From: Gemma Keenan
To: Tracey Williams

Cc: Norfolk Vanguard; Sian Evans; rebecca.sherwood@vattenfall.com; "ruari.lean@vattenfall.com"; Josh Taylor

(josh.taylor@wbd-uk.com)

Subject: Norfolk Vanguard - Email 13 of 18 Deadline 1 Submissions

**Date:** 16 January 2019 15:00:37

Attachments: ExA;WQApp16.7;10.D1.3 Norfolk Vanquard WQ Appendix 16.7 Happisburgh GI.pdf

### Dear Tracey

This is email 13 of 18 of the Applicant's submission for Norfolk Vanguard Examination Deadline 1.

We enclose the following documents:

Appendix to Written Questions:

· Appendix 16.7 TerraConsults Happisburgh

Please could you kindly confirm receipt.

Best Regards

Gemma Keenan BSc, MIEMA, CEnv Senior Environmental Consultant

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# **Norfolk Vanguard Offshore Wind Farm**

# The Applicant Responses to First Written Questions

Appendix 16.7 – TerraConsult 2017 Ground Investigations Report: Happisburgh (Q16.8)

Applicant: Norfolk Vanguard Limited

Document Reference: ExA; WQApp16.7;10.D1.3

Deadline 1

Date: January 2019

Photo: Kentish Flats Offshore Wind Farm











DRAINAGE STONE

ipping Area

November 2017 Report No 3318-R006-3

**East Anglia (North) Offshore Wind Farm Landfall Site Investigation** 

**Carried out for:** 

**Gutteridge, Haskins and Davey Ltd (GHD)** 

# **TerraConsult**

# **East Anglia (North) Offshore Wind Farm**

# **Landfall Site Investigation**

**Date: November 2017** 

Report No 3318-R006-3

**Prepared for:** 



Gutteridge, Haskins & Davey Ltd The Studio, 51 Brookfield Road, Cheadle, SK8 1ES **Engineer:** 



Gutteridge, Haskins & Davey Ltd The Studio, 51 Brookfield Road, Cheadle, SK8 1ES By:

### **TerraConsult**

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### DOCUMENT INFORMATION AND CONTROL SHEET

### **Document Status and Approval Schedule**

Report No.	Title
3318-R005-01	East Anglia (North) Offshore Wind Farm
	Landfall Site Investigation

Prepared by:	Victoria Smith	Victoria Smith	Engineering Geologist
Approved by:	Derek Daniels		Operations Manager
Date:	03/11/17		

Issue:	Date:	Description:	Prepared by:
1	11/10/17	Draft for Approval	VS
2	01/11/17	Final	DD
3	03/11/17	Final (minor amendments)	DD

### **DISCLAIMER**

This site investigation contract was completed by TerraConsult Ltd on the basis of a specification and scope of works and terms and conditions agreed with the client. This report was compiled with all reasonable skill and care, bearing in mind the project objectives, the agreed scope of works, the prevailing site conditions, the budget, the degree of manpower and resources allocated to the project as agreed.

TerraConsult Ltd cannot accept responsibility to any parties whatsoever, following the issue of this report, for any matters arising which may be considered outwith the agreed scope of works.

This report is issued solely to the client and TerraConsult cannot accept any responsibility to any third parties to whom this report may be circulated, in part or in full, and any such parties rely on the contents at their own risk.





November 2017 3318-R006-3

### East Anglia (North) Offshore Wind Farm

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3318(LF)D001-1 Site Location Plan 3318(LF1A)D002-1 Exploratory Hole Location Plan 3318(LF1B)D002-1 Exploratory Hole Location Plan

### **APPENDICES**

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APPENDIX C In Situ Testing Results

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APPENDIX E Geotechnical Laboratory Test Results

APPENDIX F Geoenvironmental Laboratory Test Results

APPENDIX G Calibration Certificates

### East Anglia (North) Offshore Wind Farm

### **Landfall Site Investigation**

### 1 INTRODUCTION

TerraConsult Limited (TCL) was commissioned by Gutteridge, Haskins and Davey Ltd (GHD) to carry out a ground investigation for two coastal options for the proposed cable route (Landfall A and Landfall B) to the south of Happisburgh, Norfolk.

This report presents the factual records of the fieldwork and laboratory testing. The data is also presented separately in digital format following AGS4 (2011).

The scope of the investigation, which was specified by GHD, comprised:

- o Boreholes formed by cable percussive techniques;
- o In situ testing comprising of;
  - Standard penetration tests in boreholes;
  - Variable head permeability testing;
- Post fieldwork monitoring and sampling;
- o Geotechnical laboratory testing;
- o Geoenvironmental laboratory testing;
- o Factual report (GIR) and AGS data.

The investigation was carried out in accordance with the contract specification and relevant standards (see References). The fieldwork was carried out between 03/07/17 and 19/07/17.

Whilst every attempt is made to record full details of the strata encountered in the exploratory holes, techniques of exploratory hole formation and sampling will inevitably lead to disturbance, mixing or loss of material in some soils and rocks.

All information given in this report is based on the ground conditions encountered during the site work and on the results of laboratory and field tests performed during the investigation. However, there may be conditions at the site that have not been taken into account, such as unpredictable soil strata, contaminant concentrations and water conditions between or below exploratory holes. It should be noted that groundwater levels, gas concentrations and gas flows usually vary due to seasonal, atmospheric and/or other effects and may at times differ to those measured during the investigation.

### 2 SITE DESCRIPTION

### 2.1 Location and Topography

The sites are located approximately 1 km (Landfall B) and 1.8 km (Landfall A) to the south east of Happisburgh, Norfolk. The Landfall A site is approximately located between Ordnance Survey National Grid Reference TG 396 301 and TG 394 296. The Landfall B site is approximately located between Ordnance Survey National Grid Reference TG 389 303 and TG 386 301.

A site location plan is presented as drawing reference 3318(LF)D001-1.

### 2.2 Published Geology

The online British Geological Survey (BGS) 1:50,000 scale map shows the sites to be underlain by the Happisburgh Glacigenic Formation sand and gravel, and the Bacton Green Till Member glacial diamicton and glaciolacustrine silts.

Beneath these is the Crag Group bedrock comprising of sand and gravel.

### 3 FIELDWORK

### 3.1 General

Fieldwork was undertaken between 03/07/17 and 19/07/17. The scope of the works, as provided by GHD comprised:

Table 1: Scope of Intrusive Works and In Situ Testing						
Exploratory Hole/In Situ Test Type	Proposed number					
Cable percussion, SPTs, variable head permeability test, install	BH17-LIA-01					
Cable percussion, SPTs, variable head permeability test	BH17-LIA-02					
Cable percussion, SPTs, variable head permeability test	BH17-LIA-03					
Cable percussion, SPTs, variable head permeability test, install	BH17-LIA-04					
Cable percussion, SPTs, variable head permeability test	BH17-LIA-05					
Cable percussion, SPTs, variable head permeability test, install	BH17-LIB-01					
Cable percussion, SPTs, variable head permeability test	BH17-LIB-02					
Cable percussion, SPTs, variable head permeability test	BH17-LIB-03					
Cable percussion, SPTs, variable head permeability test, install	BH17-LIB-04					
Cable percussion, SPTs, variable head permeability test	BH17-LIB-05					

The exploratory hole locations were selected by GHD. The locations were set out by the GHD site representative prior to commencement.

### 3.2 Exploratory Holes

The exploratory holes were logged by an engineer in accordance with the recommendations of BS5930:2015, which incorporates the requirements of BS EN ISO 14688-1, 14688-2 and 14689-1. Methods of formation and geological descriptions, together with sample records, in situ test results and observations made during formation of the exploratory hole are given in the logs presented in Appendix A and should be read in conjunction with the Key included therein. Sample photographs are presented in Appendix B.

A summary of the exploratory holes formed is listed in the following table.

Table 2: Summa	Table 2: Summary of Exploratory Positions													
Exploratory position:	Type:	Final depth (m):	Easting (mE):	Northing (mN):	Level (mAOD):	Start date:	End date:							
BH17-L1A-01	CP	15.00	639341.81	329922.11	4.14	04/07/17	05/07/17							
BH17-L1A-02	CP	14.00	639485.00	329738.21	3.25	03/07/17	04/07/17							
BH17-L1A-03	CP	18.00	639479.54	329911.26	3.66	06/07/17	07/07/17							
BH17-L1A-04	CP	20.00	639551.64	329979.62	5.79	11/07/17	12/07/17							
BH17-L1A-05	CP	8.00	639665.41	330085.17	1.91	19/07/17	19/07/17							
BH17-L1B-01	CP	20.45	638643.01	330317.53	11.58	06/07/17	07/07/17							
BH17-L1B-02	CP	19.45	638719.03	330167.24	11.42	10/07/17	11/07/17							
BH17-L1B-03	CP	20.00	638828.69	330276.05	12.42	10/07/17	11/07/17							
BH17-L1B-04	CP	16.00	638976.43	330391.52	7.79	11/07/17	12/07/17							

Type: CP – cable percussion;

Prior to commencement, all exploratory positions were checked for services by reference to available plans, visual inspection and CAT survey. Inspection pits were excavated by hand and rechecked with a CAT at all borehole locations.

After completing BH17-LIA-05, location BH17-LIB-05 was cancelled by GHD due to the ground conditions and difficulty with access.

Exploratory hole location plans are presented as drawings 3318(LF1A)D002-1 and 3318(LF1B)D002-1.

### 3.3 Sampling

Samples for geotechnical and geoenvironmental testing and strata description were taken during the formation of the exploratory holes in general accordance with the specification, BS5930:2015, BS10175:2011 and BS EN ISO 22475-1:2006. Soil and water samples for geochemical analysis were taken in accordance with the specification and stored in cool boxes for despatch directly to Concept Life Sciences (Formerly Scientific analysis Laboratories, SAL) in Braintree, Essex.

A summary of water samples taken from monitoring installations is presented in Appendix D.

### 3.4 In Situ Testing

In situ testing was carried in accordance with BS 5930:2015, BS 1377-9 (1990), BS EN ISO 22282-1:2012 and BS EN ISO 22282-2:2012 unless otherwise stated. SPT results are presented on individual exploratory hole logs. Information relating to the identification and calibration of SPT hammers can also be found on the individual borehole logs. Hammer calibration certificates are presented in Appendix G.

Falling head tests were carried out in suitable strata in the boreholes upon instruction from GHD. Results are presented in Appendix C.

### 3.5 Instrumentation and Monitoring

Details of instrumentation installed is presented on the exploratory hole logs. A summary of the installed instrumentation is listed in the following table.

Table 3: Summa	ary of Instrui	mentation					
Exploratory position:	Instrument type:	Instrument reference:	Internal diameter (mm):	Installed depth (m bgl):	Depth (m AOD):	Top of response zone (m bgl):	Base of response zone (m bgl):
BH17-L1A-04	SP	1	50	20.00	-14.21	10.00	20.00
BH17-L1B-01	SP	1	50	20.00	-8.42	10.00	20.00
BH17-L1B-04	SP	1	50	16.00	-8.21	13.50	16.00

Under instruction from GHD, BH17-LIA-01 was not installed as proposed.

Records of monitoring and gas/groundwater sampling carried out by TerraConsult during and after the fieldwork period to the date of issue of this report are presented in Appendix D. Calibration certificates are presented in Appendix G.

### 3.6 Surveying

On completion of the fieldworks, all exploratory positions were surveyed by use of GPS. Coordinates and reduced levels to Ordnance Survey are provided on the exploratory hole logs.

### 4 LABORATORY TESTING

### 4.1 Geotechnical Testing

The testing was scheduled by GHD and was carried out by GEO Site Testing Services Ltd (GSTL), Llanelli, Camarthenshire, in accordance with BS 1377 (1990) and BRE SD1 unless otherwise stated. The testing is summarised below and the results are presented in Appendix <E>.

Table 4: Summary of Geotechnical Laboratory Testing												
Lab test:	Number	Method:	Remarks:									
	undertaken:											
Atterburg Limit 4 Point	4	BS1377: Part 2: 4.3 & 5.3										
Method												
Particle Size Distribution	4	BS1377: Part 2: 9.2										
BRE SD1 suite	2	BRE SD1										
One Dimensional	2	BS1377: Part 5: 3										
Consolidation												
Triaxial 100mm singl stage	3	BS1377: Part 7: 8										

### 4.2 Geoenvironmental Testing

The testing was scheduled by GHD and carried out by Consept Life Sciences. The results are presented in Appendix F.

### 5 REFERENCES

AGS: 2010: Electronic transfer of geotechnical and geoenvironmental data (Edition 4 including addendum 3, 2011). Association of Geotechnical and Geoenvironmental Specialists.

BRE Special Digest 1: 2005 Concrete in aggressive ground.

BS 1377: 1990: Methods of test for soils for civil engineering purposes. Published in nine parts. British Standards Institution.

BS 5930: 2015: Code of practice for site investigation. British Standards Institution.

BS 10175: 2011: Investigation of potentially contaminated sites - Code of Practice. British Standards Institution

BS EN 1997-1: 2004 : Eurocode 7 – Geotechnical Design – Part 1: General rules. Including UK National Appendix of November 2007.

British Standards Institution.

BS EN ISO 14688-1 : 2002 : Geotechnical investigation and testing – Identification and classification of soil – Part 1: Identification and description. British Standards Institution.

BS EN ISO 14688-2 : 2004 : Geotechnical investigation and testing – Identification and classification of soil – Part 2: Principles for a classification. British Standards Institution.

BS EN ISO 14689-1 : 2003 : Geotechnical investigation and testing – Identification and classification of rock – Part 1: Identification and description. British Standards Institution.

BS EN ISO 22282-1: 2012 Geotechnical investigation and testing. Geohydraulic testing Part1: General Rules

BS EN ISO 22282-2 : 2012 Geotechnical investigation and testing. Geohydraulic testing Part 2: Water Permeability Tests in a borehole using open systems

BS EN ISO 22475-1 : 2006 : Geotechnical investigation and testing – Sampling methods and groundwater measurements – Part 1: Technical principals for execution (July 2011 reprint). British Standards Institution.

BS EN ISO 22476-3: 2005: Geotechnical investigation and testing - Field Testing - Part 3: Standard penetration test

### 6 LICENCES

British Geological Survey Reproduction Licence Number: IPR/187-68CF CO8/053-CSL

Ordnance Survey Reproduction Licence Number. 100035365

### **DRAWINGS**

3318(LF)D001-1 Site Location Plan 3318(LF1A)D002-1 Exploratory Hole Location Plan 3318(LF1B)D002-1 Exploratory Hole Location Plan

November 2017 3318-R006-3

# Site Location Plan

# **TerraConsult**



Project: East Anglia (North) Offshore Wind Farm Drawing No:

Issue: FINAL Scale: 1:25000 Client: GHD Ltd 3318 (LF)D001-1

**Exploratory Hole Location Plan TerraConsult** Legend Key Locations By Type - CP

AGS Issue: Scale:

FINAL 1:3000 East Anglia (North) Offshore Wind Farm

Project No: 3318 Client: GHD Ltd

**bing** 

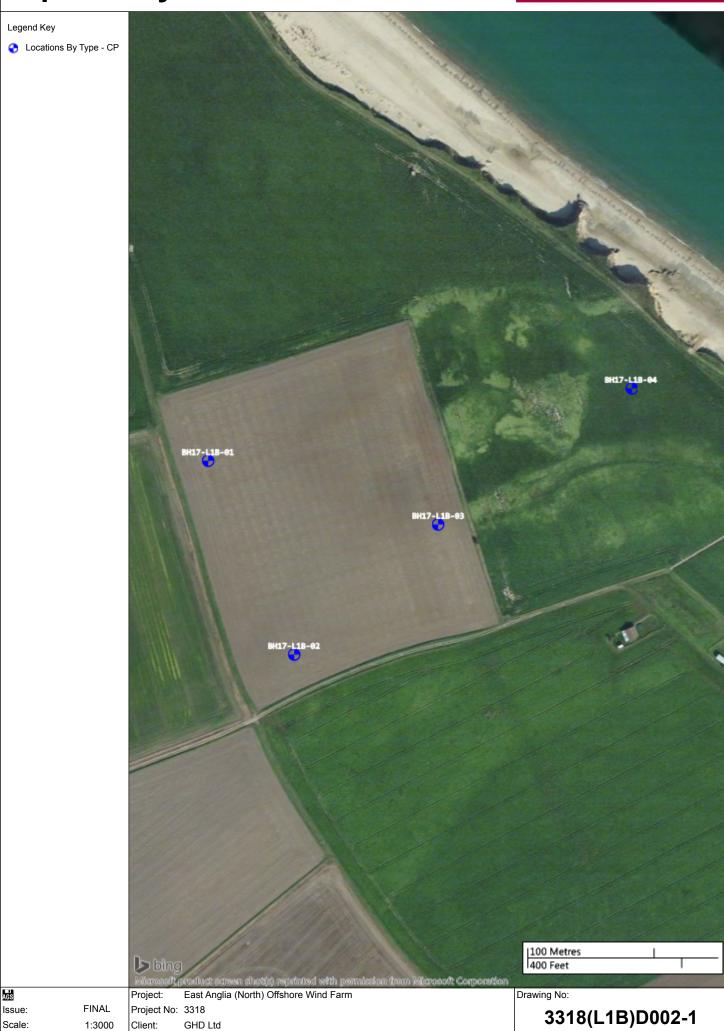
Drawing No:

100 Metres 400 Feet

3318(L1A)D002-1

# **Exploratory Hole Location Plan**

**TerraConsult** 



### **APPENDICES**

APPENDIX A Exploratory Hole Records

APPENDIX B Photographs

APPENDIX C In Situ Testing Results

APPENDIX D Instrumentation Sampling and Monitoring Records

APPENDIX E Geotechnical Laboratory Test Results

APPENDIX F Geoenvironmental Laboratory Test Results

APPENDIX G Calibration Certificates

# APPENDIX A Exploratory Hole Records

Key sheet

Boreholes

# **Exploratory Hole Key Sheet**

## **TerraConsult**

### SAMPLES:

Undisturbed:

Driven tube sample UT Thin wall driven tube sample TW Pushed thin wall tube sample Pushed piston sample

Liner sample (from windowless or similar sampler), full recovery unless otherwise stated

**CBR** CBR mould sample **BLK** Block sample

Core sample (from rotary core) taken for laboratory testing

Disturbed:

Small sample В Bulk sample **AMAL** Amalgamated sample

Environmental:

ES Environmental soil sample FW Environmental water sample

Comments: Sample reference numbers are assigned to every sample taken. A sample reference of 'NR' indicates that an attempt was made

to take a tube sample; however, there was no recovery. Sample recovery is given as a percentage.

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 incremental blow counts are given in the Field Records column; each increment is 75mm unless stated otherwise and any penetration under self weight in mm (SW) is noted. Where the full 300mm test drive is achieved the total number of blows for the test drive is presented as N = \*\* in the Test column. Where the test drive blows reach 50 (either in total or for a single

increment) the total blow count beyond the seating drive is given (without the N = prefix).

**ICBR** In situ CBR

In situ vane shear strength, peak (p) and remoulded (r), kPa HV 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

PID/FID Photo-ionisation detector/Flame-ionisation detector

Test results provided in Field Records column

### **DRILLING RECORDS:**

The mechanical indices (TCR/SCR/RQD & If) are defined in BS 5930: 2015 and BS EN ISO 22575-1 (2006)

Total Core Recovery, % SCR Solid Core Recovery, % RQD Rock Quality Designation, %

Fracture spacing, mm. Minimum, typical and maximum spacings are presented.

NI Non intact is used where the core is fragmented. CRF Core recovered (length in m) in the following run

AZCL Assessed zone of core loss

NR Not recovered

GROUNDWATER:	DEPTH REMARKS:

EoS End of Shift SoS Start of Shift Groundwater strike EoBH End of Borehole

Groundwater level after standing period

### INSTRUMENTATION:

Details of installations are given on the Record. Legend column shows installed instrument depths including slotted pipe section or tip depth, response zone filter material type and layers of backfill. The type of instrument installed is indicated by a code adjacent to the Legend column at the base of the instrument.

Standpipe Standpipe piezometer **SPIE** PPIE Pneumatic piezometer **EPIE** Electronic piezometer **HPIE** Hydraulic piezometer **GMP** Gas monitoring standpipe (xx) Internal diameter

ICF Biaxial inclinometer

**ICM** Inclinometer tubing for use with probe

SLIP Slip indicator

**ESET** Electronic settlement cell/gauge Magnetic extensometer settlement point **ETM** 

**ETR** Rod extensometer

### **EXPLORATORY HOLE TYPE:** Cable percussion

Dynamic probe DCP

Dynamic cone penetrometer

HA Hand auger Inspection pit OP Observation pit/trench PC Pavement core RC Rotary core RO Rotary open hole

SH Shaft

SNC Sonic (resonance) TP Trial pit/trench TRAV Traverse

WLS Windowless (dynamic) sample

WS Window (dynamic) sample

Project: East Anglia (North) Offshore Wind Farm

> Project No: 3318 Client: **GHD Ltd**

Reference **KEY SHEET** 

Sheet 1 of 1



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kfii/ tal'n	rter-	puel	l evel	Depth (thick-			Stratum	Description	'				Samples	& In Situ Te	esting
Bac	Wa		20101	ness)	Madional	- al - ··!			_ 4	CAND	Wate	er Casing		Type & No	Results/Remarks
Backfill Instaln Instaln			-6.86	(1.00)	of subangular (BACTON GR Medium dense Gravel of suba	to subr EEN TI e light b angular EEN TI	Stratum  grey slightly gra- rounded fine to ILL MEMBER)  prown slightly gra- to subrounded ILL MEMBER)  ehole ends at 15	coarse flint.	ne to coars se flint.		vel.	11.50	11.50 11.50 - 11.95	S D8	Results/Remarks N=10 (4,6/3,2,2,3)
Gro	Inst undv		entries:		Diameter	& casi	ng:	Depth relate	ed remarks	:	Wate		Depth Chiselling deta	Type & No	Results
Stru	ick:	Rose to	o: Casin	g: Seale		Depth		From: T	ō:	Rema	rks:		From: to:	Duratio	
Log Scal	issue		e Key Sheet. educed levels a FINAL 1:50	ire in metres.	Project No Client:		}								_1A-01 Sheet 2 of 2

# **TerraConsult**

Boreh	ole fo	orma	ation	details	):											Location details:
Type: IP CP	0.00 0.00		To: 1.20 14.00	Start da 03-07- 03-07-	17 03-07-17	Crew: MJ MJ	Plant: Hand tools Dando 2000	Barrel type: n/a n/a	Drill Bit: n/a n/a	Logged: 03-07-17 04-07-17	Logge VS VS		Remarks: SPT ham	: nmer ID: SI 3 E(r	r)% 75	mE: 639485.00 mN: 329738.2 mAOD: 3.25 Grid: OSGB
Instal'n Water-	strike		Level	Depth (thick-			Stratum	Description						Samples	& In Situ T	esting
			2.95	(0.30) (0.30) (1.50)	subrounded f (TOPSOIL) Stiff dark oran Gravel of sub	ine to congish brown	y slightly grave parse flint.  The mottled light to subrounded and black and o	ht grey slightly	y gravelly s	andy CLAY		Vater	Casing	0.50 0.50 1.00 1.00	Type & No  D1 ES1  D2 ES2	Results/Remarks
			1.45	1.80	Soft to firm d	ark greyi	sh brown sligh	tly sandy CLA	ıY.					1.50 1.50 - 1.95 2.00 2.00	ES3 U1 D3 ES4	25 (100%)
	Z ×:		0.55	2.70	fine to coarse	gravels	rellowish browr sized pockets o ACIGENIC FOI	n silty fine to co	oarse SAN		<u>"</u>	Dry	2.50	2.50 2.50 - 2.95	S D4	N=12 (1,2/2,3,3,4)
Z	X X X X X	× × × × × × × × × × × × × × × × × × ×		- - - - - -							1 - 1	Dry	3.50	3.50 3.50 - 3.95	S D5	N=15 (2,3/3,4,4,4)
	X: X: X: X: X: X: X: X: X: X: X: X: X: X	× × × × × × × × × × × × × × × × × × ×		(4.30)	4.30 - 7.00	) m: Becom	es slightly gravelly	with subang <u>ular to</u>	subrounded fi	ne to coarse fli		Dry	4.50	4.50 4.50 - 4.95	C B1	N=24 (2,3/4,5,6,9)
	X X X X X X X X X X X X X X X X X X X	× × × × × × × × × × × × × × × × × × ×	3.75	7.00 —								Dry	7.00	5.50 5.50 - 5.95 7.00	S D6	N=9 (1,2/1,2,3,3)
	× × ·× ×	× -	3.75	(1.00) -			reyish brown s ACIGENIC FOI		s fine SAN	D.		ыу	7.00	7.00 7.00 - 7.45	D7	N=12 (1,2/2,3,3,4)
	X: X: X: X: X: X: X: X: X:	× · · · · · · · · · · · · · · · · · · ·	4.75	8.00 -	Medium dens (HAPPISBUF	se dark g RGH GLA	reyish brown s ACIGENIC FOI	silty fine to coa RMATION)	arse SAND			Dry	8.50	8.50 8.50	S D8	N=17 (2,3/3,3,5,6)
	× × × × × ×	× × × × × × ×		(2.00)							1					
In		~	6.75	10.00	I= -		Т				V	Dry Vater		10.00 Depth	Type & No	N=12 (2,3/2,3,4,3) Results
Struck: 4.00	Rose			g: Seal	Diameter ed: Dia (mm 20 15	): Depth 00 3		Prom: To		: Rema	irks:			hiselling det From: to:	<b>ails:</b> Duration	on: Tool:
AGS A	ibbreviation III depths a	ns see K and redu F	tion of symb key Sheet. ced levels at INAL :50	ools and re in metres.	Project: Project N Client:			Offshore Wind	d Farm				E	xploratory pos		ence: _1A-02 Sheet 1 of



Bor	ehol	e for	mation	details:								_			Location details:
Type IP CP		From: 0.00 0.00	To: 1.20 14.00	Start date 03-07-17 03-07-17	7 03-07-17	Crew: MJ MJ	Plant: Hand tools Dando 2000	Barrel type: n/a n/a	Drill Bit: n/a n/a	Logged: 03-07-17 04-07-17	Logger: VS VS	Remarks SPT har	s: nmer ID: SI 3 E(r	)% 75	mE: 639485.00 mN: 329738.21 mAOD: 3.25 Grid: OSGB
kfill/ tal'n	ater- rike	gend	Level	Depth (thick-			Stratum	Description					Samples	& In Situ Te	esting
Bac	We		20401	ness)	Analissa 1	_ H 1 - 1			dala bee	-UL - C 1	Wate	er Casing		Type & No	Results/Remarks
Backfill Instal'n	Water strike	Pueded X X X X X X X X X X X X X X X X X X	-10.75	(thick- ness)	oarse SAND	GH GL	Stratum grey brown moti	RMATION)		silty fine to	Wates	11.50			esting
	Inst											r Casing	Depth	Type & No	Results
	undw		ntries:		Diameter			Depth relate				Ċ	Chiselling deta	ails:	
Stru	Note		anation of symbols key Sheet. educed levels a	g: Sealed	Project:	East	: Anglia (North)		d Farm	Rema	arks:		From: to:		ence:
1	issue		FINAL 1:50		Project No Client:	3318 GHD							BH	17-L	_1A-02 Sheet 2 of 2

# TerraConsult

Bor	eho	le for	mation	details	s:										Location details:
Type IP CP		rom: 0.00 0.00	To: 1.20 18.00	Start d 06-07- 06-07-	-17 06-07-17	Crew: MJ MJ	Plant: Hand tools Dando 2000	Barrel type: n/a n/a	Drill Bit: n/a n/a	Logged: 06-07-17 07-07-17	Logger: VS VS	Remarks	s: mmer ID: SI 3 E(r	)% 75	mE: 639479.54 mN: 329911.26 mAOD: 3.66 Grid: OSGB
Backfill/ Instal'n	Water- strike	Legend	Level	Depth (thick-			Stratum	Description					Samples	& In Situ Te	esting
₩ =	S %	<u>د</u> الا		ness)	Soft dark brow	vn sliah	itly gravelly san	dv CLAY Gra	avel of suba	angular to	Wate	r Casing	Depth	Type & No	Results/Remarks
			3.36	(0.30) 0.30 (0.80)	subrounded fi (TOPSOIL) Soft to firm da subangular to	ne to course or the subrou	oarse flint.  Igish brown mounded fine to co	ttled light gre	y sandy CL				0.50 0.50	D1 ES1	
			2.56	1.10	Firm to stiff da	ark orar	ngish brown mo						1.00 1.00 1.00	D2 ES1 ES2	
				-	flint. Occasion	al shel		angular to sur	nounaca m	ne to media	''' <u>-</u>		1.50 1.50 - 1.95	ES3 U1	30 (100%)
				(2.30)	<u>-</u> - -								2.00 2.00	D3 ES4	
				-	- - - - - - -						- Dry		2.50 2.50 - 2.95	S D4	N=9 (1,2/2,2,2,3)
	_		0.26	3.40	subrounded fi	ne to c	v slightly gravell oarse flint. Occa ILL MEMBER)			f subangula	r to		3.50 - 3.95	U2	38 (100%)
				_	- - -		,						4.00	D5	
				-	- - - - - - - -						- Dry		4.50 4.50 - 4.95	S D6	N=12 (1,1/2,3,3,4)
				(3.60)	- - - - - - -								5.50 - 5.95	U3	45 (100%)
				-									6.00	D7	
		×	-3.34	7.00 -	-Medium dens	e light (	grey silty fine to	coarse SAN	D.		Dry		7.00 7.00 - 7.45	S D8	N=11 (2,2/3,2,3,3)
		X X X X X X X X X X X X X X X X X X X		-	-		,								
		× × × × × × × × × × × × × × × × × × ×		-	-						- Dry	8.50	8.50 8.50 - 8.95	S D9	N=13 (2,3/3,3,4,3)
		x x x x x x x x x x x x x x x x x x x		-	- - - - - - - - -										
Y////	Inst	××		(6.00)	1		Т				Wate			Type & No	N=17 (3,6/7,4,3,3) Results
Stru			entries: o: Casin	g: Sea	Diameter led: Dia (mm) 20	: Dept	_	Prom: T	od remarks	: Rema	ırks:		Chiselling deta From: to:	<b>ails:</b> Duratio	on: Tool:
AG Log	issue	reviations si depths and r	lanation of symles Key Sheet. educed levels a FINAL 1:50	pols and are in metres.	Project: Project No Client:	o: 3318	: Anglia (North) 3 ) Ltd	Offshore Win	d Farm			E	Exploratory pos		ence: _1A-03 Sheet 1 of 2



Bor	ehol	e fori	mation	details	:										Location details:
Type IP CP	- 1 (	From: 0.00 0.00	To: 1.20 18.00	Start da 06-07- 06-07-	17 06-07-17	Crew: MJ MJ	Plant: Hand tools Dando 2000	Barrel typ n/a n/a	e: Drill Bit: n/a n/a	Logged: 06-07-17 07-07-17	Logger: VS VS	Remarks SPT har	s: mmer ID: SI 3 E(r)	)% <b>7</b> 5	mE: 639479.54 mN: 329911.26 mAOD: 3.66 Grid: OSGB
Backfill/ Instal'n	Water- strike	Legend	Level	Depth (thick-			Stratum	Description	1				Samples 8	& In Situ Te	esting
Pag L	Str Wa	1	20101	ness)	10.00 10.50	D	nes slightly gravelly	-			Water	Casing	Depth 10.00 - 10.45	Type & No	Results/Remarks
					10.00 - 10.30	iii. Becoii	ies singiliy graveny	wiiri suveri <u>gure</u>	i to suorounded in	ne to Coarse IIII		11.50	11.50 11.50 - 11.95	S D10	N=10 (2,3/2,2,3,3)
		X:	-9.34	13.00	Very dense to (PROBABLE	dense CRAG	light grey silty GROUP)	fine to medi	ium SAND.		Dry	13.00	13.00 13.00 - 13.45	S D11	N=49 (3,5/9,12,12,16)
		\(\cdot \times \									- Dry	14.50	14.50 14.50 - 14.95	S D12	50 (6,7/50 for 235mm)
		X X X X X X X X X X X X X X X X X X X									- Dry	16.00	16.00 16.00 - 16.45	S D13	50 (6,9/13,17,20,)
		X X X X X X X X X X X X X X X X X X X	-14.34	18.00		Bor	ehole ends at 1	8.00m (Blow	ving sands)		- Dry	17.50	17.50 17.50 - 17.95	S D14	50 (8,13/50 for 285mm)
Gro	Inst undw	/ater e	ntries:		Diameter	& casi	ng:	Depth rela	ted remarks	:	Water		Depth Chiselling deta	Type & No	Results
				g: Seal				From:	То:	Rema	rks:		From: to:	Duratio	on: Tool:
AG Log Scal	All d issue	eviations se epths and r	anation of symbols Key Sheet. educed levels a FINAL	pols and are in metres.	Project: Project No Client:			Offshore W	/ind Farm			E	Exploratory pos		ence: -1A-03 Sheet 2 of 2

# TerraConsult

	•	0.0	;	9								IGII			
oreho	le fori	mation	details	s:										Locatio	n details:
ype: IP CP	From: 0.00 0.00	To: 1.20 20.00	Start d 11-07- 11-07-	17 11-07-17	Crew: MJ MJ	Plant: Hand tools Dando 2000	Barrel type: n/a n/a	Drill Bit: n/a n/a	Logged: 11-07-17 12-07-17	Logger: VS VS	Remark SPT ha	s: nmmer ID: SI 3 E(r	)% 75	mE: mN: mAOD: Grid:	639551.6 329979.6 5.79 OSGB
Instal'n Water-	Legend	Level	Depth (thick-			Stratum	Description					Samples	& In Situ Te	esting	
ar W	\$ <u>\$</u>		ness)	0 - 6 - 1 - 1 - 1			-			Wate	er Casing	g Depth	Type & No	Resul	ts/Remarks
		5.49	(0.30) 0.30	subrounded f (TOPSOIL) Medium dens gravel of suba	ine to co se dark o angular	orangish brown to subrounded	clayey fine to	medium S				0.50 0.50	D1 ES1		
			(1.50)	(NAPPISBUR	KGN GL	ACIGENIC FO	RIMATION)					1.00 1.00	D2 ES2		
		3.99	1.80	Firm dark ora	ngish br	rown mottled liq y sandy CLAY.	ght grey and c	occasionally	mottled da	Dry	1.50	1.50 1.50 1.50 - 1.95	S ES3 D3	N=10 (	1,2/2,2,3,3
			-	fine to coarse	flint.	ACIGENIC FO		angular to s	abrounded	, i		2.50 - 2.95	U1	28	(100%)
			(2.30)_									3.00	D4		
			-							- Dry	3.00	3.50 3.50 - 3.95	S D5	N=12 (	2,3/2,3,3,4
l		1.69	4.10	subangular to mottling with	subrou dark ora	ish brown sligh Inded fine to m Ingish brown. ( ACIGENIC FO	edium flint. Od Occasional sh	ccasional ba	inds and			4.50 - 4.95	U2	50	(100%)
			_				5.0 <u>0 - 10.</u> 1	00 m: Becomes	stiff to very st	iff		5.00	D6		
			-							Dry	3.00	5.50 5.50 - 5.95	S D7	N=19 (:	2,3/4,4,5,6
			-							- - - - -		6.50	D8		
			(5.90)							-		7.00 - 7.45	U3	65	(100%)
			-									7.50	D9		
			-							Dry	3.00	8.50 8.50 - 8.95	S D10	N=26 (	3,4/5,6,7,8
			-												
		<del>-4.21</del>	10.00									10.00 - 10.45 Depth	B1 Type & No	86	0 (0%) esults
ound		ntries:		Diameter	& casi	ng:	Depth relate	d remarks:		Wate		Chiselling deta		_	esults'
		o: Casir	ng: Seal		): Depth		From: To		Rema	ırks:		From: to:	Duratio	on:	Tool:
GS All	breviations se depths and r	anation of sym the Key Sheet. educed levels	bols and are in metres.	Project: Project No			Offshore Wind	d Farm				Exploratory pos	sition refere		-04



Bor	ehol	e forr	nation	details:								_			Location details:
Type IP CP	e: F	From: 0.00 0.00	To: 1.20 20.00	Start date: 11-07-17 11-07-17	End date: 11-07-17 12-07-17	Crew: MJ MJ	Plant: Hand tools Dando 2000	Barrel typ n/a n/a	pe: Drill Bi n/a n/a	it: Logged: 11-07-17 12-07-17	Logger: VS VS	Remarks SPT har	s: mmer ID: SI 3 E(r)	% 75	mE: 639551.64 mN: 329979.62 mAOD: 5.79 Grid: OSGB
Backfill/ Instal'n	Water- strike	Legend	Level	Depth (thick-	-		Stratum	Descriptio	n	'			Samples	& In Situ Te	esting
Bac Inst	Wa		Level	ness)				•			Wate	r Casing		Type & No	Results/Remarks
		××		-Lo	ose becomi e to coarse	ng med SAND.	dium dense and Gravel of suba	d very dens angular to s	se dark grey subrounded	y silty gravelly I fine to coarse	.		10.00 - 10.45	U4	
:H:		×××,		.∫flii −(P	ROBABLE (	CRAG	GROUP)	_							
		* * * ;		-	10.00 -	10.40 m:	Occasional fine to c	oarse pocke <u>ts</u>	of dark greyish	n brown sandy CLA	<u>Y</u> ]				
	:	× ^ ;		-							-				
::  :		(× × )		1							1				
H.		××		-				11.50 - 14. <u>00</u>	m: Becomes fir	ne to medium SAN	Dry	11.50	11.50 11.50 - 11.95	S D11	N=8 (1,1/2,2,2,2)
	:	××		-							-				
: #:		××*		-							Ī				
		× × ×		-											
		× × ×		-							1				
::  :		`x		-							Dry	13.00	13.00	S	N=14 (2,2/3,3,4,4)
		××		-									13.00 - 13.95	D12	
	:	××		-							-				
	:	× × ×		-											
		× ×		-							4				
:::::::::::::::::::::::::::::::::::::::	:	× × ×		-							-	14.50	14.50	S	N-17 (1 2/2 4 5 5)
		`x :		-							- Dry	14.50	14.50 - 14.95	D13	N=17 (1,2/3,4,5,5)
		××		(10.00)											
		××,		`							]				
	:	× × ×		-							-				
	:	× ×		-							-				
:::::::::::::::::::::::::::::::::::::::	:	× × ×									Dry	16.00	16.00 16.00 - 16.45	S D14	N=41 (4,6/9,10,10,12)
		`x :		-							1				
		××		-							-				
		×××		-							-				
	:	× × ×		-							-				
		× × ×		-							Dry	17.50	17.50	S	50 (5,9/50 for 235mm)
:::::::::::::::::::::::::::::::::::::::	:	× × ×		-									17.50 - 17.95	D15	
:#:		(× × ×		-							-				
		××		-							}				
	:	×××		-							-				
H.		× × ;		-							1				
	:	× × ×		_							- Dry	19.00	19.00 19.00 - 19.45	S D16	50 (7,14/50 for 160mm)
:::::::::::::::::::::::::::::::::::::::		×××													
:H:		××		-							-				
<u>.Д.</u>	SP Inst	××	-14.21	20.00		Br	orehole ends at	20 00m (Tar	raet denth)		Wate	r Casing	Depth	Type & No	Results
	undw		ntries:	1	Diameter	& casi	ng:	Depth rela	ated remar			(	Chiselling deta	ils:	
Stru	ick: F	≺ose to	o: Casin	g: Sealed	: Dia (mm)	: Depti	h: Casing:	From:	То:	Rema	rks:		From: to:	Duratio	on: Tool:
Į.	Note	es: For expli	anation of symb	ols and	Project:	East	Anglia (North)	Offshore V	Vind Farm			E	Exploratory pos	ition refere	ence:
AGS	issue		e Key Sheet. duced levels a	re in metres.	Project No			, V							1A-04
Scal			1:50		Client:	GHE	) Ltd						<b>→</b> 11		Sheet 2 of 2



Bor	ehol	e for	mation	details	<b>S</b> :										Location details:
Type IP CP	- (	From: 0.00 0.00	To: 1.20 8.00	Start d: 19-07- 19-07-	17 19-07-17	Crew: MJ MJ	Plant: Hand tools Dando 2000	Barrel type: n/a n/a	Drill Bit: n/a n/a	Logged: 19-07-17 19-07-17	Logger: VS VS	Remarks SPT har	s: nmer ID: SI 3 E(r	)% 75	mE: 639665.41 mN: 330085.17 mAOD: 1.91 Grid: OSGB
Backfill/ Instal'n	Water- strike	Legend	Level	Depth (thick-			Stratum	Description					Samples	& In Situ To	esting
ns Bac	Wa		2010.	ness)				·		15.0	Water	r Casing	Depth	Type & No	Results/Remarks
		* * * * * * * * *			Dark yellowisl subangular to (LOWESTOF	subrou	n slightly silty gr unded fine to co MATION)	avelly fine to arse flint.	coarse SAI	ND. Gravel o	of -		0.50	ES1	
		x		(1.80)							-		1.00 1.00	D1 ES2	
		× × × × × ×	0.11	1.80	Coff to firm do	urle brove	un aliabthy groups	ally sondy Cl	AV Craval	of aubangula	- Dry		1.50 1.50 1.50 - 1.95	C ES3 B1	N=8 (1,0/1,2,2,3)
			-0.09	2.00 -	to subrounded occasionally land BACTON GR	d fine to aminate REEN T	ILL MEMBER)	Occasional sh	ell fragmer	nts and	1		2.00 2.00	D2 ES4	
				- -	subrounded fi	ne to c	v slightly gravell parse flint. Occa ILL MEMBER)	y sandy CLA\ asional shell f	Y. Gravel of ragments.	subangular	to		2.50 - 2.95	UNR	50 (0%)
				(2.60)									3.00 - 3.45	D3	
				- - - -							Dry	3.00	4.00 4.00 - 4.45	S D4	N=10 (1,1/2,2,3,3)
			-2.69	4.60	Medium dens	a dark	grey gravelly sli	abtly silty fine	to coarse	SAND Grav	- - - (a)		4.00 - 4.45	D4	
		× × × × × × × ×		- - - - -	of subangular fragments.	to sub	rounded fine to	coarse flint. C	Occasional	shell	Dry	5.00	5.00 5.00 - 5.45 5.00 - 5.45	S B3 D5	N=29 (2,3/5,7,8,9)
		X X X X X X X X X X X X X X X X X X X		(3.40)							- Dry	6.50	6.50 6.50 - 6.95	S D6	N=32 (3,4/6,8,9,9)
		* * * * * * * * * * * * * * * * * * *	-6.09	8.00 -		В	orehole ends at	8.00m (Target	depth)		Dry	7.80	8.00 8.00 - 8.45	S D7	N=34 (4,5/7,8,9,10)
Gro	Inst undw	/ater e	entries:		Diameter	& casi	ng:	Depth relate	d remarks	:	Water		Depth Chiselling deta	Type & No	Results
Stru			o: Casir	ng: Seal 0		: Dept		From: To		Rema	rks:		From: to:	Duratio	on: Tool:
AGS Log Scal	abbr All d issue	eviations s epths and i	lanation of sym ee Key Sheet. reduced levels FINAL 1:50	are in metres.	Project: Project No Client:	o: 3318	Anglia (North)	Offshore Wind	d Farm			E	Exploratory pos		ence: _1A-05 _Sheet 1 of 1

# TerraConsult

Bor	ehol	e fori	mation	details	<u> </u>											Location details:
Туре	: F	rom:	To:	Start da	ate: End date:	Crew:	Plant:	Barrel type:	Drill Bit:	Logged:	Logo		Remarks	):		mE: 638643.01
IP CP		0.00 0.00	1.20 20.45	06-07- 06-07-		TM TM	Hand tools Dando 2000	n/a n/a	n/a n/a	06-07-17 07-07-17	VS		SPT har	nmer ID: SI 4 E(r)	% 74	mN: 330317.53
																mAOD: 11.58
	$\perp$	1														Grid: OSGB
Backfill/ Instal'n	Water- strike	Legend	Level	Depth (thick-			Stratum	Description						Samples 8	& In Situ Te	esting
8 =	≥ ∞	<u>ٿ</u>		ness)	Coft doub base		d l latt	· · · · · · · · · · · · · · · · · · ·				Water	Casing	Depth	Type & No	Results/Remarks
П			11.28	(0.30)	subrounded f		dy slightly grave oarse flint.	elly CLAY. Gra	vei of suba	ingular to	1					
		_	11.20	0.30	(TOPSOIL)	hrown	slightly gravelly	v clavev fine to	o medium :	SAND Gra	/			0.50	D1	
П		-		(0.70)	of subangular	to sub	rounded fine to	coarse flint. C			-			0.50 0.50 - 1.00	ES1 B1	
П		7	10.58	1.00 -			ACIGENIC FO							1.00	D2	
П			10.50	(0.50)			slightly gravelly rounded fine to		o medium	SAND. Gra	vel -			1.00	ES2	
П			10.08	1.50 -	(HAPPISBUR	GH GL	ACIGENIC FO	RMATION)			-	Dry		1.50	s	N=8 (1,1/2,2,2,2)
П			10.06	1.50 -	Loose light or	angish	brown slightly sparse pockets of	silty clayey fine	e to mediur	n SAND.		DIY		1.50	ES3	N=0 (1,1/2,2,2,2)
П		× ×					ACIGENIC FO		i biowii sa	ndy OLAT.				1.50 - 1.95 1.50 - 2.00	D3 B2	
П		<u>×</u>									-			2.00	ES4	
П		<u>×</u>		-												
П		× ×		-							1			2.50 2.50 - 2.95	D4 D9	
П		× ^		(2.50)							]					
П		× ×		_							-	Dry	3.00	3.00 3.00 - 3.45	S D5	N=5 (1,2/1,2,1,1)
П		× ^		-							]					
П		×		-							-					
П		×		-							1					
П		×	7.58	4.00	Medium dens	e light b	brown gravelly f	ine to coarse	SAND. Gra	avel of	-			4.00	D6	
П				-	subangular to	subrou	unded fine to co ACIGENIC FOR	arse flint. Occ	asional sh	ell fragmen	ts.					
П				-	(IIAI I IODOI	OITOL	ACIOLIVICTO	(WATION)				Dry	4.50	4.50	S	N=17 (2,3/4,4,4,5)
П				-										4.50 - 4.95 4.50 - 4.95	B3 D7	
П				_							-					
П											]					
П				-							-					
П				-							]					
П				(3.80)								Dry	6.00	6.00	s	N=21 (2,2/4,5,5,7)
П				-							1	-		6.00 - 6.45	D8	
П				-												
П				-												
П																
П				-												
П				-							]	Dny	7.50	7.50		N=22 /2 55/5 5 6 6)
				-								Dry	7.50	7.50	S	N=22 (3,55/5,5,6,6)
			3.78	7.80	Firm to stiff da	ark orar	ngish brown occ	asionally mot	tled dark re	eddish brov	vn -			9.00	D40	40 (000/ )
				-			ly CLAY. Gravel onal thin dark g							8.00 8.00 - 8.45	D10 U1	40 (90%)
					shell fragmen	ts.	ACIGENIC FO	•			‡			0.50	541	
				(1.70)		02	2.220101				]			8.50	D11	
				-												
				-												
											-	_			_	
			2.08	9.50 -			brown slightly g		CLAY. Gra	avel of		Dry	9.00	9.50 9.50 - 9.95	S D12	N=38 (4,6/8,9,9,12)
				(0.80)			unded fine to co ACIGENIC FOR				-					
	Inst				F1 :	•		Daniel III			,	Water	Ť	Depth	Type & No	Results
			entries: o: Casin	ıa. Seal	Diameter ed: Dia (mm)			Prom: To		: Rema	arke.			Chiselling deta From: to:	ails: Duratio	on: Tool:
Jun	υк. Г	.036 [[	o. Odbill	.y. ocai	20		6.50 6.50	. 10111.	··	INCIII	۱۱۱.ک.				Durall	1001.
<b>I</b>	Note	s: For eval	lanation of sym	hols and	Dest. 1		h Ammilia (Ali III)	Offich 14"	d F2						141	
AGS	abbr All d	eviations se epths and r	lanation of sym se Key Sheet. educed levels a	are in metres.	Project: Project No		t Anglia (North)	Offshore Wind	ı Farm				ĮE	Exploratory pos		
1 -	issue	:	FINAL		Client:		) Ltd							DП	ı / -L	.1B-01
Scale	e:		1:50		1											Sheet 1 of 3



Bor	eho	le fori	mation	details	s:										Location details:
Type IP CP		rom: 0.00 0.00	To: 1.20 20.45	Start d 06-07- 06-07-	-17 06-07-17	Crew: TM TM	Plant: Hand tools Dando 2000	Barrel type: n/a n/a	Drill Bit: n/a n/a	Logged: 06-07-17 07-07-17	Logger: VS VS	Remarks SPT hai	s: mmer ID: SI 4 E(r	)% 74	mE: 638643.01 mN: 330317.53 mAOD: 11.58 Grid: OSGB
al'n	re er	pue		Depth			Chartura	Description					Samples	& In Situ Te	
Backfill/ Instal'n	Water- strike	Legend	Level	(thick- ness)				Description			Wate	er Casing	Depth	Type & No	Results/Remarks
			1.28	10.30	subangular to	subrou GH GL dense n SANI	brown slightly g unded fine to co ACIGENIC FOF light greyish br D.	arse flint. RMATION)			ty –	11.00	10.50 - 11.50 11.00 11.00 - 11.45	B4 S D13	50 (4,7/12,20,18,)
				(3.70)							- Dry	12.50	12.50 12.50 - 12.95	S D14	N=41 (5,8/8,10,11,12)
		X X X X X X X X X X X X X X X X X X X	-2.42	14.00 -	Dense light gr (CRAG GROU	reyish b JP)	prown silty mica	ceous fine SA	ND.		Dry	14.00	14.00 14.00 - 14.45	S D15	N=34 (2,5/6,7,9,12)
				-							- Dry	15.50	15.50 15.50 - 15.95	S D16	N=32 (3,4/7,7,9,9)
		X X X X X X X X X X X X X X X X X X X		(6.45)							- Dry	17.00	17.00 17.00 - 17.45	S D17	N=48 (3,6/10,10,12,16)
				-							- Dry	18.50	18.00 - 20.00 18.50 18.50 - 18.95	D5 S D18	N=41 (5,6/8,9,12,12)
			entries:	a. Soo	Diameter			Depth relate		: Rema	- Dry Wate	(	20.00 Depth	Type & No ails: Duratio	50 (3,7/50 for 160mm)
AGS Log i	Note abb All o	es: For expl reviations se depths and re	ination of symbols Rey Sheet. educed levels a FINAL 1:50	nois and	Project: Project No Client:	East	t Anglia (North)	0	).4 Blow 5	rema	iino.		Exploratory pos	sition refere	



Bor	ehol	e for	mation	details:											Location	on details:
Type IP CP		From: 0.00 0.00	To: 1.20 20.45	Start date 06-07-17 06-07-17	7 06-07-17	Crew: TM TM	Plant: Hand tools Dando 2000	Barrel type: n/a n/a	Drill Bit: n/a n/a	Logged: 06-07-17 07-07-17	Logger: VS VS	Remarks	s: mmer ID: SI 4 E(r	74 74	mE: mN: mAOD: Grid:	638643.01 330317.53 11.58 OSGB
Backfill/ Instal'n	ater- rike	Legend	Level	Depth (thick-	<u> </u>	•	Stratum	Description	•				Samples	& In Situ Te	esting	
Bac	Wa		2070	ness)	Dense light gr	ovich h	rown silty mica		VND		Wate	er Casing	Depth 20.00 - 20.45	Type & No D19	Res	ults/Remarks
		× × × ×		- (0	CRAG GROU	JP)	TOWN SILY THICK		W.D.		]		20.00 20.10			
		w	-8.87	20.45 ]		Во	orehole ends at 2	20.45m (Targe	t depth)							
				1							1					
				-							-					
				]							]					
				-							-					
				-							1					
				-							-					
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				-							1,			T. C.		Desuit
			ntries:		Diameter			Depth relate		:	Wate		Depth Chiselling deta		1	Results
Stru	ck: F	Rose to	o: Casin	ig: Sealed	d: Dia (mm)	: Deptl	h: Casing:	From: To	0:	Rema	rks:		From: to:	Duratio	on:	Tool:
AGS	Note abbr All d	es: For exp reviations se epths and r	anation of syml ee Key Sheet. educed levels a	bols and are in metres.	Project: Project No		Anglia (North)	Offshore Win	d Farm			E	Exploratory pos			04
Log	issue e	:	FINAL 1:50		Client:	GHD							ВП	17-L	- I B	Sheet 3 of 3



Bor	ehol	e for	nation	details	<b>:</b>										Location details:
Type IP CP		From: 0.00 0.00	To: 1.20 19.45	Start da 10-07- 10-07-	17 10-07-17	Crew: TM TM	Plant: Hand tools Dando 2000	Barrel type n/a n/a	e: Drill Bit: n/a n/a	Logged: 10-07-17 11-07-17	Logger: VS VS	Remarks SPT hai	s: mmer ID: SI 4 E(r	)% 74	mE: 638719.03 mN: 330167.24 mAOD: 11.42 Grid: OSGB
Backfill/ Instal'n	Water- strike	Legend	Level	Depth (thick-			Stratum	Description	ı				Samples	& In Situ Te	esting
8 ⊑	≤ ω			ness)	Soft dark brow	vn sliah	tly gravelly sar	ndv CLAY G	ravel of suba	angular to	Wate	er Casing	Depth	Type & No	Results/Remarks
		× × × × × × × × × × × × × × × × × × ×	11.12	(0.30)	subrounded file (TOPSOIL) Light orangish Gravel of subasized pockets Occasional ro	ne to control  brown angular of redd otlets.		ly slightly sil If fine to coan ntly silty fine	ty fine to med	dium SAND.	] 		0.50 0.50 0.50 - 1.00 1.00	D1 ES1 B1 D2 ES2	
		×××	9.92	1.50 -			orangish brown		rse SAND.		Dry	,	1.50 1.50 1.50 - 1.95	S ES3 D3	N=24 (2,3/5,5,7,7)
			9.42	2.00		ottling v	rown and greer vith dark reddis				th =		2.00	ES4	
				(1.00)			ACIGENIC FO	RMATION)					2.50	D4	
			8.42	3.00 -	gravel sized p SAND. Rare s	ockets shell fra	brown fine to coof dark orangisgments. ACIGENIC FO	sh brown mo			Dry	3.00	3.00 3.00 - 3.45	S D1	N=40 (3,4/6,8,11,15)
				<u>-</u> - -							Dry	4.50	4.00 - 4.50 4.50	B5 S	N=32 (2,4/5,7,9,11)
				- - - - - - -				4.50 - 5. <u>00 n</u>	n: Becomes fine t	o medium SANi	b J Diy	4.50	4.50 - 4.95	D6	N-32 (2,4/3,7,9,11)
				(5.90)							Dry	6.00	6.00 6.00 - 6.45	S D7	N=28 (2,5/6,6,8,8)
				- - - - - - - - - - - - - - - - - - -				7.50 - 8 <u>.90 i</u>	m: Occasionally r	mottles dark gre	Dry	7.50	7.50 7.50 - 7.95	S D8	N=33 (4,6/6,8,9,10)
			2.52 2.42	8.90 - 9.00	(HAPPISBUR Medium dense sized pockets Rare shell frag	GH GLA e dark of of dark gments.	own sandy CL ACIGENIC FO orangish brown orangish brow ACIGENIC FO	RMATION) ifine to coar in mottled lig			Dry	9.00	8.90 9.00 9.00 - 9.45	D9 S D10	N=12 (2,2/2,3,3,4)
Gro	Inst undv	ater e	ntries:		Diameter	& casi	na:	Depth rela	ted remarks	:	Wate		Depth Chiselling deta	Type & No	Results
			o: Casin	g: Seal		: Depth		-	To:	Rema	rks:		From: to:	Duratio	on: Tool:
AG Log Scal	All d	reviations se lepths and re	anation of symble Key Sheet. educed levels a FINAL 1:50		Project: Project No Client:			Offshore W	ind Farm			E	Exploratory pos		ence: _1B-02 



														<u> </u>	
				details		0	Disaste	I Damel to man	D-III Dit	Lanadi		Damada			Location details
ype: IP CP	0.	om: .00 .00	To: 1.20 19.45	Start d 10-07 10-07	-17   10-07-17	Crew: TM TM	Plant: Hand tools Dando 2000	Barrel type: n/a n/a	Drill Bit: n/a n/a	Logged: 10-07-17 11-07-17	Logger: VS VS	Remarks SPT har	s: mmer ID: SI 4 E(r)	)% 74	mE: 638719.0 mN: 330167.2 mAOD: 11.42 Grid: OSGB
Instal'n Water-	<u>ş</u>	Legend	Level	Depth (thick-			Stratum	Description					Samples	& In Situ Te	esting
<u> </u>	st	) Fe		ness)					04115		Wate	r Casing	Depth	Type & No	Results/Remarks
	3	× × × × × × × × × × × × × × × × × × ×	0.92	10.50 -	sized pockets Rare shell fra (HAPPISBUF Medium dens Fine to mediu	of dark agments RGH GL se dark um sized	orangish brown corangish brown ACIGENIC FO orangish brown d pockets of sof ACIGENIC FO	n mottled ligh RMATION) slightly claye ft dark orangis	t grey claye	ey SAND.		9.00	10.50 10.50	S D11	N=22 (2,2/4,5,6,7)
	3	***	-0.78	(1.70) - 12.20	fragments. R	are sub	rish brown sligh angular to subr ACIGENIC FO	ounded fine to	AY. Occasio o coarse flin	nal shell it gravel.	- Dry		12.00 12.00 - 12.45	S D12	N=38 (4,4/6,7,11,14
_	Z			-									13.50 - 13.95 13.50 - 13.95 13.50 - 13.95	B3 D13 UNR	40 (0%)
Z	Z			(5.30)							- Dry	14.00	14.50 14.50 - 14.95	S D14	N=39 (2,3/5,8,11,18
				-							Dry	16.00	16.00 16.00 - 16.45	S D15	N=14 (2,2/3,3,4,4
	Z		-6.08	17.50 -	Occasional fi	ne to co	y fine to mediui arse gravel siz ACIGENIC FO	ed pockets of					17.50 - 17.95 17.50 - 17.95	D16 UNR	20 (0%)
		x		(1.95)							-		18.50	D17	
		× × × × × × × × × × × × × × × × × × ×	-8.03	19.45				0.45			Dry	19.00	19.00 19.00 - 19.45	C B4	N=1 (1,0/1,0,0,0)
			00	. 5. 10		Bor	ehole ends at 1	9.45m (Blowing	g sands)						
In:	ıst				-						Water	Casing	Depth	Type & No	Results
		iter e	ntries:		Diameter	* & casi	ng:	Depth relate	d remarks:				Chiselling deta		
14.8 0 17.7 0		ose to 14.0 2 17.8 9	17.	0 14 0				0	7.9 Sand 5	Rema	rks:		From: to:	Duratio	on: Tool:
og issu	abbrevi All dep	riations se oths and re	nation of sym e Key Sheet. duced levels : FINAL 1:50	are in metres.	Project: Project N Client:			Offshore Wind	d Farm			E	BH'		ence: _1B-02 



Bor	eho	le for	mation	details	s:										Location details:
Type IP CP		rom: 0.00 0.00	To: 1.20 20.00	Start d 10-07 10-07	-17   10-07-1	7 MJ	Plant: Hand tools Dando 2000	Barrel type: n/a n/a	Drill Bit: n/a n/a	Logged: 10-07-17 11-07-17	Logger: VS VS	Remarks	s: mmer ID: SI 3 E(r	·)% 75	mE: 638828.69 mN: 330276.05 mAOD: 12.42 Grid: OSGB
vfill/ al'n	re e	pue		Depth			Charture	Description					Samples	& In Situ Te	
Backfill/ Instal'n	Water- strike	Legend	Level	(thick- ness)				Description			Wate	r Casing	Depth	Type & No	Results/Remarks
		××	12.12	(0.30) 0.30	subrounded (TOPSOIL) Medium de Rare suban	fine to one of the second seco	orangish brown subrounded fine	slightly silty f	ine to medi	um SAND. ne to mediu			0.50 0.50	D1 ES1	
		× × × ×		-	-gravel sized (HAPPISBL	i pockets IRGH GL	of dark reddish ACIGENIC FOI	brown slighti RMATION)	y silty claye	ey SAND.			1.00 1.00	D2 ES2	
		× × × × × ×		-	- - - - - - -						Dry	1.40	1.50 1.50 1.50 - 1.95	S ES3 D3	N=19 (2,4/4,4,5,6)
				-	- - - - -								2.00	ES4	
		× × × × × ×		-	- - - - - - -						- Dry	2.40	2.50 2.50 - 2.95	S D4	N=25 (3,4/5,6,6,8)
		x x x x x x x x x x x x x x x x x x x			-						- Dry	3.40	3.50 3.50 - 3.95	S D5	N=20 (2,3/4,4,6,6)
		\(\cdot \cdot \cdo			-						- Dry	4.50	4.50 4.50 - 4.95	S D6	N=23 (1,3/5,5,6,7)
		X X X X X X X X X		(11.20)	-							5.50	5.50 5.50 - 5.95	S D7	N=31 (3,5/6,8,8,9)
		X X X X X X X X X X X X X X X X X X X			- - - - - - - -								6.50	D8	
		X X X X X X X X X X X X X X X X X X X			- - - - - - - - -			7.00 - 8. <u>95 m:</u>	Becomes dark	x yellowish brow	n Dry	7.00	7.00 7.00 - 7.45	S D9	N=26 (2,4/5,5,7,9)
		x x x x x x x x x x x x x x x x x x x		-	-						Dry	8.50	8.00 8.50	D10 S	N=27 (3,5/5,6,8,8)
		× × × × × ×		_	- - - - - -						Siy	0.50	8.50 - 8.95	D11	1 21 (0,000,0,0)
		× × × × × × × × × × × × × × × × × × ×		-	- - - - - - -						-		9.50	D12	
	Inst	××		_	1						- Dry Water			Type & No	N=31 (4,6/6,7,9,9) Results
			entries: o: Casin	id. Sea		er & casi n): Dept		Depth relate From: To		: Rema	ırks.	(	Chiselling deta From: to:	ails: Duratio	on: Tool:
Jul	ion.	1036 (	o. Odsil	.y. Oca	Dia (IIII	Бер	ar. Odoniy.	rion. It	·.	1761116			. 10m. tu.	Dulatic	1001.
AG Log Scal	issue	reviations so depths and r	lanation of sym ee Key Sheet. reduced levels a FINAL 1:50	bols and are in metres.	Project: Project Client:	No: 331	t Anglia (North) 8 D Ltd	Offshore Win	d Farm			E	Exploratory pos BH		-nce: -1B-03 Sheet 1 of 2



Borehole formation details: Location details:																	
ΙP	Type: From: IP 0.00 CP 0.00		To: 1.20 20.00	Start da 10-07-1 10-07-1	17 10-07-17	Crew: MJ MJ	Plant: Hand tools Dando 2000	Barrel type: n/a n/a	Drill Bit: n/a n/a	Logged: 10-07-17 11-07-17	Logger: VS VS	Remarks	s: mmer ID: SI 3 E(r)	% 75	mE: 638828.69 mN: 330276.05 mAOD: 12.42 Grid: OSGB		
Backfill/ Instal'n	Water- strike	Legend	Level	Depth Level (thick- Stratum Description								Samples & In Situ Testing					
8 ≅ ∀/∧	≥ ½	ر: x		ness)				10.00 - 11.50 m	: Becomes dari	k orangish brow	Wate	Casing	Depth 10.00 - 10.45	Type & No D13	Results/Remarks		
		× × × × × × × × × × × × × × × × × × ×	0.92	-	subangular to gravel sized p	subrou ockets	brown gravelly inded fine to m of dark orangis ACIGENIC FO	r silty fine to r edium flint. O	nedium SAI ccasional fi	ND. Gravel	of - Dry	11.50	11.50 11.50 - 11.95	S D14	N=38 (3,5/7,8,10,13)		
	•	× × × × × × × × × × × × × × × × × × ×	-0.58	-	of subangular	to subr	ngish brown gra rounded fine to ACIGENIC FO	coarse flint.	e to coarse	SAND. Gra	vel Dry		13.00 13.00 - 13.45	C B1	N=50 (4,7/10,12,13,15)		
		X X X X X X X X X X X X X X X X X X X	-1.38	_	SAND. Fine to CLAY.	coarse	rish brown occa e gravel sized p ACIGENIC FO	ockets of da					14.50 14.50 - 14.95	S D15	50 (5,10/50 for 220mm)		
		X X X X X X X X X X X X X X X X X X X	-3.58	-		d fine to	r silty fine to co medium flint. I			of subangu	Dry		16.00 16.00 - 16.45	S D16	50 (4,8/50 for 235mm)		
		× · · · · · · · · · · · · · · · · · · ·		(4.00)							- Dry	17.50	17.50 17.50 - 17.95 17.50 - 17.95	S D111 D17	50 (6,10/50 for 225mm)		
		X X X X X X X X X X X X X X X X X X X		- - - - - - - - - - - - - - - - - - -	19.00 - 20.00	m: Becon	nes slightly gravelly	with subang <u>ular to</u>	o subrounded fi	īne to coarse flir	Dry	19.00	19.00 19.00 - 19.45	C B2	50 (10,14/50 for 140mm)		
Y/)))]	Inst	××	<del>-7.58</del>	20.00			rehole ends at 2				Water		Depth	Type & No	Results		
	ck: F			)	Diameter ed: Dia (mm)			Pepth relate From: T	d remarks	: Rema	rks:		Chiselling deta From: to:	<b>nils:</b> Duratio	on: Tool:		
AGS Log Scal	All d	reviations se epths and re	anation of symble Key Sheet. educed levels a FINAL 1:50	ols and re in metres.	Project: Project No Client:			Offshore Win	d Farm			E	Exploratory pos		ence: _1B-03 Sheet 2 of 2		

# TerraConsult

Dorentie Log															
Borehole formation details: Location details:															
Type: IP CP	Fro 0.0 0.0	00	To: 1.20 16.00	Start da 11-07- 11-07-	17   11-07-17	1-07-17 TM Hand tools n/a n/a 11-07-17 VS							s: mmer ID: SI 4 E(r	mE: 638976.43 mN: 330391.52 mAOD: 7.79 Grid: OSGB	
Backfill/ Instal'n Water-	ķe	Legend	Depth (thick- Stratum Description								Samples	& In Situ Te	esting		
Backfill Instal'r Water-	str	Leg	Level	(thick- ness)				ightly gravelly CLAY. Gravel of subangular to				r Casing	Depth	Type & No	Results/Remarks
	1 44 44 44 44		7.49	(0.30)	subrounded (TOPSOIL) Dark orangis Gravel of sul	fine to co		slightly grave	elly fine to me		//. ND		0.50 0.50 0.50 - 1.00 1.00	D1 ES1 B1 D2 ES2	
			6.29	1.50 -	subangular t of light brow	o subrou nish white	own slightly sa nded fine to co e CLAY. ACIGENIC FO	arse flint. Fir	ravelly CLAY ne to coarse s	. Gravel of sized pock	f Dry		1.50 1.50 1.50 - 1.95 1.50 - 2.00 2.00	S ES3 D3 B2 ES4	N=8 (1,1/1,2,2,3)
	**************************************	*** *** ***	4.79	3.00 -	SAND. Grav shell fragme	el of subants. Occa	ish brown sligh angular to subi sionally mottle ACIGENIC FO	ounded fine ed dark orang	to coarse flin	ne to medii t. Occasio	Dry	3.00	3.00 3.00 - 3.45 3.00 - 4.00	S D4 B3	N=39 (1,3/5,8,11,15)
	******	×		- - - - - - - - - - - - - - - - - - -								4.50	4.50 4.50 - 4.95	S D5	50 (2,6/50 for 225mm)
	* * * * * * * * * * * * * * * * * * * *	*		(5.20)							Dry	6.00	6.00 6.00 - 6.45	S D6	N=50 (3,5/7,11,15,17)
	▼ × × × × × × × × × × × × × × × × × × ×	*** *** *** *** ***	-0.41	8.20			own mottled d		ntly sandy CL	AY.	- Dry	7.50	7.50 7.50 - 7.95 8.20	S D7	50 (3,6/50 for 225mm)
			-1.21	9.00 - (1.00) -	(HAPPISBUI Medium den medium SAN	RGH GLA se light o	ns and dark bro ACIGENIC FO rangish brown el of subangula ACIGENIC FO	RMATION) slightly silty ar to subroun			Dry	9.00	9.00 9.00 - 9.45	S D9	N=14 (2,2/2,3,4,5)
	×	××	-2.21	- -10.00							1		10.00	D10	
iroun	nst dw2	ter e	ntries:	10.00	Diamete	r & caeir	ıa.	Denth relate	ed remarks:		Water		10.00 Depth	Type & No	Results
	: Ro			g: Seal	ed: Dia (mm	i): Depth			oc remarks:	Rema	arks:		From: to:	Duratio	on: Tool:
AGS .og iss Scale:	abbrevia All depth	ations see hs and re	nation of symb e Key Sheet. duced levels a FINAL 1:50	ools and re in metres.	Project: Project N Client:			Offshore Wir	nd Farm			E	BH'		ence: _1B-04 



Borehole formation details:															
Type: From: IP 0.00 CP 0.00		To: 1.20 16.00	Start d 11-07- 11-07-	-17 11-07-17	7   11-07-17   TM   Hand tools   n/a   n/a   11-07-17   VS							s: mmer ID: SI 4 E(r	)% 74	mE: 638976.43 mN: 330391.52 mAOD: 7.79 Grid: OSGB	
Backfill/ Instal'n	Water-	Legend	Level	Depth (thick-		Stratum Description							Samples	& In Situ Te	esting
Ba	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	9	20 2 4 4 2 5 1 2 5 1 2 5 1 4 2	(0.30)	Gravel of fine (HAPPISBUR Firm to stiff da to subrounder orangish brov	Dark orangish brown slightly slity slightly gravelly fine to coarse SAND. Gravel of fine-medium flint. Occasional clay pockets and shell fragments. HAPPISBURGH GLACIGENIC FORMATION) Firm to stiff dark brown slightly gravelly sandy CLAY. Gravel of subangular or subrounded fine to medium. Frequent shell fragments. Occasional dark brown mottling. HAPPISBURGH GLACIGENIC FORMATION)					ar Dry		10.50 10.50 - 10.95 10.80 11.00 - 11.45	S D11 D12 U1	Results/Remarks N=19 (2,3/3,4,5,7) 73 (80%)
				(3.10)				10.8 <u>0 - 11.</u> -	45 m: Become.	s stiff to very sti	#		11.50 11.60 - 12.05	D13 U2	60 (80%)
				-							- Dry	12.00	12.50 12.50 - 12.95	S D15	N=22 (2,3/4,5,6,7)
		*** *** *** *** ***	-5.61 -5.71	13.40 13.50	(HAPPISBUR Dense dark y subangular to gravel sized p	GH GL ellowish subrou ockets	ngish brown slig ACIGENIC FOP In brown slightly unded fine to co- of dark orangis ACIGENIC FOP	RMATION) silty slightly g arse flint. Occ h brown sand	ravelly SAI	ND. Gravel	Dry	12.00	13.40 13.50 13.50 - 13.95	D16 S D17	N=35 (3,3/6,7,9,13)
				(2.50)							Dry		15.00 15.00 - 15.45	S D18	32 (2,2/32 for 225mm)
	SPP		-8.21	16.00 -			rehole ends at 16				Wate		Depth	Type & No	Results
Struck: Rose to: Casing: Sealed: 13.5 8.50 12.0 0 0   Dia (mm): Depth: Casing:   From: To: Remarks:   From: to: Duration: Tool: 15.0 15.4 Blowing sands.   Struck: Rose to: Casing: Sealed: Dia (mm): Depth: Casing:   From: To: Remarks:   From: to: Duration: Tool:   Tool: Remarks:   From: to: Duration: Tool:   Tool:									on: Tool:						
AC Log Sca	s ab issu	breviations so depths and r	lanation of sym ee Key Sheet. reduced levels a FINAL 1:50	bols and are in metres.	Project: Project No Client:	o: 3318	Anglia (North)	Offshore Wind	d Farm			E	Exploratory pos BH'		ence: -1B-04 Sheet 2 of 2

## APPENDIX B Photographs

November 2017 Report No 3318-R006-3

#### BH17-LIA-01



0.50 m



4.50 m



7.00 m

#### BH17-LIA-02



1.00 m



3.50 m



7.00 m micaceous sand



11.50 m

#### BH17-LIA-03



2.00 m



4.00 m

#### BH17-LIA-04



0.50 m



3.00 m



5.00 m



11.50 m micaceous sand



14.50 m

#### BH17-LIA-05



0.50 m



1.80 m

#### BH17-LIB-01



1.00 m



4.00 m



8.50 m



10.50 m



14.00 m micaceous sand

#### BH17-LIB-02



0.50 m



2.50 m



7.50 m



8.90 m



13.50 m



17.50 m

#### BH17-LIB-03



4.50 m



7.00 m



11.50 m



16.00 m

#### BH17-LIB-04



0.50 m



3.00 m



8.20 m



10.80 m



13.50 m

# **APPENDIX C In Situ Testing Results**

Variable head permeability test

November 2017 Report No 3318-R006-3

# Variable Head Permeability Test Results

Bottom of Response Zone

# **TerraConsult**

Static water level (m)
Internal Diameter (D)
Length of Standpipe below Ground Level (m)
Height of Water above Ground Level (m)
Length of Standpipe above Ground Level (m)
Water level at start of test (m)
Top of Response Zone

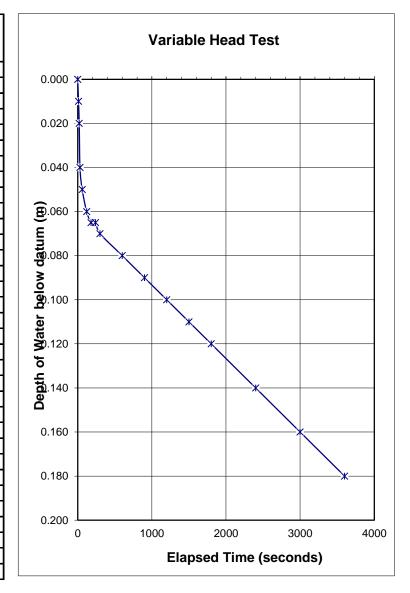
4.80	
0.15	
0.00	
0.00	
0.00	
0.00	
5.50	
6.50	

	Test 1
Time (t0)	0
Time (t)	3600
Head of Water	
Initial Head (h0) at (t0)	6.50
Final Head (h(t)) at (t)	6.32
Length of Response Zone (L)	1.00
Cross Sectional Area (S)	0.0177

Description

Silty slightly gravelly SAND.

Elapsed	Water	Head of				
Time	below	Water				
(seconds)	Datum	water				
0	0.000	6.50				
10	0.010	6.49				
20	0.020	6.48				
30	0.040	6.46				
60	0.050	6.45				
120	0.060	6.44				
180	0.065	6.44				
240	0.065	6.44				
300	0.070	6.43				
600	0.080	6.42				
900	0.090	6.41				
1200	0.100	6.40				
1500	0.110	6.39				
1800	0.120	6.38				
2400	0.140	6.36				
3000	0.160	6.34				
3600	0.180	6.32				



Shape Factor (F) calculated according to ISO 22282-1:2012

Equation for borehole permeability tests after BS EN ISO 22282-2:2012

$$F = \frac{2\pi L}{\ln\left\{ (L/D) + \sqrt{\left( (L/D)^2 + 1 \right)} \right\}}$$
$$= \frac{6.28}{2.59}$$

$$k = \frac{S \ln \left( \frac{h_0}{h(t)} \right)}{F(t - t_0)}$$

= 2.43

k = 5.68E-08 m/s

C	alculated by:	JMT	Project:	East Anglia (North) Offshore Wind Farm	Exploratory position reference:
			Project No:	3318	BH17-L1A-01
С	hecked by:	DD	Client:	GHD	DITT-LIA-01

## Variable Head Permeability Test Results

Bottom of Response Zone

# **TerraConsult**

Static water level (m)
Internal Diameter (D)
Length of Standpipe below Ground Level (m)
Height of Water above Ground Level (m)
Length of Standpipe above Ground Level (m)
Water level at start of test (m)
Top of Response Zone

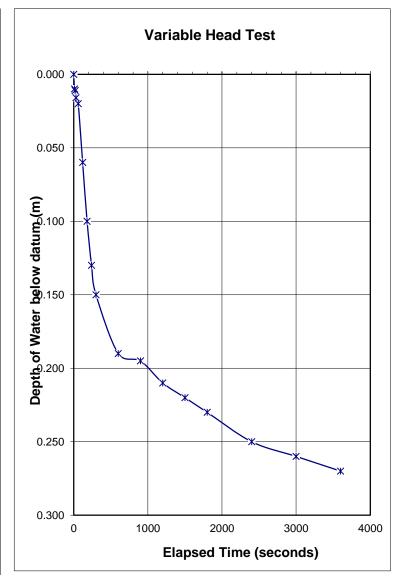
7.00	
0.15	l
0.00	l
8.50	l
9.50	l

	Test 1
Time (t0)	0
Time (t)	3600
Head of Water	
Initial Head (h0) at (t0)	9.50
Final Head (h(t)) at (t)	9.23
Length of Response Zone (L)	1.00
Cross Sectional Area (S)	0.0177

Description

Silty SAND.

Elapsed	Water	Head of
Time	below	Water
(seconds)	Datum	Water
0	0.000	9.50
10	0.010	9.49
20	0.011	9.49
30	0.016	9.48
60	0.020	9.48
120	0.060	9.44
180	0.100	9.40
240	0.130	9.37
300	0.150	9.35
600	0.190	9.31
900	0.195	9.31
1200	0.210	9.29
1500	0.220	9.28
1800	0.230	9.27
2400	0.250	9.25
3000	0.260	9.24
3600	0.270	9.23



Shape Factor (F) calculated according to ISO 22282-1:2012

Equation for borehole permeability tests after BS EN ISO 22282-2:2012

$$F = \frac{2\pi L}{\ln\left\{ \left( \frac{L}{D} \right) + \sqrt{\left( \left( \frac{L}{D} \right)^2 + 1 \right)} \right\}}$$
6.28

2.59

$$k = \frac{S \ln \left( h_0 / h(t) \right)}{F(t - t_0)}$$

= 2.43

k = 5.83E-08 m/s

Calculated by: JMT Project: East Anglia (North) Offshore Wind Farm Exploratory position reference:

Project No: 3318
Checked by: DD Client: GHD

#### Variable Head Permeability Test Results

Bottom of Response Zone

## **TerraConsult**

Static water level (m)
Internal Diameter (D)
Length of Standpipe below Ground Level (m)
Height of Water above Ground Level (m)
Length of Standpipe above Ground Level (m)
Water level at start of test (m)
Top of Response Zone

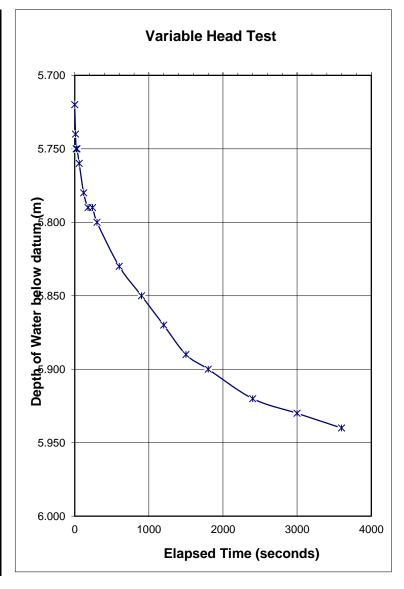
	14.02	
	0.15	
Γ	0.00	
Γ	0.34	
Γ	0.34	
Γ	0.00	
Ī	14.00	
Γ	15.00	

	Test 1
Time (t0)	0
Time (t)	3600
Head of Water	
Initial Head (h0) at (t0)	9.28
Final Head (h(t)) at (t)	9.06
Length of Response Zone (L)	1.00
Cross Sectional Area (S)	0.0177

Description

Silty slightly sandy CLAY.

Description		
Elapsed	Water	Head of
Time	below	Water
(seconds)	Datum	vvalei
0	5.720	9.62
10	5.740	9.60
20	5.750	9.59
30	5.750	9.59
60	5.760	9.58
120	5.780	9.56
180	5.790	9.55
240	5.790	9.55
300	5.800	9.54
600	5.830	9.51
900	5.850	9.49
1200	5.870	9.47
1500	5.890	9.45
1800	5.900	9.44
2400	5.920	9.42
3000	5.930	9.41
3600	5.940	9.40



Shape Factor (F) calculated according to ISO 22282-1:2012

Equation for borehole permeability tests after BS EN ISO 22282-2:2012

$$F = \frac{2\pi L}{ln\left\{ \left( \frac{L}{D} \right) + \sqrt{\left( \left( \frac{L}{D} \right)^2 + 1 \right)} \right\}}$$
6.28

= 2.43

$$k = \frac{S \ln \left( \frac{h_0}{h(t)} \right)}{F(t - t_0)}$$

k = 4.86E-08 m/s

Calculated by: JMT Project: East Anglia (North) Offshore Wind Farm

Project No: 3318

Checked by: DD Client: GHD

Exploratory position reference:

BH17-L1B-02

# APPENDIX D Instrumentation Sampling and Monitoring Records

November 2017 Report No 3318-R006-3

GROUNDWATER AND GROUND GAS MONITORING

**TerraConsult** 

Site: East Anglia OWF

3318

No:

#### **GROUND GAS AND GROUNDWATER MONITORING DATA**

			Well D	etails		(	Groundwate	r							Gas							Weather		
Location	Date	Monitored by	Standpipe diameter (mm)	Depth to Base (m bgl)	Water Depth (m bgl)	Water Sample Taken?	Water Temp oC	Odour	Colour	Atmospher ic Pressure (mbar)	Atmospher ic Pressure Comment	Pressure	Flow (I/h)	CH <sub>4</sub> (% v/v)	GSV CH <sub>4</sub> (l/hr)	CO <sub>2</sub> (% v/v)	GSV CO <sub>2</sub> (l/hr)	O <sub>2</sub> (% v/v)	CO (ppm)	H2S (ppm)	VOC (ppm)	Conditions	Ambient Temp °C	
	10/08/17	KW	51	14.80	4.46	Υ				1024	NM	0.0	0.0	0.0	0.0000	1.4	0.0000	18.8	0	0	NM	Sunny, dry	18	
BH17-LIA-04	22/08/17	VS	51	18.43	5.98	N				1018	NM	0.0	0.0	0.0	0.0000	1.3	0.0000	19.5	0	0	NM	Sunny, dry	18	
	31/08/17	VS	51	18.08	4.96	N				1016	NM	0.0	0.0	0.0	0.0000	0.4	0.0000	20.6	0	0	NM	Sunny, dry	18	
	40/00/47	IZM	F4	45.00	40.00	I v	1	1	1	1004	NINA		0.0		0.0000	0.4	0.0000	00.5			L NINA	I 0 1	40	
	10/08/17	KW	51	15.39	10.23	Y				1024	NM	0.0	0.0	0.0	0.0000	0.1	0.0000	20.5	U	0	NM	Sunny, dry		
	22/08/17	VS	51	15.24	10.44	Y				1017	NM	0.0	0.0	0.0	0.0000	0.1	0.0000	20.6	0	0	NM	Sunny, dry		
	31/08/17	VS	51	15.03	10.40	N				1015	NM	0.0	0.0	0.0	0.0000	1.6	0.0000	18.6	0	0	NM	Sunny, dry	18	
	10/08/17	KW	51	16.25	6.75	Y				1024	NM	0.0	0.0	0.0	0.0000	0.1	0.0000	20.6	0	0	NM	Sunny, dry	18	
BH17-LIB-04	22/08/17	VS	51	16.24	7.40	N				1016	NM	0.0	0.0	0.0	0.0000	0.0	0.0000	21.4	0	0	NM	Sunny, dry	1	
	31/08/17	VS	51	15.88	6.80	N				1015	NM	0.0	0.0	0.0	0.0000	0.0	0.0000	20.8	0	0	NM	Sunny, dry	18	

# **APPENDIX E Geotechnical Laboratory Test Results**

Report References: GSTL 35625

CLS 684646

November 2017 Report No 3318-R006-3

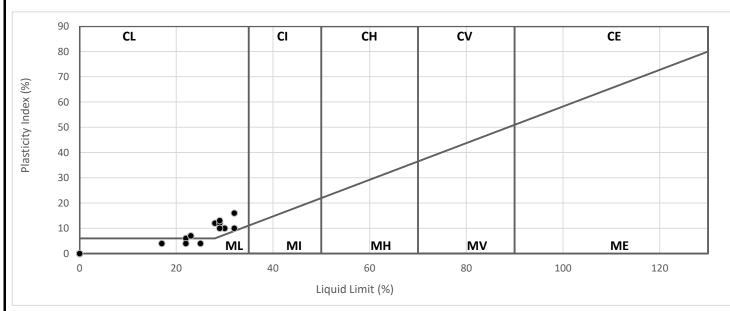
CSTI	LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX	
GOIL	( BS 1377 : Part 2 : 1990 Method 5 )	
Contract Number	36525	
Site Name	E Anglia Wind Farm - Cable Route	

Hole Reference	Sample Number	Sample Type	D	epth (r	m)	Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity index %	Passing .425mm %	Remarks
BH17-L1A-02	2	D	1.00	-		26	32	22	10	100	CL Low Plasticity
BH17-L1A-04	4	D	3.00	-		16	29	19	10	100	CL Low Plasticity
BH17-L1B-01	12	D	9.50	-	9.95	25	29	16	13	100	CL Low Plasticity
BH17-L1B-04	3	D	1.50	-	1.95	24		NP		100	
				-							
				-							
				-							
				-							
				-							
				-							
				-							

Symbols: NP : Non Plastic # : Liquid

# : Liquid Limit and Plastic Limit Wet Sieved

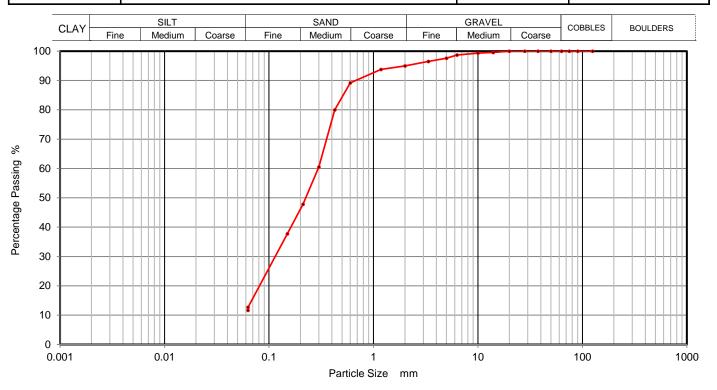
#### PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION BS 5930:1999+A2:2010



Operators	Checked	20/09/2017	Sean Penn	
DB	Approved	21/09/2017	Ben Sharp	



PARTICLE SIZE DISTRIBUTION		Contract Number	36525
GOIL	BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Borehole/Pit No.	BH17-L1A-01
Site Name	E Anglia Wind Farm - Cable Route	Sample No.	7
Soil Description		Depth Top	5.50
	Brown slightly fine to medium gravelly silty fine to coarse SAND	Depth Base	5.95
		Sample Type	D



Siev	Sieving		entation
Particle Size	% Passing	Particle Size	% Passing
mm	70 1 assing	mm	70 1 assing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	99		
6.3	99		
5	98		
3.35	96		
2	95		
1.18	94		
0.6	89		
0.425	80		
0.3	61		
0.212	48		
0.15	38		
0.063	13		

Sample Proportions	% dry mass	
Cobbles	0	
Gravel	5	
Sand	82	
Silt and Clay	13	

Grading Analysis	
Uniformity Coefficient	

Operators	Checked	20/09/2017	Sean Penn
RO/MH	Approved	21/09/2017	Ben Sharp



CCTI	PARTICLE SIZE DISTRIBUTION	Contract Number	36525
GOIL	BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Borehole/Pit No.	BH17-L1A-03
Site Name	E Anglia Wind Farm - Cable Route	Sample No.	8
Soil Description	Brown silty fine to coarse SAND	Depth Top	7.00
	Blown silly line to coarse SAND	Depth Base	7.45
		Sample Type	D



Sieving		Sedime	entation
Particle Size	% Passing	Particle Size	% Passing
mm	% Fassing	mm	% Fassing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	99		
0.6	95		
0.425	88		
0.3	69		
0.212	53		
0.15	45		
0.063	10		

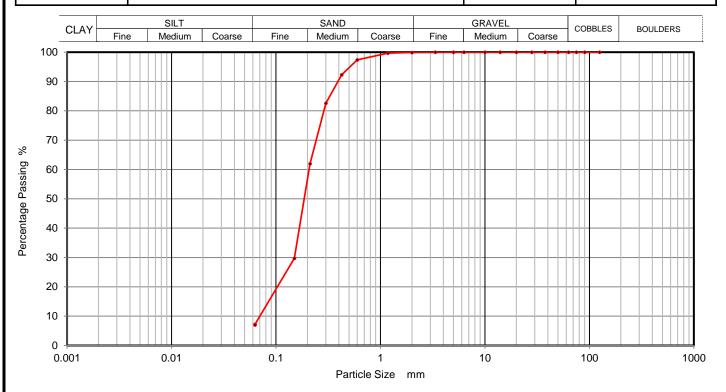
Sample Proportions	% dry mass	
Cobbles	0	
Gravel	0	
Sand	90	
Silt and Clay	10	

<b>Grading Analysis</b>	
Uniformity Coefficient	

Operators	Checked	20/09/2017	Sean Penn
RO/MH	Approved	21/09/2017	Ben Sharp



PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	PARTICLE SIZE DISTRIBUTION	Contract Number	36525
	Borehole/Pit No.	BH17-L1B-02	
Site Name	E Anglia Wind Farm - Cable Route	Sample No.	1
Soil Description	Brown slightly silty fine to coarse SAND	Depth Top	3.00
	brown slightly slity line to coarse SAND	Depth Base	3.45
		Sample Type	D



Sie	ving	Sedime	entation
Particle Size	9/ Dessing	Particle Size	% Passing
mm	% Passing	mm	% Fassing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	97		
0.425	92		
0.3	83		
0.212	62		
0.15	30		
0.063	7		

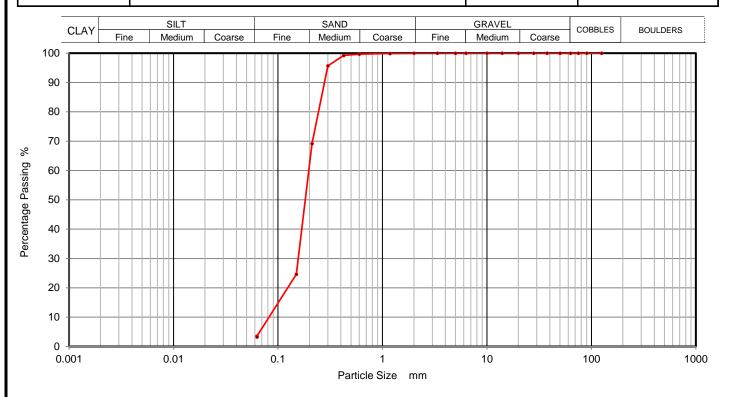
Sample Proportions	% dry mass		
Cobbles	0		
Gravel	0		
Sand	93		
Silt and Clay	7		

Grading Analysis	
Uniformity Coefficient	

Operators	Checked	20/09/2017	Sean Penn
RO/MH	Approved	21/09/2017	Ben Sharp



CCTI	PARTICLE SIZE DISTRIBUTION	Contract Number	36525
BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Borehole/Pit No.	BH17-L1B-03	
Site Name	E Anglia Wind Farm - Cable Route	Sample No.	7
Soil Description	Brown slightly silty fine to medium SAND	Depth Top	5.50
	Brown slightly stity time to medium SAND	Depth Base	5.95
		Sample Type	D



Siev	ving	Sedime	entation
Particle Size	9/ Dessing	Particle Size	% Passing
mm	% Passing	mm	% Fassing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	99		
0.3	96		
0.212	69		
0.15	25		
0.063	4		

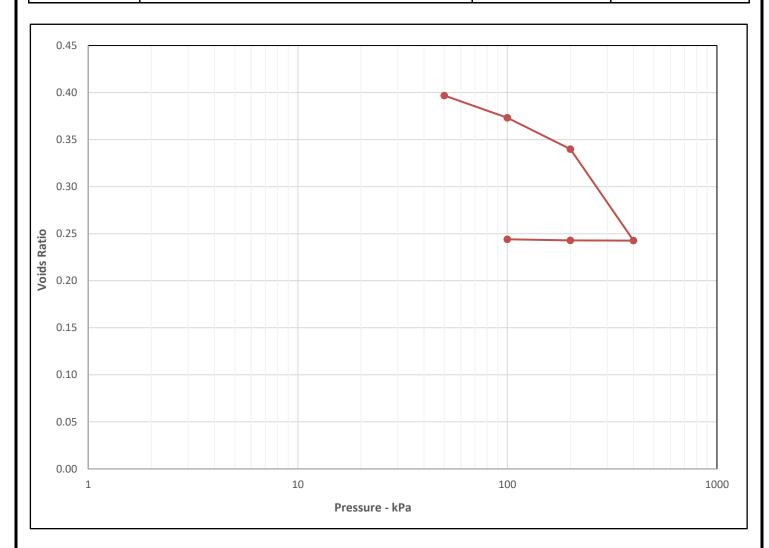
Sample Proportions	% dry mass		
Cobbles	0		
Gravel	0		
Sand	96		
Silt and Clay	4		

Grading Analysis	
Uniformity Coefficient	

Operators	Checked	20/09/2017	Sean Penn
RO/MH	Approved	21/09/2017	Ben Sharp



CCTI	ONE DIMENSIONAL CONSOLIDATION TEST	Contract Number	36525	
GJIL	BS1377:Part 5:1990, clause 3	Borehole/Trialpit No.	BH17-L1A-04	
Site Name	E Anglia Wind Farm - Cable Route	Sample No.	1	
Soil Description	Brown silty sandy CLAY	Depth Top (m)	2.50	
	BIOWIT SILLY SATILLY CLAT	Depth Base (m)	2.95	
Lab Temperature	20°c	Sample Location	Middle	
Remarks	Cv Calculated Using T90	Sample Type	U	

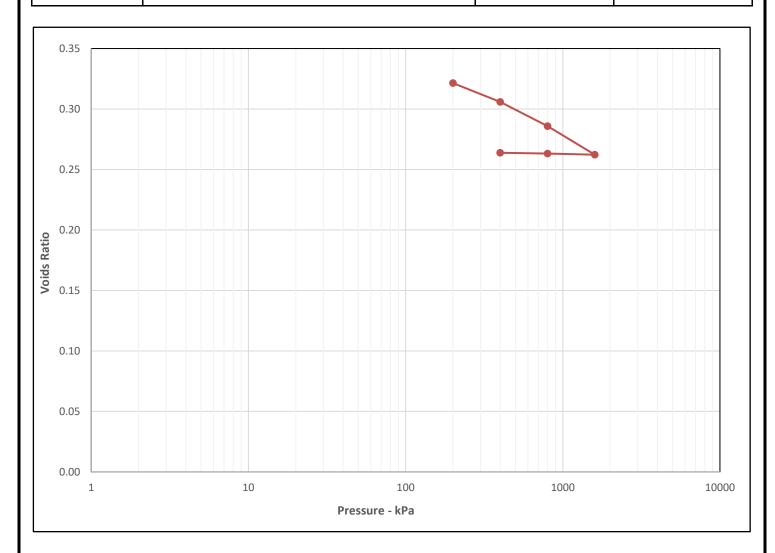


Initial Sample Conditions		Pressure Range		Mv m2/MN	Cv m2/yr	Pressure Range		Mv m2/MN	Cv m2/yr		
Moisture Content (%)	18	0	-	50	0.79	13		-			
Bulk Density (Mg/m3)	2.16	50	-	100	0.34	12		-			
Dry Density (Mg/m3)	1.82	100	-	200	0.24	8.1		-			
Voids Ratio	0.4547	200	-	400	0.4	2.9		-			
Degree of saturation	107.8	400	-	200	0.00062	7.6		-			
Height (mm)	18.77	200	-	100	0.0094	21		-			
Diameter (mm)	74.96		-					-			
Particle Density (Mg/m3)	2.65		-					-			

Operators	Checked	20/09/2017	Sean Penn	-
LG	Approved	21/09/2017	Ben Sharp	



CCTI	ONE DIMENSIONAL CONSOLIDATION TEST	Contract Number	36525	
GOIL	BS1377:Part 5:1990, clause 3		BH17-L1B-04	
Site Name	E Anglia Wind Farm - Cable Route	Sample No.	1	
Soil Description	Grey sandy silty CLAY	Depth Top (m)	11.00	
	Grey Sarity Sity CLAT	Depth Base (m)	11.45	
Lab Temperature	20°c	Sample Location	Middle	
Remarks	Cv Calculated Using T90	Sample Type	U	



Initial Sample Conditions		Pressure Range		Mv m2/MN	Cv m2/yr	Pressure Range		Mv m2/MN	Cv m2/yr		
Moisture Content (%)	16	0	-	200	0.23	3		-			
Bulk Density (Mg/m3)	2.21	200	-	400	0.059	8.6		-			
Dry Density (Mg/m3)	1.91	400	-	800	0.038	7.9		-			
Voids Ratio	0.3845	800	-	1600	0.0	7.6		-			
Degree of saturation	107.7	1600	-	800	0.00089	12		-			
Height (mm)	19.97	800	-	400	0.0014	9.1		-			
Diameter (mm)	49.95		-					-			
Particle Density (Mg/m3)	2.65		-					-			

Operators	Checked	20/09/2017	Sean Penn	
LG	Approved	21/09/2017	Ben Sharp	





Concept Life Sciences is a trading name of Concept Life Sciences Analytical & Development Services Limited registered in England and Wales (No 2514788)

# Concept Life Sciences Certificate of Analysis

3 Crittall Drive Springwood Industrial Estate Braintree Essex CM7 2RT

Tel: 01376 560120 Fax: 01376 552923

Report Number: Supplement 1 to Report Number 684646-

1

Date of Report: 23-Oct-2017

Customer: TerraConsult (South) Limited

Suite F17 Dugard House

Peartree Road Colchester Essex CO3 0UL

**Customer Contact: Victoria Smith** 

**Customer Job Reference:** 

Customer Site Reference: Happisburgh/East Anglia

Date Job Received at Concept: 05-Sep-2017
Date Analysis Started: 26-Sep-2017
Date Analysis Completed: 29-Sep-2017

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation
This report should not be reproduced except in full without the written approval of the laboratory
Tests covered by this certificate were conducted in accordance with Concept Life Sciences SOPs
All results have been reviewed in accordance with Section 25 of the Concept Life Sciences, Analytical
Services Quality Manual





Report checked and authorised by : Chelsea Entwistle Senior Customer Service Advisor Issued by : Aislinn Arthey Customer Service Ad



Project Site: Happisburgh/East Anglia

Customer Reference:

Soil

Analysed as Soil

BRE SD1 (SE)

			Conce	ot Reference	684646 001	684646 002						
	17-L1A-02 D3 @ 2.00m	17-L1B-02 D3 @ 14.00m										
	Date Sampled											
	Matrix Class											
Determinand	Method	Test Sample	LOD	Units								
(Water soluble) Ammonia expressed as NH4	T710	AR	0.01	g/l	<0.01	<0.01						
(Water soluble) CI-	T710	A40	0.01	g/l	<0.01	<0.01						
Magnesium	T112	A40	1	mg/l	2	6						
(Water soluble) NO3	T710	A40	0.01	g/l	<0.01	<0.01						
рН	T7	A40			8.2	7.9						
(Water Soluble) SO4 expressed as SO4	T242	A40	0.01	g/l	0.02	0.26						
SO4(Total)	T102	A40	0.02	%	<0.02	0.09						
Sulphur (total)	T6	A40	0.01	%	<0.01	0.23						
Moisture @105C	T162	AR	0.1	%	13	11						
Retained on 2mm	T2	A40	0.1	%	0.3	0.6						

# Index to symbols used in Supplement 1 to Report Number 684646-1

Value	Description
AR	As Received
A40	Assisted dried < 40C
M	Analysis is MCERTS accredited
N	Analysis is not UKAS accredited

#### **Notes**

001 - The date of sampling has not been provided and therefore the time from sampling to analysis is unknown. It is possible therefore that the results provided may be compromised Retained on 2mm is removed before analysis

Supplement 1 Report reissued to include only samples 001 and 002

#### **Method Index**

Value	Description
Т6	ICP/OES
T112	ICP/OES (SIM)(Water Extract)
T710	2:1 Extraction / Discrete Analyser
T102	ICP/OES (HCl extract)
T162	Grav (1 Dec) (105 C)
T242	2:1 Extraction/ICP/OES (TRL 447 T1)
T7	Probe
T2	Grav

# **Accreditation Summary**

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
(Water soluble) Ammonia expressed as NH4	T710	AR	0.01	g/l	N	001-002
(Water soluble) CI-	T710	A40	0.01	g/l	N	001-002
Magnesium	T112	A40	1	mg/l	Ν	001-002
(Water soluble) NO3	T710	A40	0.01	g/l	N	001-002
рН	T7	A40			М	001-002
(Water Soluble) SO4 expressed as SO4	T242	A40	0.01	g/l	М	001-002
SO4(Total)	T102	A40	0.02	%	М	001-002
Sulphur (total)	T6	A40	0.01	%	М	001-002
Moisture @105C	T162	AR	0.1	%	N	001-002
Retained on 2mm	T2	A40	0.1	%	N	001-002

# APPENDIX F Geoenvironmental Laboratory Test Results

Report References: 672447

675177

November 2017 Report No 3318-R006-3



Concept Life Sciences is a trading name of Concept Life Sciences Analytical & Development Services Limited registered in England and Wales (No 2514788)

# Concept Life Sciences Certificate of Analysis

3 Crittall Drive Springwood Industrial Estate Braintree Essex CM7 2RT

Tel: 01376 560120 Fax: 01376 552923

Report Number: Supplement 1A to Report Number

672447-1

Date of Report: 23-Oct-2017

Customer: TerraConsult Limited

Unit 34

**Bold Business Centre** 

Bold Lane Sutton St Helens WA9 4TX

**Customer Contact:** Mr Derek Daniels

**Customer Job Reference: 3318** 

Customer Purchase Order: PO-001748

Customer Site Reference: Norfolk Vanguard Cable Route

Date Job Received at Concept: 13-Jul-2017
Date Analysis Started: 03-Aug-2017
Date Analysis Completed: 11-Aug-2017

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation
This report should not be reproduced except in full without the written approval of the laboratory
Tests covered by this certificate were conducted in accordance with Concept Life Sciences SOPs
All results have been reviewed in accordance with Section 25 of the Concept Life Sciences, Analytical
Services Quality Manual





Report checked and authorised by : Claire Brown Crociquia Customer Service Manager Issued by : Aislinn Arthey Customer Service Adv



Project Site: Norfolk Vanguard Cable Route

Customer Reference: 3318

Soil Analysed as Soil

Miscellaneous

			Concer	t Reference	672447 002	672447 006	672447 010	672447 018	672447 022
		Custor		e Reference	BH17-L1B-03 ES2 @ 1.00m	BH17-L1B-02 ES2 @ 1.00m	BH17-L1A-02 ES2 @ 1.00m	BH17-L1B-01 ES2 @ 1.00m	BH17-L1A-03 ES2 @ 1.00m
			D	ate Sampled	10-JUL-2017	06-JUL-2017	03-JUL-2017	06-JUL-2017	06-JUL-2017
				Matrix Class	Sandy Soil	Sandy Soil	Clay	Sandy Soil	Clay
Determinand	Method	Test Sample	LOD	Units					
Arsenic	T257	A40	2	mg/kg	2	4	6	13	8
Barium	T257	A40	2	mg/kg	8	21	55	35	54
Beryllium	T245	A40	0.5	mg/kg	<0.5	<0.5	0.7	0.6	0.7
Boron (water-soluble)	T82	A40	1	mg/kg	<1	<1	<1	<1	<1
Cadmium	T257	A40	0.1	mg/kg	<0.1	<0.1	<0.1	0.1	<0.1
Chromium	T257	A40	0.5	mg/kg	4.5	8.0	18	18	20
Copper	T257	A40	2	mg/kg	3	5	10	12	10
Lead	T257	A40	2	mg/kg	3	7	12	12	12
Mercury	T245	A40	1.0	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
Nickel	T257	A40	0.5	mg/kg	3.7	5.7	16	18	20
Selenium	T257	A40	3	mg/kg	<3	<3	<3	<3	<3
Vanadium	T257	A40	0.1	mg/kg	6.7	12	26	32	28
Zinc	T257	A40	2	mg/kg	10	19	30	39	32
Soil Organic Matter	T287	A40	0.1	%	<0.1		0.3	-	-
Moisture @105C	T162	AR	0.1	%	4.4	2.7	12	11	11
Retained on 2mm	T2	A40	0.1	%	<0.1	<0.1	5.1	<0.1	1.6

Concept Reference: 672447

Project Site: Norfolk Vanguard Cable Route

Customer Reference: 3318

Soil Analysed as Soil

Miscellaneous

			Concep	ot Reference	672447 058	672447 062	672447 070	
		Custon	ner Sampl	le Reference	BH17-L1B-04 ES2 @ 1.00m	BH17-L1A-04 ES2 @ 1.00m	BH17-L1A-05 ES2 @ 1.00m	
			D	ate Sampled	11-JUL-2017	11-JUL-2017	25-JUL-2017	
			l	Matrix Class	Sandy Soil	Sandy Soil	Clay	
Determinand	Method	Test Sample	LOD	Units	-431	The second second		
Arsenic	T257	A40	2	mg/kg	6	6	6	
Barium	T257	A40	2	mg/kg	28	26	16	
Beryllium	T245	A40	0.5	mg/kg	<0.5	<0.5	<0.5	
Boron (water-soluble)	T82	A40	1	mg/kg	<1	<1	2	
Cadmium	T257	A40	0.1	mg/kg	0.1	<0.1	<0.1	
Chromium	T257	A40	0.5	mg/kg	8.6	12	13	
Copper	T257	A40	2	mg/kg	6	8	10	
Lead	T257	A40	2	mg/kg	8	10	7	
Mercury	T245	A40	1.0	mg/kg	<1.0	<1.0	<1.0	
Nickel	T257	A40	0.5	mg/kg	9.6	12	17	
Selenium	T257	A40	3	mg/kg	<3	<3	<3	
Vanadium	T257	A40	0.1	mg/kg	16	19	19	
Zinc	T257	A40	2	mg/kg	25	28	29	
Soil Organic Matter	T287	A40	0.1	%	0.7	0.2	0.3	
Moisture @105C	T162	AR	0.1	%	10	15	12	
Retained on 2mm	T2	A40	0.1	%	8.6	<0.1	0.6	

Project Site: Norfolk Vanguard Cable Route

Customer Reference: 3318

Soil Analysed as Soil

Asbestos

			Concep	t Reference	672447 001	672447 009	672447 010	672447 057	672447 061	672447 069
Customer Sample Reference					BH17-L1B-03 ES1 @ 0.50m	BH17-L1A-02 ES1 @ 0.50m	BH17-L1A-02 ES2 @ 1.00m	BH17-L1B-04 ES1 @ 0.50m	BH17-L1A-04 ES1 @ 0.50m	BH17-L1A-05 ES1 @ 0.50m
			D	ate Sampled	10-JUL-2017	03-JUL-2017	03-JUL-2017	11-JUL-2017	11-JUL-2017	25-JUL-2017
			ı	Matrix Class			Clay			
Determinand	Method	Test Sample	LOD	Units						
Asbestos ID	T27	A40			Asbestos not detected					

Concept Reference: 672447

Project Site: Norfolk Vanguard Cable Route

Customer Reference: 3318

Soil Analysed as Soil
Total and Speciated USEPA16 PAH (SE) (MCERTS)

			Concep	t Reference	672447 002	672447 010	672447 058	672447 062	672447 070
		Custon	ner Sampl	e Reference	BH17-L1B-03 ES2 @ 1.00m	BH17-L1A-02 ES2 @ 1.00m	BH17-L1B-04 ES2 @ 1.00m	BH17-L1A-04 ES2 @ 1.00m	BH17-L1A-05 ES2 @ 1.00m
			Da	te Sampled	10-JUL-2017	03-JUL-2017	11-JUL-2017	11-JUL-2017	25-JUL-2017
			ı	Matrix Class	Sandy Soil	Clay	Sandy Soil	Sandy Soil	Clay
Determinand	Method	Test Sample	LOD	Units					
Naphthalene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)Anthracene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b)fluoranthene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)Pyrene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(123-cd)Pyrene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(ah)Anthracene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)Perylene	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
PAH(total)	T16	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1

Project Site: Norfolk Vanguard Cable Route

Customer Reference: 3318

Soil Analysed as Soil

TPH CWG

Concept Reference 672447 002 672447 010 672447 058 672447 062 672447 070 BH17-L1A-02 ES2 @ 1.00m BH17-L1B-03 ES2 @ 1.00m BH17-L1B-04 ES2 @ 1.00m BH17-L1A-04 ES2 @ 1.00m BH17-L1A-05 ES2 @ 1.00m Customer Sample Reference **Date Sampled** 10-JUL-2017 03-JUL-2017 11-JUL-2017 11-JUL-2017 25-JUL-2017 **Matrix Class** Sandy Soil Clay Sandy Soil Sandy Soil Clay Test Sample Determinand Method LOD Units T209 Benzene 10 AR μg/kg <10 <10 <10 <10 <10 Toluene T209 AR 10 <10 <10 <10 <10 <10 μg/kg EthylBenzene T209 AR 10 μg/kg <10 <10 <10 <10 <10 M/P Xylene T209 AR 10 <10 <10 <10 <10 <10 μg/kg O Xylene T209 AR 10 μg/kg <10 <10 <10 <10 <10 T54 Methyl tert-Butyl Ether AR 1 μg/kg <10 <10 <10 <10 T54 TPH (C5-C6 aliphatic) AR 0.010 mg/kg < 0.010 < 0.010 < 0.010 <0.010 < 0.010 TPH (C6-C7 aromatic) T54 AR 0.010 < 0.010 <0.010 <0.010 <0.010 <0.010 mg/kg TPH (C6-C8 aliphatic) T54 AR 0.010 < 0.010 < 0.010 < 0.010 < 0.010 mg/kg < 0.010 TPH (C7-C8 aromatic) T54 AR 0.010 <0.010 <0.010 <0.010 mg/kg < 0.010 < 0.010 TPH (C8-C10 aliphatic) T54 0.010 AR mg/kg < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 TPH (C8-C10 aromatic) T54 AR 0.010 mg/kg <0.010 <0.010 <0.010 <0.010 <0.010 TPH (C10-C12 aliphatic) T219 AR <2 <2 <2 <2 <2 mg/kg TPH (C10-C12 aromatic) T219 AR 2 mg/kg <2 <2 <2 <2 <2 TPH (C12-C16 aliphatic) T219 AR <2 2 <2 <2 <2 <2 mg/kg mg/kg TPH (C12-C16 aromatic) T219 AR 2 <2 <2 <2 <2 <2 TPH (C16-C21 aliphatic) T219 AR <2 <2 <2 <2 <2 mg/kg

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Concept Reference: 672447

Project Site: Norfolk Vanguard Cable Route

T219

T219

T219

T219

T219

T85

T85

AR

AR

AR

AR

AR

AR

AR

2

2

2

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

Customer Reference: 3318

TPH (Aliphatic+Aromatic) C10-C25 (Sum)

TPH (Aliphatic+Aromatic) C25-C40 (Sum)

Soil Analysed as Soil

Organochlorine insecticides

TPH (C16-C21 aromatic)

TPH (C21-C35 aliphatic)

TPH (C21-C35 aromatic)

TPH (C35-C40 aliphatic)

TPH (C35-C40 aromatic)

			Concep	t Reference	672447 002	672447 010	672447 058	672447 062	672447 070
		Custon	ner Sampl	e Reference	BH17-L1B-03 ES2 @ 1.00m	BH17-L1A-02 ES2 @ 1.00m	BH17-L1B-04 ES2 @ 1.00m	BH17-L1A-04 ES2 @ 1.00m	BH17-L1A-05 ES2 @ 1.00m
			Da	ate Sampled	10-JUL-2017	03-JUL-2017	11-JUL-2017	11-JUL-2017	25-JUL-2017
			l	Matrix Class	Sandy Soil	Clay	Sandy Soil	Sandy Soil	Clay
Determinand	Method	Test Sample	LOD	Units	100	40/			
Hexachlorocyclohexane	T16	AR	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Hexachlorobenzene	T1	AR	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Heptachlor	T16	AR	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Aldrin	T16	AR	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Heptachlor epoxide	T16	AR	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Chlordane	T16	AR	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Endosulphan	T16	AR	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
DDE	T16	AR	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Dieldrin	T16	AR	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Endrin	T16	AR	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
DDD	T16	AR	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
DDT	T16	AR	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01

Project Site: Norfolk Vanguard Cable Route

Customer Reference: 3318

Soil Analysed as Soil

Organophosphorous insecticides

			Concer	t Reference	672447 002	672447 010	672447 058	672447 062	672447 070
		Custor	ner Sampl	e Reference	BH17-L1B-03 ES2 @ 1.00m	BH17-L1A-02 ES2 @ 1.00m	BH17-L1B-04 ES2 @ 1.00m	BH17-L1A-04 ES2 @ 1.00m	BH17-L1A-05 ES2 @ 1.00m
			D	ate Sampled	10-JUL-2017	03-JUL-2017	11-JUL-2017	11-JUL-2017	25-JUL-2017
			ı	Matrix Class	Sandy Soil	Clay	Sandy Soil	Sandy Soil	Clay
Determinand	Method	Test Sample	LOD	Units					
Dichlorvos	T16	AR	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Mevinphos	T16	AR	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Dimethoate	T16	AR	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Diazinon	T16	AR	0.01	mg/kg	<0.01	0.01	<0.01	<0.01	0.01
Pirimiphos methyl	T16	AR	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Malathion	T16	AR	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Fenitrothion	T16	AR	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Parathion	T16	AR	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Azinphos methyl	T16	AR	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01

Concept Reference: 672447

Project Site: Norfolk Vanguard Cable Route

Customer Reference: 3318

Soil Analysed as Soil

Triazines Suite

			Concep	t Reference	672447 002	672447 010	672447 058	672447 062	672447 070
		Custon	ner Sampl	e Reference	BH17-L1B-03 ES2 @ 1.00m	BH17-L1A-02 ES2 @ 1.00m	BH17-L1B-04 ES2 @ 1.00m	BH17-L1A-04 ES2 @ 1.00m	BH17-L1A-05 ES2 @ 1.00m
			Da	te Sampled	10-JUL-2017	03-JUL-2017	11-JUL-2017	11-JUL-2017	25-JUL-2017
				Matrix Class	Sandy Soil	Clay	Sandy Soil	Sandy Soil	Clay
Determinand Method Test Sample LOD Units									
Simazine	T16	AR	0.01	mg/kg	<sup>(64)</sup> <0.01	<sup>(64)</sup> <0.01	(64) < 0.01	<sup>(64)</sup> <0.01	<sup>(64)</sup> <0.01
Atrazine	T16	AR	0.01	mg/kg	(64) < 0.01	(64) < 0.01	(64) < 0.01	<sup>(64)</sup> <0.01	<sup>(64)</sup> <0.01
Propazine	T16	AR	0.01	mg/kg	<sup>(64)</sup> <0.01				
Trietazine	T16	AR	0.01	mg/kg	(64) < 0.01	<sup>(64)</sup> <0.01	(64) < 0.01	<sup>(64)</sup> < 0.01	<sup>(64)</sup> <0.01
Prometryn	T16	AR	0.01	mg/kg	(64) < 0.01	(64) < 0.01	(64) < 0.01	<sup>(64)</sup> <0.01	<sup>(64)</sup> <0.01
Terbutryn	T16	AR	0.01	mg/kg	<sup>(64)</sup> <0.01	(64) < 0.01	(64) < 0.01	<sup>(64)</sup> < 0.01	<sup>(64)</sup> <0.01

Concept Reference: 672447

Project Site: Norfolk Vanguard Cable Route

Customer Reference: 3318

**Soil** Analysed as Soil

Urons

			Conce	ot Reference	672447 002	672447 010	672447 058	672447 062	672447 070
		Custon	ner Samp	le Reference	BH17-L1B-03 ES2 @ 1.00m	BH17-L1A-02 ES2 @ 1.00m	BH17-L1B-04 ES2 @ 1.00m	BH17-L1A-04 ES2 @ 1.00m	BH17-L1A-05 ES2 @ 1.00m
			D	ate Sampled	10-JUL-2017	03-JUL-2017	11-JUL-2017	11-JUL-2017	25-JUL-2017
				Matrix Class	Sandy Soil	Clay	Sandy Soil	Sandy Soil	Clay
Determinand	Method	Test Sample	LOD	Units					
Chlorotoluron	T310	AR	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Diuron	T310	AR	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Isoproturon	T310	AR	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Linuron	T310	AR	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Monuron	T310	AR	0.01	ma/ka	<0.01	<0.01	<0.01	<0.01	<0.01

Project Site: Norfolk Vanguard Cable Route

Customer Reference: 3318

Soil Analysed as Soil

Phenoxy Acetic acid herbicides

			Conce	ot Reference	672447 002	672447 010	672447 058	672447 062	672447 070
		Custon	ner Sampl	e Reference	BH17-L1B-03 ES2 @ 1.00m	BH17-L1A-02 ES2 @ 1.00m	BH17-L1B-04 ES2 @ 1.00m	BH17-L1A-04 ES2 @ 1.00m	BH17-L1A-05 ES2 @ 1.00m
			D	ate Sampled	10-JUL-2017	03-JUL-2017	11-JUL-2017	11-JUL-2017	25-JUL-2017
				Matrix Class	Sandy Soil	Clay	Sandy Soil	Sandy Soil	Clay
Determinand	Method	Test Sample	LOD	Units					
Mecoprop	T16	AR	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Phenoxy Acetic acid herbicide: MCPA	T16	AR	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Dichlorprop	T16	AR	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Phenoxy Acetic acid herbicide: 2,4-D	T16	AR	0.01	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
Fenoprop	T16	AR	0.01	mg/kg	(36) < 0.02	(36) < 0.02	(36) < 0.02	(36) < 0.02	(36) < 0.02
Phenoxy Acetic acid herbicide: 2,4,5-T	T16	AR	0.01	mg/kg	(36) < 0.02	(36) < 0.02	(36) < 0.02	(36) < 0.02	(36) < 0.02

Concept Reference: 672447

Project Site: Norfolk Vanguard Cable Route

Customer Reference: 3318

Soil Analysed as Soil

Phenols (Speciated)

			Conc	ept Reference	672447 002	672447 010	672447 058	672447 062	672447 070
		Custon	ner Sam	ple Reference	BH17-L1B-03 ES2 @ 1.00m	BH17-L1A-02 ES2 @ 1.00m	BH17-L1B-04 ES2 @ 1.00m	BH17-L1A-04 ES2 @ 1.00m	BH17-L1A-05 ES2 @ 1.00m
				Date Sampled	10-JUL-2017	03-JUL-2017	11-JUL-2017	11-JUL-2017	25-JUL-2017
				Matrix Class	Sandy Soil	Clay	Sandy Soil	Sandy Soil	Clay
Determinand	Method	Test Sample	LOD	Units					
Resorcinol	T17	AR	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Catechol	T17	AR	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Phenol	T17	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Cresols	T17	AR	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Xylenols	T17	AR	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Naphthols	T17	AR	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Trimethyl phenol	T17	AR	0.05	mg/kg	<sup>(62)</sup> < 0.10	(62) < 0.10	(62) < 0.10	<sup>(62)</sup> < 0.10	<sup>(62)</sup> < 0.10
Total Phenols	T17	AR	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1

### Index to symbols used in Supplement 1A to Report Number 672447-1

Value	Description								
AR	As Received								
A40	Assisted dried < 40C								
36	LOD Raised due to low Matrix spike recovery								
62	LOD was raised due to the method performance of the analytical procedure used								
64	Analysis was performed by an alternative technique								
S	Analysis was subcontracted								
М	Analysis is MCERTS accredited								
U	Analysis is UKAS accredited								
N	Analysis is not UKAS accredited								

#### **Notes**

Asbestos subcontracted to REC Limited

Mercury - 010 - These samples have been analysed exceeding recommended holding times. It is possible therefore that the results provided may be compromised.

Reported results on as received samples are corrected to a 105 degree centigrade dry weight basis except TPH c5-c35 aro/ali split, Urons, Triazines, OCP/OPP and PAAH

OCP, OPP and PAAH analysis transferred to Concept Life Sciences Manchester

Supplement 1A report reissued to include only samples 001, 002, 006, 009, 010, 018, 022, 057, 058, 061, 062, 069, and 070

002, 010, 058, 062 & 070 - BTEX - Samples submitted for GC/MS (Headspace) analysis were submitted in inappropriate containers. It is possible therefore that the results provided may be compromised.

OCP & OPP - 002, 010, 058 & 062 - These samples have been analysed exceeding recommended holding times. It is possible therefore that the results provided may be compromised.

Retained on 2mm is removed before analysis

Urons and Triazines analysis transferred to Concept Life Sciences Cambridge

TPH, PAH & BTEX - 002, 010, 026, 030, 058 & 062 - These samples have been analysed exceeding recommended holding times. It is possible therefore that the results provided may be compromised.

### **Method Index**

Value	Description
T257	ICP/OES (SIM) (Aqua Regia Extraction)
T1	GC/MS (HR)
T85	Calc
T287	Calc TOC/0.58
T16	GC/MS
T54	GC/MS (Headspace)
T2	Grav
T82	ICP/OES (Sim)
T162	Grav (1 Dec) (105 C)
T209	GC/MS (Head Space)(MCERTS)
T27	PLM
T245	ICP/OES (Aqua Regia Extraction)
T219	GC/FID (SE)
T310	LC/MS/MS
T17	HPLC

# **Accreditation Summary**

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Arsenic	T257	A40	2	mg/kg	М	002,006,010,018,022,058,062,070
Barium	T257	A40	2	mg/kg	U	002,006,010,018,022,058,062,070
Beryllium	T245	A40	0.5	mg/kg	U	002,006,010,018,022,058,062,070
Boron (water-soluble)	T82	A40	1	mg/kg	N	002,006,010,018,022,058,062,070
Cadmium	T257	A40	0.1	mg/kg	М	002,006,010,018,022,058,062,070
Chromium	T257	A40	0.5	mg/kg	M	002,006,010,018,022,058,062,070
Copper	T257	A40	2	mg/kg	М	002,006,010,018,022,058,062,070
Lead	T257	A40	2	mg/kg	М	002,006,010,018,022,058,062,070
Mercury	T245	A40	1.0	mg/kg	U	002,006,010,018,022,058,062,070
Nickel	T257	A40	0.5	mg/kg	М	002,006,010,018,022,058,062,070
Selenium	T257	A40	3	mg/kg	U	002,006,010,018,022,058,062,070
Vanadium	T257	A40	0.1	mg/kg	U	002,006,010,018,022,058,062,070
Zinc	T257	A40	2	mg/kg	М	002,006,010,018,022,058,062,070
Soil Organic Matter	T287	A40	0.1	%	N	002,010,058,062,070
Moisture @105C	T162	AR	0.1	%	N	002,006,010,018,022,058,062,070
Retained on 2mm	T2	A40	0.1	%	N	002,006,010,018,022,058,062,070
Asbestos ID	T27	A40		TO CALL	SU	001,009-010,057,061,069
Naphthalene	T16	AR	0.1	mg/kg	U	002,010,058,062,070
Acenaphthylene	T16	AR	0.1	mg/kg	U	002,010,058,062,070
Acenaphthene	T16	AR	0.1	mg/kg	M	002,010,058,062,070
Fluorene	T16	AR	0.1	mg/kg	M	002,010,058,062,070
Phenanthrene	T16	AR	0.1	mg/kg	U	002,010,058,062,070
Anthracene	T16	AR	0.1	mg/kg	M	002,010,058,062,070
Fluoranthene	T16	AR	0.1	mg/kg	N	002,010,058,062,070
Pyrene	T16	AR	0.1	mg/kg	N	002,010,058,062,070
Benzo(a)Anthracene	T16	AR	0.1	mg/kg	М	002,010,058,062,070
Chrysene	T16	AR	0.1	mg/kg	M	002,010,058,062,070
Benzo(b)fluoranthene	T16	AR	0.1	mg/kg	U	002,010,058,062,070
Benzo(k)fluoranthene	T16	AR	0.1	mg/kg	N	002,010,058,062,070
Benzo(a)Pyrene	T16	AR	0.1	mg/kg	М	002,010,058,062,070
Indeno(123-cd)Pyrene	T16	AR	0.1	mg/kg	М	002,010,058,062,070
Dibenzo(ah)Anthracene	T16	AR	0.1	mg/kg	М	002,010,058,062,070
Benzo(ghi)Perylene	T16	AR	0.1	mg/kg	М	002,010,058,062,070
PAH(total)	T16	AR	0.1	mg/kg	U	002,010,058,062,070
Benzene	T209	AR	10	μg/kg	М	002,010,058,062,070
Toluene	T209	AR	10	μg/kg	M	002,010,058,062,070
EthylBenzene	T209	AR	10	μg/kg	М	002,010,058,062,070
M/P Xylene	T209	AR	10	μg/kg	М	002,010,058,062,070
O Xylene	T209	AR	10	μg/kg	М	002,010,058,062,070
Methyl tert-Butyl Ether	T54	AR	1	μg/kg	U	002,010,058,062,070
TPH (C5-C6 aliphatic)	T54	AR	0.010	mg/kg	N	002,010,058,062,070
TPH (C6-C7 aromatic)	T54	AR	0.010	mg/kg	N	002,010,058,062,070
TPH (C6-C8 aliphatic)	T54	AR	0.010	mg/kg	N	002,010,058,062,070
TPH (C7-C8 aromatic)	T54	AR	0.010	mg/kg	N	002,010,058,062,070

THY (15-07-10 signature)	Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
TPH (CE-07-12 accorated)	TPH (C8-C10 aliphatic)	T54		0.010	mg/kg	N	002,010,058,062,070
THE CLEF CLEF ALTERNACY   TABLE   AR   2	' '	T54	AR	0.010		N	
THE INTEL   CLE   CLE   September   Tol   AR   2   mysley   N   00.00110.06.00.02   PO   THE INTEL   CLE   September   Tol   AR   2   mysley   N   00.00110.06.00.02   PO   THE INTEL   CLE   September   Tol   AR   2   mysley   N   00.00110.06.00.02   PO   THE INTEL   CLE   CLE   September   Tol   AR   2   mysley   N   00.00110.06.00.02   PO   THE INTEL   CLE   CLE   September   Tol   AR   2   mysley   N   00.00110.06.00.02   PO   THE INTEL   CLE   CLE   September   Tol   AR   2   mysley   N   00.00110.06.00.02   PO   THE INTEL   CLE   CLE   September   Tol   AR   2   mysley   N   00.00110.06.00.02   PO   THE INTEL   CLE	TPH (C10-C12 aliphatic)	T219	AR	2	mg/kg	N	002,010,058,062,070
THE HIGH Colf anomale	TPH (C10-C12 aromatic)	T219	AR	2	mg/kg	N	002,010,058,062,070
THY   CFC   CF   alphases    T19	TPH (C12-C16 aliphatic)	T219	AR	2		N	002,010,058,062,070
TPH CET CET animates    T219	TPH (C12-C16 aromatic)	T219	AR	2	mg/kg	N	002,010,058,062,070
THE ICE   CSS selphanic    T219	TPH (C16-C21 aliphatic)	T219	AR	2	mg/kg	N	002,010,058,062,070
THE INCIDENCE   THE INCIDENC	TPH (C16-C21 aromatic)	T219	AR	2	mg/kg	N	002,010,058,062,070
TPH 1635-C40 alphanter  T219	TPH (C21-C35 aliphatic)	T219	AR	2	mg/kg	N	002,010,058,062,070
The High Action Action   Table   AR	TPH (C21-C35 aromatic)	T219	AR	2	mg/kg	N	002,010,058,062,070
Time Humanian Care Care (Sam)	TPH (C35-C40 aliphatic)	T219	AR	2	mg/kg	N	002,010,058,062,070
The Halphate-Americal (25C-40 Sum)	TPH (C35-C40 aromatic)	T219	AR	2	mg/kg	N	002,010,058,062,070
HeaderBrookerane	TPH (Aliphatic+Aromatic) C10-C25 (Sum)	T85	AR	4	mg/kg	N	002,010,058,062,070
Headerhordersceneme	TPH (Aliphatic+Aromatic) C25-C40 (Sum)	T85	AR	4	mg/kg	N	002,010,058,062,070
Heptachlor	Hexachlorocyclohexane	T16	AR	0.01	mg/kg	U	002,010,058,062,070
Askin	Hexachlorobenzene	T1	AR	0.01	mg/kg	U	002,010,058,062,070
Heplachior eposide	Heptachlor	T16	AR	0.01	mg/kg	U	002,010,058,062,070
Calorane	Aldrin	T16	AR	0.01	mg/kg	U	002,010,058,062,070
Endosuphan	Heptachlor epoxide	T16	AR	0.01	mg/kg	U	002,010,058,062,070
Deletin	Chlordane	T16	AR	0.01	mg/kg	U	002,010,058,062,070
Deletrin	Endosulphan	T16	AR	0.01	mg/kg	U	002,010,058,062,070
Eddin	DDE	T16	AR	0.01	mg/kg	U	002,010,058,062,070
DDD	Dieldrin	T16	AR	0.01	mg/kg	U	002,010,058,062,070
DOT	Endrin	T16	AR	0.01	mg/kg	U	002,010,058,062,070
Dehlorvos	DDD	T16	AR	0.01	mg/kg	U	002,010,058,062,070
Mevinphos         T16         AR         0.01         mg/kg         U         002,010,058,062,070           Dimethoate         T16         AR         0.01         mg/kg         U         002,010,058,062,070           Dizazinon         T16         AR         0.01         mg/kg         U         002,010,058,062,070           Pirmiphos methyl         T16         AR         0.01         mg/kg         U         002,010,058,062,070           Malathion         T16         AR         0.01         mg/kg         U         002,010,058,062,070           Parathion         T16         AR         0.01         mg/kg         U         002,010,058,062,070           Parathion         T16         AR         0.01         mg/kg         U         002,010,058,062,070           Azinphos methyl         T16         AR         0.01         mg/kg         U         002,010,058,062,070           Azinphos methyl         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Azinphos methyl         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Azinphos methyl         T16         AR         0.01         mg/kg         <	DDT	T16	AR	0.01	mg/kg	U	002,010,058,062,070
Dimethosite   Ti6	Dichlorvos	T16	AR	0.01	mg/kg	U	002,010,058,062,070
Diazinon         T16         AR         0.01         mg/kg         U         020,210,058,062,070           Primiphos methyl         T16         AR         0.01         mg/kg         U         020,210,058,062,070           Fenitrohion         T16         AR         0.01         mg/kg         U         020,210,058,062,070           Parathion         T16         AR         0.01         mg/kg         U         020,210,058,062,070           Azinphos methyl         T16         AR         0.01         mg/kg         U         020,210,058,062,070           Simazine         T16         AR         0.01         mg/kg         U         020,210,058,062,070           Atrazine         T16         AR         0.01         mg/kg         U         020,210,058,062,070           Atrazine         T16         AR         0.01         mg/kg         N         020,210,058,062,070           Tifetazine         T16         AR         0.01         mg/kg         N         020,210,058,062,070           Prometryn         T16         AR         0.01         mg/kg         N         020,210,058,062,070           Tifetazine         T16         AR         0.01         mg/kg         N         <	Mevinphos	T16	AR	0.01	mg/kg	U	002,010,058,062,070
Primiphos methyl	Dimethoate	T16	AR	0.01	mg/kg	U	002,010,058,062,070
Malathion         T16         AR         0.01         mg/kg         U         002,010,058,062,070           Fenitrothion         T16         AR         0.01         mg/kg         U         002,010,058,062,070           Perathion         T16         AR         0.01         mg/kg         U         002,010,058,062,070           Azinphos methyl         T16         AR         0.01         mg/kg         U         002,010,058,062,070           Simazine         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Atrazine         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Trietazine         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Prometryn         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Terbutyn         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Chloroteluron         T310         AR         0.01         mg/kg         N         002,010,058,062,070           Diuron         T310         AR         0.01         mg/kg         N         0	Diazinon	T16	AR	0.01	mg/kg	U	002,010,058,062,070
Fenitrothion	Pirimiphos methyl	T16	AR	0.01	mg/kg	U	002,010,058,062,070
Parathion         T16         AR         0.01         mg/kg         U         002,010,058,062,070           Azinphos methyl         T16         AR         0.01         mg/kg         U         002,010,058,062,070           Simazine         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Arazine         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Propazine         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Trietazine         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Prometryn         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Terbutryn         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Chiorobulron         T310         AR         0.01         mg/kg         N         002,010,058,062,070           Diuron         T310         AR         0.01         mg/kg         N         002,010,058,062,070           Linuron         T310         AR         0.01         mg/kg         N         002,01	Malathion	T16	AR	0.01	mg/kg		002,010,058,062,070
Azinphos methyl         T16         AR         0.01         mg/kg         U         002,010,058,062,070           Simazine         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Alrazine         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Propazine         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Trietazine         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Promettyn         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Terbutryn         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Chlorotoluro         T310         AR         0.01         mg/kg         N         002,010,058,062,070           Diuron         T310         AR         0.01         mg/kg         N         002,010,058,062,070           Isoproturon         T310         AR         0.01         mg/kg         N         002,010,058,062,070           Inuron         T310         AR         0.01         mg/kg         N         002	Fenitrothion	T16	AR	0.01	mg/kg	U	002,010,058,062,070
Simazine         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Atrazine         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Propazine         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Trietazine         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Prometryn         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Terbutryn         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Diuron         T310         AR         0.01         mg/kg         N         002,010,058,062,070           Iburon         T310         AR         0.01         mg/kg         N         002,010,058,062,070           Iburon         T310         AR         0.01         mg/kg         N         002,010,058,062,070           Iburon         T310         AR         0.01         mg/kg         N         002,010,058,062,070           Mecoprop         T16         AR         0.01         mg/kg         N         002,010,058,062,070 </td <td>Parathion</td> <td>T16</td> <td>AR</td> <td>0.01</td> <td>mg/kg</td> <td>U</td> <td>002,010,058,062,070</td>	Parathion	T16	AR	0.01	mg/kg	U	002,010,058,062,070
Atrazine         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Propazine         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Trietazine         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Prometryn         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Terbutryn         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Chlorotoluron         T310         AR         0.01         mg/kg         N         002,010,058,062,070           Diuron         T310         AR         0.01         mg/kg         N         002,010,058,062,070           Diuron         T310         AR         0.01         mg/kg         N         002,010,058,062,070           Linuron         T310         AR         0.01         mg/kg         N         002,010,058,062,070           Monuron         T310         AR         0.01         mg/kg         N         002,010,058,062,070           Mecoprop         T16         AR         0.01         mg/kg         N         002,010,058,0	Azinphos methyl						
Propazine         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Trietazine         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Prometryn         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Terbutryn         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Chlorotoluron         T310         AR         0.01         mg/kg         N         002,010,058,062,070           Diuron         T310         AR         0.01         mg/kg         N         002,010,058,062,070           Isoproturon         T310         AR         0.01         mg/kg         N         002,010,058,062,070           Linuron         T310         AR         0.01         mg/kg         N         002,010,058,062,070           Mecoprop         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Phenoxy Acetic acid herbicide: MCPA         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Phenoxy Acetic acid herbicide: 2,4-D         T16         AR         0.01							
Trietazine         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Prometryn         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Terbutryn         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Chlorotoluron         T310         AR         0.01         mg/kg         N         002,010,058,062,070           Isoproturon         T310         AR         0.01         mg/kg         N         002,010,058,062,070           Linuron         T310         AR         0.01         mg/kg         N         002,010,058,062,070           Monuron         T310         AR         0.01         mg/kg         N         002,010,058,062,070           Mecoprop         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Phenoxy Acetic acid herbicide: MCPA         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Phenoxy Acetic acid herbicide: 2,4-D         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Phenoxy Acetic acid herbicide: 2,4-T         T16         AR							
Prometryn         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Terbutryn         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Chlorotoluron         T310         AR         0.01         mg/kg         N         002,010,058,062,070           Diuron         T310         AR         0.01         mg/kg         N         002,010,058,062,070           Linuron         T310         AR         0.01         mg/kg         N         002,010,058,062,070           Monuron         T310         AR         0.01         mg/kg         N         002,010,058,062,070           Mecoprop         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Mecoprop         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Phenoxy Acetic acid herbicide: MCPA         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Phenoxy Acetic acid herbicide: 2,4-D         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Phenoxy Acetic acid herbicide: 2,4-S-T         T16         AR							
Terbutryn         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Chlorotoluron         T310         AR         0.01         mg/kg         N         002,010,058,062,070           Diuron         T310         AR         0.01         mg/kg         N         002,010,058,062,070           Isoproturon         T310         AR         0.01         mg/kg         N         002,010,058,062,070           Inuron         T310         AR         0.01         mg/kg         N         002,010,058,062,070           Monuron         T310         AR         0.01         mg/kg         N         002,010,058,062,070           Mecoprop         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Phenoxy Acetic acid herbicide: MCPA         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Phenoxy Acetic acid herbicide: 2,4-D         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Phenoxy Acetic acid herbicide: 2,4,5-T         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Phenoxy Acetic acid herbicide: 2,4,5-T         T16							
Chlorotoluron         T310         AR         0.01         mg/kg         N         002,010,058,062,070           Diuron         T310         AR         0.01         mg/kg         N         002,010,058,062,070           Isoproturon         T310         AR         0.01         mg/kg         N         002,010,058,062,070           Linuron         T310         AR         0.01         mg/kg         N         002,010,058,062,070           Monuron         T310         AR         0.01         mg/kg         N         002,010,058,062,070           Mecoprop         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Phenoxy Acetic acid herbicide: MCPA         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Phenoxy Acetic acid herbicide: MCPA         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Phenoxy Acetic acid herbicide: 2,4-D         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Phenoxy Acetic acid herbicide: 2,4,5-T         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Phenoxy Acetic acid herbicide: 2	•						
Diuron         T310         AR         0.01         mg/kg         N         002,010,058,062,070           Isoproturon         T310         AR         0.01         mg/kg         N         002,010,058,062,070           Linuron         T310         AR         0.01         mg/kg         N         002,010,058,062,070           Monuron         T310         AR         0.01         mg/kg         N         002,010,058,062,070           Mecoprop         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Phenoxy Acetic acid herbicide: MCPA         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Phenoxy Acetic acid herbicide: 2,4-D         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Phenoxy Acetic acid herbicide: 2,4,5-T         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Phenoxy Acetic acid herbicide: 2,4,5-T         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Phenoxy Acetic acid herbicide: 2,4,5-T         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Reso	·						
Isoproturon							
Linuron         T310         AR         0.01         mg/kg         N         002,010,058,062,070           Monuron         T310         AR         0.01         mg/kg         N         002,010,058,062,070           Mecoprop         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Phenoxy Acetic acid herbicide: MCPA         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Dichlorprop         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Phenoxy Acetic acid herbicide: 2,4-D         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Fenoprop         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Phenoxy Acetic acid herbicide: 2,4,5-T         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Resorcinol         T17         AR         0.05         mg/kg         M         002,010,058,062,070           Catechol         T17         AR         0.05         mg/kg         N         002,010,058,062,070           Cresols         T17         AR         <							
Monuron         T310         AR         0.01         mg/kg         N         002,010,058,062,070           Mecoprop         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Phenoxy Acetic acid herbicide: MCPA         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Dichlorprop         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Phenoxy Acetic acid herbicide: 2,4-D         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Fenoprop         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Phenoxy Acetic acid herbicide: 2,4,5-T         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Resorcinol         T17         AR         0.05         mg/kg         M         002,010,058,062,070           Catechol         T17         AR         0.05         mg/kg         M         002,010,058,062,070           Phenol         T17         AR         0.1         mg/kg         M         002,010,058,062,070           Cresols         T17         AR							
Mecoprop         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Phenoxy Acetic acid herbicide: MCPA         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Dichlorprop         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Phenoxy Acetic acid herbicide: 2,4-D         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Fenoprop         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Phenoxy Acetic acid herbicide: 2,4,5-T         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Resorcinol         T17         AR         0.05         mg/kg         M         002,010,058,062,070           Catechol         T17         AR         0.05         mg/kg         M         002,010,058,062,070           Phenol         T17         AR         0.1         mg/kg         N         002,010,058,062,070           Cresols         T17         AR         0.05         mg/kg         M         002,010,058,062,070           Naphthols         T17         AR <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>							
Phenoxy Acetic acid herbicide: MCPA         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Dichlorprop         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Phenoxy Acetic acid herbicide: 2,4-D         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Fenoprop         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Phenoxy Acetic acid herbicide: 2,4,5-T         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Resorcinol         T17         AR         0.05         mg/kg         M         002,010,058,062,070           Catechol         T17         AR         0.05         mg/kg         N         002,010,058,062,070           Phenol         T17         AR         0.1         mg/kg         N         002,010,058,062,070           Cresols         T17         AR         0.1         mg/kg         M         002,010,058,062,070           Xylenols         T17         AR         0.05         mg/kg         M         002,010,058,062,070           Naphthols         T17         AR							
Dichlorprop         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Phenoxy Acetic acid herbicide: 2,4-D         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Fenoprop         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Phenoxy Acetic acid herbicide: 2,4,5-T         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Resorcinol         T17         AR         0.05         mg/kg         M         002,010,058,062,070           Catechol         T17         AR         0.05         mg/kg         N         002,010,058,062,070           Phenol         T17         AR         0.1         mg/kg         N         002,010,058,062,070           Cresols         T17         AR         0.1         mg/kg         M         002,010,058,062,070           Xylenols         T17         AR         0.05         mg/kg         M         002,010,058,062,070           Naphthols         T17         AR         0.05         mg/kg         M         002,010,058,062,070           Trimethyl phenol         T17         AR         0.05         <							
Phenoxy Acetic acid herbicide: 2,4-D         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Fenoprop         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Phenoxy Acetic acid herbicide: 2,4,5-T         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Resorcinol         T17         AR         0.05         mg/kg         M         002,010,058,062,070           Catechol         T17         AR         0.05         mg/kg         N         002,010,058,062,070           Phenol         T17         AR         0.1         mg/kg         M         002,010,058,062,070           Cresols         T17         AR         0.05         mg/kg         M         002,010,058,062,070           Xylenols         T17         AR         0.05         mg/kg         M         002,010,058,062,070           Naphthols         T17         AR         0.05         mg/kg         M         002,010,058,062,070           Trimethyl phenol         T17         AR         0.05         mg/kg         M         002,010,058,062,070	•						
Fenoprop         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Phenoxy Acetic acid herbicide: 2,4,5-T         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Resorcinol         T17         AR         0.05         mg/kg         M         002,010,058,062,070           Catechol         T17         AR         0.05         mg/kg         N         002,010,058,062,070           Phenol         T17         AR         0.1         mg/kg         M         002,010,058,062,070           Cresols         T17         AR         0.05         mg/kg         M         002,010,058,062,070           Xylenols         T17         AR         0.05         mg/kg         M         002,010,058,062,070           Naphthols         T17         AR         0.05         mg/kg         M         002,010,058,062,070           Trimethyl phenol         T17         AR         0.05         mg/kg         M         002,010,058,062,070							
Phenoxy Acetic acid herbicide: 2,4,5-T         T16         AR         0.01         mg/kg         N         002,010,058,062,070           Resorcinol         T17         AR         0.05         mg/kg         M         002,010,058,062,070           Catechol         T17         AR         0.05         mg/kg         N         002,010,058,062,070           Phenol         T17         AR         0.1         mg/kg         M         002,010,058,062,070           Cresols         T17         AR         0.05         mg/kg         M         002,010,058,062,070           Xylenols         T17         AR         0.05         mg/kg         M         002,010,058,062,070           Naphthols         T17         AR         0.05         mg/kg         N         002,010,058,062,070           Trimethyl phenol         T17         AR         0.05         mg/kg         M         002,010,058,062,070							
Resorcinol         T17         AR         0.05         mg/kg         M         002,010,058,062,070           Catechol         T17         AR         0.05         mg/kg         N         002,010,058,062,070           Phenol         T17         AR         0.1         mg/kg         M         002,010,058,062,070           Cresols         T17         AR         0.05         mg/kg         M         002,010,058,062,070           Xylenols         T17         AR         0.05         mg/kg         M         002,010,058,062,070           Naphthols         T17         AR         0.05         mg/kg         N         002,010,058,062,070           Trimethyl phenol         T17         AR         0.05         mg/kg         M         002,010,058,062,070	' '						
Catechol         T17         AR         0.05         mg/kg         N         002,010,058,062,070           Phenol         T17         AR         0.1         mg/kg         M         002,010,058,062,070           Cresols         T17         AR         0.05         mg/kg         M         002,010,058,062,070           Xylenols         T17         AR         0.05         mg/kg         M         002,010,058,062,070           Naphthols         T17         AR         0.05         mg/kg         N         002,010,058,062,070           Trimethyl phenol         T17         AR         0.05         mg/kg         M         002,010,058,062,070	•						
Phenol         T17         AR         0.1         mg/kg         M         002,010,058,062,070           Cresols         T17         AR         0.05         mg/kg         M         002,010,058,062,070           Xylenols         T17         AR         0.05         mg/kg         M         002,010,058,062,070           Naphthols         T17         AR         0.05         mg/kg         N         002,010,058,062,070           Trimethyl phenol         T17         AR         0.05         mg/kg         M         002,010,058,062,070							
Cresols         T17         AR         0.05         mg/kg         M         002,010,058,062,070           Xylenols         T17         AR         0.05         mg/kg         M         002,010,058,062,070           Naphthols         T17         AR         0.05         mg/kg         N         002,010,058,062,070           Trimethyl phenol         T17         AR         0.05         mg/kg         M         002,010,058,062,070							
Xylenols         T17         AR         0.05         mg/kg         M         002,010,058,062,070           Naphthols         T17         AR         0.05         mg/kg         N         002,010,058,062,070           Trimethyl phenol         T17         AR         0.05         mg/kg         M         002,010,058,062,070							
Naphthols         T17         AR         0.05         mg/kg         N         002,010,058,062,070           Trimethyl phenol         T17         AR         0.05         mg/kg         M         002,010,058,062,070							
Trimethyl phenol T17 AR 0.05 mg/kg M 002,010,058,062,070	,						
	•						
Total Pnenois   117   AR   U.1   mg/kg   N   002,010,058,062,070	• •						
	Total Phenois	117	AR	0.1	mg/kg	N	UU2,UTU,U58,U62,U7U



Concept Life Sciences is a trading name of Concept Life Sciences Analytical & Development Services Limited registered in England and Wales (No 2514788)

# Concept Life Sciences Certificate of Analysis

3 Crittall Drive Springwood Industrial Estate Braintree Essex CM7 2RT

Tel: 01376 560120 Fax: 01376 552923

Report Number: Supplement 1D to Report Number

675177-1

Date of Report: 18-Oct-2017

Customer: TerraConsult (South) Limited

Suite F17 Dugard House

Peartree Road Colchester Essex CO3 0UL

**Customer Contact:** Victoria Smith

**Customer Job Reference: 3318** 

Customer Site Reference: East Anglia OWF Date Job Received at Concept: 11-Aug-2017

> Date Analysis Started: 14-Aug-2017 Date Analysis Completed: 25-Aug-2017

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation
This report should not be reproduced except in full without the written approval of the laboratory
Tests covered by this certificate were conducted in accordance with Concept Life Sciences SOPs
All results have been reviewed in accordance with Section 25 of the Concept Life Sciences, Analytical
Services Quality Manual



Report checked and authorised by : Claire Brown Crociquia Customer Service Manager Issued by : Aislinn Arthey Customer Service Advi



Project Site: East Anglia OWF

Customer Reference: 3318

Water Analysed as Water

Heavy Metals (9)

			Concep	t Reference	675177 009	675177 010	675177 011
		Custor	ner Sampl	e Reference	BH17-L1A-04	BH17-L1B-01	BH17-L1B-04
			Da	ate Sampled	10-AUG-2017	10-AUG-2017	10-AUG-2017
Determinand	Method	Test Sample	LOD	Units			
As (Dissolved)	T281	F	0.0002	mg/l	0.0039	0.0036	(110) < 0.0020
Cd (Dissolved)	T281	F	0.00002	mg/l	<0.00002	<0.00002	(110) < 0.00020
Cr (Dissolved)	T281	F	0.001	mg/l	<0.001	<0.001	<sup>(110)</sup> <0.010
Cu (Dissolved)	T281	F	0.0005	mg/l	<0.0005	<0.0005	<sup>(110)</sup> <0.0050
Pb (Dissolved)	T281	F	0.0003	mg/l	<0.0003	<0.0003	(110) < 0.0030
Hg (Dissolved)	T281	F	0.00005	mg/l	<0.00005	<0.00005	(110) < 0.00050
Ni (Dissolved)	T281	F	0.001	mg/l	0.003	0.002	0.010
Se (Dissolved)	T281	F	0.0005	mg/l	0.0006	<0.0005	(110) < 0.0050
Zn (Dissolved)	T281	F	0.002	ma/l	< 0.002	< 0.002	(110) < 0.020

Concept Reference: 675177

Project Site: East Anglia OWF

Customer Reference: 3318

Water Analysed as Water

			Concep	t Reference	675177 009	675177 010	675177 011
		Custon	ner Sampl	e Reference	BH17-L1A-04	BH17-L1B-01	BH17-L1B-04
			Da	ate Sampled	10-AUG-2017	10-AUG-2017	10-AUG-2017
Determinand	Method	Test Sample	LOD	Units			
Naphthalene	T149	AR	0.01	μg/l	<0.01	<0.01	<0.01
Acenaphthylene	T149	AR	0.01	μg/l	<0.01	<0.01	<0.01
Acenaphthene	T149	AR	0.01	μg/l	<0.01	<0.01	<0.01
Fluorene	T149	AR	0.01	μg/l	<0.01	<0.01	<0.01
Phenanthrene	T149	AR	0.01	μg/l	<0.01	<0.01	<0.01
Anthracene	T149	AR	0.01	μg/l	<0.01	<0.01	<0.01
Fluoranthene	T149	AR	0.01	μg/l	<0.01	<0.01	<0.01
Pyrene	T149	AR	0.01	μg/l	<0.01	<0.01	<0.01
Benzo(a)Anthracene	T149	AR	0.01	μg/l	<0.01	<0.01	<0.01
Chrysene	T149	AR	0.01	μg/l	<0.01	<0.01	<0.01
Benzo(b)fluoranthene	T149	AR	0.01	μg/l	<0.01	<0.01	<0.01
Benzo(k)fluoranthene	T149	AR	0.01	μg/l	<0.01	<0.01	<0.01
Benzo(a)Pyrene	T149	AR	0.01	μg/l	<0.01	<0.01	<0.01
Indeno(123-cd)Pyrene	T149	AR	0.01	μg/l	<0.01	<0.01	<0.01
Dibenzo(ah)Anthracene	T149	AR	0.01	μg/l	<0.01	<0.01	<0.01
Benzo(ghi)Perylene	T149	AR	0.01	μg/l	<0.01	<0.01	<0.01
PAH(total)	T149	AR	0.01	μg/l	<0.01	<0.01	<0.01

Concept Reference: 675177

Project Site: East Anglia OWF

Customer Reference: 3318

Water Analysed as Water

TPH (CWG) with MTBE & BTEX SE

			Conce	ot Reference	675177 009	675177 010	675177 011
		Custor	ner Sampl	e Reference	BH17-L1A-04	BH17-L1B-01	BH17-L1B-04
			D	ate Sampled	10-AUG-2017	10-AUG-2017	10-AUG-2017
Determinand	Method	Test Sample	LOD	Units			
Benzene	T54	AR	1	μg/l	<1	<1	<1
EthylBenzene	T54	AR	1	μg/l	<1	<1	<1
M/P Xylene	T54	AR	1	μg/l	<1	<1	<1
Methyl tert-Butyl Ether	T54	AR	1	μg/l	<1	<1	<1
O Xylene	T54	AR	1	μg/l	<1	<1	<1
Toluene	T54	AR	1	μg/l	<1	<1	<1
TPH (C5-C6 aliphatic)	T54	AR	0.020	mg/l	<0.020	<0.020	<0.020
TPH (C6-C7 aromatic)	T54	AR	0.020	mg/l	<0.020	<0.020	<0.020
TPH (C6-C8 aliphatic)	T54	AR	0.020	mg/l	<0.020	<0.020	<0.020
TPH (C7-C8 aromatic)	T54	AR	0.020	mg/l	<0.020	<0.020	<0.020
TPH (C8-C10 aliphatic)	T54	AR	0.020	mg/l	<0.020	<0.020	<0.020
TPH (C8-C10 aromatic)	T54	AR	0.020	mg/l	<0.020	<0.020	<0.020
TPH (C10-C12 aliphatic)	T219	AR	0.01	mg/l	<0.01	<0.01	<0.01
TPH (C10-C12 aromatic)	T219	AR	0.01	mg/l	<0.01	<0.01	<0.01
TPH (C12-C16 aliphatic)	T219	AR	0.01	mg/l	<0.01	<0.01	<0.01
TPH (C12-C16 aromatic)	T219	AR	0.01	mg/l	0.03	0.02	0.03
TPH (C16-C21 aliphatic)	T219	AR	0.01	mg/l	<0.01	<0.01	0.03
TPH (C16-C21 aromatic)	T219	AR	0.01	mg/l	<0.01	<0.01	<0.01
TPH (C21-C35 aliphatic)	T219	AR	0.01	mg/l	<0.01	0.02	0.02
TPH (C21-C35 aromatic)	T219	AR	0.01	mg/l	<0.01	0.01	0.02

Concept Reference: 675177

Project Site: East Anglia OWF

Customer Reference: 3318

Water Analysed as Water

Organochlorine insecticides

				707.5%			
			Concep	t Reference	675177 009	675177 010	675177 011
		Custon	ner Sampl	e Reference	BH17-L1A-04	BH17-L1B-01	BH17-L1B-04
			D	ate Sampled	10-AUG-2017	10-AUG-2017	10-AUG-2017
Determinand	Method	Test Sample	LOD	Units			
Hexachlorocyclohexane	T16	AR	0.01	μg/l	(36) < 0.02	(36) < 0.02	(36) < 0.02
Hexachlorobenzene	T16	AR	0.01	μg/l	<0.01	<0.01	<0.01
Heptachlor	T16	AR	0.01	μg/l	<0.01	<0.01	<0.01
Aldrin	T16	AR	0.01	μg/l	<0.01	<0.01	<0.01
Heptachlor epoxide	T16	AR	0.01	μg/l	<0.01	<0.01	<0.01
Chlordane	T16	AR	0.01	μg/l	<0.01	<0.01	<0.01
Endosulphan	T16	AR	0.01	μg/l	<0.01	<0.01	<0.01
DDE	T16	AR	0.01	μg/l	<0.02	<0.02	<0.02
Dieldrin	T16	AR	0.01	μg/l	<0.01	<0.01	<0.01
Endrin	T16	AR	0.01	μg/l	(36) < 0.02	(36) < 0.02	(36) < 0.02
DDD	T16	AR	0.01	μg/l	<0.01	<0.01	<0.01
DDT	T16	AR	0.01	μg/l	(36) < 0.02	(36) < 0.02	(36) < 0.02

Concept Reference: 675177

Project Site: East Anglia OWF

Customer Reference: 3318

Analysed as Water

Organophosphorous insecticides

Water

			Concep	t Reference	675177 009	675177 010	675177 011
		Custon	ner Sampl	e Reference	BH17-L1A-04	BH17-L1B-01	BH17-L1B-04
			D	ate Sampled	10-AUG-2017	10-AUG-2017	10-AUG-2017
Determinand	Method	Test Sample	LOD	Units			
Dichlorvos	T16	AR	0.01	μg/l	<0.01	<0.01	<0.01
Mevinphos	T16	AR	0.01	μg/l	<0.01	<0.01	<0.01
Dimethoate	T16	AR	0.01	μg/l	<0.01	<0.01	<0.01
Diazinon	T16	AR	0.01	μg/l	<0.01	<0.01	<0.01
Pirimiphos methyl	T16	AR	0.01	μg/l	<0.01	<0.01	<0.01
Malathion	T16	AR	0.01	μg/l	<0.01	<0.01	<0.01
Fenitrothion	T16	AR	0.01	μg/l	<0.01	<0.01	<0.01
Parathion	T16	AR	0.01	μg/l	<0.01	<0.01	<0.01
Azinphos methyl	T16	AR	0.01	μg/l	(36) < 0.02	(36) < 0.02	(36) < 0.02

# Index to symbols used in Supplement 1D to Report Number 675177-1

Value	Description
AR	As Received
F	Filtered
36	LOD Raised due to low Matrix spike recovery
100	LOD determined by sample aliquot used for analysis
110	LOD raised due to low internal standard recovery.
U	Analysis is UKAS accredited
N	Analysis is not UKAS accredited

#### **Notes**

Supplement 1D report reissued to include only samples 009, 010 and 011

OCP and OPP transferred to Concept Life Sciences Manchester

#### **Method Index**

Value	Description
T281	ICP/MS (Filtered)
T16	GC/MS
T54	GC/MS (Headspace)
T219	GC/FID (SE)
T149	GC/MS (SIR)

# **Accreditation Summary**

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
As (Dissolved)	T281	F	0.0002	mg/l	U	009-011
Cd (Dissolved)	T281	F	0.00002	mg/l	U	009-011
Cr (Dissolved)	T281	F	0.001	mg/l	U	009-011
Cu (Dissolved)	T281	F	0.0005	mg/l	U	009-011
Pb (Dissolved)	T281	F	0.0003	mg/l	U	009-011
Hg (Dissolved)	T281	F	0.00005	mg/l	U	009-011
Ni (Dissolved)	T281	F	0.001	mg/l	U	009-011
Se (Dissolved)	T281	F	0.0005	mg/l	U	009-011
Zn (Dissolved)	T281	F	0.002	mg/l	U	009-011
Naphthalene	T149	AR	0.01	μg/l	U	009-011
Acenaphthylene	T149	AR	0.01	μg/l	U	009-011
Acenaphthene	T149	AR	0.01	μg/l	U	009-011
Fluorene	T149	AR	0.01	μg/l	U	009-011
Phenanthrene	T149	AR	0.01	μg/l	U	009-011
Anthracene	T149	AR	0.01	μg/l	U	009-011
Fluoranthene	T149	AR	0.01	μg/l	U	009-011
Pyrene	T149	AR	0.01	μg/l	U	009-011

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Benzo(a)Anthracene	T149	AR	0.01	μg/l	U	009-011
Chrysene	T149	AR	0.01	μg/l	U	009-011
Benzo(b)fluoranthene	T149	AR	0.01	μg/l	N	009-011
Benzo(k)fluoranthene	T149	AR	0.01	μg/l	U	009-011
Benzo(a)Pyrene	T149	AR	0.01	μg/l	U	009-011
Indeno(123-cd)Pyrene	T149	AR	0.01	μg/l	U	009-011
Dibenzo(ah)Anthracene	T149	AR	0.01	μg/l	U	009-011
Benzo(ghi)Perylene	T149	AR	0.01	μg/l	U	009-011
PAH(total)	T149	AR	0.01	μg/l	N	009-011
Benzene	T54	AR	1	μg/l	U	009-011
EthylBenzene	T54	AR	1	μg/l	U	009-011
M/P Xylene	T54	AR	1	μg/l	U	009-011
Methyl tert-Butyl Ether	T54	AR	1	μg/l	U	009-011
O Xylene	T54	AR	1	μg/l	U	009-011
Toluene	T54	AR	1	μg/l	U	009-011
TPH (C5-C6 aliphatic)	T54	AR	0.020	mg/l	N	009-011
TPH (C6-C7 aromatic)	T54	AR	0.020	mg/l	N	009-011
TPH (C6-C8 aliphatic)	T54	AR	0.020	mg/l	N	009-011
TPH (C7-C8 aromatic)	T54	AR	0.020	mg/l	N	009-011
TPH (C8-C10 aliphatic)	T54	AR	0.020	mg/l	N	009-011
TPH (C8-C10 aromatic)	T54	AR	0.020	mg/l	N	009-011
TPH (C10-C12 aliphatic)	T219	AR	0.01	mg/l	N	009-011
TPH (C10-C12 aromatic)	T219	AR	0.01	mg/l	N	009-011
TPH (C12-C16 aliphatic)	T219	AR	0.01	mg/l	N	009-011
TPH (C12-C16 aromatic)	T219	AR	0.01	mg/l	N	009-011
TPH (C16-C21 aliphatic)	T219	AR	0.01	mg/l	N	009-011
TPH (C16-C21 aromatic)	T219	AR	0.01	mg/l	N	009-011
TPH (C21-C35 aliphatic)	T219	AR	0.01	mg/l	N	009-011
TPH (C21-C35 aromatic)	T219	AR	0.01	mg/l	N	009-011
Hexachlorocyclohexane	T16	AR	0.01	μg/l	N	009-011
Hexachlorobenzene	T16	AR	0.01	μg/l	N	009-011
Heptachlor	T16	AR	0.01	μg/l	N	009-011
Aldrin	T16	AR	0.01	μg/l	N	009-011
Heptachlor epoxide	T16	AR	0.01	μg/l	N	009-011
Chlordane	T16	AR	0.01	μg/l	N	009-011
Endosulphan	T16	AR	0.01	μg/l	N	009-011
DDE	T16	AR	0.01	μg/l	N	009-011
Dieldrin	T16	AR	0.01	μg/l	N	009-011
Endrin	T16	AR	0.01	μg/l	N	009-011
DDD	T16	AR	0.01	μg/l	N	009-011
DDT	T16	AR	0.01	μg/l	N	009-011
Dichlorvos	T16	AR	0.01	μg/l	N	009-011
Mevinphos	T16	AR	0.01	μg/l	N	009-011
Dimethoate	T16	AR	0.01	μg/l	N	009-011
Diazinon	T16	AR	0.01	μg/l	N	009-011
Pirimiphos methyl	T16	AR	0.01	μg/l	N	009-011
Malathion	T16	AR	0.01	μg/l	N	009-011
Fenitrothion	T16	AR	0.01	μg/l	N	009-011
Parathion	T16	AR	0.01	μg/l	N	009-011
Azinphos methyl	T16	AR	0.01		N	009-011
Aziriprius metnyi	110	AK	0.01	μg/l	I IN	ا ا ن <del>-</del> قاب

# **APPENDIX G Calibration Certificates**

SPT hammer(s) SI 3, SI 4, SI 5

Gas monitor(s) GFM 435 s/n 11378

November 2017 Report No 3318-R006-3

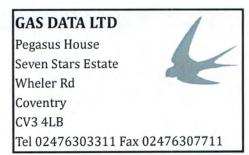
#### **SPT Calibration Report** www.equipegroup.com Hammer Energy Measurement Report Type of Hammer SPT HAMMER Client Key SI DRILLING EQU1695 Test No 2 Part of instrumented rod 3 Drive Rod Test Depth (m) 8.70 Strain Gauge Accelerometer 29 December 2016 Date of Test Valid until 29 December 2017 F Force d<sub>r</sub> Diameter of rod SI 3 Hammer ID ød, m = 63.5 kgMass of the hammer h = 0.76m Falling height $m \times g \times h = 473$ Characteristics of the instrumented rod $d_r = 0.052 \,\mathrm{m}$ Length of the instrumented rod 0.558 m $A = 11.61 \text{ cm}^2$ Area Modulus $E_a = 206843 \text{ MPa}$ Fig. B.1 and B.2 BS EN ISO 22476-3: 2005 + A1: 2011 **Particle Velocity** Force Velocity v (m/s) Time t (µs) Time t (µs) Acceleration **Energy Ratio per Blow** 100.000 95.000 90.000 Blow 2 Blow 3 80,000 Blow 4 75.000 Blow 5 70.000 Blow 6 Blow 7 Biow 8 Blow 9 Blow 10 50.000 Maximum Force (Fmax) Time t (µs) Observations: E meas = 0.355 kN-m 75.14% Energy Ratio = Etheor E theor = 0.473 kN-m $(E_r)$ Equipe SPT Analyzer Operators: KS Prepared by: Checked b Date 10/01/2017

#### **SPT Calibration Report** www.equipegroup.com F **Hammer Energy Measurement Report** Type of Hammer SPT HAMMER Key Client SI DRILLING EQU1694 Test No Part of instrumented rod 8.70 Drive Rod Test Depth (m) 4 Strain Gauge 29 December 2016 Date of Test 6 Ground 29 December 2017 Valid until F Force d, Diameter of rod 4 CUT DOWN Hammer ID ød, m = 63.5 kgMass of the hammer h = 0.76m Falling height $m \times g \times h = 473$ /// Characteristics of the instrumented rod $d_r = 0.052 \,\mathrm{m}$ Length of the instrumented rod 0.558 m $A = 11.61 \text{ cm}^2$ Area Modulus $E_a = 206843 \text{ MPa}$ Fig. B.1 and B.2 BS EN ISO 22476-3: 2005 + A1: 2011 **Particle Velocity** Force Time t (µs) Time t (µs) **Energy Ratio per Blow** Acceleration 100.000 95.000 90.000 85.000 Blow 2 Blow 3 80.000 Blow 4 75.000 Blow 5 70.000 Blow 6 • Blow 7 65.000 Blow 8 Blow 9 55.000 Blow 10 50,000 Maximum Force (Fmax) Time t (µs) Observations: E meas = 0.351 kN-m **Energy Ratio** 74.14% Etheor E theor = 0.473 kN-m **Equipe SPT Analyzer Operators:** KS Prepared by: Checked b 10/01/2017 Date

#### **SPT Calibration Report** www.equipegroup.com **Hammer Energy Measurement Report** Type of Hammer SPT HAMMER Client Key SI DRILLING Test No EQU1690 Part of instrumented rod Test Depth (m) 8.70 3 Drive Rod 4 Strain Gauge Date of Test 29 December 2016 5 Accelerometer 6 Ground Valid until 29 December 2017 F Force $d_r$ Diameter of rod Hammer ID SI 05 ød, Mass of the hammer m = 63.5 kgFalling height h = 0.76m $E_{\text{theor}} =$ $m \times g \times h = 473$ /// Characteristics of the instrumented rod $d_r = 0.052 \,\mathrm{m}$ Length of the instrumented rod 0.558 m Area $A = 11.61 \text{ cm}^2$ Modulus $E_a = 206843 \text{ MPa}$ Fig. B.1 and B.2 BS EN ISO 22476-3: 2005 + A1: 2011 Force **Particle Velocity** Time t (µs) Time t (µs) Acceleration **Energy Ratio per Blow** 100.000 95.000 90,000 Blow 1 85.000 Blow 2 Blow 3 80.000 Blow 4 75.000 Blow 5 70,000 Blow 6 ♦ Blow 7 65.000 Blow 8 Blow 9 55.000 \* Blow 10 170 220 Maximum Force (Fmax) Time t (µs) Observations: E meas = 0.343 kN-m Emeas **Energy Ratio** 72.53% E theor = 0.473 kN-m **Equipe SPT Analyzer Operators:** Prepared by: Checked by Date 10/01/2017

TEST DATE AND CONDITIONS						
Date	21/06/2017					
Atmospheric Pressu	997	mB				
Ambient Temperatı	23.0	°C				
Environics Serial No	508	9				

# GFM435 Final Inspection & Calibration Check Certificate



Customer	Terraconsult (South) Ltd				
Certificate Number	119385				
Order Number	317112				

Serial Number 11378		Recalibration DUE Date		
Software Version	G435-00.0024/0004	21/06/2018		

		Instrum	ent Checks			
Keyboard		<b>✓</b>	Display Contrast	4		
Pump Flow In	400	Accept > 200 cc/min	Pump Flow @ -200mB	200	Accept > 200 cc/min	
Clock Set / Running	1		Labels Fitted	/		

Gas Checks									
Sensor	CH	14	C	02	0	)2			
	Instrument Gas Readings %	True Gas Value %	Instrument Gas Readings %	True Gas Value %	Instrument Gas Readings %	True Gas Value %			
	59.7	60	39.7	40	20.8	20.9			
	Accept +/- 3.0	00	Accept +/- 3.0	TU	Accept +/- 0.5	20.7			
1.0	5.0	5	4.8	5	6.0	6			
	Accept +/- 0.3	J	Accept +/- 0.3	9	Accept +/- 0.3				
Zero Reading	0.0	0.0	0.0	0.0	0.0	0.0			
100% N <sub>2</sub>	Accent +/- 0.0	0.0	Accept +/- 0.0	0.0	Accept + 0.1	0.0			

		Option	al Gas Check	KS .		
Applied Gas &	Applied Gas & Range of GFM Concentration Gas Type Range (ppm) Tested @ (ppm)			Instrument Re	eadings (ppm)	
Gas Type			Zer	o Reading	Instrument Gas Reading	
H2S	5000	1500	0	Accept +/-0.0	1500	Accept +/-5.0
CO	2000	1000	0	Accept +/-0.0	1000	Accept +/-5.0
				Accept +/-0.0		Accept +/-5.0
				Accept +/-0.0		Accept +/-5.0
Hexane	2.0%	2.0%	0	Accept +/-0.0	1.99	Accept +/-10.0

			Cross C	ias Effects			Contract of		
Applied Gas (ppm)			Instrument Readings (ppm)						
Gas Type	Concentration	Toxic 1:	H2S	Toxic 2:	CO	Toxic 3:	Hex	Toxic 4:	
H2S	1500	1500		0		0			
CO	1000	60	)	100	0	0			
Hexane	2.0%	0		0		1.9	9		

Pressure Checks								
Atmospheric Pressure [AP] (mB)								
Current Atmospheric Pressure (mB)	Instrument Atmospheric Pressure Reading (mB)							
All Ports Open to Atmosphere	Open Ports	997	Accept +/- 2.0					
AP Port (Internal)	+800 mB	801	Accept +/- 5.0					
AP Port (Internal)	+1200mb	1199	Accept +/- 5.0					

Flow Checks									
Borehole Flow	Later and Fi	P di (1/1)	District the second	Differential Pr	essure				
Applied Flow Reading (1/h)	Instrument Flow Reading (l/h)		Instrument	DP Reading (Pa)	Applied DP Pressure (Pa)				
-30.0	-29.8	Accept +/-3.0	-272	Accept +/-50	-276				
-3.0	-3.1	Accept +/-1.0	-15	Accept +/-6.0	-14				
0.0	0.0	Accept +/-0.0	0.0	Accept +/-0.5	0.0				
+3.0	3.0	Accept +/-0.5	13	Accept +/-3.0	14				
+30.0	30.0	Accept +/-3.0	294	Accept +/-50	295				
+60.0	58.5	Accept +/-6.0	843	Accept +/-130	876				
+90.0	85.9	Accept +/-9.0	1616	Accept +/-250	1717				















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