

Date: January 2020

Environmental Impact Assessment

Environmental Statement

Volume 6

Appendix 16.2

Report Number: 4593/R01 Issue 1

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This report is also downloadable from the Thurrock Flexible Generation Plant website at: http://www.thurrockpower.co.uk

Thurrock Power Ltd

1st Floor

145 Kensington Church Street

London W8 7LP

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Summary

This appendix presents the results and discussion of the Phase 2 intrusive site investigation works undertaken in zone A, the main development site for Thurrock Flexible Generation Plant.

Appendix 16.2: Phase 2 Site Investigation Report Environmental Statement January 2020



TerraConsult Phase 2 Site Investigation Report 1.

Appendix 16.2: Phase 2 Site Investigation Report Environmental Statement January 2020



TerraConsult









DRAINAGE STONE

COLLIERY SHALL

October 2019 Report No 4593/R01 Issue 1

Tilbury

Phase 2 Site Investigation Report

Prepared for

Statera Energy Limited

TerraConsult

Tilbury

Phase 2 Site Investigation Report

October 2019

Carried Out For:

Statera Energy Limited

1st Floor 145 Kensington Church Street London W8 7LP Prepared By:

TerraConsult Ltd

9 The Courtyard Phoenix Square Wyncolls Road Colchester Essex CO4 9PE

Tel: 01206 585600 E-mail: <u>mailbox@terraconsult.co.uk</u>

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1	Draft	28/10/2019	Prepared By: Therese McDaid BSc (Hons) PGDip GradIEMA	'T McDaid	08/10/2019	
			Checked By: Adam Steele BSc (Hons) MSc MIEnvSc	A Steele	08/10/2019	
			Authorised By: Jason Tilley BEng (Hons) MSc DIC FGS	J'Tilley	28/10/2019	
DISCLAIMER						
This report should be read with the Service Constraints Report Limitations & Planning Requirements set out in Appendix A.						



Executive Summary

The client, Statera Energy Limited, commissioned TerraConsult Ltd to undertake a Phase 2 Site Investigation Report for a site at Station Road, Tilbury, which is being considered for development.

Development Proposals

Development proposals are understood to comprise construction of a power station.

Conclusions

When compared to the screening criteria for commercial end use, the chemical laboratory testing indicated no elevated concentrations of contaminants within the samples analysed. Asbestos was not detected in any of the samples analysed.

Recommendations

Recommendations are provided within the subsequent report.

Page

Tilbury

Phase 2 Site Investigation Report

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Appendices

Appendix A	Service Constraints and Report Limitations
Appendix B	Environmental Risk Assessment Methodology and Terminology
Appendix C	Fieldwork Records
Appendix D	Laboratory Analysis Results

1. Introduction

1.1 Background Information

TerraConsult Limited (TerraConsult) was commissioned by Statera Energy Limited (Statera) to undertake a Phase 2 Site Investigation for the site known as Tilbury, off Station Road, RM18 8RA.

1.2 Development Proposals

It is understood that the development proposals comprise construction of a power station.

1.3 Purpose of Investigation

The purpose of the report is to provide information on the condition of the site prior to application for an Environmental Permit, and to provide information to guide any changes to the current proposed land use. The specific activities carried out are as follows:

- Carry out a site walk over;
- Carry out an intrusive investigation comprising cable percussive and dynamic sampler boreholes with associated sampling, and cone penetration tests;
- Ground gas and groundwater monitoring;
- Laboratory testing for potential contaminants and geotechnical purposes;
- Assess the general nature and extent of contamination at the site and carry out a contamination risk assessment to determine if the site poses a risk to potential receptors;
- To monitor the ground gas conditions at the site and undertake a ground gas risk assessment;
- Should the investigation indicate that remediation of contaminants be required, provide recommendations of feasible remedial measures to facilitate development of the site for commercial end use;
- Provide preliminary geotechnical information on the ground conditions for foundation and floor slab design.

This report has been devised to comply with the relevant principles and requirements of a range of guidance with regards to potentially contaminated land, including (but not limited to):

- Part IIA of the Environment Protection Act, 1990;
- Contaminated Land (England) (Amendment) Regulations 2012 and Contaminated Land Statutory Guidance (DEFRA, April 2012);
- National Planning Policy Framework (HCA, March 2012);
- BS5930:2015: "Code of practice for site investigations";
- BS10175: 2011 +A2:2017 "Investigation of Potentially Contaminated Sites -Code of Practice";
- The Building Regulations 2010. Part C (HM Government 2013)

- DEFRA/Environment Agency (2004) Report CLR11 "Model Procedures for the Management of Land Contamination";
- Environment Agency (2011) Report GPLC1 "Guiding Principles for Land Contamination";
- Environment Agency (2017) "The Environment Agency's Approach to Groundwater Protection" November 2017 Version 1.1

1.4 **Previous Investigations**

It is understood that the site has not been subject to any previous investigations.

1.5 Limitations

TerraConsult's service constraints and report limitations are presented in Appendix A and a description of environmental risk assessment methodology and terminology is presented in Appendix B.

In preparation of this report, it is assumed that any information provided to TerraConsult by the client in connection with the commission is accurate, complete and not misleading. TerraConsult cannot guarantee the accuracy or validity of this information.

2. Fieldwork and Analysis (September 2019)

The works undertaken as part of the site investigation and subsequent analysis of selected samples is summarised below.

2.1 Site Investigation

The site work undertaken as part of this phase of investigation is detailed in the following section. The site investigation was undertaken in accordance with the scope of works agreed with the client and generally in accordance with industry guidance including BS10175: 2011 *Investigations into Potentially Contaminated Sites – Code of Practice* and BS5930: 2015 *Code of Practice for Site Investigations – Amendment 2.*

2.1.1 Site Work Rationale and Preparatory Works

The exploratory hole location plan and fieldwork records are presented in **Appendix C**. The investigative positions were selected based on the available access and to provide coverage of the proposed development plot.

Prior to boring a cable avoidance tool was used to confirm each location was clear of detectable services.

2.1.2 Cable Percussive Boreholes

Seven cable percussive boreholes, referenced CP01 to CP07, were undertaken between the 10th and 24th September 2019 and were completed at depths between 23.10mbgl and 25.00mbgl (5.00m into the underlying solid geology). The arisings were logged on site by an Environmental Consultant. Recovered soil samples were taken at regular intervals throughout the depth of the boreholes.

2.1.3 Dynamic Sampler Boreholes

A total of nine dynamic sampler boreholes, referenced WS01 to WS09, were undertaken on the 19th and 20th September 2019 and were completed at depths between 4.45mbgl and 5.45mbgl. The arisings were logged and sampled on site by an Environmental Consultant. The recovered soil samples were taken at regular intervals throughout the depth of the boreholes and environmental samples were placed in laboratory supplied sealed glass jars and plastic containers prior to being stored in cool boxes during transit to the laboratory.

2.1.4 Cone Penetration Tests

A total of ten Cone Penetration Tests (CPT) measuring cone end resistance and sleeve friction, were undertaken on the 17th and 18th September 2019 using the ISO 22476-1:2012 method.

2.1.5 Piezometer Installations and Monitoring

Single groundwater monitoring piezometer installations were placed in boreholes CP01 to CP07. Each installation comprised 16mm diameter HDPE piezometer casing with a ceramic piezometer tip at the base of each borehole. The depth to groundwater was measured using a dip-meter. Monitoring results are presented in Appendix C.

2.1.6 Standpipe Installations and Monitoring

Single standpipe installations were placed in boreholes WS01, WS02, WS04, WS06, WS07 and WS08. Each standpipe comprised 63mm diameter HDPE piping, slotted below 1.00mbgl; installed to depths of 5.00mbgl. Once installed, the slotted section was surrounded by suitable gravel pack, above which a sealing material (bentonite) was used. A rubber bung and gas tap were placed at the top of the pipework and a raised cover concreted at surface to protect the installation from damage. Flow was monitored for a period of up to two minutes, and the concentrations of ground gases including methane, carbon dioxide, oxygen, hydrogen sulphide and carbon monoxide were monitored for up to five minutes. The depth to groundwater was measured using a dip-meter. The monitoring results are presented in **Appendix C**.

2.2 Laboratory Analysis

The scheduled analysis and number of samples tested is summarised in Error! Reference source not found.1 and Table 2.2. The laboratory certificates are presented in Appendix D.

Analysis	No. of Soil Samples Tested
Metals	9
Speciated polycyclic aromatic hydrocarbons (PAHs)	9
Water Soluble Sulphate & Water Soluble Chloride	9
Phenols – Total (monohydric)	9
Mineral Oil, TPH C10-C40, TPH C10-C25	9
Benzene, toluene, ethylbenzene and xylenes (BTEX)	9
Asbestos screen	9
рН	9
Total Cyanide	9
Moisture Content & Stone Content	9
Analysis	No. of Water Samples Tested
Metals	3
General Inorganics	3
Speciated polycyclic aromatic hydrocarbons (PAHs)	3
Heavy Metals	3
Monoaromatics and Oxygenates	3
Mineral Oil, TPH C10-C40, TPH C10-C25	3

Table 2.1 Summary of Scheduled	Chemical Testing
--------------------------------	------------------

Table 2.1
 Summary of Scheduled Geotechnical Testing

Analysis	No. of Soil Samples Tested		
Moisture Content	18		
Atterberg Limit (4 Point)	18		



Oedometer Consolidation	6
Quick Undrained Triaxial	16
BRE SD1	12

3. Ground Conditions

The encountered ground conditions, groundwater and other observations are summarised and discussed below.

3.1 Encountered Ground Conditions

The ground conditions encountered are summarised in Table 3.1 and discussed below.

Stratum	Location	Surface Depth (mbgl)	Proven Base Depth (mbgl)	Proven thickness (m)
Topsoil	CP01 to CP07. WS01, WS02, 0.00 WS03, WS09.		0.10 to 0.95	0.10 to 0.95
Made Ground	round WS04, WS05, WS06, WS07, 0.00 WS08.		0.50 to 1.82	0.50 to 1.82
Alluvium	vium All locations 0.10 t		18.10 to 20.30	18.00 to 19.80
Lewes Nodular Chalk Formation, Seaford Chalk Formation and Newhaven Chalk Formation (undifferentiated)	CP01 to CP07	18.10 to 20.30	Base not proved	Thickness not proved

Table 3.1 Summary of Encountered Ground Conditions

3.1.1 Topsoil

Topsoil was encountered at all cable percussive locations, and dynamic sampling locations WS01, WS02, WS03 and WS09 from surface level to depths between 0.10mbgl and 0.95mbgl.

3.1.2 Made Ground

Made Ground was encountered at WS04 to WS08 from surface level to depths between 0.50mbgl and 1.82mbgl. The Made Ground comprised gravelly clay with gravel of brick fragments and chalk.

3.1.3 Alluvium

Alluvium was encountered underlying the topsoil and Made Ground at depths between 0.10mbgl and 1.82mbgl in all locations, to depths between 18.10mbgl and 20.30mbgl. This stratum comprised mainly very soft, silty clay, frequently peaty and with an occasional layer of peat typically 1.50m thick encountered at approximately 5.50mbgl to 6.00mbgl. Thinner, shallower bands of peat were also noted in WS03, WS04, WS05, CP03 and CP05 around 1.00mbgl. Coarse sand and gravel of sub-angular to sub-rounded flint was also encountered in boreholes CP01 to CP07 as a deeper component of this stratum, at depths between 11.20mbgl and 16.10mbgl, before encountering the underlying chalk.

3.1.4 Lewes Nodular Chalk Formation, Seaford Chalk Formation and Newhaven Chalk Formation (undifferentiated)

This stratum was encountered underlying the Alluvium at depths between 18.10mbgl and 20.30mbgl in boreholes CP01 to CP07. The stratum comprised primarily structureless chalk recovered as chalk gravel and putty chalk, occasionally with pockets of flint gravel. The base of the chalk was not proven. Boreholes CP01 to CP07 were completed at target depths between 23.10mbgl and 25.00mbgl (approximately 5 metres into the chalk).

3.1.5 Groundwater

During the site investigation, groundwater was encountered in CP01, CP03, CP05, CP06 and CP07 at depths between 11.20mbgl and 15.00mbgl, where the top of the sand and gravel component of the alluvium was encountered, and rose to depths between 2.40mbgl and 6.20mbgl over a period of 20 minutes.

During subsequent monitoring, groundwater levels in CP01 to CP07 rose to and stabilised at approximately 1.00mbgl. Groundwater was encountered in WS1, WS2, WS4, WS6, WS7 and WS8 at depths between 1.62mbgl and 2.67mbgl.

4. Summary of Laboratory Analysis

The results of the chemical laboratory testing and ground gas monitoring are detailed in the following section.

4.1 Geoenvironmental Soil Analysis

The samples were submitted to i2 Analytical Laboratories in Watford, Hertfordshire who are UKAS accredited in accordance with ISO17025 and are also MCERTS accredited for soil analysis in accordance with the Environment Agency's scheme. The laboratory carries out Quality Assurance and Quality Control in accordance with BS ISO 17025 and participates in external laboratory comparison and quality control schemes. Details of the accreditation and the methods of analysis are provided on the relevant test reports.

4.2 Geotechnical Soil Analysis

The samples were submitted to K4 Soils in Watford who are UKAS accredited in accordance with ISO17025.

4.3 Groundwater Analysis

Water samples were submitted to i2 Analytical in Watford for analysis. The laboratory carries out Quality Assurance and Quality Control in accordance with BS ISO 17025 and participates in external laboratory comparison and quality control schemes. Details of the accreditation and the methods of analysis are provided on the relevant test reports.

4.4 Ground Gas Analysis

Where applicable, the results of ground gas monitoring have been compared to CIRIA 665: Assessing risks posed by hazardous ground gases to buildings and BS 8485:2015: Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings.

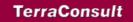


 Table 4.1
 Results of Laboratory Analysis for Metals

Determinand Metals	Determinand Concentration Range (mg/kg)		Screening Values for Res	pective Land Use (mg/kg)	No. of Samples with Elevated Concentrations	Samples with Elevated Concentrations
	Minimum	Maximum	S4ULs	C4SLs	Concentrations	
Arsenic	7.4	25	640	-	0	None elevated
Cadmium	<0.2	<0.2	190	-	0	None elevated
Chromium (III)	38	50	8,600	-	0	None elevated
Copper	4.9	24	68,000	-	0	None elevated
Lead	15	33	-	6,000	0	None elevated
Mercury	<0.3	<0.3	1,100	-	0	None elevated
Nickel	24	43	980	-	0	None elevated
Selenium	<1.0	<1.0	120,000	-	0	None elevated
Zinc	68	130	730,000 -		0	None elevated

Table 4.2 Results of Laboratory Analysis for Polycyclic Aromatic Hydrocarbons

Determinand	Concentra	ninand tion Range //kg)	Screening Values for Proposed Land Use (mg/kg)			No. of Samples with Elevated	Samples with Elevated Concentrations
PAHs	Minimum	Maximum		S4ULs			
		waxiinum	1% som	2.5% som	6% som		
Acenaphthene	<0.05	<0.05	84,000	97,000	100,000	0	None elevated
Acenaphthylene	<0.05	<0.05	83,000	97,000	100,000	0	None elevated
Anthracene	<0.05	<0.05	520,000	540,000	540,000	0	None elevated
Benzo[a]anthracene	<0.05	<0.05	170	170	180	0	None elevated
Benzo[a]pyrene	<0.05	<0.05	76	76	76	0	None elevated

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Determinand	Determinand Concentration Range (mg/kg)		Screening Va	Screening Values for Proposed Land Use (mg/kg)			Samples with Elevated
PAHs	Minimum	Maximum		S4ULs		Concentrations	Concentrations
	wiimmum	Maximum	1% som	2.5% som	6% som		
Benzo[b]fluoranthene	<0.05	<0.05	44	44	45	0	None elevated
Benzo[ghi]perylene	<0.05	<0.05	3,900	4,000	4,000	0	None elevated
Benzo[k]fluoranthene	<0.05	<0.05	1,200	1,200	1,200	0	None elevated
Chrysene	<0.05	<0.05	350	350	350	0	None elevated
Dibenzo[ah]anthracene	<0.05	<0.05	3.5	3.6	3.6	0	None elevated
Fluoranthene	<0.05	<0.05	23,000	23,000	23,000	0	None elevated
Fluorene	<0.05	<0.05	63,000	68,000	71,000	0	None elevated
Indeno[123-cd]pyrene	<0.05	<0.05	500	510	510	0	None elevated
Naphthalene	<0.05	<0.05	190	460	1,100	0	None elevated
Phenanthrene	<0.05	<0.05	22,000	22,000	23,000	0	None elevated
Pyrene	<0.05	<0.05	54,000	54,000	54,000	0	None elevated
Total PAH	<0.9	<0.9	-	-	-	-	-

Table 4.3 Results of Laboratory Analysis for Petroleum Hydrocarbons

Determinand	Determ Concentrati (mg/	ion Range	Screening	Values for Proposed (mg/kg)	d Land Use	No. of Samples with Elevated	Location of Samples with Elevated
Petroleum Hydrocarbons	Minimum	Maximum	S4ULs		Concentrations	Concentrations	
	winimum	Maximum	1% som 2.5% som 6% som				
Mineral Oil (C10-C40)	<10	<10	-	-	-	-	-

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Determinand	Determ Concentrati (mg/	ion Range	Screening Values for Proposed Land Use (mg/kg)		- · ·		•		Location of Samples with Elevated
Petroleum Hydrocarbons	nrbons Minimum Maximum		S4ULs			with Elevated Concentrations	Concentrations		
	wiiniiniuni	Maximum	1% som	2.5% som	6% som				
TPH (C10-C40)	<10	<10	-	-	-	-	-		
TPH (C10-C25)	<10	<10	-	-	-	-	-		

Table 4.4 Results of Laboratory Analysis for BTEX and MTBE

Determinand	Determ Concentrati (mg/	ion Range	Screening Values for Proposed Land Use (mg/kg)			No. of Samples with Elevated	Location of Samples with Elevated
BTEX and MTBE	A dimina cum	Maximation		S4ULs		Concentration	Concentrations
	Minimum Maximum		1% som	2.5% som	6% som		
Benzene	<0.001	<0.001	27	47	90	0	None elevated
Toluene	<0.001	<0.001	869	1920	4360	0	None elevated
Ethylbenzene	<0.001	<0.001	518	1220	2840	0	None elevated
o-xylene	<0.001	<0.001	478	1120	2620	0	None elevated
m-xylene	<0.001	<0.001	625 1470		3460	0	None elevated
p-xylene	<0.001	<0.001	576	1350	3170	0	None elevated

Table 4.5 Asbestos Screening

Determinand	Screening Result	Asbestos Matrix	Asbestos Type	No. of Samples with Asbestos	Location of Samples with Detected Asbestos
Asbestos	None detected	-	-	0	None detected

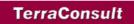


Table 4.6 Summary of Groundwater Analysis Results

Determinand	Determinand Concentration Range (ug/l)		Threshold	Value (ug/l)	No. of Samples with Elevated	Location of Samples with Elevated
	Minimum	Maximum	UK	DWS	Concentrations	Concentrations
Arsenic	<0.15	1.40	10	10	0	None elevated
Cadmium	<0.02	<0.02	5	13	0	None elevated
Chromium	<0.2	0.2	50	50	0	None elevated
Copper	<0.5	<0.5	2,000	2,000	0	None elevated
Lead	<0.2	0.4	10	10	0	None elevated
Mercury	<0.05	<0.05	1	16	0	None elevated
Nickel	<0.5	9.2	20	70	0	None elevated
Selenium	U/S	14	10	40	0	None elevated
Zinc	<0.5	<0.5	5,000	-	0	None elevated
Benzo(a)pyrene	<0.01	<0.01	0.01	0.7	0	None elevated
Sum of PAHs (4no. congeners)	<0.01	<0.01	0.1 (sum of 4no. congeners)	0.7	0	None elevated
Total petroleum hydrocarbons	<140 (C5-C35)	<140 (C5-C35)	-	Taste and odour will in most cases be detectable at concentrations below those of health concern, particularly with short-term exposure.	-	No evidence to suggest fuel contamination.

*U/S unsufficient sample

4.5 Summary of Analysis and Monitoring Results

The results of the chemical laboratory analysis of selected soil samples is discussed in the following section.

4.5.1 Summary of Soil Sample Analysis and Screening Results

Analysis of selected soil samples did not indicate any elevated concentrations of contaminants when compared against their respective criteria for commercial end use.

Asbestos was not detected in any of the analysed soil samples.

4.5.2 Summary of Groundwater Sample Analysis and Screening Results

analysis of selected groundwater samples did not indicate any elevated concentrations of contaminants when compared to the UK Drinking Water Standards.

4.6 Discussion of Ground Gas Results and Gas Screening Value

The results of ground gas monitoring are summarised below.

4.6.1 Summary of Ground Gas Results

The recorded methane, carbon monoxide and hydrogen sulphide (H_2S) concentrations were below detection levels. Detected levels of carbon dioxide ranged between 0.3 and 2.7.

4.6.2 Recorded Flow Rate

No flow was detected at any of the monitoring points.

4.6.3 Gas Screening Value and Classification

The Gas Screening Value (GSV) for the site based on the recorded maximum concentrations of methane and carbon dioxide is provided in Table 4.6.

Peak Flow Rate (l/hr)	Worst Case CO ₂ (%)	CO2 GSV	Worst Case CH₄ (%)	CH₄ GSV
<0.1	2.7	<0.0027 l/hr CO ₂	<0.1	<0.0001 l/hr CH ₄

 Table 4.6
 Gas Screening Values for Methane and Carbon Dioxide

Characteristic Situation 1 is considered applicable to the site based on the gas screening value of <0.0027 I/hr and the recorded maximum concentrations of carbon dioxide and methane.

5. Conceptual Site Model

In accordance with BS 10175, a general schematic section has been developed for the site based on the previously presented data and contaminant linkage assessment for the proposed commercial end use. This is shown in **Figure 1**.

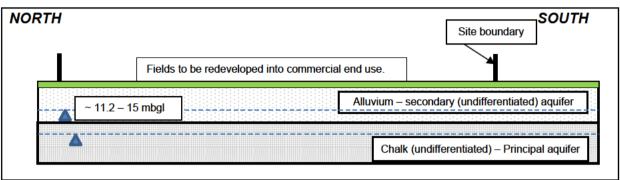


Figure 1 Conceptual Site Model based on the proposed development (not to scale).

The model for the site shows the geology, former site usage and vulnerable receptors. The information presented above represents the conceptual ground model that may need to be revised based on data obtained during any future investigation, either desk-based or intrusive. The conceptual site model and proposed end use described above should be considered very broadly representative of a commercial land use, as a worst case scenario, as defined in SR3 "Updated Technical Model to the CLEA Model" (SC050021/SR3, 2011) for the purpose of this report.

5.1 Updated Qualitative Risk Assessment

The contaminant linkages have been individually assessed and an updated summary of the potential geo-environmental risks associated with the site and in the context of the proposed development is provided in **Table 5.1**.

Issue	Risk Rating	Justification Comments			
Contamination Potential					
Potential for significant on site contamination.	- IOW				
Potential for contaminants to migrate via soil/air/groundwater pathways to site.	Low to moderate	Secondary (undifferentiated) Aquifer within the Alluvium stratum.			
Potential for contaminants to migrate via soil/air/groundwater pathways off-site.	Low	Contaminants on site could migrate off site due to the ground conditions. A Secondary (undifferentiated) Aquifer underlies the site within the Alluvium stratum.			
Geo-environmental Risk					
Risk of harm to human health (end users) based on anticipated conditions.	Low	No elevated concentrations of contaminants were detected in the samples analysed.			
Risk to site workers.	Low	No elevated concentrations of contaminants were detected in the samples analysed.			
Risk of pollution to controlled Low Than elever		A Secondary (undifferentiated) Aquifer lies within the Alluvium stratum underlying the site, and the River Thames lies less than 1km south of the site, however no elevated concentrations of contaminants were detected in the samples analysed.			
Hazards to building structures and	Low	Contamination has not been identified that could affect			

 Table 5.1
 Summary of Updated Qualitative Risk Assessment

Issue	Risk Rating	Justification Comments	
services – excluding ground gas.		building structures or services.	
Liabilities			
Likelihood of designation as Contaminated Land under Part 2A of EPA 1990.	Negligible	No elevated concentrations of contaminants were detected in the samples analysed.	
Liability issues for owner.	Low	No potential liability issues identified.	
Development Implications			
Possible requirement for remediation of soil.	Low	No elevated concentrations of contaminants were detected in the samples analysed.	
Possible requirement for remediation of groundwater.	Low	Groundwater was not encountered during monitoring.	
Possible requirement for gas protection.	Negligible	Based on the results of monitoring.	
Special requirements for water supply pipes.	Low	No elevated concentrations of contaminants were detected in the samples analysed. Specialist pipework should not be required. The water provider, however, may require additional soil analysis.	
Potential limitations on foundation design.	Low	Laboratory analysis has classed the ground on site as DS-1 and AC-1.	
Risk of encountering materials classed as hazardous waste.	Low	No contamination was identified from the samples analysed.	

6. Geoenvironmental Conclusion and Recommendation

The following recommendations are based on the results of the conceptual site model and risk assessment.

6.1 Summary of Development Proposals and Ground Investigation Results

The proposals, encountered ground conditions and analysis results are summarised below.

6.1.1 Development Proposals

Proposals comprise the construction of a power station on site.

6.1.2 Summary of Encountered Ground Conditions and Groundwater

The encountered ground conditions comprised Made Ground or Topsoil to depths between 0.10mbgl and 1.82mbgl, overlying Alluvium to depths between 18.10mbgl and 20.30mbgl. The Lewes Nodular Chalk Formation, Seaford Chalk Formation and Newhaven Chalk Formation (undifferentiated) was encountered underlying the Alluvium at all Cable Percussive borehole locations. Cable Percussive boreholes were completed at depths approximately 5m into the chalk, or at 25mbgl – between 23.1mbgl and 25.0mbgl across the site.

Groundwater was encountered in CP1, CP3, CP5, CP6 and CP7 during site work at depths between 11.20mbgl and 15.00mbgl. During subsequent monitoring, groundwater was encountered at depths of approximately 1.00mbgl at these locations, and at depths between 1.62mbgl and 2.67mbgl at WS1, WS2, WS4, WS6, WS7 and WS8.

6.1.3 Summary of Laboratory Test Results and Monitoring

When compared to the screening criteria for commercial end use, the chemical laboratory testing indicated no elevated concentrations of contaminants within the samples analysed. Asbestos was not detected in any of the samples analysed.

The ground gas monitoring results indicated that the gassing regime falls into CIRIA C665 Characteristic Situation 1.

6.2 Conclusion

Based on the conceptual site model and risk assessment, low risk to end users and moderate risk to site workers has been identified.

6.3 Recommendations

Recommendations are provided below.

6.3.1 Watching Brief

It is recommended that a watching brief is maintained on site, particularly during the groundwork stage. During any ground works an appraisal of the exposed soils should be made by a competent person, this as an example could be the site manager. If any material is noted to show visual and/or olfactory signs of contamination it should be stockpiled separately and tested prior to its appropriate removal off-site or re-use. If soils suspected of

being contaminated are encountered, it is recommended that a contaminated land specialist is consulted.

6.3.2 Buried Services

Potable water pipework shall comply with the Water Supply Regulations, the agreement of the water provider and Local Authority should also be sought regarding the potable water pipework and fittings selected prior to commencement.

6.3.3 Importing and Re-Use of Soil and Materials Management Plan

Excavated soil that is to remain and be re-used on site, assuming it is suitable for the proposed use, may not be determined as waste and its re-use therefore may not require an Environmental Permit. It may be necessary to consult the Environment Agency or other statutory bodies regarding re-use of soils as part of the proposals and whether a Materials Management Plan or Environmental Permit is required. In any case, a site waste management plan or materials management plan may assist the design and cost assessment of the proposed development. This should be devised within the design phase of the scheme.

6.3.4 Soil Disposal

The client and contractors are advised to follow the process outlined in the Environment Agency's Technical Guidance Document WM3 '*Waste Classification – Guidance on the Classification and Assessment of Waste*', 1st edition 2015. Background information and the results of chemical laboratory analysis within this assessment may be used as part of an initial characterisation to determine the likely waste classification of waste soils.

6.3.5 Statutory Authority Consultation

It is recommended that this report is sent to the statutory authorities including the Local Authority Environmental Health and Planning Departments prior to remediation or development of the site commencing to seek their comments. Where necessary, they will consult the Environment Agency or other relevant statutory authorities. If applicable to this project, this report should also be provided to the relevant building warranty provider. Where remediation works are required, a verification report should be submitted to the relevant authorities for approval in accordance with relevant Planning Conditions.

6.3.6 Health and Safety

As outlined within the HSE publication "Successful Health and Safety Management – HSG65" this report should inform your development of safe systems of work and the information used as an input to the safety management system. The contents of this report may be used to supplement the contents of the Health and Safety File as required under the Construction Design and Management (CDM) Regulations 2015.

In accordance with the Construction Design and Management (CDM) Regulations 2015, TerraConsult has acted in the role of Principal Contractor and as Principal Designer for the works as described in this report. With issue of this report, TerraConsult has discharged and completed all contractual and legal requirements for these positions and has no further involvement with the project. It is the developer's duty, as required by the CDM Regulations, to appoint others to fill these roles for the further development of the site.

7. Geotechnical Assessment and Recommendation

7.1 Fieldwork and Laboratory Data Review

7.1.1 General Stratigraphy

The natural geology was identified in all of the intrusive locations and was found to comprise Alluvium overlying Lewes Nodular Chalk Formation, Seaford Chalk Formation and Newhaven Chalk Formation (Undifferentiated). Groundwater was encountered within the sand and gravel component of the Alluvium at CP1, CP3, CP5, CP6 and CP7.

7.1.2 Made Ground

Made Ground was encountered at WS4, WS5, WS6, WS7 and WS8 from surface level to depths between 0.15mbgl and 0.65mbgl

7.1.3 Alluvial Clay

Twelve samples of the Alluvial Clay were submitted to a laboratory for plasticity analyses. The test results are summarised below:

Hole	Depth (m)	Moisture Content (%)	% passing 425um sieve	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index	Modified Plasticity Index	Volume Change Potential	Liquidity Index
CP01	1.5	60	100	79	32	47	47	High	0.596
CP02	1.5	58	100	72	30	42	42	High	0.667
CP02	3.5	87	100	77	30	47	47	High	1.213
CP04	1.5	59	100	77	33	44	44	High	0.591
CP04	3.5	99	100	87	34	53	53	High	1.227
CP05	1.5	62	100	71	28	43	43	High	0.791
CP05	3.5	59	100	70	28	42	42	High	0.738
CP06	1.5	51	100	70	26	44	44	High	0.569
CP06	3.5	51	100	45	22	23	23	High	1.261
CP07	1.5	62	100	79	32	47	47	High	0.639
CP07	3.5	70	100	67	31	36	36	Medium	1.084
CP07	6.0	75	100	75	33	42	42	High	1.000
м	linimum	51	100	45	22	23	23	Medium	0.569
1	Average	66.08	100	72.42	29.92	42.50	42.50	High	0.865
Ma	aximum	99	100	87	34	53	53	High	1.261

 Table 7.1
 Summary of Geotechnical Laboratory Classification Testing Alluvial Clay

None of the results indicated any level of desiccation. They do, however, indicate a high volume change potential. It is therefore considered that, where present, these soils could pose a significant risk to shallow structures such as foundations from either heave or shrinkage, and foundation design will need to allow for the impact of volume change potential on such soils.

SPT N-values were recorded throughout each borehole and are summarised below for the alluvial clay encountered. The listed N-values have been corrected to the standard Energy Ratio of 60% and are therefore reported below as N_{60} values:

Hole No Depth (m) Alluvium Clay 2.50 0 3.50 0 4.50 0 4.50 0 6.00 0 7.50 0 9.00 0 10.5 0 10.5 0 7.50 0 10.5 0 10.5 0 10.5 0 10.5 0 10.50 0 10.50 0 12.00 0 13.50 0 13.50 0 4.50 0 10.50 0 10.50 0 10.50 0 10.50 0 10.50 0 10.50 0 10.50 0 10.50 0 10.50 0 10.50 0 10.50 0 10.50 0 <	Table 7.2 Summary of SPT N-Values Alluvial Clay							
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13.50 1 13.50 1 2.50 0 4.50 0 7.50 0 7.50 0 10.50 0 12.00 0 13.50 1 2.50 0 CP5 4.50 0		10.50	0					
2.50 0 4.50 0 7.50 0 7.50 0 10.50 0 12.00 0 13.50 1 2.50 0 4.50 0		12.00	0					
4.50 0 7.50 0 9.00 0 10.50 0 12.00 0 13.50 1 2.50 0 CP5 4.50 0		13.50	1					
7.50 0 9.00 0 10.50 0 12.00 0 13.50 1 2.50 0 CP5 4.50 0		2.50	0					
CP4 9.00 0 10.50 0 12.00 0 13.50 1 2.50 0 CP5 4.50 0		4.50	0					
10.50 0 12.00 0 13.50 1 2.50 0 CP5 4.50 0		7.50	0					
12.00 0 13.50 1 2.50 0 CP5 4.50 0	CP4	9.00	0					
13.50 1 2.50 0 CP5 4.50 0		10.50	0					
2.50 0 CP5 4.50 0		12.00	0					
CP5 4.50 0		13.50	1					
		2.50	0					
7.50 0	CP5	4.50	0					
		7.50	0					

Table 7.0



Hole No	Depth (m)	Alluvium Clay
	9.00	0
	10.50	0
	12.00	0
	13.50	2
	2.50	0
	4.50	0
CP6	7.50	0
CFO	9.00	0
	10.50	0
	12.00	0
	2.50	0
	4.50	0
CP7	7.50	0
CP7	9.00	0
	10.50	0
	12.00	0
	1.00	2
	2.00	0
WS1	3.00	0
	4.00	0
	5.00	0
	1.00	0
	2.00	0
WS2	3.00	0
	4.00	0
	5.00	0
	1.00	1
	2.00	0
WS3	3.00	0
	4.00	0
	5.00	0
	1.00	4
	2.00	0
WS4	3.00	0
	4.00	0
	5.00	0

Hole No	Depth (m)	Alluvium Clay
	1.00	0
WS5	2.00	0
	3.00	0
	4.00	0
	1.00	2
	2.00	0
WS6	3.00	0
	4.00	0
	5.00	0
	1.00	3
	2.00	0
WS7	3.00	0
	4.00	0
	5.00	0
	1.00	4
	2.00	0
WS8	3.00	0
	4.00	0
	5.00	0
	1.00	4
	2.00	0
WS9	3.00	0
	4.00	0
	5.00	0
No of Tests		93
Range of Values		0 - 4
Mean		0.28

The average results indicate that the alluvial clay is of very low to extremely low strength. This was also confirmed within the triaxial test results.

7.1.4 Peat

Six samples of Peat were submitted to a laboratory for plasticity analyses. The classification test results on the clay strata are summarised below with the two lithologies separated out:

Hole	Depth (m)	Moisture Content (%)	% passing 425um sieve	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index	Modified Plasticity Index	Volume Change Potential	Liquidity Index
CP02	6.0	380	100	473	335	138	138	High	0.326
CP03	1.5	127	100	150	50	100	100	High	0.77
CP03	6 .0	421	100	508	400	108	108	High	0.195
CP04	6 .0	469	100	679	429	250	250	High	0.16
CP05	6 .0	341	100	495	384	111	111	High	-0.388
CP06	6 .0	310	100	312	215	97	97	High	0.98
М	inimum	127	100	150	50	97	97	High	-0.388
-	Average	341	100	436	302	134	134	High	0.341
Ma	aximum	469	100	679	429	250	250	High	0.98

 Table 7.3
 Summary of Geotechnical Laboratory Classification Testing Peat

None of these results indicated any degree of desiccation with the exception of CP05, however this may be due to the presence of wood fragments. They also indicated a high volume change potential. This material was mainly found at depth across the site and is unlikely to have any direct effect on shallow structures. However, the high plasticity and presence of decaying wood fragments does indicate that the material will be subject to decay and movement over time which may affect both ground levels and structures penetrating through the strata such as piles. Significant movement may also occur is dewatering occurs either from engineering practices or drainage.

The average results indicate that the peat is of very low to extremely low strength.

7.1.5 Coarse Alluvium

SPT N-values were recorded throughout each borehole and are summarised below for the alluvial granular materials encountered. The listed N-values have been corrected to the standard Energy Ratio of 60% and are therefore reported below as N_{60} values:

Hole No	Depth (m)	Alluvium Granular
	12.00	8
	13.50	9
CP1	15.00	14
	16.50	33
	18.00	46
	19.50	23
CP2	16.50	8
	18.00	9
CP3	15.00	13
	16.50	9
	18.00	11
	19.50	11

 Table 7.4
 Summary of SPT N-Values Granular Alluvial

Hole No	Depth (m)	Alluvium Granular
CP4	15.00	7
	16.50	10
	15.00	8
CP5	16.50	9
	18.00	13
	13.50	9
CP6	15.00	9
Cru	16.50	14
	18.00	21
CP7	13.50	8
	15.00	8
	16.50	11
	18.00	10
No of Tests		25
Range of Values		7 - 46
Mean		13.24

The SPT tests undertaken within the alluvial granular deposits indicated them being present from between 12m and 16.5m below ground level. The results identified them as commencing as a loose deposit generally becoming medium dense towds the base of the deposit.

7.1.6 Chalk

Chalk was located within all of the deep boreholes below the alluvial soils. The SPT data indicated it to be relatively consistent in strength although, due to the drilling method, it weas difficult to provide a qualitative description. Standpipe piezometers placed within the strata indicated the piezometric head in the chalk to be close to ground level.

SPT N-values were recorded throughout each borehole and are summarised below for the chalk encountered. The listed N-values have been corrected to the standard Energy Ratio of 60% and are therefore reported below as N_{60} values:

Hole No	Depth (m)	Chalk	
	21.00	15	
CP1	22.50	16	
	24.00	31	
	19.50	7	
CP2	21.00	28	
	22.50	7	

 Table 7.5
 Summary of SPT N-Values Chalk

Hole No	Depth (m)	Chalk
	24.00	14
	21.00	3
CP3	22.50	10
	24.00	13
	18.00	11
CP4	19.50	5
CF4	21.00	5
	22.50	12
	19.50	6
CD5	21.00	11
CP5	22.50	6
	24.00	11
	19.50	16
CP6	21.00	10
	22.50	11
CP7	19.50	10
	21.00	8
	22.50	10
No of Tests		24
Range of Values		3 - 31
Mean		11.50

7.2 Foundation Recommendations

7.2.1 Shallow Foundations

It is understood that the site is to be used as a power station, storing and providing electricity to the Grid. As such the development will include for significant structures although the exact loads are unknown.

The investigation works has identified that the alluvial deposits (specifically the clay) will not be suitable for foundations for any significant structures. It may be possible to place lightly loaded structures onto the deposits either using rafts or ground improvement such as cement/lime stabilisation of the near surface soft materials. Should rafts be used we would recommend a safe allowable bearing pressure 25kN/m². However, any structures placed on this typs of foundation would need to be able to tolerate a significant amount of long term settlement, especially if any loadings are eccentric thus potentially leading to differential settlement.

Detailed design of foundations should be carried out in accordance with BSEN 19971 2007 + A1 2013, and BS8004:2015, by a suitably qualified structural enginer.

Any ground improvement should be designed by a specialist contractor.

7.2.2 Deep Foundations

It is recommended that any significant loads, or buildings which do not have a high tolerance for total and differential settlement, should be constructed on piled foundations.

A specialist piling contractor should be contacted with regards to the selection of appropriate pile design and construction method. Geotechnical information within this report should be provided to give design parameters although further, deeper information will likely be required.

Any piles would need to be taken to significant depth through all of the alluvial clay and peat and at least into the underlying alluvial granular deposits at depth. However, it is highly likely that, in order to have suitable loading capacity, the piles will need to be taken into the underlying chalk.

Due to the significant thickness of soft clays and peat and the presence of groundwater the type of pile should be considered. The effect of negative skin friction (downward force on the piles from settlement in the peat and clay) could be significant. Also, if a cast in-situ type pile is adopted, the presence of mobile groundwater could cause washout of the concrete fines leading to necking of the piles. Both of these scenarious could potentially lead to catastrophic loss of bearing capacity and thus failure of the pile. A solution to these effects such as sleeving of the piles through these deposits should be considered.

Driven precast piles taken to such a depth as to equalise the effect of potential negative skin friction could also be considered although such a solution could lead to extremely deep piles and would require the pile to be successfully driven through the granular depsoits abopve the chalk.

Detailed design of piledfoundations should be carried out in accordance with BSEN 19971 2007 + A1 2013, and BS8004:2015, by a suitably qualified structural enginer once the detailed layout and loading of the propsed foundations is known.

Whilst TerraConsult considers the risks to be low for piling, a risk assessment is likely to be necessary to show that the piling will not create additional risks to Controlled Water.

Any piling works undertaken from existing ground levels will require a suitable piling mat/platform constructed in accordance with BRE Report 470 (2004) or TWf2019:02. A geotextile may be incorporated into the platform to reduce the required thickness and the platform could be designed as part of the engineering fill required for any earthworks to alter final site levels. TerraConsult can assist in the design if required once the piling rig type is known.

7.3 Ground Floor Slab

Ground bearing floor slabs would not be recommended on the alluvial deposits. However, placement of slabs onto the underlying natural clay which has been treated with lime and/or cement may be suitable dependent on the proposed loading and its susceptibility to differential settlement.

Fo any heavily loaded structure or any structures which are susceptible to significant settlement, a suspended ground floow slab would be recommended.

7.4 Roads and Hard Standing Areas

No CBR testing was undertaken as part of the site investigation works. However, with regards to the natural strata for initial design purposes, we would recommend that a CBR value of <2.5% would be indicative of the site conditions. However, we would recommend that some in-situ testing is undertaken in areas of proposed hardstanding and this along with ground conditions are reviewed in line with the layout to provide more detailed information for design purposes.

Should the CBR be demonstrated to be <2.5% then engineering solutions such as localised removal and replacement with a suitable imported engineered fill, or stabilisation using lime and cement should be considered to provide a capping layer for pavement construction..

7.5 Groundwater and Excavations

Groundwater will likely be encountered across the site in excavations in excess of 2m depth. It is anticipated that any groundwater in excavations can be controlled by sump pumping due to the clayey nature of the shallow ground.

Excavations through the soils to a depth of about 2.0m should be stable in the short term (up to 3 to 4 hours). All excavations should be carried out in accordance with BSEN16907: 2018 Earthworks, CIRIA Report 97 "Trenching Practice" and BS6031: 2009: Code of Practice for Earthworks. Further guidance on this aspect of site works is given in the British Standards for "Workmanship on Building Sites", BS 8000, Parts 1 and 14, and in the Construction Industry Training Board's Site Safety Note 10.

Excavation depths should generally be readily achieved using conventional hydraulic plant (e.g. wheeled JCB or similar) although larger plant (tracked 360° or similar) will have higher excavation rates and generally lower ground bearing pressures.

7.6 Buried Concrete and Pipework

A total of 21 samples were analysed for pH and sulphate values. Therefore in accordance with BRE Digest 1, the mean of the highest 20% of the results should be taken into account for buried concrete classification. Therefore, for this site the highest five results have been used for classification. The results are as presented below:

Hole	Depth (m)	Water Soluble Sulphate Content (mg/l)	pH Level	Design Sulphate Class	ACEC Class
CP01	4.5	1,120	8.5	DS2	AC2
CP01	10.0	830	8.4	DS2	AC2
CP02	13.5	740	8.2	DS2	AC2
CP04	3.5	1,480	8.1	DS2	AC2
CP04	5.9	2,080	7.4	DS3	AC3
	Average	1,250	8.1	DS2	AC2

 Table 7.6
 Summary of Top 20% Sulphate and pH Analysis

The results of laboratory pH and sulphate content indicate that a Design Sulphate Class of DS-2 and ACEC Class AC-2 conditions prevail in accordance with BRE Special Digest 1, 2005 (the Design Concrete Class).

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APPENDICES

- Appendix A Service Constraints, Report Limitations and Planning Requirements
- Appendix B Environmental Risk Assessment Methodology and Terminology
- Appendix C Fieldwork Records
- Appendix D Laboratory Analysis Results

Appendix A

Service Constraints, Report Limitations

and Planning Requirements

Service Constraints, Report Limitations and Planning Requirements

This report (the "Services") was compiled and carried out by TerraConsult Limited (TCL) for the client named on the front of the report (the "client") in accordance with the terms of a contract between TCL and the "client". The Services were performed by TCL with the skill and care ordinarily exercised by a reasonable environmental consultant at the time the Services were performed. Further, and in particular, the Services were performed by TCL taking into account the limits of the scope of works required by the client, the time scale involved and the resources, including financial and manpower resources, agreed between TCL and the client.

Other than that expressly contained in the above paragraph, TCL provides no other representation or warranty whether express or implied, is made in relation to the Services. Unless otherwise agreed, this report has been prepared exclusively for the use and reliance of the client in accordance with generally accepted consulting practices and for the intended purposes as stated in the agreement under which this work was completed. This report may not be relied upon, or transferred to, by any other party without the written agreement of a Director of TCL. If a third party relies on this report, it does so wholly at its own and sole risk and TCL disclaims any liability to such parties.

It is TCL's understanding that this report is to be used for the purpose described in the introduction to the report. That purpose was a significant factor in determining the scope and level of the Services. Should the purpose for which the report is used, or the proposed use of the site change, this report may no longer be valid and any further use of, or reliance upon, the report in those circumstances by the client without TCL 's review and advice shall be at the client's sole and own risk.

The information contained in this report is protected by disclosure under Part 3 of the Environmental Information Regulations 2004 pursuant to the provisions of Regulation 12(5) without the consent in writing of a Director of TerraConsult Limited.

The report has been prepared at the date shown on the front page and should be read in light of any subsequent changes in legislation, statutory requirements and industry practices. Ground conditions can also change over time and further investigations or assessment should be made if there is any significant delay in acting on the findings of this report. The passage of time may result in changes in site conditions, regulatory or other legal provisions, technology or economic conditions which could render the report inaccurate or unreliable. The information and conclusions contained in this report should not be relied upon in the future without the written advice of TCL. In the absence of such written advice of TCL, reliance on the report in the future shall be at the client's own and sole risk. Should TCL be requested to review the report in the future, TCL shall be entitled to additional payment at the then existing rate or such other terms as may be agreed between TCL and the client.

The observations and conclusions described in this report are based solely upon the Services that were provided pursuant to the agreement between the client and TCL. TCL has not performed any observations, investigations, studies or testing not specifically set out or mentioned within this report. TCL is not liable for the existence of any condition, the discovery of which would require performance of services not otherwise contained in the Services. For the avoidance of doubt, unless otherwise expressly referred to in the introduction to this report, TCL did not seek to evaluate the presence on or off the site of asbestos, electromagnetic fields, lead paint, radon gas or other radioactive or hazardous materials.

The Services are based upon TCL's observations of existing physical conditions at the site gained from existing documents, together with TCL's interpretation of information including documentation, obtained from third parties and from the client on the history and usage of the site. The findings and recommendations contained in this report are based in part upon information provided by third parties, and whilst TerraConsult Limited has no reason to doubt the accuracy and that it has been provided in full from those it was requested from, the items relied on have not been verified. No responsibility can be accepted for errors within third party items presented in this report. Further, TCL was not authorised and did not attempt to independently verify the accuracy or completeness of information, documentation or materials received from the client or third parties, including laboratories and information services, during the performance of the Services. TCL is not liable for any inaccurate information or conclusions, the discovery of which inaccuracies required the doing of any act including the gathering of any information which was not reasonably available to TCL and including the doing of any independent investigation of the information provided to TCL save as otherwise provided in the terms of the contract between the client and TCL.

Where field investigations have been carried out, these have been restricted to a level of detail required to achieve the stated objectives of the work. Ground conditions can also be variable and as investigation excavations only allow examination of the ground at discrete locations. The potential exists for ground conditions to be encountered which are different to those considered in this report. The extent of the limited area depends on the soil and groundwater conditions, together with the position of any current structures and underground facilities and natural and other activities on site. In addition, chemical analysis was carried out for a limited number of parameters [as stipulated in the contract between the client and TCL] based on an understanding of the available operational and historical information, and it should not be inferred that other chemical species are not present.

The groundwater conditions entered on the exploratory hole records are those observed at the time of investigation. The normal speed of investigation usually does not permit the recording of an equilibrium water level for any one water strike. Moreover, groundwater levels are subject to seasonal variation or changes in local drainage conditions and higher groundwater levels may occur at other times of the year than were recorded during this investigation.

Any site drawing(s) provided in this report is (are) not meant to be an accurate base plan, but is (are) used to present the general relative locations of features on, and surrounding, the site.

Throughout the report the term 'geotechnical' is used to describe aspects relating to the physical nature of the site (such as foundation requirements) and the term 'geoenvironmental' is used to describe aspects relating to ground-related environmental issues (such as potential contamination). However, it should be appreciated that this is an integrated investigation and these two main aspects are inter-related. The geoenvironmental sections are written in broad agreement with BS 10175:2011+A1 2013. For the geotechnical aspects of the report, the general requirements of Eurocode 7 (BS EN 1997-2:2007) providing a desk study assessment. This report shall not be considered as being a Ground Investigation Report (GIR).

Planning Requirements

The National Planning Policy Framework (NPPF, 2012) has twelve core land-use planning principles, two of which directly relate to the potential for pollution and contaminated land:

- Requirement to *"contribute to conserving and enhancing the natural environment and reducing pollution"* and setting out of a preference for developments to be on land of *"lesser environmental value"*; and
- "encourage the effective use of land by re-using land that has been previously developed (brownfield land), providing that it is not of high environmental value.".

In accordance with the core principles of NPPF, Paragraph 109 clarifies that enhancing the natural environment includes:

- "preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability; and
- remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate.".

Paragraph 121 of NPPF states that planning policies and decisions for developments should also ensure that:

- "the site is suitable for its new use taking account of ground conditions and land instability, including from natural hazards or former activities such as mining, pollution arising from previous uses and any proposals for mitigation including land remediation or impacts on the natural environment arising from that remediation;
- after remediation, as a minimum, land should not be capable of being determined as contaminated land under Part IIA of the Environmental Protection Act 1990; and
- adequate site investigation information, prepared by a competent person, is presented.".

This report has been prepared and authorised by staff that are competent as defined in the NPPF.

Unexploded Ordnance

Clients have a legal duty under the CDM 2015 Regulations to provide designers and contractors with project-specific health and safety information needed to identify hazards and risks. This includes the possibility of unexploded ordnance (UXO) being encountered on the site. Further details are given in CIRIA Report C681 (Stone et al 2009). A non-UXO specialist screening exercise has been carried out for the site by considering any evidence of UK defence activities on or near the site evident from the gathered desk study information and the unexploded aerial delivered bomb (UXB) regional risk maps produced by Zetica. Other data sources are available, but as a first stage screening exercise the freely available Zetica maps have been used. The level of risk stated is that determined by Zetica, a company experienced in the desk study, field investigation and clearance of UXO/UXB.

Appendix B

Environmental Risk Assessment Methodology & Terminology

ENVIRONMENTAL RISK ASSESSMENT

METHODOLOGY & TERMINOLOGY

Legislation Overview

This report includes hazard identification and environmental risk assessment in line with the riskbased methods referred to in relevant UK legislation and guidance. Government environmental policy is based upon a "suitable for use approach," which is relevant to both the current use of land and also to any proposed future use. The contaminated land regime is the statutory regime for remediation of contaminated land that causes an unacceptable level of risk and is set out in Part 2A of the Environmental Protection Act 1990 ("EPA 1990"). The main objective of introducing the Part IIA regime is to provide an improved system for the identification and remediation of land where contamination is causing unacceptable risks to human health or the wider environment given the current use and circumstances of the land. Part IIA provides a statutory definition of contaminated land under Section 78A(2) as:

"any land which appears to the Local Authority in whose area it is situated to be in such a condition, by reason of substances in, on, or under the land, that:

(a) Significant harm is being caused or there is a significant possibility of such harm being caused;

or

(b) Pollution of controlled waters is being, or is likely to be, caused."

In order to assist in establishing if there is a "*significant possibility of significant harm*" there must be a "*contaminant linkage*" for potential harm to exist. That means there must be a source(s) of contamination, sensitive receptors present and a connection or pathway between the two. This combination of contaminant-pathway-receptor is termed a "contaminant linkage or CPR linkage."

Part IIA of The Environmental Protection Act 1990 is supported by a substantial quantity of guidance and other Regulations. Key implementing legislation of the Part 2A regime includes the Contaminated Land (England) Regulations 2006 (SI 2006/1380) as recently amended by the overarching legislation for the contaminated land regime, which implements the provisions of Part IIA of the Environmental Protection Act 1990 (as inserted by section 57 of the Environment Act 1995), came into force on 14th July 2000 together with recent amended regulations: Contaminated Land (England) (Amendment) Regulations 2012 (SI 2012/263). Revised and Contaminated Land Statutory Guidance was published by Defra in (Defra, April 2012). Part IIA defines the duties of Local Authorities in dealing with it. Part IIA places contaminated land responsibility as a part of planning and redevelopment process rather than Local Authority direct action except in situations of very high pollution risk.

In the planning process guidance is provided by National Planning Policy Framework (NPPF) of March 2012 which requires that a site which has been developed shall not be capable of being determined "contaminated land" under Part IIA. In practice, Planning Authorities require sites being developed to have a lower level of risk post development than the higher level of risk that is required in order to determine a site as being contaminated in accordance with Part IIA. This is to ensure that there is a suitable zone of safety below the level for Part IIA determination and prevent recently developed sites becoming reclassified as contaminated land if there are future legislative or technical changes (e.g. a substance is subsequently found to be more toxic than previously assessed this increases its hazard)..

The criteria for assessing levels of contaminants and hence determining whether a site represents a hazard are based on a range of techniques, models and guidance. Within this context it is relevant to note that Government objectives are:

- (a) to identify and remove unacceptable risks to human health and the environment;
- (b) to seek to bring damaged land back into beneficial use;
- (c) to seek to ensure that the cost burdens faced by individuals, companies and society as a whole are proportionate, manageable and economically sustainable.

These three objectives underlie the "suitable for use" approach to remediation of contaminated land. The "suitable for use" approach focuses on the risks caused by land contamination. The approach recognises that the risks presented by any given level of contamination will vary greatly according to the use of the land and a wide range of other factors, such as the underlying geology of the site. Risks therefore should be assessed on a site-by-site basis.

The "suitable for use" approach then consists of three elements:

- (a) ensuring that land is suitable for its current use in other words, identifying any land where contamination is causing unacceptable risks to human health and the environment, assessed on the basis of the current use and circumstances of the land, and returning such land to a condition where such risks no longer arise ("remediating" the land); the contaminated land regime provides the regulatory mechanisms to achieve this;
- (b) ensuring that land is made suitable for any new use, as planning permission is given for that new use - in other words, assessing the potential risks from contamination, on the basis of the proposed future use and circumstances, before official permission is given for the development and, where necessary to avoid unacceptable risks to human health and the environment, remediating the land before the new use commences; this is the role of the town and country planning and building control regimes; and
- (c) limiting requirements for remediation to the work necessary to prevent unacceptable risks to human health or the environment in relation to the current use or future use of the land for which planning permission is being sought - in other words, recognising that the risks from contaminated land can be satisfactory assessed only in the context of specific uses of the land (whether current or proposed), and that any attempt to guess what might be needed at some time in the future for other uses is likely to result either in premature work (thereby running the risk of distorting social, economic and environmental priorities) or in unnecessary work (thereby wasting resources).

The mere presence of contaminants does not therefore necessarily warrant action, and consideration must be given to the scale of risk involved for the use that the site has, and will have in the future.

OVERALL METHODOLOGY

The work presented in this report has been carried out in general accordance with recognised best practice as detailed in guidance documents such as in the CLR 11 Model Procedures for the Management of Land Contamination (Environment Agency, 2004), and BS10175:2011+A2 20173. Important aspects of the risk assessment process are transparency and justification. The particular rationale behind the risk assessments presented is given in this appendix.

The first stage of a two-staged investigation and assessment of a site is the Preliminary Investigation (BS 10175:2011), often referred to as the Phase 1 Study, comprising desk study and walk-over survey, which culminates in the Preliminary Risk Assessment. A preliminary conceptual site model (CSM) is developed which identifies potential geotechnical and geo-environmental hazards and the qualitative degree of risk associated with them. From the geo-environmental perspective, the Hazard Identification process uses professional judgement to evaluate all the hazards in terms of potential contaminant linkages (of contaminant source-pathway-receptor). Potential contaminant linkages are potentially unacceptable risks in terms of the current contaminated land regime legal framework and require either remediation or further assessment. These are normally addressed via intrusive ground investigation and generic risk assessment.

The second stage is the Ground Investigation, Generic Risk Assessment and Geotechnical Interpretation. This represents the further assessment mentioned above. The scope of the Ground Investigation is based on the findings of the Preliminary Risk Assessment and is designed to reduce uncertainty in the geotechnical and geoenvironmental hazard identification. The Ground Investigation comprises fieldwork, laboratory testing and usually also on site monitoring. The Ground Investigation may include the Exploratory, Main and Supplementary Investigations described in BS 10175:2011+A1

2013. The result of the Ground Investigation reduces uncertainty in the geotechnical and geoenvironmental risks. Depending on the findings more detailed investigations or assessments may be required.

Preliminary Risk Assessment

Current practice recommends that the determination of potential liabilities that could arise from land contamination be carried out using the process of risk assessment, whereby "risk" is defined as:

- "(a) The probability, or frequency, or occurrence of a defined hazard; and
- (b) The magnitude (including the seriousness) of the consequences."

The UK's approach to the assessment of environmental risk is set out in by the Department of the Environment Transport and the Regions (2000) publication "A Guide to Risk Assessment and Risk Management for Environmental Protection" (also called Greenleaves II). This established an iterative, systematic staged process which comprises:

- (a) Hazard identification;
- (b) Hazard assessment;
- (c) Risk estimation;
- (d) Risk evaluation;
- (e) Risk assessment;

At each stage during the development process the above steps are repeated as more detailed information becomes available for the site.

For an environmental risk to be present, all three of the following elements must be present:

- Source/Contaminant: hazardous substance that has the potential to cause adverse impacts;
- Receptor: target that may be affected by contamination: examples include human occupants/users of site, water resources (rivers or groundwater), or structures;
- Pathway: a viable route whereby a hazardous substance may come into contact with the receptor.

The absence of one or more of each component (contaminant, pathway, receptor) would prevent a contaminant linkage being established and there would be no significant environmental risk.

The identification of potential contaminant linkages is based on a Conceptual Model of the site, which is subject to continual refinement as additional data becomes available. As part of a Phase I Investigation (Desk Study and site walk over) a Preliminary Conceptual Site Model (PCSM) is formed. Based on the PCSM, potential contaminant linkages can be assessed. If the PCSM and hazard assessment indicate that a pollution linkage is not of significance then no further assessment or action is required due to this linkage. For each significant and possible linkage a risk assessment is carried out. The linkages which potentially pose significant risks may require a variety of responses ranging from immediate remedial action or risk management or, more commonly, further investigation and risk assessment. This next stage is termed a Phase II Main Site Investigation and should provide additional data to allow refinement of the Conceptual Site Model and assess the level of risk from each contaminant linkage.

Definition of Risk Assessment Terminology

The criteria used for risk assessment are broadly based on those presented in DETR's "A Guide to Risk Assessment and Risk Management for Environmental Protection" (2000). The Severity of the risk is classified according to the criteria in Table B.1 below:

Table B.1 Severity/Consequence of Risk

Severe	Acute risks to human health. Catastrophic damage to buildings/property (e.g. by explosion). Direct pollution of sensitive water receptors or serious pollution of other controlled water (watercourses or groundwater) bodies.
Medium	Harm to human health from long-term exposure. Slight pollution of sensitive controlled waters (surface waters or aquifers) or pollution of other water bodies. Significant effects on sensitive ecosystems or species.
Mild	No significant harm to human health in either short or long term. No pollution of sensitive controlled waters, no more than slight pollution of non-sensitive waters. Significant damage to buildings or structures. Requirement for protective equipment during site works to mitigate health effects.
Negligible	Damage to non-sensitive ecosystems or species. Minor damage to buildings or structures. No harm or pollution of water.

The probability of the risk occurring is classified according to criteria given in Table B.2 below:

Table B.2: Probability	of Risk Occurring
High likelihood	Contaminant linkage may be present, and risk is almost certain to occur in the long term, or there is evidence of harm to the receptor.
Medium/Reasonably Foreseeable	Contaminant linkage may be present, and it is probable that the risk will occur over the long term.
Low/Unlikely	Contaminant linkage may be present and there is a possibility of the risk occurring, although there is no certainty that it will do so.
Negligible/ Not credible	Contaminant linkage may be present but the circumstances under which harm would occur are improbable.

An overall evaluation of the level of risk is gained from a comparison of the severity and probability, as shown in Table B.3 below:

Table B.3: C	Comparison of Severity	and Probability	y							
			Severity							
		Severe	Medium	Mild	Negligible					
	High likelihood	Very High Risk	High Risk	Medium/Low Risk	Low Risk					
Drohobility	Medium/Reasonably Foreseeable	High Risk	Medium Risk	Low Risk	Near Zero					
Probability	Low/Unlikely	High/Medium Risk	Medium/Low Risk	Low Risk	Near Zero					
	Negligible/ Not credible	Medium/Low Risk	Low Risk	Low Risk	Near Zero					

The various risk rankings provide guidance for recommended actions, whether this is:

AR - Action Required, Remediation or mitigation or site investigation works required

- SIR Site Investigation Required, further assessment is required.
- NAR No Action Required.

A description of the evaluated risk is as follows:

Table B.4 – Dese	cription of the Classified Risks and Likely Action Required
Evaluated Risk	Recommended Actions
Very High Risk	AR: There is a high probability that severe harm could arise to a designated receptor from an identified hazard, OR, there is evidence that severe harm to a designated receptor is currently happening. This risk, if realised, is likely to result in a substantial liability. Urgent investigation (if not undertaken already) and remediation are likely to be required.
High Risk	AR: Harm is likely to arise to a designated receptor from an identified hazard. Realisation of the risk is likely to present a substantial liability. Urgent investigation (if not undertaken already) is required and remedial works may be necessary in the short term and are likely over the long term.
Moderate Risk	SIR: It is possible that harm could arise to a designated receptor from an identified hazard. However, it is relatively unlikely that any such harm would be severe, or if any harm were to occur it is more likely that the harm would be relatively mild. Investigation (if not already undertaken) is normally required to clarify the risk and to determine the potential liability. Some remedial works may be required in the longer term.
Low Risk	NAR: It is possible that harm could arise to a designated receptor from an identified hazard, but there is a low likelihood of this hazard occurring and if realised, harm would at worst normally be mild.
Near Zero	NAR: There is a negligible possibility that harm could arise to a receptor. In the event of such harm being realised, it is not likely to be severe.

Definition of Controlled Waters

The term 'controlled waters' is defined in Section 104 of the Water Resources Act 1991 as:

"Territorial Waters...which extend seawards for three miles..., coastal waters..., inland freshwaters, waters in any relevant lake or pond or of so much of any relevant river or watercourse as is above the freshwater limit, and ground waters, that is to say, any waters contained in underground strata."

Note that the definition of groundwater under the Water Resources Act 1991 includes all water within underground strata (including soil / pore water in the unsaturated zone). The definition of groundwater under the Groundwater Directive however is limited to water in the saturated zone. For the purposes of Part IIA of the Environmental Protection Act 1990, the Environment Agency recommends that the groundwater within the saturated zone only is considered as the receptor (rather than soil / pore water).

Environment Agency's Aquifer Designations

The Environment Agency have classified different types of aquifer from which groundwater can be extracted. The aquifer designations reflect the importance of aquifers in terms of groundwater as a resource (drinking water supply) but also their role in supporting surface water flows and wetland ecosystems. The aquifer designation data is based on geological mapping provided by the British Geological Survey.

The maps are split into two different types of aquifer designation:

- Superficial (Drift) permeable unconsolidated (loose) deposits.
- Bedrock (Solid)- solid permeable formations e.g. sandstone, chalk, limestone.

The aquifer designations displayed on the Environment Agency maps are as follows:

- Principal Aquifers (formerly termed Major Aquifers) These are layers of rock or drift deposits that have high intergranular and/or fracture permeability - meaning they usually provide a high level of water storage. They may support water supply and/or river base flow on a strategic scale. In most cases, principal aquifers are aquifers previously designated as a major aquifer.
- Secondary Aquifers (formerly termed Minor Aquifers) These include a wide range of rock layers or drift deposits with an equally wide range of water permeability and storage. Secondary aquifers are subdivided into two types:
 - Secondary A permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers;
 - Secondary B predominantly lower permeability layers which may store and yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering. These are generally the water-bearing parts of the former non-aquifers.
 - Secondary Undifferentiated has been assigned in cases where it has not been possible to attribute either category A or B to a rock type. In most cases, this means that the layer in question has previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type.
- Unproductive Strata (formerly termed Non-Aquifer) These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow.

MANAGEMENT OF CONTAMINATED LAND

When risk assessment of the site has been completed and this indicates that remedial works are required, the main guidance in managing this process is set out in the Defra/EA publication CLR11 (2004) "Model Procedures for the Management of Land Contamination." The stages of managing remediation are as follows:

- (a) Options Appraisal and develop Remediation Strategy;
- (b) Develop Implementation Plan and Verification Plan;
- (c) Remediation, Verification and Monitoring.

The Remediation Strategy sets out the remediation targets, identifies technically feasible remedial solutions and presents an evaluation of the options so that these can be assessed enabling that the most suitable solution is adopted. An outline of the proposed remedial method should be presented. Agreement should be sought of the appropriate statutory bodies for the Remediation Strategy before proceeding to the next stage.

The Implementation Plan is a detailed method statement setting out how the remediation is to be carried out including stating how the site will be managed, welfare procedures, health and safety considerations together with practical measures such as details of temporary works, programme of works, waste management licences and regulatory consents required. Agreement should again be sought of the appropriate statutory bodies for this Plan.

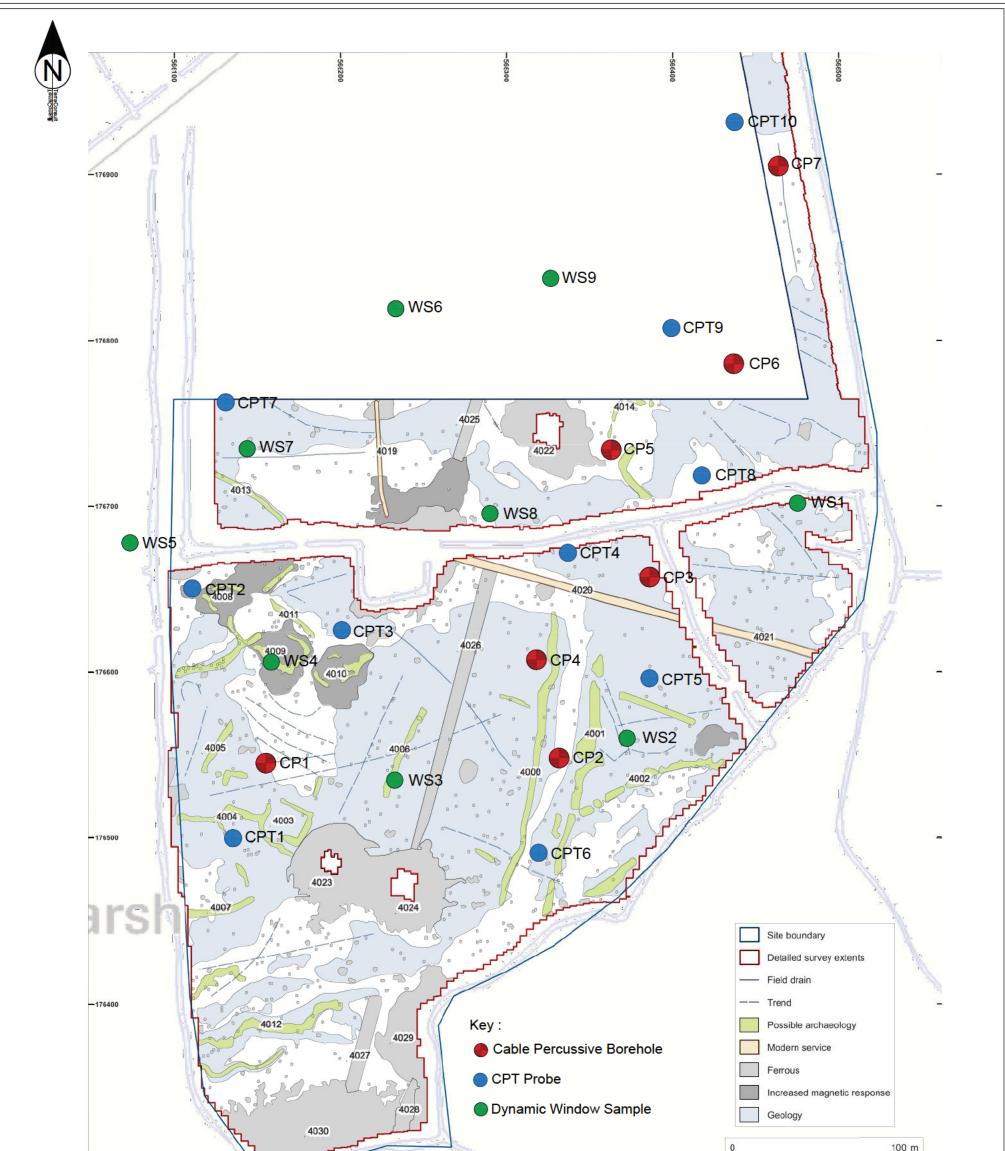
The Verification Plan sets out the requirements for gathering data to demonstrate that the remediation has met the required remediation objectives and criteria. The Verification Plan presents the requirements for a wide range of issues including the level of supervision, sampling and testing regimes for treated materials, waste and imported materials, required monitoring works during and post remediation, how compliance with all licenses and consents will be checked etc. Agreement should again be sought of the appropriate statutory bodies for the Verification Plan. On completion of the remediation a Verification Report should be produced to provide a complete record of all remediation activities on site and the data collected as required in the Verification Plan. The Verification Report should demonstrate that the remediation has met the remedial targets to show that the site is suitable for the proposed use.

GLOSSARY

TERMS		UNITS	
AST	Above Ground Storage Tank	m	Metres
BGS	British Geological Survey	km	Kilometres
BSI	British Standards Institute	%	Percent
BTEX	Benzene, Toluene, Ethylbenzene, Xylenes	%v/v	Percent volume in air
CIEH	Chartered Institute of Environmental Health	mb	Milli Bars
CIRIA	Construction Industry Research Association		(atmospheric pressure)
CLEA	Contaminated Land Exposure Assessment	l/hr	Litres per hour
CSM	Conceptual Site Model	ha	Hectare (10,000 m ²)
	Dense Non-Aqueous Phase Liquid (chlorinated solvents,	µg/l	Micrograms per Litre
PCB)			(parts per billion)
DWS	Drinking Water Standard	ppb	Parts Per Billion
EA	Environment Agency	mg/kg	Milligrams per kilogram
EQS	Environmental Quality Standard		(parts per million)
GAC	General Assessment Criteria	ppm 3	Parts Per Million
GL	Ground Level	mg/m ³	Milligram per metre cubed
GSV	Gas Screening Value	Mg/m ³	Megagram per metre cubed
HCV	Health Criteria Value	µg/m ³	Microgram per metre cubed
	Light Non-Aqueous Phase Liquid (petrol, diesel)	m bgl	Metres Below Ground Level
ND	Not Detected	m bcl	Metre Below Cover Level
LMRL	Lower Method Reporting Limit	mOD	Metres Above Ordnance
NR	Not Recorded		Datum (sea level)
OD	Ordnance Datum	kN/m ²	Kilo Newtons per metre
PAH	Poly Aromatic Hydrocarbon	1-D-	squared
PCB	Poly-Chlorinated Biphenyl	kPa	Kilo Pascal – same as kN/m ²
PID	Photo Ionisation Detector	μm	Micro metre
	Preliminary Conceptual Site Model		
SGV	Soil Guideline Value		
SPT	VG) Total Petroleum Hydrocarbon (Criteria Working Group) Standard Penetration Test		
SVOC			
UST	Underground Storage Tank		
	Vibro Concrete Columns		
VCCS	Vibro Stone Columns		
VOC	Volatile Organic Compound		
100			

Appendix C

Fieldwork Records



-176300		1				-
	Site	Scale	e	Scale B	Bar (@ A3
TerraConsult		Draw	ing No.	4693-1-	-001	
	Statera Tilbury	Rev	Date	Descrip	otion	
9 The Courtyard, Phoenix Square, Wyncolls Road COLCHESTER, CO4 9PE						
Client	Title					
Statera	Borehole Location	File	4593-1-00)1 Borehol	e Location F	Plan.dwg
Otatora	Plan	Date	: 27-0	9-2019	Engineer:	ТМ
	FIAII	Draw	n: DF		Checked:	AS

Exploratory Hole Key Sheet

TerraConsult

SAMPLES:			
Undisturbed:			
U	Driven tube sample		
UT TW	Thin wall driven tube sample Pushed thin wall tube sample		
P	Pushed piston sample		
L	Liner sample (from windowless or similar sampler), full recovery unless otherwise stated	d	
CBR BLK	CBR mould sample Block sample		
C	Core sample (from rotary core) taken for laboratory testing		
Disturbed			
Disturbed: D	Small sample		
В	Bulk sample		
AMAL	Amalgamated sample		
Environmental:			
ES	Environmental soil sample		
EW	Environmental water sample		
Comments:	Sample reference numbers are assigned to every sample taken. A sample reference of to take a tube sample; however, there was no recovery. Sample recovery is given as a		
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). The increment		
	in the Field Records column; each increment is 75mm unless stated otherwise and any weight in mm (SW) is noted. Where the full 300mm test drive is achieved the total numl drive is presented as N = ** in the Test column. Where the test drive blows reach 50 (ei increment) the total blow count beyond the seating drive is given (without the N = prefix)	ber of blows	for the test
ICBR	In situ CBR		
IV	In situ vane shear strength, peak (p) and remoulded (r), kPa		
HV PP	Hand vane shear strength, peak (p) and remoulded (r), kPa Pocket penetrometer test, converted to shear strength, kPa		
KFH, KRH, KPI	Variable head permeability tests (KFH = falling head test, KRH = rising head test, KPI =	packer test)), permeability value
	Photo-ionisation detector/Flame-ionisation detector		
PID/FID			
DRILLING RECORDS: The mechanical indices (TCR	Test results provided in Field Records column TCR/SCR/RQD & If) are defined in BS 5930: 2015 and BS EN ISO 22575-1 (2006) Total Core Recovery, %		
DRILLING RECORDS: The mechanical indices (TCR SCR RQD If NI	Test results provided in Field Records column TCR/SCR/RQD & If) are defined in BS 5930: 2015 and BS EN ISO 22575-1 (2006) Total Core Recovery, % Solid Core Recovery, % Rock Quality Designation, % Fracture spacing, mm. Minimum, typical and maximum spacings are presented. Non intact is used where the core is fragmented.		
DRILLING RECORDS: The mechanical indices (TCR SCR RQD If	Test results provided in Field Records column TCR/SCR/RQD & If) are defined in BS 5930: 2015 and BS EN ISO 22575-1 (2006) Total Core Recovery, % Solid Core Recovery, % Rock Quality Designation, % Fracture spacing, mm. Minimum, typical and maximum spacings are presented.		
DRILLING RECORDS: The mechanical indices (TCR SCR RQD If NI CRF AZCL NR	Test results provided in Field Records column TCR/SCR/RQD & If) are defined in BS 5930: 2015 and BS EN ISO 22575-1 (2006) Total Core Recovery, % Solid Core Recovery, % Rock Quality Designation, % Fracture spacing, mm. Minimum, typical and maximum spacings are presented. Non intact is used where the core is fragmented. Core recovered (length in m) in the following run Assessed zone of core loss	DEPTH R	EMARKS:
DRILLING RECORDS: The mechanical indices (TCR SCR RQD If NI CRF AZCL NR GROUNDWATER:	Test results provided in Field Records column TCR/SCR/RQD & If) are defined in BS 5930: 2015 and BS EN ISO 22575-1 (2006) Total Core Recovery, % Solid Core Recovery, % Rock Quality Designation, % Fracture spacing, mm. Minimum, typical and maximum spacings are presented. Non intact is used where the core is fragmented. Core recovered (length in m) in the following run Assessed zone of core loss	EoS	End of Shift
DRILLING RECORDS: The mechanical indices (TCR SCR RQD If NI CRF AZCL NR	Test results provided in Field Records column TCR/SCR/RQD & If) are defined in BS 5930: 2015 and BS EN ISO 22575-1 (2006) Total Core Recovery, % Solid Core Recovery, % Rock Quality Designation, % Fracture spacing, mm. Minimum, typical and maximum spacings are presented. Non intact is used where the core is fragmented. Core recovered (length in m) in the following run Assessed zone of core loss	EoS SoS	End of Shift Start of Shift
DRILLING RECORDS: The mechanical indices (TCR SCR RQD If NI CRF AZCL NR BROUNDWATER:	Test results provided in Field Records column TCR/SCR/RQD & If) are defined in BS 5930: 2015 and BS EN ISO 22575-1 (2006) Total Core Recovery, % Solid Core Recovery, % Rock Quality Designation, % Fracture spacing, mm. Minimum, typical and maximum spacings are presented. Non intact is used where the core is fragmented. Core recovered (length in m) in the following run Assessed zone of core loss Not recovered	EoS	End of Shift
PRILLING RECORDS: The mechanical indices (TCR SCR RQD If NI CRF AZCL NR SROUNDWATER:	Test results provided in Field Records column TCR/SCR/RQD & If) are defined in BS 5930: 2015 and BS EN ISO 22575-1 (2006) Total Core Recovery, % Solid Core Recovery, % Rock Quality Designation, % Fracture spacing, mm. Minimum, typical and maximum spacings are presented. Non intact is used where the core is fragmented. Core recovered (length in m) in the following run Assessed zone of core loss Not recovered	EoS SoS	End of Shift Start of Shift
DRILLING RECORDS: The mechanical indices (TCR SCR RQD If NI CRF AZCL NR BROUNDWATER: 	Test results provided in Field Records column TCR/SCR/RQD & If) are defined in BS 5930: 2015 and BS EN ISO 22575-1 (2006) Total Core Recovery, % Solid Core Recovery, % Rock Quality Designation, % Fracture spacing, mm. Minimum, typical and maximum spacings are presented. Non intact is used where the core is fragmented. Core recovered (length in m) in the following run Assessed zone of core loss Not recovered Groundwater strike	EoS SoS EoBH	End of Shift Start of Shift End of Borehole
DRILLING RECORDS: The mechanical indices (TCR SCR RQD If NI CRF AZCL NR BROUNDWATER: T MSTRUMENTATION:	Test results provided in Field Records column TCR/SCR/RQD & If) are defined in BS 5930: 2015 and BS EN ISO 22575-1 (2006) Total Core Recovery, % Solid Core Recovery, % Rock Quality Designation, % Fracture spacing, mm. Minimum, typical and maximum spacings are presented. Non intact is used where the core is fragmented. Core recovered (length in m) in the following run Assessed zone of core loss Not recovered Groundwater strike Groundwater level after standing period	EoS SoS EoBH	End of Shift Start of Shift End of Borehole
DRILLING RECORDS: The mechanical indices (TCR SCR RQD If NI CRF AZCL NR BROUNDWATER: T SROUNDWATER: T SROUNDWATER: Details of installations are	Test results provided in Field Records column TCR/SCR/RQD & If) are defined in BS 5930: 2015 and BS EN ISO 22575-1 (2006) Total Core Recovery, % Solid Core Recovery, % Rock Quality Designation, % Fracture spacing, mm. Minimum, typical and maximum spacings are presented. Non intact is used where the core is fragmented. Core recovered (length in m) in the following run Assessed zone of core loss Not recovered Groundwater strike Groundwater strike agiven on the Record. Legend column shows installed instrument depths including slotted	EoS SoS EoBH EXPLORA	End of Shift Start of Shift End of Borehole
DRILLING RECORDS: The mechanical indices (TCR SCR RQD If NI CRF AZCL NR GROUNDWATER:	Test results provided in Field Records column TCR/SCR/RQD & If) are defined in BS 5930: 2015 and BS EN ISO 22575-1 (2006) Total Core Recovery, % Solid Core Recovery, % Rock Quality Designation, % Fracture spacing, mm. Minimum, typical and maximum spacings are presented. Non intact is used where the core is fragmented. Core recovered (length in m) in the following run Assessed zone of core loss Not recovered Groundwater strike Groundwater level after standing period	EoS SoS EoBH EXPLORA CP DP DCP	End of Shift Start of Shift End of Borehole XTORY HOLE TYPE: Cable percussion Dynamic probe Dynamic cone penetrometer
DRILLING RECORDS: The mechanical indices (TCR SCR RQD If NI CRF AZCL NR SROUNDWATER: T SROUNDWATER: Details of installations are pipe section or tip depth,	Test results provided in Field Records column TCR/SCR/RQD & If) are defined in BS 5930: 2015 and BS EN ISO 22575-1 (2006) Total Core Recovery, % Solid Core Recovery, % Rock Quality Designation, % Fracture spacing, mm. Minimum, typical and maximum spacings are presented. Non intact is used where the core is fragmented. Core recovered (length in m) in the following run Assessed zone of core loss Not recovered Groundwater strike Groundwater level after standing period e given on the Record. Legend column shows installed instrument depths including slotted response zone filter material type and layers of backfill. The type of instrument installed is tent to the Legend column at the base of the instrument.	EoS SoS EoBH EXPLORA CP DP DCP HA	End of Shift Start of Shift End of Borehole ATORY HOLE TYPE: Cable percussion Dynamic probe Dynamic cone penetrometer Hand auger
DRILLING RECORDS: The mechanical indices (TCR SCR RQD If NI CRF AZCL NR BROUNDWATER: T SROUNDWATER: Details of installations are ipe section or tip depth, ndicated by a code adjact SP SPIE	Test results provided in Field Records column TCR/SCR/RQD & If) are defined in BS 5930: 2015 and BS EN ISO 22575-1 (2006) Total Core Recovery, % Solid Core Recovery, % Rock Quality Designation, % Fracture spacing, mm. Minimum, typical and maximum spacings are presented. Non intact is used where the core is fragmented. Core recovered (length in m) in the following run Assessed zone of core loss Not recovered Groundwater strike Groundwater strike e given on the Record. Legend column shows installed instrument depths including slotted response zone filter material type and layers of backfill. The type of instrument installed is tent to the Legend column at the base of the instrument. Standpipe Standpipe piezometer	EoS SoS EoBH EXPLORA CP DP DCP	End of Shift Start of Shift End of Borehole ATORY HOLE TYPE: Cable percussion Dynamic probe Dynamic cone penetrometer Hand auger Inspection pit
DRILLING RECORDS: The mechanical indices (TCR SCR RQD If NI CRF AZCL NR BROUNDWATER:	Test results provided in Field Records column TCR/SCR/RQD & If) are defined in BS 5930: 2015 and BS EN ISO 22575-1 (2006) Total Core Recovery, % Solid Core Recovery, % Rock Quality Designation, % Fracture spacing, mm. Minimum, typical and maximum spacings are presented. Non intact is used where the core is fragmented. Core recovered (length in m) in the following run Assessed zone of core loss Not recovered Groundwater strike Groundwater strike given on the Record. Legend column shows installed instrument depths including slotted response zone filter material type and layers of backfill. The type of instrument installed is tent to the Legend column at the base of the instrument. Standpipe Standpipe piezometer Pneumatic piezometer Pneumatic piezometer	EoS SoS EoBH CP DP DCP HA IP OP PC	End of Shift Start of Shift End of Borehole ATORY HOLE TYPE: Cable percussion Dynamic probe Dynamic cone penetrometer Hand auger Inspection pit Observation pit/trench Pavement core
DRILLING RECORDS: The mechanical indices (TCR SCR RQD If NI CRF AZCL NR BROUNDWATER: SROUNDWATER: Details of installations are ipe section or tip depth, ndicated by a code adjact SP SPIE	Test results provided in Field Records column TCR/SCR/RQD & If) are defined in BS 5930: 2015 and BS EN ISO 22575-1 (2006) Total Core Recovery, % Solid Core Recovery, % Rock Quality Designation, % Fracture spacing, mm. Minimum, typical and maximum spacings are presented. Non intact is used where the core is fragmented. Core recovered (length in m) in the following run Assessed zone of core loss Not recovered Groundwater strike Groundwater strike e given on the Record. Legend column shows installed instrument depths including slotted response zone filter material type and layers of backfill. The type of instrument installed is tent to the Legend column at the base of the instrument. Standpipe Standpipe piezometer	EoS SoS EoBH CP DP DCP HA IP OP PC RC	End of Shift Start of Shift End of Borehole TORY HOLE TYPE: Cable percussion Dynamic probe Dynamic cone penetrometer Hand auger Inspection pit Observation pit/trench Pavement core Rotary core
DRILLING RECORDS: The mechanical indices (TCR SCR RQD If NI CRF AZCL NR BROUNDWATER: SROUNDWATER: Details of installations are bipe section or tip depth, ndicated by a code adjact SP SPIE PPIE EPIE AP GMP	Test results provided in Field Records column TCR/SCR/RQD & If) are defined in BS 5930: 2015 and BS EN ISO 22575-1 (2006) Total Core Recovery, % Solid Core Recovery, % Rock Quality Designation, % Fracture spacing, mm. Minimum, typical and maximum spacings are presented. Non intact is used where the core is fragmented. Core recovered (length in m) in the following run Assessed zone of core loss Not recovered Groundwater strike Groundwater strike given on the Record. Legend column shows installed instrument depths including slotted response zone filter material type and layers of backfill. The type of instrument installed is tent to the Legend column at the base of the instrument. Standpipe Standpipe iezometer Pneumatic piezometer Electronic piezometer Electronic piezometer Access pipe Gas monitoring standpipe	EoS SoS EoBH CP DP DCP HA IP OP PC	End of Shift Start of Shift End of Borehole ATORY HOLE TYPE: Cable percussion Dynamic probe Dynamic cone penetrometer Hand auger Inspection pit Observation pit/trench Pavement core
DRILLING RECORDS: The mechanical indices (TCR SCR RQD If NI CRF AZCL NR BROUNDWATER:	Test results provided in Field Records column TCR/SCR/RQD & If) are defined in BS 5930: 2015 and BS EN ISO 22575-1 (2006) Total Core Recovery, % Solid Core Recovery, % Rock Quality Designation, % Fracture spacing, mm. Minimum, typical and maximum spacings are presented. Non intact is used where the core is fragmented. Core recovered (length in m) in the following run Assessed zone of core loss Not recovered Groundwater strike Groundwater strike e given on the Record. Legend column shows installed instrument depths including slotted response zone filter material type and layers of backfill. The type of instrument installed is tent to the Legend column at the base of the instrument. Standpipe Standpipe piezometer Pneumatic piezometer Electronic piezometer Electronic piezometer Access pipe	EoS SoS EoBH EXPLORA CP DP DCP HA IP OP PC RC RO SH SNC	End of Shift Start of Shift End of Borehole TORY HOLE TYPE: Cable percussion Dynamic probe Dynamic cone penetrometer Hand auger Inspection pit Observation pit/trench Pavement core Rotary core Rotary core Rotary core Rotary core Rotary cone hole Shaft Sonic (resonance)
DRILLING RECORDS: The mechanical indices (TCR SCR RQD If NI CRF AZCL NR GROUNDWATER:	Test results provided in Field Records column TCR/SCR/RQD & If) are defined in BS 5930: 2015 and BS EN ISO 22575-1 (2006) Total Core Recovery, % Solid Core Recovery, % Rock Quality Designation, % Fracture spacing, mm. Minimum, typical and maximum spacings are presented. Non intact is used where the core is fragmented. Core recovered (length in m) in the following run Assessed zone of core loss Not recovered Groundwater strike Groundwater strike given on the Record. Legend column shows installed instrument depths including slotted response zone filter material type and layers of backfill. The type of instrument installed is tent to the Legend column at the base of the instrument. Standpipe Standpipe iezometer Pneumatic piezometer Electronic piezometer Electronic piezometer Access pipe Gas monitoring standpipe	EoS SoS EoBH CP DP DCP HA IP OP PC RC RO SNC TP	End of Shift Start of Shift End of Borehole ATORY HOLE TYPE: Cable percussion Dynamic probe Dynamic cone penetrometer Hand auger Inspection pit Observation pit/trench Pavement core Rotary core Rotary core Rotary core Rotary core Rotary core Shaft Sonic (resonance) Trial pit/trench
DRILLING RECORDS: The mechanical indices (TCR SCR RQD If NI CRF AZCL NR GROUNDWATER: T Details of installations are bipe section or tip depth, ndicated by a code adjact SP SPIE PPIE EPIE AP GMP (xx) ICE ICM	Test results provided in Field Records column TCR/SCR/RQD & If) are defined in BS 5930: 2015 and BS EN ISO 22575-1 (2006) Total Core Recovery, % Solid Core Recovery, % Rock Quality Designation, % Fracture spacing, mm. Minimum, typical and maximum spacings are presented. Non intact is used where the core is fragmented. Core recovered (length in m) in the following run Assessed zone of core loss Not recovered Groundwater strike Groundwater level after standing period e given on the Record. Legend column shows installed instrument depths including slotted response zone filter material type and layers of backfill. The type of instrument installed is sent to the Legend column at the base of the instrument. Standpipe Standpipe piezometer Pneumatic piezometer Pneumatic piezometer Record cite (mm) Biaxial inclinometer Inclinometer tubing for use with probe	EoS SoS EoBH EXPLORA CP DP DCP HA IP OP PC RC RO SH SNC	End of Shift Start of Shift End of Borehole TORY HOLE TYPE: Cable percussion Dynamic probe Dynamic cone penetrometer Hand auger Inspection pit Observation pit/trench Pavement core Rotary core Rotary core Rotary core Rotary core Rotary cone hole Shaft Sonic (resonance)
DRILLING RECORDS: The mechanical indices (TCR SCR RQD If NI CRF AZCL NR BROUNDWATER:	Test results provided in Field Records column TCR/SCR/RQD & If) are defined in BS 5930: 2015 and BS EN ISO 22575-1 (2006) Total Core Recovery, % Solid Core Recovery, % Rock Quality Designation, % Fracture spacing, mm. Minimum, typical and maximum spacings are presented. Non intact is used where the core is fragmented. Core recovered (length in m) in the following run Assessed zone of core loss Not recovered Groundwater strike Groundwater level after standing period e given on the Record. Legend column shows installed instrument depths including slotted response zone filter material type and layers of backfill. The type of instrument installed is sent to the Legend column at the base of the instrument. Standpipe Standpipe piezometer Pneumatic piezometer Electronic piezometer Electronic piezometer Core in the filter material period Biaxial inclinometer	EoS SoS EoBH CP DP DCP HA IP OP PC RC RO SH SNC TP TRAV	End of Shift Start of Shift End of Borehole ATORY HOLE TYPE: Cable percussion Dynamic probe Dynamic cone penetrometer Hand auger Inspection pit Observation pit/trench Pavement core Rotary core Rotary open hole Shaft Sonic (resonance) Trial pit/trench Traverse
DRILLING RECORDS: The mechanical indices (TCR SCR RQD If NI CRF AZCL NR GROUNDWATER: Details of installations are bipe section or tip depth, ndicated by a code adjact SP SPIE PPIE EPIE AP GMP (xx) ICE ICM	Test results provided in Field Records column TCR/SCR/RQD & If) are defined in BS 5930: 2015 and BS EN ISO 22575-1 (2006) Total Core Recovery, % Solid Core Recovery, % Rock Quality Designation, % Fracture spacing, mm. Minimum, typical and maximum spacings are presented. Non intact is used where the core is fragmented. Core recovered (length in m) in the following run Assessed zone of core loss Not recovered Groundwater strike Groundwater level after standing period e given on the Record. Legend column shows installed instrument depths including slotted response zone filter material type and layers of backfill. The type of instrument installed is sent to the Legend column at the base of the instrument. Standpipe Standpipe piezometer Pneumatic piezometer Pneumatic piezometer Record cite (mm) Biaxial inclinometer Inclinometer tubing for use with probe	EoS SoS EoBH CP DP DCP HA IP OP PC RC RO SH SNC TP TRAV WLS	End of Shift Start of Shift End of Borehole ATORY HOLE TYPE: Cable percussion Dynamic probe Dynamic cone penetrometer Hand auger Inspection pit Observation pit/trench Pavement core Rotary core Rotary open hole Shaft Sonic (resonance) Trial pit/trench Traverse Windowless (dynamic) sample
DRILLING RECORDS: The mechanical indices (TCR SCR RQD If NI CRF AZCL NR GROUNDWATER:	Test results provided in Field Records column TCR/SCR/RQD & If) are defined in BS 5930: 2015 and BS EN ISO 22575-1 (2006) Total Core Recovery, % Solid Core Recovery, % Rock Quality Designation, % Fracture spacing, mm. Minimum, typical and maximum spacings are presented. Non intact is used where the core is fragmented. Core recovered (length in m) in the following run Assessed zone of core loss Not recovered Groundwater strike Groundwater strike Groundwater level after standing period e given on the Record. Legend column shows installed instrument depths including slotted response zone filter material type and layers of backfill. The type of instrument installed is sent to the Legend column at the base of the instrument. Standpipe Standpipe Standpipe Gas monitoring standpipe Internal diameter (mm) Biaxial inclinometer Inclinometer Inclinometer Inclinometer Slip indicator Electronic settlement cell/gauge Magnetic extensometer settlement point	EoS SoS EoBH CP DP DCP HA IP OP PC RC RO SH SNC TP TRAV WLS	End of Shift Start of Shift End of Borehole TORY HOLE TYPE: Cable percussion Dynamic probe Dynamic cone penetrometer Hand auger Inspection pit Observation pit/trench Pavement core Rotary core Rotary core Rotary core Rotary core Rotary core Rotary core Rotary core Shaft Sonic (resonance) Trial pit/trench Traverse Windowless (dynamic) sample
DRILLING RECORDS: The mechanical indices (TCR SCR RQD If NI CRF AZCL NR GROUNDWATER:	Test results provided in Field Records column TCR/SCR/RQD & If) are defined in BS 5930: 2015 and BS EN ISO 22575-1 (2006) Total Core Recovery, % Solid Core Recovery, % Rock Quality Designation, % Fracture spacing, mm. Minimum, typical and maximum spacings are presented. Non intact is used where the core is fragmented. Core recovered (length in m) in the following run Assessed zone of core loss Not recovered Groundwater strike Groundwater level after standing period e given on the Record. Legend column shows installed instrument depths including slotted response zone filter material type and layers of backfill. The type of instrument installed is zent to the Legend column at the base of the instrument. Standpipe Standpipe piezometer Pneumatic piezometer Access pipe Gas monitoring standpipe Internal diameter (mm) Biaxial inclinometer Inclinometer tubing for use with probe Slip indicator Electronic settlement cell/gauge Magnetic extensometer settlement point Rod extensometer	EoS SoS EoBH CP DP DCP HA IP OP PC RC RO SH SNC TP TRAV WLS WS	End of Shift Start of Shift End of Borehole TORY HOLE TYPE: Cable percussion Dynamic probe Dynamic cone penetrometer Hand auger Inspection pit Observation pit/trench Pavement core Rotary core Rotary core Rotary core Rotary core Rotary core Rotary core Rotary core Shaft Sonic (resonance) Trial pit/trench Traverse Windowless (dynamic) sample

ehole	form	ation	details:											Location detail
e: Fr	om: .00	To: 24.70	Start date 10-09-19		Crew: KG/TM	Plant: Dando 3000	Barrel type: n/a	Drill Bit: n/a	Logged: 13-09-19	Logger: TM	Remarks Hammer	: ID: SI1 Er(%) 72	2	mE: 566123 mN: 176594 mAOD: 1.54 Grid: OSGB
Water-	Legend	Level	Depth (thick-			Stratum	Description					Samples	& In Situ Te	esting
	le e	2010	ness)							Wate	r Casing	Depth	Type & No	Results/Remarks
•			(0.50)	Greyish bro (TOPSOIL)	wn CLA	Y. Abundant roo	otlets.			1				
•		1.04				CLAY. Occasio						0.50 0 60 - 1.10	D1 B1	
		-		organic mat (ALLUVIUM		asional selenite	e crystal. Abu	ndant rootle	ets.]				
		-	-							-				
•	×	0.14		Very soft gr (ALLUVIUM		CLAY.						1 50 - 1.95	U1	8 (100%)
	×		-							3		1 95 - 2.00	D2	
	> >		:							-				
	×>									Dry		2 50 - 2.95 2 50 - 2.95	S B2	N=0 (0,0/0,0,0,0
	× ×		1							1		2 50 - 2.95	D3	
•	×]]				
	× >		-							Dry	3.00	3 50 - 3.95 3 50 - 3.95	S D4	N=0 (0,0/0,0,0,0
	×		-							1		0.00		
	×		-											
	×		-							Dry	4.50	4 50 - 4.95	S D5	N=0 (1,0/0,0,0,0
	×											4 50 - 4.95	Do	
	×		-											
	×>		-							-		5.50	D6	
: ▼	·]											
	×>		-							- Dry	6.00	6 00 - 6.45 6 00 - 6.45	S D7	N=0 (0,0/0,0,0,0
	× ×		(9.80) 							1				
	×		-]				
	×		-							-		7.00	D8	
	>		-							- Dry	7.50	7 50 - 7.95	s	N=0 (1,0/0,0,0,0
	×									1		7 50 - 7.95	D9	
	×		-							-		8 00 - 8.50	B3	
	×		-							1				
	×		-							1				
	×>									Dry	9.00	9 00 - 9.45 9 00 - 9.45	S D10	N=0 (1,0/0,0,0,0
	×`]							1				
	×		1							1				
j. Inst (¢	<u>^</u>		-							- Wate	_	Depth	Type & No	Results
	ater en Rose to:	tries: Casing	g: Sealed:	Diameter Dia (mm):		Casing:	Depth related From:		narks:			From: to:		ation: Tool:
				200 150	14.0 24.1	00 13.50							2.2.0	
Notes abbrev All dep	For explan	ation of symb Key Sheet. uced levels ar	ols and	Project:	Tilbur	y Power					F	xploratory pos	ition refere	nce.

Γ

orehol	le fo	orma	ation o	details:											Location details
	From 0.00		To: 24.70	Start date 10-09-19		Crew: KG/TM	Plant: Dando 3000	Barrel type: n/a	Drill Bit: n/a	Logged: 13-09-19	Logger: TM	Remarks Hammer	5: ID: SI1 Er(%) 72	2	mE: 566123.8 mN: 176594.6 mAOD: 1.54 Grid: OSGB
Instal'n Water-	ike	Legend	Level	Depth (thick-	1	· •	Stratum	Description					Samples	& In Situ T	esting
Nater-	str	Ľe	2010.	ness)				Description			Wate	er Casing	Depth 10.00	Type & No D11	Results/Remarks
• • • • • • • • • • • • • • • • • • •	<u> </u>				Very soft gre (ALLUVIUM		JLAT.				Dry	10.50	10.00 10 50 - 10 95 10 50 - 10 95	S B4	N=0 (0,0/0,0,0,0)
	V V		-9.66	-	Loose grey subrounded (ALLUVIUM	flint.	Ity GRAVEL of	fine to mediu	m subangu	ılar to			11.40	D12	
* * * * * * * * * * * * * * * * * * *	(· £ · • X · £ · • X · £ · • X · £ · • X			(2.10)							- 584	12.00	12 00 - 12.45 12 00 - 12.45	C B5	N=8 (1,0/1,2,2,3)
	2	ی ماد م ماد	-11.76 -12.16	(0.40) 13.70	(ALLUVIUM) sandy G	h black pseudo RAVEL of suba			int.	- 11.2	0 13.50	13.30 13 50 - 13 95 13 50 - 13 95 13.70 - 14 20	D13 S D14 B6	N=9 (2,3/3,2,2,2)
0 4 4 0 4 4 0 4 4 0 4 4 0 4 4 0 4 4 0 4 4 0 4 4 0 4 4 0 4 0 4 0 4 0 4 0 4 0 4 0 4 0 4 0 4 0 4 0 4 0 4 0 4 0 4 0	2		-12.66	14 20	(ALLUVIUM Very soft gre (ALLUVIUM	ey silty C	CLAY.						14 20 - 15 00	B7	
* * * * * * * * * * * * * * * * * * *	N 1		-13.46	1	Medium der subrounded (ALLUVIUM	flint.	ming dense gr	rey sandy GR	AVEL of su	bangular to	280) 15.00	15 00 - 15.45 15.00 15 00 - 15 50	S D15 B8	N=14 (2,3/3,3,4,4)
*************											- 3 00) 16.50	16 50 - 16 95 16 50 - 16 95	C B9	N=33 (3,3/5,7,9,12
********	***********			(4.70)							- 3 00) 18.00	18 00 - 18.45 18 00 - 18.45	C B10	N=46 (5,6/7,9,13,17
	0		-18.16	19.70	Recovered a	as: stru	ctureless CHAI	LK composed	of slightly	silty GRAV	- 3 00 EL) 19.50	19 50 - 19.95 19.70 - 20.00	S B11	N=23 (3,4/6,6,5,6)
,° Inst		1			1						u Wate		Depth	Type & No	Results
roundw truck: 1 11 20	Rose			: Sealed	Diameter Dia (mm): 200 150		Casing: 00 13.50	Depth related From:		narks:			Chiselling deta From: to:		ation: Tool:
GS All de			ion of symbo ey Sheet. xed ievels are	ils and e in metres.	Project: Project No Client:	o: 4593	y Power ra Energy Ltd					E	Exploratory pos	sition refere	

				Log)								Teri	au		
Soreh Type: CP	From 0.0	m:	ation (To: 24.70	details: Start date: 10-09-19	End date: 13-09-19	Crew: KG/TM	Plant: Dando 3000	Barrel type: n/a	Drill Bit: n/a	Logged: 13-09-19	Logger: TM	Remarks Hammer	: ID: SI1 Er(%) 72	!	Location mE: mN: mAOD: Grid:	on details: 566123.80 176594.69 1.54 OSGB
Backfill/ Instal'n	Water- strike	Legend	Level	Depth (thick-			Stratum	Description					Samples &	& In Situ T	esting	
Bad	Wa str	Leg	Lova	ness)							Wate	r Casing	Depth	Type & No	Resu	ilts/Remarks
	(19) SPIE (19)		-23.16	- () - ()	Bravel is we are mediun LEWES NO	eak med n subrou DULAF N AND I	ctureless CHAI lium density an inded flint. Ma R CHALK FOR! NEWHAVEN C	gular to subro trix is white. (MATION, SEA HALK FORM.	ounded whi (Grade Dc) (FORD CH ATION)	te chalk an		22.50	21 00 - 21.45 21 00 - 21.45 22 50 - 22 95 22 50 - 22 95 24 00 - 24.45 24 00 - 24.45	S D16 S D17 S D18	N=16	(1,2/4,4,3,4) (4,3/4,4,4,4) (4,5/7,7,8,9)
				‡							1					
TOUR	Inst (Ø)		tries:		Diameter	& cacin	a.	Depth related	1 remarke		Wate		Depth Chiselling deta	Type & No		Results
Struck:			Casing	: Sealed:	Diameter Dia (mm): 200 150		Casing: 00 13.50	From:		narks:			From: to:		ation: Tool:	
AGS og iss			ation of symbo (ey Sheet. Iced levels are	is and In metres.	Project: Project No		y Power					E	Exploratory pos	ition refere		

			e Lo	9										onsult
reho	le fo	rmatio	n details:											Location detail
	From: 0.00	To: 24.45	Start date 10-09-19		Crew: SH	Plant: Dando 3000	Barrel type: n/a	Drill Bit: n/a	Logged: 11-09-19	Logger: TM	Remark	5.		mE: 566343. mN: 176576 mAOD: 1.36 Grid: OSGB
al'n	ke k		Depth			Otrotum	Description					Samples	& In Situ Te	esting
Instal'n Water-	strike	Leve	ness)				Description			Wate	er Casing	-	Type & No	Results/Remarks
	×	<u> </u>	⁶ 0.10	(TOPSOIL)		Y. Abundant roo				A		0.10 - 0.50	B1	
•			-	Greyish brov Abundant ro		tly gravelly CL/	AY. Gravel is t	ine subrou	nded flint.	-		0.50	D1	
		<u>.</u>	(1.20)	(ALLUVIUM)					1		0 50 - 1.00	B2	
			-							-				
		0.0	i 1.30	Verv soft are	ev mottle	ed orangish bro	own silty peat	CLAY.				1.30	D3	
	×. alz		-	(ALĹUVIŬM		J				-		1.50 1 50 - 2.00	U1 B3	20 (66%)
	x. alg									1				
•	alg X		-							1				
	al.c									- Dry	2.50	2 50 - 2.95	s	N=0 (0,0/0,0,0,0
	alg X-									1 .,	2.00	2 50 - 2.95	D4	11 0 (0,010,0,0,0
	aig X. aig		-							-				
										1				
•	al.g		(4.70)							-		3.50 3.50	D5 U2	11 (66%)
••••	alg X		(4.70)							1		3.90	D6	
	al.c		-							4		4 00 - 4.50	B4	
, ,	al.4 													
	aliq X. aliq		-							- Dry	4.50	4 50 - 4.95 4 50 - 4.95	S D7	N=0 (0,0/0,0,0,0
			-							1				
	ix. alg		:							1				
	314 314 		-							4				
	alg ×	×								1				
	ماد مع	- 4.6	4 6.00 -			ownish black p	seudo-fibrous	PEAT. Lar	ninations o	r -		6.00	U3	40 (88%)
	ادي م	ia at atta		plant remain (ALLUVIUM										
	2	ia d' Stéa	(1.20)									6.50 6 50 - 7.00	D8 B5	
	ادر ہ ادر	ಡನ್ ಮಗಡ ಡನ								1				
	e X	<u>مالد</u> -5.8	4 7.20	Von coff ar	w mottle	ed orangish bro						7.20	D9	
	ala X.			(ALLUVIUM		eu orangisit bio	will peaky CL	AI.		Dry	7.50	7 50 - 7.95	S	N=0 (0,0/0,0,0,0
	al4 											7 50 - 7.95	D10	
	ind X. Dia		(1.80)							-]				
	×. ala		(1.00)							1				
•	ala N		-							-				
	ala X	X								1	_			
•		-7.6	4 9.00 -	Very soft gre (ALLUVIUM		<i>.</i>				Dry	9.00	9 00 - 9.45 9 00 - 9.45	S D11	N=0 (0,0/0,0,0,0
			:		,					3				
	E									1				
			(2.00)							-		0	Tree 6 M	Decutto
_	^{st (Ø)} water	entries:		Diameter	& casin	-	Depth related	remarks:		Wate		Depth Chiselling det	Type & No ails:	Results
uck:	Rose	to: Cas	ng: Sealeo	: Dia (mm): 200 150	Depth: 19. 24.		From:	To: Rer	narks:			From: to:	Dura	ition: Tool:
			mbole and	Project:	Tilbur	y Power						Exploratory pos	tion refere	nce.
S All	tes Fore breviations depths an	xplanation of sy see Key Sheet d reduced level	are in metres.	Project No							¹		CF	

Γ

rehole	e forr	nation	details:								_			Location details:
pe: Fr	rom: 1.00	To: 24.45	Start date 10-09-19		Crew: SH	Plant: Dando 3000	Barrel type: n/a	Drill Bit: n/a	Logged: 11-09-19	Logger: TM	Remarks	c		mE: 566343.7 mN: 176576.8 mAOD: 1.36 Grid: OSGB
Water-	strike Legend	Level	Depth (thick-			Stratum	Description					Samples 8	k In Situ Te	esting
≝ Št	Le st	_	ness)	Very soft gre						Water	Casing	Depth	Type & No	Results/Remarks
• • • • • • • • • • • • • •		· • • • •	• • •	(ALLUVIUM)	-				Dry	10.50	10 50 - 10 95	S	N=0 (1,0/0,0,0,0)
		-9.64		Very soft gre (ALLUVIUM		y CLAY.								
· · · · · · · · · · · · · · · · · · ·										4.10	12.00	12 00 - 12.45 12 00 - 12.45 12 00 - 12 50	S D13 B6	N=0 (0,0/0,0,0,0)
0			(5.10)							- 590	13.50	13 50 - 13 95 13 50 - 13 95	S D14	N=2 (1,0/0,1,0,1)
										6 80	15.00	15 00 - 15.45 15 00 - 15.45	S D15	N=2 (1,0/0,1,1,0)
		्र -14.74 इ. इ. इ. इ. इ. इ. इ. इ. इ. इ. इ. इ. इ.	-	Loose grey occasional ((ALLUVIUM	cobbles.	GRAVEL of sub	angular to sut	prounded fi	int and	5.10	16.50	16 50 - 16 95 16.50 16 50 - 17 00	C D16 B7	N=8 (1,1/2,2,2,2)
0 0 4 4 0 7 4 0 0 4 0 0 4 0 0 4 0 0 0 4 0 0 0 4 0 0 0 4 0 0 0 4 0		in an	(2.90)							- 3.10	18.00	18 00 - 18.45 18.00 18 00 - 18 50	C D17 B8	N=9 (1,1/2,2,2,3)
¥ 8 9 9 9 8 9 9 9 8 9 9 9 8 9 9 9 8 9 9 9 8 9 9 9 8 9 9 9 9 8 9		* * - - - - - - -	-	and occasio angular to s to subround subangular	nal cobl ubround ed flint. to subro	ctureless CHAI bles. Clasts ar led white with o Matrix is white unded flint. (G R CHALK FORI	e weak low ar occasional fine . Occasional rade Dc)	nd medium e to mediui gravel of fi	density m subangu ne to mediu	ar .	19.50	19 00 - 19 50 19 50 - 19 95 19 50 - 19 95	B9 S D18	N=7 (1,2/1,2,2,2)
inst (i	0	-		LETTED INC						Water	Casing	Depth	Type & No	Results
oundwa	ater e	ntries: :: Casin <u>c</u>	j: Sealed:	Diameter Dia (mm): 200 150		Casing: 50 19.50	Depth related From:		: narks:	vvater		From: to:	ils:	ation: Tool:

Boreh	nole 1	form	ation d	letails:											Location details:
Type: CP	Froi 0.0		To: 24.45	Start date: 10-09-19		Crew: SH	Plant: Dando 3000	Barrel type: n/a	Drill Bit: n/a	Logged: 11-09-19	Logger: TM	Remarks	:		mE: 566343.77 mN: 176576.84 mAOD: 1.36 Grid: OSGB
Backfill/ Instal'n	Water- strike	Legend	Level	Depth (thick-	•		Stratum	Description					Samples &	& In Situ Te	esting
Bac	Wa str	Leg	Level	ness)							Water	Casing	Depth	Type & No	Results/Remarks
	(19) SPIE (19)		-23.09		and occasio angular to si to subround subangular f (LEWES NC	nal cobt ubround ed flint. to subro DULAR N AND N	ctureless CHAI ples. Clasts ar led white with of Matrix is white unded flint. (Gi CHALK FOR NEWHAVEN C	e weak low ar occasional fine . Occasional rade Dc) MATION, SEA HALK FORM	nd medium e to mediuu gravel of fi FORD CH ATION)	i density m subangui ne to mediu	l i	21.00 22.50 24.00	21 00 - 21.45 21 00 - 21.45 22 50 - 22 95 22 50 - 22 95 24 00 - 24.45 24 00 - 24.45	S D19	N=28 (2,4/13,5,5,5) N=7 (1,2/2,2,2,1) N=14 (3,3/3,3,4,4)
											1				
				_ 1							1				
10.115	Inst (Ø)	er en	riec:		Diameter	& opeir	a: 1	Depth related	remarke		Water		Depth hiselling deta	Type & No	Results
			Casing	Sealed:			Casing: 50 19.50	From:		marks:			From: to:		ation: Tool:

oreh	ole f	orm	ation	details:											Location details:
/pe: CP	Fron 0.00	n:	To: 25.00	Start date: 12-09-19	End date: 13-09-19	Crew: SH	Plant: Dando 3000	Barrel type: n/a	Drill Bit: n/a	Logged: 13-09-19	Logger: TM	Remarks	c		mE: 566394.7 mN: 176654.5 mAOD: 1.29 Grid: OSGB
Instal'n	Water- strike	Legend	Level	Depth (thick-			Stratum	Description					Samples	& In Situ Te	esting
<u>۽</u>	2 2 2 2 2 2 2 2 3 2 3 2 3 2 3 2 3 3 3 3	ĕ ×///×		ness)		(4 hum					Wate	r Casing	Depth	Type & No	Results/Remarks
•••••		Ì			TOPSOIL)	r. Aduno	dant rootlets.				1				
		<u></u>	0.79	0.50	Firm orangis	sh brow	n mottled grey (CLAY. Occasi	onal rootlet	t.			0.50	D1	
••••					ALLUVIUM		5,				1		0 50 - 1.00	B1	
			0.00	1 20							-		1.20	D 2	
		x	0.09	(0.30)	very soft bro ALLUVIUM		aty CLAY.				-		1.20	D2	
		د ماند بر ماند	-0.21	(0.30)	Plas ic black plant remain	and br	rownish black p	seudo-fibrous	PEAT. Lar	ninations o	f -		1.50 1.50	D3 U1	9 (66%)
••••			-0.51	1.80	ALLUVIUM)	nated orangish	brown slightly	silty neat		- Pode		2.00	D4	
		×			of black orga	anic CL	AY. Occasional	decayed woo	d and sele	nite crystal			2 00 - 2.50	B2	
· · · ·		314 <u>-</u> ×			ALLOVION)					Dry	2.50	2 50 - 2.95	s	N=0 (0,0/0,0,0,0)
											1		2 50 - 2.95	D5	
		×									-				
		×									1				
•		× ala ×		(3.50)							- Dry	3.50	3 50 - 3.95 3 50 - 3.95	S D6	N=0 (0,0/0,0,0,0)
		×									1				
· · · ·		314 <u>-</u> ×									-				
				3							Dry	4.50	4 50 - 4.95	s	N=0 (0,0/0,0,0,0)
		×^		1								4.50	4 50 - 4.95	D7	11-0 (0,000,0,0,0)
		×		-							1				
		× ala ×	-4.01	5.30							_		5.30	D8	
		ala <u>x</u>		(0.50)	of black orga	anic CL	nated orangish AY. Occasional	brown slightly decayed woo	d and sele	/ CLAY. Ba nite crystal	nds				
		314 <u>-</u> ×	-4.51	5.80	Drier than al (ALLUVIUM)									
••••	T	ા ગાય પ્રાથ આય			Plas ic brow (ALLUVIUM		do-fibrous PEA	Γ.			-		6.00 6.00	D9 U2	35 (88%)
		د مادر مادر م													
		د مادر ماد م د مادر		(1.70)									6.50	D10	
		ی میشد مالد اد د امالد		_							1				
		ন নাজ নাজ ন		-							1				
••••		ماند م د ماند - ماند	-6.21	7.50	Very soft gre	w post					Dry	7.50	7 50 - 7.95	s	N=0 (0,0/0,0,0,0)
		>14 			ALLUVIUM		Y CLAI.				1		7 50 - 7.95	D11	
		×^		(1.00)							-				
		×		3							1				
			-7.21		Very soft lig		CLAY.				-		8 50 - 9.00	B3	
•](alluvium)					1	0.00	0.00 0.15	_	N=0 /0 0/0 0 0 0
				1							- 8 50	9.00	9 00 - 9.45 9.00	S D12	N=0 (0,0/0,0,0,0)
••••				3							1				
				;							1				
, ,	Inst (Ø)										- Wate	r Casing	Depth	Type & No	Results
oun	lwate		tries:		Diameter		-	Depth related			mate		hiselling det	ails:	
ruck:	Ros	se to:	Casing	: Sealed:	Dia (mm): 200 150	21	Casing: .00 21.00 .00 24.00	From:	To: Ren	narks:			From: to:	Dura	ation: Tool:
-	Notes Fo	r emian:	ation of symbo Key Sheet. Iced levels are	is and	Project:		ry Power						xploratory pos		

Во	re	h	ble	Log	3									Terr	aC	onsult
Boreh	ole 1	orm	ation	details:									_			Location details:
Type: CP	Fror 0.0	n:	To: 25.00	Start date: 12-09-19	End date: 13-09-19	Crew: SH	Plant: Dando 3000	Barrel type: n/a	Drill Bit: n/a	Logged: 13-09-19	Logg TM		Remarks	:		mE: 566394.74 mN: 176654.51 mAOD: 1.29 Grid: OSGB
kfilv al'n	ter- ike	Legend	Level	Depth (thick-			Stratum	Description						Samples &	& In Situ Te	esting
Backfil/ Instal'n	Water- strike	Leg	Level	(unick- ness)			Suatum	Description			v	Vater	Casing	Depth	Type & No	Results/Remarks
					√ery soft lig (ALLUVIUM		CLAY.				- 1	0.00	10.50	10 50 - 10 95 10.50	S D13	N=0 (0,0/0,0,0,0)
												0.50	12.00	12 00 - 12.45 12 00 - 12.45	S D14	N=0 (1,0/0,0,0,0)
		<pre></pre>	-11.71		√ery soft gre (ALLUVIUM		CLAY.					2.80	13.50	13.00 13 50 - 13 95 13 50 - 13 95	D15 S D16	N=1 (1,0/0,1,0,0)
	V		-13.21 -13.71	(0.50) 15 00	subrounded) nse grey flint.	CLAY. coarse SAND	and GRAVEL	of angular	to		9.10	15.00	13 50 - 14 00 14.50 15 00 - 15.45 15.00	B4 D17 S D18	N=13 (1,2/2,2,4,5)
					alluvium)						5.40	16.50	15 50 - 16 00 16.00 16 50 - 16 95 16 50 - 17 00	В5 D19 С В6	N=9 (1,1/2,2,2,3)
• •				(5.30)								3 60	18.00	18 00 - 18.45 18.00 18 00 - 18 50	C D20 B7	N=11 (1,0/2,2,3,4)
	Inst (Ø)											3 00 Vater	19.50 Casing	19 50 - 19 95 19.50 19 50 - 20 00 Depth	C D21 B8 Type & No	N=11 (1,2/2,3,3,3) Results
Ground		er en	ries:		Diameter	& casin	g: I	Depth related	d remarks:					hiselling deta		
Struck: 15 00	Ro:	se to: 6.20	Casing 15.0	D	Dia (mm): 200 150	Depth: 21.(25.(Casing: 00 21.00 00 24.00	From:		narks:				From: to:	Dura	ation: Tool:
AGS Log iss Scale:		F	ton of symbo ey Sheet sed levels are INAL 50	is and In metres.	Project: Project No Client:	5 4593	y Power a Energy Ltd						E	xploratory pos	ition refere	

loreh	ole	form	ation	details:								-			Location details
CP	From 0.0	m:	To: 25.00	Start date: 12-09-19	End date: 13-09-19	Crew: SH	Plant: Dando 3000	Barrel type: n/a	Drill Bit: n/a	Logged: 13-09-19	Logger: TM	Remarks	:		mE: 566394.7 mN: 176654.5 mAOD: 1.29 Grid: OSGB
Backfill/ Instal'n	Water- strike	Legend	Level	Depth (thick-			Stratum	Description					Samples a	& In Situ Te	esting
l Ba	W ₈	Ľě		ness)			coarse SAND		-6	4-	Wate	er Casing	Depth	Type & No	Results/Remarks
		╕╛╕╛╡╡┨╼┨╼┨╼┨╼╏╼╏	-19.01	20 30	subrounded (ALLUVIUM Recovered a and occasio angular to s to subround subangular (LEWES NO	flint.) as: struc nal cobb ubround ed flint. to subro)DULAR	ctureless CHAI bles. Clasts an ed white with c Matrix is white unded flint. (Gi CCHALK FORI NEWHAVEN C	LK composed e weak low al occasional fine e. Occasional rade Dc) MATION, SEA	d of slightly nd medium e to mediur gravel of fi AFORD CH	silty grave density n subangui ne to mediu	lar -	0 21.00	20.30 21 00 - 21.45 21 00 - 21.45	D22 S D23	N=3 (1,0/0,1,1,1)
**** **** ****				(4.70)							- 1.7(- 1.7) 	0 22.50	22 50 - 22 95 22 50 - 22 95	S D24	N=10 (3,2/2,2,3,3)
	(19)			• • • • • • • • • •							- 15	0 24.00	24 00 - 24.45 24 00 - 24.45	S D25	N=13 (2,3/3,3,3,4)
	(19)					Bo	rehole ends at i	25 UUM (Targe	a depin)						
	Inst (Ø)										Wate	er Casing	Depth	Type & No	Results
	dwat	er en			Diameter		-	Depth related			vvalt		hiselling deta	ails:	
			Casing tion of symbo (ey Sheet, ced levels an		Dia (mm): 200 150 Project:	21.0 25.0		From:	To: Rer	narks:			From: to:		ation: Tool: ence:

	6														
oreh /pe: CP	Fron 0.00	1:	To: 23.10	details: Start date 16-09-19		Crew: SH	Plant: Dando 3000	Barrel type: n/a	Drill Bit: n/a	Logged: 17-09-19	Logger: TM	Remarks	:		Location details mE: 566327.4 mN: 176621.1 mAOD: 1.41 Grid: OSGB
backilly Instal'n	Water- strike	Legend	Level	Depth (thick-			Stratum	Description					Samples &	& In Situ Te	
	str str	Leg		ness)							Wate	r Casing	Depth	Type & No	Results/Remarks
••••			1.31		(TOPSOIL)		lant roots and				_/		0 00 - 0.50	B1	
· · ·	-				ALLUVIUM		CLAY. Abunda	nt rootlets.			-		0.50	D1	
			0.51	0.90							1		0 50 - 1.00	B2	
••••			0.01	-	Soft grey mo stained lami	ottled or nations.	angish brown l Occasional ro	aminated CLA otlets.	Y. Occasio	nal iron	-		1.00	D2	
	-			(1.00)	(ALLUVIUM)					1				
	-												1.50 1.50	D3 U1	14 (88%)
••••		×	-0.49	1.90	Verv soft da	rk arev :	slightly silty pe	atv CLAY.					2.00	D4	
		14 <u>-</u> ×			(ALLUVIUM		5 7 71	,			1		2 00 - 2.50	B3	
· · · ·		×		-							Dry	2.50	2 50 - 2.95	s	N=0 (0,0/0,0,0,0)
° • • •		₩X									1		2 50 - 2.95	D5	
** ***		x 142x		-							-				
••••		×		-							1				
		x		(3.60)							1		3.50 3.50	D6 U2	12 (88%)
		×		(3.00)									4.00	57	
		×		-							-		4.00	D7	
		× ×		-							Dry	4.50	4 50 - 4.95	S	N=0 (0,0/0,0,0,0)
		x 14x											4 50 - 4.95	D8	
••••		x xx		-							-				
		n nk		-							1				
		×	-4.09	5.50	Soft dark gr	ey slight	tly silty very pe	aty CLAY.			-1		5.50	D9	
		×	-4.49	E 00	(ALLUVIUM								5.90	D10	
		د مادر مادر		_	Plas ic dark (ALLUVIUM		sh black pseud	o-fibrous PEA	I.				6.00	U3	42 (88%)
	;	د مادر مادر د مادر		3							3		6.50	D11	
••••		ی ادر در مادر		(1.30)							1		0.50		
		ی اند در ماند		-							-				
· · · ·		یالد 	-5.79	7.20	Very soft da	rk grey :	silty peaty CLA	Y.							
		× ×		-	(ALLUVIUM)					Dry	7.50	7 50 - 7.95 7.50	S D12	N=0 (0,0/0,0,0,0)
		x 14x		(1.30)							1		7.50 7 50 - 8.00	B4	
		× 14×		-							-				
			7.00								1				
		x	-7.09	8.50 -	Very soft da (ALLUVIUM		silty peaty CLA	Y.			-				
				1		-					Dry	9.00	9 00 - 9.45	S	N=0 (0,0/0,0,0,0)
				1							1		9 00 - 9.45	D13	, ; - ; - ; - ; • /
		x hl4x		-							-				
· · ·				(2.50)							1				
,°	inst (Ø)	nk t			-						Wate	r Casing	Depth	Type & No	Results
	dwate Ros		tries: Casing	: Sealed	Diameter Dia (mm):		Ig: Casing:	Depth related From:		narks:			From: to:		ation: Tool:
					200 150	12. 23.	00 12.00								
П	Notes Fo	r explana ons see K	tion of symb	ols and e In metres.	Project:	Tilbur	y Power					F	xploratory pos	ition refere	ence:
GS	All de		and in	n in main-	Project No							1-			

oroh			tion	LO details:								_			Location detail
ype: CP	From 0.00	:	To: 23.10	Start date 16-09-19		Crew: SH	Plant: Dando 3000	Barrel type: n/a	Drill Bit: n/a	Logged: 17-09-19	Logger: TM	Remarks	:		mE: 566327 mN: 176621 mAOD: 1.41 Grid: OSGB
Backfill Instal'n	Water- strike	Legend	Level	Depth (thick-			Stratum	Description					Samples &	& In Situ Te	esting
ga ≝ ⊡	影왕	Ĕ		ness)		de arce e					Water	Casing	Depth	Type & No	Results/Remarks
**** ****	ין פיין פיין פיין פיי				very son da (ALLUVIUM		silty peaty CLA	Y.			Dry	10.50	10 50 - 10 95 10.50	S D14	N=0 (0,0/0,0,0,0
	ופ סו סו		-9.59		Very soft da (ALLUVIUM		silty very peaty	CLAY.							
*** ***	ם ס ס ס ס ס ס ס ס ס ס ס ס ס ס ס ס ס ס ס			(1.00)											
• • • • • • • • • • • •	ים יין מיין מיין מיין מיין מיין מיין		-10.59		Very soft gre (ALLUVIUM		Y CLAY.				3 00	12.00	12 00 - 12.45 12.00	S D15	N=0 (1,0/0,0,0,0
• • • • • • • • • • • • •	ים הקיק הקיק			(2.50)							- 3.40	13.50	13 50 - 13 95 13 50 - 13 95	S D16	N=1 (1,0/0,0,1,0
· · · · · · · · ·	al a SE al S		-13.09	- - 14 50 -		a cond	y peaty CLAY.						14 50 - 15 00	В5	
			-13.79	(0.70)	(ALLUVIUM)	SAND and GR/	AVEL of subar	ocular to su	ibrounded	- 2.40	15.00	15 00 - 15.45 15 00 - 15.45	S D17	N=7 (1,1/1,1,2,3
• • • • • • • • • • • • • • • • • • •	, p, , , p, , , , p, , , , p, , , , , ,			-	flint. (ALLUVIUM				. .		- 2 50	16.50	16 50 - 16 95	с	N=10 (1,2/2,2,3,
• • • • • • • • • • • • • • • • • •	ייין יה יין יה יין יה יין יה יין יי			(2.90)								10.50	16.50 16.50 16 50 - 17 00	D18 B6	N-10 (1,02,2,3,
			-16.69	-	Gravel is we rare medium (LEWES NO	ak med subrou DULAF	ictureless CHAI dium density an unded flint. Ma R CHALK FORI NEWHAVEN C	gular to subro trix is white. (MATION, SEA	unded whi Grade Dc) FORD CH	e chalk an		18.00	18 00 - 18.45 18.00 18.10 18.10 - 18 60	C D19 D20 B7	N=11 (1,1/2,3,4,
**** **** ****	r r r			(1.90)							4 30	19.50	19 50 - 19 95 19 50 - 19 95	S D21	N=5 (1,1/1,1,1,2
*	Inst (Ø)	1		20-00	Diama 1	0	I.	-			Water		Depth	Type & No	Results
	dwate Rose		ries: Casing	: Sealed	Diameter Dia (mm): 200 150	Depth: 12.	Casing:	Depth related From:		narks:			:hiselling deta From: to:		ation: Tool:
GS og iss			lon of symbo ey Sheet. sed levels are NAL	is and In metres.	Project: Project No		ry Power					E	xploratory pos	ition refere	

oreh	ole f	form	ation 4	details:											Location details
Type: CP	From 0.0	n:	To: 23.10	Start date: 16-09-19	End date: 17-09-19	Crew: SH	Plant: Dando 3000	Barrel type: n/a	Drill Bit: n/a	Logged: 17-09-19	Logger: TM	Remarks	:		mE: 566327. mN: 176621. mAOD: 1.41 Grid: OSGB
Backfill/ Instal'n	Water- strike	Legend	Level	Depth (thick-			Stratum	Description					Samples &	& In Situ Te	esting
E Ba	St Va	ĥ	2010	ness)							Water	Casing	Depth	Type & No	Results/Remarks
				- (subangular o subround LEWES NC	white ch ed flint.)DULAF	K recovered as nalk. Occasiona (Grade Dc) R CHALK FORM NEWHAVEN C	I gravel of fine	e to mediu FORD CH	m subangu	ar - 4.70	21.00	21 00 - 21.45 21 00 - 21.45	S D22	N=5 (1,0/1,1,1,2)
				(3.10)							3 00	22.50	22 50 - 22 95 22 50 - 22 95	S D23	N=12 (3,2/2,3,3,4
	(19) SPIE (19)		-21.69	23.10		В	orehole ends at :	23.10m (Targe	t depth)				23.10	D24	
				··· [·································							•••••••••••••••••••••••••••••••••••••••				
	Inst (Ø)			-	1						- Water	Casing	Depth	Type & No	Results
Struck:			tries: Casing	: Sealed:	Diameter Dia (mm): 200 150		Casing: .00 12.00	Depth related From:		: marks:			:hiselling deta From: to:		ation: Tool:

Bo	re	h	ble	Lo	g									Ter	raC	ons	sult
oreh	ole f	form	ation	details:												Locatio	on details
ype: CP	Fror 0.0		To: 24.45	Start date 18-09-19		Crew: SH	Plant: Dando 3000	Barrel type: n/a	Drill Bit: n/a	Logged: 19-09-19		gger: TM	Remarks	:		me: mn: maod: Grid:	566384.1 176752.4 1.22 OSGB
Backfil/ Instal'n	Water- strike	Legend	Level	Depth (thick-			Stratum	Description						Samples	& In Situ Te	esting	
as≊ ∎	st Vi			ness)		wp mot			ravelly CL	W. Cravel	ia	Water	Casing	Depth	Type & No	Res	ults/Remarks
			1.02	0.20			tled orangish bro angular to subro							0 20 - 1.00 0.50	B1		
· · ·				(1.10)		ange gle	lark orange and eying.	orangish bro	wn Clay. I	ighter gre	, '			1.00	D2		
****		 	-0.08	1.30 (0.30) _			do-fibrous PEAT	Г.									
· · · ·		אוג א א אוג א אין אוג א אוג	-0.38	1.60	brown, dark	ey silty grey ar	peaty laminated nd light grey.	CLAY. Lamir	ations are	orangish				1.50 1.50	D3 U1		1 (88%)
• • • • •	•			-	(ALLUVIUM)					1			2.00 2 00 - 2.50	D4 B2		
· · · ·		5 × 5 × 5		(2.40)								Dry	2.50	2 50 - 2.95 2 50 - 2.95	S D5	N=0	(0,0/0,0,0,0)
· · ·		등 제 중 제 이 x		-							.						
• • •		S × S × 		-										3.50 3.50	D6 U2	1	4 (88%)
		≤×1 × × × × × × × × ×	-2.78	4.00 -	Very soft da (ALLUVIUM		silty peaty CLA	Y.						4.00	D7		
		× × × ×		-	(ALLOVION	<i>.</i> ,					•	Dry	4.50	4 50 - 4.95 4 50 - 4.95	S D8	N=0	(0,0/0,0,0,0)
		{ × ≥ × ≥ × ×		(1.80)							.						
		× × × × × × × × × ×		-													
		اللامي × به الله به الله به الله ب	-4.58	-	of plant rem	ains. O	k brown pseudo ccasional relic r		f. Frequent	lamination	IS -			5.80 6.00	D9 U3	6	5 (88%)
		ہ مادہ ی مادہ ی مادہ ی	-5.28	6.50	(ALLUVIUM		orangish brown	fibrous PEA	r. Abundan	t small she	lls -			6.50	D10		
		ه ۱۱۱۵ ۵ مالد ۵ مالد مالد ۲			and shell fra (ALLUVIUM	igments	s.										
		2012 2012 2012	-5.98	7.20	Very soft gre (ALLUVIUM		dark grey peaty	CLAY.				Dry	7.50	7.20 7 50 - 7.95	D11 S	N=0	(0,0/0,0,0,0)
2 4 0 0 4 4 0 1				(1.10)							•			7 50 - 7.95	D12		
		비지하기종	-7.08	8.30	Very soft gre (ALLUVIUM		CLAY.							8.30	D13		
						-					1	Dry	9.00	9 00 - 9.45	s	N=0	(0,0/0,0,0,0)
				-							•			9 00 - 9.45	D14		
				(2.70)							-						
round	inst (Ø)	er en	ries:		Diameter	& casi	na: r	Depth related	remarks.			Water		Depth hiselling det	Type & No ails:		Results
			Casin <u>c</u>	g: Sealed		Depth: 12	Casing: .00 12.00 .00 24.00	From:		narks:				From: to:		ation: Tool:	
GS g issu			tion of symbo ey Sheet ced levels an	ois and e in metres.	Project: Project No Client:	o: 459 3	ry Power						E	xploratory pos	sition refere		

ehole	e forr	nation	details:											Location details
	rom: 1.00	To: 24.45	Start date 18-09-19		Crew: SH	Plant: Dando 3000	Barrel type: n/a	Drill Bit: n/a	Logged: 19-09-19	Logger: TM	Remarks	51		mE: 566384. mN: 176752. mAOD: 1.22 Grid: OSGB
Water-	strike Legend	Level	Depth (thick-			Stratum	Description					Samples 8	& In Situ Te	esting
≝ ≷*	IS Đ	~	ness)	Von coff an	ov oith (Wate	r Casing	Depth	Type & No	Results/Remarks
0 0 4 0 0 4 0 0 4 0 0 0 4 0 0 0 4 0 0 0 4 0 0 0 4 0	×			Very soft gro (ALLUVIUM		CLAY.				Dry	10.50	10 50 - 10 95 10.50	S D15	N=0 (0,0/0,0,0,0)
* * * * * * * * * * * * * * * * * * *	ala ala ala ala ala	-9.78	11.00	Very soft gra (ALLUVIUM		beaty CLAY.						11.00 11 00 - 11.50	D16 B3	
	× ala ala ala ala ala	× × · ×	(3.50)							- Dry	12.00	12 00 - 12.45 12 00 - 12.45	S D17	N=0 (1,0/0,0,0,0
9 × 4 9 × 4 9 × 4 9 × 4	ala N ala N ala N ala	× . × . × . × . × . × . × . × . × . × .								- Dry	13.50	13 50 - 13 95 13 50 - 13 95	S D18	N=2 (1,0/0,1,0,1)
		-13.28	-		t with o	to coarse SAN ccasional cobbl		EL of suba	ngular to			14.50	D19	
		4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4								- 2.40) 15.00	15 00 - 15.45 15.00 15 00 - 15 50	C D20 B4	N=8 (1,1/1,2,3,2
· · · · · · · · · · · · · · · · · · ·		· · · · · · · · · · · · · · · · · · ·	(4.50)							- 2 30) 16.50	16 50 - 16 95 16.50	C D21	N=9 (1,0/1,2,3,3
	ن معیان میں اور میں اور میں اور میں اور میں اور میں اور									2.10) 18.00	18 00 - 18.45 18.00 18 00 - 18 50	C D22 B5	N=13 (1,1/2,3,3,5
10 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0		-17.78	-	Gravel is we	eak med n subrou	ctureless CHA lium density an unded flint. Flir	gular to subro	unded whi	te chalk an	d	19.50	19.00 19 50 - 19 95	D23 S	N=6 (1,1/2,2,1,1
•		- -		(LEWES NO	DULÁF	R CHALK FORI NEWHAVEN C			ALK			19.50	D24	
inst (Ø)		-					-		- Wate	r Casing	Depth	Type & No	Results
undwa uck: F 4 50		-		Diameter : Dia (mm): 200 150		Casing: .00 12.00	Depth related From:		narks:		(Chiselling deta From: to:		ation: Tool:
S Al dep	pths and re	anation of symbo e Key Sheet. duced levels an FINAL	ois and e in metres.	Project: Project No		ry Power					E	Exploratory pos	ition refere	

oreh	ole f	form	ation o	letails:											Location details:
ype: CP	Fror 0.0	n:	To: 24.45	Start date: 18-09-19	End date: 19-09-19	Crew: SH	Plant: Dando 3000	Barrel type: n/a	Drill Bit: n/a	Logged: 19-09-19	Logger: TM	Remarks	:		mE: 566384.14 mN: 176752.40 mAOD: 1.22 Grid: OSGB
Backfill/ Instal'n	Water- strike	Legend	Level	Depth (thick-			Stratum	Description					Samples a	& In Situ T	esting
	Wa str	Leg	Leve	ness)				-			Wate	r Casing	Depth	Type & No	Results/Remarks
	(19) SPIE (19)	┡┨╶╾┥┝┑╸┙╸┙╸╸╸╸╸╸╸╸╸╸╸╸╸╸╸╸╸╸╸╸╸╸╸╸╸╸╸╸╸╸╸╸╸	-23.23	-(- - - (Gravel is we are medium white. (Grad LEWES NO	eak medi 1 subrou de Dc). DDULAR N AND N	rehole ends at	gular to subro t becomes ra MATION, SEA HALK FORM/	unded whi re with dep FORD CH ATION)	te chalk an oth. Matrix	d ·	22.50	21 00 - 21.45 21 00 - 21.45 21 50 - 22 00 22 50 - 22 95 22 50 - 22 95 24 00 - 24.45 24 00 - 24.45	S D25 B6 S D26 S D27	N=11 (1,1/1,4,3,3) N=6 (1,1/1,1,2,2) N=11 (1,1/2,2,3,4)
				:							1				
roun	Inst (Ø)	er en	ries:		Diameter	& casin	g:	Depth related	remarks:		Wate	_	Depth hiselling deta	Type & No ails:	Results
			Casing	Sealed:	Dia (mm): 200 150		Casing: 00 12.00	From:		narks:			From: to:		ation: Tool:
	Notes Fi	or explana lons see K s and redu	tion of symbol lev Sheet.	s and	Project:	Tilbur	y Power					E	xploratory pos	ition refer	ence:
GS															

				Lo	9								Ter		
pe: P	Fror 0.0	n:	ation To: 23.50	details: Start date 19-09-19		Crew: SH	Plant: Dando 3000	Barrel type: n/a	Drill Bit: n/a	Logged: 20-09-19	Logger: TM	Remark	S:		Location details mE: 566453.6 mN: 176779.8 mAOD: 1.37
Instal'n	ike	Legend	Level	Depth (thick-			Stratum	Description					Samples	& In Situ Te	Grid: OSGB
L Ist	Water- strike	Leg	Lova	ness)	_						Wat	er Casing	Depth	Type & No	Results/Remarks
· · · ·		<u> </u>	1.17		fine to medi		led orangish br angular to subr				is .				
•••••					TOPSOIL)						A		0.50	D1	
					Firm greyish (ALLUVIUM		mottled orangi	sh brown CLA	Y.				0 50 - 1.50	B1	
÷		×	0.37	1 00	-		angish brown s	silty peaty CL	AY Occasi	onal relic					
· · ·		ali <u>s</u> ×			roots. (ALLUVIUM		anglen zierne	, poul, ou							
· · · ·		24 		-	(ALLOVIOW)					-		1.50	D2 U1	12 (88%)
		× ×		(1.50)									1.50		
· · · ·		× ×		-							-		2.00	D3	
• • •				-							1				
	▼	al4	-1.13	2.50	Very soft gre	ey silty s	slightly peaty C	LAY.			- Dŋ	y 2.50	2 50 - 2.95 2 50 - 2.95	S D4	N=0 (0,0/0,0,0,0)
		ala <u>-</u> x		-	(ALĹUVIŬM						1		2 30 - 2.33	04	
· • • • •		×									-		3 00 - 3.50	B2	
••••		× ×		-							1				
•••••				-							-		3.50 3.50	D5 U2	14 (88%)
•••		014X		-							1				
°		al6		(3.00)-							-				
		ala <u>x</u>									1				
°, •		al4x		-							- Dŋ	y 4.50	4 50 - 4.95 4 50 - 4.95	S D6	N=0 (0,0/0,0,0,0)
· · · ·		al4x		-											
		24 <u>×</u>		-							-				
		× ×		-											
		<u>ہ مادہ</u> مادہ م	-4.13	5.50 -	Firm dark br	ownish	black pseudo-f	fibrous PEAT.	Occasiona	lly clayey.	-		5.50	D7	
		ہے مالانے مالد		1	(alluvium)									
		<u>ہ</u> ماد <u>ہ</u> ماد		(1.00)-							-		6.00	U3	61 (88%)
· · ·		ہے متادی متاہم م	5.42								1		0.50	54	
· · ·		ه میشم بیاده بر بر بیاده	-5.13		Firm dark br (ALLUVIUM		black pseudo-f	fibrous PEAT.			-		6.50	D8	
••••		ہ میں۔ مارد ہ	5.62								-		7.00	DO	
			-5.63	7.00 -	Very soft gre (ALLUVIUM		sionally mottled	I dark grey sil	ty peaty Cl	AY.			7.00	D9	
		014 <u>-</u> ×		-	(·					- Dŋ	y 7.50	7 50 - 7.95	s	N=0 (0,0/0,0,0,0)
°, •		al4 <u>×</u>		(1.30)							-	, 1.50	7 50 - 7.95	D10	11-0 (0,0/0,0,0,0,0)
°, •		ala <u>-</u> ×		-							1				
		×	6.00	0.30							1		0.00	D44	
		x	-6.93	8.30	Very soft gre (ALLUVIUM		CLAY.				-		8.30	D11	
		××									1				
		××		-							- Dŋ	y 9.00	9 00 - 9.45	s	N=0 (0,0/0,0,0,0)
		×		3							1		9.00	D12	
••••		× ×		-							4				
		××		(2.90)							1				
ļ,	Inst (Ø)	×		-							- Wat	er Casing	Depth	Type & No	Results
	dwat		tries:		Diameter			Depth related					Chiselling det	ails:	
truck	Ro	se to:	Casin <u>c</u>	j: Sealed	: Dia (mm): 200 150	Depth: 12. 23.		From:	To: Rer	narks:			From: to:	Dura	ation: Tool:
1	Notes Fi	or explan	ation of symbo Key Sheet. Iced levels an	olis and	Project:	Tilbur	y Power						Exploratory pos	sition refere	ence:
			iced levels an INAL	e in metres.	Project No		-					ľ		CF	
j iss	and.		111/AL		Client:	State	ra Energy Ltd								~

0	orehole Log													aC	onsult	
reho	ehole formation details:															
e: >	From 0.00		To: 23.50	Start date 19-09-19	: End date: 20-09-19	Crew: SH	Plant: Dando 3000	Barrel type: n/a	Drill Bit: n/a	Logged: 20-09-19	Logger: TM	Remarks	5.		mE: 566453. mN: 176779. mAOD: 1.37 Grid: OSGB	
	ke ke	Legend	Level	Depth (thick-	1		Stratum	Description		I	<u> </u>		Samples	& In Situ Te	esting	
Instal'n	vvater- strike	Leg	Leve	ness)				Description			Wate	er Casing	Depth	Type & No	Results/Remarks	
*******	-				Very soft gre (ALLUVIUM		CLAY.				Dry	10.50	10 50 - 10 95 10 50 - 10 95	S D13	N=0 (0,0/0,0,0,0	
۰۰ ^۰ ۰ ۰۰ ^۰ ۰			-9.83		Very soft gre (ALLUVIUM		slightly sandy p	eaty CLAY.					11.20	D14		
• * * • • * * • • * •	10 P. 10 P. 10 P.	ilax ilax ilax ilax		(1.30)							- Dry	12.00	12 00 - 12.45 12 00 - 12.45	S D15	N=0 (0,0/0,0,0,0	
			-11.13	1	Loose beco subangular (ALLUVIUM	to round	edium dense g Jed flint.	rey coarse SA	ND and G	RAVEL of			12.50	D16		
,				• • • • •							- 2.70) 13.50	13 50 - 13 95 13.50 13 50 - 14 00	C D17 B3	N=9 (1,0/1,2,3,3	
۰				(6.00)							- 2.40) 15.00	15 00 - 15.45 15.00 15 00 - 15 50	C D18 B4	N=9 (1,1/2,2,3,2	
											- 2.70) 16.50	16 50 - 16 95 16.50 16 50 - 17 00	C D19 B5	N=14 (2,2/2,3,4,	
			-17.13	1	Gravel is we subrounded	eak med flint. M	ctureless CHA lium density su latrix is white.	bangular whit (Grade Dc)	e chalk an	d rare medi) 18.00	18 00 - 18.45 18.00 18 00 - 18 50 18.50	C D20 B6 D21	N=21 (2,3/5,5,6,	
, •** <u>,</u> •** <u>,</u> •**	T T T						R CHALK FOR NEWHAVEN C			IALK	- 2.40) 19.50	19 50 - 19 95 19.50	S D22	N=16 (1,0/2,3,4,	
_	nst (Ø) wate		ries		Diameter	& cacir	a.	Denth related	1 romarke		Wate			Type & No	Results	
undwater entries: uck: Rose to: Casing: Sealed: 2 50 2.60 12.50					Diameter Dia (mm): 200 150		Casing: .00 12.00	Depth related From:		: marks:			Chiselling deta From: to:		ation: Tool:	
issu		F	tion of symbo ey Sheet. æd levels are INAL 50	is and In metres.	Project: Project No Client:	Project No: 4593								Exploratory position reference: CP6 Sheet 2 of		

Γ

oreh	ole	form	ation	letails:											Location details:
Type: CP	From 0.0	n:	To: 23.50	Start date: 19-09-19	End date: 20-09-19	Crew: SH	Plant: Dando 3000	Barrel type: n/a	Drill Bit: n/a	Logged: 20-09-19	Logger: TM	Remarks	:		mE: 566453.68 mN: 176779.8 mAOD: 1.37 Grid: OSGB
Backfil/ Instal'n	Water- strike	Legend	Level	Depth (thick-			Stratum	Description					Samples	& In Situ T	esting
	\$ ⁸	Let		ness)	Decovered	an otau		-	of olighthy	ailty gravel	Wate	r Casing	Depth	Type & No	Results/Remarks
	(19) SPIE (19)	┤╾╡╾╛╼╛╼╛╸┙╸╸╸╸╸╸╸╸╸╸╸╸╸╸╸╸╸╸╸╸╸╸╸╸╸╸╸╸╸╸╸╸	-21.13	(4.00) - (Gravel is we subrounded (LEWES NC FORMATIO FORMATIO Gravel is we (Grade Dc). (LEWES NC	ak med flint. M DULAR N AND N AND N DULAR N AND N	ctureless CHA ium density su atrix is white. C CHALK FOR NEWHAVEN C ium density su CHALK FOR NEWHAVEN C orehole ends at	Ibangular whit (Grade Dc). MATION, SEA HALK FORM bangular whit MATION, SEA	of slightly e chalk. M ATION) e chalk. M FORD CH ATION)	d rare medi ALK silty gravel. latrix is whit	um - 2 30 - 2 30		21 00 - 21.45 21 00 - 21.45 21 50 - 22 00 22 50 - 22 95 23 50 - 22 95 23.50	S D23 B7 S D24 D25	N=10 (1,2/2,2,3,3) N=11 (2,2/2,2,3,4)
	Inst (Ø)										- Wate	r Casing	Depth	Type & No	Results
roun	dwat		casing	: Sealed:	Diameter Dia (mm): 200 150		Casing: 00 12.00	Depth related From:		: narks:		c	hiselling deta From: to:	ails:	ation: Tool:
GS	Notes F abbreviat	or explana lons see K	tion of symbo ey Sheet.	is and	Project:	Tilbur	y Power					E	xploratory pos	ition refer	ence:

				Lo	9								ien	aU	onsult
pe: P	ole f Fron 0.0(n:	ation To: 23.50	details: Start date 23-09-19		Crew: SH	Plant: Dando 3000	Barrel type: n/a	Drill Bit: n/a	Logged: 24-09-19	Logger: TM	Remarks	:		Location details mE: 566477. mN: 176884. mAOD: 1.32 Grid: OSGB
Instal'n	Water- strike	Legend	Level	Depth (thick-			Stratun	n Description					Samples	& In Situ T	esting
Ë	s s	e E		ness)	Crovich bro	wp mot	tled orangish b	-	ravelly CL	AV Cravel	Wate	er Casing	Depth	Type & No	Results/Remarks
· · · · · · · · · · · · · · · · · · ·			1.12	0.20	fine to medi rootlets. (TOPSOIL) Firm grey m	ottled o	prangish brown casional seleni	slightly silty C	Abundant	roots and	Å		0.50 0 50 - 1.50	D1 B1	
· · · · · · · · · · ·				(110)									1.50 1.50	D2 U1	19 (88%)
		× × × × × × × × × × × × × × × × × × ×	-0.58	(0.60)	Soft grey mo light grey sa (ALLUVIUM	ndy lan	rangish brown ninations.	slightly silty pe	eaty CLAY.	Occasiona			2.00 2 00 - 2.50	D3 B2	
0 0 4 0 0 4 0 0 4 0 0	¥	< < < < < < < < < < < < < < < < < < <	-1.18	2.50		rk grey	silty peaty CLA	AY.			Dry	2.50	2 50 - 2.95 2 50 - 2.95	S D4	N=0 (0,0/0,0,0,0)
1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		N N N N N N N N N N N N N N N N N N N		(1.50)									3.50 3.50	D5 U2	11 (88%)
**** ***		× × ×	-2.68		Very soft lig (ALLUVIUM		silty peaty CLA	NY.					4.00	D6	
*** **** ****		중 시 중 시 중 시 중 시 중 									- Dry	4.50	4 50 - 4.95 4 50 - 4.95 5.50	S D7 D8	N=0 (0,0/0,0,0,0
• • • • • • • • • • • • •		× 중 × 중 × 중 × 중 × 중 × 		(4.50)							- - - - - - -		6.00	U3 D9	19 (88%)
۰ • • • • • • • • • • • • • • •		× ≤ × ≤ × ≤ × ≤ × ≤ × ≤ × ≤ × ≤ × = × = ×										7.50	7 00 - 7.50 7 50 - 7.95	B3 S	N=0 (0,0/0,0,0,0
۰ • • • • • • • • • • • • • • • • • • •			-7.18	8.50	Very soft gre (ALLUVIUM	ey sligh	tly sandy peaty	CLAY.					7 50 - 7.95	D10	
***************************************		× 등 * 등 * 등 * 등 * 등 ki 등 ki 등 ki 등 ki ri = ri = ri = ri = ri									- Dry	9.00	9 00 - 9.45 9 00 - 9.45	S D11	N=1 (0,0/0,0,1,0
_	inst (Ø)	-5 581647. 			B irmin	0					Wate	_	Depth	Type & No	Results
			tries: Casin <u>o</u>	g: Sealed:	Diameter Dia (mm): 200 150	Depth: 11	ng: Casing: .00 10.50 .50 23.50	Depth related From:		: narks:			From: to:		ation: Tool:
issu			ation of symb (ey Sheet iced levels ar	ois and e in metres.	Project: Project No Client:	: 4593	ry Power 3 era Energy Ltd	<u> </u>				E	xploratory pos	sition refere	

				Lo	<i>,</i>										onsult
reho e: P	From 0.00	1:	ation c To: 23.50	Start date 23-09-19	End date: 24-09-19	Crew: SH	Plant: Dando 3000	Barrel type: n/a	Drill Bit: n/a	Logged: 24-09-19	Logger: TM	Remark	5		Location detail mE: 566477 mN: 176884 mAOD: 1.32 Grid: OSGB
u, le	ke -	pua		Depth		I	Otratura	Description					Samples	& In Situ Te	esting
Instal'n	Water- strike	Legend	Level	(thick- ness)			Stratun	n Description			Wate	er Casing	Depth	Type & No	Results/Remarks
***************************************		중 첫 중 첫 중 첫 중 첫 중 첫 중 0동 Mis Mis Mis Mis Mi 01-01-01-01-01-0			Very soft gre (ALLUVIUM)		ly sandy peaty	/ CLAY.			- Dry	10.50	10 50 - 10 95 10 50 - 10 95	S D12	N=0 (0,0/0,0,0,0
· · · · · · · · · · · · · · · · · · ·		2 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	-10.48		Firm dark bro remains thro (ALLUVIUM)	ughout.	black fibrous s	slightly clayey	PEAT. Woo	od and plan	t - - - - - Dry	12.00	12 00 - 12.45 12 00 - 12.45	S D13	N=4 (1,1/1,1,1,1
· · · · · · · · · · · · · · · · · · ·		30, 31, 31, 31, 31, 31, 31, 31, 31, 31, 31	-12.18	13 50	Loose grey s (ALLUVIUM)		RAVEL of sub	pangular to rot	Inded flint.		280) 13.50	13 50 - 13 95 13.50 13 50 - 14 00	C D14 B4	N=8 (1,0/1,1,2,4
*** **** **** **** **** ****	6、半6、半6、半6、半6、半6、			(3.00)							- 2.40) 15.00	15 00 - 15.45 15.00	C D15	N=8 (1,2/2,2,2,2
***************************************	* \$. * \$. * \$. * \$. * \$. * \$		-15.18	-	Medium den COBBLES o (ALLUVIUM)	fsuban	sandy GRAVI gular flint.	EL of subangu	lar to round	led flint and	2 3() 16.50	16 50 - 16 95 16.50 16 50 - 17 00	С D16 В5	N=11 (1,0/2,3,2,
· · · · · · · · · · · · · · · · · · ·	, G , M G ,		-16.68 -17.18	(0.50) 18 50	subangular t (ALLUVIUM) Recovered a Gravel is we subangular f	o subro) as: struc ak low o lint. Ma	y gravelly med unded flint an ctureless CHA density white v trix is white.	d very fine cha LK composed with black flec (Grade Dc).	alk. I of subang ks and med	ular gravel. ium to coa		0 18.00	18 00 - 18.45 18.00 18 00 - 18 50 18.50	C D17 B6 D18	N=10 (1,2/2,3,2,
10 ***0 ***0 ***0 ***0	T		-18.18	19 50	FORMATION Recovered a Gravel is we	NAND N as: strue ak low e	CHALK FOR NEWHAVEN C Cureless CHAI Jensity white.	CHALK FORM	ATION) of subangu e. (Grade)	ilar gravel. Dc).	2.40		19 50 - 19 95 19 50 - 19 95	S D19	N=10 (1,1/2,3,3,
	nst (Ø) wate	er ent	ries:		Diameter	& casin	g:	Depth relate	d remarks:		Wate	_	Depth Chiselling deta	Type & No ails:	Results
ruck: 13 50	Ros		Casing 13.3		_		Casing: 00 10.50	From:		narks:			From: to:		ation: Tool:
issu		F	tion of symbo ey Sheet. xed levels are INAL 50	is and In metres.	Project: Project No Client:	: 4593	y Power ra Energy Ltd					E	Exploratory pos	ition refere	

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			auuu	details:											Locano	n details:
ype: CP	Froi 0.0	m:	To: 23.50	Start date: 23-09-19	End date: 24-09-19	Crew: SH	Plant: Dando 3000	Barrel type: n/a	Drill Bit: n/a	Logged: 24-09-19	Logger: TM	Remarks	:		mE: mN: mAOD: Grid:	566477.0 176884.0 1.32 OSGB
Backfill/ Instal'n	Water- strike	Legend	Level	Depth (thick-			Stratum	Description					Samples &	& In Situ T	esting	
Bac	Str Wa	Leg	2010	ness)							Water	Casing	Depth	Type & No	Resu	lts/Remarks
	(19) SPIE (19)		-22.18		Gravel is we LEWES NO	ak low c DULAR N AND N	rehole ends at	Matrix is white Mation, SEA Halk Form	e. (Grade FORD CH ATION)	Dc).	2 50	21.00	21 00 - 21.45 21 00 - 21.45 22 50 - 22 95 22 50 - 22 95 23.50	S D20 S D21 D22		1,1/1,2,3,2)
				1							1					
	Inst (Ø)	-									Water	Casing	Depth	Type & No		Results
	dwat	er en		1	Diameter			Depth related			. raio	C	hiselling deta	ils:		
Struck	: Ro	se to:	Casing	: Sealed:	Dia (mm): 200 150	Depth: 11.0 23.5		From:	To: Rer	narks:			From: to:	Dur	ation: Tool:	

Boreh	ole f	orma	tion de	tails:								_			Location details:
Type: WLS	Fro 0.0		To: 5.45	Start date 19-09-19		Crew: HD	Plant: Dando Terrier	Logger: TM	Logged: 19-09-19	Remarks:					mE: 566475.91
							2002								mN: 176704.22 mAOD: 1.53
															Grid: OSGB
Backfill/ Instal'n	Water- strike	Legend	Level	Depth (thick-			Stratum	Descripti	00				Samples	& In Situ Te	esting
Bac	stri stri	Leg	Level	ness)							Water	Casing	Depth	Type & No	Results
			1.13	(0.40) 0.40	Abundant ro (TOPSOIL)	ots and	d rootlets.			subangular flint. 			0.30	ES1	
	(50)		-		grey sandy (ALLUVIUM	aminat	ion. Abundant r	oots and	rootlets.		Dev		1.00 - 1.45	s	
	(50)			(1.40)						-	Dry				N=2 (0,0/0,0,1,1)
			-0.27	1.80	Soft grey sil	y CLA	Y. Abundant pla	nt matter.		-			1.50	D1	
		×			(ALLUVIUM)				-	Dry		2.00 - 2.45	S	N=0 (0,0/0,0,0,0)
											Dry		3.00 - 3.45	s	N=0 (0,0/0,0,0,0)
				<mark>(3.65)</mark>											
										-	Dry		4.00 - 4.45	S	N=0 (0,0/0,0,0,0)
		×								-	Dry		5.00 - 5.45	S	N=1 (0,0/0,0,0,1)
	SP (50)	<u>~</u>	-3.92	5.45		Dyna	mic sample ends	s at 5.45 n	n (Target de	pth)					
										-					
										-					
										<u>-</u>					
										-					
										-					
<u> </u>	Inst (Ø)								•	Water	Casing	Depth	Type & No	Results
Grour	dwat	ter er			Casing:	P.		· ·	ated rema			R	un details:		
Struck	c Ro	se to:	Casing	j. Sealed	Cased to:	Dia	meter (mm):	From	to: Rer	narks			From: to:	Duratio	n: Recovery:
AGS			nation of symb Key Sheet. Juced levels a	ools and re in metres.	Project: Project No		ry Power					E	xploratory pos	sition refere	
Log is: Scale:			INAL		Client:	State	era Energy Ltd								Sheet 1 of 1

Dy	'n	an	nic	Sa	mple	Lo	og						Teri	raC	ons	sult
Boreh	ole f	ormat	tion de	tails:											Locatio	n details:
Type: WLS	Fro 0.0	m:	To: 5.45	Start date 19-09-19		Crew: HD	Plant: Dando Terrier 2002	Logger: TM	Logged: 19-09-19	Remarks:					mE: mN: mAOD: Grid:	566373.84 176598.87 1.33 OSGB
	i e	P		Depth						•			Samples	& In Situ Te	esting	
Backfill/ Instal'n	Water- strike	Legend	Level	(thick- ness)			Stratum	Descripti	on		Water	Casing	Depth	Type & No	-	Results
김 문			1.13	0.20	Brown mott Abundant re	led gre	yish brown and o	orangish	brown fissu	ured CLAY.			0.20	ES1		
			1.13	(0.45)	(TOPSOIL)						4					
			0.68	0.65	Firm grey m Abundant re	ottled o	orangish brown a and occasional r	and yello elic roots	wish brown	fissured CLAY.			0.50	D1		
				(0.35)	ALLUVIUN					vhite shell fragments.	4					
· · - •	(50)		0.33	1.00			orangish brown a	ind yellow	vish brown	fissured CLAY.	Dry		1.00 - 1.45	S	N=0 ((0,0/0,0,0,0)
				(0.66)		I)	and occasional r				9					
]		-0.33	1.66	Soft grey m Abundant re		orangish brown a ts	ind yellow	vish brown	fissured CLAY.	1					
]	× 	-0.40	1.73		I)		A\/			4					
		×	-0.67	2.00)	ck very peaty CL				Dry		2.00 - 2.45	S	N=0 ((0,0/0,0,0,0)
]	×			Grey mottle		gish brown silty (CLAY. Oc	casional re	elic roots.	4					
		×			Soft grey si	ty CLA	Y. Abundant plar	nt matter.			1					
		×			(ALLUVIUN)					1					
		×								-	Dry		3.00 - 3.45	S	N=0 ((0,0/0,0,0,0)
		×									1					
		×]					
		×		(3.45)							1					
		×								-	Dry		4.00 - 4.45	S	N=0 ((0,0/0,0,0,0)
		×]					
		×									1					
		×]					
		× ×								-	Dry		5.00 - 5.45	s	N=0	(0,0/0,0,0,0)
		×									1					
ġ.	SP (50)	×	-4.12	5.45		Dyna	amic sample ends	at 5.45 n	n (Target de	pth)	1					
	(50)								(3	F-7	1					
										-	-					
											1					
]					
											1					
										-	-					
											1					
]					
											1					
											1					
										-	1					
											1					
]					
											1					
										-]					
											1					
											3					
]					
										-	1					
0	Inst (Ø)		triect		Casin				atod are	rke	Water	Casing	Depth	Type & No		Results
Groun Struck				g: Sealed	Casing: t: Cased to:	Dia	ameter (mm):	From	to: Rer	rks: marks			From: to:	Duratio	on: Rec	overy:
							, <i>p</i>									
1																
1																
	Notes	For explan	ation of sym	bois and	Project	Tiller	ID/ DOWER						voloratory per	ition rofer	ance.	
AGS			ation of sym Key Sheet. uced levels a	are in metres.	Project: Project No		iry Power 3						xploratory pos	WS		
Log is: Scale:			INAL :50		Client:		era Energy Ltd									Sheet 1 of 1
ocale.			.00													ONCOUT UF 1

Boreh	ole fo	ormat	tion de	tails:	_		-								Location details:
Type: WLS	Fror 0.0	n:	To: 5.45	Start date 19-09-19		Crew: HD	Plant: Dando Terrier 2002	Logger: TM	Logged: 19-09-19	Remarks:					mE: 566252.44 mN: 176544.19 mAOD: 1.56
≧c	4.0	Ţ		Depth									Samples	& In Situ Te	Grid: OSGB
Backfill/ Instal'n	Water- strike	Legend	Level	(thick- ness)			Stratum	Descripti	on		Water	Casing	Depth	Type & No	Results
			0.61	(0.95) 0.95	rootlets. (TOPSOIL)		tled orangish br	own fissu	ired CLAY.	Abundant			0.40	ES1	
			0.56	1.00 (0.80)	Firm black a (ALLUVIUM Grey mottle peaty CLAY (ALLUVIUM) d orang Abung		vn and ye	llowish bro	wn slightly silty	Dry		1.00 - 1.45	S	N=1 (0,0/0,0,0,1)
			-0.24 -0.44	2.00	peaty CLAY	Rare i	jish brown, brov ootlets. Y. Abundant plar			wn very silty	Dry		2.00 - 2.45	S	N=0 (0,0/0,0,0,0)
				(3.45)							Dry		3.00 - 3.45	S	N=1 (0,0/0,0,1,0)
				(3.43)						-	Dry		4.00 - 4.45	S	N=0 (0,0/0,0,0,0)
			-3.89	5.45		Dyna	mic sample ends	s at 5.45 m	n (Target de	- pth)	Dry		5.00 - 5.45	S	N=0 (0,0/0,0,0,0)
										-					
										-					
Groun	Inst (Ø)	or or	trice		Casing:		lr.)enth rol	ated rema	rks	Water	Casing	Depth un details:	Type & No	Results
Struck	: Ros	se to:	Casing		Cased to:		meter (mm):	From		nrks:			From: to:	Duratic	on: Recovery:
100	abbreviat All depth:	tions see s and red F	ation of symb Key Sheet. luced levels a		Project: Project No Client:	: 4593	ry Power 3 era Energy Ltd					E	xploratory pos		

					iihic		3								onsuit
			ion de					1		B1					Location details:
ype: VLS	Fror 0.0		To: 5.45	Start date 19-09-19		Crew: HD	Plant: Dando Terrier 2002	Logger: TM	Logged: 19-09-19	Remarks:					mE: 566131.1 mN: 176637.9 mAOD: 1.77 Grid: OSGB
al'n	ter- ke	Legend	Level	Depth (thick-	•		Stratum	Decerinti	0.0				Samples	& In Situ Te	esting
backfill/ Instal'n	Water- strike	Leg	Level	ness)				Descripti			Water	Casing	Depth	Type & No	Results
			1.12	(0.65)	Greyish bro Gravel is fin (MADE GR	e to me	htly gravelly CL edium subangul	AY. Abuno ar brick.	dant roots a	and rootlets.	•		0.40	ES1	
• • •	(50)		1.12 0.77		rootlets. (<u>ALLUVIUM</u> Grey mottle	l) d oranç	ttled orangish br gish brown, brov			-	Dry		1.00 - 1.45	s	N=4 (1,1/1,1,1,1)
			0.23 0.17		ALLUVIUM	l) amorph I)	dant rootlets.								
			-0.33	2 10	Grey mottle Occasional (ALLUVIUM) Very soft gr (ALLUVIUM)	iron sp 1) ey silty	ot and dark grey	rown and gleying.	Occasiona	brown silty CLAY I selenite crystal 70 m: Seeds present.	Dry		2.00 - 2.45	S	N=0 (0,0/0,0,0,0)
										-	Dry		3.00 - 3.45	s	N=0 (0,0/0,0,0,0)
				(3.35)							Dry		4.00 - 4.45	s	N=0 (0,0/0,0,0,0)
										-	Dry		5.00 - 5.45	s	N=0 (0,0/0,0,0,0)
	SP (50)		-3.68	5.45		Dyna	amic sample ends	s at 5.45 n	n (Target de	pth)	• • •				
										-					
											- - - - -				
										-					
										-					
	Inst (Ø)										- Water	Casing	Depth	Type & No	Results
		er ent		: Sealed	Casing: Cased to:	Dia	ameter (mm):	Depth rel From	ated rema to: Rer	rks: narks			tun details: From: to:	Duratio	n: Recovery:
- -			- aon N	,		00			10. Nel				W.	Duradu	1000101y.
00	abbreviat All depths	tions see k s and redu	ation of symb Key Sheet. Iced levels a		Project: Project No Client:	o: 4593	iry Power 3 era Energy Ltd					E	xploratory pos	sition refere	

Dy	/nar	nic	San	nple	Lo	g			
Bore	ole form	ation de	tails:						
Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Logger:	Logged:	Remarks:
WLS	0.00	4.45	19-09-19	19-09-19	HD	Dando Terrier 2002	ТМ	19-09-19	

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Boreh	ole for	mati	ion de	tails:											Location	n details:
Type: WLS	From: 0.00		To: 4.45	Start date 19-09-19		Crew: HD	Plant: Dando Terrier	Logger: TM	Logged: 19-09-19	Remarks:					mE:	566093.32
VVL5	0.00		4.45	19-09-18	19-09-19		2002		19-09-19						mN:	176692.57
															mAOD:	1.27
															Grid:	OSGB
Backfill/ Instal'n	Water- strike	Legend	Level	Depth (thick-			Stratum	Descripti	on				Samples	& In Situ Te	esting	
Bac	str str	Leç	2010.	ness)			oliulum	Decempti	011		Water	Casing	Depth	Type & No	1	Results
				(0.30)			htly gravelly CL			and rootlets. d occasional brick	-		0.20	ES1		
		∞∞× •	0.97	0.30	fragments.				ieu nint an		À		0.20	201		
	×		0.77		MADE GR	OUND)) ayey GRAVEL o	foubong	lar to subr	j ounded flipt	Ą					
	alı ×			(0.43)	MADE GR	OUND)			1	4					
		<u> </u>	0.34 0.27				gish brown, brov dant rootlets.	wn and ye	ellowish bro	own slightly silty	Dry		1.00 - 1.45	S	N=0 (0,0/0,0,0,0)
	×				ALLUVIUN	1)					/4					
			-0.23	1.50	Firm dark b Abundant re	rownisł potlets	n black pseudo-	fibrous PE	EAT. Abun	dant iron spots.	Å					
	X	×			ALLUVIUM	1)					ł					
					Grey mottle Occasional	d orang rootlet	gish brown and and relic roots.	yellowish	brown ver	y silty CLAY.	Dry		2.00 - 2.45	s	N=0 (0,0/0,0,0,0)
	×				ALLUVIUM	1)										-,,-,-,-,
	×	 			Very soft gr (ALLUVIUN	ey siity 1)	GLAY.				-					
	X	>0									-					
	Ê	 									-					
				(2.95)						-	Dry		3.00 - 3.45	S	N=0 (0,0/0,0,0,0)
	×	- X									-					
	×										-					
	×	—									-					
	×									-	Dry		4.00 - 4.45	s	N=0 (0,0/0,0,0,0)
	×										-					
	×		-3.18	4.45		Dunc	amic sample ends	n of 4 45 m	(Torgot de	anth)	-					
						Dyne	anne sample enus	5 al 4.45 li	in (Taiget de	-pui)	-					
											-					
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	Inst (Ø)						1			_	Water	Casing	Depth	Type & No	1	Results
	dwater			g: Sealed	Casing: Cased to:	Dia	ameter (mm):	Depth rel From	to: Re	n rks: marks			Run details: From: to:	Duratio	n: Rec	overy:
	. 1.030	.0.	Cabiri					1.000	10. INC					Duratio	1160	
1																
AGS	Notes For e abbreviation All depths ar	s see K	ley Sheet.		Project:		Iry Power					E	Exploratory pos		-	
Log is:			NAL		Project No									WS	55	
Scale:			50		Client:	State	era Energy Ltd									Sheet 1 of 1

Dynamic Sample Log Borehole formation details:

oreho	ole fo	ormati	on de	tails:	_							_			Location details:
Гуре: WLS	Fror 0.0	n:	To: 5.45	Start date 20-09-19		Crew: HD	Plant: Dando Terrier 2002	Logger: TM	Logged: 20-09-19	Remarks:	1				mE: 566233.72 mN: 176814.70 mAOD: 1.26 Grid: OSGB
Backfill/ Instal'n	Water- strike	Legend	Level	Depth (thick-			Stratum	Descripti	on				Samples a	& In Situ Te	esting
	× s		0.86	(0.40) 0.40 (0.60)	brick and ch (MADE GRO Grevish bro	alk. Ab DUND) wn moi ht grey	ttled orangish br sandy laminatio	own and	grey fissur	ed CLAY.	Water	Casing	Depth 0.30	Type & No ES1	Results
**************************************	(50)		0.26	1.00	(TOPSOIL) Soft grey mo	ottled o andy lai		slightly sil sional se	ty peaty Cl lenite cryst	AY. Occasional als.	Dry		1.00 - 1.45	S	N=2 (0,0/0,0,1,1)
· · · · · · · · · · · · · · · · · · ·			-0.74	2.00	Very soft gre (ALLUVIUM	ey silty)	CLAY. Occasior	nal Iamina	ation of ree	ds.	Dry		2.00 - 2.45	S	N=0 (0,0/0,0,0,0)
				(2.45)						-	Dry		2.90 3.00 - 3.45	D1 S	N=0 (0,0/0,0,0,0)
				(3.45)						-	Dry		4.00 - 4.45	S	N=0 (0,0/0,0,0,0)
	SP (50)		-4.19	5.45		Dyna	mic sample ends	at 5.45 n	n (Target de	pth)	Dry		5.00 - 5.45	S	N=0 (0,0/0,0,0,0)
										-	•				
										-	•				
										-					
	Inst (Ø)										Water	Casing	Depth	Type & No	Results
round	dwat	er ent se to:		g: Sealed	Casing: Cased to:	Dia	Imeter (mm):	Depth rel From	ated rema to: Rer	rks: narks		R	un details: From: to:	Duratio	n: Recovery:
GS og iss cale:		FI	tion of sym ey Sheet. sed levels a NAL 50	bols and are in metres.	Project: Project No Client:): 4593	Iry Power 3 era Energy Ltd					E	xploratory pos	sition refere	

			ion de												Location details:
īype: WLS	Fror 0.0		To: 5.45	Start date 20-09-19		Crew: HD	Plant: Dando Terrier 2002	Logger: TM	Logged: 20-09-19	Remarks:					mE: 566146.2 mN: 176744.7 mAOD: 1.68 Grid: OSGB
Backtill/ Instal'n	Water- strike	Legend	Level	Depth (thick-			Stratum	Descripti	on				Samples a	& In Situ Te	esting
8≝][]	3 20	و ۵		ness)	Firm arevist	1 brown	n slightly gravell	-		e to medium	Water	Casing	Depth	Type & No	Results
	(50)		1.43	0.25	subrounded MADE GRO Greyish bro	I flint an OUND) wn mot sandy l potlets.	nd brick. Abunda ttled orangish br laminations. Oc	ant rootlet	s. grey fissur	ed CLAY.	J Dry		0.15 1.00 - 1.45	ES1 S	N=3 (1,1/1,1,1,0)
· · · · · · · · · · · · · · · · · · ·			-0.14 -0.32	1.82 2.00	light grey sa ALLUVIUM	andy lar I) ey silty	orangish brown s minations. Occa CLAY. Occasion	isional se	lenite cryst		Dry		1.80 2.00 - 2.45	D1 S	N=0 (0,0/0,0,0,0)
											Dry		3.00 - 3.45	S	N=0 (0,0/0,0,0,0)
· · · · · · · · · · · · · · · · · · ·				(3.45)							Dry		4.00 - 4.45	s	N=0 (0,0/0,0,0,0)
	SP (50)		-3.77	5.45		Dyna	amic sample ends	s at 5.45 n	n (Target de	pth)	Dry		5.00 - 5.45	S	N=0 (0,0/0,0,0,0)
											- - - - - -				
	Inst (Ø)										Water	Casing	Depth	Type & No	Results
			tries: Casin	g: Sealed	Casing: : Cased to:	Dia	ameter (mm):	Depth rel From	ated rema to: Rer	rks: narks			t un details: From: to:	Duratio	on: Recovery:
GS og iss cale:	abbreviat All depth	tions see H s and redu F	ation of syn Key Sheet. Joed levels INAL :50	ibois and are in metres.	Project: Project No Client:	o: 4593	Iry Power 3 era Energy Ltd					E	xploratory pos	sition refere	

-					lihic		3						ICII			
			ion de			0	Diast	1		Domotion					Location details:	
ype: NLS	Fro 0.0		To: 5.45	Start date 20-09-19		Crew: HD	Plant: Dando Terrier	Logger: TM	Logged: 20-09-19	Remarks:					mE: 566273.7	
								2002								mN: 176686.6
															mAOD: 1.53	
															Grid: OSGB	
backnii/ Instal'n	Water- strike	Legend	Level	Depth (thick-			Stratum	Descripti	on				Samples	& In Situ Te	esting	
8≞ 1⊡∵	3 20	د		ness)				-			Water	Casing	Depth	Type & No	Results	
		<u> </u>	1.38	0.15	Firm greyis brick and cl	h browr nalk, Ab	n slightly gravell oundant rootlets	Y CLAY. (Sravel is fin	e subangular	;		0.10	ES1		
		SS			MADE GR	OUND)					1					
		SS		(4.45)	Greyish bro Occasional	wn mot sandv	ttled orangish bi laminations. Oc	rown and casional v	grey fissur white and b	ed CLAY. lack flecks.]					
		%		(1.15)	Abundant r	ootlets.]					
<u> </u>	(50)				(TOPSOIL)						Dry		1.00 - 1.45	S	N=4 (0,0/1,1,1,1)	
			0.23	1.30	Oreviet has		ttled orangish bi	and and	are feet		_					
H÷:				(0.40)			laminations and				-					
Ξ.		×	- 0 .17	1.70	root and pla	ant rema			-		2					
		X			(ALLUVIUN Very soft gr	i) ey mott	led orangish bro	own silty	CLAY. Occa	asional plant	_/ Dry		2.00 - 2.45	s	N=0 (0,0/0,0,0,0)	
		X		(0.80)	remains.		U U						2.00 2.45	Ŭ	1 0 (0,010,0,0,0)	
		×			(ALLUVIUN	1)					1					
H.		É-×	-0.97	2.50	Very soft gr	ey silty	CLAY. Occasion	nal lamina	ation of ree	ds.	-					
		× ×			(ALLUVIUN	1)]					
		×									Dry		3.00 - 3.45	s	N=0 (0,0/0,0,0,0)	
H: ا		×									1					
		×									1					
		<u>×</u>									1					
		×		(2.95)									4.00 4.45	s		
H÷:		<u></u> ×		(2.55)							- Dry		4.00 - 4.45	5	N=0 (0,0/0,0,0,0)	
H÷.		<u></u> X]					
H÷.		<u></u> X									1					
H.		<u> </u>									1					
		X									- Dry		5.00 - 5.45	s	N=0 (0,0/0,0,0,0)	
]					
L:	SP	×	-3.92	5.45		Dyna	amic sample ends	sat 5.45 n	n (Target de	oth)	-					
	(50)					Dyna	inic sumple end.	Jul 0.401	in (langet de	puly	1					
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	lnst (Ø)		tria		Cogin				ate d	rke-	Water	Casing	Depth	Type & No	Results	
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20	abbrevia	ations see I	ation of sym		Project:	Tilbu	Iry Power					E	Exploratory pos			
iss og iss			INAL	are in metres.	Project No									WS	58	
3.00			:50		Client:	State	era Energy Ltd								Sheet 1 of	

oreho		ormat	ion do												
	-		lon de	tails:											Location details:
	6.0	m:)0	To: 5.45	Start date 20-09-19		Crew: HD	Plant: Dando Terrier 2002	Logger: TM	Logged: 20-09-19	Remarks:					mE: 566306.6 mN: 176821.1 mAOD: 1.23 Grid: OSGB
j li li li li li li li li li li li li li	er- Ke	pue		Depth			Otratura	Description		1			Samples &	& In Situ Te	esting
Backfill/ Instal'n Water-	Water- strike	Legend	Level	(thick- ness)				Descripti			Water	Casing	Depth	Type & No	Results
					Brown and g gravel of fin (TOPSOIL)	greyish e chalk	brown mottled Abundant root	orangish tlets.	brown fissu	ired CLAY. Rare			0.25	ES1	
			0.33	0.90	Grevish bro	wn mot	tled orangish br	own fissi		Occasional light			4 00 4 45		
						laminat	tion. Occasional				Dry		1.00 - 1.45	S	N=4 (0,0/1,1,1,1)
			-0.57	1.80	Very soft ar	av mott	led dark grey ar	d orangi	sh brown si		-				
		×_×		(0.60)	Occasional (ALLUVIUM	plant re	emains.	iu orangi	SILDIOWILS		Dry		2.00 - 2.45	S	N=0 (0,0/0,0,0,0)
			-1.17	2.40		ey mott	led dark grey sil	ty CLAY.	Rare plant	remains.	-				
											Dry		3.00 - 3.45	s	N=0 (0,0/0,0,0,0)
		× ××		(3.05)							Dry		4.00 - 4.45	s	N=0 (0,0/0,0,0,0)
											-		5 00 5 45		N 0 (0 0 (0 0 0 0 0)
		×_* ×_*	-4.22	5.45		Dyna	mic sample ends	at 5.45 n	n (Target de	nth)	Dry		5.00 - 5.45	S	N=0 (0,0/0,0,0,0)
						Dyna			r (raiget de						
											- - -				
											-				
	to at 77										-	0		The Case	
	Inst (Ø) dwat	er en	tries:		Casing:			Depth rel	ated rema	rks:	Water	Casing	Depth	Type & No	Results
truck:	: Ro	se to:	Casing	g: Sealed	Cased to:	Dia	imeter (mm):	From	to: Rer	narks			From: to:	Duratio	on: Recovery:
GS og iss	abbrevia All depth	itions see I is and redu	ation of symi Key Sheet. uced levels a	ools and ire in metres.	Project: Project No		ry Power					E	xploratory pos	sition refer	

CPT LOG 01 IN SITU PointID **CPT 01** SITE INVESTIGATION Working with: CLIENT : Terra Consult EASTING Remark: SHEET : 1 OF 2 NORTHING Test refused on tip resistance. STATUS : Final **PROJECT: Tilbury ELEVATION** : 0.000 m OD TEST DATE : 17/09/2019 LOCATION : Ti bury CHECKED BY : LD PLOT DATE : 19/09/2019 PROJECT No. : 1190415 TERMINATION REASON : Refusal METHOD : ISO 22476-1:2012 Inclination () Cone Resistance, q_e (MPa) In Situ Pore Pressure, u₀ (kPa) phic Log Friction Ratio, R₁(%) Pore Pressure Ratio, Ba _ _ 5 10 Soil Behaviour Type: Material Description Robertson et al. 1986 oc Rf Ē Porewater Pressure, u₂ (kPa) - 2 100 200 300 400 500 Depth (Ē Sleeve Friction Resistance, f, (kPa) 10 15 -0.6 -0.1 0.9 1 2 3 4 5 6 7 8 9 10 11 8 -300 0 300 600 900 -5 0 5 04 1.4 Medium strength locally high strength sandy SILT to clayey SILT (6) \mathbf{x} × 1---1 Low strength CLAY (3) locally organic 2---2 Low strength sensitive fine grained (1) 3---3 Ŧ 4---4 Ž x Medium strength locally high strength CLAY to silty CLAY (4) 15 -5---5 X Ŧ ____ -6 x --7 x 7 60 Low strength clayey SILT to silty CLAY (5)8---8 9---9 METHOD: Robertson et al. 1986 qc Rf CONE ID S15-CF P.1486 TEST TYPE CPTU ZERO VALUES : TE2 groundwater CONE AREA 15cm² APPLICATION CLASS : 2 Transducer Pre Post Difference 1 - Sensitive fine grained material 5 - Clayey SILT to sity CLAY 9-SAND Level CONE AREA RATIO : 0.79 RIG CPT 007 294 mV 0.011 MPa Тір 293 mV 10 - Gravely SAND to SAND 2 - Organic material 6 - Sandy SILT to clayey SILT FILTER POSITION u2 OPERATOR AC Sleeve 299 mV 302 mV 0.002 kPa Dissipation 3-CLAY 7 - Silty SAND to sandy SILT 11 - Very stiff fine grained : 1190415-CPT 01 FILTER TYPE HDPE FILE NAME Pore Pressure 2 273 mV 286 mV 0.004 kPa Test 12 - SAND to clayey SAND 4 - SIIty CLAY to CLAY 8 - SAND to si ty SAND FRICTION REDUCER : None WEATHER : Sunny & Mild X-Y Inclinometer 2351 mV 2470 mV

IN SITU PointID **CPT 01** SITE INVESTIGATION Working with: CLIENT : Terra Consult EASTING Remark: SHEET : 2 OF 2 NORTHING Test refused on tip resistance. STATUS : Final **PROJECT: Tilbury ELEVATION** : 0.000 m OD TEST DATE : 17/09/2019 LOCATION : Ti bury CHECKED BY : LD PLOT DATE : 19/09/2019 PROJECT No. : 1190415 TERMINATION REASON : Refusal METHOD : ISO 22476-1:2012 Inclination () Cone Resistance, q_e (MPa) In Situ Pore Pressure, u₀ (kPa) aphic Log Friction Ratio, R₁(%) Pore Pressure Ratio, Bg _ _ 5 10 Soil Behaviour Type: Material Description Robertson et al. 1986 oc Rf Ē Porewater Pressure, u₂ (kPa) <u>8</u> - 2 100 200 300 400 -500 Depth (ΞĒ Sleeve Friction Resistance, f, (kPa) 10 15 -0.6 8 -300 0 300 600 900 -5 0 5 -0.1 04 0.9 1.4 1 2 3 4 5 6 7 8 9 10 11 Low strength clayey SILT to silty CLAY 3 (5) (continued) Þ 11---11 12---12 13--11 14---14 i I J I × 14.60 Medium dense becoming very dense 0 15.06 gravelly SAND to SAND (10) 15_ --15 Terminated at 15 06 m Refusal 16--16 17-18---18 19---19 11 METHOD: Robertson et al. 1986 qc Rf CONE ID S15-CF P.1486 TEST TYPE CPTU ZERO VALUES : TE2 groundwater CONE AREA 15cm² APPLICATION CLASS 2 Transducer Pre Post Difference 1 - Sensitive fine grained material 5 - Clayey SILT to sity CLAY 9-SAND Level CONE AREA RATIO : 0.79 RIG CPT 007 0.011 MPa Тір 293 mV 294 mV 2 - Organic material 10 - Gravely SAND to SAND 6 - Sandy SILT to clayey SILT FILTER POSITION u2 OPERATOR AC Sleeve 299 mV 302 mV 0.002 kPa Dissipation 3-CLAY 7 - Silty SAND to sandy SILT 11 - Very stiff fine grained : 1190415-CPT 01 FILTER TYPE HDPE FILE NAME Pore Pressure 2 273 mV 286 mV 0.004 kPa Test 12 - SAND to clayey SAND 4 - SIIty CLAY to CLAY 8 - SAND to si ty SAND FRICTION REDUCER WEATHER : Sunny & Mild X-Y Inclinometer 2351 mV 2470 mV : None

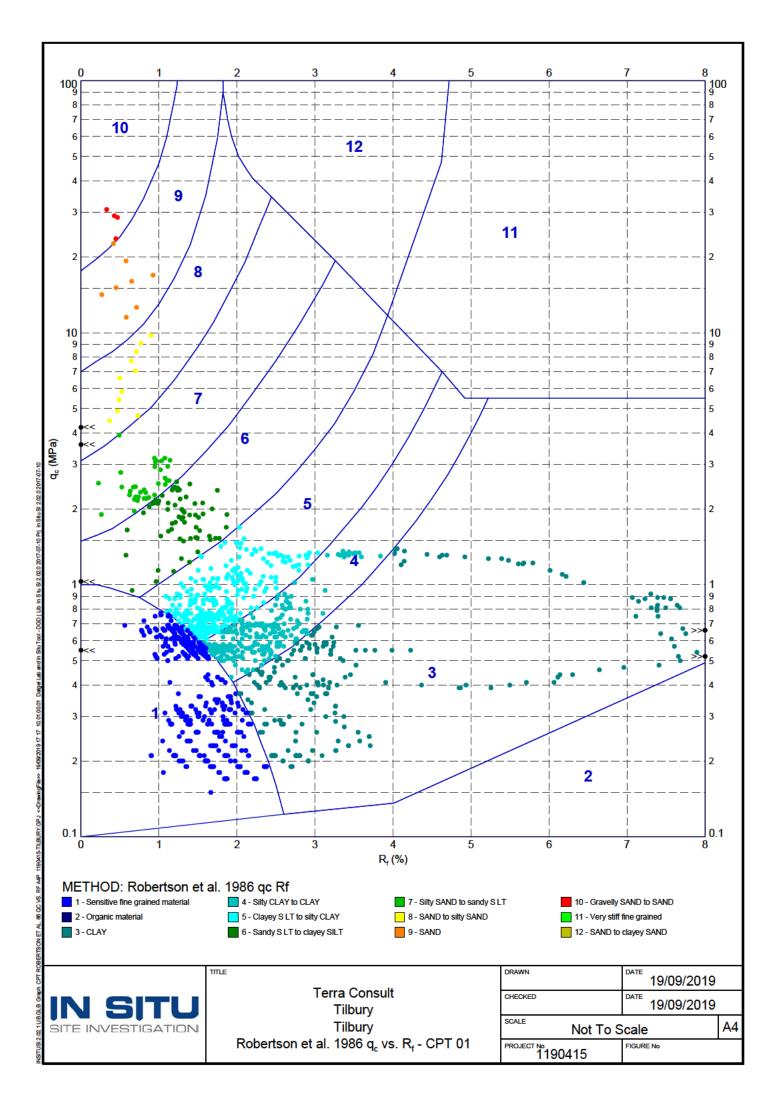
IN SITU PointID **CPT 01** SITE INVESTIGATION Working with: CLIENT : Terra Consult EASTING Remark: SHEET : 1 OF 2 STATUS NORTHING Test refused on tip resistance. : Final **PROJECT: Tilbury ELEVATION** : 0.000 m OD TEST DATE : 17/09/2019 LOCATION : Ti bury CHECKED BY : LD PLOT DATE : 19/09/2019 PROJECT No. : 1190415 METHOD : ISO 22476-1:2012 **TERMINATION REASON : Refusal** SPT Neo Relative Density, D, (%) Friction Angle, **\$'** (deg) Corrected Cone Resistance, qt (MPa) Non-normalized Soil Behaviour Type Index, I_{SBT} Graphic Log 1. Rob. & Wride 98 2. Jeff. & Davies 93 1. Baidi et al. (1986); Al-Hornoud & Wehr (2006) - 1. Senneset et al. (1988 & 1989); Mayne & Campanelia (2005) 5 10 15 Robertson (2010) Depth (m) 3. Ku hawy & Mayne (1990) nawy & Mayne (1990 <u>S</u> 100 200 300 400 -500 Ĩ€ Sleeve Friction Resistance, f. (kPa) 2 5 10 15 20 25 30 35 40 45 50 0 25 50 75 100 0 20 40 60 80 X х × × All A ̈́× 1-____ 0 Clay 2 _ _ ___ siltv 8 2---2 ____ õ ŝ ____ Sar i i ____ ş 3---3 Ŧ ___ Ź ____ _ _ ____ 4---4 + 1 x — × 5----5 > <u>x</u>___ + — × x____ ___<u>×</u>___ -6 6 x____ _____ _____ --7 ×× 8----8 ×××× 4 Ę × х 9---9 × × ×× 1 X × × CONE ID S15-CF P.1486 TEST TYPE CPTU ZERO VALUES : TE2 CONE AREA 15cm² APPLICATION CLASS : 2 Transducer Pre Post Difference Level CONE AREA RATIO : 0.79 RIG CPT 007 294 mV 0.011 MPa Тір 293 mV FILTER POSITION u2 OPERATOR AC Sleeve 299 mV 302 mV 0.002 kPa Dissipation : 1190415-CPT 01 FILTER TYPE HDPE FILE NAME Pore Pressure 2 273 mV 286 mV 0.004 kPa Test FRICTION REDUCER : None WEATHER : Sunny & Mild X-Y Inclinometer 2351 mV 2470 mV

IN SITU PointID **CPT 01** SITE INVESTIGATION Working with: CLIENT : Terra Consult EASTING Remark: SHEET : 2 OF 2 NORTHING STATUS : Final Test refused on tip resistance. **PROJECT:** Tilbury **ELEVATION** : 0.000 m OD TEST DATE : 17/09/2019 LOCATION : Ti bury CHECKED BY : LD PLOT DATE : 19/09/2019 PROJECT No. : 1190415 METHOD : ISO 22476-1:2012 **TERMINATION REASON : Refusal** SPT Neo Relative Density, D, (%) Friction Angle, **\$'** (deg) Corrected Cone Resistance, qt (MPa) Non-normalized Soil Behaviour Type Index, I_{SBT} Graphic Log 1. Baidi et al. (1986); Al-Hornoud & Wehr (2006) 1. Senneset et al. (1988 & 1989); Mayne & Campanella (2005) 5 10 15 Robertson (2010) Depth (m) 3. Ku hawy & Mayne (1990) hawy & Mayne (1990 ţi G 100 200 300 400 -500 Ē Sleeve Friction Resistance, f, (kPa) 2 5 10 15 20 25 30 35 40 45 50 0 25 50 75 100 0 20 40 60 80 ××× sit ××× ×× silty À. ≥ ×× × clav 2 90 Clay × × × silty ×× Clay ≥ × 12---12 × å ŝ × × × Sa × × × 13---13 × ×× × × 2 +× x. × 14-Þ × ×× × I 0 Ó 15----15 - - - +Terminated at 15 06 m Refusal Ŧ 16---16 17---1 18---18 19---19 CONE ID S15-CF P.1486 TEST TYPE CPTU ZERO VALUES : TE2 ____ Groundwater CONE AREA 15cm² APPLICATION CLASS : 2 Transducer Pre Post Difference Level CONE AREA RATIO : 0.79 RIG CPT 007 294 mV 0.011 MPa Тір 293 mV FILTER POSITION u2 OPERATOR AC Sleeve 299 mV 302 mV 0.002 kPa Dissipation : 1190415-CPT 01 FILTER TYPE HDPE FILE NAME Pore Pressure 2 273 mV 286 mV 0.004 kPa Test FRICTION REDUCER : None WEATHER : Sunny & Mild X-Y Inclinometer 2351 mV 2470 mV

IN SITU PointID **CPT 01** SITE INVESTIGATION Working with: CLIENT : Terra Consult EASTING Remark: SHEET : 1 OF 2 STATUS NORTHING Test refused on tip resistance. : Final **PROJECT: Tilbury** ELEVATION : 0.000 m OD TEST DATE : 17/09/2019 LOCATION : Ti bury CHECKED BY : LD PLOT DATE : 19/09/2019 PROJECT No. : 1190415 METHOD : ISO 22476-1:2012 **TERMINATION REASON : Refusal** Unit Weight, Y (kN/m³) Fines Content, FC (%) Undrained Shear Strength, su (kPa) Sensitivity, St Corrected Cone Resistance, qt (MPa) Graphic Log 1. Schmertmann78; R&L86 2. Mayne (2007) - Y bulk . R&W 98 and NCEER 2001 5 10 (q - ...)N, where N, 20 (q - ...)N, where N, 17.5 1. Mayne (2007 1. Mayne (2007 Depth (m) 3. Boulanger and Idriss (2014) <u>8</u> 100 200 300 400 -500 Ē Sleeve Friction Resistance, f. (kPa) 12.5 37.5 25 50 75 100 0 100 200 300 0 25 50 8 12 18 24 X × 1---1 2---2 3---3 Ξ 4---4 ę, 2 T 3 × 5----5 N. - × ‡ -6 - x -7 - x 8---8 X × X \times × \times 9---9 X × × × × CONE ID CPTU ZERO VALUES S15-CF P.1486 TEST TYPE : TE2 CONE AREA 15cm² APPLICATION CLASS : 2 Transducer Pre Post Difference Level CONE AREA RATIO : 0.79 RIG CPT 007 293 mV 294 mV 0.011 MPa Тір FILTER POSITION u2 OPERATOR AC Sleeve 299 mV 302 mV 0.002 kPa Dissipation : 1190415-CPT 01 FILTER TYPE HDPE FILE NAME Pore Pressure 2 273 mV 286 mV 0.004 kPa Test FRICTION REDUCER : None WEATHER : Sunny & Mild X-Y Inclinometer 2351 mV 2470 mV

CPT LOG 03

IN SITU PointID **CPT 01** SITE INVESTIGATION Working with: CLIENT : Terra Consult EASTING Remark: SHEET : 2 OF 2 STATUS NORTHING Test refused on tip resistance. : Final **PROJECT: Tilbury** ELEVATION : 0.000 m OD TEST DATE : 17/09/2019 LOCATION : Ti bury CHECKED BY : LD PLOT DATE : 19/09/2019 PROJECT No. : 1190415 METHOD : ISO 22476-1:2012 **TERMINATION REASON : Refusal** Unit Weight, Y (kN/m³) Fines Content, FC (%) Undrained Shear Strength, su (kPa) Sensitivity, St Corrected Cone Resistance, qt (MPa) Graphic Log 1. Schmertmann78; R&L86 2. Mayne (2007) - Y bulk 1. R&W 98 and NCEER 2001 5 10 15 LB. s. (q. - e.,)N., where N. 20 BE. s. (q. - e.,)N., where N. 17.5 1. Mayne (2007 1. Mayne (2007) Depth (m) 3. Boulanger and Idriss (2014) <u>S</u> 100 200 300 400 -500 Ē Sleeve Friction Resistance, f, (kPa) 200 300 0 12.5 37.5 16 25 50 75 100 0 100 25 50 8 12 20 24 ××× \mathbb{Z} 6 51 × ×× х × × х × × Х X 12---12 × × × 2 × × × 13---13 ×× × × ×_x х 14-Х ×<u>×</u> × 0 ó 15----15 Terminated at 15 06 m Refusal 16--16 17---1 18---18 19---19 CONE ID S15-CF P.1486 TEST TYPE CPTU ZERO VALUES : TE2 CONE AREA 15cm² APPLICATION CLASS : 2 Transducer Pre Post Difference Level CONE AREA RATIO : 0.79 RIG CPT 007 294 mV 0.011 MPa Тір 293 mV FILTER POSITION u2 OPERATOR AC Sleeve 299 mV 302 mV 0.002 kPa Dissipation : 1190415-CPT 01 FILTER TYPE HDPE FILE NAME Pore Pressure 2 273 mV 286 mV 0.004 kPa Test FRICTION REDUCER : None WEATHER : Sunny & Mild X-Y Inclinometer 2351 mV 2470 mV



IN SITU			CPT LOG 0 ²
BITE INVESTIGATION Working with:			PointID CPT 02
CLIENT : Terra Consult PROJECT : Tilbury LOCATION : Ti bury PROJECT No. : 1190415	EASTING : NORTHING : ELEVATION : 0.000 m OD CHECKED BY : LD TERMINATION REASON : Refusal	Remark: Test refused on tip resi	SHEET : 1 OF 2 stance. STATUS : Final TEST DATE : 17/09/2019 PLOT DATE : 19/09/2019 METHOD : ISO 22476-1:2012
E 5 10 15 20 Friction Ratio, R ₁ (* 5 10 10 15 20 5 10 15 20 5 <	In Situ Pore Pressure, u ₀ (kPa) Inclination () Porewater Pressure, u ₂ (kPa) 1 2 6 8 -300 300 600 900 -5 5 10 15 -0.6		ehaviour Type: et al. 1988 qc Rf 5 6 7 8 9 10 11
			High strength sandy SILT to clayey SIL (8) 0.90 Medium strength CLAY (3) locally organic 1 1 <tr< td=""></tr<>
CONE ID : \$15-CF P.1486 TEST TYPE : TE2 CONE AREA : 15cm² APPLICATION CLASS : 2 CONE AREA RATIO : 0.79 RIG : CPT 007 FILTER POSITION : u2 OPERATOR : AC FILTER TYPE : HDPE FILE NAME : 1190415-CPT 02 FRICTION REDUCER : None WEATHER : Sunny & Mild	Transducer Pre Post Difference 1-se Tip 293 mV 298 mV 0.055 MPa 2-oc Sleeve 301 mV 307 mV 0.004 kPa 3-cc Pore Pressure 2 283 mV 308 mV 0.007 kPa 3-cc	D: Robertson et al. 1986 qc Rf institue fine grained material 5- Clayey SILT to sity CL ganic material 6- Sandy SILT to clayey 5 AY 7- Sitty SAND to sandy S ty CLAY to CLAY 8- SAND to sity SAND	ALT 10 - Gravely SAND to SAND

- - -

IN SITU		CPT LO	OG 01
SITE INVESTIGATION Working with:		PointID CPT 02	
CLIENT : Terra Consult PROJECT: Tilbury LOCATION : Tibury PROJECT No. : 1190415	EASTING : NORTHING : ELEVATION : 0.000 m OD CHECKED BY : LD TERMINATION REASON : Refusal	Remark: Test refused on tip resistance.SHEET: 2 OF 2 STATUSSTATUS: Final TEST DATE: 17/09/2019 PLOT DATEPLOT DATE: 19/09/2019 METHOD: ISO 22476-1	
E 5 10 15 20 Friction Ratio, Rr (E 5 10 15 20 Friction Ratio, Rr (E 5 10 15 20 5 10 15 20 10	In Situ Pore Pressure, u ₀ (kPa) Inclination () Porewater Pressure, u ₂ (kPa) 1 2 6 8 -300 300 600 900 -5 5 10 15 -0.6 -0.6	Pore Pressure Ratio, B _q Soil Behaviour Type: Robertson et al. 1986 qc Rf Soil Behaviour Type: Robertson et al. 1986 qc Rf Soil Behaviour Type: C Soil Behaviour Type: Soil Behaviour	
		Medium strength locally low : clayer SILT to sity CLAY (5) Medium strength locally low : clayer SILT to sity CLAY (6) Medium strength locally high CLAY to sity CLAY (4) Medium strength locally high CLAY to sity CLAY (4) Medium strength locally high CLAY to sity CLAY (4) Medium strength locally high CLAY to sity CLAY (4)	5) (continued)
		Dense becoming very dense Ó. 18.54 SAND to SAND (10)	e gravelly
17 -17 Refusal -17 18 -18 -10 -10 18 -18 -10 -10 19 -19 -10 -10			
CONE ID : \$15-CF P.1486 TEST TYPE : TE2 CONE AREA : 15cm² APPLICATION CLASS : 2 CONE AREA RATIO : 0.79 RIG : CPT 007 FILTER POSITION : u2 OPERATOR : AC FILTER TYPE : HDPE FILE NAME : 1190415-CPT 02 FRICTION REDUCER : None WEATHER : Sunny & Mild		c material 6 - Sandy SILT to dayey SILT 10 - Gravely SAND to SAND Levi 7 - Sitty SAND to sandy SILT 11 - Very stiff fine grained	sipation

IN SITU PointID **CPT 02** SITE INVESTIGATION Working with: CLIENT : Terra Consult EASTING Remark: SHEET : 1 OF 2 STATUS NORTHING Test refused on tip resistance. : Final **PROJECT: Tilbury ELEVATION** : 0.000 m OD TEST DATE : 17/09/2019 LOCATION : Ti bury CHECKED BY : LD PLOT DATE : 19/09/2019 PROJECT No. : 1190415 METHOD : ISO 22476-1:2012 **TERMINATION REASON : Refusal** SPT Neo Relative Density, D, (%) Friction Angle, **\$'** (deg) Corrected Cone Resistance, qt (MPa) Non-normalized Soil Behaviour Type Index, I_{SBT} Graphic Log 1. Rob. & Wride 98 2. Jeff. & Davies 93 1. Baidi et al. (1986); Al-Hornoud & Wehr (2006) - 1. Senneset et al. (1988 & 1989); Mayne & Campanelia (2005) 5 10 15 Robertson (2010) Depth (m) nawy & Mayne (1990 3. Ku hawy & Mayne (1990) <u>S</u> 100 200 300 400 -500 Ĩ€ Sleeve Friction Resistance, f. (kPa) 2 5 0 5 10 15 20 25 30 35 40 45 50 0 25 50 75 100 0 20 40 80 80 X х Aav Value × × All A _X 1---1 Clay 2 ____ siltv - -2---2 õ ŝ ____ Sar 煎 _ _ 3---3 = ٤ ŧ ž ____ $\mathbf{>}$ _ 4---4 Ŧ ____ 5----5 + ----< _ _ 6---6 _ _ ____ _ _ ____ 7---7 ź ≱ 8---8 = X 9---9 \times Ŷ× ×× ٤ × ð -> ł× ХŢ CONE ID S15-CF P.1486 TEST TYPE CPTU ZERO VALUES : TE2 CONE AREA 15cm² APPLICATION CLASS : 2 Transducer Pre Post Difference Level CONE AREA RATIO : 0.79 RIG CPT 007 298 mV 0.055 MPa Тір 293 mV FILTER POSITION u2 OPERATOR AC Sleeve 301 mV 307 mV 0.004 kPa Dissipation : 1190415-CPT 02 FILTER TYPE HDPE FILE NAME Pore Pressure 2 283 mV 308 mV 0.007 kPa Test FRICTION REDUCER : None WEATHER : Sunny & Mild X-Y Inclinometer 2513 mV 2479 mV

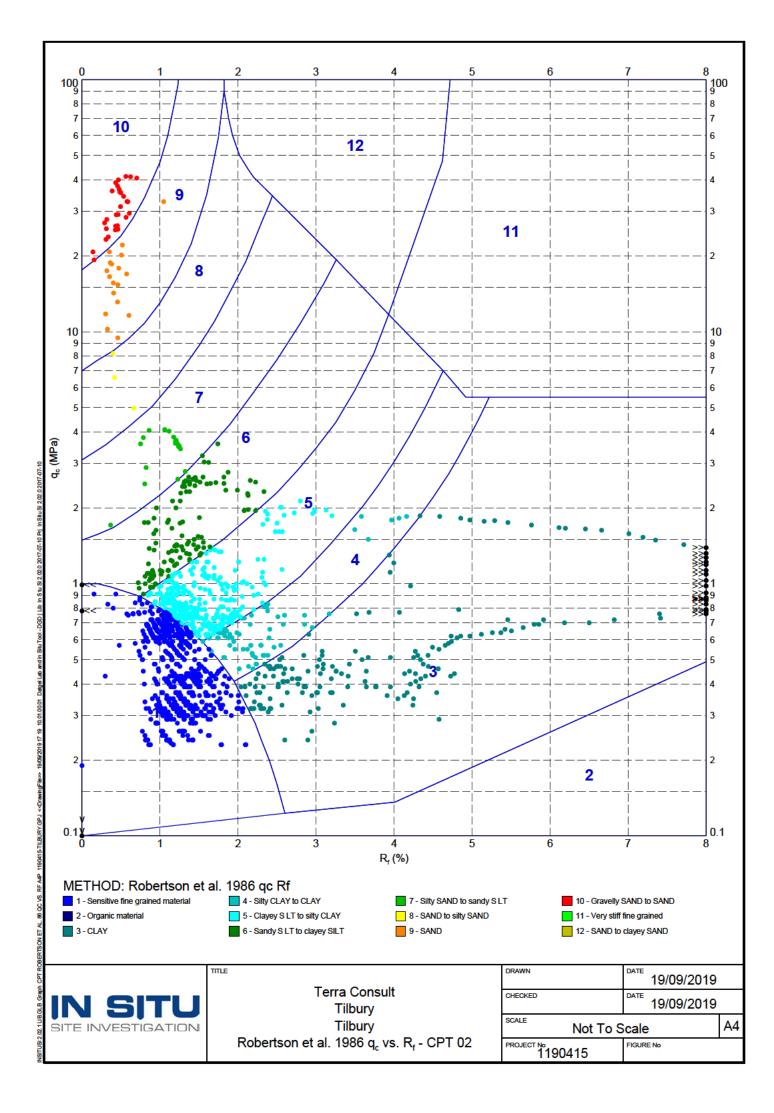
CPT LOG 02

IN SITU PointID **CPT 02** SITE INVESTIGATION Working with: CLIENT : Terra Consult EASTING Remark: SHEET : 2 OF 2 STATUS NORTHING Test refused on tip resistance. : Final **PROJECT:** Tilbury **ELEVATION** : 0.000 m OD TEST DATE : 17/09/2019 LOCATION : Ti bury CHECKED BY : LD PLOT DATE : 19/09/2019 PROJECT No. : 1190415 METHOD : ISO 22476-1:2012 **TERMINATION REASON : Refusal** SPT Neo Relative Density, D, (%) Friction Angle, **\$'** (deg) Corrected Cone Resistance, qt (MPa) Non-normalized Soil Behaviour Type Index, I_{SBT} Graphic Log 1. Rob. & Wride 98 2. Jeff. & Davies 93 1. Baidi et al. (1986); Al-Hornoud & Wehr (2006) - 1. Senneset et al. (1988 & 1989); Mayne & Campanelia (2005) 5 10 15 Robertson (2010) Depth (m) 3. Ku hawy & Mayne (1990) hawy & Mayne (1990 <u>S</u> 100 200 300 400 -500 Ē Sleeve Friction Resistance, f. (kPa) 2 5 10 15 20 25 30 35 40 45 50 0 25 50 75 100 0 20 40 80 80 ××× sit ××× ×× Silt Ne. ×× clav \times 2 90 Clay × clayey × × silty ×× 3 Clay × ×× 12---12 å ŝ × × Sa 쿬 × \times 13-× --13 × <u>__</u> \pm ~ x____ 14---14 $\langle \rangle$ <u>×</u> x____ - × -_-15--15 _____ _____ 16-0.0 Terminated at 16 54 m Refusal 17---17 18---18 19---19 CONE ID S15-CF P.1486 TEST TYPE CPTU ZERO VALUES : TE2 CONE AREA 15cm² APPLICATION CLASS : 2 Transducer Pre Post Difference Level CONE AREA RATIO : 0.79 RIG CPT 007 298 mV 0.055 MPa Тір 293 mV FILTER POSITION u2 OPERATOR AC Sleeve 301 mV 307 mV 0.004 kPa Dissipation : 1190415-CPT 02 FILTER TYPE HDPE FILE NAME Pore Pressure 2 283 mV 308 mV 0.007 kPa Test FRICTION REDUCER : None WEATHER : Sunny & Mild X-Y Inclinometer 2513 mV 2479 mV

IN SITU PointID **CPT 02** SITE INVESTIGATION Working with: CLIENT : Terra Consult EASTING Remark: SHEET : 1 OF 2 STATUS NORTHING Test refused on tip resistance. : Final **PROJECT: Tilbury** ELEVATION : 0.000 m OD TEST DATE : 17/09/2019 LOCATION : Ti bury CHECKED BY : LD PLOT DATE : 19/09/2019 PROJECT No. : 1190415 METHOD : ISO 22476-1:2012 **TERMINATION REASON : Refusal** Unit Weight, Y (kN/m³) Fines Content, FC (%) Undrained Shear Strength, su (kPa) Sensitivity, St Corrected Cone Resistance, qt (MPa) Graphic Log 1. Schmertmann78; R&L86 2. Mayne (2007) - Y bulk . R&W 98 and NCEER 2001 5 10 (q - ...)N, where N, 20 (q - ...)N, where N, 17.5 Mayne (2007 Mayne (2007 Depth (m) 3. Boulanger and Idriss (2014) <u>8</u> 100 200 300 400 -500 Ē Sleeve Friction Resistance, f. (kPa) 300 0 12.5 37.5 25 50 75 100 0 100 200 25 50 8 12 16 24 X × 1---1 2---2 3---3 2 Ξ 5 4---4 Part and 5----5 Ŧ Ŧ 6---6 7---7 8---8 Ş 9---9 × \times ×× 33 ХŤ CONE ID S15-CF P.1486 TEST TYPE CPTU ZERO VALUES : TE2 ____ Groundwater CONE AREA 15cm² APPLICATION CLASS : 2 Transducer Pre Post Difference Level CONE AREA RATIO 0.79 RIG CPT 007 293 mV 298 mV 0.055 MPa Тір FILTER POSITION u2 OPERATOR : AC Sleeve 301 mV 307 mV 0.004 kPa Dissipation : 1190415-CPT 02 FILTER TYPE HDPE FILE NAME Pore Pressure 2 283 mV 308 mV 0.007 kPa Test FRICTION REDUCER : None WEATHER : Sunny & Mild X-Y Inclinometer 2513 mV 2479 mV

CPT LOG 03

IN SITU PointID **CPT 02** SITE INVESTIGATION Working with: CLIENT : Terra Consult EASTING Remark: SHEET : 2 OF 2 STATUS NORTHING Test refused on tip resistance. : Final **PROJECT: Tilbury** ELEVATION : 0.000 m OD TEST DATE : 17/09/2019 LOCATION : Ti bury CHECKED BY : LD PLOT DATE : 19/09/2019 PROJECT No. : 1190415 METHOD : ISO 22476-1:2012 **TERMINATION REASON : Refusal** Unit Weight, Y (kN/m³) Fines Content, FC (%) Undrained Shear Strength, su (kPa) Sensitivity, St Corrected Cone Resistance, qt (MPa) Graphic Log 1. Schmertmann78; R&L86 2. Mayne (2007) - Y bulk 1. R&W 98 and NCEER 2001 5 10 LB. s. (q. - .)N., where N. 20 BE. s. (q. - .)N., where N. 17.5 1. Mayne (2007 1. Mayne (2007 Depth (m) 3. Boulanger and Idriss (2014) <u>S</u> 100 200 300 400 -500 Ē Sleeve Friction Resistance, f. (kPa) 200 300 0 12.5 37.5 12 16 25 50 75 100 0 100 25 50 8 20 24 ××× × × \times 11---11 × 5 × × × × × Х 12— --12 × × × X × х 13---13 × x ____ z — × 14---14 - × × 15--15 × ____ 16-0.0 Ł Terminated at 16 54 m Refusal 17---17 18---18 19---19 CONE ID S15-CF P.1486 TEST TYPE CPTU ZERO VALUES : TE2 CONE AREA 15cm² APPLICATION CLASS : 2 Transducer Pre Post Difference Level CONE AREA RATIO : 0.79 RIG CPT 007 298 mV 0.055 MPa Тір 293 mV FILTER POSITION u2 OPERATOR AC Sleeve 301 mV 307 mV 0.004 kPa Dissipation : 1190415-CPT 02 FILTER TYPE HDPE FILE NAME Pore Pressure 2 283 mV 308 mV 0.007 kPa Test FRICTION REDUCER : None WEATHER : Sunny & Mild X-Y Inclinometer 2513 mV 2479 mV



IN SITU PointID **CPT 03** SITE INVESTIGATION Working with: CLIENT : Terra Consult EASTING Remark: SHEET : 1 OF 2 NORTHING Test refused on tip resistance. STATUS : Final **PROJECT: Tilbury ELEVATION** : 0.000 m OD TEST DATE : 17/09/2019 LOCATION : Ti bury CHECKED BY : LD PLOT DATE : 19/09/2019 PROJECT No. : 1190415 : ISO 22476-1:2012 **TERMINATION REASON : Refusal** METHOD Inclination () Cone Resistance, q_e (MPa) In Situ Pore Pressure, u₀ (kPa) hic Log Friction Ratio, R_f (%) Pore Pressure Ratio, Ba 5 10 Soil Behaviour Type: Material Description Depth (m) Robertson et al. 1986 oc Rf Porewater Pressure, u₂ (kPa) - 2 100 200 300 400 500 Ĩ€ Sleeve Friction Resistance, f, (kPa) 10 15 -0.6 -0.1 0.9 1 2 3 4 5 6 7 8 9 10 11 8 -300 0 300 600 900 -5 0 5 04 1.4 High strength sandy SILT to clayey SILT Very low strength to low strength CLAY 1---1 (3) locally organic 2---2 3---3 Ŧ 4--_1 High strength to very high strength sandy SILT to clayey SILT (6) 5---5 + 6 -6 Loose to medium dense silty SAND to 8---8 × sandy SILT (7) with a layer of clay 1× 9--_0 i 🐔 × 0 70 | | | | |x Medium strength CLAY to silty CLAY (4) METHOD: Robertson et al. 1986 qc Rf CONE ID S15-CF P.1486 TEST TYPE CPTU ZERO VALUES : TE2 groundwater CONE AREA 15cm² APPLICATION CLASS : 2 Transducer Pre Post Difference 1 - Sensitive fine grained material 5 - Clayey SILT to sity CLAY 9-SAND Level CONE AREA RATIO : 0.79 RIG CPT 007 294 mV 298 mV 0.044 MPa Тір 6 - Sandy SILT to clayey SILT 10 - Gravely SAND to SAND 2 - Organic material FILTER POSITION u2 OPERATOR AC Sleeve 303 mV 306 mV 0.002 kPa Dissipation 3-CLAY 7 - Silty SAND to sandy SILT 11 - Very stiff fine grained : 1190415-CPT 03 FILTER TYPE HDPE FILE NAME Pore Pressure 2 275 mV 299 mV 0.007 kPa Test 12 - SAND to clayey SAND 4 - SIIty CLAY to CLAY 8 - SAND to si ty SAND FRICTION REDUCER : None WEATHER : Sunny & Mild X-Y Inclinometer 2401 mV 2431 mV

CPT LOG 01

IN SITU			CPT LOG 01
SITE INVESTIGATION Working with:		PointID	CPT 03
CLIENT : Terra Consult PROJECT : Tilbury LOCATION : Tibury PROJECT No. : 1190415	EASTING : NORTHING : ELEVATION : 0.000 m OD CHECKED BY : LD TERMINATION REASON : Refusal	Remark: Test refused on tip resistance.	SHEET : 2 OF 2 STATUS : Final TEST DATE : 17/09/2019 PLOT DATE : 19/09/2019 METHOD : ISO 22476-1:2012
E 5 10 15 20 Friction Ratio, Rr (E 5 10 15 20 Friction Ratio, Rr (E 5 10 15 20 5 10 15 20 10	In Situ Pore Pressure, u ₀ (kPa) Inclination () Porewater Pressure, u ₂ (kPa) — 2 8 8-300 0 300 600 900 -5 0 5 1 15 -0.6	Pore Pressure Ratio, B _q Soil Behaviour Type: Robertson et al. 1988 qc Rf 	Material Description
			X Medium strength CLAY to silty CLAY (4) (continued) X (continued) X
			Image: Same state Image: Same state Image: Same state Image: Same state
17 -17 Refusal 18 18 19 19			
CONE ID : \$15-CF P.1486 TEST TYPE : TE2 CONE AREA : 15cm² APPLICATION CLASS : 2 CONE AREA : 0.79 RIG : CPT 007 FILTER POSITION : u2 OPERATOR : AC FILTER TYPE : HOPE FILE NAME : 1190415-CPT 03 FRICTION REDUCER : None WEATHER : Sunny & Mild	Transducer Pre Post Difference 1 Tip 294 mV 298 mV 0.044 MPa Sleeve 303 mV 306 mV 0.002 kPa Pore Pressure 2 275 mV 299 mV 0.007 kPa	Organic material G - Sandy SILT to clayey SILT GLAY CLAY 7 - Sitty SAND to sandy SILT	-SAND -SAND ID - Gravely SAND to SAND II - Very stirt fine grained II - SAND to drayey SAND II - SAND to drayey SAND II - SAND to drayey SAND

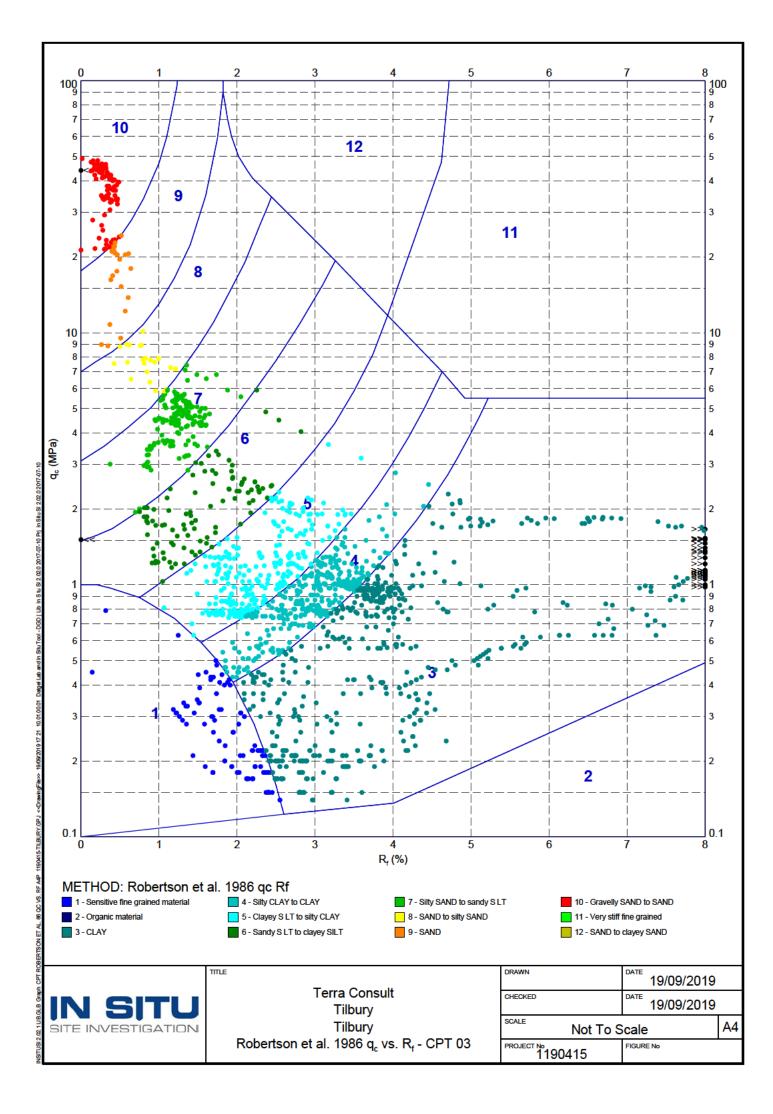
IN SITU	CPT LOG 02
SITE INVESTIGATION Working with:	PointID CPT 03
CLIENTTerra ConsultEASTINGRemark: NORTHINGPROJECT:TilburyELEVATION0.000 m ODLOCATIONTi buryCHECKED BYLDPROJECT No.:1190415TERMINATION REASON : Refusal	SHEET : 1 OF 2 sistance. STATUS : Final TEST DATE : 17/09/2019 PLOT DATE : 19/09/2019 METHOD : ISO 22476-1:2012
E Corrected Cone Resistance, q ₁ (MPa) SPT N ₆₀ Relative Density, D ₁ (%) 0 5 10 15 20 0 5 10 15 20 0 100 200 300 400 500 Sleeve Friction Resistance, f ₄ (kPa) 0 1 2 3 4 5 0 5 10 15 20 25 30 35 40 45 0 25 50 75	Friction Angle, ♦' (deg) 3 3 5
Image: Concernment of the system of the s	Groundwate Groundwate Level Dissipation Test

IN SITU									CPT LOG 02
SITE INVESTIGATION Working with	C.						PointID	CPT 03	i
CLIENT : Terra Consult PROJECT: Tilbury LOCATION : Tibury PROJECT No. : 1190415		EASTING : Remark: NORTHING : Test refused on tip refused on t			esistance. SHEET : 2 OF 2 STATUS : Final TEST DATE : 17/09/2019 PLOT DATE : 19/09/2019 METHOD : ISO 22476-				
E 5 10 15 20 5 10 15 20 20 300 400 500 5 0 100 200 300 400 500 500 6 0 5 100 200 300 400 500 7 0 100 200 300 400 500 8 0 Steeve Friction Resistance, f. (kPa) 500 500 500 500	Non-normalized Soil Beh Robertsor	aviour Type Index, I _{sar} (2010) 	1. Rob. & W 2. Jeff. & Da	SPT N ₆₀ nde 98 Mes 93 15 20 25 30 35	3 . Ř	Relative Density, D, (%) all et al. (1999): Al-Homoud & Wehr (2006) ministrowski et al. (2011) ulhawy & Mayne (1990) 25 50 75		Friction Angle. (deg)	×
11 -11 12 -12 13 -13 14 -14 15 -15 16 -16 17 -17 Refusal	Derise sand to gravely sand	Image: Clayor all is ally clay Image: Clayor all is ally clayor ally clayor ally clayor all is ally clayor ally clayor ally clayor ally clayor ally clayor ally clayo				Derive			
CONE AREA : 15cm² APPLICATION CLASS CONE AREA RATIO : 0.79 RIG FILTER POSITION : u2 OPERATOR	: TE2 : 2 : CPT 007 : AC : 1190415-CPT 03 : Sunny & Mild	Transducer Tip Sleeve Pore Pressure 2 X-Y Inclinometer	294 mV 29 303 mV 30 275 mV 29	VALUES St Difference 18 mV 0.044 MPa 16 mV 0.002 kPa 9 mV 0.007 kPa 131 mV			I	<u>.</u>	Groundwate Level □ Dissipation Test

IN SITU PointID **CPT 03** SITE INVESTIGATION Working with: CLIENT : Terra Consult EASTING Remark: SHEET : 1 OF 2 STATUS NORTHING Test refused on tip resistance. : Final **PROJECT: Tilbury** ELEVATION : 0.000 m OD TEST DATE : 17/09/2019 : Ti bury LOCATION CHECKED BY : LD PLOT DATE : 19/09/2019 PROJECT No. : 1190415 METHOD : ISO 22476-1:2012 **TERMINATION REASON : Refusal** Unit Weight, **Y** (kN/m³) Fines Content, FC (%) Undrained Shear Strength, su (kPa) Sensitivity, St Corrected Cone Resistance, qt (MPa) Graphic Log 1. Schmertmann78; R&L86 2. Mayne (2007) - Y bulk . R&W 98 and NCEER 2001 5 10 (q - ...)N, where N, 20 (q - ...)N, where N, 17.5 . Mayne (200 . Mayne (200 Depth (m) . Boulanger and Idriss (2014) <u>8</u> 100 200 300 400 -500 Ĩ€ Sleeve Friction Resistance, f. (kPa) 300 0 12.5 37.5 25 50 75 100 100 200 25 50 8 12 16 24 X 1---1 2---2 3---3 Ξ 4---4 5---5 + -6 6 X × 8---8 ٦ (9x CONE ID CPTU ZERO VALUES S15-CF P.1486 TEST TYPE TE2 Groundwater CONE AREA 15cm² APPLICATION CLASS : 2 Transducer Pre Post Difference Level CONE AREA RATIO 0.79 RIG CPT 007 294 mV 298 mV 0.044 MPa Tip FILTER POSITION u2 OPERATOR AC Sleeve 303 mV 306 mV 0.002 kPa Dissipation : 1190415-CPT 03 FILTER TYPE HDPE FILE NAME Pore Pressure 2 275 mV 299 mV 0.007 kPa Test FRICTION REDUCER : None WEATHER : Sunny & Mild X-Y Inclinometer 2401 mV 2431 mV

IN SITU PointID **CPT 03** SITE INVESTIGATION Working with: CLIENT : Terra Consult EASTING Remark: SHEET : 2 OF 2 STATUS NORTHING Test refused on tip resistance. : Final **PROJECT: Tilbury ELEVATION** : 0.000 m OD TEST DATE : 17/09/2019 LOCATION : Ti bury CHECKED BY : LD PLOT DATE : 19/09/2019 PROJECT No. : 1190415 METHOD : ISO 22476-1:2012 **TERMINATION REASON : Refusal** Unit Weight, Y (kN/m³) Fines Content, FC (%) Undrained Shear Strength, su (kPa) Sensitivity, St Corrected Cone Resistance, qt (MPa) Graphic Log 1. Schmertmann78; R&L86 2. Mayne (2007) - Y bulk 1. R&W 98 and NCEER 2001 5 10 LB. s. (q. - ...)N., where N. 20 BE. s. (q. - ...)N., where N. 17.5 1. Mayne (2007 1. Mayne (2007) Depth (m) 3. Boulanger and Idriss (2014) <u>S</u> 100 200 300 400 -500 Ē Sleeve Friction Resistance, f. (kPa) 100 300 0 12.5 37.5 16 25 50 75 100 200 25 50 8 12 20 24 × _____ × 11 ---11 × - - × - -12---12 - × ____ _ 13--13 × +Х × × 14-×× --14 × × × 15---1 × \times :0 Ó 16-0 -16 o Terrhinated at 16 59 m Refusal. 17---17 18---18 19---19 CONE ID S15-CF P.1486 TEST TYPE CPTU ZERO VALUES : TE2 CONE AREA 15cm² APPLICATION CLASS : 2 Transducer Pre Post Difference Level CONE AREA RATIO : 0.79 RIG CPT 007 294 mV 298 mV 0.044 MPa Tip FILTER POSITION u2 OPERATOR AC Sleeve 303 mV 306 mV 0.002 kPa Dissipation : 1190415-CPT 03 FILTER TYPE HDPE FILE NAME Pore Pressure 2 275 mV 299 mV 0.007 kPa Test FRICTION REDUCER : None WEATHER : Sunny & Mild X-Y Inclinometer 2401 mV 2431 mV

CPT LOG 03



IN SITU PointID **CPT 04** SITE INVESTIGATION Working with: CLIENT : Terra Consult EASTING Remark: SHEET : 1 OF 2 NORTHING Test refused on tip resistance. STATUS : Final **PROJECT: Tilbury ELEVATION** : 0.000 m OD TEST DATE : 17/09/2019 LOCATION : Ti bury CHECKED BY : LD PLOT DATE : 19/09/2019 PROJECT No. : 1190415 TERMINATION REASON : Refusal METHOD : ISO 22476-1:2012 Inclination () Cone Resistance, q_e (MPa) In Situ Pore Pressure, u₀ (kPa) aphic Log Friction Ratio, R_f (%) Pore Pressure Ratio, B_q _ _ 5 10 Soil Behaviour Type: Material Description Depth (m) Robertson et al. 1986 oc Rf Porewater Pressure, u₂ (kPa) 100 - 2 200 300 400 -500 Ĩ€ Sleeve Friction Resistance, f, (kPa) 10 15 -0.6 -0.1 0.9 8 -300 0 300 600 900 -5 0 5 04 1.4 1 2 3 4 5 6 7 8 9 10 11 x High strength becoming very high strength CLAY to silty CLAY (4) × 0.85 1---1 Low strength organic material (2) 20 . . . Very low strength to low strength CLAY ∇ 2---2 3---3 Ξ 4---4 5----5 -- 1-1 Ŧ --6 6 11 Low strength organic material (2) r 2 7.00 7---7 Very low strength CLAY (3) locally organic 8---8 듵 9---9 11 11 METHOD: Robertson et al. 1986 qc Rf CONE ID S15-CF P.1486 TEST TYPE CPTU ZERO VALUES : TE2 groundwater CONE AREA 15cm² APPLICATION CLASS : 2 Transducer Pre Post Difference 1 - Sensitive fine grained material 5 - Clayey SILT to sity CLAY 9-SAND Level CONE AREA RATIO : 0.79 RIG CPT 007 294 mV 0.011 MPa Тір 295 mV 10 - Gravely SAND to SAND 2 - Organic material 6 - Sandy SILT to clayey SILT FILTER POSITION u2 OPERATOR AC Sleeve 302 mV 304 mV 0.001 kPa Dissipation 3-CLAY 7 - Silty SAND to sandy SILT 11 - Very stiff fine grained : 1190415-CPT 04 FILTER TYPE HDPE FILE NAME Pore Pressure 2 283 mV 285 mV 0.001 kPa Test 12 - SAND to clayey SAND 4 - SIIty CLAY to CLAY 8 - SAND to si ty SAND FRICTION REDUCER : None WEATHER : Sunny & Mild X-Y Inclinometer 2391 mV 2499 mV

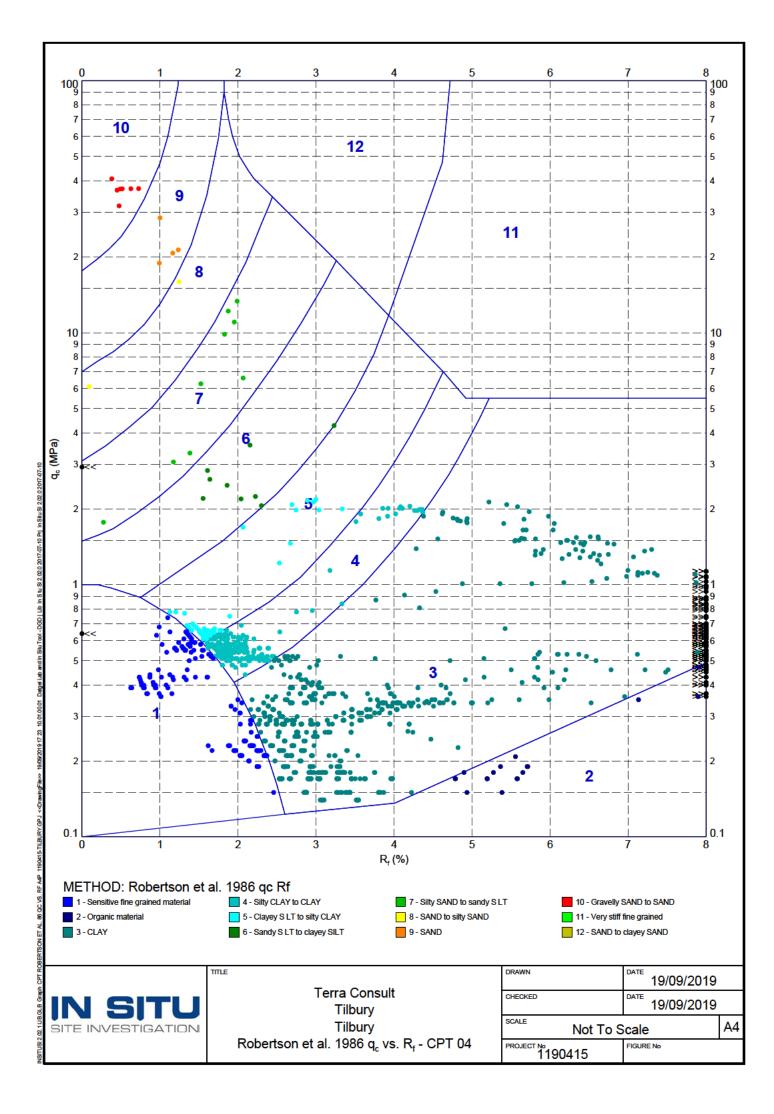
CPT LOG 01 IN SITU PointID **CPT 04** SITE INVESTIGATION Working with: CLIENT : Terra Consult EASTING Remark: SHEET : 2 OF 2 NORTHING Test refused on tip resistance. STATUS : Final **PROJECT: Tilbury ELEVATION** : 0.000 m OD TEST DATE : 17/09/2019 LOCATION : Ti bury CHECKED BY : LD PLOT DATE : 19/09/2019 PROJECT No. : 1190415 TERMINATION REASON : Refusal METHOD : ISO 22476-1:2012 Inclination () Cone Resistance, q_e (MPa) In Situ Pore Pressure, u₀ (kPa) aphic Log Friction Ratio, R₁(%) Pore Pressure Ratio, B_q _ _ 5 10 15 Soil Behaviour Type: Material Description Robertson et al. 1986 oc Rf Ē Porewater Pressure, u₂ (kPa) <u>8</u> - 2 100 200 300 400 -500 Depth (ΞĒ Sleeve Friction Resistance, f, (kPa) 10 15 -0.6 0.9 8 -300 0 300 600 900 -5 0 5 -01 04 1.4 1 2 3 4 5 6 7 8 9 10 11 \leq Very low strength CLAY (3) locally Σ organic (continued F 11.40 Low strength locally medium strength CLAY to silty CLAY (4) 12---12 - 1-4 +++x X 13---13 X x -14---14 15— --15 - 1-1 ++++ x. Ŀ 15.80 5 Medium dense becoming very dense 16--16 16.24 gravelly SAND to SAND (10) Terminated at 16 24 m Refusal 17---1 11 18---18 19---19 11 METHOD: Robertson et al. 1986 qc Rf CONE ID S15-CF P.1486 TEST TYPE CPTU ZERO VALUES : TE2 groundwater CONE AREA 15cm² APPLICATION CLASS 2 Transducer Pre Post Difference 1 - Sensitive fine grained material 5 - Clayey SILT to sity CLAY 9-SAND Level CONE AREA RATIO : 0.79 RIG CPT 007 0.011 MPa Тір 294 mV 295 mV 2 - Organic material 6 - Sandy SILT to clayey SILT 10 - Gravely SAND to SAND FILTER POSITION u2 OPERATOR AC Sleeve 302 mV 304 mV 0.001 kPa Dissipation 3-CLAY 7 - Silty SAND to sandy SILT 11 - Very stiff fine grained : 1190415-CPT 04 FILTER TYPE HDPE FILE NAME Pore Pressure 2 283 mV 285 mV 0.001 kPa Test 12 - SAND to clayey SAND 4 - SIIty CLAY to CLAY 8 - SAND to si ty SAND FRICTION REDUCER WEATHER : Sunny & Mild X-Y Inclinometer 2391 mV 2499 mV : None

IN SITU		CPT LOG 02
SITE INVESTIGATION Working with:		PointID CPT 04
CLIENT : Terra Consult PROJECT: Tilbury LOCATION : Ti bury PROJECT No. : 1190415		emark: est refused on tip resistance. SHEET : 1 OF 2 STATUS : Final TEST DATE : 17/09/2019 PLOT DATE : 19/09/2019 METHOD : ISO 22476-1:2012
E 5 10 15 20 5 10 15 20 20 300 400 500 Mon-normalized Soil Behar Robertson (5 10 10 200 300 400 500	(2010) 1. Hold & Wildle 98 1. Blaid et 2. Jarrick 1. Blaid et 2. Jar	
2 -2 -2		
CONE ID : S15-CF P.1486 TEST TYPE : TE2 CONE AREA : 15cm² APPLICATION CLASS : 2 CONE AREA RATIO : 0.79 RIG : CPT 007 FILTER POSITION : u2 OPERATOR : AC FILTER TYPE : HDPE FILE NAME : 1190415-CPT 04 FRICTION REDUCER : None WEATHER : Sunny & Mild	CPTU ZERO VALUES Transducer Pre Post Difference Tip 294 mV 295 mV 0.011 MPa Sleeve 302 mV 304 mV 0.001 kPa Pore Pressure 2 283 mV 285 mV 0.001 kPa X-Y Inclinometer 2391 mV 2499 mV	Groundwater Level □III Dissipation Test

IN SITU					CPT LOG 02
SITE INVESTIGATION Working with	n:			PointID CPT 04	
CLIENT : Terra Consult PROJECT: Tilbury LOCATION : Tibury PROJECT No. : 1190415	NC ELI CH	ASTING : ORTHING : LEVATION : 0.000 m OD HECKED BY : LD ERMINATION REASON : Refusal	Remark: Test refused on tip resi		7/09/2019 9/09/2019
E F T Corrected Cone Resistance, q ₁ (MPa) 0 5 10 15 20 10 10 200 300 400 500 10 100 200 300 400 500 10 100 200 300 400 500 10 100 200 300 400 500	Non-normalized Soil Behaviour T Robertson (2010)	Type Index, I _{SBT}) 4 5 0 5 10 15 20 25 30 35 4	Relative Density, D, (%) 1. Sald et al. (1995); Al-kmoud & Wehr (2006) 2. Jamichowski et al. (2011) 3. Kultuary & Mayne (1990) 0. 45 50 0 25 50 75	Friction Angle. \$ (deg) 1. Semest et al. (1993 & 1999) Mayne & Car 2. Roberbook & Carganetia (1953) 3. Ku hawy & Mayne (1990) 100 0 20 40	mpanelia (2005) jet e 0 60 80
11 11 12 12 13 13 14 14 15 15 16 16 Terminated at 16 24 m Refusal 17 17 18 18 19 19	to gravelly s.		Image: constraint of the second state of the second sta		
CONE ID : S15-CF P.1486 TEST TYPE CONE AREA : 15cm² APPLICATION CLASS CONE AREA RATIO : 0.79 RIG FILTER POSITION : u2 OPERATOR FILTER TYPE : HDPE FILE NAME FRICTION REDUCER : None WEATHER	: CPT 007 Tip : AC Slee : 1190415-CPT 04 Por	CPTU ZERO VALUES ransducer Pre Post Difference ip 294 mV 295 mV 0.011 MPa ieeve 302 mV 304 mV 0.001 kPa ore Pressure 2 283 mV 285 mV 0.001 kPa -Y Inclinometer 2391 mV 2499 mV 0.001 kPa		· · · · · ·	Groundwater Level

IN SITU PointID **CPT 04** SITE INVESTIGATION Working with: CLIENT : Terra Consult EASTING Remark: SHEET : 1 OF 2 STATUS NORTHING Test refused on tip resistance. : Final **PROJECT: Tilbury** ELEVATION : 0.000 m OD TEST DATE : 17/09/2019 LOCATION : Ti bury CHECKED BY : LD PLOT DATE : 19/09/2019 PROJECT No. : 1190415 METHOD : ISO 22476-1:2012 **TERMINATION REASON : Refusal** Unit Weight, Y (kN/m³) Corrected Cone Resistance, qt (MPa) Fines Content, FC (%) Undrained Shear Strength, su (kPa) Sensitivity, St Graphic Log 1. Schmertmann78; R&L86 2. Mayne (2007) - Y bulk 1. R&W 98 and NCEER 2001 5 10 15 1. Mayne (2007 1. Mayne (2007 Depth (m) 3. Boulanger and Idriss (2014) <u>S</u> 100 200 300 400 -500 Ĩ€ Sleeve Friction Resistance, f. (kPa) 300 0 12.5 37.5 25 50 75 100 100 200 25 50 8 12 18 20 24 1---1 2---2 3---3 _ _ ___ Ξ 4---4 + 5----5 _ _ ____ ___ 6---6 <u> 11 11</u> 14 7---7 = ____ 8---8 ŝ 9---9 CONE ID S15-CF P.1486 TEST TYPE CPTU ZERO VALUES : TE2 CONE AREA 15cm² APPLICATION CLASS : 2 Transducer Pre Post Difference Level CONE AREA RATIO : 0.79 RIG CPT 007 294 mV 295 mV 0.011 MPa Тір FILTER POSITION u2 OPERATOR : AC Sleeve 302 mV 304 mV 0.001 kPa Dissipation : 1190415-CPT 04 FILTER TYPE HDPE FILE NAME Pore Pressure 2 283 mV 285 mV 0.001 kPa Test FRICTION REDUCER : None WEATHER : Sunny & Mild X-Y Inclinometer 2391 mV 2499 mV

IN SITU			(CPT LOG 03
SITE INVESTIGATION Working with:		Point	D CPT 04	
PROJECT: Tilbury	EASTING : NORTHING : ELEVATION : 0.000 m OD CHECKED BY : LD TERMINATION REASON : Refusal	Remark: Test refused on tip resistance		/09/2019 /09/2019
E 5 10 15 20 Fines Content, I 0 5 10 15 20 1. R&W 98 and NCEER 2001 2. countil et al. (1999) 5 0 100 200 300 400 500 3. Boulanger and lottes (2014) 5 10 15		Sensitivity, S ₁ netman/78, R&L56 Vec (2007) 12.5 25 37.5 50	Unit Weight, Y (kN/m ³) 	Bong Bong Bong Bong Bong Bong Bong Bong
11 11 12 12 13 -13 14 -14 15 -15 16 -16 Terminated at 16 24 m Refusal 17 -17 18 -18				
CONE ID : \$15-CF P.1486 TEST TYPE : TE2 CONE AREA : 15cm ² APPLICATION CLASS : 2 CONE AREA RATIO : 0.79 RIG : CPT 007 FILTER POSITION : u2 OPERATOR : AC FILTER TYPE : HDPE FILE NAME : 1190415-CPT 04 FRICTION REDUCER : None WEATHER : Sunny & Mild	CPTU ZERO VALUES Transducer Pre Post Difference Tip 294 mV 295 mV 0.011 MPa Sleeve 302 mV 304 mV 0.001 kPa Pore Pressure 2 283 mV 285 mV 0.001 kPa X-Y Inclinometer 2391 mV 2499 mV			Groundwater Level



CPT LOG 01 IN SITU PointID **CPT 05** SITE INVESTIGATION Working with: CLIENT : Terra Consult EASTING Remark: SHEET : 1 OF 2 NORTHING STATUS : Final Test refused on tip resistance. **PROJECT: Tilbury ELEVATION** : 0.000 m OD TEST DATE : 17/09/2019 LOCATION : Ti bury CHECKED BY : LD PLOT DATE : 19/09/2019 PROJECT No. : 1190415 TERMINATION REASON : Refusal METHOD : ISO 22476-1:2012 Inclination () Cone Resistance, q_e (MPa) In Situ Pore Pressure, u₀ (kPa) aphic Log Friction Ratio, R_f (%) Pore Pressure Ratio, Bg _ _ 5 10 Soil Behaviour Type: Material Description Depth (m) Robertson et al. 1986 oc Rf Porewater Pressure, u₂ (kPa) <u>8</u> - 2 100 200 300 400 -500 Ĩ€ Sleeve Friction Resistance, f, (kPa) 10 15 -0.6 -01 0.9 6 -300 0 300 600 900 -5 0 5 04 1.4 1 2 3 4 5 6 7 8 9 10 11 x Medium strength locally low strength CLAY to silty CLAY (4) x 0.80 Very low strength CLAY (3) locally 1---1 organic ∇ 2---2 3---3 Ξ ₹ 4---4 5----5 1 Ŧ 5 60 14 Low strength organic material (2) 6 -6 14 Very low strength sensitive fine grained 7---7 (1) 11 8---8 11 9---9 11 METHOD: Robertson et al. 1986 qc Rf CONE ID S15-CF P.1486 TEST TYPE CPTU ZERO VALUES : TE2 groundwater CONE AREA 15cm² APPLICATION CLASS 2 Transducer Pre Post Difference 1 - Sensitive fine grained material 5 - Clayey SILT to sity CLAY 9-SAND Level CONE AREA RATIO : 0.79 RIG CPT 007 0 MPa Тір 295 mV 295 mV 2 - Organic material 6 - Sandy SILT to clayey SILT 10 - Gravely SAND to SAND FILTER POSITION u2 OPERATOR AC Sleeve 304 mV 303 mV -0 001 kPa Dissipation 3-CLAY 7 - Silty SAND to sandy SILT 11 - Very stiff fine grained : 1190415-CPT 05 FILTER TYPE HDPE FILE NAME Pore Pressure 2 277 mV 292 mV 0.004 kPa Test 12 - SAND to clayey SAND 4 - SIIty CLAY to CLAY 8 - SAND to si ty SAND FRICTION REDUCER : None WEATHER : Sunny & Mild X-Y Inclinometer 2414 mV 2598 mV

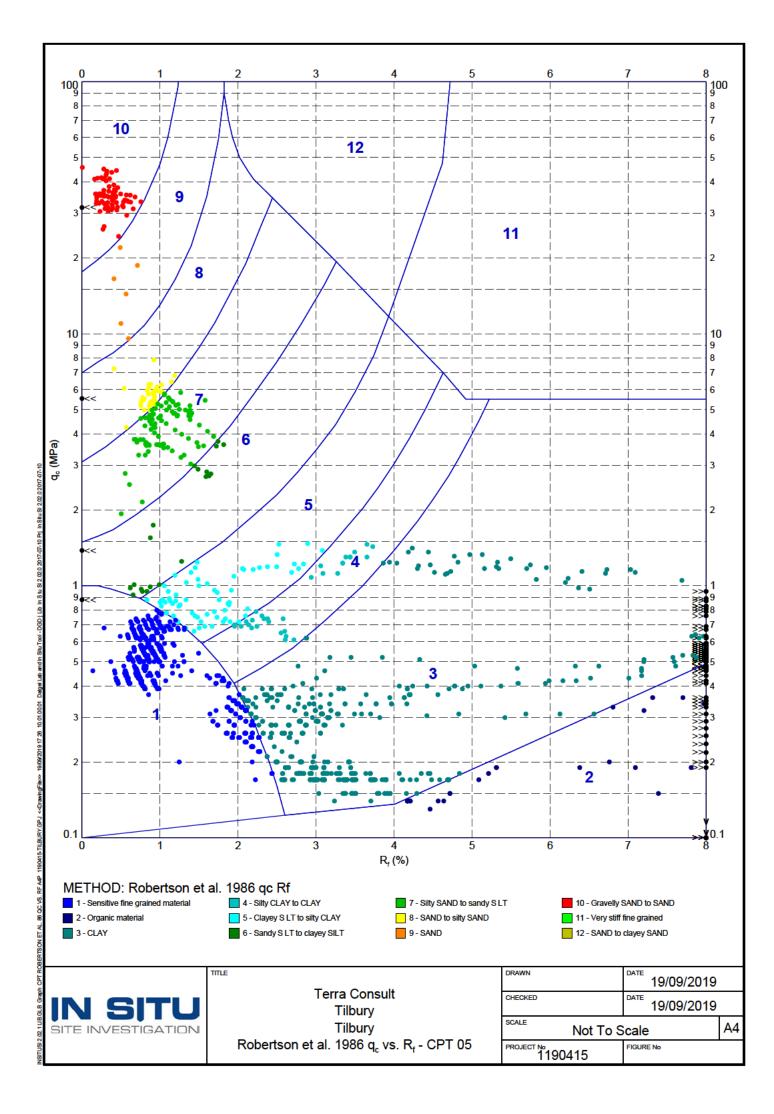
IN SITU PointID **CPT 05** SITE INVESTIGATION Working with: CLIENT : Terra Consult EASTING Remark: SHEET : 2 OF 2 NORTHING STATUS : Final Test refused on tip resistance. **PROJECT: Tilbury ELEVATION** : 0.000 m OD TEST DATE : 17/09/2019 LOCATION : Ti bury CHECKED BY : LD PLOT DATE : 19/09/2019 PROJECT No. : 1190415 TERMINATION REASON : Refusal METHOD : ISO 22476-1:2012 Inclination () Cone Resistance, q_e (MPa) In Situ Pore Pressure, u₀ (kPa) aphic Log Friction Ratio, R₁(%) Pore Pressure Ratio, B_q _ _ 5 10 Soil Behaviour Type: Material Description Robertson et al. 1986 oc Rf Ē Porewater Pressure, u₂ (kPa) <u>8</u> - 2 100 200 300 400 -500 Depth (ΞĒ Sleeve Friction Resistance, f, (kPa) 10 15 -0.6 0.9 8 -300 0 300 600 900 -5 0 5 -0.1 04 1.4 1 2 3 4 5 6 7 8 9 10 11 Very low strength sensitive fine grained (1) (continued) 11-12---12 13---13 Low strength locally medium strength clayey SILT to silty CLAY (5) 14---14 15---15 $\neg \neg \uparrow \uparrow$ × 15.40 × Loose becoming medium dense silty SAND to sandy SILT (7) with layers of clay 16--16 × × 16.80 Very dense gravely SAND to SAND (10) 17---1 Ó 5.1 7 72 Terminated at 17.72 m 18---18 Refusal 19---19 11 METHOD: Robertson et al. 1986 qc Rf CONE ID S15-CF P.1486 TEST TYPE CPTU ZERO VALUES : TE2 groundwater CONE AREA 15cm² APPLICATION CLASS 2 Transducer Pre Post Difference 1 - Sensitive fine grained material 5 - Clayey SILT to sity CLAY 9-SAND Level CONE AREA RATIO : 0.79 RIG CPT 007 0 MPa Тір 295 mV 295 mV 2 - Organic material 10 - Gravely SAND to SAND 6 - Sandy SILT to clayey SILT FILTER POSITION u2 OPERATOR AC Sleeve 304 mV 303 mV -0 001 kPa Dissipation 3-CLAY 7 - Silty SAND to sandy SILT 11 - Very stiff fine grained : 1190415-CPT 05 FILTER TYPE HDPE FILE NAME Pore Pressure 2 277 mV 292 mV 0.004 kPa Test 12 - SAND to clayey SAND 4 - SIIty CLAY to CLAY 8 - SAND to si ty SAND FRICTION REDUCER : None WEATHER : Sunny & Mild X-Y Inclinometer 2414 mV 2598 mV

IN SITU PointID **CPT 05** SITE INVESTIGATION Working with: CLIENT : Terra Consult EASTING Remark: SHEET : 1 OF 2 STATUS NORTHING Test refused on tip resistance. : Final **PROJECT: Tilbury ELEVATION** : 0.000 m OD TEST DATE : 17/09/2019 LOCATION : Ti bury CHECKED BY : LD PLOT DATE : 19/09/2019 PROJECT No. : 1190415 METHOD : ISO 22476-1:2012 **TERMINATION REASON : Refusal** SPT Neo Relative Density, D, (%) Friction Angle, **\$'** (deg) Corrected Cone Resistance, qt (MPa) Graphic Log Non-normalized Soil Behaviour Type Index, I_{SBT} 1. Rob. & Wride 98 2. Jeff. & Davies 93 1. Baidi et al. (1986); Al-Hornoud & Wehr (2006) 1. Senneset et al. (1988 & 1989); Mayne & Campanella (2005) 5 10 15 Robertson (2010) Depth (m) 3. Ku hawy & Mayne (1990) hawy & Mayne (1990 <u>S</u> 100 200 300 400 -500 Ĩ€ Sleeve Friction Resistance, f. (kPa) 2 5 10 15 20 25 30 35 40 45 50 0 25 50 75 100 0 20 40 60 80 × sit _____ All A 1-____ _ _ 2 90 Clay ____ silty ___ 2---2 ____ å ds: nixt ____ Sar in the second se ____ 3---3 _ ŧ ____ 4---4 ŧ 5----5 11 11 -6 6 4 14 <u> 14 14</u> 7---7 ____ ___ ____ _ _ _ 8---8 ____ _ _ 9---9 ~ ___ CONE ID S15-CF P.1486 TEST TYPE CPTU ZERO VALUES : TE2 CONE AREA 15cm² APPLICATION CLASS : 2 Transducer Pre Post Difference Level CONE AREA RATIO : 0.79 RIG CPT 007 0 MPa Tip 295 mV 295 mV FILTER POSITION u2 OPERATOR AC Sleeve 304 mV 303 mV -0 001 kPa Dissipation : 1190415-CPT 05 FILTER TYPE HDPE FILE NAME Pore Pressure 2 277 mV 292 mV 0.004 kPa Test FRICTION REDUCER : None WEATHER : Sunny & Mild X-Y Inclinometer 2598 mV 2414 mV

IN SITU PointID **CPT 05** SITE INVESTIGATION Working with: CLIENT : Terra Consult EASTING Remark: SHEET : 2 OF 2 STATUS NORTHING Test refused on tip resistance. : Final **PROJECT: Tilbury ELEVATION** : 0.000 m OD TEST DATE : 17/09/2019 LOCATION : Ti bury CHECKED BY : LD PLOT DATE : 19/09/2019 PROJECT No. : 1190415 METHOD : ISO 22476-1:2012 **TERMINATION REASON : Refusal** SPT Neo Relative Density, D, (%) Friction Angle, **\$'** (deg) Corrected Cone Resistance, qt (MPa) Non-normalized Soil Behaviour Type Index, I_{SBT} Graphic Log 1. Rob. & Wride 98 2. Jeff. & Davies 93 1. Baidi et al. (1986); Al-Hornoud & Wehr (2006) - 1. Senneset et al. (1988 & 1989); Mayne & Campanelia (2005) 5 10 15 Robertson (2010) Depth (m) 3. Ku hawy & Mayne (1990) nawy & Mayne (1990 <u>S</u> 100 200 300 400 -500 Ĩ€ Sleeve Friction Resistance, f, (kPa) 20 2 5 10 15 20 25 30 35 40 45 50 0 25 50 75 100 0 40 60 80 ____ sit <u>R</u> _ lity Ne. ____ = clav 2 90 Clay silty ____ 8 12---12 _ _ ____ å ŝ Sa _ _ ____ 13---13 \pm ≸ 14---14 × Ś × × 15— --15 × \times ×. 2 16--16 × ٠x ŝ. 2 35 17---17 :0 Ó 0. Terminated at 17.72 m 18---18 Refusal 19---19 CONE ID S15-CF P.1486 TEST TYPE CPTU ZERO VALUES : TE2 CONE AREA 15cm² APPLICATION CLASS : 2 Transducer Pre Post Difference Level CONE AREA RATIO : 0.79 RIG CPT 007 0 MPa Tip 295 mV 295 mV FILTER POSITION u2 OPERATOR AC Sleeve 304 mV 303 mV -0 001 kPa Dissipation : 1190415-CPT 05 FILTER TYPE HDPE FILE NAME Pore Pressure 2 277 mV 292 mV 0.004 kPa Test FRICTION REDUCER : None WEATHER : Sunny & Mild X-Y Inclinometer 2598 mV 2414 mV

IN SITU PointID **CPT 05** SITE INVESTIGATION Working with: CLIENT : Terra Consult EASTING Remark: SHEET : 1 OF 2 STATUS NORTHING Test refused on tip resistance. : Final **PROJECT: Tilbury** ELEVATION : 0.000 m OD TEST DATE : 17/09/2019 LOCATION : Ti bury CHECKED BY : LD PLOT DATE : 19/09/2019 PROJECT No. : 1190415 METHOD : ISO 22476-1:2012 **TERMINATION REASON : Refusal** Unit Weight, Y (kN/m³) Fines Content, FC (%) Undrained Shear Strength, su (kPa) Sensitivity, St Corrected Cone Resistance, qt (MPa) Graphic Log 1. Schmertmann78; R&L86 2. Mayne (2007) - Y bulk 1. R&W 98 and NCEER 2001 5 10 15 8. s, (**q. - e**,)**N,, where N,** 20 E. s, (**q. - e**,)**N**,, where N, 17.5 1. Mayne (2007 1. Mayne (2007 Depth (m) 3. Boulanger and Idriss (2014) <u>S</u> 100 200 300 400 -500 Ĩ€ Sleeve Friction Resistance, f, (kPa) 300 0 12.5 37.5 25 50 75 100 0 100 200 25 50 8 12 16 24 1---1 _ _ 2---2 3---3 ____ Ξ 4---4 ŧ 5----5 _ _ ____ ŧ ___ 11 11 -6 6 4 14 2 <u> 14 14</u> 7---7 ____ 8---8 _ 9---9 _ _ ___ CPTU ZERO VALUES CONE ID S15-CF P.1486 TEST TYPE : TE2 CONE AREA 15cm² APPLICATION CLASS : 2 Transducer Pre Post Difference Level CONE AREA RATIO : 0.79 RIG CPT 007 295 mV 295 mV 0 MPa Tip FILTER POSITION u2 OPERATOR : AC Sleeve 304 mV 303 mV -0 001 kPa Dissipation : 1190415-CPT 05 FILTER TYPE HDPE FILE NAME Pore Pressure 2 277 mV 292 mV 0.004 kPa Test FRICTION REDUCER : None WEATHER : Sunny & Mild X-Y Inclinometer 2598 mV 2414 mV

IN SITU					CPT LOG 03
BITE INVESTIGATION Working with:				PointID CPT	05
CLIENT : Terra Consult PROJECT : Tilbury LOCATION : Tibury PROJECT No. : 1190415	EASTING NORTHING ELEVATION CHECKED BY TERMINATION	: 0.000 m OD : LD I REASON : Refusal	Remark: Test refused on tip re	TEST DATE PLOT DATE	: 2 OF 2 : Final : 17/09/2019 : 19/09/2019 : ISO 22476-1:2012
0 5 10 15	Fines Content, FC (%) MCEER 2001 (1996) Ind lidits (2014)	Undrained Shear Strength, s _u (kPa)	Sensitivity, S _t <u>1. Schnermann78; R&L86</u> 2. Mayne (2007)	Unit Weight, Y 1. Mayne (2007) 1. Mayne (2007) 2. Mayne (2007)	
a us center instance que of 0 25 11 -11 -11 -11 -11 -11 12 -12 -12 -11 -11 -11 13 -13 -13 -13 -14 -14 14 -14 -14 -14 -14 -14 15 -15 -15 -15 -16 -16 17 -17 -17 -17 -17 -17 18 -18 -Terrhinated at 17.72 h -11 -11 -11 19 -19 -19 -11 -11 -11 -11					
T I T CONE ID : S15-CF P.1486 TEST TYPE : TE2 CONE AREA : 15cm ² APPLICATION CLASS : 2 CONE AREA RATIO : 0.79 RIG : CPT 007 FILTER POSITION : u2 OPERATOR : AC FILTER TYPE : HDPE FILE NAME : 1190415-CPT FRICTION REDUCER : None WEATHER : Sunny & Mid	Tip Sleeve 05 Pore Pressure 2	CPTU ZERO VALUES Pre Post Difference 295 mV 295 mV 0 MPa 304 mV 303 mV -0 001 kPa 277 mV 292 mV 0.004 kPa 2598 mV 2414 mV	<u>T ! ! !</u>	<u> </u>	Groundwate



CPT LOG 01 IN SITU PointID **CPT 06** SITE INVESTIGATION Working with: CLIENT : Terra Consult EASTING Remark: SHEET : 1 OF 2 NORTHING Test refused on tip resistance. STATUS : Final **PROJECT: Tilbury ELEVATION** : 0.000 m OD TEST DATE : 17/09/2019 LOCATION : Ti bury CHECKED BY : LD PLOT DATE : 19/09/2019 PROJECT No. : 1190415 TERMINATION REASON : Refusal METHOD : ISO 22476-1:2012 Inclination () Cone Resistance, q_e (MPa) In Situ Pore Pressure, u₀ (kPa) aphic Log Friction Ratio, R_f (%) Pore Pressure Ratio, Ba _ _ 5 10 Soil Behaviour Type: Material Description Robertson et al. 1986 oc Rf Ē Porewater Pressure, u₂ (kPa) 100 - 2 200 300 400 -500 Depth (€ E Sleeve Friction Resistance, f, (kPa) 10 15 -0.6 -0.1 0.9 8 -300 0 300 600 900 -5 0 5 04 1.4 1 2 3 4 5 6 7 8 9 10 11 x Medium strength locally high strength CLAY to silty CLAY (4) locally organic × 1---1 Low strength locally very low strength CLAY (3) 2---2 3---3 1 Ŧ 4---4 5----5 Low strength organic material (2) Ŧ 6---6 6.10 Low strength CLAY (3) 11 7---7 2 00 8---8 Very low strength sensitive fine grained (1) 9---9 1 METHOD: Robertson et al. 1986 qc Rf CONE ID S15-CF P.1486 TEST TYPE TE2 CPTU ZERO VALUES groundwater CONE AREA 15cm² APPLICATION CLASS 2 Transducer Pre Post Difference 1 - Sensitive fine grained material 5 - Clayey SILT to sity CLAY 9-SAND Level CONE AREA RATIO : 0.79 RIG CPT 007 294 mV 294 mV 0 MPa Тір 2 - Organic material 6 - Sandy SILT to clayey SILT 10 - Gravely SAND to SAND FILTER POSITION u2 OPERATOR AC Sleeve 302 mV 305 mV 0.002 kPa Dissipation 3-CLAY 7 - Silty SAND to sandy SILT 11 - Very stiff fine grained : 1190415-CPT 06 FILTER TYPE HDPE FILE NAME Pore Pressure 2 288 mV 290 mV 0.001 kPa Test 12 - SAND to clayey SAND 4 - SIIty CLAY to CLAY 8 - SAND to si ty SAND FRICTION REDUCER : None WEATHER : Sunny & Mild X-Y Inclinometer 2382 mV 2441 mV

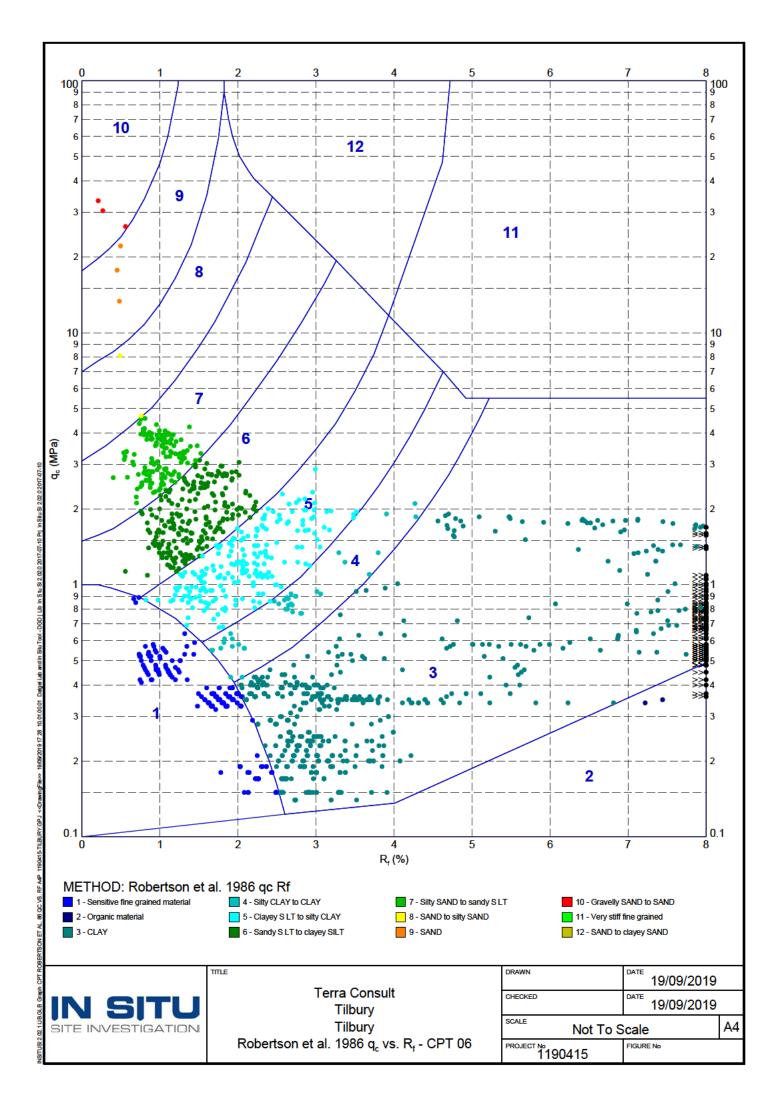
IN SITU PointID **CPT 06** SITE INVESTIGATION Working with: CLIENT : Terra Consult EASTING Remark: SHEET : 2 OF 2 NORTHING Test refused on tip resistance. STATUS : Final **PROJECT: Tilbury ELEVATION** : 0.000 m OD TEST DATE : 17/09/2019 LOCATION : Ti bury CHECKED BY : LD PLOT DATE : 19/09/2019 PROJECT No. : 1190415 TERMINATION REASON : Refusal METHOD : ISO 22476-1:2012 Inclination () Cone Resistance, q_e (MPa) In Situ Pore Pressure, u₀ (kPa) phic Log Friction Ratio, R₁(%) Pore Pressure Ratio, Bg _ _ 5 10 Soil Behaviour Type: Material Description Depth (m) Robertson et al. 1986 oc Rf <u>8</u> Porewater Pressure, u₂ (kPa) - 2 100 200 300 400 -500 Ē Sleeve Friction Resistance, f, (kPa) 10 15 -0.6 0.9 1.4 1 2 3 4 5 6 7 8 9 10 11 8 -300 0 300 600 900 -5 0 5 -01 04 10 20 x Meidum strength to high strength locally very high strength sandy SILT to clayey SILT (6) 11---1 x 12-13-x 1 | | 14-X X 15-Medium strength locally high strength clayey SILT to silty CLAY (5) ¥ 16-16 20 16.42 Dense becoming very dense gravelly SAND to SAND (10) Terminated at 16.42 m Refusal 17---17 18---18 19---19 11 METHOD: Robertson et al. 1986 qc Rf CONE ID S15-CF P.1486 TEST TYPE CPTU ZERO VALUES : TE2 groundwater CONE AREA 15cm² APPLICATION CLASS 2 Transducer Pre Post Difference 1 - Sensitive fine grained material 5 - Clayey SILT to sity CLAY 9-SAND Level CONE AREA RATIO : 0.79 RIG CPT 007 294 mV 0 MPa Тір 294 mV 10 - Gravely SAND to SAND 2 - Organic material 6 - Sandy SILT to clayey SILT FILTER POSITION u2 OPERATOR AC Sleeve 302 mV 305 mV 0.002 kPa Dissipation 3-CLAY 7 - Silty SAND to sandy SILT 11 - Very stiff fine grained : 1190415-CPT 06 FILTER TYPE HDPE FILE NAME Pore Pressure 2 288 mV 290 mV 0.001 kPa Test 12 - SAND to clayey SAND 4 - SIIty CLAY to CLAY 8 - SAND to si ty SAND FRICTION REDUCER : None WEATHER : Sunny & Mild X-Y Inclinometer 2382 mV 2441 mV

IN SITU PointID **CPT 06** SITE INVESTIGATION Working with: CLIENT : Terra Consult EASTING Remark: SHEET : 1 OF 2 STATUS NORTHING Test refused on tip resistance. : Final **PROJECT: Tilbury ELEVATION** : 0.000 m OD TEST DATE : 17/09/2019 LOCATION : Ti bury CHECKED BY : LD PLOT DATE : 19/09/2019 PROJECT No. : 1190415 METHOD : ISO 22476-1:2012 **TERMINATION REASON : Refusal** SPT Neo Relative Density, D, (%) Friction Angle, **\$'** (deg) Corrected Cone Resistance, qt (MPa) Graphic Log Non-normalized Soil Behaviour Type Index, I_{SBT} 1. Rob. & Wride 98 2. Jeff. & Davies 93 1. Baidi et al. (1986); Al-Hornoud & Wehr (2006) - 1. Senneset et al. (1988 & 1989); Mayne & Campanelia (2005) 5 10 15 Robertson (2010) Depth (m) 3. Ku hawy & Mayne (1990) hawy & Mayne (1990 <u>S</u> 100 200 300 400 -500 Ĩ€ Sleeve Friction Resistance, f. (kPa) 2 5 10 15 20 25 30 35 40 45 50 0 25 50 75 100 0 20 40 60 80 × sit ____ ð À. ≥ 1-_ 2 90 Clay silty ____ 8 2 ---2 å ____ ŝ nixt Sar 붌 _ _ 3-____ --3 ŧ ___ ____ 4---4 ŧ ____ ___ 5----5 + 14 11 4 14 6---6 7---7 8---8 _ 9---9 _ _ ____ Ś ----CONE ID S15-CF P.1486 TEST TYPE CPTU ZERO VALUES : TE2 CONE AREA 15cm² APPLICATION CLASS : 2 Transducer Pre Post Difference Level CONE AREA RATIO : 0.79 RIG CPT 007 294 mV 0 MPa Tip 294 mV FILTER POSITION u2 OPERATOR AC Sleeve 302 mV 305 mV 0.002 kPa Dissipation : 1190415-CPT 06 FILTER TYPE HDPE FILE NAME Pore Pressure 2 288 mV 290 mV 0.001 kPa Test FRICTION REDUCER : None WEATHER : Sunny & Mild X-Y Inclinometer 2382 mV 2441 mV

IN SITU			D-:-40	CPT LOG 02
SITE INVESTIGATION Working with	:		PointID	CPT 06
CLIENT : Terra Consult PROJECT: Tilbury LOCATION : Tibury PROJECT No. : 1190415	EASTING NORTHING ELEVATION CHECKED B TERMINATIO	: : 0.000 m OD Y : LD DN REASON : Refusal	Remark: Test refused on tip resistance.	SHEET 2 OF 2 STATUS Final TEST DATE 17/09/2019 PLOT DATE 19/09/2019 METHOD ISO 22476-1:2012
Corrected Cone Resistance, qt (MPa) 0 5 10 15 20 5 0 100 200 300 400 500 5 8 10 15 - 500 500 500 6 8 10 100 200 300 400 500	Non-normalized Soil Behaviour Type Index, I _{SST} Robertson (2010) 0 1 2 3 4	SPT N _{e0} 	Relative Density, Dr, (%) and ef at. (1996); Al-Homoud & Wehr (2006) antoloxeek ef at. (2001) uihawy & Mayne (1990) 25 50 75 100 0	Friction Angle. ♦' (deg) 1. Sennest et al. (1968 & 1969); Mane & Campanelia (2005) 2. Probertion & Campanelia (1953) 3. Ku havy & Mayne (1950) 20 40 60 80
	Derjee sand to gravelly sand Cands: clean sands to gravelly sands Sands: clean sands to gravelly sands Sands: clean sands to gravelly sands Cands: clean sands Ca		Loose - Corres - Corr	V V V V V V V V V V V V V V V V V V V
16 -16 Terminated at 16.42 m Refusal 17 -17 18 18 18 19 19				
CONE AREA : 15cm ² APPLICATION CLASS CONE AREA RATIO : 0.79 RIG FILTER POSITION : u2 OPERATOR FILTER TYPE : HDPE FILE NAME	: TE2 : CPT 007 : AC : 1190415-CPT 06 : Sunny & Mid : Sunny & Mid	CPTU ZERO VALUES Pre Post Difference 294 mV 294 mV 0 MPa 302 mV 305 mV 0.002 kPa 288 mV 290 mV 0.001 kPa 2382 mV 2441 mV		Groundwater Level □ □ Test

IN SITU PointID **CPT 06** SITE INVESTIGATION Working with: CLIENT : Terra Consult EASTING Remark: SHEET : 1 OF 2 STATUS NORTHING Test refused on tip resistance. : Final **PROJECT: Tilbury** ELEVATION : 0.000 m OD TEST DATE : 17/09/2019 LOCATION : Ti bury CHECKED BY : LD PLOT DATE : 19/09/2019 PROJECT No. : 1190415 METHOD : ISO 22476-1:2012 **TERMINATION REASON : Refusal** Unit Weight, Y (kN/m³) Fines Content, FC (%) Undrained Shear Strength, su (kPa) Sensitivity, St Corrected Cone Resistance, qt (MPa) Graphic Log 1. Schmertmann78; R&L86 2. Mayne (2007) - Y bulk . R&W 98 and NCEER 2001 5 10 15 . s. (q. - e.,)/N., where N., 20 . s. (q. - e.,)/N., where N., 17.5 1. Mayne (2007 1. Mayne (2007 Depth (m) 3. Boulanger and Idriss (2014) <u>S</u> 100 200 300 400 -500 Ĩ€ Sleeve Friction Resistance, f. (kPa) 300 0 12.5 37.5 25 50 75 100 100 200 25 50 8 12 18 20 24 1-2---2 3---3 ___ Ξ s 4---4 ____ ____ ____ 5----5 14 11 Ŧ 14 6---6 ____ -7---7 _ _ ____ 8---8 ____ 9---9 CONE ID S15-CF P.1486 TEST TYPE CPTU ZERO VALUES : TE2 CONE AREA 15cm² APPLICATION CLASS : 2 Transducer Pre Post Difference Level CONE AREA RATIO : 0.79 RIG CPT 007 294 mV 294 mV 0 MPa Tip FILTER POSITION u2 OPERATOR : AC Sleeve 302 mV 305 mV 0.002 kPa Dissipation : 1190415-CPT 06 FILTER TYPE HDPE FILE NAME Pore Pressure 2 288 mV 290 mV 0.001 kPa Test FRICTION REDUCER : None WEATHER : Sunny & Mild X-Y Inclinometer 2382 mV 2441 mV

IN SITU		CPT LOG 03
SITE INVESTIGATION Working with:		PointID CPT 06
PROJECT: Tilbury		Remark: Test refused on tip resistance.SHEET: 2 OF 2 STATUSSTATUS: Final TEST DATE: 17/09/2019 PLOT DATEPLOT DATE: 19/09/2019 METHOD: ISO 22476-1:2012
Corrected Cone Resistance, qt (MPa) Fines Content, 0 5 10 15 20 5 0 100 200 300 400 5 6 5 100 100 200 300 400 500 5 6 100 200 300 400 500 3. Bodrage and Motes (2014) 5 8 5 5 5 5 5 5 6 5 100 200 300 400 500 3. Bodrage and Motes (2014) 5 5 5 5 5 5 5	LB s, (q , /N, where N, 20 EC s, (q , /N, where N, 17.5 US. s, (q , /N, where N, 15	Sensitivity. St Hertmann76; R&L66 (2007) 1. Mayne (2007) 1. Mayne (2007) 2. Mayne (2007) 12.5 25 37.5 50 8 12 16 20 24
1111 1212 1313 1414 1515 1616 Terminated at 16.42 n Refusal		
17 17		
CONE AREA 15cm ² APPLICATION CLASS 2 CONE AREA RATIO 0.79 RIG CPT 007 FILTER POSITION u2 OPERATOR AC FILTER TYPE HDPE FILE NAME 1190415-CPT 06 FRICTION REDUCER None WEATHER Sunny & Mild	Transducer Pre Post Difference Tip 294 mV 294 mV 0 MPa Sleeve 302 mV 305 mV 0.002 kPa Pore Pressure 2 288 mV 290 mV 0.001 kPa X-Y Inclinometer 2382 mV 2441 mV	Groundwater Level □



IN SITU PointID **CPT 07** SITE INVESTIGATION Working with: CLIENT : Terra Consult EASTING Remark: SHEET : 1 OF 2 NORTHING STATUS : Final Test refused on tip resistance. **PROJECT: Tilbury ELEVATION** : 0.000 m OD TEST DATE : 18/09/2019 LOCATION : Ti bury CHECKED BY : LD PLOT DATE : 19/09/2019 PROJECT No. : 1190415 **TERMINATION REASON : Refusal** METHOD : ISO 22476-1:2012 Inclination () Cone Resistance, q_e (MPa) In Situ Pore Pressure, u₀ (kPa) aphic Log Friction Ratio, R₁(%) Pore Pressure Ratio, B_q _ _ 5 10 Soil Behaviour Type: Material Description Depth (m) Robertson et al. 1986 oc Rf Porewater Pressure, u₂ (kPa) 100 - 2 200 300 400 -500 Ĩ€ Sleeve Friction Resistance, f, (kPa) 10 15 -0.6 -0.1 0.9 8 -300 0 300 600 900 -5 0 5 0.4 1.4 1 2 3 4 5 6 7 8 9 10 11 High strength sandy SILT to clayey SILT (6) × 0 60 Medium strength becoming low strength CLAY (3) 1- ∇ 2---2 Low strength locally very low strength sensitive fine grained (1) 3---3 Ŧ 4---4 5----5 Ŧ --6 6 7---7 8---8 ş 9---9 5 MM METHOD: Robertson et al. 1986 qc Rf CONE ID S15-CF P.1486 TEST TYPE TE2 CPTU ZERO VALUES groundwater CONE AREA 15cm² APPLICATION CLASS 2 Transducer Pre Post Difference 1 - Sensitive fine grained material 5 - Clayey SILT to sity CLAY 9-SAND Level CONE AREA RATIO : 0.79 RIG CPT 007 289 mV 0.044 MPa Тір 293 mV 6 - Sandy SILT to clayey SILT 10 - Gravely SAND to SAND 2 - Organic material FILTER POSITION u2 OPERATOR AC Sleeve 303 mV 305 mV 0.001 kPa Dissipation 3-CLAY 7 - Silty SAND to sandy SILT 11 - Very stiff fine grained : 1190415-CPT 07 FILTER TYPE HDPE FILE NAME Pore Pressure 2 280 mV 274 mV -0 002 kPa Test 12 - SAND to clayey SAND 4 - SIIty CLAY to CLAY 8 - SAND to si ty SAND FRICTION REDUCER : None WEATHER : Sunny & Mild X-Y Inclinometer 2301 mV 2437 mV

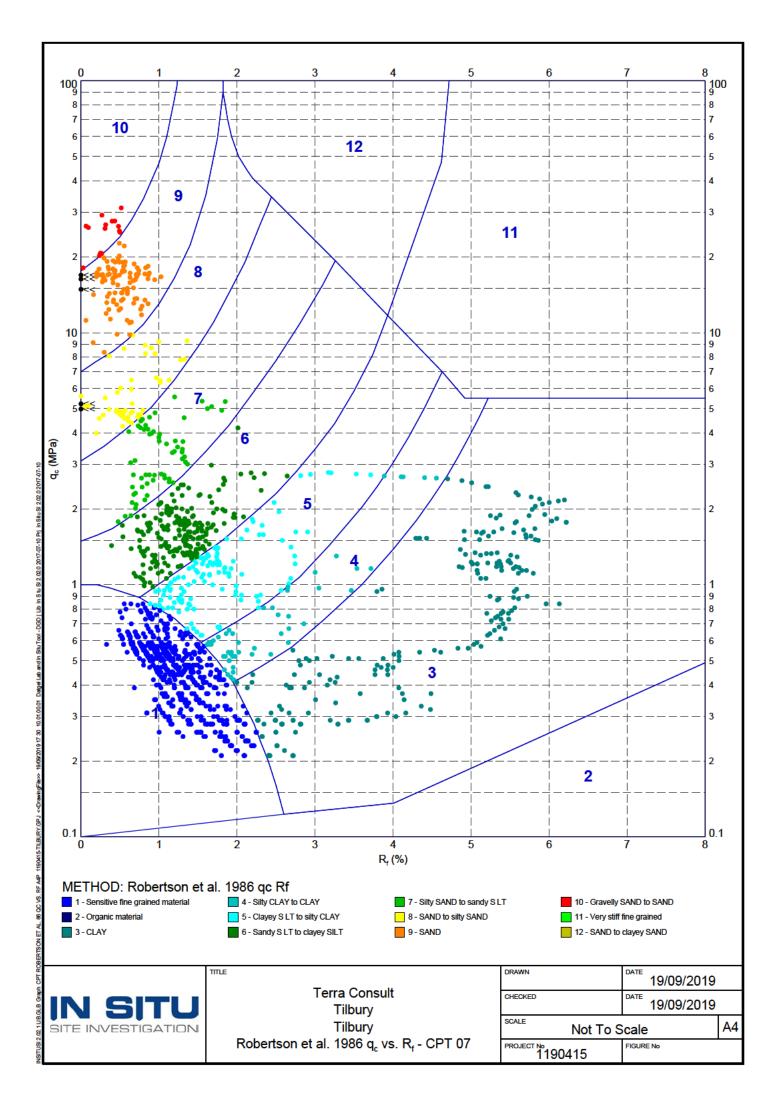
CPT LOG 01 IN SITU PointID **CPT 07** SITE INVESTIGATION Working with: CLIENT : Terra Consult EASTING Remark: SHEET : 2 OF 2 NORTHING Test refused on tip resistance. STATUS : Final **PROJECT: Tilbury ELEVATION** : 0.000 m OD TEST DATE : 18/09/2019 LOCATION : Ti bury CHECKED BY : LD PLOT DATE : 19/09/2019 PROJECT No. : 1190415 TERMINATION REASON : Refusal METHOD : ISO 22476-1:2012 Inclination () Cone Resistance, q_e (MPa) In Situ Pore Pressure, u₀ (kPa) aphic Log Friction Ratio, R₁(%) Pore Pressure Ratio, Bg 5 10 Soil Behaviour Type: Material Description Depth (m) Robertson et al. 1986 oc Rf <u>8</u> Porewater Pressure, u₂ (kPa) - 2 100 200 300 400 500 Ē Sleeve Friction Resistance, f, (kPa) 10 15 -0.6 -01 1 2 3 4 5 6 7 8 9 10 11 8 -300 0 300 600 900 -5 0 5 04 0.9 1.4 10 20 X Medium strength to high strength CLAY to silty CLAY (4) 5 x 11---1 12-13-3 40 1 Loose SAND to silty SAND (8) with a 13.80 layer of clay 14-Medium strength clayey SILT to silty CLAY (5) X 14.20 Medium dense to dense gravelly SAND to SAND (10) with a layer of clay Ó 15---14 15 50 15.82 Very dense gravelly SAND to SAND (10) -Terminated at 15 82 m 16---16 Refusal 17-18---18 19---19 11 METHOD: Robertson et al. 1986 qc Rf CONE ID S15-CF P.1486 TEST TYPE CPTU ZERO VALUES : TE2 groundwater CONE AREA 15cm² APPLICATION CLASS 2 Transducer Pre Post Difference 1 - Sensitive fine grained material 5 - Clayey SILT to sity CLAY 9-SAND Level CONE AREA RATIO : 0.79 RIG CPT 007 0.044 MPa Тір 289 mV 293 mV 2 - Organic material 6 - Sandy SILT to clayey SILT 10 - Gravely SAND to SAND FILTER POSITION u2 OPERATOR AC Sleeve 303 mV 305 mV 0.001 kPa Dissipation 3-CLAY 7 - Silty SAND to sandy SILT 11 - Very stiff fine grained : 1190415-CPT 07 FILTER TYPE HDPE FILE NAME Pore Pressure 2 280 mV 274 mV -0 002 kPa Test 12 - SAND to clayey SAND 4 - SIIty CLAY to CLAY 8 - SAND to si ty SAND FRICTION REDUCER WEATHER : Sunny & Mild X-Y Inclinometer 2301 mV 2437 mV : None

IN SITU PointID **CPT 07** SITE INVESTIGATION Working with: CLIENT : Terra Consult EASTING Remark: SHEET : 1 OF 2 STATUS NORTHING Test refused on tip resistance. : Final **PROJECT: Tilbury ELEVATION** : 0.000 m OD TEST DATE : 18/09/2019 LOCATION : Ti bury CHECKED BY : LD PLOT DATE : 19/09/2019 PROJECT No. : 1190415 METHOD : ISO 22476-1:2012 **TERMINATION REASON : Refusal** SPT Neo Relative Density, D, (%) Friction Angle, **\$'** (deg) Corrected Cone Resistance, qt (MPa) Non-normalized Soil Behaviour Type Index, I_{SBT} Graphic Log 1. Rob. & Wride 98 2. Jeff. & Davies 93 1. Baidi et al. (1986); Al-Hornoud & Wehr (2006) - 1. Senneset et al. (1988 & 1989); Mayne & Campanelia (2005) 5 10 15 Robertson (2010) Depth (m) 3. Ku hawy & Mayne (1990) hawy & Mayne (1990 <u>S</u> 100 200 300 400 -500 Ĩ€ Sleeve Friction Resistance, f. (kPa) 2 5 0 5 10 15 20 25 30 35 40 45 50 0 25 50 75 100 0 20 40 60 80 X \times ? x À. _ 1-_ _ 2 90 Clay ____ ___ siltv තී 2---2 _ _ õ ŝ nixt ____ Sar in the second se ____ 3---3 ŧ ____ ____ _ _ ____ 4---4 ŧ 2 ____ ____ 5----5 ŝ, + ____ ____ ____ ક્ 6---6 ____ 5 ટ્રે ≿ ≿ 7---7 _ _ ____ ş ____ Ξ 8---8 9---9 ____ 2 CONE ID S15-CF P.1486 TEST TYPE CPTU ZERO VALUES : TE2 CONE AREA 15cm² APPLICATION CLASS : 2 Transducer Pre Post Difference Level CONE AREA RATIO : 0.79 RIG CPT 007 0.044 MPa Тір 289 mV 293 mV FILTER POSITION u2 OPERATOR AC Sleeve 303 mV 305 mV 0.001 kPa Dissipation : 1190415-CPT 07 FILTER TYPE HDPE FILE NAME Pore Pressure 2 280 mV 274 mV -0 002 kPa Test FRICTION REDUCER : None WEATHER : Sunny & Mild X-Y Inclinometer 2301 mV 2437 mV

IN SITU					CPT LOG 02
SITE INVESTIGATION Working with:				PointID CPT 07	
CLIENT : Terra Consult PROJECT : Tilbury LOCATION : Tibury PROJECT No. : 1190415	EASTING NORTHING ELEVATION CHECKED BY TERMINATION	: : : 0.000 m OD : LD N REASON : Refusal	Remark: Test refused on tip resi		8/09/2019 9/09/2019
E 5 10 15 20 0 5 10 15 20 0 100 200 300 400 500 0 100 200 300 400 500 500 0 Sleeve Friction Resistance, f_k (kPa) 0 0 0 0 0	Non-normalized Soil Behaviour Type Index, I _{BBT} Robertson (2010)	SPT Ne0 1.Rok & Wride 98 2.Jeff. & Davles 93 5.0 5 10 15 20 25 30 35 40 45 50 0	Relative Density, Dr (%) id et al. (1995); Al-Homoud & Wehr (2005) mitblowebi et al. (2001) thowy & Mayne (1990) 25 50 75	Friction Angle, \$ (deg) 1. Semest of at (1968 & 1969); Mayne & Ca 2. Robertson & Campanetic (1963) 3. Ku hawy & Mayne (1990) 100 0 20 40	mpanelia (2005)
11	Image: constraint of the second to gravely send Image: constraint of the second to gravely second t		Image: constraint of the second se		
		$\begin{array}{c ccccccccccccccccccccccccccccccccccc$			
FILTER POSITION : u2 OPERATOR : A0 FILTER TYPE : HDPE FILE NAME : 11	2 Transducer CPT 007 Tip AC Sleeve 1190415-CPT 07 Pore Pressure 2	CPTU ZERO VALUES Pre Post Difference 289 mV 293 mV 0.044 MPa 303 mV 305 mV 0.001 kPa 280 mV 274 mV -0 002 kPa 2301 mV 2437 mV			Groundwater Level

IN SITU PointID **CPT 07** SITE INVESTIGATION Working with: CLIENT : Terra Consult EASTING Remark: SHEET : 1 OF 2 STATUS NORTHING Test refused on tip resistance. : Final **PROJECT: Tilbury** ELEVATION : 0.000 m OD TEST DATE : 18/09/2019 LOCATION : Ti bury CHECKED BY : LD PLOT DATE : 19/09/2019 PROJECT No. : 1190415 METHOD : ISO 22476-1:2012 **TERMINATION REASON : Refusal** Unit Weight, Y (kN/m³) Corrected Cone Resistance, qt (MPa) Fines Content, FC (%) Undrained Shear Strength, su (kPa) Sensitivity, St Graphic Log 1. Schmertmann78; R&L86 2. Mayne (2007) - Y bulk 1. R&W 98 and NCEER 2001 5 10 Mayne (2007 Mayne (2007 Depth (m) 3. Boulanger and Idriss (2014) <u>S</u> 100 200 300 400 -500 Ĩ€ Sleeve Friction Resistance, f. (kPa) 300 0 12.5 37.5 25 50 75 100 0 100 200 25 50 8 12 18 20 24 X × × 1---1 2---2 3---3 Ξ 4---4 5----5 Ł, Ŧ 6---6 7---7 £ 8---8 9---9 1 _ CONE ID S15-CF P.1486 TEST TYPE CPTU ZERO VALUES : TE2 CONE AREA 15cm² APPLICATION CLASS : 2 Transducer Pre Post Difference Level CONE AREA RATIO : 0.79 RIG CPT 007 289 mV 293 mV 0.044 MPa Тір FILTER POSITION u2 OPERATOR : AC Sleeve 303 mV 305 mV 0.001 kPa Dissipation : 1190415-CPT 07 FILTER TYPE HDPE FILE NAME Pore Pressure 2 280 mV 274 mV -0 002 kPa Test FRICTION REDUCER : None WEATHER : Sunny & Mild X-Y Inclinometer 2301 mV 2437 mV

IN SITU PointID **CPT 07** SITE INVESTIGATION Working with: CLIENT : Terra Consult EASTING Remark: SHEET : 2 OF 2 STATUS NORTHING Test refused on tip resistance. : Final **PROJECT: Tilbury** ELEVATION : 0.000 m OD TEST DATE : 18/09/2019 LOCATION : Ti bury CHECKED BY : LD PLOT DATE : 19/09/2019 PROJECT No. : 1190415 METHOD : ISO 22476-1:2012 **TERMINATION REASON : Refusal** Unit Weight, **Y** (kN/m³) Fines Content, FC (%) Undrained Shear Strength, su (kPa) Sensitivity, St Corrected Cone Resistance, qt (MPa) Graphic Log 1. Schmertmann78; R&L86 2. Mayne (2007) - Y bulk 1. R&W 98 and NCEER 2001 5 10 . s. (q. - e.,)/N., where N., 20 . s. (q. - e.,)/N., where N., 17.5 1. Mayne (2007 1. Mayne (2007 Depth (m) 3. Boulanger and Idriss (2014) <u>S</u> 100 200 300 400 -500 Ē Sleeve Friction Resistance, f. (kPa) 300 0 12.5 37.5 16 25 100 100 200 25 50 8 12 20 24 Γχ - × 11--_1 × ъ - × 12-— × — × 13-- x 14-X 0 Ó 6 15---14 .ю. :0 ..0 -Terminated at 15 82 m 16---16 Refusal 17---1 18---18 19---19 CONE ID S15-CF P.1486 TEST TYPE CPTU ZERO VALUES TE2 Groundwater CONE AREA 15cm² APPLICATION CLASS : 2 Transducer Pre Post Difference Level CONE AREA RATIO : 0.79 RIG CPT 007 293 mV 0.044 MPa Тір 289 mV FILTER POSITION u2 OPERATOR AC Sleeve 303 mV 305 mV 0.001 kPa Dissipation : 1190415-CPT 07 FILTER TYPE HDPE FILE NAME Pore Pressure 2 280 mV 274 mV -0 002 kPa Test FRICTION REDUCER : None WEATHER : Sunny & Mild X-Y Inclinometer 2301 mV 2437 mV



CPT LOG 01 IN SITU PointID **CPT 08** SITE INVESTIGATION Working with: CLIENT : Terra Consult EASTING Remark: SHEET : 1 OF 2 NORTHING STATUS : Final Test refused on tip resistance. **PROJECT: Tilbury ELEVATION** : 0.000 m OD TEST DATE : 18/09/2019 LOCATION : Ti bury CHECKED BY : LD PLOT DATE : 19/09/2019 PROJECT No. : 1190415 **TERMINATION REASON : Refusal** METHOD : ISO 22476-1:2012 Inclination () Cone Resistance, q_e (MPa) In Situ Pore Pressure, u₀ (kPa) phic Log Friction Ratio, R₁(%) Pore Pressure Ratio, B_q _ _ 5 10 Soil Behaviour Type: Material Description Robertson et al. 1986 oc Rf Ē Porewater Pressure, u₂ (kPa) <u>8</u> 100 - 2 200 300 400 -500 Depth (Ĩ€ Sleeve Friction Resistance, f, (kPa) 10 15 -0.6 -0.1 0.9 8 -300 0 300 600 900 -5 0 5 04 1.4 1 2 3 4 5 6 7 8 9 10 11 High strength CLAY (3) 1-Very low strength to low strength CLAY (3)2---2 3---3 Ξ 4---4 5----5 - 5.40 Ŧ M. Low strength organic material (2) -6 6 11 Low strength CLAY (3) 7---7 8---8 18 80 9---9 Low strength sensitive fine grained (1) ş 5 1 METHOD: Robertson et al. 1986 qc Rf CONE ID S15-CF P.1486 TEST TYPE TE2 CPTU ZERO VALUES groundwater CONE AREA 15cm² APPLICATION CLASS 2 Transducer Pre Post Difference 1 - Sensitive fine grained material 5 - Clayey SILT to sity CLAY 9-SAND Level CONE AREA RATIO : 0.79 RIG CPT 007 291 mV 297 mV 0.066 MPa Тір 10 - Gravely SAND to SAND 2 - Organic material 6 - Sandy SILT to clayey SILT FILTER POSITION u2 OPERATOR AC Sleeve 302 mV 308 mV 0.004 kPa Dissipation 3-CLAY 7 - Silty SAND to sandy SILT 11 - Very stiff fine grained : 1190415-CPT 08 FILTER TYPE HDPE FILE NAME Pore Pressure 2 274 mV 274 mV 0 kPa Test 12 - SAND to clayey SAND 4 - SIIty CLAY to CLAY 8 - SAND to si ty SAND FRICTION REDUCER : None WEATHER : Sunny & Mild X-Y Inclinometer 2374 mV 2450 mV

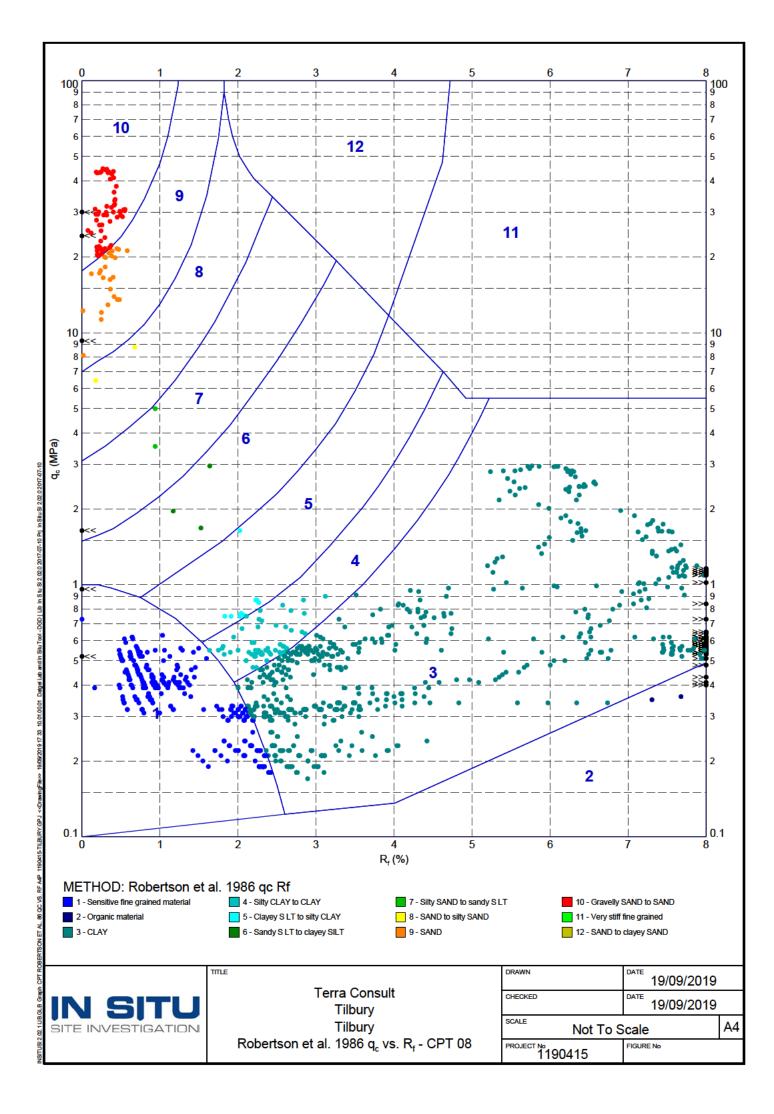
IN SITU PointID **CPT 08** SITE INVESTIGATION Working with: CLIENT : Terra Consult EASTING Remark: SHEET : 2 OF 2 NORTHING Test refused on tip resistance. STATUS : Final **PROJECT: Tilbury ELEVATION** : 0.000 m OD TEST DATE : 18/09/2019 LOCATION : Ti bury CHECKED BY : LD PLOT DATE : 19/09/2019 PROJECT No. : 1190415 TERMINATION REASON : Refusal METHOD : ISO 22476-1:2012 Inclination () Cone Resistance, q_e (MPa) In Situ Pore Pressure, u₀ (kPa) aphic Log Friction Ratio, R_f (%) Pore Pressure Ratio, Bg _ _ 5 10 15 Soil Behaviour Type: Material Description Depth (m) Robertson et al. 1986 oc Rf Porewater Pressure, u₂ (kPa) <u>8</u> . . 100 200 300 400 -500 ΞĒ Sleeve Friction Resistance, f, (kPa) 10 15 -0.6 8 -300 0 300 600 900 -5 0 5 -0.1 04 0.9 1.4 1 2 3 4 5 6 7 8 9 10 11 Low strength sensitive fine grained (1) (continued) 10.70 x Low strength CLAY (3) locally organic 11---11 x × 12 00 <u>____++</u>+++++ 12--12 Medium dense becoming very dense gravelly SAND to SAND (10) Tal. Ó 0 1<u>3.16</u> 13 ---13 Terminated at 13.16 m Refusal 15— --1 - 1-16-17-11 18---18 19---19 11 METHOD: Robertson et al. 1986 qc Rf CONE ID S15-CF P.1486 TEST TYPE CPTU ZERO VALUES : TE2 groundwater CONE AREA 15cm² APPLICATION CLASS 2 Transducer Pre Post Difference 1 - Sensitive fine grained material 5 - Clayey SILT to sity CLAY 9-SAND Level CONE AREA RATIO : 0.79 RIG CPT 007 297 mV 0.066 MPa Тір 291 mV 2 - Organic material 6 - Sandy SILT to clayey SILT 10 - Gravely SAND to SAND FILTER POSITION u2 OPERATOR AC Sleeve 302 mV 308 mV 0.004 kPa Dissipation 3-CLAY 7 - Silty SAND to sandy SILT 11 - Very stiff fine grained : 1190415-CPT 08 FILTER TYPE HDPE FILE NAME Pore Pressure 2 274 mV 274 mV 0 kPa Test 12 - SAND to clayey SAND 4 - SIIty CLAY to CLAY 8 - SAND to si ty SAND FRICTION REDUCER WEATHER : Sunny & Mild X-Y Inclinometer 2374 mV 2450 mV : None

IN SITU PointID **CPT 08** SITE INVESTIGATION Working with: CLIENT : Terra Consult EASTING Remark: SHEET : 1 OF 2 STATUS NORTHING Test refused on tip resistance. : Final **PROJECT: Tilbury ELEVATION** : 0.000 m OD TEST DATE : 18/09/2019 LOCATION : Ti bury CHECKED BY : LD PLOT DATE : 19/09/2019 PROJECT No. : 1190415 METHOD : ISO 22476-1:2012 **TERMINATION REASON : Refusal** SPT Neo Relative Density, D, (%) Friction Angle, **\$'** (deg) Corrected Cone Resistance, qt (MPa) Non-normalized Soil Behaviour Type Index, I_{SBT} Graphic Log 1. Rob. & Wride 98 2. Jeff. & Davies 93 1. Baidi et al. (1986); Al-Hornoud & Wehr (2006) - 1. Senneset et al. (1988 & 1989); Mayne & Campanelia (2005) 5 10 15 Robertson (2010) Depth (m) 3. Ku hawy & Mayne (1990) hawy & Mayne (1990 <u>S</u> 100 200 300 400 -500 Ĩ€ Sleeve Friction Resistance, f. (kPa) 2 5 0 5 10 15 20 25 30 35 40 45 50 0 25 50 75 100 0 20 40 60 80 , ____ Silt _ 칇 All A ____ ____ 2 90 Clay _ _ silty Ga 2---2 ____ å ŝ ___ nixt Sar 붌 3---3 _ _ ŧ 4---4 ŧ ___ 5----5 ____ Ŧ <u> 14 14</u> 14 6---6 14 11 14 ____ 7---7 ___ ____ _ _ _ 8---8 ____ S 9---9 pulling WWW ____ CONE ID S15-CF P.1486 TEST TYPE CPTU ZERO VALUES : TE2 CONE AREA 15cm² APPLICATION CLASS : 2 Transducer Pre Post Difference Level CONE AREA RATIO : 0.79 RIG CPT 007 291 mV 297 mV 0.066 MPa Тір FILTER POSITION u2 OPERATOR AC Sleeve 302 mV 308 mV 0.004 kPa Dissipation : 1190415-CPT 08 FILTER TYPE HDPE FILE NAME Pore Pressure 2 274 mV 274 mV 0 kPa Test FRICTION REDUCER : None WEATHER : Sunny & Mild X-Y Inclinometer 2374 mV 2450 mV

IN SITU PointID **CPT 08** SITE INVESTIGATION Working with: CLIENT : Terra Consult EASTING Remark: SHEET : 2 OF 2 STATUS NORTHING : Final Test refused on tip resistance. **PROJECT: Tilbury** ELEVATION : 0.000 m OD TEST DATE : 18/09/2019 LOCATION : Ti bury CHECKED BY : LD PLOT DATE : 19/09/2019 PROJECT No. : 1190415 METHOD : ISO 22476-1:2012 **TERMINATION REASON : Refusal** SPT Neo Relative Density, D, (%) Friction Angle, **\$'** (deg) Corrected Cone Resistance, qt (MPa) Non-normalized Soil Behaviour Type Index, I_{SBT} Graphic Log 1. Baidi et al. (1986); Al-Hornoud & Wehr (2006) 1. Senneset et al. (1988 & 1989); Mayne & Campanella (2005) 5 10 15 Robertson (2010) Depth (m) 3. Ku hawy & Mayne (1990) hawy & Mayne (1990 <u>S</u> 100 200 300 400 -500 Ē Sleeve Friction Resistance, f, (kPa) 2 5 10 15 20 25 30 35 40 45 50 0 25 50 75 100 0 20 40 60 80 ____ sit Ne. _ _ × 2 Clay ___ - × _ 12---12 ŏ 0 Ó. 0. 薏 o. 13---13 Terminated at 13.16 m Refusal 15----15 Ŧ 16--16 17-----1 18---18 19---19 CONE ID S15-CF P.1486 TEST TYPE CPTU ZERO VALUES TE2 ____ Groundwater CONE AREA 15cm² APPLICATION CLASS : 2 Transducer Pre Post Difference Level CONE AREA RATIO : 0.79 RIG CPT 007 291 mV 297 mV 0.066 MPa Тір FILTER POSITION u2 OPERATOR AC Sleeve 302 mV 308 mV 0.004 kPa Dissipation : 1190415-CPT 08 FILTER TYPE HDPE FILE NAME Pore Pressure 2 274 mV 274 mV 0 kPa Test FRICTION REDUCER : None WEATHER : Sunny & Mild X-Y Inclinometer 2374 mV 2450 mV

IN SITU PointID **CPT 08** SITE INVESTIGATION Working with: CLIENT : Terra Consult EASTING Remark: SHEET : 1 OF 2 STATUS NORTHING Test refused on tip resistance. : Final **PROJECT: Tilbury** ELEVATION : 0.000 m OD TEST DATE : 18/09/2019 LOCATION : Ti bury CHECKED BY : LD PLOT DATE : 19/09/2019 PROJECT No. : 1190415 METHOD : ISO 22476-1:2012 **TERMINATION REASON : Refusal** Unit Weight, Y (kN/m³) Fines Content, FC (%) Undrained Shear Strength, su (kPa) Sensitivity, St Corrected Cone Resistance, qt (MPa) Graphic Log 1. Schmertmann78; R&L86 2. Mayne (2007) - Y bulk . R&W 98 and NCEER 2001 5 10 15 (q - ...)N, where N, 20 (q - ...)N, where N, 17.5 1. Mayne (2007 1. Mayne (2007 Depth (m) 3. Boulanger and Idriss (2014) <u>S</u> 100 200 300 400 -500 Ĩ€ Sleeve Friction Resistance, f. (kPa) 300 0 12.5 37.5 25 50 75 100 0 100 200 25 50 8 12 18 20 24 _ ____ 1-2---2 3---3 _ _ Ŧ 4---4 ___ 5----5 ___ Ŧ <u> 14 14</u> 14 6---6 14 11 1 14 7---7 ____ ____ 8---8 _ 9---9 ____ ___ f CONE ID S15-CF P.1486 TEST TYPE CPTU ZERO VALUES : TE2 CONE AREA 15cm² APPLICATION CLASS : 2 Transducer Pre Post Difference Level CONE AREA RATIO : 0.79 RIG CPT 007 291 mV 297 mV 0.066 MPa Тір FILTER POSITION u2 OPERATOR : AC Sleeve 302 mV 308 mV 0.004 kPa Dissipation : 1190415-CPT 08 FILTER TYPE HDPE FILE NAME Pore Pressure 2 274 mV 274 mV 0 kPa Test FRICTION REDUCER : None WEATHER : Sunny & Mild X-Y Inclinometer 2374 mV 2450 mV

IN SITU PointID **CPT 08** SITE INVESTIGATION Working with: CLIENT : Terra Consult EASTING Remark: SHEET : 2 OF 2 STATUS NORTHING : Final Test refused on tip resistance. **PROJECT: Tilbury** ELEVATION : 0.000 m OD TEST DATE : 18/09/2019 LOCATION : Ti bury CHECKED BY : LD PLOT DATE : 19/09/2019 PROJECT No. : 1190415 METHOD : ISO 22476-1:2012 **TERMINATION REASON : Refusal** Unit Weight, Y (kN/m³) Fines Content, FC (%) Undrained Shear Strength, su (kPa) Sensitivity, St Corrected Cone Resistance, qt (MPa) Graphic Log 1. Schmertmann78; R&L86 2. Mayne (2007) - Y bulk 1. R&W 98 and NCEER 2001 5 10 15 LB. s. (q. - .)N., where N. 20 BE. s. (q. - .)N., where N. 17.5 1. Mayne (2007 1. Mayne (2007) Depth (m) 3. Boulanger and Idriss (2014) <u>S</u> 100 200 300 400 -500 Ē Sleeve Friction Resistance, f, (kPa) 200 300 0 37.5 25 50 75 100 0 100 12.5 25 50 8 12 16 20 24 5 - × - x 12---12 0 Ó 0 0 13---13 Terminated at 13.16 m Refusal 15---15 ‡ 16--16 17---1 18---18 19---19 CONE ID S15-CF P.1486 TEST TYPE CPTU ZERO VALUES : TE2 ____ Groundwater CONE AREA 15cm² APPLICATION CLASS : 2 Transducer Pre Post Difference Level CONE AREA RATIO : 0.79 RIG CPT 007 291 mV 297 mV 0.066 MPa Тір FILTER POSITION u2 OPERATOR : AC Sleeve 302 mV 308 mV 0.004 kPa Dissipation : 1190415-CPT 08 FILTER TYPE HDPE FILE NAME Pore Pressure 2 274 mV 274 mV 0 kPa Test FRICTION REDUCER : None WEATHER : Sunny & Mild X-Y Inclinometer 2374 mV 2450 mV



IN SITU PointID **CPT 09** SITE INVESTIGATION Working with: CLIENT : Terra Consult EASTING Remark: SHEET : 1 OF 2 NORTHING STATUS : Final Test refused on tip resistance. **PROJECT: Tilbury ELEVATION** : 0.000 m OD TEST DATE : 18/09/2019 LOCATION : Ti bury CHECKED BY : LD PLOT DATE : 19/09/2019 PROJECT No. : 1190415 TERMINATION REASON : Refusal METHOD : ISO 22476-1:2012 Inclination () Cone Resistance, q_e (MPa) In Situ Pore Pressure, u₀ (kPa) aphic Log Friction Ratio, R_f (%) Pore Pressure Ratio, B_q 5 10 Soil Behaviour Type: Material Description Depth (m) Robertson et al. 1986 oc Rf Porewater Pressure, u₂ (kPa) - 2 100 200 300 400 500 Ĩ€ Sleeve Friction Resistance, f, (kPa) 10 15 -0.6 0.9 8 -300 0 300 600 900 -5 0 5 -0.1 04 1.4 1 2 3 4 5 6 7 8 9 10 11 Loose gravelly SAND to SAND (10) with layers of clay Ó 10.80 Very low strength to low strength CLAY 1---1 ∇ 2---2 3---3 Ŧ 4---4 5----5 1 5.40 Ŧ Low strength organic material (2) 6 -6 11 Low strength locally very low strength CLAY (3) 7---7 8---8 Very low strength sensitive fine grained (1) 9---9 METHOD: Robertson et al. 1986 qc Rf CONE ID S15-CF P.1486 TEST TYPE TE2 CPTU ZERO VALUES groundwater CONE AREA 15cm² APPLICATION CLASS 2 Transducer Pre Post Difference 1 - Sensitive fine grained material 5 - Clayey SILT to sity CLAY 9-SAND Level CONE AREA RATIO : 0.79 RIG CPT 007 291 mV 0.022 MPa Тір 293 mV 6 - Sandy SILT to clayey SILT 10 - Gravely SAND to SAND 2 - Organic material FILTER POSITION u2 OPERATOR AC Sleeve 302 mV 302 mV 0 kPa Dissipation 3-CLAY 7 - Silty SAND to sandy SILT 11 - Very stiff fine grained : 1190415-CPT 09 FILTER TYPE HDPE FILE NAME Pore Pressure 2 269 mV 287 mV 0.005 kPa Test 12 - SAND to clayey SAND 4 - SIIty CLAY to CLAY 8 - SAND to si ty SAND FRICTION REDUCER : None WEATHER : Sunny & Mild X-Y Inclinometer 2604 mV 2460 mV

IN SITU PointID **CPT 09** SITE INVESTIGATION Working with: CLIENT : Terra Consult EASTING Remark: SHEET : 2 OF 2 NORTHING Test refused on tip resistance. STATUS : Final **PROJECT: Tilbury ELEVATION** : 0.000 m OD TEST DATE : 18/09/2019 LOCATION : Ti bury CHECKED BY : LD PLOT DATE : 19/09/2019 PROJECT No. : 1190415 TERMINATION REASON : Refusal METHOD : ISO 22476-1:2012 Inclination () Cone Resistance, q_e (MPa) In Situ Pore Pressure, u₀ (kPa) aphic Log Friction Ratio, R_f (%) Pore Pressure Ratio, B_q 5 10 15 Soil Behaviour Type: Material Description Depth (m) Robertson et al. 1986 oc Rf Porewater Pressure, u₂ (kPa) <u>8</u> . . 100 200 300 400 -500 ΞĒ Sleeve Friction Resistance, f, (kPa) 10 15 -0.6 8 -300 0 300 600 900 -5 0 5 -0.1 04 0.9 1.4 1 2 3 4 5 6 7 8 9 10 11 Very low strength sensitive fine grained (1) (continued) 10.80 11 11---11 Medium strength organic material (2) 1 20 X Low strength to medium strength CLAY to silty CLAY (4) x 12---12 ++++++x X 13--1 Medium dense becoming very dense gravelly SAND to SAND (10) ó 14---14 0 .0 15.11 Terminated at 15.11 m Refusal 16--16 17-18---18 19---19 11 METHOD: Robertson et al. 1986 qc Rf CONE ID S15-CF P.1486 TEST TYPE CPTU ZERO VALUES : TE2 groundwater CONE AREA 15cm² APPLICATION CLASS 2 Transducer Pre Post Difference 1 - Sensitive fine grained material 5 - Clayey SILT to sity CLAY 9-SAND Level CONE AREA RATIO : 0.79 RIG CPT 007 0.022 MPa Тір 291 mV 293 mV 2 - Organic material 6 - Sandy SILT to clayey SILT 10 - Gravely SAND to SAND FILTER POSITION u2 OPERATOR AC Sleeve 302 mV 302 mV 0 kPa Dissipation 3-CLAY 7 - Silty SAND to sandy SILT 11 - Very stiff fine grained : 1190415-CPT 09 FILTER TYPE HDPE FILE NAME Pore Pressure 2 269 mV 287 mV 0.005 kPa Test 12 - SAND to clayey SAND 4 - SIIty CLAY to CLAY 8 - SAND to si ty SAND FRICTION REDUCER WEATHER : Sunny & Mild X-Y Inclinometer 2604 mV 2460 mV : None

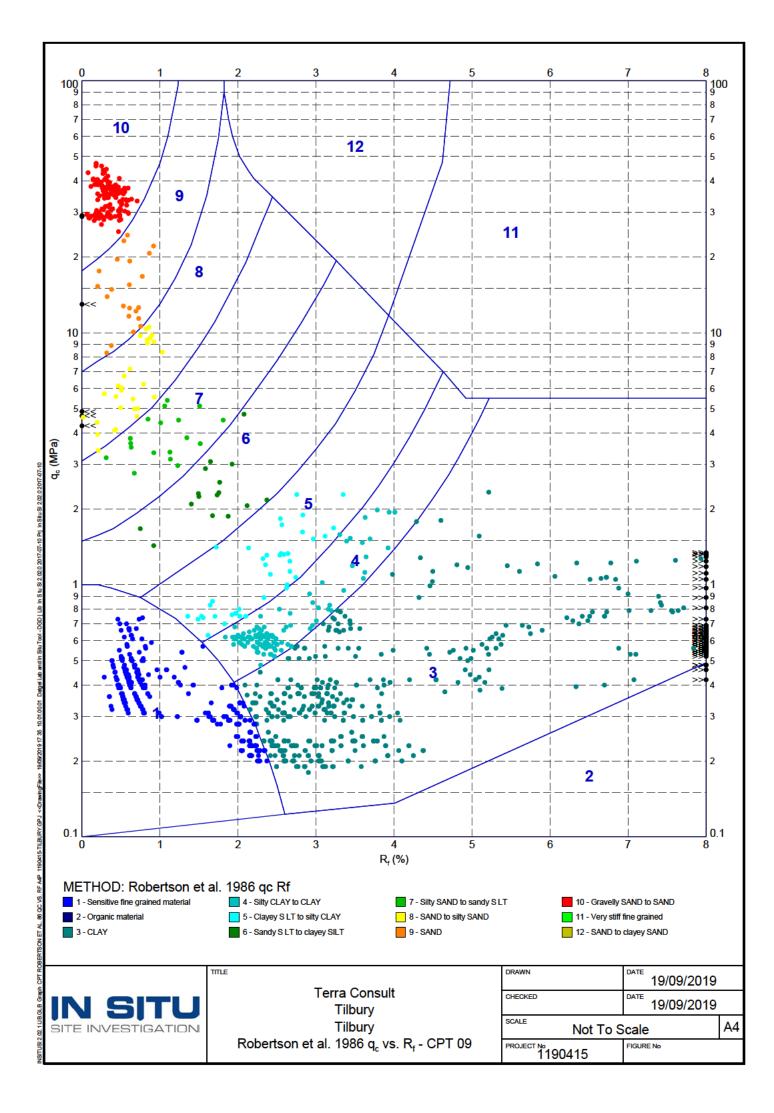
IN SITU PointID **CPT 09** SITE INVESTIGATION Working with: CLIENT : Terra Consult EASTING Remark: SHEET : 1 OF 2 STATUS NORTHING Test refused on tip resistance. : Final **PROJECT: Tilbury ELEVATION** : 0.000 m OD TEST DATE : 18/09/2019 LOCATION : Ti bury CHECKED BY : LD PLOT DATE : 19/09/2019 PROJECT No. : 1190415 METHOD : ISO 22476-1:2012 **TERMINATION REASON : Refusal** SPT Neo Relative Density, D, (%) Friction Angle, **\$'** (deg) Corrected Cone Resistance, qt (MPa) Non-normalized Soil Behaviour Type Index, I_{SBT} Graphic Log 1. Rob. & Wride 98 2. Jeff. & Davies 93 1. Baidi et al. (1986); Al-Hornoud & Wehr (2006) 1. Senneset et al. (1988 & 1989); Mayne & Campanella (2005) 5 10 15 Robertson (2010) Depth (m) Ku hawy & Mayne (1990) awy & Mayne (1 <u>S</u> 100 200 300 400 -500 Ĩ€ Sleeve Friction Resistance, f. (kPa) 2 5 10 15 20 25 30 35 40 45 50 0 25 75 100 0 20 40 60 80 0 > Ó 0. 1---1 ____ _ _ 2 90 Clay ____ silty ____ 2 --2 _ _ ____ å ds: nixt _ Sar i i ____ 3---3 _ ŧ ____ 4---4 ____ ŧ ____ 5----5 ____ 14 6--6 14 11 ____ ____ 7 _ _ --7 Ł ____ 8---8 ____ 9---9 mynh _ _ ___ ___ CONE ID S15-CF P.1486 TEST TYPE CPTU ZERO VALUES : TE2 ____ Groundwater CONE AREA 15cm² APPLICATION CLASS : 2 Transducer Pre Post Difference Level CONE AREA RATIO : 0.79 RIG CPT 007 291 mV 293 mV 0.022 MPa Тір FILTER POSITION u2 OPERATOR AC Sleeve 302 mV 302 mV 0 kPa Dissipation : 1190415-CPT 09 FILTER TYPE HDPE FILE NAME Pore Pressure 2 269 mV 287 mV 0.005 kPa Test FRICTION REDUCER : None WEATHER : Sunny & Mild X-Y Inclinometer 2604 mV 2460 mV

IN SITU				_		CPT LOG 02
SITE INVESTIGATION Working with:					PointID CPT 09	
CLIENT : Terra Consult PROJECT: Tilbury LOCATION : Tibury PROJECT No. : 1190415	EASTING : Remark: NORTHING : Test refused ELEVATION : 0.000 m OD CHECKED BY : LD TERMINATION REASON : Refusal			Remark: Test refused on tip resis	tance. STATUS : F TEST DATE : 1 PLOT DATE : 1	8/09/2019
E E Corrected Cone Resistance, qt (MPa) No 0 5 10 15 20 0 100 200 300 400 500 0 100 200 300 400 500 0	on-normalized Soil Behaviour Type Inde Robertson (2010) 1 2 3 4	K, I _{ser} 1. Rob. 8. Write 98 2. Jeff. & Dankes 93 5. 0 5 10 15 20		Relative Density, D, (%) 1. Baid et al. (1965): Al-tomoud & Wehr (2006) 2. Jamichtowski et al. (2001) 3. Nuthawy & Mayne (1990) 25 50 75	Friction Angle, \$' (deg) 1. Semeet et al. (1983 & 1989); Mane & Ca 2. Robertion & Campanetal (1953) 3. Ku hawy & Mayne (1990) 100 0 20 40	2
11 11 12 12 13 13 14 14 15 -15 16 16 17 17 18 18 19 19	lear sands to silv lear sands to silv s: silv sand th sa tes: clayery silv & si Clays: clayer o	Clark - Model and Clark - Mode				
CONE ID : S15-CF P.1486 TEST TYPE : TE2 CONE AREA : 15cm² APPLICATION CLASS : 2 CONE AREA RATIO : 0.79 RIG : CPT 0 FILTER POSITION : u2 OPERATOR : AC FILTER TYPE : HDPE FILE NAME : 11904 FRICTION REDUCER : None WEATHER : Sunny	007 Transduce D07 Tip Sleeve 415-CPT 09 Pore Press y & Mild X-Y Inclino	291 mV 293 mV 302 mV 302 mV ure 2 269 mV 287 mV	Difference 0.022 MPa 0 kPa 0.005 kPa			Groundwate Level IIIII Dissipation Test

IN SITU PointID **CPT 09** SITE INVESTIGATION Working with: CLIENT : Terra Consult EASTING Remark: SHEET : 1 OF 2 STATUS NORTHING : Final Test refused on tip resistance. **PROJECT: Tilbury** ELEVATION : 0.000 m OD TEST DATE : 18/09/2019 LOCATION : Ti bury CHECKED BY : LD PLOT DATE : 19/09/2019 PROJECT No. : 1190415 METHOD : ISO 22476-1:2012 **TERMINATION REASON : Refusal** Unit Weight, Y (kN/m³) Fines Content, FC (%) Undrained Shear Strength, su (kPa) Sensitivity, St Corrected Cone Resistance, qt (MPa) Graphic Log 1. Schmertmann78; R&L86 2. Mayne (2007) - Y bulk . R&W 98 and NCEER 2001 5 10 (q. - e.,)/N., where N. 20 (q. - e.,)/N., where N. 17.5 . Mayne (2007 . Mayne (2007 Depth (m) . Boulanger and Idriss (2014) <u>8</u> 100 200 300 400 500 Ĩ€ Sleeve Friction Resistance, f. (kPa) 12.5 37.5 50 8 12 25 50 75 100 0 100 200 300 0 25 16 24 0 Ó ó. 1---1 2---2 3---3 Ξ 4---4 5----5 - -_ 10 10 Ŧ 14 6--6 14 11 7---7 8---8 9---9 CONE ID S15-CF P.1486 TEST TYPE CPTU ZERO VALUES : TE2 CONE AREA 15cm² APPLICATION CLASS : 2 Transducer Pre Post Difference Level CONE AREA RATIO 0.79 RIG CPT 007 291 mV 293 mV 0.022 MPa Tip FILTER POSITION u2 OPERATOR : AC Sleeve 302 mV 302 mV 0 kPa Dissipation : 1190415-CPT 09 FILTER TYPE HDPE FILE NAME Pore Pressure 2 269 mV 287 mV 0.005 kPa Test FRICTION REDUCER : None WEATHER : Sunny & Mild X-Y Inclinometer 2604 mV 2460 mV

IN SITU PointID **CPT 09** SITE INVESTIGATION Working with: CLIENT : Terra Consult EASTING Remark: SHEET : 2 OF 2 STATUS NORTHING : Final Test refused on tip resistance. **PROJECT: Tilbury** ELEVATION : 0.000 m OD TEST DATE : 18/09/2019 LOCATION : Ti bury CHECKED BY : LD PLOT DATE : 19/09/2019 PROJECT No. : 1190415 METHOD : ISO 22476-1:2012 **TERMINATION REASON : Refusal** Unit Weight, Y (kN/m³) Fines Content, FC (%) Undrained Shear Strength, su (kPa) Sensitivity, St Corrected Cone Resistance, qt (MPa) Graphic Log 1. Schmertmann78; R&L86 2. Mayne (2007) - Y bulk 1. R&W 98 and NCEER 2001 5 10 1. Mayne (2007 1. Mayne (2007 Depth (m) 3. Boulanger and Idriss (2014) <u>S</u> 100 200 300 400 -500 Ĩ€ Sleeve Friction Resistance, f, (kPa) 300 37.5 25 50 100 0 100 200 12.5 25 50 8 12 16 20 24 ____ 5 _ <u> 11 11</u> x - -<u>×</u> 12---12 <u>×</u> - -- x 13--11 :0. Ó 0. 14-0. :0 0 0. 0 Terminated at 15.11 m Refusal 16---16 17---1 18---18 19---19 CONE ID S15-CF P.1486 TEST TYPE CPTU ZERO VALUES : TE2 Groundwater CONE AREA 15cm² APPLICATION CLASS : 2 Transducer Pre Post Difference Level CONE AREA RATIO : 0.79 RIG CPT 007 291 mV 293 mV 0.022 MPa Tip FILTER POSITION u2 OPERATOR AC Sleeve 302 mV 302 mV 0 kPa Dissipation : 1190415-CPT 09 FILTER TYPE HDPE FILE NAME Pore Pressure 2 269 mV 287 mV 0.005 kPa Test FRICTION REDUCER : None WEATHER : Sunny & Mild X-Y Inclinometer 2604 mV 2460 mV

CPT LOG 03



PointID **CPT 10** SITE INVESTIGATION Working with: CLIENT : Terra Consult EASTING Remark: SHEET : 1 OF 2 NORTHING Test refused on tip resistance. STATUS : Final **PROJECT: Tilbury ELEVATION** : 0.000 m OD TEST DATE : 18/09/2019 LOCATION : Ti bury CHECKED BY : LD PLOT DATE : 19/09/2019 PROJECT No. : 1190415 TERMINATION REASON : Refusal METHOD : ISO 22476-1:2012 Inclination () Cone Resistance, q_e (MPa) In Situ Pore Pressure, u₀ (kPa) aphic Log Friction Ratio, R₁(%) Pore Pressure Ratio, Bg _ _ 5 10 15 Soil Behaviour Type: Material Description Robertson et al. 1986 oc Rf Ē Porewater Pressure, u₂ (kPa) <u>8</u> 100 - 2 200 300 400 -500 Depth (ΞĒ Sleeve Friction Resistance, f, (kPa) 10 15 -0.6 -0.1 0.9 8 -300 0 300 600 900 -5 0 5 04 1.4 1 2 3 4 5 6 7 8 9 10 11 × Medium strength CLAY to silty CLAY (4) locally organic x 0.80 Medium strength becoming low strength 1-CLAY (3) ∇ 2 00 2---2 Very low strength locally low strength sensitive fine grained (1) 3---3 Ŧ 4---4 5----5 1 Ŧ 6---6 11 7---7 8---8 9---9 METHOD: Robertson et al. 1986 qc Rf CONE ID S15-CF P.1486 TEST TYPE TE2 CPTU ZERO VALUES groundwater CONE AREA 15cm² APPLICATION CLASS 2 Transducer Pre Post Difference 1 - Sensitive fine grained material 5 - Clayey SILT to sity CLAY 9-SAND Level CONE AREA RATIO : 0.79 RIG CPT 007 0 MPa Тір 293 mV 293 mV 2 - Organic material 6 - Sandy SILT to clayey SILT 10 - Gravely SAND to SAND FILTER POSITION u2 OPERATOR AC Sleeve 302 mV 304 mV 0.001 kPa Dissipation 3-CLAY 7 - Silty SAND to sandy SILT 11 - Very stiff fine grained : 1190415-CPT 10 FILTER TYPE HDPE FILE NAME Pore Pressure 2 283 mV 280 mV -0 001 kPa Test 4 - SIIty CLAY to CLAY 12 - SAND to clayey SAND 8 - SAND to si ty SAND FRICTION REDUCER : None WEATHER : Sunny & Mild X-Y Inclinometer 2479 mV 2479 mV

CPT LOG 01

IN SITU

IN SITU PointID **CPT 10** SITE INVESTIGATION Working with: CLIENT : Terra Consult EASTING Remark: SHEET : 2 OF 2 NORTHING STATUS : Final Test refused on tip resistance. **PROJECT: Tilbury ELEVATION** : 0.000 m OD TEST DATE : 18/09/2019 LOCATION : Ti bury CHECKED BY : LD PLOT DATE : 19/09/2019 PROJECT No. : 1190415 TERMINATION REASON : Refusal METHOD : ISO 22476-1:2012 Inclination () Cone Resistance, q_e (MPa) aphic Log In Situ Pore Pressure, u₀ (kPa) Friction Ratio, R₁(%) Pore Pressure Ratio, Bg _ _ 5 10 15 Soil Behaviour Type: Material Description Robertson et al. 1986 oc Rf Ē Porewater Pressure, u₂ (kPa) <u>8</u> - 2 100 200 300 400 -500 Depth (ΞĒ Sleeve Friction Resistance, f, (kPa) 10 15 -0.6 0.9 8 -300 0 300 600 900 -5 0 5 -0.1 0.4 1.4 1 2 3 4 5 6 7 8 9 10 11 Very low strength locally low strength sensitive fine grained (1) (continued) 2 11---11 - 11.40 Medium strength locally low strength CLAY to silty CLAY (4) locally organic 12---12 ++++++12.50 Dense becoming very dense gravelly SAND to SAND (10) 0 13.03 13-Terminated at 13 03 m Refusal 14-15— --1 - 1-16-17-11 18---18 19---19 11 METHOD: Robertson et al. 1986 qc Rf CONE ID S15-CF P.1486 CPTU ZERO VALUES TEST TYPE TE2 groundwater CONE AREA 15cm² APPLICATION CLASS 2 Transducer Pre Post Difference 1 - Sensitive fine grained material 5 - Clayey SILT to sity CLAY 9-SAND Level CONE AREA RATIO RIG CPT 007 0 MPa : 0.79 Тір 293 mV 293 mV 2 - Organic material 10 - Gravely SAND to SAND 6 - Sandy SILT to clayey SILT FILTER POSITION u2 OPERATOR AC Sleeve 302 mV 304 mV 0.001 kPa Dissipation 3-CLAY 7 - Silty SAND to sandy SILT 11 - Very stiff fine grained : 1190415-CPT 10 FILTER TYPE HDPE FILE NAME Pore Pressure 2 283 mV 280 mV -0 001 kPa Test 12 - SAND to clayey SAND 4 - SIIty CLAY to CLAY 8 - SAND to si ty SAND FRICTION REDUCER WEATHER : Sunny & Mild X-Y Inclinometer 2479 mV 2479 mV : None

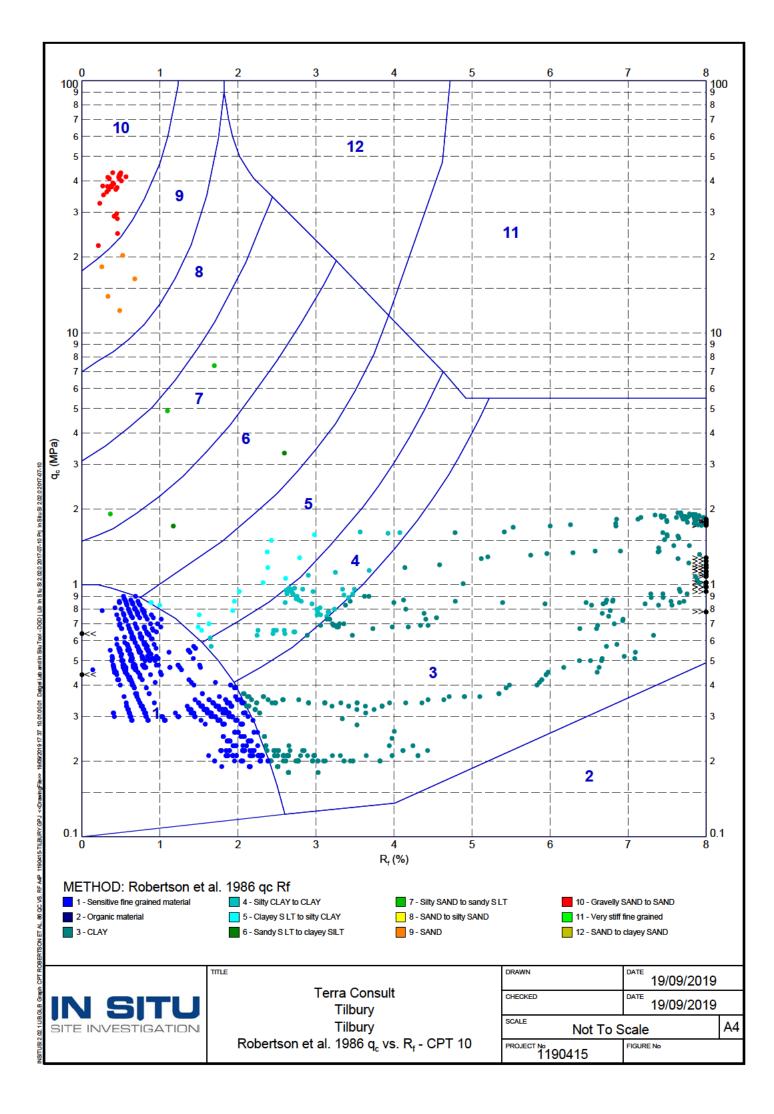
IN SITU PointID **CPT 10** SITE INVESTIGATION Working with: CLIENT : Terra Consult EASTING Remark: SHEET : 1 OF 2 STATUS NORTHING Test refused on tip resistance. : Final **PROJECT: Tilbury ELEVATION** : 0.000 m OD TEST DATE : 18/09/2019 LOCATION : Ti bury CHECKED BY : LD PLOT DATE : 19/09/2019 PROJECT No. : 1190415 METHOD : ISO 22476-1:2012 **TERMINATION REASON : Refusal** SPT Neo Relative Density, D, (%) Friction Angle, **\$'** (deg) Corrected Cone Resistance, qt (MPa) Graphic Log Non-normalized Soil Behaviour Type Index, I_{SBT} 1. Rob. & Wride 98 2. Jeff. & Davies 93 1. Baidi et al. (1986); Al-Hornoud & Wehr (2006) - 1. Senneset et al. (1988 & 1989); Mayne & Campanelia (2005) 5 10 15 Robertson (2010) Depth (m) 3. Ku hawy & Mayne (1990) hawy & Mayne (1990 <u>S</u> 100 200 300 400 -500 Ĩ€ Sleeve Friction Resistance, f. (kPa) 2 5 0 5 10 15 20 25 30 35 40 45 50 0 25 50 75 100 0 20 40 60 80 ×____ ____× Silt lity | **२***≣* À. ≥ 1-____ _ _ 2 90 Clay ____ silty Ga ____ 2 --2 = = å ____ ŝ nixt _ _ Sar 붌 _ _ 3---3 = ŧ ____ ____ 4---4 ŧ ____ 5----5 + _ 6---6 ____ ____ 7---7 8----8 _ 9---9 MC w _ _ ₹ ____ ž ----CONE ID S15-CF P.1486 TEST TYPE CPTU ZERO VALUES : TE2 CONE AREA 15cm² APPLICATION CLASS : 2 Transducer Pre Post Difference Level 0 MPa CONE AREA RATIO : 0.79 RIG CPT 007 Tip 293 mV 293 mV FILTER POSITION u2 OPERATOR AC Sleeve 302 mV 304 mV 0.001 kPa Dissipation : 1190415-CPT 10 FILTER TYPE HDPE FILE NAME Pore Pressure 2 283 mV 280 mV -0 001 kPa Test FRICTION REDUCER : None WEATHER : Sunny & Mild X-Y Inclinometer 2479 mV 2479 mV

IN SITU PointID **CPT 10** SITE INVESTIGATION Working with: CLIENT : Terra Consult EASTING Remark: SHEET : 2 OF 2 STATUS NORTHING : Final Test refused on tip resistance. **PROJECT: Tilbury** ELEVATION : 0.000 m OD TEST DATE : 18/09/2019 LOCATION : Ti bury CHECKED BY : LD PLOT DATE : 19/09/2019 PROJECT No. : 1190415 METHOD : ISO 22476-1:2012 **TERMINATION REASON : Refusal** SPT Neo Relative Density, D, (%) Friction Angle, **\$'** (deg) Corrected Cone Resistance, qt (MPa) Non-normalized Soil Behaviour Type Index, I_{SBT} Graphic Log 1. Baidi et al. (1986); Al-Hornoud & Wehr (2006) 1. Senneset et al. (1988 & 1989); Mayne & Campanella (2005) 5 10 15 Robertson (2010) Depth (m) 3. Ku hawy & Mayne (1990) hawy & Mayne (1990 <u>S</u> 100 200 300 400 -500 3 E Sleeve Friction Resistance, f, (kPa) 20 2 5 0 5 10 15 20 25 30 35 40 45 50 0 25 50 75 100 0 40 60 80 _ sit ð Ne. ____ ___ clav 2 Clay Siltv 12---12 å 0.0 13-Terminated at 13 03 m Refusal 15----15 Ŧ 16--16 17-----1 18---18 19---19 CONE ID S15-CF P.1486 TEST TYPE CPTU ZERO VALUES : TE2 ____ Groundwater CONE AREA 15cm² APPLICATION CLASS : 2 Transducer Pre Post Difference Level CONE AREA RATIO : 0.79 RIG CPT 007 0 MPa Tip 293 mV 293 mV FILTER POSITION u2 OPERATOR AC Sleeve 302 mV 304 mV 0.001 kPa Dissipation : 1190415-CPT 10 FILTER TYPE HDPE FILE NAME Pore Pressure 2 283 mV 280 mV -0 001 kPa Test FRICTION REDUCER : None WEATHER : Sunny & Mild X-Y Inclinometer 2479 mV 2479 mV

IN SITU PointID **CPT 10** SITE INVESTIGATION Working with: CLIENT : Terra Consult EASTING Remark: SHEET : 1 OF 2 STATUS NORTHING Test refused on tip resistance. : Final **PROJECT: Tilbury** ELEVATION : 0.000 m OD TEST DATE : 18/09/2019 LOCATION : Ti bury CHECKED BY : LD PLOT DATE : 19/09/2019 PROJECT No. : 1190415 METHOD : ISO 22476-1:2012 **TERMINATION REASON : Refusal** Unit Weight, Y (kN/m³) Fines Content, FC (%) Undrained Shear Strength, su (kPa) Sensitivity, St Corrected Cone Resistance, qt (MPa) Graphic Log 1. Schmertmann78; R&L86 2. Mayne (2007) - Y bulk . R&W 98 and NCEER 2001 5 10 . s. (q. - e.,)/N., where N., 20 . s. (q. - e.,)/N., where N., 17.5 1. Mayne (2007 1. Mayne (2007 Depth (m) . Boulanger and Idriss (2014) <u>S</u> 100 200 300 400 -500 Ĩ€ Sleeve Friction Resistance, f. (kPa) 300 0 12.5 37.5 25 50 75 100 0 100 200 25 50 8 12 18 20 24 × × 1-_ _ 2---2 3---3 Ξ a 4---4 ____ 5----5 + - -6---6 7---7 8----8 9---9 3 CONE ID S15-CF P.1486 TEST TYPE CPTU ZERO VALUES : TE2 ____ Groundwater CONE AREA 15cm² APPLICATION CLASS : 2 Transducer Pre Post Difference Level CONE AREA RATIO : 0.79 RIG CPT 007 293 mV 293 mV 0 MPa Тір FILTER POSITION u2 OPERATOR : AC Sleeve 302 mV 304 mV 0.001 kPa Dissipation : 1190415-CPT 10 FILTER TYPE HDPE FILE NAME Pore Pressure 2 283 mV 280 mV -0 001 kPa Test FRICTION REDUCER : None WEATHER : Sunny & Mild X-Y Inclinometer 2479 mV 2479 mV

CPT LOG 03

IN SITU PointID **CPT 10** SITE INVESTIGATION Working with: CLIENT : Terra Consult EASTING Remark: SHEET : 2 OF 2 STATUS NORTHING : Final Test refused on tip resistance. **PROJECT: Tilbury** ELEVATION : 0.000 m OD TEST DATE : 18/09/2019 LOCATION : Ti bury CHECKED BY : LD PLOT DATE : 19/09/2019 PROJECT No. : 1190415 METHOD : ISO 22476-1:2012 **TERMINATION REASON : Refusal** Unit Weight, **Y** (kN/m³) Fines Content, FC (%) Undrained Shear Strength, su (kPa) Sensitivity, St Corrected Cone Resistance, qt (MPa) Graphic Log 1. Schmertmann78; R&L86 2. Mayne (2007) - Y bulk 1. R&W 98 and NCEER 2001 5 10 LB. s. (q. - .)N., where N. 20 BE. s. (q. - .)N., where N. 17.5 1. Mayne (2007 1. Mayne (2007 Depth (m) 3. Boulanger and Idriss (2014) <u>S</u> 100 200 300 400 -500 Ē Sleeve Friction Resistance, f, (kPa) 200 300 0 37.5 12 25 50 75 100 0 100 12.5 25 50 8 18 20 24 ____ _ ____ 12---12 ____ 0.0 13-Terminated at 13 03 m Refusal 14-15---15 ‡ 16--16 17---1 18---18 19---19 CONE ID S15-CF P.1486 TEST TYPE CPTU ZERO VALUES : TE2 ____ Groundwater CONE AREA 15cm² APPLICATION CLASS : 2 Transducer Pre Post Difference Level CONE AREA RATIO : 0.79 RIG CPT 007 293 mV 0 MPa Тір 293 mV FILTER POSITION u2 OPERATOR : AC Sleeve 302 mV 304 mV 0.001 kPa Dissipation : 1190415-CPT 10 FILTER TYPE HDPE FILE NAME Pore Pressure 2 283 mV 280 mV -0 001 kPa Test FRICTION REDUCER : None WEATHER : Sunny & Mild X-Y Inclinometer 2479 mV 2479 mV



Gas	&	Grou	Ind	wate	r Mo	nitori	ng R	ecor	d					٦	erra	aConsult
Project No:		4593	Project:	Statera - Til	bury											
Date:		25/09/2019						State of Grou	nd:					Dry		
Operator:		ТМ						Wind : Light breeze								
								Wind directior	ו:					-		
								Cloud cover: Light clouds							ıds	
Equipment used:		Dipmeter & GFM435 s/n 11378					Precipitation:						None			
useu.		-						Pressure tren	d:					Steady	,	
							D	etection limits:	0.1% vol	0.1%	0.1% vol	0.1% vol	0.1 ppm	1.0 ppm	NA	
Borehole ID	Inst ID	Barometric Pressure (mbars)	Air temp (₀C)	Depth of Installa ion (m BGL)	Time of Reading hh:mm	Depth to Groundwater (m BGL)	Differential Pressure (Pa)	FlowRate (l/hr)	CH4 (% vol)	CH4 (% LEL)	O2 (% vol)	CO2 (% vol)	CO (ppm)	H2S (ppm)	Nitrogen (% vol)	Remarks
WS1	1	1000	18	4.84	11:44	2.40	0	0.0	0.0	0.0	18.8	1.9	0.0	0	NM	
WS2	1	1000	18	4.48	11:35	1.62	0	0.0	0.0	0.0	18.1	2.7	0.0	0	NM	
WS4	1	1001	18	4.12	11:13	2.49	0	0.0	0.0	0.0	20.2	0.3	0.0	0	NM	
WS6	1	1001	18	4.50	12:36	2.67	0	0.0	0.0	0.0	19.8	0.9	0.0	0	NM	
WS7	1	1000	18	4.20	12:29	2.19	0	0.0	0.0	0.0	19.8	1.0	0.0	0	NM	
WS8	1	1000	18	4.07	13:06	2.07	0	0.0	0.0	0.0	19.6	0.8	0.0	0	NM	
Piezometer b	oreho	oles														
CP1	1		18	25.02		1.12										
CP2	1		18	23.88		1.19										
CP3	1		18	23.95		0.94		5.15.4								
CP4 CP5	1	NA	18	23.15	NM	1.29 0.77	NM	NM				NM				
CP5 CP6	1	-	18 18	23.92 23.70		0.77										
CP6 CP7	1	-	18	23.70		0.99										

Gas	&	Grou	Ind	wate	r Mo	nitori	ng R	ecor	d					T	erra	aConsult
Project No:		4593	Project:	Statera - Til	bury											
Date:		04/10/2019						State of Grou	nd:					Dry		
Operator:		ТМ						Wind : Light breeze								
								Wind directior	ו:					-		
								Cloud cover:						100%		
Equipment used:		Dipmeter & GFM435 s/n 11378					Precipitation:						Light show	/ers		
useu.		-						Pressure tren	d:					Steady	,	
	-						D	etection limits:	0.1% vol	0.1%	0.1% vol	0.1% vol	0.1 ppm	1.0 ppm	NA	
Borehole ID	Inst ID	Barometric Pressure (mbars)	Air temp (₀C)	Depth of Installa ion (m BGL)	Time of Reading hh:mm	Depth to Groundwater (m BGL)	Differential Pressure (Pa)	FlowRate (l/hr)	CH4 (% vol)	CH4 (% LEL)	O2 (% vol)	CO2 (% vol)	CO (ppm)	H2S (ppm)	Nitrogen (% vol)	Remarks
WS1	1	1004	16	4.85	11:33	2.56	0	0.0	0.0	0.0	18.4	2.0	0.0	0	NM	
WS2	1	1004	16	4.45	11:25	1.69	0	0.0	0.0	0.0	18.0	2.2	0.0	0	NM	
WS4	1	1004	16	4.10	11:05	2.55	0	0.0	0.0	0.0	17.2	2.2	0.0	0	NM	
WS6	1	1004	16	4.50	12:00	2.16	0	0.0	0.0	0.0	19.5	0.7	0.0	0	NM	
WS7	1	1004	16	4.20	11:54	2.23	0	0.0	0.0	0.0	19.1	0.9	0.0	0	NM	
WS8	1	1004	16	4.04	12:22	2.03	0	0.0	0.0	0.0	18.5	0.8	0.0	0	NM	
Piezometer b	oreho	oles														
CP1	1		16	25.03		1.07										
CP2	1		16	23.91		0.98										
CP3	1		16	23.85		0.84	N IN 4	515.4								
CP4 CP5	1	NA	16 16	23.16	NM	1.05 0.74	NM	NM				NM				
CP5 CP6	1	4	16	23.92 23.70		0.74										
CP6 CP7	1	4	16	23.70		0.91										

Gas	&	Grou	nd	vate	r Mo	nitori	ng R	ecor	d					T	erra	aConsult
Project No:		4593	Project:	Statera - Til	bury											
Date:		09/10/2019						State of Grou	nd:					Dry		
Operator:		тм						Wind :		Blustery						
•								Wind directior	ו:					-		
								Cloud cover:						Light clou	ds	
Equipment		Dipmeter & C	GFM435 s	s/n 11378				Precipitation:						None		
used:								Pressure tren	d:					Steady	,	
							D	etection limits:	0.1% vol	0.1%	0.1% vol	0.1% vol	0.1 ppm	1.0 ppm	NA	
Borehole ID	Inst ID	Barometric Pressure (mbars)	Air temp (₀C)	Depth of Installa ion (m BGL)	Time of Reading hh:mm	Depth to Groundwater (m BGL)	Differential Pressure (Pa)	FlowRate (l/hr)	CH4 (% vol)	CH4 (% LEL)	O2 (% vol)	CO2 (% vol)	CO (ppm)	H2S (ppm)	Nitrogen (% vol)	Remarks
WS1	1	1004	14	4.84	12:43	2.60	0	0.0	0.0	0.0	17.8	2.3	0.0	0	NM	
WS2	1	1003	14	4.45	12:33	1.71	0	0.0	0.0	0.0	17.7	2.2	0.0	0	NM	
WS4	1	1004	14	4.10	12:15	2.5	0	0.0	0.0	0.0	18.4	2.2	0.0	0	NM	
WS6	1	1004	15	4.49	14:44	2.12	0	0.0	0.0	0.0	19.3	0.7	0.0	0	NM	
WS7	1	1005	15	4.20	14:25	2.23	0	0.0	0.0	0.0	18.9	0.9	0.0	0	NM	
WS8	1	1004	15	4.07	15:11	2.02	0	0.0	0.0	0.0	18.2	0.8	0.0	0	NM	
Piezometer b	orehc	les				•		•			•					
CP1	1		14	25.03		1.08										
CP2	1		14	23.91		0.95										
CP3	1		14	23.85		0.97										
CP4	1	NA	14	23.17	NM	1.08	NM	NM				NM				
CP5	1	_	15	23.92		0.72										
CP6 CP7	1		15 15	23.71 23.76		0.93										

Project No:		4593	Project:	Statera - Til	bury											
Date:		15/10/2019						State of Groui	nd:					Damp		
Operator:		ТМ						Wind :						Light bree	eze	
								Wind direction:								
								Cloud cover:					Clou	dy with sun	iny spells	
Equipment used:		Dipmeter & 0	GFM435 s	s/n 11378				Precipitation:						None		
								Pressure tren	d:					Falling		
							_					-				
		Barometric	1	Depth of	Time of	Depth to	D Differential	etection limits:	0.1% vol	0.1%	0.1% vol	0.1% vol	0.1 ppm	1.0 ppm	NA	
Borehole ID	Inst ID	Pressure (mbars)	Air temp (oC)	Installa ion (m BGL)	Reading hh:mm	Groundwater (m BGL)	Pressure (Pa)	FlowRate (I/hr)	CH4 (% vol)	CH4 (% LEL)	O2 (% vol)	CO2 (% vol)	CO (ppm)	H2S (ppm)	Nitrogen (% vol)	Remarks
WS1	1	1004	15	4.86	13:03	2.60	0	0.0	0.0	0.0	17.5	1.7	0.0	0	NM	
WS2	1	1006	15	4.48	12:54	1.71	0	0.0	0.0	0.0	17.2	2.3	0.0	0	NM	
WS4	1	1006	15	4.14	12:37	2.50	0	0.0	0.0	0.0	16.8	2.2	0.0	0	NM	
WS6	1	1004	15	4.53	13:40	2.12	0	0.0	0.0	0.0	18.5	0.8	0.0	0	NM	
WS7	1	1004	15	4.20	14:09	2.23	0	0.0	0.0	0.0	18.5	0.9	0.0	0	NM	
WS8	1	1004	15	4.05	14:03	2.02	0	0.0	0.0	0.0	17.1	0.9	0.0	0	NM	
Piezometer b	oreho	oles				•										
CP1	1		15	25.03		1.09									_	
CP2	1		15	23.91		0.93									_	
CP3	1		15	23.82		1.09									-	
CP4	1	NA	15	23.08	NM	1.06 0.72	NM	NM				NM			F	
CP5 CP6	1	-	15 15	23.93 23.70		0.72									F	
CP0 CP7	1	4	15	23.70		0.89									-	

^ . - -. .

Appendix D

Laboratory Analysis Results



Unit A2 Windmill Road Ponswood Industrial Estate St Leonards on Sea East Sussex TN38 9BY Telephone: (01424) 718618

> cs@elab-uk.co.uk info@elab-uk.co.uk

THE ENVIRONMENTAL LABORATORY LTD

Analytical Report Number:	19-25079
Issue:	1
Date of Issue:	04/10/2019
Contact:	Jason Tilley
Customer Details:	TerraConsult Ltd Bold Business Centre Unit 34, Bold Lane St Helens MersevsideWA9 4TX
Quotation No:	Q19-01619
Order No:	PO-005865
Customer Reference:	4593
Date Received:	01/10/2019
Date Approved:	04/10/2019
Details:	Tilbury
Approved by:	

Mike Varley, Technical Manager

Any comments, opinions or interpretations expressed herein are outside the scope of UKAS accreditation (Accreditation Number 2683

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Sample Summary

Report No.: 19-25079, issue number 1

Elab No.	Client's Ref.	Date Sampled	Date Scheduled	Description	Deviations
185495	CP1 4.50	24/09/2019	01/10/2019	Loamy sand	
185496	CP1 10.00	24/09/2019	01/10/2019	Loamy sand	
185497	CP2 7.50	24/09/2019	01/10/2019	Clayey loam	
185498	CP2 13.50	24/09/2019	01/10/2019	Loamy sand	
185499	CP3 9.00	24/09/2019	01/10/2019	Silty clayey loam	
185500	CP3 14.50	24/09/2019	01/10/2019	Silty clayey loam	
185501	CP4 3.50	24/09/2019	01/10/2019	Silty clayey loam	
185502	CP4 5.90	24/09/2019	01/10/2019	Silty loam	
185503	CP5 5.80	24/09/2019	01/10/2019	Silty loam	
185504	CP5 14.50	24/09/2019	01/10/2019	Sandy loam	
185505	CP6 5.50	24/09/2019	01/10/2019	Silty loam	
185506	CP7 5.50	24/09/2019	01/10/2019	Silty clayey loam	



Results Summary

Report No.: 19-25079, issue number 1

	ELAB Reference						185498	185499
	Customer Reference							
			Sample ID					
		Sar	mple Type	SOIL	SOIL	SOIL	SOIL	SOIL
		Sample	e Location	CP1	CP1	CP2	CP2	CP3
		Sample	Depth (m)	4.50	10.00	7.50	13.50	9.00
		Sam	pling Date	24/09/2019	24/09/2019	24/09/2019	24/09/2019	24/09/2019
Determinand	Codes	Units	LOD					
Soil sample preparation paramet	ers							
Material removed	N	%	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Description of Inert material removed	N		0	None	None	None	None	None
Anions								
Water Soluble Sulphate	M	g/l	0.02	1.12	0.83	0.73	0.74	0.32
Miscellaneous								
рН	M	pH units	0.1	8.5	8.4	8.3	8.2	8.5



Results Summary

Report No.: 19-25079, issue number 1

	ELAB Reference						185503	185504
	Customer Reference							
		:	Sample ID					
		Sa	mple Type	SOIL	SOIL	SOIL	SOIL	SOIL
		Sample	e Location	CP3	CP4	CP4	CP5	CP5
		Sample	Depth (m)	14.50	3.50	5.90	5.80	14.50
		Sam	pling Date	24/09/2019	24/09/2019	24/09/2019	24/09/2019	24/09/2019
Determinand	Codes	Units	LOD					
Soil sample preparation paramet	ers							
Material removed	N	%	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Description of Inert material removed	N		0	None	None	None	None	None
Anions								
Water Soluble Sulphate	M	g/l	0.02	0.42	1.48	2.08	0.33	0.22
Miscellaneous								
рН	M	pH units	0.1	7.8	8.1	7.4	7.0	7.9



Results Summary

Report No.: 19-25079, issue number 1

	ELAB Reference							
	(Reference						
		:	Sample ID					
		Sa	mple Type	SOIL	SOIL			
		Sample	e Location	CP6	CP7			
		Sample	Depth (m)	5.50	5.50			
		Sam	24/09/2019	24/09/2019				
Determinand	Codes	Units	LOD					
Soil sample preparation paramet	ers							
Material removed	N	%	0.1	< 0.1	< 0.1			
Description of Inert material removed	N		0	None	None			
Anions								
Water Soluble Sulphate	M	g/l	0.02	0.12	0.27			
Miscellaneous								
pH	M	pH units	0.1	7.0	8.5			

1



Method Summary Report No.: 19-25079, issue number 1

Parameter	Codes	Analysis Undertaken On	Date Tested	Method Number	Technique
Soil					
pН	М	Air dried sample	03/10/2019	113	Electromeric
Water soluble anions	М	Air dried sample	03/10/2019	172	Ion Chromatography



Report Information

Report No.: 19-25079, issue number 1

Key

Ney	
U	hold UKAS accreditation
М	hold MCERTS and UKAS accreditation
Ν	do not currently hold UKAS accreditation
^	MCERTS accreditation not applicable for sample matrix
*	UKAS accreditation not applicable for sample matrix
S	Subcontracted to approved laboratory UKAS Accredited for the test
SM	Subcontracted to approved laboratory MCERTS/UKAS Accredited for the test
NS	Subcontracted to approved laboratory. UKAS accreditation is not applicable.
I/S	Insufficient Sample
U/S	Unsuitable sample
n/t	Not tested
<	means "less than"
>	means "greater than"
	Soil sample results are expressed on an air dried basis (dried at < 30°C), and are uncorrected for inert material removed. ELAB are unable to provide an interpretation or opinion on the content of this report. The results relate only to the sample received. PCB congener results may include any coeluting PCBs Uncertainty of measurement for the determinands tested are available upon request Unless otherwise stated, sample information has been provided by the client
Deviation	Codes
а	No date of sampling supplied
b	No time of sampling supplied (Waters Only)
С	Sample not received in appropriate containers
d	Sample not received in cooled condition

- e The container has been incorrectly filled
- f Sample age exceeds stability time (sampling to receipt)
- g Sample age exceeds stability time (sampling to analysis)

Where a sample has a deviation code, the applicable test result may be invalid.

Sample Retention and Disposal

All soil samples will be retained for a period of one month

All water samples will be retained for 7 days following the date of the test report Charges may apply to extended sample storage



Adam Steele TerraConsult Ltd 9 The Courtyard Pheonic Square Wyncolls Road Colchester CO4 9PE



i2 Analytical Ltd. 7 Woodshots Meadow, Croxley Green Business Park, Watford, Herts, WD18 8YS

t: 01923 225404 f: 01923 237404 e: reception@i2analytical.com

e: adamsteele@terraconsult.co.uk

Analytical Report Number : 19-62316

Project / Site name:	Statera, Tilbury	Samples received on:	24/09/2019
Your job number:	4593	Samples instructed on:	24/09/2019
Your order number:	PO-005803	Analysis completed by:	03/10/2019
Report Issue Number:	1	Report issued on:	03/10/2019
Samples Analysed:	9 soil samples		



Zina Abdul Razzak Senior Quality Specialist For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :	waters	 4 weeks from reporting 2 weeks from reporting 2 weeks from reporting 6 months from reporting
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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement. Application of uncertainty of measurement would provide a range within which the true result lies. An estimate of measurement uncertainty can be provided on request.





Lab Sample Number				12881	12882	12883	12884	12885
Sample Reference				WS01	WS02	WS03	12884 WS04	WS05
Sample Number				None Supplied				
Depth (m)				0.30	0 20	0.40	0.40	0 20
Date Sampled				19/09/2019	19/09/2019	19/09/2019	19/09/2019	19/09/2019
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
			-					
SOILS	-							
30113	-							
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	11	17	16	15	12
Total mass of sample received	kg	0.001	NONE	1.2	12	1.2	1.2	12
	Kġ	0.001	NONE	1.2	12	1.2	1.2	12
Asbestos in Soil	Туре	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	7.1	68	7.2	7.1	68
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Water Soluble SO4 16hr extraction (2:1 Leachate				_				_
Equivalent)	g/l	0.00125	MCERTS	0.20	0.11	0 0099	0 019	0.020
Water Soluble Chloride (2:1)	mg/kg	1	MCERTS	120	83	3.2	14	12
Total Phenols		1 .						
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1 0	< 1.0	< 1.0	< 1 0	< 1.0
One detect PAUs								
Speciated PAHs		0.05		0.05	0.05	0.05	0.05	0.05
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene Anthracene	mg/kg	0.05	MCERTS MCERTS	< 0.05 < 0.05	< 0.05 < 0.05	< 0 05 < 0 05	< 0.05 < 0.05	< 0.05 < 0.05
Fluoranthene	mg/kg mg/kg	0.03	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0 05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0 05	< 0.05	< 0.05
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0 05	< 0.05	< 0.05
Total PAH								
Total WAC-17 PAHs	mg/kg	0.85	NONE	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9
Heavy Metals / Metalloids	-			-			_	
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	17	20	14	7.4	25
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.7	18	1.2	1.3	13
Boron (water soluble)	mg/kg	02	MCERTS	14	9.9	5.7	4.2	5.7
Cadmium (aqua regia extractable)	mg/kg	02	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	50	50	40	43	39
Copper (aqua regia extractable)	mg/kg	1	MCERTS	8.5	4.9 20	5.0	24 15	11 23
Lead (aqua regia extractable)	mg/kg	03	MCERTS	21	< 0.3	16	< 0 3	
Mercury (aqua regia extractable) Nickel (aqua regia extractable)	mg/kg mg/kg	1	MCERTS MCERTS	< 0 3 30	< 0.3 43	< 0.3 24	< 0 3 40	< 0.3 27
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1 0	< 1.0	< 1.0	< 1 0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	84	86	67	71	67
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	80	80	68	110	77
בוויב (מקמם וכקום כאם מכנמטוכ)	ilig/kg		PICENTS	00	00	00	110	
Monoaromatics & Oxygenates								
Benzene	µg/kg	1	MCERTS	< 1 0	< 1.0	< 1.0	< 1 0	< 1.0

Benzene µg/kg MCERTS < 10 < 1.0 < 1.0 < 10 < 1.0 MCERTS Toluene µg/kg < 1 0 < 1.0 < 1.0 < 10 < 1.0 1 Ethylbenzene MCERTS < 1.0 < 1.0 < 1.0 < 10 < 1.0 µg/kg 1 p & m-xylene MCERTS < 1 0 < 1 0 < 1.0 < 1.0 < 1.0 < 1.0 < 1 0 < 1 0 < 1.0 < 1.0 µg/kg 1 MCERTS o-xylene µg/kg 1

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Lab Sample Number				12881	12882	12883	12884	12885
Sample Reference				WS01	WS02	WS03	WS04	WS05
Sample Number				None Supplied				
Depth (m)				0.30	0 20	0.40	0.40	0 20
Date Sampled				19/09/2019	19/09/2019	19/09/2019	19/09/2019	19/09/2019
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Petroleum Hydrocarbons								
Mineral Oil (C10 - C40)	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH C10 - C40	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH (C10 - C25)	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample





Lab Sample Number				12886	12887	12888	12889	
Sample Reference				WS06	WS07	WS08	WS09	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				0.30	0.15	0.10	0.25	
Date Sampled				20/09/2019	20/09/2019	20/09/2019	20/09/2019	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter	Units	Limit of detection	Accreditation Status					
(Soil Analysis)	ត	tion	tation us					
SOILS								
50125								
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	
Moisture Content	%	0.1 N/A	NONE	17	16	15	18	
Total mass of sample received	kg	0.001	NONE	1.0	1.1	0.40	1.1	
	ĸġ	0.001	NONL	1.0	1.1	0.40	1.1	
Asbestos in Soil	Туре	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	
	Type	- Mark	150 17025	Not detected	Not detected	Not detected	Hot detected	
General Inorganics								
PH - Automated	pH Units	N/A	MCERTS	7.5	73	7.1	7.4	
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	
Water Soluble SO4 16hr extraction (2:1 Leachate								
Equivalent)	g/l	0.00125	MCERTS	0 026	0.021	0.024	0 020	
Nater Soluble Chloride (2:1)	mg/kg	1	MCERTS	20	31	20	11	
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1 0	< 1.0	< 1.0	< 1 0	
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0 05	< 0.05	
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
luorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0 05 < 0 05	< 0.05 < 0.05	
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS MCERTS	< 0.05	< 0.05 < 0.05	< 0.05	< 0.05	
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
indeno(1,2,3-cd)pyrene Dibenz(a,h)anthracene	mg/kg mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
	ing/kg	0.05	HUNL	\$ 0.05	- 0.05	- 0.05	× 0.03	
Total PAH								
Total WAC-17 PAHs	mg/kg	0.85	NONE	< 0.9	< 0.9	< 0.9	< 0.9	
	• ··· <i>a</i> /···J							
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	21	14	19	19	
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.4	13	1.5	1.4	
Boron (water soluble)	mg/kg	0 2	MCERTS	5.8	3.7	4.6	4.6	
Cadmium (aqua regia extractable)	mg/kg	0 2	MCERTS	< 0 2	< 0.2	< 0.2	< 0 2	
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	43	38	43	40	
Copper (aqua regia extractable)	mg/kg	1	MCERTS	11	9.7	14	11	
ead (aqua regia extractable)	mg/kg	1	MCERTS	33	32	30	30	
Mercury (aqua regia extractable)	mg/kg	03	MCERTS	< 0 3	< 0.3	< 0.3	< 0 3	
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	28	26	27	26	
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1 0	< 1.0	< 1.0	< 1 0	
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	75	71	74	72	
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	81	78	130	82	
Ionoaromatics & Oxygenates		I .	MCERTS					
Konzono	ua/ka			< 1.0	< 1.0	< 1.0	< 1.0	

Benzene	µg/kg	1	MCERTS	< 1 0	< 1.0	< 1.0	< 1 0	
Toluene	µg/kg	1	MCERTS	< 1 0	< 1.0	< 1.0	< 10	
Ethylbenzene	µg/kg	1	MCERTS	< 1 0	< 1.0	< 1.0	< 10	
p & m-xylene	µg/kg	1	MCERTS	< 1 0	< 1.0	< 1.0	< 1 0	
o-xylene	µg/kg	1	MCERTS	< 1 0	< 1.0	< 1.0	< 10	

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Lab Sample Number				12886	12887	12888	12889	
Sample Reference				WS06	WS07	WS08	WS09	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				0.30	0.15	0.10	0.25	
Date Sampled				20/09/2019	20/09/2019	20/09/2019	20/09/2019	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Petroleum Hydrocarbons								
Mineral Oil (C10 - C40)	mg/kg	10	NONE	< 10	< 10	< 10	< 10	
TPH C10 - C40	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	
TPH (C10 - C25)	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	

U/S = Unsuitable Sample I/S = Insufficient Sample





Analytical Report Number : 19-62316

Project / Site name: Statera, Tilbury

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
12881	WS01	None Supplied	0.30	Brown clay with vegetation.
12882	WS02	None Supplied	0.20	Brown clay with vegetation.
12883	WS03	None Supplied	0.40	Brown clay with vegetation.
12884	WS04	None Supplied	0.40	Brown clay and sand with vegetation.
12885	WS05	None Supplied	0.20	Brown clay and gravel with vegetation.
12886	WS06	None Supplied	0.30	Brown clay.
12887	WS07	None Supplied	0.15	Brown clay.
12888	WS08	None Supplied	0.10	Brown clay.
12889	WS09	None Supplied	0.25	Brown clay.





Analytical Report Number : 19-62316

Project / Site name: Statera, Tilbury

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

					1
Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
BTEX in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L017-UK	W	MCERTS
Chloride, water soluble, in soil	Determination of Chloride colorimetrically by discrete analyser.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests. 2:1 extraction.	L082-PL	D	MCERTS
DRO (Soil)	Determination of extractable hydrocarbons in soil by GC-MS/FID.	In-house method	L076-PL	D	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Mineral Oil (Soil) C10 - C40	Determination of mineral oil fraction extractable hydrocarbons in soil by GC-MS/GC-FID.	in-house method	L076-PL	D	NONE
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	w	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS
Speciated WAC-17 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270. MCERTS accredited except Coronene.	L064-PL	D	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP- OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests, 2:1 water:soil extraction, analysis by ICP- OES.	L038-PL	D	MCERTS
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
TPH Banding in Soil by FID	Determination of hexane extractable hydrocarbons in soil by GC-FID.	In-house method, TPH with carbon banding.	L076-PL	W	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.

For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.

Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.



Therese McDaid

TerraConsult Ltd

9 The Courtyard Pheonic Square

Wyncolls Road

Colchester

CO4 9PE



i2 Analytical Ltd. 7 Woodshots Meadow, Croxley Green Business Park, Watford, Herts, WD18 8YS

t: 01923 225404 f: 01923 237404 e: reception@i2analytical.com

e: theresemcdaid@terraconsult.co.uk

Analytical Report Number : 19-65300

Project / Site name:	Tilbury	Samples received on:	11/10/2019
Your job number:	4593	Samples instructed on:	11/10/2019
Your order number:	PO-005935	Analysis completed by:	17/10/2019
Report Issue Number:	1	Report issued on:	17/10/2019
Samples Analysed:	3 water samples		

Signed:

Zina Abdul Razzak Senior Quality Specialist For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :	soils leachates waters asbestos	 4 weeks from reporting 2 weeks from reporting 2 weeks from reporting 6 months from reporting
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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement. Application of uncertainty of measurement would provide a range within which the true result lies. An estimate of measurement uncertainty can be provided on request.





Analytical Report Number: 19-65300

Project / Site name: Tilbury

Your Order No: PO-005935

Lab Sample Number				1327498	1327499	1327500	
Sample Reference				WS2	WS4	WS7	
Sample Number				None Supplied	None Supplied	None Supplied	
Depth (m)				None Supplied	None Supplied	None Supplied	
Date Sampled				09/10/2019	09/10/2019	09/10/2019	
Time Taken				1440	1410	1430	
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status				
General Inorganics							
pH	pH Units	N/A	ISO 17025	7.3	7.4	7.4	
Electrical Conductivity at 20 °C	µS/cm	10	ISO 17025	28000	6700	5500	
Total Cyanide	μg/l	10	ISO 17025	< 10	< 10	< 10	
Sulphate as SO ₄	µg/l	45	ISO 17025	1290000	2200000	1970000	
Chloride	mg/l	0.15	ISO 17025	6200	810	610	
Ammonium as NH ₄	µg/l	15	ISO 17025	33000	6100	6200	
Nitrate as N	mg/l	0.01	ISO 17025	0.78	0.58	0.54	
Nitrate as NO ₃	mg/l	0.05	ISO 17025	3.45	2.59	2.37	
Alkalinity	mgCaCO3/I	3	ISO 17025	2500	960	880	
Hardness - Total	mgCaCO3/I	1	ISO 17025	4400	1450	1740	
Total Phenols	µg/l	10	ISO 17025	150	13	< 10	
Total Phenols (monohydric)							
	• • • •						
Speciated PAHs		0.01	ISO 17025	< 0.01	< 0.01	< 0.01	
Speciated PAHs Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	
Speciated PAHs Naphthalene Acenaphthylene	µg/I µg/I	0.01	ISO 17025	< 0 01	< 0.01	< 0.01	
Speciated PAHs Naphthalene Acenaphthylene Acenaphthene	нд/I hg/I hg/I	0.01	ISO 17025 ISO 17025	< 0 01 < 0 01	< 0.01 < 0.01	< 0.01 < 0.01	
Speciated PAHs Naphthalene Acenaphthylene Acenaphthene Fluorene	μg/l μg/l μg/l μg/l	0.01 0.01 0.01	ISO 17025 ISO 17025 ISO 17025	< 0 01 < 0 01 < 0 01	< 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01	
Speciated PAHs Naphthalene Acenaphthylene Acenaphthene Fluorene Phenanthrene	μg/l μg/l μg/l μg/l μg/l	0.01 0.01 0.01 0.01	ISO 17025 ISO 17025 ISO 17025 ISO 17025	< 0 01 < 0 01 < 0 01 < 0 01	< 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01	
Speciated PAHs Naphthalene Acenaphthylene Acenaphthene Fluorene	hð\ hð\ hð\ hð\ hð\ hð\	0.01 0.01 0.01	ISO 17025 ISO 17025 ISO 17025	< 0 01 < 0 01 < 0 01	< 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01	
Speciated PAHs Naphthalene Acenaphthylene Acenaphthene Fluorene Phenanthrene Anthracene	hð\ hð\ hð\ hð\ hð\ hð\ hð\ hð\ hð\ hð\	0.01 0.01 0.01 0.01 0.01	ISO 17025 ISO 17025 ISO 17025 ISO 17025 ISO 17025	< 0 01 < 0 01 < 0 01 < 0 01 < 0 01 < 0 01	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01	
Speciated PAHs Naphthalene Acenaphthylene Acenaphthylene Fluorene Phenanthrene Anthracene Fluoranthene Fluoranthene	hð\ hð\ hð\ hð\ hð\ hð\	0.01 0.01 0.01 0.01 0.01 0.01	ISO 17025 ISO 17025 ISO 17025 ISO 17025 ISO 17025 ISO 17025	< 0 01 < 0 01 < 0 01 < 0 01 < 0 01 < 0 01 < 0 01	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	
Speciated PAHs Naphthalene Acenaphthylene Acenaphthene Fluorene Phenanthrene Anthracene Fluoranthene Pyrene	hð\ hð\ hð\ hð\ hð\ hð\ hð\ hð\ hð\ hð\	0.01 0.01 0.01 0.01 0.01 0.01 0.01	ISO 17025 ISO 17025 ISO 17025 ISO 17025 ISO 17025 ISO 17025 ISO 17025	< 0 01 < 0 01	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	
Speciated PAHs Naphthalene Acenaphthylene Acenaphthene Fluorene Phenanthrene Anthracene Fluoranthene Pyrene Benzo(a)anthracene	۲۹۹/۱ ۲۹۹/۱ ۲۹۹/۱ ۲۹۹/۱ ۲۹۹/۱ ۲۹۹/۱ ۲۹۹/۱ ۲۹۹/۱ ۲۹۹/۱	0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01	ISO 17025 ISO 17025 ISO 17025 ISO 17025 ISO 17025 ISO 17025 ISO 17025 ISO 17025	< 0 01 < 0 01	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	
Speciated PAHs Napithalene Acenaphthylene Acenaphthylene Fluorene Phenanthrene Fluorene Fluoranthene Pyrene Benzo(a)anthracene Chrysene	hall hall hall hall hall hall hall hall	0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01	ISO 17025 ISO 17025 ISO 17025 ISO 17025 ISO 17025 ISO 17025 ISO 17025 ISO 17025 ISO 17025	$\begin{array}{c} < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \end{array}$	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.	
Speciated PAHs Naphthalene Acenaphthylene Acenaphthylene Pluorene Phenanthrene Phinarthrene Phrene Benzo(a)anthracene Benzo(b)fluoranthene	hðl hðl hðl hðl hðl hðl hðl hðl hðl hðl	0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01	ISO 17025 ISO 17025	$\begin{array}{c} < 0.01 \\ < 0.01 \\ < 0.01 \\ < 0.01 \\ < 0.01 \\ < 0.01 \\ < 0.01 \\ < 0.01 \\ < 0.01 \\ < 0.01 \\ < 0.01 \\ < 0.01 \end{array}$	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.	
Speciated PAHs Naphthalene Acenaphthylene Acenaphthylene Fluorene Fluorene Phenanthrene Phenanthrene Pyrene Benzo(a)anthracene Benzo(b)fluoranthene Benzo(b)fluoranthene	۲۹۹۱ ۲۹۹۲ ۲۹۹۲ ۲۹۹۲ ۲۹۹۲ ۲۹۹۲ ۲۹۹۲ ۲۹۹۲	0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01	ISO 17025 ISO 17025	$\begin{array}{c} < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \end{array}$	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	
Speciated PAHs Naphthalene Acenaphthylene Acenaphthene Fluorene Phenanthrene Anthracene Fluoranthene Pyrene Benzo(a)anthracene Benzo(b)fluoranthene Benzo(a)pyrene Benzo(a)pyrene	рд/ рд/ рд/ рд/ рд/ рд/ рд/ рд/	0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01	ISO 17025 ISO 17025	$\begin{array}{c} < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 1 \\ < 0 \ 0 \ 0 \ 0 \ 0 \ 0 \ 0 \ 0 \ 0 \ 0$	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	< 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01	

Total PAH							
Total EPA-16 PAHs	µg/l	0.16	ISO 17025	< 0.16	< 0.16	< 0.16	





Analytical Report Number: 19-65300

Project / Site name: Tilbury

Your Order No: PO-005935

Toul Oldel No. PO-003333								
Lab Sample Number		1327498	1327499	1327500				
Sample Reference		WS2	WS4	WS7				
Sample Number		None Supplied	None Supplied	None Supplied				
Depth (m)	None Supplied	None Supplied	None Supplied					
Date Sampled				09/10/2019	09/10/2019	09/10/2019		
Time Taken				1440	1410	1430		
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					
Heavy Metals / Metalloids								
Boron (dissolved)	µg/l	10	ISO 17025	1800	1500	1100		
Calcium (dissolved)	mg/l	0.012	ISO 17025	410	190	330		
Magnesium (dissolved)	mg/l	0.005	ISO 17025	820	240	220		
Selenium (dissolved)	µg/l	4	ISO 17025	< 4.0	-	-		
Arsenic (dissolved)	µg/l	0.15	ISO 17025	< 0.15	1.40	0.89		
Boron (dissolved)	µg/l	10	ISO 17025	1800	1500	1100		
Cadmium (dissolved)	µg/l	0.02	ISO 17025	< 0 02	< 0.02	< 0.02		
Calcium (dissolved)	mg/l	0.012	ISO 17025	410	190	330		
Chromium (dissolved)	µg/l	0.2	ISO 17025	< 0.2	0.2	< 0 2		
Copper (dissolved)	µg/l	0.5	ISO 17025	< 0.5	< 0.5	< 0 5		
Lead (dissolved)	µg/l	0.2	ISO 17025	< 0.2	0.4	< 0 2		
Magnesium (dissolved)	mg/l	0.005	ISO 17025	820	240	220		
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0 05	< 0.05	< 0.05		
Nickel (dissolved)	µg/l	0.5	ISO 17025	< 0.5	9.2	< 0 5		
Selenium (dissolved)	µg/l	0.6	ISO 17025	U/S	14	13	_	
Zinc (dissolved)	µg/l	0.5	ISO 17025	< 0.5	< 0.5	< 0 5		





Analytical Report Number: 19-65300

Project / Site name: Tilbury

Your Order No: PO-005935

Lab Sample Number		1327498	1327499	1327500			
Sample Reference		WS2	WS4	WS7			
Sample Number				None Supplied	None Supplied	None Supplied	
Depth (m)				None Supplied	None Supplied	None Supplied	
Date Sampled				09/10/2019	09/10/2019	09/10/2019	
Time Taken				1440	1410	1430	
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status				
Monoaromatics & Oxygenates							
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 10	
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 10	
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 10	
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 10	
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 10	
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 10	

Petroleum Hydrocarbons

TPH1 (C10 - C40)	µg/l	10	NONE	< 10	< 10	< 10	
TPH-CWG - Aliphatic >C5 - C6	µg/l	1	ISO 17025	< 1.0	< 1.0	< 10	
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0	< 10	
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	ISO 17025	< 1.0	< 1.0	< 10	
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10	
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10	
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10	
TPH-CWG - Aromatic >C5 - C7	µg/l	1	ISO 17025	< 1.0	< 1.0	< 10	
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0	< 10	
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	< 1.0	< 1.0	< 10	
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10	
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10	
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10	

U/S = Unsuitable Sample I/S = Insufficient Sample





Analytical Report Number : 19-65300

Project / Site name: Tilbury

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

nalytical Test Name Analytical Method Description		Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status	
Alkalinity in Water (by discreet analyser)	Determination of Alkalinity by discreet analyser (colorimetry). Accredited matrices: SW, PW, GW.	In house method based on MEWAM & USEPA Method 310 2.	L082-PL	w	ISO 17025	
Ammonium as NH4 in water	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	ISO 17025	
Boron in water	Determination of boron in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW	In-house method based on MEWAM	L039-PL	W	ISO 17025	
BTEX and MTBE in water (Monoaromatics)	Determination of BTEX and MTBE in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	w	ISO 17025	
Chloride in water	Determination of Chloride colorimetrically by discrete analyser.	In house based on MEWAM Method ISBN 0117516260. Accredited matrices: SW, PW, GW.	L082-PL	w	ISO 17025	
Electrical conductivity at 20oC of water	Determination of electrical conductivity in water by electrometric measurement. Accredited Matrices SW, GW, PW	In-house method	L031-PL	w	ISO 17025	
Metals in water by ICP-MS (dissolved)	Determination of metals in water by acidification followed by ICP-MS. Accredited Matrices: SW, GW, PW except B=SW,GW, Hg=SW,PW, Al=SW,PW.	In-house method based on USEPA Method 6020 & 200.8 "for the determination of trace elements in water by ICP-MS.	L012-PL	w	ISO 17025	
Metals in water by ICP-OES (dissolved)	Determination of metals in water by acidification followed by ICP-OES. Accredited Matrices SW, GW, PW, PrW.(AI, Cu,Fe,Zn).	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	w	ISO 17025	
Monohydric phenols in water	Determination of phenols in water by continuous flow analyser. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	w	ISO 17025	
Nitrate as N in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewatern & Polish Standard Method PN-82/C-04579.08,	L078-PL	w	ISO 17025	
Nitrate in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW	In-house method based on Examination of Water and Wastewatern & Polish Standard Method PN-82/C-04579.08,	L078-PL	w	ISO 17025	
pH at 20oC in water (automated)	Determination of pH in water by electrometric measurement. Accredited matrices: SW PW GW	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	w	ISO 17025	
Speciated EPA-16 PAHs in water	Determination of PAH compounds in water by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards. Accredited matrices: SW PW GW	In-house method based on USEPA 8270	L102B-PL	w	ISO 17025	
Sulphate in water	Determination of sulphate in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW, PrW.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	w	ISO 17025	
Total cyanide in water	Determination of total cyanide by distillation followed by colorimetry. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	w	ISO 17025	
Total Hardness of water	Determination of hardness in waters by calculation from calcium and magnesium. Accredited Matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L045-PL	w	ISO 17025	
TPH1 (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS.	In-house method	L070-PL	w	NONE	

Iss No 19-65300-1 Tilbury 4593

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Analytical Report Number : 19-65300

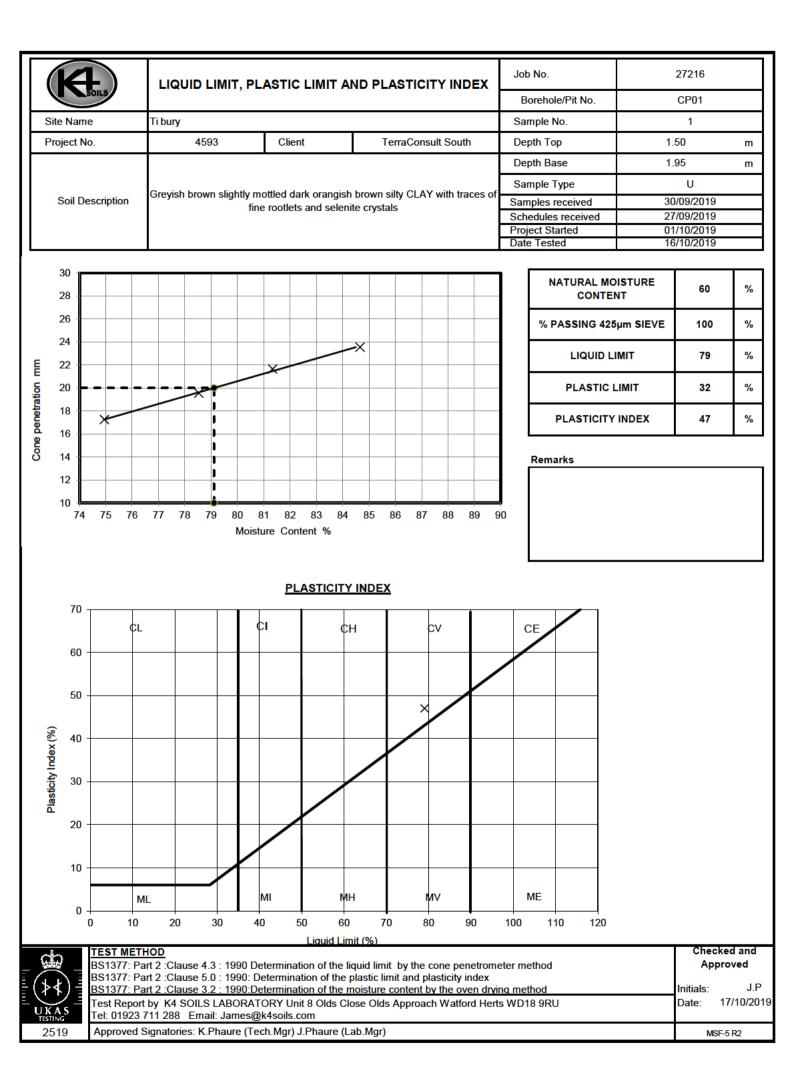
Project / Site name: Tilbury

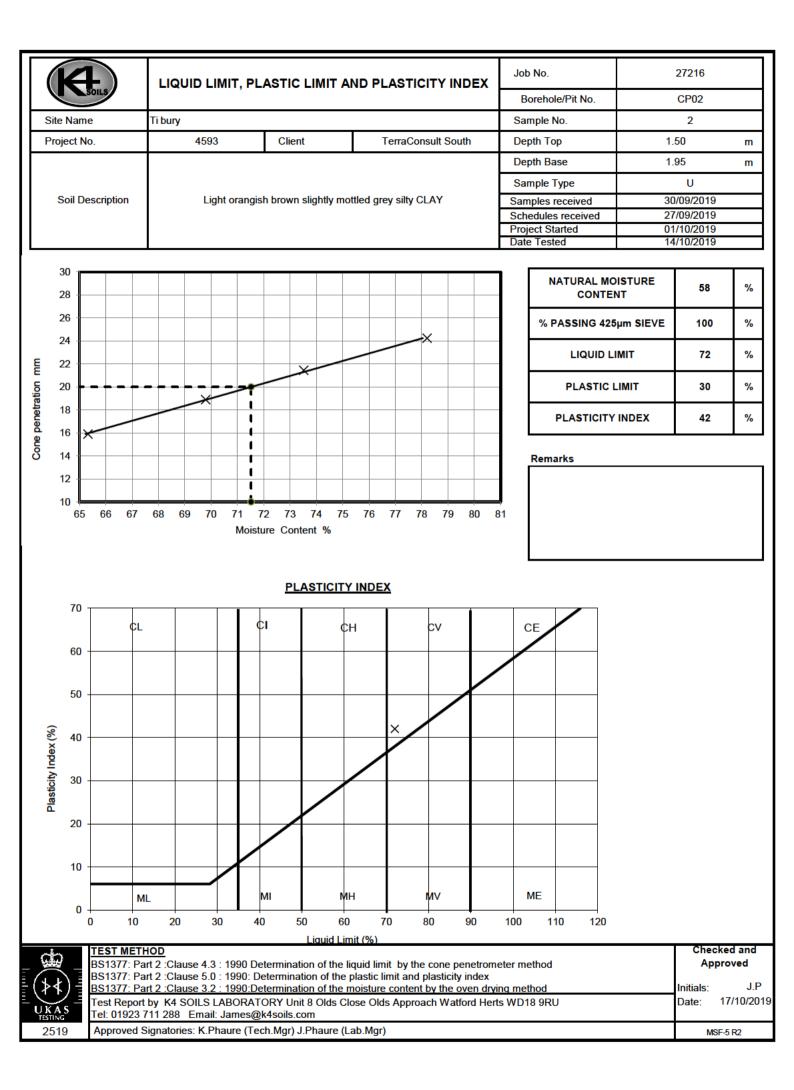
Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

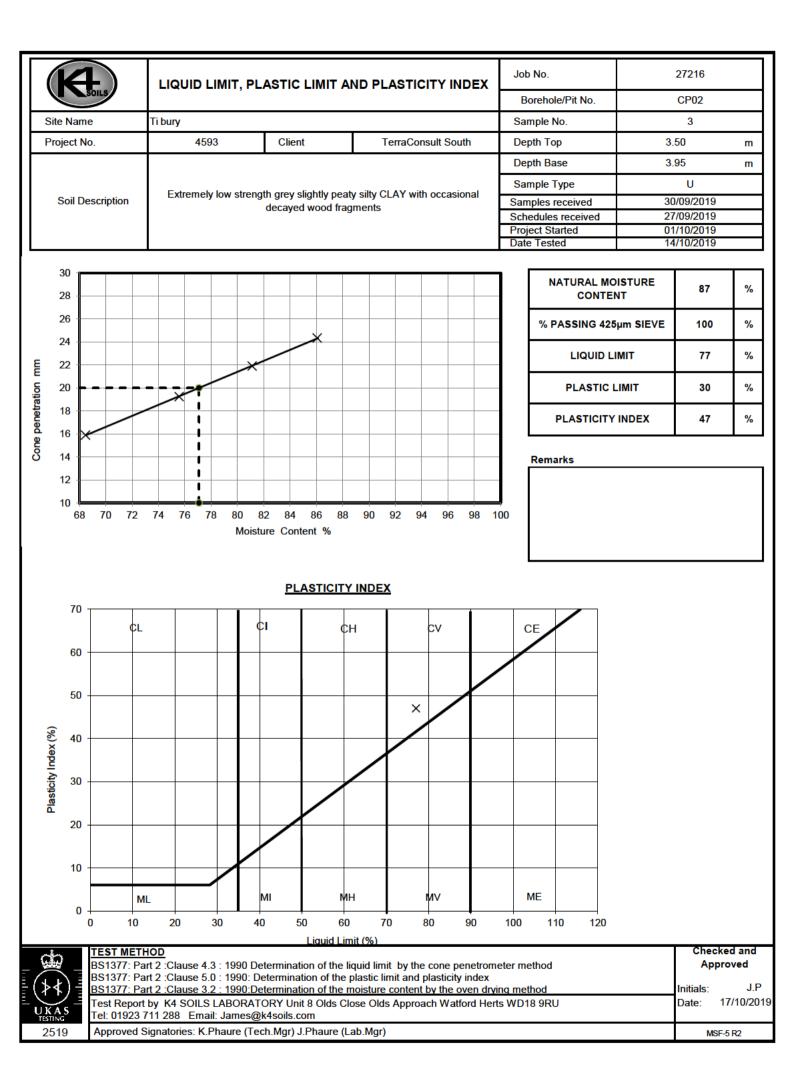
Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-PL	W	NONE

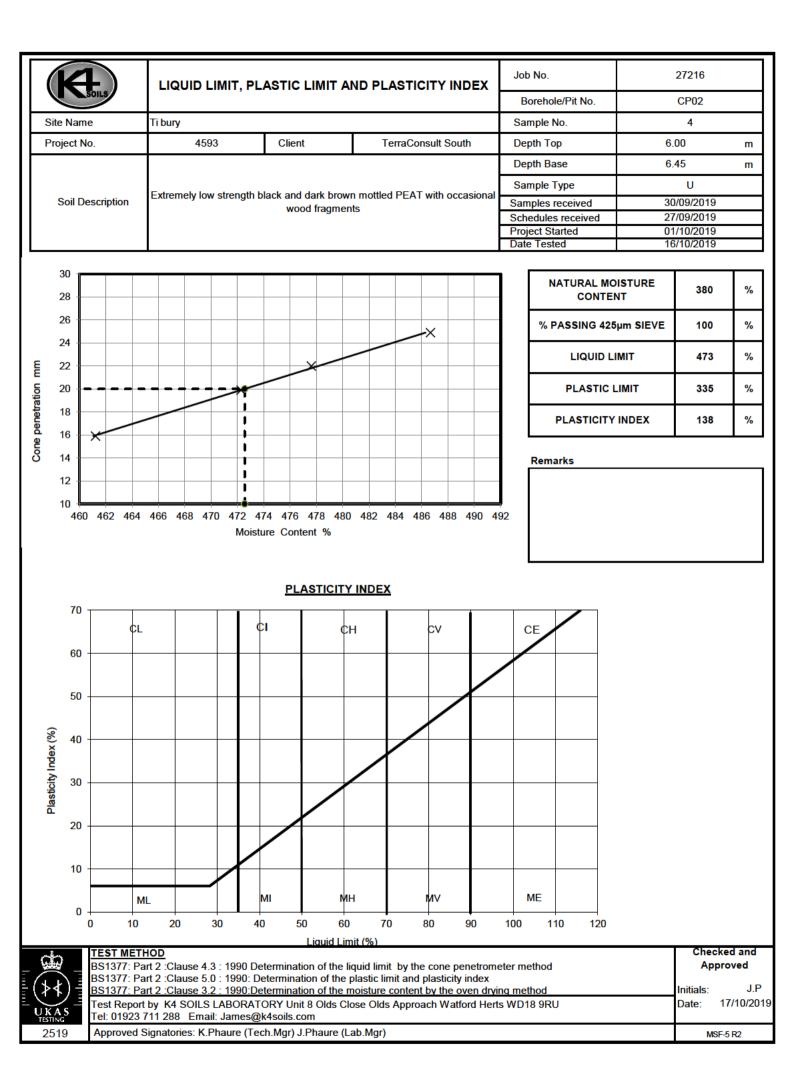
For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom. For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.

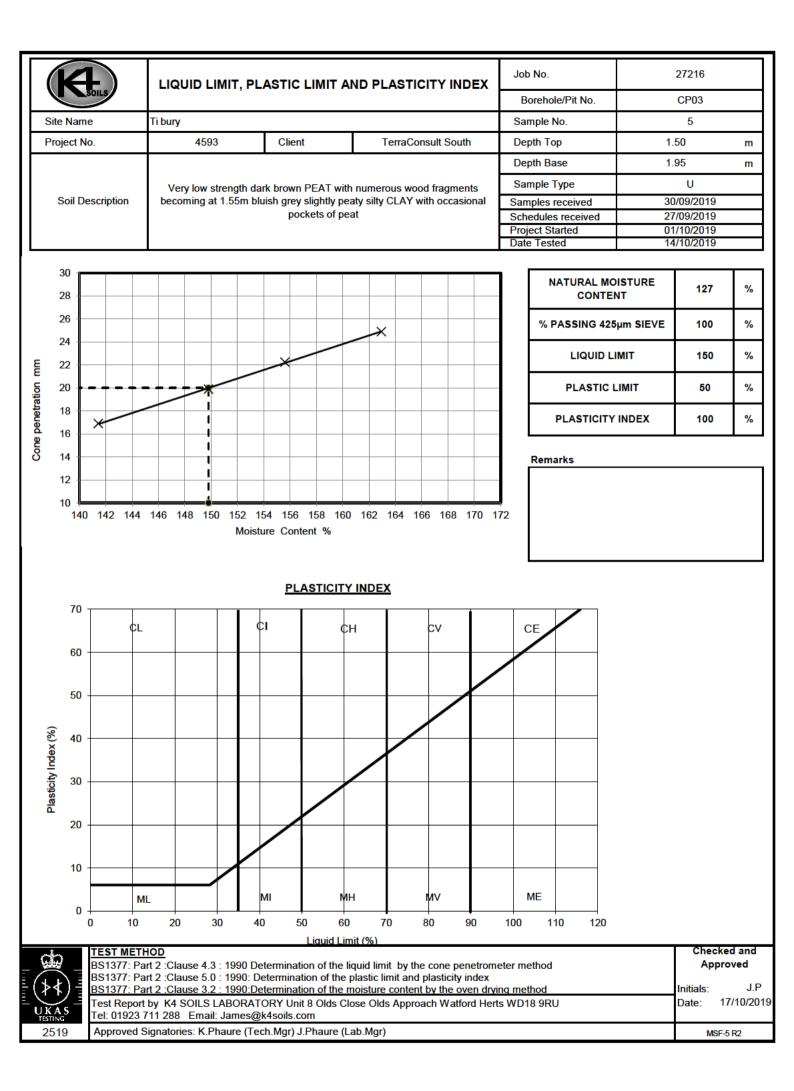
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

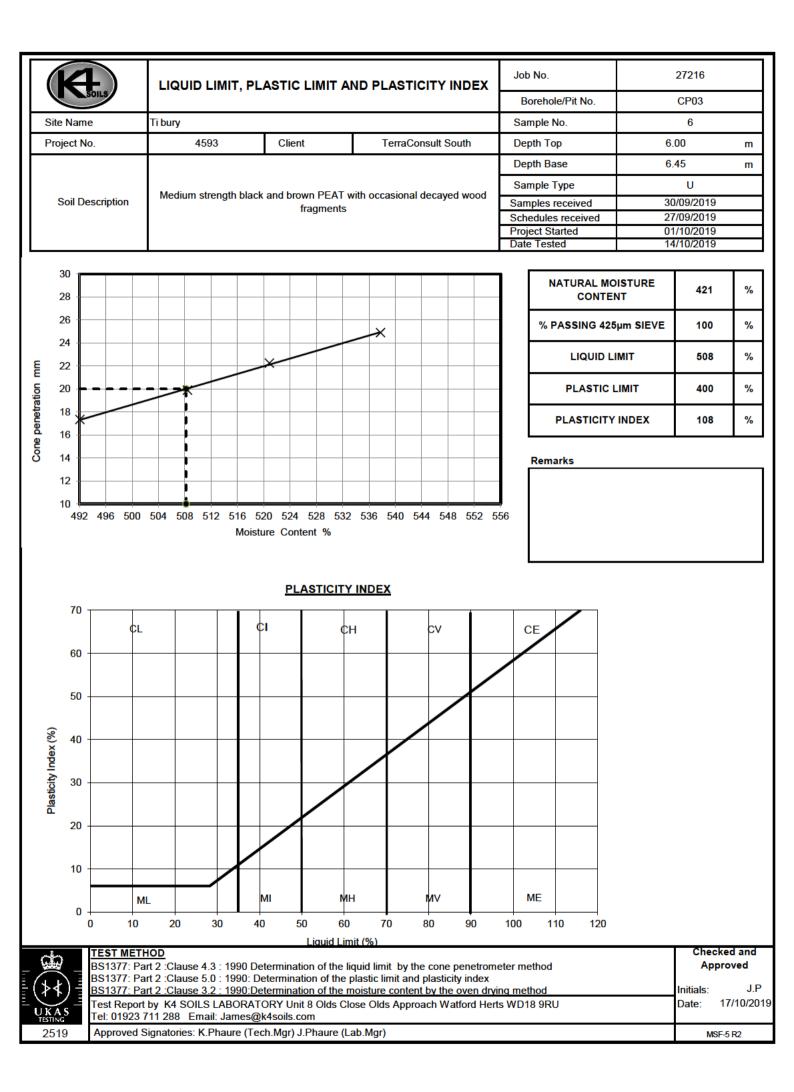


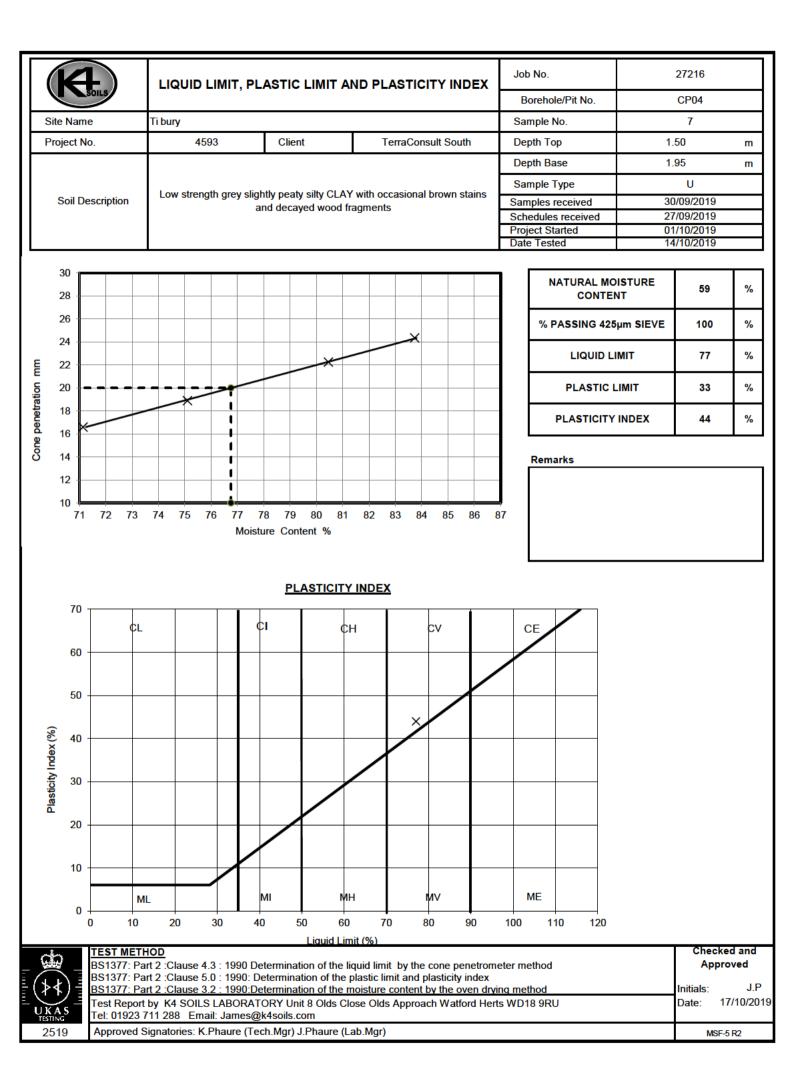


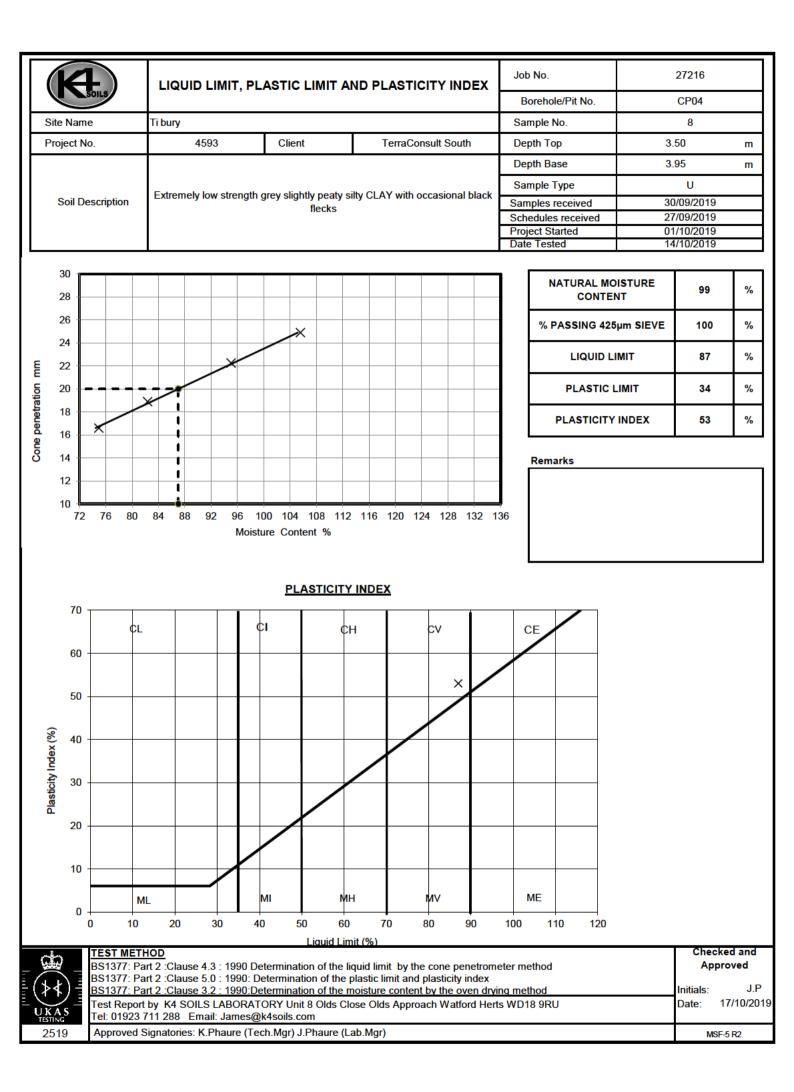


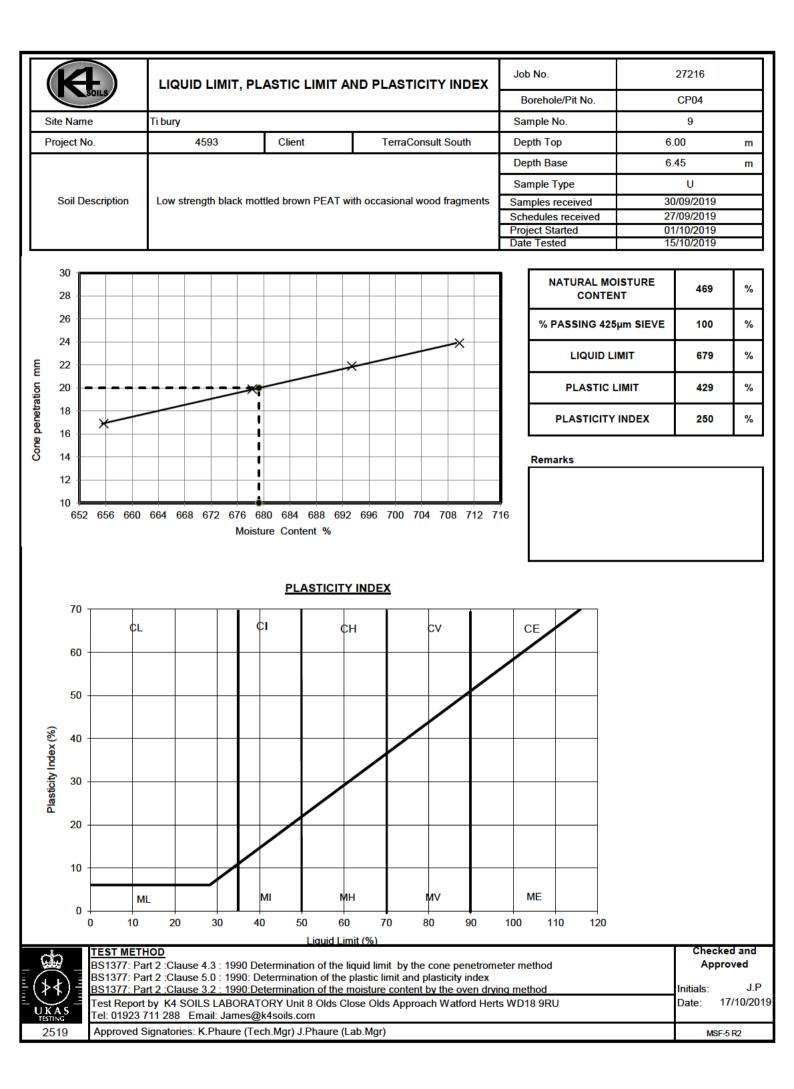


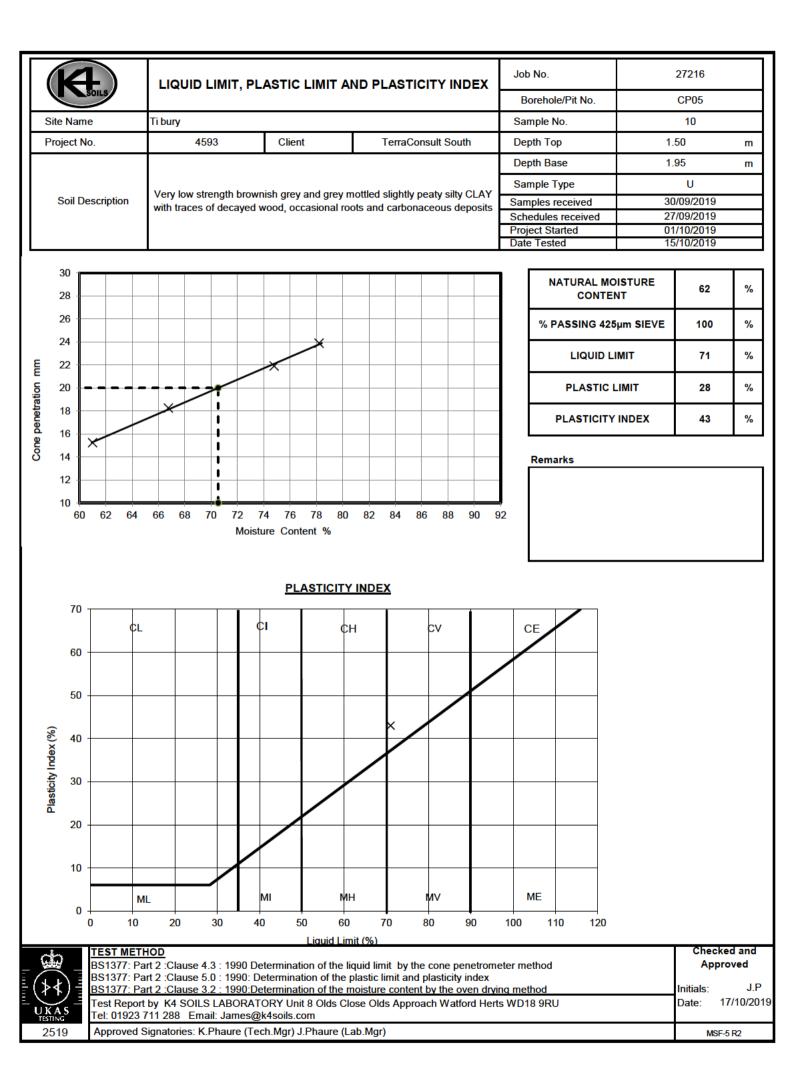


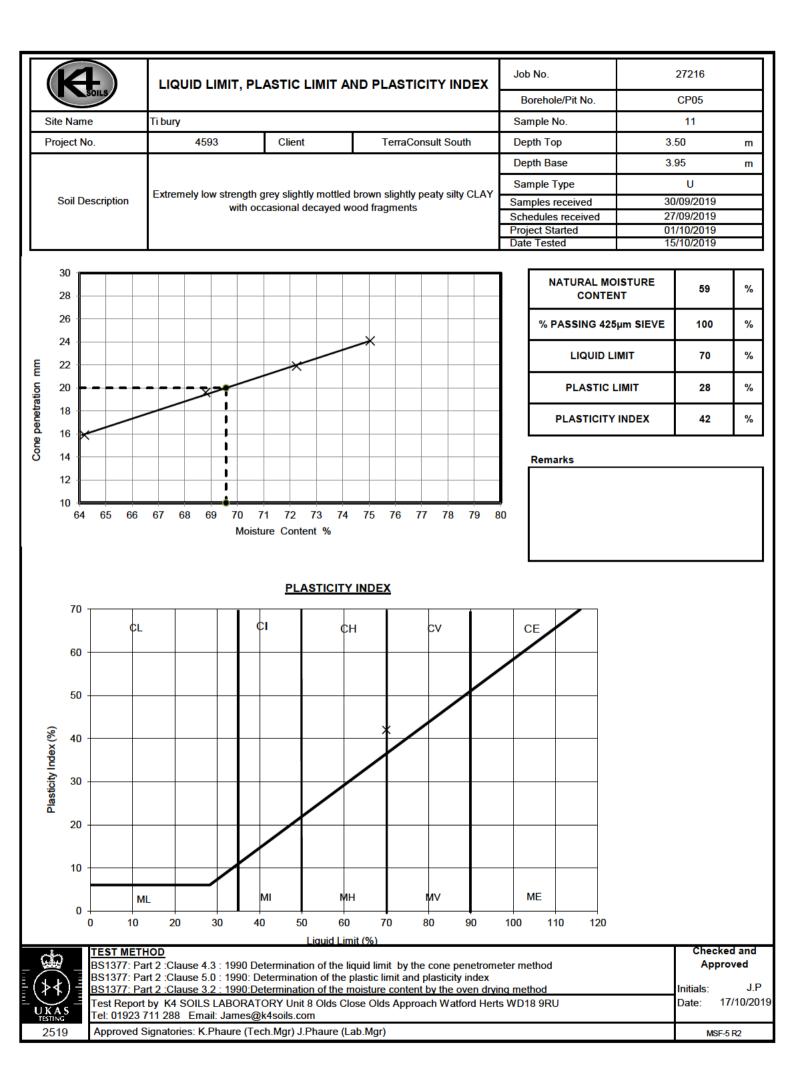


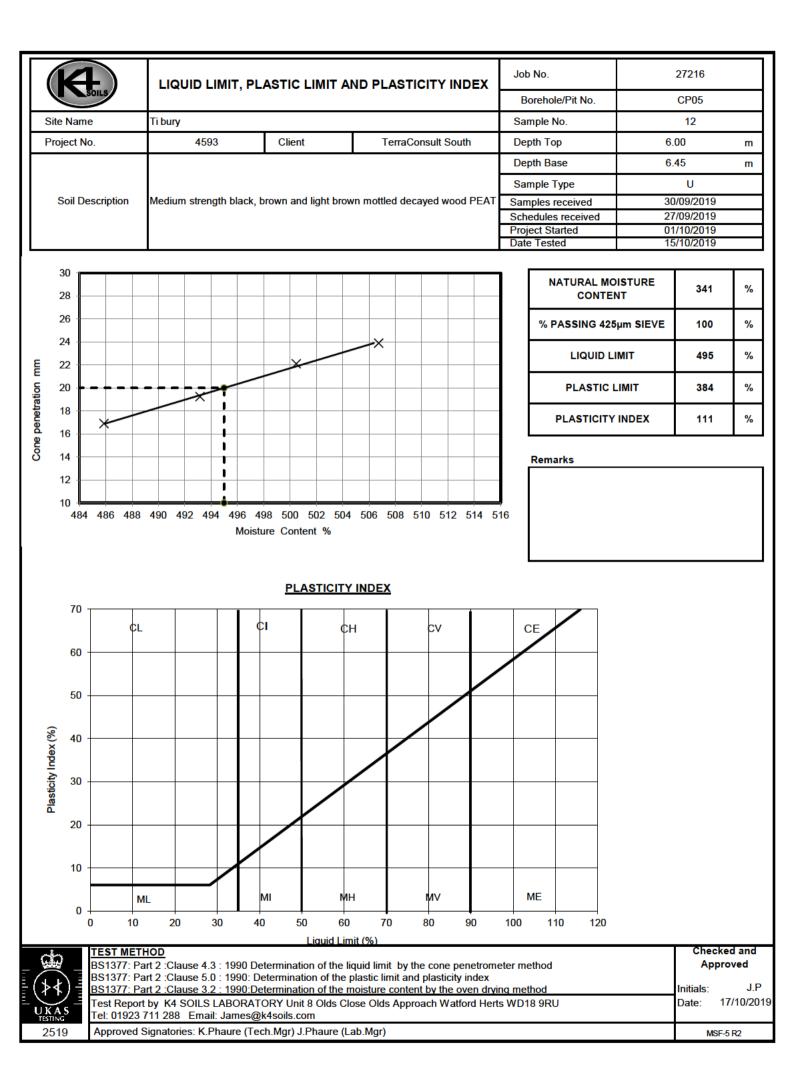


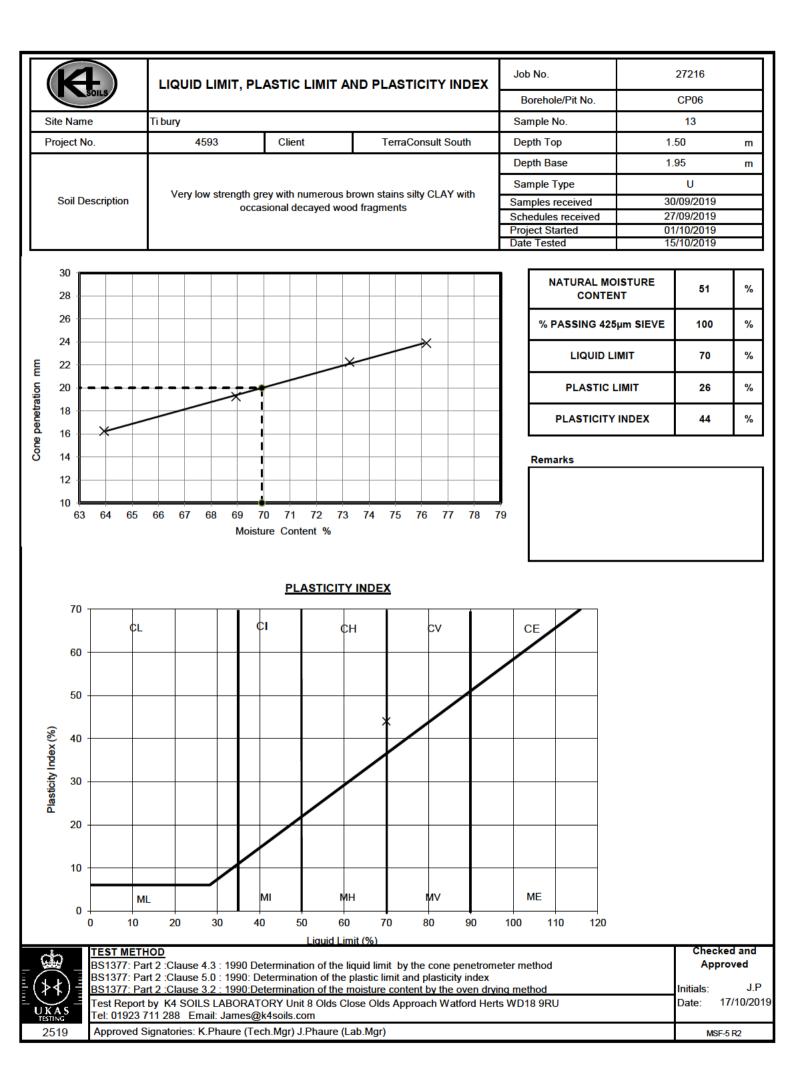


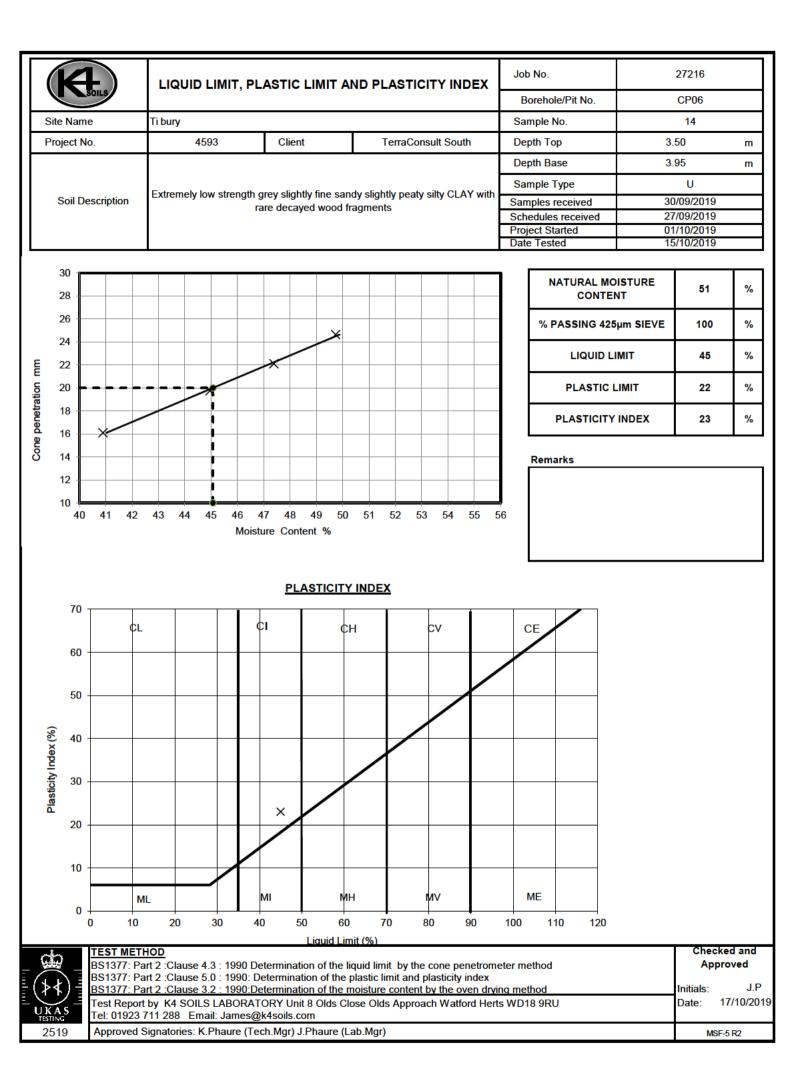


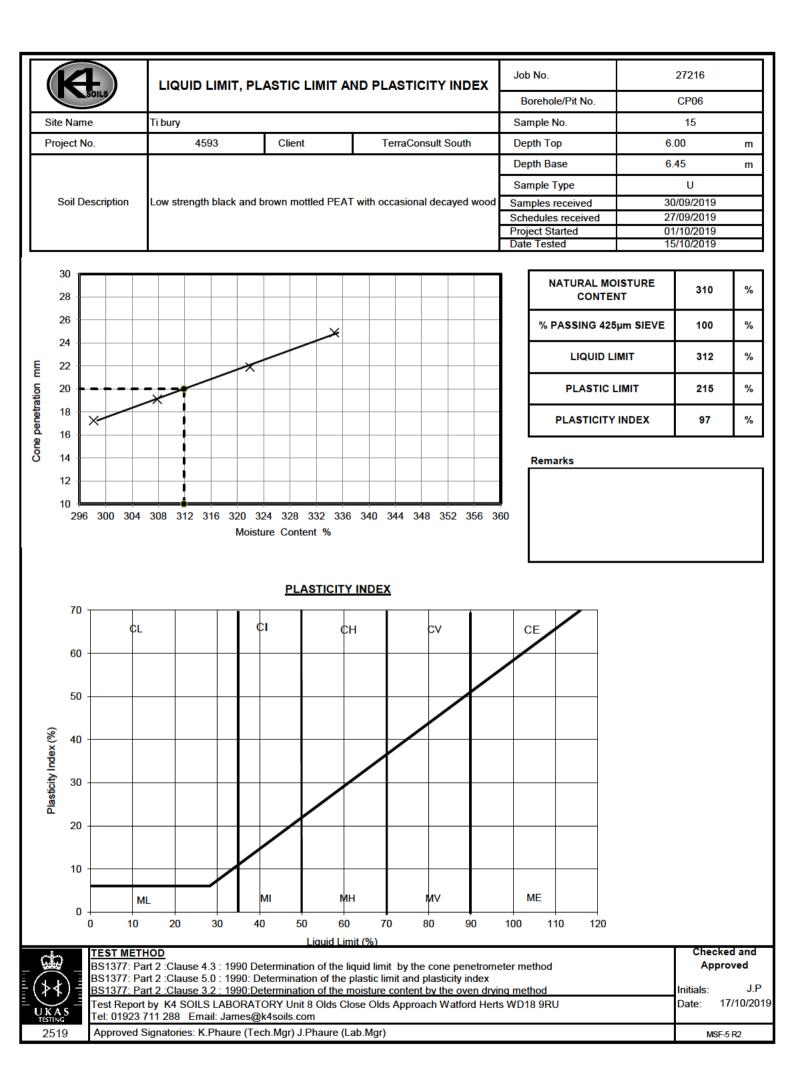


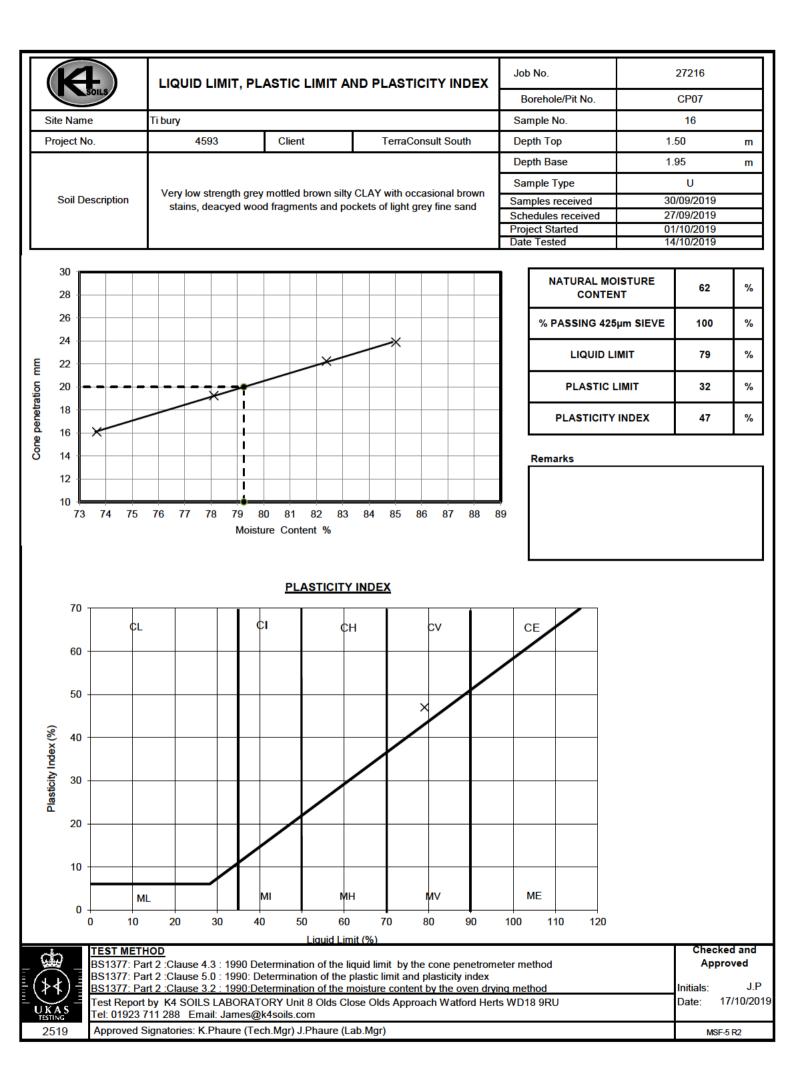


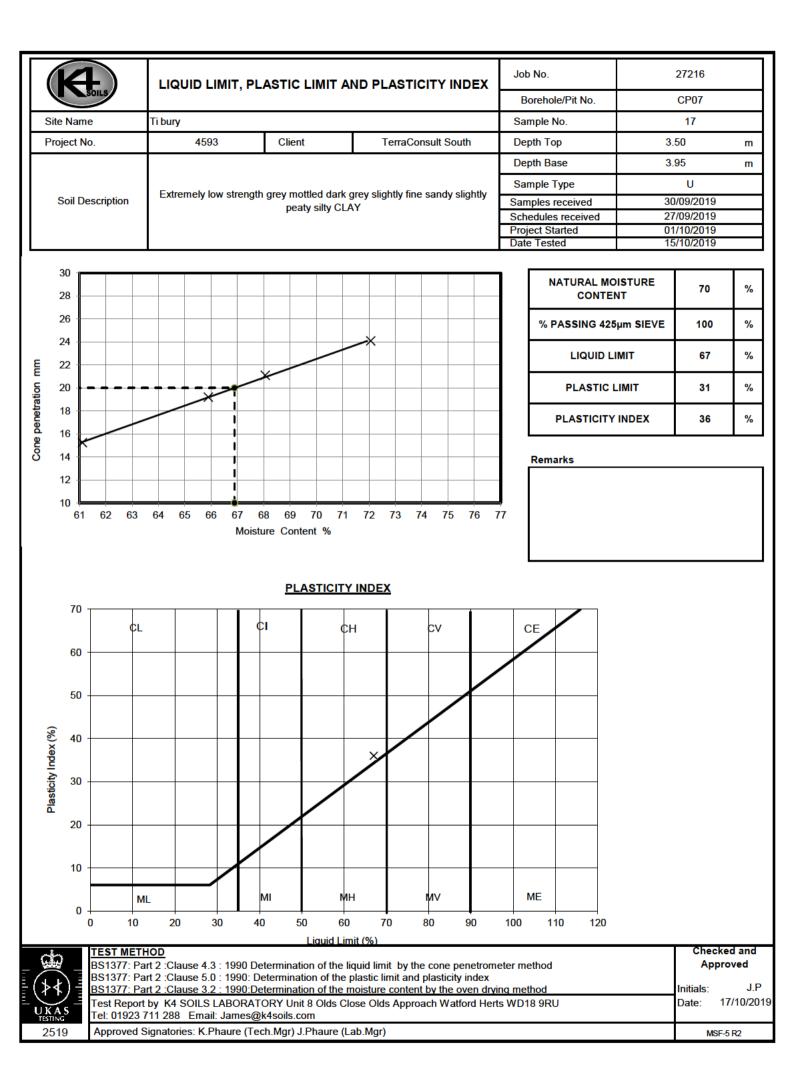


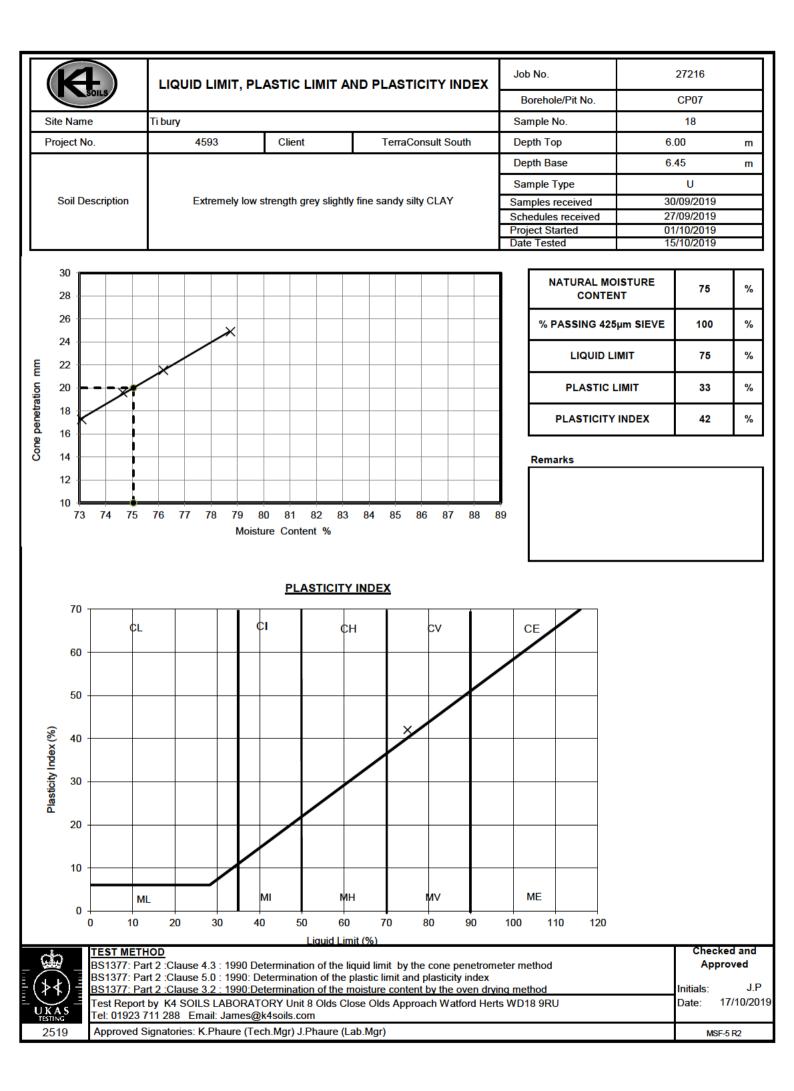












ob No.			Project	Name							<u> </u>	ramme	
27	216		Tilbury							Samples r Schedule)/2019)/2019
roject No.			Client							Project sta			/2019
4	593		TerraCo	onsult	South					Testing St	arted	15/10	/2019
	<u> </u>									· · · · · · · · · · · · · · · · · · ·			
Hole No.	Ref		mple	Turne	Soil Description		NMC	Passing 425µm	LL	PL	PI	Rem	narks
	Rei	Top m	Base m	Туре			%	%	%	%	%		
CP01	1	1.50	1.95	U	Greyish brown slightly mottled dark oran brown silty CLAY with traces of fine roo and selenite crystals	-	60	100	79	32	47		
CP02	2	1.50	1.95	U	Light orangish brown slightly mottled gre CLAY	ey silty	58	100	72	30	42		
CP02	3	3.50	3.95	U	Extremely low strength grey sligh ly peat CLAY with occasional decayed wood fragments	ty silty	87	100	77	30	47		
CP02	4	6.00	6.45	U	Extremely low strength black and dark b mottled PEAT with occasional wood frac		380	100	473	335	138		
CP03	5	1.50	1.95	U	Very low strength dark brown PEAT with numerous wood fragments becoming at bluish grey slightly peaty silty CLAY with occasional pockets of peat	1.55m	127	100	150	50	100		
CP03	6	6.00	6.45	U	Medium strength black and brown PEAT occasional decayed wood fragments	ſ with	421	100	508	400	108		
CP04	7	1.50	1.95	U	Low strength grey slightly peaty silty CL/ with occasional brown stains and decaye wood fragments		59	100	77	33	44		
CP04	8	3.50	3.95	U	Extremely low strength grey sligh ly peal CLAY with occasional black flecks	ty silty	99	100	87	34	53		
CP04	9	6.00	6.45	U	Low strength black mottled brown PEAT occasional wood fragments	⊺ with	469	100	679	429	250		
CP05	10	1.50	1.95	U	Very low strength brownish grey and gre mottled slightly peaty silty CLAY with tra decayed wood, occasional roots and carbonaceous deposits		62	100	71	28	43		
CP05	11	3.50	3.95	U	Extremely low strength grey sligh ly moth brown slightly peaty silty CLAY with occa decayed wood fragments		59	100	70	28	42		
CP05	12	6.00	6.45	U	Medium strength black, brown and light mottled decayed wood PEAT	brown	341	100	495	384	111		
	Natura	al Moistu	Is: BS13 re Content s: clause	t : clau	se 3.2	Test Re Uni		(4 SOILS lose Olds Herts WD	Approa 18 9RU	ATORY ach	I	Check Appr Initials	ed an oved J.F

K	Soils)	Sur	nma	ary of Natural Moisture Co	ntent, L	iquid.	Limit	and Pla	astic L	imit R	esults
Job No.			Project	Name					0		ramme	0/0040
27	216		Tilbury						Samples r Schedule			9/2019 9/2019
Project No.			Client						Project sta			0/2019
4	593		TerraCo	onsult	South				Testing St	arted	15/1	0/2019
	<u> </u>						I					
Hole No.	Ref	Sa Top	mple Base	Туре	Soil Description	NMC	Passing 425µm	LL	PL	PI	Rer	narks
	I CO	m	m	Type		%	%	%	%	%		
CP06	13	1.50	1.95	U	Very low strength grey with numerous brown stains silty CLAY with occasional decayed wood fragments	51	100	70	26	44		
CP06	14	3.50	3.95	U	Extremely low strength grey sligh ly fine sandy slightly peaty silty CLAY with rare decayed wood fragments	51	100	45	22	23		
CP06	15	6.00	6.45	U	Low strength black and brown mottled PEAT with occasional decayed wood	310	100	312	215	97		
CP07	16	1.50	1.95	U	Very low strength grey mottled brown silty CLAY with occasional brown stains, deacyed wood fragments and pockets of light grey fine sand	62	100	79	32	47		
CP07	17	3.50	3.95	U	Extremely low strength grey mottled dark grey slightly fine sandy slightly peaty silty CLAY	70	100	67	31	36		
CP07	18	6.00	6.45	U	Extremely low strength grey sligh ly fine sandy silty CLAY	75	100	75	33	42		
t.	Test	Methor	s: BS13	77: P	art 2: 1990: Test F	Report by P		LABOR	ATORY		Check	(ed and
<u>G</u>	Natur	al Moistu	re Content	t : clau	se 3.2 Ui	nit 8 Olds C	lose Olds	s Approa	ach			roved
(≱≰)-	Atterb	erg Limit	s: clause 4	4.3, 4.4	and 5.0		Herts WD				Initials	J.P
						Email: Jar			ı		Date:	17/10/20
2519	Appr	oved Sig	natories:	K.Pha	ure (Tech.Mgr) J.Phaure (Lab.Mgr)						MSF	F-5-R1

								TION	TE	ст	Jot	o Ref					272	216		
	K	SOILS		E DIMENS	SIONAL C	UNS	JLIDA	TION	163	51	Bo	rehole	/Pit No) .			CP	02		
											Sa	mple N	lo.				3	3		
Site	Name				Till	bury					De	pth To	р				3.50			m
Proje	ct ID		45	93	Client		Terra	Consul	t Sou	th	Dep	th Bas	e				3.95			m
											Sa	mple T	уре				ι	J		
So	oil Dese	cription	Extremel	y low strengt	h grey slight decayed wo			AY wit	h occ	asional		mple F					30/09	/2019		
					decayed wo	ou iray	ments					hedule Project			+		27/09			-
Tes	t Metho	bd	BS1377:Par	t 5: 1990, cla	use 3							te Tes					02/10			_
•	2.40	0									<u> </u>									
	2.20	0			- e _o															
	2.00	o -																		-
~	1.80	o -				~														_
Ratic	1.60	0					\searrow													
Voids Ratio																				
~	1.40																			
	1.20	0								~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~)									
	1.00	0																		
	0.80	0.800																		-
	0.600																			
	0.40	0																		
	1.00)																		_
Cv m²/yr (log time)	0.80																_			_
n²/yr time)	0.60 0.40					*			-*											-
2	0.40						*													_
	0.00) <mark> </mark> 1			10				100	<u> </u>				10	00				10	0000
							A	pplied	Pres	sure kPa				10					10	1000
Appl			Mv	Cv	Cv	1	Prep	aratior	n											
Press		Voids ratio	m2/MN	(t50,log) m2/yr	(t90, root) m2/yr		Orie	ntation	wthi	n sample						Ver	tical			
2.0 25		2.252 1.824	- 5.7	- 0.59	- 0.68										2001100	o.d		2.50		Malm2
50)	1.634	2.7	0.36	0.43		Paru	icle dei	nsity						assume	eu		2.30		Mg/m3
10 20		1.386 1.163	1.9 0.94	0.58	0.56 0.58			cimen (neter	detail	S					Initial 75.05			Final		mm
25		1.277	0.3				Heig	ht							19.90)		13.93		mm %
								ture C densit		IC					93.0 1.48			58.1 1.74		‰ Mg/m3
								density s Ratio							0.77	,		1.10		Mg/m3
							Satu	ration							103			114		%
								rage te Iling Pr		ature for te re	est					22	2.0			oC kPa
							Settl	ement	on sa	aturation									0	%
							Rem	arks												
		Remarks																		
مۇسر					Test Repor	thv K	1 5011 5		RATO	ORY							hecker	d and A	nnrov	/ed
<u>a</u>	$\langle \neg$				Unit 8	Olds C	lose Old	s Appr	oach											
(>	9					Tel: 01	lerts WD 923 711	288								Initial	s		K.P	
UKA TESTIN 251	G	Approved Sin	natories: K.Pha	auro (Tooh Ma			nes@k4s	oils.co	m							Date:		17/	10/20	
201	-	nppioved alg	natones. R.Phi	aure (rech.ivig	Juliania (L	av.ivigi)										1				MSF-5-R6

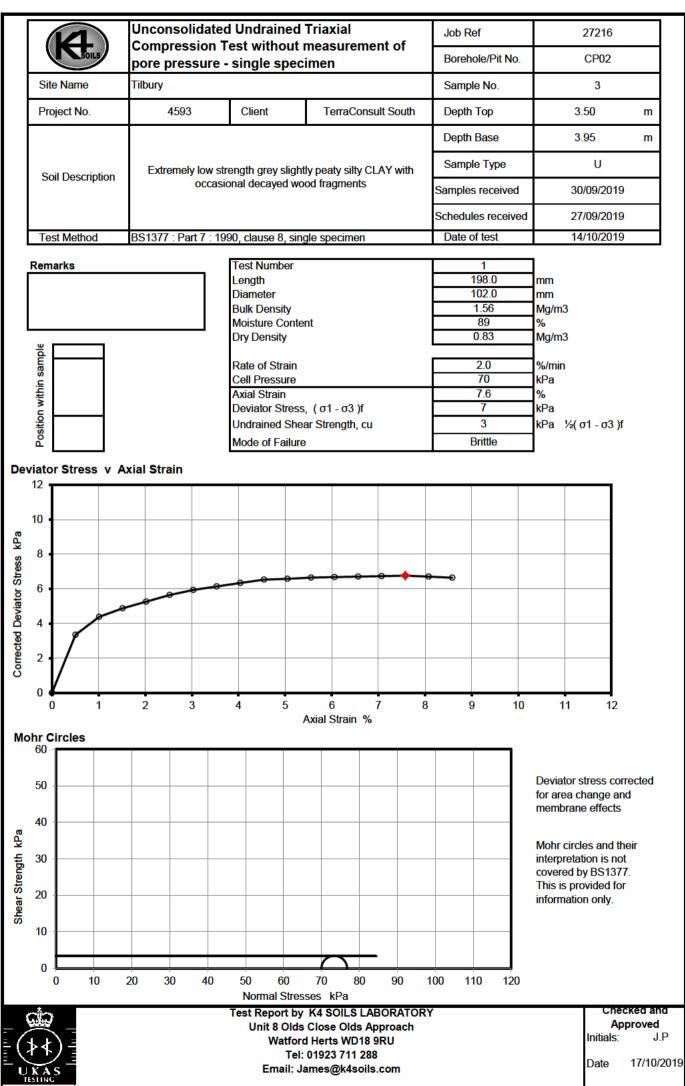
)	ON			ONSO		ΓΙΟΝ	TE	ST		Job Re					272		
	K	SOILS				0.100						Boreho	e/Pit N	IO .			CP	03	
												Sample	No.				6	6	
Site	Name	÷			Tilb	oury						Depth 1	Гор				6.00		m
Proje	ect ID		45	i93	Client		Terra	Consul	t Sou	ıth	[Depth Ba	ase				6.45		m
											Τ	Sample	Туре				ι	J	
So	oil Des	cription	Medium st	rength black			h occas	sional (decay	yed wood		Sample	Recei	ived			30/09	/2019	
		-			fragn	nents						Schedu			_		27/09/		
Tes	t Meth	bod	BS1377:Par	t 5: 1990, cla	1150 3						╋	Date Te	ct Star		<u> </u>		01/10/		
	9.00		001077.1 0	10. 1000, 010															
	8.50				- e_														
	8.00	0																	
atio	7.50	00				a,													
Voids Ratio	7.00	0					$\overline{}$												
Void	6.50	0										_							
	6.00																		
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	5.00	00							\searrow	\mathbf{X}									
	4.50	0								$\rightarrow \rightarrow$									
	4.00	00																	
	1.0	0																	
gol)	0.8					×													
1²/yr time)	0.6						\setminus												
Cv m²/yr (log time)	0.4 0.2										-*								
	0.0							×											
		1			10		A	pplied	Pres	sure kPa				10	000				10000
Appl	iod			Cv	Cv		Drop	aratior											
Press		Voids ratio	Mv	(t50, log)	(t90, root)														
kP 2.0		8.568	m2/MN	m2/yr	m2/yr		Orier	ntation	wthi	n sample						Ver	tical		
30)	7.462	4.1	0.77	18		Parti	cle dei	nsity						assum	ed		1.75	Mg/m3
60 12		6.533 4.971	3.7 3.5	0.16	2.5 1		Spec	imen (detail	s					Initia			Final	_
24	0	3.883	1.5	0.28	0.55		Diam	eter							74.90			-	mm
30)	6.015	0.83				Heig Mois	ht ture C	onter	nt					18.70 441.4			13.71 316.6	mm %
							Bulk	densit	y						0.99			1.04	Mg/m3
	_							lensity s Ratio							0.18 8.568			0.25 6.015	Mg/m3
							Satu	ration							90	00		92	%
	_							age te ling Pr		rature for te ire	est					22	2.0		oC kPa
										aturation									%
	_						Rem	arks			Г								
<u>G</u>	Test Report by K4 SOILS LABORATORY Unit 8 Olds Close Olds Approach													С	hecked	and Ap	oproved		
(><	c)				Wa	atford He	rts WD	18 9R								Initial	s		K.P
	ζ_≣					Tel: 019 ail: Jame			m							Date:		17/	10/2019
251	G	Approved Sig	natories: K.Pha	aure (Tech.Mg			0.00									Date:		111	10/2019 MSF-5-F

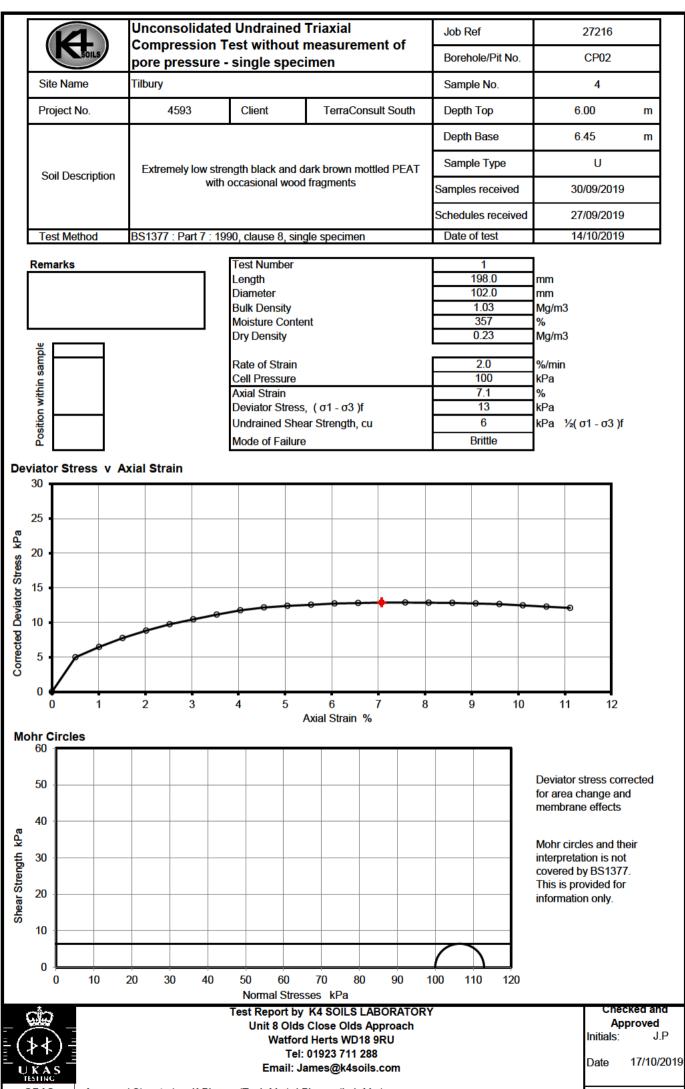
											Job Ref				27	216	
	К	SOILS	ON	E DIMENS	SIONAL C	ONSC	LIDA	TION	ITE	ST	Borehole	/Pit No).		CI	P04	
		/									Sample I	No.				8	
Site	Name	÷			Till	bury					Depth To	р			3.50		m
Proje	ect ID		45	i93	Client		Terra	Consul	lt Sou	ith	Depth Bas	se			3.95		m
					•						Sample	Гуре				U	
So	oil Des	cription	Extremely lo	ow strength g			Y CLAY	' with c	occas	ional black	Sample I				30/09	9/2019	
		-			ne	cks					Schedul Projec					9/2019 0/2019	
Test	t Meth	od	BS1377:Par	t 5: 1990, cla	use 3						Date Tes				01/10	1/2019	
L	2.40				eo												
	2.20	0															
	2.00	0				Q.											
	1.80	0															
Voids Ratio	1.60							\searrow									
oids																	
>	1.40	10								<u> </u>							
	1.20	0															
	1.00	0															
	0.80	800															
	0.60	0.600															
	0.40																
Bol)	0.50 0.40					×			*								
² /yr ime)	0.30	D						/		*							
Cv m²/yr (log time)	0.20																
_	0.00) I															ļ
		1			10		Α	pplied	Pres	sure kPa			100	0			10000
Appli	ied			Cv	Cv	1	Prec	paration	n								
Press	sure	Voids ratio	Mv	(t50, log)	(t90, root)										(
kP 2.0	D	2.387	m2/MN -	m2/yr -	m2/yr -		One	ntation	1 wini	n sample				v	ertical		
25 50		1.975 1.767	5.3 2.8	0.4	0.36		Part	icle de	ensity					assumed		2.50	Mg/m3
10	0	1.509	1.9	0.39	0.42	1		cimen	detail	s				Initial		Final	7
20 25		1.282 1.416	0.9 0.34	0.3	0.41		Dian Heig	neter Iht						75.05 18.90	_	- 13.48	mm mm
								sture C densi		nt				97.2 1.46		59.6 1.65	% Mg/m3
						1	Dry	density	y					0.74		1.03	Mg/m3
								ls Ration						2.387 102		1.416 105	%
										ature for te	st				22.0		oC kPa
						1		lling Pi Iement		re aturation							кРа %
├──	-+					-	Dom	narks									7
						1	NCI	an									
<u> </u>	Test Report by K4 SOILS LABORATORY Unit 8 Olds Close Olds Approach													Checke	d and App	roved	
-(≯∢	:)-					atford He	erts WD	18 9R						Init	ials	K.	Р
	∕_≞ s				Em	Tel: 019 ail: Jame			om					Dat	e:	17/10/	/2019
2519		Approved Sig	natories: K.Ph	aure (Tech.Mg	r) J.Phaure (L	ab.Mgr)								Da			MSF-5-R6

		J	ON		SIONAL C	ONSOL	.IDATI		EST		b Ref	(D)())				272		
		SOILS									rehole).			CP		
										-	mple N					1:	2	
	Name	÷			Tilk	oury				-	epth To					6.00		m
Proje	ect ID		45	i93	Client	-	TerraCo	onsult S	South	Dep	oth Bas	se				6.45		m
											imple 1					U		
So	oil Des	cription	Medium s	strength blac		l light brow EAT	vn mottl	ed dec	ayed wood		mple F					30/09/		
											chedule Project					01/10/		
Tes	t Meth	od	BS1377:Par	t 5: 1990, cla	use 3					_	te Tes					02/10/		
	8.50	0 1																
	8.00	0			<u>е</u>			+++-								_		
	7.50	0														_		
	7.00	0.																
Ratio						Q												
Voids Ratio	6.50	0																
×	6.00	0														_		
	5.50	0	_					\mathbf{X}								_		
	5.00	0	_															
	4.50																	
	4.00									\searrow								
	3.50	0								e								
D	10.0																	
r (lo e)	8.0															_		
Cv m²/yr (log time)	6.00 4.00					×												
δ	2.0						\setminus								_	_		
	0.0	0 إ 1			10			*	100 essure kPa	<u> </u>			100	00				10000
							Арр	nied Pi	essure kPa									
Appl			Mv	Cv	Cv		Prepar	ration										
Press		Voids ratio	m2/MN	(t50,log) m2/yr	(t90, root) m2/yr		Orient	ation w	thin sample						Vert	ical		
2.0	D	8.041	-	-	-													
30		6.608 5.803	5.7 3.5	5.2 0.41	17 2.1		Particl	e dens	ity					assume	ed		1.75	Mg/m3
12		4.520	3.1	0.32	1.1		Specin		tails					Initial			Final	_
24 30		3.638 4.491	1.3 0.88	0.19	0.54		Diame Height							75.05 19.00			- 11.54	mm mm
							Moistu	re Con	tent					328.6 0.83			270.6 1.18	% Mg/m3
							Bulk d Dry de							0.03			0.32	Mg/m3
							Voids Satura						_	8.041 72			4.491 105	%
							Averag	ge tem	perature for t	est				12	22	.0	100	оС
							Swellir Settler		ssure saturation									kPa %
													<u> </u>					
							Remar	rks										
										L								
cit	Test Report by K4 SOILS LABORATORY													CI	hecked	and A	pproved	
	Unit 8 Olds Close Olds Approach Watford Herts WD18 9RU														-			
\mathbb{P}	ソ					Tel: 0192	3 711 2	88							Initial	•		K.P
UKA TESTIN 251	G	Approved Qia	natories: K.Pha	aure (Toch Ma		ail: James ab Mar)	@k4soi	ls.com							Date:		17/	10/2019 MSE 5 R
201	,	Approved Sig	natones. K.Pha	aure (rech.Mg	ij J.Fflaure (La	av.ivigi)												MSF-5-R

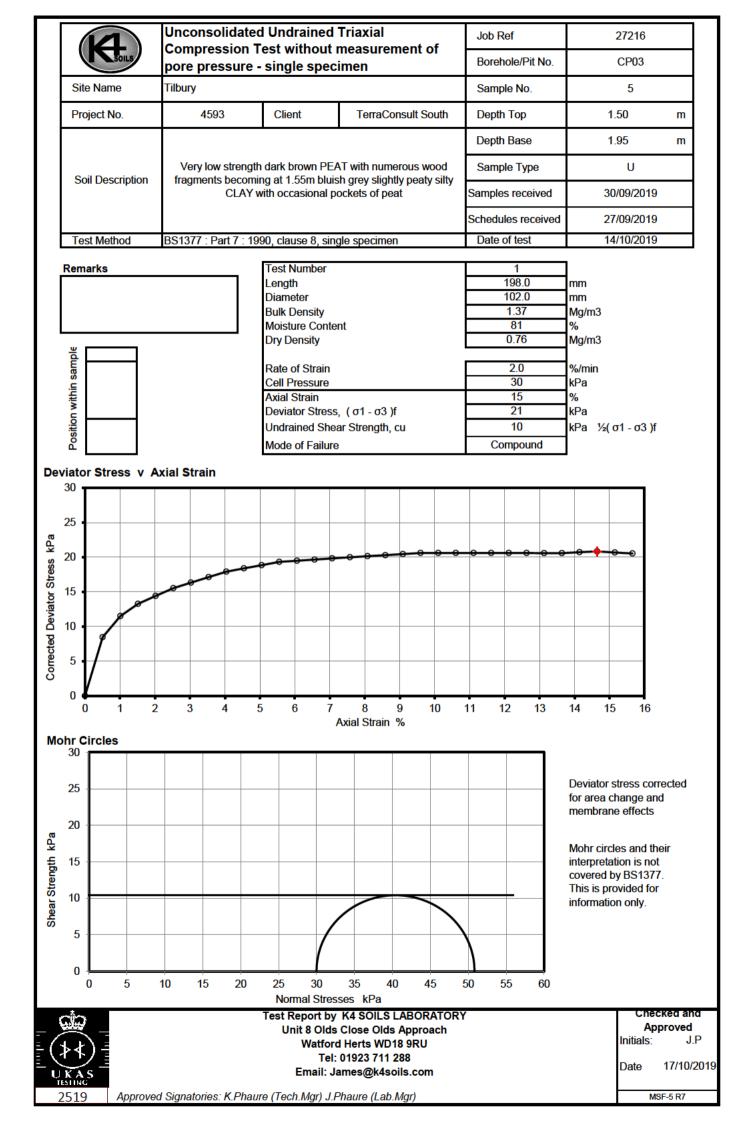
)	ON			CONSC	DLIDA.		TE	ST	Job		Dit Nic				272			
		SOILS										hole/f).			CP			
												ple No					14	4		
	Name					bury						th Top					3.50			m
Proje	ct ID		45	93	Client		Terra(Consu	lt So	uth	Dept	n Base	e				3.95			m
						_						ple Ty					ι			
So	il Deso	cription	Extremely		th grey slightl th rare decaye				aty s	ilty CLAY		iple Re edule					30/09/			
												oject					01/10/			
Test	Metho		BS1377:Par	t 5: 1990,	lause 3						Date	e Test	starte	ed			02/10/	2019		
	1.30	•			e _o															
	1.20	0											_						++-	
	1.10	0				~							_							-
.0	1.00	o	_										_							-
Voids Ratio	0.90	o -																		
/oids	0.80									\backslash										
						G		_												
	0.70	0																		
	0.60	0																		
	0.50	0.500																++-	-	
	0.400												_			_	_			-
	0.30																			
	2.50																			_
gol)	2.00						_													_
ילאר time)	1.50					*			_*				_			_	_			
Cv m²/yr (log time)	1.00 0.50						*													
	0.00) <u> </u>																		
		1			10		Α	pplied	Pres	0 ssure kPa				100	00				10	0000
Appli	ed			Cv	Cv	1	Prep	aratio	n											
Press	ure	Voids ratio	Mv	(t50, log) (t90, root)	4														
kPa 2.0		1.261	m2/MN -	m2/yr -	m2/yr -	1	One	ntatior	1 wth	in sample						Ver	ical			
25 50		1.105 1.026	3 1.5	1.2 0.94	1.3 1.5	-	Parti	icle de	nsity						assume	ed		2.60	I	Mg/m3
100)	0.923	1	1.6	1.4	1		cimen	detai	ils					Initial			Final		
200 25		0.729 0.763	1 0.11	1.2	2.2	1	Dian Heig							_	74.95 18.84			- 14.69		mm mm
						1	Mois	ture C		nt					49.9			34.0		%
						4		densi density						_	1.72 1.15			1.98 1.47		Mg/m3 Mg/m3
						1	Void	s Rati	0						1.261			0.763		-
						4		ration age te		rature for te	et			_	103	22	0	116		% oC
						1	Swe	lling P	ressu	ure										kPa
	-					-	Settl	ement	t on s	aturation										%
							Rem	arks												
	_				Test Repo	rt by 174	SOILS		DAT	OPV							hacks	and A	DPF-	und
- File					Unit 8	Olds Cl	ose Old	s Appr	oach								necket	l and A	hhi.o/	ved
(≯∢)				w	atford He Tel: 019	erts WD 923 711		U							Initial	s		K.P	
						nail: Jame			m							Date:		17	/10/20)19
2519		Approved Sig	natories: K.Pha	aure (Tech.l	/lgr) J.Phaure (l	_ab.Mgr)													N	MSF-5-R6

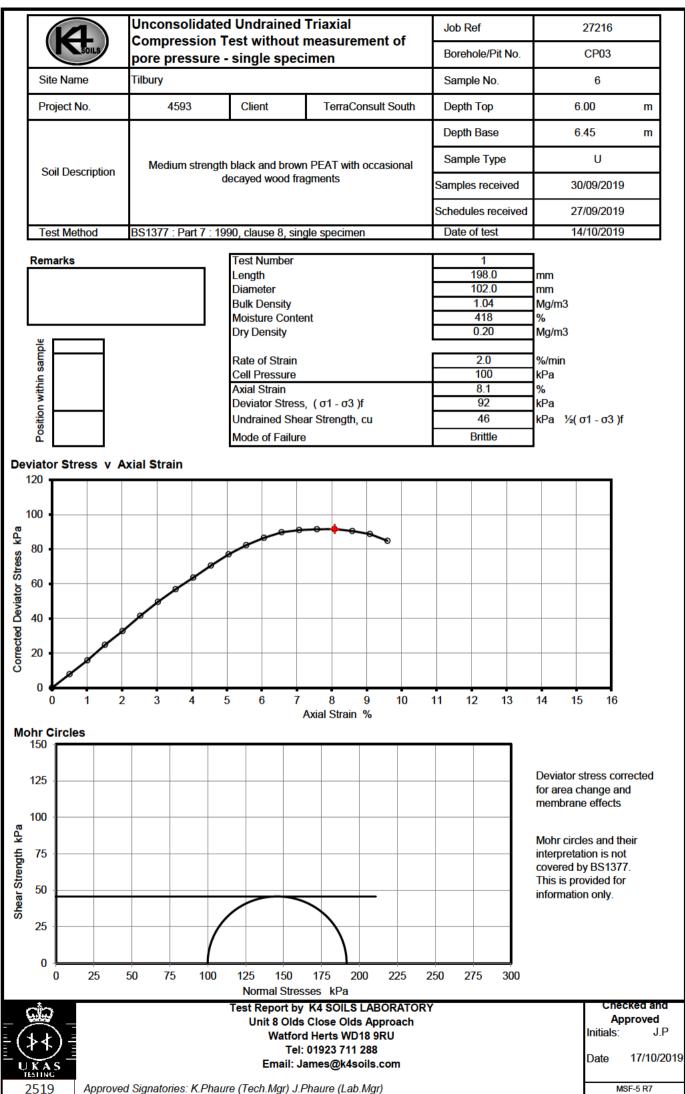
		/	0	E DIMENS		ONSC			TE	e T	J	ob Ref					272	216		
	50	nils				UNSC					В	orehole	e/Pit N	D.			CP	07		
											S	ample	No.				1	8		
Site	Name				Tilt	oury					D	epth T	ор				6.00		m	n
Projec	t ID		45	93	Client		Terra	Consu	lt Sou	th	De	epth Ba	se				6.45		m	n
											S	ample	Туре				ι	J		٦
So	il Descr	iption	Ext	remely low st	rength grey	slightly	fine san	dy silt	y CLA	Y		ample					30/09			
												Schedul Projec					27/09/ 01/10/			_
Test	Method	t	BS1377:Par	t 5: 1990, cla	use 3							ate Te					02/10			┥
	2.000																			
	1.900				- е _о															
	1.800						_	_									_			
	1.700				_															
Ratio	1.600					G														
Voids Ratio																				
>	1.500																			
	1.400								N	<u> </u>										
	1.300																			
	1.200								$ \longrightarrow $	_						_				
	1.100										->-					_	_			
	1.000																			
	1.00																			
fog)	0.80																			
יצ/אר time)	0.60					*				*						_				
Cv m²/yr (log time)	0.40							\checkmark												
	0.00	<u> </u>			10					<u> </u>										
		1			10		A	pplied	Pres	sure kPa				100	U				10000	U
Applie	ed		Mv	Cv	Cv		Prep	aratio	n											
Press	-	oids ratio	m2/MN	(t50, log) m2/yr	(t90, root) m2/yr		Orier	otation	wthi	n sample						Ver	tical			
2.0		1.901	-	-	-					n sampie							ucai			
30 60		1.666 1.520	2.9 1.8	0.64	0.77		Parti	cle de	nsity						assume	d		2.55	Mg/r	/m3
120 240		1.328 1.143	1.3 0.66	0.54 0.47	0.62		Spec Diam	imen	detail	s					Initial 75.05			Final	mm	
30		1.143	0.88	0.47	0.01		Heig	ht							18.90			14.61	mm	
								ture C densi		nt					73.8			51.3 1.72	% Mg/r	/m3
							Dry o	lensity	ý						0.88			1.14	Mg/r	
								s Ratio ration						-	1.901 99			1.243 105	%	
								age te ling P		ature for te	est					22	2.0		oC kPa	
										aturation									%	
├──							Rem	arke											_	
							Kem	ans												
ୁ ଭୁର୍ଘ୍					Test Repor Unit 8		SOILS									C	hecked	d and Ap	oproved	I
(≯≮)-				Wa	tford He	erts WD	18 9R								Initial	s		K.P	
	s =						923 711 es@k4s		m							Date:		17/	10/2019	
2519		pproved Sig	natories: K.Pha	aure (Tech.Mgr) J.Phaure (La	ab.Mgr)													MSF-	

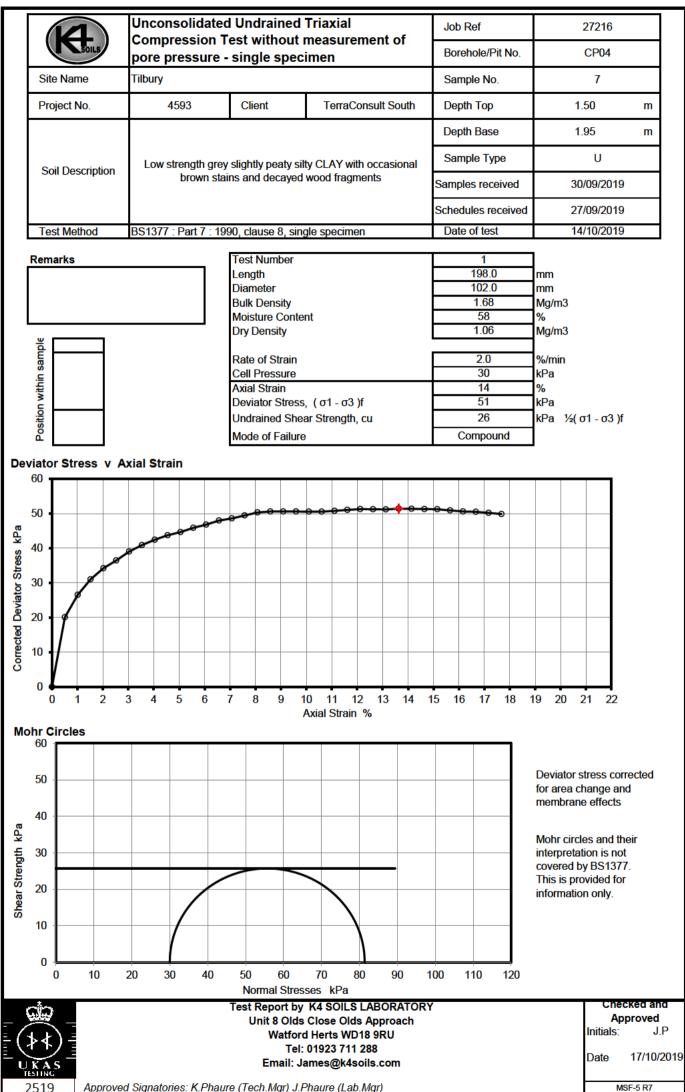


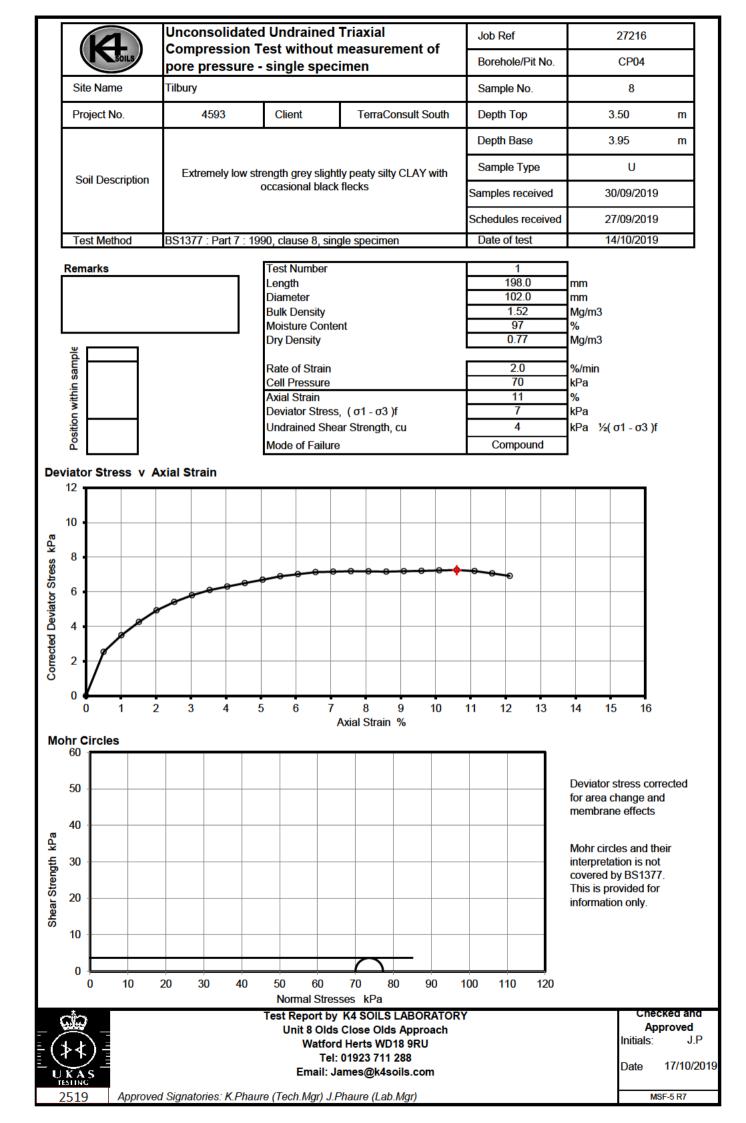


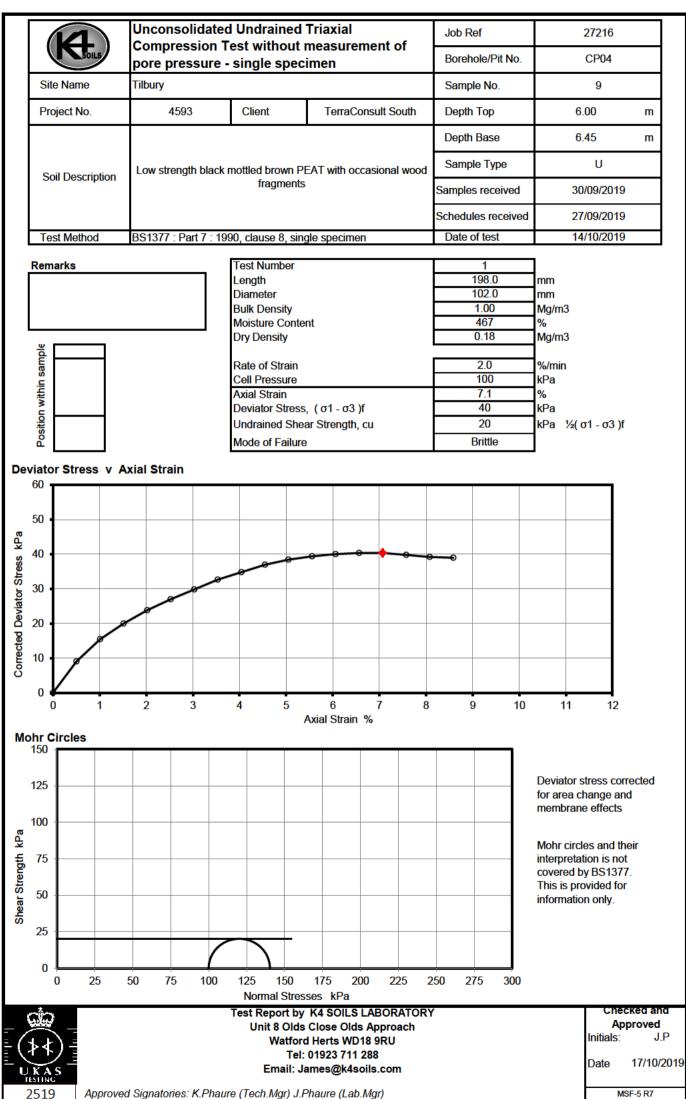
MSF-5 R7

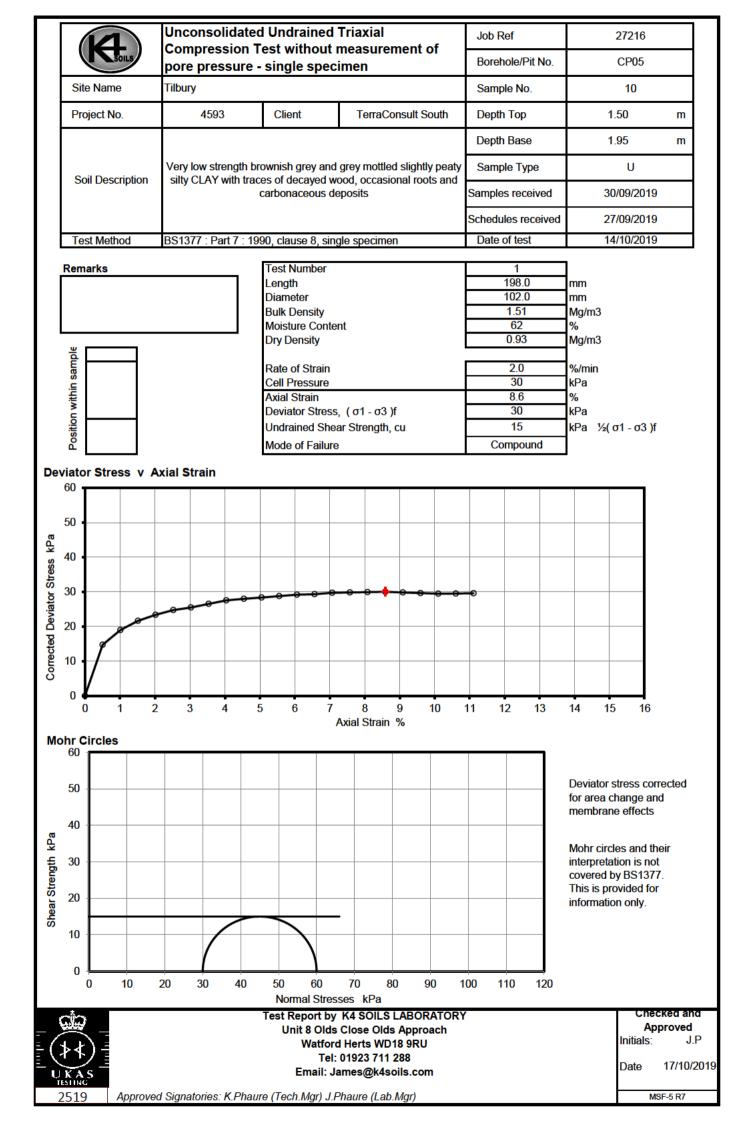


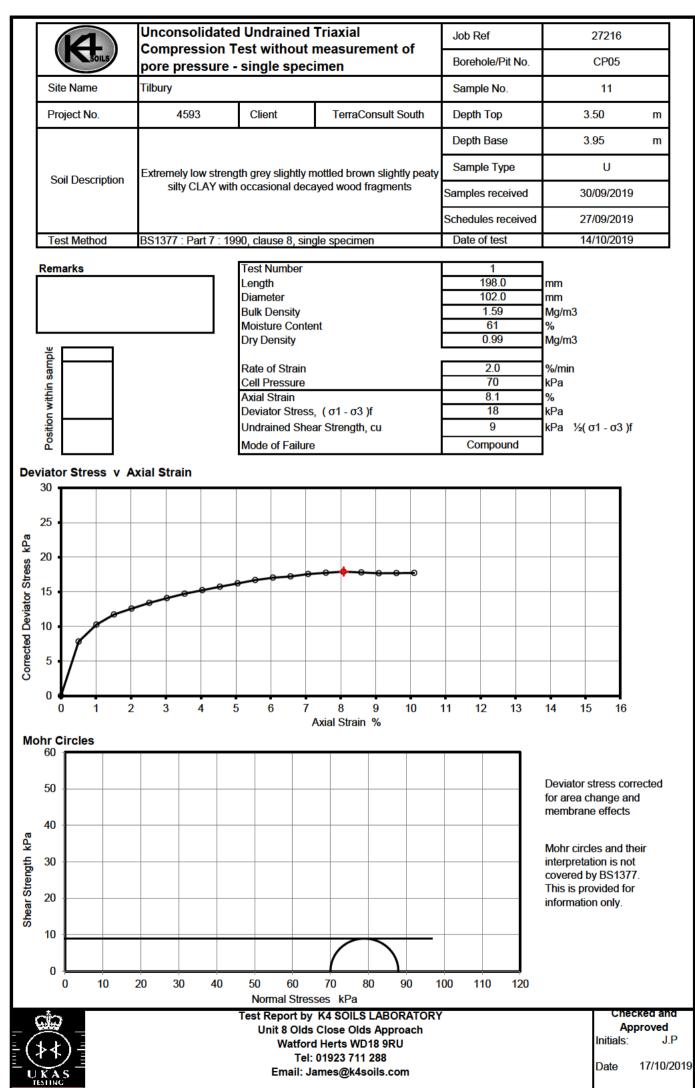






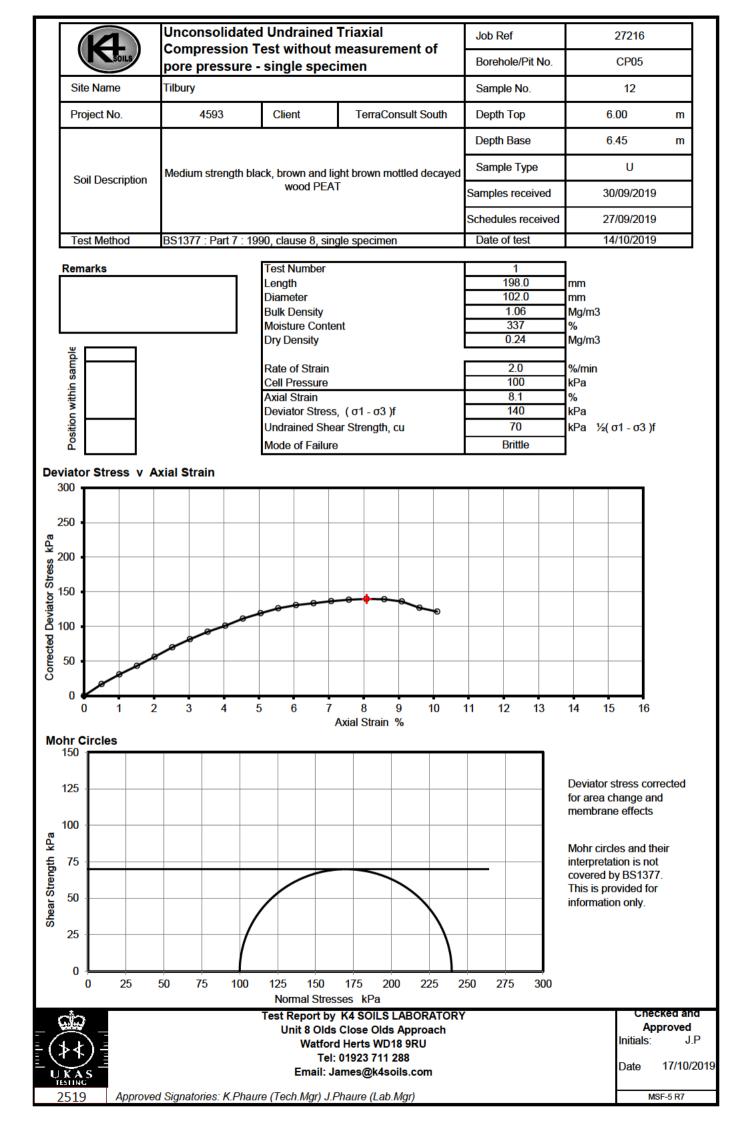


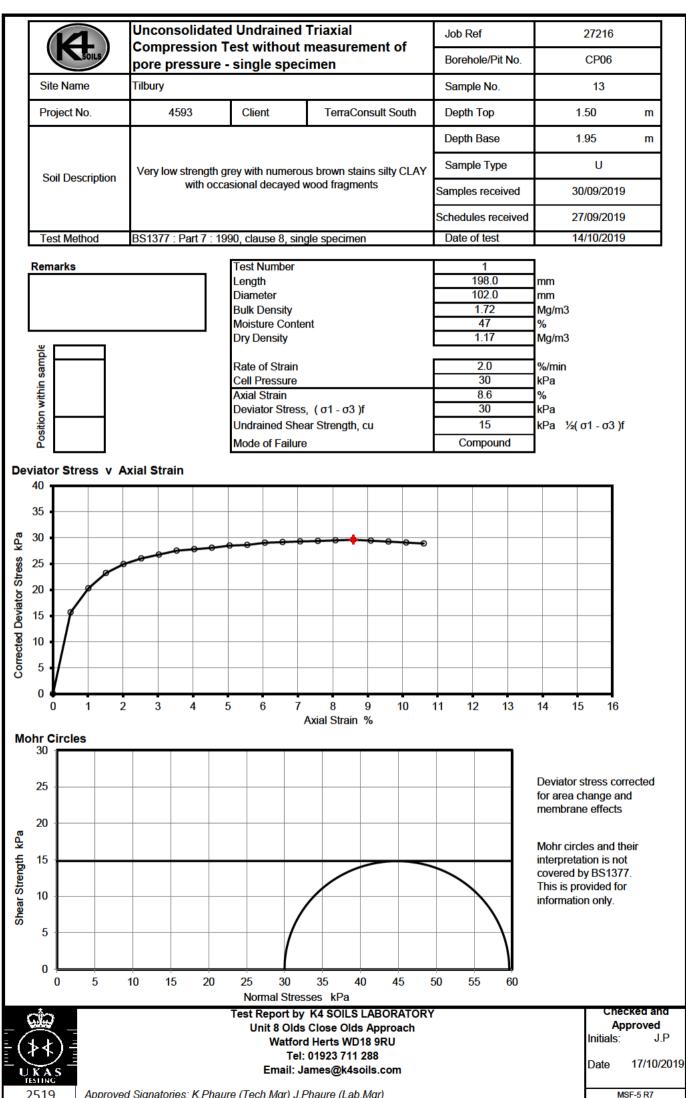


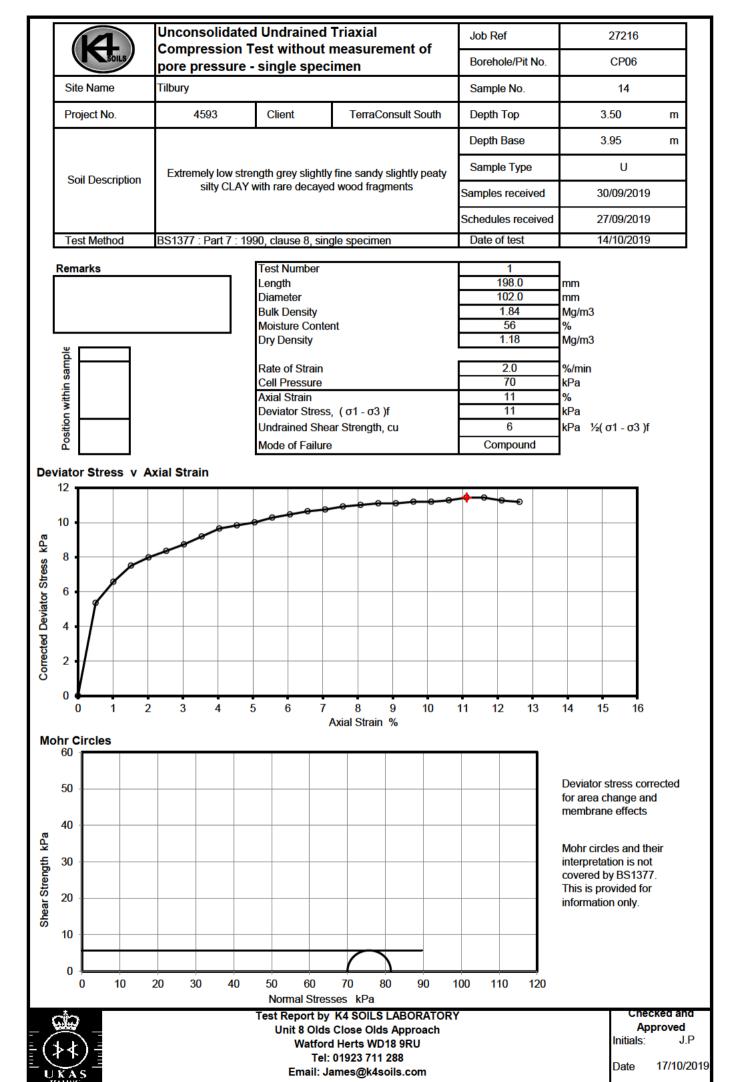


Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)

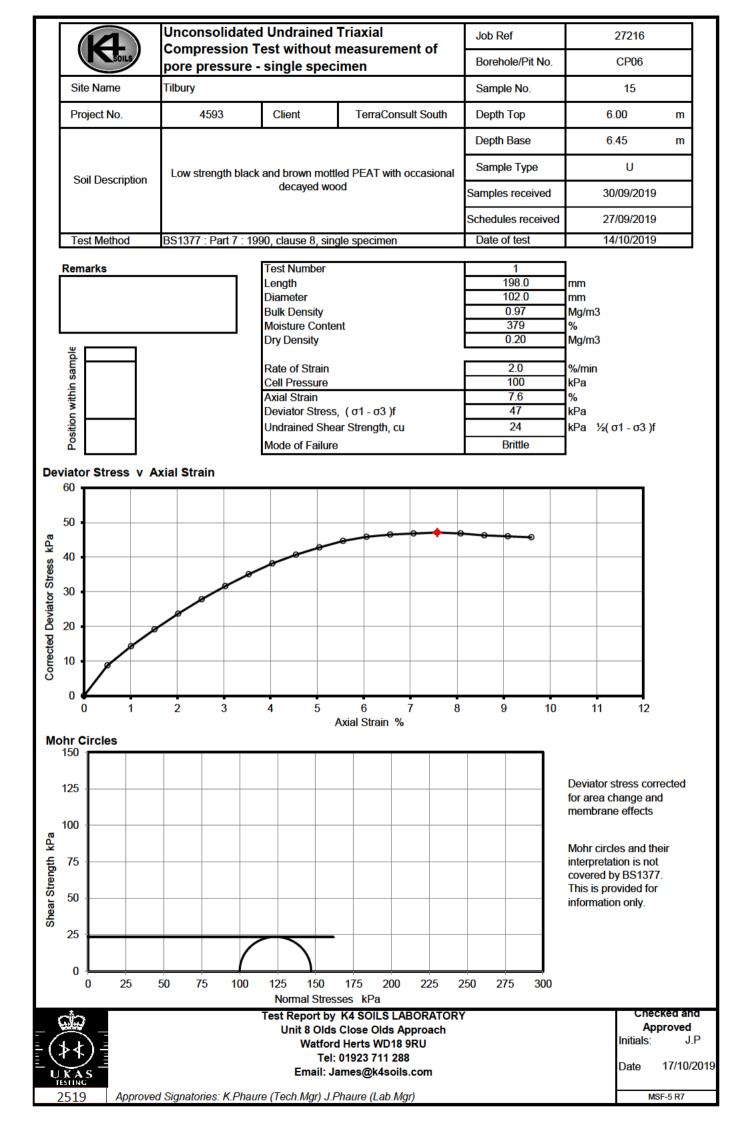
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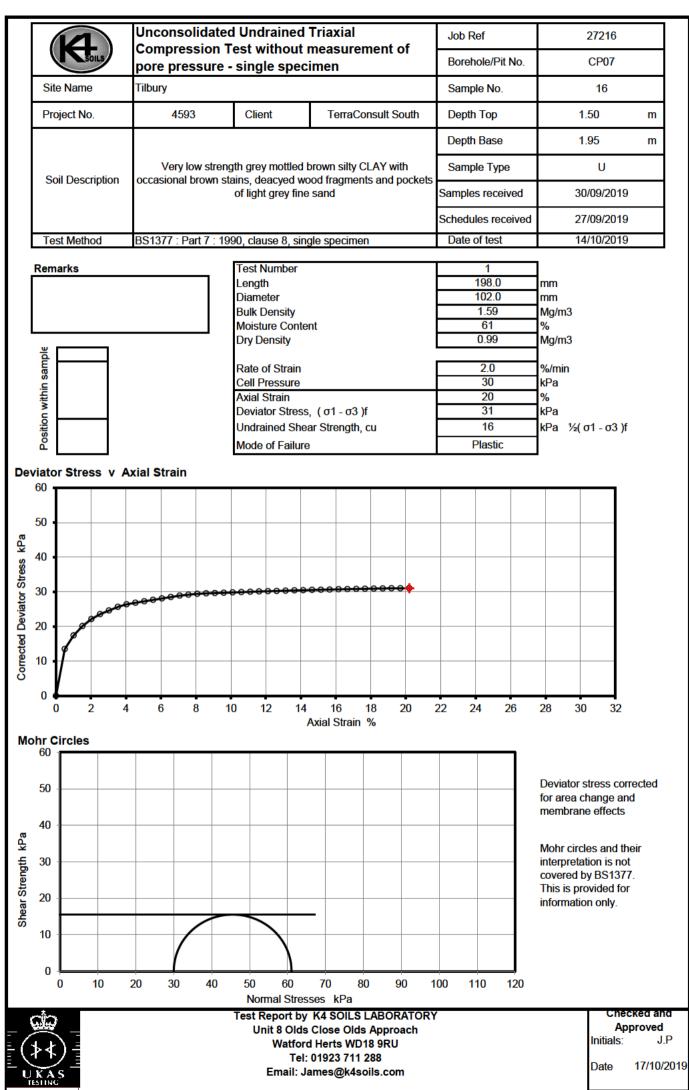


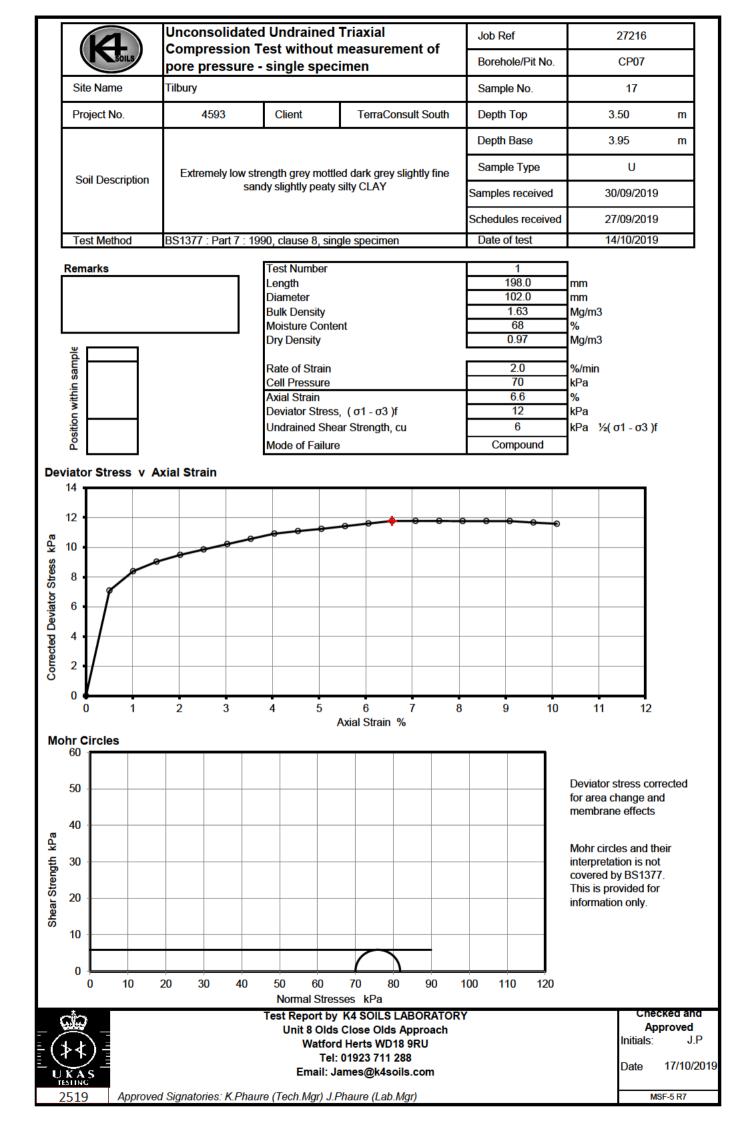


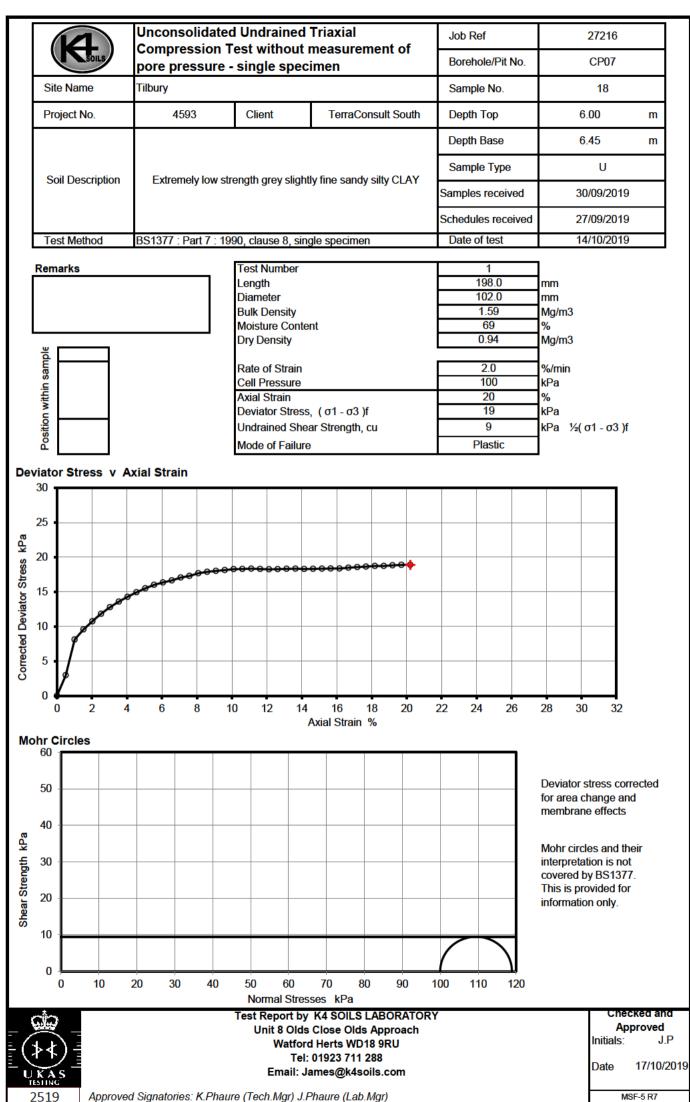


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Approved Signatories. K.Phaure (Tech.ingr) J.Phaure (Lab.ingr)

Unconsolidated Undrained Triaxial Compression tests without measurement of pore pressure Summary of Results

K	1 Soils)			onsolidated Undrained T arried out in accordanc	e with	รเ า BS1	imma	ry of	Resul	ts				oropr	iate	to test type.
Job No.			T .11		Proj	ect Nar	ne						Sar	nples r	Pr receive	ograr d	mme 30/09/2019
27216			Tilbury										Sch	edule i	receive		27/09/2019
Project No 4593).		Client TerraCo	onsult	South									roject s	Started		01/10/2019 14/10/2019
1000	<u> </u>	Sar	nple	mount		Test	Der	nsity						At fail			11110/2010
Hole No.	Ref	Top m	Base	Туре	Soil Description	Test Type	bulk	dry /m3	w %	Length	Diameter mm	σ3 kPa	Axial strain %	ງ1-ດ3 kPa	CU kPa	M d e	Remarks
CP02	3	3.50	3.95	U	Extremely low strength grey slightly peaty silty CLAY with occasional decayed wood fragments	UU	1.56	0.83	89	198	102	70	7.6	7	3	в	
CP02	4	6.00	6.45	U	Extremely low strength black and dark brown mottled PEAT with occasional wood fragments	UU	1.03	0.23	357	198	102	100	7.1	13	6	в	
CP03	5	1.50	1.95	U	Very low strength dark brown PEAT with numerous wood fragments becoming at 1.55m bluish grey slightly peaty silty CLAY with occasional pockets of peat	UU	1.37	0.76	81	198	102	30	15	21	10	с	
CP03	6	6.00	6.45	U	Medium strength black and brown PEAT with occasional decayed wood fragments	UU	1.04	0.20	418	198	102	100	8.1	92	46	в	
CP04	7	1.501.95ULow strength grey slightly peaty silty dcayed wood fragmentsUU1.681.06581981023014513.503.95UExtremely low strength grey slightly peaty silty CLAY with occasional blackUU1.520.779719810270117															
CP04	8	3.50	U	Extremely low strength grey slightly peaty silty CLAY with occasional black flecks	70	11	7	4	с								
CP04	9	6.00	6.45	U	Low strength black mottled brown PEAT with occasional wood fragments	UU	1.00	0.18	467	198	102	100	7.1	40	20	в	
CP05	10	1.50	1.95	U	Very low strength brownish grey and grey mottled slightly peaty sity CLAY with traces of decayed wood, occasional roots and carbonaceous deposits	UU	1.51	0.93	63	198	102	30	8.6	30	15	с	
CP05	11	3.50	3.95	U	Extremely low strength grey slightly mottled brown slightly peaty silty CLAY with occasional decayed wood fragments	UU	1.59	0.99	61	198	102	70	8.1	18	9	с	
CP05	12	6.00	6.45	U	Medium strength black, brown and light brown mottled decayed wood PEAT	UU	1.06	0.24	337	198	102	100	8.1	140	70	в	
CP06	13	1.50	1.95	U	Very low strength grey with numerous brown stains silty CLAY with occasional decayed wood fragments	UU	1.72	1.17	47	198	102	30	8.6	30	15	c	
CP06	14	3.50	3.95	U	Extremely low strength grey slightly fine sandy slightly peaty silty CLAY with rare decayed wood fragments	UU	1.84	1.18	56	198	102	70	11	11	6	с	
CP06	15	6.00	6.45	U	Low strength black and brown mottled PEAT with occasional decayed wood	UU	0.97	0.20	379	198	102	100	7.6	47	24	в	
Legend	UUM	- Multista		a sing	l nd multiple specimens) jle specimen acted	σ3 σ1 - σ3 cu	Maxir		rected d	eviator s ngth, ½ (c		Mode o	of failure););	P - F	Brittle Plastic Comp	
					Test Report by K4 Unit 8 Olds Clo Watford H Tel: 01	ose Old erts Wi	ls Appr D18 9R	oach	RY						Initials		ed and Approved J.P
UKAS TESTING					Email: jame	es@k4s	oils.co		-						Date:		17/10/2019
2519			Ар	prove	d Signatories: K.Phaure (Tech.M	/lgr) J.P	haure (Lab.Mg	r)								MSF-5-R7b

Unconsolidated Undrained Triaxial Compression tests without measurement of pore pressure Summary of Results

K	1 SOILS)	l	Jnco	onsolidated Undrained	riaxia		npres Imma				ut me	easur	emen	it of p	ore	e pressure	
			Tes	sts c	arried out in accordanc	e with	BS1	377:P	art 7 :	1990	claus	se 8 c	or 9 a	s app	ropri	iate	to test type.	
Job No.			T:16		Proj	ect Nar	ne						Sar	nples r		ograr d	nme 30/09/2019	
27216			Tilbury											edule r		d	27/09/2019	
Project No.	-		Client		Cauth									roject s			01/10/2019	
4593			TerraCo	onsuit	South								16	esting S			14/10/2019	
Lista Nis			nple		Call Description	Test Type		nsity	w	Length	Diameter	σ3	Axial	At fail		м	Demedia	
Hole No.	Ref	Тор	Base	Туре	Soil Description		bulk	dry					strain	σ1 - σ3	cu	o d	Remarks	
		m	m		Very low strength grey mottled brown		Mg	/m3	%	mm	mm	kPa	%	kPa	kPa	e		
CP07	16	1.50	1.95	U	silty CLAY with occasional brown stains, deacyed wood fragments and pockets of light grey fine sand	UU	1.59	0.99	61	198	102	30	20	31	16	Ρ		
CP07	17	3.50	3.95	U	Extremely low strength grey mottled dark grey slightly fine sandy slightly peaty silty CLAY	UU	1.63	0.97	68	198	102	70	6.6	12	6	С		
CP07	18	6.00	6.45	U	Extremely low strength grey slightly fine sandy sitty CLAY	UU	1.59	0.94	69	198	102	100	20	19	9	Р		
Legend	UU - s	single sta	ge test (si	ngle ar	nd multiple specimens)	σ3	Cell r	ressure				Mode o	of failure);	B - B	Brittle		
	UUM	- Multista		a sing	le specimen	σ1 - σ3 cu	Maxir	num con ained she			ress					Plastic Comp	c ound	
cia					Test Report by K4				Y						Ch	eck	ed and Approved	
					Unit 8 Olds Clo													
					Watford H Tel: 01	erts Wi 923 711		U							Initials	i.	J.P	
UKAS TESTING					Email: jame	es@k4s	oils.co								Date:		17/10/2019	
2519			Ар	prove	d Signatories: K.Phaure (Tech.M	/lgr) J.P	haure (Lab.Mg	r)								MSF-5-R7b	













TerraConsult

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Head Office TerraConsult Limited Bold Business Centre Bold Lane, Sutton St Helens WA9 4TX Tel: +44 (0)1925 291111

TerraConsult (South) Limited 9 The Courtyards Phoenix Square Wyncolls Road, Colchester, Essex CO4 9PE Tel: +44 (0)1206 585600 TerraConsult Leeds Unit 15(2)A3 Springfield Commercial Centre Bagley Lane, Farsley, Leeds LS28 5LY Tel: +44 (0)113 834 6474

Email: mailbox@terraconsult.co.uk Website: www.terraconsult.co.uk

