | ug/l | < 0.05 | ISO17025 | < 0.05 | | | | |
| Nickel | ug/l | < 5 | ISO17025 | < 5 | | | | |
| Selenium | ug/l | < 5 | ISO17025 | < 5 | | | | |
| Zinc | ug/l | < 2 | ISO17025 | 12 | | | | |
| Total Phenols (monohydric) | ug/l | < 10 | ISO17025 | < 10 | | | | |

Subcontracted analysis (S)

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| Leachate Analysis Certificate - Speciated PAH | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-03884 | Date Sampled | 25/04/22 | | | | |
| Ground Technology Services | Time Sampled | 1041 | | | | |
| Site Reference: A47 Wansford to Sutton | TP / BH No | BH112 | | | | |
| Project / Job Ref: GT0386 | Additional Refs | ES2 | | | | |
| Order No: M-GT0386/000016 | Depth (m) | 0.50 - 0.60 | | | | |
| Reporting Date: 10/05/2022 | DETS Sample No | 596351 | | | | |

| Determinand | Unit | RL | Accreditation | | | | |
|---|---|---|---|---|---|---|---|
| Naphthalene | ug/l | < 0.01 | NONE | < 0.01 | | | |
| Acenaphthylene | ug/l | < 0.01 | NONE | < 0.01 | | | |
| Acenaphthene | ug/l | < 0.01 | NONE | < 0.01 | | | |
| Fluorene | ug/l | < 0.01 | NONE | < 0.01 | | | |
| Phenanthrene | ug/l | < 0.01 | NONE | < 0.01 | | | |
| Anthracene | ug/l | < 0.01 | NONE | < 0.01 | | | |
| Fluoranthene | ug/l | < 0.01 | NONE | < 0.01 | | | |
| Pyrene | ug/l | < 0.01 | NONE | < 0.01 | | | |
| Benzo(a)anthracene | ug/l | < 0.01 | NONE | < 0.01 | | | |
| Chrysene | ug/l | < 0.01 | NONE | < 0.01 | | | |
| Benzo(b)fluoranthene | ug/l | < 0.01 | NONE | < 0.01 | | | |
| Benzo(k)fluoranthene | ug/l | < 0.01 | NONE | < 0.01 | | | |
| Benzo(a)pyrene | ug/l | < 0.01 | NONE | < 0.01 | | | |
| Indeno(1,2,3-cd)pyrene | ug/l | < 0.01 | NONE | < 0.01 | | | |
| Dibenz(a,h)anthracene | ug/l | < 0.01 | NONE | < 0.01 | | | |
| Benzo(ghi)perylene | ug/l | < 0.008 | NONE | < 0.008 | | | |
| Total EPA-16 PAHs | ug/l | < 0.16 | NONE | < 0.16 | | | |

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| Leachate Analysis Certificate - EPH Texas Banded | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-03884 | Date Sampled | 25/04/22 | | | | |
| Ground Technology Services | Time Sampled | 1041 | | | | |
| Site Reference: A47 Wansford to Sutton | TP / BH No | BH112 | | | | |
| Project / Job Ref: GT0386 | Additional Refs | ES2 | | | | |
| Order No: M-GT0386/000016 | Depth (m) | 0.50 - 0.60 | | | | |
| Reporting Date: 10/05/2022 | DETS Sample No | 596351 | | | | |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| EPH Texas (C6 - C8) | ug/l | < 10 | NONE | < 10 | | | | |
| EPH Texas (>C8 - C10) | ug/l | < 10 | NONE | 69 | | | | |
| EPH Texas (>C10 - C12) | ug/l | < 10 | NONE | 194 | | | | |
| EPH Texas (>C12 - C16) | ug/l | < 10 | NONE | 58 | | | | |
| EPH Texas (>C16 - C21) | ug/l | < 10 | NONE | < 10 | | | | |
| EPH Texas (>C21 - C40) | ug/l | < 10 | NONE | < 10 | | | | |
| EPH Texas (C6 - C40) | ug/l | < 10 | NONE | 321 | | | | |

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UKAS TESTING
4480

| Leachate Analysis Certificate - BTEX / MTBE | | | | | | |
|---|---|---|---|---|---|---|
| DETS Report No: 22-03884 | Date Sampled | 25/04/22 | | | | |
| Ground Technology Services | Time Sampled | 1041 | | | | |
| Site Reference: A47 Wansford to Sutton | TP / BH No | BH112 | | | | |
| Project / Job Ref: GT0386 | Additional Refs | ES2 | | | | |
| Order No: M-GT0386/000016 | Depth (m) | 0.50 - 0.60 | | | | |
| Reporting Date: 10/05/2022 | DETS Sample No | 596351 | | | | |

| Determinand | Unit | RL | Accreditation | | | | | |
|---|---|---|---|---|---|---|---|---|
| Benzene | ug/l | < 1 | ISO17025 | < 1 | | | | |
| Toluene | ug/l | < 5 | ISO17025 | < 5 | | | | |
| Ethylbenzene | ug/l | < 5 | ISO17025 | < 5 | | | | |
| p & m-xylene | ug/l | < 10 | ISO17025 | < 10 | | | | |
| o-xylene | ug/l | < 5 | ISO17025 | < 5 | | | | |
| MTBE | ug/l | < 10 | ISO17025 | < 10 | | | | |

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| Soil Analysis Certificate - Sample Descriptions |
|---|
| DETS Report No: 22-03884 |
| Ground Technology Services |
| Site Reference: A47 Wansford to Sutton |
| Project / Job Ref: GT0386 |
| Order No: M-GT0386/000016 |
| Reporting Date: 10/05/2022 |

| DETS Sample No | TP / BH No | Additional Refs | Depth (m) | Moisture Content (%) | Sample Matrix Description |
|---|---|---|---|---|---|
| 596349 | BH112 | ES1 | 0.10 - 0.20 | 12.4 | Light brown sandy clay with stones |
| 596350 | BH112 | ES2 | 0.50 - 0.60 | 12.9 | 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

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Maidstone
Kent ME17 2JN
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| Soil Analysis Certificate - Methodology & Miscellaneous Information |
|---|
| DETS Report No: 22-03884 |
| Ground Technology Services |
| Site Reference: A47 Wansford to Sutton |
| Project / Job Ref: GT0386 |
| Order No: M-GT0386/000016 |
| Reporting Date: 10/05/2022 |

| 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 | Fraction Organic Carbon (FOC) | Determination of TOC by combustion analyser. | E027 |
| Soil | D | Organic Matter (SOM) | Determination of TOC by combustion analyser. | E027 |
| Soil | D | TOC (Total Organic Carbon) | Determination of TOC by combustion analyser. | E027 |
| Soil | AR | Exchangeable Ammonium | Determination of ammonium by discrete analyser. | E029 |
| 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

| Water Analysis Certificate - Methodology & Miscellaneous Information |
|---|
| DETS Report No: 22-03884 |
| Ground Technology Services |
| Site Reference: A47 Wansford to Sutton |
| Project / Job Ref: GT0386 |
| Order No: M-GT0386/000016 |
| Reporting Date: 10/05/2022 |

| 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 | F | Ammoniacal Nitrogen | Determination of ammoniacal nitrogen by discrete analyser. | E126 |
| 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 | 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 dete | 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 dichlorometha | 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

GROUND TECHNOLOGY

# Appendix VI – Post monitoring data

| Site: | A47 Wansford to Sutton Dualling | Job No: | GT0386 |
|---|---|---|---|
| Client | Galliford Try | | |

## Groundwater monitoring during fieldwork stage

| Borehole ID | 18/02/2022 | 25/02/2022 | 04/03/2022 | 11/03/2022 | 18/03/2022 | 25/03/2022 | 01/04/2022 | 08/04/2022 | 14/04/2022 | 22/04/2022 | 29/04/2022 | 18/05/2022 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BH104A | - | 4.01 | 3.95 | 3.93 | 3.95 | 3.94 | 3.96 | 3.93 | 3.93 | 3.93 | 3.93 | 3.91 |
| BH105 | - | - | 5.16 | 5.18 | 5.18 | 5.18 | 5.20 | 5.19 | 5.20 | 5.20 | 5.22 | 5.31 |
| BH107 | - | - | Dry | Dry | Dry | Dry | Dry | Dry | Dry | Dry | Dry | Dry |
| BH108 | - | - | 7.84 | 7.86 | 7.85 | 7.86 | 7.87 | 7.86 | 7.85 | 7.85 | 7.86 | 7.88 |
| BH109 | - | Dry | Dry | Dry | Dry | Dry | Dry | Dry | Dry | Dry | Dry | Dry |
| BH110 | - | - | - | 5.01 | 5.06 | 5.04 | 5.04 | 5.03 | 5.04 | 5.04 | 5.03 | 5.03 |
| BH111 | - | - | - | 8.15 | 8.17 | 8.17 | 8.15 | 8.17 | 8.18 | 8.18 | 8.18 | 8.25 |
| BH112 | - | - | - | - | - | - | - | - | - | - | 3.14 | 3.15 |
| BH113 | - | - | - | - | - | - | - | - | - | - | 1.41 | 1.43 |
| BH114 | - | - | - | - | 1.36 | 1.38 | 1.37 | 1.42 | 1.40 | 1.40 | 1.42 | 1.72 |
| BH116 | - | - | - | - | 1.87 | 1.91 | 1.91 | 1.91 | 1.93 | 1.92 | 1.91 | 1.94 |
| BH117 | - | - | - | - | 4.82 | 4.82 | 4.84 | 4.86 | 4.85 | 4.85 | 4.90 | 4.98 |
| BH119 | - | - | - | - | - | 5.36 | 5.38 | 5.36 | 5.36 | 5.36 | 5.35 | 5.38 |
| BH121 | - | - | - | - | - | - | - | Dry | Dry | Dry | Dry | Dry |
| BH123 | - | - | - | - | - | - | - | Dry | Dry | Dry | Dry | Dry |
| BH124 | - | - | - | - | - | - | - | Dry | Dry | Dry | Dry | Dry |
| BH126 | - | - | - | - | - | - | - | Dry | Dry | Dry | Dry | Dry |
| BH127 | - | - | - | - | - | - | Dry | Dry | Dry | Dry | Dry | Dry |
| BH128 | - | - | - | - | 0.60 | 0.58 | 0.61 | 0.65 | 0.64 | 0.64 | 0.64 | 0.66 |
| BH129 | - | - | - | - | - | - | Dry | Dry | Dry | Dry | Dry | Dry |
| BH130 | - | - | - | - | - | - | - | Dry | Dry | Dry | Dry | Dry |
| BH131 | - | - | - | - | - | - | - | Dry | Dry | Dry | Dry | Dry |
| BH132 | - | 5.10 | 5.10 | 5.09 | 5.11 | 5.05 | 5.11 | 5.12 | 5.12 | 5.12 | 5.10 | 5.04 |
| BH133 | - | - | - | 0.55 | 0.48 | 0.50 | 0.52 | 0.52 | 0.52 | 0.50 | 0.50 | 0.57 |
| BH134 | - | - | - | - | - | - | - | - | 3.11 | 3.10 | 3.10 | 3.42 |

# Low-Flow Test Report:

**Test Date / Time:** 14/03/2022 12:35:17
**Project:** GT0386
**Operator Name:** JJ

| | | |
|---|---|---|
| **Location Name: BH109**<br>**Initial Depth to Water: 9.54 m** | **Flow Cell Volume: 90 ml**<br>**Final Draw Down: 0 m** | **Instrument Used: Aqua TROLL 400**<br>**Serial Number: 900183** |

**Test Notes:**

**Low-Flow Readings:**

| Date Time | Elapsed Time | pH | Temperature | Specific Conductivity | RDO Concentration | Turbidity | ORP | Depth to Water |
|---|---|---|---|---|---|---|---|---|
| | | +/- 0.1 | +/- 0.5 | +/- 3 % | +/- 0.3 | +/- 10 | +/- 10 | +/- 5 |
| 14/03/2022 12:35 | 00:00 | 8.00 pH | 15.96 °C | 1,109.8 µS/cm | | | 118.9 mV | 954.00 cm |
| 14/03/2022 12:40 | 05:00 | 8.26 pH | 12.77 °C | 4.07 µS/cm | | | 87.9 mV | 954.00 cm |
| 14/03/2022 12:45 | 10:00 | 8.45 pH | 13.37 °C | 2.60 µS/cm | | | 82.0 mV | 954.00 cm |
| 14/03/2022 12:50 | 15:00 | 8.50 pH | 13.82 °C | 2.18 µS/cm | | | 81.1 mV | 954.00 cm |
| 14/03/2022 12:55 | 20:00 | 8.54 pH | 14.13 °C | 1.91 µS/cm | | | 80.9 mV | 954.00 cm |
| 14/03/2022 13:00 | 25:00 | 8.53 pH | 14.32 °C | 1.80 µS/cm | | | 80.9 mV | 954.00 cm |
| 14/03/2022 13:05 | 30:00 | 8.52 pH | 14.50 °C | 1.72 µS/cm | | | 80.7 mV | 954.00 cm |
| 14/03/2022 13:10 | 35:00 | 8.50 pH | 14.69 °C | 1.73 µS/cm | | | 81.6 mV | 954.00 cm |

**Samples**

| Sample ID: | Description: |
|---|---|

Created using VuSitu from In-Situ, Inc.

# Low-Flow Test Report:

**Test Date / Time:** 15/03/2022 12:22:00
**Project:** GT0386
**Operator Name:** JJ

| | | |
|---|---|---|
| **Location Name: BH110**<br>**Initial Depth to Water: 5.29 m** | **Flow Cell Volume: 90 ml**<br>**Final Draw Down: 0 m** | **Instrument Used: Aqua TROLL 400**<br>**Serial Number: 900183** |

**Test Notes:**

**Low-Flow Readings:**

| Date Time | Elapsed Time | pH | Temperature | Specific Conductivity | RDO Concentration | Turbidity | ORP | Depth to Water |
|---|---|---|---|---|---|---|---|---|
| | | +/- 0.1 | +/- 0.5 | +/- 3 % | +/- 0.3 | +/- 10 | +/- 10 | +/- 5 |
| 15/03/2022 12:22 | 00:00 | 8.71 pH | 16.46 °C | 24.39 µS/cm | | | 64.3 mV | 529.00 cm |
| 15/03/2022 12:27 | 05:00 | 7.19 pH | 12.12 °C | 1,377.2 µS/cm | | | 68.4 mV | 529.00 cm |
| 15/03/2022 12:32 | 10:00 | 7.17 pH | 12.04 °C | 1,402.5 µS/cm | | | 63.5 mV | 529.00 cm |
| 15/03/2022 12:37 | 15:00 | 7.16 pH | 12.06 °C | 1,414.9 µS/cm | | | 59.4 mV | 529.00 cm |
| 15/03/2022 12:42 | 20:00 | 7.15 pH | 12.31 °C | 1,410.3 µS/cm | | | 57.3 mV | 529.00 cm |
| 15/03/2022 12:47 | 25:00 | 7.15 pH | 12.59 °C | 1,411.7 µS/cm | | | 55.9 mV | 529.00 cm |
| 15/03/2022 12:52 | 30:00 | 7.14 pH | 12.97 °C | 1,412.9 µS/cm | | | 55.4 mV | 529.00 cm |

**Samples**

| Sample ID: | Description: |
|---|---|

Created using VuSitu from In-Situ, Inc.

# Low-Flow Test Report:

**Test Date / Time:** 14/03/2022 11:09:10
**Project:** GT0386
**Operator Name:** JJ

| | | |
|---|---|---|
| **Location Name: BH111**<br>**Initial Depth to Water: 8.37 m** | **Flow Cell Volume: 90 ml**<br>**Final Draw Down: 0 m** | **Instrument Used: Aqua TROLL 400**<br>**Serial Number: 900183** |

**Test Notes:**

**Low-Flow Readings:**

| Date Time | Elapsed Time | pH | Temperature | Specific Conductivity | RDO Concentration | Turbidity | ORP | Depth to Water |
|---|---|---|---|---|---|---|---|---|
| | | +/- 0.1 | +/- 0.5 | +/- 3 % | +/- 0.3 | +/- 10 | +/- 10 | +/- 5 |
| 14/03/2022 11:09 | 00:00 | 7.78 pH | 16.62 °C | 1,204.3 µS/cm | | | 99.9 mV | 837.00 cm |
| 14/03/2022 11:14 | 05:00 | 7.63 pH | 14.41 °C | 35.39 µS/cm | | | 45.1 mV | 837.00 cm |
| 14/03/2022 11:19 | 10:00 | 8.27 pH | 15.24 °C | 3.40 µS/cm | | | 117.0 mV | 837.00 cm |
| 14/03/2022 11:24 | 15:00 | 8.51 pH | 16.12 °C | 3.39 µS/cm | | | 101.7 mV | 837.00 cm |
| 14/03/2022 11:29 | 20:00 | 8.55 pH | 16.56 °C | 3.03 µS/cm | | | 97.9 mV | 837.00 cm |
| 14/03/2022 11:33 | 24:17 | 8.53 pH | 16.77 °C | 2.85 µS/cm | | | 106.5 mV | 837.00 cm |
| 14/03/2022 11:38 | 29:17 | 8.54 pH | 16.79 °C | 2.69 µS/cm | | | 98.3 mV | 837.00 cm |
| 14/03/2022 11:43 | 34:17 | 8.54 pH | 16.66 °C | 2.59 µS/cm | | | 96.7 mV | 837.00 cm |
| 14/03/2022 11:48 | 39:17 | 8.54 pH | 16.40 °C | 2.51 µS/cm | | | 94.7 mV | 837.00 cm |
| 14/03/2022 11:49 | 40:10 | 8.54 pH | 16.35 °C | 2.49 µS/cm | | | 78.3 mV | 837.00 cm |
| 14/03/2022 11:50 | 40:59 | 8.54 pH | 16.30 °C | 2.49 µS/cm | | | 73.3 mV | 837.00 cm |
| 14/03/2022 11:50 | 41:30 | 8.53 pH | 16.25 °C | 2.49 µS/cm | | | 98.2 mV | 837.00 cm |

**Samples**

| Sample ID: | Description: |
|---|---|

# Low-Flow Test Report:

**Test Date / Time:** 17/05/2022 14:23:38
**Project:** GT0386
**Operator Name:** MM

| | | |
|---|---|---|
| **Location Name: BH112**<br>**Well Diameter: 5 cm**<br>**Total Depth: 18.05 m**<br>**Initial Depth to Water: 3.15 m** | **Flow Cell Volume: 90 ml**<br>**Final Draw Down: 0 m** | **Instrument Used: Aqua TROLL 400**<br>**Serial Number: 900183** |

**Test Notes:**

**Low-Flow Readings:**

| Date Time | Elapsed Time | pH | Temperature | Specific Conductivity | RDO Concentration | Turbidity | ORP | Depth to Water |
|---|---|---|---|---|---|---|---|---|
| | | +/- 0.1 | +/- 0.5 | +/- 3 % | +/- 0.3 | +/- 10 | +/- 10 | +/- 5 |
| 17/05/2022 14:23 | 00:00 | 7.38 pH | 25.79 °C | 54.75 µS/cm | | | 243.6 mV | 315.00 cm |
| 17/05/2022 14:28 | 05:00 | 7.76 pH | 23.76 °C | 1,727.7 µS/cm | | | 96.7 mV | 315.00 cm |
| 17/05/2022 14:33 | 10:00 | 7.76 pH | 15.97 °C | 97.14 µS/cm | | | 118.3 mV | 315.00 cm |
| 17/05/2022 14:38 | 15:00 | 7.64 pH | 15.63 °C | 114.30 µS/cm | | | 127.2 mV | 315.00 cm |
| 17/05/2022 14:43 | 20:00 | 8.05 pH | 17.06 °C | 1,859.8 µS/cm | | | 104.9 mV | 315.00 cm |
| 17/05/2022 14:48 | 25:00 | 7.84 pH | 19.31 °C | 1,225.1 µS/cm | | | 113.9 mV | 315.00 cm |

**Samples**

| Sample ID: | Description: |
|---|---|

Created using VuSitu from In-Situ, Inc.

# Low-Flow Test Report:

**Test Date / Time:** 21/04/2022 09:46:43
**Project:** GT0386
**Operator Name:** MM

| | | |
|---|---|---|
| **Location Name: BH114**<br>**Well Diameter: 5 cm**<br>**Total Depth: 4.71 m**<br>**Initial Depth to Water: 1.47 m** | **Flow Cell Volume: 90 ml**<br>**Final Draw Down: 0.38 m** | **Instrument Used: Aqua TROLL 400**<br>**Serial Number: 900183** |

**Test Notes:**

**Low-Flow Readings:**

| Date Time | Elapsed Time | pH | Temperature | Specific Conductivity | RDO Concentration | Turbidity | ORP | Depth to Water |
|---|---|---|---|---|---|---|---|---|
| | | +/- 0.1 | +/- 0.5 | +/- 3 % | +/- 0.3 | +/- 10 | +/- 10 | +/- 5 |
| 21/04/2022 09:46 | 00:00 | 7.76 pH | 11.34 °C | 654.92 µS/cm | | | 79.9 mV | 147.00 cm |
| 21/04/2022 09:51 | 05:00 | 7.53 pH | 8.90 °C | 698.39 µS/cm | | | 95.2 mV | 147.00 cm |
| 21/04/2022 09:56 | 10:00 | 7.50 pH | 8.88 °C | 703.51 µS/cm | | | 95.8 mV | 147.00 cm |
| 21/04/2022 10:01 | 15:00 | 7.49 pH | 8.86 °C | 705.94 µS/cm | | | 95.6 mV | 147.00 cm |
| 21/04/2022 10:06 | 20:00 | 7.49 pH | 8.86 °C | 705.72 µS/cm | | | 95.4 mV | 147.00 cm |

**Samples**

| Sample ID: | Description: |
|---|---|

# Low-Flow Test Report:

**Test Date / Time:** 21/04/2022 12:48:20
**Project:** GT0386
**Operator Name:** MM

| | | |
|---|---|---|
| **Location Name: BH116**<br>**Well Diameter: 5 cm**<br>**Total Depth: 6.08 m**<br>**Initial Depth to Water: 1.94 m** | **Flow Cell Volume: 90 ml**<br>**Final Draw Down: 0.06 m** | **Instrument Used: Aqua TROLL 400**<br>**Serial Number: 900183** |

**Test Notes:**

**Low-Flow Readings:**

| Date Time | Elapsed Time | pH | Temperature | Specific Conductivity | RDO Concentration | Turbidity | ORP | Depth to Water |
|---|---|---|---|---|---|---|---|---|
| | | +/- 0.1 | +/- 0.5 | +/- 3 % | +/- 0.3 | +/- 10 | +/- 10 | +/- 5 |
| 21/04/2022 12:48 | 00:00 | 7.60 pH | 18.44 °C | 1,615.9 µS/cm | | | -72.7 mV | 194.00 cm |
| 21/04/2022 12:53 | 05:00 | 7.69 pH | 10.50 °C | 1,029.1 µS/cm | | | -60.5 mV | 194.00 cm |
| 21/04/2022 12:58 | 10:00 | 7.69 pH | 10.42 °C | 964.28 µS/cm | | | -42.6 mV | 194.00 cm |
| 21/04/2022 13:03 | 15:00 | 7.69 pH | 10.61 °C | 931.61 µS/cm | | | -38.8 mV | 194.00 cm |
| 21/04/2022 13:08 | 20:00 | 7.69 pH | 10.43 °C | 928.07 µS/cm | | | -38.2 mV | 194.00 cm |

**Samples**

| Sample ID: | Description: |
|---|---|

# Low-Flow Test Report:

**Test Date / Time:** 15/03/2022 13:41:16
**Project:** GT0386
**Operator Name:** AB

| | | |
|---|---|---|
| **Location Name: BH117**<br>**Initial Depth to Water: 5.26 m** | **Flow Cell Volume: 90 ml**<br>**Final Draw Down: 0 m** | **Instrument Used: Aqua TROLL 400**<br>**Serial Number: 900183** |

**Test Notes:**

**Low-Flow Readings:**

| Date Time | Elapsed Time | pH | Temperature | Specific Conductivity | RDO Concentration | Turbidity | ORP | Depth to Water |
|---|---|---|---|---|---|---|---|---|
| | | +/- 0.1 | +/- 0.5 | +/- 3 % | +/- 0.3 | +/- 10 | +/- 10 | +/- 5 |
| 15/03/2022 13:41 | 00:00 | 8.34 pH | 14.90 °C | 1,096.0 µS/cm | | | 58.9 mV | 526.00 cm |
| 15/03/2022 13:46 | 05:00 | 8.33 pH | 14.05 °C | 1,110.7 µS/cm | | | 3.4 mV | 526.00 cm |
| 15/03/2022 13:51 | 10:00 | 8.37 pH | 14.00 °C | 1,111.3 µS/cm | | | -19.7 mV | 526.00 cm |
| 15/03/2022 13:56 | 15:00 | 8.37 pH | 14.25 °C | 1,116.2 µS/cm | | | -30.3 mV | 526.00 cm |
| 15/03/2022 14:01 | 20:00 | 8.36 pH | 14.59 °C | 1,119.9 µS/cm | | | -39.3 mV | 526.00 cm |
| 15/03/2022 14:06 | 25:00 | 8.34 pH | 14.99 °C | 1,122.4 µS/cm | | | -43.6 mV | 526.00 cm |

**Samples**

| Sample ID: | Description: |
|---|---|

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# Low-Flow Test Report:

**Test Date / Time:** 21/04/2022 10:30:57
**Project:** GT0386
**Operator Name:** MM

| | | |
|---|---|---|
| **Location Name: BH119**<br>**Well Diameter: 5 cm**<br>**Total Depth: 15.67 m**<br>**Initial Depth to Water: 5.36 m** | **Flow Cell Volume: 90 ml**<br>**Final Draw Down: 1.64 m** | **Instrument Used: Aqua TROLL 400**<br>**Serial Number: 900183** |

**Test Notes:**

**Low-Flow Readings:**

| Date Time | Elapsed Time | pH | Temperature | Specific Conductivity | RDO Concentration | Turbidity | ORP | Depth to Water |
|---|---|---|---|---|---|---|---|---|
| | | +/- 0.1 | +/- 0.5 | +/- 3 % | +/- 0.3 | +/- 10 | +/- 10 | +/- 5 |
| 21/04/2022 10:30 | 00:00 | 7.79 pH | 12.85 °C | 2,409.4 µS/cm | | | -21.1 mV | 536.00 cm |
| 21/04/2022 10:35 | 05:00 | 7.39 pH | 12.35 °C | 3,058.5 µS/cm | | | -67.6 mV | 536.00 cm |
| 21/04/2022 10:40 | 10:00 | 7.44 pH | 12.86 °C | 3,039.8 µS/cm | | | -45.4 mV | 536.00 cm |
| 21/04/2022 10:45 | 15:00 | 7.36 pH | 13.24 °C | 3,072.3 µS/cm | | | -49.8 mV | 536.00 cm |
| 21/04/2022 10:50 | 20:00 | 7.25 pH | 12.85 °C | 3,136.0 µS/cm | | | -50.8 mV | 536.00 cm |
| 21/04/2022 10:55 | 25:00 | 7.22 pH | 13.13 °C | 3,138.4 µS/cm | | | -50.5 mV | 536.00 cm |

**Samples**

| Sample ID: | Description: |
|---|---|

Created using VuSitu from In-Situ, Inc.

# Low-Flow Test Report:

**Test Date / Time:** 15/03/2022 10:48:53
**Project:** GT0386
**Operator Name:** JJ

| | | |
|---|---|---|
| **Location Name: BH128**<br>**Initial Depth to Water: 0.88 m** | **Flow Cell Volume: 90 ml**<br>**Final Draw Down: 0 m** | **Instrument Used: Aqua TROLL 400**<br>**Serial Number: 900183** |

**Test Notes:**

**Low-Flow Readings:**

| Date Time | Elapsed Time | pH | Temperature | Specific Conductivity | RDO Concentration | Turbidity | ORP | Depth to Water |
|---|---|---|---|---|---|---|---|---|
| | | +/- 0.1 | +/- 0.5 | +/- 3 % | +/- 0.3 | +/- 10 | +/- 10 | +/- 5 |
| 15/03/2022 10:48 | 00:00 | 7.90 pH | 9.90 °C | 577.19 µS/cm | | | 74.1 mV | |
| 15/03/2022 10:53 | 05:00 | 7.62 pH | 9.32 °C | 2,528.2 µS/cm | | | -88.6 mV | |
| 15/03/2022 10:58 | 10:00 | 7.20 pH | 8.86 °C | 2,558.9 µS/cm | | | -63.3 mV | |
| 15/03/2022 11:03 | 15:00 | 7.21 pH | 8.90 °C | 2,543.7 µS/cm | | | -60.8 mV | |
| 15/03/2022 11:08 | 20:00 | 7.98 pH | 10.49 °C | 18.96 µS/cm | | | 0.6 mV | |
| 15/03/2022 11:13 | 25:00 | 8.22 pH | 11.76 °C | 16.99 µS/cm | | | 41.3 mV | |
| 15/03/2022 11:18 | 30:00 | 8.29 pH | 12.72 °C | 16.32 µS/cm | | | 57.0 mV | |
| 15/03/2022 11:23 | 35:00 | 8.36 pH | 13.83 °C | 16.07 µS/cm | | | 62.4 mV | |

**Samples**

| Sample ID: | Description: |
|---|---|

Created using VuSitu from In-Situ, Inc.

# Low-Flow Test Report:

**Test Date / Time:** 28/02/2022 15:22:07
**Project:** GT0386
**Operator Name:** JJ

| | | |
|---|---|---|
| **Location Name: BH132**<br>**Initial Depth to Water: 5.10 m** | **Flow Cell Volume: 90 ml** | **Instrument Used: Aqua TROLL 400**<br>**Serial Number: 900183** |

**Test Notes:**

**Low-Flow Readings:**

| Date Time | Elapsed Time | pH | Temperature | Specific Conductivity | RDO Concentration | Turbidity | ORP | Depth to Water | Salinity |
|---|---|---|---|---|---|---|---|---|---|
| | | +/- 0.1 | +/- 0.5 | +/- 3 % | +/- 0.3 | +/- 10 | +/- 10 | +/- 5 | +/- 10 |
| 28/02/2022 15:22 | 00:00 | 7.19 pH | 12.32 °C | 1,324.7 µS/cm | | | 101.7 mV | | 0.66 PSU |
| 28/02/2022 15:23 | 01:00 | 7.16 pH | 12.04 °C | 1,336.1 µS/cm | | | 98.7 mV | | 0.67 PSU |
| 28/02/2022 15:24 | 02:00 | 7.15 pH | 11.86 °C | 1,342.2 µS/cm | | | 102.6 mV | | 0.67 PSU |
| 28/02/2022 15:25 | 03:00 | 7.16 pH | 11.80 °C | 1,344.8 µS/cm | | | 98.1 mV | | 0.67 PSU |
| 28/02/2022 15:26 | 04:00 | 7.15 pH | 11.76 °C | 1,345.3 µS/cm | | | 95.0 mV | | 0.67 PSU |
| 28/02/2022 15:27 | 05:00 | 7.15 pH | 11.76 °C | 1,344.2 µS/cm | | | 92.8 mV | | 0.67 PSU |
| 28/02/2022 15:28 | 06:00 | 7.15 pH | 11.76 °C | 1,343.2 µS/cm | | | 90.4 mV | | 0.67 PSU |
| 28/02/2022 15:29 | 07:00 | 7.15 pH | 11.76 °C | 1,341.3 µS/cm | | | 88.3 mV | | 0.67 PSU |
| 28/02/2022 15:30 | 08:00 | 7.15 pH | 11.76 °C | 1,339.5 µS/cm | | | 86.9 mV | | 0.67 PSU |
| 28/02/2022 15:31 | 09:00 | 7.15 pH | 11.76 °C | 1,337.2 µS/cm | | | 85.4 mV | | 0.67 PSU |
| 28/02/2022 15:32 | 10:00 | 7.16 pH | 11.76 °C | 1,335.9 µS/cm | | | 76.6 mV | | 0.67 PSU |
| 28/02/2022 15:32 | 10:33 | 7.16 pH | 11.76 °C | 1,334.7 µS/cm | | | 86.7 mV | | 0.67 PSU |
| 28/02/2022 15:33 | 11:33 | 7.16 pH | 11.77 °C | 1,331.7 µS/cm | | | 77.9 mV | | 0.67 PSU |
| 28/02/2022 15:34 | 12:33 | 7.16 pH | 11.76 °C | 1,330.2 µS/cm | | | 89.3 mV | | 0.67 PSU |
| 28/02/2022 15:35 | 13:33 | 7.16 pH | 11.77 °C | 1,327.5 µS/cm | | | 76.5 mV | | 0.67 PSU |
| 28/02/2022 15:36 | 14:33 | 7.16 pH | 11.77 °C | 1,325.6 µS/cm | | | 72.6 mV | | 0.66 PSU |
| 28/02/2022 15:37 | 15:33 | 7.16 pH | 11.77 °C | 1,323.4 µS/cm | | | 71.8 mV | | 0.66 PSU |

## Samples

| Sample ID: | Description: |
| --- | --- |

# Low-Flow Test Report:

**Test Date / Time:** 14/03/2022 15:48:46
**Project:** GT0386
**Operator Name:** JJ

| | | |
|---|---|---|
| **Location Name: BH133**<br>**Initial Depth to Water: 0.55 m** | **Flow Cell Volume: 90 ml** | **Instrument Used: Aqua TROLL 400**<br>**Serial Number: 900183** |

**Test Notes:**

**Low-Flow Readings:**

| Date Time | Elapsed Time | pH | Temperature | Specific Conductivity | RDO Concentration | Turbidity | ORP | Depth to Water |
|---|---|---|---|---|---|---|---|---|
| | | +/- 0.1 | +/- 0.5 | +/- 3 % | +/- 0.3 | +/- 10 | +/- 10 | +/- 5 |
| 14/03/2022 15:48 | 00:00 | 7.63 pH | 16.94 °C | 1,050.6 µS/cm | | | 96.5 mV | |
| 14/03/2022 15:53 | 05:00 | 7.51 pH | 12.52 °C | 1,085.9 µS/cm | | | 1.5 mV | |
| 14/03/2022 15:58 | 10:00 | 9.05 pH | 14.41 °C | 83.22 µS/cm | | | 65.6 mV | |
| 14/03/2022 16:03 | 15:00 | 9.11 pH | 15.96 °C | 74.60 µS/cm | | | 70.8 mV | |
| 14/03/2022 16:08 | 20:00 | 9.13 pH | 17.01 °C | 73.96 µS/cm | | | 72.7 mV | |
| 14/03/2022 16:13 | 25:00 | 9.19 pH | 17.77 °C | 73.23 µS/cm | | | 74.4 mV | |
| 14/03/2022 16:18 | 30:00 | 9.27 pH | 18.06 °C | 71.55 µS/cm | | | 75.0 mV | |

**Samples**

| Sample ID: | Description: |
|---|---|

# Low-Flow Test Report:

**Test Date / Time:** 21/04/2022 11:17:17
**Project:** GT0386
**Operator Name:** MM

| | | |
|---|---|---|
| **Location Name: BH134**<br>**Well Diameter: 5 cm**<br>**Total Depth: 4.87 m**<br>**Initial Depth to Water: 3.19 m** | **Flow Cell Volume: 90 ml**<br>**Final Draw Down: 1.04 m** | **Instrument Used: Aqua TROLL 400**<br>**Serial Number: 900183** |

**Test Notes:**

**Low-Flow Readings:**

| Date Time | Elapsed Time | pH | Temperature | Specific Conductivity | RDO Concentration | Turbidity | ORP | Depth to Water |
|---|---|---|---|---|---|---|---|---|
| | | +/- 0.1 | +/- 0.5 | +/- 3 % | +/- 0.3 | +/- 10 | +/- 10 | +/- 5 |
| 21/04/2022 11:17 | 00:00 | 7.59 pH | 13.27 °C | 761.58 µS/cm | | | 57.1 mV | 319.00 cm |
| 21/04/2022 11:22 | 05:00 | 7.50 pH | 11.39 °C | 804.80 µS/cm | | | 71.9 mV | 319.00 cm |
| 21/04/2022 11:27 | 10:00 | 7.45 pH | 12.17 °C | 807.97 µS/cm | | | 73.4 mV | 319.00 cm |
| 21/04/2022 11:32 | 15:00 | 7.42 pH | 12.61 °C | 810.94 µS/cm | | | 73.3 mV | 319.00 cm |
| 21/04/2022 11:37 | 20:00 | 7.41 pH | 12.73 °C | 810.75 µS/cm | | | 74.0 mV | 319.00 cm |

**Samples**

| Sample ID: | Description: |
|---|---|

# Low-Flow Test Report:

**Test Date / Time:** 17/05/2022 13:41:57
**Project:** GT0386
**Operator Name:** MM

| | | |
|---|---|---|
| **Location Name: BH113**<br>**Well Diameter: 5 cm**<br>**Total Depth: 5.3 m**<br>**Initial Depth to Water: 1.42 m** | **Flow Cell Volume: 90 ml**<br>**Final Draw Down: 0 m** | **Instrument Used: Aqua TROLL 400**<br>**Serial Number: 900183** |

**Test Notes:**

**Low-Flow Readings:**

| Date Time | Elapsed Time | pH | Temperature | Specific Conductivity | RDO Concentration | Turbidity | ORP | Depth to Water |
|---|---|---|---|---|---|---|---|---|
| | | +/- 0.1 | +/- 0.5 | +/- 3 % | +/- 0.3 | +/- 10 | +/- 10 | +/- 5 |
| 17/05/2022 13:41 | 00:00 | 7.60 pH | 19.96 °C | 112.32 µS/cm | | | 113.0 mV | 142.00 cm |
| 17/05/2022 13:46 | 05:00 | 7.54 pH | 15.06 °C | 2,216.8 µS/cm | | | 47.1 mV | 142.00 cm |
| 17/05/2022 13:51 | 10:00 | 7.54 pH | 16.47 °C | 2,367.0 µS/cm | | | 49.6 mV | 142.00 cm |
| 17/05/2022 13:56 | 15:00 | 7.54 pH | 17.60 °C | 2,351.2 µS/cm | | | 49.5 mV | 142.00 cm |

**Samples**

| Sample ID: | Description: |
|---|---|

Created using VuSitu from In-Situ, Inc.

# Ground Gas monitoring record

| | |
|---|---|
| Instrument reference | GFM 436 |
| Date | 13 June 2022 |

| Monitoring location | Date and time | Monitoring round | Methane | Carbon dioxide | Oxygen | Lower Explosive Limit | Hydrogen sulphide | Carbon monoxide | Hexane | Instantaneous flow | Peak flow | Differential pressure | Atmospheric pressure | Static pressure | Photoionisation detection | Water depth | Installation base | Comments | Engineer |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | CH4 | CO2 | O2 | LEL | H2S | CO | Hex | Flw | PkFlw | DP | AP | SP | PID | | | | |
| | dd/mm/yyyy hh:mm:ss | | % | % | % | % | ppm | ppm | % | l/h | l/h | Pa | mb | mb | - | m | m | | |
| BH104A | 13/06/2022 10:00:04 | 1 | 0.0 | 0.4 | 18.7 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1024 | | 0.00 | 3.97 | 8.90 | Monitoring well in good order, tap closed on arrival. | MM |
| | 10:00:34 | | 0.0 | 0.4 | 19.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 10:01:04 | | 0.0 | 0.3 | 19.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH105 | 13/06/2022 10:02:33 | 1 | 0.0 | 0.3 | 20.3 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1024 | | 0.00 | 5.36 | 5.77 | Monitoring well in good order, tap closed on arrival. | MM |
| | 10:03:03 | | 0.0 | 0.3 | 20.3 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 10:03:33 | | 0.0 | 0.3 | 20.3 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH107 | 13/06/2022 10:09:31 | 1 | 0.0 | 1.2 | 19.8 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1024 | | 0.00 | 7.38 | 7.41 | Monitoring well in good order, tap closed on arrival. | MM |
| | 10:10:01 | | 0.0 | 1.2 | 19.6 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 10:10:31 | | 0.0 | 1.2 | 19.5 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH108 | 13/06/2022 10:43:36 | 1 | 0.0 | 0.9 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1024 | | 0.00 | 7.87 | 10.43 | Monitoring well in good order, tap closed on arrival. | MM |
| | 10:44:06 | | 0.0 | 0.9 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 10:44:36 | | 0.0 | 0.9 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH109 | 13/06/2022 08:10:11 | 1 | 0.0 | 0.8 | 19.7 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1024 | | 0.00 | Dry | 4.42 | Monitoring well in good order, tap closed on arrival. | MM |
| | 08:10:41 | | 0.0 | 0.8 | 19.7 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 08:11:11 | | 0.0 | 0.8 | 19.7 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH110 | 13/06/2022 08:40:22 | 1 | 0.0 | 0.6 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1024 | | 0.00 | 5.07 | 8.78 | Monitoring well in good order, tap closed on arrival. | MM |
| | 08:40:52 | | 0.0 | 0.6 | 19.9 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 08:41:22 | | 0.0 | 0.5 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH111 | 13/06/2022 09:40:31 | 1 | 0.0 | 0.9 | 19.9 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1024 | | 0.00 | 8.28 | 8.82 | Monitoring well in good order, tap closed on arrival. | MM |
| | 09:41:01 | | 0.0 | 0.9 | 19.9 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 09:41:31 | | 0.0 | 0.9 | 19.9 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH112 | 13/06/2022 10:25:54 | 1 | 0.0 | 0.1 | 20.8 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1024 | | 0.00 | 2.64 | 18.02 | Monitoring well in good order, tap closed on arrival. | MM |
| | 10:26:24 | | 0.0 | 0.0 | 20.8 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 10:26:54 | | 0.0 | 0.0 | 20.8 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |

# Ground Gas monitoring record

| | |
|---|---|
| Instrument reference | GFM 436 |
| Date | 13 June 2022 |

| Monitoring location | Date and time | Monitoring round | Methane | Carbon dioxide | Oxygen | Lower Explosive Limit | Hydrogen sulphide | Carbon monoxide | Hexane | Instantaneous flow | Peak flow | Differential pressure | Atmospheric pressure | Static pressure | Photoionisation detection | Water depth | Installation base | Comments | Engineer |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | CH4 | CO2 | O2 | LEL | H2S | CO | Hex | Flw | PkFlw | DP | AP | SP | PID | | | | |
| | dd/mm/yyyy hh:mm:ss | | % | % | % | % | ppm | ppm | % | l/h | l/h | Pa | mb | mb | - | m | m | | |
| BH113 | 13/06/2022 11:40:35 | 1 | 0.0 | 0.0 | 20.7 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1024 | | 0.00 | 0.64 | 4.86 | Monitoring well in good order, tap closed on arrival. | MM |
| | 11:41:05 | | 0.0 | 0.0 | 20.7 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 11:41:35 | | 0.0 | 0.0 | 20.7 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH114 | 13/06/2022 11:20:32 | 1 | 0.0 | 2.1 | 18.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1024 | | 0.00 | 1.82 | 4.67 | Monitoring well in good order, tap closed on arrival. | MM |
| | 11:21:02 | | 0.0 | 2.1 | 18.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 11:21:32 | | 0.0 | 2.1 | 17.9 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH116 | 13/06/2022 11:10:08 | 1 | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | | 1024 | | n/a | 2.07 | 4.69 | Monitoring well in good order, tap closed on arrival. | MM |
| | 11:10:38 | | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | | | | n/a | | | | |
| | 11:11:08 | | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | | | | n/a | | | | |
| BH117 | 13/06/2022 11:25:11 | 1 | 0.0 | 0.8 | 19.6 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1024 | | 0.00 | 5.10 | 8.30 | Monitoring well in good order, tap closed on arrival. | MM |
| | 11:25:41 | | 0.0 | 0.8 | 19.6 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 11:26:11 | | 0.0 | 0.8 | 19.6 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH119 | 13/06/2022 11:45:53 | 1 | 0.0 | 0.2 | 20.6 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1024 | | 0.00 | 5.42 | 15.66 | Monitoring well in good order, tap closed on arrival. | MM |
| | 11:46:23 | | 0.0 | 0.2 | 20.5 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 11:46:53 | | 0.0 | 0.2 | 20.5 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH121 | 13/06/2022 12:00:23 | 1 | 0.0 | 0.6 | 20.5 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1024 | | 0.00 | Dry | 4.90 | Monitoring well in good order, tap closed on arrival. | MM |
| | 12:00:53 | | 0.0 | 0.6 | 20.6 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 12:01:23 | | 0.0 | 0.6 | 20.6 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH123 | 13/06/2022 12:20:42 | 1 | 0.0 | 0.9 | 19.8 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1024 | | 0.00 | Dry | 2.98 | Monitoring well in good order, tap closed on arrival. | MM |
| | 12:21:12 | | 0.0 | 0.9 | 19.5 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 12:21:42 | | 0.0 | 0.8 | 19.4 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH124 | 13/06/2022 12:30:40 | 1 | 0.0 | 0.3 | 20.6 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1024 | | 0.00 | Dry | 9.20 | Monitoring well in good order, tap closed on arrival. | MM |
| | 12:31:10 | | 0.0 | 0.3 | 20.5 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 12:31:40 | | 0.0 | 0.3 | 20.5 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |

# Ground Gas monitoring record

| | |
|---|---|
| Instrument reference | GFM 436 |
| Date | 13 June 2022 |

| Monitoring location | Date and time | Monitoring round | Methane | Carbon dioxide | Oxygen | Lower Explosive Limit | Hydrogen sulphide | Carbon monoxide | Hexane | Instantaneous flow | Peak flow | Differential pressure | Atmospheric pressure | Static pressure | Photoionisation detection | Water depth | Installation base | Comments | Engineer |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | CH4 | CO2 | O2 | LEL | H2S | CO | Hex | Flw | PkFlw | DP | AP | SP | PID | | | | |
| | dd/mm/yyyy hh:mm:ss | | % | % | % | % | ppm | ppm | % | l/h | l/h | Pa | mb | mb | - | m | m | | |
| BH126 | 13/06/2022 09:22:21 | 1 | 0.0 | 0.3 | 20.5 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1024 | | 0.00 | 2.93 | 3.15 | Monitoring well in good order, tap closed on arrival. | MM |
| | 09:22:51 | | 0.0 | 0.3 | 20.6 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 09:23:21 | | 0.0 | 0.3 | 20.6 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH127 | 13/06/2022 10:50:10 | 1 | 0.0 | 0.4 | 20.4 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1024 | | 0.00 | Dry | 6.08 | Monitoring well in good order, tap closed on arrival. | MM |
| | 10:50:40 | | 0.0 | 0.4 | 20.4 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 10:51:10 | | 0.0 | 0.4 | 20.4 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH128 | 13/06/2022 10:45:30 | 1 | 0.0 | 0.1 | 20.8 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1024 | | 0.00 | 0.66 | 6.02 | Monitoring well in good order, tap closed on arrival. | MM |
| | 10:46:00 | | 0.0 | 0.1 | 20.8 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 10:46:30 | | 0.0 | 0.1 | 20.8 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH129 | 13/06/2022 10:30:59 | 1 | 0.0 | 0.8 | 19.9 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1024 | | 0.00 | Dry | 9.81 | Monitoring well in good order, tap closed on arrival. | MM |
| | 10:31:29 | | 0.0 | 0.8 | 19.9 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 10:31:59 | | 0.0 | 0.8 | 19.9 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH130 | 13/06/2022 08:45:52 | 1 | 0.0 | 1.5 | 18.9 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1024 | | 0.00 | Dry | 5.47 | Monitoring well in good order, tap closed on arrival. | MM |
| | 08:46:22 | | 0.0 | 1.5 | 18.8 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 08:46:52 | | 0.0 | 1.5 | 18.8 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH131 | 13/06/2022 09:58:26 | 1 | 0.0 | 0.9 | 19.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1024 | | 0.00 | 1.92 | 2.50 | Monitoring well in good order, tap closed on arrival. | MM |
| | 09:58:56 | | 0.0 | 0.9 | 19.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 09:59:26 | | 0.0 | 0.9 | 19.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH132 | 13/06/2022 09:10:52 | 1 | 0.0 | 0.4 | 20.1 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1024 | | 0.00 | 5.05 | 10.08 | Monitoring well in good order, tap closed on arrival. | MM |
| | 09:11:22 | | 0.0 | 0.4 | 20.1 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 09:11:52 | | 0.0 | 0.4 | 20.1 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH133 | 13/06/2022 10:50:25 | 1 | 0.0 | 0.0 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1024 | | 0.00 | 0.74 | 8.10 | Monitoring well in good order, tap closed on arrival. | MM |
| | 10:50:55 | | 0.0 | 0.0 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 10:51:25 | | 0.0 | 0.0 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |

# Ground Gas monitoring record

| | |
|---|---|
| Instrument reference | GFM 436 |
| Date | 13 June 2022 |

| Monitoring location | Date and time | Monitoring round | Methane | Carbon dioxide | Oxygen | Lower Explosive Limit | Hydrogen sulphide | Carbon monoxide | Hexane | Instantaneous flow | Peak flow | Differential pressure | Atmospheric pressure | Static pressure | Photoionisation detection | Water depth | Installation base | Comments | Engineer |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | CH4 | CO2 | O2 | LEL | H2S | CO | Hex | Flw | PkFlw | DP | AP | SP | PID | | | | |
| | dd/mm/yyyy hh:mm:ss | | % | % | % | % | ppm | ppm | % | l/h | l/h | Pa | mb | mb | - | m | m | | |
| BH134 | 13/06/2022 10:21:25 | 1 | 0.0 | 0.3 | 21.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1024 | | 0.00 | 3.48 | 4.85 | Monitoring well in good order, tap closed on arrival. | MM |
| | 10:21:55 | | 0.0 | 0.3 | 20.3 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 10:22:25 | | 0.0 | 0.3 | 20.1 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |

# Ground Gas monitoring record

| | |
|---|---|
| Instrument reference | GFM 436 |
| Date | 21 June 2022 |

| Monitoring location | Date and time | Monitoring round | Methane | Carbon dioxide | Oxygen | Lower Explosive Limit | Hydrogen sulphide | Carbon monoxide | Hexane | Instantaneous flow | Peak flow | Differential pressure | Atmospheric pressure | Static pressure | Photoionisation detection | Water depth | Installation base | Comments | Engineer |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | CH4 | CO2 | O2 | LEL | H2S | CO | Hex | Flw | PkFlw | DP | AP | SP | PID | | | | |
| | dd/mm/yyyy hh:mm:ss | | % | % | % | % | ppm | ppm | % | l/h | l/h | Pa | mb | mb | - | m | m | | |
| BH104A | 21/06/2022 11:00:02 | 2 | 0.0 | 0.4 | 19.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1014 | | 0.00 | 3.97 | 8.90 | Monitoring well in good order, tap closed on arrival. | MM |
| | 11:00:32 | | 0.0 | 0.4 | 19.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 11:01:02 | | 0.0 | 0.4 | 19.1 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH105 | 21/06/2022 11:32:43 | 2 | 0.0 | 0.2 | 20.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1014 | | 0.00 | 5.37 | 5.75 | Monitoring well in good order, tap closed on arrival. | MM |
| | 11:33:13 | | 0.0 | 0.2 | 20.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 11:33:43 | | 0.0 | 0.2 | 20.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH107 | 21/06/2022 12:03:32 | 2 | 0.0 | 1.0 | 19.6 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1014 | | 0.00 | Dry | 7.40 | Monitoring well in good order, tap closed on arrival. | MM |
| | 12:04:02 | | 0.0 | 1.0 | 19.6 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 12:04:32 | | 0.0 | 1.0 | 19.7 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH108 | 21/06/2022 10:43:36 | 2 | 0.0 | 1.0 | 20.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1014 | | 0.00 | 7.88 | 10.40 | Monitoring well in good order, tap closed on arrival. | MM |
| | 10:44:06 | | 0.0 | 1.0 | 20.3 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 10:44:36 | | 0.0 | 1.0 | 20.3 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH109 | 21/06/2022 08:10:11 | 2 | 0.0 | 0.6 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1014 | | 0.00 | Dry | 4.42 | Monitoring well in good order, tap closed on arrival. | MM |
| | 08:10:41 | | 0.0 | 0.6 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 08:11:11 | | 0.0 | 0.6 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH110 | 21/06/2022 08:40:22 | 2 | 0.0 | 0.5 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1014 | | 0.00 | 5.05 | 8.80 | Monitoring well in good order, tap closed on arrival. | MM |
| | 08:40:52 | | 0.0 | 0.5 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 08:41:22 | | 0.0 | 0.5 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH111 | 21/06/2022 09:40:31 | 2 | 0.0 | 1.0 | 20.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1014 | | 0.00 | 8.25 | 8.80 | Monitoring well in good order, tap closed on arrival. | MM |
| | 09:41:01 | | 0.0 | 1.0 | 20.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 09:41:31 | | 0.0 | 1.0 | 20.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH112 | 21/06/2022 10:25:54 | 2 | 0.0 | 0.0 | 20.9 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1014 | | 0.00 | 2.64 | 18.06 | Monitoring well in good order, tap closed on arrival. | MM |
| | 10:26:24 | | 0.0 | 0.0 | 20.9 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 10:26:54 | | 0.0 | 0.0 | 20.9 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |

# Ground Gas monitoring record

| | |
|---|---|
| Instrument reference | GFM 436 |
| Date | 21 June 2022 |

| Monitoring location | Date and time | Monitoring round | Methane | Carbon dioxide | Oxygen | Lower Explosive Limit | Hydrogen sulphide | Carbon monoxide | Hexane | Instantaneous flow | Peak flow | Differential pressure | Atmospheric pressure | Static pressure | Photoionisation detection | Water depth | Installation base | Comments | Engineer |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | CH4 | CO2 | O2 | LEL | H2S | CO | Hex | Flw | PkFlw | DP | AP | SP | PID | | | | |
| | dd/mm/yyyy hh:mm:ss | | % | % | % | % | ppm | ppm | % | l/h | l/h | Pa | mb | mb | - | m | m | | |
| BH113 | 21/06/2022 11:40:35 | 2 | 0.0 | 0.0 | 20.8 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1014 | | 0.00 | 0.82 | 4.85 | Monitoring well in good order, tap closed on arrival. | MM |
| | 11:41:05 | | 0.0 | 0.0 | 20.8 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 11:41:35 | | 0.0 | 0.0 | 20.8 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH114 | 21/06/2022 11:20:32 | 2 | 0.0 | 2.0 | 18.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1014 | | 0.00 | 1.80 | 4.65 | Monitoring well in good order, tap closed on arrival. | MM |
| | 11:21:02 | | 0.0 | 2.0 | 18.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 11:21:32 | | 0.0 | 2.0 | 18.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH116 | 21/06/2022 11:10:08 | 2 | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | | 1014 | | n/a | 2.10 | 4.70 | Monitoring well in good order, tap closed on arrival. | MM |
| | 11:10:38 | | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | | | | n/a | | | | |
| | 11:11:08 | | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | | | | n/a | | | | |
| BH117 | 21/06/2022 11:25:11 | 2 | 0.0 | 0.9 | 19.9 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1014 | | 0.00 | 5.10 | 8.30 | Monitoring well in good order, tap closed on arrival. | MM |
| | 11:25:41 | | 0.0 | 0.9 | 19.9 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 11:26:11 | | 0.0 | 0.9 | 19.8 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH119 | 21/06/2022 11:45:53 | 2 | 0.0 | 0.4 | 20.6 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1014 | | 0.00 | 5.42 | 15.65 | Monitoring well in good order, tap closed on arrival. | MM |
| | 11:46:23 | | 0.0 | 0.3 | 20.5 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 11:46:53 | | 0.0 | 0.2 | 20.6 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH121 | 21/06/2022 12:00:23 | 2 | 0.0 | 1.0 | 20.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1014 | | 0.00 | Dry | 4.90 | Monitoring well in good order, tap closed on arrival. | MM |
| | 12:00:53 | | 0.0 | 1.0 | 20.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 12:01:23 | | 0.0 | 1.0 | 20.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH123 | 21/06/2022 12:20:42 | 2 | 0.0 | 1.0 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1014 | | 0.00 | Dry | 2.98 | Monitoring well in good order, tap closed on arrival. | MM |
| | 12:21:12 | | 0.0 | 1.0 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 12:21:42 | | 0.0 | 1.0 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH124 | 21/06/2022 12:30:40 | 2 | 0.0 | 0.2 | 20.4 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1014 | | 0.00 | Dry | 9.20 | Monitoring well in good order, tap closed on arrival. | MM |
| | 12:31:10 | | 0.0 | 0.2 | 20.4 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 12:31:40 | | 0.0 | 0.3 | 20.5 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |

# Ground Gas monitoring record

| | |
|---|---|
| Instrument reference | GFM 436 |
| Date | 21 June 2022 |

| Monitoring location | Date and time | Monitoring round | Methane | Carbon dioxide | Oxygen | Lower Explosive Limit | Hydrogen sulphide | Carbon monoxide | Hexane | Instantaneous flow | Peak flow | Differential pressure | Atmospheric pressure | Static pressure | Photoionisation detection | Water depth | Installation base | Comments | Engineer |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | CH4 | CO2 | O2 | LEL | H2S | CO | Hex | Flw | PkFlw | DP | AP | SP | PID | | | | |
| | dd/mm/yyyy hh:mm:ss | | % | % | % | % | ppm | ppm | % | l/h | l/h | Pa | mb | mb | - | m | m | | |
| BH126 | 21/06/2022 09:22:21 | 2 | 0.0 | 0.2 | 20.7 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1014 | | 0.00 | Dry | 3.15 | Monitoring well in good order, tap closed on arrival. | MM |
| | 09:22:51 | | 0.0 | 0.3 | 20.5 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 09:23:21 | | 0.0 | 0.3 | 20.5 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH127 | 21/06/2022 10:50:10 | 2 | 0.0 | 0.3 | 20.5 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1014 | | 0.00 | Dry | 6.08 | Monitoring well in good order, tap closed on arrival. | MM |
| | 10:50:40 | | 0.0 | 0.3 | 20.5 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 10:51:10 | | 0.0 | 0.3 | 20.5 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH128 | 21/06/2022 10:45:30 | 2 | 0.0 | 0.0 | 21.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1014 | | 0.00 | 0.66 | 6.00 | Monitoring well in good order, tap closed on arrival. | MM |
| | 10:46:00 | | 0.0 | 0.0 | 21.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 10:46:30 | | 0.0 | 0.0 | 21.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH129 | 21/06/2022 10:30:59 | 2 | 0.0 | 0.7 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1014 | | 0.00 | Dry | 9.81 | Monitoring well in good order, tap closed on arrival. | MM |
| | 10:31:29 | | 0.0 | 0.7 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 10:31:59 | | 0.0 | 0.8 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH130 | 21/06/2022 08:45:52 | 2 | 0.0 | 1.4 | 19.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1014 | | 0.00 | Dry | 5.47 | Monitoring well in good order, tap closed on arrival. | MM |
| | 08:46:22 | | 0.0 | 1.4 | 19.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 08:46:52 | | 0.0 | 1.5 | 18.9 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH131 | 21/06/2022 09:58:26 | 2 | 0.0 | 1.0 | 19.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1014 | | 0.00 | 1.92 | 2.50 | Monitoring well in good order, tap closed on arrival. | MM |
| | 09:58:56 | | 0.0 | 1.0 | 19.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 09:59:26 | | 0.0 | 1.0 | 19.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH132 | 21/06/2022 09:10:52 | 2 | 0.0 | 0.5 | 20.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1014 | | 0.00 | 5.05 | 10.05 | Monitoring well in good order, tap closed on arrival. | MM |
| | 09:11:22 | | 0.0 | 0.5 | 20.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 09:11:52 | | 0.0 | 0.4 | 20.1 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH133 | 21/06/2022 10:50:25 | 2 | 0.0 | 0.0 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1014 | | 0.00 | 0.74 | 8.10 | Monitoring well in good order, tap closed on arrival. | MM |
| | 10:50:55 | | 0.0 | 0.0 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 10:51:25 | | 0.0 | 0.0 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |

# Ground Gas monitoring record

| | |
|---|---|
| Instrument reference | GFM 436 |
| Date | 21 June 2022 |

| Monitoring location | Date and time | Monitoring round | Methane | Carbon dioxide | Oxygen | Lower Explosive Limit | Hydrogen sulphide | Carbon monoxide | Hexane | Instantaneous flow | Peak flow | Differential pressure | Atmospheric pressure | Static pressure | Photoionisation detection | Water depth | Installation base | Comments | Engineer |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | CH4 | CO2 | O2 | LEL | H2S | CO | Hex | Flw | PkFlw | DP | AP | SP | PID | | | | |
| | dd/mm/yyyy hh:mm:ss | | % | % | % | % | ppm | ppm | % | l/h | l/h | Pa | mb | mb | - | m | m | | |
| BH134 | 21/06/2022 10:21:25 | 2 | 0.0 | 0.1 | 21.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1014 | | 0.00 | 3.30 | 4.85 | Monitoring well in good order, tap closed on arrival. | MM |
| | 10:21:55 | | 0.0 | 0.1 | 21.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 10:22:25 | | 0.0 | 0.1 | 20.9 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |

# Ground Gas monitoring record

| | |
|---|---|
| Instrument reference | GFM 436 |
| Date | 27 June 2022 |

| Monitoring location | Date and time | Monitoring round | Methane | Carbon dioxide | Oxygen | Lower Explosive Limit | Hydrogen sulphide | Carbon monoxide | Hexane | Instantaneous flow | Peak flow | Differential pressure | Atmospheric pressure | Static pressure | Photoionisation detection | Water depth | Installation base | Comments | Engineer |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | CH4 | CO2 | O2 | LEL | H2S | CO | Hex | Flw | PkFlw | DP | AP | SP | PID | | | | |
| | dd/mm/yyyy hh:mm:ss | | % | % | % | % | ppm | ppm | % | l/h | l/h | Pa | mb | mb | - | m | m | | |
| BH104A | 27/06/2022 11:00:00 | 3 | 0.0 | 0.3 | 19.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1015 | | 0.00 | 3.98 | 8.90 | Monitoring well in good order, tap closed on arrival. | MM |
| | 11:00:30 | | 0.0 | 0.3 | 19.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 11:01:00 | | 0.0 | 0.3 | 19.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH105 | 27/06/2022 11:32:43 | 3 | 0.0 | 0.1 | 20.3 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1015 | | 0.00 | 5.39 | 5.75 | Monitoring well in good order, tap closed on arrival. | MM |
| | 11:33:13 | | 0.0 | 0.1 | 20.3 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 11:33:43 | | 0.0 | 0.1 | 20.3 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH107 | 27/06/2022 12:03:32 | 3 | 0.0 | 0.8 | 19.7 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1015 | | 0.00 | Dry | 7.40 | Monitoring well in good order, tap closed on arrival. | MM |
| | 12:04:02 | | 0.0 | 0.9 | 19.6 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 12:04:32 | | 0.0 | 1.0 | 19.5 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH108 | 27/06/2022 10:43:36 | 3 | 0.0 | 0.9 | 20.4 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1015 | | 0.00 | 7.90 | 10.40 | Monitoring well in good order, tap closed on arrival. | MM |
| | 10:44:06 | | 0.0 | 0.9 | 20.3 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 10:44:36 | | 0.0 | 1.0 | 20.3 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH109 | 27/06/2022 08:10:11 | 3 | 0.0 | 0.8 | 20.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1015 | | 0.00 | Dry | 4.42 | Monitoring well in good order, tap closed on arrival. | MM |
| | 08:10:41 | | 0.0 | 0.8 | 20.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 08:11:11 | | 0.0 | 0.8 | 20.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH110 | 27/06/2022 08:40:22 | 3 | 0.0 | 0.4 | 20.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1015 | | 0.00 | 5.06 | 8.80 | Monitoring well in good order, tap closed on arrival. | MM |
| | 08:40:52 | | 0.0 | 0.4 | 20.1 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 08:41:22 | | 0.0 | 0.5 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH111 | 27/06/2022 09:40:31 | 3 | 0.0 | 1.2 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1015 | | 0.00 | 8.25 | 8.80 | Monitoring well in good order, tap closed on arrival. | MM |
| | 09:41:01 | | 0.0 | 1.2 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 09:41:31 | | 0.0 | 1.2 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH112 | 27/06/2022 10:25:54 | 3 | 0.0 | 0.0 | 20.7 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1015 | | 0.00 | 2.64 | 18.06 | Monitoring well in good order, tap closed on arrival. | MM |
| | 10:26:24 | | 0.0 | 0.0 | 20.7 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 10:26:54 | | 0.0 | 0.0 | 20.7 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |

# Ground Gas monitoring record

| | |
|---|---|
| Instrument reference | GFM 436 |
| Date | 27 June 2022 |

| Monitoring location | Date and time | Monitoring round | Methane | Carbon dioxide | Oxygen | Lower Explosive Limit | Hydrogen sulphide | Carbon monoxide | Hexane | Instantaneous flow | Peak flow | Differential pressure | Atmospheric pressure | Static pressure | Photoionisation detection | Water depth | Installation base | Comments | Engineer |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | CH4 | CO2 | O2 | LEL | H2S | CO | Hex | Flw | PkFlw | DP | AP | SP | PID | | | | |
| | dd/mm/yyyy hh:mm:ss | | % | % | % | % | ppm | ppm | % | l/h | l/h | Pa | mb | mb | - | m | m | | |
| BH113 | 27/06/2022 11:40:35 | 3 | 0.0 | 0.0 | 20.6 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1014 | | 0.00 | 0.90 | 4.85 | Monitoring well in good order, tap closed on arrival. | MM |
| | 11:41:05 | | 0.0 | 0.0 | 20.6 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 11:41:35 | | 0.0 | 0.0 | 20.6 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH114 | 27/06/2022 11:20:32 | 3 | 0.0 | 1.6 | 18.5 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1015 | | 0.00 | 1.82 | 4.65 | Monitoring well in good order, tap closed on arrival. | MM |
| | 11:21:02 | | 0.0 | 1.6 | 18.5 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 11:21:32 | | 0.0 | 1.6 | 18.5 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH116 | 27/06/2022 11:10:08 | 3 | n/a | n/a | n/a | n/a | n/a | n/a | n/a | 0.0 | 0.0 | | 1015 | | n/a | 2.10 | 4.70 | Monitoring well in good order, tap closed on arrival. | MM |
| | 11:10:38 | | n/a | n/a | n/a | n/a | n/a | n/a | n/a | 0.0 | 0.0 | | | | n/a | | | | |
| | 11:11:08 | | n/a | n/a | n/a | n/a | n/a | n/a | n/a | 0.0 | 0.0 | | | | n/a | | | | |
| BH117 | 27/06/2022 11:25:11 | 3 | 0.0 | 1.0 | 19.7 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1015 | | 0.00 | 5.10 | 8.30 | Monitoring well in good order, tap closed on arrival. | MM |
| | 11:25:41 | | 0.0 | 1.0 | 19.7 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 11:26:11 | | 0.0 | 1.0 | 19.7 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH119 | 27/06/2022 11:45:53 | 3 | 0.0 | 0.3 | 20.4 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1015 | | 0.00 | 5.43 | 15.65 | Monitoring well in good order, tap closed on arrival. | MM |
| | 11:46:23 | | 0.0 | 0.3 | 20.4 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 11:46:53 | | 0.0 | 0.2 | 20.4 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH121 | 27/06/2022 12:00:23 | 3 | 0.0 | 1.0 | 20.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1015 | | 0.00 | Dry | 4.90 | Monitoring well in good order, tap closed on arrival. | MM |
| | 12:00:53 | | 0.0 | 1.1 | 20.1 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 12:01:23 | | 0.0 | 1.2 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH123 | 27/06/2022 12:20:42 | 3 | 0.0 | 1.0 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1015 | | 0.00 | Dry | 2.98 | Monitoring well in good order, tap closed on arrival. | MM |
| | 12:21:12 | | 0.0 | 1.0 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 12:21:42 | | 0.0 | 1.0 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH124 | 27/06/2022 12:30:40 | 3 | 0.0 | 0.1 | 20.5 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1015 | | 0.00 | Dry | 9.20 | Monitoring well in good order, tap closed on arrival. | MM |
| | 12:31:10 | | 0.0 | 0.1 | 20.5 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 12:31:40 | | 0.0 | 0.1 | 20.5 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |

# Ground Gas monitoring record

| | |
|---|---|
| Instrument reference | GFM 436 |
| Date | 27 June 2022 |

| Monitoring location | Date and time | Monitoring round | Methane | Carbon dioxide | Oxygen | Lower Explosive Limit | Hydrogen sulphide | Carbon monoxide | Hexane | Instantaneous flow | Peak flow | Differential pressure | Atmospheric pressure | Static pressure | Photoionisation detection | Water depth | Installation base | Comments | Engineer |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | CH4 | CO2 | O2 | LEL | H2S | CO | Hex | Flw | PkFlw | DP | AP | SP | PID | | | | |
| | dd/mm/yyyy hh:mm:ss | | % | % | % | % | ppm | ppm | % | l/h | l/h | Pa | mb | mb | - | m | m | | |
| BH126 | 27/06/2022 09:22:21 | 3 | 0.0 | 0.3 | 20.4 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1015 | | 0.00 | Dry | 3.15 | Monitoring well in good order, tap closed on arrival. | MM |
| | 09:22:51 | | 0.0 | 0.4 | 20.3 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 09:23:21 | | 0.0 | 0.4 | 20.3 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH127 | 27/06/2022 10:50:10 | 3 | 0.0 | 0.3 | 20.5 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1015 | | 0.00 | Dry | 6.08 | Monitoring well in good order, tap closed on arrival. | MM |
| | 10:50:40 | | 0.0 | 0.3 | 20.5 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 10:51:10 | | 0.0 | 0.3 | 20.5 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH128 | 27/06/2022 10:45:30 | 3 | 0.0 | 0.0 | 21.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1015 | | 0.00 | 0.65 | 6.00 | Monitoring well in good order, tap closed on arrival. | MM |
| | 10:46:00 | | 0.0 | 0.0 | 21.1 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 10:46:30 | | 0.0 | 0.0 | 21.1 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH129 | 27/06/2022 10:30:59 | 3 | 0.0 | 0.5 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1015 | | 0.00 | Dry | 9.81 | Monitoring well in good order, tap closed on arrival. | MM |
| | 10:31:29 | | 0.0 | 0.5 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 10:31:59 | | 0.0 | 0.5 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH130 | 27/06/2022 08:45:52 | 3 | 0.0 | 1.4 | 19.3 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1015 | | 0.00 | Dry | 5.47 | Monitoring well in good order, tap closed on arrival. | MM |
| | 08:46:22 | | 0.0 | 1.4 | 19.3 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 08:46:52 | | 0.0 | 1.4 | 19.3 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH131 | 27/06/2022 09:58:26 | 3 | 0.0 | 1.0 | 19.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1015 | | 0.00 | 1.92 | 2.50 | Monitoring well in good order, tap closed on arrival. | MM |
| | 09:58:56 | | 0.0 | 1.0 | 19.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 09:59:26 | | 0.0 | 1.0 | 19.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH132 | 27/06/2022 09:10:52 | 3 | 0.0 | 0.5 | 20.4 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1015 | | 0.00 | 5.06 | 10.05 | Monitoring well in good order, tap closed on arrival. | MM |
| | 09:11:22 | | 0.0 | 0.5 | 20.4 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 09:11:52 | | 0.0 | 0.5 | 20.4 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH133 | 27/06/2022 10:50:25 | 3 | 0.0 | 0.0 | 20.3 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1015 | | 0.00 | 0.74 | 8.10 | Monitoring well in good order, tap closed on arrival. | MM |
| | 10:50:55 | | 0.0 | 0.0 | 20.3 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 10:51:25 | | 0.0 | 0.0 | 20.3 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |

# Ground Gas monitoring record

| | |
|---|---|
| Instrument reference | GFM 436 |
| Date | 27 June 2022 |

| Monitoring location | Date and time | Monitoring round | Methane | Carbon dioxide | Oxygen | Lower Explosive Limit | Hydrogen sulphide | Carbon monoxide | Hexane | Instantaneous flow | Peak flow | Differential pressure | Atmospheric pressure | Static pressure | Photoionisation detection | Water depth | Installation base | Comments | Engineer |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | CH4 | CO2 | O2 | LEL | H2S | CO | Hex | Flw | PkFlw | DP | AP | SP | PID | | | | |
| | dd/mm/yyyy hh:mm:ss | | % | % | % | % | ppm | ppm | % | l/h | l/h | Pa | mb | mb | - | m | m | | |
| BH134 | 27/06/2022 10:21:25 | 3 | 0.0 | 0.0 | 21.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1015 | | 0.00 | 3.25 | 4.85 | Monitoring well in good order, tap closed on arrival. | MM |
| | 10:21:55 | | 0.0 | 0.0 | 21.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 10:22:25 | | 0.0 | 0.0 | 21.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |

# Ground Gas monitoring record

| | |
|---|---|
| Instrument reference | GFM 436 |
| Date | 05 July 2022 |

| Monitoring location | Date and time | Monitoring round | Methane | Carbon dioxide | Oxygen | Lower Explosive Limit | Hydrogen sulphide | Carbon monoxide | Hexane | Instantaneous flow | Peak flow | Differential pressure | Atmospheric pressure | Static pressure | Photoionisation detection | Water depth | Installation base | Comments | Engineer |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | CH4 | CO2 | O2 | LEL | H2S | CO | Hex | Flw | PkFlw | DP | AP | SP | PID | | | | |
| | dd/mm/yyyy hh:mm:ss | | % | % | % | % | ppm | ppm | % | l/h | l/h | Pa | mb | mb | - | m | m | | |
| BH104A | 05/07/2022 11:00:00 | 4 | 0.0 | 0.2 | 19.4 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1015 | | 0.00 | 3.97 | 8.90 | Monitoring well in good order, tap closed on arrival. | MM |
| | 11:00:30 | | 0.0 | 0.2 | 19.4 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 11:01:00 | | 0.0 | 0.2 | 19.4 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH105 | 05/07/2022 11:32:43 | 4 | 0.0 | 0.2 | 20.4 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1015 | | 0.00 | 5.39 | 5.75 | Monitoring well in good order, tap closed on arrival. | MM |
| | 11:33:13 | | 0.0 | 0.2 | 20.4 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 11:33:43 | | 0.0 | 0.2 | 20.4 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH107 | 05/07/2022 12:03:32 | 4 | 0.0 | 1.0 | 19.5 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1015 | | 0.00 | Dry | 7.40 | Monitoring well in good order, tap closed on arrival. | MM |
| | 12:04:02 | | 0.0 | 1.0 | 19.5 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 12:04:32 | | 0.0 | 1.0 | 19.5 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH108 | 05/07/2022 10:43:36 | 4 | 0.0 | 1.0 | 20.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1015 | | 0.00 | 7.90 | 10.40 | Monitoring well in good order, tap closed on arrival. | MM |
| | 10:44:06 | | 0.0 | 1.0 | 20.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 10:44:36 | | 0.0 | 1.0 | 20.3 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH109 | 05/07/2022 08:10:11 | 4 | 0.0 | 0.7 | 20.1 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1015 | | 0.00 | Dry | 4.42 | Monitoring well in good order, tap closed on arrival. | MM |
| | 08:10:41 | | 0.0 | 0.8 | 20.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 08:11:11 | | 0.0 | 0.8 | 20.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH110 | 05/07/2022 08:40:22 | 4 | 0.0 | 0.5 | 20.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1015 | | 0.00 | 5.06 | 8.80 | Monitoring well in good order, tap closed on arrival. | MM |
| | 08:40:52 | | 0.0 | 0.5 | 20.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 08:41:22 | | 0.0 | 0.5 | 20.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH111 | 05/07/2022 09:40:31 | 4 | 0.0 | 1.1 | 20.1 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1015 | | 0.00 | 8.26 | 8.80 | Monitoring well in good order, tap closed on arrival. | MM |
| | 09:41:01 | | 0.0 | 1.1 | 20.1 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 09:41:31 | | 0.0 | 1.2 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH112 | 05/07/2022 10:25:54 | 4 | 0.0 | 0.0 | 20.6 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1015 | | 0.00 | 2.65 | 18.06 | Monitoring well in good order, tap closed on arrival. | MM |
| | 10:26:24 | | 0.0 | 0.0 | 20.6 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 10:26:54 | | 0.0 | 0.0 | 20.6 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |

# Ground Gas monitoring record

| | |
|---|---|
| Instrument reference | GFM 436 |
| Date | 05 July 2022 |

| Monitoring location | Date and time | Monitoring round | Methane | Carbon dioxide | Oxygen | Lower Explosive Limit | Hydrogen sulphide | Carbon monoxide | Hexane | Instantaneous flow | Peak flow | Differential pressure | Atmospheric pressure | Static pressure | Photoionisation detection | Water depth | Installation base | Comments | Engineer |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | CH4 | CO2 | O2 | LEL | H2S | CO | Hex | Flw | PkFlw | DP | AP | SP | PID | | | | |
| | dd/mm/yyyy hh:mm:ss | | % | % | % | % | ppm | ppm | % | l/h | l/h | Pa | mb | mb | - | m | m | | |
| BH113 | 05/07/2022 11:40:35 | 4 | 0.0 | 0.0 | 20.5 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1014 | | 0.00 | 0.96 | 4.85 | Monitoring well in good order, tap closed on arrival. | MM |
| | 11:41:05 | | 0.0 | 0.0 | 20.5 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 11:41:35 | | 0.0 | 0.0 | 20.5 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH114 | 05/07/2022 11:20:32 | 4 | 0.0 | 1.5 | 18.4 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1015 | | 0.00 | 1.80 | 4.65 | Monitoring well in good order, tap closed on arrival. | MM |
| | 11:21:02 | | 0.0 | 1.5 | 18.4 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 11:21:32 | | 0.0 | 1.5 | 18.5 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH116 | 05/07/2022 11:10:08 | 4 | n/a | n/a | n/a | n/a | n/a | n/a | n/a | 0.0 | 0.0 | | 1015 | | n/a | 2.08 | 4.70 | Monitoring well in good order, tap closed on arrival. | MM |
| | 11:10:38 | | n/a | n/a | n/a | n/a | n/a | n/a | n/a | 0.0 | 0.0 | | | | n/a | | | | |
| | 11:11:08 | | n/a | n/a | n/a | n/a | n/a | n/a | n/a | 0.0 | 0.0 | | | | n/a | | | | |
| BH117 | 05/07/2022 11:25:11 | 4 | 0.0 | 1.2 | 19.5 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1015 | | 0.00 | 5.18 | 8.30 | Monitoring well in good order, tap closed on arrival. | MM |
| | 11:25:41 | | 0.0 | 1.2 | 19.5 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 11:26:11 | | 0.0 | 1.2 | 19.6 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH119 | 05/07/2022 11:45:53 | 4 | 0.0 | 0.2 | 20.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1015 | | 0.00 | 5.44 | 15.65 | Monitoring well in good order, tap closed on arrival. | MM |
| | 11:46:23 | | 0.0 | 0.2 | 20.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 11:46:53 | | 0.0 | 0.2 | 20.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH121 | 05/07/2022 12:00:23 | 4 | 0.0 | 1.1 | 20.1 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1015 | | 0.00 | Dry | 4.90 | Monitoring well in good order, tap closed on arrival. | MM |
| | 12:00:53 | | 0.0 | 1.1 | 20.1 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 12:01:23 | | 0.0 | 1.2 | 20.1 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH123 | 05/07/2022 12:20:42 | 4 | 0.0 | 0.8 | 20.1 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1015 | | 0.00 | Dry | 2.98 | Monitoring well in good order, tap closed on arrival. | MM |
| | 12:21:12 | | 0.0 | 0.8 | 20.1 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 12:21:42 | | 0.0 | 0.8 | 20.1 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH124 | 05/07/2022 12:30:40 | 4 | 0.0 | 0.0 | 20.6 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1015 | | 0.00 | Dry | 9.20 | Monitoring well in good order, tap closed on arrival. | MM |
| | 12:31:10 | | 0.0 | 0.0 | 20.6 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 12:31:40 | | 0.0 | 0.0 | 20.6 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |

# Ground Gas monitoring record

| | |
|---|---|
| Instrument reference | GFM 436 |
| Date | 05 July 2022 |

| Monitoring location | Date and time | Monitoring round | Methane | Carbon dioxide | Oxygen | Lower Explosive Limit | Hydrogen sulphide | Carbon monoxide | Hexane | Instantaneous flow | Peak flow | Differential pressure | Atmospheric pressure | Static pressure | Photoionisation detection | Water depth | Installation base | Comments | Engineer |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | CH4 | CO2 | O2 | LEL | H2S | CO | Hex | Flw | PkFlw | DP | AP | SP | PID | | | | |
| | dd/mm/yyyy hh:mm:ss | | % | % | % | % | ppm | ppm | % | l/h | l/h | Pa | mb | mb | - | m | m | | |
| BH126 | 05/07/2022 09:22:21 | 4 | 0.0 | 0.2 | 20.5 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1015 | | 0.00 | 2.95 | 3.15 | Monitoring well in good order, tap closed on arrival. | MM |
| | 09:22:51 | | 0.0 | 0.2 | 20.5 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 09:23:21 | | 0.0 | 0.2 | 20.5 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH127 | 05/07/2022 10:50:10 | 4 | 0.0 | 0.2 | 20.4 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1015 | | 0.00 | Dry | 6.08 | Monitoring well in good order, tap closed on arrival. | MM |
| | 10:50:40 | | 0.0 | 0.2 | 20.4 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 10:51:10 | | 0.0 | 0.2 | 20.4 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH128 | 05/07/2022 10:45:30 | 4 | 0.0 | 0.0 | 21.1 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1015 | | 0.00 | 0.65 | 6.00 | Monitoring well in good order, tap closed on arrival. | MM |
| | 10:46:00 | | 0.0 | 0.0 | 21.1 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 10:46:30 | | 0.0 | 0.0 | 21.1 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH129 | 05/07/2022 10:30:59 | 4 | 0.0 | 0.4 | 20.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1015 | | 0.00 | Dry | 9.81 | Monitoring well in good order, tap closed on arrival. | MM |
| | 10:31:29 | | 0.0 | 0.4 | 20.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 10:31:59 | | 0.0 | 0.4 | 20.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH130 | 05/07/2022 08:45:52 | 4 | 0.0 | 1.5 | 19.5 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1015 | | 0.00 | Dry | 5.47 | Monitoring well in good order, tap closed on arrival. | MM |
| | 08:46:22 | | 0.0 | 1.5 | 19.5 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 08:46:52 | | 0.0 | 1.5 | 19.5 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH131 | 05/07/2022 09:58:26 | 4 | 0.0 | 1.1 | 19.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1015 | | 0.00 | 2.02 | 2.50 | Monitoring well in good order, tap closed on arrival. | MM |
| | 09:58:56 | | 0.0 | 1.1 | 19.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 09:59:26 | | 0.0 | 1.1 | 19.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH132 | 05/07/2022 09:10:52 | 4 | 0.0 | 0.5 | 20.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1015 | | 0.00 | 5.06 | 10.05 | Monitoring well in good order, tap closed on arrival. | MM |
| | 09:11:22 | | 0.0 | 0.5 | 20.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 09:11:52 | | 0.0 | 0.5 | 20.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH133 | 05/07/2022 10:50:25 | 4 | 0.0 | 0.0 | 20.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1015 | | 0.00 | 0.74 | 8.10 | Monitoring well in good order, tap closed on arrival. | MM |
| | 10:50:55 | | 0.0 | 0.0 | 20.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 10:51:25 | | 0.0 | 0.0 | 20.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |

# Ground Gas monitoring record

| | |
|---|---|
| Instrument reference | GFM 436 |
| Date | 05 July 2022 |

| Monitoring location | Date and time | Monitoring round | Methane | Carbon dioxide | Oxygen | Lower Explosive Limit | Hydrogen sulphide | Carbon monoxide | Hexane | Instantaneous flow | Peak flow | Differential pressure | Atmospheric pressure | Static pressure | Photoionisation detection | Water depth | Installation base | Comments | Engineer |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | CH4 | CO2 | O2 | LEL | H2S | CO | Hex | Flw | PkFlw | DP | AP | SP | PID | | | | |
| | dd/mm/yyyy hh:mm:ss | | % | % | % | % | ppm | ppm | % | l/h | l/h | Pa | mb | mb | - | m | m | | |
| BH134 | 05/07/2022 10:21:25 | 4 | 0.0 | 0.0 | 21.3 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1015 | | 0.00 | 2.82 | 4.85 | Monitoring well in good order, tap closed on arrival. | MM |
| | 10:21:55 | | 0.0 | 0.0 | 21.3 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 10:22:25 | | 0.0 | 0.0 | 21.3 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |

# Ground Gas monitoring record

| | |
|---|---|
| Instrument reference | GFM 436 |
| Date | 26 July 2022 |

| Monitoring location | Date and time | Monitoring round | Methane | Carbon dioxide | Oxygen | Lower Explosive Limit | Hydrogen sulphide | Carbon monoxide | Hexane | Instantaneous flow | Peak flow | Differential pressure | Atmospheric pressure | Static pressure | Photoionisation detection | Water depth | Installation base | Comments | Engineer |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | CH4 | CO2 | O2 | LEL | H2S | CO | Hex | Flw | PkFlw | DP | AP | SP | PID | | | | |
| | dd/mm/yyyy hh:mm:ss | | % | % | % | % | ppm | ppm | % | l/h | l/h | Pa | mb | mb | - | m | m | | |
| BH104A | 26/07/2022 09:20:00 | 5 | 0.0 | 0.1 | 19.6 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1020 | | 0.00 | 3.99 | 8.92 | Monitoring well in good order, tap closed on arrival. | MM |
| | 09:20:30 | | 0.0 | 0.1 | 19.6 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 09:21:00 | | 0.0 | 0.1 | 19.6 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH105 | 26/07/2022 09:22:30 | 5 | 0.0 | 0.1 | 20.5 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1020 | | 0.00 | 5.43 | 5.72 | Monitoring well in good order, tap closed on arrival. | MM |
| | 09:23:00 | | 0.0 | 0.1 | 20.5 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 09:23:30 | | 0.0 | 0.1 | 20.5 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH107 | 26/07/2022 09:30:30 | 5 | 0.0 | 0.8 | 19.8 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1020 | | 0.00 | Dry | 7.40 | Monitoring well in good order, tap closed on arrival. | MM |
| | 09:31:00 | | 0.0 | 0.8 | 19.8 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 09:31:30 | | 0.0 | 0.8 | 19.8 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH108 | 26/07/2022 09:37:31 | 5 | 0.0 | 1.0 | 20.1 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1020 | | 0.00 | 7.90 | 10.45 | Monitoring well in good order, tap closed on arrival. | MM |
| | 09:38:01 | | 0.0 | 1.0 | 20.1 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 09:38:31 | | 0.0 | 1.0 | 20.1 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH109 | 26/07/2022 09:45:19 | 5 | 0.0 | 0.7 | 20.1 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1020 | | 0.00 | Dry | 4.49 | Monitoring well in good order, tap closed on arrival. | MM |
| | 09:45:49 | | 0.0 | 0.8 | 20.1 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 09:46:19 | | 0.0 | 1.0 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH110 | 26/07/2022 09:48:25 | 5 | 0.0 | 0.3 | 20.1 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1020 | | 0.00 | 5.14 | 8.78 | Monitoring well in good order, tap closed on arrival. | MM |
| | 09:48:55 | | 0.0 | 0.3 | 20.1 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 09:49:25 | | 0.0 | 0.4 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH111 | 26/07/2022 09:59:30 | 5 | 0.0 | 1.1 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1020 | | 0.00 | 8.20 | 8.80 | Monitoring well in good order, tap closed on arrival. | MM |
| | 10:00:00 | | 0.0 | 1.1 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 10:00:30 | | 0.0 | 1.1 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH112 | 26/07/2022 10:06:56 | 5 | 0.0 | 0.0 | 20.6 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1020 | | 0.00 | 2.66 | 18.04 | Monitoring well in good order, tap closed on arrival. | MM |
| | 10:07:26 | | 0.0 | 0.0 | 20.5 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 10:07:56 | | 0.0 | 0.0 | 20.5 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |

# Ground Gas monitoring record

| | |
|---|---|
| Instrument reference | GFM 436 |
| Date | 26 July 2022 |

| Monitoring location | Date and time | Monitoring round | Methane | Carbon dioxide | Oxygen | Lower Explosive Limit | Hydrogen sulphide | Carbon monoxide | Hexane | Instantaneous flow | Peak flow | Differential pressure | Atmospheric pressure | Static pressure | Photoionisation detection | Water depth | Installation base | Comments | Engineer |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | CH4 | CO2 | O2 | LEL | H2S | CO | Hex | Flw | PkFlw | DP | AP | SP | PID | | | | |
| | dd/mm/yyyy hh:mm:ss | | % | % | % | % | ppm | ppm | % | l/h | l/h | Pa | mb | mb | - | m | m | | |
| BH113 | 26/07/2022 10:18:35 | 5 | 0.0 | 0.0 | 20.3 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1020 | | 0.00 | 0.83 | 4.82 | Monitoring well in good order, tap closed on arrival. | MM |
| | 10:19:05 | | 0.0 | 0.0 | 20.3 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 10:19:35 | | 0.0 | 0.0 | 20.3 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH114 | 26/07/2022 10:20:38 | 5 | 0.0 | 1.3 | 18.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1020 | | 0.00 | 1.84 | 4.65 | Monitoring well in good order, tap closed on arrival. | MM |
| | 10:21:08 | | 0.0 | 1.3 | 18.1 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 10:21:38 | | 0.0 | 1.3 | 18.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH116 | 26/07/2022 10:30:08 | 5 | n/a | n/a | n/a | n/a | n/a | n/a | n/a | 0.0 | 0.0 | | 1020 | | n/a | 2.20 | 4.70 | Monitoring well in good order, tap closed on arrival. | MM |
| | 10:30:38 | | n/a | n/a | n/a | n/a | n/a | n/a | n/a | 0.0 | 0.0 | | | | n/a | | | | |
| | 10:31:08 | | n/a | n/a | n/a | n/a | n/a | n/a | n/a | 0.0 | 0.0 | | | | n/a | | | | |
| BH117 | 26/07/2022 10:35:11 | 5 | 0.0 | 1.0 | 19.8 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1020 | | 0.00 | 5.25 | 8.25 | Monitoring well in good order, tap closed on arrival. | MM |
| | 10:35:41 | | 0.0 | 1.0 | 19.8 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 10:36:11 | | 0.0 | 1.0 | 19.8 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH119 | 26/07/2022 10:45:59 | 5 | 0.0 | 0.1 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1020 | | 0.00 | 5.43 | 15.65 | Monitoring well in good order, tap closed on arrival. | MM |
| | 10:46:29 | | 0.0 | 0.1 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 10:46:59 | | 0.0 | 0.2 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH121 | 26/07/2022 11:00:21 | 5 | 0.0 | 1.0 | 20.1 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1020 | | 0.00 | Dry | 4.90 | Monitoring well in good order, tap closed on arrival. | MM |
| | 11:00:51 | | 0.0 | 1.0 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 11:01:21 | | 0.0 | 1.2 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH123 | 26/07/2022 11:10:39 | 5 | 0.0 | 0.6 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1020 | | 0.00 | Dry | 2.98 | Monitoring well in good order, tap closed on arrival. | MM |
| | 11:11:09 | | 0.0 | 0.6 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 11:11:39 | | 0.0 | 0.7 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH124 | 26/07/2022 11:20:40 | 5 | 0.0 | 0.0 | 20.6 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1020 | | 0.00 | Dry | 9.20 | Monitoring well in good order, tap closed on arrival. | MM |
| | 11:21:10 | | 0.0 | 0.0 | 20.6 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 11:21:40 | | 0.0 | 0.0 | 20.6 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |

# Ground Gas monitoring record

| | |
|---|---|
| Instrument reference | GFM 436 |
| Date | 26 July 2022 |

| Monitoring location | Date and time | Monitoring round | Methane | Carbon dioxide | Oxygen | Lower Explosive Limit | Hydrogen sulphide | Carbon monoxide | Hexane | Instantaneous flow | Peak flow | Differential pressure | Atmospheric pressure | Static pressure | Photoionisation detection | Water depth | Installation base | Comments | Engineer |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | CH4 | CO2 | O2 | LEL | H2S | CO | Hex | Flw | PkFlw | DP | AP | SP | PID | | | | |
| | dd/mm/yyyy hh:mm:ss | | % | % | % | % | ppm | ppm | % | l/h | l/h | Pa | mb | mb | - | m | m | | |
| BH126 | 26/07/2022 11:22:21 | 5 | 0.0 | 0.0 | 20.6 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1020 | | 0.00 | 3.00 | 3.15 | Monitoring well in good order, tap closed on arrival. | MM |
| | 11:22:51 | | 0.0 | 0.0 | 20.6 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 11:23:21 | | 0.0 | 0.0 | 20.6 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH127 | 26/07/2022 11:30:50 | 5 | 0.0 | 0.1 | 20.6 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1020 | | 0.00 | Dry | 6.08 | Monitoring well in good order, tap closed on arrival. | MM |
| | 11:31:20 | | 0.0 | 0.1 | 20.6 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 11:31:50 | | 0.0 | 0.1 | 20.6 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH128 | 26/07/2022 12:22:30 | 5 | 0.0 | 0.0 | 21.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1020 | | 0.00 | 0.70 | 6.00 | Monitoring well in good order, tap closed on arrival. | MM |
| | 12:23:00 | | 0.0 | 0.0 | 21.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 12:23:30 | | 0.0 | 0.0 | 21.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH129 | 26/07/2022 11:30:59 | 5 | 0.0 | 0.5 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1020 | | 0.00 | Dry | 9.80 | Monitoring well in good order, tap closed on arrival. | MM |
| | 11:31:29 | | 0.0 | 0.6 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 11:31:59 | | 0.0 | 0.6 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH130 | 26/07/2022 11:37:50 | 5 | 0.0 | 1.3 | 19.8 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1020 | | 0.00 | Dry | 5.45 | Monitoring well in good order, tap closed on arrival. | MM |
| | 11:38:20 | | 0.0 | 1.3 | 19.8 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 11:38:50 | | 0.0 | 1.3 | 19.8 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH131 | 26/07/2022 11:39:20 | 5 | 0.0 | 1.0 | 19.4 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1020 | | 0.00 | 2.07 | 2.50 | Monitoring well in good order, tap closed on arrival. | MM |
| | 11:39:50 | | 0.0 | 1.0 | 19.4 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 11:40:20 | | 0.0 | 1.0 | 19.4 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH132 | 26/07/2022 11:42:11 | 5 | 0.0 | 0.6 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1020 | | 0.00 | 5.11 | 10.02 | Monitoring well in good order, tap closed on arrival. | MM |
| | 11:42:41 | | 0.0 | 0.7 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 11:43:11 | | 0.0 | 0.6 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH133 | 26/07/2022 12:49:20 | 5 | 0.0 | 0.0 | 20.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1020 | | 0.00 | 0.75 | 8.10 | Monitoring well in good order, tap closed on arrival. | MM |
| | 12:49:50 | | 0.0 | 0.0 | 20.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 12:50:20 | | 0.0 | 0.0 | 20.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |

# Ground Gas monitoring record

| | |
|---|---|
| Instrument reference | GFM 436 |
| Date | 26 July 2022 |

| Monitoring location | Date and time | Monitoring round | Methane | Carbon dioxide | Oxygen | Lower Explosive Limit | Hydrogen sulphide | Carbon monoxide | Hexane | Instantaneous flow | Peak flow | Differential pressure | Atmospheric pressure | Static pressure | Photoionisation detection | Water depth | Installation base | Comments | Engineer |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | CH4 | CO2 | O2 | LEL | H2S | CO | Hex | Flw | PkFlw | DP | AP | SP | PID | | | | |
| | dd/mm/yyyy hh:mm:ss | | % | % | % | % | ppm | ppm | % | l/h | l/h | Pa | mb | mb | - | m | m | | |
| BH134 | 26/07/2022 11:58:25 | 5 | 0.0 | 0.0 | 21.5 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1020 | | 0.00 | 3.17 | 4.85 | Monitoring well in good order, tap closed on arrival. | MM |
| | 11:58:55 | | 0.0 | 0.0 | 21.5 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 11:59:25 | | 0.0 | 0.0 | 21.5 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |

# Ground Gas monitoring record

| | |
|---|---|
| Instrument reference | GFM 436 |
| Date | 23 August 2022 |

| Monitoring location | Date and time | Monitoring round | Methane | Carbon dioxide | Oxygen | Lower Explosive Limit | Hydrogen sulphide | Carbon monoxide | Hexane | Instantaneous flow | Peak flow | Differential pressure | Atmospheric pressure | Static pressure | Photoionisation detection | Water depth | Installation base | Comments | Engineer |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | CH4 | CO2 | O2 | LEL | H2S | CO | Hex | Flw | PkFlw | DP | AP | SP | PID | | | | |
| | dd/mm/yyyy hh:mm:ss | | % | % | % | % | ppm | ppm | % | l/h | l/h | Pa | mb | mb | - | m | m | | |
| BH104A | 23/08/2022 09:00:00 | 6 | 0.0 | 0.0 | 19.8 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1013 | | 0.00 | 4.03 | 8.90 | Monitoring well in good order, tap closed on arrival. | MM |
| | 09:00:30 | | 0.0 | 0.0 | 19.8 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 09:01:00 | | 0.0 | 0.0 | 19.8 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH105 | 23/08/2022 09:05:30 | 6 | 0.0 | 0.1 | 20.3 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1013 | | 0.00 | 5.44 | 5.71 | Monitoring well in good order, tap closed on arrival. | MM |
| | 09:06:00 | | 0.0 | 0.1 | 20.3 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 09:06:30 | | 0.0 | 0.1 | 20.3 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH107 | 23/08/2022 09:10:30 | 6 | 0.0 | 0.6 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1013 | | 0.00 | Dry | 7.40 | Monitoring well in good order, tap closed on arrival. | MM |
| | 09:11:00 | | 0.0 | 0.6 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 09:11:30 | | 0.0 | 0.6 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH108 | 23/08/2022 09:15:30 | 6 | 0.0 | 1.0 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1013 | | 0.00 | 7.92 | 10.43 | Monitoring well in good order, tap closed on arrival. | MM |
| | 09:16:00 | | 0.0 | 1.0 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 09:16:30 | | 0.0 | 1.0 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH109 | 23/08/2022 09:45:00 | 6 | 0.0 | 1.0 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1013 | | 0.00 | Dry | 4.50 | Monitoring well in good order, tap closed on arrival. | MM |
| | 09:45:30 | | 0.0 | 1.1 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 09:46:00 | | 0.0 | 1.1 | 19.9 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH110 | 23/08/2022 09:50:00 | 6 | 0.0 | 0.1 | 20.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1013 | | 0.00 | 5.16 | 8.80 | Monitoring well in good order, tap closed on arrival. | MM |
| | 09:50:30 | | 0.0 | 0.1 | 20.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 09:51:00 | | 0.0 | 0.2 | 20.1 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH111 | 23/08/2022 09:59:00 | 6 | 0.0 | 1.0 | 20.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1013 | | 0.00 | 8.21 | 8.80 | Monitoring well in good order, tap closed on arrival. | MM |
| | 09:59:30 | | 0.0 | 1.0 | 20.1 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 10:00:00 | | 0.0 | 1.0 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH112 | 23/08/2022 10:05:00 | 6 | 0.0 | 0.0 | 20.5 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1013 | | 0.00 | 2.73 | 18.02 | Monitoring well in good order, tap closed on arrival. | MM |
| | 10:05:30 | | 0.0 | 0.0 | 20.5 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 10:06:00 | | 0.0 | 0.0 | 20.4 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |

# Ground Gas monitoring record

| | |
|---|---|
| Instrument reference | GFM 436 |
| Date | 23 August 2022 |

| Monitoring location | Date and time | Monitoring round | Methane | Carbon dioxide | Oxygen | Lower Explosive Limit | Hydrogen sulphide | Carbon monoxide | Hexane | Instantaneous flow | Peak flow | Differential pressure | Atmospheric pressure | Static pressure | Photoionisation detection | Water depth | Installation base | Comments | Engineer |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | CH4 | CO2 | O2 | LEL | H2S | CO | Hex | Flw | PkFlw | DP | AP | SP | PID | | | | |
| | dd/mm/yyyy hh:mm:ss | | % | % | % | % | ppm | ppm | % | l/h | l/h | Pa | mb | mb | - | m | m | | |
| BH113 | 23/08/2022 10:15:00 | 6 | 0.0 | 0.0 | 20.1 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1013 | | 0.00 | 1.16 | 4.80 | Monitoring well in good order, tap closed on arrival. | MM |
| | 10:15:30 | | 0.0 | 0.0 | 20.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 10:16:00 | | 0.0 | 0.0 | 20.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH114 | 23/08/2022 10:20:00 | 6 | 0.0 | 1.1 | 18.5 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1013 | | 0.00 | 2.16 | 4.65 | Monitoring well in good order, tap closed on arrival. | MM |
| | 10:20:30 | | 0.0 | 1.1 | 18.6 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 10:21:00 | | 0.0 | 1.1 | 18.6 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH116 | 23/08/2022 10:30:00 | 6 | 0.0 | 0.7 | 19.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1013 | | 0.00 | 2.25 | 4.70 | Monitoring well in good order, tap closed on arrival. | MM |
| | 10:30:30 | | 0.0 | 0.6 | 19.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 10:31:00 | | 0.0 | 0.6 | 19.3 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH117 | | | | | | | | | | | | | | | | | | Monitoring well inaccessible. | |
| | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| BH119 | 23/08/2022 10:45:00 | 6 | 0.0 | 0.0 | 20.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1013 | | 0.00 | 5.46 | 15.63 | Monitoring well in good order, tap closed on arrival. | MM |
| | 10:45:30 | | 0.0 | 0.0 | 20.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 10:46:00 | | 0.0 | 0.0 | 20.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH121 | 23/08/2022 11:00:00 | 6 | 0.0 | 0.9 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1013 | | 0.00 | Dry | 4.90 | Monitoring well in good order, tap closed on arrival. | MM |
| | 11:00:30 | | 0.0 | 0.9 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 11:01:00 | | 0.0 | 0.8 | 20.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH123 | 23/08/2022 11:10:00 | 6 | 0.0 | 0.4 | 20.1 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1013 | | 0.00 | Dry | 2.30 | Monitoring well in good order, tap closed on arrival. | MM |
| | 11:10:30 | | 0.0 | 0.4 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 11:11:00 | | 0.0 | 0.4 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH124 | 23/08/2022 11:20:00 | 6 | 0.0 | 0.0 | 20.5 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1013 | | 0.00 | Dry | 9.20 | Monitoring well in good order, tap closed on arrival. | MM |
| | 11:20:30 | | 0.0 | 0.0 | 20.5 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 11:21:00 | | 0.0 | 0.0 | 20.5 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |

# Ground Gas monitoring record

| | |
|---|---|
| Instrument reference | GFM 436 |
| Date | 23 August 2022 |

| Monitoring location | Date and time | Monitoring round | Methane | Carbon dioxide | Oxygen | Lower Explosive Limit | Hydrogen sulphide | Carbon monoxide | Hexane | Instantaneous flow | Peak flow | Differential pressure | Atmospheric pressure | Static pressure | Photoionisation detection | Water depth | Installation base | Comments | Engineer |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | CH4 | CO2 | O2 | LEL | H2S | CO | Hex | Flw | PkFlw | DP | AP | SP | PID | | | | |
| | dd/mm/yyyy hh:mm:ss | | % | % | % | % | ppm | ppm | % | l/h | l/h | Pa | mb | mb | - | m | m | | |
| BH126 | 23/08/2022 11:22:00 | 6 | 0.0 | 0.0 | 20.6 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1013 | | 0.00 | 3.00 | 3.15 | Monitoring well in good order, tap closed on arrival. | MM |
| | 11:22:30 | | 0.0 | 0.0 | 20.6 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 11:23:00 | | 0.0 | 0.0 | 20.6 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH127 | 23/08/2022 11:30:00 | 6 | 0.0 | 0.0 | 20.4 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1013 | | 0.00 | Dry | 6.07 | Monitoring well in good order, tap closed on arrival. | MM |
| | 11:30:30 | | 0.0 | 0.0 | 20.4 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 11:31:00 | | 0.0 | 0.0 | 20.4 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH128 | 23/08/2022 12:22:00 | 6 | 0.0 | 0.0 | 20.7 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1013 | | 0.00 | 0.78 | 6.00 | Monitoring well in good order, tap closed on arrival. | MM |
| | 12:22:30 | | 0.0 | 0.0 | 20.7 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 12:23:00 | | 0.0 | 0.0 | 20.6 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH129 | 23/08/2022 11:30:00 | 6 | 0.0 | 0.3 | 20.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1013 | | 0.00 | Dry | 9.80 | Monitoring well in good order, tap closed on arrival. | MM |
| | 11:30:30 | | 0.0 | 0.4 | 20.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 11:31:00 | | 0.0 | 0.4 | 20.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH130 | 23/08/2022 11:37:00 | 6 | 0.0 | 1.1 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1013 | | 0.00 | Dry | 5.45 | Monitoring well in good order, tap closed on arrival. | MM |
| | 11:37:30 | | 0.0 | 1.0 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 11:38:00 | | 0.0 | 1.0 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH131 | 23/08/2022 11:39:00 | 6 | 0.0 | 0.8 | 19.6 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1013 | | 0.00 | 2.12 | 2.50 | Monitoring well in good order, tap closed on arrival. | MM |
| | 11:39:30 | | 0.0 | 0.8 | 19.6 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 11:40:00 | | 0.0 | 0.7 | 19.6 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH132 | 23/08/2022 11:42:00 | 6 | 0.0 | 0.5 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1013 | | 0.00 | 5.10 | 10.00 | Monitoring well in good order, tap closed on arrival. | MM |
| | 11:42:30 | | 0.0 | 0.5 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 11:43:00 | | 0.0 | 0.5 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH133 | 23/08/2022 12:49:00 | 6 | 0.0 | 0.0 | 20.4 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1013 | | 0.00 | 0.75 | 8.10 | Monitoring well in good order, tap closed on arrival. | MM |
| | 12:49:30 | | 0.0 | 0.0 | 20.4 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 12:50:00 | | 0.0 | 0.0 | 20.4 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |

# Ground Gas monitoring record

| | |
|---|---|
| Instrument reference | GFM 436 |
| Date | 23 August 2022 |

| Monitoring location | Date and time | Monitoring round | Methane | Carbon dioxide | Oxygen | Lower Explosive Limit | Hydrogen sulphide | Carbon monoxide | Hexane | Instantaneous flow | Peak flow | Differential pressure | Atmospheric pressure | Static pressure | Photoionisation detection | Water depth | Installation base | Comments | Engineer |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | CH4 | CO2 | O2 | LEL | H2S | CO | Hex | Flw | PkFlw | DP | AP | SP | PID | | | | |
| | dd/mm/yyyy hh:mm:ss | | % | % | % | % | ppm | ppm | % | l/h | l/h | Pa | mb | mb | - | m | m | | |
| BH134 | 23/08/2022 11:58:00 | 6 | 0.0 | 0.0 | 21.3 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1013 | | 0.00 | 3.38 | 4.83 | Monitoring well in good order, tap closed on arrival. | MM |
| | 11:58:30 | | 0.0 | 0.0 | 21.3 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 11:59:00 | | 0.0 | 0.0 | 21.3 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |

# Ground Gas monitoring record

| | |
|---|---|
| Instrument reference | GFM 436 |
| Date | 13 September 2022 |

| Monitoring location | Date and time | Monitoring round | Methane | Carbon dioxide | Oxygen | Lower Explosive Limit | Hydrogen sulphide | Carbon monoxide | Hexane | Instantaneous flow | Peak flow | Differential pressure | Atmospheric pressure | Static pressure | Photoionisation detection | Water depth | Installation base | Comments | Engineer |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | CH4 | CO2 | O2 | LEL | H2S | CO | Hex | Flw | PkFlw | DP | AP | SP | PID | | | | |
| | dd/mm/yyyy hh:mm:ss | | % | % | % | % | ppm | ppm | % | l/h | l/h | Pa | mb | mb | - | m | m | | |
| BH104A | 13/09/2022 09:00:00 | 7 | 0.0 | 0.0 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1012 | | 0.00 | 4.05 | 8.90 | Monitoring well in good order, tap closed on arrival. | MM |
| | 09:00:30 | | 0.0 | 0.0 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 09:01:00 | | 0.0 | 0.0 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH105 | 13/09/2022 09:05:30 | 7 | 0.0 | 0.1 | 20.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1012 | | 0.00 | 5.48 | 5.70 | Monitoring well in good order, tap closed on arrival. | MM |
| | 09:06:00 | | 0.0 | 0.1 | 20.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 09:06:30 | | 0.0 | 0.1 | 20.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH107 | 13/09/2022 09:10:30 | 7 | 0.0 | 0.5 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1012 | | 0.00 | Dry | 7.40 | Monitoring well in good order, tap closed on arrival. | MM |
| | 09:11:00 | | 0.0 | 0.5 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 09:11:30 | | 0.0 | 0.6 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH108 | 13/09/2022 09:15:30 | 7 | 0.0 | 1.0 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1012 | | 0.00 | 7.96 | 10.40 | Monitoring well in good order, tap closed on arrival. | MM |
| | 09:16:00 | | 0.0 | 1.0 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 09:16:30 | | 0.0 | 1.0 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH109 | 13/09/2022 09:45:00 | 7 | 0.0 | 1.0 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1012 | | 0.00 | Dry | 4.49 | Monitoring well in good order, tap closed on arrival. | MM |
| | 09:45:30 | | 0.0 | 1.0 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 09:46:00 | | 0.0 | 1.0 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH110 | 13/09/2022 09:50:00 | 7 | 0.0 | 0.1 | 20.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1012 | | 0.00 | 5.17 | 8.84 | Monitoring well in good order, tap closed on arrival. | MM |
| | 09:50:30 | | 0.0 | 0.1 | 20.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 09:51:00 | | 0.0 | 0.1 | 20.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH111 | 13/09/2022 09:59:00 | 7 | 0.0 | 0.9 | 20.1 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1012 | | 0.00 | 8.23 | 8.78 | Monitoring well in good order, tap closed on arrival. | MM |
| | 09:59:30 | | 0.0 | 0.9 | 20.1 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 10:00:00 | | 0.0 | 0.9 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH112 | 13/09/2022 10:05:00 | 7 | 0.0 | 0.0 | 20.4 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1012 | | 0.00 | 2.75 | 18.01 | Monitoring well in good order, tap closed on arrival. | MM |
| | 10:05:30 | | 0.0 | 0.0 | 20.4 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 10:06:00 | | 0.0 | 0.0 | 20.4 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |

# Ground Gas monitoring record

| | |
|---|---|
| Instrument reference | GFM 436 |
| Date | 13 September 2022 |

| Monitoring location | Date and time | Monitoring round | Methane | Carbon dioxide | Oxygen | Lower Explosive Limit | Hydrogen sulphide | Carbon monoxide | Hexane | Instantaneous flow | Peak flow | Differential pressure | Atmospheric pressure | Static pressure | Photoionisation detection | Water depth | Installation base | Comments | Engineer |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | CH4 | CO2 | O2 | LEL | H2S | CO | Hex | Flw | PkFlw | DP | AP | SP | PID | | | | |
| | dd/mm/yyyy hh:mm:ss | | % | % | % | % | ppm | ppm | % | l/h | l/h | Pa | mb | mb | - | m | m | | |
| BH113 | 13/09/2022 10:15:00 | 7 | 0.0 | 0.0 | 20.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1012 | | 0.00 | 1.14 | 4.75 | Monitoring well in good order, tap closed on arrival. | MM |
| | 10:15:30 | | 0.0 | 0.0 | 20.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 10:16:00 | | 0.0 | 0.0 | 20.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH114 | 13/09/2022 10:20:00 | 7 | 0.0 | 1.0 | 18.7 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1012 | | 0.00 | 2.15 | 4.65 | Monitoring well in good order, tap closed on arrival. | MM |
| | 10:20:30 | | 0.0 | 1.0 | 18.7 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 10:21:00 | | 0.0 | 1.0 | 18.7 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH116 | 13/09/2022 10:30:00 | 7 | 0.0 | 0.5 | 19.3 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1012 | | 0.00 | 2.20 | 4.70 | Monitoring well in good order, tap closed on arrival. | MM |
| | 10:30:30 | | 0.0 | 0.6 | 19.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 10:31:00 | | 0.0 | 0.6 | 19.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH117 | 13/09/2022 10:35:11 | 7 | 0.0 | 1.0 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1012 | | 0.00 | 5.30 | 8.27 | Monitoring well in good order, tap closed on arrival. | MM |
| | 10:35:41 | | 0.0 | 1.0 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 10:36:11 | | 0.0 | 1.0 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH119 | 13/09/2022 10:45:00 | 7 | 0.0 | 0.0 | 20.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1012 | | 0.00 | 5.47 | 15.61 | Monitoring well in good order, tap closed on arrival. | MM |
| | 10:45:30 | | 0.0 | 0.0 | 20.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 10:46:00 | | 0.0 | 0.0 | 20.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH121 | 13/09/2022 11:00:00 | 7 | 0.0 | 1.0 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1012 | | 0.00 | Dry | 4.90 | Monitoring well in good order, tap closed on arrival. | MM |
| | 11:00:30 | | 0.0 | 1.0 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 11:01:00 | | 0.0 | 1.0 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH123 | 13/09/2022 11:10:00 | 7 | 0.0 | 0.4 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1012 | | 0.00 | Dry | 2.30 | Monitoring well in good order, tap closed on arrival. | MM |
| | 11:10:30 | | 0.0 | 0.4 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 11:11:00 | | 0.0 | 0.4 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH124 | 13/09/2022 11:20:00 | 7 | 0.0 | 0.0 | 20.5 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1012 | | 0.00 | Dry | 9.20 | Monitoring well in good order, tap closed on arrival. | MM |
| | 11:20:30 | | 0.0 | 0.0 | 20.5 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 11:21:00 | | 0.0 | 0.0 | 20.5 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |

# Ground Gas monitoring record

| | |
|---|---|
| Instrument reference | GFM 436 |
| Date | 13 September 2022 |

| Monitoring location | Date and time | Monitoring round | Methane | Carbon dioxide | Oxygen | Lower Explosive Limit | Hydrogen sulphide | Carbon monoxide | Hexane | Instantaneous flow | Peak flow | Differential pressure | Atmospheric pressure | Static pressure | Photoionisation detection | Water depth | Installation base | Comments | Engineer |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | CH4 | CO2 | O2 | LEL | H2S | CO | Hex | Flw | PkFlw | DP | AP | SP | PID | | | | |
| | dd/mm/yyyy hh:mm:ss | | % | % | % | % | ppm | ppm | % | l/h | l/h | Pa | mb | mb | - | m | m | | |
| BH126 | 13/09/2022 11:22:00 | 7 | 0.0 | 0.0 | 20.5 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1012 | | 0.00 | 3.02 | 3.15 | Monitoring well in good order, tap closed on arrival. | MM |
| | 11:22:30 | | 0.0 | 0.0 | 20.5 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 11:23:00 | | 0.0 | 0.0 | 20.5 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH127 | 13/09/2022 11:30:00 | 7 | 0.0 | 0.0 | 20.3 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1012 | | 0.00 | Dry | 6.07 | Monitoring well in good order, tap closed on arrival. | MM |
| | 11:30:30 | | 0.0 | 0.0 | 20.3 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 11:31:00 | | 0.0 | 0.0 | 20.3 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH128 | 13/09/2022 12:22:00 | 7 | 0.0 | 0.0 | 20.5 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1012 | | 0.00 | 0.75 | 6.00 | Monitoring well in good order, tap closed on arrival. | MM |
| | 12:22:30 | | 0.0 | 0.0 | 20.5 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 12:23:00 | | 0.0 | 0.0 | 20.5 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH129 | 13/09/2022 11:30:00 | 7 | 0.0 | 0.2 | 20.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1012 | | 0.00 | Dry | 9.80 | Monitoring well in good order, tap closed on arrival. | MM |
| | 11:30:30 | | 0.0 | 0.2 | 20.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 11:31:00 | | 0.0 | 0.2 | 20.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH130 | 13/09/2022 11:37:00 | 7 | 0.0 | 1.0 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1012 | | 0.00 | Dry | 5.45 | Monitoring well in good order, tap closed on arrival. | MM |
| | 11:37:30 | | 0.0 | 1.0 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 11:38:00 | | 0.0 | 1.0 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH131 | 13/09/2022 11:39:00 | 7 | 0.0 | 0.6 | 19.9 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1012 | | 0.00 | 2.15 | 2.50 | Monitoring well in good order, tap closed on arrival. | MM |
| | 11:39:30 | | 0.0 | 0.6 | 19.9 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 11:40:00 | | 0.0 | 0.6 | 19.9 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH132 | 13/09/2022 11:42:00 | 7 | 0.0 | 0.4 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1012 | | 0.00 | 5.13 | 10.00 | Monitoring well in good order, tap closed on arrival. | MM |
| | 11:42:30 | | 0.0 | 0.4 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 11:43:00 | | 0.0 | 0.4 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH133 | 13/09/2022 12:49:00 | 7 | 0.0 | 0.0 | 20.3 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1012 | | 0.00 | 0.75 | 8.10 | Monitoring well in good order, tap closed on arrival. | MM |
| | 12:49:30 | | 0.0 | 0.0 | 20.3 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 12:50:00 | | 0.0 | 0.0 | 20.3 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |

# Ground Gas monitoring record

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|---|---|
| Instrument reference | GFM 436 |
| Date | 13 September 2022 |

| Monitoring location | Date and time | Monitoring round | Methane | Carbon dioxide | Oxygen | Lower Explosive Limit | Hydrogen sulphide | Carbon monoxide | Hexane | Instantaneous flow | Peak flow | Differential pressure | Atmospheric pressure | Static pressure | Photoionisation detection | Water depth | Installation base | Comments | Engineer |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | CH4 | CO2 | O2 | LEL | H2S | CO | Hex | Flw | PkFlw | DP | AP | SP | PID | | | | |
| | dd/mm/yyyy hh:mm:ss | | % | % | % | % | ppm | ppm | % | l/h | l/h | Pa | mb | mb | - | m | m | | |
| BH134 | 13/09/2022 11:58:00 | 7 | 0.0 | 0.0 | 21.1 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1012 | | 0.00 | 3.55 | 4.80 | Monitoring well in good order, tap closed on arrival. | MM |
| | 11:58:30 | | 0.0 | 0.0 | 21.1 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 11:59:00 | | 0.0 | 0.0 | 21.1 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |

# Ground Gas monitoring record

| | |
|---|---|
| Instrument reference | GFM 436 |
| Date | 14 October 2022 |

| Monitoring location | Date and time | Monitoring round | Methane | Carbon dioxide | Oxygen | Lower Explosive Limit | Hydrogen sulphide | Carbon monoxide | Hexane | Instantaneous flow | Peak flow | Differential pressure | Atmospheric pressure | Static pressure | Photoionisation detection | Water depth | Installation base | Comments | Engineer |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | CH4 | CO2 | O2 | LEL | H2S | CO | Hex | Flw | PkFlw | DP | AP | SP | PID | | | | |
| | dd/mm/yyyy hh:mm:ss | | % | % | % | % | ppm | ppm | % | l/h | l/h | Pa | mb | mb | - | m | m | | |
| BH104A | 14/10/2022 09:00:00 | 8 | 0.0 | 0.0 | 20.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1027 | | 0.00 | 4.08 | 8.85 | Monitoring well in good order, tap closed on arrival. | MM |
| | 09:00:30 | | 0.0 | 0.0 | 20.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 09:01:00 | | 0.0 | 0.0 | 20.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH105 | 14/10/2022 09:05:30 | 8 | 0.0 | 0.1 | 20.1 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1027 | | 0.00 | 5.48 | 5.70 | Monitoring well in good order, tap closed on arrival. | MM |
| | 09:06:00 | | 0.0 | 0.1 | 20.1 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 09:06:30 | | 0.0 | 0.1 | 20.1 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH107 | 14/10/2022 09:10:30 | 8 | 0.0 | 0.4 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1027 | | 0.00 | Dry | 7.40 | Monitoring well in good order, tap closed on arrival. | MM |
| | 09:11:00 | | 0.0 | 0.4 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 09:11:30 | | 0.0 | 0.4 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH108 | 14/10/2022 09:15:30 | 8 | 0.0 | 0.8 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1027 | | 0.00 | 7.99 | 10.40 | Monitoring well in good order, tap closed on arrival. | MM |
| | 09:16:00 | | 0.0 | 0.8 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 09:16:30 | | 0.0 | 0.8 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH109 | 14/10/2022 09:45:00 | 8 | 0.0 | 1.1 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1027 | | 0.00 | Dry | 4.49 | Monitoring well in good order, tap closed on arrival. | MM |
| | 09:45:30 | | 0.0 | 1.1 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 09:46:00 | | 0.0 | 1.1 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH110 | 14/10/2022 09:50:00 | 8 | 0.0 | 0.0 | 20.1 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1027 | | 0.00 | 5.19 | 8.85 | Monitoring well in good order, tap closed on arrival. | MM |
| | 09:50:30 | | 0.0 | 0.0 | 20.1 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 09:51:00 | | 0.0 | 0.0 | 20.1 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH111 | 14/10/2022 09:59:00 | 8 | 0.0 | 0.8 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1027 | | 0.00 | 8.23 | 8.75 | Monitoring well in good order, tap closed on arrival. | MM |
| | 09:59:30 | | 0.0 | 0.8 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 10:00:00 | | 0.0 | 0.8 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH112 | 14/10/2022 10:05:00 | 8 | 0.0 | 0.0 | 20.3 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1027 | | 0.00 | 2.78 | 18.00 | Monitoring well in good order, tap closed on arrival. | MM |
| | 10:05:30 | | 0.0 | 0.0 | 20.3 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 10:06:00 | | 0.0 | 0.0 | 20.3 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |

# Ground Gas monitoring record

| | |
|---|---|
| Instrument reference | GFM 436 |
| Date | 14 October 2022 |

| Monitoring location | Date and time | Monitoring round | Methane | Carbon dioxide | Oxygen | Lower Explosive Limit | Hydrogen sulphide | Carbon monoxide | Hexane | Instantaneous flow | Peak flow | Differential pressure | Atmospheric pressure | Static pressure | Photoionisation detection | Water depth | Installation base | Comments | Engineer |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | CH4 | CO2 | O2 | LEL | H2S | CO | Hex | Flw | PkFlw | DP | AP | SP | PID | | | | |
| | dd/mm/yyyy hh:mm:ss | | % | % | % | % | ppm | ppm | % | l/h | l/h | Pa | mb | mb | - | m | m | | |
| BH113 | 14/10/2022 10:15:00 | 8 | 0.0 | 0.0 | 20.1 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1027 | | 0.00 | 1.18 | 4.75 | Monitoring well in good order, tap closed on arrival. | MM |
| | 10:15:30 | | 0.0 | 0.0 | 20.1 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 10:16:00 | | 0.0 | 0.0 | 20.1 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH114 | 14/10/2022 10:20:00 | 8 | 0.0 | 1.0 | 18.9 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1027 | | 0.00 | 2.15 | 4.65 | Monitoring well in good order, tap closed on arrival. | MM |
| | 10:20:30 | | 0.0 | 1.0 | 18.9 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 10:21:00 | | 0.0 | 1.0 | 18.9 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH116 | 14/10/2022 10:30:00 | 8 | 0.0 | 0.5 | 19.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1027 | | 0.00 | 2.21 | 4.70 | Monitoring well in good order, tap closed on arrival. | MM |
| | 10:30:30 | | 0.0 | 0.5 | 19.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 10:31:00 | | 0.0 | 0.5 | 19.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH117 | 14/10/2022 10:35:11 | 8 | 0.0 | 1.2 | 20.1 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1027 | | 0.00 | 5.37 | 8.30 | Monitoring well in good order, tap closed on arrival. | MM |
| | 10:35:41 | | 0.0 | 1.2 | 20.1 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 10:36:11 | | 0.0 | 1.2 | 20.1 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH119 | 14/10/2022 10:45:00 | 8 | 0.0 | 0.0 | 20.1 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1027 | | 0.00 | 5.40 | 15.60 | Monitoring well damaged. Diver had been lifted due to damaged pipe. | MM |
| | 10:45:30 | | 0.0 | 0.0 | 20.1 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 10:46:00 | | 0.0 | 0.0 | 20.1 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH121 | 14/10/2022 11:00:00 | 8 | 0.0 | 1.1 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1027 | | 0.00 | Dry | 4.90 | Monitoring well in good order, tap closed on arrival. | MM |
| | 11:00:30 | | 0.0 | 1.1 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 11:01:00 | | 0.0 | 1.1 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH123 | 14/10/2022 11:10:00 | 8 | 0.0 | 0.2 | 20.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1027 | | 0.00 | Dry | 2.30 | Monitoring well in good order, tap closed on arrival. | MM |
| | 11:10:30 | | 0.0 | 0.2 | 20.1 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 11:11:00 | | 0.0 | 0.3 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH124 | 14/10/2022 11:20:00 | 8 | 0.0 | 0.0 | 20.3 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1027 | | 0.00 | Dry | 9.20 | Monitoring well in good order, tap closed on arrival. | MM |
| | 11:20:30 | | 0.0 | 0.0 | 20.3 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 11:21:00 | | 0.0 | 0.0 | 20.3 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |

# Ground Gas monitoring record

| | |
|---|---|
| Instrument reference | GFM 436 |
| Date | 14 October 2022 |

| Monitoring location | Date and time | Monitoring round | Methane | Carbon dioxide | Oxygen | Lower Explosive Limit | Hydrogen sulphide | Carbon monoxide | Hexane | Instantaneous flow | Peak flow | Differential pressure | Atmospheric pressure | Static pressure | Photoionisation detection | Water depth | Installation base | Comments | Engineer |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | CH4 | CO2 | O2 | LEL | H2S | CO | Hex | Flw | PkFlw | DP | AP | SP | PID | | | | |
| | dd/mm/yyyy hh:mm:ss | | % | % | % | % | ppm | ppm | % | l/h | l/h | Pa | mb | mb | - | m | m | | |
| BH126 | 14/10/2022 11:22:00 | 8 | 0.0 | 0.0 | 20.4 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1027 | | 0.00 | 3.05 | 3.15 | Monitoring well in good order, tap closed on arrival. | MM |
| | 11:22:30 | | 0.0 | 0.0 | 20.4 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 11:23:00 | | 0.0 | 0.0 | 20.4 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH127 | 14/10/2022 11:30:00 | 8 | 0.0 | 0.1 | 20.3 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1027 | | 0.00 | Dry | 6.05 | Monitoring well in good order, tap closed on arrival. | MM |
| | 11:30:30 | | 0.0 | 0.1 | 20.3 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 11:31:00 | | 0.0 | 0.1 | 20.3 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH128 | 14/10/2022 12:22:00 | 8 | 0.0 | 0.0 | 20.4 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1027 | | 0.00 | 0.79 | 6.00 | Monitoring well in good order, tap closed on arrival. | MM |
| | 12:22:30 | | 0.0 | 0.0 | 20.4 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 12:23:00 | | 0.0 | 0.0 | 20.4 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH129 | 14/10/2022 11:30:00 | 8 | 0.0 | 0.1 | 20.1 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1027 | | 0.00 | Dry | 9.80 | Monitoring well in good order, tap closed on arrival. | MM |
| | 11:30:30 | | 0.0 | 0.1 | 20.1 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 11:31:00 | | 0.0 | 0.1 | 20.1 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH130 | 14/10/2022 11:37:00 | 8 | 0.0 | 1.0 | 20.1 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1027 | | 0.00 | Dry | 5.45 | Monitoring well in good order, tap closed on arrival. | MM |
| | 11:37:30 | | 0.0 | 1.0 | 20.1 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 11:38:00 | | 0.0 | 1.0 | 20.1 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH131 | 14/10/2022 11:39:00 | 8 | 0.0 | 0.4 | 19.7 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1027 | | 0.00 | 2.18 | 2.50 | Monitoring well in good order, tap closed on arrival. | MM |
| | 11:39:30 | | 0.0 | 0.4 | 19.7 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 11:40:00 | | 0.0 | 0.4 | 19.7 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH132 | 14/10/2022 11:42:00 | 8 | 0.0 | 0.4 | 20.1 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1027 | | 0.00 | 5.13 | 10.00 | Monitoring well in good order, tap closed on arrival. | MM |
| | 11:42:30 | | 0.0 | 0.4 | 20.1 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 11:43:00 | | 0.0 | 0.4 | 20.0 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| BH133 | 14/10/2022 12:49:00 | 8 | 0.0 | 0.0 | 20.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1027 | | 0.00 | 0.76 | 8.10 | Monitoring well in good order, tap closed on arrival. | MM |
| | 12:49:30 | | 0.0 | 0.0 | 20.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 12:50:00 | | 0.0 | 0.0 | 20.2 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |

# Ground Gas monitoring record

| | |
|---|---|
| Instrument reference | GFM 436 |
| Date | 14 October 2022 |

| Monitoring location | Date and time | Monitoring round | Methane | Carbon dioxide | Oxygen | Lower Explosive Limit | Hydrogen sulphide | Carbon monoxide | Hexane | Instantaneous flow | Peak flow | Differential pressure | Atmospheric pressure | Static pressure | Photoionisation detection | Water depth | Installation base | Comments | Engineer |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | CH4 | CO2 | O2 | LEL | H2S | CO | Hex | Flw | PkFlw | DP | AP | SP | PID | | | | |
| | dd/mm/yyyy hh:mm:ss | | % | % | % | % | ppm | ppm | % | l/h | l/h | Pa | mb | mb | - | m | m | | |
| BH134 | 14/10/2022 11:58:00 | 8 | 0.0 | 0.1 | 20.8 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | 1027 | | 0.00 | 3.58 | 4.80 | Monitoring well in good order, tap closed on arrival. | MM |
| | 11:58:30 | | 0.0 | 0.1 | 20.8 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |
| | 11:59:00 | | 0.0 | 0.0 | 21.7 | 0.0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | | | 0.00 | | | | |

GROUND TECHNOLOGY

# Appendix VII – Calibration certificates

# Allied Exploration & Geotechnics Ltd.

**Unit 25 Stella Gill Industrial Estate**
**Pelton Fell**
**Chester-le-Street**
**DH2 2RG**

# SPT Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

| | |
|---|---|
| SPT Hammer Ref: | 12-4 |
| Test Date: | 13/04/2023 |
| Report Date: | 13/04/2023 |
| File Name: | 12-4.spt |
| Test Operator: | BP |

## Instrumented Rod Data

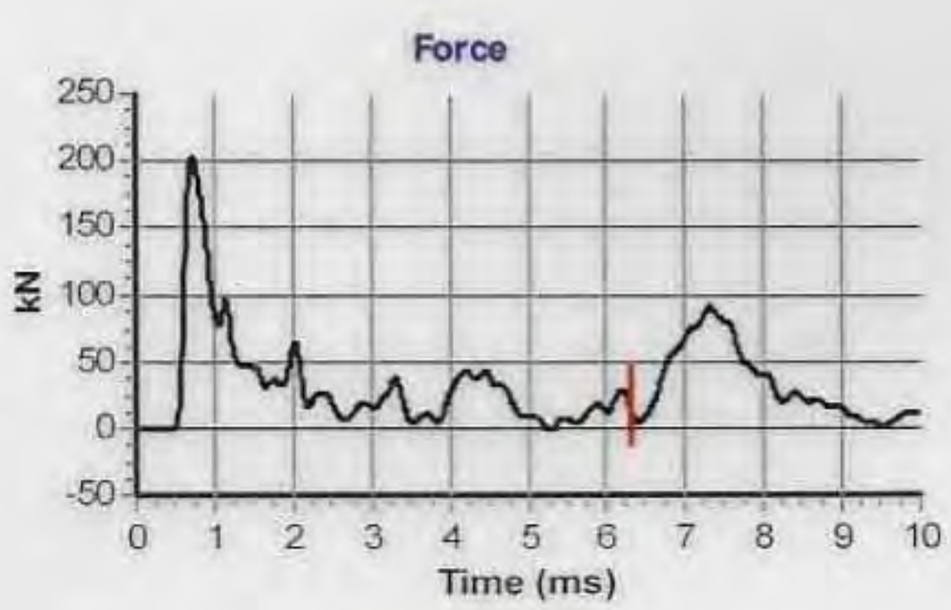
| | |
|---|---|
| Diameter $d_r$ (mm): | 67 |
| Wall Thickness $t_r$ (mm): | 8.7 |
| Assumed Modulus $E_a$ (GPa): | 208 |
| Accelerometer No.1: | 65939 |
| Accelerometer No.2: | 66286 |

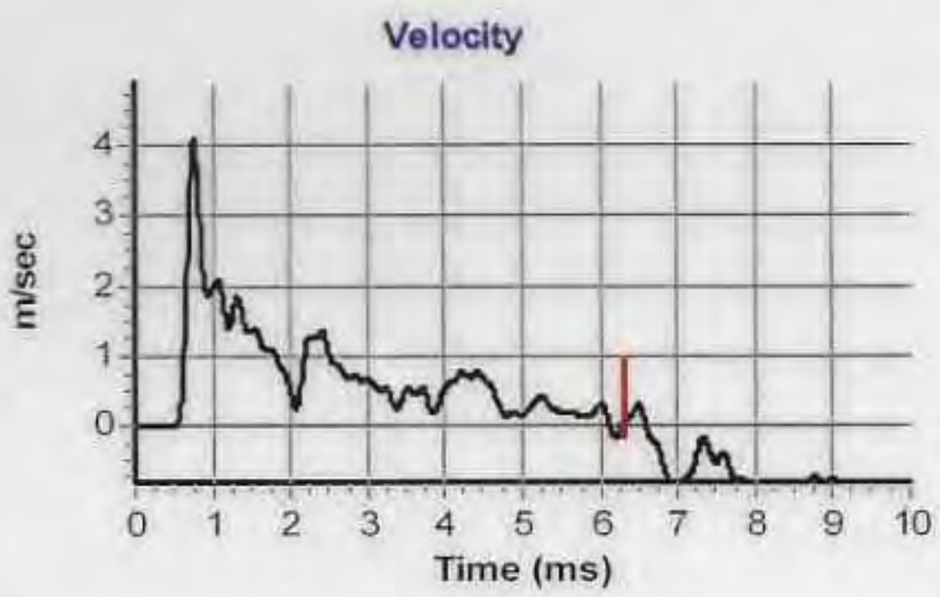
## SPT Hammer Information

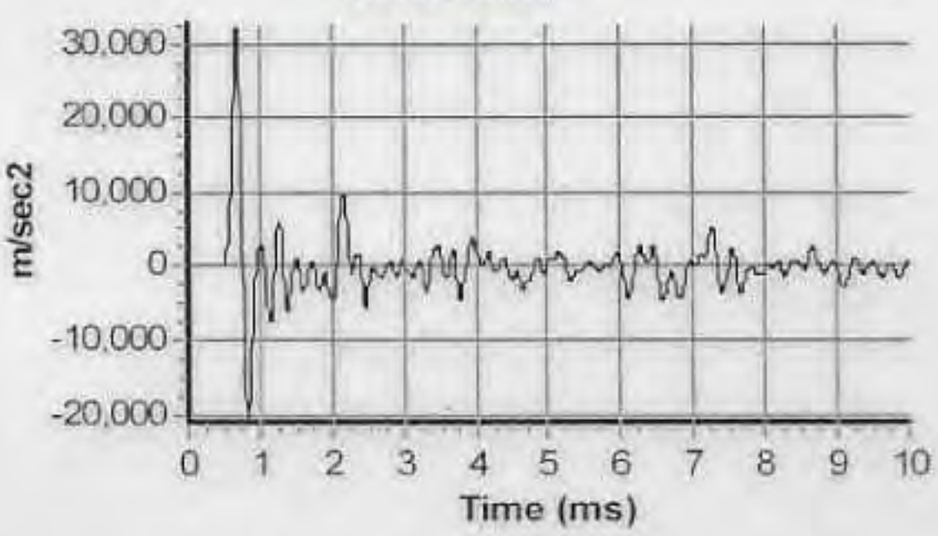
| | |
|---|---|
| Hammer Mass m (kg): | 63.5 |
| Falling Height h (mm): | 760 |
| SPT String Length L (m): | 14.1 |

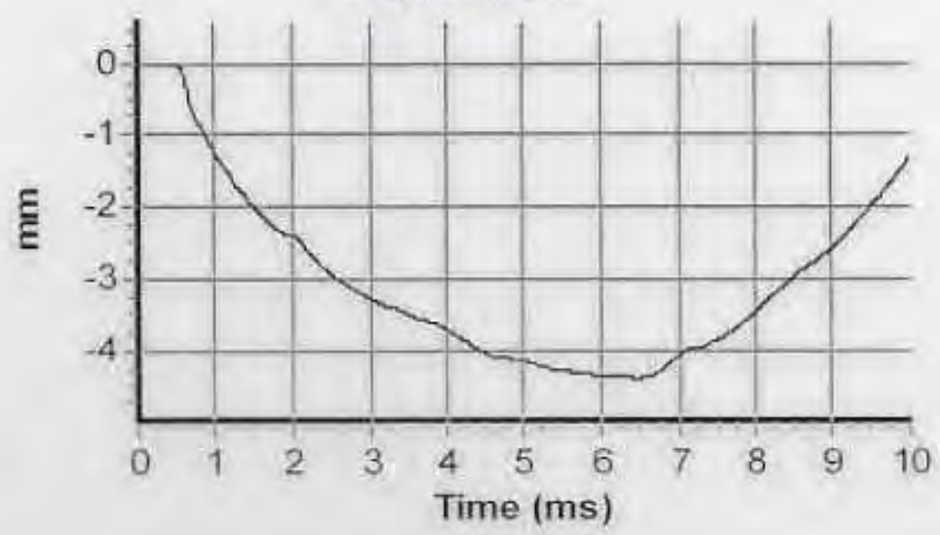
## Comments / Location

Mass and drop supplied by client




## Calculations

| | |
|---|---|
| Area of Rod A (mm2): | 1593 |
| Theoretical Energy $E_{theor}$ (J): | 473 |
| Measured Energy $E_{meas}$ (J): | 293 |

**Energy Ratio $E_r$ (%): 62**

[redacted]

Signed: Brian Proctor

Title: Senior Technician

The recommended calibration interval is 12 months

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# SPT Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

**James and Milton Drilling Ltd**
**63 Fakenham Road**
**Great Ryburgh**
**NR21 7AW**

| | |
|---|---|
| SPT Hammer Ref: | P2011130 (R9) |
| Test Date: | 24/12/2021 |
| Report Date: | 24/12/2021 |
| File Name: | P2011130.spt |
| Test Operator: | RW |

## Instrumented Rod Data

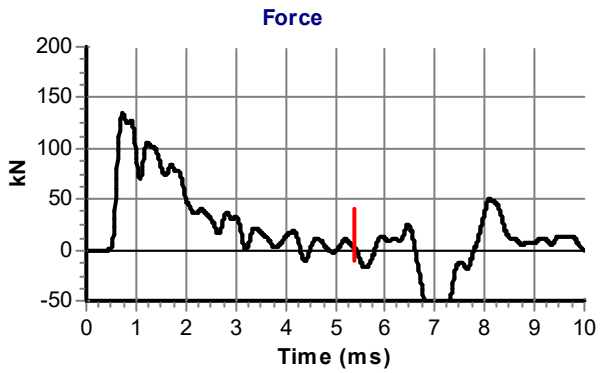
| | |
|---|---|
| Diameter $d_r$ (mm): | 54 |
| Wall Thickness $t_r$ (mm): | 6.4 |
| Assumed Modulus $E_a$ (GPa): | 208 |
| Accelerometer No.1: | 63177 |
| Accelerometer No.2: | 63178 |

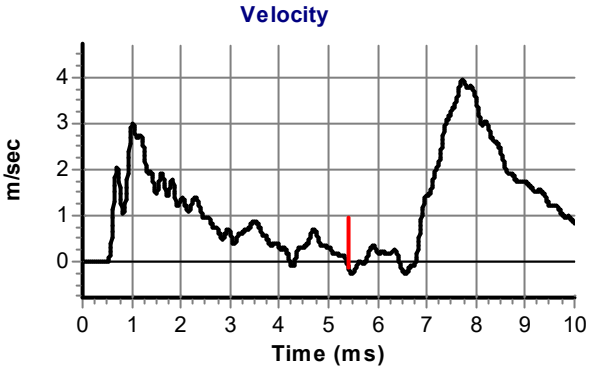
## SPT Hammer Information

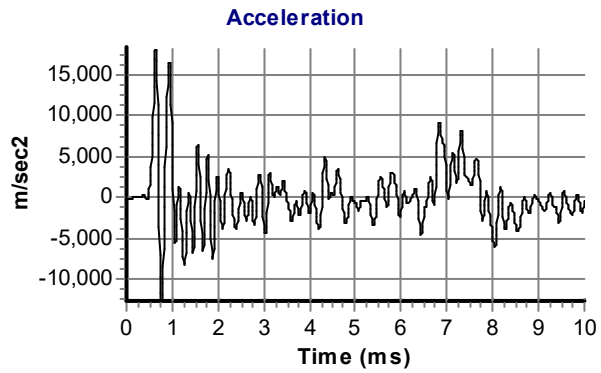
| | |
|---|---|
| Hammer Mass m (kg): | 63.5 |
| Falling Height h (mm): | 760 |
| SPT String Length L (m): | 13.6 |

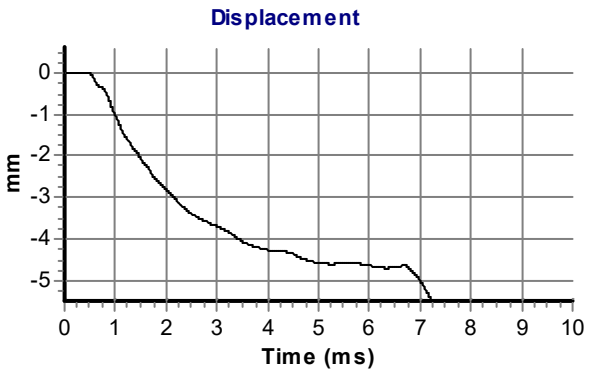
## Comments / Location

JMD YARD




## Calculations

| | |
|---|---|
| Area of Rod A (mm2): | 957 |
| Theoretical Energy $E_{theor}$ (J): | 473 |
| Measured Energy $E_{meas}$ (J): | 333 |

**Energy Ratio $E_r$ (%):** **70**

[redacted]

Signed: Richard Walter

Title: Drilling Manager

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# 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: | SIS1 |
| Test Date: | 10/09/2021 |
| Report Date: | 10/09/2021 |
| File Name: | SIS1.spt |
| Test Operator: | BH |

## Instrumented Rod Data

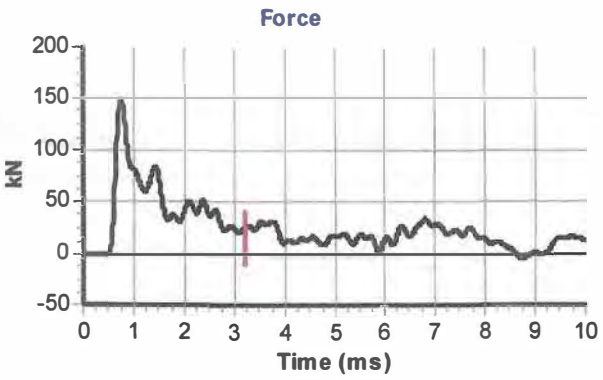
| | |
|---|---|
| Diameter $d_r$ (mm): | 54 |
| Wall Thickness $t_r$ (mm): | 6.5 |
| Assumed Modulus $E_a$ (GPa): | 208 |
| Accelerometer No.1: | 7080 |
| Accelerometer No.2: | 11609 |

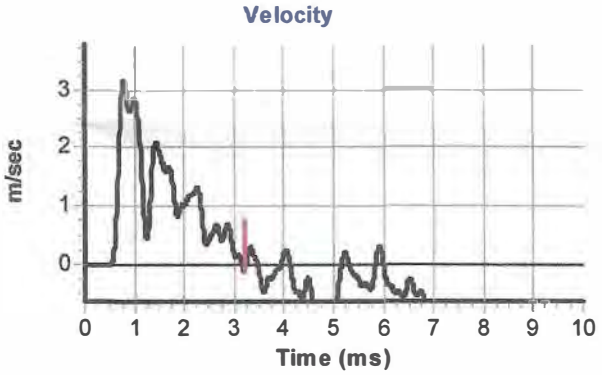
## SPT Hammer Information

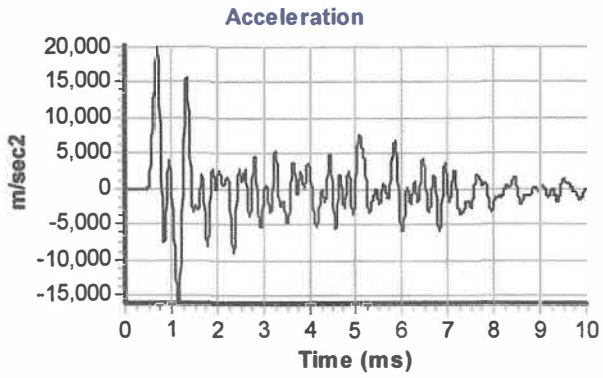
| | |
|---|---|
| Hammer Mass m (kg): | 63.5 |
| Falling Height h (mm): | 760 |
| SPT String Length L (m): | 10.0 |

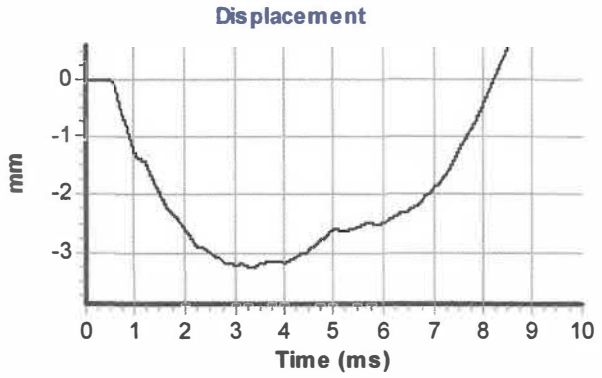
## Comments / Location

SO66964




## Calculations

| | |
|---|---|
| Area of Rod A (mm2): | 970 |
| Theoretical Energy $E_{theor}$ (J): | 473 |
| Measured Energy $E_{meas}$ (J): | 258 |

**Energy Ratio $E_r$ (%):** **55**

[redacted]

Title: SALES ENGINEER

The recommended calibration interval is 12 months

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RADIODETECTION

# Certificate of Calibration

**PASS**

**Product:** CAT4
**Serial Number:** 10/C4EN03-25629
**Order Number:**
**Date of Issue:** 20/01/22
**Calibration due date:** 20/01/23

**Customer :**

**Radiodetection Calibration Data:**

**Date of Calibration :** 17/01/22

**Location of Calibration:**
Radiodetection Ltd , Western Drive , Bristol , BS14 0AF , United Kingdom ,

**Environmental Temperature:** N/A
**Relative Humidity:** N/A
**Test Procedure:** CAT4 T2 GPS (REV6).xml
**Revision:** 6.7.4

**Traceability Information:**

**Technician ID:** TimW

**Calibration Equipment Used:**

| Model Number | Model Description | Serial Number | Last Cal Date | Cal Due Date |
|---|---|---|---|---|
| 33220A | Hewlett Packard Function Generator | US36039135 | 18/02/2021 | 18/02/2022 |
| 34401A | Hewlett Packard Digital Multimeter | MY41022044 | 25/08/2021 | 25/08/2022 |
| QL355TP | Thurlby Thandar Power Supply | 388187 | 16/11/2021 | 16/11/2022 |

**Calibration Results:**

| Frequency | Measured Value | Measurement Uncertainty | High Limit | Low Limit | Pass/Fail |
|---|---|---|---|---|---|
| 635.0 | 0.9854 | 0.0005 | 1.10 | 0.88 | Pass |
| 8172.0 | 0.9827 | 0.0005 | 1.10 | 0.88 | Pass |
| 22070.0 | 0.9879 | 0.0005 | 1.10 | 0.88 | Pass |
| 32758.0 | 0.9940 | 0.0005 | 1.10 | 0.88 | Pass |
| 65500.0 | 1.0101 | 0.0005 | 1.10 | 0.88 | Pass |
| 131000.0 | 0.9872 | 0.0005 | 1.10 | 0.88 | Pass |

1. This certifies that the above product was tested and calibrated to the company's specifications and that the purpose-built equipment performing these functions has been calibrated by instruments whose calibration is traceable to national standards.
2. The calibration was performed using procedures that are subject to periodic rewiew.
3. The Company's Quality Management System is in accordance with BS EN ISO 9001:2008 Cert Number FM12608.

**Authorised Signatories:**

David Hurley - Operations Director

[redacted]

Chris Willerton - Quality Representative

[redacted]

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RADIODETECTION

# Certificate of Calibration

**Product:** GENNY4
**Serial Numer:** 10/G4EN-72911
**Customer Order:** 6191473

**Date of Issue:** 31-Jan-2022
**Valid for** 12 months
**Plant Number:** N/A

**Customer:**

GAP GROUP LIMITED
UNIT 28, SANDY BUSINESS PARK
MIDDLEFIELD INDUSTRIAL ESTATE
TYNE ROAD
SANDY,

**Issued by :**

Radiodetection Limited
Western Drive
Bristol
United Kingdom
BS14 0AF

**Test Procedure:** ITCC TX **Revision:** 4.3.2

| Test Description | Pass/Fail |
|---|---|
| Output Frequency | Pass |
| Output Voltage Normal 5k Load | Pass |
| Output Voltage Normal 2R Load | Pass |
| Output Voltage Normal 1k Load | Pass |
| Output Voltage Boost 143R Load | Pass |
| Induction Output Boost | Pass |
| Induction Output Normal | Pass |

1. This certifies that the above product was tested and calibrated to the company's specifications, and that the purpose built equipment performing these functions been calibrated by instruments whose calibration is traceable to national standards.
2. The calibration was performed using procedures that are subject to periodic review.
3. The Company's Quality Management System is in accordance with BS EN ISO9001:2015. Cert Number FM12608

**Authorised Signatory:**

[redacted]

David Hurley - Operations Director

[redacted]

Chris Willerton - Quality Representative

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Radiodetection

MCC

# Calibration Certificate

**Certificate No: 717808.09**

| | | | | | |
|---|---|---|---|---|---|
| Certificate Issued To | Impact Test Equipment Ltd | | Address | Building 21<br>Stevenston Industrial Estate<br>Stevenston<br>Ayrshire, Scotland U.K KA20 3LR | |
| Purchase Order No | | | | | |
| Manufacturer | Impact Test Equipment | Model | SL810 | S/No | 3386 |
| | | | | Unique ID | |
| Description | Handheld shear vane with matching blade(s) | | | | |
| Calibration Date | 4/03/2022 | | Temp During Test | 19.3 to 19.7 °C | |
| Method | MCC 5.51c.01 – Handheld Soil Shear Vane Testers (2021), Guideline for Hand Held Shear Vane Test (NZGS, 2001) was used as a guide. | | | | |
| Statement of Performance | The equipment meets the requirements of the method for which it was tested. | | | | |

**Results**

## 19 mm Ø Vane Blade

| Shear Strength = A × Reading | A (kPa/div) | 1.761 | Area Ratio | 23.7% |
|---|---|---|---|---|

| Reading (div) | Shear Strength (kPa) | Reading (div) | Shear Strength (kPa) | Reading (div) | Shear Strength (kPa) | Reading (div) | Shear Strength (kPa) | Reading (div) | Shear Strength (kPa) |
|---|---|---|---|---|---|---|---|---|---|
| 0 | 0 | 30 | 53 | 60 | 106 | 90 | 159 | 120 | 211 |
| 2 | 4 | 32 | 56 | 62 | 109 | 92 | 162 | 122 | 215 |
| 4 | 7 | 34 | 60 | 64 | 113 | 94 | 166 | 124 | 218 |
| 6 | 11 | 36 | 63 | 66 | 116 | 96 | 169 | 126 | 222 |
| 8 | 14 | 38 | 67 | 68 | 120 | 98 | 173 | 128 | 225 |
| 10 | 18 | 40 | 70 | 70 | 123 | 100 | 176 | 130 | 229 |
| 12 | 21 | 42 | 74 | 72 | 127 | 102 | 180 | 132 | 233 |
| 14 | 25 | 44 | 78 | 74 | 130 | 104 | 183 | 134 | 236 |
| 16 | 28 | 46 | 81 | 76 | 134 | 106 | 187 | 136 | 240 |
| 18 | 32 | 48 | 85 | 78 | 137 | 108 | 190 | 138 | 243 |
| 20 | 35 | 50 | 88 | 80 | 141 | 110 | 194 | 140 | 247 |
| 22 | 39 | 52 | 92 | 82 | 144 | 112 | 197 | | |
| 24 | 42 | 54 | 95 | 84 | 148 | 114 | 201 | | |
| 26 | 46 | 56 | 99 | 86 | 151 | 116 | 204 | | |
| 28 | 49 | 58 | 102 | 88 | 155 | 118 | 208 | | |

The expanded uncertainty of measurement, expressed at the 95% confidence level, is ±7.6 kPa. The coverage factor (k) is 2.

**Remarks**

When received, this equipment was in new condition.

Measurement results are traceable to the International System of Units (SI), or other recognised references via an unbroken chain of comparisons to the New Zealand National Standards or to the National Standards of other Signatories to the CIPM MRA.

This certificate has been prepared for the benefit of Impact Test Equipment Ltd, with respect to the particular brief given to us and it cannot be relied upon in other contexts or for any other purpose without our prior review and agreement.

This calibration was performed at 1 Hill Street, Onehunga, Auckland, NZ.

**Prepared by**

[redacted] Annalyse Ryan
Metrologist

**Checked by**

[redacted] Agnelo Vaz
Senior Metrologist

**Key Technical Person**

[redacted] Agnelo Vaz
Senior Metrologist


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MCC

## Calibration Certificate

**Certificate No: 717808.09**

| | | | | | |
|---|---|---|---|---|---|
| **Certificate Issued To** | Impact Test Equipment Ltd | | **Address** | Building 21<br>Stevenston Industrial Estate<br>Stevenston<br>Ayrshire, Scotland U.K KA20 3LR | |
| **Purchase Order No** | | | | | |
| **Manufacturer** | Impact Test Equipment | **Model** | SL810 | **S/No** | 3386 |
| | | | | **Unique ID** | |
| **Description** | Handheld shear vane with matching blade(s) | | | | |
| **Calibration Date** | 4/03/2022 | | **Temp During Test** | 19.3 to 19.7 °C | |
| **Method** | MCC 5.51c.01 – Handheld Soil Shear Vane Testers (2021), Guideline for Hand Held Shear Vane Test (NZGS, 2001) was used as a guide. | | | | |
| **Statement of Performance** | The equipment meets the requirements of the method for which it was tested. | | | | |

**Results**

### 33 mm Ø Vane Blade

| **Shear Strength = A × Reading** | **A (kPa/div)** | 0.333 |
|---|---|---|

| **Area Ratio** | 12.8% |
|---|---|

| Reading (div) | Shear Strength (kPa) | Reading (div) | Shear Strength (kPa) | Reading (div) | Shear Strength (kPa) | Reading (div) | Shear Strength (kPa) | Reading (div) | Shear Strength (kPa) |
|---|---|---|---|---|---|---|---|---|---|
| 0 | 0 | 30 | 10 | 60 | 20 | 90 | 30 | 120 | 40 |
| 2 | 1 | 32 | 11 | 62 | 21 | 92 | 31 | 122 | 41 |
| 4 | 1 | 34 | 11 | 64 | 21 | 94 | 31 | 124 | 41 |
| 6 | 2 | 36 | 12 | 66 | 22 | 96 | 32 | 126 | 42 |
| 8 | 3 | 38 | 13 | 68 | 23 | 98 | 33 | 128 | 43 |
| 10 | 3 | 40 | 13 | 70 | 23 | 100 | 33 | 130 | 43 |
| 12 | 4 | 42 | 14 | 72 | 24 | 102 | 34 | 132 | 44 |
| 14 | 5 | 44 | 15 | 74 | 25 | 104 | 35 | 134 | 45 |
| 16 | 5 | 46 | 15 | 76 | 25 | 106 | 35 | 136 | 45 |
| 18 | 6 | 48 | 16 | 78 | 26 | 108 | 36 | 138 | 46 |
| 20 | 7 | 50 | 17 | 80 | 27 | 110 | 37 | 140 | 47 |
| 22 | 7 | 52 | 17 | 82 | 27 | 112 | 37 | | |
| 24 | 8 | 54 | 18 | 84 | 28 | 114 | 38 | | |
| 26 | 9 | 56 | 19 | 86 | 29 | 116 | 39 | | |
| 28 | 9 | 58 | 19 | 88 | 29 | 118 | 39 | | |

The expanded uncertainty of measurement, expressed at the 95% confidence level, is ±1.5 kPa. The coverage factor (k) is 2.

**Remarks**

When received, this equipment was in new condition.

Measurement results are traceable to the International System of Units (SI), or other recognised references via an unbroken chain of comparisons to the New Zealand National Standards or to the National Standards of other Signatories to the CIPM MRA.

This certificate has been prepared for the benefit of Impact Test Equipment Ltd, with respect to the particular brief given to us and it cannot be relied upon in other contexts or for any other purpose without our prior review and agreement.

This calibration was performed at 1 Hill Street, Onehunga, Auckland, NZ.

**Prepared by**

[redacted] Annalyse Ryan
Metrologist

**Checked by**

[redacted] gnelo Vaz
nior Metrologist

**Key Technical Person**

[redacted] Agnelo Vaz
Senior Metrologist


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# Calibration Certificate

**Certificate No: 717808.10**

| | | | | | |
|---|---|---|---|---|---|
| **Certificate Issued To** | Impact Test Equipment Ltd | | **Address** | Building 21<br>Stevenston Industrial Estate<br>Stevenston<br>Ayrshire, Scotland U.K KA20 3LR | |
| **Purchase Order No** | | | | | |
| **Manufacturer** | Impact Test Equipment | **Model** | SL810 | **S/No** | 3387 |
| | | | | **Unique ID** | |
| **Description** | Handheld shear vane with matching blade(s) | | | | |
| **Calibration Date** | 2/03/2022 | | **Temp During Test** | 19.6 to 20.0 °C | |
| **Method** | MCC 5.51c.01 – Handheld Soil Shear Vane Testers (2021), Guideline for Hand Held Shear Vane Test (NZGS, 2001) was used as a guide. | | | | |
| **Statement of Performance** | The equipment meets the requirements of the method for which it was tested. | | | | |

**Results**

## 33 mm Ø Vane Blade

| **Shear Strength = A × Reading** | **A (kPa/div)** | 0.239 | **Area Ratio** | 12.8% |
|---|---|---|---|---|

| Reading (div) | Shear Strength (kPa) | Reading (div) | Shear Strength (kPa) | Reading (div) | Shear Strength (kPa) | Reading (div) | Shear Strength (kPa) | Reading (div) | Shear Strength (kPa) |
|---|---|---|---|---|---|---|---|---|---|
| 0 | 0 | 30 | 7 | 60 | 14 | 90 | 22 | 120 | 29 |
| 2 | 0 | 32 | 8 | 62 | 15 | 92 | 22 | 122 | 29 |
| 4 | 1 | 34 | 8 | 64 | 15 | 94 | 22 | 124 | 30 |
| 6 | 1 | 36 | 9 | 66 | 16 | 96 | 23 | 126 | 30 |
| 8 | 2 | 38 | 9 | 68 | 16 | 98 | 23 | 128 | 31 |
| 10 | 2 | 40 | 10 | 70 | 17 | 100 | 24 | 130 | 31 |
| 12 | 3 | 42 | 10 | 72 | 17 | 102 | 24 | 132 | 32 |
| 14 | 3 | 44 | 11 | 74 | 18 | 104 | 25 | 134 | 32 |
| 16 | 4 | 46 | 11 | 76 | 18 | 106 | 25 | 136 | 33 |
| 18 | 4 | 48 | 11 | 78 | 19 | 108 | 26 | 138 | 33 |
| 20 | 5 | 50 | 12 | 80 | 19 | 110 | 26 | 140 | 33 |
| 22 | 5 | 52 | 12 | 82 | 20 | 112 | 27 | | |
| 24 | 6 | 54 | 13 | 84 | 20 | 114 | 27 | | |
| 26 | 6 | 56 | 13 | 86 | 21 | 116 | 28 | | |
| 28 | 7 | 58 | 14 | 88 | 21 | 118 | 28 | | |

The expanded uncertainty of measurement, expressed at the 95% confidence level, is ±1.2 kPa. The coverage factor (k) is 2.

**Remarks**

When received, this equipment was in new condition.

Measurement results are traceable to the International System of Units (SI), or other recognised references via an unbroken chain of comparisons to the New Zealand National Standards or to the National Standards of other Signatories to the CIPM MRA.

This certificate has been prepared for the benefit of Impact Test Equipment Ltd, with respect to the particular brief given to us and it cannot be relied upon in other contexts or for any other purpose without our prior review and agreement.

This calibration was performed at 1 Hill Street, Onehunga, Auckland, NZ.

**Prepared by**

[redacted]nnalyse Ryan
[redacted]irologist

**Checked by**

[redacted]gnelo Vaz
[redacted]enior Metrologist

**Key Technical Person**

[redacted]elo Vaz
[redacted]or Metrologist


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MCC

## Calibration Certificate

**Certificate No: 717808.10**

| | | | | | |
|---|---|---|---|---|---|
| **Certificate Issued To** | Impact Test Equipment Ltd | | **Address** | Building 21<br>Stevenston Industrial Estate<br>Stevenston<br>Ayrshire, Scotland U.K KA20 3LR | |
| **Purchase Order No** | | | | | |
| **Manufacturer** | Impact Test Equipment | **Model** | SL810 | **S/No** | 3387 |
| | | | | **Unique ID** | |
| **Description** | Handheld shear vane with matching blade(s) | | | | |
| **Calibration Date** | 2/03/2022 | | **Temp During Test** | 19.6 to 20.0 °C | |
| **Method** | MCC 5.51c.01 – Handheld Soil Shear Vane Testers (2021), Guideline for Hand Held Shear Vane Test (NZGS, 2001) was used as a guide. | | | | |
| **Statement of Performance** | The equipment meets the requirements of the method for which it was tested. | | | | |

**Results**

### 19 mm Ø Vane Blade

| | | | | |
|---|---|---|---|---|
| **Shear Strength = A × Reading** | **A (kPa/div)** | **1.256** | **Area Ratio** | 23.9% |

| Reading (div) | Shear Strength (kPa) | Reading (div) | Shear Strength (kPa) | Reading (div) | Shear Strength (kPa) | Reading (div) | Shear Strength (kPa) | Reading (div) | Shear Strength (kPa) |
|---|---|---|---|---|---|---|---|---|---|
| 0 | 0 | 30 | 38 | 60 | 75 | 90 | 113 | 120 | 151 |
| 2 | 3 | 32 | 40 | 62 | 78 | 92 | 116 | 122 | 153 |
| 4 | 5 | 34 | 43 | 64 | 80 | 94 | 118 | 124 | 156 |
| 6 | 8 | 36 | 45 | 66 | 83 | 96 | 121 | 126 | 158 |
| 8 | 10 | 38 | 48 | 68 | 85 | 98 | 123 | 128 | 161 |
| 10 | 13 | 40 | 50 | 70 | 88 | 100 | 126 | 130 | 163 |
| 12 | 15 | 42 | 53 | 72 | 90 | 102 | 128 | 132 | 166 |
| 14 | 18 | 44 | 55 | 74 | 93 | 104 | 131 | 134 | 168 |
| 16 | 20 | 46 | 58 | 76 | 95 | 106 | 133 | 136 | 171 |
| 18 | 23 | 48 | 60 | 78 | 98 | 108 | 136 | 138 | 173 |
| 20 | 25 | 50 | 63 | 80 | 101 | 110 | 138 | 140 | 176 |
| 22 | 28 | 52 | 65 | 82 | 103 | 112 | 141 | | |
| 24 | 30 | 54 | 68 | 84 | 106 | 114 | 143 | | |
| 26 | 33 | 56 | 70 | 86 | 108 | 116 | 146 | | |
| 28 | 35 | 58 | 73 | 88 | 111 | 118 | 148 | | |

The expanded uncertainty of measurement, expressed at the 95% confidence level, is ±6.3 kPa. The coverage factor (k) is 2.

**Remarks**

When received, this equipment was in new condition.

Measurement results are traceable to the International System of Units (SI), or other recognised references via an unbroken chain of comparisons to the New Zealand National Standards or to the National Standards of other Signatories to the CIPM MRA.

This certificate has been prepared for the benefit of Impact Test Equipment Ltd, with respect to the particular brief given to us and it cannot be relied upon in other contexts or for any other purpose without our prior review and agreement.

This calibration was performed at 1 Hill Street, Onehunga, Auckland, NZ.

**Prepared by**

[redacted]nnalyse Ryan
[redacted]letrologist

**[redacted]cked by**

[redacted] Agnelo Vaz
Senior Metrologist

**Key Technical Person**

[redacted] Agnelo Vaz
Senior Metrologist

18 October 2021
[redacted]ed: 16/03/2022


Do not redistribute this document except in full.

| TEST DATE AND CONDITIONS | |
|---|---|
| Date | 8/10/21 |
| Atmospheric pressure | 1016 mb |
| Ambient Temp | 22.5 °C |
| Environics Serial No. | N/A |


| GAS DATA LTD |
|---|
| Unit 4 Fairfield court |
| Seven Stars Estate |
| Coventry |
| CV3 4LJ, UK |
| +44 (0) 24 7630 3311 |


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# GFM436-1 OUTWARD INSPECTION & QUALITY CHECK SHEET

| INSTRUMENT DETAILS | | | | |
|---|---|---|---|---|
| SO Number | Instrument Banner | Instrument Serial Number + SW Version | Job Number(s) | |
| 329407 | GFM436 | 13543 / 29-10 | 22089 | |

**Calibration Technicia** [redacted] **DATE** 7/10/21

**Inspection Technician** [redacted] **DATE** 8/10/21

| INSTRUMENT CHECKS | | Pass (P), Fail (F) or not applicable(NA) |
|---|---|---|
| Function Tests | Dust Caps Fitted | P |
| | Keyboard Test (All keys) | P |
| | Backlight Test | P |
| | Clock Set / Running | P |
| | Comms Test | P |
| | Pump Flow Test (In & Out) | P |
| | Overall Leak Test (30mb) | N/A |
| | Battery Charge Test | P |
| | Service Date set to? | 7/10/22 |
| Channel Tests | Data Logging Enabled? | P |
| | Verify CH4/LEL/Hexane/PID | P |
| | Verify CO2 | P |
| | Verify O2 | P |
| | Verify H2S | P |
| | Verify CO | P |
| | Verify LEL | P |
| | Verify 1st Option gas | N/A |
| | Verify atmospheric pressure | P |
| | Verify differential pressure | P |
| | Verify flow | P |
| | Verify temperature probe input | P |
| | Verify vane anemometer input | P |
| DataBase Checks | Jobcard(s) completed and signed | P |
| | Jobcard(s) booked off database | P |
| | Calibration certificate completed | P |
| | Complete & print QI record | N/A |
| Label Checks | No. of Calibration label fitted | 10426 |
| | MCERTS label not displayed | P |
| | Warranty label fitted | P |
| H2S Range | H2S Range from SO | 50000 ppm |
| | H2S Range from cal cert | 50000 ppm |
| | Over-range value correct? | P |

| INSTRUMENT PACKING LIST | | Tick if included |
|---|---|---|
| Instrument | | ✓ |
| Leather Case | | ✓ |
| Instrument Strap | | ✓ |
| AC Battery Charger (UK) | | ✓ |
| AC Battery Charger (EURO) | | X |
| AC Battery Charger (US) | | X |
| AC Battery Charger (AUS) | | X |
| Gas Sample Pipe | | ✓ |
| Hard Carry Case | | ✓ |
| Spares Pot | | ✓ |
| Allen Key | | ✓ |
| Flow Sample Pipe | | ✓ |
| Temperature Probe | | X |
| Vane Anemometer | | X |
| USB Cable | | ✓ |
| USB Memory Stick | | ✓ |
| SM V5 Software | Ver 6.05 | ✓ |
| Internal Filter Pack | Qty | X |
| External Filter Pack | Qty | X |
| Field Guide | | X |
| Extra Items: | | |

Comments

| TEST DATE AND CONDITIONS | |
|---|---|
| Date | 6/10/21 |
| Atmospheric pressure | 1006mb |
| Ambient Temp | 24.4°C |
| Environics Serial No. | 2633 |


| GAS DATA LTD |
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| Seven Stars Estate |
| Coventry |
| CV3 4LJ, UK |
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# GFM436-1 FINAL INSPECTION & CALIBRATION CHECK CERTIFICATE

| INSTRUMENT DETAILS | |
|---|---|
| Serial No | Customer |
| 13573 | Ground Technology Services |

| INSTRUMENT CHECKS | | | |
|---|---|---|---|
| Keyboard | ✓ | Pump Flow | 500cc/min |
| Display Contrast | ✓ | Pump Flow @ -200mB | 350cc/min |
| Clock Set / Running | ✓ | S/W Version | G436.0029/0010 |
| Labels Fitted | ✓ | Recalibration Date | 7/10/22 |

| GAS CHECKS | | | | | | | |
|---|---|---|---|---|---|---|---|
| Calibration Gas | | Instrument Gas Channels Read | | | | | |
| Gas Type | Applied Conc. | CH4 ( % ) | tol. ( % vol. ) | CO2 ( % ) | tol. ( % vol. ) | O2 ( % ) | tol. ( % vol. ) |
| N2 | 100% | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | +/-0.1 |
| CH4 | 5% | 4.9 | +/-0.3 | 0.0 | 0.0 | 0.0 | +/-0.1 |
| | 60% | 59.8 | +/-3.0 | 0.0 | 0.0 | 0.0 | +/-0.1 |
| CO2 | 5% | 0.0 | 0.0 | 4.9 | +/-0.3 | 0.0 | +/-0.1 |
| | 40% | 0.0 | 0.0 | 39.4 | +/-3.0 | 0.0 | +/-0.1 |
| O2 | 20.9% | 0.0 | 0.0 | 0.0 | +0.1 | 20.9 | +/-0.5 |

| OPTIONAL GAS CHECKS | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Calibration Gas | | Instrument Gas Channels Read | | | | | | |
| Gas Type | Applied Conc. | Label | H2S | CO | | | Hexane | tol. (% vol.) |
| | | Range | 5000ppm | 2000ppm | | | 2.00% | |
| N2 | 100% | | 0 | 0 | | | 0.000 | 0.0 |
| H2S | 1500ppm | | 1510 | 0 | | | | +/- 5.0 |
| CO | 1000ppm | | 45 | 997 | | | | +/- 5.0 |
| Hexane | 2.00% | | | | | | 2.193 | +/- 10.0 |

| PRESSURE CHECKS | | | | | | | |
|---|---|---|---|---|---|---|---|
| Calibration Pressure | | Instrument Pressure Channels Read | | | | | |
| Pressure @ | Applied Pressure | Atmospheric [Ap] ( mB ) | tol. ( mB ) | | | | |
| All Ports | Current Atmospheric | 1006 | +/-2.0 | | | | |
| Ap Port (Internal) | +800mB(a) | 798 | +/-5.0 | | | | |
| | +1200mB(a) | 1198 | +/-5.0 | | | | |

| TEST DATE AND CONDITIONS | |
|---|---|
| Date | 6/10/21 |
| Atmospheric pressure | 1006mb |
| Ambient Temp | 24.4°C |
| Environics Serial No. | 2633 |


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## GFM436-1 FINAL INSPECTION & CALIBRATION CHECK CERTIFICATE

| FLOW CHECKS | | | | | |
|---|---|---|---|---|---|
| Calibration Flow | | Instrument Flow Channels Read | | | |
| Applied Flow (l/hour) | Applied Pressure (Pa) | Flow [Flow] ( l/hour ) | tol. ( l/hour ) | Differential Pressure [Dp] ( Pa ) | tol. ( Pa ) |
| -30.0 | -447 | 29.1 | +/-3.0 | -443 | +/-50 |
| -3.0 | -19 | -3.0 | +/-1.0 | -19 | +/-6 |
| 0.0 | 0 | 0.0 | 0.0 | 0 | 0.0 |
| +3.0 | 16 | 3.1 | +/-0.5 | 17 | +/-3 |
| +30.0 | 371 | 29.8 | +/-3.0 | 372 | +/-50 |
| +60.0 | 1162 | 60.3 | +/-6.0 | 1183 | +/-130 |
| +90.0 | 2322 | 91.4 | +/-9.0 | 2390 | +/-250 |

| TEMPERATURE CHECK | | |
|---|---|---|
| Calibration Temperature | Instrument Temperature Channel Read | |
| Applied Equivalent Temperature (°C) | Temperature [Temp] ( °C ) | tol. ( °C ) |
| -10.0 | -10.0 | +/- 2.0 |
| 0.0 | 0.0 | +/- 1.0 |
| 30.0 | 30.0 | +/- 1.0 |
| 60.0 | 60.0 | +/- 1.0 |
| 100.0 | 100.0 | +/- 1.0 |

**Notes:**

The instrument identified by the serial number stated above has been tested by Gas Data personnel for calibration accuracy on the date and under the ambient conditions stated. Gas Data Ltd internal BS EN ISO9001:2015, BS EN ISO 14001:2015 and BS EN ISO 45001:2018 compliant workshop procedures were followed to apply known calibration test gases, gas flow rates, pressures and temperatures of the values stated. The results displayed on the instrument at each stage are recorded above.

Gas Data Ltd is certified to: BS EN ISO 9001:2015
BS EN ISO 14001:2015
BS EN ISO 45001:2018

# CALIBRATION CERTIFICATE

Date of Calibration: - 6th October 2021

Certificate Number: - 257796

Calibrated by: - P Kovacs

Signed: - _____

Customer: - Shawcity Limited

Description: - Tiger$^{LT}$

Manufacturer: - ION Science Ltd

Type Number: - N/A

Serial Number: - T-118378

Service Due date: - October 2022

This instrument has been factory calibrated to fully documented procedures in accordance with our ISO 9001:2015 Quality Management System.
Measurement standards are derived from volumetric and time sources which have been calibrated at an accredited laboratory traceable to National or International standards. The following list indicates the serial numbers of equipment used during the calibration procedure.

| | | | | | |
|---|---|---|---|---|---|
| BAR02 | C90541 / A13382[1] | C9563 / A13039[1] | | | |

[1] Gas mixtures prepared using equipment traceable to N.P.L. standards against Suppliers Certificate No.

The instrument has been calibrated at a temperature of 21.8°C ± 0.25°C and a barometric pressure of 1014.4 mbar ± 2 mbar.

ION Science hereby certify that on the day of calibration the instrument was working according to the manufacturer's original sales specification as checked by the calibration procedure, unless otherwise stated.
Copies of this certificate may only be reproduced in full.
Calibrations are valid as certified only on date of Calibration. For correct instrument operation please see the User Manual.

**RESULTS ON DESPATCH**

| Applied Concentration | Instrument Indication |
|---|---|
| 100.4 ppm Isobutylene | 99.8 ppm Isobutylene |
| 4913.9 ppm Isobutylene | 4861 ppm Isobutylene |

The estimated applied gas uncertainty is ± 2.0%

Comments: -

| GEOSENSE QUALITY FORM |
|---|
| Form No G/QF/169 |
| ISS. 1 |
| DATE : APR-20 |
| SIG. GC |

Nova House, Rougham Industrial Estate, Rougham, Bury St Edmunds
Tel: +44(0)1359 270457 - Fax: +44(0)1359 272860
Website: www.geosense.co.uk

# Calibration Record
## MEMS Digital Portable Inclinometer

| Serial No: | 0210 | Range(+-): | 30 |
|---|---|---|---|
| Calibration Date: | 26/05/2022 | Model: | DPI-V-2-05 |

**References**

| OMT Rotary Table SN: | AT50/7/71 |
|---|---|

**A Axis**

| Angle (Degrees) | Mean Deviation (Sin °) | Cross Axis B (Sin °) | True Deviation (Sin °) | Error (Sin °) |
|---|---|---|---|---|
| **30** | 0.49998 | 0.00011 | 0.50000 | -0.00002 |
| **15** | 0.25881 | 0.00014 | 0.25882 | -0.00001 |
| **0** | 0.00000 | 0.00013 | 0.00000 | 0.00000 |
| **-15** | -0.25881 | 0.00014 | -0.25882 | 0.00001 |
| **-30** | -0.49997 | 0.00013 | -0.50000 | 0.00003 |

**B Axis**

| Angle (Degrees) | Mean Deviation (Sin °) | Cross Axis A (Sin °) | True Deviation (Sin °) | Error (Sin °) |
|---|---|---|---|---|
| **30** | 0.50001 | -0.00009 | 0.50000 | 0.00001 |
| **15** | 0.25883 | -0.00012 | 0.25882 | 0.00001 |
| **0** | 0.00002 | -0.00014 | 0.00000 | 0.00002 |
| **-15** | -0.25881 | -0.00014 | -0.25882 | 0.00001 |
| **-30** | -0.49999 | -0.00014 | -0.50000 | 0.00001 |

THE EQUIPMENT USED IN THE CALIBRATION OF THE PRODUCT DETAILED ABOVE IS TRACEABLE TO NATIONAL/INTERNATIONAL STANDARDS

**Calibrated by: AS**

**THIS IS AN ELECTRONIC CERTIFICATE AND IS VALID WITHOUT A SIGNATURE**

In-Situ

Innovations in Water Monitoring

# Calibration Report

**Instrument Details:**

| | |
|---|---|
| Instrument Model: | Aqua TROLL® 400 |
| Full Scale Pressure Range: | 0 - 250 ft (0 - 76 m) |
| Serial Number: | 900183 |
| Manufacture Date: | 2022-02-14 |

**Calibration Details:**

| | |
|---|---|
| Calibration Result: | PASS |
| Calibration Date: | 2022-01-14 |
| Nominal Range of Applied Temperature: | 0 C to +50 C |
| Temperature Accuracy Specification: | +/-0.1 C from 0 C to +50 C |
| Nominal Range of Applied Pressure: | 0 - 250 feet |
| Pressure Accuracy Specification: | +/-0.3% FS |
| Conductivity Calibration: | Pass with a cell constant of 1.00. |
| Rugged Dissolved Oxygen Calibration: | Pass with an optical phase difference of +/- 2 degrees. |
| pH/ORP Check: | Pass with mV readings of +/- 5 mV. |

**Post-Calibration Check:**

| Parameter | Applied (PSI) | Reported (PSI) | Deviation (PSI) |
|---|---|---|---|
| Pressure | 7 | 6.998 | 0.002 |
| Pressure | 65 | 65.001 | -0.001 |
| Pressure | 123 | 123.024 | -0.024 |
| Pressure | 84.333 | 84.354 | -0.02 |
| Pressure | 45.667 | 45.681 | -0.014 |
| Pressure | 7 | 7.01 | -0.01 |

**Calibration Procedures and Equipment Used:**

Automated calibration procedures used.
Calibrated in 900, 9000, & 90000 µS/cm conductivity standards.
Manu MENSOR Model 600 Serial No 610915
Manu HART Model 1504 Serial No B42917
Manu instrulab Model 406 Serial No 1-31154

**Notes:**

1. Standards used in the calibration are traceable to the National Institute of Standards and Technology.
2. This calibration report shall not be reproduced, except in full, without the written approval of In-Situ, Inc.
3. A calibration interval of 12 to 18 months is recommended.
4. The post-calibration data is collected at nominal +15C.
5. 1.0 PSI = 6.894757 kPa.

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221 East Lincoln Avenue, Fort Collins, CO 80524 USA
Toll Free: 800.446.7488 Tel: 970.498.1500 Fax: 970.498.1598

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# Calibration Report

**Report Number: 20211217182721-883225**

221 East Lincoln Avenue, Fort Collins, CO 80524 USA
1-970-498-1500, 1-800-446-7488, FAX: 1-970-498-1598
Visit us at www.in-situ.com

**Instrument Details:**

| | |
|---|---|
| Instrument Model: | **Rugged BaroTROLL** |
| Full Scale Depth Range: | **0 to 15 Ft (0 to 1 m)** |
| Serial Number: | **883225** |
| Hardware Version: | 0 |
| Firmware Version: | 1.05 |

**Calibration Details:**

| | |
|---|---|
| Calibration Result: | **PASS** |
| Calibration Date: | 2021-12-17 18:27:21 (UTC) |
| Nominal Range of Applied Temperature: | 0 C to +50 C |
| Temperature Accuracy Specification: | +/- 0.3 C From 0 C to +50 C |
| Nominal Range of Applied Pressure: | 7 PSI to 30 PSI Absolute |
| Pressure Accuracy Specification: | +/- 0.05% FS From -5 C to +50 C |

**Post-Calibration Check:**

| Parameter | Applied | Reported | Deviation | Unit |
|---|---|---|---|---|
| Depth | 35.7443 | 35.7488 | 0.0045 | FT |
| Depth | 9.2156 | 9.2164 | 0.0008 | FT |
| Depth | -17.3114 | -17.3102 | 0.0012 | FT |
| Temperature | 19.8500 | 19.9416 | 0.0916 | C |

**Calibration Procedures and Equipment Used:**

Manu Agilent Model 53131A-010 SerialNo MY47001136
Manu Instrulab Model 406X-0031-01 SerialNo 1-31125
Manu Instrulab Model 3312A-14-15-24 SerialNo 31134
Manu Mensor Model CPC6000 SerialNo 611120
Manu Agilent Model 34970A SerialNo MY44000742

**Notes:**

1. Standards used in this calibration are traceable to the National Institute of Standards and Technology.
2. This calibration report shall not be reproduced, except in full, without the written approval of In-Situ, Inc.
3. Pressure calibration is conducted in units of PSI Absolute.
4. The total range of applied pressure includes pressure due to both the water column and 1 bar of atmosphere.
5. The pressure accuracy specification is in terms of the full-scale capability of the pressure sensor (i.e. maximum water depth + 1 bar atmosphere).
6. The Post-Calibration data is expressed, for convenience, in terms of water depth. An ambient barometric pressure of 1 bar is assumed.
7. Conversion factors: 2.30666 FT/PSI, 14.50377 PSI/bar.

**Performed By:** JB

Report generated: 2021-12-20 17:50:31 UTC

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# Calibration Report

**Report Number: 20211217065750-883273**

221 East Lincoln Avenue, Fort Collins, CO 80524 USA
1-970-498-1500, 1-800-446-7488, FAX: 1-970-498-1598
Visit us at www.in-situ.com

**Instrument Details:**

| | |
|---|---|
| Instrument Model: | **Rugged BaroTROLL** |
| Full Scale Depth Range: | **0 to 15 Ft (0 to 1 m)** |
| Serial Number: | **883273** |
| Hardware Version: | 0 |
| Firmware Version: | 1.05 |

**Calibration Details:**

| | |
|---|---|
| Calibration Result: | **PASS** |
| Calibration Date: | 2021-12-17 06:57:50 (UTC) |
| Nominal Range of Applied Temperature: | 0 C to +50 C |
| Temperature Accuracy Specification: | +/- 0.3 C From 0 C to +50 C |
| Nominal Range of Applied Pressure: | 7 PSI to 30 PSI Absolute |
| Pressure Accuracy Specification: | +/- 0.05% FS From -5 C to +50 C |

**Post-Calibration Check:**

| Parameter | Applied | Reported | Deviation | Unit |
|---|---|---|---|---|
| Depth | 35.7464 | 35.7443 | -0.0020 | FT |
| Depth | 9.2142 | 9.2100 | -0.0042 | FT |
| Depth | -17.3156 | -17.2982 | 0.0174 | FT |
| Temperature | 19.9590 | 19.9539 | -0.0051 | C |

**Calibration Procedures and Equipment Used:**

Manu Agilent Model 53131A-010 SerialNo MY40016413
Manu Instrulab Model 406X-0031-01 SerialNo 1-31127
Manu Instrulab Model 3312A-14-15-24 SerialNo 31099
Manu Mensor Model CPC6000 SerialNo 610431

**Notes:**

1. Standards used in this calibration are traceable to the National Institute of Standards and Technology.
2. This calibration report shall not be reproduced, except in full, without the written approval of In-Situ, Inc.
3. Pressure calibration is conducted in units of PSI Absolute.
4. The total range of applied pressure includes pressure due to both the water column and 1 bar of atmosphere.
5. The pressure accuracy specification is in terms of the full-scale capability of the pressure sensor (i.e. maximum water depth + 1 bar atmosphere).
6. The Post-Calibration data is expressed, for convenience, in terms of water depth. An ambient barometric pressure of 1 bar is assumed.
7. Conversion factors: 2.30666 FT/PSI, 14.50377 PSI/bar.

**Performed By:** KB

Report generated: 2021-12-21 20:18:41 UTC

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# In-Situ

## Calibration Report

Report Number: 20211028083059-869679

221 East Lincoln Avenue, Fort Collins, CO 80524 USA
1-970-498-1500, 1-800-446-7488, FAX 1-970-498-1598
Visit us at www.in-situ.com

**Instrument Details:**

| | |
|---|---|
| Instrument Model | Rugged TROLL 100 |
| Full Scale Depth Range | 0 to 100 Ft (0 to 30 m) |
| Serial Number | 869679 |
| Hardware Version | 0 |
| Firmware Version | 1.06 |

**Calibration Details:**

| | |
|---|---|
| Calibration Result | **PASS** |
| Calibration Date | 2021-10-28 08:30:58 (UTC) |
| Nominal Range of Applied Temperature | 0 C to +50 C |
| Temperature Accuracy Specification | +/- 0.3 C From 0 C to +50 C |
| Nominal Range of Applied Pressure | 7 PSI to 58 PSI Absolute |
| Pressure Accuracy Specification | +/- 0.05% FS From -5 C to +50 C |

**Post-Calibration Check:**

| Parameter | Applied | Reported | Deviation | Unit |
|---|---|---|---|---|
| Depth | 100.3329 | 100.3275 | -0.0054 | FT |
| Depth | 61.1169 | 61.1272 | 0.0103 | FT |
| Depth | 21.9018 | 21.9022 | 0.0004 | FT |
| Temperature | 19.7340 | 19.7317 | -0.0023 | C |

**Calibration Procedures and Equipment Used:**

Manu Agilent Model 53131A-010 SerialNo MY47002282
Manu Instrulab Model 406X-0031-01 SerialNo 21167-1
Manu Instrulab Model 3312A-14-15-24 SerialNo 31139
Manu Mensor Model CPC6000 SerialNo 610915

**Notes:**

1. Standards used in this calibration are traceable to the National Institute of Standards and Technology.
2. This calibration report shall not be reproduced, except in full, without the written approval of In-Situ, Inc.
3. Pressure calibration is conducted in units of PSI Absolute.
4. The total range of applied pressure includes pressure due to both the water column and 1 bar of atmosphere.
5. The pressure accuracy specification is in terms of the full-scale capability of the pressure sensor (i.e. maximum water depth + 1 bar atmosphere).
6. The Post-Calibration data is expressed, for convenience, in terms of water depth. An ambient barometric pressure of 1 bar is assumed.
7. Conversion factors: 2.30666 FT/PSI, 14.50377 PSI/bar.

In-Situ [redacted]

**Performed By:** MM



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# Calibration Report

**Report Number: 2021111614465-872403**

221 East Lincoln Avenue, Fort Collins, CO 80524 USA
1-970-498-1500, 1-800-446-7488, FAX: 1-970-498-1598
Visit us at www.in-situ.com

**Instrument Details:**

| | |
|---|---|
| Instrument Model: | **Rugged TROLL 100** |
| Full Scale Depth Range: | **0 to 100 Ft (0 to 30 m)** |
| Serial Number: | **872403** |
| Hardware Version: | 0 |
| Firmware Version: | 1.06 |

**Calibration Details:**

| | |
|---|---|
| Calibration Result: | **PASS** |
| Calibration Date: | 2021-11-16 14:46:05 (UTC) |
| Nominal Range of Applied Temperature: | 0 C to +50 C |
| Temperature Accuracy Specification: | +/- 0.3 C From 0 C to +50 C |
| Nominal Range of Applied Pressure: | 7 PSI to 58 PSI Absolute |
| Pressure Accuracy Specification: | +/- 0.05% FS From -5 C to +50 C |

**Post-Calibration Check:**

| Parameter | Applied | Reported | Deviation | Unit |
|---|---|---|---|---|
| Depth | 100.3308 | 100.3311 | 0.0003 | FT |
| Depth | 61.1166 | 61.1216 | 0.0049 | FT |
| Depth | 21.9036 | 21.9100 | 0.0064 | FT |
| Temperature | 19.8460 | 19.9500 | 0.1040 | C |

**Calibration Procedures and Equipment Used:**

Manu Agilent Model 53131A-010 SerialNo MY47001576
Manu Instrulab Model 406X-0031-01 SerialNo 1-31125
Manu Instrulab Model 3312A-14-15-24 SerialNo 31134
Manu Mensor Model CPC6000 SerialNo 611120
Manu Agilent Model 34970A SerialNo MY44000742

**Notes:**

1. Standards used in this calibration are traceable to the National Institute of Standards and Technology.
2. This calibration report shall not be reproduced, except in full, without the written approval of In-Situ, Inc.
3. Pressure calibration is conducted in units of PSI Absolute.
4. The total range of applied pressure includes pressure due to both the water column and 1 bar of atmosphere.
5. The pressure accuracy specification is in terms of the full-scale capability of the pressure sensor (i.e. maximum water depth + 1 bar atmosphere).
6. The Post-Calibration data is expressed, for convenience, in terms of water depth. An ambient barometric pressure of 1 bar is assumed.
7. Conversion factors: 2.30666 FT/PSI, 14.50377 PSI/bar.

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[redacted]

**Performed By:** TG

Report generated: 2021-11-22 21:07:40 UTC

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# Calibration Report

**Report Number: 20211028094353-872424**

221 East Lincoln Avenue, Fort Collins, CO 80524 USA
1-970-498-1500, 1-800-446-7488, FAX: 1-970-498-1598
Visit us at www.in-situ.com

**Instrument Details:**

| | |
|---|---|
| Instrument Model: | **Rugged TROLL 100** |
| Full Scale Depth Range: | **0 to 100 Ft (0 to 30 m)** |
| Serial Number: | **872424** |
| Hardware Version: | 0 |
| Firmware Version: | 1.06 |

**Calibration Details:**

| | |
|---|---|
| Calibration Result: | **PASS** |
| Calibration Date: | 2021-10-28 09:43:53 (UTC) |
| Nominal Range of Applied Temperature: | 0 C to +50 C |
| Temperature Accuracy Specification: | +/- 0.3 C From 0 C to +50 C |
| Nominal Range of Applied Pressure: | 7 PSI to 58 PSI Absolute |
| Pressure Accuracy Specification: | +/- 0.05% FS From -5 C to +50 C |

**Post-Calibration Check:**

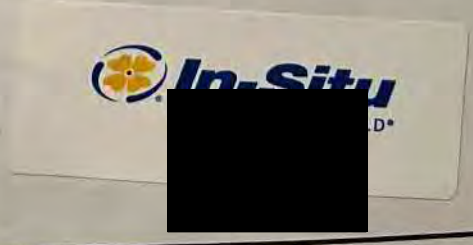
| Parameter | Applied | Reported | Deviation | Unit |
|---|---|---|---|---|
| Depth | 100.3310 | 100.3268 | -0.0042 | FT |
| Depth | 61.1173 | 61.1282 | 0.0109 | FT |
| Depth | 21.8988 | 21.9199 | 0.0211 | FT |
| Temperature | 19.8510 | 19.9573 | 0.1063 | C |

**Calibration Procedures and Equipment Used:**

Manu Agilent Model 53131A-010 SerialNo MY47001576
Manu Instrulab Model 406X-0031-01 SerialNo 1-31125
Manu Instrulab Model 3312A-14-15-24 SerialNo 31134
Manu Mensor Model CPC6000 SerialNo 611120
Manu Agilent Model 34970A SerialNo MY44000742

**Notes:**

1. Standards used in this calibration are traceable to the National Institute of Standards and Technology.
2. This calibration report shall not be reproduced, except in full, without the written approval of In-Situ, Inc.
3. Pressure calibration is conducted in units of PSI Absolute.
4. The total range of applied pressure includes pressure due to both the water column and 1 bar of atmosphere.
5. The pressure accuracy specification is in terms of the full-scale capability of the pressure sensor (i.e. maximum water depth + 1 bar atmosphere).
6. The Post-Calibration data is expressed, for convenience, in terms of water depth. An ambient barometric pressure of 1 bar is assumed.
7. Conversion factors: 2.30666 FT/PSI, 14.50377 PSI/bar.




**Performed By:** KS

Report generated: 2021-11-24 20:30:55 UTC

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# Calibration Report

221 East Lincoln Avenue, Fort Collins, CO 80524 USA
1-970-498-1500, 1-800-446-7488, FAX: 1-970-498-1598
Visit us at www.in-situ.com

**Report Number:** **2021102806375-872721**

**Instrument Details:**

| | |
|---|---|
| Instrument Model: | **Rugged TROLL 100** |
| Full Scale Depth Range: | **0 to 100 Ft (0 to 30 m)** |
| Serial Number: | **872721** |
| Hardware Version: | 0 |
| Firmware Version: | 1.06 |

**Calibration Details:**

| | |
|---|---|
| Calibration Result: | **PASS** |
| Calibration Date: | 2021-10-28 06:37:05 (UTC) |
| Nominal Range of Applied Temperature: | 0 C to +50 C |
| Temperature Accuracy Specification: | +/- 0.3 C From 0 C to +50 C |
| Nominal Range of Applied Pressure: | 7 PSI to 58 PSI Absolute |
| Pressure Accuracy Specification: | +/- 0.05% FS From -5 C to +50 C |

**Post-Calibration Check:**

| Parameter | Applied | Reported | Deviation | Unit |
|---|---|---|---|---|
| Depth | 100.3317 | 100.3463 | 0.0146 | FT |
| Depth | 61.1173 | 61.1241 | 0.0068 | FT |
| Depth | 21.9043 | 21.9076 | 0.0033 | FT |
| Temperature | 19.8313 | 19.8330 | 0.0017 | C |

**Calibration Procedures and Equipment Used:**

Manu Agilent Model 53131A-010 SerialNo MY47000169
Manu Instrulab Model 406X-031-05 SerialNo 3-31103
Manu Fluke Model 1504 SerialNo B91242
Manu Mensor Model CPC6000 SerialNo 610431

**Notes:**

1. Standards used in this calibration are traceable to the National Institute of Standards and Technology.
2. This calibration report shall not be reproduced, except in full, without the written approval of In-Situ, Inc.
3. Pressure calibration is conducted in units of PSI Absolute.
4. The total range of applied pressure includes pressure due to both the water column and 1 bar of atmosphere.
5. The pressure accuracy specification is in terms of the full-scale capability of the pressure sensor (i.e. maximum water depth + 1 bar atmosphere).
6. The Post-Calibration data is expressed, for convenience, in terms of water depth. An ambient barometric pressure of 1 bar is assumed.
7. Conversion factors: 2.30666 FT/PSI, 14.50377 PSI/bar.

In-Situ [redacted]

**Performed By:** KB

Report generated: 2021-11-24 21:00:54 UTC

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# Calibration Report

**Report Number: 20211030041248-873577**

221 East Lincoln Avenue, Fort Collins, CO 80524 USA
1-970-498-1500, 1-800-446-7488, FAX: 1-970-498-1598
Visit us at www.in-situ.com

**Instrument Details:**

| | |
|---|---|
| Instrument Model: | **Rugged TROLL 100** |
| Full Scale Depth Range: | **0 to 100 Ft (0 to 30 m)** |
| Serial Number: | **873577** |
| Hardware Version: | 0 |
| Firmware Version: | 1.06 |

**Calibration Details:**

| | |
|---|---|
| Calibration Result: | **PASS** |
| Calibration Date: | 2021-10-30 04:12:48 (UTC) |
| Nominal Range of Applied Temperature: | 0 C to +50 C |
| Temperature Accuracy Specification: | +/- 0.3 C From 0 C to +50 C |
| Nominal Range of Applied Pressure: | 7 PSI to 58 PSI Absolute |
| Pressure Accuracy Specification: | +/- 0.05% FS From -5 C to +50 C |

**Post-Calibration Check:**

| Parameter | Applied | Reported | Deviation | Unit |
|---|---|---|---|---|
| Depth | 100.3335 | 100.3785 | 0.0449 | FT |
| Depth | 61.1155 | 61.1658 | 0.0503 | FT |
| Depth | 21.9016 | 21.9472 | 0.0456 | FT |
| Temperature | 19.7310 | 19.7320 | 0.0010 | C |

**Calibration Procedures and Equipment Used:**

Manu Agilent Model 53131A-010 SerialNo MY47002282
Manu Instrulab Model 406X-0031-01 SerialNo 21167-1
Manu Instrulab Model 3312A-14-15-24 SerialNo 31139
Manu Mensor Model CPC6000 SerialNo 610915

**Notes:**

1. Standards used in this calibration are traceable to the National Institute of Standards and Technology.
2. This calibration report shall not be reproduced, except in full, without the written approval of In-Situ, Inc.
3. Pressure calibration is conducted in units of PSI Absolute.
4. The total range of applied pressure includes pressure due to both the water column and 1 bar of atmosphere.
5. The pressure accuracy specification is in terms of the full-scale capability of the pressure sensor (i.e. maximum water depth + 1 bar atmosphere).
6. The Post-Calibration data is expressed, for convenience, in terms of water depth. An ambient barometric pressure of 1 bar is assumed.
7. Conversion factors: 2.30666 FT/PSI, 14.50377 PSI/bar.

**Performed By:** KB

Report generated: 2021-11-29 15:05:39 UTC

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# Calibration Report

Report Number: 20211029189 47-874106
221 East Lincoln Avenue, Fort Collins, CO 80524 USA
1-970-498-1500, 1-800-446-7488, FAX: 1-970-498-1598
Visit us at www.in-situ.com

**Instrument Details:**

| | |
|---|---|
| Instrument Model: | **Rugged TROLL 100** |
| Full Scale Depth Range: | **0 to 100 Ft (0 to 30 m)** |
| Serial Number: | **874106** |
| Hardware Version: | 0 |
| Firmware Version: | 1.06 |

**Calibration Details:**

| | |
|---|---|
| Calibration Result: | **PASS** |
| Calibration Date: | 2021-10-29 18:09:47 (UTC) |
| Nominal Range of Applied Temperature: | 0 C to +50 C |
| Temperature Accuracy Specification: | +/- 0.3 C From 0 C to +50 C |
| Nominal Range of Applied Pressure: | 7 PSI to 58 PSI Absolute |
| Pressure Accuracy Specification: | +/- 0.05% FS From -5 C to +50 C |

**Post-Calibration Check:**

| Parameter | Applied | Reported | Deviation | Unit |
|---|---|---|---|---|
| Depth | 100.3345 | 100.3146 | -0.0199 | FT |
| Depth | 61.1166 | 61.1274 | 0.0107 | FT |
| Depth | 21.9023 | 21.9107 | 0.0084 | FT |
| Temperature | 19.7360 | 19.7340 | -0.0020 | C |

**Calibration Procedures and Equipment Used:**

Manu Agilent Model 53131A-010 SerialNo MY47002282
Manu Instrulab Model 406X-0031-01 SerialNo 21167-1
Manu Instrulab Model 3312A-14-15-24 SerialNo 31139
Manu Mensor Model CPC6000 SerialNo 610915

**Notes:**

1. Standards used in this calibration are traceable to the National Institute of Standards and Technology.
2. This calibration report shall not be reproduced, except in full, without the written approval of In-Situ, Inc.
3. Pressure calibration is conducted in units of PSI Absolute.
4. The total range of applied pressure includes pressure due to both the water column and 1 bar of atmosphere.
5. The pressure accuracy specification is in terms of the full-scale capability of the pressure sensor (i.e. maximum water depth + 1 bar atmosphere).
6. The Post-Calibration data is expressed, for convenience, in terms of water depth. An ambient barometric pressure of 1 bar is assumed.
7. Conversion factors: 2.30666 FT/PSI, 14.50377 PSI/bar.

**Performed By:** GK

Report generated: 2021-11-24 21:20:54 UTC

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# Calibration Report

**Report Number: 20211101195019-874250**
221 East Lincoln Avenue, Fort Collins, CO 80524 USA
1-970-498-1500, 1-800-446-7488, FAX: 1-970-498-1598
Visit us at www.in-situ.com

**Instrument Details:**

| | |
|---|---|
| Instrument Model: | **Rugged TROLL 100** |
| Full Scale Depth Range: | **0 to 100 Ft (0 to 30 m)** |
| Serial Number: | **874250** |
| Hardware Version: | 0 |
| Firmware Version: | 1.06 |

**Calibration Details:**

| | |
|---|---|
| Calibration Result: | **PASS** |
| Calibration Date: | 2021-11-01 19:50:19 (UTC) |
| Nominal Range of Applied Temperature: | 0 C to +50 C |
| Temperature Accuracy Specification: | +/- 0.3 C From 0 C to +50 C |
| Nominal Range of Applied Pressure: | 7 PSI to 58 PSI Absolute |
| Pressure Accuracy Specification: | +/- 0.05% FS From -5 C to +50 C |

**Post-Calibration Check:**

| Parameter | Applied | Reported | Deviation | Unit |
|---|---|---|---|---|
| Depth | 100.3338 | 100.3207 | -0.0130 | FT |
| Depth | 61.1153 | 61.1277 | 0.0125 | FT |
| Depth | 21.9030 | 21.9074 | 0.0045 | FT |
| Temperature | 19.7310 | 19.7299 | -0.0011 | C |

**Calibration Procedures and Equipment Used:**

Manu Agilent Model 53131A-010 SerialNo MY47002282
Manu Instrulab Model 406X-0031-01 SerialNo 21167-1
Manu Instrulab Model 3312A-14-15-24 SerialNo 31139
Manu Mensor Model CPC6000 SerialNo 610915

**Notes:**

1. Standards used in this calibration are traceable to the National Institute of Standards and Technology.
2. This calibration report shall not be reproduced, except in full, without the written approval of In-Situ, Inc.
3. Pressure calibration is conducted in units of PSI Absolute.
4. The total range of applied pressure includes pressure due to both the water column and 1 bar of atmosphere.
5. The pressure accuracy specification is in terms of the full-scale capability of the pressure sensor (i.e. maximum water depth + 1 bar atmosphere).
6. The Post-Calibration data is expressed, for convenience, in terms of water depth. An ambient barometric pressure of 1 bar is assumed.
7. Conversion factors: 2.30666 FT/PSI, 14.50377 PSI/bar.

In-Situ [redacted]

**Performed By:** GK

Report generated: 2021-11-29 15:31:55 UTC

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# Calibration Report

**Report Number: 20211030041015-874369**
221 East Lincoln Avenue, Fort Collins, CO 80524 USA
1-970-498-1500, 1-800-446-7488, FAX: 1-970-498-1598
Visit us at www.in-situ.com

**Instrument Details:**

| | |
|---|---|
| Instrument Model: | **Rugged TROLL 100** |
| Full Scale Depth Range: | **0 to 100 Ft (0 to 30 m)** |
| Serial Number: | **874369** |
| Hardware Version: | 0 |
| Firmware Version: | 1.06 |

**Calibration Details:**

| | |
|---|---|
| Calibration Result: | **PASS** |
| Calibration Date: | 2021-10-30 04:10:15 (UTC) |
| Nominal Range of Applied Temperature: | 0 C to +50 C |
| Temperature Accuracy Specification: | +/- 0.3 C From 0 C to +50 C |
| Nominal Range of Applied Pressure: | 7 PSI to 58 PSI Absolute |
| Pressure Accuracy Specification: | +/- 0.05% FS From -5 C to +50 C |

**Post-Calibration Check:**

| Parameter | Applied | Reported | Deviation | Unit |
|---|---|---|---|---|
| Depth | 100.3312 | 100.3225 | -0.0087 | FT |
| Depth | 61.1171 | 61.1135 | -0.0036 | FT |
| Depth | 21.9041 | 21.9121 | 0.0080 | FT |
| Temperature | 19.8520 | 19.9319 | 0.0799 | C |

**Calibration Procedures and Equipment Used:**

Manu Agilent Model 53131A-010 SerialNo MY47001576
Manu Instrulab Model 406X-0031-01 SerialNo 1-31125
Manu Instrulab Model 3312A-14-15-24 SerialNo 31134
Manu Mensor Model CPC6000 SerialNo 611120
Manu Agilent Model 34970A SerialNo MY44000742

**Notes:**

1. Standards used in this calibration are traceable to the National Institute of Standards and Technology.
2. This calibration report shall not be reproduced, except in full, without the written approval of In-Situ, Inc.
3. Pressure calibration is conducted in units of PSI Absolute.
4. The total range of applied pressure includes pressure due to both the water column and 1 bar of atmosphere.
5. The pressure accuracy specification is in terms of the full-scale capability of the pressure sensor (i.e. maximum water depth + 1 bar atmosphere).
6. The Post-Calibration data is expressed, for convenience, in terms of water depth. An ambient barometric pressure of 1 bar is assumed.
7. Conversion factors: 2.30666 FT/PSI, 14.50377 PSI/bar.

**Performed By:** KB

Report generated: 2021-11-29 15:25:40 UTC

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# Calibration Report

**Report Number:** **2021111905943-879344**
221 East Lincoln Avenue, Fort Collins, CO 80524 USA
1-970-498-1500, 1-800-446-7488, FAX: 1-970-498-1598
Visit us at www.in-situ.com

**Instrument Details:**

| | |
|---|---|
| Instrument Model: | **Rugged TROLL 100** |
| Full Scale Depth Range: | **0 to 100 Ft (0 to 30 m)** |
| Serial Number: | **879344** |
| Hardware Version: | 0 |
| Firmware Version: | 1.06 |

**Calibration Details:**

| | |
|---|---|
| Calibration Result: | **PASS** |
| Calibration Date: | 2021-11-19 05:09:43 (UTC) |
| Nominal Range of Applied Temperature: | 0 C to +50 C |
| Temperature Accuracy Specification: | +/- 0.3 C From 0 C to +50 C |
| Nominal Range of Applied Pressure: | 7 PSI to 58 PSI Absolute |
| Pressure Accuracy Specification: | +/- 0.05% FS From -5 C to +50 C |

**Post-Calibration Check:**

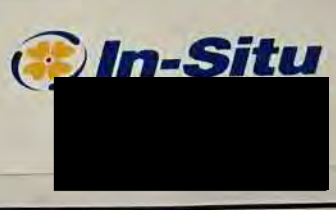
| Parameter | Applied | Reported | Deviation | Unit |
|---|---|---|---|---|
| Depth | 100.3308 | 100.3217 | -0.0090 | FT |
| Depth | 61.1173 | 61.1173 | -0.0001 | FT |
| Depth | 21.8986 | 21.9139 | 0.0153 | FT |
| Temperature | 19.8460 | 19.9226 | 0.0766 | C |

**Calibration Procedures and Equipment Used:**

Manu Agilent Model 53131A-010 SerialNo MY47001576
Manu Instrulab Model 406X-0031-01 SerialNo 1-31125
Manu Instrulab Model 3312A-14-15-24 SerialNo 31134
Manu Mensor Model CPC6000 SerialNo 611120
Manu Agilent Model 34970A SerialNo MY44000742

**Notes:**

1. Standards used in this calibration are traceable to the National Institute of Standards and Technology.
2. This calibration report shall not be reproduced, except in full, without the written approval of In-Situ, Inc.
3. Pressure calibration is conducted in units of PSI Absolute.
4. The total range of applied pressure includes pressure due to both the water column and 1 bar of atmosphere.
5. The pressure accuracy specification is in terms of the full-scale capability of the pressure sensor (i.e. maximum water depth + 1 bar atmosphere).
6. The Post-Calibration data is expressed, for convenience, in terms of water depth. An ambient barometric pressure of 1 bar is assumed.
7. Conversion factors: 2.30666 FT/PSI, 14.50377 PSI/bar.



**Performed By:** MM

Report generated: 2021-11-23 17:22:17 UTC

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# Calibration Report

**Report Number: 20211119003641-879345**
221 East Lincoln Avenue, Fort Collins, CO 80524 USA
1-970-498-1500, 1-800-446-7488, FAX: 1-970-498-1598
Visit us at www.in-situ.com

**Instrument Details:**

| | |
|---|---|
| Instrument Model: | **Rugged TROLL 100** |
| Full Scale Depth Range: | **0 to 100 Ft (0 to 30 m)** |
| Serial Number: | **879345** |
| Hardware Version: | 0 |
| Firmware Version: | 1.06 |

**Calibration Details:**

| | |
|---|---|
| Calibration Result: | **PASS** |
| Calibration Date: | 2021-11-19 00:36:41 (UTC) |
| Nominal Range of Applied Temperature: | 0 C to +50 C |
| Temperature Accuracy Specification: | +/- 0.3 C From 0 C to +50 C |
| Nominal Range of Applied Pressure: | 7 PSI to 58 PSI Absolute |
| Pressure Accuracy Specification: | +/- 0.05% FS From -5 C to +50 C |

**Post-Calibration Check:**

| Parameter | Applied | Reported | Deviation | Unit |
|---|---|---|---|---|
| Depth | 100.3335 | 100.3219 | -0.0116 | FT |
| Depth | 61.1157 | 61.1253 | 0.0096 | FT |
| Depth | 21.9020 | 21.9134 | 0.0114 | FT |
| Temperature | 19.7330 | 19.7249 | -0.0081 | C |

**Calibration Procedures and Equipment Used:**

Manu Agilent Model 53131A-010 SerialNo MY47002282
Manu Instrulab Model 406X-0031-01 SerialNo 21167-1
Manu Instrulab Model 3312A-14-15-24 SerialNo 31139
Manu Mensor Model CPC6000 SerialNo 610915

**Notes:**

1. Standards used in this calibration are traceable to the National Institute of Standards and Technology.
2. This calibration report shall not be reproduced, except in full, without the written approval of In-Situ, Inc.
3. Pressure calibration is conducted in units of PSI Absolute.
4. The total range of applied pressure includes pressure due to both the water column and 1 bar of atmosphere.
5. The pressure accuracy specification is in terms of the full-scale capability of the pressure sensor (i.e. maximum water depth + 1 bar atmosphere).
6. The Post-Calibration data is expressed, for convenience, in terms of water depth. An ambient barometric pressure of 1 bar is assumed.
7. Conversion factors: 2.30666 FT/PSI, 14.50377 PSI/bar.

**Performed By:** MM

Report generated: 2021-11-23 13:47:38 UTC

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Innovations in Water Monitoring

# Calibration Report

**Instrument Details:**

| | |
|---|---|
| Instrument Model: | Aqua TROLL® 400 |
| Full Scale Pressure Range: | 0 - 250 ft (0 - 76 m) |
| Serial Number: | 900183 |
| Manufacture Date: | 2022-02-14 |

**Calibration Details:**

| | |
|---|---|
| Calibration Result: | PASS |
| Calibration Date: | 2022-01-14 |
| Nominal Range of Applied Temperature: | 0 C to +50 C |
| Temperature Accuracy Specification: | +/-0.1 C from 0 C to +50 C |
| Nominal Range of Applied Pressure: | 0 - 250 feet |
| Pressure Accuracy Specification: | +/-0.3% FS |
| Conductivity Calibration: | Pass with a cell constant of 1.00. |
| Rugged Dissolved Oxygen Calibration: | Pass with an optical phase difference of +/- 2 degrees. |
| pH/ORP Check: | Pass with mV readings of +/- 5 mV. |

**Post-Calibration Check:**

| Parameter | Applied (PSI) | Reported (PSI) | Deviation (PSI) |
|---|---|---|---|
| Pressure | 7 | 6.998 | 0.002 |
| Pressure | 65 | 65.001 | -0.001 |
| Pressure | 123 | 123.024 | -0.024 |
| Pressure | 84.333 | 84.354 | -0.02 |
| Pressure | 45.667 | 45.681 | -0.014 |
| Pressure | 7 | 7.01 | -0.01 |

**Calibration Procedures and Equipment Used:**

Automated calibration procedures used.
Calibrated in 900, 9000, & 90000 µS/cm conductivity standards.
Manu MENSOR Model 600 Serial No 610915
Manu HART Model 1504 Serial No B42917
Manu instrulab Model 406 Serial No 1-31154

**Notes:**

1. Standards used in the calibration are traceable to the National Institute of Standards and Technology.
2. This calibration report shall not be reproduced, except in full, without the written approval of In-Situ, Inc.
3. A calibration interval of 12 to 18 months is recommended.
4. The post-calibration data is collected at nominal +15C.
5. 1.0 PSI = 6.894757 kPa.

WWW.IN-SITU.COM

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Toll Free: 800.446.7488 Tel: 970.498.1500 Fax: 970.498.1598

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