

**APPENDIX 12B: GROUND INVESTIGATION REPORT VOLUME 1: FACTUAL  
REPORT**

# **SOUTH HUMBER BANK ENERGY CENTRE – SITE INVESTIGATION WORKS**

## **REPORT ON GROUND INVESTIGATION**

**Report No A9020-19/1**

**VOLUME 1 : FACTUAL REPORT**







December 2019

Issue No 1

Carried out for:  
EP UK Investments Ltd  
Paradigm Building  
3175 Century Way  
Thorpe Park  
Leeds  
LS15 8ZB

Engineer :  
Fichtner Consulting Engineers

**Report No A9020-19/1**

ISSUE NO DATE	STATUS	PREPARED BY	CHECKED BY	APPROVED BY
1  Oct 2019	Draft report	NAME and QUALIFICATIONS R Taylor HNC	NAME and QUALIFICATIONS Melody Wareing BSc FGS	NAME and QUALIFICATIONS Melody Wareing BSc FGS
		SIGNATURE 	SIGNATURE 	SIGNATURE 
1  Dec 2019	Final report	NAME and QUALIFICATIONS R Taylor HNC	NAME and QUALIFICATIONS Melody Wareing BSc FGS	NAME and QUALIFICATIONS Melody Wareing BSc FGS
		SIGNATURE 	SIGNATURE 	SIGNATURE 

This Report has been prepared by SOCOTEC UK Limited ("SOCOTEC") with all reasonable skill and care, within the terms and conditions of the contract between SOCOTEC and the Client ("Contract") and within the limitations of the resources devoted to it by agreement with the Client.

This Report shall not be used for engineering or contractual purposes unless the Report status is 'Final' and signed by the author, checker and the approver for and on behalf of SOCOTEC.

Whilst every effort has been made to ensure the accuracy of the data supplied and any analysis interpretation derived from it, the possibility exists of variations in the ground and groundwater conditions around and between the exploratory positions. SOCOTEC shall not be liable for any use of the Report for any purpose other than that for which it was originally prepared. No liability can be accepted for any such variations in these conditions. Furthermore, any recommendations are specific to the development as detailed in this Report and no liability will be accepted should they be used for the design of alternative schemes without prior consultant with SOCOTEC.

This Report is confidential between the Client and SOCOTEC. Any reliance upon the Report is subject to the Contract terms and conditions.

SOCOTEC accepts no responsibility whatsoever to third parties to whom this document, or any part thereof, is made known. Any such party relies upon the Report at their own risk. The Contracts (Rights of Third Parties) Act 1999 does not apply to this Report nor the Contract and the provisions of the said Act are hereby excluded.

Unless specifically assigned or transferred within the terms and conditions of the Contract, SOCOTEC asserts and retains all Copyright and other Intellectual Property Rights in and over the Report and its contents. The Report may not be copied or reproduced, in whole or in part, without the written authorisation from SOCOTEC.

SOCOTEC UK Limited was formerly known as Environmental Scientifics Group Limited. The Certificate of Incorporation on Change of Name was filed on 16 October 2017.



**SOCOTEC**

©2017 SOCOTEC UK Limited

**Report No A9020-19/1**

**REPORT STRUCTURE**

<b>DATE</b>	<b>TITLE</b>	<b>REPORT No</b>
<b>Dec 2019</b>	<b>VOLUME 1 : FACTUAL REPORT</b>	<b>A9020-19/1</b>
Dec 2019	VOLUME 2: INTERPRETATIVE REPORT	A9020-19/2



**C O N T E N T S**

	Page
<b>1 INTRODUCTION.....</b>	<b>1</b>
<b>2 SITE SETTING.....</b>	<b>1</b>
2.1 Location and Description.....	1
2.2 Published Geology .....	2
<b>3 FIELDWORK .....</b>	<b>2</b>
3.1 General.....	2
3.2 Exploratory Holes .....	2
3.3 Field Testing.....	3
3.4 Cone Penetration Testing.....	4
3.5 Groundwater and Gas Monitoring .....	5
<b>4 LABORATORY TESTING .....</b>	<b>5</b>
4.1 Geotechnical Testing.....	5
4.2 Geoenvironmental Testing .....	6
<b>5 REFERENCES.....</b>	<b>7</b>

**APPENDIX A FIGURES AND DRAWINGS**

**APPENDIX B EXPLORATORY HOLE RECORDS**

**APPENDIX C FIELD TESTING**

**APPENDIX D INSTRUMENTATION AND MONITORING**

**APPENDIX E GEOTECHNICAL LABORATORY TEST RESULTS**

**APPENDIX F GEOENVIRONMENTAL LABORATORY TEST RESULTS**

**APPENDIX G PHOTOGRAPHS**

## **1 INTRODUCTION**

SOCOTEC UK Limited was commissioned in July 2019 by EP UK Investments Ltd (EPUKi), to carry out a ground investigation for South Humber Bank Energy Centre. The investigation was required to obtain information for a proposed new energy from waste centre and associated auxiliary structures.

The scope of the investigation was specified by Fitchner Consulting Engineers (FCE) and comprised boreholes, trial pits, in situ testing, monitoring, laboratory testing and reporting. The investigation was performed in accordance with the contract specification, and the general requirements of BS 5930 (2015), BS EN 1997-2 (2007), BS EN ISO 22475-1 (2006) and other relevant related standards identified below. The fieldwork took place between 12 August and 12 September 2019.

This report, Volume 1, presents the factual records of the fieldwork, monitoring and laboratory testing. The information is also presented as digital data as defined in AGS (2017). Volume 2 presents a geotechnical and geoenvironmental assessment of the data presented here in relation to the proposed works.

## **2 SITE SETTING**

### **2.1 Location and Description**

South Humber Bank Energy Centre is located approximately 3 km north east of Stallingborough town centre centred at National Grid reference TA 235135, see Site Location Plan in Appendix A. The site address is: South Humber Bank Power Station, South Marsh Road, Stallingborough, DN41 8BZ.

The site is set within the confines of the existing South Humber Bank Power Station, located on grassland to the east of the existing power generation buildings. The site is bounded to the north by South Marsh Road and other industrial plant works, to the south by farm land and to the east by the River Humber. The site is generally flat and is split into two areas either side of the main access road from the main generation plant to the pumping station adjacent to the River Humber. The area north of the access road is approximately 240m x 100m in area roughly rectangular and grass covered with occasional shrubs. The area to the south is irregular shaped and approximately 480m x 120m and grass covered. Both sides were recently used by a local farmer to graze sheep.



## 2.2 Published Geology

The published geological map for the area, (BGS Sheet 81, 1991), and the BGS GeoIndex Onshore online viewer (2019) show the site located on Tidal Flat Deposits (clay and silt) onto Glacial Till (diamicton). This is underlain by bedrock of the Cretaceous Flamborough Chalk Formation. Made Ground is shown directly north of the investigated area.

## 3 FIELDWORK

### 3.1 General

The exploratory hole and in situ test locations were selected by FEC and set out from supplied coordinates. The co-ordinates and ground levels of the as built positions were surveyed by SOCOTEC to National Grid and Ordnance Datum, using GPS Techniques and are shown on the Site Plan in Appendix A.

### 3.2 Exploratory Holes

The exploratory holes are listed in the following table.

TABLE 1 : SUMMARY OF EXPLORATORY HOLES

TYPE	QUANTITY	DEPTH RANGE (m)	REMARKS
Cable Percussion Boring	10	25.00 to 35.00	BH04, BH06, BH07, BH08, BH09, BH10, BH11 and BH12
Cable Percussion Boring extended by Rotary Core Drilling	4	35.00 to 46.60	BH01, BH02, BH03 and BH05
Trial Pits (Machine Dug)	12	4.50	TP01 to TP12
Dynamic Sampling	9	5.00	WS01 to WS10 WS08 not possible due to obstruction.

The exploratory hole logs are presented in Appendix B. These include descriptions of the strata encountered together with details of the equipment and methods used, sampling and field testing carried out, water depths and other field observations. Explanation of the terms and abbreviations used on the logs is given in the Key to Exploratory Hole Records in Appendix B, along with other



explanatory information. Soil and rock material descriptions are in accordance with BS EN ISO 14688-1 (2018), BS EN ISO 14689 (2018) and the guidance of BS 5930 (2015).

Standard penetration tests (SPT) in the boreholes were carried out in accordance with BS EN ISO 22476-3+A1 (2011) and the SPT hammer energy ratio certificates are included in Appendix B. The results are presented on the logs as uncorrected N values.

On completion of the fieldwork, geotechnical samples were transported to the Carcroft office of SOCOTEC for temporary retention, with those required for testing being transferred to the SOCOTEC laboratory also at Carcroft, near Doncaster. Geoenvironmental samples were transported from site directly to the SOCOTEC laboratory at Bretby, near Burton-on-Trent.

Photographs of the trial pits and rotary drilled cores are presented in Appendix G.

### 3.3 Field Testing

Field (in situ) testing was carried out in accordance with the relevant standards as tabulated below. The testing is summarised in the following table and the results are presented in Appendix C unless noted otherwise. Calibration certificates where appropriate are included with the results in the appendix.

TABLE 2 : SUMMARY OF FIELD TESTING

TYPE	QUANTITY	REMARKS
Cone Penetration Testing	11	CPT01 to 04, 04A, 05, 06, 06A, 07, 09 and 10, see Section 3.4
Falling Head Permeability	9	BS EN ISO 22282-2 (2012)
Apparent Resistivity of Soil	10	BS 1377 : Part 9 (1990) Carried out within TP01 to TP10
Plate Bearing Test	12	IAN 73/06 Rev 1 (2009) Carried out within TP01 to TP12





## **3.4 Cone Penetration Testing**

### **3.4.1 General**

Eleven CPTs were carried out to a maximum depth of 17.86 m using an electric piezocone operated from a 9 tonne tracked mounted CPT unit, together with four dissipation tests.

Testing was carried out in accordance with Part 9 of BS 1377 (1990) and BS EN ISO 22476-1 (2012). The serial number of the cone used is indicated on the test plots. The calibration certificate is included in Appendix C and provides details of the manufacturer, cone dimensions, capacity and geometry.

Any opinions and interpretations presented are outside the scope of SOCOTEC's UKAS accreditation for cone penetration testing.

### **3.4.2 CPT Data Processing**

Test control and data acquisition was carried out using CPTask, a proprietary software supplied by Geomil Equipment BV of Holland. The measured cone end resistance, sleeve friction, dynamic porewater pressure, and inclination were recorded at 1 cm intervals of penetration.

Interpretation of the CPT data was carried out using an in-house data reduction spreadsheet. The interpretation follows the recommendations of Lunne et al (1997) to derive, where appropriate: friction ratio, pore pressure ratio, undrained shear strength (minimum and maximum range presented using typical cone factors of 20 and 12 respectively), relative density, angle of friction and soil type. The soil classification uses the soil behaviour type chart of Robertson (1990), see KeyCPT. A nominal groundwater level of 1.00 m has been assumed for the data interpretation, based on the general groundwater level indicated by monitoring of borehole installations as part of the main ground investigation works.

Explanation of the terms used and derivations of the cone and soil parameters are given in the Key, see KeyCPT. The data are presented graphically as plots relative to depth below ground level on the CPT logs in Appendix B. The stratum descriptions shown are derived using the interpreted soil



classification in conjunction with the site borehole data, together with strength and relative density terms related to the CPT data, as indicated in the Key.

### 3.4.3 Dissipation Testing

Four dissipation tests were carried out in conjunction with CPTs, as specified by SOCOTEC and subject to suitable porewater pressure response observed during penetration.

### 3.5 Groundwater and Gas Monitoring

Gas and groundwater monitoring instrumentation was installed in selected boreholes, as specified by SOCOTEC; details are shown on the logs and summarised in Appendix D. Records of monitoring carried out by SOCOTEC during and after the fieldwork period are presented in Appendix D and summarised in the table below.

In addition to the gas and groundwater monitoring installations, 75mm wells for downhole seismic testing were installed in BH8, BH9 and BH10.

TABLE 3 : SUMMARY OF MONITORING

TYPE	QUANTITY	REMARKS
Monitoring Visits	3	Monthly

## 4 LABORATORY TESTING

### 4.1 Geotechnical Testing

Geotechnical laboratory testing was scheduled by SOCOTEC and was carried out in accordance with BS 1377 (1990), BS EN ISO 17892 (2014) Part 1 and 2 and ISRM (2007) unless otherwise stated within the test report. The testing is summarised below and the results are presented in Appendix E.

**TABLE 4 : SUMMARY OF GEOTECHNICAL LABORATORY TESTING**

<b>TYPE</b>	<b>QUANTITY</b>	<b>REMARKS</b>
Water Content Determination	52	
Atterberg Limit Determination	52	
Particle Density	16	
Particle Size Distribution Analysis	12	
pH, Acid Soluble Sulphate and Total Sulphur and Water Soluble Sulphate Content of Soils	23	Test methods are BS 1377 or others recognised in BRE Special Digest 1 (2005); they are indicated on the results report sheets
Unconsolidated Undrained Triaxial Compression Testing	20	
One Dimensional Oedometer Consolidation	19	Variable loads to obtain virgin consolidation line
California Bearing Ratio	1	
Dry Density Moisture Content Relationship	1	Combined samples of chalk to obtain single test due to granular nature
Saturated Moisture Content of chalk	7	
Uniaxial Compressive Strength	1	
Point Load Index of Rock	26	Axial and diametral testing where possible

## 4.2 Geoenvironmental Testing

Geoenvironmental laboratory testing was scheduled by SOCOTEC on the soil samples recovered during the fieldwork. The testing is summarised in the table below and the results are presented in Appendix F.

**TABLE 5 : SUMMARY OF GEOENVIRONMENTAL LABORATORY TESTING**

<b>TYPE</b>	<b>QUANTITY</b>	<b>REMARKS</b>
Metals and pH	10	
TPHCWG	10	
PAH	10	
Phenol	10	
Soil organic matter	10	
Asbestos screen	10	

## **5 REFERENCES**

- AGS : 2017 : Electronic transfer of geotechnical and geoenvironmental data (Edition 4.0.4 February 2017). Association of Geotechnical and Geoenvironmental Specialists.
- BGS England and Wales Sheet 81 including 82 and 90 : 1991 : Patrington. 1:50000 geological map (solid and drift). British Geological Survey.
- BGS GeoIndex Onshore : 2019. [www.bgs.ac.uk](http://www.bgs.ac.uk). British Geological Survey.
- BRE Special Digest 1 : 2005 : Concrete in aggressive ground. Building Research Establishment.
- BS 1377 : 1990 : Methods of test for soils for civil engineering purposes. British Standards Institution.
- BS 5930 : 2015 : Code of practice for ground investigations. British Standards Institution.
- BS EN 1997-2 : 2007 : Eurocode 7 - Geotechnical design - Part 2 Ground investigation and testing. British Standards Institution.
- BS EN ISO 14688-1:2018 : Geotechnical investigation and testing - Identification and classification of soil - Part 1 Identification and description
- BS EN ISO 14688-2:2018 : Geotechnical investigation and testing - Identification and classification of soil - Part 2 Principles for a classification
- BS EN ISO 14689:2018 : Geotechnical investigation and testing - Identification and classification of rock - Part 1 Identification and description
- BS EN ISO 17892-2 : 2014 : Geotechnical investigation and testing – Laboratory Testing of soil – Determination of bulk density.
- BS EN ISO 22282-1:2012 : Geotechnical investigation and testing – Geohydraulic testing – Part 1 General rules
- BS EN ISO 22282-2:2012 : Geotechnical investigation and testing – Geohydraulic testing – Part 2 Water permeability tests in a borehole using open systems
- BS EN ISO 22475-1 : 2006 : Geotechnical investigation and testing – Sampling methods and groundwater measurements - Part 1 Technical principles for execution. British Standards Institution.
- BS EN ISO 22476-3:2005+A1 : 2011 : Geotechnical investigation and testing - Field testing - Part 3 Standard penetration test. British Standards Institution.
- ISRM : 2007 : The Complete ISRM Suggested Methods for Rock Characterisation, Testing and Monitoring (1974-2006). Commission on Testing Methods, International Society for Rock Mechanics (Editors Ulusay R & Hudson JA).
- Design Manual for Roads and Bridges Volume 7, Pavement Design and Maintenance, IAN 73/06 Rev.1 (2009)

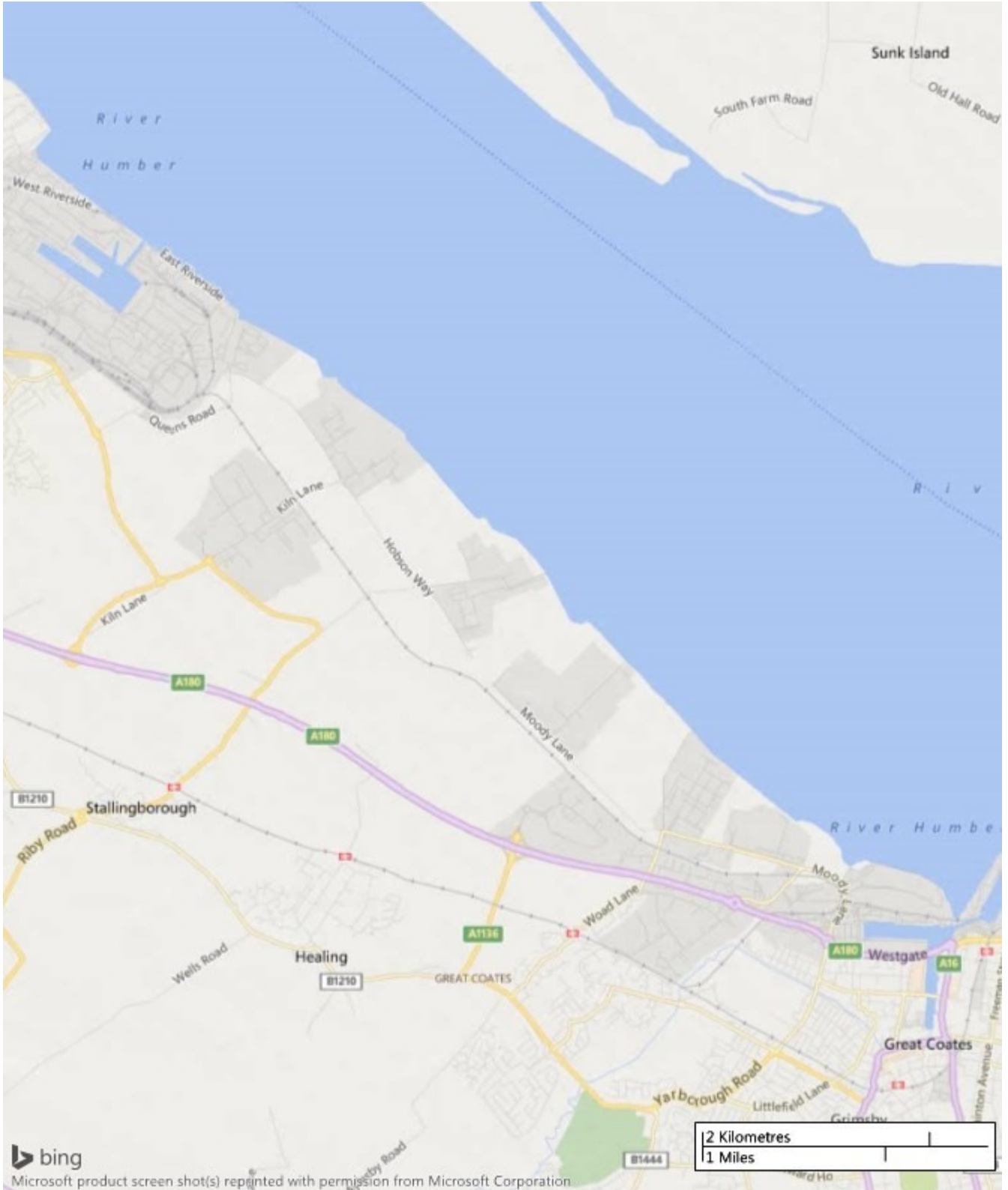
**APPENDIX A**  
**FIGURES AND DRAWINGS**

Site Location Plan  
Site Plan

A1  
A2

# Site Location Plan

Site location

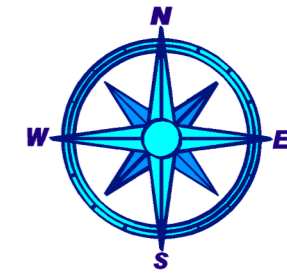
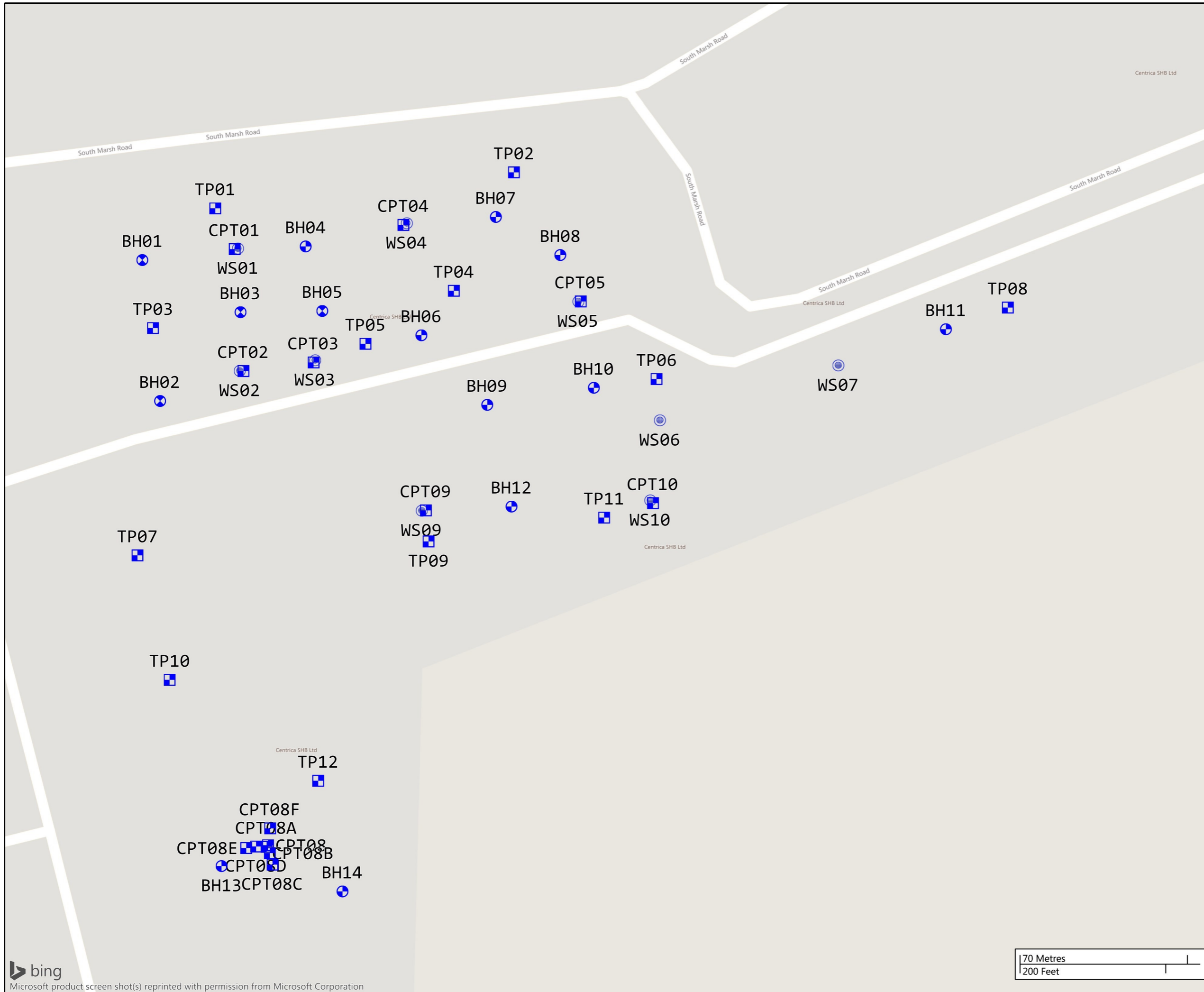


Notes

Project SOUTH HUMBER BANK ENERGY CENTRE  
 Project No. A9020-19  
 Carried out for EP UK Investments Ltd.

Figure

**A1**







Notes:

Scale: 1:1500

Surveyed By: SOCOTEC

Surveyed Date: 12/09/2019

- Key:
-  Cable Percussion Borehole
  -  Cable Percussion and Rotary Borehole
  -  Trial Pit
  -  Dynamic Sampling

### Site Plan

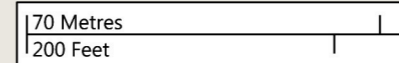


Project ID: A9020-19

Project Title: SOUTH HUMBER BANK ENERGY CENTRE

Client: EP UK Investments Ltd.

Figure: A2



## APPENDIX B

### EXPLORATORY HOLE RECORDS

Key to Exploratory Hole Records	Key
SPT Hammer Energy Ratio Report	AR2068, JB0014, JB0016 and RP07
Borehole Logs	BH01 to BH14
Trial Pit Logs	TP01 to TP12
Inspection Pit Logs for CPT holes	CPT01 to CPT05, CPT08, CPT08A to CPT08F CPT09 and CPT10
Dynamic Sampler Hole Logs	WS01 to WS07, WS09 and WS10





# Key to Exploratory Hole Records

## SAMPLES

### Undisturbed

U	Driven tube sample	} nominally 100 mm diameter and full recovery unless otherwise stated
UT	Driven thin wall tube sample	
TW	Pushed thin wall tube sample	
P	Pushed piston sample	
L	Liner sample from dynamic (windowless) sampling. Full recovery unless otherwise stated	
CBR	CBR mould sample	
BLK	Block sample	
C / CS	Core sample (from rotary core) taken for laboratory testing.	
AMAL	Amalgamated sample	

### Disturbed

D	Small sample
B	Bulk sample

### Other

W	Water sample
G	Gas sample

	Environmental chemistry samples (in more than one container where appropriate)
ES	Soil sample
EW	Water sample

### Comments

Sample reference numbers are assigned to every sample taken. A sample reference of 'NR' indicates that, while an attempt was made to take a tube sample, there was no recovery.

Samples taken from borehole installations (ie water or gas) after hole construction are not shown on the exploratory hole logs.

Specimens for point load testing undertaken on site (or other non-lab location) are not shown on the log.

## IN SITU TESTS

SPT S or SPT C Standard Penetration Test, open shoe (S) or solid cone (C)

The Standard Penetration Test is defined in BS EN ISO 22476-3:2005+A1:2011. The incremental blow counts are given in the Field Records column; each increment is 75 mm unless stated otherwise and any penetration under self-weight in mm (SW) is noted. Where the full 300 mm test drive is achieved the total number of blows for the test drive is presented as N = \*\* in the Test column. Where the test drive blows reach 50 the total blow count beyond the seating drive is given (without the N = prefix).

IV	<i>in situ</i> vane shear strength, peak (p) and remoulded (r)
HV	Hand vane shear strength, peak (p) and remoulded (r)
PP	Pocket penetrometer test, converted to shear strength
KFH, KRH, KPI	Permeability tests (KFH = falling head, KRH = rising head; KPI = packer inflow); results provided in Field Records column (one value per stage for packer tests)

## DRILLING RECORDS

The mechanical indices (TCR/SCR/RQD & If) are defined in BS 5930:2015

TCR	Total Core Recovery, %
SCR	Solid Core Recovery, %
RQD	Rock Quality Designation, %
If	Fracture spacing, mm. Minimum, typical and maximum spacing measurements are presented.
NI	Non-intact - used where the core is fragmented (ie no Solid Core).
NA	Not-applicable - used where a measurement is not applicable (eg. If, SCR and RQD in non-rock materials).

Flush returns, estimated percentage with colour where relevant, are given in the Records column

CRF	Core recovered in the following run (length in m)
AZCL	Assessed zone of core loss

## GROUNDWATER

▼	Groundwater entry
▽	Depth to groundwater after standing period

Notes:

See report text for full references of standards.

Updated October 2018

Project South Humber Bank Energy Centre

Project No. A9020-19

Carried out for EP UK Investments

Key



# Key to Exploratory Hole Records

**INSTALLATION** Details of standpipe/piezometer installations are given on the Record. Legend column shows installed instrument depths including slotted pipe section or tip depth, response zone filter material type and layers of backfill.

**Standpipe/ piezometer** The type of instrument installed is indicated by a code in the Legend column at the depth of the response zone:

SP	Standpipe			
SPIE	Standpipe piezometer	Plain Pipe		
PPIE	Pneumatic piezometer			Slotted Pipe
EPIE	Electronic piezometer			Piezometer Tip

**Inclinometer or Slip Indicator** The installation of vertical profiling instruments is indicated on the Record. The base of tubing is shown in the Legend column.

ICE	The type of instrument installed is indicated by a code in the Legend column at the base of the tubing:
ICM	Biaxial inclinometer
SLIP	Inclinometer tubing for use with probe Slip indicator

**Settlement Points or Pressure Cells** The installation of single point instruments is indicated on the Record. The location of the measuring device is shown in the Legend column. The type of instrument installed is indicated by a code in the Legend column:

ESET	Electronic settlement cell/gauge
ETM	Magnetic extensometer settlement point
EPCE	Electronic embedment pressure cell
PPCE	Electronic push in pressure cell

**INSTALLATION / BACKFILL LEGENDS** A legend describing the installation is shown in the rightmost column. Legend symbols used to describe the backfill materials are indicated below.

Macadam	Concrete	Grout	Bentonite	Sand	Gravel	Arisings

**STRATUM LEGENDS** The legend symbols used for graphical representation of soils, rocks and other materials on the borehole logs are shown below. For soils with significant proportions of secondary soil types, a combination of two or more symbols may be used.

Macadam	Concrete	Topsoil	Made Ground / Fill	Peat	Void or No Information	
Clay	Silt	Sand	Gravel	Cobbles	Boulders	Coal
Mudstone	Siltstone	Sandstone	Conglomerate	Breccia	Limestone	Chalk
Igneous (Fine)	Igneous (Med)	Igneous (Coarse)	Metamorphic (Fine)	Metamorphic (Med)	Metamorphic (Coarse)	Tuff

Notes:

See report text for full references of standards.

Updated October 2018

Project South Humber Bank Energy Centre

Project No. A9020-19

Carried out for EP UK Investments

Key



# Key to Exploratory Hole Records

## NOTES

- 1 Soils and rocks are described in accordance with BS EN ISO 14688-1:2018 and 14689-1:2018 respectively and the guidance of BS 5930:2015.
- 2 For fine soils, consistency determined during description is reported for those strata where undisturbed samples are available. Where the logger considers that the sample may not be representative of the condition in situ, for whatever reason, the reported consistency is given in brackets. The reliability of the sample is indicated by Probably or Possibly as appropriate. Hence (Probably firm) indicates the logger is reasonably confident of the assessment, but (Possibly firm) means less certainty. Where the samples available are too disturbed to allow a reasonable assessment of the in situ condition, no consistency is given.
- 3 Evidence of the occurrence of very coarse particles (cobbles and boulders) is presented on the logs. However, because of their size in relation to the exploratory hole these records may not be fully representative of their size and frequency in the ground mass.
- 4 The declination of bedding and joints is given with respect to the normal to the core axis. Thus in a vertical borehole this will be the dip.
- 5 The assessment of SCR, RQD and Fracture Spacing excludes artificial fractures.
- 6 Observations of discernible groundwater entries during the advancement of the exploratory hole are given at the foot of the log and in the Legend column. The absence of a recorded groundwater entry should not, however, be interpreted as a groundwater level below the base of the borehole. Under certain conditions groundwater entry may not be observed, for instance, drilling with water flush or overwater, or boring at a rate faster than water can accumulate in the borehole. Similarly, where water entry observations do exist, groundwater may also be present at higher elevations in the ground than where recorded in the borehole. In addition, where appropriate, water levels in the hole at the time of recovering individual samples or carrying out in situ tests and at shift changes are given in the Records column.
- 7 The borehole logs present the results of Standard Penetration Tests recorded in the field without correction or interpretation. However, in certain ground conditions (eg high hydraulic head or where very coarse particles are present) some judgement may be necessary in considering whether the results are representative of in situ mass conditions.

## REFERENCES

- 1 BS EN ISO 14688-1:2018 : Geotechnical investigation and testing - Identification and classification of soil. Part 1 Identification and description. British Standards Institution
- 2 BS EN ISO 14689-1 : 2018 : Geotechnical investigation and testing - Identification and classification of rock. Part 1 Identification and description. British Standards Institution
- 3 BS EN ISO 22476-3:2005+A1 : 2011 : Geotechnical investigation and testing - Field testing. Part 3 Standard penetration test. British Standards Institution
- 4 BS 5930 : 2015 : Code of practice for ground investigations. British Standards Institution

Notes:

See report text for full references of standards.

Updated October 2018

Project South Humber Bank Energy Centre

Project No. A9020-19

Carried out for EP UK Investments

**Key**

# 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: AR2068  
Test Date: 13/05/2019  
Report Date: 13/05/2019  
File Name: AR2068.spt  
Test Operator: JL

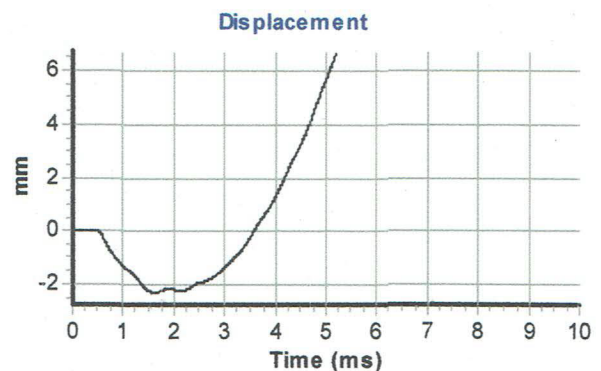
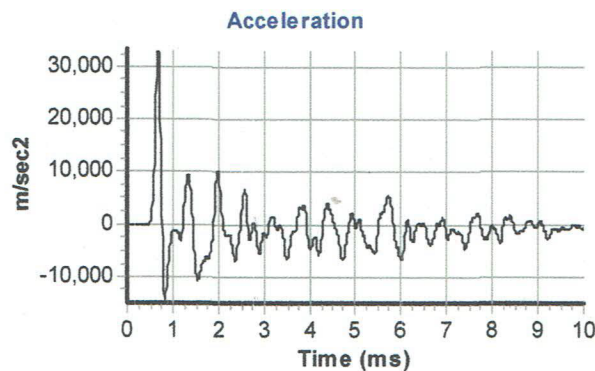
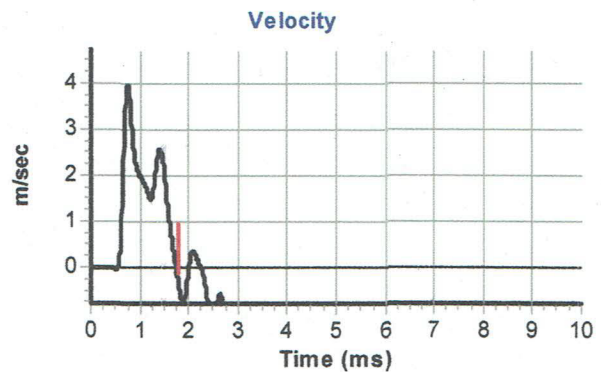
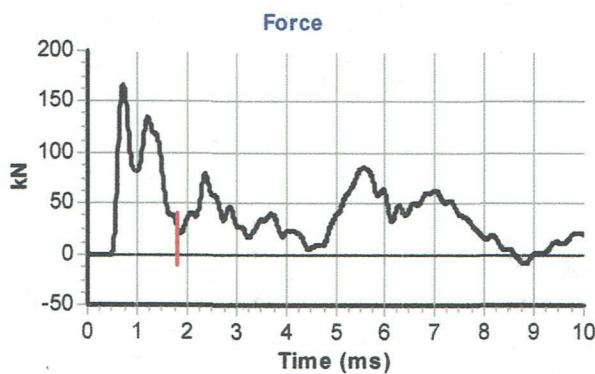
## Instrumented Rod Data

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

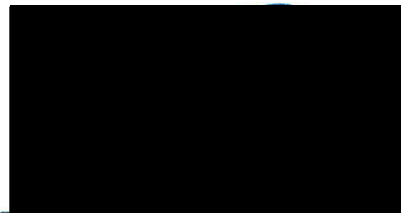
## Comments / Location



## Calculations

Area of Rod A ( $\text{mm}^2$ ): 970  
Theoretical Energy  $E_{\text{theor}}$  (J): 473  
Measured Energy  $E_{\text{meas}}$  (J): 254

**Energy Ratio  $E_r$  (%):** **54**



Signed: S. HOWARTH  
Title: FITTER

The recommended calibration interval is 12 months

# SPT Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

**JB Site Investigations**  
**Windmill Way West**  
**Ramparts Business Park**  
**Berwick**  
**TD15 1TB**

SPT Hammer Ref: JB00014  
Test Date: 21/06/2019  
Report Date: 21/06/2019  
File Name: JB00014.spt  
Test Operator: SP



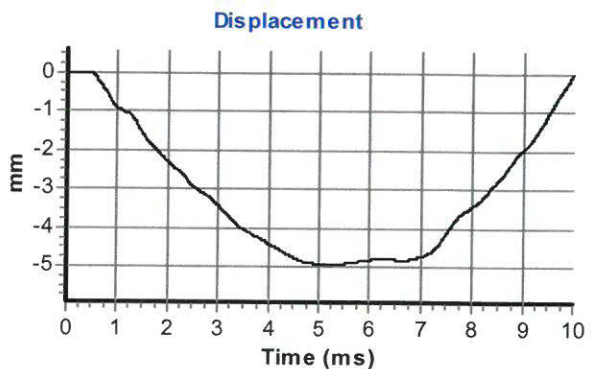
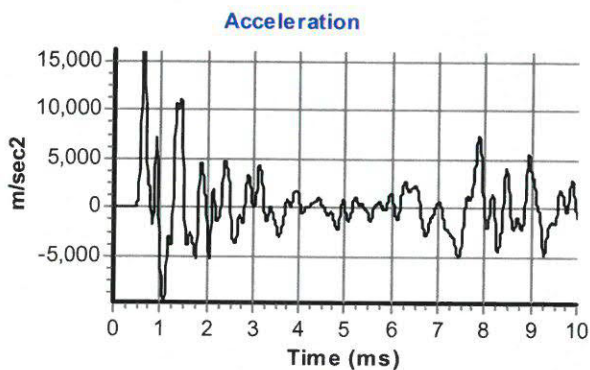
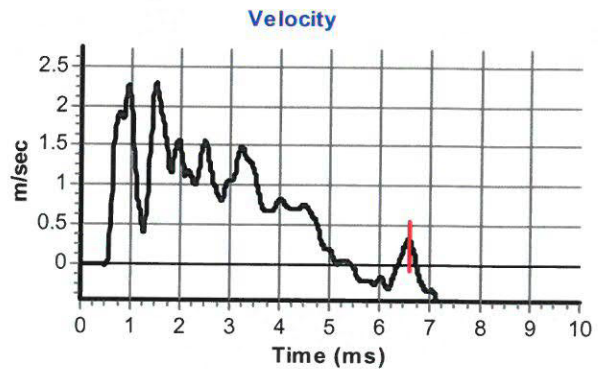
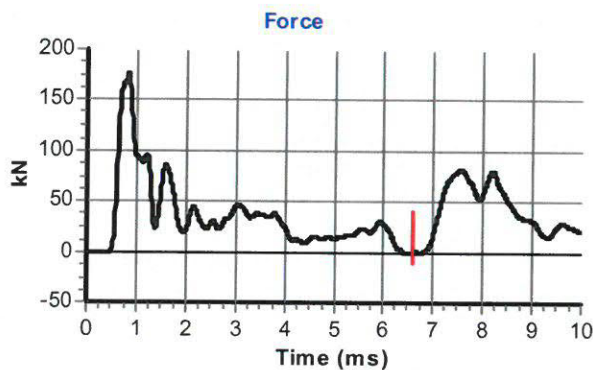
## Instrumented Rod Data

Diameter  $d_r$  (mm): 54  
Wall Thickness  $t_r$  (mm): 6.5  
Rod Length  $l_r$  (m): 1.0  
Assumed Modulus  $E_a$  (GPa): 208  
Accelerometer No.1: 6178  
Accelerometer No.2: 5843

## SPT Hammer Information

Hammer Mass  $m$  (kg): 63.5  
Falling Height  $h$  (mm): 760  
SPT String Length  $L$  (m): 20.0

## Comments / Location



## Calculations

Area of Rod  $A$  (mm<sup>2</sup>): 970  
Theoretical Energy  $E_{theor}$  (J): 473  
Measured Energy  $E_{meas}$  (J): 330

**Energy Ratio  $E_r$  (%):** **70**

Signed: Scott Pincher  
Title: Manager

# SPT Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

**JB Site Investigations**  
**Windmill Way West**  
**Ramparts Business Park**  
**Berwick**  
**TD15 1TB**

SPT Hammer Ref: JB00016  
Test Date: 21/06/2019  
Report Date: 21/06/2019  
File Name: JB00016.spt  
Test Operator: SP



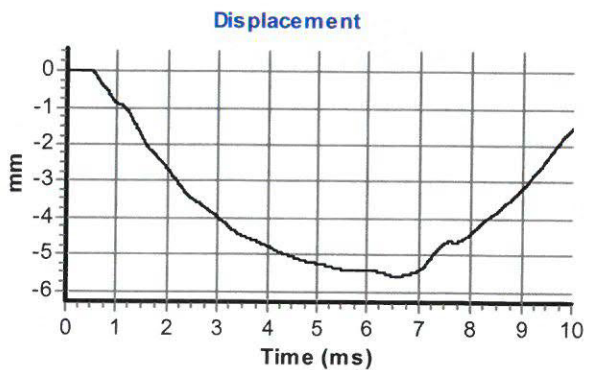
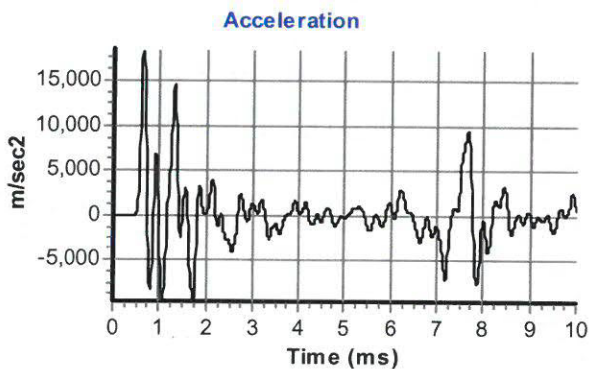
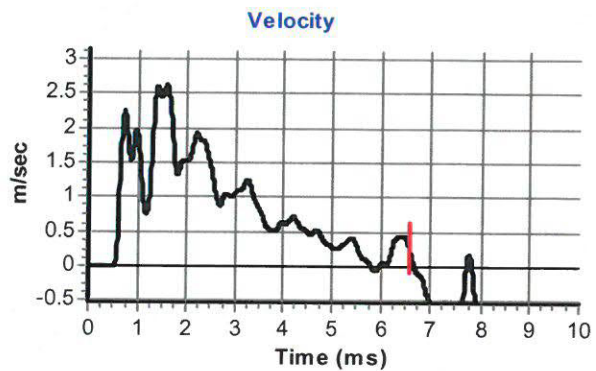
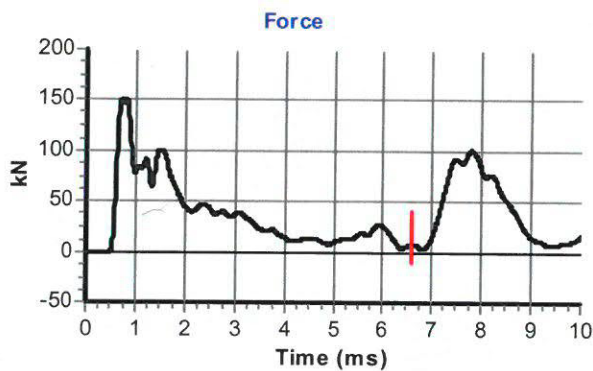
## Instrumented Rod Data

Diameter  $d_r$  (mm): 54  
Wall Thickness  $t_r$  (mm): 6.5  
Rod Length  $l_r$  (m): 1.0  
Assumed Modulus  $E_a$  (GPa): 208  
Accelerometer No.1: 6178  
Accelerometer No.2: 5843

## SPT Hammer Information

Hammer Mass  $m$  (kg): 63.5  
Falling Height  $h$  (mm): 760  
SPT String Length  $L$  (m): 20.0

## Comments / Location



## Calculations

Area of Rod A ( $\text{mm}^2$ ): 970  
Theoretical Energy  $E_{\text{theor}}$  (J): 473  
Measured Energy  $E_{\text{meas}}$  (J): 339

**Energy Ratio  $E_r$  (%):** **72**

Signed:  Scott Pincher

Title: Manager

# 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: RP07  
Test Date: 08/07/2019  
Report Date: 08/07/2019  
File Name: RP07.spt  
Test Operator: CM

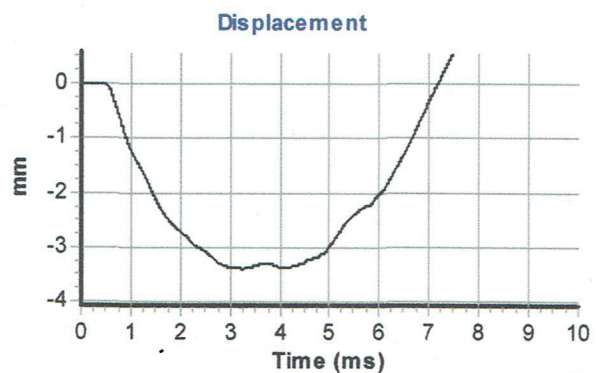
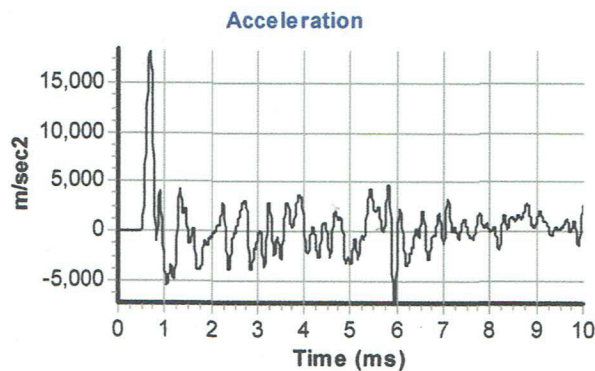
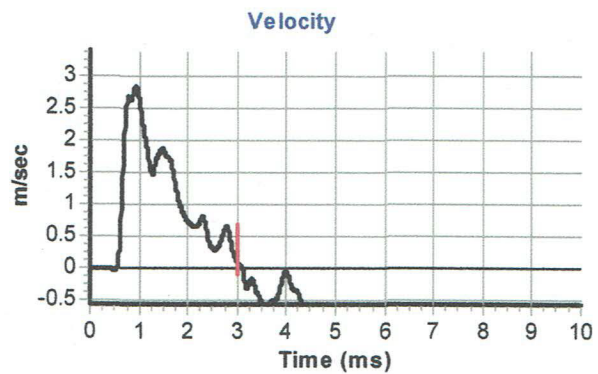
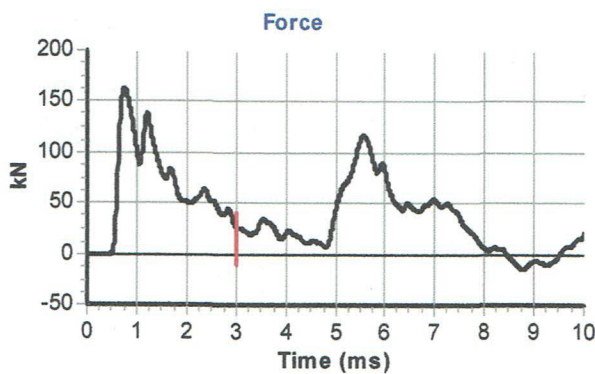
## Instrumented Rod Data

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



## Calculations

Area of Rod A ( $\text{mm}^2$ ): 970  
Theoretical Energy  $E_{\text{theor}}$  (J): 473  
Measured Energy  $E_{\text{meas}}$  (J): 334

**Energy Ratio  $E_r$  (%):** **71**

Signed: C.MCCLUSKEY  
Title: FITTER

The recommended calibration interval is 12 months

# Borehole Log



<b>Drilled</b> CJ/TW <b>Logged</b> AW/RT/ MJS <b>Checked</b> MW <b>Approved</b> MW	<b>Start</b> 12/08/2019 <b>End</b> 21/08/2019	<b>Equipment, Methods and Remarks</b> Dando 2000/Beretta T43. Cable percussion boring to 27.50m./Rotary core drilling (PWF size) using air mist flush to 36.50m. SPT Hammer ID: JB0014, Rod type: N.WY. Er 70%	<b>Depth from (m)</b> 1.20 <b>to (m)</b> 28.50 <b>Diameter (mm)</b> 200 <b>Casing Depth (m)</b> 25.00 31.00	<b>Ground Level</b> 2.24 mOD <b>Coordinates (m)</b> E 522972.86 <b>National Grid</b> N 413465.13
------------------------------------------------------------------------------------------------	--------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------

Samples and Tests			Strata Description				Depth, Level (Thickness)	Legend	Backfill
Depth	Type & No.	Records	Date Casing	Time Water	Main	Detail			
0.00 - 0.20	D 1 B 2 ES 3	0.00-1.20 Hand excavated inspection pit.			Stiff brown slightly sandy slightly gravelly CLAY with frequent rootlets. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse of flint, concrete and tile. Rare 6mm steel enforcement bar. Slight organic (humic) odour. (MADE GROUND)	0.30-0.50 rare subangular to subrounded cobbles of granite (kerbstone fragments)	(0.50)		
0.50	ES 4				Stiff brown slightly sandy slightly gravelly CLAY with occasional rootlets. Sand is fine and medium. Gravel is angular to subrounded fine to coarse of flint. (TIDAL FLAT DEPOSITS)		0.50 +1.74		
0.50 - 0.70	D 5 B 6 D 7 B 9 ES 8				Stiff brown slightly sandy slightly gravelly CLAY with occasional rootlets. Sand is fine and medium. Gravel is angular to subrounded fine to coarse of flint. (TIDAL FLAT DEPOSITS)		0.70 +1.54		
1.20 - 1.65	SPTS D 10 B 11	N=5 (1,1/1,1,1,2)		Dry	Stiff to very stiff brown slightly sandy CLAY with occasional subangular fine gravel of flint. Sand is fine and medium. (TIDAL FLAT DEPOSITS)		1.20 +1.04		
1.70	D 12				Soft to firm brown, mottled bluish green, slightly sandy CLAY. Sand is fine. (TIDAL FLAT DEPOSITS)		(1.00)		
2.00 - 2.45	UT 13	14 blows 100% rec			Soft very dark grey, locally with occasional pockets of brown, slightly sandy slightly organic CLAY. Organic (humic) odour. (TIDAL FLAT DEPOSITS)		2.20 +0.04		
2.50	D 14		12/08/19 1.50	1700 Dry					
2.50 - 3.00	B 15		13/08/19 1.50	0800 Dry			(0.80)		
3.00 - 3.45	SPTS D 16 B 17	N=1 (0,0/0,0,1)		Dry	Very soft dark grey silty CLAY, locally with rare pockets of black mica (<2mm) and rare pockets of black silt. (TIDAL FLAT DEPOSITS)		3.00 -0.76		
3.50	D 18						(5.00)		
4.00	ES 19 UT 20	6 blows 100% rec							
4.50	D 21 B 22								
5.00 - 5.45	SPTS D 23 B 24	N=1 (0,0/0,0,1,0)		Dry					
6.00	D 25								
6.50 - 6.95	UT 26	6 blows 100% rec							
7.00	D 27 B 28								
8.00 - 8.45	SPTS D 29 B 30	N=1 (0,0/0,0,1)		Dry	Very soft dark grey, becoming grey and brownish grey with depth. SILT. (TIDAL FLAT DEPOSITS)		8.00 -5.76		
9.00	D 31								
9.50 - 9.95	UT 32	14 blows 100% rec				9.50-10.00 becoming grey	(3.60)		
						10.00-11.60 becoming dark brownish grey			

<b>Groundwater Entries</b> No. Depth Strike (m) Remarks   	<b>Depth Related Remarks</b> Depth Sealed (m)  	<b>Hard Boring</b> Depths (m) Duration (mins) Tools used   
------------------------------------------------------------------------	----------------------------------------------------------	-------------------------------------------------------------------------

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. Scale 1:50 © Copyright SOCOTEC UK Limited 12/11/2019 15:31:29	<b>Project</b> SOUTH HUMBER BANK ENERGY CENTRE <b>Project No.</b> A9020-19 <b>Carried out for</b> EP UK Investments Ltd.	<b>Borehole</b> BH01 Sheet 1 of 4
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------	--------------------------------------



# Borehole Log



Drilled	CJ/TW	Start	12/08/2019	Equipment, Methods and Remarks	Dando 2000/Beretta T43. Cable percussion boring to 27.50m./Rotary core drilling (PWF size) using air mist flush to 36.50m. SPT Hammer ID: JB0014, Rod type: N.W.Y. Er 70%	Depth from (m)	1.20	to (m)	28.50	Diameter (mm)	200	Casing Depth (m)	25.00	Ground Level	2.24 mOD
Logged	AW/RT/MJS	End	21/08/2019				28.50		36.50		121		31.00	Coordinates (m)	E 522972.86
Checked	MW													National Grid	N 413465.13
Approved	MW														

Samples and Tests				Strata Description				Depth, Level (Thickness)	Legend	Backfill
Depth	Type & No.	Records	Date Casing	Time Water	Main	Detail				
10.00 - 10.50	D 33 B 34				Very soft dark grey, becoming grey and brownish grey with depth, SILT. (TIDAL FLAT DEPOSITS)					
10.50	W 35									
11.00 - 11.45	SPTS D 36 B 37	SW=450								
11.60	D 38				Stiff dark brownish grey slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subrounded predominantly fine and medium of flint. Driller notes sand lenses. (GLACIAL TILL)		11.60	-9.36		
12.00	ES 39							(1.40)		
12.50 - 12.95	UT 40	150 blows 100% rec								
13.00 - 13.50	D 41 B 42				Loose and medium dense gravelly very silty fine to coarse SAND. Gravel is subangular to subrounded fine to coarse of flint. (GLACIAL TILL)		13.00	-10.76		
13.50 - 13.95	SPTS D 43 B 44	N=10 (2,2/2,2,3,3)	13/08/19	1700						
13.50 - 14.00			14.00	4.93						
14.00	D 45		14/08/19	0800						
14.00			14.00	4.83						
14.50 - 14.95	UT NR B 47	86 blows No Recovery						(3.60)		
15.00 - 15.45	SPTS D 48 B 49	N=9 (2,2/2,2,2,3)								
15.00 - 15.50										
15.50	D 50									
16.50 - 16.95	SPTS D 51 B 52	N=15 (2,1/2,3,4,6)			Light brown fine and medium SAND. (GLACIAL TILL)		16.50	-14.36		
16.50 - 17.00					Stiff brown slightly sandy slightly gravelly CLAY. Gravel is angular fine and medium of chalk. (GLACIAL TILL)					
17.00	D 53									
17.50 - 17.95	UT 54	92 blows 70% rec								
18.00 - 18.50	D 55 B 56							(2.85)		
18.50 - 18.95	SPTS D 57 B 58	N=2 (1,1/0,1,1,0)				18.50-19.50 pockets of soft orangish brown sandy clay				
18.50 - 19.00										
19.00	D 59									
19.50 - 19.95	UT NR B 61	78 blows No Recovery			Brown fine SAND. (GLACIAL TILL)		19.50	-17.26		
19.50 - 20.00										

Groundwater Entries				Depth Related Remarks				Hard Boring			
No.	Depth (m)	Strike (m)	Remarks	Depth Sealed (m)	Depths (m)	Remarks	Depths (m)	Duration (mins)	Tools used		
1	10.50		Rose to 1.31 m after 20 minutes.								

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.	Project	SOUTH HUMBER BANK ENERGY CENTRE				Borehole	BH01	
Scale 1:50	Project No.	A9020-19						
© Copyright SOCOTEC UK Limited	Carried out for	EP UK Investments Ltd.						
AGS							Sheet 2 of 4	

# Borehole Log



Drilled	CJ/TW	Start	Equipment, Methods and Remarks	Depth from	to	Diameter	Casing Depth	Ground Level	2.24 mOD
Logged	AW/RT/ MJS	12/08/2019	Dando 2000./Beretta T43. Cable percussion boring to 27.50m./Rotary core drilling (PWF size) using air mist flush to 36.50m.	(m)	(m)	(mm)	(m)	Coordinates (m)	E 522972.86
Checked	MW	End	SPT Hammer ID: JB0014, Rod type: NWY. Er 70%	28.50	28.50	200	25.00	National Grid	N 413465.13
Approved	MW	21/08/2019			36.50	121	31.00		

## Samples and Tests

Depth	Type & No.	Records	Date Casing	Time Water	Main	Detail	Depth, Level (Thickness)	Legend	Backfill
20.00	D 62				Brown fine SAND. (GLACIAL TILL)		(1.50)		
21.00 - 21.45	SPTS	N=42 (7,11/10,10,10,12)			White CHALK. Recovered as very weak sandy subangular to subrounded fine to coarse gravel in a silt matrix. Sand is fine to coarse. (FLAMBOROUGH CHALK FORMATION)		21.00 -18.76		
21.00 - 21.45	D 63								
21.00 - 21.50	B 64								
21.50	D 65								
22.00 - 22.45	SPTS	N=32 (2,3/6,7,8,11)			White CHALK. Recovered as very weak slightly sandy subangular to subrounded fine to coarse gravel with frequent cobbles. Cobbles are weak subangular to subrounded (max 90x80x80mm). (FLAMBOROUGH CHALK FORMATION)		(2.50)		
22.00 - 22.45	D 66								
22.00 - 22.50	B 67								
22.50	D 68								
23.00 - 23.45	SPTS	N=36 (4,5/7,9,10,10)			White CHALK. Recovered as very weak slightly sandy subangular to subrounded fine to coarse gravel with frequent cobbles. Cobbles are weak subangular to subrounded (max 90x80x80mm). (FLAMBOROUGH CHALK FORMATION)		23.50 -21.26		
23.00 - 23.45	D 69								
23.00 - 23.50	B 70								
23.50	D 71								
24.00 - 24.45	SPTS	N=5 (1,2/1,1,2,1)			Partial recovery. Core loss presumed to be more weathered material. Recovered core comprises structureless CHALK composed of white slightly sandy silty subangular to subrounded gravel (up to 60mm). Clasts are very weak to weak low and medium density with rare black speckling. (FLAMBOROUGH CHALK FORMATION - GRADE Dc)		28.50 -26.26		
24.00 - 24.45	D 72								
24.00 - 24.50	B 73								
24.50	D 74								
25.00 - 25.45	SPTS	N=8 (6,4/4,4,0,0)	14/08/19	1700	28.50-29.05 AZCL		28.50 -26.26		
25.00 - 25.45	D 75		25.00	6.37					
25.00 - 25.50	B 76		15/08/19	0800					
25.00 - 25.50	D 77		25.00	4.52					
26.00 - 26.45	SPTS	N=0 (3,2/0,0,0,0)			29.05-29.15 structureless chalk composed of white gravelly silt. Gravel is subrounded extremely weak to weak low to medium density (Flamborough Chalk Formation - Grade Dm)		(5.00)		
26.00 - 26.45	D 78								
26.00 - 26.50	B 79								
27.00	D 80								
27.50 - 27.79	SPTS	50 (9,16/24,26 for 69mm)			29.50-30.50 AZCL		(2.00)		
27.50 - 27.95	D 81		15/08/19	1700					
			25.00	6.84					
			20/08/19	0800					
			25.00						
28.50 - 29.50	45 0 0	NI NI NI							
		Flush: 28.50 - 31.00 Air/mist 100%							

Depth	TCR	SCR	RQD	If	Records	Date Casing	Time Water	29.50-30.50 AZCL			
Groundwater Entries						Depth Related Remarks			Hard Boring		
No.	Depth	Strike (m)	Remarks	Depth Sealed (m)		Depths (m)	Remarks	Depths (m)	Duration (mins)	Tools used	
								27.00 - 27.50	30		

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.	Project	SOUTH HUMBER BANK ENERGY CENTRE							Borehole	BH01
Scale 1:50	Project No.	A9020-19								
© Copyright SOCOTEC UK Limited	Carried out for	EP UK Investments Ltd.								Sheet 3 of 4
12/11/2019 15:31:29										

# Borehole Log



Drilled	CJ/TW	Start	12/08/2019	Equipment, Methods and Remarks	Dando 2000. Beretta T43. Cable percussion boring to 27.50m. Rotary core drilling (PWF size) using air mist flush to 36.50m. SPT Hammer ID: JB0014, Rod type: NWW. Er 70%	Depth from (m)	1.20	to (m)	28.50	Diameter (mm)	200	Casing Depth (m)	25.00	Ground Level	2.24 mOD
Logged	AW/RT/ MJS	End	21/08/2019				28.50		36.50		121		31.00	Coordinates (m)	E 522972.86
Checked	MW													National Grid	N 413465.13
Approved	MW														

Samples and Tests				Strata Description												
Depth	TCR SCR ROD	If	Records/Samples	Date Casing	Time Water	Main	Detail	Depth, Level (Thickness)	Legend	Backfill						
29.50 - 31.00	33 20 16					Partial recovery. Core loss presumed to be more weathered material. Recovered core comprises structureless CHALK composed of white slightly sandy silty subangular to subrounded gravel (up to 60mm). Clasts are very weak to weak low and medium density with rare black speckling. (FLAMBOROUGH CHALK FORMATION - GRADE Dc)	30.50-30.60 AZCL	30.50 -28.26								
30.75 - 30.90			C 76	20/08/19 31.00	1700											
		NI 120 150		21/08/19 31.00	0800	Recovery is of stronger materials, weaker materials not recovered.	31.00-31.20 AZCL 31.20-31.50 NI									
31.00 - 32.00	80 15 15					Recovered material is weak locally extremely weak high density white, with rare black specks, CHALK.	31.50-31.60 locally stained grey NI, extremely weak to very weak									
31.70 - 31.88			C 77			Fractures are closely spaced (10,120,150), no infill with occasional orangish brown and grey staining. (FLAMBOROUGH CHALK FORMATION - GRADE A3)	31.70-31.80 70-80 degree subvertical planar open fracture with occasional grey and black staining 31.80-32.00 NI occasional grey staining, rare orangish brown staining 31.80-36.50 predominantly NI (associated with inclined fractures) locally very weak	(4.30)								
32.00 - 33.50	60 18 15						32.00-32.60 AZCL 32.80-33.23 predominantly NI, clasts are extremely weak to very weak in a silt matrix 33.23-33.43 subvertical planar smooth open fracture, some clay smearing locally stained grey locally									
		NI NI 100					33.48-33.50 greenish grey clay (marl band) 33.62-33.75 vertical planar open fracture, occasional grey and orangish brown staining, locally NI									
33.98 - 34.08 33.50 - 34.50	100 20 10		C 78				33.87-34.00 predominantly NI, weak 34.10-34.50 NI very weak 34.50-34.70 AZCL 35.00-35.10 NI	34.80 -32.56								
34.50 - 35.00	60 20 20					Extremely weak to weak high density white, with rare black specks, CHALK. Fractures closely spaced (10,130,200), no infill with occasional grey staining and rare orangish brown staining. (FLAMBOROUGH CHALK FORMATION - GRADE A3)	35.10-35.25 vertical closed fracture 35.25-35.33 NI very weak 35.33-35.95 subvertical planar smooth tight fracture with occasional grey and orangish brown staining, locally striated, partially NI 36.00-36.23 predominantly NI 36.23-36.36 subvertical planar open fracture with occasional orangish brown staining	(1.70)								
34.92 - 35.00			C 79													
35.00 - 36.50	100 30 23	NI 130 200		21/08/19 31.00	1700											
						END OF EXPLORATORY HOLE		36.50 -34.26								

Groundwater Entries				Depth Related Remarks				Hard Boring				
No.	Depth	Strike	Remarks	Depth Sealed	Depths (m)	Remarks	Depths (m)	Duration (mins)	Tools used			

# Borehole Log



Drilled LW/RB/TW	Start	Equipment, Methods and Remarks	Depth from (m)	to (m)	Diameter (mm)	Casing Depth (m)	Ground Level	2.19 mOD
Logged AW/MJS	12/08/2019	Dando 175/Beretta T46. Cable percussion boring to 29.50m./Rotary core drilling (PWF size) using air mist flush to 46.30m.	1.20	29.50	200	27.50	Coordinates (m)	E 522981.72
Checked MW	End	SPT Hammer ID: JB0016, Rod type: NWWY. Er 72%	30.60	46.30	121	46.30	National Grid	N 413406.18
Approved MW	19/08/2019							

Samples and Tests			Strata Description						
Depth	Type & No.	Records	Date Casing	Time Water	Main	Detail	Depth, Level (Thickness)	Legend	Backfill
0.20	ES 1	0.00-1.20 Hand excavated inspection pit.			Firm brown slightly sandy slightly gravelly CLAY with occasional rootlets (<2mm in diameter). Gravel is angular to subangular fine and medium of sandstone and chalk. (Possible MADE GROUND)		(0.90)		
0.20	D 2								
0.20 - 0.40	B 4								
0.50	ES 3								
0.80 - 1.00	B 7								
0.90	D 5				Firm brown, mottled orangish brown and grey, slightly sandy CLAY. (Possible MADE GROUND)		0.90 +1.29		
1.00	ES 6								
1.20 - 1.65	UT 8	21 blows 80% rec					(1.10)		
1.70	D 9								
2.00 - 2.45	SPTS	N=0 (1,0/0,0,0,0)		Dry	Very soft to firm thinly laminated brown slightly sandy slightly gravelly CLAY. Gravel is subangular fine of sandstone. Laminae are very dark grey. (Possibly reworked MADE GROUND)		2.00 +0.19		
2.00 - 2.45	D 10								
2.00 - 2.50	B 11								
2.30	D 12						(1.00)		
3.00 - 3.45	UT 13	7 blows 90% rec			Very soft to soft very dark grey slightly sandy slightly organic CLAY with rare fine gravel. Organic (humic) odour. (TIDAL FLAT DEPOSITS)		3.00 -0.81		
3.50	ES 28								
3.50	D 14								
4.00 - 4.45	SPTS	SW=450					(2.00)		
4.00 - 4.45	D 15								
4.00 - 4.50	B 16								
5.00 - 5.45	UT 17	11 blows 100% rec	12/08/19 5.00	1700 Dry	Very soft to soft thinly laminated very dark grey slightly sandy slightly organic CLAY. Organic (humic) odour. Laminae are grey. (TIDAL FLAT DEPOSITS)	5.00-13.50 thinly laminated with occasional thin laminae of grey	5.00 -2.81		
5.50	D 18		13/08/19 5.00	0800 Dry					
6.50 - 6.95	SPTS	SW=450							
6.50 - 7.00	D 20								
6.50 - 7.00	B 19								
8.00 - 8.45	SPTS	SW=450							
8.00 - 8.45	D 20								
8.00 - 8.50	B 21								
8.90	D 22						(8.50)		
9.50 - 9.95	UT 23	27 blows 100% rec							

Groundwater Entries			Depth Related Remarks			Hard Boring		
No.	Depth Strike (m)	Remarks	Depth Sealed (m)	Depths (m)	Remarks	Depths (m)	Duration (mins)	Tools used

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.	Project	SOUTH HUMBER BANK ENERGY CENTRE	Borehole	BH02
Scale 1:50	Project No.	A9020-19		
© Copyright SOCOTEC UK Limited	Carried out for	EP UK Investments Ltd.		
AGS				Sheet 1 of 5

# Borehole Log



Drilled	LW/RB/ TW	Start	Equipment, Methods and Remarks	Depth from	to	Diameter	Casing Depth	Ground Level	2.19 mOD
Logged	AW/MJS	12/08/2019	Dando 175/Beretta T46. Cable percussion boring to 29.50m./Rotary core drilling (PWF size) using air mist flush to 46.30m.	(m)	(m)	(mm)	(m)	Coordinates (m)	E 522981.72
Checked	MW	End	SPT Hammer ID: JB0016, Rod type: NWW. Er 72%	30.60	29.50	200	27.50	National Grid	N 413406.18
Approved	MW	19/08/2019			46.30	121	46.30		

Samples and Tests				Strata Description				Depth, Level	Legend	Backfill
Depth	Type & No.	Records	Date Casing	Time Water	Main	Detail	(Thickness)			
10.00	D 24				Very soft to soft thinly laminated very dark grey slightly sandy slightly organic CLAY. Organic (humic) odour. Laminae are grey. (TIDAL FLAT DEPOSITS)					
10.40	D 25									
11.00 - 11.45	SPTS	N=8 (1,1/2,2,2,2)		Dry						
11.00 - 11.45	D 26									
11.00 - 11.50	B 27									
12.50 - 12.95	UT NR	49 blows No Recovery								
12.50	D 29									
12.50 - 13.00	B 30									
13.20	ES 31									
14.00 - 14.45	SPTS	N=25 (3,4/5,6,6,8)		Dry	Firm to stiff brown slightly sandy slightly gravelly CLAY. Gravel is angular to subangular fine and medium of chalk and sandstone. (GLACIAL TILL)		13.50 -11.31			
14.00 - 14.45	D 32						(1.80)			
14.00 - 14.50	B 33									
15.00 - 15.50	Falling Head	k=0.0E+0 m/s								
15.40	D 34									
15.50 - 15.95	SPTS	N=15 (1,2/3,4,4,4)		Dry	Medium dense brown slightly silty fine and medium SAND. (GLACIAL TILL)		15.30 -13.11			
15.50 - 16.00	B 35						(0.80)			
16.20	D 36									
17.00 - 17.45	SPTS	N=27 (2,3/5,7,7,8)		Dry	Firm to stiff brown slightly sandy slightly gravelly CLAY. Gravel is angular to subangular fine and medium of chalk. (GLACIAL TILL)		16.10 -13.91			
17.00 - 17.45	UT 37	80 blows 55% rec								
17.00 - 17.50	D 38									
18.50 - 19.00	B 39									
							(5.40)			
19.80	D 40									

Groundwater Entries			Depth Related Remarks			Hard Boring		
No.	Depth Strike (m)	Remarks	Depth Sealed (m)	Depths (m)	Remarks	Depths (m)	Duration (mins)	Tools used
				15.50 - 30.00	150mm diameter casing installed and jammed, redrilled as 200mm.			

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.	Project	SOUTH HUMBER BANK ENERGY CENTRE			Borehole	BH02		
Scale 1:50	Project No.	A9020-19						
© Copyright SOCOTEC UK Limited	Carried out for	EP UK Investments Ltd.				Sheet 2 of 5		
12/11/2019 15:31:30								

# Borehole Log



Drilled LW/RB/ TW	Start	Equipment, Methods and Remarks	Depth from (m)	to (m)	Diameter (mm)	Casing Depth (m)	Ground Level	2.19 mOD
Logged AW/MJS	12/08/2019	Dando 175/Beretta T46. Cable percussion boring to 29.50m./Rotary core drilling (PWF size) using air mist flush to 46.30m.	1.20	29.50	200	27.50	Coordinates (m)	E 522981.72
Checked MW	End	SPT Hammer ID: JB0016, Rod type: N.WY. Er 72%	30.60	46.30	121	46.30	National Grid	N 413406.18
Approved MW	19/08/2019							

Samples and Tests			Strata Description						
Depth	Type & No.	Records	Date Casing	Time Water	Main	Detail	Depth, Level (Thickness)	Legend	Backfill
20.00 - 20.45 20.00 - 20.50	SPTC B 41	N=18 (2,5/4,4,4,6)		Dry	Firm to stiff brown slightly sandy slightly gravelly CLAY. Gravel is angular to subangular fine and medium of chalk. (GLACIAL TILL)				
20.90	D 42		13/08/19 21.00	1700 Dry					
21.50 - 21.95 21.50 - 21.95 21.50 - 22.00	SPTS D 43 B 44	N=27 (3,4/5,7,7,8)	14/08/19 21.00	0800 1.70	Weak white and grey CHALK. Recovered as sandy, locally clayey, angular fine to coarse gravel with high cobble content. Cobbles are angular to subangular (75x70x65mm). (FLAMBOROUGH CHALK FORMATION)		21.50 -19.31		
23.00 - 23.45 23.00 - 23.50	SPTC B 45	N=32 (3,4/6,7,9,10)							
24.50 - 24.95 24.50 - 25.00	SPTC B 46	N=36 (2,5/7,9,9,11)					(6.30)		
26.00 - 26.45 26.00 - 26.50	SPTC B 47	N=30 (4,5/6,7,7,10)				26.00-26.50 recovered as very gravelly very clayey SAND. Gravel is fine and medium.			
27.50 - 27.74 27.50 - 27.80	SPTC B 48	50 (11,14 for 60mm/33,17 for 28mm)				27.50-28.00 white gravelly fine to coarse, predominantly coarse, sand. Gravel is angular to subangular fine to coarse of chalk	27.80 -25.61		
					Driller notes possible void as tool dropped following SPT. (FLAMBOROUGH CHALK FORMATION)		(1.70)		
			14/08/19 27.50	1700					
			15/08/19 27.50	1500 0.40	Rotary open hole, advancing casing. (FLAMBOROUGH CHALK FORMATION)		29.50 -27.31		

Groundwater Entries			Depth Related Remarks			Hard Boring		
No.	Depth Strike (m)	Remarks	Depth Sealed (m)	Depths (m)	Remarks	Depths (m)	Duration (mins)	Tools used
						24.50 - 24.70	15	Chisel
						26.70 - 26.90	30	Chisel
						27.50 - 27.80	15	Chisel

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.	Project	SOUTH HUMBER BANK ENERGY CENTRE		Borehole	BH02	
Scale 1:50	Project No.	A9020-19				
© Copyright SOCOTEC UK Limited	Carried out for	EP UK Investments Ltd.			Sheet 3 of 5	
12/11/2019 15:31:30						

# Borehole Log



Drilled	LW/RB/ TW	Start	Equipment, Methods and Remarks	Depth from	to	Diameter	Casing Depth	Ground Level	2.19 mOD
Logged	AW/MJS	12/08/2019	Dando 175/Beretta T46. Cable percussion boring to 29.50m./Rotary core drilling (PWF size) using air mist flush to 46.30m.	(m)	(m)	(mm)	(m)	Coordinates (m)	E 522981.72
Checked	MW	End	SPT Hammer ID: JB0016, Rod type: N.WY. Er 72%	30.60	29.50	200	27.50	National Grid	N 413406.18
Approved	MW	19/08/2019			46.30	121	46.30		

## Samples and Tests

Samples and Tests				Strata Description					
Depth	Type & No.	Records	Date	Time	Main	Detail	Depth, Level	Legend	Backfill
			Casing	Water			(Thickness)		
					Rotary open hole, advancing casing. (FLAMBOROUGH CHALK FORMATION)		(1.10)		
30.60 - 31.60	40 7 0				Recovery is of stronger materials, weaker materials not recovered. Recovered material is very weak to weak high density white CHALK. (FLAMBOROUGH CHALK FORMATION) Predominantly non intact. No discernible fracture sets.	30.60-31.20 AZCL 31.20-31.55 NI 31.60-32.10 AZCL	30.60 -28.41		
32.25 - 32.38 31.60 - 33.10 32.50 - 32.58	67 12 8	C 49 C 50				32.10-32.28 NI 32.28-32.30 30 degree planar rough open fracture with heavy grey staining 32.30-32.40 white locally cream 32.32-32.33 uneven stylolitic bedding fracture	(2.50)		
33.30 - 33.38 33.10 - 33.80	93 24 14	C 52	15/08/19 30.60	1700 0.30	Very weak to weak high density white CHALK. Fractures are closely spaced (10,100,140), locally orangish brown staining and heavy grey staining. (FLAMBOROUGH CHALK FORMATION - GRADE A3) Predominantly non intact. (Possibly associated with inclined fracture sets).	32.40-32.50 NI 32.50-32.66 subvertical planar rough open fracture with heavy grey staining partially NI 32.66-33.10 NI extremely weak to very weak locally grey predominanty NI with a slightly sandy silt matrix 33.10-33.30 NI 33.30-33.40 extremely weak NI with a sandy silt matrix 33.52-33.80 subvertical planar rough open fracture with heavy grey staining	33.10 -30.91		
33.80 - 35.30	23 7 7		16/08/19 30.60	0815 -0.34		33.80-34.95 AZCL 34.95-35.20 NI extremely weak to very weak	(2.20)		
35.30 - 36.30	0 0 0	NA NA NA			NO RECOVERY. Driller reports CHALK.		35.30 -33.11		
36.30 - 36.80	0 0 0						(1.50)		
36.80 - 37.80 37.60 - 37.70	85 37 14	NI 100 140 C 51			Very weak to weak high density white CHALK. Fractures are closely spaced (10,100,140), locally orangish brown staining and heavy grey staining. (FLAMBOROUGH CHALK FORMATION - GRADE A3) Predominantly non intact. (Possibly associated with inclined fracture sets).	36.80-36.95 AZCL 36.95-37.22 NI extremely weak to very weak in a silt matrix 37.32-37.45 80 degree planar rough fracture with heavy grey staining 37.45-37.80 numerous subvertical planar fractures, surfaces stained grey predominantly NI 37.95-38.02 NI 38.21-38.32 subvertical planar fracture partially NI 38.32-38.45 frequent brown staining 38.60-39.80 frequent subvertical fractures planar tight occasionally closed, heavy grey staining locally NI and very weak	36.80 -34.61		
37.80 - 38.80 38.30 - 38.56	92 53 40	C 54 Flush: 30.60 - 46.30 Air/ mist 100%			Very weak to weak high density white, with rare black specks, CHALK. Fractures are closely to medium spaced (10,150,220), occasional grey staining, rare orangish brown staining. (FLAMBOROUGH CHALK FORMATION - GRADE A3/A2) Occasional stylolitic closed bedding fractures, subhorizontal to 45 degree.		37.80 -35.61		
38.80 - 40.30 39.88 - 40.02	97 40 28	NI 130 200 C 53							

Depth	TCR	SCR	RQD	If	Records	Date	Time	Groundwater Entries	Depth Related Remarks	Hard Boring			
						Casing	Water	No.	Depth Strike (m)	Remarks	Depths (m)	Duration (mins)	Tools used
								1	30.60	Subartesian.			

# Borehole Log



Drilled LW/RB/TW	Start 12/08/2019	Equipment, Methods and Remarks Dando 175. Beretta T46. Cable percussion boring to 29.50m. Rotary core drilling (PWF size) using air mist flush to 46.30m. SPT Hammer ID: JB0016, Rod type: NWW. Er 72%	Depth from (m) 1.20	to (m) 29.50	Diameter (mm) 200	Casing Depth (m) 27.50	Ground Level 2.19 mOD
Logged AW/MJS	End 19/08/2019		30.60	46.30	121	46.30	Coordinates (m) E 522981.72
Checked MW							National Grid N 413406.18
Approved MW							

## Samples and Tests

Depth	TCR SCR RCD	If	Records/Samples	Date Casing	Time Water	Main	Detail	Depth, Level (Thickness)	Legend	Backfill
40.30 - 41.80	100 48 31			16/08/19 35.00	1730 1.90	Very weak to weak high density white, with rare black specks, CHALK. Fractures are closely to medium spaced (10,150,220), occasional grey staining, rare orangish brown staining. (FLAMBOROUGH CHALK FORMATION - GRADE A3/A2) Occasional stylolitic closed bedding fractures, subhorizontal to 45 degree.	40.20-40.45 subvertical planar open fracture with occasional orangish brown staining 40.45-40.80 frequent subvertical planar fractures predominantly NI and very weak 40.80-41.05 subvertical stepped tight fracture 41.05-41.30 NI extremely weak to very weak in a silt matrix 41.30-41.60 subvertical planar rough open fracture occasional light grey staining rare orangish brown 41.80-41.90 AZCL 42.00-42.40 predominantly NI (associated with multiple subvertical fractures) 42.80-43.05 subvertical planar open fracture occasional stained orangish brown and grey partially NI 43.30-43.37 NI 43.37 numerous 70 degree to subvertical fractures planar rough with orangish brown and grey staining 43.80-44.40 very weak predominantly NI associated 44.62-44.80 subvertical planar open fracture with heavy grey staining 44.80-45.40 AZCL 45.40-45.67 NI	(8.50)		
41.80 - 43.30	93 54 34			19/08/19 35.00	0800 0.30					
43.04 - 43.30			C 56							
43.30 - 44.80	100 28 19	NI 150 220								
44.80 - 46.30	60 37 37									
46.15 - 46.30			C 55	19/08/19 35.00	1700			45.90-45.98 NI		
						END OF EXPLORATORY HOLE		46.30	-44.11	

<b>Groundwater Entries</b>			<b>Depth Related Remarks</b>		<b>Hard Boring</b>				
No.	Depth	Strike	Remarks	Depth Sealed	Depths (m)	Remarks	Depths (m)	Duration (mins)	Tools used



# Borehole Log



Drilled LW/RB/ TW	Start 15/08/2019	Equipment, Methods and Remarks Dando 175/Beretta T46. Cable percussion boring to 30.00m./Rotary core drilling (PWF size) using air mist flush to 35.30m. SPT Hammer ID: JB0016, Rod type: N.W.Y. Er 72%	Depth from (m) 1.20 30.00	to (m) 30.00 35.30	Diameter (mm) 200 121	Casing Depth (m) 30.00 30.70	Ground Level 2.08 mOD
Logged RT/MJS	End 21/08/2019						Coordinates (m) E 523014.60 National Grid N 413444.33
Checked MW							
Approved MW							

Samples and Tests				Strata Description					
Depth	Type & No.	Records	Date Casing	Time Water	Main	Detail	Depth, Level (Thickness)	Legend	Backfill
0.20 0.20 0.20 - 0.80 0.50	ES 2 D 1 B 6 ES 3	0.00-1.20 Hand excavated inspection pit.			Stiff brown, mottled grey and orangish brown, slightly sandy CLAY with frequent rootlets. Rare wood fragments (<20x40x40mm). (TIDAL FLAT DEPOSITS)		(0.90)		
1.00 1.00 1.20 - 1.65	ES 5 D 4 UT 7	22 blows 100% rec		Dry	Firm to stiff thinly laminated orangish brown, mottled grey, sandy CLAY. (TIDAL FLAT DEPOSITS)		0.90 +1.18 (1.20)		
1.70 2.00 - 2.45 2.00 - 2.50 2.10	D 8 UT NR B 9 D 10	11 blows No Recovery		Dry	Soft dark grey and brown slightly sandy CLAY. (TIDAL FLAT DEPOSITS)		2.10 -0.02		
3.00 - 3.45 3.50	UT 11 D 12	9 blows 100% rec		Dry		3.00-3.45 dark grey and grey interlaminated, slightly organic			
4.00 - 4.45 4.50	UT 13 D 14	13 blows 100% rec		Dry			(4.20)		
5.00 - 5.45 5.50	UT 15 D 16	15 blows 100% rec		Dry					
6.50 - 6.95 6.50 - 7.00	UT NR B 17	14 blows No Recovery		Dry	Soft brown sandy silty CLAY with occasional shell fragments. (Drillers description) (TIDAL FLAT DEPOSITS)		6.30 -4.22		
8.00 - 8.45 8.50	UT 18 D 19	32 blows 100% rec		Dry			(3.00)		
9.30 9.50 - 9.95 9.50 - 10.00	D 20 SPTS D 21 B 22	N=8 (1,2/2,1,2,3)		Dry	Soft dark grey sandy CLAY with occasional pockets of soft brown peat. (TIDAL FLAT DEPOSITS)		9.30 -7.22 (1.10)		

Groundwater Entries			Depth Related Remarks			Hard Boring		
No.	Depth Strike (m)	Remarks	Depth Sealed (m)	Depths (m)	Remarks	Depths (m)	Duration (mins)	Tools used

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. Scale 1:50 © Copyright SOCOTEC UK Limited 12/11/2019 15:31:31	Project SOUTH HUMBER BANK ENERGY CENTRE Project No. A9020-19 Carried out for EP UK Investments Ltd.	Borehole <b>BH03</b> Sheet 1 of 4
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------	-----------------------------------------

# Borehole Log



Drilled LW/RB/ TW	Start 15/08/2019	Equipment, Methods and Remarks Dando 175/Beretta T46. Cable percussion boring to 30.00m./Rotary core drilling (PWF size) using air mist flush to 35.30m. SPT Hammer ID: JB0016, Rod type: NWY. Er 72%	Depth from (m)	to (m)	Diameter (mm)	Casing Depth (m)	Ground Level 2.08 mOD
Logged RT/MJS	End 21/08/2019		1.20	30.00	200	30.00	Coordinates (m) E 523014.60
Checked MW			30.00	35.30	121	30.70	National Grid N 413444.33
Approved MW							

## Samples and Tests

Depth	Type & No.	Records	Date Casing	Time Water	Main	Detail	Depth, Level (Thickness)	Legend	Backfill
10.40	D 23				Soft dark grey sandy CLAY with occasional pockets of soft brown peat. (TIDAL FLAT DEPOSITS)		10.40 -8.32		
11.00 - 11.45	UT 24	47 blows 100% rec		Dry	Soft thinly laminated grey slightly sandy CLAY. (TIDAL FLAT DEPOSITS)		(1.40)		
11.50	D 25								
11.70 - 12.20	Falling Head	k=0.0E+0 m/s							
11.90	D 26				Soft to firm grey slightly gravelly sandy CLAY. Gravel is subangular to subrounded fine of chalk. (GLACIAL TILL)		11.80 -9.72		
12.50 - 12.95	SPTS	N=11 (1,2,2,2,3,4)		8.70			(1.90)		
12.50 - 12.95	D 27								
12.50 - 13.00	B 28								
13.30	D 29					13.20-13.50 driller notes gravel			
13.50	D 30								
14.00 - 14.45	UT 31	51 blows 100% rec		8.7	Stiff grey slightly sandy slightly gravelly CLAY. Gravel is angular to subangular fine to coarse of chalk. (GLACIAL TILL)		13.70 -11.62		
14.50	D 32								
15.50 - 15.95	SPTS	N=30 (4,5/7,8,8,7)		8.70			(4.50)		
15.50 - 15.95	D 33								
15.50 - 16.00	B 34								
17.00 - 17.45	UT 35	47 blows 100% rec		8.7					
17.50	D 36								
18.30	D 39		15/08/19 18.00	1800 8.70					
18.50 - 18.95	SPTS	N=21 (2,3/3,5,5,8)		0800 3.70	Medium dense brown slightly silty fine to medium SAND. (GLACIAL TILL)		18.20 -16.12		
18.50 - 18.95	D 37						(1.10)		
18.50 - 19.00	B 38								
19.40	D 40				Firm brown, mottled grey, slightly sandy slightly gravelly CLAY. Gravel is angular fine to coarse of chalk. (GLACIAL TILL)		19.30 -17.23		
19.80	D 41				Very dense brown gravelly fine to coarse SAND.		(0.40)		
							19.70 -17.62 19.80 -17.73		

<b>Groundwater Entries</b>			<b>Depth Related Remarks</b>			<b>Hard Boring</b>		
No.	Depth Strike (m)	Remarks	Depth Sealed (m)	Depths (m)	Remarks	Depths (m)	Duration (mins)	Tools used
1	11.70	Rose to 8.70 m after 20 minutes.				16.50 - 16.70	15	Chisel

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.	Project <b>SOUTH HUMBER BANK ENERGY CENTRE</b>	Borehole <b>BH03</b>
Scale 1:50 © Copyright SOCOTEC UK Limited 12/11/2019 15:31:31	Project No. <b>A9020-19</b> Carried out for <b>EP UK Investments Ltd.</b>	<b>BH03</b> Sheet 2 of 4

# Borehole Log



Drilled	LW/RB/ TW	Start	Equipment, Methods and Remarks	Depth from (m)	to (m)	Diameter (mm)	Casing Depth (m)	Ground Level	2.08 mOD
Logged	RT/MJS	15/08/2019	Dando 175/Beretta T46. Cable percussion boring to 30.00m./Rotary core drilling (PWF size) using air mist flush to 35.30m.	1.20	30.00	200	30.00	Coordinates (m)	E 523014.60
Checked	MW	End	SPT Hammer ID: JB0016, Rod type: NWy. Er 72%	30.00	35.30	121	30.70	National Grid	N 413444.33
Approved	MW	21/08/2019							

## Samples and Tests

Depth	Type & No.	Records	Date Casing	Time Water	Main	Detail	Depth, Level (Thickness)	Legend	Backfill
20.00 - 20.45 20.00	UT 43 D 42	72 blows 100% rec			Very dense brown gravelly fine to coarse SAND. Gravel is angular fine to medium of chalk. (GLACIAL TILL) Orangish brown chalky CLAY (Drillers Description) (TILL)		(2.10)		
20.50	D 44								
21.50 - 21.95 21.50 - 21.95 21.50 - 22.00	SPTS D 45 B 46	N=35 (4,5/7,8,9,11)			White CHALK. Recovered as sandy gravel in a silt matrix. Gravel is angular to subangular fine to coarse of chalk. (FLAMBOROUGH CHALK FORMATION)		21.90 -19.82		
22.10	D 47						(1.10)		
23.00 - 23.45 23.00 - 23.50	SPTC B 48	N=36 (4,7/8,9,9,10)	16/08/19 23.50	1700		White CHALK. Recovered as slightly sandy gravel with high cobble content. Gravel is very weak to weak subangular to subrounded fine to coarse. Cobbles are subrounded and predominantly weak chalk. (FLAMBOROUGH CHALK FORMATION)		23.00 -20.92	
24.50 - 24.95 24.50 - 25.00	SPTC B 49	N=13 (2,3/5,2,2,4)	19/08/19 23.50	0800 2.20					
26.00 - 26.45 26.00 - 26.50	SPTC B 50	N=23 (6,7/7,7,4,5)					(7.00)		
27.50 - 27.78 27.50 - 28.00	SPTC B 51	50 (9,11/22,28 for 57mm)							
29.90 - 30.13 29.90 - 30.15	SPTC B 52	50 (3,15/41,9 for 7mm)	19/08/19 28.50	1700			29.90-30.15 some orange staining on gravel and cobble clasts	30.00 -27.92	

Groundwater Entries			Depth Related Remarks		Hard Boring			
No.	Depth Strike (m)	Remarks	Depth Sealed (m)	Depths (m)	Remarks	Depths (m)	Duration (mins)	Tools used

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.	Project	SOUTH HUMBER BANK ENERGY CENTRE			Borehole	BH03		
Scale 1:50	Project No.	A9020-19						
© Copyright SOCOTEC UK Limited	Carried out for	EP UK Investments Ltd.						
12/11/2019 15:31:31						Sheet 3 of 4		

# Borehole Log



Drilled LW/RB/TW	Start 15/08/2019	Equipment, Methods and Remarks Dando 175 Beretta T46. Cable percussion boring to 30.00m. Rotary core drilling (PWF size) using air mist flush to 35.30m. SPT Hammer ID: JB0016, Rod type: N.WY. Er 72%	Depth from (m) 1.20	to (m) 30.00	Diameter (mm) 200	Casing Depth (m) 30.00	Ground Level 2.08 mOD
Logged RT/MJS	End 21/08/2019		30.00	35.30	121	30.70	Coordinates (m) E 523014.60
Checked MW							National Grid N 413444.33
Approved MW							

Samples and Tests				Strata Description				Depth, Level (Thickness)	Legend	Backfill
Depth	TCR SCR RCD	If	Records/Samples	Date Casing	Time Water	Main	Detail			
30.00 - 30.70	43 0 0	NI NI NI		22/08/19 28.50	0800	Partial recovery. Core loss presumed to be more weathered material. Recovered core comprises subangular to subrounded fine to coarse gravel and cobbles of very weak white CHALK. (FLAMBOROUGH CHALK FORMATION)	30.00-30.40 AZCL	(0.70)		
30.70 - 31.30	0 0 0	NA NA NA				NO RECOVERY. Driller reports CHALK.		30.70 -28.62		
31.65 - 31.82 31.30 - 32.30	80 30 17		C 52			Very weak to weak high density white and cream CHALK. Predominantly non intact. Recovered as subangular fine to coarse gravel in a silt matrix. Non intact material probably associated with inclined fractures. (FLAMBOROUGH CHALK FORMATION)	31.30-31.50 AZCL 31.50-31.68 NI	31.30 -29.22		
32.30 - 33.80	40 7 7	NI NI 170	Flush: 30.00 - 35.30 Air/mist 100%				31.78-31.85 70-80 degree planar rough open fracture 31.80 1no. flint nodule (upto 10mm) 31.83-31.93 NI locally stained grey 32.00-32.30 predominantly NI locally extremely weak stained grey with rare orangish brown staining 32.30-33.20 AZCL 33.20-33.38 NI	(2.40)		
33.80 - 35.30 34.60 - 34.65	53 20 13	NI 100 100	C 53	22/08/19 30.70	1700	Very weak to weak light density white, with rare black specks, CHALK. Fractures are closely spaced (30,100,100), rare orangish brown staining. (FLAMBOROUGH CHALK FORMATION - GRADE A3)	33.47-33.70 NI extremely weak to very weak locally stained grey 33.70-33.80 subvertical undulating rough open fracture heavy grey staining with black specks 33.80-34.50 AZCL 34.50-34.60 NI 34.70-34.80 NI 34.88-34.98 NI locally extremely weak in a silt matrix 35.02-35.10 70-80 degree planar open rough fracture heavy grey staining rare orangish brown staining 35.10-35.30 NI locally with grey staining	33.70 -31.62		
						END OF EXPLORATORY HOLE		35.30 -33.22		

Groundwater Entries				Depth Related Remarks				Hard Boring			
No.	Depth	Strike	Remarks	Depth Sealed	Depths (m)	Remarks	Depths (m)	Duration (mins)	Tools used		

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.	Project SOUTH HUMBER BANK ENERGY CENTRE	Borehole BH03
Scale 1:50	Project No. A9020-19	
© Copyright SOCOTEC UK Limited	Carried out for EP UK Investments Ltd.	Sheet 4 of 4

# Borehole Log



Drilled	CJ	Start	15/08/2019	Equipment, Methods and Remarks	Dando 2000. Cable percussion boring to 35.00m. SPT Hammer ID: JB0014, Rod type: N.W.Y. Er 70%	Depth from (m)	1.20	to (m)	35.00	Diameter (mm)	200	Casing Depth (m)	32.92	Ground Level	3.56 mOD
Logged	RT	End	20/08/2019											Coordinates (m)	E 523041.40
Checked	MW													National Grid	N 413472.64
Approved	MW														

Samples and Tests				Strata Description						
Depth	Type & No.	Records	Date Casing	Time Water	Main	Detail	Depth, Level (Thickness)	Legend	Backfill	
0.00 - 0.50	B 1	0.00-1.20 Hand excavated inspection pit.			Firm to stiff brown, locally slightly sandy, CLAY with rare subangular to subrounded fine to medium gravel of flint. Sand is fine to medium. (TIDAL FLAT DEPOSITS)					
0.20	ES 3									
0.20	D 2									
0.50	ES 5									
0.50	D 4									
0.50 - 1.00	B 6						0.70 2no. subrounded cobbles of granite	(1.90)		
1.00	ES 7		15/08/19	1700 Dry						
1.20 - 1.65	SPTS	N=19 (2,3/4,4,5,6)					1.20-1.90 occasional pockets (<5mm) of orange fine sand			
1.20	D 8		16/08/19	0800 Dry						
1.20 - 1.65	D 9									
1.20 - 1.70	B 10									
1.70	D 11									
1.90	D 12							1.90	+1.66	
2.00 - 2.45	UT 13	42 blows 100% rec		Dry		Soft to firm brown, mottled bluish grey, CLAY. (TIDAL FLAT DEPOSITS)				
2.50	D 14									
2.50 - 3.00	B 15						(1.50)			
3.00 - 3.45	SPTS	N=5 (1,1/0,1,2,2)								
3.00 - 3.45	D 16									
3.00 - 3.50	B 17									
3.50	D 18				Soft brown slightly sandy silty CLAY. Sand is fine to medium. Slight organic odour. (TIDAL FLAT DEPOSITS)		3.40	+0.16		
3.90	D 19						(0.50)			
4.00 - 4.45	UT 20	8 blows 100% rec		Dry	Very soft brown, mottled dark grey and black, slightly sandy silty organic CLAY. Sand is fine. Slight organic odour. (TIDAL FLAT DEPOSITS)		3.90	-0.34		
4.50	D 21						(0.40)			
4.50 - 5.00	B 22				Very soft dark brownish grey organic CLAY with abundant pockets of black silt. Slight organic odour. (TIDAL FLAT DEPOSITS)		4.30	-0.74		
5.00 - 5.45	UT 23	5 blows 100% rec		Dry			(1.20)			
5.50	D 24						5.50	-1.94		
5.50 - 6.00	B 25				Very soft dark grey peaty CLAY with abundant pockets of black silt. Slight organic odour. (TIDAL FLAT DEPOSITS)					
6.00 - 6.45	UT 26	7 blows 100% rec		Dry			(1.70)			
6.50	D 27									
6.50 - 7.00	B 28									
7.00 - 7.45	UT 29	8 blows 100% rec		Dry						
7.50	D 30						7.20	-3.64		
7.50 - 8.00	B 31				Very soft dark grey and black clayey SILT. Slight organic odour. (TIDAL FLAT DEPOSITS)					
8.00 - 8.45	UT 32	6 blows 100% rec		Dry						
8.50	D 33									
8.50 - 9.00	B 34									
9.00 - 9.45	UT 35	16 blows 100% rec		Dry		9.00-9.45 silty CLAY	(3.50)			
9.50	D 36									
9.50 - 10.00	B 37									

Groundwater Entries			Depth Related Remarks			Hard Boring		
No.	Depth Strike (m)	Remarks	Depth Sealed (m)	Depths (m)	Remarks	Depths (m)	Duration (mins)	Tools used

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.	Project	SOUTH HUMBER BANK ENERGY CENTRE	Borehole	BH04
Scale 1:50	Project No.	A9020-19		
© Copyright SOCOTEC UK Limited	Carried out for	EP UK Investments Ltd.		
12/11/2019 15:31:32				Sheet 1 of 4

# Borehole Log



Drilled	CJ	Start	15/08/2019	Equipment, Methods and Remarks	Dando 2000. Cable percussion boring to 35.00m. SPT Hammer ID: JB0014, Rod type: NWY. Er 70%	Depth from (m)	1.20	to (m)	35.00	Diameter (mm)	200	Casing Depth (m)	32.92	Ground Level	3.56 mOD
Logged	RT	End	20/08/2019											Coordinates (m)	E 523041.40
Checked	MW													National Grid	N 413472.64
Approved	MW														

Samples and Tests				Strata Description				Depth, Level (Thickness)	Legend	Backfill
Depth	Type & No.	Records	Date Casing	Time Water	Main	Detail				
10.50 - 10.95	UT 38	46 blows 100% rec		Dry	Very soft dark grey and black clayey SILT. Slight organic odour. (TIDAL FLAT DEPOSITS)		10.70	-7.14		
11.00 - 11.50	D 39 B 40		16/08/19 10.50	1700 Dry	Soft to firm bluish grey, mottled brown, CLAY with occasional, locally frequent, plant remains. (TIDAL FLAT DEPOSITS)		(1.30)			
12.00 - 12.45 12.00 - 12.45 12.00 - 12.50	SPTS D 41 B 42	N=10 (2,2/2,3,2,3)	19/08/19 10.50	0800 10.59	Soft to firm light greyish brown slightly sandy CLAY with frequent pockets (<10mm) of dark grey slightly sandy silt. (TIDAL FLAT DEPOSITS)		12.00	-8.44		
13.00	D 43						(1.60)			
13.50 - 13.95	UT 44	48 blows 90% rec					13.60	-10.04		
14.00 - 14.50	D 45 B 46				Firm light greyish brown slightly sandy slightly gravelly CLAY (GLACIAL TILL)					
15.00 - 15.45 15.00 - 15.45 15.00 - 15.50	SPTS D 47 B 48	N=14 (2,1/2,3,4,5)					(3.20)			
16.00	D 49					16.00 1no. rounded cobble of grey fine grained sandstone				
16.50 - 16.95	UT 50	119 blows 100% rec					16.80	-13.24		
17.00 - 17.50 17.00	D 51 B 53 W 52				Medium dense brown slightly gravelly fine to medium SAND. Gravel is subangular to subrounded fine to coarse flint. (GLACIAL TILL)		(3.70)			
17.50 - 17.90	Falling Head	k=0.0E+0 m/s								
18.00 - 18.45 18.00 - 18.45 18.00 - 18.50	SPTS D 54 B 55	N=28 (3,3/4,7,7,10)								
19.00	D 56									
19.50 - 19.95 19.50 - 20.00	UT NR B 58	46 blows No Recovery	19/08/19 19.50	1700 12.32						
			20/08/19 19.50	0800 2.35						

<b>Groundwater Entries</b>				<b>Depth Related Remarks</b>				<b>Hard Boring</b>			
No.	Depth (m)	Strike (m)	Remarks	Depth Sealed (m)	Depths (m)	Remarks	Depths (m)	Duration (mins)	Tools used		
1	16.50		Rose to 9.09 m after 20 minutes.		16.80 - 17.70	Blowing sands.					

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.	Project	SOUTH HUMBER BANK ENERGY CENTRE				Borehole	BH04	
Scale 1:50	Project No.	A9020-19					Sheet 2 of 4	
© Copyright SOCOTEC UK Limited	Carried out for	EP UK Investments Ltd.						

# Borehole Log



Drilled	CJ	Start	Equipment, Methods and Remarks	Depth from (m)	to (m)	Diameter (mm)	Casing Depth (m)	Ground Level	3.56 mOD
Logged	RT	15/08/2019	Dando 2000. Cable percussion boring to 35.00m. SPT Hammer ID: JB0014, Rod type: NWWY. Er 70%	1.20	35.00	200	32.92	Coordinates (m)	E 523041.40
Checked	MW	End						National Grid	N 413472.64
Approved	MW	20/08/2019							

Samples and Tests				Strata Description					
Depth	Type & No.	Records	Date Casing	Time Water	Main	Detail	Depth, Level (Thickness)	Legend	Backfill
20.50	D 59				Medium dense brown slightly gravelly fine to medium SAND. Gravel is subangular to subrounded fine to coarse flint. (GLACIAL TILL)		20.50 -16.94		
21.00 - 21.45	SPTS	N=45 (4,5/7,10,13,15)			Firm to very stiff dark greyish brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of flint. (GLACIAL TILL)	21.00-21.45 occasional pockets of orange fine to coarse sand	(1.80)		
21.00 - 21.45	D 60								
21.00 - 21.50	B 61								
22.00	D 62								
22.30	D 63								
22.50 - 22.95	UT 64	15 blows 80% rec			White CHALK. Recovered as sandy gravel in a silt matrix. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of very weak chalk and flint. (FLAMBOROUGH CHALK FORMATION)		22.30 -18.74		
23.00	D 65								
23.00 - 23.50	B 66								
24.00 - 24.45	SPTS	N=15 (3,2/2,4,3,6)			White CHALK. Recovered as very weak to weak low to medium density slightly sandy subangular to subrounded fine to coarse gravel. (FLAMBOROUGH CHALK FORMATION)	24.00-24.45 occasional pockets of very soft brown clay	24.00 -20.44		
24.00 - 24.45	D 67								
24.00 - 24.50	B 68								
25.00	D 69								
25.50 - 25.95	SPTS	N=12 (2,2/3,2,3,4)							
25.50 - 25.95	D 70								
25.50 - 26.00	B 71								
26.50	D 72								
27.00 - 27.45	SPTS	N=9 (3,2/2,2,3,2)	27.00	6.94					
27.00 - 27.45	D 73								
27.00 - 27.50	B 74								
28.00	D 75								
28.50 - 28.95	SPTS	N=19 (3,4/5,4,5,5)	28.50	5.46	White CHALK. Recovered as weak medium density slightly sandy subangular to subrounded fine to coarse gravel with low to medium cobble content. Cobbles are subrounded. (FLAMBOROUGH CHALK FORMATION)		28.00 -24.44		
28.50 - 28.95	D 76								
28.50 - 29.00	B 77								
29.50	D 78								

Groundwater Entries			Depth Related Remarks			Hard Boring		
No.	Depth Strike (m)	Remarks	Depth Sealed (m)	Depths (m)	Remarks	Depths (m)	Duration (mins)	Tools used

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.	Project	SOUTH HUMBER BANK ENERGY CENTRE		Borehole	BH04
Scale 1:50	Project No.	A9020-19			
© Copyright SOCOTEC UK Limited	Carried out for	EP UK Investments Ltd.			Sheet 3 of 4
AGS					

# Borehole Log



<b>Drilled</b> CJ	<b>Start</b> 15/08/2019	<b>Equipment, Methods and Remarks</b> Dando 2000. Cable percussion boring to 35.00m. SPT Hammer ID: JB0014, Rod type: NWWY. Er 70%	<b>Depth from (m)</b> 1.20	<b>to (m)</b> 35.00	<b>Diameter (mm)</b> 200	<b>Casing Depth (m)</b> 32.92	<b>Ground Level</b> 3.56 mOD
<b>Logged</b> RT	<b>End</b> 20/08/2019		<b>Coordinates (m)</b> E 523041.40				
<b>Checked</b> MW			<b>National Grid</b> N 413472.64				
<b>Approved</b> MW							

Samples and Tests				Strata Description					
Depth	Type & No.	Records	Date Casing	Time Water	Main	Detail	Depth, Level (Thickness)	Legend	Backfill
30.00 - 30.21 30.00 - 30.45 30.00 - 30.50	SPTS D 79 B 80	50 (12,13 for 55mm/20,23,7 for 4mm)	30.00	5.28	White CHALK. Recovered as weak medium density slightly sandy subangular to subrounded fine to coarse gravel with low to medium cobble content. Cobbles are subrounded. (FLAMBOROUGH CHALK FORMATION)	31.00 occasional pockets of very soft grey clay	(7.00)		
31.00	D 81								
31.50 - 31.95 31.50 - 31.95 31.50 - 32.00	SPTS D 82 B 83	N=34 (5,6/10,13,7,4)	31.50	5.80					
32.50	D 84								
33.00 - 33.45 33.00 - 33.45 33.00 - 33.50	SPTS D 85 B 86	N=43 (4,6/7,9,12,15)	20/08/19 32.92 33.00	1700 5.76 6.26		34.00-35.00 some dark orange staining			
34.00	D 87								
34.50 - 34.75 34.50 34.50 - 35.00	SPTS D 88 B 89	50 (9,16 for 62mm/31,19 for 36mm)	34.50	7.29					
35.00 - 35.23 35.00 35.00	SPTS D 90 D 91	50 (15,10 for 49mm/39,11 for 29mm)	34.50	6.84	END OF EXPLORATORY HOLE		35.00 - 31.44		

<b>Groundwater Entries</b>	<b>Depth Related Remarks</b>	<b>Hard Boring</b>
No. Depth Strike (m) Remarks	Depths (m) Remarks	Depths (m) Duration (mins) Tools used
		30.40 - 30.60 30 Chisel
		32.30 - 32.50 30 Chisel

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.	<b>Project</b> SOUTH HUMBER BANK ENERGY CENTRE	<b>Borehole</b> BH04
Scale 1:50 © Copyright SOCOTEC UK Limited 12/11/2019 15:31:32	<b>Project No.</b> A9020-19	
	<b>Carried out for</b> EP UK Investments Ltd.	Sheet 4 of 4



# Borehole Log



Drilled	LW/TW	Start	Equipment, Methods and Remarks	Depth from (m)	to (m)	Diameter (mm)	Casing Depth (m)	Ground Level	2.86 mOD
Logged	RT/MS	19/08/2019	Dando 175/Beretta T46. Cable percussion boring to 30.30m./Rotary core drilling (PWF size) using air mist flush to 35.30m.	1.20	30.30	200	30.00	Coordinates (m)	E 523049.18
Checked	MW	End	SPT Hammer ID: JB0016, Rod type: NWW. Er 72%	30.30	35.30	121	32.80	National Grid	N 413445.75
Approved	MW	23/08/2019							

## Samples and Tests

Samples and Tests				Strata Description				Depth, Level (Thickness)	Legend	Backfill
Depth	Type & No.	Records	Date Casing	Time Water	Main	Detail				
0.20 0.30 0.50	ES 1 D 2 ES 3	0.00-1.20 Hand excavated inspection pit.			Firm to stiff greyish brown slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to medium of flint. (Reworked TIDAL FLAT DEPOSITS - PLACED FILL)		(1.30)			
1.00	ES 4		19/08/19	1700						
1.20 - 1.65 1.20 - 1.70	UT NR B 5	22 blows No Recovery	20/08/19	0800	Stiff brown, mottled grey, slightly sandy CLAY. (TIDAL FLAT DEPOSITS)		1.30	+1.56		
2.00 - 2.45	UT 6	17 blows 100% rec				2.00-2.45 soft to firm				
2.50	D 7						(2.50)			
3.00 - 3.45	UT 8	11 blows 100% rec								
3.50	D 9					3.50 very thinly laminated. Laminae are of dark grey sandy silt				
3.90 4.00 - 4.45	D 10 UT 11	10 blows 100% rec			Very soft dark greyish brown and dark grey slightly sandy clayey SILT. Sand is fine to medium. Locally interlaminated. Slight organic odour. (TIDAL FLAT DEPOSITS)		3.80	-0.94		
4.50	D 12									
5.00 - 5.45	UT 13	9 blows 100% rec								
5.50	D 14									
6.50 - 6.95	UT 15	7 blows 100% rec								
7.00	D 16						(6.30)			
8.00 - 8.45	UT 17	8 blows 65% rec								
8.50	D 18									
9.50 - 9.95 9.50 - 10.00	UT NR B 19	5 blows No Recovery								

Groundwater Entries			Depth Related Remarks			Hard Boring		
No.	Depth Strike (m)	Remarks	Depth Sealed (m)	Depths (m)	Remarks	Depths (m)	Duration (mins)	Tools used
				6.50	Water added.			

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.	Project	SOUTH HUMBER BANK ENERGY CENTRE			Borehole	BH05		
Scale 1:50 © Copyright SOCOTEC UK Limited 12/11/2019 15:31:33	Project No.	A9020-19						
	Carried out for	EP UK Investments Ltd.				Sheet 1 of 4		

# Borehole Log



Drilled	LW/TW	Start	Equipment, Methods and Remarks	Depth from (m)	to (m)	Diameter (mm)	Casing Depth (m)	Ground Level	2.86 mOD
Logged	RT/MS	19/08/2019	Dando 175/Beretta T46. Cable percussion boring to 30.30m./Rotary core drilling (PWF size) using air mist flush to 35.30m.	1.20	30.30	200	30.00	Coordinates (m)	E 523049.18
Checked	MW	End	SPT Hammer ID: JB0016, Rod type: NWW. Er 72%	30.30	35.30	121	32.80	National Grid	N 413445.75
Approved	MW	23/08/2019							

Samples and Tests				Strata Description				Depth, Level (Thickness)	Legend	Backfill
Depth	Type & No.	Records	Date Casing	Time Water	Main	Detail				
10.20	D 20				Very soft dark greyish brown and dark grey slightly sandy clayey SILT. Sand is fine to medium. Locally interlaminated. Slight organic odour. (TIDAL FLAT DEPOSITS)		10.10 -7.24			
11.00 - 11.45	UT 21	41 blows 100% rec			Very soft dark grey CLAY/SILT with frequent decomposed plant remains. (TIDAL FLAT DEPOSITS)		(1.30)			
11.50	D 22				Firm to very stiff dark greyish brown slightly sandy slightly gravelly CLAY with frequent pockets of dark grey sandy silt. Gravel is subangular fine to medium of flint and chalk. (GLACIAL TILL)		11.40 -8.54			
11.80	D 23									
12.50 - 12.95 12.50 - 12.95 12.50 - 13.00	SPTS D 24 B 25	N=32 (4,5/7,7,8,10)				12.50-17.10 becoming predominantly dark brown				
14.00 - 14.45	UT 26	52 blows 100% rec					(5.70)			
14.50	D 27					14.50-17.10 silt pockets absent				
15.50 - 15.95 15.50 - 15.95 15.50 - 16.00	SPTS D 28 B 29	N=24 (3,4/5,5,7,7)								
17.00 - 17.50 17.20	B 30 D 31				Medium dense dark orangish brown gravelly clayey SAND. Gravel is subangular to subrounded fine and medium flint. (GLACIAL TILL)		17.10 -14.24			
18.50 - 18.95 18.50 - 18.95 18.50 - 19.00	SPTS D 32 B 33	N=18 (2,3/4,4,4,6)					(2.20)			
19.40	D 34				Firm to stiff brown slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to medium of flint and chalk. (GLACIAL TILL)		19.30 -16.44			

<b>Groundwater Entries</b>			<b>Depth Related Remarks</b>			<b>Hard Boring</b>		
No.	Depth Strike (m)	Remarks	Depth Sealed (m)	Depths (m)	Remarks	Depths (m)	Duration (mins)	Tools used
1	17.10	Rose to 10.40 m after 20 minutes.						

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.	Project	SOUTH HUMBER BANK ENERGY CENTRE			Borehole	BH05		
Scale 1:50 © Copyright SOCOTEC UK Limited 12/11/2019 15:31:33	Project No.	A9020-19						
	Carried out for	EP UK Investments Ltd.				Sheet 2 of 4		



# Borehole Log



Drilled	LW/TW	Start	Equipment, Methods and Remarks	Depth from (m)	to (m)	Diameter (mm)	Casing Depth (m)	Ground Level	2.86 mOD
Logged	RT/MS	19/08/2019	Dando 175/Beretta T46. Cable percussion boring to 30.30m./Rotary core drilling (PWF size) using air mist flush to 35.30m.	1.20	30.30	200	30.00	Coordinates (m)	E 523049.18
Checked	MW	End	SPT Hammer ID: JB0016, Rod type: NWY. Er 72%	30.30	35.30	121	32.80	National Grid	N 413445.75
Approved	MW	23/08/2019							

## Samples and Tests

Samples and Tests				Strata Description					
Depth	Type & No.	Records	Date Casing	Time Water	Main	Detail	Depth, Level (Thickness)	Legend	Backfill
30.10 - 30.37	SPTC	50 (9,10/29,21 for 47mm)	21/08/19 30.00	1700	White CHALK. Recovered as slightly sandy silty GRAVEL with low cobble content. Gravel is predominantly subrounded, occasionally subangular, fine to coarse of very weak to weak low to medium density chalk. Cobbles are subrounded weak and medium density. (FLAMBOROUGH CHALK FORMATION) CHALK (drillers description - No recovery) (FLAMBOROUGH CHALK FORMATION)		30.30 -27.44		
30.30 - 31.30	0 0 0		23/08/19 30.00	0800					
31.30 - 32.30	0 0 0								
32.30 - 32.80	0 0 0								
32.80 - 33.80	0 0 0	Flush: 30.30 - 35.30 Air/ mist 100%					(5.00)		
33.80 - 34.80	60 NA NA								
34.80 - 35.30	0 0 0		23/08/19 32.80	1700	END OF EXPLORATORY HOLE		35.30 -32.44		

Depth	TCR	SCR	RQD	If	Records	Date Casing	Time Water	Groundwater Entries	Depth Related Remarks	Hard Boring
No.	Depth	Strike (m)	Remarks	Depth Sealed (m)	Depths (m)	Remarks	Depths (m)	Duration (mins)	Tools used	

# Borehole Log



Drilled	SS	Start	Equipment, Methods and Remarks		Depth from	to	Diameter	Casing Depth	Ground Level	2.10 mOD
Logged	RT/AW	20/08/2019	Dando 175. Cable percussion boring to 25.45m. SPT Hammer ID: AR2068, Rod type: 1 1/2 inch Whitworth. Er 54 %		1.20	12.00	200	12.00	Coordinates (m)	E 523091.01
Checked	MW	End			12.00	25.00	150	25.00	National Grid	N 413436.64
Approved	MW	22/08/2019								

## Samples and Tests

Depth	Type & No.	Records	Date Casing	Time Water	Strata Description		Depth, Level (Thickness)	Legend	Backfill
					Main	Detail			
0.30	ES 1	0.00-1.20 Hand excavated inspection pit.			TOPSOIL.		(0.20) +1.90		
0.60 0.60 - 1.00	ES 2 B 3				Soft to firm brown, mottled orangish brown and grey, slightly sandy CLAY. Sand is fine. (TIDAL FLAT DEPOSITS)		(1.70)		
1.00	ES 4								
1.20 - 1.65 1.20 - 1.65	SPTS D 5	N=8 (1,2/2,2,2,2)	1.20						
1.50 - 2.00	B 6								
2.00 - 2.45	UT 7	10 blows			Firm brown, mottled orangish brown and grey, slightly sandy slightly gravelly CLAY. Gravel is angular to subangular fine to medium of sandstone. (TIDAL FLAT DEPOSITS)		1.90 +0.20 (0.50)		
2.45 - 2.65	D 8								
2.65 - 3.00	B 9				Soft thinly laminated slightly sandy CLAY. Sand is fine. Occasional pockets of light brown silty fine to medium sand (2x2mm). (TIDAL FLAT DEPOSITS)		2.40 -0.30		
3.00 - 3.45	UT 10	10 blows							
3.45 - 3.65	D 11								
3.65 - 4.00	B 12								
4.00 - 4.45	UT 13	11 blows							
4.45 - 4.65	D 14								
4.65 - 5.00	B 15								
5.00 - 5.45	UT 16	8 blows			Very soft dark grey and black slightly sandy CLAY with slight organic odour. Sand is fine. (TIDAL FLAT DEPOSITS)		5.00 -2.90 (1.40)		
5.45 - 5.65	D 17								
6.00 - 6.45	UT 18	8 blows							
7.00 - 7.50	B 19				Very soft to soft dark grey sandy SILT. Sand is fine. Occasional lenses of grey silty fine to medium sand. (TIDAL FLAT DEPOSITS)		6.40 -4.30 (2.10)		
7.50 - 7.95 7.50 - 7.95	SPTS D 20	N=8 (1,2/2,2,2,2)	20/08/19 7.50	1700 4.80					
8.00 - 8.50	B 21								
8.50 - 8.95 8.50 - 8.95	SPTS D 22	N=11 (1,2/2,3,2,4)	21/08/19 7.50	0800					
9.00 - 10.00	B 23				Soft to firm dark grey CLAY with frequent pockets (<15mm) of firm brown fibrous peat. (TIDAL FLAT DEPOSITS)		8.50 -6.40 (0.60)		
					Soft grey slightly sandy CLAY. Sand is fine to medium. (TIDAL FLAT DEPOSITS)		9.10 -7.00 (1.20)		

Groundwater Entries			Depth Related Remarks		Hard Boring			
No.	Depth Strike (m)	Remarks	Depth Sealed (m)	Depths (m)	Remarks	Depths (m)	Duration (mins)	Tools used
				5.00 - 7.50	Water added.			

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.	Project	SOUTH HUMBER BANK ENERGY CENTRE		Borehole	BH06	
Scale 1:50	Project No.	A9020-19		Sheet 1 of 3		
© Copyright SOCOTEC UK Limited	Carried out for	EP UK Investments Ltd.				

# Borehole Log



Drilled SS	Start	Equipment, Methods and Remarks	Depth from (m)	to (m)	Diameter (mm)	Casing Depth (m)	Ground Level	2.10 mOD
Logged RT/AW	20/08/2019	Dando 175. Cable percussion boring to 25.45m. SPT Hammer ID: AR2068, Rod type: 1 1/2 inch Whitworth. Er 54 %	1.20	12.00	200	12.00	Coordinates (m)	E 523091.01
Checked MW	End		12.00	25.00	150	25.00	National Grid	N 413436.64
Approved MW	22/08/2019							

## Samples and Tests

Depth	Type & No.	Records	Date Casing	Time Water	Main	Detail	Depth, Level (Thickness)	Legend	Backfill
10.00 - 10.45	UT 24	31 blows			Soft grey slightly sandy CLAY. Sand is fine to medium. (TIDAL FLAT DEPOSITS)		10.30 -8.20	1	
11.00	D 25				Greyish brown gravelly SAND. Gravel is angular to subrounded fine to coarse of flint. (TIDAL FLAT DEPOSITS)		(1.60)		
12.00 - 12.45	UT 26				Stiff brownish grey slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse of flint and chalk. (GLACIAL TILL)		11.90 -9.80		
12.45 - 12.65	D 27								
12.50 - 13.00	B 28								
13.50 - 13.95	SPTS D 29	N=19 (4,5/5,5,4,5)	13.50						
14.00 - 15.00	B 30								
15.00 - 15.45	UT 31	61 blows	15.00				(6.10)		
16.00 - 16.50	B 32								
16.50 - 16.95	SPTS D 33	N=20 (3,4/5,5,4,6)	16.50						
17.00 - 18.00	B 34								
18.00	D 35						18.00 -15.90		
19.50 - 19.84	SPTS D 36	50 (13,12 for 60mm/17,17,16 for 60mm)	21/08/19 19.50	1700 14.90	Very dense becoming dense brown slightly gravelly slightly clayey fine to coarse SAND. Gravel is subrounded fine to coarse of chalk, flint and sandstone. (GLACIAL TILL)		(3.40)		
19.50 - 19.90			22/08/19 19.50	0800 2.90					

<b>Groundwater Entries</b>				<b>Depth Related Remarks</b>				<b>Hard Boring</b>			
No.	Depth Strike (m)	Remarks	Depth Sealed (m)	Depths (m)	Remarks	Depths (m)	Duration (mins)	Tools used			
1	10.30	Rose to 5.20 m after 20 minutes.	11.90	18.00	Water added.						

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.	Project	SOUTH HUMBER BANK ENERGY CENTRE				Borehole	BH06			
Scale 1:50	Project No.	A9020-19								
© Copyright SOCOTEC UK Limited	Carried out for	EP UK Investments Ltd.								
12/11/2019 15:31:34							Sheet 2 of 3			

# Borehole Log



Drilled	SS	Start	Equipment, Methods and Remarks	Depth from (m)	to (m)	Diameter (mm)	Casing Depth (m)	Ground Level	2.10 mOD
Logged	RT/AW	20/08/2019	Dando 175. Cable percussion boring to 25.45m.	12.00	12.00	200	12.00	Coordinates (m)	E 523091.01
Checked	MW	End	SPT Hammer ID: AR2068, Rod type: 1 1/2 inch Whitworth. Er 54 %	12.00	25.00	150	25.00	National Grid	N 413436.64
Approved	MW	22/08/2019							

**Samples and Tests** **Strata Description**

Depth	Type & No.	Records	Date Casing	Time Water	Main	Detail	Depth, Level (Thickness)	Legend	Backfill
20.50	D 37				Very dense becoming dense brown slightly gravelly slightly clayey fine to coarse SAND. Gravel is subrounded fine to coarse of chalk, flint and sandstone. (GLACIAL TILL)				
21.00 - 21.45 21.00 - 21.45	SPTS D 38	N=28 (5,6/7,9,7,5)	21.00	1.10			21.40 -19.30 (0.50)		
21.50 - 22.50	B 39				Stiff dark brown slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse of flint and sandstone. (GLACIAL TILL)		21.90 -19.80		
22.50 - 22.95 22.50 - 22.95	SPTS D 40	N=18 (4,5/6,5,3,4)	22.50	3.90	White CHALK. Recovered as slightly sandy silty angular to subrounded fine to coarse gravel. Chalk clasts are weak, low to medium density with some light brown clay smearing on faces. (FLAMBOROUGH CHALK FORMATION)		(3.55)		
23.00 - 24.00	B 41								
24.00 - 24.45 24.00 - 24.45 24.00 - 25.00	SPTS D 42 B 43	N=22 (3,4/5,7,4,6)	24.00	4.10					
25.00 - 25.45 25.00 - 25.45	SPTS D 44	N=28 (5,7/5,7,7,9)	25.00 22/08/19 25.00	6.10 1430 6.10					
					END OF EXPLORATORY HOLE		25.45 -23.35		

<b>Groundwater Entries</b>	<b>Depth Related Remarks</b>	<b>Hard Boring</b>
No. Depth Strike (m) Remarks	Depths (m) Remarks	Depths (m) Duration (mins) Tools used

# Borehole Log



Drilled	CJ	Start	Equipment, Methods and Remarks	Depth from (m)	to (m)	Diameter (mm)	Casing Depth (m)	Ground Level	2.25 mOD
Logged	AW/RT	30/08/2019	Dando 2000 MK2. Cable percussion boring to 35.28m. SPT Hammer ID: JB0014, Rod type: N.WY. Er 70%	1.20	35.00	200	35.00	Coordinates (m)	E 523121.10
Checked	MW	End						National Grid	N 413487.10
Approved	MW	04/09/2019							

## Samples and Tests

Samples and Tests				Strata Description				Depth, Level (Thickness)	Legend	Backfill
Depth	Type & No.	Records	Date Casing	Time Water	Main	Detail				
0.00 0.00 - 0.50 0.20	D 1 B 3 ES 2	0.00-1.20 Hand excavated inspection pit.			Firm brown slightly sandy CLAY. Sand is fine and medium. Frequent rootlets. (MADE GROUND)		(0.50)			
0.50 0.50 - 1.00 0.50	ES 5 D 4 B 6				Stiff brown, mottled bluish grey, locally dark reddish brown, slightly sandy CLAY. Sand is fine. (TIDAL FLAT DEPOSITS)		0.50 +1.75			
1.00 1.20 - 1.65 1.20	ES 7 UT 9 D 8	36 blows 90% rec					(1.00)			
1.70 1.70 - 2.00	D 10 B 11				Soft orangish brown, mottled brown, slightly sandy CLAY. Sand is fine. Frequent pockets of light brown fine sand and pockets of black silt (<3mm). (TIDAL FLAT DEPOSITS)		1.50 +0.75			
2.00 - 2.45 2.00 - 2.45 2.00 - 2.45	SPTS D 12 B 13	SW=450			Very soft grey, locally dark greyish brown, slightly organic CLAY. Locally with occasional pockets of brown fibrous peat and black silt. (TIDAL FLAT DEPOSITS)	2.00-2.50 occasional pockets of brown fibrous peat and frequent pockets of black slightly organic silt	2.00 +0.25			
2.50 3.00 - 3.45	D 14 UT 15	9 blows 100% rec					(2.30)			
3.50 3.50 - 4.00	D 16 B 17					3.50-6.00 slight organic odour				
4.00 - 4.45 4.50 4.50 - 5.00	UT 18 D 19 B 20	4 blows 100% rec			Very soft dark grey sandy slightly organic SILT. Sand is fine. (TIDAL FLAT DEPOSITS)		4.30 -2.05			
5.00 - 5.45 5.50 5.50 - 6.00	UT 21 D 22 B 23	3 blows 100% rec	30/08/19 5.00	1700 Dry			(3.00)			
6.00 - 6.45 6.50 6.50 - 7.00	UT 24 D 25 B 26	6 blows 100% rec	02/09/19 5.00	0800 Dry						
7.00 - 7.45 7.50 7.50 - 8.00	UT 27 D 28 B 29	13 blows 100% rec			Soft grey, locally mottled dark grey, slightly sandy slightly organic CLAY. Sand is fine. Locally with pockets of spongy very dark brown fibrous peat and brown organic material. (TIDAL FLAT DEPOSITS)		7.30 -5.05			
8.00 - 8.45 8.50 8.50 - 9.00	UT 30 D 31 B 32	19 blows 100% rec			Spongy brown fibrous PEAT. (TIDAL FLAT DEPOSITS)		8.20 -5.95			
9.00 - 10.00 9.00 - 9.45 9.00	Falling Head UT 34 D 33	k=0.0E+0 m/s 40 blows 100% rec					(1.10)			
9.50 9.50 - 10.00	D 35 B 36				Firm grey, mottled orangish brown, slightly sandy CLAY. Sand is fine. Occasional pockets of organic material. (TIDAL FLAT DEPOSITS)		9.30 -7.05			
							10.00 -7.75			

<b>Groundwater Entries</b>				<b>Depth Related Remarks</b>				<b>Hard Boring</b>		
No.	Depth (m)	Strike (m)	Remarks	Depth Sealed (m)	Depths (m)	Remarks	Depths (m)	Duration (mins)	Tools used	
1	10.00		Rose to 6.48 m after 20 minutes.	13.50						

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.	Project	SOUTH HUMBER BANK ENERGY CENTRE				Borehole	BH07	
Scale 1:50 © Copyright SOCOTEC UK Limited 12/11/2019 15:31:35	Project No.	A9020-19					Sheet 1 of 4	
	Carried out for	EP UK Investments Ltd.						



# Borehole Log



Drilled	CJ	Start	30/08/2019	Equipment, Methods and Remarks	Dando 2000 MK2. Cable percussion boring to 35.28m. SPT Hammer ID: JB0014, Rod type: NWWY. Er 70%	Depth from (m)	1.20	to (m)	35.00	Diameter (mm)	200	Casing Depth (m)	35.00	Ground Level	2.25 mOD
Logged	AW/RT	End	04/09/2019											Coordinates (m)	E 523121.10
Checked	MW													National Grid	N 413487.10
Approved	MW														

Samples and Tests					Strata Description				
Depth	Type & No.	Records	Date Casing	Time Water	Main	Detail	Depth, Level (Thickness)	Legend	Backfill
10.00 - 10.45 10.00 - 10.50	UT NR B 38	42 blows No Recovery			Stiff to very stiff greyish brown slightly sandy slightly gravelly CLAY. Gravel is angular to subangular fine and medium of chalk. Sand is fine to coarse. Occasional pockets of brown gravelly fine to coarse sand. Gravel is subangular fine to coarse of chalk and sandstone. (GLACIAL TILL)	10.30-10.50 driller notes sand and gravel band			
10.50 - 10.95 10.50 10.50 - 10.95 10.50 - 11.00	SPTS D 39 D 40 B 41	N=19 (2,2/3,4,5,7)	10.50	3.80					
11.50	D 42								
12.00 - 12.45	UT 43	120 blows 100% rec							
12.50 12.50 - 13.00	D 44 B 45					12.50-16.00 gravel is subangular to subrounded	(6.00)		
13.50 - 13.95 13.50 - 13.95 13.50 - 14.00	SPTS D 46 B 47	N=34 (3,5/6,8,10,10)	13.50	10.40					
14.50	D 48					14.50-16.00 occasional pockets of brown silty fine and medium sand			
15.00 - 15.45	UT 49	150 blows 100% rec							
15.50 15.50 - 16.00	D 50 B 51								
16.00 16.00	D 53 W 52				Loose, becoming medium dense, brown gravelly silty SAND. Gravel is fine to coarse. (Driller notes occasional fine chalk gravel) (GLACIAL TILL)		16.00 -13.75	2	
16.50 - 16.95 16.50 - 16.95 16.50 - 17.00	SPTS D 54 B 55	N=9 (1,2/2,2,3,2)	16.50	6.25			(2.60)		
17.50	D 56								
18.00 - 18.45 18.00 - 18.70 18.00 - 18.45 18.00 - 18.50	SPTS D 57 B 58	N=14 (2,2/3,3,3,5) k=0.0E+0 m/s	02/09/19 18.00	1700 6.62					
18.60	D 59				Soft brownish grey sandy CLAY. Sand is fine and medium. Locally clayey fine and medium sand. (GLACIAL TILL)		18.60 -16.35		
19.00	D 60						(0.90)		
19.50 - 19.95	UT 61	150 blows 100% rec			Firm to very stiff brownish grey slightly gravelly sandy CLAY. Gravel is angular fine of chalk. Sand is fine to coarse. (GLACIAL TILL)		19.50 -17.25		

<b>Groundwater Entries</b>				<b>Depth Related Remarks</b>				<b>Hard Boring</b>				
No.	Depth (m)	Strike (m)	Remarks	Depth Sealed (m)	Depths (m)	Remarks	Depths (m)	Duration (mins)	Tools used			
2	16.00		Rose to 5.72 m after 20 minutes.									

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.	Project	SOUTH HUMBER BANK ENERGY CENTRE				Borehole	BH07	
Scale 1:50	Project No.	A9020-19					Sheet 2 of 4	
© Copyright SOCOTEC UK Limited	Carried out for	EP UK Investments Ltd.						
12/11/2019 15:31:35								

# Borehole Log



Drilled	CJ	Start	Equipment, Methods and Remarks	Depth from (m)	to (m)	Diameter (mm)	Casing Depth (m)	Ground Level	2.25 mOD
Logged	AW/RT	30/08/2019	Dando 2000 MK2. Cable percussion boring to 35.28m. SPT Hammer ID: JB0014, Rod type: NWY. Er 70%	1.20	35.00	200	35.00	Coordinates (m)	E 523121.10
Checked	MW	End						National Grid	N 413487.10
Approved	MW	04/09/2019							

Samples and Tests				Strata Description					
Depth	Type & No.	Records	Date Casing	Time Water	Main	Detail	Depth, Level (Thickness)	Legend	Backfill
20.00 - 20.45 20.00 20.00 - 20.50	SPTS D 62 B 63	N=31 (5,6/6,8,8,9)	21.00	13.20	Firm to very stiff brownish grey slightly gravelly sandy CLAY. Gravel is angular fine of chalk. Sand is fine to coarse. (GLACIAL TILL)		(1.50)		
21.00 - 21.45 21.00 - 21.50	D 64 B 65				Firm grey slightly sandy gravelly CLAY. Gravel is angular fine and medium of chalk. Sand is fine to coarse. (GLACIAL TILL)		21.00 -18.75 (1.20)		
22.20	D 66				CHALK. Recovered as white and light brown sandy angular to subangular fine to coarse gravel with a medium to high content of angular cobbles (<110x100x90mm). Locally soft white slightly sandy silt. Sand is fine to medium. (FLAMBOROUGH CHALK FORMATION)		22.20 -19.95	3	
22.50 - 22.95 22.50 - 22.95 22.50 - 23.00	SPTS D 67 B 68	N=27 (2,4/6,8,7,6)	22.50	4.90					
23.50	D 69								
24.00 - 24.45 24.00 - 24.45 24.00 - 24.50	SPTS D 70 B 71	N=36 (3,5/7,8,10,11)	24.00	5.40					
25.00	D 72								
25.50 - 25.95 25.50 - 25.95 25.50 - 26.00	SPTS D 73 B 74	N=35 (7,9/10,8,9,8)	25.50	5.32					
26.50	D 75								
27.00 - 27.45 27.00 - 27.45 27.00 - 27.50	SPTS D 76 B 77	N=46 (6,8/9,11,14,12)	27.00	5.85					
28.00	D 78								
28.50 - 28.95 28.50 - 28.95 28.50 - 29.00	SPTS D 79 B 80	N=21 (3,3/4,5,7,5)	28.50	6.10			(13.08)		
29.50	D 81								

Groundwater Entries				Depth Related Remarks				Hard Boring		
No.	Depth Strike (m)	Remarks	Depth Sealed (m)	Depths (m)	Remarks	Depths (m)	Duration (mins)	Tools used		
3	22.20	Rose to 4.87 m after 20 minutes.								

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.	Project	SOUTH HUMBER BANK ENERGY CENTRE				Borehole	
Scale 1:50 © Copyright SOCOTEC UK Limited 12/11/2019 15:31:35	Project No.	A9020-19				<b>BH07</b>	Sheet 3 of 4
	Carried out for	EP UK Investments Ltd.					

# Borehole Log



Drilled	CJ	Start	30/08/2019	Equipment, Methods and Remarks	Dando 2000 MK2. Cable percussion boring to 35.28m. SPT Hammer ID: JB0014, Rod type: NWWY. Er 70%	Depth from (m)	1.20	to (m)	35.00	Diameter (mm)	200	Casing Depth (m)	35.00	Ground Level	2.25 mOD
Logged	AW/RT	End	04/09/2019											Coordinates (m)	E 523121.10
Checked	MW													National Grid	N 413487.10
Approved	MW														

Samples and Tests					Strata Description				
Depth	Type & No.	Records	Date Casing	Time Water	Main	Detail	Depth, Level (Thickness)	Legend	Backfill
30.00 - 30.45 30.00 - 30.45 30.00 - 30.50	SPTS D 82 B 83	N=33 (5,8/9,7,8,9)	30.00	5.40	CHALK. Recovered as white and light brown sandy angular to subangular fine to coarse gravel with a medium to high content of angular cobbles (<110x100x90mm). Locally soft white slightly sandy silt. Sand is fine to medium. (FLAMBOROUGH CHALK FORMATION)				
31.00	D 84								
31.50 - 31.84 31.50 - 31.95 31.50 - 32.00	SPTS D 85 B 86	50 (6,10/17,22,11 for 35mm)	31.50	5.98					
			03/09/19	1700					
			04/09/19	0800					
			32.00	4.78					
32.50	D 87								
33.00 - 33.30 33.00 - 33.45 33.00 - 33.50	SPTC B 88 B 89	50 (13,12/19,23,8 for 3mm)	33.00	5.05					
34.00	D 90								
34.50 - 34.88 34.50 - 34.95 34.50 - 35.00	SPTC B 91 B 92	50 (11,14/15,15,18,2 for 3mm)	34.50	5.70					
35.00 - 35.28 35.00 35.00 - 35.28	SPTC D 93 B 94	50 (18,7/27,23 for 52mm)	35.00 04/09/19 35.00	5.85 1700 5.85					
					END OF EXPLORATORY HOLE		35.28	-33.03	

Groundwater Entries			Depth Related Remarks			Hard Boring		
No.	Depth Strike (m)	Remarks	Depth Sealed (m)	Depths (m)	Remarks	Depths (m)	Duration (mins)	Tools used

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.	Project	SOUTH HUMBER BANK ENERGY CENTRE			Borehole	BH07		
Scale 1:50	Project No.	A9020-19						
© Copyright SOCOTEC UK Limited	Carried out for	EP UK Investments Ltd.						
12/11/2019 15:31:35						Sheet 4 of 4		

# Borehole Log



<b>Drilled</b> CJ	<b>Start</b> 22/08/2019	<b>Equipment, Methods and Remarks</b> Dando 2000 MK2. Cable percussion boring to 35.00m. SPT Hammer ID: JB0014, Rod type: N.W.Y. Er 70%	<b>Depth from (m)</b> 1.20	<b>to (m)</b> 35.00	<b>Diameter (mm)</b> 200	<b>Casing Depth (m)</b> 35.00	<b>Ground Level</b> 1.41 mOD
<b>Logged</b> RT/CJ	<b>End</b> 28/08/2019						<b>Coordinates (m)</b> E 523148.70
<b>Checked</b> MW							<b>National Grid</b> N 413471.82
<b>Approved</b> MW							

## Samples and Tests

Samples and Tests			Strata Description				Depth, Level (Thickness)		Legend	Backfill
Depth	Type & No.	Records	Date Casing	Time Water	Main	Detail	Depth, Level (Thickness)	Legend	Backfill	
0.00 0.00 - 0.50 0.20	D 1 B 3 ES 2	0.00-1.20 Hand excavated inspection pit.			Firm to stiff brown, slightly mottled grey, slightly gravelly CLAY. Gravel is subrounded to rounded of flint and sandstone. (Reworked TIDAL FLAT DEPOSITS) (MADE GROUND)		(1.10)			
0.50 0.50 0.50 - 1.00	ES 5 D 4 B 6						1.10 +0.31 (0.20) 1.30 +0.11			
1.00	ES 7									
1.20 - 1.65 1.20	UT 9 D 8	17 blows 100% rec			Soft to firm brown, slightly mottled grey, CLAY with pockets of dark grey silt. (TIDAL FLAT DEPOSITS)					
1.70 1.70 - 2.00	D 10 B 11				Very soft dark brown and grey CLAY with frequent pockets of black silt. (TIDAL FLAT DEPOSITS)					
2.00 - 2.45	UT 12	9 blows 100% rec								
2.50 2.50 - 3.00	D 13 B 14									
3.00 - 3.45	UT 15	7 blows 100% rec					(3.70)			
3.50 3.50 - 4.00	D 16 B 17									
4.00 - 4.45	UT 18	8 blows 100% rec								
4.50 4.50 - 5.00	D 19 B 20									
5.00 - 5.45	UT 21	5 blows 100% rec			Very soft dark brownish grey CLAY with abundant pockets (<5mm) of black silt. Slight organic odour. (TIDAL FLAT DEPOSITS)		5.00 -3.59			
5.50 5.50 - 6.00	D 22 B 23									
6.00 - 6.45	UT 24	7 blows 100% rec					(1.80)			
6.50 6.50 - 7.00	D 25 B 26									
7.00	D 27				Soft dark grey SILT with occasional fragments of decomposing plant remains and occasional pockets of dark brown peat. Slight organic odour. (TIDAL FLAT DEPOSITS)		6.80 -5.39 (0.90)			
7.50 - 7.95	UT 28	21 blows 100% rec								
8.00 8.00 - 8.50	D 29 B 30				Firm brown fibrous PEAT with frequent plant remains. (TIDAL FLAT DEPOSITS)		7.70 -6.29 (1.00)			
8.50	D 31									
9.00 - 9.45 9.00 - 9.45 9.00 - 9.50	SPTS D 32 B 33	N=6 (1,1/1,1,2,2)			Firm bluish grey, locally slightly sandy, CLAY. Sand is fine to medium. (TIDAL FLAT DEPOSITS) Soft to firm grey slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is subrounded fine of flint. (Possible GLACIAL TILL)	9.00-12.00 driller notes possible sand lenses	8.70 -7.29 (0.30) 9.00 -7.59			

<b>Groundwater Entries</b>	<b>Depth Related Remarks</b>	<b>Hard Boring</b>
No. Depth Strike (m) Remarks	Depths (m) Remarks	Depths (m) Duration (mins) Tools used
1 9.00 Rose to 4.26 m after 20 minutes.		
Depth Sealed (m)		

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.	Project SOUTH HUMBER BANK ENERGY CENTRE	Borehole BH08
Scale 1:50	Project No. A9020-19	Sheet 1 of 4
© Copyright SOCOTEC UK Limited	Carried out for EP UK Investments Ltd.	



12/11/2019 15:31:36

# Borehole Log



Drilled	CJ	Start	22/08/2019	Equipment, Methods and Remarks	Dando 2000 MK2. Cable percussion boring to 35.00m. SPT Hammer ID: JB0014, Rod type: N.W.Y. Er 70%	Depth from (m)	1.20	to (m)	35.00	Diameter (mm)	200	Casing Depth (m)	35.00	Ground Level	1.41 mOD
Logged	RT/CJ	End	28/08/2019											Coordinates (m)	E 523148.70
Checked	MW													National Grid	N 413471.82
Approved	MW														

Samples and Tests				Strata Description				Depth, Level (Thickness)	Legend	Backfill
Depth	Type & No.	Records	Date Casing	Time Water	Main	Detail				
10.00	D 34				Soft to firm grey slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is subrounded fine of flint. (Possible GLACIAL TILL)					
10.50 - 10.95	UT 35	65 blows 100% rec					(3.00)			
11.00	D 36					10.95-11.00 gravel absent				
11.00 - 11.50	B 37									
			22/08/19	1700						
			11.50	6.48						
			23/08/19	0800						
			11.50	4.66						
12.00 - 12.45	SPTS	N=18 (2,2/3,4,5,6)			Firm to stiff brown and dark greyish brown slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse of flint and chalk. (GLACIAL TILL)		12.00	-10.59		
12.00 - 12.45	D 38									
12.00 - 12.50	B 39					12.50-13.00 slightly sandy				
13.00	D 40									
13.50 - 13.95	UT 41	115 blows 100% rec					(2.60)			
14.00	D 42									
14.00 - 14.50	B 43									
					Medium dense brown clayey fine to coarse SAND. (GLACIAL TILL)		14.60	-13.19		
15.00 - 15.45	SPTS	N=27 (2,3/5,6,7,9)								
15.00 - 15.45	D 44						(1.80)			
15.00 - 15.50	B 45									
16.00	D 46									
16.40	D 46A						16.40	-14.99	2	
16.50 - 16.95	SPTS	N=4 (1,1/0,1,1,2)			Loose, becoming medium dense, brown, gravelly silty fine to coarse SAND. Gravel is subrounded fine to medium of flint. (GLACIAL TILL)					
16.50 - 16.95	D 47									
16.50 - 17.00	B 48									
17.50	D 49						(2.80)			
18.00 - 18.45	SPTS	N=13 (2,2/2,3,4,4)								
18.00 - 18.45	D 50									
18.00 - 18.50	B 51									
			23/08/19	1700						
			19.00	11.20						
19.00	D 52									
			28/08/19	0800						
			19.00	7.00						
19.50 - 19.95	UT 53	150 blows 100% rec			Stiff brown slightly gravelly sandy CLAY. Sand is fine. Gravel is subrounded fine to coarse of chalk. (GLACIAL TILL)		19.20	-17.79		
							(1.50)			

<b>Groundwater Entries</b>				<b>Depth Related Remarks</b>				<b>Hard Boring</b>				
No.	Depth	Strike (m)	Remarks	Depth Sealed (m)	Depths (m)	Remarks	Depths (m)	Duration (mins)	Tools used			
2	16.40		Rose to 9.68 m after 20 minutes.									

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.	Project	SOUTH HUMBER BANK ENERGY CENTRE				Borehole	BH08			
Scale 1:50	Project No.	A9020-19								
© Copyright SOCOTEC UK Limited	Carried out for	EP UK Investments Ltd.								
12/11/2019 15:31:36							Sheet 2 of 4			

# Borehole Log



Drilled	CJ	Start	22/08/2019	Equipment, Methods and Remarks	Dando 2000 MK2. Cable percussion boring to 35.00m. SPT Hammer ID: JB0014, Rod type: NWWY. Er 70%	Depth from (m)	1.20	to (m)	35.00	Diameter (mm)	200	Casing Depth (m)	35.00	Ground Level	1.41 mOD
Logged	RT/CJ	End	28/08/2019											Coordinates (m)	E 523148.70
Checked	MW													National Grid	N 413471.82
Approved	MW														

Samples and Tests				Strata Description				Depth, Level (Thickness)	Legend	Backfill
Depth	Type & No.	Records	Date Casing	Time Water	Main	Detail				
20.00 20.00 - 20.50	D 54 B 55				Stiff brown slightly gravelly sandy CLAY. Sand is fine. Gravel is subrounded fine to coarse of chalk. (GLACIAL TILL)					
20.70	D 56				White CHALK. Recovered as brownish white gravelly silt. Gravel is weak subangular to subrounded fine to coarse. (FLAMBOROUGH CHALK FORMATION)		20.70 -19.29	3		
21.00 - 21.45 21.00 - 21.45 21.00 - 21.50	SPTS D 57 B 58	N=50 (5,8/10,16,17,7)	21.00	5.84						
22.00	D 59									
22.50 - 22.73 22.50 - 22.95 22.50 - 23.00	SPTS D 60 B 61	50 (15,10 for 42mm/29,21 for 36mm)	22.50	5.98			(4.30)			
23.00	W 62									
23.50	D 63									
24.00 - 24.44 24.00 - 24.45 24.00 - 24.50	SPTS D 64 B 65	50 (5,7/11,15,14,10 for 63mm)		2.86		24.00-24.50 rare cobbles with black speckling				
25.00	D 66				White CHALK. Recovered as weak slightly sandy silty subangular to subrounded fine to coarse gravel with occasional cobbles. Cobbles are subrounded. (FLAMBOROUGH CHALK FORMATION)		25.00 -23.59			
25.50 - 25.91 25.50 - 25.95 25.50 - 26.00	SPTS D 67 B 68	50 (8,12/15,11,15,9 for 39mm)		3.11						
26.50	D 69									
27.00 - 27.28 27.00 - 27.45 27.00 - 27.50	SPTS D 70 B 71	50 (13,12 for 50mm/21,25,4 for 3mm)		4.22						
28.00	D 72									
28.50 - 28.82 28.50 - 28.95 28.50 - 29.00	SPTS D 73 B 74	46 (11,14 for 71mm/16,19,11 for 29mm)		5.70						
29.50	D 75									
							(10.00)			

<b>Groundwater Entries</b>				<b>Depth Related Remarks</b>				<b>Hard Boring</b>			
No.	Depth	Strike (m)	Remarks	Depth Sealed (m)	Depths (m)	Remarks	Depths (m)	Duration (mins)	Tools used		
3	20.70		Rose to 5.78 m after 20 minutes.				21.30 - 21.50	30	Chisel		
							22.70 - 23.00	30	Chisel		

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.	Project	SOUTH HUMBER BANK ENERGY CENTRE				Borehole	BH08	
Scale 1:50	Project No.	A9020-19					Sheet 3 of 4	
© Copyright SOCOTEC UK Limited	Carried out for	EP UK Investments Ltd.						
12/11/2019 15:31:36								

# Borehole Log



Drilled	CJ	Start	22/08/2019	Equipment, Methods and Remarks	Dando 2000 MK2. Cable percussion boring to 35.00m. SPT Hammer ID: JB0014, Rod type: NWY. Er 70%	Depth from (m)	1.20	to (m)	35.00	Diameter (mm)	200	Casing Depth (m)	35.00	Ground Level	1.41 mOD
Logged	RT/CJ	End	28/08/2019											Coordinates (m)	E 523148.70
Checked	MW													National Grid	N 413471.82
Approved	MW														

Samples and Tests					Strata Description				
Depth	Type & No.	Records	Date Casing	Time Water	Main	Detail	Depth, Level (Thickness)	Legend	Backfill
30.00 - 30.30 30.00 - 30.45 30.00 - 30.50	SPTS D 76 B 77	50 (12,13 for 64mm/18,26,6 for 11mm)		6.32	White CHALK. Recovered as weak slightly sandy silty subangular to subrounded fine to coarse gravel with occasional cobbles. Cobbles are subrounded. (FLAMBOROUGH CHALK FORMATION)				
31.00	D 78								
31.50 - 31.85 31.50 - 31.95 31.50 - 32.00	SPTC B 79 B 80	50 (8,13/17,19,14 for 52mm)		6.66					
32.50	D 81					32.50 rare flint			
33.00 - 33.30 33.00 - 33.45 33.00 - 33.50	SPTC B 82 B 83	50 (15,10 for 42mm/19,21,10 for 36mm)		6.94					
34.00	D 84								
34.50 - 34.78 34.50 - 34.95 34.50 - 35.00	SPTC B 85 B 86	50 (13,12 for 58mm/21,29 for 72mm)		7.11					
35.00	D 87		28/08/19 35.00	1700 5.94	END OF EXPLORATORY HOLE		35.00 -33.59		

Groundwater Entries			Depth Related Remarks			Hard Boring		
No.	Depth Strike (m)	Remarks	Depth Sealed (m)	Depths (m)	Remarks	Depths (m)	Duration (mins)	Tools used
						30.20 - 30.50	45	Chisel
						31.30 - 31.50	30	Chisel
						34.80 - 35.00	30	Chisel

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.	Project	SOUTH HUMBER BANK ENERGY CENTRE			Borehole	BH08	
Scale 1:50	Project No.	A9020-19				Sheet 4 of 4	
© Copyright SOCOTEC UK Limited 12/11/2019 15:31:36	Carried out for	EP UK Investments Ltd.					

# Borehole Log



Drilled	LW	Start	28/08/2019	Equipment, Methods and Remarks	Dando 175. Cable percussion boring to 35.34m. SPT Hammer ID: JB0016, Rod type: NWWY. Er 72%	Depth from (m)	1.20	to (m)	35.00	Diameter (mm)	200	Casing Depth (m)	33.80	Ground Level	2.80 mOD
Logged	RT/CJ	End	29/08/2019											Coordinates (m)	E 523119.50
Checked	MW													National Grid	N 413408.16
Approved	MW														

Samples and Tests				Strata Description				Depth, Level (Thickness)	Legend	Backfill
Depth	Type & No.	Records	Date Casing	Time Water	Main	Detail				
0.20	ES 1	0.00-1.20 Hand excavated inspection pit.			Stiff brown slightly sandy slightly gravelly CLAY. Sand is fine to medium. Gravel is subangular to subrounded fine to medium of flint and chalk. (MADE GROUND)					
0.50	ES 2						(1.60)			
0.50	D 3									
1.00	ES 4									
1.20 - 1.65	UT 5	58 blows 90% rec								
1.70	D 6				Stiff bluish grey slightly sandy slightly gravelly CLAY. Sand is fine to medium. Gravel is subangular to subrounded fine to medium of flint and chalk.		1.60	+1.20		
2.00 - 2.45	UT 7	32 blows 90% rec					(0.90)			
2.50	D 8				Soft brown, slightly mottled bluish grey, CLAY with occasional pockets (<5mm) of dark brown slightly sandy silt. (TIDAL FLAT DEPOSITS)		2.50	+0.30		
2.80	D 9				Very soft grey CLAY with abundant pockets (<5mm) of black silt. (TIDAL FLAT DEPOSITS)		(0.20)			
3.00 - 3.45	UT NR	14 blows No Recovery					2.70	+0.10		
3.00 - 3.50	B 10									
4.00 - 4.50	UT 11	12 blows 100% rec				4.00-4.45 slight organic odour				
4.50	D 12						(4.25)			
5.00 - 5.45	UT NR	9 blows No Recovery								
5.00 - 5.50	B 13									
6.50 - 6.95	UT 14	5 blows 100% rec								
7.00	D 15				Very soft dark grey and black CLAY with slight organic odour. (TIDAL FLAT DEPOSITS)		6.95	-4.15	2	
8.00 - 8.45	UT 16	7 blows 80% rec					(2.65)			
8.50	D 17									
9.50 - 9.95	UT 18	25 blows 90% rec			Soft grey slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of flint.		9.60	-6.80		
							(0.50)			

Groundwater Entries				Depth Related Remarks				Hard Boring			
No.	Depth	Strike (m)	Remarks	Depth Sealed (m)	Depths (m)	Remarks	Depths (m)	Duration (mins)	Tools used		
					6.00	Water added.					

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.	Project	SOUTH HUMBER BANK ENERGY CENTRE				Borehole	BH09	
Scale 1:50	Project No.	A9020-19						
© Copyright SOCOTEC UK Limited	Carried out for	EP UK Investments Ltd.						
12/11/2019 15:31:37							Sheet 1 of 4	



# Borehole Log



Drilled	LW	Start	Equipment, Methods and Remarks	Depth from	to	Diameter	Casing Depth	Ground Level	2.80 mOD
Logged	RT/CJ	28/08/2019	Dando 175. Cable percussion boring to 35.34m. SPT Hammer ID: JB0016, Rod type: N.W.Y. Er 72%	1.20	35.00	200	33.80	Coordinates (m)	E 523119.50
Checked	MW	End						National Grid	N 413408.16
Approved	MW	29/08/2019							

## Samples and Tests

Depth	Type & No.	Records	Date Casing	Time Water	Main	Detail	Depth, Level (Thickness)	Legend	Backfill
10.00	D 19				Soft grey slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of flint. (TIDAL FLAT DEPOSITS)		10.10 -7.30		
10.20	D 20				Soft grey slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of flint. (TIDAL FLAT DEPOSITS)		(0.90)		
11.00 - 11.45	SPTS B 21	N=27 (2,5/7,7,6,7)			Firm to stiff grey slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to medium of flint and chalk. (GLACIAL TILL)		11.00 -8.20		
11.00 - 11.50							(1.95)		
12.50 - 12.95	UT 22	66 blows 100% rec							
13.00	D 23				Stiff to very stiff dark greyish brown slightly sandy slightly gravelly CLAY. Sand is fine to medium. Gravel is subangular to subrounded fine to medium of flint, chalk and sandstone. (GLACIAL TILL)	12.90 colour change to dark greyish brown	12.95 -10.15		
14.00 - 14.45	SPTS D 24 B 25	N=31 (1,3/6,7,8,10)					(2.55)		
15.20 - 16.20	Falling Head	k=0.0E+0 m/s							
15.20 - 16.20					Soft to firm dark greyish brown slightly sandy slightly gravelly CLAY. Sand is fine to medium. Gravel is subangular to subrounded fine to medium of flint, chalk and sandstone. (GLACIAL TILL)		15.50 -12.70		
16.00	D 27				Brown slightly sandy slightly gravelly silty CLAY. Gravel is subangular to subrounded fine to coarse of flint and chalk. (GLACIAL TILL)		15.80 -13.00		
16.00							(1.20)		
16.50 - 16.95	UT NR B 26	25 blows No Recovery							
16.50 - 17.00									
17.00 - 17.45	SPTS B 28	N=12 (1,1/2,3,3,4)			Medium dense dark brown gravelly slightly clayey fine to coarse SAND with low cobble content. Gravel is subangular to subrounded fine to coarse of flint and chalk. Cobble is subrounded (100x80x50mm). (GLACIAL TILL)		17.00 -14.20		
17.00 - 17.50							(0.70)		
17.80	D 29				Stiff greyish brown slightly sandy CLAY. Sand is fine to medium. (GLACIAL TILL)		17.70 -14.90		
17.80							(0.80)		
18.50 - 18.95	UT NR B 30	42 blows No Recovery			Stiff greyish brown slightly sandy slightly gravelly CLAY. Sand is fine to medium. Gravel is subangular to subrounded fine to medium of flint and chalk. (GLACIAL TILL)		18.50 -15.70		
18.50 - 19.00							(2.60)		

20.00-21.90 driller notes sand

Groundwater Entries			Depth Related Remarks			Hard Boring		
No.	Depth Strike (m)	Remarks	Depth Sealed (m)	Depths (m)	Remarks	Depths (m)	Duration (mins)	Tools used
1	11.20	Seepage.						
2	15.80	Rose to 6.90 m after 20 minutes.						

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.	Project	SOUTH HUMBER BANK ENERGY CENTRE			Borehole	BH09		
Scale 1:50	Project No.	A9020-19				Sheet 2 of 4		
© Copyright SOCOTEC UK Limited	Carried out for	EP UK Investments Ltd.						
12/11/2019 15:31:37								

# Borehole Log



Drilled	LW	Start	28/08/2019	Equipment, Methods and Remarks	Dando 175. Cable percussion boring to 35.34m. SPT Hammer ID: JB0016, Rod type: NWWY. Er 72%	Depth from (m)	1.20	to (m)	35.00	Diameter (mm)	200	Casing Depth (m)	33.80	Ground Level	2.80 mOD
Logged	RT/CJ	End	29/08/2019											Coordinates (m)	E 523119.50
Checked	MW													National Grid	N 413408.16
Approved	MW														

Samples and Tests				Strata Description				Depth, Level (Thickness)	Legend	Backfill
Depth	Type & No.	Records	Date Casing	Time Water	Main	Detail				
20.00 - 20.45 20.00 20.00 - 20.45 20.00 - 20.50	SPTS D 31 D 32 B 33	N=16 (1,2/3,3,4,6)			Stiff greyish brown slightly sandy slightly gravelly CLAY. Sand is fine to medium. Gravel is subangular to subrounded fine to medium of flint and chalk. (GLACIAL TILL)					
21.20	D 34				Stiff brown slightly sandy CLAY. (GLACIAL TILL)		21.10 -18.30			
21.50 - 21.95 21.50 - 22.00	UT NR B 35	27 blows No Recovery	28/08/19 22.00	1700			(0.80)			
22.20	D 36		29/08/19 22.00	0800 7.10	White CHALK. Recovered as gravelly silt. Gravel is subangular to subrounded fine to medium of chalk. (FLAMBOROUGH CHALK FORMATION - Grade Dm)		21.90 -19.10			
23.00 - 23.45 23.00 - 23.50	SPTC B 37	N=20 (2,3/4,5,5,6)					(2.10)			
24.00	D 38				White CHALK. Recovered as silty subangular to subrounded fine to coarse gravel and cobbles of very weak to weak chalk. (FLAMBOROUGH CHALK FORMATION - Grade Dc)		24.00 -21.20			
24.50 - 24.95 24.50 - 25.00	SPTC B 39	N=28 (9,11/7,7,6,8)								
25.50	D 40									
26.00 - 26.45 26.00	SPTC B 41	N=37 (4,7/9,11,9,8)								
27.00	D 42									
27.50 - 27.86 27.50 - 28.00	SPTC B 43	50 (8,11/12,22,16 for 59mm)								
28.50	D 44									
29.00 - 29.45 29.00 - 29.50	SPTC B 45	N=29 (3,7/8,6,7,8)					(11.34)			

Groundwater Entries			Depth Related Remarks			Hard Boring		
No.	Depth Strike (m)	Remarks	Depth Sealed (m)	Depths (m)	Remarks	Depths (m)	Duration (mins)	Tools used

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.	Project	SOUTH HUMBER BANK ENERGY CENTRE			Borehole	BH09		
Scale 1:50	Project No.	A9020-19						
© Copyright SOCOTEC UK Limited	Carried out for	EP UK Investments Ltd.				Sheet 3 of 4		
12/11/2019 15:31:37								

# Borehole Log



Drilled LW	Start	Equipment, Methods and Remarks	Depth from (m)	to (m)	Diameter (mm)	Casing Depth (m)	Ground Level	2.80 mOD
Logged RT/CJ	28/08/2019	Dando 175. Cable percussion boring to 35.34m. SPT Hammer ID: JB0016, Rod type: NWY. Er 72%	1.20	35.00	200	33.80	Coordinates (m)	E 523119.50
Checked MW	End						National Grid	N 413408.16
Approved MW	29/08/2019							

## Samples and Tests Strata Description

Depth	Type & No.	Records	Date Casing	Time Water	Main	Detail	Depth, Level (Thickness)	Legend	Backfill
30.00	D 46				White CHALK. Recovered as silty subangular to subrounded fine to coarse gravel and cobbles of very weak to weak chalk. (FLAMBOROUGH CHALK FORMATION - Grade Dc)				
30.50 - 30.95 30.50 - 31.00	SPTC B 47	N=44 (4,7,9,10,10,15)							
31.50	D 48								
32.00 - 32.42 32.00 - 32.50	SPTC B 49	50 (6,9/10,12,15,13 for 40mm)							
33.00	D 50								
33.50 - 33.83 33.50 - 34.00	SPTC B 51	50 (10,12/15,18,17 for 31mm)							
34.50	D 52								
35.00 - 35.34	SPTC	50 (9,11/17,19,14 for 37mm)	29/08/19 33.80	1700					
					END OF EXPLORATORY HOLE		35.34 -32.54		?

<b>Groundwater Entries</b>	<b>Depth Related Remarks</b>	<b>Hard Boring</b>
No. Depth Strike (m) Remarks	Depth Sealed (m) Depths (m) Remarks	Depths (m) Duration (mins) Tools used
		32.40 - 32.60 15 Chisel
		33.70 - 33.90 15 Chisel

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.	Project SOUTH HUMBER BANK ENERGY CENTRE	Borehole BH09
Scale 1:50	Project No. A9020-19	Sheet 4 of 4
© Copyright SOCOTEC UK Limited	Carried out for EP UK Investments Ltd.	



12/11/2019 15:31:37

# Borehole Log



Drilled	LW/DC	Start	Equipment, Methods and Remarks	Depth from (m)	to (m)	Diameter (mm)	Casing Depth (m)	Ground Level	2.86 mOD
Logged	FC	21/08/2019	Dando 175. Cable percussion boring to 35.45m. SPT Hammer ID: JB0016, Rod type: NWY. Er 72%	1.20	35.00	200	35.00	Coordinates (m)	E 523164.13
Checked	MW	End						National Grid	N 413416.51
Approved	MW	23/08/2019							

Samples and Tests				Strata Description				Depth, Level (Thickness)	Legend	Backfill
Depth	Type & No.	Records	Date Casing	Time Water	Main	Detail				
0.20 0.30 0.50	ES 1 D 2 ES 3	0.00-1.20 Hand excavated inspection pit.			Firm to stiff brown slightly sandy slightly gravelly CLAY. Gravel is subangular to rounded fine to coarse of chert, chalk and sandstone. (Probable reworked TIDAL FLAT DEPOSITS)					
1.00 1.20 - 1.65	ES 4 UT 5	27 blows 100% rec						(3.05)		
1.70 2.00 - 2.45	D 6 UT 7	31 blows 90% rec			Very soft dark brown and dark grey slightly sandy CLAY. (TIDAL FLAT DEPOSITS)	2.50-3.05 gravel absent				
2.50 3.00 - 3.45 3.00 - 3.50 3.20	D 8 UT NR B 9 D 10	11 blows No Recovery						3.05	-0.19	
4.00 - 4.45	UT 11	9 blows 100% rec			Soft grey, locally mottled dark grey, SILT. Driller notes traces of peat. (TIDAL FLAT DEPOSITS)					
4.50 5.00 - 5.45 5.00 - 5.50 5.20	D 12 UT NR B 13 D 14	17 blows No Recovery	21/08/19 5.00	1700				5.10	-2.24	
6.50 - 6.95	UT 15	14 blows 100% rec			Soft fissured grey and brown CLAY.					
7.00 8.00 - 8.45	D 16 UT 17	11 blows 65% rec								
8.50 9.50 - 9.95	D 18 UT 19	9 blows 80% rec								
							9.80	-6.94		

Groundwater Entries			Depth Related Remarks			Hard Boring		
No.	Depth Strike (m)	Remarks	Depth Sealed (m)	Depths (m)	Remarks	Depths (m)	Duration (mins)	Tools used

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.	Project	SOUTH HUMBER BANK ENERGY CENTRE			Borehole	BH10		
Scale 1:50 © Copyright SOCOTEC UK Limited 12/11/2019 15:31:37	Project No.	A9020-19						
	Carried out for	EP UK Investments Ltd.				Sheet 1 of 4		

# Borehole Log



Drilled	LW/DC	Start	Equipment, Methods and Remarks	Depth from (m)	to (m)	Diameter (mm)	Casing Depth (m)	Ground Level	2.86 mOD
Logged	FC	21/08/2019	Dando 175. Cable percussion boring to 35.45m. SPT Hammer ID: JB0016, Rod type: N.W.Y. Er 72%	1.20	35.00	200	35.00	Coordinates (m)	E 523164.13
Checked	MW	End						National Grid	N 413416.51
Approved	MW	23/08/2019							

Samples and Tests				Strata Description					
Depth	Type & No.	Records	Date Casing	Time Water	Main	Detail	Depth, Level (Thickness)	Legend	Backfill
10.00	D 20				Soft fissured grey and brown CLAY. Fissures are randomly orientated. (TIDAL FLAT DEPOSITS)		(1.20)		
11.00 - 11.45	UT 21	47 blows 100% rec			Firm to very stiff grey slightly gravelly CLAY. Gravel is subangular to subrounded fine to medium of chert, chalk and sandstone. (GLACIAL TILL)		11.00 - 8.14		
11.50	D 22								
12.50 - 12.95 12.50 - 12.95 12.50 - 13.00	SPTS D 23 B 24	N=32 (3,5/7,7,8,10)					(5.30)		
14.00 - 14.45	UT 25	62 blows 100% rec							
14.50	D 26								
15.50 - 15.95 15.50 - 16.00	SPTS B 27	N=20 (2,3/4,4,5,7)							
16.40	D 28				Medium dense brown gravelly clayey SAND. Sand is fine to coarse. Gravel is subangular to subrounded fine to medium of chalk and sandstone. (GLACIAL TILL)		16.30 - 13.44		
17.00 - 17.45 17.00 - 17.45 17.00 - 17.50	SPTS D 29 B 30	N=15 (2,3/3,4,4,4)					(1.40)		
17.80	D 31				Stiff dark brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of chalk and sandstone. (GLACIAL TILL)		17.70 - 14.84		
18.50 - 18.95	UT 32	39 blows 65% rec					(2.00)		
19.00	D 33								
19.80	D 34				Loose to medium dense brown slightly clayey fine to medium SAND.		19.70 - 16.84		

Groundwater Entries			Depth Related Remarks			Hard Boring		
No.	Depth Strike (m)	Remarks	Depth Sealed (m)	Depths (m)	Remarks	Depths (m)	Duration (mins)	Tools used

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.	Project	SOUTH HUMBER BANK ENERGY CENTRE			Borehole	BH10		
Scale 1:50	Project No.	A9020-19						
© Copyright SOCOTEC UK Limited	Carried out for	EP UK Investments Ltd.				Sheet 2 of 4		
AGS								
12/11/2019 15:31:37								

# Borehole Log



Drilled	LW/DC	Start	Equipment, Methods and Remarks	Depth from (m)	to (m)	Diameter (mm)	Casing Depth (m)	Ground Level	2.86 mOD
Logged	FC	21/08/2019	Dando 175. Cable percussion boring to 35.45m. SPT Hammer ID: JB0016, Rod type: NWY. Er 72%	1.20	35.00	200	35.00	Coordinates (m)	E 523164.13
Checked	MW	End						National Grid	N 413416.51
Approved	MW	23/08/2019							

Samples and Tests				Strata Description					
Depth	Type & No.	Records	Date Casing	Time Water	Main	Detail	Depth, Level (Thickness)	Legend	Backfill
20.00 - 20.45 20.00 - 20.50	SPTS B 35	N=7 (1,1/2,2,1,2)			Loose to medium dense brown slightly clayey fine to medium SAND. (GLACIAL TILL)		(2.50)		
21.50 - 21.95 21.50 - 22.00	SPTS B 36	N=10 (2,3/2,3,3,2)							
22.30	D 37				Stiff dark brown slightly sandy CLAY. Sand is fine to coarse. (GLACIAL TILL)		22.20 -19.34 (0.70)		
23.00 - 23.45 23.00	UT 39 D 38	40 blows 45% rec			White CHALK. Recovered as slightly sandy gravelly silt. Sand is fine to coarse. Gravel is subangular fine to coarse weak. (FLAMBOROUGH CHALK FORMATION)		22.90 -20.04		
23.50	D 40								
24.50 - 24.95 24.50 - 25.00	SPTC B 41	N=20 (2,3/4,5,5,6)					(4.60)		
26.00 - 26.45 26.00 - 26.50	SPTC B 42	N=21 (3,4/5,5,5,6)							
27.50 - 27.95 27.50 - 28.00	SPTC B 43	N=47 (8,9/13,17,9,8)	22/08/19 27.50	1700	White CHALK. Recovered as subangular to subrounded fine to coarse weak gravel. (FLAMBOROUGH CHALK FORMATION)		27.50 -24.64		
29.00 - 29.45 29.00 - 29.50	SPTC B 44	N=43 (3,4/15,10,9,9)	23/08/19 27.50	0800 0.65					

Groundwater Entries			Depth Related Remarks			Hard Boring		
No.	Depth Strike (m)	Remarks	Depth Sealed (m)	Depths (m)	Remarks	Depths (m)	Duration (mins)	Tools used

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.	Project	SOUTH HUMBER BANK ENERGY CENTRE			Borehole	BH10		
Scale 1:50	Project No.	A9020-19						
© Copyright SOCOTEC UK Limited	Carried out for	EP UK Investments Ltd.				Sheet 3 of 4		
12/11/2019 15:31:37								

# Borehole Log



Drilled	LW/DC	Start	Equipment, Methods and Remarks	Depth from (m)	to (m)	Diameter (mm)	Casing Depth (m)	Ground Level	2.86 mOD
Logged	FC	21/08/2019	Dando 175. Cable percussion boring to 35.45m. SPT Hammer ID: JB0016, Rod type: NWY. Er 72%	1.20	35.00	200	35.00	Coordinates (m)	E 523164.13
Checked	MW	End						National Grid	N 413416.51
Approved	MW	23/08/2019							

## Samples and Tests Strata Description

Depth	Type & No.	Records	Date Casing	Time Water	Main	Detail	Depth, Level (Thickness)	Legend	Backfill
30.50 - 30.85 30.50 - 31.00	SPTC B 45	50 (7,9/10,15,25 for 50mm)			White CHALK. Recovered as subangular to subrounded fine to coarse weak gravel. (FLAMBOROUGH CHALK FORMATION)		(7.95)		
32.00 - 32.45 32.00 - 32.50	SPTC B 46	N=47 (4,5/9,10,11,17)							
33.50 - 33.75 33.50 - 34.00	SPTC B 47	50 (12,13 for 47mm/24,26 for 51mm)							
35.00 - 35.18	SPTC	50 (19,6 for 11mm/40,10 for 22mm)	23/08/19 35.00	1700					
					END OF EXPLORATORY HOLE		35.45 -32.59		⑦

<b>Groundwater Entries</b>			<b>Depth Related Remarks</b>			<b>Hard Boring</b>		
No.	Depth	Strike (m) Remarks	Depth Sealed (m)	Depths (m)	Remarks	Depths (m)	Duration (mins)	Tools used
						30.10 - 31.00	15	Chisel
						33.10 - 33.30	15	Chisel

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.	Project	SOUTH HUMBER BANK ENERGY CENTRE			Borehole	<b>BH10</b>		
Scale 1:50 © Copyright SOCOTEC UK Limited 12/11/2019 15:31:37	Project No.	A9020-19						
	Carried out for	EP UK Investments Ltd.				Sheet 4 of 4		

# Borehole Log



Drilled	SS	Start	Equipment, Methods and Remarks		Depth from	to	Diameter	Casing Depth	Ground Level	3.08 mOD
Logged	FC/RT	23/08/2019	Dando 175. Cable percussion boring to 25.00m. SPT Hammer ID: AR2068, Rod type: 1 1/2 inch Whitworth. Er 54 %		1.20	15.00	200	15.00	Coordinates (m)	E 523311.69
Checked	MW	End			15.00	25.00	150	25.00	National Grid	N 413444.93
Approved	MW	28/08/2019								

Samples and Tests				Strata Description				Depth, Level	Legend	Backfill
Depth	Type & No.	Records	Date	Time	Main	Detail	(Thickness)			
			Casing	Water						
0.00 - 1.20		Hand excavated inspection pit.			TOPSOIL. (Driller's description)		0.10 (0.10)	+2.98		
0.30	ES 1				Friable brown slightly sandy CLAY. Gravel is angular to subrounded fine to coarse of concrete, chert and chalk. (MADE GROUND)		(1.40)			
0.60	ES 2									
0.90	ES 3									
0.90 - 1.20	B 4									
1.20 - 1.65	SPTS	N=15 (3,4/3,5,3,4)	1.20	Dry	Firm dark brown slightly sandy CLAY. (TIDAL FLAT DEPOSITS)		1.50	+1.58		
1.20 - 1.65	D 5		22/08/19	1700						
1.50 - 2.00	B 6		1.20							
2.00 - 2.45	UT 7	22 blows	23/08/19	0800			1.50			
2.45 - 2.65	D 8		1.20		Stiff fissured brown, mottled grey, CLAY. Fissures are randomly orientated. (TIDAL FLAT DEPOSITS)		2.60	+0.48		
2.65 - 3.00	B 9									
3.00 - 3.41	UT 10	16 blows	3.00				(1.10)			
3.45 - 3.65	D 11				Very soft to soft dark brown and grey silty CLAY. (TIDAL FLAT DEPOSITS)		3.65	-0.57		
3.65 - 4.00	B 12									
4.00 - 4.45	UT 13	14 blows	4.00				(0.80)			
4.45 - 4.65	D 14				Very soft to soft grey silty CLAY with organic odour. (TIDAL FLAT DEPOSITS)		4.45	-1.37		
4.65 - 5.00	B 15									
5.00 - 5.45	UT 16	11 blows	5.00				(2.45)			
5.45 - 5.65	D 17				Soft grey silty CLAY with organic odour. (TIDAL FLAT DEPOSITS)		6.90	-3.82		
5.65 - 6.00	B 18									
6.00 - 6.45	UT 19	12 blows	6.00				(1.05)			
6.45 - 6.65	D 20				Dark grey clayey fine to medium SAND. (TIDAL FLAT DEPOSITS)		7.95	-4.87		
7.00 - 7.50	B 21									
7.50 - 7.95	UT 22	16 blows	7.50				(0.20)			
7.95 - 8.15	D 23				Stiff brown, mottled grey, slightly sandy CLAY. Sand is fine to coarse. (GLACIAL TILL)		8.15	-5.07		
8.20 - 9.00	B 24									
9.00 - 9.45	UT 25	63 blows	9.00				(1.30)			
9.45 - 9.65	D 26				Stiff to very stiff brown, mottled grey, slightly gravelly CLAY. Gravel is subrounded fine to coarse of chalk and quartzite. (GLACIAL TILL)		9.45	-6.37		
							(0.55)			
							10.00	-6.92		

Groundwater Entries			Depth Related Remarks			Hard Boring		
No.	Depth	Strike (m) Remarks	Depth Sealed (m)	Depths (m)	Remarks	Depths (m)	Duration (mins)	Tools used

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.	Project	SOUTH HUMBER BANK ENERGY CENTRE		Borehole	BH11	
Scale 1:50	Project No.	A9020-19		Sheet 1 of 3		
© Copyright SOCOTEC UK Limited	Carried out for	EP UK Investments Ltd.				
12/11/2019 15:31:38						



# Borehole Log



Drilled	SS	Start	Equipment, Methods and Remarks	Depth from (m)	to (m)	Diameter (mm)	Casing Depth (m)	Ground Level	3.08 mOD
Logged	FC/RT	23/08/2019	Dando 175. Cable percussion boring to 25.00m. SPT Hammer ID: AR2068, Rod type: 1 1/2 inch Whitworth. Er 54 %	1.20	15.00	200	15.00	Coordinates (m)	E 523311.69
Checked	MW	End		15.00	25.00	150	25.00	National Grid	N 413444.93
Approved	MW	28/08/2019							

Samples and Tests				Strata Description					
Depth	Type & No.	Records	Date Casing	Time Water	Main	Detail	Depth, Level (Thickness)	Legend	Backfill
10.00 - 10.50	B 27				Stiff to very stiff dark greyish brown slightly sandy slightly gravelly CLAY. Sand is fine to medium. Gravel is subangular to subrounded fine of flint. (GLACIAL TILL)	10.50-10.95 grey pockets and veins (<5mm) of dark grey fine to medium sand			
10.50 - 10.95	SPTS D 28	N=27 (4,5/6,7,7,7)	10.50						
11.00 - 12.00	B 29				12.00 occasional pockets (<10mm) of soft black sandy silt		(4.00)		
12.00 - 12.45	UT 30	21 blows	10.50						
12.45 - 12.65	D 31								
13.00 - 13.50	B 32				Firm to stiff thinly to thickly laminated brown slightly sandy slightly gravelly CLAY. Sand is fine to medium. Gravel is subangular to rounded fine to medium of chalk and flint. (GLACIAL TILL)		14.00 -10.92		
13.50 - 13.95	SPTS D 33	N=30 (4,6/7,6,9,8)	12.50						
14.00 - 15.00	B 34				12.65-14.00 soft grey silt pockets				
15.00 - 15.45	SPTS D 35	N=23 (2,3/4,6,6,7)	23/08/19 13.50 27/08/19 13.50	1700 0800 12.10					
15.00 - 15.45					Soft to firm thinly to thickly laminated brown SILT. (GLACIAL TILL)		16.95 (0.20) -13.87		
16.50 - 16.95	UT 36	67 blows	16.50						
16.95 - 17.15	D 37				Firm to stiff brown slightly gravelly sandy CLAY. Sand is fine to medium. Gravel is subangular to rounded fine to medium of flint and chalk. (GLACIAL TILL)		17.15 -14.07		
17.00 - 18.00	B 38								
18.00 - 18.45	SPTS D 39	N=19 (3,4/4,5,5,5)	18.00	12.70	Stiff brown slightly gravelly sandy CLAY. Sand is fine to medium. Gravel is subangular to rounded fine to medium of flint and chalk. (GLACIAL TILL)		(1.85)		
18.00 - 18.45									
19.00 - 20.00	B 40						19.00 -15.92		

Groundwater Entries				Depth Related Remarks				Hard Boring		
No.	Depth Strike (m)	Remarks	Depth Sealed (m)	Depths (m)	Remarks	Depths (m)	Duration (mins)	Tools used		
1	15.10	Rose to 4.57 m after 20 minutes.		15.10 - 15.40	Water added.					

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.	Project	SOUTH HUMBER BANK ENERGY CENTRE				Borehole	BH11			
Scale 1:50 © Copyright SOCOTEC UK Limited 12/11/2019 15:31:38	Project No.	A9020-19								
	Carried out for	EP UK Investments Ltd.					Sheet 2 of 3			

# Borehole Log



Drilled	SS	Start	Equipment, Methods and Remarks	Depth from	to	Diameter	Casing Depth	Ground Level	3.08 mOD
Logged	FC/RT	23/08/2019	Dando 175. Cable percussion boring to 25.00m. SPT Hammer ID: AR2068, Rod type: 1 1/2 inch Whitworth. Er 54 %	(m)	(m)	(mm)	(m)	Coordinates (m)	E 523311.69
Checked	MW	End		1.20	15.00	200	15.00	National Grid	N 413444.93
Approved	MW	28/08/2019		15.00	25.00	150	25.00		

Samples and Tests				Strata Description				Depth, Level	Legend	Backfill
Depth	Type & No.	Records	Date	Time	Main	Detail	(Thickness)			
			Casing	Water						
21.00 - 21.45	UT 41	59 blows	21.00		Stiff brown slightly gravelly sandy CLAY. Sand is fine to medium. Gravel is subangular to rounded fine to medium of flint and chalk. (GLACIAL TILL)		(3.50)			
21.45 - 21.65	D 42		27/08/19 21.00	1700						
22.00 - 22.50	B 43		28/08/19 21.00	0800 3.70						
22.50 - 22.95 22.50 - 22.95	SPTS D 44	N=16 (2,3/3,4,4,5)	22.50	4.10	Structureless CHALK. Recovered as greyish white slightly gravelly silt. Gravel is weak subangular to rounded. (FLAMBOROUGH CHALK FORMATION - Grade Dm)		22.50	-19.42		
23.00 - 24.00	B 45						(2.50)			
24.50 - 24.95 24.50 - 24.95	SPTS D 46	N=25 (4,5/6,6,5,8)	24.50	6.20						
			28/08/19 24.50	1700						
					END OF EXPLORATORY HOLE		25.00	-21.92		

Groundwater Entries			Depth Related Remarks			Hard Boring		
No.	Depth	Strike (m) Remarks	Depth Sealed (m)	Depths (m)	Remarks	Depths (m)	Duration (mins)	Tools used

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.	Project	SOUTH HUMBER BANK ENERGY CENTRE			Borehole	BH11		
Scale 1:50	Project No.	A9020-19						
© Copyright SOCOTEC UK Limited	Carried out for	EP UK Investments Ltd.				Sheet 3 of 3		
12/11/2019 15:31:38								

# Borehole Log



Drilled	LW	Start	Equipment, Methods and Remarks	Depth from	to	Diameter	Casing Depth	Ground Level	3.35 mOD
Logged	RT	30/08/2019	Dando 175. Cable percussion boring to 35.39m. SPT Hammer ID: JB0016, Rod type: NWWY. Er 72%	(m)	(m)	(mm)	(m)	Coordinates (m)	E 523130.85
Checked	MW	End		1.20	35.00	200	35.00	National Grid	N 413365.76
Approved	MW	03/09/2019							

## Samples and Tests

Samples and Tests				Strata Description				Depth, Level	Legend	Backfill
Depth	Type & No.	Records	Date Casing	Time Water	Main	Detail	(Thickness)			
0.20	ES 1	0.00-1.20 Hand excavated inspection pit.			Firm to stiff dark greyish brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of flint, brick and chalk. (MADE GROUND)		(0.90)			
0.50	ES 2									
1.00	ES 4				Firm to stiff brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of chert, flint and sandstone. (MADE GROUND)		0.90	+2.45		
1.00	D 3	81 blows 100% rec								
1.20 - 1.65	UT 1									
			30/08/19	1700						
			2.00							
2.00 - 2.45	SPTS	N=20 (1,3/5,7,4,4)	02/09/19	0800		2.00-2.60 dark greyish brown, some rare brick fragments (<10x10mm) and 1no. piece of geotextile matting/fabric				
2.00 - 2.45	D 6									
2.00 - 2.50	B 7									
2.70	D 8				Soft brown, mottled dark grey CLAY. (TIDAL FLAT DEPOSITS)		2.60	+0.75		
3.00 - 3.45	UT 9	19 blows 100% rec					(0.60)			
3.50	D 10				Soft brown CLAY with abundant pockets (<10x6mm) of black decomposing plant remains and black silt. Slight organic odour. (TIDAL FLAT DEPOSITS)		3.20	+0.15		
3.90	D 11									
4.00 - 4.45	UT NR	9 blows No Recovery			Very soft dark brown and dark greyish brown CLAY with abundant pockets of black silt. Slight organic odour. (TIDAL FLAT DEPOSITS)		3.80	-0.45		
4.00 - 4.50	B 12									
5.00 - 5.45	UT 13	11 blows 100% rec					(2.70)			
5.50	D 14									
6.50 - 6.95	UT 15	7 blows 100% rec			Very soft dark grey, locally mottled brown, CLAY/ SILT. Slight organic odour. (TIDAL FLAT DEPOSITS)		6.50	-3.15		
7.00	D 16									
8.00 - 8.45	UT NR	12 blows No Recovery								
8.00 - 8.50	B 17						(3.30)			
9.50 - 9.95	UT 18	32 blows 100% rec								
					Brown pseudofibrous and fibrous PEAT.		9.80	-6.45		

Groundwater Entries			Depth Related Remarks			Hard Boring		
No.	Depth Strike (m)	Remarks	Depth Sealed (m)	Depths (m)	Remarks	Depths (m)	Duration (mins)	Tools used

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.	Project	SOUTH HUMBER BANK ENERGY CENTRE			Borehole	BH12		
Scale 1:50	Project No.	A9020-19				Sheet 1 of 4		
© Copyright SOCOTEC UK Limited	Carried out for	EP UK Investments Ltd.						
12/11/2019 15:31:39								

# Borehole Log



Drilled	LW	Start	Equipment, Methods and Remarks	Depth from (m)	to (m)	Diameter (mm)	Casing Depth (m)	Ground Level	3.35 mOD
Logged	RT	30/08/2019	Dando 175. Cable percussion boring to 35.39m. SPT Hammer ID: JB0016, Rod type: N.W.Y. Er 72%	1.20	35.00	200	35.00	Coordinates (m)	E 523130.85
Checked	MW	End						National Grid	N 413365.76
Approved	MW	03/09/2019							

Samples and Tests				Strata Description				Depth, Level (Thickness)	Legend	Backfill
Depth	Type & No.	Records	Date Casing	Time Water	Main	Detail				
10.00	D 19				Brown pseudofibrous and fibrous PEAT. (TIDAL FLAT DEPOSITS)		(0.70)			
10.50 - 12.20	Falling Head D 20	k=0.0E+0 m/s			Firm grey, mottled brown, CLAY. (TIDAL FLAT DEPOSITS)		10.50 -7.15			
10.60							(0.40)			
11.00 - 11.45	UT 22 D 21	37 blows 100% rec			Firm fissured brown, mottled bluish grey, CLAY with occasional plant remains (2x10mm). Fissures are extremely closely spaced, random and matt. (TIDAL FLAT DEPOSITS)		10.90 -7.55			
11.00							(1.30)			
11.50	D 23									
12.30	D 24				Firm brown gravelly CLAY with frequent sand lenses. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of flint. (GLACIAL TILL)		12.20 -8.85			
12.50 - 12.95	SPTC B 25	N=17 (2,3/4,4,4,5)								
12.50 - 13.00										
13.30	D 26		02/09/19 13.50	1700						
			03/09/19 13.50	0800 9.70						
14.00 - 14.45	UT 27	49 blows 65% rec				14.00-15.50 firm to stiff				
14.50	D 28									
15.00	D 29									
15.50 - 15.95	SPTS D 30 B 31	N=17 (2,3/4,4,4,5)				15.50-18.20 stiff	(6.00)			
15.50 - 15.95										
15.50 - 16.00										
16.50	D 32									
17.00 - 17.45	UT NR B 33	37 blows No Recovery				17.50-18.20 sandy, sand is fine to coarse				
17.00 - 17.50										
18.00	D 34									
18.30	D 35				Medium dense brown gravelly clayey fine to coarse SAND. Gravel is subangular to subrounded fine and medium of flint. (GLACIAL TILL)		18.20 -14.85			
18.50 - 18.95	SPTS D 36 B 37	N=26 (2,3/5,7,7,7)					(1.10)			
18.50 - 18.95										
18.50 - 19.00										
19.50	D 38				Interlaminated firm brown and orangish brown sandy CLAY and orangish brown fine to coarse SAND. (GLACIAL TILL)		19.30 -15.95			

<b>Groundwater Entries</b>				<b>Depth Related Remarks</b>				<b>Hard Boring</b>		
No.	Depth (m)	Strike (m)	Remarks	Depth Sealed (m)	Depths (m)	Remarks	Depths (m)	Duration (mins)	Tools used	
1	12.30		Rose to 7.80 m after 20 minutes.							

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.	Project	SOUTH HUMBER BANK ENERGY CENTRE				Borehole	BH12			
Scale 1:50	Project No.	A9020-19								
© Copyright SOCOTEC UK Limited	Carried out for	EP UK Investments Ltd.								
12/11/2019 15:31:39							Sheet 2 of 4			

# Borehole Log



Drilled	LW	Start	Equipment, Methods and Remarks	Depth from	to	Diameter	Casing Depth	Ground Level	3.35 mOD
Logged	RT	30/08/2019	Dando 175. Cable percussion boring to 35.39m. SPT Hammer ID: JB0016, Rod type: NWWY. Er 72%	1.20	35.00	200	35.00	Coordinates (m)	E 523130.85
Checked	MW	End						National Grid	N 413365.76
Approved	MW	03/09/2019							

Samples and Tests				Strata Description				Depth, Level	Legend	Backfill
Depth	Type & No.	Records	Date Casing	Time Water	Main	Detail	(Thickness)			
20.00 - 20.45 20.00 - 20.50	UT NR B 39	30 blows No Recovery			Interlaminated firm brown and orangish brown sandy CLAY and orangish brown fine to coarse SAND. (GLACIAL TILL)		(2.00)			
21.40 21.50 - 21.95 21.50 - 22.00	D 40 SPTS B 41	N=8 (1,2/2,2,2,2)			Soft to firm brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of flint. (GLACIAL TILL)		21.30 -17.95 (0.90)			
22.30	D 42				White CHALK. Recovered as cream slightly sandy slightly gravelly silt. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of very weak to weak low density chalk. (FLAMBOROUGH CHALK FORMATION)		22.20 -18.85			
23.00 - 23.45 23.00 - 23.50	SPTC B 43	N=18 (2,3/4,4,5,5)					(2.30)			
24.00	D 44									
24.50 - 24.95 24.50 - 25.00	SPTC B 45	N=32 (7,9/10,9,7,6)			White CHALK. Recovered as predominantly slightly sandy gravel with occasional cobbles. Gravel is weak medium density subangular to subrounded fine to coarse. Cobbles are weak medium density subrounded, occasionally subangular (maximum size 120x90x60mm). (FLAMBOROUGH CHALK FORMATION)		24.50 -21.15			
25.50	D 46									
26.00 - 26.45 26.00 - 26.50	SPTC B 47	N=40 (5,8/9,10,10,11)								
27.00	D 48									
27.50 - 27.85 27.50 - 28.00	SPTC B 49	50 (9,14/15,21,14 for 47mm)								
28.50	D 50					28.50-29.00 fine to coarse sand and fine gravel				
29.00 - 29.45 29.00 - 29.50	SPTC B 51	N=32 (4,5/7,8,9,8)					(10.89)			

Groundwater Entries			Depth Related Remarks			Hard Boring		
No.	Depth Strike (m)	Remarks	Depth Sealed (m)	Depths (m)	Remarks	Depths (m)	Duration (mins)	Tools used

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.	Project	SOUTH HUMBER BANK ENERGY CENTRE			Borehole	BH12		
Scale 1:50 © Copyright SOCOTEC UK Limited 12/11/2019 15:31:39	Project No.	A9020-19						
	Carried out for	EP UK Investments Ltd.				Sheet 3 of 4		

# Borehole Log



Drilled LW	Start	Equipment, Methods and Remarks	Depth from (m)	to (m)	Diameter (mm)	Casing Depth (m)	Ground Level	3.35 mOD
Logged RT	30/08/2019	Dando 175. Cable percussion boring to 35.39m. SPT Hammer ID: JB0016, Rod type: NWY. Er 72%	1.20	35.00	200	35.00	Coordinates (m)	E 523130.85
Checked MW	End						National Grid	N 413365.76
Approved MW	03/09/2019							

## Samples and Tests Strata Description

Depth	Type & No.	Records	Date Casing	Time Water	Main	Detail	Depth, Level (Thickness)	Legend	Backfill
30.00	D 52				White CHALK. Recovered as predominantly slightly sandy gravel with occasional cobbles. Gravel is weak medium density subangular to subrounded fine to coarse. Cobbles are weak medium density subrounded, occasionally subangular (maximum size 120x90x60mm). (FLAMBOROUGH CHALK FORMATION)				
30.50 - 30.89 30.50 - 31.00	SPTC B 53	50 (5,8/11,14,17,8 for 12mm)							
31.50	D 54								
32.00 - 32.36 32.00 - 32.50	SPTC B 55	50 (7,11/14,16,20 for 59mm)							
33.00	D 56								
33.50 - 33.95 33.50 - 34.00	SPTC B 57	N=50 (2,9/11,16,20,3)							
34.50	D 58								
35.00 - 35.39	SPTC	50 (7,9/12,15,17,6 for 11mm)	03/09/19 35.00	1700					
					END OF EXPLORATORY HOLE		35.39 -32.04		

Groundwater Entries			Depth Related Remarks			Hard Boring		
No.	Depth Strike (m)	Remarks	Depth Sealed (m)	Depths (m)	Remarks	Depths (m)	Duration (mins)	Tools used

# Borehole Log



Drilled	CJ	Start	Equipment, Methods and Remarks	Depth from (m)	to (m)	Diameter (mm)	Casing Depth (m)	Ground Level	2.55 mOD
Logged	AW	04/09/2019	Dando 2000 MK2. Cable percussion boring to 25.43m. SPT Hammer ID: JB0014, Rod type: N.W.Y. Er 70%	1.20	25.00	200	25.00	Coordinates (m)	E 523012.83
Checked	MW	End						National Grid	N 413211.72
Approved	MW	06/09/2019							

## Samples and Tests

Depth	Type & No.	Records	Date Casing	Time Water	Main	Detail	Depth, Level (Thickness)	Legend	Backfill	
0.10	ES 1	0.00-1.20 Hand excavated inspection pit.			Firm brown slightly sandy gravelly CLAY with low cobble content. Gravel is angular to subangular fine to coarse of sandstone and chalk. Sand is fine to coarse. Cobbles are angular to subangular of sandstone. Frequent roots and rootlets. (MADE GROUND) Grey angular COBBLES of limestone, concrete and chalk with much sandy GRAVEL. Gravel is angular fine to coarse of limestone, concrete and chalk. Occasional boulders of conglomeratic concrete (<300x280x240mm). (MADE GROUND) Soft to firm grey, mottled brown with pockets of very dark grey, slightly sandy CLAY. Sand is fine. (TIDAL FLAT DEPOSITS)		(0.45)			
0.10	D 2						0.45	+2.10		
0.10 - 0.45	B 3									
0.45 - 0.70	B 5									
0.70 - 1.20	B 7									
0.75	ES 4						0.70 fabric membrane	(0.65)		
1.10	ES 6							1.10	+1.45	
1.10	D 8									
1.20 - 1.65	SPTS	N=6 (1,1/1,2,2,1)								
1.20 - 1.65	D 9									
1.20 - 1.70	B 10									
1.70	D 11						(1.40)			
2.00 - 2.45	UT 12	12 blows 65% rec								
2.50	D 13				Soft greyish brown, with pockets of very dark grey, slightly sandy slightly organic CLAY. Sand is fine and medium. (TIDAL FLAT DEPOSITS)		2.50	-0.05		
2.50 - 3.00	B 14									
3.00 - 4.00	Falling Head	k=0.0E+0 m/s								
3.00 - 3.45	UT 15	9 blows 100% rec								
3.50	D 16									
3.50 - 4.00	B 17							(2.00)		
4.00 - 4.45	UT 18	11 blows 100% rec								
4.50	D 19							4.50	-1.95	
4.50 - 5.00	B 20							(0.50)		
5.00 - 5.45	UT NR	3 blows No Recovery						5.00	-2.45	
5.00 - 5.50	B 22									
5.50 - 5.95	SPTS	N=2 (0,0/0,1,0,1)								
5.50	D 23									
5.50 - 5.95	D 24									
6.00 - 6.45	SPTS	N=3 (1,0/1,1,0,1)								
6.00 - 6.45	D 25									
6.00 - 6.50	B 26									
6.50	D 27									
7.00 - 7.45	SPTS	N=11 (1,1/2,2,3,4)	7.00	4.00						
7.00 - 7.45	D 28									
7.00 - 7.50	B 29									
7.50	D 30									
8.00 - 8.45	SPTS	N=12 (1,2/2,3,4,3)	8.00	5.10						
8.00 - 8.45	D 31									
8.00 - 8.50	B 32		04/09/19	1800						
			8.00	5.10						
8.50	D 33		05/09/19	0800						
			8.00	3.12			(6.70)			
9.00 - 9.45	SPTS	N=8 (1,1/1,2,2,3)	9.00	4.18						
9.00 - 9.45	D 34									
9.00 - 9.50	B 35									

<b>Groundwater Entries</b> No. Depth Strike (m) Remarks 1 4.00 Rose to 2.63 m after 20 minutes.			Depth Sealed (m)	<b>Depth Related Remarks</b> Depths (m) Remarks		<b>Hard Boring</b> Depths (m) Duration (mins) Tools used		
-------------------------------------------------------------------------------------------------------	--	--	------------------	----------------------------------------------------	--	-------------------------------------------------------------	--	--

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. Scale 1:50 © Copyright SOCOTEC UK Limited 12/11/2019 15:31:40	Project SOUTH HUMBER BANK ENERGY CENTRE Project No. A9020-19 Carried out for EP UK Investments Ltd.	Borehole <b>BH13</b> Sheet 1 of 3
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------	--------------------------------------

# Borehole Log



Drilled	CJ	Start	Equipment, Methods and Remarks	Depth from (m)	to (m)	Diameter (mm)	Casing Depth (m)	Ground Level	2.55 mOD
Logged	AW	04/09/2019	Dando 2000 MK2. Cable percussion boring to 25.43m. SPT Hammer ID: JB0014, Rod type: NWY. Er 70%	1.20	25.00	200	25.00	Coordinates (m)	E 523012.83
Checked	MW	End						National Grid	N 413211.72
Approved	MW	06/09/2019							

Samples and Tests				Strata Description				Depth, Level (Thickness)	Legend	Backfill
Depth	Type & No.	Records	Date Casing	Time Water	Main	Detail				
10.00	D 36				Very loose to medium dense grey silty fine and medium SAND. (TIDAL FLAT DEPOSITS)					
10.50 - 10.95	SPTS D 37 B 38	N=6 (1,0/1,1,2,2)	10.50	4.85						
10.50 - 11.00										
11.50	D 39				Firm grey slightly sandy slightly gravelly CLAY. Gravel is angular to subangular fine and medium of chalk and sandstone. Sand is fine to coarse. (GLACIAL TILL)					
11.70	D 40									
12.00 - 12.45	UT 41	150 blows 65% rec								
12.50	D 42				Grey sandy angular fine to coarse GRAVEL of chalk and sandstone. Sand is fine to coarse. Locally with pockets of firm grey slightly sandy slightly gravelly clay. (GLACIAL TILL)					
13.00	D 43 B 44									
13.00 - 13.50										
13.50 - 13.95	SPTS D 45 B 46	N=32 (3,5/8,7,8,9)	13.50	8.10	Stiff to very stiff brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine and medium of chalk and sandstone. (GLACIAL TILL)					
13.50 - 13.95										
13.50 - 14.00										
14.50	D 47									
15.00 - 15.45	UT 48	150 blows 65% rec								
15.50	D 49 B 50									
15.50 - 16.00										
16.50 - 16.95	SPTS D 51 B 52	N=36 (2,3/5,8,11,12)	16.50	14.95						
16.50 - 17.00										
17.50	D 53									
18.00 - 18.45	UT 54	150 blows 100% rec								
18.50	D 55									
18.70	D 56 B 57				Medium dense brown slightly silty fine to coarse SAND. (GLACIAL TILL)					
18.70 - 19.00										
19.00	W 58									
19.50 - 19.95	SPTS D 59 B 60	N=23 (2,3/5,5,6,7)	19.50	5.55						
19.50 - 19.95										
19.50 - 20.00										

<b>Groundwater Entries</b>				<b>Depth Related Remarks</b>				<b>Hard Boring</b>		
No.	Depth Strike (m)	Remarks	Depth Sealed (m)	Depths (m)	Remarks	Depths (m)	Duration (mins)	Tools used		
2	13.00	Rose to 8.56 m after 20 minutes.	10.50							
3	18.70	Rose to 8.18 m after 20 minutes.	16.50							

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.	Project	SOUTH HUMBER BANK ENERGY CENTRE				Borehole	BH13	
Scale 1:50 © Copyright SOCOTEC UK Limited 12/11/2019 15:31:40	Project No.	A9020-19						
	Carried out for	EP UK Investments Ltd.					Sheet 2 of 3	



# Borehole Log



Drilled	CJ	Start	Equipment, Methods and Remarks	Depth from (m)	to (m)	Diameter (mm)	Casing Depth (m)	Ground Level	2.55 mOD
Logged	AW	04/09/2019	Dando 2000 MK2. Cable percussion boring to 25.43m.	1.20	25.00	200	25.00	Coordinates (m)	E 523012.83
Checked	MW	End	SPT Hammer ID: JB0014, Rod type: NWWY. Er 70%					National Grid	N 413211.72
Approved	MW	06/09/2019							

Samples and Tests				Strata Description				Depth, Level (Thickness)	Legend	Backfill
Depth	Type & No.	Records	Date Casing	Time Water	Main	Detail				
20.20	D 61				Medium dense brown slightly silty fine to coarse SAND. (GLACIAL TILL)		20.20	-17.65		
21.00 - 21.45	SPTS	N=24 (3,3/4,5,7,8)	21.00	6.04	Firm to stiff brown slightly gravelly sandy CLAY. Gravel is angular to subangular fine to coarse of chalk. Sand is fine to coarse. (GLACIAL TILL)					
21.00 - 21.45	D 62		05/09/19	1800						
21.00 - 21.50	B 63		21.00	6.04			(2.20)			
			06/09/19	0800						
			21.00	4.92						
22.00	D 64									
22.40	D 65									
22.50 - 22.95	SPTC	N=45 (5,9/10,10,12,13)	23.50	6.11	White CHALK. Recovered as sandy angular to subangular fine to coarse gravel. Sand is fine to coarse. (FLAMBOROUGH CHALK FORMATION)		22.40	-19.85		
22.50 - 22.95	B 66									
22.50 - 23.00	B 67									
23.50	D 68									
24.00 - 24.45	SPTC	N=42 (4,8/9,13,10,10)	24.00	6.34						
24.00 - 24.45	B 69									
24.00 - 24.50	B 70						(3.03)			
24.50	D 71									
25.00 - 25.43	SPTC	50 (9,11/15,12,13,10 for 56mm)	25.00	6.51						
25.00 - 25.43	B 72		06/09/19	1400						
			25.00	6.51						
					END OF EXPLORATORY HOLE		25.43	-22.88		

Groundwater Entries			Depth Related Remarks			Hard Boring		
No.	Depth Strike (m)	Remarks	Depth Sealed (m)	Depths (m)	Remarks	Depths (m)	Duration (mins)	Tools used
						23.80 - 24.00	30	Chisel
						24.60 - 24.80	30	Chisel

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.	Project	SOUTH HUMBER BANK ENERGY CENTRE			Borehole	BH13		
Scale 1:50	Project No.	A9020-19						
© Copyright SOCOTEC UK Limited	Carried out for	EP UK Investments Ltd.						
12/11/2019 15:31:40						Sheet 3 of 3		

# Borehole Log



Drilled	LW	Start	Equipment, Methods and Remarks	Depth from	to	Diameter	Casing Depth	Ground Level	2.16 mOD
Logged	AW/RT	04/09/2019	Dando 175. Cable percussion boring to 25.45m. SPT Hammer ID: JB0016, Rod type: NWY. Er 72%	(m)	(m)	(mm)	(m)	Coordinates (m)	E 523063.88
Checked	MW	End		1.20	25.00	200	25.00	National Grid	N 413202.40
Approved	MW	05/09/2019							

## Samples and Tests

Depth	Type & No.	Records	Date Casing	Time Water	Main	Detail	Depth, Level (Thickness)	Legend	Backfill	
0.10 - 0.50	B 3	0.00-1.20 Hand excavated inspection pit.			Firm brown slightly sandy gravelly CLAY with frequent rootlets and roots. Gravel is subangular to subrounded fine to coarse of chalk, chert and sandstone. Sand is fine to coarse. Occasional fragments of red brick. <b>(MADE GROUND)</b>		(0.50)			
0.20	ES 1									
0.20	D 2						0.50	+1.66		
0.50 - 1.20	B 6				Soft to firm brown, mottled grey, slightly sandy CLAY. Sand is fine. Occasional pockets of brown silt and orangish brown fine sand. <b>(TIDAL FLAT DEPOSITS)</b>					
0.55	ES 4									
0.55	D 5									
1.00	ES 7									
1.20 - 1.65	UT 8	14 blows 55% rec	04/09/19	0800			(1.60)			
1.70	D 9									
2.00 - 2.45	SPTS	N=1 (1,0/0,0,0,1)			Very soft to soft brown, becoming dark brown and dark grey, CLAY. <b>(TIDAL FLAT DEPOSITS)</b>					
2.00 - 2.45	D 10									
2.00 - 2.50	B 11							2.10	+0.06	
2.20	D 12									
3.00 - 3.45	UT 13	12 blows 100% rec								
3.50	D 14									
4.00 - 4.45	UT 15	10 blows 80% rec								
4.50	D 16									
5.00 - 5.45	UT NR	9 blows No Recovery			Very soft to soft dark brown and grey sandy silty CLAY with rare fine gravel. Sand is fine. <b>(TIDAL FLAT DEPOSITS)</b>					
5.00 - 5.50	B 17									
6.50 - 6.95	UT NR	7 blows No Recovery								
6.50 - 7.00	B 18									
8.00 - 8.45	UT 20	33 blows 65% rec			Firm dark grey peaty CLAY. <b>(TIDAL FLAT DEPOSITS)</b>					
8.00	D 19									
					Firm fibrous PEAT. <b>(TIDAL FLAT DEPOSITS)</b>					
8.50	D 21					8.40-8.90 rare pockets of soft grey clay				
8.90	D 22				Stiff to very stiff fissured dark greyish brown, mottled grey, slightly gravelly CLAY. Gravel is subangular to subrounded fine to medium of flint, sandstone and chalk. Fissures are extremely closely spaced, randomly orientated and matt. <b>(GLACIAL TILL)</b>					
9.50 - 9.95	SPTS	N=36 (4,5/7,9,9,11)								
9.50 - 9.95	D 23									
9.50 - 10.00	B 24									

<b>Groundwater Entries</b>			<b>Depth Related Remarks</b>			<b>Hard Boring</b>		
No.	Depth Strike (m)	Remarks	Depth Sealed (m)	Depths (m)	Remarks	Depths (m)	Duration (mins)	Tools used
				2.20	Water added.			

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.	Project	SOUTH HUMBER BANK ENERGY CENTRE			Borehole	BH14		
Scale 1:50	Project No.	A9020-19				Sheet 1 of 3		
© Copyright SOCOTEC UK Limited	Carried out for	EP UK Investments Ltd.						

# Borehole Log



Drilled LW	Start	Equipment, Methods and Remarks	Depth from (m)	to (m)	Diameter (mm)	Casing Depth (m)	Ground Level	2.16 mOD
Logged AW/RT	04/09/2019	Dando 175. Cable percussion boring to 25.45m. SPT Hammer ID: JB0016, Rod type: NWY. Er 72%	1.20	25.00	200	25.00	Coordinates (m)	E 523063.88
Checked MW	End						National Grid	N 413202.40
Approved MW	05/09/2019							

Samples and Tests				Strata Description				Depth, Level (Thickness)	Legend	Backfill
Depth	Type & No.	Records	Date Casing	Time Water	Main	Detail				
10.50	D 25				Stiff to very stiff fissured dark greyish brown, mottled grey, slightly gravelly CLAY. Gravel is subangular to subrounded fine to medium of flint, sandstone and chalk. Fissures are extremely closely spaced, randomly orientated and matt. (GLACIAL TILL)					
11.00 - 11.45 11.00 - 11.50	UT NR B 26	39 blows No Recovery					(4.70)			
12.00	D 27									
12.50 - 12.95 12.50 - 12.95 12.50 - 13.00	SPTS D 28 B 29	N=21 (2,3/4,5,5,7)								
13.50	D 30				Firm to stiff dark greyish brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is subrounded fine to medium of flint and chalk. (GLACIAL TILL)		13.50 -11.34			
14.00 - 14.45	UT 31	51 blows 100% rec								
14.50	D 32						(2.60)			
15.00	D 33									
15.50 - 15.95 15.50 - 16.00	D 34 B 35									
16.10 - 16.60 16.20	Falling Head D 36	k=0.0E+0 m/s								
			04/09/19 15.20	1800	Brown fine to coarse SAND AND subangular to subrounded fine to coarse GRAVEL of flint, locally slightly clayey. (GLACIAL TILL)		16.10 -13.94			
			05/09/19 15.20	0800 0.60			(0.90)			
17.00 - 17.45 17.00 - 17.45 17.00 - 17.50	SPTS D 37 B 38	N=19 (1,3/4,4,5,6)			Medium dense brown fine to coarse SAND. (GLACIAL TILL)		17.00 -14.84			
							(0.60)			
17.70	D 39				Firm greyish brown slightly gravelly CLAY. Gravel is subangular to subrounded fine to medium of flint. (GLACIAL TILL)		17.60 -15.44			
18.50 - 18.95	UT 40	62 blows 55% rec								
19.00	D 41									
19.50	D 42						(3.20)			

Groundwater Entries			Depth Related Remarks			Hard Boring		
No.	Depth Strike (m)	Remarks	Depth Sealed (m)	Depths (m)	Remarks	Depths (m)	Duration (mins)	Tools used
1	16.10	Rose to 8.90 m after 20 minutes.						

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.	Project	SOUTH HUMBER BANK ENERGY CENTRE			Borehole	BH14		
Scale 1:50	Project No.	A9020-19				Sheet 2 of 3		
© Copyright SOCOTEC UK Limited	Carried out for	EP UK Investments Ltd.						
12/11/2019 15:31:40								

# Borehole Log



Drilled LW	Start	Equipment, Methods and Remarks	Depth from (m)	to (m)	Diameter (mm)	Casing Depth (m)	Ground Level	2.16 mOD
Logged AW/RT	04/09/2019	Dando 175. Cable percussion boring to 25.45m. SPT Hammer ID: JB0016, Rod type: NWY. Er 72%	1.20	25.00	200	25.00	Coordinates (m)	E 523063.88
Checked MW	End						National Grid	N 413202.40
Approved MW	05/09/2019							

Samples and Tests				Strata Description				Depth, Level (Thickness)	Legend	Backfill
Depth	Type & No.	Records	Date Casing	Time Water	Main	Detail				
20.00 - 20.45 20.00 - 20.50	SPTS B 43	N=11 (1,2/3,2,3,3)			Firm greyish brown slightly gravelly CLAY. Gravel is subangular to subrounded fine to medium of flint. (GLACIAL TILL)					
20.90	D 44				White CHALK. Recovered as slightly sandy slightly gravelly silt with pockets of soft brown clay. Gravel is very weak subangular to subrounded fine to coarse. (FLAMBOROUGH CHALK FORMATION)		20.80	-18.64		
21.50 - 21.95 21.50 - 22.00	SPTC B 45	N=42 (4,7/10,9,11,12)					(2.20)			
22.50	D 46									
23.50 - 23.95 23.50 - 24.00	SPTC B 47	N=25 (2,3/5,7,5,8)			White CHALK. Recovered as very weak to weak low to medium density subangular to subrounded fine to coarse gravel and occasional subangular to subrounded cobbles. Cobbles are weak. (FLAMBOROUGH CHALK FORMATION)		23.00	-20.84		
24.50	D 48						(2.45)			
25.00 - 25.45	UT 49	31 blows 65% rec	05/09/19 25.00	1800						
					END OF EXPLORATORY HOLE		25.45	-23.29		

Groundwater Entries			Depth Related Remarks			Hard Boring		
No.	Depth Strike (m)	Remarks	Depth Sealed (m)	Depths (m)	Remarks	Depths (m)	Duration (mins)	Tools used

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.	Project	SOUTH HUMBER BANK ENERGY CENTRE	Borehole	BH14
Scale 1:50	Project No.	A9020-19		
© Copyright SOCOTEC UK Limited	Carried out for	EP UK Investments Ltd.		Sheet 3 of 3
12/11/2019 15:31:40				

# Trial Pit Log



<b>Logged</b> AW <b>Checked</b> MW <b>Approved</b> MW	<b>Start</b> 27/08/2019 <b>End</b> 27/08/2019	<b>Equipment, Methods and Remarks</b> DX140. Machine excavated.	<b>Dimension and Orientation</b> Width 4.00 m Length 3.00 m 60 (Deg)	<b>Ground Level</b> 2.23 mOD <b>Coordinates (m)</b> E 523002.91 <b>National Grid</b> N 413487.64
-------------------------------------------------------------	--------------------------------------------------------	-----------------------------------------------------------------------	-------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------

## Samples and Tests      Strata Description

Depth	Type & No.	Records	Main	Detail	Depth, Level (Thickness)	Legend	Backfill
0.00 - 0.45	B3		Firm brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of chalk. Frequent roots and rootlets. (MADE GROUND)		(0.45)		
0.20 0.20	ES1 D2				0.45 +1.78		
0.50 0.50	ES4 D5		Stiff brown, mottled grey, slightly sandy CLAY. Sand is fine. (TIDAL FLAT DEPOSITS)				
1.00 - 2.00	B6						
1.20	ES8				(1.55)		
1.50	D7						
2.00 - 3.00	B9		Soft brown, mottled grey, slightly sandy CLAY. Sand is fine. (TIDAL FLAT DEPOSITS)		2.00 +0.23		
					(1.00)		
3.00 - 4.00	B10		Very soft very dark grey slightly sandy CLAY. Sand is fine. Slightly organic. (TIDAL FLAT DEPOSITS)		3.00 -0.77		
3.50	D11				(1.00)		
		27/08/19      Dry					
			END OF EXPLORATORY HOLE		4.00 -1.77		

<b>Groundwater Entries</b> No.    Depth Strike (m)    Remarks	<b>Remarks</b> Depth (m)    Remarks 0.00 - 4.00    No groundwater encountered during excavation.	<b>Stability</b> Stable  <b>Shoring</b> None  <b>Weather</b> Sunny, dry
------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. Scale 1:25    © Copyright SOCOTEC UK Limited 12/11/2019 15:31:45	<b>Project</b> SOUTH HUMBER BANK ENERGY CENTRE  <b>Project No.</b> A9020-19 <b>Carried out for</b> EP UK Investments Ltd.	<b>Trial Pit</b>  <h2>TP01</h2> Sheet 1 of 1
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------

# Trial Pit Log



<b>Logged</b> AW <b>Checked</b> MW <b>Approved</b> MW	<b>Start</b> 27/08/2019 <b>End</b> 27/08/2019	<b>Equipment, Methods and Remarks</b> DX140. Machine excavated.	<b>Dimension and Orientation</b> Width 4.00 m Length 3.00 m 	<b>Ground Level</b> 2.54 mOD <b>Coordinates (m)</b> E 523128.25 <b>National Grid</b> N 413506.00
-------------------------------------------------------------	--------------------------------------------------------	-----------------------------------------------------------------------	-----------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------

Samples and Tests		Strata Description					
Depth	Type & No.	Records	Main	Detail	Depth, Level (Thickness)	Legend	Backfill
0.00 - 0.40	B3		Firm brown slightly gravelly sandy CLAY with medium cobble content. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of chalk and sandstone. Cobbles (<100x120x90mm) are angular to subangular of chalk. (MADE GROUND)				
0.20 0.20	ES1 D2			Stiff brown, mottled grey, slightly sandy CLAY. Sand is fine. (TIDAL FLAT DEPOSITS)		(0.40) +2.14	
0.60 0.60	ES4 D5						
1.00 - 2.00	B6						
1.20	ES7						
2.00 - 3.00	B8				(2.60)		
3.00 - 3.60	B9		Firm, locally soft, brown, mottled grey, slightly sandy CLAY. Sand is fine. (TIDAL FLAT DEPOSITS)		3.00 (0.60) -0.46		
3.60 - 4.00	B10		Very soft grey and dark grey sandy SILT. Locally sandy clay. Sand is fine. (TIDAL FLAT DEPOSITS)		3.60 (0.40) -1.06		
3.80	D11	27/08/19 Dry					
			END OF EXPLORATORY HOLE		4.00 -1.46		

<b>Groundwater Entries</b> No. Depth Strike (m) Remarks	<b>Remarks</b> Depth (m) Remarks 0.00 - 4.00 No groundwater encountered during excavation.	<b>Stability</b> Stable  <b>Shoring</b> None  <b>Weather</b> Sunny, dry
------------------------------------------------------------	--------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. Scale 1:25 © Copyright SOCOTEC UK Limited 12/11/2019 15:31:45	<b>Project</b> SOUTH HUMBER BANK ENERGY CENTRE <b>Project No.</b> A9020-19 <b>Carried out for</b> EP UK Investments Ltd.	<b>Trial Pit</b> <h2 style="text-align: center;">TP02</h2> Sheet 1 of 1
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------

# Trial Pit Log



<b>Logged</b> AW <b>Checked</b> MW <b>Approved</b> MW	<b>Start</b> 27/08/2019 <b>End</b> 27/08/2019	<b>Equipment, Methods and Remarks</b> DX140. Machine excavated.	<b>Dimension and Orientation</b> Width 4.00 m Length 3.00 m 	<b>Ground Level</b> 2.22 mOD <b>Coordinates (m)</b> E 522978.08 <b>National Grid</b> N 413436.73
-------------------------------------------------------------	--------------------------------------------------------	-----------------------------------------------------------------------	-----------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------

Samples and Tests		Strata Description					
Depth	Type & No.	Records	Main	Detail	Depth, Level (Thickness)	Legend	Backfill
0.00 - 0.45	B3		Brown gravelly fine to coarse SAND with medium cobble content. Gravel is angular to subangular fine to coarse of chert and chalk. Cobbles (<110x100x90mm) are subangular of chalk. Occasional fragments of red brick, fabric, plastic and paving slabs. (MADE GROUND)		(0.45)		
0.20 0.20	ES1 D2						
0.60 0.60	ES4 D5		Firm brown, mottled grey, slightly sandy CLAY with occasional light grey silt partings. Sand is fine. (TIDAL FLAT DEPOSITS)		0.45 +1.77		
1.00 1.00 - 2.00	ES10 B6				(2.75)		
2.00 - 3.00	B7						
3.20 - 4.00	B8		Very soft dark grey and grey slightly sandy CLAY. Sand is fine. (TIDAL FLAT DEPOSITS)		3.20 -0.98		
3.50	D9				(0.80)		
		27/08/19 Dry					
			END OF EXPLORATORY HOLE		4.00 -1.78		

<b>Groundwater Entries</b> No. Depth Strike (m) Remarks	<b>Remarks</b> Depth (m) Remarks 0.00 - 4.00 No groundwater encountered during excavation.	<b>Stability</b> Stable  <b>Shoring</b> None  <b>Weather</b> Sunny, dry
------------------------------------------------------------	--------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. Scale 1:25 © Copyright SOCOTEC UK Limited 12/11/2019 15:31:45	<b>Project</b> SOUTH HUMBER BANK ENERGY CENTRE  <b>Project No.</b> A9020-19 <b>Carried out for</b> EP UK Investments Ltd.	<b>Trial Pit</b>  <b>TP03</b> Sheet 1 of 1
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------

# Trial Pit Log



<b>Logged</b> AW <b>Checked</b> MW <b>Approved</b> MW	<b>Start</b> 27/08/2019 <b>End</b> 27/08/2019	<b>Equipment, Methods and Remarks</b> DX140. Machine excavated.	<b>Dimension and Orientation</b> Width 0.60 m Length 2.80 m 55 (Deg)	<b>Ground Level</b> 2.27 mOD <b>Coordinates (m)</b> E 523104.22 <b>National Grid</b> N 413455.68
-------------------------------------------------------------	--------------------------------------------------------	-----------------------------------------------------------------------	-------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------

## Samples and Tests      Strata Description

Depth	Type & No.	Records	Main	Detail	Depth, Level (Thickness)	Legend	Backfill
0.00 - 0.45	B3		Firm brown, locally mottled grey, slightly sandy slightly gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of chalk and mudstone. Cobbles (<150x140x80mm) are angular to subangular of chalk. Rare fragments of red brick. Frequent roots and rootlets. (MADE GROUND)				
0.20 0.20	ES1 D2			(0.45)			
0.45 - 1.00	B6		Stiff brown, mottled grey, slightly sandy CLAY. Sand is fine to medium. (TIDAL FLAT DEPOSITS)		0.45		
0.50 0.50	ES4 D5			+1.82			
1.00 - 2.00	B8						
1.20	ES7						
1.50	D9						
2.00 - 3.00	B10				(2.55)		
3.00 - 4.00	B11		Very soft very dark grey sandy SILT, locally sandy clay. Sand is fine to medium. (TIDAL FLAT DEPOSITS)		3.00		
3.50	D12			-0.73			
		27/08/19      Dry			(1.00)		
			END OF EXPLORATORY HOLE		4.00		
					-1.73		

<b>Groundwater Entries</b> No.    Depth Strike (m)    Remarks	<b>Remarks</b> Depth (m)    Remarks 0.00 - 4.00    No groundwater encountered during excavation.	<b>Stability</b> Stable  <b>Shoring</b> None  <b>Weather</b> Sunny, dry
------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. Scale 1:25    © Copyright SOCOTEC UK Limited 12/11/2019 15:31:45	<b>Project</b> SOUTH HUMBER BANK ENERGY CENTRE  <b>Project No.</b> A9020-19 <b>Carried out for</b> EP UK Investments Ltd.	<b>Trial Pit</b>  <h2 style="text-align: center;">TP04</h2> Sheet 1 of 1
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------



# Trial Pit Log



<b>Logged</b> AW <b>Checked</b> MW <b>Approved</b> MW	<b>Start</b> 27/08/2019 <b>End</b> 27/08/2019	<b>Equipment, Methods and Remarks</b> DX140. Machine excavated.	<b>Dimension and Orientation</b> Width 4.00 m Length 3.00 m 	<b>Ground Level</b> 2.33 mOD <b>Coordinates (m)</b> E 523067.64 <b>National Grid</b> N 413432.45
-------------------------------------------------------------	--------------------------------------------------------	-----------------------------------------------------------------------	-----------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------

## Samples and Tests      Strata Description

Depth	Type & No.	Records	Main	Detail	Depth, Level (Thickness)	Legend	Backfill
0.00 - 0.40	B3		Firm grey slightly sandy slightly gravelly CLAY. Gravel is angular to subangular fine to coarse of chert and chalk. Occasional angular fragments of red brick. Sand is fine to coarse. Frequent roots and rootlets. (MADE GROUND)		(0.45)		
0.20 0.20	ES1 D2					0.45 +1.88	
0.50 0.50	ES4 D6		Stiff brown, mottled grey, slightly sandy CLAY with occasional light grey silt partings. Sand is fine. (TIDAL FLAT DEPOSITS)				
1.00 - 2.00	B7						
1.20	ES8						
2.00 - 3.00	B9			2.00 becoming soft	(2.85)		
3.30 - 4.00	B10		Very soft grey and dark grey slightly sandy SILT and sandy CLAY. Sand is fine to medium. Slightly organic. (TIDAL FLAT DEPOSITS)		3.30 -0.97		
3.50	D11					(0.70)	
		27/08/19      Dry					
			END OF EXPLORATORY HOLE		4.00 -1.67		

<b>Groundwater Entries</b> No.    Depth Strike (m)    Remarks	<b>Remarks</b> Depth (m)    Remarks 0.00 - 4.00    No groundwater encountered during excavation.	<b>Stability</b> Stable  <b>Shoring</b> None  <b>Weather</b> Sunny, dry
------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. Scale 1:25    © Copyright SOCOTEC UK Limited 	<b>Project</b> SOUTH HUMBER BANK ENERGY CENTRE  <b>Project No.</b> A9020-19 <b>Carried out for</b> EP UK Investments Ltd.	<b>Trial Pit</b>  <h2>TP05</h2> Sheet 1 of 1
--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------

# Trial Pit Log



<b>Logged</b> AW <b>Checked</b> MW <b>Approved</b> MW	<b>Start</b> 28/08/2019 <b>End</b> 28/08/2019	<b>Equipment, Methods and Remarks</b> DX140. Machine excavated.	<b>Dimension and Orientation</b> Width 0.60 m Length 3.20 m 	<b>Ground Level</b> 2.66 mOD <b>Coordinates (m)</b> E 523190.57 <b>National Grid</b> N 413420.86
-------------------------------------------------------------	--------------------------------------------------------	-----------------------------------------------------------------------	-----------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------

## Samples and Tests      Strata Description

Depth	Type & No.	Records	Main	Detail	Depth, Level (Thickness)	Legend	Backfill
0.00 - 1.10	B3		Firm brown slightly sandy gravelly CLAY with medium cobble content of subangular cobbles and boulders of chalk. Cobbles (<150x140x130mm). Boulders (<250x200x180mm). Frequent rootlets and roots. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of chalk. (TIDAL FLAT DEPOSITS)				
0.20 0.20	ES1 D2						
0.50 0.50	ES4 D5				(1.10)		
1.00 1.00 - 2.00	ES6 B7		Firm brown, mottled grey, with occasional pockets of orangish brown slightly sandy CLAY. Sand is fine. (TIDAL FLAT DEPOSITS)		1.10	+1.56	
1.50	D8						
2.00 - 3.40	B9				(2.30)		
3.40 - 4.50 3.50	B10 D11		Soft dark grey and grey slightly sandy CLAY. Sand is fine. Slightly organic. (TIDAL FLAT DEPOSITS)		3.40	-0.74	
						(1.10)	
		28/08/19      Dry					
			END OF EXPLORATORY HOLE		4.50	-1.84	

<b>Groundwater Entries</b> No.    Depth    Strike (m)    Remarks	<b>Remarks</b> Depth (m)    Remarks 0.00 - 4.50    No groundwater encountered during excavation.	<b>Stability</b> Stable  <b>Shoring</b> Overcast, dry  <b>Weather</b>
---------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. Scale 1:25    © Copyright SOCOTEC UK Limited 	Project    SOUTH HUMBER BANK ENERGY CENTRE Project No.    A9020-19 Carried out for    EP UK Investments Ltd.	Trial Pit <h3>TP06</h3> Sheet 1 of 1
--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------	--------------------------------------------

# Trial Pit Log



<b>Logged</b> AW <b>Checked</b> MW <b>Approved</b> MW	<b>Start</b> 27/08/2019 <b>End</b> 27/08/2019	<b>Equipment, Methods and Remarks</b> DX140. Machine excavated.	<b>Dimension and Orientation</b> Width 4.50 m Length 3.00 m 30 (Deg)	<b>Ground Level</b> 2.55 mOD <b>Coordinates (m)</b> E 522974.05 <b>National Grid</b> N 413341.18
-------------------------------------------------------------	--------------------------------------------------	-----------------------------------------------------------------------	-------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------

## Samples and Tests      Strata Description

Depth	Type & No.	Records	Main	Detail	Depth, Level (Thickness)	Legend	Backfill	
0.00 - 0.25	B3		Firm brown and grey slightly sandy slightly gravelly CLAY. Gravel is angular fine to coarse of sandstone, chert and chalk. Sand is fine. Frequent fragments of angular fine to coarse gravel and cobbles of concrete. Occasional fragments of fabric and plastic. Frequent roots and rootlets. (MADE GROUND) Grey angular COBBLES of sandstone with some angular to subangular fine to coarse gravel of sandstone. Sand is fine to coarse. (TIDAL FLAT DEPOSITS) Stiff brown, mottled grey, with pockets of orange slightly sandy CLAY. Sand is fine. (TIDAL FLAT DEPOSITS)		(0.25)			
0.20	ES1	Unsuitable for ES			0.25			-2.30
0.20	D2							
0.25 - 0.55	B7				0.55			-2.00
0.50	ES4			0.55 fabric membrane				
0.50	D5							
0.55 - 1.50	B8							
1.00	ES6				(2.35)			
2.90 - 4.00	B9		Soft grey and dark grey sandy CLAY. Sand is fine to medium. (TIDAL FLAT DEPOSITS)		2.90	-0.35		
3.50	D10				(1.10)			
		27/08/19	Dry					
			END OF EXPLORATORY HOLE		4.00	-1.45		

<b>Groundwater Entries</b> No.    Depth    Strike (m)    Remarks	<b>Remarks</b> Depth (m)    Remarks 0.00 - 4.00    No groundwater encountered during excavation.	<b>Stability</b> Stable  <b>Shoring</b> None  <b>Weather</b> Sunny, dry
---------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. Scale 1:25    © Copyright SOCOTEC UK Limited 12/11/2019 15:31:46	<b>Project</b> SOUTH HUMBER BANK ENERGY CENTRE  <b>Project No.</b> A9020-19 <b>Carried out for</b> EP UK Investments Ltd.	<b>Trial Pit</b>  <b>TP07</b> Sheet 1 of 1
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------

# Trial Pit Log



<b>Logged</b> AW <b>Checked</b> MW <b>Approved</b> MW	<b>Start</b> 28/08/2019 <b>End</b> 28/08/2019	<b>Equipment, Methods and Remarks</b> DX140. Machine excavated.	<b>Dimension and Orientation</b> Width 4.50 m Length 3.00 m 	<b>Ground Level</b> 3.27 mOD <b>Coordinates (m)</b> E 523337.54 <b>National Grid</b> N 413454.72
-------------------------------------------------------------	--------------------------------------------------------	-----------------------------------------------------------------------	-----------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------

## Samples and Tests      Strata Description

Depth	Type & No.	Records	Main	Detail	Depth, Level (Thickness)	Legend	Backfill
0.00 - 0.45	B3		Firm brown slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of chalk, chert and sandstone. Cobbles (<80x70x70mm) are of chalk. Frequent roots and rootlets. (MADE GROUND)		(0.45)		
0.20 0.20	ES1 D2						
0.45 - 1.20	B6		Grey sandy angular to subangular fine to coarse GRAVEL of limestone with medium cobble and boulder content. Cobbles (<120x150x110mm) are angular. Boulders (<180x220x120mm). (MADE GROUND)		0.45 +2.82		
0.50 0.50	ES4 D5				(0.65)		
1.20 1.20 - 2.30	ES7 B8		Stiff brown, mottled grey and orangish brown, slightly sandy CLAY. Sand is fine. (TIDAL FLAT DEPOSITS)		1.10 +2.17		
1.50	D9				(1.20)		
2.30 - 4.50	B10		Soft grey slightly sandy CLAY. Sand is fine. Slightly organic. (TIDAL FLAT DEPOSITS)		2.30 +0.97		
3.50	D11				(2.20)		
		28/08/19      Dry					
			END OF EXPLORATORY HOLE		4.50 -1.23		

<b>Groundwater Entries</b> No.    Depth Strike (m)    Remarks	<b>Remarks</b> Depth (m)    Remarks 0.00 - 4.50    No groundwater encountered during excavation.	<b>Stability</b> Stable  <b>Shoring</b> None  <b>Weather</b> Sunny, dry
------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. Scale 1:25    © Copyright SOCOTEC UK Limited 	Project    SOUTH HUMBER BANK ENERGY CENTRE Project No.    A9020-19 Carried out for    EP UK Investments Ltd.	Trial Pit <h2>TP08</h2> Sheet 1 of 1
--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------	--------------------------------------------

# Trial Pit Log



<b>Logged</b> AW <b>Checked</b> MW <b>Approved</b> MW	<b>Start</b> 27/08/2019 <b>End</b> 27/08/2019	<b>Equipment, Methods and Remarks</b> DX140. Machine excavated. Possible service identified on CAT. Not exposed. Pit extended away from service.	<b>Dimension and Orientation</b> Width 0.60 m Length 4.00 m 	<b>Ground Level</b> 3.43 mOD <b>Coordinates (m)</b> E 523096.41 <b>National Grid</b> N 413350.21
-------------------------------------------------------------	--------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------

## Samples and Tests      Strata Description

Depth	Type & No.	Records	Main	Detail	Depth, Level (Thickness)	Legend	Backfill
0.10 - 0.45	B3		Firm brown slightly sandy gravelly CLAY with high cobble content. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of chalk and sandstone. Rare fragments plastic and paving stones. Cobbles (<110x90x100mm) are subangular of chalk and sandstone. Occasional pockets of brown gravelly fine to coarse sand. Frequent roots and rootlets. (MADE GROUND)		(0.45)		
0.20 0.20	ES1 D2						
0.45 - 1.50	B7 ES4 D5		Firm brown, mottled grey and very dark grey, slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular fine to coarse of chalk and sandstone. (TIDAL FLAT DEPOSITS)		0.45 +2.98		
1.00	ES6				(1.05)		
1.40 1.50 - 2.50	D8 B9				1.50 +1.93		
3.00	D10		Firm brown, mottled grey and very dark grey, slightly sandy CLAY. Sand is fine. (TIDAL FLAT DEPOSITS)		(1.70)		
3.20 - 4.50	B11				3.20 +0.23		
4.20	D12	27/08/19      Dry	Soft grey and dark grey slightly organic slightly sandy CLAY. Sand is fine. (TIDAL FLAT DEPOSITS)		(1.30)		
					4.50 -1.07		
			END OF EXPLORATORY HOLE				

<b>Groundwater Entries</b> No.    Depth    Strike (m)    Remarks	<b>Remarks</b> Depth (m)    Remarks 0.00 - 4.50    No groundwater encountered during excavation.	<b>Stability</b> Stable  <b>Shoring</b> None  <b>Weather</b> Sunny
---------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. Scale 1:25    © Copyright SOCOTEC UK Limited 12/11/2019 15:31:47	<b>Project</b> SOUTH HUMBER BANK ENERGY CENTRE  <b>Project No.</b> A9020-19 <b>Carried out for</b> EP UK Investments Ltd.	<b>Trial Pit</b>  <h2>TP09</h2> Sheet 1 of 1
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------

# Trial Pit Log



<b>Logged</b> AW <b>Checked</b> MW <b>Approved</b> MW	<b>Start</b> 27/08/2019 <b>End</b> 27/08/2019	<b>Equipment, Methods and Remarks</b> DX140. Machine excavated.	<b>Dimension and Orientation</b> Width 0.60 m Length 3.00 m 18 (Deg)	<b>Ground Level</b> 2.68 mOD <b>Coordinates (m)</b> E 522988.97 <b>National Grid</b> N 413289.30
-------------------------------------------------------------	--------------------------------------------------------	-----------------------------------------------------------------------	-------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------

## Samples and Tests      Strata Description

Depth	Type & No.	Records	Main	Detail	Depth, Level (Thickness)	Legend	Backfill
0.00 - 0.25	B3		Firm brownish grey slightly sandy slightly gravelly CLAY. Gravel is angular to subangular fine to coarse of chalk. Sand is fine to coarse. Frequent roots and rootlets. (MADE GROUND)		(0.25)		
0.20	ES1				0.25	+2.44	
0.20	D2				(0.30)		
0.25 - 0.55	B7		Grey angular to subangular COBBLES of limestone with some angular to subangular fine to coarse gravel of limestone. Sand is fine to coarse. (MADE GROUND)		0.55	+2.13	
0.50	ES4	Unsuitable for ES		0.55 fabric membrane	(2.25)		
0.50	D5						
0.55 - 2.80	B8		Stiff brown, mottled grey and orange, slightly sandy CLAY. Sand is fine. (TIDAL FLAT DEPOSITS)				
1.00	ES6						
1.00	D9						
2.80 - 4.00	B10		Soft grey sandy SILT. Sand is fine to medium. (TIDAL FLAT DEPOSITS)		2.80	-0.12	
3.00	D11				(1.20)		
		27/08/19	Dry				
			END OF EXPLORATORY HOLE		4.00	-1.32	

<b>Groundwater Entries</b> No.    Depth    Strike (m)    Remarks	<b>Remarks</b> Depth (m)    Remarks 0.00 - 4.00    No groundwater encountered during excavation.	<b>Stability</b> Stable  <b>Shoring</b> None  <b>Weather</b> Sunny, dry
---------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. Scale 1:25    © Copyright SOCOTEC UK Limited 12/11/2019 15:31:47	Project    SOUTH HUMBER BANK ENERGY CENTRE  Project No.    A9020-19 Carried out for    EP UK Investments Ltd.	<b>Trial Pit</b>  <b>TP10</b> Sheet 1 of 1
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------

# Trial Pit Log



<b>Logged</b> AW <b>Checked</b> MW <b>Approved</b> MW	<b>Start</b> 28/08/2019 <b>End</b> 28/08/2019	<b>Equipment, Methods and Remarks</b> DX140. Machine excavated.	<b>Dimension and Orientation</b> Width 0.60 m Length 3.00 m 56 (Deg)	<b>Ground Level</b> 3.02 mOD <b>Coordinates (m)</b> E 523169.94 <b>National Grid</b> N 413362.15
-------------------------------------------------------------	--------------------------------------------------------	-----------------------------------------------------------------------	-------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------

## Samples and Tests      Strata Description

Depth	Type & No.	Records	Main	Detail	Depth, Level (Thickness)	Legend	Backfill
0.20 0.20 0.20 - 0.80	ES1 D2 B3		Brown gravelly fine to coarse SAND. Gravel is angular to subangular fine to coarse of sandstone. Occasional roots and rootlets. (MADE GROUND)				
0.50 0.50	ES4 D5				(1.20)		
1.00	ES6						
1.20 - 1.80	B7		Firm grey slightly sandy gravelly CLAY. Gravel is subangular to subrounded fine to coarse of chert, chalk and sandstone. Sand is fine to coarse. Occasional fragments of red brick, fabric and plastic. (MADE GROUND)		1.20 +1.82		
1.50 1.50	ES9 D8				(0.60)		
1.80 - 3.50	B10		Firm brown, mottled grey, slightly sandy CLAY. Occasional pockets of brown fine to coarse sand. (TIDAL FLAT DEPOSITS)		1.80 +1.22		
2.50	D11				(1.70)		
3.50 - 4.50	B12		Firm grey slightly sandy CLAY with occasional pockets of black slightly organic sandy clay. Sand is fine to coarse. (TIDAL FLAT DEPOSITS)		3.50 -0.48		
4.00	D13				(1.00)		
		28/08/19      Dry					
			END OF EXPLORATORY HOLE		4.50 -1.48		

<b>Groundwater Entries</b> No.    Depth    Strike (m)    Remarks	<b>Remarks</b> Depth (m)    Remarks 0.00 - 4.50    No groundwater encountered during excavation.	<b>Stability</b> Stable  <b>Shoring</b> None  <b>Weather</b> Sunny, dry
---------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. Scale 1:25    © Copyright SOCOTEC UK Limited 12/11/2019 15:31:47	<b>Project</b> SOUTH HUMBER BANK ENERGY CENTRE  <b>Project No.</b> A9020-19 <b>Carried out for</b> EP UK Investments Ltd.	<b>Trial Pit</b>  <h2 style="text-align: center;">TP11</h2> Sheet 1 of 1
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------

# Trial Pit Log



<b>Logged</b> AW <b>Checked</b> MW <b>Approved</b> MW	<b>Start</b> 27/08/2019 <b>End</b> 27/08/2019	<b>Equipment, Methods and Remarks</b> DX140. Machine excavated.	<b>Dimension and Orientation</b> Width 0.60 m Length 2.80 m 	<b>Ground Level</b> 2.58 mOD <b>Coordinates (m)</b> E 523052.47 <b>National Grid</b> N 413248.58
-------------------------------------------------------------	--------------------------------------------------------	-----------------------------------------------------------------------	-----------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------

## Samples and Tests      Strata Description

Depth	Type & No.	Records	Main	Detail	Depth, Level (Thickness)	Legend	Backfill
0.00 - 0.45	B3		Firm to stiff brown, mottled grey, slightly sandy gravelly CLAY. Gravel is angular to subangular fine to coarse of chalk, chert and sandstone. Occasional fragments of red brick. Frequent rootlets. (MADE GROUND)		(0.45)		
0.20 0.20	ES1 D2						
0.45 - 1.30	B7 ES4 D5		Brownish grey very sandy angular fine to coarse GRAVEL of chalk and limestone. Frequent angular fragments of concrete, wire and red brick and rebar. Sand is fine to coarse. (MADE GROUND)		0.45 +2.13 (0.85)		
1.00	ES6						
1.30 - 2.50	B9		Firm brown, mottled grey and orangish brown, slightly sandy CLAY. Sand is fine. (TIDAL FLAT DEPOSITS)		1.30 +1.28 (1.20)		
1.50	D8						
2.50 - 3.50	B11		Soft dark grey and grey slightly organic slightly sandy CLAY. Sand is fine. (TIDAL FLAT DEPOSITS)		2.50 +0.08 (2.00)		
3.00	D10						
3.50 - 4.00	B13						
4.20	D12	27/08/19	Dry				
			END OF EXPLORATORY HOLE		4.50 -1.92		

<b>Groundwater Entries</b> No.    Depth    Strike (m)    Remarks	<b>Remarks</b> Depth (m)    Remarks 0.00 - 4.50    No groundwater encountered during excavation.	<b>Stability</b> Stable  <b>Shoring</b> None  <b>Weather</b> Sunny, dry
---------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. Scale 1:25    © Copyright SOCOTEC UK Limited 	Project    SOUTH HUMBER BANK ENERGY CENTRE Project No.    A9020-19 Carried out for    EP UK Investments Ltd.	Trial Pit <h2>TP12</h2> Sheet 1 of 1
--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------	--------------------------------------------



# Trial Pit Log



<b>Logged</b> FC <b>Checked</b> MW <b>Approved</b> MW	<b>Start</b> 19/08/2019 <b>End</b> 19/08/2019	<b>Equipment, Methods and Remarks</b> Hand excavated.	<b>Dimension and Orientation</b> Width  Length	<b>Ground Level</b> 1.80 mOD <b>Coordinates (m)</b> E 523011.50 <b>National Grid</b> N 413470.72
-------------------------------------------------------------	--------------------------------------------------------	----------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------

Samples and Tests		Strata Description		
-------------------	--	--------------------	--	--

Depth	Type & No.	Records	Main	Detail	Depth, Level (Thickness)	Legend	Backfill
0.20 0.20	ES1 D2		Firm dark brown and grey slightly sandy CLAY. (TIDAL FLAT DEPOSITS)				
0.50 0.50	ES3 D4			(1.20)			
1.00 1.00	ES5 D6	19/08/19 Dry					
			END OF EXPLORATORY HOLE		1.20 +0.60		

<b>Groundwater Entries</b> No. Depth Strike (m) Remarks	<b>Remarks</b> Depth (m) 0.00 - 1.20 1.20 Remarks No groundwater encountered during excavation. CAT scanned base of pit - no trace.	<b>Stability</b> Stable <b>Shoring</b> None <b>Weather</b> Sunny
------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. Scale 1:25 © Copyright SOCOTEC UK Limited 12/11/2019 15:31:41	Project SOUTH HUMBER BANK ENERGY CENTRE Project No. A9020-19 Carried out for EP UK Investments Ltd.	Trial Pit <b>CPT01</b> Sheet 1 of 1
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------	-------------------------------------------

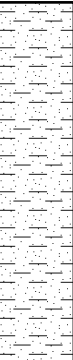
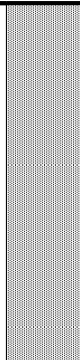


# Trial Pit Log



<b>Logged</b> AW <b>Checked</b> MW <b>Approved</b> MW	<b>Start</b> 19/08/2019 <b>End</b> 19/08/2019	<b>Equipment, Methods and Remarks</b> Hand excavated.	<b>Dimension and Orientation</b> Width  Length	<b>Ground Level</b> 2.22 mOD <b>Coordinates (m)</b> E 523016.56 <b>National Grid</b> N 413419.67
-------------------------------------------------------------	--------------------------------------------------------	----------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------

Samples and Tests			Strata Description		
-------------------	--	--	--------------------	--	--

Depth	Type & No.	Records	Main	Detail	Depth, Level (Thickness)	Legend	Backfill
0.20 0.20	ES1 D2		Firm brown, mottled grey and orangish brown, slightly sandy CLAY. (TIDAL FLAT DEPOSITS)				
0.50 0.50	ES3 D4			(1.20)			
1.00 1.00	ES5 D6	19/08/19					
			END OF EXPLORATORY HOLE		1.20 +1.02		

<b>Groundwater Entries</b> No. Depth Strike (m) Remarks	<b>Remarks</b> Depth (m) Remarks	<b>Stability</b>  <b>Shoring</b>  <b>Weather</b>
------------------------------------------------------------	-------------------------------------	--------------------------------------------------------------

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. Scale 1:25 © Copyright SOCOTEC UK Limited 12/11/2019 15:31:41	<b>AGS</b> Project SOUTH HUMBER BANK ENERGY CENTRE Project No. A9020-19 Carried out for EP UK Investments Ltd.	<b>Trial Pit</b> <b>CPT02</b> Sheet 1 of 1
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------

# Trial Pit Log



Logged FC Checked MW Approved MW	Start 19/08/2019 End 19/08/2019	Equipment, Methods and Remarks Hand excavated.	Dimension and Orientation Width Length		Ground Level 2.20 mOD Coordinates (m) E 523046.00 National Grid N 413424.05
----------------------------------------	------------------------------------	---------------------------------------------------	----------------------------------------------	--	-----------------------------------------------------------------------------------

Samples and Tests			Strata Description			
-------------------	--	--	--------------------	--	--	--

Depth	Type & No.	Records	Main	Detail	Depth, Level (Thickness)	Legend	Backfill
0.20	ES1		Firm dark brown slightly sandy CLAY. (TIDAL FLAT DEPOSITS)				
0.50	ES2				(1.20)		
1.00	ES3	19/08/19 Dry			1.00-1.20 mottled grey. Occasional lenses of orangish brown fine to medium sand upto 50x50mm		
			END OF EXPLORATORY HOLE				

<b>Groundwater Entries</b> No. Depth Strike (m) Remarks	<b>Remarks</b> Depth (m) 0.00 - 1.20 Remarks No groundwater encountered during excavation.	<b>Stability</b> Stable <b>Shoring</b> None <b>Weather</b> Sunny
------------------------------------------------------------	--------------------------------------------------------------------------------------------------	------------------------------------------------------------------------

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. Scale 1:25 © Copyright SOCOTEC UK Limited 12/11/2019 15:31:41	Project SOUTH HUMBER BANK ENERGY CENTRE Project No. A9020-19 Carried out for EP UK Investments Ltd.	Trial Pit <b>CPT03</b> Sheet 1 of 1
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------	-------------------------------------------

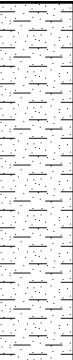
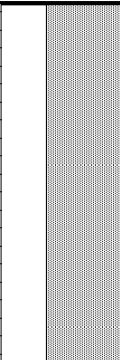


# Trial Pit Log



<b>Logged</b> FC <b>Checked</b> MW <b>Approved</b> MW	<b>Start</b> 19/08/2019 <b>End</b> 19/08/2019	<b>Equipment, Methods and Remarks</b> Hand excavated.	<b>Dimension and Orientation</b> Width  Length	<b>Ground Level</b> 1.93 mOD <b>Coordinates (m)</b> E 523082.33 <b>National Grid</b> N 413482.73
-------------------------------------------------------------	--------------------------------------------------------	----------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------

Samples and Tests			Strata Description			
-------------------	--	--	--------------------	--	--	--

Depth	Type & No.	Records	Main	Detail	Depth, Level (Thickness)	Legend	Backfill
0.20	ES1		Firm dark brown and grey slightly sandy CLAY. Frequent lenses of orangish brown fine to medium sand up to 50x50mm. (TIDAL FLAT DEPOSITS)		(1.20)		
0.50	ES2						
1.00	ES3	19/08/19 Dry					
			END OF EXPLORATORY HOLE		1.20 +0.73		

<b>Groundwater Entries</b> No. Depth Strike (m) Remarks	<b>Remarks</b> Depth (m) 0.00 - 1.20 Remarks No groundwater encountered during excavation.	<b>Stability</b> Stable <b>Shoring</b> None <b>Weather</b> Sunny
------------------------------------------------------------	--------------------------------------------------------------------------------------------------	------------------------------------------------------------------------

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. Scale 1:25 © Copyright SOCOTEC UK Limited 12/11/2019 15:31:42	<b>Project</b> SOUTH HUMBER BANK ENERGY CENTRE <b>Project No.</b> A9020-19 <b>Carried out for</b> EP UK Investments Ltd.	<b>Trial Pit</b> <b>CPT04</b> Sheet 1 of 1
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------



# Trial Pit Log



Logged FC Checked MW Approved MW	Start 19/08/2019 End 19/08/2019	Equipment, Methods and Remarks Hand excavated	Dimension and Orientation Width Length		Ground Level 2.28 mOD Coordinates (m) E 523157.68 National Grid N 413452.58
----------------------------------------	------------------------------------	--------------------------------------------------	----------------------------------------------	--	-----------------------------------------------------------------------------------

## Samples and Tests      Strata Description

Depth	Type & No.	Records	Main	Detail	Depth, Level (Thickness)	Legend	Backfill
0.20	ES1		Firm dark brown, mottled grey, slightly sandy CLAY. (MADE GROUND)				
0.50	ES2				(1.20)		
1.00	ES3	19/08/19      Dry					
1.20	ES4		END OF EXPLORATORY HOLE	1.10-1.20 subrounded gravel of clinker	1.20	+1.08	

<b>Groundwater Entries</b> No.    Depth    Strike (m)    Remarks	<b>Remarks</b> Depth (m)    Remarks 0.00 - 1.20    No groundwater encountered during excavation.	Stability    Stable  Shoring      None  Weather
---------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------	-------------------------------------------------------------

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. Scale 1:25    © Copyright SOCOTEC UK Limited 12/11/2019 15:31:42	Project    SOUTH HUMBER BANK ENERGY CENTRE Project No.    A9020-19 Carried out for    EP UK Investments Ltd.	Trial Pit <h3>CPT05</h3> Sheet 1 of 1
------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------	---------------------------------------------



# Trial Pit Log



Logged FC Checked MW Approved MW	Start 20/08/2019 End 20/08/2019	Equipment, Methods and Remarks Hand excavated.	Dimension and Orientation Width Length		Ground Level 2.52 mOD Coordinates (m) E 523032.15 National Grid N 413220.98
----------------------------------------	------------------------------------	---------------------------------------------------	----------------------------------------------	--	-----------------------------------------------------------------------------------

Samples and Tests			Strata Description		
-------------------	--	--	--------------------	--	--

Depth	Type & No.	Records	Main	Detail	Depth, Level (Thickness)	Legend	Backfill
0.20	ES1	20/08/19 Dry	Dark brown gravelly slightly clayey fine to coarse SAND with low cobble content. Gravel is subangular fine to coarse of concrete, sub-base, quartzite and chalk. Cobbles are subangular of chalk and concrete. (MADE GROUND)		(0.55)		
0.50	ES2				0.55		
			END OF EXPLORATORY HOLE				

<b>Groundwater Entries</b> No. Depth Strike (m) Remarks	<b>Remarks</b> Depth (m) 0.00 - 0.55 0.55 Remarks No groundwater encountered during excavation. Trial pit terminated due to obstruction, pit relocated approximately 0.60m West.	Stability Stable Shoring None Weather
------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. Scale 1:25 © Copyright SOCOTEC UK Limited 12/11/2019 15:31:43	Project SOUTH HUMBER BANK ENERGY CENTRE Project No. A9020-19 Carried out for EP UK Investments Ltd.	Trial Pit <h2>CPT08</h2> Sheet 1 of 1
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------	---------------------------------------------



# Trial Pit Log



Logged FC Checked MW Approved MW	Start 20/08/2019 End 20/08/2019	Equipment, Methods and Remarks Hand excavated.	Dimension and Orientation Width Length		Ground Level 2.55 mOD Coordinates (m) E 523031.45 National Grid N 413220.30
----------------------------------------	------------------------------------------	---------------------------------------------------	----------------------------------------------	--	-----------------------------------------------------------------------------------

Samples and Tests			Strata Description		
-------------------	--	--	--------------------	--	--

Depth	Type & No.	Records	Main	Detail	Depth, Level (Thickness)	Legend	Backfill
		20/08/19 Dry	Dark brown gravelly slightly clayey fine to coarse SAND. Gravel is subangular fine to coarse of brick, quartzite and concrete. (MADE GROUND)	0.50-0.60 rare plastic fragments	(0.60)		
			END OF EXPLORATORY HOLE		0.60 +1.95		

<b>Groundwater Entries</b> No. Depth Strike (m) Remarks	<b>Remarks</b> Depth (m) 0.00 - 0.60 0.60 Remarks No groundwater encountered during excavation. Trial pit terminated due to obstruction.	Stability Stable Shoring None Weather
------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. Scale 1:25 © Copyright SOCOTEC UK Limited 12/11/2019 15:31:43	Project SOUTH HUMBER BANK ENERGY CENTRE Project No. A9020-19 Carried out for EP UK Investments Ltd.	Trial Pit <h2>CPT08A</h2> Sheet 1 of 1
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------	----------------------------------------------

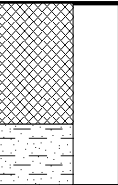
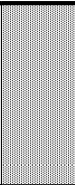


# Trial Pit Log



<b>Logged</b> FC <b>Checked</b> MW <b>Approved</b> MW	<b>Start</b> 22/08/2019 <b>End</b> 22/08/2019	<b>Equipment, Methods and Remarks</b> Hand excavated.	<b>Dimension and Orientation</b> Width  Length	<b>Ground Level</b> 2.51 mOD <b>Coordinates (m)</b> E 523033.01 <b>National Grid</b> N 413217.68
-------------------------------------------------------------	--------------------------------------------------------	----------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------

Samples and Tests		Strata Description		
-------------------	--	--------------------	--	--

Depth	Type & No.	Records	Main	Detail	Depth, Level (Thickness)	Legend	Backfill
		22/08/19	Dry Dark brown gravelly slightly clayey fine to coarse SAND. Gravel is subangular to rounded fine to coarse of chalk, concrete and quartzite. Rare fragments of rope and metal. (MADE GROUND) Firm dark brown slightly sandy CLAY. (TIDAL FLAT DEPOSITS)		(0.40) 0.40 +2.11 (0.20) 0.60 +1.91		
			END OF EXPLORATORY HOLE				

<b>Groundwater Entries</b> No. Depth Strike (m) Remarks	<b>Remarks</b> Depth (m) 0.00 - 0.60 0.60 Remarks No groundwater encountered during excavation. Trial pit terminated due to obstruction.	<b>Stability</b> Stable  <b>Shoring</b> None  <b>Weather</b>
------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. Scale 1:25 © Copyright SOCOTEC UK Limited 12/11/2019 15:31:43	<b>AGS</b> Project SOUTH HUMBER BANK ENERGY CENTRE Project No. A9020-19 Carried out for EP UK Investments Ltd.	<b>Trial Pit</b> <b>CPT08B</b> Sheet 1 of 1
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------

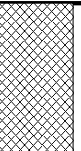
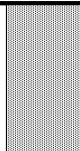


# Trial Pit Log



<b>Logged</b> FC <b>Checked</b> MW <b>Approved</b> MW	<b>Start</b> 22/08/2019 <b>End</b> 22/08/2019	<b>Equipment, Methods and Remarks</b> Hand excavated.	<b>Dimension and Orientation</b> Width  Length	<b>Ground Level</b> 2.49 mOD <b>Coordinates (m)</b> E 523034.28 <b>National Grid</b> N 413212.90
-------------------------------------------------------------	--------------------------------------------------------	----------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------

Samples and Tests		Strata Description		
-------------------	--	--------------------	--	--

Depth	Type & No.	Records	Main	Detail	Depth, Level (Thickness)	Legend	Backfill
		22/08/19 Dry	Brown gravelly clayey fine to coarse SAND. Gravel is angular to subangular fine to coarse of concrete, chalk, quartzite, chert and plastic. (MADE GROUND)		(0.50)		
			END OF EXPLORATORY HOLE		0.50 +1.99		

<b>Groundwater Entries</b> No. Depth Strike (m) Remarks	<b>Remarks</b> Depth (m) 0.00 - 0.50 0.50 Remarks No groundwater encountered during excavation. Trial pit terminated due to obstruction.	<b>Stability</b> Stable  <b>Shoring</b> None  <b>Weather</b>
------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. Scale 1:25 © Copyright SOCOTEC UK Limited 12/11/2019 15:31:43	Project SOUTH HUMBER BANK ENERGY CENTRE Project No. A9020-19 Carried out for EP UK Investments Ltd.	Trial Pit <h2>CPT08C</h2> Sheet 1 of 1
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------	----------------------------------------------

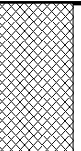
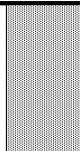


# Trial Pit Log



<b>Logged</b> FC <b>Checked</b> MW <b>Approved</b> MW	<b>Start</b> 22/08/2019 <b>End</b> 22/08/2019	<b>Equipment, Methods and Remarks</b> Hand excavated.	<b>Dimension and Orientation</b> Width  Length	<b>Ground Level</b> 2.54 mOD <b>Coordinates (m)</b> E 523027.21 <b>National Grid</b> N 413220.32
-------------------------------------------------------------	--------------------------------------------------------	----------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------

Samples and Tests		Strata Description		
-------------------	--	--------------------	--	--

Depth	Type & No.	Records	Main	Detail	Depth, Level (Thickness)	Legend	Backfill
		22/08/19 Dry	Dark brown gravelly slightly clayey fine to coarse SAND. Gravel is subangular fine to coarse of chalk, concrete, macadam and plastic. (MADE GROUND)		(0.50)		
			END OF EXPLORATORY HOLE		0.50 +2.04		

<b>Groundwater Entries</b> No. Depth Strike (m) Remarks	<b>Remarks</b> Depth (m) 0.00 - 0.50 0.50 Remarks No groundwater encountered during excavation. Trial pit terminated due to obstruction.	<b>Stability</b> Stable  <b>Shoring</b> None  <b>Weather</b>
------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------

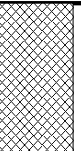
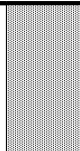
Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. Scale 1:25 © Copyright SOCOTEC UK Limited 12/11/2019 15:31:43	<b>AGS</b> Project SOUTH HUMBER BANK ENERGY CENTRE Project No. A9020-19 Carried out for EP UK Investments Ltd.	<b>Trial Pit</b> <h2>CPT08D</h2> Sheet 1 of 1
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------

# Trial Pit Log



<b>Logged</b> FC <b>Checked</b> MW <b>Approved</b> MW	<b>Start</b> 22/08/2019 <b>End</b> 22/08/2019	<b>Equipment, Methods and Remarks</b> Hand excavated.	<b>Dimension and Orientation</b> Width  Length	<b>Ground Level</b> 2.56 mOD <b>Coordinates (m)</b> E 523022.94 <b>National Grid</b> N 413219.56
-------------------------------------------------------------	--------------------------------------------------------	----------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------

Samples and Tests			Strata Description		
-------------------	--	--	--------------------	--	--

Depth	Type & No.	Records	Main	Detail	Depth, Level (Thickness)	Legend	Backfill
		22/08/19 Dry	Dark brown gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to coarse of chalk, concrete, macadam and rebar. (MADE GROUND)		(0.50)		
			END OF EXPLORATORY HOLE		0.50 +2.06		

<b>Groundwater Entries</b> No. Depth Strike (m) Remarks	<b>Remarks</b> Depth (m) 0.00 - 0.50 0.50 Remarks No groundwater encountered during excavation. Trial pit terminated due to obstruction.	<b>Stability</b> Stable <b>Shoring</b> None <b>Weather</b>
------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. Scale 1:25 © Copyright SOCOTEC UK Limited 12/11/2019 15:31:44	Project SOUTH HUMBER BANK ENERGY CENTRE Project No. A9020-19 Carried out for EP UK Investments Ltd.	Trial Pit <h2>CPT08E</h2> Sheet 1 of 1
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------	----------------------------------------------





# Trial Pit Log



<b>Logged</b> FC <b>Checked</b> MW <b>Approved</b> MW	<b>Start</b> 22/08/2019 <b>End</b> 22/08/2019	<b>Equipment, Methods and Remarks</b> Hand excavated.	<b>Dimension and Orientation</b> Width  Length	<b>Ground Level</b> 2.39 mOD <b>Coordinates (m)</b> E 523032.89 <b>National Grid</b> N 413228.08
-------------------------------------------------------------	--------------------------------------------------------	----------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------

Samples and Tests		Strata Description		
-------------------	--	--------------------	--	--

Depth	Type & No.	Records	Main	Detail	Depth, Level (Thickness)	Legend	Backfill
		22/08/19 Dry	Dark brown gravelly slightly clayey fine to coarse SAND. Gravel is angular to subangular fine to coarse of chalk, concrete and macadam. (MADE GROUND)		(0.30)		
			END OF EXPLORATORY HOLE		0.30 +2.09		

<b>Groundwater Entries</b> No. Depth Strike (m) Remarks	<b>Remarks</b> Depth (m) 0.00 - 0.30 0.30 Remarks No groundwater encountered during excavation. Trial pit terminated due to macadam obstruction.	<b>Stability</b> Stable  <b>Shoring</b> None  <b>Weather</b> Sunny
------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------

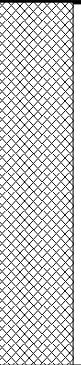
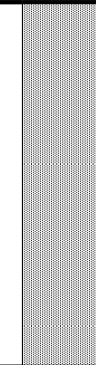
Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. Scale 1:25 © Copyright SOCOTEC UK Limited 12/11/2019 15:31:44	Project SOUTH HUMBER BANK ENERGY CENTRE Project No. A9020-19 Carried out for EP UK Investments Ltd.	Trial Pit <h2>CPT08F</h2> Sheet 1 of 1
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------	----------------------------------------------



# Trial Pit Log



<b>Logged</b> FC <b>Checked</b> MW <b>Approved</b> MW	<b>Start</b> 20/08/2019 <b>End</b> 20/08/2019	<b>Equipment, Methods and Remarks</b> Hand excavated.	<b>Dimension and Orientation</b> Width  Length	<b>Ground Level</b> 3.54 mOD <b>Coordinates (m)</b> E 523094.89 <b>National Grid</b> N 413363.21
-------------------------------------------------------------	--------------------------------------------------------	----------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------

Samples and Tests			Strata Description					
Depth	Type & No.	Records	Main	Detail	Depth, Level (Thickness)	Legend	Backfill	
0.20	ES1		Firm friable dark brown slightly sandy slightly gravelly CLAY with high cobble content. Gravel is subangular fine to coarse of brick, sandstone and chalk. Cobbles are subangular of chalk. (MADE GROUND)	0.10 rare plastic	(1.20)			
0.50	ES2							
1.00	ES3	20/08/19 Dry		1.00 mesh netting				
			END OF EXPLORATORY HOLE				1.20	+2.34

<b>Groundwater Entries</b> No. Depth Strike (m) Remarks	<b>Remarks</b> Depth (m) 0.00 - 1.20 Remarks No groundwater encountered during excavation.	<b>Stability</b> Stable  <b>Shoring</b> None  <b>Weather</b>
------------------------------------------------------------	--------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------


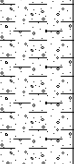

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. Scale 1:25 © Copyright SOCOTEC UK Limited 12/11/2019 15:31:44	<b>AGS</b> Project SOUTH HUMBER BANK ENERGY CENTRE Project No. A9020-19 Carried out for EP UK Investments Ltd.	<b>Trial Pit</b> <b>CPT09</b> Sheet 1 of 1
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------

# Trial Pit Log



<b>Logged</b> FC <b>Checked</b> MW <b>Approved</b> MW	<b>Start</b> 20/08/2019 <b>End</b> 20/08/2019	<b>Equipment, Methods and Remarks</b> Hand excavated.	<b>Dimension and Orientation</b> Width  Length	<b>Ground Level</b> 2.70 mOD <b>Coordinates (m)</b> E 523190.33 <b>National Grid</b> N 413368.73
-------------------------------------------------------------	--------------------------------------------------------	----------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------

Samples and Tests			Strata Description			
-------------------	--	--	--------------------	--	--	--

Depth	Type & No.	Records	Main	Detail	Depth, Level (Thickness)	Legend	Backfill
0.20	ES1		Firm dark brown slightly sandy slightly gravelly CLAY. Gravel is subrounded fine to coarse of quartz. (TIDAL FLAT DEPOSITS)				
0.50	ES2			0.60 subangular cobbles of chalk 10x10mm	(1.00)		
1.10	ES3	20/08/19 Dry	Firm grey, locally mottled black, slightly sandy CLAY. (TIDAL FLAT DEPOSITS)		1.00 +1.70 (0.20)		
			END OF EXPLORATORY HOLE		1.20 +1.50		

<b>Groundwater Entries</b> No. Depth Strike (m) Remarks	<b>Remarks</b> Depth (m) 0.00 - 1.20 Remarks No groundwater encountered during excavation.	<b>Stability</b> Stable  <b>Shoring</b> None  <b>Weather</b>
------------------------------------------------------------	--------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. Scale 1:25 © Copyright SOCOTEC UK Limited 12/11/2019 15:31:44	<b>AGS</b> Project SOUTH HUMBER BANK ENERGY CENTRE Project No. A9020-19 Carried out for EP UK Investments Ltd.	<b>Trial Pit</b> <b>CPT10</b> Sheet 1 of 1
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------

# Borehole Log



Drilled	RP	Start	20/08/2019	Equipment, Methods and Remarks	Competitor Dynamic sampling SPT Hammer ID: RP07 ER 71%	Depth from (m)	1.20	to (m)	5.00	Diameter (mm)	87	Casing Depth (m)	5.00	Ground Level	1.73 mOD
Logged	AW	End	20/08/2019										Coordinates (m)	E 523012.99	
Checked	MW	End	20/08/2019										National Grid	N 413470.99	
Approved	MW														

## Samples and Tests

Depth	Type & No.	Records	Date Casing	Time Water	Strata Description		Depth, Level (Thickness)	Legend	Backfill
					Main	Detail			
		0.00-1.20 Hand excavated inspection pit.			Soft thinly laminated brown, mottled orangish brown and grey, slightly sandy CLAY. (TIDAL FLAT DEPOSITS)				
1.20 - 1.65	SPTS D 1	N=2 (1,1/0,1,0,1)		Dry			(2.15)		
1.20 - 1.65	L	100% rec, diameter 87mm							
1.20 - 2.00	D 2								
1.40 - 1.60									
2.00 - 2.45	SPTS D 3	SW=450		Dry	Very soft interlaminated dark grey and grey slightly sandy CLAY and sandy SILT. (TIDAL FLAT DEPOSITS)		2.15 -0.42		
2.00 - 2.45	L	100% rec, diameter 87mm							
2.00 - 3.00	D 4								
2.40 - 2.60									
3.00 - 3.45	SPTS D 5	SW=450		Dry					
3.00 - 3.45	L	100% rec, diameter 87mm							
3.00 - 4.00	D 6								
3.50 - 3.70									
4.00 - 4.45	SPTS D 7	SW=450		Dry			(3.30)		
4.00 - 4.45	L	100% rec, diameter 87mm							
4.00 - 5.00	D 8								
4.60 - 4.80									
5.00 - 5.45	SPTS D 9	SW=450	20/08/19	Dry					
5.00 - 5.45			5.00	Dry					
					END OF EXPLORATORY HOLE		5.45 -3.72		

Groundwater Entries			Depth Related Remarks			Hard Boring		
No.	Depth Strike (m)	Remarks	Depth Sealed (m)	Depths (m)	Remarks	Depths (m)	Duration (mins)	Tools used
				0.00 - 5.45	No groundwater encountered during drilling.			

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.	Project	SOUTH HUMBER BANK ENERGY CENTRE			Borehole	WS01		
Scale 1:50	Project No.	A9020-19						
© Copyright SOCOTEC UK Limited	Carried out for	EP UK Investments Ltd.				Sheet 1 of 1		
12/11/2019 15:31:48								

# Borehole Log



Drilled	RP	Start	19/08/2019	Equipment, Methods and Remarks	Competitor Dynamic sampling SPT Hammer ID: RP07 ER 71%	Depth from (m)	1.20	to (m)	5.00	Diameter (mm)	87	Casing Depth (m)	3.00	Ground Level	2.18 mOD
Logged	AW	End	19/08/2019											Coordinates (m)	E 523015.11
Checked	MW													National Grid	N 413419.67
Approved	MW														

Samples and Tests				Strata Description				Depth, Level (Thickness)	Legend	Backfill
Depth	Type & No.	Records	Date Casing	Time Water	Main	Detail				
0.20	ES 1	0.00-1.20 Hand excavated inspection pit.			Firm brown, mottled grey and orangish brown, with pockets of dark grey slightly sandy slightly gravelly CLAY. Gravel is angular fine and medium of mudstone. (TIDAL FLAT DEPOSITS)					
0.20	D 2									
0.50	ES 3									
0.50	D 4									
1.00	ES 5									
1.00	D 6									
1.20 - 1.65	SPTS	N=4 (1,1/1,1,1,1)		Dry			(2.65)			
1.20 - 1.65	D 7									
1.20 - 2.00	L	Diameter 87mm								
1.40 - 1.60	D 8									
2.00 - 2.45	SPTS	N=2 (1,0/1,0,1,0)	2.00	Dry		2.00-2.20 AZCL due to SPT				
2.00 - 3.00	L	Diameter 87mm								
2.30 - 2.50	D 9									
2.80 - 3.00	D 10				Soft thinly laminated grey, with pockets of very dark grey, sandy slightly organic CLAY. Sand is fine. Organic odour. (TIDAL FLAT DEPOSITS)		2.65	-0.47		
3.00 - 3.45	SPTS	N=2 (0,0/0,1,0,1)	3.00	Dry		3.00-5.45 interlaminated dark grey and grey slightly sandy clay and silty fine sand				
3.00 - 4.00	L	Diameter 87mm								
3.30 - 3.50	D 11									
3.85 - 4.00	D 12									
4.00 - 4.45	SPTS	SW=450	3.00	Dry			(2.80)			
4.00 - 4.45	D 14									
4.00 - 5.00	L	Diameter 87mm								
4.40 - 4.60	D 13									
5.00 - 5.45	SPTS	SW=450	3.00	Dry						
5.00 - 5.45	D 15		19/08/19	1300						
			3.00	Dry						
					END OF EXPLORATORY HOLE		5.45	-3.27		

Groundwater Entries			Depth Related Remarks			Hard Boring		
No.	Depth Strike (m)	Remarks	Depth Sealed (m)	Depths (m)	Remarks	Depths (m)	Duration (mins)	Tools used
				0.00 - 5.45	No groundwater encountered during drilling.			

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.	Project	SOUTH HUMBER BANK ENERGY CENTRE			Borehole	WS02		
Scale 1:50	Project No.	A9020-19						
© Copyright SOCOTEC UK Limited	Carried out for	EP UK Investments Ltd.						
12/11/2019 15:31:48						Sheet 1 of 1		



# Borehole Log



Drilled	RP	Start	Equipment, Methods and Remarks		Depth from (m)	to (m)	Diameter (mm)	Casing Depth (m)	Ground Level	2.26 mOD	
Logged	AW	20/08/2019	Competitor Dynamic sampling SPT Hammer ID: RP07 ER 71%		1.20	5.00	87	5.00	Coordinates (m)	E 523046.60	
Checked	MW	End								National Grid	N 413424.95
Approved	MW	20/08/2019									

Samples and Tests				Strata Description				Depth, Level (Thickness)	Legend	Backfill
Depth	Type & No.	Records	Date Casing	Time Water	Main	Detail				
0.10 - 0.80	B 1	0.00-1.20 Hand excavated inspection pit.			Firm brown, mottled grey, slightly sandy CLAY. Frequent rootlets. (<1mm). (TIDAL FLAT DEPOSITS)		(2.00)			
1.20 - 1.65	SPTS D 2	N=6 (1,1/2,1,1,2)		Dry						
1.20 - 2.00	L	100% rec, diameter 87mm								
1.40 - 1.60	D 3									
2.00 - 2.45	SPTS D 4	SW=450		Dry	Soft thinly laminated grey sandy SILT with thin laminations of soft grey sandy clay. Sand is fine. (TIDAL FLAT DEPOSITS)		2.00	+0.26		
2.00 - 2.45	L	100% rec, diameter 87mm								
2.40 - 2.60	D 5									
3.00 - 3.45	SPTS D 6	SW=450		Dry			(2.30)			
3.00 - 3.45	L	100% rec, diameter 87mm								
3.00 - 4.00	D 7									
3.30 - 3.50										
4.00 - 4.45	SPTS D 8	SW=450		Dry			4.30	-2.04		
4.00 - 4.45	L	100% rec, diameter 87mm								
4.00 - 5.00	D 9				Very soft very dark grey sandy CLAY. Sand is fine. (TIDAL FLAT DEPOSITS)					
4.30 - 4.60										
5.00 - 5.45	SPTS D 10	N=3 (0,0/0,1,1,1)		Dry			(1.15)			
5.00 - 5.45			20/08/19	0000						
			5.00	Dry	END OF EXPLORATORY HOLE		5.45	-3.19		

Groundwater Entries			Depth Related Remarks			Hard Boring		
No.	Depth Strike (m)	Remarks	Depth Sealed (m)	Depths (m)	Remarks	Depths (m)	Duration (mins)	Tools used
				0.00 - 5.45	No groundwater encountered during drilling.			

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.	Project	SOUTH HUMBER BANK ENERGY CENTRE			Borehole	WS03
Scale 1:50	Project No.	A9020-19				
© Copyright SOCOTEC UK Limited	Carried out for	EP UK Investments Ltd.				Sheet 1 of 1
12/11/2019 15:31:48						

# Borehole Log



Drilled	RP	Start	Equipment, Methods and Remarks	Depth from (m)	to (m)	Diameter (mm)	Casing Depth (m)	Ground Level	1.96 mOD
Logged	AW	20/08/2019	Competitor Dynamic sampling SPT Hammer ID: RP07 ER 71%	1.20	5.00	87	5.00	Coordinates (m)	E 523083.68
Checked	MW	End						National Grid	N 413483.44
Approved	MW	20/08/2019							

Samples and Tests				Strata Description				Depth, Level (Thickness)	Legend	Backfill
Depth	Type & No.	Records	Date Casing	Time Water	Main	Detail				
0.10 - 0.80	B 1	0.00-1.20 Hand excavated inspection pit.			Soft brown, mottled orangish brown and grey, slightly sandy CLAY. Sand is fine. (TIDAL FLAT DEPOSITS)					
1.20 - 1.65	SPTS D 2	SW=450		Dry			(2.65)			
1.20 - 1.65	L	100% rec, diameter 87mm								
1.20 - 2.00	L									
1.50 - 1.70	D 3									
2.00 - 2.45	SPTS D 5	SW=450		Dry						
2.00 - 2.20	D 4									
2.00 - 2.45	L	100% rec, diameter 87mm								
2.00 - 3.00	L									
2.80 - 3.00	D 6				Very soft interlaminated grey and dark grey sandy SILT and sandy CLAY. Sand is fine. (TIDAL FLAT DEPOSITS)		2.65	-0.70		
3.00 - 3.45	SPTS D 7	SW=450		Dry						
3.00 - 3.45	L	100% rec, diameter 87mm								
3.00 - 4.00	L									
3.50 - 3.70	D 8									
4.00 - 4.45	SPTS D 9	SW=450		Dry						
4.00 - 4.45	L	100% rec, diameter 87mm								
4.00 - 5.00	L									
4.50 - 4.70	D 10						(2.80)			
5.00 - 5.45	SPTS D 11	SW=450		Dry						
5.00 - 5.45	D 11		20/08/19	0000						
			5.00	Dry	END OF EXPLORATORY HOLE		5.45	-3.50		

Groundwater Entries			Depth Related Remarks			Hard Boring		
No.	Depth Strike (m)	Remarks	Depth Sealed (m)	Depths (m)	Remarks	Depths (m)	Duration (mins)	Tools used
				0.00 - 5.45	No groundwater encountered during drilling.			

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.	Project	SOUTH HUMBER BANK ENERGY CENTRE			Borehole	WS04
Scale 1:50	Project No.	A9020-19				
© Copyright SOCOTEC UK Limited	Carried out for	EP UK Investments Ltd.				Sheet 1 of 1
12/11/2019 15:31:49						

# Borehole Log



Drilled	RP	Start	Equipment, Methods and Remarks		Depth from (m)	to (m)	Diameter (mm)	Casing Depth (m)	Ground Level	2.31 mOD
Logged	FC	23/08/2019	Competitor Dynamic sampling SPT Hammer ID: RP07 ER 71%		1.20	5.00			Coordinates (m)	E 523156.69
Checked	MW	End							National Grid	N 413452.48
Approved	MW	23/08/2019								

## Samples and Tests

Samples and Tests			Strata Description				Depth, Level (Thickness)	Legend	Backfill
Depth	Type & No.	Records	Date Casing	Time Water	Main	Detail			
		0.00-1.20 Hand excavated inspection pit.			Firm to stiff brown, mottled grey, slightly sandy CLAY. (TIDAL FLAT DEPOSITS)				
1.20 - 1.65	SPTS D 4	N=5 (1,2/1,1,2,1)					(2.40)		
1.20 - 5.00	L								
1.50 - 1.60	D 5								
2.00 - 2.45	SPTS D 6	SW=450							
2.00									
2.60 - 2.70	D 7				Very soft brown, mottled grey, silty CLAY. (TIDAL FLAT DEPOSITS)	2.90 dark grey	2.40	-0.09	
3.00 - 3.45	SPTS D 8	SW=450							
3.00									
3.60 - 3.70	D 9								
4.00 - 4.45	SPTS D 10	SW=450							
4.00									
4.20 - 4.30	D 11								
5.00 - 5.45	SPTS D 12	SW=450							
5.00			23/08/19	0000					
					END OF EXPLORATORY HOLE		5.45	-3.14	

Groundwater Entries			Depth Related Remarks			Hard Boring		
No.	Depth Strike (m)	Remarks	Depth Sealed (m)	Depths (m)	Remarks	Depths (m)	Duration (mins)	Tools used

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.	Project	SOUTH HUMBER BANK ENERGY CENTRE		Borehole	WS05
Scale 1:50	Project No.	A9020-19			
© Copyright SOCOTEC UK Limited	Carried out for	EP UK Investments Ltd.			
12/11/2019 15:31:49					Sheet 1 of 1

# Borehole Log



Drilled	RP	Start	Equipment, Methods and Remarks		Depth from (m)	to (m)	Diameter (mm)	Casing Depth (m)	Ground Level	2.71 mOD
Logged	FC	22/08/2019	Competitor Dynamic sampling SPT Hammer ID: RP07 ER 71%		1.20	5.00			Coordinates (m)	E 523192.42
Checked	MW	End							National Grid	N 413403.56
Approved	MW	23/08/2019								

**Samples and Tests** **Strata Description**

Depth	Type & No.	Records	Date Casing	Time Water	Main	Detail	Depth, Level (Thickness)	Legend	Backfill
0.20	D 2				Dark brown slightly sandy CLAY. Frequent rootlets. Rare subrounded fine to medium gravel of quartz and chalk. (MADE GROUND)		(1.00)		
1.00	D 3		22/08/19	1700 Dry	Grey gravelly clayey fine to coarse SAND. Gravel is subangular to subrounded fine to coarse of chalk and flint. (MADE GROUND)	0.70 rare subangular cobbles of concrete	1.00 +1.71		
1.20 - 1.65	SPTS D 3	N=14 (7,7/4,3,3,4)	23/08/19	0800			1.20 +1.51		
1.70 - 1.80	D 4				Grey gravelly clayey fine to coarse SAND. Gravel is subangular fine to coarse of chalk, quartzite and concrete. (MADE GROUND)		1.50 +1.21		
2.00 - 2.45	SPTS D 5	N=4 (1,1/1,1,1,1)			Firm dark brown, mottled grey, CLAY. (TIDAL FLAT DEPOSITS)		(0.70)		
2.30 - 2.40	D 6				Soft brown slightly sandy CLAY. (TIDAL FLAT DEPOSITS)		2.20 +0.51		
2.70 - 2.80	D 7				Very soft brown and grey silty CLAY. (TIDAL FLAT DEPOSITS)		2.60 +0.11		
3.00 - 3.45	SPTS D 8	SW=450							
3.50 - 3.60	D 9					3.50 locally organic, slightly organic odour			
4.00 - 4.45	SPTS D 10	SW=450					(2.85)		
4.20 - 4.30	D 11					4.50 dark grey			
5.00 - 5.45	SPTS D 12	SW=450	23/09/19	1000					
					END OF EXPLORATORY HOLE		5.45 -2.74		

<b>Groundwater Entries</b>		<b>Depth Related Remarks</b>		<b>Hard Boring</b>	
No.	Depth Strike (m) Remarks	Depth Sealed (m)	Depths (m) Remarks	Depths (m)	Duration (mins) Tools used
			0.00 - 1.20 No groundwater encountered during excavation.		

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.	Project	SOUTH HUMBER BANK ENERGY CENTRE		Borehole	WS06
Scale 1:50 © Copyright SOCOTEC UK Limited 12/11/2019 15:31:49	Project No.	A9020-19			
	Carried out for	EP UK Investments Ltd.			Sheet 1 of 1

# Borehole Log



Drilled	RP	Start	22/08/2019	Equipment, Methods and Remarks	Competitor Dynamic sampling SPT Hammer ID: RP07 ER 71%	Depth from (m)	1.20	to (m)	5.00	Diameter (mm)	87	Casing Depth (m)	5.00	Ground Level	2.66 mOD
Logged	AW	End	22/08/2019			Coordinates (m)	E 523266.84						National Grid	N 413428.54	
Checked	MW														
Approved	MW														

Samples and Tests				Strata Description									
Depth	Type & No.	Records	Date Casing	Time Water	Main	Detail	Depth, Level (Thickness)	Legend	Backfill				
0.20	ES 1	0.00-1.20 Hand excavated inspection pit.			Firm brown slightly gravelly sandy CLAY. Gravel is angular fine to coarse of chalk. Rare angular fragments of red brick. Sand is fine to coarse. (MADE GROUND)								
0.50	ES 2						(1.20)						
1.00	ES 3												
1.20 - 1.65	SPTS D 4	N=9 (1,2/2,2,2,3)		Dry	Firm dark brown, mottled grey, slightly sandy CLAY. Sand is fine. (TIDAL FLAT DEPOSITS)		1.20	+1.46					
1.20 - 2.00	L	100% rec, diameter 87mm											
1.50 - 1.70	D 5												
2.00 - 2.45	SPTS D 6	N=4 (0,1/1,1,1,1)		Dry									
2.00 - 2.45	L	80% rec, diameter 87mm											
2.00 - 3.00	D 7												
2.50 - 2.60	D 7				Soft dark brown, mottled dark grey, slightly sandy slightly organic CLAY. Sand is fine. (TIDAL FLAT DEPOSITS)		2.50	+0.16					
3.00 - 3.45	SPTS D 8	N=4 (0,0/1,1,1,1)		Dry		3.00 becoming greyish brown							
3.00 - 3.45	L	80% rec, diameter 87mm											
3.00 - 4.00	D 9												
3.50 - 3.70	D 9												
4.00 - 4.45	SPTS D 10	N=4 (0,0/1,1,1,1)		Dry									
4.00 - 4.45	L	80% rec, diameter 87mm											
4.00 - 5.00	D 11												
4.40 - 4.60	D 11												
5.00 - 5.45	D 12		22/08/19	0000									
			5.00	Dry	END OF EXPLORATORY HOLE		5.45	-2.79					

Groundwater Entries			Depth Related Remarks				Hard Boring		
No.	Depth Strike (m)	Remarks	Depth Sealed (m)	Depths (m)	Remarks	Depths (m)	Duration (mins)	Tools used	
				0.00 - 5.45	No groundwater encountered during drilling.				

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.	Project	SOUTH HUMBER BANK ENERGY CENTRE				Borehole	WS07
Scale 1:50	Project No.	A9020-19					
© Copyright SOCOTEC UK Limited	Carried out for	EP UK Investments Ltd.					Sheet 1 of 1
12/11/2019 15:31:50							

# Borehole Log



Drilled	RP	Start	22/08/2019	Equipment, Methods and Remarks	Competitor Dynamic sampling SPT Hammer ID: RP07 ER 71%	Depth from (m)	1.20	to (m)	2.00	Diameter (mm)	87	Casing Depth (m)	2.00	Ground Level	3.53 mOD
Logged	AW	End	22/08/2019			Coordinates (m)	E 523093.09						National Grid	N 413363.00	
Checked	MW														
Approved	MW														

## Samples and Tests

Depth	Type & No.	Records	Date Casing	Time Water	Strata Description		Depth, Level (Thickness)	Legend	Backfill	
					Main	Detail				
		0.00-1.20 Hand excavated inspection pit.				Firm brown slightly sandy gravelly CLAY with high cobble content. Gravel is angular fine to coarse of chalk. Cobbles (<80x70x60mm) are angular of chalk. Sand is fine to coarse. Occasional fragments of red brick. (MADE GROUND)				
1.20 - 1.65	SPTS D 1	N=10 (2,2/2,3,3,2)		Dry			(1.80)			
1.20 - 1.65	L	100% rec, diameter 87mm								
1.20 - 2.00										
1.60 - 1.70	D 2									
1.80 - 2.00	D 3									
2.00 - 2.45	SPTS D 4	N=14 (2,2/3,4,3,4)		Dry		White sandy angular fine to coarse GRAVEL of chalk. Sand is fine to coarse. (MADE GROUND)	1.80 (0.20)	+1.73		
2.00 - 2.45	L	80% rec, diameter 77mm				Stiff grey slightly sandy slightly gravelly CLAY. Gravel is angular fine to coarse of chalk. Sand is fine to coarse. (MADE GROUND)	2.00 (0.40)	+1.53		
2.00 - 3.00	D 5					Stiff brown, mottled grey, slightly sandy CLAY. Sand is fine. (TIDAL FLAT DEPOSITS)	2.40 (1.40)	+1.13		
2.20 - 2.40										
2.80 - 3.00	D 6									
3.00 - 3.45	SPTS D 7	N=4 (1,1/1,1,1,1)		Dry						
3.00 - 3.45	L	80% rec, diameter 77mm								
3.00 - 4.00	D 8									
3.20 - 3.40										
3.80 - 4.00	D 9									
4.00 - 4.45	SPTS D 10	N=4 (0,1/1,1,1,1)	22/08/19	Dry		Soft dark grey slightly sandy CLAY. Sand is fine. Slightly organic. (TIDAL FLAT DEPOSITS)	3.80 (0.65)	-0.27		
4.00 - 4.45			2.00	Dry			4.45 (0.65)	-0.92		
					END OF EXPLORATORY HOLE					

Groundwater Entries			Depth Related Remarks			Hard Boring		
No.	Depth (m)	Strike (m) Remarks	Depth Sealed (m)	Depths (m)	Remarks	Depths (m)	Duration (mins)	Tools used
				0.00 - 4.45	No groundwater encountered during drilling.			

# Borehole Log



Drilled RP	Start	Equipment, Methods and Remarks	Depth from (m)	to (m)	Diameter (mm)	Casing Depth (m)	Ground Level	2.77 mOD	
Logged AW	22/08/2019	Competitor Dynamic sampling SPT Hammer ID: RP07 ER 71%	1.20	5.00	87	5.00	Coordinates (m)	E 523189.17	
Checked MW	End		National Grid						N 413369.84
Approved MW	22/08/2019								

## Samples and Tests      Strata Description

Depth	Type & No.	Records	Date Casing	Time Water	Main	Detail	Depth, Level (Thickness)	Legend	Backfill
		0.00-1.20 Hand excavated inspection pit.			Firm brown, mottled grey, slightly sandy CLAY. Sand is fine. (MADE GROUND)		(0.80)		
1.20 - 1.65	SPTS D 1	N=6 (1,1/1,2,2,1)		Dry	Brown silty fine to medium SAND. (MADE GROUND)		0.80 +1.97 (0.55)		
1.20 - 2.00	L	100% rec, diameter 87mm					1.35 +1.42		
1.60 - 1.80	D 2				Soft brown and grey slightly sandy slightly gravelly CLAY. Gravel is angular fine to coarse of flint, chalk and sandstone. Occasional angular fragments of red brick. (MADE GROUND)	1.80-2.00 pocket of black fine to coarse sand (slag)	(0.80)		
2.00 - 2.45	SPTS D 3	N=8 (1,2/2,1,2,3)		Dry	Firm brown and grey slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is angular fine to coarse of chalk, flint and sandstone. (TIDAL FLAT DEPOSITS)		2.15 +0.62 (0.85)		
2.00 - 3.00	L	85% rec, diameter 87mm					3.00 -0.23 (0.80)		
2.15 - 2.30	D 4								
2.50 - 2.60	D 5								
3.00 - 3.45	SPTS D 6	N=3 (0,1/0,1,1,1)		Dry	Soft brown CLAY. (TIDAL FLAT DEPOSITS)				
3.00 - 3.45	L	80% rec, diameter 87mm							
3.20 - 3.40	D 7								
3.80 - 4.00	D 8								
4.00 - 4.45	SPTS D 9	SW=450		Dry	Soft grey and dark grey CLAY. Slightly organic. (TIDAL FLAT DEPOSITS)				
4.00 - 4.45	L	80% rec, diameter 87mm							
4.50 - 4.60	D 10								
5.00 - 5.45	SPTS D 11	N=2 (0,0/0,1,1,0)	22/08/19	Dry					
5.00 - 5.45	L		5.00	Dry					
					END OF EXPLORATORY HOLE		5.45 -2.68		

<b>Groundwater Entries</b>				<b>Depth Related Remarks</b>			<b>Hard Boring</b>		
No.	Depth (m)	Strike (m)	Remarks	Depth Sealed (m)	Depths (m)	Remarks	Depths (m)	Duration (mins)	Tools used
					0.00 - 5.45	No groundwater encountered during drilling.			

## APPENDIX C FIELD TESTING

Key to Cone Penetration Test Records  
Calibration Certificate  
Cone Penetration Logs

Falling Head Permeability Tests

In-Situ Apparent Resistivity of Soil

Determination of Equivalent CBR Value derived from  
Plate Bearing Test

KeyCPT  
CPT Cone  
CPT01 to CPT04, CPT04A, CPT06,  
CPT06, CPT06A, CPT07, CPT09,  
CPT10

51052244  
WAM0015484



# Key to Cone Penetration Test Records

Parameter	Unit	Description	Equation
<b>Measured parameters</b>			
$q_c$	MPa	Cone resistance	Measured parameter
$f_s$	MPa	Sleeve friction	Measured parameter
$l$	degrees	Inclination	Measured parameter
$u$	MPa	Dynamic pore pressure (Piezocone only)	Measured parameter. Denoted as $u_1$ and $u_2$ for pore pressure filter locations on cone face and cone shoulder respectively.
-	m, s	Penetration depth and corresponding time	Measured parameters
<b>Derived cone parameters</b>			
$R_f$	%	Friction ratio	$f_s / q_c \cdot 100 \%$
$q_t$	MPa	Corrected cone resistance (Piezocone only)	$q_c + (1 - a) \cdot u_2$ where $a = \text{area ratio of cone} = A_r/A_c$ $A_n = \text{cross sectional areas of cone tip shaft}$ $A_c = \text{projected area of cone tip}$
$f_t$	MPa	Corrected sleeve friction (Piezocone only)	$(f_s - (u_2 \cdot A_{sb} - u_3 \cdot A_{st})) / A_s$ where $b = \text{area ratio of friction sleeve}$ $A_{sb}$ and $A_{st}$ are bottom and top cross sectional areas of friction sleeve
$q_e$	MPa	Effective cone resistance (Piezocone only)	$q_t - u_2$
$q_n$	MPa	Net cone resistance (Piezocone or using $q_t = q_c$ )	$q_t - \sigma_{vo}$ where $\sigma_{vo} = \text{vertical total stress}$
$R'_t$	%	Corrected friction ratio (Piezocone only)	$f_t / q_t \cdot 100 \%$
$\Delta u$	MPa	Excess pore pressure (Piezocone only)	$u - u_0$ where $u_0 = \text{equilibrium pore water pressure}$
$B_q$	-	Pore pressure ratio (Piezocone only)	$(u - u_0) / (q_t - \sigma_{vo}) = \Delta u / q_n$
-	-	Dynamic pore pressure ratio (Piezocone only)	$u / q_c$
$Q_t$	-	Normalised cone resistance (Piezocone or using $q_t = q_c$ )	$(q_t - \sigma_{vo}) / \sigma'_{vo} = q_n / \sigma'_{vo}$ where $\sigma'_{vo} = \text{vertical effective stress}$
$F_r$	%	Normalised local friction (Piezocone or using $q_t = q_c$ )	$f_s / (q_t - \sigma_{vo}) = f_s / q_n \cdot 100 \%$

Notes:

Project SOUTH HUMBER BANK ENERGY CENTRE  
 Project No. A9020-19  
 Carried out for EP UK Investments Ltd

Figure

**Key CPT**

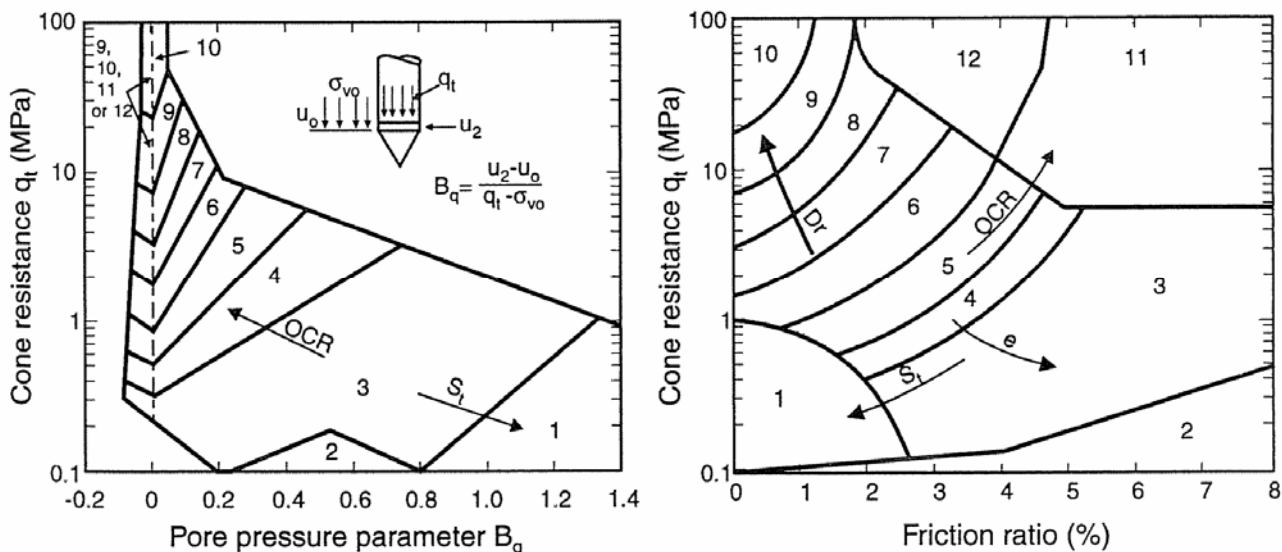
# Key to Cone Penetration Test Records

Derived soil parameters		
Parameter	Description	Remarks
S <sub>u</sub> Su(min) and Su(max)	Undrained Shear Strength (Clays)	<p>Interpretation for fine soils only – soil types 3 and 4.</p> <p>Based on net cone resistance (corrected where pore pressure data available) and empirical cone factor</p> $= (q_c - \sigma_{vo}) / N_k$ <p>Plots of minimum and maximum strength presented using N<sub>k</sub> of 20 and 12.</p>
D <sub>r</sub> RD	Relative Density	<p>Interpretation for coarse soils only – soil types 5, 6 and 7.</p> <p>After Baldi et al (1986) for moderately compressible, unaged, uncemented, silica sand</p> $= (1 / C_2) \cdot \ln (q_c / C_0 (\sigma')^{C_1})$ <p>For NC sands : C<sub>0</sub> = 157, C<sub>1</sub> = 0.55, C<sub>2</sub> = 2.41, <math>\sigma' = \sigma'_{vo}</math></p> <p>For OC sands : C<sub>0</sub> = 181, C<sub>1</sub> = 0.55, C<sub>2</sub> = 2.61, <math>\sigma' = \sigma'_m</math> and mean effective stress = <math>\sigma'_m = (\sigma'_{vo} + 2 \sigma'_{ho}) / 3</math></p>
φ IFA	Internal Friction Angle	<p>Interpretation for coarse soils only – soil types 5, 6 and 7.</p> <p>After Robertson and Campanella (1983) for uncemented, moderately incompressible, predominately silica sands</p> $= \text{Arctan} (0.105 + 0.16 \cdot \ln (q_c / \sigma'_{vo}))$
N <sub>60</sub>	Equivalent Standard Penetration Test (SPT) N value	$= (q_c / p_a) / 8.5 \cdot (1 - I_c / 4.6)$ <p>p<sub>a</sub> – reference stress of 100 kPa</p>

Soil Description			
Soil Type	Classification after Robertson (1990) using normalised cone resistance, normalised friction ratio and pore pressure ratio.		
Undrained shear strength description	Descriptive term	Strength, kPa	
	Very soft	<20	
	Soft	20 to 40	
	Firm	40 to 75	
	Stiff	75 to 150	
Relative density description	Descriptive term	Cone resistance (q <sub>c</sub> ), MPa	
	Very loose	<2	
	Loose	2 to 4	
	Medium dense	4 to 12	
	Dense	12 to 20	
	Very dense	>20	

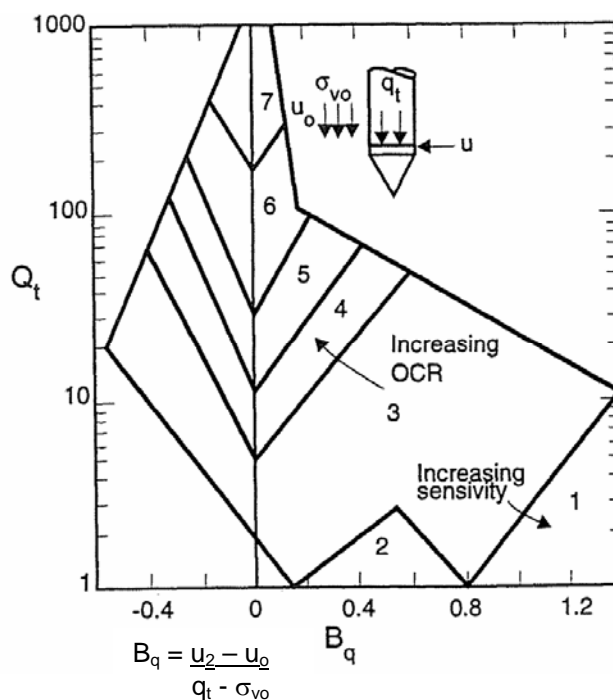
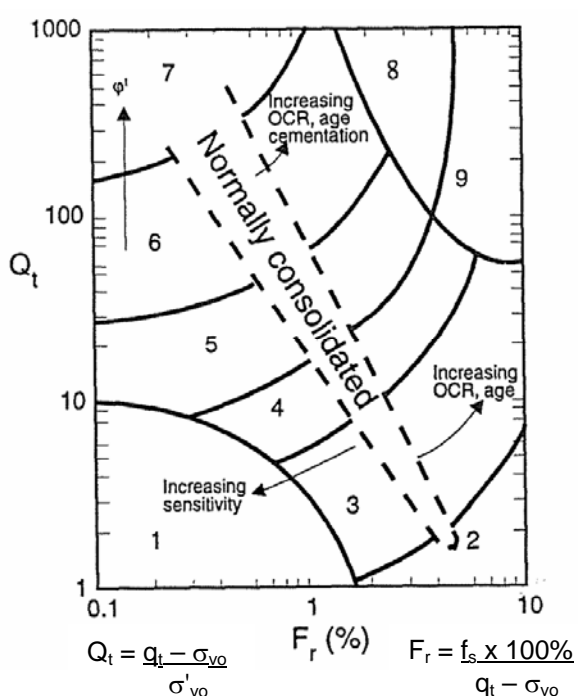


# Key to Cone Penetration Test Records



KEY TO SOIL BEHAVIOUR TYPES - after Robertson et al (1986)

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



KEY TO SOIL BEHAVIOUR TYPES – after Robertson (1990)

ZONE	SOIL BEHAVIOUR TYPE	ZONE	SOIL BEHAVIOUR TYPE	ZONE	SOIL BEHAVIOUR TYPE
1	Sensitive fine grained	4	Silt mixtures: clayey silt to silty clay	7	Gravelly sand to sand
2	Organic soils – peats	5	Sand mixtures: silty sand to sandy silt	8	Very stiff sand to clayey sand
3	Clays: clay to silty clay	6	Sands: clean sand to silty sand	9	Very stiff fine grained

Notes:

Project SOUTH HUMBER BANK ENERGY CENTRE  
 Project No. A9020-19  
 Carried out for EP UK Investments Ltd

Figure  
**Key CPT**

# CPT CONE

Cone No.	S10-CFIP.1680	Date of Calibration	11.7.19	
Manufacturer	GeoPoint.	Reference Standards	BS 1377 : 1990 Part 9	
Compression/ Subtraction	Subtraction	Reference Equipment	Pressure meter	LTR01
Pore Pressure Channel (Y/N)	Y		Vernier callipers	GCV2
			Load cell	22541
			Voltmeter	06402486
Cone end area ratio (by dimension measurement), a	0.5	Sleeve end area ratio (by dimension measurement), b	1.0	

Note: Calibration Zero taken as no load in free air, Output taken as slope of linear regression line x maximum load.

Cone Type (S/ C/ M/ D/ T)

**S**

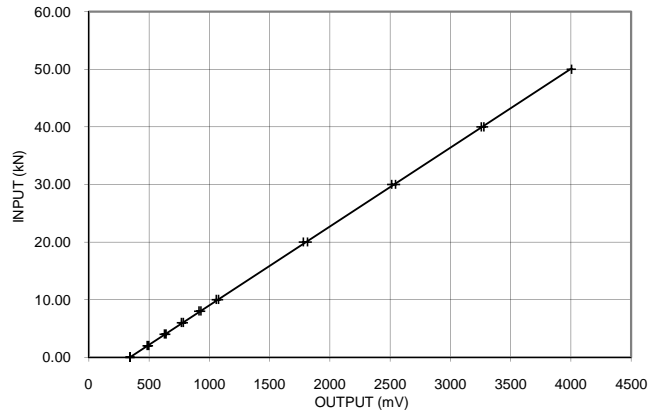
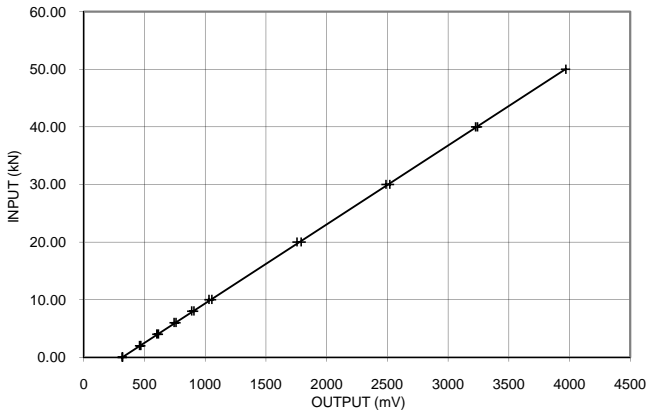
Ch 3 (P/ C/ T/ N/ F)

**P**

	Output	Input	Zero	Area	Alarm
Channel 1	3651 mV	50 kN	308 mV	10 cm <sup>2</sup>	45 kN
Channel 2	3659 mV	50 kN	331 mV	150 cm <sup>2</sup>	45 kN
Channel 3	7306 mV	20 Bar	201 mV		16 Bar
Inclination	-20°	0°	20°		Alarm
	X 444	2491	4552		15
	Y 454	2490	4541	Extra Channels	N

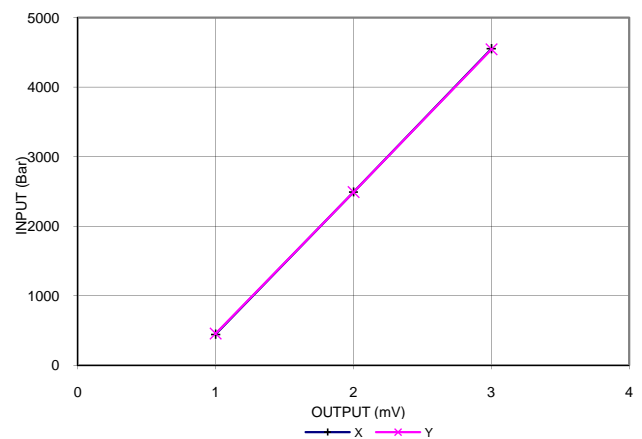
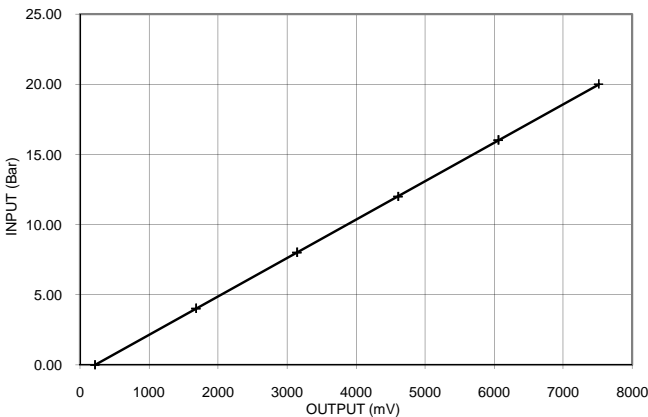
CHANNEL 1 - TIP

CHANNEL 2 - FRICTION SLEEVE



CHANNEL 3 - PORE PRESSURE

CHANNEL 4 - INCLINATION



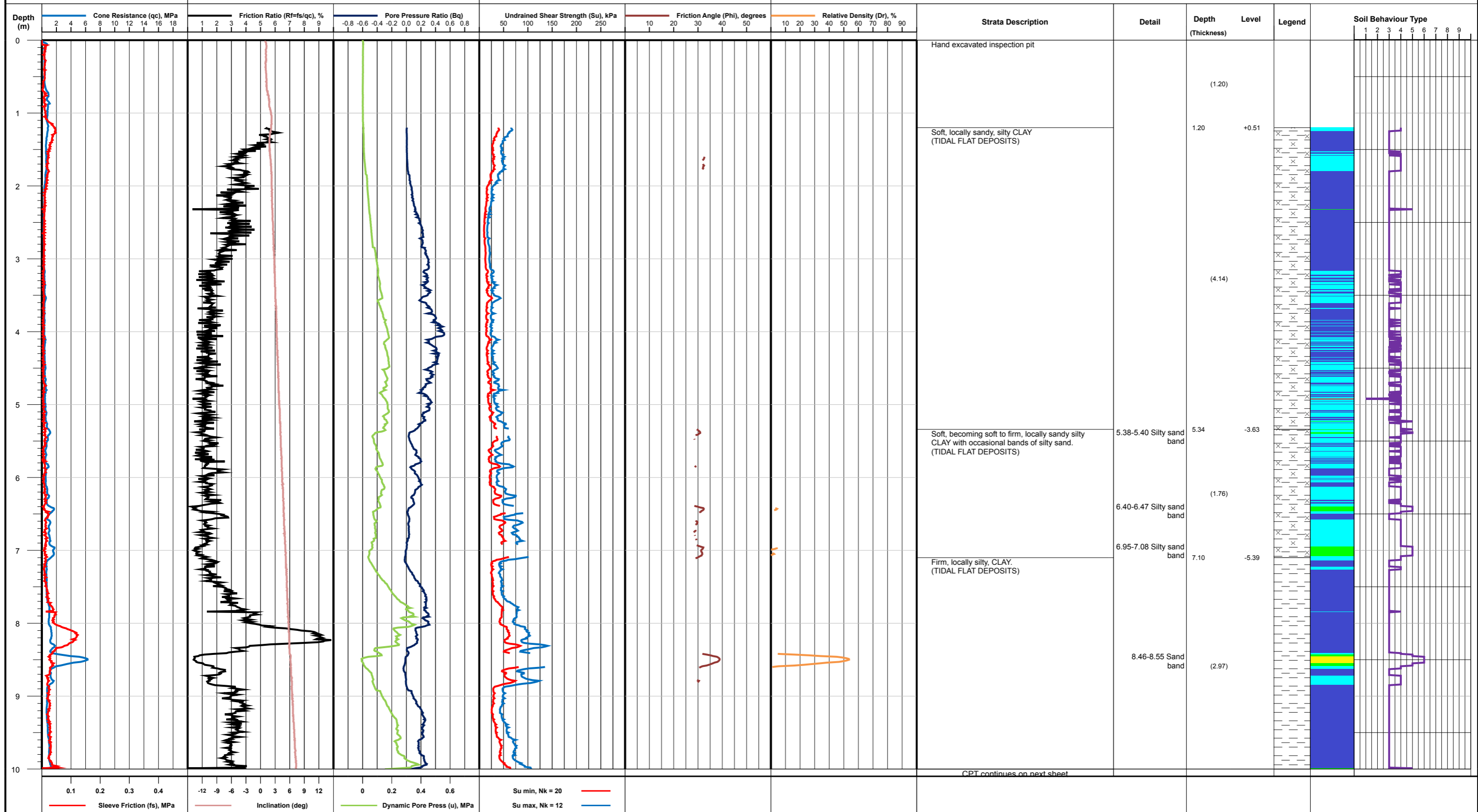
Cone calibrated by:  
H Barnett  
Date:  
11.7.19

authorised for use by:  
  
Manager

# Cone Penetration Test Log



<b>Date</b> 19/08/2019 <b>Cone ID</b> S10CFIIP.1680 <b>Operator</b> DLB <b>Checked</b> IRC <b>Approved</b> IRC	<b>Equipment and Methods</b> Test according to BS 1377 : Part 9 : Method 3.1	<b>Ground level</b> 1.71 mOD <b>Co-ordinates (m)</b> E 523011.48 <b>National Grid</b> N 413470.84	<b>Remarks</b> Terminated due to maximum thrust reached  <b>Assumed Groundwater Level (m)</b> 1.00
----------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------

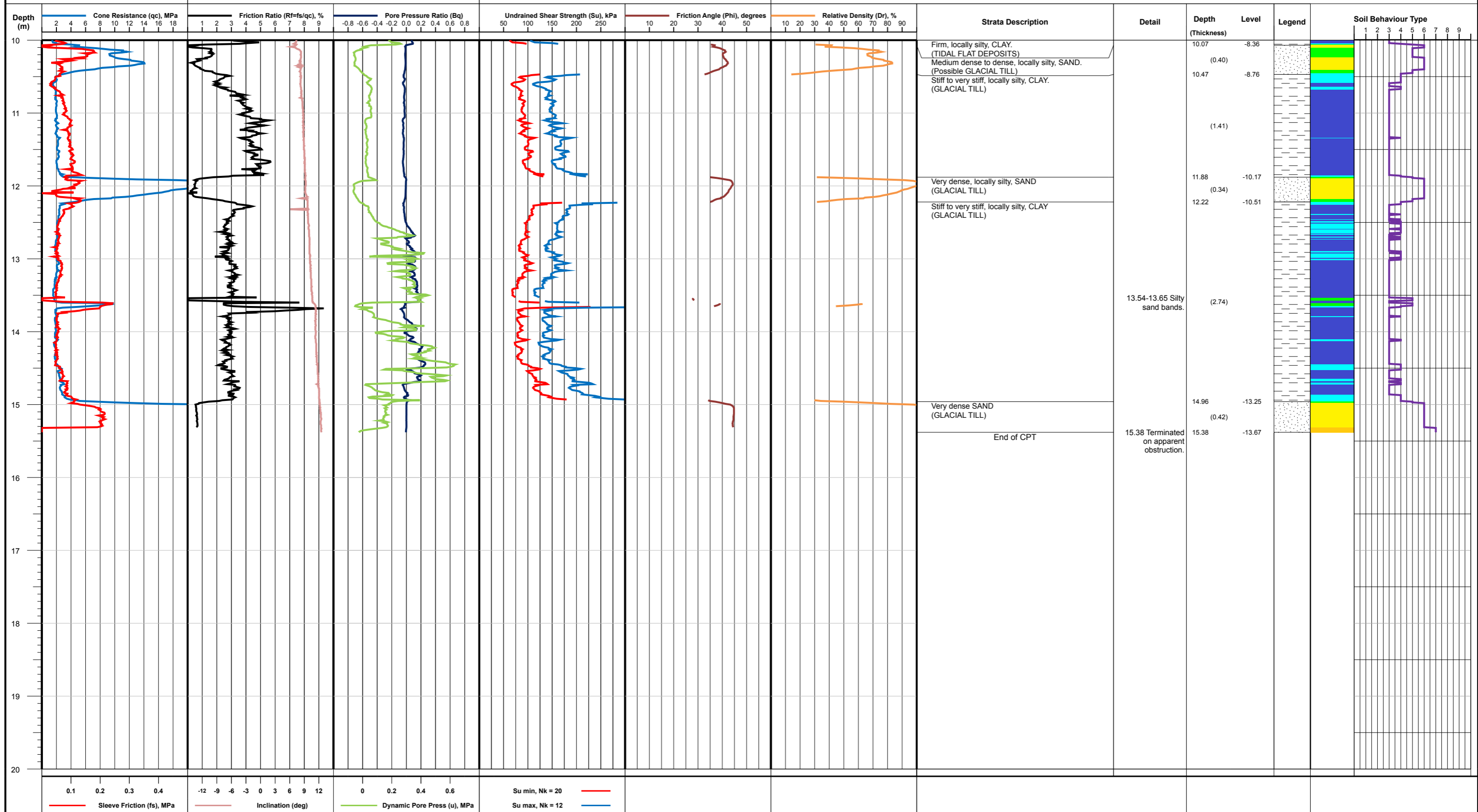


Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation © Copyright SOCOTEC UK Limited	<b>Project</b> SOUTH HUMBER BANK ENERGY CENTRE <b>Project No.</b> M9020-19 <b>Carried out for</b> EP UK Investments Ltd	<b>CPT No.</b> <h2>CPT01</h2> Sheet 1 of 2
--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------

# Cone Penetration Test Log



<b>Date</b> 19/08/2019 <b>Cone ID</b> S10CFIIP.1680 <b>Operator</b> DLB <b>Checked</b> IRC <b>Approved</b> IRC	<b>Equipment and Methods</b> Test according to BS 1377 : Part 9 : Method 3.1	<b>Ground level</b> 1.71 mOD <b>Co-ordinates (m)</b> E 523011.48 <b>National Grid</b> N 413470.84	<b>Remarks</b> Terminated due to maximum thrust reached  <b>Assumed Groundwater Level (m)</b> 1.00
----------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------

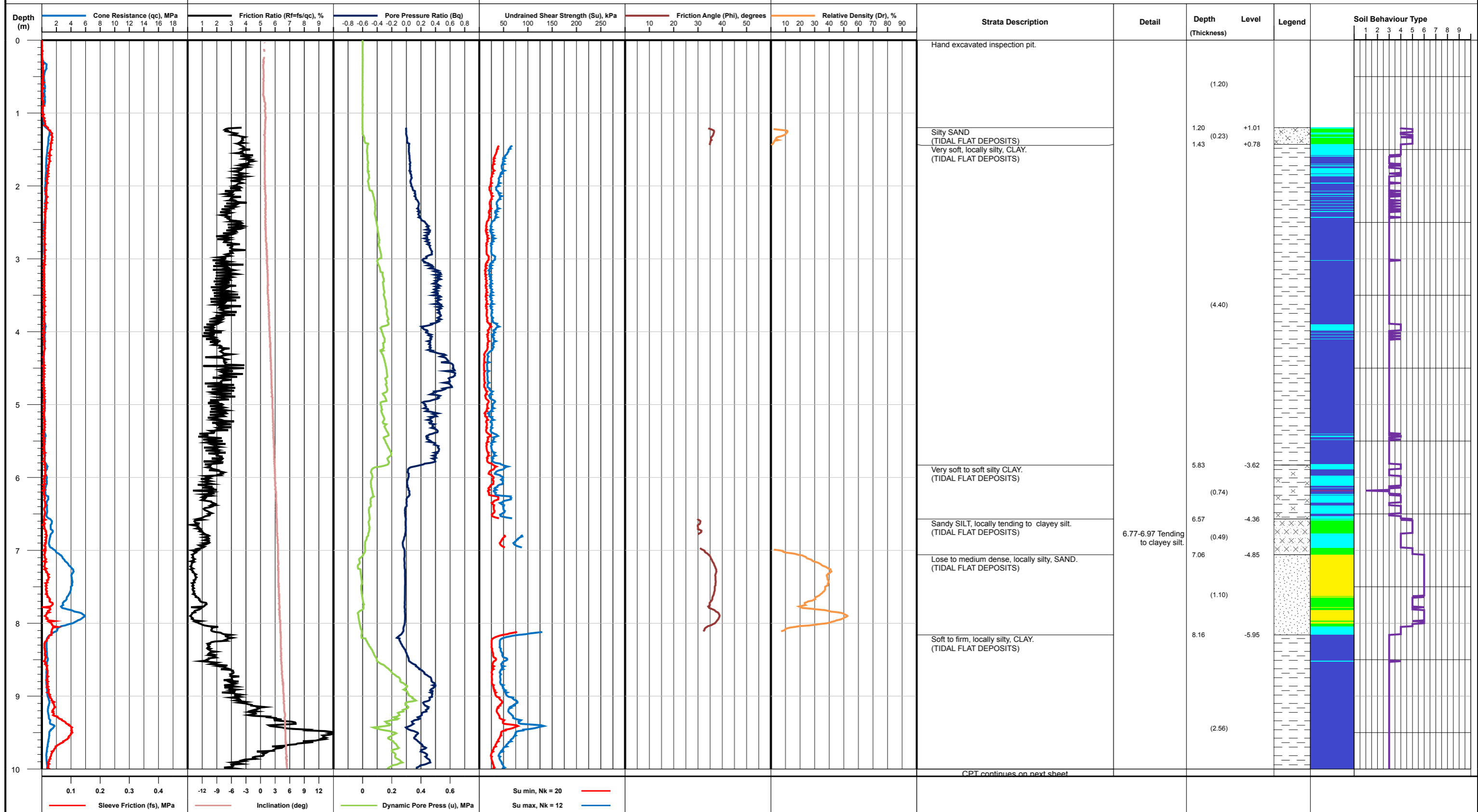


Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation © Copyright SOCOTEC UK Limited	<b>Project</b> SOUTH HUMBER BANK ENERGY CENTRE <b>Project No.</b> M9020-19 <b>Carried out for</b> EP UK Investments Ltd	<b>CPT No.</b> <h2>CPT01</h2> Sheet 2 of 2
--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------

# Cone Penetration Test Log



<b>Date</b> 19/08/2019 <b>Cone ID</b> S10CFIIP.1680 <b>Operator</b> DLB <b>Checked</b> IRC <b>Approved</b> IRC	<b>Equipment and Methods</b> Test according to BS 1377 : Part 9 : Method 3.1	<b>Ground level</b> 2.21 mOD <b>Co-ordinates (m)</b> E 523016.75 <b>National Grid</b> N 413419.64	<b>Remarks</b> Terminated due to maximum thrust reached  <b>Assumed Groundwater Level (m)</b> 1.00
----------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------

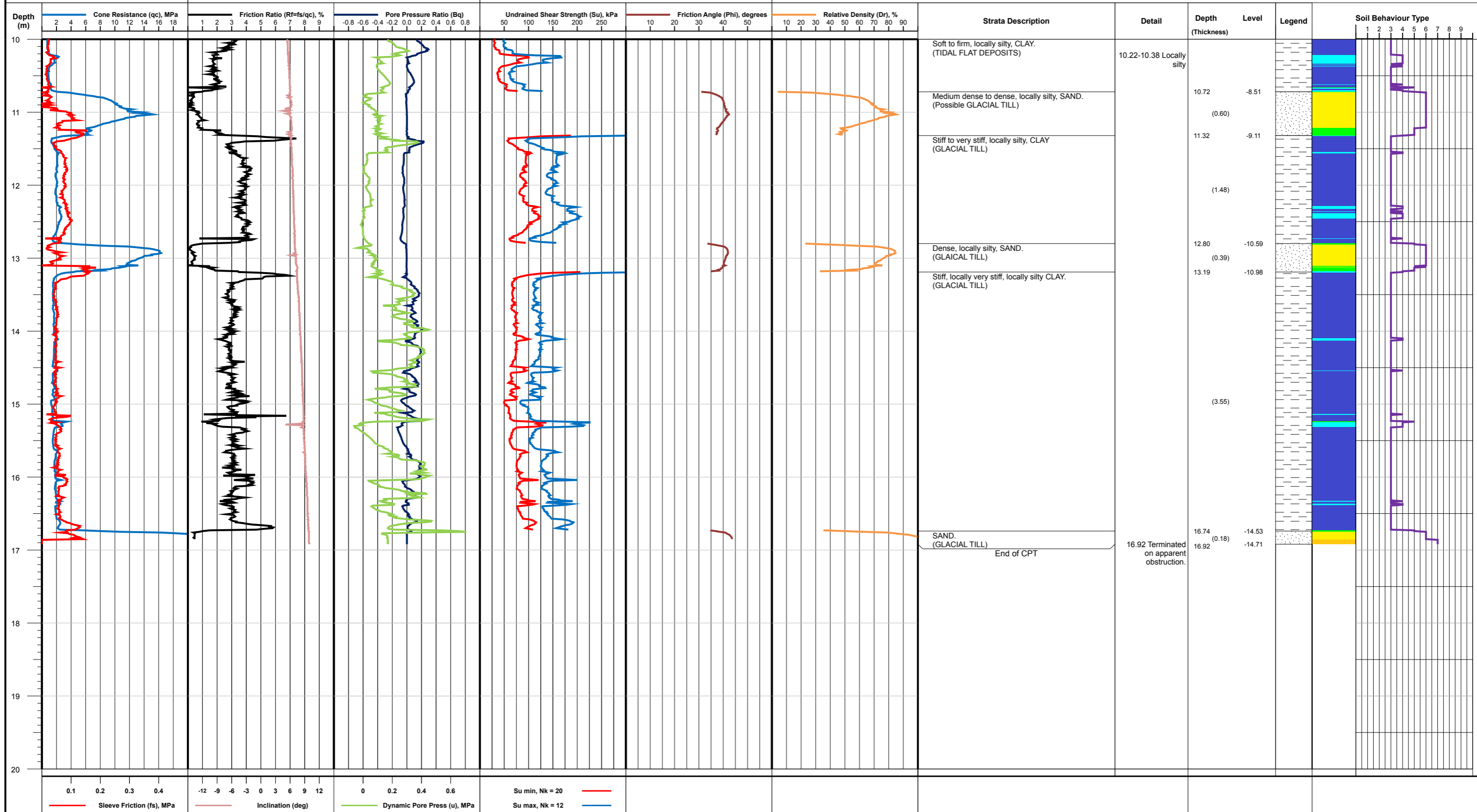


Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation © Copyright SOCOTEC UK Limited	<b>Project</b> SOUTH HUMBER BANK ENERGY CENTRE <b>Project No.</b> M9020-19 <b>Carried out for</b> EP UK Investments Ltd	<b>CPT No.</b> <h2>CPT02</h2> Sheet 1 of 2
--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------

# Cone Penetration Test Log



<b>Date</b> 19/08/2019 <b>Cone ID</b> S10CFIIP.1680 <b>Operator</b> DLB <b>Checked</b> IRC <b>Approved</b> IRC	<b>Equipment and Methods</b> Test according to BS 1377 : Part 9 : Method 3.1	<b>Ground level</b> 2.21 mOD <b>Co-ordinates (m)</b> E 523016.75 <b>National Grid</b> N 413419.64	<b>Remarks</b> Terminated due to maximum thrust reached  <b>Assumed Groundwater Level (m)</b> 1.00
----------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------



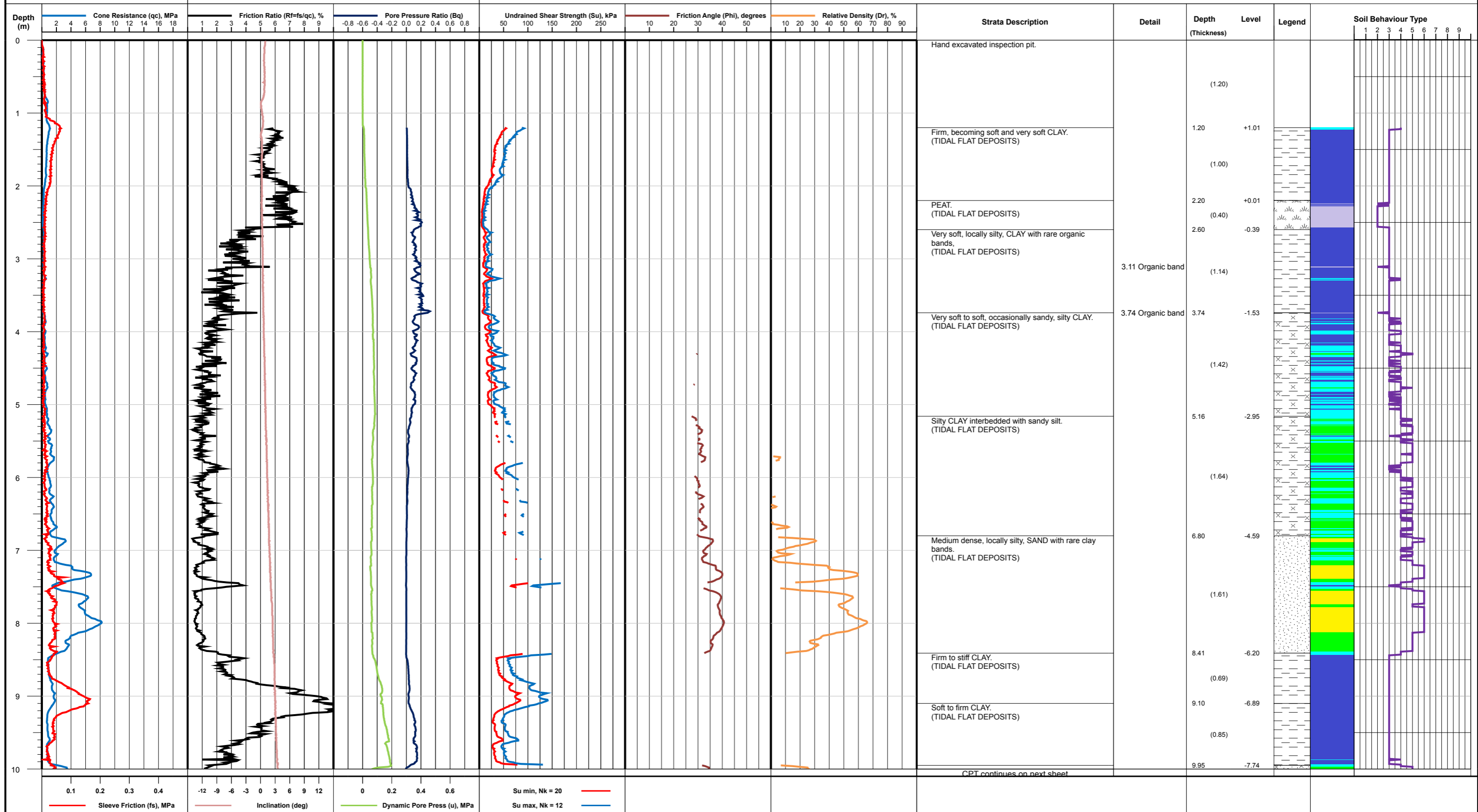
Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation © Copyright SOCOTEC UK Limited	<b>Project</b> SOUTH HUMBER BANK ENERGY CENTRE <b>Project No.</b> M9020-19 <b>Carried out for</b> EP UK Investments Ltd	<b>CPT No.</b> <h2>CPT02</h2> Sheet 2 of 2
--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------



# Cone Penetration Test Log



<b>Date</b> 19/08/2019 <b>Cone ID</b> S10CFIIP.1680 <b>Operator</b> DLB <b>Checked</b> IRC <b>Approved</b> IRC	<b>Equipment and Methods</b> Test according to BS 1377 : Part 9 : Method 3.1	<b>Ground level</b> 2.21 mOD <b>Co-ordinates (m)</b> E 523045.81 <b>National Grid</b> N 413423.86	<b>Remarks</b> Terminated due to maximum thrust reached  <b>Assumed Groundwater Level (m)</b> 1.00
----------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------

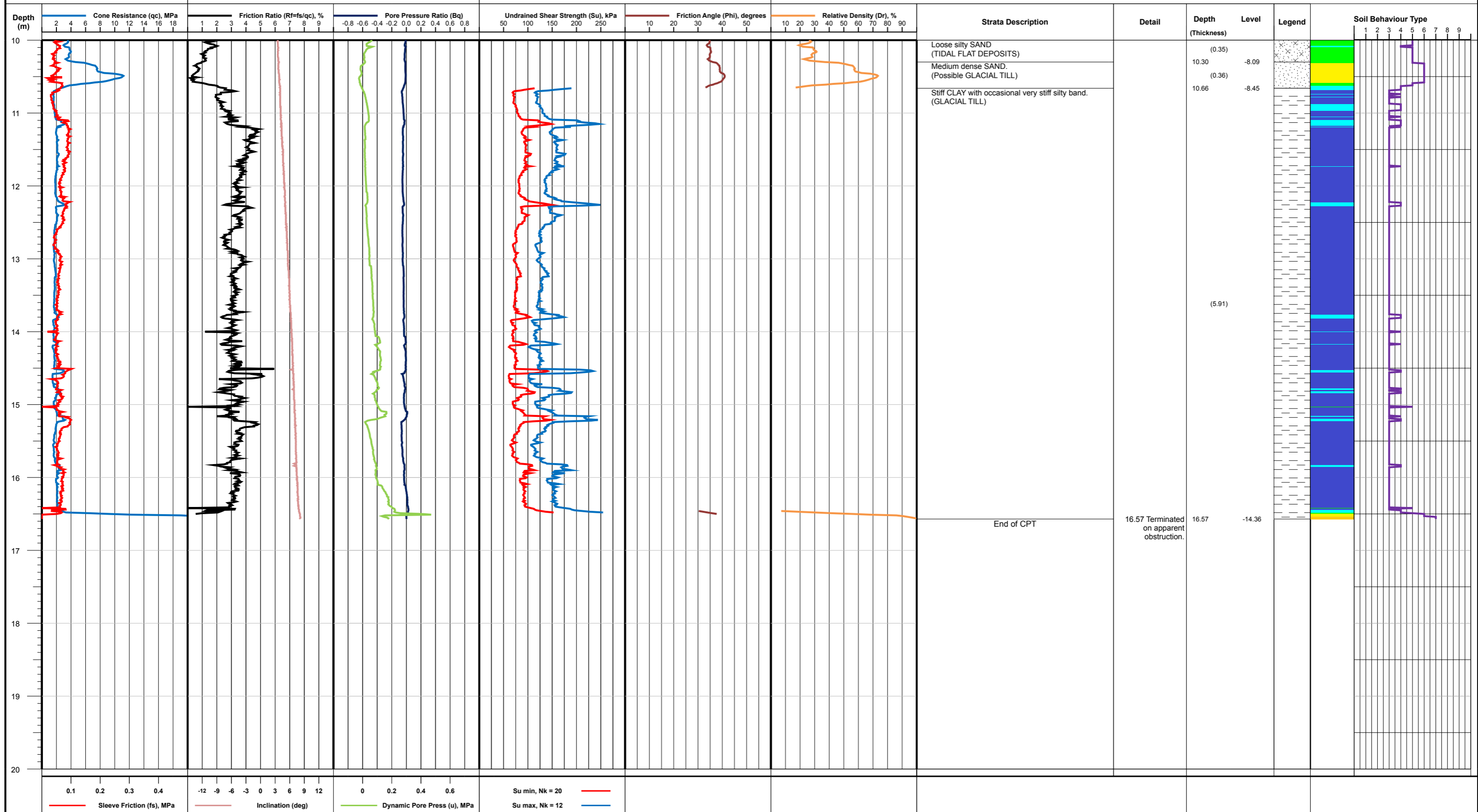


Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation © Copyright SOCOTEC UK Limited	<b>Project</b> SOUTH HUMBER BANK ENERGY CENTRE <b>Project No.</b> M9020-19 <b>Carried out for</b> EP UK Investments Ltd	<b>CPT No.</b> <h2>CPT03</h2> Sheet 1 of 2
--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------

# Cone Penetration Test Log



<b>Date</b> 19/08/2019 <b>Cone ID</b> S10CFIIP.1680 <b>Operator</b> DLB <b>Checked</b> IRC <b>Approved</b> IRC	<b>Equipment and Methods</b> Test according to BS 1377 : Part 9 : Method 3.1	<b>Ground level</b> 2.21 mOD <b>Co-ordinates (m)</b> E 523045.81 <b>National Grid</b> N 413423.86	<b>Remarks</b> Terminated due to maximum thrust reached  <b>Assumed Groundwater Level (m)</b> 1.00
----------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------

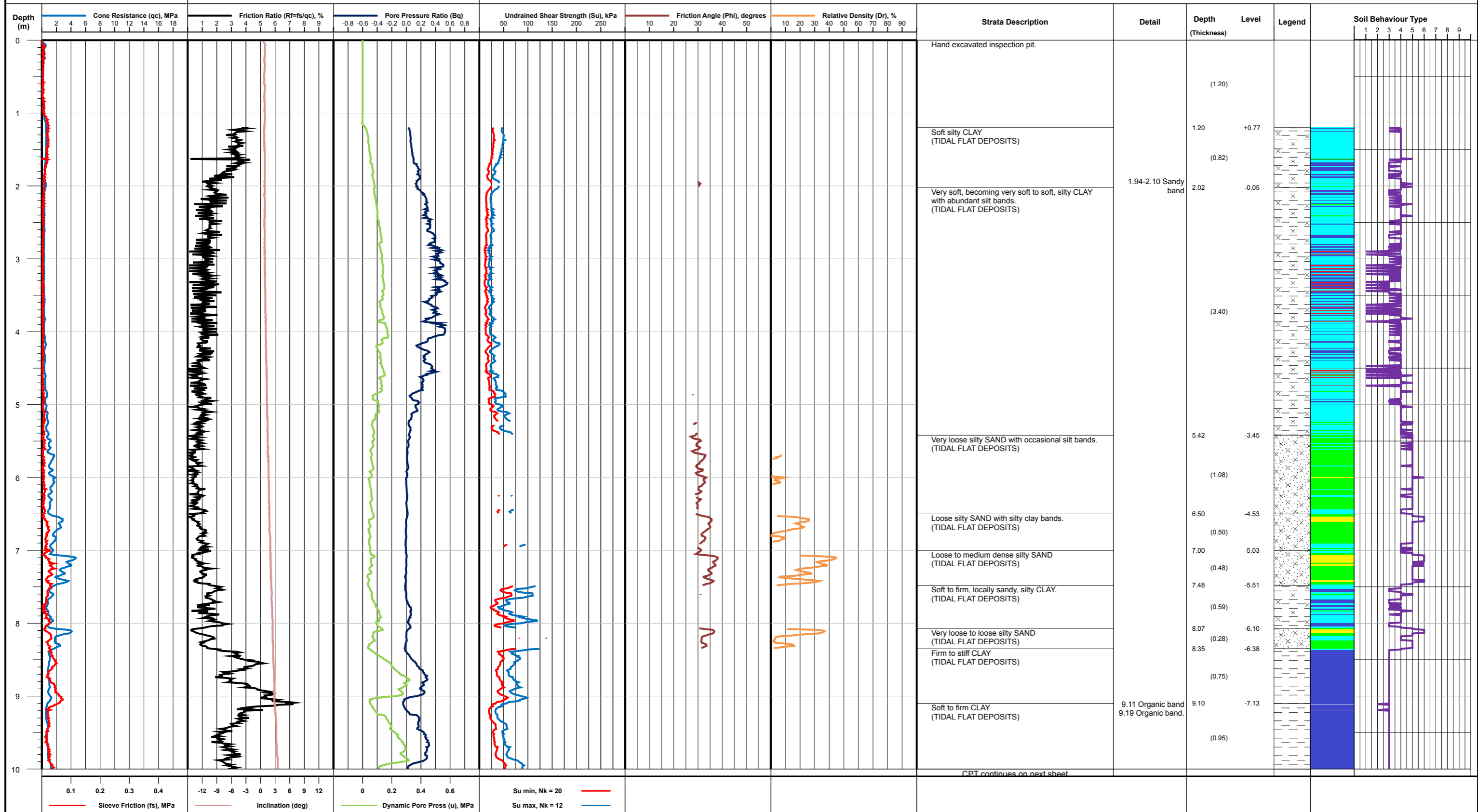


Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation © Copyright SOCOTEC UK Limited	<b>Project</b> SOUTH HUMBER BANK ENERGY CENTRE <b>Project No.</b> M9020-19 <b>Carried out for</b> EP UK Investments Ltd	<b>CPT No.</b> <h2>CPT03</h2> Sheet 2 of 2
--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------

# Cone Penetration Test Log



<b>Date</b> 20/08/2019 <b>Cone ID</b> S10CFIIP.1680 <b>Operator</b> DLB <b>Checked</b> IRC <b>Approved</b> IRC	<b>Equipment and Methods</b> Test according to BS 1377 : Part 9 : Method 3.1	<b>Ground level</b> 1.97 mOD <b>Co-ordinates (m)</b> E 523085.38 <b>National Grid</b> N 413475.81	<b>Remarks</b> Terminated due to maximum thrust reached  <b>Assumed Groundwater Level (m)</b> 1.00
----------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------

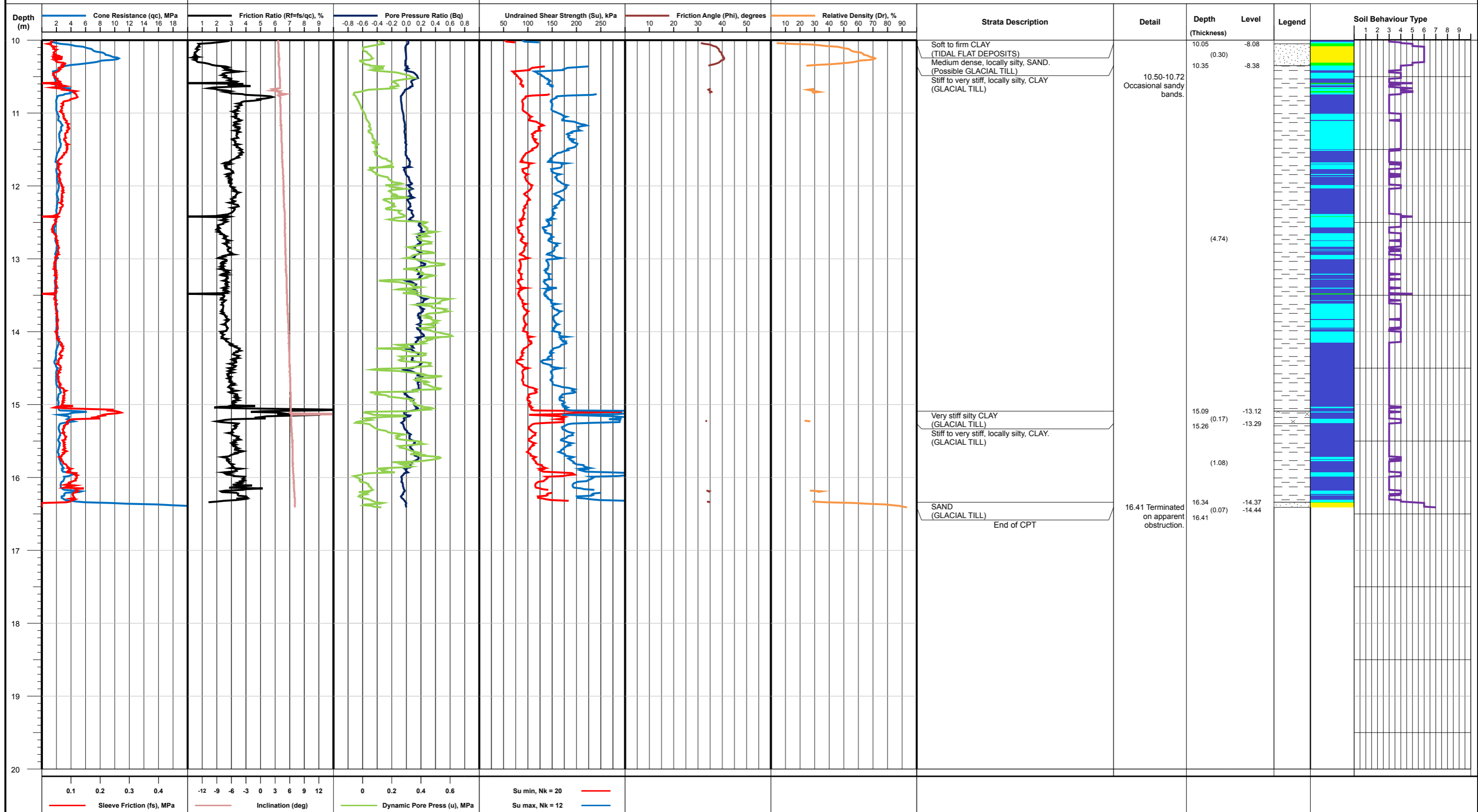


Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation © Copyright SOCOTEC UK Limited	<b>Project</b> SOUTH HUMBER BANK ENERGY CENTRE <b>Project No.</b> M9020-19 <b>Carried out for</b> EP UK Investments Ltd	<b>CPT No.</b> <h2>CPT04</h2> Sheet 1 of 2
--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------

# Cone Penetration Test Log



<b>Date</b> 20/08/2019 <b>Cone ID</b> S10CFIIP.1680 <b>Operator</b> DLB <b>Checked</b> IRC <b>Approved</b> IRC	<b>Equipment and Methods</b> Test according to BS 1377 : Part 9 : Method 3.1	<b>Ground level</b> 1.97 mOD <b>Co-ordinates (m)</b> E 523085.38 <b>National Grid</b> N 413475.81	<b>Remarks</b> Terminated due to maximum thrust reached  <b>Assumed Groundwater Level (m)</b> 1.00
----------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------



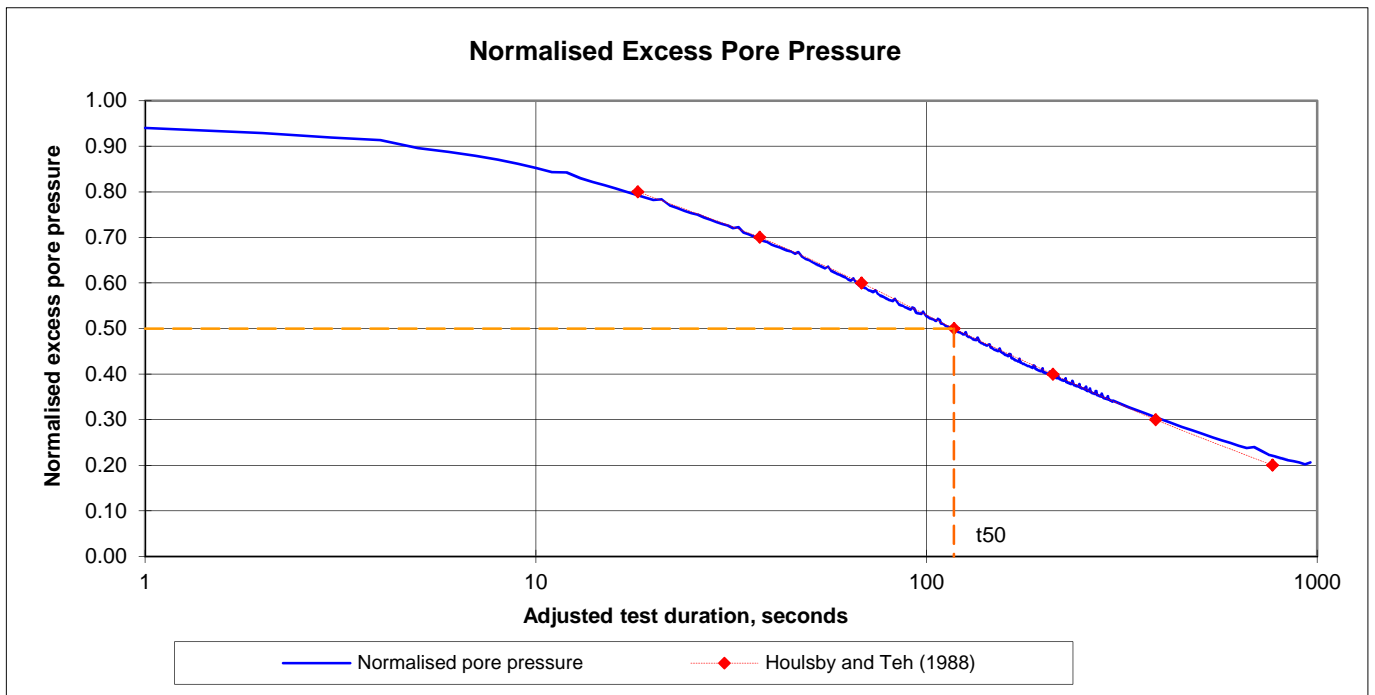
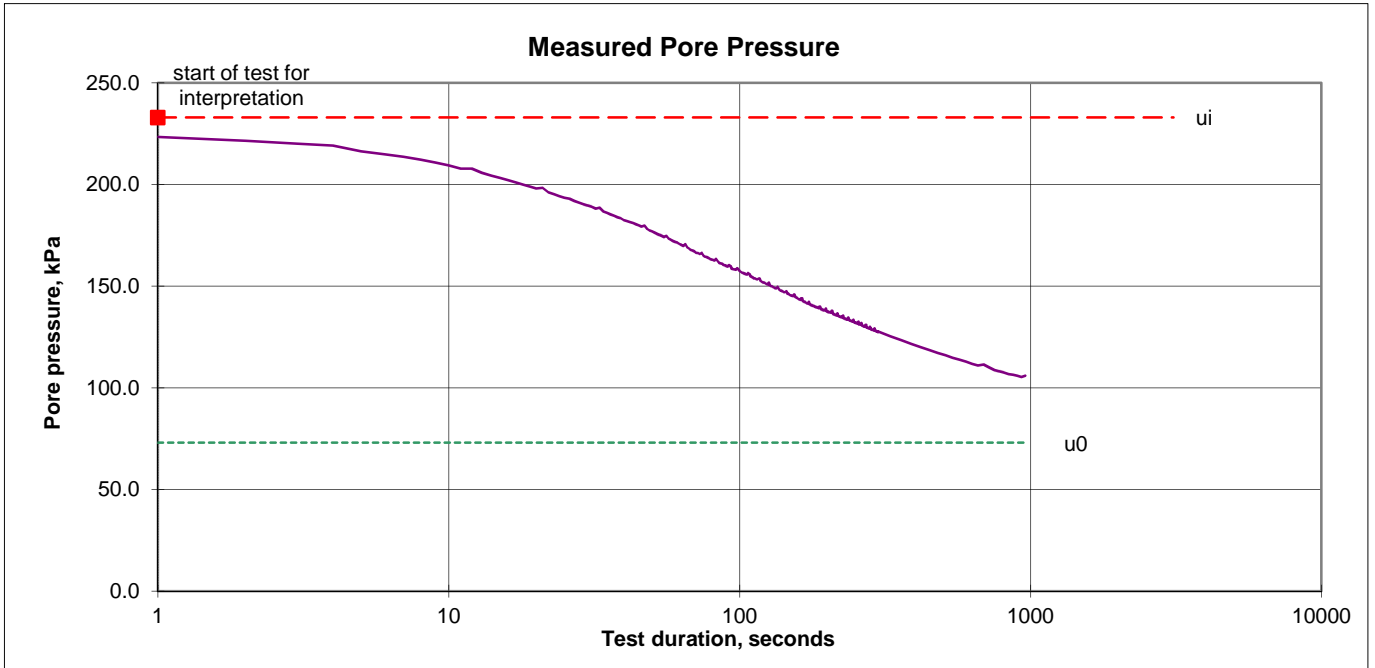
Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation © Copyright SOCOTEC UK Limited	<b>Project</b> SOUTH HUMBER BANK ENERGY CENTRE <b>Project No.</b> M9020-19 <b>Carried out for</b> EP UK Investments Ltd	<b>CPT No.</b> <h2>CPT04</h2> Sheet 2 of 2
--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------

# Dissipation Test Results



Cone Ref	S10-CFIIP.1680
PWP filter location	u2

CPT No	CPT04A
Depth, m	8.47



Conditions used for analysis:

Initial pore water pressure, $u_i$	233 kPa	(Start of test value)
Equilibrium pore water pressure, $u_0$	73 kPa	(From inspection of test data)
Equivalent groundwater level	1.03 m bgl	

**Time to achieve 50% dissipation,  $t_{50}$  = 118 seconds**  
**Horizontal coefficient of consolidation,  $c_h$  = 212.9 m<sup>2</sup> / year**

Notes: Interpretation of dissipation tests is not covered by the SOCOTEC UK UKAS accreditation

Spikes noted in pore pressure readings attributed to water ingress to the cone

Project SOUTH HMBER BANK ENERGY CENTRE  
 Project No. M9020-19  
 Carried out for EP UK Investments Ltd

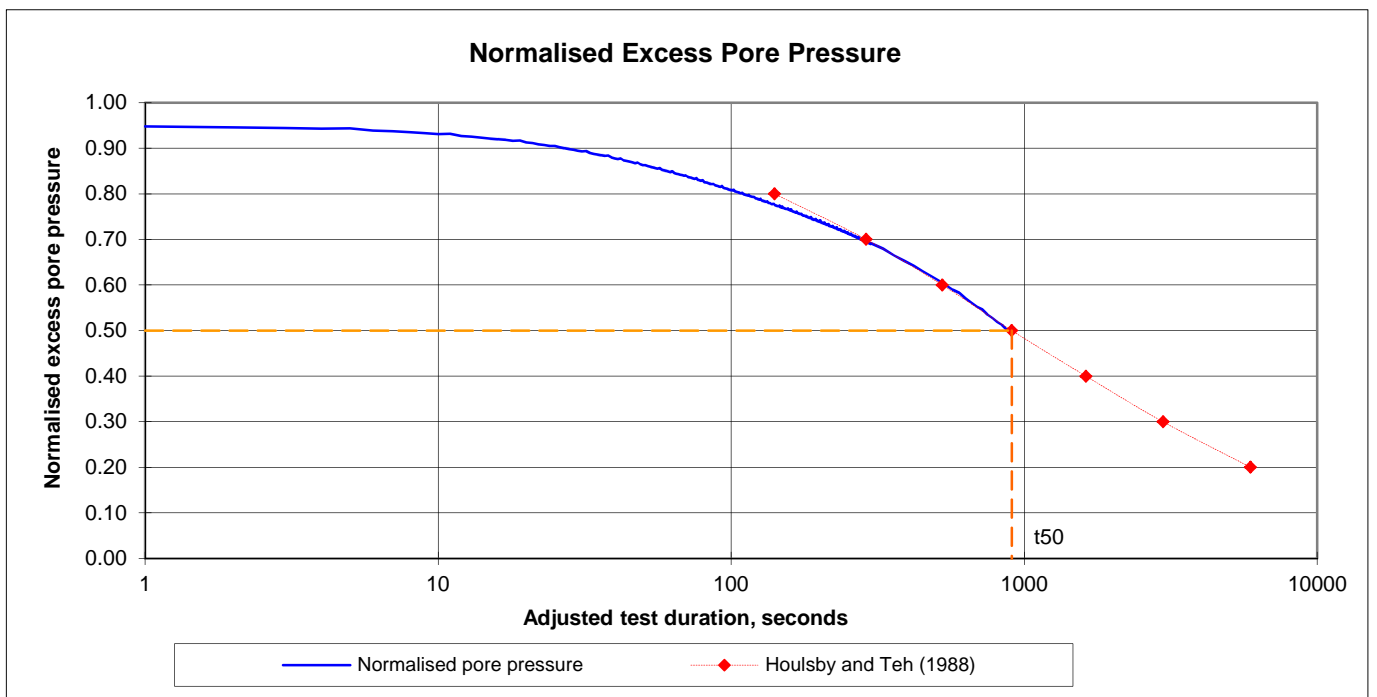
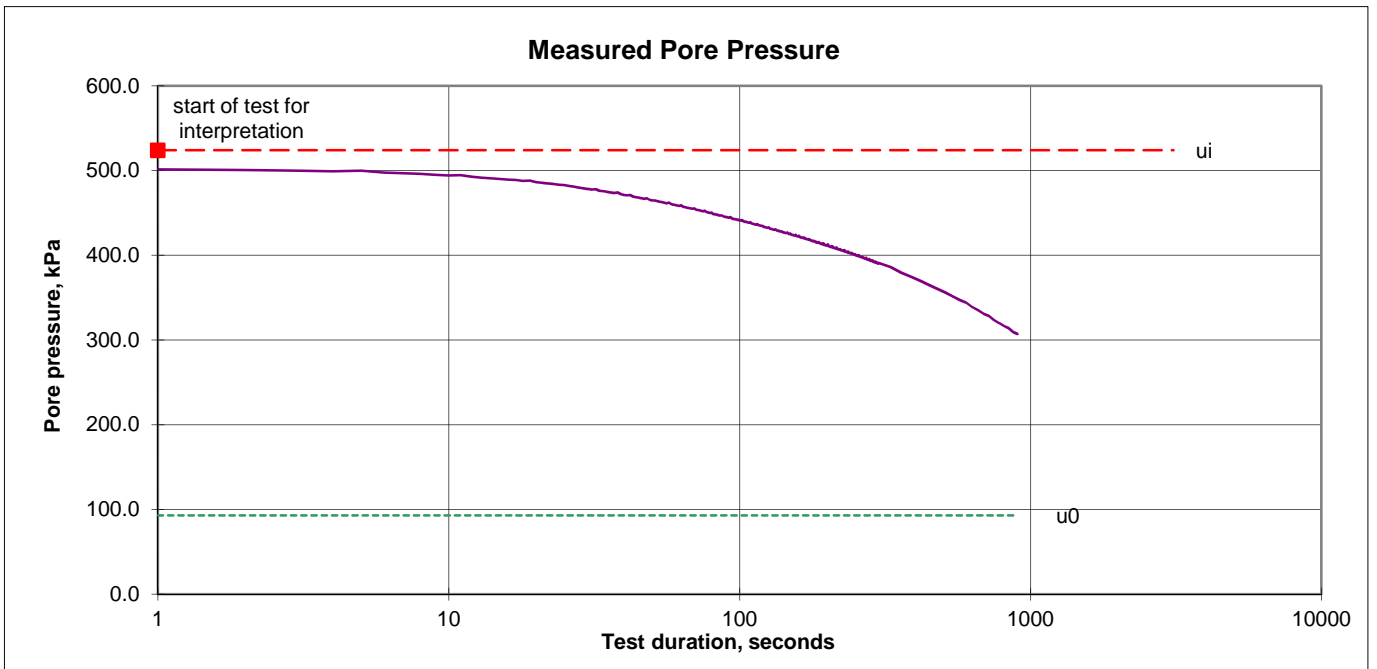
Figure  
**CPT04A D01**

# Dissipation Test Results



Cone Ref	S10-CFIIP.1680
PWP filter location	u2

CPT No	CPT04A
Depth, m	10.46



Conditions used for analysis:

Initial pore water pressure,  $u_i$     524 kPa    (Start of test value)  
 Equilibrium pore water pressure,  $u_0$     93 kPa    (From inspection of test data)  
 Equivalent groundwater level    0.98 m bgl

**Time to achieve 50% dissipation,  $t_{50}$  = 907 seconds**  
**Horizontal coefficient of consolidation,  $c_h$  = 27.6 m<sup>2</sup> / year**

Notes: Interpretation of dissipation tests is not covered by the SOCOTEC UK UKAS accreditation

Spikes noted in pore pressure readings attributed to water ingress to the cone

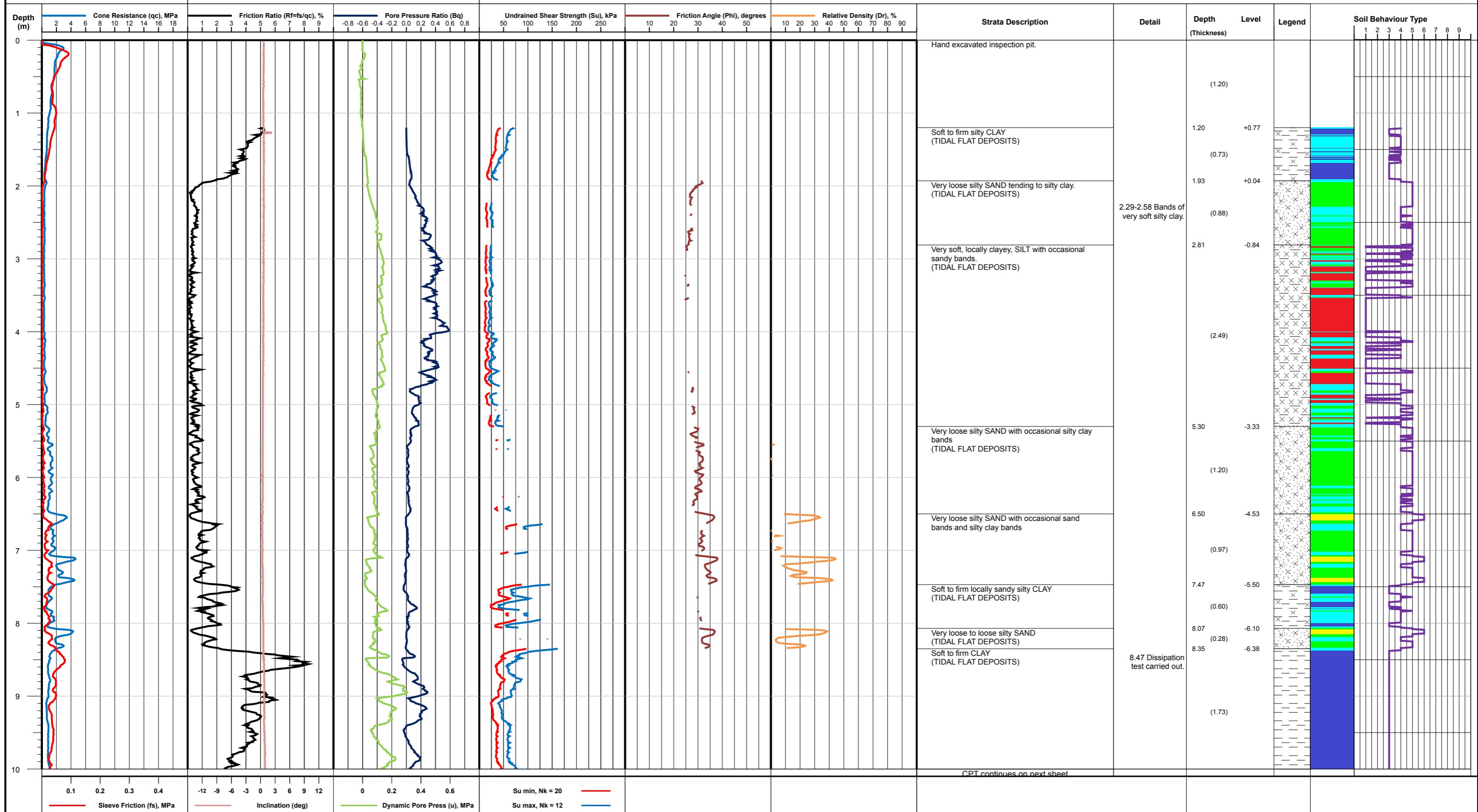
Project    SOUTH HMBER BANK ENERGY CENTRE  
 Project No.    M9020-19  
 Carried out for    EP UK Investments Ltd

Figure  
**CPT04A D02**

# Cone Penetration Test Log



<b>Date</b> 23/08/2019 <b>Cone ID</b> S10CFIIP.1680 <b>Operator</b> DLB <b>Checked</b> IRC <b>Approved</b> IRC	<b>Equipment and Methods</b> Test according to BS 1377 : Part 9 : Method 3.1	<b>Ground level</b> 1.97 mOD <b>Co-ordinates (m)</b> E 523083.38 <b>National Grid</b> N 413479.81	<b>Remarks</b> Terminated due to maximum thrust reached  <b>Assumed Groundwater Level (m)</b> 1.00
----------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------

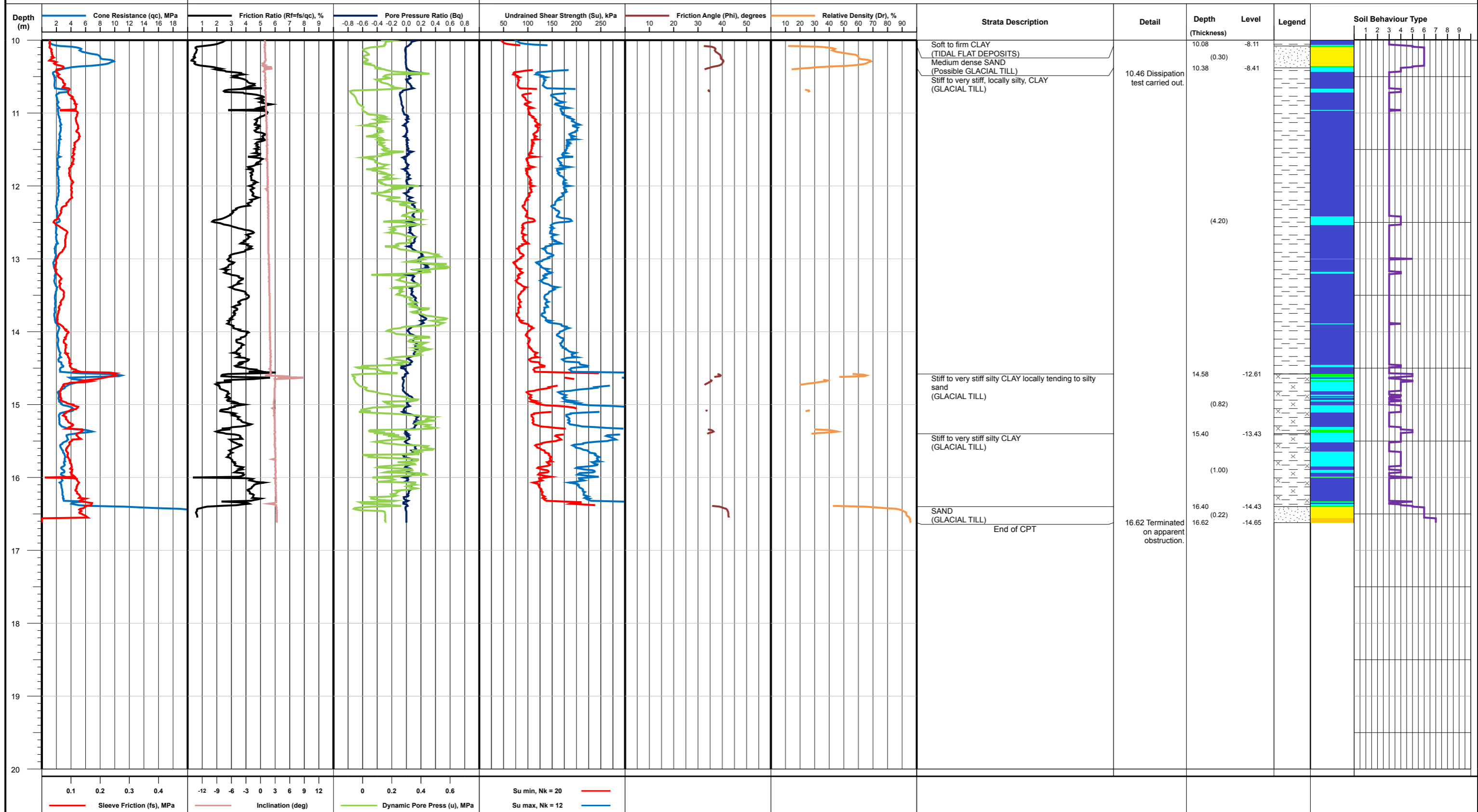


Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation © Copyright SOCOTEC UK Limited	<b>Project</b> SOUTH HUMBER BANK ENERGY CENTRE <b>Project No.</b> M9020-19 <b>Carried out for</b> EP UK Investments Ltd	<b>CPT No.</b> CPT04A Sheet 1 of 2
--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------	---------------------------------------

# Cone Penetration Test Log



<b>Date</b> 23/08/2019 <b>Cone ID</b> S10CFIIP.1680 <b>Operator</b> DLB <b>Checked</b> IRC <b>Approved</b> IRC	<b>Equipment and Methods</b> Test according to BS 1377 : Part 9 : Method 3.1	<b>Ground level</b> 1.97 mOD <b>Co-ordinates (m)</b> E 523083.38 <b>National Grid</b> N 413479.81	<b>Remarks</b> Terminated due to maximum thrust reached  <b>Assumed Groundwater Level (m)</b> 1.00
----------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------



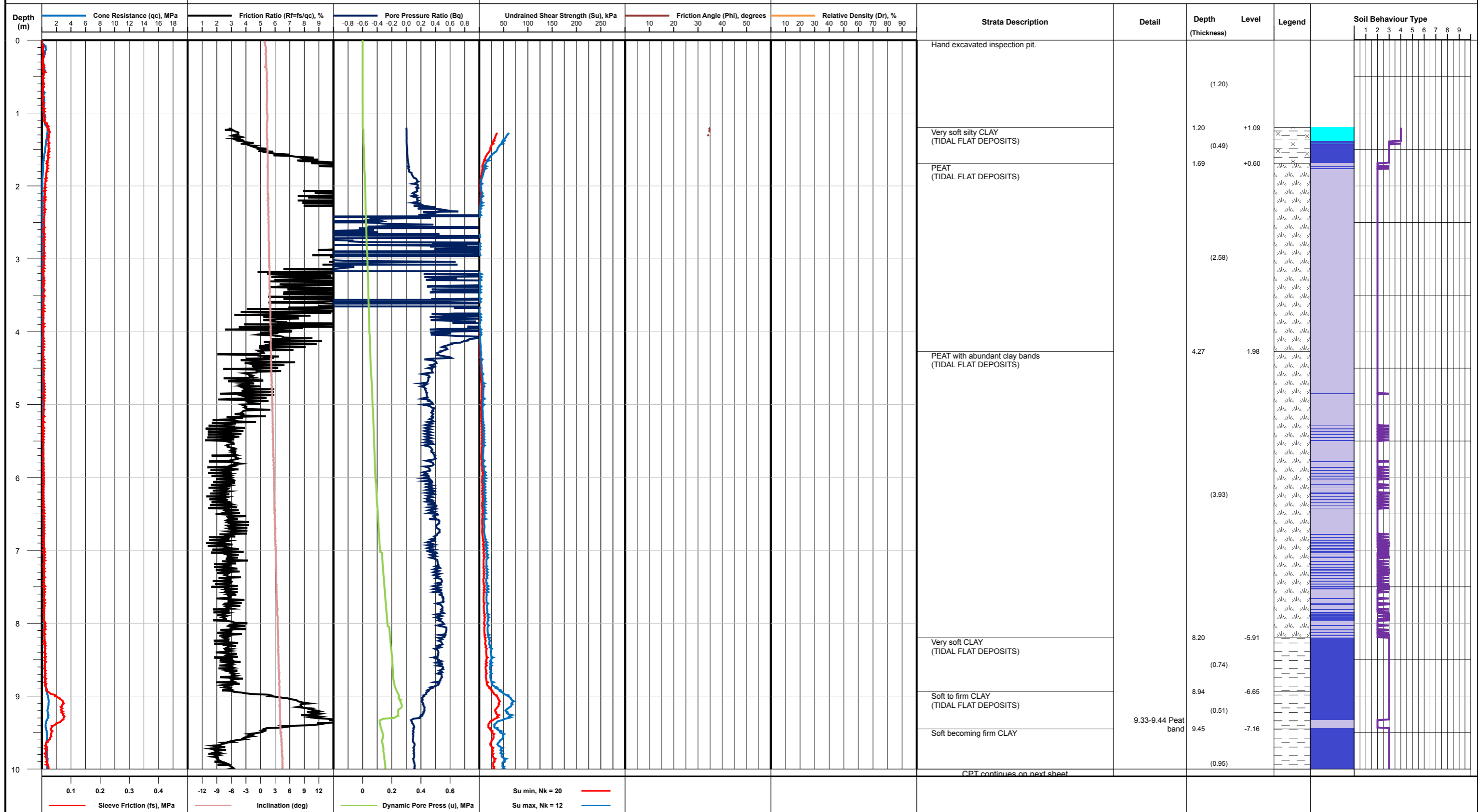
Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation © Copyright SOCOTEC UK Limited	<b>Project</b> SOUTH HUMBER BANK ENERGY CENTRE <b>Project No.</b> M9020-19 <b>Carried out for</b> EP UK Investments Ltd	<b>CPT No.</b> <h2>CPT04A</h2> Sheet 2 of 2
--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------



# Cone Penetration Test Log



<b>Date</b> 19/08/2019 <b>Cone ID</b> S10CFIIP.1680 <b>Operator</b> DLB <b>Checked</b> IRC <b>Approved</b> IRC	<b>Equipment and Methods</b> Test according to BS 1377 : Part 9 : Method 3.1	<b>Ground level</b> 2.29 mOD <b>Co-ordinates (m)</b> E 523157.85 <b>National Grid</b> N 413452.72	<b>Remarks</b> Terminated due to maximum thrust reached  <b>Assumed Groundwater Level (m)</b> 1.00
----------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------

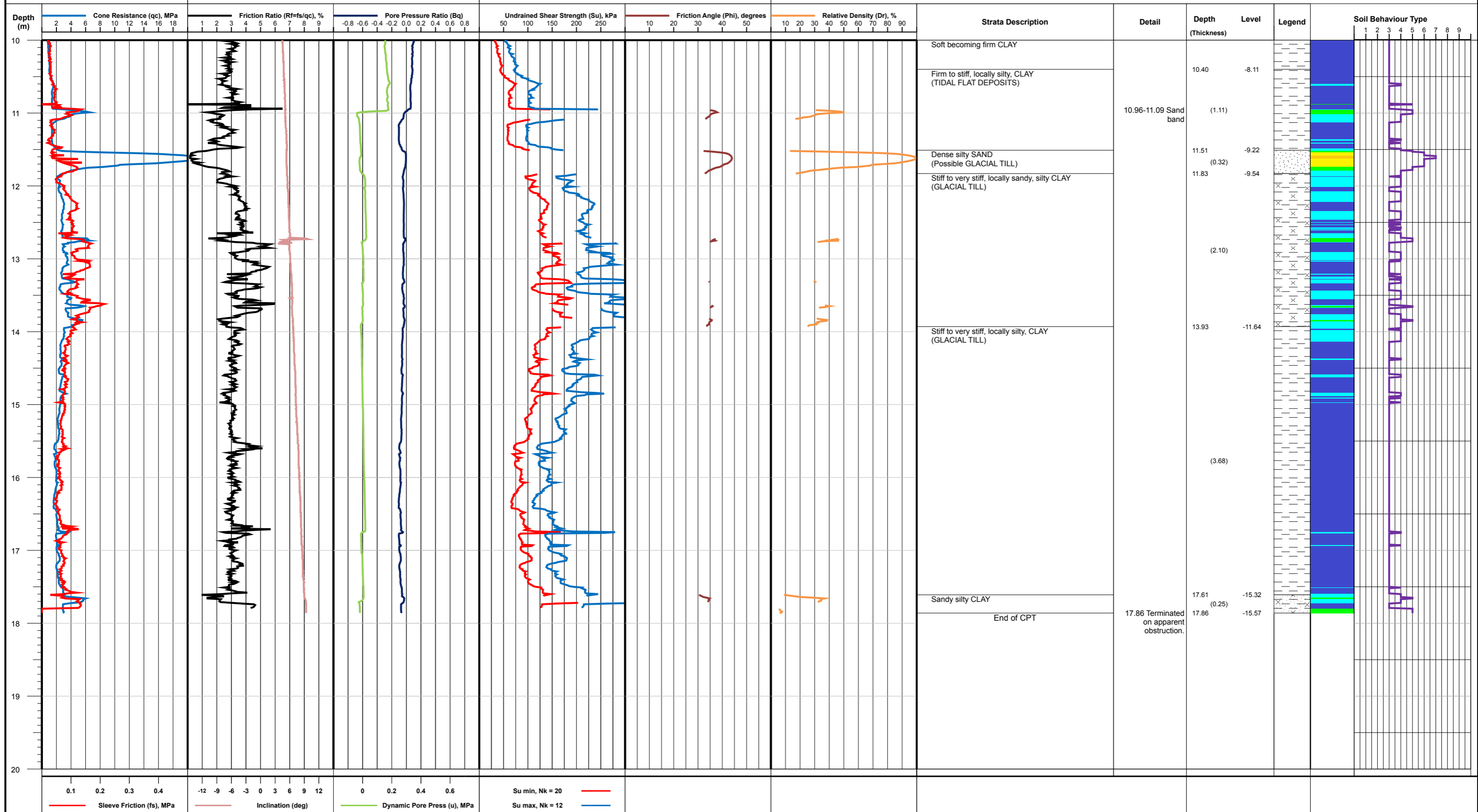


Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation © Copyright SOCOTEC UK Limited	<b>Project</b> SOUTH HUMBER BANK ENERGY CENTRE <b>Project No.</b> M9020-19 <b>Carried out for</b> EP UK Investments Ltd	<b>CPT No.</b> <h2>CPT05</h2> Sheet 1 of 2
--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------

# Cone Penetration Test Log



<b>Date</b> 19/08/2019 <b>Cone ID</b> S10CFIIP.1680 <b>Operator</b> DLB <b>Checked</b> IRC <b>Approved</b> IRC	<b>Equipment and Methods</b> Test according to BS 1377 : Part 9 : Method 3.1	<b>Ground level</b> 2.29 mOD <b>Co-ordinates (m)</b> E 523157.85 <b>National Grid</b> N 413452.72	<b>Remarks</b> Terminated due to maximum thrust reached  <b>Assumed Groundwater Level (m)</b> 1.00
----------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------



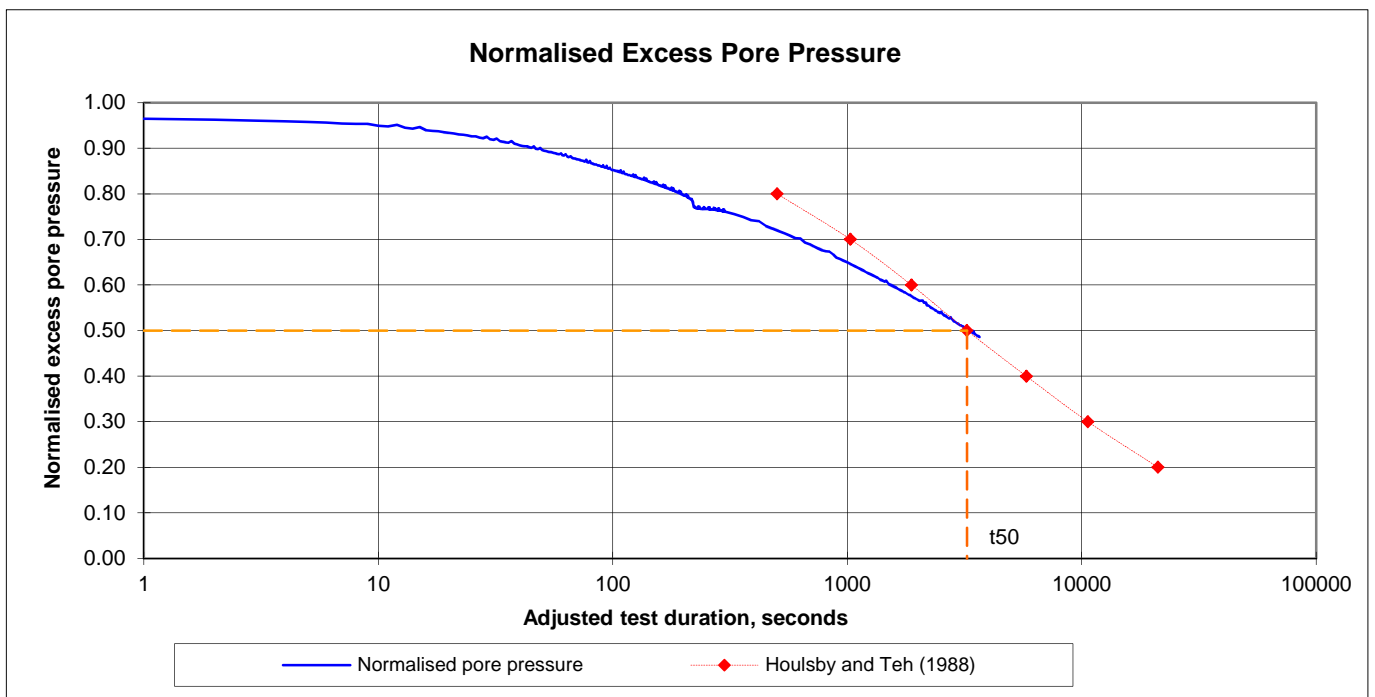
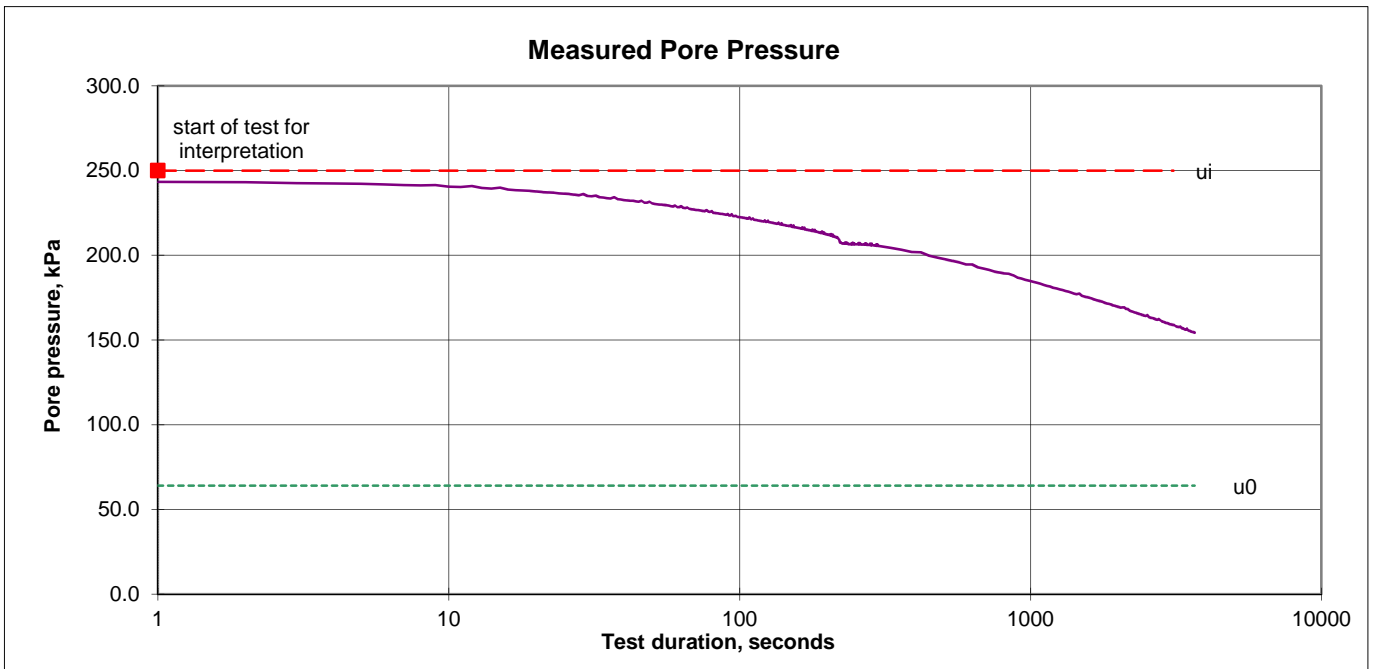
Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation © Copyright SOCOTEC UK Limited	<b>Project</b> SOUTH HUMBER BANK ENERGY CENTRE <b>Project No.</b> M9020-19 <b>Carried out for</b> EP UK Investments Ltd	<b>CPT No.</b> <h2>CPT05</h2> Sheet 2 of 2
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------

# Dissipation Test Results



Cone Ref	S10-CFIIP.1680
PWP filter location	u2

CPT No	CPT06
Depth, m	7.51



Conditions used for analysis:

Initial pore water pressure,  $u_i$     250 kPa    (Start of test value)  
 Equilibrium pore water pressure,  $u_0$     64 kPa    (From inspection of test data)  
 Equivalent groundwater level    0.99 m bgl

**Time to achieve 50% dissipation,  $t_{50}$  = 3239 seconds**  
**Horizontal coefficient of consolidation,  $c_h$  = 7.7 m<sup>2</sup> / year**

Notes: Interpretation of dissipation tests is not covered by the SOCOTEC UK UKAS accreditation

Spikes noted in pore pressure readings attributed to water ingress to the cone

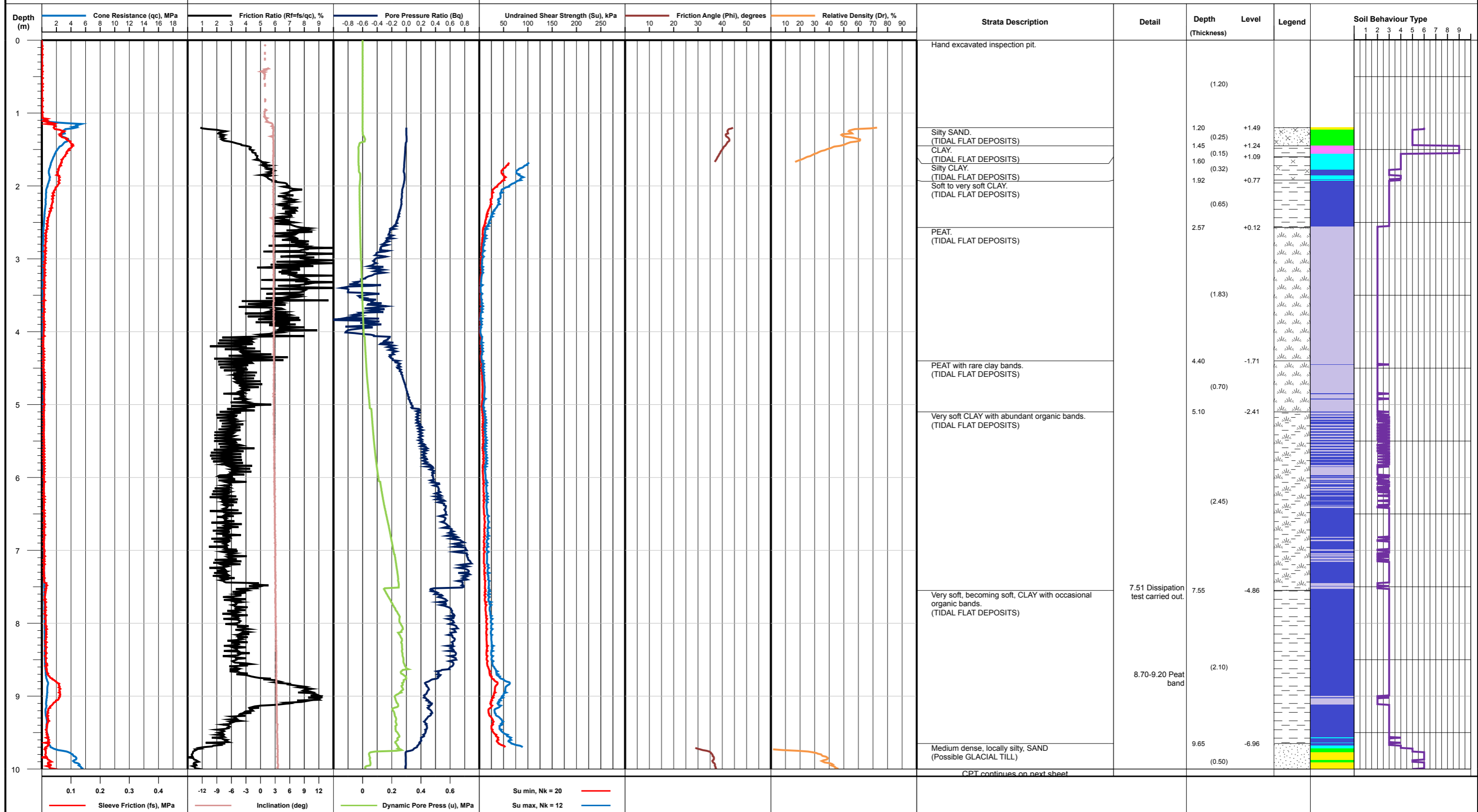
Project    SOUTH HMBER BANK ENERGY CENTRE  
 Project No.    M9020-19  
 Carried out for    EP UK Investments Ltd

Figure  
**CPT06 D01**

# Cone Penetration Test Log



<b>Date</b> 22/08/2019 <b>Cone ID</b> S10-CFIP.1680 <b>Operator</b> DLB <b>Checked</b> IRC <b>Approved</b> IRC	<b>Equipment and Methods</b> Test according to BS 1377 : Part 9 : Method 3.1	<b>Ground level</b> 2.69 mOD <b>Co-ordinates (m)</b> E 523194.15 <b>National Grid</b> N 413404.95	<b>Remarks</b> Terminated due to maximum thrust reached  <b>Assumed Groundwater Level (m)</b> 1.00
----------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------

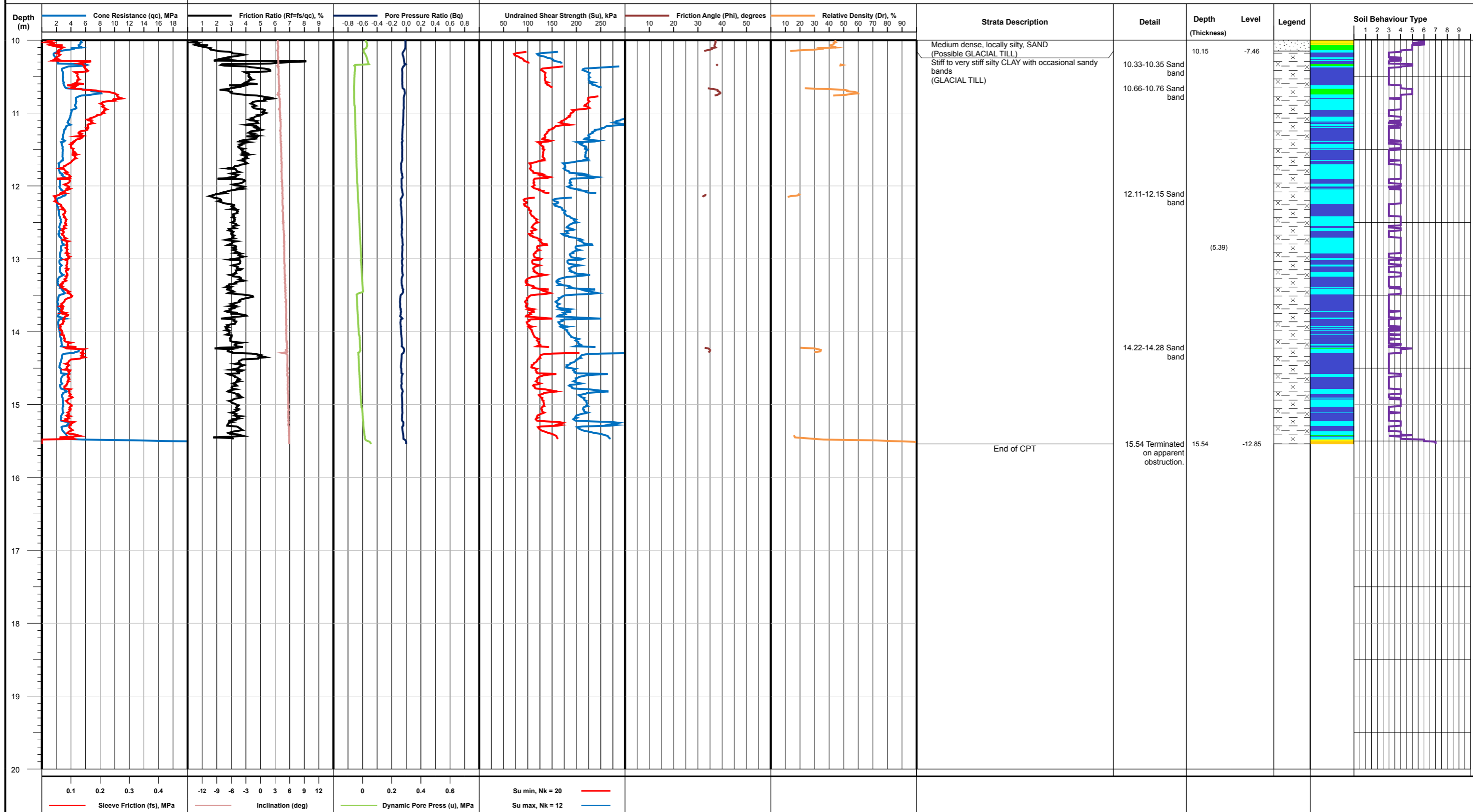


Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation © Copyright SOCOTEC UK Limited	<b>Project</b> SOUTH HUMBER BANK ENERGY CENTRE <b>Project No.</b> M9020-19 <b>Carried out for</b> EP UK Investments Ltd	<b>CPT No.</b> <h2>CPT06</h2> Sheet 1 of 2
--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------

# Cone Penetration Test Log



<b>Date</b> 22/08/2019 <b>Cone ID</b> S10-CFIP.1680 <b>Operator</b> DLB <b>Checked</b> IRC <b>Approved</b> IRC	<b>Equipment and Methods</b> Test according to BS 1377 : Part 9 : Method 3.1	<b>Ground level</b> 2.69 mOD <b>Co-ordinates (m)</b> E 523194.15 <b>National Grid</b> N 413404.95	<b>Remarks</b> Terminated due to maximum thrust reached  <b>Assumed Groundwater Level (m)</b> 1.00
----------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------

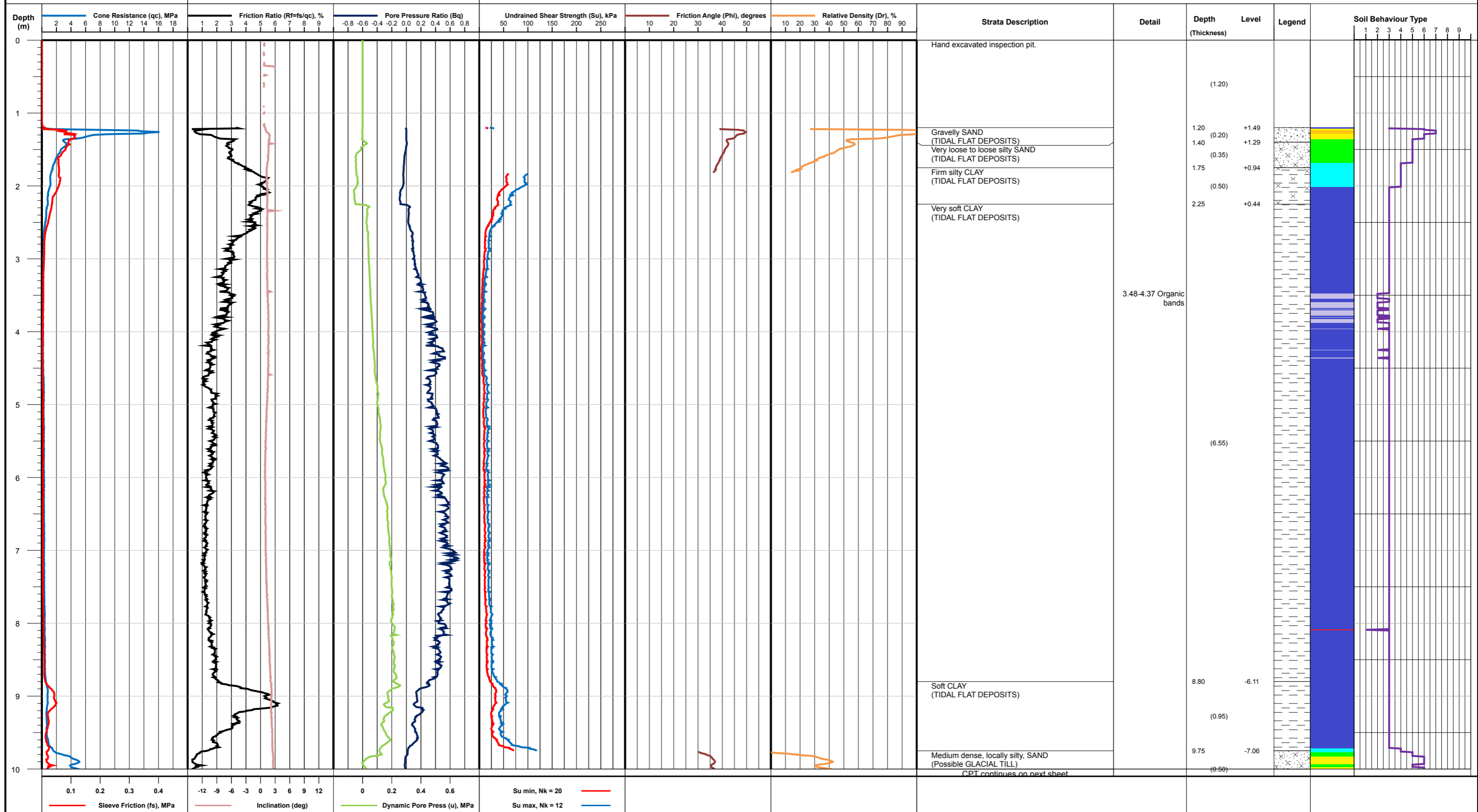


Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation © Copyright SOCOTEC UK Limited	<b>Project</b> SOUTH HUMBER BANK ENERGY CENTRE <b>Project No.</b> M9020-19 <b>Carried out for</b> EP UK Investments Ltd	<b>CPT No.</b> <h2>CPT06</h2> Sheet 2 of 2
--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------

# Cone Penetration Test Log



<b>Date</b> 22/08/2019	<b>Equipment and Methods</b> Test according to BS 1377 : Part 9 : Method 3.1	<b>Ground level</b> 2.69 mOD	<b>Remarks</b> Terminated due to maximum thrust reached
<b>Cone ID</b> S10CFIIP.1680		<b>Co-ordinates (m)</b> E 523194.12	
<b>Operator</b> DLB		<b>National Grid</b> N 413404.91	
<b>Checked</b> IRC			
<b>Approved</b> IRC			<b>Assumed Groundwater Level (m)</b> 1.00

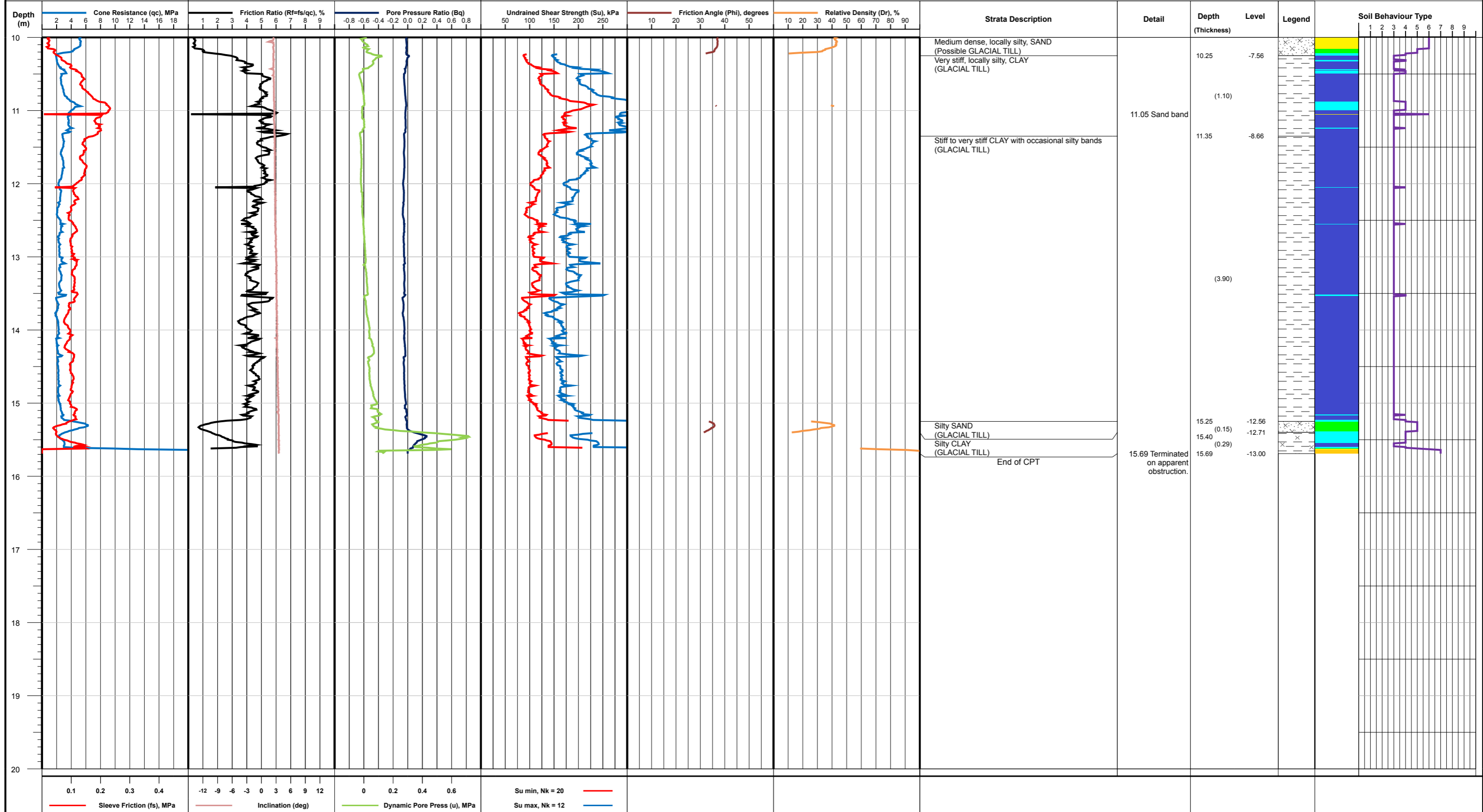


Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation © Copyright SOCOTEC UK Limited	<b>Project</b> SOUTH HUMBER BANK ENERGY CENTRE	<b>CPT No.</b>  <b>CPT06A</b>  Sheet 1 of 2
	<b>Project No.</b> M9020-19	
	<b>Carried out for</b> EP UK Investments Ltd	

# Cone Penetration Test Log



<b>Date</b> 22/08/2019 <b>Cone ID</b> S10CFIIP.1680 <b>Operator</b> DLB <b>Checked</b> IRC <b>Approved</b> IRC	<b>Equipment and Methods</b> Test according to BS 1377 : Part 9 : Method 3.1	<b>Ground level</b> 2.69 mOD <b>Co-ordinates (m)</b> E 523194.12 <b>National Grid</b> N 413404.91	<b>Remarks</b> Terminated due to maximum thrust reached  <b>Assumed Groundwater Level (m)</b> 1.00
----------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------

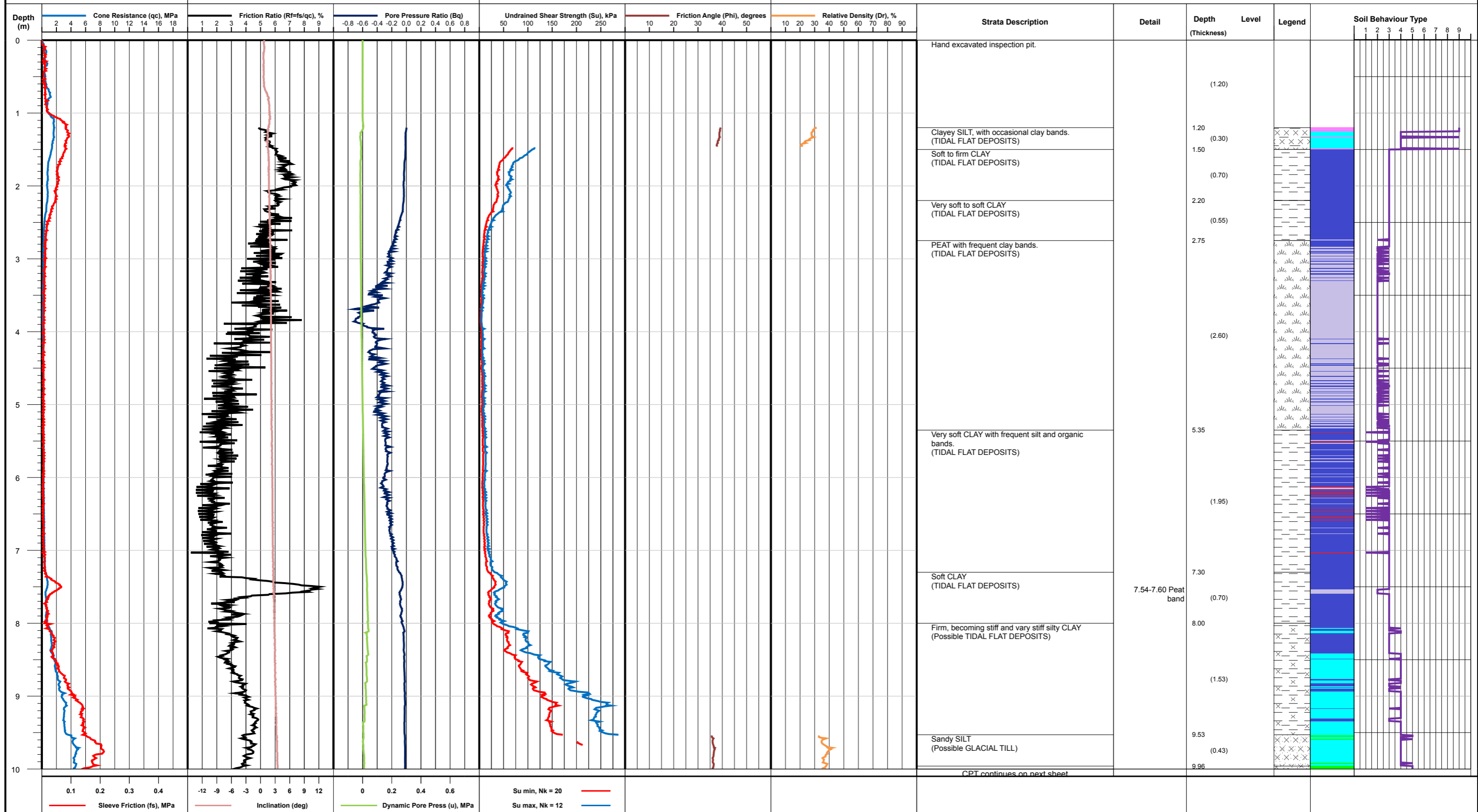


Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation © Copyright SOCOTEC UK Limited	<b>Project</b> SOUTH HUMBER BANK ENERGY CENTRE <b>Project No.</b> M9020-19 <b>Carried out for</b> EP UK Investments Ltd	<b>CPT No.</b> <h2>CPT06A</h2> Sheet 2 of 2
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------

# Cone Penetration Test Log



<b>Date</b> 21/08/2019 <b>Cone ID</b> S10CFIIP.1680 <b>Operator</b> DLB <b>Checked</b> IRC <b>Approved</b> IRC	<b>Equipment and Methods</b> Test according to BS 1377 : Part 9 : Method 3.1	<b>Ground level</b> <b>Co-ordinates (m)</b> <b>National Grid</b>	<b>Remarks</b> Terminated due to maximum thrust reached  <b>Assumed Groundwater Level (m)</b> 1.00
----------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------	------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------



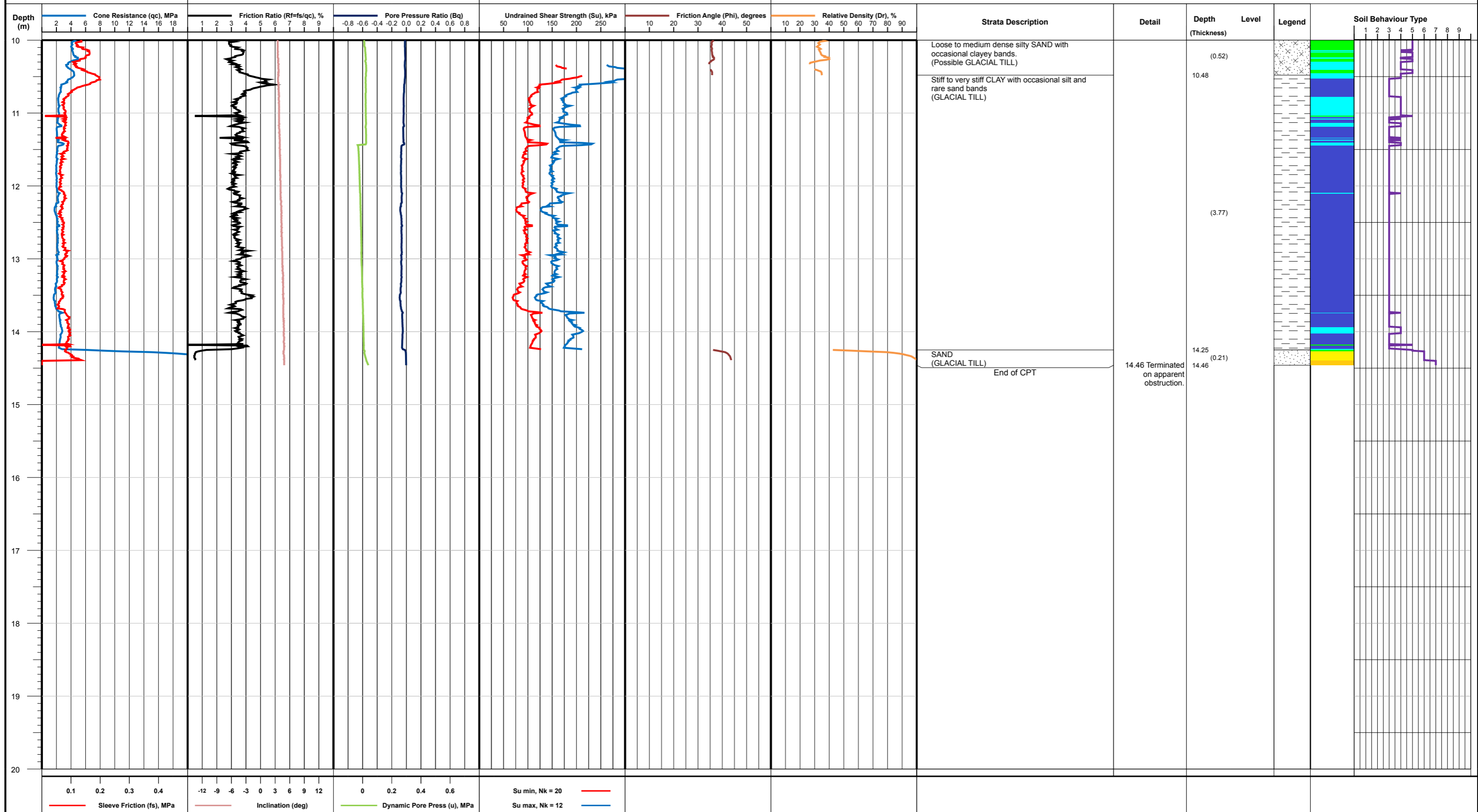
Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation © Copyright SOCOTEC UK Limited	<b>Project</b> SOUTH HUMBER BANK ENERGY CENTRE <b>Project No.</b> M9020-19 <b>Carried out for</b> EP UK Investments Ltd	<b>CPT No.</b> <h2>CPT07</h2> Sheet 1 of 2
--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------



# Cone Penetration Test Log



<b>Date</b> 21/08/2019 <b>Cone ID</b> S10CFIIP.1680 <b>Operator</b> DLB <b>Checked</b> IRC <b>Approved</b> IRC	<b>Equipment and Methods</b> Test according to BS 1377 : Part 9 : Method 3.1	<b>Ground level</b> <b>Co-ordinates (m)</b> <b>National Grid</b>	<b>Remarks</b> Terminated due to maximum thrust reached  <b>Assumed Groundwater Level (m)</b> 1.00
----------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------	------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------

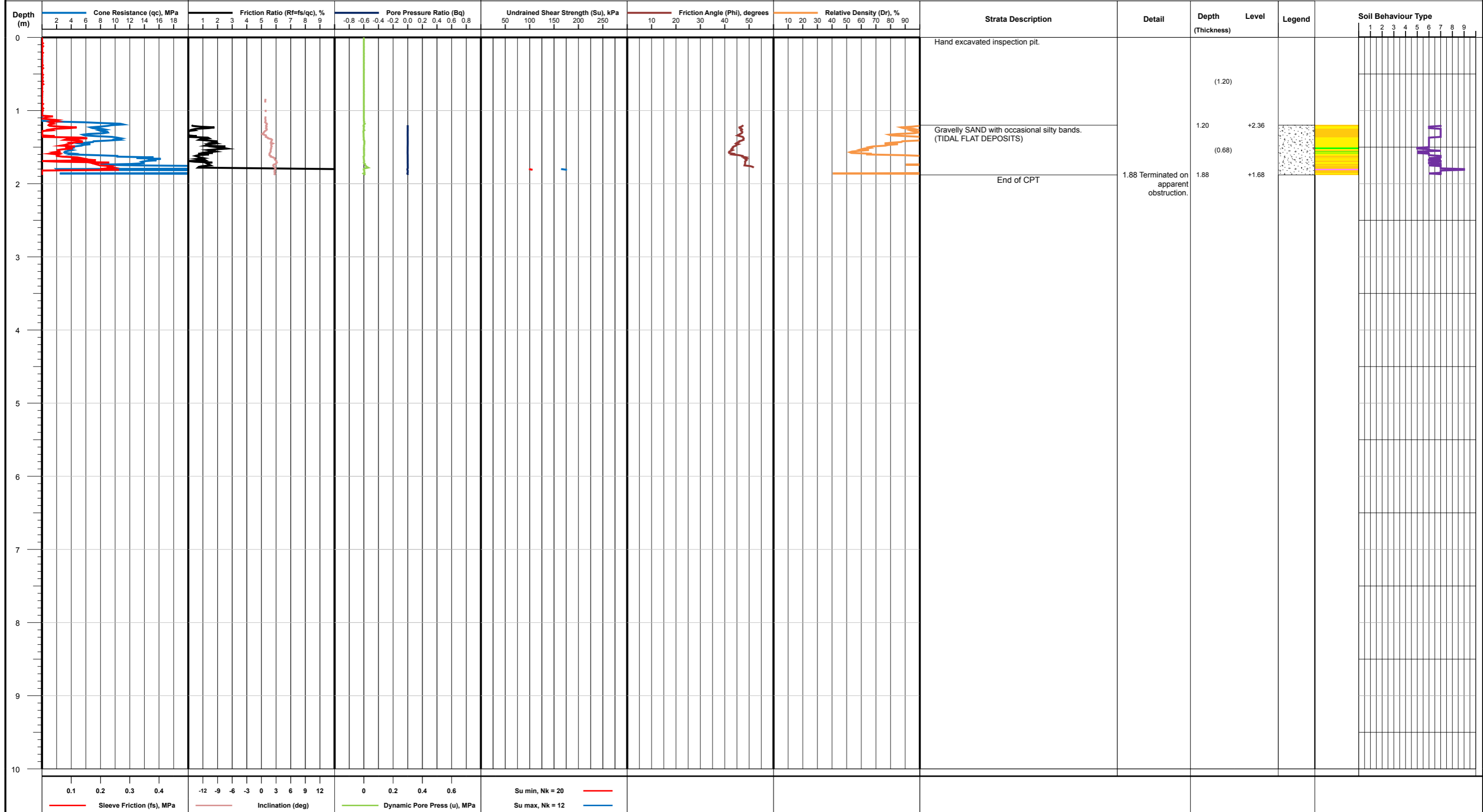


Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation © Copyright SOCOTEC UK Limited	<b>Project</b> SOUTH HUMBER BANK ENERGY CENTRE <b>Project No.</b> M9020-19 <b>Carried out for</b> EP UK Investments Ltd	<b>CPT No.</b> <h2>CPT07</h2> Sheet 2 of 2
--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------

# Cone Penetration Test Log



<b>Date</b> 20/08/2019 <b>Cone ID</b> S10CFIIP.1680 <b>Operator</b> DLB <b>Checked</b> IRC <b>Approved</b> IRC	<b>Equipment and Methods</b> Test according to BS 1377 : Part 9 : Method 3.1	<b>Ground level</b> 3.56 mOD <b>Co-ordinates (m)</b> E 523094.96 <b>National Grid</b> N 413363.25	<b>Remarks</b> Terminated due to high thrust and flex in rods.  <b>Assumed Groundwater Level (m)</b> 1.00
----------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------



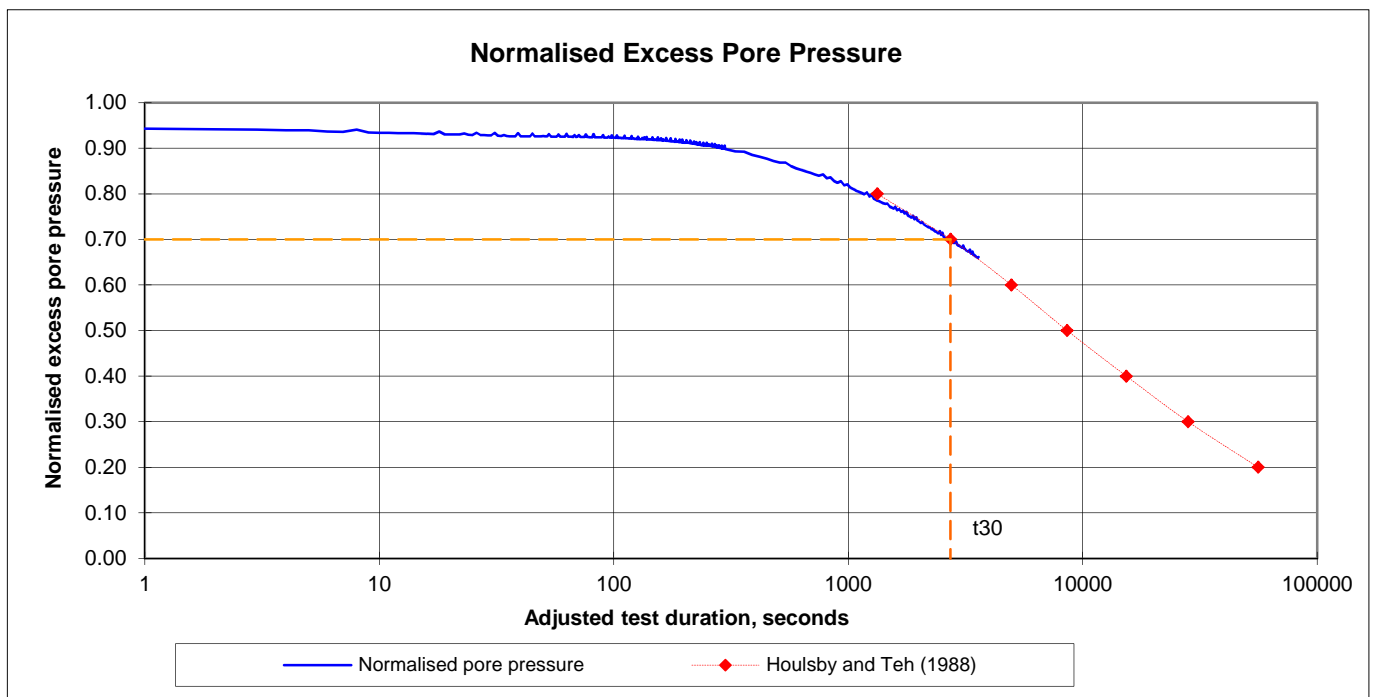
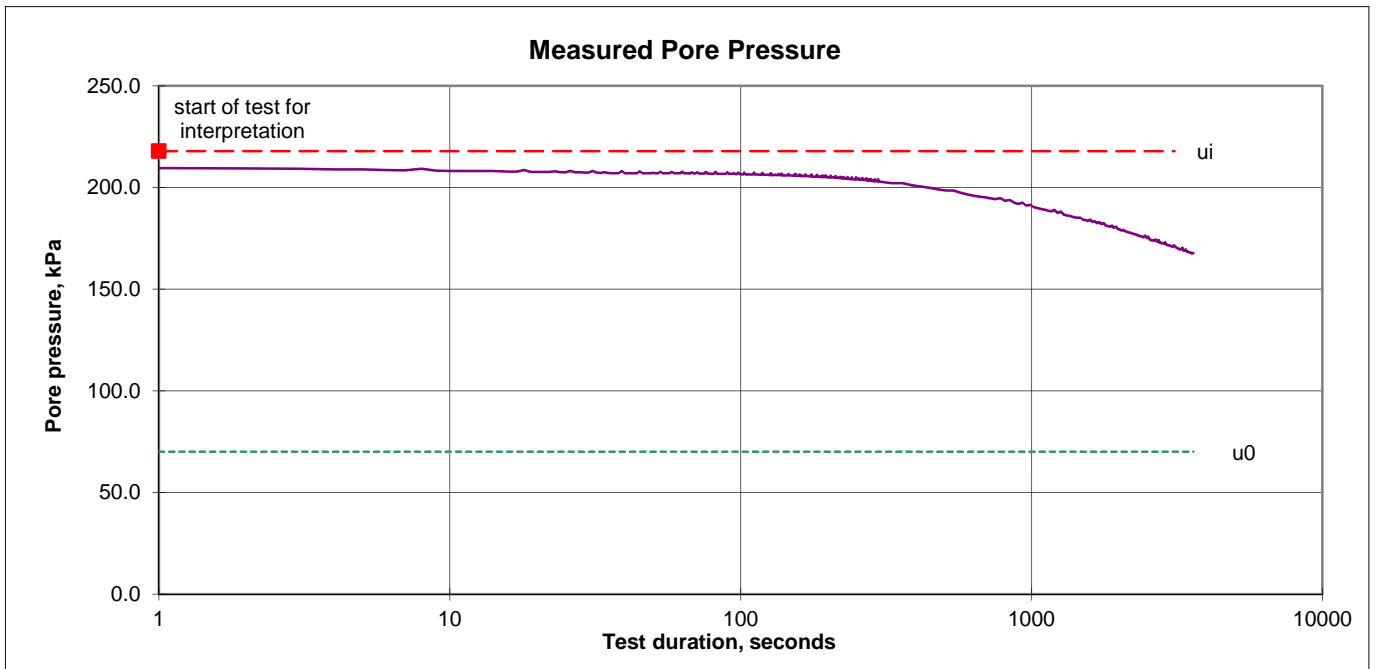
Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation © Copyright SOCOTEC UK Limited	<b>Project</b> SOUTH HUMBER BANK ENERGY CENTRE <b>Project No.</b> M9020-19 <b>Carried out for</b> EP UK Investments Ltd	<b>CPT No.</b> <h2>CPT09</h2> Sheet 1 of 1
--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------

# Dissipation Test Results



Cone Ref	S10-CFIIP.1680
PWP filter location	u2

CPT No	CPT10
Depth, m	8.17



Conditions used for analysis:

Initial pore water pressure, $u_i$	218 kPa	(Start of test value)
Equilibrium pore water pressure, $u_0$	70 kPa	(From inspection of test data)
Equivalent groundwater level	1.03 m bgl	

**Time to achieve 30% dissipation,  $t_{30}$  = 2730 seconds**  
**Horizontal coefficient of consolidation,  $c_h$  = 2.9 m<sup>2</sup> / year**

Notes: Interpretation of dissipation tests is not covered by the SOCOTEC UK UKAS accreditation

Spikes noted in pore pressure readings attributed to water ingress to the cone

Project	SOUTH HMBER BANK ENERGY CENTRE
Project No.	M9020-19
Carried out for	EP UK Investments Ltd

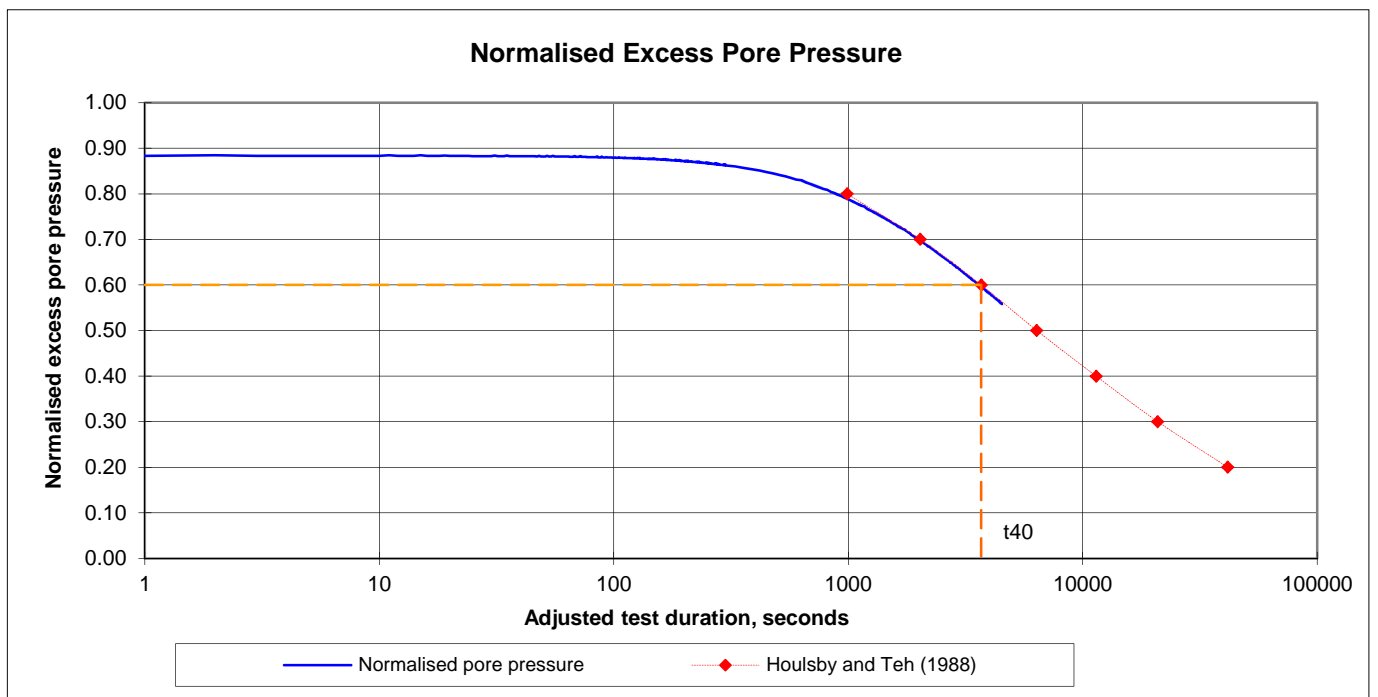
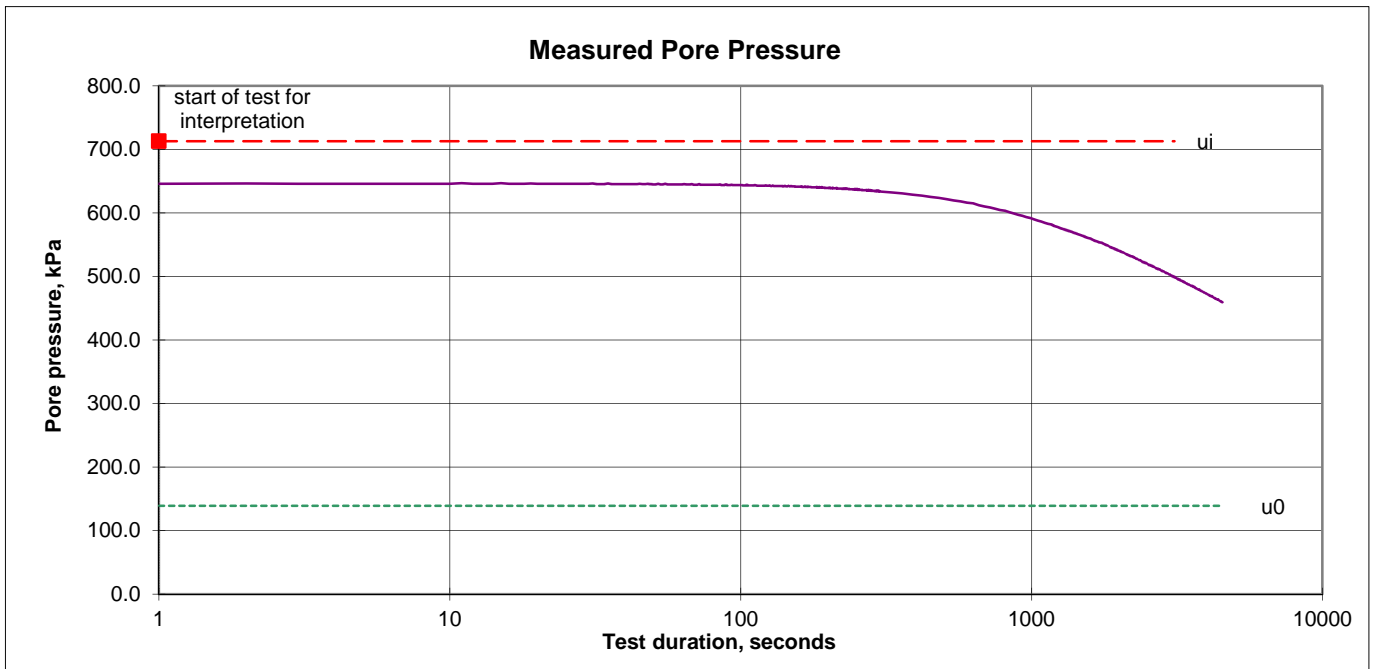
Figure  
CPT10 D01

# Dissipation Test Results



Cone Ref	S10-CFIIP.1680
PWP filter location	u2

CPT No	CPT10
Depth, m	15.14



Conditions used for analysis:

Initial pore water pressure,  $u_i$     713 kPa    (Start of test value)  
 Equilibrium pore water pressure,  $u_0$     139 kPa    (From inspection of test data)  
 Equivalent groundwater level    0.97 m bgl

**Time to achieve 40% dissipation,  $t_{40}$  = 3692 seconds**  
**Horizontal coefficient of consolidation,  $c_h$  = 3.9 m<sup>2</sup> / year**

Notes: Interpretation of dissipation tests is not covered by the SOCOTEC UK UKAS accreditation

Spikes noted in pore pressure readings attributed to water ingress to the cone

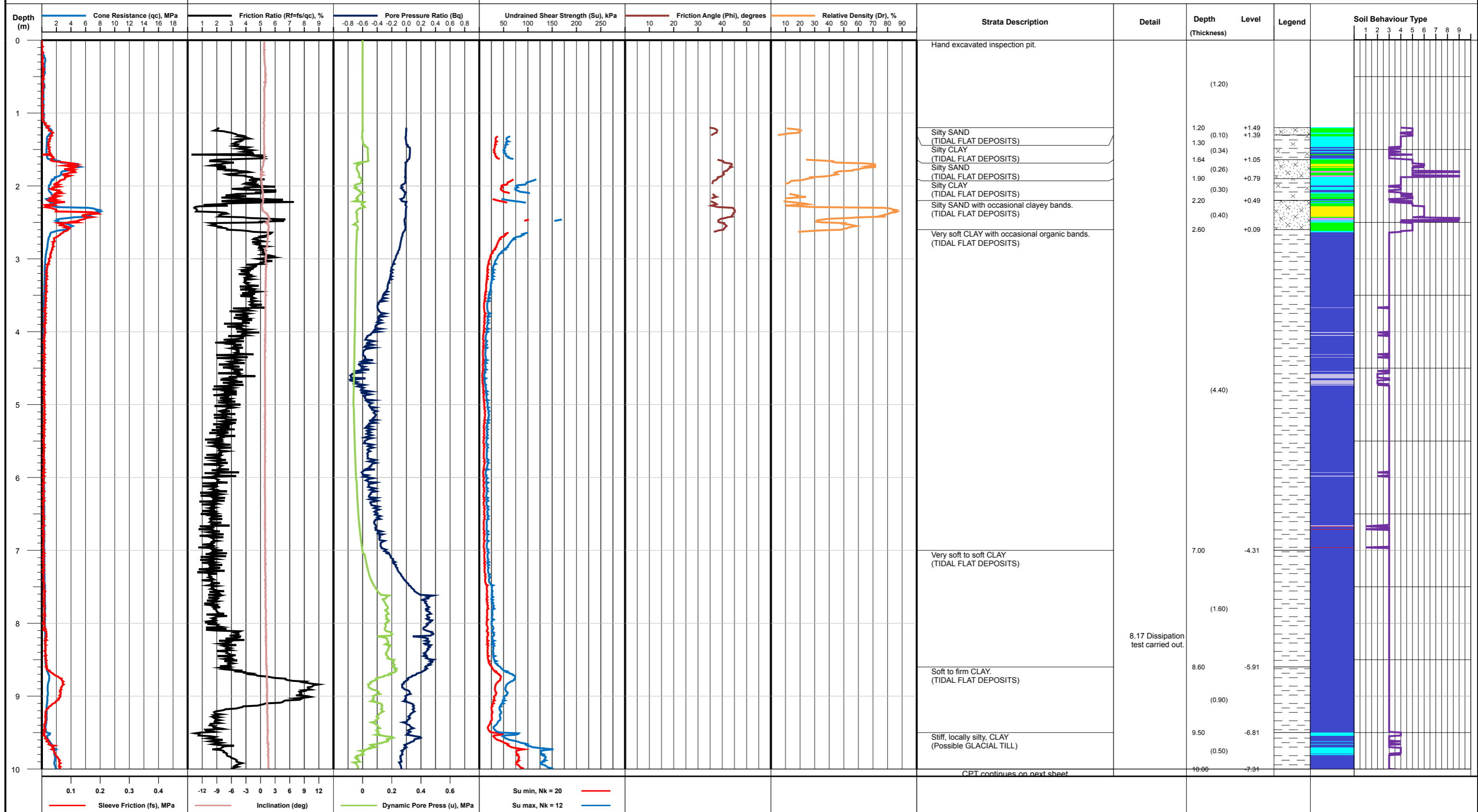
Project    SOUTH HMBER BANK ENERGY CENTRE  
 Project No.    M9020-19  
 Carried out for    EP UK Investments Ltd

Figure  
**CPT10 D02**

# Cone Penetration Test Log



<b>Date</b> 21/08/2019 <b>Cone ID</b> S10-CFIP.1680 <b>Operator</b> DLB <b>Checked</b> IRC <b>Approved</b> IRC	<b>Equipment and Methods</b> Test according to BS 1377 : Part 9 : Method 3.1	<b>Ground level</b> 2.69 mOD <b>Co-ordinates (m)</b> E 523190.43 <b>National Grid</b> N 413368.81	<b>Remarks</b> Terminated due to maximum thrust reached  <b>Assumed Groundwater Level (m)</b> 1.00
----------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------



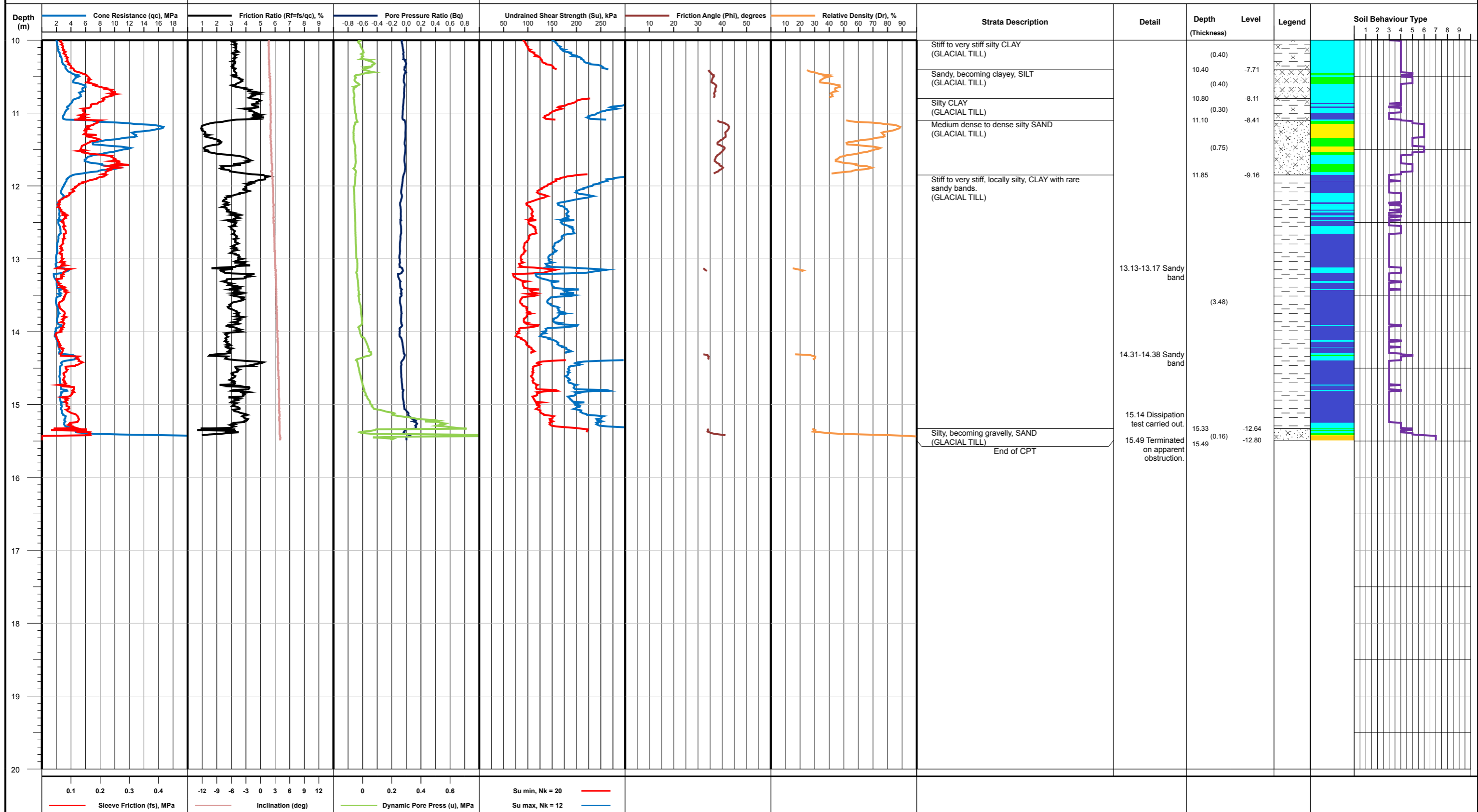
Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation © Copyright SOCOTEC UK Limited

<b>Project</b> SOUTH HUMBER BANK ENERGY CENTRE <b>Project No.</b> M9020-19 <b>Carried out for</b> EP UK Investments Ltd	<b>CPT No.</b> <h2>CPT10</h2> Sheet 1 of 2
-------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------

# Cone Penetration Test Log



<b>Date</b> 21/08/2019 <b>Cone ID</b> S10-CFIP.1680 <b>Operator</b> DLB <b>Checked</b> IRC <b>Approved</b> IRC	<b>Equipment and Methods</b> Test according to BS 1377 : Part 9 : Method 3.1	<b>Ground level</b> 2.69 mOD <b>Co-ordinates (m)</b> E 523190.43 <b>National Grid</b> N 413368.81	<b>Remarks</b> Terminated due to maximum thrust reached  <b>Assumed Groundwater Level (m)</b> 1.00
----------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------

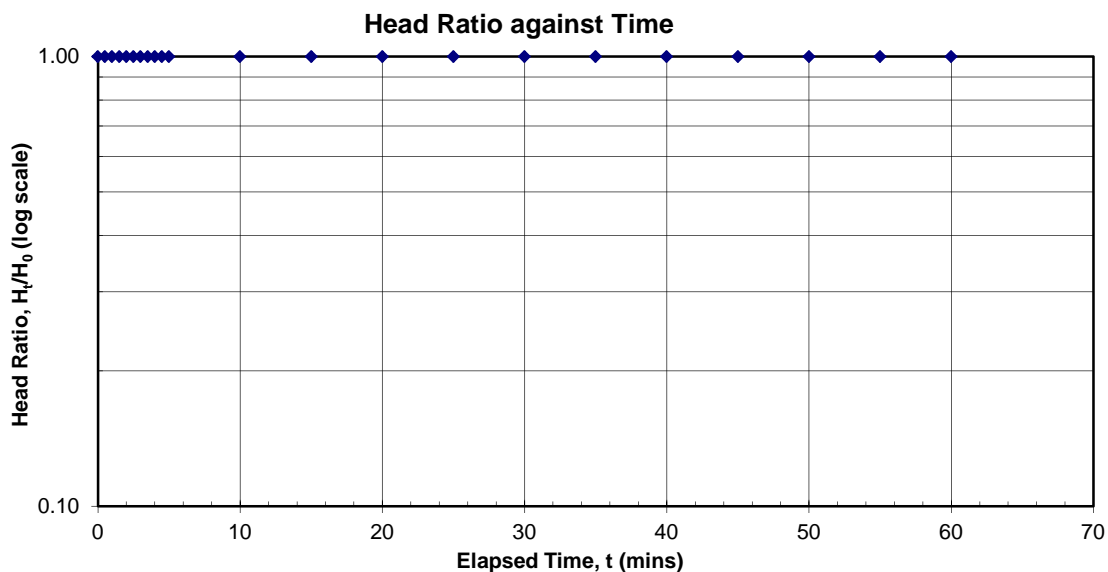


Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation © Copyright SOCOTEC UK Limited	<b>Project</b> SOUTH HUMBER BANK ENERGY CENTRE <b>Project No.</b> M9020-19 <b>Carried out for</b> EP UK Investments Ltd	<b>CPT No.</b> <h2>CPT10</h2> Sheet 2 of 2
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------

# Variable Head Permeability Test



<b>LOCATION TYPE</b> Borehole <b>TEST TYPE</b> Falling Head <b>DETAILS OF TEST ZONE:</b> Depth of casing 15.00 m BGL Depth of borehole 15.50 m BGL Diameter of borehole (D) 200 mm Height of casing above ground level (datum) 0.00 m	<b>BOREHOLE No.</b> BH02 <b>TEST NUMBER</b> 1 <b>DATE OF TEST</b> 13-Aug-19  <b>TEST ZONE CONDITIONS</b> Diameter of response zone (D) 200 mm Length of response zone (L) 500 mm Soil in casing with bottom in uniform soil (6) Shape factor (F) after Hvorslev (1951) 0.06 m																																																																																												
<b>TEST DATA</b> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th style="text-align: center;">Elapsed time, t (minutes)</th> <th style="text-align: center;">Depth to water below datum (m)</th> <th style="text-align: center;">Head, H<sub>t</sub> (m)</th> <th style="text-align: center;">Head Ratio H<sub>t</sub>/H<sub>0</sub></th> </tr> </thead> <tbody> <tr><td style="text-align: center;">0</td><td style="text-align: center;">0.00</td><td style="text-align: center;">12.30</td><td style="text-align: center;">1.00</td></tr> <tr><td style="text-align: center;">0.5</td><td style="text-align: center;">0.00</td><td style="text-align: center;">12.30</td><td style="text-align: center;">1.00</td></tr> <tr><td style="text-align: center;">1</td><td style="text-align: center;">0.00</td><td style="text-align: center;">12.30</td><td style="text-align: center;">1.00</td></tr> <tr><td style="text-align: center;">1.5</td><td style="text-align: center;">0.00</td><td style="text-align: center;">12.30</td><td style="text-align: center;">1.00</td></tr> <tr><td style="text-align: center;">2</td><td style="text-align: center;">0.00</td><td style="text-align: center;">12.30</td><td style="text-align: center;">1.00</td></tr> <tr><td style="text-align: center;">2.5</td><td style="text-align: center;">0.00</td><td style="text-align: center;">12.30</td><td style="text-align: center;">1.00</td></tr> <tr><td style="text-align: center;">3</td><td style="text-align: center;">0.00</td><td style="text-align: center;">12.30</td><td style="text-align: center;">1.00</td></tr> <tr><td style="text-align: center;">3.5</td><td style="text-align: center;">0.00</td><td style="text-align: center;">12.30</td><td style="text-align: center;">1.00</td></tr> <tr><td style="text-align: center;">4</td><td style="text-align: center;">0.00</td><td style="text-align: center;">12.30</td><td style="text-align: center;">1.00</td></tr> <tr><td style="text-align: center;">4.5</td><td style="text-align: center;">0.00</td><td style="text-align: center;">12.30</td><td style="text-align: center;">1.00</td></tr> <tr><td style="text-align: center;">5</td><td style="text-align: center;">0.00</td><td style="text-align: center;">12.30</td><td style="text-align: center;">1.00</td></tr> <tr><td style="text-align: center;">10</td><td style="text-align: center;">0.00</td><td style="text-align: center;">12.30</td><td style="text-align: center;">1.00</td></tr> <tr><td style="text-align: center;">15</td><td style="text-align: center;">0.00</td><td style="text-align: center;">12.30</td><td style="text-align: center;">1.00</td></tr> <tr><td style="text-align: center;">20</td><td style="text-align: center;">0.00</td><td style="text-align: center;">12.30</td><td style="text-align: center;">1.00</td></tr> <tr><td style="text-align: center;">25</td><td style="text-align: center;">0.00</td><td style="text-align: center;">12.30</td><td style="text-align: center;">1.00</td></tr> <tr><td style="text-align: center;">30</td><td style="text-align: center;">0.00</td><td style="text-align: center;">12.30</td><td style="text-align: center;">1.00</td></tr> <tr><td style="text-align: center;">35</td><td style="text-align: center;">0.00</td><td style="text-align: center;">12.30</td><td style="text-align: center;">1.00</td></tr> <tr><td style="text-align: center;">40</td><td style="text-align: center;">0.00</td><td style="text-align: center;">12.30</td><td style="text-align: center;">1.00</td></tr> <tr><td style="text-align: center;">45</td><td style="text-align: center;">0.00</td><td style="text-align: center;">12.30</td><td style="text-align: center;">1.00</td></tr> <tr><td style="text-align: center;">50</td><td style="text-align: center;">0.00</td><td style="text-align: center;">12.30</td><td style="text-align: center;">1.00</td></tr> <tr><td style="text-align: center;">55</td><td style="text-align: center;">0.00</td><td style="text-align: center;">12.30</td><td style="text-align: center;">1.00</td></tr> <tr><td style="text-align: center;">60</td><td style="text-align: center;">0.00</td><td style="text-align: center;">12.30</td><td style="text-align: center;">1.00</td></tr> </tbody> </table>	Elapsed time, t (minutes)	Depth to water below datum (m)	Head, H <sub>t</sub> (m)	Head Ratio H <sub>t</sub> /H <sub>0</sub>	0	0.00	12.30	1.00	0.5	0.00	12.30	1.00	1	0.00	12.30	1.00	1.5	0.00	12.30	1.00	2	0.00	12.30	1.00	2.5	0.00	12.30	1.00	3	0.00	12.30	1.00	3.5	0.00	12.30	1.00	4	0.00	12.30	1.00	4.5	0.00	12.30	1.00	5	0.00	12.30	1.00	10	0.00	12.30	1.00	15	0.00	12.30	1.00	20	0.00	12.30	1.00	25	0.00	12.30	1.00	30	0.00	12.30	1.00	35	0.00	12.30	1.00	40	0.00	12.30	1.00	45	0.00	12.30	1.00	50	0.00	12.30	1.00	55	0.00	12.30	1.00	60	0.00	12.30	1.00	<b>GROUNDWATER CONDITIONS</b> Depth to groundwater prior to test 12.30 m BGL Groundwater level for analysis 12.30 m BGL (Based on groundwater depth prior to test)
Elapsed time, t (minutes)	Depth to water below datum (m)	Head, H <sub>t</sub> (m)	Head Ratio H <sub>t</sub> /H <sub>0</sub>																																																																																										
0	0.00	12.30	1.00																																																																																										
0.5	0.00	12.30	1.00																																																																																										
1	0.00	12.30	1.00																																																																																										
1.5	0.00	12.30	1.00																																																																																										
2	0.00	12.30	1.00																																																																																										
2.5	0.00	12.30	1.00																																																																																										
3	0.00	12.30	1.00																																																																																										
3.5	0.00	12.30	1.00																																																																																										
4	0.00	12.30	1.00																																																																																										
4.5	0.00	12.30	1.00																																																																																										
5	0.00	12.30	1.00																																																																																										
10	0.00	12.30	1.00																																																																																										
15	0.00	12.30	1.00																																																																																										
20	0.00	12.30	1.00																																																																																										
25	0.00	12.30	1.00																																																																																										
30	0.00	12.30	1.00																																																																																										
35	0.00	12.30	1.00																																																																																										
40	0.00	12.30	1.00																																																																																										
45	0.00	12.30	1.00																																																																																										
50	0.00	12.30	1.00																																																																																										
55	0.00	12.30	1.00																																																																																										
60	0.00	12.30	1.00																																																																																										
<b>CALCULATED VALUES</b> Permeability calculation based on BS EN ISO 22282-2 : 2012 Section B.4.2 (Hvorslev method - general approach)  Differential head at start of test, H <sub>0</sub> 12.30 m Differential head at end of test, H <sub>t</sub> 12.30 m Time elapsed at end of test 60 mins Proportion of test recovery 0 %																																																																																													
<b>Permeability (k) =                      m/sec</b>																																																																																													
<b>REMARKS</b> No change in water level, permeability not calculated																																																																																													



Testing: RT  
Checked: MW  
Approved: MW

Notes:

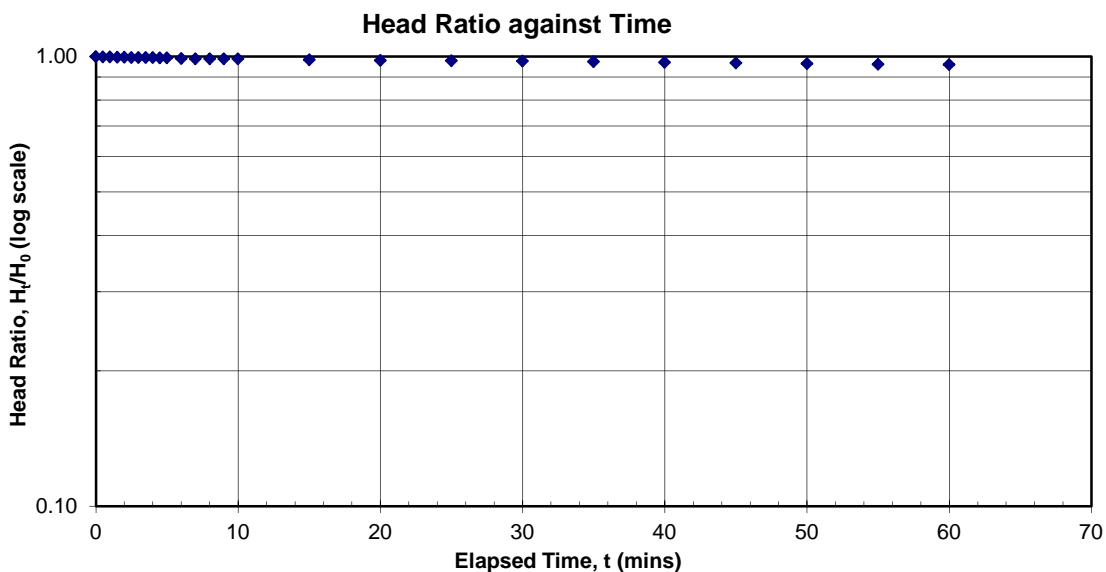
**Project** SOUTH HUMBER BANK ENERGY CENTRE  
**Project No.** A9020-19  
**Carried out for** EP UK Investments Ltd.

**Test** BH02T1

# Variable Head Permeability Test



<p>LOCATION TYPE <b>Borehole</b></p> <p>TEST TYPE <b>Falling Head</b></p> <p>DETAILS OF TEST ZONE:</p> <p>Depth of casing 11.70 m BGL                  Depth of borehole 12.20 m BGL                  Diameter of borehole (D) 200 mm                  Height of casing above ground level (datum) 0.45 m</p>	<p>BOREHOLE No. <b>BH03</b></p> <p>TEST NUMBER <b>1</b></p> <p>DATE OF TEST <b>14-Aug-19</b></p> <p>TEST ZONE CONDITIONS</p> <p>Diameter of response zone (D) 200 mm                  Length of response zone (L) 500 mm                  Soil in casing with bottom in uniform soil (6)                  Shape factor (F) after Hvorslev (1951) 0.06 m</p>																																																																																																												
<p><b>TEST DATA</b></p> <table border="1" style="width:100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>Elapsed time, t (minutes)</th> <th>Depth to water below datum (m)</th> <th>Head, <math>H_t</math> (m)</th> <th>Head Ratio <math>H_t/H_0</math></th> </tr> </thead> <tbody> <tr><td>0</td><td>0.08</td><td>9.52</td><td>1.00</td></tr> <tr><td>0.5</td><td>0.09</td><td>9.51</td><td>1.00</td></tr> <tr><td>1</td><td>0.10</td><td>9.50</td><td>1.00</td></tr> <tr><td>1.5</td><td>0.11</td><td>9.49</td><td>1.00</td></tr> <tr><td>2</td><td>0.11</td><td>9.49</td><td>1.00</td></tr> <tr><td>2.5</td><td>0.12</td><td>9.48</td><td>1.00</td></tr> <tr><td>3</td><td>0.13</td><td>9.47</td><td>0.99</td></tr> <tr><td>3.5</td><td>0.13</td><td>9.47</td><td>0.99</td></tr> <tr><td>4</td><td>0.13</td><td>9.47</td><td>0.99</td></tr> <tr><td>4.5</td><td>0.14</td><td>9.46</td><td>0.99</td></tr> <tr><td>5</td><td>0.14</td><td>9.46</td><td>0.99</td></tr> <tr><td>6</td><td>0.17</td><td>9.43</td><td>0.99</td></tr> <tr><td>7</td><td>0.18</td><td>9.42</td><td>0.99</td></tr> <tr><td>8</td><td>0.18</td><td>9.42</td><td>0.99</td></tr> <tr><td>9</td><td>0.18</td><td>9.42</td><td>0.99</td></tr> <tr><td>10</td><td>0.19</td><td>9.41</td><td>0.99</td></tr> <tr><td>15</td><td>0.23</td><td>9.37</td><td>0.98</td></tr> <tr><td>20</td><td>0.26</td><td>9.34</td><td>0.98</td></tr> <tr><td>25</td><td>0.28</td><td>9.32</td><td>0.98</td></tr> <tr><td>30</td><td>0.30</td><td>9.30</td><td>0.98</td></tr> <tr><td>35</td><td>0.33</td><td>9.27</td><td>0.97</td></tr> <tr><td>40</td><td>0.35</td><td>9.25</td><td>0.97</td></tr> <tr><td>45</td><td>0.38</td><td>9.22</td><td>0.97</td></tr> <tr><td>50</td><td>0.41</td><td>9.19</td><td>0.97</td></tr> <tr><td>55</td><td>0.44</td><td>9.16</td><td>0.96</td></tr> <tr><td>60</td><td>0.46</td><td>9.14</td><td>0.96</td></tr> </tbody> </table>	Elapsed time, t (minutes)	Depth to water below datum (m)	Head, $H_t$ (m)	Head Ratio $H_t/H_0$	0	0.08	9.52	1.00	0.5	0.09	9.51	1.00	1	0.10	9.50	1.00	1.5	0.11	9.49	1.00	2	0.11	9.49	1.00	2.5	0.12	9.48	1.00	3	0.13	9.47	0.99	3.5	0.13	9.47	0.99	4	0.13	9.47	0.99	4.5	0.14	9.46	0.99	5	0.14	9.46	0.99	6	0.17	9.43	0.99	7	0.18	9.42	0.99	8	0.18	9.42	0.99	9	0.18	9.42	0.99	10	0.19	9.41	0.99	15	0.23	9.37	0.98	20	0.26	9.34	0.98	25	0.28	9.32	0.98	30	0.30	9.30	0.98	35	0.33	9.27	0.97	40	0.35	9.25	0.97	45	0.38	9.22	0.97	50	0.41	9.19	0.97	55	0.44	9.16	0.96	60	0.46	9.14	0.96	<p><b>GROUNDWATER CONDITIONS</b></p> <p>Depth to groundwater prior to test 9.15 m BGL                  Groundwater level for analysis 9.15 m BGL                  (Based on groundwater depth prior to test)</p> <p><b>CALCULATED VALUES</b></p> <p>Permeability calculation based on BS EN ISO 22282-2 : 2012                  Section B.4.2 (Hvorslev method - general approach)</p> <p>Differential head at start of test, <math>H_0</math> 9.52 m                  Differential head at end of test, <math>H_t</math> 9.14 m                  Time elapsed at end of test 60 mins                  Proportion of test recovery 4 %</p> <p style="text-align: center; border: 1px solid black; padding: 5px;"> <b>Permeability (k) = m/sec</b> </p> <p><b>REMARKS</b></p> <p>Test based on small change in head ratio and only 2 % test recovery, permeability not calculated</p>
Elapsed time, t (minutes)	Depth to water below datum (m)	Head, $H_t$ (m)	Head Ratio $H_t/H_0$																																																																																																										
0	0.08	9.52	1.00																																																																																																										
0.5	0.09	9.51	1.00																																																																																																										
1	0.10	9.50	1.00																																																																																																										
1.5	0.11	9.49	1.00																																																																																																										
2	0.11	9.49	1.00																																																																																																										
2.5	0.12	9.48	1.00																																																																																																										
3	0.13	9.47	0.99																																																																																																										
3.5	0.13	9.47	0.99																																																																																																										
4	0.13	9.47	0.99																																																																																																										
4.5	0.14	9.46	0.99																																																																																																										
5	0.14	9.46	0.99																																																																																																										
6	0.17	9.43	0.99																																																																																																										
7	0.18	9.42	0.99																																																																																																										
8	0.18	9.42	0.99																																																																																																										
9	0.18	9.42	0.99																																																																																																										
10	0.19	9.41	0.99																																																																																																										
15	0.23	9.37	0.98																																																																																																										
20	0.26	9.34	0.98																																																																																																										
25	0.28	9.32	0.98																																																																																																										
30	0.30	9.30	0.98																																																																																																										
35	0.33	9.27	0.97																																																																																																										
40	0.35	9.25	0.97																																																																																																										
45	0.38	9.22	0.97																																																																																																										
50	0.41	9.19	0.97																																																																																																										
55	0.44	9.16	0.96																																																																																																										
60	0.46	9.14	0.96																																																																																																										



Testing: RT  
 Checked: MW  
 Approved: MW

Notes:

Project **SOUTH HUMBER BANK ENERGY CENTRE**

Project No. **A9020-19**

Carried out for **EP UK Investments Ltd.**

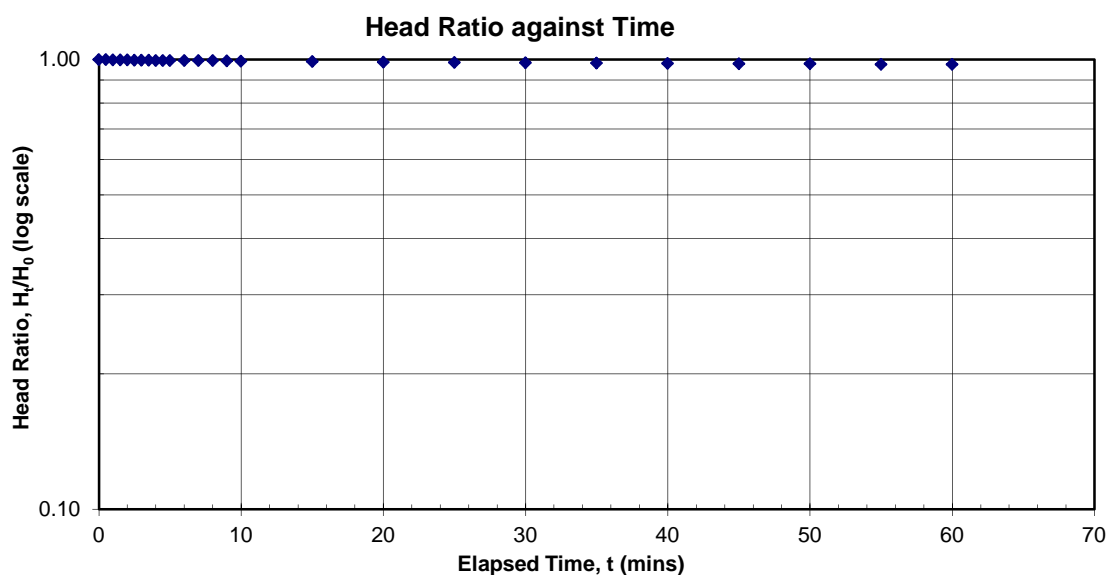
Test **BH03T1**



# Variable Head Permeability Test



<b>LOCATION TYPE</b> <b>TEST TYPE</b> <b>DETAILS OF TEST ZONE:</b> Depth of casing 17.50 m BGL Depth of borehole 17.90 m BGL Diameter of borehole (D) 200 mm Height of casing above ground level (datum) 0.67 m	<b>Borehole</b> Falling Head	<b>BOREHOLE No.</b> BH04 <b>TEST NUMBER</b> 1 <b>DATE OF TEST</b> 19-Aug-19 <b>TEST ZONE CONDITIONS</b> Diameter of response zone (D) 200 mm Length of response zone (L) 400 mm Soil in casing with bottom in uniform soil (6) Shape factor (F) after Hvorslev (1951) 0.07 m																																																																																																												
<b>TEST DATA</b> <table border="1"> <thead> <tr> <th>Elapsed time, t (minutes)</th> <th>Depth to water below datum (m)</th> <th>Head, H<sub>t</sub> (m)</th> <th>Head Ratio H<sub>t</sub>/H<sub>0</sub></th> </tr> </thead> <tbody> <tr><td>0</td><td>0.67</td><td>9.76</td><td>1.00</td></tr> <tr><td>0.5</td><td>0.67</td><td>9.76</td><td>1.00</td></tr> <tr><td>1</td><td>0.68</td><td>9.75</td><td>1.00</td></tr> <tr><td>1.5</td><td>0.69</td><td>9.74</td><td>1.00</td></tr> <tr><td>2</td><td>0.69</td><td>9.74</td><td>1.00</td></tr> <tr><td>2.5</td><td>0.70</td><td>9.73</td><td>1.00</td></tr> <tr><td>3</td><td>0.70</td><td>9.73</td><td>1.00</td></tr> <tr><td>3.5</td><td>0.70</td><td>9.73</td><td>1.00</td></tr> <tr><td>4</td><td>0.71</td><td>9.72</td><td>1.00</td></tr> <tr><td>4.5</td><td>0.71</td><td>9.72</td><td>1.00</td></tr> <tr><td>5</td><td>0.71</td><td>9.72</td><td>1.00</td></tr> <tr><td>6</td><td>0.72</td><td>9.71</td><td>0.99</td></tr> <tr><td>7</td><td>0.72</td><td>9.71</td><td>0.99</td></tr> <tr><td>8</td><td>0.72</td><td>9.71</td><td>0.99</td></tr> <tr><td>9</td><td>0.73</td><td>9.70</td><td>0.99</td></tr> <tr><td>10</td><td>0.74</td><td>9.69</td><td>0.99</td></tr> <tr><td>15</td><td>0.77</td><td>9.66</td><td>0.99</td></tr> <tr><td>20</td><td>0.79</td><td>9.64</td><td>0.99</td></tr> <tr><td>25</td><td>0.81</td><td>9.62</td><td>0.99</td></tr> <tr><td>30</td><td>0.83</td><td>9.60</td><td>0.98</td></tr> <tr><td>35</td><td>0.84</td><td>9.59</td><td>0.98</td></tr> <tr><td>40</td><td>0.86</td><td>9.57</td><td>0.98</td></tr> <tr><td>45</td><td>0.87</td><td>9.56</td><td>0.98</td></tr> <tr><td>50</td><td>0.88</td><td>9.55</td><td>0.98</td></tr> <tr><td>55</td><td>0.90</td><td>9.53</td><td>0.98</td></tr> <tr><td>60</td><td>0.90</td><td>9.53</td><td>0.98</td></tr> </tbody> </table>		Elapsed time, t (minutes)	Depth to water below datum (m)	Head, H <sub>t</sub> (m)	Head Ratio H <sub>t</sub> /H <sub>0</sub>	0	0.67	9.76	1.00	0.5	0.67	9.76	1.00	1	0.68	9.75	1.00	1.5	0.69	9.74	1.00	2	0.69	9.74	1.00	2.5	0.70	9.73	1.00	3	0.70	9.73	1.00	3.5	0.70	9.73	1.00	4	0.71	9.72	1.00	4.5	0.71	9.72	1.00	5	0.71	9.72	1.00	6	0.72	9.71	0.99	7	0.72	9.71	0.99	8	0.72	9.71	0.99	9	0.73	9.70	0.99	10	0.74	9.69	0.99	15	0.77	9.66	0.99	20	0.79	9.64	0.99	25	0.81	9.62	0.99	30	0.83	9.60	0.98	35	0.84	9.59	0.98	40	0.86	9.57	0.98	45	0.87	9.56	0.98	50	0.88	9.55	0.98	55	0.90	9.53	0.98	60	0.90	9.53	0.98	<b>GROUNDWATER CONDITIONS</b> Depth to groundwater prior to test 9.76 m BGL Groundwater level for analysis 9.76 m BGL (Based on groundwater depth prior to test)
Elapsed time, t (minutes)	Depth to water below datum (m)	Head, H <sub>t</sub> (m)	Head Ratio H <sub>t</sub> /H <sub>0</sub>																																																																																																											
0	0.67	9.76	1.00																																																																																																											
0.5	0.67	9.76	1.00																																																																																																											
1	0.68	9.75	1.00																																																																																																											
1.5	0.69	9.74	1.00																																																																																																											
2	0.69	9.74	1.00																																																																																																											
2.5	0.70	9.73	1.00																																																																																																											
3	0.70	9.73	1.00																																																																																																											
3.5	0.70	9.73	1.00																																																																																																											
4	0.71	9.72	1.00																																																																																																											
4.5	0.71	9.72	1.00																																																																																																											
5	0.71	9.72	1.00																																																																																																											
6	0.72	9.71	0.99																																																																																																											
7	0.72	9.71	0.99																																																																																																											
8	0.72	9.71	0.99																																																																																																											
9	0.73	9.70	0.99																																																																																																											
10	0.74	9.69	0.99																																																																																																											
15	0.77	9.66	0.99																																																																																																											
20	0.79	9.64	0.99																																																																																																											
25	0.81	9.62	0.99																																																																																																											
30	0.83	9.60	0.98																																																																																																											
35	0.84	9.59	0.98																																																																																																											
40	0.86	9.57	0.98																																																																																																											
45	0.87	9.56	0.98																																																																																																											
50	0.88	9.55	0.98																																																																																																											
55	0.90	9.53	0.98																																																																																																											
60	0.90	9.53	0.98																																																																																																											
		<b>CALCULATED VALUES</b> Permeability calculation based on BS EN ISO 22282-2 : 2012 Section B.4.2 (Hvorslev method - general approach) Differential head at start of test, H <sub>0</sub> 9.76 m Differential head at end of test, H <sub>t</sub> 9.53 m Time elapsed at end of test 60 mins Proportion of test recovery 2 %																																																																																																												
		<b>Permeability (k) =                  m/sec</b>																																																																																																												
		<b>REMARKS</b> Test based on small change in head ratio and only 2 % test recovery, permeability not calculated																																																																																																												



Testing: RT  
 Checked: MW  
 Approved: MW

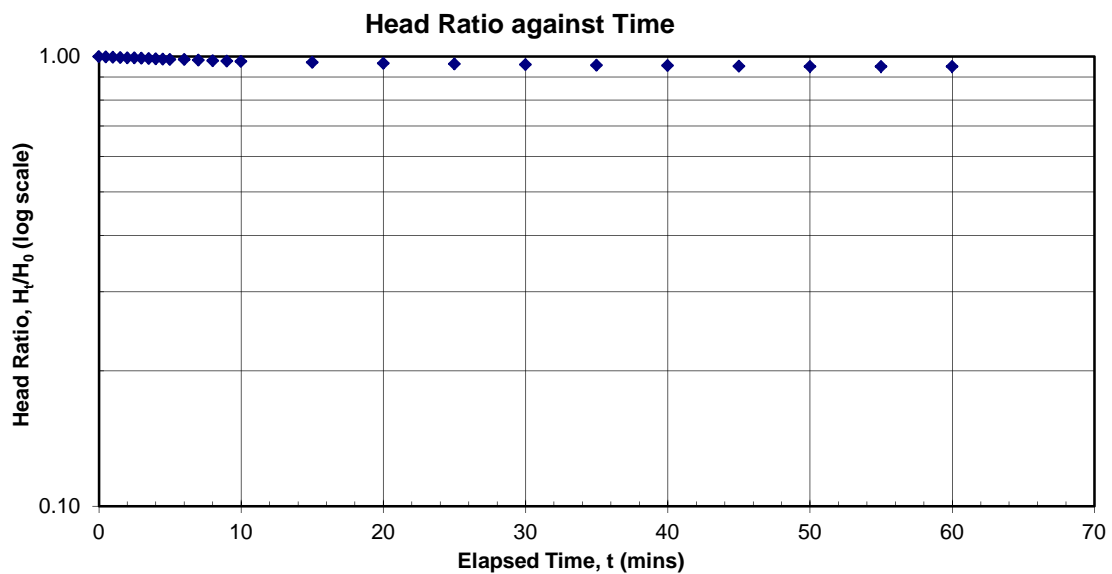
Notes:

**Project** SOUTH HUMBER BANK ENERGY CENTRE  
**Project No.** A9020-19  
**Carried out for** EP UK Investments Ltd.

**Test** BH04T1

# Variable Head Permeability Test

LOCATION TYPE TEST TYPE DETAILS OF TEST ZONE: Depth of casing 9.00 m BGL Depth of borehole 10.00 m BGL Diameter of borehole (D) 200 mm Height of casing above ground level (datum) 0.24 m	Borehole Falling Head  BOREHOLE No. BH07 TEST NUMBER 1 DATE OF TEST 02-Sep-19  TEST ZONE CONDITIONS Diameter of response zone (D) 200 mm Length of response zone (L) 1000 mm Soil in casing with bottom in uniform soil (6) Shape factor (F) after Hvorslev (1951) 0.03 m																																																																																																												
<b>TEST DATA</b>  <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>Elapsed time, t (minutes)</th> <th>Depth to water below datum (m)</th> <th>Head, H<sub>t</sub> (m)</th> <th>Head Ratio H<sub>t</sub>/H<sub>0</sub></th> </tr> </thead> <tbody> <tr><td>0</td><td>0.23</td><td>6.41</td><td>1.00</td></tr> <tr><td>0.5</td><td>0.24</td><td>6.40</td><td>1.00</td></tr> <tr><td>1</td><td>0.25</td><td>6.40</td><td>1.00</td></tr> <tr><td>1.5</td><td>0.26</td><td>6.39</td><td>1.00</td></tr> <tr><td>2</td><td>0.27</td><td>6.38</td><td>0.99</td></tr> <tr><td>2.5</td><td>0.28</td><td>6.37</td><td>0.99</td></tr> <tr><td>3</td><td>0.29</td><td>6.36</td><td>0.99</td></tr> <tr><td>3.5</td><td>0.30</td><td>6.35</td><td>0.99</td></tr> <tr><td>4</td><td>0.31</td><td>6.34</td><td>0.99</td></tr> <tr><td>4.5</td><td>0.31</td><td>6.33</td><td>0.99</td></tr> <tr><td>5</td><td>0.32</td><td>6.32</td><td>0.99</td></tr> <tr><td>6</td><td>0.33</td><td>6.32</td><td>0.99</td></tr> <tr><td>7</td><td>0.35</td><td>6.30</td><td>0.98</td></tr> <tr><td>8</td><td>0.36</td><td>6.28</td><td>0.98</td></tr> <tr><td>9</td><td>0.37</td><td>6.27</td><td>0.98</td></tr> <tr><td>10</td><td>0.38</td><td>6.26</td><td>0.98</td></tr> <tr><td>15</td><td>0.42</td><td>6.23</td><td>0.97</td></tr> <tr><td>20</td><td>0.44</td><td>6.20</td><td>0.97</td></tr> <tr><td>25</td><td>0.47</td><td>6.18</td><td>0.96</td></tr> <tr><td>30</td><td>0.49</td><td>6.16</td><td>0.96</td></tr> <tr><td>35</td><td>0.51</td><td>6.14</td><td>0.96</td></tr> <tr><td>40</td><td>0.52</td><td>6.12</td><td>0.95</td></tr> <tr><td>45</td><td>0.54</td><td>6.11</td><td>0.95</td></tr> <tr><td>50</td><td>0.55</td><td>6.10</td><td>0.95</td></tr> <tr><td>55</td><td>0.55</td><td>6.09</td><td>0.95</td></tr> <tr><td>60</td><td>0.55</td><td>6.09</td><td>0.95</td></tr> </tbody> </table>	Elapsed time, t (minutes)	Depth to water below datum (m)	Head, H <sub>t</sub> (m)	Head Ratio H <sub>t</sub> /H <sub>0</sub>	0	0.23	6.41	1.00	0.5	0.24	6.40	1.00	1	0.25	6.40	1.00	1.5	0.26	6.39	1.00	2	0.27	6.38	0.99	2.5	0.28	6.37	0.99	3	0.29	6.36	0.99	3.5	0.30	6.35	0.99	4	0.31	6.34	0.99	4.5	0.31	6.33	0.99	5	0.32	6.32	0.99	6	0.33	6.32	0.99	7	0.35	6.30	0.98	8	0.36	6.28	0.98	9	0.37	6.27	0.98	10	0.38	6.26	0.98	15	0.42	6.23	0.97	20	0.44	6.20	0.97	25	0.47	6.18	0.96	30	0.49	6.16	0.96	35	0.51	6.14	0.96	40	0.52	6.12	0.95	45	0.54	6.11	0.95	50	0.55	6.10	0.95	55	0.55	6.09	0.95	60	0.55	6.09	0.95	GROUNDWATER CONDITIONS Depth to groundwater prior to test 6.40 m BGL Groundwater level for analysis 6.40 m BGL (Based on groundwater depth prior to test)
Elapsed time, t (minutes)	Depth to water below datum (m)	Head, H <sub>t</sub> (m)	Head Ratio H <sub>t</sub> /H <sub>0</sub>																																																																																																										
0	0.23	6.41	1.00																																																																																																										
0.5	0.24	6.40	1.00																																																																																																										
1	0.25	6.40	1.00																																																																																																										
1.5	0.26	6.39	1.00																																																																																																										
2	0.27	6.38	0.99																																																																																																										
2.5	0.28	6.37	0.99																																																																																																										
3	0.29	6.36	0.99																																																																																																										
3.5	0.30	6.35	0.99																																																																																																										
4	0.31	6.34	0.99																																																																																																										
4.5	0.31	6.33	0.99																																																																																																										
5	0.32	6.32	0.99																																																																																																										
6	0.33	6.32	0.99																																																																																																										
7	0.35	6.30	0.98																																																																																																										
8	0.36	6.28	0.98																																																																																																										
9	0.37	6.27	0.98																																																																																																										
10	0.38	6.26	0.98																																																																																																										
15	0.42	6.23	0.97																																																																																																										
20	0.44	6.20	0.97																																																																																																										
25	0.47	6.18	0.96																																																																																																										
30	0.49	6.16	0.96																																																																																																										
35	0.51	6.14	0.96																																																																																																										
40	0.52	6.12	0.95																																																																																																										
45	0.54	6.11	0.95																																																																																																										
50	0.55	6.10	0.95																																																																																																										
55	0.55	6.09	0.95																																																																																																										
60	0.55	6.09	0.95																																																																																																										
	CALCULATED VALUES  Permeability calculation based on BS EN ISO 22282-2 : 2012 Section B.4.2 (Hvorslev method - general approach)  Differential head at start of test, H <sub>0</sub> 6.41 m Differential head at end of test, H <sub>t</sub> 6.09 m Time elapsed at end of test 60 mins Proportion of test recovery 5 %																																																																																																												
	<b>Permeability (k) =                      m/sec</b>																																																																																																												
	REMARKS  Test based on small change in head ratio and only 5 % test recovery, permeability not calculated																																																																																																												

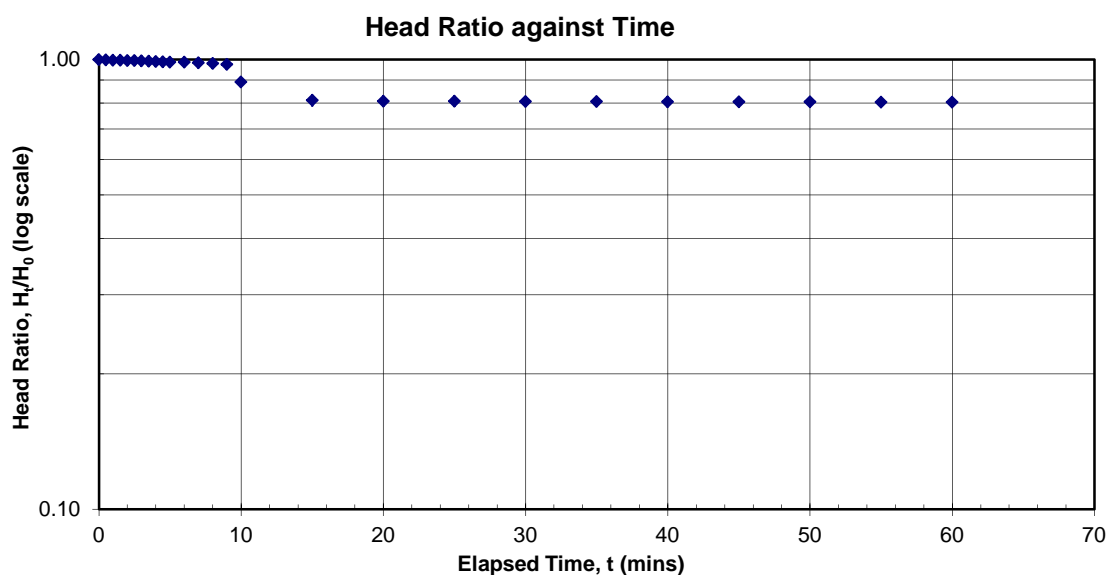




# Variable Head Permeability Test



<p><b>LOCATION TYPE</b> Borehole</p> <p><b>TEST TYPE</b> Falling Head</p> <p><b>DETAILS OF TEST ZONE:</b></p> <p>Depth of casing 15.20 m BGL                  Depth of borehole 16.20 m BGL                  Diameter of borehole (D) 200 mm                  Height of casing above ground level (datum) 0.09 m</p>	<p><b>BOREHOLE No.</b> BH09</p> <p><b>TEST NUMBER</b> 1</p> <p><b>DATE OF TEST</b> 28-Aug-19</p> <p><b>TEST ZONE CONDITIONS</b></p> <p>Diameter of response zone (D) 200 mm                  Length of response zone (L) 1000 mm                  Soil in casing with bottom in uniform soil (6)                  Shape factor (F) after Hvorslev (1951) 0.03 m</p>																																																																																																												
<p><b>TEST DATA</b></p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>Elapsed time, t (minutes)</th> <th>Depth to water below datum (m)</th> <th>Head, H<sub>t</sub> (m)</th> <th>Head Ratio H<sub>t</sub>/H<sub>0</sub></th> </tr> </thead> <tbody> <tr><td>0</td><td>0.09</td><td>6.90</td><td>1.00</td></tr> <tr><td>0.5</td><td>0.10</td><td>6.89</td><td>1.00</td></tr> <tr><td>1</td><td>0.11</td><td>6.88</td><td>1.00</td></tr> <tr><td>1.5</td><td>0.12</td><td>6.88</td><td>1.00</td></tr> <tr><td>2</td><td>0.12</td><td>6.87</td><td>1.00</td></tr> <tr><td>2.5</td><td>0.13</td><td>6.87</td><td>0.99</td></tr> <tr><td>3</td><td>0.14</td><td>6.86</td><td>0.99</td></tr> <tr><td>3.5</td><td>0.15</td><td>6.85</td><td>0.99</td></tr> <tr><td>4</td><td>0.15</td><td>6.84</td><td>0.99</td></tr> <tr><td>4.5</td><td>0.17</td><td>6.83</td><td>0.99</td></tr> <tr><td>5</td><td>0.18</td><td>6.82</td><td>0.99</td></tr> <tr><td>6</td><td>0.18</td><td>6.81</td><td>0.99</td></tr> <tr><td>7</td><td>0.20</td><td>6.79</td><td>0.98</td></tr> <tr><td>8</td><td>0.22</td><td>6.77</td><td>0.98</td></tr> <tr><td>9</td><td>0.25</td><td>6.74</td><td>0.98</td></tr> <tr><td>10</td><td>0.84</td><td>6.15</td><td>0.89</td></tr> <tr><td>15</td><td>1.38</td><td>5.61</td><td>0.81</td></tr> <tr><td>20</td><td>1.41</td><td>5.58</td><td>0.81</td></tr> <tr><td>25</td><td>1.41</td><td>5.58</td><td>0.81</td></tr> <tr><td>30</td><td>1.43</td><td>5.57</td><td>0.81</td></tr> <tr><td>35</td><td>1.43</td><td>5.57</td><td>0.81</td></tr> <tr><td>40</td><td>1.43</td><td>5.56</td><td>0.81</td></tr> <tr><td>45</td><td>1.43</td><td>5.56</td><td>0.81</td></tr> <tr><td>50</td><td>1.43</td><td>5.56</td><td>0.81</td></tr> <tr><td>55</td><td>1.44</td><td>5.56</td><td>0.81</td></tr> <tr><td>60</td><td>1.44</td><td>5.55</td><td>0.80</td></tr> </tbody> </table>	Elapsed time, t (minutes)	Depth to water below datum (m)	Head, H <sub>t</sub> (m)	Head Ratio H <sub>t</sub> /H <sub>0</sub>	0	0.09	6.90	1.00	0.5	0.10	6.89	1.00	1	0.11	6.88	1.00	1.5	0.12	6.88	1.00	2	0.12	6.87	1.00	2.5	0.13	6.87	0.99	3	0.14	6.86	0.99	3.5	0.15	6.85	0.99	4	0.15	6.84	0.99	4.5	0.17	6.83	0.99	5	0.18	6.82	0.99	6	0.18	6.81	0.99	7	0.20	6.79	0.98	8	0.22	6.77	0.98	9	0.25	6.74	0.98	10	0.84	6.15	0.89	15	1.38	5.61	0.81	20	1.41	5.58	0.81	25	1.41	5.58	0.81	30	1.43	5.57	0.81	35	1.43	5.57	0.81	40	1.43	5.56	0.81	45	1.43	5.56	0.81	50	1.43	5.56	0.81	55	1.44	5.56	0.81	60	1.44	5.55	0.80	<p><b>GROUNDWATER CONDITIONS</b></p> <p>Depth to groundwater prior to test 6.90 m BGL                  Groundwater level for analysis 6.90 m BGL                  (Based on groundwater depth prior to test)</p> <p><b>CALCULATED VALUES</b></p> <p>Permeability calculation based on BS EN ISO 22282-2 : 2012 Section B.4.2 (Hvorslev method - general approach)</p> <p>Differential head at start of test, H<sub>0</sub> 6.90 m                  Differential head at end of test, H<sub>t</sub> 5.55 m                  Time elapsed at end of test 60 mins                  Proportion of test recovery 20 %</p> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <p><b>Permeability (k) =                      m/sec</b></p> </div> <p><b>REMARKS</b></p> <p>Test based on small change in head ratio and only 20 % test recovery, permeability not calculated</p>
Elapsed time, t (minutes)	Depth to water below datum (m)	Head, H <sub>t</sub> (m)	Head Ratio H <sub>t</sub> /H <sub>0</sub>																																																																																																										
0	0.09	6.90	1.00																																																																																																										
0.5	0.10	6.89	1.00																																																																																																										
1	0.11	6.88	1.00																																																																																																										
1.5	0.12	6.88	1.00																																																																																																										
2	0.12	6.87	1.00																																																																																																										
2.5	0.13	6.87	0.99																																																																																																										
3	0.14	6.86	0.99																																																																																																										
3.5	0.15	6.85	0.99																																																																																																										
4	0.15	6.84	0.99																																																																																																										
4.5	0.17	6.83	0.99																																																																																																										
5	0.18	6.82	0.99																																																																																																										
6	0.18	6.81	0.99																																																																																																										
7	0.20	6.79	0.98																																																																																																										
8	0.22	6.77	0.98																																																																																																										
9	0.25	6.74	0.98																																																																																																										
10	0.84	6.15	0.89																																																																																																										
15	1.38	5.61	0.81																																																																																																										
20	1.41	5.58	0.81																																																																																																										
25	1.41	5.58	0.81																																																																																																										
30	1.43	5.57	0.81																																																																																																										
35	1.43	5.57	0.81																																																																																																										
40	1.43	5.56	0.81																																																																																																										
45	1.43	5.56	0.81																																																																																																										
50	1.43	5.56	0.81																																																																																																										
55	1.44	5.56	0.81																																																																																																										
60	1.44	5.55	0.80																																																																																																										



Testing: RT  
 Checked: MW  
 Approved: MW

Notes:

**Project** SOUTH HUMBER BANK ENERGY CENTRE

**Project No.** A9020-19

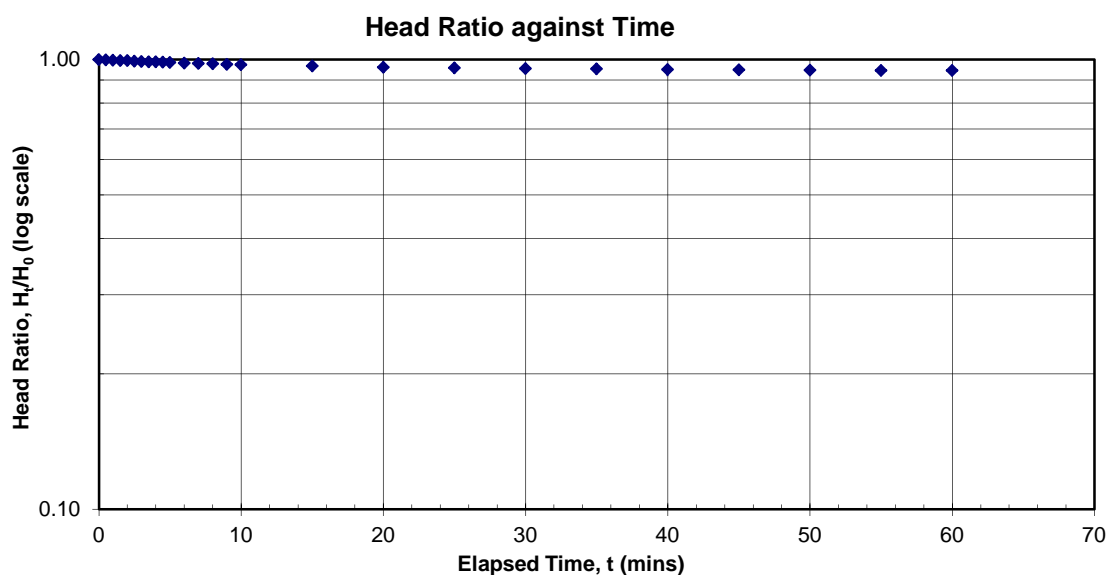
**Carried out for** EP UK Investments Ltd.

**Test** BH09T1

# Variable Head Permeability Test



<p><b>LOCATION TYPE</b> Borehole</p> <p><b>TEST TYPE</b> Falling Head</p> <p><b>DETAILS OF TEST ZONE:</b></p> <table style="width: 100%;"> <tr> <td style="width: 70%;">Depth of casing</td> <td>10.50 m BGL</td> </tr> <tr> <td>Depth of borehole</td> <td>12.20 m BGL</td> </tr> <tr> <td>Diameter of borehole (D)</td> <td>200 mm</td> </tr> <tr> <td>Height of casing above ground level (datum)</td> <td>0.13 m</td> </tr> </table>	Depth of casing	10.50 m BGL	Depth of borehole	12.20 m BGL	Diameter of borehole (D)	200 mm	Height of casing above ground level (datum)	0.13 m	<p><b>BOREHOLE No.</b> BH12</p> <p><b>TEST NUMBER</b> 1</p> <p><b>DATE OF TEST</b> 02-Sep-19</p> <p><b>TEST ZONE CONDITIONS</b></p> <table style="width: 100%;"> <tr> <td style="width: 70%;">Diameter of response zone (D)</td> <td>200 mm</td> </tr> <tr> <td>Length of response zone (L)</td> <td>1700 mm</td> </tr> <tr> <td>Soil in casing with bottom in uniform soil (6)</td> <td></td> </tr> <tr> <td>Shape factor (F) after Hvorslev (1951)</td> <td>0.02 m</td> </tr> </table>	Diameter of response zone (D)	200 mm	Length of response zone (L)	1700 mm	Soil in casing with bottom in uniform soil (6)		Shape factor (F) after Hvorslev (1951)	0.02 m																																																																																																										
Depth of casing	10.50 m BGL																																																																																																																										
Depth of borehole	12.20 m BGL																																																																																																																										
Diameter of borehole (D)	200 mm																																																																																																																										
Height of casing above ground level (datum)	0.13 m																																																																																																																										
Diameter of response zone (D)	200 mm																																																																																																																										
Length of response zone (L)	1700 mm																																																																																																																										
Soil in casing with bottom in uniform soil (6)																																																																																																																											
Shape factor (F) after Hvorslev (1951)	0.02 m																																																																																																																										
<p><b>TEST DATA</b></p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>Elapsed time, t (minutes)</th> <th>Depth to water below datum (m)</th> <th>Head, <math>H_t</math> (m)</th> <th>Head Ratio <math>H_t/H_0</math></th> </tr> </thead> <tbody> <tr><td>0</td><td>0.19</td><td>7.74</td><td>1.00</td></tr> <tr><td>0.5</td><td>0.20</td><td>7.73</td><td>1.00</td></tr> <tr><td>1</td><td>0.21</td><td>7.72</td><td>1.00</td></tr> <tr><td>1.5</td><td>0.22</td><td>7.71</td><td>1.00</td></tr> <tr><td>2</td><td>0.23</td><td>7.70</td><td>0.99</td></tr> <tr><td>2.5</td><td>0.25</td><td>7.68</td><td>0.99</td></tr> <tr><td>3</td><td>0.26</td><td>7.67</td><td>0.99</td></tr> <tr><td>3.5</td><td>0.27</td><td>7.66</td><td>0.99</td></tr> <tr><td>4</td><td>0.28</td><td>7.65</td><td>0.99</td></tr> <tr><td>4.5</td><td>0.29</td><td>7.64</td><td>0.99</td></tr> <tr><td>5</td><td>0.30</td><td>7.63</td><td>0.99</td></tr> <tr><td>6</td><td>0.32</td><td>7.61</td><td>0.98</td></tr> <tr><td>7</td><td>0.34</td><td>7.60</td><td>0.98</td></tr> <tr><td>8</td><td>0.35</td><td>7.58</td><td>0.98</td></tr> <tr><td>9</td><td>0.37</td><td>7.56</td><td>0.98</td></tr> <tr><td>10</td><td>0.39</td><td>7.55</td><td>0.97</td></tr> <tr><td>15</td><td>0.44</td><td>7.50</td><td>0.97</td></tr> <tr><td>20</td><td>0.48</td><td>7.45</td><td>0.96</td></tr> <tr><td>25</td><td>0.51</td><td>7.42</td><td>0.96</td></tr> <tr><td>30</td><td>0.53</td><td>7.40</td><td>0.96</td></tr> <tr><td>35</td><td>0.55</td><td>7.38</td><td>0.95</td></tr> <tr><td>40</td><td>0.57</td><td>7.36</td><td>0.95</td></tr> <tr><td>45</td><td>0.59</td><td>7.35</td><td>0.95</td></tr> <tr><td>50</td><td>0.60</td><td>7.33</td><td>0.95</td></tr> <tr><td>55</td><td>0.61</td><td>7.32</td><td>0.95</td></tr> <tr><td>60</td><td>0.61</td><td>7.32</td><td>0.95</td></tr> </tbody> </table>	Elapsed time, t (minutes)	Depth to water below datum (m)	Head, $H_t$ (m)	Head Ratio $H_t/H_0$	0	0.19	7.74	1.00	0.5	0.20	7.73	1.00	1	0.21	7.72	1.00	1.5	0.22	7.71	1.00	2	0.23	7.70	0.99	2.5	0.25	7.68	0.99	3	0.26	7.67	0.99	3.5	0.27	7.66	0.99	4	0.28	7.65	0.99	4.5	0.29	7.64	0.99	5	0.30	7.63	0.99	6	0.32	7.61	0.98	7	0.34	7.60	0.98	8	0.35	7.58	0.98	9	0.37	7.56	0.98	10	0.39	7.55	0.97	15	0.44	7.50	0.97	20	0.48	7.45	0.96	25	0.51	7.42	0.96	30	0.53	7.40	0.96	35	0.55	7.38	0.95	40	0.57	7.36	0.95	45	0.59	7.35	0.95	50	0.60	7.33	0.95	55	0.61	7.32	0.95	60	0.61	7.32	0.95	<p><b>GROUNDWATER CONDITIONS</b></p> <table style="width: 100%;"> <tr> <td style="width: 70%;">Depth to groundwater prior to test</td> <td>7.80 m BGL</td> </tr> <tr> <td>Groundwater level for analysis</td> <td>7.80 m BGL</td> </tr> <tr> <td colspan="2" style="text-align: center;">(Based on groundwater depth prior to test)</td> </tr> </table> <p><b>CALCULATED VALUES</b></p> <p>Permeability calculation based on BS EN ISO 22282-2 : 2012 Section B.4.2 (Hvorslev method - general approach)</p> <table style="width: 100%;"> <tr> <td style="width: 70%;">Differential head at start of test, <math>H_0</math></td> <td>7.74 m</td> </tr> <tr> <td>Differential head at end of test, <math>H_t</math></td> <td>7.32 m</td> </tr> <tr> <td>Time elapsed at end of test</td> <td>60 mins</td> </tr> <tr> <td>Proportion of test recovery</td> <td>5 %</td> </tr> </table> <div style="border: 1px solid black; padding: 5px; text-align: center; margin-top: 10px;"> <p><b>Permeability (k) =                                  m/sec</b></p> </div> <p><b>REMARKS</b></p> <p>Test based on small change in head ratio and only 5 % test recovery, permeability not calculated</p>	Depth to groundwater prior to test	7.80 m BGL	Groundwater level for analysis	7.80 m BGL	(Based on groundwater depth prior to test)		Differential head at start of test, $H_0$	7.74 m	Differential head at end of test, $H_t$	7.32 m	Time elapsed at end of test	60 mins	Proportion of test recovery	5 %
Elapsed time, t (minutes)	Depth to water below datum (m)	Head, $H_t$ (m)	Head Ratio $H_t/H_0$																																																																																																																								
0	0.19	7.74	1.00																																																																																																																								
0.5	0.20	7.73	1.00																																																																																																																								
1	0.21	7.72	1.00																																																																																																																								
1.5	0.22	7.71	1.00																																																																																																																								
2	0.23	7.70	0.99																																																																																																																								
2.5	0.25	7.68	0.99																																																																																																																								
3	0.26	7.67	0.99																																																																																																																								
3.5	0.27	7.66	0.99																																																																																																																								
4	0.28	7.65	0.99																																																																																																																								
4.5	0.29	7.64	0.99																																																																																																																								
5	0.30	7.63	0.99																																																																																																																								
6	0.32	7.61	0.98																																																																																																																								
7	0.34	7.60	0.98																																																																																																																								
8	0.35	7.58	0.98																																																																																																																								
9	0.37	7.56	0.98																																																																																																																								
10	0.39	7.55	0.97																																																																																																																								
15	0.44	7.50	0.97																																																																																																																								
20	0.48	7.45	0.96																																																																																																																								
25	0.51	7.42	0.96																																																																																																																								
30	0.53	7.40	0.96																																																																																																																								
35	0.55	7.38	0.95																																																																																																																								
40	0.57	7.36	0.95																																																																																																																								
45	0.59	7.35	0.95																																																																																																																								
50	0.60	7.33	0.95																																																																																																																								
55	0.61	7.32	0.95																																																																																																																								
60	0.61	7.32	0.95																																																																																																																								
Depth to groundwater prior to test	7.80 m BGL																																																																																																																										
Groundwater level for analysis	7.80 m BGL																																																																																																																										
(Based on groundwater depth prior to test)																																																																																																																											
Differential head at start of test, $H_0$	7.74 m																																																																																																																										
Differential head at end of test, $H_t$	7.32 m																																																																																																																										
Time elapsed at end of test	60 mins																																																																																																																										
Proportion of test recovery	5 %																																																																																																																										



Testing: RT  
Checked: MW  
Approved: MW

Notes:

**Project** SOUTH HUMBER BANK ENERGY CENTRE

**Project No.** A9020-19

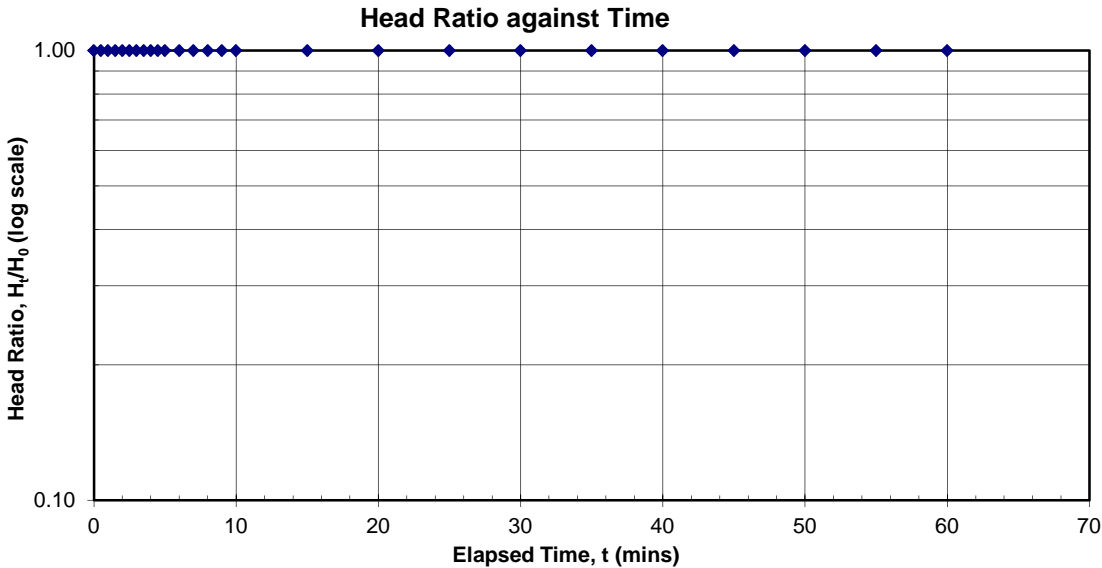
**Carried out for** EP UK Investments Ltd.

**Test** BH12T1

# Variable Head Permeability Test



<b>LOCATION TYPE</b> <b>TEST TYPE</b> <b>DETAILS OF TEST ZONE:</b> Depth of casing Depth of borehole Diameter of borehole (D) Height of casing above ground level (datum)	<b>Borehole</b> <b>Falling Head</b>  3.00 m BGL 4.00 m BGL 200 mm 0.30 m	<b>BOREHOLE No.</b> BH13 <b>TEST NUMBER</b> 1 <b>DATE OF TEST</b> 04-Sep-19  <b>TEST ZONE CONDITIONS</b> Diameter of response zone (D) 200 mm Length of response zone (L) 1000 mm Soil in casing with bottom in uniform soil (6) Shape factor (F) after Hvorslev (1951) 0.03 m																																																																																																												
<b>TEST DATA</b> <table border="1" style="width:100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>Elapsed time, t (minutes)</th> <th>Depth to water below datum (m)</th> <th>Head, H<sub>t</sub> (m)</th> <th>Head Ratio H<sub>t</sub>/H<sub>0</sub></th> </tr> </thead> <tbody> <tr><td>0</td><td>0.27</td><td>2.63</td><td>1.00</td></tr> <tr><td>0.5</td><td>0.27</td><td>2.63</td><td>1.00</td></tr> <tr><td>1</td><td>0.27</td><td>2.63</td><td>1.00</td></tr> <tr><td>1.5</td><td>0.27</td><td>2.63</td><td>1.00</td></tr> <tr><td>2</td><td>0.27</td><td>2.63</td><td>1.00</td></tr> <tr><td>2.5</td><td>0.27</td><td>2.63</td><td>1.00</td></tr> <tr><td>3</td><td>0.27</td><td>2.63</td><td>1.00</td></tr> <tr><td>3.5</td><td>0.27</td><td>2.63</td><td>1.00</td></tr> <tr><td>4</td><td>0.27</td><td>2.63</td><td>1.00</td></tr> <tr><td>4.5</td><td>0.27</td><td>2.63</td><td>1.00</td></tr> <tr><td>5</td><td>0.27</td><td>2.63</td><td>1.00</td></tr> <tr><td>6</td><td>0.27</td><td>2.63</td><td>1.00</td></tr> <tr><td>7</td><td>0.27</td><td>2.63</td><td>1.00</td></tr> <tr><td>8</td><td>0.27</td><td>2.63</td><td>1.00</td></tr> <tr><td>9</td><td>0.27</td><td>2.63</td><td>1.00</td></tr> <tr><td>10</td><td>0.27</td><td>2.63</td><td>1.00</td></tr> <tr><td>15</td><td>0.27</td><td>2.63</td><td>1.00</td></tr> <tr><td>20</td><td>0.27</td><td>2.63</td><td>1.00</td></tr> <tr><td>25</td><td>0.27</td><td>2.63</td><td>1.00</td></tr> <tr><td>30</td><td>0.27</td><td>2.63</td><td>1.00</td></tr> <tr><td>35</td><td>0.27</td><td>2.63</td><td>1.00</td></tr> <tr><td>40</td><td>0.27</td><td>2.63</td><td>1.00</td></tr> <tr><td>45</td><td>0.27</td><td>2.63</td><td>1.00</td></tr> <tr><td>50</td><td>0.27</td><td>2.63</td><td>1.00</td></tr> <tr><td>55</td><td>0.27</td><td>2.63</td><td>1.00</td></tr> <tr><td>60</td><td>0.27</td><td>2.63</td><td>1.00</td></tr> </tbody> </table>		Elapsed time, t (minutes)	Depth to water below datum (m)	Head, H <sub>t</sub> (m)	Head Ratio H <sub>t</sub> /H <sub>0</sub>	0	0.27	2.63	1.00	0.5	0.27	2.63	1.00	1	0.27	2.63	1.00	1.5	0.27	2.63	1.00	2	0.27	2.63	1.00	2.5	0.27	2.63	1.00	3	0.27	2.63	1.00	3.5	0.27	2.63	1.00	4	0.27	2.63	1.00	4.5	0.27	2.63	1.00	5	0.27	2.63	1.00	6	0.27	2.63	1.00	7	0.27	2.63	1.00	8	0.27	2.63	1.00	9	0.27	2.63	1.00	10	0.27	2.63	1.00	15	0.27	2.63	1.00	20	0.27	2.63	1.00	25	0.27	2.63	1.00	30	0.27	2.63	1.00	35	0.27	2.63	1.00	40	0.27	2.63	1.00	45	0.27	2.63	1.00	50	0.27	2.63	1.00	55	0.27	2.63	1.00	60	0.27	2.63	1.00	<b>GROUNDWATER CONDITIONS</b> Depth to groundwater prior to test 2.60 m BGL Groundwater level for analysis 2.60 m BGL (Based on groundwater depth prior to test)
Elapsed time, t (minutes)	Depth to water below datum (m)	Head, H <sub>t</sub> (m)	Head Ratio H <sub>t</sub> /H <sub>0</sub>																																																																																																											
0	0.27	2.63	1.00																																																																																																											
0.5	0.27	2.63	1.00																																																																																																											
1	0.27	2.63	1.00																																																																																																											
1.5	0.27	2.63	1.00																																																																																																											
2	0.27	2.63	1.00																																																																																																											
2.5	0.27	2.63	1.00																																																																																																											
3	0.27	2.63	1.00																																																																																																											
3.5	0.27	2.63	1.00																																																																																																											
4	0.27	2.63	1.00																																																																																																											
4.5	0.27	2.63	1.00																																																																																																											
5	0.27	2.63	1.00																																																																																																											
6	0.27	2.63	1.00																																																																																																											
7	0.27	2.63	1.00																																																																																																											
8	0.27	2.63	1.00																																																																																																											
9	0.27	2.63	1.00																																																																																																											
10	0.27	2.63	1.00																																																																																																											
15	0.27	2.63	1.00																																																																																																											
20	0.27	2.63	1.00																																																																																																											
25	0.27	2.63	1.00																																																																																																											
30	0.27	2.63	1.00																																																																																																											
35	0.27	2.63	1.00																																																																																																											
40	0.27	2.63	1.00																																																																																																											
45	0.27	2.63	1.00																																																																																																											
50	0.27	2.63	1.00																																																																																																											
55	0.27	2.63	1.00																																																																																																											
60	0.27	2.63	1.00																																																																																																											
<b>CALCULATED VALUES</b> Permeability calculation based on BS EN ISO 22282-2 : 2012 Section B.4.2 (Hvorslev method - general approach)  Differential head at start of test, H <sub>0</sub> 2.63 m Differential head at end of test, H <sub>t</sub> 2.63 m Time elapsed at end of test 60 mins Proportion of test recovery 0 %		<div style="border: 1px solid black; padding: 5px; text-align: center;"> <b>Permeability (k) =                      m/sec</b> </div>																																																																																																												
<b>REMARKS</b> No change in water level, permeability not calculated																																																																																																														

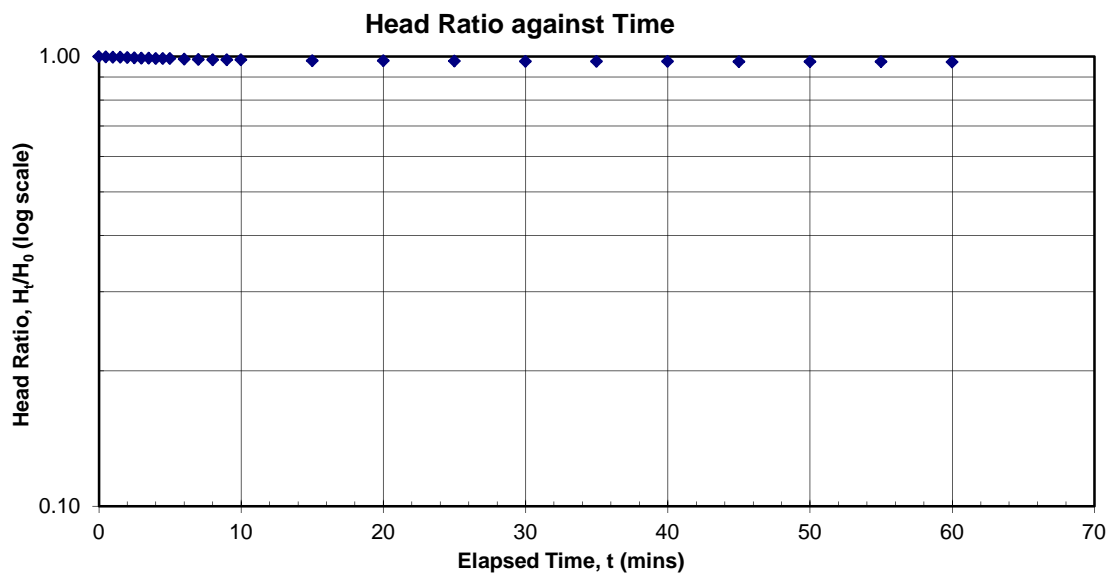


Testing: AW Checked: MW Approved: MW	Notes:	<b>Project</b> SOUTH HUMBER BANK ENERGY CENTRE  <b>Project No.</b> A9020-19 <b>Carried out for</b> EP UK Investments Ltd.	<b>Test</b> BH13T1
--------------------------------------------	--------	------------------------------------------------------------------------------------------------------------------------------------	--------------------

# Variable Head Permeability Test



<p><b>LOCATION TYPE</b> Borehole</p> <p><b>TEST TYPE</b> Falling Head</p> <p><b>DETAILS OF TEST ZONE:</b></p> <p>Depth of casing 16.10 m BGL                  Depth of borehole 16.60 m BGL                  Diameter of borehole (D) 200 mm                  Height of casing above ground level (datum) 0.16 m</p>	<p><b>BOREHOLE No.</b> BH14</p> <p><b>TEST NUMBER</b> 1</p> <p><b>DATE OF TEST</b> 04-Sep-19</p> <p><b>TEST ZONE CONDITIONS</b></p> <p>Diameter of response zone (D) 200 mm                  Length of response zone (L) 500 mm                  Soil in casing with bottom in uniform soil (6)                  Shape factor (F) after Hvorslev (1951) 0.06 m</p>																																																																																																												
<p><b>TEST DATA</b></p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>Elapsed time, t (minutes)</th> <th>Depth to water below datum (m)</th> <th>Head, H<sub>t</sub> (m)</th> <th>Head Ratio H<sub>t</sub>/H<sub>0</sub></th> </tr> </thead> <tbody> <tr><td>0</td><td>0.12</td><td>8.94</td><td>1.00</td></tr> <tr><td>0.5</td><td>0.13</td><td>8.93</td><td>1.00</td></tr> <tr><td>1</td><td>0.14</td><td>8.92</td><td>1.00</td></tr> <tr><td>1.5</td><td>0.15</td><td>8.91</td><td>1.00</td></tr> <tr><td>2</td><td>0.16</td><td>8.90</td><td>1.00</td></tr> <tr><td>2.5</td><td>0.17</td><td>8.89</td><td>0.99</td></tr> <tr><td>3</td><td>0.19</td><td>8.88</td><td>0.99</td></tr> <tr><td>3.5</td><td>0.19</td><td>8.87</td><td>0.99</td></tr> <tr><td>4</td><td>0.20</td><td>8.86</td><td>0.99</td></tr> <tr><td>4.5</td><td>0.21</td><td>8.86</td><td>0.99</td></tr> <tr><td>5</td><td>0.21</td><td>8.85</td><td>0.99</td></tr> <tr><td>6</td><td>0.23</td><td>8.83</td><td>0.99</td></tr> <tr><td>7</td><td>0.25</td><td>8.81</td><td>0.99</td></tr> <tr><td>8</td><td>0.26</td><td>8.80</td><td>0.98</td></tr> <tr><td>9</td><td>0.26</td><td>8.80</td><td>0.98</td></tr> <tr><td>10</td><td>0.27</td><td>8.80</td><td>0.98</td></tr> <tr><td>15</td><td>0.30</td><td>8.76</td><td>0.98</td></tr> <tr><td>20</td><td>0.31</td><td>8.75</td><td>0.98</td></tr> <tr><td>25</td><td>0.33</td><td>8.74</td><td>0.98</td></tr> <tr><td>30</td><td>0.33</td><td>8.73</td><td>0.98</td></tr> <tr><td>35</td><td>0.34</td><td>8.73</td><td>0.98</td></tr> <tr><td>40</td><td>0.34</td><td>8.72</td><td>0.98</td></tr> <tr><td>45</td><td>0.35</td><td>8.72</td><td>0.97</td></tr> <tr><td>50</td><td>0.35</td><td>8.71</td><td>0.97</td></tr> <tr><td>55</td><td>0.36</td><td>8.71</td><td>0.97</td></tr> <tr><td>60</td><td>0.36</td><td>8.70</td><td>0.97</td></tr> </tbody> </table>	Elapsed time, t (minutes)	Depth to water below datum (m)	Head, H <sub>t</sub> (m)	Head Ratio H <sub>t</sub> /H <sub>0</sub>	0	0.12	8.94	1.00	0.5	0.13	8.93	1.00	1	0.14	8.92	1.00	1.5	0.15	8.91	1.00	2	0.16	8.90	1.00	2.5	0.17	8.89	0.99	3	0.19	8.88	0.99	3.5	0.19	8.87	0.99	4	0.20	8.86	0.99	4.5	0.21	8.86	0.99	5	0.21	8.85	0.99	6	0.23	8.83	0.99	7	0.25	8.81	0.99	8	0.26	8.80	0.98	9	0.26	8.80	0.98	10	0.27	8.80	0.98	15	0.30	8.76	0.98	20	0.31	8.75	0.98	25	0.33	8.74	0.98	30	0.33	8.73	0.98	35	0.34	8.73	0.98	40	0.34	8.72	0.98	45	0.35	8.72	0.97	50	0.35	8.71	0.97	55	0.36	8.71	0.97	60	0.36	8.70	0.97	<p><b>GROUNDWATER CONDITIONS</b></p> <p>Depth to groundwater prior to test 8.90 m BGL                  Groundwater level for analysis 8.90 m BGL                  (Based on groundwater depth prior to test)</p> <p><b>CALCULATED VALUES</b></p> <p>Permeability calculation based on BS EN ISO 22282-2 : 2012 Section B.4.2 (Hvorslev method - general approach)</p> <p>Differential head at start of test, H<sub>0</sub> 8.94 m                  Differential head at end of test, H<sub>t</sub> 8.70 m                  Time elapsed at end of test 60 mins                  Proportion of test recovery 3 %</p> <div style="border: 1px solid black; padding: 5px; text-align: center; margin-top: 10px;"> <p><b>Permeability (k) =                      m/sec</b></p> </div> <p><b>REMARKS</b></p> <p>Test based on small change in head ratio and only 3 % test recovery, permeability not calculated</p>
Elapsed time, t (minutes)	Depth to water below datum (m)	Head, H <sub>t</sub> (m)	Head Ratio H <sub>t</sub> /H <sub>0</sub>																																																																																																										
0	0.12	8.94	1.00																																																																																																										
0.5	0.13	8.93	1.00																																																																																																										
1	0.14	8.92	1.00																																																																																																										
1.5	0.15	8.91	1.00																																																																																																										
2	0.16	8.90	1.00																																																																																																										
2.5	0.17	8.89	0.99																																																																																																										
3	0.19	8.88	0.99																																																																																																										
3.5	0.19	8.87	0.99																																																																																																										
4	0.20	8.86	0.99																																																																																																										
4.5	0.21	8.86	0.99																																																																																																										
5	0.21	8.85	0.99																																																																																																										
6	0.23	8.83	0.99																																																																																																										
7	0.25	8.81	0.99																																																																																																										
8	0.26	8.80	0.98																																																																																																										
9	0.26	8.80	0.98																																																																																																										
10	0.27	8.80	0.98																																																																																																										
15	0.30	8.76	0.98																																																																																																										
20	0.31	8.75	0.98																																																																																																										
25	0.33	8.74	0.98																																																																																																										
30	0.33	8.73	0.98																																																																																																										
35	0.34	8.73	0.98																																																																																																										
40	0.34	8.72	0.98																																																																																																										
45	0.35	8.72	0.97																																																																																																										
50	0.35	8.71	0.97																																																																																																										
55	0.36	8.71	0.97																																																																																																										
60	0.36	8.70	0.97																																																																																																										



Testing: AW  
 Checked: MW  
 Approved: MW

Notes:

**Project** SOUTH HUMBER BANK ENERGY CENTRE

**Project No.** A9020-19

**Carried out for** EP UK Investments Ltd.

**Test** BH14T1



## In-Situ Apparent Resistivity of Soil

Tested to BS1377: Part 9: 1990 Clause 5.1 (wenner probe)

**Client:** EP SHB LIMITED  
**Address:** EP UK INVESTMENTS LIMITED  
 GROUND FLOOR PARADIGM BUILDING  
 3175 CENTURY WAY  
 THORPE PARK, LEEDS  
 LS15 8ZB

**Report No:** 51052244/19/01  
**Report Date:** 09 September 2019  
**Contract No:** 51052244

**Site:** South Humber Bank Powerstation, Immingham

**Sample Details:**

Test Location: Various  
 Weather Conditions: Sun  
 Date Tested: 05 September 2019  
 Equipment Used: Saturn Geo Earth Tester  
 Probes Used: 12mm diameter stainless steel  
 Excavation Depth: 0m  
 Soil Description: Topsoil

**Test Details:**

Electrical Resistivity	Test 1	Test 2	Test 3	Test 4	Test 5	
Test Position	TP1	TP2	TP3	TP4	TP5	
Overall Spacing A-B	3	3	3	3	3	m
Probe Spacing	1	1	1	1	1	m
Insertion Depth	150	150	150	150	150	mm
Test Depth	0	0	0	0	0	m
Resistance Reading A	4.52	4.95	4.6	4.13	5.56	Ω
Resistance Reading B	4.43	5.55	5.37	3.85	5.4	Ω
Temperature:	10	10	10	11	11	°C
Moisture Content	-	-	-	-	-	%
<b>Apparent Resistivity A</b>	<b>28</b>	<b>31</b>	<b>29</b>	<b>26</b>	<b>35</b>	<b>Ω.m</b>
<b>Apparent Resistivity B</b>	<b>28</b>	<b>35</b>	<b>34</b>	<b>24</b>	<b>34</b>	<b>Ω.m</b>

**Test Remarks:** 1Ω.m equates to 100Ω.cm.  
 Tests not corrected for temperature.

**Signed:**   
 For and on behalf of SOCOTEC UK Ltd

A. Greaves - Section Manager





## In-Situ Apparent Resistivity of Soil

Tested to BS1377: Part 9: 1990 Clause 5.1 (wenner probe)

**Client:** EP SHB LIMITED  
**Address:** EP UK INVESTMENTS LIMITED  
GROUND FLOOR PARADIGM BUILDING  
3175 CENTURY WAY  
THORPE PARK, LEEDS  
LS15 8ZB

**Report No:** 51052244/19/02  
**Report Date:** 09 September 2019  
**Contract No:** 51052244

**Site:** South Humber Bank Powerstation, Immingham

**Sample Details:**

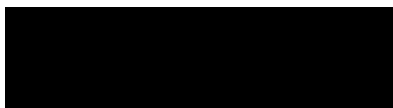
Test Location: Various  
Weather Conditions: Sun  
Date Tested: 05 September 2019  
Equipment Used: Saturn Geo Earth Tester  
Probes Used: 12mm diameter stainless steel  
Excavation Depth: 0m  
Soil Description: Topsoil

**Test Details:**

Electrical Resistivity	Test 6	Test 7	Test 8	Test 9	Test 10	
Test Position	TP6	TP9	TP10	TP11	TP12	
Overall Spacing A-B	3	3	3	3	3	m
Probe Spacing	1	1	1	1	1	m
Insertion Depth	150	150	150	150	150	mm
Test Depth	0	0	0	0	0	m
Resistance Reading A	4.82	11.54	61	6.18	5.95	Ω
Resistance Reading B	5.84	10.97	60.2	6.13	6.07	Ω
Temperature:	11	11	12	12	12	°C
Moisture Content	-	-	-	-	-	%
<b>Apparent Resistivity A</b>	<b>30</b>	<b>73</b>	<b>383</b>	<b>39</b>	<b>37</b>	Ω.m
<b>Apparent Resistivity B</b>	<b>37</b>	<b>69</b>	<b>378</b>	<b>39</b>	<b>38</b>	Ω.m

**Test Remarks:** 1Ω.m equates to 100Ω.cm.  
Tests not corrected for temperature.

**Signed:**



A. Greaves - Section Manager

For and on behalf of SOCOTEC UK Ltd

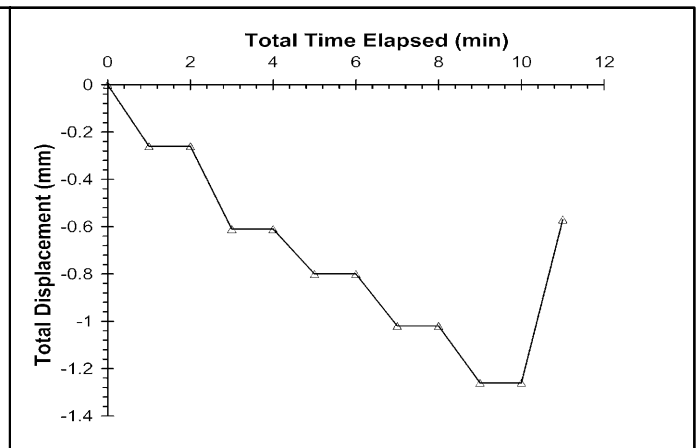
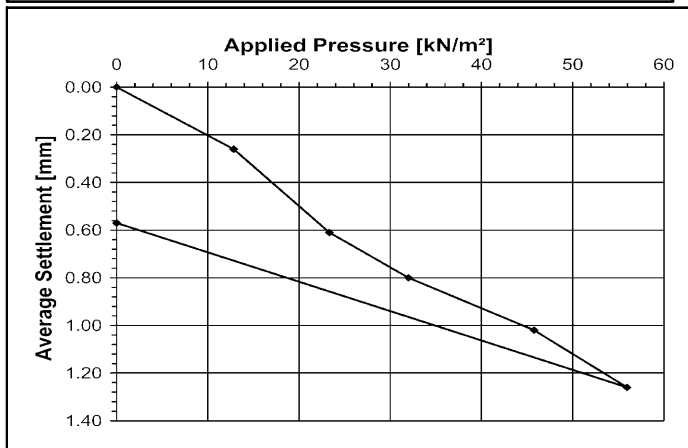
## Determination of Equivalent CBR Value derived from Plate Bearing Test

<b>Report No:</b>	<b>WAM0015484/161/M5</b>	<b>Report Date:</b>	<b>3 September 2019</b>
<b>Client:</b>	EP SHB LIMITED	<b>Our Contract Ref:</b>	51052244/2019-08-30
<b>Address:</b>	EP UK INVESTMENTS LIMITED GROUND FLOOR PARADIGM BUILDING 3175 CENTURY WAY THORPE PARK, LEEDS LS15 8ZB	<b>Test Number:</b>	Test 05
<b>Client Contact:</b>	Not Advised	<b>Date Tested:</b>	30 Aug 2019
<b>Site:</b>	<b>Humber South Bunk Powerstation</b>	<b>Tested By:</b>	SOCOTEC Warrington
<b>Location:</b>	TP1	<b>Material Supplier:</b>	Not Supplied
<b>Depth of Test (mm):</b>	Surface	<b>Material Source:</b>	Not Supplied
<b>Material Description:</b>	Natural Clay	<b>Kentledge Type:</b>	14 Tonne 360
<b>Layer Thickness (mm):</b>	Unknown	<b>Plate Diameter (mm):</b>	450
		<b>Weather Conditions:</b>	Clear

**Results :**

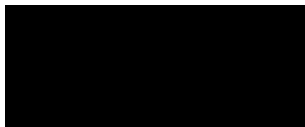
Applied Load (kN)	Applied Pressure (kN/m <sup>2</sup> )	Applied Plate Settlement (mm)
2.04	13	0.26
3.71	23	0.61
5.09	32	0.80
7.28	46	1.02
8.90	56	1.26
0.00	0	0.57
End of Test		

Pressure at 1.25mm Settlement (kN/m<sup>2</sup>): 56  
 Modulus of Subgrade Reaction (MN/m<sup>2</sup>/m): 28  
 Moisture Content (%): 19  
 Equivalent CBR by Plate Loading (%): 3.0



Certified that testing was carried out in accordance with Design Manual for Roads and Bridges Volume 7, Pavement Design and Maintenance, IAN 73/06 Rev.1 (2009)  
 Certified that Moisture Content was carried out in accordance with BS1377-2:1990 Method 3.2

**Signed:**



Mark Beastall - Laboratory Manager  
 for and on behalf of SOCOTEC UK Limited

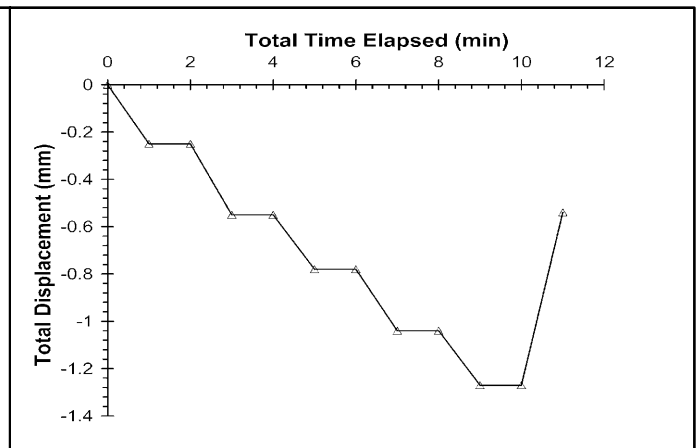
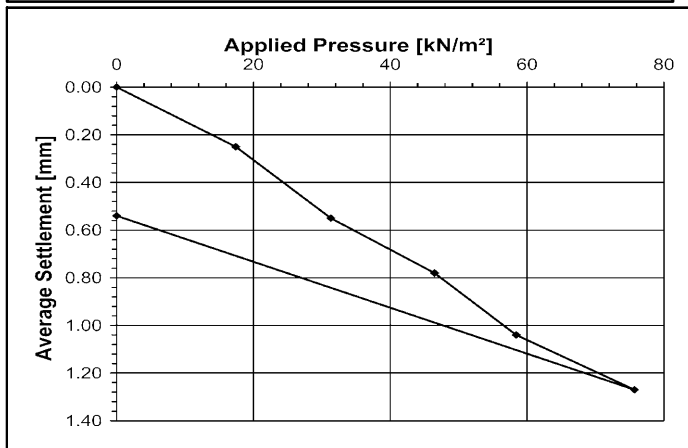
### Determination of Equivalent CBR Value derived from Plate Bearing Test

<b>Report No:</b>	<b>WAM0015484/160/M4</b>	<b>Report Date:</b>	<b>3 September 2019</b>
<b>Client:</b>	EP SHB LIMITED	<b>Our Contract Ref:</b>	51052244/2019-08-30
<b>Address:</b>	EP UK INVESTMENTS LIMITED GROUND FLOOR PARADIGM BUILDING 3175 CENTURY WAY THORPE PARK, LEEDS LS15 8ZB	<b>Test Number:</b>	Test 04
<b>Client Contact:</b>	Not Advised	<b>Date Tested:</b>	30 Aug 2019
<b>Site:</b>	<b>Humber South Bunk Powerstation</b>	<b>Tested By:</b>	SOCOTEC Warrington
<b>Location:</b>	TP2	<b>Material Supplier:</b>	Not Supplied
<b>Depth of Test (mm):</b>	Surface	<b>Material Source:</b>	Not Supplied
<b>Material Description:</b>	Natural Clay	<b>Kentledge Type:</b>	14 Tonne 360
<b>Layer Thickness (mm):</b>	Unknown	<b>Plate Diameter (mm):</b>	450
		<b>Weather Conditions:</b>	Clear

**Results :**

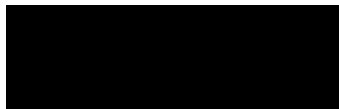
Applied Load (kN)	Applied Pressure (kN/m <sup>2</sup> )	Applied Plate Settlement (mm)
2.77	17	0.25
4.98	31	0.55
7.39	46	0.78
9.29	58	1.04
12.04	76	1.27
0.00	0	0.54
End of Test		

Pressure at 1.25mm Settlement (kN/m<sup>2</sup>): 74  
 Modulus of Subgrade Reaction (MN/m<sup>2</sup>/m): 37  
 Moisture Content (%): 18  
 Equivalent CBR by Plate Loading (%): 5.0



Certified that testing was carried out in accordance with Design Manual for Roads and Bridges Volume 7, Pavement Design and Maintenance, IAN 73/06 Rev.1 (2009)  
 Certified that Moisture Content was carried out in accordance with BS1377-2:1990 Method 3.2

**Signed:**



**Mark Beastall - Laboratory Manager  
 for and on behalf of SOCOTEC UK Limited**

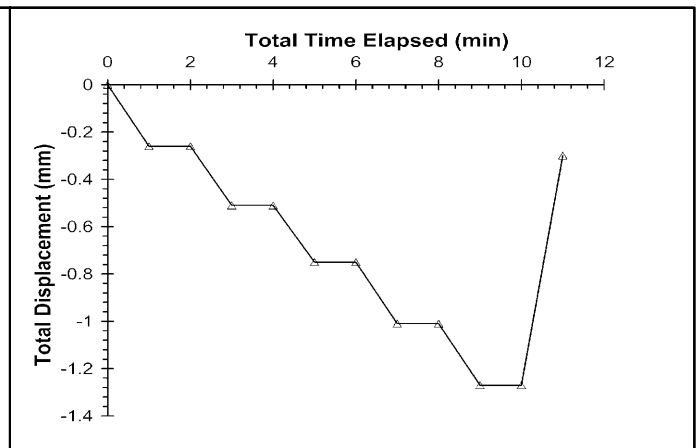
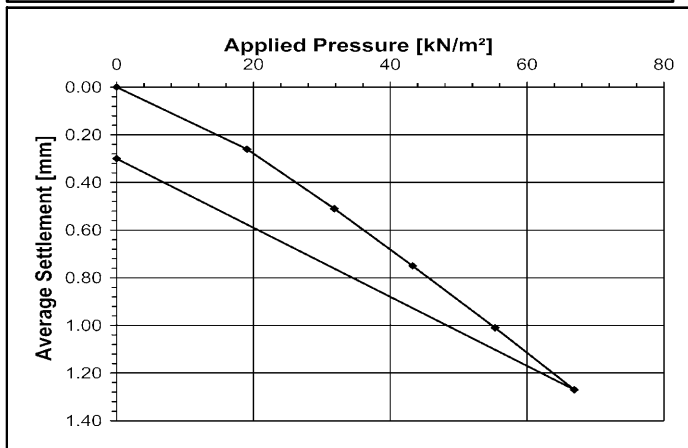
## Determination of Equivalent CBR Value derived from Plate Bearing Test

<b>Report No:</b>	<b>WAM0015484/158/M2</b>	<b>Report Date:</b>	<b>3 September 2019</b>
<b>Client:</b>	EP SHB LIMITED	<b>Our Contract Ref:</b>	51052244/2019-08-30
<b>Address:</b>	EP UK INVESTMENTS LIMITED GROUND FLOOR PARADIGM BUILDING 3175 CENTURY WAY THORPE PARK, LEEDS LS15 8ZB	<b>Test Number:</b>	Test 02
<b>Client Contact:</b>	Not Advised	<b>Date Tested:</b>	30 Aug 2019
<b>Site:</b>	<b>Humber South Bunk Powerstation</b>	<b>Tested By:</b>	SOCOTEC Warrington
<b>Location:</b>	TP3	<b>Material Supplier:</b>	Not Supplied
<b>Depth of Test (mm):</b>	Surface	<b>Material Source:</b>	Not Supplied
<b>Material Description:</b>	Natural Clay	<b>Kentledge Type:</b>	14 Tonne 360
<b>Layer Thickness (mm):</b>	Unknown	<b>Plate Diameter (mm):</b>	450
		<b>Weather Conditions:</b>	Clear

**Results :**

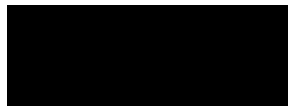
Applied Load (kN)	Applied Pressure (kN/m <sup>2</sup> )	Applied Plate Settlement (mm)
3.03	19	0.26
5.06	32	0.51
6.88	43	0.75
8.80	55	1.01
10.64	67	1.27
0.00	0	0.30
End of Test		

Pressure at 1.25mm Settlement (kN/m<sup>2</sup>): 66  
 Modulus of Subgrade Reaction (MN/m<sup>2</sup>/m): 33  
 Moisture Content (%): 19  
 Equivalent CBR by Plate Loading (%): 4.1



Certified that testing was carried out in accordance with Design Manual for Roads and Bridges Volume 7, Pavement Design and Maintenance, IAN 73/06 Rev.1 (2009)  
 Certified that Moisture Content was carried out in accordance with BS1377-2:1990 Method 3.2

**Signed:**



Mark Beastall - Laboratory Manager  
 for and on behalf of SOCOTEC UK Limited

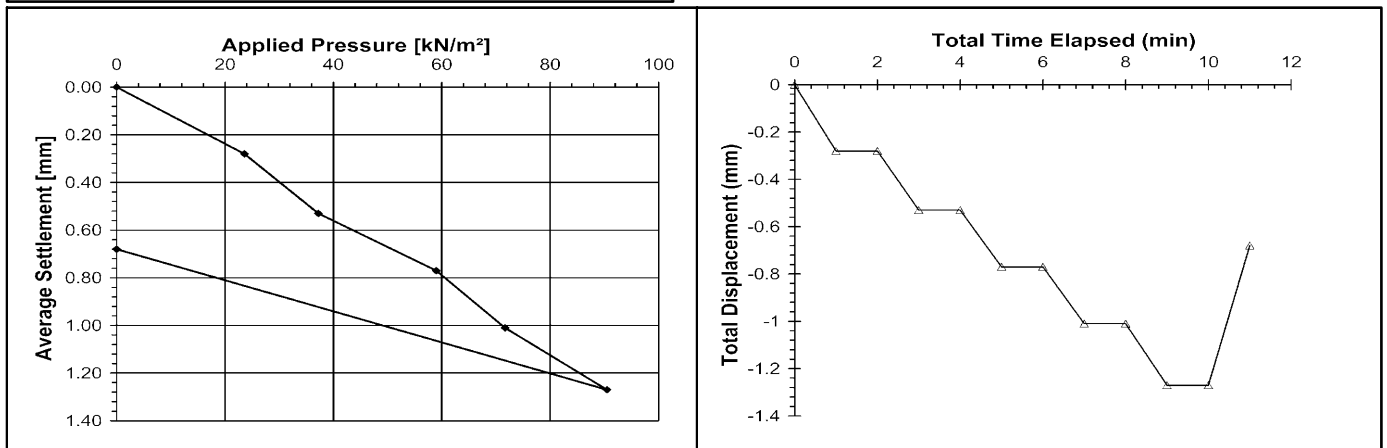
## Determination of Equivalent CBR Value derived from Plate Bearing Test

<b>Report No:</b>	<b>WAM0015418/977/M1</b>	<b>Report Date:</b>	<b>29 August 2019</b>
<b>Client:</b>	EP SHB LIMITED	<b>Our Contract Ref:</b>	51052244/2019-08-27
<b>Address:</b>	EP UK INVESTMENTS LIMITED GROUND FLOOR PARADIGM BUILDING 3175 CENTURY WAY THORPE PARK, LEEDS LS15 8ZB	<b>Test Number:</b>	Test 1
<b>Client Contact:</b>	Not Advised	<b>Date Tested:</b>	27 Aug 2019
<b>Site:</b>	<b>Humber South Bank Powerstation</b>	<b>Tested By:</b>	SOCOTEC Warrington
<b>Location:</b>	TP04	<b>Material Supplier:</b>	Not Supplied
<b>Depth of Test (mm):</b>	Surface	<b>Material Source:</b>	Not Supplied
<b>Material Description:</b>	Brown Very Gravelly Sandy Clay	<b>Kentledge Type:</b>	22 Tonne 360
<b>Layer Thickness (mm):</b>	Unknown	<b>Plate Diameter (mm):</b>	450
		<b>Weather Conditions:</b>	Clear

**Results :**

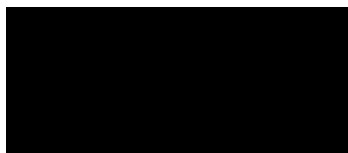
Applied Load (kN)	Applied Pressure (kN/m <sup>2</sup> )	Applied Plate Settlement (mm)
3.75	24	0.28
5.92	37	0.53
9.38	59	0.77
11.40	72	1.01
14.39	90	1.27
0.00	0	0.68
End of Test		

Pressure at 1.25mm Settlement (kN/m<sup>2</sup>): 89  
 Modulus of Subgrade Reaction (MN/m<sup>2</sup>/m): 44  
 Moisture Content (%): N/A  
 Equivalent CBR by Plate Loading (%): 6.9



Certified that testing was carried out in accordance with Design Manual for Roads and Bridges Volume 7, Pavement Design and Maintenance, IAN 73/06 Rev.1 (2009)  
 Certified that Moisture Content was carried out in accordance with BS1377-2:1990 Method 3.2

**Signed:**



Andrew Greaves -  
 for and on behalf of SOCOTEC UK Limited

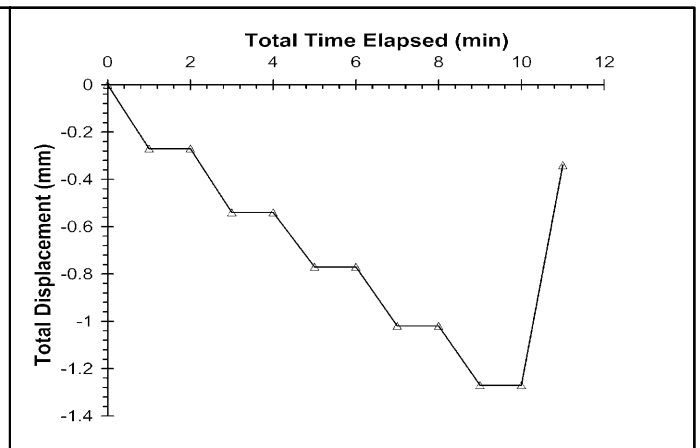
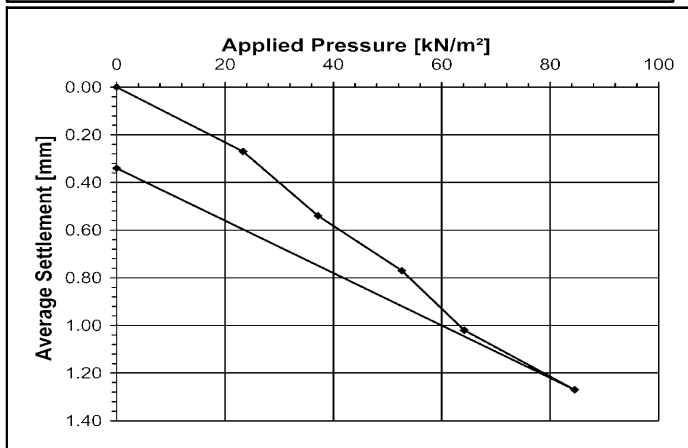
### Determination of Equivalent CBR Value derived from Plate Bearing Test

<b>Report No:</b>	<b>WAM0015484/159/M3</b>	<b>Report Date:</b>	<b>3 September 2019</b>
Client:	EP SHB LIMITED	Our Contract Ref:	51052244/2019-08-30
Address:	EP UK INVESTMENTS LIMITED GROUND FLOOR PARADIGM BUILDING 3175 CENTURY WAY THORPE PARK, LEEDS LS15 8ZB	Test Number:	Test 03
Client Contact:	Not Advised	Date Tested:	30 Aug 2019
<b>Site:</b>	<b>Humber South Bunk Powerstation</b>	Tested By:	SOCOTEC Warrington
Location:	TP5	Material Supplier:	Not Supplied
Depth of Test (mm):	Surface	Material Source:	Not Supplied
Material Description:	Natural Clay	Kentledge Type:	14 Tonne 360
Layer Thickness (mm):	Unknown	Plate Diameter (mm):	450
		Weather Conditions:	Clear

**Results :**

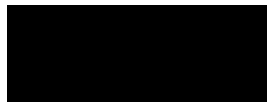
Applied Load (kN)	Applied Pressure (kN/m <sup>2</sup> )	Applied Plate Settlement (mm)
3.71	23	0.27
5.91	37	0.54
8.37	53	0.77
10.20	64	1.02
13.44	85	1.27
0.00	0	0.34
End of Test		

Pressure at 1.25mm Settlement (kN/m<sup>2</sup>): 83  
 Modulus of Subgrade Reaction (MN/m<sup>2</sup>/m): 41  
 Moisture Content (%): 18  
 Equivalent CBR by Plate Loading (%): 6.1



Certified that testing was carried out in accordance with Design Manual for Roads and Bridges Volume 7, Pavement Design and Maintenance, IAN 73/06 Rev.1 (2009)  
 Certified that Moisture Content was carried out in accordance with BS1377-2:1990 Method 3.2

**Signed:**



**Mark Beastall - Laboratory Manager  
 for and on behalf of SOCOTEC UK Limited**

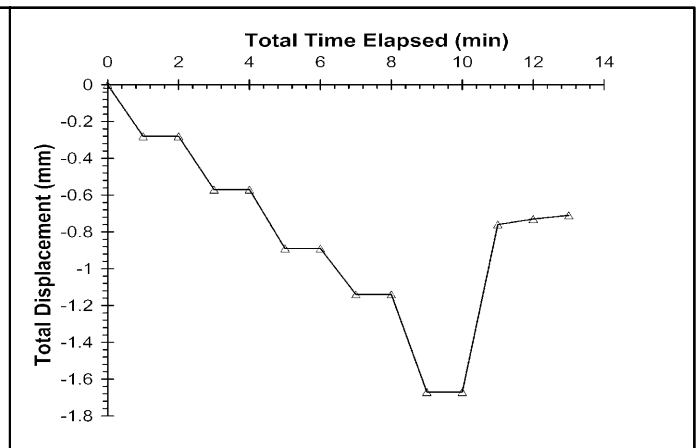
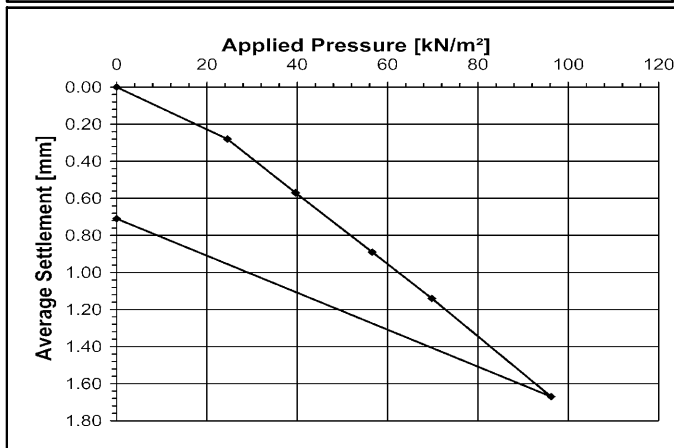
## Determination of Equivalent CBR Value derived from Plate Bearing Test

<b>Report No:</b>	<b>WAM0015421/981/M2</b>	<b>Report Date:</b>	<b>30 August 2019</b>
<b>Client:</b>	EP SHB LIMITED	<b>Our Contract Ref:</b>	51052244/2019-08-28
<b>Address:</b>	EP UK INVESTMENTS LIMITED GROUND FLOOR PARADIGM BUILDING 3175 CENTURY WAY THORPE PARK, LEEDS LS15 8ZB	<b>Test Number:</b>	Test 02
<b>Client Contact:</b>	Not Advised	<b>Date Tested:</b>	28 Aug 2019
<b>Site:</b>	<b>Humber South Bunk Powerstation</b>	<b>Tested By:</b>	SOCOTEC Warrington
<b>Location:</b>	TP06	<b>Material Supplier:</b>	Not Supplied
<b>Depth of Test (mm):</b>	Surface	<b>Material Source:</b>	Not Supplied
<b>Material Description:</b>	Brown Very Gravelly Sandy Clay	<b>Kentledge Type:</b>	22 Tonne 360
<b>Layer Thickness (mm):</b>	Unknown	<b>Plate Diameter (mm):</b>	450
		<b>Weather Conditions:</b>	Sunny

**Results :**

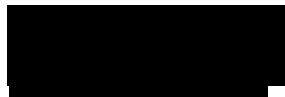
Applied Load (kN)	Applied Pressure (kN/m <sup>2</sup> )	Applied Plate Settlement (mm)
3.90	25	0.28
6.30	40	0.57
9.00	57	0.89
11.10	70	1.14
15.30	96	1.67
0.00	0	0.71
End of Test		

Pressure at 1.25mm Settlement (kN/m<sup>2</sup>): 75  
 Modulus of Subgrade Reaction (MN/m<sup>2</sup>/m): 38  
 Moisture Content (%): 20  
 Equivalent CBR by Plate Loading (%): 5.2



Certified that testing was carried out in accordance with Design Manual for Roads and Bridges Volume 7, Pavement Design and Maintenance, IAN 73/06 Rev.1 (2009)  
 Certified that Moisture Content was carried out in accordance with BS1377-2:1990 Method 3.2

**Signed:**



**Mark Beastall - Laboratory Manager  
 for and on behalf of SOCOTEC UK Limited**

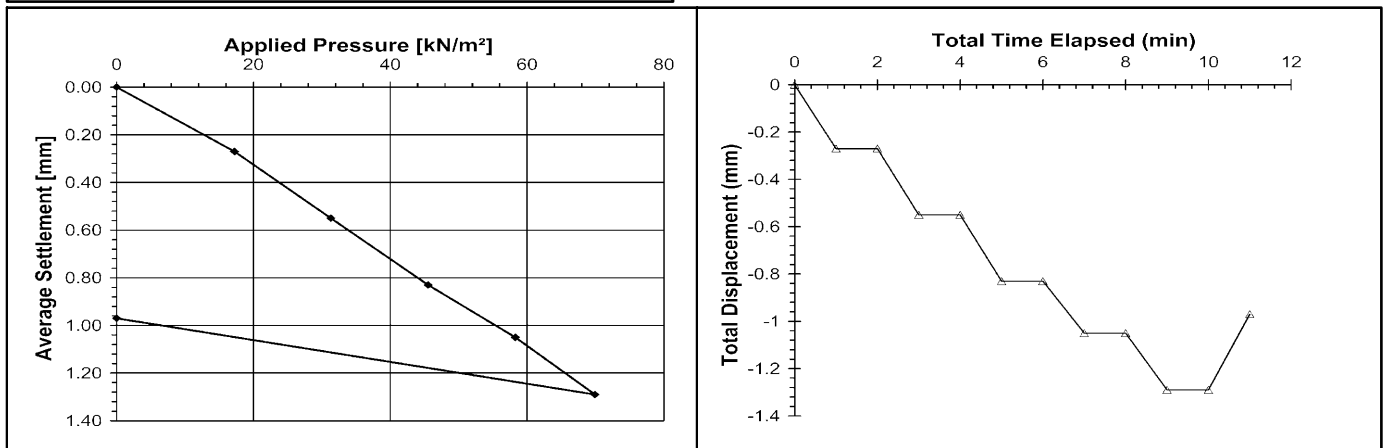
### Determination of Equivalent CBR Value derived from Plate Bearing Test

<b>Report No:</b>	<b>WAM0015484/157/M1</b>	<b>Report Date:</b>	<b>3 September 2019</b>
<b>Client:</b>	EP SHB LIMITED	<b>Our Contract Ref:</b>	51052244/2019-08-30
<b>Address:</b>	EP UK INVESTMENTS LIMITED GROUND FLOOR PARADIGM BUILDING 3175 CENTURY WAY THORPE PARK, LEEDS LS15 8ZB	<b>Test Number:</b>	Test 01
<b>Client Contact:</b>	Not Advised	<b>Date Tested:</b>	30 Aug 2019
<b>Site:</b>	<b>Humber South Bunk Powerstation</b>	<b>Tested By:</b>	SOCOTEC Warrington
<b>Location:</b>	TP7	<b>Material Supplier:</b>	Not Supplied
<b>Depth of Test (mm):</b>	Surface	<b>Material Source:</b>	Not Supplied
<b>Material Description:</b>	Natural Clay	<b>Kentledge Type:</b>	14 Tonne 360
<b>Layer Thickness (mm):</b>	Unknown	<b>Plate Diameter (mm):</b>	450
		<b>Weather Conditions:</b>	Clear

**Results :**

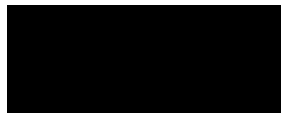
Applied Load (kN)	Applied Pressure (kN/m <sup>2</sup> )	Applied Plate Settlement (mm)
2.74	17	0.27
4.98	31	0.55
7.24	46	0.83
9.27	58	1.05
11.12	70	1.29
0.00	0	0.97
End of Test		

Pressure at 1.25mm Settlement (kN/m<sup>2</sup>): 68  
 Modulus of Subgrade Reaction (MN/m<sup>2</sup>/m): 34  
 Moisture Content (%): 18  
 Equivalent CBR by Plate Loading (%): 4.3



Certified that testing was carried out in accordance with Design Manual for Roads and Bridges Volume 7, Pavement Design and Maintenance, IAN 73/06 Rev.1 (2009)  
 Certified that Moisture Content was carried out in accordance with BS1377-2:1990 Method 3.2

**Signed:**



**Mark Beastall - Laboratory Manager  
 for and on behalf of SOCOTEC UK Limited**



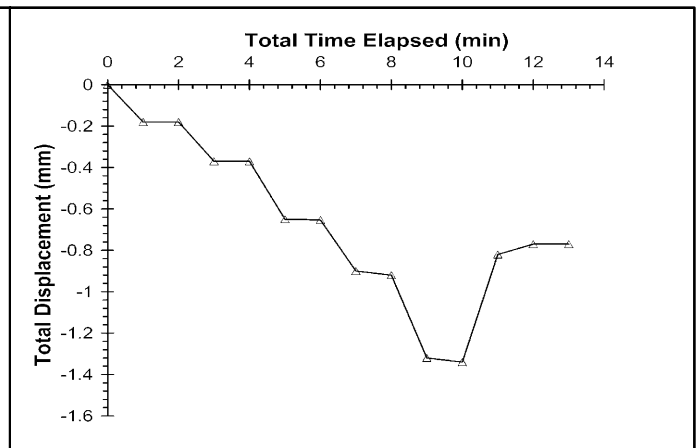
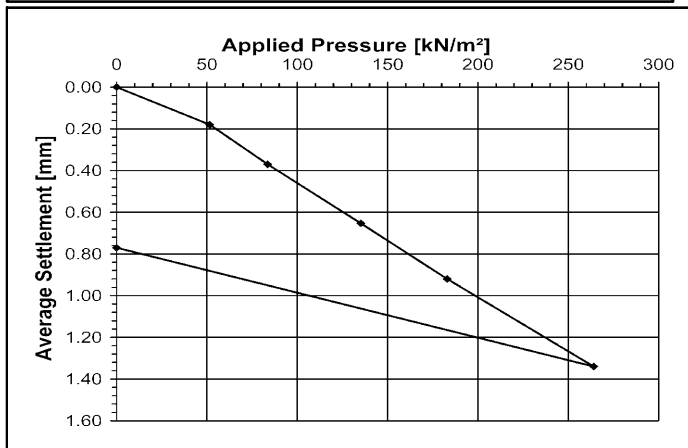
## Determination of Equivalent CBR Value derived from Plate Bearing Test

<b>Report No:</b>	<b>WAM0015421/980/M1</b>	<b>Report Date:</b>	<b>30 August 2019</b>
<b>Client:</b>	EP SHB LIMITED	<b>Our Contract Ref:</b>	51052244/2019-08-28
<b>Address:</b>	EP UK INVESTMENTS LIMITED GROUND FLOOR PARADIGM BUILDING 3175 CENTURY WAY THORPE PARK, LEEDS LS15 8ZB	<b>Test Number:</b>	Test 01
<b>Client Contact:</b>	Not Advised	<b>Date Tested:</b>	28 Aug 2019
<b>Site:</b>	<b>Humber South Bunk Powerstation</b>	<b>Tested By:</b>	SOCOTEC Warrington
<b>Location:</b>	TP08	<b>Material Supplier:</b>	Not Supplied
<b>Depth of Test (mm):</b>	Surface	<b>Material Source:</b>	Not Supplied
<b>Material Description:</b>	Brown Very Gravelly Sandy Clay	<b>Kentledge Type:</b>	22 Tonne 360
<b>Layer Thickness (mm):</b>	Unknown	<b>Plate Diameter (mm):</b>	450
		<b>Weather Conditions:</b>	Sunny

**Results :**

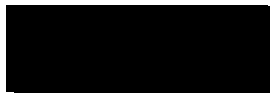
Applied Load (kN)	Applied Pressure (kN/m <sup>2</sup> )	Applied Plate Settlement (mm)
8.20	52	0.18
13.30	84	0.37
21.50	135	0.65
29.10	183	0.92
42.00	264	1.34
0.00	0	0.77
End of Test		

Pressure at 1.25mm Settlement (kN/m<sup>2</sup>): 247  
 Modulus of Subgrade Reaction (MN/m<sup>2</sup>/m): 120  
 Moisture Content (%): 14  
 Equivalent CBR by Plate Loading (%): 40



Certified that testing was carried out in accordance with Design Manual for Roads and Bridges Volume 7, Pavement Design and Maintenance, IAN 73/06 Rev.1 (2009)  
 Certified that Moisture Content was carried out in accordance with BS1377-2:1990 Method 3.2

**Signed:**



**Mark Beastall - Laboratory Manager  
 for and on behalf of SOCOTEC UK Limited**

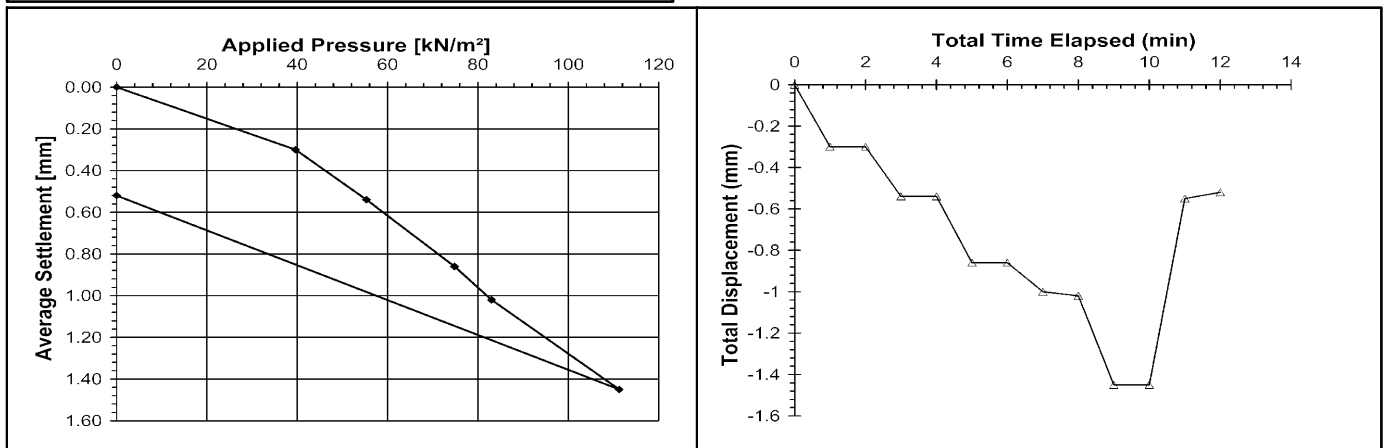
## Determination of Equivalent CBR Value derived from Plate Bearing Test

<b>Report No:</b>	<b>WAM0015421/983/M4</b>	<b>Report Date:</b>	<b>30 August 2019</b>
<b>Client:</b>	EP SHB LIMITED	<b>Our Contract Ref:</b>	51052244/2019-08-28
<b>Address:</b>	EP UK INVESTMENTS LIMITED GROUND FLOOR PARADIGM BUILDING 3175 CENTURY WAY THORPE PARK, LEEDS LS15 8ZB	<b>Test Number:</b>	Test 04
<b>Client Contact:</b>	Not Advised	<b>Date Tested:</b>	28 Aug 2019
<b>Site:</b>	<b>Humber South Bunk Powerstation</b>	<b>Tested By:</b>	SOCOTEC Warrington
<b>Location:</b>	TP09	<b>Material Supplier:</b>	Not Supplied
<b>Depth of Test (mm):</b>	Surface	<b>Material Source:</b>	Not Supplied
<b>Material Description:</b>	Brown Very Gravelly Sandy Clay	<b>Kentledge Type:</b>	22 Tonne 360
<b>Layer Thickness (mm):</b>	Unknown	<b>Plate Diameter (mm):</b>	450
		<b>Weather Conditions:</b>	Sunny

**Results :**

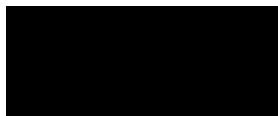
Applied Load (kN)	Applied Pressure (kN/m <sup>2</sup> )	Applied Plate Settlement (mm)
6.30	40	0.30
8.80	55	0.54
11.90	75	0.86
13.20	83	1.02
17.70	111	1.45
0.00	0	0.52
End of Test		

Pressure at 1.25mm Settlement (kN/m<sup>2</sup>): 98  
 Modulus of Subgrade Reaction (MN/m<sup>2</sup>/m): 49  
 Moisture Content (%): 19  
 Equivalent CBR by Plate Loading (%): 8.2



Certified that testing was carried out in accordance with Design Manual for Roads and Bridges Volume 7, Pavement Design and Maintenance, IAN 73/06 Rev.1 (2009)  
 Certified that Moisture Content was carried out in accordance with BS1377-2:1990 Method 3.2

**Signed:**



Mark Beastall - Laboratory Manager  
 for and on behalf of SOCOTEC UK Limited

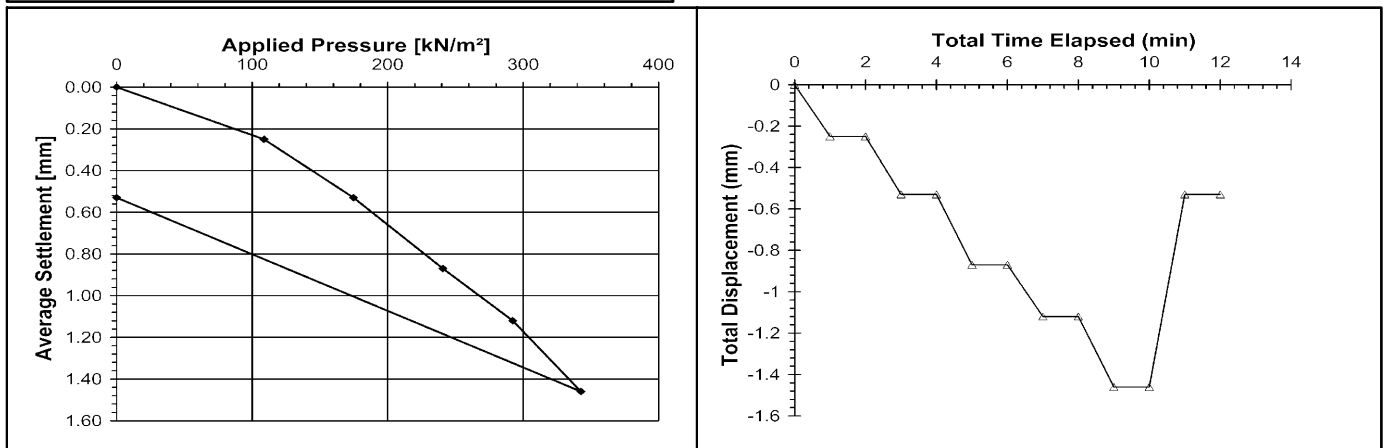
## Determination of Equivalent CBR Value derived from Plate Bearing Test

<b>Report No:</b>	<b>WAM0015421/985/M6</b>	<b>Report Date:</b>	<b>30 August 2019</b>
<b>Client:</b>	EP SHB LIMITED	<b>Our Contract Ref:</b>	51052244/2019-08-28
<b>Address:</b>	EP UK INVESTMENTS LIMITED GROUND FLOOR PARADIGM BUILDING 3175 CENTURY WAY THORPE PARK, LEEDS LS15 8ZB	<b>Test Number:</b>	Test 06
<b>Client Contact:</b>	Not Advised	<b>Date Tested:</b>	28 Aug 2019
<b>Site:</b>	<b>Humber South Bunk Powerstation</b>	<b>Tested By:</b>	SOCOTEC Warrington
<b>Location:</b>	TP10	<b>Material Supplier:</b>	Not Supplied
<b>Depth of Test (mm):</b>	Surface	<b>Material Source:</b>	Not Supplied
<b>Material Description:</b>	Brown Very Gravelly Sandy Clay	<b>Kentledge Type:</b>	22 Tonne 360
<b>Layer Thickness (mm):</b>	Unknown	<b>Plate Diameter (mm):</b>	450
		<b>Weather Conditions:</b>	Sunny

**Results :**

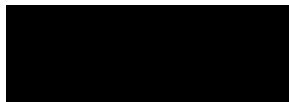
Applied Load (kN)	Applied Pressure (kN/m <sup>2</sup> )	Applied Plate Settlement (mm)
17.30	109	0.25
27.80	175	0.53
38.30	241	0.87
46.50	292	1.12
54.50	343	1.46
0.00	0	0.53
End of Test		

Pressure at 1.25mm Settlement (kN/m<sup>2</sup>): 312  
 Modulus of Subgrade Reaction (MN/m<sup>2</sup>/m): 160  
 Moisture Content (%): 13  
 Equivalent CBR by Plate Loading (%): 61



Certified that testing was carried out in accordance with Design Manual for Roads and Bridges Volume 7, Pavement Design and Maintenance, IAN 73/06 Rev.1 (2009)  
 Certified that Moisture Content was carried out in accordance with BS1377-2:1990 Method 3.2

**Signed:**



Mark Beastall - Laboratory Manager  
 for and on behalf of SOCOTEC UK Limited

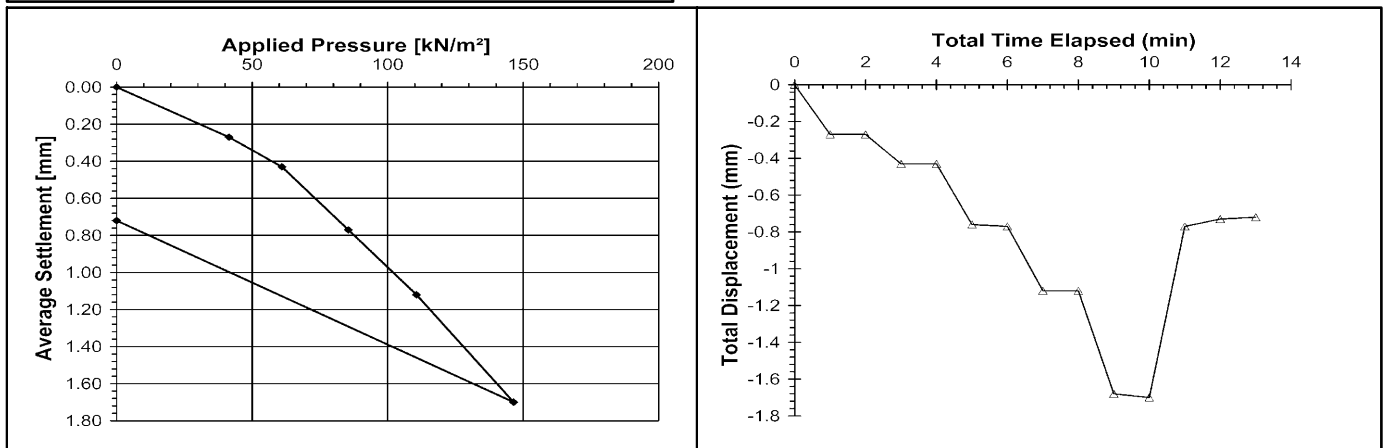
## Determination of Equivalent CBR Value derived from Plate Bearing Test

<b>Report No:</b>	<b>WAM0015421/982/M3</b>	<b>Report Date:</b>	<b>30 August 2019</b>
<b>Client:</b>	EP SHB LIMITED	<b>Our Contract Ref:</b>	51052244/2019-08-28
<b>Address:</b>	EP UK INVESTMENTS LIMITED GROUND FLOOR PARADIGM BUILDING 3175 CENTURY WAY THORPE PARK, LEEDS LS15 8ZB	<b>Test Number:</b>	Test 03
<b>Client Contact:</b>	Not Advised	<b>Date Tested:</b>	28 Aug 2019
<b>Site:</b>	<b>Humber South Bunk Powerstation</b>	<b>Tested By:</b>	SOCOTEC Warrington
<b>Location:</b>	TP11	<b>Material Supplier:</b>	Not Supplied
<b>Depth of Test (mm):</b>	Surface	<b>Material Source:</b>	Not Supplied
<b>Material Description:</b>	Brown Very Gravelly Sandy Clay	<b>Kentledge Type:</b>	22 Tonne 360
<b>Layer Thickness (mm):</b>	Unknown	<b>Plate Diameter (mm):</b>	450
		<b>Weather Conditions:</b>	Sunny

**Results :**

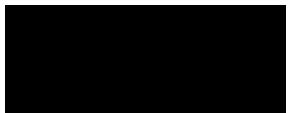
Applied Load (kN)	Applied Pressure (kN/m <sup>2</sup> )	Applied Plate Settlement (mm)
6.60	42	0.27
9.70	61	0.43
13.60	86	0.77
17.60	111	1.12
23.30	147	1.70
0.00	0	0.72
End of Test		

Pressure at 1.25mm Settlement (kN/m<sup>2</sup>): 119  
 Modulus of Subgrade Reaction (MN/m<sup>2</sup>/m): 59  
 Moisture Content (%): 14  
 Equivalent CBR by Plate Loading (%): 11



Certified that testing was carried out in accordance with Design Manual for Roads and Bridges Volume 7, Pavement Design and Maintenance, IAN 73/06 Rev.1 (2009)  
 Certified that Moisture Content was carried out in accordance with BS1377-2:1990 Method 3.2

**Signed:**



**Mark Beastall - Laboratory Manager  
 for and on behalf of SOCOTEC UK Limited**

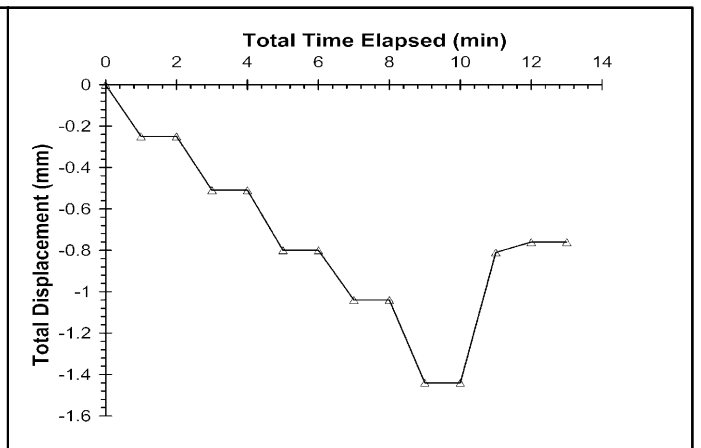
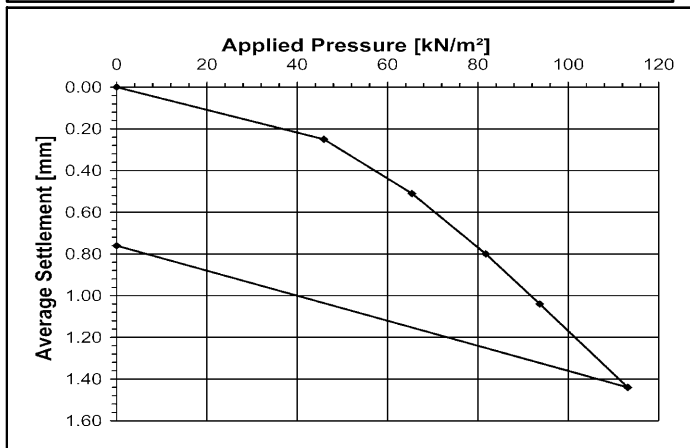
### Determination of Equivalent CBR Value derived from Plate Bearing Test

<b>Report No:</b>	<b>WAM0015421/984/M5</b>	<b>Report Date:</b>	<b>30 August 2019</b>
Client:	EP SHB LIMITED	Our Contract Ref:	51052244/2019-08-28
Address:	EP UK INVESTMENTS LIMITED GROUND FLOOR PARADIGM BUILDING 3175 CENTURY WAY THORPE PARK, LEEDS LS15 8ZB	Test Number:	Test 05
Client Contact:	Not Advised	Date Tested:	28 Aug 2019
<b>Site:</b>	<b>Humber South Bunk Powerstation</b>	Tested By:	SOCOTEC Warrington
Location:	TP12	Material Supplier:	Not Supplied
Depth of Test (mm):	Surface	Material Source:	Not Supplied
Material Description:	Brown Very Gravelly Sandy Clay	Kentledge Type:	22 Tonne 360
Layer Thickness (mm):	Unknown	Plate Diameter (mm):	450
		Weather Conditions:	Sunny

**Results :**

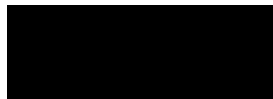
Applied Load (kN)	Applied Pressure (kN/m <sup>2</sup> )	Applied Plate Settlement (mm)
7.30	46	0.25
10.40	65	0.51
13.00	82	0.80
14.90	94	1.04
18.00	113	1.44
0.00	0	0.76
End of Test		

Pressure at 1.25mm Settlement (kN/m<sup>2</sup>): 104  
 Modulus of Subgrade Reaction (MN/m<sup>2</sup>/m): 52  
 Moisture Content (%): 3.9  
 Equivalent CBR by Plate Loading (%): 9.0



Certified that testing was carried out in accordance with Design Manual for Roads and Bridges Volume 7, Pavement Design and Maintenance, IAN 73/06 Rev.1 (2009)  
 Certified that Moisture Content was carried out in accordance with BS1377-2:1990 Method 3.2

**Signed:**



**Mark Beastall - Laboratory Manager  
 for and on behalf of SOCOTEC UK Limited**

**APPENDIX D**  
**INSTRUMENTATION AND MONITORING**

Monitoring Installation Details	D1
Groundwater Monitoring	D2
Gas Monitoring	D3

# Groundwater Monitoring Installations Summary



Instrument Reference	Instrument Type (See Notes)	Installation Date, dd/mm/yyyy	Pipe Diameter, mm	Instrument Base, mbgl	Response Zone Range, mbgl	Pipe Top Details	Headworks	Remarks
BH01 (D)	SPIE	20/08/2019	25	36.00	34.00 to 36.50	Gas tap	Raised cover	
BH01 (S)	SP	20/08/2019	50	11.00	7.00 to 11.00	Gas tap	Raised cover	
BH02 (D)	SPIE	19/08/2019	25	32.60	30.60 to 33.00	Gas tap	Raised cover	
BH02 (S)	SP	19/08/2019	50	8.00	2.50 to 8.00	Gas tap	Raised cover	
BH03 (1)	SP	15/08/2019	50	10.40	6.00 to 10.40	Gas tap	Flush cover	
BH04 (D)	SPIE	21/08/2019	25	17.00	16.80 to 17.70	Gas tap	Raised cover	
BH04 (S)	SP	21/08/2019	50	3.90	3.40 to 3.90	Gas tap	Raised cover	
BH08 (1)		29/08/2019	75	35.00		Open	Raised Cover	Geophysics Installation
BH09 (1)		30/08/2019	75	35.34		Open	Raised cover	Geophysics Installation
BH10 (1)		27/08/2019	75	35.45		Open	Raised Cover	Geophysics Installation
BH11 (D)	SPIE	28/08/2019	25	14.50	10.00 to 15.00	Gas tap	Raised cover	
BH11 (S)	SP	28/08/2019	50	8.00	6.90 to 8.00	Gas tap	Raised cover	
BH12 (D)	SPIE	03/09/2019	25	20.80	18.20 to 21.30	Gas tap	Raised cover	
BH12 (S)	SP	03/09/2019	50	9.70	3.20 to 9.70	Gas tap	Raised cover	
BH13 (1)	SP	06/09/2019	50	7.00	4.00 to 7.00	Gas tap	Raised cover	
WS01 (1)	SP	20/08/2019	50	5.00	2.00 to 5.00	Gas tap	Flush cover	
WS02 (1)	SP	19/08/2019	50	5.00	2.60 to 5.00	Gas tap	Flush cover	
WS03 (1)	SP	20/08/2019	50	5.00	2.00 to 5.00	Gas tap	Flush cover	
WS04 (1)	SP	20/08/2019	50	5.00	3.00 to 5.00	Gas tap	Flush cover	
WS05 (1)	SP	23/08/2019	50	5.00	3.00 to 5.00	Gas tap	Flush cover	
WS06 (1)	SP	23/08/2019	50	5.00	3.00 to 5.00	Gas tap	Flush cover	
WS07 (1)	SP	22/08/2019	50	5.00	2.50 to 5.00	Gas tap	Flush cover	
WS09 (1)	SP	22/08/2019	50	2.00	1.00 to 2.00	Gas tap	Flush cover	
WS10 (1)	SP	22/08/2019	50	5.00	3.00 to 5.00	Gas tap	Flush cover	

Notes: Type: SP - Standpipe, SPIE - Standpipe Piezometer



Project SOUTH HUMBER BANK ENERGY CENTRE  
 Project No. A9020-19  
 Carried out for EP UK Investments Ltd.

Table

D1

# Groundwater Monitoring

Instrument Reference	Instrument Type	Instrument Base, mbgl	Date dd/mm/yyyy	Time hh:mm:ss	Groundwater depth, mbgl	Comments
BH01 (D)	SPIE	36.00	23/08/2019	10:20:00	-0.18	
BH01 (D)	SPIE	36.00	28/08/2019	12:55:00	-0.18	
BH01 (D)	SPIE	36.00	29/08/2019	11:50:00	-0.32	
BH01 (D)	SPIE	36.00	02/09/2019	11:50:00	-0.32	
BH01 (D)	SPIE	36.00	03/09/2019	10:03:00	-0.21	
BH01 (D)	SPIE	36.00	04/09/2019	13:32:00	-0.18	
BH01 (D)	SPIE	36.00	17/09/2019	09:15:00	-0.30	Overflowing
BH01 (D)	SPIE	36.00	09/10/2019	12:15:00	-0.22	Above ground level
BH01 (D)	SPIE	36.00	12/11/2019	10:10:00	0.00	Artesian
BH01 (S)	SP	11.00	23/08/2019	10:21:00	0.54	
BH01 (S)	SP	11.00	28/08/2019	12:56:00	0.44	
BH01 (S)	SP	11.00	29/08/2019	11:50:00	0.45	
BH01 (S)	SP	11.00	02/09/2019	11:50:00	0.45	
BH01 (S)	SP	11.00	03/09/2019	10:03:00	0.57	
BH01 (S)	SP	11.00	04/09/2019	13:32:00	0.35	
BH01 (S)	SP	11.00	17/09/2019	09:30:00	0.47	Silting
BH01 (S)	SP	11.00	09/10/2019	12:00:00	0.24	
BH01 (S)	SP	11.00	12/11/2019	10:05:00	0.00	Artesian
BH02 (D)	SPIE	32.60	21/08/2019	13:00:00	0.17	
BH02 (D)	SPIE	32.60	23/08/2019	10:15:00	0.02	
BH02 (D)	SPIE	32.60	28/08/2019	12:50:00	0.00	
BH02 (D)	SPIE	32.60	03/09/2019	10:08:00	0.00	
BH02 (D)	SPIE	32.60	04/09/2019	13:25:00	-0.20	
BH02 (D)	SPIE	32.60	06/09/2019	14:54:00	-0.20	
BH02 (D)	SPIE	32.60	17/09/2019	09:01:00	-0.07	Artesian
BH02 (D)	SPIE	32.60	09/10/2019	12:35:00	-0.16	Above ground level
BH02 (D)	SPIE	32.60	12/11/2019	10:45:00	0.74	
BH02 (S)	SP	8.00	21/08/2019	13:02:00	1.17	
BH02 (S)	SP	8.00	23/08/2019	10:16:00	1.41	
BH02 (S)	SP	8.00	28/08/2019	12:51:00	1.28	
BH02 (S)	SP	8.00	03/09/2019	10:08:00	1.30	
BH02 (S)	SP	8.00	04/09/2019	13:25:00	1.26	
BH02 (S)	SP	8.00	06/09/2019	14:54:00	1.10	
BH02 (S)	SP	8.00	17/09/2019	09:00:00	1.25	
BH02 (S)	SP	8.00	09/10/2019	12:20:00	1.05	
BH02 (S)	SP	8.00	12/11/2019	10:45:00	0.78	
BH04 (D)	SPIE	17.00	28/08/2019	13:22:00	1.63	
BH04 (D)	SPIE	17.00	03/09/2019	09:48:00	1.82	
BH04 (D)	SPIE	17.00	04/09/2019	13:45:00	1.90	
BH04 (D)	SPIE	17.00	06/09/2019	15:02:00	1.80	
BH04 (D)	SPIE	17.00	17/09/2019	11:06:00	1.97	
BH04 (D)	SPIE	17.00	09/10/2019	13:00:00	2.16	Silty
BH04 (D)	SPIE	17.00	12/11/2019	11:45:00	1.94	

Notes: Type: SP - Standpipe, SPIE - Standpipe Piezometer



**Project** SOUTH HUMBER BANK ENERGY CENTRE  
**Project No.** A9020-19  
**Carried out for** EP UK Investments Ltd.

**Table**  
**D2**



# Groundwater Monitoring

Instrument Reference	Instrument Type	Instrument Base, mbgl	Date dd/mm/yyyy	Time hh:mm:ss	Groundwater depth, mbgl	Comments
BH04 (S)	SP	3.90	23/08/2019	10:45:00	3.19	
BH04 (S)	SP	3.90	28/08/2019	13:20:00	2.95	
BH04 (S)	SP	3.90	29/08/2019	11:47:00	2.97	
BH04 (S)	SP	3.90	02/09/2019	11:47:00	2.97	
BH04 (S)	SP	3.90	03/09/2019	09:48:00	3.03	
BH04 (S)	SP	3.90	04/09/2019	13:48:00	3.05	
BH04 (S)	SP	3.90	06/09/2019	15:02:00	2.22	
BH04 (S)	SP	3.90	17/09/2019	11:08:00	3.04	
BH04 (S)	SP	3.90	09/10/2019	12:45:00	3.02	
BH04 (S)	SP	3.90	12/11/2019	11:40:00	1.91	
BH08 (1)	SP	35.00	03/09/2019	11:10:00		Top of casing.
BH11 (D)	SPIE	14.50	29/08/2019	12:10:00	1.53	
BH11 (D)	SPIE	14.50	02/09/2019	12:10:00	1.53	
BH11 (D)	SPIE	14.50	03/09/2019	11:10:00	1.38	
BH11 (D)	SPIE	14.50	04/09/2019	13:00:00	1.40	
BH11 (D)	SPIE	14.50	06/09/2019	14:42:00	1.25	
BH11 (D)	SPIE	14.50	17/09/2019	12:50:00	1.35	
BH11 (D)	SPIE	14.50	09/10/2019	13:25:00	1.27	
BH11 (D)	SPIE	14.50	12/11/2019	15:05:00	0.96	
BH11 (S)	SP	8.00	29/08/2019	12:10:00	1.21	
BH11 (S)	SP	8.00	02/09/2019	12:10:00	1.21	
BH11 (S)	SP	8.00	03/09/2019	11:10:00	1.38	
BH11 (S)	SP	8.00	04/09/2019	13:00:00	1.69	
BH11 (S)	SP	8.00	06/09/2019	14:42:00	0.52	
BH11 (S)	SP	8.00	17/09/2019	12:46:00	1.35	
BH11 (S)	SP	8.00	09/10/2019	13:10:00	1.28	
BH11 (S)	SP	8.00	12/11/2019	15:00:00	0.97	
BH12 (D)	SPIE	20.80	17/09/2019	14:30:00	1.56	
BH12 (D)	SPIE	20.80	09/10/2019	14:00:00	1.22	
BH12 (D)	SPIE	20.80	12/11/2019	14:00:00	1.07	
BH12 (S)	SP	9.70	17/09/2019	14:40:00	1.50	
BH12 (S)	SP	9.70	09/10/2019	13:40:00	1.17	
BH12 (S)	SP	9.70	12/11/2019	14:00:00	0.89	
BH13 (1)	SP	7.00	17/09/2019	16:00:00	1.79	
BH13 (1)	SP	7.00	09/10/2019	14:15:00	1.53	
BH13 (1)	SP	7.00	12/11/2019	13:20:00	1.15	
WS01 (1)	SP	5.00	21/08/2019	13:45:00	1.39	
WS01 (1)	SP	5.00	23/08/2019	10:25:00	1.20	
WS01 (1)	SP	5.00	28/08/2019	13:00:00	1.23	
WS01 (1)	SP	5.00	29/08/2019	11:48:00	1.29	
WS01 (1)	SP	5.00	02/09/2019	11:48:00	1.29	
WS01 (1)	SP	5.00	03/09/2019	10:00:00	1.40	
WS01 (1)	SP	5.00	04/09/2019	13:40:00	1.40	

Notes: Type: SP - Standpipe, SPIE - Standpipe Piezometer



**Project** SOUTH HUMBER BANK ENERGY CENTRE  
**Project No.** A9020-19  
**Carried out for** EP UK Investments Ltd.

**Table**

**D2**

# Groundwater Monitoring

Instrument Reference	Instrument Type	Instrument Base, mbgl	Date dd/mm/yyyy	Time hh:mm:ss	Groundwater depth, mbgl	Comments
WS01 (1)	SP	5.00	06/09/2019	13:19:00	1.38	
WS01 (1)	SP	5.00	17/09/2019	09:58:00	1.32	
WS01 (1)	SP	5.00	08/10/2019	10:00:00	1.15	
WS01 (1)	SP	5.00	12/11/2019	12:20:00	0.12	
WS02 (1)	SP	5.00	21/08/2019	13:50:00	1.96	
WS02 (1)	SP	5.00	23/08/2019	10:30:00	1.82	
WS02 (1)	SP	5.00	28/08/2019	13:05:00	1.43	
WS02 (1)	SP	5.00	29/08/2019	11:45:00	1.75	
WS02 (1)	SP	5.00	02/09/2019	11:45:00	1.75	
WS02 (1)	SP	5.00	03/09/2019	09:40:00	1.74	
WS02 (1)	SP	5.00	04/09/2019	13:17:00	1.98	
WS02 (1)	SP	5.00	06/09/2019	13:22:00	2.00	
WS02 (1)	SP	5.00	17/09/2019	10:28:00	1.78	
WS02 (1)	SP	5.00	08/10/2019	10:15:00	1.38	
WS02 (1)	SP	5.00	12/11/2019	11:00:00	0.40	
WS03 (1)	SP	5.00	21/08/2019	13:55:00	1.53	
WS03 (1)	SP	5.00	23/08/2019	10:35:00	1.41	
WS03 (1)	SP	5.00	28/08/2019	13:10:00	1.42	
WS03 (1)	SP	5.00	29/08/2019	11:45:00	1.42	
WS03 (1)	SP	5.00	02/09/2019	11:45:00	1.42	
WS03 (1)	SP	5.00	03/09/2019	09:44:00	1.50	
WS03 (1)	SP	5.00	04/09/2019	13:15:00	1.48	
WS03 (1)	SP	5.00	06/09/2019	13:25:00	1.32	
WS03 (1)	SP	5.00	17/09/2019	10:40:00	1.52	
WS03 (1)	SP	5.00	08/10/2019	10:30:00	1.25	
WS03 (1)	SP	5.00	12/11/2019	12:00:00	0.47	
WS04 (1)	SP	5.00	21/08/2019	14:00:00	1.35	
WS04 (1)	SP	5.00	23/08/2019	10:40:00	1.40	
WS04 (1)	SP	5.00	28/08/2019	13:15:00	1.32	
WS04 (1)	SP	5.00	29/08/2019	11:55:00	1.30	
WS04 (1)	SP	5.00	02/09/2019	11:55:00	1.30	
WS04 (1)	SP	5.00	03/09/2019	09:35:00	1.10	
WS04 (1)	SP	5.00	04/09/2019	13:55:00	1.40	
WS04 (1)	SP	5.00	06/09/2019	13:40:00	1.52	
WS04 (1)	SP	5.00	17/09/2019	12:15:00	1.33	
WS04 (1)	SP	5.00	12/11/2019	00:00:00		Flooded
WS05 (1)	SP	5.00	28/08/2019	13:25:00	2.63	
WS05 (1)	SP	5.00	29/08/2019	11:50:00	2.60	
WS05 (1)	SP	5.00	02/09/2019	11:50:00	2.60	
WS05 (1)	SP	5.00	03/09/2019	09:38:00	2.30	
WS05 (1)	SP	5.00	04/09/2019	13:58:00	2.42	
WS05 (1)	SP	5.00	06/09/2019	13:55:00	2.00	
WS05 (1)	SP	5.00	17/09/2019	11:30:00	1.88	

Notes: Type: SP - Standpipe, SPIE - Standpipe Piezometer



Project **SOUTH HUMBER BANK ENERGY CENTRE**  
 Project No. **A9020-19**  
 Carried out for **EP UK Investments Ltd.**

Table **D2**

# Groundwater Monitoring

Instrument Reference	Instrument Type	Instrument Base, mbgl	Date Time dd/mm/yyyy hh:mm:ss	Groundwater depth, mbgl	Comments
WS05 (1)	SP	5.00	08/10/2019 11:10:00	1.61	
WS05 (1)	SP	5.00	12/11/2019 12:20:00	0.65	
WS06 (1)	SP	5.00	28/08/2019 12:30:00	1.63	
WS06 (1)	SP	5.00	29/08/2019 12:20:00	1.61	
WS06 (1)	SP	5.00	02/09/2019 12:20:00	1.61	
WS06 (1)	SP	5.00	03/09/2019 11:00:00	1.55	
WS06 (1)	SP	5.00	04/09/2019 13:04:00	1.60	
WS06 (1)	SP	5.00	06/09/2019 14:02:00	1.75	
WS06 (1)	SP	5.00	17/09/2019 14:20:00	1.49	
WS06 (1)	SP	5.00	08/10/2019 11:30:00	1.55	
WS06 (1)	SP	5.00	12/11/2019 14:15:00	0.54	
WS07 (1)	SP	5.00	23/08/2019 10:10:00	2.30	
WS07 (1)	SP	5.00	28/08/2019 12:35:00	2.69	
WS07 (1)	SP	5.00	29/08/2019 12:25:00	2.63	
WS07 (1)	SP	5.00	02/09/2019 12:25:00	2.63	
WS07 (1)	SP	5.00	03/09/2019 11:05:00	2.40	
WS07 (1)	SP	5.00	04/09/2019 13:02:00	2.35	
WS07 (1)	SP	5.00	06/09/2019 14:16:00	2.32	
WS07 (1)	SP	5.00	17/09/2019 13:20:00	1.83	
WS07 (1)	SP	5.00	08/10/2019 11:40:00	1.18	
WS07 (1)	SP	5.00	12/11/2019 14:45:00	0.94	
WS09 (1)	SP	2.00	23/08/2019 10:00:00	1.82	
WS09 (1)	SP	2.00	28/08/2019 12:45:00	1.87	
WS09 (1)	SP	2.00	29/08/2019 12:10:00	1.90	
WS09 (1)	SP	2.00	02/09/2019 12:10:00	1.90	
WS09 (1)	SP	2.00	03/09/2019 10:30:00	Dry	
WS09 (1)	SP	2.00	04/09/2019 13:10:00	Dry	
WS09 (1)	SP	2.00	06/09/2019 14:35:00	Dry	
WS09 (1)	SP	2.00	17/09/2019 15:30:00	Dry	
WS09 (1)	SP	2.00	08/10/2019 12:00:00	Dry	
WS09 (1)	SP	2.00	12/11/2019 13:35:00	0.85	
WS10 (1)	SP	5.00	23/08/2019 10:05:00	3.62	
WS10 (1)	SP	5.00	28/08/2019 12:40:00	2.97	
WS10 (1)	SP	5.00	29/08/2019 12:17:00	2.90	
WS10 (1)	SP	5.00	02/09/2019 12:17:00	2.90	
WS10 (1)	SP	5.00	03/09/2019 11:02:00	2.70	
WS10 (1)	SP	5.00	04/09/2019 13:07:00	2.60	
WS10 (1)	SP	5.00	06/09/2019 14:50:00	1.60	
WS10 (1)	SP	5.00	17/09/2019 15:05:00	2.00	
WS10 (1)	SP	5.00	08/10/2019 12:20:00	1.82	
WS10 (1)	SP	5.00	12/11/2019 14:30:00	0.25	

Notes: Type: SP - Standpipe, SPIE - Standpipe Piezometer



Project **SOUTH HUMBER BANK ENERGY CENTRE**  
 Project No. **A9020-19**  
 Carried out for **EP UK Investments Ltd.**

Table **D2**

# Gas Monitoring



Instrument Reference	Instrument Base, mbgl	Date Time dd/mm/yyyy hh:mm:ss	Air Temperature, oC	Barometric Pressure, mbar	Gas Differential Pressure, Pa	Gas Flow Rate, l/hr	Gas Concentrations						
							Carbon Dioxide, %vol	Carbon Monoxide, ppm	Hydrogen Sulphide, ppm	Methane, %LEL	Nitrogen, %vol	Oxygen, %vol	Methane, %vol
BH01 (S)	11.00	17/09/2019 09:17:00	8.0	1027	0.0	0.0	0.1	ND	ND	ND	79.8	20.1	ND
BH01 (S)	11.00	17/09/2019 09:22:00	8.0	1027	-0.1	0.0	0.1	ND	ND	ND	79.8	20.1	ND
BH01 (S)	11.00	09/10/2019 12:00:00	15.0	1003	0.0	-0.1	0.5	1.0	ND		79.1	20.4	ND
BH01 (S)	11.00	09/10/2019 12:05:00	15.0	1003	0.0	-0.1	0.1	1.0	ND		78.7	21.2	ND
BH01 (S)	11.00	12/11/2019 10:00:00	5.0	991			1.1				86.8	12.1	0.1
BH01 (S)	11.00	12/11/2019 10:05:00	5.0	991			1.1				86.8	18.2	0.1
BH02 (S)	8.00	17/09/2019 08:50:00	8.0	1027	-0.3	0.1	0.1	ND	ND	<0.1	79.7	20.3	<0.1
BH02 (S)	8.00	17/09/2019 08:54:30	8.0	1027	-0.3	0.1	0.1	ND	ND	<0.1	79.7	20.2	<0.1
BH02 (S)	8.00	09/10/2019 12:20:00	16.0	1003	-0.2	-0.1	0.1	ND	ND		79.0	21.0	ND
BH02 (S)	8.00	09/10/2019 12:25:00	16.0	1003	-0.2	-0.1	0.1	ND	ND		78.9	21.0	ND
BH02 (S)	8.00	12/11/2019 10:20:00	5.0	991		2.0	0.5				78.3	19.2	2.4
BH02 (S)	8.00	12/11/2019 10:25:00	5.0	991		0.3	0.3				78.1	20.5	1.1
BH04 (S)	3.90	17/09/2019 10:55:00	10.0	1028	0.1	-0.3	0.1	ND	ND	ND	78.7	21.3	ND
BH04 (S)	3.90	17/09/2019 11:00:00	10.0	1028	0.1	0.1	0.1	ND	ND	ND	78.7	21.2	ND
BH04 (S)	3.90	09/10/2019 12:45:00	11.0	1003	-0.1	-0.1	0.1	ND	ND		78.9	21.0	ND
BH04 (S)	3.90	09/10/2019 12:50:00	11.0	1003	-0.1	-0.1	0.1	ND	ND		78.8	21.1	ND
BH04 (S)	3.90	12/11/2019 10:30:00	6.0	991		0.1	0.1				78.5	21.3	ND
BH04 (S)	3.90	12/11/2019 10:35:00	6.0	991		0.1	0.3				78.8	20.8	ND
BH11 (S)	8.00	17/09/2019 12:41:00	12.0	1029	0.1	0.0	0.1	ND	ND	ND	78.6	21.4	ND
BH11 (S)	8.00	17/09/2019 12:46:00	12.0	1029	0.1	0.0	0.1	ND	ND	ND	78.5	21.4	ND
BH11 (S)	8.00	09/10/2019 13:10:00	16.0	1003	0.0	-0.1	0.2	ND	ND		80.1	19.7	ND
BH11 (S)	8.00	09/10/2019 13:15:00	16.0	1003	0.0	-0.1	0.1	ND	ND		79.7	20.2	ND
BH11 (S)	8.00	12/11/2019 10:40:00	7.0	991		0.1	0.4				78.1	21.3	0.2
BH11 (S)	8.00	12/11/2019 10:45:00	7.0	991		0.1	0.1				78.4	21.4	0.1
BH12 (S)	9.70	17/09/2019 14:30:00	18.0	1029	0.1	3.4	0.1	ND	ND	ND	78.5	21.5	ND
BH12 (S)	9.70	17/09/2019 14:35:00	18.0	1029	0.0	7.0	0.1	ND	ND	ND	78.2	21.5	ND
BH12 (S)	9.70	09/10/2019 13:40:00	16.0	1003	0.0	-0.1	0.3	ND	ND		80.3	19.3	0.1
BH12 (S)	9.70	09/10/2019 13:45:00	16.0	1003	0.0	-0.1	0.2	ND	ND		80.1	19.7	ND
BH12 (S)	9.70	12/11/2019 10:50:00	5.0	991			0.3				78.3	21.5	0.1
BH12 (S)	9.70	12/11/2019 11:00:00	5.0	991			0.2				78.0	21.2	1.0
BH13 (1)	7.00	17/09/2019 15:35:00	18.0	1030	-0.1	-0.7	0.1	ND	ND	ND	78.1	21.8	ND

Notes: ND - not detected

**Project** SOUTH HUMBER BANK ENERGY CENTRE  
**Project No.** A9020-19  
**Carried out for** EP UK Investments Ltd.

**Table** D3

# Gas Monitoring



Instrument Reference	Instrument Base, mbgl	Date Time dd/mm/yyyy hh:mm:ss	Air Temperature, oC	Barometric Pressure, mbar	Gas Differential Pressure, Pa	Gas Flow Rate, l/hr	Gas Concentrations						
							Carbon Dioxide, %vol	Carbon Monoxide, ppm	Hydrogen Sulphide, ppm	Methane, %LEL	Nitrogen, %vol	Oxygen, %vol	Methane, %vol
BH13 (1)	7.00	17/09/2019 15:40:00	18.0	1030	-0.1	4.0	0.1	1.0	ND	ND	78.0	21.9	ND
BH13 (1)	7.00	09/10/2019 14:15:00	16.0	1003	-0.2	-0.1	0.1	ND	ND		79.4	20.5	ND
BH13 (1)	7.00	09/10/2019 14:20:00	16.0	1003	-0.2	-0.1	0.1	ND	ND		79.3	20.6	ND
BH13 (1)	7.00	12/11/2019 11:10:00	5.0	991			0.1				78.6	21.0	0.1
BH13 (1)	7.00	12/11/2019 11:15:00	5.0	991			0.7				79.0	20.3	ND
WS01 (1)	5.00	17/09/2019 09:50:00	9.0	1027	0.0	0.0	0.1	ND	ND	ND	79.5	20.4	ND
WS01 (1)	5.00	17/09/2019 09:55:00	10.0	1028	0.0	0.1	0.1	ND	ND	ND	79.4	20.5	ND
WS01 (1)	5.00	08/10/2019 10:00:00	12.0	1004	-0.1	-0.1	0.5	ND	ND		78.4	20.2	3.0
WS01 (1)	5.00	08/10/2019 10:05:00	12.0	1004	-0.2	-0.1	0.2	ND	ND		78.0	21.4	0.4
WS01 (1)	5.00	12/11/2019 11:20:00	5.0	991		0.0	0.1				78.4	21.4	0.1
WS02 (1)	5.00	17/09/2019 10:14:00	10.0	1028	0.0	2.4	0.3	2.0	ND	ND	78.9	20.9	ND
WS02 (1)	5.00	17/09/2019 10:19:00	10.0	1028	0.0	6.6	0.1	ND	ND	ND	78.9	21.0	ND
WS02 (1)	5.00	08/10/2019 10:15:00	11.0	1003	14.4	-0.1	0.1	1.0	ND		78.8	21.2	ND
WS02 (1)	5.00	08/10/2019 10:20:00	11.0	1003	0.0	-0.1	0.1	ND	ND		78.7	21.2	ND
WS02 (1)	5.00	12/11/2019 11:30:00	5.0	991		0.4	0.1				77.6	21.6	0.1
WS02 (1)	5.00	12/11/2019 11:35:00	5.0	991		0.1	1.2				78.3	20.4	0.1
WS03 (1)	5.00	17/09/2019 10:31:00	10.0	1028	0.0	0.1	0.1	ND	ND	ND	78.7	21.2	ND
WS03 (1)	5.00	17/09/2019 10:36:00	10.0	1028	0.0	0.2	0.1	ND	ND	ND	78.7	21.2	ND
WS03 (1)	5.00	08/10/2019 10:30:00	14.0	1003	10.3	-0.1	0.2	4.0	ND		79.2	20.7	ND
WS03 (1)	5.00	08/10/2019 10:40:00	14.0	1003	0.1	-0.1	0.1	1.0	ND		79.1	20.8	ND
WS03 (1)	5.00	12/11/2019 11:40:00	5.0	991		0.0	0.1				78.5	21.4	0.1
WS03 (1)	5.00	12/11/2019 11:45:00	5.0	991		0.0	0.5				78.4	21.0	ND
WS04 (1)	5.00	17/09/2019 12:05:00	12.0	1029	0.1	0.0	0.1	ND	ND	ND	78.7	21.1	ND
WS04 (1)	5.00	17/09/2019 12:10:00	12.0	1029	0.1	0.0	0.1	ND	ND	ND	78.8	21.2	ND
WS04 (1)	5.00	08/10/2019 10:50:00	13.0	1003	63.0	0.3	0.2	1.0	ND		77.0	20.6	2.7
WS04 (1)	5.00	08/10/2019 10:55:00	13.0	1003	0.6	0.3	0.1	1.0	ND		76.9	20.8	2.1
WS04 (1)	5.00	12/11/2019 11:50:00	5.0	991									
WS05 (1)	5.00	17/09/2019 11:16:00	11.0	1028	0.1	5.2	0.1	1.0	ND	ND	75.0	20.5	ND
WS05 (1)	5.00	17/09/2019 11:21:00	11.0	1028	0.1	10.2	0.4	ND	ND	ND	77.6	19.8	2.3
WS05 (1)	5.00	08/10/2019 11:10:00	13.0	1004	-0.1	-0.1	1.4	1.0	ND		75.2	18.4	10.5
WS05 (1)	5.00	08/10/2019 11:20:00	13.0	1004	-0.1	-0.1	0.8	1.0	ND		75.2	20.1	4.0

Notes: ND - not detected	Project Project No. A9020-19 Carried out for EP UK Investments Ltd.	SOUTH HUMBER BANK ENERGY CENTRE	Table <b>D3</b>
--------------------------	---------------------------------------------------------------------------	---------------------------------	--------------------

# Gas Monitoring



Instrument Reference	Instrument Base, mbgl	Date Time dd/mm/yyyy hh:mm:ss	Air Temperature, °C	Barometric Pressure, mbar	Gas Differential Pressure, Pa	Gas Flow Rate, l/hr	Gas Concentrations							
							Carbon Dioxide, %vol	Carbon Monoxide, ppm	Hydrogen Sulphide, ppm	Methane, %LEL	Nitrogen, %vol	Oxygen, %vol	Methane, %vol	
WS05 (1)	5.00	12/11/2019 11:55:00	6.0	991		0.1	0.1					78.5	21.4	0.1
WS05 (1)	5.00	12/11/2019 12:00:00	6.0	991		0.1	2.0					76.1	19.8	2.1
WS06 (1)	5.00	17/09/2019 14:10:00	18.0	1029	0.2	6.2	ND	ND	ND	ND		79.5	20.5	ND
WS06 (1)	5.00	17/09/2019 14:15:00	18.0	1029	0.3	11.3	ND	1.0	ND	ND		79.0	20.7	0.3
WS06 (1)	5.00	08/10/2019 11:30:00	16.0	997	11.4	-0.1	0.6	1.0	ND			79.4	19.1	3.3
WS06 (1)	5.00	08/10/2019 11:35:00	16.0	997	0.1	-0.1	0.1	1.0	ND			79.3	20.7	ND
WS06 (1)	5.00	12/11/2019 12:10:00	6.0	991		9.2	0.1					63.4	21.3	0.2
WS06 (1)	5.00	12/11/2019 12:15:00	6.0	991		7.0	2.9					70.1	13.5	13.4
WS07 (1)	5.00	17/09/2019 12:58:00	13.0	1029	-0.2	0.3	0.1	1.0	ND	ND		79.0	20.9	ND
WS07 (1)	5.00	17/09/2019 13:03:00	13.0	1029	-0.2	2.5	0.1	ND	ND	ND		79.0	21.0	ND
WS07 (1)	5.00	08/10/2019 11:40:00	16.0	1003	0.2	-0.1	0.2	1.0	ND			79.5	20.3	ND
WS07 (1)	5.00	08/10/2019 11:45:00	16.0	1003	0.1	-0.1	0.1	ND	ND			79.4	20.5	ND
WS07 (1)	5.00	12/11/2019 12:20:00	7.0	991		0.3	0.2					78.2	21.6	0.1
WS07 (1)	5.00	12/11/2019 12:25:00	7.0	991		0.3	0.5					78.0	21.4	0.1
WS09 (1)	2.00	17/09/2019 15:10:00	18.0	1029	0.0	0.0	0.1	ND	ND	ND		78.8	21.1	ND
WS09 (1)	2.00	17/09/2019 15:15:00	18.0	1030	0.0	0.0	1.2	ND	ND	ND		79.9	18.9	ND
WS09 (1)	2.00	08/10/2019 12:00:00	16.0	1003	0.1	-0.1	1.4	ND	ND			82.3	16.4	ND
WS09 (1)	2.00	08/10/2019 12:10:00	16.0	1003	0.1	-0.1	1.2	ND	ND			82.2	16.6	ND
WS09 (1)	2.00	12/11/2019 13:25:00	6.0	991		0.1	21.2					78.6	0.1	0.1
WS09 (1)	2.00	12/11/2019 13:30:00	6.0	991		0.1	21.3					78.6	0.1	0.1
WS10 (1)	5.00	17/09/2019 14:50:00	18.0	1029	31.4	3.5	ND	ND	ND	ND		78.0	21.9	ND
WS10 (1)	5.00	17/09/2019 14:55:00	18.0	1029	30.3	17.1	0.3	3.0	ND	ND		78.4	21.3	ND
WS10 (1)	5.00	08/10/2019 12:20:00	16.0	1003	19.9	-0.2	0.3	2.0	ND			79.2	20.5	ND
WS10 (1)	5.00	08/10/2019 12:30:00	16.0	1003	0.0	-0.2	0.1	1.0	ND			79.0	20.9	ND
WS10 (1)	5.00	12/11/2019 14:25:00	6.0	991		0.1	21.6					78.2	0.1	0.3
WS10 (1)	5.00	12/11/2019 14:30:00	6.0	991		0.1	21.6					78.5	0.1	0.1

Notes: ND - not detected

Project SOUTH HUMBER BANK ENERGY CENTRE  
 Project No. A9020-19  
 Carried out for EP UK Investments Ltd.

Table

**D3**



**APPENDIX E**  
**GEOTECHNICAL LABORATORY TEST RESULTS**

Index Properties – Summary of Results	INDX
Particle Size Distribution Analyses	PSD
Unconsolidated Undrained Triaxial Compression Tests – Summary of Results	UUSUM
One Dimensional Consolidation Test	OED
California Bearing Ratio	CBR
Dry Density Moisture Content Relationship	COMPL
Saturated Moisture Content	SMC
Uniaxial Compressive Strength	
Point Load Index Test	PLT
Test Report – Chemical Tests	EFS/202198 EFS/202301

# INDEX PROPERTIES - SUMMARY OF RESULTS

Hole No.	Sample			Soil Description	$\rho$	$\rho_d$	W	< 425 $\mu$ m sieve	W <sub>L</sub>	W <sub>P</sub>	I <sub>p</sub>	$\rho_s$	Remarks	
	No.	Depth (m)												type
		from	to											
					Mg/m <sup>3</sup>	%	%	%	%	%	Mg/m <sup>3</sup>			
BH01	20	4.00	4.45	UT	Soft greyish brown slightly sandy silty CLAY.			100 n	40 a	22	18	2.66-p		
BH01	55	18.00		D	Dark brown slightly sandy slightly gravelly CLAY.		19	90 n	31 a	14	17			
BH01	67	22.00	22.50	B	Light brown slightly sandy very gravelly silty CLAY.							2.66-g		
BH02	14	3.50		D	Dark brown slightly sandy CLAY.		46	100 n	54 a	23	31			
BH02	23	9.50	9.95	UT	Soft to firm dark brownish grey slightly sandy silty CLAY.			100 n	58 a	30	28	2.67-p		
BH02	32	14.00	14.45	D	Light brown slightly sandy slightly gravelly CLAY.		11	83 s	34 b	17	17			
BH02	47	26.00	26.50	B	Cream slightly sandy gravelly clayey SILT.							2.66-g		
BH03	21	9.50	9.95	D	Dark brownish grey organic SILT.		338		b	NP				
BH03	31	14.00	14.45	UT	Stiff greyish brown slightly sandy slightly gravelly CLAY.			90 n	24 a	13	11	2.66-p		
BH03	51	27.50	28.00	B	Cream silty GRAVEL with eight cobbles.							2.47-g		
BH04	13	2.00	2.45	UT	Stiff brown mottled grey slightly sandy CLAY.			100 n	49 a	23	26			
BH04	27	6.50		D	Greyish brown slightly sandy silty CLAY.		32	100 n	40 a	22	18			
BH04	35	9.00	9.45	UT	Soft organic dark grey CLAY.			100 n	43 a	22	21			
BH04	44	13.50	13.95	UT	Firm greyish brown slightly sandy slightly gravelly CLAY.			90 n	27 a	14	13	2.73-p		
BH04	69	25.00		D	CHALK composed of white silt.		24							
BH04	78	29.50		D	CHALK.		24							
BH05	8	3.00	3.45	UT	Soft brown CLAY.			100 n	39 a	22	17	2.70-p		
BH05	17	8.00	8.45	UT	Dark greyish brown clayey SAND.				b	NP		2.62-p		
BH05	26	14.00	14.45	UT	Firm brown slightly sandy slightly gravelly CLAY.			88 n	27 a	14	13			
BH05	39	23.00	23.50	B	Cream slightly sandy very gravelly silty CLAY.		20							
BH06	10	3.00	3.45	UT	Soft greyish brown slightly sandy silty CLAY.			100 n	41 a	21	20			
BH06	17	5.45	5.65	D	Brownish grey slightly sandy silty CLAY.		37	100 n	39 a	22	17			
BH07	14	2.50		D	Dark brownish grey slightly sandy silty CLAY.		43	100 n	43 a	20	23			
BH07	24	6.00	6.45	UT	Dark brown clayey SILT.				b	NP		2.66-p		
BH07	61	19.50	19.95	UT	Firm greyish brown slightly sandy slightly gravelly CLAY.			96 n	27 a	13	14			
BH08	15	3.00	3.45	UT	Soft greyish brown slightly sandy silty CLAY.			100 n	63 a	26	37	2.65-p		
BH08	21	5.00	5.45	UT	Soft greyish brown slightly sandy silty CLAY.			100 n	44 a	24	20			
BH08	27	7.00		D	Dark brownish grey slightly sandy silty CLAY.		81	100 n	99 a	45	54			
BH08	35	10.50	10.95	UT	Brown slightly gravelly SAND becoming soft to firm greyish brown slightly sandy slightly gravelly CLAY			51 s	24 a	14	10			
BH08	53	19.50	19.95	UT	Firm to stiff brown slightly sandy slightly gravelly CLAY.			98 n	29 a	13	16	2.68-p		
BH08	63	23.50		D	CHALK composed of cream silty gravel.		22							

General notes:

All above tests carried out to BS1377 : 1990 unless annotated otherwise. See Remarks for further details

Key :  $\rho$  bulk density, linear

W<sub>L</sub> Liquid limit

W<sub>P</sub> Plastic limit

<425 $\mu$ m preparation

$\rho_s$  particle density

$\rho_d$  dry density

a 4 point cone test

NP non - plastic

n from natural soil

-g = gas jar

w moisture content


b 1 point cone test

IP Plasticity Index

s sieved specimen

-p = small pyknometer

\* test carried out to BS EN ISO 17892

<b>QA Ref</b> SLR 1 Rev 2.93 Mar 17		Project No      A9020-19	Figure
		Project Name      SOUTH HUMBER BANK ENERGY CENTRE	<b>INDX</b>
The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2017 SOCOTEC UK Limited			Printed: 10/10/2019 08:47



# INDEX PROPERTIES - SUMMARY OF RESULTS

Hole No.	Sample			Soil Description	$\rho$	$\rho_d$	W	< 425 $\mu$ m sieve	W <sub>L</sub>	W <sub>P</sub>	I <sub>p</sub>	$\rho_s$	Remarks	
	No.	Depth (m)												type
		from	to											
					Mg/m <sup>3</sup>	%	%	%	%	%	Mg/m <sup>3</sup>			
BH09	16	8.00	8.45	UT	Soft dark grey organic CLAY.			100 n	50 a	24	26	2.65-p		
BH09	22	12.50	12.95	UT	Stiff greyish brown slightly sandy slightly gravelly CLAY. Gravel is chalk.			90 n	28 a	15	13			
BH09	40	25.50		D	CHALK composed of cream silty gravel.									
BH09	52	34.50		D	CHALK composed of cream silty gravel.			22						
BH10	11	4.00	4.45	UT	Soft greyish brown slightly sandy CLAY.			100 n	54 a	27	27			
BH10	16	7.00		D	Brownish grey slightly sandy CLAY.			54	100 n	56 a	33	23		
BH10	21	11.00	11.45	UT	Firm greyish brown slightly sandy slightly gravelly CLAY.			86 n	27 a	15	12			
BH10	26	14.50		D	Greyish brown slightly sandy slightly gravelly CLAY.			14	90 n	27 a	14	13		
BH10	42	26.00	26.50	B	Cream slightly sandy gravelly clayey SILT.			21						
BH11	7	2.00	2.45	UT	Firm to stiff brown slightly sandy CLAY.			100 n	64 a	31	33			
BH11	19	6.00	6.45	UT	Soft brownish grey slightly sandy slightly gravelly CLAY. Gravel contains shell fragments.			100 n	45 a	24	21	2.70-p		
BH11	25	9.00	9.45	UT	Firm to stiff greyish brown slightly sandy slightly gravelly CLAY.			92 n	25 a	15	10	2.68-p		
BH11	41	21.00	21.45	UT	Firm greyish brown slightly sandy slightly gravelly CLAY.			86 s	33 a	16	17			
BH11	46	24.50	24.95	D	CHALK composed of cream silty gravel.			24						
BH12	8	2.70		D	Dark brown slightly sandy slightly gravelly silty CLAY.			26	98 n	66 a	27	39		
BH12	13	5.00	5.45	UT	Soft greyish brown slightly sandy CLAY.			100 n	43 a	22	21			
BH12	16	7.00		D	Dark brownish grey slightly sandy silty CLAY.			43	100 n	49 a	27	22		
BH12	27	14.00	14.45	UT	Stiff dark brown slightly sandy slightly gravelly CLAY.			83 s	29 a	16	13			
BH12	54	31.50		D	CHALK composed of cream silty gravel.			24						
BH13	15	3.00	3.45	UT	Firm greyish brown slightly sandy silty CLAY.			100 n	40 a	24	16			
BH13	41	12.00	12.45	UT	Firm brown slightly sandy slightly gravelly CLAY.			97 n	34 a	19	15			
BH13	54	18.00	18.45	UT	Firm to stiff greyish brown slightly sandy slightly gravelly CLAY with localised softening. Gravel			86 s	33 a	17	16			
BH13	64	22.00		D	Dark brown slightly sandy slightly gravelly silty CLAY.			19	69 s	32 a	19	13		
BH13	68	23.50		D	Light brown silty GRAVEL.			21						
BH14	13	3.00	3.45	UT	Soft brownish grey slightly sandy silty CLAY.			100 n	41 a	23	18	2.66-p		
BH14	16	4.50		D	Dark brownish grey slightly sandy silty CLAY.			33	100 n	37 a	22	15		
BH14	31	14.00	14.45	UT	Firm brown slightly sandy CLAY.			100 s	29 a	15	14			
BH14	46	22.50		D	CHALK composed of cream silty gravel.			23						
BH14	48	24.50		D	CHALK composed of cream silty gravel.			23						
TP07	10	3.50		D	Dark brown slightly sandy CLAY.			40	100 n	46 a	25	21		
TP08	9	1.50		D	Dark brown slightly sandy CLAY.			50	100 n	73 a	31	42		

General notes:

All above tests carried out to BS1377 : 1990 unless annotated otherwise. See Remarks for further details

Key :  $\rho$  bulk density, linear

W<sub>L</sub> Liquid limit

W<sub>P</sub> Plastic limit

<425 $\mu$ m preparation

$\rho_s$  particle density

$\rho_d$  dry density

a 4 point cone test

NP non - plastic

n from natural soil

-g = gas jar

w moisture content


b 1 point cone test

IP Plasticity Index

s sieved specimen

-p = small pyknometer

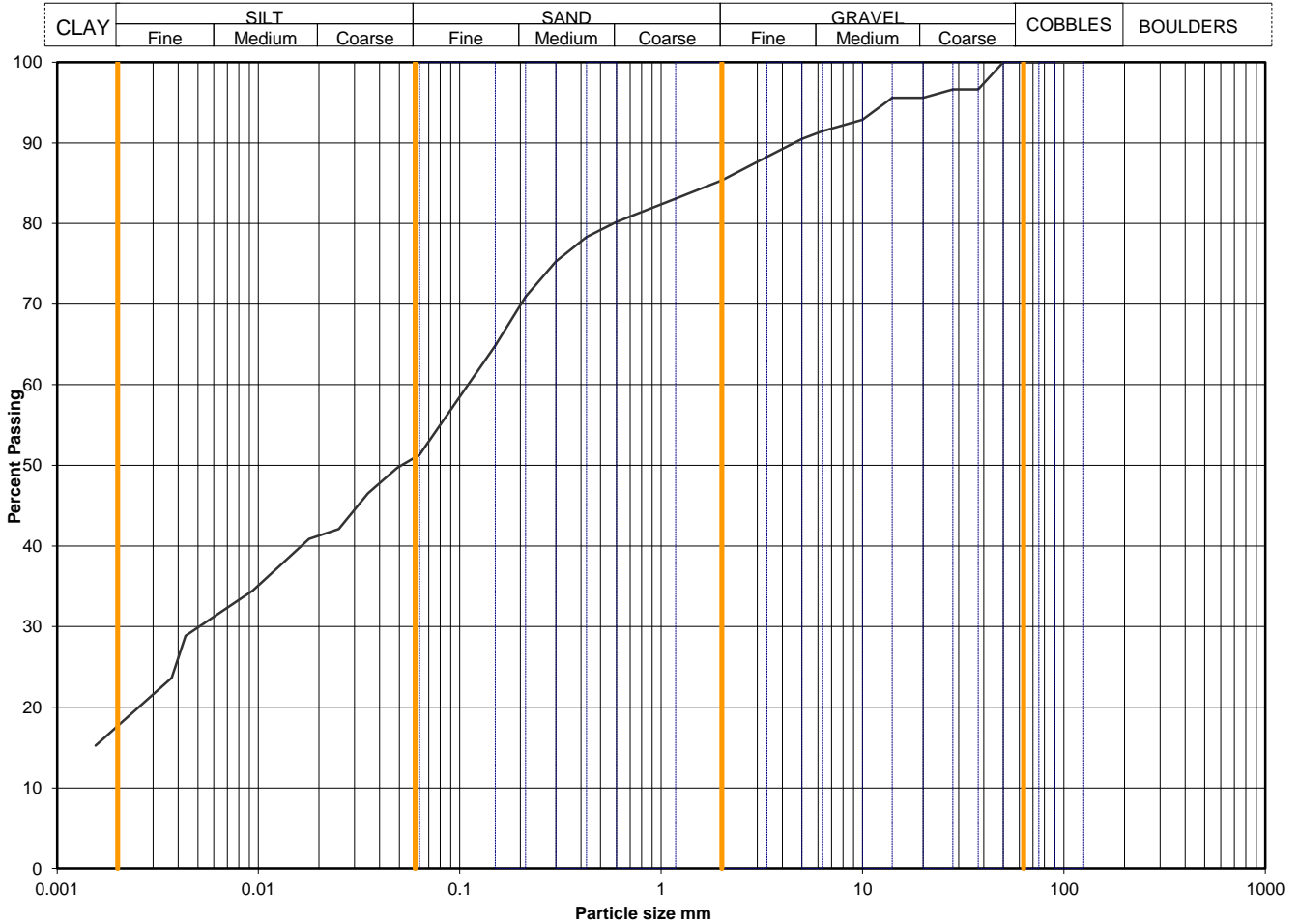
\* test carried out to BS EN ISO 17892

<b>QA Ref</b> SLR 1 Rev 2.93 Mar 17		Project No      A9020-19	Figure
		Project Name      SOUTH HUMBER BANK ENERGY CENTRE	<b>INDX</b>
The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2017 SOCOTEC UK Limited			Printed: 10/10/2019 08:47



# Particle Size Distribution Analysis

<b>Sample Details:</b>	SAMPLE ID:	Hole No	BH01
	A9020-1920190815100110	Sample Depth (m BGL)	13.50 - 14.00
		Sample Type and No	B44
		Specimen Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	51
90	100	0.0489	50
75	100	0.0350	46
63	100	0.0251	42
50	100	0.0178	41
37.5	97	0.0094	34
28	97	0.0044	29
20	96	0.0037	24
14	96	0.0016	15
10	93		
6.3	91		
5.0	90		
3.35	88		
2.00	85		
1.18	83		
0.600	80		
0.425	78		
0.300	75		
0.212	71		
0.150	65		
0.063	51		
		Particle density, Mg/m <sup>3</sup> 2.65 assumed	
		Dry mass of sample, kg 11.7	

Soil description	Dark brown slightly sandy slightly gravelly CLAY.		
Preparation / Pretreatment	Sieve: natural material    Hydro: as BS1377		
Remarks			
<b>Sample Proportions</b> <small>*&lt;60mm values to aid description only</small>	Cobbles / boulders	Whole	*<60mm
	Gravel	0	0
	Sand	15	15
	Silt	34	34
	Clay	18	18

<b>Uniformity Coefficient</b>	<b>D60 / D10</b>	Not applicable
-------------------------------	------------------	----------------

<b>Test Method</b>	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	9.5 hydrometer

QA Ref  
SLR 2,9  
Rev 2.21  
Jul 17



Project No      A9020-19  
Project Name    SOUTH HUMBER BANK ENERGY CENTRE

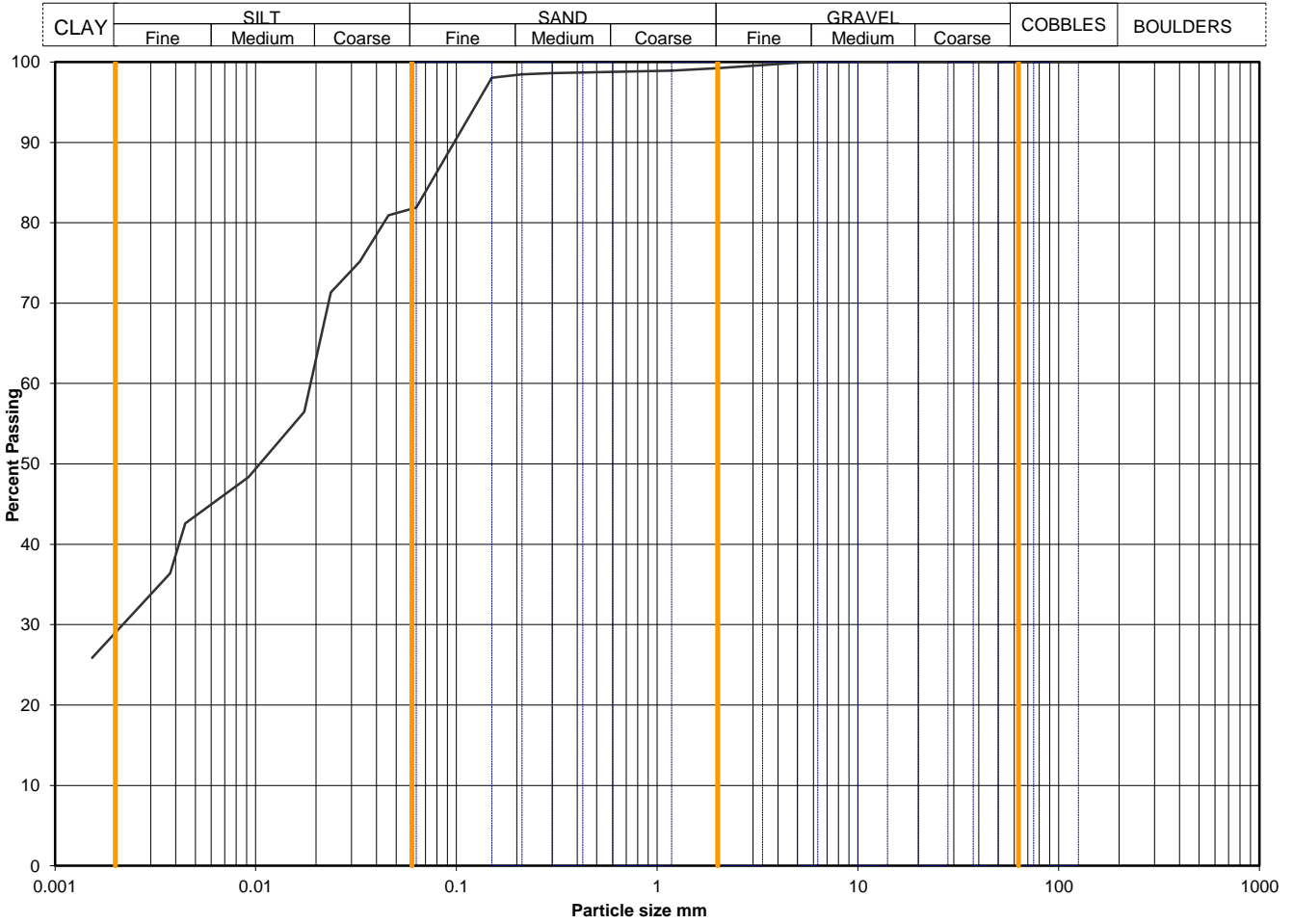
**Figure**  
**PSD**

The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2016 SOCOTEC UK Limited

Printed: 10/10/2019 08:55

# Particle Size Distribution Analysis

<b>Sample Details:</b>	SAMPLE ID:	Hole No	BH02
	A9020-1920190815104624	Sample Depth (m BGL)	4.00 - 4.50
		Sample Type and No	B16
		Specimen Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	82
90	100	0.0459	81
75	100	0.0330	75
63	100	0.0236	71
50	100	0.0174	56
37.5	100	0.0092	48
28	100	0.0045	43
20	100	0.0038	36
14	100	0.0015	26
10	100		
6.3	100		
5.0	100		
3.35	100		
2.00	99		
1.18	99		
0.600	99	Particle density, Mg/m <sup>3</sup>	
0.425	99	2.65	assumed
0.300	99	Dry mass of sample, kg	
0.212	98	7.8	
0.150	98		
0.063	82		

Soil description	Dark brown slightly sandy slightly gravelly CLAY.		
Preparation / Pretreatment	Sieve: natural material    Hydro: as BS1377		
Remarks			
<b>Sample Proportions</b> <small>*&lt;60mm values to aid description only</small>	Cobbles / boulders	Whole	*<60mm
	Gravel	0	0
	Sand	1	1
	Silt	17	17
	Clay	53	53

<b>Uniformity Coefficient</b>	<b>D60 / D10</b>	Not applicable
-------------------------------	------------------	----------------

<b>Test Method</b>	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	9.5 hydrometer

QA Ref  
SLR 2,9  
Rev 2.21  
Jul 17



Project No        A9020-19  
Project Name      SOUTH HUMBER BANK ENERGY CENTRE

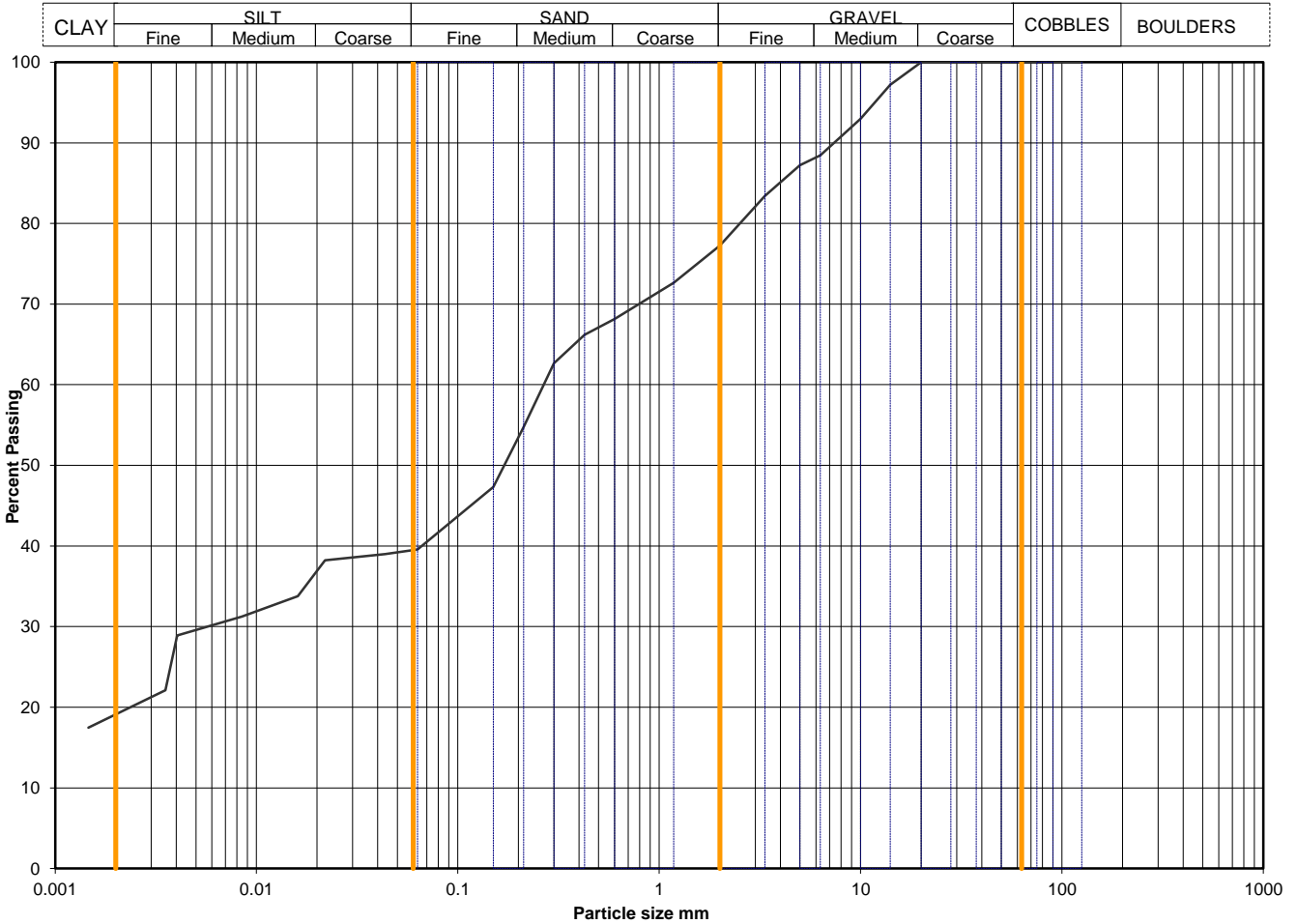
**Figure**  
**PSD**

The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2016 SOCOTEC UK Limited

Printed: 10/10/2019 08:55

# Particle Size Distribution Analysis

<b>Sample Details:</b>	SAMPLE ID:	Hole No	BH02
	A9020-1920190815105331	Sample Depth (m BGL)	26.00 - 26.50
		Sample Type and No	B47
		Specimen Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	40
90	100	0.0434	39
75	100	0.0308	39
63	100	0.0219	38
50	100	0.0160	34
37.5	100	0.0084	31
28	100	0.0040	29
20	100	0.0035	22
14	97	0.0015	17
10	93		
6.3	88		
5.0	87		
3.35	83		
2.00	77		
1.18	73		
0.600	68	Particle density, Mg/m <sup>3</sup>	
0.425	66	2.66	measured
0.300	63	Dry mass of sample, kg	
0.212	55	8.2	
0.150	47		
0.063	40		

Soil description	Cream slightly sandy gravelly clayey SILT.		
Preparation / Pretreatment	Sieve: natural material    Hydro: as BS1377		
Remarks			
<b>Sample Proportions</b> <small>*&lt;60mm values to aid description only</small>	Cobbles / boulders	Whole	*<60mm
	Gravel	0	0
	Sand	23	23
	Silt	38	38
	Clay	21	21

<b>Uniformity Coefficient</b>	<b>D60 / D10</b>	Not applicable
-------------------------------	------------------	----------------

<b>Test Method</b>	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	9.5 hydrometer

QA Ref  
SLR 2,9  
Rev 2.21  
Jul 17



Project No      A9020-19  
Project Name    SOUTH HUMBER BANK ENERGY CENTRE

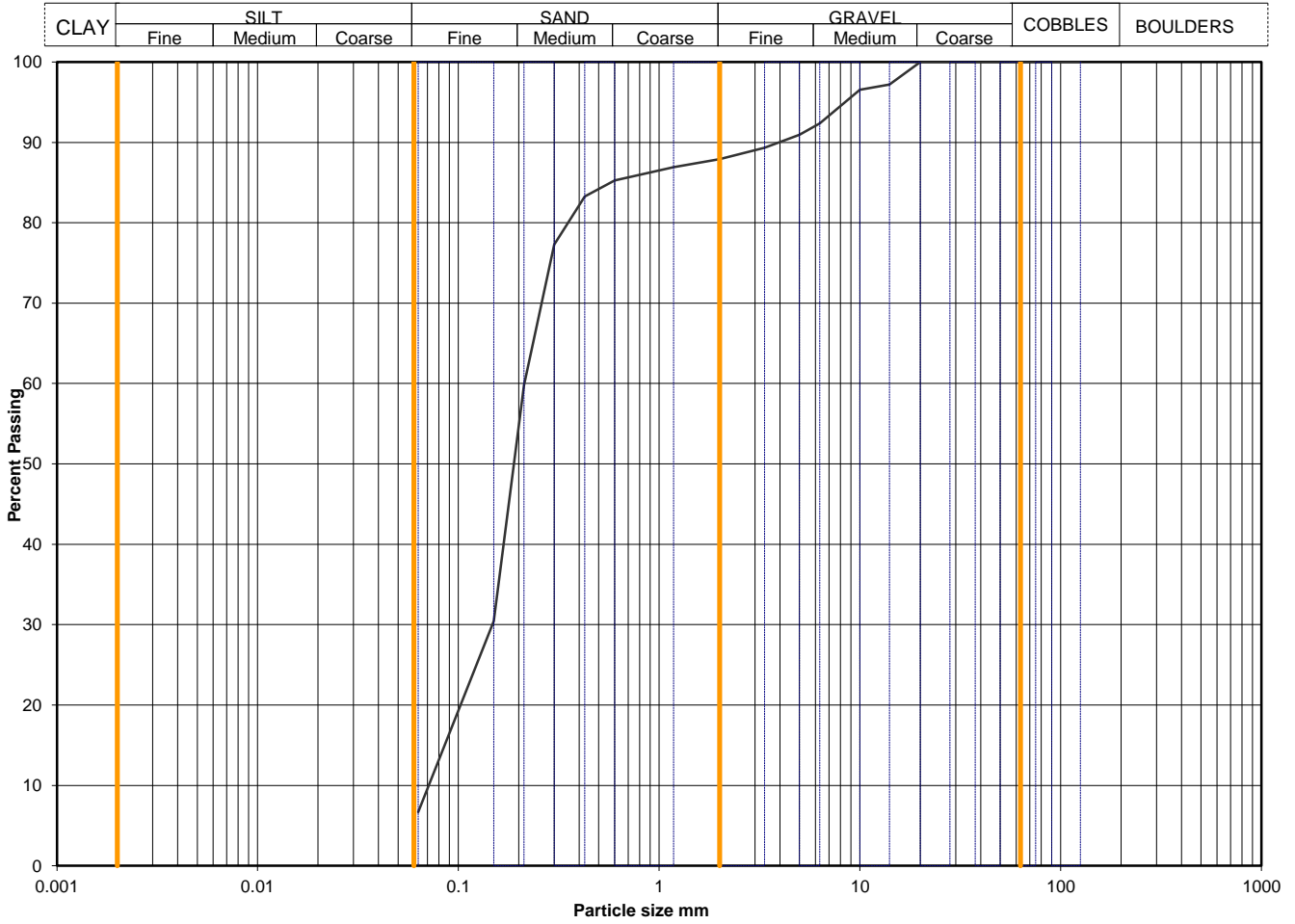
**Figure**  
**PSD**

The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2016 SOCOTEC UK Limited

Printed: 10/10/2019 08:55

# Particle Size Distribution Analysis

<b>Sample Details:</b>	SAMPLE ID:	Hole No	BH05
	A9020-1920190829110218	Sample Depth (m BGL)	18.50 - 19.00
		Sample Type and No	B33
		Specimen Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	97		
10	97		
6.3	92		
5.0	91		
3.35	89		
2.00	88		
1.18	87		
0.600	85		
0.425	83		
0.300	77		
0.212	60		
0.150	30		
0.063	7		
		Dry mass of sample, kg	
		4.4	

Soil description	Dark brown gravelly clayey SAND.		
Preparation / Pretreatment	Sieve: pre dried,		
Remarks			
<b>Sample Proportions</b> <small>*&lt;math&gt; &lt; 60\text{mm}&lt;/math&gt; values to aid description only</small>	Cobbles / boulders	Whole	*<math> < 60\text{mm}</math>
	Gravel	0	0
	Sand	12	12
	Silt	81	81
	Clay	silt+clay =	7

<b>Uniformity Coefficient</b>	<b>D60 / D10</b>	3
-------------------------------	------------------	---

<b>Test Method</b>	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	none

QA Ref  
SLR 2,9  
Rev 2.21  
Jul 17



Project No A9020-19  
Project Name SOUTH HUMBER BANK ENERGY CENTRE

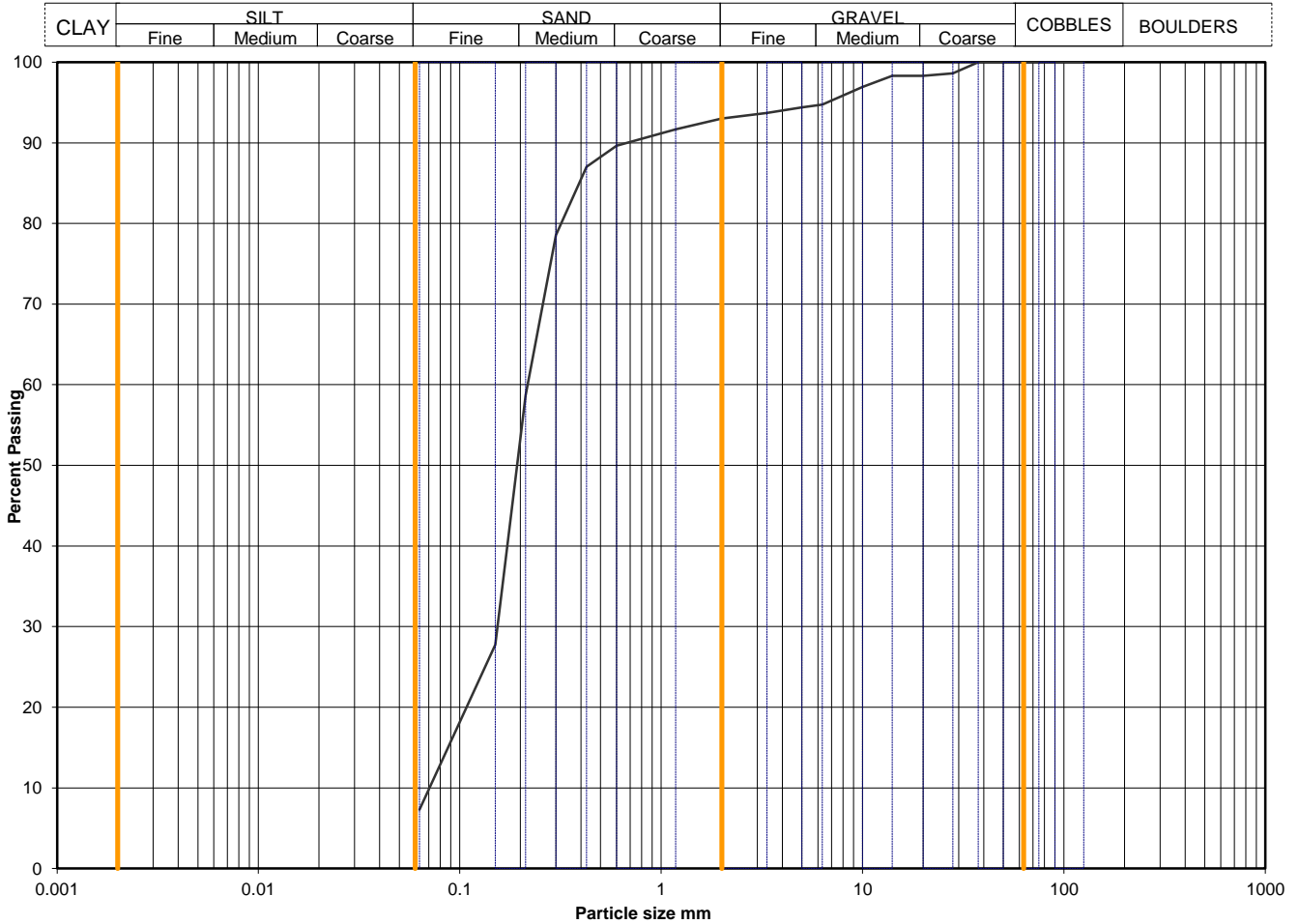
Figure  
**PSD**

The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2016 SOCOTEC UK Limited

Printed: 10/10/2019 08:55

# Particle Size Distribution Analysis

<b>Sample Details:</b>	SAMPLE ID:	Hole No	BH07
	A9020-1920190903103640	Sample Depth (m BGL)	16.50 - 17.00
		Sample Type and No	B55
		Specimen Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	99		
20	98		
14	98		
10	97		
6.3	95		
5.0	94		
3.35	94		
2.00	93		
1.18	92		
0.600	90		
0.425	87		
0.300	79		
0.212	59		
0.150	28		
0.063	7		
		Dry mass of sample, kg	
		4.7	

Soil description	Dark brown gravelly clayey SAND.		
Preparation / Pretreatment	Sieve: pre dried,		
Remarks			
<b>Sample Proportions</b> <small>*&lt;60mm values to aid description only</small>	Cobbles / boulders	Whole	*<60mm
	Gravel	0	0
	Sand	7	7
	Silt	86	86
	Clay	silt+clay =	7

<b>Uniformity Coefficient</b>	<b>D60 / D10</b>	3
-------------------------------	------------------	---

<b>Test Method</b>	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	none

QA Ref  
SLR 2,9  
Rev 2.21  
Jul 17



Project No A9020-19  
Project Name SOUTH HUMBER BANK ENERGY CENTRE

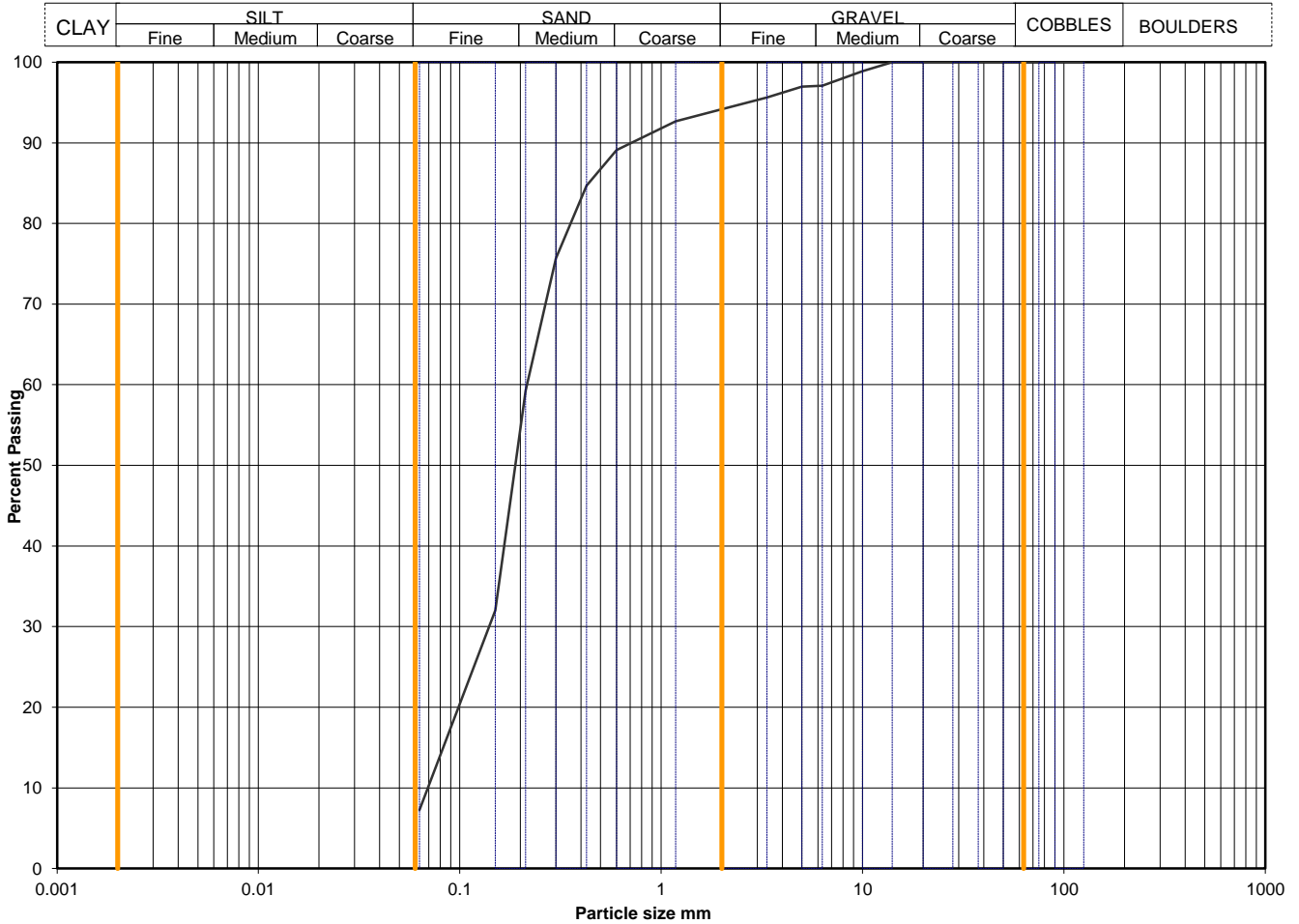
Figure  
**PSD**

The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2016 SOCOTEC UK Limited

Printed: 10/10/2019 08:55

# Particle Size Distribution Analysis

<b>Sample Details:</b>	SAMPLE ID:	Hole No	BH08
	A9020-1920190830091705	Sample Depth (m BGL)	16.50 - 17.00
		Sample Type and No	B48
		Specimen Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	99		
6.3	97		
5.0	97		
3.35	96		
2.00	94		
1.18	93		
0.600	89		
0.425	85		
0.300	76		
0.212	59		
0.150	32		
0.063	7		
		Dry mass of sample, kg	
		3.7	

Soil description	Dark brown gravelly silty SAND.		
Preparation / Pretreatment	Sieve: pre dried,		
Remarks			
<b>Sample Proportions</b> <small>*&lt;60mm values to aid description only</small>	Cobbles / boulders	Whole	*<60mm
	Gravel	0	0
	Sand	6	6
	Silt	87	87
	Clay	silt+clay =	
		7	7

<b>Uniformity Coefficient</b>	<b>D60 / D10</b>	3
-------------------------------	------------------	---

<b>Test Method</b>	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	none

QA Ref  
SLR 2,9  
Rev 2.21  
Jul 17



1157



Project No A9020-19  
Project Name SOUTH HUMBER BANK ENERGY CENTRE

Figure  
**PSD**

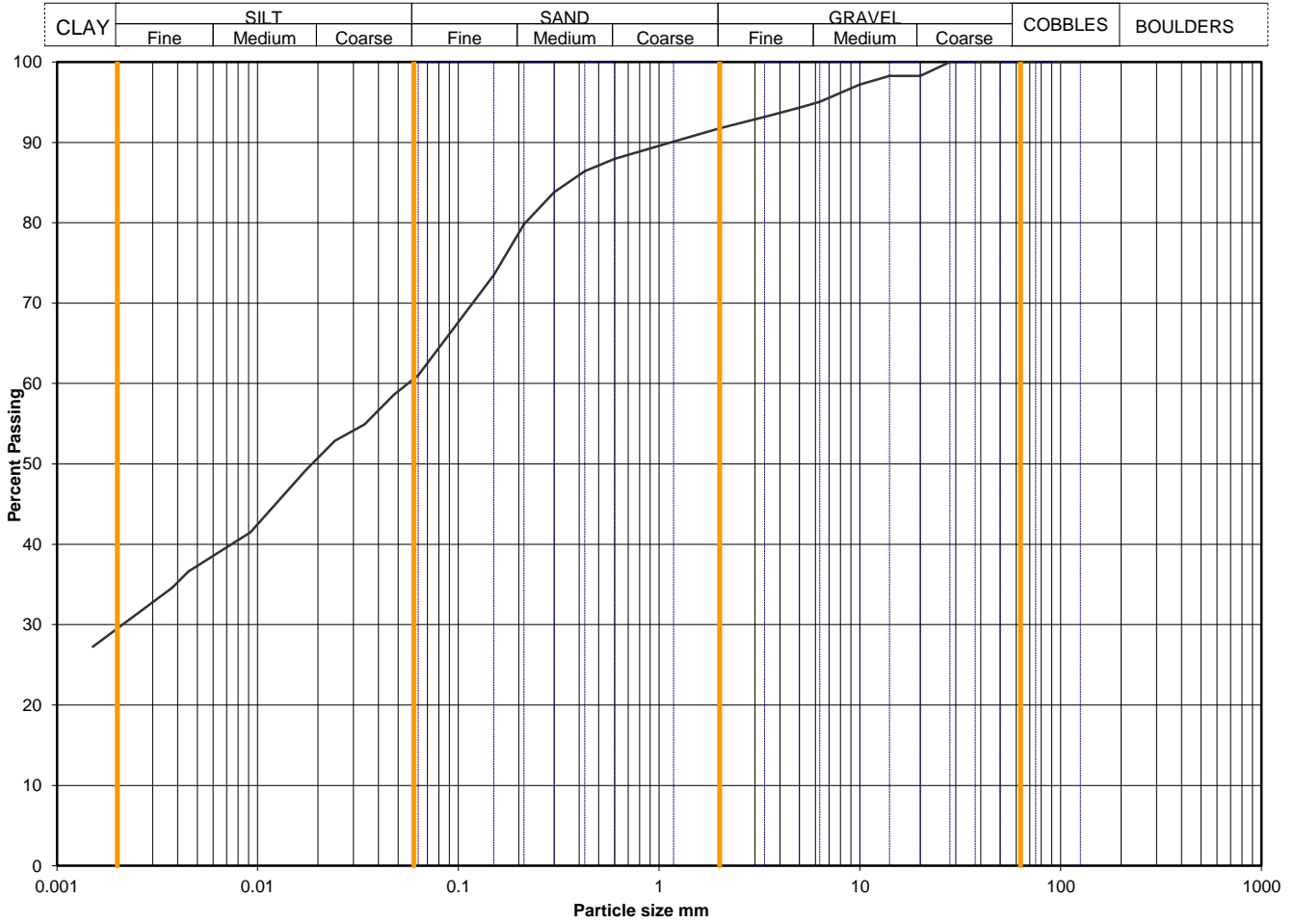
The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2016 SOCOTEC UK Limited

Printed: 10/10/2019 08:55



# Particle Size Distribution Analysis

<b>Sample Details:</b>	SAMPLE ID:	Hole No	BH09
	A9020-1920190830094955	Sample Depth (m BGL)	16.50 - 17.00
		Sample Type and No	B26
		Specimen Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	61
90	100	0.0476	59
75	100	0.0341	55
63	100	0.0243	53
50	100	0.0174	49
37.5	100	0.0092	41
28	100	0.0045	37
20	98	0.0038	35
14	98	0.0015	27
10	97		
6.3	95		
5.0	94		
3.35	93		
2.00	92		
1.18	90		
0.600	88	Particle density, Mg/m <sup>3</sup>	
0.425	86	2.65	assumed
0.300	84	Dry mass of sample, kg	
0.212	80	4.7	
0.150	74		
0.063	61		

Soil description	Dark brown slightly sandy slightly gravelly CLAY.		
Preparation / Pretreatment	Sieve: natural material    Hydro: as BS1377		
Remarks			
<b>Sample Proportions</b> <small>*&lt;60mm values to aid description only</small>	Cobbles / boulders	Whole	*<60mm
	Gravel	0	0
	Sand	8	8
	Silt	31	31
	Clay	32	32

<b>Uniformity Coefficient</b>	<b>D60 / D10</b>	Not applicable
-------------------------------	------------------	----------------

<b>Test Method</b>	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	9.5 hydrometer

QA Ref  
SLR 2,9  
Rev 2.21  
Jul 17



Project No      A9020-19  
Project Name    SOUTH HUMBER BANK ENERGY CENTRE

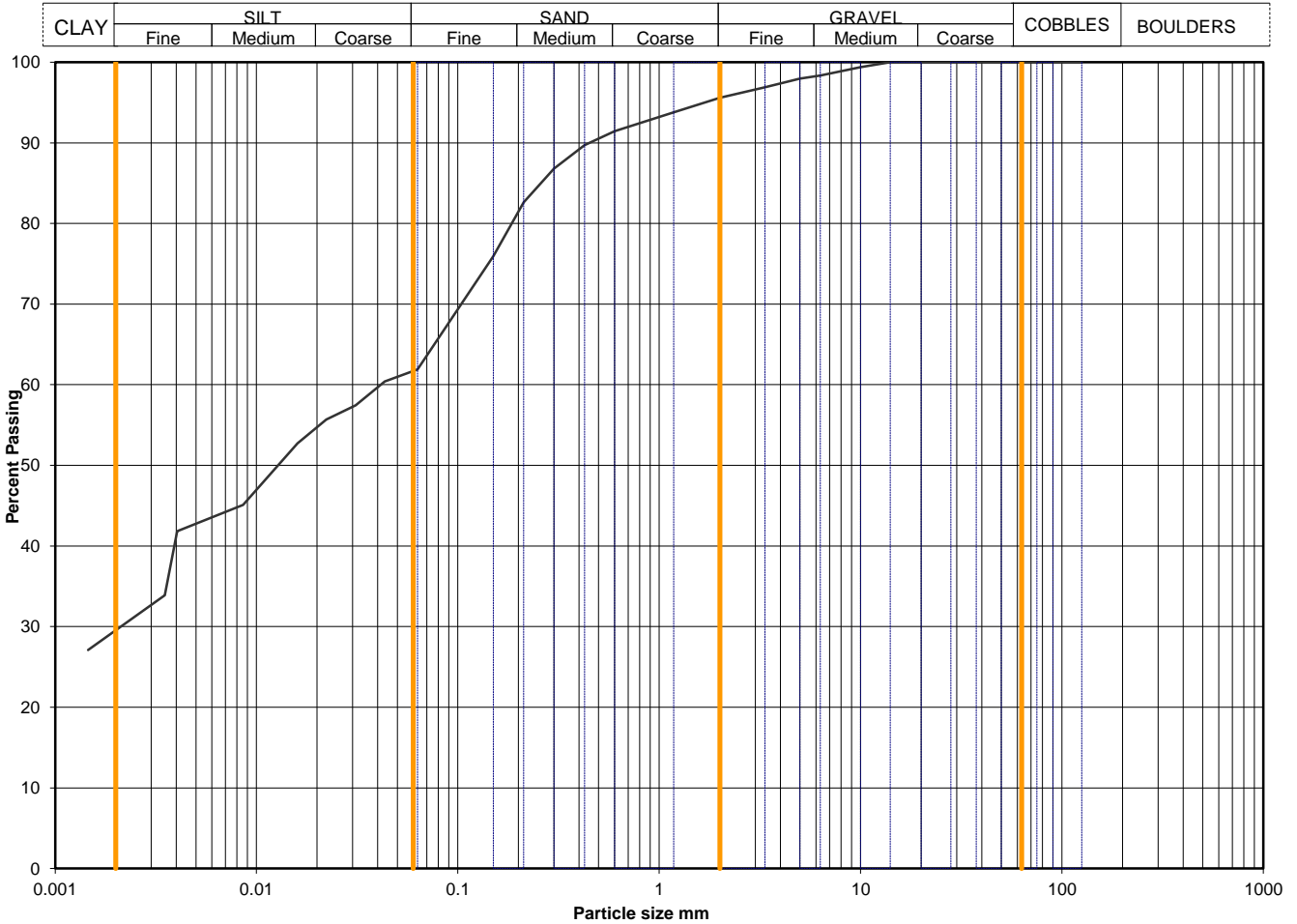
**Figure**  
**PSD**

The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2016 SOCOTEC UK Limited

Printed: 10/10/2019 08:55

# Particle Size Distribution Analysis

<b>Sample Details:</b>	SAMPLE ID:	Hole No	BH11
	A9020-1920190829101818	Sample Depth (m BGL)	13.00 - 13.50
		Sample Type and No	B32
		Specimen Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	62
90	100	0.0433	60
75	100	0.0311	57
63	100	0.0222	56
50	100	0.0160	53
37.5	100	0.0086	45
28	100	0.0040	42
20	100	0.0035	34
14	100	0.0015	27
10	99		
6.3	98		
5.0	98		
3.35	97		
2.00	96		
1.18	94		
0.600	91		
0.425	90		
0.300	87		
0.212	83		
0.150	76		
0.063	62		
		Particle density, Mg/m <sup>3</sup> 2.65 assumed	
		Dry mass of sample, kg 3.8	

Soil description	Dark brown slightly gravelly slightly sandy CLAY.		
Preparation / Pretreatment	Sieve: natural material Hydro: as BS1377		
Remarks			
<b>Sample Proportions</b> <small>*&lt;60mm values to aid description only</small>	Cobbles / boulders Gravel Sand Silt Clay	Whole	*<60mm
		0	0
		4	4
		34	34
		32	32
		30	30

<b>Uniformity Coefficient</b>	<b>D60 / D10</b>	Not applicable
-------------------------------	------------------	----------------

<b>Test Method</b>	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	9.5 hydrometer

QA Ref  
SLR 2,9  
Rev 2.21  
Jul 17



Project No A9020-19  
Project Name SOUTH HUMBER BANK ENERGY CENTRE

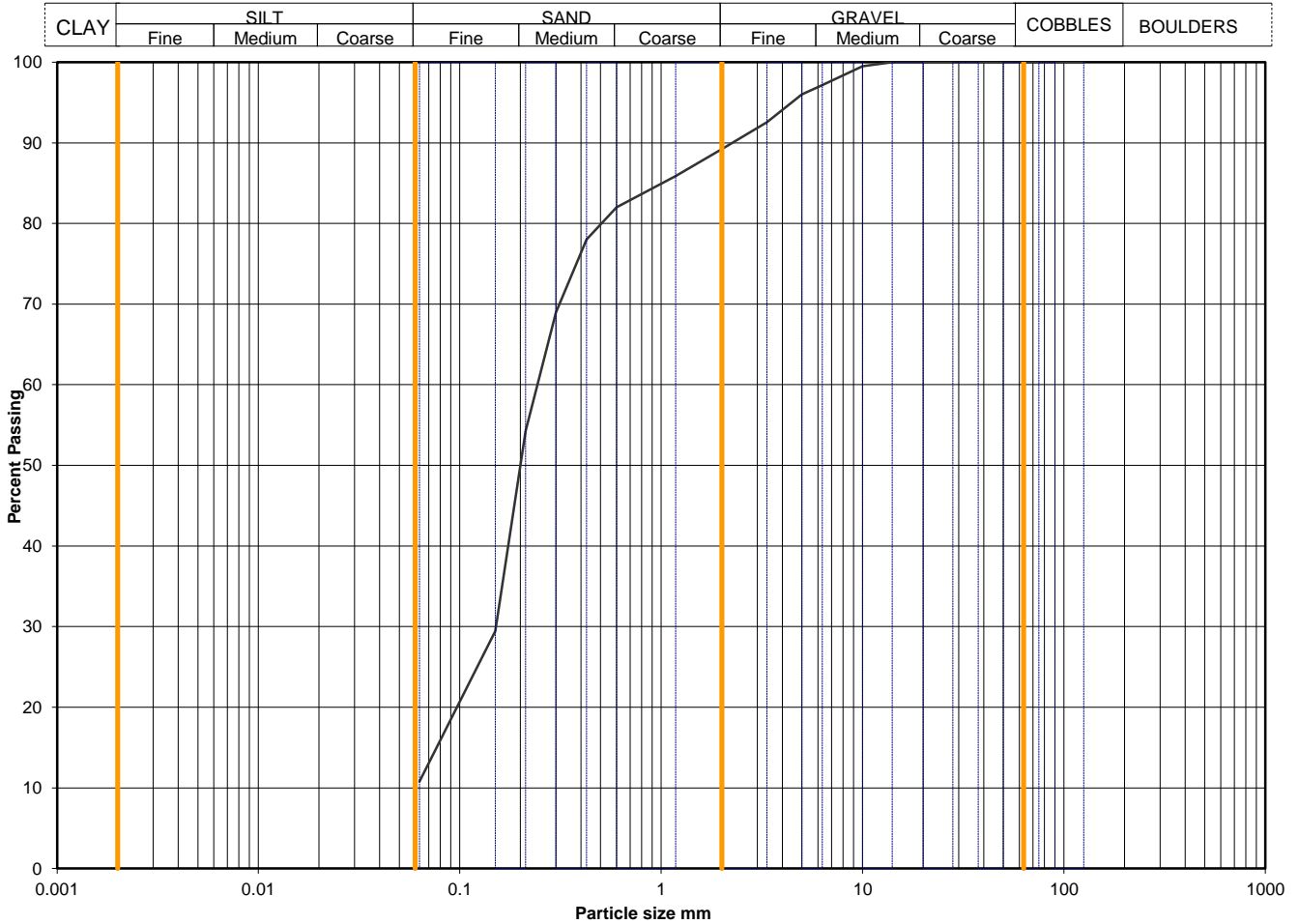
Figure  
**PSD**

The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2016 SOCOTEC UK Limited

Printed: 10/10/2019 08:55

# Particle Size Distribution Analysis

<b>Sample Details:</b>	SAMPLE ID:	Hole No	BH12
	A9020-1920190904095220	Sample Depth (m BGL)	18.50 - 19.00
		Sample Type and No	B37
		Specimen Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	97		
5.0	96		
3.35	93		
2.00	89		
1.18	86		
0.600	82		
0.425	78		
0.300	69		
0.212	54		
0.150	29		
0.063	11		
		Dry mass of sample, kg	
		3.4	

Soil description	Dark brown gravelly clayey SAND.		
Preparation / Pretreatment	Sieve: pre dried,		
Remarks			
<b>Sample Proportions</b> <small>*&lt;60mm values to aid description only</small>	Cobbles / boulders	Whole	*<60mm
	Gravel	0	0
	Sand	11	11
	Silt	silt+clay =	
	Clay	11	11

<b>Uniformity Coefficient</b>	<b>D60 / D10</b>	Not applicable
-------------------------------	------------------	----------------

<b>Test Method</b>	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	none

QA Ref  
SLR 2,9  
Rev 2.21  
Jul 17



1157



Project No A9020-19  
Project Name SOUTH HUMBER BANK ENERGY CENTRE

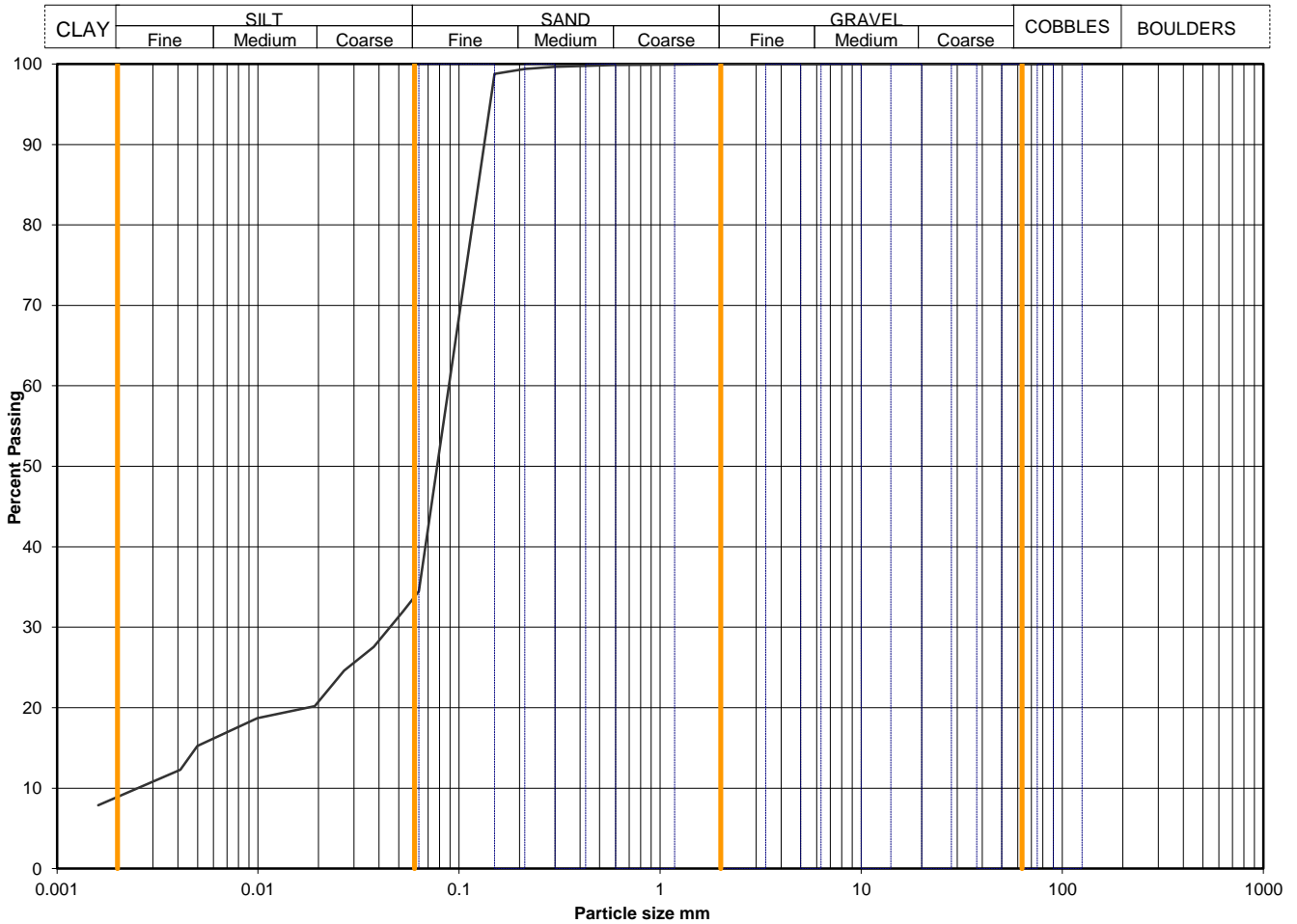
Figure  
**PSD**

The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2016 SOCOTEC UK Limited

Printed: 10/10/2019 08:55

# Particle Size Distribution Analysis

<b>Sample Details:</b>	SAMPLE ID:	Hole No	BH13
	A9020-1920190905111038	Sample Depth (m BGL)	4.50 - 5.00
		Sample Type and No	B20
		Specimen Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	34
90	100	0.0527	32
75	100	0.0376	28
63	100	0.0268	25
50	100	0.0191	20
37.5	100	0.0099	19
28	100	0.0050	15
20	100	0.0041	12
14	100	0.0016	8
10	100		
6.3	100		
5.0	100		
3.35	100		
2.00	100		
1.18	100		
0.600	100		
0.425	100		
0.300	100		
0.212	99		
0.150	99		
0.063	34		
		Particle density, Mg/m <sup>3</sup>	
		2.65	assumed
		Dry mass of sample, kg	
		9.1	

Soil description	Dark brownish grey very sandy silty CLAY.		
Preparation / Pretreatment	Sieve: natural material    Hydro: as BS1377		
Remarks			
<b>Sample Proportions</b> <small>*&lt;60mm values to aid description only</small>	Cobbles / boulders Gravel Sand Silt Clay	Whole	*<60mm
		0	0
		0	0
		66	66
		26	26
		9	9

<b>Uniformity Coefficient</b>	<b>D60 / D10</b>	35
-------------------------------	------------------	----

<b>Test Method</b>	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	9.5 hydrometer

QA Ref  
SLR 2.9  
Rev 2.21  
Jul 17



1157



Project No            A9020-19  
Project Name        SOUTH HUMBER BANK ENERGY CENTRE

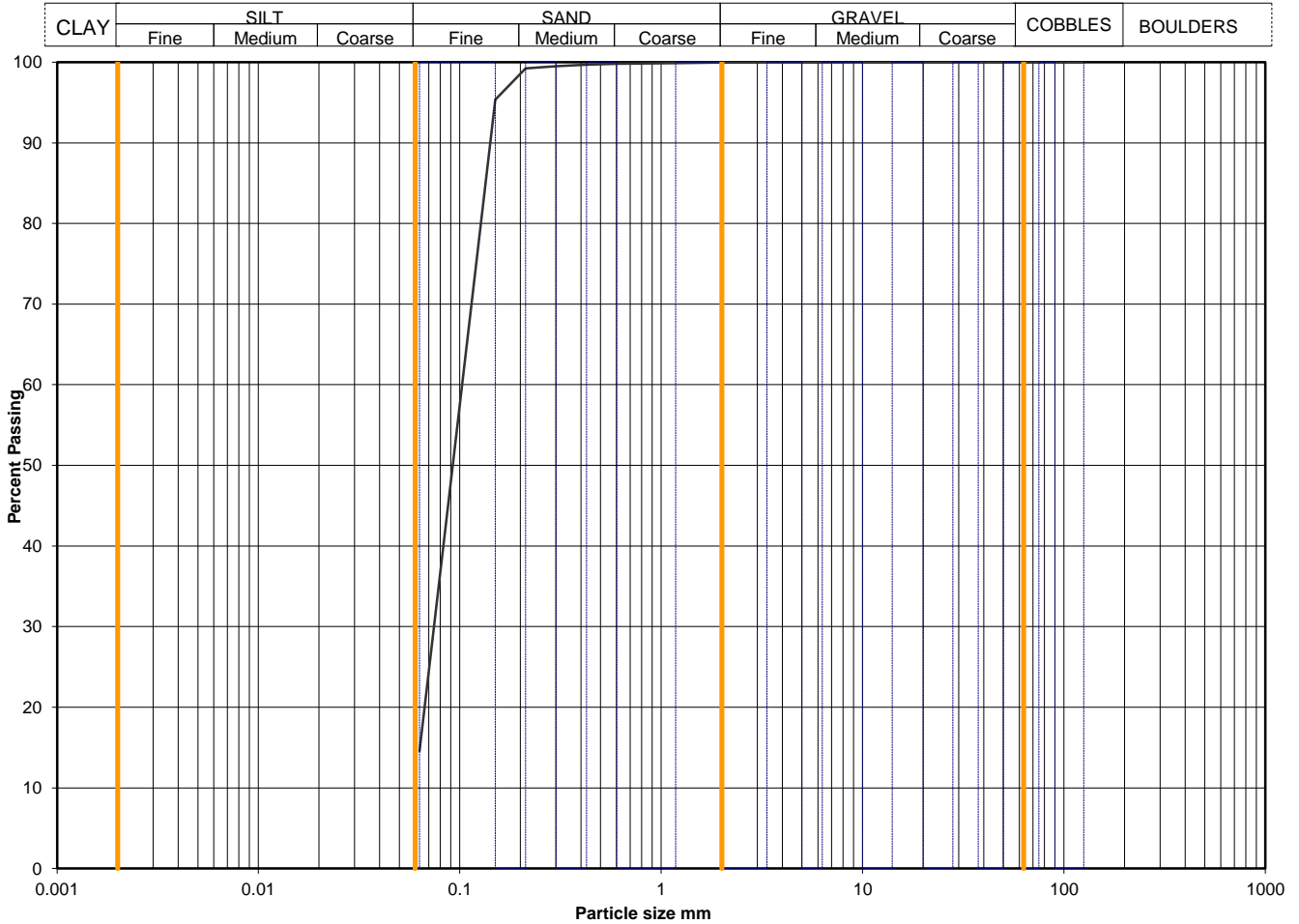
**Figure**  
**PSD**

The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2016 SOCOTEC UK Limited

Printed: 10/10/2019 08:55

# Particle Size Distribution Analysis

<b>Sample Details:</b>	SAMPLE ID:	Hole No	BH13
	A9020-1920190905111206	Sample Depth (m BGL)	7.00 - 7.50
		Sample Type and No	B29
		Specimen Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5.0	100		
3.35	100		
2.00	100		
1.18	100		
0.600	100		
0.425	100		
0.300	99		
0.212	99		
0.150	95		
0.063	15		
		Dry mass of sample, kg	
		6.7	

Soil description	Dark brownish grey silty SAND.		
Preparation / Pretreatment	Sieve: natural material		
Remarks			
<b>Sample Proportions</b> <small>*&lt;60mm values to aid description only</small>	Cobbles / boulders	Whole	*<60mm
	Gravel	0	0
	Sand	85	85
	Silt	silt+clay =	
	Clay	15	15

<b>Uniformity Coefficient</b>	<b>D60 / D10</b>	Not applicable
-------------------------------	------------------	----------------

<b>Test Method</b>	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	none

QA Ref  
SLR 2,9  
Rev 2.21  
Jul 17



Project No A9020-19  
Project Name SOUTH HUMBER BANK ENERGY CENTRE

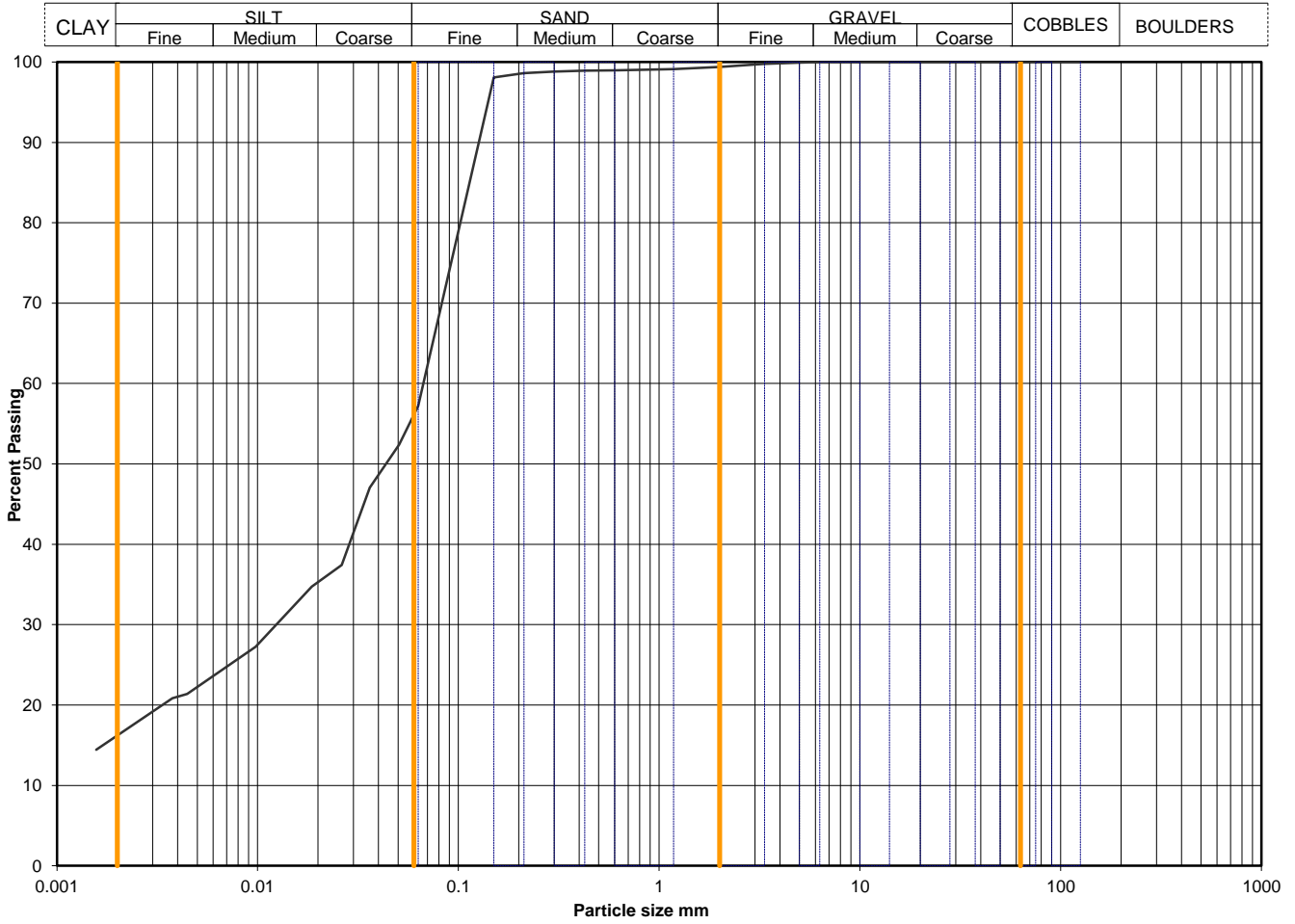
Figure  
**PSD**

The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2016 SOCOTEC UK Limited

Printed: 10/10/2019 08:55

# Particle Size Distribution Analysis

<b>Sample Details:</b>	SAMPLE ID:	Hole No	BH14
	A9020-1920190905105631	Sample Depth (m BGL)	5.00 - 5.50
		Sample Type and No	B17
		Specimen Ref	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	57
90	100	0.0506	52
75	100	0.0362	47
63	100	0.0262	37
50	100	0.0186	35
37.5	100	0.0098	27
28	100	0.0045	21
20	100	0.0038	21
14	100	0.0016	14
10	100		
6.3	100		
5.0	100		
3.35	100		
2.00	99		
1.18	99		
0.600	99	Particle density, Mg/m <sup>3</sup>	
0.425	99	2.65	assumed
0.300	99	Dry mass of sample, kg	
0.212	99	8.0	
0.150	98		
0.063	57		

Soil description	Dark brownish grey slightly gravelly sandy silty CLAY.		
Preparation / Pretreatment	Sieve: natural material    Hydro: as BS1377		
Remarks			
<b>Sample Proportions</b> <small>*&lt;60mm values to aid description only</small>	Cobbles / boulders	Whole	*<60mm
	Gravel	0	0
	Sand	1	1
	Silt	42	42
	Clay	16	16

<b>Uniformity Coefficient</b>	<b>D60 / D10</b>	Not applicable
-------------------------------	------------------	----------------

<b>Test Method</b>	BS 1377 : Part 2 : 1990	
	Sieving	9.2 wet sieve
	Sedimentation	9.5 hydrometer

QA Ref  
SLR 2.9  
Rev 2.21  
Jul 17



Project No        A9020-19  
Project Name      SOUTH HUMBER BANK ENERGY CENTRE

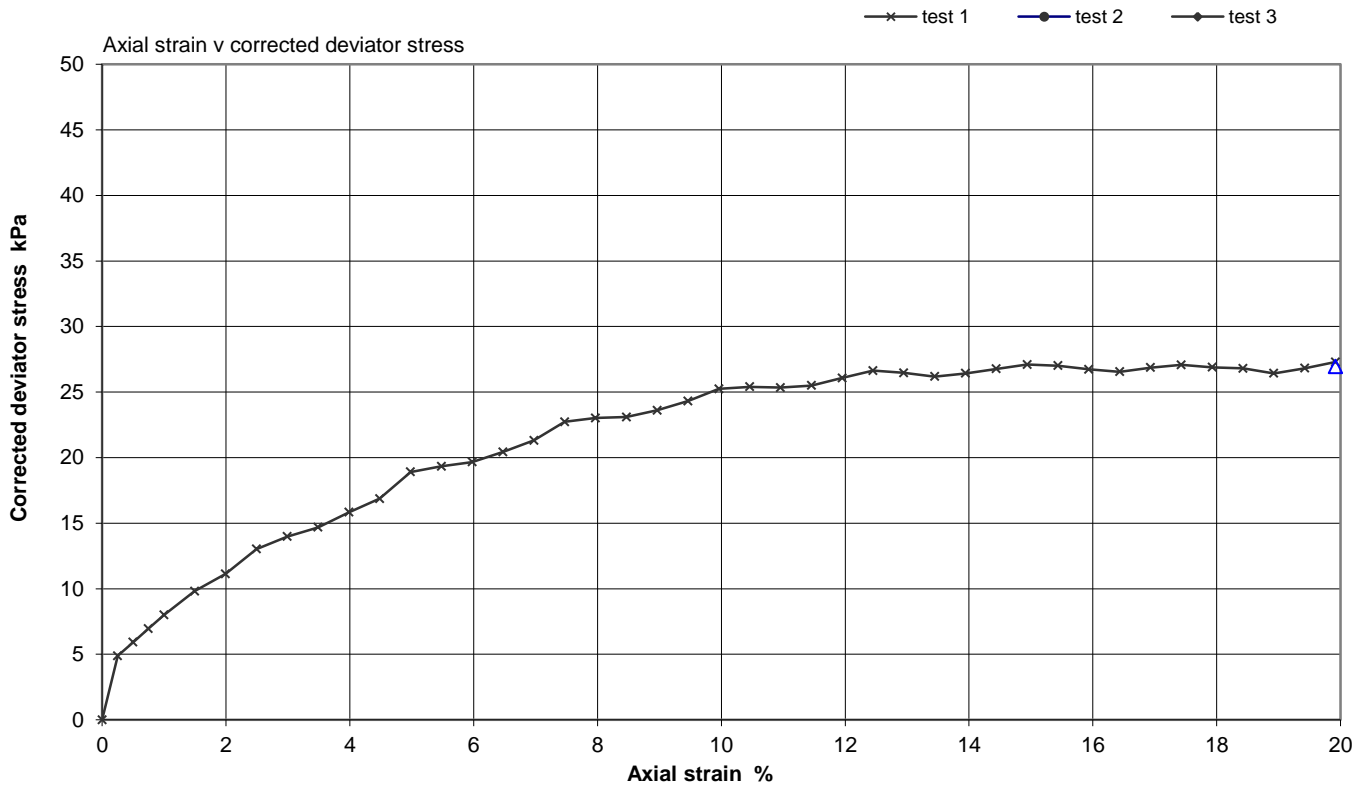
**Figure**  
**PSD**

The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2016 SOCOTEC UK Limited

Printed: 10/10/2019 08:55

# UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST

Sample Details:	SAMPLE ID:	Hole No	BH01
	A9020-1920190815095751	Sample Depth (m BGL)	6.50 - 6.95
		Sample Type and No	UT26
		Specimen Ref	



Type of test	BS 1377: Part 7 : 1990, clause 8, single stage
Soil description	Soft to firm brownish grey silty CLAY.
Initial Condition	UNDISTURBED
Preparation	As BS 1377 Part 1

Test No.	1		
Initial Length	200.8		mm
Dimensions Diameter	103.2		mm
Bulk density	1.87		Mg/m3
Dry density	1.35		Mg/m3
Moisture Content	38		%
Rate of strain	2.00		% / minute
Membrane thickness	0.24		mm ( latex rubber )
<b>At failure (Δ)</b>			
Cell pressure	130		kPa
Axial strain	19.9		%
Deviator stress ( $\sigma_1 - \sigma_3$ )	27		kPa corrected
CU $\sigma_1 - \sigma_3$ )	14		kPa
Mode of failure	Plastic		

Deviator stress corrected for area change and membrane, as BS 1377

Report page 1 of 1

QA Ref  
SLD 7, 8  
Rev 2.7  
Jul 16



Project No A9020-19  
Project Name SOUTH HUMBER BANK ENERGY CENTRE

Figure  
**UTXL**

The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2016 SOCOTEC UK Limited

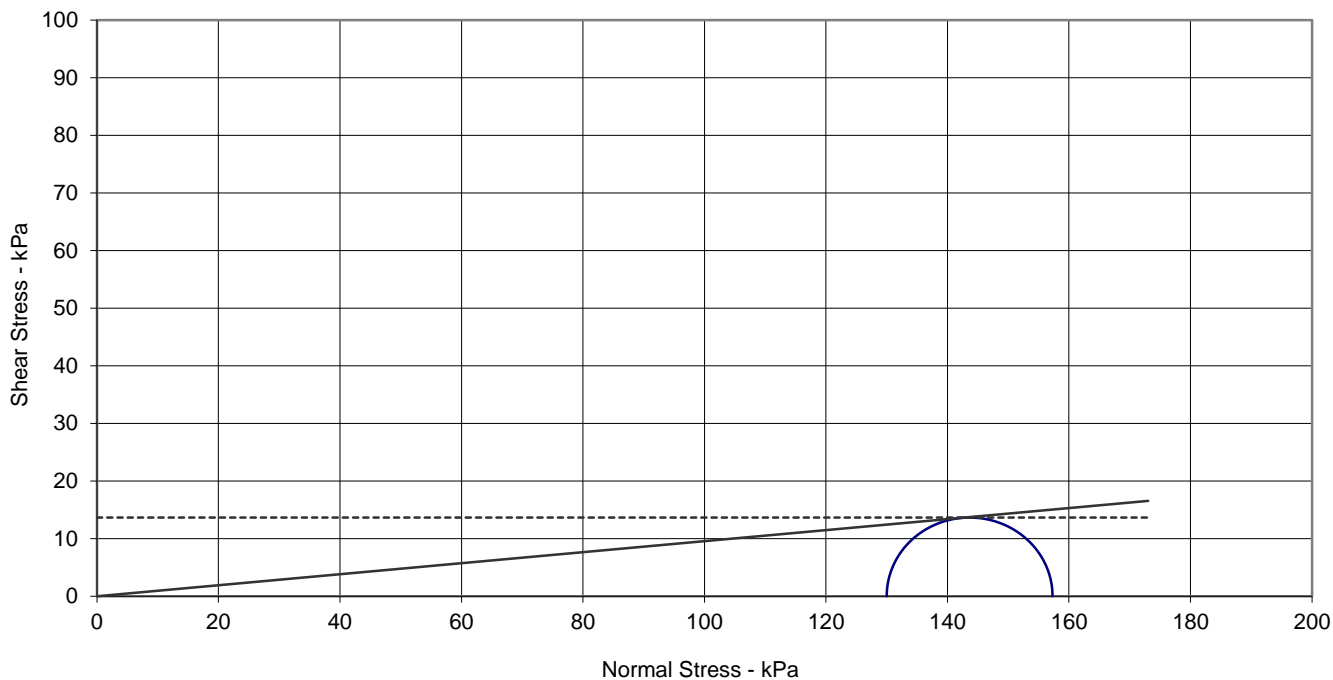
Printed: 27/09/2019 14:32

# UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST

Sample Details:	SAMPLE ID:	Hole No	BH01
	A9020-1920190815095751	Sample Depth (m BGL)	6.50 - 6.95
		Sample Type and No	UT26
		Specimen Ref	

## MOHR CIRCLES

— test 1    - - - - - test 2    - · - · - test 3    — envelope    - - - - - phi = 0



Conditions at failure / end of stage

Test No.	1		
Cell Pressure	130		kPa
Deviator stress	27		kPa

Envelope based on linear regression

angle of shearing resistance,  $\phi_u$       5½      degrees  
 cohesion,  $c_u$                               0      kPa



Based on  $\phi = 0$ ,

average cohesion,  $c_u$                       14      kPa  
 ( average undrained shear strength )

Parameters derived from

BS 1377: Part 7 : 1990, clause 8, single stage

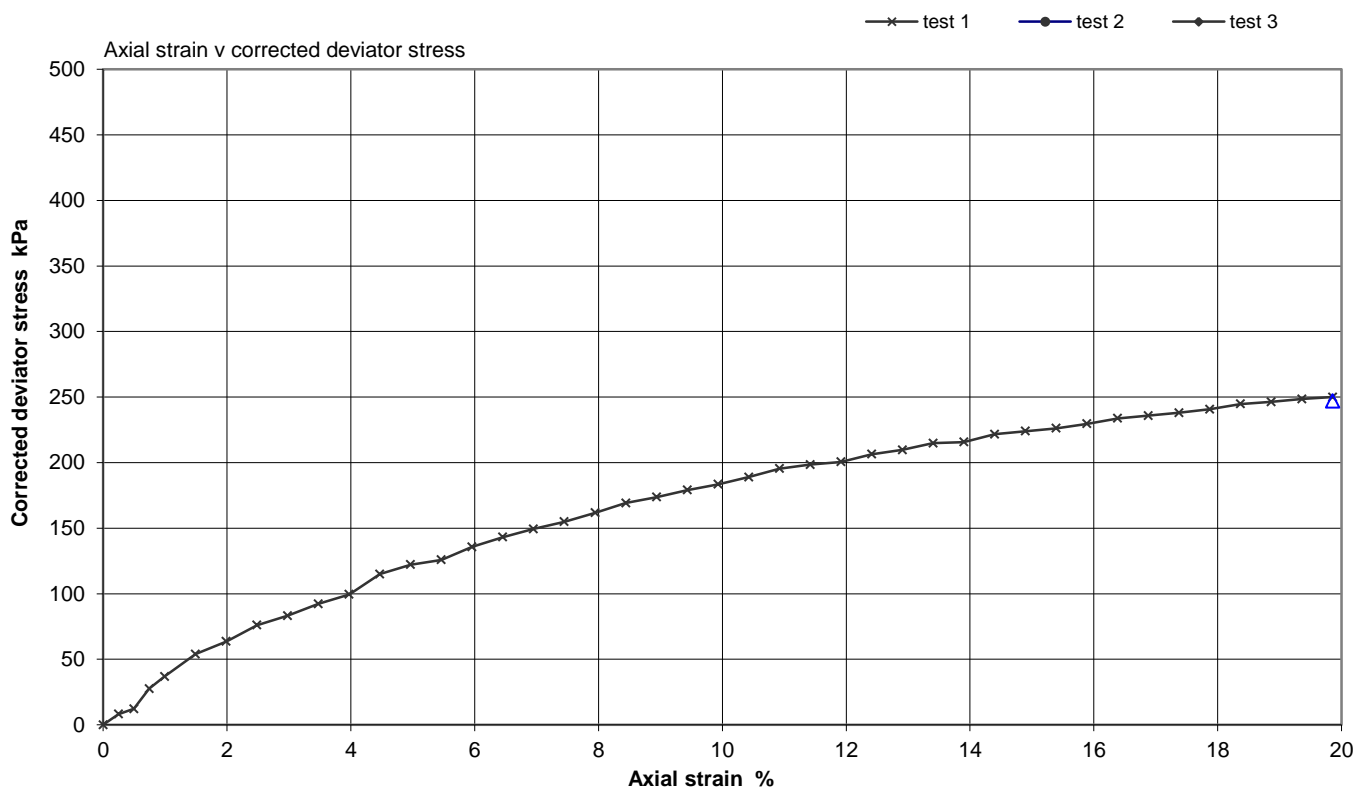
The data produced on this sheet is not covered by BS 1377 nor by UKAS accreditation to BS 1377

QA Ref SLD 7, 8 Rev 2.7 Jul 16	 1157	 <b>SOCOTEC</b>	Project No      A9020-19 Project Name    SOUTH HUMBER BANK ENERGY CENTRE	Figure <h3>MOHR</h3>
			The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2016 SOCOTEC UK Limited	



# UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST

Sample Details:	SAMPLE ID:	Hole No	BH03
	A9020-1920190819090652	Sample Depth (m BGL)	14.00 - 14.45
		Sample Type and No	UT31
		Specimen Ref	



Type of test	BS 1377: Part 7 : 1990, clause 8, single stage
Soil description	Stiff greyish brown slightly sandy slightly gravelly CLAY.
Initial Condition	UNDISTURBED
Preparation	As BS 1377 Part 1

Test No.	1		
Initial Length	201.4		mm
Dimensions Diameter	103.7		mm
Bulk density	2.24		Mg/m <sup>3</sup>
Dry density	1.98		Mg/m <sup>3</sup>
Moisture Content	13		%
Rate of strain	2.00		% / minute
Membrane thickness	0.24		mm ( latex rubber )
<b>At failure (Δ)</b>			
Cell pressure	280		kPa
Axial strain	19.9		%
Deviator stress ( $\sigma_1 - \sigma_3$ )	250		kPa corrected
CU $\sigma_1 - \sigma_3$ )	125		kPa
Mode of failure	Plastic		

Deviator stress corrected for area change and membrane, as BS 1377

Report page 1 of 1

QA Ref  
SLD 7, 8  
Rev 2.7  
Jul 16



Project No A9020-19  
Project Name SOUTH HUMBER BANK ENERGY CENTRE

Figure  
**UTXL**

The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2016 SOCOTEC UK Limited

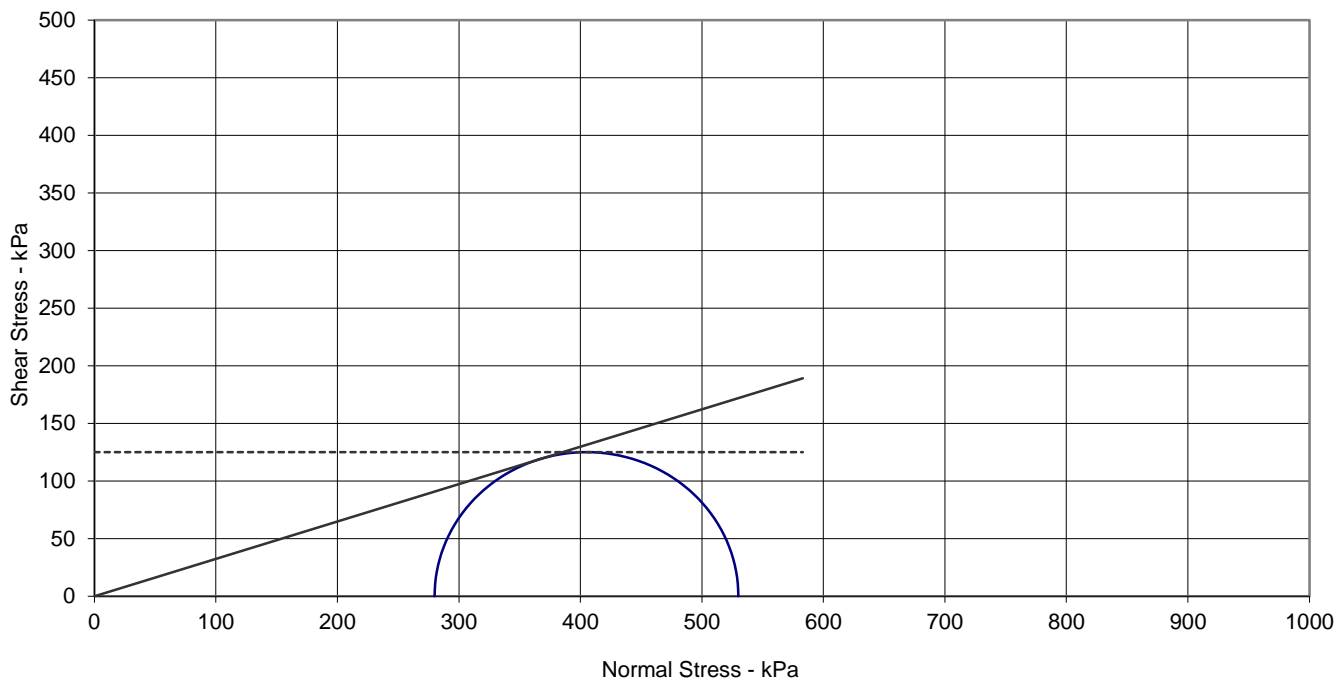
Printed: 27/09/2019 14:32

# UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST

Sample Details:	SAMPLE ID:	Hole No	BH03
	A9020-1920190819090652	Sample Depth (m BGL)	14.00 - 14.45
		Sample Type and No	UT31
		Specimen Ref	

## MOHR CIRCLES

— test 1    - - - - - test 2    - · - · - test 3    — envelope    - - - - - phi = 0



Conditions at failure / end of stage

Test No.	1		
Cell Pressure	280		kPa
Deviator stress	250		kPa

Envelope based on linear regression

angle of shearing resistance, $\phi_u$	18	degrees
cohesion, $c_u$	0	kPa

Based on  $\phi = 0$ ,

average cohesion, $c_u$	125	kPa
( average undrained shear strength )		

Parameters derived from

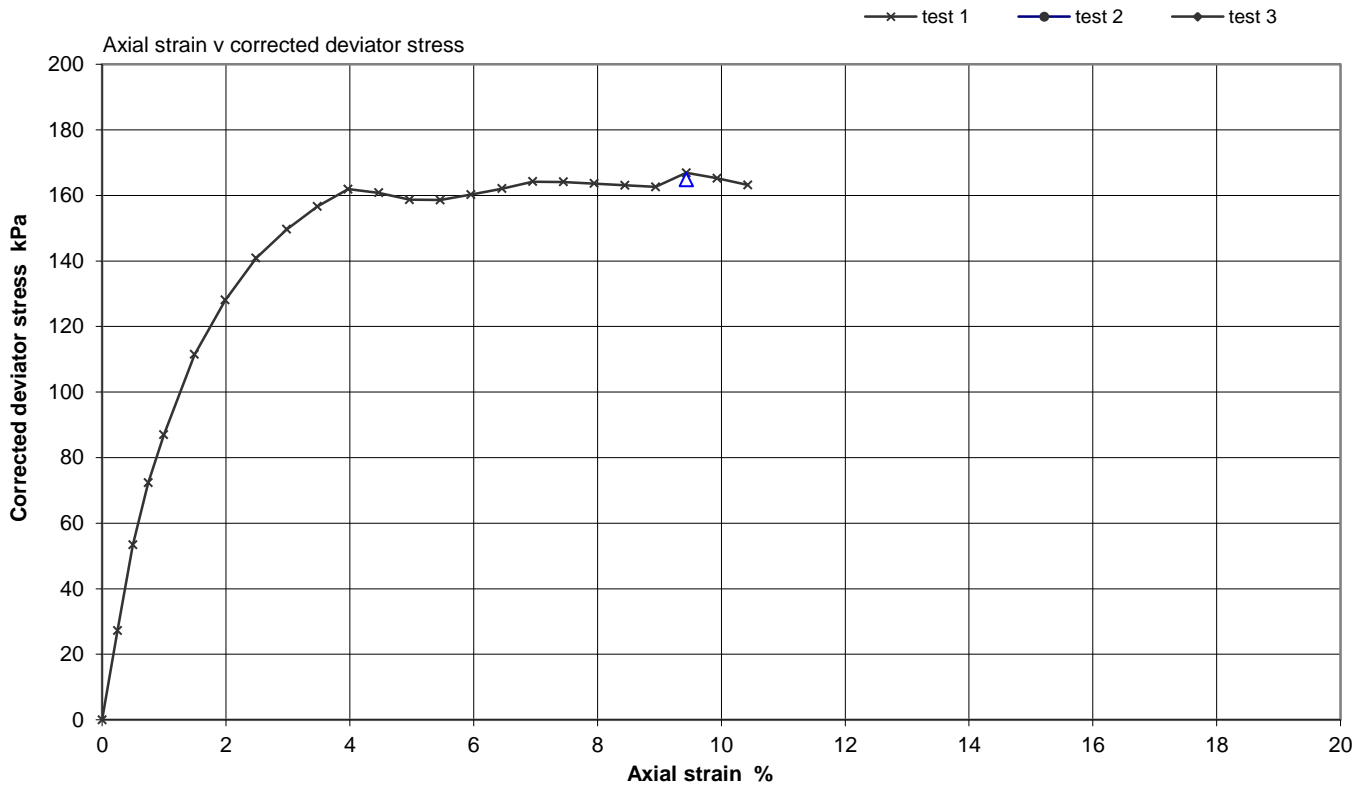
BS 1377: Part 7 : 1990, clause 8, single stage
------------------------------------------------

The data produced on this sheet is not covered by BS 1377 nor by UKAS accreditation to BS 1377

QA Ref SLD 7, 8 Rev 2.7 Jul 16	 1157	 <b>SOCOTEC</b>	Project No      A9020-19	Figure  <b>MOHR</b>
			Project Name    SOUTH HUMBER BANK ENERGY CENTRE	
The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2016 SOCOTEC UK Limited			Printed: 27/09/2019 14:32	

# UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST

Sample Details:	SAMPLE ID:	Hole No	BH04
	A9020-1920190819091754	Sample Depth (m BGL)	2.00 - 2.45
		Sample Type and No	UT13
		Specimen Ref	



Type of test	BS 1377: Part 7 : 1990, clause 8, single stage
Soil description	Stiff brown mottled grey slightly sandy CLAY.
Initial Condition	UNDISTURBED
Preparation	As BS 1377 Part 1

Test No.	1		
Initial Length	201.4		mm
Dimensions Diameter	103.0		mm
Bulk density	2.00		Mg/m <sup>3</sup>
Dry density	1.57		Mg/m <sup>3</sup>
Moisture Content	27		%
Rate of strain	2.00		% / minute
Membrane thickness	0.24		mm ( latex rubber )
<b>At failure (Δ)</b>			
Cell pressure	40		kPa
Axial strain	9.4		%
Deviator stress ( $\sigma_1 - \sigma_3$ )	167		kPa corrected
CU $\sigma_1 - \sigma_3$ )	83		kPa
Mode of failure	Brittle		

Deviator stress corrected for area change and membrane, as BS 1377

Report page 1 of 1

QA Ref  
SLD 7, 8  
Rev 2.7  
Jul 16



Project No A9020-19  
Project Name SOUTH HUMBER BANK ENERGY CENTRE

Figure  
**UTXL**

The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2016 SOCOTEC UK Limited

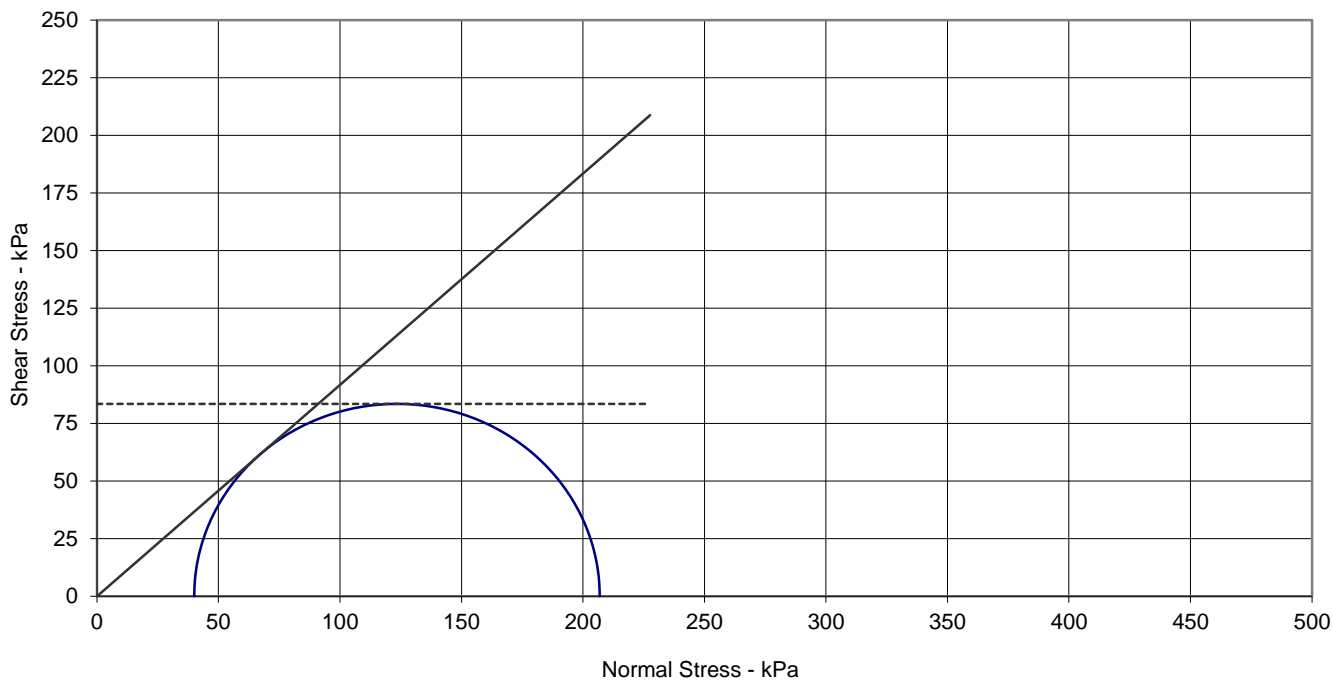
Printed: 27/09/2019 14:32

# UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST

Sample Details:	SAMPLE ID:	Hole No	BH04
	A9020-1920190819091754	Sample Depth (m BGL)	2.00 - 2.45
		Sample Type and No	UT13
		Specimen Ref	

## MOHR CIRCLES

— test 1    - - - - - test 2    - · - · - test 3    — envelope    - - - - - phi = 0



Conditions at failure / end of stage

Test No.	1		
Cell Pressure	40		kPa
Deviator stress	167		kPa

Envelope based on linear regression

angle of shearing resistance, $\phi_u$	42½	degrees
cohesion, $c_u$	0	kPa



Based on  $\phi = 0$ ,

average cohesion, $c_u$	83	kPa
( average undrained shear strength )		

Parameters derived from

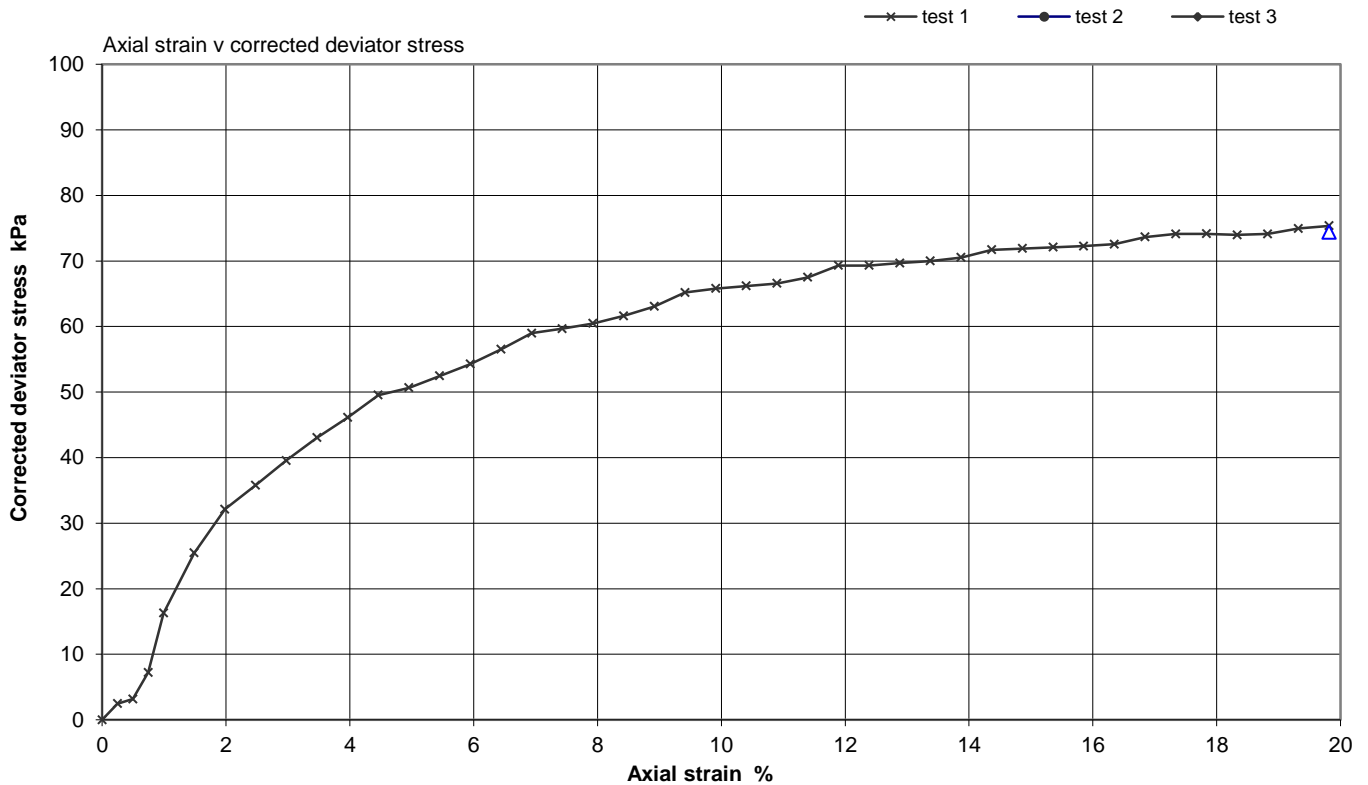
BS 1377: Part 7 : 1990, clause 8, single stage
------------------------------------------------

The data produced on this sheet is not covered by BS 1377 nor by UKAS accreditation to BS 1377

QA Ref SLD 7, 8 Rev 2.7 Jul 16	 1157	 <b>SOCOTEC</b>	Project No      A9020-19 Project Name    SOUTH HUMBER BANK ENERGY CENTRE	Figure  <b>MOHR</b>
			The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2016 SOCOTEC UK Limited	

# UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST

Sample Details:	SAMPLE ID:	Hole No	BH04
	A9020-1920190830081141	Sample Depth (m BGL)	13.50 - 13.95
		Sample Type and No	UT44
		Specimen Ref	



Type of test	BS 1377: Part 7 : 1990, clause 8, single stage
Soil description	Firm greyish brown slightly sandy slightly gravelly CLAY.
Initial Condition	UNDISTURBED
Preparation	As BS 1377 Part 1

Test No.	1		
Initial Length	201.8		mm
Dimensions Diameter	101.3		mm
Bulk density	2.15		Mg/m <sup>3</sup>
Dry density	1.85		Mg/m <sup>3</sup>
Moisture Content	16		%
Rate of strain	2.00		% / minute
Membrane thickness	0.24		mm ( latex rubber )
<b>At failure (Δ)</b>			
Cell pressure	270		kPa
Axial strain	19.8		%
Deviator stress ( $\sigma_1 - \sigma_3$ )	75		kPa corrected
CU $\sigma_1 - \sigma_3$ )	38		kPa
Mode of failure	Plastic		

Deviator stress corrected for area change and membrane, as BS 1377

Report page 1 of 1

QA Ref  
SLD 7, 8  
Rev 2.7  
Jul 16



Project No A9020-19  
Project Name SOUTH HUMBER BANK ENERGY CENTRE

Figure  
**UTXL**

The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2016 SOCOTEC UK Limited

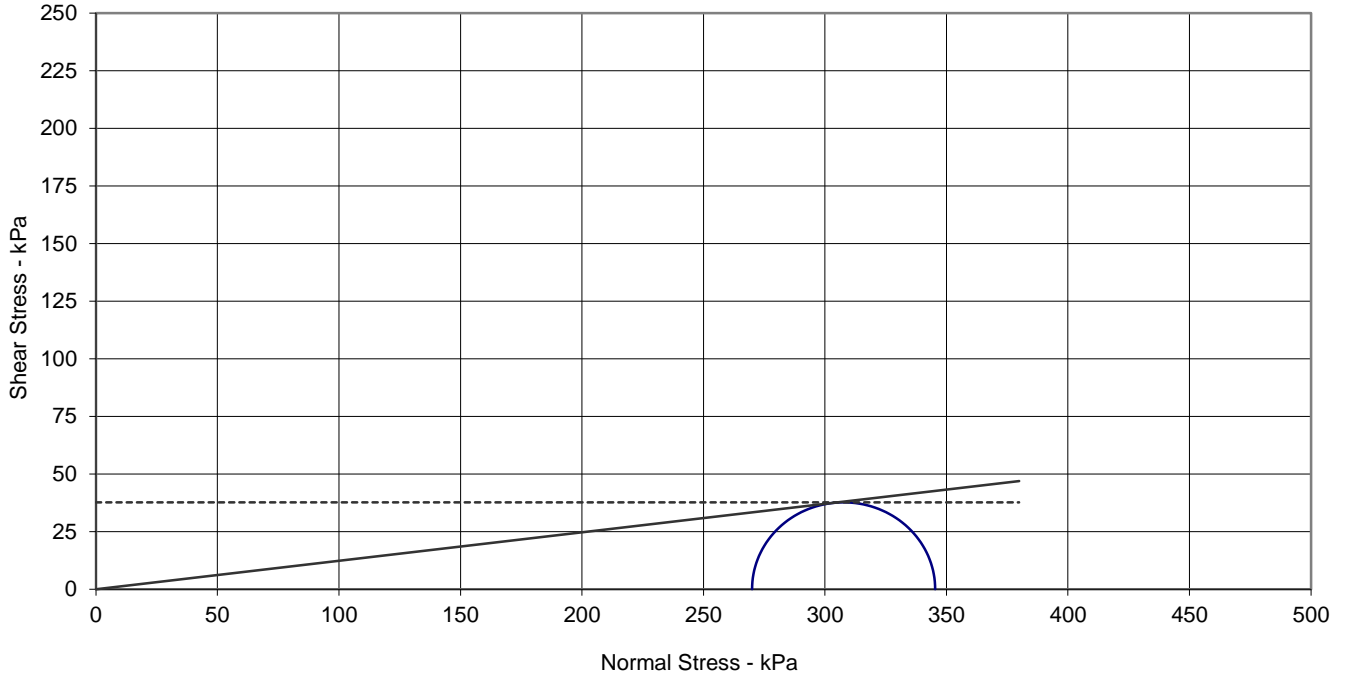
Printed: 27/09/2019 14:32

# UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST

Sample Details:	SAMPLE ID:	Hole No	BH04
		Sample Depth (m BGL)	13.50 - 13.95
	A9020-1920190830081141	Sample Type and No	UT44
		Specimen Ref	

## MOHR CIRCLES

— test 1    - - - - - test 2    - · - · - test 3    — envelope    - - - - - phi = 0



Conditions at failure / end of stage

Test No.	1		
Cell Pressure	270		kPa
Deviator stress	75		kPa

Envelope based on linear regression

angle of shearing resistance,  $\phi_u$                       7                      degrees  
 cohesion,  $c_u$                                                       0                      kPa

Based on  $\phi = 0$ ,

average cohesion,  $c_u$                                               38                      kPa  
 ( average undrained shear strength )

Parameters derived from

BS 1377: Part 7 : 1990, clause 8, single stage

The data produced on this sheet is not covered by BS 1377 nor by UKAS accreditation to BS 1377

QA Ref  
SLD 7, 8  
Rev 2.7  
Jul 16



Project No                      A9020-19  
 Project Name                      SOUTH HUMBER BANK ENERGY CENTRE

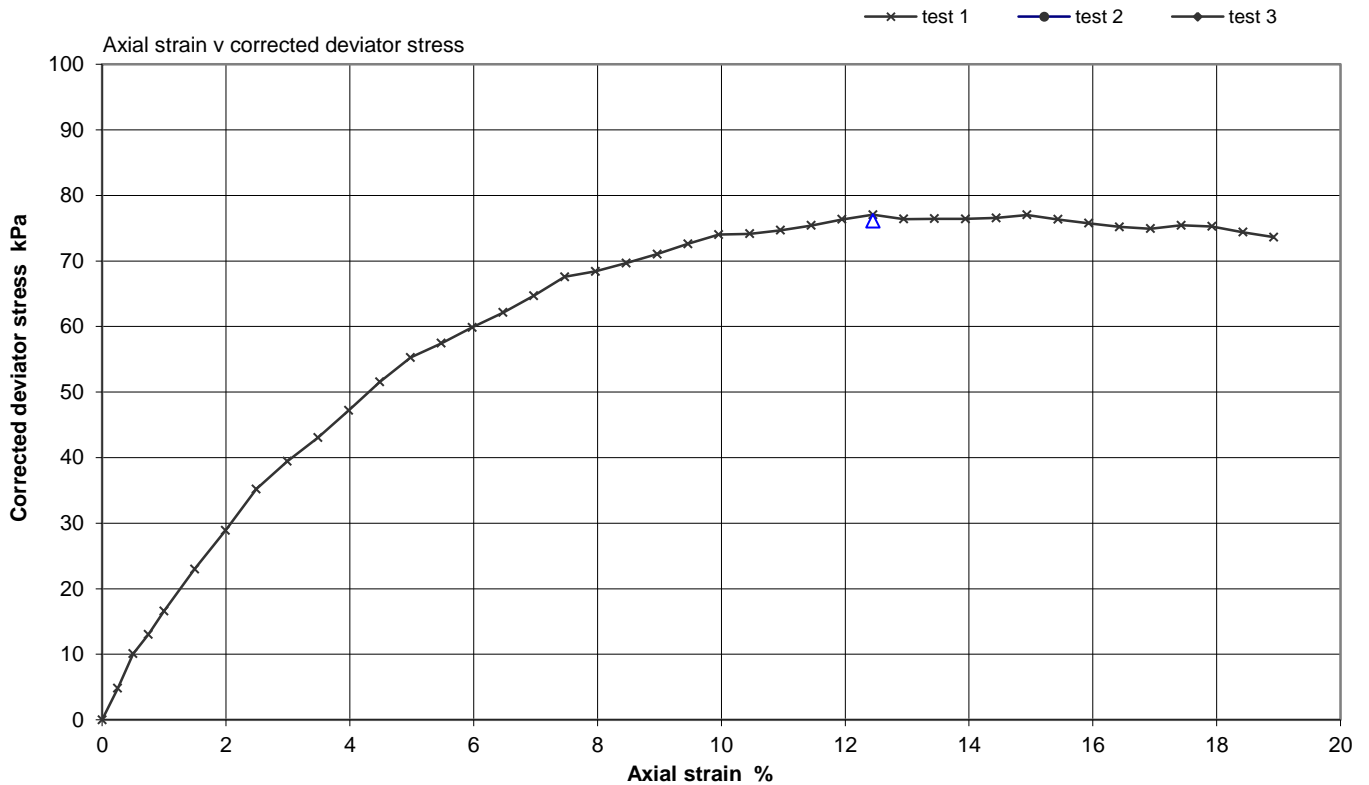
Figure  
**MOHR**

The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2016 SOCOTEC UK Limited

Printed: 27/09/2019 14:32

# UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST

<b>Sample Details:</b>	SAMPLE ID:	Hole No	BH05
	A9020-1920190829105927	Sample Depth (m BGL)	11.00 - 11.45
		Sample Type and No	UT21
		Specimen Ref	



Type of test	BS 1377: Part 7 : 1990, clause 8, single stage
Soil description	Soft to firm brownish grey slightly sandy slightly gravelly CLAY.
Initial Condition	UNDISTURBED
Preparation	As BS 1377 Part 1

Test No.	1		
Initial Length	200.8		mm
Dimensions Diameter	102.6		mm
Bulk density	1.99		Mg/m <sup>3</sup>
Dry density	1.59		Mg/m <sup>3</sup>
Moisture Content	25		%
Rate of strain	2.00		% / minute
Membrane thickness	0.24		mm ( latex rubber )
<b>At failure (Δ)</b>			
Cell pressure	220		kPa
Axial strain	12.4		%
Deviator stress ( $\sigma_1 - \sigma_3$ )	77		kPa corrected
CU $\sigma_1 - \sigma_3$ )	39		kPa
Mode of failure	Compound		

Deviator stress corrected for area change and membrane, as BS 1377

Report page 1 of 1

QA Ref  
SLD 7, 8  
Rev 2.7  
Jul 16



Project No A9020-19  
Project Name SOUTH HUMBER BANK ENERGY CENTRE

Figure  
**UTXL**

The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2016 SOCOTEC UK Limited

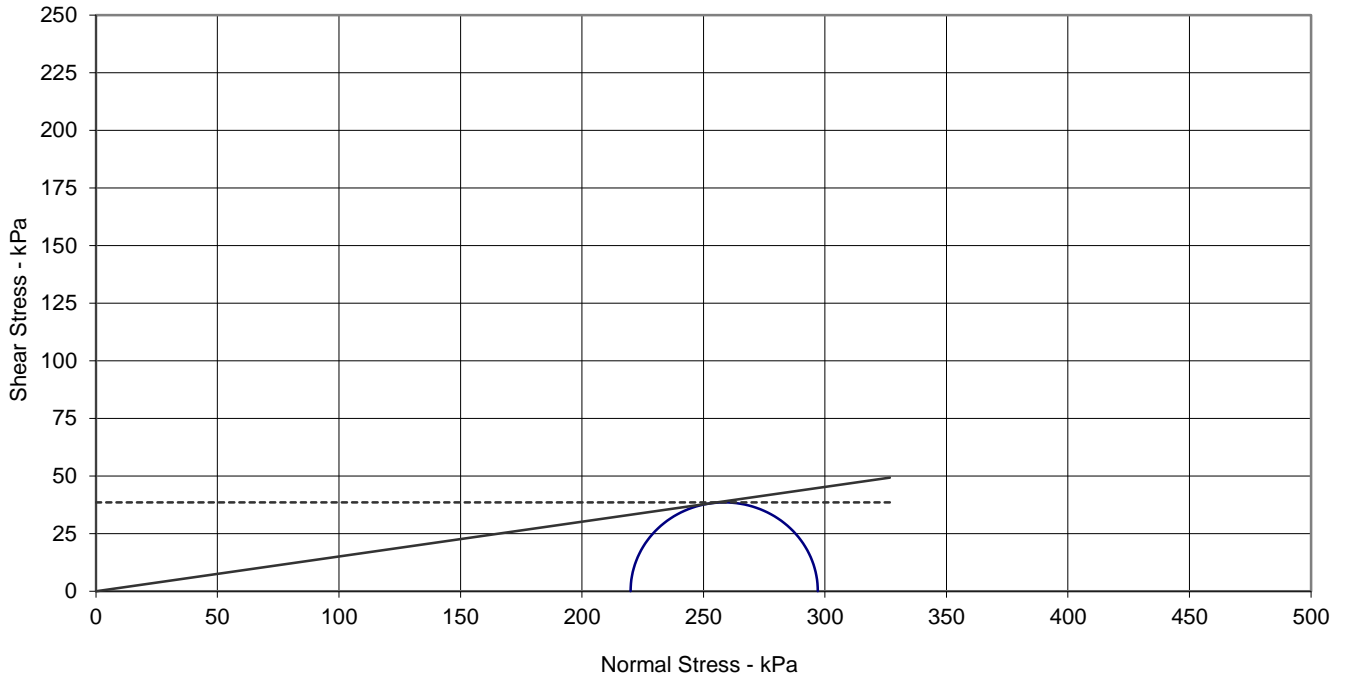
Printed: 27/09/2019 14:32

# UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST

Sample Details:	SAMPLE ID:	Hole No	BH05
	A9020-1920190829105927	Sample Depth (m BGL)	11.00 - 11.45
		Sample Type and No	UT21
		Specimen Ref	

## MOHR CIRCLES

— test 1    - - - - - test 2    - · - · - test 3    — envelope    - - - - - phi = 0



Conditions at failure / end of stage

Test No.	1		
Cell Pressure	220		kPa
Deviator stress	77		kPa

Envelope based on linear regression

angle of shearing resistance,  $\phi_u$       8½      degrees  
 cohesion,  $c_u$       0      kPa

Based on  $\phi = 0$ ,

average cohesion,  $c_u$       39      kPa  
 ( average undrained shear strength )

Parameters derived from

BS 1377: Part 7 : 1990, clause 8, single stage

The data produced on this sheet is not covered by BS 1377 nor by UKAS accreditation to BS 1377

QA Ref  
SLD 7, 8  
Rev 2.7  
Jul 16



Project No      A9020-19  
 Project Name      SOUTH HUMBER BANK ENERGY CENTRE

Figure  
**MOHR**

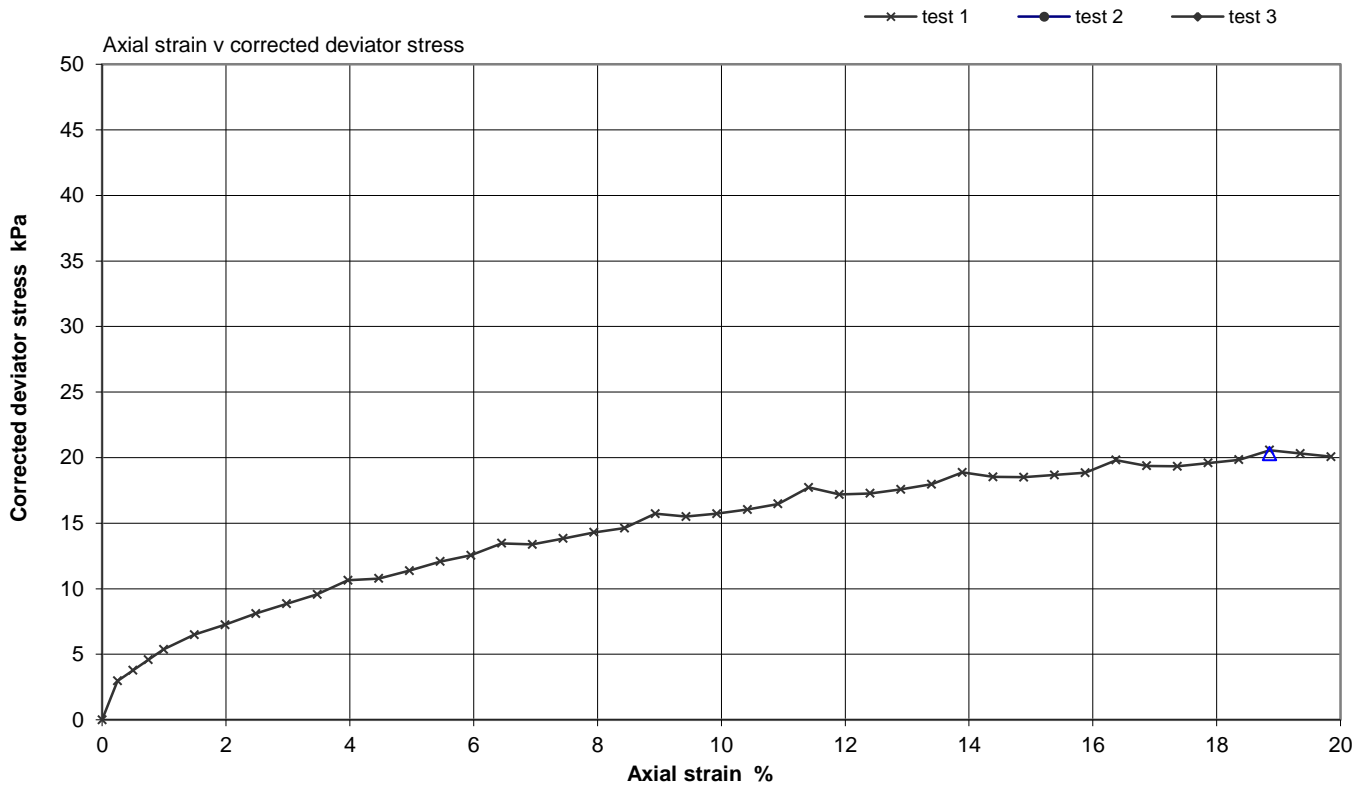
The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2016 SOCOTEC UK Limited

Printed: 27/09/2019 14:32



# UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST

Sample Details:	SAMPLE ID:	Hole No	BH06
	A9020-1920190828122058	Sample Depth (m BGL)	3.00 - 3.45
		Sample Type and No	UT10
		Specimen Ref	



Type of test	BS 1377: Part 7 : 1990, clause 8, single stage
Soil description	Soft greyish brown slightly sandy silty CLAY.
Initial Condition	UNDISTURBED
Preparation	As BS 1377 Part 1

Test No.	1		
Initial Length	201.5		mm
Dimensions Diameter	103.3		mm
Bulk density	1.83		Mg/m <sup>3</sup>
Dry density	1.28		Mg/m <sup>3</sup>
Moisture Content	42		%
Rate of strain	2.00		% / minute
Membrane thickness	0.24		mm ( latex rubber )
<b>At failure (Δ)</b>			
Cell pressure	60		kPa
Axial strain	18.9		%
Deviator stress ( $\sigma_1 - \sigma_3$ )	21		kPa corrected
CU $\sigma_1 - \sigma_3$ )	10		kPa
Mode of failure	Plastic		

Deviator stress corrected for area change and membrane, as BS 1377

Report page 1 of 1

QA Ref  
SLD 7, 8  
Rev 2.7  
Jul 16



Project No A9020-19  
Project Name SOUTH HUMBER BANK ENERGY CENTRE

Figure  
**UTXL**

The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2016 SOCOTEC UK Limited

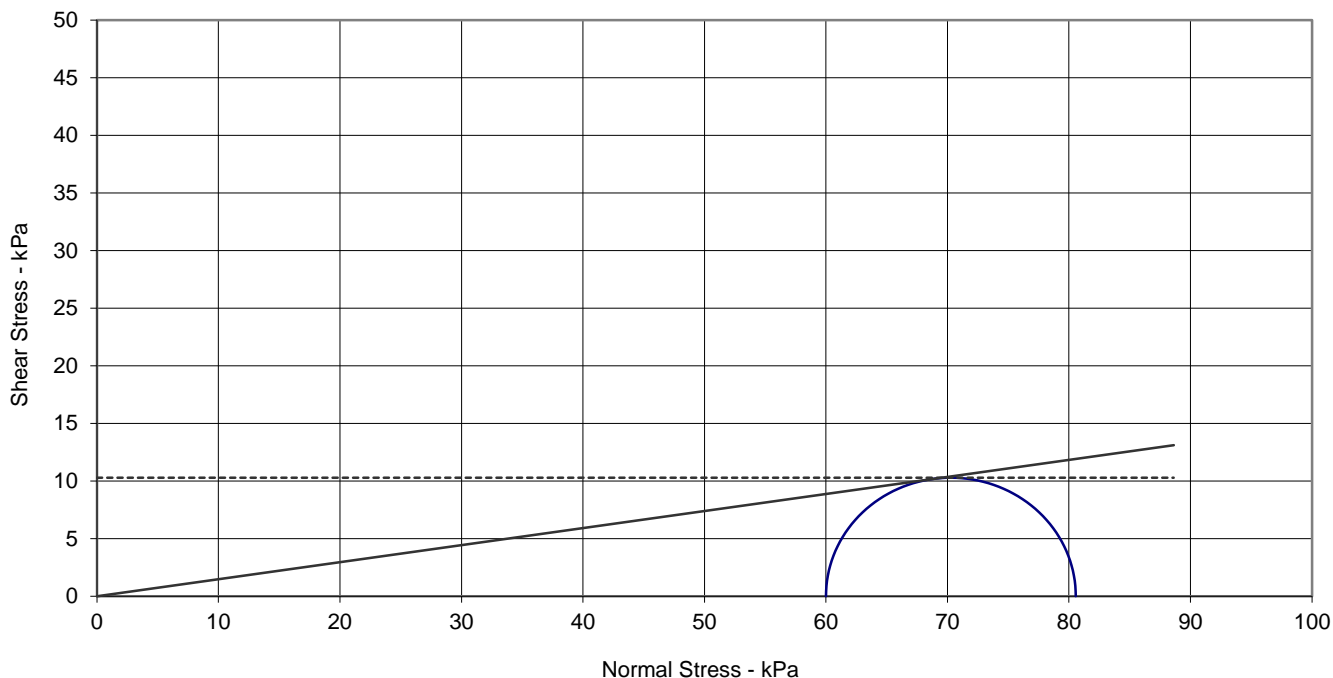
Printed: 27/09/2019 14:32

# UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST

Sample Details:	SAMPLE ID:	Hole No	BH06
	A9020-1920190828122058	Sample Depth (m BGL)	3.00 - 3.45
		Sample Type and No	UT10
		Specimen Ref	

## MOHR CIRCLES

— test 1    - - - - - test 2    - · - · - test 3    — envelope    - - - - - phi = 0



Conditions at failure / end of stage

Test No.	1		
Cell Pressure	60		kPa
Deviator stress	21		kPa

Envelope based on linear regression

angle of shearing resistance,  $\phi_u$       8½      degrees  
 cohesion,  $c_u$                               0      kPa



Based on  $\phi = 0$ ,

average cohesion,  $c_u$                       10      kPa  
 ( average undrained shear strength )

Parameters derived from

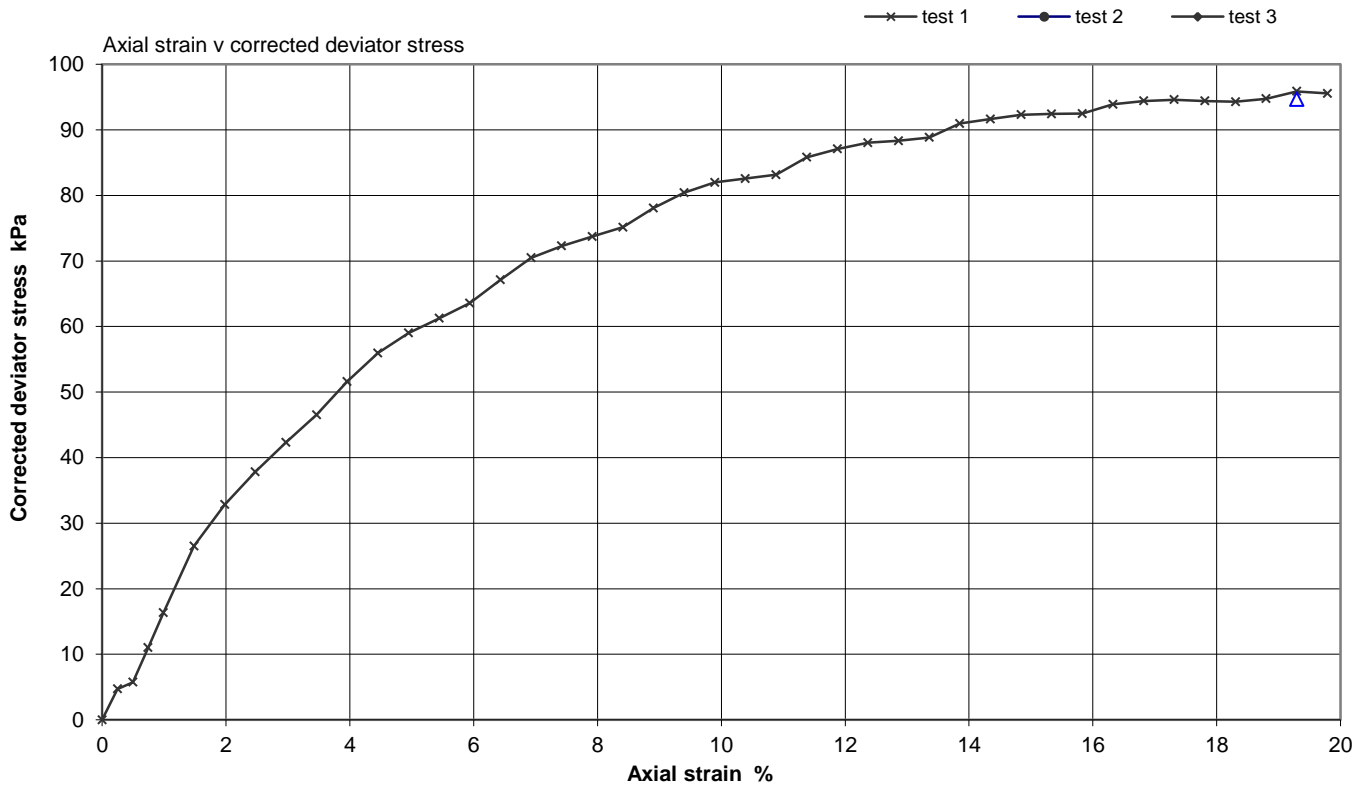
BS 1377: Part 7 : 1990, clause 8, single stage

The data produced on this sheet is not covered by BS 1377 nor by UKAS accreditation to BS 1377

QA Ref SLD 7, 8 Rev 2.7 Jul 16	 1157	 <b>SOCOTEC</b>	Project No      A9020-19 Project Name    SOUTH HUMBER BANK ENERGY CENTRE	Figure <h3>MOHR</h3>
			The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2016 SOCOTEC UK Limited	

# UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST

<b>Sample Details:</b>	SAMPLE ID:	Hole No	BH07
	A9020-1920190904093310	Sample Depth (m BGL)	19.50 - 19.95
		Sample Type and No	UT61
		Specimen Ref	



Type of test	BS 1377: Part 7 : 1990, clause 8, single stage
Soil description	Firm greyish brown slightly sandy slightly gravelly CLAY.
Initial Condition	UNDISTURBED
Preparation	As BS 1377 Part 1

Test No.	1		
Initial Length	202.1		mm
Dimensions Diameter	103.7		mm
Bulk density	2.17		Mg/m <sup>3</sup>
Dry density	1.85		Mg/m <sup>3</sup>
Moisture Content	17		%
Rate of strain	2.00		% / minute
Membrane thickness	0.24		mm ( latex rubber )
<b>At failure (Δ)</b>			
Cell pressure	390		kPa
Axial strain	19.3		%
Deviator stress ( $\sigma_1 - \sigma_3$ )	96		kPa corrected
CU $\sigma_1 - \sigma_3$ )	48		kPa
Mode of failure	Plastic		

Deviator stress corrected for area change and membrane, as BS 1377

Report page 1 of 1

QA Ref  
SLD 7, 8  
Rev 2.7  
Jul 16



Project No A9020-19  
Project Name SOUTH HUMBER BANK ENERGY CENTRE

Figure  
**UTXL**

The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2016 SOCOTEC UK Limited

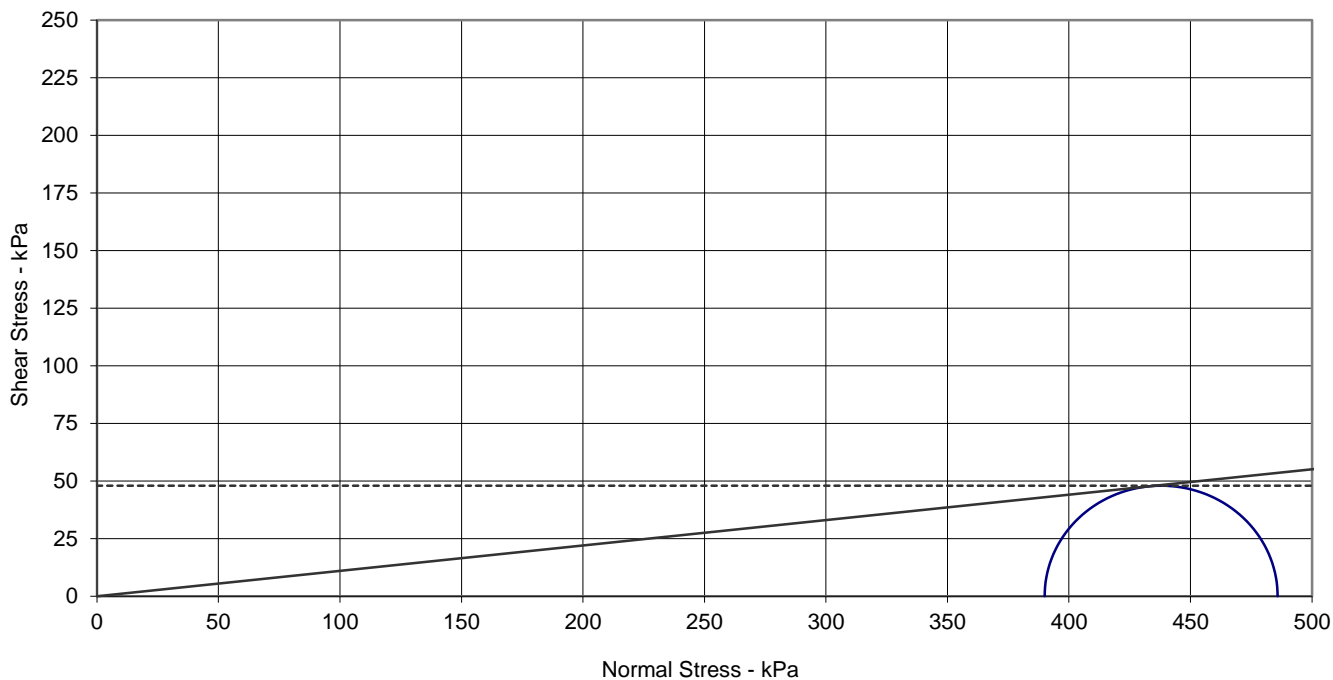
Printed: 27/09/2019 14:32

# UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST

Sample Details:	SAMPLE ID:	Hole No	BH07
	A9020-1920190904093310	Sample Depth (m BGL)	19.50 - 19.95
		Sample Type and No	UT61
		Specimen Ref	

## MOHR CIRCLES

— test 1    - - - - - test 2    - · - · - test 3    — envelope    - - - - - phi = 0



Conditions at failure / end of stage

Test No.	1		
Cell Pressure	390		kPa
Deviator stress	96		kPa

Envelope based on linear regression

angle of shearing resistance, $\phi_u$	6½	degrees
cohesion, $c_u$	0	kPa



Based on  $\phi = 0$ ,

average cohesion, $c_u$	48	kPa
( average undrained shear strength )		

Parameters derived from

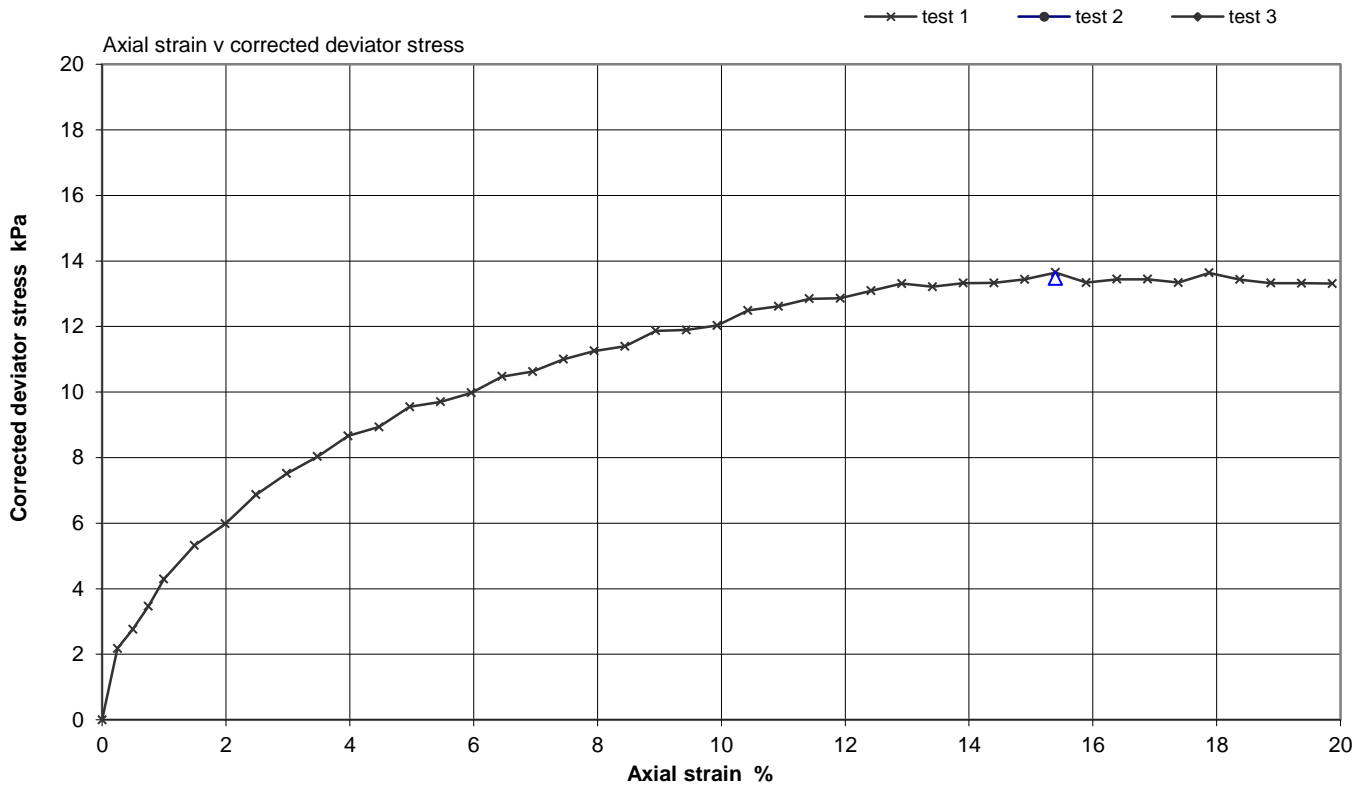
BS 1377: Part 7 : 1990, clause 8, single stage
------------------------------------------------

The data produced on this sheet is not covered by BS 1377 nor by UKAS accreditation to BS 1377

QA Ref SLD 7, 8 Rev 2.7 Jul 16	 1157	 <b>SOCOTEC</b>	Project No      A9020-19 Project Name    SOUTH HUMBER BANK ENERGY CENTRE	Figure  <b>MOHR</b>
			The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2016 SOCOTEC UK Limited	

# UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST

<b>Sample Details:</b>	SAMPLE ID:	Hole No	BH08
	A9020-1920190830085651	Sample Depth (m BGL)	3.00 - 3.45
		Sample Type and No	UT15
		Specimen Ref	



Type of test	BS 1377: Part 7 : 1990, clause 8, single stage
Soil description	Soft greyish brown slightly sandy silty CLAY.
Initial Condition	UNDISTURBED
Preparation	As BS 1377 Part 1

Test No.	1		
Initial Length	201.3		mm
Dimensions Diameter	102.1		mm
Bulk density	1.70		Mg/m3
Dry density	1.06		Mg/m3
Moisture Content	61		%
Rate of strain	2.00		% / minute
Membrane thickness	0.24		mm ( latex rubber )
<b>At failure (Δ)</b>			
Cell pressure	60		kPa
Axial strain	15.4		%
Deviator stress ( $\sigma_1 - \sigma_3$ )	14		kPa corrected
CU $\sigma_1 - \sigma_3$ )	7		kPa
Mode of failure	Plastic		

Deviator stress corrected for area change and membrane, as BS 1377

Report page 1 of 1

QA Ref  
SLD 7, 8  
Rev 2.7  
Jul 16



Project No    A9020-19  
Project Name    SOUTH HUMBER BANK ENERGY CENTRE

Figure  
**UTXL**

The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2016 SOCOTEC UK Limited

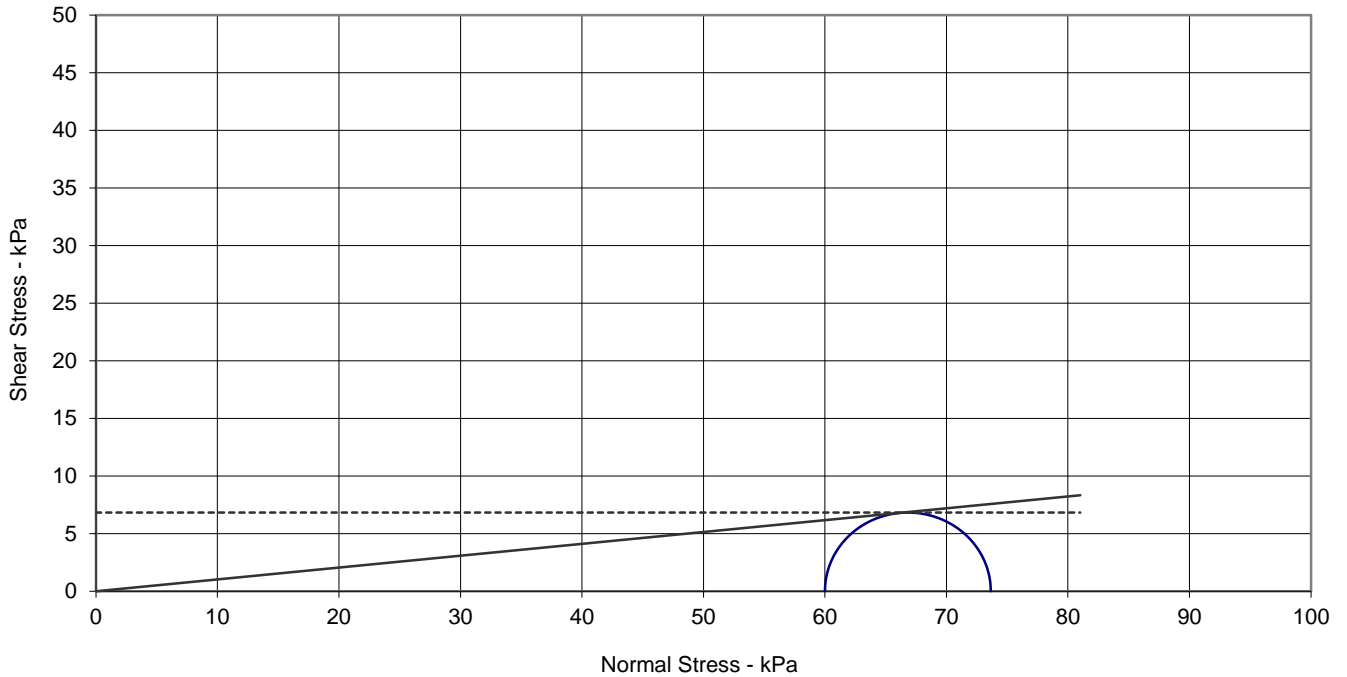
Printed: 27/09/2019 14:32

# UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST

Sample Details:	SAMPLE ID:	Hole No	BH08
	A9020-1920190830085651	Sample Depth (m BGL)	3.00 - 3.45
		Sample Type and No	UT15
		Specimen Ref	

## MOHR CIRCLES

— test 1    - - - - - test 2    - · - · - test 3    — envelope    - - - - - phi = 0



Conditions at failure / end of stage

Test No.	1		
Cell Pressure	60		kPa
Deviator stress	14		kPa

Envelope based on linear regression

angle of shearing resistance,  $\phi_u$                       6                      degrees  
 cohesion,  $c_u$                                               0                      kPa



Based on  $\phi = 0$ ,

average cohesion,  $c_u$                                       7                      kPa  
 ( average undrained shear strength )

Parameters derived from

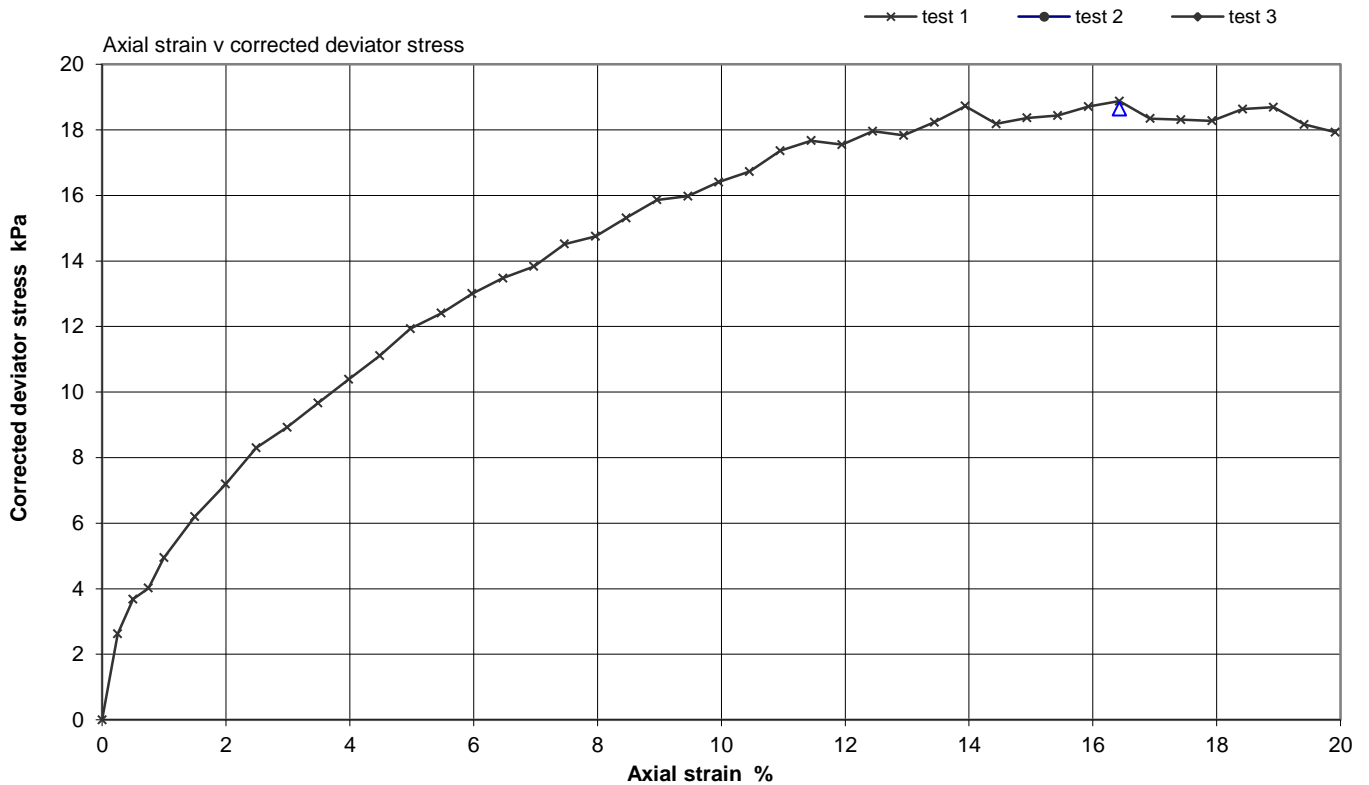
BS 1377: Part 7 : 1990, clause 8, single stage

The data produced on this sheet is not covered by BS 1377 nor by UKAS accreditation to BS 1377

QA Ref SLD 7, 8 Rev 2.7 Jul 16	 1157	 <b>SOCOTEC</b>	Project No                      A9020-19	Figure  <b>MOHR</b>
			Project Name                      SOUTH HUMBER BANK ENERGY CENTRE	
The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2016 SOCOTEC UK Limited			Printed: 27/09/2019 14:32	

# UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST

<b>Sample Details:</b>	SAMPLE ID:	Hole No	BH08
	A9020-1920190830085823	Sample Depth (m BGL)	5.00 - 5.45
		Sample Type and No	UT21
		Specimen Ref	



Type of test	BS 1377: Part 7 : 1990, clause 8, single stage
Soil description	Soft greyish brown slightly sandy silty CLAY.
Initial Condition	UNDISTURBED
Preparation	As BS 1377 Part 1

Test No.	1		
Initial Length	200.9		mm
Dimensions Diameter	102.8		mm
Bulk density	1.79		Mg/m <sup>3</sup>
Dry density	1.24		Mg/m <sup>3</sup>
Moisture Content	45		%
Rate of strain	2.00		% / minute
Membrane thickness	0.24		mm ( latex rubber )
<b>At failure (Δ)</b>			
Cell pressure	100		kPa
Axial strain	16.4		%
Deviator stress ( $\sigma_1 - \sigma_3$ )	19		kPa corrected
CU $\sigma_1 - \sigma_3$ )	9		kPa
Mode of failure	Plastic		

Deviator stress corrected for area change and membrane, as BS 1377

Report page 1 of 1

QA Ref  
SLD 7, 8  
Rev 2.7  
Jul 16



Project No A9020-19  
Project Name SOUTH HUMBER BANK ENERGY CENTRE

Figure  
**UTXL**

The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2016 SOCOTEC UK Limited

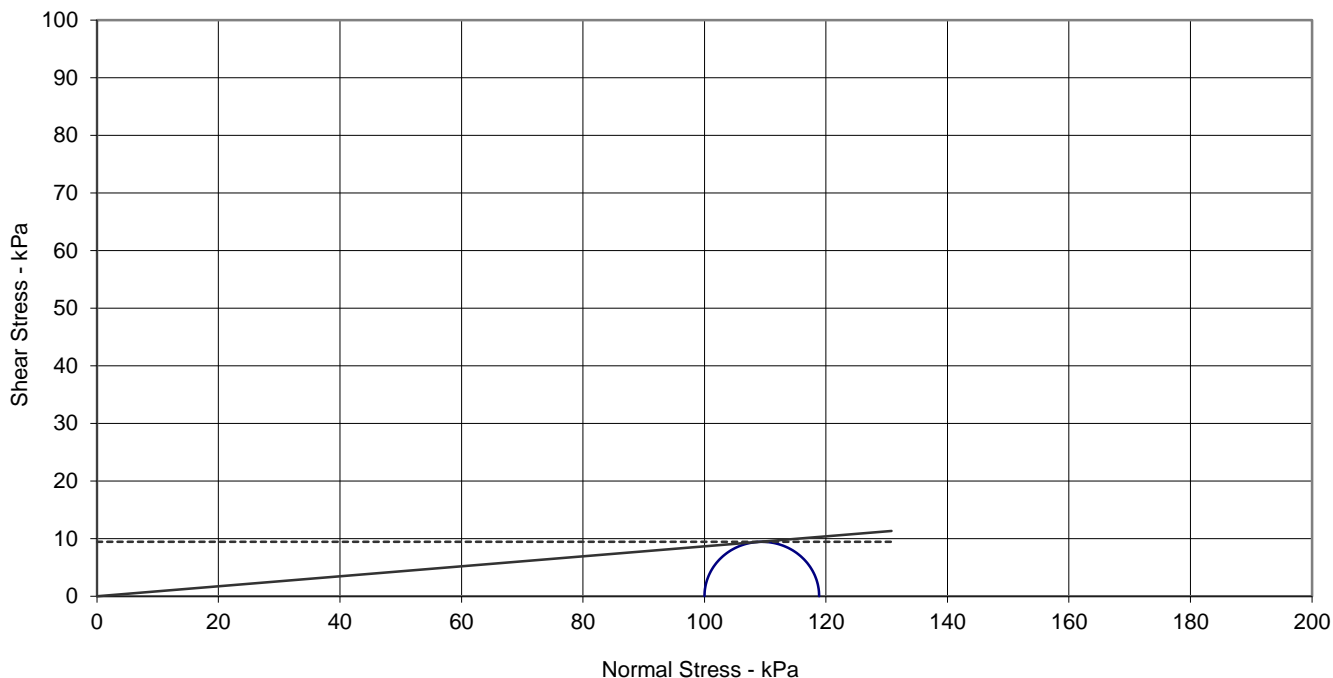
Printed: 27/09/2019 14:32

# UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST

Sample Details:	SAMPLE ID:	Hole No	BH08
	A9020-1920190830085823	Sample Depth (m BGL)	5.00 - 5.45
		Sample Type and No	UT21
		Specimen Ref	

## MOHR CIRCLES

— test 1    - - - - - test 2    - · - · - test 3    — envelope    - - - - - phi = 0



Conditions at failure / end of stage

Test No.	1		
Cell Pressure	100		kPa
Deviator stress	19		kPa

Envelope based on linear regression

angle of shearing resistance,  $\phi_u$                       5                      degrees  
 cohesion,  $c_u$                                               0                      kPa



Based on  $\phi = 0$ ,

average cohesion,  $c_u$                                       9                      kPa  
 ( average undrained shear strength )

Parameters derived from

BS 1377: Part 7 : 1990, clause 8, single stage

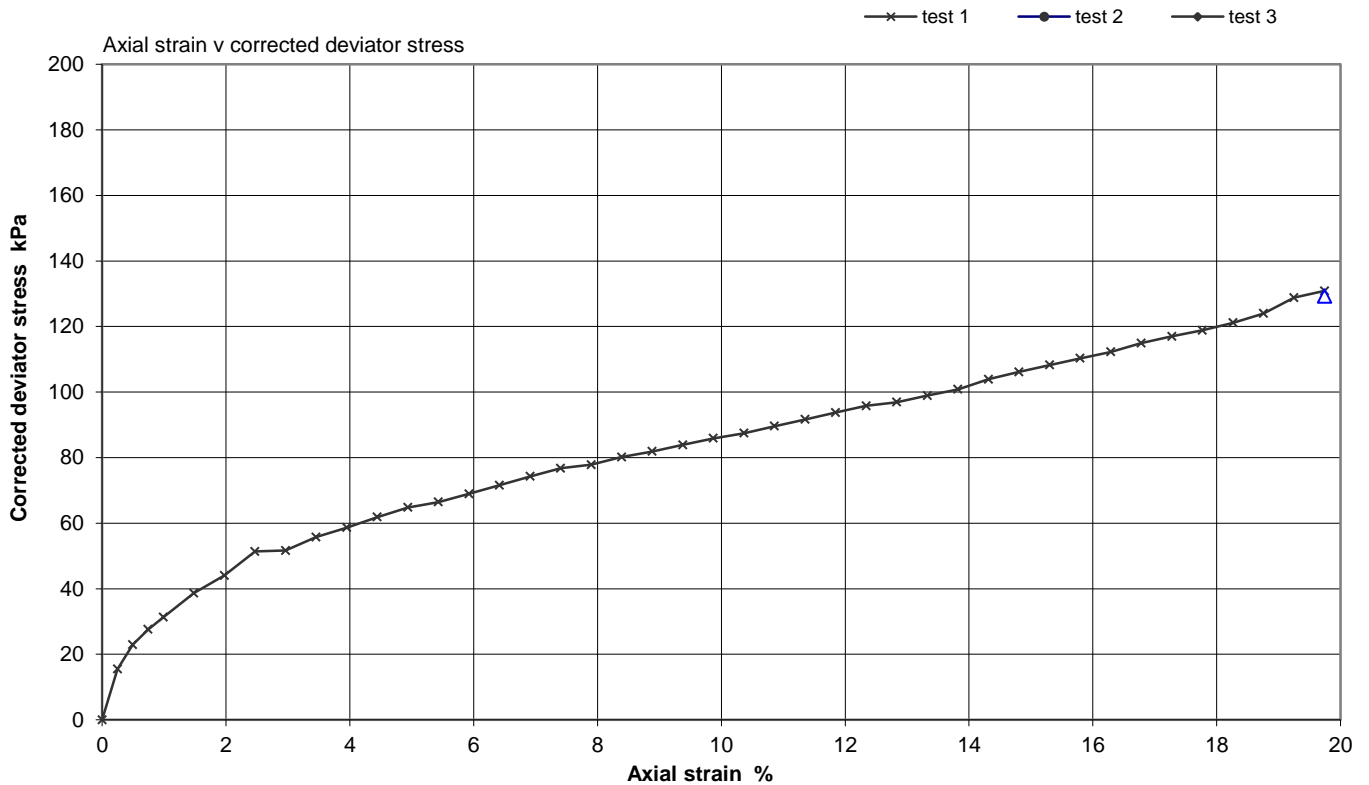
The data produced on this sheet is not covered by BS 1377 nor by UKAS accreditation to BS 1377

QA Ref SLD 7, 8 Rev 2.7 Jul 16	 1157	 <b>SOCOTEC</b>	Project No                      A9020-19 Project Name                      SOUTH HUMBER BANK ENERGY CENTRE	Figure  <b>MOHR</b>
			The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2016 SOCOTEC UK Limited	



# UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST

Sample Details:	SAMPLE ID:	Hole No	BH08
	A9020-1920190830090918	Sample Depth (m BGL)	10.50 - 10.95
		Sample Type and No	UT35
		Specimen Ref	



Type of test	BS 1377: Part 7 : 1990, clause 8, single stage
Soil description	Brown slightly gravelly SAND becoming soft to firm greyish brown slightly sandy slightly gravelly CLAY towards base.
Initial Condition	UNDISTURBED
Preparation	As BS 1377 Part 1

Test No.	1		
Initial Length	202.6		mm
Dimensions Diameter	103.2		mm
Bulk density	2.24		Mg/m3
Dry density	1.96		Mg/m3
Moisture Content	14		%
Rate of strain	2.00		% / minute
Membrane thickness	0.24		mm ( latex rubber )
<b>At failure (Δ)</b>			
Cell pressure	210		kPa
Axial strain	19.7		%
Deviator stress ( $\sigma_1 - \sigma_3$ )	131		kPa corrected
CU $\sigma_1 - \sigma_3$ )	65		kPa
Mode of failure	Compound		

Deviator stress corrected for area change and membrane, as BS 1377

Report page 1 of 1

QA Ref  
SLD 7, 8  
Rev 2.7  
Jul 16



Project No A9020-19  
Project Name SOUTH HUMBER BANK ENERGY CENTRE

Figure  
**UTXL**

The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2016 SOCOTEC UK Limited

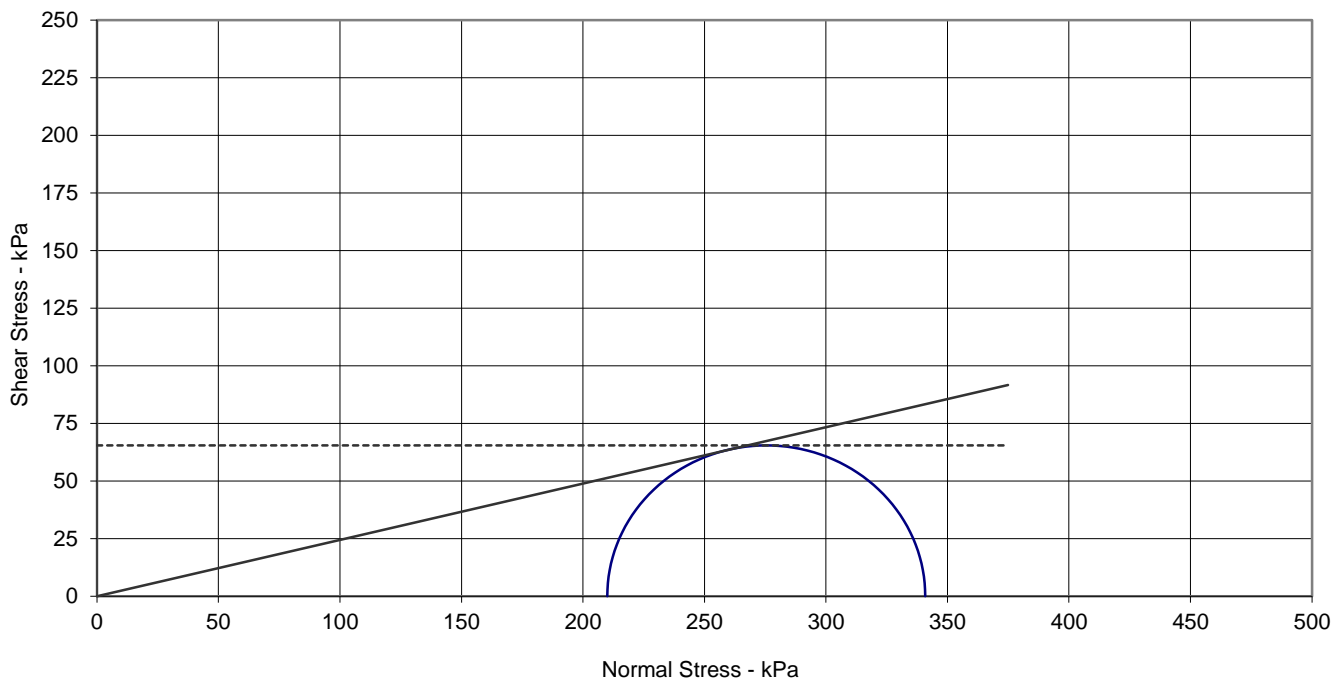
Printed: 27/09/2019 14:32

# UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST

Sample Details:	SAMPLE ID:	Hole No	BH08
	A9020-1920190830090918	Sample Depth (m BGL)	10.50 - 10.95
		Sample Type and No	UT35
		Specimen Ref	

## MOHR CIRCLES

— test 1    - - - - - test 2    - · - · - test 3    — envelope    - - - - - phi = 0



Conditions at failure / end of stage

Test No.	1		
Cell Pressure	210		kPa
Deviator stress	131		kPa

Envelope based on linear regression

angle of shearing resistance, $\phi_u$	13½	degrees
cohesion, $c_u$	0	kPa



Based on  $\phi = 0$ ,

average cohesion, $c_u$	65	kPa
( average undrained shear strength )		

Parameters derived from

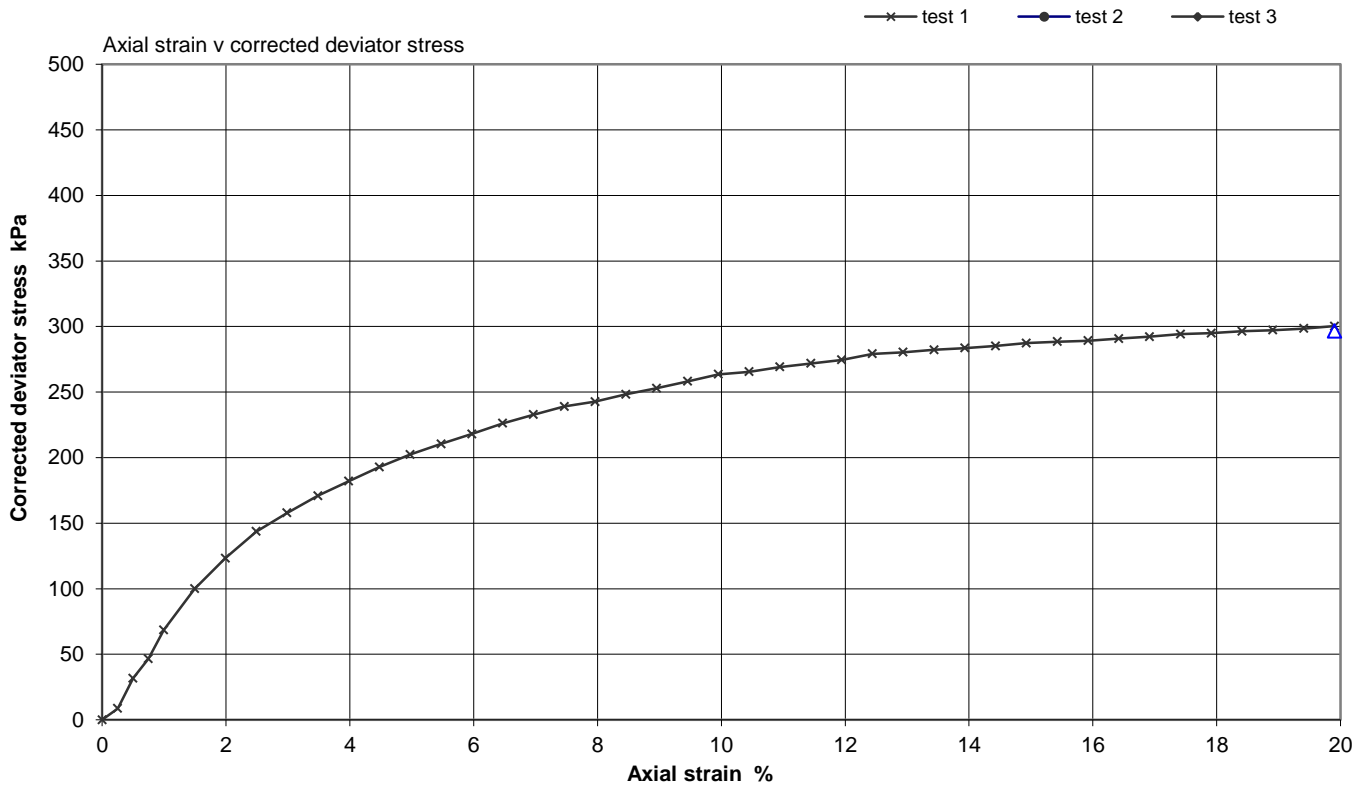
BS 1377: Part 7 : 1990, clause 8, single stage
------------------------------------------------

The data produced on this sheet is not covered by BS 1377 nor by UKAS accreditation to BS 1377

QA Ref SLD 7, 8 Rev 2.7 Jul 16	 1157	 <b>SOCOTEC</b>	Project No      A9020-19 Project Name    SOUTH HUMBER BANK ENERGY CENTRE	Figure  <b>MOHR</b>
			The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2016 SOCOTEC UK Limited	

# UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST

<b>Sample Details:</b>	SAMPLE ID:	Hole No	BH09
	A9020-1920190830094925	Sample Depth (m BGL)	12.50 - 12.95
		Sample Type and No	UT22
		Specimen Ref	



Type of test	BS 1377: Part 7 : 1990, clause 8, single stage
Soil description	Stiff greyish brown slightly sandy slightly gravelly CLAY. Gravel is chalk.
Initial Condition	UNDISTURBED
Preparation	As BS 1377 Part 1

Test No.	1		
Initial Length	201.0		mm
Dimensions Diameter	103.6		mm
Bulk density	2.25		Mg/m3
Dry density	1.97		Mg/m3
Moisture Content	14		%
Rate of strain	2.00		% / minute
Membrane thickness	0.24		mm ( latex rubber )
<b>At failure (Δ)</b>			
Cell pressure	250		kPa
Axial strain	19.9		%
Deviator stress ( $\sigma_1 - \sigma_3$ )	300		kPa corrected
CU $\sigma_1 - \sigma_3$ )	150		kPa
Mode of failure	Compound		

Deviator stress corrected for area change and membrane, as BS 1377

Report page 1 of 1

QA Ref  
SLD 7, 8  
Rev 2.7  
Jul 16



Project No A9020-19  
Project Name SOUTH HUMBER BANK ENERGY CENTRE

Figure  
**UTXL**

The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2016 SOCOTEC UK Limited

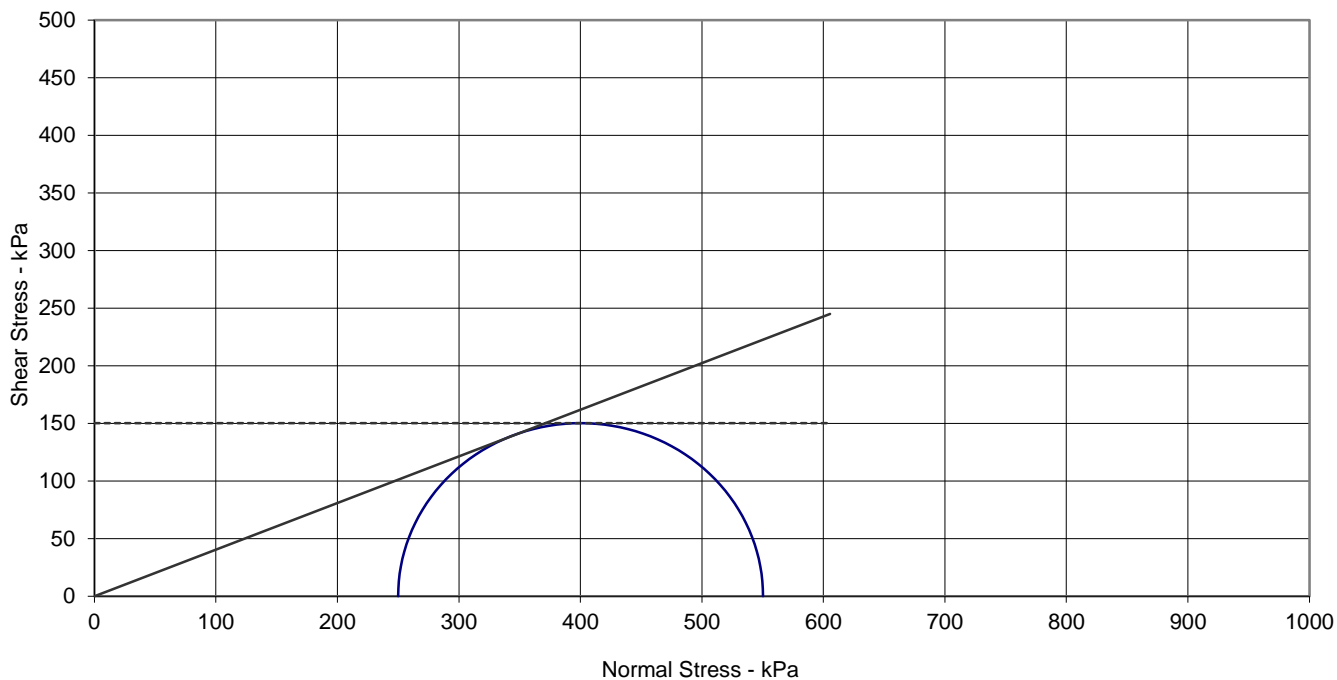
Printed: 27/09/2019 14:32

# UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST

Sample Details:	SAMPLE ID:	Hole No	BH09
	A9020-1920190830094925	Sample Depth (m BGL)	12.50 - 12.95
		Sample Type and No	UT22
		Specimen Ref	

## MOHR CIRCLES

— test 1    - - - - - test 2    - · - · - test 3    — envelope    - - - - - phi = 0



Conditions at failure / end of stage

Test No.	1		
Cell Pressure	250		kPa
Deviator stress	300		kPa

Envelope based on linear regression

angle of shearing resistance, $\phi_u$	22	degrees
cohesion, $c_u$	0	kPa



Based on  $\phi = 0$ ,

average cohesion, $c_u$	150	kPa
( average undrained shear strength )		

Parameters derived from

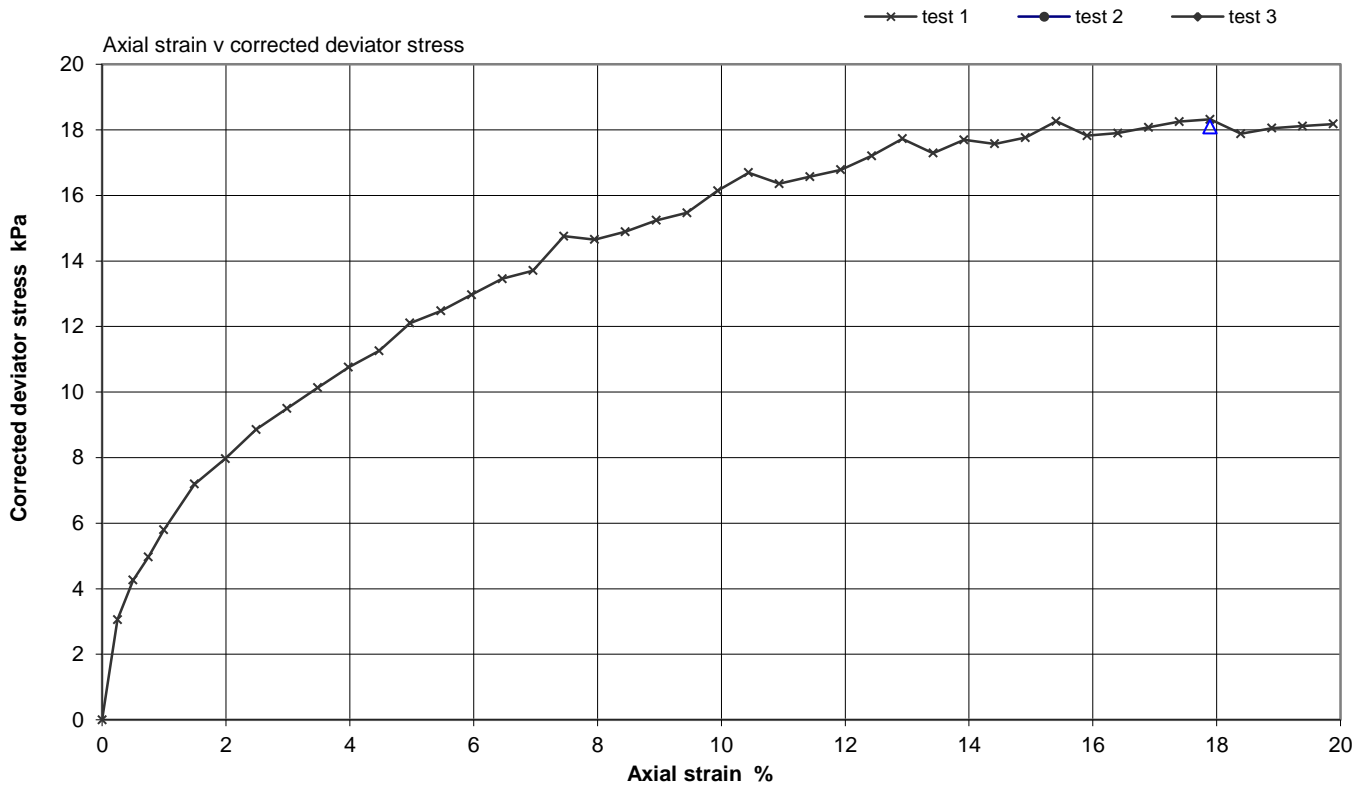
BS 1377: Part 7 : 1990, clause 8, single stage
------------------------------------------------

The data produced on this sheet is not covered by BS 1377 nor by UKAS accreditation to BS 1377

QA Ref SLD 7, 8 Rev 2.7 Jul 16	 1157	 <b>SOCOTEC</b>	Project No      A9020-19 Project Name    SOUTH HUMBER BANK ENERGY CENTRE	Figure  <b>MOHR</b>
			The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2016 SOCOTEC UK Limited	

# UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST

Sample Details:	SAMPLE ID:	Hole No	BH10
	A9020-1920190828011630	Sample Depth (m BGL)	4.00 - 4.45
		Sample Type and No	UT11
		Specimen Ref	



Type of test	BS 1377: Part 7 : 1990, clause 8, single stage
Soil description	Soft greyish brown slightly sandy CLAY.
Initial Condition	UNDISTURBED
Preparation	As BS 1377 Part 1

Test No.	1		
Initial Length	201.2		mm
Dimensions Diameter	101.6		mm
Bulk density	1.78		Mg/m3
Dry density	1.18		Mg/m3
Moisture Content	51		%
Rate of strain	2.00		% / minute
Membrane thickness	0.24		mm ( latex rubber )
<b>At failure (Δ)</b>			
Cell pressure	40		kPa
Axial strain	17.9		%
Deviator stress ( $\sigma_1 - \sigma_3$ )	18		kPa corrected
CU $\sigma_1 - \sigma_3$ )	9		kPa
Mode of failure	Plastic		

Deviator stress corrected for area change and membrane, as BS 1377

Report page 1 of 1

QA Ref  
SLD 7, 8  
Rev 2.7  
Jul 16



Project No A9020-19  
Project Name SOUTH HUMBER BANK ENERGY CENTRE

Figure  
**UTXL**

The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2016 SOCOTEC UK Limited

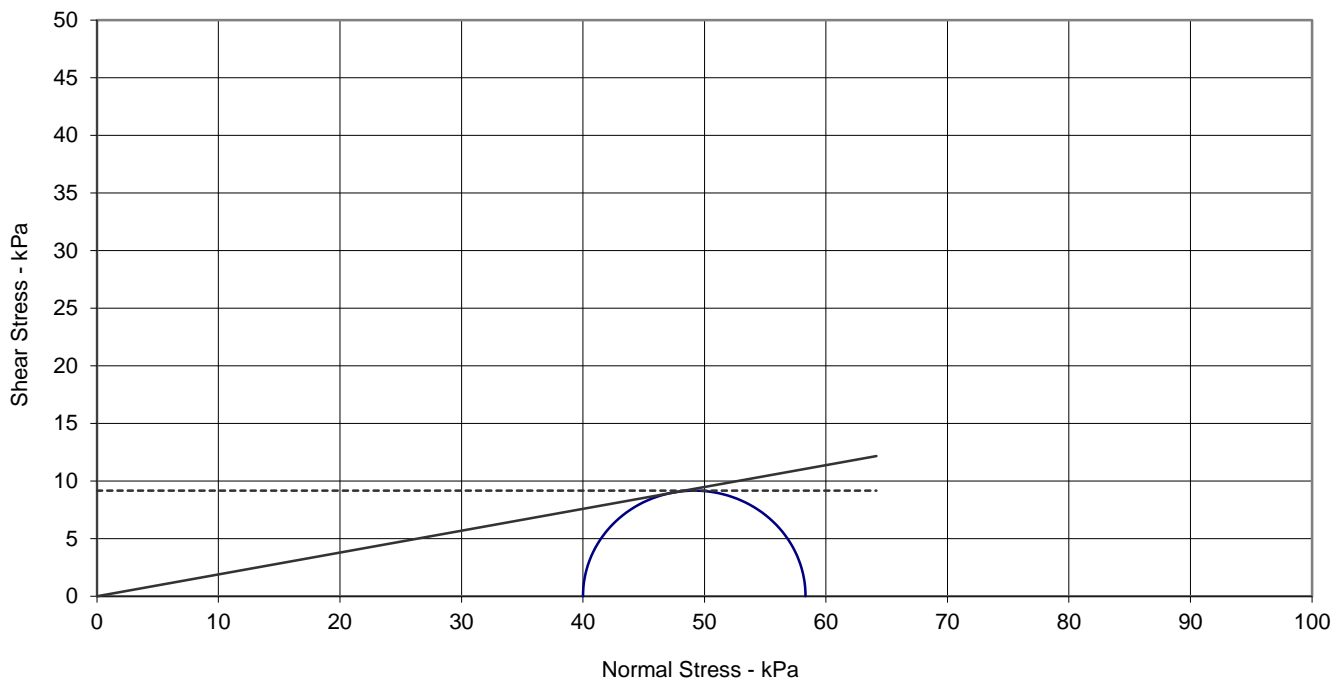
Printed: 27/09/2019 14:32

# UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST

Sample Details:	SAMPLE ID:	Hole No	BH10
	A9020-1920190828011630	Sample Depth (m BGL)	4.00 - 4.45
		Sample Type and No	UT11
		Specimen Ref	

## MOHR CIRCLES

— test 1    - - - - - test 2    - · - · - test 3    — envelope    - - - - - phi = 0



Conditions at failure / end of stage

Test No.	1		
Cell Pressure	40		kPa
Deviator stress	18		kPa

Envelope based on linear regression

angle of shearing resistance, $\phi_u$	10½	degrees
cohesion, $c_u$	0	kPa



Based on  $\phi = 0$ ,

average cohesion, $c_u$	9	kPa
(average undrained shear strength)		

Parameters derived from

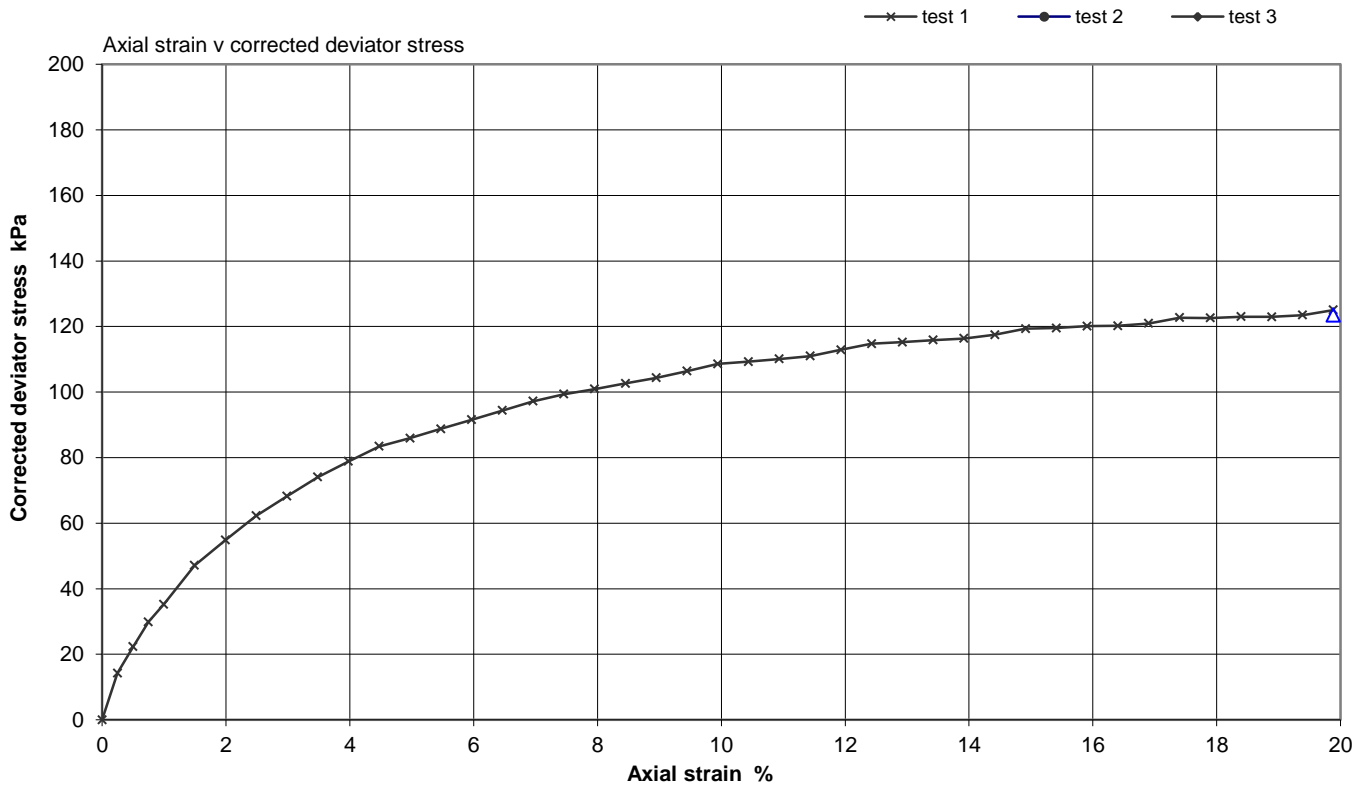
BS 1377: Part 7 : 1990, clause 8, single stage
------------------------------------------------

The data produced on this sheet is not covered by BS 1377 nor by UKAS accreditation to BS 1377

QA Ref SLD 7, 8 Rev 2.7 Jul 16	 1157	 <b>SOCOTEC</b>	Project No      A9020-19 Project Name    SOUTH HUMBER BANK ENERGY CENTRE	Figure  <b>MOHR</b>
			The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2016 SOCOTEC UK Limited	

# UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST

Sample Details:	SAMPLE ID:	Hole No	BH11
	A9020-1920190829101446	Sample Depth (m BGL)	2.00 - 2.45
		Sample Type and No	UT7
		Specimen Ref	



Type of test	BS 1377: Part 7 : 1990, clause 8, single stage
Soil description	Firm to stiff brown slightly sandy CLAY.
Initial Condition	UNDISTURBED
Preparation	As BS 1377 Part 1

Test No.	1		
Initial Length	201.1		mm
Dimensions Diameter	103.0		mm
Bulk density	1.90		Mg/m3
Dry density	1.43		Mg/m3
Moisture Content	33		%
Rate of strain	2.00		% / minute
Membrane thickness	0.24		mm ( latex rubber )
<b>At failure (Δ)</b>			
Cell pressure	40		kPa
Axial strain	19.9		%
Deviator stress ( $\sigma_1 - \sigma_3$ )	125		kPa corrected
CU $\sigma_1 - \sigma_3$ )	63		kPa
Mode of failure	Compound		

Deviator stress corrected for area change and membrane, as BS 1377

Report page 1 of 1

QA Ref  
SLD 7, 8  
Rev 2.7  
Jul 16



Project No A9020-19  
Project Name SOUTH HUMBER BANK ENERGY CENTRE

Figure  
**UTXL**

The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2016 SOCOTEC UK Limited

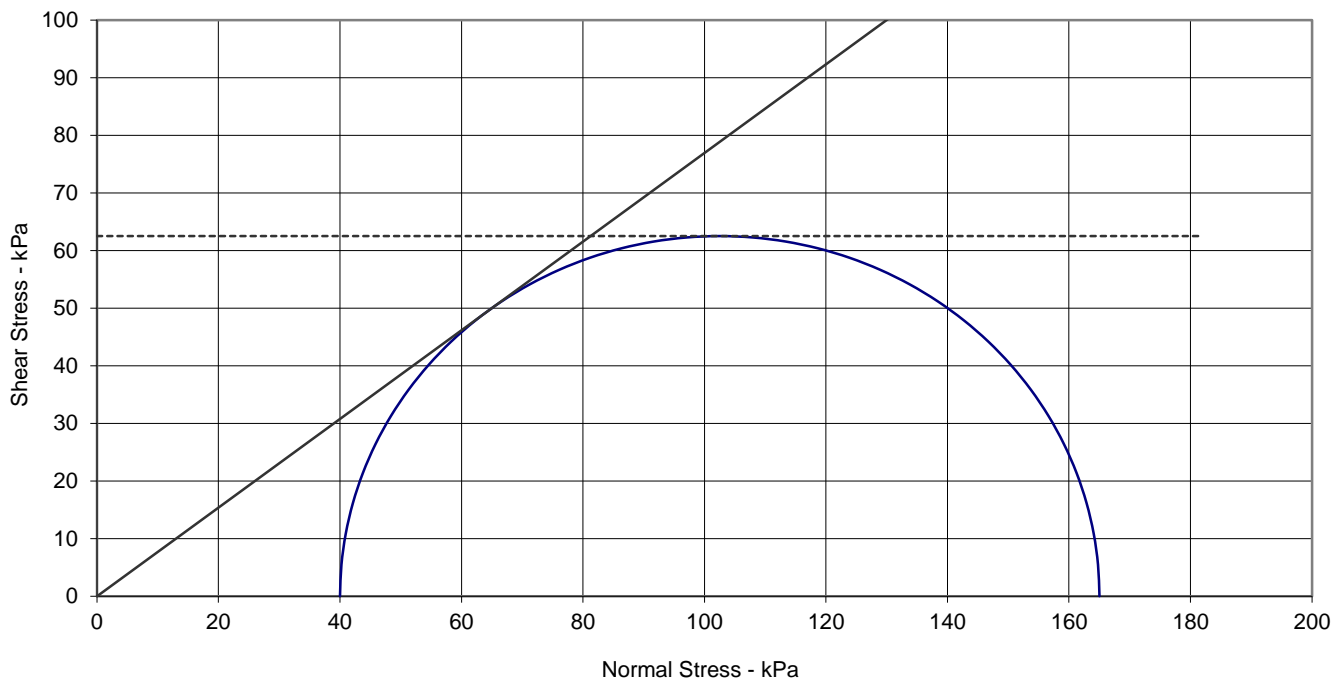
Printed: 27/09/2019 14:32

# UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST

Sample Details:	SAMPLE ID:	Hole No	BH11
	A9020-1920190829101446	Sample Depth (m BGL)	2.00 - 2.45
		Sample Type and No	UT7
		Specimen Ref	

## MOHR CIRCLES

— test 1    - - - - - test 2    - · - · - test 3    — envelope    - - - - - phi = 0



Conditions at failure / end of stage

Test No.	1		
Cell Pressure	40		kPa
Deviator stress	125		kPa

Envelope based on linear regression

angle of shearing resistance, $\phi_u$	37½	degrees
cohesion, $c_u$	0	kPa



Based on  $\phi = 0$ ,

average cohesion, $c_u$	63	kPa
( average undrained shear strength )		

Parameters derived from

BS 1377: Part 7 : 1990, clause 8, single stage
------------------------------------------------

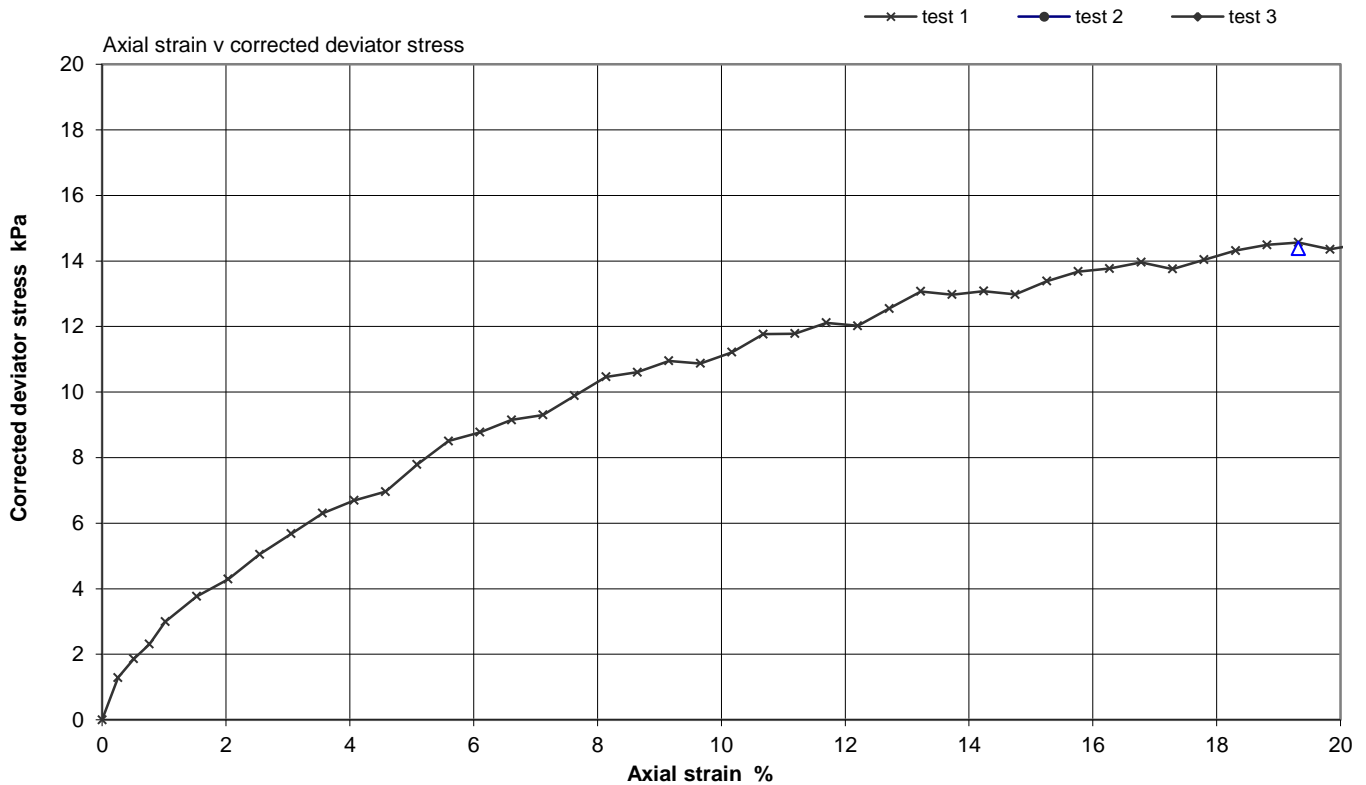
The data produced on this sheet is not covered by BS 1377 nor by UKAS accreditation to BS 1377

QA Ref SLD 7, 8 Rev 2.7 Jul 16	 1157	 <b>SOCOTEC</b>	Project No      A9020-19 Project Name    SOUTH HUMBER BANK ENERGY CENTRE	Figure  <b>MOHR</b>
			The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2016 SOCOTEC UK Limited	



# UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST

Sample Details:	SAMPLE ID:	Hole No	BH11
	A9020-1920190829101655	Sample Depth (m BGL)	6.00 - 6.45
		Sample Type and No	UT19
		Specimen Ref	



Type of test	BS 1377: Part 7 : 1990, clause 8, single stage
Soil description	Soft brownish grey slightly sandy slightly gravelly CLAY. Gravel contains shell fragments.
Initial Condition	UNDISTURBED
Preparation	As BS 1377 Part 1

Test No.	1		
Initial Length	196.7		mm
Dimensions Diameter	103.6		mm
Bulk density	1.88		Mg/m <sup>3</sup>
Dry density	1.62		Mg/m <sup>3</sup>
Moisture Content	16		%
Rate of strain	2.00		% / minute
Membrane thickness	0.24		mm ( latex rubber )
<b>At failure (Δ)</b>			
Cell pressure	120		kPa
Axial strain	19.3		%
Deviator stress ( $\sigma_1 - \sigma_3$ )	15		kPa corrected
CU $\sigma_1 - \sigma_3$ )	7		kPa
Mode of failure	Plastic		

Deviator stress corrected for area change and membrane, as BS 1377

Report page 1 of 1

QA Ref  
SLD 7, 8  
Rev 2.7  
Jul 16



Project No A9020-19  
Project Name SOUTH HUMBER BANK ENERGY CENTRE

Figure  
**UTXL**

The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2016 SOCOTEC UK Limited

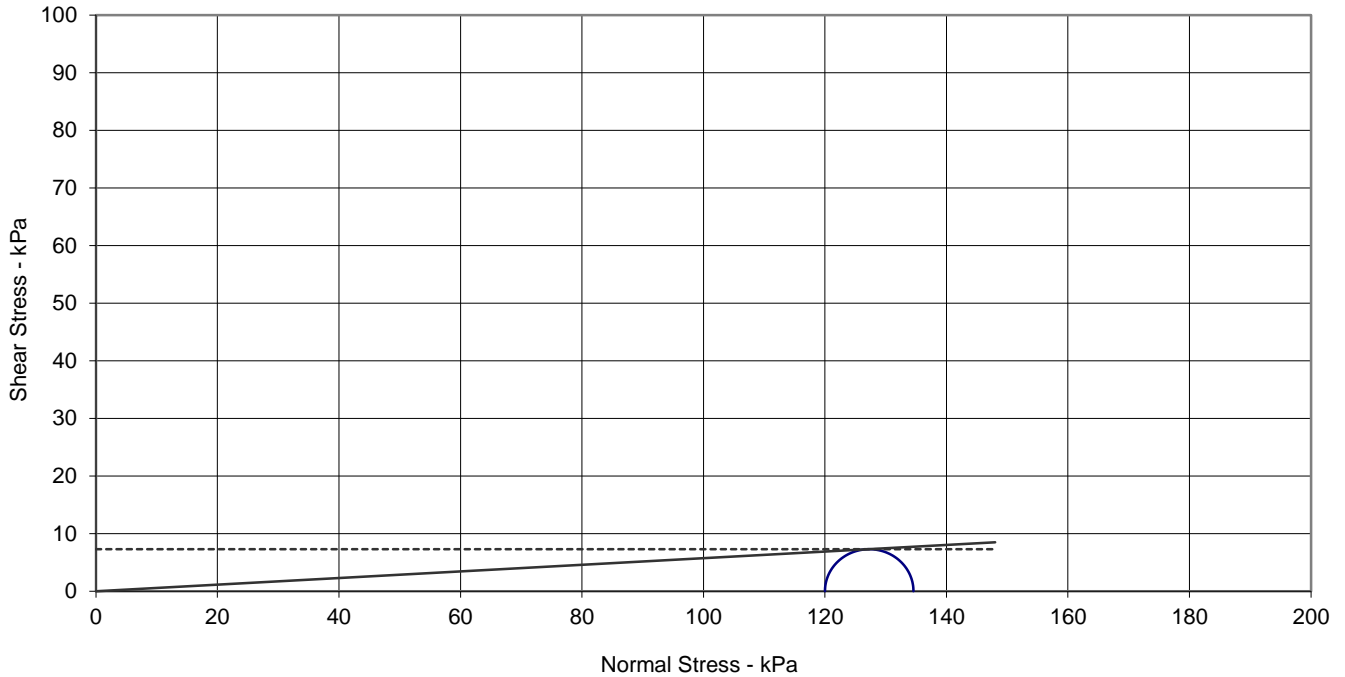
Printed: 27/09/2019 14:32

# UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST

Sample Details:	SAMPLE ID:	Hole No	BH11
	A9020-1920190829101655	Sample Depth (m BGL)	6.00 - 6.45
		Sample Type and No	UT19
		Specimen Ref	

## MOHR CIRCLES

— test 1    - - - - - test 2    - · - · - test 3    — envelope    - - - - - phi = 0



Conditions at failure / end of stage

Test No.	1		
Cell Pressure	120		kPa
Deviator stress	15		kPa

Envelope based on linear regression

angle of shearing resistance,  $\phi_u$       3½      degrees  
 cohesion,  $c_u$                               0      kPa

Based on  $\phi = 0$ ,

average cohesion,  $c_u$                       7      kPa  
 ( average undrained shear strength )

Parameters derived from

BS 1377: Part 7 : 1990, clause 8, single stage

The data produced on this sheet is not covered by BS 1377 nor by UKAS accreditation to BS 1377

QA Ref  
SLD 7, 8  
Rev 2.7  
Jul 16



Project No      A9020-19  
 Project Name    SOUTH HUMBER BANK ENERGY CENTRE

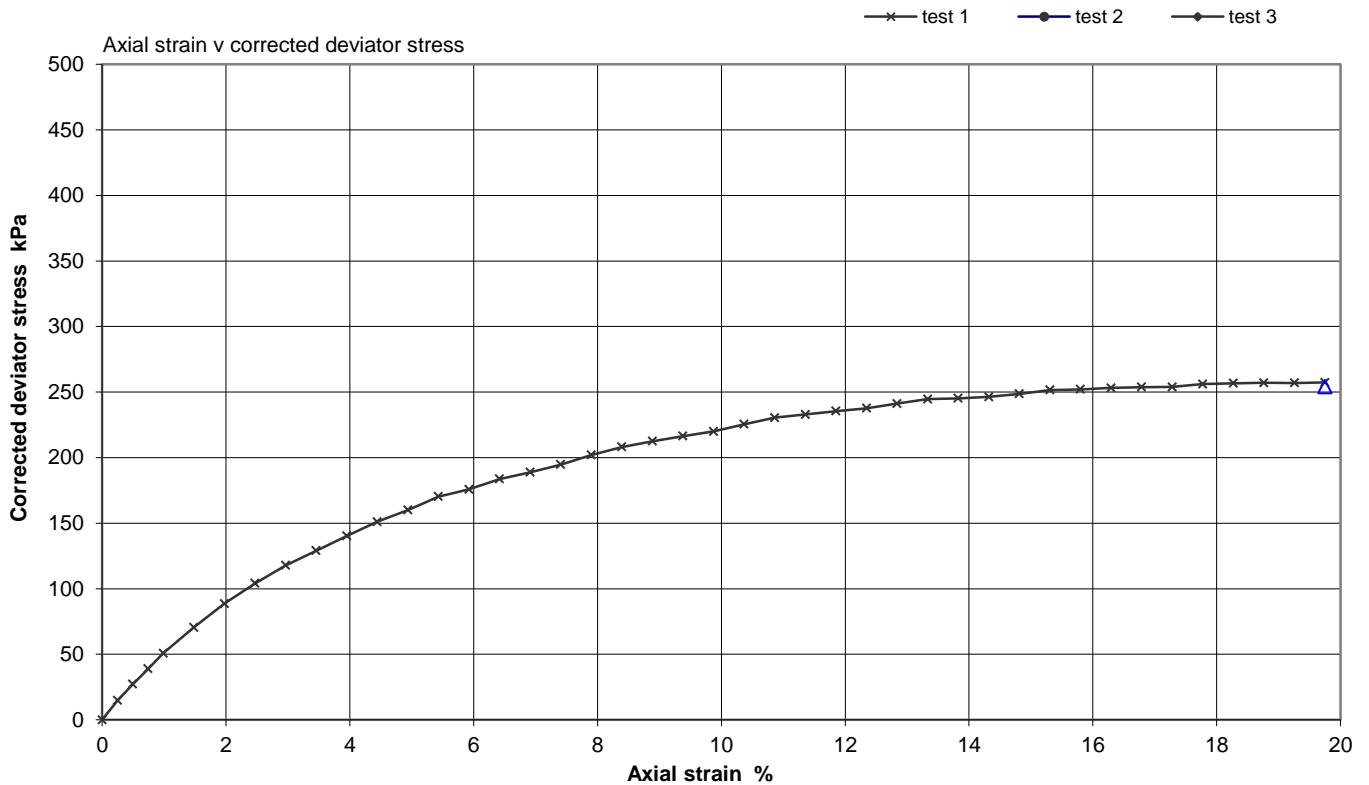
Figure  
**MOHR**

The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2016 SOCOTEC UK Limited

Printed: 27/09/2019 14:32

# UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST

Sample Details:	SAMPLE ID:	Hole No	BH11
	A9020-1920190829101731	Sample Depth (m BGL)	9.00 - 9.45
		Sample Type and No	UT25
		Specimen Ref	



Type of test	BS 1377: Part 7 : 1990, clause 8, single stage
Soil description	Firm to stiff greyish brown slightly sandy slightly gravelly CLAY.
Initial Condition	UNDISTURBED
Preparation	As BS 1377 Part 1

Test No.	1		
Initial Length	202.5		mm
Dimensions Diameter	103.8		mm
Bulk density	2.20		Mg/m <sup>3</sup>
Dry density	1.88		Mg/m <sup>3</sup>
Moisture Content	17		%
Rate of strain	2.00		% / minute
Membrane thickness	0.24		mm ( latex rubber )
<b>At failure (Δ)</b>			
Cell pressure	180		kPa
Axial strain	19.8		%
Deviator stress ( $\sigma_1 - \sigma_3$ )	257		kPa corrected
CU $\sigma_1 - \sigma_3$ )	129		kPa
Mode of failure	Plastic		

Deviator stress corrected for area change and membrane, as BS 1377

Report page 1 of 1

QA Ref  
SLD 7, 8  
Rev 2.7  
Jul 16



Project No A9020-19  
Project Name SOUTH HUMBER BANK ENERGY CENTRE

Figure  
**UTXL**

The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2016 SOCOTEC UK Limited

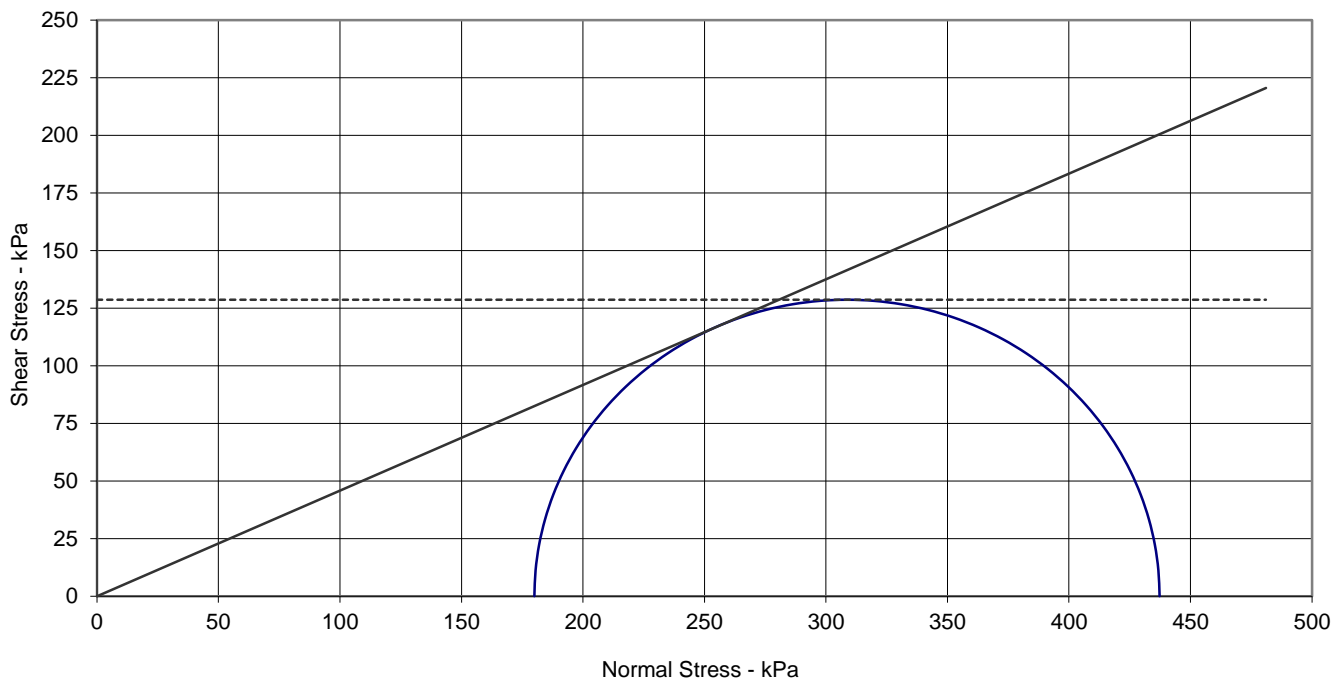
Printed: 27/09/2019 14:32

# UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST

Sample Details:	SAMPLE ID:	Hole No	BH11
	A9020-1920190829101731	Sample Depth (m BGL)	9.00 - 9.45
		Sample Type and No	UT25
		Specimen Ref	

## MOHR CIRCLES

— test 1    - - - - - test 2    - · - · - test 3    — envelope    - - - - - phi = 0



Conditions at failure / end of stage

Test No.	1		
Cell Pressure	180		kPa
Deviator stress	257		kPa

Envelope based on linear regression

angle of shearing resistance,  $\phi_u$       24½      degrees  
 cohesion,  $c_u$                               0              kPa



Based on  $\phi = 0$ ,

average cohesion,  $c_u$                       129              kPa  
 ( average undrained shear strength )

Parameters derived from

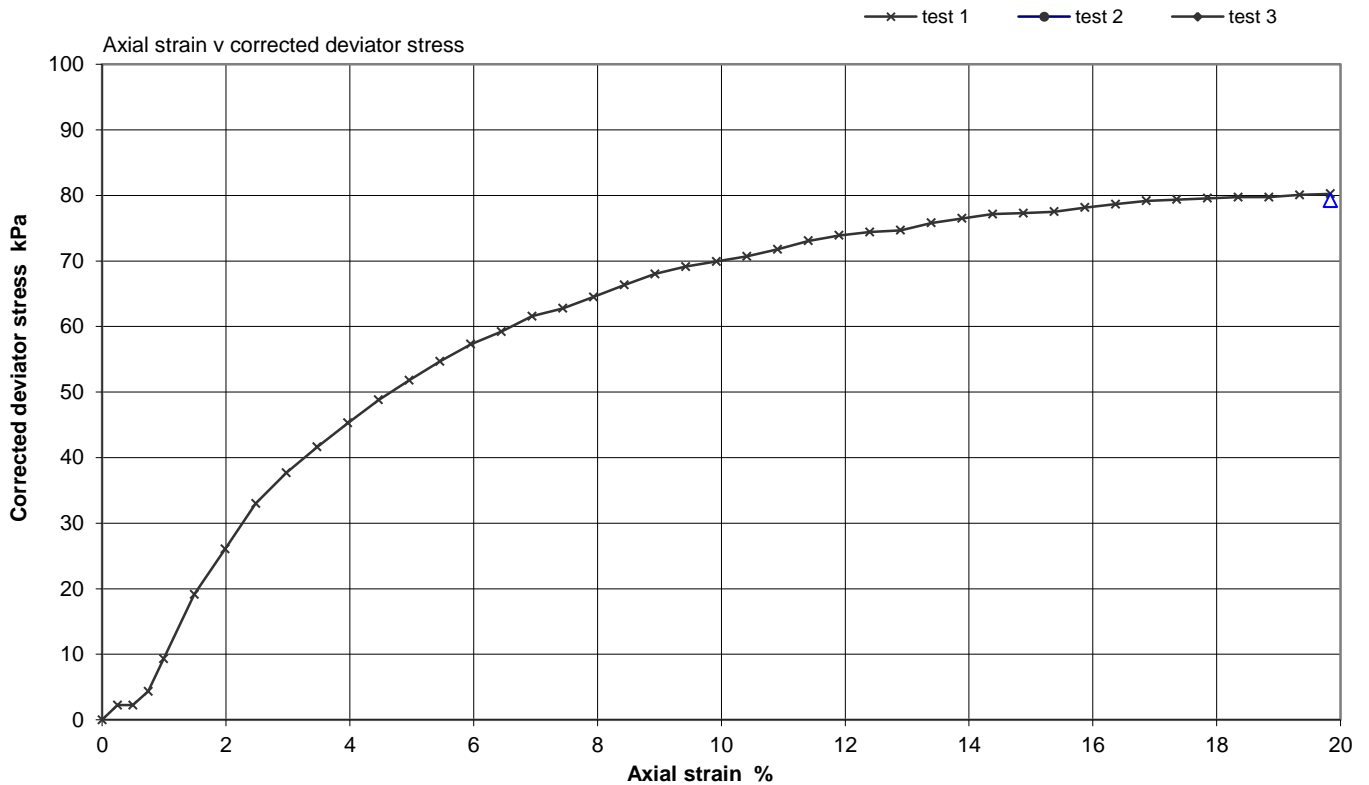
BS 1377: Part 7 : 1990, clause 8, single stage

The data produced on this sheet is not covered by BS 1377 nor by UKAS accreditation to BS 1377

QA Ref SLD 7, 8 Rev 2.7 Jul 16	 1157	 <b>SOCOTEC</b>	Project No      A9020-19 Project Name    SOUTH HUMBER BANK ENERGY CENTRE	Figure <h3>MOHR</h3>
			The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2016 SOCOTEC UK Limited	

# UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST

<b>Sample Details:</b>	SAMPLE ID:	Hole No	BH11
	A9020-1920190829103601	Sample Depth (m BGL)	21.00 - 21.45
		Sample Type and No	UT41
		Specimen Ref	



Type of test	BS 1377: Part 7 : 1990, clause 8, single stage
Soil description	Firm greyish brown slightly sandy slightly gravelly CLAY.
Initial Condition	UNDISTURBED
Preparation	As BS 1377 Part 1

Test No.	1		
Initial Length	201.6		mm
Dimensions Diameter	103.1		mm
Bulk density	2.17		Mg/m <sup>3</sup>
Dry density	1.57		Mg/m <sup>3</sup>
Moisture Content	39		%
Rate of strain	2.00		% / minute
Membrane thickness	0.24		mm ( latex rubber )
<b>At failure (Δ)</b>			
Cell pressure	420		kPa
Axial strain	19.8		%
Deviator stress ( $\sigma_1 - \sigma_3$ )	80		kPa corrected
CU $\sigma_1 - \sigma_3$ )	40		kPa
Mode of failure	Plastic		

Deviator stress corrected for area change and membrane, as BS 1377

Report page 1 of 1

QA Ref  
SLD 7, 8  
Rev 2.7  
Jul 16



Project No A9020-19  
Project Name SOUTH HUMBER BANK ENERGY CENTRE

Figure  
**UTXL**

The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2016 SOCOTEC UK Limited

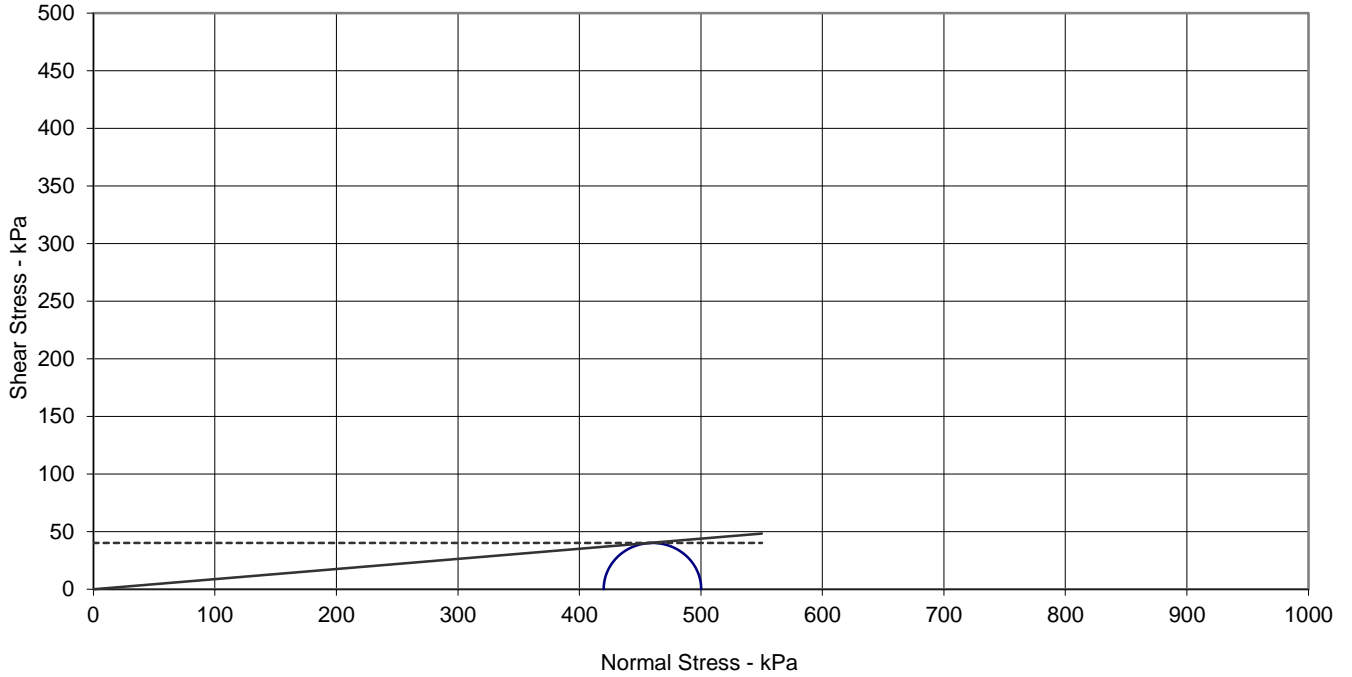
Printed: 27/09/2019 14:32

# UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST

Sample Details:	SAMPLE ID:	Hole No	BH11
	A9020-1920190829103601	Sample Depth (m BGL)	21.00 - 21.45
		Sample Type and No	UT41
		Specimen Ref	

## MOHR CIRCLES

— test 1    - - - - - test 2    - · - · - test 3    — envelope    - - - - - phi = 0



Conditions at failure / end of stage

Test No.	1		
Cell Pressure	420		kPa
Deviator stress	80		kPa

Envelope based on linear regression

angle of shearing resistance,  $\phi_u$                   5                  degrees  
 cohesion,  $c_u$                                                   0                  kPa



Based on  $\phi = 0$ ,

average cohesion,  $c_u$                                           40                  kPa  
 ( average undrained shear strength )

Parameters derived from

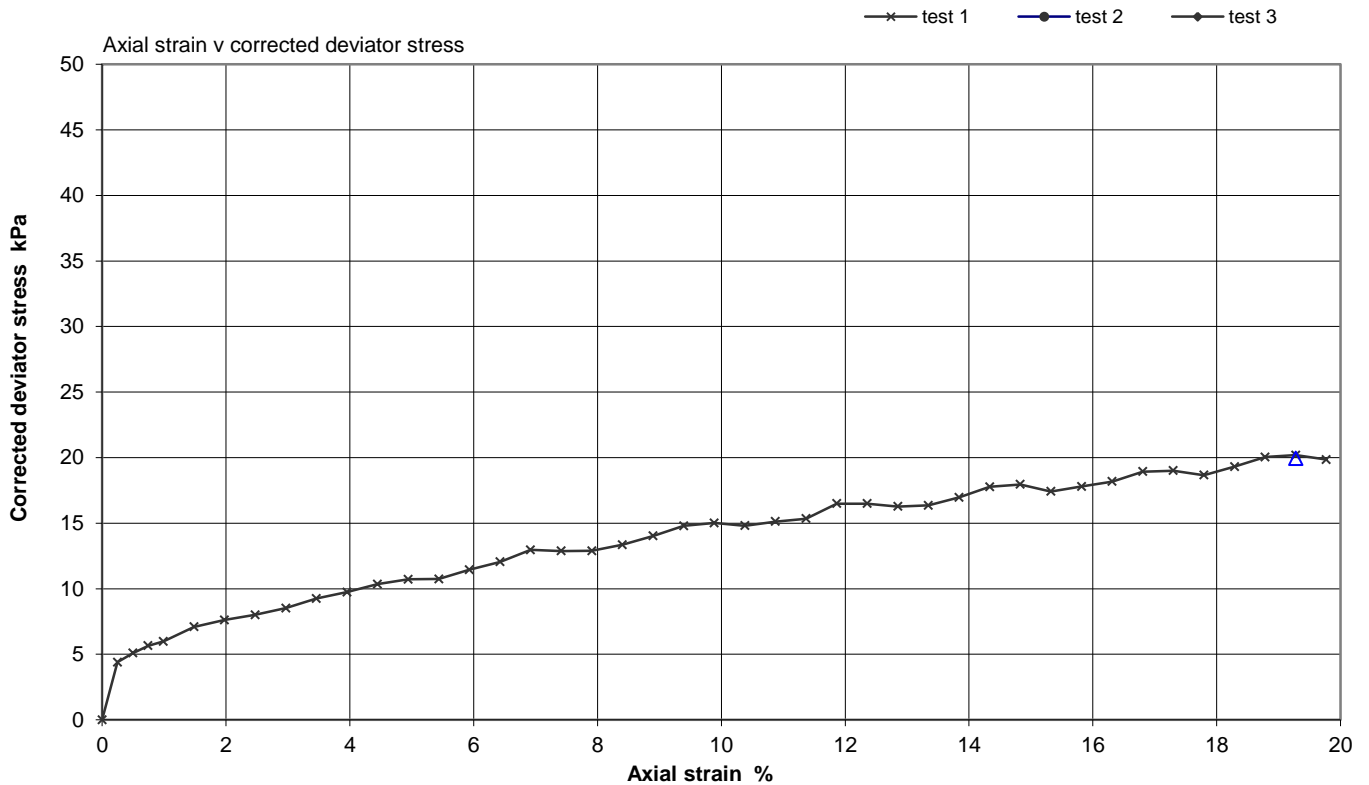
BS 1377: Part 7 : 1990, clause 8, single stage

The data produced on this sheet is not covered by BS 1377 nor by UKAS accreditation to BS 1377

QA Ref SLD 7, 8 Rev 2.7 Jul 16	 1157	 <b>SOCOTEC</b>	Project No                  A9020-19	Figure  <b>MOHR</b>
			Project Name              SOUTH HUMBER BANK ENERGY CENTRE	
The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2016 SOCOTEC UK Limited			Printed: 27/09/2019 14:32	

# UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST

Sample Details:	SAMPLE ID:	Hole No	BH12
	A9020-1920190903095333	Sample Depth (m BGL)	5.00 - 5.45
		Sample Type and No	UT13
		Specimen Ref	



Type of test	BS 1377: Part 7 : 1990, clause 8, single stage
Soil description	Soft greyish brown slightly sandy CLAY.
Initial Condition	UNDISTURBED
Preparation	As BS 1377 Part 1

Test No.	1		
Initial Length	202.3		mm
Dimensions Diameter	103.2		mm
Bulk density	1.83		Mg/m <sup>3</sup>
Dry density	1.31		Mg/m <sup>3</sup>
Moisture Content	39		%
Rate of strain	2.00		% / minute
Membrane thickness	0.24		mm ( latex rubber )
<b>At failure (Δ)</b>			
Cell pressure	100		kPa
Axial strain	19.3		%
Deviator stress ( $\sigma_1 - \sigma_3$ )	20		kPa corrected
CU $\sigma_1 - \sigma_3$ )	10		kPa
Mode of failure	Plastic		

Deviator stress corrected for area change and membrane, as BS 1377

Report page 1 of 1

QA Ref  
SLD 7, 8  
Rev 2.7  
Jul 16



Project No A9020-19  
Project Name SOUTH HUMBER BANK ENERGY CENTRE

Figure  
**UTXL**

The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2016 SOCOTEC UK Limited

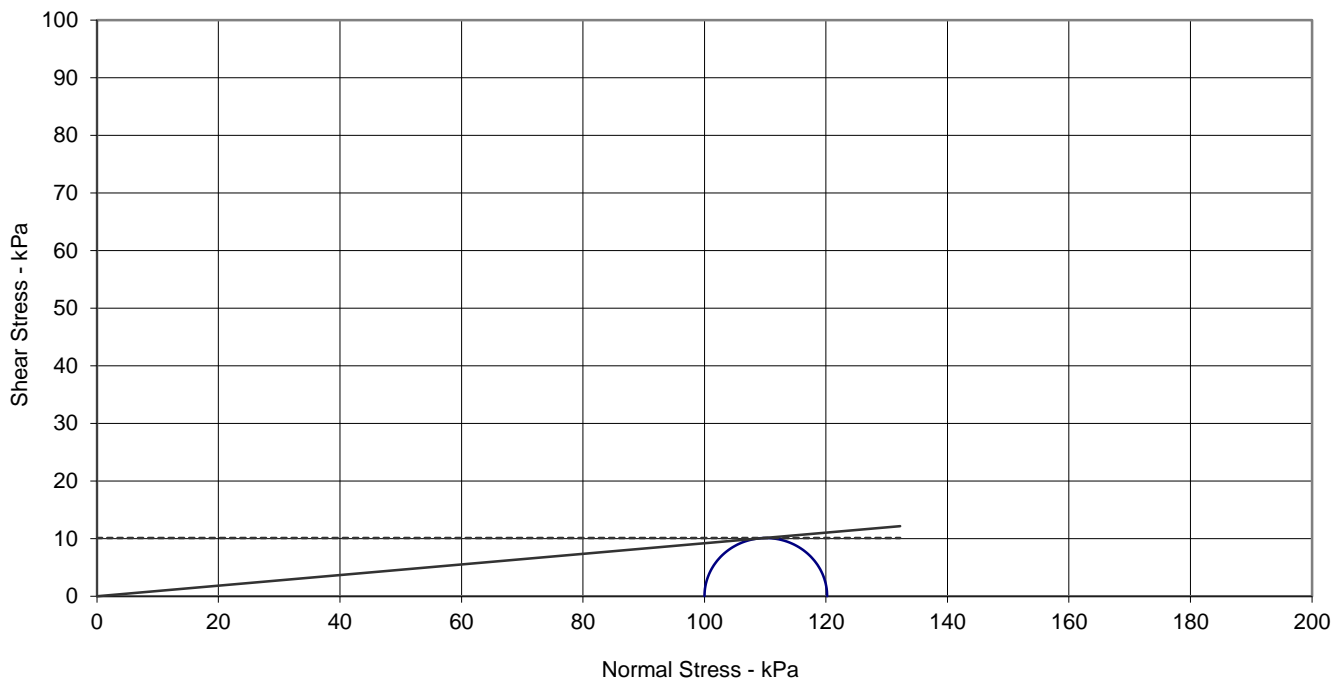
Printed: 27/09/2019 14:32

# UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST

Sample Details:	SAMPLE ID:	Hole No	BH12
	A9020-1920190903095333	Sample Depth (m BGL)	5.00 - 5.45
		Sample Type and No	UT13
		Specimen Ref	

## MOHR CIRCLES

— test 1    - - - - - test 2    - · - · - test 3    — envelope    - - - - - phi = 0



Conditions at failure / end of stage

Test No.	1		
Cell Pressure	100		kPa
Deviator stress	20		kPa

Envelope based on linear regression

angle of shearing resistance,  $\phi_u$       5½      degrees  
 cohesion,  $c_u$                               0      kPa



Based on  $\phi = 0$ ,

average cohesion,  $c_u$                       10      kPa  
 ( average undrained shear strength )

Parameters derived from

BS 1377: Part 7 : 1990, clause 8, single stage

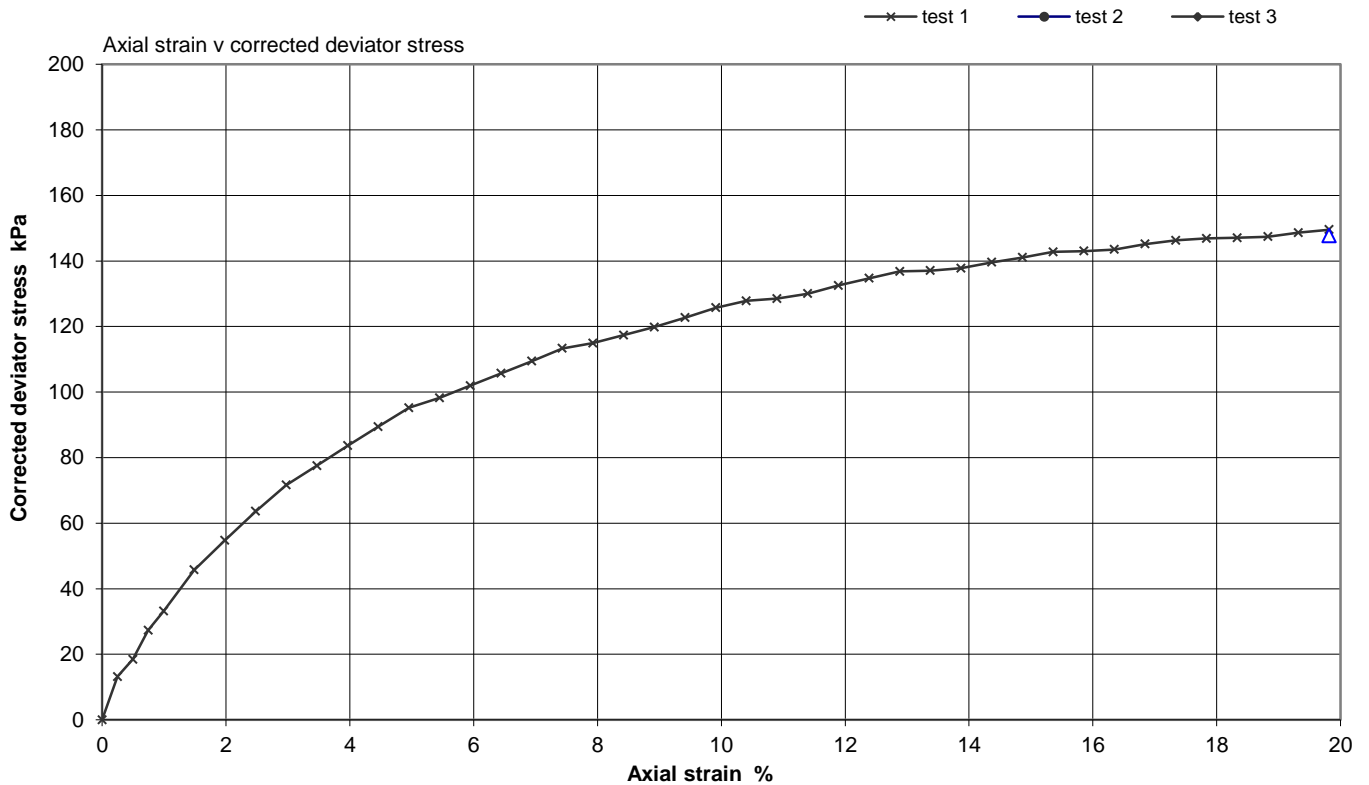
The data produced on this sheet is not covered by BS 1377 nor by UKAS accreditation to BS 1377

QA Ref SLD 7, 8 Rev 2.7 Jul 16	 1157		Project No      A9020-19	Figure  <b>MOHR</b>
			Project Name      SOUTH HUMBER BANK ENERGY CENTRE	
The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2016 SOCOTEC UK Limited			Printed: 27/09/2019 14:32	



# UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST

<b>Sample Details:</b>	SAMPLE ID:	Hole No	BH12
	A9020-1920190904094851	Sample Depth (m BGL)	14.00 - 14.45
		Sample Type and No	UT27
		Specimen Ref	



Type of test	BS 1377: Part 7 : 1990, clause 8, single stage
Soil description	Stiff dark brown slightly sandy slightly gravelly CLAY.
Initial Condition	UNDISTURBED
Preparation	As BS 1377 Part 1

Test No.	1		
Initial Length	201.8		mm
Dimensions Diameter	102.4		mm
Bulk density	2.22		Mg/m <sup>3</sup>
Dry density	1.95		Mg/m <sup>3</sup>
Moisture Content	14		%
Rate of strain	2.00		% / minute
Membrane thickness	0.24		mm ( latex rubber )
<b>At failure (Δ)</b>			
Cell pressure	280		kPa
Axial strain	19.8		%
Deviator stress ( $\sigma_1 - \sigma_3$ )	150		kPa corrected
CU $\sigma_1 - \sigma_3$ )	75		kPa
Mode of failure	Plastic		

Deviator stress corrected for area change and membrane, as BS 1377

Report page 1 of 1

QA Ref  
SLD 7, 8  
Rev 2.7  
Jul 16



Project No A9020-19  
Project Name SOUTH HUMBER BANK ENERGY CENTRE

Figure  
**UTXL**

The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2016 SOCOTEC UK Limited

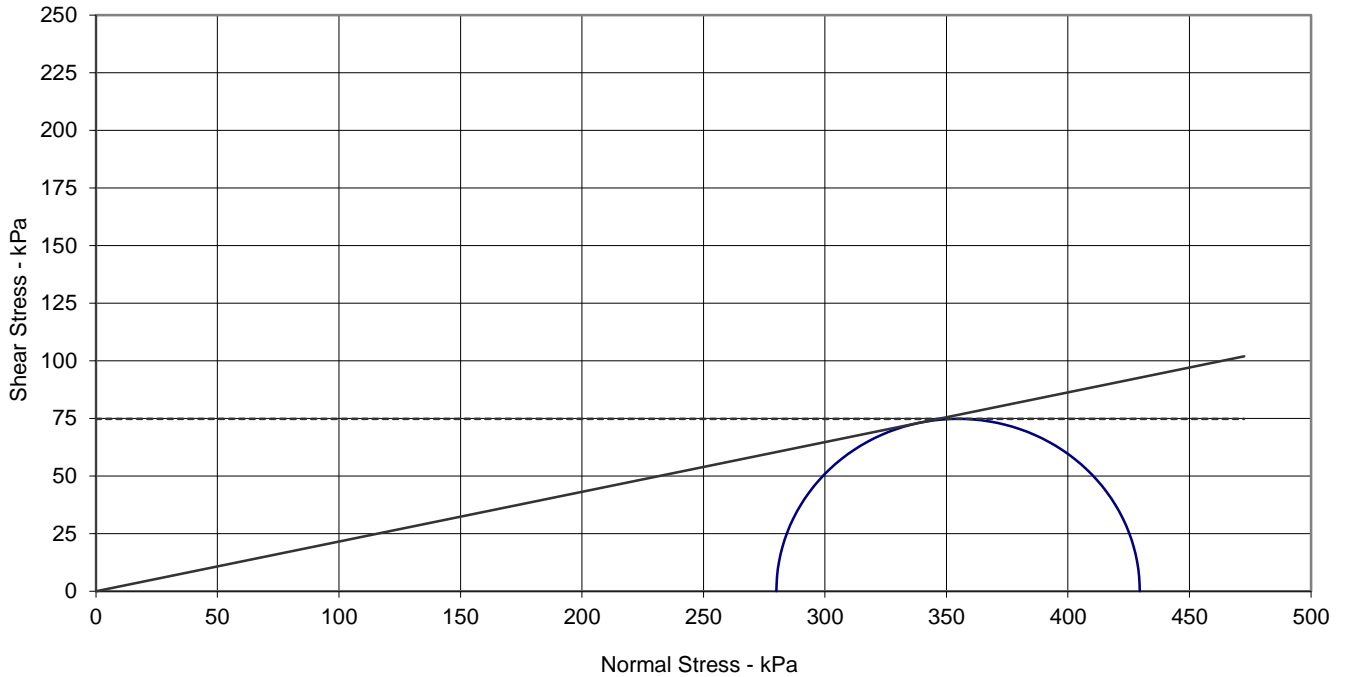
Printed: 27/09/2019 14:32

# UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST

Sample Details:	SAMPLE ID:	Hole No	BH12
	A9020-1920190904094851	Sample Depth (m BGL)	14.00 - 14.45
		Sample Type and No	UT27
		Specimen Ref	

## MOHR CIRCLES

— test 1    - - - - - test 2    - · - · - test 3    — envelope    - - - - - phi = 0



Conditions at failure / end of stage

Test No.	1		
Cell Pressure	280		kPa
Deviator stress	150		kPa

Envelope based on linear regression

angle of shearing resistance, $\phi_u$	12	degrees
cohesion, $c_u$	0	kPa

Based on  $\phi = 0$ ,

average cohesion, $c_u$	75	kPa
(average undrained shear strength)		

Parameters derived from

BS 1377: Part 7 : 1990, clause 8, single stage
------------------------------------------------

The data produced on this sheet is not covered by BS 1377 nor by UKAS accreditation to BS 1377

QA Ref  
SLD 7, 8  
Rev 2.7  
Jul 16



Project No      A9020-19  
Project Name    SOUTH HUMBER BANK ENERGY CENTRE

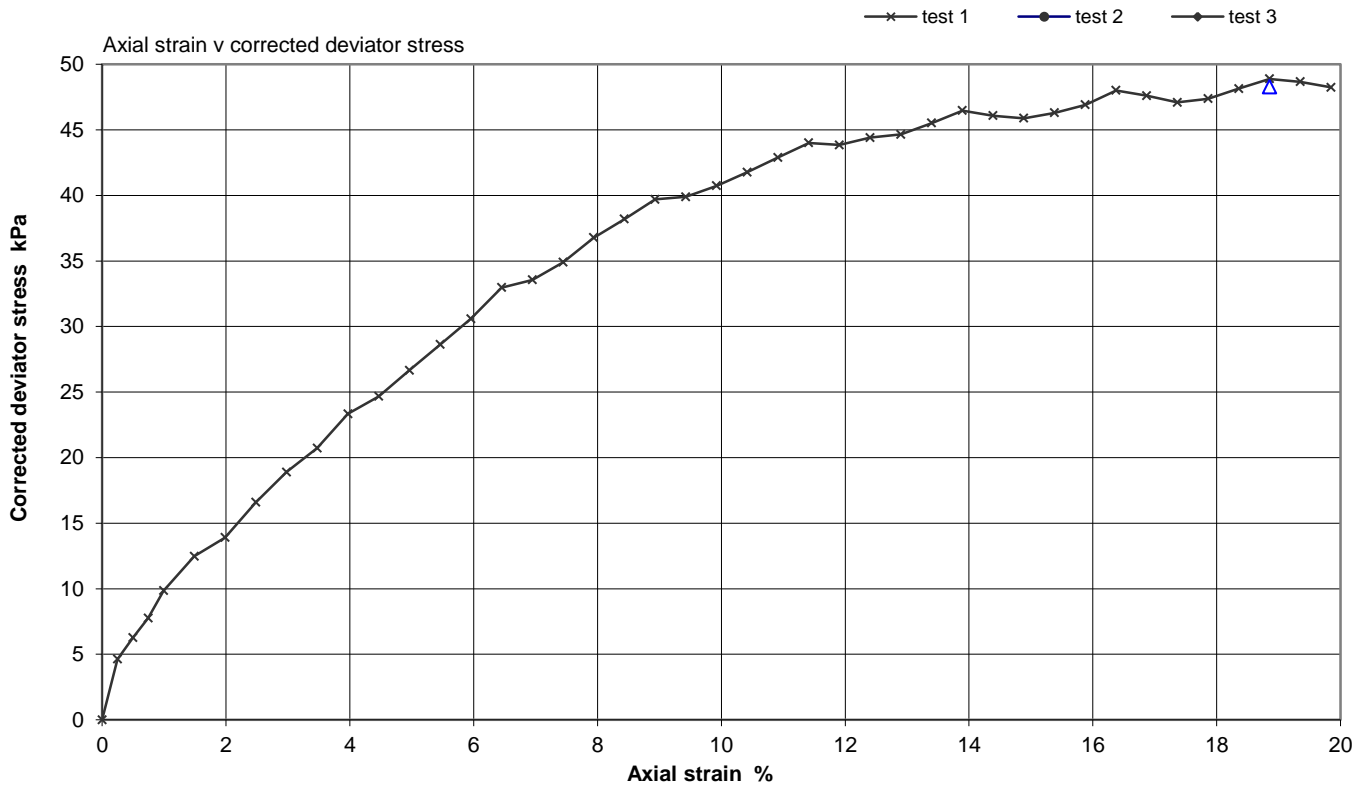
Figure  
**MOHR**

The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2016 SOCOTEC UK Limited

Printed: 27/09/2019 14:32

# UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST

<b>Sample Details:</b>	SAMPLE ID:	Hole No	BH13
	A9020-1920190905111009	Sample Depth (m BGL)	3.00 - 3.45
		Sample Type and No	UT15
		Specimen Ref	



Type of test	BS 1377: Part 7 : 1990, clause 8, single stage
Soil description	Firm greyish brown slightly sandy silty CLAY.
Initial Condition	UNDISTURBED
Preparation	As BS 1377 Part 1

Test No.	1		
Initial Length	201.5		mm
Dimensions Diameter	103.3		mm
Bulk density	1.90		Mg/m <sup>3</sup>
Dry density	1.41		Mg/m <sup>3</sup>
Moisture Content	35		%
Rate of strain	2.00		% / minute
Membrane thickness	0.24		mm ( latex rubber )
<b>At failure (Δ)</b>			
Cell pressure	60		kPa
Axial strain	18.9		%
Deviator stress ( $\sigma_1 - \sigma_3$ )	49		kPa corrected
CU $\sigma_1 - \sigma_3$ )	24		kPa
Mode of failure	Plastic		

Deviator stress corrected for area change and membrane, as BS 1377

Report page 1 of 1

QA Ref  
SLD 7, 8  
Rev 2.7  
Jul 16



Project No A9020-19  
Project Name SOUTH HUMBER BANK ENERGY CENTRE

Figure  
**UTXL**

The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2016 SOCOTEC UK Limited

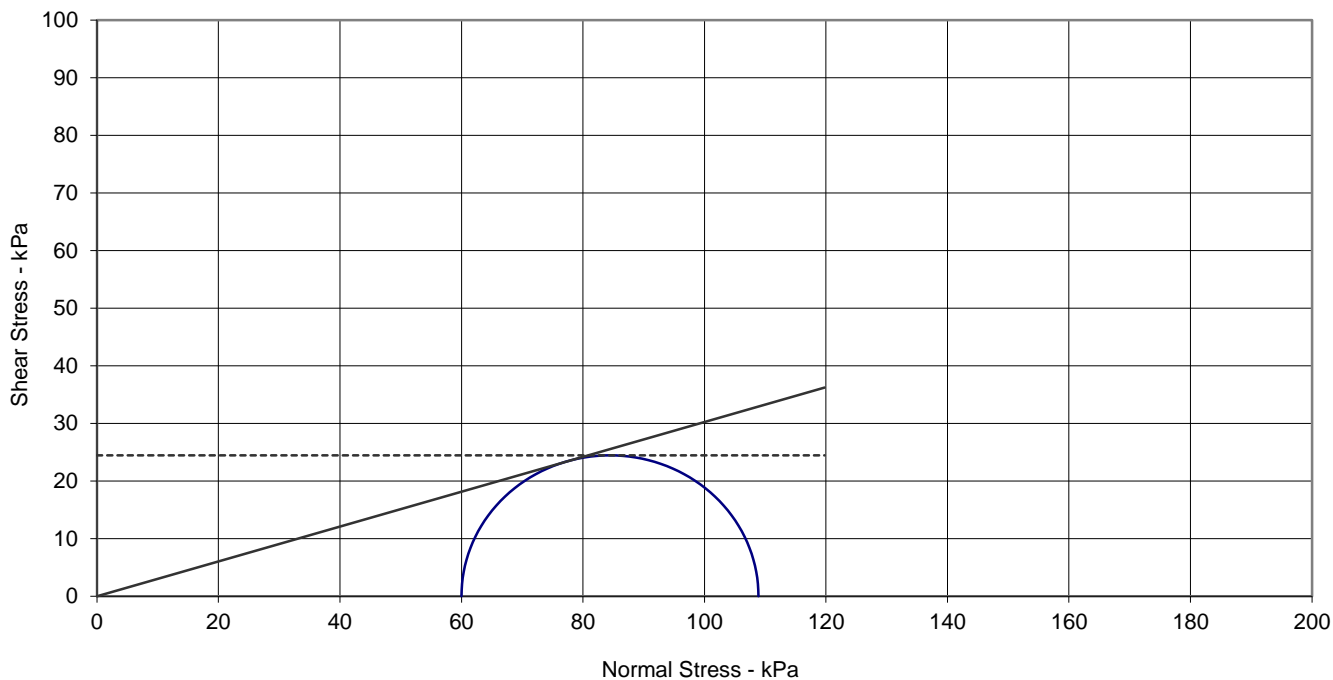
Printed: 27/09/2019 14:32

# UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST

Sample Details:	SAMPLE ID:	Hole No	BH13
	A9020-1920190905111009	Sample Depth (m BGL)	3.00 - 3.45
		Sample Type and No	UT15
		Specimen Ref	

## MOHR CIRCLES

— test 1    - - - - - test 2    - · - · - test 3    — envelope    - - - - - phi = 0



Conditions at failure / end of stage

Test No.	1		
Cell Pressure	60		kPa
Deviator stress	49		kPa

Envelope based on linear regression

angle of shearing resistance, $\phi_u$	17	degrees
cohesion, $c_u$	0	kPa



Based on  $\phi = 0$ ,

average cohesion, $c_u$	24	kPa
( average undrained shear strength )		

Parameters derived from

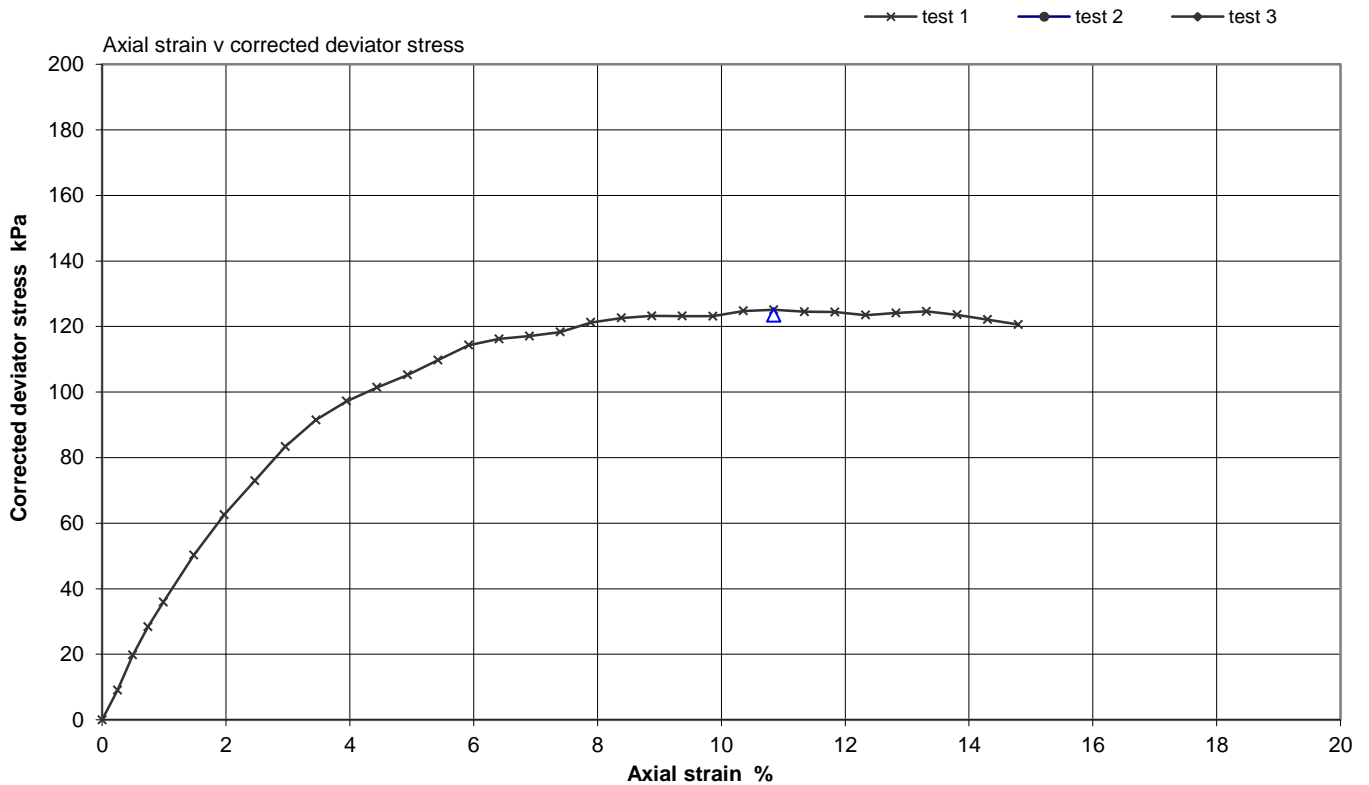
BS 1377: Part 7 : 1990, clause 8, single stage
------------------------------------------------

The data produced on this sheet is not covered by BS 1377 nor by UKAS accreditation to BS 1377

QA Ref SLD 7, 8 Rev 2.7 Jul 16	 1157	 <b>SOCOTEC</b>	Project No      A9020-19 Project Name    SOUTH HUMBER BANK ENERGY CENTRE	Figure  <b>MOHR</b>
			The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2016 SOCOTEC UK Limited	

# UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST

Sample Details:	SAMPLE ID:	Hole No	BH13
	A9020-1920190909093632	Sample Depth (m BGL)	18.00 - 18.45
		Sample Type and No	UT54
		Specimen Ref	



Type of test	BS 1377: Part 7 : 1990, clause 8, single stage
Soil description	Firm to stiff greyish brown slightly sandy slightly gravelly CLAY with localised softening. Gravel contains chalk.
Initial Condition	UNDISTURBED
Preparation	As BS 1377 Part 1

Test No.	1		
Initial Length	202.8		mm
Dimensions Diameter	104.0		mm
Bulk density	2.15		Mg/m3
Dry density	1.84		Mg/m3
Moisture Content	17		%
Rate of strain	2.00		% / minute
Membrane thickness	0.24		mm ( latex rubber )
<b>At failure (Δ)</b>			
Cell pressure	360		kPa
Axial strain	10.8		%
Deviator stress ( $\sigma_1 - \sigma_3$ )	125		kPa corrected
CU $\sigma_1 - \sigma_3$ )	63		kPa
Mode of failure	Plastic		

Deviator stress corrected for area change and membrane, as BS 1377

Report page 1 of 1

QA Ref  
SLD 7, 8  
Rev 2.7  
Jul 16



Project No A9020-19  
Project Name SOUTH HUMBER BANK ENERGY CENTRE

Figure  
**UTXL**

The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2016 SOCOTEC UK Limited

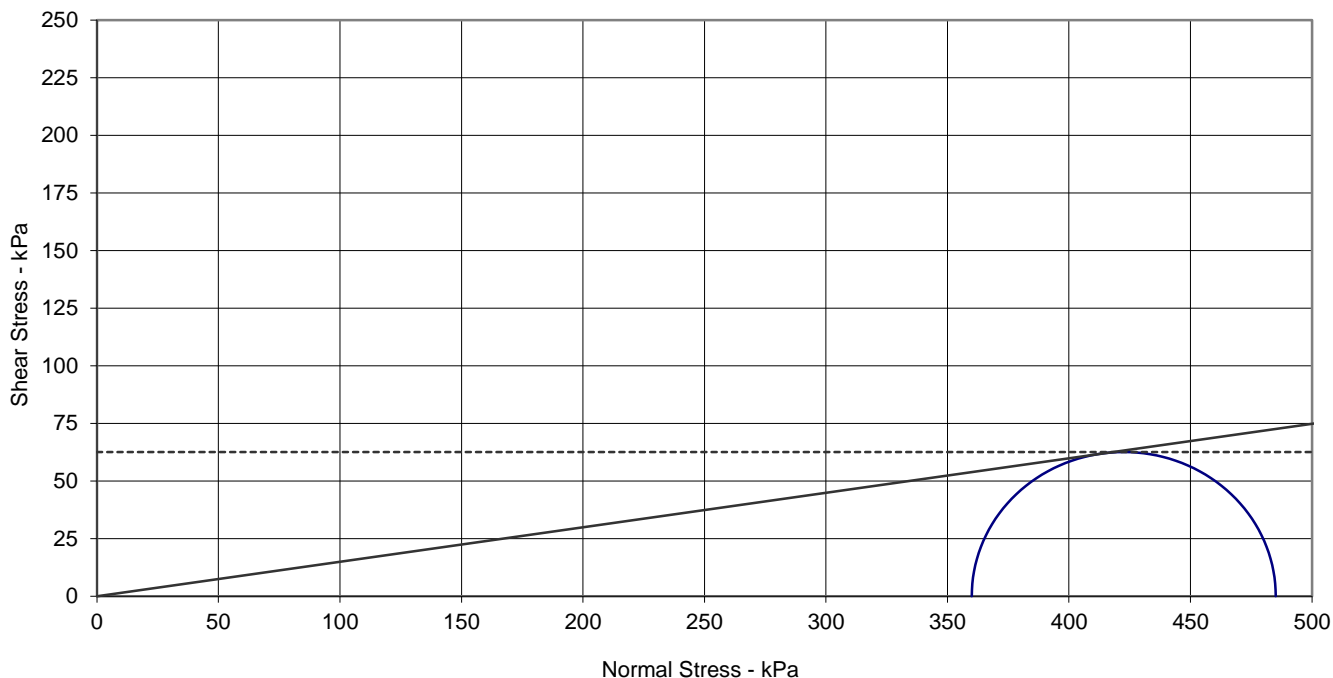
Printed: 27/09/2019 14:32

# UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST

Sample Details:	SAMPLE ID:	Hole No	BH13
	A9020-1920190909093632	Sample Depth (m BGL)	18.00 - 18.45
		Sample Type and No	UT54
		Specimen Ref	

## MOHR CIRCLES

— test 1    - - - - - test 2    - · - · - test 3    — envelope    - - - - - phi = 0



Conditions at failure / end of stage

Test No.	1		
Cell Pressure	360		kPa
Deviator stress	125		kPa

Envelope based on linear regression

angle of shearing resistance, $\phi_u$	8½	degrees
cohesion, $c_u$	0	kPa



Based on  $\phi = 0$ ,

average cohesion, $c_u$	63	kPa
(average undrained shear strength)		

Parameters derived from

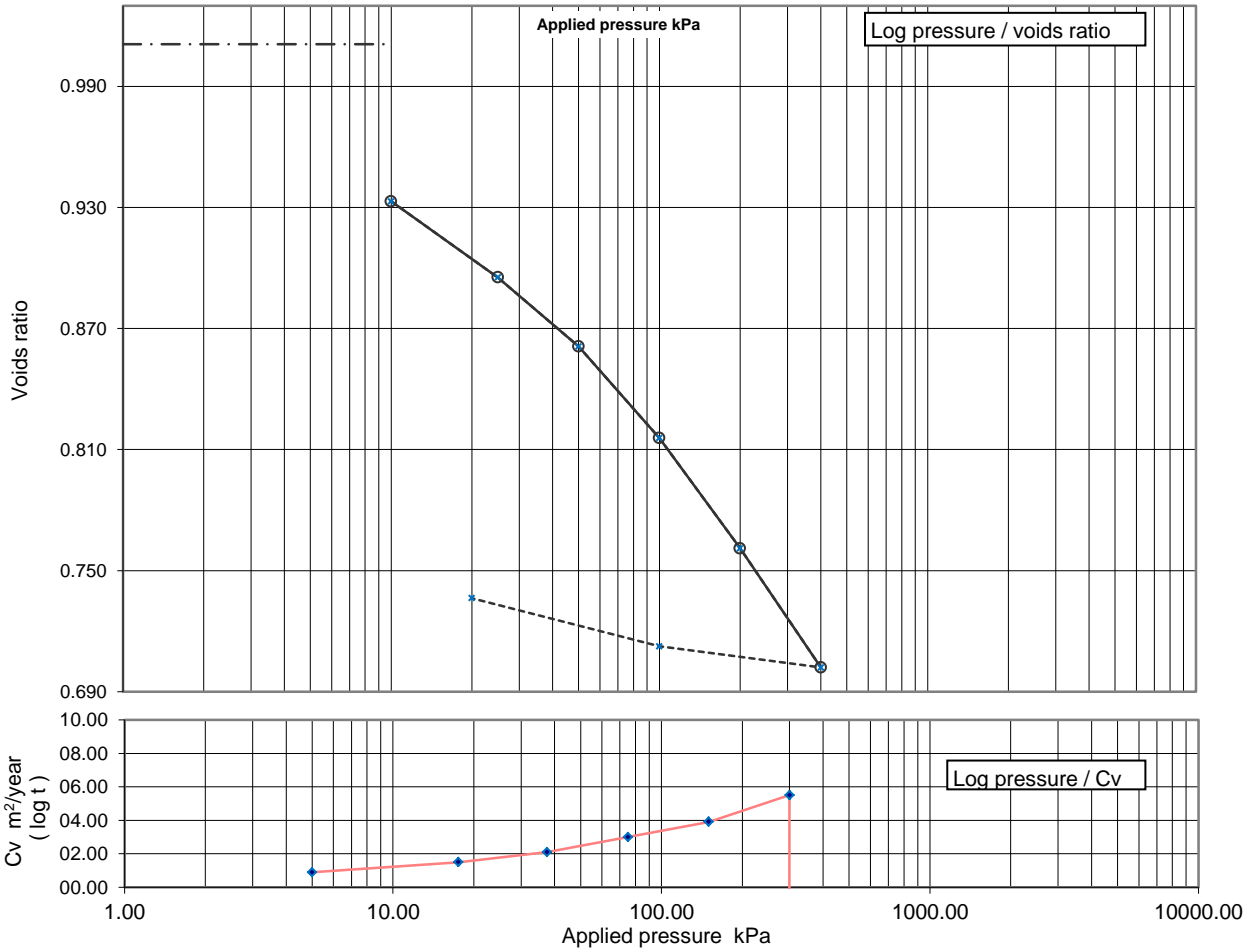
BS 1377: Part 7 : 1990, clause 8, single stage
------------------------------------------------

The data produced on this sheet is not covered by BS 1377 nor by UKAS accreditation to BS 1377

QA Ref SLD 7, 8 Rev 2.7 Jul 16	 1157	 <b>SOCOTEC</b>	Project No      A9020-19 Project Name    SOUTH HUMBER BANK ENERGY CENTRE	Figure <b>MOHR</b>
			The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2016 SOCOTEC UK Limited	

**ONE DIMENSIONAL CONSOLIDATION TEST**  
**BS 1377 : Part 5 : 1990 : clause 3**

<b>Sample Details:</b>	SAMPLE ID:	Hole No	BH01
	A9020-1920190815095540	Sample Depth (m BGL)	4.00 - 4.45
		Sample Type and No	UT20
		Specimen Ref	



Soil description	Soft greyish brown slightly sandy silty CLAY.		
Preparation	Undisturbed		
Index properties	Liquid limit %		Plastic limit %

(if available)

	Initial	Final	
Specimen details			
Particle density	2.66	measured	Mg/m <sup>3</sup>
Diameter	74.99		mm
Height	18.95	16.36	mm
Voids ratio	1.011	0.736	
Moisture content	38	28	%
Bulk density	1.83	1.96	Mg/m <sup>3</sup>
Dry density	1.32	1.53	Mg/m <sup>3</sup>
Saturation	100	102	%
Average temperature for test	19		oC
Swelling pressure	not measured		kPa

Applied Pressure kPa	Voids ratio	mv m <sup>2</sup> /MN	cv (t50, log) m <sup>2</sup> /year	cv (t90, root) m <sup>2</sup> /year
0	1.0110	/	/	/
10	0.9330	3.900	0.89	0.96
25	0.8953	1.300	1.5	1.6
50	0.8611	0.720	2.1	2.2
100	0.8157	0.490	3	1.6
200	0.7610	0.300	3.9	4.3
400	0.7020	0.170	5.5	5.7
100	0.7124	0.020	-	-
20	0.7363	0.170	-	-

Notes :

Specimen taken 10 mm from base of sample

QA Ref  
SLR 5.3  
Rev 2.21  
Feb 19



1157



Project No A9020-19  
Project Name SOUTH HUMBER BANK ENERGY CENTRE

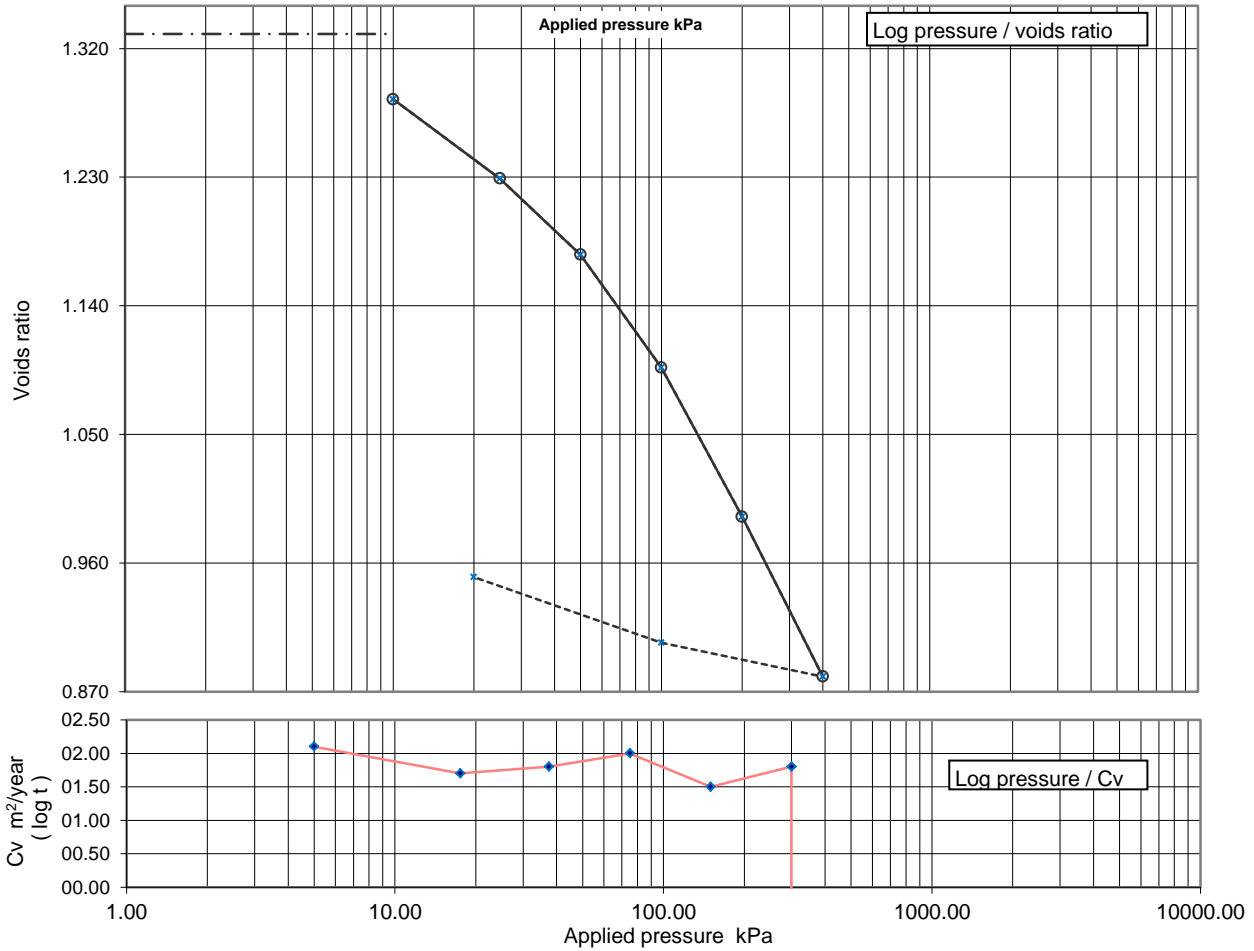
Figure  
**OED**

The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2019 SOCOTEC UK Limited

Printed:  
10/10/2019 09:03

**ONE DIMENSIONAL CONSOLIDATION TEST**  
**BS 1377 : Part 5 : 1990 : clause 3**

<b>Sample Details:</b>	SAMPLE ID:	Hole No	BH02
	A9020-1920190815104737	Sample Depth (m BGL)	9.50 - 9.95
		Sample Type and No	UT23
		Specimen Ref	



Soil description	Soft to firm dark brownish grey slightly sandy silty CLAY.		
Preparation	Undisturbed		
Index properties	Liquid limit %		Plastic limit %

(if available)

Specimen details	Initial	Final	
Particle density	2.67	measured	Mg/m <sup>3</sup>
Diameter	74.95		mm
Height	18.99	15.89	mm
Voids ratio	1.330	0.950	
Moisture content	47	36	%
Bulk density	1.69	1.86	Mg/m <sup>3</sup>
Dry density	1.15	1.37	Mg/m <sup>3</sup>
Saturation	95	101	%
Average temperature for test	19		oC
Swelling pressure	not measured		kPa

Applied Pressure kPa	Voids ratio	mv m <sup>2</sup> /MN	cv (t50, log) m <sup>2</sup> /year	cv (t90, root) m <sup>2</sup> /year
0	1.3303	/	/	/
10	1.2845	2.000	2.1	2.3
25	1.2291	1.600	1.7	1.9
50	1.1757	0.960	1.8	2
100	1.0967	0.730	2	2.1
200	0.9924	0.500	1.5	1.6
400	0.8805	0.280	1.8	1.9
100	0.9043	0.042	-	-
20	0.9502	0.300	-	-

Notes :

Specimen taken 20 mm from base of sample

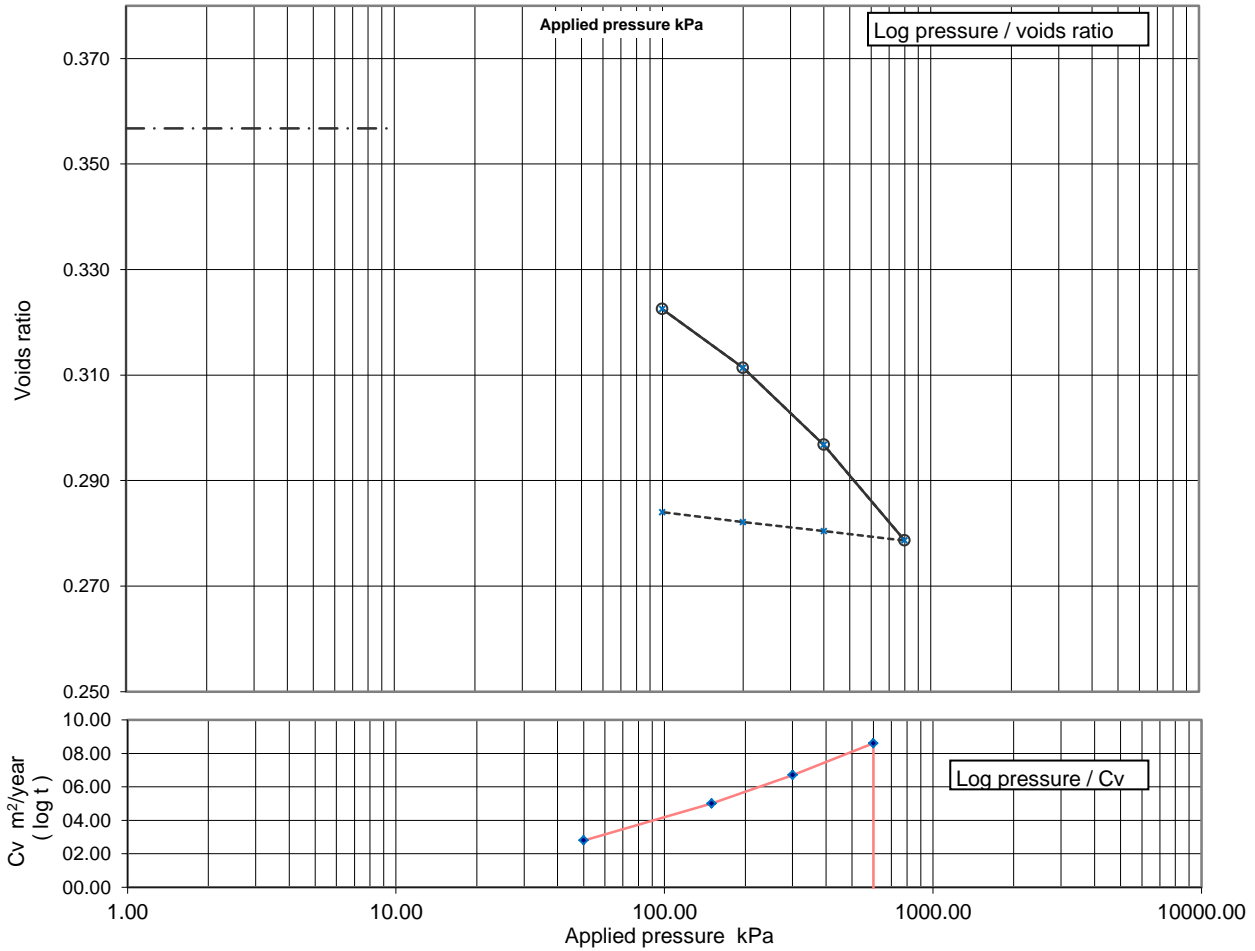
<b>QA Ref</b> SLR 5.3 Rev 2.21 Feb 19	<p>1157</p>		Project No	A9020-19	<b>Figure</b>  <b>OED</b>
			Project Name	SOUTH HUMBER BANK ENERGY CENTRE	
The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2019 SOCOTEC UK Limited			Printed: 10/10/2019 09:03		



# ONE DIMENSIONAL CONSOLIDATION TEST

## BS 1377 : Part 5 : 1990 : clause 3

<b>Sample Details:</b>	SAMPLE ID:	Hole No	BH03
	A9020-1920190819090652	Sample Depth (m BGL)	14.00 - 14.45
		Sample Type and No	UT31
		Specimen Ref	





Soil description	Stiff greyish brown slightly sandy slightly gravelly CLAY.		
Preparation	Undisturbed		
Index properties	Liquid limit %		Plastic limit %

(if available)		
Specimen details	Initial	Final
Particle density	2.66	measured
Diameter	74.94	
Height	18.99	17.97
Voids ratio	0.357	0.284
Moisture content	13	11
Bulk density	2.21	2.30
Dry density	1.96	2.07
Saturation	94	103
Average temperature for test	19	
Swelling pressure	not measured	

Applied Pressure kPa	Voids ratio	mv m <sup>2</sup> /MN	cv (t50, log) m <sup>2</sup> /year	cv (t90, root) m <sup>2</sup> /year
0	0.3567			
100	0.3225	0.250	2.8	2.9
200	0.3114	0.084	5	5.5
400	0.2968	0.056	6.7	7.2
800	0.2786	0.035	8.6	8.5
400	0.2804	0.004	-	-
200	0.2821	0.007	-	-
100	0.2840	0.014	-	-

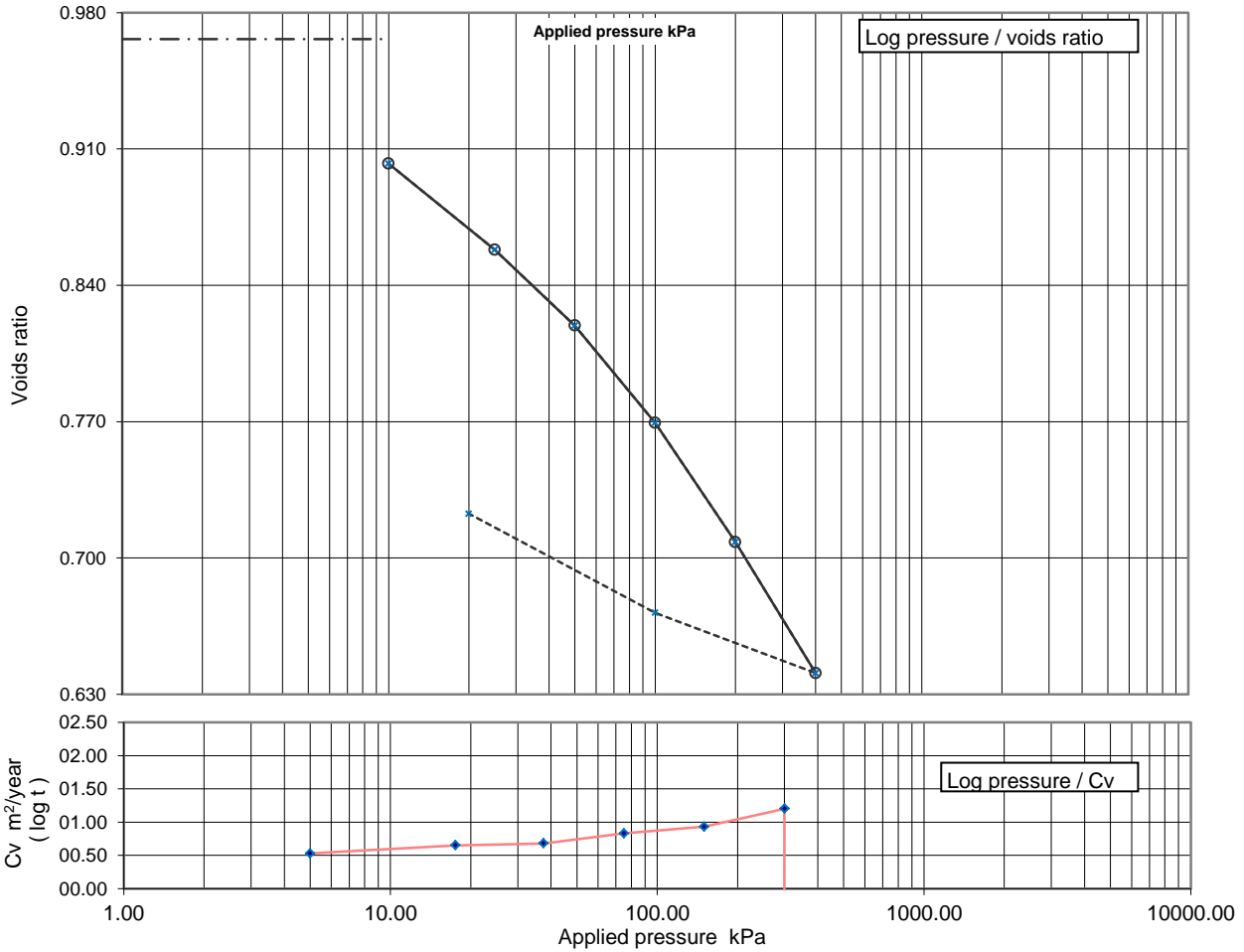
Notes :

Specimen taken 10 mm from base of sample

<b>QA Ref</b> SLR 5.3 Rev 2.21 Feb 19	 1157	 <b>SOCOTEC</b>	Project No	A9020-19	Figure	<b>OED</b>	
			Project Name	SOUTH HUMBER BANK ENERGY CENTRE			
The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2019 SOCOTEC UK Limited						Printed:	10/10/2019 09:03

**ONE DIMENSIONAL CONSOLIDATION TEST**  
**BS 1377 : Part 5 : 1990 : clause 3**

<b>Sample Details:</b>	SAMPLE ID:	Hole No	BH04
	A9020-1920190819092044	Sample Depth (m BGL)	9.00 - 9.45
		Sample Type and No	UT35
		Specimen Ref	



Soil description	Soft organic dark grey CLAY.		
Preparation	Undisturbed		
Index properties	Liquid limit %	Plastic limit %	

(if available)

	Initial	Final	
Specimen details			
Particle density	2.65	assumed	Mg/m <sup>3</sup>
Diameter	74.94		mm
Height	19.03	16.67	mm
Voids ratio	0.966	0.723	
Moisture content	37	29	%
Bulk density	1.85	1.98	Mg/m <sup>3</sup>
Dry density	1.35	1.54	Mg/m <sup>3</sup>
Saturation	101	105	%
Average temperature for test	19		oC
Swelling pressure	not measured		kPa

Applied Pressure kPa	Voids ratio	mv m <sup>2</sup> /MN	cv (t50, log) m <sup>2</sup> /year	cv (t90, root) m <sup>2</sup> /year
0	0.9664	/	/	/
10	0.9024	3.300	0.53	0.58
25	0.8583	1.500	0.65	0.7
50	0.8193	0.840	0.68	0.72
100	0.7693	0.550	0.83	0.87
200	0.7081	0.350	0.93	0.99
400	0.6408	0.200	1.2	1.3
100	0.6718	0.063	-	-
20	0.7227	0.380	-	-

Notes :

Specimen taken 10 mm from base of sample

QA Ref  
SLR 5.3  
Rev 2.21  
Feb 19



1157



Project No A9020-19  
Project Name SOUTH HUMBER BANK ENERGY CENTRE

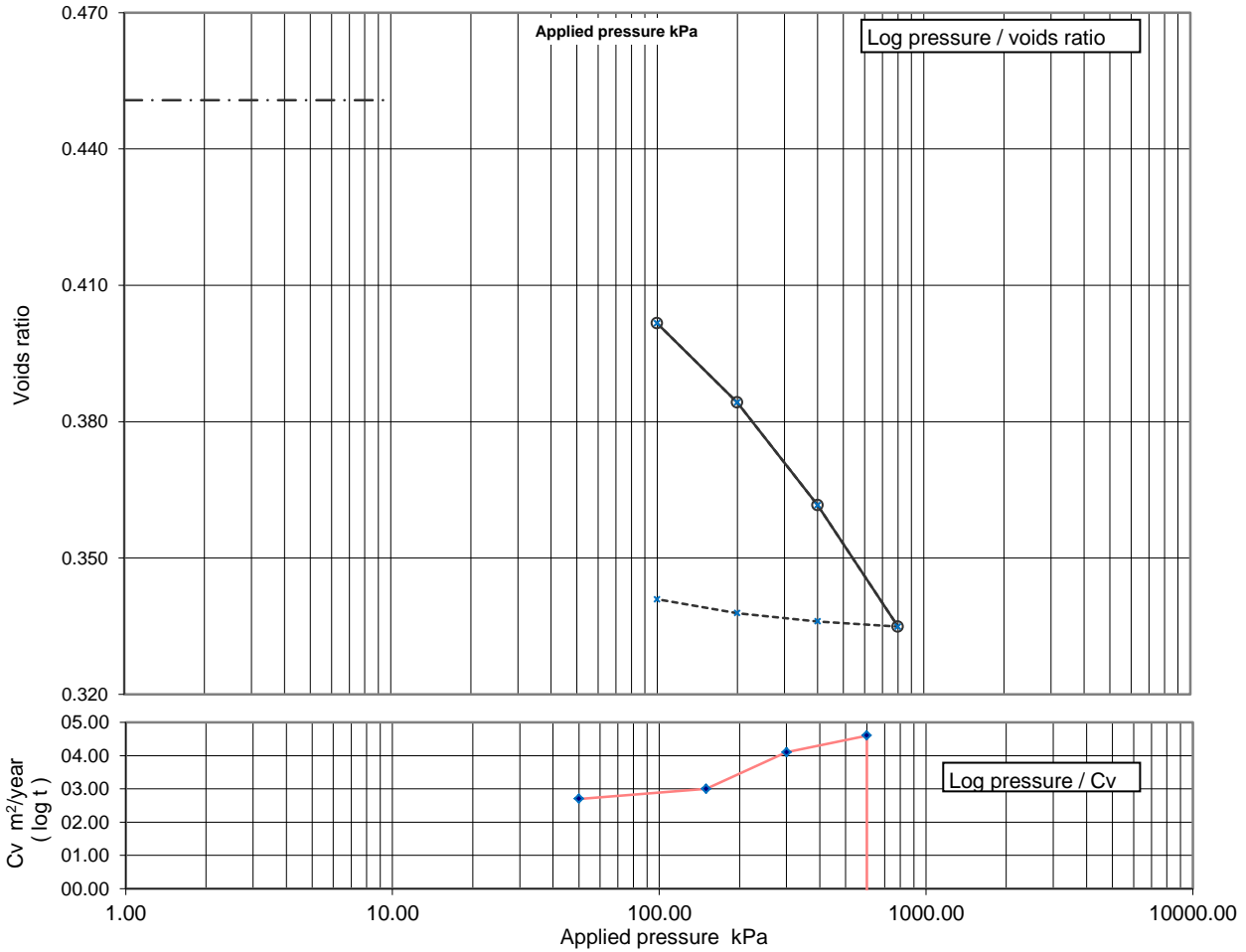
Figure  
**OED**

The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2019 SOCOTEC UK Limited

Printed:  
10/10/2019 09:03

**ONE DIMENSIONAL CONSOLIDATION TEST**  
**BS 1377 : Part 5 : 1990 : clause 3**

<b>Sample Details:</b>	SAMPLE ID:	Hole No	BH04
	A9020-1920190830081141	Sample Depth (m BGL)	13.50 - 13.95
		Sample Type and No	UT44
		Specimen Ref	



Soil description	Firm greyish brown slightly sandy slightly gravelly CLAY.		
Preparation	Undisturbed		
Index properties	Liquid limit %	Plastic limit %	

(if available)

	Initial	Final	
Specimen details			
Particle density	2.73	measured	Mg/m <sup>3</sup>
Diameter	74.97		mm
Height	19.06	17.62	mm
Voids ratio	0.451	0.341	
Moisture content	15	13	%
Bulk density	2.17	2.30	Mg/m <sup>3</sup>
Dry density	1.88	2.04	Mg/m <sup>3</sup>
Saturation	93	105	%
Average temperature for test	19		oC
Swelling pressure	not measured		kPa

Applied Pressure kPa	Voids ratio	mv m <sup>2</sup> /MN	cv (t50, log) m <sup>2</sup> /year	cv (t90, root) m <sup>2</sup> /year
0	0.4507	/	/	/
100	0.4016	0.340	2.7	2.9
200	0.3842	0.120	3	3.3
400	0.3616	0.082	4.1	4.4
800	0.3349	0.049	4.6	4.8
400	0.3360	0.002	-	-
200	0.3378	0.007	-	-
100	0.3409	0.023	-	-

Notes :

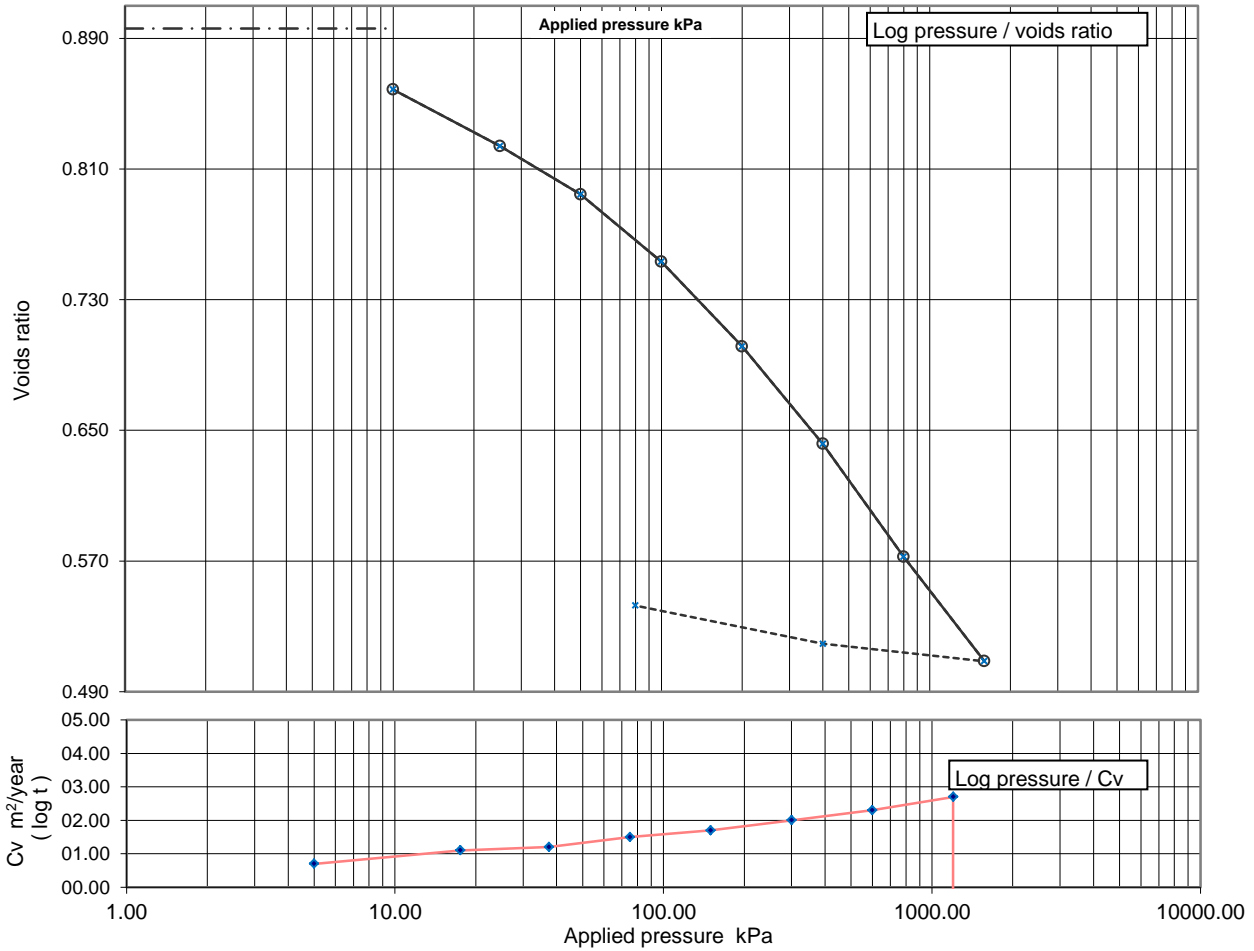
Specimen taken 10 mm from base of sample

<b>QA Ref</b> SLR 5.3 Rev 2.21 Feb 19	 1157	 <b>SOCOTEC</b>	Project No	A9020-19	Figure	<b>OED</b>
			Project Name	SOUTH HUMBER BANK ENERGY CENTRE		
The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2019 SOCOTEC UK Limited					Printed: 10/10/2019 09:03	

# ONE DIMENSIONAL CONSOLIDATION TEST

## BS 1377 : Part 5 : 1990 : clause 3

Sample Details:	SAMPLE ID:	Hole No	BH05
	A9020-1920190829105800	Sample Depth (m BGL)	3.00 - 3.45
		Sample Type and No	UT8
		Specimen Ref	



Soil description	Soft brown CLAY.		
Preparation	Undisturbed		
Index properties	Liquid limit %	Plastic limit %	

(if available)

	Initial	Final	
Specimen details			
Particle density	2.70	measured	Mg/m <sup>3</sup>
Diameter	75.02		mm
Height	18.95	15.42	mm
Voids ratio	0.896	0.543	
Moisture content	34	21	%
Bulk density	1.91	2.12	Mg/m <sup>3</sup>
Dry density	1.42	1.75	Mg/m <sup>3</sup>
Saturation	102	105	%
Average temperature for test	19		oC
Swelling pressure	not measured		kPa

Notes :

Applied Pressure kPa	Voids ratio	mv m <sup>2</sup> /MN	cv (t <sub>50</sub> , log) m <sup>2</sup> /year	cv (t <sub>90</sub> , root) m <sup>2</sup> /year
0	0.8960	/	/	/
10	0.8586	2.000	0.7	0.76
25	0.8240	1.200	1.1	1.1
50	0.7945	0.650	1.2	1.3
100	0.7532	0.460	1.5	1.6
200	0.7014	0.300	1.7	1.8
400	0.6417	0.180	2	2.2
800	0.5725	0.110	2.3	2.3
1600	0.5087	0.051	2.7	3
400	0.5193	0.006	-	-
80	0.5427	0.048	-	-

Specimen taken 10 mm from base of sample

QA Ref  
SLR 5.3  
Rev 2.21  
Feb 19



1157



Project No A9020-19  
Project Name SOUTH HUMBER BANK ENERGY CENTRE

Figure

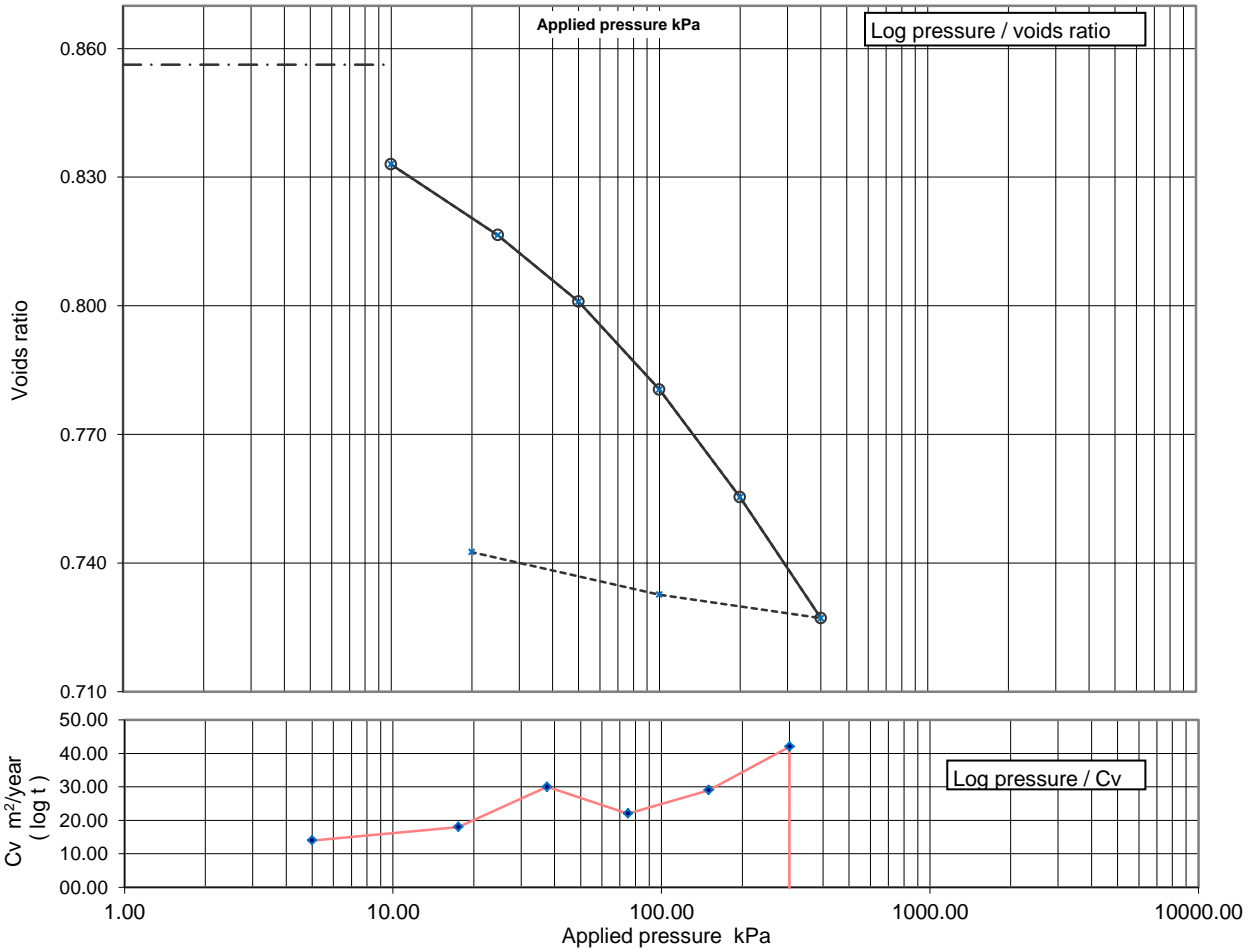
OED

The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2019 SOCOTEC UK Limited

Printed:  
10/10/2019 09:03

**ONE DIMENSIONAL CONSOLIDATION TEST**  
**BS 1377 : Part 5 : 1990 : clause 3**

<b>Sample Details:</b>	SAMPLE ID:	Hole No	BH05
	A9020-1920190829105847	Sample Depth (m BGL)	8.00 - 8.45
		Sample Type and No	UT17
		Specimen Ref	



Soil description	Dark greyish brown clayey SAND.		
Preparation	Undisturbed		
Index properties	Liquid limit %	Plastic limit %	

(if available)

	Initial	Final	
Specimen details			
Particle density	2.62	measured	Mg/m <sup>3</sup>
Diameter	74.94		mm
Height	18.91	17.75	mm
Voids ratio	0.856	0.743	
Moisture content	32	27	%
Bulk density	1.86	1.92	Mg/m <sup>3</sup>
Dry density	1.41	1.50	Mg/m <sup>3</sup>
Saturation	97	97	%
Average temperature for test	19		oC
Swelling pressure	not measured		kPa

Applied Pressure kPa	Voids ratio	mv m <sup>2</sup> /MN	cv (t50, log) m <sup>2</sup> /year	cv (t90, root) m <sup>2</sup> /year
0	0.8562	/	/	/
10	0.8330	1.300	14	14
25	0.8165	0.600	18	18
50	0.8010	0.340	30	32
100	0.7804	0.230	22	23
200	0.7553	0.140	29	30
400	0.7271	0.080	42	45
100	0.7326	0.011	-	-
20	0.7425	0.072	-	-

Notes :

Specimen taken 10 mm from base of sample

QA Ref  
SLR 5.3  
Rev 2.21  
Feb 19



1157



Project No A9020-19  
Project Name SOUTH HUMBER BANK ENERGY CENTRE

Figure  
**OED**

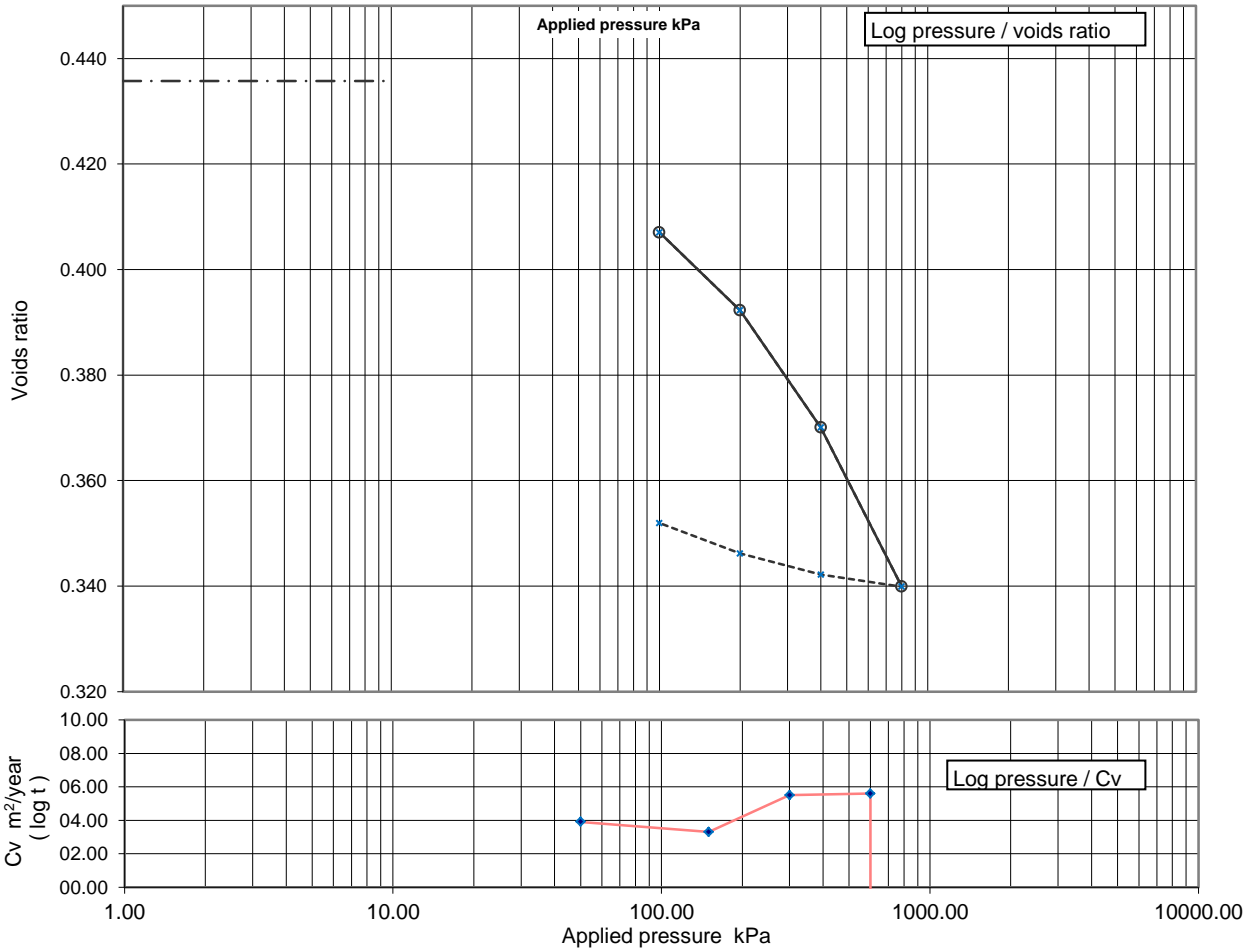
The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2019 SOCOTEC UK Limited

Printed:  
10/10/2019 09:03

# ONE DIMENSIONAL CONSOLIDATION TEST

## BS 1377 : Part 5 : 1990 : clause 3

<b>Sample Details:</b>	SAMPLE ID:	Hole No	BH05
	A9020-1920190829105952	Sample Depth (m BGL)	14.00 - 14.45
		Sample Type and No	UT26
		Specimen Ref	



Soil description	Firm brown slightly sandy slightly gravelly CLAY.		
Preparation	Undisturbed		
Index properties	Liquid limit %	Plastic limit %	

(if available)

	Initial	Final	
Specimen details			
Particle density	2.65	assumed	Mg/m <sup>3</sup>
Diameter	74.98		mm
Height	18.95	17.84	mm
Voids ratio	0.436	0.352	
Moisture content	16	14	%
Bulk density	2.15	2.23	Mg/m <sup>3</sup>
Dry density	1.85	1.96	Mg/m <sup>3</sup>
Saturation	99	105	%
Average temperature for test	19		oC
Swelling pressure	not measured		kPa

Applied Pressure kPa	Voids ratio	mv m <sup>2</sup> /MN	cv (t50, log) m <sup>2</sup> /year	cv (t90, root) m <sup>2</sup> /year	
0	0.4357				
100	0.4070	0.200	3.9	4	
200	0.3922	0.110	3.3	3.8	
400	0.3700	0.080	5.5	5.7	
800	0.3399	0.055	5.6	5.8	
400	0.3422	0.004	-	-	
200	0.3462	0.015	-	-	
100	0.3519	0.043	-	-	

Notes :

Specimen taken 10 mm from base of sample

QA Ref  
SLR 5.3  
Rev 2.21  
Feb 19



1157



Project No A9020-19  
Project Name SOUTH HUMBER BANK ENERGY CENTRE

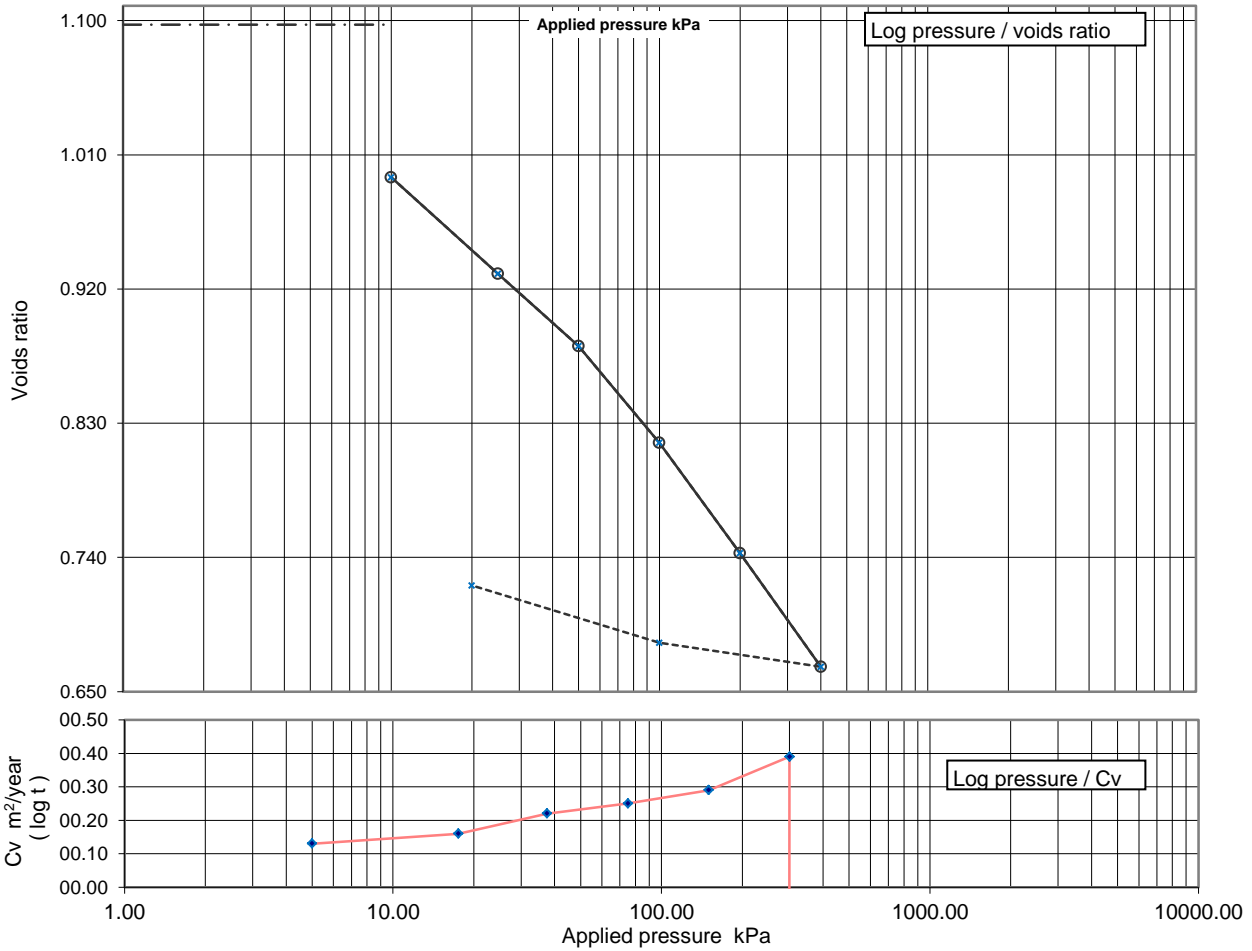
The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2019 SOCOTEC UK Limited

Figure  
**OED**

Printed:  
10/10/2019 09:03

**ONE DIMENSIONAL CONSOLIDATION TEST**  
**BS 1377 : Part 5 : 1990 : clause 3**

<b>Sample Details:</b>	SAMPLE ID:	Hole No	BH06
	A9020-1920190828122058	Sample Depth (m BGL)	3.00 - 3.45
		Sample Type and No	UT10
		Specimen Ref	



Soil description	Soft greyish brown slightly sandy silty CLAY.		
Preparation	Undisturbed		
Index properties	Liquid limit %		Plastic limit %

(if available)

	Initial	Final	
Specimen details			
Particle density	2.72	assumed	Mg/m <sup>3</sup>
Diameter	74.95		mm
Height	18.94	15.54	mm
Voids ratio	1.097	0.721	
Moisture content	40	28	%
Bulk density	1.82	2.02	Mg/m <sup>3</sup>
Dry density	1.30	1.58	Mg/m <sup>3</sup>
Saturation	100	105	%
Average temperature for test	19		oC
Swelling pressure	not measured		kPa

Applied Pressure kPa	Voids ratio	mv m <sup>2</sup> /MN	cv (t50, log) m <sup>2</sup> /year	cv (t90, root) m <sup>2</sup> /year	
0	1.0972	/	/	/	/
10	0.9949	4.900	0.13	0.14	
25	0.9302	2.200	0.16	0.17	
50	0.8817	1.000	0.22	0.23	
100	0.8168	0.690	0.25	0.28	
200	0.7427	0.410	0.29	0.31	
400	0.6666	0.220	0.39	0.42	
100	0.6827	0.032	-	-	
20	0.7211	0.290	-	-	

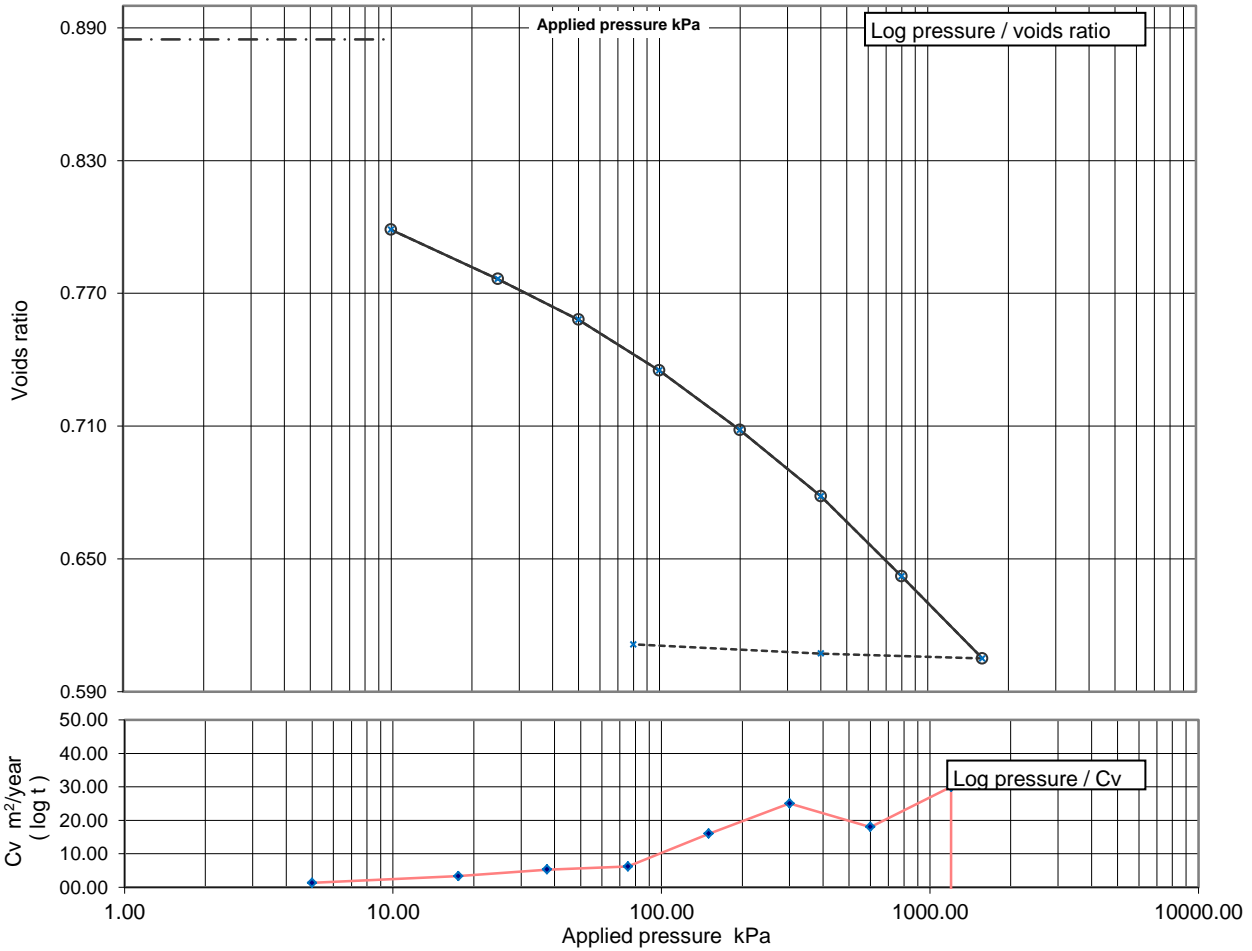
Notes :

Specimen taken 10 mm from base of sample

<b>QA Ref</b> SLR 5.3 Rev 2.21 Feb 19	 1157	 <b>SOCOTEC</b>	Project No	A9020-19	Figure	<b>OED</b>
			Project Name	SOUTH HUMBER BANK ENERGY CENTRE		
The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2019 SOCOTEC UK Limited					Printed: 10/10/2019 09:03	

**ONE DIMENSIONAL CONSOLIDATION TEST**  
**BS 1377 : Part 5 : 1990 : clause 3**

<b>Sample Details:</b>	SAMPLE ID:	Hole No	BH07
	A9020-1920190903102827	Sample Depth (m BGL)	6.00 - 6.45
		Sample Type and No	UT24
		Specimen Ref	



Soil description	Soft clayey brown SILT.		
Preparation	Undisturbed		
Index properties	Liquid limit %	Plastic limit %	

(if available)

	Initial	Final	
Specimen details			
Particle density	2.66	measured	Mg/m <sup>3</sup>
Diameter	74.94		mm
Height	18.96	16.21	mm
Voids ratio	0.885	0.611	
Moisture content	33	21	%
Bulk density	1.87	2.00	Mg/m <sup>3</sup>
Dry density	1.41	1.65	Mg/m <sup>3</sup>
Saturation	98	93	%
Average temperature for test	19		oC
Swelling pressure	not measured		kPa

Applied Pressure kPa	Voids ratio	mv m <sup>2</sup> /MN	cv (t50, log) m <sup>2</sup> /year	cv (t90, root) m <sup>2</sup> /year
0	0.8848	/	/	/
10	0.7988	4.600	1.3	1.4
25	0.7765	0.830	3.3	3.6
50	0.7581	0.410	5.3	5.6
100	0.7351	0.260	6.2	6.5
200	0.7082	0.160	16	17
400	0.6783	0.087	25	27
800	0.6420	0.054	18	20
1600	0.6050	0.028	30	38
400	0.6072	0.001	-	-
80	0.6113	0.008	-	-

Notes :

Specimen taken 10 mm from base of sample

QA Ref  
SLR 5.3  
Rev 2.21  
Feb 19



1157



Project No A9020-19  
Project Name SOUTH HUMBER BANK ENERGY CENTRE

Figure  
**OED**

The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2019 SOCOTEC UK Limited

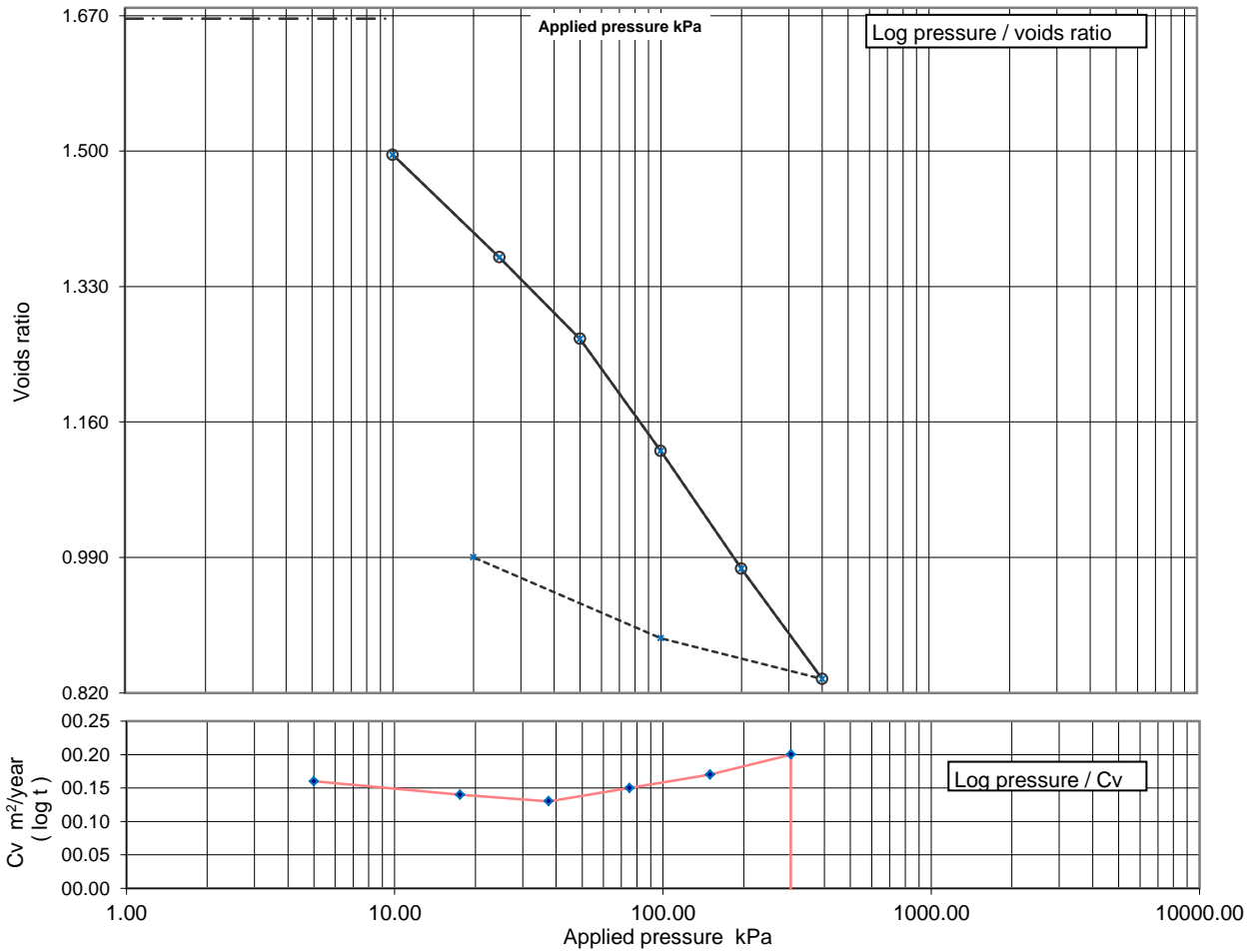
Printed:  
10/10/2019 09:03



# ONE DIMENSIONAL CONSOLIDATION TEST

## BS 1377 : Part 5 : 1990 : clause 3

<b>Sample Details:</b>	SAMPLE ID:	Hole No	BH08
	A9020-1920190830085651	Sample Depth (m BGL)	3.00 - 3.45
		Sample Type and No	UT15
		Specimen Ref	



Soil description	Very soft brown silty CLAY.		
Preparation	Undisturbed		
Index properties	Liquid limit %	Plastic limit %	

(if available)

	Initial	Final	
Specimen details			
Particle density	2.65	measured	Mg/m <sup>3</sup>
Diameter	74.97		mm
Height	18.91	14.12	mm
Voids ratio	1.666	0.990	
Moisture content	63	39	%
Bulk density	1.62	1.85	Mg/m <sup>3</sup>
Dry density	0.99	1.33	Mg/m <sup>3</sup>
Saturation	100	105	%
Average temperature for test	19		oC
Swelling pressure	not measured		kPa

Applied Pressure kPa	Voids ratio	mv m <sup>2</sup> /MN	cv (t50, log) m <sup>2</sup> /year	cv (t90, root) m <sup>2</sup> /year
0	1.6661	/	/	/
10	1.4952	6.400	0.16	0.17
25	1.3665	3.400	0.14	0.15
50	1.2642	1.700	0.13	0.14
100	1.1233	1.200	0.15	0.17
200	0.9757	0.700	0.17	0.18
400	0.8374	0.350	0.2	0.21
100	0.8886	0.093	-	-
20	0.9901	0.670	-	-

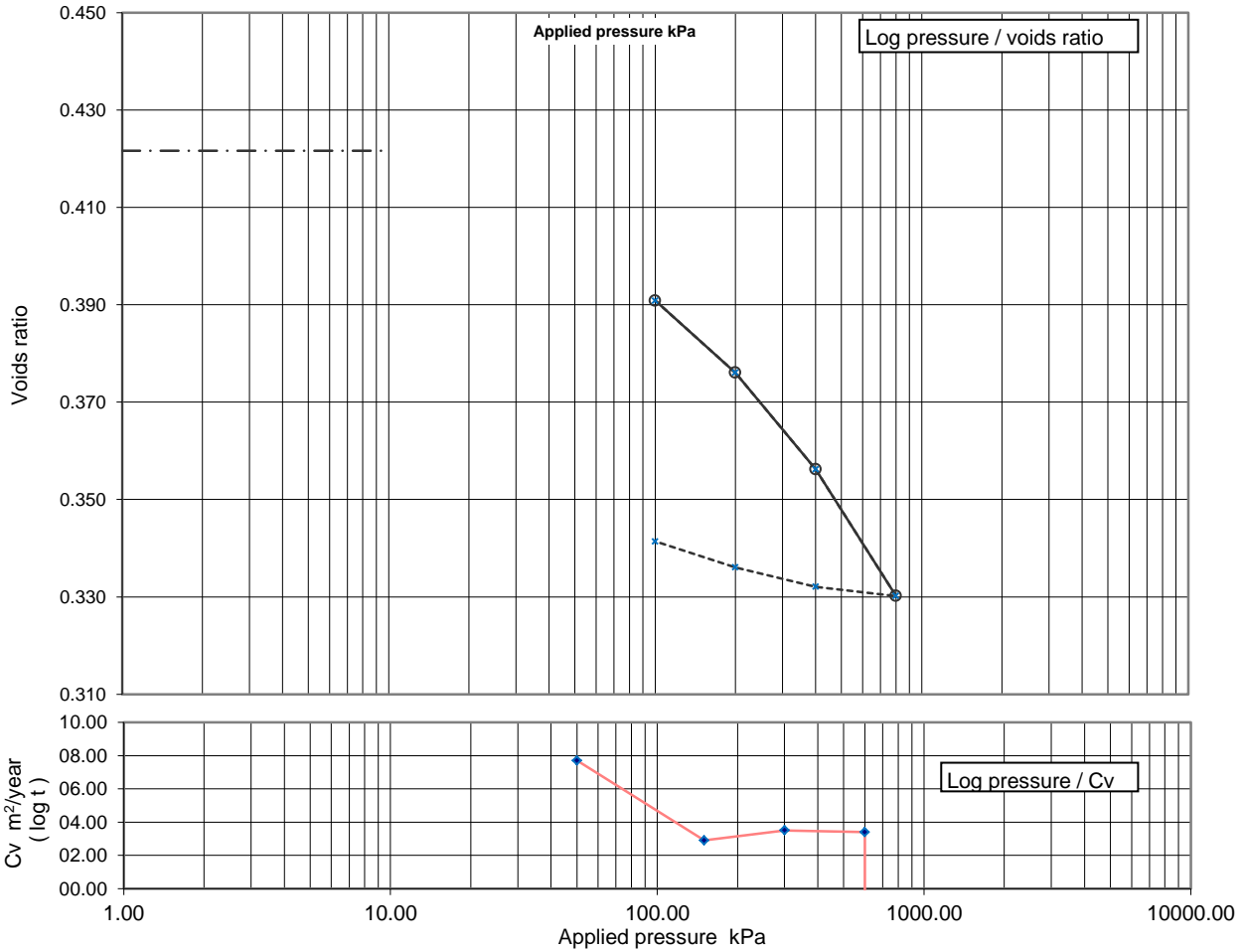
Notes :

Specimen taken 10 mm from base of sample

<b>QA Ref</b> SLR 5.3 Rev 2.21 Feb 19	 1157	 <b>SOCOTEC</b>	Project No	A9020-19	Figure	<b>OED</b>
			Project Name	SOUTH HUMBER BANK ENERGY CENTRE		
The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2019 SOCOTEC UK Limited					Printed: 10/10/2019 09:03	

**ONE DIMENSIONAL CONSOLIDATION TEST**  
**BS 1377 : Part 5 : 1990 : clause 3**

<b>Sample Details:</b>	SAMPLE ID:	Hole No	BH08
	A9020-1920190830091845	Sample Depth (m BGL)	19.50 - 19.95
		Sample Type and No	UT53
		Specimen Ref	



Soil description	Firm to stiff brown slightly sandy slightly gravelly CLAY.		
Preparation	Undisturbed		
Index properties	Liquid limit %	Plastic limit %	



(if available)

	Initial	Final	
Specimen details			
Particle density	2.68	measured	Mg/m <sup>3</sup>
Diameter	74.98		mm
Height	18.91	17.85	mm
Voids ratio	0.422	0.341	
Moisture content	15	13	%
Bulk density	2.17	2.27	Mg/m <sup>3</sup>
Dry density	1.89	2.00	Mg/m <sup>3</sup>
Saturation	95	105	%
Average temperature for test	19		oC
Swelling pressure	not measured		kPa

Applied Pressure kPa	Voids ratio	mv m <sup>2</sup> /MN	cv (t50, log) m <sup>2</sup> /year	cv (t90, root) m <sup>2</sup> /year
0	0.4216			
100	0.3909	0.220	7.7	8.7
200	0.3760	0.110	2.9	3
400	0.3562	0.072	3.5	3.5
800	0.3302	0.048	3.4	3.4
400	0.3321	0.004	-	-
200	0.3361	0.015	-	-
100	0.3414	0.040	-	-

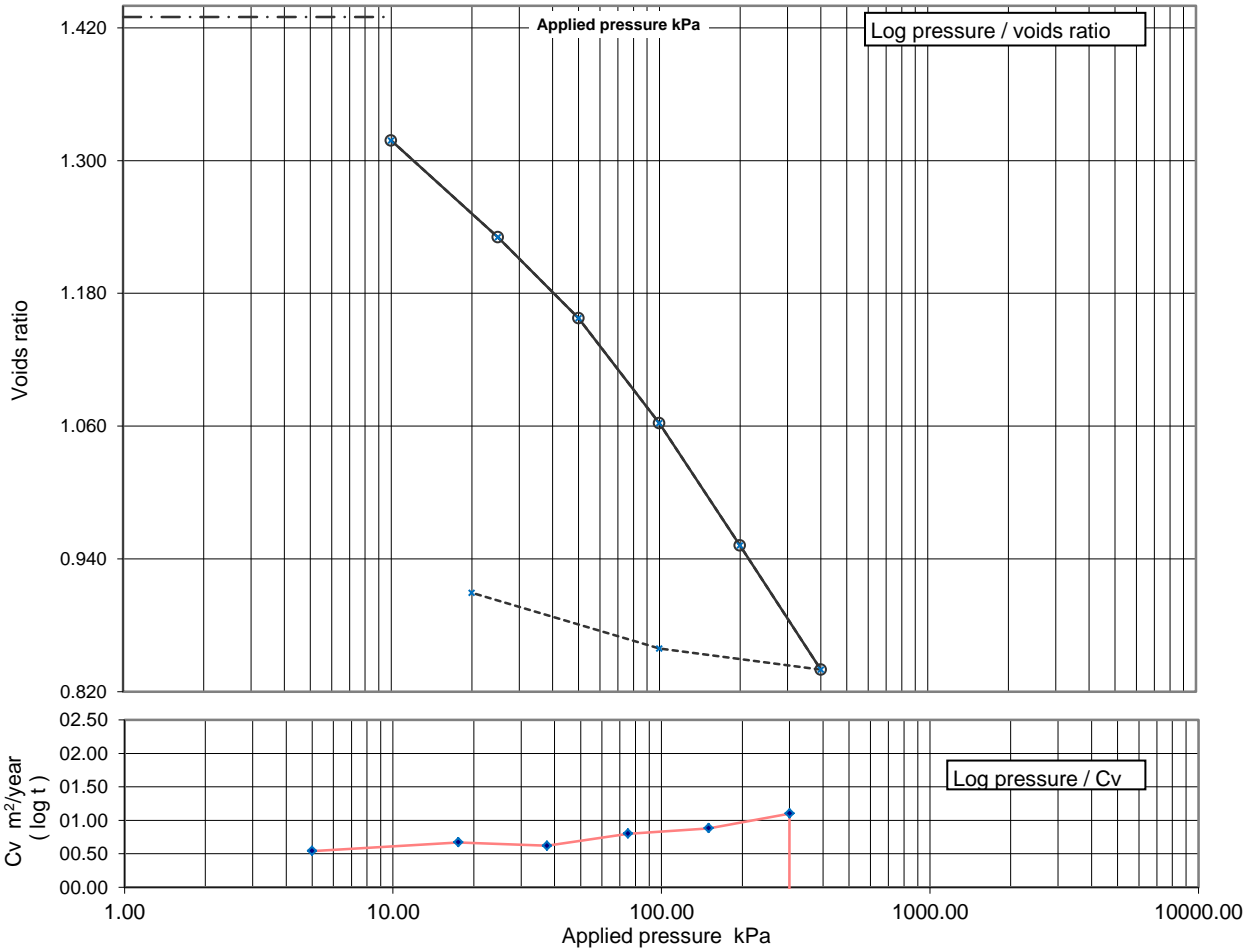
Notes :

Specimen taken 10 mm from base of sample

<b>QA Ref</b> SLR 5.3 Rev 2.21 Feb 19  1157		Project No	A9020-19	Figure	<b>OED</b>
		Project Name	SOUTH HUMBER BANK ENERGY CENTRE		
The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2019 SOCOTEC UK Limited				Printed: 10/10/2019 09:03	

**ONE DIMENSIONAL CONSOLIDATION TEST**  
**BS 1377 : Part 5 : 1990 : clause 3**

<b>Sample Details:</b>	SAMPLE ID:	Hole No	BH09
	A9020-1920190830094826	Sample Depth (m BGL)	8.00 - 8.45
		Sample Type and No	UT16
		Specimen Ref	



Soil description	Soft dark grey organic CLAY.		
Preparation	Undisturbed		
Index properties	Liquid limit %	Plastic limit %	

(if available)

Specimen details	Initial	Final	
Particle density	2.65	measured	Mg/m <sup>3</sup>
Diameter	74.98		mm
Height	18.92	14.86	mm
Voids ratio	1.430	0.909	
Moisture content	52	35	%
Bulk density	1.66	1.88	Mg/m <sup>3</sup>
Dry density	1.09	1.39	Mg/m <sup>3</sup>
Saturation	96	103	%
Average temperature for test	19		oC
Swelling pressure	not measured		kPa

Applied Pressure kPa	Voids ratio	mv m <sup>2</sup> /MN	cv (t50, log) m <sup>2</sup> /year	cv (t90, root) m <sup>2</sup> /year
0	1.4298	/	/	/
10	1.3180	4.600	0.54	0.58
25	1.2307	2.500	0.67	0.71
50	1.1575	1.300	0.62	0.67
100	1.0624	0.880	0.8	0.86
200	0.9520	0.540	0.88	0.91
400	0.8398	0.290	1.1	1.1
100	0.8590	0.035	-	-
20	0.9092	0.340	-	-

Notes :

Specimen taken 10 mm from base of sample

QA Ref  
 SLR 5.3  
 Rev 2.21  
 Feb 19



1157



Project No A9020-19  
 Project Name SOUTH HUMBER BANK ENERGY CENTRE

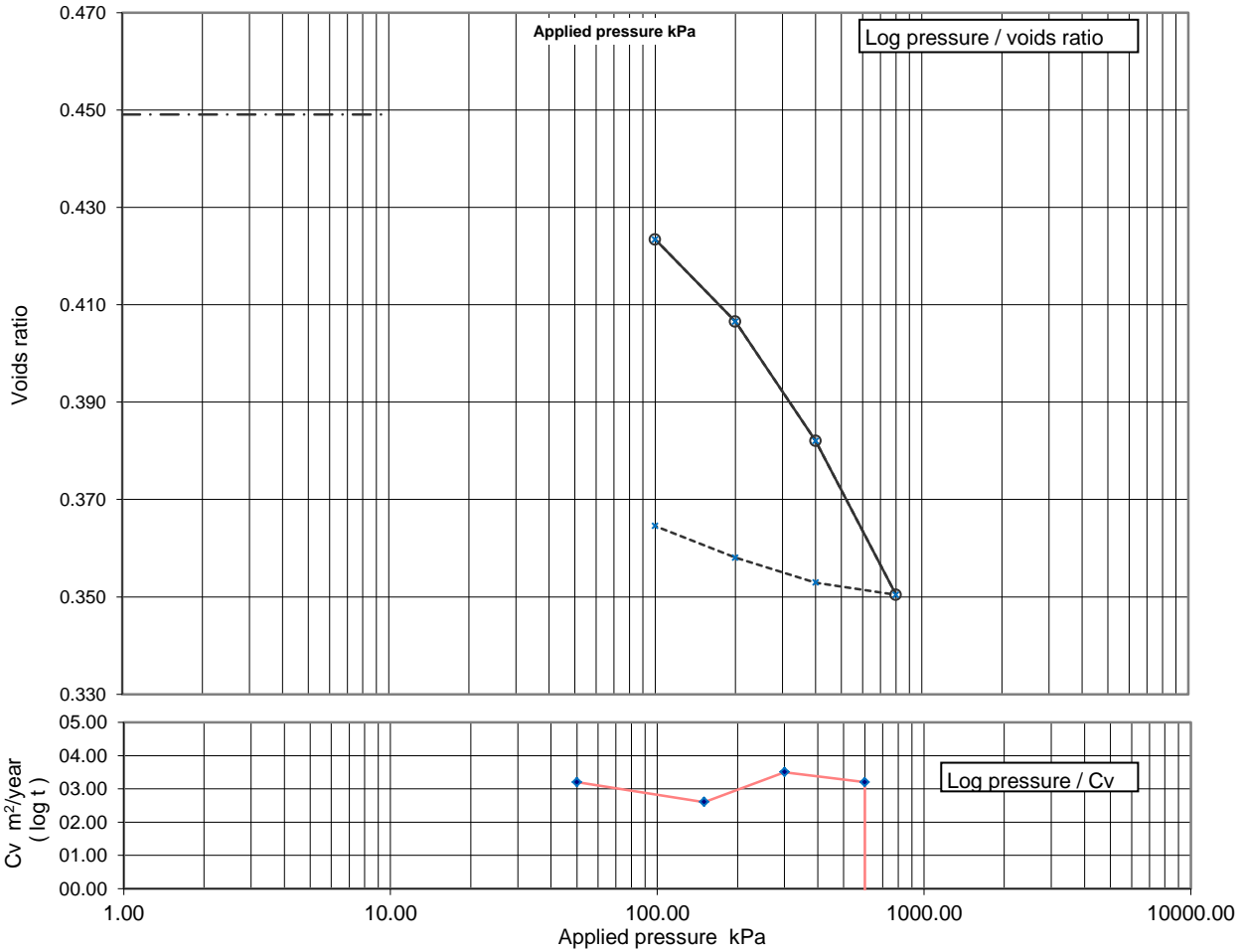
Figure  
**OED**

The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2019 SOCOTEC UK Limited

Printed:  
 10/10/2019 09:03

**ONE DIMENSIONAL CONSOLIDATION TEST**  
**BS 1377 : Part 5 : 1990 : clause 3**

<b>Sample Details:</b>	SAMPLE ID:	Hole No	BH10
	A9020-1920190828013523	Sample Depth (m BGL)	11.00 - 11.45
		Sample Type and No	UT21
		Specimen Ref	



Soil description	Firm greyish brown slightly sandy slightly gravelly CLAY.		
Preparation	Undisturbed		
Index properties	Liquid limit %	Plastic limit %	

(if available)

	Initial	Final	
Specimen details			
Particle density	2.65	assumed	Mg/m <sup>3</sup>
Diameter	74.98		mm
Height	18.93	17.82	mm
Voids ratio	0.449	0.365	
Moisture content	17	14	%
Bulk density	2.14	2.22	Mg/m <sup>3</sup>
Dry density	1.83	1.94	Mg/m <sup>3</sup>
Saturation	99	105	%
Average temperature for test	19		oC
Swelling pressure	not measured		kPa

Applied Pressure kPa	Voids ratio	mv m <sup>2</sup> /MN	cv (t50, log) m <sup>2</sup> /year	cv (t90, root) m <sup>2</sup> /year
0	0.4491	/	/	/
100	0.4234	0.180	3.2	3.5
200	0.4065	0.120	2.6	2.8
400	0.3820	0.087	3.5	3.6
800	0.3504	0.057	3.2	3.5
400	0.3529	0.005	-	-
200	0.3581	0.019	-	-
100	0.3646	0.048	-	-

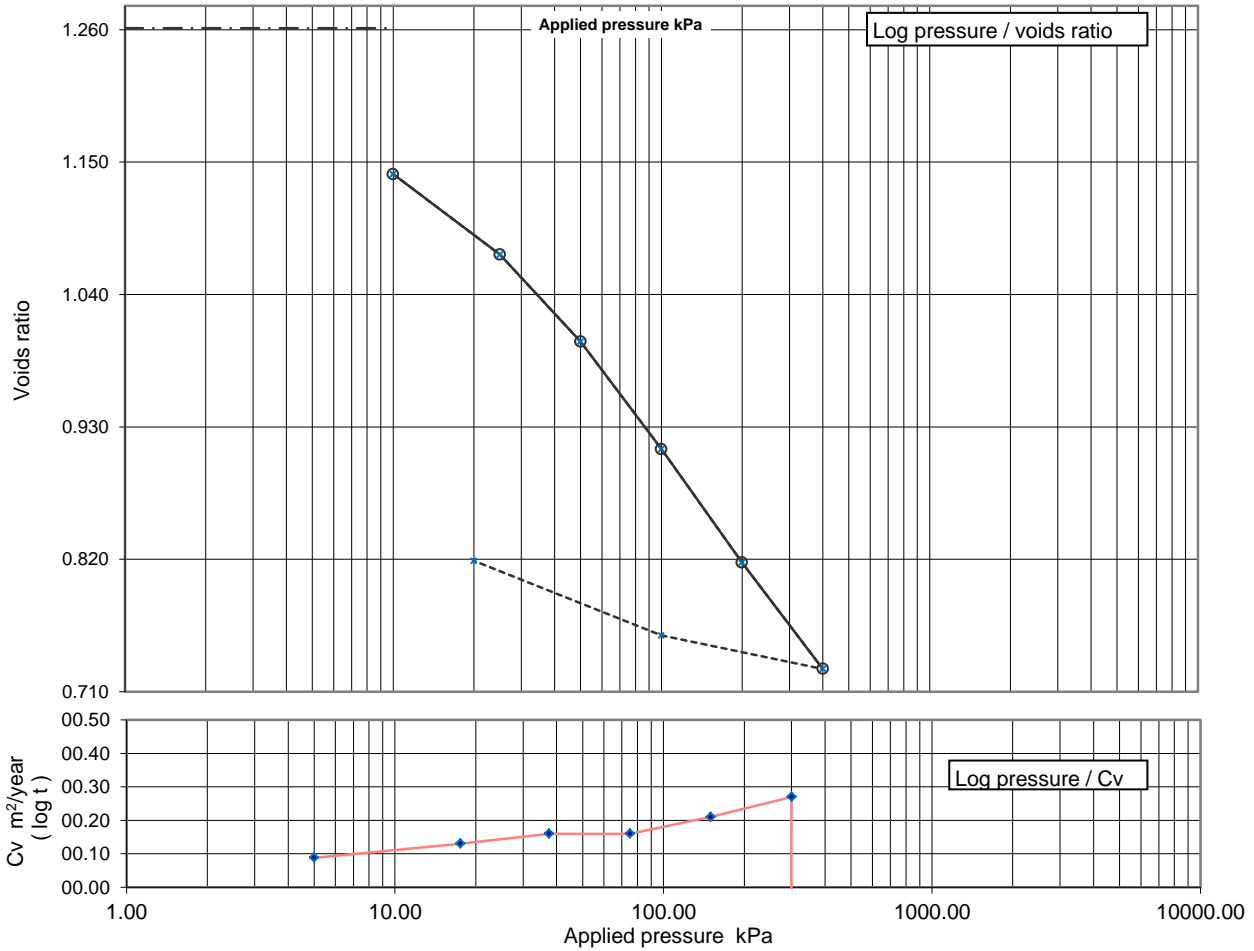
Notes :

Specimen taken 10 mm from base of sample

<b>QA Ref</b> SLR 5.3 Rev 2.21 Feb 19			Project No	A9020-19	<b>Figure</b>  <b>OED</b>
			Project Name	SOUTH HUMBER BANK ENERGY CENTRE	
			The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2019 SOCOTEC UK Limited		Printed: 10/10/2019 09:03

**ONE DIMENSIONAL CONSOLIDATION TEST**  
**BS 1377 : Part 5 : 1990 : clause 3**

<b>Sample Details:</b>	SAMPLE ID:	Hole No	BH11
	A9020-1920190829101655	Sample Depth (m BGL)	6.00 - 6.45
		Sample Type and No	UT19
		Specimen Ref	



Soil description	Very soft grey silty CLAY.		
Preparation	Undisturbed		
Index properties	Liquid limit %		Plastic limit %

(if available)

	Initial	Final	
Specimen details			
Particle density	2.70	measured	Mg/m <sup>3</sup>
Diameter	74.97		mm
Height	19.00	15.28	mm
Voids ratio	1.261	0.819	
Moisture content	47	32	%
Bulk density	1.75	1.96	Mg/m <sup>3</sup>
Dry density	1.19	1.48	Mg/m <sup>3</sup>
Saturation	100	105	%
Average temperature for test	19		oC
Swelling pressure	not measured		kPa

Applied Pressure kPa	Voids ratio	mv m <sup>2</sup> /MN	cv (t50, log) m <sup>2</sup> /year	cv (t90, root) m <sup>2</sup> /year
0	1.2612	/	/	/
10	1.1400	5.400	0.088	0.092
25	1.0732	2.100	0.13	0.14
50	1.0009	1.400	0.16	0.17
100	0.9115	0.890	0.16	0.17
200	0.8171	0.490	0.21	0.22
400	0.7288	0.240	0.27	0.28
100	0.7567	0.054	-	-
20	0.8187	0.440	-	-

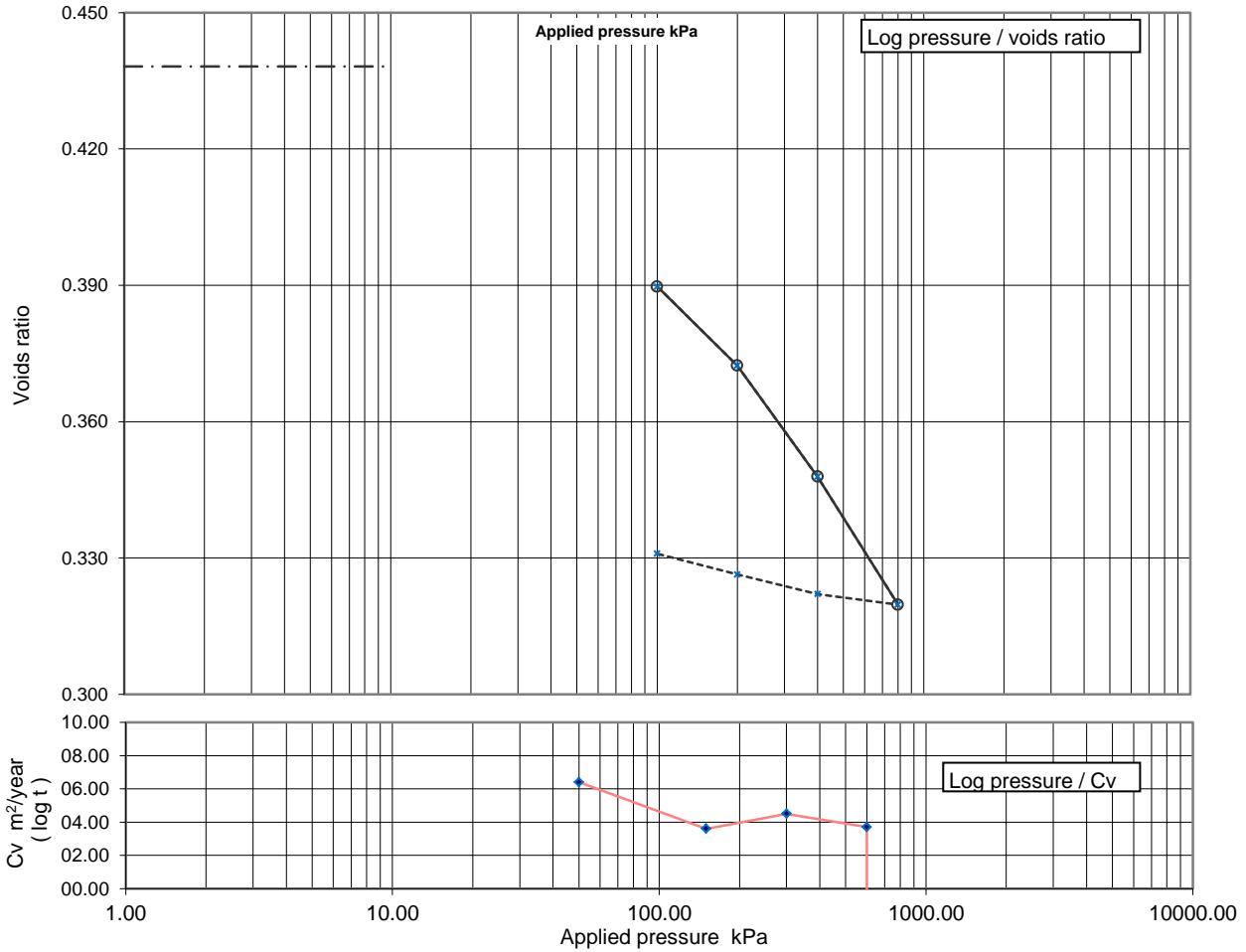
Notes :

Specimen taken 10 mm from base of sample

<b>QA Ref</b> SLR 5.3 Rev 2.21 Feb 19			Project No	A9020-19	Figure	<b>OED</b>
			Project Name	SOUTH HUMBER BANK ENERGY CENTRE		
			The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2019 SOCOTEC UK Limited		Printed: 10/10/2019 09:03	

**ONE DIMENSIONAL CONSOLIDATION TEST**  
**BS 1377 : Part 5 : 1990 : clause 3**

<b>Sample Details:</b>	SAMPLE ID:	Hole No	BH11
	A9020-1920190829101731	Sample Depth (m BGL)	9.00 - 9.45
		Sample Type and No	UT25
		Specimen Ref	



Soil description	Firm to stiff greyish brown slightly sandy slightly gravelly CLAY.		
Preparation	Undisturbed		
Index properties	Liquid limit %	Plastic limit %	

(if available)

	Initial	Final	
Specimen details			
Particle density	2.68	measured	Mg/m <sup>3</sup>
Diameter	75.01		mm
Height	20.10	18.60	mm
Voids ratio	0.438	0.331	
Moisture content	16	13	%
Bulk density	2.16	2.27	Mg/m <sup>3</sup>
Dry density	1.86	2.01	Mg/m <sup>3</sup>
Saturation	98	105	%
Average temperature for test	19		oC
Swelling pressure	not measured		kPa

Applied Pressure kPa	Voids ratio	mv m <sup>2</sup> /MN	cv (t50, log) m <sup>2</sup> /year	cv (t90, root) m <sup>2</sup> /year
0	0.4381	/	/	/
100	0.3897	0.340	6.4	6.6
200	0.3723	0.130	3.6	3.8
400	0.3479	0.089	4.5	4.6
800	0.3197	0.052	3.7	4
400	0.3221	0.005	-	-
200	0.3263	0.016	-	-
100	0.3309	0.035	-	-

Notes :

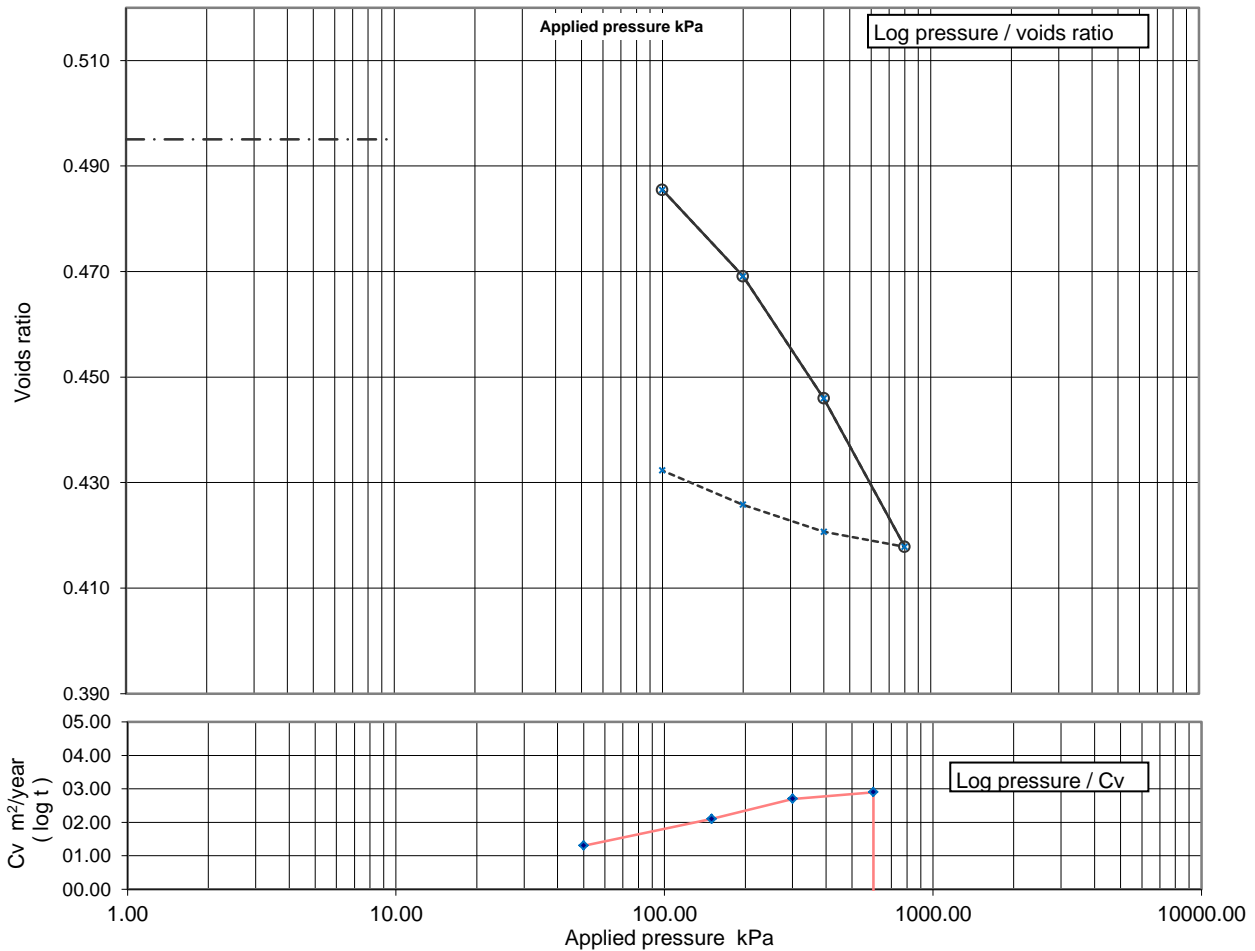
Specimen taken 10 mm from base of sample

<b>QA Ref</b> SLR 5.3 Rev 2.21 Feb 19			Project No	A9020-19	<b>Figure</b>  <b>OED</b>
			Project Name	SOUTH HUMBER BANK ENERGY CENTRE	
The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2019 SOCOTEC UK Limited					Printed: 10/10/2019 09:03

# ONE DIMENSIONAL CONSOLIDATION TEST

## BS 1377 : Part 5 : 1990 : clause 3

Sample Details:	SAMPLE ID:	Hole No	BH13
	A9020-1920190909093454	Sample Depth (m BGL)	12.00 - 12.45
		Sample Type and No	UT41
		Specimen Ref	



Soil description	Firm brown slightly sandy slightly gravelly CLAY.		
Preparation	Undisturbed		
Index properties	Liquid limit %	Plastic limit %	

(if available)

	Initial	Final	
Specimen details			
Particle density	2.70	assumed	Mg/m <sup>3</sup>
Diameter	75.00		mm
Height	18.92	18.13	mm
Voids ratio	0.495	0.432	
Moisture content	18	17	%
Bulk density	2.13	2.20	Mg/m <sup>3</sup>
Dry density	1.81	1.89	Mg/m <sup>3</sup>
Saturation	98	104	%
Average temperature for test	19		oC
Swelling pressure	not measured		kPa

Applied Pressure kPa	Voids ratio	mv m <sup>2</sup> /MN	cv (t50, log) m <sup>2</sup> /year	cv (t90, root) m <sup>2</sup> /year
0	0.4951			
100	0.4854	0.064	1.3	1.4
200	0.4691	0.110	2.1	2.3
400	0.4459	0.079	2.7	2.9
800	0.4178	0.049	2.9	3.1
400	0.4207	0.005	-	-
200	0.4258	0.018	-	-
100	0.4323	0.045	-	-

Notes :

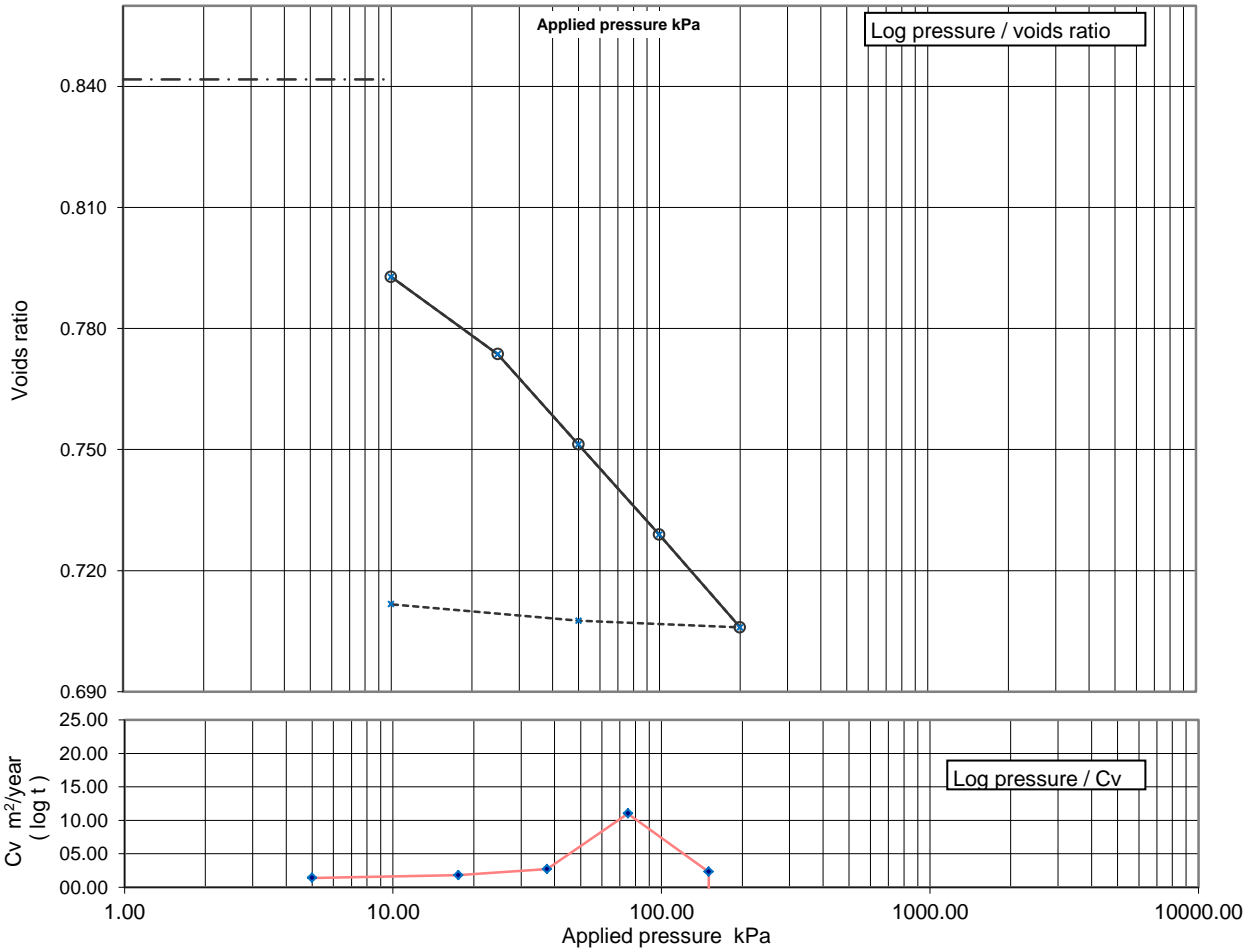
Specimen taken 0 mm from base of sample

<b>QA Ref</b> SLR 5.3 Rev 2.21 Feb 19			Project No	A9020-19	Figure	<b>OED</b>
			Project Name	SOUTH HUMBER BANK ENERGY CENTRE		
			The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2019 SOCOTEC UK Limited		Printed: 10/10/2019 09:03	

# ONE DIMENSIONAL CONSOLIDATION TEST

## BS 1377 : Part 5 : 1990 : clause 3

Sample Details:	SAMPLE ID:	Hole No	BH14
	A9020-1920190905105535	Sample Depth (m BGL)	3.00 - 3.45
		Sample Type and No	UT13
		Specimen Ref	



Soil description	Soft brownish grey slightly sandy silty CLAY.		
Preparation	Undisturbed		
Index properties	Liquid limit %	Plastic limit %	

(if available)

	Initial	Final	
Specimen details			
Particle density	2.66	assumed	Mg/m <sup>3</sup>
Diameter	75.07		mm
Height	18.94	17.60	mm
Voids ratio	0.842	0.712	
Moisture content	31	27	%
Bulk density	1.90	1.97	Mg/m <sup>3</sup>
Dry density	1.44	1.55	Mg/m <sup>3</sup>
Saturation	99	101	%
Average temperature for test	19		oC
Swelling pressure	not measured		kPa

Applied Pressure kPa	Voids ratio	mv m <sup>2</sup> /MN	cv (t50, log) m <sup>2</sup> /year	cv (t90, root) m <sup>2</sup> /year
0	0.8417	/	/	/
10	0.7928	2.700	1.4	1.9
25	0.7736	0.710	1.8	1.9
50	0.7512	0.500	2.7	3
100	0.7289	0.260	11	24
200	0.7059	0.130	2.3	3.4
50	0.7076	0.007	-	-
10	0.7117	0.060	-	-

Notes :

Specimen taken 10 mm from base of sample

QA Ref  
SLR 5.3  
Rev 2.21  
Feb 19



1157



Project No A9020-19  
Project Name SOUTH HUMBER BANK ENERGY CENTRE

Figure  
**OED**

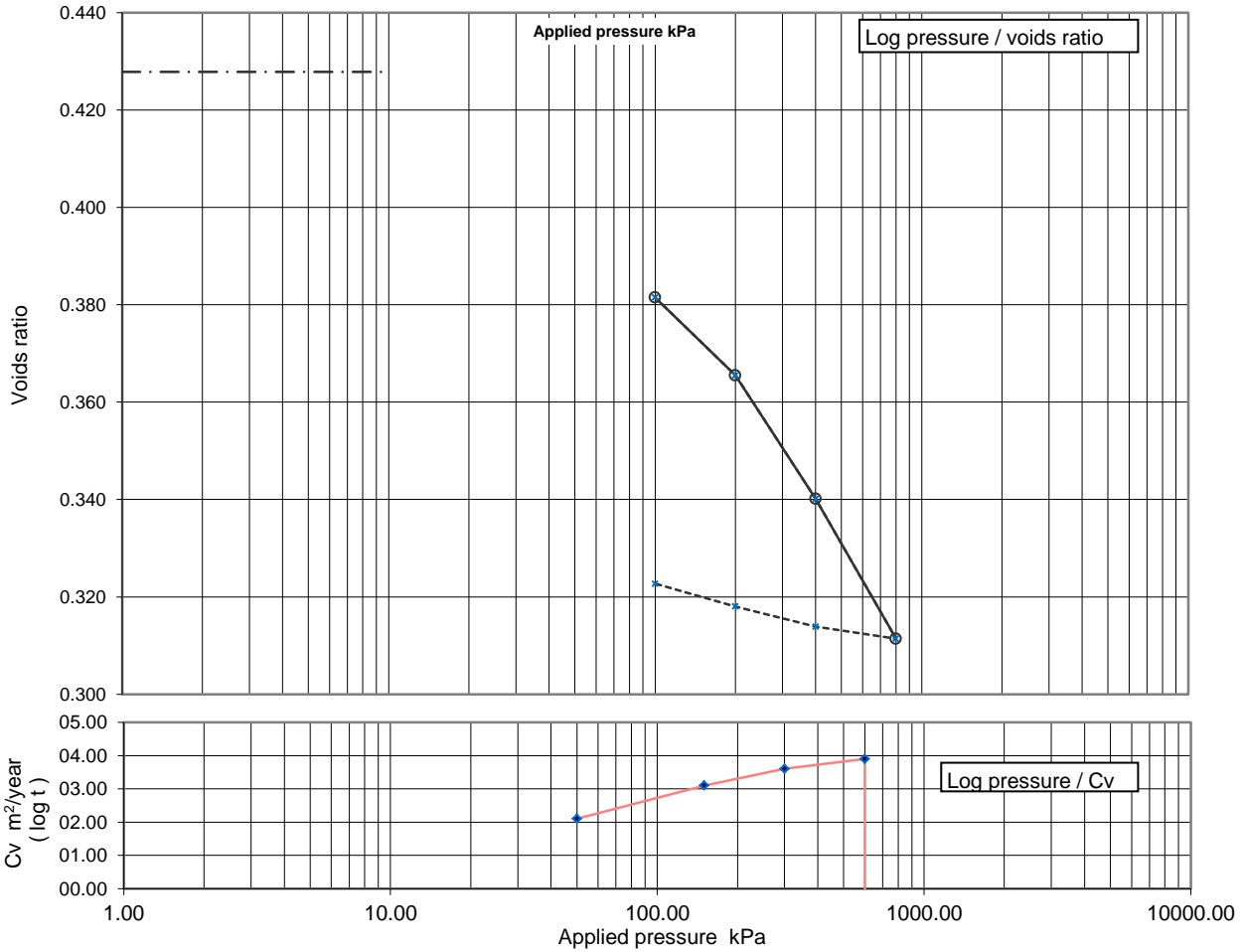
The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2019 SOCOTEC UK Limited

Printed:  
10/10/2019 09:03



**ONE DIMENSIONAL CONSOLIDATION TEST**  
**BS 1377 : Part 5 : 1990 : clause 3**

<b>Sample Details:</b>	SAMPLE ID:	Hole No	BH14
	A9020-1920190905105836	Sample Depth (m BGL)	14.00 - 14.45
		Sample Type and No	UT31
		Specimen Ref	



Soil description	Firm brown slightly sandy CLAY.		
Preparation	Undisturbed		
Index properties	Liquid limit %	Plastic limit %	

(if available)



	Initial	Final	
Specimen details			
Particle density	2.65	assumed	Mg/m <sup>3</sup>
Diameter	75.01		mm
Height	19.95	18.48	mm
Voids ratio	0.428	0.323	
Moisture content	16	13	%
Bulk density	2.15	2.26	Mg/m <sup>3</sup>
Dry density	1.86	2.00	Mg/m <sup>3</sup>
Saturation	97	105	%
Average temperature for test	19		oC

Swelling pressure not measured kPa

Notes :

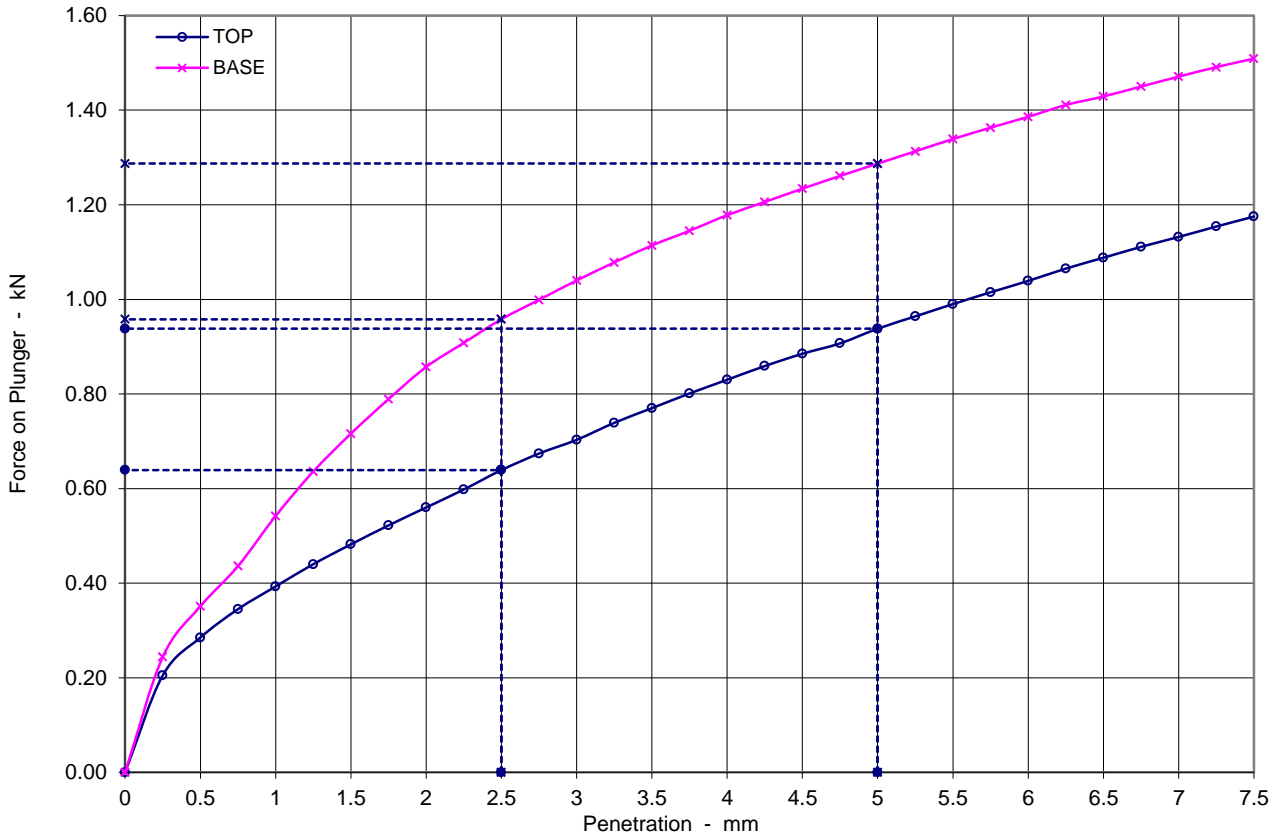
Applied Pressure kPa	Voids ratio	mv m <sup>2</sup> /MN	cv (t50, log) m <sup>2</sup> /year	cv (t90, root) m <sup>2</sup> /year
0	0.4278	/	/	/
100	0.3815	0.320	2.1	2.2
200	0.3655	0.120	3.1	3.4
400	0.3402	0.093	3.6	4
800	0.3114	0.054	3.9	4.2
400	0.3139	0.005	-	-
200	0.3180	0.016	-	-
100	0.3227	0.035	-	-

Specimen taken 10 mm from base of sample

<b>QA Ref</b> SLR 5.3 Rev 2.21 Feb 19	 1157	 <b>SOCOTEC</b>	Project No	A9020-19	Figure	<b>OED</b>
			Project Name	SOUTH HUMBER BANK ENERGY CENTRE		
The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2019 SOCOTEC UK Limited			Printed: 10/10/2019 09:03			

# California Bearing Ratio ( BS1377:1990:Part 4 , section 7 )

<b>Sample Details:</b>	SAMPLE ID:	Hole No	TP09
	A9020-1920190829092313	Sample Depth (m)	0.45 - 1.50
		Sample Type and No	B7
		Specimen Ref	1



Soil description | Brown slightly sandy slightly gravelly CLAY.

Test Conditions		
Sample Retained on 20 mm sieve	%	0

Sample Conditions		
Initial Moisture Content	%	28.0
Bulk Density	Mg/m <sup>3</sup>	1.93
Dry Density	Mg/m <sup>3</sup>	1.51
Moisture Content - TOP	%	29.0
Moisture Content - BASE	%	26.0

Preparation	Method of Compaction	
	Recompacted - Rammer compaction with specified effort (2.5kg)	
	Soaked test	NO
	Soaking Period	days N/A
	Amount of Swell	mm N/A

Penetration mm	CBR Values %	
	TOP	BASE
2.5	4.8	7.3
5	4.7	6.4

Surcharge applied	kg	16
	kPa	10

Notes :

<b>Accepted CBR %</b>	<b>4.8</b>	<b>7.3</b>
-----------------------	------------	------------

QA Ref  
SLR 4.7  
Rev 2.8  
Mar 17



1157



Project No | A9020-19  
Project Name | SOUTH HUMBER BANK ENERGY CENTRE

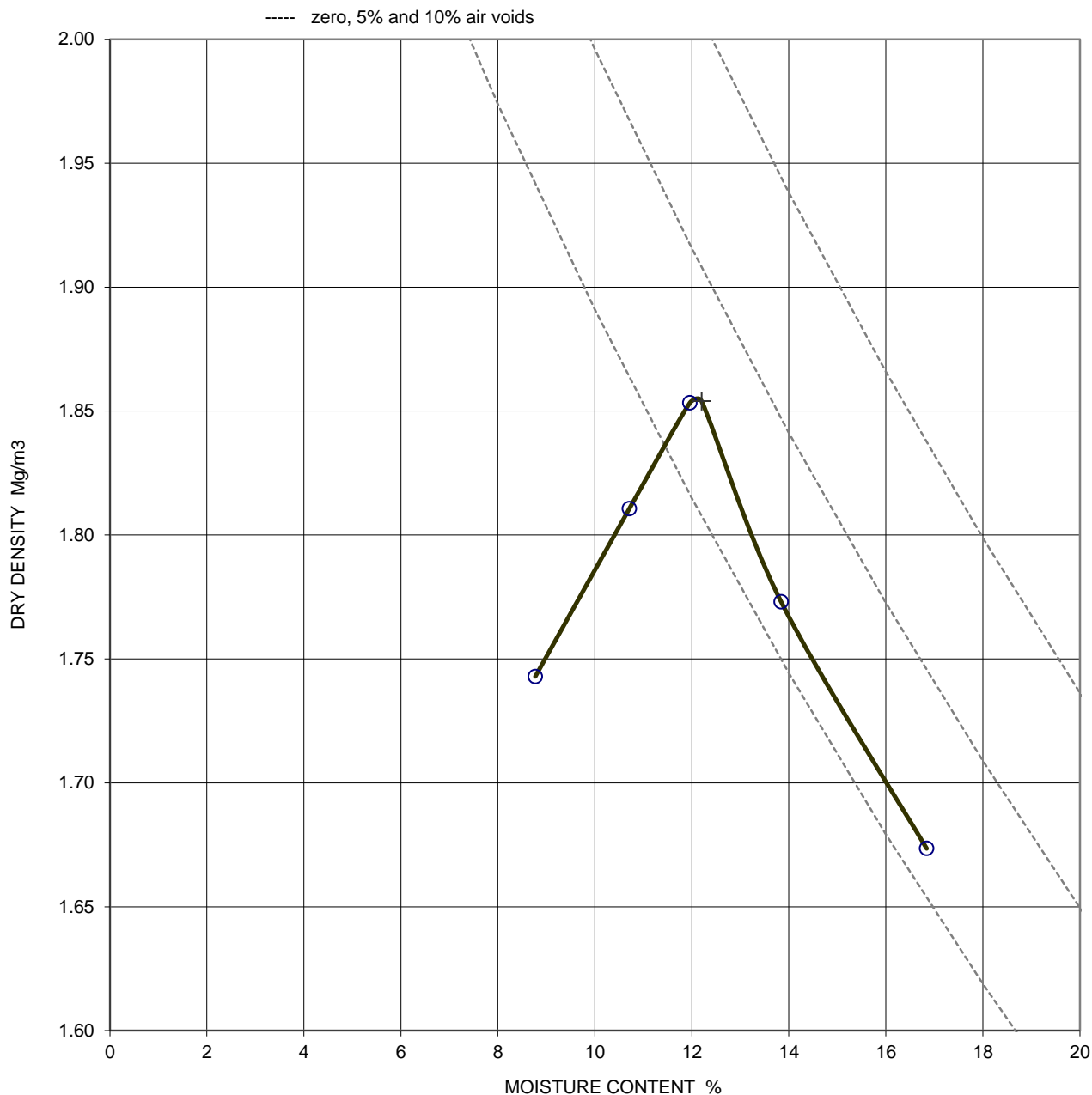
The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2017 SOCOTEC UK Limited

Figure  
**CBR**



Printed: 27/09/2019 14:18

**DRY DENSITY / MOISTURE CONTENT RELATIONSHIP**  
**BS1377 : PART 4 : 1990 : LIGHT COMPACTION, 2.5 kg rammer**

<b>Sample Details:</b>	SAMPLE ID:	Hole No	BH01
	A9020-1920190815101020	Sample Depth (m BGL)	22.00 - 22.50
		Sample Type and No	B67
		Specimen Ref	



Soil description	Light brown slightly sandy very gravelly silty CLAY.	Derived Parameters +
Test method	BS 1377:part 4:1990: clause 3.6, 2.5 kg rammer in a CBR mould	Maximum dry density, Mg/m <sup>3</sup>
Preparation	Original material was natural, single sample tested	<b>1.85</b>
Material > 37.5mm	27 %	Optimum moisture content, %
Material < 37.5mm > 20mm	26 %	<b>12</b>
Particle density	2.66 measured - gas jar	
Remarks	Sample combined with BH02 47B @ 26.00, BH03 51B @ 27.50 & BH10 42B @ 26.00 as requested.	
Grading Zone X		

<b>QA Ref</b> SLD 4, 3.3/4 Rev 2.5 Sep 17	 1157	 <b>SOCOTEC</b>	Project No	A9020-19	Figure	<b>COMPL</b>
			Project Name	SOUTH HUMBER BANK ENERGY CENTRE		
The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2017 SOCOTEC UK Limited					Printed: 10/10/2019 09:07	





# Point Load Index Test

All specimens tested at as received water content unless shown otherwise

## Test Type

D - Diametral, A - Axial, I - Irregular Lump, B - Block

Direction (U = unknown or random)

L - parallel to planes of weakness

P - perpendicular to planes of weakness

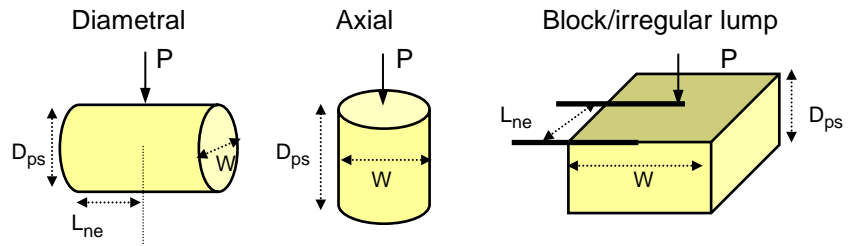
## Dimensions

Dps - Distance between platens (platen separation)

Dps' - at failure

Lne - Length from platens to nearest free end

W - Width of shortest dimension perpendicular to load, P



Borehole	Depth, m	Sample Ref	Sample Type	Specimen Ref	Specimen Depth	Rock type	Test Type see ISRM Fig 5 and 8		Failure Valid (Y/N)	Dimensions				LOAD P kN	D <sub>e</sub> equivalent diameter, mm	Point Load Index MPa F = (De/50)0.45		Remarks
							Type (D, A, I, B)	Direction (L, P, or U)		L <sub>ne</sub> mm	W mm	D <sub>ps</sub> mm	D <sub>ps'</sub> mm			I <sub>s</sub>	I <sub>s</sub> (50)	
BH01	30.75	76	C	1		CHALK	D	L	Y	52.0	85.8	84.0	80.0	1.84	82.83	0.27	0.34	
BH01	30.75	76	C	2		CHALK	A	P	Y		85.8	78.0	72.0	3.18	88.67	0.40	0.52	
BH01	31.70	77	C	1		CHALK	D	L	Y	77.0	84.6	77.0	75.0	0.10	79.66	0.02	0.02	Failed along pre-existing fracture
BH01	31.70	77	C	2		CHALK	A	P	Y		84.6	70.0	62.0	1.70	81.72	0.25	0.32	
BH01	33.98	78	C	1		CHALK	A	P	Y		84.4	50.0	42.0	1.03	67.20	0.23	0.26	
BH01	33.98	78	C	2		CHALK	I	L	Y	45.0	54.2	51.0	47.0	0.10	56.97	0.03	0.03	
BH01	34.92	79	C	1		CHALK	A	P	Y		82.0	65.0	63.0	0.10	81.12	0.02	0.02	
BH01	34.92	79	C	2		CHALK	I	L	Y	40.0	743.0	47.0	40.0	0.61	194.53	0.02	0.03	
BH02	32.25	49	C	1		CHALK	D	L	Y	46.0	83.6	81.0	73.0	1.34	78.13	0.22	0.27	
BH02	32.25	49	C	2		CHALK	A	P	Y		83.6	59.0	73.0	1.91	88.15	0.25	0.32	
BH02	32.50	50	C	1		CHALK	D	L	Y	42.0	79.2	76.0	67.0	0.10	72.85	0.02	0.02	
BH02	32.50	50	C	2		CHALK	A	P	Y		79.2	79.0	72.0	1.03	85.21	0.14	0.18	

QA Ref  
ISRM 85  
Rev 2.8  
Aug 17



1157



Project No

A9020-19

Project Name

SOUTH HUMBER BANK ENERGY  
CENTRE

Figure

PLT

The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2017 SOCOTEC UK Limited

Sheet Printed  
10/10/2019 09:13

# Point Load Index Test

All specimens tested at as received water content unless shown otherwise

## Test Type

D - Diametral, A - Axial, I - Irregular Lump, B - Block

Direction (U = unknown or random)

L - parallel to planes of weakness

P - perpendicular to planes of weakness

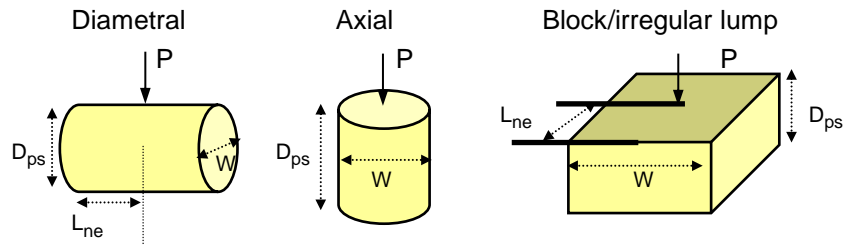
## Dimensions

Dps - Distance between platens (platen separation)

Dps' - at failure

Lne - Length from platens to nearest free end

W - Width of shortest dimension perpendicular to load, P



Borehole	Depth, m	Sample Ref	Sample Type	Specimen Ref	Specimen Depth	Rock type	Test Type see ISRM Fig 5 and 8		Failure Valid (Y/N)	Dimensions				LOAD P kN	De equivalent diameter, mm	Point Load Index MPa F = (De/50)0.45		Remarks
							Type (D, A, I, B)	Direction (L, P, or U)		Lne mm	W mm	Dps mm	Dps' mm			Is	Is(50)	
BH02	33.30	52	C	1		CHALK	D	L	Y	46.0	85.6	75.0	72.0	1.18	78.52	0.19	0.23	
BH02	33.30	52	C	2		CHALK	A	P	Y		85.6	45.0	40.0	1.42	66.03	0.33	0.37	
BH02	37.60	51	C	1		CHALK	D	L	Y	50.0	84.9	77.0	73.0	1.64	78.72	0.26	0.32	
BH02	37.60	51	C	2		CHALK	A	P	Y		85.6	45.0	40.0	1.42	66.03	0.33	0.37	
BH02	38.30	54	C	1		CHALK	D	L	Y	73.0	85.3	83.0	81.0	2.21	83.11	0.32	0.40	
BH02	38.30	54	C	2		CHALK	A	P	Y		85.3	73.0	65.0	0.99	84.01	0.14	0.18	
BH02	39.88	53	C	1		CHALK	D	L	Y	75.0	85.3	84.0	80.0	2.21	82.63	0.32	0.41	
BH02	39.88	53	C	2		CHALK	A	P	Y		85.3	75.0	73.0	1.42	89.06	0.18	0.23	
BH02	46.15	55	C	1		CHALK	D	L	Y	62.0	84.9	83.0	81.0	0.10	82.94	0.01	0.02	
BH02	46.15	55	C	2		CHALK	A	P	Y		84.9	59.0	56.0	1.59	77.81	0.26	0.32	
BH03	31.65	52	C	1		CHALK	D	L	Y	72.0	85.8	84.0	79.0	2.58	82.32	0.38	0.48	
BH03	31.65	52	C	2		CHALK	A	P	Y		85.8	67.0	64.0	2.68	83.61	0.38	0.48	

QA Ref  
ISRM 85  
Rev 2.8  
Aug 17



Project No

A9020-19

Project Name

SOUTH HUMBER BANK ENERGY  
CENTRE

Figure

PLT

The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2017 SOCOTEC UK Limited

Sheet Printed  
10/10/2019 09:13

# Point Load Index Test

All specimens tested at as received water content unless shown otherwise

## Test Type

D - Diametral, A - Axial, I - Irregular Lump, B - Block

Direction (U = unknown or random)

L - parallel to planes of weakness

P - perpendicular to planes of weakness

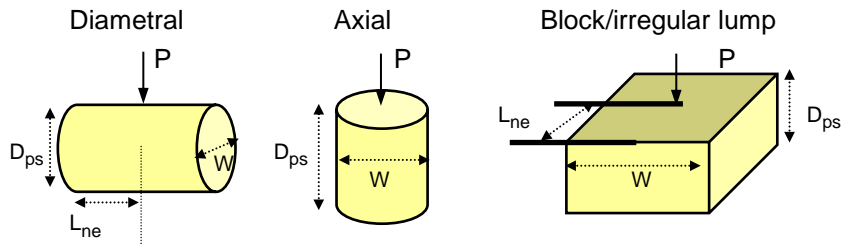
## Dimensions

Dps - Distance between platens ( platen separation )



Dps' - at failure

Lne - Length from platens to nearest free end

W - Width of shortest dimension perpendicular to load, P



Borehole	Depth, m	Sample Ref	Sample Type	Specimen Ref	Specimen Depth	Rock type	Test Type see ISRM Fig 5 and 8		Failure Valid (Y/N)	Dimensions				LOAD P kN	De equivalent diameter, mm	Point Load Index MPa F = (De/50)0.45		Remarks
							Type (D, A, I, B)	Direction (L, P or U)		Lne mm	W mm	Dps mm	Dps' mm			Is	Is(50)	
BH03	34.60	53	C	1		CHALK	A	P	Y		82.9	50.0	47.0	0.65	70.44	0.13	0.15	
BH03	34.60	53	C	2		CHALK	I	L	Y	42.0	44.7	43.0	41.0	0.68	48.33	0.29	0.29	

<b>QA Ref</b> ISRM 85 Rev 2.8 Aug 17	 1157		Project No            A9020-19	<b>Figure</b>  <b>PLT</b>
			Project Name        SOUTH HUMBER BANK ENERGY CENTRE	
The results reported relate only to the samples tested; opinions and interpretations expressed herein are outside the scope of UKAS accreditation. © Copyright 2017 SOCOTEC UK Limited			Sheet Printed 10/10/2019 09:13	



# TEST REPORT



1252

Report No. EFS/202198 (Ver. 1)

SOCOTEC UK Deeside  
Unit 18  
Drome Road  
Deeside Industrial Park  
Deeside  
Flintshire  
CH5 2NY

**Site: A9020-19 South Humber Bank Energy Centre**

The 8 samples described in this report were registered for analysis by SOCOTEC UK Limited on 24-Sep-2019. This report supersedes any versions previously issued by the laboratory.

The analysis was completed by: 30-Sep-2019

Tests where the accreditation is set to N or No, and any individual data items marked with a \* are not UKAS accredited. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

The following tables are contained in this report:

Table 1 Main Analysis Results (Page 2)  
Analytical and Deviating Sample Overview (Page 3)  
Table of Method Descriptions (Page 4)  
Table of Report Notes (Page 5)  
Table of Sample Descriptions (Appendix A Page 1 of 1)

On behalf of  
SOCOTEC UK Limited  
Becky Batham

Operations Manager  
Energy & Waste Services

Date of Issue: 30-Sep-2019

Tests marked 'N' have been subcontracted to another laboratory.

Where samples have been flagged as deviant on the Analytical and Deviating Sample Overview, for any reason, the data may not be representative of the sample at the point of sampling and the validity of the data may be affected.

SOCOTEC UK Limited accepts no responsibility for any sampling not carried out by our personnel.



Customer SOCOTEC UK Deeside  
Site A9020-19 South Humber Bank Energy Centre  
Report No S202198

Consignment No S87690  
Date Logged 24-Sep-2019  
In-House Report Due 02-Oct-2019

Please note the results for any subcontracted analysis (identified with a '^') is likely to take up to an additional five working days.

ID Number	Description	MethodID	Client Serv	Dep. Out	DO Mg if SO4(W)>3000	DO NO3 if pH<5.5	ICPACIDS	ICPBRE	ICPWSS	KONECL	KoreNO3	TSBRE1	VSLM50
		Sampled	REPORT A	DO Cl if pH<5.5									
							✓		✓				
CL/1972732	TP07 1.00	27/08/19							E				
CL/1972733	TP08 0.20	27/08/19							E				
CL/1972734	TP08 1.20	27/08/19							E				
CL/1972735	TP9 1.00	27/08/19							E				
CL/1972736	TP10 1.00	27/08/19							E				
CL/1972737	TP12 1.00	28/08/19							E				
CL/1972738	BH13 0.75	29/08/19							E				
CL/1972739	BH14 1.00	29/08/19							E				

**Note: We will endeavour to prioritise samples to complete analysis within holding time; however any delay could result in samples becoming deviant whilst being processed in the laboratory.**

**If sampling dates are missing or matrices unclassified then results will not be ISO 17025 accredited. Please contact us as soon as possible to provide missing information in order to reinstate accreditation.**

Deviating Sample Key	
A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time
Requested Analysis Key	
	Analysis Required
	Analysis dependant upon trigger result - <b>Note: due date may be affected if triggered</b>
	No analysis scheduled
	Analysis Subcontracted - <b>Note: due date may vary</b>

Where individual results are flagged see report notes for status.

# Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Soil	ICPACIDS	Oven Dried @ < 35°C	Determination of Total Sulphate in soil samples by Hydrochloric Acid extraction followed by ICPOES detection
Soil	ICPWSS	Oven Dried @ < 35°C	Determination of Water Soluble Sulphate in soil samples by water extraction followed by ICPOES detection
Soil	TSBRE1	Oven Dried @ < 35°C	Determination of Total Carbon and/or Total Sulphur in solid samples by high temperature combustion/infrared detection
Soil	WSLM50	Oven Dried @ < 35°C	Determination of pH of 2.5:1 deionised water to soil extracts using pH probe.

Where individual results are flagged see report notes for status.

# Report Notes

## Generic Notes

### Soil/Solid Analysis

Unless stated otherwise,

- Results expressed as mg/kg have been calculated on the basis indicated in the Method Description table.  
All results on MCERTS reports are reported on a 105°C dry weight basis with the exception of pH and conductivity.
- Sulphate analysis not conducted in accordance with BS1377
- Water Soluble Sulphate is on a 2:1 water:soil extract

### Waters Analysis

Unless stated otherwise results are expressed as mg/l

**Nil:** Where "Nil" has been entered against Total Alkalinity or Total Acidity this indicates that a measurement was not required due to the inherent pH of the sample.

### Oil analysis specific

Unless stated otherwise,

- Results are expressed as mg/kg
- SG is expressed as g/cm<sup>3</sup>@ 15°C

### Gas (Tedlar bag) Analysis

Unless stated otherwise, results are expressed as ug/l

### Asbestos Analysis

**CH** Denotes Chrysotile

**TR** Denotes Tremolite

**CR** Denotes Crocidolite

**AC** Denotes Actinolite

**AM** Denotes Amosite

**AN** Denotes Anthophyllite

**NAIIS** No Asbestos Identified in Sample

**NADIS** No Asbestos Detected In Sample

## Symbol Reference

^ Sub-contracted analysis.

\$\$ Unable to analyse due to the nature of the sample

¶ Samples submitted for this analyte were not preserved on site in accordance with laboratory protocols.

This may have resulted in deterioration of the sample(s) during transit to the laboratory.

Consequently the reported data may not represent the concentration of the target analyte present in the sample at the time of sampling

¥ Results for guidance only due to possible interference

& Blank corrected result

I.S Insufficient sample to complete requested analysis

I.S(g) Insufficient sample to re-analyse, results for guidance only

Intf Unable to analyse due to interferences

N.D Not determined

N.Det Not detected

N.F No Flow

NS Information Not Supplied

Req Analysis requested, see attached sheets for results

P Raised detection limit due to nature of the sample

\* All accreditation has been removed by the laboratory for this result

‡ MCERTS accreditation has been removed for this result

§ accreditation has been removed for this result as it is a non-accredited matrix

**Note:** The Laboratory may only claim that data is accredited when all of the requirements of our Quality System have been met. Where these requirements have not been met the laboratory may elect to include the data in its final report and remove the accreditation from individual data items if it believes that the validity of the data has not been affected. If further details are required of the circumstances which have led to the removal of accreditation then please do not hesitate to contact the laboratory.



# TEST REPORT



Report No. EFS/202301 (Ver. 1)

SOCOTEC UK Deeside  
Deeside

**Site: A9020-19 South Humber Bank Energy Centre**

The 18 samples described in this report were registered for analysis by SOCOTEC UK Limited on 26-Sep-2019. This report supersedes any versions previously issued by the laboratory.

The analysis was completed by: 02-Oct-2019

Tests where the accreditation is set to N or No, and any individual data items marked with a \* are not UKAS accredited. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

The following tables are contained in this report:

Table 1 Main Analysis Results (Page 2)  
Analytical and Deviating Sample Overview (Pages 3 to 4)  
Table of Method Descriptions (Page 5)  
Table of Report Notes (Page 6)  
Table of Sample Descriptions (Appendix A Page 1 of 1)

On behalf of  
SOCOTEC UK Limited  
Becky Batham  
Operations Manager  
Energy & Waste Services

Date of Issue: 02-Oct-2019

Tests marked 'N' have been subcontracted to another laboratory.

Where samples have been flagged as deviant on the Analytical and Deviating Sample Overview, for any reason, the data may not be representative of the sample at the point of sampling and the validity of the data may be affected.

SOCOTEC UK Limited accepts no responsibility for any sampling not carried out by our personnel.





Customer SOCOTEC UK Deeside  
Site A9020-19 South Humber Bank Energy Centre  
Report No S202301

Consignment No S88344  
Date Logged 26-Sep-2019  
In-House Report Due 07-Oct-2019

Please note the results for any subcontracted analysis (identified with a '^') is likely to take up to an additional five working days.

ID Number	Description	MethodID	ClustServ	ICPACIDS	ICPWSS	ORGAMAT	TSBRE1	VSLM50
		Sampled	REPORT A	SO4-- (acid sol)	SO4-- (H2O sol) mg/l	Organic Matter %	Total Sulphur.	pH (BS1377)
				✓	✓			
CL/1973121	BH03 9.50	D	D			D		
CL/1973122	TP08 3.50	D	D			D		
CL/1973123	TP12 3.00	D	D	D	D		D	D
CL/1973124	BH07 4.50	D	D	D	D		D	D
CL/1973125	BH07 9.00	D	D	D	D		D	D
CL/1973126	BH07 14.50	D	D	D	D		D	D
CL/1973127	BH07 25.00	D	D	D	D		D	D
CL/1973128	BH09 2.80	D	D	D	D		D	D
CL/1973129	BH09 8.50	D	D	D	D	D	D	D
CL/1973130	BH09 13.00	D	D	D	D		D	D
CL/1973131	BH09 17.80	D	D	D	D		D	D
CL/1973132	BH09 27.00	D	D	D	D		D	D
CL/1973133	BH09 33.00	D	D	D	D		D	D
CL/1973134	BH11 2.45	D	D	D	D		D	D
CL/1973135	BH11 4.45	D	D	D	D		D	D

Note: We will endeavour to prioritise samples to complete analysis within holding time; however any delay could result in samples becoming deviant whilst being processed in the laboratory.

If sampling dates are missing or matrices unclassified then results will not be ISO 17025 accredited. Please contact us as soon as possible to provide missing information in order to reinstate accreditation.

Deviating Sample Key

- A appropriate container for this analysis
- B The sample was received without the correct preservation for this analysis
- C Headspace present in the sample container
- D The sampling date was not supplied so holding time may be compromised - applicable to all analysis
- E Sample processing did not commence within the appropriate holding time
- F Sample processing did not commence within the appropriate handling time

Requested Analysis Key

- Analysis Required
- Analysis dependant upon trigger result - Note: due date may be affected if triggered
- No analysis scheduled
- Analysis Subcontracted - Note: due date may vary

Where individual results are flagged see report notes for status.

Customer SOCOTEC UK Deeside  
Site A9020-19 South Humber Bank Energy Centre  
Report No S202301

Consignment No S88344  
Date Logged 26-Sep-2019  
In-House Report Due 07-Oct-2019

Please note the results for any subcontracted analysis (identified with a '^') is likely to take up to an additional five working days.

ID Number	Description	MethodID	ClstServ	ICPACIDS	ICPWSS	ORGMAT	TSBRE1	WSLMS0
		Sampled	REPORT A	SO4-- (acid sol)	SO4-- (H2O sol) mg/l	Organic Matter %	Total Sulphur.	pH (BS1377)
				✓	✓			
CL/1973136	BH11 5.45	D	D			D		
CL/1973137	BH13 3.50	D	D	D	D		D	D
CL/1973138	BH13 6.50	D	D	D	D		D	D

Note: We will endeavour to prioritise samples to complete analysis within holding time; however any delay could result in samples becoming deviant whilst being processed in the laboratory.

If sampling dates are missing or matrices unclassified then results will not be ISO 17025 accredited. Please contact us as soon as possible to provide missing information in order to reinstate accreditation.

Deviating Sample Key

- A appropriate container for this analysis
- B The sample was received without the correct preservation for this analysis
- C Headspace present in the sample container
- D The sampling date was not supplied so holding time may be compromised - applicable to all analysis
- E Sample processing did not commence within the appropriate holding time
- F Sample processing did not commence within the appropriate handling time

Requested Analysis Key

- Analysis Required
- Analysis dependant upon trigger result - Note: due date may be affected if triggered
- No analysis scheduled
- ^ Analysis Subcontracted - Note: due date may vary

Where individual results are flagged see report notes for status.

# Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Soil	ICPACIDS	Oven Dried @ < 35°C	Determination of Total Sulphate in soil samples by Hydrochloric Acid extraction followed by ICPOES detection
Soil	ICPWSS	Oven Dried @ < 35°C	Determination of Water Soluble Sulphate in soil samples by water extraction followed by ICPOES detection
Soil	ORGMAT	Oven Dried @ < 35°C	Acid Dichromate oxidation of the sample followed by colorimetric analysis of the extract
Soil	TSBRE1	Oven Dried @ < 35°C	Determination of Total Carbon and/or Total Sulphur in solid samples by high temperature combustion/infrared detection
Soil	WSLM50	Oven Dried @ < 35°C	Determination of pH of 2.5:1 deionised water to soil extracts using pH probe.

Where individual results are flagged see report notes for status.

# Report Notes

## Generic Notes

### Soil/Solid Analysis

Unless stated otherwise,

- Results expressed as mg/kg have been calculated on the basis indicated in the Method Description table.  
All results on MCERTS reports are reported on a 105°C dry weight basis with the exception of pH and conductivity.
- Sulphate analysis not conducted in accordance with BS1377
- Water Soluble Sulphate is on a 2:1 water:soil extract

### Waters Analysis

Unless stated otherwise results are expressed as mg/l

**Nil:** Where "Nil" has been entered against Total Alkalinity or Total Acidity this indicates that a measurement was not required due to the inherent pH of the sample.

### Oil analysis specific

Unless stated otherwise,

- Results are expressed as mg/kg
- SG is expressed as g/cm<sup>3</sup>@ 15°C

### Gas (Tedlar bag) Analysis

Unless stated otherwise, results are expressed as ug/l

### Asbestos Analysis

**CH** Denotes Chrysotile

**TR** Denotes Tremolite

**CR** Denotes Crocidolite

**AC** Denotes Actinolite

**AM** Denotes Amosite

**AN** Denotes Anthophyllite

**NAIIS** No Asbestos Identified in Sample

**NADIS** No Asbestos Detected In Sample

## Symbol Reference

^ Sub-contracted analysis.

\$\$ Unable to analyse due to the nature of the sample

¶ Samples submitted for this analyte were not preserved on site in accordance with laboratory protocols.

This may have resulted in deterioration of the sample(s) during transit to the laboratory.

Consequently the reported data may not represent the concentration of the target analyte present in the sample at the time of sampling

¥ Results for guidance only due to possible interference

& Blank corrected result

I.S Insufficient sample to complete requested analysis

I.S(g) Insufficient sample to re-analyse, results for guidance only

Intf Unable to analyse due to interferences

N.D Not determined

N.Det Not detected

N.F No Flow

NS Information Not Supplied

Req Analysis requested, see attached sheets for results

P Raised detection limit due to nature of the sample

\* All accreditation has been removed by the laboratory for this result

‡ MCERTS accreditation has been removed for this result

§ accreditation has been removed for this result as it is a non-accredited matrix

**Note:** The Laboratory may only claim that data is accredited when all of the requirements of our Quality System have been met. Where these requirements have not been met the laboratory may elect to include the data in its final report and remove the accreditation from individual data items if it believes that the validity of the data has not been affected. If further details are required of the circumstances which have led to the removal of accreditation then please do not hesitate to contact the laboratory.



**APPENDIX F**  
**GEOENVIRONMENTAL LABORATORY TEST RESULTS**

Test Report - Soil

EFS/201606

EFS/220711

# TEST REPORT



Report No. EFS/201711M (Ver. 1)

SOCOTEC UK Deeside  
Unit 18  
Drome Road  
Deeside Industrial Park  
Deeside  
Flintshire  
CH5 2NY

**Site: A9020-19 South Humber Bank Energy Centre**

The 6 samples described in this report were registered for analysis by SOCOTEC UK Limited on 02-Sep-2019. This report supersedes any versions previously issued by the laboratory.

The analysis was completed by: 11-Sep-2019

Tests where the accreditation is set to N or No, and any individual data items marked with a \* are not UKAS or MCERTS accredited. Any opinions or interpretations expressed herein are outside the scope of any UKAS accreditation held by SOCOTEC UK Limited.

The following tables are contained in this report:

Table 1 Main Analysis Results (Pages 2 to 6)  
Subcontracted Analysis Reports (Pages 7 to 8)  
*The accreditation status of subcontracted analysis is displayed on the appended subcontracted analysis reports.*  
Analytical and Deviating Sample Overview (Pages 9 to 10)  
Table of Method Descriptions (Page 11)  
Table of Report Notes (Page 12)  
Table of Sample Descriptions (Appendix A Page 1 of 1)

On behalf of  
SOCOTEC UK Li  
Becky Batham



Operations Manager  
Energy & Waste Services

Date of Issue: 11-Sep-2019

Accreditation Codes: **N** (Not Accredited), **U** (UKAS), **UM** (UKAS & MCERTS)

Tests marked 'A' have been subcontracted to another laboratory.

(NVM) - denotes the sample matrix is dissimilar to matrices upon which the MCERTS validation was based, and is therefore not accredited for MCERTS.

All results are reported on a dry weight basis at 105°C unless otherwise stated. (except QC samples)  
SOCOTEC UK Limited accepts no responsibility for any sampling not carried out by our personnel.













## CERTIFICATE OF ANALYSIS

**ANALYSIS REQUESTED BY:** SOCOTEC UK Ltd  
Environmental Chemistry  
PO Box 100  
Burton upon Trent  
Staffordshire  
DE15 0XD

**CONTRACT NO:** S07902-8

**DATE OF ISSUE:** 11.09.19

**DATE SAMPLES RECEIVED:** 04.09.19

**DATE SAMPLES ANALYSED:** 11.09.19

**DESCRIPTION:** Six soil/loose aggregate samples each weighing approximately 0.7-1.1kg.

**ANALYSIS REQUESTED:** Qualitative and quantitative analysis of soil/loose aggregate samples for mass determination of asbestos.

### METHODS:

**Qualitative** - The samples were analysed qualitatively for asbestos by polarised light and dispersion staining as described by the Health and Safety Executive in HSG 248.

**Quantitative** - The analysis was carried out using our documented in-house method based on HSE Contract Research Report No. 83/1996: Development and Validation of an analytical method to determine the amount of asbestos in soils and loose aggregates (Davies *et al*, 1996) and HSG 248. Our method includes initial examination of the entire sample, detailed analysis of a representative sub-sample and quantification by hand picking/weighing and/or fibre counting/sizing as appropriate.

### RESULTS:

#### Initial Screening

No asbestos was detected in any of the soil samples by stereo-binocular and polarised light microscopy.

A summary of the results is given in Table 1.



**CONTRACT NO:** S07902-8  
**DATE OF ISSUE:** 11.09.19

**RESULTS: (cont.)**

**Table 1: Qualitative Results**

**SOCOTEC Job I.D:** S201711

IOM sample number	Client sample number	ACM type detected	PLM result
S66844	S1970713 TP02 0.20	-	No Asbestos Detected
S66845	S1970714 TP02 0.60	-	No Asbestos Detected
S66846	S1970715 CPT04 0.20	-	No Asbestos Detected
S66847	S1970716 CPT05 0.50	-	No Asbestos Detected
S66848	S1970717 TP04 0.20	-	No Asbestos Detected
S66849	S1970718 TP04 1.20	-	No Asbestos Detected

Our detection limit for this method is 0.001%.

**COMMENTS:**

IOM Consulting cannot accept responsibility for samples that have been incorrectly collected or despatched by external clients.

Any opinions and interpretations expressed herein are outwith the scope of our UKAS accreditation.

AUTHORISED BY: 

**D Third**  
*Scientific Technician*



Customer SOCOTEC UK Deeside  
Site A9020-19 South Humber Bank Energy Centre  
Report No S201711M

Consignment No S87698  
Date Logged 02-Sep-2019  
In-House Report Due 11-Sep-2019

Please note the results for any subcontracted analysis (identified with a '^') is likely to take up to an additional five working days.

ID Number	Description	MethodID	TPHUSI											WSLMS9		
				Sampled	TPH AII Band >C12-C16	TPH AII Band >C16-C21	TPH AII Band >C21-C35	TPH AII Band >C8-C10	TPH AII Band >C8-C40	TPH Aro Band >C10-C12	TPH Aro Band >C12-C16	TPH Aro Band >C16-C21	TPH Aro Band >C21-C35		TPH Aro Band >C8-C10	TPH Aro Band >C8-C40
			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CL/1970713	TP02 0.20	27/08/19	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CL/1970714	TP02 0.60	27/08/19	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CL/1970715	CPT04 0.20	19/08/19	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CL/1970716	CPT05 0.50	19/08/19	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CL/1970717	TP04 0.20	27/08/19	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CL/1970718	TP04 1.20	27/08/19	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

**Note: We will endeavour to prioritise samples to complete analysis within holding time; however any delay could result in samples becoming deviant whilst being processed in the laboratory.**

**If sampling dates are missing or matrices unclassified then results will not be ISO 17025 accredited. Please contact us as soon as possible to provide missing information in order to reinstate accreditation.**

Deviating Sample Key	
A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time
Requested Analysis Key	
■	Analysis Required
■	Analysis dependant upon trigger result - <b>Note: due date may be affected if triggered</b>
□	No analysis scheduled
^	Analysis Subcontracted - <b>Note: due date may vary</b>



# Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Soil	BTEXHSA	As Received	Determination of Benzene, Toluene, Ethyl benzene and Xylenes (BTEX) by Headspace GCFID
Soil	CALC_CR3	Oven Dried @ < 35°C	Calculated from the difference between Total Chromium and Hexavalent Chromium
Soil	FOCS	Oven Dried @ < 35°C	Calculation of Soil Organic Matter content from Organic Carbon content of soil samples
Soil	GROHSA	As Received	Determination of Total Gasoline Range Organics Hydrocarbons (GRO) by Headspace GCFID
Soil	ICPBOR	Oven Dried @ < 35°C	Determination of Boron in soil samples by hot water extraction followed by ICPOES detection
Soil	ICPMSS	Oven Dried @ < 35°C	Determination of Metals in Marine Sediments and Soil samples by aqua regia digestion followed by ICPMS detection
Soil	ICPSOIL	Oven Dried @ < 35°C	Determination of Metals in soil samples by aqua regia digestion followed by ICPOES detection
Soil	KONECR	Oven Dried @ < 35°C	Determination of Chromium vi in soil samples by water extraction followed by colorimetric detection
Soil	PAHMSUS	As Received	Determination of Polycyclic Aromatic Hydrocarbons (PAH) by hexane/acetone extraction followed by GCMS detection
Soil	PCBECD	As Received	Determination of Polychlorinated Biphenyl (PCB) congeners/arocloris by hexane/acetone extraction followed by GCECD detection
Soil	PHSOIL	As Received	Determination of pH of 2.5:1 deionised water to soil extracts using pH probe.
Soil	SFAPI	As Received	Segmented flow analysis with colorimetric detection
Soil	SubCon*	*	Contact Laboratory for details of the methodology used by the sub-contractor.
Soil	TMSS	As Received	Determination of the Total Moisture content at 105°C by loss on oven drying gravimetric analysis (% based upon wet weight)
Soil	TPHUSSI	As Received	Determination of hexane/acetone extractable Hydrocarbons in soil with GCFID detection including quantitation of Aromatic and Aliphatic fractions.
Soil	WSLM59	Oven Dried @ < 35°C	Determination of Organic Carbon in soil using sulphurous Acid digestion followed by high temperature combustion and IR detection

# Report Notes

## Generic Notes

### Soil/Solid Analysis

Unless stated otherwise,

- Results expressed as mg/kg have been calculated on the basis indicated in the Method Description table.  
All results on MCERTS reports are reported on a 105°C dry weight basis with the exception of pH and conductivity.
- Sulphate analysis not conducted in accordance with BS1377
- Water Soluble Sulphate is on a 2:1 water:soil extract

### Waters Analysis

Unless stated otherwise results are expressed as mg/l

**Nil:** Where "Nil" has been entered against Total Alkalinity or Total Acidity this indicates that a measurement was not required due to the inherent pH of the sample.

### Oil analysis specific

Unless stated otherwise,

- Results are expressed as mg/kg
- SG is expressed as g/cm<sup>3</sup>@ 15°C

### Gas (Tedlar bag) Analysis

Unless stated otherwise, results are expressed as ug/l

### Asbestos Analysis

**CH** Denotes Chrysotile

**TR** Denotes Tremolite

**CR** Denotes Crocidolite

**AC** Denotes Actinolite

**AM** Denotes Amosite

**AN** Denotes Anthophyllite

**NAIIS** No Asbestos Identified in Sample

**NADIS** No Asbestos Detected In Sample

## Symbol Reference

^ Sub-contracted analysis.

\$\$ Unable to analyse due to the nature of the sample

¶ Samples submitted for this analyte were not preserved on site in accordance with laboratory protocols.

This may have resulted in deterioration of the sample(s) during transit to the laboratory.

Consequently the reported data may not represent the concentration of the target analyte present in the sample at the time of sampling

¥ Results for guidance only due to possible interference

& Blank corrected result

I.S Insufficient sample to complete requested analysis

I.S(g) Insufficient sample to re-analyse, results for guidance only

Intf Unable to analyse due to interferences

N.D Not determined

N.Det Not detected

N.F No Flow

NS Information Not Supplied

Req Analysis requested, see attached sheets for results

P Raised detection limit due to nature of the sample

\* All accreditation has been removed by the laboratory for this result

‡ MCERTS accreditation has been removed for this result

§ accreditation has been removed for this result as it is a non-accredited matrix

**Note:** The Laboratory may only claim that data is accredited when all of the requirements of our Quality System have been met. Where these requirements have not been met the laboratory may elect to include the data in its final report and remove the accreditation from individual data items if it believes that the validity of the data has not been affected. If further details are required of the circumstances which have led to the removal of accreditation then please do not hesitate to contact the laboratory.



# TEST REPORT



Report No. EFS/201606M (Ver. 1)

SOCOTEC UK Deeside  
Unit 18  
Drome Road  
Deeside Industrial Park  
Deeside  
Flintshire  
CH5 2NY

**Site: A9020-19 South Humber Bank Energy Centre**

The 4 samples described in this report were registered for analysis by SOCOTEC UK Limited on 28-Aug-2019. This report supersedes any versions previously issued by the laboratory.

The analysis was completed by: 09-Sep-2019

Tests where the accreditation is set to N or No, and any individual data items marked with a \* are not UKAS or MCERTS accredited. Any opinions or interpretations expressed herein are outside the scope of any UKAS accreditation held by SOCOTEC UK Limited.

The following tables are contained in this report:

Table 1 Main Analysis Results (Pages 2 to 6)  
Subcontracted Analysis Reports (Pages 7 to 8)  
*The accreditation status of subcontracted analysis is displayed on the appended subcontracted analysis reports.*  
Analytical and Deviating Sample Overview (Pages 9 to 10)  
Table of Method Descriptions (Page 11)  
Table of Report Notes (Page 12)  
Table of Sample Descriptions (Appendix A Page 1 of 1)

On behalf of  
SOCOTEC UK Limited  
Becky Batham  
Operations Manager  
Energy & Waste Services

Date of Issue: 09-Sep-2019

Accreditation Codes: **N** (Not Accredited), **U** (UKAS), **UM** (UKAS & MCERTS)

Tests marked 'A' have been subcontracted to another laboratory.

(NVM) - denotes the sample matrix is dissimilar to matrices upon which the MCERTS validation was based, and is therefore not accredited for MCERTS.

All results are reported on a dry weight basis at 105°C unless otherwise stated. (except QC samples)  
SOCOTEC UK Limited accepts no responsibility for any sampling not carried out by our personnel.













## CERTIFICATE OF ANALYSIS

**ANALYSIS REQUESTED BY:** SOCOTEC UK Ltd  
Environmental Chemistry  
PO Box 100  
Burton upon Trent  
Staffordshire  
DE15 0XD

**CONTRACT NO:** S07801-3

**DATE OF ISSUE:** 06.09.19

**DATE SAMPLES RECEIVED:** 30.08.19

**DATE SAMPLES ANALYSED:** 05.09.19

**DESCRIPTION:** Four soil/loose aggregate samples each weighing approximately 0.7-1.6kg.

**ANALYSIS REQUESTED:** Qualitative and quantitative analysis of soil/loose aggregate samples for mass determination of asbestos.

### METHODS:

**Qualitative** - The samples were analysed qualitatively for asbestos by polarised light and dispersion staining as described by the Health and Safety Executive in HSG 248.

**Quantitative** - The analysis was carried out using our documented in-house method based on HSE Contract Research Report No. 83/1996: Development and Validation of an analytical method to determine the amount of asbestos in soils and loose aggregates (Davies *et al*, 1996) and HSG 248. Our method includes initial examination of the entire sample, detailed analysis of a representative sub-sample and quantification by hand picking/weighing and/or fibre counting/sizing as appropriate.

### RESULTS:

#### Initial Screening

No asbestos was detected in any of the soil samples by stereo-binocular and polarised light microscopy.

A summary of the results is given in Table 1.





**CONTRACT NO:** S07801-3  
**DATE OF ISSUE:** 06.09.19

**RESULTS: (cont.)**

**Table 1: Qualitative Results**

**SOCOTEC Job I.D:** S201606

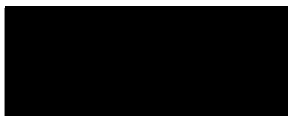
IOM sample number	Client sample number	ACM type detected	PLM result
S66738	S1970418 BH02 0.20	-	No Asbestos Detected
S66739	S1970419 BH04 0.50	-	No Asbestos Detected
S66740	S1970420 CPT08 0.50	-	No Asbestos Detected
S66741	S1970421 CPT09 1.00	-	No Asbestos Detected

Our detection limit for this method is 0.001%.

**COMMENTS:**

IOM Consulting cannot accept responsibility for samples that have been incorrectly collected or despatched by external clients.

Any opinions and interpretations expressed herein are outwith the scope of our UKAS accreditation.



AUTHORISED BY: .....

**J Simpson**  
*Senior Scientific Technician*



Customer SOCOTEC UK Deeside  
Site A9020-19 South Humber Bank Energy Centre  
Report No S201606M





Consignment No S87264  
Date Logged 28-Aug-2019  
In-House Report Due 05-Sep-2019

Please note the results for any subcontracted analysis (identified with a '^') is likely to take up to an additional five working days.

ID Number	Description	MethodID	TPHUSSI							WS/LM59	
		Sampled	TPH AII Band >C8-C40	TPH Aro Band >C10-C12	TPH Aro Band >C12-C16	TPH Aro Band >C16-C21	TPH Aro Band >C21-C35	TPH Aro Band >C8-C10	TPH Aro Band >C8-C40	TPH by GC/FID (AR/SI)	Total Organic Carbon
Test Method Accredited to ISO17025			✓	✓	✓	✓	✓	✓	✓	✓	✓
CL/1970418	BH02 0.20	12/08/19									
CL/1970419	BH04 0.50	15/08/19									
CL/1970420	CPT08 0.50	20/08/19									
CL/1970421	CPT09 1.00	20/08/19									

**Note: We will endeavour to prioritise samples to complete analysis within holding time; however any delay could result in samples becoming deviant whilst being processed in the laboratory.**

**If sampling dates are missing or matrices unclassified then results will not be ISO 17025 accredited. Please contact us as soon as possible to provide missing information in order to reinstate accreditation.**

Deviating Sample Key	
A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time
Requested Analysis Key	
	Analysis Required
	Analysis dependant upon trigger result - <b>Note: due date may be affected if triggered</b>
	No analysis scheduled
	Analysis Subcontracted - <b>Note: due date may vary</b>

# Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Soil	BTEXHSA	As Received	Determination of Benzene, Toluene, Ethyl benzene and Xylenes (BTEX) by Headspace GCFID
Soil	FOCS	Oven Dried @ < 35°C	Calculation of Soil Organic Matter content from Organic Carbon content of soil samples
Soil	GROHSA	As Received	Determination of Total Gasoline Range Organics Hydrocarbons (GRO) by Headspace GCFID
Soil	ICPMSS	Oven Dried @ < 35°C	Determination of Metals in Marine Sediments and Soil samples by aqua regia digestion followed by ICPMS detection
Soil	PAHMSUS	As Received	Determination of Polycyclic Aromatic Hydrocarbons (PAH) by hexane/acetone extraction followed by GCMS detection
Soil	PCBECD	As Received	Determination of Polychlorinated Biphenyl (PCB) congeners/aroclors by hexane/acetone extraction followed by GCECD detection
Soil	PHSOIL	As Received	Determination of pH of 2.5:1 deionised water to soil extracts using pH probe.
Soil	SFAPI	As Received	Segmented flow analysis with colorimetric detection
Soil	SubCon*	*	Contact Laboratory for details of the methodology used by the sub-contractor.
Soil	TMSS	As Received	Determination of the Total Moisture content at 105°C by loss on oven drying gravimetric analysis (% based upon wet weight)
Soil	TPHUSSI	As Received	Determination of hexane/acetone extractable Hydrocarbons in soil with GCFID detection including quantitation of Aromatic and Aliphatic fractions.
Soil	WSLM59	Oven Dried @ < 35°C	Determination of Organic Carbon in soil using sulphurous Acid digestion followed by high temperature combustion and IR detection

# Report Notes

## Generic Notes

### Soil/Solid Analysis

Unless stated otherwise,

- Results expressed as mg/kg have been calculated on the basis indicated in the Method Description table.  
All results on MCERTS reports are reported on a 105°C dry weight basis with the exception of pH and conductivity.
- Sulphate analysis not conducted in accordance with BS1377
- Water Soluble Sulphate is on a 2:1 water:soil extract

### Waters Analysis

Unless stated otherwise results are expressed as mg/l

**Nil:** Where "Nil" has been entered against Total Alkalinity or Total Acidity this indicates that a measurement was not required due to the inherent pH of the sample.

### Oil analysis specific

Unless stated otherwise,

- Results are expressed as mg/kg
- SG is expressed as g/cm<sup>3</sup>@ 15°C

### Gas (Tedlar bag) Analysis

Unless stated otherwise, results are expressed as ug/l

### Asbestos Analysis

**CH** Denotes Chrysotile

**TR** Denotes Tremolite

**CR** Denotes Crocidolite

**AC** Denotes Actinolite

**AM** Denotes Amosite

**AN** Denotes Anthophyllite

**NAIIS** No Asbestos Identified in Sample

**NADIS** No Asbestos Detected In Sample

## Symbol Reference

^ Sub-contracted analysis.

\$\$ Unable to analyse due to the nature of the sample

¶ Samples submitted for this analyte were not preserved on site in accordance with laboratory protocols.

This may have resulted in deterioration of the sample(s) during transit to the laboratory.

Consequently the reported data may not represent the concentration of the target analyte present in the sample at the time of sampling

¥ Results for guidance only due to possible interference

& Blank corrected result

I.S Insufficient sample to complete requested analysis

I.S(g) Insufficient sample to re-analyse, results for guidance only

Intf Unable to analyse due to interferences

N.D Not determined

N.Det Not detected

N.F No Flow

NS Information Not Supplied

Req Analysis requested, see attached sheets for results

P Raised detection limit due to nature of the sample

\* All accreditation has been removed by the laboratory for this result

‡ MCERTS accreditation has been removed for this result

§ accreditation has been removed for this result as it is a non-accredited matrix

**Note:** The Laboratory may only claim that data is accredited when all of the requirements of our Quality System have been met. Where these requirements have not been met the laboratory may elect to include the data in its final report and remove the accreditation from individual data items if it believes that the validity of the data has not been affected. If further details are required of the circumstances which have led to the removal of accreditation then please do not hesitate to contact the laboratory.





**APPENDIX A  
PHOTOGRAPHS**

Rotary Cores  
Trial Pits

G1 to G5  
G6 to G45

# Photographs



BH01 28.50-33.50m



BH01 33.50-36.50m

Notes:	<p>Project South Humber Bank Energy Centre</p> <p>Project No. A9020-19</p> <p>Carried out for EP UK Investments Ltd</p>	<p>Plate</p> <p><b>G1</b></p>
--------	-------------------------------------------------------------------------------------------------------------------------	-------------------------------

# Photographs



BH02 30.60-33.10m



BH02 33.10-37.80m

Notes:	<p><b>Project</b> South Humber Bank Energy Centre</p> <p><b>Project No.</b> A9020-19</p> <p><b>Carried out for</b> EP UK Investments Ltd</p>	<p><b>Plate</b></p> <p><b>G2</b></p>
--------	----------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------

# Photographs



BH02 37.80-CUT



BH02 CUT-CUT

Notes:	<p>Project South Humber Bank Energy Centre</p> <p>Project No. A9020-19</p> <p>Carried out for EP UK Investments Ltd</p>	<p>Plate <b>G3</b></p>
--------	-------------------------------------------------------------------------------------------------------------------------	------------------------

# Photographs



BH02 CUT-46.30m



BH03 30.00-33.80m

Notes:	<p>Project South Humber Bank Energy Centre</p> <p>Project No. A9020-19</p> <p>Carried out for EP UK Investments Ltd</p>	<p>Plate</p> <p><b>G4</b></p>
--------	-------------------------------------------------------------------------------------------------------------------------	-------------------------------

# Photographs



BH03 33.80-35.00m

Notes:	Project: South Humber Bank Energy Centre Project No.: A9020-19 Carried out for: EP UK Investments Ltd	Plate: <b>G5</b>
--------	-------------------------------------------------------------------------------------------------------------	------------------



TP01

Notes:

Project South Humber Bank Energy Centre  
Project No. A9020-19  
Carried out for EP UK Investments Ltd

Plate

G6

# Photographs



TP01

Notes:

Project South Humber Bank Energy Centre  
Project No. A9020-19  
Carried out for EP UK Investments Ltd

Plate

**G7**





TP01

Notes:

Project South Humber Bank Energy Centre  
Project No. A9020-19  
Carried out for EP UK Investments Ltd

Plate

G8

# Photographs



TP01

Notes:

Project South Humber Bank Energy Centre  
Project No. A9020-19  
Carried out for EP UK Investments Ltd

Plate

G9

# Photographs



TP02

Notes:

Project South Humber Bank Energy Centre  
Project No. A9020-19  
Carried out for EP UK Investments Ltd

Plate

G10



TP02

Notes:

Project South Humber Bank Energy Centre  
Project No. A9020-19  
Carried out for EP UK Investments Ltd

Plate

G11



TP02

Notes:

Project South Humber Bank Energy Centre  
Project No. A9020-19  
Carried out for EP UK Investments Ltd

Plate

**G12**



TP03

Notes:

Project South Humber Bank Energy Centre  
Project No. A9020-19  
Carried out for EP UK Investments Ltd

Plate

G13

# Photographs



TP03



TP03

Notes:	<p>Project South Humber Bank Energy Centre</p> <p>Project No. A9020-19</p> <p>Carried out for EP UK Investments Ltd</p>	<p>Plate</p> <p><b>G14</b></p>
--------	-------------------------------------------------------------------------------------------------------------------------	--------------------------------



TP03



TP04

Notes:	<p>Project South Humber Bank Energy Centre</p> <p>Project No. A9020-19</p> <p>Carried out for EP UK Investments Ltd</p>	<p>Plate</p> <p><b>G15</b></p>
--------	-------------------------------------------------------------------------------------------------------------------------	--------------------------------





TP04

Notes:

Project South Humber Bank Energy Centre  
Project No. A9020-19  
Carried out for EP UK Investments Ltd

Plate

**G16**



TP04

Notes:

Project South Humber Bank Energy Centre  
Project No. A9020-19  
Carried out for EP UK Investments Ltd

Plate

G17



TP04

Notes:

Project South Humber Bank Energy Centre  
Project No. A9020-19  
Carried out for EP UK Investments Ltd

Plate

**G18**



TP05

Notes:

Project South Humber Bank Energy Centre  
Project No. A9020-19  
Carried out for EP UK Investments Ltd

Plate

G19



TP05

Notes:

Project South Humber Bank Energy Centre  
Project No. A9020-19  
Carried out for EP UK Investments Ltd

Plate

G20

# Photographs



TP05

Notes:

Project South Humber Bank Energy Centre  
Project No. A9020-19  
Carried out for EP UK Investments Ltd

Plate

G21



TP05

Notes:

Project South Humber Bank Energy Centre  
Project No. A9020-19  
Carried out for EP UK Investments Ltd

Plate

G22

# Photographs



TP06

Notes:

Project South Humber Bank Energy Centre  
Project No. A9020-19  
Carried out for EP UK Investments Ltd

Plate

**G23**





TP06

Notes:

Project South Humber Bank Energy Centre  
Project No. A9020-19  
Carried out for EP UK Investments Ltd

Plate

G24



TP06

Notes:

Project South Humber Bank Energy Centre  
Project No. A9020-19  
Carried out for EP UK Investments Ltd

Plate

G25



TP06

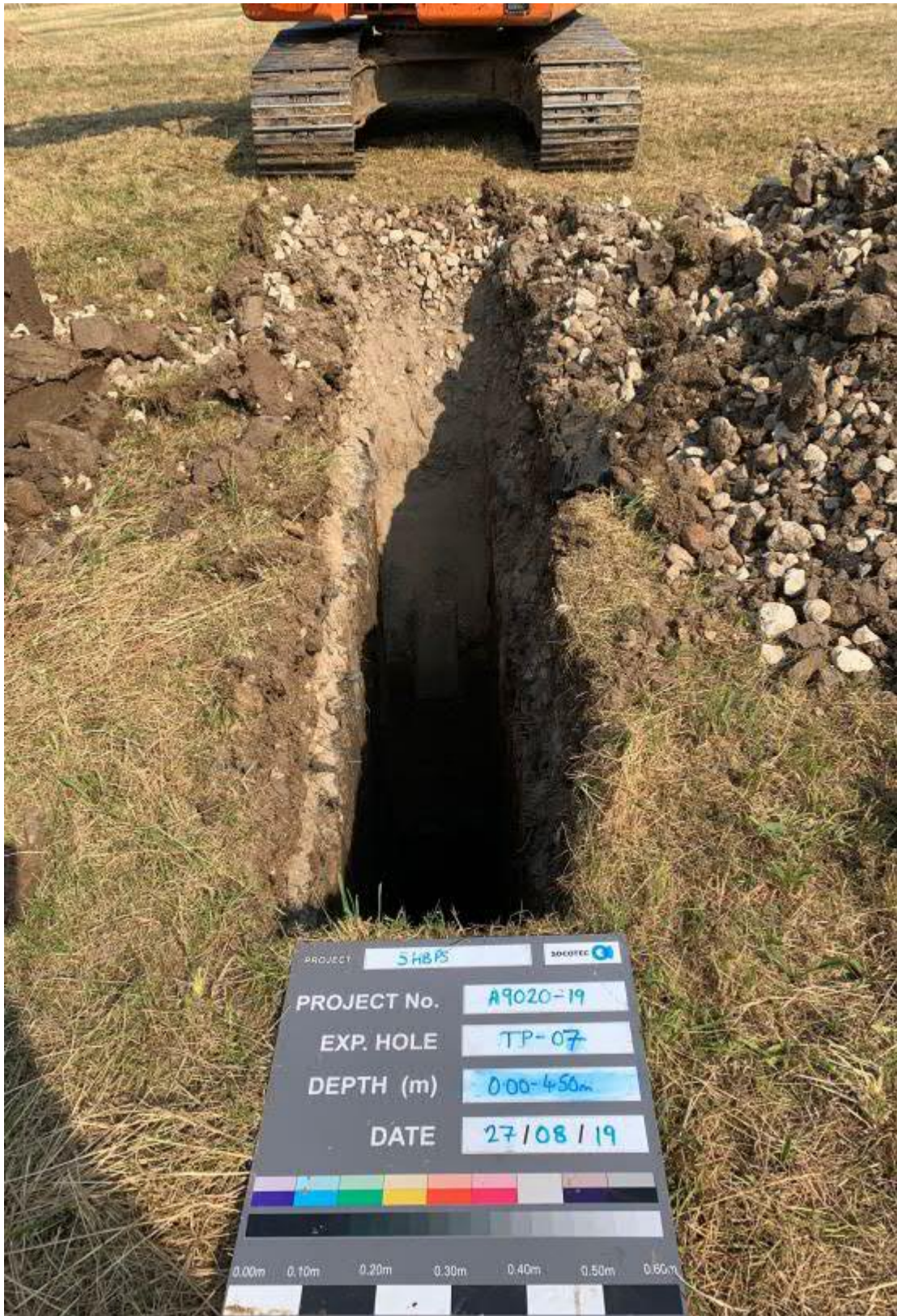
Notes:

Project South Humber Bank Energy Centre  
Project No. A9020-19  
Carried out for EP UK Investments Ltd

Plate

G26

# Photographs



TP07

Notes:

Project South Humber Bank Energy Centre  
Project No. A9020-19  
Carried out for EP UK Investments Ltd

Plate

G27



TP07



TP07

Notes:	<p>Project South Humber Bank Energy Centre</p> <p>Project No. A9020-19</p> <p>Carried out for EP UK Investments Ltd</p>	<p>Plate</p> <p><b>G28</b></p>
--------	-------------------------------------------------------------------------------------------------------------------------	--------------------------------

# Photographs



TP07

Notes:

Project South Humber Bank Energy Centre  
Project No. A9020-19  
Carried out for EP UK Investments Ltd

Plate

**G29**



TP08

Notes:

Project South Humber Bank Energy Centre  
Project No. A9020-19  
Carried out for EP UK Investments Ltd

Plate

**G30**



TP08

Notes:

Project South Humber Bank Energy Centre  
Project No. A9020-19  
Carried out for EP UK Investments Ltd

Plate

**G31**



# Photographs



TP08

Notes:

Project South Humber Bank Energy Centre  
Project No. A9020-19  
Carried out for EP UK Investments Ltd

Plate

G32



TP08

Notes:

Project South Humber Bank Energy Centre  
Project No. A9020-19  
Carried out for EP UK Investments Ltd

Plate

**G33**



TP09

Notes:

Project South Humber Bank Energy Centre  
Project No. A9020-19  
Carried out for EP UK Investments Ltd

Plate

**G34**

# Photographs



TP09



TP09

Notes:

Project South Humber Bank Energy Centre  
Project No. A9020-19  
Carried out for EP UK Investments Ltd

Plate

**G35**



TP09

Notes:

Project South Humber Bank Energy Centre  
Project No. A9020-19  
Carried out for EP UK Investments Ltd

Plate

G36

# Photographs



TP10

Notes:

Project South Humber Bank Energy Centre  
Project No. A9020-19  
Carried out for EP UK Investments Ltd

Plate

**G37**

# Photographs



TP10

Notes:

Project South Humber Bank Energy Centre  
Project No. A9020-19  
Carried out for EP UK Investments Ltd

Plate

**G38**



TP10

Notes:

Project South Humber Bank Energy Centre  
Project No. A9020-19  
Carried out for EP UK Investments Ltd

Plate

**G39**





TP10

Notes:

Project South Humber Bank Energy Centre  
Project No. A9020-19  
Carried out for EP UK Investments Ltd

Plate

**G40**

# Photographs



TP11



TP11

Notes:	Project South Humber Bank Energy Centre Project No. A9020-19 Carried out for EP UK Investments Ltd	Plate G41
--------	----------------------------------------------------------------------------------------------------------	-----------



TP11

Notes:

Project South Humber Bank Energy Centre  
Project No. A9020-19  
Carried out for EP UK Investments Ltd

Plate

G42

# Photographs



TP12



TP12

Notes:

Project South Humber Bank Energy Centre  
Project No. A9020-19  
Carried out for EP UK Investments Ltd

Plate

**G43**



TP12

Notes:

Project South Humber Bank Energy Centre  
Project No. A9020-19  
Carried out for EP UK Investments Ltd

Plate

**G44**

# Photographs



TP12

Notes:

Project South Humber Bank Energy Centre  
Project No. A9020-19  
Carried out for EP UK Investments Ltd

Plate

G45