The Sizewell C Project

6.14 Environmental Statement Addendum
Volume 3: Environmental Statement Addendum Appendices
Chapter 2 Main Development Site Appendix 2.13.A
Phase 2 Geo-Environmental Interpretative Report Part 23 of 25

Revision:	2.0
Applicable Regulation:	Regulation 5(2)(a)
PINS Reference Number:	EN010012

January 2021

Planning Act 2008
Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

SizewellC
Doing the power of good for Britain
EDF CGN

Summary of Fines Content (<75µm) Results

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Summary of Fines Content (<75µm) Results

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Summary of Fines Content (<75µm) Results

Summary of Fines Content (<75µm) Results

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Summary of Fines Content (<75µm) Results

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Summary of Maximum and Minimum Dry Densities for Granular Soils

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ISOTROPICALLY CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST : MULTIPLE SPECIMENS
with measurement of pore water pressure

Project No.				G190016U
Borehole No.				IT1_SB_03
Sample No.				1
Project Name	SZC 2019 Offshore Ground Investigation		Sample Type	C
Specimen Description	Very stiff dark grey fissured CLAY with pre-existing failure surfaces		Sample preparation	UNDISTURBED
Test Method	Specimen set-up	BS 1377:Part 8: 1990 Clause 4	Sample orientation	Vertical
	Saturation	BS 1377:Part 8: 1990 Clause 5.3		
	Consolidation-Isotropic	BS 1377:Part 8: 1990 Clause 6	Drainage conditions	Both ends and sides
	Shearing	BS 1377:Part 8: 1990 Clause 7		
Test type	CU	assumed ☑ measured ☐	Specific gravity	2.70
			Date started	17/10/2019

INITIAL CONDITIONS		Specimen Reference 1	2	3
Sample depth	[m]	45.00		
Specimen depth	[mm]	20	150	320
Diameter	[mm]	49.40	49.44	49.58
Length	[mm]	98.80	99.16	99.47
Moisture content	[%]	39.9	41.6	40.7
Bulk density	[Mg/m^3]	1.83	1.82	1.83
Dry density	[Mg/m^3]	1.31	1.29	1.30
Voids ratio		1.07	1.10	1.08
Degree of saturation	[%]	100	100	100

SATURATION STAGE				
Final cell pressure	[kPa]	750	1200	1800
Final pore pressure	[kPa]	734	1181	1776
Pres. Increments/Differential pres.	[kPa]	50;100 / 60-10	50;100 / 60-10	50;100 / 60-10
B value achieved	[%]	99	99	99
Duration	[days]	5	5	5

CONSOLIDATION STAGE				
Cell pressure	[kPa]	750	1200	1800
Back pressure	[kPa]	300	300	300
Effective pressure	[kPa]	450	900	1500
Final pore pressure	[kPa]	300	300	300
Final pore pressure dissipation	[%]	100	100	100
Duration	[days]	2	2	2

COMPRESSION STAGE				
Cell Pressure	[kPa]	750	1200	1800
Initial pore pressure	[kPa]	300	300	300
Initial effective stress	[kPa]	450	900	1500
Rate of strain	[mm/min]	0.0020	0.0020	0.0020
Duration	[days]	7	7	7

Remarks

FUGRO	**ISOTROPICALLY CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST : MULTIPLE SPECIMENS with measurement of pore water pressure**	Project No.	G190016U
		Hole	IT1_SB_03
		Sample No.	1
Project Name	SZC 2019 Offshore Ground Investigation	Test type	CU

Conditions at failure		**1**	**2**	**3**
Assumed failure criterion		Maximum deviator stress		
Pore pressure	[kPa]	492	695	944
Minor effective principal stress	[kPa]	258	505	856
Deviator stress	[kPa]	336	576	785
Major effective principal stress	[kPa]	594	1081	1641
Effective principal stress ratio		2.3	2.1	1.9
Axial strain	[%]	5.9	5.7	4.2
Volumetric strain	[%]	0.0	0.0	0.0
Corrections to dev. stress M/Sd	[kPa]	1.8 / 7	1.7 / 7	1.3 / 7
Total Duration	[days]	42		

EFFECTIVE STRESS PARAMETERS

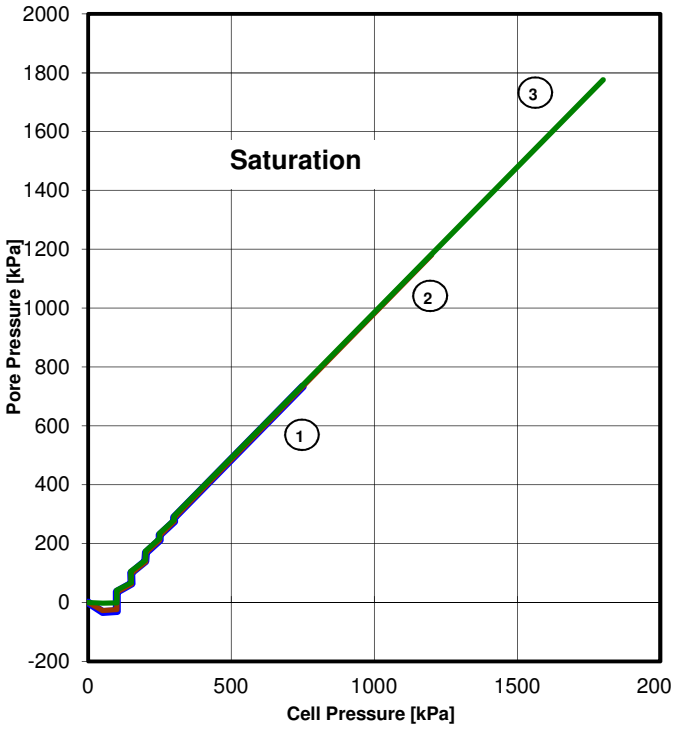
Cohesion c'	[kPa]	**54.4**
Angle of shearing resistance ϕ'	degrees	**16.6**

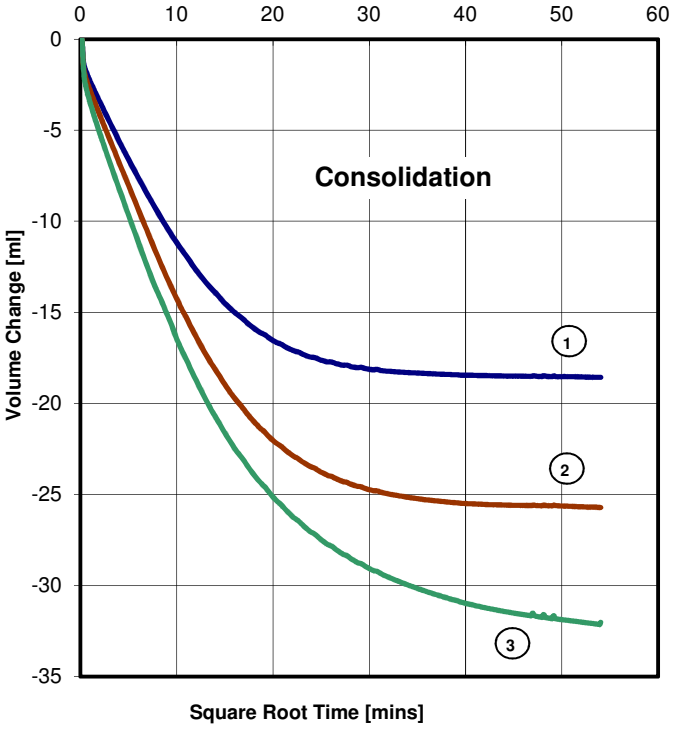
FINAL CONDITIONS

Moisture content	[%]	41.4	40.3	38.6
Bulk density	[Mg/m^3]	2.05	2.08	2.14

OTHER PARAMETERS

Secant modulus Eu 50	[MPa]	31.4	37.7	55.9
Strain at ε_{50}	[%]	0.53	0.76	0.70





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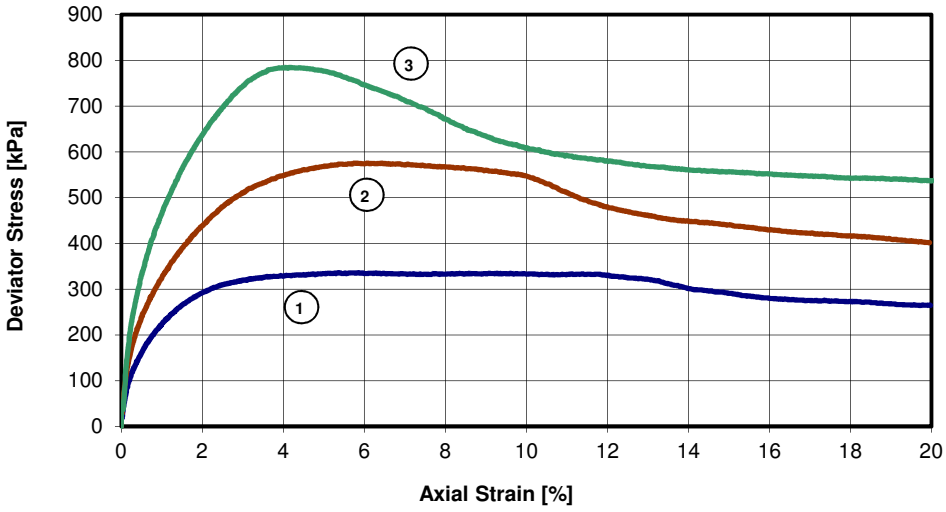
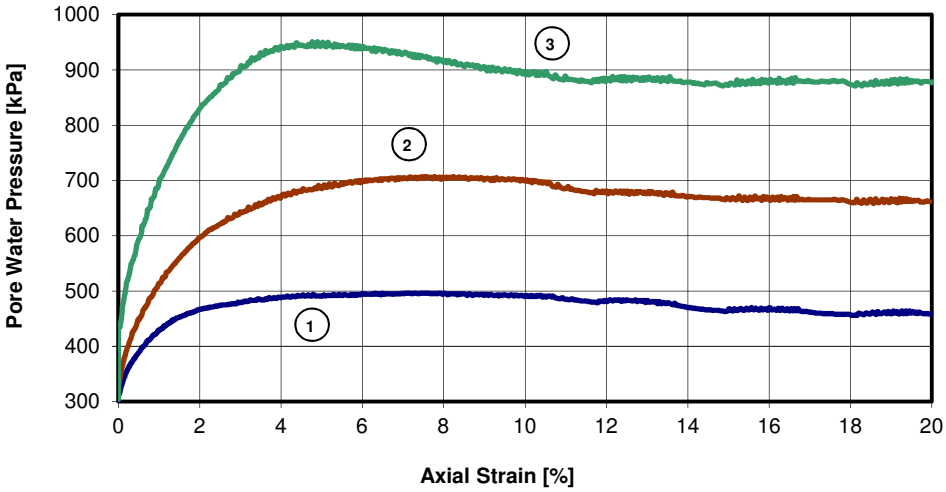
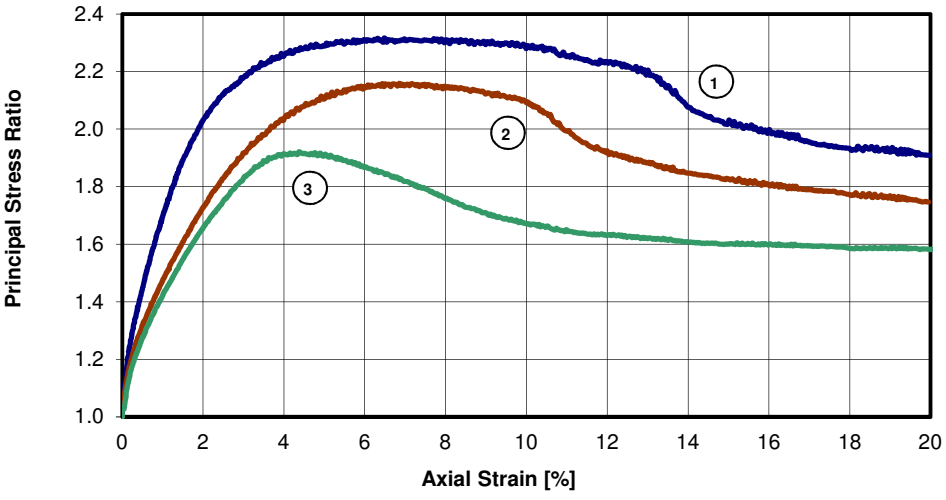
FUGRO	**ISOTROPICALLY CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST : MULTIPLE SPECIMENS with measurement of pore water pressure**	Project No.	G190016U
		Hole	IT1_SB_03
		Sample No.	1
Project Name	SZC 2019 Offshore Ground Investigation	Test type	CU







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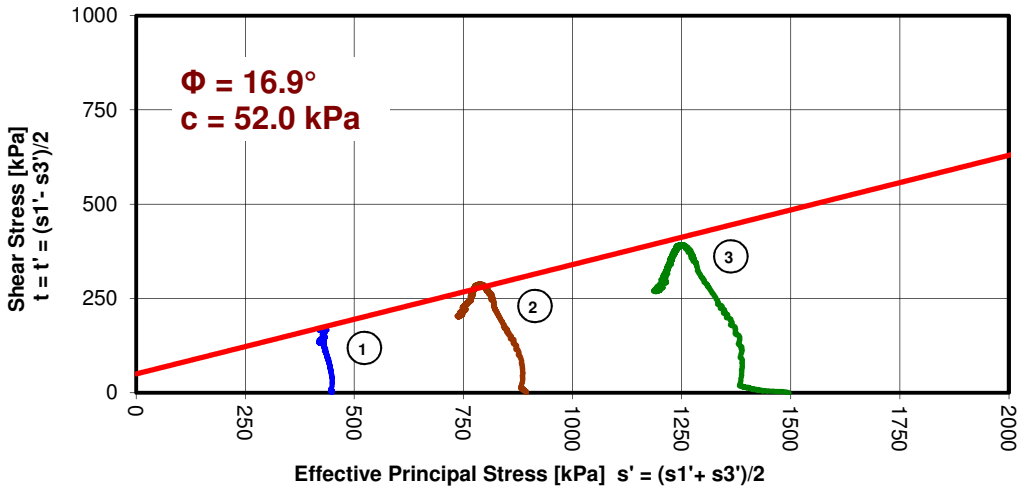
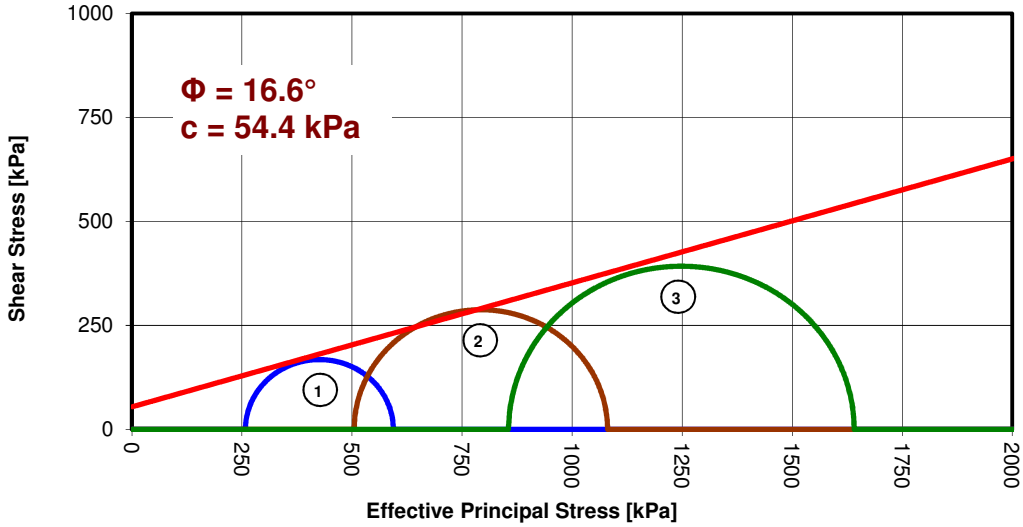
	ISOTROPICALLY CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST : MULTIPLE SPECIMENS with measurement of pore water pressure	Project No.	G190016U
		Hole	IT1_SB_03
		Sample No.	1
Project Name	SZC 2019 Offshore Ground Investigation	Test type	CU





Mode of failure:

1 Brittle
2 Brittle
3 Brittle

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ISOTROPICALLY CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST : MULTIPLE SPECIMENS
with measurement of pore water pressure

			Project No.	G190016U
			Borehole No.	IT1_SB_06
			Sample No.	15
Project Name	SZC 2019 Offshore Ground Investigation		Sample Type	C
Specimen Description	Very stiff dark grey brown slightly sandy CLAY		Sample preparation	UNDISTURBED
Test Method	Specimen set-up	BS 1377:Part 8: 1990 Clause 4	Sample orientation	Vertical
	Saturation	BS 1377:Part 8: 1990 Clause 5.3		
	Consolidation-Isotropic	BS 1377:Part 8: 1990 Clause 6	Drainage conditions	Both ends and sides
	Shearing	BS 1377:Part 8: 1990 Clause 7		
Test type	CU	assumed ☑ measured ☐	Specific gravity	2.70
			Date started	04/11/2019

INITIAL CONDITIONS		Specimen Reference 1	2	3
Sample depth	[m]	29.67		
Specimen depth	[mm]	210	350	480
Diameter	[mm]	49.00	48.40	48.30
Length	[mm]	97.75	102.15	98.42
Moisture content	[%]	34.9	40.7	39.0
Bulk density	[Mg/m^3]	1.91	1.82	1.85
Dry density	[Mg/m^3]	1.41	1.29	1.33
Voids ratio		0.91	1.09	1.02
Degree of saturation	[%]	100	100	100

SATURATION STAGE				
Final cell pressure	[kPa]	600	900	1499
Final pore pressure	[kPa]	583	880	1462
Pres. Increments/Differential pres.	[kPa]	50;100 / 60-10	50;100 / 60-10	50;100 / 60-10
B value achieved	[%]	98	99	98
Duration	[days]	5	5	5

CONSOLIDATION STAGE				
Cell pressure	[kPa]	600	900	1500
Back pressure	[kPa]	300	300	300
Effective pressure	[kPa]	300	600	1200
Final pore pressure	[kPa]	300	300	300
Final pore pressure dissipation	[%]	100	100	100
Duration	[days]	2	2	2

COMPRESSION STAGE				
Cell Pressure	[kPa]	600	900	1500
Initial pore pressure	[kPa]	300	300	300
Initial effective stress	[kPa]	300	600	1200
Rate of strain	[mm/min]	0.0030	0.0030	0.0030
Duration	[days]	4	5	4

Remarks

Specimens exhibit signs of fissuring. Failures occurred along pre-existing slip surfaces	Date Printed 19/12/2019	Figure Number	Sheet Number 1/4

FUGRO	**ISOTROPICALLY CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST : MULTIPLE SPECIMENS with measurement of pore water pressure**	Project No.	G190016U
		Hole	IT1_SB_06
		Sample No.	15
Project Name	SZC 2019 Offshore Ground Investigation	Test type	CU

Conditions at failure		**1**	**2**	**3**
Assumed failure criterion		Maximum deviator stress		
Pore pressure	[kPa]	423	525	748
Minor effective principal stress	[kPa]	177	375	752
Deviator stress	[kPa]	344	438	650
Major effective principal stress	[kPa]	521	813	1402
Effective principal stress ratio		2.9	2.2	1.9
Axial strain	[%]	8.6	7.2	5.5
Volumetric strain	[%]	0.0	0.0	0.0
Corrections to dev. stress M/Sd	[kPa]	2.5 / 7	2.2 / 7	1.7 / 7
Total Duration	[days]	19		

EFFECTIVE STRESS PARAMETERS

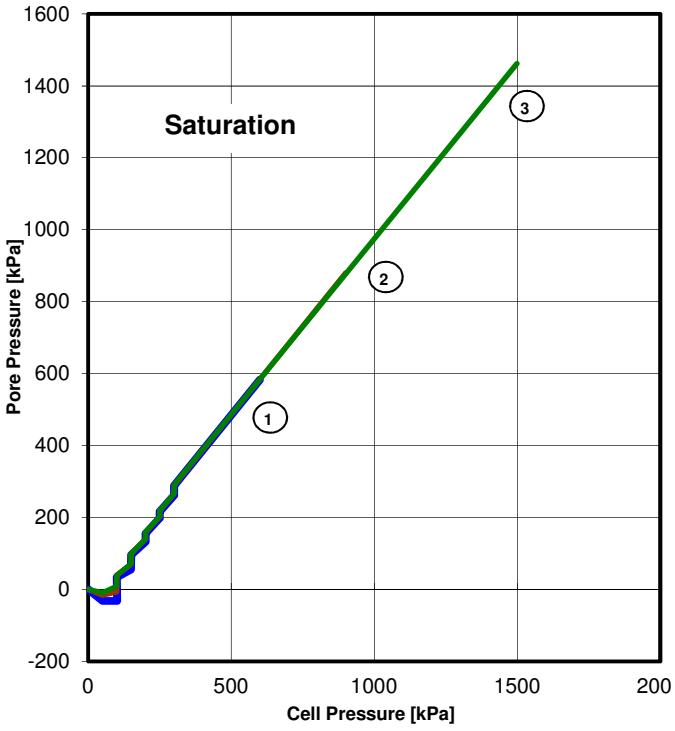
Cohesion c'	[kPa]	**98.5**
Angle of shearing resistance ϕ'	degrees	**12.2**

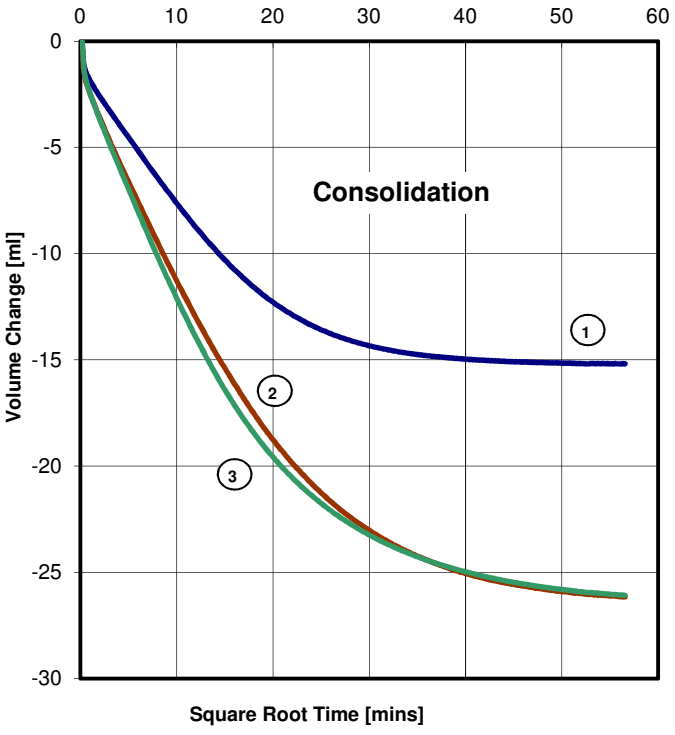
FINAL CONDITIONS

Moisture content	[%]	41.0	39.6	35.1
Bulk density	[Mg/m^3]	2.16	2.07	2.09

OTHER PARAMETERS

Secant modulus Eu 50	[MPa]	20.0	26.8	44.1
Strain at ε_{50}	[%]	0.85	0.79	0.74





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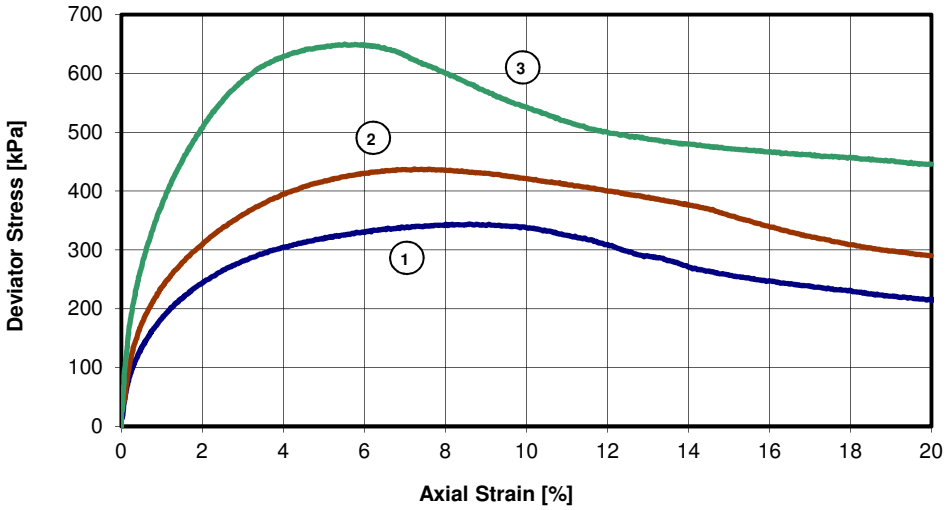
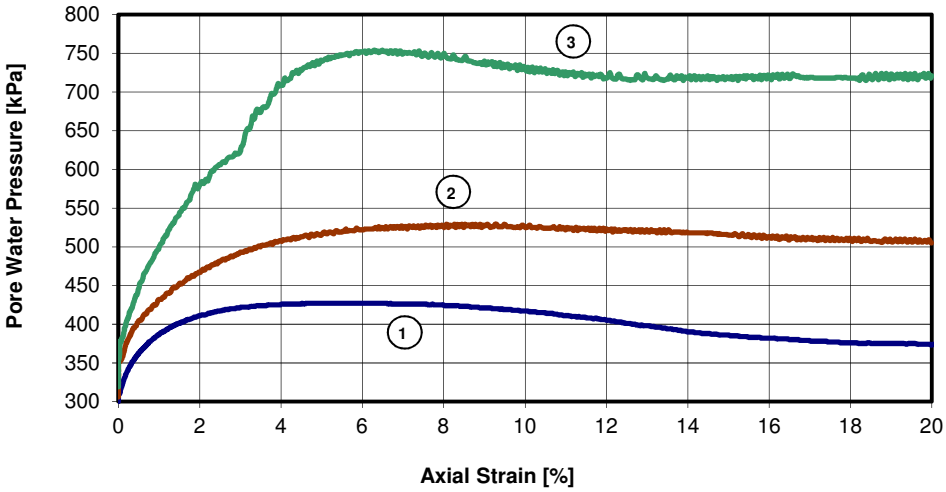
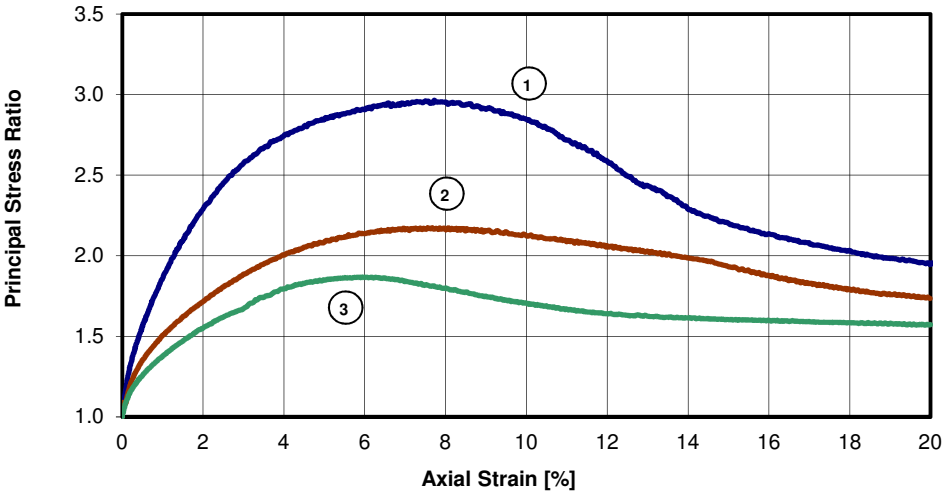
FUGRO	**ISOTROPICALLY CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST : MULTIPLE SPECIMENS with measurement of pore water pressure**	Project No.	G190016U
		Hole	IT1_SB_06
		Sample No.	15
Project Name	SZC 2019 Offshore Ground Investigation	Test type	CU







Date Printed	Figure Number	Sheet Number
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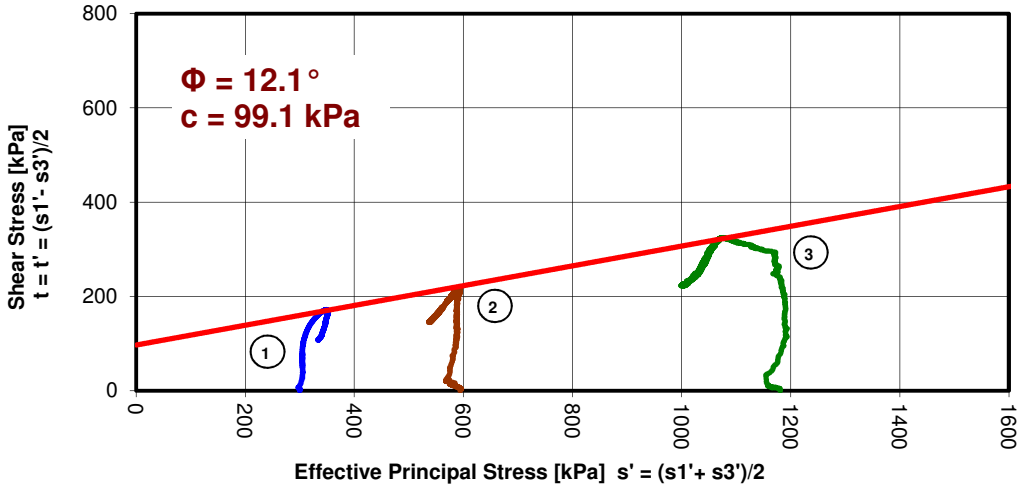
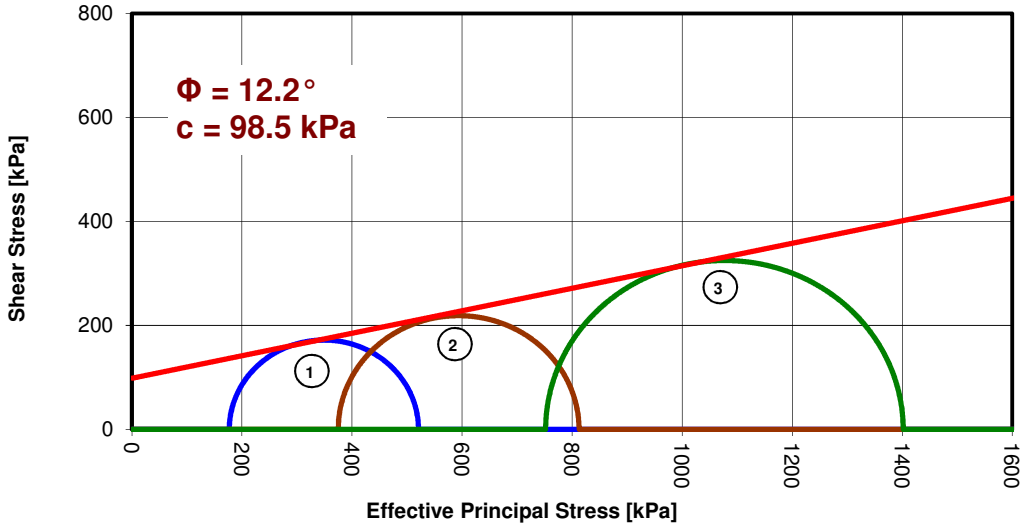
	ISOTROPICALLY CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST : MULTIPLE SPECIMENS with measurement of pore water pressure	Project No.	G190016U
		Hole	IT1_SB_06
		Sample No.	15
Project Name	SZC 2019 Offshore Ground Investigation	Test type	CU





Mode of failure:

1 Brittle
2 Brittle
3 Brittle

1

2

3

Date Printed	Figure Number	Sheet Number
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ISOTROPICALLY CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST : MULTIPLE SPECIMENS
with measurement of pore water pressure

Project No.				G190016U
Borehole No.				IT1_SB_07
Sample No.				12
Project Name	SZC 2019 Offshore Ground Investigation		Sample Type	C
Specimen Description	Very stiff dark grey slightly fissured CLAY		Sample preparation	UNDISTURBED
Test Method	Specimen set-up	BS 1377:Part 8: 1990 Clause 4	Sample orientation	Vertical
	Saturation	BS 1377:Part 8: 1990 Clause 5.3		
	Consolidation-Isotropic	BS 1377:Part 8: 1990 Clause 6	Drainage conditions	Both ends and sides
	Shearing	BS 1377:Part 8: 1990 Clause 7		
Test type	CU	assumed ☑ measured ☐	Specific gravity	2.70
			Date started	03/10/2019

INITIAL CONDITIONS		Specimen Reference 1	2	3
Sample depth	[m]	28.17		
Specimen depth	[mm]	10	120	330
Diameter	[mm]	51.10	50.10	50.26
Length	[mm]	100.32	99.71	95.54
Moisture content	[%]	35.1	38.0	35.8
Bulk density	[Mg/m^3]	1.97	1.89	1.86
Dry density	[Mg/m^3]	1.46	1.37	1.37
Voids ratio		0.85	0.98	0.98
Degree of saturation	[%]	100	100	99

SATURATION STAGE				
Final cell pressure	[kPa]	680	960	1517
Final pore pressure	[kPa]	637	901	1471
Pres. Increments/Differential pres.	[kPa]	50;100 / 60-30	50;100 / 60-30	50;100 / 60-30
B value achieved	[%]	98	96	99
Duration	[days]	6	6	6

CONSOLIDATION STAGE				
Cell pressure	[kPa]	680	960	1520
Back pressure	[kPa]	400	400	400
Effective pressure	[kPa]	280	560	1120
Final pore pressure	[kPa]	400	400	400
Final pore pressure dissipation	[%]	100	100	100
Duration	[days]	7	7	7

COMPRESSION STAGE				
Cell Pressure	[kPa]	680	960	1520
Initial pore pressure	[kPa]	400	400	400
Initial effective stress	[kPa]	280	560	1120
Rate of strain	[mm/min]	0.0006	0.0006	0.0006
Duration	[days]	17	16	17

Remarks

Specimens were not homogeneous: Specimen 1 contained a pocket of silt. Specimens 1 and 3 had pre-existing slip surfaces present	Date Printed 15/01/2020	Figure Number	Sheet Number 1/4

FUGRO	**ISOTROPICALLY CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST : MULTIPLE SPECIMENS with measurement of pore water pressure**	Project No.	G190016U
		Hole	IT1_SB_07
		Sample No.	12
Project Name	SZC 2019 Offshore Ground Investigation	Test type	CU

Conditions at failure		**1**	**2**	**3**
Assumed failure criterion		Maximum deviator stress		
Pore pressure	[kPa]	510	640	837
Minor effective principal stress	[kPa]	170	320	683
Deviator stress	[kPa]	285	481	591
Major effective principal stress	[kPa]	455	801	1274
Effective principal stress ratio		2.7	2.5	1.9
Axial strain	[%]	6.7	12.8	7.9
Volumetric strain	[%]	0.0	0.0	0.0
Corrections to dev. stress M/Sd	[kPa]	1.9 / 7	3.3 / 7	2.2 / 7
Total Duration	[days]	89		

EFFECTIVE STRESS PARAMETERS

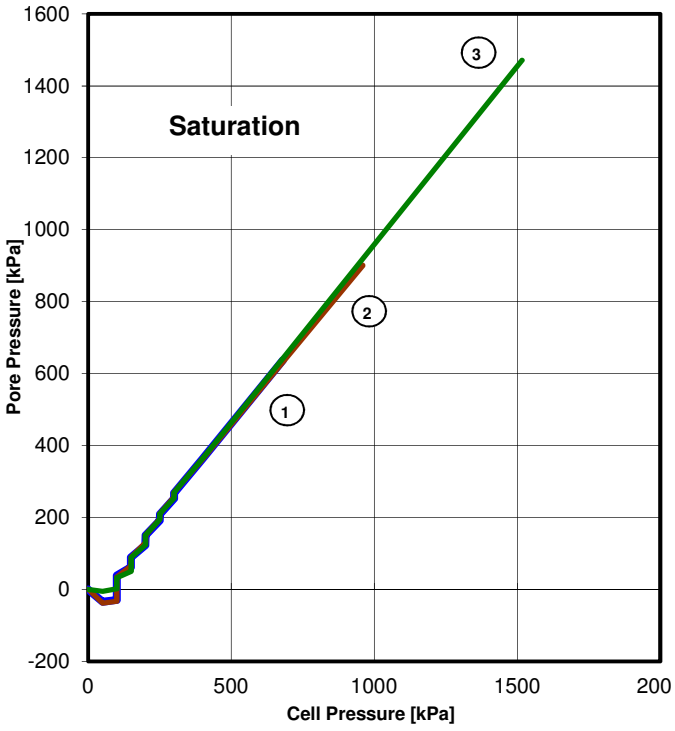
Cohesion c'	[kPa]	**75.6**
Angle of shearing resistance ϕ'	degrees	**14.8**

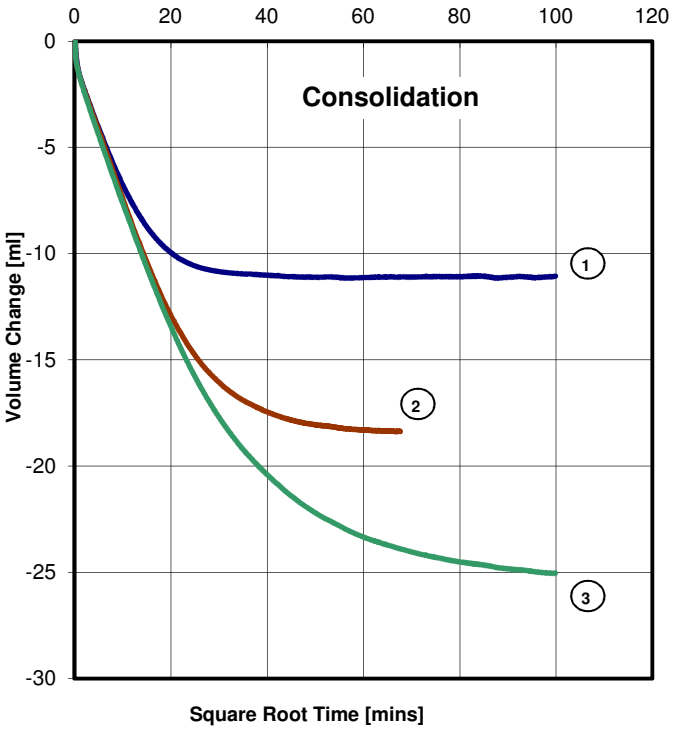
FINAL CONDITIONS

Moisture content	[%]	36.8	37.7	35.4
Bulk density	[Mg/m^3]	2.14	2.08	2.12

OTHER PARAMETERS

Secant modulus Eu 50	[MPa]	21.8	18.9	30.9
Strain at ε_{50}	[%]	0.65	1.25	0.95





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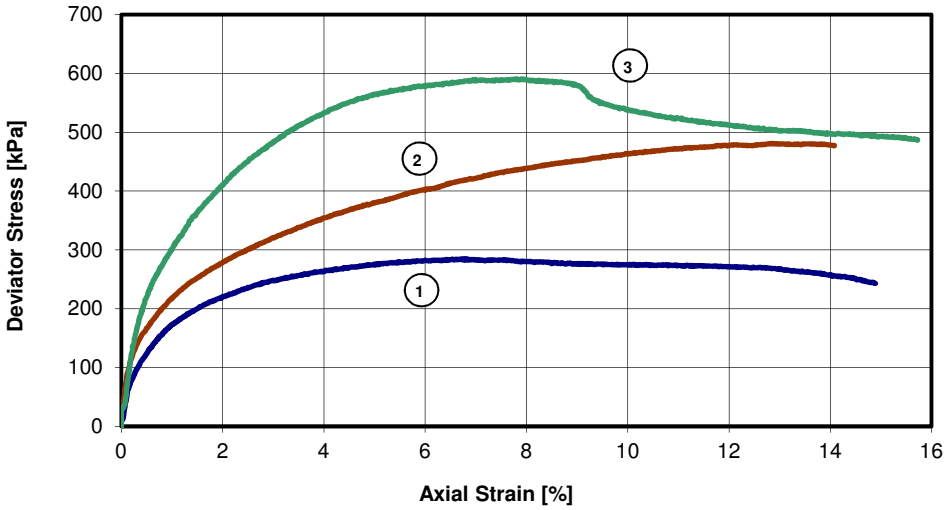
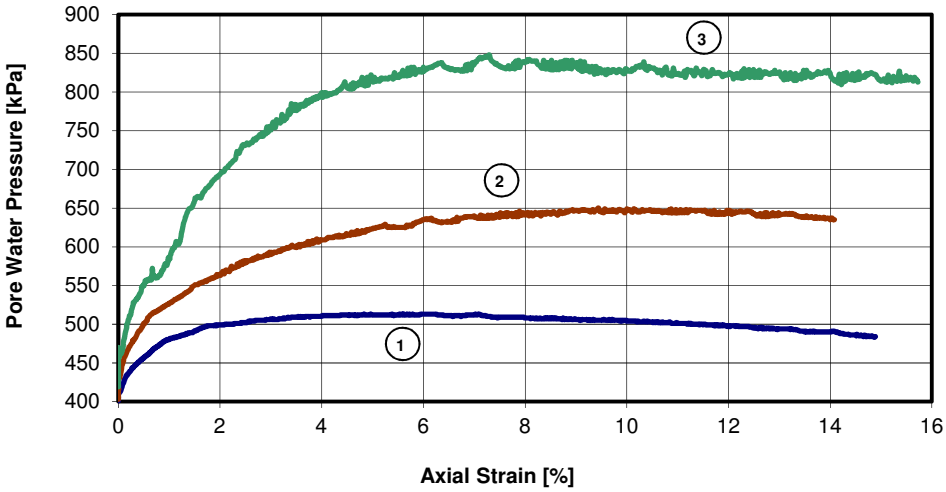
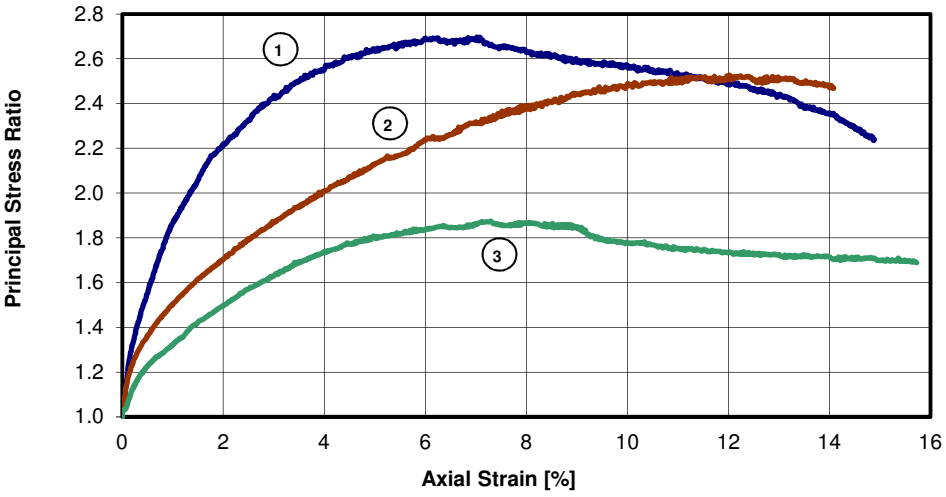
FUGRO	**ISOTROPICALLY CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST : MULTIPLE SPECIMENS with measurement of pore water pressure**	Project No.	G190016U
		Hole	IT1_SB_07
		Sample No.	12
Project Name	SZC 2019 Offshore Ground Investigation	Test type	CU







Date Printed	Figure Number	Sheet Number
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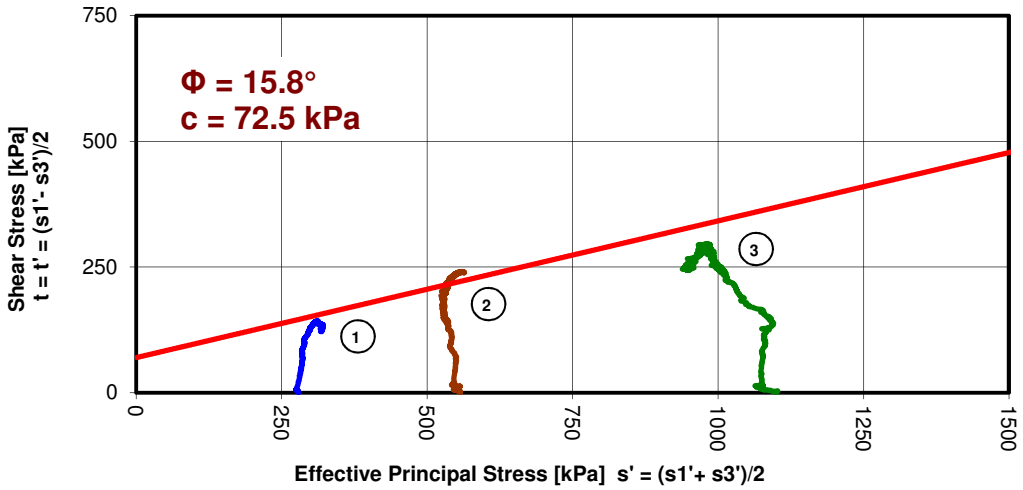
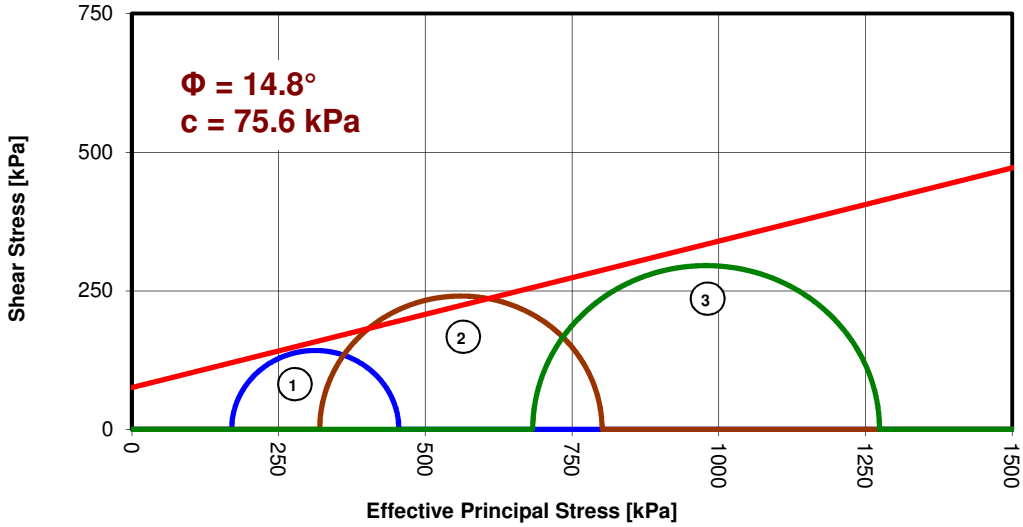
	ISOTROPICALLY CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST : MULTIPLE SPECIMENS with measurement of pore water pressure	Project No.	G190016U
		Hole	IT1_SB_07
		Sample No.	12
Project Name	SZC 2019 Offshore Ground Investigation	Test type	CU





1

2

3

Mode of failure:

1 Brittle
2 Plastic
3 Brittle

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ISOTROPICALLY CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST : MULTIPLE SPECIMENS
with measurement of pore water pressure

			Project No.	G190016U
			Borehole No.	IT1_SB_07
			Sample No.	11
Project Name	SZC 2019 Offshore Ground Investigation		Sample Type	C
Specimen Description	Very stiff dark grey brown slightly silty CLAY		Sample preparation	UNDISTURBED
Test Method	Specimen set-up	BS 1377:Part 8: 1990 Clause 4	Sample orientation	Vertical
	Saturation	BS 1377:Part 8: 1990 Clause 5.3		
	Consolidation-Isotropic	BS 1377:Part 8: 1990 Clause 6	Drainage conditions	Both ends and sides
	Shearing	BS 1377:Part 8: 1990 Clause 7		
Test type	CU	assumed ☑ measured ☐	Specific gravity	2.70
			Date started	01/11/2019

INITIAL CONDITIONS		Specimen Reference 1	2	3
Sample depth	[m]	49.90		
Specimen depth	[mm]	120	320	430
Diameter	[mm]	50.90	49.90	51.50
Length	[mm]	100.05	98.50	98.80
Moisture content	[%]	33.0	34.7	35.4
Bulk density	[Mg/m^3]	1.81	1.88	1.85
Dry density	[Mg/m^3]	1.36	1.39	1.36
Voids ratio		0.98	0.94	0.98
Degree of saturation	[%]	91	100	97

SATURATION STAGE				
Final cell pressure	[kPa]	899	1400	1899
Final pore pressure	[kPa]	886	1383	1887
Pres. Increments/Differential pres.	[kPa]	50;100 / 60-10	50;100 / 60-10	50;100 / 60-10
B value achieved	[%]	99	100	99
Duration	[days]	7	7	7

CONSOLIDATION STAGE				
Cell pressure	[kPa]	900	1400	1900
Back pressure	[kPa]	400	400	400
Effective pressure	[kPa]	500	1000	1500
Final pore pressure	[kPa]	400	400	400
Final pore pressure dissipation	[%]	100	100	100
Duration	[days]	3	3	3

COMPRESSION STAGE				
Cell Pressure	[kPa]	900	1400	1900
Initial pore pressure	[kPa]	400	400	400
Initial effective stress	[kPa]	500	1000	1500
Rate of strain	[mm/min]	0.0020	0.0020	0.0020
Duration	[days]	7	7	7

Remarks

Specimens were not homogeneous	Date Printed	Figure Number	Sheet Number
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FUGRO	**ISOTROPICALLY CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST : MULTIPLE SPECIMENS with measurement of pore water pressure**	Project No.	G190016U
		Hole	IT1_SB_07
		Sample No.	11
Project Name	SZC 2019 Offshore Ground Investigation	Test type	CU

Conditions at failure		**1**	**2**	**3**
Assumed failure criterion		Maximum deviator stress		
Pore pressure	[kPa]	606	873	988
Minor effective principal stress	[kPa]	294	527	912
Deviator stress	[kPa]	465	717	843
Major effective principal stress	[kPa]	759	1244	1755
Effective principal stress ratio		2.6	2.4	1.9
Axial strain	[%]	3.1	5.0	4.9
Volumetric strain	[%]	0.0	0.0	0.0
Corrections to dev. stress M/Sd	[kPa]	1.0 / 7	1.5 / 7	1.4 / 7
Total Duration	[days]	51		

EFFECTIVE STRESS PARAMETERS

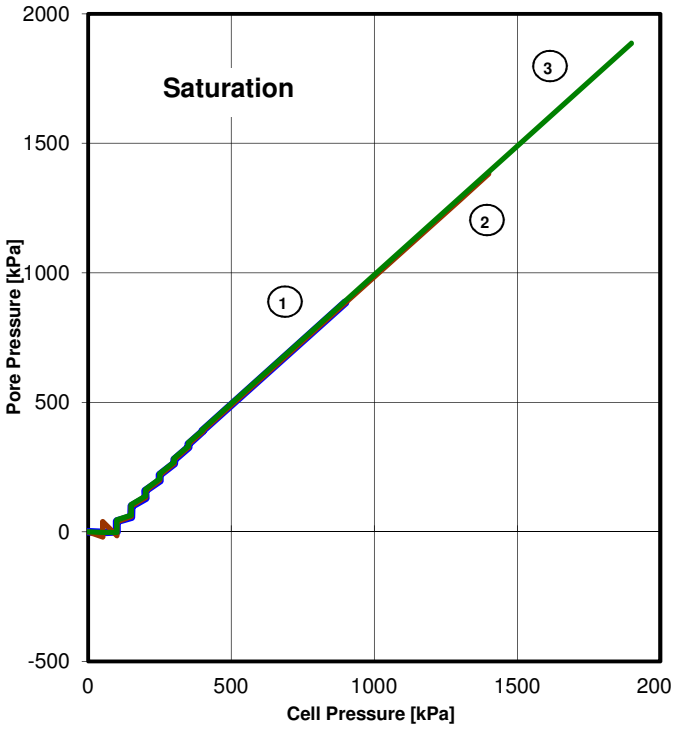
Cohesion c'	[kPa]	**89.9**
Angle of shearing resistance ϕ'	degrees	**16.6**

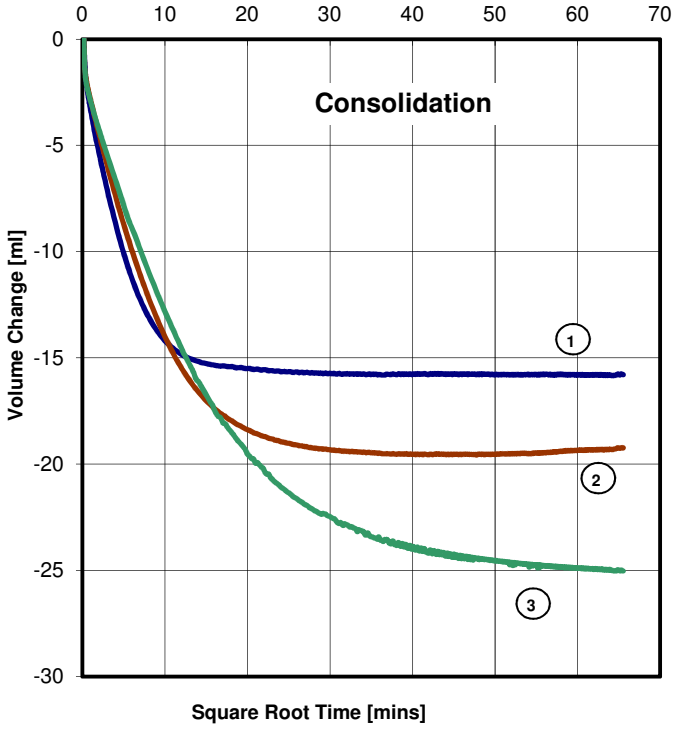
FINAL CONDITIONS

Moisture content	[%]	37.1	34.2	33.8
Bulk density	[Mg/m^3]	2.02	2.08	2.08

OTHER PARAMETERS

Secant modulus Eu 50	[MPa]	51.1	65.7	85.7
Strain at ε_{50}	[%]	0.45	0.54	0.49





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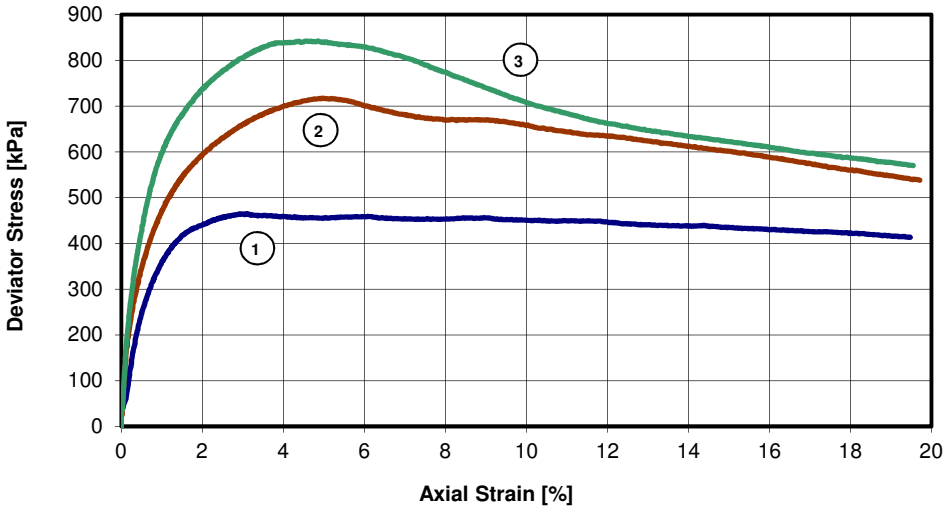
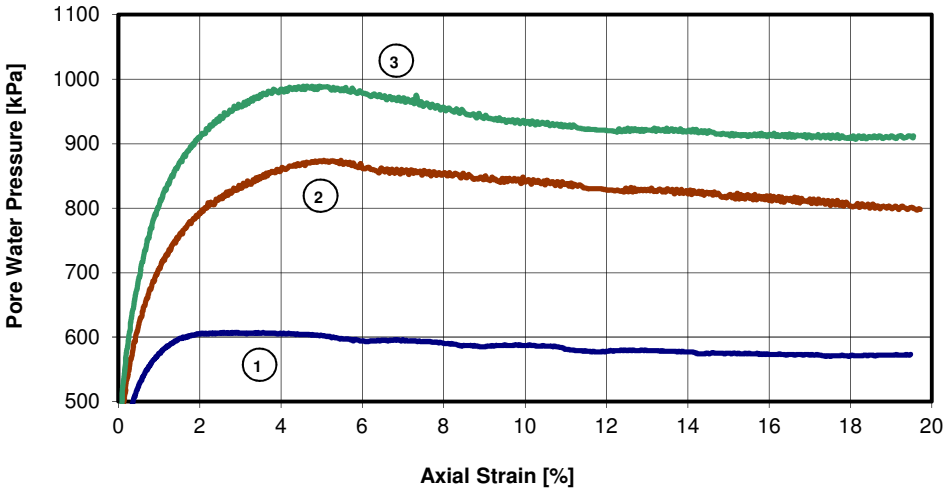
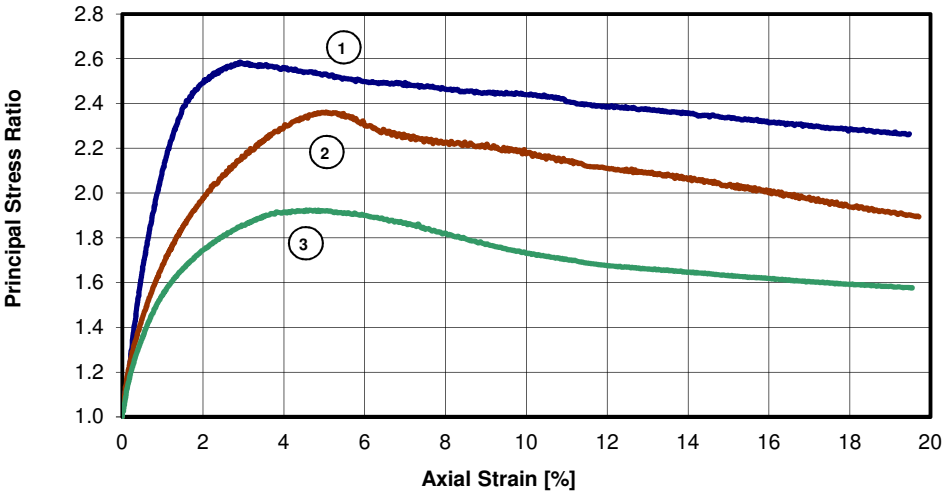
FUGRO	**ISOTROPICALLY CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST : MULTIPLE SPECIMENS with measurement of pore water pressure**	Project No.	G190016U
		Hole	IT1_SB_07
		Sample No.	11
Project Name	SZC 2019 Offshore Ground Investigation	Test type	CU







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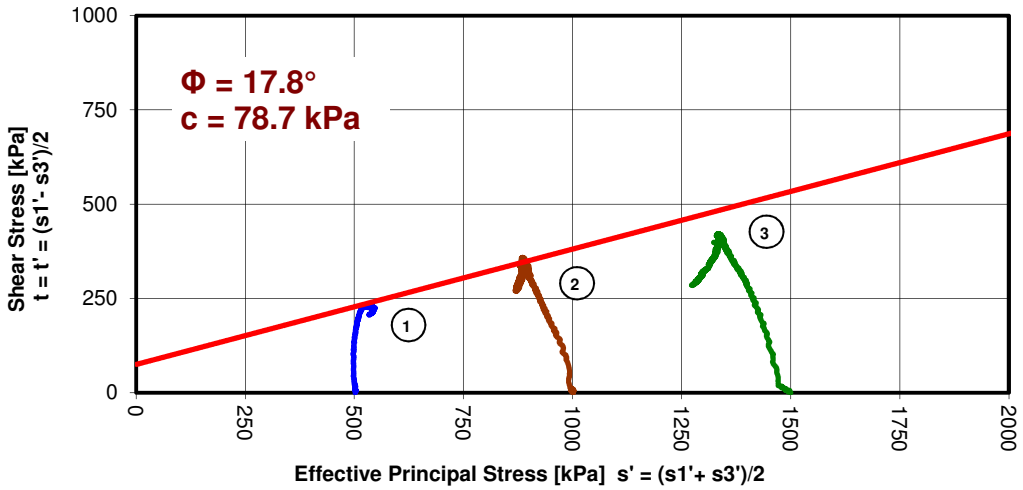
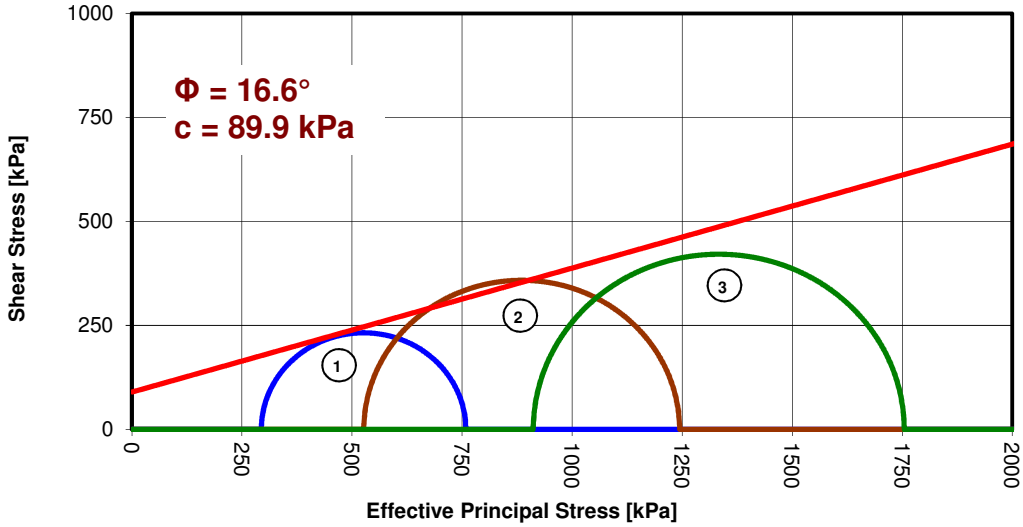
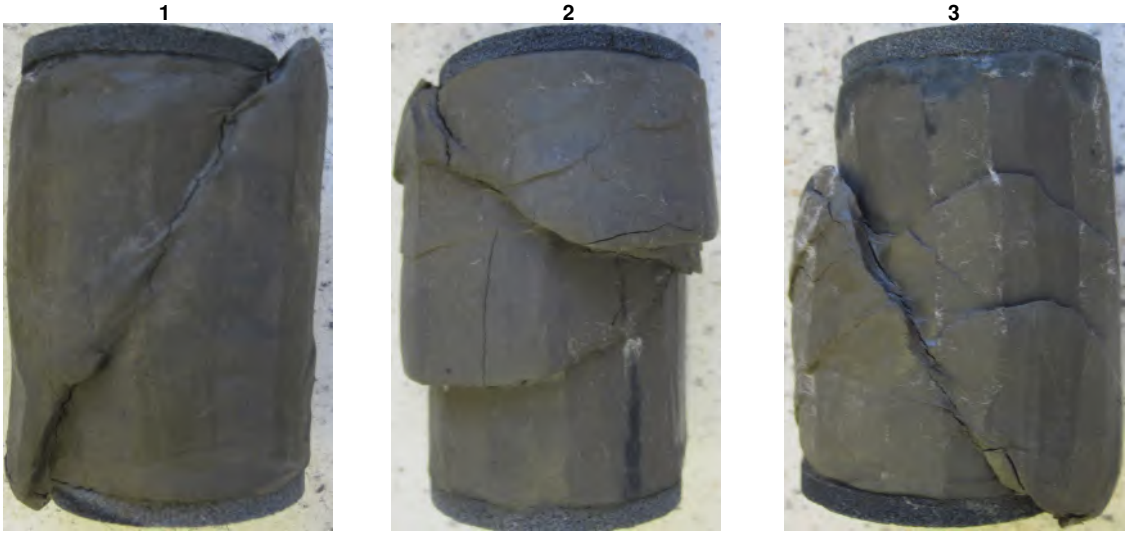
	ISOTROPICALLY CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST : MULTIPLE SPECIMENS with measurement of pore water pressure	Project No.	G190016U
		Hole	IT1_SB_07
		Sample No.	11
Project Name	SZC 2019 Offshore Ground Investigation	Test type	CU





Mode of failure:

1 Brittle
2 Brittle
3 Brittle



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ISOTROPICALLY CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST : MULTIPLE SPECIMENS
with measurement of pore water pressure

Project No.				G190016U
Borehole No.				IT2_SB_01
Sample No.				1
Project Name	SZC 2019 Offshore Ground Investigation		Sample Type	C
Specimen Description	Very stiff dark grey brown slightly sandy CLAY		Sample preparation	UNDISTURBED
Test Method	Specimen set-up	BS 1377:Part 8: 1990 Clause 4	Sample orientation	Vertical
	Saturation	BS 1377:Part 8: 1990 Clause 5.3		
	Consolidation-Isotropic	BS 1377:Part 8: 1990 Clause 6	Drainage conditions	Both ends and sides
	Shearing	BS 1377:Part 8: 1990 Clause 7		
Test type	CU	assumed ☑ measured ☐	Specific gravity	2.70
			Date started	18/11/2019

INITIAL CONDITIONS		Specimen Reference 1	2	3
Sample depth	[m]	44.40		
Specimen depth	[mm]	10	310	450
Diameter	[mm]	48.96	49.35	48.84
Length	[mm]	92.78	95.40	95.13
Moisture content	[%]	38.9	42.4	39.8
Bulk density	[Mg/m^3]	1.84	1.82	1.81
Dry density	[Mg/m^3]	1.33	1.28	1.29
Voids ratio		1.04	1.12	1.09
Degree of saturation	[%]	100	100	99

SATURATION STAGE				
Final cell pressure	[kPa]	849	1300	1900
Final pore pressure	[kPa]	824	1266	1864
Pres. Increments/Differential pres.	[kPa]	50;100 / 60-20	50;100 / 60-20	50;100 / 60-20
B value achieved	[%]	99	99	99
Duration	[days]	5	5	5

CONSOLIDATION STAGE				
Cell pressure	[kPa]	850	1300	1900
Back pressure	[kPa]	400	400	400
Effective pressure	[kPa]	450	900	1500
Final pore pressure	[kPa]	400	400	400
Final pore pressure dissipation	[%]	100	100	100
Duration	[days]	2	2	2

COMPRESSION STAGE				
Cell Pressure	[kPa]	850	1300	1900
Initial pore pressure	[kPa]	400	400	400
Initial effective stress	[kPa]	450	900	1500
Rate of strain	[mm/min]	0.0040	0.0040	0.0040
Duration	[days]	3	3	3

Remarks

FUGRO	**ISOTROPICALLY CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST : MULTIPLE SPECIMENS with measurement of pore water pressure**	Project No.	G190016U
		Hole	IT2_SB_01
		Sample No.	1
Project Name	SZC 2019 Offshore Ground Investigation	Test type	CU

Conditions at failure		**1**	**2**	**3**
Assumed failure criterion		Maximum deviator stress		
Pore pressure	[kPa]	607	899	1205
Minor effective principal stress	[kPa]	243	401	695
Deviator stress	[kPa]	443	692	1141
Major effective principal stress	[kPa]	686	1093	1836
Effective principal stress ratio		2.8	2.7	2.6
Axial strain	[%]	7.3	7.1	5.9
Volumetric strain	[%]	0.0	0.0	0.0
Corrections to dev. stress M/Sd	[kPa]	2.1 / 7	2.1 / 7	1.8 / 7
Total Duration	[days]	30		

EFFECTIVE STRESS PARAMETERS

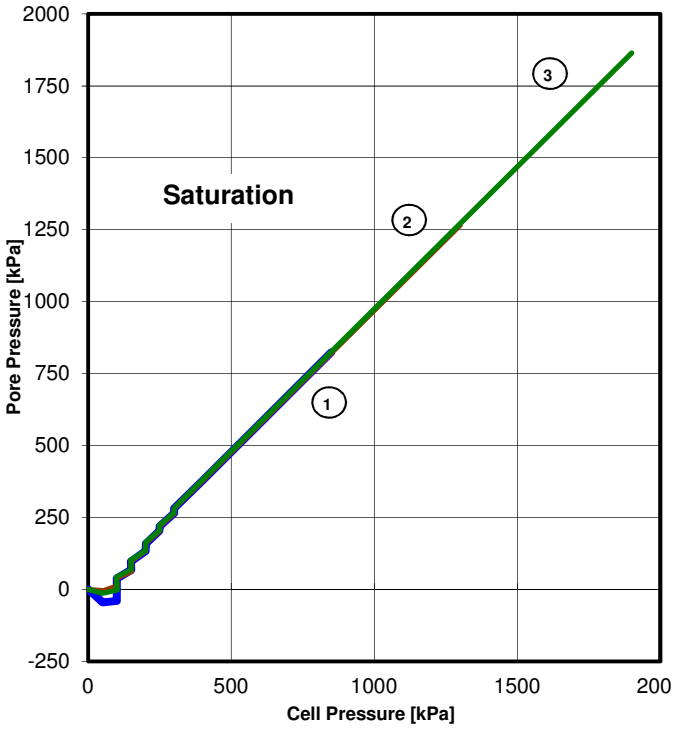
Cohesion c'	[kPa]	**22.0**
Angle of shearing resistance ϕ'	degrees	**25.8**

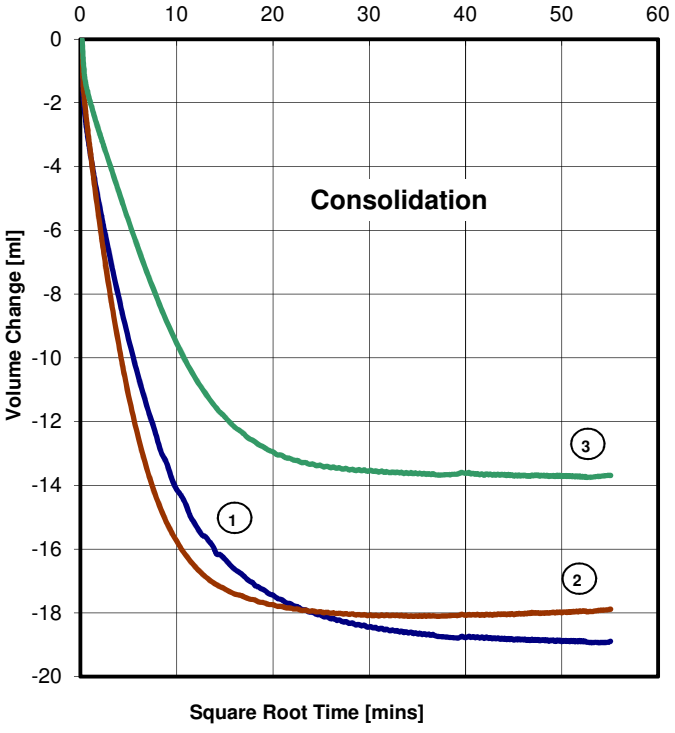
FINAL CONDITIONS

Moisture content	[%]	38.8	39.3	37.0
Bulk density	[Mg/m^3]	2.06	1.97	1.91

OTHER PARAMETERS

Secant modulus Eu 50	[MPa]	26.7	57.9	70.8
Strain at ε_{50}	[%]	0.82	0.59	0.80





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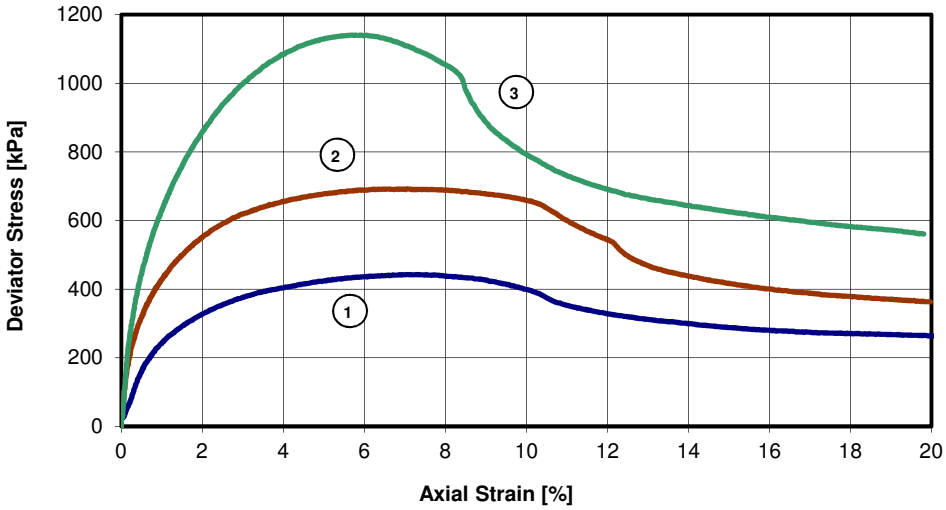
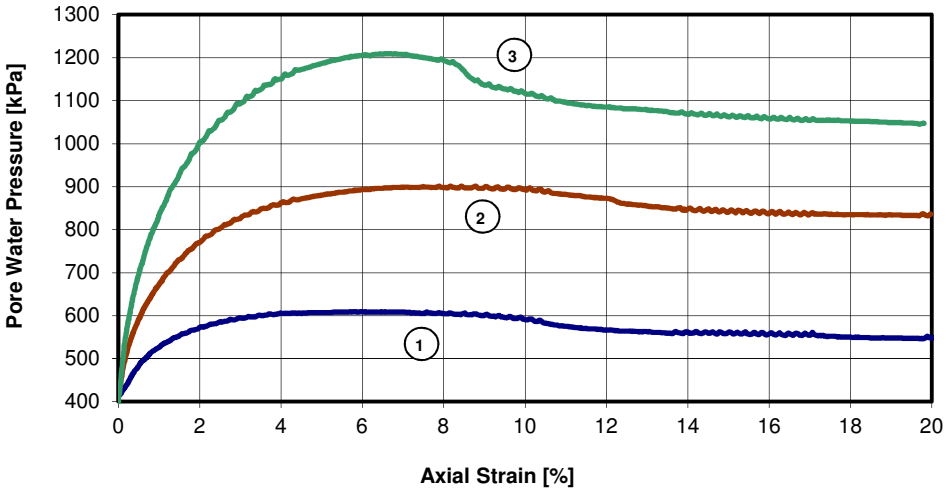
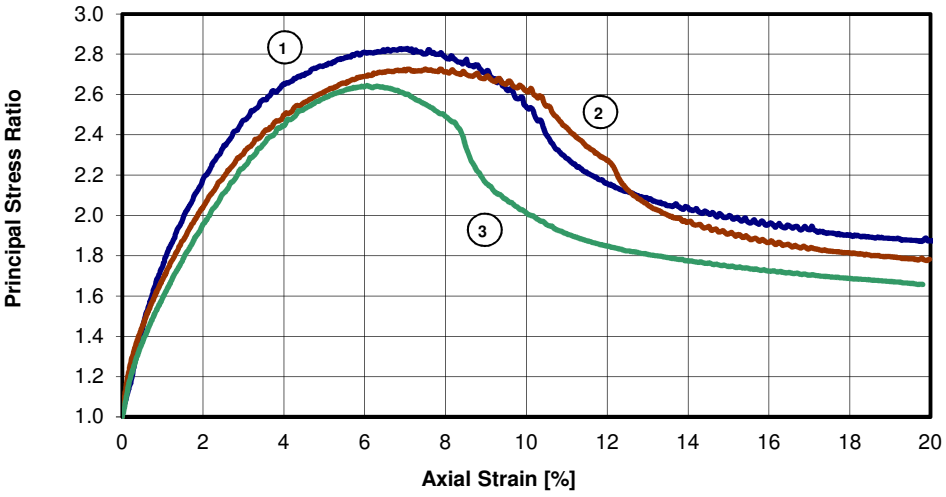
FUGRO	**ISOTROPICALLY CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST : MULTIPLE SPECIMENS with measurement of pore water pressure**	Project No.	G190016U
		Hole	IT2_SB_01
		Sample No.	1
Project Name	SZC 2019 Offshore Ground Investigation	Test type	CU







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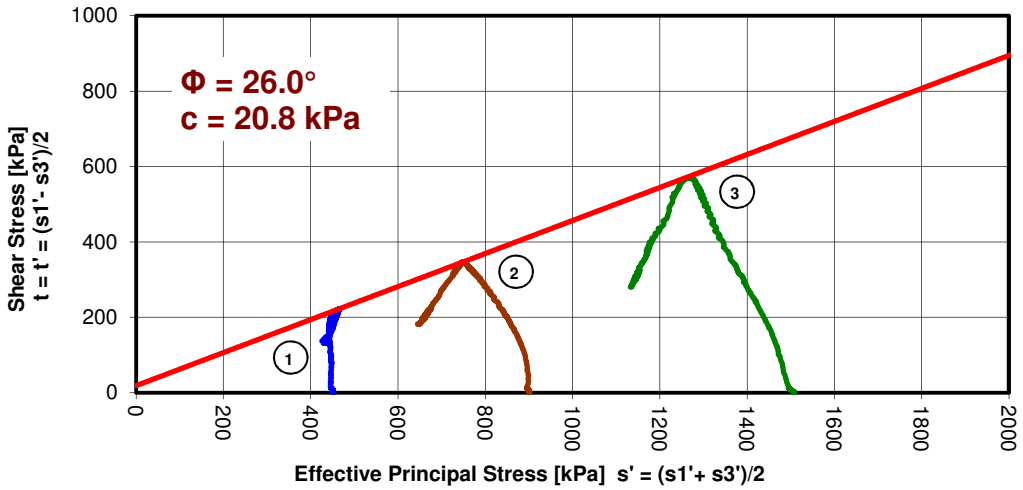
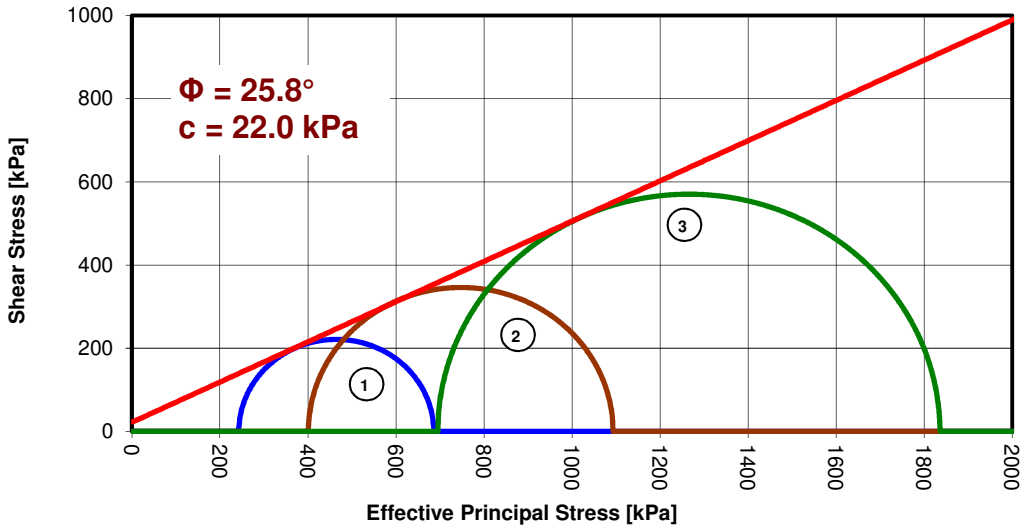
	ISOTROPICALLY CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST : MULTIPLE SPECIMENS with measurement of pore water pressure	Project No.	G190016U
		Hole	IT2_SB_01
		Sample No.	1
Project Name	SZC 2019 Offshore Ground Investigation	Test type	CU





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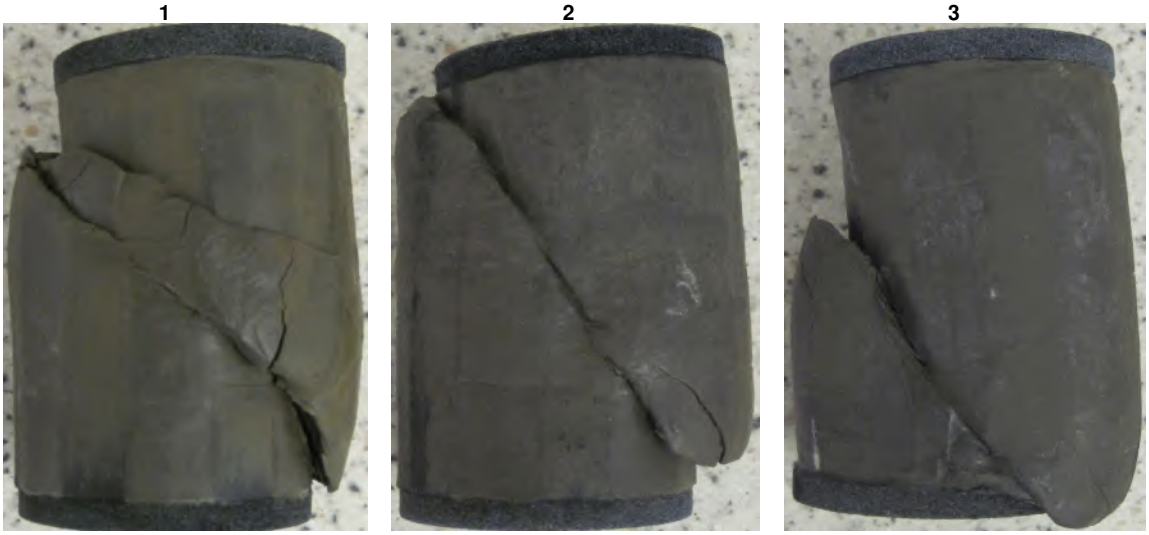


Mode of failure:

1 Brittle
2 Brittle
3 Brittle

Date Printed	Figure Number	Sheet Number
19/12/2019		4/4

ISOTROPICALLY CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST : MULTIPLE SPECIMENS
with measurement of pore water pressure

			Project No.	G190016U
			Borehole No.	OT_SB_01
			Sample No.	1
Project Name	SZC 2019 Offshore Ground Investigation		Sample Type	C
Specimen Description	Very stiff dark brown grey slightly silty CLAY		Sample preparation	UNDISTURBED
Test Method	Specimen set-up	BS 1377:Part 8: 1990 Clause 4	Sample orientation	Vertical
	Saturation	BS 1377:Part 8: 1990 Clause 5.3		
	Consolidation-Isotropic	BS 1377:Part 8: 1990 Clause 6	Drainage conditions	Both ends and sides
	Shearing	BS 1377:Part 8: 1990 Clause 7		
Test type	CU	assumed ☑ measured ☐	Specific gravity	2.70
			Date started	07/10/2019

INITIAL CONDITIONS		Specimen Reference 1	2	3
Sample depth	[m]	44.81		
Specimen depth	[mm]	0	100	199
Diameter	[mm]	51.36	51.08	50.56
Length	[mm]	99.50	98.70	101.50
Moisture content	[%]	41.2	43.6	49.2
Bulk density	[Mg/m^3]	1.83	1.77	1.73
Dry density	[Mg/m^3]	1.30	1.23	1.16
Voids ratio		1.08	1.20	1.32
Degree of saturation	[%]	100	98	100

SATURATION STAGE				
Final cell pressure	[kPa]	850	1300	1899
Final pore pressure	[kPa]	839	1280	1876
Pres. Increments/Differential pres.	[kPa]	50;100 / 50-10	50;100 / 50-10	50;100 / 50-10
B value achieved	[%]	100	99	99
Duration	[days]	5	5	5

CONSOLIDATION STAGE				
Cell pressure	[kPa]	850	1300	1900
Back pressure	[kPa]	400	400	400
Effective pressure	[kPa]	450	900	1500
Final pore pressure	[kPa]	400	400	400
Final pore pressure dissipation	[%]	100	100	100
Duration	[days]	2	2	2

COMPRESSION STAGE				
Cell Pressure	[kPa]	850	1300	1900
Initial pore pressure	[kPa]	400	400	400
Initial effective stress	[kPa]	450	900	1500
Rate of strain	[mm/min]	0.0110	0.0110	0.0110
Duration	[days]	1	1	1

Remarks

Failure occurred along pre-existing slip surfaces in all specimens	Date Printed	Figure Number	Sheet Number 1/4

FUGRO	**ISOTROPICALLY CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST : MULTIPLE SPECIMENS with measurement of pore water pressure**	Project No.	G190016U
		Hole	OT_SB_01
		Sample No.	1
Project Name	SZC 2019 Offshore Ground Investigation	Test type	CU

Conditions at failure		**1**	**2**	**3**
Assumed failure criterion		Maximum deviator stress		
Pore pressure	[kPa]	619	903	1193
Minor effective principal stress	[kPa]	231	397	707
Deviator stress	[kPa]	500	794	1111
Major effective principal stress	[kPa]	731	1191	1818
Effective principal stress ratio		3.2	3.0	2.6
Axial strain	[%]	7.7	9.5	4.2
Volumetric strain	[%]	0.0	0.0	0.0
Corrections to dev. stress M/Sd	[kPa]	2.2 / 7	2.6 / 7	1.3 / 7
Total Duration	[days]	24		

EFFECTIVE STRESS PARAMETERS

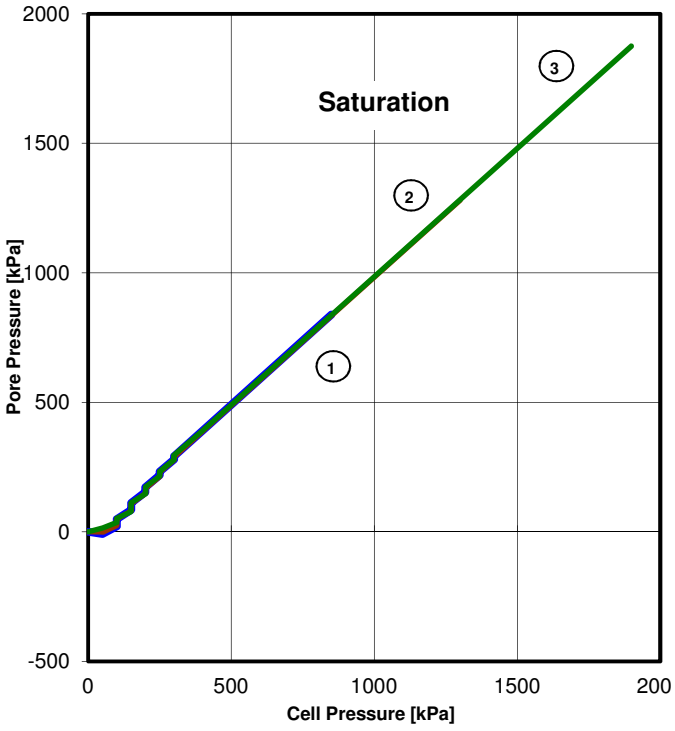
Cohesion c'	[kPa]	**81.9**
Angle of shearing resistance ϕ'	degrees	**22.6**

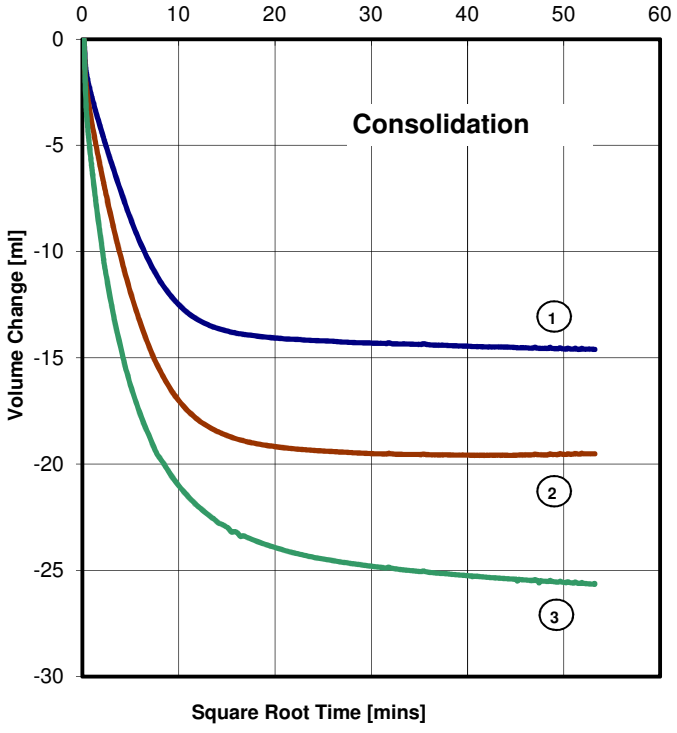
FINAL CONDITIONS

Moisture content	[%]	39.9	40.6	44.5
Bulk density	[Mg/m^3]	1.95	1.91	1.90

OTHER PARAMETERS

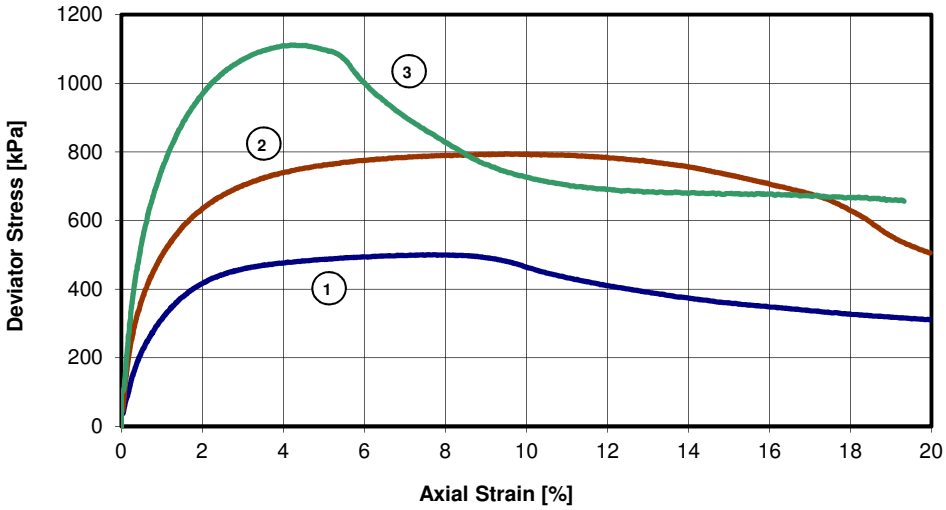
Secant modulus Eu 50	[MPa]	39.5	66.8	101.0
Strain at ε_{50}	[%]	0.63	0.59	0.54

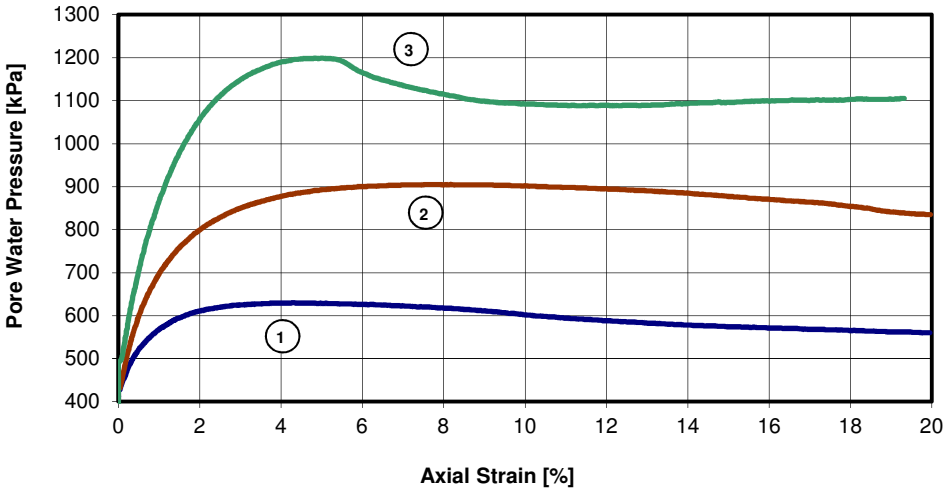


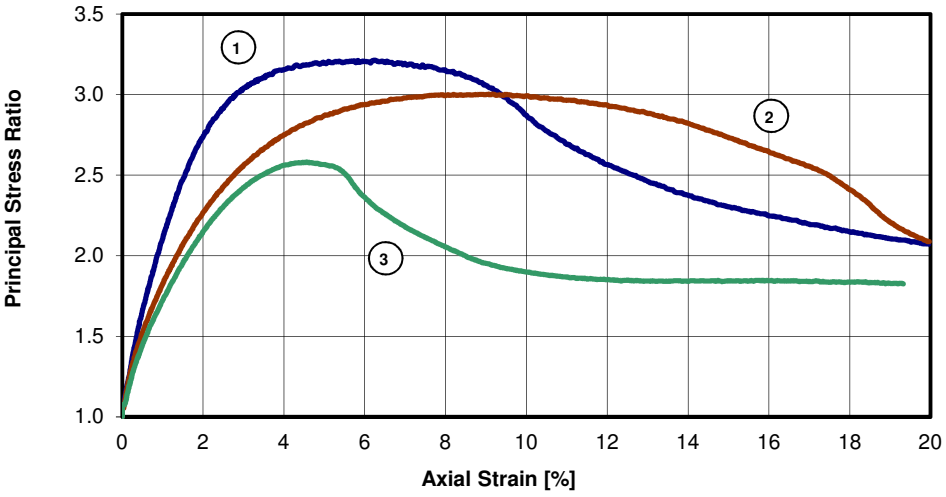


Date Printed	Figure Number	Sheet Number
		2/4

FUGRO	**ISOTROPICALLY CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST : MULTIPLE SPECIMENS with measurement of pore water pressure**	Project No.	G190016U
		Hole	OT_SB_01
		Sample No.	1
Project Name	SZC 2019 Offshore Ground Investigation	Test type	CU

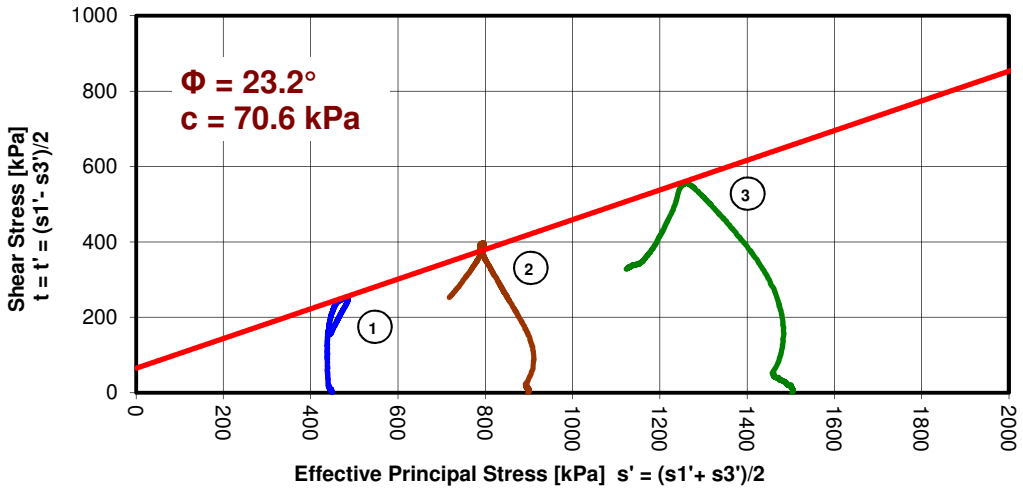


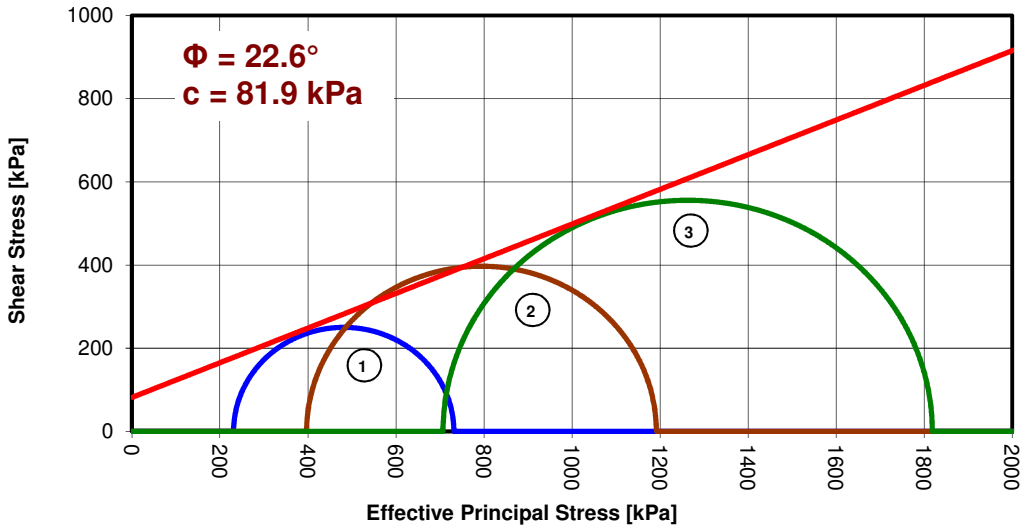




Date Printed	Figure Number	Sheet Number
		3/4

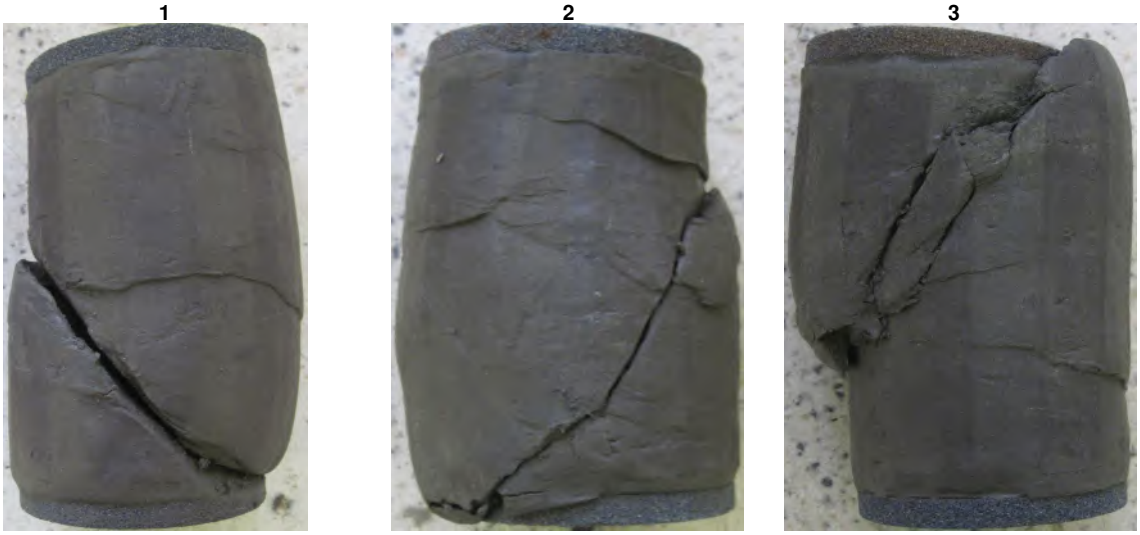
	ISOTROPICALLY CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST : MULTIPLE SPECIMENS with measurement of pore water pressure	Project No.	G190016U
		Hole	OT_SB_01
		Sample No.	1
Project Name	SZC 2019 Offshore Ground Investigation	Test type	CU





Mode of failure:

1 Brittle
2 Brittle
3 Brittle



Date Printed	Figure Number	Sheet Number
		4/4

ISOTROPICALLY CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST : MULTIPLE SPECIMENS
with measurement of pore water pressure

			Project No.	G190016U
			Borehole No.	OT_SPT_02
			Sample No.	2
Project Name	SZC 2019 Offshore Ground Investigation		Sample Type	C
Specimen Description	Very stiff dark grey brown slightly sandy CLAY		Sample preparation	UNDISTURBED
Test Method	Specimen set-up	BS 1377:Part 8: 1990 Clause 4	Sample orientation	Vertical
	Saturation	BS 1377:Part 8: 1990 Clause 5.3		
	Consolidation-Isotropic	BS 1377:Part 8: 1990 Clause 6	Drainage conditions	Both ends and sides
	Shearing	BS 1377:Part 8: 1990 Clause 7		
Test type	CU	assumed ☑ measured ☐	Specific gravity	2.70
			Date started	29/11/2019

INITIAL CONDITIONS		Specimen Reference 1	2	3
Sample depth	[m]	53.00		
Specimen depth	[mm]	140	320	440
Diameter	[mm]	49.90	49.43	49.60
Length	[mm]	93.92	98.48	99.69
Moisture content	[%]	41.1	36.5	43.2
Bulk density	[Mg/m^3]	1.85	1.86	1.82
Dry density	[Mg/m^3]	1.31	1.36	1.27
Voids ratio		1.06	0.98	1.12
Degree of saturation	[%]	100	100	100

SATURATION STAGE				
Final cell pressure	[kPa]	799	1298	1800
Final pore pressure	[kPa]	766	1266	1759
Pres. Increments/Differential pres.	[kPa]	50;100 / 60-20	50;100 / 60-20	50;100 / 60-20
B value achieved	[%]	100	99	98
Duration	[days]	5	5	5

CONSOLIDATION STAGE				
Cell pressure	[kPa]	800	1300	1800
Back pressure	[kPa]	300	300	300
Effective pressure	[kPa]	500	1000	1500
Final pore pressure	[kPa]	300	300	300
Final pore pressure dissipation	[%]	100	100	100
Duration	[days]	1	1	1

COMPRESSION STAGE				
Cell Pressure	[kPa]	800	1300	1800
Initial pore pressure	[kPa]	300	300	300
Initial effective stress	[kPa]	500	1000	1500
Rate of strain	[mm/min]	0.0060	0.0060	0.0060
Duration	[days]	2	2	2

Remarks

Specimens exhibit signs of fissuring. Failures occurred along pre-existing slip surfaces	Date Printed 18/12/2019	Figure Number	Sheet Number 1/4

FUGRO	**ISOTROPICALLY CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST : MULTIPLE SPECIMENS with measurement of pore water pressure**	Project No.	G190016U
		Hole	OT_SPT_02
		Sample No.	2
Project Name	SZC 2019 Offshore Ground Investigation	Test type	CU

Conditions at failure		**1**	**2**	**3**
Assumed failure criterion		Maximum deviator stress		
Pore pressure	[kPa]	642	824	1033
Minor effective principal stress	[kPa]	158	476	767
Deviator stress	[kPa]	837	1076	1194
Major effective principal stress	[kPa]	995	1552	1961
Effective principal stress ratio		6.3	3.3	2.6
Axial strain	[%]	1.5	2.4	2.5
Volumetric strain	[%]	0.0	0.0	0.0
Corrections to dev. stress M/Sd	[kPa]	0.5 / 7	0.8 / 7	0.8 / 7
Total Duration	[days]	24		

EFFECTIVE STRESS PARAMETERS

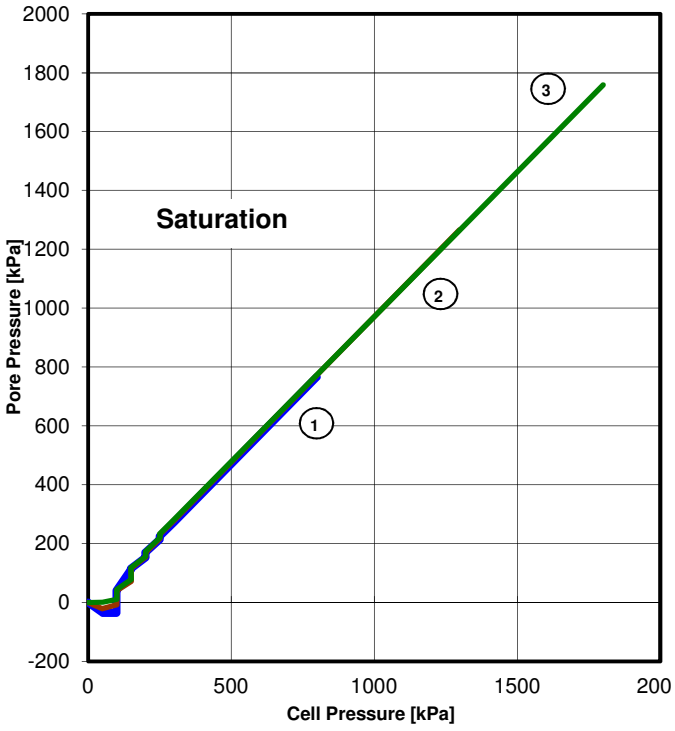
Cohesion c'	[kPa]	**301.6**
Angle of shearing resistance ϕ'	degrees	**13.2**

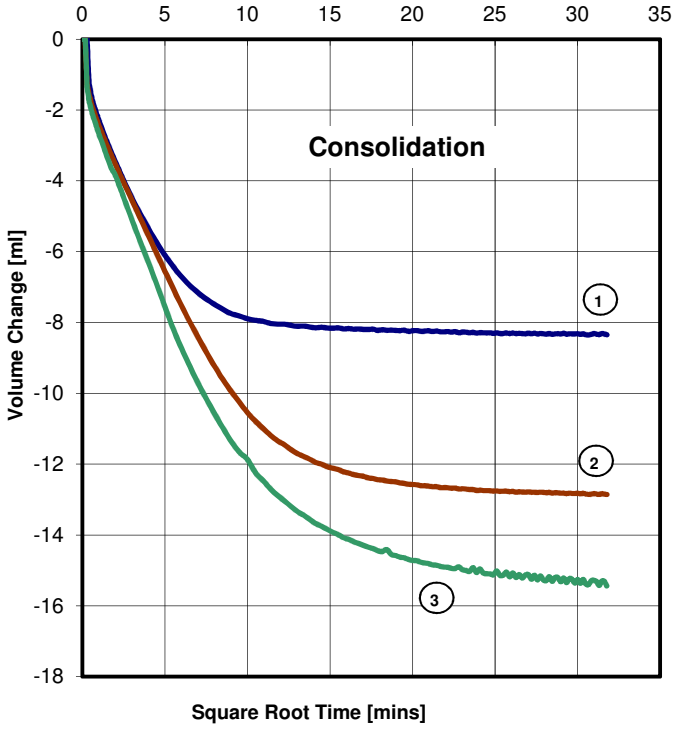
FINAL CONDITIONS

Moisture content	[%]	44.4	35.4	39.6
Bulk density	[Mg/m^3]	1.97	1.98	1.95

OTHER PARAMETERS

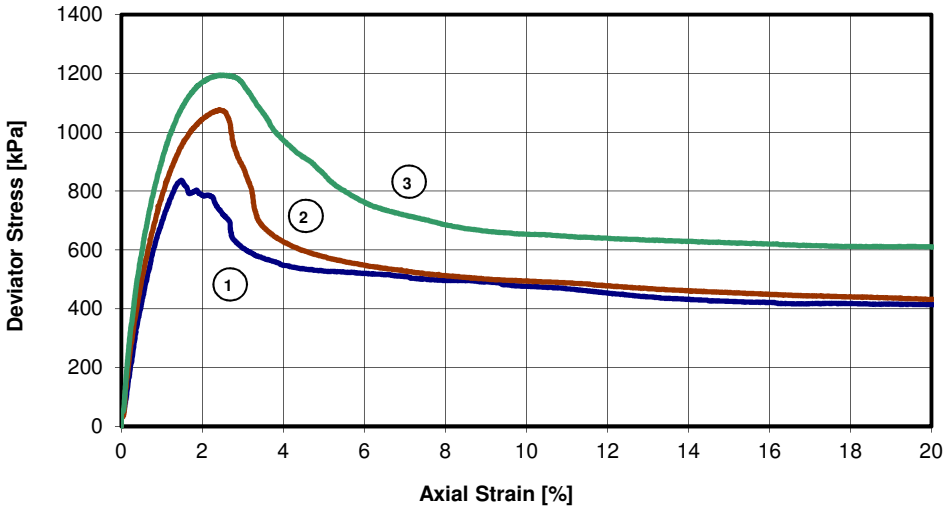
Secant modulus Eu 50	[MPa]	84.4	94.1	114.9
Strain at ε_{50}	[%]	0.49	0.57	0.52

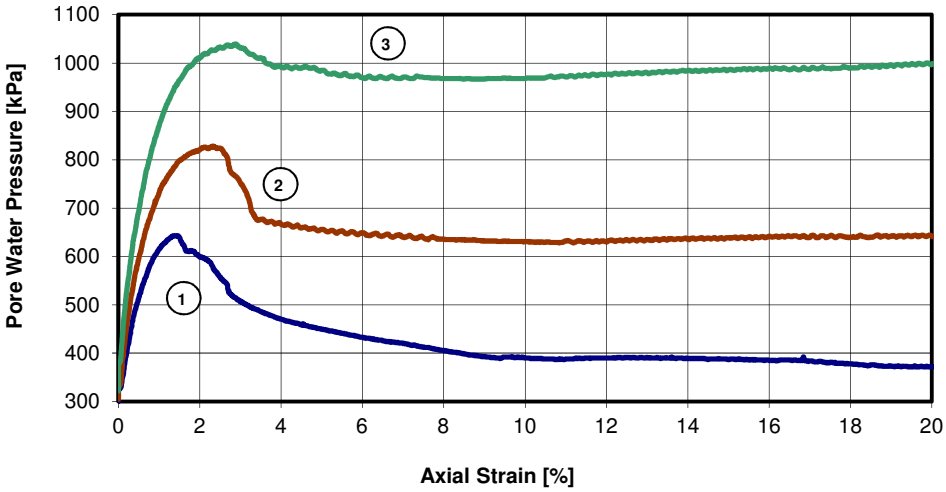


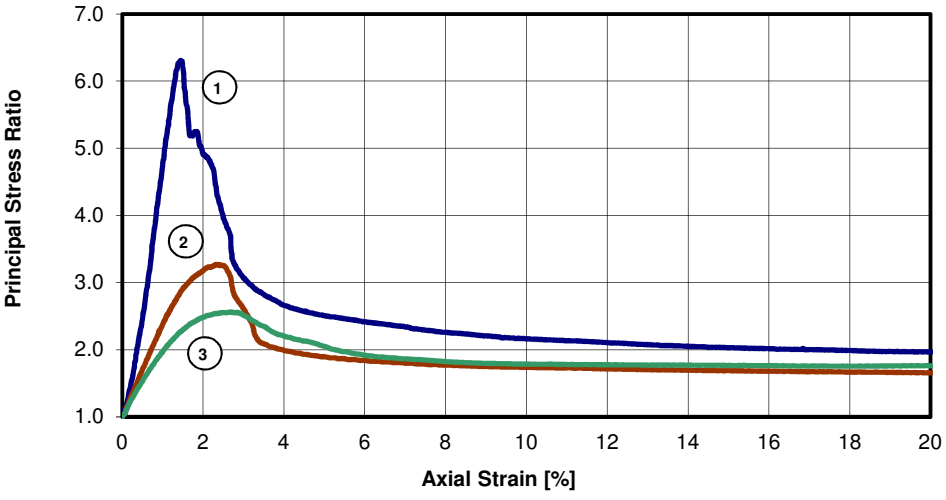


Date Printed	Figure Number	Sheet Number
18/12/2019		2/4

FUGRO	**ISOTROPICALLY CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST : MULTIPLE SPECIMENS with measurement of pore water pressure**	Project No.	G190016U
		Hole	OT_SPT_02
		Sample No.	2
Project Name	SZC 2019 Offshore Ground Investigation	Test type	CU

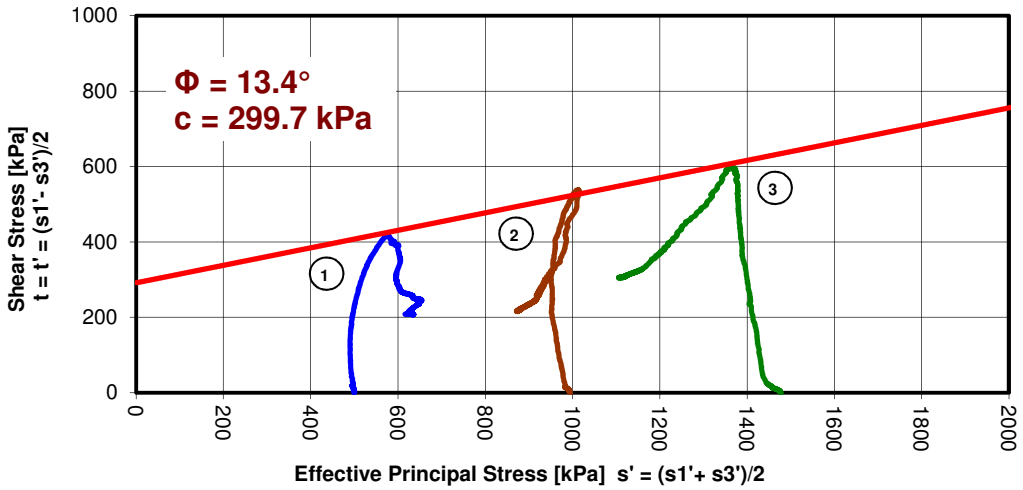


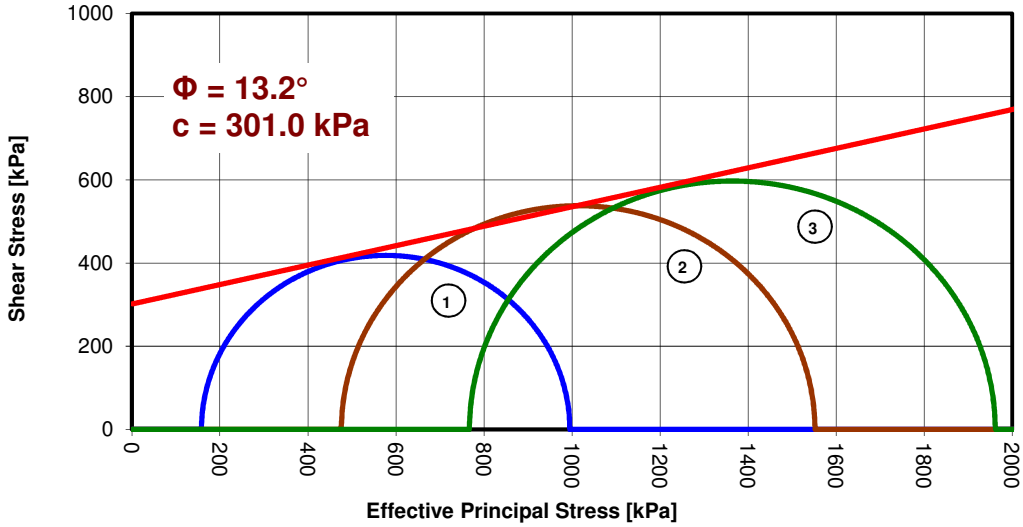




Date Printed	Figure Number	Sheet Number
18/12/2019		3/4

	ISOTROPICALLY CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST : MULTIPLE SPECIMENS with measurement of pore water pressure	Project No.	G190016U
		Hole	OT_SPT_02
		Sample No.	2
Project Name	SZC 2019 Offshore Ground Investigation	Test type	CU





1

2

3

Mode of failure:

1 Brittle
2 Brittle
3 Brittle

Date Printed	Figure Number	Sheet Number
18/12/2019		4/4

DETERMINATION OF THE SHEAR STRENGTH BY DIRECT SHEAR

Small Shearbox Apparatus : BS 1377 : Part 7 : 1990. Method 4.5.4

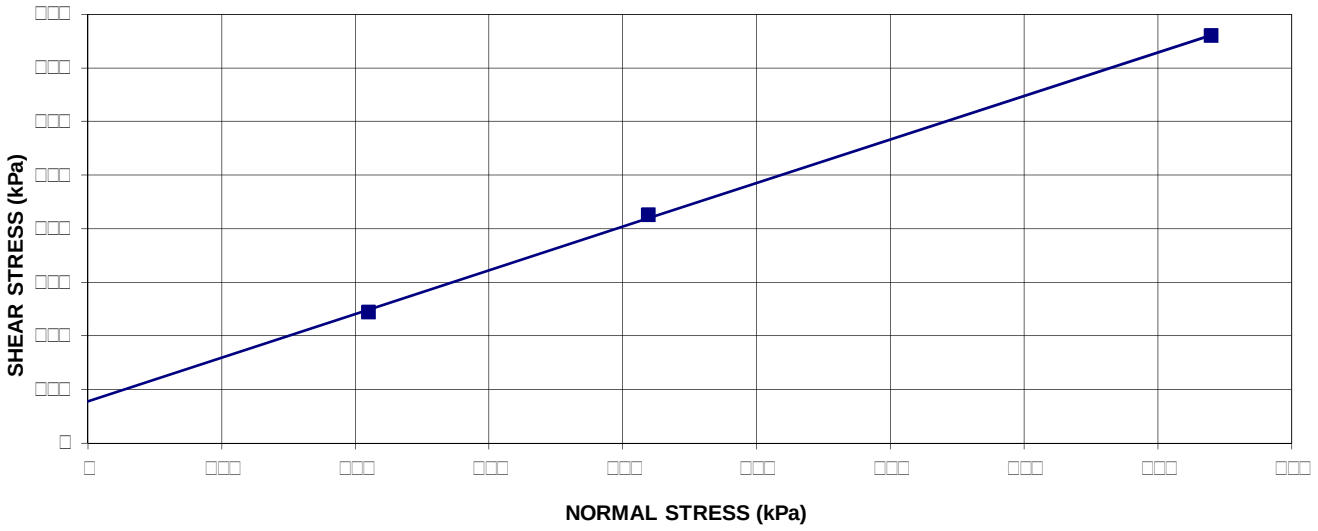
Specimen Details

Vertical

Brown gravelly very clayey SAND

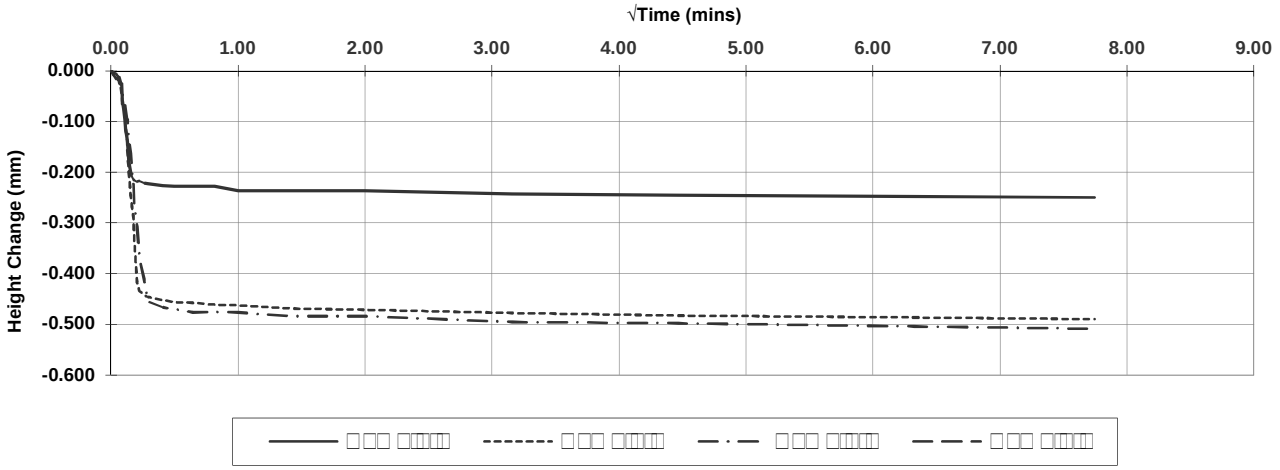
			Sample 1	Sample 2	Sample 3	Sample 4
Initial Properties	Sample Height	mm	26.6	24.6	25.6	
	Sample Width	mm	63.6	63.6	63.5	
	Sample Length	mm	63.5	63.6	63.6	
	Moisture Content	%	16	16	16	
	Bulk Density	Mg/m³	2.01	2.00	2.02	
	Dry Density	Mg/m³	1.74	1.73	1.74	
	Particle Density	Mg/m³	2.70 (Assumed)			
	Degree of Saturation	%	77.6%	76.2%	77.8%	
	Voids Ratio		0.5539	0.5639	0.5525	
	Test Conditions		Submerged			
Consolid-ation	Applied Normal Stress	kPa	210	419	840	
	Consolidated Height	mm	26.0	23.6	25.0	
	Consolidated Dry Density	Mg/m ³	1.78	1.80	1.79	
Shearing	Rate of Displacement	mm/mir	0.055	0.055	0.055	
	Maximum Shear Stress (MS)	kPa	244	425	759	
	Horizontal Displacement at MS	mm	2.9	3.6	5.2	

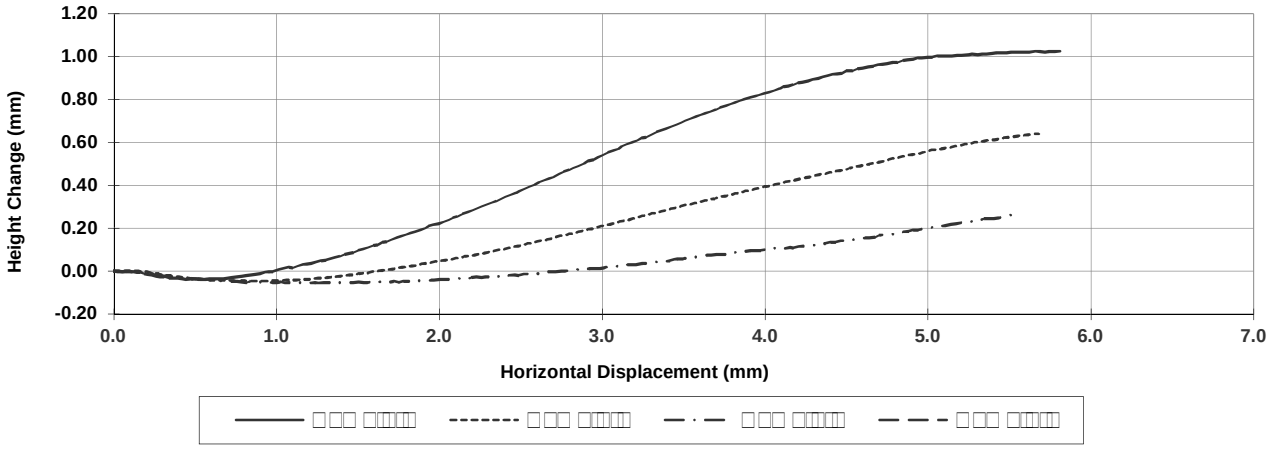
Peak Strength	Effective cohesion (c')	78 kPa	Eff. angle of friction (φ')	39.2

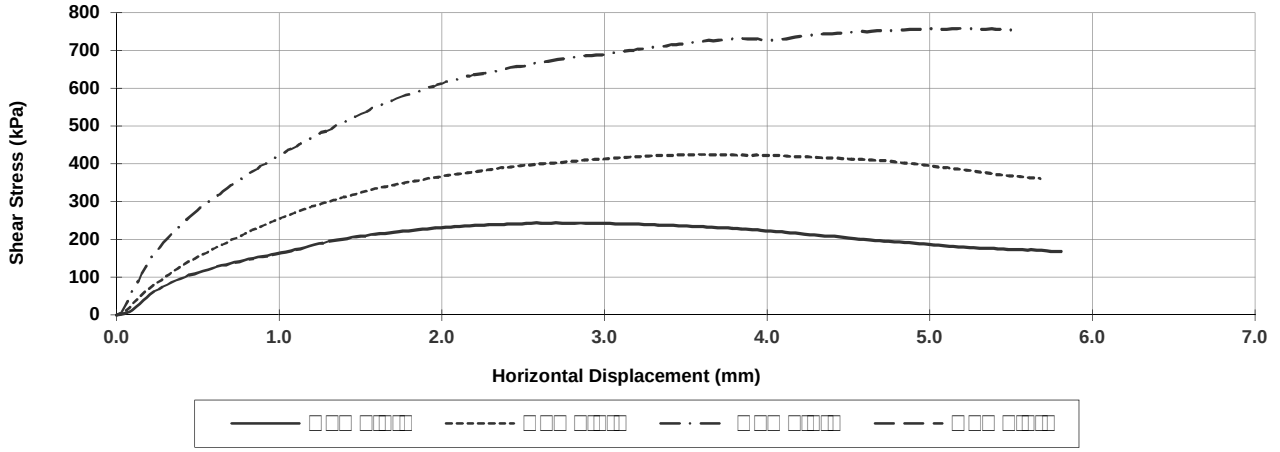


DETERMINATION OF THE SHEAR STRENGTH BY DIRECT SHEAR

Small Shearbox Apparatus : BS 1377 : Part 7 : 1990. Method 4.5.4







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DETERMINATION OF SHEAR STRENGTH BY DIRECT SHEAR

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Specimen Details

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			Sample 1	Sample 2	Sample 3	Sample 4
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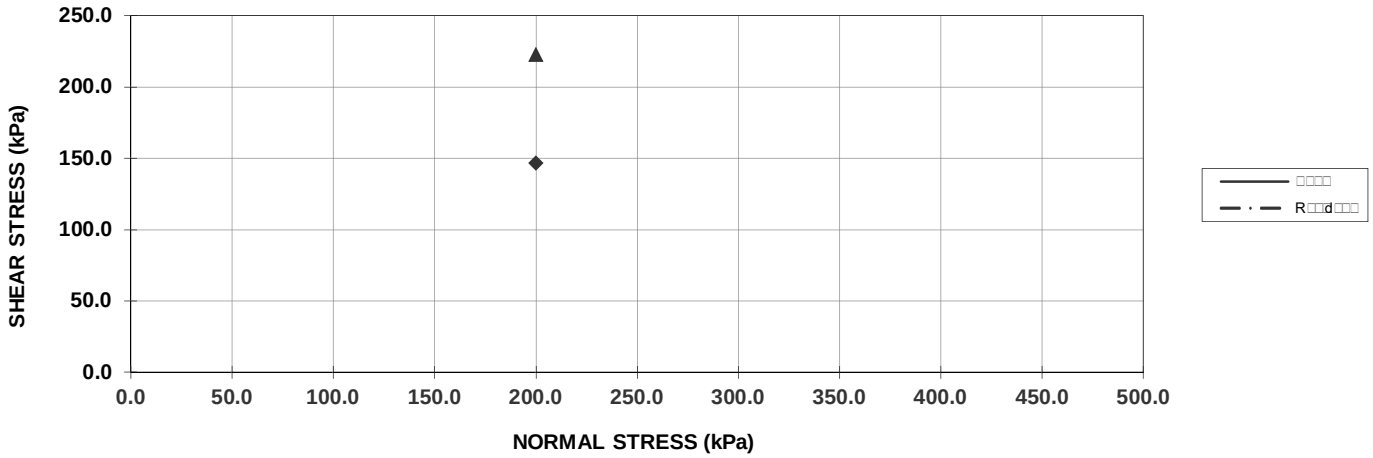
Peak Strength	□□□□□□□□□□□□□□□□□□□□□□□□		□□□	Eff. angle of friction (φ')		□
Residual Strength	□□□□□□□□□□□□□□□□□□□□□□□□		□□□	Eff. angle of friction (φ')		□



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DETERMINATION OF SHEAR STRENGTH BY DIRECT SHEAR

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Sample 1

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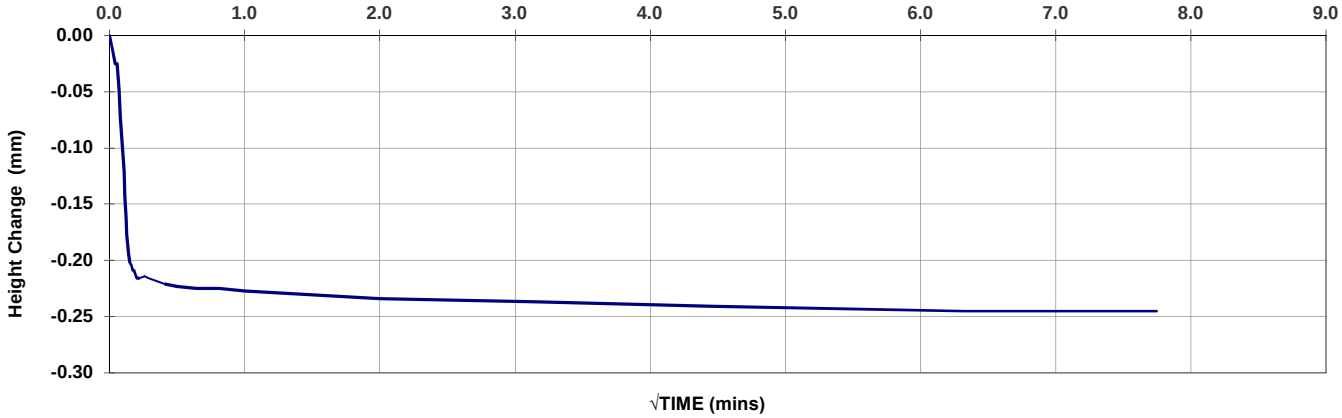

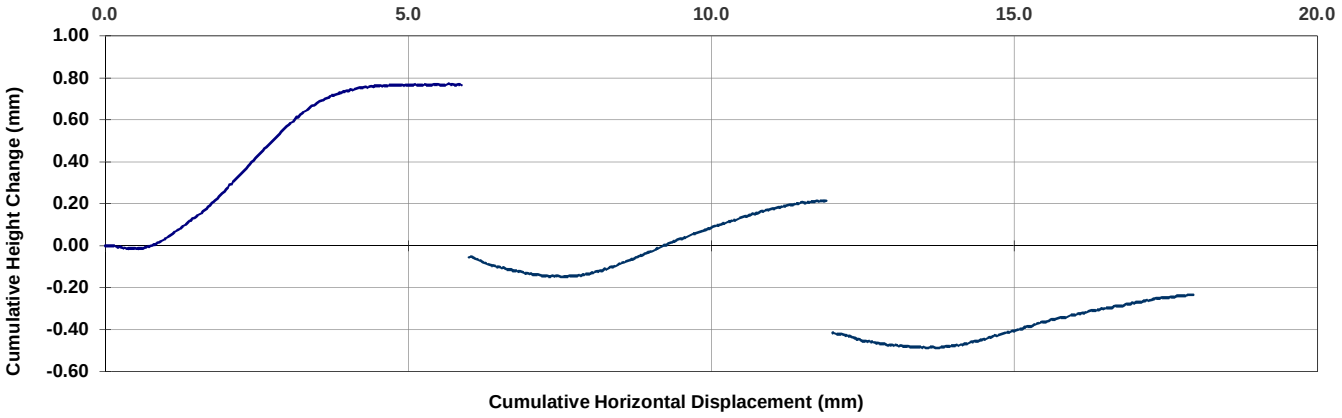

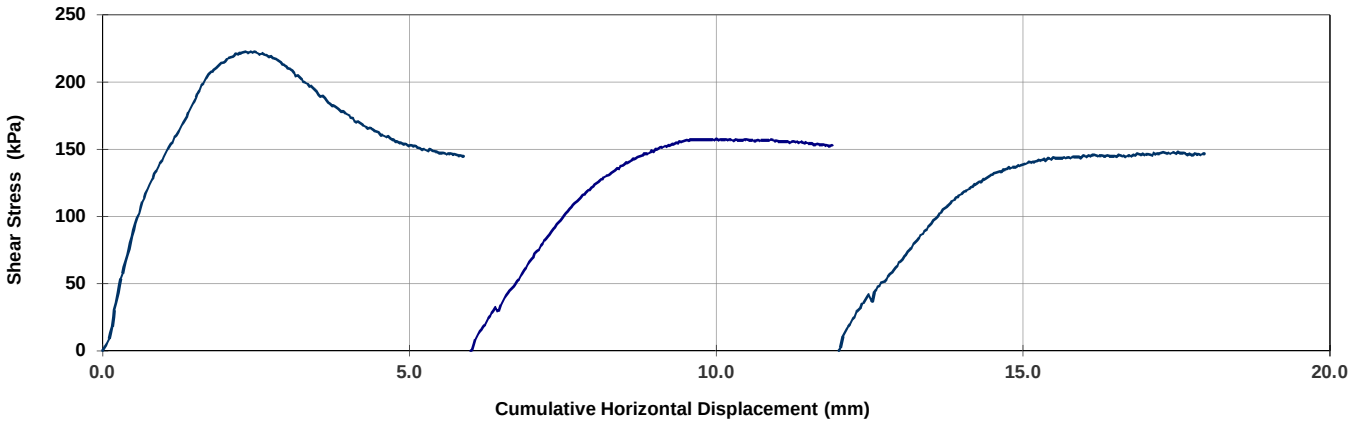

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DETERMINATION OF SHEAR STRENGTH BY DIRECT SHEAR

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Specimen Details

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			Sample 1	Sample 2	Sample 3	Sample 4
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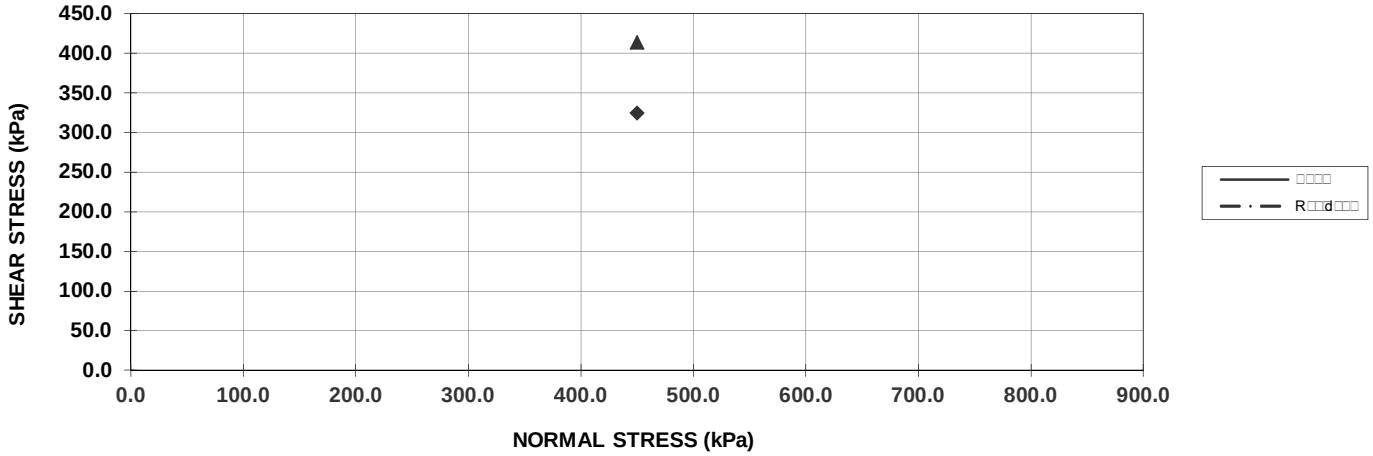
Residual Strength	□□□□□□□□□□□□□□□□□□□□		□□	Eff. angle of friction (φ')		□



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DETERMINATION OF SHEAR STRENGTH BY DIRECT SHEAR

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Sample 1

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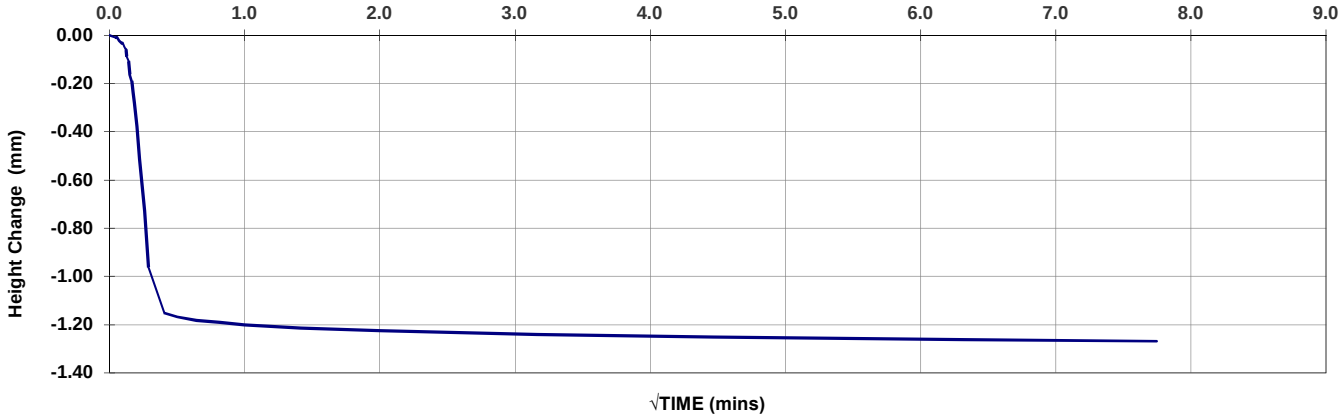

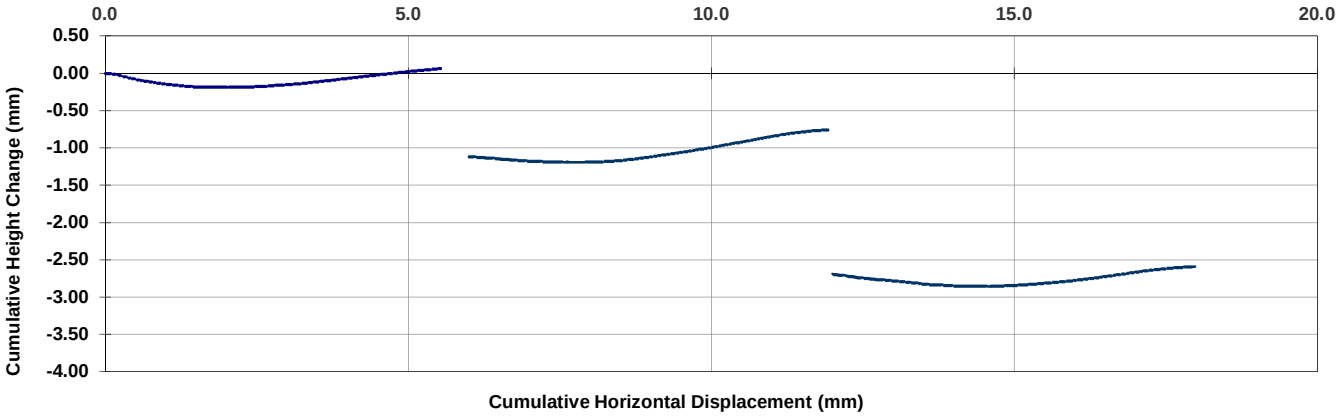

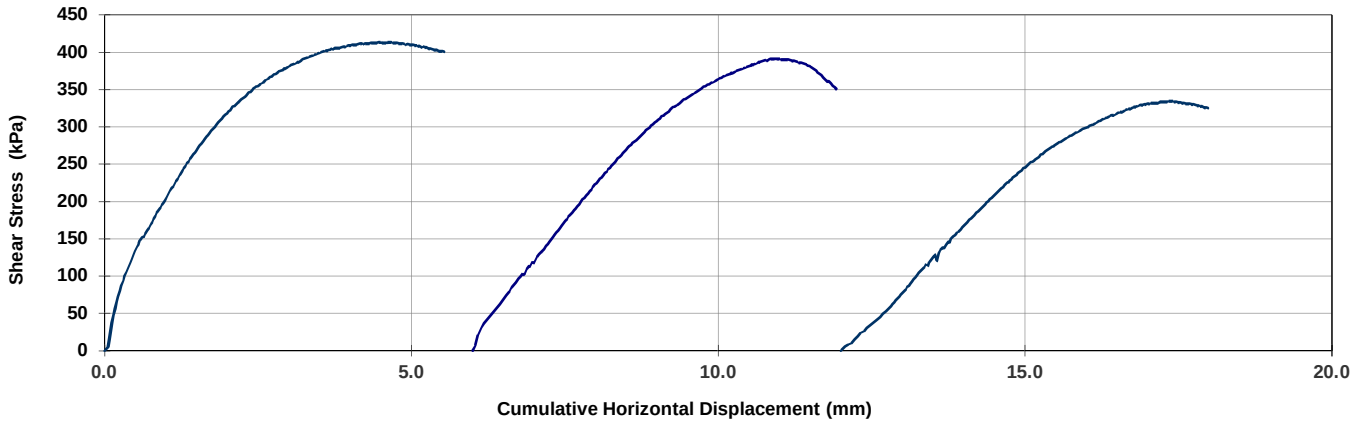

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DETERMINATION OF SHEAR STRENGTH BY DIRECT SHEAR

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Specimen Details

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			Sample 1	Sample 2	Sample 3	Sample 4
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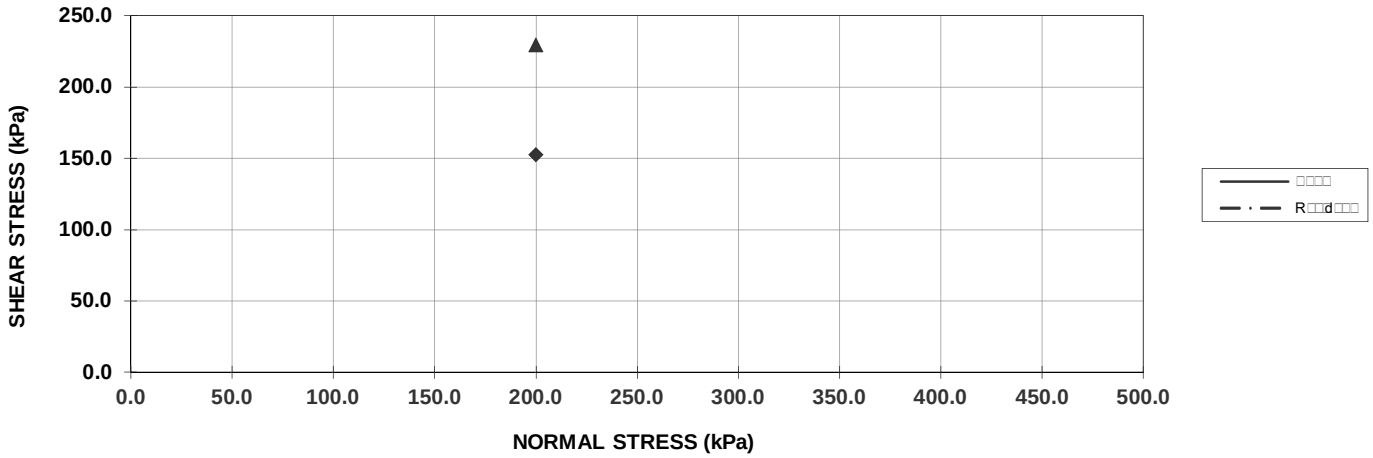
Peak Strength	□□□□□□□□□□□□□□□□□□□□□□□□□□□□		□□□	Eff. angle of friction (φ')		□
Residual Strength	□□□□□□□□□□□□□□□□□□□□□□□□□□□□		□□□	Eff. angle of friction (φ')		□



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DETERMINATION OF SHEAR STRENGTH BY DIRECT SHEAR

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Sample 1

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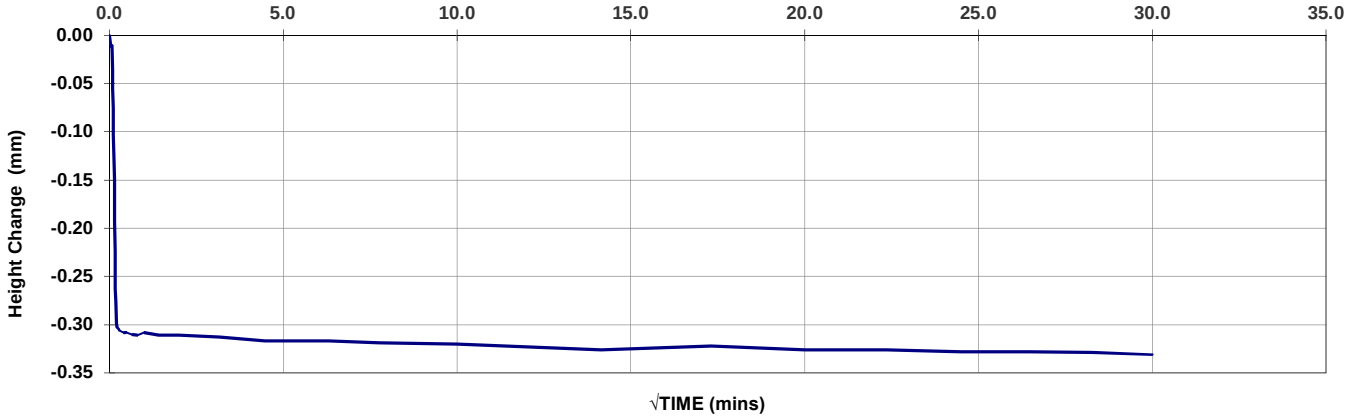

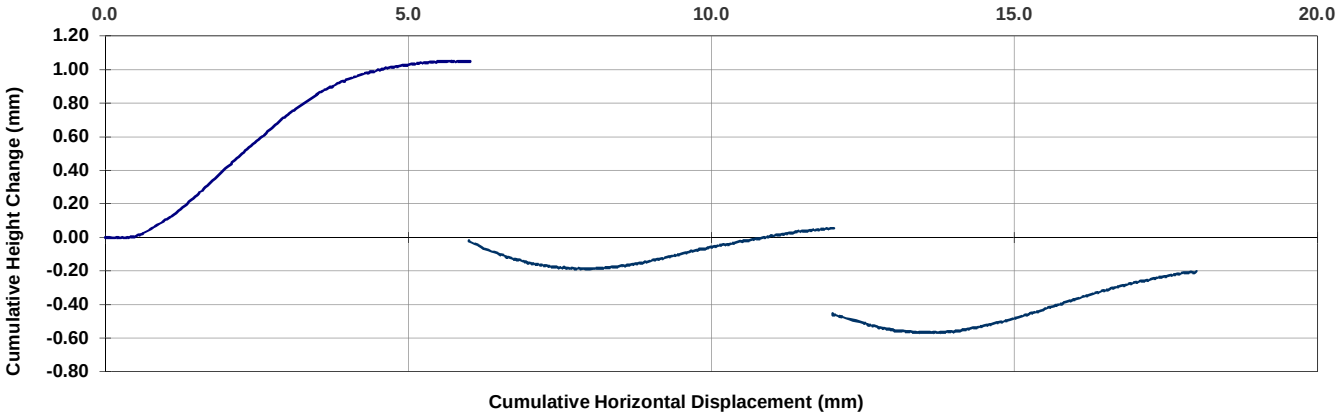

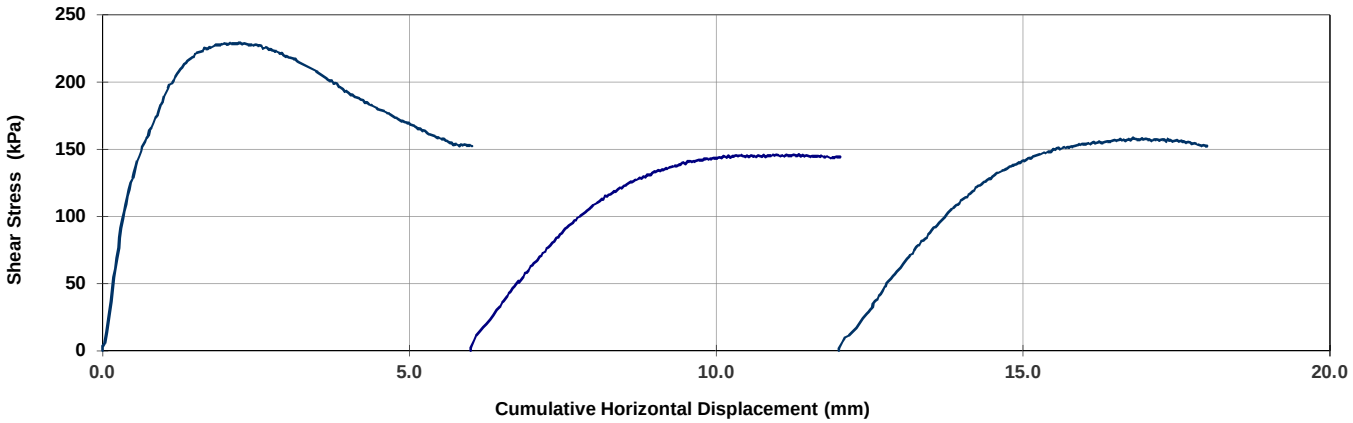

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DETERMINATION OF THE SHEAR STRENGTH BY DIRECT SHEAR

Small Shearbox Apparatus : BS 1377 : Part 7 : 1990. Method 4.5.4

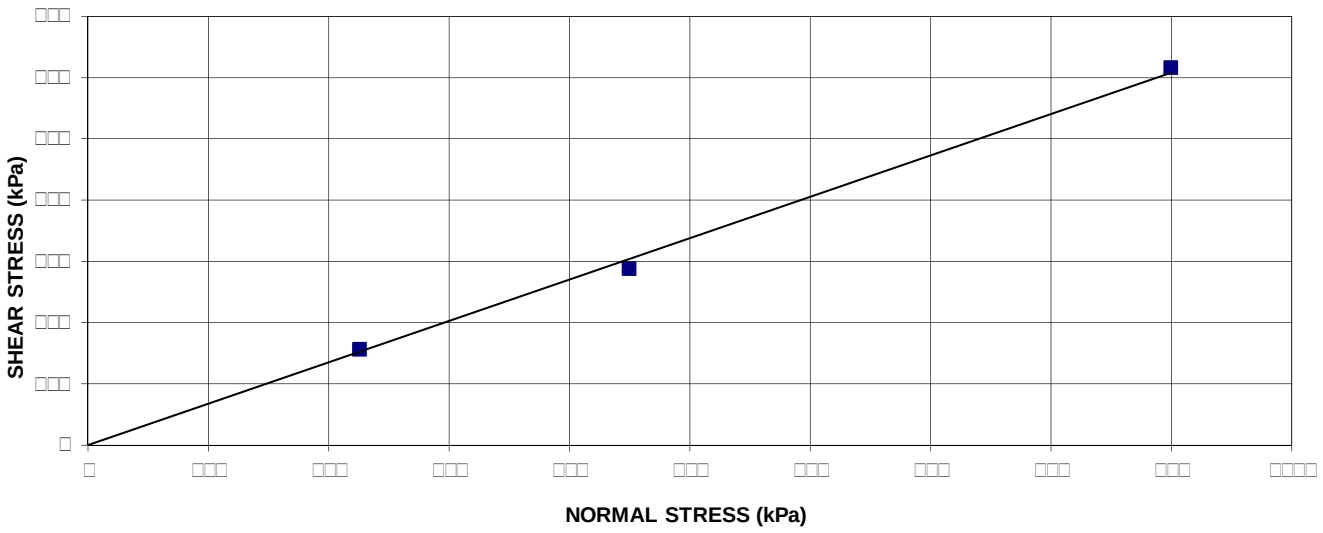
Specimen Details

Not Applicable

Brown slightly gravelly very clayey SAND

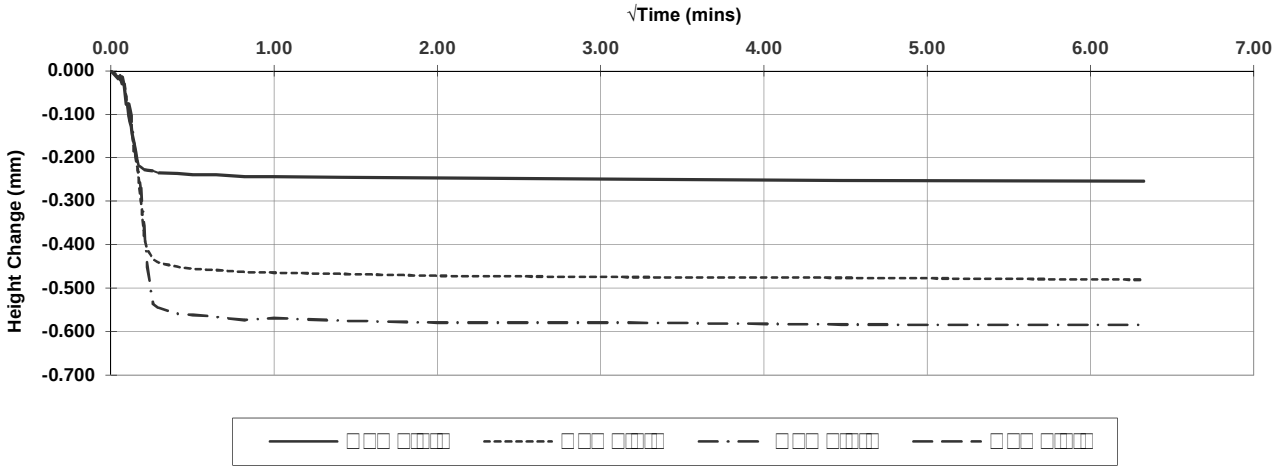
			Sample 1	Sample 2	Sample 3	Sample 4
Initial Properties	Sample Height	mm	27.3	25.5	25.6	
	Sample Width	mm	63.6	63.6	63.5	
	Sample Length	mm	63.5	63.6	63.6	
	Moisture Content	%	16	16	16	
	Bulk Density	Mg/m³	2.16	2.16	2.17	
	Dry Density	Mg/m³	1.87	1.87	1.87	
	Particle Density	Mg/m³	2.70 (Assumed)			
	Degree of Saturation	%	94.9%	94.4%	95.2%	
	Voids Ratio		0.4425	0.4453	0.4411	
	Test Conditions		Submerged			
Consolid-ation	Applied Normal Stress	kPa	226	450	900	
	Consolidated Height	mm	26.6	24.7	24.6	
	Consolidated Dry Density	Mg/m ³	1.92	1.93	1.95	
Shearing	Rate of Displacement	mm/min	0.055	0.055	0.055	
	Maximum Shear Stress (MS)	kPa	156	287	616	
	Horizontal Displacement at MS	mm	2.9	3.3	3.8	

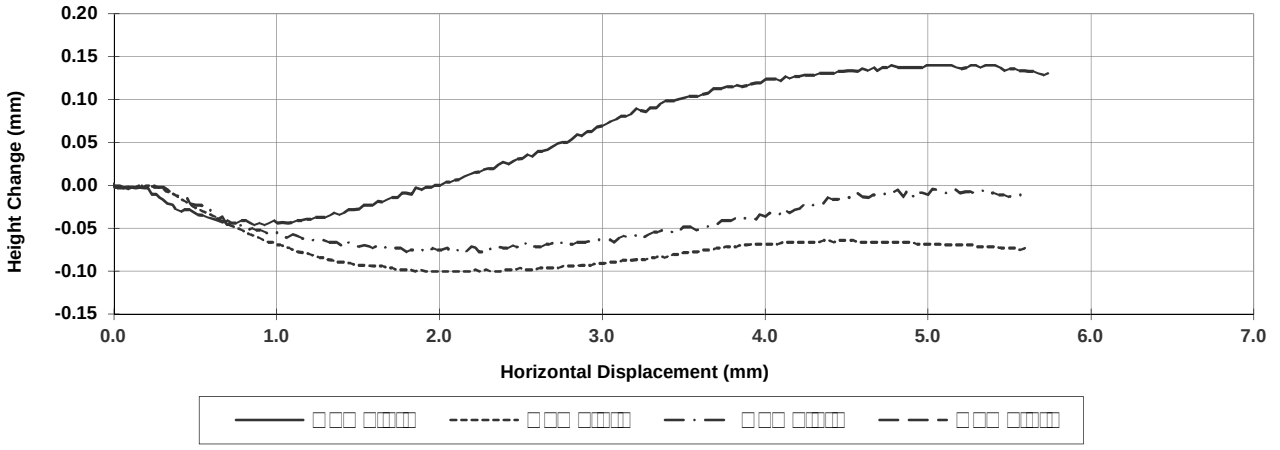
Peak Strength	Effective cohesion (c')	0 kPa	Eff. angle of friction (φ')	34.1

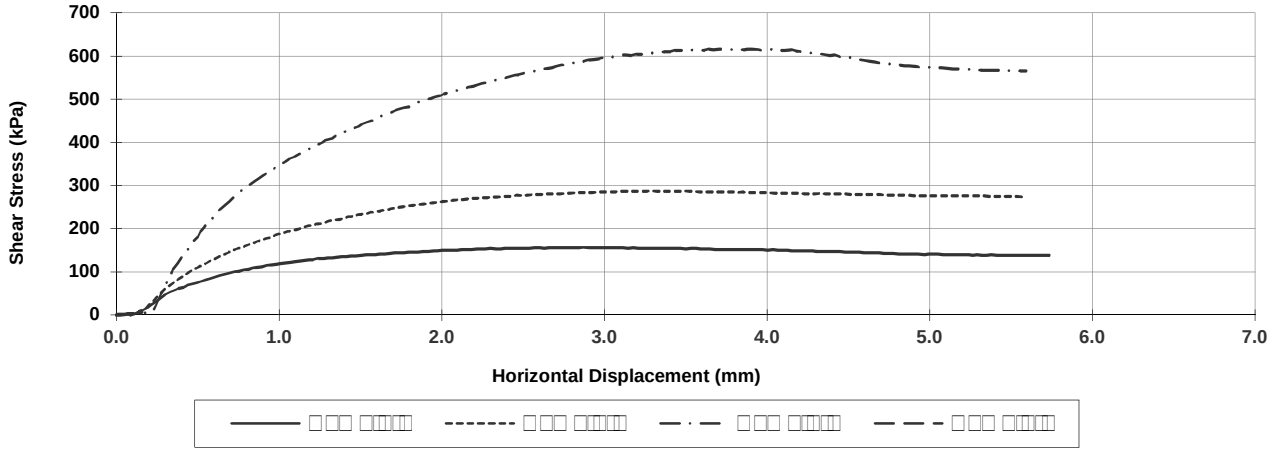


DETERMINATION OF THE SHEAR STRENGTH BY DIRECT SHEAR

Small Shearbox Apparatus : BS 1377 : Part 7 : 1990. Method 4.5.4







DETERMINATION OF SHEAR STRENGTH BY DIRECT SHEAR

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Specimen Details

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			Sample 1	Sample 2	Sample 3	Sample 4
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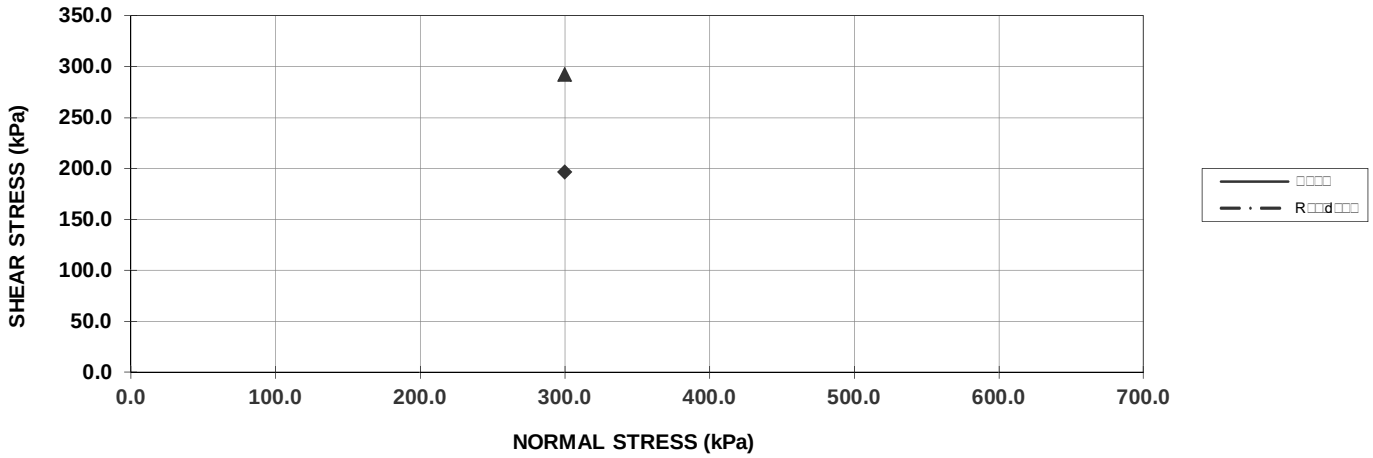
Residual Strength	□□□□□□□□□□□□□□□□□□□□□□□□□□□□		□□□	Eff. angle of friction (φ')		□



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DETERMINATION OF SHEAR STRENGTH BY DIRECT SHEAR

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Sample 1

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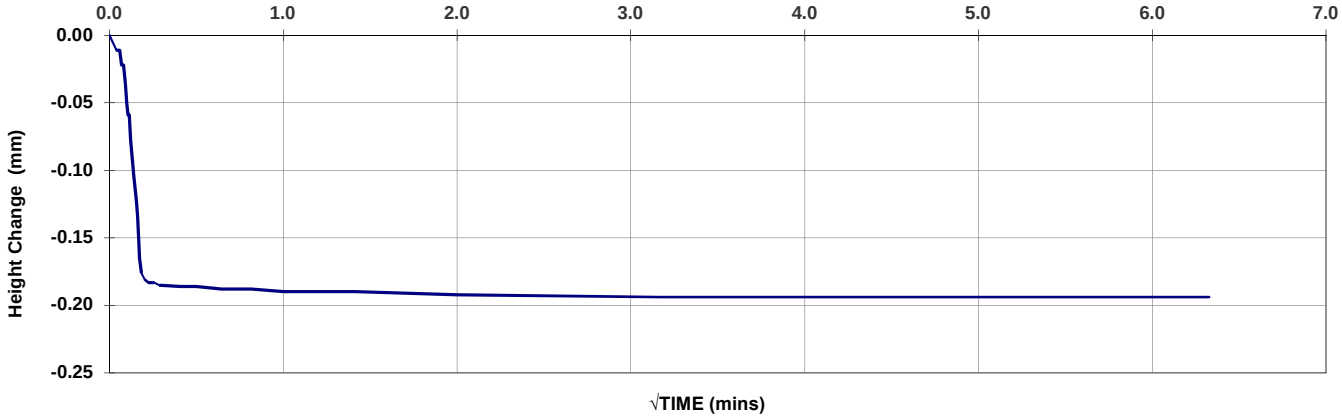

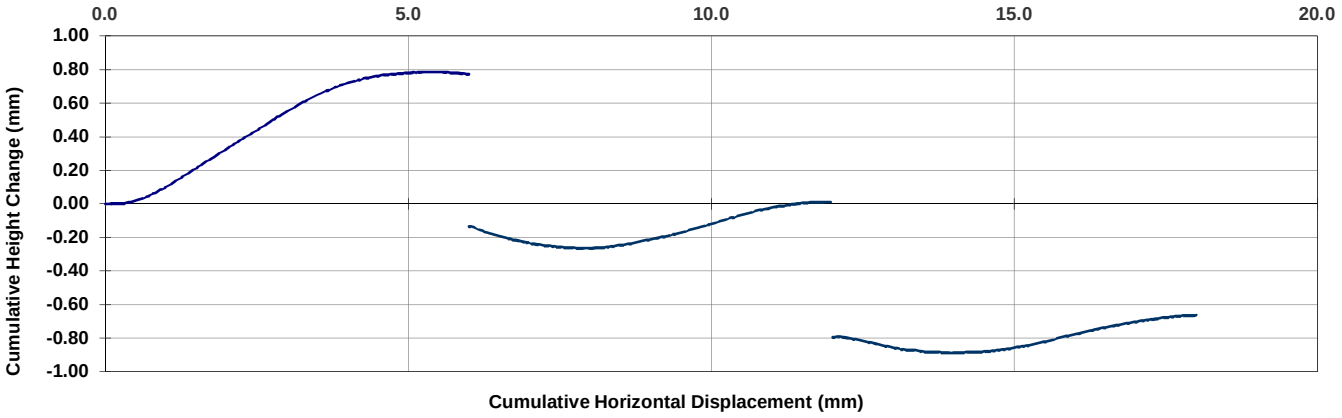

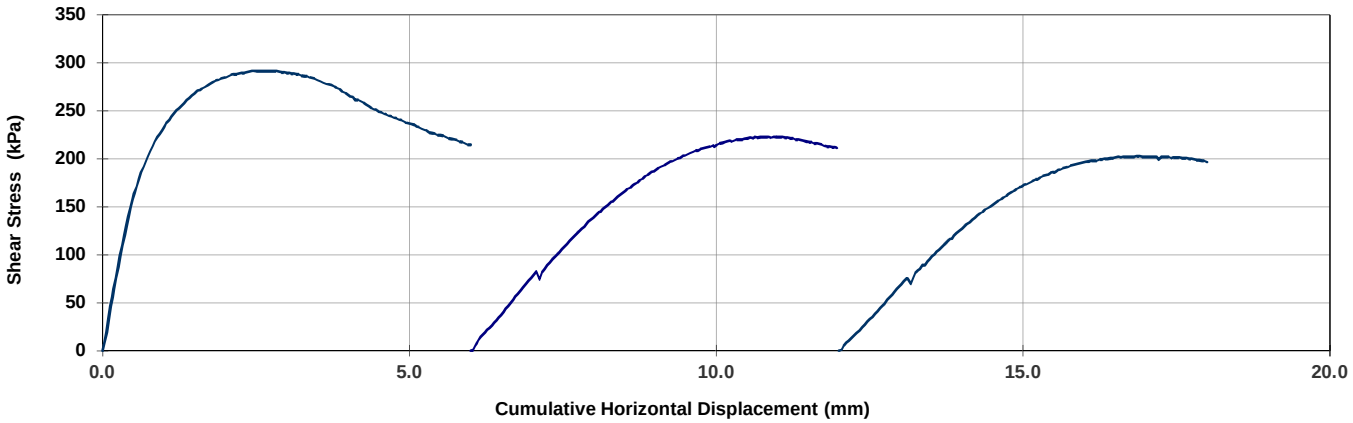

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DETERMINATION OF THE SHEAR STRENGTH BY DIRECT SHEAR

Small Shearbox Apparatus : BS 1377 : Part 7 : 1990. Method 4.5.4

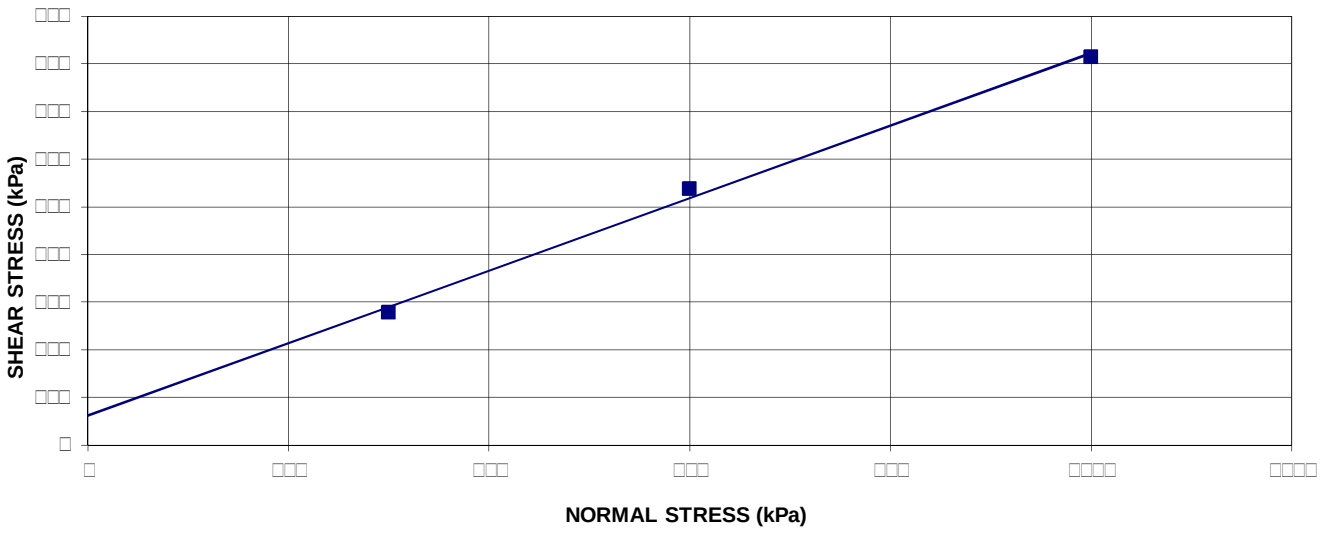
Specimen Details

Not Applicable

Brown gravelly SAND

			Sample 1	Sample 2	Sample 3	Sample 4
Initial Properties	Sample Height	mm	24.9	25.7	25.7	
	Sample Width	mm	63.6	63.6	63.5	
	Sample Length	mm	63.5	63.6	63.6	
	Moisture Content	%	10	10	10	
	Bulk Density	Mg/m³	1.94	1.95	1.95	
	Dry Density	Mg/m³	1.76	1.76	1.76	
	Particle Density	Mg/m³	2.70 (Assumed)			
	Degree of Saturation	%	51.8%	52.5%	52.6%	
	Voids Ratio		0.5380	0.5306	0.5301	
	Test Conditions		Submerged			
Consolid-ation	Applied Normal Stress	kPa	300	600	1000	
	Consolidated Height	mm	24.1	25.2	25.2	
	Consolidated Dry Density	Mg/m ³	1.81	1.79	1.80	
Shearing	Rate of Displacement	mm/mir	0.123	0.123	0.123	
	Maximum Shear Stress (MS)	kPa	279	538	815	
	Horizontal Displacement at MS	mm	2.2	2.8	4.0	

Peak Strength	Effective cohesion (c')	62 kPa	Eff. angle of friction (φ')	37.3



DETERMINATION OF THE SHEAR STRENGTH BY DIRECT SHEAR

Small Shearbox Apparatus : BS 1377 : Part 7 : 1990. Method 4.5.4

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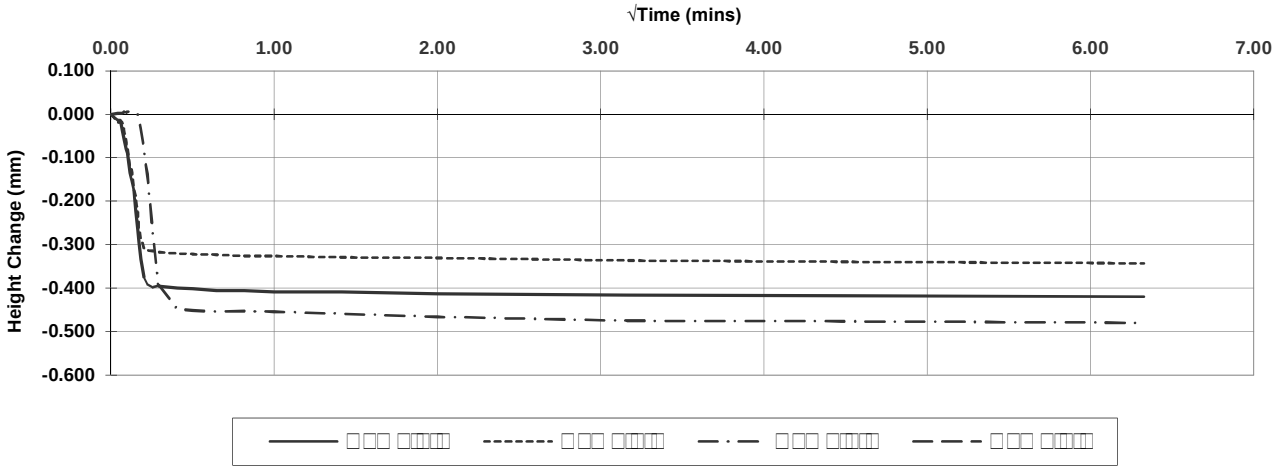

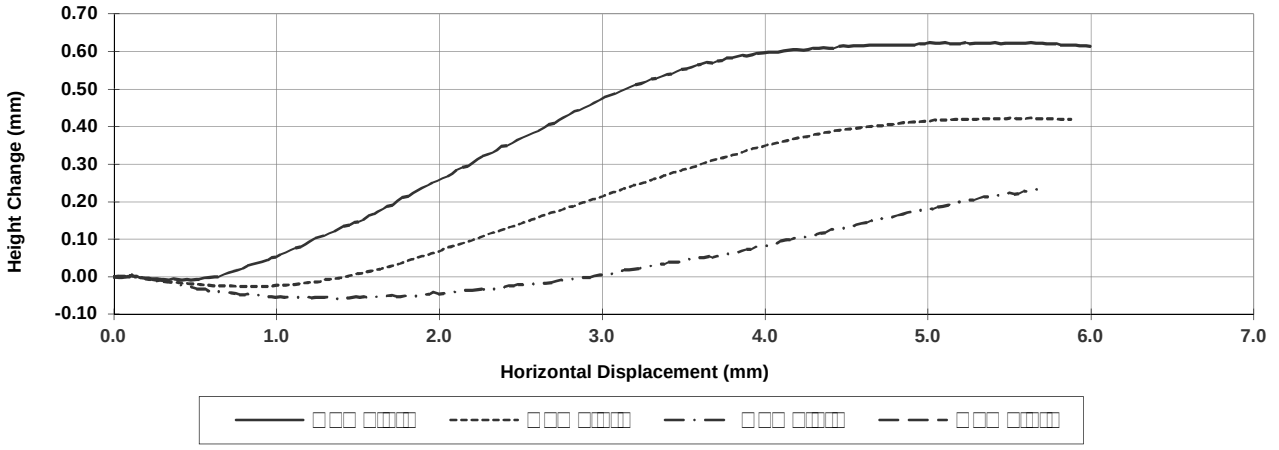

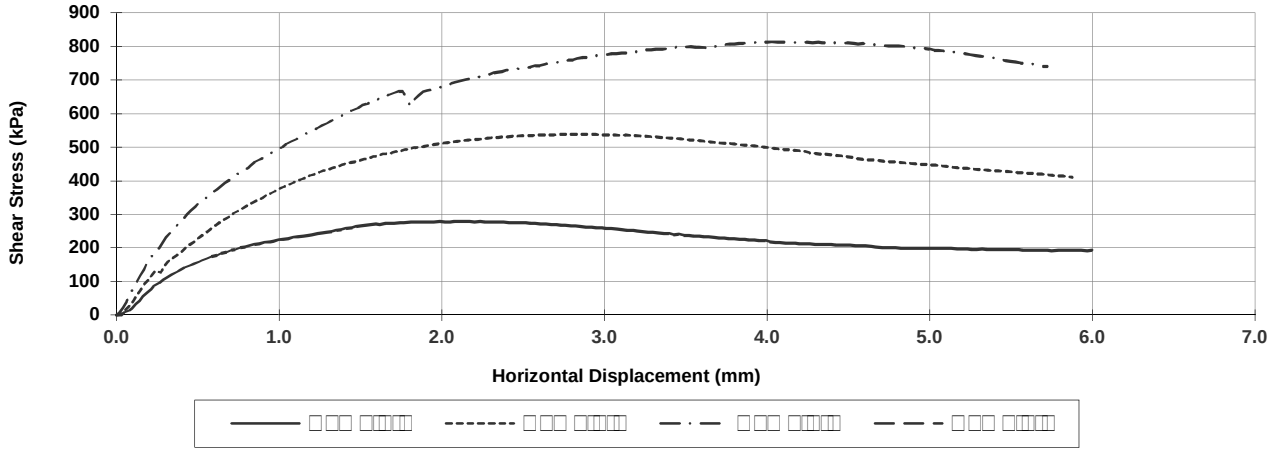

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DETERMINATION OF SHEAR STRENGTH BY DIRECT SHEAR

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Specimen Details

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			Sample 1	Sample 2	Sample 3	Sample 4
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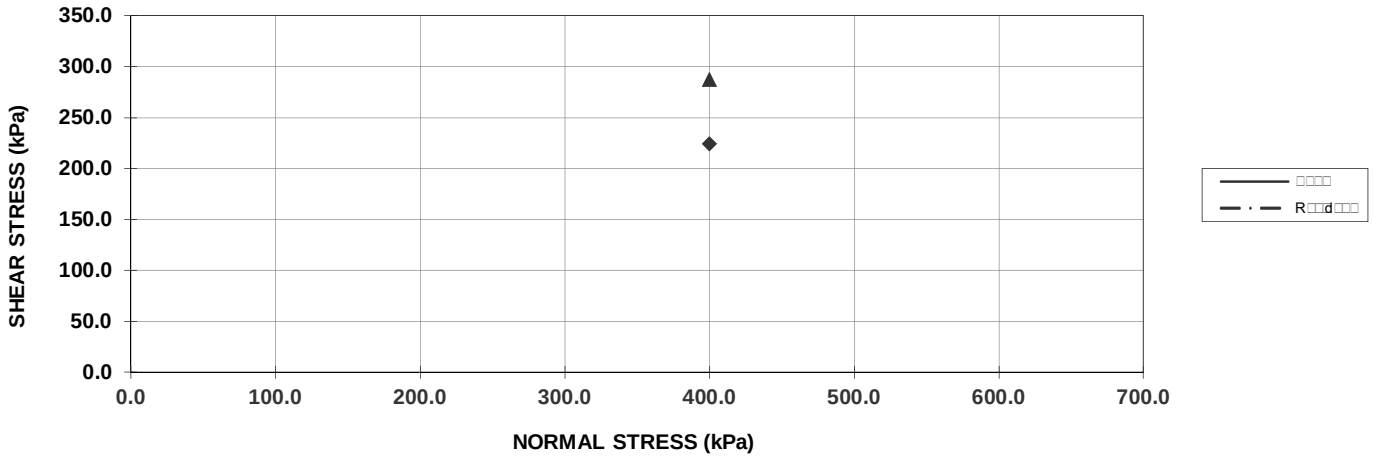

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DETERMINATION OF SHEAR STRENGTH BY DIRECT SHEAR

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Sample 1

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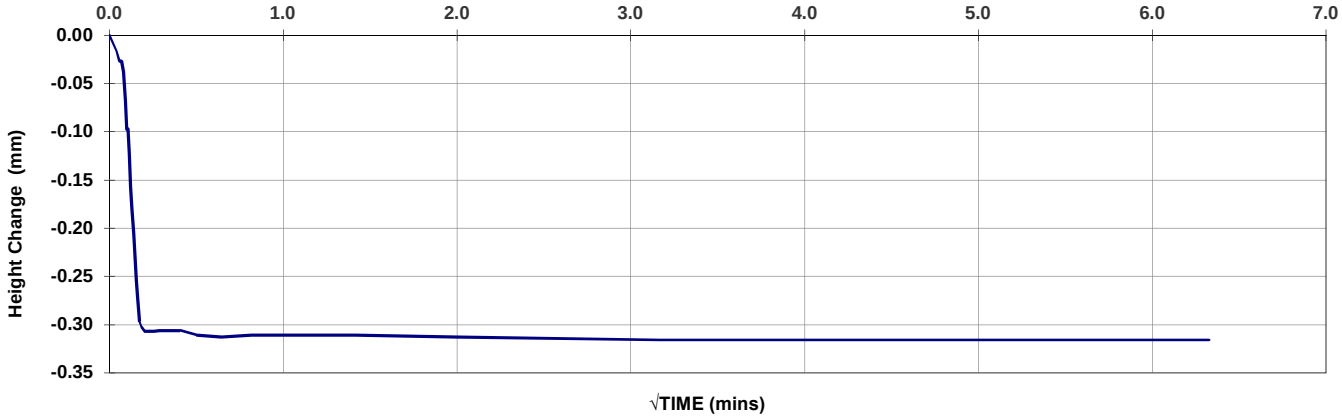

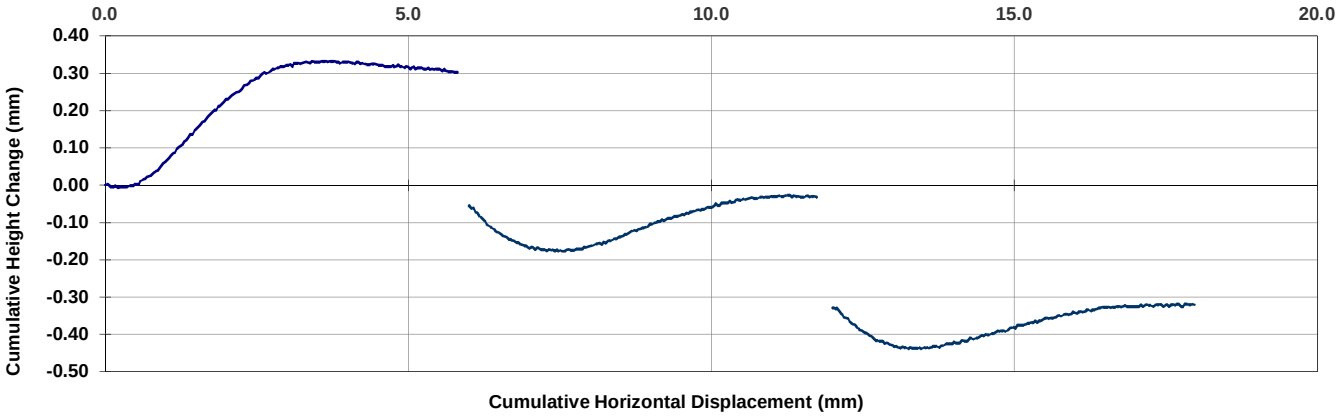

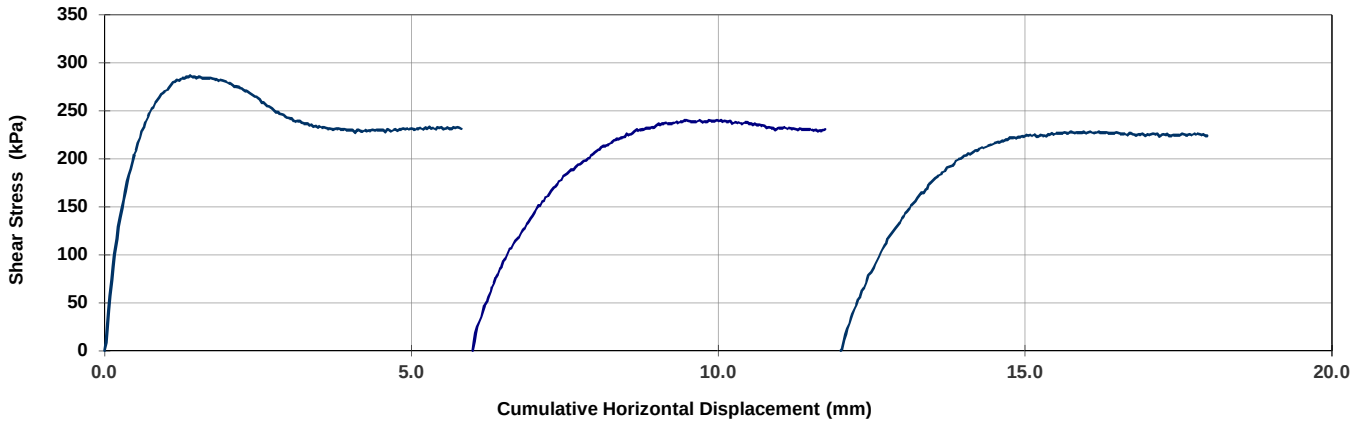

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DETERMINATION OF SHEAR STRENGTH BY DIRECT SHEAR

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Specimen Details

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			Sample 1	Sample 2	Sample 3	Sample 4
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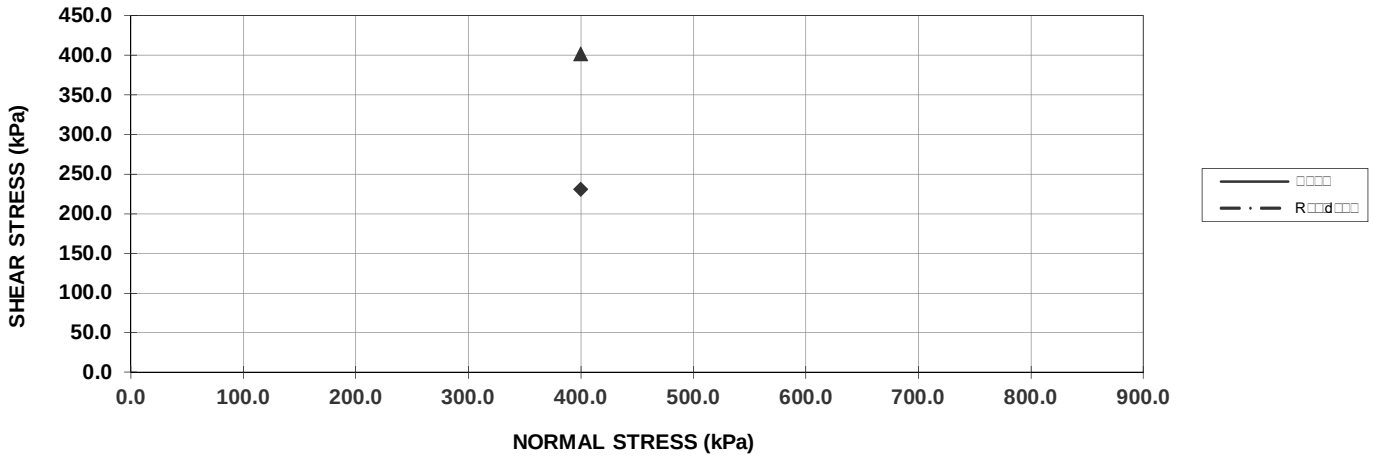

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DETERMINATION OF SHEAR STRENGTH BY DIRECT SHEAR

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Sample 1

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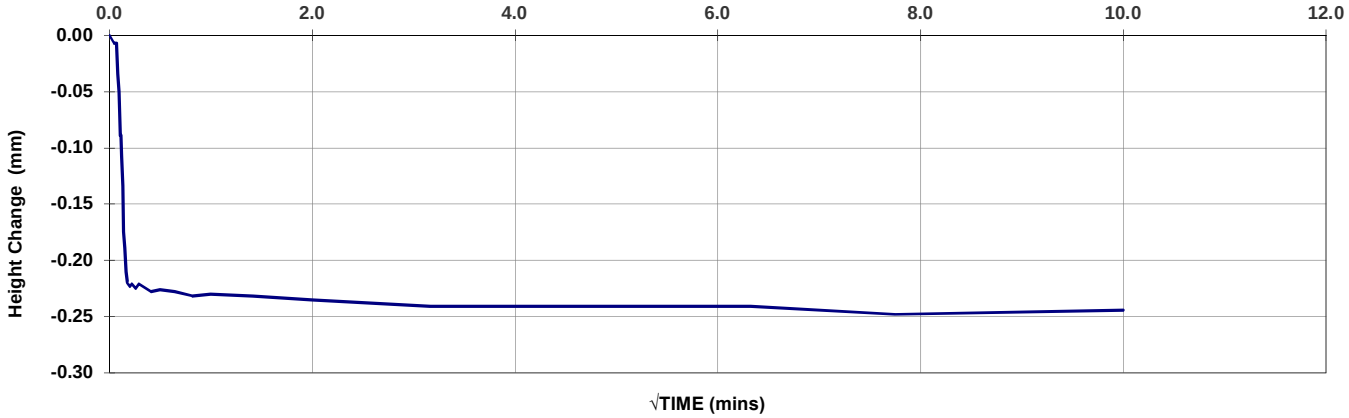

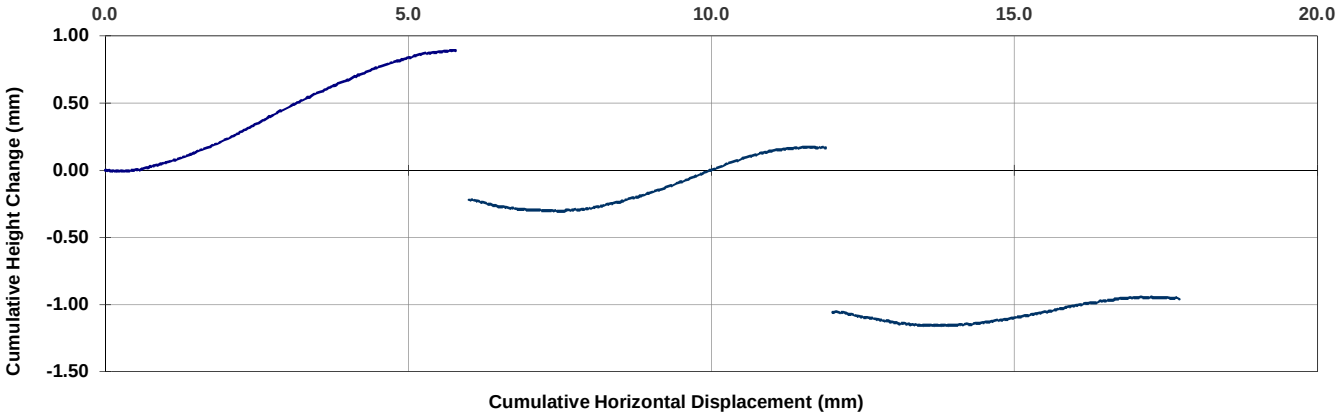

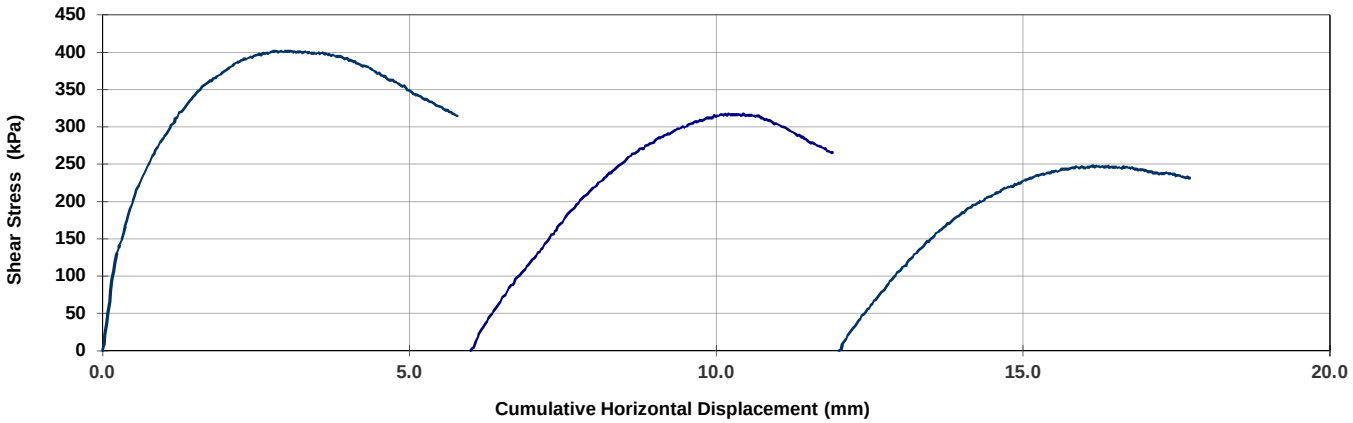

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DETERMINATION OF SHEAR STRENGTH BY DIRECT SHEAR

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			Sample 1	Sample 2	Sample 3	Sample 4
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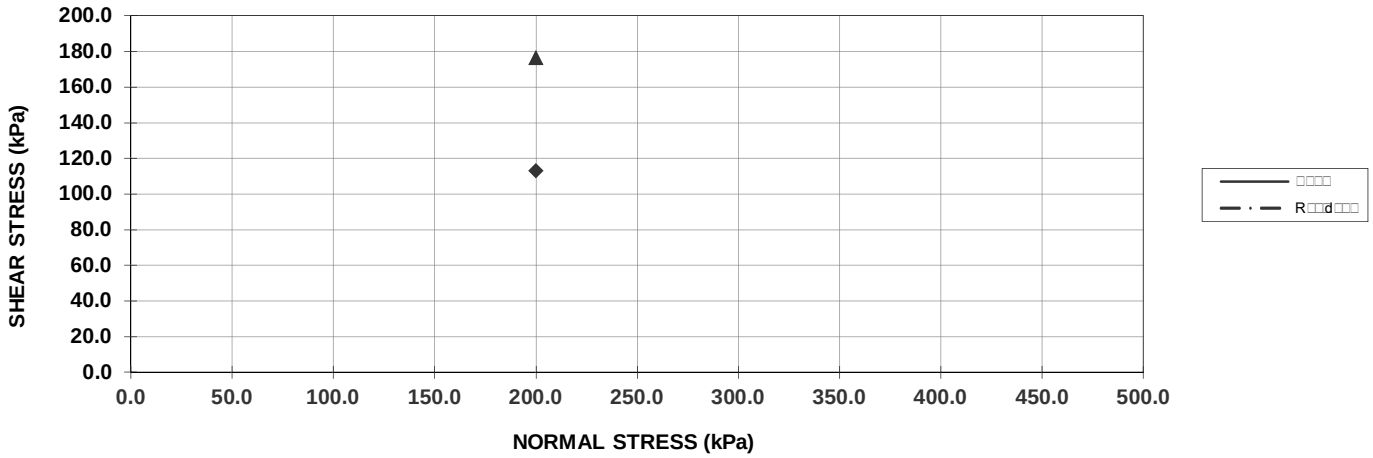
Peak Strength	□□□□□□□□□□□□□□□□□□□□		□□ □	Eff. angle of friction (φ')		□
Residual Strength	□□□□□□□□□□□□□□□□□□□□		□□ □	Eff. angle of friction (φ')		□



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DETERMINATION OF SHEAR STRENGTH BY DIRECT SHEAR

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Sample 1

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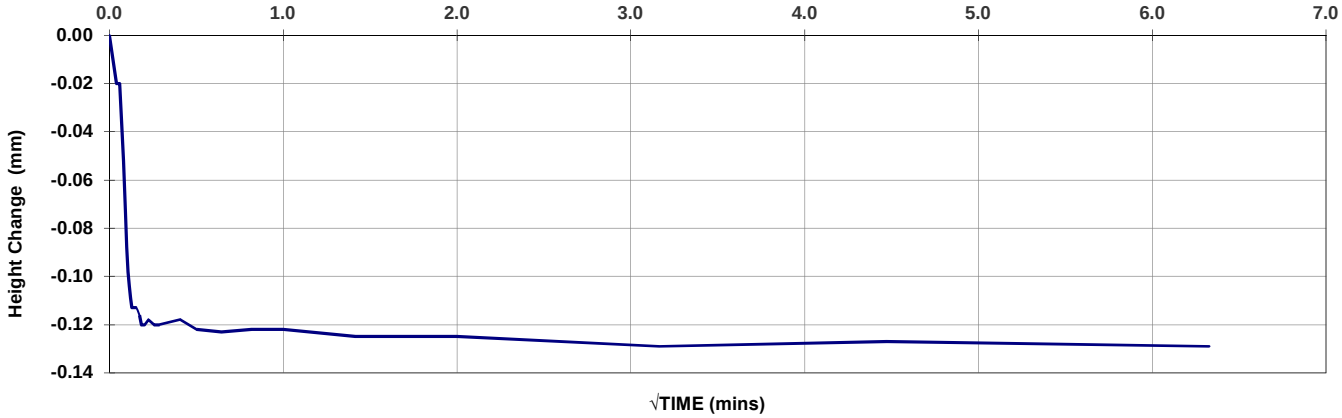

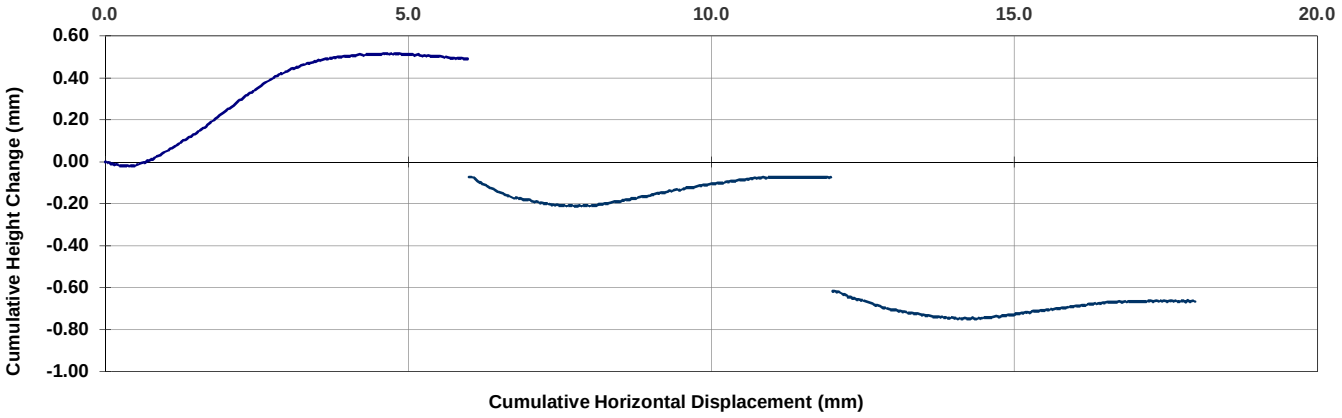

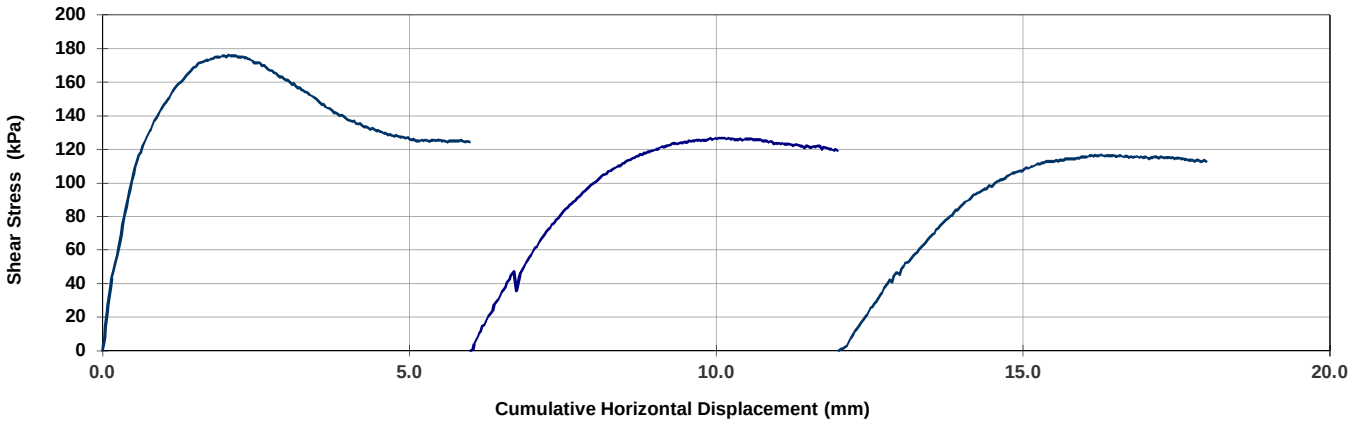

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Intact Dry Density of Irregular Chalk Lumps Summary

Intact Dry Density of Irregular Chalk Lumps Summary

Intact Dry Density of Irregular Chalk Lumps Summary

Saturation Moisture Content - Summary of Results

Saturation Moisture Content - Summary of Results

Saturation Moisture Content - Summary of Results

Point Load Strength Index Tests
Summary of Results

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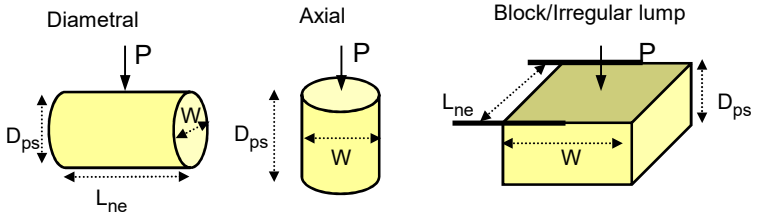
Point Load Strength Index Tests
Summary of Results

Project Name	Project No.
SZC 2019 Offshore Ground Investigation	G190016U

Hole	Sample			Specimen		Rock Type	Test Type		Dimensions			Date of Test	Force P	Equivalent diameter, De	Point Load Strength Index		Remarks
	Depth m	Ref.	Type	Ref.	Depth m		Type (D, A, I, B)	Direction (L, P or U)	Lne mm	W mm	Dps mm		kN	mm	Is MPa	Is(50) MPa	
IT1_SB_04	6.07	1	D	1	6.07	Cemented SAND	I	U	65.3	5.5	25.0	07/10/19	0.56	29.1	0.5	0.4	Invalid failure. Treat results with caution.
IT1_SB_04	12.20	6	D	1	12.24	Cemented SAND	I	U	69.0	59.2	25.0	07/10/19	0.44	25.7	0.3	0.2	Invalid failure. Treat results with caution.
IT1_SB_04	19.77	8	D	1	19.77	Cemented SAND	I	U	91.0	93.0	43.0	08/10/19					No test. Machine reading did not record properly.
IT1_SB_04	22.50	10	D	1	22.50	Cemented SAND	I	U	82.0	70.0	30.0	08/10/19	1.50	32.4	0.9	0.7	Invalid failure. Treat results with caution.
IT1_SB_04	24.14	13	D	1	24.14	Cemented SAND	I	U	97.0	94.0	57.0	07/10/19	2.04	79.4	0.4	0.5	Invalid failure. Treat results with caution.

Test Type
D - Diametral, A - Axial, I - Irregular Lump, B - Block
Direction
L - parallel to planes of weakness
P - perpendicular to planes of weakness
U - unknown or random
Dimensions
Dps - Distance between platens (platen separation)
Lne - Length of specimen
W - Width of shortest dimension perpendicular to load, P



Test performed in accordance with Normalisation Française XP P 94-429, unless noted otherwise.
Size factor, F = (De/50)0.45 for all tests.

Date Printed	Figure Number
14/01/2020	

Point Load Strength Index Tests
Summary of Results

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Point Load Strength Index Tests
Summary of Results

Point Load Strength Index Tests
Summary of Results

| | | |

Point Load Strength Index Tests
Summary of Results

D
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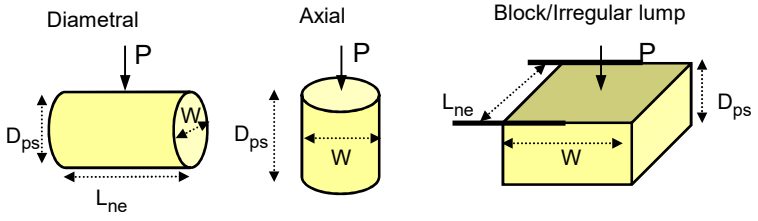
D

Point Load Strength Index Tests
Summary of Results

Project Name	Project No.
SZC 2019 Offshore Ground Investigation	G190016U

Hole	Sample			Specimen		Rock Type	Test Type		Dimensions			Date of Test	Force P	Equivalent diameter, De	Point Load Strength Index		Remarks
	Depth m	Ref.	Type	Ref.	Depth m		Type (D, A, I, B)	Direction (L, P or U)	Lne mm	W mm	Dps mm		kN	mm	Is MPa	Is(50) MPa	
OT_SB_03	3.80	8	D	1	4.76	Cementred SAND	I	U	93.0	42.0	31.0	17/09/19	2.20	45.4	1.0	1.0	
OT_SB_03	3.80	8	D	2	4.40	Cementred SAND	I	U	80.0	64.0	27.0	17/09/19	0.27	33.6	0.2	0.2	
OT_SB_03	3.80	8	D	3	3.80	Cementred SAND	I	U	71.0	60.0	36.0	17/09/19	0.29	40.0	0.2	0.2	Invalid failure. Treat results with caution.
OT_SB_03	6.54	5	D	1	6.54	Cemented SAND	I	U	57.0	48.0	35.0	17/09/19	0.54	40.0	0.5	0.4	
OT_SB_03	6.54	5	D	2	7.00	Cemented SAND	I	U	54.0	42.0	40.0	17/09/19	0.55	26.7	0.7	0.5	Invalid failure. Treat results with caution.
OT_SB_03	6.54	5	D	3	7.35	Cemented SAND	I	U	82.0	69.0	27.0	17/09/19	0.39	27.4	0.3	0.2	
OT_SB_03	9.91	6	D	1	9.91	Cemented SAND	I	U	44.5	37.0	27.0	17/09/19	0.61	16.5	1.5	0.9	Invalid failure. Treat results with caution.
OT_SB_03	9.91	6	D	2	10.05	Cemented SAND	I	U	74.0	63.0	56.0	17/09/19	1.66	45.7	1.0	1.0	Invalid failure. Treat results with caution.
OT_SB_03	15.88	7	D	1	15.88	Cemented SAND	I	U	89.0	64.0	30.0	17/09/19	0.23	31.9	0.2	0.2	Invalid failure. Treat results with caution.
OT_SB_03	15.88	7	D	2	16.25	Cemented SAND	I	U	83.0	58.0	33.0	17/09/19	1.34	26.3	1.5	1.1	
OT_SB_03	18.66	9	D	1	18.66	Cemented SAND	I	U	87.0	85.0	61.0	17/09/19	1.52	58.7	0.5	0.5	Invalid failure. Treat results with caution.
OT_SB_03	24.02	10	D	1	24.02	Cemented SAND	I	U	90.0	84.0	32.0	17/09/19	1.12		<0.1		

Test Type
D - Diametral, A - Axial, I - Irregular Lump, B - Block
Direction
L - parallel to planes of weakness
P - perpendicular to planes of weakness
U - unknown or random
Dimensions
Dps - Distance between platens (platen separation)
Lne - Length of specimen
W - Width of shortest dimension perpendicular to load, P



Test performed in accordance with Normalisation Française XP P 94-429, unless noted otherwise.
Size factor, F = (De/50)0.45 for all tests.

Date Printed	Figure Number
14/01/2020	

Point Load Strength Index Tests
Summary of Results

Point Load Strength Index Tests
Summary of Results

D

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D r

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D

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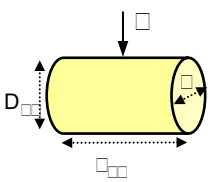

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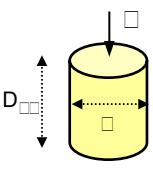

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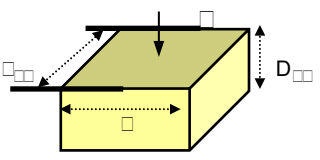

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UNIAXIAL COMPRESSION TEST ON ROCK - SUMMARY OF RESULTS

UNIAXIAL COMPRESSION TEST ON ROCK - SUMMARY OF RESULTS

UNIAXIAL COMPRESSION TEST ON ROCK - SUMMARY OF RESULTS

Certificate of Analysis

Certificate Number	19-15711,19-15713,19-16530,19-17024,19-17027,19-17855,19-18213,19-19008,19-19649,19-20198,19-20423,19-21411,19-21464
Client	Fugro GeoServices Limited Fugro House Hithercroft Road Hithercroft Industrial Estate Wallingford Oxfordshire OX10 9RB
Our Reference	19-15711,19-15713,19-16530,19-17024,19-17027,19-17855,19-18213,19-19008,19-19649,19-20198,19-20423,19-21411,19-21464
Client Reference	G190016U
Order No	88326KB-WAL
Contract Title	SZC 2019 Offshore Ground Investigation
Description	29 Soil samples.
Date Received	14-Aug-19
Date Started	14-Aug-19
Date Completed	16-Jan-20
Test Procedures	Identified by prefix DETSn (details on request).
Notes	Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Adam Fenwick
Contracts Manager

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Summary of Chemical Analysis

Soil Samples

Our Ref 19-15711,19-15713,19-16530,19-17024,19-17027,19-17855,19-18213,19-19008,19-19649,19-20198,19-20423,19-21411,19-21464

Client Ref G190016U

Contract Title SZC 2019 Offshore Ground Investigation

			Lab No	1587036	1587037	1586798	1547150	1547151	1574265	1574266	1577858
			Sample ID	IT1_SB_01	IT1_SB_01	IT1_SB_02	IT1_SB_03	IT1_SB_03	IT1_SB_04	IT1_SB_04	IT1_SB_05
			Depth	16.50	27.00	15.00	11.00	21.00	19.00	23.50	12.65
			Other ID	5	6	1	4	8	17	22	3
			Sample Type	D	D	D	D	D	D	D	D
			Sampling Date	18/10/19	18/10/19	17/10/19	06/08/19	07/08/19	24/09/19	24/09/19	06/10/19
			Sampling Time	1500	1500	1743	0900	1300	1630	1730	1600
Test	**Method**	**LOD**	**Units**								
Inorganics											
pH	DETSC 2008#		pH	8.1	7.6	8.7	8.4	8.5	8.0	8.0	8.5
Carbonate (as CO3)	DETSC 2005	1.4	%	2.5	3.1	3.3	23	45	46	43	13
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	240	260	220	210	410	240	310	900
Sulphate as SO4, Total	DETSC 2321#	0.01	%	0.09	0.14	0.08	0.17	0.34	0.24	0.24	0.21

Key: # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis

Soil Samples

Our Ref 19-15711,19-15713,19-16530,19-17024,19-17027,19-17855,19-18213,19-19008,19-19649,19-20198,19-20423,19-21411,19-21464

Client Ref G190016U

Contract Title SZC 2019 Offshore Ground Investigation

			Lab No	1577859	1547154	1547155	1547156	1553263	1579533	1577857	1579534
			Sample ID	IT1_SB_05	IT1_SB_06	IT1_SB_07	IT1_SB_07	IT2_SB_01	IT2_SB_02	IT2_SB_03	IT2_SB_03
			Depth	20.18	15.00	5.70	12.00	22.50-22.90	25.50	12.55	20.00
			Other ID	4	21	13	14	6	2	8	19
			Sample Type	D	D	D	D	D	D	D	D
			Sampling Date	06/10/19	11/08/19	10/08/19	10/08/19	15/08/19	08/10/19	04/10/19	07/10/19
			Sampling Time	1600	0900	1500	1610	1730	1520	1400	1420
Test	**Method**	**LOD**	**Units**								
Inorganics											
pH	DETSC 2008#		pH	8.7	8.5	8.6	8.6	8.1	8.2	8.5	8.3
Carbonate (as CO3)	DETSC 2005	1.4	%	16	45	50	51	13	6.4	23	11
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	290	340	320	230	170	250	240	95
Sulphate as SO4, Total	DETSC 2321#	0.01	%	0.23	0.28	0.23	0.31	0.16	0.09	0.19	0.07

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Summary of Chemical Analysis

Soil Samples

Our Ref 19-15711,19-15713,19-16530,19-17024,19-17027,19-17855,19-18213,19-19008,19-19649,19-20198,19-20423,19-21411,19-21464

Client Ref G190016U

Contract Title SZC 2019 Offshore Ground Investigation

			Lab No	1556570	1556571	1556572	1556573	1547152	1556578	1556579	1569179
			Sample ID	IT2_SB_04	IT2_SB_04	OT_SB_01	OT_SB_01	OT_SB_02	OT_SB_03	OT_SB_03	OT_SB_04
			Depth	7.90-8.50	12.30-12.60	12.20-12.60	40.10-40.50	28.50	9.40-9.80	22.90-23.20	10.90-11.05
			Other ID	8	10	6	11	10	4	11	15
			Sample Type	D	D	D	D	D	D	D	D
			Sampling Date	26/08/19	26/08/19	26/08/19	27/08/19	05/08/19	29/08/19	29/08/19	20/09/19
			Sampling Time	1400	1415	1100	0938	1300	1000	1000	0945
Test	**Method**	**LOD**	**Units**								
Inorganics											
pH	DETSC 2008#		pH	8.1	8.0	8.8	8.1	8.7	8.5	8.4	8.1
Carbonate (as CO3)	DETSC 2005	1.4	%	16	22	4.0	40	10	51	42	41
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	180	210	250	280	200	190	260	240
Sulphate as SO4, Total	DETSC 2321#	0.01	%	0.15	0.23	0.09	0.36	0.12	0.26	0.28	0.27

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Summary of Chemical Analysis

Soil Samples

Our Ref 19-15711,19-15713,19-16530,19-17024,19-17027,19-17855,19-18213,19-19008,19-19649,19-20198,19-20423,19-21411,19-21464

Client Ref G190016U

Contract Title SZC 2019 Offshore Ground Investigation

			Lab No	1569180	1561869	1561870	1564075	1564076
			Sample ID	OT_SB_04	OT_SB_05	OT_SB_05	OT_SB_06	OT_SB_06
			Depth	18.10-18.33	10.00	16.10	10.20	20.50
			Other ID	16	12	13	5	12
			Sample Type	D	D	D	D	D
			Sampling Date	20/09/19	08/09/19	08/09/19	11/09/19	11/09/19
			Sampling Time	0950	1500	1520	0930	1230
Test	**Method**	**LOD**	**Units**					
Inorganics								
pH	DETSC 2008#		pH	8.4	8.3	8.3	8.3	8.3
Carbonate (as CO3)	DETSC 2005	1.4	%	2.3	37	37	46	36
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	290	310	310	290	690
Sulphate as SO4, Total	DETSC 2321#	0.01	%	0.15	0.33	0.33	0.22	0.38

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Information in Support of the Analytical Results

Our Ref 19-15711,19-15713,19-16530,19-17024,19-17027,19-17855,19-18213,19-19008,19-19649,19-20198,19-20423,19-21411,19-21464

Client Ref G190016U

Contract SZC 2019 Offshore Ground Investigation

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1547150	IT1_SB_03 11.00 SOIL	06/08/19	PT 500ml x2	pH + Conductivity (7 days)	
1547151	IT1_SB_03 21.00 SOIL	07/08/19	PT 500ml x2		
1547152	OT_SB_02 28.50 SOIL	05/08/19	PT 500ml x2	pH + Conductivity (7 days)	
1547154	IT1_SB_06 15.00 SOIL	11/08/19	PT 1L x2		
1547155	IT1_SB_07 5.70 SOIL	10/08/19	PT 1L x2		
1547156	IT1_SB_07 12.00 SOIL	10/08/19	PT 1L x2		
1553263	IT2_SB_01 22.50-22.90 SOIL	15/08/19	PT 1L x2	pH + Conductivity (7 days)	
1556570	IT2_SB_04 7.90-8.50 SOIL	26/08/19	PT 1L x2		
1556571	IT2_SB_04 12.30-12.60 SOIL	26/08/19	PT 1L x2		
1556572	OT_SB_01 12.20-12.60 SOIL	26/08/19	PT 1L x2		
1556573	OT_SB_01 40.10-40.50 SOIL	27/08/19	PT 1L x2		
1556578	OT_SB_03 9.40-9.80 SOIL	29/08/19	PT 1L x2		
1556579	OT_SB_03 22.90-23.20 SOIL	29/08/19	PT 1L x2		
1561869	OT_SB_05 10.00 SOIL	08/09/19	PT 1L x2		
1561870	OT_SB_05 16.10 SOIL	08/09/19	PT 1L x2		
1564075	OT_SB_06 10.20 SOIL	11/09/19	PT 1L x2		
1564076	OT_SB_06 20.50 SOIL	11/09/19	PT 1L x2		
1569179	OT_SB_04 10.90-11.05 SOIL	20/09/19	PT 1L x2		
1569180	OT_SB_04 18.10-18.33 SOIL	20/09/19	PT 1L x2		
1574265	IT1_SB_04 19.00 SOIL	24/09/19	PT 500ml		
1574266	IT1_SB_04 23.50 SOIL	24/09/19	PT 500ml		
1577857	IT2_SB_03 12.55 SOIL	04/10/19	PT 1L x2		
1577858	IT1_SB_05 12.65 SOIL	06/10/19	PT 1L x2		
1577859	IT1_SB_05 20.18 SOIL	06/10/19	PT 1L x2		
1579533	IT2_SB_02 25.50 SOIL	08/10/19	PT 1L x2		
1579534	IT2_SB_03 20.00 SOIL	07/10/19	PT 1L x2		
1586798	IT1_SB_02 15.00 SOIL	17/10/19	PT 1L x2		
1587036	IT1_SB_01 16.50 SOIL	18/10/19	PT 1L x2		
1587037	IT1_SB_01 27.00 SOIL	18/10/19	PT 1L x2		

Key: P-Plastic T-Tub

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Information in Support of the Analytical Results

Our Ref 19-15711,19-15713,19-16530,19-17024,19-17027,19-17855,19-18213,19-19008,19-19649,19-20198,19-20423,19-21411,19-21464
Client Ref G190016U
Contract SZC 2019 Offshore Ground Investigation

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.
Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.
The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-
Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Appendix H

Geoenvironmental Laboratory Test Results

Appendix H Contents

H.1 Notes on Geoenvironmental Laboratory Testing
H.1.1 Notes on Chemical Analysis for Contaminated Land Assessment
H.2 UKAS Schedules
H.3 Test Schedules and Analytical Suites
H.4 Test Certificates

H.1 Notes on Geoenvironmental Laboratory Testing

H.1.1 Notes on Chemical Analysis for Contaminated Land Assessment

H.1.1.1 Sampling, Sample Preservation, Transport And Storage

Sampling of soils for environmental chemical analysis is undertaken to the standards set out in BS 10175:2011+A1:2013, sampling of groundwater is undertaken as per BS EN ISO 22475-1:2006 and BS ISO 5667-11:2009, sampling of surface waters as per BS EN ISO 5667-1:2006 and BS ISO 5667 6:2014, and sampling of ground gases for environmental testing as per CIRIA Guidance C665.

The sample container types used are dictated by the requirements of chemical testing as set out in the project specification and as provided by the selected environmental testing laboratory. Sample containers are filled as instructed by laboratory guidelines, ensuring minimisation of sample headspace.

Where sample volumes are limited by the sampling technique (e.g. dynamic sampling) certain sample container types may be prioritised to achieve the most comprehensive testing possible.

Samples on site are preserved by control of temperature to between 2 and 4 degrees Celsius unless otherwise stated. Samples are despatched to the analytical laboratory on the day of sampling under Chain of Custody (CoC) in temperature controlled cool boxes. Sample temperature is measured on receipt at the designated analytical laboratory. Temperature control is maintained at the analytical laboratory prior to receipt of testing instructions, preparation and analysis.

Where testing instructions are to be provided by the Engineer/Client blank testing schedules are provided as standard within 1 to 2 working days of sampling.

H.1.1.2 Scheduled Testing

The requested chemical analyses scheduled on available samples given on the relevant CoC.

The schedule lists the date of sampling, CoC number under which the samples were transported, tests requested and laboratory certificate reference for all samples.

H.1.1.3 Laboratory Analytical Methodologies and Accreditation

Analytical laboratories used by FGSL are accredited by UKAS (United Kingdom Accreditation Service). Dependent on Limits of Detection being achievable as requested at the time of scheduling, chemical analyses on soils, waters and gases will, where possible, be accredited by MCERTS (Monitoring Certification Scheme). MCERTS is the Environment Agency's performance standard for laboratories undertaking chemical testing. The accreditation applicable for individual tests is presented on the analytical laboratory test certificates in this report.

A summary of the methodologies used by the analytical laboratory in carrying out the requested analyses is presented on the summary pages of the analytical laboratory test certificates. Further information may be obtained on the test methodologies by contacting the laboratory concerned.

Where marine sediment samples are tested, principally as part of a dredging licence application, specific laboratory accreditation testing is required, as detailed in the relevant guidance documents from the licensing agency. Details of these tests are given in relevant guidance documents reproduced in the appendix with the results.

H.1.1.4 Deviating Samples

UKAS is the accreditation body responsible for auditing laboratories to both ISO 17025 and MCERTS in the UK. All UKAS accredited laboratories are required to operate appropriate procedures for the handling of deviating samples.

Deviating (or non-conforming) samples are defined as those which may have been compromised in some way during sampling, transportation, storage or analysis, and which may cause the integrity of the analytical data to be in doubt.

Examples of deviating samples that can occur from sampling, transportation and storage issues include:

- Incorrect sample containers for analyses requested, for example, no separate volatile container supplied or samples for organics analysis supplied in plastic containers;
- Headspace present in containers for volatile compounds or Biological Oxygen Demand (BOD) analyses;
- No sampling date supplied (mandatory for MCERTS);
- No sampling time supplied (applicable for certain water parameters);
- Temperature exceeded;
- Holding time for the analysis exceeded.

Where deviating samples are subsequently analysed, UKAS requires that the competent laboratory "shall include a disclaimer in the report, clearly stating that the sample was deviating and that, as a result, the test result(s) may be invalid". It is also a condition of MCERTS that the whole results certificate is included in reports sent to the Client, including all supporting information. and not just the results sheets. Each analytical report therefore contains a page detailing the deviating samples and the reasons for the non-conformity.

FGSL undertakes to sample, record, transport and store samples in such a way that deviating samples should not occur unless for reasons outside of FGSL's control.

H.1.1.5 Waste Acceptance Criteria Testing

Where samples have been scheduled for Waste Acceptance Criteria (WAC) testing to BS EN 12457, Part 3, analysis is undertaken for one of the Full, Hazardous or Inert WAC suites, as specified and as detailed below.

Full WAC Suite: The solid material from each sample is tested for: total organic carbon (TOC); loss on ignition (LOI); benzene, toluene, ethylbenzene and xylene (BTEX): Polychlorinated biphenyls (PCB's); Total petroleum hydrocarbons (TPH (C10 – C40)); Polycyclic aromatic hydrocarbons (PAHs); pH value; and acid neutralisation capacity. Two leachate specimens for each sample are prepared at liquid to solid ratios of 2:1 and then 8:1 and both are analysed for arsenic, barium, cadmium, chromium, copper, mercury, molybdenum, nickel, lead, antimony, selenium, zinc, chloride, fluoride, sulphate, total dissolved solids, phenol index and dissolved organic carbon.

Hazardous WAC Suite: The solid material from each sample is tested for total organic carbon, loss on ignition and acid neutralisation capacity. Two leachate specimens for each sample are prepared at liquid to solid ratios of 2:1 and then 8:1 and both are analysed for arsenic, barium, cadmium, chromium, copper, mercury, molybdenum, nickel, lead, antimony, selenium, zinc, chloride, fluoride, sulphate, total dissolved solids and dissolved organic carbon.

Inert WAC Suite: The solid material from each sample for total organic carbon, BTEX, PCB's, TPH (C10 – C40) and PAH. Two leachate specimens for each sample are prepared at liquid to solid ratios of 2:1 and then 8:1 and both analysed for arsenic, barium, cadmium, chromium, copper, mercury, molybdenum, nickel, lead, antimony, selenium, zinc, chloride, fluoride, sulphate, total dissolved solids, phenol index and dissolved organic carbon.

Results – calculation: The results of the testing of the 2:1 and 8:1 leachate specimens are then calculated to give a liquid to solid ratio of 10:1 result in mg/kg. These 10:1 results, and the results of the solid determinations, can be compared to the values set out in the guidance produced by the Environment Agency (2005) to assist with appropriate disposal to landfill, under Landfill Directive (1999/31/EC).

H.1.1.6 Chemical Analysis on Leachates Prepared from Soil Samples

Where artificially produced leachate specimens are requested from soil samples the leachate preparation technique is in accordance with British Standard BS EN 12457, as detailed on the Schedules.

The following is a summary of the different leaching preparations available:

- BS EN 12457-1: One stage test carried out at a liquid to solid ratio of 2:1;
- BS EN 12457-2: One stage test carried out at a liquid to solid ratio of 10:1;
- BS EN 12457-3: Two stage test carried out at a liquid to solid ratio of 2:1 followed by 8:1, giving a cumulative liquid to solid ratio of 10:1.

The resultant leachate specimens are then tested for the list of parameters as scheduled.

H.1.1.7 AGS Data for Chemistry Testing

Chemical testing results are provided in AGS 4.0 format. It should be noted that where laboratory methodologies differ, or determinants tested do not appear on the AGS code list for chemical test names, a new and unique code may be used for an individual test.

H.1.1.8 References

BS 10175:2011+A1:2013 Investigation of potentially contaminated sites. Code of practice. British Standards Institute (BSI), March 2011. ISBN 978 0 580 68198 1.

Council Directive 1999/31/EC of 26 April 1999 on the landfill of waste.

Environment Agency (2005) Guidance on Sampling and Testing of Wastes to meet Landfill Waste Acceptance Procedures., Version 1. April 2005.

BS EN 12457-1:2002. Characterisation of waste. Leaching. Compliance test for leaching of granular waste materials and sludges. One stage batch test at a liquid to solid ratio of 2 l/kg for materials with high solid content and with particle size below 4 mm (without or with size reduction). BSI, London (2002).

BS EN 12457-2:2002. Characterisation of waste. Leaching. Compliance test for leaching of granular waste materials and sludges. One stage batch test at a liquid to solid ratio of 10 l/kg for materials with particle size below 4 mm (without or with size reduction). BSI, London (2002).

BS EN 12457-3:2002. Characterisation of waste. Leaching. Compliance test for leaching of granular waste materials and sludges. Two stage batch test at a liquid to solid ratio of 2 l/kg and 8 l/kg for materials with a high solid content and with a particle size below 4 mm (without or with size reduction). BSI, London (2002).

BS EN ISO 22475-1. Geotechnical investigation and testing – sampling methods and groundwater measurements – Part 1: Technical principles for execution. BSI, Milton Keynes (2006).

BS ISO 5667-11:2009. Water Quality. Sampling. Guidance on sampling of groundwaters. BSI, Milton Keynes (2009).

BS EN ISO 5667-1:2006. Water quality. Sampling. Guidance on the design of sampling programmes and sampling techniques. BSI, Milton Keynes (2006).

BS ISO 5667-6:2014. Water quality. Sampling. Guidance on sampling of rivers and streams. BSI, Milton Keynes (2014).

Wilson, S. et al. (2007). Assessing risks posed by hazardous ground gases, C665, CIRIA, London.

See guidance documents from Centre for Environment Fisheries and Aquaculture Science (Cefas), Marine Scotland or Natural Resources Wales, as appropriate

H.2 UKAS Schedules

UKAS Schedule of Accreditation No. 1252 (SOCOTEC)

Schedule of Accreditation

issued by

United Kingdom Accreditation Service

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Testing performed by the Organisation at the locations specified

M[illegible]	[illegible]	[illegible]	[illegible]
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RAD[illegible]	[illegible]	D[illegible] M[illegible]	[illegible]
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Issue No: [illegible] **Issue date:** [illegible]

Testing performed by the Organisation at the locations specified

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Issue No: **Issue date:**

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Materials or products tested	Type of test or property measured or range of measurement	Standard specification or equipment used	Location code
ASTM A370-20 Test Methods and Definitions for Mechanical Testing of Steel Products (cont'd)			
Steel products	Tensile testing	ASTM A370-20	
Steel products	Bend testing	ASTM A370-20	
Steel products	Impact testing of notched specimens	ASTM A370-20	
Steel products	Hardness testing	ASTM A370-20	
Steel products	Chemical analysis	ASTM A370-20	
Steel products	Tensile testing	ASTM A370-20	
Steel products	Bend testing	ASTM A370-20	
Steel products	Impact testing of notched specimens	ASTM A370-20	
Steel products	Hardness testing	ASTM A370-20	
Steel products	Chemical analysis	ASTM A370-20	
Steel products	Tensile testing	ASTM A370-20	
Steel products	Bend testing	ASTM A370-20	
Steel products	Impact testing of notched specimens	ASTM A370-20	
Steel products	Hardness testing	ASTM A370-20	
Steel products	Chemical analysis	ASTM A370-20	
Steel products	Tensile testing	ASTM A370-20	
Steel products	Bend testing	ASTM A370-20	
Steel products	Impact testing of notched specimens	ASTM A370-20	
Steel products	Hardness testing	ASTM A370-20	
Steel products	Chemical analysis	ASTM A370-20	
Steel products	Tensile testing	ASTM A370-20	
Steel products	Bend testing	ASTM A370-20	
Steel products	Impact testing of notched specimens	ASTM A370-20	
Steel products	Hardness testing	ASTM A370-20	
Steel products	Chemical analysis	ASTM A370-20	

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Issue No: [illegible] **Issue date:** [illegible]

Testing performed by the Organisation at the locations specified

Measured, observed or derived property	Specification, standard, method or test technique used	Range of measurement	Uncertainty of measurement (±)
ASME RTP-1 (cont'd)	**(cont'd)**		
Examination of GRP tanks and vessels (cont'd)	Examination of GRP tanks and vessels (cont'd)	Up to 4 m diameter	Up to 4 m diameter
AD 2 resin trap (cont'd)	Visual examination of GRP tanks and vessels Visual examination of GRP tanks and vessels Visual examination of GRP tanks and vessels Visual examination of GRP tanks and vessels Visual examination of GRP tanks and vessels Visual examination of GRP tanks and vessels Visual examination of GRP tanks and vessels Visual examination of GRP tanks and vessels Visual examination of GRP tanks and vessels		
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Issue No: [illegible] **Issue date:** [illegible]

Testing performed by the Organisation at the locations specified

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Issue No: [illegible] **Issue date:** [illegible]

Testing performed by the Organisation at the locations specified

Materials or products tested	Type of test or property measured / Range of measurement / Standard specification / Equipment or technique used	Code	Location
ACMs and Related Materials (cont'd)	(cont'd)		
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
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Issue No: [illegible] **Issue date:** [illegible]

Testing performed by the Organisation at the locations specified

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ENVIRONMENTAL CHEMISTRY			

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MARINE DIVISION (cont'd)	(cont'd)		
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Issue No: [illegible] **Issue date:** [illegible]

Testing performed by the Organisation at the locations specified

M[illegible]	[illegible]	[illegible]	[illegible]
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Issue No: [illegible] **Issue date:** [illegible]

Testing performed by the Organisation at the locations specified

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	[illegible] (cont'd)	D[illegible] M[illegible]	[illegible]

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Issue No: [illegible] **Issue date:** [illegible]

Testing performed by the Organisation at the locations specified

Measurand/Parameter/Product/Material Tested	Type of Test/Properties Measured/Range of Measurement/Uncertainty and/or Specification/Procedure and/or Equipment Used	Comments	Location
(cont'd)	(cont'd)		

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Accredited to
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Issue No: [illegible] **Issue date:** [illegible]

Testing performed by the Organisation at the locations specified

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		M[illegible]	

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Issue No: [illegible] **Issue date:** [illegible]

Testing performed by the Organisation at the locations specified

M[illegible]	[illegible]	[illegible]	[illegible]
[illegible] (cont'd)	[illegible] (cont'd)	[illegible]	[illegible]
	PAH's including:		
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Issue No: [illegible] **Issue date:** [illegible]

Testing performed by the Organisation at the locations specified

M[illegible]	[illegible] (cont'd)	D[illegible]	[illegible]
[illegible] (cont'd)	[illegible] (cont'd)	[illegible] (cont'd)	[illegible]

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M[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible] (cont'd)	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]

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M[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible] (cont'd)	D[illegible] M[illegible] r[illegible] M[illegible] R[illegible] [illegible]	[illegible]
[illegible] M[illegible] R[illegible] (cont'd)	PAH's including: [illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]

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Measurand/Parameter/Product/Material Tested	Type of Test/Properties Measured/Range of Measurement/Uncertainty and/or Specification/Procedure and/or Equipment Used	Standard/Method/Specification/Procedure	Location
[illegible] (cont'd)	[illegible] (cont'd)	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible] (cont'd)	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]

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M[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible] (cont'd)	D[illegible] M[illegible] r[illegible] of soil (cont'd)	[illegible]
[illegible] M[illegible] (cont'd)	[illegible] (cont'd)	D[illegible] (cont'd)	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	M[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[

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M[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible] (cont'd)	D[illegible] M[illegible] r[illegible] of soil (cont'd)	[illegible]
[illegible] (cont'd)	[illegible] (cont'd)	D[illegible] (cont'd)	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	D[illegible] M[illegible]	[illegible]

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Materials or products tested	Type of test/properties measured or range of measurement used	Reference standard(s) and/or method(s)	Remarks
(cont'd)	(cont'd)	Determination of particle size distribution (cont'd)	
[illegible]	[illegible]	Determination of particle size distribution of soil (cont'd)	
[illegible]	[illegible]	Determination of particle size distribution of soil (cont'd)	
[illegible]	Ar[illegible]	Determination of particle size distribution of soil (cont'd)	
[illegible]	[illegible]	Determination of particle size distribution of soil (cont'd)	
[illegible]	[illegible]	Determination of particle size distribution of soil (cont'd)	
[illegible]	[illegible]	Determination of particle size distribution of soil (cont'd)	

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M[illegible]	[illegible] (cont'd)	D[illegible] M[illegible] r[illegible] of soil (cont'd)	[illegible]
[illegible] M[illegible] (cont'd)	[illegible]	D[illegible] [illegible]	[illegible]
[illegible]	[illegible]	D[illegible] [illegible]	[illegible]
[illegible]	[illegible]	D[illegible] [illegible]	[illegible]
A[illegible]	[illegible]	D[illegible] M[illegible] A[illegible]	[illegible]
[illegible]	[illegible]	D[illegible] M[illegible]	[illegible]

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Materials or Products Tested	Type of Test / Properties Measured / Range of Measurement	Standard Specification / Equipment / Techniques Used	Location Code
WATERS (cont'd)	Chemical Tests (cont'd)	Determination of Metals and Metalloids by ICP-MS (Inductively Coupled Plasma Mass Spectrometry)	
Drinking water, raw water, groundwater, surface water, wastewater and treated wastewater	Determination of Metals and Metalloids by ICP-MS	In-house method based on APHA 3125 B	
	Aluminium		
	Antimony		
	Arsenic		
	Barium		
	Beryllium		
	Bismuth		
	Boron		
	Cadmium		
	Caesium		
	Chromium		
	Cobalt		
	Copper		
	Gallium		
	Germanium		
	Indium		
	Iron		
	Lanthanum		
	Lead		
	Lithium		
	Manganese		
	Molybdenum		
	Nickel		
	Niobium		
	Palladium		
	Platinum		
	Rhenium		
	Rubidium		
	Selenium		
	Silver		
	Strontium		
	Tantalum		
	Tellurium		
	Thallium		
	Thorium		
	Tin		
	Titanium		
	Tungsten		
	Uranium		
	Vanadium		
	Yttrium		
	Zinc		
	Zirconium		
	Determination of Metals and Metalloids by ICP-OES (Inductively Coupled Plasma Optical Emission Spectrometry)	In-house method based on APHA 3120 B	
	Aluminium		
	Antimony		
	Arsenic		
	Barium		
	Beryllium		
	Bismuth		
	Boron		
	Cadmium		
	Calcium		
	Chromium		
	Cobalt		
	Copper		
	Gallium		
	Germanium		
	Indium		
	Iron		
	Lanthanum		
	Lead		
	Lithium		
	Magnesium		
	Manganese		
	Molybdenum		
	Nickel		
	Niobium		
	Palladium		
	Platinum		
	Potassium		
	Rhenium		
	Rubidium		
	Selenium		
	Silicon		
	Silver		
	Sodium		
	Strontium		
	Tantalum		
	Tellurium		
	Thallium		
	Thorium		
	Tin		
	Titanium		
	Tungsten		
	Uranium		
	Vanadium		
	Yttrium		
	Zinc		
	Zirconium		

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Issue No: [illegible] **Issue date:** [illegible]

Testing performed by the Organisation at the locations specified

Materials or Products Tested	Type of Test / Properties Measured / Range of Measurement	Specification / Equipment Used / Techniques Used	Location
A[illegible]R[illegible] (cont'd)	Chemical Tests (cont'd)	D[illegible] M[illegible] A[illegible]	
[illegible] Generated Leachate (cont'd)	D[illegible] and total metals: (cont'd)		
[illegible]	[illegible]	D[illegible] M[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	
[illegible]	A[illegible]	D[illegible] M[illegible] AT AR	[illegible]
[illegible]	Ar[illegible]	D[illegible] M[illegible]	[illegible]

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M[illegible]	[illegible]	[illegible]	[illegible]
WATERS (cont'd)	Chemical Tests (cont'd)	D[illegible] M[illegible] [illegible] M[illegible] A[illegible]	
[illegible]	[illegible]	D[illegible] M[illegible] M[illegible] Add[illegible] A[illegible] [illegible]	[illegible]
[illegible]	[illegible]	D[illegible] M[illegible] [illegible] A[illegible] [illegible]	[illegible]
[illegible]	[illegible] R[illegible]	D[illegible] M[illegible] [illegible] A[illegible] M[illegible] [illegible] R[illegible] A[illegible]	[illegible]
[illegible]	[illegible]	D[illegible] M[illegible] [illegible] [illegible]	[illegible]
[illegible]	[illegible]	D[illegible] M[illegible] [illegible] [illegible]	[illegible]

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Testing performed by the Organisation at the locations specified

Materials or Products Tested	Type of Test/Properties Measured / Range of Measurement	Standard Specification / Equipment / Techniques Used	Location Code
WATERS (cont'd)	Chemical Tests (cont'd)	Determination of Metals by ICP-MS Determination of Metals by ICP-OES Determination of Mercury by CV-AAS Acid Digestion of Waters for Total Metals	
Drinking water, raw water, groundwater, surface water, wastewater, trade effluent, sewage effluent, leachate, soil leachate, sediment leachate, compost leachate, biowaste leachate, digestate leachate, sludge leachate, treated biowaste, treated digestate, treated sludge, landfill leachate	Determination of Dissolved Metals	Determination of Metals by ICP-MS Determination of Metals by ICP-OES Determination of Mercury by CV-AAS Acid Digestion of Waters for Total Metals Landfill Leachate (cont'd)	
Drinking water, raw water, groundwater, surface water, wastewater, trade effluent, sewage effluent, leachate, soil leachate, sediment leachate, compost leachate, biowaste leachate, digestate leachate, sludge leachate, treated biowaste, treated digestate, treated sludge, landfill leachate	Determination of Dissolved Metals	Determination of Metals by ICP-MS Determination of Metals by ICP-OES Determination of Mercury by CV-AAS Acid Digestion of Waters for Total Metals	
Drinking water, raw water, groundwater, surface water, wastewater, trade effluent, sewage effluent, leachate, soil leachate, sediment leachate, compost leachate, biowaste leachate, digestate leachate, sludge leachate, treated biowaste, treated digestate, treated sludge, landfill leachate	Determination of Dissolved Metals	Determination of Metals by ICP-MS Determination of Metals by ICP-OES Determination of Mercury by CV-AAS Acid Digestion of Waters for Total Metals	
Drinking water, raw water, groundwater, surface water, wastewater, trade effluent, sewage effluent, leachate, soil leachate, sediment leachate, compost leachate, biowaste leachate, digestate leachate, sludge leachate, treated biowaste, treated digestate, treated sludge, landfill leachate	Determination of Dissolved Metals	Determination of Metals by ICP-MS Determination of Metals by ICP-OES Determination of Mercury by CV-AAS Acid Digestion of Waters for Total Metals	
Drinking water, raw water, groundwater, surface water, wastewater, trade effluent, sewage effluent, leachate, soil leachate, sediment leachate, compost leachate, biowaste leachate, digestate leachate, sludge leachate, treated biowaste, treated digestate, treated sludge, landfill leachate	Determination of Dissolved Metals	Determination of Metals by ICP-MS Determination of Metals by ICP-OES Determination of Mercury by CV-AAS Acid Digestion of Waters for Total Metals	

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Testing performed by the Organisation at the locations specified

WATERS (cont'd)	Chemical Tests (cont'd)		

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WATERS (cont'd)	(cont'd)		
	Compounds (VOC's)		

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Testing performed by the Organisation at the locations specified

Materials or Products Tested	Type of Test / Properties Measured / Range of Measurement	Standard Specification / Equipment / Techniques Used	Location Code
WATERS (cont'd)	Chemical Tests (cont'd)	Determination of Dissolved Metals by Inductively Coupled Plasma Mass Spectrometry (ICP-MS)	
Surface waters, groundwaters and wastewaters (cont'd)	Organic Compounds (VOC's) including: (cont'd)	Determination of Volatile Organic Compounds by Headspace GC-MS	

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M[illegible]	[illegible]	[illegible]	[illegible]
WATERS (cont'd)	Chemical Tests (cont'd)	D[illegible] M[illegible] [illegible] M[illegible] A[illegible]	
[illegible]	PAH's including: [illegible]	D[illegible] M[illegible] [illegible]	[illegible]
	Total PAH's (sum of 17 above)		
[illegible]	[illegible]	D[illegible] M[illegible] [illegible] D[illegible]	[illegible]

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M[illegible]	[illegible]	[illegible]	[illegible]
WATERS (cont'd)	Chemical Tests (cont'd)	D[illegible] M[illegible] [illegible]	
[illegible]	A[illegible] D M[illegible] [illegible] A [illegible] D D D [illegible] M A M M [illegible]	A [illegible]	[illegible]

H.3 Test Schedules and Analytical Suites

Summary Schedule of Contamination Tests (Table H.1)

Contamination Test Suites – Soil Samples (Table H.2)

Table H.1: Summary Schedule of Contamination Tests

Hole No.	Top Depth (m)	Type	Sample No.	Sample ID	Date Sampled	CHOC ref	L1.1: Suite E2 (General)	L1.1A: Suite E3 (Organic)	L1.1B: Suite E3i (Organic)	L1.1C: Suite E3ii (Radiological)	L1.2: Suite F (Leachate)	L1.2A: Suite F2 (Cefas MMO with BDE209)	L1.2B: Suite F2i (Cefas Radiological)	L2.1: Suite H (WAC)	Sample Report Number	Comments
IT1_SPT_03	8.00	ES	1	SPT03-20190531	31/05/2019 14:00	24156	1	1	1	1				1	S19_9586	Composite sample taken from SPT D samples between 8.00m and 22.00m.
IT1_SPT_03	8.00	ES	1	SPT03-20190531	31/05/2019 14:00	24156					1				W28_5179	Composite sample taken from SPT D samples between 8.00m and 22.00m.
IT1_SB_07	0.00	ES	1	CEFAS1-020619	02/06/2019 20:25	24157						1			MAR 00296	
IT1_SB_07	0.00	ES	2	CEFAS-RAD-2	02/06/2019 20:25	24157							1		S19_9618	
IT1_SB_07	0.55	ES	4	CEFAS-RAD-4	02/06/2019 22:35	24157							1		S19_9618	
IT1_SB_07	1.00	ES	5	CEFAS5-020619	02/06/2019 20:40	24157						1			MAR 00296	
IT1_SB_07	2.00	ES	7	CEFAS7-020619	02/06/2019 20:50	24158	1	1						1	S19_9585	
IT1_SPT_06	0.00	ES	1	ES-WAC-1	06/06/2019 15:30	24159	1	1	1	1				1	S19_9776	Composite sample taken from SPT D samples between 0.00m and 10.00m.
IT1_SPT_06	26.00	ES	3	ES-WAC-3	06/06/2019 16:00	24159	1	1						1	S19_9776	Composite sample taken from SPT D samples between 26.00m and 36.00m.
IT1_SB_06	0.00	ES	1	SB06 CEFAS1-050619	05/06/2019 04:49	24160						1			MAR 00303	
IT1_SB_06	0.00	ES	2	SB06 CEFAS-RAD-2	05/06/2019 04:49	24160							1		S199798	
IT1_SB_06	1.00	ES	5	SB06 CEFAS5-050619	05/06/2019 05:12	24160						1			MAR 00303	
IT1_SB_06	1.00	ES	6	SB06 CEFAS-RAD-6	05/06/2019 05:12	24160							1		S199798	
OT_SPT_02	24.00	ES	2	OT-SPT2-ES-WAC2	16/06/2019 08:15	24162	1	1	1					1	S20_0154	Composite sample taken from SPT D samples between 24.00m and 44.00m
OT_SPT_02	24.00	ES	2	OT-SPT2-ES-WAC2	16/06/2019 08:15	24162					1				W28_6341	Composite sample taken from SPT D samples between 24.00m and 44.00m
IT2_SB_04	1.00	ES	2	SB04 CEFAS2-220619	22/06/2019 21:00	24163						1			MAR00319	
IT2_SB_04	1.00	ES	3	SB04 CEFAS-RAD-3	22/06/2019 21:00	24163							1		S200168	
IT2_SB_04	1.50	ES	4	SB04 CEFAS4-220619	22/06/2019 21:00	24163							1		S200168	
IT2_SB_04	1.50	ES	4	SB04 CEFAS4-220619	22/06/2019 21:00	24163						1			MAR00319	
OT_SB_05	0.00	ES	1	SB05 CEFAS1-240619	24/06/2019 23:10	24164						1			MAR00323	
OT_SB_05	0.00	ES	2	SB05 CEFAS-RAD-2	24/06/2019 23:10	24164							1		S20_0376	
OT_SB_05	1.00	ES	4	SB05 CEFAS4-250619	25/06/2019 03:15	24164						1			MAR00323	
OT_SB_05	1.00	ES	5	SB05 CEFAS-RAD-5	25/06/2019 03:15	24164							1		S20_0376	
OT_SB_06	0.10	ES	1	SB06 CEFAS1-280619	28/06/2019 17:50	24166							1		S20_0377	Limited marine deposits material to sample.

Hole No.	Top Depth (m)	Type	Sample No.	Sample ID	Date Sampled	CHOC ref	L1.1: Suite E2 (General)	L1.1A: Suite E3 (Organic)	L1.1B: Suite E3i (Organic)	L1.1C: Suite E3ii (Radiological)	L1.2: Suite F (Leachate)	L1.2A: Suite F2 (Cefas MMO with BDE209)	L1.2B: Suite F2i (Cefas Radiological)	L2.1: Suite H (WAC)	Sample Report Number	Comments
OT_SB_04	0.00	ES	1	OTSB04 CEFAS1-040719	04/07/2019 14:50	24167						1			MAR00330	
OT_SB_04	0.50	ES	3	OTSB04 CEFAS-RAD-3	04/07/2019 14:50	24167							1		S20_0555	
OT_SB_04	2.00	ES	6	OTSB04 CEFAS6-040719	04/07/2019 14:50	24167						1			MAR00330	
OT_SB_04	2.00	ES	7	OTSB04 CEFAS-RAD-6	04/07/2019 14:50	24167							1		S20_0555	
OT_SB_04	4.50	ES	1	OTSB04 ESWAC1	06/07/2019 02:40	24168	1	1	1	1					S20_0513	Composite sample taken from the ends of sonic core liners between 4.50m-19.50m.
OT_SB_04	4.50	ES	1	OTSB04 ESWAC1	06/07/2019 02:40	24168					1				W287327	Composite sample taken from the ends of sonic core liners between 4.50m-19.50m.
OT_SB_04	4.50	ES	2	OTSB04 ESWAC2	06/07/2019 03:00	24168								1	S20_0513	Composite sample taken from the ends of sonic core liners between 4.50m-19.50m.
OT_SPT_04	24.00	ES	3	OTSPT04 ESWAC3	06/07/2019 03:30	24168	1	1						1	S20_0514	Composite sample taken from the ends of sonic core liners between 4.50m-19.50m.
IT2_SB_03	0.00	ES	1	SB03 CEFAS1-070719	07/07/2019 05:30	24172						1			MAR00330	Composite sample taken from the ends of sonic core liners between 4.50m-19.50m.
IT2_SB_03	0.00	ES	1	SB03 CEFAS1-070719	07/07/2019 05:30	24172							1		S20_0515	
IT2_SB_03	0.00	ES	1	SB03 ESWAC1-080719	08/07/2019 12:15	24169	1	1	1	1				1	S20_0516	Composite sample taken from ends of sonic core liners between 0.00m and 19.50m
IT2_SB_03	0.00	ES	1	SB03 ESWAC1-080719	08/07/2019 12:15	24169					1				W287332	Composite sample taken from ends of sonic core liners between 0.00m and 19.50m
IT2_SB_03	2.00	ES	6	SB03 CEFAS6-070719	07/07/2019 06:00	24172						1			MAR00330	
IT2_SB_03	2.00	ES	7	SB03 CEFAS-RAD-7	07/07/2019 06:00	24172							1		S20_0515	
IT2_SB_03	19.50	ES	2	SB03 ESWAC2-080719	08/07/2019 12:53	24169	1	1						1	S20_0516	Composite sample taken from ends of sonic core liners between 19.50m and 31.00m.
IT2_SPT_03	0.00	ES	1	SPT03 CEFAS1-070719	07/07/2019 04:00	24173						1			MAR00338	Cefas MMO - no PSD due to limited sample
IT2_SPT_03	0.00	ES	1	SPT03 CEFAS1-070719	07/07/2019 04:00	24173							1		S20_0554	
IT2_SPT_03	1.00	ES	4	SPT03 CEFAS4-070719	07/07/2019 04:30	24173						1			MAR0330	
IT2_SPT_03	1.00	ES	5	SPT03 CEFAS-RAD-5	07/07/2019 04:30	24173							1		S20_0554	
IT2_SB_02	0.00	ES	1	SB02 ESWAC1-140719	14/07/2019 09:50	24174	1	1	1					1	S20_0707	Composite sample taken from ends of sonic liners between 0.00m and 32.50m.
IT2_SB_02	0.00	ES	1	SB02 ESWAC1-140719	14/07/2019 09:50	24174					1				W287757	Composite sample taken from ends of sonic liners between 0.00m and 32.50m.
IT1_SB_05	0.00	ES	1	SB05 CEFAS1-150719	15/07/2019 07:50	24175						1			MAR00341	Cefas MMO: no PSD as not enough sample

Hole No.	Top Depth (m)	Type	Sample No.	Sample ID	Date Sampled	CHOC ref	L1.1: Suite E2 (General)	L1.1A: Suite E3 (Organic)	L1.1B: Suite E3i (Organic)	L1.1C: Suite E3ii (Radiological)	L1.2: Suite F (Leachate)	L1.2A: Suite F2 (Cefas MMO with BDE209)	L1.2B: Suite F2i (Cefas Radiological)	L2.1: Suite H (WAC)	Sample Report Number	Comments
IT1_SB_05	0.00	ES	1	SB05 CEFAS1-150719	15/07/2019 07:50	24175							1		S20_0721	
IT1_SB_01	19.50	ES	2	SB01-ESWAC2	26/07/2019 00:45	22902	1	1	1					1	S20_0970	Composite sample taken from ends of sonic core liners between 19.50m and 39.00m.
						TOTALS	11	11	7	4	5	15	16	11		

Table H.2: Contamination Test Suites – Soil Samples

Soil: Suite E2 - Environmental samples
Metals: Arsenic, w/s Boron, Cadmium, Chromium (total), Hexavalent Chromium, Copper, Lead, Iron, Mercury, Nickel, Selenium, Vanadium, Zinc
pH
Ammonium
Cyanide (total) and Cyanide (Free)
Sulphate (total)
Sulphide
Fraction Organic Carbon (FOC)
Loss on Ignition (LOI)
Soil Organic Carbon (Oil Organic Matter – S.O.M.)
US EPA Speciated PAHs: Naphthalene, Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene, Anthracene, Fluoranthene, Pyrene, Benzo(a)anthracene, Chrysene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Indeno(1,2,3-cd)pyrene, Di-benzo(a,h)anthracene, Benzo(ghi)perylene
Phenol – Monohydric (Phenol Index)
Asbestos screening
Asbestos identification & quantification (%) if asbestos detected

Soil: Suite E3 - Environmental samples: Organic determinands
BTEX's: Benzene, Ethylbenzene, Toluene, Xylenes
Total petroleum hydrocarbons (TPH-CWG): Aromatic (C5 - C7), Aromatic (C7 - C8), Aromatic (C8 - C10), Aromatic (C10 - C12), Aromatic (C12 - C16), Aromatic (C16 - C21), Aromatic (C21 - C35), Aromatic (C35 – C44), Total - Aromatic (C5-C44), Aliphatic (C5 - C6), Aliphatic (C6 - C8), Aliphatic (C8 - C10), Aliphatic (C10 - C12), Aliphatic (C12 - C16), Aliphatic (C16 - C21), Aliphatic (C21 - C35), Aliphatic (C35 – C44), Total - Aliphatic (C5-C44), TPH Ali/Aro Total

Soil: Suite E3i - Environmental samples: Organic determinands
VOC speciated suite inc. Tentatively identified Compounds
SVOC speciated suite (excluding PAHs) inc. Tentatively Identified Compounds
Polychlorinated Biphenyls (PCBs) ICES 7 Congeners (PCB: 28, 52, 101, 118, 138, 153, 180)
Organotins – Dibutyl Tin (DBT), Tributyltin (TBT), Triphenyltin (TPT)

Soil: Suite E3ii - Environmental samples: Radiological Analysis
High Resolution Gamma Spectrometry

Soil: Suite F1 - Environmental samples for Leachate Analysis
Leachate preparation (10:1) then analysis for:
Metals: Arsenic (dissolved), Boron (dissolved), Cadmium (dissolved), Chromium (dissolved), Chromium Hexavalent, Copper (dissolved), Lead (dissolved), Mercury (dissolved), Nickel (dissolved), Selenium (dissolved), Vanadium (dissolved), Zinc (dissolved), Iron (dissolved), Calcium (dissolved), Selenium (dissolved), Manganese (dissolved)
pH
Cyanide (total) and Cyanide (free)
Sulphate
Sulphide
Nitrate
Ammonium

Suite F2 – Cefas Samples
Metals: Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Zinc
Particle size analysis
Percentage dry weight
Total organic carbon
Tributyl tin
Dibutyl tin
Standard set of organochlorine pesticides (OCPs): alpha-hexachlorocyclohexane (AHCH), beta-hexachlorocyclohexane (BHCH), gamma-hexachlorocyclohexane (GHCH), Dieldrin, Hexachlorobenzene (HCB), 1,1-Dichloro-2,2-bis(p-chlorophenyl) ethylene (PPDDE), Dichlorodiphenyltrichloroethane (PPDDT), 1,1-dichloro-2,2-bis(p-chlorophenyl)ethane (PPTDE)
Standard set of brominated flame retardants (Polybrominated diphenyl ethers (PBDEs)): BDE100, BDE138, BDE153, BDE154, BDE17, BDE183, BDE28, BDE47, BDE66, BDE85, BDE99, BDE209
Standard set of PAHS: Acenaphthene, Acenaphthylene, Anthracene, Benzo[a]anthracene, Benzo[a]pyrene, Benzo[b]fluoranthene, Benzo[e]pyrene, Benzo[g,h,i]perylene, Benzo[k]fluoranthene, C1-naphthalenes, C1-Phenanthrenes, C2-Naphthalenes, C3-Naphthalenes, Chrysene, Fluoranthene, Fluorene, Indeno[1,2,3-cd]pyrene, Naphthalene, Perylene, Phenanthrene, Pyrene, Dibenz(a,h)anthracene
Total hydrocarbon content (THC)
PCBs (Sum of 25 congeners, including ICES 7): PCB: 18, 28, 31, 44, 47, 49, 52, 66, 101, 105, 110, 118, 128, 138, 141, 149, 151, 153, 156, 158, 170, 180, 183, 187, 194

F2i – Cefas samples: Radiological Analysis
High-resolution gamma spectrometry

Suite H – Sediment samples for Waste Acceptance Criteria Testing (10:1)
Solid Analyses:
Total Organic Carbon
Moisture content
Loss on Ignition
BTEX (benzene, toluene, ethylbenzene and xylenes) plus MTBE
PCBs (7 congeners)
TPH (C8 to C40, including >C10-C40)
PAHs (17 including coronene)
pH
Acid neutralising capacity
Leachate Analysis (10:1 leaching) then analysis for:
Metals: Arsenic (dissolved), Barium (dissolved), Cadmium (dissolved), Chromium (dissolved), Copper (dissolved), Mercury (dissolved), Molybdenum (dissolved), Nickel (dissolved), Lead (dissolved), Antimony (dissolved), Selenium (dissolved), Zinc (dissolved)
Chloride
Fluoride
Sulphate (as SO4)
Total dissolved solids
Phenols Total (monohydric)
Dissolved organic carbon at own pH or pH7.5-8.0

H.4 Test Certificates

Cefas Suite F2
SOCOTEC Certificates of Analysis (MAR00296, MAR00303, MAR00319, MAR00323, MAR00330, MAR00338, MAR00341)

General Contamination, Radiological and WAC Suites
SOCOTEC Certificates of Analysis (EFS/199585M, EFS/199586M, EFS/199618, EFS/199776M, EFS/199798, EFS/200154M, EFS/200168, EFS/200376, EFS/200377, EFS/200513M, EFS/200514M, EFS/200515, EFS/200516M, EFS/200554, EFS/200555, EFS/200707M, EFS/200721, EFS/200970M)

Leachate Suite F
SOCOTEC Certificates of Analysis (EXR/285179, EXR/286341, EXR/287327, EXR/287332, EXR/287757)

Certificate of Analysis

Issuing Laboratory SOCOTEC, Marine Department, Specialist Chemistry, Etwall House, Bretby Business Park, Ashby Road, Bretby, Burton-upon-Trent DE15 0YZ

Test Report ID	**MAR00296**	
Issue Version	2	
Customer	Fugro Geoservices Ltd, Fugro House, Hithercroft Road, Wallingford, Oxfordshire, OX10 9RB	
Customer Reference	SZC 2019 Offshore Ground Investigation - G190016U	
Date Received	06-Jun-19	
Date Reported	16-Jan-20	
Condition of samples	Frozen	Satisfactory

This is a revised report containing updated sample descriptions and replaces all previously issed versions.

[redacted]

Authorised by: Marya Hubbard

Position: Laboratory Manager

Any additional opinions or interpretations found in this report, are outside the scope of UKAS accreditation.

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Test Report ID	MAR00296
Issue Version	2
Customer Reference	SZC 2019 Offshore Ground Investigation - G190016U

			Units	% M/M	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)
			Method No	SOCOTEC Env Chem*	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01
			Accreditation	UKAS/MMO	MMO	MMO	MMO	MMO	MMO
				Total Organic Carbon	45mm	31.5mm	22.4mm	16mm	11.2mm
Client Reference:	SOCOTEC Ref:	Matrix		–	-5.5	-5.0	-4.5	-4.0	-3.5
IT1_SB_07, 0.00m, ES, 1, CEFAS1-020619	MAR00296.001	Sediment		0.19	26.21	3.12	0.00	1.73	2.49
IT1_SB_07, 1.00m, ES, 5, CEFAS5-020619	MAR00296.002	Sediment		0.19	0.00	0.00	2.90	3.03	2.59

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Test Report ID	MAR00296
Issue Version	2
Customer Reference	SZC 2019 Offshore Ground Investigation - G19001

		Units	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)
		Method No	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01
		Accreditation	MMO	MMO	MMO	MMO	MMO	MMO
			8mm	**5.6mm**	**4mm**	**2.8mm**	**2mm**	**1.4mm**
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**-3.0**	**-2.5**	**-2.0**	**-1.5**	**-1.0**	**-0.5**
IT1_SB_07, 0.00m, ES, 1, CEFAS1-020619	MAR00296.001	Sediment	2.46	2.60	2.76	2.55	2.83	3.21
IT1_SB_07, 1.00m, ES, 5, CEFAS5-020619	MAR00296.002	Sediment	2.87	2.98	3.22	3.41	3.78	4.65

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Test Report ID	MAR00296
Issue Version	2
Customer Reference	SZC 2019 Offshore Ground Investigation - G19001

		Units	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)
		Method No	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01
		Accreditation	MMO	MMO	MMO	MMO	MMO	MMO
			1mm	**707µm**	**500µm**	**353.6µm**	**250µm**	**176.8µm**
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**0.0**	**0.5**	**1.0**	**1.5**	**2.0**	**2.5**
IT1_SB_07, 0.00m, ES, 1, CEFAS1-020619	MAR00296.001	Sediment	3.43	7.73	10.18	10.57	7.21	4.01
IT1_SB_07, 1.00m, ES, 5, CEFAS5-020619	MAR00296.002	Sediment	5.17	8.89	12.51	13.61	10.77	5.55

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Test Report ID	MAR00296
Issue Version	2
Customer Reference	SZC 2019 Offshore Ground Investigation - G19001

		Units	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)
		Method No	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01
		Accreditation	MMO	MMO	MMO	MMO	MMO	MMO
			125µm	**88.39µm**	**63µm**	**44.2µm**	**31.3µm**	**22.1µm**
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**3.0**	**3.5**	**4.0**	**4.5**	**5.0**	**5.5**
IT1_SB_07, 0.00m, ES, 1, CEFAS1-020619	MAR00296.001	Sediment	1.95	0.69	0.30	0.44	0.38	0.37
IT1_SB_07, 1.00m, ES, 5, CEFAS5-020619	MAR00296.002	Sediment	2.94	1.28	0.59	0.74	0.71	0.72

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Test Report ID	MAR00296
Issue Version	2
Customer Reference	SZC 2019 Offshore Ground Investigation - G19001

		Units	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)
		Method No	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01
		Accreditation	MMO	MMO	MMO	MMO	MMO	MMO
			15.6µm	**11µm**	**7.8µm**	**5.5µm**	**3.9µm**	**2.75µm**
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**6.0**	**6.5**	**7.0**	**7.5**	**8.0**	**8.5**
IT1_SB_07, 0.00m, ES, 1, CEFAS1-020619	MAR00296.001	Sediment	0.33	0.44	0.38	0.36	0.31	0.21
IT1_SB_07, 1.00m, ES, 5, CEFAS5-020619	MAR00296.002	Sediment	0.80	0.94	0.99	0.93	0.77	0.56

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Test Report ID	MAR00296
Issue Version	2
Customer Reference	SZC 2019 Offshore Ground Investigation - G19001

		Units	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)
		Method No	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01
		Accreditation	MMO	MMO	MMO	MMO	MMO
			1.95µm	**1.38µm**	**0.98µm**	**0.69µm**	**0.49µm**
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**9.0**	**9.5**	**10.0**	**10.5**	**11.0**
IT1_SB_07, 0.00m, ES, 1, CEFAS1-020619	MAR00296.001	Sediment	0.12	0.10	0.11	0.12	0.10
IT1_SB_07, 1.00m, ES, 5, CEFAS5-020619	MAR00296.002	Sediment	0.38	0.26	0.21	0.20	0.21

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Test Report ID	MAR00296
Issue Version	2
Customer Reference	SZC 2019 Offshore Ground Investigation - G19001

		Units	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)
		Method No	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01
		Accreditation	MMO	MMO	MMO	MMO	MMO
			0.34µm	**0.24µm**	**0.17µm**	**0.12µm**	**0.09µm**
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**11.5**	**12.0**	**12.5**	**13.0**	**13.5**
IT1_SB_07, 0.00m, ES, 1, CEFAS1-020619	MAR00296.001	Sediment	0.08	0.05	0.03	0.02	0.01
IT1_SB_07, 1.00m, ES, 5, CEFAS5-020619	MAR00296.002	Sediment	0.20	0.19	0.16	0.13	0.09

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Issue Version	2
Customer Reference	SZC 2019 Offshore Ground Investigation - G19001

		Units	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)
		Method No	*SUB_01	*SUB_01	*SUB_01
		Accreditation	MMO	MMO	MMO
			0.06µm	0.04µm	<0.04µm
Client Reference:	SOCOTEC Ref:	Matrix	14.0	14.5	>14.5
IT1_SB_07, 0.00m, ES, 1, CEFAS1-020619	MAR00296.001	Sediment	0.00	0.00	0.00
IT1_SB_07, 1.00m, ES, 5, CEFAS5-020619	MAR00296.002	Sediment	0.04	0.00	0.00

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Test Report ID	MAR00296
Issue Version	2
Customer Reference	SZC 2019 Offshore Ground Investigation - G190016U

		Units	mg/Kg (Dry Weight)							
		Method No	SOCOTEC Env Chem*							
		Limit of Detection	0.5	0.04	0.5	0.5	0.015	0.5	0.5	2
		Accreditation	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**Arsenic (As)**	**Cadmium (Cd)**	**Chromium (Cr)**	**Copper (Cu)**	**Mercury (Hg)**	**Nickel (Ni)**	**Lead (Pb)**	**Zinc (Zn)**
IT1_SB_07, 0.00m, ES, 1, CEFAS1-020619	MAR00296.001	Sediment	15.2	0.19	12.1	5.8	0.02	5.5	2.6	19.2
IT1_SB_07, 1.00m, ES, 5, CEFAS5-020619	MAR00296.002	Sediment	12.2	0.17	9.1	3.7	0.02	3.8	1.7	12.5
Certified Reference Material SETOC 774 (% Recovery)			97	93	95	97	93	95	95	96
QC Blank			<0.5	<0.04	<0.5	<0.5	<0.015	<0.5	<0.5	<2

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Test Report ID	MAR00296
Issue Version	2
Customer Reference	SZC 2019 Offshore Ground Investigation - G190016U

		Units	mg/Kg (Dry Weight)	
		Method No	ASC/SOP/301	
		Limit of Detection	0.001	0.001
		Accreditation	MMO	MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**Dibutyltin (DBT)**	**Tributyltin (TBT)**
IT1_SB_07, 0.00m, ES, 1, CEFAS1-020619	MAR00296.001	Sediment	<0.001	<0.001
IT1_SB_07, 1.00m, ES, 5, CEFAS5-020619	MAR00296.002	Sediment	<0.001	<0.001
Certified Reference Material BCR-646 (% Recovery)			92	78
QC Blank			<0.001	<0.001

* See report notes

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Test Report ID	MAR00296
Issue Version	2
Customer Reference	SZC 2019 Offshore Ground Investigation - G190016U

		Units	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)
		Method No	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304
		Limit of Detection	1	1	1	1	1	1
		Accreditation	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**ACENAPTH**	**ACENAPHY**	**ANTHRACN**	**BAA**	**BAP**	**BBF**
IT1_SB_07, 0.00m, ES, 1, CEFAS1-020619	MAR00296.001	Sediment	<1	<1	<1	<1	<1	<1
IT1_SB_07, 1.00m, ES, 5, CEFAS5-020619	MAR00296.002	Sediment	<1	<1	<1	<1	<1	<1
Certified Reference Material CRM180013 1941b (% Recovery)			86	95	75	70	66	88
QC Blank			<1	<1	<1	<1	<1	<1

~ Indicates result is for an In-house Reference Material as
no Certified Reference Materials are avaliable.
For full analyte name see method summaries

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Test Report ID	MAR00296
Issue Version	2
Customer Reference	SZC 2019 Offshore Ground Investigation - G19001

		Units	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)
		Method No	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304
		Limit of Detection	1	1	1	1	1	1
		Accreditation	UKAS/MMO	UKAS/MMO	UKAS/MMO	MMO	MMO	MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**BENZGHIP**	**BEP**	**BKF**	**C1N**	**C1PHEN**	**C2N**
IT1_SB_07, 0.00m, ES, 1, CEFAS1-020619	MAR00296.001	Sediment	<1	<1	<1	<1	<1	<1
IT1_SB_07, 1.00m, ES, 5, CEFAS5-020619	MAR00296.002	Sediment	<1	<1	<1	<1	<1	<1
Certified Reference Material CRM180013 1941b (% Recovery)			91	93	105	77	85	107
QC Blank			<1	<1	<1	<1	<1	<1

~ Indicates result is for an In-house Reference Material as
no Certified Reference Materials are avaliable.
For full analyte name see method summaries

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Test Report ID MAR00296
Issue Version 2
Customer Reference SZC 2019 Offshore Ground Investigation - G19001

		Units	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)
		Method No	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304
		Limit of Detection	1	1	1	1	1	1
		Accreditation	MMO	MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**C3N**	**CHRYSENE**	**DBENZAH**	**FLUORANT**	**FLUORENE**	**INDPYR**
IT1_SB_07, 0.00m, ES, 1, CEFAS1-020619	MAR00296.001	Sediment	<1	<1	<1	<1	<1	<1
IT1_SB_07, 1.00m, ES, 5, CEFAS5-020619	MAR00296.002	Sediment	<1	<1	<1	<1	<1	<1
Certified Reference Material CRM180013 1941b (% Recovery)			113	92	116	88	58	87
QC Blank			<1	<1	<1	<1	<1	<1

~ Indicates result is for an In-house Reference Material as
no Certified Reference Materials are avaliable.
For full analyte name see method summaries

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Certificate of Analysis

Issuing Laboratory SOCOTEC, Marine Department, Specialist Chemistry, Etwall House, Bretby Business Park, Ashby Road, Bretby, Burton-upon-Trent DE15 0YZ

Test Report ID	MAR00296
Issue Version	2
Customer Reference	SZC 2019 Offshore Ground Investigation - G19001

		Units	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	mg/Kg
		Method No	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/305
		Limit of Detection	1	1	1	1	1
		Accreditation	UKAS/MMO	MMO	UKAS/MMO	UKAS/MMO	MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**NAPTH**	**PERYLENE**	**PHENANT**	**PYRENE**	**THC**
IT1_SB_07, 0.00m, ES, 1, CEFAS1-020619	MAR00296.001	Sediment	<1	<1	<1	<1	<1
IT1_SB_07, 1.00m, ES, 5, CEFAS5-020619	MAR00296.002	Sediment	<1	<1	<1	<1	<1
Certified Reference Material CRM180013 1941b (% Recovery)			66	65	86	77	112~
QC Blank			<1	<1	<1	<1	<1

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Test Report ID	MAR00296
Issue Version	2
Customer Reference	SZC 2019 Offshore Ground Investigation - G190016U

		Units	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)
		Method No	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302
		Limit of Detection	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008
		Accreditation	MMO	MMO	MMO	MMO	MMO	MMO	MMO	MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**PCB 101**	**PCB 105**	**PCB 110**	**PCB 118**	**PCB 128**	**PCB 138**	**PCB 141**	**PCB 149**
IT1_SB_07, 0.00m, ES, 1, CEFAS1-020619	MAR00296.001	Sediment	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008
IT1_SB_07, 1.00m, ES, 5, CEFAS5-020619	MAR00296.002	Sediment	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008
Certified Reference Material SRM 1941b (% Recovery)			96	83	122	108	67	121	103~	115
QC Blank			<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008

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Test Report ID	MAR00296
Issue Version	2
Customer Reference	SZC 2019 Offshore Ground Investigation - G19001

		Units	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)
		Method No	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302
		Limit of Detection	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008
		Accreditation	MMO	MMO	MMO	MMO	MMO	MMO	MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**PCB 151**	**PCB 153**	**PCB 156**	**PCB 158**	**PCB 170**	**PCB 18**	**PCB 180**
IT1_SB_07, 0.00m, ES, 1, CEFAS1-020619	MAR00296.001	Sediment	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	0.00022	<0.00008
IT1_SB_07, 1.00m, ES, 5, CEFAS5-020619	MAR00296.002	Sediment	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	0.00009	<0.00008
Certified Reference Material SRM 1941b (% Recovery)			118~	100	92	111~	102	89	100
QC Blank			<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008

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Test Report ID MAR00296
Issue Version 2
Customer Reference SZC 2019 Offshore Ground Investigation - G19001

		Units	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)
		Method No	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302
		Limit of Detection	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008
		Accreditation	MMO	MMO	MMO	MMO	MMO	MMO	MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**PCB 183**	**PCB 187**	**PCB 194**	**PCB 28**	**PCB 31**	**PCB 44**	**PCB 47**
IT1_SB_07, 0.00m, ES, 1, CEFAS1-020619	MAR00296.001	Sediment	<0.00008	<0.00008	<0.00008	0.00018	0.00015	0.00010	<0.00008
IT1_SB_07, 1.00m, ES, 5, CEFAS5-020619	MAR00296.002	Sediment	<0.00008	<0.00008	<0.00008	0.00011	0.00009	<0.00008	<0.00008
Certified Reference Material SRM 1941b (% Recovery)			77	90	100	71	96	92	108~
QC Blank			<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008

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Test Report ID	MAR00296
Issue Version	2
Customer Reference	SZC 2019 Offshore Ground Investigation - G19001

		Units	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)
		Method No	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302
		Limit of Detection	0.00008	0.00008	0.00008
		Accreditation	MMO	MMO	MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**PCB 49**	**PCB 52**	**PCB 66**
IT1_SB_07, 0.00m, ES, 1, CEFAS1-020619	MAR00296.001	Sediment	0.00008	0.00017	<0.00008
IT1_SB_07, 1.00m, ES, 5, CEFAS5-020619	MAR00296.002	Sediment	<0.00008	<0.00008	<0.00008
Certified Reference Material SRM 1941b (% Recovery)			107	99	87
QC Blank			<0.00008	<0.00008	<0.00008

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Test Report ID	MAR00296
Issue Version	2
Customer Reference	SZC 2019 Offshore Ground Investigation - G190016U

		Units	mg/Kg (Dry Weight)							
		Method No	ASC/SOP/302							
		Limit of Detection	0.0001							
		Accreditation	MMO							
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**AHCH**	**BHCH**	**GHCH**	**DIELDRIN**	**HCB**	**PPTDE**	**PPDDE**	**PPDDT**
IT1_SB_07, 0.00m, ES, 1, CEFAS1-020619	MAR00296.001	Sediment	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
IT1_SB_07, 1.00m, ES, 5, CEFAS5-020619	MAR00296.002	Sediment	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Certified Reference Material SRM 1941b (% Recovery)			105~	104~	108~	131~	132	105	129	104~
QC Blank			<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010

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For full analyte name see method summaries

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Test Report ID	MAR00296
Issue Version	2
Customer Reference	SZC 2019 Offshore Ground Investigation - G190016U

		Units	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)
		Method No	*SUB_02	*SUB_02	*SUB_02	*SUB_02	*SUB_02	*SUB_02	*SUB_02	*SUB_02
		Limit of Detection	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
		Accreditation	MMO	MMO	MMO	MMO	MMO	MMO	MMO	MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**BDE17**	**BDE28**	**BDE47**	**BDE66**	**BDE85**	**BDE99**	**BDE100**	**BDE138**
IT1_SB_07, 0.00m, ES, 1, CEFAS1-020619	MAR00296.001	Sediment	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
IT1_SB_07, 1.00m, ES, 5, CEFAS5-020619	MAR00296.002	Sediment	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02

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Test Report ID	MAR00296
Issue Version	2
Customer Reference	SZC 2019 Offshore Ground Investigation - G19001

		Units	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)
		Method No	*SUB_02	*SUB_02	*SUB_02	*SUB_02
		Limit of Detection	0.02	0.02	0.02	0.1
		Accreditation	MMO	MMO	MMO	MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**BDE153**	**BDE154**	**BDE183**	**BDE209**
IT1_SB_07, 0.00m, ES, 1, CEFAS1-020619	MAR00296.001	Sediment	<0.02	<0.02	<0.02	<0.1
IT1_SB_07, 1.00m, ES, 5, CEFAS5-020619	MAR00296.002	Sediment	<0.02	<0.02	<0.02	<0.1

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Test Report ID MAR00296
Issue Version 2
Customer Reference SZC 2019 Offshore Ground Investigation - G190016U

REPORT NOTES

Method Code	Sample ID	The following information should be taken into consideration when using the data contained within this report
*SUB_01	MAR00296.001-002	Analysis was conducted by an approved subcontracted laboratory.
*SUB_02	MAR00296.001-002	Analysis was conducted by an approved subcontracted laboratory.
SOCOTEC Env Chem*	MAR00296.001-002	Analysis was conducted by an internal SOCOTEC laboratory. UKAS accredited analysis by this laboratory is under UKAS number 1252.
ASC/SOP/302	MAR00296.001-002	The Primary process control data associated with this Test has not wholly met the requirements of the Laboratory Quality Management System QMS with one or more target analytes falling outside acceptable limits. However the remaining data gives the Laboratory confidence that the test has performed satisfactorily and that the validity of the data may not have been significantly affected. However in line with our QMS policy we have removed accreditation, where applicable, from the affected analytes (PCB110, 118, 149 and PPDDT) . These circumstances should be taken into consideration when utilising the data.

DEVIATING SAMPLE STATEMENT

Deviation Code	Devation Definition	Sample ID	Deviation Details. The following information should be taken into consideration when using the data contained within this report
D1	Holding Time Exceeded	N/A	N/A
D2	Handling Time Exceeded	N/A	N/A
D3	Sample Contaminated through Damaged Packaging	N/A	N/A
D4	Sample Contaminated through Sampling	N/A	N/A
D5	Inappropriate Container/Packaging	N/A	N/A
D6	Damaged in Transit	N/A	N/A
D7	Insufficient Quantity of Sample	N/A	N/A
D8	Inappropriate Headspace	N/A	N/A
D9	Retained at Incorrect Temperature	N/A	N/A
D10	Lack of Date & Time of Sampling	N/A	N/A
D11	Insufficient Sample Details	N/A	N/A
D12	Sample integrity compromised or not suitable for analysis	N/A	N/A

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Test Report ID	MAR00296
Issue Version	2
Customer Reference	SZC 2019 Offshore Ground Investigation - G190016U

Method	Sample and Fraction Size	Method Summary
Particle Size Analysis	Wet Sediment	Wet and dry sieving followed by laser diffraction analysis.
Total Organic Carbon (TOC)	Air dried	Carbonate removal and sulphurous acid/combustion at 800°C/NDIR.
Metals	Air dried	Aqua-regia extraction followed by ICP analysis.
Organotins	Wet Sediment	Solvent extraction and derivatisation followed by GC-MS analysis.
Polyaromatic Hydrocarbons (PAH)	Wet Sediment	Solvent extraction and clean up followed by GC-MS analysis.
Total Hydrocarbon Content (THC)	Wet Sediment	Ultra-violet fluorescence spectroscopy
Polychlorinated Biphenyls (PCBs)	Air dried and seived to <2mm	Solvent extraction and clean up followed by GC-MS-MS analysis.
Organochlorine Pesticides (OCPs)	Air dried and seived to <2mm	Solvent extraction and clean up followed by GC-MS-MS analysis.

Analyte Definitions

Analyte Abbreviation	Full Analyte name	Analyte Abbreviation	Full Analyte name	Analyte Abbreviation	Full Analyte name
ACENAPTH	Acenaphthene	C2N	C2-naphthalenes	THC	Total Hydrocarbon Content
ACENAPHY	Acenaphthylene	C3N	C3-naphthalenes	AHCH	alpha-Hexachlorcyclohexane
ANTHRACN	Anthracene	CHRYSENE	Chrysene	BHCH	beta-Hexachlorcyclohexane
BAA	Benzo[a]anthracene	DBENZAH	Diben[ah]anthracene	GHCH	gamma-Hexachlorcyclohexane
BAP	Benzo[a]pyrene	FLUORANT	Fluoranthene	DIELDRIN	Dieldrin
BBF	Benzo[b]fluoranthene	FLUORENE	Fluorene	HCB	Hexachlorobenzene
BEP	Benzo[e]pyrene	INDPYR	Indeno[1,2,3-cd]pyrene	PPDDE	p,p'-Dichorodiphenyldicloroethylene
BENZGHIP	Benzo[ghi]perylene	NAPTH	Naphthalene	PPDDT	p,p'-Dichorodiphenyltrichloroethane
BKF	Benzo[k]fluoranthene	PERYLENE	Perylene	PPTDE	p,p'-Dichorodiphenyldicloroethane
C1N	C1-naphthalenes	PHENANT	Phenanthrene		
C1PHEN	C1-phenanthrene	PYRENE	Pyrene		

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Test Report ID	**MAR00303**	
Issue Version	2	
Customer	Fugro Geoservices Ltd, Fugro House, Hithercroft Road, Wallingford, Oxfordshire, OX10 9RB	
Customer Reference	SZC 2019 Offshore Ground Investigation - G190016U	
Date Received	13-Jun-19	
Date Reported	16-Jan-20	
Condition of samples	Frozen	Satisfactory

This is a revised report containing updated sample descriptions and replaces all previously issed versions.

[redacted]

Authorised by: Marya Hubbard

Position: Laboratory Manager

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Test Report ID	MAR00303
Issue Version	2
Customer Reference	SZC 2019 Offshore Ground Investigation - G190016U

		Units	% M/M	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)
		Method No	SOCOTEC Env Chem*	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01
		Accreditation	UKAS/MMO	MMO	MMO	MMO	MMO	MMO
			Total Organic Carbon	**45mm**	**31.5mm**	**22.4mm**	**16mm**	**11.2mm**
Client Reference:	**SOCOTEC Ref:**	**Matrix**	–	**-5.5**	**-5.0**	**-4.5**	**-4.0**	**-3.5**
IT1_SB_06, 0.00m, ES, 1, SB06 CEFAS1-050619	MAR00303.001	Sediment	0.24	0.00	0.00	3.64	0.89	3.67
IT1_SB_06, 1.00m, ES, 5, SB06 CEFAS5-050619	MAR00303.002	Sediment	0.22	0.00	0.00	0.00	0.00	1.61

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Test Report ID	MAR00303
Issue Version	2
Customer Reference	SZC 2019 Offshore Ground Investigation - G190016U

		Units	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)
		Method No	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01
		Accreditation	MMO	MMO	MMO	MMO	MMO
			8mm	**5.6mm**	**4mm**	**2.8mm**	**2mm**
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**-3.0**	**-2.5**	**-2.0**	**-1.5**	**-1.0**
IT1_SB_06, 0.00m, ES, 1, SB06 CEFAS1-050619	MAR00303.001	Sediment	2.20	5.23	5.34	5.16	4.81
IT1_SB_06, 1.00m, ES, 5, SB06 CEFAS5-050619	MAR00303.002	Sediment	1.26	1.55	1.92	2.15	2.45

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Test Report ID	MAR00303
Issue Version	2
Customer Reference	SZC 2019 Offshore Ground Investigation - G190016U

		Units	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)
		Method No	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01
		Accreditation	MMO	MMO	MMO	MMO	MMO
			1.4mm	**1mm**	**707µm**	**500µm**	**353.6µm**
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**-0.5**	**0.0**	**0.5**	**1.0**	**1.5**
IT1_SB_06, 0.00m, ES, 1, SB06 CEFAS1-050619	MAR00303.001	Sediment	5.48	7.42	8.85	8.39	9.22
IT1_SB_06, 1.00m, ES, 5, SB06 CEFAS5-050619	MAR00303.002	Sediment	3.90	8.25	13.97	15.40	13.15

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Test Report ID	MAR00303
Issue Version	2
Customer Reference	SZC 2019 Offshore Ground Investigation - G190016U

		Units	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)
		Method No	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01
		Accreditation	MMO	MMO	MMO	MMO	MMO
			250µm	**176.8µm**	**125µm**	**88.39µm**	**63µm**
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**2.0**	**2.5**	**3.0**	**3.5**	**4.0**
IT1_SB_06, 0.00m, ES, 1, SB06 CEFAS1-050619	MAR00303.001	Sediment	6.94	4.62	3.11	2.14	1.44
IT1_SB_06, 1.00m, ES, 5, SB06 CEFAS5-050619	MAR00303.002	Sediment	8.54	5.51	3.49	2.52	1.55

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Test Report ID	MAR00303
Issue Version	2
Customer Reference	SZC 2019 Offshore Ground Investigation - G190016U

		Units	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)
		Method No	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01
		Accreditation	MMO	MMO	MMO	MMO	MMO
			44.2µm	31.3µm	22.1µm	15.6µm	11µm
Client Reference:	SOCOTEC Ref:	Matrix	4.5	5.0	5.5	6.0	6.5
IT1_SB_06, 0.00m, ES, 1, SB06 CEFAS1-050619	MAR00303.001	Sediment	0.79	0.69	0.85	0.75	0.68
IT1_SB_06, 1.00m, ES, 5, SB06 CEFAS5-050619	MAR00303.002	Sediment	1.04	0.77	1.14	0.91	0.92

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Issuing Laboratory SOCOTEC, Marine Department, Specialist Chemistry, Etwall House, Bretby Business Park, Ashby Road, Bretby, Burton-upon-Trent DE15 0YZ

Test Report ID	MAR00303
Issue Version	2
Customer Reference	SZC 2019 Offshore Ground Investigation - G190016U

		Units	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)
		Method No	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01
		Accreditation	MMO	MMO	MMO	MMO	MMO
			7.8µm	**5.5µm**	**3.9µm**	**2.75µm**	**1.95µm**
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**7.0**	**7.5**	**8.0**	**8.5**	**9.0**
IT1_SB_06, 0.00m, ES, 1, SB06 CEFAS1-050619	MAR00303.001	Sediment	0.85	0.95	1.03	0.96	0.76
IT1_SB_06, 1.00m, ES, 5, SB06 CEFAS5-050619	MAR00303.002	Sediment	1.08	0.94	0.92	0.87	0.74

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Test Report ID	MAR00303
Issue Version	2
Customer Reference	SZC 2019 Offshore Ground Investigation - G190016U

		Units	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)
		Method No	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01
		Accreditation	MMO	MMO	MMO	MMO	MMO
			1.38µm	**0.98µm**	**0.69µm**	**0.49µm**	**0.34µm**
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**9.5**	**10.0**	**10.5**	**11.0**	**11.5**
IT1_SB_06, 0.00m, ES, 1, SB06 CEFAS1-050619	MAR00303.001	Sediment	0.58	0.49	0.44	0.40	0.34
IT1_SB_06, 1.00m, ES, 5, SB06 CEFAS5-050619	MAR00303.002	Sediment	0.60	0.53	0.49	0.44	0.38

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Test Report ID	MAR00303
Issue Version	2
Customer Reference	SZC 2019 Offshore Ground Investigation - G190016U

		Units	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)
		Method No	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01
		Accreditation	MMO	MMO	MMO	MMO	MMO
			0.24µm	0.17µm	0.12µm	0.09µm	0.06µm
Client Reference:	SOCOTEC Ref:	Matrix	12.0	12.5	13.0	13.5	14.0
IT1_SB_06, 0.00m, ES, 1, SB06 CEFAS1-050619	MAR00303.001	Sediment	0.28	0.22	0.16	0.12	0.07
IT1_SB_06, 1.00m, ES, 5, SB06 CEFAS5-050619	MAR00303.002	Sediment	0.32	0.25	0.19	0.13	0.08

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		Units	% (at 0.5phi intervals)	% (at 0.5phi intervals)
		Method No	*SUB_01	*SUB_01
		Accreditation	MMO	MMO
			0.04µm	<0.04µm
Client Reference:	SOCOTEC Ref:	Matrix	14.5	>14.5
IT1_SB_06, 0.00m, ES, 1, SB06 CEFAS1-050619	MAR00303.001	Sediment	0.03	0.00
IT1_SB_06, 1.00m, ES, 5, SB06 CEFAS5-050619	MAR00303.002	Sediment	0.03	0.00

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Test Report ID	MAR00303
Issue Version	2
Customer Reference	SZC 2019 Offshore Ground Investigation - G190016U

		Units	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)
		Method No	SOCOTEC Env Chem*	SOCOTEC Env Chem*	SOCOTEC Env Chem*	SOCOTEC Env Chem*
		Limit of Detection	0.5	0.04	0.5	0.5
		Accreditation	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**Arsenic (As)**	**Cadmium (Cd)**	**Chromium (Cr)**	**Copper (Cu)**
IT1_SB_06, 0.00m, ES, 1, SB06 CEFAS1-050619	MAR00303.001	Sediment	15.5	0.22	8.8	8.0
IT1_SB_06, 1.00m, ES, 5, SB06 CEFAS5-050619	MAR00303.002	Sediment	10.3	0.19	7.3	5.1
Certified Reference Material SETOC 774 (% Recovery)			101	104	101	100
QC Blank			<0.5	<0.04	<0.5	<0.5

* See Report Notes

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Test Report ID	MAR00303
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Customer Reference	SZC 2019 Offshore Ground Investigation - G190016U

		Units	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)
		Method No	SOCOTEC Env Chem*	SOCOTEC Env Chem*	SOCOTEC Env Chem*	SOCOTEC Env Chem*
		Limit of Detection	0.015	0.5	0.5	2
		Accreditation	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**Mercury (Hg)**	**Nickel (Ni)**	**Lead (Pb)**	**Zinc (Zn)**
IT1_SB_06, 0.00m, ES, 1, SB06 CEFAS1-050619	MAR00303.001	Sediment	<0.015	5.1	6.2	34.0
IT1_SB_06, 1.00m, ES, 5, SB06 CEFAS5-050619	MAR00303.002	Sediment	<0.015	3.7	1.9	19.2
Certified Reference Material SETOC 774 (% Recovery)			94	101	98	102
QC Blank			<0.015	<0.5	<0.5	<2

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Test Report ID	MAR00303
Issue Version	2
Customer Reference	SZC 2019 Offshore Ground Investigation - G190016U

		Units	mg/Kg (Dry Weight)	
		Method No	ASC/SOP/301	
		Limit of Detection	0.001	0.001
		Accreditation	MMO	MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**Dibutyltin (DBT)**	**Tributyltin (TBT)**
IT1_SB_06, 0.00m, ES, 1, SB06 CEFAS1-050619	MAR00303.001	Sediment	<0.001	<0.001
IT1_SB_06, 1.00m, ES, 5, SB06 CEFAS5-050619	MAR00303.002	Sediment	<0.001	<0.001
Certified Reference Material BCR-646 (% Recovery)			91.9	78.1
QC Blank			<0.001	<0.001

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Issue Version 2
Customer Reference SZC 2019 Offshore Ground Investigation - G190016U

		Units	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)
		Method No	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304
		Limit of Detection	1	1	1	1	1
		Accreditation	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**ACENAPTH**	**ACENAPHY**	**ANTHRACN**	**BAA**	**BAP**
IT1_SB_06, 0.00m, ES, 1, SB06 CEFAS1-050619	MAR00303.001	Sediment	<1	<1	<1	1.49	2.22
IT1_SB_06, 1.00m, ES, 5, SB06 CEFAS5-050619	MAR00303.002	Sediment	<1	<1	<1	<1	<1
Certified Reference Material CRM180013 1941b (% Recovery)			85.9	94.7	75.4	69.7	66.4
QC Blank			<1	<1	<1	<1	<1

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Test Report ID	MAR00303
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		Units	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)
		Method No	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304
		Limit of Detection	1	1	1	1	1
		Accreditation	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**BBF**	**BENZGHIP**	**BEP**	**BKF**	**C1N**
IT1_SB_06, 0.00m, ES, 1, SB06 CEFAS1-050619	MAR00303.001	Sediment	2.59	3.78	2.95	1.52	8.70
IT1_SB_06, 1.00m, ES, 5, SB06 CEFAS5-050619	MAR00303.002	Sediment	<1	<1	<1	<1	<1
Certified Reference Material CRM180013 1941b (% Recovery)			88.2	90.9	92.7	105	76.8
QC Blank			<1	<1	<1	<1	<1

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Test Report ID	MAR00303
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		Units	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)
		Method No	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304
		Limit of Detection	1	1	1	1	1
		Accreditation	MMO	MMO	MMO	MMO	UKAS/MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**C1PHEN**	**C2N**	**C3N**	**CHRYSENE**	**DBENZAH**
IT1_SB_06, 0.00m, ES, 1, SB06 CEFAS1-050619	MAR00303.001	Sediment	5.92	7.08	5.14	2.24	<1
IT1_SB_06, 1.00m, ES, 5, SB06 CEFAS5-050619	MAR00303.002	Sediment	<1	<1	<1	<1	<1
Certified Reference Material CRM180013 1941b (% Recovery)			85.3	107	113	91.7	116
QC Blank			<1	<1	<1	<1	<1

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Test Report ID	MAR00303
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		Units	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)
		Method No	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304
		Limit of Detection	1	1	1	1	1
		Accreditation	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**FLUORANT**	**FLUORENE**	**INDPYR**	**NAPTH**	**PERYLENE**
IT1_SB_06, 0.00m, ES, 1, SB06 CEFAS1-050619	MAR00303.001	Sediment	3.16	<1	2.29	2.59	1.36
IT1_SB_06, 1.00m, ES, 5, SB06 CEFAS5-050619	MAR00303.002	Sediment	<1	<1	<1	<1	<1
Certified Reference Material CRM180013 1941b (% Recovery)			87.9	58.0	86.7	66.2	65
QC Blank			<1	<1	<1	<1	<1

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Test Report ID	MAR00303
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		Units	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	mg/Kg
		Method No	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/305
		Limit of Detection	1	1	1
		Accreditation	UKAS/MMO	UKAS/MMO	MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**PHENANT**	**PYRENE**	**THC**
IT1_SB_06, 0.00m, ES, 1, SB06 CEFAS1-050619	MAR00303.001	Sediment	4.62	2.87	5.04
IT1_SB_06, 1.00m, ES, 5, SB06 CEFAS5-050619	MAR00303.002	Sediment	<1	<1	<1
Certified Reference Material CRM180013 1941b (% Recovery)			86.4	77.3	94.6~
QC Blank			<1	<1	<1

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		Units	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)
		Method No	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302
		Limit of Detection	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008
		Accreditation	MMO	MMO	MMO	MMO	MMO	MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**PCB 101**	**PCB 105**	**PCB 110**	**PCB 118**	**PCB 128**	**PCB 138**
IT1_SB_06, 0.00m, ES, 1, SB06 CEFAS1-050619	MAR00303.001	Sediment	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008
IT1_SB_06, 1.00m, ES, 5, SB06 CEFAS5-050619	MAR00303.002	Sediment	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008
Certified Reference Material SRM 1941b (% Recovery)			96.2	82.9	122	108	66.9	121
QC Blank			<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008

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		Units	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)
		Method No	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302
		Limit of Detection	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008
		Accreditation	MMO	MMO	MMO	MMO	MMO	MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**PCB 141**	**PCB 149**	**PCB 151**	**PCB 153**	**PCB 156**	**PCB 158**
IT1_SB_06, 0.00m, ES, 1, SB06 CEFAS1-050619	MAR00303.001	Sediment	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008
IT1_SB_06, 1.00m, ES, 5, SB06 CEFAS5-050619	MAR00303.002	Sediment	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008
Certified Reference Material SRM 1941b (% Recovery)			103~	115	118~	100	91.9	111
QC Blank			<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008

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		Units	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)
		Method No	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302
		Limit of Detection	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008
		Accreditation	MMO	MMO	MMO	MMO	MMO	MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**PCB 170**	**PCB 18**	**PCB 180**	**PCB 183**	**PCB 187**	**PCB 194**
IT1_SB_06, 0.00m, ES, 1, SB06 CEFAS1-050619	MAR00303.001	Sediment	<0.00008	0.00017	<0.00008	<0.00008	<0.00008	<0.00008
IT1_SB_06, 1.00m, ES, 5, SB06 CEFAS5-050619	MAR00303.002	Sediment	<0.00008	0.00016	<0.00008	<0.00008	<0.00008	<0.00008
Certified Reference Material SRM 1941b (% Recovery)			102	88.8	100	77.0	90.0	100
QC Blank			<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008

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Test Report ID	MAR00303
Issue Version	2
Customer Reference	SZC 2019 Offshore Ground Investigation - G190016U

		Units	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)
		Method No	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302
		Limit of Detection	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008
		Accreditation	MMO	MMO	MMO	MMO	MMO	MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**PCB 28**	**PCB 31**	**PCB 44**	**PCB 47**	**PCB 49**	**PCB 52**
IT1_SB_06, 0.00m, ES, 1, SB06 CEFAS1-050619	MAR00303.001	Sediment	0.00013	0.00012	<0.00008	<0.00008	<0.00008	0.00009
IT1_SB_06, 1.00m, ES, 5, SB06 CEFAS5-050619	MAR00303.002	Sediment	0.00012	0.00013	<0.00008	<0.00008	<0.00008	0.00009
Certified Reference Material SRM 1941b (% Recovery)			71.4	95.9	92.0	108~	107	98.9
QC Blank			<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008

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Issue Version	2
Customer Reference	SZC 2019 Offshore Ground Investigation - G190016U

		Units	mg/Kg (Dry Weight)
		Method No	ASC/SOP/302
		Limit of Detection	0.00008
		Accreditation	MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**PCB 66**
IT1_SB_06, 0.00m, ES, 1, SB06 CEFAS1-050619	MAR00303.001	Sediment	<0.00008
IT1_SB_06, 1.00m, ES, 5, SB06 CEFAS5-050619	MAR00303.002	Sediment	<0.00008
		Certified Reference Material SRM 1941b (% Recovery)	86.5
		QC Blank	<0.00008

~ Indicates result is for an In-house Reference Material as
no Certified Reference Materials are avaliable.

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Certificate of Analysis

Issuing Laboratory SOCOTEC, Marine Department, Specialist Chemistry, Etwall House, Bretby Business Park, Ashby Road, Bretby, Burton-upon-Trent DE15 0YZ

Test Report ID	MAR00303
Issue Version	2
Customer Reference	SZC 2019 Offshore Ground Investigation - G190016U

		Units	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)
		Method No	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302
		Limit of Detection	0.0001	0.0001	0.0001	0.0001
		Accreditation	MMO	MMO	MMO	MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**AHCH**	**BHCH**	**GHCH**	**DIELDRIN**
IT1_SB_06, 0.00m, ES, 1, SB06 CEFAS1-050619	MAR00303.001	Sediment	<0.00010	<0.00010	<0.00010	<0.00010
IT1_SB_06, 1.00m, ES, 5, SB06 CEFAS5-050619	MAR00303.002	Sediment	<0.00010	<0.00010	<0.00010	<0.00010
		Certified Reference Material SRM 1941b (% Recovery)	105~	104~	108~	131~
		QC Blank	<0.00010	<0.00010	<0.00010	<0.00010

~ Indicates result is for an In-house Reference Material as
no Certified Reference Materials are avaliable.
For full analyte name see method summaries

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Test Report ID	MAR00303
Issue Version	2
Customer Reference	SZC 2019 Offshore Ground Investigation - G190016U

		Units	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)
		Method No	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302
		Limit of Detection	0.0001	0.0001	0.0001	0.0001
		Accreditation	MMO	MMO	MMO	MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**HCB**	**PPTDE**	**PPDDE**	**PPDDT**
IT1_SB_06, 0.00m, ES, 1, SB06 CEFAS1-050619	MAR00303.001	Sediment	<0.00010	<0.00010	<0.00010	<0.00010
IT1_SB_06, 1.00m, ES, 5, SB06 CEFAS5-050619	MAR00303.002	Sediment	<0.00010	<0.00010	<0.00010	<0.00010
Certified Reference Material SRM 1941b (% Recovery)			132	105	129	104~
QC Blank			<0.00010	<0.00010	<0.00010	<0.00010

~ Indicates result is for an In-house Reference Material as
no Certified Reference Materials are avaliable.
For full analyte name see method summaries

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Test Report ID	MAR00303
Issue Version	2
Customer Reference	SZC 2019 Offshore Ground Investigation - G190016U

		Units	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)
		Method No	*SUB_02	*SUB_02	*SUB_02	*SUB_02	*SUB_02	*SUB_02	*SUB_02
		Limit of Detection	0.02	0.02	0.02	0.02	0.02	0.02	0.02
		Accreditation	MMO	MMO	MMO	MMO	MMO	MMO	MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**BDE17**	**BDE28**	**BDE47**	**BDE66**	**BDE85**	**BDE99**	**BDE100**
IT1_SB_06, 0.00m, ES, 1, SB06 CEFAS1-050619	MAR00303.001	Sediment	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
IT1_SB_06, 1.00m, ES, 5, SB06 CEFAS5-050619	MAR00303.002	Sediment	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02

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Test Report ID	MAR00303
Issue Version	2
Customer Reference	SZC 2019 Offshore Ground Investigation - G190016U

		Units	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)
		Method No	*SUB_02	*SUB_02	*SUB_02	*SUB_02	*SUB_02
		Limit of Detection	0.02	0.02	0.02	0.02	0.1
		Accreditation	MMO	MMO	MMO	MMO	MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**BDE138**	**BDE153**	**BDE154**	**BDE183**	**BDE209**
IT1_SB_06, 0.00m, ES, 1, SB06 CEFAS1-050619	MAR00303.001	Sediment	<0.02	<0.02	<0.02	<0.02	<0.1
IT1_SB_06, 1.00m, ES, 5, SB06 CEFAS5-050619	MAR00303.002	Sediment	<0.02	<0.02	<0.02	<0.02	<0.1

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Test Report ID MAR00303
Issue Version 2
Customer Reference SZC 2019 Offshore Ground Investigation - G190016U

REPORT NOTES

Method Code	Sample ID	The following information should be taken into consideration when using the data contained within this report
*SUB_01	MAR00303.001-002	Analysis was conducted by an approved subcontracted laboratory.
*SUB_02	MAR00303.001-002	Analysis was conducted by an approved subcontracted laboratory.
SOCOTEC Env Chem*	MAR00303.001-002	Analysis was conducted by an internal SOCOTEC laboratory. UKAS accredited analysis by this laboratory is under UKAS number 1252.
ASC/SOP/302	MAR00303.001-002	The Primary process control data associated with this Test has not wholly met the requirements of the Laboratory Quality Management System QMS with one or more target analytes falling outside acceptable limits. However the remaining data gives the Laboratory confidence that the test has performed satisfactorily and that the validity of the data may not have been significantly affected. However in line with our QMS policy we have removed accreditation, where applicable, from the affected analytes (PCB110, 118, 149 and PPDDT) . These circumstances should be taken into consideration when utilising the data.
ASC/SOP/303/304	MAR00303.001	Chrysene is known to coelute with Triphenylene and these peaks can not be resolved in the PAHSED UKAS accredited method. Chrysene and Triphenylene are resolved for MMO but this is

DEVIATING SAMPLE STATEMENT

Deviation Code	Devation Definition	Sample ID	Deviation Details. The following information should be taken into consideration when using the data contained within this report
D1	Holding Time Exceeded	N/A	N/A
D2	Handling Time Exceeded	N/A	N/A
D3	Sample Contaminated through Damaged Packaging	N/A	N/A
D4	Sample Contaminated through Sampling	N/A	N/A
D5	Inappropriate Container/Packaging	N/A	N/A
D6	Damaged in Transit	N/A	N/A
D7	Insufficient Quantity of Sample	N/A	N/A
D8	Inappropriate Headspace	N/A	N/A
D9	Retained at Incorrect Temperature	N/A	N/A
D10	Lack of Date & Time of Sampling	N/A	N/A
D11	Insufficient Sample Details	N/A	N/A
D12	Sample integrity compromised or not suitable for analysis	N/A	N/A

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Test Report ID	MAR00303
Issue Version	2
Customer Reference	SZC 2019 Offshore Ground Investigation - G190016U

Method	Sample and Fraction Size	Method Summary
Particle Size Analysis	Wet Sediment	Wet and dry sieving followed by laser diffraction analysis.
Total Organic Carbon (TOC)	Air dried	Carbonate removal and sulphurous acid/combustion at 800°C/NDIR.
Metals	Air dried	Aqua-regia extraction followed by ICP analysis.
Organotins	Wet Sediment	Solvent extraction and derivatisation followed by GC-MS analysis.
Polyaromatic Hydrocarbons (PAH)	Wet Sediment	Solvent extraction and clean up followed by GC-MS analysis.
Total Hydrocarbon Content (THC)	Wet Sediment	Ultra-violet fluorescence spectroscopy
Polychlorinated Biphenyls (PCBs)	Air dried and seived to <2mm	Solvent extraction and clean up followed by GC-MS-MS analysis.
Organochlorine Pesticides (OCPs)	Air dried and seived to <2mm	Solvent extraction and clean up followed by GC-MS-MS analysis.

Analyte Definitions

Analyte Abbreviation	Full Analyte name	Analyte Abbreviation	Full Analyte name	Analyte Abbreviation	Full Analyte name
ACENAPTH	Acenaphthene	C2N	C2-naphthalenes	THC	Total Hydrocarbon Content
ACENAPHY	Acenaphthylene	C3N	C3-naphthalenes	AHCH	alpha-Hexachlorcyclohexane
ANTHRACN	Anthracene	CHRYSENE	Chrysene	BHCH	beta-Hexachlorcyclohexane
BAA	Benzo[a]anthracene	DBENZAH	Diben[ah]anthracene	GHCH	gamma-Hexachlorcyclohexane
BAP	Benzo[a]pyrene	FLUORANT	Fluoranthene	DIELDRIN	Dieldrin
BBF	Benzo[b]fluoranthene	FLUORENE	Fluorene	HCB	Hexachlorobenzene
BEP	Benzo[e]pyrene	INDPYR	Indeno[1,2,3-cd]pyrene	PPDDE	p,p'-Dichorodiphenyldicloroethylene
BENZGHIP	Benzo[ghi]perylene	NAPTH	Naphthalene	PPDDT	p,p'-Dichorodiphenyltrichloroethane
BKF	Benzo[k]fluoranthene	PERYLENE	Perylene	PPTDE	p,p'-Dichorodiphenyldicloroethane
C1N	C1-naphthalenes	PHENANT	Phenanthrene		
C1PHEN	C1-phenanthrene	PYRENE	Pyrene		

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Test Report ID	**MAR00319**	
Issue Version	1	
Customer	Fugro Geoservices Ltd, Fugro House, Hithercroft Road, Wallingford, Oxfordshire, OX10 9RB	
Customer Reference	SZC 2019 Offshore Ground Investigation	
Date Received	25-Jun-19	
Date Reported	08-Oct-19	
Condition of samples	Frozen	Satisfactory

[redacted]

Authorised by: Marya Hubbard

Position: Laboratory Manager

Any additional opinions or interpretations found in this report, are outside the scope of UKAS accreditation.

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Test Report ID MAR00319
Issue Version 1
Customer Reference SZC 2019 Offshore Ground Investigation

		Units	% M/M	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)
		Method No	SOCOTEC Env Chem*	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01
		Accreditation	UKAS/MMO	MMO	MMO	MMO	MMO	MMO
			Total Organic Carbon	**45mm**	**31.5mm**	**22.4mm**	**16mm**	**11.2mm**
Client Reference:	**SOCOTEC Ref:**	**Matrix**	–	**-5.5**	**-5.0**	**-4.5**	**-4.0**	**-3.5**
IT2_SB_04, 1.00M, ES, 2, SB04 CEFAS2-220619	MAR00319.001	Sediment	0.14	0.00	0.00	0.00	0.00	0.00
IT2_SB_04, 1.50M, ES, 4, SB04 CEFAS4-220619	MAR00319.002	Sediment	0.33	0.00	0.00	0.00	1.32	0.65

* See Report Notes

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Test Report ID MAR00319
Issue Version 1
Customer Reference SZC 2019 Offshore Ground Investigation

		Units	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)
		Method No	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01
		Accreditation	MMO	MMO	MMO	MMO	MMO	MMO
			8mm	5.6mm	4mm	2.8mm	2mm	1.4mm
Client Reference:	SOCOTEC Ref:	Matrix	-3.0	-2.5	-2.0	-1.5	-1.0	-0.5
IT2_SB_04, 1.00M, ES, 2, SB04 CEFAS2-220619	MAR00319.001	Sediment	0.00	0.17	0.67	0.86	1.51	2.77
IT2_SB_04, 1.50M, ES, 4, SB04 CEFAS4-220619	MAR00319.002	Sediment	1.42	1.53	1.68	2.09	2.71	4.01

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Test Report ID MAR00319
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Customer Reference SZC 2019 Offshore Ground Investigation

			Units	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)
			Method No	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01
			Accreditation	MMO	MMO	MMO	MMO	MMO	MMO
				1mm	707µm	500µm	353.6µm	250µm	176.8µm
Client Reference:	SOCOTEC Ref:	Matrix		0.0	0.5	1.0	1.5	2.0	2.5
IT2_SB_04, 1.00M, ES, 2, SB04 CEFAS2-220619	MAR00319.001	Sediment		4.15	8.14	11.06	12.00	14.80	15.71
IT2_SB_04, 1.50M, ES, 4, SB04 CEFAS4-220619	MAR00319.002	Sediment		5.06	6.65	8.31	6.40	8.31	9.63

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Issue Version 1
Customer Reference SZC 2019 Offshore Ground Investigation

		Units	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)
		Method No	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01
		Accreditation	MMO	MMO	MMO	MMO	MMO	MMO
			125µm	88.39µm	63µm	44.2µm	31.3µm	22.1µm
Client Reference:	SOCOTEC Ref:	Matrix	3.0	3.5	4.0	4.5	5.0	5.5
IT2_SB_04, 1.00M, ES, 2, SB04 CEFAS2-220619	MAR00319.001	Sediment	8.53	4.49	4.33	2.95	1.39	0.78
IT2_SB_04, 1.50M, ES, 4, SB04 CEFAS4-220619	MAR00319.002	Sediment	6.44	5.44	3.89	2.57	2.72	1.97

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		Units	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)
		Method No	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01
		Accreditation	MMO	MMO	MMO	MMO	MMO	MMO
			15.6µm	**11µm**	**7.8µm**	**5.5µm**	**3.9µm**	**2.75µm**
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**6.0**	**6.5**	**7.0**	**7.5**	**8.0**	**8.5**
IT2_SB_04, 1.00M, ES, 2, SB04 CEFAS2-220619	MAR00319.001	Sediment	0.68	0.70	0.66	0.62	0.55	0.49
IT2_SB_04, 1.50M, ES, 4, SB04 CEFAS4-220619	MAR00319.002	Sediment	1.86	2.18	1.96	2.01	1.95	1.66

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		Units	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)
		Method No	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01
		Accreditation	MMO	MMO	MMO	MMO	MMO
			1.95µm	**1.38µm**	**0.98µm**	**0.69µm**	**0.49µm**
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**9.0**	**9.5**	**10.0**	**10.5**	**11.0**
IT2_SB_04, 1.00M, ES, 2, SB04 CEFAS2-220619	MAR00319.001	Sediment	0.41	0.34	0.28	0.24	0.20
IT2_SB_04, 1.50M, ES, 4, SB04 CEFAS4-220619	MAR00319.002	Sediment	1.30	1.07	0.92	0.76	0.59

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		Units	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)
		Method No	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01
		Accreditation	MMO	MMO	MMO	MMO	MMO
			0.34µm	**0.24µm**	**0.17µm**	**0.12µm**	**0.09µm**
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**11.5**	**12.0**	**12.5**	**13.0**	**13.5**
IT2_SB_04, 1.00M, ES, 2, SB04 CEFAS2-220619	MAR00319.001	Sediment	0.16	0.13	0.10	0.07	0.05
IT2_SB_04, 1.50M, ES, 4, SB04 CEFAS4-220619	MAR00319.002	Sediment	0.42	0.27	0.14	0.07	0.03

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		Units	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)
		Method No	*SUB_01	*SUB_01	*SUB_01
		Accreditation	MMO	MMO	MMO
			0.06µm	0.04µm	<0.04µm
Client Reference:	SOCOTEC Ref:	Matrix	14.0	14.5	>14.5
IT2_SB_04, 1.00M, ES, 2, SB04 CEFAS2-220619	MAR00319.001	Sediment	0.02	0.00	0.00
IT2_SB_04, 1.50M, ES, 4, SB04 CEFAS4-220619	MAR00319.002	Sediment	0.01	0.00	0.00

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Test Report ID MAR00319
Issue Version 1
Customer Reference SZC 2019 Offshore Ground Investigation

		Units	mg/Kg (Dry Weight)							
		Method No	SOCOTEC Env Chem*							
		Limit of Detection	0.5	0.04	0.5	0.5	0.015	0.5	0.5	2
		Accreditation	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**Arsenic (As)**	**Cadmium (Cd)**	**Chromium (Cr)**	**Copper (Cu)**	**Mercury (Hg)**	**Nickel (Ni)**	**Lead (Pb)**	**Zinc (Zn)**
IT2_SB_04, 1.00M, ES, 2, SB04 CEFAS2-220619	MAR00319.001	Sediment	18.3	0.04	6.6	5.7	0.03	5.2	6.4	20.7
IT2_SB_04, 1.50M, ES, 4, SB04 CEFAS4-220619	MAR00319.002	Sediment	18.1	0.07	10.2	6.9	0.03	8.1	6.5	24.3
Certified Reference Material SETOC 774 (% Recovery)			105	101	98	105	102	98	103	100
QC Blank			<0.5	<0.04	<0.5	<0.5	<0.015	<0.5	<0.5	<2

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Test Report ID MAR00319
Issue Version 1
Customer Reference SZC 2019 Offshore Ground Investigation

		Units	mg/Kg (Dry Weight)	
		Method No	ASC/SOP/301	
		Limit of Detection	0.001	0.001
		Accreditation	MMO	MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**Dibutyltin (DBT)**	**Tributyltin (TBT)**
IT2_SB_04, 1.00M, ES, 2, SB04 CEFAS2-220619	MAR00319.001	Sediment	<0.001	<0.001
IT2_SB_04, 1.50M, ES, 4, SB04 CEFAS4-220619	MAR00319.002	Sediment	<0.005	<0.005
Certified Reference Material BCR-646 (% Recovery)			97	83
QC Blank			<0.001	<0.001

* See report notes

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		Units	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)
		Method No	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304
		Limit of Detection	1	1	1	1	1	1
		Accreditation	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**ACENAPTH**	**ACENAPHY**	**ANTHRACN**	**BAA**	**BAP**	**BBF**
IT2_SB_04, 1.00M, ES, 2, SB04 CEFAS2-220619	MAR00319.001	Sediment	<1	<1	<1	<1	1.16	1.39
IT2_SB_04, 1.50M, ES, 4, SB04 CEFAS4-220619	MAR00319.002	Sediment	3.17	<1	3.91	12.2	15.4	18.4
Certified Reference Material CRM180013 1941b (% Recovery)			68	105	73	76	70	91
QC Blank			<1	<1	<1	<1	<1	<1

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For full analyte name see method summaries

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Certificate of Analysis

Issuing Laboratory SOCOTEC, Marine Department, Specialist Chemistry, Etwall House, Bretby Business Park, Ashby Road, Bretby, Burton-upon-Trent DE15 0YZ

Test Report ID MAR00319
Issue Version 1
Customer Reference SZC 2019 Offshore Ground Investigation

		Units	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)
		Method No	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304
		Limit of Detection	1	1	1	1	1	1
		Accreditation	UKAS/MMO	UKAS/MMO	UKAS/MMO	MMO	MMO	MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**BENZGHIP**	**BEP**	**BKF**	**C1N**	**C1PHEN**	**C2N**
IT2_SB_04, 1.00M, ES, 2, SB04 CEFAS2-220619	MAR00319.001	Sediment	2.23	1.88	<1	4.42	3.63	4.32
IT2_SB_04, 1.50M, ES, 4, SB04 CEFAS4-220619	MAR00319.002	Sediment	24.2	26.3	7.95	67.4	72.1	72.0
Certified Reference Material CRM180013 1941b (% Recovery)			77	99	101	78	84	101
QC Blank			<1	<1	<1	<1	<1	<1

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Test Report ID MAR00319
Issue Version 1
Customer Reference SZC 2019 Offshore Ground Investigation

		Units	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)
		Method No	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304
		Limit of Detection	1	1	1	1	1	1
		Accreditation	MMO	MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**C3N**	**CHRYSENE**	**DBENZAH**	**FLUORANT**	**FLUORENE**	**INDPYR**
IT2_SB_04, 1.00M, ES, 2, SB04 CEFAS2-220619	MAR00319.001	Sediment	4.11	1.27	<1	1.65	<1	<1
IT2_SB_04, 1.50M, ES, 4, SB04 CEFAS4-220619	MAR00319.002	Sediment	78.7	17.1	2.88	16	6.86	8.05
Certified Reference Material CRM180013 1941b (% Recovery)			108	99	99	83	57	80
QC Blank			<1	<1	<1	<1	<1	<1

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Test Report ID MAR00319
Issue Version 1
Customer Reference SZC 2019 Offshore Ground Investigation

			Units	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	mg/Kg
			Method No	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/305
			Limit of Detection	1	1	1	1	1
			Accreditation	UKAS/MMO	MMO	UKAS/MMO	UKAS/MMO	MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**		**NAPTH**	**PERYLENE**	**PHENANT**	**PYRENE**	**THC**
IT2_SB_04, 1.00M, ES, 2, SB04 CEFAS2-220619	MAR00319.001	Sediment		<1	1.50	2.94	1.73	3.76
IT2_SB_04, 1.50M, ES, 4, SB04 CEFAS4-220619	MAR00319.002	Sediment		11.9	25.5	50.2	21.2	6.79
Certified Reference Material CRM180013 1941b (% Recovery)				64	66	83	75	95~
QC Blank				<1	<1	<1	<1	<1

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Test Report ID MAR00319
Issue Version 1
Customer Reference SZC 2019 Offshore Ground Investigation

		Units	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)
		Method No	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302
		Limit of Detection	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008
		Accreditation	MMO	MMO	MMO	MMO	MMO	MMO	MMO	MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**PCB 101**	**PCB 105**	**PCB 110**	**PCB 118**	**PCB 128**	**PCB 138**	**PCB 141**	**PCB 149**
IT2_SB_04, 1.00M, ES, 2, SB04 CEFAS2-220619	MAR00319.001	Sediment	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008
IT2_SB_04, 1.50M, ES, 4, SB04 CEFAS4-220619	MAR00319.002	Sediment	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008
Certified Reference Material SRM 1941b (% Recovery)			99	86	119	108	66	123	114~	131
QC Blank			<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008

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Test Report ID MAR00319
Issue Version 1
Customer Reference SZC 2019 Offshore Ground Investigation

		Units	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)
		Method No	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302
		Limit of Detection	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008
		Accreditation	MMO	MMO	MMO	MMO	MMO	MMO	MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**PCB 151**	**PCB 153**	**PCB 156**	**PCB 158**	**PCB 170**	**PCB 18**	**PCB 180**
IT2_SB_04, 1.00M, ES, 2, SB04 CEFAS2-220619	MAR00319.001	Sediment	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	0.00014	<0.00008
IT2_SB_04, 1.50M, ES, 4, SB04 CEFAS4-220619	MAR00319.002	Sediment	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	0.00016	<0.00008
Certified Reference Material SRM 1941b (% Recovery)			127~	103	91	124~	105	85	99
QC Blank			<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008

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		Units	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)
		Method No	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302
		Limit of Detection	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008
		Accreditation	MMO	MMO	MMO	MMO	MMO	MMO	MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**PCB 183**	**PCB 187**	**PCB 194**	**PCB 28**	**PCB 31**	**PCB 44**	**PCB 47**
IT2_SB_04, 1.00M, ES, 2, SB04 CEFAS2-220619	MAR00319.001	Sediment	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008
IT2_SB_04, 1.50M, ES, 4, SB04 CEFAS4-220619	MAR00319.002	Sediment	<0.00008	<0.00008	<0.00008	0.00010	0.00011	<0.00008	<0.00008
Certified Reference Material SRM 1941b (% Recovery)			82	100	88	75	98	91	116~
QC Blank			<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008

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Issue Version 1
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		Units	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)
		Method No	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302
		Limit of Detection	0.00008	0.00008	0.00008
		Accreditation	MMO	MMO	MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**PCB 49**	**PCB 52**	**PCB 66**
IT2_SB_04, 1.00M, ES, 2, SB04 CEFAS2-220619	MAR00319.001	Sediment	<0.00008	<0.00008	<0.00008
IT2_SB_04, 1.50M, ES, 4, SB04 CEFAS4-220619	MAR00319.002	Sediment	<0.00008	0.00009	<0.00008
Certified Reference Material SRM 1941b (% Recovery)			104	99	97
QC Blank			<0.00008	<0.00008	<0.00008

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Test Report ID MAR00319
Issue Version 1
Customer Reference SZC 2019 Offshore Ground Investigation

		Units	mg/Kg (Dry Weight)							
		Method No	ASC/SOP/302							
		Limit of Detection	0.0001							
		Accreditation	MMO							
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**AHCH**	**BHCH**	**GHCH**	**DIELDRIN**	**HCB**	**PPTDE**	**PPDDE**	**PPDDT**
IT2_SB_04, 1.00M, ES, 2, SB04 CEFAS2-220619	MAR00319.001	Sediment	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
IT2_SB_04, 1.50M, ES, 4, SB04 CEFAS4-220619	MAR00319.002	Sediment	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Certified Reference Material SRM 1941b (% Recovery)			106~	105~	106~	153~	141	185	128	66~
QC Blank			<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010

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Test Report ID MAR00319
Issue Version 1
Customer Reference SZC 2019 Offshore Ground Investigation

		Units	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)
		Method No	*SUB_02	*SUB_02	*SUB_02	*SUB_02	*SUB_02	*SUB_02	*SUB_02
		Limit of Detection	0.02	0.02	0.02	0.02	0.02	0.02	0.02
		Accreditation	MMO	MMO	MMO	MMO	MMO	MMO	MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**BDE17**	**BDE28**	**BDE47**	**BDE66**	**BDE85**	**BDE99**	**BDE100**
IT2_SB_04, 1.00M, ES, 2, SB04 CEFAS2-220619	MAR00319.001	Sediment	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
IT2_SB_04, 1.50M, ES, 4, SB04 CEFAS4-220619	MAR00319.002	Sediment	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02

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Issue Version 1
Customer Reference SZC 2019 Offshore Ground Investigation

		Units	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)
		Method No	*SUB_02	*SUB_02	*SUB_02	*SUB_02	*SUB_02
		Limit of Detection	0.02	0.02	0.02	0.02	0.1
		Accreditation	MMO	MMO	MMO	MMO	MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**BDE138**	**BDE153**	**BDE154**	**BDE183**	**BDE209**
IT2_SB_04, 1.00M, ES, 2, SB04 CEFAS2-220619	MAR00319.001	Sediment	<0.02	<0.02	<0.02	<0.02	<0.1
IT2_SB_04, 1.50M, ES, 4, SB04 CEFAS4-220619	MAR00319.002	Sediment	<0.02	<0.02	<0.02	0.0285	<0.1

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Test Report ID MAR00319
Issue Version 1
Customer Reference SZC 2019 Offshore Ground Investigation

REPORT NOTES

Method Code	Sample ID	The following information should be taken into consideration when using the data contained within this report
*SUB_01	MAR00319.001-002	Analysis was conducted by an approved subcontracted laboratory.
SOCOTEC Env Chem*	MAR00319.001-002	Analysis was conducted by an internal SOCOTEC laboratory. UKAS accredited analysis by this laboratory is under UKAS number 1252.
ASC/SOP/301	MAR00319.002	The matrix of this sample has been found to interfere with the result for this test. The sample has therefore been diluted, but in doing so, the detection limit for this test has been elevated..
ASC/SOP/303/304	MAR00319.001-002	Chrysene is known to coelute with Triphenylene and these peaks can not be resolved in the PAHSED UKAS accredited method. Chrysene and Triphenylene are resolved for MMO but this is currently not UKAS accredited therefore Chrysene is reported without this acccreditation.

DEVIATING SAMPLE STATEMENT

Deviation Code	Devation Definition	Sample ID	Deviation Details. The following information should be taken into consideration when using the data contained within this report
D1	Holding Time Exceeded	N/A	N/A
D2	Handling Time Exceeded	N/A	N/A
D3	Sample Contaminated through Damaged Packaging	N/A	N/A
D4	Sample Contaminated through Sampling	N/A	N/A
D5	Inappropriate Container/Packaging	N/A	N/A
D6	Damaged in Transit	N/A	N/A
D7	Insufficient Quantity of Sample	N/A	N/A
D8	Inappropriate Headspace	N/A	N/A
D9	Retained at Incorrect Temperature	N/A	N/A
D10	Lack of Date & Time of Sampling	N/A	N/A
D11	Insufficient Sample Details	N/A	N/A
D12	Sample integrity compromised or not suitable for analysis	N/A	N/A

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Test Report ID	MAR00319
Issue Version	1
Customer Reference	SZC 2019 Offshore Ground Investigation

Method	Sample and Fraction Size	Method Summary
Particle Size Analysis	Wet Sediment	Wet and dry sieving followed by laser diffraction analysis.
Total Organic Carbon (TOC)	Air dried	Carbonate removal and sulphurous acid/combustion at 800°C/NDIR.
Metals	Air dried	Aqua-regia extraction followed by ICP analysis.
Organotins	Wet Sediment	Solvent extraction and derivatisation followed by GC-MS analysis.
Polyaromatic Hydrocarbons (PAH)	Wet Sediment	Solvent extraction and clean up followed by GC-MS analysis.
Total Hydrocarbon Content (THC)	Wet Sediment	Ultra-violet fluorescence spectroscopy
Polychlorinated Biphenyls (PCBs)	Air dried and seived to <2mm	Solvent extraction and clean up followed by GC-MS-MS analysis.
Organochlorine Pesticides (OCPs)	Air dried and seived to <2mm	Solvent extraction and clean up followed by GC-MS-MS analysis.

Analyte Definitions

Analyte Abbreviation	Full Analyte name	Analyte Abbreviation	Full Analyte name	Analyte Abbreviation	Full Analyte name
ACENAPTH	Acenaphthene	C2N	C2-naphthalenes	THC	Total Hydrocarbon Content
ACENAPHY	Acenaphthylene	C3N	C3-naphthalenes	AHCH	alpha-Hexachlorcyclohexane
ANTHRACN	Anthracene	CHRYSENE	Chrysene	BHCH	beta-Hexachlorcyclohexane
BAA	Benzo[a]anthracene	DBENZAH	Diben[ah]anthracene	GHCH	gamma-Hexachlorcyclohexane
BAP	Benzo[a]pyrene	FLUORANT	Fluoranthene	DIELDRIN	Dieldrin
BBF	Benzo[b]fluoranthene	FLUORENE	Fluorene	HCB	Hexachlorobenzene
BEP	Benzo[e]pyrene	INDPYR	Indeno[1,2,3-cd]pyrene	PPDDE	p,p'-Dichorodiphenyldicloroethylene
BENZGHIP	Benzo[ghi]perylene	NAPTH	Naphthalene	PPDDT	p,p'-Dichorodiphenyltrichloroethane
BKF	Benzo[k]fluoranthene	PERYLENE	Perylene	PPTDE	p,p'-Dichorodiphenyldicloroethane
C1N	C1-naphthalenes	PHENANT	Phenanthrene		
C1PHEN	C1-phenanthrene	PYRENE	Pyrene		

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Test Report ID	**MAR00323**	
Issue Version	1	
Customer	Fugro Geoservices Ltd, Fugro House, Hithercroft Road, Wallingford, Oxfordshire, OX10 9RB	
Customer Reference	SZC 2019 Offshore Ground Investigation	
Date Received	04-Jul-19	
Date Reported	08-Oct-19	
Condition of samples	Frozen	Satisfactory

[redacted]

Authorised by: Marya Hubbard

Position: Laboratory Manager

Any additional opinions or interpretations found in this report, are outside the scope of UKAS accreditation.

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Test Report ID MAR00323
Issue Version 1
Customer Reference SZC 2019 Offshore Ground Investigation

			Units	% M/M	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)
			Method No	SOCOTEC Env Chem*	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01
			Accreditation	UKAS/MMO	MMO	MMO	MMO	MMO	MMO
				Total Organic Carbon	45mm	31.5mm	22.4mm	16mm	11.2mm
Client Reference:	SOCOTEC Ref:	Matrix		–	-5.5	-5.0	-4.5	-4.0	-3.5
OT_SB_05, 0.00M, ES, 1, SB05 CEFAS1-240619	MAR00323.001	Sediment		0.17	0.00	0.00	0.00	1.46	0.83
OT_SB_05, 1.00M, ES, 4, SB05 CEFAS4-250619	MAR00323.002	Sediment		0.13	0.00	0.00	0.00	7.06	5.31

* See Report Notes

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Test Report ID MAR00323
Issue Version 1
Customer Reference SZC 2019 Offshore Ground Investigation

		Units	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)
		Method No	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01
		Accreditation	MMO	MMO	MMO	MMO	MMO	MMO
			8mm	5.6mm	4mm	2.8mm	2mm	1.4mm
Client Reference:	SOCOTEC Ref:	Matrix	-3.0	-2.5	-2.0	-1.5	-1.0	-0.5
OT_SB_05, 0.00M, ES, 1, SB05 CEFAS1-240619	MAR00323.001	Sediment	0.14	0.09	0.12	0.05	0.06	0.07
OT_SB_05, 1.00M, ES, 4, SB05 CEFAS4-250619	MAR00323.002	Sediment	1.31	1.30	0.69	0.73	0.88	1.28

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Certificate of Analysis

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Test Report ID MAR00323
Issue Version 1
Customer Reference SZC 2019 Offshore Ground Investigation

		Units	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)
		Method No	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01
		Accreditation	MMO	MMO	MMO	MMO	MMO	MMO
			1mm	707µm	500µm	353.6µm	250µm	176.8µm
Client Reference:	SOCOTEC Ref:	Matrix	0.0	0.5	1.0	1.5	2.0	2.5
OT_SB_05, 0.00M, ES, 1, SB05 CEFAS1-240619	MAR00323.001	Sediment	0.10	0.09	4.18	13.99	21.38	20.46
OT_SB_05, 1.00M, ES, 4, SB05 CEFAS4-250619	MAR00323.002	Sediment	1.47	0.24	4.66	13.72	17.63	13.73

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Customer Reference SZC 2019 Offshore Ground Investigation

		Units	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)
		Method No	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01
		Accreditation	MMO	MMO	MMO	MMO	MMO	MMO
			125µm	88.39µm	63µm	44.2µm	31.3µm	22.1µm
Client Reference:	SOCOTEC Ref:	Matrix	3.0	3.5	4.0	4.5	5.0	5.5
OT_SB_05, 0.00M, ES, 1, SB05 CEFAS1-240619	MAR00323.001	Sediment	9.44	2.39	2.68	3.57	3.26	2.72
OT_SB_05, 1.00M, ES, 4, SB05 CEFAS4-250619	MAR00323.002	Sediment	6.76	2.62	1.57	2.12	1.96	1.63

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		Units	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)
		Method No	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01
		Accreditation	MMO	MMO	MMO	MMO	MMO	MMO
			15.6µm	**11µm**	**7.8µm**	**5.5µm**	**3.9µm**	**2.75µm**
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**6.0**	**6.5**	**7.0**	**7.5**	**8.0**	**8.5**
OT_SB_05, 0.00M, ES, 1, SB05 CEFAS1-240619	MAR00323.001	Sediment	2.41	2.26	1.95	1.61	1.21	0.86
OT_SB_05, 1.00M, ES, 4, SB05 CEFAS4-250619	MAR00323.002	Sediment	1.40	1.51	1.61	1.65	1.52	1.28

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		Units	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)
		Method No	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01
		Accreditation	MMO	MMO	MMO	MMO	MMO
			1.95µm	**1.38µm**	**0.98µm**	**0.69µm**	**0.49µm**
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**9.0**	**9.5**	**10.0**	**10.5**	**11.0**
OT_SB_05, 0.00M, ES, 1, SB05 CEFAS1-240619	MAR00323.001	Sediment	0.59	0.41	0.32	0.27	0.24
OT_SB_05, 1.00M, ES, 4, SB05 CEFAS4-250619	MAR00323.002	Sediment	1.00	0.78	0.62	0.50	0.41

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		Units	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)
		Method No	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01
		Accreditation	MMO	MMO	MMO	MMO	MMO
			0.34µm	**0.24µm**	**0.17µm**	**0.12µm**	**0.09µm**
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**11.5**	**12.0**	**12.5**	**13.0**	**13.5**
OT_SB_05, 0.00M, ES, 1, SB05 CEFAS1-240619	MAR00323.001	Sediment	0.21	0.19	0.15	0.12	0.08
OT_SB_05, 1.00M, ES, 4, SB05 CEFAS4-250619	MAR00323.002	Sediment	0.33	0.27	0.20	0.15	0.09

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		Units	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)
		Method No	*SUB_01	*SUB_01	*SUB_01
		Accreditation	MMO	MMO	MMO
			0.06µm	0.04µm	<0.04µm
Client Reference:	SOCOTEC Ref:	Matrix	14.0	14.5	>14.5
OT_SB_05, 0.00M, ES, 1, SB05 CEFAS1-240619	MAR00323.001	Sediment	0.03	0.00	0.00
OT_SB_05, 1.00M, ES, 4, SB05 CEFAS4-250619	MAR00323.002	Sediment	0.04	0.00	0.00

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		Units	mg/Kg (Dry Weight)							
		Method No	SOCOTEC Env Chem*							
		Limit of Detection	0.5	0.04	0.5	0.5	0.015	0.5	0.5	2
		Accreditation	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**Arsenic (As)**	**Cadmium (Cd)**	**Chromium (Cr)**	**Copper (Cu)**	**Mercury (Hg)**	**Nickel (Ni)**	**Lead (Pb)**	**Zinc (Zn)**
OT_SB_05, 0.00M, ES, 1, SB05 CEFAS1-240619	MAR00323.001	Sediment	5.4	<0.04	8.3	7.5	0.02	5.6	3.8	14.4
OT_SB_05, 1.00M, ES, 4, SB05 CEFAS4-250619	MAR00323.002	Sediment	8.6	<0.04	7.9	7	0.08	5	4.2	14.3
Certified Reference Material SETOC 774 (% Recovery)			101	100	104.0	109	96	105	98	105
QC Blank			<0.5	<0.04	<0.5	<0.5	<0.015	<0.5	<0.5	<2

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		Units	mg/Kg (Dry Weight)	
		Method No	ASC/SOP/301	
		Limit of Detection	0.001	0.001
		Accreditation	MMO	MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**Dibutyltin (DBT)**	**Tributyltin (TBT)**
OT_SB_05, 0.00M, ES, 1, SB05 CEFAS1-240619	MAR00323.001	Sediment	<0.001	<0.001
OT_SB_05, 1.00M, ES, 4, SB05 CEFAS4-250619	MAR00323.002	Sediment	<0.001	<0.001
Certified Reference Material BCR-646 (% Recovery)			80	73
QC Blank			<0.001	<0.001

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		Units	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)
		Method No	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304
		Limit of Detection	1	1	1	1	1	1
		Accreditation	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**ACENAPTH**	**ACENAPHY**	**ANTHRACN**	**BAA**	**BAP**	**BBF**
OT_SB_05, 0.00M, ES, 1, SB05 CEFAS1-240619	MAR00323.001	Sediment	<1	<1	<1	<1	<1	<1
OT_SB_05, 1.00M, ES, 4, SB05 CEFAS4-250619	MAR00323.002	Sediment	<1	<1	<1	1.92	2.29	2.87
Certified Reference Material CRM180013 1941b (% Recovery)			70	113	70	71	64	85
QC Blank			<1	<1	<1	<1	<1	<1

~ Indicates result is for an In-house Reference Material as
no Certified Reference Materials are avaliable.
For full analyte name see method summaries

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Customer Reference SZC 2019 Offshore Ground Investigation

		Units	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)
		Method No	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304
		Limit of Detection	1	1	1	1	1	1
		Accreditation	UKAS/MMO	UKAS/MMO	UKAS/MMO	MMO	MMO	MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**BENZGHIP**	**BEP**	**BKF**	**C1N**	**C1PHEN**	**C2N**
OT_SB_05, 0.00M, ES, 1, SB05 CEFAS1-240619	MAR00323.001	Sediment	<1	<1	<1	<1	<1	<1
OT_SB_05, 1.00M, ES, 4, SB05 CEFAS4-250619	MAR00323.002	Sediment	3.54	3.17	1.19	9.50	5.89	7.83
Certified Reference Material CRM180013 1941b (% Recovery)			71	92	79	79	78	104
QC Blank			<1	<1	<1	<1	<1	<1

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Test Report ID MAR00323
Issue Version 1
Customer Reference SZC 2019 Offshore Ground Investigation

		Units	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)
		Method No	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304
		Limit of Detection	1	1	1	1	1	1
		Accreditation	MMO	MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**C3N**	**CHRYSENE**	**DBENZAH**	**FLUORANT**	**FLUORENE**	**INDPYR**
OT_SB_05, 0.00M, ES, 1, SB05 CEFAS1-240619	MAR00323.001	Sediment	<1	<1	<1	<1	<1	<1
OT_SB_05, 1.00M, ES, 4, SB05 CEFAS4-250619	MAR00323.002	Sediment	6.77	2.24	<1	3.73	<1	2.49
Certified Reference Material CRM180013 1941b (% Recovery)			126	90	84	80	62	74
QC Blank			<1	<1	<1	<1	<1	<1

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Customer Reference SZC 2019 Offshore Ground Investigation

			Units	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	mg/Kg
			Method No	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/305
			Limit of Detection	1	1	1	1	1
			Accreditation	UKAS/MMO	MMO	UKAS/MMO	UKAS/MMO	MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**		**NAPTH**	**PERYLENE**	**PHENANT**	**PYRENE**	**THC**
OT_SB_05, 0.00M, ES, 1, SB05 CEFAS1-240619	MAR00323.001	Sediment		<1	2.76	<1	<1	<1
OT_SB_05, 1.00M, ES, 4, SB05 CEFAS4-250619	MAR00323.002	Sediment		2.74	4.49	4.73	3.84	1.92
Certified Reference Material CRM180013 1941b (% Recovery)				64	59	81	74	88~
QC Blank				<1	<1	<1	<1	<1

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Customer Reference SZC 2019 Offshore Ground Investigation

		Units	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)
		Method No	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302
		Limit of Detection	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008
		Accreditation	MMO	MMO	MMO	MMO	MMO	MMO	MMO	MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**PCB 101**	**PCB 105**	**PCB 110**	**PCB 118**	**PCB 128**	**PCB 138**	**PCB 141**	**PCB 149**
OT_SB_05, 0.00M, ES, 1, SB05 CEFAS1-240619	MAR00323.001	Sediment	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008
OT_SB_05, 1.00M, ES, 4, SB05 CEFAS4-250619	MAR00323.002	Sediment	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008
Certified Reference Material SRM 1941b (% Recovery)			100	79	124	110	96	117	124~	97
QC Blank			<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008

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		Units	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)
		Method No	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302
		Limit of Detection	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008
		Accreditation	MMO	MMO	MMO	MMO	MMO	MMO	MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**PCB 151**	**PCB 153**	**PCB 156**	**PCB 158**	**PCB 170**	**PCB 18**	**PCB 180**
OT_SB_05, 0.00M, ES, 1, SB05 CEFAS1-240619	MAR00323.001	Sediment	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	0.00014	<0.00008
OT_SB_05, 1.00M, ES, 4, SB05 CEFAS4-250619	MAR00323.002	Sediment	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	0.00029	<0.00008
Certified Reference Material SRM 1941b (% Recovery)			135~	104	74	134~	101	93	102
QC Blank			<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008

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		Units	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)
		Method No	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302
		Limit of Detection	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008
		Accreditation	MMO	MMO	MMO	MMO	MMO	MMO	MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**PCB 183**	**PCB 187**	**PCB 194**	**PCB 28**	**PCB 31**	**PCB 44**	**PCB 47**
OT_SB_05, 0.00M, ES, 1, SB05 CEFAS1-240619	MAR00323.001	Sediment	<0.00008	<0.00008	<0.00008	0.00013	0.00013	0.00010	<0.00008
OT_SB_05, 1.00M, ES, 4, SB05 CEFAS4-250619	MAR00323.002	Sediment	<0.00008	<0.00008	<0.00008	0.00022	0.00023	0.00018	0.00011
Certified Reference Material SRM 1941b (% Recovery)			78	89	90	76	108	96	120~
QC Blank			<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008

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		Units	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)
		Method No	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302
		Limit of Detection	0.00008	0.00008	0.00008
		Accreditation	MMO	MMO	MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**PCB 49**	**PCB 52**	**PCB 66**
OT_SB_05, 0.00M, ES, 1, SB05 CEFAS1-240619	MAR00323.001	Sediment	<0.00008	0.00012	<0.00008
OT_SB_05, 1.00M, ES, 4, SB05 CEFAS4-250619	MAR00323.002	Sediment	0.00014	0.00023	0.00010
Certified Reference Material SRM 1941b (% Recovery)			105	102	96
QC Blank			<0.00008	<0.00008	<0.00008

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		Units	mg/Kg (Dry Weight)							
		Method No	ASC/SOP/302							
		Limit of Detection	0.0001							
		Accreditation	MMO							
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**AHCH**	**BHCH**	**GHCH**	**DIELDRIN**	**HCB**	**PPTDE**	**PPDDE**	**PPDDT**
OT_SB_05, 0.00M, ES, 1, SB05 CEFAS1-240619	MAR00323.001	Sediment	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
OT_SB_05, 1.00M, ES, 4, SB05 CEFAS4-250619	MAR00323.002	Sediment	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Certified Reference Material SRM 1941b (% Recovery)			116~	111~	123~	140~	150	107	102	115~
QC Blank			<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010

~ Indicates result is for an In-house Reference Material as
no Certified Reference Materials are avaliable.
For full analyte name see method summaries

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Test Report ID MAR00323
Issue Version 1
Customer Reference SZC 2019 Offshore Ground Investigation

		Units	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)
		Method No	*SUB_02	*SUB_02	*SUB_02	*SUB_02	*SUB_02	*SUB_02	*SUB_02
		Limit of Detection	0.02	0.02	0.02	0.02	0.02	0.02	0.02
		Accreditation	MMO	MMO	MMO	MMO	MMO	MMO	MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**BDE17**	**BDE28**	**BDE47**	**BDE66**	**BDE85**	**BDE99**	**BDE100**
OT_SB_05, 0.00M, ES, 1, SB05 CEFAS1-240619	MAR00323.001	Sediment	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
OT_SB_05, 1.00M, ES, 4, SB05 CEFAS4-250619	MAR00323.002	Sediment	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02

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Test Report ID MAR00323
Issue Version 1
Customer Reference SZC 2019 Offshore Ground Investigation

		Units	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)
		Method No	*SUB_02	*SUB_02	*SUB_02	*SUB_02	*SUB_02
		Limit of Detection	0.02	0.02	0.02	0.02	0.1
		Accreditation	MMO	MMO	MMO	MMO	MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**BDE138**	**BDE153**	**BDE154**	**BDE183**	**BDE209**
OT_SB_05, 0.00M, ES, 1, SB05 CEFAS1-240619	MAR00323.001	Sediment	<0.02	<0.02	<0.02	<0.02	<0.1
OT_SB_05, 1.00M, ES, 4, SB05 CEFAS4-250619	MAR00323.002	Sediment	<0.02	<0.02	<0.02	<0.02	0.891

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REPORT NOTES

Method Code	Sample ID	The following information should be taken into consideration when using the data contained within this report
*SUB_01	MAR00323.001-002	Analysis was conducted by an approved subcontracted laboratory.
SOCOTEC Env Chem*	MAR00323.001-002	Analysis was conducted by an internal SOCOTEC laboratory. UKAS accredited analysis by this laboratory is under UKAS number 1252.
ASC/SOP/303/304	MAR00323.002	Chrysene is known to coelute with Triphenylene and these peaks can not be resolved in the PAHSED UKAS accredited method. Chrysene and Triphenylene are resolved for MMO but this is currently not UKAS accredited therefore Chrysene is reported without this acccreditation.

DEVIATING SAMPLE STATEMENT

Deviation Code	Devation Definition	Sample ID	Deviation Details. The following information should be taken into consideration when using the data contained within this report
D1	Holding Time Exceeded	N/A	N/A
D2	Handling Time Exceeded	N/A	N/A
D3	Sample Contaminated through Damaged Packaging	N/A	N/A
D4	Sample Contaminated through Sampling	N/A	N/A
D5	Inappropriate Container/Packaging	N/A	N/A
D6	Damaged in Transit	N/A	N/A
D7	Insufficient Quantity of Sample	N/A	N/A
D8	Inappropriate Headspace	N/A	N/A
D9	Retained at Incorrect Temperature	N/A	N/A
D10	Lack of Date & Time of Sampling	N/A	N/A
D11	Insufficient Sample Details	N/A	N/A
D12	Sample integrity compromised or not suitable for analysis	N/A	N/A

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Test Report ID	MAR00323
Issue Version	1
Customer Reference	SZC 2019 Offshore Ground Investigation

Method	Sample and Fraction Size	Method Summary
Particle Size Analysis	Wet Sediment	Wet and dry sieving followed by laser diffraction analysis.
Total Organic Carbon (TOC)	Air dried	Carbonate removal and sulphurous acid/combustion at 800°C/NDIR.
Metals	Air dried	Aqua-regia extraction followed by ICP analysis.
Organotins	Wet Sediment	Solvent extraction and derivatisation followed by GC-MS analysis.
Polyaromatic Hydrocarbons (PAH)	Wet Sediment	Solvent extraction and clean up followed by GC-MS analysis.
Total Hydrocarbon Content (THC)	Wet Sediment	Ultra-violet fluorescence spectroscopy
Polychlorinated Biphenyls (PCBs)	Air dried and seived to <2mm	Solvent extraction and clean up followed by GC-MS-MS analysis.
Organochlorine Pesticides (OCPs)	Air dried and seived to <2mm	Solvent extraction and clean up followed by GC-MS-MS analysis.

Analyte Definitions

Analyte Abbreviation	Full Analyte name	Analyte Abbreviation	Full Analyte name	Analyte Abbreviation	Full Analyte name
ACENAPTH	Acenaphthene	C2N	C2-naphthalenes	THC	Total Hydrocarbon Content
ACENAPHY	Acenaphthylene	C3N	C3-naphthalenes	AHCH	alpha-Hexachlorcyclohexane
ANTHRACN	Anthracene	CHRYSENE	Chrysene	BHCH	beta-Hexachlorcyclohexane
BAA	Benzo[a]anthracene	DBENZAH	Diben[ah]anthracene	GHCH	gamma-Hexachlorcyclohexane
BAP	Benzo[a]pyrene	FLUORANT	Fluoranthene	DIELDRIN	Dieldrin
BBF	Benzo[b]fluoranthene	FLUORENE	Fluorene	HCB	Hexachlorobenzene
BEP	Benzo[e]pyrene	INDPYR	Indeno[1,2,3-cd]pyrene	PPDDE	p,p'-Dichorodiphenyldicloroethylene
BENZGHIP	Benzo[ghi]perylene	NAPTH	Naphthalene	PPDDT	p,p'-Dichorodiphenyltrichloroethane
BKF	Benzo[k]fluoranthene	PERYLENE	Perylene	PPTDE	p,p'-Dichorodiphenyldicloroethane
C1N	C1-naphthalenes	PHENANT	Phenanthrene		
C1PHEN	C1-phenanthrene	PYRENE	Pyrene		

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Test Report ID	**MAR00330**	
Issue Version	1	
Customer	Fugro Geoservices Ltd, Fugro House, Hithercroft Road, Wallingford, Oxfordshire, OX10 9RB	
Customer Reference	SZC 2019 Offshore Ground Investigation	
Date Received	11-Jul-19	
Date Reported	08-Oct-19	
Condition of samples	Frozen	Satisfactory

[redacted]

Authorised by: Marya Hubbard

Position: Laboratory Manager

Any additional opinions or interpretations found in this report, are outside the scope of UKAS accreditation.

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Test Report ID	MAR00330
Issue Version	1
Customer Reference	SZC 2019 Offshore Ground Investigation

		Units	% M/M	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)
		Method No	SOCOTEC Env Chem*	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01
		Accreditation	UKAS/MMO	MMO	MMO	MMO	MMO	MMO
			Total Organic Carbon	**45mm**	**31.5mm**	**22.4mm**	**16mm**	**11.2mm**
Client Reference:	**SOCOTEC Ref:**	**Matrix**	–	**-5.5**	**-5.0**	**-4.5**	**-4.0**	**-3.5**
OT_SB_04, 0.00M, ES, 1, OTSB04 CEFAS1-040719	MAR00330.001	Sediment	0.34	0.00	0.00	0.00	0.00	0.00
OT_SB_04, 2.00M, ES, 6, OTSB04 CEFAS6-040719	MAR00330.002	Sediment	0.13	0.00	0.00	0.00	0.00	0.69
IT2_SPT_03, 1.00M, ES, 4, SPT03 CEFAS-070719	MAR00330.003	Sediment	0.51	0.00	0.00	0.00	6.52	2.49
IT2_SB_03, 0.00M, ES, 1, SB03 CEFAS1-070719	MAR00330.004	Sediment	0.40	0.00	0.00	0.00	0.00	0.00
IT2_SB_03, 2.00M, ES, 6, SB03 CEFAS6-070719	MAR00330.005	Sediment	0.19	0.00	0.00	0.00	0.00	0.00

* See Report Notes

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Test Report ID MAR00330
Issue Version 1
Customer Reference SZC 2019 Offshore Ground Investigation

		Units	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)
		Method No	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01
		Accreditation	MMO	MMO	MMO	MMO	MMO	MMO
			8mm	5.6mm	4mm	2.8mm	2mm	1.4mm
Client Reference:	SOCOTEC Ref:	Matrix	-3.0	-2.5	-2.0	-1.5	-1.0	-0.5
OT_SB_04, 0.00M, ES, 1, OTSB04 CEFAS1-040719	MAR00330.001	Sediment	0.04	0.07	0.24	0.10	0.19	0.39
OT_SB_04, 2.00M, ES, 6, OTSB04 CEFAS6-040719	MAR00330.002	Sediment	0.85	0.47	0.51	0.15	0.12	0.10
IT2_SPT_03, 1.00M, ES, 4, SPT03 CEFAS-070719	MAR00330.003	Sediment	1.39	0.85	0.59	0.45	0.25	0.13
IT2_SB_03, 0.00M, ES, 1, SB03 CEFAS1-070719	MAR00330.004	Sediment	0.04	0.03	0.57	0.26	0.48	0.70
IT2_SB_03, 2.00M, ES, 6, SB03 CEFAS6-070719	MAR00330.005	Sediment	0.00	0.01	0.35	0.26	0.49	0.79

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Test Report ID	MAR00330
Issue Version	1
Customer Reference	SZC 2019 Offshore Ground Investigation

		Units	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)
		Method No	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01
		Accreditation	MMO	MMO	MMO	MMO	MMO	MMO
			1mm	**707µm**	**500µm**	**353.6µm**	**250µm**	**176.8µm**
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**0.0**	**0.5**	**1.0**	**1.5**	**2.0**	**2.5**
OT_SB_04, 0.00M, ES, 1, OTSB04 CEFAS1-040719	MAR00330.001	Sediment	0.76	0.07	3.50	5.52	5.79	9.90
OT_SB_04, 2.00M, ES, 6, OTSB04 CEFAS6-040719	MAR00330.002	Sediment	0.15	2.23	6.78	14.87	22.59	22.15
IT2_SPT_03, 1.00M, ES, 4, SPT03 CEFAS-070719	MAR00330.003	Sediment	0.07	0.06	0.17	0.88	2.71	4.34
IT2_SB_03, 0.00M, ES, 1, SB03 CEFAS1-070719	MAR00330.004	Sediment	0.99	0.13	0.01	0.56	5.20	21.04
IT2_SB_03, 2.00M, ES, 6, SB03 CEFAS6-070719	MAR00330.005	Sediment	1.21	1.56	4.82	6.91	6.06	16.97

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		Units	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)
		Method No	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01
		Accreditation	MMO	MMO	MMO	MMO	MMO	MMO
			125µm	88.39µm	63µm	44.2µm	31.3µm	22.1µm
Client Reference:	SOCOTEC Ref:	Matrix	3.0	3.5	4.0	4.5	5.0	5.5
OT_SB_04, 0.00M, ES, 1, OTSB04 CEFAS1-040719	MAR00330.001	Sediment	5.97	3.81	2.66	2.76	4.86	4.72
OT_SB_04, 2.00M, ES, 6, OTSB04 CEFAS6-040719	MAR00330.002	Sediment	10.69	2.46	1.58	1.94	1.77	1.56
IT2_SPT_03, 1.00M, ES, 4, SPT03 CEFAS-070719	MAR00330.003	Sediment	7.78	7.51	6.19	7.90	6.49	5.18
IT2_SB_03, 0.00M, ES, 1, SB03 CEFAS1-070719	MAR00330.004	Sediment	24.52	12.10	4.54	3.42	2.88	2.30
IT2_SB_03, 2.00M, ES, 6, SB03 CEFAS6-070719	MAR00330.005	Sediment	19.03	10.40	6.93	4.94	3.27	2.17

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		Units	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)
		Method No	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01
		Accreditation	MMO	MMO	MMO	MMO	MMO	MMO
			15.6µm	**11µm**	**7.8µm**	**5.5µm**	**3.9µm**	**2.75µm**
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**6.0**	**6.5**	**7.0**	**7.5**	**8.0**	**8.5**
OT_SB_04, 0.00M, ES, 1, OTSB04 CEFAS1-040719	MAR00330.001	Sediment	4.39	5.60	6.30	6.86	6.44	5.08
OT_SB_04, 2.00M, ES, 6, OTSB04 CEFAS6-040719	MAR00330.002	Sediment	1.46	1.40	1.22	1.03	0.80	0.59
IT2_SPT_03, 1.00M, ES, 4, SPT03 CEFAS-070719	MAR00330.003	Sediment	4.23	4.72	4.85	4.92	4.47	3.57
IT2_SB_03, 0.00M, ES, 1, SB03 CEFAS1-070719	MAR00330.004	Sediment	2.06	2.39	2.49	2.51	2.32	1.98
IT2_SB_03, 2.00M, ES, 6, SB03 CEFAS6-070719	MAR00330.005	Sediment	1.69	1.61	1.50	1.45	1.35	1.22

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		Units	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)
		Method No	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01
		Accreditation	MMO	MMO	MMO	MMO	MMO
			1.95µm	**1.38µm**	**0.98µm**	**0.69µm**	**0.49µm**
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**9.0**	**9.5**	**10.0**	**10.5**	**11.0**
OT_SB_04, 0.00M, ES, 1, OTSB04 CEFAS1-040719	MAR00330.001	Sediment	3.60	2.66	2.15	1.79	1.43
OT_SB_04, 2.00M, ES, 6, OTSB04 CEFAS6-040719	MAR00330.002	Sediment	0.42	0.30	0.23	0.19	0.17
IT2_SPT_03, 1.00M, ES, 4, SPT03 CEFAS-070719	MAR00330.003	Sediment	2.67	2.12	1.80	1.51	1.19
IT2_SB_03, 0.00M, ES, 1, SB03 CEFAS1-070719	MAR00330.004	Sediment	1.56	1.20	0.93	0.74	0.59
IT2_SB_03, 2.00M, ES, 6, SB03 CEFAS6-070719	MAR00330.005	Sediment	1.05	0.89	0.75	0.62	0.50

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		Units	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)
		Method No	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01
		Accreditation	MMO	MMO	MMO	MMO	MMO
			0.34µm	**0.24µm**	**0.17µm**	**0.12µm**	**0.09µm**
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**11.5**	**12.0**	**12.5**	**13.0**	**13.5**
OT_SB_04, 0.00M, ES, 1, OTSB04 CEFAS1-040719	MAR00330.001	Sediment	1.05	0.68	0.37	0.18	0.08
OT_SB_04, 2.00M, ES, 6, OTSB04 CEFAS6-040719	MAR00330.002	Sediment	0.15	0.13	0.10	0.08	0.05
IT2_SPT_03, 1.00M, ES, 4, SPT03 CEFAS-070719	MAR00330.003	Sediment	0.87	0.56	0.31	0.16	0.07
IT2_SB_03, 0.00M, ES, 1, SB03 CEFAS1-070719	MAR00330.004	Sediment	0.47	0.36	0.26	0.19	0.12
IT2_SB_03, 2.00M, ES, 6, SB03 CEFAS6-070719	MAR00330.005	Sediment	0.39	0.30	0.22	0.16	0.10

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Test Report ID	MAR00330
Issue Version	1
Customer Reference	SZC 2019 Offshore Ground Investigation

		Units	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)
		Method No	*SUB_01	*SUB_01	*SUB_01
		Accreditation	MMO	MMO	MMO
			0.06µm	**0.04µm**	**<0.04µm**
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**14.0**	**14.5**	**>14.5**
OT_SB_04, 0.00M, ES, 1, OTSB04 CEFAS1-040719	MAR00330.001	Sediment	0.02	0.00	0.00
OT_SB_04, 2.00M, ES, 6, OTSB04 CEFAS6-040719	MAR00330.002	Sediment	0.02	0.00	0.00
IT2_SPT_03, 1.00M, ES, 4, SPT03 CEFAS-070719	MAR00330.003	Sediment	0.02	0.00	0.00
IT2_SB_03, 0.00M, ES, 1, SB03 CEFAS1-070719	MAR00330.004	Sediment	0.05	0.01	0.00
IT2_SB_03, 2.00M, ES, 6, SB03 CEFAS6-070719	MAR00330.005	Sediment	0.04	0.00	0.00

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Test Report ID MAR00330
Issue Version 1
Customer Reference SZC 2019 Offshore Ground Investigation

		Units	mg/Kg (Dry Weight)							
		Method No	SOCOTEC Env Chem*							
		Limit of Detection	0.5	0.04	0.5	0.5	0.015	0.5	0.5	2
		Accreditation	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**Arsenic (As)**	**Cadmium (Cd)**	**Chromium (Cr)**	**Copper (Cu)**	**Mercury (Hg)**	**Nickel (Ni)**	**Lead (Pb)**	**Zinc (Zn)**
OT_SB_04, 0.00M, ES, 1, OTSB04 CEFAS1-040719	MAR00330.001	Sediment	16.6	0.11	15.6	11.4	<0.015	11.0	13.5	36.8
OT_SB_04, 2.00M, ES, 6, OTSB04 CEFAS6-040719	MAR00330.002	Sediment	4.2	0.07	6.0	7.6	<0.015	4.2	3.3	11.6
IT2_SPT_03, 1.00M, ES, 4, SPT03 CEFAS-070719	MAR00330.003	Sediment	11.5	0.12	19.4	12.9	<0.015	16.3	9.3	39.6
IT2_SB_03, 0.00M, ES, 1, SB03 CEFAS1-070719	MAR00330.004	Sediment	12.8	0.1	13.2	10.1	0.06	10.6	9.8	29.8
IT2_SB_03, 2.00M, ES, 6, SB03 CEFAS6-070719	MAR00330.005	Sediment	7.7	0.09	9.4	8.6	<0.015	7.6	5.1	20.8
Certified Reference Material SETOC 774 (% Recovery)			95	102	95	107	90	97	95	101
QC Blank			<0.5	<0.04	<0.5	<0.5	<0.015	<0.5	<0.5	<2

* See Report Notes

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Test Report ID	MAR00330
Issue Version	1
Customer Reference	SZC 2019 Offshore Ground Investigation

		Units	mg/Kg (Dry Weight)	
		Method No	ASC/SOP/301	
		Limit of Detection	0.001	0.001
		Accreditation	MMO	MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**Dibutyltin (DBT)**	**Tributyltin (TBT)**
OT_SB_04, 0.00M, ES, 1, OTSB04 CEFAS1-040719	MAR00330.001	Sediment	<0.005	<0.005
OT_SB_04, 2.00M, ES, 6, OTSB04 CEFAS6-040719	MAR00330.002	Sediment	<0.001	<0.001
IT2_SPT_03, 1.00M, ES, 4, SPT03 CEFAS-070719	MAR00330.003	Sediment	<0.005	<0.005
IT2_SB_03, 0.00M, ES, 1, SB03 CEFAS1-070719	MAR00330.004	Sediment	<0.005	<0.005
IT2_SB_03, 2.00M, ES, 6, SB03 CEFAS6-070719	MAR00330.005	Sediment	<0.005	<0.005
Certified Reference Material BCR-646 (% Recovery)			102	89
QC Blank			<0.001	<0.001

* See report notes

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Test Report ID	MAR00330
Issue Version	1
Customer Reference	SZC 2019 Offshore Ground Investigation

		Units	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)
		Method No	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304
		Limit of Detection	1	1	1	1	1	1
		Accreditation	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**ACENAPTH**	**ACENAPHY**	**ANTHRACN**	**BAA**	**BAP**	**BBF**
OT_SB_04, 0.00M, ES, 1, OTSB04 CEFAS1-040719	MAR00330.001	Sediment	3.84	1.90	7.21	20.7	24.8	32.0
OT_SB_04, 2.00M, ES, 6, OTSB04 CEFAS6-040719	MAR00330.002	Sediment	<1	<1	<1	<1	<1	<1
IT2_SPT_03, 1.00M, ES, 4, SPT03 CEFAS-070719	MAR00330.003	Sediment	2.53	<1	2.83	9.88	11.5	18.4
IT2_SB_03, 0.00M, ES, 1, SB03 CEFAS1-070719	MAR00330.004	Sediment	<1	<1	<1	4.52	4.53	9.55
IT2_SB_03, 2.00M, ES, 6, SB03 CEFAS6-070719	MAR00330.005	Sediment	<1	<1	<1	1.77	2.37	2.77
Certified Reference Material CRM180013 1941b (% Recovery)			66	101	70	71	65	88
QC Blank			<1	<1	<1	<1	<1	<1

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Test Report ID MAR00330
Issue Version 1
Customer Reference SZC 2019 Offshore Ground Investigation

		Units	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)
		Method No	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304
		Limit of Detection	1	1	1	1	1	1
		Accreditation	UKAS/MMO	UKAS/MMO	UKAS/MMO	MMO	MMO	MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**BENZGHIP**	**BEP**	**BKF**	**C1N**	**C1PHEN**	**C2N**
OT_SB_04, 0.00M, ES, 1, OTSB04 CEFAS1-040719	MAR00330.001	Sediment	28.9	26.3	13.3	71.6	41.4	57.2
OT_SB_04, 2.00M, ES, 6, OTSB04 CEFAS6-040719	MAR00330.002	Sediment	<1	<1	<1	<1	<1	<1
IT2_SPT_03, 1.00M, ES, 4, SPT03 CEFAS-070719	MAR00330.003	Sediment	27.3	23.4	5.39	55.9	55.4	50.8
IT2_SB_03, 0.00M, ES, 1, SB03 CEFAS1-070719	MAR00330.004	Sediment	9.29	10.1	2.33	29.7	25.3	26.6
IT2_SB_03, 2.00M, ES, 6, SB03 CEFAS6-070719	MAR00330.005	Sediment	4.87	4.10	<1	12.0	11.5	12.0
Certified Reference Material CRM180013 1941b (% Recovery)			81	90	82	79	80	102
QC Blank			<1	<1	<1	<1	<1	<1

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Test Report ID	MAR00330
Issue Version	1
Customer Reference	SZC 2019 Offshore Ground Investigation

		Units	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)
		Method No	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304
		Limit of Detection	1	1	1	1	1	1
		Accreditation	MMO	MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**C3N**	**CHRYSENE**	**DBENZAH**	**FLUORANT**	**FLUORENE**	**INDPYR**
OT_SB_04, 0.00M, ES, 1, OTSB04 CEFAS1-040719	MAR00330.001	Sediment	51.8	22.2	4.70	44.0	7.24	25.5
OT_SB_04, 2.00M, ES, 6, OTSB04 CEFAS6-040719	MAR00330.002	Sediment	<1	<1	<1	<1	<1	<1
IT2_SPT_03, 1.00M, ES, 4, SPT03 CEFAS-070719	MAR00330.003	Sediment	57.7	13.8	2.66	13.8	5.69	9.31
IT2_SB_03, 0.00M, ES, 1, SB03 CEFAS1-070719	MAR00330.004	Sediment	27.2	6.72	<1	7.85	3.00	4.54
IT2_SB_03, 2.00M, ES, 6, SB03 CEFAS6-070719	MAR00330.005	Sediment	13.7	2.41	<1	2.43	<1	1.31
Certified Reference Material CRM180013 1941b (% Recovery)			107	91	105	79	51	77
QC Blank			<1	<1	<1	<1	<1	<1

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Test Report ID	MAR00330
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		Units	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	mg/Kg
		Method No	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/305
		Limit of Detection	1	1	1	1	1
		Accreditation	UKAS/MMO	MMO	UKAS/MMO	UKAS/MMO	MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**NAPTH**	**PERYLENE**	**PHENANT**	**PYRENE**	**THC**
OT_SB_04, 0.00M, ES, 1, OTSB04 CEFAS1-040719	MAR00330.001	Sediment	21.7	12.1	44.0	40.1	3.03
OT_SB_04, 2.00M, ES, 6, OTSB04 CEFAS6-040719	MAR00330.002	Sediment	<1	17.5	<1	<1	<1
IT2_SPT_03, 1.00M, ES, 4, SPT03 CEFAS-070719	MAR00330.003	Sediment	12.2	21.4	40.3	18.7	3.57
IT2_SB_03, 0.00M, ES, 1, SB03 CEFAS1-070719	MAR00330.004	Sediment	6.00	9.88	18.9	8.97	2.94
IT2_SB_03, 2.00M, ES, 6, SB03 CEFAS6-070719	MAR00330.005	Sediment	2.32	4.31	8.18	3.24	3.67
Certified Reference Material CRM180013 1941b (% Recovery)			64	63	79	73	103~
QC Blank			<1	<1	<1	<1	<1

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Customer Reference	SZC 2019 Offshore Ground Investigation

		Units	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)
		Method No	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302
		Limit of Detection	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008
		Accreditation	MMO	MMO	MMO	MMO	MMO	MMO	MMO	MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**PCB 101**	**PCB 105**	**PCB 110**	**PCB 118**	**PCB 128**	**PCB 138**	**PCB 141**	**PCB 149**
OT_SB_04, 0.00M, ES, 1, OTSB04 CEFAS1-040719	MAR00330.001	Sediment	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	0.00008	<0.00008	<0.00008
OT_SB_04, 2.00M, ES, 6, OTSB04 CEFAS6-040719	MAR00330.002	Sediment	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008
IT2_SPT_03, 1.00M, ES, 4, SPT03 CEFAS-070719	MAR00330.003	Sediment	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008
IT2_SB_03, 0.00M, ES, 1, SB03 CEFAS1-070719	MAR00330.004	Sediment	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008
IT2_SB_03, 2.00M, ES, 6, SB03 CEFAS6-070719	MAR00330.005	Sediment	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008
Certified Reference Material SRM 1941b (% Recovery)			104	103	113	100	112	139	127~	93
QC Blank			<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008

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Certificate of Analysis

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Test Report ID	MAR00330
Issue Version	1
Customer Reference	SZC 2019 Offshore Ground Investigation

		Units	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)
		Method No	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302
		Limit of Detection	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008
		Accreditation	MMO	MMO	MMO	MMO	MMO	MMO	MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**PCB 151**	**PCB 153**	**PCB 156**	**PCB 158**	**PCB 170**	**PCB 18**	**PCB 180**
OT_SB_04, 0.00M, ES, 1, OTSB04 CEFAS1-040719	MAR00330.001	Sediment	<0.00008	0.00010	<0.00008	<0.00008	<0.00008	0.00012	<0.00008
OT_SB_04, 2.00M, ES, 6, OTSB04 CEFAS6-040719	MAR00330.002	Sediment	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	0.00002	<0.00008
IT2_SPT_03, 1.00M, ES, 4, SPT03 CEFAS-070719	MAR00330.003	Sediment	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	0.00019	<0.00008
IT2_SB_03, 0.00M, ES, 1, SB03 CEFAS1-070719	MAR00330.004	Sediment	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	0.00006	<0.00008
IT2_SB_03, 2.00M, ES, 6, SB03 CEFAS6-070719	MAR00330.005	Sediment	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	0.00010	<0.00008
Certified Reference Material SRM 1941b (% Recovery)			142~	107	96	133~	99	99	101
QC Blank			<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008

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Test Report ID	MAR00330
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		Units	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)
		Method No	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302
		Limit of Detection	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008
		Accreditation	MMO	MMO	MMO	MMO	MMO	MMO	MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**PCB 183**	**PCB 187**	**PCB 194**	**PCB 28**	**PCB 31**	**PCB 44**	**PCB 47**
OT_SB_04, 0.00M, ES, 1, OTSB04 CEFAS1-040719	MAR00330.001	Sediment	<0.00008	<0.00008	<0.00008	0.00016	0.00014	<0.00008	<0.00008
OT_SB_04, 2.00M, ES, 6, OTSB04 CEFAS6-040719	MAR00330.002	Sediment	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008
IT2_SPT_03, 1.00M, ES, 4, SPT03 CEFAS-070719	MAR00330.003	Sediment	<0.00008	<0.00008	<0.00008	0.00015	0.00020	0.00008	<0.00008
IT2_SB_03, 0.00M, ES, 1, SB03 CEFAS1-070719	MAR00330.004	Sediment	<0.00008	<0.00008	<0.00008	0.00008	<0.00008	<0.00008	<0.00008
IT2_SB_03, 2.00M, ES, 6, SB03 CEFAS6-070719	MAR00330.005	Sediment	<0.00008	<0.00008	<0.00008	0.00011	0.00009	<0.00008	<0.00008
Certified Reference Material SRM 1941b (% Recovery)			94	103	95	75	106	100	146~
QC Blank			<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008

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Test Report ID	MAR00330
Issue Version	1
Customer Reference	SZC 2019 Offshore Ground Investigation

		Units	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)
		Method No	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302
		Limit of Detection	0.00008	0.00008	0.00008
		Accreditation	MMO	MMO	MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**PCB 49**	**PCB 52**	**PCB 66**
OT_SB_04, 0.00M, ES, 1, OTSB04 CEFAS1-040719	MAR00330.001	Sediment	<0.00008	0.00013	0.00010
OT_SB_04, 2.00M, ES, 6, OTSB04 CEFAS6-040719	MAR00330.002	Sediment	<0.00008	<0.00008	<0.00008
IT2_SPT_03, 1.00M, ES, 4, SPT03 CEFAS-070719	MAR00330.003	Sediment	<0.00008	0.00014	<0.00008
IT2_SB_03, 0.00M, ES, 1, SB03 CEFAS1-070719	MAR00330.004	Sediment	<0.00008	<0.00008	<0.00008
IT2_SB_03, 2.00M, ES, 6, SB03 CEFAS6-070719	MAR00330.005	Sediment	<0.00008	<0.00008	<0.00008
Certified Reference Material SRM 1941b (% Recovery)			99	101	97
QC Blank			<0.00008	<0.00008	<0.00008

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Test Report ID	MAR00330
Issue Version	1
Customer Reference	SZC 2019 Offshore Ground Investigation

		Units	mg/Kg (Dry Weight)							
		Method No	ASC/SOP/302							
		Limit of Detection	0.0001							
		Accreditation	MMO							
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**AHCH**	**BHCH**	**GHCH**	**DIELDRIN**	**HCB**	**PPTDE**	**PPDDE**	**PPDDT**
OT_SB_04, 0.00M, ES, 1, OTSB04 CEFAS1-040719	MAR00330.001	Sediment	<0.00010	<0.00010	<0.00010	<0.00010	0.0002	0.0003	0.0003	<0.00010
OT_SB_04, 2.00M, ES, 6, OTSB04 CEFAS6-040719	MAR00330.002	Sediment	<0.00010	<0.00010	<0.00010	<0.00010	0.0001	<0.00010	<0.00010	<0.00010
IT2_SPT_03, 1.00M, ES, 4, SPT03 CEFAS-070719	MAR00330.003	Sediment	<0.00010	<0.00010	<0.00010	<0.00010	0.0008	<0.00010	<0.00010	<0.00010
IT2_SB_03, 0.00M, ES, 1, SB03 CEFAS1-070719	MAR00330.004	Sediment	<0.00010	<0.00010	<0.00010	<0.00010	0.0001	<0.00010	<0.00010	<0.00010
IT2_SB_03, 2.00M, ES, 6, SB03 CEFAS6-070719	MAR00330.005	Sediment	<0.00010	<0.00010	<0.00010	<0.00010	0.0004	<0.00010	<0.00010	<0.00010
Certified Reference Material SRM 1941b (% Recovery)			135~	126~	143~	268~	141	79	107	82~
QC Blank			<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010

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Test Report ID	MAR00330
Issue Version	1
Customer Reference	SZC 2019 Offshore Ground Investigation

		Units	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)
		Method No	*SUB_02	*SUB_02	*SUB_02	*SUB_02	*SUB_02	*SUB_02	*SUB_02
		Limit of Detection	0.02	0.02	0.02	0.02	0.02	0.02	0.02
		Accreditation	MMO	MMO	MMO	MMO	MMO	MMO	MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**BDE17**	**BDE28**	**BDE47**	**BDE66**	**BDE85**	**BDE99**	**BDE100**
OT_SB_04, 0.00M, ES, 1, OTSB04 CEFAS1-040719	MAR00330.001	Sediment	0.0294	<0.02	0.103	0.0201	<0.02	0.0681	<0.02
OT_SB_04, 2.00M, ES, 6, OTSB04 CEFAS6-040719	MAR00330.002	Sediment	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02

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Test Report ID	MAR00330
Issue Version	1
Customer Reference	SZC 2019 Offshore Ground Investigation

		Units	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)
		Method No	*SUB_02	*SUB_02	*SUB_02	*SUB_02	*SUB_02
		Limit of Detection	0.02	0.02	0.02	0.02	0.1
		Accreditation	MMO	MMO	MMO	MMO	MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**BDE138**	**BDE153**	**BDE154**	**BDE183**	**BDE209**
OT_SB_04, 0.00M, ES, 1, OTSB04 CEFAS1-040719	MAR00330.001	Sediment	<0.02	<0.02	<0.02	<0.02	5.97
OT_SB_04, 2.00M, ES, 6, OTSB04 CEFAS6-040719	MAR00330.002	Sediment	<0.02	<0.02	<0.02	<0.02	<0.1

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Test Report ID MAR00330
Issue Version 1
Customer Reference SZC 2019 Offshore Ground Investigation

REPORT NOTES

Method Code	Sample ID	The following information should be taken into consideration when using the data contained within this report
*SUB_01	MAR00330.001-005	Analysis was conducted by an approved subcontracted laboratory.
SOCOTEC Env Chem*	MAR00330.001-005	Analysis was conducted by an internal SOCOTEC laboratory. UKAS accredited analysis by this laboratory is under UKAS number 1252.
ASC/SOP/301	MAR00330.001, .003-005	The matrix of this sample has been found to interfere with the result for this test. The sample has therefore been diluted, but in doing so, the detection limit for this test has been elevated.
ASC/SOP/302	MAR00330.001-005	The Primary process control data associated with this Test has not wholly met the requirements of the Laboratory Quality Management System QMS with one or more target analytes falling above acceptable limits. However the remaining data gives the Laboratory confidence that the test has performed satisfactorily and that the validity of the data may not have been significantly affected. These circumstances should be taken into consideration when utilising the data.
ASC/SOP/303/304	MAR00330.001-005	Chrysene is known to coelute with Triphenylene and these peaks can not be resolved in the PAHSED UKAS accredited method. Chrysene and Triphenylene are resolved for MMO but this is currently not UKAS accredited therefore Chrysene is reported without this acccreditation.

DEVIATING SAMPLE STATEMENT

Deviation Code	Devation Definition	Sample ID	Deviation Details. The following information should be taken into consideration when using the data contained within this report
D1	Holding Time Exceeded	N/A	N/A
D2	Handling Time Exceeded	N/A	N/A
D3	Sample Contaminated through Damaged Packaging	N/A	N/A
D4	Sample Contaminated through Sampling	N/A	N/A
D5	Inappropriate Container/Packaging	N/A	N/A
D6	Damaged in Transit	N/A	N/A
D7	Insufficient Quantity of Sample	N/A	N/A
D8	Inappropriate Headspace	N/A	N/A
D9	Retained at Incorrect Temperature	N/A	N/A
D10	Lack of Date & Time of Sampling	N/A	N/A
D11	Insufficient Sample Details	N/A	N/A
D12	Sample integrity compromised or not suitable for analysis	N/A	N/A

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Test Report ID	MAR00330
Issue Version	1
Customer Reference	SZC 2019 Offshore Ground Investigation

Method	Sample and Fraction Size	Method Summary
Particle Size Analysis	Wet Sediment	Wet and dry sieving followed by laser diffraction analysis.
Total Organic Carbon (TOC)	Air dried	Carbonate removal and sulphurous acid/combustion at 800°C/NDIR.
Metals	Air dried	Aqua-regia extraction followed by ICP analysis.
Organotins	Wet Sediment	Solvent extraction and derivatisation followed by GC-MS analysis.
Polyaromatic Hydrocarbons (PAH)	Wet Sediment	Solvent extraction and clean up followed by GC-MS analysis.
Total Hydrocarbon Content (THC)	Wet Sediment	Ultra-violet fluorescence spectroscopy
Polychlorinated Biphenyls (PCBs)	Air dried and seived to <2mm	Solvent extraction and clean up followed by GC-MS-MS analysis.
Organochlorine Pesticides (OCPs)	Air dried and seived to <2mm	Solvent extraction and clean up followed by GC-MS-MS analysis.

Analyte Definitions

Analyte Abbreviation	Full Analyte name	Analyte Abbreviation	Full Analyte name	Analyte Abbreviation	Full Analyte name
ACENAPTH	Acenaphthene	C2N	C2-naphthalenes	THC	Total Hydrocarbon Content
ACENAPHY	Acenaphthylene	C3N	C3-naphthalenes	AHCH	alpha-Hexachlorcyclohexane
ANTHRACN	Anthracene	CHRYSENE	Chrysene	BHCH	beta-Hexachlorcyclohexane
BAA	Benzo[a]anthracene	DBENZAH	Diben[ah]anthracene	GHCH	gamma-Hexachlorcyclohexane
BAP	Benzo[a]pyrene	FLUORANT	Fluoranthene	DIELDRIN	Dieldrin
BBF	Benzo[b]fluoranthene	FLUORENE	Fluorene	HCB	Hexachlorobenzene
BEP	Benzo[e]pyrene	INDPYR	Indeno[1,2,3-cd]pyrene	PPDDE	p,p'-Dichorodiphenyldicloroethylene
BENZGHIP	Benzo[ghi]perylene	NAPTH	Naphthalene	PPDDT	p,p'-Dichorodiphenyltrichloroethane
BKF	Benzo[k]fluoranthene	PERYLENE	Perylene	PPTDE	p,p'-Dichorodiphenyldicloroethane
C1N	C1-naphthalenes	PHENANT	Phenanthrene		
C1PHEN	C1-phenanthrene	PYRENE	Pyrene		

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Issuing Laboratory SOCOTEC, Marine Department, Specialist Chemistry, Etwall House, Bretby Business Park, Ashby Road, Bretby, Burton-upon-Trent DE15 0YZ

Test Report ID	**MAR00338**	
Issue Version	1	
Customer	Fugro Geoservices Ltd, Fugro House, Hithercroft Road, Wallingford, Oxfordshire, OX10 9RB	
Customer Reference	SZC 2019 Offshore Ground Investigation	
Date Received	17-Jul-19	
Date Reported	08-Oct-19	
Condition of samples	Frozen	Satisfactory

[redacted]

Authorised by: Marya Hubbard

Position: Laboratory Manager

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Test Report ID	MAR00338
Issue Version	1
Customer Reference	SZC 2019 Offshore Ground Investigation

		Units	% M/M	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)
		Method No	SOCOTEC Env Chem*	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01
		Accreditation	UKAS/MMO	MMO	MMO	MMO	MMO	MMO
			Total Organic Carbon	**45mm**	**31.5mm**	**22.4mm**	**16mm**	**11.2mm**
Client Reference:	**SOCOTEC Ref:**	**Matrix**	–	**-5.5**	**-5.0**	**-4.5**	**-4.0**	**-3.5**
IT2_SPT_03, 0.00M, ES, 1, SPT03 CEFAS1-070719	MAR00338.001	Sediment	0.26	Insufficient	Insufficient	Insufficient	Insufficient	Insufficient

* See Report Notes

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Test Report ID	MAR00338
Issue Version	1
Customer Reference	SZC 2019 Offshore Ground Investigation

		Units	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)
		Method No	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01
		Accreditation	MMO	MMO	MMO	MMO	MMO	MMO
			8mm	**5.6mm**	**4mm**	**2.8mm**	**2mm**	**1.4mm**
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**-3.0**	**-2.5**	**-2.0**	**-1.5**	**-1.0**	**-0.5**
IT2_SPT_03, 0.00M, ES, 1, SPT03 CEFAS1-070719	MAR00338.001	Sediment	Insufficient	Insufficient	Insufficient	Insufficient	Insufficient	Insufficient

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Customer Reference	SZC 2019 Offshore Ground Investigation

		Units	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)
		Method No	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01
		Accreditation	MMO	MMO	MMO	MMO	MMO	MMO
			1mm	**707µm**	**500µm**	**353.6µm**	**250µm**	**176.8µm**
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**0.0**	**0.5**	**1.0**	**1.5**	**2.0**	**2.5**
IT2_SPT_03, 0.00M, ES, 1, SPT03 CEFAS1-070719	MAR00338.001	Sediment	Insufficient	Insufficient	Insufficient	Insufficient	Insufficient	Insufficient

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Test Report ID	MAR00338
Issue Version	1
Customer Reference	SZC 2019 Offshore Ground Investigation

		Units	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)
		Method No	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01
		Accreditation	MMO	MMO	MMO	MMO	MMO	MMO
			125µm	**88.39µm**	**63µm**	**44.2µm**	**31.3µm**	**22.1µm**
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**3.0**	**3.5**	**4.0**	**4.5**	**5.0**	**5.5**
IT2_SPT_03, 0.00M, ES, 1, SPT03 CEFAS1-070719	MAR00338.001	Sediment	Insufficient	Insufficient	Insufficient	Insufficient	Insufficient	Insufficient

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Test Report ID	MAR00338
Issue Version	1
Customer Reference	SZC 2019 Offshore Ground Investigation

		Units	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)
		Method No	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01
		Accreditation	MMO	MMO	MMO	MMO	MMO	MMO
			15.6µm	**11µm**	**7.8µm**	**5.5µm**	**3.9µm**	**2.75µm**
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**6.0**	**6.5**	**7.0**	**7.5**	**8.0**	**8.5**
IT2_SPT_03, 0.00M, ES, 1, SPT03 CEFAS1-070719	MAR00338.001	Sediment	Insufficient	Insufficient	Insufficient	Insufficient	Insufficient	Insufficient

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Test Report ID	MAR00338
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Customer Reference	SZC 2019 Offshore Ground Investigation

		Units	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)
		Method No	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01
		Accreditation	MMO	MMO	MMO	MMO	MMO
			1.95µm	**1.38µm**	**0.98µm**	**0.69µm**	**0.49µm**
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**9.0**	**9.5**	**10.0**	**10.5**	**11.0**
IT2_SPT_03, 0.00M, ES, 1, SPT03 CEFAS1-070719	MAR00338.001	Sediment	Insufficient	Insufficient	Insufficient	Insufficient	Insufficient

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Test Report ID	MAR00338
Issue Version	1
Customer Reference	SZC 2019 Offshore Ground Investigation

		Units	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)
		Method No	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01
		Accreditation	MMO	MMO	MMO	MMO	MMO
			0.34µm	**0.24µm**	**0.17µm**	**0.12µm**	**0.09µm**
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**11.5**	**12.0**	**12.5**	**13.0**	**13.5**
IT2_SPT_03, 0.00M, ES, 1, SPT03 CEFAS1-070719	MAR00338.001	Sediment	Insufficient	Insufficient	Insufficient	Insufficient	Insufficient

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Customer Reference	SZC 2019 Offshore Ground Investigation

		Units	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)
		Method No	*SUB_01	*SUB_01	*SUB_01
		Accreditation	MMO	MMO	MMO
			0.06µm	**0.04µm**	**<0.04µm**
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**14.0**	**14.5**	**>14.5**
IT2_SPT_03, 0.00M, ES, 1, SPT03 CEFAS1-070719	MAR00338.001	Sediment	Insufficient	Insufficient	Insufficient

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Test Report ID	MAR00338
Issue Version	1
Customer Reference	SZC 2019 Offshore Ground Investigation

		Units	mg/Kg (Dry Weight)							
		Method No	SOCOTEC Env Chem*							
		Limit of Detection	0.5	0.04	0.5	0.5	0.015	0.5	0.5	2
		Accreditation	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**Arsenic (As)**	**Cadmium (Cd)**	**Chromium (Cr)**	**Copper (Cu)**	**Mercury (Hg)**	**Nickel (Ni)**	**Lead (Pb)**	**Zinc (Zn)**
IT2_SPT_03, 0.00M, ES, 1, SPT03 CEFAS1-070719	MAR00338.001	Sediment	9.1	0.08	9	9.6	0.06	7.3	9	33.5
Certified Reference Material SETOC 774 (% Recovery)			99	89	94	104	91	96	91	99
QC Blank			<0.5	<0.04	<0.5	<0.5	<0.015	<0.5	<0.5	<2

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Test Report ID	MAR00338
Issue Version	1
Customer Reference	SZC 2019 Offshore Ground Investigation

		Units	mg/Kg (Dry Weight)	
		Method No	ASC/SOP/301	
		Limit of Detection	0.001	0.001
		Accreditation	MMO	MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**Dibutyltin (DBT)**	**Tributyltin (TBT)**
IT2_SPT_03, 0.00M, ES, 1, SPT03 CEFAS1-070719	MAR00338.001	Sediment	<0.005	<0.005
		Certified Reference Material BCR-646 (% Recovery)	79	73
		QC Blank	<0.001	<0.001

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Test Report ID	MAR00338
Issue Version	1
Customer Reference	SZC 2019 Offshore Ground Investigation

		Units	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)
		Method No	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304
		Limit of Detection	1	1	1	1	1	1
		Accreditation	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**ACENAPTH**	**ACENAPHY**	**ANTHRACN**	**BAA**	**BAP**	**BBF**
IT2_SPT_03, 0.00M, ES, 1, SPT03 CEFAS1-070719	MAR00338.001	Sediment	<1	<1	1.45	4.84	5.15	8.48
Certified Reference Material CRM180013 1941b (% Recovery)			66	101	70	71	65	88
QC Blank			<1	<1	<1	<1	<1	<1

~ Indicates result is for an In-house Reference Material as
no Certified Reference Materials are avaliable.
For full analyte name see method summaries

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		Units	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)
		Method No	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304
		Limit of Detection	1	1	1	1	1	1
		Accreditation	UKAS/MMO	UKAS/MMO	UKAS/MMO	MMO	MMO	MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**BENZGHIP**	**BEP**	**BKF**	**C1N**	**C1PHEN**	**C2N**
IT2_SPT_03, 0.00M, ES, 1, SPT03 CEFAS1-070719	MAR00338.001	Sediment	11.9	10.5	2.67	25.3	26.6	22.6
Certified Reference Material CRM180013 1941b (% Recovery)			81	90	82	79	80	102
QC Blank			<1	<1	<1	<1	<1	<1

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Issue Version	1
Customer Reference	SZC 2019 Offshore Ground Investigation

		Units	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)
		Method No	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304
		Limit of Detection	1	1	1	1	1	1
		Accreditation	MMO	MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**C3N**	**CHRYSENE**	**DBENZAH**	**FLUORANT**	**FLUORENE**	**INDPYR**
IT2_SPT_03, 0.00M, ES, 1, SPT03 CEFAS1-070719	MAR00338.001	Sediment	23.4	6.58	<1	8.33	2.66	4.65
Certified Reference Material CRM180013 1941b (% Recovery)			107	91	105	79	51	78
QC Blank			<1	<1	<1	<1	<1	<1

~ Indicates result is for an In-house Reference Material as
no Certified Reference Materials are avaliable.
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Test Report ID	MAR00338
Issue Version	1
Customer Reference	SZC 2019 Offshore Ground Investigation

		Units	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	mg/Kg
		Method No	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/305
		Limit of Detection	1	1	1	1	1
		Accreditation	UKAS/MMO	MMO	UKAS/MMO	UKAS/MMO	MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**NAPTH**	**PERYLENE**	**PHENANT**	**PYRENE**	**THC**
IT2_SPT_03, 0.00M, ES, 1, SPT03 CEFAS1-070719	MAR00338.001	Sediment	6.01	8.42	18.7	10.9	5.41
Certified Reference Material CRM180013 1941b (% Recovery)			64	63	79	73	103~
QC Blank			<1	<1	<1	<1	<1

~ Indicates result is for an In-house Reference Material as
no Certified Reference Materials are avaliable.
For full analyte name see method summaries

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Test Report ID	MAR00338
Issue Version	1
Customer Reference	SZC 2019 Offshore Ground Investigation

		Units	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)
		Method No	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302
		Limit of Detection	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008
		Accreditation	MMO	MMO	MMO	MMO	MMO	MMO	MMO	MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**PCB 101**	**PCB 105**	**PCB 110**	**PCB 118**	**PCB 128**	**PCB 138**	**PCB 141**	**PCB 149**
IT2_SPT_03, 0.00M, ES, 1, SPT03 CEFAS1-070719	MAR00338.001	Sediment	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008
Certified Reference Material SRM 1941b (% Recovery)			98	97	104	95	105	125	121~	93
QC Blank			<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008

~ Indicates result is for an In-house Reference Material as
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Certificate of Analysis

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Test Report ID	MAR00338
Issue Version	1
Customer Reference	SZC 2019 Offshore Ground Investigation

		Units	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)
		Method No	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302
		Limit of Detection	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008
		Accreditation	MMO	MMO	MMO	MMO	MMO	MMO	MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**PCB 151**	**PCB 153**	**PCB 156**	**PCB 158**	**PCB 170**	**PCB 18**	**PCB 180**
IT2_SPT_03, 0.00M, ES, 1, SPT03 CEFAS1-070719	MAR00338.001	Sediment	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	0.00014	<0.00008
Certified Reference Material SRM 1941b (% Recovery)			130~	99	78	122~	101	96	100
QC Blank			<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008

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Test Report ID MAR00338
Issue Version 1
Customer Reference SZC 2019 Offshore Ground Investigation

		Units	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)
		Method No	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302
		Limit of Detection	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008
		Accreditation	MMO	MMO	MMO	MMO	MMO	MMO	MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**PCB 183**	**PCB 187**	**PCB 194**	**PCB 28**	**PCB 31**	**PCB 44**	**PCB 47**
IT2_SPT_03, 0.00M, ES, 1, SPT03 CEFAS1-070719	MAR00338.001	Sediment	<0.00008	<0.00008	<0.00008	0.00010	0.00011	<0.00008	<0.00008
Certified Reference Material SRM 1941b (% Recovery)			82	97	87	74	111	97	116~
QC Blank			<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008

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Test Report ID	MAR00338
Issue Version	1
Customer Reference	SZC 2019 Offshore Ground Investigation

		Units	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)
		Method No	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302
		Limit of Detection	0.00008	0.00008	0.00008
		Accreditation	MMO	MMO	MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**PCB 49**	**PCB 52**	**PCB 66**
IT2_SPT_03, 0.00M, ES, 1, SPT03 CEFAS1-070719	MAR00338.001	Sediment	<0.00008	0.00008	<0.00008
		Certified Reference Material SRM 1941b (% Recovery)	103	98	95
		QC Blank	<0.00008	<0.00008	<0.00008

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Test Report ID	MAR00338
Issue Version	1
Customer Reference	SZC 2019 Offshore Ground Investigation

		Units	mg/Kg (Dry Weight)								
		Method No	ASC/SOP/302								
		Limit of Detection	0.0001								
		Accreditation	MMO								
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**AHCH**	**BHCH**	**GHCH**	**DIELDRIN**	**HCB**	**PPTDE**	**PPDDE**	**PPDDT**
IT2_SPT_03, 0.00M, ES, 1, SPT03 CEFAS1-070719	MAR00338.001	Sediment	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Certified Reference Material SRM 1941b (% Recovery)			116~	114~	130~	222~	150	71	98	119~
QC Blank			<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010

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For full analyte name see method summaries

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Test Report ID MAR00338
Issue Version 1
Customer Reference SZC 2019 Offshore Ground Investigation

		Units	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)
		Method No	*SUB_02	*SUB_02	*SUB_02	*SUB_02	*SUB_02	*SUB_02	*SUB_02
		Limit of Detection	0.02	0.02	0.02	0.02	0.02	0.02	0.02
		Accreditation	MMO	MMO	MMO	MMO	MMO	MMO	MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**BDE17**	**BDE28**	**BDE47**	**BDE66**	**BDE85**	**BDE99**	**BDE100**
IT2_SPT_03, 0.00M, ES, 1, SPT03 CEFAS1-070719	MAR00338.001	Sediment	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02

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Test Report ID MAR00338
Issue Version 1
Customer Reference SZC 2019 Offshore Ground Investigation

		Units	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)
		Method No	*SUB_02	*SUB_02	*SUB_02	*SUB_02	*SUB_02
		Limit of Detection	0.02	0.02	0.02	0.02	0.1
		Accreditation	MMO	MMO	MMO	MMO	MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**BDE138**	**BDE153**	**BDE154**	**BDE183**	**BDE209**
IT2_SPT_03, 0.00M, ES, 1, SPT03 CEFAS1-070719	MAR00338.001	Sediment	<0.02	<0.02	<0.02	<0.02	0.900

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Test Report ID MAR00338
Issue Version 1
Customer Reference SZC 2019 Offshore Ground Investigation

REPORT NOTES

Method Code	Sample ID	The following information should be taken into consideration when using the data contained within this report
*SUB_01	MAR00338.001	Sample was insufficient for analysis as the Cefas Radiological suite was conducted on the same sample location and sample volume was limited.
SOCOTEC Env Chem*	MAR00338.001	Analysis was conducted by an internal SOCOTEC laboratory. UKAS accredited analysis by this laboratory is under UKAS number 1252.
ASC/SOP/301	MAR00338.001	The matrix of this sample has been found to interfere with the result for this test. The sample has therefore been diluted, but in doing so, the detection limit for this test has been elevated.
ASC/SOP/302	MAR00338.001	The Primary process control data associated with this Test has not wholly met the requirements of the Laboratory Quality Management System QMS with one or more target analytes falling above acceptable limits. However the remaining data gives the Laboratory confidence that the test has performed satisfactorily and that the validity of the data may not have been significantly affected. These circumstances should be taken into consideration when utilising the data.
ASC/SOP/303/304	MAR00338.001	Chrysene is known to coelute with Triphenylene and these peaks can not be resolved in the PAHSED UKAS accredited method. Chrysene and Triphenylene are resolved for MMO but this is currently not UKAS accredited therefore Chrysene is reported without this acccreditation.

DEVIATING SAMPLE STATEMENT

Deviation Code	Devation Definition	Sample ID	Deviation Details. The following information should be taken into consideration when using the data contained within this report
D1	Holding Time Exceeded	N/A	N/A
D2	Handling Time Exceeded	N/A	N/A
D3	Sample Contaminated through Damaged Packaging	N/A	N/A
D4	Sample Contaminated through Sampling	N/A	N/A
D5	Inappropriate Container/Packaging	N/A	N/A
D6	Damaged in Transit	N/A	N/A
D7	Insufficient Quantity of Sample	N/A	N/A
D8	Inappropriate Headspace	N/A	N/A
D9	Retained at Incorrect Temperature	N/A	N/A
D10	Lack of Date & Time of Sampling	N/A	N/A
D11	Insufficient Sample Details	N/A	N/A
D12	Sample integrity compromised or not suitable for analysis	N/A	N/A

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Test Report ID	MAR00338
Issue Version	1
Customer Reference	SZC 2019 Offshore Ground Investigation

Method	Sample and Fraction Size	Method Summary
Particle Size Analysis	Wet Sediment	Wet and dry sieving followed by laser diffraction analysis.
Total Organic Carbon (TOC)	Air dried	Carbonate removal and sulphurous acid/combustion at 800°C/NDIR.
Metals	Air dried	Aqua-regia extraction followed by ICP analysis.
Organotins	Wet Sediment	Solvent extraction and derivatisation followed by GC-MS analysis.
Polyaromatic Hydrocarbons (PAH)	Wet Sediment	Solvent extraction and clean up followed by GC-MS analysis.
Total Hydrocarbon Content (THC)	Wet Sediment	Ultra-violet fluorescence spectroscopy
Polychlorinated Biphenyls (PCBs)	Air dried and seived to <2mm	Solvent extraction and clean up followed by GC-MS-MS analysis.
Organochlorine Pesticides (OCPs)	Air dried and seived to <2mm	Solvent extraction and clean up followed by GC-MS-MS analysis.

Analyte Definitions

Analyte Abbreviation	Full Analyte name	Analyte Abbreviation	Full Analyte name	Analyte Abbreviation	Full Analyte name
ACENAPTH	Acenaphthene	C2N	C2-naphthalenes	THC	Total Hydrocarbon Content
ACENAPHY	Acenaphthylene	C3N	C3-naphthalenes	AHCH	alpha-Hexachlorcyclohexane
ANTHRACN	Anthracene	CHRYSENE	Chrysene	BHCH	beta-Hexachlorcyclohexane
BAA	Benzo[a]anthracene	DBENZAH	Diben[ah]anthracene	GHCH	gamma-Hexachlorcyclohexane
BAP	Benzo[a]pyrene	FLUORANT	Fluoranthene	DIELDRIN	Dieldrin
BBF	Benzo[b]fluoranthene	FLUORENE	Fluorene	HCB	Hexachlorobenzene
BEP	Benzo[e]pyrene	INDPYR	Indeno[1,2,3-cd]pyrene	PPDDE	p,p'-Dichorodiphenyldicloroethylene
BENZGHIP	Benzo[ghi]perylene	NAPTH	Naphthalene	PPDDT	p,p'-Dichorodiphenyltrichloroethane
BKF	Benzo[k]fluoranthene	PERYLENE	Perylene	PPTDE	p,p'-Dichorodiphenyldicloroethane
C1N	C1-naphthalenes	PHENANT	Phenanthrene		
C1PHEN	C1-phenanthrene	PYRENE	Pyrene		

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Test Report ID	**MAR00341**
Issue Version	1
Customer	Fugro Geoservices Ltd, Fugro House, Hithercroft Road, Wallingford, Oxfordshire, OX10 9RB
Customer Reference	SZC 2019 Offshore Ground Investigation
Date Received	18-Jul-19
Date Reported	08-Oct-19
Condition of samples	Frozen Satisfactory

[redacted]

Authorised by: Marya Hubbard

Position: Laboratory Manager

Any additional opinions or interpretations found in this report, are outside the scope of UKAS accreditation.

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Test Report ID	MAR00341
Issue Version	1
Customer Reference	SZC 2019 Offshore Ground Investigation

		Units	% M/M	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)
		Method No	SOCOTEC Env Chem*	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01
		Accreditation	UKAS/MMO	MMO	MMO	MMO	MMO	MMO
			Total Organic Carbon	**45mm**	**31.5mm**	**22.4mm**	**16mm**	**11.2mm**
Client Reference:	**SOCOTEC Ref:**	**Matrix**	–	**-5.5**	**-5.0**	**-4.5**	**-4.0**	**-3.5**
IT1_SB_05, 0.00M, ES, 1, SB05 CEFAS1-150719	MAR00341.001	Sediment	0.22	Insufficient	Insufficient	Insufficient	Insufficient	Insufficient

* See Report Notes

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Test Report ID MAR00341
Issue Version 1
Customer Reference SZC 2019 Offshore Ground Investigation

		Units	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)
		Method No	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01
		Accreditation	MMO	MMO	MMO	MMO	MMO	MMO
			8mm	5.6mm	4mm	2.8mm	2mm	1.4mm
Client Reference:	SOCOTEC Ref:	Matrix	-3.0	-2.5	-2.0	-1.5	-1.0	-0.5
IT1_SB_05, 0.00M, ES, 1, SB05 CEFAS1-150719	MAR00341.001	Sediment	Insufficient	Insufficient	Insufficient	Insufficient	Insufficient	Insufficient

* See Report Notes

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Test Report ID	MAR00341
Issue Version	1
Customer Reference	SZC 2019 Offshore Ground Investigation

		Units	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)
		Method No	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01
		Accreditation	MMO	MMO	MMO	MMO	MMO	MMO
			1mm	**707µm**	**500µm**	**353.6µm**	**250µm**	**176.8µm**
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**0.0**	**0.5**	**1.0**	**1.5**	**2.0**	**2.5**
IT1_SB_05, 0.00M, ES, 1, SB05 CEFAS1-150719	MAR00341.001	Sediment	Insufficient	Insufficient	Insufficient	Insufficient	Insufficient	Insufficient

* See Report Notes

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Test Report ID MAR00341
Issue Version 1
Customer Reference SZC 2019 Offshore Ground Investigation

		Units	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)
		Method No	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01
		Accreditation	MMO	MMO	MMO	MMO	MMO	MMO
			125µm	88.39µm	63µm	44.2µm	31.3µm	22.1µm
Client Reference:	SOCOTEC Ref:	Matrix	3.0	3.5	4.0	4.5	5.0	5.5
IT1_SB_05, 0.00M, ES, 1, SB05 CEFAS1-150719	MAR00341.001	Sediment	Insufficient	Insufficient	Insufficient	Insufficient	Insufficient	Insufficient

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Test Report ID	MAR00341
Issue Version	1
Customer Reference	SZC 2019 Offshore Ground Investigation

		Units	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)
		Method No	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01
		Accreditation	MMO	MMO	MMO	MMO	MMO	MMO
			15.6µm	**11µm**	**7.8µm**	**5.5µm**	**3.9µm**	**2.75µm**
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**6.0**	**6.5**	**7.0**	**7.5**	**8.0**	**8.5**
IT1_SB_05, 0.00M, ES, 1, SB05 CEFAS1-150719	MAR00341.001	Sediment	Insufficient	Insufficient	Insufficient	Insufficient	Insufficient	Insufficient

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Test Report ID	MAR00341
Issue Version	1
Customer Reference	SZC 2019 Offshore Ground Investigation

		Units	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)
		Method No	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01
		Accreditation	MMO	MMO	MMO	MMO	MMO
			1.95µm	**1.38µm**	**0.98µm**	**0.69µm**	**0.49µm**
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**9.0**	**9.5**	**10.0**	**10.5**	**11.0**
IT1_SB_05, 0.00M, ES, 1, SB05 CEFAS1-150719	MAR00341.001	Sediment	Insufficient	Insufficient	Insufficient	Insufficient	Insufficient

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Test Report ID	MAR00341
Issue Version	1
Customer Reference	SZC 2019 Offshore Ground Investigation

		Units	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)
		Method No	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01
		Accreditation	MMO	MMO	MMO	MMO	MMO
			0.34µm	**0.24µm**	**0.17µm**	**0.12µm**	**0.09µm**
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**11.5**	**12.0**	**12.5**	**13.0**	**13.5**
IT1_SB_05, 0.00M, ES, 1, SB05 CEFAS1-150719	MAR00341.001	Sediment	Insufficient	Insufficient	Insufficient	Insufficient	Insufficient

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Test Report ID	MAR00341
Issue Version	1
Customer Reference	SZC 2019 Offshore Ground Investigation

		Units	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)
		Method No	*SUB_01	*SUB_01	*SUB_01
		Accreditation	MMO	MMO	MMO
			0.06µm	**0.04µm**	**<0.04µm**
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**14.0**	**14.5**	**>14.5**
IT1_SB_05, 0.00M, ES, 1, SB05 CEFAS1-150719	MAR00341.001	Sediment	Insufficient	Insufficient	Insufficient

* See Report Notes

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Test Report ID	MAR00341
Issue Version	1
Customer Reference	SZC 2019 Offshore Ground Investigation

		Units	mg/Kg (Dry Weight)							
		Method No	SOCOTEC Env Chem*							
		Limit of Detection	0.5	0.04	0.5	0.5	0.015	0.5	0.5	2
		Accreditation	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**Arsenic (As)**	**Cadmium (Cd)**	**Chromium (Cr)**	**Copper (Cu)**	**Mercury (Hg)**	**Nickel (Ni)**	**Lead (Pb)**	**Zinc (Zn)**
IT1_SB_05, 0.00M, ES, 1, SB05 CEFAS1-150719	MAR00341.001	Sediment	34.1	0.2	13.3	6.9	0.03	10.3	5.6	24.9
Certified Reference Material SETOC 774 (% Recovery)			99	89	94	104	91	96	91	99
QC Blank			<0.5	<0.04	<0.5	<0.5	<0.015	<0.5	<0.5	<2

* See Report Notes

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Test Report ID	MAR00341
Issue Version	1
Customer Reference	SZC 2019 Offshore Ground Investigation

		Units	mg/Kg (Dry Weight)	
		Method No	ASC/SOP/301	
		Limit of Detection	0.001	0.001
		Accreditation	MMO	MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**Dibutyltin (DBT)**	**Tributyltin (TBT)**
IT1_SB_05, 0.00M, ES, 1, SB05 CEFAS1-150719	MAR00341.001	Sediment	<0.005	<0.005
Certified Reference Material BCR-646 (% Recovery)			105	85
QC Blank			<0.001	<0.001

* See report notes

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Test Report ID	MAR00341
Issue Version	1
Customer Reference	SZC 2019 Offshore Ground Investigation

		Units	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)
		Method No	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304
		Limit of Detection	1	1	1	1	1	1
		Accreditation	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**ACENAPTH**	**ACENAPHY**	**ANTHRACN**	**BAA**	**BAP**	**BBF**
IT1_SB_05, 0.00M, ES, 1, SB05 CEFAS1-150719	MAR00341.001	Sediment	<1	<1	<1	1.46	1.87	2.35
Certified Reference Material CRM180013 1941b (% Recovery)			66	96	70	71	64	92
QC Blank			<1	<1	<1	<1	<1	<1

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Test Report ID	MAR00341
Issue Version	1
Customer Reference	SZC 2019 Offshore Ground Investigation

		Units	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)
		Method No	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304
		Limit of Detection	1	1	1	1	1	1
		Accreditation	UKAS/MMO	UKAS/MMO	UKAS/MMO	MMO	MMO	MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**BENZGHIP**	**BEP**	**BKF**	**C1N**	**C1PHEN**	**C2N**
IT1_SB_05, 0.00M, ES, 1, SB05 CEFAS1-150719	MAR00341.001	Sediment	3.13	2.56	<1	6.33	4.69	5.51
Certified Reference Material CRM180013 1941b (% Recovery)			83	91	80	78	79	99
QC Blank			<1	<1	<1	<1	<1	<1

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Test Report ID	MAR00341
Issue Version	1
Customer Reference	SZC 2019 Offshore Ground Investigation

		Units	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)
		Method No	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304
		Limit of Detection	1	1	1	1	1	1
		Accreditation	MMO	MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**C3N**	**CHRYSENE**	**DBENZAH**	**FLUORANT**	**FLUORENE**	**INDPYR**
IT1_SB_05, 0.00M, ES, 1, SB05 CEFAS1-150719	MAR00341.001	Sediment	5.47	1.74	<1	2.70	<1	1.80
Certified Reference Material CRM180013 1941b (% Recovery)			102	92	110	81	50	81
QC Blank			<1	<1	<1	<1	<1	<1

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Test Report ID	MAR00341
Issue Version	1
Customer Reference	SZC 2019 Offshore Ground Investigation

		Units	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	mg/Kg
		Method No	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/305
		Limit of Detection	1	1	1	1	1
		Accreditation	UKAS/MMO	MMO	UKAS/MMO	UKAS/MMO	MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**NAPTH**	**PERYLENE**	**PHENANT**	**PYRENE**	**THC**
IT1_SB_05, 0.00M, ES, 1, SB05 CEFAS1-150719	MAR00341.001	Sediment	1.73	1.36	3.90	2.77	2.19
Certified Reference Material CRM180013 1941b (% Recovery)			66	65	83	74	97~
QC Blank			<1	<1	<1	<1	<1

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Test Report ID	MAR00341
Issue Version	1
Customer Reference	SZC 2019 Offshore Ground Investigation

		Units	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)
		Method No	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302
		Limit of Detection	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008
		Accreditation	MMO	MMO	MMO	MMO	MMO	MMO	MMO	MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**PCB 101**	**PCB 105**	**PCB 110**	**PCB 118**	**PCB 128**	**PCB 138**	**PCB 141**	**PCB 149**
IT1_SB_05, 0.00M, ES, 1, SB05 CEFAS1-150719	MAR00341.001	Sediment	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008
Certified Reference Material SRM 1941b (% Recovery)			98	97	104	95	105	125	121~	93
QC Blank			<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008

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Test Report ID MAR00341
Issue Version 1
Customer Reference SZC 2019 Offshore Ground Investigation

		Units	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)
		Method No	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302
		Limit of Detection	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008
		Accreditation	MMO	MMO	MMO	MMO	MMO	MMO	MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**PCB 151**	**PCB 153**	**PCB 156**	**PCB 158**	**PCB 170**	**PCB 18**	**PCB 180**
IT1_SB_05, 0.00M, ES, 1, SB05 CEFAS1-150719	MAR00341.001	Sediment	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	0.00012	<0.00008
Certified Reference Material SRM 1941b (% Recovery)			130~	99	78	122~	101	96	100
QC Blank			<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008

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Issue Version 1
Customer Reference SZC 2019 Offshore Ground Investigation

		Units	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)
		Method No	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302
		Limit of Detection	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008
		Accreditation	MMO	MMO	MMO	MMO	MMO	MMO	MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**PCB 183**	**PCB 187**	**PCB 194**	**PCB 28**	**PCB 31**	**PCB 44**	**PCB 47**
IT1_SB_05, 0.00M, ES, 1, SB05 CEFAS1-150719	MAR00341.001	Sediment	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008
Certified Reference Material SRM 1941b (% Recovery)			82	97	87	74	111	97	116~
QC Blank			<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008

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Test Report ID	MAR00341
Issue Version	1
Customer Reference	SZC 2019 Offshore Ground Investigation

		Units	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)
		Method No	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302
		Limit of Detection	0.00008	0.00008	0.00008
		Accreditation	MMO	MMO	MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**PCB 49**	**PCB 52**	**PCB 66**
IT1_SB_05, 0.00M, ES, 1, SB05 CEFAS1-150719	MAR00341.001	Sediment	<0.00008	<0.00008	<0.00008
		Certified Reference Material SRM 1941b (% Recovery)	103	98	95
		QC Blank	<0.00008	<0.00008	<0.00008

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Test Report ID	MAR00341
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		Units	mg/Kg (Dry Weight)							
		Method No	ASC/SOP/302							
		Limit of Detection	0.0001							
		Accreditation	MMO							
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**AHCH**	**BHCH**	**GHCH**	**DIELDRIN**	**HCB**	**PPTDE**	**PPDDE**	**PPDDT**
IT1_SB_05, 0.00M, ES, 1, SB05 CEFAS1-150719	MAR00341.001	Sediment	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Certified Reference Material SRM 1941b (% Recovery)			116~	114~	130~	222~	150	71	98	119~
QC Blank			<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010

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For full analyte name see method summaries

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Issue Version 1
Customer Reference SZC 2019 Offshore Ground Investigation

		Units	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)
		Method No	*SUB_02	*SUB_02	*SUB_02	*SUB_02	*SUB_02	*SUB_02	*SUB_02
		Limit of Detection	0.02	0.02	0.02	0.02	0.02	0.02	0.02
		Accreditation	MMO	MMO	MMO	MMO	MMO	MMO	MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**BDE17**	**BDE28**	**BDE47**	**BDE66**	**BDE85**	**BDE99**	**BDE100**
IT1_SB_05, 0.00M, ES, 1, SB05 CEFAS1-150719	MAR00341.001	Sediment	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02

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Customer Reference SZC 2019 Offshore Ground Investigation

		Units	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)
		Method No	*SUB_02	*SUB_02	*SUB_02	*SUB_02	*SUB_02
		Limit of Detection	0.02	0.02	0.02	0.02	0.1
		Accreditation	MMO	MMO	MMO	MMO	MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**BDE138**	**BDE153**	**BDE154**	**BDE183**	**BDE209**
IT1_SB_05, 0.00M, ES, 1, SB05 CEFAS1-150719	MAR00341.001	Sediment	<0.02	<0.02	<0.02	<0.02	0.769

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Test Report ID MAR00341
Issue Version 1
Customer Reference SZC 2019 Offshore Ground Investigation

REPORT NOTES

Method Code	Sample ID	The following information should be taken into consideration when using the data contained within this report
*SUB_01	MAR00341.001	Sample was insufficient for analysis as the Cefas Radiological suite was conducted on the same sample location and sample volume was limited.
SOCOTEC Env Chem*	MAR00341.001	Analysis was conducted by an internal SOCOTEC laboratory. UKAS accredited analysis by this laboratory is under UKAS number 1252.
ASC/SOP/301	MAR00341.001	The matrix of this sample has been found to interfere with the result for this test. The sample has therefore been diluted, but in doing so, the detection limit for this test has been elevated.
ASC/SOP/302	MAR00341.001	The Primary process control data associated with this Test has not wholly met the requirements of the Laboratory Quality Management System QMS with one or more target analytes falling above acceptable limits. However the remaining data gives the Laboratory confidence that the test has performed satisfactorily and that the validity of the data may not have been significantly affected. These circumstances should be taken into consideration when utilising the data.
ASC/SOP/303/304	MAR00341.001	Chrysene is known to coelute with Triphenylene and these peaks can not be resolved in the PAHSED UKAS accredited method. Chrysene and Triphenylene are resolved for MMO but this is currently not UKAS accredited therefore Chrysene is reported without this acccreditation.

DEVIATING SAMPLE STATEMENT

Deviation Code	Devation Definition	Sample ID	Deviation Details. The following information should be taken into consideration when using the data contained within this report
D1	Holding Time Exceeded	N/A	N/A
D2	Handling Time Exceeded	N/A	N/A
D3	Sample Contaminated through Damaged Packaging	N/A	N/A
D4	Sample Contaminated through Sampling	N/A	N/A
D5	Inappropriate Container/Packaging	N/A	N/A
D6	Damaged in Transit	N/A	N/A
D7	Insufficient Quantity of Sample	N/A	N/A
D8	Inappropriate Headspace	N/A	N/A
D9	Retained at Incorrect Temperature	N/A	N/A
D10	Lack of Date & Time of Sampling	N/A	N/A
D11	Insufficient Sample Details	N/A	N/A
D12	Sample integrity compromised or not suitable for analysis	N/A	N/A

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Test Report ID	MAR00341
Issue Version	1
Customer Reference	SZC 2019 Offshore Ground Investigation

Method	Sample and Fraction Size	Method Summary
Particle Size Analysis	Wet Sediment	Wet and dry sieving followed by laser diffraction analysis.
Total Organic Carbon (TOC)	Air dried	Carbonate removal and sulphurous acid/combustion at 800°C/NDIR.
Metals	Air dried	Aqua-regia extraction followed by ICP analysis.
Organotins	Wet Sediment	Solvent extraction and derivatisation followed by GC-MS analysis.
Polyaromatic Hydrocarbons (PAH)	Wet Sediment	Solvent extraction and clean up followed by GC-MS analysis.
Total Hydrocarbon Content (THC)	Wet Sediment	Ultra-violet fluorescence spectroscopy
Polychlorinated Biphenyls (PCBs)	Air dried and seived to <2mm	Solvent extraction and clean up followed by GC-MS-MS analysis.
Organochlorine Pesticides (OCPs)	Air dried and seived to <2mm	Solvent extraction and clean up followed by GC-MS-MS analysis.

Analyte Definitions

Analyte Abbreviation	Full Analyte name	Analyte Abbreviation	Full Analyte name	Analyte Abbreviation	Full Analyte name
ACENAPTH	Acenaphthene	C2N	C2-naphthalenes	THC	Total Hydrocarbon Content
ACENAPHY	Acenaphthylene	C3N	C3-naphthalenes	AHCH	alpha-Hexachlorcyclohexane
ANTHRACN	Anthracene	CHRYSENE	Chrysene	BHCH	beta-Hexachlorcyclohexane
BAA	Benzo[a]anthracene	DBENZAH	Diben[ah]anthracene	GHCH	gamma-Hexachlorcyclohexane
BAP	Benzo[a]pyrene	FLUORANT	Fluoranthene	DIELDRIN	Dieldrin
BBF	Benzo[b]fluoranthene	FLUORENE	Fluorene	HCB	Hexachlorobenzene
BEP	Benzo[e]pyrene	INDPYR	Indeno[1,2,3-cd]pyrene	PPDDE	p,p'-Dichorodiphenyldicloroethylene
BENZGHIP	Benzo[ghi]perylene	NAPTH	Naphthalene	PPDDT	p,p'-Dichorodiphenyltrichloroethane
BKF	Benzo[k]fluoranthene	PERYLENE	Perylene	PPTDE	p,p'-Dichorodiphenyldicloroethane
C1N	C1-naphthalenes	PHENANT	Phenanthrene		
C1PHEN	C1-phenanthrene	PYRENE	Pyrene		

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Our Ref: EFS/199585M (Ver. 1)
Your Ref: G190016U

June 17, 2019

Environmental Chemistry
SOCOTEC UK Limited
Bretby Business Park
Ashby Road
Burton-on-Trent
Staffordshire
DE15 0YZ

Telephone: 01283 554400
Facsimile: 01283 554422

Karen Blackmore
Fugro GeoServices Ltd
Fugro House
Hithercroft Road
Wallingford
Oxfordshire
OX10 9RB

For the attention of Karen Blackmore

Dear Karen Blackmore

Sample Analysis - SZC 2019 Offshore Ground Investigation

Samples from the above site have been analysed in accordance with the schedule supplied.
The sample details and the results of analyses for these samples are given in the appended report.

An invoice for this work will follow under a separate cover.

Where appropriate the samples will be kept until 19/07/19 when they will be discarded. Please call 01283 554434 for an extension of this date.
Please be aware that our policy for the retention of paper based laboratory records and analysis reports is 6 years.

The work was carried out in accordance with SOCOTEC UK Limited (Laboratory and Analytical) Standard Terms and Conditions of Contract.

If I can be of any further assistance please do not hesitate to contact me.

Yours sincerely

for SOCOTEC UK Limited

[redacted]

K Smith
Project Co-ordinator
01283 554434

Environmental Chemistry, SOCOTEC UK Limited, P.O. Box 100, Burton-upon-trent, DE15 0XD Tel: 01283 554400 Fax: 01283 554422
SOCOTEC UK Limited.
Registered No: 2880501

TEST REPORT

1252

Report No. EFS/199585M (Ver. 1)

Fugro GeoServices Ltd
Fugro House
Hithercroft Road
Wallingford
Oxfordshire
OX10 9RB

Site: SZC 2019 Offshore Ground Investigation

The 3 samples described in this report were registered for analysis by SOCOTEC UK Limited on 07-Jun-2019. This report supersedes any versions previously issued by the laboratory.

The analysis was completed by: 14-Jun-2019

Tests where the accreditation is set to N or No, and any individual data items marked with a * are not UKAS or MCERTS accredited. Any opinions or interpretations expressed herein are outside the scope of any UKAS accreditation held by SOCOTEC UK Limited.

The following tables are contained in this report:

Table 1 Main Analysis Results (Pages 2 to 7)
Table of WAC Analysis Results (Page 8)
Table of Asbestos Screening Results (Page 9)
Analytical and Deviating Sample Overview (Pages 10 to 11)
Table of Method Descriptions (Pages 12 to 13)
Table of Report Notes (Page 14)
Table of Sample Descriptions (Appendix A Page 1 of 1)

On behalf of
SOCOTEC UK Li [redacted]
Becky Batham Operations Manager
Energy & Waste Services

Date of Issue: 17-Jun-2019

Accreditation Codes: **N** (Not Accredited), **U** (UKAS), **UM** (UKAS & MCERTS)
Tests marked '^' have been subcontracted to another laboratory.
(NVM) - denotes the sample matrix is dissimilar to matrices upon which the MCERTS validation was based, and is therefore not accredited for MCERTS.
All results are reported on a dry weight basis at 105°C unless otherwise stated. (except QC samples)
SOCOTEC UK Limited accepts no responsibility for any sampling not carried out by our personnel.

Units :			mg/kg	Mol/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg		% M/M	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			AMMAR	ANC	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	FOCCALC	FOCS	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA
Method Reporting Limits :			0.5	0.04	10	10	20	20	10	10	30	0.0002	0.04	0.2	0.2	0.2	0.2	0.2
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Exchange.Ammonium AR**	**Acid Neut. Capacity**	**Benzene**	**Ethyl Benzene**	**m/p Xylenes**	**MTBE**	**o Xylene**	**Toluene**	**Xylenes**	**F.O.C.**	**S.O.M. % (Calc)**	**GRO**	**GRO (>C5 - C6)**	**GRO (>C7 - C8)**	**GRO (>C8 - C10)**	**GRO (C5-C6 Aliphatic)**
1962057	IT1_SB_07 CEFAS7-020619 ES 7 2.00 (NVM)	**02-Jun-19**	1.2	17.4	<12.3	<12.3	<24.6	<24.6	<12.3	<12.3	<36.9	0.0018	0.31	<0.246	<0.246	<0.246	<0.246	<0.246
1962058	QC Blank (NVM)		<0.5	<0.04	<10.0	<10.0	<20.0	<20.0	<10.0	<10.0	<30.0	<0.0002	<0.04	<0.200	<0.200	<0.200	<0.200	<0.200
1962059	Reference Material (% Recovery) (NVM)		100	100	101	97	99	101.0	102	105	101.5	0.98	169	102	90.0	108	117	90

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Client Name	**Fugro GeoServices Ltd**
Contact	Karen Blackmore

SZC 2019 Offshore Ground Investigation

Sample Analysis

Date Printed	**17-Jun-2019**
Report Number	**EFS/199585M**
Table Number	**1**

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Units :			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			GROHSA	GROHSA	GROHSA	GROHSA	ICPACIDS	ICPBOR	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS
Method Reporting Limits :			0.2	0.2	0.2	0.2	20	0.5	0.3	0.2	1.2	1.6	0.7	0.5	2	0.5	0.6	16
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**GRO (C6-C7 Aliphatic)**	**GRO (C6-C7)**	**GRO (C7-C8 Aliphatic)**	**GRO (C8-C10 Aliphatic)**	**SO4-- (acid sol)**	**Boron (H20 Soluble)**	**Arsenic (MS)**	**Cadmium (MS)**	**Chromium (MS)**	**Copper (MS)**	**Lead (MS)**	**Mercury (MS)**	**Nickel (MS)**	**Selenium (MS)**	**Vanadium (MS)**	**Zinc (MS)**
1962057	IT1_SB_07 CEFAS7-020619 ES 7 2.00 (NVM)	**02-Jun-19**	<0.246	<0.246	<0.246	<0.246	2400	2.4	12.1	<0.20	10.0	4.5	3.4	<0.5	4.6	<0.5	19.6	24.9
1962058	QC Blank (NVM)		<0.200	<0.200	<0.200	<0.200	<20	<0.5	<0.3	<0.2	<1.2	<1.6	<0.7	<0.5	<2.0	<0.5	<0.6	<16
1962059	Reference Material (% Recovery) (NVM)		97.9	98.0	108	117	101	85	93	98	94	91	95	92	95	91	91	99

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Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Units :			mg/kg	mg/kg	%	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			ICPSOIL	KONECR	LOI(%MM)	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS
Method Reporting Limits :			36	0.1	0.2	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Iron**	**Chromium vi:**	**L.O.I. % @ 450C**	**Acenaphthene**	**Acenaphthylene**	**Anthracene**	**Benzo(a)anthracene**	**Benzo(a)pyrene**	**Benzo(b)fluoranthene**	**Benzo(ghi)perylene**	**Benzo(k)fluoranthene**	**Chrysene**	**Coronene**	**Dibenzo(ah)anthracene**	**Fluoranthene**	**Fluorene**
1962057	IT1_SB_07 CEFAS7-020619 ES 7 2.00 (NVM)	**02-Jun-19**	9310	<0.1	1.3	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
1962058	QC Blank (NVM)		<36	<0.1	<0.2	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
1962059	Reference Material (% Recovery) (NVM)		93	101	97	99.3	97.4	105	99.3	97.5	91.5	90.5	91.6	95.4	92.8	105	96.5	98.5

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Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Units :			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	pH Units	mg/kg	mg/kg	mg/kg
Method Codes :			PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PCBECD	PCBECD	PCBECD	PCBECD	PCBECD	PCBECD	PCBECD	PHSOIL	SFAPI	SFAPI	SFAPI
Method Reporting Limits :			0.08	0.08	0.08	0.08	1.28	5	5	5	5	5	5	5		0.5	0.5	0.5
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Indeno(123-cd)pyrene**	**Naphthalene**	**Phenanthrene**	**Pyrene**	**Total PAH (Sum of USEPA 16)**	**PCB 101**	**PCB 118**	**PCB 138**	**PCB 153**	**PCB 180**	**PCB 28**	**PCB 52**	**pH units (AR)**	**Cyanide(Free) (AR)**	**Cyanide(Total) (AR)**	**Phenol Index.(AR)**
1962057	IT1_SB_07 CEFAS7-020619 ES 7 2.00 (NVM)	**02-Jun-19**	<0.10	<0.10	<0.10	<0.10	<1.58	<6.16	<6.16	<6.16	<6.16	<6.16	<6.16	<6.16	8.5	<0.6	<0.6	<0.6
1962058	QC Blank (NVM)		<0.08	<0.08	<0.08	<0.08	<1.28	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00		<0.5	<0.5	<0.5
1962059	Reference Material (% Recovery) (NVM)		103	99.4	96.3	99.9	98.125	107	99	95	96	98	98	94	100	91.5	91.8	91.1

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Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Units :			mg/kg	%	%	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			SFAS	Sub002	TMSS	TPHFIDUS	TPHFIDUS	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI
Method Reporting Limits :			0.5		0.1	10	10	4	4	4	8.75	4	20	4	4	4	8.75	4
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Sulphide as S (AR)**	**^Asbestos Screen & ID (Stage 1)**	**Tot.Moisture @ 105C**	**TPH Band (>C10-C40)**	**TPH by GCFID (AR)**	**TPH Ali Band >C10-C12**	**TPH Ali Band >C12-C16**	**TPH Ali Band >C16-C21**	**TPH Ali Band >C21-C35**	**TPH Ali Band >C8-C10**	**TPH Ali Band >C8-C40**	**TPH Aro Band >C10-C12**	**TPH Aro Band >C12-C16**	**TPH Aro Band >C16-C21**	**TPH Aro Band >C21-C35**	**TPH Aro Band >C8-C10**
1962057	IT1_SB_07 CEFAS7-020619 ES 7 2.00 (NVM)	**02-Jun-19**	<0.6	NAIIS	18.8	13.8	14.9	<4.93	<4.93	<4.93	<10.79	<4.93	<24.6	<4.93	<4.93	<4.93	13.7	<4.93
1962058	QC Blank (NVM)		<0.5		N/A	<10.0	<10.0	4.07	<4.00	<4.00	<8.76	<4.00	<20.0	<4.00	<4.00	<4.00	<8.76	<4.00
1962059	Reference Material (% Recovery) (NVM)		102.3		N/A	100	100	96	98	100	100	94	100	84	86	85	94	91

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Table Number	**1**

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Units :			mg/kg	% M/M															
Method Codes :			TPHUSSI	WSLM59															
Method Reporting Limits :			20	0.02															
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**TPH Aro Band >C8-C40**	**Total Organic Carbon**															
1962057	IT1_SB_07 CEFAS7-020619 ES 7 2.00 (NVM)	**02-Jun-19**	28.3	0.18															
1962058	QC Blank (NVM)		<20.0	<0.02															
1962059	Reference Material (% Recovery) (NVM)		90	98															

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Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

WASTE ACCEPTANCE CRITERIA TESTING
BSEN 12457/2

					Leaching Data	
Client	Fugro GeoServices Ltd				Weight of sample (kg)	0.110
Contact	Karen Blackmore				Moisture content @ 105°C (% of Wet Weight)	18.8
					Equivalent Weight based on drying at 105°C (kg)	0.090
Site	SZC 2019 Offshore Ground Investigation				Volume of water required to carry out 10:1 stage (litres)	0.880
					Fraction of sample above 4 mm %	12.700
Sample Description		**Report No**	**Sample No**	**Issue Date**	Fraction of non-crushable material %	0.000
IT1_SB_07 CEFAS7-020619 ES 7 2.00		s19_9585M	CL/1962057	14-Jun-19		

Note: The >4mm fraction is crushed using a disc mill

Accreditation	Method Code	Solid Waste Analysis (Dry Basis)	Concentration in Solid (Dry Weight Basis)	Landfill Waste Acceptance Criteria Limit Values		
				Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
N	WSLM59	Total Organic Carbon (% M/M)	0.18	3	5	6
N	LOI450	Loss on Ignition (%)	1.3			10
U	BTEXHSA	Sum of BTEX (mg/kg)	<0.0738	6		
U	PCBUSECD	Sum of 7 Congener PCB's (mg/kg)	<0.042	1		
N	TPHFIDUS	Mineral Oil (mg/kg)	13.8	500		
N	PAHMSUS	PAH Sum of 17 (mg/kg)	<1.67	100		
N	PHSOIL	pH (pH units)	8.5		>6	
N	ANC	Acid Neutralisation Capacity (mol/kg) @pH 7	17.4		To be evaluated	To be evaluated

Accreditation	Method Code	Leachate Analysis	10:1 Single Stage Leachate	Calculated cumulative amount	Landfill Waste Acceptance Criteria Limit Values for BSEN 12457/2 @ L/S 10 litre kg-1		
			mg/l except °°	mg/kg (dry weight)	mg/kg (dry weight)		
U	WSLM3	pH (pH units) °°	7.8	Calculated data not UKAS Accredited			
U	WSLM2	Conductivity (µs/cm) °°	1640				
U	ICPMSW	Arsenic	<0.001	<0.01	0.5	2	25
U	ICPWATVAR	Barium	<0.01	<0.1	20	100	300
U	ICPMSW	Cadmium	<0.0001	<0.001	0.04	1	5
U	ICPMSW	Chromium	<0.001	<0.01	0.5	10	70
U	ICPMSW	Copper	<0.001	<0.01	2	50	100
U	ICPMSW	Mercury	<0.0001	<0.001	0.01	0.2	2
U	ICPMSW	Molybdenum	0.01	0.1	0.5	10	30
U	ICPMSW	Nickel	<0.001	<0.01	0.4	10	40
U	ICPMSW	Lead	<0.001	<0.01	0.5	10	50
U	ICPMSW	Antimony	<0.001	<0.01	0.06	0.7	5
U	ICPMSW	Selenium	<0.001	<0.01	0.1	0.5	7
U	ICPMSW	Zinc	0.003	0.03	4	50	200
U	KONENS	Chloride	419	4190	800	15000	25000
U	ISEF	Fluoride	0.4	4	10	150	500
U	ICPWATVAR	Sulphate as SO4	67	670	1000	20000	50000
N	WSLM27	Total Dissolved Solids	1280	12800	4000	60000	100000
U	SFAPI	Phenol Index	<0.05	<0.5	1		
N	WSLM13	Dissolved Organic Carbon	0.5	5	500	800	1000

Template Ver. 1

Landfill Waste Acceptance Criteria limit values correct as of 11th March 2009.

Tests where the accreditation is set to U are UKAS accredited, those where the accreditation is set to N are not UKAS accredited

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

ASBESTOS ANALYSIS RESULTS

SOCOTEC Asbestos Limited Certificate of Analysis for Asbestos in Soils, Sediments and Aggregates

UKAS TESTING 1089

Detection limit of Method SCI-ASB-020 is 0.001%

Sampling has been carried out by a third party

SOCOTEC

Client:	SOCOTEC Environmental Chemistry	**Page 1 of 1**	
Address:	Etwall House, Bretby Business Park, Ashby Road, Burton upon Trent	**Report No:**	**ANO-0503-21026**
For the attention of:	Fugro GeoServices Ltd	**Report Date:**	**13/06/2019**
Site Address:	SZC 2019 Offshore Ground Investigation	**Project Number:**	**S199585**

Sample Number	Sample Date	Sample Location & Matrix	Test Date	Total Sample Dry Weight (g)	Weight of <10mm Fraction (g)	Asbestos(g) in >10mm	Asbestos(g) in < 10mm	% Asbestos by weight of Total Dried Sample	Moisture Content	Asbestos Fibre Types Identified
CL/1962057	02/06/19	T1_SB_07 CEFAS7-020619 ES 7 2.00 Soils	13/06/2019	437	437			Identification		NAIIS

Keys

NAACR = Not Analysed at Clients Request

*** visible to naked eye**

NAIIS = No Asbestos Identified in Sample (Identification Only)

NADIS = No Asbestos Detected in Sample (ID & Quant Only)

Name:	Chris Rosser	Authorised Signatory:
Position:	Lab Analyst	

The sample analysis for the above results was carried out using the procedures detailed in SOCOTEC Asbestos Limited in house method (SCI-ASB-020) based on EA document Quantification of asbestos in soil and associated materials - Draft 2017. Fibre identification was carried out using SOCOTEC Asbestos Limited in house method of transmitted/polarised light microscopy and centre stop dispersion staining (SCI-ASB-007), based on HSE's HSG 248. The analysis of the < 10mm fraction for asbestos content only includes ACMs and fibres and does not discriminate non-asbestos fibres. All fibres are assumed, unless specified, to be amphiboles. All tests were carried out at SOCOTEC Asbestos Ltd laboratory, Unit 5, New Street, Bridgend, CF31 3UD, UKAS Testing Number 1089. Recommended sample weight is 1kg-2kg, samples less than 1kg are classified as deviating samples.

Where individual results are flagged see report notes for status.

Analytical and Deviating Sample Overview

Customer **Fugro GeoServices Ltd**
Site **SZC 2019 Offshore Ground Investigation**
Report No **S199585M**

Consignment No S85543
Date Logged 07-Jun-2019
In-House Report Due 17-Jun-2019

Please note the results for any subcontracted analysis (identified with a '^') is likely to take up to an additional five working days.

ID Number	Description	Sampled	MethodID	AMMAR	ANC	BTEXHSA		CEN Leachate	ClustServ	FOCCALC	FOCS	GROHSA	ICPACIDS	ICPBOR	ICPMSS										ICPSOIL	KONECR	LOI(%MM)	MCertS
				Exchange.Ammonium AR	Acid Neut. Capacity	BTEX-HSA + MTBE analysis	MTBE (µg/kg)	CEN Leac(P)C	REPORT A	F.O.C.	S.O.M. % (Calc)	GRO (AA) by HSA GC-FID	SO4-- (acid sol)	Boron (H20 Soluble)	Arsenic (MS)	Cadmium (MS)	Chromium (MS)	Copper (MS)	Lead (MS)	Mercury (MS)	Nickel (MS)	Selenium (MS)	Vanadium (MS)	Zinc (MS)	Iron	Chromium vi:	L.O.I. % @ 450C	MCertS Analysis
				✓		✓	✓			✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓				✓
CL/1962057	IT1_SB_07 CEFAS7-020619 ES	02/06/19																										
CL/1962058	QC Blank																											
CL/1962059	Reference Material (% Recovery)																											

Note: We will endeavour to prioritise samples to complete analysis within holding time; however any delay could result in samples becoming deviant whilst being processed in the laboratory.

If sampling dates are missing or matrices unclassified then results will not be ISO 17025 accredited. Please contact us as soon as possible to provide missing information in order to reinstate accreditation.

Deviating Sample Key

A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key

	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

Where individual results are flagged see report notes for status.
The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Analytical and Deviating Sample Overview

Customer **Fugro GeoServices Ltd** Consignment No S85543
Site **SZC 2019 Offshore Ground Investigation** Date Logged 07-Jun-2019
Report No **S199585M** In-House Report Due 17-Jun-2019

Please note the results for any subcontracted analysis (identified with a '^') is likely to take up to an additional five working days.

ID Number	Description	MethodID	PAHMSUS	PCBECD	PHSOIL	SFAPI			SFAS	Sub002	TMSS	TPHFIDUS		TPHUSSI													WSLM59
		Sampled	PAH (17) by GCMS	PCB-7 Congeners Analysis	pH units (AR)	Cyanide(Free) (AR)	Cyanide(Total) (AR)	Phenol Index.(AR)	Sulphide as S (AR)	^Asbestos Screen & ID (Stage 1)	Tot.Moisture @ 105C	TPH Band (>C10-C40)	TPH by GCFID (AR)	TPH Ali Band >C10-C12	TPH Ali Band >C12-C16	TPH Ali Band >C16-C21	TPH Ali Band >C21-C35	TPH Ali Band >C8-C10	TPH Ali Band >C8-C40	TPH Aro Band >C10-C12	TPH Aro Band >C12-C16	TPH Aro Band >C16-C21	TPH Aro Band >C21-C35	TPH Aro Band >C8-C10	TPH Aro Band >C8-C40	TPH by GCFID (AR/Si)	Total Organic Carbon
			✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CL/1962057	IT1_SB_07 CEFAS7-020619 ES	02/06/19																										
CL/1962058	QC Blank																											
CL/1962059	Reference Material (% Recovery)																											

Note: We will endeavour to prioritise samples to complete analysis within holding time; however any delay could result in samples becoming deviant whilst being processed in the laboratory.

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^	Analysis Subcontracted - **Note: due date may vary**

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Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Soil	AMMAR	As Received	Determination of Exchangeable Ammonium in Soil using potassium chloride extraction, discrete colorimetric detection
Soil	ANC	Oven Dried @ < 35°C	Quantitative digestion with Hydrochloric Acid back titration with 1M Sodium Hydroxide to pH 7
Soil	BTEXHSA	As Received	Determination of Benzene, Toluene, Ethyl benzene and Xylenes (BTEX) by Headspace GCFID
Soil	FOCS	Oven Dried @ < 35°C	Calculation of Soil Organic Matter content from Organic Carbon content of soil samples
Soil	GROHSA	As Received	Determination of Total Gasoline Range Organics Hydrocarbons (GRO) by Headspace GCFID
Soil	ICPACIDS	Oven Dried @ < 35°C	Determination of Total Sulphate in soil samples by Hydrochloric Acid extraction followed by ICPOES detection
Soil	ICPBOR	Oven Dried @ < 35°C	Determination of Boron in soil samples by hot water extraction followed by ICPOES detection
Soil	ICPMSS	Oven Dried @ < 35°C	Determination of Metals in Marine Sediments and Soil samples by aqua regia digestion followed by ICPMS detection
Soil	ICPSOIL	Oven Dried @ < 35°C	Determination of Metals in soil samples by aqua regia digestion followed by ICPOES detection
Soil	KONECR	Oven Dried @ < 35°C	Determination of Chromium vi in soil samples by water extraction followed by colorimetric detection
Soil	LOI(%MM)	Oven Dried @ < 35°C	Determination of loss on ignition for soil samples at specified temperature by gravimetry
Soil	PAHMSUS	As Received	Determination of Polycyclic Aromatic Hydrocarbons (PAH) by hexane/acetone extraction followed by GCMS detection
Soil	PCBECD	As Received	Determination of Polychlorinated Biphenyl (PCB) congeners/aroclors by hexane/acetone extraction followed by GCECD detection
Soil	PHSOIL	As Received	Determination of pH of 2.5:1 deionised water to soil extracts using pH probe.
Soil	SFAPI	As Received	Segmented flow analysis with colorimetric detection
Soil	SFAS	As Received	Segmented flow analysis with colorimetric detection
Soil	SubCon*	*	Contact Laboratory for details of the methodology used by the sub-contractor.
Soil	TMSS	As Received	Determination of the Total Moisture content at 105ºC by loss on oven drying gravimetric analysis (% based upon wet weight)
Soil	TPHFIDUS	As Received	Determination of hexane/acetone extractable Hydrocarbons in soil with GCFID detection.
Soil	TPHUSSI	As Received	Determination of hexane/acetone extractable Hydrocarbons in soil with GCFID detection including quantitation of Aromatic and Aliphatic fractions.

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Soil	WSLM59	Oven Dried @ < 35°C	Determination of Organic Carbon in soil using sulphurous Acid digestion followed by high temperature combustion and IR detection
Water	ICPMSW	As Received	Direct quantitative determination of Metals in water samples using ICPMS
Water	ICPWATVAR	As Received	Direct determination of Metals and Sulphate in water samples using ICPOES
Water	ISEF	As Received	Determination of Fluoride in water samples by Ion Selective Electrode (ISE)
Water	KONENS	As Received	Direct analysis using discrete colorimetric analysis
Water	SFAPI	As Received	Segmented flow analysis with colorimetric detection
Water	WSLM13	As Received	Instrumental analysis using acid/persulphate digestion and non-dispersive IR detection
Water	WSLM2	As Received	Determination of the Electrical Conductivity (µS/cm) by electrical conductivity probe.
Water	WSLM27	As Received	Gravimetric Determination
Water	WSLM3	As Received	Determination of the pH of water samples by pH probe

Where individual results are flagged see report notes for status.

Report Notes

Generic Notes

Soil/Solid Analysis

Unless stated otherwise,
- Results expressed as mg/kg have been calculated on the basis indicated in the Method Description table.
  All results on MCERTS reports are reported on a 105ºC dry weight basis with the exception of pH and conductivity.
- Sulphate analysis not conducted in accordance with BS1377
- Water Soluble Sulphate is on a 2:1 water:soil extract

Waters Analysis

Unless stated otherwise results are expressed as mg/l
Nil: Where "Nil" has been entered against Total Alkalinity or Total Acidity this indicates that a measurement was not required due to the inherent pH of the sample.

Oil analysis specific

Unless stated otherwise,
- Results are expressed as mg/kg
- SG is expressed as g/cm^3@ 15°C

Gas (Tedlar bag) Analysis

Unless stated otherwise, results are expressed as ug/l

Asbestos Analysis

CH Denotes Chrysotile **TR** Denotes Tremolite
CR Denotes Crocidolite **AC** Denotes Actinolite
AM Denotes Amosite **AN** Denotes Anthophylite
NAIIS No Asbestos Identified in Sample
NADIS No Asbestos Detected In Sample

Symbol Reference

^ Sub-contracted analysis.
$$ Unable to analyse due to the nature of the sample
¶ Samples submitted for this analyte were not preserved on site in accordance with laboratory protocols. This may have resulted in deterioration of the sample(s) during transit to the laboratory. Consequently the reported data may not represent the concentration of the target analyte present in the sample at the time of sampling
¥ Results for guidance only due to possible interference
& Blank corrected result
I.S Insufficient sample to complete requested analysis
I.S(g) Insufficient sample to re-analyse, results for guidance only
Intf Unable to analyse due to interferences
N.D Not determined **N.Det** Not detected
N.F No Flow
NS Information Not Supplied
Req Analysis requested, see attached sheets for results
Þ Raised detection limit due to nature of the sample
***** All accreditation has been removed by the laboratory for this result
‡ MCERTS accreditation has been removed for this result
§ accreditation has been removed for this result as it is a non-accredited matrix

Note: The Laboratory may only claim that data is accredited when all of the requirements of our Quality System have been met. Where these requirements have not been met the laboratory may elect to include the data in its final report and remove the accreditation from individual data items if it believes that the validity of the data has not been affected. If further details are required of the circumstances which have led to the removal of accreditation then please do not hesitate to contact the laboratory.

Sample Descriptions

Client : Fugro GeoServices Ltd

Site : SZC 2019 Offshore Ground Investigation

Report Number : S19_9585

Note: major constituent in upper case

Lab ID Number	Client ID	Description
CL/1962057	3_07 CEFAS7-020619 ES 7 2.00	MARINE SEDIMENTS
CL/1962058	QC Blank (NVM)	QUALITY CONTROL SAMPLE
CL/1962059	erence Material (% Recovery) (N	QUALITY CONTROL SAMPLE

Our Ref: EFS/199586M (Ver. 1)
Your Ref: G190016U

June 17, 2019

Environmental Chemistry
SOCOTEC UK Limited
Bretby Business Park
Ashby Road
Burton-on-Trent
Staffordshire
DE15 0YZ

Telephone: 01283 554400
Facsimile: 01283 554422

Karen Blackmore
Fugro GeoServices Ltd
Fugro House
Hithercroft Road
Wallingford
Oxfordshire
OX10 9RB

For the attention of Karen Blackmore

Dear Karen Blackmore

Sample Analysis - SZC 2019 Offshore Ground Investigation

Samples from the above site have been analysed in accordance with the schedule supplied.
The sample details and the results of analyses for these samples are given in the appended report.

An invoice for this work will follow under a separate cover.

Where appropriate the samples will be kept until 19/07/19 when they will be discarded. Please call 01283 554434 for an extension of this date.
Please be aware that our policy for the retention of paper based laboratory records and analysis reports is 6 years.

The work was carried out in accordance with SOCOTEC UK Limited (Laboratory and Analytical) Standard Terms and Conditions of Contract.

If I can be of any further assistance please do not hesitate to contact me.

Yours sincerely

for SOCOTEC UK Limited

[redacted]

Project Co-ordinator
01283 554434

Environmental Chemistry, SOCOTEC UK Limited, P.O. Box 100, Burton-upon-trent, DE15 0XD Tel: 01283 554400 Fax: 01283 554422
SOCOTEC UK Limited.
Registered No: 2880501

TEST REPORT

1252

Report No. EFS/199586M (Ver. 1)

Fugro GeoServices Ltd
Fugro House
Hithercroft Road
Wallingford
Oxfordshire
OX10 9RB

Site: SZC 2019 Offshore Ground Investigation

The 3 samples described in this report were registered for analysis by SOCOTEC UK Limited on 07-Jun-2019. This report supersedes any versions previously issued by the laboratory.

The analysis was completed by: 17-Jun-2019

Tests where the accreditation is set to N or No, and any individual data items marked with a * are not UKAS or MCERTS accredited. Any opinions or interpretations expressed herein are outside the scope of any UKAS accreditation held by SOCOTEC UK Limited.

The following tables are contained in this report:

Table 1 Main Analysis Results (Pages 2 to 15)
Table of SVOC (Tics) Results (Pages 16 to 18)
Table of VOC (Tics) Results (Pages 19 to 21)
Table of WAC Analysis Results (Page 22)
Subcontracted Analysis Reports (Pages 23 to 25)
The accreditation status of subcontracted analysis is displayed on the appended subcontracted analysis reports.
Table of Asbestos Screening Results (Page 26)
Analytical and Deviating Sample Overview (Pages 27 to 29)
Table of Additional Report Notes (Page 30)
Table of Method Descriptions (Pages 31 to 32)
Table of Report Notes (Page 33)
Table of Sample Descriptions (Appendix A Page 1 of 1)

On behalf of
SOCOTEC UK Li [redacted]
Becky Batham Operations Manager
Energy & Waste Services

Date of Issue: 17-Jun-2019

Accreditation Codes: **N** (Not Accredited), **U** (UKAS), **UM** (UKAS & MCERTS)
Tests marked '^' have been subcontracted to another laboratory.
(NVM) - denotes the sample matrix is dissimilar to matrices upon which the MCERTS validation was based, and is therefore not accredited for MCERTS.
All results are reported on a dry weight basis at 105°C unless otherwise stated. (except QC samples)
SOCOTEC UK Limited accepts no responsibility for any sampling not carried out by our personnel.

Units :			mg/kg	Mol/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg		% M/M	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			AMMAR	ANC	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	FOCCALC	FOCS	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA
Method Reporting Limits :			0.5	0.04	10	10	20	20	10	10	30	0.0002	0.04	0.2	0.2	0.2	0.2	0.2
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Exchange.Ammonium AR**	**Acid Neut. Capacity**	**Benzene**	**Ethyl Benzene**	**m/p Xylenes**	**MTBE**	**o Xylene**	**Toluene**	**Xylenes**	**F.O.C.**	**S.O.M. % (Calc)**	**GRO**	**GRO (>C5 - C6)**	**GRO (>C7 - C8)**	**GRO (>C8 - C10)**	**GRO (C5-C6 Aliphatic)**
1962060	IT1_SPT_03 SPT03-20190531 ES 1 8.00 (NVM)	**31-May-19**	<0.6	9.52	<11.6	<11.6	<23.1	<23.1	<11.6	<11.6	<34.7	0.0018	0.31	<0.231	<0.231	<0.231	<0.231	<0.231
1962063	QC Blank (NVM)		<0.5	<0.04	<10.0	<10.0	<20.0	<20.0	<10.0	<10.0	<30.0	<0.0002	<0.04	<0.200	<0.200	<0.200	<0.200	<0.200
1962064	Reference Material (% Recovery) (NVM)		100	100	98	99	102	95.0	100	98	101	0.98	169	113	108	116	113	108

SOCOTEC

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Client Name	**Fugro GeoServices Ltd**
Contact	Karen Blackmore

SZC 2019 Offshore Ground Investigation

Sample Analysis

Date Printed	**17-Jun-2019**
Report Number	**EFS/199586M**
Table Number	**1**

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Units :			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			GROHSA	GROHSA	GROHSA	GROHSA	ICPACIDS	ICPBOR	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS
Method Reporting Limits :			0.2	0.2	0.2	0.2	20	0.5	0.3	0.2	1.2	1.6	0.7	0.5	2	0.5	0.6	16
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**GRO (C6-C7 Aliphatic)**	**GRO (C6-C7)**	**GRO (C7-C8 Aliphatic)**	**GRO (C8-C10 Aliphatic)**	**SO4-- (acid sol)**	**Boron (H20 Soluble)**	**Arsenic (MS)**	**Cadmium (MS)**	**Chromium (MS)**	**Copper (MS)**	**Lead (MS)**	**Mercury (MS)**	**Nickel (MS)**	**Selenium (MS)**	**Vanadium (MS)**	**Zinc (MS)**
1962060	IT1_SPT_03 SPT03-20190531 ES 1 8.00 (NVM)	**31-May-19**	<0.231	<0.231	<0.231	<0.231	2130	3.3	9.4	<0.2	12.9	6.7	4.1	<0.5	5.3	<0.5	31	19.6
1962063	QC Blank (NVM)		<0.200	<0.200	<0.200	<0.200	<20	<0.5	<0.3	<0.2	<1.2	<1.6	<0.7	<0.5	<2.0	<0.5	<0.6	<16
1962064	Reference Material (% Recovery) (NVM)		116	116	116	113	101	85	93	98	94	91	95	92	95	91	91	99

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Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Units :			mg/kg	mg/kg	%	ug Sn/kg	ug Sn/kg	ug Sn/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			ICPSOIL	KONECR	LOI(%MM)	OGSN	OGSN	OGSN	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS
Method Reporting Limits :			36	0.1	0.2	1	1	1	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Iron**	**Chromium vi:**	**L.O.I. % @ 450C**	**Dibutyl Tin**	**Tributyl Tin as Sn**	**Triphenyl Tin**	**Acenaphthene**	**Acenaphthylene**	**Anthracene**	**Benzo(a)anthracene**	**Benzo(a)pyrene**	**Benzo(b)fluoranthene**	**Benzo(ghi)perylene**	**Benzo(k)fluoranthene**	**Chrysene**	**Coronene**
1962060	IT1_SPT_03 SPT03-20190531 ES 1 8.00 (NVM)	**31-May-19**	24000	<0.1	2.2	<1	<1	<1	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09
1962063	QC Blank (NVM)		<36	<0.1	<0.2	<1	<1	<1	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
1962064	Reference Material (% Recovery) (NVM)		93	101	97	137	128	113	99.3	97.4	105	99.3	97.5	91.5	90.5	91.6	95.4	92.8

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Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Units :			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	pH Units
Method Codes :			PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PCBECD	PCBECD	PCBECD	PCBECD	PCBECD	PCBECD	PCBECD	PHSOIL
Method Reporting Limits :			0.08	0.08	0.08	0.08	0.08	0.08	0.08	1.28	5	5	5	5	5	5	5	
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Dibenzo(ah)anthracene**	**Fluoranthene**	**Fluorene**	**Indeno(123-cd)pyrene**	**Naphthalene**	**Phenanthrene**	**Pyrene**	**Total PAH (Sum of USEPA 16)**	**PCB 101**	**PCB 118**	**PCB 138**	**PCB 153**	**PCB 180**	**PCB 28**	**PCB 52**	**pH units (AR)**
1962060	IT1_SPT_03 SPT03-20190531 ES 1 8.00 (NVM)	**31-May-19**	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<1.48	<5.79	<5.79	<5.79	<5.79	<5.79	<5.79	<5.79	8.3
1962063	QC Blank (NVM)		<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<1.28	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	
1962064	Reference Material (% Recovery) (NVM)		105	96.5	98.5	103	99.4	96.3	99.9	98.125	107	99	95	96	98	98	94	100

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Units :			mg/kg	mg/kg	mg/kg	mg/kg	%	Bq/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			SFAPI	SFAPI	SFAPI	SFAS	Sub002	Sub008	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW
Method Reporting Limits :			0.5	0.5	0.5	0.5			0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.5
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Cyanide(Free) (AR)**	**Cyanide(Total) (AR)**	**Phenol Index.(AR)**	**Sulphide as S (AR)**	**^Asbestos Screen & ID (Stage 1)**	**^Gamma spectrometry**	**1,2,4-Trichlorobenzene**	**1,2-Dichlorobenzene**	**1,3-Dichlorobenzene**	**1,4-Dichlorobenzene**	**1-Methylnaphthalene**	**2,4,5-Trichlorophenol**	**2,4,6-Trichlorophenol**	**2,4-Dichlorophenol**	**2,4-Dimethylphenol**	**2,4-Dinitrophenol**
1962060	IT1_SPT_03 SPT03-20190531 ES 1 8.00 (NVM)	**31-May-19**	<0.6	<0.6	<0.6	<0.6	NAIIS	Req	<0.116	<0.116	<0.116	<0.116	<0.116	<0.116	<0.116	<0.116	<0.116	<0.579
1962063	QC Blank (NVM)		<0.5	<0.5	<0.5	<0.5			<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.500
1962064	Reference Material (% Recovery) (NVM)		91.5	91.8	91.1	102.3			83.0	81.2	82.3	78.9	82.2	91.3	93.0	90.5	85.7	88.8

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Where individual results are flagged see report notes for status.
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Units :			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW
Method Reporting Limits :			0.2	0.5	0.1	0.1	0.1	0.1	0.5	0.1	0.1	14.5	0.2	0.1	0.1	0.5	0.5	0.1
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**2,4-Dinitrotoluene**	**2,6-Dinitrotoluene**	**2-Chloronaphthalene**	**2-Chlorophenol**	**2-Methylnaphthalene**	**2-Methylphenol**	**2-Nitroaniline**	**2-Nitrophenol**	**3- & 4-Methylphenol**	**3-Nitroaniline**	**4,6-Dinitro-2-methylphenol**	**4-Bromophenyl-phenylether**	**4-Chloro-3-methylphenol**	**4-Chloroaniline**	**4-Chlorophenol**	**4-Chlorophenyl-phenylether**
1962060	IT1_SPT_03 SPT03-20190531 ES 1 8.00 (NVM)	**31-May-19**	<0.231	<0.579	<0.116	<0.116	<0.116	<0.116	<0.579	<0.116	<0.116	<16.8	<0.231	<0.116	<0.116	<0.579	<0.579	<0.116
1962063	QC Blank (NVM)		<0.200	<0.500	<0.100	<0.100	<0.100	<0.100	<0.500	<0.100	<0.100	<14.5	<0.200	<0.100	<0.100	<0.500	<0.500	<0.100
1962064	Reference Material (% Recovery) (NVM)		91.7	86.9	84.8	87.6	82.8	79.8	81.9	85.1	86.4	598	98.8	87.5	93.3	2530	93.0	85.2

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Client Name	**Fugro GeoServices Ltd**
Contact	Karen Blackmore

SZC 2019 Offshore Ground Investigation

Sample Analysis

Date Printed	**17-Jun-2019**
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Table Number	**1**

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Units :			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW
Method Reporting Limits :			0.6	0.5	0.1	0.1	0.1	0.2	0.2	0.2	0.5	0.2	0.5	0.5	0.1	0.1	0.1	0.5
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**4-Nitroaniline**	**4-Nitrophenol**	**Acenaphthene**	**Acenaphthylene**	**Anthracene**	**Benzo(a)anthracene**	**Benzo(a)pyrene**	**Benzo(b)fluoranthene**	**Benzo(ghi)perylene**	**Benzo(k)fluoranthene**	**Benzoic Acid**	**Benzyl alcohol**	**Biphenyl**	**bis(2-Chloroethoxy)methane**	**bis(2-Chloroethyl)ether**	**bis(2-Chloroisopropyl)ether**
1962060	IT1_SPT_03 SPT03-20190531 ES 1 8.00 (NVM)	**31-May-19**	<0.694	<0.579	<0.116	<0.116*	<0.116	<0.231	<0.231	<0.231	<0.579	<0.231	<0.579	<0.579	<0.116	<0.116	<0.116	<0.579
1962063	QC Blank (NVM)		<0.600	<0.500	<0.100	<0.100	<0.100	<0.200	<0.200	<0.200	<0.500	<0.200	<0.500	<0.500	<0.100	<0.100	<0.100	<0.500
1962064	Reference Material (% Recovery) (NVM)		597	144	82.5	94.3	83.7	87.2	84.0	83.3	67.9	83.0	117	139	82.5	86.1	82.9	73.7

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Client Name	**Fugro GeoServices Ltd**
Contact	Karen Blackmore

SZC 2019 Offshore Ground Investigation

Sample Analysis

Date Printed	**17-Jun-2019**
Report Number	**EFS/199586M**
Table Number	**1**

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Units :			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW
Method Reporting Limits :			0.2	0.2	0.1	0.3	0.5	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.1	0.1	0.1
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**bis(2-Ethylhexyl)phthalate**	**Butylbenzylphthalate**	**Chrysene**	**Coronene**	**Dibenzo(ah)anthracene**	**Dibenzofuran**	**Diethylphthalate**	**Dimethylphthalate**	**Di-n-butylphthalate**	**Di-n-octylphthalate**	**Diphenyl Ether**	**Fluoranthene**	**Fluorene**	**Hexachlorobenzene**	**Hexachlorobutadiene**	**Hexachlorocyclopentadiene**
1962060	IT1_SPT_03 SPT03-20190531 ES 1 8.00 (NVM)	**31-May-19**	<0.231	<0.231	<0.116	<0.347	<0.579	<0.116	<0.116	<0.116	<0.116	<0.231	<0.116	<0.231	<0.231	<0.116	<0.116	<0.116
1962063	QC Blank (NVM)		<0.200	<0.200	<0.100	<0.300	<0.500	<0.100	<0.100	<0.100	<0.100	<0.200	<0.100	<0.200	<0.200	<0.100	<0.100	<0.100
1962064	Reference Material (% Recovery) (NVM)		89.0	91.7	80.5	60.5	87.2	85.4	84.6	85.0	84.1	100	83.3	82.1	84.8	83.8	81.9	51.4

SOCOTEC

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Client Name	**Fugro GeoServices Ltd**
Contact	Karen Blackmore

SZC 2019 Offshore Ground Investigation

Sample Analysis

Date Printed	**17-Jun-2019**
Report Number	**EFS/199586M**
Table Number	**1**

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Units :			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	%	mg/kg	mg/kg	mg/kg
Method Codes :			SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	TMSS	TPHFIDUS	TPHFIDUS	TPHUSSI
Method Reporting Limits :			0.1	0.5	0.1	0.1	0.5	0.9	0.1	0.5	0.1	0.1	0.2		0.1	10	10	4
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Hexachloroethane**	**Indeno(123-cd)pyrene**	**Isophorone**	**Naphthalene**	**Nitrobenzene**	**N-Nitroso-di-n-propylamine**	**N-Nitrosodiphenylamine**	**Pentachlorophenol**	**Phenanthrene**	**Phenol**	**Pyrene**	**SVOC + TICs (AR)**	**Tot.Moisture @ 105C**	**TPH Band (>C10-C40)**	**TPH by GCFID (AR)**	**TPH Ali Band >C10-C12**
1962060	IT1_SPT_03 SPT03-20190531 ES 1 8.00 (NVM)	**31-May-19**	<0.116	<0.579	<0.116	<0.116	<0.579	<1.042	<0.116	<0.579	<0.116	<0.116	<0.231	Req	13.6	72.1	74.4	<4.63
1962063	QC Blank (NVM)		<0.100	<0.500	<0.100	<0.100	<0.500	<0.900	<0.100	<0.500	<0.100	<0.100	<0.200	Req	N/A	<10.0	<10.0	4.07
1962064	Reference Material (% Recovery) (NVM)		75.8	77.5	81.7	80.8	83.2	80.1	310	106	83.3	89.2	81.9	Req	N/A	100	100	96

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Units :			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Method Codes :			TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS
Method Reporting Limits :			4	4	8.75	4	20	4	4	4	8.75	4	20	1	1	1	1	1
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**TPH Ali Band >C12-C16**	**TPH Ali Band >C16-C21**	**TPH Ali Band >C21-C35**	**TPH Ali Band >C8-C10**	**TPH Ali Band >C8-C40**	**TPH Aro Band >C10-C12**	**TPH Aro Band >C12-C16**	**TPH Aro Band >C16-C21**	**TPH Aro Band >C21-C35**	**TPH Aro Band >C8-C10**	**TPH Aro Band >C8-C40**	**1,1,1,2-Tetrachloroethane**	**1,1,1-Trichloroethane**	**1,1,2,2-Tetrachloroethane**	**1,1,2-Trichloroethane**	**1,1-Dichloroethane**
1962060	IT1_SPT_03 SPT03-20190531 ES 1 8.00 (NVM)	**31-May-19**	<4.63	<4.63	12.3	<4.63	<23.1	<4.63	<4.63	<4.63	<10.14	<4.63	<23.1	<1.2	<1.2	<1.2	<1.2	<1.2
1962063	QC Blank (NVM)		<4.00	<4.00	<8.76	<4.00	<20.0	<4.00	<4.00	<4.00	<8.76	<4.00	<20.0	<1.0	<1.0	<1.0	<1.0	<1.0
1962064	Reference Material (% Recovery) (NVM)		98	100	100	94	100	84	86	85	94	91	90	104	109	180	106	104

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Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Units :			µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Method Codes :			VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS
Method Reporting Limits :			1	1	3	1	3	1	1	1	1	1	1	1	1	1	1	1
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**1,1-Dichloroethene**	**1,1-Dichloropropene**	**1,2,3-Trichlorobenzene**	**1,2,3-Trichloropropane**	**1,2,4-Trichlorobenzene**	**1,2,4-Trimethylbenzene**	**1,2-Dibromo-3-chloropropane**	**1,2-Dibromoethane**	**1,2-Dichlorobenzene**	**1,2-Dichloroethane**	**1,2-Dichloropropane**	**1,3,5-Trimethylbenzene**	**1,3-Dichlorobenzene**	**1,3-Dichloropropane**	**1,4-Dichlorobenzene**	**2,2-Dichloropropane**
1962060	IT1_SPT_03 SPT03-20190531 ES 1 8.00 (NVM)	**31-May-19**	<1.2	<1.2	<3.5	<1.2	<3.5	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2
1962063	QC Blank (NVM)		<1.0	<1.0	<3.0	<1.0	<3.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1962064	Reference Material (% Recovery) (NVM)		116	110	97.0	100	100	113	104	106	105	104	107	114	107	108	103	111

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Units :			µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Method Codes :			VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS
Method Reporting Limits :			1	1	1	1	1	1	1	1	1	1	2	1	3	5	1	1
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**2-Chlorotoluene**	**4-Chlorotoluene**	**Benzene**	**Bromobenzene**	**Bromochloromethane**	**Bromodichloromethane**	**Bromoform**	**Bromomethane**	**Carbon Tetrachloride**	**Chlorobenzene**	**Chloroethane**	**Chloroform**	**Chloromethane**	**cis 1,2-Dichloroethene**	**cis 1,3-Dichloropropene**	**Dibromochloromethane**
1962060	IT1_SPT_03 SPT03-20190531 ES 1 8.00 (NVM)	**31-May-19**	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<2.3	<1.2	<3.5	<5.8	<1.2	<1.2
1962063	QC Blank (NVM)		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<3.0	<5.0	<1.0	<1.0
1962064	Reference Material (% Recovery) (NVM)		112	108	107	101	105	109	103	113	108	102	110	107	119	109	106	107

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Units :			µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Method Codes :			VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS
Method Reporting Limits :			1	1	2	2	1	4	1	5	1	2	1	1	1	1	1	3
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Dibromomethane**	**Dichlorodifluoromethane**	**Ethylbenzene**	**Hexachlorobutadiene**	**iso-Propylbenzene**	**m and p-Xylene**	**MTBE**	**Naphthalene**	**n-Butylbenzene**	**o-Xylene**	**p-Isopropyltoluene**	**Propylbenzene**	**sec-Butylbenzene**	**Styrene**	**tert-Butylbenzene**	**Tetrachloroethene**
1962060	IT1_SPT_03 SPT03-20190531 ES 1 8.00 (NVM)	**31-May-19**	<1.2	<1.2	<2.3	<2.3	<1.2	<4.6	<1.2	<5.8	<1.2	<2.3	<1.2	<1.2	<1.2	<1.2	<1.2	<3.5
1962063	QC Blank (NVM)		<1.0	<1.0	<2.0	<2.0	<1.0	<4.0	<1.0	<5.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<3.0
1962064	Reference Material (% Recovery) (NVM)		105	142	107	109	109	213	103	100	112	107	110	98.0	112	107	113	105

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Date Printed	**17-Jun-2019**
Report Number	**EFS/199586M**
Table Number	**1**

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Units :			µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	% M/M									
Method Codes :			VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	WSLM59									
Method Reporting Limits :			5	1	1	1	1	1		0.02									
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Toluene**	**trans 1,2-Dichloroethene**	**trans 1,3-Dichloropropene**	**Trichloroethene**	**Trichlorofluoromethane**	**Vinyl Chloride**	**VOC + TICs HSA-GCMS**	**Total Organic Carbon**									
1962060	IT1_SPT_03 SPT03-20190531 ES 1 8.00 (NVM)	**31-May-19**	<5.8	<1.2	<1.2	<1.2	<1.2	<1.2	Req	0.18									
1962063	QC Blank (NVM)		<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	Req	<0.02									
1962064	Reference Material (% Recovery) (NVM)		107	109	104	86.0	107	117	Req	98									

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Date Printed	**17-Jun-2019**
Report Number	**EFS/199586M**
Table Number	**1**

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Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

SVOC (TICs)

Accredited?:No

Customer and Site Details:	Furgo GeoServices Ltd: SZC 2019 Offshore Ground Investigation		
Sample Details:	IT1_SPT_03 SPT03-20190531 ES 1 8	**Job Number:**	S19_9586
LIMS ID Number:	CL1962060		
		Multiplier:	0.2
Date Booked in:	07-Jun-19	**Dilution Factor:**	1
Date Extracted:	11-Jun-19	**GPC (Y/N):**	N
Date Analysed:	11-Jun-19	**Matrix:**	Soil
QC Batch Number:	119	**Method:**	Ultrasonic
Directory/Quant File:	061119.GC11\ 0	**Operator:**	CO

Tentatively Identified Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
Ethanol, 2,2'-[1,2-ethanediylbis(oxy)]bis-	000112-27-6	4.29	46.126	86	N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

SVOC (TICs)

Accredited?:No

Customer and Site Details:	Furgo GeoServices Ltd: SZC 2019 Offshore Ground Investigation		
Sample Details:	QC Blank (NVM)	**Job Number:**	S19_9586
LIMS ID Number:	CL1962063		
		Multiplier:	0.2
Date Booked in:	07-Jun-19	**Dilution Factor:**	1
Date Extracted:	11-Jun-19	**GPC (Y/N):**	N
Date Analysed:	11-Jun-19	**Matrix:**	Soil
QC Batch Number:	119	**Method:**	Ultrasonic
Directory/Quant File:	061119.GC11\ 0	**Operator:**	CO

Tentatively Identified Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
None detected	-	-	<1.5		N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

SVOC (TICs)

Accredited?:No

Customer and Site Details:	Furgo GeoServices Ltd: SZC 2019 Offshore Ground Investigation		
Sample Details:	Reference Material (% Recovery)	**Job Number:**	S19_9586
LIMS ID Number:	CL1962064		
		Multiplier:	5
Date Booked in:	07-Jun-19	**Dilution Factor:**	25
Date Extracted:	11-Jun-19	**GPC (Y/N):**	N
Date Analysed:	11-Jun-19	**Matrix:**	Soil
QC Batch Number:	119	**Method:**	Ultrasonic
Directory/Quant File:	061119.GC11\ 0	**Operator:**	CO

Tentatively Identified Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

TICs by HSA-GCMS

Accredited?: No

Customer and Site Details:	Fugro GeoServices Ltd: SZC 2019 Offshore Ground Investigation		**Date Booked in:**	07-Jun-19
Sample Details:	IT1_SPT_03 SPT03-20190531 ES 1 8.00 (NVM)		**Date Analysed:**	13-Jun-19
LIMS ID Number:	CL1962060		**Matrix:**	Soil
Job Number:	s19_9586		**Ext Method:**	Headspace
Directory/Quant file:	061319_MS19\	Initial Calibration	**Dilution:**	1.09
Operator:	EH		**Position:**	15

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Acetic acid, methyl ester	000079-20-9	2.78	230	83	N
Dichloromethane (Methylene Chloride)	75-09-2	-	<6	-	N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Compounds marked * are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

TICs by HSA-GCMS

Accredited?: No

Customer and Site Details:	Fugro GeoServices Ltd: SZC 2019 Offshore Ground Investigation		**Date Booked in:**	07-Jun-19
Sample Details:	QC Blank (NVM)		**Date Analysed:**	13-Jun-19
LIMS ID Number:	CL1962063		**Matrix:**	Soil
Job Number:	S19_9586		**Ext Method:**	Headspace
Directory/Quant file:	061319_MS19\	Initial Calibration	**Dilution:**	1
Operator:	EH		**Position:**	9

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/l	% Fit	Accr. code
4-Bromo-2-chlorobenzoic acid	059748-90-2	1.53	96	50	N
Dichloromethane (Methylene Chloride)	75-09-2	-	<5	-	N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

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"M" denotes that % fit has been manually interpreted

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TICs by HSA-GCMS

Accredited?: No

Customer and Site Details:	Fugro GeoServices Ltd: SZC 2019 Offshore Ground Investigation		**Date Booked in:**	07-Jun-19
Sample Details:	Reference Material (% Recovery) (NVM)		**Date Analysed:**	13-Jun-19
LIMS ID Number:	CL1962064		**Matrix:**	0
Job Number:	S19_9586		**Ext Method:**	Headspace
Directory/Quant file:	061319_MS19\	Initial Calibration	**Dilution:**	1
Operator:	EH		**Position:**	10

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/l	% Fit	Accr. code
Methyl isocyanide	000593-75-9	2.74	40	74	N
Dichloromethane (Methylene Chloride)	75-09-2	2.84	87.74%	93	N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Compounds marked * are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.
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WASTE ACCEPTANCE CRITERIA TESTING
BSEN 12457/2

Client	Fugro GeoServices Ltd				**Leaching Data**	
					Weight of sample (kg)	0.105
Contact	Karen Blackmore				Moisture content @ 105°C (% of Wet Weight)	13.6
					Equivalent Weight based on drying at 105°C (kg)	0.090
Site	SZC 2019 Offshore Ground Investigation				Volume of water required to carry out 10:1 stage (litres)	0.885
					Fraction of sample above 4 mm %	0.000
Sample Description		**Report No**	**Sample No**	**Issue Date**	Fraction of non-crushable material %	0.000
IT1_SPT_03 SPT03-20190531 ES 1 8.00		s19_9586M	CL/1962060	17-Jun-19		

Note: The >4mm fraction is crushed using a disc mill

Accreditation	Method Code	Solid Waste Analysis (Dry Basis)	Concentration in Solid (Dry Weight Basis)	Landfill Waste Acceptance Criteria Limit Values		
				Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
N	WSLM59	Total Organic Carbon (% M/M)	0.18	3	5	6
N	LOI450	Loss on Ignition (%)	2.2			10
U	BTEXHSA	Sum of BTEX (mg/kg)	<0.0695	6		
U	PCBUSECD	Sum of 7 Congener PCB's (mg/kg)	<0.042	1		
N	TPHFIDUS	Mineral Oil (mg/kg)	72.1	500		
N	PAHMSUS	PAH Sum of 17 (mg/kg)	<1.57	100		
N	PHSOIL	pH (pH units)	8.3		>6	
N	ANC	Acid Neutralisation Capacity (mol/kg) @pH 7	9.52		To be evaluated	To be evaluated

Accreditation	Method Code	Leachate Analysis	10:1 Single Stage Leachate	Calculated cumulative amount	Landfill Waste Acceptance Criteria Limit Values for BSEN 12457/2 @ L/S 10 litre kg-1		
			mg/l except °°	mg/kg (dry weight)	mg/kg (dry weight)		
U	WSLM3	pH (pH units) °°	7.3	Calculated data not UKAS Accredited			
U	WSLM2	Conductivity (µs/cm) °°	1190				
U	ICPMSW	Arsenic	<0.001	<0.01	0.5	2	25
U	ICPWATVAR	Barium	<0.01	<0.1	20	100	300
U	ICPMSW	Cadmium	<0.0001	<0.001	0.04	1	5
U	ICPMSW	Chromium	<0.001	<0.01	0.5	10	70
U	ICPMSW	Copper	<0.001	<0.01	2	50	100
U	ICPMSW	Mercury	<0.0001	<0.001	0.01	0.2	2
U	ICPMSW	Molybdenum	0.01	0.1	0.5	10	30
U	ICPMSW	Nickel	<0.001	<0.01	0.4	10	40
U	ICPMSW	Lead	<0.001	<0.01	0.5	10	50
U	ICPMSW	Antimony	0.003	0.03	0.06	0.7	5
U	ICPMSW	Selenium	<0.001	<0.01	0.1	0.5	7
U	ICPMSW	Zinc	<0.002	<0.02	4	50	200
U	KONENS	Chloride	287	2870	800	15000	25000
U	ISEF	Fluoride	0.2	2	10	150	500
U	ICPWATVAR	Sulphate as SO4	68	680	1000	20000	50000
N	WSLM27	Total Dissolved Solids	930	9300	4000	60000	100000
U	SFAPI	Phenol Index	<0.05	<0.5	1		
N	WSLM13	Dissolved Organic Carbon	15	150	500	800	1000

Template Ver. 1

Landfill Waste Acceptance Criteria limit values correct as of 11th March 2009.

Tests where the accreditation is set to U are UKAS accredited, those where the accreditation is set to N are not UKAS accredited

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Analysis of a Soil Sample

Client:	SOCOTEC UK Environmental Chemistry PO Box 100 Burton upon Trent Staffordshire DE15 0XD
Testing Facility:	SOCOTEC UK Unit 12, Moorbrook Southmead Industrial Park Didcot Oxfordshire OX11 7HP
Laboratory Reference:	19-0499
Customer Reference:	S199586
Quote Number:	ENR-ANU-9346Rev1
PO Number:	Intraco
Sample Received:	11 June 2019
Sample Condition:	Satisfactory, Ambient
Analysis Completed:	13 June 2019
Report Author:	[redacted]
Author's Name:	Kiran Bala
Job Title:	Analyst
Approved By:	[redacted]
Approver's Name:	Charlene Hunston
Job Title:	Team Leader
Report Date:	14 June 2019

1252

SOCOTEC

Sample Summary

Customer Reference	Laboratory Reference (SOCOTEC UK Bretby)	Laboratory Reference (SOCOTEC UK Didcot)	Matrix	Sampling Date
IT1_SPT_03 SPT03-20190531 ES1 8.00	S1962060	RX0537	Soil	31/05/2019 12:00

Experimental

Gamma Spectrometry

The sample was analysed following method "ANU/SOP/2029" – "The measurement technique is based on the use of high purity germanium (HPGe) detectors coupled to an Ortec gamma ray spectroscopy system. The gamma ray spectra are stored on a computer and analysed using the software programme Fitzpeaks for photopeak identification and quantification. The detectors are calibrated for efficiency using a mixed radionuclide standard, which covers an energy range of approximately 30-2000 keV. The efficiency of gamma rays between 30 keV and 120 keV are determined on an individual basis.

Application of decay corrections for the naturally occurring daughter radionuclides of uranium and thorium assumes that the series daughter radionuclides are all in secular equilibrium and therefore decay with the half-life of the first radionuclide in the series." (^{226}Ra is not UKAS accredited)

Results

Results are presented in the following table.

Any opinions and interpretations expressed herein are outside the scope of our UKAS accreditation.

The results in this test report relate only to the items tested, and test portions taken thereof. This test report must not be reproduced except in full, without written approval of the laboratory.

UKAS TESTING
1252

SOCOTEC

Results Summary – Gamma Spectrometry

Customer Reference	Laboratory Reference	Be-7	K-40	Co-60	Cs-134	Cs-137	Tl-208	Pb-210	Bi-212	Pb-212
IT1_SPT_03 SPT03-20190531 ES1 8.00	RX2967	< 8.9	69 ± 18	< 1.5	< 1.5	< 1.2	2.75 ± 0.92	< 22	< 16	5.4 ± 1.5

Customer Reference	Laboratory Reference	Bi-214	Pb-214	Ra-224	Ra-226 *	Ac-228	Pa-234m	Th-234	U-235	Am-241
IT1_SPT_03 SPT03-20190531 ES1 8.00	RX2967	15.2 ± 3.0	18.8 ± 2.4	< 19	< 20	< 4.8	< 150	< 24	< 1.3	< 2.0

Notes:

1. Analysis marked with an asterisk is not UKAS accredited.
2. Results are presented as $Bq.kg^{-1}$ of dried and homogenised sample and are decay corrected to the sampling date.
3. For results below the Limit of Detection, the LoD is rounded up to 2 significant figures.
4. Uncertainties are rounded to 2 significant figures; results are rounded to the same precision.
5. Detector calibrations are based upon homogeneous standard solutions. For quantification purposes the samples are assumed to be homogeneous.
6. ^{226}Ra has only one gamma ray at 186 keV and the major gamma ray from ^{235}U also occurs at 186 keV. ^{235}U can be measured by the lower abundance gamma ray at 144 keV and if a positive result for ^{235}U is reported, the ^{226}Ra result will be unreliable and overestimated. However even if ^{235}U is below the LoD there may still be a contribution to the ^{226}Ra from ^{235}U and the ^{226}Ra result may be unreliable and overestimated. If an accurate result for ^{226}Ra is required this is better obtained by radiochemical analysis.

- End of Report -

UKAS TESTING
1252

ASBESTOS ANALYSIS RESULTS

SOCOTEC Asbestos Limited Certificate of Analysis for Asbestos in Soils, Sediments and Aggregates

UKAS TESTING 1089

Detection limit of Method SCI-ASB-020 is 0.001%

Sampling has been carried out by a third party

SOCOTEC

Client:	SOCOTEC Environmental Chemistry	**Page 1 of 1**	
Address:	Etwall House, Bretby Business Park, Ashby Road, Burton upon Trent	**Report No:**	**ANO-0503-21027**
For the attention of:	Fugro GeoServices Ltd	**Report Date:**	**13/06/2019**
Site Address:	SZC 2019 Offshore Ground Investigation	**Project Number:**	**S199586**

Sample Number	Sample Date	Sample Location & Matrix	Test Date	Total Sample Dry Weight (g)	Weight of <10mm Fraction (g)	Asbestos(g) in >10mm	Asbestos(g) in < 10mm	% Asbestos by weight of Total Dried Sample	Moisture Content	Asbestos Fibre Types Identified
CL/1962060	31/05/19	T1_SPT_03 SPT03-20190531 ES 1 8.00 Soi	13/06/2019	1014	1014			Identification		NAIIS

Keys

NAACR = Not Analysed at Clients Request

*** visible to naked eye**

NAIIS = No Asbestos Identified in Sample (Identification Only)

NADIS = No Asbestos Detected in Sample (ID & Quant Only)

Name:	Chris Rosser	Authorised Signatory:
Position:	Lab Analyst	

The sample analysis for the above results was carried out using the procedures detailed in SOCOTEC Asbestos Limited in house method (SCI-ASB-020) based on EA document Quantification of asbestos in soil and associated materials - Draft 2017. Fibre identification was carried out using SOCOTEC Asbestos Limited in house method of transmitted/polarised light microscopy and centre stop dispersion staining (SCI-ASB-007), based on HSE's HSG 248. The analysis of the < 10mm fraction for asbestos content only includes ACMs and fibres and does not discriminate non-asbestos fibres. All fibres are assumed, unless specified, to be amphiboles. All tests were carried out at SOCOTEC Asbestos Ltd laboratory, Unit 5, New Street, Bridgend, CF31 3UD, UKAS Testing Number 1089. Recommended sample weight is 1kg-2kg, samples less than 1kg are classified as deviating samples.

Where individual results are flagged see report notes for status.

Analytical and Deviating Sample Overview

Customer **Fugro GeoServices Ltd**
Site **SZC 2019 Offshore Ground Investigation**
Report No **S199586M**

Consignment No S85545
Date Logged 07-Jun-2019
In-House Report Due 17-Jun-2019

Please note the results for any subcontracted analysis (identified with a '^') is likely to take up to an additional five working days.

ID Number	Description	MethodID	AMMAR	ANC	BTEXHSA		CEN Leachate	CustServ	FOCCALC	FOCS	GROHSA	ICPACIDS	ICPBOR	ICPMSS										ICPSOIL	KONECR	LOI(%MM)	MCertS
		Sampled	Exchange.Ammonium AR	Acid Neut. Capacity	BTEX-HSA + MTBE analysis	MTBE (µg/kg)	CEN Leac(P)C	REPORT A	F.O.C.	S.O.M. % (Calc)	GRO (AA) by HSA GC-FID	SO4-- (acid sol)	Boron (H20 Soluble)	Arsenic (MS)	Cadmium (MS)	Chromium (MS)	Copper (MS)	Lead (MS)	Mercury (MS)	Nickel (MS)	Selenium (MS)	Vanadium (MS)	Zinc (MS)	Iron	Chromium vi:	L.O.I. % @ 450C	MCertS Analysis
			✓		✓	✓			✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓				✓
CL/1962060	IT1_SPT_03 SPT03-20190531	31/05/19																									
CL/1962063	QC Blank																										
CL/1962064	Reference Material (% Recovery)																										

Note: We will endeavour to prioritise samples to complete analysis within holding time; however any delay could result in samples becoming deviant whilst being processed in the laboratory.

If sampling dates are missing or matrices unclassified then results will not be ISO 17025 accredited. Please contact us as soon as possible to provide missing information in order to reinstate accreditation.

Deviating Sample Key

A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key

	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

Where individual results are flagged see report notes for status.
The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Analytical and Deviating Sample Overview

Customer **Fugro GeoServices Ltd**
Site **SZC 2019 Offshore Ground Investigation**
Report No **S199586M**

Consignment No S85545
Date Logged 07-Jun-2019
In-House Report Due 17-Jun-2019

Please note the results for any subcontracted analysis (identified with a '^') is likely to take up to an additional five working days.

ID Number	Description	MethodID	OGSN			PAHMSUS	PCBECD	PHSOIL	SFAPI			SFAS	Sub002	Sub008	SVOCSW	TMSS	TPHFIDUS		TPHUSSI								
		Sampled	Dibutyl Tin	Tributyl Tin as Sn	Triphenyl Tin	PAH (17) by GCMS	PCB-7 Congeners Analysis	pH units (AR)	Cyanide(Free) (AR)	Cyanide(Total) (AR)	Phenol Index.(AR)	Sulphide as S (AR)	^Asbestos Screen & ID (Stage 1)	^Gamma spectrometry	SVOC + TICs (AR)	Tot.Moisture @ 105C	TPH Band (>C10-C40)	TPH by GCFID (AR)	TPH Ali Band >C10-C12	TPH Ali Band >C12-C16	TPH Ali Band >C16-C21	TPH Ali Band >C21-C35	TPH Ali Band >C8-C10	TPH Ali Band >C8-C40	TPH Aro Band >C10-C12	TPH Aro Band >C12-C16	TPH Aro Band >C16-C21
						✓	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CL/1962060	IT1_SPT_03 SPT03-20190531	31/05/19																									
CL/1962063	QC Blank																										
CL/1962064	Reference Material (% Recovery)																										

Note: We will endeavour to prioritise samples to complete analysis within holding time; however any delay could result in samples becoming deviant whilst being processed in the laboratory.

If sampling dates are missing or matrices unclassified then results will not be ISO 17025 accredited. Please contact us as soon as possible to provide missing information in order to reinstate accreditation.

Deviating Sample Key

A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key

	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

Where individual results are flagged see report notes for status.
The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Analytical and Deviating Sample Overview

Customer **Fugro GeoServices Ltd**
Site **SZC 2019 Offshore Ground Investigation**
Report No **S199586M**

Consignment No S85545
Date Logged 07-Jun-2019
In-House Report Due 17-Jun-2019

Please note the results for any subcontracted analysis (identified with a '^') is likely to take up to an additional five working days.

ID Number	Description	Sampled	MethodID	TPHUSSI				VOCHSAS	WSLM59
				TPH Aro Band >C21-C35	TPH Aro Band >C8-C10	TPH Aro Band >C8-C40	TPH by GCFID (AR/Si)	VOC + TICs HSA-GCMS	Total Organic Carbon
				✓	✓	✓	✓	✓	✓
CL/1962060	IT1_SPT_03 SPT03-20190531	31/05/19							
CL/1962063	QC Blank								
CL/1962064	Reference Material (% Recovery)								

Note: We will endeavour to prioritise samples to complete analysis within holding time; however any delay could result in samples becoming deviant whilst being processed in the laboratory.

If sampling dates are missing or matrices unclassified then results will not be ISO 17025 accredited. Please contact us as soon as possible to provide missing information in order to reinstate accreditation.

Deviating Sample Key	
A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key	
	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

Where individual results are flagged see report notes for status.
The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Report Number : EFS/199586

Additional Report Notes

Method Code	Sample ID	The following information should be taken into consideration when using the data contained within this report
SVOCSW	CL1962060	The Secondary process control data associated with this Test has not wholly met the requirements of the Laboratory Quality Management System QMS with one or more target analytes falling outside acceptable limits. However the remaining data gives the Laboratory confidence that the test has performed satisfactorily (including the Primary Process Control) and that the validity of the data may not have been significantly affected. However in line with our QMS policy we have removed accreditation , where applicable, from the affected analytes (Acenaphthylene) . These circumstances should be taken into consideration when utilising the data.

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Soil	AMMAR	As Received	Determination of Exchangeable Ammonium in Soil using potassium chloride extraction, discrete colorimetric detection
Soil	ANC	Oven Dried @ < 35°C	Quantitative digestion with Hydrochloric Acid back titration with 1M Sodium Hydroxide to pH 7
Soil	BTEXHSA	As Received	Determination of Benzene, Toluene, Ethyl benzene and Xylenes (BTEX) by Headspace GCFID
Soil	FOCS	Oven Dried @ < 35°C	Calculation of Soil Organic Matter content from Organic Carbon content of soil samples
Soil	GROHSA	As Received	Determination of Total Gasoline Range Organics Hydrocarbons (GRO) by Headspace GCFID
Soil	ICPACIDS	Oven Dried @ < 35°C	Determination of Total Sulphate in soil samples by Hydrochloric Acid extraction followed by ICPOES detection
Soil	ICPBOR	Oven Dried @ < 35°C	Determination of Boron in soil samples by hot water extraction followed by ICPOES detection
Soil	ICPMSS	Oven Dried @ < 35°C	Determination of Metals in Marine Sediments and Soil samples by aqua regia digestion followed by ICPMS detection
Soil	ICPSOIL	Oven Dried @ < 35°C	Determination of Metals in soil samples by aqua regia digestion followed by ICPOES detection
Soil	KONECR	Oven Dried @ < 35°C	Determination of Chromium vi in soil samples by water extraction followed by colorimetric detection
Soil	LOI(%MM)	Oven Dried @ < 35°C	Determination of loss on ignition for soil samples at specified temperature by gravimetry
Soil	OGSN	As Received	Determination of Organo-tin compounds using sonic extraction in methanol , derivatiseation with Sodium Tetraethylborate and GCMS quantitation (SIM mode).
Soil	PAHMSUS	As Received	Determination of Polycyclic Aromatic Hydrocarbons (PAH) by hexane/acetone extraction followed by GCMS detection
Soil	PCBECD	As Received	Determination of Polychlorinated Biphenyl (PCB) congeners/aroclors by hexane/acetone extraction followed by GCECD detection
Soil	PHSOIL	As Received	Determination of pH of 2.5:1 deionised water to soil extracts using pH probe.
Soil	SFAPI	As Received	Segmented flow analysis with colorimetric detection
Soil	SFAS	As Received	Segmented flow analysis with colorimetric detection
Soil	SubCon*	*	Contact Laboratory for details of the methodology used by the sub-contractor.
Soil	SVOCSW	As Received	Determination of Semi-Volatile Organic Compounds by dichloromethane/acetone extraction followed by GCMS detection
Soil	TMSS	As Received	Determination of the Total Moisture content at 105ºC by loss on oven drying gravimetric analysis (% based upon wet weight)

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Soil	TPHFIDUS	As Received	Determination of hexane/acetone extractable Hydrocarbons in soil with GCFID detection.
Soil	TPHUSSI	As Received	Determination of hexane/acetone extractable Hydrocarbons in soil with GCFID detection including quantitation of Aromatic and Aliphatic fractions.
Soil	VOCHSAS	As Received	Determination of Volatile Organic Compounds (VOC) by Headspace GCMS
Soil	WSLM59	Oven Dried @ < 35°C	Determination of Organic Carbon in soil using sulphurous Acid digestion followed by high temperature combustion and IR detection
Water	ICPMSW	As Received	Direct quantitative determination of Metals in water samples using ICPMS
Water	ICPWATVAR	As Received	Direct determination of Metals and Sulphate in water samples using ICPOES
Water	ISEF	As Received	Determination of Fluoride in water samples by Ion Selective Electrode (ISE)
Water	KONENS	As Received	Direct analysis using discrete colorimetric analysis
Water	SFAPI	As Received	Segmented flow analysis with colorimetric detection
Water	WSLM13	As Received	Instrumental analysis using acid/persulphate digestion and non-dispersive IR detection
Water	WSLM2	As Received	Determination of the Electrical Conductivity (µS/cm) by electrical conductivity probe.
Water	WSLM27	As Received	Gravimetric Determination
Water	WSLM3	As Received	Determination of the pH of water samples by pH probe

Where individual results are flagged see report notes for status.

Report Notes

Generic Notes

Soil/Solid Analysis

Unless stated otherwise,
- Results expressed as mg/kg have been calculated on the basis indicated in the Method Description table.
  All results on MCERTS reports are reported on a 105ºC dry weight basis with the exception of pH and conductivity.
- Sulphate analysis not conducted in accordance with BS1377
- Water Soluble Sulphate is on a 2:1 water:soil extract

Waters Analysis

Unless stated otherwise results are expressed as mg/l
Nil: Where "Nil" has been entered against Total Alkalinity or Total Acidity this indicates that a measurement was not required due to the inherent pH of the sample.

Oil analysis specific

Unless stated otherwise,
- Results are expressed as mg/kg
- SG is expressed as g/cm^3@ 15°C

Gas (Tedlar bag) Analysis

Unless stated otherwise, results are expressed as ug/l

Asbestos Analysis

CH Denotes Chrysotile **TR** Denotes Tremolite
CR Denotes Crocidolite **AC** Denotes Actinolite
AM Denotes Amosite **AN** Denotes Anthophylite
NAIIS No Asbestos Identified in Sample
NADIS No Asbestos Detected In Sample

Symbol Reference

^ Sub-contracted analysis.
$$ Unable to analyse due to the nature of the sample
¶ Samples submitted for this analyte were not preserved on site in accordance with laboratory protocols. This may have resulted in deterioration of the sample(s) during transit to the laboratory. Consequently the reported data may not represent the concentration of the target analyte present in the sample at the time of sampling
¥ Results for guidance only due to possible interference
& Blank corrected result
I.S Insufficient sample to complete requested analysis
I.S(g) Insufficient sample to re-analyse, results for guidance only
Intf Unable to analyse due to interferences
N.D Not determined **N.Det** Not detected
N.F No Flow
NS Information Not Supplied
Req Analysis requested, see attached sheets for results
Þ Raised detection limit due to nature of the sample
***** All accreditation has been removed by the laboratory for this result
‡ MCERTS accreditation has been removed for this result
§ accreditation has been removed for this result as it is a non-accredited matrix

Note: The Laboratory may only claim that data is accredited when all of the requirements of our Quality System have been met. Where these requirements have not been met the laboratory may elect to include the data in its final report and remove the accreditation from individual data items if it believes that the validity of the data has not been affected. If further details are required of the circumstances which have led to the removal of accreditation then please do not hesitate to contact the laboratory.

Sample Descriptions

Client : Fugro GeoServices Ltd

Site : SZC 2019 Offshore Ground Investigation

Report Number : S19_9586

Note: major constituent in upper case

Lab ID Number	Client ID	Description
CL/1962060	T_03 SPT03-20190531 ES 1 8.0(	MARINE SEDIMENTS
CL/1962063	QC Blank (NVM)	QUALITY CONTROL SAMPLE
CL/1962064	erence Material (% Recovery) (N'	QUALITY CONTROL SAMPLE

Our Ref: EFS/199618 (Ver. 2)
Your Ref: G190016U

June 26, 2019

Environmental Chemistry
SOCOTEC UK Limited
Bretby Business Park
Ashby Road
Burton-on-Trent
Staffordshire
DE15 0YZ

Telephone: 01283 554400
Facsimile: 01283 554422

Karen Blackmore
Fugro GeoServices Ltd
Fugro House
Hithercroft Road
Wallingford
Oxfordshire
OX10 9RB

For the attention of Karen Blackmore

Dear Karen Blackmore

Sample Analysis - SZC 2019 Offshore Ground Investigation

Samples from the above site have been analysed in accordance with the schedule supplied.
The sample details and the results of analyses for these samples are given in the appended report.

An invoice for this work will follow under a separate cover.

Where appropriate the samples will be kept until 20/07/19 when they will be discarded. Please call 01283 554434 for an extension of this date.
Please be aware that our policy for the retention of paper based laboratory records and analysis reports is 6 years.

The work was carried out in accordance with SOCOTEC UK Limited (Multi-Sector Services) Standard Terms and Conditions of Contract.

If I can be of any further assistance please do not hesitate to contact me.

Yours sincerely

for SOCOTEC UK Limited

[redacted]

Project Co-ordinator
01283 554434

TEST REPORT

Report No. EFS/199618 (Ver. 2)

Fugro GeoServices Ltd
Fugro House
Hithercroft Road
Wallingford
Oxfordshire
OX10 9RB

Site: SZC 2019 Offshore Ground Investigation

The 2 samples described in this report were registered for analysis by SOCOTEC UK Limited on 08-Jun-2019. This report supersedes any versions previously issued by the laboratory.

The analysis was completed by: 26-Jun-2019

The following tables are contained in this report:

Table 1 Main Analysis Results (Page 2)
Subcontracted Analysis Reports (Pages 3 to 5)
The accreditation status of subcontracted analysis is displayed on the appended subcontracted analysis reports.
Analytical and Deviating Sample Overview (Page 6)
Table of Method Descriptions (Page 7)
Table of Report Notes (Page 8)
Table of Sample Descriptions (Appendix A Page 1 of 1)

On behalf of
SOCOTEC UK L[redacted]
Becky Batham Operations Manager
Energy & Waste Services

Date of Issue: 26-Jun-2019

Tests marked '^' have been subcontracted to another laboratory.

Where samples have been flagged as deviant on the Analytical and Deviating Sample Overview, for any reason, the data may not be representative of the sample at the point of sampling and the validity of the data may be affected. SOCOTEC UK Limited accepts no responsibility for any sampling not carried out by our personnel.

Where individual results are flagged see report notes for status.

		Units :	Bq/kg																
		Method Codes :	Sub008																
		Method Reporting Limits :																	
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**^Gamma spectrometry**																
1962160	IT1_SB_07 CEFAS-RAD-2 ES 2 0.00	**02-Jun-19 20:25**	Req																
1962161	IT1_SB_07 CEFAS-RAD-4 ES 4 0.55	**02-Jun-19 22:35**	Req																

SOCOTEC

Bretby Business Park, Ashby Road

Burton-on-Trent, Staffordshire, DE15 0YZ

Tel +44 (0) 1283 554400

Fax +44 (0) 1283 554422

Client Name	**Fugro GeoServices Ltd**
Contact	Karen Blackmore

SZC 2019 Offshore Ground Investigation

Sample Analysis

Date Printed	**24-Jun-2019**
Report Number	**EFS/199618**
Table Number	**1**

SOCOTEC

Analysis of Sand Samples

Client: SOCOTEC UK Environmental Chemistry
PO Box 100
Burton upon Trent
Staffordshire
DE15 0XD

Testing Facility: SOCOTEC UK
Unit 12, Moorbrook
Southmead Industrial Park
Didcot
Oxfordshire
OX11 7HP

Laboratory Reference: 19-0500

Customer Reference: S199618

Quote Number: ENR-ANU-9346Rev1

PO Number: Intraco

Samples Received: 12 June 2019

Sample Condition: Satisfactory, Ambient

Analysis Completed: 17 June 2019

Report Author: [redacted]

Author's Name: Trevor Harding

Job Title: Senior Analyst

Approved By: [redacted]

Approver's Name: Charlene Hunston

Job Title: Team Leader

Report Date: 25 June 2019

SOCOTEC

Introduction

This is a revised report as denoted by the suffix 'Rev1'. The sampling times been updated for both samples at the customer's request; the report has been reissued to reflect this. All other results remain unchanged. This report supersedes the previous issue.

Sample Summary

Customer Reference	Laboratory Reference (SOCOTEC UK Bretby)	Laboratory Reference (SOCOTEC UK Didcot)	Matrix	Sampling Date
IT1_SB_07 CEFAS-RAD-2 ES 2 0.00	S1962160	RX2970	Sand	02/06/2019 20:25
IT1_SB_07 CEFAS-RAD-4 ES 4 0.55	S1962161	RX2971	Sand	02/06/2019 22:35

Experimental

Gamma Spectrometry

The samples were analysed following method "ANU/SOP/2029" – "The measurement technique is based on the use of high purity germanium (HPGe) detectors coupled to an Ortec gamma ray spectroscopy system. The gamma ray spectra are stored on a computer and analysed using the software programme Fitzpeaks for photopeak identification and quantification. The detectors are calibrated for efficiency using a mixed radionuclide standard, which covers an energy range of approximately 30-2000 keV. The efficiency of gamma rays between 30 keV and 120 keV are determined on an individual basis.

Application of decay corrections for the naturally occurring daughter radionuclides of uranium and thorium assumes that the series daughter radionuclides are all in secular equilibrium and therefore decay with the half-life of the first radionuclide in the series." (^{226}Ra is not UKAS accredited)

Results

Results are presented in the following table.

Any opinions and interpretations expressed herein are outside the scope of our UKAS accreditation.

The results in this test report relate only to the items tested, and test portions taken thereof. This test report must not be reproduced except in full, without written approval of the laboratory.

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Results Summary – Gamma Spectrometry

Customer Reference	Laboratory Reference	Be-7	K-40	Co-60	Cs-134	Cs-137	Tl-208	Pb-210	Bi-212	Pb-212
IT1_SB_07 CEFAS-RAD-2 ES 2 0.00	S1962160	< 18	< 37	< 2.4	< 2.3	< 2.2	< 2.5	< 39	< 29	< 3.3
IT1_SB_07 CEFAS-RAD-4 ES 4 0.55	S1962161	< 13	< 33	< 2.2	< 2.2	< 1.7	< 1.7	< 24	< 22	4.4 ± 1.8

Customer Reference	Laboratory Reference	Bi-214	Pb-214	Ra-224	Ra-226 *	Ac-228	Pa-234m	Th-234	U-235	Am-241
IT1_SB_07 CEFAS-RAD-2 ES 2 0.00	S1962160	< 5.1	< 4.8	< 46	< 43	< 9.0	< 290	< 47	< 2.7	< 3.4
IT1_SB_07 CEFAS-RAD-4 ES 4 0.55	S1962161	< 4.1	< 3.5	< 29	< 27	< 6.3	< 210	< 26	< 1.7	< 2.2

Notes:

1. Analysis marked with an asterisk is not UKAS accredited.
2. Results are presented as $Bq.kg^{-1}$ of dried and homogenised samples and are decay corrected to the sampling date.
3. For results below the Limit of Detection, the LoD is rounded up to 2 significant figures.
4. Uncertainties are rounded to 2 significant figures; results are rounded to the same precision.
5. Detector calibrations are based upon homogeneous standard solutions. For quantification purposes the samples are assumed to be homogeneous.
6. ^{226}Ra has only one gamma ray at 186 keV and the major gamma ray from ^{235}U also occurs at 186 keV. ^{235}U can be measured by the lower abundance gamma ray at 144 keV and if a positive result for ^{235}U is reported, the ^{226}Ra result will be unreliable and overestimated. However even if ^{235}U is below the LoD there may still be a contribution to the ^{226}Ra from ^{235}U and the ^{226}Ra result may be unreliable and overestimated. If an accurate result for ^{226}Ra is required this is better obtained by radiochemical analysis.

- End of Report -

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Analytical and Deviating Sample Overview

Customer Fugro GeoServices Ltd
Site SZC 2019 Offshore Ground Investigation
Report No S199618

Consignment No S85544
Date Logged 08-Jun-2019
In-House Report Due 20-Jun-2019

Please note the results for any subcontracted analysis (identified with a '^') is likely to take up to an additional five working days.

ID Number	Description	Sampled	MethodID	CustServ	Sub008
				Report B	^Gamma spectrometry
CL/1962160	IT1_SB_07 CEFAS-RAD-2 ES 1	02/06/19			
CL/1962161	IT1_SB_07 CEFAS-RAD-4 ES 4	02/06/19			

Note: We will endeavour to prioritise samples to complete analysis within holding time; however any delay could result in samples becoming deviant whilst being processed in the laboratory.

If sampling dates are missing or matrices unclassified then results will not be ISO 17025 accredited. Please contact us as soon as possible to provide missing information in order to reinstate accreditation.

Deviating Sample Key	
A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key	
	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

Where individual results are flagged see report notes for status.

The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Soil	SubCon*	*	Contact Laboratory for details of the methodology used by the sub-contractor.

Where individual results are flagged see report notes for status.

Report Notes

Generic Notes

Soil/Solid Analysis

Unless stated otherwise,
- Results expressed as mg/kg have been calculated on the basis indicated in the Method Description table.
  All results on MCERTS reports are reported on a 105ºC dry weight basis with the exception of pH and conductivity.
- Sulphate analysis not conducted in accordance with BS1377
- Water Soluble Sulphate is on a 2:1 water:soil extract

Waters Analysis

Unless stated otherwise results are expressed as mg/l
Nil: Where "Nil" has been entered against Total Alkalinity or Total Acidity this indicates that a measurement was not required due to the inherent pH of the sample.

Oil analysis specific

Unless stated otherwise,
- Results are expressed as mg/kg
- SG is expressed as g/cm^3@ 15°C

Gas (Tedlar bag) Analysis

Unless stated otherwise, results are expressed as ug/l

Asbestos Analysis

CH Denotes Chrysotile **TR** Denotes Tremolite
CR Denotes Crocidolite **AC** Denotes Actinolite
AM Denotes Amosite **AN** Denotes Anthophylite
NAIIS No Asbestos Identified in Sample
NADIS No Asbestos Detected In Sample

Symbol Reference

^ Sub-contracted analysis.
$$ Unable to analyse due to the nature of the sample
¶ Samples submitted for this analyte were not preserved on site in accordance with laboratory protocols. This may have resulted in deterioration of the sample(s) during transit to the laboratory. Consequently the reported data may not represent the concentration of the target analyte present in the sample at the time of sampling
¥ Results for guidance only due to possible interference
& Blank corrected result
I.S Insufficient sample to complete requested analysis
I.S(g) Insufficient sample to re-analyse, results for guidance only
Intf Unable to analyse due to interferences
N.D Not determined **N.Det** Not detected
N.F No Flow
NS Information Not Supplied
Req Analysis requested, see attached sheets for results
Þ Raised detection limit due to nature of the sample
***** All accreditation has been removed by the laboratory for this result
‡ MCERTS accreditation has been removed for this result
§ accreditation has been removed for this result as it is a non-accredited matrix

Note: The Laboratory may only claim that data is accredited when all of the requirements of our Quality System have been met. Where these requirements have not been met the laboratory may elect to include the data in its final report and remove the accreditation from individual data items if it believes that the validity of the data has not been affected. If further details are required of the circumstances which have led to the removal of accreditation then please do not hesitate to contact the laboratory.

Sample Descriptions

Client : Fugro GeoServices Ltd

Site : SZC 2019 Offshore Ground Investigation

Report Number : S19_9618

Note: major constituent in upper case

Lab ID Number	Client ID	Description
CL/1962160	1_SB_07 CEFAS-RAD-2 ES 2 0.	Brown
CL/1962161	1_SB_07 CEFAS-RAD-4 ES 4 0.	Brown MARINE SEDIMENTS

Our Ref: EFS/199776M (Ver. 1)
Your Ref: G190016U

July 3, 2019

Environmental Chemistry
SOCOTEC UK Limited
Bretby Business Park
Ashby Road
Burton-on-Trent
Staffordshire
DE15 0YZ

Telephone: 01283 554400
Facsimile: 01283 554422

Karen Blackmore
Fugro GeoServices Ltd
Furgo GeoServices Ltd
Furgo House
Hithercroft Road
Wallingford
Oxfordshire
OX10 9RB

For the attention of Karen Blackmore

Dear Karen Blackmore

Sample Analysis - SZC 2019 Offshore Ground Investigation

Samples from the above site have been analysed in accordance with the schedule supplied.
The sample details and the results of analyses for these samples are given in the appended report.

An invoice for this work will follow under a separate cover.

The samples will be kept until the agreed date when they will be discarded. Please call 01283 554434 for an extension of this date.
Please be aware that our policy for the retention of paper based laboratory records and analysis reports is 6 years.

The work was carried out in accordance with SOCOTEC UK Limited (Laboratory and Analytical) Standard Terms and Conditions of Contract.

If I can be of any further assistance please do not hesitate to contact me.

Yours sincerely

for SOCOTEC UK Limited

[redacted]

K Smith
Project Co-ordinator
01283 554434

Environmental Chemistry, SOCOTEC UK Limited, P.O. Box 100, Burton-upon-trent, DE15 0XD Tel: 01283 554400 Fax: 01283 554422
SOCOTEC UK Limited.
Registered No: 2880501

TEST REPORT

UKAS TESTING 1252

mCERTS THE ENVIRONMENT AGENCY'S MONITORING CERTIFICATION SCHEME

Report No. EFS/199776M (Ver. 1)

Fugro GeoServices Ltd
Furgo GeoServices Ltd
Furgo House
Hithercroft Road
Wallingford
Oxfordshire
OX10 9RB

Site: SZC 2019 Offshore Ground Investigation

The 2 samples described in this report were registered for analysis by SOCOTEC UK Limited on 14-Jun-2019. This report supersedes any versions previously issued by the laboratory.
The analysis was completed by: 03-Jul-2019

Tests where the accreditation is set to N or No, and any individual data items marked with a * are not UKAS or MCERTS accredited. Any opinions or interpretations expressed herein are outside the scope of any UKAS accreditation held by SOCOTEC UK Limited.

The following tables are contained in this report:

Table 1 Main Analysis Results (Pages 2 to 15)
Table of SVOC (Tics) Results (Page 16)
Table of VOC (Tics) Results (Page 17)
Table of WAC Analysis Results (Pages 18 to 19)
Subcontracted Analysis Reports (Pages 20 to 22)
The accreditation status of subcontracted analysis is displayed on the appended subcontracted analysis reports.
Table of Asbestos Screening Results (Page 23)
Analytical and Deviating Sample Overview (Pages 24 to 26)
Table of Additional Report Notes (Page 27)
Table of Method Descriptions (Pages 28 to 29)
Table of Report Notes (Page 30)
Table of Sample Descriptions (Appendix A Page 1 of 1)

On behalf of
SOCOTEC UK
Becky Batham Operations Manager
Energy & Waste Services

Date of Issue: 03-Jul-2019

Accreditation Codes: **N** (Not Accredited), **U** (UKAS), **UM** (UKAS & MCERTS)
Tests marked '^' have been subcontracted to another laboratory.
(NVM) - denotes the sample matrix is dissimilar to matrices upon which the MCERTS validation was based, and is therefore not accredited for MCERTS.
All results are reported on a dry weight basis at 105°C unless otherwise stated. (except QC samples)
SOCOTEC UK Limited accepts no responsibility for any sampling not carried out by our personnel.

		Units :	mg/kg	Mol/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg		% M/M	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		Method Codes :	AMMAR	ANC	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	FOCCALC	FOCS	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA
		Method Reporting Limits :	0.5	0.04	10	10	20	20	10	10	30	0.0002	0.04	0.2	0.2	0.2	0.2	0.2
		Accreditation Code:	UM	N	UM	UM	UM	U	UM	UM	UM	U	N	UM	UM	UM	UM	UM
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Exchange.Ammonium AR**	**Acid Neut. Capacity**	**Benzene**	**Ethyl Benzene**	**m/p Xylenes**	**MTBE**	**o Xylene**	**Toluene**	**Xylenes**	**F.O.C.**	**S.O.M. % (Calc)**	**GRO**	**GRO (>C5 - C6)**	**GRO (>C7 - C8)**	**GRO (>C8 - C10)**	**GRO (C5-C6 Aliphatic)**
1962922	IT1_SPT_06 ES-WAC-1 ES 1 0.00	**06/06/2019 15:30**	<0.6	16.1	<12.1	<12.1	<24.2	<24.2	<12.1	<12.1	<36.3	0.002	0.35	<0.242	<0.242	<0.242	<0.242	<0.242
1962923	IT1_SPT_06 ES-WAC-3 ES 3 26.00	**06/06/2019 16:00**	20.3	1.34	<13.8	<13.8	<27.6	<27.6	<13.8	<13.8	<41.4	0.0085	1.47	<0.276	<0.276	<0.276	<0.276	<0.276

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Client Name **Fugro GeoServices Ltd**

Contact Karen Blackmore

SZC 2019 Offshore Ground Investigation

Sample Analysis

Date Printed	**03-Jul-2019**
Report Number	**EFS/199776M**
Table Number	**1**

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

		Units :	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		Method Codes :	GROHSA	GROHSA	GROHSA	GROHSA	ICPACIDS	ICPBOR	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS
		Method Reporting Limits :	0.2	0.2	0.2	0.2	20	0.5	0.3	0.2	1.2	1.6	0.7	0.5	2	0.5	0.6	16
		Accreditation Code:	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	N	UM
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**GRO (C6-C7 Aliphatic)**	**GRO (C6-C7)**	**GRO (C7-C8 Aliphatic)**	**GRO (C8-C10 Aliphatic)**	**SO4-- (acid sol)**	**Boron (H20 Soluble)**	**Arsenic (MS)**	**Cadmium (MS)**	**Chromium (MS)**	**Copper (MS)**	**Lead (MS)**	**Mercury (MS)**	**Nickel (MS)**	**Selenium (MS)**	**Vanadium (MS)**	**Zinc (MS)**
1962922	IT1_SPT_06 ES-WAC-1 ES 1 0.00	**06/06/2019 15:30**	<0.242	<0.242	<0.242	<0.242	2750	2.5	6.8	0.26	8.4	7.3	1.8	<0.5	7.2	<0.5	19.7	<15.9
1962923	IT1_SPT_06 ES-WAC-3 ES 3 26.00	**06/06/2019 16:00**	<0.276	<0.276	<0.276	<0.276	1850	6.9	8.8	0.90	39.1	71.7	13.3	<0.53	50.1	3.3	58.4	108.5

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Date Printed	**03-Jul-2019**
Report Number	**EFS/199776M**
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Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

		Units :	mg/kg	mg/kg	%	ug Sn/kg	ug Sn/kg	ug Sn/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		Method Codes :	ICPSOIL	KONECR	LOI(%MM)	OGSN	OGSN	OGSN	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS
		Method Reporting Limits :	36	0.1	0.2	1	1	1	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
		Accreditation Code:	UM	N	N	N	N	N	UM	U	U	UM	UM	UM	UM	UM	UM	N
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Iron**	**Chromium vi:**	**L.O.I. % @ 450C**	**Dibutyl Tin**	**Tributyl Tin as Sn**	**Triphenyl Tin**	**Acenaphthene**	**Acenaphthylene**	**Anthracene**	**Benzo(a)anthracene**	**Benzo(a)pyrene**	**Benzo(b)fluoranthene**	**Benzo(ghi)perylene**	**Benzo(k)fluoranthene**	**Chrysene**	**Coronene**
1962922	IT1_SPT_06 ES-WAC-1 ES 1 0.00	**06/06/2019 15:30**	7660	<0.1	1.4	<1	<1	<1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
1962923	IT1_SPT_06 ES-WAC-3 ES 3 26.00	**06/06/2019 16:00**	27500	<0.1	5.1				<0.11	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11

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Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

		Units :	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	pH Units
		Method Codes :	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PCBECD	PCBECD	PCBECD	PCBECD	PCBECD	PCBECD	PCBECD	PHSOIL
		Method Reporting Limits :	0.08	0.08	0.08	0.08	0.08	0.08	0.08	1.28	5	5	5	5	5	5	5	
		Accreditation Code:	UM	UM	UM	UM	UM	UM	UM	U	UM	UM	UM	UM	UM	UM	UM	UM
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Dibenzo(ah)anthracene**	**Fluoranthene**	**Fluorene**	**Indeno(123-cd)pyrene**	**Naphthalene**	**Phenanthrene**	**Pyrene**	**Total PAH (Sum of USEPA 16)**	**PCB 101**	**PCB 118**	**PCB 138**	**PCB 153**	**PCB 180**	**PCB 28**	**PCB 52**	**pH units (AR)**
1962922	IT1_SPT_06 ES-WAC-1 ES 1 0.00	**06/06/2019 15:30**	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<1.55	<6.05	<6.05	<6.05	<6.05	<6.05	<6.05	<6.05	9.1
1962923	IT1_SPT_06 ES-WAC-3 ES 3 26.00	**06/06/2019 16:00**	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11	<1.77	<6.90	<6.90	<6.90	<6.90	<6.90	<6.90	<6.90	9

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Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

			Units :	mg/kg	mg/kg	mg/kg	mg/kg	%	Bq/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
			Method Codes :	SFAPI	SFAPI	SFAPI	SFAS	Sub002	Sub008	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW
			Method Reporting Limits :	0.5	0.5	0.5	0.5			0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.5
			Accreditation Code:	UM	UM	U	N	U		N	U	U	U	U	U	U	U	U	N
LAB ID Number CL/	Client Sample Description	Sample Date		Cyanide(Free) (AR)	Cyanide(Total) (AR)	Phenol Index.(AR)	Sulphide as S (AR)	^Asbestos Screen & ID (Stage 1)	^Gamma spectrometry	1,2,4-Trichlorobenzene	1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	1-Methylnaphthalene	2,4,5-Trichlorophenol	2,4,6-Trichlorophenol	2,4-Dichlorophenol	2,4-Dimethylphenol	2,4-Dinitrophenol
1962922	IT1_SPT_06 ES-WAC-1 ES 1 0.00	06/06/2019 15:30		<0.6	<0.6	<0.6	<0.6	NAIIS	Req	<0.121	<0.121	<0.121	<0.121	<0.121*	<0.121	<0.121	<0.121	<0.121	<0.605
1962923	IT1_SPT_06 ES-WAC-3 ES 3 26.00	06/06/2019 16:00		<0.7	<0.7	<0.7	<0.7	NAIIS											

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Contact	Karen Blackmore

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Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

		Units :	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		Method Codes :	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW
		Method Reporting Limits :	0.2	0.5	0.1	0.1	0.1	0.1	0.5	0.1	0.1	14.5	0.2	0.1	0.1	0.5	0.5	0.1
		Accreditation Code:	U	U	U	U	U	U	N	U	U	N	N	U	U	N	U	U
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**2,4-Dinitrotoluene**	**2,6-Dinitrotoluene**	**2-Chloronaphthalene**	**2-Chlorophenol**	**2-Methylnaphthalene**	**2-Methylphenol**	**2-Nitroaniline**	**2-Nitrophenol**	**3- & 4-Methylphenol**	**3-Nitroaniline**	**4,6-Dinitro-2-methylphenol**	**4-Bromophenyl-phenylether**	**4-Chloro-3-methylphenol**	**4-Chloroaniline**	**4-Chlorophenol**	**4-Chlorophenyl-phenylether**
1962922	IT1_SPT_06 ES-WAC-1 ES 1 0.00	**06/06/2019 15:30**	<0.242	<0.605	<0.121	<0.121	<0.121	<0.121	<0.605	<0.121	<0.121	<17.5	<0.242	<0.121	<0.121	<0.605	<0.605	<0.121
1962923	IT1_SPT_06 ES-WAC-3 ES 3 26.00	**06/06/2019 16:00**																

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Contact	Karen Blackmore

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Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

		Units :	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		Method Codes :	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW
		Method Reporting Limits :	0.6	0.5	0.1	0.1	0.1	0.2	0.2	0.2	0.5	0.2	0.5	0.5	0.1	0.1	0.1	0.5
		Accreditation Code:	N	N	U	U	U	U	U	U	U	U	N	U	U	U	U	U
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**4-Nitroaniline**	**4-Nitrophenol**	**Acenaphthene**	**Acenaphthylene**	**Anthracene**	**Benzo(a)anthracene**	**Benzo(a)pyrene**	**Benzo(b)fluoranthene**	**Benzo(ghi)perylene**	**Benzo(k)fluoranthene**	**Benzoic Acid**	**Benzyl alcohol**	**Biphenyl**	**bis(2-Chloroethoxy)methane**	**bis(2-Chloroethyl)ether**	**bis(2-Chloroisopropyl)ether**
1962922	IT1_SPT_06 ES-WAC-1 ES 1 0.00	**06/06/2019 15:30**	<0.726	<0.605	<0.121	<0.121	<0.121	<0.242	<0.242	<0.242	<0.605	<0.242	<0.605	<0.605	<0.121	<0.121	<0.121	<0.605
1962923	IT1_SPT_06 ES-WAC-3 ES 3 26.00	**06/06/2019 16:00**																

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Client Name	**Fugro GeoServices Ltd**
Contact	Karen Blackmore

SZC 2019 Offshore Ground Investigation

Sample Analysis

Date Printed	**03-Jul-2019**
Report Number	**EFS/199776M**
Table Number	**1**

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

		Units :	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		Method Codes :	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW
		Method Reporting Limits :	0.2	0.2	0.1	0.3	0.5	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.1	0.1	0.1
		Accreditation Code:	U	U	U	N	U	U	U	U	U	U	U	U	U	U	N	N
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**bis(2-Ethylhexyl)phthalate**	**Butylbenzylphthalate**	**Chrysene**	**Coronene**	**Dibenzo(ah)anthracene**	**Dibenzofuran**	**Diethylphthalate**	**Dimethylphthalate**	**Di-n-butylphthalate**	**Di-n-octylphthalate**	**Diphenyl Ether**	**Fluoranthene**	**Fluorene**	**Hexachlorobenzene**	**Hexachlorobutadiene**	**Hexachlorocyclopentadiene**
1962922	IT1_SPT_06 ES-WAC-1 ES 1 0.00	**06/06/2019 15:30**	3.70	<0.242	<0.121	<0.363	<0.605	<0.121	<0.121	<0.121	<0.121	<0.242	<0.121	<0.242	<0.242	<0.121	<0.121	<0.121
1962923	IT1_SPT_06 ES-WAC-3 ES 3 26.00	**06/06/2019 16:00**																

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		Units :	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	%	mg/kg	mg/kg	mg/kg
		Method Codes :	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	TMSS	TPHFIDUS	TPHFIDUS	TPHUSSI
		Method Reporting Limits :	0.1	0.5	0.1	0.1	0.5	0.9	0.1	0.5	0.1	0.1	0.2		0.1	10	10	4
		Accreditation Code:	U	U	N	U	U	N	N	N	U	U	U	Yes	U	U	UM	U
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Hexachloroethane**	**Indeno(123-cd)pyrene**	**Isophorone**	**Naphthalene**	**Nitrobenzene**	**N-Nitroso-di-n-propylamine**	**N-Nitrosodiphenylamine**	**Pentachlorophenol**	**Phenanthrene**	**Phenol**	**Pyrene**	**SVOC + TICs (AR)**	**Tot.Moisture @ 105C**	**TPH Band (>C10-C40)**	**TPH by GCFID (AR)**	**TPH Ali Band >C10-C12**
1962922	IT1_SPT_06 ES-WAC-1 ES 1 0.00	**06/06/2019 15:30**	<0.121	<0.605	<0.121	<0.121	<0.605	<1.088	<0.121	<0.605	<0.121	<0.121	<0.242	Req	17.3	189	190	5.50
1962923	IT1_SPT_06 ES-WAC-3 ES 3 26.00	**06/06/2019 16:00**													27.5	66.6	69.1	<5.52

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SZC 2019 Offshore Ground Investigation

Sample Analysis

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Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

		Units :	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
		Method Codes :	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS
		Method Reporting Limits :	4	4	8.75	4	20	4	4	4	8.75	4	20	1	1	1	1	1
		Accreditation Code:	U	U	U	U	U	U	U	U	U	U	U	UM	UM	N	UM	UM
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**TPH Ali Band >C12-C16**	**TPH Ali Band >C16-C21**	**TPH Ali Band >C21-C35**	**TPH Ali Band >C8-C10**	**TPH Ali Band >C8-C40**	**TPH Aro Band >C10-C12**	**TPH Aro Band >C12-C16**	**TPH Aro Band >C16-C21**	**TPH Aro Band >C21-C35**	**TPH Aro Band >C8-C10**	**TPH Aro Band >C8-C40**	**1,1,1,2-Tetrachloroethane**	**1,1,1-Trichloroethane**	**1,1,2,2-Tetrachloroethane**	**1,1,2-Trichloroethane**	**1,1-Dichloroethane**
1962922	IT1_SPT_06 ES-WAC-1 ES 1 0.00	**06/06/2019 15:30**	6.93	30.1	76.7	<4.84	129	<4.84	<4.84	11.02	32.5	<4.84	54.7	<1.2	<1.2	<1.2	<1.2	<1.2
1962923	IT1_SPT_06 ES-WAC-3 ES 3 26.00	**06/06/2019 16:00**	<5.52	10.41	28.4	<5.52	53.5	<5.52	<5.52	10.18	35.6	<5.52	55.6					

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		Units :	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
		Method Codes :	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS
		Method Reporting Limits :	1	1	3	1	3	1	1	1	1	1	1	1	1	1	1	1	1
		Accreditation Code:	U	UM	UM	UM	N	UM	N	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**1,1-Dichloroethene**	**1,1-Dichloropropene**	**1,2,3-Trichlorobenzene**	**1,2,3-Trichloropropane**	**1,2,4-Trichlorobenzene**	**1,2,4-Trimethylbenzene**	**1,2-Dibromo-3-chloropropane**	**1,2-Dibromoethane**	**1,2-Dichlorobenzene**	**1,2-Dichloroethane**	**1,2-Dichloropropane**	**1,3,5-Trimethylbenzene**	**1,3-Dichlorobenzene**	**1,3-Dichloropropane**	**1,4-Dichlorobenzene**	**2,2-Dichloropropane**
1962922	IT1_SPT_06 ES-WAC-1 ES 1 0.00	**06/06/2019 15:30**	<1.2	<1.2	<3.6	<1.2	<3.6	<1.2*	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2
1962923	IT1_SPT_06 ES-WAC-3 ES 3 26.00	**06/06/2019 16:00**																

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Date Printed	**03-Jul-2019**
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		Units :	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
		Method Codes :	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS
		Method Reporting Limits :	1	1	1	1	1	1	1	1	1	1	2	1	3	5	1	1	
		Accreditation Code:	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	U	UM	UM	UM	
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**2-Chlorotoluene**	**4-Chlorotoluene**	**Benzene**	**Bromobenzene**	**Bromochloromethane**	**Bromodichloromethane**	**Bromoform**	**Bromomethane**	**Carbon Tetrachloride**	**Chlorobenzene**	**Chloroethane**	**Chloroform**	**Chloromethane**	**cis 1,2-Dichloroethene**	**cis 1,3-Dichloropropene**	**Dibromochloromethane**	
1962922	IT1_SPT_06 ES-WAC-1 ES 1 0.00	**06/06/2019 15:30**	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<2.4	<1.2	<3.6	<6.0	<1.2	<1.2	
1962923	IT1_SPT_06 ES-WAC-3 ES 3 26.00	**06/06/2019 16:00**																	

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Date Printed	**03-Jul-2019**
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Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

		Units :	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
		Method Codes :	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS
		Method Reporting Limits :	1	1	2	2	1	4	1	5	1	2	1	1	1	1	1	3
		Accreditation Code:	UM	N	UM	N	UM	UM	UM	UM	U	UM	UM	UM	UM	UM	UM	UM
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Dibromomethane**	**Dichlorodifluoromethane**	**Ethylbenzene**	**Hexachlorobutadiene**	**iso-Propylbenzene**	**m and p-Xylene**	**MTBE**	**Naphthalene**	**n-Butylbenzene**	**o-Xylene**	**p-Isopropyltoluene**	**Propylbenzene**	**sec-Butylbenzene**	**Styrene**	**tert-Butylbenzene**	**Tetrachloroethene**
1962922	IT1_SPT_06 ES-WAC-1 ES 1 0.00	**06/06/2019 15:30**	<1.2	<1.2	<2.4	<2.4	<1.2	<4.8	<1.2	<6.0	<1.2	<2.4	<1.2	<1.2	<1.2	<1.2	<1.2	<3.6*
1962923	IT1_SPT_06 ES-WAC-3 ES 3 26.00	**06/06/2019 16:00**																

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Sample Analysis

Date Printed	**03-Jul-2019**
Report Number	**EFS/199776M**
Table Number	**1**

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

		Units :	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	% M/M									
		Method Codes :	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	WSLM59									
		Method Reporting Limits :	5	1	1	1	1	1		0.02									
		Accreditation Code:	UM	UM	UM	UM	UM	UM	Yes	N									
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Toluene**	**trans 1,2-Dichloroethene**	**trans 1,3-Dichloropropene**	**Trichloroethene**	**Trichlorofluoromethane**	**Vinyl Chloride**	**VOC + TICs HSA-GCMS**	**Total Organic Carbon**									
1962922	IT1_SPT_06 ES-WAC-1 ES 1 0.00	**06/06/2019 15:30**	<6.0*	<1.2	<1.2	<1.2	<1.2	<1.2	Req	0.20									
1962923	IT1_SPT_06 ES-WAC-3 ES 3 26.00	**06/06/2019 16:00**								0.85									

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Sample Analysis

Date Printed	**03-Jul-2019**
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Table Number	**1**

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Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

SVOC (TICs)

Accredited?:No

Customer and Site Details:	Fugro GeoServices Ltd: SZC 2019 Offshore Ground Investigation		
Sample Details:	IT1_SPT_06 ES-WAC-1 ES 1 0.00	**Job Number:**	S19_9776
LIMS ID Number:	CL1962922		
		Multiplier:	0.2
Date Booked in:	14-Jun-19	**Dilution Factor:**	1
Date Extracted:	14-Jun-19	**GPC (Y/N):**	N
Date Analysed:	18-Jun-19	**Matrix:**	Soil
QC Batch Number:	125	**Method:**	Ultrasonic
Directory/Quant File:	061819_MS16\ 0	**Operator:**	CO

Tentatively Identified Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
Ethanol, 2,2'-[1,2-ethanediylbis(oxy)]bis-	000112-27-6	4.14	17.721	90	N
Nonadecane	000629-92-5	6.20	0.958	96	N
Octadecane	000593-45-3	5.92	0.771	97	N
Eicosane	000112-95-8	6.48	0.704	97	N
Octadecane	000593-45-3	6.78	0.659	98	N
Hexadecane, 2,6,10,14-tetramethyl-	000638-36-8	6.41	0.414	89	N
Docosane	000629-97-0	7.11	0.366	98	N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

TICs by HSA-GCMS

Accredited?: No

Customer and Site Details:	Fugro GeoServices Ltd: SZC 2019 Offshore Ground Investigation		**Date Booked in:**	14-Jun-19
Sample Details:	IT1_SPT_06 ES-WAC-1 ES 1 0.00		**Date Analysed:**	18-Jun-19
LIMS ID Number:	CL1962922		**Matrix:**	Soil
Job Number:	S19_9776		**Ext Method:**	Headspace
Directory/Quant file:	061819_MS19\	Initial Calibration	**Dilution:**	0.98
Operator:	ED		**Position:**	14

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Acetic acid, methyl ester	000079-20-9	2.80	73	9	N
Dichloromethane (Methylene Chloride)	75-09-2	-	<6	-	N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Compounds marked * are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

WASTE ACCEPTANCE CRITERIA TESTING
BSEN 12457/2

Client	Fugro GeoServices Ltd				**Leaching Data**	
					Weight of sample (kg)	0.107
Contact	Karen Blackmore				Moisture content @ 105°C (% of Wet Weight)	17.3
					Equivalent Weight based on drying at 105°C (kg)	0.090
Site	SZC 2019 Offshore Ground Investigation				Volume of water required to carry out 10:1 stage (litres)	0.883
					Fraction of sample above 4 mm %	0.000
Sample Description		**Report No**	**Sample No**	**Issue Date**	Fraction of non-crushable material %	0.000
IT1_SPT_06 ES-WAC-1 ES 1 0.00		s19_9776M	CL/1962922	03-Jul-19		

Note: The >4mm fraction is crushed using a disc mill

Accreditation	Method Code	Solid Waste Analysis (Dry Basis)	Concentration in Solid (Dry Weight Basis)	Landfill Waste Acceptance Criteria Limit Values		
				Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
U	WSLM59	Total Organic Carbon (% M/M)	0.2	3	5	6
N	LOI450	Loss on Ignition (%)	1.4			10
U	BTEXHSA	Sum of BTEX (mg/kg)	<0.0726	6		
U	PCBUSECD	Sum of 7 Congener PCB's (mg/kg)	<0.042	1		
U	TPHFIDUS	Mineral Oil (mg/kg)	189	500		
N	PAHMSUS	PAH Sum of 17 (mg/kg)	<1.64	100		
U	PHSOIL	pH (pH units)	9.1		>6	
N	ANC	Acid Neutralisation Capacity (mol/kg) @pH 7	16.1		To be evaluated	To be evaluated

Accreditation	Method Code	Leachate Analysis	10:1 Single Stage Leachate	Calculated cumulative amount	Landfill Waste Acceptance Criteria Limit Values for BSEN 12457/2 @ L/S 10 litre kg-1		
			mg/l except oo	mg/kg (dry weight)	mg/kg (dry weight)		
U	WSLM3	pH (pH units) oo	8.4	Calculated data not UKAS Accredited			
U	WSLM2	Conductivity (µs/cm) oo	1480				
U	ICPMSW	Arsenic	<0.001	<0.01	0.5	2	25
U	ICPWATVAR	Barium	0.01	0.1	20	100	300
U	ICPMSW	Cadmium	0.0002	0.002	0.04	1	5
U	ICPMSW	Chromium	0.001	0.01	0.5	10	70
U	ICPMSW	Copper	0.002	0.02	2	50	100
U	ICPMSW	Mercury	<0.0001	<0.001	0.01	0.2	2
U	ICPMSW	Molybdenum	0.006	0.06	0.5	10	30
U	ICPMSW	Nickel	<0.001	<0.01	0.4	10	40
U	ICPMSW	Lead	<0.001	<0.01	0.5	10	50
U	ICPMSW	Antimony	0.003	0.03	0.06	0.7	5
U	ICPMSW	Selenium	<0.001	<0.01	0.1	0.5	7
U	ICPMSW	Zinc	0.019	0.19	4	50	200
U	KONENS	Chloride	378	3780	800	15000	25000
U	ISEF	Fluoride	0.3	3	10	150	500
U	ICPWATVAR	Sulphate as SO4	59	590	1000	20000	50000
N	WSLM27	Total Dissolved Solids	1160	11600	4000	60000	100000
U	SFAPI	Phenol Index	<0.05	<0.5	1		
N	WSLM13	Dissolved Organic Carbon	9.3	93	500	800	1000

Template Ver. 1

Landfill Waste Acceptance Criteria limit values correct as of 11th March 2009.

Tests where the accreditation is set to U are UKAS accredited, those where the accreditation is set to N are not UKAS accredited

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

WASTE ACCEPTANCE CRITERIA TESTING
BSEN 12457/2

Client	Fugro GeoServices Ltd				**Leaching Data**	
					Weight of sample (kg)	0.127
Contact	Karen Blackmore				Moisture content @ 105°C (% of Wet Weight)	27.5
					Equivalent Weight based on drying at 105°C (kg)	0.090
Site	SZC 2019 Offshore Ground Investigation				Volume of water required to carry out 10:1 stage (litres)	0.863
					Fraction of sample above 4 mm %	0.000
Sample Description		**Report No**	**Sample No**	**Issue Date**	Fraction of non-crushable material %	0.000
IT1_SPT_06 ES-WAC-3 ES 3 26.00		s19_9776M	CL/1962923	03-Jul-19		

Note: The >4mm fraction is crushed using a disc mill

Accreditation	Method Code	Solid Waste Analysis (Dry Basis)	Concentration in Solid (Dry Weight Basis)	Landfill Waste Acceptance Criteria Limit Values		
				Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
U	WSLM59	Total Organic Carbon (% M/M)	0.85	3	5	6
N	LOI450	Loss on Ignition (%)	5.1			10
U	BTEXHSA	Sum of BTEX (mg/kg)	<0.0828	6		
U	PCBUSECD	Sum of 7 Congener PCB's (mg/kg)	<0.049	1		
U	TPHFIDUS	Mineral Oil (mg/kg)	66.6	500		
N	PAHMSUS	PAH Sum of 17 (mg/kg)	<1.88	100		
U	PHSOIL	pH (pH units)	9		>6	
N	ANC	Acid Neutralisation Capacity (mol/kg) @pH 7	1.34		To be evaluated	To be evaluated

Accreditation	Method Code	Leachate Analysis	10:1 Single Stage Leachate	Calculated cumulative amount	Landfill Waste Acceptance Criteria Limit Values for BSEN 12457/2 @ L/S 10 litre kg-1		
			mg/l except ºº	mg/kg (dry weight)	mg/kg (dry weight)		
U	WSLM3	pH (pH units) ºº	8.6	Calculated data not UKAS Accredited			
U	WSLM2	Conductivity (µs/cm) ºº	1030				
U	ICPMSW	Arsenic	0.006	0.06	0.5	2	25
U	ICPWATVAR	Barium	0.03	0.3	20	100	300
U	ICPMSW	Cadmium	<0.0001	<0.001	0.04	1	5
U	ICPMSW	Chromium	<0.001	<0.01	0.5	10	70
U	ICPMSW	Copper	<0.001	<0.01	2	50	100
U	ICPMSW	Mercury	<0.0001	<0.001	0.01	0.2	2
U	ICPMSW	Molybdenum	0.047	0.47	0.5	10	30
U	ICPMSW	Nickel	0.002	0.02	0.4	10	40
U	ICPMSW	Lead	<0.001	<0.01	0.5	10	50
U	ICPMSW	Antimony	0.003	0.03	0.06	0.7	5
U	ICPMSW	Selenium	0.074	0.74	0.1	0.5	7
U	ICPMSW	Zinc	0.01	0.1	4	50	200
U	KONENS	Chloride	235	2350	800	15000	25000
U	ISEF	Fluoride	0.8	8	10	150	500
U	ICPWATVAR	Sulphate as SO4	98	980	1000	20000	50000
N	WSLM27	Total Dissolved Solids	802	8020	4000	60000	100000
U	SFAPI	Phenol Index	<0.05	<0.5	1		
N	WSLM13	Dissolved Organic Carbon	2.2	22	500	800	1000

Template Ver. 1

Landfill Waste Acceptance Criteria limit values correct as of 11th March 2009.

Tests where the accreditation is set to U are UKAS accredited, those where the accreditation is set to N are not UKAS accredited

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

SOCOTEC

Analysis of a Soil Sample

Client:	SOCOTEC UK Environmental Chemistry PO Box 100 Burton upon Trent Staffordshire DE15 0XD
Testing Facility:	SOCOTEC UK Unit 12, Moorbrook Southmead Industrial Park Didcot Oxfordshire OX11 7HP
Laboratory Reference:	19-0515
Customer Reference:	S199776
Quote Number:	ENR-ANU-9346Rev1
PO Number:	Intraco
Sample Received:	18 June 2019
Sample Condition:	Satisfactory, Ambient
Analysis Completed:	02 July 2019
Report Author:	[redacted]
Author's Name:	Trevor Harding
Job Title:	Senior Analyst
Approved By:	[redacted]
Approver's Name:	Charlene Hunston
Job Title:	Team Leader
Report Date:	04 July 2019

UKAS TESTING
1252

SOCOTEC

Introduction

This is a revised report as denoted by the suffix 'Rev1'. The sampling time been updated for the sample at the customer's request; the report has been reissued to reflect this. All other results remain unchanged. This report supersedes the previous issue.

Sample Summary

Customer Reference	Laboratory Reference (SOCOTEC UK Bretby)	Laboratory Reference (SOCOTEC UK Didcot)	Matrix	Sampling Date
IT1_SPT_06 ES-WAC-1 ES 1 0.00	S1962922	RX3046	Soil	06/06/2019 15:30

Experimental

Gamma Spectrometry

The sample was analysed following method "ANU/SOP/2029" – "The measurement technique is based on the use of high purity germanium (HPGe) detectors coupled to an Ortec gamma ray spectroscopy system. The gamma ray spectra are stored on a computer and analysed using the software programme Fitzpeaks for photopeak identification and quantification. The detectors are calibrated for efficiency using a mixed radionuclide standard, which covers an energy range of approximately 30-2000 keV. The efficiency of gamma rays between 30 keV and 120 keV are determined on an individual basis.

Application of decay corrections for the naturally occurring daughter radionuclides of uranium and thorium assumes that the series daughter radionuclides are all in secular equilibrium and therefore decay with the half-life of the first radionuclide in the series." (^{226}Ra is not UKAS accredited)

Results

Results are presented in the following tables.

Any opinions and interpretations expressed herein are outside the scope of our UKAS accreditation.

The results in this test report relate only to the items tested, and test portions taken thereof. This test report must not be reproduced except in full, without written approval of the laboratory.

UKAS TESTING
1252

SOCOTEC

Results Summary – Gamma Spectrometry

Customer Reference	Laboratory Reference	Be-7	K-40	Co-60	Cs-134	Cs-137	Tl-208	Pb-210	Bi-212	Pb-212
IT1_SPT_06 ES-WAC-1 ES 1 0.00	S1962922	< 15	< 31	< 2.0	< 2.0	< 1.8	< 1.9	< 33	< 23	< 2.6

Customer Reference	Laboratory Reference	Bi-214	Pb-214	Ra-224	Ra-226 *	Ac-228	Pa-234m	Th-234	U-235	Am-241
IT1_SPT_06 ES-WAC-1 ES 1 0.00	S1962922	< 4.5	< 4.1	< 25	< 36	< 7.0	< 270	< 42	< 2.3	< 2.9

Notes:

1. Analysis marked with an asterisk is not UKAS accredited.
2. Results are presented as $Bq.kg^{-1}$ of dried and homogenised sample and are decay corrected to the sampling date.
3. For results below the Limit of Detection, the LoD is rounded up to 2 significant figures.
4. Detector calibrations are based upon homogeneous standard solutions. For quantification purposes the samples are assumed to be homogeneous.
5. ^{226}Ra has only one gamma ray at 186 keV and the major gamma ray from ^{235}U also occurs at 186 keV. ^{235}U can be measured by the lower abundance gamma ray at 144 keV and if a positive result for ^{235}U is reported, the ^{226}Ra result will be unreliable and overestimated. However even if ^{235}U is below the LoD there may still be a contribution to the ^{226}Ra from ^{235}U and the ^{226}Ra result may be unreliable and overestimated. If an accurate result for ^{226}Ra is required this is better obtained by radiochemical analysis.

- End of Report -

ASBESTOS ANALYSIS RESULTS

SOCOTEC Asbestos Limited Certificate of Analysis for Asbestos in Soils, Sediments and Aggregates

UKAS TESTING
1089

Detection limit of Method SCI-ASB-020 is 0.001%

Sampling has been carried out by a third party

SOCOTEC

Client:	SOCOTEC Environmental Chemistry	**Page 1 of 1**	
Address:	Etwall House, Bretby Business Park, Ashby Road, Burton upon Trent	**Report No:**	**ANO-0503-21087**
For the attention of:	Fugro GeoServices Ltd	**Report Date:**	**26/06/2019**
Site Address:	SZC 2019 Offshore Ground Investigation	**Project Number:**	**S199776**

Sample Number	Sample Date	Sample Location & Matrix	Test Date	Total Sample Dry Weight (g)	Weight of <10mm Fraction (g)	Asbestos(g) in >10mm	Asbestos(g) in < 10mm	% Asbestos by weight of Total Dried Sample	Moisture Content	Asbestos Fibre Types Identified
CL/1962922	06/06/19	IT1_SPT_06 ES-WAC-1 ES 1 0.00 Soils	26/06/2019	819.8	669.8			Identification		NAIIS
CL/1962923	06/06/19	IT1_SPT_06 ES-WAC-3 ES 3 26.00 Soils	26/06/2019	327.1	327.1			Identification		NAIIS

Keys

NAACR = Not Analysed at Clients Request

NAIIS = No Asbestos Identified in Sample (Identification Only)

*** visible to naked eye**

NADIS = No Asbestos Detected in Sample (ID & Quant Only)

Name:	Tom Pratt	Authorised Signatory:
Position:	Lab Coordinator	

The sample analysis for the above results was carried out using the procedures detailed in SOCOTEC Asbestos Limited in house method (SCI-ASB-020) based on EA document Quantification of asbestos in soil and associated materials - Draft 2017. Fibre identification was carried out using SOCOTEC Asbestos Limited in house method of transmitted/polarised light microscopy and centre stop dispersion staining (SCI-ASB-007), based on HSE's HSG 248. The analysis of the < 10mm fraction for asbestos content only includes ACMs and fibres and does not discriminate non-asbestos fibres. All fibres are assumed, unless specified, to be amphiboles. All tests were carried out at a SOCOTEC Asbestos Ltd laboratory, UKAS Testing Number 1089. Recommended sample weight is 1kg-2kg, samples less than 1kg are classified as deviating samples.

Where individual results are flagged see report notes for status.

Analytical and Deviating Sample Overview

Customer Fugro GeoServices Ltd
Site SZC 2019 Offshore Ground Investigation
Report No S199776M

Consignment No S85713
Date Logged 14-Jun-2019
In-House Report Due 24-Jun-2019

Please note the results for any subcontracted analysis (identified with a '^') is likely to take up to an additional five working days.

ID Number	Description	Sampled	MethodID	AMMAR	ANC	BTEXHSA		CEN Leachate	CustServ	FOCCALC	FOCS	GROHSA	ICPACIDS	ICPBOR	ICPMSS										ICPSOIL	KONECR	LOI(%MM)	MCertS
				Exchange.Ammonium AR	Acid Neut. Capacity	BTEX-HSA + MTBE analysis	MTBE (µg/kg)	CEN Leac(P)C	REPORT A	F.O.C.	S.O.M. % (Calc)	GRO (AA) by HSA GC-FID	SO4-- (acid sol)	Boron (H20 Soluble)	Arsenic (MS)	Cadmium (MS)	Chromium (MS)	Copper (MS)	Lead (MS)	Mercury (MS)	Nickel (MS)	Selenium (MS)	Vanadium (MS)	Zinc (MS)	Iron	Chromium vi:	L.O.I. % @ 450C	MCertS Analysis
				✓		✓	✓			✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓				✓
CL/1962922	IT1_SPT_06 ES-WAC-1 ES 1 0	06/06/19																										
CL/1962923	IT1_SPT_06 ES-WAC-3 ES 3 2	06/06/19																										

Note: We will endeavour to prioritise samples to complete analysis within holding time; however any delay could result in samples becoming deviant whilst being processed in the laboratory.

If sampling dates are missing or matrices unclassified then results will not be ISO 17025 accredited. Please contact us as soon as possible to provide missing information in order to reinstate accreditation.

Deviating Sample Key

A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key

	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

Where individual results are flagged see report notes for status.
The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Analytical and Deviating Sample Overview

Customer Fugro GeoServices Ltd
Site SZC 2019 Offshore Ground Investigation
Report No S199776M

Consignment No S85713
Date Logged 14-Jun-2019
In-House Report Due 24-Jun-2019

Please note the results for any subcontracted analysis (identified with a '^') is likely to take up to an additional five working days.

ID Number	Description	Sampled	MethodID	OGSN			PAHMSUS	PCBECD	PHSOIL	SFAPI			SFAS	Sub002	Sub008	SVOCSW	TMSS	TPHFIDUS		TPHUSSI								
				Dibutyl Tin	Tributyl Tin as Sn	Triphenyl Tin	PAH (17) by GCMS	PCB-7 Congeners Analysis	pH units (AR)	Cyanide(Free) (AR)	Cyanide(Total) (AR)	Phenol Index.(AR)	Sulphide as S (AR)	^Asbestos Screen & ID (Stage 1)	^Gamma spectrometry	SVOC + TICs (AR)	Tot.Moisture @ 105C	TPH Band (>C10-C40)	TPH by GCFID (AR)	TPH Ali Band >C10-C12	TPH Ali Band >C12-C16	TPH Ali Band >C16-C21	TPH Ali Band >C21-C35	TPH Ali Band >C8-C10	TPH Ali Band >C8-C40	TPH Aro Band >C10-C12	TPH Aro Band >C12-C16	TPH Aro Band >C16-C21
							✓	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CL/1962922	IT1_SPT_06 ES-WAC-1 ES 1 0	06/06/19																										
CL/1962923	IT1_SPT_06 ES-WAC-3 ES 3 2	06/06/19																										

Note: We will endeavour to prioritise samples to complete analysis within holding time; however any delay could result in samples becoming deviant whilst being processed in the laboratory.

If sampling dates are missing or matrices unclassified then results will not be ISO 17025 accredited. Please contact us as soon as possible to provide missing information in order to reinstate accreditation.

Deviating Sample Key

A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key

	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

Where individual results are flagged see report notes for status.
The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Analytical and Deviating Sample Overview

Customer **Fugro GeoServices Ltd** Consignment No S85713
Site **SZC 2019 Offshore Ground Investigation** Date Logged 14-Jun-2019
Report No **S199776M** In-House Report Due 24-Jun-2019

Please note the results for any subcontracted analysis (identified with a '^') is likely to take up to an additional five working days.

ID Number	Description	Sampled	MethodID	TPHUSSI				VOCHSAS	WSLM59
				TPH Aro Band >C21-C35	TPH Aro Band >C8-C10	TPH Aro Band >C8-C40	TPH by GCFID (AR/Si)	VOC + TICs HSA-GCMS	Total Organic Carbon
				✓	✓	✓	✓	✓	✓
CL/1962922	IT1_SPT_06 ES-WAC-1 ES 1 0	06/06/19							
CL/1962923	IT1_SPT_06 ES-WAC-3 ES 3 2	06/06/19							

Note: We will endeavour to prioritise samples to complete analysis within holding time; however any delay could result in samples becoming deviant whilst being processed in the laboratory.

If sampling dates are missing or matrices unclassified then results will not be ISO 17025 accredited. Please contact us as soon as possible to provide missing information in order to reinstate accreditation.

Deviating Sample Key	
A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key	
	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

Report Number : EFS/199776

Additional Report Notes

Method Code	Sample ID	The following information should be taken into consideration when using the data contained within this report
VOCHSAS	CL1962924	The Primary process control data associated with this Test has not wholly met the requirements of the Laboratory Quality Management System QMS with one or more target analytes falling outside acceptable limits. However the remaining data gives the Laboratory confidence that the test has performed satisfactorily and that the validity of the data may not have been significantly affected. However in line with our QMS policy we have removed accreditation, where applicable, from the affected analytes (Toluene, Tetrachloroethene, 1,2,4-Trimethylbenzene) . These circumstances should be taken into consideration when utilising the data.
SVOCSW	CL1962922	The Secondary process control data associated with this Test has not wholly met the requirements of the Laboratory Quality Management System QMS with one or more target analytes falling outside acceptable limits. However the remaining data gives the Laboratory confidence that the test has performed satisfactorily (including the Primary Process Control) and that the validity of the data may not have been significantly affected. However in line with our QMS policy we have removed accreditation , where applicable, from the affected analytes (1-Methylnaphthalene) . These circumstances should be taken into consideration when utilising the data.

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Soil	AMMAR	As Received	Determination of Exchangeable Ammonium in Soil using potassium chloride extraction, discrete colorimetric detection
Soil	ANC	Oven Dried @ < 35°C	Quantitative digestion with Hydrochloric Acid back titration with 1M Sodium Hydroxide to pH 7
Soil	BTEXHSA	As Received	Determination of Benzene, Toluene, Ethyl benzene and Xylenes (BTEX) by Headspace GCFID
Soil	FOCS	Oven Dried @ < 35°C	Calculation of Soil Organic Matter content from Organic Carbon content of soil samples
Soil	GROHSA	As Received	Determination of Total Gasoline Range Organics Hydrocarbons (GRO) by Headspace GCFID
Soil	ICPACIDS	Oven Dried @ < 35°C	Determination of Total Sulphate in soil samples by Hydrochloric Acid extraction followed by ICPOES detection
Soil	ICPBOR	Oven Dried @ < 35°C	Determination of Boron in soil samples by hot water extraction followed by ICPOES detection
Soil	ICPMSS	Oven Dried @ < 35°C	Determination of Metals in Marine Sediments and Soil samples by aqua regia digestion followed by ICPMS detection
Soil	ICPSOIL	Oven Dried @ < 35°C	Determination of Metals in soil samples by aqua regia digestion followed by ICPOES detection
Soil	KONECR	Oven Dried @ < 35°C	Determination of Chromium vi in soil samples by water extraction followed by colorimetric detection
Soil	LOI(%MM)	Oven Dried @ < 35°C	Determination of loss on ignition for soil samples at specified temperature by gravimetry
Soil	OGSN	As Received	Determination of Organo-tin compounds using sonic extraction in methanol , derivatiseation with Sodium Tetraethylborate and GCMS quantitation (SIM mode).
Soil	PAHMSUS	As Received	Determination of Polycyclic Aromatic Hydrocarbons (PAH) by hexane/acetone extraction followed by GCMS detection
Soil	PCBECD	As Received	Determination of Polychlorinated Biphenyl (PCB) congeners/aroclors by hexane/acetone extraction followed by GCECD detection
Soil	PHSOIL	As Received	Determination of pH of 2.5:1 deionised water to soil extracts using pH probe.
Soil	SFAPI	As Received	Segmented flow analysis with colorimetric detection
Soil	SFAS	As Received	Segmented flow analysis with colorimetric detection
Soil	SubCon*	*	Contact Laboratory for details of the methodology used by the sub-contractor.
Soil	SVOCSW	As Received	Determination of Semi-Volatile Organic Compounds by dichloromethane/acetone extraction followed by GCMS detection
Soil	TMSS	As Received	Determination of the Total Moisture content at 105ºC by loss on oven drying gravimetric analysis (% based upon wet weight)

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Soil	TPHFIDUS	As Received	Determination of hexane/acetone extractable Hydrocarbons in soil with GCFID detection.
Soil	TPHUSSI	As Received	Determination of hexane/acetone extractable Hydrocarbons in soil with GCFID detection including quantitation of Aromatic and Aliphatic fractions.
Soil	VOCHSAS	As Received	Determination of Volatile Organic Compounds (VOC) by Headspace GCMS
Soil	WSLM59	Oven Dried @ < 35°C	Determination of Organic Carbon in soil using sulphurous Acid digestion followed by high temperature combustion and IR detection
Water	ICPMSW	As Received	Direct quantitative determination of Metals in water samples using ICPMS
Water	ICPWATVAR	As Received	Direct determination of Metals and Sulphate in water samples using ICPOES
Water	ISEF	As Received	Determination of Fluoride in water samples by Ion Selective Electrode (ISE)
Water	KONENS	As Received	Direct analysis using discrete colorimetric analysis
Water	SFAPI	As Received	Segmented flow analysis with colorimetric detection
Water	WSLM13	As Received	Instrumental analysis using acid/persulphate digestion and non-dispersive IR detection
Water	WSLM2	As Received	Determination of the Electrical Conductivity (µS/cm) by electrical conductivity probe.
Water	WSLM27	As Received	Gravimetric Determination
Water	WSLM3	As Received	Determination of the pH of water samples by pH probe

Report Notes

Generic Notes

Soil/Solid Analysis

Unless stated otherwise,
- Results expressed as mg/kg have been calculated on the basis indicated in the Method Description table.
  All results on MCERTS reports are reported on a 105ºC dry weight basis with the exception of pH and conductivity.
- Sulphate analysis not conducted in accordance with BS1377
- Water Soluble Sulphate is on a 2:1 water:soil extract

Waters Analysis

Unless stated otherwise results are expressed as mg/l

Nil: Where "Nil" has been entered against Total Alkalinity or Total Acidity this indicates that a measurement was not required due to the inherent pH of the sample.

Oil analysis specific

Unless stated otherwise,
- Results are expressed as mg/kg
- SG is expressed as g/cm^3@ 15°C

Gas (Tedlar bag) Analysis

Unless stated otherwise, results are expressed as ug/l

Asbestos Analysis

CH Denotes Chrysotile **TR** Denotes Tremolite
CR Denotes Crocidolite **AC** Denotes Actinolite
AM Denotes Amosite **AN** Denotes Anthophylite
NAIIS No Asbestos Identified in Sample
NADIS No Asbestos Detected In Sample

Symbol Reference

^ Sub-contracted analysis.
$$ Unable to analyse due to the nature of the sample
¶ Samples submitted for this analyte were not preserved on site in accordance with laboratory protocols. This may have resulted in deterioration of the sample(s) during transit to the laboratory. Consequently the reported data may not represent the concentration of the target analyte present in the sample at the time of sampling
¥ Results for guidance only due to possible interference
& Blank corrected result
I.S Insufficient sample to complete requested analysis
I.S(g) Insufficient sample to re-analyse, results for guidance only
Intf Unable to analyse due to interferences
N.D Not determined **N.Det** Not detected
N.F No Flow
NS Information Not Supplied
Req Analysis requested, see attached sheets for results
Þ Raised detection limit due to nature of the sample
***** All accreditation has been removed by the laboratory for this result
‡ MCERTS accreditation has been removed for this result
§ accreditation has been removed for this result as it is a non-accredited matrix

Note: The Laboratory may only claim that data is accredited when all of the requirements of our Quality System have been met. Where these requirements have not been met the laboratory may elect to include the data in its final report and remove the accreditation from individual data items if it believes that the validity of the data has not been affected. If further details are required of the circumstances which have led to the removal of accreditation then please do not hesitate to contact the laboratory.

Sample Descriptions

Client : Fugro GeoServices Ltd
Site : SZC 2019 Offshore Ground Investigation
Report Number : S19_9776

Note: major constituent in upper case

Lab ID Number	Client ID	Description
CL/1962922	IT1_SPT_06 ES-WAC-1 ES 1 0.00	Brown Gravel SAND
CL/1962923	IT1_SPT_06 ES-WAC-3 ES 3 26.00	Brown CLAY

Our Ref: EFS/199798 (Ver. 1)
Your Ref: G190016U

July 3, 2019

Environmental Chemistry
SOCOTEC UK Limited
Bretby Business Park
Ashby Road
Burton-on-Trent
Staffordshire
DE15 0YZ

Telephone: 01283 554400
Facsimile: 01283 554422

Karen Blackmore
Fugro GeoServices Ltd
Fugro House
Hithercroft Road
Wallingford
Oxfordshire
OX10 9RB

For the attention of Karen Blackmore

Dear Karen Blackmore

Sample Analysis - SZC 2019 Offshore Ground Investigation

Samples from the above site have been analysed in accordance with the schedule supplied.
The sample details and the results of analyses for these samples are given in the appended report.

An invoice for this work will follow under a separate cover.

The samples will be kept until the agreed date when they will be discarded. Please call 01283 554434 for an extension of this date.
Please be aware that our policy for the retention of paper based laboratory records and analysis reports is 6 years.

The work was carried out in accordance with SOCOTEC UK Limited (Multi-Sector Services) Standard Terms and Conditions of Contract.

If I can be of any further assistance please do not hesitate to contact me.

Yours sincerely

for SOCOTEC UK Limited

[redacted]

K Smith
Project Co-ordinator
01283 554434

TEST REPORT

Report No. EFS/199798 (Ver. 1)

Fugro GeoServices Ltd
Fugro House
Hithercroft Road
Wallingford
Oxfordshire
OX10 9RB

Site: SZC 2019 Offshore Ground Investigation

The 2 samples described in this report were registered for analysis by SOCOTEC UK Limited on 15-Jun-2019. This report supersedes any versions previously issued by the laboratory.
The analysis was completed by: 03-Jul-2019

The following tables are contained in this report:

Table 1 Main Analysis Results (Page 2)
Subcontracted Analysis Reports (Pages 3 to 5)
The accreditation status of subcontracted analysis is displayed on the appended subcontracted analysis reports.
Analytical and Deviating Sample Overview (Page 6)
Table of Method Descriptions (Page 7)
Table of Report Notes (Page 8)
Table of Sample Descriptions (Appendix A Page 1 of 1)

On behalf of
SOCOTEC UK L[redacted]
Becky Batham nager
Energy & Waste Services

Date of Issue: 03-Jul-2019

Tests marked '^' have been subcontracted to another laboratory.
Where samples have been flagged as deviant on the Analytical and Deviating Sample Overview, for any reason, the data may not be representative of the sample at the point of sampling and the validity of the data may be affected.
SOCOTEC UK Limited accepts no responsibility for any sampling not carried out by our personnel.

		Units :	Bq/kg																
		Method Codes :	Sub008																
		Method Reporting Limits :																	
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**^Gamma spectrometry**																
1962988	IT1_SB_06 SB06 CEFAS-RAD-2 ES 2 0.00	**05/06/2019 04:49**	Req																
1962989	IT1_SB_06 SB06 CEFAS-RAD-6 ES 6 1.00	**05/06/2019 05:12**	Req																

SOCOTEC

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Client Name **Fugro GeoServices Ltd**

Contact Karen Blackmore

SZC 2019 Offshore Ground Investigation

Sample Analysis

Date Printed	**03-Jul-2019**
Report Number	**EFS/199798**
Table Number	**1**

Where individual results are flagged see report notes for status.

Analysis of Sediment Samples

Client:	SOCOTEC UK Environmental Chemistry PO Box 100 Burton upon Trent Staffordshire DE15 0XD
Testing Facility:	SOCOTEC UK Unit 12, Moorbrook Southmead Industrial Park Didcot Oxfordshire OX11 7HP
Laboratory Reference:	19-0516
Customer Reference:	S199798
Quote Number:	ENR-ANU-9346Rev1
PO Number:	Intraco
Samples Received:	18 June 2019
Sample Condition:	Satisfactory, Ambient
Analysis Completed:	26 June 2019
Report Author:	[redacted]
Author's Name:	Trevor Harding
Job Title:	Senior Analyst
Approved By:	[redacted]
Approver's Name:	Charlene Hunston
Job Title:	Team Leader
Report Date:	04 July 2019

UKAS TESTING 1252

SOCOTEC

Introduction

This is a revised report as denoted by the suffix 'Rev1'. The sampling times been updated for both samples at the customer's request; the report has been reissued to reflect this. All other results remain unchanged. This report supersedes the previous issue.

Sample Summary

Customer Reference	Laboratory Reference (SOCOTEC UK Bretby)	Laboratory Reference (SOCOTEC UK Didcot)	Matrix	Sampling Date
IT1_SB_06 SB06 CEFAS-RAD-2 ES 2 0.00	S1962988	RX3047	Marine Sediment	05/06/2019 04:49
IT1_SB_06 SB06 CEFAS-RAD-6 ES 6 1.00	S1962989	RX3048	Marine Sediment	05/06/2019 05:12

Experimental

Gamma Spectrometry

The samples were analysed following method "ANU/SOP/2029" – "The measurement technique is based on the use of high purity germanium (HPGe) detectors coupled to an Ortec gamma ray spectroscopy system. The gamma ray spectra are stored on a computer and analysed using the software programme Fitzpeaks for photopeak identification and quantification. The detectors are calibrated for efficiency using a mixed radionuclide standard, which covers an energy range of approximately 30-2000 keV. The efficiency of gamma rays between 30 keV and 120 keV are determined on an individual basis.

Application of decay corrections for the naturally occurring daughter radionuclides of uranium and thorium assumes that the series daughter radionuclides are all in secular equilibrium and therefore decay with the half-life of the first radionuclide in the series." (^{226}Ra is not UKAS accredited)

Results

Results are presented in the following tables.

Any opinions and interpretations expressed herein are outside the scope of our UKAS accreditation.

The results in this test report relate only to the items tested, and test portions taken thereof. This test report must not be reproduced except in full, without written approval of the laboratory.

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Results Summary – Gamma Spectrometry

Customer Reference	Laboratory Reference	Be-7	K-40	Co-60	Cs-134	Cs-137	Tl-208	Pb-210	Bi-212	Pb-212
IT1_SB_06 SB06 CEFAS-RAD-2 ES 2 0.00	RX3047	< 11	< 22	< 1.6	< 1.8	< 1.4	< 1.5	< 31	< 18	< 2.1
IT1_SB_06 SB06 CEFAS-RAD-6 ES 6 1.00	RX3048	< 12	< 22	< 1.6	< 1.9	< 1.5	< 1.6	< 32	< 20	< 2.1

Customer Reference	Laboratory Reference	Bi-214	Pb-214	Ra-224	Ra-226 *	Ac-228	Pa-234m	Th-234	U-235	Am-241
IT1_SB_06 SB06 CEFAS-RAD-2 ES 2 0.00	RX3047	< 3.3	6.7 ± 2.3	< 29	< 29	< 5.8	< 190	< 40	< 1.8	< 2.8
IT1_SB_06 SB06 CEFAS-RAD-6 ES 6 1.00	RX3048	< 3.7	< 3.3	< 21	< 31	< 5.8	< 210	< 42	< 1.9	< 3.0

Notes:

1. Analysis marked with an asterisk is not UKAS accredited.
2. Results are presented as $Bq.kg^{-1}$ of dried and homogenised samples and are decay corrected to the sampling date.
3. For results below the Limit of Detection, the LoD is rounded up to 2 significant figures.
4. Uncertainties are rounded to 2 significant figures; results are rounded to the same precision.
5. Detector calibrations are based upon homogeneous standard solutions. For quantification purposes the samples are assumed to be homogeneous.
6. ^{226}Ra has only one gamma ray at 186 keV and the major gamma ray from ^{235}U also occurs at 186 keV. ^{235}U can be measured by the lower abundance gamma ray at 144 keV and if a positive result for ^{235}U is reported, the ^{226}Ra result will be unreliable and overestimated. However even if ^{235}U is below the LoD there may still be a contribution to the ^{226}Ra from ^{235}U and the ^{226}Ra result may be unreliable and overestimated. If an accurate result for ^{226}Ra is required this is better obtained by radiochemical analysis.

- End of Report -

UKAS TESTING
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Customer Fugro GeoServices Ltd
Site SZC 2019 Offshore Ground Investigation
Report No S199798

Consignment No S85714
Date Logged 15-Jun-2019
In-House Report Due 04-Jul-2019

Please note the results for any subcontracted analysis (identified with a '^') is likely to take up to an additional five working days.

ID Number	Description	MethodID	CustServ	Sub008
		Sampled	Report C	^Gamma spectrometry
CL/1962988	IT1_SB_06 SB06 CEFAS-RAD-	05/06/2019 04:49		
CL/1962989	IT1_SB_06 SB06 CEFAS-RAD-	05/06/2019 05:12		

Note: We will endeavour to prioritise samples to complete analysis within holding time; however any delay could result in samples becoming deviant whilst being processed in the laboratory.

If sampling dates are missing or matrices unclassified then results will not be ISO 17025 accredited. Please contact us as soon as possible to provide missing information in order to reinstate accreditation.

Deviating Sample Key	
A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key	
	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.
Where individual results are flagged see report notes for status.

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Soil	SubCon*	*	Contact Laboratory for details of the methodology used by the sub-contractor.

Report Notes

Generic Notes

Soil/Solid Analysis

Unless stated otherwise,
- Results expressed as mg/kg have been calculated on the basis indicated in the Method Description table.
  All results on MCERTS reports are reported on a 105ºC dry weight basis with the exception of pH and conductivity.
- Sulphate analysis not conducted in accordance with BS1377
- Water Soluble Sulphate is on a 2:1 water:soil extract

Waters Analysis

Unless stated otherwise results are expressed as mg/l

Nil: Where "Nil" has been entered against Total Alkalinity or Total Acidity this indicates that a measurement was not required due to the inherent pH of the sample.

Oil analysis specific

Unless stated otherwise,
- Results are expressed as mg/kg
- SG is expressed as g/cm^3@ 15°C

Gas (Tedlar bag) Analysis

Unless stated otherwise, results are expressed as ug/l

Asbestos Analysis

CH Denotes Chrysotile **TR** Denotes Tremolite
CR Denotes Crocidolite **AC** Denotes Actinolite
AM Denotes Amosite **AN** Denotes Anthophylite
NAIIS No Asbestos Identified in Sample
NADIS No Asbestos Detected In Sample

Symbol Reference

^ Sub-contracted analysis.
$$ Unable to analyse due to the nature of the sample
¶ Samples submitted for this analyte were not preserved on site in accordance with laboratory protocols. This may have resulted in deterioration of the sample(s) during transit to the laboratory. Consequently the reported data may not represent the concentration of the target analyte present in the sample at the time of sampling
¥ Results for guidance only due to possible interference
& Blank corrected result
I.S Insufficient sample to complete requested analysis
I.S(g) Insufficient sample to re-analyse, results for guidance only
Intf Unable to analyse due to interferences
N.D Not determined **N.Det** Not detected
N.F No Flow
NS Information Not Supplied
Req Analysis requested, see attached sheets for results
Þ Raised detection limit due to nature of the sample
***** All accreditation has been removed by the laboratory for this result
‡ MCERTS accreditation has been removed for this result
§ accreditation has been removed for this result as it is a non-accredited matrix

Note: The Laboratory may only claim that data is accredited when all of the requirements of our Quality System have been met. Where these requirements have not been met the laboratory may elect to include the data in its final report and remove the accreditation from individual data items if it believes that the validity of the data has not been affected. If further details are required of the circumstances which have led to the removal of accreditation then please do not hesitate to contact the laboratory.

Sample Descriptions

Client : Fugro GeoServices Ltd
Site : SZC 2019 Offshore Ground Investigation
Report Number : S19_9798

Note: major constituent in upper case

Lab ID Number	Client ID	Description
CL/1962988	IT1_SB_06 SB06 CEFAS-RAD-2 ES 2 0.00	Brown MARINE SEDIMENTS
CL/1962989	IT1_SB_06 SB06 CEFAS-RAD-6 ES 6 1.00	Brown MARINE SEDIMENTS

Our Ref: EFS/200154M (Ver. 2)
Your Ref: G190016U

July 22, 2019

Environmental Chemistry
SOCOTEC UK Limited
Bretby Business Park
Ashby Road
Burton-on-Trent
Staffordshire
DE15 0YZ

Telephone: 01283 554400
Facsimile: 01283 554422

Karen Blackmore
Fugro GeoServices Ltd
Fugro House
Hithercroft Road
Wallingford
Oxfordshire
OX10 9RB

For the attention of Karen Blackmore

Dear Karen Blackmore

Sample Analysis - SZC 2019 Offshore Ground Investigation

Samples from the above site have been analysed in accordance with the schedule supplied.
The sample details and the results of analyses for these samples are given in the appended report.

An invoice for this work will follow under a separate cover.

The samples will be kept until the agreed date when they will be discarded. Please call 01283 554434 for an extension of this date.
Please be aware that our policy for the retention of paper based laboratory records and analysis reports is 6 years.

The work was carried out in accordance with SOCOTEC UK Limited (Laboratory and Analytical) Standard Terms and Conditions of Contract.

If I can be of any further assistance please do not hesitate to contact me.

Yours sincerely

for SOCOTEC UK Limited

[redacted]

K Smith
Project Co-ordinator
01283 554434

Environmental Chemistry, SOCOTEC UK Limited, P.O. Box 100, Burton-upon-trent, DE15 0XD Tel: 01283 554400 Fax: 01283 554422
SOCOTEC UK Limited.
Registered No: 2880501

TEST REPORT

1252

Report No. EFS/200154M (Ver. 2)

Fugro GeoServices Ltd
Fugro House
Hithercroft Road
Wallingford
Oxfordshire
OX10 9RB

Site: SZC 2019 Offshore Ground Investigation

The 1 sample described in this report were registered for analysis by SOCOTEC UK Limited on 28-Jun-2019. This report supersedes any versions previously issued by the laboratory.

The analysis was completed by: 22-Jul-2019

Tests where the accreditation is set to N or No, and any individual data items marked with a * are not UKAS or MCERTS accredited.
Any opinions or interpretations expressed herein are outside the scope of any UKAS accreditation held by SOCOTEC UK Limited.

The following tables are contained in this report:

Table 1 Main Analysis Results (Pages 2 to 15)
Table of SVOC (Tics) Results (Page 16)
Table of VOC (Tics) Results (Page 17)
Table of WAC Analysis Results (Page 18)
Table of Asbestos Screening Results (Page 19)
Analytical and Deviating Sample Overview (Pages 20 to 22)
Table of Additional Report Notes (Page 23)
Table of Method Descriptions (Pages 24 to 25)
Table of Report Notes (Page 26)
Table of Sample Descriptions (Appendix A Page 1 of 1)

On behalf of
SOCOTEC UK Li [redacted]
Becky Batham Operations Manager
Energy & Waste Services

Date of Issue: 22-Jul-2019

Accreditation Codes: **N** (Not Accredited), **U** (UKAS), **UM** (UKAS & MCERTS)
Tests marked '^' have been subcontracted to another laboratory.
(NVM) - denotes the sample matrix is dissimilar to matrices upon which the MCERTS validation was based, and is therefore not accredited for MCERTS.
All results are reported on a dry weight basis at 105°C unless otherwise stated. (except QC samples)
SOCOTEC UK Limited accepts no responsibility for any sampling not carried out by our personnel.

Units :			mg/kg	Mol/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	%	%		% M/M	mg/kg	mg/kg	mg/kg
Method Codes :			AMMAR	ANC	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	CEN Leachate	CEN Leachate	FOCCALC	FOCS	GROHSA	GROHSA	GROHSA
Method Reporting Limits :			0.5	0.04	10	10	20	20	10	10	30			0.0002	0.04	0.2	0.2	0.2
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Exchange.Ammonium AR**	**Acid Neut. Capacity**	**Benzene**	**Ethyl Benzene**	**m/p Xylenes**	**MTBE**	**o Xylene**	**Toluene**	**Xylenes**	**Fraction of non-crushable material %**	**Fraction of sample above 4 mm %**	**F.O.C.**	**S.O.M. % (Calc)**	**GRO**	**GRO (>C5 - C6)**	**GRO (>C7 - C8)**
1964507	OT_SPT_02 OT-SPT2-ES-WAC2 24.00 (NVM)	**16-Jun-19**	<0.6	5.11	<12.1	<12.1	<24.2	<24.2	<12.1	<12.1	<36.3	0.0	0.0	0.002	0.29	<0.242	<0.242	<0.242

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Client Name	**Fugro GeoServices Ltd**
Contact	Karen Blackmore

SZC 2019 Offshore Ground Investigation

Sample Analysis

Date Printed	**22-Jul-2019**
Report Number	**EFS/200154M**
Table Number	**1**

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Units :			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	ICPACIDS	ICPBOR	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS
Method Reporting Limits :			0.2	0.2	0.2	0.2	0.2	0.2	20	0.5	0.3	0.2	1.2	1.6	0.7	0.5	2	0.5
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**GRO (>C8 - C10)**	**GRO (C5-C6 Aliphatic)**	**GRO (C6-C7 Aliphatic)**	**GRO (C6-C7)**	**GRO (C7-C8 Aliphatic)**	**GRO (C8-C10 Aliphatic)**	**SO4-- (acid sol)**	**Boron (H20 Soluble)**	**Arsenic (MS)**	**Cadmium (MS)**	**Chromium (MS)**	**Copper (MS)**	**Lead (MS)**	**Mercury (MS)**	**Nickel (MS)**	**Selenium (MS)**
1964507	OT_SPT_02 OT-SPT2-ES-WAC2 24.00 (NVM)	**16-Jun-19**	<0.242	<0.242	<0.242	<0.242	<0.242	<0.242	1840	2.6	15.6	0.49	19	98.0	42	<0.5	21.3	<0.5

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			Units :	mg/kg	mg/kg	mg/kg	mg/kg	%	ug Sn/kg	ug Sn/kg	ug Sn/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
			Method Codes :	ICPMSS	ICPMSS	ICPSOIL	KONECR	LOI(%MM)	OGSN	OGSN	OGSN	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS
			Method Reporting Limits :	0.6	16	36	0.1	0.2	1	1	1	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
LAB ID Number CL/	Client Sample Description	Sample Date		Vanadium (MS)	Zinc (MS)	Iron	Chromium vi:	L.O.I. % @ 450C	Dibutyl Tin	Tributyl Tin as Sn	Triphenyl Tin	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(ghi)perylene	Benzo(k)fluoranthene
1964507	OT_SPT_02 OT-SPT2-ES-WAC2 24.00 (NVM)	16-Jun-19		29.3	90.4	39200	<0.1	2.8	<1	<1	<1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10

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Units :			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Method Codes :			PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PCBECD	PCBECD	PCBECD	PCBECD	PCBECD	PCBECD
Method Reporting Limits :			0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	1.28	5	5	5	5	5	5
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Chrysene**	**Coronene**	**Dibenzo(ah)anthracene**	**Fluoranthene**	**Fluorene**	**Indeno(123-cd)pyrene**	**Naphthalene**	**Phenanthrene**	**Pyrene**	**Total PAH (Sum of USEPA 16)**	**PCB 101**	**PCB 118**	**PCB 138**	**PCB 153**	**PCB 180**	**PCB 28**
1964507	OT_SPT_02 OT-SPT2-ES-WAC2 24.00 (NVM)	**16-Jun-19**	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10*	<0.10	<0.10	<0.10	<1.55*	<6.05	<6.05	<6.05	<6.05	<6.05	<6.05

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Units :			µg/kg	pH Units	mg/kg	mg/kg	mg/kg	mg/kg	%	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			PCBECD	PHSOIL	SFAPI	SFAPI	SFAPI	SFAS	Sub002	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW
Method Reporting Limits :			5		0.5	0.5	0.5	0.5		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**PCB 52**	**pH units (AR)**	**Cyanide(Free) (AR)**	**Cyanide(Total) (AR)**	**Phenol Index.(AR)**	**Sulphide as S (AR)**	**^Asbestos Screen & ID (Stage 1)**	**1,2,4-Trichlorobenzene**	**1,2-Dichlorobenzene**	**1,3-Dichlorobenzene**	**1,4-Dichlorobenzene**	**1-Methylnaphthalene**	**2,4,5-Trichlorophenol**	**2,4,6-Trichlorophenol**	**2,4-Dichlorophenol**	**2,4-Dimethylphenol**
1964507	OT_SPT_02 OT-SPT2-ES-WAC2 24.00 (NVM)	**16-Jun-19**	<6.05	8.8	<0.6	<0.6	<0.6	3.1	NAIIS	<0.121	<0.121	<0.121	<0.121	<0.121	<0.121	<0.121	<0.121	<0.121

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		Units :	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		Method Codes :	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW
		Method Reporting Limits :	0.5	0.2	0.5	0.1	0.1	0.1	0.1	0.5	0.1	0.1	14.5	0.2	0.1	0.1	0.5	0.5
LAB ID Number CL/	Client Sample Description	Sample Date	2,4-Dinitrophenol	2,4-Dinitrotoluene	2,6-Dinitrotoluene	2-Chloronaphthalene	2-Chlorophenol	2-Methylnaphthalene	2-Methylphenol	2-Nitroaniline	2-Nitrophenol	3- & 4-Methylphenol	3-Nitroaniline	4,6-Dinitro-2-methylphenol	4-Bromophenyl-phenylether	4-Chloro-3-methylphenol	4-Chloroaniline	4-Chlorophenol
1964507	OT_SPT_02 OT-SPT2-ES-WAC2 24.00 (NVM)	16-Jun-19	<0.605	<0.242	<0.605	<0.121	<0.121	<0.121	<0.121	<0.605	<0.121	<0.121	<17.5	<0.242	<0.121	<0.121	<0.605	<0.605

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		Units :	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		Method Codes :	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW
		Method Reporting Limits :	0.1	0.6	0.5	0.1	0.1	0.1	0.2	0.2	0.2	0.5	0.2	0.5	0.5	0.1	0.1	0.1
LAB ID Number CL/	Client Sample Description	Sample Date	4-Chlorophenyl-phenylether	4-Nitroaniline	4-Nitrophenol	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(ghi)perylene	Benzo(k)fluoranthene	Benzoic Acid	Benzyl alcohol	Biphenyl	bis(2-Chloroethoxy)methane	bis(2-Chloroethyl)ether
1964507	OT_SPT_02 OT-SPT2-ES-WAC2 24.00 (NVM)	16-Jun-19	<0.121	<0.726	<0.605	<0.121	<0.121	<0.121	<0.242	<0.242	<0.242	<0.605*	<0.242	<0.605	<0.605*	<0.121	<0.121	<0.121

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Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Units :			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW
Method Reporting Limits :			0.5	0.2	0.2	0.1	0.3	0.5	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.1	0.1
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**bis(2-Chloroisopropyl)ether**	**bis(2-Ethylhexyl)phthalate**	**Butylbenzylphthalate**	**Chrysene**	**Coronene**	**Dibenzo(ah)anthracene**	**Dibenzofuran**	**Diethylphthalate**	**Dimethylphthalate**	**Di-n-butylphthalate**	**Di-n-octylphthalate**	**Diphenyl Ether**	**Fluoranthene**	**Fluorene**	**Hexachlorobenzene**	**Hexachlorobutadiene**
1964507	OT_SPT_02 OT-SPT2-ES-WAC2 24.00 (NVM)	**16-Jun-19**	<0.605	<0.242	<0.242	<0.121	<0.363	<0.605	<0.121	<0.121	<0.121	<0.121	<0.242	<0.121	<0.242	<0.242	<0.121	<0.121

SOCOTEC

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Client Name	**Fugro GeoServices Ltd**
Contact	Karen Blackmore

SZC 2019 Offshore Ground Investigation

Sample Analysis

Date Printed	**22-Jul-2019**
Report Number	**EFS/200154M**
Table Number	**1**

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Units :			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	%	mg/kg	mg/kg
Method Codes :			SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	TMSS	TPHFIDUS	TPHFIDUS
Method Reporting Limits :			0.1	0.1	0.5	0.1	0.1	0.5	0.9	0.1	0.5	0.1	0.1	0.2		0.1	10	10
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Hexachlorocyclopentadiene**	**Hexachloroethane**	**Indeno(123-cd)pyrene**	**Isophorone**	**Naphthalene**	**Nitrobenzene**	**N-Nitroso-di-n-propylamine**	**N-Nitrosodiphenylamine**	**Pentachlorophenol**	**Phenanthrene**	**Phenol**	**Pyrene**	**SVOC + TICs (AR)**	**Tot.Moisture @ 105C**	**TPH Band (>C10-C40)**	**TPH by GCFID (AR)**
1964507	OT_SPT_02 OT-SPT2-ES-WAC2 24.00 (NVM)	**16-Jun-19**	<0.121	<0.121	<0.605	<0.121	<0.121	<0.605	<1.088	<0.121	<0.605	<0.121	<0.121	<0.242	Req	17.3	85.9	86.2

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Table Number	**1**

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Units :			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Method Codes :			TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS
Method Reporting Limits :			4	4	4	8.75	4	20	4	4	4	8.75	4	20	1	1	1	1
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**TPH Ali Band >C10-C12**	**TPH Ali Band >C12-C16**	**TPH Ali Band >C16-C21**	**TPH Ali Band >C21-C35**	**TPH Ali Band >C8-C10**	**TPH Ali Band >C8-C40**	**TPH Aro Band >C10-C12**	**TPH Aro Band >C12-C16**	**TPH Aro Band >C16-C21**	**TPH Aro Band >C21-C35**	**TPH Aro Band >C8-C10**	**TPH Aro Band >C8-C40**	**1,1,1,2-Tetrachloroethane**	**1,1,1-Trichloroethane**	**1,1,2,2-Tetrachloroethane**	**1,1,2-Trichloroethane**
1964507	OT_SPT_02 OT-SPT2-ES-WAC2 24.00 (NVM)	**16-Jun-19**	<4.84	<4.84	<4.84	<10.59	<4.84	<24.2	<4.84	<4.84	<4.84	<10.59	<4.84	<24.2	<1.2	<1.2	<1.2	<1.2

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SZC 2019 Offshore Ground Investigation

Sample Analysis

Date Printed	**22-Jul-2019**
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Table Number	**1**

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Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Units :			µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Method Codes :			VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS
Method Reporting Limits :			1	1	1	3	1	3	1	1	1	1	1	1	1	1	1	1
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**1,1-Dichloroethane**	**1,1-Dichloroethene**	**1,1-Dichloropropene**	**1,2,3-Trichlorobenzene**	**1,2,3-Trichloropropane**	**1,2,4-Trichlorobenzene**	**1,2,4-Trimethylbenzene**	**1,2-Dibromo-3-chloropropane**	**1,2-Dibromoethane**	**1,2-Dichlorobenzene**	**1,2-Dichloroethane**	**1,2-Dichloropropane**	**1,3,5-Trimethylbenzene**	**1,3-Dichlorobenzene**	**1,3-Dichloropropane**	**1,4-Dichlorobenzene**
1964507	OT_SPT_02 OT-SPT2-ES-WAC2 24.00 (NVM)	**16-Jun-19**	<1.2	<1.2	<1.2	<3.6	<1.2	<3.6	<1.2	<1.2	<1.2*	<1.2	<1.2	<1.2	<1.2*	<1.2	<1.2	<1.2

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SZC 2019 Offshore Ground Investigation

Sample Analysis

Date Printed	**22-Jul-2019**
Report Number	**EFS/200154M**
Table Number	**1**

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Units :			µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Method Codes :			VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS
Method Reporting Limits :			1	1	1	1	1	1	1	1	1	1	1	2	1	3	5	1
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**2,2-Dichloropropane**	**2-Chlorotoluene**	**4-Chlorotoluene**	**Benzene**	**Bromobenzene**	**Bromochloromethane**	**Bromodichloromethane**	**Bromoform**	**Bromomethane**	**Carbon Tetrachloride**	**Chlorobenzene**	**Chloroethane**	**Chloroform**	**Chloromethane**	**cis 1,2-Dichloroethene**	**cis 1,3-Dichloropropene**
1964507	OT_SPT_02 OT-SPT2-ES-WAC2 24.00 (NVM)	**16-Jun-19**	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<2.4	<1.2	<3.6	<6.0	<1.2

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SZC 2019 Offshore Ground Investigation

Sample Analysis

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Table Number	**1**

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Units :			µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Method Codes :			VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS
Method Reporting Limits :			1	1	1	2	2	1	4	1	5	1	2	1	1	1	1	1
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Dibromochloromethane**	**Dibromomethane**	**Dichlorodifluoromethane**	**Ethylbenzene**	**Hexachlorobutadiene**	**iso-Propylbenzene**	**m and p-Xylene**	**MTBE**	**Naphthalene**	**n-Butylbenzene**	**o-Xylene**	**p-Isopropyltoluene**	**Propylbenzene**	**sec-Butylbenzene**	**Styrene**	**tert-Butylbenzene**
1964507	OT_SPT_02 OT-SPT2-ES-WAC2 24.00 (NVM)	**16-Jun-19**	<1.2	<1.2*	<1.2	<2.4	<2.4	<1.2	<4.8	<1.2	<6.0	<1.2*	<2.4	<1.2	<1.2	<1.2	<1.2	<1.2

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Date Printed	**22-Jul-2019**
Report Number	**EFS/200154M**
Table Number	**1**

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Units :			µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	% M/M							
Method Codes :			VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	WSLM59							
Method Reporting Limits :			3	5	1	1	1	1	1		0.02							
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Tetrachloroethene**	**Toluene**	**trans 1,2-Dichloroethene**	**trans 1,3-Dichloropropene**	**Trichloroethene**	**Trichlorofluoromethane**	**Vinyl Chloride**	**VOC + TICs HSA-GCMS**	**Total Organic Carbon**							
1964507	OT_SPT_02 OT-SPT2-ES-WAC2 24.00 (NVM)	**16-Jun-19**	<3.6*	<6.0	<1.2	<1.2	<1.2	<1.2	<1.2	Req	0.17							

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Contact	Karen Blackmore

SZC 2019 Offshore Ground Investigation

Sample Analysis

Date Printed	**22-Jul-2019**
Report Number	**EFS/200154M**
Table Number	**1**

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

SVOC (TICs)

Accredited?:No

Customer and Site Details:	Fugro GeoServices Ltd: SZC 2019 Offshore Ground Investigation		
Sample Details:	OT_SPT_02 OT-SPT2-ES-WAC2 24	**Job Number:**	S20_0154
LIMS ID Number:	CL1964507		
		Multiplier:	0.2
Date Booked in:	28-Jun-19	**Dilution Factor:**	1
Date Extracted:	01-Jul-19	**GPC (Y/N):**	N
Date Analysed:	03-Jul-19	**Matrix:**	Soil
QC Batch Number:	134	**Method:**	Ultrasonic
Directory/Quant File:	070219.GC11\ 0	**Operator:**	CO

Tentatively Identified Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
Ethanol, 2,2'-[1,2-ethanediylbis(oxy)]bis-	000112-27-6	4.27	63.721	86	N
Hydroxycodeinone	000508-54-3	16.28	6.154	64	N
dimethyl 7-(4-nitrophenyl)imidazo[1,2-a]pyridine-5,6-dicarbox	123331-44-2	12.58	5.549	52	N
9-Octadecenoic acid (Z)-, 2,3-dihydroxypropyl ester	000111-03-5	13.05	3.052	68	N
Unknown peak	-	15.04	2.428	-	N
Unknown peak	-	13.27	2.185	-	N
2-Pentanone, 4-hydroxy-4-methyl-	000123-42-2	2.50	0.915	83	N
n-Hexadecanoic acid	000057-10-3	6.39	0.568	99	N
Unknown peak	-	4.42	0.553	-	N
Unknown peak	-	16.48	0.499	-	N
Unknown peak	-	14.04	0.492	-	N
Octadecanoic acid	000057-11-4	7.01	0.448	93	N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

TICs by HSA-GCMS

Accredited?: No

Customer and Site Details:	Fugro GeoServices Ltd: SZC 2019 Offshore Ground Investigation		**Date Booked in:**	28-Jun-19
Sample Details:	OT_SPT_02 OT-SPT2-ES-WAC2 24.00 (NVM)		**Date Analysed:**	05-Jul-19
LIMS ID Number:	CL1964507		**Matrix:**	Soil
Job Number:	S20_0154		**Ext Method:**	Headspace
Directory/Quant file:	070519_MS19\	Initial Calibration	**Dilution:**	0.98
Operator:	ED		**Position:**	11

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Acetic acid, methyl ester	000079-20-9	2.79	441	83	N
Dichloromethane (Methylene Chloride)	75-09-2	-	<6	-	N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Compounds marked * are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

WASTE ACCEPTANCE CRITERIA TESTING
BSEN 12457/2

Client	Fugro GeoServices Ltd				**Leaching Data**	
					Weight of sample (kg)	0.108
Contact	Karen Blackmore				Moisture content @ 105°C (% of Wet Weight)	17.3
					Equivalent Weight based on drying at 105°C (kg)	0.090
Site	SZC 2019 Offshore Ground Investigation				Volume of water required to carry out 10:1 stage (litres)	0.882
					Fraction of sample above 4 mm %	0.000
Sample Description		**Report No**	**Sample No**	**Issue Date**	Fraction of non-crushable material %	0.000
OT_SPT_02 OT-SPT2-ES-WAC2 24.00		s20_0154M	CL/1964507	22-Jul-19		

Note: The >4mm fraction is crushed using a disc mill

Accreditation	Method Code	Solid Waste Analysis (Dry Basis)	Concentration in Solid (Dry Weight Basis)	Landfill Waste Acceptance Criteria Limit Values		
				Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
N	WSLM59	Total Organic Carbon (% M/M)	0.17	3	5	6
N	LOI450	Loss on Ignition (%)	2.8			10
U	BTEXHSA	Sum of BTEX (mg/kg)	<0.0726	6		
U	PCBUSECD	Sum of 7 Congener PCB's (mg/kg)	<0.042	1		
N	TPHFIDUS	Mineral Oil (mg/kg)	85.9	500		
N	PAHMSUS	PAH Sum of 17 (mg/kg)	<1.64	100		
N	PHSOIL	pH (pH units)	8.8		>6	
N	ANC	Acid Neutralisation Capacity (mol/kg) @pH 7	5.11		To be evaluated	To be evaluated

Accreditation	Method Code	Leachate Analysis	10:1 Single Stage Leachate	Calculated cumulative amount	Landfill Waste Acceptance Criteria Limit Values for BSEN 12457/2 @ L/S 10 litre kg-1		
			mg/l except °°	mg/kg (dry weight)	mg/kg (dry weight)		
U	WSLM3	pH (pH units) °°	7.7	Calculated data not UKAS Accredited			
U	WSLM2	Conductivity (µs/cm) °°	1550				
U	ICPMSW	Arsenic	0.003	0.03	0.5	2	25
U	ICPWATVAR	Barium	<0.01	<0.1	20	100	300
U	ICPMSW	Cadmium	<0.0001	<0.001	0.04	1	5
U	ICPMSW	Chromium	<0.001	<0.01	0.5	10	70
U	ICPMSW	Copper	<0.001	<0.01	2	50	100
U	ICPMSW	Mercury	<0.0001	<0.001	0.01	0.2	2
U	ICPMSW	Molybdenum	0.02	0.2	0.5	10	30
U	ICPMSW	Nickel	0.002	0.02	0.4	10	40
U	ICPMSW	Lead	<0.001	<0.01	0.5	10	50
U	ICPMSW	Antimony	0.002	0.02	0.06	0.7	5
U	ICPMSW	Selenium	<0.001	<0.01	0.1	0.5	7
U	ICPMSW	Zinc	0.004	0.04	4	50	200
U	KONENS	Chloride	395	3950	800	15000	25000
U	ISEF	Fluoride	0.2	2	10	150	500
U	ICPWATVAR	Sulphate as SO4	80	800	1000	20000	50000
N	WSLM27	Total Dissolved Solids	1210	12100	4000	60000	100000
U	SFAPI	Phenol Index	<0.05	<0.5	1		
N	WSLM13	Dissolved Organic Carbon	30	300	500	800	1000

Template Ver. 1

Landfill Waste Acceptance Criteria limit values correct as of 11th March 2009.

Tests where the accreditation is set to U are UKAS accredited, those where the accreditation is set to N are not UKAS accredited

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

ASBESTOS ANALYSIS RESULTS

SOCOTEC Asbestos Limited Certificate of Analysis for Asbestos in Soils, Sediments and Aggregates

UKAS TESTING 1089

Detection limit of Method SCI-ASB-020 is 0.001%

Sampling has been carried out by a third party

SOCOTEC

Client:	SOCOTEC Environmental Chemistry	**Page 1 of 1**	
Address:	Etwall House, Bretby Business Park, Ashby Road, Burton upon Trent	**Report No:**	**ANO-0503-21150**
For the attention of:	Fugro GeoServices Ltd	**Report Date:**	**11/07/2019**
Site Address:	SZC 2019 Offshore Ground Investigation	**Project Number:**	**S200154**

Sample Number	Sample Date	Sample Location & Matrix	Test Date	Total Sample Dry Weight (g)	Weight of <10mm Fraction (g)	Asbestos(g) in >10mm	Asbestos(g) in < 10mm	% Asbestos by weight of Total Dried Sample	Moisture Content	Asbestos Fibre Types Identified
CL/1964507	16/06/19	OT_SPT_02 OT-SPT2-ES-WAC2 24.00 Soils	11/07/2019	1210.7	1198.0			Identification		NAIIS

Keys

NAACR = Not Analysed at Clients Request

*** visible to naked eye**

NAIIS = No Asbestos Identified in Sample (Identification Only)

NADIS = No Asbestos Detected in Sample (ID & Quant Only)

Name: Tom Pratt

Position: Lab Coordinator

Authorised Signatory: [redacted]

The sample analysis for the above results was carried out using the procedures detailed in SOCOTEC Asbestos Limited in house method (SCI-ASB-020) based on EA document Quantification of asbestos in soil and associated materials - Draft 2017. Fibre identification was carri[redacted]Limited in house method of transmitted/polarised light microscopy and centre stop dispersion staining (SCI-ASB-007), based on HSE's HSG 248. The analysis of the < 10mm fraction for asbestos content only includes ACMs and fibres and does not discriminate non-asbestos fibres. All fibres are assumed, unless specified, to be amphiboles. All tests were carried out at a SOCOTEC Asbestos Ltd laboratory, UKAS Testing Number 1089. Recommended sample weight is 1kg-2kg, samples less than 1kg are classified as deviating samples.

Where individual results are flagged see report notes for status.

Analytical and Deviating Sample Overview

Customer **Fugro GeoServices Ltd**
Site **SZC 2019 Offshore Ground Investigation**
Report No **S200154M**

Consignment No S86045
Date Logged 28-Jun-2019
In-House Report Due 08-Jul-2019

Please note the results for any subcontracted analysis (identified with a '^') is likely to take up to an additional five working days.

ID Number	Description	MethodID	AMMAR	ANC	BTEXHSA		CEN Leachate			GustServ	FOCCALC	FOCS	GROHSA	ICPACIDS	ICPBOR	ICPMSS										ICPSOIL	KONECR
		Sampled	Exchange.Ammonium AR	Acid Neut. Capacity	BTEX-HSA + MTBE analysis	MTBE (µg/kg)	CEN Leac(P)C	Fraction of non-crushable material %	Fraction of sample above 4 mm %	REPORT A	F.O.C.	S.O.M. % (Calc)	GRO (AA) by HSA GC-FID	SO4-- (acid sol)	Boron (H20 Soluble)	Arsenic (MS)	Cadmium (MS)	Chromium (MS)	Copper (MS)	Lead (MS)	Mercury (MS)	Nickel (MS)	Selenium (MS)	Vanadium (MS)	Zinc (MS)	Iron	Chromium vi:
			✓		✓	✓					✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	
CL/1964507	OT_SPT_02 OT-SPT2-ES-WA(	16/06/19																									

Note: We will endeavour to prioritise samples to complete analysis within holding time; however any delay could result in samples becoming deviant whilst being processed in the laboratory.

If sampling dates are missing or matrices unclassified then results will not be ISO 17025 accredited. Please contact us as soon as possible to provide missing information in order to reinstate accreditation.

Deviating Sample Key

A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key

	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

Where individual results are flagged see report notes for status.
The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Analytical and Deviating Sample Overview

Customer **Fugro GeoServices Ltd**
Site **SZC 2019 Offshore Ground Investigation**
Report No **S200154M**

Consignment No S86045
Date Logged 28-Jun-2019
In-House Report Due 08-Jul-2019

Please note the results for any subcontracted analysis (identified with a '^') is likely to take up to an additional five working days.

ID Number	Description	MethodID	LOI(%MM)	MCertS	OGSN			PAHMSUS	PCBECD	PHSOIL	SFAPI			SFAS	Sub002	SVOCSW	TMSS	TPHFIDUS		TPHUSSI							
		Sampled	L.O.I. % @ 450C	MCertS Analysis	Dibutyl Tin	Tributyl Tin as Sn	Triphenyl Tin	PAH (17) by GCMS	PCB-7 Congeners Analysis	pH units (AR)	Cyanide(Free) (AR)	Cyanide(Total) (AR)	Phenol Index.(AR)	Sulphide as S (AR)	^Asbestos Screen & ID (Stage 1)	SVOC + TICs (AR)	Tot.Moisture @ 105C	TPH Band (>C10-C40)	TPH by GCFID (AR)	TPH Ali Band >C10-C12	TPH Ali Band >C12-C16	TPH Ali Band >C16-C21	TPH Ali Band >C21-C35	TPH Ali Band >C8-C10	TPH Ali Band >C8-C40	TPH Aro Band >C10-C12	TPH Aro Band >C12-C16
				✓				✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CL/1964507	OT_SPT_02 OT-SPT2-ES-WA(	16/06/19																									

Note: We will endeavour to prioritise samples to complete analysis within holding time; however any delay could result in samples becoming deviant whilst being processed in the laboratory.

If sampling dates are missing or matrices unclassified then results will not be ISO 17025 accredited. Please contact us as soon as possible to provide missing information in order to reinstate accreditation.

Deviating Sample Key	
A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key	
	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

Where individual results are flagged see report notes for status.
The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Analytical and Deviating Sample Overview

Customer **Fugro GeoServices Ltd** Consignment No S86045
Site **SZC 2019 Offshore Ground Investigation** Date Logged 28-Jun-2019
Report No **S200154M** In-House Report Due 08-Jul-2019

Please note the results for any subcontracted analysis (identified with a '^') is likely to take up to an additional five working days.

ID Number	Description	MethodID	TPHUSSI					VOCHSAS	WSLM59
		Sampled	TPH Aro Band >C16-C21	TPH Aro Band >C21-C35	TPH Aro Band >C8-C10	TPH Aro Band >C8-C40	TPH by GCFID (AR/Si)	VOC + TICs HSA-GCMS	Total Organic Carbon
			✓	✓	✓	✓	✓	✓	✓
CL/1964507	OT_SPT_02 OT-SPT2-ES-WA(	16/06/19							

Note: We will endeavour to prioritise samples to complete analysis within holding time; however any delay could result in samples becoming deviant whilst being processed in the laboratory.

If sampling dates are missing or matrices unclassified then results will not be ISO 17025 accredited. Please contact us as soon as possible to provide missing information in order to reinstate accreditation.

Deviating Sample Key	
A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key	
	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

Where individual results are flagged see report notes for status.
The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Additional Report Notes

Method Code	Sample ID	The following information should be taken into consideration when using the data contained within this report
PAHMSUS	CL/1964507	The Primary process control data associated with this Test has not wholly met the requirements of the Laboratory Quality Management System QMS with one or more target analytes falling outside acceptable limits. However the remaining data gives the Laboratory confidence that the test has performed satisfactorily and that the validity of the data may not have been significantly affected. However in line with our QMS policy we have removed accreditation, where applicable, from the affected analytes INDENO[1,2,3-cd]PYRENE . These circumstances should be taken into consideration when utilising the data.
SVOCSW	CL/1964507	The Primary process control data associated with this Test has not wholly met the requirements of the Laboratory Quality Management System QMS with one or more target analytes falling outside acceptable limits. However the remaining data gives the Laboratory confidence that the test has performed satisfactorily and that the validity of the data may not have been significantly affected. However in line with our QMS policy we have removed accreditation, where applicable, from the affected analytes (Benzyl alcohol) . These circumstances should be taken into consideration when utilising the data.
SVOCSW	CL/1964507	The Secondary process control data associated with this Test has not wholly met the requirements of the Laboratory Quality Management System QMS with one or more target analytes falling outside acceptable limits. However the remaining data gives the Laboratory confidence that the test has performed satisfactorily (including the Primary Process Control) and that the validity of the data may not have been significantly affected. However in line with our QMS policy we have removed accreditation , where applicable, from the affected analytes (Benzo[g,h,i]perylene) . These circumstances should be taken into consideration when utilising the data.
VOCHSAS	CL/1964507	The Primary process control data associated with this Test has not wholly met the requirements of the Laboratory Quality Management System QMS with one or more target analytes falling outside acceptable limits. However the remaining data gives the Laboratory confidence that the test has performed satisfactorily and that the validity of the data may not have been significantly affected. However in line with our QMS policy we have removed accreditation, where applicable, from the affected analytes (1,2-Dibromoethane, 1,3,5-Trimethylbenzene, Dibromomethane, n-Butylbenzene, Tetrachloroethene) . These circumstances should be taken into consideration when utilising the data.
VOCHSAS	CL/1964507	Due to matrix interference, the Internal Standard recovery for this Test is outside the required QMS specification. This has been confirmed by repeating the analysis. All other Laboratory Process Controls meet the requirements of the QMS unless otherwise stated. These circumstances should be taken into consideration when utilising the data.

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Soil	AMMAR	As Received	Determination of Exchangeable Ammonium in Soil using potassium chloride extraction, discrete colorimetric detection
Soil	ANC	Oven Dried @ < 35°C	Quantitative digestion with Hydrochloric Acid back titration with 1M Sodium Hydroxide to pH 7
Soil	BTEXHSA	As Received	Determination of Benzene, Toluene, Ethyl benzene and Xylenes (BTEX) by Headspace GCFID
Soil	CEN Leachate	As Received	Determination of Oversize and Inert Material Content prior to leaching sample
Soil	FOCS	Oven Dried @ < 35°C	Calculation of Soil Organic Matter content from Organic Carbon content of soil samples
Soil	GROHSA	As Received	Determination of Total Gasoline Range Organics Hydrocarbons (GRO) by Headspace GCFID
Soil	ICPACIDS	Oven Dried @ < 35°C	Determination of Total Sulphate in soil samples by Hydrochloric Acid extraction followed by ICPOES detection
Soil	ICPBOR	Oven Dried @ < 35°C	Determination of Boron in soil samples by hot water extraction followed by ICPOES detection
Soil	ICPMSS	Oven Dried @ < 35°C	Determination of Metals in Marine Sediments and Soil samples by aqua regia digestion followed by ICPMS detection
Soil	ICPSOIL	Oven Dried @ < 35°C	Determination of Metals in soil samples by aqua regia digestion followed by ICPOES detection
Soil	KONECR	Oven Dried @ < 35°C	Determination of Chromium vi in soil samples by water extraction followed by colorimetric detection
Soil	LOI(%MM)	Oven Dried @ < 35°C	Determination of loss on ignition for soil samples at specified temperature by gravimetry
Soil	OGSN	As Received	Determination of Organo-tin compounds using sonic extraction in methanol , derivatiseation with Sodium Tetraethylborate and GCMS quantitation (SIM mode).
Soil	PAHMSUS	As Received	Determination of Polycyclic Aromatic Hydrocarbons (PAH) by hexane/acetone extraction followed by GCMS detection
Soil	PCBECD	As Received	Determination of Polychlorinated Biphenyl (PCB) congeners/aroclors by hexane/acetone extraction followed by GCECD detection
Soil	PHSOIL	As Received	Determination of pH of 2.5:1 deionised water to soil extracts using pH probe.
Soil	SFAPI	As Received	Segmented flow analysis with colorimetric detection
Soil	SFAS	As Received	Segmented flow analysis with colorimetric detection
Soil	SubCon*	*	Contact Laboratory for details of the methodology used by the sub-contractor.
Soil	SVOCSW	As Received	Determination of Semi-Volatile Organic Compounds by dichloromethane/acetone extraction followed by GCMS detection

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Soil	TMSS	As Received	Determination of the Total Moisture content at 105ºC by loss on oven drying gravimetric analysis (% based upon wet weight)
Soil	TPHFIDUS	As Received	Determination of hexane/acetone extractable Hydrocarbons in soil with GCFID detection.
Soil	TPHUSSI	As Received	Determination of hexane/acetone extractable Hydrocarbons in soil with GCFID detection including quantitation of Aromatic and Aliphatic fractions.
Soil	VOCHSAS	As Received	Determination of Volatile Organic Compounds (VOC) by Headspace GCMS
Soil	WSLM59	Oven Dried @ < 35°C	Determination of Organic Carbon in soil using sulphurous Acid digestion followed by high temperature combustion and IR detection
Water	ICPMSW	As Received	Direct quantitative determination of Metals in water samples using ICPMS
Water	ICPWATVAR	As Received	Direct determination of Metals and Sulphate in water samples using ICPOES
Water	ISEF	As Received	Determination of Fluoride in water samples by Ion Selective Electrode (ISE)
Water	KONENS	As Received	Direct analysis using discrete colorimetric analysis
Water	SFAPI	As Received	Segmented flow analysis with colorimetric detection
Water	WSLM13	As Received	Instrumental analysis using acid/persulphate digestion and non-dispersive IR detection
Water	WSLM2	As Received	Determination of the Electrical Conductivity (µS/cm) by electrical conductivity probe.
Water	WSLM27	As Received	Gravimetric Determination
Water	WSLM3	As Received	Determination of the pH of water samples by pH probe

Where individual results are flagged see report notes for status.

Report Notes

Generic Notes

Soil/Solid Analysis

Unless stated otherwise,
- Results expressed as mg/kg have been calculated on the basis indicated in the Method Description table.
  All results on MCERTS reports are reported on a 105ºC dry weight basis with the exception of pH and conductivity.
- Sulphate analysis not conducted in accordance with BS1377
- Water Soluble Sulphate is on a 2:1 water:soil extract

Waters Analysis

Unless stated otherwise results are expressed as mg/l
Nil: Where "Nil" has been entered against Total Alkalinity or Total Acidity this indicates that a measurement was not required due to the inherent pH of the sample.

Oil analysis specific

Unless stated otherwise,
- Results are expressed as mg/kg
- SG is expressed as g/cm^3@ 15°C

Gas (Tedlar bag) Analysis

Unless stated otherwise, results are expressed as ug/l

Asbestos Analysis

CH Denotes Chrysotile **TR** Denotes Tremolite
CR Denotes Crocidolite **AC** Denotes Actinolite
AM Denotes Amosite **AN** Denotes Anthophylite
NAIIS No Asbestos Identified in Sample
NADIS No Asbestos Detected In Sample

Symbol Reference

^ Sub-contracted analysis.
$$ Unable to analyse due to the nature of the sample
¶ Samples submitted for this analyte were not preserved on site in accordance with laboratory protocols. This may have resulted in deterioration of the sample(s) during transit to the laboratory. Consequently the reported data may not represent the concentration of the target analyte present in the sample at the time of sampling
¥ Results for guidance only due to possible interference
& Blank corrected result
I.S Insufficient sample to complete requested analysis
I.S(g) Insufficient sample to re-analyse, results for guidance only
Intf Unable to analyse due to interferences
N.D Not determined **N.Det** Not detected
N.F No Flow
NS Information Not Supplied
Req Analysis requested, see attached sheets for results
Þ Raised detection limit due to nature of the sample
***** All accreditation has been removed by the laboratory for this result
‡ MCERTS accreditation has been removed for this result
§ accreditation has been removed for this result as it is a non-accredited matrix

Note: The Laboratory may only claim that data is accredited when all of the requirements of our Quality System have been met. Where these requirements have not been met the laboratory may elect to include the data in its final report and remove the accreditation from individual data items if it believes that the validity of the data has not been affected. If further details are required of the circumstances which have led to the removal of accreditation then please do not hesitate to contact the laboratory.

Sample Descriptions

Client : Fugro GeoServices Ltd
Site : SZC 2019 Offshore Ground Investigation
Report Number : S20_0154

Note: major constituent in upper case

Lab ID Number	Client ID	Description
CL/1964507	T_02 OT-SPT2-ES-WAC2 24.00	MARINE SEDIMENTS

Our Ref: EFS/200168 (Ver. 1)
Your Ref: G190016U

July 26, 2019

Environmental Chemistry
SOCOTEC UK Limited
Bretby Business Park
Ashby Road
Burton-on-Trent
Staffordshire
DE15 0YZ

Telephone: 01283 554400
Facsimile: 01283 554422

Karen Blackmore
Fugro GeoServices Ltd
Fugro House
Hithercroft Road
Wallingford
Oxfordshire
OX10 9RB

For the attention of Karen Blackmore

Dear Karen Blackmore

Sample Analysis - SZC 2019 Offshore Ground Investigation

Samples from the above site have been analysed in accordance with the schedule supplied.
The sample details and the results of analyses for these samples are given in the appended report.

An invoice for this work will follow under a separate cover.

The samples will be kept until the agreed date when they will be discarded. Please call 01283 554434 for an extension of this date.
Please be aware that our policy for the retention of paper based laboratory records and analysis reports is 6 years.

The work was carried out in accordance with SOCOTEC UK Limited (Multi-Sector Services) Standard Terms and Conditions of Contract.

If I can be of any further assistance please do not hesitate to contact me.

Yours sincerely

for SOCOTEC UK Limited

[redacted]

K Smith
Project Co-ordinator
01283 554434

TEST REPORT

Report No. EFS/200168 (Ver. 1)

Fugro GeoServices Ltd
Fugro House
Hithercroft Road
Wallingford
Oxfordshire
OX10 9RB

Site: SZC 2019 Offshore Ground Investigation

The 2 samples described in this report were registered for analysis by SOCOTEC UK Limited on 28-Jun-2019. This report supersedes any versions previously issued by the laboratory.

The analysis was completed by: 26-Jul-2019

The following tables are contained in this report:

Table 1 Main Analysis Results (Page 2)
Subcontracted Analysis Reports (Pages 3 to 5)
The accreditation status of subcontracted analysis is displayed on the appended subcontracted analysis reports.
Analytical and Deviating Sample Overview (Page 6)
Table of Method Descriptions (Page 7)
Table of Report Notes (Page 8)
Table of Sample Descriptions (Appendix A Page 1 of 1)

On behalf of
SOCOTEC UK
Becky Batham Operations Manager
Energy & Waste Services

Date of Issue: 26-Jul-2019

Tests marked '^' have been subcontracted to another laboratory.

Where samples have been flagged as deviant on the Analytical and Deviating Sample Overview, for any reason, the data may not be representative of the sample at the point of sampling and the validity of the data may be affected. SOCOTEC UK Limited accepts no responsibility for any sampling not carried out by our personnel.

Where individual results are flagged see report notes for status.

		Units :	Bq/kg																
		Method Codes :	Sub008																
		Method Reporting Limits :																	
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**^Gamma spectrometry**																
1964539	IT2_SB_04 SB04 CEFAS4-220619 ES 4 1.50	**22-Jun-19 21:00**	Req																
1964540	IT2_SB_04 CEFASRAD3 1.00-1.50	**22-Jun-19 21:00**	Req																

SOCOTEC

Bretby Business Park, Ashby Road

Burton-on-Trent, Staffordshire, DE15 0YZ

Tel +44 (0) 1283 554400

Fax +44 (0) 1283 554422

Client Name	**Fugro GeoServices Ltd**
Contact	Karen Blackmore

SZC 2019 Offshore Ground Investigation

Sample Analysis

Date Printed	**26-Jul-2019**
Report Number	**EFS/200168**
Table Number	**1**

Analysis of Sediment Samples

Client:	SOCOTEC UK Environmental Chemistry PO Box 100 Burton upon Trent Staffordshire DE15 0XD
Testing Facility:	SOCOTEC UK Unit 12, Moorbrook Southmead Industrial Park Didcot Oxfordshire OX11 7HP
Laboratory Reference:	19-0596
Customer Reference:	S200168
Quote Number:	ENR-ANU-9781
PO Number:	Intraco
Samples Received:	11 July 2019
Sample Condition:	Satisfactory, Ambient
Analysis Completed:	17 July 2019
Report Author:	[redacted]
Author's Name:	Charlene Hunston
Job Title:	Team Leader
Approved By:	[redacted]
Approver's Name:	Carla Thompson
Job Title:	Deputy Project Manager
Report Date:	26 July 2019

1252

SOCOTEC

Introduction

This is a revised report as denoted by the suffix 'Rev2'. The Customer reference for sample RX3732 and the sampling times for both samples have been updated at the customer's request; the report has been reissued to reflect this. All other results remain unchanged. This report supersedes the previous issue.

Sample Summary

Customer Reference	Laboratory Reference (SOCOTEC UK Bretby)	Laboratory Reference (SOCOTEC UK Didcot)	Matrix	Sampling Date
IT2_SB_04 SB04 CEFAS4_220619 ES 4 1.50	S1964539	RX3732	Marine Sediment	22/06/2019 21:00
IT2_SB_04 CEFASRAD3 1.00-1.50	S1964540	RX3733	Marine Sediment	22/06/2019 21:00

Experimental

Gamma Spectrometry

ANU/SOP/2029 – "The measurement technique is based on the use of high purity germanium (HPGe) detectors coupled to an Ortec gamma ray spectroscopy system. The gamma ray spectra are stored on a computer and analysed using the software programme Fitzpeaks for photopeak identification and quantification. The detectors are calibrated for efficiency using a mixed radionuclide standard, which covers an energy range of approximately 30-2000 keV. The efficiency of gamma rays between 30 keV and 120 keV are determined on an individual basis.

Application of decay corrections for the naturally occurring daughter radionuclides of uranium and thorium assumes that the series daughter radionuclides are all in secular equilibrium and therefore decay with the half-life of the first radionuclide in the series." (^{226}Ra is not UKAS accredited)

Results

Results are presented in the following table.

Any opinions and interpretations expressed herein are outside the scope of our UKAS accreditation.

The results in this test report relate only to the items tested, and test portions taken thereof. This test report must not be reproduced except in full, without written approval of the laboratory.

UKAS TESTING
1252

SOCOTEC

Results Summary – Gamma Spectrometry

Customer Reference	Laboratory Reference	Be-7	K-40	Co-60	Cs-134	Cs-137	Tl-208	Pb-210	Bi-212	Pb-212
IT2_SB_04 SB04 CEFAS4_220619 ES 4 1.50	RX3732	<12	281 ± 43	<1.5	<1.7	<1.4	4.1 ± 1.3	<33	<19	15.1 ± 2.2
IT2_SB_04 CEFASRAD3 1.00-1.50	RX3733	<11	74 ± 18	<1.3	<1.5	<1.1	<1.4	<33	<15	6.0 ± 1.5

Customer Reference	Laboratory Reference	Bi-214	Pb-214	Ra-224	Ra-226 *	Ac-228	Pa-234m	Th-234	U-235	Am-241
IT2_SB_04 SB04 CEFAS4_220619 ES 4 1.50	RX3732	13.8 ± 2.8	14.9 ± 2.4	<38	<27	18.2 ± 3.9	<160	<40	<1.7	<3.2
IT2_SB_04 CEFASRAD3 1.00-1.50	RX3733	10.3 ± 2.3	11.2 ± 2.0	<29	<24	<5.2	<140	<39	<1.5	<2.8

Notes:

1. Analysis marked with an asterisk is not UKAS accredited.
2. Results are presented as $Bq.kg^{-1}$ of dried and homogenised samples and are decay corrected to the sampling date.
3. For results below the Limit of Detection, the LoD is rounded up to 2 significant figures.
4. Uncertainties are rounded to 2 significant figures; results are rounded to the same precision.
5. Detector calibrations are based upon homogeneous standard solutions. For quantification purposes the samples are assumed to be homogeneous.
6. ^{226}Ra has only one gamma ray at 186 keV and the major gamma ray from ^{235}U also occurs at 186 keV. ^{235}U can be measured by the lower abundance gamma ray at 144 keV and if a positive result for ^{235}U is reported, the ^{226}Ra result will be unreliable and overestimated. However even if ^{235}U is below the LoD there may still be a contribution to the ^{226}Ra from ^{235}U and the ^{226}Ra result may be unreliable and overestimated. If an accurate result for ^{226}Ra is required this is better obtained by radiochemical analysis.

-End of Report-

UKAS TESTING
1252

Analytical and Deviating Sample Overview

Customer Fugro GeoServices Ltd
Site SZC 2019 Offshore Ground Investigation
Report No S200168

Consignment No S86046
Date Logged 28-Jun-2019
In-House Report Due 18-Jul-2019

Please note the results for any subcontracted analysis (identified with a '^') is likely to take up to an additional five working days.

ID Number	Description	Sampled	MethodID	CustServ	Sub008
				Report C	^Gamma spectrometry
CL/1964539	IT2_SB_04 SB04 CEFAS4-220	22/06/19			
CL/1964540	IT2_SB_04 CEFASRAD3 1.00-	22/06/19			

Note: We will endeavour to prioritise samples to complete analysis within holding time; however any delay could result in samples becoming deviant whilst being processed in the laboratory.

If sampling dates are missing or matrices unclassified then results will not be ISO 17025 accredited. Please contact us as soon as possible to provide missing information in order to reinstate accreditation.

Deviating Sample Key	
A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key	
	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

Where individual results are flagged see report notes for status.

The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Soil	SubCon*	*	Contact Laboratory for details of the methodology used by the sub-contractor.

Report Notes

Generic Notes

Soil/Solid Analysis

Unless stated otherwise,
- Results expressed as mg/kg have been calculated on the basis indicated in the Method Description table.
  All results on MCERTS reports are reported on a 105ºC dry weight basis with the exception of pH and conductivity.
- Sulphate analysis not conducted in accordance with BS1377
- Water Soluble Sulphate is on a 2:1 water:soil extract

Waters Analysis

Unless stated otherwise results are expressed as mg/l
Nil: Where "Nil" has been entered against Total Alkalinity or Total Acidity this indicates that a measurement was not required due to the inherent pH of the sample.

Oil analysis specific

Unless stated otherwise,
- Results are expressed as mg/kg
- SG is expressed as g/cm^3@ 15°C

Gas (Tedlar bag) Analysis

Unless stated otherwise, results are expressed as ug/l

Asbestos Analysis

CH Denotes Chrysotile **TR** Denotes Tremolite
CR Denotes Crocidolite **AC** Denotes Actinolite
AM Denotes Amosite **AN** Denotes Anthophylite
NAIIS No Asbestos Identified in Sample
NADIS No Asbestos Detected In Sample

Symbol Reference

^ Sub-contracted analysis.
$$ Unable to analyse due to the nature of the sample
¶ Samples submitted for this analyte were not preserved on site in accordance with laboratory protocols. This may have resulted in deterioration of the sample(s) during transit to the laboratory. Consequently the reported data may not represent the concentration of the target analyte present in the sample at the time of sampling
¥ Results for guidance only due to possible interference
& Blank corrected result
I.S Insufficient sample to complete requested analysis
I.S(g) Insufficient sample to re-analyse, results for guidance only
Intf Unable to analyse due to interferences
N.D Not determined **N.Det** Not detected
N.F No Flow
NS Information Not Supplied
Req Analysis requested, see attached sheets for results
Þ Raised detection limit due to nature of the sample
***** All accreditation has been removed by the laboratory for this result
‡ MCERTS accreditation has been removed for this result
§ accreditation has been removed for this result as it is a non-accredited matrix

Note: The Laboratory may only claim that data is accredited when all of the requirements of our Quality System have been met. Where these requirements have not been met the laboratory may elect to include the data in its final report and remove the accreditation from individual data items if it believes that the validity of the data has not been affected. If further details are required of the circumstances which have led to the removal of accreditation then please do not hesitate to contact the laboratory.

Sample Descriptions

Client : Fugro GeoServices Ltd

Site : SZC 2019 Offshore Ground Investigation

Report Number : S20_0168

Note: major constituent in upper case

Lab ID Number	Client ID	Description
CL/1964539	B_04 SB04 CEFAS4-220619 ES	MARINE SEDIMENTS
CL/1964540	'2_SB_04 CEFASRAD3 1.00-1.5	MARINE SEDIMENTS

Our Ref: EFS/200376 (Ver. 1)
Your Ref: G190016U

August 1, 2019

Environmental Chemistry
SOCOTEC UK Limited
Bretby Business Park
Ashby Road
Burton-on-Trent
Staffordshire
DE15 0YZ

Telephone: 01283 554400
Facsimile: 01283 554422

Karen Blackmore
Fugro GeoServices Ltd
Fugro House
Hithercroft Road
Wallingford
Oxfordshire
OX10 9RB

For the attention of Karen Blackmore

Dear Karen Blackmore

Sample Analysis - SZC 2019 Offshore Ground Investigation

Samples from the above site have been analysed in accordance with the schedule supplied.
The sample details and the results of analyses for these samples are given in the appended report.

An invoice for this work will follow under a separate cover.

The samples will be kept until the agreed date when they will be discarded. Please call 01283 554434 for an extension of this date.
Please be aware that our policy for the retention of paper based laboratory records and analysis reports is 6 years.

The work was carried out in accordance with SOCOTEC UK Limited (Multi-Sector Services) Standard Terms and Conditions of Contract.

If I can be of any further assistance please do not hesitate to contact me.

Yours sincerely

for SOCOTEC UK Limited

[redacted]

Project Co-ordinator
01283 554434

TEST REPORT

Report No. EFS/200376 (Ver. 1)

Fugro GeoServices Ltd
Fugro House
Hithercroft Road
Wallingford
Oxfordshire
OX10 9RB

Site: SZC 2019 Offshore Ground Investigation

The 2 samples described in this report were registered for analysis by SOCOTEC UK Limited on 09-Jul-2019. This report supersedes any versions previously issued by the laboratory.

The analysis was completed by: 01-Aug-2019

The following tables are contained in this report:

Table 1 Main Analysis Results (Page 2)
Subcontracted Analysis Reports (Pages 3 to 5)
The accreditation status of subcontracted analysis is displayed on the appended subcontracted analysis reports.
Analytical and Deviating Sample Overview (Page 6)
Table of Method Descriptions (Page 7)
Table of Report Notes (Page 8)
Table of Sample Descriptions (Appendix A Page 1 of 1)

On behalf of
SOCOTEC UK
Becky Batham Operations Manager
Energy & Waste Services

Date of Issue: 01-Aug-2019

Tests marked '^' have been subcontracted to another laboratory.

Where samples have been flagged as deviant on the Analytical and Deviating Sample Overview, for any reason, the data may not be representative of the sample at the point of sampling and the validity of the data may be affected. SOCOTEC UK Limited accepts no responsibility for any sampling not carried out by our personnel.

Where individual results are flagged see report notes for status.

		Units :	Bq/kg															
		Method Codes :	Sub008															
		Method Reporting Limits :																
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**^Gamma spectrometry**															
1965328	OT_SB_05 SB05 CEFAS-RAD-2 0.00	**24-Jun-19**	Req															
1965329	OT_SB_05 SB05 CEFAS-RAD-5 1.00	**25-Jun-19**	Req															

SOCOTEC

Bretby Business Park, Ashby Road

Burton-on-Trent, Staffordshire, DE15 0YZ

Tel +44 (0) 1283 554400

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Client Name	**Fugro GeoServices Ltd**
Contact	Karen Blackmore

SZC 2019 Offshore Ground Investigation

Sample Analysis

Date Printed	**01-Aug-2019**
Report Number	**EFS/200376**
Table Number	**1**

Analysis of Soil Samples

Client:	SOCOTEC UK Environmental Chemistry PO Box 100 Burton upon Trent Staffordshire DE15 0XD
Testing Facility:	SOCOTEC UK Unit 12, Moorbrook Southmead Industrial Park Didcot Oxfordshire OX11 7HP
Laboratory Reference:	19-0598
Customer Reference:	S200376
Quote Number:	ENR-ANU-9781
PO Number:	Intraco
Samples Received:	11 July 2019
Sample Condition:	Unsatisfactory, Ambient
Analysis Completed:	19 July 2019
Report Author	[redacted]
Author's Name:	Trevor Harding
Job Title:	Senior Analyst
Approved By:	[redacted]
Approver's Name:	Charlene Hunston
Job Title:	Team Leader
Report Date:	31 July 2019

UKAS TESTING
1252

SOCOTEC

Introduction

This is a revised report as denoted by the suffix 'Rev1'. The sampling times for both samples have been updated at the customer's request; the report has been reissued to reflect this. All other results remain unchanged. This report supersedes the previous issue.

Sample Summary

Customer Reference	Laboratory Reference (SOCOTEC UK Bretby)	Laboratory Reference (SOCOTEC UK Didcot)	Matrix	Sampling Date
OT_SB_05 SB05 CEFAS-RAD-2 0.00	S1965328	RX3738	Soil	24/06/2019 23:10
OT_SB_05 SB05 CEFAS-RAD-5 1.00	S1965329	RX3739	Soil	25/06/2019 03:15

Experimental

Gamma Spectrometry

ANU/SOP/2029 – The measurement technique is based on the use of high purity germanium (HPGe) detectors coupled to an Ortec gamma ray spectroscopy system. The gamma ray spectra are stored on a computer and analysed using the software programme Fitzpeaks for photopeak identification and quantification. The detectors are calibrated for efficiency using a mixed radionuclide standard, which covers an energy range of approximately 30-2000 keV. The efficiency of gamma rays between 30 keV and 120 keV are determined on an individual basis.

Application of decay corrections for the naturally occurring daughter radionuclides of uranium and thorium assumes that the series daughter radionuclides are all in secular equilibrium and therefore decay with the half-life of the first radionuclide in the series. (^{226}Ra is not UKAS accredited)

Deviating Sample Disclaimer

The reported results are representative of the samples upon receipt. However:

K) The samples were noted as damaged on receipt

Consequently the samples are considered deviating and the validity of the reported data may be compromised.

Results

Results are presented in the following table.

Any opinions and interpretations expressed herein are outside the scope of our UKAS accreditation.

The results in this test report relate only to the items tested, and test portions taken thereof. This test report must not be reproduced except in full, without written approval of the laboratory.

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Results Summary – Gamma Spectrometry

Customer Reference	Laboratory Reference	Be-7	K-40	Co-60	Cs-134	Cs-137	Tl-208	Pb-210	Bi-212	Pb-212
OT_SB_05 SB05 CEFAS-RAD-2 0.00	RX3738	<9.8	164 ± 29	<1.4	<1.5	<1.1	<1.3	<28	<16	5.5 ± 1.6
OT_SB_05 SB05 CEFAS-RAD-5 1.00	RX3739	<11	169 ± 29	<1.3	<1.4	<1.2	<1.3	<30	<16	7.0 ± 1.6

Customer Reference	Laboratory Reference	Bi-214	Pb-214	Ra-224	Ra-226 *	Ac-228	Pa-234m	Th-234	U-235	Am-241
OT_SB_05 SB05 CEFAS-RAD-2 0.00	RX3738	5.7 ± 2.0	6.3 ± 1.9	<28	<24	<5.3	<140	<35	<1.5	<2.6
OT_SB_05 SB05 CEFAS-RAD-5 1.00	RX3739	6.5 ± 2.1	5.3 ± 2.0	<27	<24	9.4 ± 3.7	<150	<34	<1.5	<2.6

Notes:

1. Analysis marked with an asterisk is not UKAS accredited.
2. Results are presented as $Bq.kg^{-1}$ of dried and homogenised samples and are decay corrected to the sampling date.
3. For results below the Limit of Detection, the LoD is rounded up to 2 significant figures.
4. Results above the LoD are reported with expanded (2σ) uncertainties based on a total uncertainty budget.
5. Uncertainties are rounded to 2 significant figures; results are rounded to the same precision.
6. Detector calibrations are based upon homogeneous standard solutions. For quantification purposes the samples are assumed to be homogeneous.
7. ^{226}Ra has only one gamma ray at 186 keV and the major gamma ray from ^{235}U also occurs at 186 keV. ^{235}U can be measured by the lower abundance gamma ray at 144 keV and if a positive result for ^{235}U is reported, the ^{226}Ra result will be unreliable and overestimated. However even if ^{235}U is below the LoD there may still be a contribution to the ^{226}Ra from ^{235}U and the ^{226}Ra result may be unreliable and overestimated. If an accurate result for ^{226}Ra is required this is better obtained by radiochemical analysis.

- End of Test Report -

UKAS TESTING
1252

Analytical and Deviating Sample Overview

Customer Fugro GeoServices Ltd
Site SZC 2019 Offshore Ground Investigation
Report No S200376

Consignment No S86259
Date Logged 09-Jul-2019
In-House Report Due 29-Jul-2019

Please note the results for any subcontracted analysis (identified with a '^') is likely to take up to an additional five working days.

ID Number	Description	Sampled	MethodID: CustServ (Report C)	Sub008 (^Gamma spectrometry)
CL/1965328	OT_SB_05 SB05 CEFAS-RAD-	24/06/19		
CL/1965329	OT_SB_05 SB05 CEFAS-RAD-	25/06/19		

Note: We will endeavour to prioritise samples to complete analysis within holding time; however any delay could result in samples becoming deviant whilst being processed in the laboratory.

If sampling dates are missing or matrices unclassified then results will not be ISO 17025 accredited. Please contact us as soon as possible to provide missing information in order to reinstate accreditation.

Deviating Sample Key	
A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key	
	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

Where individual results are flagged see report notes for status.

The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Soil	SubCon*	*	Contact Laboratory for details of the methodology used by the sub-contractor.

Where individual results are flagged see report notes for status.

Report Notes

Generic Notes

Soil/Solid Analysis

Unless stated otherwise,
- Results expressed as mg/kg have been calculated on the basis indicated in the Method Description table.
  All results on MCERTS reports are reported on a 105ºC dry weight basis with the exception of pH and conductivity.
- Sulphate analysis not conducted in accordance with BS1377
- Water Soluble Sulphate is on a 2:1 water:soil extract

Waters Analysis

Unless stated otherwise results are expressed as mg/l
Nil: Where "Nil" has been entered against Total Alkalinity or Total Acidity this indicates that a measurement was not required due to the inherent pH of the sample.

Oil analysis specific

Unless stated otherwise,
- Results are expressed as mg/kg
- SG is expressed as g/cm^3@ 15°C

Gas (Tedlar bag) Analysis

Unless stated otherwise, results are expressed as ug/l

Asbestos Analysis

CH Denotes Chrysotile **TR** Denotes Tremolite
CR Denotes Crocidolite **AC** Denotes Actinolite
AM Denotes Amosite **AN** Denotes Anthophylite
NAIIS No Asbestos Identified in Sample
NADIS No Asbestos Detected In Sample

Symbol Reference

^ Sub-contracted analysis.
$$ Unable to analyse due to the nature of the sample
¶ Samples submitted for this analyte were not preserved on site in accordance with laboratory protocols. This may have resulted in deterioration of the sample(s) during transit to the laboratory. Consequently the reported data may not represent the concentration of the target analyte present in the sample at the time of sampling
¥ Results for guidance only due to possible interference
& Blank corrected result
I.S Insufficient sample to complete requested analysis
I.S(g) Insufficient sample to re-analyse, results for guidance only
Intf Unable to analyse due to interferences
N.D Not determined **N.Det** Not detected
N.F No Flow
NS Information Not Supplied
Req Analysis requested, see attached sheets for results
Þ Raised detection limit due to nature of the sample
***** All accreditation has been removed by the laboratory for this result
‡ MCERTS accreditation has been removed for this result
§ accreditation has been removed for this result as it is a non-accredited matrix

Note: The Laboratory may only claim that data is accredited when all of the requirements of our Quality System have been met. Where these requirements have not been met the laboratory may elect to include the data in its final report and remove the accreditation from individual data items if it believes that the validity of the data has not been affected. If further details are required of the circumstances which have led to the removal of accreditation then please do not hesitate to contact the laboratory.

Sample Descriptions

Client : Fugro GeoServices Ltd

Site : SZC 2019 Offshore Ground Investigation

Report Number : S20_0376

Note: major constituent in upper case

Lab ID Number	Client ID	Description
CL/1965328	Γ_SB_05 SB05 CEFAS-RAD-2 0.	Brown SAND
CL/1965329	Γ_SB_05 SB05 CEFAS-RAD-5 1.	Brown SAND

Our Ref: EFS/200377 (Ver. 1)
Your Ref: G190016U

July 25, 2019

Environmental Chemistry
SOCOTEC UK Limited
Bretby Business Park
Ashby Road
Burton-on-Trent
Staffordshire
DE15 0YZ

Telephone: 01283 554400
Facsimile: 01283 554422

Karen Blackmore
Fugro GeoServices Ltd
Fugro House
Hithercroft Road
Wallingford
Oxfordshire
OX10 9RB

For the attention of Karen Blackmore

Dear Karen Blackmore

Sample Analysis - SZC 2019 Offshore Ground Investigation

Samples from the above site have been analysed in accordance with the schedule supplied.
The sample details and the results of analyses for these samples are given in the appended report.

An invoice for this work will follow under a separate cover.

The samples will be kept until the agreed date when they will be discarded. Please call 01283 554434 for an extension of this date.
Please be aware that our policy for the retention of paper based laboratory records and analysis reports is 6 years.

The work was carried out in accordance with SOCOTEC UK Limited (Multi-Sector Services) Standard Terms and Conditions of Contract.

If I can be of any further assistance please do not hesitate to contact me.

Yours sincerely

for SOCOTEC UK Limited

[redacted]

K Smith
Project Co-ordinator
01283 554434

TEST REPORT

Report No. EFS/200377 (Ver. 1)

Fugro GeoServices Ltd
Fugro House
Hithercroft Road
Wallingford
Oxfordshire
OX10 9RB

Site: SZC 2019 Offshore Ground Investigation

The 1 sample described in this report were registered for analysis by SOCOTEC UK Limited on 09-Jul-2019. This report supersedes any versions previously issued by the laboratory.

The analysis was completed by: 25-Jul-2019

The following tables are contained in this report:

Table 1 Main Analysis Results (Page 2)
Subcontracted Analysis Reports (Pages 3 to 5)
The accreditation status of subcontracted analysis is displayed on the appended subcontracted analysis reports.
Analytical and Deviating Sample Overview (Page 6)
Table of Method Descriptions (Page 7)
Table of Report Notes (Page 8)
Table of Sample Descriptions (Appendix A Page 1 of 1)

On behalf of
SOCOTEC UK L[redacted]
Becky Batham Operations Manager
Energy & Waste Services

Date of Issue: 25-Jul-2019

Tests marked '^' have been subcontracted to another laboratory.

Where samples have been flagged as deviant on the Analytical and Deviating Sample Overview, for any reason, the data may not be representative of the sample at the point of sampling and the validity of the data may be affected. SOCOTEC UK Limited accepts no responsibility for any sampling not carried out by our personnel.

Where individual results are flagged see report notes for status.

		Units :	Bq/kg															
		Method Codes :	Sub008															
		Method Reporting Limits :																
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**^Gamma spectrometry**															
1965330	OT_SB_06 SB06 CEFAS1-280619 0.10	**28-Jun-19**	Req															

SOCOTEC

Bretby Business Park, Ashby Road

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Tel +44 (0) 1283 554400

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Client Name	**Fugro GeoServices Ltd**
Contact	Karen Blackmore

SZC 2019 Offshore Ground Investigation

Sample Analysis

Date Printed	**25-Jul-2019**
Report Number	**EFS/200377**
Table Number	**1**

SOCOTEC

Analysis of a Soil Sample

Client:	SOCOTEC UK Environmental Chemistry PO Box 100 Burton upon Trent Staffordshire DE15 0XD
Testing Facility:	SOCOTEC UK Unit 12, Moorbrook Southmead Industrial Park Didcot Oxfordshire OX11 7HP
Laboratory Reference:	19-0599
Customer Reference:	S200377
Quote Number:	ENR-ANU-9781
PO Number:	Intraco
Samples Received:	11 July 2019
Sample Condition:	Satisfactory, Ambient
Analysis Completed:	16 July 2019
Report Author:	[redacted]
Author's Name:	Charlene Hunston
Job Title:	Team Leader
Approved By	[redacted]
Approver's Name:	Trevor Harding
Job Title:	Senior Analyst
Report Date:	24 July 2019

UKAS TESTING
1252

SOCOTEC

Introduction

This is a revised report as denoted by the suffix 'Rev1'. The sampling time been updated for the sample at the customer's request; the report has been reissued to reflect this. All other results remain unchanged. This report supersedes the previous issue.

Sample Summary

Customer Reference	Laboratory Reference (SOCOTEC UK Bretby)	Laboratory Reference (SOCOTEC UK Didcot)	Matrix	Sampling Date
OT_SB_06 SB06 CEFAS1-280619 0.10	S1965330	RX3740	Soil	28/06/2019 17:50

Experimental

Gamma Spectrometry

ANU/SOP/2029 – "The measurement technique is based on the use of high purity germanium (HPGe) detectors coupled to an Ortec gamma ray spectroscopy system. The gamma ray spectra are stored on a computer and analysed using the software programme Fitzpeaks for photopeak identification and quantification. The detectors are calibrated for efficiency using a mixed radionuclide standard, which covers an energy range of approximately 30-2000 keV. The efficiency of gamma rays between 30 keV and 120 keV are determined on an individual basis.

Application of decay corrections for the naturally occurring daughter radionuclides of uranium and thorium assumes that the series daughter radionuclides are all in secular equilibrium and therefore decay with the half-life of the first radionuclide in the series." (^{226}Ra is not UKAS accredited)

Results

Results are presented in the following table.

Any opinions and interpretations expressed herein are outside the scope of our UKAS accreditation.

The results in this test report relate only to the items tested, and test portions taken thereof. This test report must not be reproduced except in full, without written approval of the laboratory.

Deviating Sample Disclaimer:

The reported results are representative of the sample upon receipt. However:

M) Insufficient sample was received.

Consequently the sample is considered deviating and the validity of the reported data may be compromised.

UKAS TESTING
1252

SOCOTEC

Results Summary – Gamma Spectrometry

Customer Reference	Laboratory Reference	Be-7	K-40	Co-60	Cs-134	Cs-137	Tl-208	Pb-210	Bi-212	Pb-212
OT_SB_06 SB06 CEFAS1-280619 0.10	RX3740	<26	294 ± 65	<3.9	<3.7	<3.0	<3.6	<45	<41	17.8 ± 4.1

Customer Reference	Laboratory Reference	Bi-214	Pb-214	Ra-224	Ra-226 *	Ac-228	Pa-234m	Th-234	U-235	Am-241
OT_SB_06 SB06 CEFAS1-280619 0.10	RX3740	<7.5	12.7 ± 4.9	<73	<59	<15	<420	<57	<3.7	<4.1

Notes:

1. Analysis marked with an asterisk is not UKAS accredited.
2. Results are presented as $Bq.kg^{-1}$ of sample as received and are decay corrected to the sampling date.
3. For results below the Limit of Detection, the LoD is rounded up to 2 significant figures.
4. Uncertainties are rounded to 2 significant figures; results are rounded to the same precision.
5. Detector calibrations are based upon homogeneous standard solutions. For quantification purposes the sample is assumed to be homogeneous.
6. ^{226}Ra has only one gamma ray at 186 keV and the major gamma ray from ^{235}U also occurs at 186 keV. ^{235}U can be measured by the lower abundance gamma ray at 144 keV and if a positive result for ^{235}U is reported, the ^{226}Ra result will be unreliable and overestimated. However even if ^{235}U is below the LoD there may still be a contribution to the ^{226}Ra from ^{235}U and the ^{226}Ra result may be unreliable and overestimated. If an accurate result for ^{226}Ra is required this is better obtained by radiochemical analysis.

-End of Report-

UKAS TESTING
1252

Analytical and Deviating Sample Overview

Customer Fugro GeoServices Ltd
Site SZC 2019 Offshore Ground Investigation
Report No S200377

Consignment No S86258
Date Logged 09-Jul-2019
In-House Report Due 29-Jul-2019

Please note the results for any subcontracted analysis (identified with a '^') is likely to take up to an additional five working days.

ID Number	Description	Sampled	MethodID: CustServ — Report C	Sub008 — ^Gamma spectrometry
CL/1965330	OT_SB_06 SB06 CEFAS1-280	28/06/19		

Note: We will endeavour to prioritise samples to complete analysis within holding time; however any delay could result in samples becoming deviant whilst being processed in the laboratory.

If sampling dates are missing or matrices unclassified then results will not be ISO 17025 accredited. Please contact us as soon as possible to provide missing information in order to reinstate accreditation.

Deviating Sample Key	
A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key	
	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

Where individual results are flagged see report notes for status.

The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Soil	SubCon*	*	Contact Laboratory for details of the methodology used by the sub-contractor.

Where individual results are flagged see report notes for status.

Report Notes

Generic Notes

Soil/Solid Analysis

Unless stated otherwise,
- Results expressed as mg/kg have been calculated on the basis indicated in the Method Description table.
  All results on MCERTS reports are reported on a 105ºC dry weight basis with the exception of pH and conductivity.
- Sulphate analysis not conducted in accordance with BS1377
- Water Soluble Sulphate is on a 2:1 water:soil extract

Waters Analysis

Unless stated otherwise results are expressed as mg/l
Nil: Where "Nil" has been entered against Total Alkalinity or Total Acidity this indicates that a measurement was not required due to the inherent pH of the sample.

Oil analysis specific

Unless stated otherwise,
- Results are expressed as mg/kg
- SG is expressed as g/cm^3@ 15°C

Gas (Tedlar bag) Analysis

Unless stated otherwise, results are expressed as ug/l

Asbestos Analysis

CH Denotes Chrysotile **TR** Denotes Tremolite
CR Denotes Crocidolite **AC** Denotes Actinolite
AM Denotes Amosite **AN** Denotes Anthophylite
NAIIS No Asbestos Identified in Sample
NADIS No Asbestos Detected In Sample

Symbol Reference

^ Sub-contracted analysis.
$$ Unable to analyse due to the nature of the sample
¶ Samples submitted for this analyte were not preserved on site in accordance with laboratory protocols. This may have resulted in deterioration of the sample(s) during transit to the laboratory. Consequently the reported data may not represent the concentration of the target analyte present in the sample at the time of sampling
¥ Results for guidance only due to possible interference
& Blank corrected result
I.S Insufficient sample to complete requested analysis
I.S(g) Insufficient sample to re-analyse, results for guidance only
Intf Unable to analyse due to interferences
N.D Not determined **N.Det** Not detected
N.F No Flow
NS Information Not Supplied
Req Analysis requested, see attached sheets for results
Þ Raised detection limit due to nature of the sample
***** All accreditation has been removed by the laboratory for this result
‡ MCERTS accreditation has been removed for this result
§ accreditation has been removed for this result as it is a non-accredited matrix

Note: The Laboratory may only claim that data is accredited when all of the requirements of our Quality System have been met. Where these requirements have not been met the laboratory may elect to include the data in its final report and remove the accreditation from individual data items if it believes that the validity of the data has not been affected. If further details are required of the circumstances which have led to the removal of accreditation then please do not hesitate to contact the laboratory.

Sample Descriptions

Client : Fugro GeoServices Ltd
Site : SZC 2019 Offshore Ground Investigation
Report Number : S20_0377

Note: major constituent in upper case

Lab ID Number	Client ID	Description
CL/1965330	_SB_06 SB06 CEFAS1-280619 0	Brown SILT

Our Ref: EFS/200513M (Ver. 1)
Your Ref: G190016U

August 1, 2019

Environmental Chemistry
SOCOTEC UK Limited
Bretby Business Park
Ashby Road
Burton-on-Trent
Staffordshire
DE15 0YZ

Telephone: 01283 554400
Facsimile: 01283 554422

Karen Blackmore
Fugro GeoServices Ltd
Fugro House
Hithercroft Road
Wallingford
Oxfordshire
OX10 9RB

For the attention of Karen Blackmore

Dear Karen Blackmore

Sample Analysis - SZC 2019 Offshore Ground Investigation

Samples from the above site have been analysed in accordance with the schedule supplied.
The sample details and the results of analyses for these samples are given in the appended report.

An invoice for this work will follow under a separate cover.

The samples will be kept until the agreed date when they will be discarded. Please call 01283 554434 for an extension of this date.
Please be aware that our policy for the retention of paper based laboratory records and analysis reports is 6 years.

The work was carried out in accordance with SOCOTEC UK Limited (Laboratory and Analytical) Standard Terms and Conditions of Contract.

If I can be of any further assistance please do not hesitate to contact me.

Yours sincerely

for SOCOTEC UK Limited

[redacted]

K Smith
Project Co-ordinator
01283 554434

Environmental Chemistry, SOCOTEC UK Limited, P.O. Box 100, Burton-upon-trent, DE15 0XD Tel: 01283 554400 Fax: 01283 554422
SOCOTEC UK Limited.
Registered No: 2880501

TEST REPORT

1252

Report No. EFS/200513M (Ver. 1)

Fugro GeoServices Ltd
Fugro House
Hithercroft Road
Wallingford
Oxfordshire
OX10 9RB

Site: SZC 2019 Offshore Ground Investigation

The 2 samples described in this report were registered for analysis by SOCOTEC UK Limited on 16-Jul-2019. This report supersedes any versions previously issued by the laboratory.

The analysis was completed by: 01-Aug-2019

Tests where the accreditation is set to N or No, and any individual data items marked with a * are not UKAS or MCERTS accredited.
Any opinions or interpretations expressed herein are outside the scope of any UKAS accreditation held by SOCOTEC UK Limited.

The following tables are contained in this report:

Table 1 Main Analysis Results (Pages 2 to 15)
Table of SVOC (Tics) Results (Page 16)
Table of VOC (Tics) Results (Page 17)
Table of WAC Analysis Results (Page 18)
Subcontracted Analysis Reports (Pages 19 to 21)
The accreditation status of subcontracted analysis is displayed on the appended subcontracted analysis reports.
Table of Asbestos Screening Results (Page 22)
Analytical and Deviating Sample Overview (Pages 23 to 25)
Table of Additional Report Notes (Page 26)
Table of Method Descriptions (Pages 27 to 28)
Table of Report Notes (Page 29)
Table of Sample Descriptions (Appendix A Page 1 of 1)

On behalf of
SOCOTEC UK Li [redacted]
Becky Batham Operations Manager
Energy & Waste Services

Date of Issue: 01-Aug-2019

Accreditation Codes: **N** (Not Accredited), **U** (UKAS), **UM** (UKAS & MCERTS)
Tests marked '^' have been subcontracted to another laboratory.
(NVM) - denotes the sample matrix is dissimilar to matrices upon which the MCERTS validation was based, and is therefore not accredited for MCERTS.
All results are reported on a dry weight basis at 105°C unless otherwise stated. (except QC samples)
SOCOTEC UK Limited accepts no responsibility for any sampling not carried out by our personnel.

Units :			mg/kg	Mol/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	%	%		% M/M	mg/kg	mg/kg	mg/kg
Method Codes :			AMMAR	ANC	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	CEN Leachate	CEN Leachate	FOCCALC	FOCS	GROHSA	GROHSA	GROHSA
Method Reporting Limits :			0.5	0.04	10	10	20	20	10	10	30			0.0002	0.04	0.2	0.2	0.2
Accreditation Code:			UM	N	UM	UM	UM	U	UM	UM	UM	N	N	U	N	UM	UM	UM
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Exchange.Ammonium AR**	**Acid Neut. Capacity**	**Benzene**	**Ethyl Benzene**	**m/p Xylenes**	**MTBE**	**o Xylene**	**Toluene**	**Xylenes**	**Fraction of non-crushable material %**	**Fraction of sample above 4 mm %**	**F.O.C.**	**S.O.M. % (Calc)**	**GRO**	**GRO (>C5 - C6)**	**GRO (>C7 - C8)**
1965830	OT_SB_04 OTSB04 ESWAC1 ES 1 4.50	**06-Jul-19 02:40**	<0.6		<11.8	<11.8	<23.7		<11.8	<11.8	<35.5	0.0	0.0	0.0014	0.27	<0.237	<0.237	<0.237
1965831	OT_SB_04 OTSB04 ESWAC2 ES 2 4.50	**06-Jul-19 03:00**		4.52	<11.7	<11.7	<23.5	<23.5	<11.7	<11.7	<35							

SOCOTEC

Bretby Business Park, Ashby Road

Burton-on-Trent, Staffordshire, DE15 0YZ

Tel +44 (0) 1283 554400

Fax +44 (0) 1283 554422

Client Name	**Fugro GeoServices Ltd**
Contact	Karen Blackmore

SZC 2019 Offshore Ground Investigation

Sample Analysis

Date Printed	**01-Aug-2019**
Report Number	**EFS/200513M**
Table Number	**1**

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Units :			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	ICPACIDS	ICPBOR	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS
Method Reporting Limits :			0.2	0.2	0.2	0.2	0.2	0.2	20	0.5	0.3	0.2	1.2	1.6	0.7	0.5	2	0.5
Accreditation Code:			UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**GRO (>C8 - C10)**	**GRO (C5-C6 Aliphatic)**	**GRO (C6-C7 Aliphatic)**	**GRO (C6-C7)**	**GRO (C7-C8 Aliphatic)**	**GRO (C8-C10 Aliphatic)**	**SO4-- (acid sol)**	**Boron (H20 Soluble)**	**Arsenic (MS)**	**Cadmium (MS)**	**Chromium (MS)**	**Copper (MS)**	**Lead (MS)**	**Mercury (MS)**	**Nickel (MS)**	**Selenium (MS)**
1965830	OT_SB_04 OTSB04 ESWAC1 ES 1 4.50	**06-Jul-19 02:40**	<0.237	<0.237	<0.237	<0.237	<0.237	<0.237	1250	2.1	7.9	<0.2	8.5	3.0	5.0	<0.5	6	<0.5
1965831	OT_SB_04 OTSB04 ESWAC2 ES 2 4.50	**06-Jul-19 03:00**																

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Client Name	**Fugro GeoServices Ltd**
Contact	Karen Blackmore

SZC 2019 Offshore Ground Investigation

Sample Analysis

Date Printed	**01-Aug-2019**
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Units :			mg/kg	mg/kg	mg/kg	mg/kg	%	ug Sn/kg	ug Sn/kg	ug Sn/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			ICPMSS	ICPMSS	ICPSOIL	KONECR	LOI(%MM)	OGSN	OGSN	OGSN	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS
Method Reporting Limits :			0.6	16	36	0.1	0.2	1	1	1	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Accreditation Code:			N	UM	UM	N	N	N	N	N	UM	U	U	UM	UM	UM	UM	UM
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Vanadium (MS)**	**Zinc (MS)**	**Iron**	**Chromium vi:**	**L.O.I. % @ 450C**	**Dibutyl Tin**	**Tributyl Tin as Sn**	**Triphenyl Tin**	**Acenaphthene**	**Acenaphthylene**	**Anthracene**	**Benzo(a)anthracene**	**Benzo(a)pyrene**	**Benzo(b)fluoranthene**	**Benzo(ghi)perylene**	**Benzo(k)fluoranthene**
1965830	OT_SB_04 OTSB04 ESWAC1 ES 1 4.50	**06-Jul-19 02:40**	37.4	18.6	352	<0.1	3.7	<1	<1	<1	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09
1965831	OT_SB_04 OTSB04 ESWAC2 ES 2 4.50	**06-Jul-19 03:00**					3.0				<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09

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Units :			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Method Codes :			PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PCBECD	PCBECD	PCBECD	PCBECD	PCBECD	PCBECD
Method Reporting Limits :			0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	1.28	5	5	5	5	5	5
Accreditation Code:			UM	N	UM	UM	UM	UM	UM	UM	UM	U	UM	UM	UM	UM	UM	UM
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Chrysene**	**Coronene**	**Dibenzo(ah)anthracene**	**Fluoranthene**	**Fluorene**	**Indeno(123-cd)pyrene**	**Naphthalene**	**Phenanthrene**	**Pyrene**	**Total PAH (Sum of USEPA 16)**	**PCB 101**	**PCB 118**	**PCB 138**	**PCB 153**	**PCB 180**	**PCB 28**
1965830	OT_SB_04 OTSB04 ESWAC1 ES 1 4.50	**06-Jul-19 02:40**	<0.09		<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<1.51	<5.92	<5.92	<5.92	<5.92	<5.92	<5.92
1965831	OT_SB_04 OTSB04 ESWAC2 ES 2 4.50	**06-Jul-19 03:00**	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<1.50	<5.87	<5.87	<5.87	<5.87	<5.87	<5.87

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Units :			µg/kg	pH Units	mg/kg	mg/kg	mg/kg	mg/kg	%	Bq/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			PCBECD	PHSOIL	SFAPI	SFAPI	SFAPI	SFAS	Sub002	Sub008	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW
Method Reporting Limits :			5		0.5	0.5	0.5	0.5			0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Accreditation Code:			UM	UM	UM	UM	U	N	U		N	U	U	U	U	U	U	U
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**PCB 52**	**pH units (AR)**	**Cyanide(Free) (AR)**	**Cyanide(Total) (AR)**	**Phenol Index.(AR)**	**Sulphide as S (AR)**	**^Asbestos Screen & ID (Stage 1)**	**^Gamma spectrometry**	**1,2,4-Trichlorobenzene**	**1,2-Dichlorobenzene**	**1,3-Dichlorobenzene**	**1,4-Dichlorobenzene**	**1-Methylnaphthalene**	**2,4,5-Trichlorophenol**	**2,4,6-Trichlorophenol**	**2,4-Dichlorophenol**
1965830	OT_SB_04 OTSB04 ESWAC1 ES 1 4.50	**06-Jul-19 02:40**	<5.92	8.8	<0.6	<0.6	<0.6	<0.6	NAIIS	Req	<0.118	<0.118	<0.118	<0.118	<0.118	<0.118	<0.118	<0.118
1965831	OT_SB_04 OTSB04 ESWAC2 ES 2 4.50	**06-Jul-19 03:00**	<5.87	8.8														

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Units :			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW
Method Reporting Limits :			0.1	0.5	0.2	0.5	0.1	0.1	0.1	0.1	0.5	0.1	0.1	14.5	0.2	0.1	0.1	0.5	
Accreditation Code:			U	N	U	U	U	U	U	U	N	U	U	N	N	U	U	N	
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**2,4-Dimethylphenol**	**2,4-Dinitrophenol**	**2,4-Dinitrotoluene**	**2,6-Dinitrotoluene**	**2-Chloronaphthalene**	**2-Chlorophenol**	**2-Methylnaphthalene**	**2-Methylphenol**	**2-Nitroaniline**	**2-Nitrophenol**	**3- & 4-Methylphenol**	**3-Nitroaniline**	**4,6-Dinitro-2-methylphenol**	**4-Bromophenyl-phenylether**	**4-Chloro-3-methylphenol**	**4-Chloroaniline**	
1965830	OT_SB_04 OTSB04 ESWAC1 ES 1 4.50	**06-Jul-19 02:40**	<0.118	<0.592	<0.237*	<0.592	<0.118	<0.118	<0.118	<0.118	<0.592	<0.118	<0.118	<17.2	<0.237	<0.118	<0.118	<0.592	
1965831	OT_SB_04 OTSB04 ESWAC2 ES 2 4.50	**06-Jul-19 03:00**																	

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		Units :	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		Method Codes :	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW
		Method Reporting Limits :	0.5	0.1	0.6	0.5	0.1	0.1	0.1	0.2	0.2	0.2	0.5	0.2	0.5	0.5	0.1	0.1
		Accreditation Code:	U	U	N	N	U	U	U	U	U	U	U	U	N	U	U	U
LAB ID Number CL/	Client Sample Description	Sample Date	4-Chlorophenol	4-Chlorophenyl-phenylether	4-Nitroaniline	4-Nitrophenol	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(ghi)perylene	Benzo(k)fluoranthene	Benzoic Acid	Benzyl alcohol	Biphenyl	bis(2-Chloroethoxy)methane
1965830	OT_SB_04 OTSB04 ESWAC1 ES 1 4.50	06-Jul-19 02:40	<0.592	<0.118	<0.710	<0.592	<0.118	<0.118	<0.118	<0.237	<0.237	<0.237	<0.592	<0.237	<0.592	<0.592	<0.118	<0.118
1965831	OT_SB_04 OTSB04 ESWAC2 ES 2 4.50	06-Jul-19 03:00																

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Units :			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW
Method Reporting Limits :			0.1	0.5	0.2	0.2	0.1	0.3	0.5	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.1	
Accreditation Code:			U	U	U	U	U	N	U	U	U	U	U	U	U	U	U	U	
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**bis(2-Chloroethyl)ether**	**bis(2-Chloroisopropyl)ether**	**bis(2-Ethylhexyl)phthalate**	**Butylbenzylphthalate**	**Chrysene**	**Coronene**	**Dibenzo(ah)anthracene**	**Dibenzofuran**	**Diethylphthalate**	**Dimethylphthalate**	**Di-n-butylphthalate**	**Di-n-octylphthalate**	**Diphenyl Ether**	**Fluoranthene**	**Fluorene**	**Hexachlorobenzene**	
1965830	OT_SB_04 OTSB04 ESWAC1 ES 1 4.50	**06-Jul-19 02:40**	<0.118	<0.592	<0.237	<0.237*	<0.118	<0.355	<0.592	<0.118	<0.118	<0.118	<0.118	<0.237*	<0.118	<0.237*	<0.237	<0.118	
1965831	OT_SB_04 OTSB04 ESWAC2 ES 2 4.50	**06-Jul-19 03:00**																	

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Units :			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	%	mg/kg
Method Codes :			SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	TMSS	TPHFIDUS
Method Reporting Limits :			0.1	0.1	0.1	0.5	0.1	0.1	0.5	0.9	0.1	0.5	0.1	0.1	0.2			0.1	2
Accreditation Code:			N	N	U	U	N	U	U	N	N	N	U	U	U	Yes		U	U
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Hexachlorobutadiene**	**Hexachlorocyclopentadiene**	**Hexachloroethane**	**Indeno(123-cd)pyrene**	**Isophorone**	**Naphthalene**	**Nitrobenzene**	**N-Nitroso-di-n-propylamine**	**N-Nitrosodiphenylamine**	**Pentachlorophenol**	**Phenanthrene**	**Phenol**	**Pyrene**	**SVOC + TICs (AR)**	**Tot.Moisture @ 105C**	**TPH Band (>C10-C12)**	
1965830	OT_SB_04 OTSB04 ESWAC1 ES 1 4.50	**06-Jul-19 02:40**	<0.118	<0.118	<0.118	<0.592	<0.118	<0.118	<0.592	<1.065	<0.118	<0.592	<0.118	<0.118	<0.237*	Req	15.5	<2.37	
1965831	OT_SB_04 OTSB04 ESWAC2 ES 2 4.50	**06-Jul-19 03:00**															14.8		

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Units :			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			TPHFIDUS	TPHFIDUS	TPHFIDUS	TPHFIDUS	TPHFIDUS	TPHFIDUS	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI
Method Reporting Limits :			10	2	2	4.38	2	10	4	4	4	8.75	4	20	4	4	4	8.75
Accreditation Code:			U	U	U	U	U	UM	U	U	U	U	U	U	U	U	U	U
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**TPH Band (>C10-C40)**	**TPH Band (>C12-C16)**	**TPH Band (>C16-C21)**	**TPH Band (>C21-C35)**	**TPH Band (>C8-C10)**	**TPH by GCFID (AR)**	**TPH Ali Band >C10-C12**	**TPH Ali Band >C12-C16**	**TPH Ali Band >C16-C21**	**TPH Ali Band >C21-C35**	**TPH Ali Band >C8-C10**	**TPH Ali Band >C8-C40**	**TPH Aro Band >C10-C12**	**TPH Aro Band >C12-C16**	**TPH Aro Band >C16-C21**	**TPH Aro Band >C21-C35**
1965830	OT_SB_04 OTSB04 ESWAC1 ES 1 4.50	**06-Jul-19 02:40**		29.2	<2.37	12.7	6.47	52.9	<4.73	<4.73	5.47*	13.4	7.47	32.0	<4.73	<4.73	<4.73	15.6
1965831	OT_SB_04 OTSB04 ESWAC2 ES 2 4.50	**06-Jul-19 03:00**	21.0					26.3										

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Units :			mg/kg	mg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Method Codes :			TPHUSSI	TPHUSSI	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS
Method Reporting Limits :			4	20	1	1	1	1	1	1	1	3	1	3	1	1	1	1	1
Accreditation Code:			U	U	UM	UM	N	UM	UM	U	UM	UM	UM	N	UM	N	UM	UM	
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**TPH Aro Band >C8-C10**	**TPH Aro Band >C8-C40**	**1,1,1,2-Tetrachloroethane**	**1,1,1-Trichloroethane**	**1,1,2,2-Tetrachloroethane**	**1,1,2-Trichloroethane**	**1,1-Dichloroethane**	**1,1-Dichloroethene**	**1,1-Dichloropropene**	**1,2,3-Trichlorobenzene**	**1,2,3-Trichloropropane**	**1,2,4-Trichlorobenzene**	**1,2,4-Trimethylbenzene**	**1,2-Dibromo-3-chloropropane**	**1,2-Dibromoethane**	**1,2-Dichlorobenzene**	
1965830	OT_SB_04 OTSB04 ESWAC1 ES 1 4.50	**06-Jul-19 02:40**	<4.73	32.5	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<3.6	<1.2	<3.6	<1.2	<1.2	<1.2	<1.2	
1965831	OT_SB_04 OTSB04 ESWAC2 ES 2 4.50	**06-Jul-19 03:00**																	

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Units :			µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Method Codes :			VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS
Method Reporting Limits :			1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Accreditation Code:			UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**1,2-Dichloroethane**	**1,2-Dichloropropane**	**1,3,5-Trimethylbenzene**	**1,3-Dichlorobenzene**	**1,3-Dichloropropane**	**1,4-Dichlorobenzene**	**2,2-Dichloropropane**	**2-Chlorotoluene**	**4-Chlorotoluene**	**Benzene**	**Bromobenzene**	**Bromochloromethane**	**Bromodichloromethane**	**Bromoform**	**Bromomethane**	**Carbon Tetrachloride**
1965830	OT_SB_04 OTSB04 ESWAC1 ES 1 4.50	**06-Jul-19 02:40**	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2
1965831	OT_SB_04 OTSB04 ESWAC2 ES 2 4.50	**06-Jul-19 03:00**																

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Burton-on-Trent, Staffordshire, DE15 0YZ

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Client Name	**Fugro GeoServices Ltd**
Contact	Karen Blackmore

SZC 2019 Offshore Ground Investigation

Sample Analysis

Date Printed	**01-Aug-2019**
Report Number	**EFS/200513M**
Table Number	**1**

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Appendix F – Ground Investigation Factual Reports

Off-shore Phase 2 Ground Investigation for Sizewell 2019/2020

CONTINUED

			Units :	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
			Method Codes :	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS
			Method Reporting Limits :	1	2	1	3	5	1	1	1	1	2	2	1	4	1	5	1
			Accreditation Code:	UM	UM	UM	U	UM	UM	UM	UM	N	UM	N	UM	UM	UM	UM	U
LAB ID Number CL/	Client Sample Description	Sample Date	Chlorobenzene	Chloroethane	Chloroform	Chloromethane	cis 1,2-Dichloroethene	cis 1,3-Dichloropropene	Dibromochloromethane	Dibromomethane	Dichlorodifluoromethane	Ethylbenzene	Hexachlorobutadiene	iso-Propylbenzene	m and p-Xylene	MTBE	Naphthalene	n-Butylbenzene
1965830	OT_SB_04 OTSB04 ESWAC1 ES 1 4.50	06-Jul-19 02:40	<1.2	<2.4	<1.2	<3.6	<5.9	<1.2	<1.2	<1.2	<1.2	<2.4	<2.4	<1.2	<4.7	<1.2	<5.9	<1.2
1965831	OT_SB_04 OTSB04 ESWAC2 ES 2 4.50	06-Jul-19 03:00																

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Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Units :			µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	% M/M	
Method Codes :			VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	WSLM59	
Method Reporting Limits :			2	1	1	1	1	1	3	5	1	1	1	1	1		0.02	
Accreditation Code:			UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	Yes	N	
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**o-Xylene**	**p-Isopropyltoluene**	**Propylbenzene**	**sec-Butylbenzene**	**Styrene**	**tert-Butylbenzene**	**Tetrachloroethene**	**Toluene**	**trans 1,2-Dichloroethene**	**trans 1,3-Dichloropropene**	**Trichloroethene**	**Trichlorofluoromethane**	**Vinyl Chloride**	**VOC + TICs HSA-GCMS**	**Total Organic Carbon**	
1965830	OT_SB_04 OTSB04 ESWAC1 ES 1 4.50	**06-Jul-19 02:40**	<2.4	<1.2	<1.2	<1.2	<1.2	<1.2	<3.6*	<5.9	<1.2	<1.2	<1.2	<1.2	<1.2	Req	0.15	
1965831	OT_SB_04 OTSB04 ESWAC2 ES 2 4.50	**06-Jul-19 03:00**															0.14	

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Contact	Karen Blackmore

SZC 2019 Offshore Ground Investigation

Sample Analysis

Date Printed	**01-Aug-2019**
Report Number	**EFS/200513M**
Table Number	**1**

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SVOC (TICs)

Accredited?:No

Customer and Site Details:	Fugro GeoServices Ltd: SZC 2019 Offshore Ground Investigation		
Sample Details:	OT_SB_04 OTSB04 ESWAC1 ES 1 4	**Job Number:**	S20_0513
LIMS ID Number:	CL1965830		
		Multiplier:	0.2
Date Booked in:	16-Jul-19	**Dilution Factor:**	1
Date Extracted:	17-Jul-19	**GPC (Y/N):**	N
Date Analysed:	18-Jul-19	**Matrix:**	Soil
QC Batch Number:	140	**Method:**	Ultrasonic
Directory/Quant File:	071719.GC11\ 0	**Operator:**	CO

Tentatively Identified Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
Triethylene glycol	000112-27-6	4.06	4.783	90	N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

TICs by HSA-GCMS

Accredited?: No

Customer and Site Details:	Fugro GeoServices Ltd: SZC 2019 Offshore Ground Investigation		**Date Booked in:**	16-Jul-19
Sample Details:	OT_SB_04 OTSB04 ESWAC1 ES 1 4.50		**Date Analysed:**	18-Jul-19
LIMS ID Number:	CL1965830		**Matrix:**	Soil
Job Number:	S20_0513		**Ext Method:**	Headspace
Directory/Quant file:	071819_MS19\	Initial Calibration	**Dilution:**	0.97
Operator:	ED		**Position:**	25

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Acetic acid, methyl ester	000079-20-9	2.78	77	72	N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Compounds marked * are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

WASTE ACCEPTANCE CRITERIA TESTING
BSEN 12457/2

Client	Fugro GeoServices Ltd				**Leaching Data**	
					Weight of sample (kg)	0.103
Contact	Karen Blackmore				Moisture content @ 105°C (% of Wet Weight)	14.8
					Equivalent Weight based on drying at 105°C (kg)	0.090
Site	SZC 2019 Offshore Ground Investigation				Volume of water required to carry out 10:1 stage (litres)	0.887
					Fraction of sample above 4 mm %	0.000
Sample Description		**Report No**	**Sample No**	**Issue Date**	Fraction of non-crushable material %	0.000
OT_SB_04 OTSB04 ESWAC2 ES 2 4.50		S20_0513M	CL/1965831	31-Jul-19		

Note: The >4mm fraction is crushed using a disc mill

Accreditation	Method Code	Solid Waste Analysis (Dry Basis)	Concentration in Solid (Dry Weight Basis)	Landfill Waste Acceptance Criteria Limit Values		
				Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
U	WSLM59	Total Organic Carbon (% M/M)	0.14	3	5	6
N	LOI450	Loss on Ignition (%)	3			10
U	BTEXHSA	Sum of BTEX (mg/kg)	<0.0703	6		
U	PCBUSECD	Sum of 7 Congener PCB's (mg/kg)	<0.042	1		
U	TPHFIDUS	Mineral Oil (mg/kg)	21	500		
N	PAHMSUS	PAH Sum of 17 (mg/kg)	<1.60	100		
U	PHSOIL	pH (pH units)	8.8		>6	
N	ANC	Acid Neutralisation Capacity (mol/kg) @pH 7	4.52		To be evaluated	To be evaluated

Accreditation	Method Code	Leachate Analysis	10:1 Single Stage Leachate	Calculated cumulative amount	Landfill Waste Acceptance Criteria Limit Values for BSEN 12457/2 @ L/S 10 litre kg-1		
			mg/l except °°	mg/kg (dry weight)	mg/kg (dry weight)		
U	WSLM3	pH (pH units) °°	7.6	Calculated data not UKAS Accredited			
U	WSLM2	Conductivity (µs/cm) °°	1220				
U	ICPMSW	Arsenic	0.002	0.02	0.5	2	25
U	ICPWATVAR	Barium	<0.01	<0.1	20	100	300
U	ICPMSW	Cadmium	<0.0001	<0.001	0.04	1	5
U	ICPMSW	Chromium	<0.001	<0.01	0.5	10	70
U	ICPMSW	Copper	<0.001	<0.01	2	50	100
U	ICPMSW	Mercury	<0.0001	<0.001	0.01	0.2	2
U	ICPMSW	Molybdenum	0.009	0.09	0.5	10	30
U	ICPMSW	Nickel	<0.001	<0.01	0.4	10	40
U	ICPMSW	Lead	<0.001	<0.01	0.5	10	50
U	ICPMSW	Antimony	0.001	0.01	0.06	0.7	5
U	ICPMSW	Selenium	<0.001	<0.01	0.1	0.5	7
U	ICPMSW	Zinc	<0.002	<0.02	4	50	200
U	KONENS	Chloride	328	3280	800	15000	25000
U	ISEF	Fluoride	0.1	1	10	150	500
U	ICPWATVAR	Sulphate as SO4	148	1480	1000	20000	50000
N	WSLM27	Total Dissolved Solids	949	9490	4000	60000	100000
U	SFAPI	Phenol Index	<0.05	<0.5	1		
N	WSLM13	Dissolved Organic Carbon	4.6	46	500	800	1000

Template Ver. 1

Landfill Waste Acceptance Criteria limit values correct as of 11th March 2009.

Tests where the accreditation is set to U are UKAS accredited, those where the accreditation is set to N are not UKAS accredited

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

SOCOTEC

Analysis of a Soil Sample

Client:	SOCOTEC UK Environmental Chemistry PO Box 100 Burton upon Trent Staffordshire DE15 0XD
Testing Facility:	SOCOTEC UK Unit 12, Moorbrook Southmead Industrial Park Didcot Oxfordshire OX11 7HP
Laboratory Reference:	19-0640
Customer Reference:	S200513
Quote Number:	ENR-ANU-9781
PO Number:	Intraco
Sample Received:	17 July 2019
Sample Condition:	Satisfactory, Ambient
Analysis Completed:	29 July 2019
Report Author	[redacted]
Author's Name:	Kiran Bala
Job Title:	Analyst
Approved By:	[redacted]
Approver's Name:	Charlene Hunston
Job Title:	Team Leader
Report Date:	29 July 2019

UKAS TESTING
1252

SOCOTEC

Sample Summary

Customer Reference	Laboratory Reference (SOCOTEC UK Bretby)	Laboratory Reference (SOCOTEC UK Didcot)	Matrix	Sampling Date
OT_SB_04 OTSB04 ESWAC1 ES 1 4.50	S1965830	RX3958	Soil	06/07/2019 02:40

Experimental

Gamma Spectrometry

ANU/SOP/2029 – The measurement technique is based on the use of high purity germanium (HPGe) detectors coupled to an Ortec gamma ray spectroscopy system. The gamma ray spectra are stored on a computer and analysed using the software programme Fitzpeaks for photopeak identification and quantification. The detectors are calibrated for efficiency using a mixed radionuclide standard, which covers an energy range of approximately 30-2000 keV. The efficiency of gamma rays between 30 keV and 120 keV are determined on an individual basis.

Application of decay corrections for the naturally occurring daughter radionuclides of uranium and thorium assumes that the series daughter radionuclides are all in secular equilibrium and therefore decay with the half-life of the first radionuclide in the series. (^{226}Ra is not UKAS accredited)

Results

Results are presented in the following table.

Any opinions and interpretations expressed herein are outside the scope of our UKAS accreditation.

The results in this test report relate only to the items tested, and test portions taken thereof. This test report must not be reproduced except in full, without written approval of the laboratory.

UKAS TESTING
1252

SOCOTEC

Results Summary – Gamma Spectrometry

Customer Reference	Laboratory Reference	Be-7	K-40	Co-60	Cs-134	Cs-137	Tl-208	Pb-210	Bi-212	Pb-212
OT_SB_04 OTSB04 ESWAC1 ES 1 4.50	RX3958	<9.5	94 ± 21	<1.4	<1.4	<1.2	<1.4	<31	<16	5.1 ± 1.6

Customer Reference	Laboratory Reference	Bi-214	Pb-214	Ra-224	Ra-226 *	Ac-228	Pa-234m	Th-234	U-235	Am-241
OT_SB_04 OTSB04 ESWAC1 ES 1 4.50	RX3958	10.4 ± 2.5	12.6 ± 2.1	<29	<26	<5.2	<140	<37	<1.6	<2.9

Notes:

1. Analysis marked with an asterisk is not UKAS accredited.
2. Results are presented as $Bq.kg^{-1}$ of dried and homogenised sample and are decay corrected to the sampling date.
3. For results below the Limit of Detection, the LoD is rounded up to 2 significant figures.
4. Uncertainties are rounded to 2 significant figures; results are rounded to the same precision.
5. Detector calibrations are based upon homogeneous standard solutions. For quantification purposes the sample is assumed to be homogeneous.
6. ^{226}Ra has only one gamma ray at 186 keV and the major gamma ray from ^{235}U also occurs at 186 keV. ^{235}U can be measured by the lower abundance gamma ray at 144 keV and if a positive result for ^{235}U is reported, the ^{226}Ra result will be unreliable and overestimated. However even if ^{235}U is below the LoD there may still be a contribution to the ^{226}Ra from ^{235}U and the ^{226}Ra result may be unreliable and overestimated. If an accurate result for ^{226}Ra is required this is better obtained by radiochemical analysis.

- End of Test Report -

UKAS TESTING
1252

ASBESTOS ANALYSIS RESULTS

SOCOTEC Asbestos Limited Certificate of Analysis for Asbestos in Soils, Sediments and Aggregates

UKAS TESTING 1089

Detection limit of Method SCI-ASB-020 is 0.001%

Sampling has been carried out by a third party

SOCOTEC

Client:	SOCOTEC Environmental Chemistry	**Page 1 of 1**	
Address:	Etwall House, Bretby Business Park, Ashby Road, Burton upon Trent	**Report No:**	**ANO-0503-21203**
For the attention of:	Fugro GeoServices Ltd	**Report Date:**	**23/07/2019**
Site Address:	SZC 2019 Offshore Ground Investigation	**Project Number:**	**S200513**

Sample Number	Sample Date	Sample Location & Matrix	Test Date	Total Sample Dry Weight (g)	Weight of <10mm Fraction (g)	Asbestos(g) in >10mm	Asbestos(g) in < 10mm	% Asbestos by weight of Total Dried Sample	Moisture Content	Asbestos Fibre Types Identified
CL/1965830	06/07/19	OT_SB_04 OTSB04 ESWAC1 ES 1 4.50 Sediment	23/07/2019	1158.7	1153.2			Identification		NAIIS

Keys

NAACR = Not Analysed at Clients Request

*** visible to naked eye**

NAIIS = No Asbestos Identified in Sample (Identification Only)

NADIS = No Asbestos Detected in Sample (ID & Quant Only)

Name: Tom Pratt

Position: Lab Coordinator

Authorised Signatory:

The sample analysis for the above results was carried out using the procedures detailed in SOCOTEC Asbestos Limited in house method (SCI-ASB-020) based on EA document Quantification of asbestos in soil and associated materials - Draft 2017. Fibre identification was carried out using SOCOTEC Asbestos Limited in house method of transmitted/polarised light microscopy and centre stop dispersion staining (SCI-ASB-007), based on HSE's HSG 248. The analysis of the < 10mm fraction for asbestos content only includes ACMs and fibres and does not discriminate non-asbestos fibres. All fibres are assumed, unless specified, to be amphiboles. All tests were carried out at a SOCOTEC Asbestos Ltd laboratory, UKAS Testing Number 1089. Recommended sample weight is 1kg-2kg, samples less than 1kg are classified as deviating samples.

Where individual results are flagged see report notes for status.

Analytical and Deviating Sample Overview

Customer **Fugro GeoServices Ltd**
Site **SZC 2019 Offshore Ground Investigation**
Report No **S200513M**

Consignment No S86404
Date Logged 16-Jul-2019
In-House Report Due 24-Jul-2019

Please note the results for any subcontracted analysis (identified with a '^') is likely to take up to an additional five working days.

ID Number	Description	MethodID	AMMAR	ANC	BTEXHSA		CEN Leachate			GustServ	FOCCALC	FOCS	GROHSA	ICPACIDS	ICPBOR	ICPMSS									ICPSOIL	KONECR
		Sampled	Exchange.Ammonium AR	Acid Neut. Capacity	BTEX-HSA + MTBE analysis	MTBE (µg/kg)	CEN Leac(P)C	Fraction of non-crushable material %	Fraction of sample above 4 mm %	REPORT A	F.O.C.	S.O.M. % (Calc)	GRO (AA) by HSA GC-FID	SO4-- (acid sol)	Boron (H20 Soluble)	Arsenic (MS)	Cadmium (MS)	Chromium (MS)	Copper (MS)	Lead (MS)	Mercury (MS)	Nickel (MS)	Selenium (MS)	Vanadium (MS)	Zinc (MS)	Iron	Chromium vi:
			✓		✓	✓					✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	
CL/1965830	OT_SB_04 OTSB04 ESWAC1	06/07/19																									
CL/1965831	OT_SB_04 OTSB04 ESWAC2	06/07/19																									

Note: We will endeavour to prioritise samples to complete analysis within holding time; however any delay could result in samples becoming deviant whilst being processed in the laboratory.

If sampling dates are missing or matrices unclassified then results will not be ISO 17025 accredited. Please contact us as soon as possible to provide missing information in order to reinstate accreditation.

Deviating Sample Key

A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key

	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

Where individual results are flagged see report notes for status.
The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Analytical and Deviating Sample Overview

Customer **Fugro GeoServices Ltd**
Site **SZC 2019 Offshore Ground Investigation**
Report No **S200513M**

Consignment No S86404
Date Logged 16-Jul-2019
In-House Report Due 24-Jul-2019

Please note the results for any subcontracted analysis (identified with a '^') is likely to take up to an additional five working days.

ID Number	Description	MethodID	LOI(%MM)	MCertS	OGSN			PAHMSUS		PCBECD	PHSOIL	SFAPI			SFAS	Sub002	Sub008	SVOCSW	TMSS	TPHFIDUS			TPHUSSI				
		Sampled	L.O.I. % @ 450C	MCertS Analysis	Dibutyl Tin	Tributyl Tin as Sn	Triphenyl Tin	PAH (16) by GCMS	PAH (17) by GCMS	PCB-7 Congeners Analysis	pH units (AR)	Cyanide(Free) (AR)	Cyanide(Total) (AR)	Phenol Index.(AR)	Sulphide as S (AR)	^Asbestos Screen & ID (Stage 1)	^Gamma spectrometry	SVOC + TICs (AR)	Tot.Moisture @ 105C	TPH Band (>C10-C40)	TPH by GCFID (AR)	TPH Carbon Banding.	TPH Ali Band >C10-C12	TPH Ali Band >C12-C16	TPH Ali Band >C16-C21	TPH Ali Band >C21-C35	TPH Ali Band >C8-C10
				✓				✓	✓	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CL/1965830	OT_SB_04 OTSB04 ESWAC1	06/07/19																									
CL/1965831	OT_SB_04 OTSB04 ESWAC2	06/07/19																									

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Requested Analysis Key

	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

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Analytical and Deviating Sample Overview

Customer **Fugro GeoServices Ltd** Consignment No S86404
Site **SZC 2019 Offshore Ground Investigation** Date Logged 16-Jul-2019
Report No **S200513M** In-House Report Due 24-Jul-2019

Please note the results for any subcontracted analysis (identified with a '^') is likely to take up to an additional five working days.

ID Number	Description	MethodID	TPHUSSI								VOCHSAS	WSLM59
		Sampled	TPH Ali Band >C8-C40	TPH Aro Band >C10-C12	TPH Aro Band >C12-C16	TPH Aro Band >C16-C21	TPH Aro Band >C21-C35	TPH Aro Band >C8-C10	TPH Aro Band >C8-C40	TPH by GCFID (AR/Si)	VOC + TICs HSA-GCMS	Total Organic Carbon
			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CL/1965830	OT_SB_04 OTSB04 ESWAC1	06/07/19										
CL/1965831	OT_SB_04 OTSB04 ESWAC2	06/07/19										

Note: We will endeavour to prioritise samples to complete analysis within holding time; however any delay could result in samples becoming deviant whilst being processed in the laboratory.

If sampling dates are missing or matrices unclassified then results will not be ISO 17025 accredited. Please contact us as soon as possible to provide missing information in order to reinstate accreditation.

Deviating Sample Key	
A	The sample was received in an inappropriate container for this analysis
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Requested Analysis Key	
	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

Where individual results are flagged see report notes for status.
The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Report Number : EFS/200513

Additional Report Notes

Method Code	Sample ID	The following information should be taken into consideration when using the data contained within this report
SVOCSW	CL1965830	The Primary process control data associated with this Test has not wholly met the requirements of the Laboratory Quality Management System QMS with one or more target analytes falling outside acceptable limits. However the remaining data gives the Laboratory confidence that the test has performed satisfactorily and that the validity of the data may not have been significantly affected. However in line with our QMS policy we have removed accreditation, where applicable, from the affected analytes (2,4-Dinitrotoluene, Fluoranthene, Pyrene, Butylbenzylphthalate, Di-n-octylphthalate) . These circumstances should be taken into consideration when utilising the data.
TPHUSSI	CL1965830	The Secondary process control data associated with this Test has not wholly met the requirements of the Laboratory Quality Management System QMS with one or more target analytes falling outside acceptable limits. However the remaining data gives the Laboratory confidence that the test has performed satisfactorily (including the Primary Process Control) and that the validity of the data may not have been significantly affected. However in line with our QMS policy we have removed accreditation , where applicable, from the affected analytes (C16-C21) of the aliphatic fraction . These circumstances should be taken into consideration when utilising the data.
VOCHSAS	CL1965830	The Primary process control data associated with this Test has not wholly met the requirements of the Laboratory Quality Management System QMS with one or more target analytes falling outside acceptable limits. However the remaining data gives the Laboratory confidence that the test has performed satisfactorily and that the validity of the data may not have been significantly affected. However in line with our QMS policy we have removed accreditation, where applicable, from the affected analytes (Tetrachloroethene) . These circumstances should be taken into consideration when utilising the data.

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Soil	AMMAR	As Received	Determination of Exchangeable Ammonium in Soil using potassium chloride extraction, discrete colorimetric detection
Soil	ANC	Oven Dried @ < 35°C	Quantitative digestion with Hydrochloric Acid back titration with 1M Sodium Hydroxide to pH 7
Soil	BTEXHSA	As Received	Determination of Benzene, Toluene, Ethyl benzene and Xylenes (BTEX) by Headspace GCFID
Soil	CEN Leachate	As Received	Determination of Oversize and Inert Material Content prior to leaching sample
Soil	FOCS	Oven Dried @ < 35°C	Calculation of Soil Organic Matter content from Organic Carbon content of soil samples
Soil	GROHSA	As Received	Determination of Total Gasoline Range Organics Hydrocarbons (GRO) by Headspace GCFID
Soil	ICPACIDS	Oven Dried @ < 35°C	Determination of Total Sulphate in soil samples by Hydrochloric Acid extraction followed by ICPOES detection
Soil	ICPBOR	Oven Dried @ < 35°C	Determination of Boron in soil samples by hot water extraction followed by ICPOES detection
Soil	ICPMSS	Oven Dried @ < 35°C	Determination of Metals in Marine Sediments and Soil samples by aqua regia digestion followed by ICPMS detection
Soil	ICPSOIL	Oven Dried @ < 35°C	Determination of Metals in soil samples by aqua regia digestion followed by ICPOES detection
Soil	KONECR	Oven Dried @ < 35°C	Determination of Chromium vi in soil samples by water extraction followed by colorimetric detection
Soil	LOI(%MM)	Oven Dried @ < 35°C	Determination of loss on ignition for soil samples at specified temperature by gravimetry
Soil	OGSN	As Received	Determination of Organo-tin compounds using sonic extraction in methanol , derivatiseation with Sodium Tetraethylborate and GCMS quantitation (SIM mode).
Soil	PAHMSUS	As Received	Determination of Polycyclic Aromatic Hydrocarbons (PAH) by hexane/acetone extraction followed by GCMS detection
Soil	PCBECD	As Received	Determination of Polychlorinated Biphenyl (PCB) congeners/aroclors by hexane/acetone extraction followed by GCECD detection
Soil	PHSOIL	As Received	Determination of pH of 2.5:1 deionised water to soil extracts using pH probe.
Soil	SFAPI	As Received	Segmented flow analysis with colorimetric detection
Soil	SFAS	As Received	Segmented flow analysis with colorimetric detection
Soil	SubCon*	*	Contact Laboratory for details of the methodology used by the sub-contractor.
Soil	SVOCSW	As Received	Determination of Semi-Volatile Organic Compounds by dichloromethane/acetone extraction followed by GCMS detection

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Soil	TMSS	As Received	Determination of the Total Moisture content at 105ºC by loss on oven drying gravimetric analysis (% based upon wet weight)
Soil	TPHFIDUS	As Received	Determination of hexane/acetone extractable Hydrocarbons in soil with GCFID detection.
Soil	TPHUSSI	As Received	Determination of hexane/acetone extractable Hydrocarbons in soil with GCFID detection including quantitation of Aromatic and Aliphatic fractions.
Soil	VOCHSAS	As Received	Determination of Volatile Organic Compounds (VOC) by Headspace GCMS
Soil	WSLM59	Oven Dried @ < 35°C	Determination of Organic Carbon in soil using sulphurous Acid digestion followed by high temperature combustion and IR detection
Water	ICPMSW	As Received	Direct quantitative determination of Metals in water samples using ICPMS
Water	ICPWATVAR	As Received	Direct determination of Metals and Sulphate in water samples using ICPOES
Water	ISEF	As Received	Determination of Fluoride in water samples by Ion Selective Electrode (ISE)
Water	KONENS	As Received	Direct analysis using discrete colorimetric analysis
Water	SFAPI	As Received	Segmented flow analysis with colorimetric detection
Water	WSLM13	As Received	Instrumental analysis using acid/persulphate digestion and non-dispersive IR detection
Water	WSLM2	As Received	Determination of the Electrical Conductivity (µS/cm) by electrical conductivity probe.
Water	WSLM27	As Received	Gravimetric Determination
Water	WSLM3	As Received	Determination of the pH of water samples by pH probe

Report Notes

Generic Notes

Soil/Solid Analysis

Unless stated otherwise,
- Results expressed as mg/kg have been calculated on the basis indicated in the Method Description table.
  All results on MCERTS reports are reported on a 105ºC dry weight basis with the exception of pH and conductivity.
- Sulphate analysis not conducted in accordance with BS1377
- Water Soluble Sulphate is on a 2:1 water:soil extract

Waters Analysis

Unless stated otherwise results are expressed as mg/l
Nil: Where "Nil" has been entered against Total Alkalinity or Total Acidity this indicates that a measurement was not required due to the inherent pH of the sample.

Oil analysis specific

Unless stated otherwise,
- Results are expressed as mg/kg
- SG is expressed as g/cm^3@ 15°C

Gas (Tedlar bag) Analysis

Unless stated otherwise, results are expressed as ug/l

Asbestos Analysis

CH Denotes Chrysotile **TR** Denotes Tremolite
CR Denotes Crocidolite **AC** Denotes Actinolite
AM Denotes Amosite **AN** Denotes Anthophylite
NAIIS No Asbestos Identified in Sample
NADIS No Asbestos Detected In Sample

Symbol Reference

^ Sub-contracted analysis.
$$ Unable to analyse due to the nature of the sample
¶ Samples submitted for this analyte were not preserved on site in accordance with laboratory protocols. This may have resulted in deterioration of the sample(s) during transit to the laboratory. Consequently the reported data may not represent the concentration of the target analyte present in the sample at the time of sampling
¥ Results for guidance only due to possible interference
& Blank corrected result
I.S Insufficient sample to complete requested analysis
I.S(g) Insufficient sample to re-analyse, results for guidance only
Intf Unable to analyse due to interferences
N.D Not determined **N.Det** Not detected
N.F No Flow
NS Information Not Supplied
Req Analysis requested, see attached sheets for results
Þ Raised detection limit due to nature of the sample
***** All accreditation has been removed by the laboratory for this result
‡ MCERTS accreditation has been removed for this result
§ accreditation has been removed for this result as it is a non-accredited matrix

Note: The Laboratory may only claim that data is accredited when all of the requirements of our Quality System have been met. Where these requirements have not been met the laboratory may elect to include the data in its final report and remove the accreditation from individual data items if it believes that the validity of the data has not been affected. If further details are required of the circumstances which have led to the removal of accreditation then please do not hesitate to contact the laboratory.

Sample Descriptions

Client : Fugro GeoServices Ltd

Site : SZC 2019 Offshore Ground Investigation

Report Number : S20_0513

Note: major constituent in upper case

Lab ID Number	Client ID	Description
CL/1965830	SB_04 OTSB04 ESWAC1 ES 1	Brown Gravel SAND
CL/1965831	SB_04 OTSB04 ESWAC2 ES 2	Brown SAND

Our Ref: EFS/200514M (Ver. 1)
Your Ref: G190016U

July 23, 2019

Environmental Chemistry
SOCOTEC UK Limited
Bretby Business Park
Ashby Road
Burton-on-Trent
Staffordshire
DE15 0YZ

Telephone: 01283 554400
Facsimile: 01283 554422

Karen Blackmore
Fugro GeoServices Ltd
Fugro House
Hithercroft Road
Wallingford
Oxfordshire
OX10 9RB

For the attention of Karen Blackmore

Dear Karen Blackmore

Sample Analysis - SZC 2019 Offshore Ground Investigation

Samples from the above site have been analysed in accordance with the schedule supplied.
The sample details and the results of analyses for these samples are given in the appended report.

An invoice for this work will follow under a separate cover.

The samples will be kept until the agreed date when they will be discarded. Please call 01283 554434 for an extension of this date.
Please be aware that our policy for the retention of paper based laboratory records and analysis reports is 6 years.

The work was carried out in accordance with SOCOTEC UK Limited (Laboratory and Analytical) Standard Terms and Conditions of Contract.

If I can be of any further assistance please do not hesitate to contact me.

Yours sincerely

for SOCOTEC UK Limited

[redacted]

K Smith
Project Co-ordinator
01283 554434

Environmental Chemistry, SOCOTEC UK Limited, P.O. Box 100, Burton-upon-trent, DE15 0XD Tel: 01283 554400 Fax: 01283 554422
SOCOTEC UK Limited.
Registered No: 2880501

TEST REPORT

1252

Report No. EFS/200514M (Ver. 1)

Fugro GeoServices Ltd
Fugro House
Hithercroft Road
Wallingford
Oxfordshire
OX10 9RB

Site: SZC 2019 Offshore Ground Investigation

The 1 sample described in this report were registered for analysis by SOCOTEC UK Limited on 16-Jul-2019. This report supersedes any versions previously issued by the laboratory.
The analysis was completed by: 23-Jul-2019

Tests where the accreditation is set to N or No, and any individual data items marked with a * are not UKAS or MCERTS accredited.
Any opinions or interpretations expressed herein are outside the scope of any UKAS accreditation held by SOCOTEC UK Limited.

The following tables are contained in this report:

Table 1 Main Analysis Results (Pages 2 to 7)
Table of WAC Analysis Results (Page 8)
Table of Asbestos Screening Results (Page 9)
Analytical and Deviating Sample Overview (Pages 10 to 11)
Table of Additional Report Notes (Page 12)
Table of Method Descriptions (Pages 13 to 14)
Table of Report Notes (Page 15)
Table of Sample Descriptions (Appendix A Page 1 of 1)

On behalf of
SOCOTEC UK L[redacted]
Becky Batham Operations Manager
Energy & Waste Services

Date of Issue: 23-Jul-2019

Accreditation Codes: **N** (Not Accredited), **U** (UKAS), **UM** (UKAS & MCERTS)
Tests marked '^' have been subcontracted to another laboratory.
(NVM) - denotes the sample matrix is dissimilar to matrices upon which the MCERTS validation was based, and is therefore not accredited for MCERTS.
All results are reported on a dry weight basis at 105°C unless otherwise stated. (except QC samples)
SOCOTEC UK Limited accepts no responsibility for any sampling not carried out by our personnel.

Units :			mg/kg	Mol/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg		% M/M	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			AMMAR	ANC	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	FOCCALC	FOCS	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA
Method Reporting Limits :			0.5	0.04	10	10	20	20	10	10	30	0.0002	0.04	0.2	0.2	0.2	0.2	0.2
Accreditation Code:			UM	N	UM	UM	UM	U	UM	UM	UM	U	N	UM	UM	UM	UM	UM
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Exchange.Ammonium AR**	**Acid Neut. Capacity**	**Benzene**	**Ethyl Benzene**	**m/p Xylenes**	**MTBE**	**o Xylene**	**Toluene**	**Xylenes**	**F.O.C.**	**S.O.M. % (Calc)**	**GRO**	**GRO (>C5 - C6)**	**GRO (>C7 - C8)**	**GRO (>C8 - C10)**	**GRO (C5-C6 Aliphatic)**
1965832	OT_SPT_04 24.00 ES 3 OTSPT04 ESWAC3	**06-Jul-19 03:30**	9.5	1.33	<14.2	<14.2	<28.4	<28.4	<14.2	116	<42.6	0.0095	1.64	<0.284	<0.284	<0.284	<0.284	<0.284

SOCOTEC

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Client Name	**Fugro GeoServices Ltd**
Contact	Karen Blackmore

SZC 2019 Offshore Ground Investigation

Sample Analysis

Date Printed	**23-Jul-2019**
Report Number	**EFS/200514M**
Table Number	**1**

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Units :			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			GROHSA	GROHSA	GROHSA	GROHSA	ICPACIDS	ICPBOR	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS
Method Reporting Limits :			0.2	0.2	0.2	0.2	20	0.5	0.3	0.2	1.2	1.6	0.7	0.5	2	0.5	0.6	16
Accreditation Code:			UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	N	UM
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**GRO (C6-C7 Aliphatic)**	**GRO (C6-C7)**	**GRO (C7-C8 Aliphatic)**	**GRO (C8-C10 Aliphatic)**	**SO4- (acid sol)**	**Boron (H20 Soluble)**	**Arsenic (MS)**	**Cadmium (MS)**	**Chromium (MS)**	**Copper (MS)**	**Lead (MS)**	**Mercury (MS)**	**Nickel (MS)**	**Selenium (MS)**	**Vanadium (MS)**	**Zinc (MS)**
1965832	OT_SPT_04 24.00 ES 3 OTSPT04 ESWAC3	**06-Jul-19 03:30**	<0.284	<0.284	<0.284	<0.284	3060	6.0	13.0	0.8	47.2	64.4	15.2	<0.6	46.1	3.7	76.8	110.6

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Units :			mg/kg	mg/kg	%	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			ICPSOIL	KONECR	LOI(%MM)	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS
Method Reporting Limits :			36	0.1	0.2	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Accreditation Code:			UM	N	N	UM	U	U	UM	UM	UM	UM	UM	UM	UM	N	UM	UM	UM
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Iron**	**Chromium vi:**	**L.O.I. % @ 450C**	**Acenaphthene**	**Acenaphthylene**	**Anthracene**	**Benzo(a)anthracene**	**Benzo(a)pyrene**	**Benzo(b)fluoranthene**	**Benzo(ghi)perylene**	**Benzo(k)fluoranthene**	**Chrysene**	**Coronene**	**Dibenzo(ah)anthracene**	**Fluoranthene**	**Fluorene**
1965832	OT_SPT_04 24.00 ES 3 OTSPT04 ESWAC3	**06-Jul-19 03:30**	35500	<0.1	6.2	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11

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SZC 2019 Offshore Ground Investigation

Sample Analysis

Date Printed	**23-Jul-2019**
Report Number	**EFS/200514M**
Table Number	**1**

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Units :			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	pH Units	mg/kg	mg/kg	mg/kg
Method Codes :			PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PCBECD	PCBECD	PCBECD	PCBECD	PCBECD	PCBECD	PCBECD	PHSOIL	SFAPI	SFAPI	SFAPI
Method Reporting Limits :			0.08	0.08	0.08	0.08	1.28	5	5	5	5	5	5	5		0.5	0.5	0.5
Accreditation Code:			UM	UM	UM	UM	U	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	U
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Indeno(123-cd)pyrene**	**Naphthalene**	**Phenanthrene**	**Pyrene**	**Total PAH (Sum of USEPA 16)**	**PCB 101**	**PCB 118**	**PCB 138**	**PCB 153**	**PCB 180**	**PCB 28**	**PCB 52**	**pH units (AR)**	**Cyanide(Free) (AR)**	**Cyanide(Total) (AR)**	**Phenol Index.(AR)**
1965832	OT_SPT_04 24.00 ES 3 OTSPT04 ESWAC3	**06-Jul-19 03:30**	<0.11	<0.11	<0.11	<0.11	<1.82	<7.10	<7.10	<7.10	<7.10	<7.10	<7.10	<7.10	8.7	<0.7	<0.7	<0.7

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Contact	Karen Blackmore

SZC 2019 Offshore Ground Investigation

Sample Analysis

Date Printed	**23-Jul-2019**
Report Number	**EFS/200514M**
Table Number	**1**

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Units :			mg/kg	%	%	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			SFAS	Sub002	TMSS	TPHFIDUS	TPHFIDUS	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI
Method Reporting Limits :			0.5		0.1	10	10	4	4	4	8.75	4	20	4	4	4	8.75	4
Accreditation Code:			N	U	U	U	UM	U	U	U	U	U	U	U	U	U	U	U	U
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Sulphide as S (AR)**	**^Asbestos Screen & ID (Stage 1)**	**Tot.Moisture @ 105C**	**TPH Band (>C10-C40)**	**TPH by GCFID (AR)**	**TPH Ali Band >C10-C12**	**TPH Ali Band >C12-C16**	**TPH Ali Band >C16-C21**	**TPH Ali Band >C21-C35**	**TPH Ali Band >C8-C10**	**TPH Ali Band >C8-C40**	**TPH Aro Band >C10-C12**	**TPH Aro Band >C12-C16**	**TPH Aro Band >C16-C21**	**TPH Aro Band >C21-C35**	**TPH Aro Band >C8-C10**
1965832	OT_SPT_04 24.00 ES 3 OTSPT04 ESWAC3	**06-Jul-19 03:30**	<0.7	NAIIS	29.6	67.0	80.1	<5.68	<5.68	<5.68*	21.2	10.10	42.9	<5.68	<5.68	5.71	21.7	<5.68

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Contact Karen Blackmore

SZC 2019 Offshore Ground Investigation

Sample Analysis

Date Printed	**23-Jul-2019**
Report Number	**EFS/200514M**
Table Number	**1**

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

		Units :	mg/kg	% M/M															
		Method Codes :	TPHUSSI	WSLM59															
		Method Reporting Limits :	20	0.02															
		Accreditation Code:	U	N															
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**TPH Aro Band >C8-C40**	**Total Organic Carbon**															
1965832	OT_SPT_04 24.00 ES 3 OTSPT04 ESWAC3	**06-Jul-19 03:30**	43.3	0.95															

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Contact	Karen Blackmore

SZC 2019 Offshore Ground Investigation

Sample Analysis

Date Printed	**23-Jul-2019**
Report Number	**EFS/200514M**
Table Number	**1**

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

WASTE ACCEPTANCE CRITERIA TESTING
BSEN 12457/2

					Leaching Data	
Client	Fugro GeoServices Ltd				Weight of sample (kg)	0.132
Contact	Karen Blackmore				Moisture content @ 105°C (% of Wet Weight)	29.6
					Equivalent Weight based on drying at 105°C (kg)	0.090
Site	SZC 2019 Offshore Ground Investigation				Volume of water required to carry out 10:1 stage (litres)	0.858
					Fraction of sample above 4 mm %	0.000
Sample Description		**Report No**	**Sample No**	**Issue Date**	Fraction of non-crushable material %	0.000
OT_SPT_04 24.00 ES 3 OTSPT04 ESWAC3		s20_0514M	CL/1965832	23-Jul-19		

Note: The >4mm fraction is crushed using a disc mill

Accreditation	Method Code	Solid Waste Analysis (Dry Basis)	Concentration in Solid (Dry Weight Basis)	Landfill Waste Acceptance Criteria Limit Values		
				Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
U	WSLM59	Total Organic Carbon (% M/M)	0.95	3	5	6
N	LOI450	Loss on Ignition (%)	6.2			10
U	BTEXHSA	Sum of BTEX (mg/kg)	<0.187	6		
U	PCBUSECD	Sum of 7 Congener PCB's (mg/kg)	<0.049	1		
U	TPHFIDUS	Mineral Oil (mg/kg)	67	500		
N	PAHMSUS	PAH Sum of 17 (mg/kg)	<1.93	100		
U	PHSOIL	pH (pH units)	8.7		>6	
N	ANC	Acid Neutralisation Capacity (mol/kg) @pH 7	1.33		To be evaluated	To be evaluated

Accreditation	Method Code	Leachate Analysis	10:1 Single Stage Leachate	Calculated cumulative amount	Landfill Waste Acceptance Criteria Limit Values for BSEN 12457/2 @ L/S 10 litre kg-1 mg/kg (dry weight)		
			mg/l except ºº	mg/kg (dry weight)			
U	WSLM3	pH (pH units) ºº	8.1	Calculated data not UKAS Accredited			
U	WSLM2	Conductivity (µs/cm) ºº	2320				
U	ICPMSW	Arsenic	0.005	0.05	0.5	2	25
U	ICPWATVAR	Barium	<0.01	<0.1	20	100	300
U	ICPMSW	Cadmium	<0.0001	<0.001	0.04	1	5
U	ICPMSW	Chromium	<0.001	<0.01	0.5	10	70
U	ICPMSW	Copper	<0.001	<0.01	2	50	100
U	ICPMSW	Mercury	<0.0001	<0.001	0.01	0.2	2
U	ICPMSW	Molybdenum	0.035	0.35	0.5	10	30
U	ICPMSW	Nickel	0.008	0.08	0.4	10	40
U	ICPMSW	Lead	<0.001	<0.01	0.5	10	50
U	ICPMSW	Antimony	0.002	0.02	0.06	0.7	5
U	ICPMSW	Selenium	0.088	0.88	0.1	0.5	7
U	ICPMSW	Zinc	<0.002	<0.02	4	50	200
U	KONENS	Chloride	593	5930	800	15000	25000
U	ISEF	Fluoride	0.6	6	10	150	500
U	ICPWATVAR	Sulphate as SO4	257	2570	1000	20000	50000
N	WSLM27	Total Dissolved Solids	1810	18100	4000	60000	100000
U	SFAPI	Phenol Index	<0.05	<0.5	1		
N	WSLM13	Dissolved Organic Carbon	20	200	500	800	1000

Template Ver. 1

Landfill Waste Acceptance Criteria limit values correct as of 11th March 2009.

Tests where the accreditation is set to U are UKAS accredited, those where the accreditation is set to N are not UKAS accredited

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

ASBESTOS ANALYSIS RESULTS

SOCOTEC Asbestos Limited Certificate of Analysis for Asbestos in Soils, Sediments and Aggregates

UKAS TESTING 1089

Detection limit of Method SCI-ASB-020 is 0.001%

Sampling has been carried out by a third party

SOCOTEC

Client:	SOCOTEC Environmental Chemistry	**Page 1 of 1**	
Address:	Etwall House, Bretby Business Park, Ashby Road, Burton upon Trent	**Report No:**	**ANO-0503-21204**
For the attention of:	Fugro GeoServices Ltd	**Report Date:**	**23/07/2019**
Site Address:	SZC 2019 Offshore Ground Investigation	**Project Number:**	**S200514**

Sample Number	Sample Date	Sample Location & Matrix	Test Date	Total Sample Dry Weight (g)	Weight of <10mm Fraction (g)	Asbestos(g) in >10mm	Asbestos(g) in < 10mm	% Asbestos by weight of Total Dried Sample	Moisture Content	Asbestos Fibre Types Identified
CL/1965832	06/07/19	OT_SPT_04 24.00 ES 3 OTSPT04 ESWAC3 Soils	23/07/2019	714.4	714.4			Identification		NAIIS

Keys

NAACR = Not Analysed at Clients Request

NAIIS = No Asbestos Identified in Sample (Identification Only)

*** visible to naked eye**

NADIS = No Asbestos Detected in Sample (ID & Quant Only)

Name: Tom Pratt

Authorised Signatory:

Position: Lab Coordinator

The sample analysis for the above results was carried out using the procedures detailed in SOCOTEC Asbestos Limited in house method (SCI-ASB-020) based on EA document Quantification of asbestos in soil and associated materials - Draft 2017. Fibre identification was carried out using SOCOTEC Asbestos Limited in house method of transmitted/polarised light microscopy and centre stop dispersion staining (SCI-ASB-007), based on HSE's HSG 248. The analysis of the < 10mm fraction for asbestos content only includes ACMs and fibres and does not discriminate non-asbestos fibres. All fibres are assumed, unless specified, to be amphiboles. All tests were carried out at a SOCOTEC Asbestos Ltd laboratory, UKAS Testing Number 1089. Recommended sample weight is 1kg-2kg, samples less than 1kg are classified as deviating samples.

Where individual results are flagged see report notes for status.

Analytical and Deviating Sample Overview

Customer **Fugro GeoServices Ltd**
Site **SZC 2019 Offshore Ground Investigation**
Report No **S200514M**

Consignment No S86401
Date Logged 16-Jul-2019
In-House Report Due 24-Jul-2019

Please note the results for any subcontracted analysis (identified with a '^') is likely to take up to an additional five working days.

ID Number	Description	MethodID	AMMAR	ANC	BTEXHSA		CEN Leachate	CustServ	FOCCALC	FOCS	GROHSA	ICPACIDS	ICPBOR	ICPMSS										ICPSOIL	KONECR	LOI(%MM)	MCertS
		Sampled	Exchange.Ammonium AR	Acid Neut. Capacity	BTEX-HSA + MTBE analysis	MTBE (µg/kg)	CEN Leac(P)C	REPORT A	F.O.C.	S.O.M. % (Calc)	GRO (AA) by HSA GC-FID	SO4-- (acid sol)	Boron (H20 Soluble)	Arsenic (MS)	Cadmium (MS)	Chromium (MS)	Copper (MS)	Lead (MS)	Mercury (MS)	Nickel (MS)	Selenium (MS)	Vanadium (MS)	Zinc (MS)	Iron	Chromium vi:	L.O.I. % @ 450C	MCertS Analysis
			✓		✓	✓			✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓				✓
CL/1965832	OT_SPT_04 24.00 ES 3 OTSPT	06/07/19																									

Note: We will endeavour to prioritise samples to complete analysis within holding time; however any delay could result in samples becoming deviant whilst being processed in the laboratory.

If sampling dates are missing or matrices unclassified then results will not be ISO 17025 accredited. Please contact us as soon as possible to provide missing information in order to reinstate accreditation.

Deviating Sample Key

A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key

	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

Where individual results are flagged see report notes for status.
The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Analytical and Deviating Sample Overview

Customer **Fugro GeoServices Ltd**
Site **SZC 2019 Offshore Ground Investigation**
Report No **S200514M**

Consignment No S86401
Date Logged 16-Jul-2019
In-House Report Due 24-Jul-2019

Please note the results for any subcontracted analysis (identified with a '^') is likely to take up to an additional five working days.

ID Number	Description	MethodID	PAHMSUS	PCBECD	PHSOIL	SFAPI			SFAS	Sub002	TMSS	TPHFIDUS		TPHUSSI													WSLM59
		Sampled	PAH (17) by GCMS	PCB-7 Congeners Analysis	pH units (AR)	Cyanide(Free) (AR)	Cyanide(Total) (AR)	Phenol Index.(AR)	Sulphide as S (AR)	^Asbestos Screen & ID (Stage 1)	Tot.Moisture @ 105C	TPH Band (>C10-C40)	TPH by GCFID (AR)	TPH Ali Band >C10-C12	TPH Ali Band >C12-C16	TPH Ali Band >C16-C21	TPH Ali Band >C21-C35	TPH Ali Band >C8-C10	TPH Ali Band >C8-C40	TPH Aro Band >C10-C12	TPH Aro Band >C12-C16	TPH Aro Band >C16-C21	TPH Aro Band >C21-C35	TPH Aro Band >C8-C10	TPH Aro Band >C8-C40	TPH by GCFID (AR/Si)	Total Organic Carbon
			✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CL/1965832	OT_SPT_04 24.00 ES 3 OTSPT	06/07/19																										

Note: We will endeavour to prioritise samples to complete analysis within holding time; however any delay could result in samples becoming deviant whilst being processed in the laboratory.

If sampling dates are missing or matrices unclassified then results will not be ISO 17025 accredited. Please contact us as soon as possible to provide missing information in order to reinstate accreditation.

Deviating Sample Key

A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key

	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

Where individual results are flagged see report notes for status.
The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Report Number : EFS/200514

Additional Report Notes

Method Code	Sample ID	The following information should be taken into consideration when using the data contained within this report
TPHUSSI	CL1965832	The Secondary process control data associated with this Test has not wholly met the requirements of the Laboratory Quality Management System QMS with one or more target analytes falling outside acceptable limits. However the remaining data gives the Laboratory confidence that the test has performed satisfactorily (including the Primary Process Control) and that the validity of the data may not have been significantly affected. However in line with our QMS policy we have removed accreditation , where applicable, from the affected analytes (C16-C21) of the aliphatic fraction . These circumstances should be taken into consideration when utilising the data.

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Soil	AMMAR	As Received	Determination of Exchangeable Ammonium in Soil using potassium chloride extraction, discrete colorimetric detection
Soil	ANC	Oven Dried @ < 35°C	Quantitative digestion with Hydrochloric Acid back titration with 1M Sodium Hydroxide to pH 7
Soil	BTEXHSA	As Received	Determination of Benzene, Toluene, Ethyl benzene and Xylenes (BTEX) by Headspace GCFID
Soil	FOCS	Oven Dried @ < 35°C	Calculation of Soil Organic Matter content from Organic Carbon content of soil samples
Soil	GROHSA	As Received	Determination of Total Gasoline Range Organics Hydrocarbons (GRO) by Headspace GCFID
Soil	ICPACIDS	Oven Dried @ < 35°C	Determination of Total Sulphate in soil samples by Hydrochloric Acid extraction followed by ICPOES detection
Soil	ICPBOR	Oven Dried @ < 35°C	Determination of Boron in soil samples by hot water extraction followed by ICPOES detection
Soil	ICPMSS	Oven Dried @ < 35°C	Determination of Metals in Marine Sediments and Soil samples by aqua regia digestion followed by ICPMS detection
Soil	ICPSOIL	Oven Dried @ < 35°C	Determination of Metals in soil samples by aqua regia digestion followed by ICPOES detection
Soil	KONECR	Oven Dried @ < 35°C	Determination of Chromium vi in soil samples by water extraction followed by colorimetric detection
Soil	LOI(%MM)	Oven Dried @ < 35°C	Determination of loss on ignition for soil samples at specified temperature by gravimetry
Soil	PAHMSUS	As Received	Determination of Polycyclic Aromatic Hydrocarbons (PAH) by hexane/acetone extraction followed by GCMS detection
Soil	PCBECD	As Received	Determination of Polychlorinated Biphenyl (PCB) congeners/aroclors by hexane/acetone extraction followed by GCECD detection
Soil	PHSOIL	As Received	Determination of pH of 2.5:1 deionised water to soil extracts using pH probe.
Soil	SFAPI	As Received	Segmented flow analysis with colorimetric detection
Soil	SFAS	As Received	Segmented flow analysis with colorimetric detection
Soil	SubCon*	*	Contact Laboratory for details of the methodology used by the sub-contractor.
Soil	TMSS	As Received	Determination of the Total Moisture content at 105ºC by loss on oven drying gravimetric analysis (% based upon wet weight)
Soil	TPHFIDUS	As Received	Determination of hexane/acetone extractable Hydrocarbons in soil with GCFID detection.
Soil	TPHUSSI	As Received	Determination of hexane/acetone extractable Hydrocarbons in soil with GCFID detection including quantitation of Aromatic and Aliphatic fractions.

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Soil	WSLM59	Oven Dried @ < 35°C	Determination of Organic Carbon in soil using sulphurous Acid digestion followed by high temperature combustion and IR detection
Water	ICPMSW	As Received	Direct quantitative determination of Metals in water samples using ICPMS
Water	ICPWATVAR	As Received	Direct determination of Metals and Sulphate in water samples using ICPOES
Water	ISEF	As Received	Determination of Fluoride in water samples by Ion Selective Electrode (ISE)
Water	KONENS	As Received	Direct analysis using discrete colorimetric analysis
Water	SFAPI	As Received	Segmented flow analysis with colorimetric detection
Water	WSLM13	As Received	Instrumental analysis using acid/persulphate digestion and non-dispersive IR detection
Water	WSLM2	As Received	Determination of the Electrical Conductivity (µS/cm) by electrical conductivity probe.
Water	WSLM27	As Received	Gravimetric Determination
Water	WSLM3	As Received	Determination of the pH of water samples by pH probe

Where individual results are flagged see report notes for status.

Report Notes

Generic Notes

Soil/Solid Analysis

Unless stated otherwise,
- Results expressed as mg/kg have been calculated on the basis indicated in the Method Description table.
  All results on MCERTS reports are reported on a 105ºC dry weight basis with the exception of pH and conductivity.
- Sulphate analysis not conducted in accordance with BS1377
- Water Soluble Sulphate is on a 2:1 water:soil extract

Waters Analysis

Unless stated otherwise results are expressed as mg/l
Nil: Where "Nil" has been entered against Total Alkalinity or Total Acidity this indicates that a measurement was not required due to the inherent pH of the sample.

Oil analysis specific

Unless stated otherwise,
- Results are expressed as mg/kg
- SG is expressed as g/cm^3@ 15°C

Gas (Tedlar bag) Analysis

Unless stated otherwise, results are expressed as ug/l

Asbestos Analysis

CH Denotes Chrysotile **TR** Denotes Tremolite
CR Denotes Crocidolite **AC** Denotes Actinolite
AM Denotes Amosite **AN** Denotes Anthophylite
NAIIS No Asbestos Identified in Sample
NADIS No Asbestos Detected In Sample

Symbol Reference

^ Sub-contracted analysis.
$$ Unable to analyse due to the nature of the sample
¶ Samples submitted for this analyte were not preserved on site in accordance with laboratory protocols. This may have resulted in deterioration of the sample(s) during transit to the laboratory. Consequently the reported data may not represent the concentration of the target analyte present in the sample at the time of sampling
¥ Results for guidance only due to possible interference
& Blank corrected result
I.S Insufficient sample to complete requested analysis
I.S(g) Insufficient sample to re-analyse, results for guidance only
Intf Unable to analyse due to interferences
N.D Not determined **N.Det** Not detected
N.F No Flow
NS Information Not Supplied
Req Analysis requested, see attached sheets for results
Þ Raised detection limit due to nature of the sample
***** All accreditation has been removed by the laboratory for this result
‡ MCERTS accreditation has been removed for this result
§ accreditation has been removed for this result as it is a non-accredited matrix

Note: The Laboratory may only claim that data is accredited when all of the requirements of our Quality System have been met. Where these requirements have not been met the laboratory may elect to include the data in its final report and remove the accreditation from individual data items if it believes that the validity of the data has not been affected. If further details are required of the circumstances which have led to the removal of accreditation then please do not hesitate to contact the laboratory.

Sample Descriptions

Client : Fugro GeoServices Ltd
Site : SZC 2019 Offshore Ground Investigation
Report Number : S20_0514

Note: major constituent in upper case

Lab ID Number	Client ID	Description
CL/1965832	PT_04 24.00 ES 3 OTSPT04 ES\	Brown CLAY

Our Ref: EFS/200515 (Ver. 1)
Your Ref: G190016U

July 31, 2019

Environmental Chemistry
SOCOTEC UK Limited
Bretby Business Park
Ashby Road
Burton-on-Trent
Staffordshire
DE15 0YZ

Telephone: 01283 554400
Facsimile: 01283 554422

Karen Blackmore
Fugro GeoServices Ltd
Fugro House
Hithercroft Road
Wallingford
Oxfordshire
OX10 9RB

For the attention of Karen Blackmore

Dear Karen Blackmore

Sample Analysis - SZC 2019 Offshore Ground Investigation

Samples from the above site have been analysed in accordance with the schedule supplied.
The sample details and the results of analyses for these samples are given in the appended report.

An invoice for this work will follow under a separate cover.

The samples will be kept until the agreed date when they will be discarded. Please call 01283 554434 for an extension of this date.
Please be aware that our policy for the retention of paper based laboratory records and analysis reports is 6 years.

The work was carried out in accordance with SOCOTEC UK Limited (Multi-Sector Services) Standard Terms and Conditions of Contract.

If I can be of any further assistance please do not hesitate to contact me.

Yours sincerely

for SOCOTEC UK Limited

[redacted]

K Smith
Project Co-ordinator
01283 554434

TEST REPORT

Report No. EFS/200515 (Ver. 1)

Fugro GeoServices Ltd
Fugro House
Hithercroft Road
Wallingford
Oxfordshire
OX10 9RB

Site: SZC 2019 Offshore Ground Investigation

The 2 samples described in this report were registered for analysis by SOCOTEC UK Limited on 16-Jul-2019. This report supersedes any versions previously issued by the laboratory.

The analysis was completed by: 31-Jul-2019

The following tables are contained in this report:

Table 1 Main Analysis Results (Page 2)
Subcontracted Analysis Reports (Pages 3 to 5)
The accreditation status of subcontracted analysis is displayed on the appended subcontracted analysis reports.
Analytical and Deviating Sample Overview (Page 6)
Table of Method Descriptions (Page 7)
Table of Report Notes (Page 8)
Table of Sample Descriptions (Appendix A Page 1 of 1)

On behalf of
SOCOTEC UK L[redacted]
Becky Batham Operations Manager
Energy & Waste Services

Date of Issue: 31-Jul-2019

Tests marked '^' have been subcontracted to another laboratory.

Where samples have been flagged as deviant on the Analytical and Deviating Sample Overview, for any reason, the data may not be representative of the sample at the point of sampling and the validity of the data may be affected. SOCOTEC UK Limited accepts no responsibility for any sampling not carried out by our personnel.

		Units :	Bq/kg																
		Method Codes :	Sub008																
		Method Reporting Limits :																	
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**^Gamma spectrometry**																
1965833	IT2_SB_03 SB03 CEFAS-RAD-7 2.00	**07-Jul-19 06:00**	Req																
1965834	IT2_SB_03 SB03 CEFAS1-070719 0.00	**07-Jul-19 05:30**	Req																

SOCOTEC

Bretby Business Park, Ashby Road

Burton-on-Trent, Staffordshire, DE15 0YZ

Tel +44 (0) 1283 554400

Fax +44 (0) 1283 554422

Client Name	**Fugro GeoServices Ltd**
Contact	Karen Blackmore

SZC 2019 Offshore Ground Investigation

Sample Analysis

Date Printed	**31-Jul-2019**
Report Number	**EFS/200515**
Table Number	**1**

Analysis of Soil Samples

Client:	SOCOTEC UK Environmental Chemistry PO Box 100 Burton upon Trent Staffordshire DE15 0XD
Testing Facility:	SOCOTEC UK Unit 12, Moorbrook Southmead Industrial Park Didcot Oxfordshire OX11 7HP
Laboratory Reference:	19-0641
Customer Reference:	S200515
Quote Number:	ENR-ANU-9781
PO Number:	Intraco
Samples Received:	17 July 2019
Sample Condition:	Satisfactory, Ambient
Analysis Completed:	29 July 2019
Report Author:	[redacted]
Author's Name:	Kiran Bala
Job Title:	Analyst
Approved By:	[redacted]
Approver's Name:	Charlene Hunston
Job Title:	Team Leader
Report Date:	29 July 2019

SOCOTEC

Sample Summary

Customer Reference	Laboratory Reference (SOCOTEC UK Bretby)	Laboratory Reference (SOCOTEC UK Didcot)	Matrix	Sampling Date
IT2_SB_03 SB03 CEFAS-RAD-7 2.00	S1965833	RX3959	Soil	07/07/2019 06:00
IT2_SB_03 SB03 CEFAS1-070719 0.00	S1965834	RX3960	Soil	07/07/2019 05:30

Experimental

Gamma Spectrometry

ANU/SOP/2029 – The measurement technique is based on the use of high purity germanium (HPGe) detectors coupled to an Ortec gamma ray spectroscopy system. The gamma ray spectra are stored on a computer and analysed using the software programme Fitzpeaks for photopeak identification and quantification. The detectors are calibrated for efficiency using a mixed radionuclide standard, which covers an energy range of approximately 30-2000 keV. The efficiency of gamma rays between 30 keV and 120 keV are determined on an individual basis.

Application of decay corrections for the naturally occurring daughter radionuclides of uranium and thorium assumes that the series daughter radionuclides are all in secular equilibrium and therefore decay with the half-life of the first radionuclide in the series. (^{226}Ra is not UKAS accredited)

Results

Results are presented in the following table.

Any opinions and interpretations expressed herein are outside the scope of our UKAS accreditation.

The results in this test report relate only to the items tested, and test portions taken thereof. This test report must not be reproduced except in full, without written approval of the laboratory.

SOCOTEC

Results Summary – Gamma Spectrometry

Customer Reference	Laboratory Reference	Be-7	K-40	Co-60	Cs-134	Cs-137	Tl-208	Pb-210	Bi-212	Pb-212
IT2_SB_03 SB03 CEFAS-RAD-7 2.00	RX3959	<11	199 ± 34	<1.5	<1.4	<1.3	3.8 ± 1.1	<31	<18	9.3 ± 2.2
IT2_SB_03 SB03 CEFAS1-070719 0.00	RX3960	<13	319 ± 50	<1.9	<1.9	<1.5	5.5 ± 1.4	<34	<22	17 ± 2.4

Customer Reference	Laboratory Reference	Bi-214	Pb-214	Ra-224	Ra-226 *	Ac-228	Pa-234m	Th-234	U-235	Am-241
IT2_SB_03 SB03 CEFAS-RAD-7 2.00	RX3959	7.3 ± 2.3	9.9 ± 2.3	<33	<26	<5.9	<160	<37	<1.6	<2.8
IT2_SB_03 SB03 CEFAS1-070719 0.00	RX3960	10.3 ± 2.9	12.8 ± 2.3	<42	<31	18.6 ± 4.0	<190	<41	<1.9	<3.3

Notes:

1. Analysis marked with an asterisk is not UKAS accredited.
2. Results are presented as $Bq.kg^{-1}$ of dried and homogenised samples and are decay corrected to the sampling date.
3. For results below the Limit of Detection, the LoD is rounded up to 2 significant figures.
4. Uncertainties are rounded to 2 significant figures; results are rounded to the same precision.
5. Detector calibrations are based upon homogeneous standard solutions. For quantification purposes the samples are assumed to be homogeneous.
6. ^{226}Ra has only one gamma ray at 186 keV and the major gamma ray from ^{235}U also occurs at 186 keV. ^{235}U can be measured by the lower abundance gamma ray at 144 keV and if a positive result for ^{235}U is reported, the ^{226}Ra result will be unreliable and overestimated. However even if ^{235}U is below the LoD there may still be a contribution to the ^{226}Ra from ^{235}U and the ^{226}Ra result may be unreliable and overestimated. If an accurate result for ^{226}Ra is required this is better obtained by radiochemical analysis.

- End of Test Report -

UKAS TESTING
1252

Analytical and Deviating Sample Overview

Customer Fugro GeoServices Ltd
Site SZC 2019 Offshore Ground Investigation
Report No S200515

Consignment No S86403
Date Logged 16-Jul-2019
In-House Report Due 05-Aug-2019

Please note the results for any subcontracted analysis (identified with a '^') is likely to take up to an additional five working days.

ID Number	Description	Sampled	MethodID: CustServ (Report C)	Sub008 (^Gamma spectrometry)
CL/1965833	IT2_SB_03 SB03 CEFAS-RAD-	07/07/19		
CL/1965834	IT2_SB_03 SB03 CEFAS1-070	07/07/19		

Note: We will endeavour to prioritise samples to complete analysis within holding time; however any delay could result in samples becoming deviant whilst being processed in the laboratory.

If sampling dates are missing or matrices unclassified then results will not be ISO 17025 accredited. Please contact us as soon as possible to provide missing information in order to reinstate accreditation.

Deviating Sample Key	
A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key	
	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

Where individual results are flagged see report notes for status.

The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Soil	SubCon*	*	Contact Laboratory for details of the methodology used by the sub-contractor.

Report Notes

Generic Notes

Soil/Solid Analysis

Unless stated otherwise,
- Results expressed as mg/kg have been calculated on the basis indicated in the Method Description table.
  All results on MCERTS reports are reported on a 105ºC dry weight basis with the exception of pH and conductivity.
- Sulphate analysis not conducted in accordance with BS1377
- Water Soluble Sulphate is on a 2:1 water:soil extract

Waters Analysis

Unless stated otherwise results are expressed as mg/l
Nil: Where "Nil" has been entered against Total Alkalinity or Total Acidity this indicates that a measurement was not required due to the inherent pH of the sample.

Oil analysis specific

Unless stated otherwise,
- Results are expressed as mg/kg
- SG is expressed as g/cm^3@ 15°C

Gas (Tedlar bag) Analysis

Unless stated otherwise, results are expressed as ug/l

Asbestos Analysis

CH Denotes Chrysotile **TR** Denotes Tremolite
CR Denotes Crocidolite **AC** Denotes Actinolite
AM Denotes Amosite **AN** Denotes Anthophylite
NAIIS No Asbestos Identified in Sample
NADIS No Asbestos Detected In Sample

Symbol Reference

^ Sub-contracted analysis.
$$ Unable to analyse due to the nature of the sample
¶ Samples submitted for this analyte were not preserved on site in accordance with laboratory protocols. This may have resulted in deterioration of the sample(s) during transit to the laboratory. Consequently the reported data may not represent the concentration of the target analyte present in the sample at the time of sampling
¥ Results for guidance only due to possible interference
& Blank corrected result
I.S Insufficient sample to complete requested analysis
I.S(g) Insufficient sample to re-analyse, results for guidance only
Intf Unable to analyse due to interferences
N.D Not determined **N.Det** Not detected
N.F No Flow
NS Information Not Supplied
Req Analysis requested, see attached sheets for results
Þ Raised detection limit due to nature of the sample
***** All accreditation has been removed by the laboratory for this result
‡ MCERTS accreditation has been removed for this result
§ accreditation has been removed for this result as it is a non-accredited matrix

Note: The Laboratory may only claim that data is accredited when all of the requirements of our Quality System have been met. Where these requirements have not been met the laboratory may elect to include the data in its final report and remove the accreditation from individual data items if it believes that the validity of the data has not been affected. If further details are required of the circumstances which have led to the removal of accreditation then please do not hesitate to contact the laboratory.

Sample Descriptions

Client : Fugro GeoServices Ltd
Site : SZC 2019 Offshore Ground Investigation
Report Number : S20_0515

Note: major constituent in upper case

Lab ID Number	Client ID	Description
CL/1965833	2_SB_03 SB03 CEFAS-RAD-7 2.	Brown Gravel SAND
CL/1965834	_SB_03 SB03 CEFAS1-070719 0	Brown Gravel SAND

Our Ref: EFS/200516M (Ver. 2)
Your Ref: G190016U

July 31, 2019

Environmental Chemistry
SOCOTEC UK Limited
Bretby Business Park
Ashby Road
Burton-on-Trent
Staffordshire
DE15 0YZ

Telephone: 01283 554400
Facsimile: 01283 554422

Karen Blackmore
Fugro GeoServices Ltd
Fugro House
Hithercroft Road
Wallingford
Oxfordshire
OX10 9RB

For the attention of Karen Blackmore

Dear Karen Blackmore

Sample Analysis - SZC 2019 Offshore Ground Investigation

Samples from the above site have been analysed in accordance with the schedule supplied.
The sample details and the results of analyses for these samples are given in the appended report.

An invoice for this work will follow under a separate cover.

The samples will be kept until the agreed date when they will be discarded. Please call 01283 554434 for an extension of this date.
Please be aware that our policy for the retention of paper based laboratory records and analysis reports is 6 years.

The work was carried out in accordance with SOCOTEC UK Limited (Laboratory and Analytical) Standard Terms and Conditions of Contract.

If I can be of any further assistance please do not hesitate to contact me.

Yours sincerely

for SOCOTEC UK Limited

[redacted]

K Smith
Project Co-ordinator
01283 554434

Environmental Chemistry, SOCOTEC UK Limited, P.O. Box 100, Burton-upon-trent, DE15 0XD Tel: 01283 554400 Fax: 01283 554422
SOCOTEC UK Limited.
Registered No: 2880501

TEST REPORT

1252

Report No. EFS/200516M (Ver. 2)

Fugro GeoServices Ltd
Fugro House
Hithercroft Road
Wallingford
Oxfordshire
OX10 9RB

Site: SZC 2019 Offshore Ground Investigation

The 2 samples described in this report were registered for analysis by SOCOTEC UK Limited on 16-Jul-2019. This report supersedes any versions previously issued by the laboratory.

The analysis was completed by: 31-Jul-2019

Tests where the accreditation is set to N or No, and any individual data items marked with a * are not UKAS or MCERTS accredited.
Any opinions or interpretations expressed herein are outside the scope of any UKAS accreditation held by SOCOTEC UK Limited.

The following tables are contained in this report:

Table 1 Main Analysis Results (Pages 2 to 15)
Table of SVOC (Tics) Results (Pages 16 to 17)
Table of VOC (Tics) Results (Pages 18 to 19)
Table of WAC Analysis Results (Pages 20 to 21)
Subcontracted Analysis Reports (Pages 22 to 24)
The accreditation status of subcontracted analysis is displayed on the appended subcontracted analysis reports.
Table of Asbestos Screening Results (Page 25)
Analytical and Deviating Sample Overview (Pages 26 to 28)
Table of Additional Report Notes (Page 29)
Table of Method Descriptions (Pages 30 to 31)
Table of Report Notes (Page 32)
Table of Sample Descriptions (Appendix A Page 1 of 1)

On behalf of
SOCOTEC UK Li [redacted]
Becky Batham Operations Manager
Energy & Waste Services

Date of Issue: 31-Jul-2019

Accreditation Codes: **N** (Not Accredited), **U** (UKAS), **UM** (UKAS & MCERTS)
Tests marked '^' have been subcontracted to another laboratory.
(NVM) - denotes the sample matrix is dissimilar to matrices upon which the MCERTS validation was based, and is therefore not accredited for MCERTS.
All results are reported on a dry weight basis at 105°C unless otherwise stated. (except QC samples)
SOCOTEC UK Limited accepts no responsibility for any sampling not carried out by our personnel.

Units :			mg/kg	Mol/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg		% M/M	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			AMMAR	ANC	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	FOCCALC	FOCS	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA
Method Reporting Limits :			0.5	0.04	10	10	20	20	10	10	30	0.0002	0.04	0.2	0.2	0.2	0.2	0.2
Accreditation Code:			UM	N	UM	UM	UM	U	UM	UM	UM	U	N	UM	UM	UM	UM	UM
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Exchange.Ammonium AR**	**Acid Neut. Capacity**	**Benzene**	**Ethyl Benzene**	**m/p Xylenes**	**MTBE**	**o Xylene**	**Toluene**	**Xylenes**	**F.O.C.**	**S.O.M. % (Calc)**	**GRO**	**GRO (>C5 - C6)**	**GRO (>C7 - C8)**	**GRO (>C8 - C10)**	**GRO (C5-C6 Aliphatic)**
1965835	IT2_SB_03 SB03 ESWAC1-080719 ES 1 0.00	**08-Jul-19 12:15**	0.8	4.12	<11.7	<11.7	<23.4	<23.4	<11.7	<11.7	<35.1	0.0012	0.21	<0.234	<0.234	<0.234	<0.234	<0.234
1965836	IT2_SB_03 SB03 ESWAC2-080719 ES 2 19.50	**08-Jul-19 12:53**	<0.6	5.16	<11.7	<11.7	<23.4	<23.4	<11.7	<11.7	<35.2	0.0012	0.21	<0.2	<0.2	<0.2	<0.2	<0.2

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Client Name **Fugro GeoServices Ltd**

Contact Karen Blackmore

SZC 2019 Offshore Ground Investigation

Sample Analysis

Date Printed	**31-Jul-2019**
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		Units :	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		Method Codes :	GROHSA	GROHSA	GROHSA	GROHSA	ICPACIDS	ICPBOR	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS
		Method Reporting Limits :	0.2	0.2	0.2	0.2	20	0.5	0.3	0.2	1.2	1.6	0.7	0.5	2	0.5	0.6	16
		Accreditation Code:	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	N	UM
LAB ID Number CL/	Client Sample Description	Sample Date	GRO (C6-C7 Aliphatic)	GRO (C6-C7)	GRO (C7-C8 Aliphatic)	GRO (C8-C10 Aliphatic)	SO4-- (acid sol)	Boron (H20 Soluble)	Arsenic (MS)	Cadmium (MS)	Chromium (MS)	Copper (MS)	Lead (MS)	Mercury (MS)	Nickel (MS)	Selenium (MS)	Vanadium (MS)	Zinc (MS)
1965835	IT2_SB_03 SB03 ESWAC1-080719 ES 1 0.00	08-Jul-19 12:15	<0.234	<0.234	<0.234	<0.234	1430	2.6	7.0	<0.20	10.4	5.3	4.9	<0.5	5.9	<0.5	38.7	19.7
1965836	IT2_SB_03 SB03 ESWAC2-080719 ES 2 19.50	08-Jul-19 12:53	<0.2	<0.2	<0.2	<0.2	1480	2.1	10.5	<0.20	10.3	5.6	3.8	<0.5	4.5	<0.5	41.3	25.7

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Units :			mg/kg	mg/kg	%	ug Sn/kg	ug Sn/kg	ug Sn/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			ICPSOIL	KONECR	LOI(%MM)	OGSN	OGSN	OGSN	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS
Method Reporting Limits :			36	0.1	0.2	1	1	1	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Accreditation Code:			UM	N	N	N	N	N	UM	U	U	UM	UM	UM	UM	UM	UM	N
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Iron**	**Chromium vi:**	**L.O.I. % @ 450C**	**Dibutyl Tin**	**Tributyl Tin as Sn**	**Triphenyl Tin**	**Acenaphthene**	**Acenaphthylene**	**Anthracene**	**Benzo(a)anthracene**	**Benzo(a)pyrene**	**Benzo(b)fluoranthene**	**Benzo(ghi)perylene**	**Benzo(k)fluoranthene**	**Chrysene**	**Coronene**
1965835	IT2_SB_03 SB03 ESWAC1-080719 ES 1 0.00	**08-Jul-19 12:15**	18300	<0.1	2.0	<1	<1	<1	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09
1965836	IT2_SB_03 SB03 ESWAC2-080719 ES 2 19.50	**08-Jul-19 12:53**	29000	<0.1	2.9				<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09

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Units :			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	pH Units
Method Codes :			PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PCBECD	PCBECD	PCBECD	PCBECD	PCBECD	PCBECD	PCBECD	PHSOIL
Method Reporting Limits :			0.08	0.08	0.08	0.08	0.08	0.08	0.08	1.28	5	5	5	5	5	5	5	
Accreditation Code:			UM	UM	UM	UM	UM	UM	UM	U	UM	UM	UM	UM	UM	UM	UM	UM
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Dibenzo(ah)anthracene**	**Fluoranthene**	**Fluorene**	**Indeno(123-cd)pyrene**	**Naphthalene**	**Phenanthrene**	**Pyrene**	**Total PAH (Sum of USEPA 16)**	**PCB 101**	**PCB 118**	**PCB 138**	**PCB 153**	**PCB 180**	**PCB 28**	**PCB 52**	**pH units (AR)**
1965835	IT2_SB_03 SB03 ESWAC1-080719 ES 1 0.00	**08-Jul-19 12:15**	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<1.50	<5.85	<5.85	<5.85	<5.85	<5.85	<5.85	<5.85	8.4
1965836	IT2_SB_03 SB03 ESWAC2-080719 ES 2 19.50	**08-Jul-19 12:53**	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<1.50	<5.86	<5.86	<5.86	<5.86	<5.86	<5.86	<5.86	8.3

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Units :			mg/kg	mg/kg	mg/kg	mg/kg	%	Bq/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			SFAPI	SFAPI	SFAPI	SFAS	Sub002	Sub008	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW
Method Reporting Limits :			0.5	0.5	0.5	0.5			0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.5
Accreditation Code:			UM	UM	U	N	U		N	U	U	U	U	U	U	U	U	N
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Cyanide(Free) (AR)**	**Cyanide(Total) (AR)**	**Phenol Index,(AR)**	**Sulphide as S (AR)**	**^Asbestos Screen & ID (Stage 1)**	**^Gamma spectrometry**	**1,2,4-Trichlorobenzene**	**1,2-Dichlorobenzene**	**1,3-Dichlorobenzene**	**1,4-Dichlorobenzene**	**1-Methylnaphthalene**	**2,4,5-Trichlorophenol**	**2,4,6-Trichlorophenol**	**2,4-Dichlorophenol**	**2,4-Dimethylphenol**	**2,4-Dinitrophenol**
1965835	IT2_SB_03 SB03 ESWAC1-080719 ES 1 0.00	**08-Jul-19 12:15**	<0.6	<0.6	<0.6	1.4	NAIIS	Req	<0.117	<0.117	<0.117	<0.117	<0.117	<0.117	<0.117	<0.117	<0.117	<0.585
1965836	IT2_SB_03 SB03 ESWAC2-080719 ES 2 19.50	**08-Jul-19 12:53**	<0.6	<0.6	<0.6	4.2	NAIIS											

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		Units :	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		Method Codes :	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW
		Method Reporting Limits :	0.2	0.5	0.1	0.1	0.1	0.1	0.5	0.1	0.1	14.5	0.2	0.1	0.1	0.5	0.5	0.1	
		Accreditation Code:	U	U	U	U	U	U	N	U	U	N	N	U	U	N	U	U	
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**2,4-Dinitrotoluene**	**2,6-Dinitrotoluene**	**2-Chloronaphthalene**	**2-Chlorophenol**	**2-Methylnaphthalene**	**2-Methylphenol**	**2-Nitroaniline**	**2-Nitrophenol**	**3- & 4-Methylphenol**	**3-Nitroaniline**	**4,6-Dinitro-2-methylphenol**	**4-Bromophenyl-phenylether**	**4-Chloro-3-methylphenol**	**4-Chloroaniline**	**4-Chlorophenol**	**4-Chlorophenyl-phenylether**	
1965835	IT2_SB_03 SB03 ESWAC1-080719 ES 1 0.00	**08-Jul-19 12:15**	<0.234*	<0.585	<0.117	<0.117	<0.117	<0.117	<0.585	<0.117	<0.117	<17.0	<0.234	<0.117	<0.117	<0.585	<0.585	<0.117	
1965836	IT2_SB_03 SB03 ESWAC2-080719 ES 2 19.50	**08-Jul-19 12:53**																	

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Units :			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW
Method Reporting Limits :			0.6	0.5	0.1	0.1	0.1	0.2	0.2	0.2	0.5	0.2	0.5	0.5	0.1	0.1	0.1	0.5	
Accreditation Code:			N	N	U	U	U	U	U	U	U	U	N	U	U	U	U	U	
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**4-Nitroaniline**	**4-Nitrophenol**	**Acenaphthene**	**Acenaphthylene**	**Anthracene**	**Benzo(a)anthracene**	**Benzo(a)pyrene**	**Benzo(b)fluoranthene**	**Benzo(ghi)perylene**	**Benzo(k)fluoranthene**	**Benzoic Acid**	**Benzyl alcohol**	**Biphenyl**	**bis(2-Chloroethoxy)methane**	**bis(2-Chloroethyl)ether**	**bis(2-Chloroisopropyl)ether**	
1965835	IT2_SB_03 SB03 ESWAC1-080719 ES 1 0.00	**08-Jul-19 12:15**	<0.703	<0.585	<0.117	<0.117	<0.117	<0.234	<0.234	<0.234	<0.585	<0.234	<0.585	<0.585	<0.117	<0.117	<0.117	<0.585	
1965836	IT2_SB_03 SB03 ESWAC2-080719 ES 2 19.50	**08-Jul-19 12:53**																	

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		Units :	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		Method Codes :	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW
		Method Reporting Limits :	0.2	0.2	0.1	0.3	0.5	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.1	0.1	0.1	
		Accreditation Code:	U	U	U	N	U	U	U	U	U	U	U	U	U	U	N	N	
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**bis(2-Ethylhexyl)phthalate**	**Butylbenzylphthalate**	**Chrysene**	**Coronene**	**Dibenzo(ah)anthracene**	**Dibenzofuran**	**Diethylphthalate**	**Dimethylphthalate**	**Di-n-butylphthalate**	**Di-n-octylphthalate**	**Diphenyl Ether**	**Fluoranthene**	**Fluorene**	**Hexachlorobenzene**	**Hexachlorobutadiene**	**Hexachlorocyclopentadiene**	
1965835	IT2_SB_03 SB03 ESWAC1-080719 ES 1 0.00	**08-Jul-19 12:15**	<0.234	<0.234*	<0.117	<0.351	<0.585	<0.117	<0.117	<0.117	<0.117	<0.234*	<0.117	<0.234*	<0.234	<0.117	<0.117	<0.117	
1965836	IT2_SB_03 SB03 ESWAC2-080719 ES 2 19.50	**08-Jul-19 12:53**																	

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Units :			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	%	mg/kg	mg/kg	mg/kg
Method Codes :			SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	TMSS	TPHFIDUS	TPHFIDUS	TPHUSSI
Method Reporting Limits :			0.1	0.5	0.1	0.1	0.5	0.9	0.1	0.5	0.1	0.1	0.2		0.1	10	10	4
Accreditation Code:			U	U	N	U	U	N	N	N	U	U	U	Yes	U	U	UM	U
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Hexachloroethane**	**Indeno(123-cd)pyrene**	**Isophorone**	**Naphthalene**	**Nitrobenzene**	**N-Nitroso-di-n-propylamine**	**N-Nitrosodiphenylamine**	**Pentachlorophenol**	**Phenanthrene**	**Phenol**	**Pyrene**	**SVOC + TICs (AR)**	**Tot.Moisture @ 105C**	**TPH Band (>C10-C40)**	**TPH by GCFID (AR)**	**TPH Ali Band >C10-C12**
1965835	IT2_SB_03 SB03 ESWAC1-080719 ES 1 0.00	**08-Jul-19 12:15**	<0.117	<0.585	<0.117	<0.117	<0.585	<1.054	<0.117	<0.585	<0.117	<0.117	<0.234*	Req	14.6	17.2	23.0	<4.68
1965836	IT2_SB_03 SB03 ESWAC2-080719 ES 2 19.50	**08-Jul-19 12:53**													14.7	12.5	17.7	<4.69

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		Units :	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
		Method Codes :	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS
		Method Reporting Limits :	4	4	8.75	4	20	4	4	4	8.75	4	20	1	1	1	1	1
		Accreditation Code:	U	U	U	U	U	U	U	U	U	U	U	UM	UM	N	UM	UM
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**TPH Ali Band >C12-C16**	**TPH Ali Band >C16-C21**	**TPH Ali Band >C21-C35**	**TPH Ali Band >C8-C10**	**TPH Ali Band >C8-C40**	**TPH Aro Band >C10-C12**	**TPH Aro Band >C12-C16**	**TPH Aro Band >C16-C21**	**TPH Aro Band >C21-C35**	**TPH Aro Band >C8-C10**	**TPH Aro Band >C8-C40**	**1,1,1,2-Tetrachloroethane**	**1,1,1-Trichloroethane**	**1,1,2,2-Tetrachloroethane**	**1,1,2-Trichloroethane**	**1,1-Dichloroethane**
1965835	IT2_SB_03 SB03 ESWAC1-080719 ES 1 0.00	**08-Jul-19 12:15**	<4.68	5.09*	12.8	8.13	31.4	<4.68	<4.68	7.28	28.0	<4.68	50.0	<1.2	<1.2	<1.2	<1.2	<1.2
1965836	IT2_SB_03 SB03 ESWAC2-080719 ES 2 19.50	**08-Jul-19 12:53**	<4.69	<4.69	<10.27	<4.69	<23.4	<4.69	<4.69	<4.69*	16.2	<4.69	24.3					

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		Units :	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
		Method Codes :	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS
		Method Reporting Limits :	1	1	3	1	3	1	1	1	1	1	1	1	1	1	1	1
		Accreditation Code:	U	UM	UM	UM	N	UM	N	UM	UM	UM	UM	UM	UM	UM	UM	UM
LAB ID Number CL/	Client Sample Description	Sample Date	1,1-Dichloroethene	1,1-Dichloropropene	1,2,3-Trichlorobenzene	1,2,3-Trichloropropane	1,2,4-Trichlorobenzene	1,2,4-Trimethylbenzene	1,2-Dibromo-3-chloropropane	1,2-Dibromoethane	1,2-Dichlorobenzene	1,2-Dichloroethane	1,2-Dichloropropane	1,3,5-Trimethylbenzene	1,3-Dichlorobenzene	1,3-Dichloropropane	1,4-Dichlorobenzene	2,2-Dichloropropane
1965835	IT2_SB_03 SB03 ESWAC1-080719 ES 1 0.00	**08-Jul-19 12:15**	<1.2	<1.2	<3.5	<1.2	<3.5	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2
1965836	IT2_SB_03 SB03 ESWAC2-080719 ES 2 19.50	**08-Jul-19 12:53**																

SOCOTEC

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Burton-on-Trent, Staffordshire, DE15 0YZ

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Client Name	**Fugro GeoServices Ltd**
Contact	Karen Blackmore

SZC 2019 Offshore Ground Investigation

Sample Analysis

Date Printed	**31-Jul-2019**
Report Number	**EFS/200516M**
Table Number	**1**

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

			Units :	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
			Method Codes :	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS
			Method Reporting Limits :	1	1	1	1	1	1	1	1	1	1	2	1	3	5	1	1
			Accreditation Code:	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	U	UM	UM	UM
LAB ID Number CL/	Client Sample Description	Sample Date		2-Chlorotoluene	4-Chlorotoluene	Benzene	Bromobenzene	Bromochloromethane	Bromodichloromethane	Bromoform	Bromomethane	Carbon Tetrachloride	Chlorobenzene	Chloroethane	Chloroform	Chloromethane	cis 1,2-Dichloroethene	cis 1,3-Dichloropropene	Dibromochloromethane
1965835	IT2_SB_03 SB03 ESWAC1-080719 ES 1 0.00	**08-Jul-19 12:15**		<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<2.3	<1.2	<3.5	<5.9	<1.2	<1.2
1965836	IT2_SB_03 SB03 ESWAC2-080719 ES 2 19.50	**08-Jul-19 12:53**																	

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Contact	Karen Blackmore

SZC 2019 Offshore Ground Investigation

Sample Analysis

Date Printed	**31-Jul-2019**
Report Number	**EFS/200516M**
Table Number	**1**

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Units :			µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Method Codes :			VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS
Method Reporting Limits :			1	1	2	2	1	4	1	5	1	2	1	1	1	1	1	3
Accreditation Code:			UM	N	UM	N	UM	UM	UM	UM	U	UM	UM	UM	UM	UM	UM	UM
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Dibromomethane**	**Dichlorodifluoromethane**	**Ethylbenzene**	**Hexachlorobutadiene**	**iso-Propylbenzene**	**m and p-Xylene**	**MTBE**	**Naphthalene**	**n-Butylbenzene**	**o-Xylene**	**p-Isopropyltoluene**	**Propylbenzene**	**sec-Butylbenzene**	**Styrene**	**tert-Butylbenzene**	**Tetrachloroethene**
1965835	IT2_SB_03 SB03 ESWAC1-080719 ES 1 0.00	**08-Jul-19 12:15**	<1.2	<1.2	<2.3	<2.3	<1.2	<4.7	<1.2	<5.9	<1.2	<2.3	<1.2	<1.2	<1.2	<1.2	<1.2	<3.5*
1965836	IT2_SB_03 SB03 ESWAC2-080719 ES 2 19.50	**08-Jul-19 12:53**																

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Client Name	**Fugro GeoServices Ltd**
Contact	Karen Blackmore

SZC 2019 Offshore Ground Investigation

Sample Analysis

Date Printed	**31-Jul-2019**
Report Number	**EFS/200516M**
Table Number	**1**

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Units :			µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	% M/M									
Method Codes :			VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	WSLM59									
Method Reporting Limits :			5	1	1	1	1	1		0.02									
Accreditation Code:			UM	UM	UM	UM	UM	UM	Yes	N									
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Toluene**	**trans 1,2-Dichloroethene**	**trans 1,3-Dichloropropene**	**Trichloroethene**	**Trichlorofluoromethane**	**Vinyl Chloride**	**VOC + TICs HSA-GCMS**	**Total Organic Carbon**									
1965835	IT2_SB_03 SB03 ESWAC1-080719 ES 1 0.00	**08-Jul-19 12:15**	<5.9	<1.2	<1.2	<1.2	<1.2	<1.2	Req	0.12									
1965836	IT2_SB_03 SB03 ESWAC2-080719 ES 2 19.50	**08-Jul-19 12:53**								0.12									

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Client Name **Fugro GeoServices Ltd**

Contact Karen Blackmore

SZC 2019 Offshore Ground Investigation

Sample Analysis

Date Printed	**31-Jul-2019**
Report Number	**EFS/200516M**
Table Number	**1**

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

SVOC (TICs)

Accredited?:No

Customer and Site Details:	Fugro GeoServices Ltd: SZC 2019 Offshore Ground Investigation		
Sample Details:	IT2_SB_03 SB03 ESWAC1-080719 E	**Job Number:**	S20_0516
LIMS ID Number:	CL1965835		
		Multiplier:	0.2
Date Booked in:	16-Jul-19	**Dilution Factor:**	1
Date Extracted:	17-Jul-19	**GPC (Y/N):**	N
Date Analysed:	18-Jul-19	**Matrix:**	Soil
QC Batch Number:	140	**Method:**	Ultrasonic
Directory/Quant File:	071719.GC11\ 0	**Operator:**	CO

Tentatively Identified Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
Triethylene glycol	000112-27-6	4.11	17.516	90	N
Heptanal	000111-71-7	2.69	0.603	64	N
Phenol, 4,4'-(1-methylethylidene)bis-	000080-05-7	7.07	0.246	97	N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

SVOC (TICs)

Accredited?:No

Customer and Site Details:	Fugro GeoServices Ltd: SZC 2019 Offshore Ground Investigation		
Sample Details:	IT2_SB_03 SB03 ESWAC2-080719 E	**Job Number:**	S20_0516
LIMS ID Number:	CL1965836		
		Multiplier:	0.2
Date Booked in:	16-Jul-19	**Dilution Factor:**	1
Date Extracted:	17-Jul-19	**GPC (Y/N):**	N
Date Analysed:	18-Jul-19	**Matrix:**	Soil
QC Batch Number:	140	**Method:**	Ultrasonic
Directory/Quant File:	071719.GC11\ 0	**Operator:**	CO

Tentatively Identified Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
Ethanol, 2,2'-[1,2-ethanediylbis(oxy)]bis-	000112-27-6	4.04	2.121	90	N
Heptanal	000111-71-7	2.69	0.650	91	N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

TICs by HSA-GCMS

Accredited?: No

Customer and Site Details:	Fugro GeoServices Ltd: SZC 2019 Offshore Ground Investigation	**Date Booked in:**	16-Jul-19
Sample Details:	IT2_SB_03 SB03 ESWAC1-080719 ES 1 0.00	**Date Analysed:**	18-Jul-19
LIMS ID Number:	CL1965835	**Matrix:**	Soil
Job Number:	S20_0516	**Ext Method:**	Headspace
Directory/Quant file:	071819_MS19\ Initial Calibration	**Dilution:**	0.99
Operator:	ED	**Position:**	26

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Non Detected	-	-	<6	-	N
Dichloromethane (Methylene Chloride)	75-09-2	-	<6	-	N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Compounds marked * are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

TICs by HSA-GCMS

Accredited?: No

Customer and Site Details:	Fugro GeoServices Ltd: SZC 2019 Offshore Ground Investigation	**Date Booked in:**	16-Jul-19
Sample Details:	IT2_SB_03 SB03 ESWAC2-080719 ES 2 19.50	**Date Analysed:**	18-Jul-19
LIMS ID Number:	CL1965836	**Matrix:**	Soil
Job Number:	S20_0516	**Ext Method:**	Headspace
Directory/Quant file:	071819_MS19\ Initial Calibration	**Dilution:**	0.95
Operator:	ED	**Position:**	27

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Non Detected	-	-	<6	-	N
Dichloromethane (Methylene Chloride)	75-09-2	-	<6	-	N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Compounds marked * are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

WASTE ACCEPTANCE CRITERIA TESTING
BSEN 12457/2

					Leaching Data	
Client	Fugro GeoServices Ltd				Weight of sample (kg)	0.105
Contact	Karen Blackmore				Moisture content @ 105°C (% of Wet Weight)	14.6
					Equivalent Weight based on drying at 105°C (kg)	0.090
Site	SZC 2019 Offshore Ground Investigation				Volume of water required to carry out 10:1 stage (litres)	0.885
					Fraction of sample above 4 mm %	0.000
Sample Description		**Report No**	**Sample No**	**Issue Date**	Fraction of non-crushable material %	0.000
IT2_SB_03 SB03 ESWAC1-080719 ES 1 0.00		s20_0516M	CL/1965835	30-Jul-19		

Note: The >4mm fraction is crushed using a disc mill

Accreditation	Method Code	Solid Waste Analysis (Dry Basis)	Concentration in Solid (Dry Weight Basis)	Landfill Waste Acceptance Criteria Limit Values		
				Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
U	WSLM59	Total Organic Carbon (% M/M)	0.12	3	5	6
N	LOI450	Loss on Ignition (%)	2			10
U	BTEXHSA	Sum of BTEX (mg/kg)	<0.0702	6		
U	PCBUSECD	Sum of 7 Congener PCB's (mg/kg)	<0.042	1		
U	TPHFIDUS	Mineral Oil (mg/kg)	17.2	500		
N	PAHMSUS	PAH Sum of 17 (mg/kg)	<1.59	100		
U	PHSOIL	pH (pH units)	8.4		>6	
N	ANC	Acid Neutralisation Capacity (mol/kg) @pH 7	4.12		To be evaluated	To be evaluated

Accreditation	Method Code	Leachate Analysis	10:1 Single Stage Leachate	Calculated cumulative amount	Landfill Waste Acceptance Criteria Limit Values for BSEN 12457/2 @ L/S 10 litre kg-1		
			mg/l except °°	mg/kg (dry weight)	mg/kg (dry weight)		
U	WSLM3	pH (pH units) °°	8	Calculated data not UKAS Accredited			
U	WSLM2	Conductivity (µs/cm) °°	1210				
U	ICPMSW	Arsenic	0.001	0.01	0.5	2	25
U	ICPWATVAR	Barium	<0.01	<0.1	20	100	300
U	ICPMSW	Cadmium	<0.0001	<0.001	0.04	1	5
U	ICPMSW	Chromium	<0.001	<0.01	0.5	10	70
U	ICPMSW	Copper	<0.001	<0.01	2	50	100
U	ICPMSW	Mercury	<0.0001	<0.001	0.01	0.2	2
U	ICPMSW	Molybdenum	0.006	0.06	0.5	10	30
U	ICPMSW	Nickel	<0.001	<0.01	0.4	10	40
U	ICPMSW	Lead	<0.001	<0.01	0.5	10	50
U	ICPMSW	Antimony	0.002	0.02	0.06	0.7	5
U	ICPMSW	Selenium	<0.001	<0.01	0.1	0.5	7
U	ICPMSW	Zinc	<0.002	<0.02	4	50	200
U	KONENS	Chloride	316	3160	800	15000	25000
U	ISEF	Fluoride	0.2	2	10	150	500
U	ICPWATVAR	Sulphate as SO4	59	590	1000	20000	50000
N	WSLM27	Total Dissolved Solids	945	9450	4000	60000	100000
U	SFAPI	Phenol Index	<0.05	<0.5	1		
N	WSLM13	Dissolved Organic Carbon	3.7	37	500	800	1000

Template Ver. 1

Landfill Waste Acceptance Criteria limit values correct as of 11th March 2009.

Tests where the accreditation is set to U are UKAS accredited, those where the accreditation is set to N are not UKAS accredited

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

WASTE ACCEPTANCE CRITERIA TESTING
BSEN 12457/2

					Leaching Data	
Client	Fugro GeoServices Ltd				Weight of sample (kg)	0.107
Contact	Karen Blackmore				Moisture content @ 105°C (% of Wet Weight)	14.7
					Equivalent Weight based on drying at 105°C (kg)	0.090
Site	SZC 2019 Offshore Ground Investigation				Volume of water required to carry out 10:1 stage (litres)	0.883
					Fraction of sample above 4 mm %	0.000
Sample Description		**Report No**	**Sample No**	**Issue Date**	Fraction of non-crushable material %	0.000
IT2_SB_03 SB03 ESWAC2-080719 ES 2 19.50		s20_0516M	CL/1965836	30-Jul-19		

Note: The >4mm fraction is crushed using a disc mill

Accreditation	Method Code	Solid Waste Analysis (Dry Basis)	Concentration in Solid (Dry Weight Basis)	Landfill Waste Acceptance Criteria Limit Values		
				Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
U	WSLM59	Total Organic Carbon (% M/M)	0.12	3	5	6
N	LOI450	Loss on Ignition (%)	2.9			10
U	BTEXHSA	Sum of BTEX (mg/kg)	<0.0702	6		
U	PCBUSECD	Sum of 7 Congener PCB's (mg/kg)	<0.042	1		
U	TPHFIDUS	Mineral Oil (mg/kg)	12.5	500		
N	PAHMSUS	PAH Sum of 17 (mg/kg)	<1.59	100		
U	PHSOIL	pH (pH units)	8.3		>6	
N	ANC	Acid Neutralisation Capacity (mol/kg) @pH 7	5.16		To be evaluated	To be evaluated

Accreditation	Method Code	Leachate Analysis	10:1 Single Stage Leachate mg/l except °°	Calculated cumulative amount mg/kg (dry weight)	Landfill Waste Acceptance Criteria Limit Values for BSEN 12457/2 @ L/S 10 litre kg-1 mg/kg (dry weight)		
U	WSLM3	pH (pH units) °°	7.8	Calculated data not UKAS Accredited			
U	WSLM2	Conductivity (µs/cm) °°	1330				
U	ICPMSW	Arsenic	<0.001	<0.01	0.5	2	25
U	ICPWATVAR	Barium	<0.01	<0.1	20	100	300
U	ICPMSW	Cadmium	<0.0001	<0.001	0.04	1	5
U	ICPMSW	Chromium	<0.001	<0.01	0.5	10	70
U	ICPMSW	Copper	<0.001	<0.01	2	50	100
U	ICPMSW	Mercury	<0.0001	<0.001	0.01	0.2	2
U	ICPMSW	Molybdenum	0.004	0.04	0.5	10	30
U	ICPMSW	Nickel	<0.001	<0.01	0.4	10	40
U	ICPMSW	Lead	<0.001	<0.01	0.5	10	50
U	ICPMSW	Antimony	0.002	0.02	0.06	0.7	5
U	ICPMSW	Selenium	<0.001	<0.01	0.1	0.5	7
U	ICPMSW	Zinc	<0.002	<0.02	4	50	200
U	KONENS	Chloride	349	3490	800	15000	25000
U	ISEF	Fluoride	0.2	2	10	150	500
U	ICPWATVAR	Sulphate as SO4	64	640	1000	20000	50000
N	WSLM27	Total Dissolved Solids	1040	10400	4000	60000	100000
U	SFAPI	Phenol Index	<0.05	<0.5	1		
N	WSLM13	Dissolved Organic Carbon	2.3	23	500	800	1000

Template Ver. 1

Landfill Waste Acceptance Criteria limit values correct as of 11th March 2009.

Tests where the accreditation is set to U are UKAS accredited, those where the accreditation is set to N are not UKAS accredited

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

SOCOTEC

Analysis of a Soil Sample

Client:	SOCOTEC UK Environmental Chemistry PO Box 100 Burton upon Trent Staffordshire DE15 0XD
Testing Facility:	SOCOTEC UK Unit 12, Moorbrook Southmead Industrial Park Didcot Oxfordshire OX11 7HP
Laboratory Reference:	19-0642
Customer Reference:	S200516
Quote Number:	ENR-ANU-9781
PO Number:	Intraco
Sample Received:	17 July 2019
Sample Condition:	Satisfactory, Ambient
Analysis Completed:	29 July 2019
Report Author:	[redacted]
Author's Name:	Kiran Bala
Job Title:	Analyst
Approved By:	[redacted]
Approver's Name:	Charlene Hunston
Job Title:	Team Leader
Report Date:	29 July 2019

1

UKAS TESTING
1252

SOCOTEC

Sample Summary

Customer Reference	Laboratory Reference (SOCOTEC UK Bretby)	Laboratory Reference (SOCOTEC UK Didcot)	Matrix	Sampling Date
IT2_SB_03 SB03 ESWAC1-080719 ES 1 0.00	S1965835	RX3961	Soil	08/07/2019 12:15

Experimental

Gamma Spectrometry

ANU/SOP/2029 – The measurement technique is based on the use of high purity germanium (HPGe) detectors coupled to an Ortec gamma ray spectroscopy system. The gamma ray spectra are stored on a computer and analysed using the software programme Fitzpeaks for photopeak identification and quantification. The detectors are calibrated for efficiency using a mixed radionuclide standard, which covers an energy range of approximately 30-2000 keV. The efficiency of gamma rays between 30 keV and 120 keV are determined on an individual basis.

Application of decay corrections for the naturally occurring daughter radionuclides of uranium and thorium assumes that the series daughter radionuclides are all in secular equilibrium and therefore decay with the half-life of the first radionuclide in the series. (^{226}Ra is not UKAS accredited)

Results

Results are presented in the following table.

Any opinions and interpretations expressed herein are outside the scope of our UKAS accreditation.

The results in this test report relate only to the items tested, and test portions taken thereof. This test report must not be reproduced except in full, without written approval of the laboratory.

SOCOTEC

Results Summary – Gamma Spectrometry

Customer Reference	Laboratory Reference	Be-7	K-40	Co-60	Cs-134	Cs-137	Tl-208	Pb-210	Bi-212	Pb-212
IT2_SB_03 SB03 ESWAC1-080719 ES 1 0.00	RX3961	<11	93 ± 22	<1.4	<1.5	<1.3	<1.4	<32	<17	4.7 ± 1.7

Customer Reference	Laboratory Reference	Bi-214	Pb-214	Ra-224	Ra-226 *	Ac-228	Pa-234m	Th-234	U-235	Am-241
IT2_SB_03 SB03 ESWAC1-080719 ES 1 0.00	RX3961	9.1 ± 2.5	8.3 ± 2.0	<29	<26	<5.5	<160	<39	<1.6	<3.0

Notes:

1. Analysis marked with an asterisk is not UKAS accredited.
2. Results are presented as $Bq.kg^{-1}$ of dried and homogenised sample and are decay corrected to the sampling date.
3. For results below the Limit of Detection, the LoD is rounded up to 2 significant figures.
4. Uncertainties are rounded to 2 significant figures; results are rounded to the same precision.
5. Detector calibrations are based upon homogeneous standard solutions. For quantification purposes the sample is assumed to be homogeneous.
6. ^{226}Ra has only one gamma ray at 186 keV and the major gamma ray from ^{235}U also occurs at 186 keV. ^{235}U can be measured by the lower abundance gamma ray at 144 keV and if a positive result for ^{235}U is reported, the ^{226}Ra result will be unreliable and overestimated. However even if ^{235}U is below the LoD there may still be a contribution to the ^{226}Ra from ^{235}U and the ^{226}Ra result may be unreliable and overestimated. If an accurate result for ^{226}Ra is required this is better obtained by radiochemical analysis.

- End of Test Report -

ASBESTOS ANALYSIS RESULTS

SOCOTEC Asbestos Limited Certificate of Analysis for Asbestos in Soils, Sediments and Aggregates

UKAS TESTING 1089

Detection limit of Method SCI-ASB-020 is 0.001%

Sampling has been carried out by a third party

SOCOTEC

Client:	SOCOTEC Environmental Chemistry	**Page 1 of 1**	
Address:	Etwall House, Bretby Business Park, Ashby Road, Burton upon Trent	**Report No:**	**ANO-0503-21205**
For the attention of:	Fugro GeoServices Ltd	**Report Date:**	**24/07/2019**
Site Address:	SZC 2019 Offshore Ground Investigation	**Project Number:**	**S200516**

Sample Number	Sample Date	Sample Location & Matrix	Test Date	Total Sample Dry Weight (g)	Weight of <10mm Fraction (g)	Asbestos(g) in >10mm	Asbestos(g) in < 10mm	% Asbestos by weight of Total Dried Sample	Moisture Content	Asbestos Fibre Types Identified
CL/1965835	08/07/19	IT2_SB_03 SB03 ESWAC1-080719 ES 1 0.00 Sediment	24/07/2019	1406.2	1406.2			Identification		NAIIS
CL/1965836	08/07/19	IT2_SB_03 SB03 ESWAC2-080719 ES 2 19.50 Sediment	24/07/2019	921.7	910.3			Identification		NAIIS

Keys

NAACR = Not Analysed at Clients Request

NAIIS = No Asbestos Identified in Sample (Identification Only)

*** visible to naked eye**

NADIS = No Asbestos Detected in Sample (ID & Quant Only)

Name:	Tom Pratt	Authorised Signatory: [redacted]
Position:	Lab Coordinator	

The sample analysis for the above results was carried out using the procedures detailed in SOCOTEC Asbestos Limited in house method (SCI-ASB-020) based on EA document Quantification of asbestos in soil and associated materials - Draft 2017. Fibre identification was carried out usi [redacted] n house method of transmitted/polarised light microscopy and centre stop dispersion staining (SCI-ASB-007), based on HSE's HSG 248. The analysis of the < 10mm fraction for asbestos content only includes ACMs and fibres and does not discriminate non-asbestos fibres. All fibres are assumed, unless specified, to be amphiboles. All tests were carried out at a SOCOTEC Asbestos Ltd laboratory, UKAS Testing Number 1089. Recommended sample weight is 1kg-2kg, samples less than 1kg are classified as deviating samples.

Where individual results are flagged see report notes for status.

Analytical and Deviating Sample Overview

Customer **Fugro GeoServices Ltd**
Site **SZC 2019 Offshore Ground Investigation**
Report No **S200516M**

Consignment No S86403
Date Logged 16-Jul-2019
In-House Report Due 24-Jul-2019

Please note the results for any subcontracted analysis (identified with a '^') is likely to take up to an additional five working days.

ID Number	Description	MethodID	AMMAR	ANC	BTEXHSA		CEN Leachate	CustServ	FOCCALC	FOCS	GROHSA	ICPACIDS	ICPBOR	ICPMSS										ICPSOIL	KONECR	LOI(RoMM)	MCertS
		Sampled	Exchange.Ammonium AR	Acid Neut. Capacity	BTEX-HSA + MTBE analysis	MTBE (µg/kg)	CEN Leac(P)C	REPORT A	F.O.C.	S.O.M. % (Calc)	GRO (AA) by HSA GC-FID	SO4-- (acid sol)	Boron (H20 Soluble)	Arsenic (MS)	Cadmium (MS)	Chromium (MS)	Copper (MS)	Lead (MS)	Mercury (MS)	Nickel (MS)	Selenium (MS)	Vanadium (MS)	Zinc (MS)	Iron	Chromium vi:	L.O.I. % @ 450C	MCertS Analysis
			✓		✓	✓			✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓			✓
CL/1965835	IT2_SB_03 SB03 ESWAC1-080	08/07/19																									
CL/1965836	IT2_SB_03 SB03 ESWAC2-080	08/07/19																									

Note: We will endeavour to prioritise samples to complete analysis within holding time; however any delay could result in samples becoming deviant whilst being processed in the laboratory.

If sampling dates are missing or matrices unclassified then results will not be ISO 17025 accredited. Please contact us as soon as possible to provide missing information in order to reinstate accreditation.

Deviating Sample Key

A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key

	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

Where individual results are flagged see report notes for status.
The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Analytical and Deviating Sample Overview

Customer **Fugro GeoServices Ltd**
Site **SZC 2019 Offshore Ground Investigation**
Report No **S200516M**

Consignment No S86403
Date Logged 16-Jul-2019
In-House Report Due 24-Jul-2019

Please note the results for any subcontracted analysis (identified with a '^') is likely to take up to an additional five working days.

ID Number	Description	MethodID	OGSN			PAHMSUS	PCBECD	PHSOIL	SFAPI			SFAS	Sub002	Sub008	SVOCSW	TMSS	TPHFIDUS		TPHUSSI								
		Sampled	Dibutyl Tin	Tributyl Tin as Sn	Triphenyl Tin	PAH (17) by GCMS	PCB-7 Congeners Analysis	pH units (AR)	Cyanide(Free) (AR)	Cyanide(Total) (AR)	Phenol Index.(AR)	Sulphide as S (AR)	^Asbestos Screen & ID (Stage 1)	^Gamma spectrometry	SVOC + TICs (AR)	Tot.Moisture @ 105C	TPH Band (>C10-C40)	TPH by GCFID (AR)	TPH Ali Band >C10-C12	TPH Ali Band >C12-C16	TPH Ali Band >C16-C21	TPH Ali Band >C21-C35	TPH Ali Band >C8-C10	TPH Ali Band >C8-C40	TPH Aro Band >C10-C12	TPH Aro Band >C12-C16	TPH Aro Band >C16-C21
						✓	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CL/1965835	IT2_SB_03 SB03 ESWAC1-080	08/07/19																									
CL/1965836	IT2_SB_03 SB03 ESWAC2-080	08/07/19																									

Note: We will endeavour to prioritise samples to complete analysis within holding time; however any delay could result in samples becoming deviant whilst being processed in the laboratory.

If sampling dates are missing or matrices unclassified then results will not be ISO 17025 accredited. Please contact us as soon as possible to provide missing information in order to reinstate accreditation.

Deviating Sample Key

A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key

	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

Where individual results are flagged see report notes for status.
The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Analytical and Deviating Sample Overview

Customer Fugro GeoServices Ltd
Site SZC 2019 Offshore Ground Investigation
Report No S200516M

Consignment No S86403
Date Logged 16-Jul-2019
In-House Report Due 24-Jul-2019

Please note the results for any subcontracted analysis (identified with a '^') is likely to take up to an additional five working days.

ID Number	Description	MethodID	TPHUSSI				VOCHSAS	WSLM59
		Sampled	TPH Aro Band >C21-C35	TPH Aro Band >C8-C10	TPH Aro Band >C8-C40	TPH by GCFID (AR/Si)	VOC + TICs HSA-GCMS	Total Organic Carbon
			✓	✓	✓	✓	✓	✓
CL/1965835	IT2_SB_03 SB03 ESWAC1-080	08/07/19						
CL/1965836	IT2_SB_03 SB03 ESWAC2-080	08/07/19						

Note: We will endeavour to prioritise samples to complete analysis within holding time; however any delay could result in samples becoming deviant whilst being processed in the laboratory.

If sampling dates are missing or matrices unclassified then results will not be ISO 17025 accredited. Please contact us as soon as possible to provide missing information in order to reinstate accreditation.

Deviating Sample Key	
A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key	
	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

Where individual results are flagged see report notes for status.
The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Report Number : EFS/200516

Additional Report Notes

Method Code	Sample ID	The following information should be taken into consideration when using the data contained within this report
SVOCSW	CL1965835 CL1965836	The Primary process control data associated with this Test has not wholly met the requirements of the Laboratory Quality Management System QMS with one or more target analytes falling outside acceptable limits. However the remaining data gives the Laboratory confidence that the test has performed satisfactorily and that the validity of the data may not have been significantly affected. However in line with our QMS policy we have removed accreditation, where applicable, from the affected analytes (2,4-Dinitrotoluene, Fluoranthene, Pyrene, Butylbenzylphthalate, Di-n-octylphthalate) . These circumstances should be taken into consideration when utilising the data.
TPHUSSI	CL1965835	The Secondary process control data associated with this Test has not wholly met the requirements of the Laboratory Quality Management System QMS with one or more target analytes falling outside acceptable limits. However the remaining data gives the Laboratory confidence that the test has performed satisfactorily (including the Primary Process Control) and that the validity of the data may not have been significantly affected. However in line with our QMS policy we have removed accreditation , where applicable, from the affected analytes (C16-C21) of the aliphatic fraction . These circumstances should be taken into consideration when utilising the data.
VOCHSAS	CL1965835 CL1965836	The Primary process control data associated with this Test has not wholly met the requirements of the Laboratory Quality Management System QMS with one or more target analytes falling outside acceptable limits. However the remaining data gives the Laboratory confidence that the test has performed satisfactorily and that the validity of the data may not have been significantly affected. However in line with our QMS policy we have removed accreditation, where applicable, from the affected analytes (Tetrachloroethene) . These circumstances should be taken into consideration when utilising the data.
TPHUSSI	CL1965836	The Secondary process control data associated with this Test has not wholly met the requirements of the Laboratory Quality Management System QMS with one or more target analytes falling outside acceptable limits. However the remaining data gives the Laboratory confidence that the test has performed satisfactorily (including the Primary Process Control) and that the validity of the data may not have been significantly affected. However in line with our QMS policy we have removed accreditation , where applicable, from the affected analytes (ARO C16-C21) . These circumstances should be taken into consideration when utilising the data.

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Soil	AMMAR	As Received	Determination of Exchangeable Ammonium in Soil using potassium chloride extraction, discrete colorimetric detection
Soil	ANC	Oven Dried @ < 35°C	Quantitative digestion with Hydrochloric Acid back titration with 1M Sodium Hydroxide to pH 7
Soil	BTEXHSA	As Received	Determination of Benzene, Toluene, Ethyl benzene and Xylenes (BTEX) by Headspace GCFID
Soil	FOCS	Oven Dried @ < 35°C	Calculation of Soil Organic Matter content from Organic Carbon content of soil samples
Soil	GROHSA	As Received	Determination of Total Gasoline Range Organics Hydrocarbons (GRO) by Headspace GCFID
Soil	ICPACIDS	Oven Dried @ < 35°C	Determination of Total Sulphate in soil samples by Hydrochloric Acid extraction followed by ICPOES detection
Soil	ICPBOR	Oven Dried @ < 35°C	Determination of Boron in soil samples by hot water extraction followed by ICPOES detection
Soil	ICPMSS	Oven Dried @ < 35°C	Determination of Metals in Marine Sediments and Soil samples by aqua regia digestion followed by ICPMS detection
Soil	ICPSOIL	Oven Dried @ < 35°C	Determination of Metals in soil samples by aqua regia digestion followed by ICPOES detection
Soil	KONECR	Oven Dried @ < 35°C	Determination of Chromium vi in soil samples by water extraction followed by colorimetric detection
Soil	LOI(%MM)	Oven Dried @ < 35°C	Determination of loss on ignition for soil samples at specified temperature by gravimetry
Soil	OGSN	As Received	Determination of Organo-tin compounds using sonic extraction in methanol , derivatiseation with Sodium Tetraethylborate and GCMS quantitation (SIM mode).
Soil	PAHMSUS	As Received	Determination of Polycyclic Aromatic Hydrocarbons (PAH) by hexane/acetone extraction followed by GCMS detection
Soil	PCBECD	As Received	Determination of Polychlorinated Biphenyl (PCB) congeners/aroclors by hexane/acetone extraction followed by GCECD detection
Soil	PHSOIL	As Received	Determination of pH of 2.5:1 deionised water to soil extracts using pH probe.
Soil	SFAPI	As Received	Segmented flow analysis with colorimetric detection
Soil	SFAS	As Received	Segmented flow analysis with colorimetric detection
Soil	SubCon*	*	Contact Laboratory for details of the methodology used by the sub-contractor.
Soil	SVOCSW	As Received	Determination of Semi-Volatile Organic Compounds by dichloromethane/acetone extraction followed by GCMS detection
Soil	TMSS	As Received	Determination of the Total Moisture content at 105ºC by loss on oven drying gravimetric analysis (% based upon wet weight)

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Soil	TPHFIDUS	As Received	Determination of hexane/acetone extractable Hydrocarbons in soil with GCFID detection.
Soil	TPHUSSI	As Received	Determination of hexane/acetone extractable Hydrocarbons in soil with GCFID detection including quantitation of Aromatic and Aliphatic fractions.
Soil	VOCHSAS	As Received	Determination of Volatile Organic Compounds (VOC) by Headspace GCMS
Soil	WSLM59	Oven Dried @ < 35°C	Determination of Organic Carbon in soil using sulphurous Acid digestion followed by high temperature combustion and IR detection
Water	ICPMSW	As Received	Direct quantitative determination of Metals in water samples using ICPMS
Water	ICPWATVAR	As Received	Direct determination of Metals and Sulphate in water samples using ICPOES
Water	ISEF	As Received	Determination of Fluoride in water samples by Ion Selective Electrode (ISE)
Water	KONENS	As Received	Direct analysis using discrete colorimetric analysis
Water	SFAPI	As Received	Segmented flow analysis with colorimetric detection
Water	WSLM13	As Received	Instrumental analysis using acid/persulphate digestion and non-dispersive IR detection
Water	WSLM2	As Received	Determination of the Electrical Conductivity (µS/cm) by electrical conductivity probe.
Water	WSLM27	As Received	Gravimetric Determination
Water	WSLM3	As Received	Determination of the pH of water samples by pH probe

Report Notes

Generic Notes

Soil/Solid Analysis

Unless stated otherwise,
- Results expressed as mg/kg have been calculated on the basis indicated in the Method Description table.
  All results on MCERTS reports are reported on a 105ºC dry weight basis with the exception of pH and conductivity.
- Sulphate analysis not conducted in accordance with BS1377
- Water Soluble Sulphate is on a 2:1 water:soil extract

Waters Analysis

Unless stated otherwise results are expressed as mg/l
Nil: Where "Nil" has been entered against Total Alkalinity or Total Acidity this indicates that a measurement was not required due to the inherent pH of the sample.

Oil analysis specific

Unless stated otherwise,
- Results are expressed as mg/kg
- SG is expressed as g/cm^3@ 15°C

Gas (Tedlar bag) Analysis

Unless stated otherwise, results are expressed as ug/l

Asbestos Analysis

CH Denotes Chrysotile **TR** Denotes Tremolite
CR Denotes Crocidolite **AC** Denotes Actinolite
AM Denotes Amosite **AN** Denotes Anthophylite
NAIIS No Asbestos Identified in Sample
NADIS No Asbestos Detected In Sample

Symbol Reference

^ Sub-contracted analysis.
$$ Unable to analyse due to the nature of the sample
¶ Samples submitted for this analyte were not preserved on site in accordance with laboratory protocols. This may have resulted in deterioration of the sample(s) during transit to the laboratory. Consequently the reported data may not represent the concentration of the target analyte present in the sample at the time of sampling
¥ Results for guidance only due to possible interference
& Blank corrected result
I.S Insufficient sample to complete requested analysis
I.S(g) Insufficient sample to re-analyse, results for guidance only
Intf Unable to analyse due to interferences
N.D Not determined **N.Det** Not detected
N.F No Flow
NS Information Not Supplied
Req Analysis requested, see attached sheets for results
Þ Raised detection limit due to nature of the sample
***** All accreditation has been removed by the laboratory for this result
‡ MCERTS accreditation has been removed for this result
§ accreditation has been removed for this result as it is a non-accredited matrix

Note: The Laboratory may only claim that data is accredited when all of the requirements of our Quality System have been met. Where these requirements have not been met the laboratory may elect to include the data in its final report and remove the accreditation from individual data items if it believes that the validity of the data has not been affected. If further details are required of the circumstances which have led to the removal of accreditation then please do not hesitate to contact the laboratory.

Sample Descriptions

Client : Fugro GeoServices Ltd
Site : SZC 2019 Offshore Ground Investigation
Report Number : S20_0516

Note: major constituent in upper case

Lab ID Number	Client ID	Description
CL/1965835	3_03 SB03 ESWAC1-080719 ES	Brown SAND
CL/1965836	_03 SB03 ESWAC2-080719 ES	Grey Gravel SAND

Our Ref: EFS/200554 (Ver. 1)
Your Ref: G190016U

July 31, 2019

Environmental Chemistry
SOCOTEC UK Limited
Bretby Business Park
Ashby Road
Burton-on-Trent
Staffordshire
DE15 0YZ

Telephone: 01283 554400
Facsimile: 01283 554422

Karen Blackmore
Fugro GeoServices Ltd
Fugro House
Hithercroft Road
Wallingford
Oxfordshire
OX10 9RB

For the attention of Karen Blackmore

Dear Karen Blackmore

Sample Analysis - SZC 2019 Offshore Ground Investigation

Samples from the above site have been analysed in accordance with the schedule supplied.
The sample details and the results of analyses for these samples are given in the appended report.

An invoice for this work will follow under a separate cover.

The samples will be kept until the agreed date when they will be discarded. Please call 01283 554434 for an extension of this date.
Please be aware that our policy for the retention of paper based laboratory records and analysis reports is 6 years.

The work was carried out in accordance with SOCOTEC UK Limited (Multi-Sector Services) Standard Terms and Conditions of Contract.

If I can be of any further assistance please do not hesitate to contact me.

Yours sincerely

for SOCOTEC UK Limited

[redacted]

K Smith
Project Co-ordinator
01283 554434

TEST REPORT

Report No. EFS/200554 (Ver. 1)

Fugro GeoServices Ltd
Fugro House
Hithercroft Road
Wallingford
Oxfordshire
OX10 9RB

Site: SZC 2019 Offshore Ground Investigation

The 2 samples described in this report were registered for analysis by SOCOTEC UK Limited on 16-Jul-2019. This report supersedes any versions previously issued by the laboratory.

The analysis was completed by: 31-Jul-2019

The following tables are contained in this report:

Table 1 Main Analysis Results (Page 2)
Subcontracted Analysis Reports (Pages 3 to 5)
The accreditation status of subcontracted analysis is displayed on the appended subcontracted analysis reports.
Analytical and Deviating Sample Overview (Page 6)
Table of Method Descriptions (Page 7)
Table of Report Notes (Page 8)
Table of Sample Descriptions (Appendix A Page 1 of 1)

On behalf of
SOCOTEC UK
Becky Batham Operations Manager
Energy & Waste Services

Date of Issue: 31-Jul-2019

Tests marked '^' have been subcontracted to another laboratory.

Where samples have been flagged as deviant on the Analytical and Deviating Sample Overview, for any reason, the data may not be representative of the sample at the point of sampling and the validity of the data may be affected. SOCOTEC UK Limited accepts no responsibility for any sampling not carried out by our personnel.

		Units :	Bq/kg																
		Method Codes :	Sub008																
		Method Reporting Limits :																	
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**^Gamma spectrometry**																
1965944	IT2_SPT_03 SPT03 CEFAS1-070719 0.00	**07-Jul-19 04:00**	Req																
1965945	IT2_SPT_03 SPT03 CEFAS-RAD-5 1.00	**07-Jul-19 04:30**	Req																

SOCOTEC

Bretby Business Park, Ashby Road

Burton-on-Trent, Staffordshire, DE15 0YZ

Tel +44 (0) 1283 554400

Fax +44 (0) 1283 554422

Client Name	**Fugro GeoServices Ltd**
Contact	Karen Blackmore

SZC 2019 Offshore Ground Investigation

Sample Analysis

Date Printed	**31-Jul-2019**
Report Number	**EFS/200554**
Table Number	**1**

SOCOTEC

Analysis of Sediment Samples

Client:	SOCOTEC UK Environmental Chemistry PO Box 100 Burton upon Trent Staffordshire DE15 0XD
Testing Facility:	SOCOTEC UK Unit 12, Moorbrook Southmead Industrial Park Didcot Oxfordshire OX11 7HP
Laboratory Reference:	19-0647
Customer Reference:	S200554
Quote Number:	ENR-ANU-9781
PO Number:	Intraco
Samples Received:	18 July 2019
Sample Condition:	Satisfactory, Ambient
Analysis Completed:	30 July 2019
Report Author:	[redacted]
Author's Name:	Charlene Hunston
Job Title:	Team Leader
Approved By:	[redacted]
Approver's Name:	Trevor Harding
Job Title:	Senior Analyst
Report Date:	30 July 2019

UKAS TESTING
1252

SOCOTEC

Sample Summary

Customer Reference	Laboratory Reference (SOCOTEC UK Bretby)	Laboratory Reference (SOCOTEC UK Didcot)	Matrix	Sampling Date
IT2_SPT_03 SPT03 CEFAS1-070719 0.00	S1965944	RX4005	Marine Sediment	07/07/2019 04:00
IT2_SPT_03 SPT03 CEFAS-RAD-5 1.00	S1965945	RX4006	Marine Sediment	07/07/2019 04:30

Experimental

Gamma Spectrometry

ANU/SOP/2029 – The measurement technique is based on the use of high purity germanium (HPGe) detectors coupled to an Ortec gamma ray spectroscopy system. The gamma ray spectra are stored on a computer and analysed using the software programme Fitzpeaks for photopeak identification and quantification. The detectors are calibrated for efficiency using a mixed radionuclide standard, which covers an energy range of approximately 30-2000 keV. The efficiency of gamma rays between 30 keV and 120 keV are determined on an individual basis.

Application of decay corrections for the naturally occurring daughter radionuclides of uranium and thorium assumes that the series daughter radionuclides are all in secular equilibrium and therefore decay with the half-life of the first radionuclide in the series. (^{226}Ra is not UKAS accredited)

Results

Results are presented in the following table.

Any opinions and interpretations expressed herein are outside the scope of our UKAS accreditation.

The results in this test report relate only to the items tested, and test portions taken thereof. This test report must not be reproduced except in full, without written approval of the laboratory.

UKAS TESTING
1252

SOCOTEC

Results Summary – Gamma Spectrometry

Customer Reference	Laboratory Reference	Be-7	K-40	Co-60	Cs-134	Cs-137	Tl-208	Pb-210	Bi-212	Pb-212
IT2_SPT_03 SPT03 CEFAS1-070719 0.00	RX4005	<12	282 ± 44	<1.6	<1.6	<1.3	3.6 ± 1.1	<30	<18	10.7 ± 1.9
IT2_SPT_03 SPT03 CEFAS-RAD-5 1.00	RX4006	<14	398 ± 60	<1.9	<1.9	<1.5	8.1 ± 1.7	<35	<23	21.8 ± 2.8

Customer Reference	Laboratory Reference	Bi-214	Pb-214	Ra-224	Ra-226 *	Ac-228	Pa-234m	Th-234	U-235	Am-241
IT2_SPT_03 SPT03 CEFAS1-070719 0.00	RX4005	9.3 ± 2.5	8.6 ± 2.3	<35	<26	11.5 ± 4.3	<160	<36	<1.6	<2.8
IT2_SPT_03 SPT03 CEFAS-RAD-5 1.00	RX4006	17.0 ± 3.4	17.8 ± 2.7	<47	<32	22.0 ± 4.9	<180	<41	<2.0	<3.4

Notes:

1. Analysis marked with an asterisk is not UKAS accredited.
2. Results are presented as $Bq.kg^{-1}$ of dried and homogenised samples and are decay corrected to the sampling date.
3. For results below the Limit of Detection, the LoD is rounded up to 2 significant figures.
4. Uncertainties are rounded to 2 significant figures; results are rounded to the same precision.
5. Detector calibrations are based upon homogeneous standard solutions. For quantification purposes the samples are assumed to be homogeneous.
6. ^{226}Ra has only one gamma ray at 186 keV and the major gamma ray from ^{235}U also occurs at 186 keV. ^{235}U can be measured by the lower abundance gamma ray at 144 keV and if a positive result for ^{235}U is reported, the ^{226}Ra result will be unreliable and overestimated. However even if ^{235}U is below the LoD there may still be a contribution to the ^{226}Ra from ^{235}U and the ^{226}Ra result may be unreliable and overestimated. If an accurate result for ^{226}Ra is required this is better obtained by radiochemical analysis.

- End of Test Report -

Analytical and Deviating Sample Overview

Customer Fugro GeoServices Ltd
Site SZC 2019 Offshore Ground Investigation
Report No S200554

Consignment No S86402
Date Logged 16-Jul-2019
In-House Report Due 05-Aug-2019

Please note the results for any subcontracted analysis (identified with a '^') is likely to take up to an additional five working days.

ID Number	Description	Sampled	MethodID: CustServ — Report C	MethodID: Sub008 — ^Gamma spectrometry
CL/1965944	IT2_SPT_03 SPT03 CEFAS1-0	07/07/19		
CL/1965945	IT2_SPT_03 SPT03 CEFAS-RA	07/07/19		

Note: We will endeavour to prioritise samples to complete analysis within holding time; however any delay could result in samples becoming deviant whilst being processed in the laboratory.

If sampling dates are missing or matrices unclassified then results will not be ISO 17025 accredited. Please contact us as soon as possible to provide missing information in order to reinstate accreditation.

Deviating Sample Key	
A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key	
	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

Where individual results are flagged see report notes for status.

The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Soil	SubCon*	*	Contact Laboratory for details of the methodology used by the sub-contractor.

Report Notes

Generic Notes

Soil/Solid Analysis

Unless stated otherwise,
- Results expressed as mg/kg have been calculated on the basis indicated in the Method Description table.
  All results on MCERTS reports are reported on a 105ºC dry weight basis with the exception of pH and conductivity.
- Sulphate analysis not conducted in accordance with BS1377
- Water Soluble Sulphate is on a 2:1 water:soil extract

Waters Analysis

Unless stated otherwise results are expressed as mg/l
Nil: Where "Nil" has been entered against Total Alkalinity or Total Acidity this indicates that a measurement was not required due to the inherent pH of the sample.

Oil analysis specific

Unless stated otherwise,
- Results are expressed as mg/kg
- SG is expressed as g/cm^3@ 15°C

Gas (Tedlar bag) Analysis

Unless stated otherwise, results are expressed as ug/l

Asbestos Analysis

CH Denotes Chrysotile **TR** Denotes Tremolite
CR Denotes Crocidolite **AC** Denotes Actinolite
AM Denotes Amosite **AN** Denotes Anthophylite
NAIIS No Asbestos Identified in Sample
NADIS No Asbestos Detected In Sample

Symbol Reference

^ Sub-contracted analysis.
$$ Unable to analyse due to the nature of the sample
¶ Samples submitted for this analyte were not preserved on site in accordance with laboratory protocols. This may have resulted in deterioration of the sample(s) during transit to the laboratory. Consequently the reported data may not represent the concentration of the target analyte present in the sample at the time of sampling
¥ Results for guidance only due to possible interference
& Blank corrected result
I.S Insufficient sample to complete requested analysis
I.S(g) Insufficient sample to re-analyse, results for guidance only
Intf Unable to analyse due to interferences
N.D Not determined **N.Det** Not detected
N.F No Flow
NS Information Not Supplied
Req Analysis requested, see attached sheets for results
Þ Raised detection limit due to nature of the sample
***** All accreditation has been removed by the laboratory for this result
‡ MCERTS accreditation has been removed for this result
§ accreditation has been removed for this result as it is a non-accredited matrix

Note: The Laboratory may only claim that data is accredited when all of the requirements of our Quality System have been met. Where these requirements have not been met the laboratory may elect to include the data in its final report and remove the accreditation from individual data items if it believes that the validity of the data has not been affected. If further details are required of the circumstances which have led to the removal of accreditation then please do not hesitate to contact the laboratory.

Sample Descriptions

Client : Fugro GeoServices Ltd

Site : SZC 2019 Offshore Ground Investigation

Report Number : S20_0554

Note: major constituent in upper case

Lab ID Number	Client ID	Description
CL/1965944	SPT_03 SPT03 CEFAS1-070719	MARINE SEDIMENTS
CL/1965945	_SPT_03 SPT03 CEFAS-RAD-5	MARINE SEDIMENTS

Our Ref: EFS/200555 (Ver. 1)
Your Ref: G190016U

August 2, 2019

Environmental Chemistry
SOCOTEC UK Limited
Bretby Business Park
Ashby Road
Burton-on-Trent
Staffordshire
DE15 0YZ

Telephone: 01283 554400
Facsimile: 01283 554422

Karen Blackmore
Fugro GeoServices Ltd
Fugro House
Hithercroft Road
Wallingford
Oxfordshire
OX10 9RB

For the attention of Karen Blackmore

Dear Karen Blackmore

Sample Analysis - SZC 2019 Offshore Ground Investigation

Samples from the above site have been analysed in accordance with the schedule supplied.
The sample details and the results of analyses for these samples are given in the appended report.

An invoice for this work will follow under a separate cover.

Where appropriate the samples will be kept until 27/08/19 when they will be discarded. Please call 01283 554434 for an extension of this date.
Please be aware that our policy for the retention of paper based laboratory records and analysis reports is 6 years.

The work was carried out in accordance with SOCOTEC UK Limited (Multi-Sector Services) Standard Terms and Conditions of Contract.

If I can be of any further assistance please do not hesitate to contact me.

Yours sincerely

for SOCOTEC UK Limited

[redacted]

K Smith
Project Co-ordinator
01283 554434

TEST REPORT

Report No. EFS/200555 (Ver. 1)

Fugro GeoServices Ltd
Fugro House
Hithercroft Road
Wallingford
Oxfordshire
OX10 9RB

Site: SZC 2019 Offshore Ground Investigation

The 2 samples described in this report were registered for analysis by SOCOTEC UK Limited on 16-Jul-2019. This report supersedes any versions previously issued by the laboratory.

The analysis was completed by: 02-Aug-2019

The following tables are contained in this report:

Table 1 Main Analysis Results (Page 2)
Subcontracted Analysis Reports (Pages 3 to 5)
The accreditation status of subcontracted analysis is displayed on the appended subcontracted analysis reports.
Analytical and Deviating Sample Overview (Page 6)
Table of Method Descriptions (Page 7)
Table of Report Notes (Page 8)
Table of Sample Descriptions (Appendix A Page 1 of 1)

On behalf of
SOCOTEC UK
Becky Batham Operations Manager
Energy & Waste Services

Date of Issue: 02-Aug-2019

Tests marked '^' have been subcontracted to another laboratory.

Where samples have been flagged as deviant on the Analytical and Deviating Sample Overview, for any reason, the data may not be representative of the sample at the point of sampling and the validity of the data may be affected. SOCOTEC UK Limited accepts no responsibility for any sampling not carried out by our personnel.

Where individual results are flagged see report notes for status.

		Units :	Bq/kg																
		Method Codes :	Sub008																
		Method Reporting Limits :																	
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**^Gamma spectrometry**																
1965946	OT_SB_04 OTSB04 CEFAS-RAD-3 0.50	**04-Jul-19 14:50**	Req																
1965947	OT_SB_04 OTSB04 CEFAS-RAD-6 2.00	**04-Jul-19 14:50**	Req																

SOCOTEC

Bretby Business Park, Ashby Road

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Client Name	**Fugro GeoServices Ltd**
Contact	Karen Blackmore

SZC 2019 Offshore Ground Investigation

Sample Analysis

Date Printed	**02-Aug-2019**
Report Number	**EFS/200555**
Table Number	**1**

Where individual results are flagged see report notes for status.

Analysis of Sediment Samples

Client:	SOCOTEC UK Environmental Chemistry PO Box 100 Burton upon Trent Staffordshire DE15 0XD
Testing Facility:	SOCOTEC UK Unit 12, Moorbrook Southmead Industrial Park Didcot Oxfordshire OX11 7HP
Laboratory Reference:	19-0651
Customer Reference:	S200555
Quote Number:	ENR-ANU-9781
PO Number:	Intraco
Samples Received:	19 July 2019
Sample Condition:	Unsatisfactory, Ambient
Analysis Completed:	01 August 2019
Report Author:	[redacted]
Author's Name:	Charlene Hunston
Job Title:	Team Leader
Approved By:	[redacted]
Approver's Name:	Trevor Harding
Job Title:	Senior Analyst
Report Date:	01 August 2019

SOCOTEC

Sample Summary

Customer Reference	Laboratory Reference (SOCOTEC UK Bretby)	Laboratory Reference (SOCOTEC UK Didcot)	Matrix	Sampling Date
OT_SB_04 OTSB04 CEFAS-RAD-3 0.50	S1965946	RX4007	Marine Sediment	04/07/2019 14:50
OT_SB_04 OTSB04 CEFAS-RAD-6 2.00	S1965947	RX4008	Marine Sediment	04/07/2019 14:50

Experimental

Gamma Spectrometry

ANU/SOP/2029 – The measurement technique is based on the use of high purity germanium (HPGe) detectors coupled to an Ortec gamma ray spectroscopy system. The gamma ray spectra are stored on a computer and analysed using the software programme Fitzpeaks for photopeak identification and quantification. The detectors are calibrated for efficiency using a mixed radionuclide standard, which covers an energy range of approximately 30-2000 keV. The efficiency of gamma rays between 30 keV and 120 keV are determined on an individual basis.

Application of decay corrections for the naturally occurring daughter radionuclides of uranium and thorium assumes that the series daughter radionuclides are all in secular equilibrium and therefore decay with the half-life of the first radionuclide in the series. (^{226}Ra is not UKAS accredited)

Deviating Sample Disclaimer

The reported results are representative of the samples upon receipt. However:

M) The sample container was noted as damaged on receipt for sample RX4007.

Consequently the sample is considered deviating and the validity of the reported data may be compromised.

Results

Results are presented in the following table.

Any opinions and interpretations expressed herein are outside the scope of our UKAS accreditation.

The results in this test report relate only to the items tested, and test portions taken thereof. This test report must not be reproduced except in full, without written approval of the laboratory.

SOCOTEC

Results Summary – Gamma Spectrometry

Customer Reference	Laboratory Reference	Be-7	K-40	Co-60	Cs-134	Cs-137	Tl-208	Pb-210	Bi-212	Pb-212
OT_SB_04 OTSB04 CEFAS-RAD-3 0.50	RX4007	<14	269 ± 43	<1.8	<1.7	<1.6	5.0 ± 1.5	<32	<20	14.1 ± 2.3
OT_SB_04 OTSB04 CEFAS-RAD-6 2.00	RX4008	<11	169 ± 29	<1.4	<1.3	<1.1	<1.3	<28	<16	5.2 ± 1.4

Customer Reference	Laboratory Reference	Bi-214	Pb-214	Ra-224	Ra-226 *	Ac-228	Pa-234m	Th-234	U-235	Am-241
OT_SB_04 OTSB04 CEFAS-RAD-3 0.50	RX4007	9.5 ± 2.7	9.9 ± 2.2	<39	<30	15.9 ± 4.1	<170	<39	<1.9	<3.1
OT_SB_04 OTSB04 CEFAS-RAD-6 2.00	RX4008	<2.7	6.4 ± 1.9	<28	<23	<5.1	<140	<33	<1.5	<2.5

Notes:

1. Analysis marked with an asterisk is not UKAS accredited.
2. Results are presented as $Bq.kg^{-1}$ of dried and homogenised samples and are decay corrected to the sampling date.
3. For results below the Limit of Detection, the LoD is rounded up to 2 significant figures.
4. Uncertainties are rounded to 2 significant figures; results are rounded to the same precision.
5. Detector calibrations are based upon homogeneous standard solutions. For quantification purposes the samples are assumed to be homogeneous.
6. ^{226}Ra has only one gamma ray at 186 keV and the major gamma ray from ^{235}U also occurs at 186 keV. ^{235}U can be measured by the lower abundance gamma ray at 144 keV and if a positive result for ^{235}U is reported, the ^{226}Ra result will be unreliable and overestimated. However even if ^{235}U is below the LoD there may still be a contribution to the ^{226}Ra from ^{235}U and the ^{226}Ra result may be unreliable and overestimated. If an accurate result for ^{226}Ra is required this is better obtained by radiochemical analysis.

- End of Test Report -

UKAS TESTING
1252

Analytical and Deviating Sample Overview

Customer Fugro GeoServices Ltd
Site SZC 2019 Offshore Ground Investigation
Report No S200555

Consignment No S86404
Date Logged 16-Jul-2019
In-House Report Due 05-Aug-2019

Please note the results for any subcontracted analysis (identified with a '^') is likely to take up to an additional five working days.

ID Number	Description	Sampled	MethodID: CustServ (Report C)	Sub008 (^Gamma spectrometry)
CL/1965946	OT_SB_04 OTSB04 CEFAS-RA	04/07/19		
CL/1965947	OT_SB_04 OTSB04 CEFAS-RA	04/07/19		

Note: We will endeavour to prioritise samples to complete analysis within holding time; however any delay could result in samples becoming deviant whilst being processed in the laboratory.

If sampling dates are missing or matrices unclassified then results will not be ISO 17025 accredited. Please contact us as soon as possible to provide missing information in order to reinstate accreditation.

Deviating Sample Key	
A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key	
	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

Where individual results are flagged see report notes for status.

The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Soil	SubCon*	*	Contact Laboratory for details of the methodology used by the sub-contractor.

Report Notes

Generic Notes

Soil/Solid Analysis

Unless stated otherwise,
- Results expressed as mg/kg have been calculated on the basis indicated in the Method Description table.
  All results on MCERTS reports are reported on a 105ºC dry weight basis with the exception of pH and conductivity.
- Sulphate analysis not conducted in accordance with BS1377
- Water Soluble Sulphate is on a 2:1 water:soil extract

Waters Analysis

Unless stated otherwise results are expressed as mg/l
Nil: Where "Nil" has been entered against Total Alkalinity or Total Acidity this indicates that a measurement was not required due to the inherent pH of the sample.

Oil analysis specific

Unless stated otherwise,
- Results are expressed as mg/kg
- SG is expressed as g/cm^3@ 15°C

Gas (Tedlar bag) Analysis

Unless stated otherwise, results are expressed as ug/l

Asbestos Analysis

CH Denotes Chrysotile **TR** Denotes Tremolite
CR Denotes Crocidolite **AC** Denotes Actinolite
AM Denotes Amosite **AN** Denotes Anthophylite
NAIIS No Asbestos Identified in Sample
NADIS No Asbestos Detected In Sample

Symbol Reference

^ Sub-contracted analysis.
$$ Unable to analyse due to the nature of the sample
¶ Samples submitted for this analyte were not preserved on site in accordance with laboratory protocols. This may have resulted in deterioration of the sample(s) during transit to the laboratory. Consequently the reported data may not represent the concentration of the target analyte present in the sample at the time of sampling
¥ Results for guidance only due to possible interference
& Blank corrected result
I.S Insufficient sample to complete requested analysis
I.S(g) Insufficient sample to re-analyse, results for guidance only
Intf Unable to analyse due to interferences
N.D Not determined **N.Det** Not detected
N.F No Flow
NS Information Not Supplied
Req Analysis requested, see attached sheets for results
Þ Raised detection limit due to nature of the sample
***** All accreditation has been removed by the laboratory for this result
‡ MCERTS accreditation has been removed for this result
§ accreditation has been removed for this result as it is a non-accredited matrix

Note: The Laboratory may only claim that data is accredited when all of the requirements of our Quality System have been met. Where these requirements have not been met the laboratory may elect to include the data in its final report and remove the accreditation from individual data items if it believes that the validity of the data has not been affected. If further details are required of the circumstances which have led to the removal of accreditation then please do not hesitate to contact the laboratory.

Sample Descriptions

Client : Fugro GeoServices Ltd

Site : SZC 2019 Offshore Ground Investigation

Report Number : S20_0555

Note: major constituent in upper case

Lab ID Number	Client ID	Description
CL/1965946	SB_04 OTSB04 CEFAS-RAD-3	MARINE SEDIMENTS
CL/1965947	SB_04 OTSB04 CEFAS-RAD-6	MARINE SEDIMENTS

Our Ref: EFS/200707M (Ver. 1)
Your Ref: G190016U

August 8, 2019

Environmental Chemistry
SOCOTEC UK Limited
Bretby Business Park
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Burton-on-Trent
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DE15 0YZ

Telephone: 01283 554400
Facsimile: 01283 554422

Karen Blackmore
Fugro GeoServices Ltd
Fugro House
Hithercroft Road
Wallingford
Oxfordshire
OX10 9RB

For the attention of Karen Blackmore

Dear Karen Blackmore

Sample Analysis - SZC 2019 Offshore Ground Investigation

Samples from the above site have been analysed in accordance with the schedule supplied.
The sample details and the results of analyses for these samples are given in the appended report.

An invoice for this work will follow under a separate cover.

Where appropriate the samples will be kept until 03/09/19 when they will be discarded. Please call 01283 554434 for an extension of this date.
Please be aware that our policy for the retention of paper based laboratory records and analysis reports is 6 years.

The work was carried out in accordance with SOCOTEC UK Limited (Laboratory and Analytical) Standard Terms and Conditions of Contract.

If I can be of any further assistance please do not hesitate to contact me.

Yours sincerely

for SOCOTEC UK Limited

[redacted]

K Smith
Project Co-ordinator
01283 554434

Environmental Chemistry, SOCOTEC UK Limited, P.O. Box 100, Burton-upon-trent, DE15 0XD Tel: 01283 554400 Fax: 01283 554422
SOCOTEC UK Limited.
Registered No: 2880501

TEST REPORT

1252

Report No. EFS/200707M (Ver. 1)

Fugro GeoServices Ltd
Fugro House
Hithercroft Road
Wallingford
Oxfordshire
OX10 9RB

Site: SZC 2019 Offshore Ground Investigation

The 1 sample described in this report were registered for analysis by SOCOTEC UK Limited on 23-Jul-2019. This report supersedes any versions previously issued by the laboratory.
The analysis was completed by: 08-Aug-2019

Tests where the accreditation is set to N or No, and any individual data items marked with a * are not UKAS or MCERTS accredited. Any opinions or interpretations expressed herein are outside the scope of any UKAS accreditation held by SOCOTEC UK Limited.

The following tables are contained in this report:

Table 1 Main Analysis Results (Pages 2 to 15)
Table of SVOC (Tics) Results (Page 16)
Table of VOC (Tics) Results (Page 17)
Table of WAC Analysis Results (Page 18)
Table of Asbestos Screening Results (Page 19)
Analytical and Deviating Sample Overview (Pages 20 to 22)
Table of Additional Report Notes (Page 23)
Table of Method Descriptions (Pages 24 to 25)
Table of Report Notes (Page 26)
Table of Sample Descriptions (Appendix A Page 1 of 1)

On behalf of
SOCOTEC UK
Becky Batham Operations Manager
Energy & Waste Services

Date of Issue: 08-Aug-2019

Accreditation Codes: **N** (Not Accredited), **U** (UKAS), **UM** (UKAS & MCERTS)
Tests marked '^' have been subcontracted to another laboratory.
(NVM) - denotes the sample matrix is dissimilar to matrices upon which the MCERTS validation was based, and is therefore not accredited for MCERTS.
All results are reported on a dry weight basis at 105°C unless otherwise stated. (except QC samples)
SOCOTEC UK Limited accepts no responsibility for any sampling not carried out by our personnel.

Units :			mg/kg	Mol/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	%	%		% M/M	mg/kg	mg/kg	mg/kg
Method Codes :			AMMAR	ANC	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	CEN Leachate	CEN Leachate	FOCCALC	FOCS	GROHSA	GROHSA	GROHSA
Method Reporting Limits :			0.5	0.04	10	10	20	20	10	10	30			0.0002	0.04	0.2	0.2	0.2
Accreditation Code:			UM	N	UM	UM	UM	U	UM	UM	UM	N	N	U	N	UM	UM	UM
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Exchange.Ammonium AR**	**Acid Neut. Capacity**	**Benzene**	**Ethyl Benzene**	**m/p Xylenes**	**MTBE**	**o Xylene**	**Toluene**	**Xylenes**	**Fraction of non-crushable material %**	**Fraction of sample above 4 mm %**	**F.O.C.**	**S.O.M. % (Calc)**	**GRO**	**GRO (>C5 - C6)**	**GRO (>C7 - C8)**
1966551	IT2_SB_02 SB02 ESWAC1-140719 0.00	**14-Jul-19**	<0.6	2.27	<11.9	<11.9	<23.9	<23.9	<11.9	<11.9	<35.8	0.0	0.0	0.0013	0.22	<0.239	<0.239	<0.239

SOCOTEC

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Client Name **Fugro GeoServices Ltd**

Contact Karen Blackmore

SZC 2019 Offshore Ground Investigation

Sample Analysis

Date Printed	**08-Aug-2019**
Report Number	**EFS/200707M**
Table Number	**1**

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Units :			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA	ICPACIDS	ICPBOR	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS
Method Reporting Limits :			0.2	0.2	0.2	0.2	0.2	0.2	20	0.5	0.3	0.2	1.2	1.6	0.7	0.5	2	0.5
Accreditation Code:			UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**GRO (>C8 - C10)**	**GRO (C5-C6 Aliphatic)**	**GRO (C6-C7 Aliphatic)**	**GRO (C6-C7)**	**GRO (C7-C8 Aliphatic)**	**GRO (C8-C10 Aliphatic)**	**SO4-- (acid sol)**	**Boron (H20 Soluble)**	**Arsenic (MS)**	**Cadmium (MS)**	**Chromium (MS)**	**Copper (MS)**	**Lead (MS)**	**Mercury (MS)**	**Nickel (MS)**	**Selenium (MS)**
1966551	IT2_SB_02 SB02 ESWAC1-140719 0.00	**14-Jul-19**	<0.239	<0.239	<0.239	<0.239	<0.239	<0.239	880	2.1	7.8	<0.2	9.5	4.7	4.6	<0.5	6.9	<0.5

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Client Name **Fugro GeoServices Ltd**

Contact Karen Blackmore

SZC 2019 Offshore Ground Investigation

Sample Analysis

Date Printed	**08-Aug-2019**
Report Number	**EFS/200707M**
Table Number	**1**

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

			Units :	mg/kg	mg/kg	mg/kg	mg/kg	%	ug Sn/kg	ug Sn/kg	ug Sn/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
			Method Codes :	ICPMSS	ICPMSS	ICPSOIL	KONECR	LOI(%MM)	OGSN	OGSN	OGSN	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS
			Method Reporting Limits :	0.6	16	36	0.1	0.2	1	1	1	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
			Accreditation Code:	N	UM	UM	N	N	N	N	N	UM	U	U	UM	UM	UM	UM	UM
LAB ID Number CL/	Client Sample Description	Sample Date		Vanadium (MS)	Zinc (MS)	Iron	Chromium vi:	L.O.I. % @ 450C	Dibutyl Tin	Tributyl Tin as Sn	Triphenyl Tin	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(ghi)perylene	Benzo(k)fluoranthene
1966551	IT2_SB_02 SB02 ESWAC1-140719 0.00	14-Jul-19		28.4	19.7	16100	<0.1	2.3	<1	<1	<1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10

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Burton-on-Trent, Staffordshire, DE15 0YZ

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Fax +44 (0) 1283 554422

Client Name	Fugro GeoServices Ltd
Contact	Karen Blackmore

SZC 2019 Offshore Ground Investigation

Sample Analysis

Date Printed	08-Aug-2019
Report Number	EFS/200707M
Table Number	1

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Units :			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Method Codes :			PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PCBECD	PCBECD	PCBECD	PCBECD	PCBECD	PCBECD
Method Reporting Limits :			0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	1.28	5	5	5	5	5	5
Accreditation Code:			UM	N	UM	UM	UM	UM	UM	UM	UM	U	UM	UM	UM	UM	UM	UM
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Chrysene**	**Coronene**	**Dibenzo(ah)anthracene**	**Fluoranthene**	**Fluorene**	**Indeno(123-cd)pyrene**	**Naphthalene**	**Phenanthrene**	**Pyrene**	**Total PAH (Sum of USEPA 16)**	**PCB 101**	**PCB 118**	**PCB 138**	**PCB 153**	**PCB 180**	**PCB 28**
1966551	IT2_SB_02 SB02 ESWAC1-140719 0.00	**14-Jul-19**	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<1.53	<5.97	<5.97	<5.97	<5.97	<5.97	<5.97

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Burton-on-Trent, Staffordshire, DE15 0YZ

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Client Name **Fugro GeoServices Ltd**

Contact Karen Blackmore

SZC 2019 Offshore Ground Investigation

Sample Analysis

Date Printed	**08-Aug-2019**
Report Number	**EFS/200707M**
Table Number	**1**

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Units :			µg/kg	pH Units	mg/kg	mg/kg	mg/kg	mg/kg	%	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			PCBECD	PHSOIL	SFAPI	SFAPI	SFAPI	SFAS	Sub002	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW
Method Reporting Limits :			5		0.5	0.5	0.5	0.5		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Accreditation Code:			UM	UM	UM	UM	U	N	U	N	U	U	U	U	U	U	U	U
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**PCB 52**	**pH units (AR)**	**Cyanide(Free) (AR)**	**Cyanide(Total) (AR)**	**Phenol Index (AR)**	**Sulphide as S (AR)**	**^Asbestos ID and Quant (1 & 2)**	**1,2,4-Trichlorobenzene**	**1,2-Dichlorobenzene**	**1,3-Dichlorobenzene**	**1,4-Dichlorobenzene**	**1-Methylnaphthalene**	**2,4,5-Trichlorophenol**	**2,4,6-Trichlorophenol**	**2,4-Dichlorophenol**	**2,4-Dimethylphenol**
1966551	IT2_SB_02 SB02 ESWAC1-140719 0.00	**14-Jul-19**	<5.97	8.4	<0.6	<0.6	<0.6	1.3	NADIS	<0.119	<0.119	<0.119	<0.119	<0.119	<0.119	<0.119	<0.119	<0.119

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Burton-on-Trent, Staffordshire, DE15 0YZ

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Client Name **Fugro GeoServices Ltd**

Contact Karen Blackmore

SZC 2019 Offshore Ground Investigation

Sample Analysis

Date Printed	**08-Aug-2019**
Report Number	**EFS/200707M**
Table Number	**1**

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Units :			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW
Method Reporting Limits :			0.5	0.2	0.5	0.1	0.1	0.1	0.1	0.5	0.1	0.1	14.5	0.2	0.1	0.1	0.5	0.5	
Accreditation Code:			N	U	U	U	U	U	U	N	U	U	N	N	U	U	N	U	
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**2,4-Dinitrophenol**	**2,4-Dinitrotoluene**	**2,6-Dinitrotoluene**	**2-Chloronaphthalene**	**2-Chlorophenol**	**2-Methylnaphthalene**	**2-Methylphenol**	**2-Nitroaniline**	**2-Nitrophenol**	**3- & 4-Methylphenol**	**3-Nitroaniline**	**4,6-Dinitro-2-methylphenol**	**4-Bromophenyl-phenylether**	**4-Chloro-3-methylphenol**	**4-Chloroaniline**	**4-Chlorophenol**	
1966551	IT2_SB_02 SB02 ESWAC1-140719 0.00	**14-Jul-19**	<0.597	<0.239	<0.597	<0.119	<0.119	<0.119	<0.119	<0.597	<0.119	<0.119	<17.3	<0.239	<0.119	<0.119	<0.597	<0.597	

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Method Codes :			SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW
Method Reporting Limits :			0.1	0.6	0.5	0.1	0.1	0.1	0.2	0.2	0.2	0.5	0.2	0.5	0.5	0.1	0.1	0.1	
Accreditation Code:			U	N	N	U	U	U	U	U	U	U	U	N	U	U	U	U	
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**4-Chlorophenyl-phenylether**	**4-Nitroaniline**	**4-Nitrophenol**	**Acenaphthene**	**Acenaphthylene**	**Anthracene**	**Benzo(a)anthracene**	**Benzo(a)pyrene**	**Benzo(b)fluoranthene**	**Benzo(ghi)perylene**	**Benzo(k)fluoranthene**	**Benzoic Acid**	**Benzyl alcohol**	**Biphenyl**	**bis(2-Chloroethoxy)methane**	**bis(2-Chloroethyl)ether**	
1966551	IT2_SB_02 SB02 ESWAC1-140719 0.00	**14-Jul-19**	<0.119	<0.717	<0.597	<0.119	<0.119	<0.119	<0.239	<0.239	<0.239	<0.597	<0.239	<0.597	<0.597	<0.119	<0.119	<0.119	

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Units :			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW
Method Reporting Limits :			0.5	0.2	0.2	0.1	0.3	0.5	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.1	0.1	
Accreditation Code:			U	U	U	U	N	U	U	U	U	U	U	U	U	U	U	N	
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**bis(2-Chloroisopropyl)ether**	**bis(2-Ethylhexyl)phthalate**	**Butylbenzylphthalate**	**Chrysene**	**Coronene**	**Dibenzo(ah)anthracene**	**Dibenzofuran**	**Diethylphthalate**	**Dimethylphthalate**	**Di-n-butylphthalate**	**Di-n-octylphthalate**	**Diphenyl Ether**	**Fluoranthene**	**Fluorene**	**Hexachlorobenzene**	**Hexachlorobutadiene**	
1966551	IT2_SB_02 SB02 ESWAC1-140719 0.00	**14-Jul-19**	<0.597	<0.239	<0.239	<0.119	<0.358	<0.597	<0.119	<0.119	<0.119	<0.119	<0.239	<0.119	<0.239	<0.239	<0.119	<0.119	

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Units :			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	%	mg/kg	mg/kg
Method Codes :			SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	TMSS	TPHFIDUS	TPHFIDUS
Method Reporting Limits :			0.1	0.1	0.5	0.1	0.1	0.5	0.9	0.1	0.5	0.1	0.1	0.2		0.1	10	10
Accreditation Code:			N	U	U	N	U	U	N	N	N	U	U	U		U	U	UM
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Hexachlorocyclopentadiene**	**Hexachloroethane**	**Indeno(123-cd)pyrene**	**Isophorone**	**Naphthalene**	**Nitrobenzene**	**N-Nitroso-di-n-propylamine**	**N-Nitrosodiphenylamine**	**Pentachlorophenol**	**Phenanthrene**	**Phenol**	**Pyrene**	**SVOC + TICs (AR)**	**Tot.Moisture @ 105C**	**TPH Band (>C10-C40)**	**TPH by GCFID (AR)**
1966551	IT2_SB_02 SB02 ESWAC1-140719 0.00	**14-Jul-19**	<0.119	<0.119	<0.597	<0.119	<0.119	<0.597	<1.075	<0.119	<0.597	<0.119	<0.119	<0.239	Req	16.3	28.0	29.3

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Report Number	**EFS/200707M**
Table Number	**1**

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Units :			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Method Codes :			TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS
Method Reporting Limits :			4	4	4	8.75	4	20	4	4	4	8.75	4	20	1	1	1	1
Accreditation Code:			U	U	U	U	U	U	U	U	U	U	U	U	UM	UM	N	UM
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**TPH Ali Band >C10-C12**	**TPH Ali Band >C12-C16**	**TPH Ali Band >C16-C21**	**TPH Ali Band >C21-C35**	**TPH Ali Band >C8-C10**	**TPH Ali Band >C8-C40**	**TPH Aro Band >C10-C12**	**TPH Aro Band >C12-C16**	**TPH Aro Band >C16-C21**	**TPH Aro Band >C21-C35**	**TPH Aro Band >C8-C10**	**TPH Aro Band >C8-C40**	**1,1,1,2-Tetrachloroethane**	**1,1,1-Trichloroethane**	**1,1,2,2-Tetrachloroethane**	**1,1,2-Trichloroethane**
1966551	IT2_SB_02 SB02 ESWAC1-140719 0.00	**14-Jul-19**	<4.78	<4.78	<4.78	<10.47	<4.78	<23.9	<4.78	<4.78	<4.78	13.0	<4.78	<23.9	<1.2	<1.2	<1.2	<1.2

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Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Units :			µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Method Codes :			VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS
Method Reporting Limits :			1	1	1	3	1	3	1	1	1	1	1	1	1	1	1	1	1
Accreditation Code:			UM	U	UM	UM	UM	N	UM	N	UM	UM	UM	UM	UM	UM	UM	UM	UM
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**1,1-Dichloroethane**	**1,1-Dichloroethene**	**1,1-Dichloropropene**	**1,2,3-Trichlorobenzene**	**1,2,3-Trichloropropane**	**1,2,4-Trichlorobenzene**	**1,2,4-Trimethylbenzene**	**1,2-Dibromo-3-chloropropane**	**1,2-Dibromoethane**	**1,2-Dichlorobenzene**	**1,2-Dichloroethane**	**1,2-Dichloropropane**	**1,3,5-Trimethylbenzene**	**1,3-Dichlorobenzene**	**1,3-Dichloropropane**	**1,4-Dichlorobenzene**
1966551	IT2_SB_02 SB02 ESWAC1-140719 0.00	**14-Jul-19**	<1.2	<1.2	<1.2	<3.6	<1.2	<3.6	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2

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Units :			µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Method Codes :			VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS
Method Reporting Limits :			1	1	1	1	1	1	1	1	1	1	1	1	2	1	3	5	1
Accreditation Code:			UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	U	UM	UM
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**2,2-Dichloropropane**	**2-Chlorotoluene**	**4-Chlorotoluene**	**Benzene**	**Bromobenzene**	**Bromochloromethane**	**Bromodichloromethane**	**Bromoform**	**Bromomethane**	**Carbon Tetrachloride**	**Chlorobenzene**	**Chloroethane**	**Chloroform**	**Chloromethane**	**cis 1,2-Dichloroethene**	**cis 1,3-Dichloropropene**
1966551	IT2_SB_02 SB02 ESWAC1-140719 0.00	**14-Jul-19**	<1.2	<1.2*	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<2.4	<1.2	<3.6	<6.0	<1.2

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Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Units :			µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Method Codes :			VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS
Method Reporting Limits :			1	1	1	2	2	1	4	1	5	1	2	1	1	1	1	1	1
Accreditation Code:			UM	UM	N	UM	N	UM	UM	UM	UM	U	UM	UM	UM	UM	UM	UM	UM
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Dibromochloromethane**	**Dibromomethane**	**Dichlorodifluoromethane**	**Ethylbenzene**	**Hexachlorobutadiene**	**iso-Propylbenzene**	**m and p-Xylene**	**MTBE**	**Naphthalene**	**n-Butylbenzene**	**o-Xylene**	**p-Isopropyltoluene**	**Propylbenzene**	**sec-Butylbenzene**	**Styrene**	**tert-Butylbenzene**
1966551	IT2_SB_02 SB02 ESWAC1-140719 0.00	**14-Jul-19**	<1.2	<1.2	<1.2	<2.4	<2.4	<1.2	<4.8	<1.2	<6.0	<1.2	<2.4	<1.2	<1.2*	<1.2	<1.2	<1.2

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Units :			µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	% M/M							
Method Codes :			VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	WSLM59							
Method Reporting Limits :			3	5	1	1	1	1	1		0.02							
Accreditation Code:			UM	UM	UM	UM	UM	UM	UM		N							
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Tetrachloroethene**	**Toluene**	**trans 1,2-Dichloroethene**	**trans 1,3-Dichloropropene**	**Trichloroethene**	**Trichlorofluoromethane**	**Vinyl Chloride**	**VOC + TICs HSA-GCMS**	**Total Organic Carbon**							
1966551	IT2_SB_02 SB02 ESWAC1-140719 0.00	**14-Jul-19**	<3.6	<6.0	<1.2	<1.2	<1.2	<1.2	<1.2	Req	0.13							

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SVOC (TICs)

Accredited?:No

Customer and Site Details:	Fugro GeoServices Ltd: SZC 2019 Offshore Ground Investigation		
Sample Details:	IT2_SB_02 SB02 ESWAC1-140719 0.	**Job Number:**	S20_0707
LIMS ID Number:	CL1966551		
		Multiplier:	0.2
Date Booked in:	23-Jul-19	**Dilution Factor:**	1
Date Extracted:	27-Jul-19	**GPC (Y/N):**	N
Date Analysed:	30-Jul-19	**Matrix:**	Soil
QC Batch Number:	143	**Method:**	Ultrasonic
Directory/Quant File:	072919.GC11\ 0	**Operator:**	CO

Tentatively Identified Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
Triethylene glycol	000112-27-6	4.04	1.681	90	N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

TICs by HSA-GCMS

Accredited?: No

Customer and Site Details:	Fugro GeoServices Ltd: SZC 2019 Offshore Ground Investigation		**Date Booked in:**	23-Jul-19
Sample Details:	IT2_SB_02 SB02 ESWAC1-140719 0.00		**Date Analysed:**	25-Jul-19
LIMS ID Number:	CL1966551		**Matrix:**	Soil
Job Number:	S20_0707		**Ext Method:**	Headspace
Directory/Quant file:	072519_MS19\	Initial Calibration	**Dilution:**	0.97
Operator:	ED		**Position:**	28

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Non Detected	-	-	<6	-	N
Dichloromethane (Methylene Chloride)	75-09-2	-	<6	-	N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Compounds marked * are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

WASTE ACCEPTANCE CRITERIA TESTING
BSEN 12457/2

Client	Fugro GeoServices Ltd				**Leaching Data**	
					Weight of sample (kg)	0.105
Contact	Karen Blackmore				Moisture content @ 105°C (% of Wet Weight)	16.3
					Equivalent Weight based on drying at 105°C (kg)	0.090
Site	SZC 2019 Offshore Ground Investigation				Volume of water required to carry out 10:1 stage (litres)	0.885
					Fraction of sample above 4 mm %	0.000
Sample Description		**Report No**	**Sample No**	**Issue Date**	Fraction of non-crushable material %	0.000
IT2_SB_02 SB02 ESWAC1-140719 0.00		S20_0707M	CL/1966551	07-Aug-19		

Note: The >4mm fraction is crushed using a disc mill

Accreditation	Method Code	Solid Waste Analysis (Dry Basis)	Concentration in Solid (Dry Weight Basis)	Landfill Waste Acceptance Criteria Limit Values		
				Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
U	WSLM59	Total Organic Carbon (% M/M)	0.13	3	5	6
N	LOI450	Loss on Ignition (%)	2.3			10
U	BTEXHSA	Sum of BTEX (mg/kg)	<0.0715	6		
U	PCBUSECD	Sum of 7 Congener PCB's (mg/kg)	<0.042	1		
U	TPHFIDUS	Mineral Oil (mg/kg)	28	500		
N	PAHMSUS	PAH Sum of 17 (mg/kg)	<1.62	100		
U	PHSOIL	pH (pH units)	8.4		>6	
N	ANC	Acid Neutralisation Capacity (mol/kg) @pH 7	2.27		To be evaluated	To be evaluated

Accr	Meth	Leachate Analysis	10:1 Single Stage Leachate mg/l except oo	Calculated cumulative amount leached @ 10:1 mg/kg (dry weight)	Landfill Waste Acceptance Criteria Limit Values for BSEN 12457/2 @ L/S 10 litre kg-1		
U	WSLM3	pH (pH units) oo	7.7	Calculated data not UKAS Accredited			
U	WSLM2	Conductivity (µs/cm) oo	1190				
U	ICPMSW	Arsenic	0.002	0.02	0.5	2	25
U	ICPWATVAR	Barium	<0.01	<0.1	20	100	300
U	ICPMSW	Cadmium	<0.0001	<0.001	0.04	1	5
U	ICPMSW	Chromium	<0.001	<0.01	0.5	10	70
U	ICPMSW	Copper	<0.001	<0.01	2	50	100
U	ICPMSW	Mercury	<0.0001	<0.001	0.01	0.2	2
U	ICPMSW	Molybdenum	0.01	0.1	0.5	10	30
U	ICPMSW	Nickel	0.001	0.01	0.4	10	40
U	ICPMSW	Lead	<0.001	<0.01	0.5	10	50
U	ICPMSW	Antimony	0.002	0.02	0.06	0.7	5
U	ICPMSW	Selenium	<0.001	<0.01	0.1	0.5	7
U	ICPMSW	Zinc	<0.002	<0.02	4	50	200
U	KONENS	Chloride	289	2890	800	15000	25000
U	ISEF	Fluoride	0.1	1	10	150	500
U	ICPWATVAR	Sulphate as SO4	49	490	1000	20000	50000
N	WSLM27	Total Dissolved Solids	680	6800	4000	60000	100000
U	SFAPI	Phenol Index	<0.05	<0.5	1		
N	WSLM13	Dissolved Organic Carbon	2.7	27	500	800	1000

Template Ver. 1

Landfill Waste Acceptance Criteria limit values correct as of 11th March 2009.

Tests where the accreditation is set to U are UKAS accredited, those where the accreditation is set to N are not UKAS accredited

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

ASBESTOS ANALYSIS RESULTS

SOCOTEC Asbestos Limited Certificate of Analysis for Asbestos in Soils, Sediments and Aggregates

UKAS TESTING
1089

Detection limit of Method SCI-ASB-020 is 0.001%

Sampling has been carried out by a third party

SOCOTEC

Client:	SOCOTEC Environmental Chemistry	**Page 1 of 1**	
Address:	Etwall House, Bretby Business Park, Ashby Road, Burton upon Trent	**Report No:**	**ANO-0503-21250**
For the attention of:	Fugro GeoServices Ltd	**Report Date:**	**05/08/2019**
Site Address:	SZC 2019 Offshore Ground Investigation	**Project Number:**	**S200707**

Sample Number	Sample Date	Sample Location & Matrix	Test Date	Total Sample Dry Weight (g)	Weight of <10mm Fraction (g)	Asbestos(g) in >10mm	Asbestos(g) in < 10mm	% Asbestos by weight of Total Dried Sample	Moisture Content	Asbestos Fibre Types Identified
CL/1966551	14/07/19	IT2_SB_02 SB02 ESWAC1-140719 0.00 Soils	05/08/2019	1582.7	1567.3	0.0000	0.0000			NADIS

Keys

NAACR = Not Analysed at Clients Request

*** visible to naked eye**

NAIIS = No Asbestos Identified in Sample (Identification Only)

NADIS = No Asbestos Detected in Sample (ID & Quant Only)

Name: Tom Pratt

Position: Lab Coordinator

Authorised Signatory: [redacted]

The sample analysis for the above results was carried out using the procedures detailed in SOCOTEC Asbestos Limited in house method (SCI-ASB-020) based on EA document Quantification of asbestos in soil and associated materials - Draft 2017. Fibre identification was c
Limited in house method of transmitted/polarised light microscopy and centre stop dispersion staining (SCI-ASB-007), based on HSE's HSG 248. The analysis of the < 10mm fraction for asbestos content only includes ACMs and fibres and does not discriminate non-asbestos
specified, to be amphiboles. All tests were carried out at a SOCOTEC Asbestos Ltd laboratory, UKAS Testing Number 1089. Recommended sample weight is 1kg-2kg, samples less than 1kg are classified as deviating samples.

Where individual results are flagged see report notes for status.

Analytical and Deviating Sample Overview

Customer **Fugro GeoServices Ltd**
Site **SZC 2019 Offshore Ground Investigation**
Report No **S200707M**

Consignment No S86601
Date Logged 23-Jul-2019
In-House Report Due 31-Jul-2019

Please note the results for any subcontracted analysis (identified with a '^') is likely to take up to an additional five working days.

ID Number	Description	MethodID	AMMAR	ANC	BTEXHSA		CEN Leachate			CustServ	FOCCALC	FOCS	GROHSA	ICPACIDS	ICPBOR	ICPMSS										ICPSOIL	KONECR
		Sampled	Exchange.Ammonium AR	Acid Neut. Capacity	BTEX-HSA + MTBE analysis	MTBE (µg/kg)	CEN Leac(P)C	Fraction of non-crushable material %	Fraction of sample above 4 mm %	REPORT A	F.O.C.	S.O.M. % (Calc)	GRO (AA) by HSA GC-FID	SO4-- (acid sol)	Boron (H20 Soluble)	Arsenic (MS)	Cadmium (MS)	Chromium (MS)	Copper (MS)	Lead (MS)	Mercury (MS)	Nickel (MS)	Selenium (MS)	Vanadium (MS)	Zinc (MS)	Iron	Chromium vi:
			✓		✓	✓					✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	
CL/1966551	IT2_SB_02 SB02 ESWAC1-140	14/07/19																									

Note: We will endeavour to prioritise samples to complete analysis within holding time; however any delay could result in samples becoming deviant whilst being processed in the laboratory.

If sampling dates are missing or matrices unclassified then results will not be ISO 17025 accredited. Please contact us as soon as possible to provide missing information in order to reinstate accreditation.

Deviating Sample Key	
A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key	
	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

Where individual results are flagged see report notes for status.
The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Analytical and Deviating Sample Overview

Customer **Fugro GeoServices Ltd** Consignment No S86601
Site **SZC 2019 Offshore Ground Investigation** Date Logged 23-Jul-2019
Report No **S200707M** In-House Report Due 31-Jul-2019

Please note the results for any subcontracted analysis (identified with a '^') is likely to take up to an additional five working days.

ID Number	Description	MethodID	LOI(%MM)	MCertS	OGSN			PAHMSUS	PCBECD	PHSOIL	SFAPI			SFAS	Sub002	SVOCSW	TMSS	TPHFIDUS		TPHUSSI							
		Sampled	L.O.I. % @ 450C	MCertS Analysis	Dibutyl Tin	Tributyl Tin as Sn	Triphenyl Tin	PAH (17) by GCMS	PCB-7 Congeners Analysis	pH units (AR)	Cyanide(Free) (AR)	Cyanide(Total) (AR)	Phenol Index.(AR)	Sulphide as S (AR)	^Asbestos ID and Quant (1 & 2)	SVOC + TICs (AR)	Tot.Moisture @ 105C	TPH Band (>C10-C40)	TPH by GCFID (AR)	TPH Ali Band >C10-C12	TPH Ali Band >C12-C16	TPH Ali Band >C16-C21	TPH Ali Band >C21-C35	TPH Ali Band >C8-C10	TPH Ali Band >C8-C40	TPH Aro Band >C10-C12	TPH Aro Band >C12-C16
				✓				✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CL/1966551	IT2_SB_02 SB02 ESWAC1-140	14/07/19																									

Note: We will endeavour to prioritise samples to complete analysis within holding time; however any delay could result in samples becoming deviant whilst being processed in the laboratory.

If sampling dates are missing or matrices unclassified then results will not be ISO 17025 accredited. Please contact us as soon as possible to provide missing information in order to reinstate accreditation.

Deviating Sample Key	
A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key	
	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

Analytical and Deviating Sample Overview

Customer **Fugro GeoServices Ltd** Consignment No S86601
Site **SZC 2019 Offshore Ground Investigation** Date Logged 23-Jul-2019
Report No **S200707M** In-House Report Due 31-Jul-2019

Please note the results for any subcontracted analysis (identified with a '^') is likely to take up to an additional five working days.

ID Number	Description	MethodID	TPHUSSI					VOCHSAS	WSLM59
		Sampled	TPH Aro Band >C16-C21	TPH Aro Band >C21-C35	TPH Aro Band >C8-C10	TPH Aro Band >C8-C40	TPH by GCFID (AR/Si)	VOC + TICs HSA-GCMS	Total Organic Carbon
			✓	✓	✓	✓	✓	✓	✓
CL/1966551	IT2_SB_02 SB02 ESWAC1-140	14/07/19							

Note: We will endeavour to prioritise samples to complete analysis within holding time; however any delay could result in samples becoming deviant whilst being processed in the laboratory.

If sampling dates are missing or matrices unclassified then results will not be ISO 17025 accredited. Please contact us as soon as possible to provide missing information in order to reinstate accreditation.

Deviating Sample Key	
A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key	
	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

Report Number : EFS/200707

Additional Report Notes

Method Code	Sample ID	The following information should be taken into consideration when using the data contained within this report
VOCHSAS	CL1966551	The Primary process control data associated with this Test has not wholly met the requirements of the Laboratory Quality Management System QMS with one or more target analytes falling outside acceptable limits. However the remaining data gives the Laboratory confidence that the test has performed satisfactorily and that the validity of the data may not have been significantly affected. However in line with our QMS policy we have removed accreditation, where applicable, from the affected analytes (Propylbenzene, 2-Chlorotoluene) . These circumstances should be taken into consideration when utilising the data.

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Soil	AMMAR	As Received	Determination of Exchangeable Ammonium in Soil using potassium chloride extraction, discrete colorimetric detection
Soil	ANC	Oven Dried @ < 35°C	Quantitative digestion with Hydrochloric Acid back titration with 1M Sodium Hydroxide to pH 7
Soil	BTEXHSA	As Received	Determination of Benzene, Toluene, Ethyl benzene and Xylenes (BTEX) by Headspace GCFID
Soil	CEN Leachate	As Received	Determination of Oversize and Inert Material Content prior to leaching sample
Soil	FOCS	Oven Dried @ < 35°C	Calculation of Soil Organic Matter content from Organic Carbon content of soil samples
Soil	GROHSA	As Received	Determination of Total Gasoline Range Organics Hydrocarbons (GRO) by Headspace GCFID
Soil	ICPACIDS	Oven Dried @ < 35°C	Determination of Total Sulphate in soil samples by Hydrochloric Acid extraction followed by ICPOES detection
Soil	ICPBOR	Oven Dried @ < 35°C	Determination of Boron in soil samples by hot water extraction followed by ICPOES detection
Soil	ICPMSS	Oven Dried @ < 35°C	Determination of Metals in Marine Sediments and Soil samples by aqua regia digestion followed by ICPMS detection
Soil	ICPSOIL	Oven Dried @ < 35°C	Determination of Metals in soil samples by aqua regia digestion followed by ICPOES detection
Soil	KONECR	Oven Dried @ < 35°C	Determination of Chromium vi in soil samples by water extraction followed by colorimetric detection
Soil	LOI(%MM)	Oven Dried @ < 35°C	Determination of loss on ignition for soil samples at specified temperature by gravimetry
Soil	OGSN	As Received	Determination of Organo-tin compounds using sonic extraction in methanol , derivatiseation with Sodium Tetraethylborate and GCMS quantitation (SIM mode).
Soil	PAHMSUS	As Received	Determination of Polycyclic Aromatic Hydrocarbons (PAH) by hexane/acetone extraction followed by GCMS detection
Soil	PCBECD	As Received	Determination of Polychlorinated Biphenyl (PCB) congeners/aroclors by hexane/acetone extraction followed by GCECD detection
Soil	PHSOIL	As Received	Determination of pH of 2.5:1 deionised water to soil extracts using pH probe.
Soil	SFAPI	As Received	Segmented flow analysis with colorimetric detection
Soil	SFAS	As Received	Segmented flow analysis with colorimetric detection
Soil	SubCon*	*	Contact Laboratory for details of the methodology used by the sub-contractor.
Soil	SVOCSW	As Received	Determination of Semi-Volatile Organic Compounds by dichloromethane/acetone extraction followed by GCMS detection

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Soil	TMSS	As Received	Determination of the Total Moisture content at 105ºC by loss on oven drying gravimetric analysis (% based upon wet weight)
Soil	TPHFIDUS	As Received	Determination of hexane/acetone extractable Hydrocarbons in soil with GCFID detection.
Soil	TPHUSSI	As Received	Determination of hexane/acetone extractable Hydrocarbons in soil with GCFID detection including quantitation of Aromatic and Aliphatic fractions.
Soil	VOCHSAS	As Received	Determination of Volatile Organic Compounds (VOC) by Headspace GCMS
Soil	WSLM59	Oven Dried @ < 35°C	Determination of Organic Carbon in soil using sulphurous Acid digestion followed by high temperature combustion and IR detection
Water	ICPMSW	As Received	Direct quantitative determination of Metals in water samples using ICPMS
Water	ICPWATVAR	As Received	Direct determination of Metals and Sulphate in water samples using ICPOES
Water	ISEF	As Received	Determination of Fluoride in water samples by Ion Selective Electrode (ISE)
Water	KONENS	As Received	Direct analysis using discrete colorimetric analysis
Water	SFAPI	As Received	Segmented flow analysis with colorimetric detection
Water	WSLM13	As Received	Instrumental analysis using acid/persulphate digestion and non-dispersive IR detection
Water	WSLM2	As Received	Determination of the Electrical Conductivity (µS/cm) by electrical conductivity probe.
Water	WSLM27	As Received	Gravimetric Determination
Water	WSLM3	As Received	Determination of the pH of water samples by pH probe

Report Notes

Generic Notes

Soil/Solid Analysis

Unless stated otherwise,
- Results expressed as mg/kg have been calculated on the basis indicated in the Method Description table.
  All results on MCERTS reports are reported on a 105ºC dry weight basis with the exception of pH and conductivity.
- Sulphate analysis not conducted in accordance with BS1377
- Water Soluble Sulphate is on a 2:1 water:soil extract

Waters Analysis

Unless stated otherwise results are expressed as mg/l

Nil: Where "Nil" has been entered against Total Alkalinity or Total Acidity this indicates that a measurement was not required due to the inherent pH of the sample.

Oil analysis specific

Unless stated otherwise,
- Results are expressed as mg/kg
- SG is expressed as g/cm^3@ 15°C

Gas (Tedlar bag) Analysis

Unless stated otherwise, results are expressed as ug/l

Asbestos Analysis

CH Denotes Chrysotile **TR** Denotes Tremolite
CR Denotes Crocidolite **AC** Denotes Actinolite
AM Denotes Amosite **AN** Denotes Anthophylite
NAIIS No Asbestos Identified in Sample
NADIS No Asbestos Detected In Sample

Symbol Reference

^ Sub-contracted analysis.
$$ Unable to analyse due to the nature of the sample
¶ Samples submitted for this analyte were not preserved on site in accordance with laboratory protocols. This may have resulted in deterioration of the sample(s) during transit to the laboratory. Consequently the reported data may not represent the concentration of the target analyte present in the sample at the time of sampling
¥ Results for guidance only due to possible interference
& Blank corrected result
I.S Insufficient sample to complete requested analysis
I.S(g) Insufficient sample to re-analyse, results for guidance only
Intf Unable to analyse due to interferences
N.D Not determined **N.Det** Not detected
N.F No Flow
NS Information Not Supplied
Req Analysis requested, see attached sheets for results
Þ Raised detection limit due to nature of the sample
***** All accreditation has been removed by the laboratory for this result
‡ MCERTS accreditation has been removed for this result
§ accreditation has been removed for this result as it is a non-accredited matrix

Note: The Laboratory may only claim that data is accredited when all of the requirements of our Quality System have been met. Where these requirements have not been met the laboratory may elect to include the data in its final report and remove the accreditation from individual data items if it believes that the validity of the data has not been affected. If further details are required of the circumstances which have led to the removal of accreditation then please do not hesitate to contact the laboratory.

Sample Descriptions

Client : Fugro GeoServices Ltd
Site : SZC 2019 Offshore Ground Investigation
Report Number : S20_0707

Note: major constituent in upper case

Lab ID Number	Client ID	Description
CL/1966551	IT2_SB_02 SB02 ESWAC1-140719 0.00	Brown SAND

Our Ref: EFS/200721 (Ver. 1)
Your Ref: G190016U

August 6, 2019

Environmental Chemistry
SOCOTEC UK Limited
Bretby Business Park
Ashby Road
Burton-on-Trent
Staffordshire
DE15 0YZ

Telephone: 01283 554400
Facsimile: 01283 554422

Karen Blackmore
Fugro GeoServices Ltd
Fugro House
Hithercroft Road
Wallingford
Oxfordshire
OX10 9RB

For the attention of Karen Blackmore

Dear Karen Blackmore

Sample Analysis - SZC 2019 Offshore Ground Investigation

Samples from the above site have been analysed in accordance with the schedule supplied.
The sample details and the results of analyses for these samples are given in the appended report.

An invoice for this work will follow under a separate cover.

Where appropriate the samples will be kept until 03/09/19 when they will be discarded. Please call 01283 554434 for an extension of this date.
Please be aware that our policy for the retention of paper based laboratory records and analysis reports is 6 years.

The work was carried out in accordance with SOCOTEC UK Limited (Multi-Sector Services) Standard Terms and Conditions of Contract.

If I can be of any further assistance please do not hesitate to contact me.

Yours sincerely

for SOCOTEC UK Limited

[redacted]

K Smith
Project Co-ordinator
01283 554434

TEST REPORT

Report No. EFS/200721 (Ver. 1)

Fugro GeoServices Ltd
Fugro House
Hithercroft Road
Wallingford
Oxfordshire
OX10 9RB

Site: SZC 2019 Offshore Ground Investigation

The 1 sample described in this report were registered for analysis by SOCOTEC UK Limited on 23-Jul-2019. This report supersedes any versions previously issued by the laboratory.

The analysis was completed by: 06-Aug-2019

The following tables are contained in this report:

Table 1 Main Analysis Results (Page 2)
Subcontracted Analysis Reports (Pages 3 to 5)
The accreditation status of subcontracted analysis is displayed on the appended subcontracted analysis reports.
Analytical and Deviating Sample Overview (Page 6)
Table of Method Descriptions (Page 7)
Table of Report Notes (Page 8)
Table of Sample Descriptions (Appendix A Page 1 of 1)

On behalf of
SOCOTEC UK
Becky Batham Operations Manager
Energy & Waste Services

Date of Issue: 06-Aug-2019

Tests marked '^' have been subcontracted to another laboratory.

Where samples have been flagged as deviant on the Analytical and Deviating Sample Overview, for any reason, the data may not be representative of the sample at the point of sampling and the validity of the data may be affected. SOCOTEC UK Limited accepts no responsibility for any sampling not carried out by our personnel.

		Units :	Bq/kg															
		Method Codes :	Sub008															
		Method Reporting Limits :																
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**^Gamma spectrometry**															
1966644	IT1_SB_05 SB05 CEFAS1-150719 0.00	**15-Jul-19**	Req															

SOCOTEC

Bretby Business Park, Ashby Road

Burton-on-Trent, Staffordshire, DE15 0YZ

Tel +44 (0) 1283 554400

Fax +44 (0) 1283 554422

Client Name	**Fugro GeoServices Ltd**
Contact	Karen Blackmore

SZC 2019 Offshore Ground Investigation

Sample Analysis

Date Printed	**06-Aug-2019**
Report Number	**EFS/200721**
Table Number	**1**

Analysis of a Soil Sample

Client:	SOCOTEC UK Environmental Chemistry PO Box 100 Burton upon Trent Staffordshire DE15 0XD
Testing Facility:	SOCOTEC UK Unit 12, Moorbrook Southmead Industrial Park Didcot Oxfordshire OX11 7HP
Laboratory Reference:	19-0663
Customer Reference:	S200721
Quote Number:	ENR-ANU-9781
PO Number:	Intraco
Sample Received:	25 July 2019
Sample Condition:	Satisfactory, Ambient
Analysis Completed:	05 August 2019
Report Author:	[redacted]
Author's Name:	Charlene Hunston
Job Title:	Team Leader
Approved By:	[redacted]
Approver's Name:	Trevor Harding
Job Title:	Senior Analyst
Report Date:	06 August 2019

1

1252

SOCOTEC

Sample Summary

Customer Reference	Laboratory Reference (SOCOTEC UK Bretby)	Laboratory Reference (SOCOTEC UK Didcot)	Matrix	Sampling Date
IT1_SB_05 SB05 CEFAS1-150719 0.00	S1966644	RX4145	Soil	15/07/2019 07:50

Experimental

Gamma Spectrometry

ANU/SOP/2029 – The measurement technique is based on the use of high purity germanium (HPGe) detectors coupled to an Ortec gamma ray spectroscopy system. The gamma ray spectra are stored on a computer and analysed using the software programme Fitzpeaks for photopeak identification and quantification. The detectors are calibrated for efficiency using a mixed radionuclide standard, which covers an energy range of approximately 30-2000 keV. The efficiency of gamma rays between 30 keV and 120 keV are determined on an individual basis.

Application of decay corrections for the naturally occurring daughter radionuclides of uranium and thorium assumes that the series daughter radionuclides are all in secular equilibrium and therefore decay with the half-life of the first radionuclide in the series. (^{226}Ra is not UKAS accredited)

Results

Results are presented in the following table.

Any opinions and interpretations expressed herein are outside the scope of our UKAS accreditation.

The results in this test report relate only to the items tested, and test portions taken thereof. This test report must not be reproduced except in full, without written approval of the laboratory.

SOCOTEC

Results Summary – Gamma Spectrometry

Customer Reference	Laboratory Reference	Be-7	K-40	Co-60	Cs-134	Cs-137	Tl-208	Pb-210	Bi-212	Pb-212
IT1_SB_05 SB05 CEFAS1-150719 0.00	RX4145	<11	81 ± 24	<1.7	<1.6	<1.3	<1.4	<27	<18	6.0 ± 1.4

Customer Reference	Laboratory Reference	Bi-214	Pb-214	Ra-224	Ra-226 *	Ac-228	Pa-234m	Th-234	U-235	Am-241
IT1_SB_05 SB05 CEFAS1-150719 0.00	RX4145	23.1 ± 3.4	26.1 ± 2.9	<18	<19	<6.2	<150	<32	<1.2	<2.8

Notes:

1. Analysis marked with an asterisk is not UKAS accredited.
2. Results are presented as $Bq.kg^{-1}$ of dried and homogenised sample and are decay corrected to the sampling date.
3. For results below the Limit of Detection, the LoD is rounded up to 2 significant figures.
4. Uncertainties are rounded to 2 significant figures; results are rounded to the same precision.
5. Detector calibrations are based upon homogeneous standard solutions. For quantification purposes the sample is assumed to be homogeneous.
6. ^{226}Ra has only one gamma ray at 186 keV and the major gamma ray from ^{235}U also occurs at 186 keV. ^{235}U can be measured by the lower abundance gamma ray at 144 keV and if a positive result for ^{235}U is reported, the ^{226}Ra result will be unreliable and overestimated. However even if ^{235}U is below the LoD there may still be a contribution to the ^{226}Ra from ^{235}U and the ^{226}Ra result may be unreliable and overestimated. If an accurate result for ^{226}Ra is required this is better obtained by radiochemical analysis.

- End of Test Report -

Analytical and Deviating Sample Overview

Customer Fugro GeoServices Ltd
Site SZC 2019 Offshore Ground Investigation
Report No S200721

Consignment No S86600
Date Logged 23-Jul-2019
In-House Report Due 30-Jul-2019

Please note the results for any subcontracted analysis (identified with a '^') is likely to take up to an additional five working days.

ID Number	Description	Sampled	MethodID: CustServ — REPORT A	MethodID: Sub008 — ^Gamma spectrometry
CL/1966644	IT1_SB_05 SB05 CEFAS1-150	15/07/19		

Note: We will endeavour to prioritise samples to complete analysis within holding time; however any delay could result in samples becoming deviant whilst being processed in the laboratory.

If sampling dates are missing or matrices unclassified then results will not be ISO 17025 accredited. Please contact us as soon as possible to provide missing information in order to reinstate accreditation.

Deviating Sample Key	
A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key	
	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

Where individual results are flagged see report notes for status.

The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Soil	SubCon*	*	Contact Laboratory for details of the methodology used by the sub-contractor.

Where individual results are flagged see report notes for status.

Report Notes

Generic Notes

Soil/Solid Analysis

Unless stated otherwise,
- Results expressed as mg/kg have been calculated on the basis indicated in the Method Description table.
  All results on MCERTS reports are reported on a 105ºC dry weight basis with the exception of pH and conductivity.
- Sulphate analysis not conducted in accordance with BS1377
- Water Soluble Sulphate is on a 2:1 water:soil extract

Waters Analysis

Unless stated otherwise results are expressed as mg/l
Nil: Where "Nil" has been entered against Total Alkalinity or Total Acidity this indicates that a measurement was not required due to the inherent pH of the sample.

Oil analysis specific

Unless stated otherwise,
- Results are expressed as mg/kg
- SG is expressed as g/cm^3@ 15°C

Gas (Tedlar bag) Analysis

Unless stated otherwise, results are expressed as ug/l

Asbestos Analysis

CH Denotes Chrysotile **TR** Denotes Tremolite
CR Denotes Crocidolite **AC** Denotes Actinolite
AM Denotes Amosite **AN** Denotes Anthophylite
NAIIS No Asbestos Identified in Sample
NADIS No Asbestos Detected In Sample

Symbol Reference

^ Sub-contracted analysis.
$$ Unable to analyse due to the nature of the sample
¶ Samples submitted for this analyte were not preserved on site in accordance with laboratory protocols. This may have resulted in deterioration of the sample(s) during transit to the laboratory. Consequently the reported data may not represent the concentration of the target analyte present in the sample at the time of sampling
¥ Results for guidance only due to possible interference
& Blank corrected result
I.S Insufficient sample to complete requested analysis
I.S(g) Insufficient sample to re-analyse, results for guidance only
Intf Unable to analyse due to interferences
N.D Not determined **N.Det** Not detected
N.F No Flow
NS Information Not Supplied
Req Analysis requested, see attached sheets for results
Þ Raised detection limit due to nature of the sample
***** All accreditation has been removed by the laboratory for this result
‡ MCERTS accreditation has been removed for this result
§ accreditation has been removed for this result as it is a non-accredited matrix

Note: The Laboratory may only claim that data is accredited when all of the requirements of our Quality System have been met. Where these requirements have not been met the laboratory may elect to include the data in its final report and remove the accreditation from individual data items if it believes that the validity of the data has not been affected. If further details are required of the circumstances which have led to the removal of accreditation then please do not hesitate to contact the laboratory.

Sample Descriptions

Client : Fugro GeoServices Ltd
Site : SZC 2019 Offshore Ground Investigation
Report Number : S20_0721

Note: major constituent in upper case

Lab ID Number	Client ID	Description
CL/1966644	_SB_05 SB05 CEFAS1-150719 0	Brown Gravel SAND

Our Ref: EFS/200970M (Ver. 2)
Your Ref: G190016U

September 2, 2019

Environmental Chemistry
SOCOTEC UK Limited
Bretby Business Park
Ashby Road
Burton-on-Trent
Staffordshire
DE15 0YZ

Telephone: 01283 554400
Facsimile: 01283 554422

Karen Blackmore
Fugro GeoServices Ltd
Fugro House
Hithercroft Road
Wallingford
Oxfordshire
OX10 9RB

For the attention of Karen Blackmore

Dear Karen Blackmore

Sample Analysis - SZC 2019 Offshore Ground Investigation

Samples from the above site have been analysed in accordance with the schedule supplied.
The sample details and the results of analyses for these samples are given in the appended report.

An invoice for this work will follow under a separate cover.

The samples will be kept until the agreed date when they will be discarded. Please call 01283 554434 for an extension of this date.
Please be aware that our policy for the retention of paper based laboratory records and analysis reports is 6 years.

The work was carried out in accordance with SOCOTEC UK Limited (Laboratory and Analytical) Standard Terms and Conditions of Contract.

If I can be of any further assistance please do not hesitate to contact me.

Yours sincerely

for SOCOTEC UK Limited

[redacted]

K Smith
Project Co-ordinator
01283 554434

Environmental Chemistry, SOCOTEC UK Limited, P.O. Box 100, Burton-upon-trent, DE15 0XD Tel: 01283 554400 Fax: 01283 554422
SOCOTEC UK Limited.
Registered No: 2880501

TEST REPORT

1252

Report No. EFS/200970M (Ver. 2)

Fugro GeoServices Ltd
Fugro House
Hithercroft Road
Wallingford
Oxfordshire
OX10 9RB

Site: SZC 2019 Offshore Ground Investigation

The 1 sample described in this report were registered for analysis by SOCOTEC UK Limited on 02-Aug-2019. This report supersedes any versions previously issued by the laboratory.

The analysis was completed by: 02-Sep-2019

Tests where the accreditation is set to N or No, and any individual data items marked with a * are not UKAS or MCERTS accredited.
Any opinions or interpretations expressed herein are outside the scope of any UKAS accreditation held by SOCOTEC UK Limited.

The following tables are contained in this report:

Table 1 Main Analysis Results (Pages 2 to 15)
Table of SVOC (Tics) Results (Page 16)
Table of VOC (Tics) Results (Page 17)
Table of WAC Analysis Results (Page 18)
Subcontracted Analysis Reports (Pages 19 to 20)
The accreditation status of subcontracted analysis is displayed on the appended subcontracted analysis reports.
Analytical and Deviating Sample Overview (Pages 21 to 23)
Table of Additional Report Notes (Page 24)
Table of Method Descriptions (Pages 25 to 26)
Table of Report Notes (Page 27)
Table of Sample Descriptions (Appendix A Page 1 of 1)

On behalf of
SOCOTEC UK Li
Becky Batham [redacted] Manager
Energy & Waste Services

Date of Issue: 02-Sep-2019

Accreditation Codes: **N** (Not Accredited), **U** (UKAS), **UM** (UKAS & MCERTS)
Tests marked '^' have been subcontracted to another laboratory.
(NVM) - denotes the sample matrix is dissimilar to matrices upon which the MCERTS validation was based, and is therefore not accredited for MCERTS.
All results are reported on a dry weight basis at 105°C unless otherwise stated. (except QC samples)
SOCOTEC UK Limited accepts no responsibility for any sampling not carried out by our personnel.

		Units :	mg/kg	Mol/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg		% M/M	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		Method Codes :	AMMAR	ANC	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA	FOCCALC	FOCS	GROHSA	GROHSA	GROHSA	GROHSA	GROHSA
		Method Reporting Limits :	0.5	0.04	10	10	20	20	10	10	30	0.0002	0.04	0.2	0.2	0.2	0.2	0.2
		Accreditation Code:	UM	N	UM	UM	UM	U	UM	UM	UM	U	N	UM	UM	UM	UM	UM
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Exchange.Ammonium AR**	**Acid Neut. Capacity**	**Benzene**	**Ethyl Benzene**	**m/p Xylenes**	**MTBE**	**o Xylene**	**Toluene**	**Xylenes**	**F.O.C.**	**S.O.M. % (Calc)**	**GRO**	**GRO (>C5 - C6)**	**GRO (>C7 - C8)**	**GRO (>C8 - C10)**	**GRO (C5-C6 Aliphatic)**
1967674	IT1_SB_01 SB01-ESWAC2 ES 2 19.50	**26-Jul-19**	<0.6	5.72	<11.4	<11.4	<22.8	<22.8	<11.4	<11.4	<34.2	0.0011	0.19	<0.604	<0.604	<0.604	<0.604	<0.228

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Client Name	**Fugro GeoServices Ltd**
Contact	Karen Blackmore

SZC 2019 Offshore Ground Investigation

Sample Analysis

Date Printed	**02-Sep-2019**
Report Number	**EFS/200970M**
Table Number	**1**

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Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Units :			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			GROHSA	GROHSA	GROHSA	GROHSA	ICPACIDS	ICPBOR	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS
Method Reporting Limits :			0.2	0.2	0.2	0.2	20	0.5	0.3	0.2	1.2	1.6	0.7	0.5	2	0.5	0.6	16
Accreditation Code:			UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	N	UM
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**GRO (C6-C7 Aliphatic)**	**GRO (C6-C7)**	**GRO (C7-C8 Aliphatic)**	**GRO (C8-C10 Aliphatic)**	**SO4-- (acid sol)**	**Boron (H20 Soluble)**	**Arsenic (MS)**	**Cadmium (MS)**	**Chromium (MS)**	**Copper (MS)**	**Lead (MS)**	**Mercury (MS)**	**Nickel (MS)**	**Selenium (MS)**	**Vanadium (MS)**	**Zinc (MS)**
1967674	IT1_SB_01 SB01-ESWAC2 ES 2 19.50	**26-Jul-19**	<0.228	<0.604	<0.228	<0.228	1580	2.3	16.1	<0.2	11.5	2.7	4.4	<0.5	5.6	<0.5	35.1	21.1

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Method Codes :			ICPSOIL	KONECR	LOI(%MM)	OGSN	OGSN	OGSN	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS
Method Reporting Limits :			36	0.1	0.2	1	1	1	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Accreditation Code:			UM	N	N	N	N	N	UM	U	U	UM	UM	UM	UM	UM	UM	N
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Iron**	**Chromium vi:**	**L.O.I. % @ 450C**	**Dibutyl Tin**	**Tributyl Tin as Sn**	**Triphenyl Tin**	**Acenaphthene**	**Acenaphthylene**	**Anthracene**	**Benzo(a)anthracene**	**Benzo(a)pyrene**	**Benzo(b)fluoranthene**	**Benzo(ghi)perylene**	**Benzo(k)fluoranthene**	**Chrysene**	**Coronene**
1967674	IT1_SB_01 SB01-ESWAC2 ES 2 19.50	**26-Jul-19**	16100	<0.1	2.0	<1	<1	<1	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09

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Method Codes :			PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PAHMSUS	PCBECD	PCBECD	PCBECD	PCBECD	PCBECD	PCBECD	PCBECD	PHSOIL
Method Reporting Limits :			0.08	0.08	0.08	0.08	0.08	0.08	0.08	1.28	5	5	5	5	5	5	5	
Accreditation Code:			UM	UM	UM	UM	UM	UM	UM	U	UM	UM	UM	UM	UM	UM	UM	UM
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Dibenzo(ah)anthracene**	**Fluoranthene**	**Fluorene**	**Indeno(123-cd)pyrene**	**Naphthalene**	**Phenanthrene**	**Pyrene**	**Total PAH (Sum of USEPA 16)**	**PCB 101**	**PCB 118**	**PCB 138**	**PCB 153**	**PCB 180**	**PCB 28**	**PCB 52**	**pH units (AR)**
1967674	IT1_SB_01 SB01-ESWAC2 ES 2 19.50	**26-Jul-19**	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<1.46	<5.70	<5.70	<5.70	<5.70	<5.70	<5.70	<5.70	8

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Method Codes :			SFAPI	SFAPI	SFAPI	SFAS	Sub020	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW
Method Reporting Limits :			0.5	0.5	0.5	0.5		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.5	0.2
Accreditation Code:			UM	UM	U	N	U	N	U	U	U	U	U	U	U	U	N	U
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Cyanide(Free) (AR)**	**Cyanide(Total) (AR)**	**Phenol Index.(AR)**	**Sulphide as S (AR)**	**^Asbestos ID (Stage 1)**	**1,2,4-Trichlorobenzene**	**1,2-Dichlorobenzene**	**1,3-Dichlorobenzene**	**1,4-Dichlorobenzene**	**1-Methylnaphthalene**	**2,4,5-Trichlorophenol**	**2,4,6-Trichlorophenol**	**2,4-Dichlorophenol**	**2,4-Dimethylphenol**	**2,4-Dinitrophenol**	**2,4-Dinitrotoluene**
1967674	IT1_SB_01 SB01-ESWAC2 ES 2 19.50	26-Jul-19	<0.6	<0.6	<0.6	3.0	NADIS	<0.114	<0.114	<0.114	<0.114	<0.114	<0.114	<0.114	<0.114	<0.114	<0.570	<0.228

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Method Codes :			SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW
Method Reporting Limits :			0.5	0.1	0.1	0.1	0.1	0.5	0.1	0.1	14.5	0.2	0.1	0.1	0.5	0.5	0.1	0.6
Accreditation Code:			U	U	U	U	U	N	U	U	N	N	U	U	N	U	U	N
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**2,6-Dinitrotoluene**	**2-Chloronaphthalene**	**2-Chlorophenol**	**2-Methylnaphthalene**	**2-Methylphenol**	**2-Nitroaniline**	**2-Nitrophenol**	**3- & 4-Methylphenol**	**3-Nitroaniline**	**4,6-Dinitro-2-methylphenol**	**4-Bromophenyl-phenylether**	**4-Chloro-3-methylphenol**	**4-Chloroaniline**	**4-Chlorophenol**	**4-Chlorophenyl-phenylether**	**4-Nitroaniline**
1967674	IT1_SB_01 SB01-ESWAC2 ES 2 19.50	**26-Jul-19**	<0.570	<0.114	<0.114	<0.114	<0.114	<0.570	<0.114	<0.114	<16.5	<0.228	<0.114	<0.114	<0.570	<0.570	<0.114	<0.684

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Units :			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Method Codes :			SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW
Method Reporting Limits :			0.5	0.1	0.1	0.1	0.2	0.2	0.2	0.5	0.2	0.5	0.5	0.1	0.1	0.1	0.5	0.2
Accreditation Code:			N	U	U	U	U	U	U	U	U	N	U	U	U	U	U	U
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**4-Nitrophenol**	**Acenaphthene**	**Acenaphthylene**	**Anthracene**	**Benzo(a)anthracene**	**Benzo(a)pyrene**	**Benzo(b)fluoranthene**	**Benzo(ghi)perylene**	**Benzo(k)fluoranthene**	**Benzoic Acid**	**Benzyl alcohol**	**Biphenyl**	**bis(2-Chloroethoxy)methane**	**bis(2-Chloroethyl)ether**	**bis(2-Chloroisopropyl)ether**	**bis(2-Ethylhexyl)phthalate**
1967674	IT1_SB_01 SB01-ESWAC2 ES 2 19.50	**26-Jul-19**	<0.570	<0.114	<0.114	<0.114	<0.228	<0.228	<0.228	<0.570*	<0.228	<0.570	<0.570	<0.114	<0.114	<0.114	<0.570	<0.228

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Method Codes :			SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW
Method Reporting Limits :			0.2	0.1	0.3	0.5	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.1	0.1	0.1	0.1
Accreditation Code:			U	U	N	U	U	U	U	U	U	U	U	U	U	N	N	U
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Butylbenzylphthalate**	**Chrysene**	**Coronene**	**Dibenzo(ah)anthracene**	**Dibenzofuran**	**Diethylphthalate**	**Dimethylphthalate**	**Di-n-butylphthalate**	**Di-n-octylphthalate**	**Diphenyl Ether**	**Fluoranthene**	**Fluorene**	**Hexachlorobenzene**	**Hexachlorobutadiene**	**Hexachlorocyclopentadiene**	**Hexachloroethane**
1967674	IT1_SB_01 SB01-ESWAC2 ES 2 19.50	**26-Jul-19**	<0.228	<0.114	<0.342	<0.570	<0.114	<0.114	<0.114	<0.114	<0.228	<0.114	<0.228	<0.228*	<0.114	<0.114	<0.114	<0.114

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Method Codes :			SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	SVOCSW	TMSS	TPHFIDUS	TPHFIDUS	TPHUSSI	TPHUSSI
Method Reporting Limits :			0.5	0.1	0.1	0.5	0.9	0.1	0.5	0.1	0.1	0.2		0.1	10	10	4	4
Accreditation Code:			U	N	U	U	N	N	N	U	U	U	Yes	U	U	UM	U	U
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Indeno(123-cd)pyrene**	**Isophorone**	**Naphthalene**	**Nitrobenzene**	**N-Nitroso-di-n-propylamine**	**N-Nitrosodiphenylamine**	**Pentachlorophenol**	**Phenanthrene**	**Phenol**	**Pyrene**	**SVOC + TICs (AR)**	**Tot.Moisture @ 105C**	**TPH Band (>C10-C40)**	**TPH by GCFID (AR)**	**TPH Ali Band >C10-C12**	**TPH Ali Band >C12-C16**
1967674	IT1_SB_01 SB01-ESWAC2 ES 2 19.50	**26-Jul-19**	<0.570	<0.114	<0.114	<0.570	<1.026	<0.114	<0.570	<0.114	<0.114	<0.228	Req	12.3	11.9	17.4	<4.56	<4.56

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Method Codes :			TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	TPHUSSI	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS
Method Reporting Limits :			4	8.75	4	20	4	4	4	8.75	4	20	1	1	1	1	1	1
Accreditation Code:			U	U	U	U	U	U	U	U	U	U	UM	UM	N	UM	UM	U
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**TPH Ali Band >C16-C21**	**TPH Ali Band >C21-C35**	**TPH Ali Band >C8-C10**	**TPH Ali Band >C8-C40**	**TPH Aro Band >C10-C12**	**TPH Aro Band >C12-C16**	**TPH Aro Band >C16-C21**	**TPH Aro Band >C21-C35**	**TPH Aro Band >C8-C10**	**TPH Aro Band >C8-C40**	**1,1,1,2-Tetrachloroethane**	**1,1,1-Trichloroethane**	**1,1,2,2-Tetrachloroethane**	**1,1,2-Trichloroethane**	**1,1-Dichloroethane**	**1,1-Dichloroethene**
1967674	IT1_SB_01 SB01-ESWAC2 ES 2 19.50	**26-Jul-19**	<4.56	10.70	<4.56	<22.8	<4.56	<4.56	5.91	12.2	<4.56	23.6	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1

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Method Codes :			VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS
Method Reporting Limits :			1	3	1	3	1	1	1	1	1	1	1	1	1	1	1	1
Accreditation Code:			UM	UM	UM	N	UM	N	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**1,1-Dichloropropene**	**1,2,3-Trichlorobenzene**	**1,2,3-Trichloropropane**	**1,2,4-Trichlorobenzene**	**1,2,4-Trimethylbenzene**	**1,2-Dibromo-3-chloropropane**	**1,2-Dibromoethane**	**1,2-Dichlorobenzene**	**1,2-Dichloroethane**	**1,2-Dichloropropane**	**1,3,5-Trimethylbenzene**	**1,3-Dichlorobenzene**	**1,3-Dichloropropane**	**1,4-Dichlorobenzene**	**2,2-Dichloropropane**	**2-Chlorotoluene**
1967674	IT1_SB_01 SB01-ESWAC2 ES 2 19.50	**26-Jul-19**	<1.1	<3.4	<1.1	<3.4	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1

SOCOTEC

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Client Name	**Fugro GeoServices Ltd**
Contact	Karen Blackmore

SZC 2019 Offshore Ground Investigation

Sample Analysis

Date Printed	**02-Sep-2019**
Report Number	**EFS/200970M**
Table Number	**1**

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Units :			µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Method Codes :			VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS
Method Reporting Limits :			1	1	1	1	1	1	1	1	1	2	1	3	5	1	1	1
Accreditation Code:			UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	UM	U	UM	UM	UM	UM
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**4-Chlorotoluene**	**Benzene**	**Bromobenzene**	**Bromochloromethane**	**Bromodichloromethane**	**Bromoform**	**Bromomethane**	**Carbon Tetrachloride**	**Chlorobenzene**	**Chloroethane**	**Chloroform**	**Chloromethane**	**cis 1,2-Dichloroethene**	**cis 1,3-Dichloropropene**	**Dibromochloromethane**	**Dibromomethane**
1967674	IT1_SB_01 SB01-ESWAC2 ES 2 19.50	**26-Jul-19**	<1.1	<1.1	<1.1	<1.1	<1.1*	<1.1	<1.1	<1.1	<1.1	<2.3	<1.1	<3.4	<5.7	<1.1	<1.1	<1.1*

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SZC 2019 Offshore Ground Investigation

Sample Analysis

Date Printed	**02-Sep-2019**
Report Number	**EFS/200970M**
Table Number	**1**

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Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Units :			µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Method Codes :			VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS
Method Reporting Limits :			1	2	2	1	4	1	5	1	2	1	1	1	1	1	3	5
Accreditation Code:			N	UM	N	UM	UM	UM	UM	U	UM	UM	UM	UM	UM	UM	UM	UM
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**Dichlorodifluoromethane**	**Ethylbenzene**	**Hexachlorobutadiene**	**iso-Propylbenzene**	**m and p-Xylene**	**MTBE**	**Naphthalene**	**n-Butylbenzene**	**o-Xylene**	**p-Isopropyltoluene**	**Propylbenzene**	**sec-Butylbenzene**	**Styrene**	**tert-Butylbenzene**	**Tetrachloroethene**	**Toluene**
1967674	IT1_SB_01 SB01-ESWAC2 ES 2 19.50	**26-Jul-19**	<1.1	<2.3	<2.3	<1.1	<4.6	<1.1	<5.7	<1.1	<2.3	<1.1	<1.1	<1.1	<1.1	<1.1	<3.4	<5.7

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Contact	Karen Blackmore

SZC 2019 Offshore Ground Investigation

Sample Analysis

Date Printed	**02-Sep-2019**
Report Number	**EFS/200970M**
Table Number	**1**

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

Units :			µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	% M/M										
Method Codes :			VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	VOCHSAS	WSLM59										
Method Reporting Limits :			1	1	1	1	1		0.02										
Accreditation Code:			UM	UM	UM	UM	UM	Yes	N										
LAB ID Number CL/	**Client Sample Description**	**Sample Date**	**trans 1,2-Dichloroethene**	**trans 1,3-Dichloropropene**	**Trichloroethene**	**Trichlorofluoromethane**	**Vinyl Chloride**	**VOC + TICs HSA-GCMS**	**Total Organic Carbon**										
1967674	IT1_SB_01 SB01-ESWAC2 ES 2 19.50	**26-Jul-19**	<1.1	<1.1	<1.1	<1.1	<1.1	Req	0.11										

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Client Name	**Fugro GeoServices Ltd**
Contact	Karen Blackmore

SZC 2019 Offshore Ground Investigation

Sample Analysis

Date Printed	**02-Sep-2019**
Report Number	**EFS/200970M**
Table Number	**1**

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

SVOC (TICs)

Accredited?:No

Customer and Site Details:	Fugro GeoServices Ltd: SZC 2019 Offshore Ground Investigation		
Sample Details:	IT1_SB_01 SB01-ESWAC2 ES 2 19.5	**Job Number:**	S20_0970
LIMS ID Number:	CL1967674		
		Multiplier:	0.2
Date Booked in:	02-Aug-19	**Dilution Factor:**	1
Date Extracted:	09-Aug-19	**GPC (Y/N):**	N
Date Analysed:	10-Aug-19	**Matrix:**	Soil
QC Batch Number:	156	**Method:**	Ultrasonic
Directory/Quant File:	080819.GC11\ 0	**Operator:**	RP

Tentatively Identified Compounds	CAS #	R.T.	Concentration mg/kg	% Fit	Accr. code
None detected	-	-	<1.7		N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.
Concentrations are reported on a dry weight basis.

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

TICs by HSA-GCMS

Accredited?: No

Customer and Site Details:	Fugro GeoServices Ltd: SZC 2019 Offshore Ground Investigation		**Date Booked in:**	02-Aug-19
Sample Details:	IT1_SB_01 SB01-ESWAC2 ES 2 19.50		**Date Analysed:**	12-Aug-19
LIMS ID Number:	CL1967674		**Matrix:**	Soil
Job Number:	S20_0970		**Ext Method:**	Headspace
Directory/Quant file:	081119_MS19\	Initial Calibration	**Dilution:**	0.96
Operator:	0		**Position:**	14

Tentatively Identified Compounds	CAS No	R.T. (min.)	Concentration µg/kg	% Fit	Accr. code
Non Detected	-	-	<6	-	N
Dichloromethane (Methylene Chloride)	75-09-2	-	<6	-	N

The compounds listed above have been tentatively identified by a computer based library search.
Compounds identified in the sample are not reported if they also occur in the method blank.
The % fit is an indication of the reliability of the compound assignment.
Due to the similarity between mass spectra of some isomeric compounds, assignments may not be correct.
Other compounds may also be present but identification was not possible.
Concentrations are semi-quantitative, assume a response factor of 1 and use the nearest internal standard.

Compounds marked * are not UKAS or Mcerts accredited
"M" denotes that % fit has been manually interpreted

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

WASTE ACCEPTANCE CRITERIA TESTING
BSEN 12457/2

					Leaching Data	
Client	Fugro GeoServices Ltd				Weight of sample (kg)	0.103
Contact	Karen Blackmore				Moisture content @ 105°C (% of Wet Weight)	12.3
					Equivalent Weight based on drying at 105°C (kg)	0.090
Site	SZC 2019 Offshore Ground Investigation				Volume of water required to carry out 10:1 stage (litres)	0.887
					Fraction of sample above 4 mm %	0.000
Sample Description		**Report No**	**Sample No**	**Issue Date**	Fraction of non-crushable material %	0.000
IT1_SB_01 SB01-ESWAC2 ES 2 19.50		s20_0970M	CL/1967674	02-Sep-19		

Note: The >4mm fraction is crushed using a disc mill

Accreditation	Method Code	Solid Waste Analysis (Dry Basis)	Concentration in Solid (Dry Weight Basis)	Landfill Waste Acceptance Criteria Limit Values		
				Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
U	WSLM59	Total Organic Carbon (% M/M)	0.11	3	5	6
N	LOI450	Loss on Ignition (%)	2			10
U	BTEXHSA	Sum of BTEX (mg/kg)	<0.0684	6		
U	PCBUSECD	Sum of 7 Congener PCB's (mg/kg)	<0.042	1		
U	TPHFIDUS	Mineral Oil (mg/kg)	11.9	500		
N	PAHMSUS	PAH Sum of 17 (mg/kg)	<1.55	100		
U	PHSOIL	pH (pH units)	8		>6	
N	ANC	Acid Neutralisation Capacity (mol/kg) @pH 7	5.72		To be evaluated	To be evaluated

Accreditation	Method Code	Leachate Analysis	10:1 Single Stage Leachate	Calculated cumulative amount	Landfill Waste Acceptance Criteria Limit Values for BSEN 12457/2 @ L/S 10 litre kg-1 mg/kg (dry weight)		
			mg/l except ºº	mg/kg (dry weight)			
U	WSLM3	pH (pH units) ºº	8.1	Calculated data not UKAS Accredited			
U	WSLM2	Conductivity (µs/cm) ºº	1230				
U	ICPMSW	Arsenic	0.005	0.05	0.5	2	25
U	ICPWATVAR	Barium	<0.01	<0.1	20	100	300
U	ICPMSW	Cadmium	<0.0001	<0.001	0.04	1	5
U	ICPMSW	Chromium	<0.001	<0.01	0.5	10	70
U	ICPMSW	Copper	<0.001	<0.01	2	50	100
U	ICPMSW	Mercury	<0.0001	<0.001	0.01	0.2	2
U	ICPMSW	Molybdenum	0.007	0.07	0.5	10	30
U	ICPMSW	Nickel	<0.001	<0.01	0.4	10	40
U	ICPMSW	Lead	<0.001	<0.01	0.5	10	50
U	ICPMSW	Antimony	0.003	0.03	0.06	0.7	5
U	ICPMSW	Selenium	<0.001	<0.01	0.1	0.5	7
U	ICPMSW	Zinc	0.004	0.04	4	50	200
U	KONENS	Chloride	327	3270	800	15000	25000
U	ISEF	Fluoride	0.2	2	10	150	500
U	ICPWATVAR	Sulphate as SO4	43	430	1000	20000	50000
N	WSLM27	Total Dissolved Solids	962	9620	4000	60000	100000
U	SFAPI	Phenol Index	<0.05	<0.5	1		
N	WSLM13	Dissolved Organic Carbon	1.2	12	500	800	1000

Template Ver. 1

Landfill Waste Acceptance Criteria limit values correct as of 11th March 2009.

Tests where the accreditation is set to U are UKAS accredited, those where the accreditation is set to N are not UKAS accredited

Where individual results are flagged see report notes for status.
Results corrected to dry weight at 105°C where appropriate, in accordance with the MCERTS standard.

IOM

working for a healthy and sustainable world

CERTIFICATE OF ANALYSIS

ANALYSIS REQUESTED BY: SOCOTEC UK Ltd
Environmental Chemistry
PO Box 100
Burton upon Trent
Staffordshire
DE15 0XD

CONTRACT NO: S07316-3

DATE OF ISSUE: 13.08.19

DATE SAMPLE RECEIVED: 06.08.19

DATE SAMPLE ANALYSED: 12.08.19

DESCRIPTION: One soil/loose aggregate sample.

ANALYSIS REQUESTED: Qualitative analysis of a sample for determination of presence/type of asbestos.

METHODS:

Our method involves initial examination of the sample followed by detailed analysis of a representative sub-sample. The sub-sample is analysed qualitatively for asbestos by polarised light and dispersion staining as described by the Health and Safety Executive in HSG 248.

RESULTS:

Initial Screening

No asbestos was detected in the soil sample by stereo-binocular and polarised light microscopy.

A summary of the results is given in Table 1.

www.iom-world.org

Registered Address: Research Avenue North, Riccarton, Edinburgh, EH14 4AP, United Kingdom
Tel: 0131 449 8000 Fax: 0131 449 8084 Email: iom@iom-world.org

IOM CONSULTING LIMITED, registered in Scotland No. SC205670

UKAS TESTING
0374

CONTRACT NO: S07316-3
DATE OF ISSUE: 13.08.19

RESULTS: (cont.)

Table 1: Qualitative Results

SOCOTEC Job I.D: S200970

IOM sample number	Client sample number	ACM type detected	PLM result
S66225	S1967674 IT1_SB_01 SB01-ESWAC2 ES 2 19.50	-	No Asbestos Detected

Our detection limit for this method is 0.001%.

COMMENTS:

IOM Consulting cannot accept responsibility for samples that have been incorrectly collected or despatched by external clients.

Any opinions and interpretations expressed herein are outwith the scope of our UKAS accreditation.

AUTHORISED BY: .....

D Third
Scientific Technician

Analytical and Deviating Sample Overview

Customer **Fugro GeoServices Ltd**
Site **SZC 2019 Offshore Ground Investigation**
Report No **S200970M**

Consignment No S86921
Date Logged 02-Aug-2019
In-House Report Due 12-Aug-2019

Please note the results for any subcontracted analysis (identified with a '^') is likely to take up to an additional five working days.

ID Number	Description	MethodID	AMMAR	ANC	BTEXHSA		CEN Leachate	CustServ	FOCCALC	FOCS	GROHSA	ICPACIDS	ICPBOR	ICPMSS										ICPSOIL	KONECR	LOI(%MM)	MCertS
		Sampled	Exchange.Ammonium AR	Acid Neut. Capacity	BTEX-HSA + MTBE analysis	MTBE (µg/kg)	CEN Leac(P)C	REPORT A	F.O.C.	S.O.M. % (Calc)	GRO (AA) by HSA GC-FID	SO4-- (acid sol)	Boron (H20 Soluble)	Arsenic (MS)	Cadmium (MS)	Chromium (MS)	Copper (MS)	Lead (MS)	Mercury (MS)	Nickel (MS)	Selenium (MS)	Vanadium (MS)	Zinc (MS)	Iron	Chromium vi:	L.O.I. % @ 450C	MCertS Analysis
			✓		✓	✓			✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓			✓
CL/1967674	IT1_SB_01 SB01-ESWAC2 ES	26/07/19																									

Note: We will endeavour to prioritise samples to complete analysis within holding time; however any delay could result in samples becoming deviant whilst being processed in the laboratory.

If sampling dates are missing or matrices unclassified then results will not be ISO 17025 accredited. Please contact us as soon as possible to provide missing information in order to reinstate accreditation.

Deviating Sample Key

A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key

	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

Where individual results are flagged see report notes for status.
The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Analytical and Deviating Sample Overview

Customer **Fugro GeoServices Ltd**
Site **SZC 2019 Offshore Ground Investigation**
Report No **S200970M**

Consignment No S86921
Date Logged 02-Aug-2019
In-House Report Due 12-Aug-2019

Please note the results for any subcontracted analysis (identified with a '^') is likely to take up to an additional five working days.

ID Number	Description	MethodID	OGSN			PAHMSUS	PCBECD	PHSOIL	SFAPI			SFAS	Sub020	SVOCSW	TMSS	TPHFIDUS		TPHUSSI								
		Sampled	Dibutyl Tin	Tributyl Tin as Sn	Triphenyl Tin	PAH (17) by GCMS	PCB-7 Congeners Analysis	pH units (AR)	Cyanide(Free) (AR)	Cyanide(Total) (AR)	Phenol Index.(AR)	Sulphide as S (AR)	^Asbestos ID (Stage 1)	SVOC + TICs (AR)	Tot.Moisture @ 105C	TPH Band (>C10-C40)	TPH by GCFID (AR)	TPH Ali Band >C10-C12	TPH Ali Band >C12-C16	TPH Ali Band >C16-C21	TPH Ali Band >C21-C35	TPH Ali Band >C8-C10	TPH Ali Band >C8-C40	TPH Aro Band >C10-C12	TPH Aro Band >C12-C16	TPH Aro Band >C16-C21	TPH Aro Band >C21-C35
						✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CL/1967674	IT1_SB_01 SB01-ESWAC2 ES	26/07/19																								

Note: We will endeavour to prioritise samples to complete analysis within holding time; however any delay could result in samples becoming deviant whilst being processed in the laboratory.

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Deviating Sample Key

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F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key

	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

Where individual results are flagged see report notes for status.
The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Analytical and Deviating Sample Overview

Customer **Fugro GeoServices Ltd** Consignment No S86921
Site **SZC 2019 Offshore Ground Investigation** Date Logged 02-Aug-2019
Report No **S200970M** In-House Report Due 12-Aug-2019

Please note the results for any subcontracted analysis (identified with a '^') is likely to take up to an additional five working days.

ID Number	Description	Sampled	MethodID	TPHUSSI			VOCHSAS	WSLM59
				TPH Aro Band >C8-C10	TPH Aro Band >C8-C40	TPH by GCFID (AR/Si)	VOC + TICs HSA-GCMS	Total Organic Carbon
				✓	✓	✓	✓	✓
CL/1967674	IT1_SB_01 SB01-ESWAC2 ES	26/07/19						

Note: We will endeavour to prioritise samples to complete analysis within holding time; however any delay could result in samples becoming deviant whilst being processed in the laboratory.

If sampling dates are missing or matrices unclassified then results will not be ISO 17025 accredited. Please contact us as soon as possible to provide missing information in order to reinstate accreditation.

Deviating Sample Key	
A	The sample was received in an inappropriate container for this analysis
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C	Headspace present in the sample container
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E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key	
	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

Where individual results are flagged see report notes for status.
The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.

Report Number : EFS/200970

Additional Report Notes

Method Code	Sample ID	The following information should be taken into consideration when using the data contained within this report
SVOCSW	CL1967674	The Secondary process control data associated with this Test has not wholly met the requirements of the Laboratory Quality Management System QMS with one or more target analytes falling outside acceptable limits. However the remaining data gives the Laboratory confidence that the test has performed satisfactorily (including the Primary Process Control) and that the validity of the data may not have been significantly affected. However in line with our QMS policy we have removed accreditation , where applicable, from the affected analytes (Fluorene and Benzo[g,h,i]perylene) . These circumstances should be taken into consideration when utilising the data.
VOCHSAS	CL1967674	The Primary process control data associated with this Test has not wholly met the requirements of the Laboratory Quality Management System QMS with one or more target analytes falling outside acceptable limits. However the remaining data gives the Laboratory confidence that the test has performed satisfactorily and that the validity of the data may not have been significantly affected. However in line with our QMS policy we have removed accreditation, where applicable, from the affected analytes (Bromodichloromethane, Dibromomethane) . These circumstances should be taken into consideration when utilising the data.

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Soil	AMMAR	As Received	Determination of Exchangeable Ammonium in Soil using potassium chloride extraction, discrete colorimetric detection
Soil	ANC	Oven Dried @ < 35°C	Quantitative digestion with Hydrochloric Acid back titration with 1M Sodium Hydroxide to pH 7
Soil	BTEXHSA	As Received	Determination of Benzene, Toluene, Ethyl benzene and Xylenes (BTEX) by Headspace GCFID
Soil	FOCS	Oven Dried @ < 35°C	Calculation of Soil Organic Matter content from Organic Carbon content of soil samples
Soil	GROHSA	As Received	Determination of Total Gasoline Range Organics Hydrocarbons (GRO) by Headspace GCFID
Soil	ICPACIDS	Oven Dried @ < 35°C	Determination of Total Sulphate in soil samples by Hydrochloric Acid extraction followed by ICPOES detection
Soil	ICPBOR	Oven Dried @ < 35°C	Determination of Boron in soil samples by hot water extraction followed by ICPOES detection
Soil	ICPMSS	Oven Dried @ < 35°C	Determination of Metals in Marine Sediments and Soil samples by aqua regia digestion followed by ICPMS detection
Soil	ICPSOIL	Oven Dried @ < 35°C	Determination of Metals in soil samples by aqua regia digestion followed by ICPOES detection
Soil	KONECR	Oven Dried @ < 35°C	Determination of Chromium vi in soil samples by water extraction followed by colorimetric detection
Soil	LOI(%MM)	Oven Dried @ < 35°C	Determination of loss on ignition for soil samples at specified temperature by gravimetry
Soil	OGSN	As Received	Determination of Organo-tin compounds using sonic extraction in methanol , derivatiseation with Sodium Tetraethylborate and GCMS quantitation (SIM mode).
Soil	PAHMSUS	As Received	Determination of Polycyclic Aromatic Hydrocarbons (PAH) by hexane/acetone extraction followed by GCMS detection
Soil	PCBECD	As Received	Determination of Polychlorinated Biphenyl (PCB) congeners/aroclors by hexane/acetone extraction followed by GCECD detection
Soil	PHSOIL	As Received	Determination of pH of 2.5:1 deionised water to soil extracts using pH probe.
Soil	SFAPI	As Received	Segmented flow analysis with colorimetric detection
Soil	SFAS	As Received	Segmented flow analysis with colorimetric detection
Soil	SubCon*	*	Contact Laboratory for details of the methodology used by the sub-contractor.
Soil	SVOCSW	As Received	Determination of Semi-Volatile Organic Compounds by dichloromethane/acetone extraction followed by GCMS detection
Soil	TMSS	As Received	Determination of the Total Moisture content at 105ºC by loss on oven drying gravimetric analysis (% based upon wet weight)

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Soil	TPHFIDUS	As Received	Determination of hexane/acetone extractable Hydrocarbons in soil with GCFID detection.
Soil	TPHUSSI	As Received	Determination of hexane/acetone extractable Hydrocarbons in soil with GCFID detection including quantitation of Aromatic and Aliphatic fractions.
Soil	VOCHSAS	As Received	Determination of Volatile Organic Compounds (VOC) by Headspace GCMS
Soil	WSLM59	Oven Dried @ < 35°C	Determination of Organic Carbon in soil using sulphurous Acid digestion followed by high temperature combustion and IR detection
Water	ICPMSW	As Received	Direct quantitative determination of Metals in water samples using ICPMS
Water	ICPWATVAR	As Received	Direct determination of Metals and Sulphate in water samples using ICPOES
Water	ISEF	As Received	Determination of Fluoride in water samples by Ion Selective Electrode (ISE)
Water	KONENS	As Received	Direct analysis using discrete colorimetric analysis
Water	SFAPI	As Received	Segmented flow analysis with colorimetric detection
Water	WSLM13	As Received	Instrumental analysis using acid/persulphate digestion and non-dispersive IR detection
Water	WSLM2	As Received	Determination of the Electrical Conductivity (µS/cm) by electrical conductivity probe.
Water	WSLM27	As Received	Gravimetric Determination
Water	WSLM3	As Received	Determination of the pH of water samples by pH probe

Where individual results are flagged see report notes for status.

Report Notes

Generic Notes

Soil/Solid Analysis

Unless stated otherwise,
- Results expressed as mg/kg have been calculated on the basis indicated in the Method Description table.
  All results on MCERTS reports are reported on a 105ºC dry weight basis with the exception of pH and conductivity.
- Sulphate analysis not conducted in accordance with BS1377
- Water Soluble Sulphate is on a 2:1 water:soil extract

Waters Analysis

Unless stated otherwise results are expressed as mg/l
Nil: Where "Nil" has been entered against Total Alkalinity or Total Acidity this indicates that a measurement was not required due to the inherent pH of the sample.

Oil analysis specific

Unless stated otherwise,
- Results are expressed as mg/kg
- SG is expressed as g/cm^3@ 15°C

Gas (Tedlar bag) Analysis

Unless stated otherwise, results are expressed as ug/l

Asbestos Analysis

CH Denotes Chrysotile **TR** Denotes Tremolite
CR Denotes Crocidolite **AC** Denotes Actinolite
AM Denotes Amosite **AN** Denotes Anthophylite
NAIIS No Asbestos Identified in Sample
NADIS No Asbestos Detected In Sample

Symbol Reference

^ Sub-contracted analysis.
$$ Unable to analyse due to the nature of the sample
¶ Samples submitted for this analyte were not preserved on site in accordance with laboratory protocols. This may have resulted in deterioration of the sample(s) during transit to the laboratory. Consequently the reported data may not represent the concentration of the target analyte present in the sample at the time of sampling
¥ Results for guidance only due to possible interference
& Blank corrected result
I.S Insufficient sample to complete requested analysis
I.S(g) Insufficient sample to re-analyse, results for guidance only
Intf Unable to analyse due to interferences
N.D Not determined **N.Det** Not detected
N.F No Flow
NS Information Not Supplied
Req Analysis requested, see attached sheets for results
Þ Raised detection limit due to nature of the sample
***** All accreditation has been removed by the laboratory for this result
‡ MCERTS accreditation has been removed for this result
§ accreditation has been removed for this result as it is a non-accredited matrix

Note: The Laboratory may only claim that data is accredited when all of the requirements of our Quality System have been met. Where these requirements have not been met the laboratory may elect to include the data in its final report and remove the accreditation from individual data items if it believes that the validity of the data has not been affected. If further details are required of the circumstances which have led to the removal of accreditation then please do not hesitate to contact the laboratory.

Sample Descriptions

Client : Fugro GeoServices Ltd
Site : SZC 2019 Offshore Ground Investigation
Report Number : S20_0970

Note: major constituent in upper case

Lab ID Number	Client ID	Description
CL/1967674	_SB_01 SB01-ESWAC2 ES 2 19	Grey/Black SAND Sea Shells

Our Ref: EXR/285179 (Ver. 1)
Your Ref: G190016U

June 21, 2019

Environmental Chemistry
SOCOTEC UK Limited
Bretby Business Park
Ashby Road
Burton-on-Trent
Staffordshire
DE15 0YZ

Telephone: 01283 554400
Facsimile: 01283 554422

Karen Blackmore
Fugro GeoServices Ltd
Fugro House
Hithercroft Road
Wallingford
Oxfordshire
OX10 9RB

For the attention of Karen Blackmore

Dear Karen Blackmore

CEN Leachate 10:1 - SZC 2019 Offshore Ground Investigation

Samples from the above site have been analysed in accordance with the schedule supplied.
The sample details and the results of analyses for these samples are given in the appended report.

An invoice for this work will follow under a separate cover.

Please be aware that our policy for the retention of paper based laboratory records and analysis reports is 6 years.

The work was carried out in accordance with SOCOTEC UK Limited (Multi-Sector Services) Standard Terms and Conditions of Contract.

If I can be of any further assistance please do not hesitate to contact me.

Yours sincerely

for SOCOTEC UK Limited

[redacted]

Project Co-ordinator
01283 554434

TEST REPORT

1252

Report No. EXR/285179 (Ver. 1)

Fugro GeoServices Ltd
Fugro House
Hithercroft Road
Wallingford
Oxfordshire
OX10 9RB

Site: SZC 2019 Offshore Ground Investigation

The 3 samples described in this report were registered for analysis by SOCOTEC UK Limited on 07-Jun-2019. This report supersedes any versions previously issued by the laboratory.

The analysis was completed by: 21-Jun-2019

Tests where the accreditation is set to N or No, and any individual data items marked with a * are not UKAS accredited.
Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

The following tables are contained in this report:

Table 1 Main Analysis Results (Pages 2 to 3)
Analytical and Deviating Sample Overview (Pages 4 to 5)
Table of Method Descriptions (Page 6)
Table of Report Notes (Page 7)
Table of Sample Descriptions (Appendix A Page 1 of 1)

On behalf of
SOCOTEC UK L[redacted]
Becky Batham Operations Manager
Energy & Waste Services

Date of Issue: 21-Jun-2019

Tests marked '^' have been subcontracted to another laboratory.

Where samples have been flagged as deviant on the Analytical and Deviating Sample Overview, for any reason, the data may not be representative of the sample at the point of sampling and the validity of the data may be affected. SOCOTEC UK Limited accepts no responsibility for any sampling not carried out by our personnel.

Units :			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
Method Codes :			ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPWATVAR	ICPWATVAR	ICPWATVAR
Method Reporting Limits :			0.001	0.001	0.0001	0.001	0.001	0.001	0.002	0.0001	0.001	0.001	0.001	0.001	0.002	0.01	0.01	1
UKAS Accredited :			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LAB ID Number EX/	**Client Sample Description**	**Sample Date**	**Antimony as Sb (Dissolved)**	**Arsenic as As (Dissolved)**	**Cadmium as Cd (Dissolved)**	**Chromium as Cr (Dissolved)**	**Copper as Cu (Dissolved)**	**Lead as Pb (Dissolved)**	**Manganese as Mn (Dissolved)**	**Mercury as Hg (Dissolved)**	**Molybdenum as Mo (Dissolved)**	**Nickel as Ni (Dissolved)**	**Selenium as Se (Dissolved)**	**Vanadium as V (Dissolved)**	**Zinc as Zn (Dissolved)**	**Barium as Ba (Dissolved) a**	**Boron as B (Dissolved) a**	**Calcium as Ca (Dissolved) a**
1980688	IT1_SPT_03 SPT03-20190531 ES 1 8.00	07-Jun-19	0.003	<0.001	<0.0001	<0.001	<0.001	<0.001	0.015	<0.0001	0.01	<0.001	<0.001	0.004	<0.002	<0.01	0.23	22
1980709	QC Blank		<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.002	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.01	<0.01	<1
1980710	Blank Spike (% Recovery)		103	101	97	99	103	102	102	100	99	103	95	103	99	102	102	100

SOCOTEC

Bretby Business Park, Ashby Road

Burton-on-Trent, Staffordshire, DE15 0YZ

Tel +44 (0) 1283 554400

Fax +44 (0) 1283 554422

Client Name	**Fugro GeoServices Ltd**
Contact	Karen Blackmore

SZC 2019 Offshore Ground Investigation

CEN Leachate 10:1

Date Printed	**14-Jun-2019**
Report Number	**EXR/285179**
Table Number	**1**

Units :			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	uS/cm	mg/l	pH units
Method Codes :			ICPWATVAR	ICPWATVAR	ISEF	KONENS	KONENS	KONENS	KONENS	SFAPI	SFAPI	SFAPI	SFAS	WSLM13	WSLM2	WSLM27	WSLM3
Method Reporting Limits :			0.01	3	0.1	0.01	1	0.003	0.2	0.02	0.02	0.05	0.02	0.2	100	60	
UKAS Accredited :			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes
LAB ID Number EX/	**Client Sample Description**	**Sample Date**	**Iron as Fe (Dissolved) a**	**Total Sulphur as SO4 (Dissolved) a**	**Fluoride as F a**	**Ammoniacal Nitrogen as N**	**Chloride as Cl w**	**Chromium VI as Cr**	**Nitrate as N**	**Cyanide (Free) as CN**	**Cyanide (Total) as CN**	**Phenol Index as C6H5OH**	**Sulphide as S**	**Dissolved Organic Carbon w**	**Conductivity uS/cm @ 25C w**	**Total Dissolved Solids**	**pH units w**
1980688	IT1_SPT_03 SPT03-20190531 ES 1 8.00	07-Jun-19	0.03	68	0.2	0.02	287	<0.003	<0.2	<0.02	<0.02	<0.05	<0.02	15	1190	930	7.3
1980709	QC Blank		<0.01	<3	<0.1	<0.01	<1	<0.003	<0.2	<0.02	<0.02	<0.05	<0.02	<0.2	<100	<60	
1980710	Blank Spike (% Recovery)		103	98	100.6	98	101	102	102	98.80	97.61	100.80	102.72	97	101		99

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Client Name	**Fugro GeoServices Ltd**
Contact	Karen Blackmore

SZC 2019 Offshore Ground Investigation

CEN Leachate 10:1

Date Printed	**14-Jun-2019**
Report Number	**EXR/285179**
Table Number	**1**

Analytical and Deviating Sample Overview

Customer Fugro GeoServices Ltd
Site SZC 2019 Offshore Ground Investigation
Report No W285179

Consignment No S85545
Date Logged 07-Jun-2019
In-House Report Due 17-Jun-2019

Please note the results for any subcontracted analysis (identified with a '^') is likely to take up to an additional five working days.

ID Number	Description	Matrix Type	Sampled	MethodID	CUSTSERV	ICPMSW												ICPWATVAR			
					Report A (CEN)C	Nickel as Ni MS (Dissolved)	Chromium as Cr MS (Dissolved)	Cadmium as Cd MS (Dissolved)	Copper as Cu MS (Dissolved)	Lead as Pb MS (Dissolved)	Zinc as Zn MS (Dissolved)	Manganese as Mn MS (Dissolved)	Arsenic as As MS (Dissolved)	Mercury as Hg MS (Dissolved)	Selenium as Se MS (Dissolved)	Vanadium as V MS (Dissolved)	Molybdenum as Mo MS (Dissolved)	Antimony as Sb MS (Dissolved)	Total Sulphur as SO4 (Diss) VAR	Calcium as Ca (Dissolved) VAR	Barium as Ba (Dissolved) VAR	Iron as Fe (Dissolved) VAR
						✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
EX/1980688	IT1_SPT_03 SPT03-20190531	Laboratory Produced Leachate	07/06/19																		
EX/1980709	QC Blank																				
EX/1980710	Blank Spike (% Recovery)																				

Note: We will endeavour to prioritise samples to complete analysis within holding time; however any delay could result in samples becoming deviant whilst being processed in the laboratory.

If sampling dates are missing or matrices unclassified then results will not be ISO 17025 accredited. Please contact us as soon as possible to provide missing information in order to reinstate accreditation.

Deviating Sample Key

A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key

	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.
Where individual results are flagged see report notes for status.

Analytical and Deviating Sample Overview

Customer Fugro GeoServices Ltd
Site SZC 2019 Offshore Ground Investigation
Report No W285179

Consignment No S85545
Date Logged 07-Jun-2019
In-House Report Due 17-Jun-2019

Please note the results for any subcontracted analysis (identified with a '^') is likely to take up to an additional five working days.

ID Number	Description	Matrix Type	Sampled	MethodID	ICPWATVAR	ISEF	KONENS				LeachPrep	SFAPI			SFAS	WSLM13	WSLM2	WSLM27		WSLM3
					Boron as B (Dissolved) VAR	Fluoride as F	Chloride as Cl (Kone)	Ammoniacal Nitrogen (Kone)	Nitrate as N (Kone calc)	Chromium VI. as Cr (Kone)	Leachate Prep	Cyanide (Free) as CN SFA	Cyanide (Total) as CN SFA	Phenol Index SFA	Sulphide as S SFA	Dissolved Organic Carbon	Conductivity uS/cm @ 25C	Total Dissolved Solids (Calc)	Total Dissolved Solids	pH units
					✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓			✓
EX/1980688	IT1_SPT_03 SPT03-20190531	Laboratory Produced Leachate	07/06/19																	
EX/1980709	QC Blank																			
EX/1980710	Blank Spike (% Recovery)																			

Note: We will endeavour to prioritise samples to complete analysis within holding time; however any delay could result in samples becoming deviant whilst being processed in the laboratory.

If sampling dates are missing or matrices unclassified then results will not be ISO 17025 accredited. Please contact us as soon as possible to provide missing information in order to reinstate accreditation.

Deviating Sample Key

A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key

	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.
Where individual results are flagged see report notes for status.

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Water	ICPMSW	As Received	Direct quantitative determination of Metals in water samples using ICPMS
Water	ICPWATVAR	As Received	Direct determination of Metals and Sulphate in water samples using ICPOES
Water	ISEF	As Received	Determination of Fluoride in water samples by Ion Selective Electrode (ISE)
Water	KONENS	As Received	Direct analysis using discrete colorimetric analysis
Water	SFAPI	As Received	Segmented flow analysis with colorimetric detection
Water	SFAS	As Received	Determination of Sulphide by segmented flow analysis with colorimetric detection
Water	WSLM13	As Received	Instrumental analysis using acid/persulphate digestion and non-dispersive IR detection
Water	WSLM2	As Received	Determination of the Electrical Conductivity (µS/cm) by electrical conductivity probe.
Water	WSLM27	As Received	Gravimetric Determination
Water	WSLM3	As Received	Determination of the pH of water samples by pH probe

Where individual results are flagged see report notes for status.

Report Notes

Generic Notes

Soil/Solid Analysis

Unless stated otherwise,
- Results expressed as mg/kg have been calculated on the basis indicated in the Method Description table.
  All results on MCERTS reports are reported on a 105ºC dry weight basis with the exception of pH and conductivity.
- Sulphate analysis not conducted in accordance with BS1377
- Water Soluble Sulphate is on a 2:1 water:soil extract

Waters Analysis

Unless stated otherwise results are expressed as mg/l
Nil: Where "Nil" has been entered against Total Alkalinity or Total Acidity this indicates that a measurement was not required due to the inherent pH of the sample.

Oil analysis specific

Unless stated otherwise,
- Results are expressed as mg/kg
- SG is expressed as g/cm^3@ 15°C

Gas (Tedlar bag) Analysis

Unless stated otherwise, results are expressed as ug/l

Asbestos Analysis

CH Denotes Chrysotile **TR** Denotes Tremolite
CR Denotes Crocidolite **AC** Denotes Actinolite
AM Denotes Amosite **AN** Denotes Anthophylite
NAIIS No Asbestos Identified in Sample
NADIS No Asbestos Detected In Sample

Symbol Reference

^ Sub-contracted analysis.
$$ Unable to analyse due to the nature of the sample
¶ Samples submitted for this analyte were not preserved on site in accordance with laboratory protocols. This may have resulted in deterioration of the sample(s) during transit to the laboratory. Consequently the reported data may not represent the concentration of the target analyte present in the sample at the time of sampling
¥ Results for guidance only due to possible interference
& Blank corrected result
I.S Insufficient sample to complete requested analysis
I.S(g) Insufficient sample to re-analyse, results for guidance only
Intf Unable to analyse due to interferences
N.D Not determined **N.Det** Not detected
N.F No Flow
NS Information Not Supplied
Req Analysis requested, see attached sheets for results
Þ Raised detection limit due to nature of the sample
***** All accreditation has been removed by the laboratory for this result
‡ MCERTS accreditation has been removed for this result
§ accreditation has been removed for this result as it is a non-accredited matrix

Note: The Laboratory may only claim that data is accredited when all of the requirements of our Quality System have been met. Where these requirements have not been met the laboratory may elect to include the data in its final report and remove the accreditation from individual data items if it believes that the validity of the data has not been affected. If further details are required of the circumstances which have led to the removal of accreditation then please do not hesitate to contact the laboratory.

Sample Descriptions

Client : Fugro GeoServices Ltd
Site : SZC 2019 Offshore Ground Investigation
Report Number : W28_5179

Lab ID Number	Client ID	Description
EX/1980688	SPT_03 SPT03-20190531 ES 1	Laboratory Produced Leachate
EX/1980709	QC Blank	Quality Control Samples
EX/1980710	Blank Spike (% Recovery)	Quality Control Samples

Our Ref: EXR/286341 (Ver. 1)
Your Ref: G190016U

July 4, 2019

Environmental Chemistry
SOCOTEC UK Limited
Bretby Business Park
Ashby Road
Burton-on-Trent
Staffordshire
DE15 0YZ

Telephone: 01283 554400
Facsimile: 01283 554422

Karen Blackmore
Fugro GeoServices Ltd
Fugro House
Hithercroft Road
Wallingford
Oxfordshire
OX10 9RB

For the attention of Karen Blackmore

Dear Karen Blackmore

CEN Leachate 10:1 - SZC 2019 Offshore Ground Investigation

Samples from the above site have been analysed in accordance with the schedule supplied.
The sample details and the results of analyses for these samples are given in the appended report.

An invoice for this work will follow under a separate cover.

Please be aware that our policy for the retention of paper based laboratory records and analysis reports is 6 years.

The work was carried out in accordance with SOCOTEC UK Limited (Multi-Sector Services) Standard Terms and Conditions of Contract.

If I can be of any further assistance please do not hesitate to contact me.

Yours sincerely

for SOCOTEC UK Limited

[redacted]

K Smith
Project Co-ordinator
01283 554434

TEST REPORT

1252

Report No. EXR/286341 (Ver. 1)

Fugro GeoServices Ltd
Fugro House
Hithercroft Road
Wallingford
Oxfordshire
OX10 9RB

Site: SZC 2019 Offshore Ground Investigation

The 1 sample described in this report were registered for analysis by SOCOTEC UK Limited on 28-Jun-2019. This report supersedes any versions previously issued by the laboratory.

The analysis was completed by: 04-Jul-2019

Tests where the accreditation is set to N or No, and any individual data items marked with a * are not UKAS accredited.
Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

The following tables are contained in this report:

Table 1 Main Analysis Results (Pages 2 to 3)
Analytical and Deviating Sample Overview (Pages 4 to 5)
Table of Method Descriptions (Page 6)
Table of Report Notes (Page 7)
Table of Sample Descriptions (Appendix A Page 1 of 1)

On behalf of
SOCOTEC UK
Becky Batham Operations Manager
Energy & Waste Services

Date of Issue: 04-Jul-2019

Tests marked '^' have been subcontracted to another laboratory.

Where samples have been flagged as deviant on the Analytical and Deviating Sample Overview, for any reason, the data may not be representative of the sample at the point of sampling and the validity of the data may be affected. SOCOTEC UK Limited accepts no responsibility for any sampling not carried out by our personnel.

Where individual results are flagged see report notes for status.

Units :			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
Method Codes :			ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPWATVAR	ICPWATVAR	ICPWATVAR
Method Reporting Limits :			0.001	0.001	0.0001	0.001	0.001	0.001	0.002	0.0001	0.001	0.001	0.001	0.001	0.002	0.01	0.01	1
UKAS Accredited :			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LAB ID Number EXR	**Client Sample Description**	**Sample Date**	**Antimony as Sb (Dissolved)**	**Arsenic as As (Dissolved)**	**Cadmium as Cd (Dissolved)**	**Chromium as Cr (Dissolved)**	**Copper as Cu (Dissolved)**	**Lead as Pb (Dissolved)**	**Manganese as Mn (Dissolved)**	**Mercury as Hg (Dissolved)**	**Molybdenum as Mo (Dissolved)**	**Nickel as Ni (Dissolved)**	**Selenium as Se (Dissolved)**	**Vanadium as V (Dissolved)**	**Zinc as Zn (Dissolved)**	**Barium as Ba (Dissolved) a**	**Boron as B (Dissolved) a**	**Calcium as Ca (Dissolved) a**
1985276	OT_SPT_02 OT-SPT2-ES-WAC2 24.00	28-Jun-19	0.002	0.003	<0.0001	<0.001	<0.001	<0.001	0.007	<0.0001	0.02	0.002	<0.001	0.008	0.004	<0.01	0.15	22

SOCOTEC

Bretby Business Park, Ashby Road

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Client Name	**Fugro GeoServices Ltd**
Contact	Karen Blackmore

CEN Leachate 10:1

SZC 2019 Offshore Ground Investigation

Date Printed	**04-Jul-2019**
Report Number	**EXR/286341**
Table Number	**1**

Units :			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	uS/cm	mg/l	pH units
Method Codes :			ICPWATVAR	ICPWATVAR	ISEF	KONENS	KONENS	KONENS	KONENS	SFAPI	SFAPI	SFAPI	SFAS	WSLM13	WSLM2	WSLM27	WSLM3
Method Reporting Limits :			0.01	3	0.1	0.01	1	0.003	0.2	0.02	0.02	0.05	0.02	0.2	100	60	
UKAS Accredited :			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes
LAB ID Number EX/	**Client Sample Description**	**Sample Date**	**Iron as Fe (Dissolved) a**	**Total Sulphur as SO4 (Dissolved) a**	**Fluoride as F a**	**Ammoniacal Nitrogen as N**	**Chloride as Cl w**	**Chromium VI as Cr**	**Nitrate as N**	**Cyanide (Free) as CN**	**Cyanide (Total) as CN**	**Phenol Index as C6H5OH**	**Sulphide as S**	**Dissolved Organic Carbon w**	**Conductivity uS/cm @ 25C w**	**Total Dissolved Solids**	**pH units w**
1985276	OT_SPT_02 OT-SPT2-ES-WAC2 24.00	28-Jun-19	0.06	80	0.2	0.07	395	<0.003	<0.2	<0.02	<0.02	<0.05	<0.02	30	1550	1210	7.7

SOCOTEC

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Client Name	**Fugro GeoServices Ltd**
Contact	Karen Blackmore

SZC 2019 Offshore Ground Investigation

CEN Leachate 10:1

Date Printed	**04-Jul-2019**
Report Number	**EXR/286341**
Table Number	**1**

Customer Fugro GeoServices Ltd
Site SZC 2019 Offshore Ground Investigation
Report No W286341

Consignment No S86045
Date Logged 28-Jun-2019
In-House Report Due 08-Jul-2019

Please note the results for any subcontracted analysis (identified with a '^') is likely to take up to an additional five working days.

ID Number	Description	Matrix Type	Sampled	Report A (CEN)C	Nickel as Ni MS (Dissolved)	Chromium as Cr MS (Dissolved)	Cadmium as Cd MS (Dissolved)	Copper as Cu MS (Dissolved)	Lead as Pb MS (Dissolved)	Zinc as Zn MS (Dissolved)	Manganese as Mn MS (Dissolved)	Arsenic as As MS (Dissolved)	Mercury as Hg MS (Dissolved)	Selenium as Se MS (Dissolved)	Vanadium as V MS (Dissolved)	Molybdenum as Mo MS (Dissolved)	Antimony as Sb MS (Dissolved)	Total Sulphur as SO4 (Diss) VAR	Calcium as Ca (Dissolved) VAR	Barium as Ba (Dissolved) VAR	Iron as Fe (Dissolved) VAR
MethodID				CUSTSERV	ICPMSW													ICPWATVAR			
					✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
EX/1985276	OT_SPT_02 OT-SPT2-ES-WA(	Laboratory Produced Leachate	28/06/19																		

Note: We will endeavour to prioritise samples to complete analysis within holding time; however any delay could result in samples becoming deviant whilst being processed in the laboratory.

If sampling dates are missing or matrices unclassified then results will not be ISO 17025 accredited. Please contact us as soon as possible to provide missing information in order to reinstate accreditation.

Deviating Sample Key	
A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key	
	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.
Where individual results are flagged see report notes for status.

Analytical and Deviating Sample Overview

Customer Fugro GeoServices Ltd
Site SZC 2019 Offshore Ground Investigation
Report No W286341

Consignment No S86045
Date Logged 28-Jun-2019
In-House Report Due 08-Jul-2019

Please note the results for any subcontracted analysis (identified with a '^') is likely to take up to an additional five working days.

ID Number	Description	Matrix Type	Sampled	MethodID	ICPWATVAR	ISEF	KONENS				LeachPrep	SFAPI			SFAS	WSLM13	WSLM2	WSLM27		WSLM3
					Boron as B (Dissolved) VAR	Fluoride as F	Chloride as Cl (Kone)	Ammoniacal Nitrogen (Kone)	Nitrate as N (Kone calc)	Chromium VI. as Cr (Kone)	Leachate Prep	Cyanide (Free) as CN SFA	Cyanide (Total) as CN SFA	Phenol Index SFA	Sulphide as S SFA	Dissolved Organic Carbon	Conductivity uS/cm @ 25C	Total Dissolved Solids (Calc)	Total Dissolved Solids	pH units
					✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓			✓
EX/1985276	OT_SPT_02 OT-SPT2-ES-WA(	Laboratory Produced Leachate	28/06/19																	

Note: We will endeavour to prioritise samples to complete analysis within holding time; however any delay could result in samples becoming deviant whilst being processed in the laboratory.

If sampling dates are missing or matrices unclassified then results will not be ISO 17025 accredited. Please contact us as soon as possible to provide missing information in order to reinstate accreditation.

Deviating Sample Key	
A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key	
	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.
Where individual results are flagged see report notes for status.

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Water	ICPMSW	As Received	Direct quantitative determination of Metals in water samples using ICPMS
Water	ICPWATVAR	As Received	Direct determination of Metals and Sulphate in water samples using ICPOES
Water	ISEF	As Received	Determination of Fluoride in water samples by Ion Selective Electrode (ISE)
Water	KONENS	As Received	Direct analysis using discrete colorimetric analysis
Water	SFAPI	As Received	Segmented flow analysis with colorimetric detection
Water	SFAS	As Received	Determination of Sulphide by segmented flow analysis with colorimetric detection
Water	WSLM13	As Received	Instrumental analysis using acid/persulphate digestion and non-dispersive IR detection
Water	WSLM2	As Received	Determination of the Electrical Conductivity (µS/cm) by electrical conductivity probe.
Water	WSLM27	As Received	Gravimetric Determination
Water	WSLM3	As Received	Determination of the pH of water samples by pH probe

Where individual results are flagged see report notes for status.

Report Notes

Generic Notes

Soil/Solid Analysis

Unless stated otherwise,
- Results expressed as mg/kg have been calculated on the basis indicated in the Method Description table.
  All results on MCERTS reports are reported on a 105ºC dry weight basis with the exception of pH and conductivity.
- Sulphate analysis not conducted in accordance with BS1377
- Water Soluble Sulphate is on a 2:1 water:soil extract

Waters Analysis

Unless stated otherwise results are expressed as mg/l
Nil: Where "Nil" has been entered against Total Alkalinity or Total Acidity this indicates that a measurement was not required due to the inherent pH of the sample.

Oil analysis specific

Unless stated otherwise,
- Results are expressed as mg/kg
- SG is expressed as g/cm^3@ 15°C

Gas (Tedlar bag) Analysis

Unless stated otherwise, results are expressed as ug/l

Asbestos Analysis

CH Denotes Chrysotile **TR** Denotes Tremolite
CR Denotes Crocidolite **AC** Denotes Actinolite
AM Denotes Amosite **AN** Denotes Anthophylite
NAIIS No Asbestos Identified in Sample
NADIS No Asbestos Detected In Sample

Symbol Reference

^ Sub-contracted analysis.
$$ Unable to analyse due to the nature of the sample
¶ Samples submitted for this analyte were not preserved on site in accordance with laboratory protocols. This may have resulted in deterioration of the sample(s) during transit to the laboratory. Consequently the reported data may not represent the concentration of the target analyte present in the sample at the time of sampling
¥ Results for guidance only due to possible interference
& Blank corrected result
I.S Insufficient sample to complete requested analysis
I.S(g) Insufficient sample to re-analyse, results for guidance only
Intf Unable to analyse due to interferences
N.D Not determined **N.Det** Not detected
N.F No Flow
NS Information Not Supplied
Req Analysis requested, see attached sheets for results
Þ Raised detection limit due to nature of the sample
***** All accreditation has been removed by the laboratory for this result
‡ MCERTS accreditation has been removed for this result
§ accreditation has been removed for this result as it is a non-accredited matrix

Note: The Laboratory may only claim that data is accredited when all of the requirements of our Quality System have been met. Where these requirements have not been met the laboratory may elect to include the data in its final report and remove the accreditation from individual data items if it believes that the validity of the data has not been affected. If further details are required of the circumstances which have led to the removal of accreditation then please do not hesitate to contact the laboratory.

Sample Descriptions

Client : Fugro GeoServices Ltd
Site : SZC 2019 Offshore Ground Investigation
Report Number : W28_6341

Lab ID Number	Client ID	Description
EX/1985276	_SPT_02 OT-SPT2-ES-WAC2 2	Laboratory Produced Leachate

Our Ref: EXR/287327 (Ver. 1)
Your Ref: G190016U

July 30, 2019

Environmental Chemistry
SOCOTEC UK Limited
Bretby Business Park
Ashby Road
Burton-on-Trent
Staffordshire
DE15 0YZ

Telephone: 01283 554400
Facsimile: 01283 554422

Karen Blackmore
Fugro GeoServices Ltd
Fugro House
Hithercroft Road
Wallingford
Oxfordshire
OX10 9RB

For the attention of Karen Blackmore

Dear Karen Blackmore

CEN Leachate 10:1 - SZC 2019 Offshore Ground Investigation

Samples from the above site have been analysed in accordance with the schedule supplied.
The sample details and the results of analyses for these samples are given in the appended report.

An invoice for this work will follow under a separate cover.

Please be aware that our policy for the retention of paper based laboratory records and analysis reports is 6 years.

The work was carried out in accordance with SOCOTEC UK Limited (Multi-Sector Services) Standard Terms and Conditions of Contract.

If I can be of any further assistance please do not hesitate to contact me.

Yours sincerely

for SOCOTEC UK Limited

[redacted]

K Smith
Project Co-ordinator
01283 554434

TEST REPORT

1252

Report No. EXR/287327 (Ver. 1)

Fugro GeoServices Ltd
Fugro House
Hithercroft Road
Wallingford
Oxfordshire
OX10 9RB

Site: SZC 2019 Offshore Ground Investigation

The 2 samples described in this report were registered for analysis by SOCOTEC UK Limited on 16-Jul-2019. This report supersedes any versions previously issued by the laboratory.

The analysis was completed by: 30-Jul-2019

Tests where the accreditation is set to N or No, and any individual data items marked with a * are not UKAS accredited.
Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

The following tables are contained in this report:

Table 1 Main Analysis Results (Pages 2 to 3)
Analytical and Deviating Sample Overview (Pages 4 to 5)
Table of Method Descriptions (Page 6)
Table of Report Notes (Page 7)
Table of Sample Descriptions (Appendix A Page 1 of 1)

On behalf of
SOCOTEC UK
Becky Batham Operations Manager
Energy & Waste Services

Date of Issue: 30-Jul-2019

Tests marked '^' have been subcontracted to another laboratory.

Where samples have been flagged as deviant on the Analytical and Deviating Sample Overview, for any reason, the data may not be representative of the sample at the point of sampling and the validity of the data may be affected. SOCOTEC UK Limited accepts no responsibility for any sampling not carried out by our personnel.

Where individual results are flagged see report notes for status.

Units :			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
Method Codes :			ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPWATVAR	ICPWATVAR	ICPWATVAR
Method Reporting Limits :			0.001	0.001	0.0001	0.001	0.001	0.001	0.002	0.0001	0.001	0.001	0.001	0.001	0.002	0.01	0.01	1
UKAS Accredited :			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LAB ID Number EXR	**Client Sample Description**	**Sample Date**	**Antimony as Sb (Dissolved)**	**Arsenic as As (Dissolved)**	**Cadmium as Cd (Dissolved)**	**Chromium as Cr (Dissolved)**	**Copper as Cu (Dissolved)**	**Lead as Pb (Dissolved)**	**Manganese as Mn (Dissolved)**	**Mercury as Hg (Dissolved)**	**Molybdenum as Mo (Dissolved)**	**Nickel as Ni (Dissolved)**	**Selenium as Se (Dissolved)**	**Vanadium as V (Dissolved)**	**Zinc as Zn (Dissolved)**	**Barium as Ba (Dissolved) a**	**Boron as B (Dissolved) a**	**Calcium as Ca (Dissolved) a**
1988992	OT_SB_04 OTSB04 ESWAC1 ES 1 4.50	16-Jul-19		0.001	<0.0001	<0.001	<0.001	<0.001	0.012	<0.0001		0.001	<0.001	0.008	<0.002		0.32	24
1988993	OT_SB_04 OTSB04 ESWAC2 ES 2 4.50	16-Jul-19	0.001	0.002	<0.0001	<0.001	<0.001	<0.001		<0.0001	0.009	<0.001	<0.001		<0.002	<0.01		

SOCOTEC

Bretby Business Park, Ashby Road

Burton-on-Trent, Staffordshire, DE15 0YZ

Tel +44 (0) 1283 554400

Fax +44 (0) 1283 554422

Client Name	**Fugro GeoServices Ltd**
Contact	Karen Blackmore

SZC 2019 Offshore Ground Investigation

CEN Leachate 10:1

Date Printed	**30-Jul-2019**
Report Number	**EXR/287327**
Table Number	**1**

Units :			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	uS/cm	mg/l	pH units	
Method Codes :			ICPWATVAR	ICPWATVAR	ISEF	KONENS	KONENS	KONENS	KONENS	SFAPI	SFAPI	SFAPI	SFAS	WSLM13	WSLM2	WSLM27	WSLM3	
Method Reporting Limits :			0.01	3	0.1	0.01	1	0.003	0.2	0.02	0.02	0.05	0.02	0.2	100	60		
UKAS Accredited :			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes	
LAB ID Number EX/	**Client Sample Description**	**Sample Date**	**Iron as Fe (Dissolved) a**	**Total Sulphur as SO4 (Dissolved) a**	**Fluoride as F a**	**Ammoniacal Nitrogen as N**	**Chloride as Cl w**	**Chromium VI as Cr**	**Nitrate as N**	**Cyanide (Free) as CN**	**Cyanide (Total) as CN**	**Phenol Index as C6H5OH**	**Sulphide as S**	**Dissolved Organic Carbon w**	**Conductivity uS/cm @ 25C w**	**Total Dissolved Solids**	**pH units w**	
1988992	OT_SB_04 OTSB04 ESWAC1 ES 1 4.50	**16-Jul-19**	0.23	64		0.11		<0.003	<0.2	<0.02	<0.02		<0.02				7.4	
1988993	OT_SB_04 OTSB04 ESWAC2 ES 2 4.50	**16-Jul-19**		148	0.1		328					<0.05		4.6	1220	949	7.6	

SOCOTEC

Bretby Business Park, Ashby Road

Burton-on-Trent, Staffordshire, DE15 0YZ

Tel +44 (0) 1283 554400

Fax +44 (0) 1283 554422

Client Name	**Fugro GeoServices Ltd**
Contact	Karen Blackmore

SZC 2019 Offshore Ground Investigation

CEN Leachate 10:1

Date Printed	**30-Jul-2019**
Report Number	**EXR/287327**
Table Number	**1**

Analytical and Deviating Sample Overview

Customer Fugro GeoServices Ltd
Site SZC 2019 Offshore Ground Investigation
Report No W287327

Consignment No S86404
Date Logged 16-Jul-2019
In-House Report Due 24-Jul-2019

Please note the results for any subcontracted analysis (identified with a '^') is likely to take up to an additional five working days.

ID Number	Description	Matrix Type	Sampled	MethodID	CUSTSERV	ICPMSW													ICPWATVAR			
					Report A (CEN)C	Nickel as Ni MS (Dissolved)	Chromium as Cr MS (Dissolved)	Cadmium as Cd MS (Dissolved)	Copper as Cu MS (Dissolved)	Lead as Pb MS (Dissolved)	Zinc as Zn MS (Dissolved)	Manganese as Mn MS (Dissolved)	Arsenic as As MS (Dissolved)	Mercury as Hg MS (Dissolved)	Selenium as Se MS (Dissolved)	Vanadium as V MS (Dissolved)	Molybdenum as Mo MS (Dissolved)	Antimony as Sb MS (Dissolved)	Total Sulphur as SO4 (Diss) VAR	Calcium as Ca (Dissolved) VAR	Barium as Ba (Dissolved) VAR	Iron as Fe (Dissolved) VAR
Test Method Accredited to ISO17025						✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
EX/1988992	OT_SB_04 OTSB04 ESWAC1	Laboratory Produced Leachate	16/07/19																			
EX/1988993	OT_SB_04 OTSB04 ESWAC2	Laboratory Produced Leachate	16/07/19																			

Note: We will endeavour to prioritise samples to complete analysis within holding time; however any delay could result in samples becoming deviant whilst being processed in the laboratory.

If sampling dates are missing or matrices unclassified then results will not be ISO 17025 accredited. Please contact us as soon as possible to provide missing information in order to reinstate accreditation.

Deviating Sample Key	
A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key	
	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.
Where individual results are flagged see report notes for status.

Analytical and Deviating Sample Overview

Customer Fugro GeoServices Ltd
Site SZC 2019 Offshore Ground Investigation
Report No W287327

Consignment No S86404
Date Logged 16-Jul-2019
In-House Report Due 24-Jul-2019

Please note the results for any subcontracted analysis (identified with a '^') is likely to take up to an additional five working days.

ID Number	Description	Matrix Type	Sampled	MethodID	ICPWATVAR	ISEF	KONENS				LeachPrep	SFAPI			SFAS	WSLM13	WSLM2	WSLM27		WSLM3
					Boron as B (Dissolved) VAR	Fluoride as F	Chloride as Cl (Kone)	Ammoniacal Nitrogen (Kone)	Nitrate as N (Kone calc)	Chromium VI. as Cr (Kone)	Leachate Prep	Cyanide (Free) as CN SFA	Cyanide (Total) as CN SFA	Phenol Index SFA	Sulphide as S SFA	Dissolved Organic Carbon	Conductivity uS/cm @ 25C	Total Dissolved Solids (Calc)	Total Dissolved Solids	pH units
	Test Method Accredited to ISO17025				✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓			✓
EX/1988992	OT_SB_04 OTSB04 ESWAC1	Laboratory Produced Leachate	16/07/19																	
EX/1988993	OT_SB_04 OTSB04 ESWAC2	Laboratory Produced Leachate	16/07/19																	

Note: We will endeavour to prioritise samples to complete analysis within holding time; however any delay could result in samples becoming deviant whilst being processed in the laboratory.

If sampling dates are missing or matrices unclassified then results will not be ISO 17025 accredited. Please contact us as soon as possible to provide missing information in order to reinstate accreditation.

Deviating Sample Key	
A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key	
	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.
Where individual results are flagged see report notes for status.

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Water	ICPMSW	As Received	Direct quantitative determination of Metals in water samples using ICPMS
Water	ICPWATVAR	As Received	Direct determination of Metals and Sulphate in water samples using ICPOES
Water	ISEF	As Received	Determination of Fluoride in water samples by Ion Selective Electrode (ISE)
Water	KONENS	As Received	Direct analysis using discrete colorimetric analysis
Water	SFAPI	As Received	Segmented flow analysis with colorimetric detection
Water	SFAS	As Received	Determination of Sulphide by segmented flow analysis with colorimetric detection
Water	WSLM13	As Received	Instrumental analysis using acid/persulphate digestion and non-dispersive IR detection
Water	WSLM2	As Received	Determination of the Electrical Conductivity (µS/cm) by electrical conductivity probe.
Water	WSLM27	As Received	Gravimetric Determination
Water	WSLM3	As Received	Determination of the pH of water samples by pH probe

Where individual results are flagged see report notes for status.

Report Notes

Generic Notes

Soil/Solid Analysis

Unless stated otherwise,
- Results expressed as mg/kg have been calculated on the basis indicated in the Method Description table.
  All results on MCERTS reports are reported on a 105ºC dry weight basis with the exception of pH and conductivity.
- Sulphate analysis not conducted in accordance with BS1377
- Water Soluble Sulphate is on a 2:1 water:soil extract

Waters Analysis

Unless stated otherwise results are expressed as mg/l
Nil: Where "Nil" has been entered against Total Alkalinity or Total Acidity this indicates that a measurement was not required due to the inherent pH of the sample.

Oil analysis specific

Unless stated otherwise,
- Results are expressed as mg/kg
- SG is expressed as g/cm^3@ 15°C

Gas (Tedlar bag) Analysis

Unless stated otherwise, results are expressed as ug/l

Asbestos Analysis

CH Denotes Chrysotile **TR** Denotes Tremolite
CR Denotes Crocidolite **AC** Denotes Actinolite
AM Denotes Amosite **AN** Denotes Anthophylite
NAIIS No Asbestos Identified in Sample
NADIS No Asbestos Detected In Sample

Symbol Reference

^ Sub-contracted analysis.
$$ Unable to analyse due to the nature of the sample
¶ Samples submitted for this analyte were not preserved on site in accordance with laboratory protocols. This may have resulted in deterioration of the sample(s) during transit to the laboratory. Consequently the reported data may not represent the concentration of the target analyte present in the sample at the time of sampling
¥ Results for guidance only due to possible interference
& Blank corrected result
I.S Insufficient sample to complete requested analysis
I.S(g) Insufficient sample to re-analyse, results for guidance only
Intf Unable to analyse due to interferences
N.D Not determined **N.Det** Not detected
N.F No Flow
NS Information Not Supplied
Req Analysis requested, see attached sheets for results
Þ Raised detection limit due to nature of the sample
***** All accreditation has been removed by the laboratory for this result
‡ MCERTS accreditation has been removed for this result
§ accreditation has been removed for this result as it is a non-accredited matrix

Note: The Laboratory may only claim that data is accredited when all of the requirements of our Quality System have been met. Where these requirements have not been met the laboratory may elect to include the data in its final report and remove the accreditation from individual data items if it believes that the validity of the data has not been affected. If further details are required of the circumstances which have led to the removal of accreditation then please do not hesitate to contact the laboratory.

Sample Descriptions

Client : Fugro GeoServices Ltd
Site : SZC 2019 Offshore Ground Investigation
Report Number : W28_7327

Lab ID Number	Client ID	Description
EX/1988992	SB_04 OTSB04 ESWAC1 ES 1	Laboratory Produced Leachate
EX/1988993	SB_04 OTSB04 ESWAC2 ES 2	Laboratory Produced Leachate

Our Ref: EXR/287332 (Ver. 1)
Your Ref: G190016U

July 30, 2019

Environmental Chemistry
SOCOTEC UK Limited
Bretby Business Park
Ashby Road
Burton-on-Trent
Staffordshire
DE15 0YZ

Telephone: 01283 554400
Facsimile: 01283 554422

Karen Blackmore
Fugro GeoServices Ltd
Fugro House
Hithercroft Road
Wallingford
Oxfordshire
OX10 9RB

For the attention of Karen Blackmore

Dear Karen Blackmore

CEN Leachate 10:1 - SZC 2019 Offshore Ground Investigation

Samples from the above site have been analysed in accordance with the schedule supplied.
The sample details and the results of analyses for these samples are given in the appended report.

An invoice for this work will follow under a separate cover.

Please be aware that our policy for the retention of paper based laboratory records and analysis reports is 6 years.

The work was carried out in accordance with SOCOTEC UK Limited (Multi-Sector Services) Standard Terms and Conditions of Contract.

If I can be of any further assistance please do not hesitate to contact me.

Yours sincerely

for SOCOTEC UK Limited

[redacted]

K Smith
Project Co-ordinator
01283 554434

TEST REPORT

1252

Report No. EXR/287332 (Ver. 1)

Fugro GeoServices Ltd
Fugro House
Hithercroft Road
Wallingford
Oxfordshire
OX10 9RB

Site: SZC 2019 Offshore Ground Investigation

The 2 samples described in this report were registered for analysis by SOCOTEC UK Limited on 16-Jul-2019. This report supersedes any versions previously issued by the laboratory.

The analysis was completed by: 30-Jul-2019

Tests where the accreditation is set to N or No, and any individual data items marked with a * are not UKAS accredited.
Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

The following tables are contained in this report:

Table 1 Main Analysis Results (Pages 2 to 3)
Analytical and Deviating Sample Overview (Pages 4 to 5)
Table of Method Descriptions (Page 6)
Table of Report Notes (Page 7)
Table of Sample Descriptions (Appendix A Page 1 of 1)

On behalf of
SOCOTEC UK Li [redacted]
Becky Batham Operations Manager
Energy & Waste Services

Date of Issue: 30-Jul-2019

Tests marked '^' have been subcontracted to another laboratory.

Where samples have been flagged as deviant on the Analytical and Deviating Sample Overview, for any reason, the data may not be representative of the sample at the point of sampling and the validity of the data may be affected. SOCOTEC UK Limited accepts no responsibility for any sampling not carried out by our personnel.

Where individual results are flagged see report notes for status.

Units :			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
Method Codes :			ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPWATVAR	ICPWATVAR	ICPWATVAR
Method Reporting Limits :			0.001	0.001	0.0001	0.001	0.001	0.001	0.002	0.0001	0.001	0.001	0.001	0.001	0.002	0.01	0.01	1
UKAS Accredited :			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LAB ID Number EX/	**Client Sample Description**	**Sample Date**	**Antimony as Sb (Dissolved)**	**Arsenic as As (Dissolved)**	**Cadmium as Cd (Dissolved)**	**Chromium as Cr (Dissolved)**	**Copper as Cu (Dissolved)**	**Lead as Pb (Dissolved)**	**Manganese as Mn (Dissolved)**	**Mercury as Hg (Dissolved)**	**Molybdenum as Mo (Dissolved)**	**Nickel as Ni (Dissolved)**	**Selenium as Se (Dissolved)**	**Vanadium as V (Dissolved)**	**Zinc as Zn (Dissolved)**	**Barium as Ba (Dissolved) a**	**Boron as B (Dissolved) a**	**Calcium as Ca (Dissolved) a**
1989011	IT2_SB_03 SB03 ESWAC1-080719 ES 1 0.00	**16-Jul-19**	0.002	0.001	<0.0001	<0.001	<0.001	<0.001	0.015	<0.0001	0.006	<0.001	<0.001	0.004	<0.002	<0.01	0.32	22
1989012	IT2_SB_03 SB03 ESWAC2-080719 ES 2 19.50	**16-Jul-19**	0.002	<0.001	<0.0001	<0.001	<0.001	<0.001		<0.0001	0.004	<0.001	<0.001		<0.002	<0.01		

SOCOTEC

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Client Name	**Fugro GeoServices Ltd**
Contact	Karen Blackmore

SZC 2019 Offshore Ground Investigation

CEN Leachate 10:1

Date Printed	**30-Jul-2019**
Report Number	**EXR/287332**
Table Number	**1**

Units :			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	uS/cm	mg/l	pH units
Method Codes :			ICPWATVAR	ICPWATVAR	ISEF	KONENS	KONENS	KONENS	KONENS	SFAPI	SFAPI	SFAPI	SFAS	WSLM13	WSLM2	WSLM27	WSLM3
Method Reporting Limits :			0.01	3	0.1	0.01	1	0.003	0.2	0.02	0.02	0.05	0.02	0.2	100	60	
UKAS Accredited :			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes
LAB ID Number EX/	**Client Sample Description**	**Sample Date**	**Iron as Fe (Dissolved) a**	**Total Sulphur as SO4 (Dissolved) a**	**Fluoride as F a**	**Ammoniacal Nitrogen as N**	**Chloride as Cl w**	**Chromium VI as Cr**	**Nitrate as N**	**Cyanide (Free) as CN**	**Cyanide (Total) as CN**	**Phenol Index as C6H5OH**	**Sulphide as S**	**Dissolved Organic Carbon w**	**Conductivity uS/cm @ 25C w**	**Total Dissolved Solids**	**pH units w**
1989011	IT2_SB_03 SB03 ESWAC1-080719 ES 1 0.00	**16-Jul-19**	0.24	59	0.2	0.11	316	<0.003	<0.2	<0.02	<0.02	<0.05	<0.02	3.7	1210	945	8
1989012	IT2_SB_03 SB03 ESWAC2-080719 ES 2 19.50	**16-Jul-19**		64	0.2		349					<0.05		2.3	1330	1040	7.8

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Client Name	**Fugro GeoServices Ltd**
Contact	Karen Blackmore

CEN Leachate 10:1

SZC 2019 Offshore Ground Investigation

Date Printed	**30-Jul-2019**
Report Number	**EXR/287332**
Table Number	**1**

Customer Fugro GeoServices Ltd
Site SZC 2019 Offshore Ground Investigation
Report No W287332

Consignment No S86403
Date Logged 16-Jul-2019
In-House Report Due 24-Jul-2019

Please note the results for any subcontracted analysis (identified with a '^') is likely to take up to an additional five working days.

ID Number	Description	Matrix Type	Sampled	MethodID	CUSTSERV	ICPMSW													ICPWATVAR			
					Report A (CEN)C	Nickel as Ni MS (Dissolved)	Chromium as Cr MS (Dissolved)	Cadmium as Cd MS (Dissolved)	Copper as Cu MS (Dissolved)	Lead as Pb MS (Dissolved)	Zinc as Zn MS (Dissolved)	Manganese as Mn MS (Dissolved)	Arsenic as As MS (Dissolved)	Mercury as Hg MS (Dissolved)	Selenium as Se MS (Dissolved)	Vanadium as V MS (Dissolved)	Molybdenum as Mo MS (Dissolved)	Antimony as Sb MS (Dissolved)	Total Sulphur as SO4 (Diss) VAR	Calcium as Ca (Dissolved) VAR	Barium as Ba (Dissolved) VAR	Iron as Fe (Dissolved) VAR
						✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
EX/1989011	IT2_SB_03 SB03 ESWAC1-08(	Laboratory Produced Leachate	16/07/19																			
EX/1989012	IT2_SB_03 SB03 ESWAC2-08(	Laboratory Produced Leachate	16/07/19																			

Note: We will endeavour to prioritise samples to complete analysis within holding time; however any delay could result in samples becoming deviant whilst being processed in the laboratory.

If sampling dates are missing or matrices unclassified then results will not be ISO 17025 accredited. Please contact us as soon as possible to provide missing information in order to reinstate accreditation.

Deviating Sample Key	
A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key	
	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.
Where individual results are flagged see report notes for status.

Analytical and Deviating Sample Overview

Customer Fugro GeoServices Ltd
Site SZC 2019 Offshore Ground Investigation
Report No W287332

Consignment No S86403
Date Logged 16-Jul-2019
In-House Report Due 24-Jul-2019

Please note the results for any subcontracted analysis (identified with a '^') is likely to take up to an additional five working days.

ID Number	Description	Matrix Type	Sampled	MethodID	ICPWATVAR	ISEF	KONENS				LeachPrep	SFAPI			SFAS	WSLM13	WSLM2	WSLM27		WSLM3
					Boron as B (Dissolved) VAR	Fluoride as F	Chloride as Cl (Kone)	Ammoniacal Nitrogen (Kone)	Nitrate as N (Kone calc)	Chromium VI. as Cr (Kone)	Leachate Prep	Cyanide (Free) as CN SFA	Cyanide (Total) as CN SFA	Phenol Index SFA	Sulphide as S SFA	Dissolved Organic Carbon	Conductivity uS/cm @ 25C	Total Dissolved Solids (Calc)	Total Dissolved Solids	pH units
					✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓			✓
EX/1989011	IT2_SB_03 SB03 ESWAC1-08(	Laboratory Produced Leachate	16/07/19																	
EX/1989012	IT2_SB_03 SB03 ESWAC2-08(	Laboratory Produced Leachate	16/07/19																	

Note: We will endeavour to prioritise samples to complete analysis within holding time; however any delay could result in samples becoming deviant whilst being processed in the laboratory.

If sampling dates are missing or matrices unclassified then results will not be ISO 17025 accredited. Please contact us as soon as possible to provide missing information in order to reinstate accreditation.

Deviating Sample Key	
A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key	
	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.
Where individual results are flagged see report notes for status.

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Water	ICPMSW	As Received	Direct quantitative determination of Metals in water samples using ICPMS
Water	ICPWATVAR	As Received	Direct determination of Metals and Sulphate in water samples using ICPOES
Water	ISEF	As Received	Determination of Fluoride in water samples by Ion Selective Electrode (ISE)
Water	KONENS	As Received	Direct analysis using discrete colorimetric analysis
Water	SFAPI	As Received	Segmented flow analysis with colorimetric detection
Water	SFAS	As Received	Determination of Sulphide by segmented flow analysis with colorimetric detection
Water	WSLM13	As Received	Instrumental analysis using acid/persulphate digestion and non-dispersive IR detection
Water	WSLM2	As Received	Determination of the Electrical Conductivity (µS/cm) by electrical conductivity probe.
Water	WSLM27	As Received	Gravimetric Determination
Water	WSLM3	As Received	Determination of the pH of water samples by pH probe

Where individual results are flagged see report notes for status.

Report Notes

Generic Notes

Soil/Solid Analysis

Unless stated otherwise,
- Results expressed as mg/kg have been calculated on the basis indicated in the Method Description table.
  All results on MCERTS reports are reported on a 105ºC dry weight basis with the exception of pH and conductivity.
- Sulphate analysis not conducted in accordance with BS1377
- Water Soluble Sulphate is on a 2:1 water:soil extract

Waters Analysis

Unless stated otherwise results are expressed as mg/l
Nil: Where "Nil" has been entered against Total Alkalinity or Total Acidity this indicates that a measurement was not required due to the inherent pH of the sample.

Oil analysis specific

Unless stated otherwise,
- Results are expressed as mg/kg
- SG is expressed as g/cm^3@ 15°C

Gas (Tedlar bag) Analysis

Unless stated otherwise, results are expressed as ug/l

Asbestos Analysis

CH Denotes Chrysotile **TR** Denotes Tremolite
CR Denotes Crocidolite **AC** Denotes Actinolite
AM Denotes Amosite **AN** Denotes Anthophylite
NAIIS No Asbestos Identified in Sample
NADIS No Asbestos Detected In Sample

Symbol Reference

^ Sub-contracted analysis.
$$ Unable to analyse due to the nature of the sample
¶ Samples submitted for this analyte were not preserved on site in accordance with laboratory protocols. This may have resulted in deterioration of the sample(s) during transit to the laboratory. Consequently the reported data may not represent the concentration of the target analyte present in the sample at the time of sampling
¥ Results for guidance only due to possible interference
& Blank corrected result
I.S Insufficient sample to complete requested analysis
I.S(g) Insufficient sample to re-analyse, results for guidance only
Intf Unable to analyse due to interferences
N.D Not determined **N.Det** Not detected
N.F No Flow
NS Information Not Supplied
Req Analysis requested, see attached sheets for results
Þ Raised detection limit due to nature of the sample
***** All accreditation has been removed by the laboratory for this result
‡ MCERTS accreditation has been removed for this result
§ accreditation has been removed for this result as it is a non-accredited matrix

Note: The Laboratory may only claim that data is accredited when all of the requirements of our Quality System have been met. Where these requirements have not been met the laboratory may elect to include the data in its final report and remove the accreditation from individual data items if it believes that the validity of the data has not been affected. If further details are required of the circumstances which have led to the removal of accreditation then please do not hesitate to contact the laboratory.

Sample Descriptions

Client : Fugro GeoServices Ltd
Site : SZC 2019 Offshore Ground Investigation
Report Number : W28_7332

Lab ID Number	Client ID	Description
EX/1989011	3_03 SB03 ESWAC1-080719 ES	Laboratory Produced Leachate
EX/1989012	_03 SB03 ESWAC2-080719 ES	Laboratory Produced Leachate

Our Ref: EXR/287757 (Ver. 1)
Your Ref: G190016U

July 30, 2019

Environmental Chemistry
SOCOTEC UK Limited
Bretby Business Park
Ashby Road
Burton-on-Trent
Staffordshire
DE15 0YZ

Telephone: 01283 554400
Facsimile: 01283 554422

Karen Blackmore
Fugro GeoServices Ltd
Fugro House
Hithercroft Road
Wallingford
Oxfordshire
OX10 9RB

For the attention of Karen Blackmore

Dear Karen Blackmore

CEN Leachate 10:1 - SZC 2019 Offshore Ground Investigation

Samples from the above site have been analysed in accordance with the schedule supplied.
The sample details and the results of analyses for these samples are given in the appended report.

An invoice for this work will follow under a separate cover.

Please be aware that our policy for the retention of paper based laboratory records and analysis reports is 6 years.

The work was carried out in accordance with SOCOTEC UK Limited (Multi-Sector Services) Standard Terms and Conditions of Contract.

If I can be of any further assistance please do not hesitate to contact me.

Yours sincerely

for SOCOTEC UK Limited

[redacted]

K Smith
Project Co-ordinator
01283 554434

TEST REPORT

1252

Report No. EXR/287757 (Ver. 1)

Fugro GeoServices Ltd
Fugro House
Hithercroft Road
Wallingford
Oxfordshire
OX10 9RB

Site: SZC 2019 Offshore Ground Investigation

The 1 sample described in this report were registered for analysis by SOCOTEC UK Limited on 23-Jul-2019. This report supersedes any versions previously issued by the laboratory.

The analysis was completed by: 30-Jul-2019

Tests where the accreditation is set to N or No, and any individual data items marked with a * are not UKAS accredited.
Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

The following tables are contained in this report:

Table 1 Main Analysis Results (Pages 2 to 3)
Analytical and Deviating Sample Overview (Pages 4 to 5)
Table of Method Descriptions (Page 6)
Table of Report Notes (Page 7)
Table of Sample Descriptions (Appendix A Page 1 of 1)

On behalf of
SOCOTEC UK
Becky Batham Operations Manager
Energy & Waste Services

Date of Issue: 30-Jul-2019

Tests marked '^' have been subcontracted to another laboratory.

Where samples have been flagged as deviant on the Analytical and Deviating Sample Overview, for any reason, the data may not be representative of the sample at the point of sampling and the validity of the data may be affected. SOCOTEC UK Limited accepts no responsibility for any sampling not carried out by our personnel.

Where individual results are flagged see report notes for status.

Units :			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
Method Codes :			ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPWATVAR	ICPWATVAR	ICPWATVAR
Method Reporting Limits :			0.001	0.001	0.0001	0.001	0.001	0.001	0.002	0.0001	0.001	0.001	0.001	0.001	0.002	0.01	0.01	1
UKAS Accredited :			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LAB ID Number EX/	**Client Sample Description**	**Sample Date**	**Antimony as Sb (Dissolved)**	**Arsenic as As (Dissolved)**	**Cadmium as Cd (Dissolved)**	**Chromium as Cr (Dissolved)**	**Copper as Cu (Dissolved)**	**Lead as Pb (Dissolved)**	**Manganese as Mn (Dissolved)**	**Mercury as Hg (Dissolved)**	**Molybdenum as Mo (Dissolved)**	**Nickel as Ni (Dissolved)**	**Selenium as Se (Dissolved)**	**Vanadium as V (Dissolved)**	**Zinc as Zn (Dissolved)**	**Barium as Ba (Dissolved) a**	**Boron as B (Dissolved) a**	**Calcium as Ca (Dissolved) a**
1990796	IT2_SB_02 SB02 ESWAC1-140719 0.00	23-Jul-19	0.002	0.002	<0.0001	<0.001	<0.001	<0.001	0.003	<0.0001	0.01	0.001	<0.001	0.003	<0.002	<0.01	0.16	27

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Client Name	**Fugro GeoServices Ltd**
Contact	Karen Blackmore

CEN Leachate 10:1

SZC 2019 Offshore Ground Investigation

Date Printed	**30-Jul-2019**
Report Number	**EXR/287757**
Table Number	**1**

Units :			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	uS/cm	mg/l	pH units
Method Codes :			ICPWATVAR	ICPWATVAR	ISEF	KONENS	KONENS	KONENS	KONENS	SFAPI	SFAPI	SFAPI	SFAS	WSLM13	WSLM2	WSLM27	WSLM3
Method Reporting Limits :			0.01	3	0.1	0.01	1	0.003	0.2	0.02	0.02	0.05	0.02	0.2	100	5	
UKAS Accredited :			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes
LAB ID Number EX/	**Client Sample Description**	**Sample Date**	**Iron as Fe (Dissolved) a**	**Total Sulphur as SO4 (Dissolved) a**	**Fluoride as F a**	**Ammoniacal Nitrogen as N**	**Chloride as Cl w**	**Chromium VI as Cr**	**Nitrate as N**	**Cyanide (Free) as CN**	**Cyanide (Total) as CN**	**Phenol Index as C6H5OH**	**Sulphide as S**	**Dissolved Organic Carbon w**	**Conductivity uS/cm @ 25C w**	**Total Dissolved Solids w**	**pH units w**
1990796	IT2_SB_02 SB02 ESWAC1-140719 0.00	23-Jul-19	0.04	49	0.1	0.07	289	<0.003	<0.2	<0.02	<0.02	<0.05	<0.01	2.7	1190	680	7.7

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Client Name	**Fugro GeoServices Ltd**
Contact	Karen Blackmore

SZC 2019 Offshore Ground Investigation

CEN Leachate 10:1

Date Printed	**30-Jul-2019**
Report Number	**EXR/287757**
Table Number	**1**

Customer Fugro GeoServices Ltd
Site SZC 2019 Offshore Ground Investigation
Report No W287757

Consignment No S86601
Date Logged 23-Jul-2019
In-House Report Due 31-Jul-2019

Please note the results for any subcontracted analysis (identified with a '^') is likely to take up to an additional five working days.

ID Number	Description	Matrix Type	Sampled	Report A (CEN)C	Nickel as Ni MS (Dissolved)	Chromium as Cr MS (Dissolved)	Cadmium as Cd MS (Dissolved)	Copper as Cu MS (Dissolved)	Lead as Pb MS (Dissolved)	Zinc as Zn MS (Dissolved)	Manganese as Mn MS (Dissolved)	Arsenic as As MS (Dissolved)	Mercury as Hg MS (Dissolved)	Selenium as Se MS (Dissolved)	Vanadium as V MS (Dissolved)	Molybdenum as Mo MS (Dissolved)	Antimony as Sb MS (Dissolved)	Total Sulphur as SO4 (Diss) VAR	Calcium as Ca (Dissolved) VAR	Barium as Ba (Dissolved) VAR	Iron as Fe (Dissolved) VAR
MethodID				CUSTSERV	ICPMSW													ICPWATVAR			
					✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
EX/1990796	IT2_SB_02 SB02 ESWAC1-14(	Laboratory Produced Leachate	23/07/19																		

Note: We will endeavour to prioritise samples to complete analysis within holding time; however any delay could result in samples becoming deviant whilst being processed in the laboratory.

If sampling dates are missing or matrices unclassified then results will not be ISO 17025 accredited. Please contact us as soon as possible to provide missing information in order to reinstate accreditation.

Deviating Sample Key	
A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key	
	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.
Where individual results are flagged see report notes for status.

Analytical and Deviating Sample Overview

Customer Fugro GeoServices Ltd
Site SZC 2019 Offshore Ground Investigation
Report No W287757

Consignment No S86601
Date Logged 23-Jul-2019
In-House Report Due 31-Jul-2019

Please note the results for any subcontracted analysis (identified with a '^') is likely to take up to an additional five working days.

ID Number	Description	Matrix Type	Sampled	MethodID	ICPWATVAR	ISEF	KONENS				LeachPrep	SFAPI			SFAS	WSLM13	WSLM2	WSLM27		WSLM3
					Boron as B (Dissolved) VAR	Fluoride as F	Chloride as Cl (Kone)	Ammoniacal Nitrogen (Kone)	Nitrate as N (Kone calc)	Chromium VI. as Cr (Kone)	Leachate Prep	Cyanide (Free) as CN SFA	Cyanide (Total) as CN SFA	Phenol Index SFA	Sulphide as S SFA	Dissolved Organic Carbon	Conductivity uS/cm @ 25C	Total Dissolved Solids (Calc)	Total Dissolved Solids	pH units
					✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓			✓
EX/1990796	IT2_SB_02 SB02 ESWAC1-14(	Laboratory Produced Leachate	23/07/19																	

Note: We will endeavour to prioritise samples to complete analysis within holding time; however any delay could result in samples becoming deviant whilst being processed in the laboratory.

If sampling dates are missing or matrices unclassified then results will not be ISO 17025 accredited. Please contact us as soon as possible to provide missing information in order to reinstate accreditation.

Deviating Sample Key	
A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key	
	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.
Where individual results are flagged see report notes for status.

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Water	ICPMSW	As Received	Direct quantitative determination of Metals in water samples using ICPMS
Water	ICPWATVAR	As Received	Direct determination of Metals and Sulphate in water samples using ICPOES
Water	ISEF	As Received	Determination of Fluoride in water samples by Ion Selective Electrode (ISE)
Water	KONENS	As Received	Direct analysis using discrete colorimetric analysis
Water	SFAPI	As Received	Segmented flow analysis with colorimetric detection
Water	SFAS	As Received	Determination of Sulphide by segmented flow analysis with colorimetric detection
Water	WSLM13	As Received	Instrumental analysis using acid/persulphate digestion and non-dispersive IR detection
Water	WSLM2	As Received	Determination of the Electrical Conductivity (µS/cm) by electrical conductivity probe.
Water	WSLM27	As Received	Gravimetric Determination
Water	WSLM3	As Received	Determination of the pH of water samples by pH probe

Where individual results are flagged see report notes for status.

Report Notes

Generic Notes

Soil/Solid Analysis

Unless stated otherwise,
- Results expressed as mg/kg have been calculated on the basis indicated in the Method Description table.
  All results on MCERTS reports are reported on a 105ºC dry weight basis with the exception of pH and conductivity.
- Sulphate analysis not conducted in accordance with BS1377
- Water Soluble Sulphate is on a 2:1 water:soil extract

Waters Analysis

Unless stated otherwise results are expressed as mg/l
Nil: Where "Nil" has been entered against Total Alkalinity or Total Acidity this indicates that a measurement was not required due to the inherent pH of the sample.

Oil analysis specific

Unless stated otherwise,
- Results are expressed as mg/kg
- SG is expressed as g/cm^3@ 15°C

Gas (Tedlar bag) Analysis

Unless stated otherwise, results are expressed as ug/l

Asbestos Analysis

CH Denotes Chrysotile **TR** Denotes Tremolite
CR Denotes Crocidolite **AC** Denotes Actinolite
AM Denotes Amosite **AN** Denotes Anthophylite
NAIIS No Asbestos Identified in Sample
NADIS No Asbestos Detected In Sample

Symbol Reference

^ Sub-contracted analysis.
$$ Unable to analyse due to the nature of the sample
¶ Samples submitted for this analyte were not preserved on site in accordance with laboratory protocols. This may have resulted in deterioration of the sample(s) during transit to the laboratory. Consequently the reported data may not represent the concentration of the target analyte present in the sample at the time of sampling
¥ Results for guidance only due to possible interference
& Blank corrected result
I.S Insufficient sample to complete requested analysis
I.S(g) Insufficient sample to re-analyse, results for guidance only
Intf Unable to analyse due to interferences
N.D Not determined **N.Det** Not detected
N.F No Flow
NS Information Not Supplied
Req Analysis requested, see attached sheets for results
Þ Raised detection limit due to nature of the sample
***** All accreditation has been removed by the laboratory for this result
‡ MCERTS accreditation has been removed for this result
§ accreditation has been removed for this result as it is a non-accredited matrix

Note: The Laboratory may only claim that data is accredited when all of the requirements of our Quality System have been met. Where these requirements have not been met the laboratory may elect to include the data in its final report and remove the accreditation from individual data items if it believes that the validity of the data has not been affected. If further details are required of the circumstances which have led to the removal of accreditation then please do not hesitate to contact the laboratory.

Sample Descriptions

Client : Fugro GeoServices Ltd
Site : SZC 2019 Offshore Ground Investigation
Report Number : W28_7757

Lab ID Number	Client ID	Description
EX/1990796	_SB_02 SB02 ESWAC1-140719 (	Laboratory Produced Leachate

Appendix I

Position Survey

Appendix I Contents

I.1 Datasheets

I.2 Mean Position Reports

I.2.1 Mean Position Reports – Intake 1

I.2.2 Mean Position Reports – Intake 2

I.2.3 Mean Position Reports – Outfall

I.3 Survey Calibration Report

I.1 Datasheets

Starfix

I.2 Mean Position Reports

I.2.1 Mean Position Reports – Intake 1

Sonic Cored Boreholes;
Rotary Boreholes
(referenced by position ID)

I.2.2 Mean Position Reports – Intake 2

Sonic Cored Boreholes;
Rotary Boreholes
(referenced by position ID)

I.2.3 Mean Position Reports – Outfall

Sonic Cored Boreholes;
Rotary Boreholes
(referenced by position ID)

I.3 Survey Calibration Report

Excalibur Jack-Up Barge Survey System Calibration Report Blyth Port (192325R01)

FUGRO
STARFIX®

Fugro's Starfix products and services provide vessels and rigs around the world with precise offshore positioning systems, the reliability, availability and coverage of which, help deliver safer operations.

OFFSHORE APPLICATIONS

Fugro is a market leader in satellite positioning, providing:

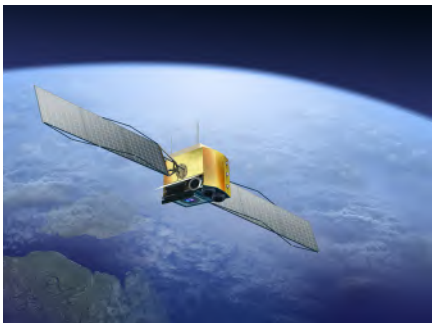
- Worldwide solutions, using a small omnidirectional antenna or Inmarsat terminal
- Highest levels of signal reliability to ensure continuous signal reception
- Dual independent links in all Inmarsat ocean regions
- Centimetre and decimetre level of positioning accuracies
- Global Navigation Satellite Systems (GNSS) capability using GPS, GLONASS, BeiDou and Galileo

STARFIX.G4

Satellite-based systems rely on an unobstructed 'view' of satellites, but when operating close to large structures, signals can easily be obscured, leading to reduced performance, just when it is needed most.

The more satellites are available, the more options the positioning system has, which means a higher probability of achieving a reliable positioning solution.

Using its worldwide network of reference stations, Fugro is able to calculate corrections to orbit and satellite clock values, for all available GNSS systems (GPS, GLONASS, BeiDou and Galileo).



STARFIX SERVICES

Fugro provides a number of services within the Starfix brand as follows.

Starfix.G2+
Starfix.G2+ is an enhancement of Fugro's G2 service and utilises advanced GNSS augmentation algorithms developed in-house. This service will be particularly beneficial when seeking to measure latitude, longitude and elevation with ultra-high accuracy in real time. Ultra-precise (3 cm) GPS and GLONASS Global Positioning Service, using clock and orbit corrections enhanced with carrier-phase corrections from the Fugro G2 Network.

Starfix.G2
A precise (sub-decimetre) GPS and GLONASS positioning service based on orbit and clock corrections generated from Fugro's own expanded network of dual system reference stations. Starfix.G2 utilises Precise Point Positioning (PPP) technology, which distinguishes itself from the traditional differential approach as satellite errors are not lumped together but estimated per source, per satellite. The GPS/GLONASS orbit and clock corrections are computed separately, free of ionospheric and tropospheric effects.

Starfix.G4
An extension of the Starfix.G2 service which utilises the Chinese BeiDou and European Galileo GNSS systems in addition to GPS and GLONASS.

Starfix.XP2
A precise (decimetre) GPS and GLONASS positioning system which is 100% independent of Starfix.G2. Although based on orbit and clock PPP technology, the corrections are procured via an independent third party corrections supplier.

Starfix.HP
A high precision GPS-only system, based on differential techniques. It uses Fugro's network of reference stations to reduce or eliminate biases due to the troposphere, and the orbits and clocks of satellites. Ionospheric effects are eliminated by forming linear combinations of L1 and L2 observations (the ionospheric effects are frequency-dependent). Corrections calculated at the reference stations are transmitted to mobile users using geostationary communication satellites.

Starfix.L1
The Starfix.L1 system uses single frequency code correction data from Fugro's network of reference stations. These corrections, combined with a single frequency GPS receiver, are used to produce a high accuracy position. This system can provide a positional accuracy of better than 1.5 m (95%) horizontally at a distance of 500 km from the closest reference station.

REFERENCE STATION NETWORK

Fugro operates a fully duplicated network for the production and delivery of high performance Global Navigation Satellite System (GNSS) augmentation services.

- Independent Network Control Centres (NCC) in Australia and USA
- Back up NCC in Australia and USA
- Dual satellite broadcast data links covering all ocean regions

Fugro Satellite Positioning DGNSS services are delivered over dual independent L-band delivery paths. To complement the standard satellite broadcast delivery channels, we also offer internet / online delivery of correction data using the NTRIP protocol. (Network Transport of RTCM over Internet Protocol).

STARFIX SYSTEMS

StarPack GNSS Receiver:

The Fugro StarPack is a high precision positioning system. The unit provides single and dual frequency GPS, GLONASS, Galileo and BeiDou positioning, using corrections generated by the global Fugro Starfix network of reference stations, broadcast via geostationary communication satellites. The unit contains a multichannel and multifrequency GNSS card (NovAtel or Trimble) and a Linux based operating system. The system is operated and configured via a user-friendly web interface, which also provides QC functions.

MultiFix 6 Software:

MultiFix 6 is a Fugro sixth generation differential GNSS real-time position computation and QC package. MultiFix 6 has been enhanced with the introduction of G2/XP2 GPS + GLONASS functionality.

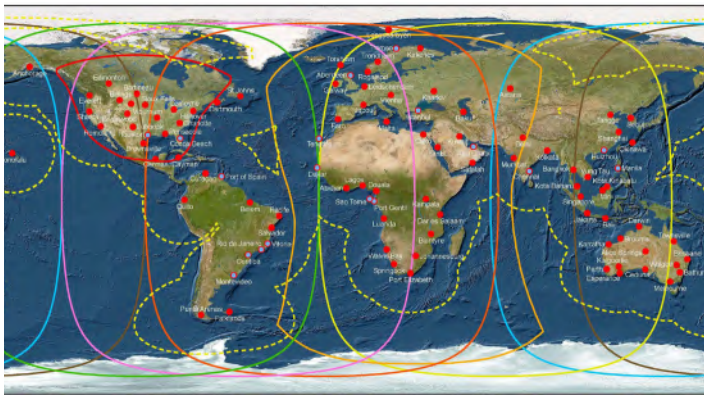
AD-492 GNSS & L-band Antenna:

This is a multifrequency GNSS antenna with L-band reception for receiving corrections signals. In addition to signal reception, this antenna has an Inmarsat C-band filter to minimise interference from a vessel's Global Maritime Distress and Safety System (GMDSS).

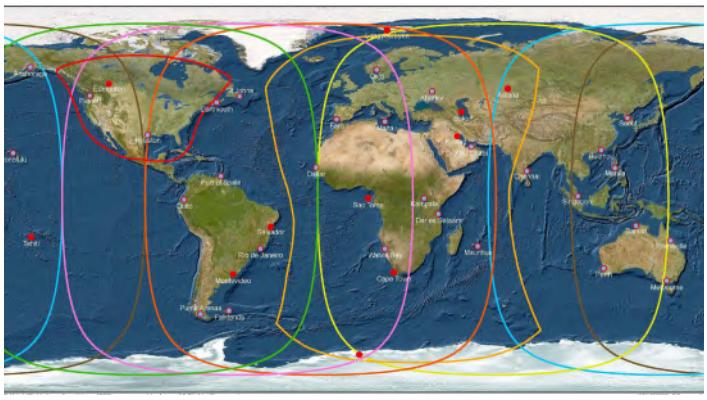
STARFIX INDEPENDENCY

The Fugro correction data are transmitted in a compressed and encrypted proprietary format known as SCF (Super Compressed Format). These corrections are available via high power satellite transmissions and via an NTRIP internet link (via the vessel's VSAT system).

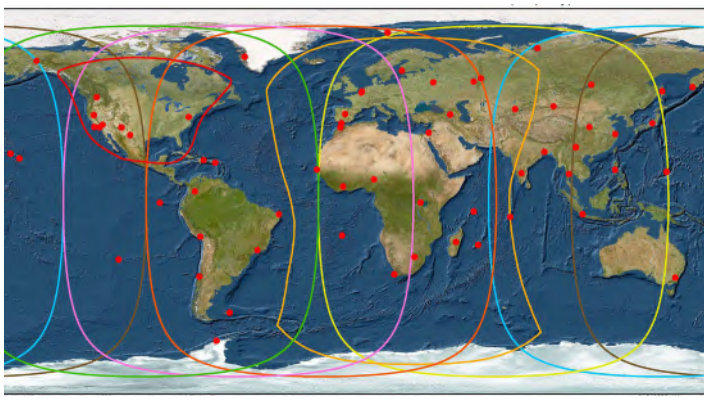
Fugro's correction networks, Network Control Centres, uplink stations and correction satellites are combined with independent vessel hardware and software to provide fully independent Starfix positioning solutions. This combination ensures that there is no single point of failure that could cause both systems to fail.



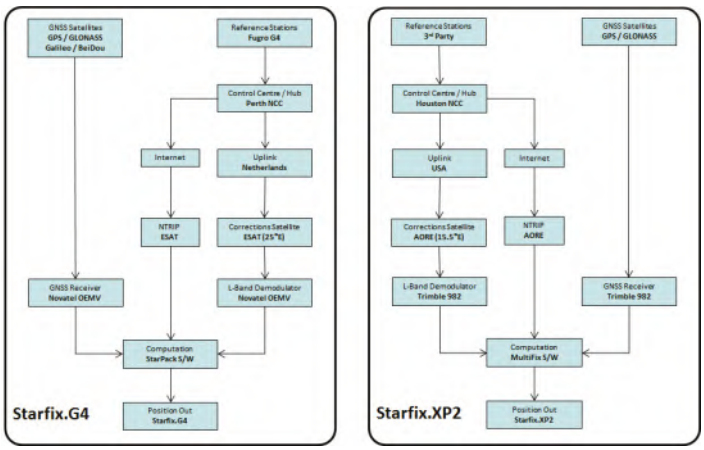
Network reference stations for Starfix.HP and L1.



Network reference stations for Starfix.G4 and G2.



Network reference stations for Starfix.XP2 and XP.



Independency diagram.

SERVICE FLYER

OFFSHORE APPLICATIONS

Starfix is designed for all offshore operations requiring precise, reliable and independent positioning. Operating worldwide, uses include:

- 3D seismic surveys
- Rig moves
- Anchoring operations
- Site & geophysical surveys
- Pipe and cable laying
- Heavy lift operations
- Rock dumping
- IMMS operations
- ROV construction support
- Dredging
- Pipeline inspection
- Seabed mapping

MOVING NORTH

Operating in rough waters and in areas far away from other infrastructure and resources, such as in the Arctic, requires the very best set-up to ensure safe operations.

The standard method of correction data delivery is by broadcast over the Fugro network of L-band geostationary communication satellites. This is an extremely reliable and robust system, but geostationary satellites, located above the equator, have a coverage footprint which is limited to around 70° North using standard spot beam antennae.

Fugro`s high performance satellite navigation augmentation services can be delivered beyond normal coverage limits.

The combination of our unique purpose-built L-band antenna for low elevation satellites (AD-493 receives corrections up to 75° North) and our NTRIP solution delivered over VSAT, delivers the right corrections for maintaining reliable and safe operations in the Arctic.

IRIDIUM

In order to further improve the delivery of Starfix corrections in high latitudes and polar regions, Fugro has developed a service to deliver these corrections via the Iridium OpenPort® broadband service. Iridium is a satellite communications system comprising more than 60 satellites in low-Earth polar orbit (LEO), at an altitude of approximately 800 km. In order to deliver these corrections Fugro, has created a dedicated NTRIP Service optimised for communications systems with limited band width. This service contains optimised Starfix.G2 orbit and clock corrections to allow vessels to obtain a precise GNSS PPP position.

STARFIX®

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WWW.FUGRO.COM

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SIZEWELL C GROUND INVESTIGATION 2019
MEAN POSITION REPORT

Project ID	C1984		
Location	Sizewell C power station		
Client	Fugro Geoservices Inc	**Vessel**	Excalibur Sizewell
Comment	DTM: 18.00m / Deck Above OD 10.493m / Seabed Mudline = -7.507m OD		

Session Name: 20190724-200415 Records Used: 7380 of 7496

Start Time: 24 Jul 2019, 21:04:43+01:00 End Time: 24 Jul 2019, 23:09:42+01:00 Session Length: 02:04:59

Mean Position for Excalibur Sizewell Moonpool 1		
	OSGB 1936 / British National Grid [OSGB-UK Gbr15]	**ETRS89(2D)**
Latitude	52°12'58.82072"N	52°13'00.54713"N
Longitude	001°37'58.47612"E	001°37'51.97007"E
Height	10.557m Ell.	55.082m Ell.
Easting	648,131.959m E (SD: ±0.01m)	
Northing	263,834.768m N (SD: ±0.02m)	
Height	10.040m Ort. (SD: ±0.06m Ort.)	

Sensors	**Sensor Averages**	**SD**
Heading	281.91°T 279.04°G	±0.0°
Pitch		
Roll		
Depth (Sounder)	0.0m	±0.00m
Depth (Manual)	0.0m	N/A

Mean Position to Waypoint	
Waypoint	IT1_SB_01
Easting	648,133.000m E
Northing	263,834.727m N
Range	1.04m Geodetic
Bearing TO	95.11°True
Bearing FROM	275.11°True

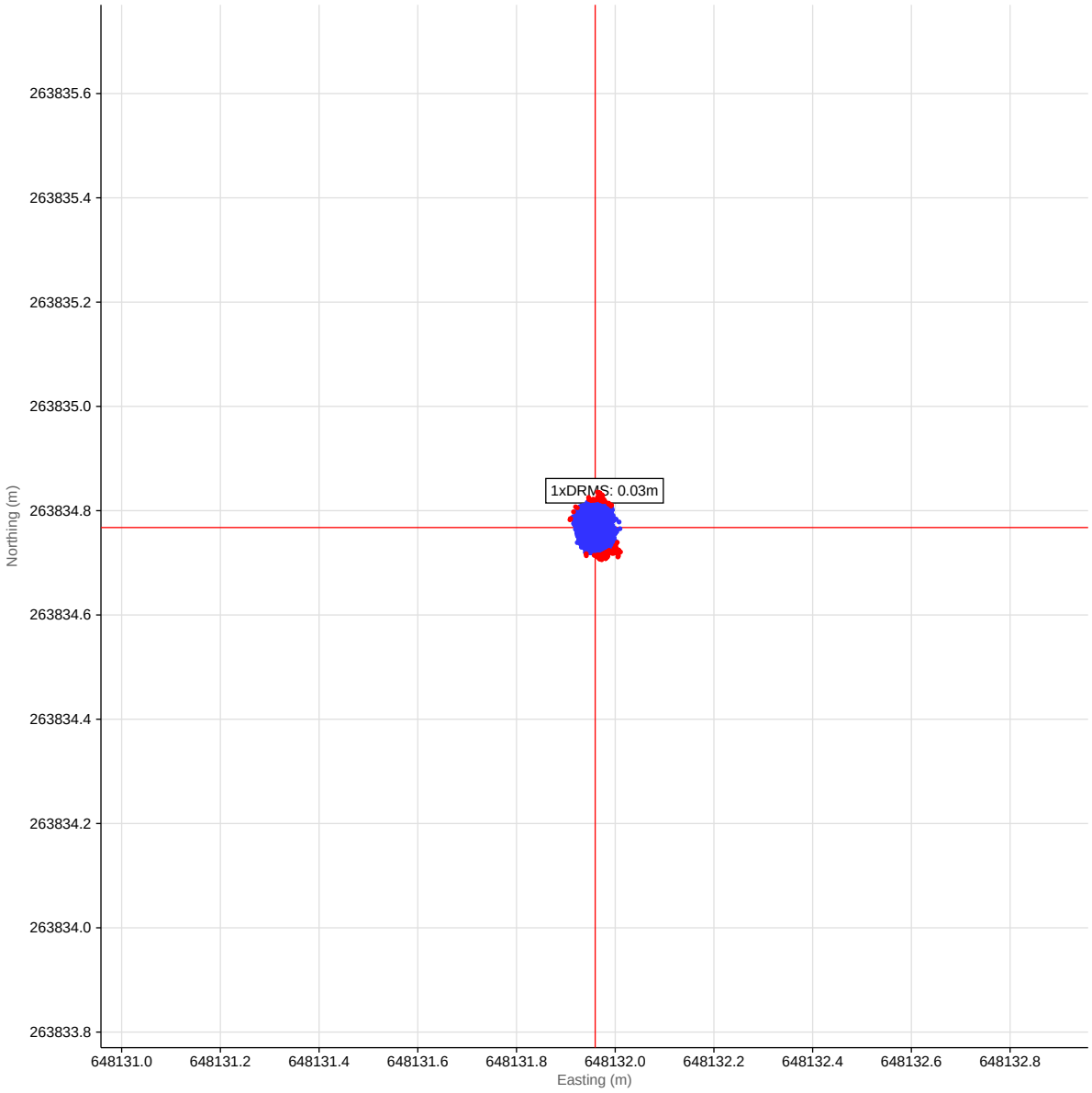
Callum Murphy
Party Chief
FGSL (Fugro GeoServices Ltd UK)

NNB EDF
Client Representative
Fugro Geoservices Inc

Geodetic Parameters

Name : OSGB 1936 / British National Grid [OSGB-UK Gbr15]		
EPSG Code	EPSG::27700	
Local Geodetic Datum Parameters		
Datum	OSGB 1936	EPSG::6277
Ellipsoid	Airy 1830	
Semi major axis	a = 6,377,563.396 m	
Inverse flattening	1/f = 299.3249646	
Datum Transformation Parameters from ETRS89 to OSGB 1936 / British National Grid		
OSGB 1936 / British National Grid to ETRS89 (3)	Ordnance Survey National Transformation	EPSG::7708
Easting and northing difference file	OSTN15_OSGM15_GB.txt	
Local Projection Parameters		
Map Projection	Transverse Mercator	
Grid System	British National Grid	EPSG::19916
Latitude Origin	49°00’00.000”N	
Central Meridian	002°00’00.000”W	
Scale Factor on Central Meridian	0.999601272	
False Easting	400,000 m	
False Northing	-100,000 m	

Scatter Plot



Mean Position

	Easting	Northing
Excalibur Sizewell	648,131.959m E	263,834.768m N

SIZEWELL C GROUND INVESTIGATION 2019
MEAN POSITION REPORT

Project ID	C1984		
Location	Sizewell C power station		
Client	Fugro Geoservices Inc	**Vessel**	Excalibur Sizewell
Comment	DTM: 20.30m / Deck Above OD 10.262m / Seabed Mudline = -10.038m OD		

Session Name: 20190722-060617 Records Used: 7169 of 7388

Start Time: 22 Jul 2019, 07:08:06+01:00 End Time: 22 Jul 2019, 09:13:05+01:00 Session Length: 02:04:59

Mean Position for Excalibur Sizewell Moonpool 1		
	OSGB 1936 / British National Grid [OSGB-UK Gbr15]	**ETRS89(2D)**
Latitude	52°12'54.41930"N	52°12'56.14662"N
Longitude	001°38'26.45737"E	001°38'19.94869"E
Height	10.229m Ell.	54.747m Ell.
Easting	648,669.491m E (SD: ±0.03m)	
Northing	263,725.519m N (SD: ±0.03m)	
Height	9.712m Ort. (SD: ±0.08m Ort.)	

Sensors	**Sensor Averages**	**SD**
Heading	287.21°T 284.33°G	±0.0°
Pitch		
Roll		
Depth (Sounder)	0.0m	±0.00m
Depth (Manual)	0.0m	N/A

Mean Position to Waypoint	
Waypoint	IT1_SB_02
Easting	648,669.000m E
Northing	263,726.051m N
Range	0.72m Geodetic
Bearing TO	320.19°True
Bearing FROM	140.19°True

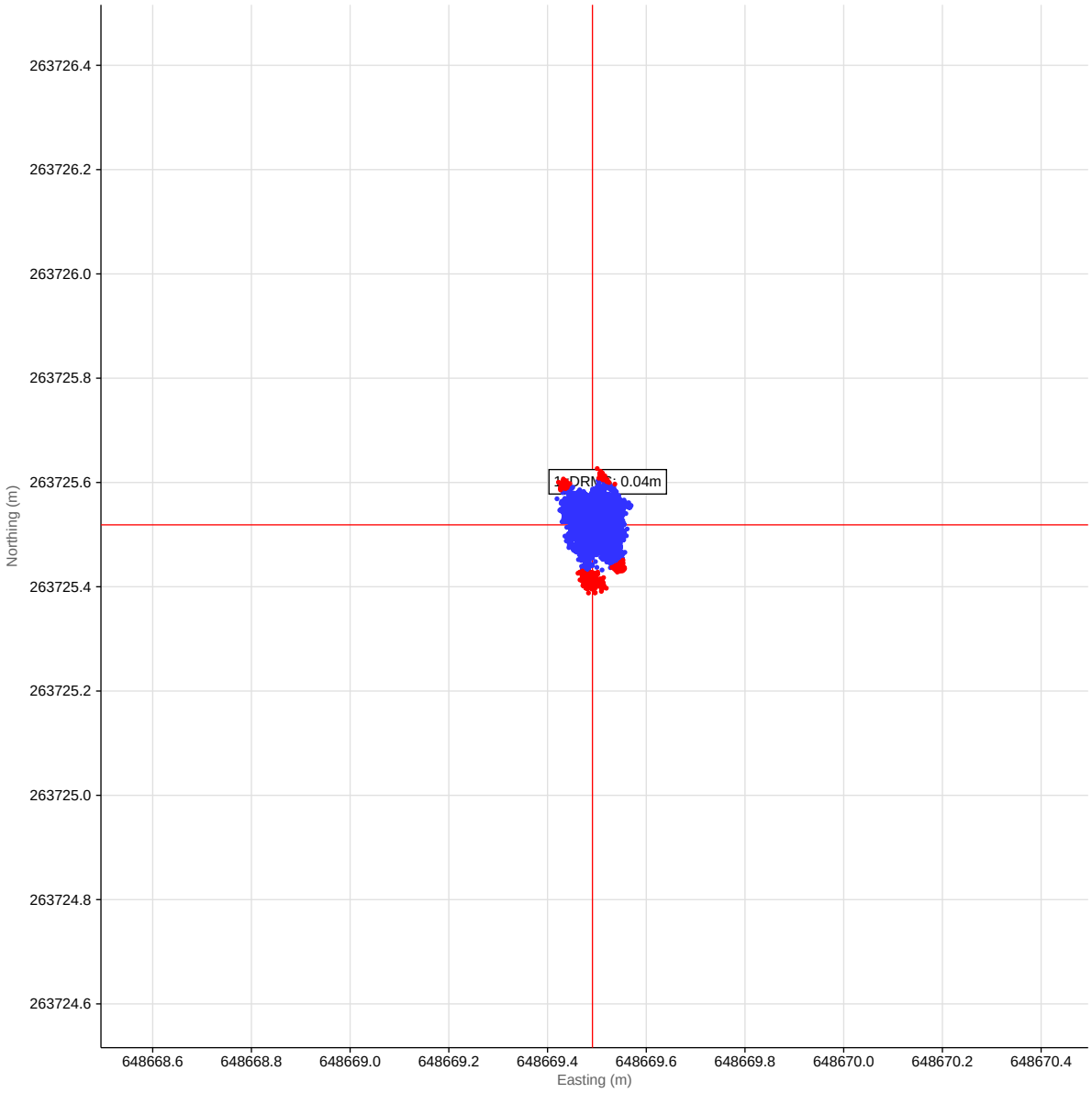
Julian North
Party Chief
FGSL (Fugro GeoServices Ltd UK)

NNB EDF
Client Representative
Fugro Geoservices Inc

Geodetic Parameters

Name : OSGB 1936 / British National Grid [OSGB-UK Gbr15]		
EPSG Code	EPSG::27700	
Local Geodetic Datum Parameters		
Datum	OSGB 1936	EPSG::6277
Ellipsoid	Airy 1830	
Semi major axis	a = 6,377,563.396 m	
Inverse flattening	1/f = 299.3249646	
Datum Transformation Parameters from ETRS89 to OSGB 1936 / British National Grid		
OSGB 1936 / British National Grid to ETRS89 (3)	Ordnance Survey National Transformation	EPSG::7708
Easting and northing difference file	OSTN15_OSGM15_GB.txt	
Local Projection Parameters		
Map Projection	Transverse Mercator	
Grid System	British National Grid	EPSG::19916
Latitude Origin	49°00’00.000”N	
Central Meridian	002°00’00.000”W	
Scale Factor on Central Meridian	0.999601272	
False Easting	400,000 m	
False Northing	-100,000 m	

Scatter Plot



Mean Position

	Easting	Northing
Excalibur Sizewell	648,669.491m E	263,725.519m N

SIZEWELL C GROUND INVESTIGATION 2019
MEAN POSITION REPORT

Project ID	C1984_Poseidon		
Location	Sizewell C Power Station		
Client	Fugro Geoservices Inc	**Vessel**	Excalibur Sizewell
Comment	DTM: 17.2m / Deck Above OD 9.564m / Seabed Mudline = -7.636m OD		

Session Name: 20190601-063336 Records Used: 580 of 607

Start Time: 01 Jun 2019, 07:33:36+01:00 End Time: 01 Jun 2019, 07:43:43+01:00 Session Length: 00:10:07

Mean Position for Excalibur Sizewell CommonReferencePoint		
	OSGB 1936 / British National Grid [OSGB-UK Gbr15]	**ETRS89(2D)**
Latitude	52°12’48.10507”N	52°12’49.83369”N
Longitude	001°39’06.80370”E	001°39’00.29123”E
Height	10.174m Ell.	54.682m Ell.
Easting	649,444.560m E (SD: ±0.06m)	
Northing	263,569.088m N (SD: ±0.05m)	
Height	9.656m Ort. (SD: ±0.08m Ort.)	

Sensors	**Sensor Averages**	**SD**
Heading	281.55°T 278.67°G	±0.1°
Pitch		
Roll		
Depth (Sounder)	0.0m	±0.00m
Depth (Manual)	0.0m	N/A

Mean Position to Waypoint	
Waypoint	IT1_SB_03
Easting	649,445.000m E
Northing	263,568.714m N
Range	0.58m Geodetic
Bearing TO	133.25°True
Bearing FROM	313.25°True

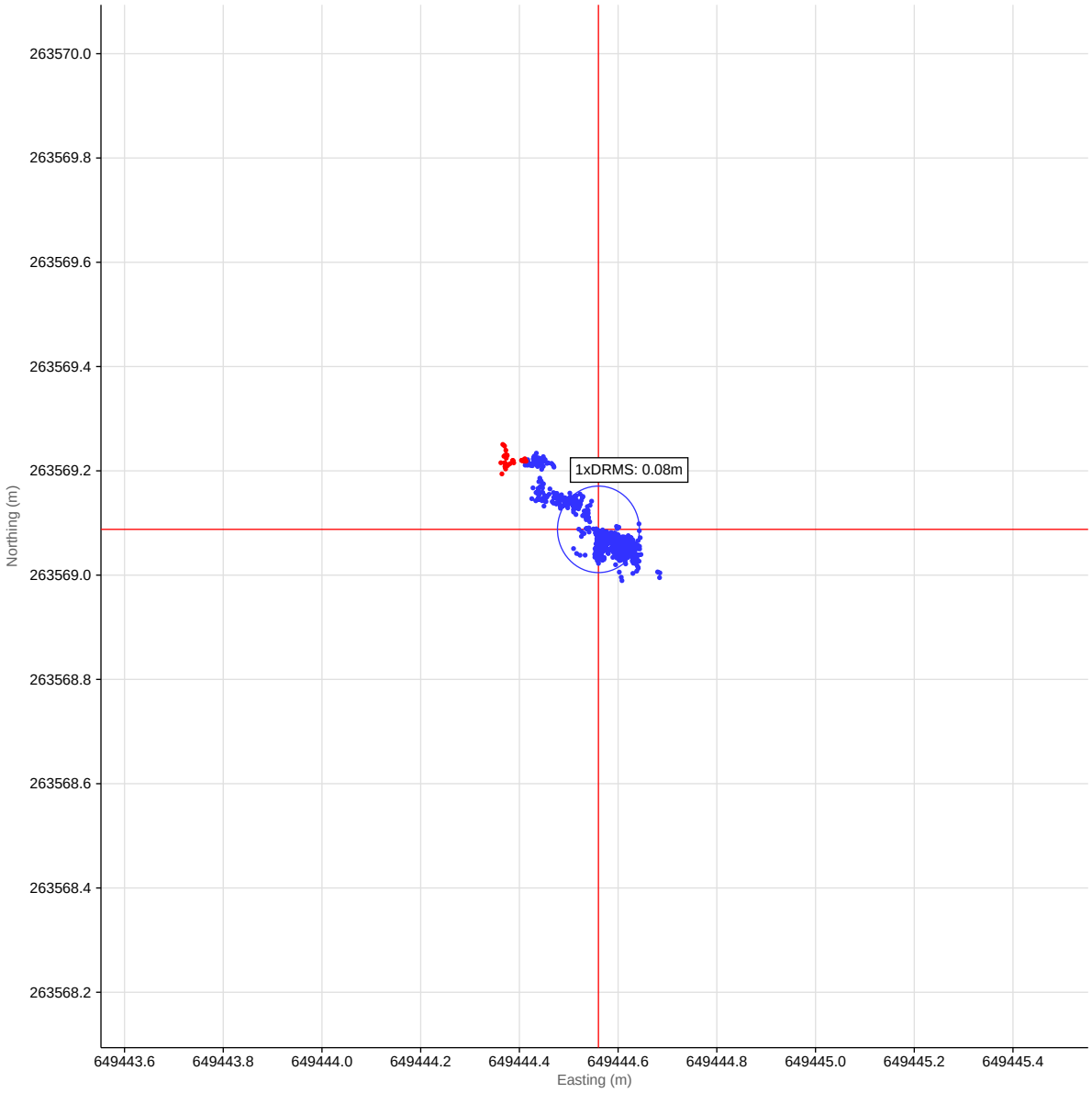
Colin Mulvey
Party Chief
FGSL (Fugro GeoServices Ltd UK)

NNB EDF
End Client Representative
Fugro Geoservices Inc

Geodetic Parameters

Name : OSGB 1936 / British National Grid [OSGB-UK Gbr15]		
EPSG Code	EPSG::27700	
Local Geodetic Datum Parameters		
Datum	OSGB 1936	EPSG::6277
Ellipsoid	Airy 1830	
Semi major axis	a = 6,377,563.396 m	
Inverse flattening	1/f = 299.3249646	
Datum Transformation Parameters from ETRS89 to OSGB 1936 / British National Grid		
OSGB 1936 / British National Grid to ETRS89 (3)	Ordnance Survey National Transformation	EPSG::7708
Easting and northing difference file	OSTN15_OSGM15_GB.txt	
Local Projection Parameters		
Map Projection	Transverse Mercator	
Grid System	British National Grid	EPSG::19916
Latitude Origin	49°00’00.000”N	
Central Meridian	002°00’00.000”W	
Scale Factor on Central Meridian	0.999601272	
False Easting	400,000 m	
False Northing	-100,000 m	

Scatter Plot



Mean Position

	Easting	Northing
Excalibur Sizewell	649,444.560m E	263,569.088m N

SIZEWELL C GROUND INVESTIGATION 2019
MEAN POSITION REPORT

Project ID	C1984		
Location	Sizewell C power station		
Client	Fugro Geoservices Inc	**Vessel**	Excalibur Sizewell
Comment	DTM: 15.90m / Deck Above OD 10.008m / Seabed Mudline = -5.892m OD		

Session Name: 20190717-202128 Records Used: 7295 of 7388

Start Time: 17 Jul 2019, 21:21:39+01:00 End Time: 17 Jul 2019, 23:26:38+01:00 Session Length: 02:04:59

Mean Position for Excalibur Sizewell CommonReferencePoint		
	OSGB 1936 / British National Grid [OSGB-UK Gbr15]	**ETRS89(2D)**
Latitude	52°12’43.56086”N	52°12’45.29042”N
Longitude	001°39’35.70337”E	001°39’29.18819”E
Height	9.996m Ell.	54.497m Ell.
Easting	649,999.803m E (SD: ±0.05m)	
Northing	263,456.451m N (SD: ±0.05m)	
Height	9.477m Ort. (SD: ±0.05m Ort.)	

Sensors	**Sensor Averages**	**SD**
Heading	282.91°T 280.02°G	±0.0°
Pitch		
Roll		
Depth (Sounder)	0.0m	±0.00m
Depth (Manual)	0.0m	N/A

Mean Position to Waypoint	
Waypoint	IT1_SB_04
Easting	650,000.000m E
Northing	263,456.185m N
Range	0.33m Geodetic
Bearing TO	146.43°True
Bearing FROM	326.43°True

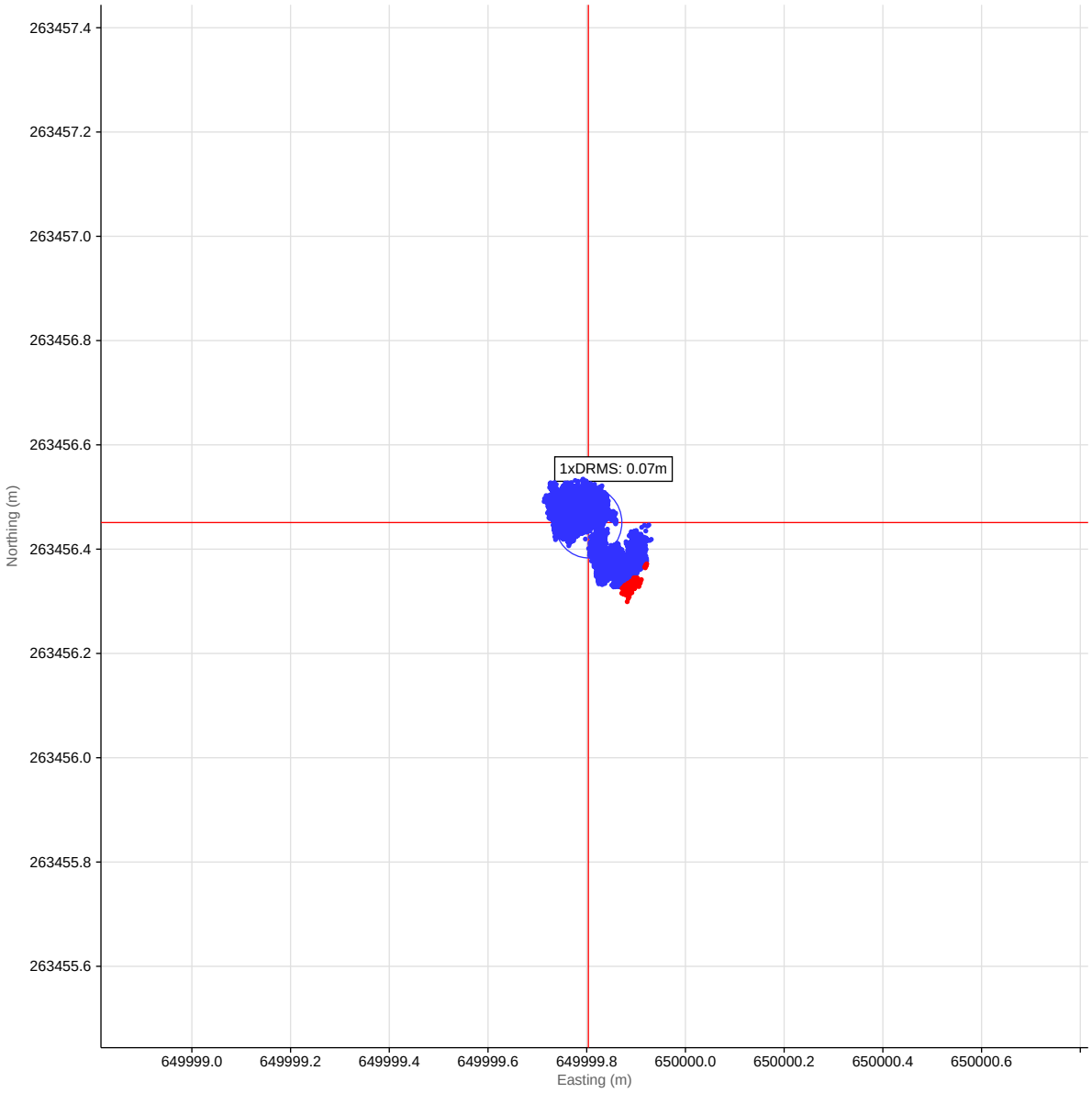
Callum Murphy
Party Chief
FGSL (Fugro GeoServices Ltd UK)

NNB EDF
Client Representative
Fugro Geoservices Inc

Geodetic Parameters

Name : OSGB 1936 / British National Grid [OSGB-UK Gbr15]		
EPSG Code	EPSG::27700	
Local Geodetic Datum Parameters		
Datum	OSGB 1936	EPSG::6277
Ellipsoid	Airy 1830	
Semi major axis	a = 6,377,563.396 m	
Inverse flattening	1/f = 299.3249646	
Datum Transformation Parameters from ETRS89 to OSGB 1936 / British National Grid		
OSGB 1936 / British National Grid to ETRS89 (3)	Ordnance Survey National Transformation	EPSG::7708
Easting and northing difference file	OSTN15_OSGM15_GB.txt	
Local Projection Parameters		
Map Projection	Transverse Mercator	
Grid System	British National Grid	EPSG::19916
Latitude Origin	49°00’00.000”N	
Central Meridian	002°00’00.000”W	
Scale Factor on Central Meridian	0.999601272	
False Easting	400,000 m	
False Northing	-100,000 m	

Scatter Plot



Mean Position

	Easting	Northing
Excalibur Sizewell	649,999.803m E	263,456.451m N

SIZEWELL C GROUND INVESTIGATION 2019
MEAN POSITION REPORT

Project ID	C1984		
Location	Sizewell C power station		
Client	Fugro Geoservices Inc	**Vessel**	Excalibur Sizewell
Comment	DTM: 24.10m / Deck Above OD 10.493m / Seabed Mudline = -13.607m OD		

Session Name: 20190715-114004 Records Used: 7181 of 7391

Start Time: 15 Jul 2019, 12:42:19+01:00 End Time: 15 Jul 2019, 14:47:18+01:00 Session Length: 02:04:59

Mean Position for Excalibur Sizewell CommonReferencePoint		
	OSGB 1936 / British National Grid [OSGB-UK Gbr15]	**ETRS89(2D)**
Latitude	52°12’39.24385”N	52°12’40.97429”N
Longitude	001°40’03.13112”E	001°39’56.61336”E
Height	10.454m Ell.	54.948m Ell.
Easting	650,526.801m E (SD: ±0.02m)	
Northing	263,349.477m N (SD: ±0.02m)	
Height	9.934m Ort. (SD: ±0.05m Ort.)	

Sensors	**Sensor Averages**	**SD**
Heading	275.71°T 272.81°G	±0.0°
Pitch		
Roll		
Depth (Sounder)	0.0m	±0.00m
Depth (Manual)	0.0m	N/A

Mean Position to Waypoint	
Waypoint	IT1_SB_05
Easting	650,526.000m E
Northing	263,349.536m N
Range	0.80m Geodetic
Bearing TO	277.11°True
Bearing FROM	97.11°True

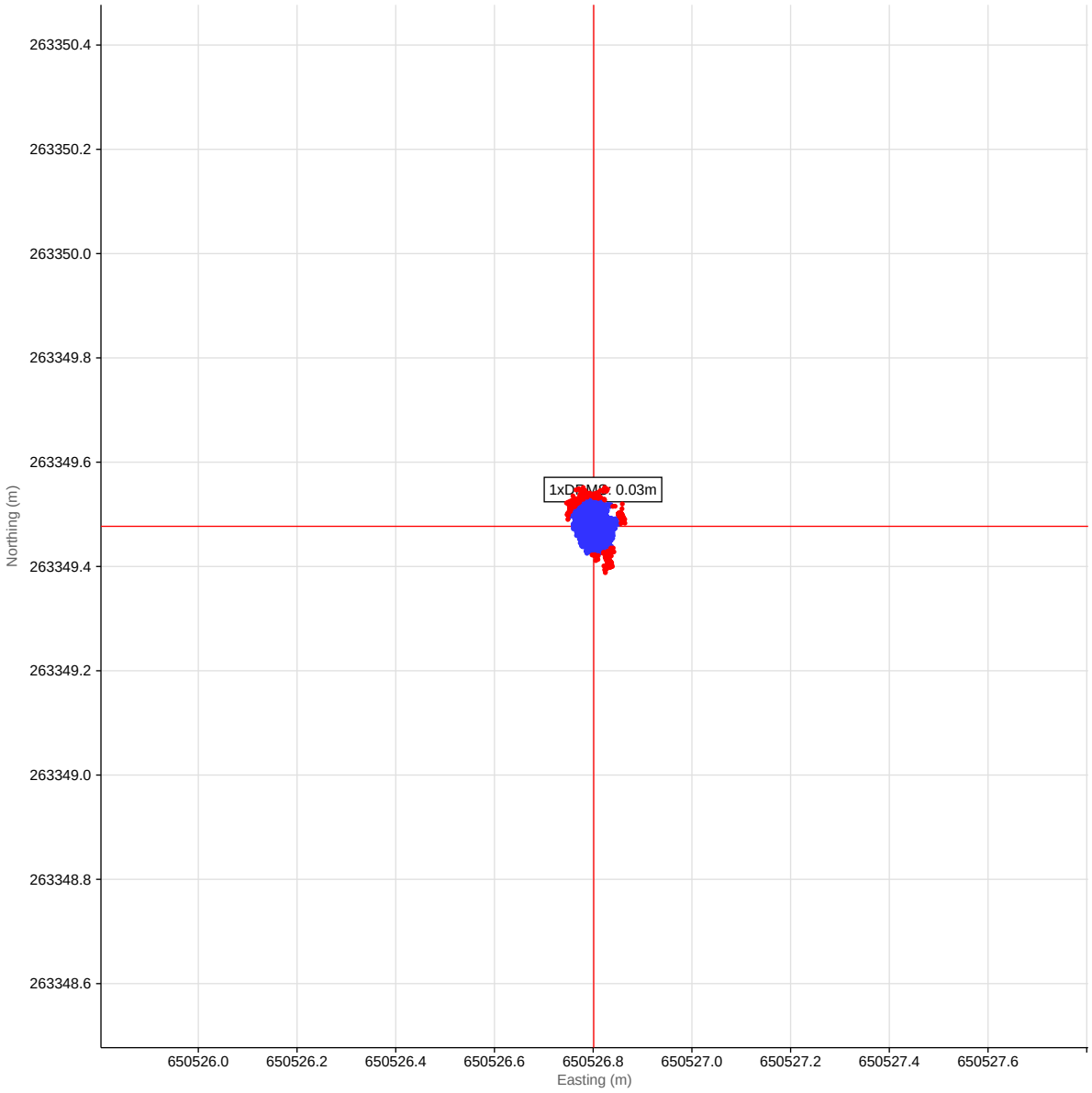
Julian North
Party Chief
FGSL (Fugro GeoServices Ltd UK)

NNB EDF
Client Representative
Fugro Geoservices Inc

Geodetic Parameters

Name : OSGB 1936 / British National Grid [OSGB-UK Gbr15]		
EPSG Code	EPSG::27700	
Local Geodetic Datum Parameters		
Datum	OSGB 1936	EPSG::6277
Ellipsoid	Airy 1830	
Semi major axis	a = 6,377,563.396 m	
Inverse flattening	1/f = 299.3249646	
Datum Transformation Parameters from ETRS89 to OSGB 1936 / British National Grid		
OSGB 1936 / British National Grid to ETRS89 (3)	Ordnance Survey National Transformation	EPSG::7708
Easting and northing difference file	OSTN15_OSGM15_GB.txt	
Local Projection Parameters		
Map Projection	Transverse Mercator	
Grid System	British National Grid	EPSG::19916
Latitude Origin	49°00’00.000”N	
Central Meridian	002°00’00.000”W	
Scale Factor on Central Meridian	0.999601272	
False Easting	400,000 m	
False Northing	-100,000 m	

Scatter Plot



Mean Position

	Easting	Northing
Excalibur Sizewell	650,526.801m E	263,349.477m N

SIZEWELL C GROUND INVESTIGATION 2019
MEAN POSITION REPORT

Project ID	C1984		
Location	Sizewell C power station		
Client	Fugro Geoservices Inc	**Vessel**	Excalibur Sizewell
Comment	DTM: 25.0m / Deck Above OD 10.988m / Seabed Mudline = -14.012m OD		

Session Name: 20190605-041336 Records Used: 596 of 599

Start Time: 05 Jun 2019, 05:15:10+01:00 End Time: 05 Jun 2019, 05:25:09+01:00 Session Length: 00:09:59

Mean Position for Excalibur Sizewell CommonReferencePoint		
	OSGB 1936 / British National Grid [OSGB-UK Gbr15]	**ETRS89(2D)**
Latitude	52°12’38.42680”N	52°12’40.15741”N
Longitude	001°40’08.12276”E	001°40’01.60453”E
Height	11.128m Ell.	55.621m Ell.
Easting	650,622.763m E (SD: ±0.01m)	
Northing	263,329.045m N (SD: ±0.03m)	
Height	10.608m Ort. (SD: ±0.02m Ort.)	

Sensors	**Sensor Averages**	**SD**
Heading	282.28°T 279.38°G	±0.1°
Pitch		
Roll		
Depth (Sounder)	0.0m	±0.00m
Depth (Manual)	0.0m	N/A

Mean Position to Waypoint	
Waypoint	IT1_SB_06
Easting	650,624.000m E
Northing	263,329.666m N
Range	1.38m Geodetic
Bearing TO	66.26°True
Bearing FROM	246.26°True

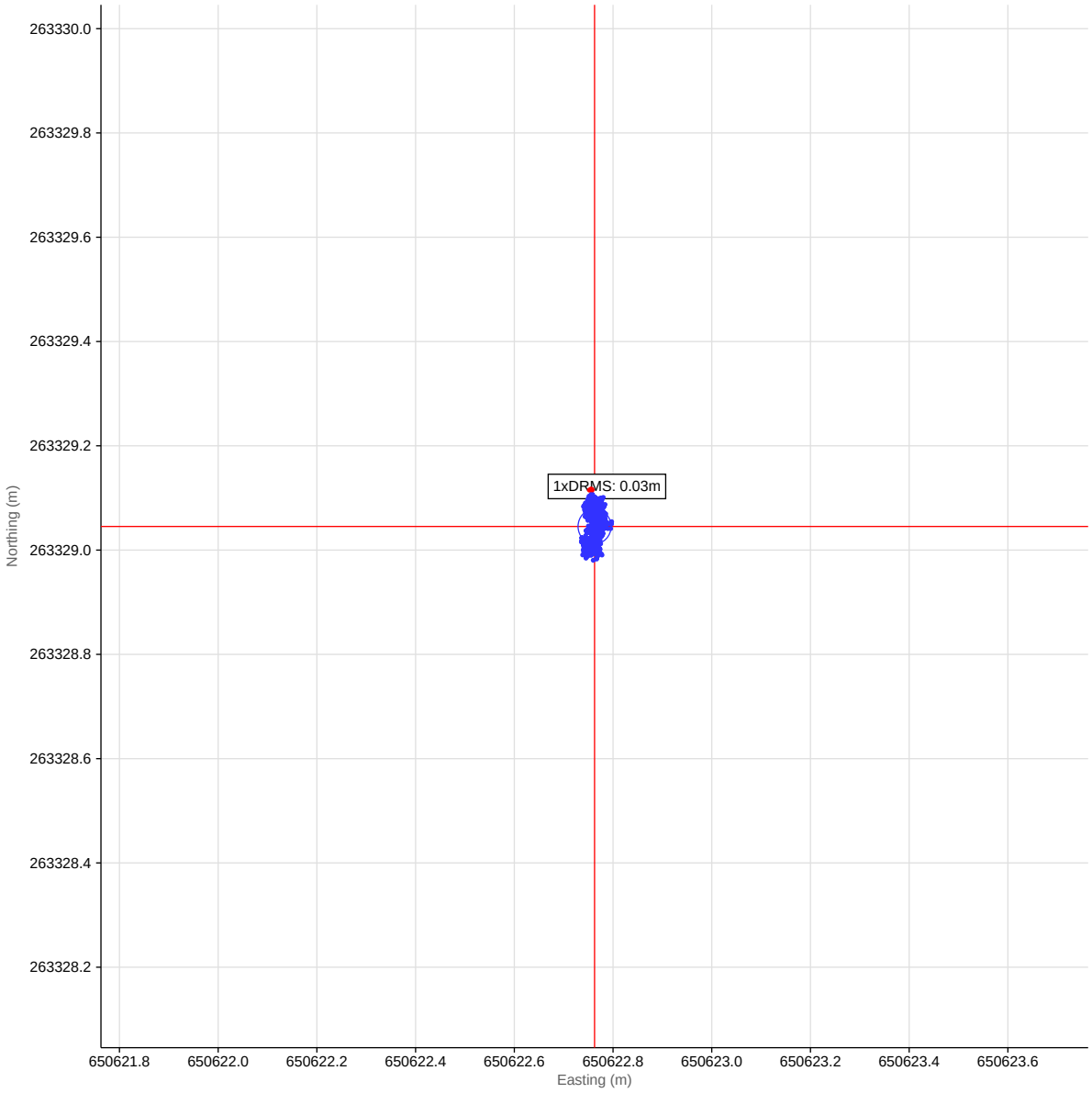
Julian North
Party Chief
FGBNM (Fugro Great Britain North Marine)

NNB EDF
Client Representative
Fugro Geoservices Inc

Geodetic Parameters

Name : OSGB 1936 / British National Grid [OSGB-UK Gbr15]		
EPSG Code	EPSG::27700	
Local Geodetic Datum Parameters		
Datum	OSGB 1936	EPSG::6277
Ellipsoid	Airy 1830	
Semi major axis	a = 6,377,563.396 m	
Inverse flattening	1/f = 299.3249646	
Datum Transformation Parameters from ETRS89 to OSGB 1936 / British National Grid		
OSGB 1936 / British National Grid to ETRS89 (3)	Ordnance Survey National Transformation	EPSG::7708
Easting and northing difference file	OSTN15_OSGM15_GB.txt	
Local Projection Parameters		
Map Projection	Transverse Mercator	
Grid System	British National Grid	EPSG::19916
Latitude Origin	49°00’00.000”N	
Central Meridian	002°00’00.000”W	
Scale Factor on Central Meridian	0.999601272	
False Easting	400,000 m	
False Northing	-100,000 m	

Scatter Plot



Mean Position

	Easting	Northing
Excalibur Sizewell	650,622.763m E	263,329.045m N

SIZEWELL C GROUND INVESTIGATION 2019
MEAN POSITION REPORT

Project ID	C1984		
Location	Sizewell C power station		
Client	Fugro Geoservices Inc	**Vessel**	Excalibur Sizewell
Comment	DTM: 23.70m / Deck Above OD 9.740m / Seabed Mudline = -13.760mOD		

Session Name: 20190602-195844 Records Used: 590 of 599

Start Time: 02 Jun 2019, 21:01:28+01:00 End Time: 02 Jun 2019, 21:11:27+01:00 Session Length: 00:09:59

Mean Position for Excalibur Sizewell CommonReferencePoint		
	OSGB 1936 / British National Grid [OSGB-UK Gbr15]	**ETRS89(2D)**
Latitude	52°12'37.63904"N	52°12'39.36981"N
Longitude	001°40'13.13860"E	001°40'06.61990"E
Height	9.796m Ell.	54.287m Ell.
Easting	650,719.138m E (SD: ±0.02m)	
Northing	263,309.543m N (SD: ±0.01m)	
Height	9.275m Ort. (SD: ±0.06m Ort.)	

Sensors	**Sensor Averages**	**SD**
Heading	282.95°T 280.04°G	±0.0°
Pitch		
Roll		
Depth (Sounder)	0.0m	±0.00m
Depth (Manual)	0.0m	N/A

Mean Position to Waypoint	
Waypoint	IT1_SB_07
Easting	650,720.013m E
Northing	263,310.199m N
Range	1.09m Geodetic
Bearing TO	56.04°True
Bearing FROM	236.04°True

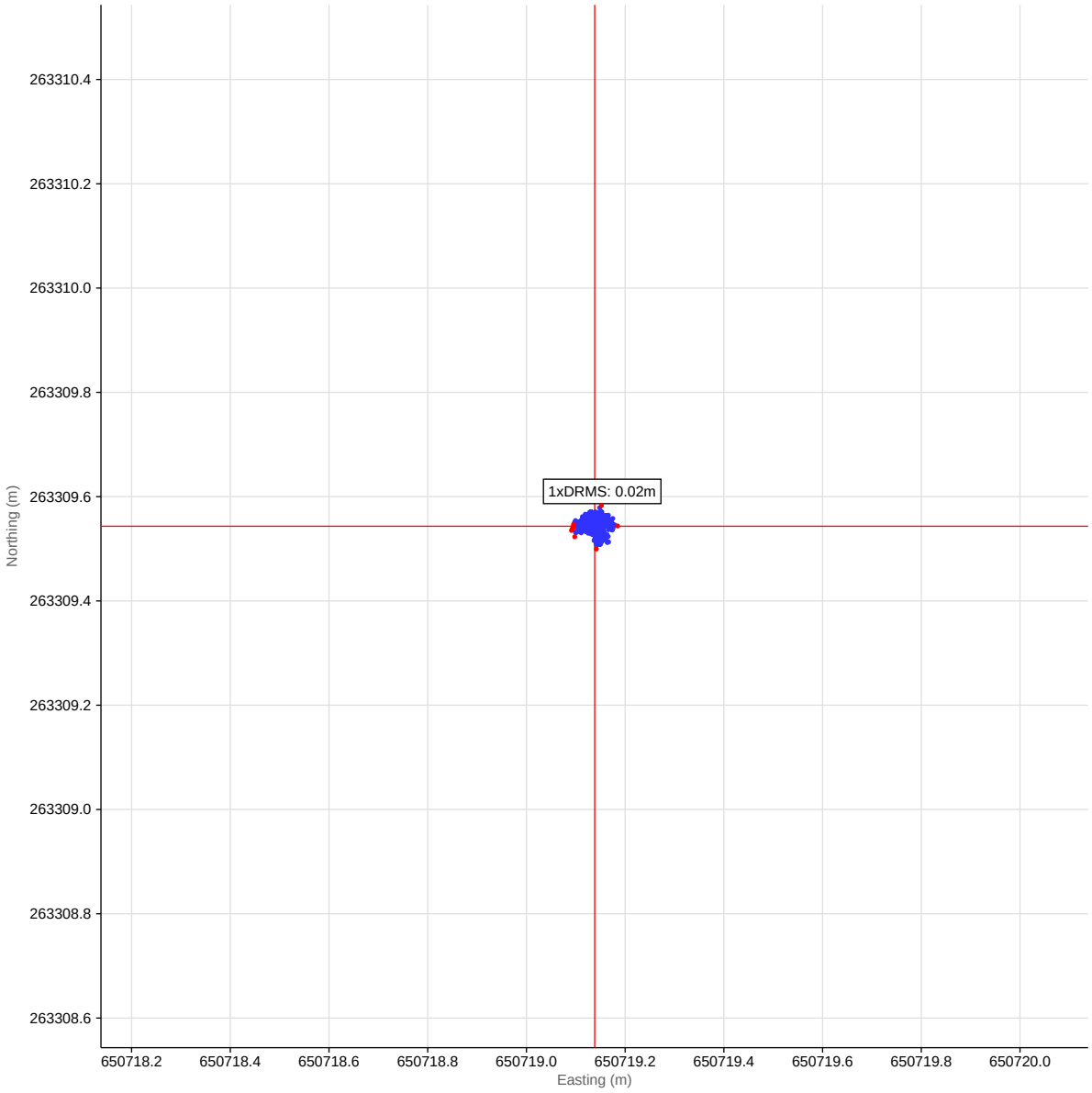
Julian North
Party Chief
FGBNM (Fugro Great Britain North Marine)

NNB EDF
Client Representative
Fugro Geoservices Inc

Geodetic Parameters

Name : OSGB 1936 / British National Grid [OSGB-UK Gbr15]		
EPSG Code	EPSG::27700	
Local Geodetic Datum Parameters		
Datum	OSGB 1936	EPSG::6277
Ellipsoid	Airy 1830	
Semi major axis	a = 6,377,563.396 m	
Inverse flattening	1/f = 299.3249646	
Datum Transformation Parameters from ETRS89 to OSGB 1936 / British National Grid		
OSGB 1936 / British National Grid to ETRS89 (3)	Ordnance Survey National Transformation	EPSG::7708
Easting and northing difference file	OSTN15_OSGM15_GB.txt	
Local Projection Parameters		
Map Projection	Transverse Mercator	
Grid System	British National Grid	EPSG::19916
Latitude Origin	49°00’00.000”N	
Central Meridian	002°00’00.000”W	
Scale Factor on Central Meridian	0.999601272	
False Easting	400,000 m	
False Northing	-100,000 m	

Scatter Plot



Mean Position

	Easting	Northing
Excalibur Sizewell	650,719.138m E	263,309.543m N

SIZEWELL C GROUND INVESTIGATION 2019
MEAN POSITION REPORT

Project ID	C1984		
Location	Sizewell C power station		
Client	Fugro Geoservices Inc	**Vessel**	Excalibur Sizewell
Comment	DTM: 18.00m / Deck Above OD 10.460m / Seabed Mudline = -7.540m OD		

Session Name: 20190725-001459 Records Used: 7377 of 7495

Start Time: 25 Jul 2019, 01:15:53+01:00 End Time: 25 Jul 2019, 03:20:52+01:00 Session Length: 02:04:59

Mean Position for Excalibur Sizewell Moonpool 1		
	OSGB 1936 / British National Grid [OSGB-UK Gbr15]	**ETRS89(2D)**
Latitude	52°12'58.71338"N	52°13'00.43980"N
Longitude	001°37'58.74778"E	001°37'52.24170"E
Height	10.434m Ell.	54.960m Ell.
Easting	648,137.278m E (SD: ±0.03m)	
Northing	263,831.712m N (SD: ±0.03m)	
Height	9.918m Ort. (SD: ±0.05m Ort.)	

Sensors	**Sensor Averages**	**SD**
Heading	281.91°T 279.04°G	±0.0°
Pitch		
Roll		
Depth (Sounder)	0.0m	±0.00m
Depth (Manual)	0.0m	N/A

Mean Position to Waypoint	
Waypoint	IT1_SPT_01
Easting	648,138.203m E
Northing	263,831.480m N
Range	0.95m Geodetic
Bearing TO	106.93°True
Bearing FROM	286.93°True

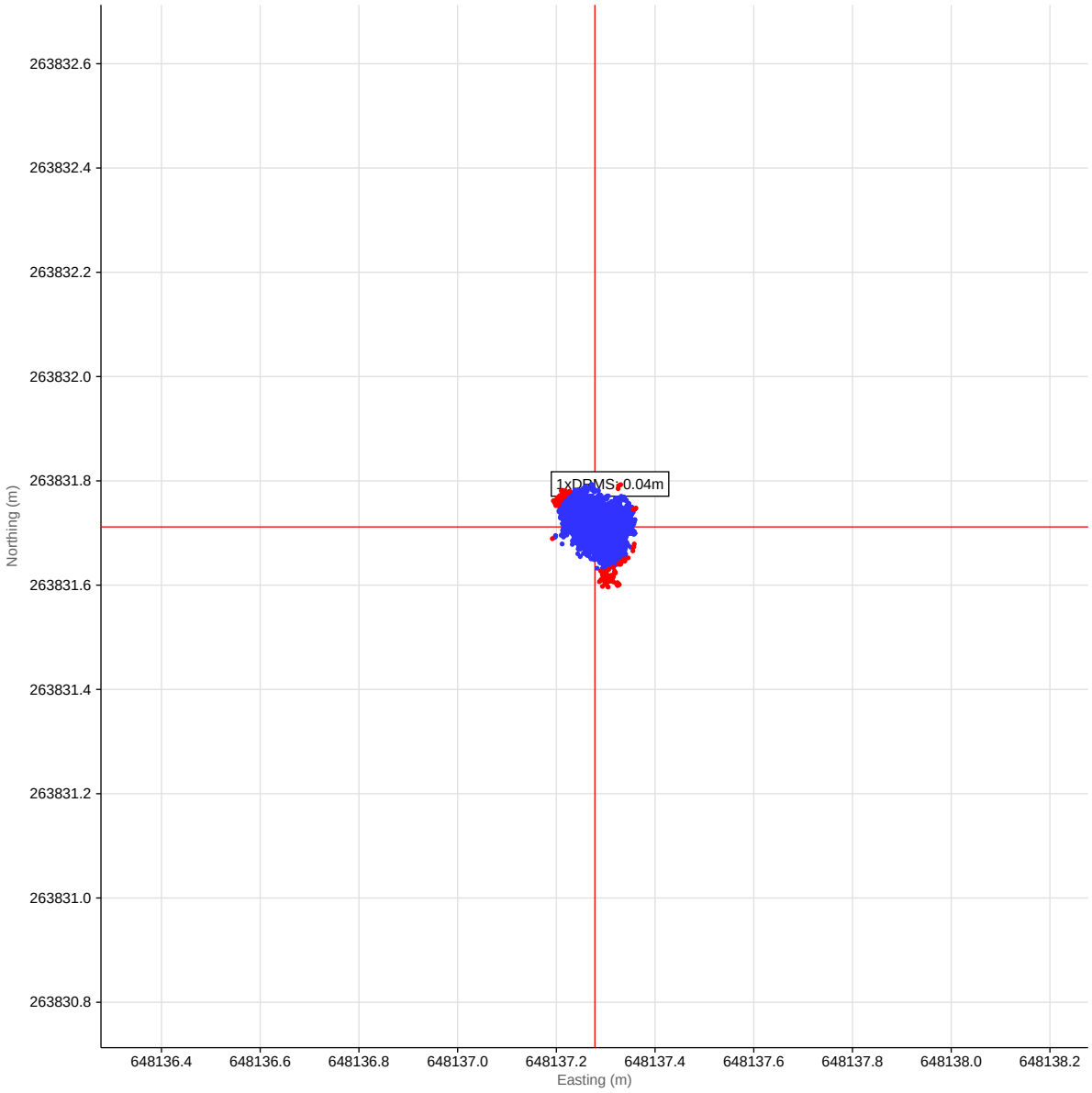
Callum Murphy
Party Chief
FGSL (Fugro GeoServices Ltd UK)

NNB EDF
Client Representative
Fugro Geoservices Inc

Geodetic Parameters

Name : OSGB 1936 / British National Grid [OSGB-UK Gbr15]		
EPSG Code	EPSG::27700	
Local Geodetic Datum Parameters		
Datum	OSGB 1936	EPSG::6277
Ellipsoid	Airy 1830	
Semi major axis	a = 6,377,563.396 m	
Inverse flattening	1/f = 299.3249646	
Datum Transformation Parameters from ETRS89 to OSGB 1936 / British National Grid		
OSGB 1936 / British National Grid to ETRS89 (3)	Ordnance Survey National Transformation	EPSG::7708
Easting and northing difference file	OSTN15_OSGM15_GB.txt	
Local Projection Parameters		
Map Projection	Transverse Mercator	
Grid System	British National Grid	EPSG::19916
Latitude Origin	49°00’00.000”N	
Central Meridian	002°00’00.000”W	
Scale Factor on Central Meridian	0.999601272	
False Easting	400,000 m	
False Northing	-100,000 m	

Scatter Plot



Mean Position

	Easting	Northing
Excalibur Sizewell	648,137.278m E	263,831.712m N

SIZEWELL C GROUND INVESTIGATION 2019
MEAN POSITION REPORT

Project ID	C1984		
Location	Sizewell C power station		
Client	Fugro Geoservices Inc	**Vessel**	Excalibur Sizewell
Comment	DTM: 20.30m / Deck Above OD 10.283m / Seabed Mudline = -10.017m OD		

Session Name: 20190722-093459 Records Used: 7230 of 7496

Start Time: 22 Jul 2019, 10:36:12+01:00 End Time: 22 Jul 2019, 12:41:11+01:00 Session Length: 02:04:59

Mean Position for Excalibur Sizewell Moonpool 1		
	OSGB 1936 / British National Grid [OSGB-UK Gbr15]	**ETRS89(2D)**
Latitude	52°12'54.29693"N	52°12'56.02425"N
Longitude	001°38'26.71285"E	001°38'20.20415"E
Height	10.200m Ell.	54.718m Ell.
Easting	648,674.527m E (SD: ±0.02m)	
Northing	263,721.984m N (SD: ±0.03m)	
Height	9.683m Ort. (SD: ±0.06m Ort.)	

Sensors	**Sensor Averages**	**SD**
Heading	287.11°T 284.23°G	±0.0°
Pitch		
Roll		
Depth (Sounder)	0.0m	±0.00m
Depth (Manual)	0.0m	N/A

Mean Position to Waypoint	
Waypoint	IT1_SPT_02
Easting	648,674.203m E
Northing	263,722.804m N
Range	0.88m Geodetic
Bearing TO	341.35°True
Bearing FROM	161.35°True

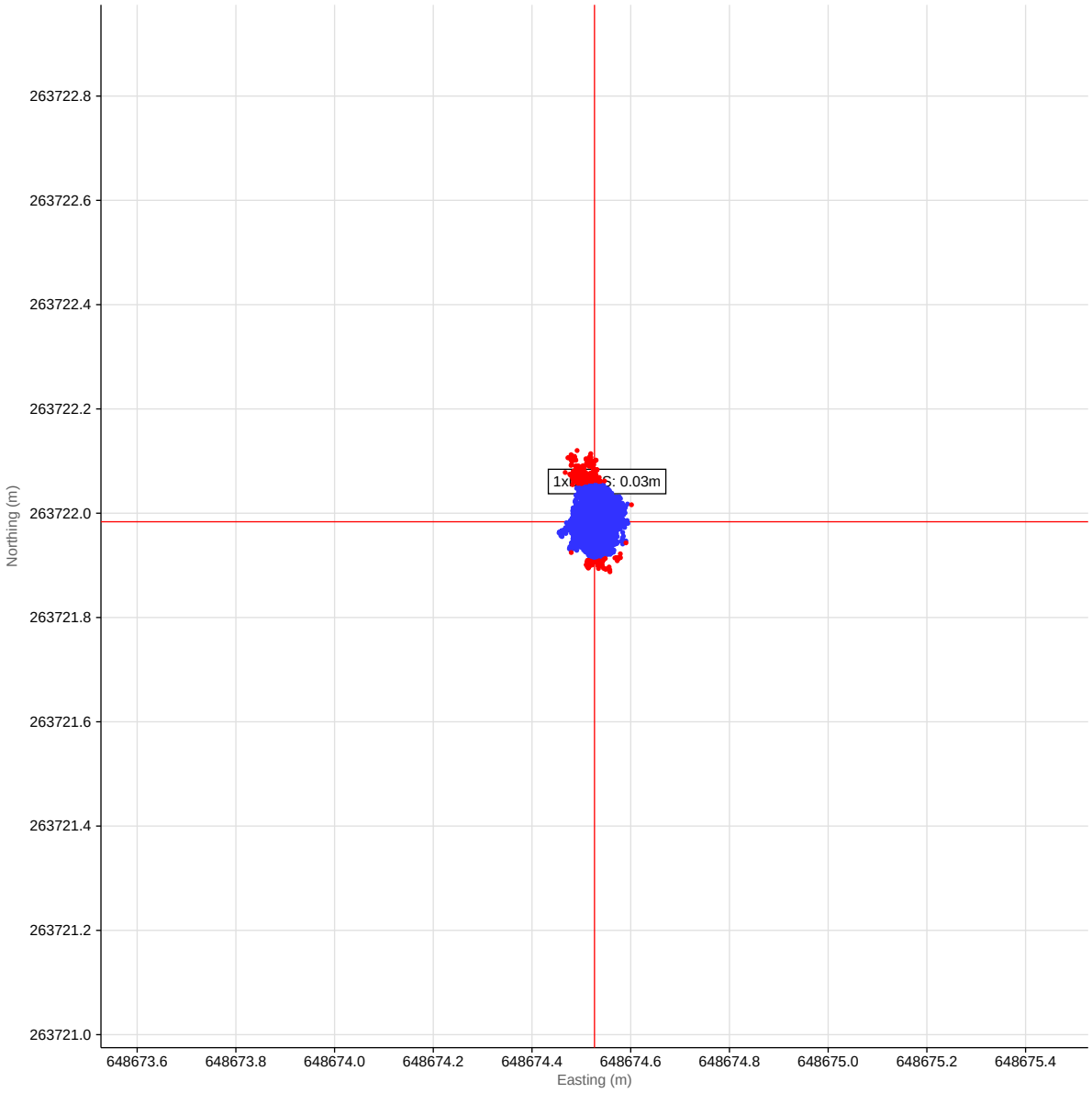
Julian North
Party Chief
FGSL (Fugro GeoServices Ltd UK)

NNB EDF
Client Representative
Fugro Geoservices Inc

Geodetic Parameters

Name : OSGB 1936 / British National Grid [OSGB-UK Gbr15]		
EPSG Code	EPSG::27700	
Local Geodetic Datum Parameters		
Datum	OSGB 1936	EPSG::6277
Ellipsoid	Airy 1830	
Semi major axis	a = 6,377,563.396 m	
Inverse flattening	1/f = 299.3249646	
Datum Transformation Parameters from ETRS89 to OSGB 1936 / British National Grid		
OSGB 1936 / British National Grid to ETRS89 (3)	Ordnance Survey National Transformation	EPSG::7708
Easting and northing difference file	OSTN15_OSGM15_GB.txt	
Local Projection Parameters		
Map Projection	Transverse Mercator	
Grid System	British National Grid	EPSG::19916
Latitude Origin	49°00’00.000”N	
Central Meridian	002°00’00.000”W	
Scale Factor on Central Meridian	0.999601272	
False Easting	400,000 m	
False Northing	-100,000 m	

Scatter Plot



Mean Position

	Easting	Northing
Excalibur Sizewell	648,674.527m E	263,721.984m N

SIZEWELL C GROUND INVESTIGATION 2019
MEAN POSITION REPORT

Project ID	C1984_Poseidon		
Location	Sizewell C Power Station		
Client	Fugro Geoservices Inc	**Vessel**	Excalibur Sizewell
Comment	DTM: 17.2m / Deck Above OD 9.564m / Seabed Mudline = -7.636m OD		

Session Name: 20190601-063336 Records Used: 580 of 607

Start Time: 01 Jun 2019, 07:33:36+01:00 End Time: 01 Jun 2019, 07:43:43+01:00 Session Length: 00:10:07

Mean Position for Excalibur Sizewell CommonReferencePoint		
	OSGB 1936 / British National Grid [OSGB-UK Gbr15]	**ETRS89(2D)**
Latitude	52°12’47.99852”N	52°12’49.72715”N
Longitude	001°39’07.07705”E	001°39’00.56457”E
Height	10.107m Ell.	54.615m Ell.
Easting	649,449.911m E (SD: ±0.06m)	
Northing	263,566.059m N (SD: ±0.06m)	
Height	9.589m Ort. (SD: ±0.08m Ort.)	

Sensors	**Sensor Averages**	**SD**
Heading	281.55°T 278.67°G	±0.1°
Pitch		
Roll		
Depth (Sounder)	0.0m	±0.00m
Depth (Manual)	0.0m	N/A

Mean Position to Waypoint	
Waypoint	IT1_SPT_03
Easting	649,450.203m E
Northing	263,565.467m N
Range	0.66m Geodetic
Bearing TO	156.63°True
Bearing FROM	336.63°True

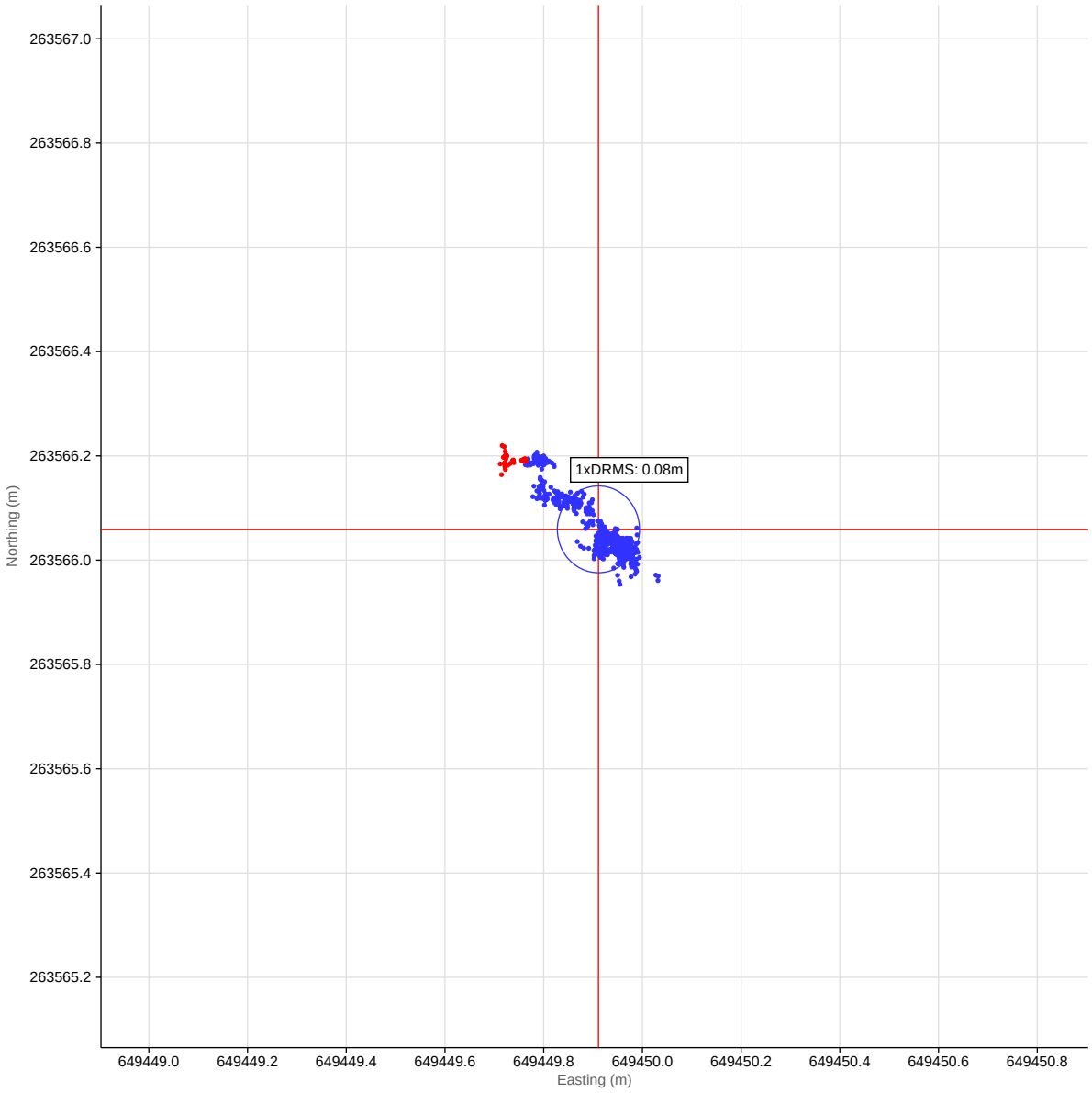
Colin Mulvey
Party Chief
FGSL (Fugro GeoServices Ltd UK)

NNB EDF
End Client Representative
Fugro Geoservices Inc

Geodetic Parameters

Name : OSGB 1936 / British National Grid [OSGB-UK Gbr15]		
EPSG Code	EPSG::27700	
Local Geodetic Datum Parameters		
Datum	OSGB 1936	EPSG::6277
Ellipsoid	Airy 1830	
Semi major axis	a = 6,377,563.396 m	
Inverse flattening	1/f = 299.3249646	
Datum Transformation Parameters from ETRS89 to OSGB 1936 / British National Grid		
OSGB 1936 / British National Grid to ETRS89 (3)	Ordnance Survey National Transformation	EPSG::7708
Easting and northing difference file	OSTN15_OSGM15_GB.txt	
Local Projection Parameters		
Map Projection	Transverse Mercator	
Grid System	British National Grid	EPSG::19916
Latitude Origin	49°00’00.000”N	
Central Meridian	002°00’00.000”W	
Scale Factor on Central Meridian	0.999601272	
False Easting	400,000 m	
False Northing	-100,000 m	

Scatter Plot



Mean Position

	Easting	Northing
Excalibur Sizewell	649,449.911m E	263,566.059m N

SIZEWELL C GROUND INVESTIGATION 2019
MEAN POSITION REPORT

Project ID	C1984		
Location	Sizewell C power station		
Client	Fugro Geoservices Inc	**Vessel**	Excalibur Sizewell
Comment	DTM: 15.90m / Deck Above OD 9.849m / Seabed Mudline = -6.051m OD		

Session Name: 20190717-232303 Records Used: 7268 of 7499

Start Time: 18 Jul 2019, 00:24:16+01:00 End Time: 18 Jul 2019, 02:29:15+01:00 Session Length: 02:04:59

Mean Position for Excalibur Sizewell CommonReferencePoint		
	OSGB 1936 / British National Grid [OSGB-UK Gbr15]	**ETRS89(2D)**
Latitude	52°12’43.44880”N	52°12’45.17838”N
Longitude	001°39’35.97339”E	001°39’29.45819”E
Height	9.756m Ell.	54.257m Ell.
Easting	650,005.100m E (SD: ±0.03m)	
Northing	263,453.250m N (SD: ±0.03m)	
Height	9.237m Ort. (SD: ±0.05m Ort.)	

Sensors	**Sensor Averages**	**SD**
Heading	282.91°T 280.02°G	±0.0°
Pitch		
Roll		
Depth (Sounder)	0.0m	±0.00m
Depth (Manual)	0.0m	N/A

Mean Position to Waypoint	
Waypoint	IT1_SPT_04
Easting	650,005.203m E
Northing	263,452.938m N
Range	0.33m Geodetic
Bearing TO	164.63°True
Bearing FROM	344.63°True

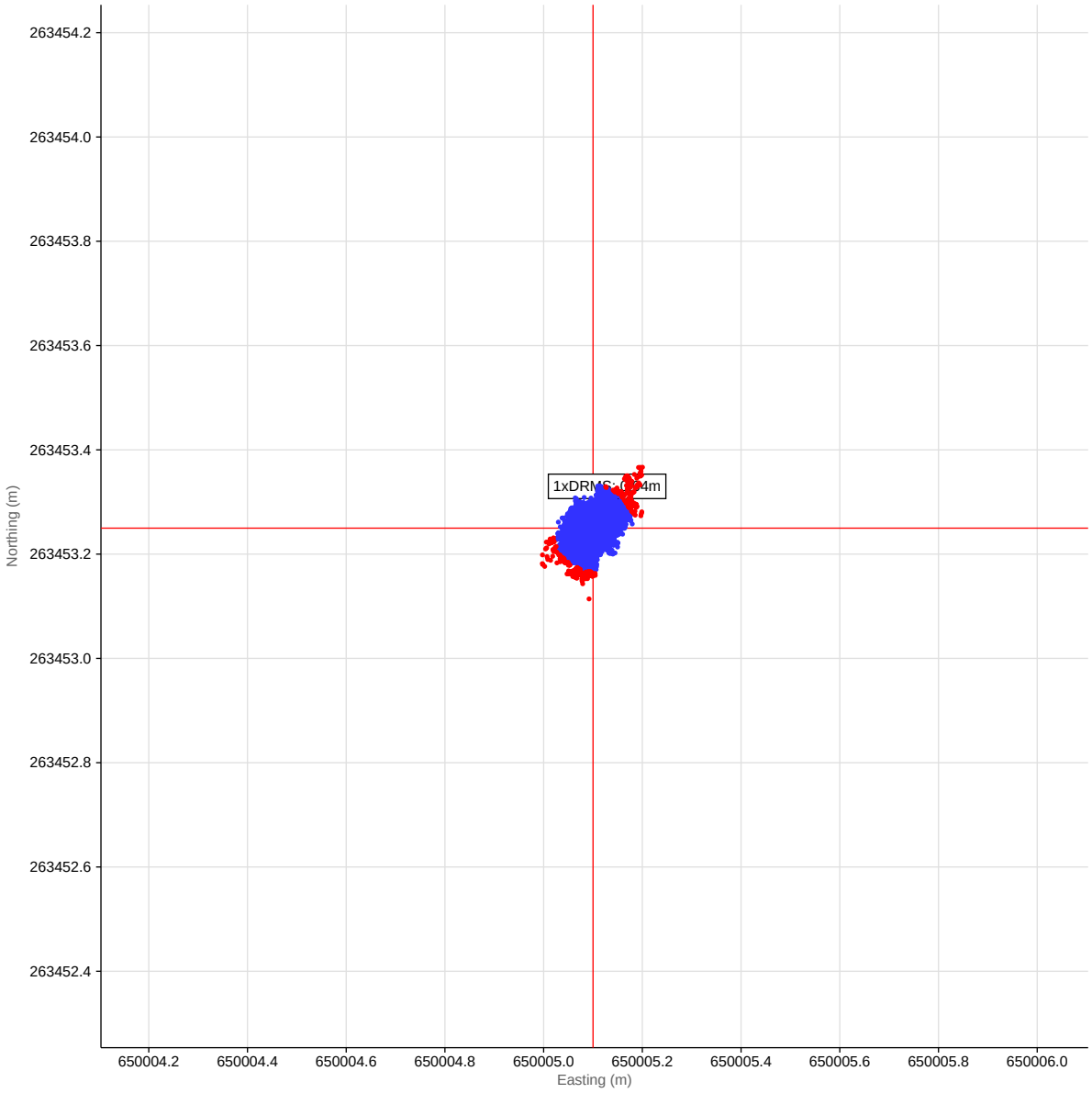
Callum Murphy
Party Chief
FGSL (Fugro GeoServices Ltd UK)

NNB EDF
Client Representative
Fugro Geoservices Inc

Geodetic Parameters

Name : OSGB 1936 / British National Grid [OSGB-UK Gbr15]		
EPSG Code	EPSG::27700	
Local Geodetic Datum Parameters		
Datum	OSGB 1936	EPSG::6277
Ellipsoid	Airy 1830	
Semi major axis	a = 6,377,563.396 m	
Inverse flattening	1/f = 299.3249646	
Datum Transformation Parameters from ETRS89 to OSGB 1936 / British National Grid		
OSGB 1936 / British National Grid to ETRS89 (3)	Ordnance Survey National Transformation	EPSG::7708
Easting and northing difference file	OSTN15_OSGM15_GB.txt	
Local Projection Parameters		
Map Projection	Transverse Mercator	
Grid System	British National Grid	EPSG::19916
Latitude Origin	49°00’00.000”N	
Central Meridian	002°00’00.000”W	
Scale Factor on Central Meridian	0.999601272	
False Easting	400,000 m	
False Northing	-100,000 m	

Scatter Plot



Mean Position

	Easting	Northing
Excalibur Sizewell	650,005.100m E	263,453.250m N

SIZEWELL C GROUND INVESTIGATION 2019
MEAN POSITION REPORT

Project ID	C1984		
Location	Sizewell C power station		
Client	Fugro Geoservices Inc	**Vessel**	Excalibur Sizewell
Comment	DTM: 24.10m / Deck Above OD 10.414m / Seabed Mudline = -13.686m OD		

Session Name: 20190715-135458 Records Used: 6990 of 7396

Start Time: 15 Jul 2019, 14:56:26+01:00 End Time: 15 Jul 2019, 17:01:25+01:00 Session Length: 02:04:59

Mean Position for Excalibur Sizewell CommonReferencePoint		
	OSGB 1936 / British National Grid [OSGB-UK Gbr15]	**ETRS89(2D)**
Latitude	52°12’39.15566”N	52°12’40.88611”N
Longitude	001°40’03.42120”E	001°39’56.90342”E
Height	10.361m Ell.	54.855m Ell.
Easting	650,532.441m E (SD: ±0.01m)	
Northing	263,347.033m N (SD: ±0.02m)	
Height	9.841m Ort. (SD: ±0.05m Ort.)	

Sensors	**Sensor Averages**	**SD**
Heading	275.62°T 272.72°G	±0.0°
Pitch		
Roll		
Depth (Sounder)	0.0m	±0.00m
Depth (Manual)	0.0m	N/A

Mean Position to Waypoint	
Waypoint	IT1_SPT_05
Easting	650,531.203m E
Northing	263,346.289m N
Range	1.44m Geodetic
Bearing TO	241.92°True
Bearing FROM	61.92°True

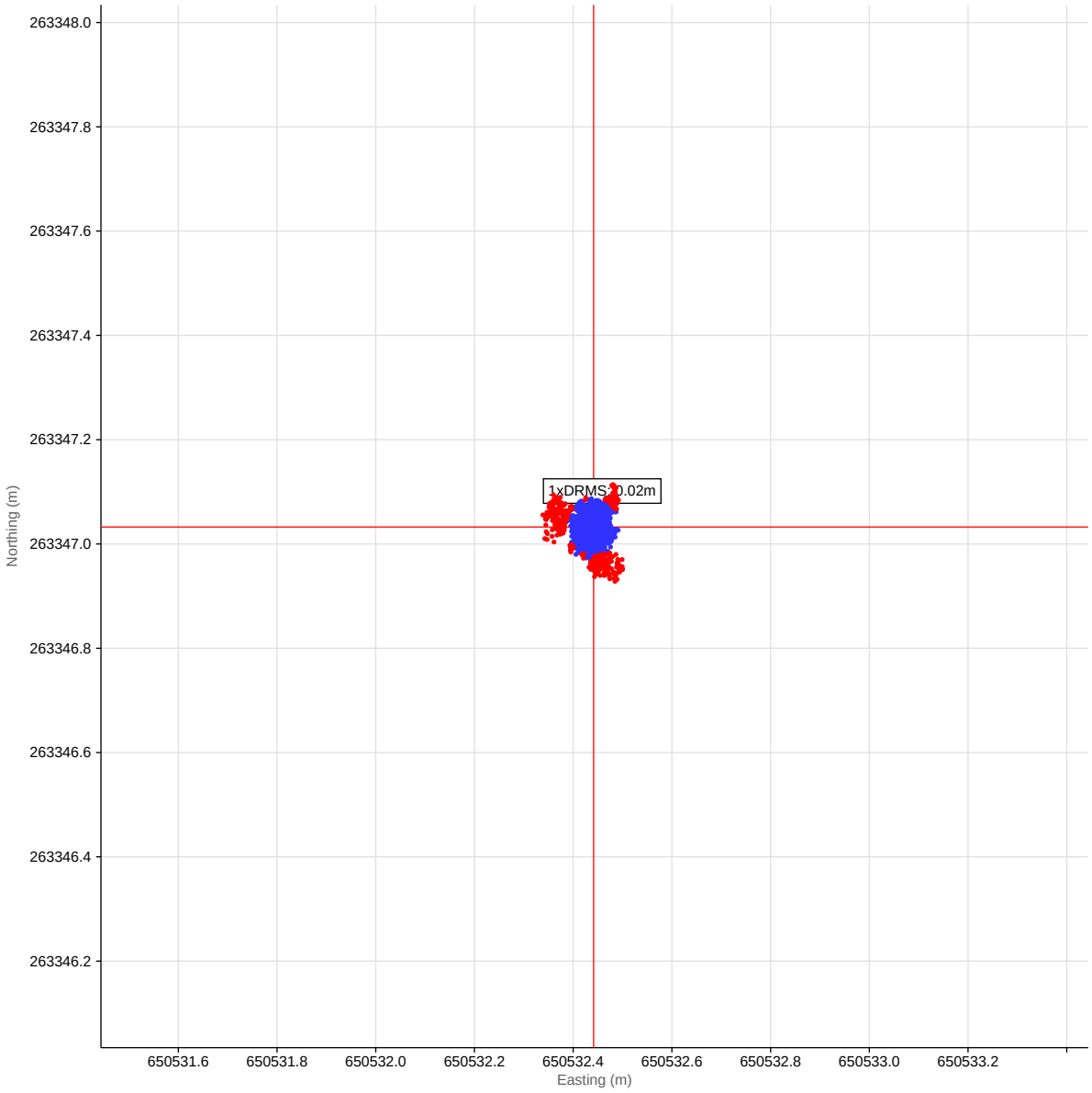
Julian North
Party Chief
FGSL (Fugro GeoServices Ltd UK)

NNB EDF
Client Representative
Fugro Geoservices Inc

Geodetic Parameters

Name : OSGB 1936 / British National Grid [OSGB-UK Gbr15]		
EPSG Code	EPSG::27700	
Local Geodetic Datum Parameters		
Datum	OSGB 1936	EPSG::6277
Ellipsoid	Airy 1830	
Semi major axis	a = 6,377,563.396 m	
Inverse flattening	1/f = 299.3249646	
Datum Transformation Parameters from ETRS89 to OSGB 1936 / British National Grid		
OSGB 1936 / British National Grid to ETRS89 (3)	Ordnance Survey National Transformation	EPSG::7708
Easting and northing difference file	OSTN15_OSGM15_GB.txt	
Local Projection Parameters		
Map Projection	Transverse Mercator	
Grid System	British National Grid	EPSG::19916
Latitude Origin	49°00’00.000”N	
Central Meridian	002°00’00.000”W	
Scale Factor on Central Meridian	0.999601272	
False Easting	400,000 m	
False Northing	-100,000 m	

Scatter Plot



Mean Position

	Easting	Northing
Excalibur Sizewell	650,532.441m E	263,347.033m N

SIZEWELL C GROUND INVESTIGATION 2019
MEAN POSITION REPORT

Project ID	C1984		
Location	Sizewell C power station		
Client	Fugro Geoservices Inc	**Vessel**	Excalibur Sizewell
Comment	DTM: 25.2m / Deck Above OD 11.149m / Seabed Mudline = -14.051m OD		

Session Name: 20190605-035823 Records Used: 564 of 599

Start Time: 05 Jun 2019, 05:00:37+01:00 End Time: 05 Jun 2019, 05:10:36+01:00 Session Length: 00:09:59

Mean Position for Excalibur Sizewell CommonReferencePoint		
	OSGB 1936 / British National Grid [OSGB-UK Gbr15]	**ETRS89(2D)**
Latitude	52°12’38.32908”N	52°12’40.05970”N
Longitude	001°40’08.40538”E	001°40’01.88713”E
Height	11.049m Ell.	55.542m Ell.
Easting	650,628.276m E (SD: ±0.03m)	
Northing	263,326.300m N (SD: ±0.04m)	
Height	10.529m Ort. (SD: ±0.04m Ort.)	

Sensors	Sensor Averages	SD
Heading	280.80°T 277.90°G	±0.2°
Pitch		
Roll		
Depth (Sounder)	0.0m	±0.00m
Depth (Manual)	0.0m	N/A

Mean Position to Waypoint	
Waypoint	IT1_SPT_06
Easting	650,629.203m E
Northing	263,326.419m N
Range	0.93m Geodetic
Bearing TO	85.56°True
Bearing FROM	265.56°True

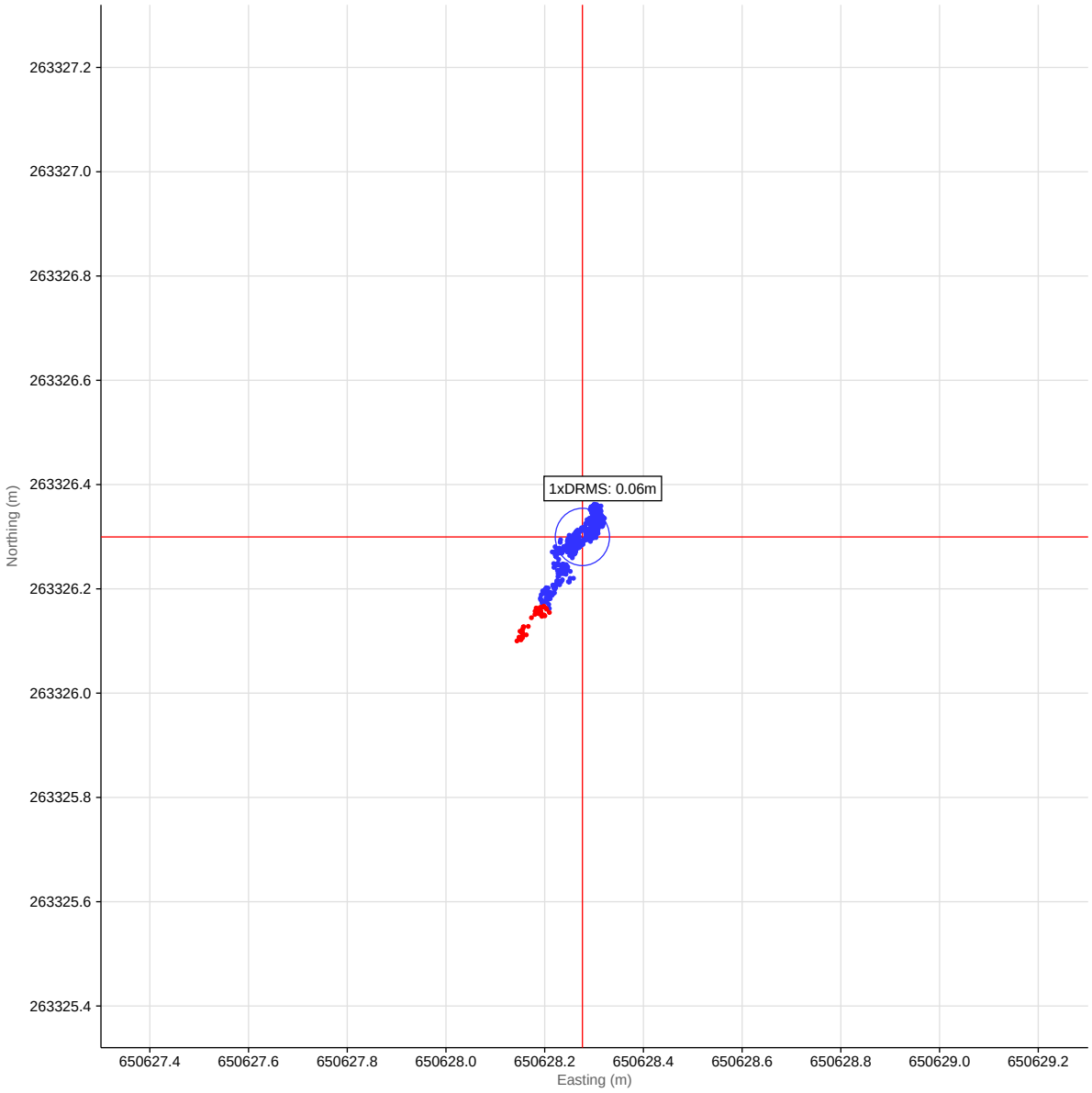
Julian North
Party Chief
FGBNM (Fugro Great Britain North Marine)

NNB EDF
Client Representative
Fugro Geoservices Inc

Geodetic Parameters

Name : OSGB 1936 / British National Grid [OSGB-UK Gbr15]		
EPSG Code	EPSG::27700	
Local Geodetic Datum Parameters		
Datum	OSGB 1936	EPSG::6277
Ellipsoid	Airy 1830	
Semi major axis	a = 6,377,563.396 m	
Inverse flattening	1/f = 299.3249646	
Datum Transformation Parameters from ETRS89 to OSGB 1936 / British National Grid		
OSGB 1936 / British National Grid to ETRS89 (3)	Ordnance Survey National Transformation	EPSG::7708
Easting and northing difference file	OSTN15_OSGM15_GB.txt	
Local Projection Parameters		
Map Projection	Transverse Mercator	
Grid System	British National Grid	EPSG::19916
Latitude Origin	49°00’00.000”N	
Central Meridian	002°00’00.000”W	
Scale Factor on Central Meridian	0.999601272	
False Easting	400,000 m	
False Northing	-100,000 m	

Scatter Plot



Mean Position

	Easting	Northing
Excalibur Sizewell	650,628.276m E	263,326.300m N

SIZEWELL C GROUND INVESTIGATION 2019
MEAN POSITION REPORT

Project ID	C1984		
Location	Sizewell C power station		
Client	Fugro Geoservices Inc	**Vessel**	Excalibur Sizewell
Comment	DTM: 23.70m / Deck Above OD 9.740m / Seabed Mudline = -13.760mOD		

Session Name: 20190602-201457 Records Used: 592 of 600

Start Time: 02 Jun 2019, 21:15:49+01:00 End Time: 02 Jun 2019, 21:25:48+01:00 Session Length: 00:09:59

Mean Position for Excalibur Sizewell CommonReferencePoint		
	OSGB 1936 / British National Grid [OSGB-UK Gbr15]	**ETRS89(2D)**
Latitude	52°12'37.52853"N	52°12'39.25931"N
Longitude	001°40'13.40762"E	001°40'06.88890"E
Height	9.656m Ell.	54.148m Ell.
Easting	650,724.414m E (SD: ±0.02m)	
Northing	263,306.390m N (SD: ±0.01m)	
Height	9.136m Ort. (SD: ±0.04m Ort.)	

Sensors	**Sensor Averages**	**SD**
Heading	282.94°T 280.04°G	±0.0°
Pitch		
Roll		
Depth (Sounder)	0.0m	±0.00m
Depth (Manual)	0.0m	N/A

Mean Position to Waypoint	
Waypoint	IT1_SPT_07
Easting	650,725.216m E
Northing	263,306.952m N
Range	0.98m Geodetic
Bearing TO	57.85°True
Bearing FROM	237.85°True

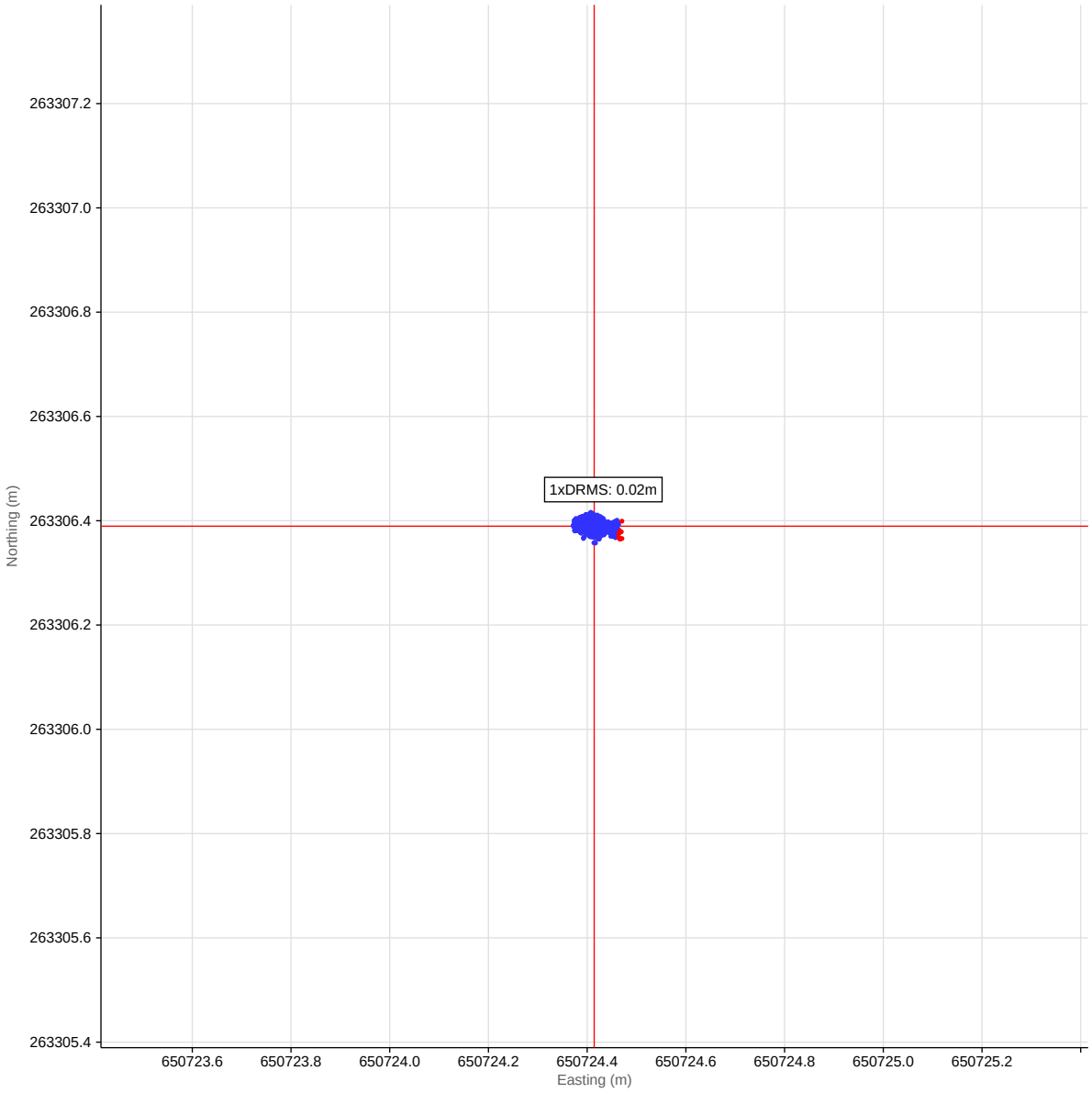
Julian North
Party Chief
FGBNM (Fugro Great Britain North Marine)

NNB EDF
Client Representative
Fugro Geoservices Inc

Geodetic Parameters

Name : OSGB 1936 / British National Grid [OSGB-UK Gbr15]		
EPSG Code	EPSG::27700	
Local Geodetic Datum Parameters		
Datum	OSGB 1936	EPSG::6277
Ellipsoid	Airy 1830	
Semi major axis	a = 6,377,563.396 m	
Inverse flattening	1/f = 299.3249646	
Datum Transformation Parameters from ETRS89 to OSGB 1936 / British National Grid		
OSGB 1936 / British National Grid to ETRS89 (3)	Ordnance Survey National Transformation	EPSG::7708
Easting and northing difference file	OSTN15_OSGM15_GB.txt	
Local Projection Parameters		
Map Projection	Transverse Mercator	
Grid System	British National Grid	EPSG::19916
Latitude Origin	49°00’00.000”N	
Central Meridian	002°00’00.000”W	
Scale Factor on Central Meridian	0.999601272	
False Easting	400,000 m	
False Northing	-100,000 m	

Scatter Plot



Mean Position

	Easting	Northing
Excalibur Sizewell	650,724.414m E	263,306.390m N

SIZEWELL C GROUND INVESTIGATION 2019
MEAN POSITION REPORT

Project ID	C1984		
Location	Sizewell C power station		
Client	Fugro Geoservices Inc	**Vessel**	Excalibur Sizewell
Comment	DTM: 16.70m / Deck Above OD 10.097m / Seabed Mudline = -6.603m OD		

Session Name: 20190609-181525 Records Used: 6553 of 6816

Start Time: 09 Jun 2019, 19:18:29+01:00 End Time: 09 Jun 2019, 21:23:28+01:00 Session Length: 02:04:59

Mean Position for Excalibur Sizewell CommonReferencePoint		
	OSGB 1936 / British National Grid [OSGB-UK Gbr15]	**ETRS89(2D)**
Latitude	52°13’10.64335”N	52°13’12.36885”N
Longitude	001°37’59.10907”E	001°37’52.60214”E
Height	9.409m Ell.	53.934m Ell.
Easting	648,125.644m E (SD: ±0.37m)	
Northing	264,200.432m N (SD: ±0.28m)	
Height	8.892m Ort. (SD: ±1.22m Ort.)	

Sensors	**Sensor Averages**	**SD**
Heading	278.11°T 275.23°G	±0.0°
Pitch		
Roll		
Depth (Sounder)	0.0m	±0.00m
Depth (Manual)	0.0m	N/A

Mean Position to Waypoint	
Waypoint	IT2_SB_01
Easting	648,125.000m E
Northing	264,201.128m N
Range	0.95m Geodetic
Bearing TO	320.09°True
Bearing FROM	140.09°True

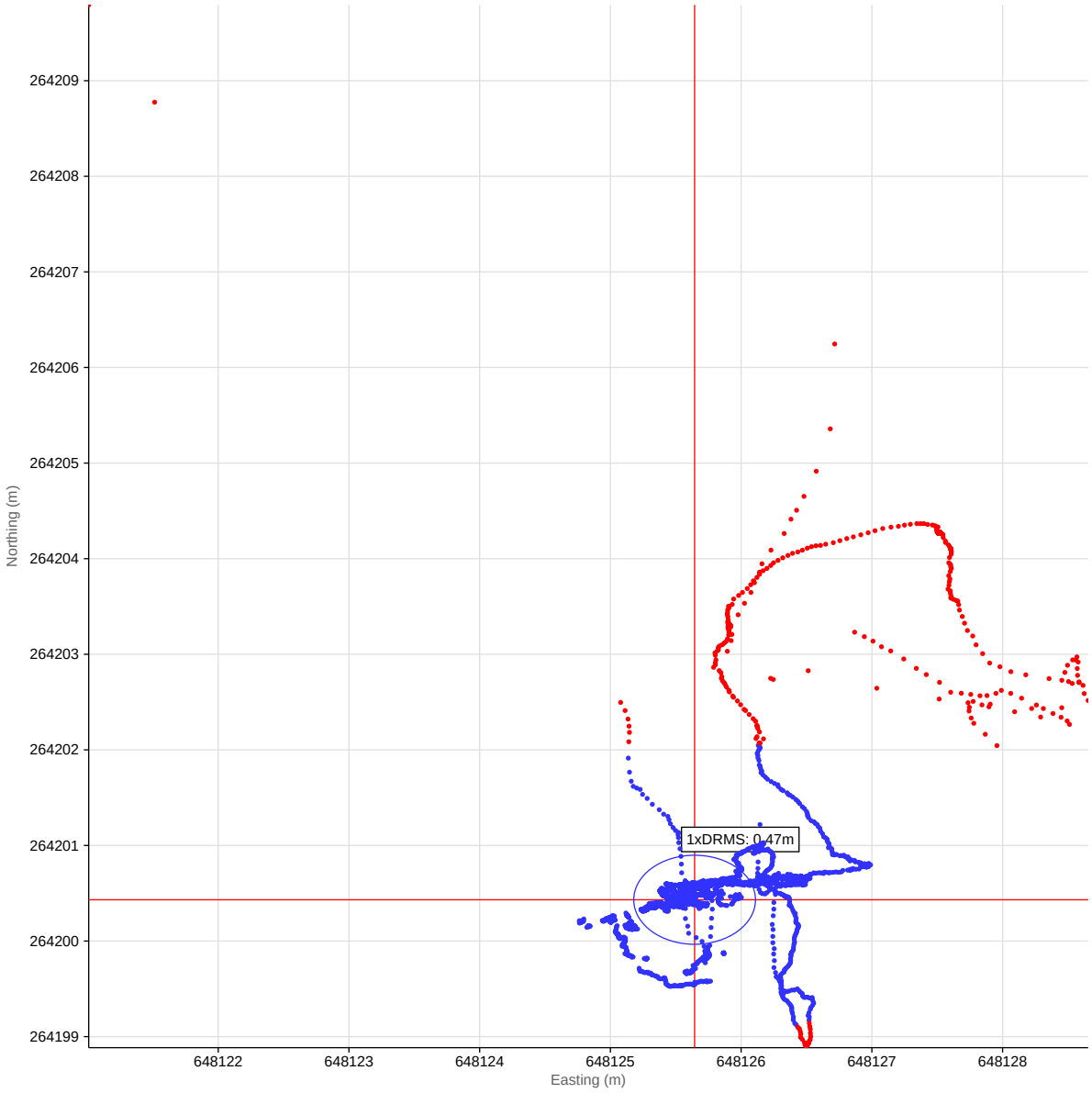
Julian North
Party Chief
FGBNM (Fugro Great Britain North Marine)

NNB EDF
Client Representative
Fugro Geoservices Inc

Geodetic Parameters

Name : OSGB 1936 / British National Grid [OSGB-UK Gbr15]		
EPSG Code	EPSG::27700	
Local Geodetic Datum Parameters		
Datum	OSGB 1936	EPSG::6277
Ellipsoid	Airy 1830	
Semi major axis	a = 6,377,563.396 m	
Inverse flattening	1/f = 299.3249646	
Datum Transformation Parameters from ETRS89 to OSGB 1936 / British National Grid		
OSGB 1936 / British National Grid to ETRS89 (3)	Ordnance Survey National Transformation	EPSG::7708
Easting and northing difference file	OSTN15_OSGM15_GB.txt	
Local Projection Parameters		
Map Projection	Transverse Mercator	
Grid System	British National Grid	EPSG::19916
Latitude Origin	49°00’00.000”N	
Central Meridian	002°00’00.000”W	
Scale Factor on Central Meridian	0.999601272	
False Easting	400,000 m	
False Northing	-100,000 m	

Scatter Plot



Mean Position

	Easting	Northing
Excalibur Sizewell	648,125.644m E	264,200.432m N

SIZEWELL C GROUND INVESTIGATION 2019
MEAN POSITION REPORT

Project ID	C1984		
Location	Sizewell C power station		
Client	Fugro Geoservices Inc	**Vessel**	Excalibur Sizewell
Comment	DTM: 17.50m / Deck Above OD 10.024m / Seabed Mudline = -7.476m OD		

Session Name: 20190713-061041 Records Used: 7305 of 7487

Start Time: 13 Jul 2019, 07:14:47+01:00 End Time: 13 Jul 2019, 09:19:46+01:00 Session Length: 02:04:59

Mean Position for Excalibur Sizewell CommonReferencePoint		
	OSGB 1936 / British National Grid [OSGB-UK Gbr15]	**ETRS89(2D)**
Latitude	52°13’09.05611”N	52°13’10.78343”N
Longitude	001°39’24.70201”E	001°39’18.18623”E
Height	10.040m Ell.	54.545m Ell.
Easting	649,751.367m E (SD: ±0.03m)	
Northing	264,233.149m N (SD: ±0.04m)	
Height	9.521m Ort. (SD: ±0.05m Ort.)	

Sensors	Sensor Averages	SD
Heading	256.01°T 253.12°G	±0.0°
Pitch		
Roll		
Depth (Sounder)	0.0m	±0.00m
Depth (Manual)	0.0m	N/A

Mean Position to Waypoint	
Waypoint	IT2_SB_02
Easting	649,751.000m E
Northing	264,232.992m N
Range	0.40m Geodetic
Bearing TO	249.73°True
Bearing FROM	69.73°True

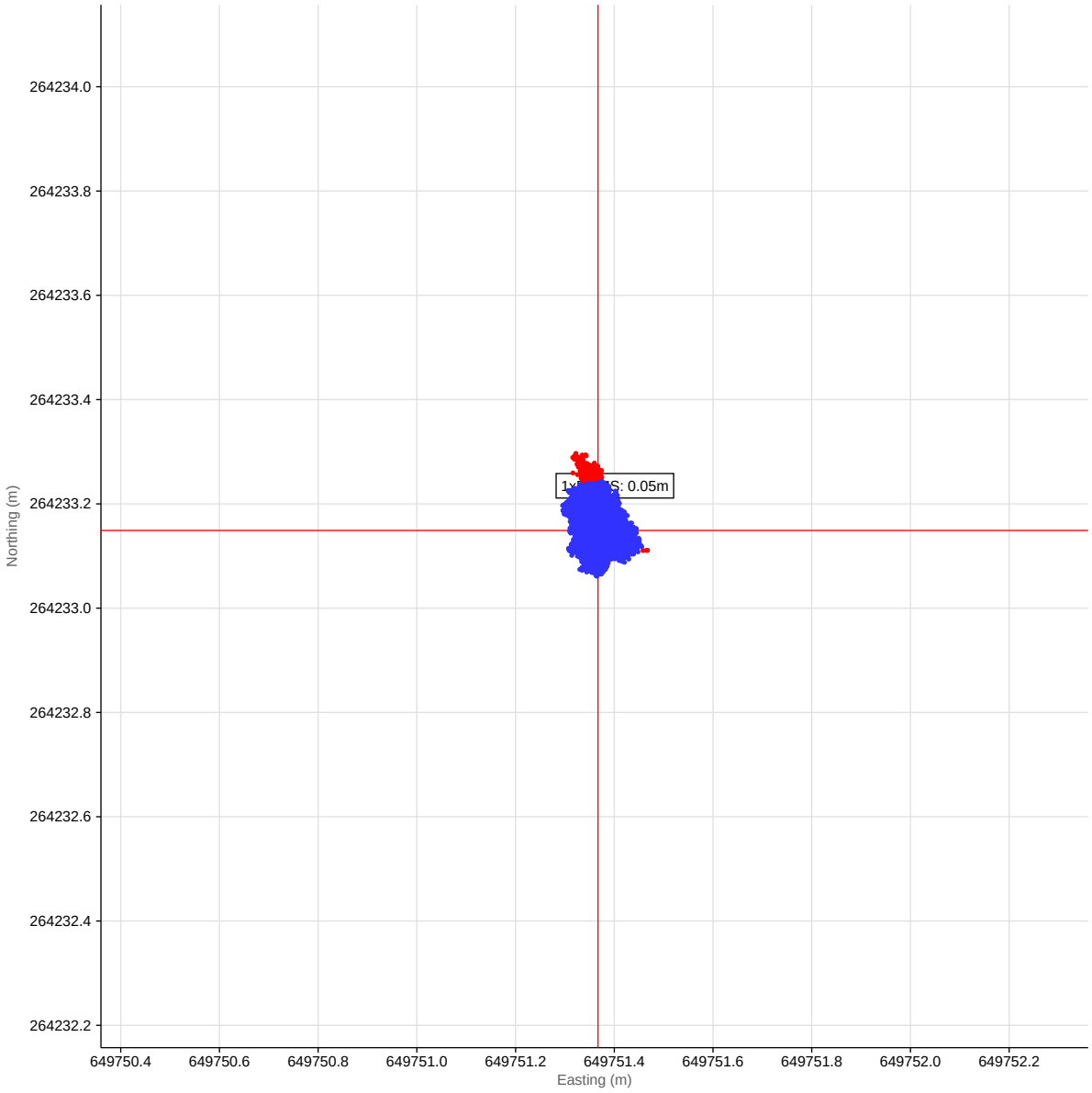
Julian North
Party Chief
FGSL (Fugro GeoServices Ltd UK)

NNB EDF
Client Representative
Fugro Geoservices Inc

Geodetic Parameters

Name : OSGB 1936 / British National Grid [OSGB-UK Gbr15]		
EPSG Code	EPSG::27700	
Local Geodetic Datum Parameters		
Datum	OSGB 1936	EPSG::6277
Ellipsoid	Airy 1830	
Semi major axis	a = 6,377,563.396 m	
Inverse flattening	1/f = 299.3249646	
Datum Transformation Parameters from ETRS89 to OSGB 1936 / British National Grid		
OSGB 1936 / British National Grid to ETRS89 (3)	Ordnance Survey National Transformation	EPSG::7708
Easting and northing difference file	OSTN15_OSGM15_GB.txt	
Local Projection Parameters		
Map Projection	Transverse Mercator	
Grid System	British National Grid	EPSG::19916
Latitude Origin	49°00’00.000”N	
Central Meridian	002°00’00.000”W	
Scale Factor on Central Meridian	0.999601272	
False Easting	400,000 m	
False Northing	-100,000 m	

Scatter Plot



Mean Position

	Easting	Northing
Excalibur Sizewell	649,751.367m E	264,233.149m N

SIZEWELL C GROUND INVESTIGATION 2019
MEAN POSITION REPORT

Project ID	C1984		
Location	Sizewell C power station		
Client	Fugro Geoservices Inc	**Vessel**	Excalibur Sizewell
Comment	DTM: 24.50m / Deck Above OD 10.020m / Seabed Mudline = -14.480m OD		

Session Name: 20190707-191900 Records Used: 7484 of 7484

Start Time: 07 Jul 2019, 20:21:18+01:00 End Time: 07 Jul 2019, 22:26:17+01:00 Session Length: 02:04:59

Mean Position for Excalibur Sizewell CommonReferencePoint		
	OSGB 1936 / British National Grid [OSGB-UK Gbr15]	**ETRS89(2D)**
Latitude	52°13’07.98025”N	52°13’09.70879”N
Longitude	001°40’21.29396”E	001°40’14.77233”E
Height	10.093m Ell.	54.584m Ell.
Easting	650,826.308m E (SD: ±0.02m)	
Northing	264,254.259m N (SD: ±0.02m)	
Height	9.571m Ort. (SD: ±0.04m Ort.)	

Sensors	**Sensor Averages**	**SD**
Heading	272.74°T 269.83°G	±0.0°
Pitch		
Roll		
Depth (Sounder)	0.0m	±0.00m
Depth (Manual)	0.0m	N/A

Mean Position to Waypoint	
Waypoint	IT2_SB_03
Easting	650,826.000m E
Northing	264,254.060m N
Range	0.37m Geodetic
Bearing TO	240.04°True
Bearing FROM	60.04°True

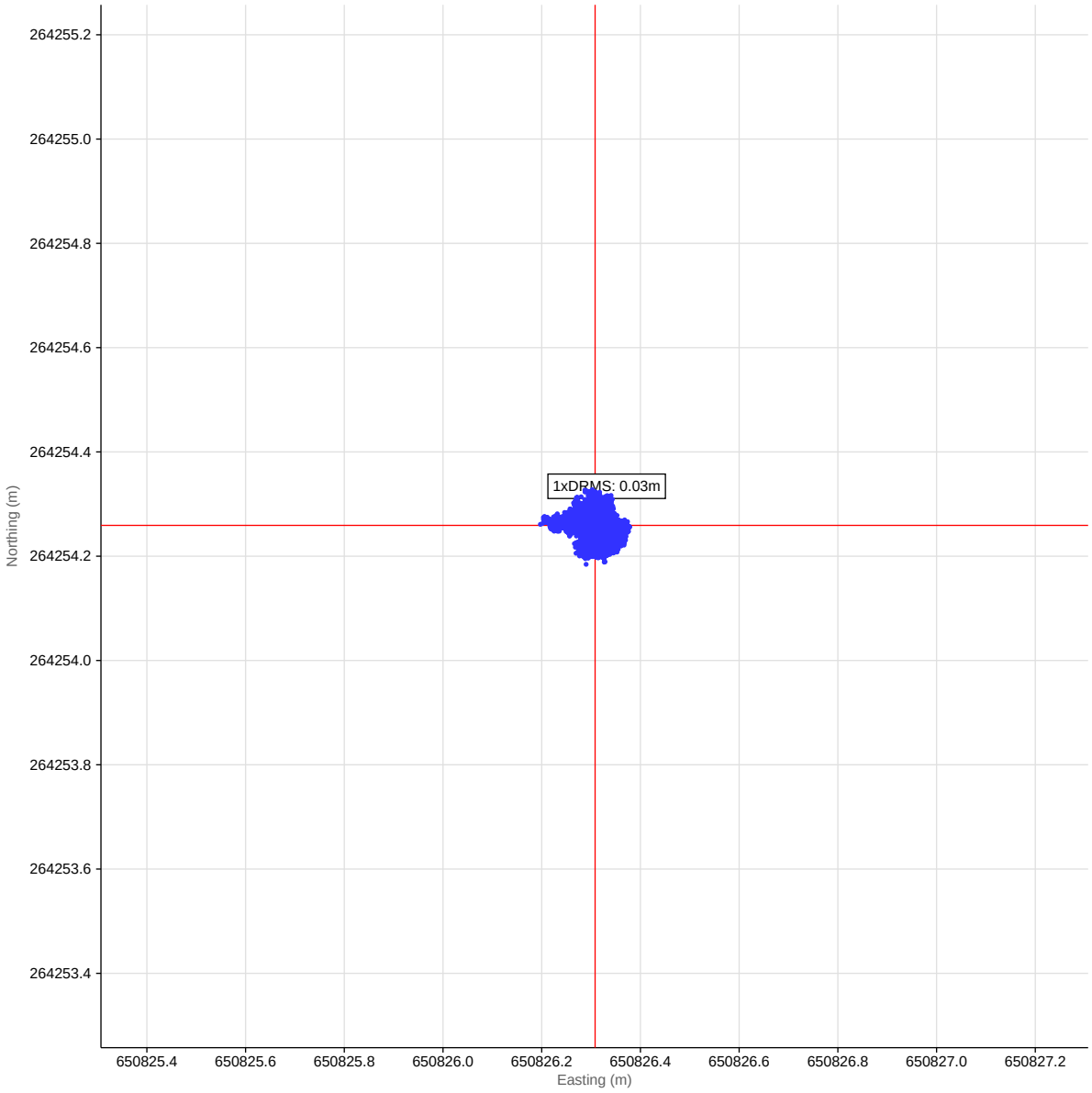
Callum Murphy
Site Manager/Supervisor
FGBNM (Fugro Great Britain North Marine)

NNB EDF
Client Representative
Fugro Geoservices Inc

Geodetic Parameters

Name : OSGB 1936 / British National Grid [OSGB-UK Gbr15]		
EPSG Code	EPSG::27700	
Local Geodetic Datum Parameters		
Datum	OSGB 1936	EPSG::6277
Ellipsoid	Airy 1830	
Semi major axis	a = 6,377,563.396 m	
Inverse flattening	1/f = 299.3249646	
Datum Transformation Parameters from ETRS89 to OSGB 1936 / British National Grid		
OSGB 1936 / British National Grid to ETRS89 (3)	Ordnance Survey National Transformation	EPSG::7708
Easting and northing difference file	OSTN15_OSGM15_GB.txt	
Local Projection Parameters		
Map Projection	Transverse Mercator	
Grid System	British National Grid	EPSG::19916
Latitude Origin	49°00’00.000”N	
Central Meridian	002°00’00.000”W	
Scale Factor on Central Meridian	0.999601272	
False Easting	400,000 m	
False Northing	-100,000 m	

Scatter Plot



Mean Position

	Easting	Northing
Excalibur Sizewell	650,826.308m E	264,254.259m N

SIZEWELL C GROUND INVESTIGATION 2019
MEAN POSITION REPORT

Project ID	C1984		
Location	Sizewell C power station		
Client	Fugro Geoservices Inc	**Vessel**	Excalibur Sizewell
Comment	DTM: 24.5m / Deck Above OD 9.987m / Seabed Mudline = -14.513m OD		

Session Name: 20190622-234335 Records Used: 7435 of 7480

Start Time: 23 Jun 2019, 00:44:17+01:00 End Time: 23 Jun 2019, 02:49:16+01:00 Session Length: 02:04:59

Mean Position for Excalibur Sizewell Moonpool 1		
	OSGB 1936 / British National Grid [OSGB-UK Gbr15]	**ETRS89(2D)**
Latitude	52°13'07.84385"N	52°13'09.57250"N
Longitude	001°40'26.42359"E	001°40'19.90143"E
Height	9.890m Ell.	54.380m Ell.
Easting	650,923.805m E (SD: ±0.03m)	
Northing	264,254.984m N (SD: ±0.03m)	
Height	9.369m Ort. (SD: ±0.06m Ort.)	

Sensors	**Sensor Averages**	**SD**
Heading	298.62°T 295.72°G	±0.1°
Pitch		
Roll		
Depth (Sounder)	0.0m	±0.00m
Depth (Manual)	0.0m	N/A

Mean Position to Waypoint	
Waypoint	IT2_SB_04
Easting	650,925.197m E
Northing	264,256.002m N
Range	1.72m Geodetic
Bearing TO	56.72°True
Bearing FROM	236.72°True

Callum Murphy
Site Manager/Supervisor
FGBNM (Fugro Great Britain North Marine)

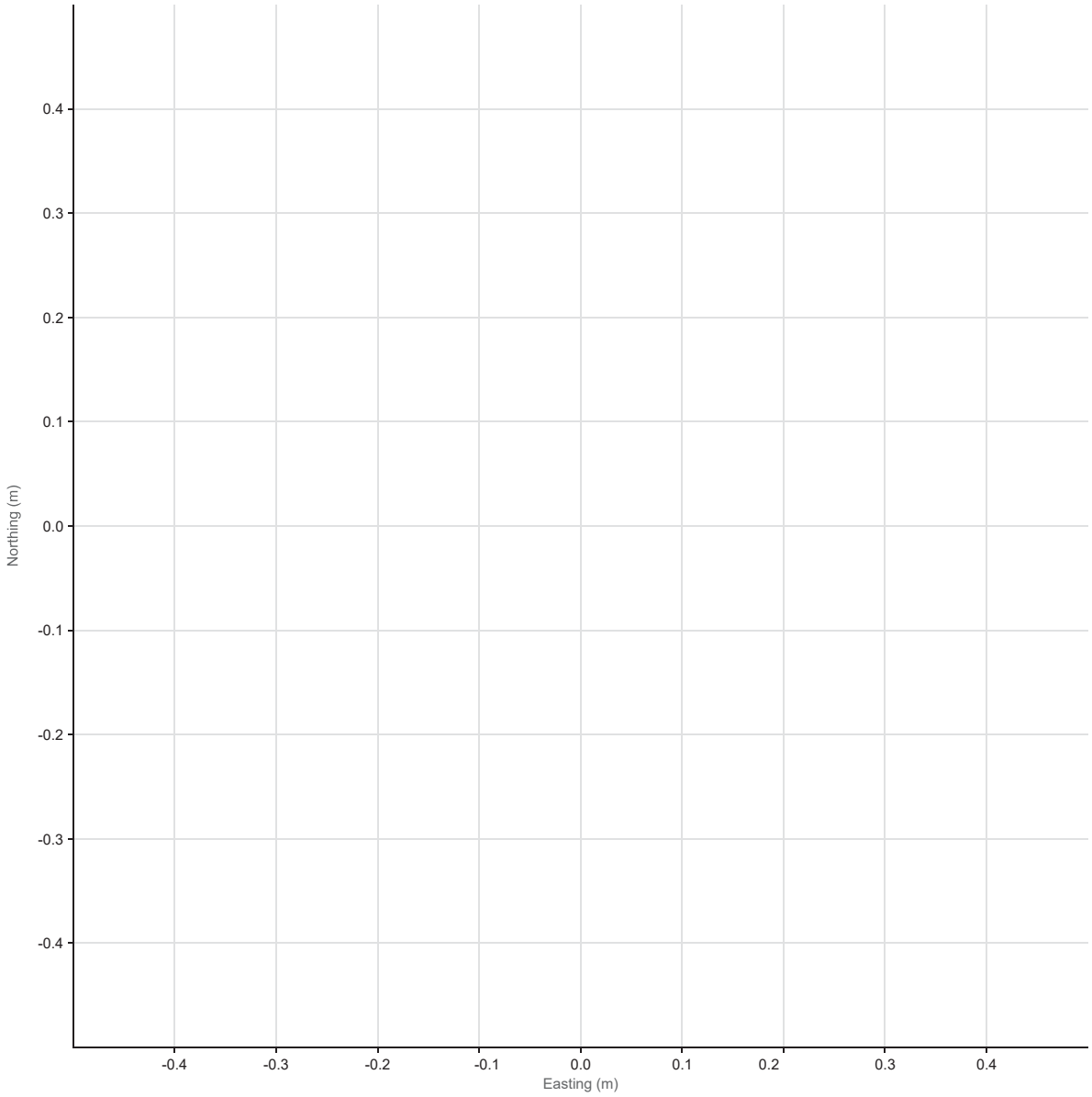
NNB EDF
Client Representative
Fugro Geoservices Inc

Geodetic Parameters

Name : OSGB 1936 / British National Grid [OSGB-UK Gbr15]	
EPSG Code	EPSG::27700

Local Geodetic Datum Parameters		
Datum	OSGB 1936	EPSG::6277
Ellipsoid	Airy 1830	
Semi major axis	a = 6,377,563.396 m	
Inverse flattening	1/f = 299.3249646	
Datum Transformation Parameters from ETRS89 to OSGB 1936 / British National Grid		
OSGB 1936 / British National Grid to ETRS89 (3)	Ordnance Survey National Transformation	EPSG::7708
Easting and northing difference file	OSTN15_OSGM15_GB.txt	
Local Projection Parameters		
Map Projection	Transverse Mercator	
Grid System	British National Grid	EPSG::19916
Latitude Origin	49°00’00.000”N	
Central Meridian	002°00’00.000”W	
Scale Factor on Central Meridian	0.999601272	
False Easting	400,000 m	
False Northing	-100,000 m	

Scatter Plot



Mean Position

	Easting	Northing
Excalibur Sizewell	650,923.805m E	264,254.984m N

SIZEWELL C GROUND INVESTIGATION 2019
MEAN POSITION REPORT

Project ID	C1984		
Location	Sizewell C power station		
Client	Fugro Geoservices Inc	**Vessel**	Excalibur Sizewell
Comment	DTM: 16.70m / Deck Above OD 9.416m / Seabed Mudline = -7.284m OD		

Session Name: 20190609-210342 Records Used: 6843 of 7299

Start Time: 09 Jun 2019, 22:05:32+01:00 End Time: 10 Jun 2019, 00:10:31+01:00 Session Length: 02:04:59

Mean Position for Excalibur Sizewell CommonReferencePoint		
	OSGB 1936 / British National Grid [OSGB-UK Gbr15]	**ETRS89(2D)**
Latitude	52°13’10.54137”N	52°13’12.26688”N
Longitude	001°37’59.39401”E	001°37’52.88705”E
Height	9.658m Ell.	54.184m Ell.
Easting	648,131.206m E (SD: ±0.34m)	
Northing	264,197.554m N (SD: ±0.46m)	
Height	9.141m Ort. (SD: ±1.53m Ort.)	

Sensors	**Sensor Averages**	**SD**
Heading	278.23°T 275.36°G	±0.8°
Pitch		
Roll		
Depth (Sounder)	0.0m	±0.00m
Depth (Manual)	0.0m	N/A

Mean Position to Waypoint	
Waypoint	IT2_SPT_01
Easting	648,130.786m E
Northing	264,199.093m N
Range	1.59m Geodetic
Bearing TO	347.61°True
Bearing FROM	167.61°True

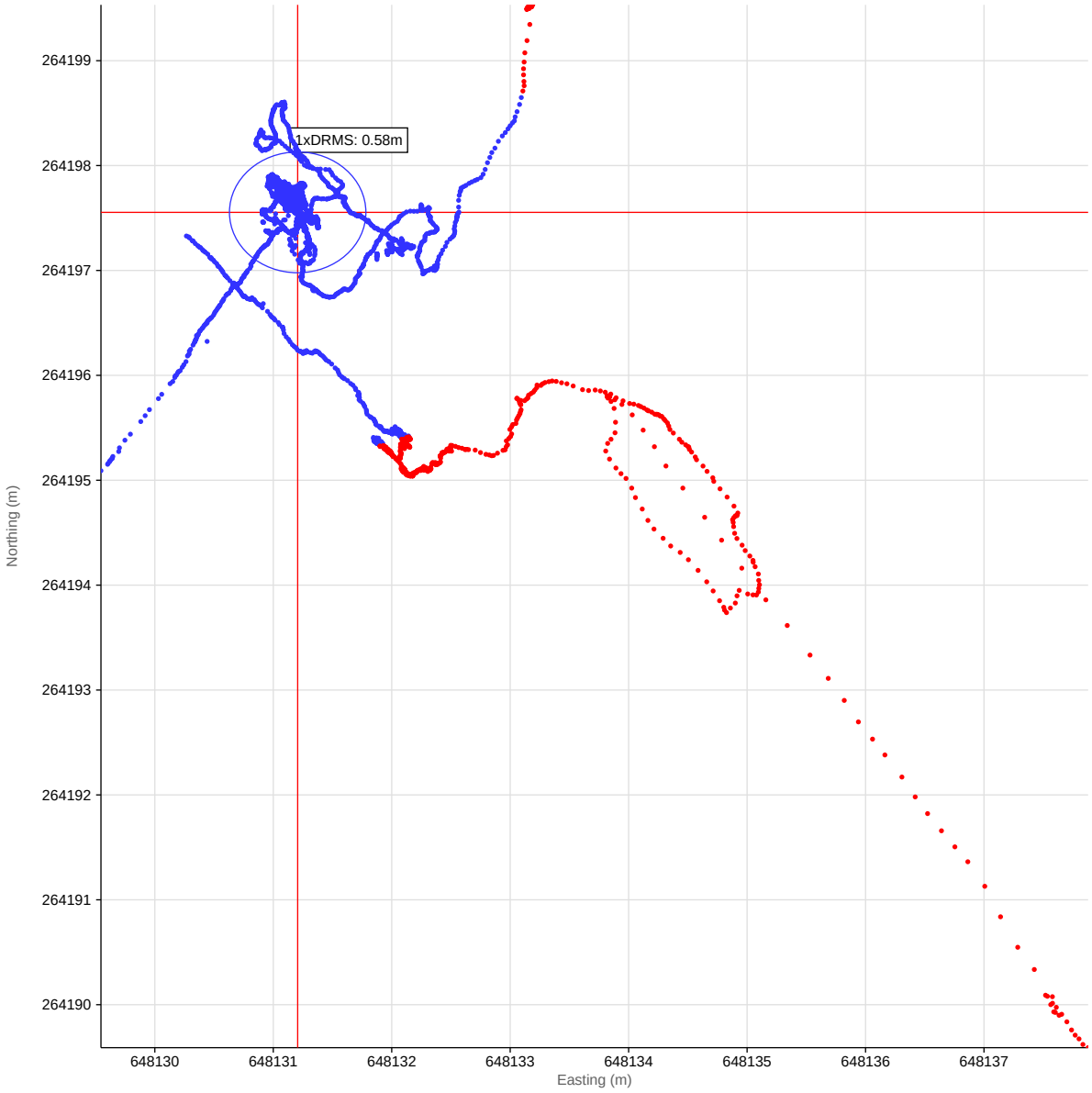
Julian North
Party Chief
FGBNM (Fugro Great Britain North Marine)

NNB EDF
Client Representative
Fugro Geoservices Inc

Geodetic Parameters

Name : OSGB 1936 / British National Grid [OSGB-UK Gbr15]		
EPSG Code	EPSG::27700	
Local Geodetic Datum Parameters		
Datum	OSGB 1936	EPSG::6277
Ellipsoid	Airy 1830	
Semi major axis	a = 6,377,563.396 m	
Inverse flattening	1/f = 299.3249646	
Datum Transformation Parameters from ETRS89 to OSGB 1936 / British National Grid		
OSGB 1936 / British National Grid to ETRS89 (3)	Ordnance Survey National Transformation	EPSG::7708
Easting and northing difference file	OSTN15_OSGM15_GB.txt	
Local Projection Parameters		
Map Projection	Transverse Mercator	
Grid System	British National Grid	EPSG::19916
Latitude Origin	49°00’00.000”N	
Central Meridian	002°00’00.000”W	
Scale Factor on Central Meridian	0.999601272	
False Easting	400,000 m	
False Northing	-100,000 m	

Scatter Plot



Mean Position

	Easting	Northing
Excalibur Sizewell	648,131.206m E	264,197.554m N

SIZEWELL C GROUND INVESTIGATION 2019
MEAN POSITION REPORT

Project ID	C1984		
Location	Sizewell C power station		
Client	Fugro Geoservices Inc	**Vessel**	Excalibur Sizewell
Comment	DTM: 17.50m / Deck Above OD 10.079m / Seabed Mudline = -7.421m OD		

Session Name: 20190713-094050 Records Used: 7118 of 7492

Start Time: 13 Jul 2019, 10:42:37+01:00 End Time: 13 Jul 2019, 12:47:36+01:00 Session Length: 02:04:59

Mean Position for Excalibur Sizewell CommonReferencePoint		
	OSGB 1936 / British National Grid [OSGB-UK Gbr15]	**ETRS89(2D)**
Latitude	52°13'09.03246"N	52°13'10.75979"N
Longitude	001°39'25.02107"E	001°39'18.50525"E
Height	9.960m Ell.	54.464m Ell.
Easting	649,757.455m E (SD: ±0.02m)	
Northing	264,232.724m N (SD: ±0.03m)	
Height	9.440m Ort. (SD: ±0.06m Ort.)	

Sensors	**Sensor Averages**	**SD**
Heading	255.96°T 253.06°G	±0.0°
Pitch		
Roll		
Depth (Sounder)	0.0m	±0.00m
Depth (Manual)	0.0m	N/A

Mean Position to Waypoint	
Waypoint	IT2_SPT_02
Easting	649,756.786m E
Northing	264,230.957m N
Range	1.89m Geodetic
Bearing TO	203.62°True
Bearing FROM	23.62°True

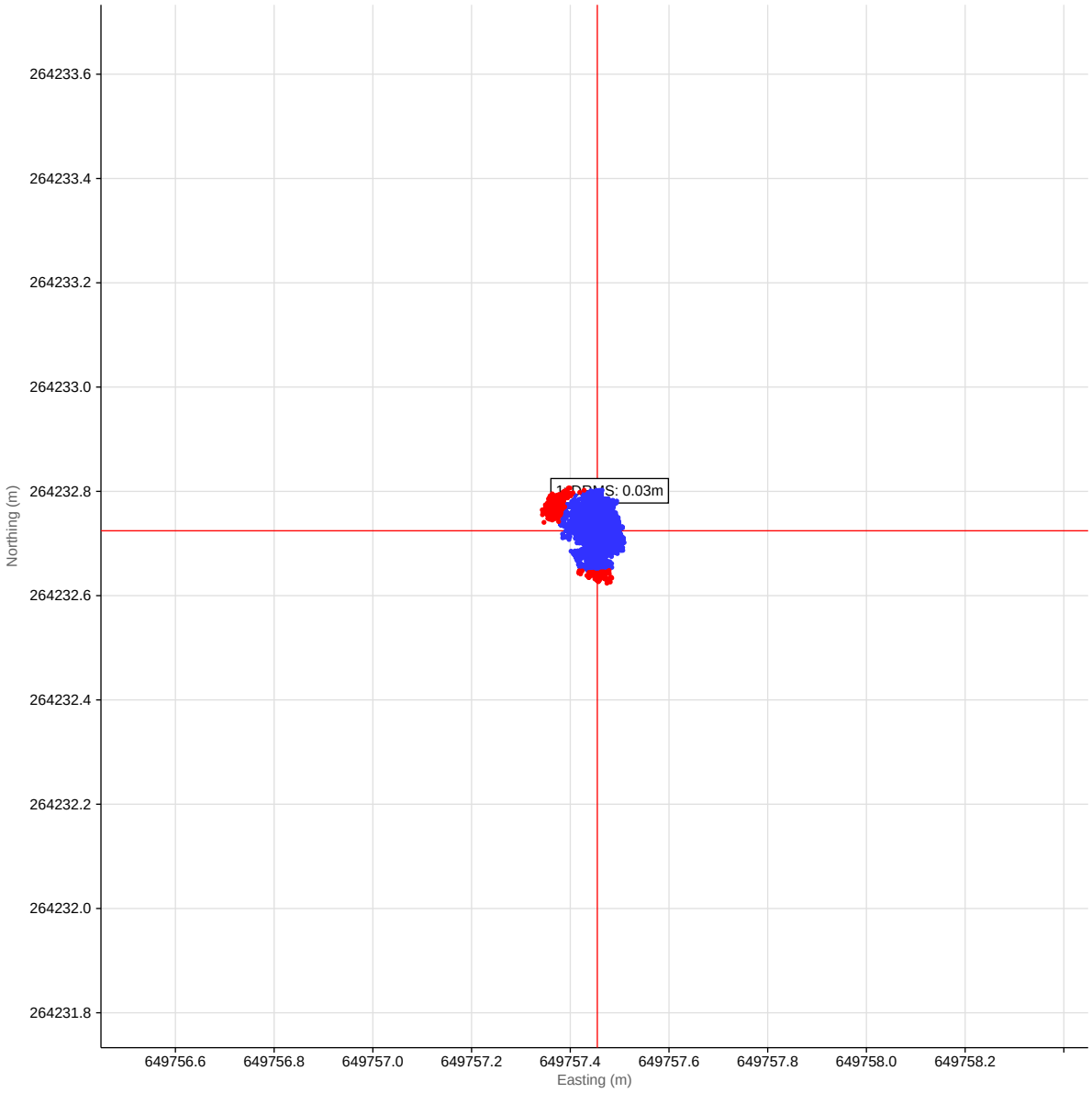
Julian North
Party Chief
FGSL (Fugro GeoServices Ltd UK)

NNB EDF
Client Representative
Fugro Geoservices Inc

Geodetic Parameters

Name : OSGB 1936 / British National Grid [OSGB-UK Gbr15]		
EPSG Code	EPSG::27700	
Local Geodetic Datum Parameters		
Datum	OSGB 1936	EPSG::6277
Ellipsoid	Airy 1830	
Semi major axis	a = 6,377,563.396 m	
Inverse flattening	1/f = 299.3249646	
Datum Transformation Parameters from ETRS89 to OSGB 1936 / British National Grid		
OSGB 1936 / British National Grid to ETRS89 (3)	Ordnance Survey National Transformation	EPSG::7708
Easting and northing difference file	OSTN15_OSGM15_GB.txt	
Local Projection Parameters		
Map Projection	Transverse Mercator	
Grid System	British National Grid	EPSG::19916
Latitude Origin	49°00’00.000”N	
Central Meridian	002°00’00.000”W	
Scale Factor on Central Meridian	0.999601272	
False Easting	400,000 m	
False Northing	-100,000 m	

Scatter Plot



Mean Position

	Easting	Northing
Excalibur Sizewell	649,757.455m E	264,232.724m N

SIZEWELL C GROUND INVESTIGATION 2019
MEAN POSITION REPORT

Project ID	C1984		
Location	Sizewell C power station		
Client	Fugro Geoservices Inc	**Vessel**	Excalibur Sizewell
Comment	DTM: 24.50m / Deck Above OD 10.232m / Seabed Mudline = -14.268m OD		

Session Name: 20190707-220427 Records Used: 7497 of 7497

Start Time: 07 Jul 2019, 23:04:52+01:00 End Time: 08 Jul 2019, 01:09:51+01:00 Session Length: 02:04:59

Mean Position for Excalibur Sizewell CommonReferencePoint		
	OSGB 1936 / British National Grid [OSGB-UK Gbr15]	**ETRS89(2D)**
Latitude	52°13’07.90121”N	52°13’09.62976”N
Longitude	001°40’21.58862”E	001°40’15.06696”E
Height	10.217m Ell.	54.708m Ell.
Easting	650,832.020m E (SD: ±0.06m)	
Northing	264,252.102m N (SD: ±0.06m)	
Height	9.695m Ort. (SD: ±0.14m Ort.)	

Sensors	Sensor Averages	SD
Heading	272.81°T 269.91°G	±0.0°
Pitch		
Roll		
Depth (Sounder)	0.0m	±0.00m
Depth (Manual)	0.0m	N/A

Mean Position to Waypoint	
Waypoint	IT2_SPT_03
Easting	650,831.786m E
Northing	264,252.023m N
Range	0.25m Geodetic
Bearing TO	254.24°True
Bearing FROM	74.24°True

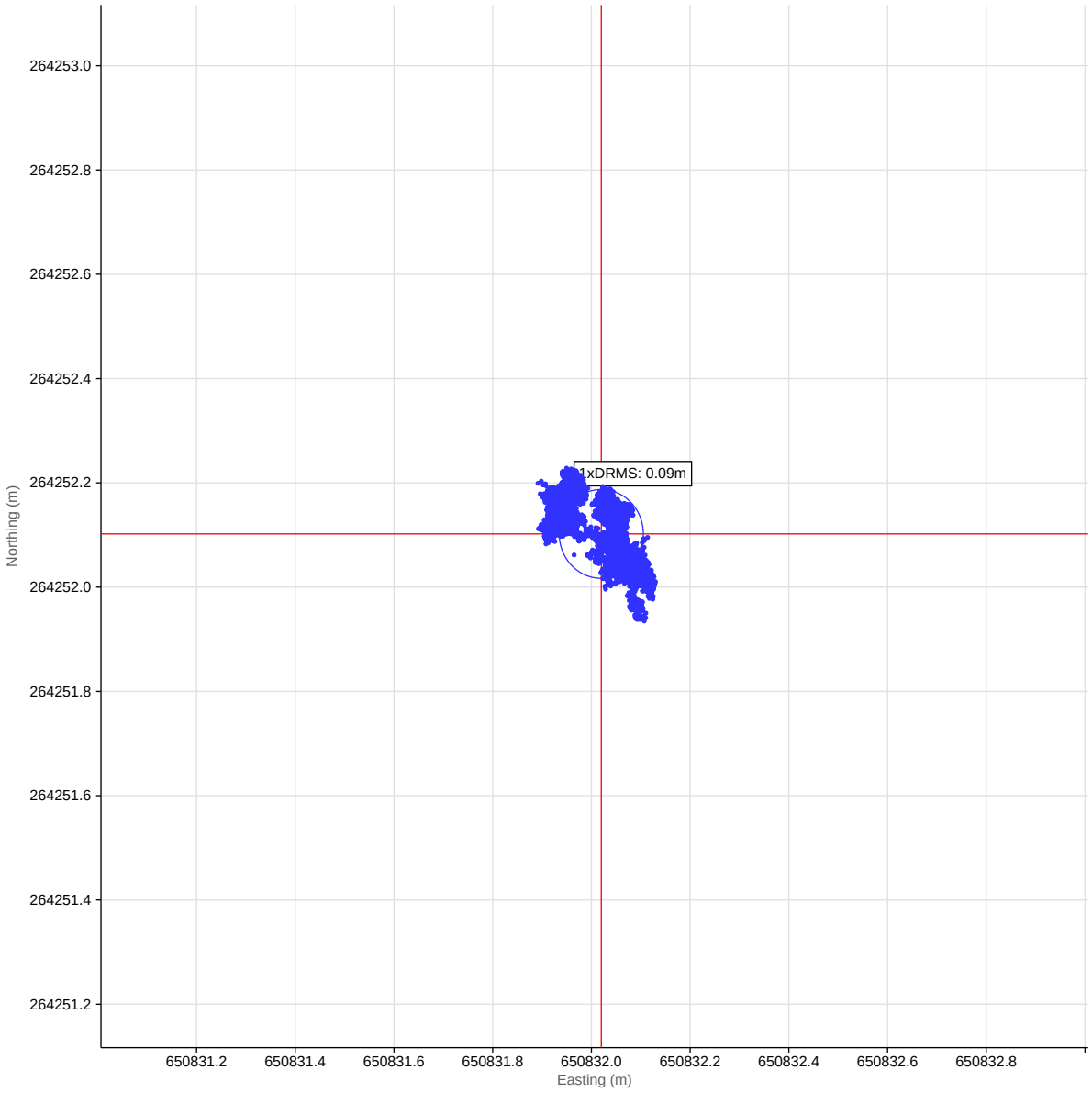
Callum Murphy
Site Manager/Supervisor
FGBNM (Fugro Great Britain North Marine)

NNB EDF
Client Representative
Fugro Geoservices Inc

Geodetic Parameters

Name : OSGB 1936 / British National Grid [OSGB-UK Gbr15]		
EPSG Code	EPSG::27700	
Local Geodetic Datum Parameters		
Datum	OSGB 1936	EPSG::6277
Ellipsoid	Airy 1830	
Semi major axis	a = 6,377,563.396 m	
Inverse flattening	1/f = 299.3249646	
Datum Transformation Parameters from ETRS89 to OSGB 1936 / British National Grid		
OSGB 1936 / British National Grid to ETRS89 (3)	Ordnance Survey National Transformation	EPSG::7708
Easting and northing difference file	OSTN15_OSGM15_GB.txt	
Local Projection Parameters		
Map Projection	Transverse Mercator	
Grid System	British National Grid	EPSG::19916
Latitude Origin	49°00’00.000”N	
Central Meridian	002°00’00.000”W	
Scale Factor on Central Meridian	0.999601272	
False Easting	400,000 m	
False Northing	-100,000 m	

Scatter Plot



Mean Position

	Easting	Northing
Excalibur Sizewell	650,832.020m E	264,252.102m N

SIZEWELL C GROUND INVESTIGATION 2019
MEAN POSITION REPORT

Project ID	C1984		
Location	Sizewell C power station		
Client	Fugro Geoservices Inc	**Vessel**	Excalibur Sizewell
Comment	DTM: 24.5m / Deck Above OD 10.199m / Seabed Mudline = -14.301m OD		

Session Name: 20190619-204229 Records Used: 7263 of 7494

Start Time: 19 Jun 2019, 21:43:41+01:00 End Time: 19 Jun 2019, 23:48:40+01:00 Session Length: 02:04:59

Mean Position for Excalibur Sizewell Moonpool 1		
	OSGB 1936 / British National Grid [OSGB-UK Gbr15]	**ETRS89(2D)**
Latitude	52°13'07.69163"N	52°13'09.42030"N
Longitude	001°40'26.63266"E	001°40'20.11048"E
Height	9.865m Ell.	54.354m Ell.
Easting	650,928.008m E (SD: ±0.02m)	
Northing	264,250.484m N (SD: ±0.02m)	
Height	9.343m Ort. (SD: ±0.06m Ort.)	

Sensors	**Sensor Averages**	**SD**
Heading	298.73°T 295.82°G	±0.1°
Pitch		
Roll		
Depth (Sounder)	0.0m	±0.00m
Depth (Manual)	0.0m	N/A

Mean Position to Waypoint	
Waypoint	IT2_SPT_04
Easting	650,930.982m E
Northing	264,253.967m N
Range	4.58m Geodetic
Bearing TO	43.40°True
Bearing FROM	223.40°True

Callum Murphy
Site Manager/Supervisor
FGBNM (Fugro Great Britain North Marine)

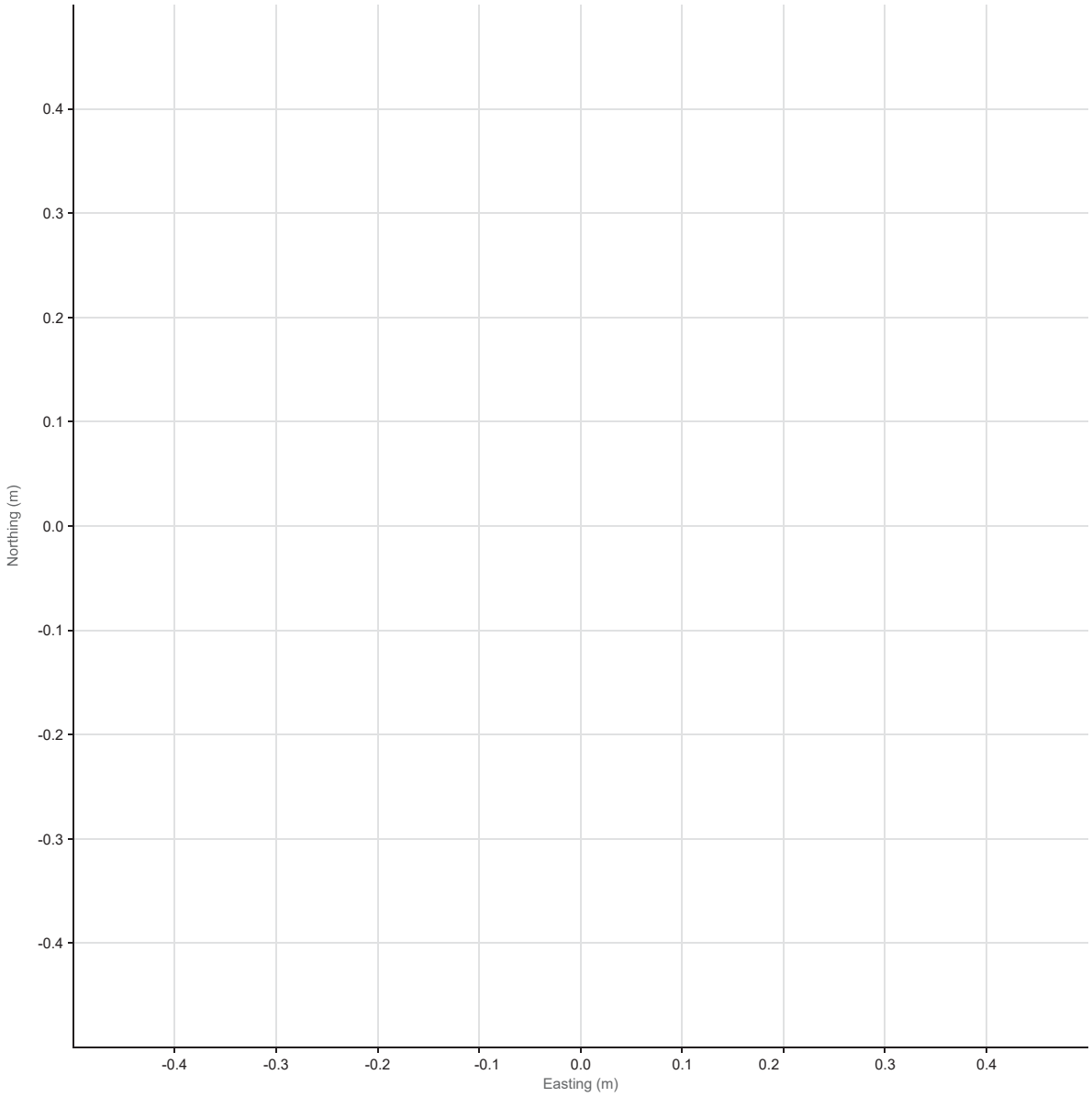
NNB EDF
Client Representative
Fugro Geoservices Inc

Geodetic Parameters

Name : OSGB 1936 / British National Grid [OSGB-UK Gbr15]	
EPSG Code	EPSG::27700

Local Geodetic Datum Parameters		
Datum	OSGB 1936	EPSG::6277
Ellipsoid	Airy 1830	
Semi major axis	a = 6,377,563.396 m	
Inverse flattening	1/f = 299.3249646	
Datum Transformation Parameters from ETRS89 to OSGB 1936 / British National Grid		
OSGB 1936 / British National Grid to ETRS89 (3)	Ordnance Survey National Transformation	EPSG::7708
Easting and northing difference file	OSTN15_OSGM15_GB.txt	
Local Projection Parameters		
Map Projection	Transverse Mercator	
Grid System	British National Grid	EPSG::19916
Latitude Origin	49°00’00.000”N	
Central Meridian	002°00’00.000”W	
Scale Factor on Central Meridian	0.999601272	
False Easting	400,000 m	
False Northing	-100,000 m	

Scatter Plot



Mean Position

	Easting	Northing
Excalibur Sizewell	650,928.008m E	264,250.484m N

SIZEWELL C GROUND INVESTIGATION 2019
MEAN POSITION REPORT

Project ID	C1984		
Location	Sizewell C power station		
Client	Fugro Geoservices Inc	**Vessel**	Excalibur Sizewell
Comment	DTM: 20.1m / Deck Above OD 9.924m / Seabed Mudline = -10.176m OD		

Session Name: 20190611-202707 Records Used: 7331 of 7499

Start Time: 11 Jun 2019, 21:29:15+01:00 End Time: 11 Jun 2019, 23:34:14+01:00 Session Length: 02:04:59

Mean Position for Excalibur Sizewell CommonReferencePoint		
	OSGB 1936 / British National Grid [OSGB-UK Gbr15]	**ETRS89(2D)**
Latitude	52°13'06.31838"N	52°13'08.04484"N
Longitude	001°38'30.51053"E	001°38'24.00061"E
Height	9.879m Ell.	54.397m Ell.
Easting	648,727.884m E (SD: ±0.02m)	
Northing	264,096.806m N (SD: ±0.03m)	
Height	9.362m Ort. (SD: ±0.06m Ort.)	

Sensors	**Sensor Averages**	**SD**
Heading	269.15°T 266.27°G	±0.1°
Pitch		
Roll		
Depth (Sounder)	0.0m	±0.00m
Depth (Manual)	0.0m	N/A

Mean Position to Waypoint	
Waypoint	OT_SB_01
Easting	648,728.030m E
Northing	264,097.440m N
Range	0.65m Geodetic
Bearing TO	15.88°True
Bearing FROM	195.88°True

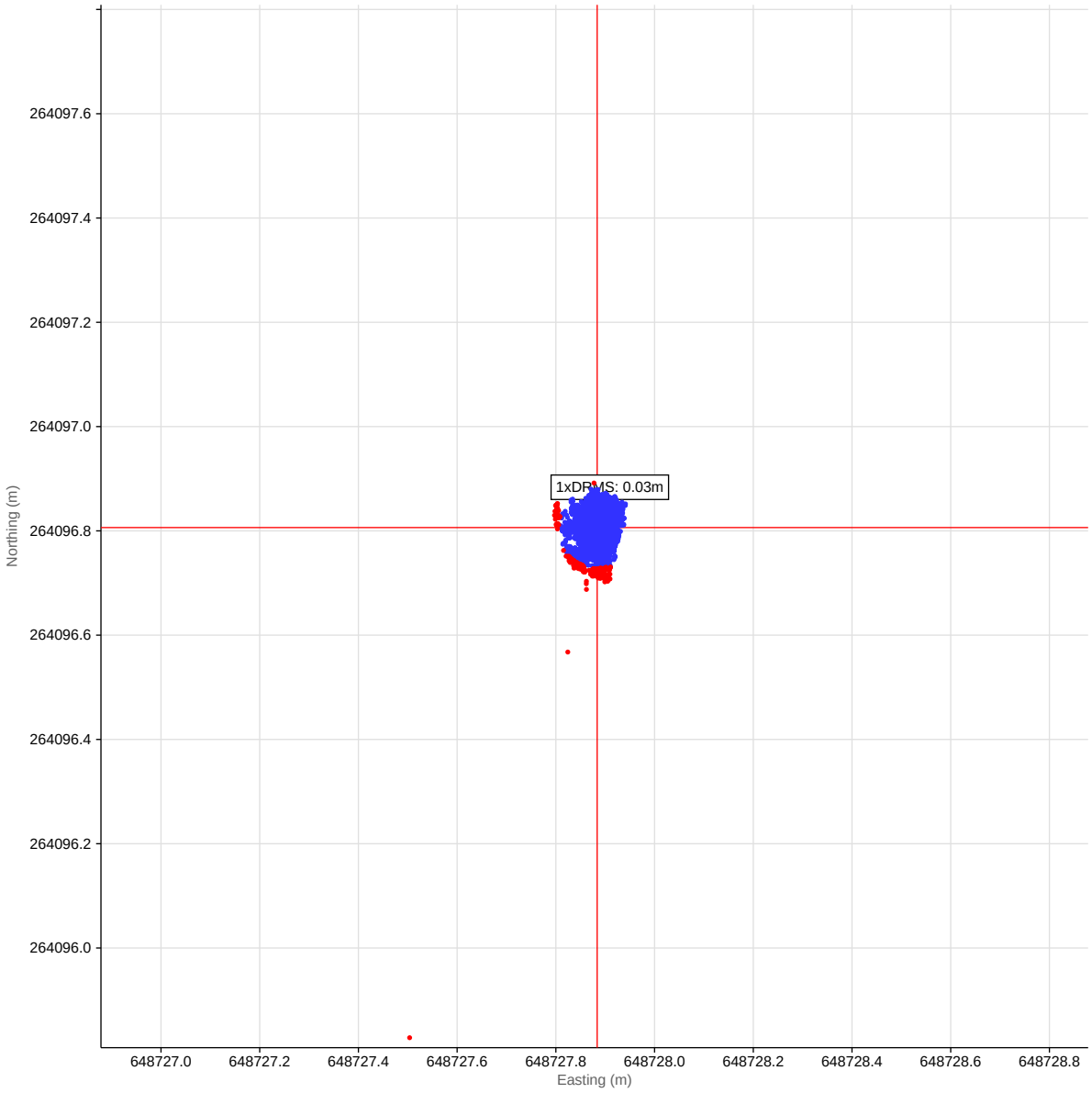
Julian North
Party Chief
FGBNM (Fugro Great Britain North Marine)

NNB EDF
Client Representative
Fugro Geoservices Inc

Geodetic Parameters

Name : OSGB 1936 / British National Grid [OSGB-UK Gbr15]		
EPSG Code	EPSG::27700	
Local Geodetic Datum Parameters		
Datum	OSGB 1936	EPSG::6277
Ellipsoid	Airy 1830	
Semi major axis	a = 6,377,563.396 m	
Inverse flattening	1/f = 299.3249646	
Datum Transformation Parameters from ETRS89 to OSGB 1936 / British National Grid		
OSGB 1936 / British National Grid to ETRS89 (3)	Ordnance Survey National Transformation	EPSG::7708
Easting and northing difference file	OSTN15_OSGM15_GB.txt	
Local Projection Parameters		
Map Projection	Transverse Mercator	
Grid System	British National Grid	EPSG::19916
Latitude Origin	49°00’00.000”N	
Central Meridian	002°00’00.000”W	
Scale Factor on Central Meridian	0.999601272	
False Easting	400,000 m	
False Northing	-100,000 m	

Scatter Plot



Mean Position

	Easting	Northing
Excalibur Sizewell	648,727.884m E	264,096.806m N

SIZEWELL C GROUND INVESTIGATION 2019
MEAN POSITION REPORT

Project ID	C1984		
Location	Sizewell C power station		
Client	Fugro Geoservices Inc	**Vessel**	Excalibur Sizewell
Comment	DTM: 18.0m / Deck Above OD 10.068m / Seabed Mudline = -7.932m OD		

Session Name: 20190614-211310 Records Used: 7361 of 7462

Start Time: 14 Jun 2019, 22:13:54+01:00 End Time: 15 Jun 2019, 00:18:53+01:00 Session Length: 02:04:59

Mean Position for Excalibur Sizewell Moonpool 1		
	OSGB 1936 / British National Grid [OSGB-UK Gbr15]	**ETRS89(2D)**
Latitude	52°13'05.45798"N	52°13'07.18513"N
Longitude	001°39'02.20395"E	001°38'55.69077"E
Height	10.193m Ell.	54.703m Ell.
Easting	649,330.297m E (SD: ±0.45m)	
Northing	264,100.512m N (SD: ±0.19m)	
Height	9.674m Ort. (SD: ±0.33m Ort.)	

Sensors	**Sensor Averages**	**SD**
Heading	277.65°T 274.76°G	±0.2°
Pitch		
Roll		
Depth (Sounder)	0.0m	±0.00m
Depth (Manual)	0.0m	N/A

Mean Position to Waypoint	
Waypoint	OT_SB_02
Easting	649,330.000m E
Northing	264,101.423m N
Range	0.96m Geodetic
Bearing TO	344.85°True
Bearing FROM	164.85°True

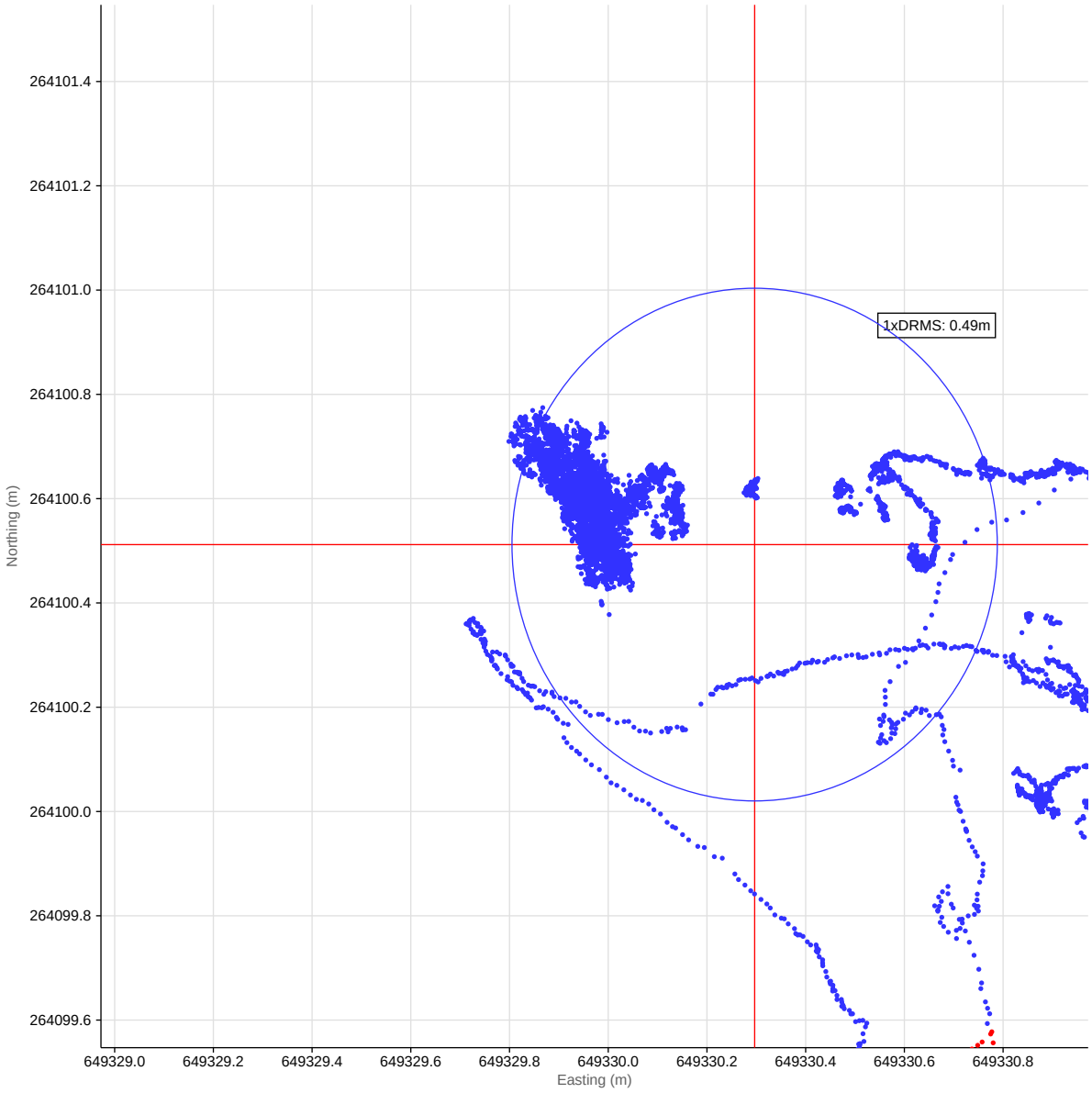
Callum Murphy
Site Manager/Supervisor
FGBNM (Fugro Great Britain North Marine)

NNB EDF
Client Representative
Fugro Geoservices Inc

Geodetic Parameters

Name : OSGB 1936 / British National Grid [OSGB-UK Gbr15]		
EPSG Code	EPSG::27700	
Local Geodetic Datum Parameters		
Datum	OSGB 1936	EPSG::6277
Ellipsoid	Airy 1830	
Semi major axis	a = 6,377,563.396 m	
Inverse flattening	1/f = 299.3249646	
Datum Transformation Parameters from ETRS89 to OSGB 1936 / British National Grid		
OSGB 1936 / British National Grid to ETRS89 (3)	Ordnance Survey National Transformation	EPSG::7708
Easting and northing difference file	OSTN15_OSGM15_GB.txt	
Local Projection Parameters		
Map Projection	Transverse Mercator	
Grid System	British National Grid	EPSG::19916
Latitude Origin	49°00’00.000”N	
Central Meridian	002°00’00.000”W	
Scale Factor on Central Meridian	0.999601272	
False Easting	400,000 m	
False Northing	-100,000 m	

Scatter Plot



Mean Position

	Easting	Northing
Excalibur Sizewell	649,330.297m E	264,100.512m N

SIZEWELL C GROUND INVESTIGATION 2019
MEAN POSITION REPORT

Project ID	C1984		
Location	Sizewell C power station		
Client	Fugro Geoservices Inc	**Vessel**	Excalibur Sizewell
Comment	DTM: 18.00m / Deck Above OD 10.00m / Seabed Mudline = -8.00m OD		

Session Name: 20190709-205011 Records Used: 7276 of 7494

Start Time: 09 Jul 2019, 21:51:10+01:00 End Time: 09 Jul 2019, 23:56:09+01:00 Session Length: 02:04:59

Mean Position for Excalibur Sizewell CommonReferencePoint		
	OSGB 1936 / British National Grid [OSGB-UK Gbr15]	**ETRS89(2D)**
Latitude	52°13'03.96022"N	52°13'05.68861"N
Longitude	001°39'57.57618"E	001°39'51.05729"E
Height	10.138m Ell.	54.634m Ell.
Easting	650,382.788m E (SD: ±0.02m)	
Northing	264,107.331m N (SD: ±0.02m)	
Height	9.617m Ort. (SD: ±0.06m Ort.)	

Sensors	**Sensor Averages**	**SD**
Heading	275.65°T 272.75°G	±0.0°
Pitch		
Roll		
Depth (Sounder)	0.0m	±0.00m
Depth (Manual)	0.0m	N/A

Mean Position to Waypoint	
Waypoint	OT_SB_03
Easting	650,383.000m E
Northing	264,108.389m N
Range	1.08m Geodetic
Bearing TO	14.22°True
Bearing FROM	194.22°True

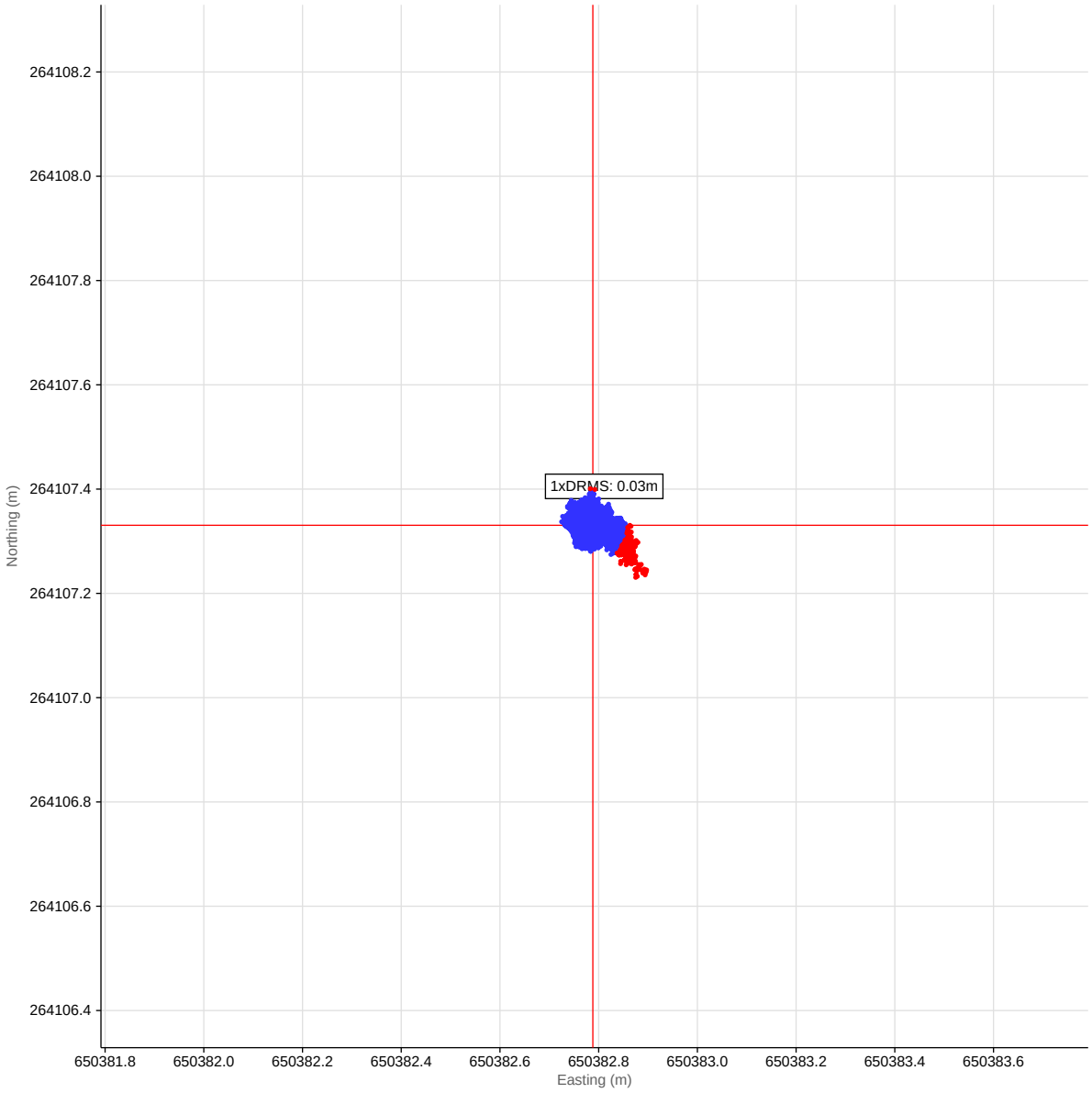
Callum Murphy
Site Manager/Supervisor
FGBNM (Fugro Great Britain North Marine)

NNB EDF
Client Representative
Fugro Geoservices Inc

Geodetic Parameters

Name : OSGB 1936 / British National Grid [OSGB-UK Gbr15]		
EPSG Code	EPSG::27700	
Local Geodetic Datum Parameters		
Datum	OSGB 1936	EPSG::6277
Ellipsoid	Airy 1830	
Semi major axis	a = 6,377,563.396 m	
Inverse flattening	1/f = 299.3249646	
Datum Transformation Parameters from ETRS89 to OSGB 1936 / British National Grid		
OSGB 1936 / British National Grid to ETRS89 (3)	Ordnance Survey National Transformation	EPSG::7708
Easting and northing difference file	OSTN15_OSGM15_GB.txt	
Local Projection Parameters		
Map Projection	Transverse Mercator	
Grid System	British National Grid	EPSG::19916
Latitude Origin	49°00’00.000”N	
Central Meridian	002°00’00.000”W	
Scale Factor on Central Meridian	0.999601272	
False Easting	400,000 m	
False Northing	-100,000 m	

Scatter Plot



Mean Position

	Easting	Northing
Excalibur Sizewell	650,382.788m E	264,107.331m N

SIZEWELL C GROUND INVESTIGATION 2019
MEAN POSITION REPORT

Project ID	C1984		
Location	Sizewell C power station		
Client	Fugro Geoservices Inc	**Vessel**	Excalibur Sizewell
Comment	DTM: 26.20m / Deck Above OD 9.601m / Seabed Mudline = -16.599m OD		

Session Name: 20190705-202834 Records Used: 756 of 756

Start Time: 05 Jul 2019, 21:29:16+01:00 End Time: 05 Jul 2019, 21:41:52+01:00 Session Length: 00:12:36

Mean Position for Excalibur Sizewell Moonpool 1		
	OSGB 1936 / British National Grid [OSGB-UK Gbr15]	**ETRS89(2D)**
Latitude	52°13’02.97435”N	52°13’04.70354”N
Longitude	001°40’34.31956”E	001°40’27.79690”E
Height	9.745m Ell.	54.232m Ell.
Easting	651,081.186m E (SD: ±0.03m)	
Northing	264,112.226m N (SD: ±0.02m)	
Height	9.223m Ort. (SD: ±0.05m Ort.)	

Sensors	**Sensor Averages**	**SD**
Heading	277.31°T 274.40°G	±0.0°
Pitch		
Roll		
Depth (Sounder)	0.0m	±0.00m
Depth (Manual)	0.0m	N/A

Mean Position to Waypoint	
Waypoint	OT_SB_04
Easting	651,080.079m E
Northing	264,112.993m N
Range	1.35m Geodetic
Bearing TO	307.62°True
Bearing FROM	127.62°True

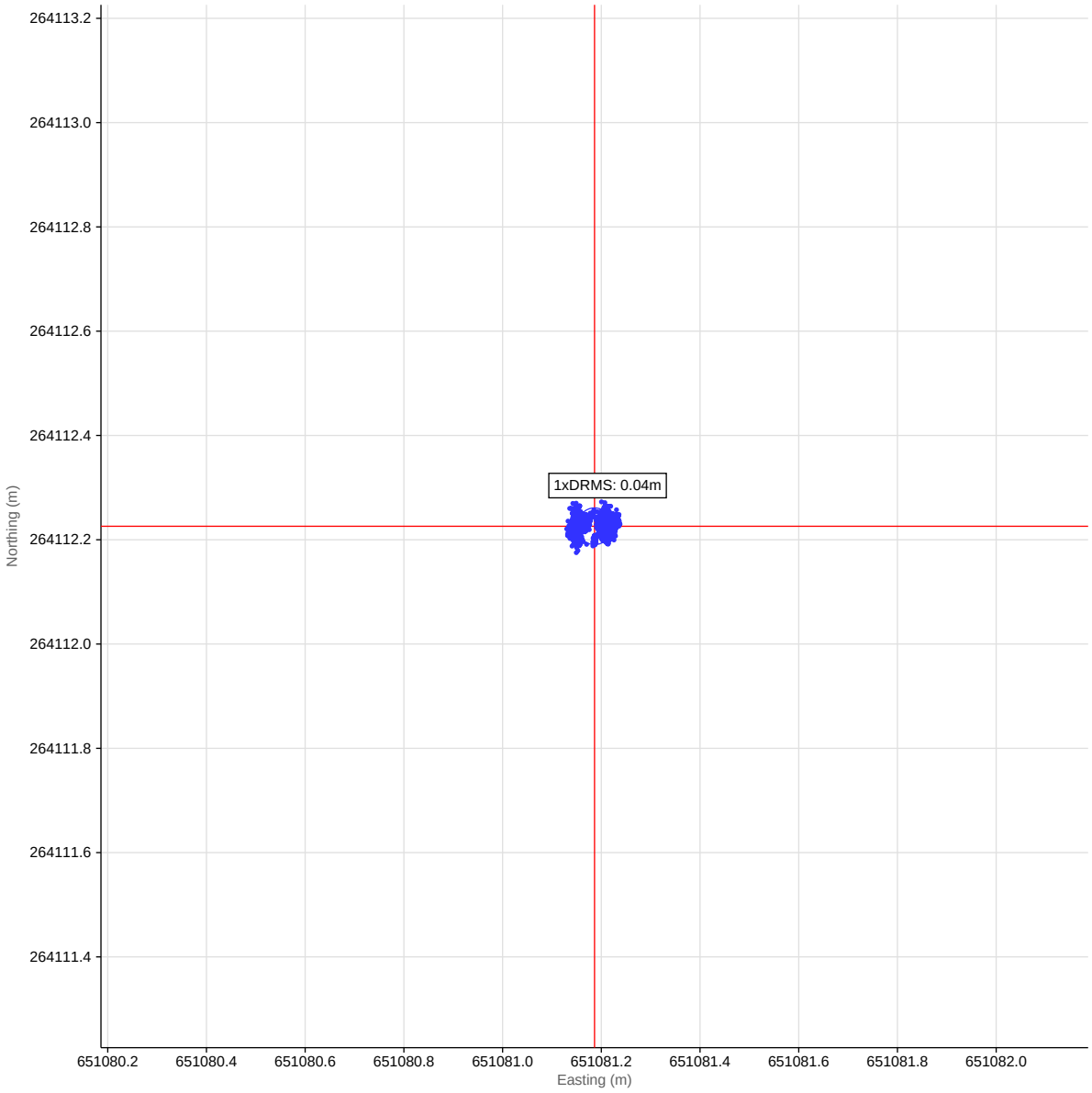
Callum Murphy
Site Manager/Supervisor
FGBNM (Fugro Great Britain North Marine)

NNB EDF
Client Representative
Fugro Geoservices Inc

Geodetic Parameters

Name : OSGB 1936 / British National Grid [OSGB-UK Gbr15]		
EPSG Code	EPSG::27700	
Local Geodetic Datum Parameters		
Datum	OSGB 1936	EPSG::6277
Ellipsoid	Airy 1830	
Semi major axis	a = 6,377,563.396 m	
Inverse flattening	1/f = 299.3249646	
Datum Transformation Parameters from ETRS89 to OSGB 1936 / British National Grid		
OSGB 1936 / British National Grid to ETRS89 (3)	Ordnance Survey National Transformation	EPSG::7708
Easting and northing difference file	OSTN15_OSGM15_GB.txt	
Local Projection Parameters		
Map Projection	Transverse Mercator	
Grid System	British National Grid	EPSG::19916
Latitude Origin	49°00’00.000”N	
Central Meridian	002°00’00.000”W	
Scale Factor on Central Meridian	0.999601272	
False Easting	400,000 m	
False Northing	-100,000 m	

Scatter Plot



Mean Position

	Easting	Northing
Excalibur Sizewell	651,081.186m E	264,112.226m N

SIZEWELL C GROUND INVESTIGATION 2019
MEAN POSITION REPORT

Project ID	C1984		
Location	Sizewell C power station		
Client	Fugro Geoservices Inc	**Vessel**	Excalibur Sizewell
Comment	DTM: 26.50m / Deck Above OD 10.184m / Seabed Mudline = -16.316m OD		

Session Name: 20190624-234648 Records Used: 7154 of 7480

Start Time: 25 Jun 2019, 00:49:30+01:00 End Time: 25 Jun 2019, 02:54:29+01:00 Session Length: 02:04:59

Mean Position for Excalibur Sizewell Moonpool 1		
	OSGB 1936 / British National Grid [OSGB-UK Gbr15]	**ETRS89(2D)**
Latitude	52°13'02.89818"N	52°13'04.62745"N
Longitude	001°40'38.14864"E	001°40'31.62559"E
Height	10.213m Ell.	54.700m Ell.
Easting	651,153.926m E (SD: ±0.03m)	
Northing	264,113.562m N (SD: ±0.05m)	
Height	9.691m Ort. (SD: ±0.13m Ort.)	

Sensors	Sensor Averages	SD
Heading	289.31°T 286.40°G	±0.1°
Pitch		
Roll		
Depth (Sounder)	0.0m	±0.00m
Depth (Manual)	0.0m	N/A

Mean Position to Waypoint	
Waypoint	OT_SB_05
Easting	651,153.290m E
Northing	264,113.485m N
Range	0.64m Geodetic
Bearing TO	266.01°True
Bearing FROM	86.01°True

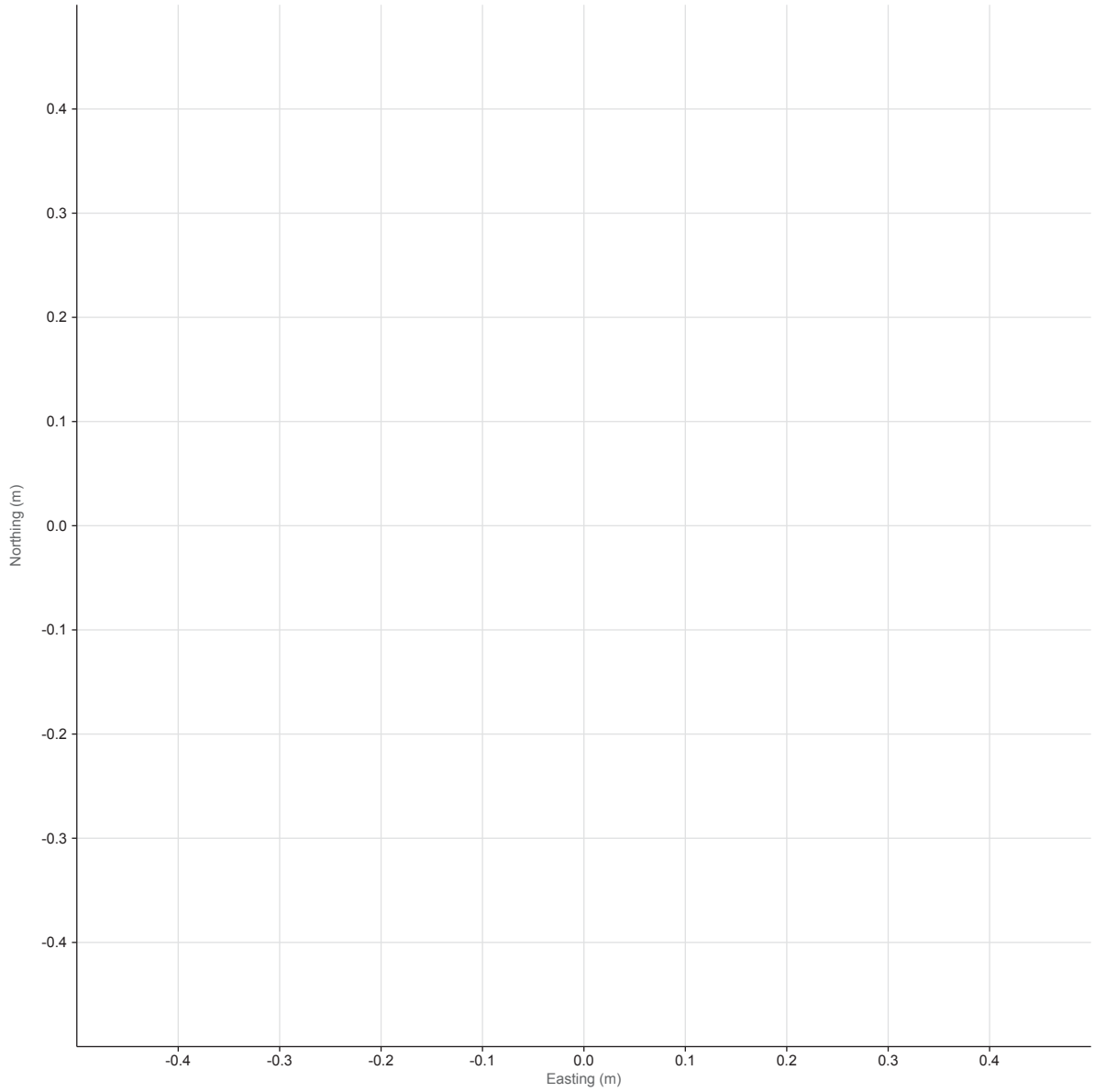
Callum Murphy
Site Manager/Supervisor
FGBNM (Fugro Great Britain North Marine)

NNB EDF
Client Representative
Fugro Geoservices Inc

Geodetic Parameters

Name : OSGB 1936 / British National Grid [OSGB-UK Gbr15]		
EPSG Code	EPSG::27700	
Local Geodetic Datum Parameters		
Datum	OSGB 1936	EPSG::6277
Ellipsoid	Airy 1830	
Semi major axis	a = 6,377,563.396 m	
Inverse flattening	1/f = 299.3249646	
Datum Transformation Parameters from ETRS89 to OSGB 1936 / British National Grid		
OSGB 1936 / British National Grid to ETRS89 (3)	Ordnance Survey National Transformation	EPSG::7708
Easting and northing difference file	OSTN15_OSGM15_GB.txt	
Local Projection Parameters		
Map Projection	Transverse Mercator	
Grid System	British National Grid	EPSG::19916
Latitude Origin	49°00’00.000”N	
Central Meridian	002°00’00.000”W	
Scale Factor on Central Meridian	0.999601272	
False Easting	400,000 m	
False Northing	-100,000 m	

Scatter Plot



Mean Position

	Easting	Northing
Excalibur Sizewell	651,153.926m E	264,113.562m N

Project ID	□ □□□□		
Location	□□□□□ □□□□ □□□□ □r□□□□□□□		
Client	□□□r□□□ □□□□r□□□□□□	**Vessel**	□□□□□□□r□□ □□□□ □□□
Comment	D□M□□□□□□□ □□D□□□A□□□□□ D□□□□□□ □□□□ □□□□d□M□d□□□□□□□□□□ □□D		

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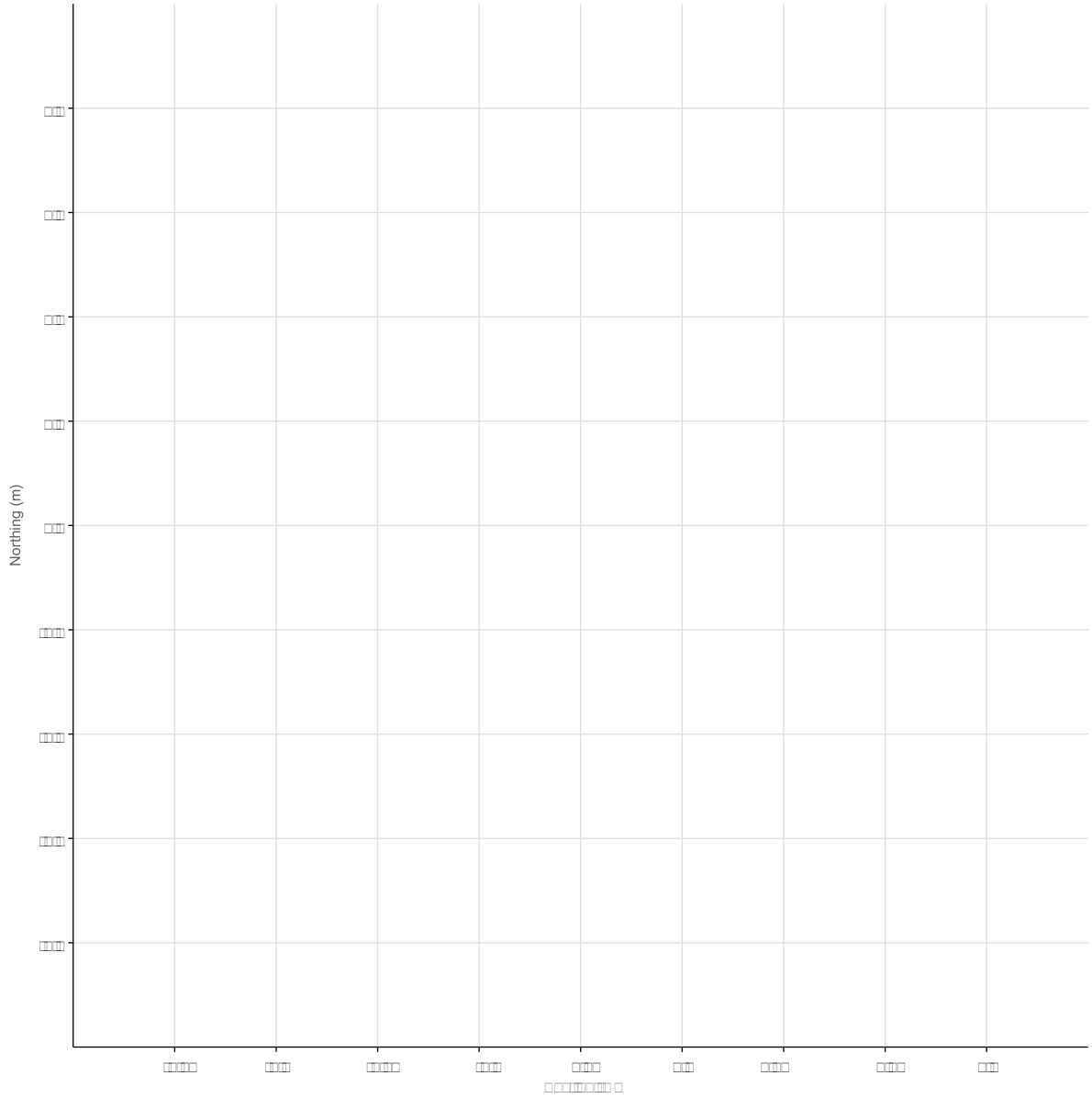
Name : OSGB 1936 / British National Grid [OSGB-UK Gbr15]		
[illegible]	[illegible]	
Local Geodetic Datum Parameters		
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	
[illegible]	[illegible]	
[illegible]	[illegible]	
Datum Transformation Parameters from ETRS89 to OSGB 1936 / British National Grid		
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	
Local Projection Parameters		
[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]
[illegible]	49°00’00.000”N	
[illegible]	002°00’00.000”W	
[illegible]	[illegible]	
[illegible]	[illegible]	
[illegible]	[illegible]	

Scatter Plot



Mean Position

	Easting	Northing
Excalibur Sizewell		

SIZEWELL C GROUND INVESTIGATION 2019
MEAN POSITION REPORT

Project ID	C1984		
Location	Sizewell C power station		
Client	Fugro Geoservices Inc	**Vessel**	Excalibur Sizewell
Comment	DTM: 25.30m / Deck Above OD 9.081m / Seabed Mudline = -16.219m OD		

Session Name: 20190701-015108 Records Used: 7247 of 7493

Start Time: 01 Jul 2019, 02:52:57+01:00 End Time: 01 Jul 2019, 04:57:56+01:00 Session Length: 02:04:59

Mean Position for Excalibur Sizewell Moonpool 1		
	OSGB 1936 / British National Grid [OSGB-UK Gbr15]	**ETRS89(2D)**
Latitude	52°13'02.16635"N	52°13'03.89647"N
Longitude	001°41'18.50363"E	001°41'11.97641"E
Height	8.996m Ell.	53.473m Ell.
Easting	651,920.428m E (SD: ±0.02m)	
Northing	264,129.900m N (SD: ±0.02m)	
Height	8.472m Ort. (SD: ±0.06m Ort.)	

Sensors	**Sensor Averages**	**SD**
Heading	289.29°T 286.38°G	±0.0°
Pitch		
Roll		
Depth (Sounder)	0.0m	±0.00m
Depth (Manual)	0.0m	N/A

Mean Position to Waypoint	
Waypoint	OT_SB_07
Easting	651,920.000m E
Northing	264,129.000m N
Range	1.00m Geodetic
Bearing TO	208.36°True
Bearing FROM	28.36°True

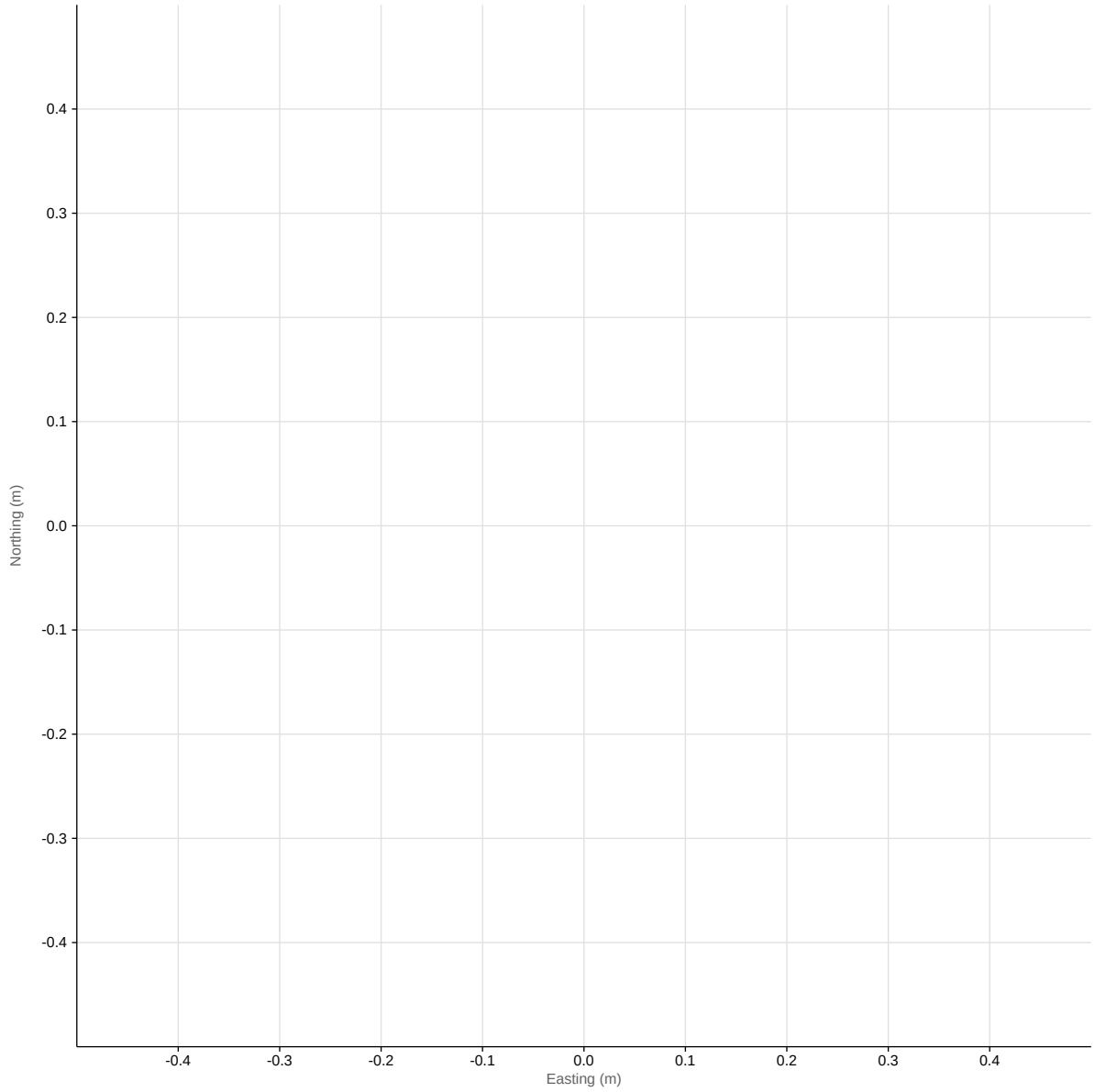
Callum Murphy
Site Manager/Supervisor
FGBNM (Fugro Great Britain North Marine)

NNB EDF
Client Representative
Fugro Geoservices Inc

Geodetic Parameters

Name : OSGB 1936 / British National Grid [OSGB-UK Gbr15]		
EPSG Code	EPSG::27700	
Local Geodetic Datum Parameters		
Datum	OSGB 1936	EPSG::6277
Ellipsoid	Airy 1830	
Semi major axis	a = 6,377,563.396 m	
Inverse flattening	1/f = 299.3249646	
Datum Transformation Parameters from ETRS89 to OSGB 1936 / British National Grid		
OSGB 1936 / British National Grid to ETRS89 (3)	Ordnance Survey National Transformation	EPSG::7708
Easting and northing difference file	OSTN15_OSGM15_GB.txt	
Local Projection Parameters		
Map Projection	Transverse Mercator	
Grid System	British National Grid	EPSG::19916
Latitude Origin	49°00’00.000”N	
Central Meridian	002°00’00.000”W	
Scale Factor on Central Meridian	0.999601272	
False Easting	400,000 m	
False Northing	-100,000 m	

Scatter Plot



Mean Position

	Easting	Northing
Excalibur Sizewell	651,920.428m E	264,129.900m N

SIZEWELL C GROUND INVESTIGATION 2019
MEAN POSITION REPORT

Project ID	C1984		
Location	Sizewell C power station		
Client	Fugro Geoservices Inc	**Vessel**	Excalibur Sizewell
Comment	DTM: 20.0m / Deck Above OD 9.857m / Seabed Mudline = -10.143m OD		

Session Name: 20190611-233459 Records Used: 7079 of 7259

Start Time: 12 Jun 2019, 00:37:00+01:00 End Time: 12 Jun 2019, 02:41:59+01:00 Session Length: 02:04:59

Mean Position for Excalibur Sizewell CommonReferencePoint		
	OSGB 1936 / British National Grid [OSGB-UK Gbr15]	**ETRS89(2D)**
Latitude	52°13'06.25288"N	52°13'07.97935"N
Longitude	001°38'30.81648"E	001°38'24.30653"E
Height	9.932m Ell.	54.449m Ell.
Easting	648,733.788m E (SD: ±0.04m)	
Northing	264,095.076m N (SD: ±0.08m)	
Height	9.414m Ort. (SD: ±0.11m Ort.)	

Sensors	**Sensor Averages**	**SD**
Heading	268.92°T 266.04°G	±0.3°
Pitch		
Roll		
Depth (Sounder)	0.0m	±0.00m
Depth (Manual)	0.0m	N/A

Mean Position to Waypoint	
Waypoint	OT_SPT_01
Easting	648,733.789m E
Northing	264,095.330m N
Range	0.25m Geodetic
Bearing TO	3.16°True
Bearing FROM	183.16°True

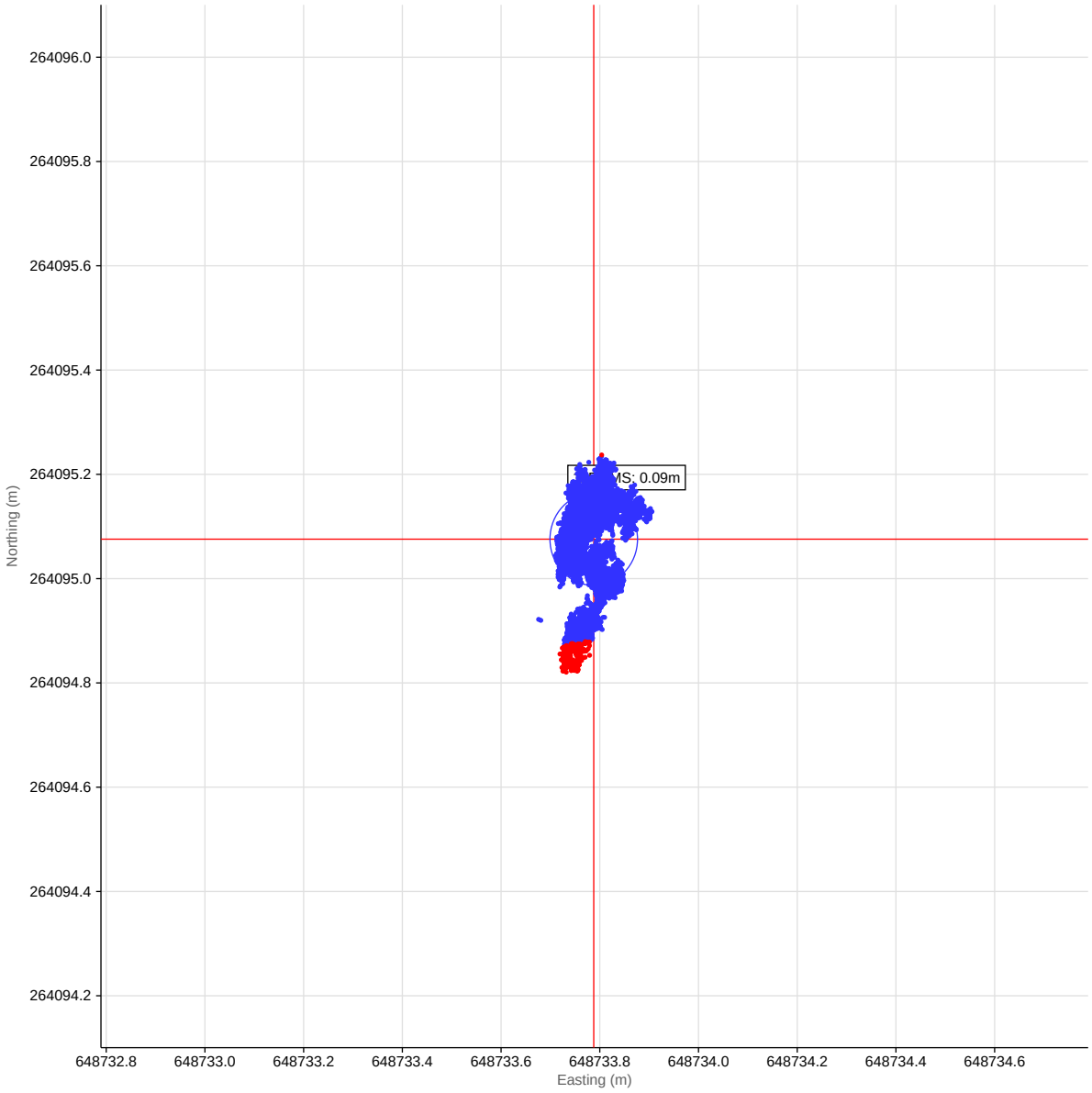
Julian North
Party Chief
FGBNM (Fugro Great Britain North Marine)

NNB EDF
Client Representative
Fugro Geoservices Inc

Geodetic Parameters

Name : OSGB 1936 / British National Grid [OSGB-UK Gbr15]		
EPSG Code	EPSG::27700	
Local Geodetic Datum Parameters		
Datum	OSGB 1936	EPSG::6277
Ellipsoid	Airy 1830	
Semi major axis	a = 6,377,563.396 m	
Inverse flattening	1/f = 299.3249646	
Datum Transformation Parameters from ETRS89 to OSGB 1936 / British National Grid		
OSGB 1936 / British National Grid to ETRS89 (3)	Ordnance Survey National Transformation	EPSG::7708
Easting and northing difference file	OSTN15_OSGM15_GB.txt	
Local Projection Parameters		
Map Projection	Transverse Mercator	
Grid System	British National Grid	EPSG::19916
Latitude Origin	49°00’00.000”N	
Central Meridian	002°00’00.000”W	
Scale Factor on Central Meridian	0.999601272	
False Easting	400,000 m	
False Northing	-100,000 m	

Scatter Plot



Mean Position

	Easting	Northing
Excalibur Sizewell	648,733.788m E	264,095.076m N

SIZEWELL C GROUND INVESTIGATION 2019
MEAN POSITION REPORT

Project ID	C1984		
Location	Sizewell C power station		
Client	Fugro Geoservices Inc	**Vessel**	Excalibur Sizewell
Comment	DTM: 18.0m / Deck Above OD 10.068m / Seabed Mudline = -7.932m OD		

Session Name: 20190614-235334 Records Used: 7395 of 7498

Start Time: 15 Jun 2019, 00:54:32+01:00 End Time: 15 Jun 2019, 02:59:31+01:00 Session Length: 02:04:59

Mean Position for Excalibur Sizewell Moonpool 1		
	OSGB 1936 / British National Grid [OSGB-UK Gbr15]	**ETRS89(2D)**
Latitude	52°13'05.37211"N	52°13'07.09928"N
Longitude	001°39'02.48707"E	001°38'55.97387"E
Height	10.339m Ell.	54.849m Ell.
Easting	649,335.800m E (SD: ±0.05m)	
Northing	264,098.131m N (SD: ±0.09m)	
Height	9.820m Ort. (SD: ±0.09m Ort.)	

Sensors	**Sensor Averages**	**SD**
Heading	276.56°T 273.68°G	±0.4°
Pitch		
Roll		
Depth (Sounder)	0.0m	±0.00m
Depth (Manual)	0.0m	N/A

Mean Position to Waypoint	
Waypoint	OT_SPT_02
Easting	649,335.759m E
Northing	264,099.312m N
Range	1.18m Geodetic
Bearing TO	0.91°True
Bearing FROM	180.91°True

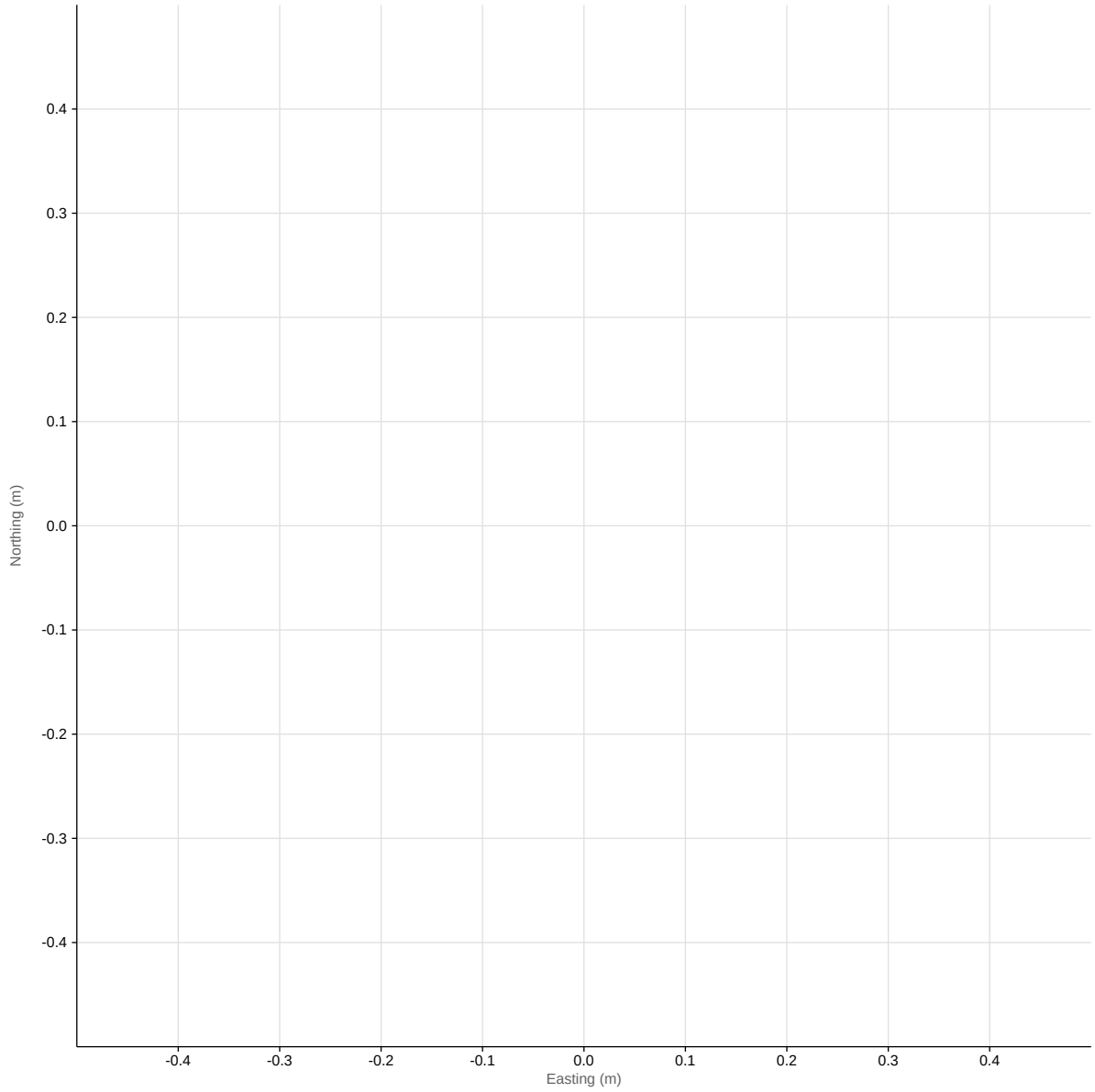
Callum Murphy
Site Manager/Supervisor
FGBNM (Fugro Great Britain North Marine)

NNB EDF
Client Representative
Fugro Geoservices Inc

Geodetic Parameters

Name : OSGB 1936 / British National Grid [OSGB-UK Gbr15]		
EPSG Code	EPSG::27700	
Local Geodetic Datum Parameters		
Datum	OSGB 1936	EPSG::6277
Ellipsoid	Airy 1830	
Semi major axis	a = 6,377,563.396 m	
Inverse flattening	1/f = 299.3249646	
Datum Transformation Parameters from ETRS89 to OSGB 1936 / British National Grid		
OSGB 1936 / British National Grid to ETRS89 (3)	Ordnance Survey National Transformation	EPSG::7708
Easting and northing difference file	OSTN15_OSGM15_GB.txt	
Local Projection Parameters		
Map Projection	Transverse Mercator	
Grid System	British National Grid	EPSG::19916
Latitude Origin	49°00’00.000”N	
Central Meridian	002°00’00.000”W	
Scale Factor on Central Meridian	0.999601272	
False Easting	400,000 m	
False Northing	-100,000 m	

Scatter Plot



Mean Position

	Easting	Northing
Excalibur Sizewell	649,335.800m E	264,098.131m N

SIZEWELL C GROUND INVESTIGATION 2019
MEAN POSITION REPORT

Project ID	C1984		
Location	Sizewell C power station		
Client	Fugro Geoservices Inc	**Vessel**	Excalibur Sizewell
Comment	DTM: 18.00m / Deck Above OD 10.103m / Seabed Mudline = -7.897m OD		

Session Name: 20190709-233234 Records Used: 7174 of 7386

Start Time: 10 Jul 2019, 00:32:43+01:00 End Time: 10 Jul 2019, 02:37:41+01:00 Session Length: 02:04:58

Mean Position for Excalibur Sizewell CommonReferencePoint		
	OSGB 1936 / British National Grid [OSGB-UK Gbr15]	**ETRS89(2D)**
Latitude	52°13'03.87137"N	52°13'05.59977"N
Longitude	001°39'57.86582"E	001°39'51.34690"E
Height	10.061m Ell.	54.557m Ell.
Easting	650,388.420m E (SD: ±0.02m)	
Northing	264,104.865m N (SD: ±0.03m)	
Height	9.540m Ort. (SD: ±0.05m Ort.)	

Sensors	**Sensor Averages**	**SD**
Heading	275.71°T 272.81°G	±0.0°
Pitch		
Roll		
Depth (Sounder)	0.0m	±0.00m
Depth (Manual)	0.0m	N/A

Mean Position to Waypoint	
Waypoint	OT_SPT_03
Easting	650,388.759m E
Northing	264,106.278m N
Range	1.45m Geodetic
Bearing TO	16.39°True
Bearing FROM	196.39°True

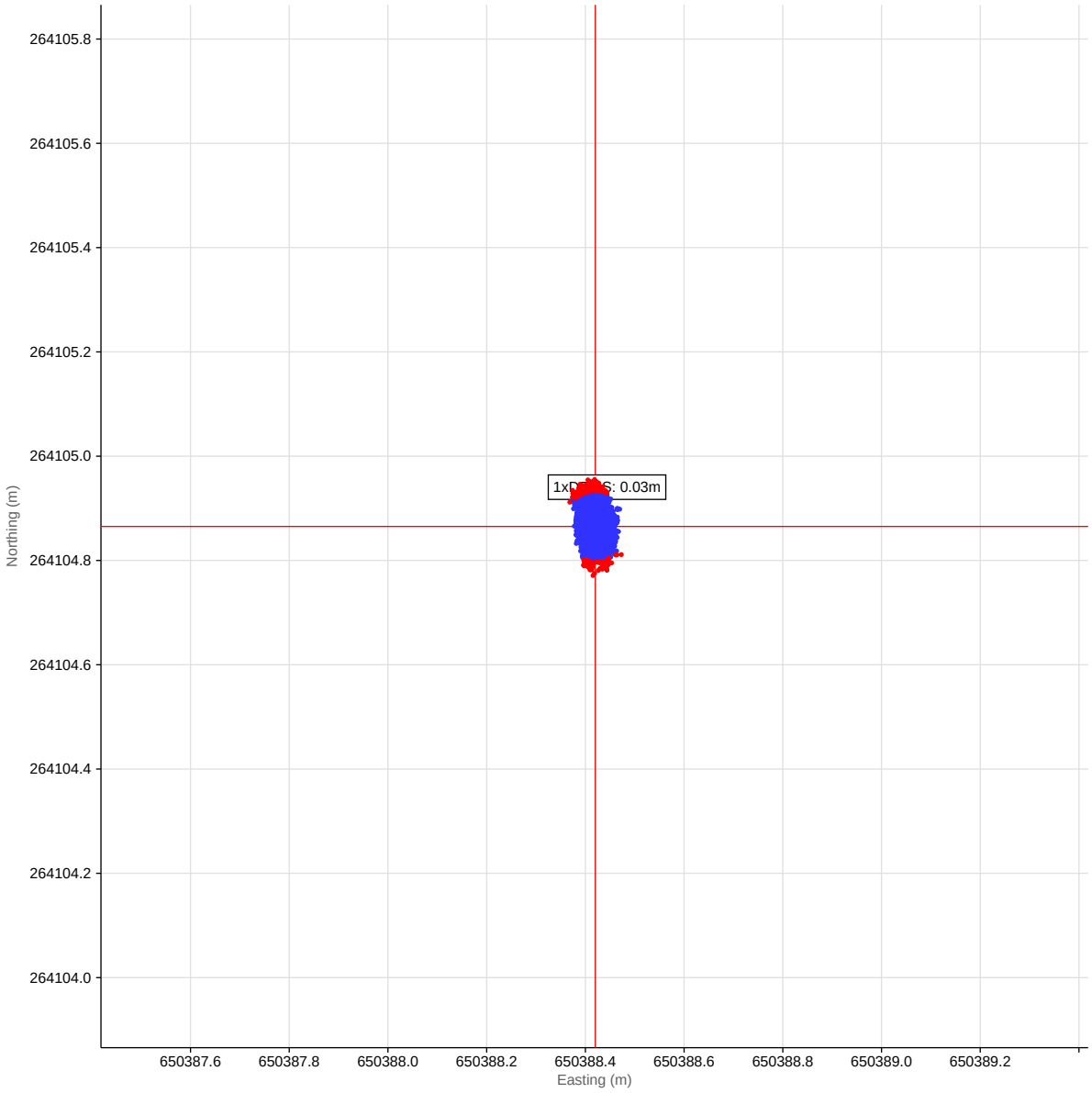
Callum Murphy
Site Manager/Supervisor
FGBNM (Fugro Great Britain North Marine)

NNB EDF
Client Representative
Fugro Geoservices Inc

Geodetic Parameters

Name : OSGB 1936 / British National Grid [OSGB-UK Gbr15]		
EPSG Code	EPSG::27700	
Local Geodetic Datum Parameters		
Datum	OSGB 1936	EPSG::6277
Ellipsoid	Airy 1830	
Semi major axis	a = 6,377,563.396 m	
Inverse flattening	1/f = 299.3249646	
Datum Transformation Parameters from ETRS89 to OSGB 1936 / British National Grid		
OSGB 1936 / British National Grid to ETRS89 (3)	Ordnance Survey National Transformation	EPSG::7708
Easting and northing difference file	OSTN15_OSGM15_GB.txt	
Local Projection Parameters		
Map Projection	Transverse Mercator	
Grid System	British National Grid	EPSG::19916
Latitude Origin	49°00’00.000”N	
Central Meridian	002°00’00.000”W	
Scale Factor on Central Meridian	0.999601272	
False Easting	400,000 m	
False Northing	-100,000 m	

Scatter Plot



Mean Position

	Easting	Northing
Excalibur Sizewell	650,388.420m E	264,104.865m N

SIZEWELL C GROUND INVESTIGATION 2019
MEAN POSITION REPORT

Project ID	C1984_Poseidon		
Location	Sizewell C Power Station		
Client	Fugro Geoservices Inc	**Vessel**	Excalibur Sizewell
Comment	DTM: 26.00m / Deck Above OD 9.810m / Seabed Mudline = -16.190m OD		

Session Name: 20190705-001749 Records Used: 7066 of 7498

Start Time: 05 Jul 2019, 01:18:49+01:00 End Time: 05 Jul 2019, 03:23:48+01:00 Session Length: 02:04:59

Mean Position for Excalibur Sizewell CommonReferencePoint		
	OSGB 1936 / British National Grid [OSGB-UK Gbr15]	**ETRS89(2D)**
Latitude	52°13'02.88011"N	52°13'04.60931"N
Longitude	001°40'34.60194"E	001°40'28.07925"E
Height	9.686m Ell.	54.173m Ell.
Easting	651,086.689m E (SD: ±0.02m)	
Northing	264,109.588m N (SD: ±0.03m)	
Height	9.164m Ort. (SD: ±0.05m Ort.)	

Sensors	**Sensor Averages**	**SD**
Heading	277.26°T 274.35°G	±0.1°
Pitch		
Roll		
Depth (Sounder)	0.0m	±0.00m
Depth (Manual)	0.0m	N/A

Mean Position to Waypoint	
Waypoint	OT_SPT_04
Easting	651,085.838m E
Northing	264,110.884m N
Range	1.55m Geodetic
Bearing TO	329.60°True
Bearing FROM	149.60°True

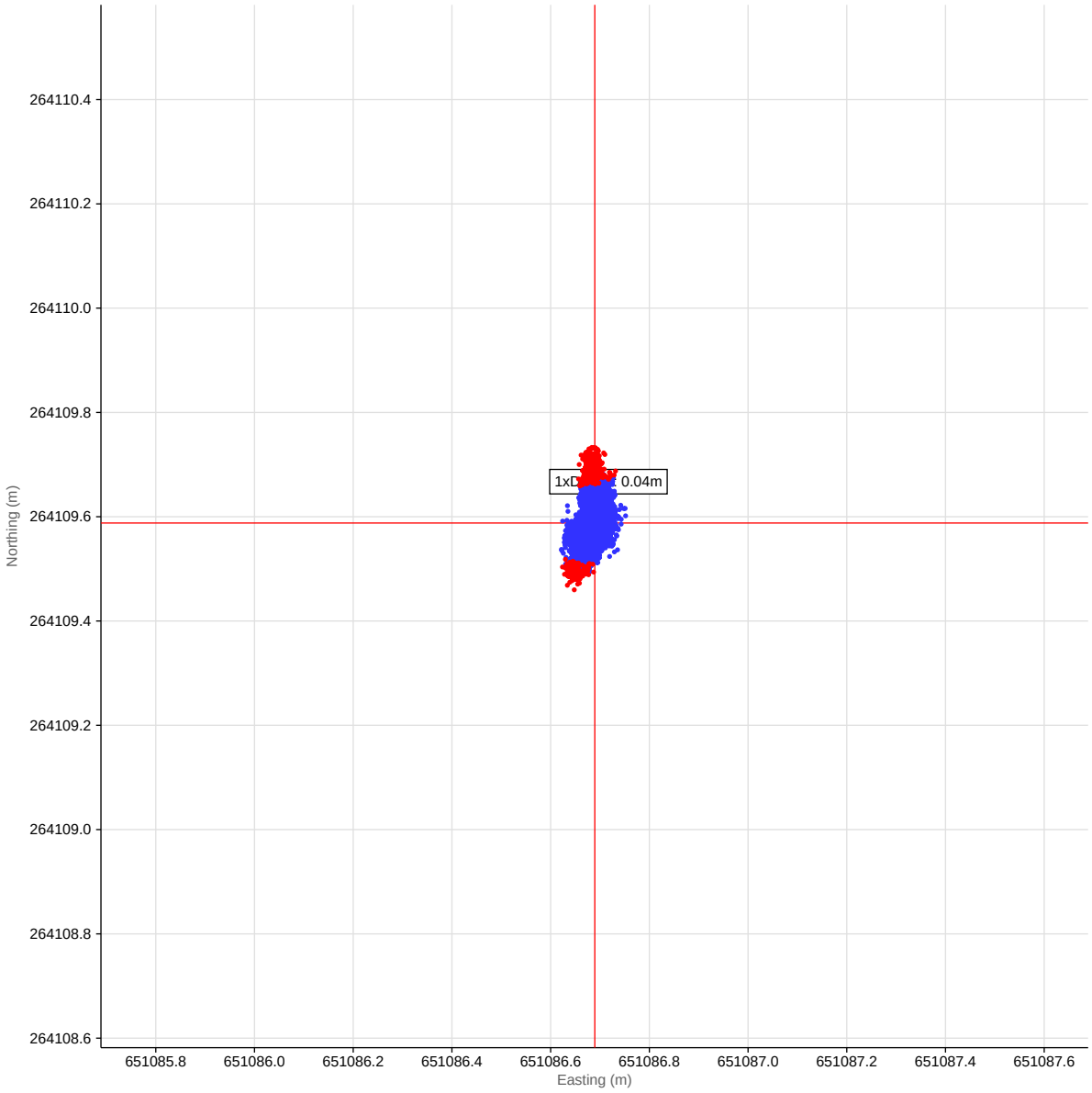
Callum Murphy
Site Manager/Supervisor
FGSL (Fugro GeoServices Ltd UK)

NNB EDF
End Client Representative
Fugro Geoservices Inc

Geodetic Parameters

Name : OSGB 1936 / British National Grid [OSGB-UK Gbr15]		
EPSG Code	EPSG::27700	
Local Geodetic Datum Parameters		
Datum	OSGB 1936	EPSG::6277
Ellipsoid	Airy 1830	
Semi major axis	a = 6,377,563.396 m	
Inverse flattening	1/f = 299.3249646	
Datum Transformation Parameters from ETRS89 to OSGB 1936 / British National Grid		
OSGB 1936 / British National Grid to ETRS89 (3)	Ordnance Survey National Transformation	EPSG::7708
Easting and northing difference file	OSTN15_OSGM15_GB.txt	
Local Projection Parameters		
Map Projection	Transverse Mercator	
Grid System	British National Grid	EPSG::19916
Latitude Origin	49°00’00.000”N	
Central Meridian	002°00’00.000”W	
Scale Factor on Central Meridian	0.999601272	
False Easting	400,000 m	
False Northing	-100,000 m	

Scatter Plot



Mean Position

	Easting	Northing
Excalibur Sizewell	651,086.689m E	264,109.588m N

SIZEWELL C GROUND INVESTIGATION 2019
MEAN POSITION REPORT

Project ID	C1984		
Location	Sizewell C power station		
Client	Fugro Geoservices Inc	**Vessel**	Excalibur Sizewell
Comment	DTM: 26.50m / Deck Above OD 10.183m / Seabed Mudline = -16.317m OD		

Session Name: 20190625-020130 Records Used: 7095 of 7464

Start Time: 25 Jun 2019, 03:02:50+01:00 End Time: 25 Jun 2019, 05:07:49+01:00 Session Length: 02:04:59

Mean Position for Excalibur Sizewell Moonpool 1		
	OSGB 1936 / British National Grid [OSGB-UK Gbr15]	**ETRS89(2D)**
Latitude	52°13'02.76947"N	52°13'04.49875"N
Longitude	001°40'38.39812"E	001°40'31.87505"E
Height	10.183m Ell.	54.669m Ell.
Easting	651,158.860m E (SD: ±0.13m)	
Northing	264,109.828m N (SD: ±0.06m)	
Height	9.661m Ort. (SD: ±0.16m Ort.)	

Sensors	Sensor Averages	SD
Heading	289.29°T 286.38°G	±0.1°
Pitch		
Roll		
Depth (Sounder)	0.0m	±0.00m
Depth (Manual)	0.0m	N/A

Mean Position to Waypoint	
Waypoint	OT_SPT_05
Easting	651,159.049m E
Northing	264,111.374m N
Range	1.56m Geodetic
Bearing TO	9.89°True
Bearing FROM	189.89°True

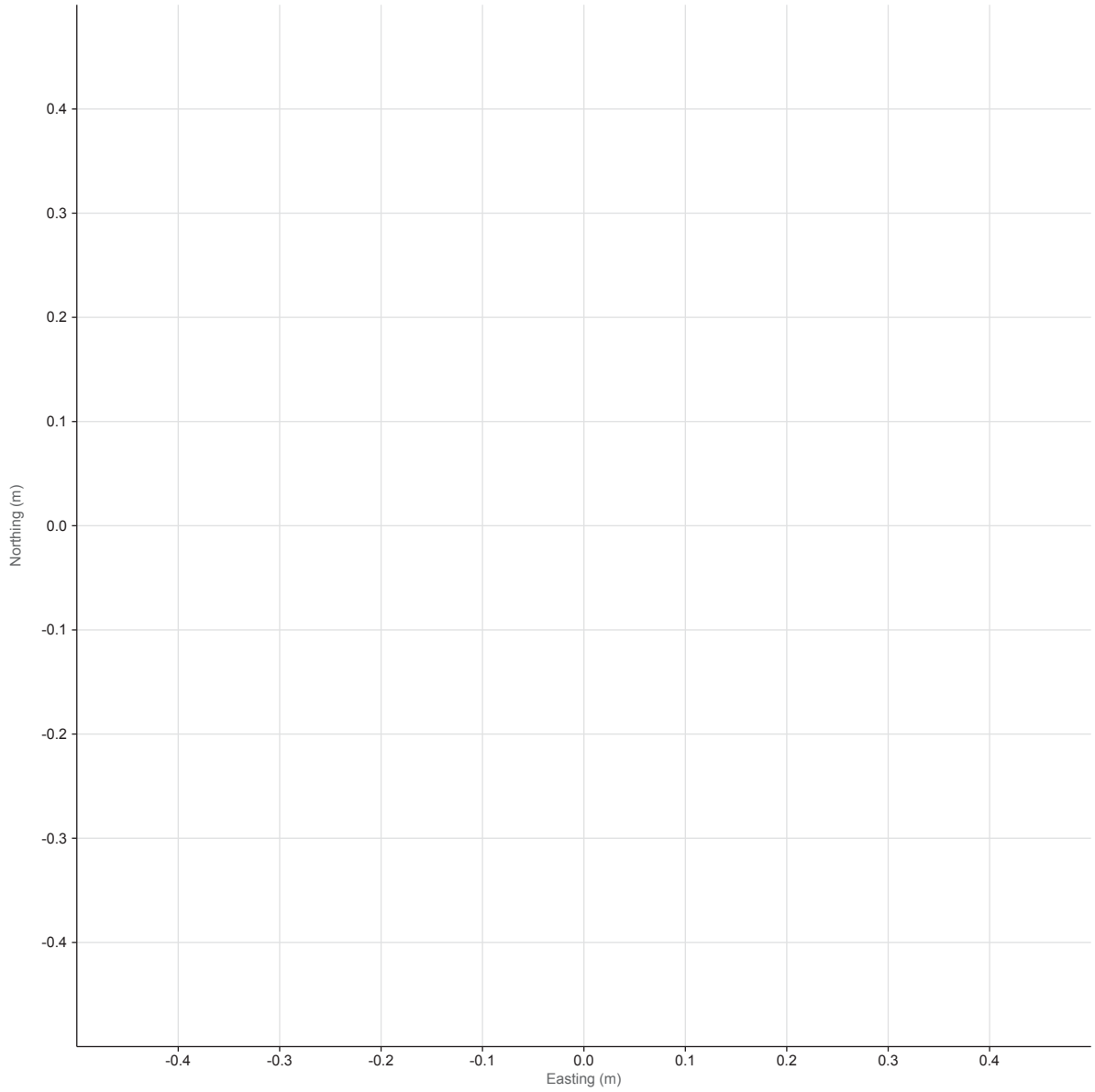
Callum Murphy
Site Manager/Supervisor
FGBNM (Fugro Great Britain North Marine)

NNB EDF
Client Representative
Fugro Geoservices Inc

Geodetic Parameters

Name : OSGB 1936 / British National Grid [OSGB-UK Gbr15]		
EPSG Code	EPSG::27700	
Local Geodetic Datum Parameters		
Datum	OSGB 1936	EPSG::6277
Ellipsoid	Airy 1830	
Semi major axis	a = 6,377,563.396 m	
Inverse flattening	1/f = 299.3249646	
Datum Transformation Parameters from ETRS89 to OSGB 1936 / British National Grid		
OSGB 1936 / British National Grid to ETRS89 (3)	Ordnance Survey National Transformation	EPSG::7708
Easting and northing difference file	OSTN15_OSGM15_GB.txt	
Local Projection Parameters		
Map Projection	Transverse Mercator	
Grid System	British National Grid	EPSG::19916
Latitude Origin	49°00’00.000”N	
Central Meridian	002°00’00.000”W	
Scale Factor on Central Meridian	0.999601272	
False Easting	400,000 m	
False Northing	-100,000 m	

Scatter Plot



Mean Position

	Easting	Northing
Excalibur Sizewell	651,158.860m E	264,109.828m N

Project ID			
Location			
Client		**Vessel**	
Comment			

Mean Position for Excalibur Sizewell Moonpool 1		
	OSGB 1936 / British National Grid [OSGB-UK Gbr15]	**ETRS89(2D)**
Latitude	52°13’02.47523”N	52°13’04.20463”N
Longitude	001°40’42.88392”E	001°40’36.36040”E
Height		
Easting		
Northing		
Height		

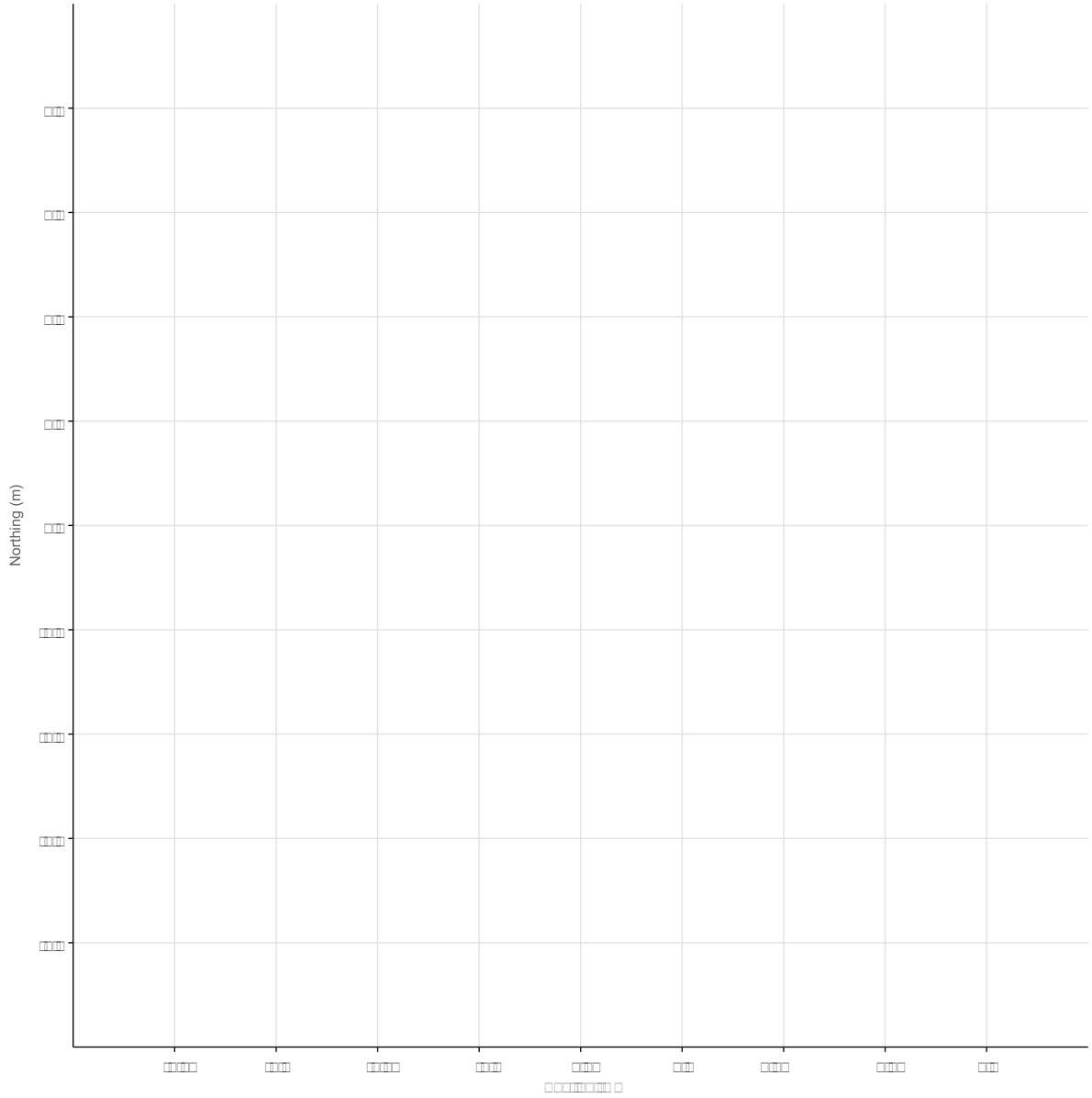
Sensors	**Sensor Averages**	**SD**
Heading		
Pitch		
Roll		
Depth (Sounder)		
Depth (Manual)		

Mean Position to Target	
Location	
Easting	
Northing	
Range	
Bearing TO	
Bearing FROM	

Geodetic Parameters

Name : OSGB 1936 / British National Grid [OSGB-UK Gbr15]		
[illegible]	[illegible]	
Local Geodetic Datum Parameters		
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	
[illegible]	[illegible]	
[illegible]	[illegible]	
Datum Transformation Parameters from ETRS89 to OSGB 1936 / British National Grid		
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	
Local Projection Parameters		
[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]
[illegible]	49°00’00.000”N	
[illegible]	002°00’00.000”W	
[illegible]	[illegible]	
[illegible]	[illegible]	
[illegible]	[illegible]	

Scatter Plot



Mean Position

	Easting	Northing
Excalibur Sizewell		

SIZEWELL C GROUND INVESTIGATION 2019
MEAN POSITION REPORT

Project ID	C1984		
Location	Sizewell C power station		
Client	Fugro Geoservices Inc	**Vessel**	Excalibur Sizewell
Comment	DTM: 25.30m / Deck Above OD 9.049m / Seabed Mudline = -16.251m OD		

Session Name: 20190702-002229 Records Used: 7115 of 7404

Start Time: 02 Jul 2019, 01:24:06+01:00 End Time: 02 Jul 2019, 03:29:05+01:00 Session Length: 02:04:59

Mean Position for Excalibur Sizewell Moonpool 1		
	OSGB 1936 / British National Grid [OSGB-UK Gbr15]	**ETRS89(2D)**
Latitude	52°13'02.03837"N	52°13'03.76850"N
Longitude	001°41'18.75246"E	001°41'12.22523"E
Height	8.984m Ell.	53.461m Ell.
Easting	651,925.348m E (SD: ±0.01m)	
Northing	264,126.188m N (SD: ±0.02m)	
Height	8.460m Ort. (SD: ±0.04m Ort.)	

Sensors	**Sensor Averages**	**SD**
Heading	289.21°T 286.29°G	±0.0°
Pitch		
Roll		
Depth (Sounder)	0.0m	±0.00m
Depth (Manual)	0.0m	N/A

Mean Position to Waypoint	
Waypoint	OT_RB_07
Easting	651,925.759m E
Northing	264,126.890m N
Range	0.81m Geodetic
Bearing TO	33.25°True
Bearing FROM	213.25°True

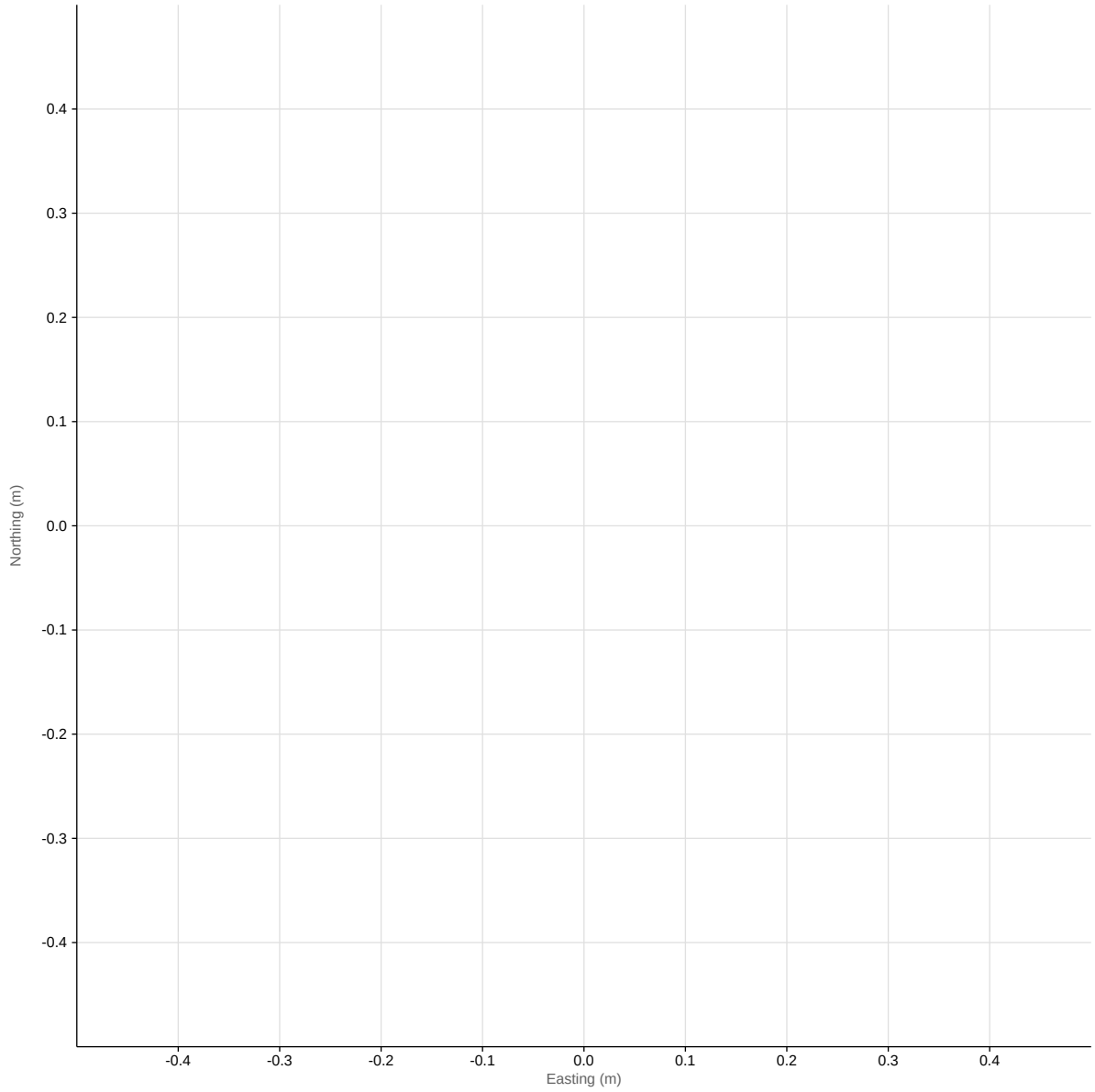
Callum Murphy
Site Manager/Supervisor
FGBNM (Fugro Great Britain North Marine)

NNB EDF
Client Representative
Fugro Geoservices Inc

Geodetic Parameters

Name : OSGB 1936 / British National Grid [OSGB-UK Gbr15]		
EPSG Code	EPSG::27700	
Local Geodetic Datum Parameters		
Datum	OSGB 1936	EPSG::6277
Ellipsoid	Airy 1830	
Semi major axis	a = 6,377,563.396 m	
Inverse flattening	1/f = 299.3249646	
Datum Transformation Parameters from ETRS89 to OSGB 1936 / British National Grid		
OSGB 1936 / British National Grid to ETRS89 (3)	Ordnance Survey National Transformation	EPSG::7708
Easting and northing difference file	OSTN15_OSGM15_GB.txt	
Local Projection Parameters		
Map Projection	Transverse Mercator	
Grid System	British National Grid	EPSG::19916
Latitude Origin	49°00’00.000”N	
Central Meridian	002°00’00.000”W	
Scale Factor on Central Meridian	0.999601272	
False Easting	400,000 m	
False Northing	-100,000 m	

Scatter Plot

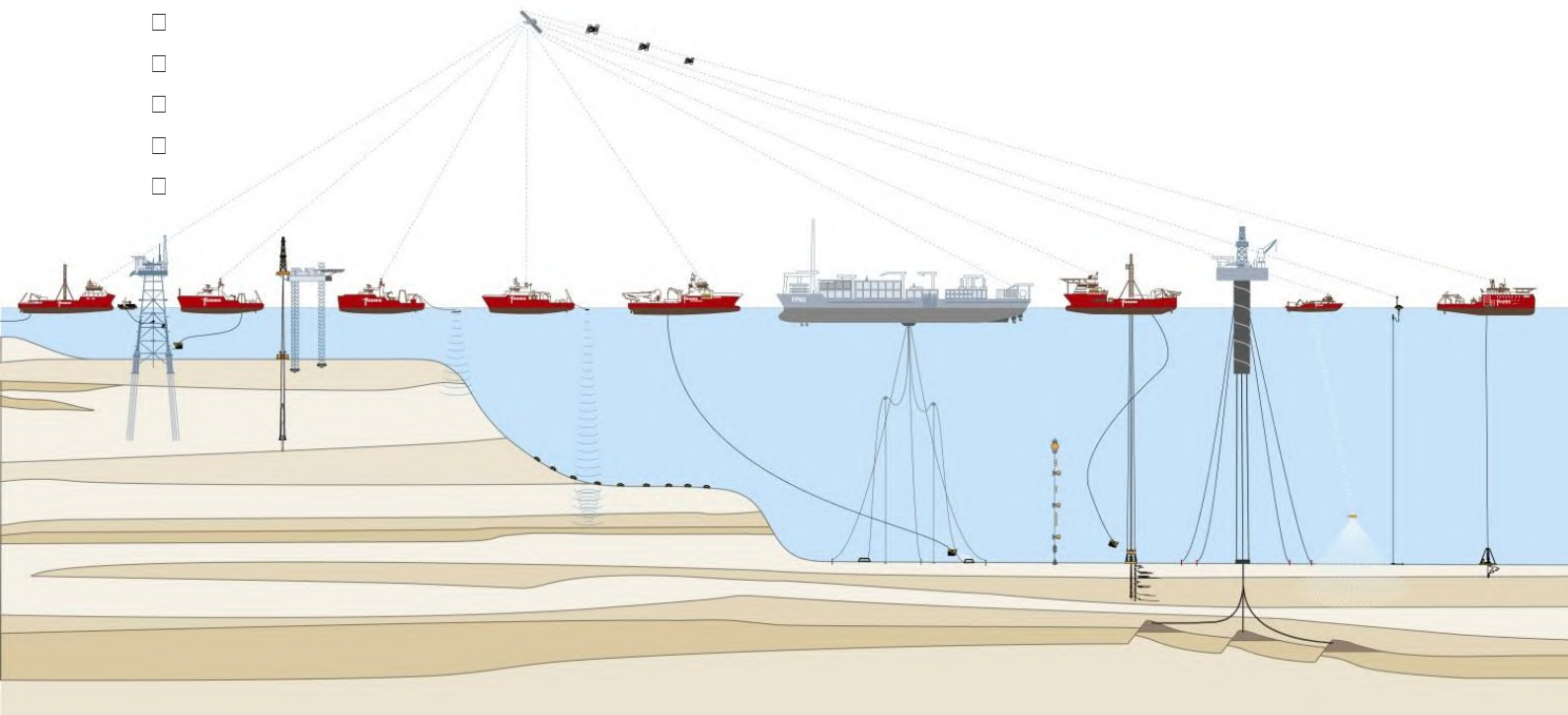


Mean Position

	Easting	Northing
Excalibur Sizewell	651,925.348m E	264,126.188m N

Fugro GB (North) Marine Limited

Excalibur Jack-Up Barge
Survey Systems Calibration Report Blyth Port



Excalibur Jack-Up Barge
Survey Systems Calibration Report Blyth Port

Rev	Description	Prepared	Checked	Approved	Date

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3. PERSONNEL AND EQUIPMENT **9**

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TABLES IN MAIN TEXT

FIGURES IN MAIN TEXT

FIGURES IN MAIN TEXT

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A. SEQUENCE OF SIGNIFICANT EVENTS

B. SYSTEM CALIBRATION DATA

B.] □r□□r□□□□Hea d ng Check

B.2 Gy o M r d Hea ding Check

B.3 D GNSS Sta r boa rd A ntenna Health Check D ata R rd G2+ Solution

B D GNSS A r rd A heck D R rd 2+

C. QUAYSIDE CONTROL STATION BASELINES

D. CONTROL POINT RTK GNSS REPORTS

E. INFORMATION FOR VERTICAL HEIGHT VERIFICATION CALCULATION

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□

ABBREVIATIONS

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1. INTRODUCTION

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Figure 1.1: Location Map

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1.1 Scope of Work

- M
- R A
- A
- R
- R
- R
- R
- R
- R
- R
- R
- R
- R
- R
- R
- R
- R
- R
- R
- R
- R

1.2 Unit Formats and Conventions

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

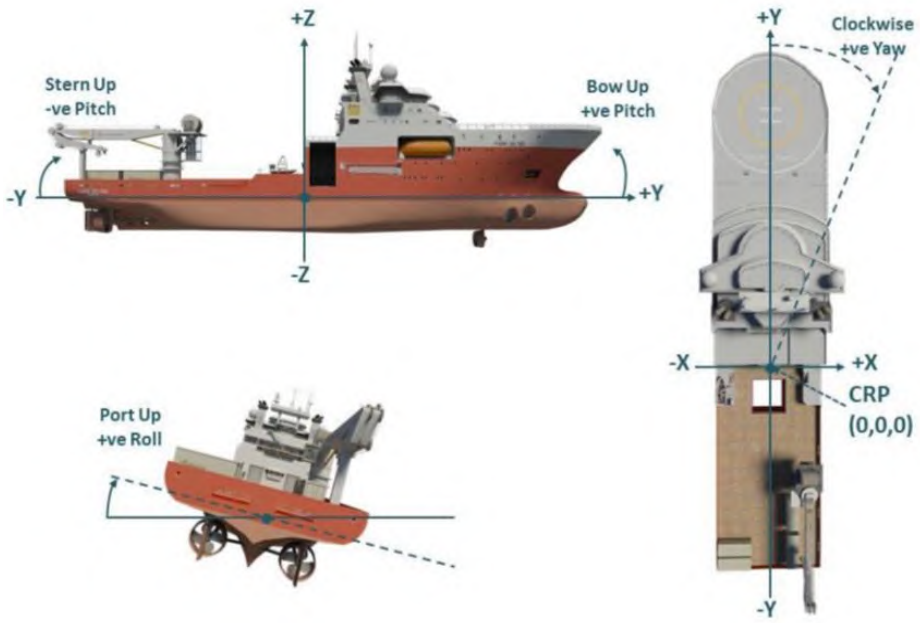

Figure 1.2: Conventions

[illegible]

[illegible]

[illegible]

[illegible]

2. RESULTS

[illegible]

2.1 Quayside Control Point Coordinates

Table 2.1: STN01 Quayside Control Point Coordinates

Control Point STN01 – Geographical Coordinates	
[illegible]	[illegible]
[illegible]	[illegible]
Control Point STN01 – Grid Coordinates	
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]

Table 2.2: STN02 Quayside Control Point Coordinates

Control Point STN02 – Geographical Coordinates	
[illegible]	[illegible]
[illegible]	[illegible]
Control Point STN02 – Grid Coordinates	
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]

Table 2.3: STN03 Quayside Control Point Coordinates

Control Point STN03 – Geographical Coordinates	
[illegible]	[illegible]
[illegible]	[illegible]
Control Point STN03 – Grid Coordinates	
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]

2.2 True Azimuth and Length of Baselines

[illegible]

[illegible]

Table 2.4: Baselines Between Control Stations

Baseline	Azimuth [True]	Azimuth [Grid]	Grid Distance [from GNSS]	Horizontal Distance [From Total Station]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

2.3 DGNSS Antenna Position Verification

[illegible]

[illegible]

Table 2.5: DGNSS Starboard Antenna Position – G2+ Solution

Calculated Antenna Position [C]			Observed Vessel Antenna Position [O]			Difference [C-O]		
Easting	Northing	Height [m]	Easting	Northing]	Height [m]	Easting	Northing	Height [m]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]						[illegible]	[illegible]	[illegible]

Table 2.6: DGNSS Aft Antenna Position – G2+ Solution

Calculated Antenna Position [C]			Observed Vessel Antenna Position [O]			Difference [C-O]		
Easting	Northing	Height [m]	Easting	Northing	Height [m]	Eastin]	Northing	Height [m]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]						[illegible]	[illegible]	[illegible]

[illegible]

2.4 Heading Sensors Check

[illegible]

[illegible]

Table 2.7: Heading Check Results

Sensor	Observed Raw Gyro [O]	Calculated True Vessel Heading [C]	Difference [C-O]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

2.5 DGNSS Positioning System Verification

[illegible]

[illegible]

2.6 Vertical Verification

[illegible]

[illegible]

Table 2.8: DGNSS Antenna Vertical Verification

Blyth Port Tide Value [m]	Deck to Waterline [m]	Calculated Deck Height [m]	Observed Deck Height [m]	Difference [C-O]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

[illegible]

2.7 Vessel Offsets

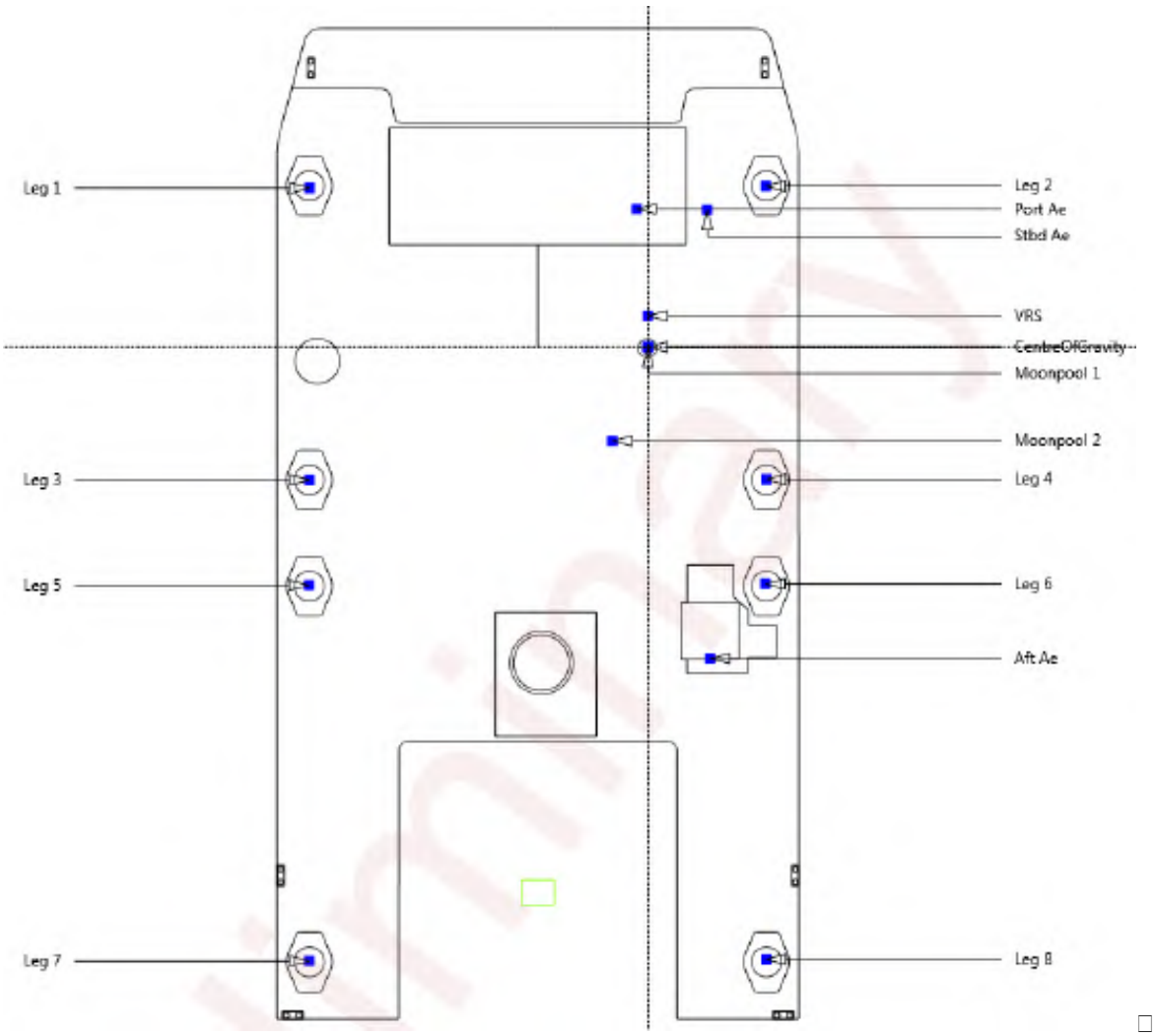

Figure 2.1: Vessel Offsets

Table 2.9: Vessel Offsets

Name	Purpose	X Offset	Y Offset	Z Offset
Aft Ae		3.81m	-19.06m	5.36m
CentreOfGravity	CentreOfGravity	0.00m	0.00m	0.00m
CommonReferencePoint	CommonReferencePoint	0.00m	0.00m	0.00m
Leg 1		-20.74m	9.73m	0.00m
Leg 2		7.21m	9.85m	0.00m
Leg 3		-20.75m	-8.13m	0.00m
Leg 4		7.23m	-8.10m	0.00m
Leg 5		-20.77m	-14.58m	0.00m
Leg 6		7.19m	-14.50m	0.00m
Leg 7		-20.76m	-37.58m	0.00m
Leg 8		7.23m	-37.47m	0.00m
Moonpool 1		0.00m	0.00m	0.00m
Moonpool 2		-2.19m	-5.74m	-0.07m
Port Ae		-0.71m	8.45m	11.98m
Stbd Ae		3.63m	8.39m	10.61m
VRS		0.00m	1.90m	0.00m

2.8 Geodetic Parameters

[illegible]

Table 2.10: Geodetic Parameters

Spheroid Parameters (GNSS Positioning):	
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
Datum Transformation Parameters from ETRS89 to OSGB 1936 / British National Grid:	
[illegible]	[illegible]
[illegible]	[illegible]
Project Projection Parameters:	
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
Primary Vertical Datum: Ordnance Datum (OD) and Chart Datum (CD) Separation = -1.60	

3. PERSONNEL AND EQUIPMENT

3.1 Personnel

Table 3.1: Personnel

Position	Name
[illegible]	[illegible]
[illegible]	[illegible]

3.2 Equipment

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

APPENDICES

A. SEQUENCE OF SIGNIFICANT EVENTS

B. SYSTEM CALIBRATION DATA

B.] □r□□r□□□□Hea d ng Check

B.2 Gy o M r d Hea ding Check

B.3 D GNSS Sta r boa rd A ntenna Health Check D ata R rd G2+ Solution

B D GNSS A r rd A heck D R rd 2+

C. QUAYSIDE CONTROL STATION BASELINES

D. CONTROL POINT RTK GNSS REPORTS

E. INFORMATION FOR VERTICAL HEIGHT VERIFICATION CALCULATION

□

□

A. SEQUENCE OF SIGNIFICANT EVENTS

Date	Time	Event
24/05/19	□□□□□□	□□□□r□□□□r□□□□□□□d□□□□r□A□□rd□□□□□□□□r□□d□□
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25/05/19	□□□□□□	□□□□r□□□□r□□□□□□□□□□□□d□d□□□ □r□□□□□□□□r□□□□□
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B. SYSTEM CALIBRATION DATA

B.1 PROTRACK HEADING CHECK

Project:	192325	Location:	Blyth	Datum:	British National Grid
Vessel:	Excalibur	Date:	26/05/2019	Spheroid:	Airy 1830
Client:	FGSL	Heading Sensor:	Protrack	Hemisphere:	North
				Projection and zone:	Transverse Mercator
"BOW PRISM" STATION:		"STERN PRISM" STATION:		Central Meridian:	-2° W
Instrument Station ID:	STN3	Instrument Station ID:	STN3	False Easting:	400000
Easting:	430963.491	Easting:	430963.491	Scale Factor:	0.9996
Northing:	582602.228	Northing:	582602.228		
Instrument Type:		Instrument Type:			Load Geodesy
Instrument Serial Number:		Instrument Serial Number:			
Backsight station ID (RO):	STN2	Backsight station ID (RO):	STN2		
Easting:	430898.885	Easting:	430898.885		
Northing:	582676.326	Northing:	582676.326	Convergence:	0.39774 deg
Backsight HA Reading:	000° 00' 00"	Backsight HA Reading:	000° 00' 00"		
Calculated Baseline Grid Bearing:	318° 54' 53"	Calculated Baseline Grid Bearing:	318° 54' 53"		

Fix No.	INPUT									Calculated True Vessel Heading (C)	Results (C-O)
	UTC time	Observations to bow prism				Observations to stern prism				Vessel Logg		
		Horizontal Angle			Horizontal Distance	Horizontal Angle			Horizontal Distance	aw Heading S. (O		
	[hh:mm:ss]	[deg]	[min]	[sec]	[m]	[deg]	[min]	[sec]	[m]	[deg]	[deg]	[deg]
1	09:13:22	337	09	49	30.410	350	04	44	44.659	153.80	153.74	-0.06
2	09:15:11	337	09	58	30.411	350	04	47	44.658	153.90	153.74	-0.16
3	09:16:21	337	09	56	30.412	350	04	43	44.659	153.80	153.74	-0.06
4	09:17:28	337	09	52	30.411	350	04	43	44.660	153.80	153.74	-0.06
5	09:18:24	337	09	52	30.410	350	04	41	44.660	153.90	153.74	-0.16
6	09:19:23	337	09	58	30.411	350	04	45	44.661	153.80	153.74	-0.06
7	09:20:27	337	09	51	30.409	350	04	45	44.659	153.80	153.74	-0.06
8	09:21:46	337	09	48	30.411	350	04	47	44.657	153.80	153.75	-0.05
9	09:22:50	337	09	51	30.408	350	04	46	44.659	153.80	153.74	-0.06
10	09:24:50	337	09	51	30.411	350	04	47	44.658	153.80	153.75	-0.05
11	09:25:57	337	09	52	30.410	350	04	43	44.657	153.80	153.74	-0.06
12	09:26:51	337	10	00	30.411	350	04	42	44.658	153.80	153.74	-0.06
13	09:26:50	337	09	50	30.411	350	04	48	44.660	153.80	153.74	-0.06
14	09:27:43	337	09	52	30.410	350	04	46	44.660	153.80	153.74	-0.06
15	09:28:30	337	09	57	30.411	350	04	41	44.659	153.80	153.74	-0.06
									Average:	+ 153.81	+ 153.74	-0.07
									St. dev.	0.04	0.00	0.04

B.2 GYRO MERIDIAN HEADING CHECK

Project:	192325	Location:	Blyth	Datum:	British National Grid
Vessel:	Excalibur	Date:	26/05/2019	Spheroid:	Airy 1830
Client:	FGSL	Heading Sensor:	Gyro Meridian	Hemisphere:	North
				Projection and zone:	Transverse Mercator
				Central Meridian:	-2° W
				False Easting:	400000
				Scale Factor:	0.9996

Load Geodesy

"BOW PRISM" STATION:		"STERN PRISM" STATION:	
Instrument Station ID:	STN3	Instrument Station ID:	STN3
Easting:	430963.491	Easting:	430963.491
Northing:	582602.228	Northing:	582602.228
Instrument Type:		Instrument Type:	
Instrument Serial Number:		Instrument Serial Number:	
Backsight station ID (RO):	STN2	Backsight station ID (RO):	STN2
Easting:	430898.885	Easting:	430898.885
Northing:	582676.326	Northing:	582676.326
Backsight HA Reading:	000° 00' 00"	Backsight HA Reading:	000° 00' 00"
Calculated Baseline Grid Bearing:	318° 54' 53"	Calculated Baseline Grid Bearing:	318° 54' 53"

Convergence: 0.39774 deg

Fix No.	INPUT								Calculated True Vessel Heading (C)	Results (C-O)
	UTC time	Observations to bow prism				Observations to stern prism			Vessel Logg aw Heading S. (O	
		Horizontal Angle			Horizontal Distance	Horizontal Angle			Horizontal Distance			
	[hh:mm:ss]	[deg]	[min]	[sec]	[m]	[deg]	[min]	[sec]	[m]	[deg]	[deg]	[deg]
1	09:13:22	337	09	49	30.410	350	04	44	44.659	154.20	153.74	-0.46
2	09:15:11	337	09	58	30.411	350	04	47	44.658	154.20	153.74	-0.46
3	09:16:21	337	09	56	30.412	350	04	43	44.659	154.20	153.74	-0.46
4	09:17:28	337	09	52	30.411	350	04	43	44.660	154.20	153.74	-0.46
5	09:18:24	337	09	52	30.410	350	04	41	44.660	154.20	153.74	-0.46
6	09:19:23	337	09	58	30.411	350	04	45	44.661	154.20	153.74	-0.46
7	09:20:27	337	09	51	30.409	350	04	45	44.659	154.20	153.74	-0.46
8	09:21:46	337	09	48	30.411	350	04	47	44.657	154.20	153.75	-0.45
9	09:22:50	337	09	51	30.408	350	04	46	44.659	154.20	153.74	-0.46
10	09:24:50	337	09	51	30.411	350	04	47	44.658	154.20	153.75	-0.45
11	09:25:57	337	09	52	30.410	350	04	43	44.657	154.20	153.74	-0.46
12	09:26:51	337	10	00	30.411	350	04	42	44.658	154.20	153.74	-0.46
13	09:27:50	337	09	50	30.411	350	04	48	44.660	154.20	153.74	-0.46
14	09:28:43	337	09	52	30.410	350	04	46	44.660	154.20	153.74	-0.46
15	09:29:30	337	09	57	30.411	350	04	41	44.659	154.20	153.74	-0.46
									Average:	+ 154.20	+ 153.74	-0.46
									St. dev.	0.00	0.00	0.00

B.3 DGNSS STARBOARD ANTENNA HEALTH CHECK DATA RECORD – G2+ SOLUTION

Project:	192325	Location:	Blyth
Vessel:	Excalibur	Date:	25/05/2019
Client:	FGSL	DGNSS Name:	Stbd AE
Instrument station:	STN1	Datum:	British National Grid
Easting:	430943.400	Spheroid:	Airy 1830
Northing:	582652.410	Hemisphere:	North
Elevation:	3.829	Projection and zone:	Transverse Mercator
Instrument Height:	1.634	Central Meridian:	-2° W
Instrument Type:		False Easting:	400000
Instrument Serial Number:		Scale Factor:	0.9996
Backsight station (RO):	STN2	Correction for horizontal distance (antenna radius):	0.100 m
Easting:	430898.885	Prism Height Above (+)/Below (-) Antenna Phase Centre:	0.000 m
Northing:	582676.326		
Backsight HA Reading:	000° 00' 00"		
Calculated Grid Bearing to RO:	298° 14' 50"		

Load Geodesy

Fix No.	UTC time	INPUT: Observations to antenna: Horizontal Angle [deg]	[min]	[sec]	Hz. distance [m]	Vertical Angle			Slope distance [m]	Observed Vessel Logg Antenna (O): Easting [m]	Northing [m]	Height [m]	Calculated (C) Antenna: Easting [m]	Northing [m]	Height [m]	Results (C-O): Easting [m]	Northing [m]	Height [m]
	[hh:mm:ss]																	
1	16:11:09	255	59	42	75.229	80	36	06	76.249	430924.94	582579.49	18.04	430924.87	582579.43	17.91	-0.06	-0.06	-0.13
2	16:11:55	255	59	42	75.224	80	36	05	76.248	430924.93	582579.49	18.02	430924.88	582579.43	17.91	-0.05	-0.06	-0.11
3	16:12:39	255	59	39	75.225	80	35	52	76.248	430924.93	582579.49	18.03	430924.88	582579.43	17.92	-0.05	-0.06	-0.11
4	16:13:25	255	59	37	75.224	80	35	58	76.249	430924.92	582579.46	17.99	430924.88	582579.43	17.92	-0.04	-0.03	-0.07
5	16:14:04	255	59	24	75.224	80	35	50	76.249	430924.94	582579.45	18.07	430924.88	582579.43	17.92	-0.06	-0.02	-0.15
6	16:14:47	255	59	30	75.225	80	36	01	76.249	430924.96	582579.46	18.09	430924.88	582579.43	17.92	-0.08	-0.03	-0.17
7	16:15:41	255	59	29	75.224	80	35	52	76.248	430924.95	582579.42	18.17	430924.88	582579.43	17.92	-0.07	0.01	-0.26
8	16:17:29	255	59	22	75.225	80	35	58	76.248	430924.98	582579.47	18.11	430924.88	582579.43	17.92	-0.10	-0.05	-0.20
9	16:18:24	255	59	22	75.225	80	35	58	76.249	430924.97	582579.44	18.16	430924.88	582579.43	17.92	-0.09	-0.02	-0.24
10	16:18:24	255	59	36	75.225	80	35	48	76.248	430924.97	582579.44	18.16	430924.88	582579.43	17.92	-0.09	-0.01	-0.24
11	16:19:43	255	59	41	75.224	80	35	40	76.249	430924.96	582579.43	18.14	430924.88	582579.43	17.92	-0.09	0.00	-0.22
12	16:20:20	255	59	41	75.224	80	35	47	76.249	430924.96	582579.41	18.13	430924.88	582579.43	17.92	-0.08	0.02	-0.21
13	16:21:04	255	59	42	75.224	80	35	48	76.249	430924.94	582579.44	18.10	430924.88	582579.43	17.92	-0.07	-0.01	-0.18
14	16:21:40	255	59	27	75.224	80	35	46	76.249	430924.96	582579.42	18.10	430924.88	582579.43	17.92	-0.07	0.00	-0.18
15	16:22:14	255	59	31	75.225	80	35	45	76.250	430924.95	582579.44	18.07	430924.88	582579.43	17.92	-0.07	-0.01	-0.15
16	16:23:04	255	59	30	75.223	80	35	45	76.248	430924.93	582579.50	18.05	430924.88	582579.43	17.92	-0.05	-0.07	-0.13
									Average:	**+ 430924.95**	**+ 582579.45**	**+ 18.09**	**+ 430924.88**	**+ 582579.43**	**+ 17.92**	**-0.07**	**-0.02**	**-0.17**
									St. dev.	0.02	0.03	0.05	0.00	0.00	0.00	0.02	0.03	0.05

B.4 DGNSS AFTERWARD ANTENNA HEALTH CHECK DATA RECORD – G2+ SOLUTION

Project:	192325	Location:	Blyth
Vessel:	Excalibur	Date:	25/05/2019
Client:	FGSL	DGNSS Name:	Aft AE
Instrument station:	STN1	Datum:	British National Grid
Easting:	430943.400	Spheroid:	Airy 1830
Northing:	582652.410	Hemisphere:	North
Elevation:	3.829	Projection and zone:	Transverse Mercator
Instrument Height:	1.634	Central Meridian:	-2° W
Instrument Type:		False Easting:	400000
Instrument Serial Number:		Scale Factor:	0.9996
Backsight station (RO):	STN2	Correction for horizontal distance (antenna radius):	0.100 m
Easting:	430898.885	Prism Height Above (+)/Below (-) Antenna Phase Centre:	0.000 m
Northing:	582676.326		
Backsight HA Reading:	000° 00' 00"		
Calculated Grid Bearing to RO:	298° 14' 50"		

Load Geodesy

Fix No.	UTC time	INPUT: Observations to antenna: Horizontal Angle [deg]	[min]	[sec]	Hz. distance [m]	Vertical Angle			Slope distance [m]	Observed Vessel Logg Antenna (O): Easting [m]	Northing [m]	Height [m]	Calculated (C) Antenna: Easting [m]	Northing [m]	Height [m]	Results (C-O): Easting [m]	Northing [m]	Height [m]
	[hh:mm:ss]																	
1	16:26:15	274	17	55	57.512	82	51	50	57.961	430912.21	582605.79	09.92	430912.42	582603.86	12.66	0.21	-1.92	2.74
2	16:28:32	274	17	55	57.512	82	51	49	57.961	430912.28	582605.17	11.09	430912.42	582603.86	12.66	0.14	-1.30	1.57
3	16:29:21	274	17	46	57.512	82	51	56	57.961	430912.44	582605.03	11.20	430912.42	582603.86	12.66	-0.02	-1.17	1.46
4	16:30:02	274	17	49	57.512	82	51	50	57.961	430912.34	582604.86	11.79	430912.42	582603.86	12.66	0.08	-0.99	0.87
5	16:30:39	274	17	53	57.506	82	52	11	57.955	430912.43	582604.88	12.01	430912.42	582603.87	12.66	-0.01	-1.01	0.65
6	16:31:25	274	17	42	57.511	82	51	54	57.960	430912.34	582604.83	11.75	430912.42	582603.86	12.66	0.09	-0.97	0.92
7	16:32:12	274	18	01	57.510	82	51	54	57.959	430912.18	582604.79	11.38	430912.42	582603.87	12.66	0.24	-0.92	1.29
8	16:32:54	274	17	52	57.511	82	51	57	57.961	430912.34	582604.59	11.42	430912.42	582603.87	12.66	0.08	-0.73	1.24
9	16:33:37	274	17	37	57.512	82	51	59	57.960	430912.60	582604.42	11.36	430912.42	582603.86	12.66	-0.17	-0.56	1.30
10	16:34:16	274	17	54	57.513	82	51	41	57.961	430912.66	582604.38	11.50	430912.42	582603.86	12.67	-0.24	-0.52	1.17
11	16:34:55	274	18	09	57.493	82	52	26	57.940	430912.59	582604.46	11.52	430912.43	582603.88	12.65	-0.16	-0.58	1.13
12	16:36:59	274	18	04	57.500	82	53	23	57.945	430912.63	582604.21	11.63	430912.42	582603.88	12.64	-0.20	-0.33	1.00
13	16:37:42	274	18	03	57.498	82	53	13	57.944	430912.80	582603.98	11.91	430912.42	582603.88	12.64	-0.38	-0.11	0.73
14	16:38:25	274	17	45	57.500	82	53	26	57.946	430912.98	582603.84	12.11	430912.43	582603.87	12.63	-0.55	0.04	0.52
15	16:39:09	274	17	49	57.498	82	53	06	57.944	430913.02	582603.70	12.25	430912.43	582603.88	12.64	-0.59	0.18	0.39
									Average:	**+ 430912.52**	**+ 582604.60**	**+ 11.52**	**+ 430912.42**	**+ 582603.87**	**+ 12.65**	**-0.10**	**-0.73**	**+ 1.13**
									St. dev.	0.26	0.55	0.55	0.00	0.01	0.01	0.26	0.55	0.56

C. QUAYSIDE CONTROL STATION BASELINES

Calculation from STN01 to STN02

ETRS89	
Latitude	55°08'14.19940"N
Longitude	001°30'58.24265"W
Ellipsoid height	52.704m Ell.
OSGB 1936	
Latitude	55°08'13.95047"N
Longitude	001°30'52.43326"W
Ellipsoidal Height	3.829m Ell.
British National Grid	
Easting	430,943.400m E
Northing	582,652.410m N
Ellipsoidal Height	3.829m Ell.
Scale factor	0.999613020
Convergence	0.39831°

Geodetic Distance/Azimuth	
Distance	50.55m Geodetic
Azimuth Forward	298.6° T
Rhumb Line Distance/Azimuth	
Distance	50.55m Rhumb line
Azimuth Forward	298.6° T
Grid Distance/Azimuth	
Distance	50.53m Grid
Azimuth Forward	298.2° G
Grid line calculations	
Line scale factor	0.999613003
True distance	50.55m Geodetic
Arc to chord correction	-00°00'00.00187"
True azimuth	298.6° T

ETRS89	
Latitude	55°08'14.98299"N
Longitude	001°31'00.74696"W
Ellipsoid height	52.420m Ell.
OSGB 1936	
Latitude	55°08'14.73421"N
Longitude	001°30'54.93782"W
Ellipsoidal Height	3.543m Ell.
British National Grid	
Easting	430,898.885m E
Northing	582,676.326m N
Ellipsoidal Height	3.543m Ell.
Scale factor	0.999612986
Convergence	0.39774°

Calculation from STN3 to STN2

ETRS89	
Latitude	55°08'12.57163"N
Longitude	001°30'57.12780"W
Ellipsoid height	52.653m Ell.
OSGB 1936	
Latitude	55°08'12.32246"N
Longitude	001°30'51.31835"W
Ellipsoidal Height	3.779m Ell.
British National Grid	
Easting	430,963.491m E
Northing	582,602.228m N
Ellipsoidal Height	3.779m Ell.
Scale factor	0.999613035
Convergence	0.39857°

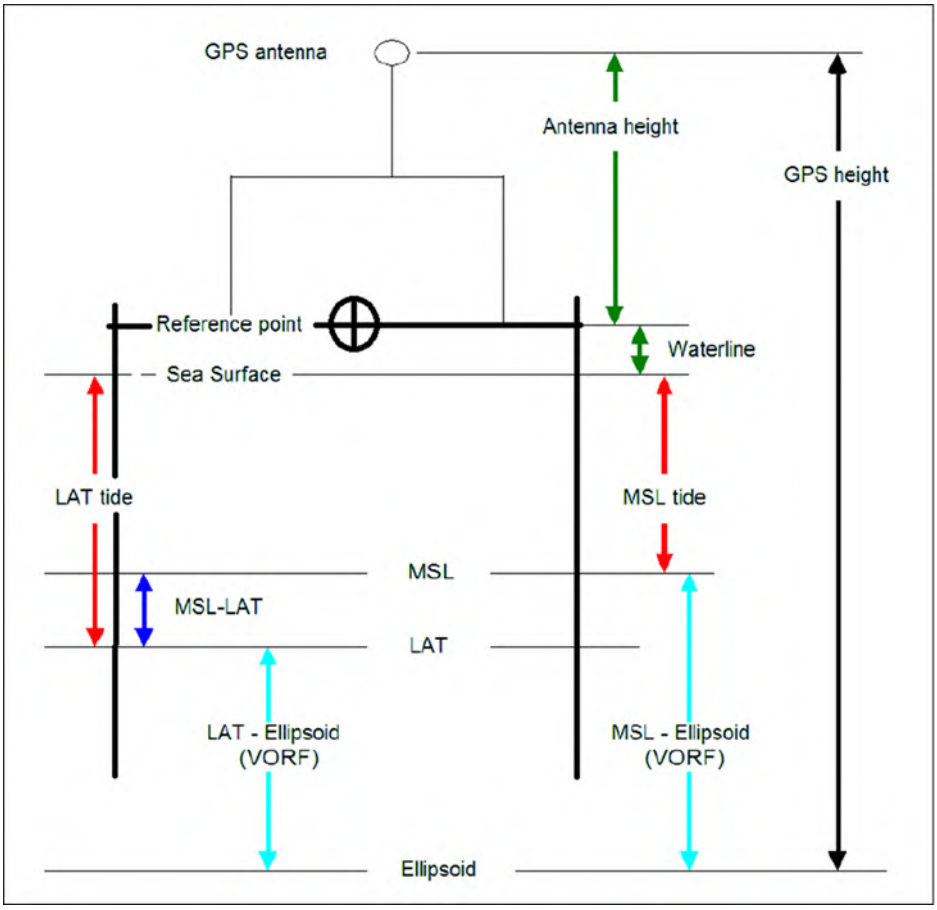
Geodetic Distance/Azimuth	
Distance	98.35m Geodetic
Azimuth Forward	319.3° T
Rhumb Line Distance/Azimuth	
Distance	98.35m Rhumb line
Azimuth Forward	319.3° T
Grid Distance/Azimuth	
Distance	98.31m Grid
Azimuth Forward	318.9° G
Grid line calculations	
Line scale factor	0.999613011
True distance	98.35m Geodetic
Arc to chord correction	-00°00'00.00580"
True azimuth	319.3° T

ETRS89	
Latitude	55°08'14.98299"N
Longitude	001°31'00.74696"W
Ellipsoid height	52.420m Ell.
OSGB 1936	
Latitude	55°08'14.73421"N
Longitude	001°30'54.93782"W
Ellipsoidal Height	3.543m Ell.
British National Grid	
Easting	430,898.885m E
Northing	582,676.326m N
Ellipsoidal Height	3.543m Ell.
Scale factor	0.999612986
Convergence	0.39774°

D. CONTROL POINT RTK GNSS REPORTS

Target Point	Date	Time	Solution Type	Antenna Height	Easting UTM Z31	Northing UTM Z31	Height Geoid	Epoch Count	HDOP	PDOP	Latitude [N] ETRS89	Longitude [W] ETRS89	Height Ellipsoid	HRMS	VRMS

E. INFORMATION FOR VERTICAL HEIGHT VERIFICATION CALCULATION



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Appendix J

Site Activities

Appendix J Contents

J.1 Daily Progress Reports
J.2 Incident Reports

J.1 Daily Progress Reports

DPR01 to DPR72 (dated 21/05/2019 to 31/07/2019)

J.2 Incident Reports

Finger Injury on 15/06/2019 (C1984_001_Rev03)

Excalibur/Tug on 17/06/2019 (FINAL)
with incident investigation report MV Excalibur Loss of Tow (C1984 / IMPACT 12780)

Hydraulic Oil Release on 18/06/2019 (C1984_003)

ESVAGT Near Miss on 19/06/2019 (C1984_005_Rev03)

GeoSonic LS600 Rig Hydraulic Hose Failure on 16/07/2019 (Incident Report No. 6)

First Aid Index Finger (right hand) on 29/08/2019 (IMP12986)

NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

Daily Report No. 01

Job No:	C1984	Vessel:	Excalibur	Date:	Tuesday 21-May-19	Revision	0

To	□d□□□□	Attn.	No./email	ed.1.flint@edf-energy.com
cc	□□□□□□ r□d□□	Attn.	No./email	kyriaki.semertzidou@edf-energy.com
cc	□□□rr□D□□□□	Attn.	No./email	thierry.denois@edf-en.com
cc	□ □□□□□ □□□	Attn.	No./email	gavin.hails@edf-energy.com
cc	□□□□□□r□□	Attn.	No./email	stephen.parrish@nnb-edfenergy.com
cc	Adr□□□□□r	Attn.	No./email	a.ivor@fugro.com
cc	□ □□□□□Ar□ □r□□□	Attn.	No./email	n.armstrong@fugro.com
cc	□□□r□ □□ □ □□	Attn.	No./email	p.gummow@fugro.com

Observed Weather	Wind		Wave Hs	Period	Sea State	Visibility	Weather Forecast Vs Operational Requirements
Time 00:00	Speed m/s	Direction	(m)	(Tp s)			
□□□□			□ □A	□ □d□□	□ □□	□ □□d□	□□r□□□□□□ □□□□r□□ □□□□□□□□□□□□□□□□□□□□d□□□□□□□□ □□□□□□□□□□□□□□□□r□□□ □□□□□□
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Leg Penetration (m)									Operational Status
BH no.	1	2	3	4	5	6	7	8	
□□□□r□	□□□	□□□	□□□	□□□	□□□	□□□	□□□	□□□	□ □□□□□□□d□□□r□□□□ □□r□□□r□□□d□□□ □ □□□□□□ □□□□□□□□□□□□□□□□□□□□

NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

Daily Report No.
01

Job No:	C1984	Vessel:	Excalibur	Date:	Tuesday 21-May-19	Revision	0

Work planned - next 72hrs:

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NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

Daily Report No. **01**

Job No:	C1984	Vessel:	Excalibur	Date:	Tuesday 21-May-19	Revision	0

Project Program / Progress		Programmed			Today			Actual To Date			% Program Completed
Activity	BoQ Item	m	No.	Hours	m	No.	Hours	m	No.	Hours	
Platform mobilisation/demobilisation	3.1		1			0		0.0	0	0.00	0.0
Platform set-up	3.4		18			0		0.0	0	0.00	0.0
Weather standby								0.0	0	0.00	0.0
Standby by other								0.0	0	0.00	0.0
SONIC (Vibration) drilling								0.0	0	0.00	0.0
Sonic Drilling between sea bed and 10m	5.2	180						0.0	0	0.00	0.0
Sonic Drilling between 10m and 20m	5.2.1	180						0.0	0	0.00	0.0
Sonic Drilling between 20m and 30m	5.2.2	180						0.0	0	0.00	0.0
Sonic Drilling between 30m and 40m	5.2.3	180						0.0	0	0.00	0.0
Sonic Drilling between 40m and 50m	5.2.4	180						0.0	0	0.00	0.0
Sonic Drilling between 50m and 55m	5.2.5	90						0.0	0	0.00	0.0
Back fill Sonic Borehole	5.3	990						0.0	0	0.00	0.0
Rotary Drilling								0.0	0	0.00	0.0
Rotary Coring between 45m and 55m	6.1.1	30						0.0	0	0.00	0.0
Rotary Coring between 55m and 65m	6.1.2	30						0.0	0	0.00	0.0
Rotary Coring between 65m and 75m	6.1.3	30						0.0	0	0.00	0.0
Rotary Coring between 75m and 85m	6.1.4	30						0.0	0	0.00	0.0
Rotary Coring between 85m and 95m	6.1.5	30						0.0	0	0.00	0.0
Rotary Coring between 95m and 105m	6.1.6	30						0.0	0	0.00	0.0
Rotary Coring between 105m and 110m	6.1.7	15						0.0	0	0.00	0.0
Borehole cementation (E/O)	6.2	165						0.0	0	0.00	0.0
Borehole cementation from 55-110m bgl	6.3	165						0.0	0	0.00	0.0
SPT Destructive Drilling								0.0	0	0.00	0.0
Destructive drilling between Sea bed and 10m	9.2	180						0.0	0	0.00	0.0
Destructive drilling between 10m and 20m	9.2.1	180						0.0	0	0.00	0.0
Destructive drilling between 20m and 30m	9.2.2	180						0.0	0	0.00	0.0
Destructive drilling between 30m and 40m	9.2.3	180						0.0	0	0.00	0.0
Destructive drilling between 40m and 50m	9.2.4	180						0.0	0	0.00	0.0
Destructive drilling between 50m and 55m	9.2.5	90						0.0	0	0.00	0.0
Undertake SPT test	9.3		467					0.0	0	0.00	0.0
Back fill SPT Borehole	9.6	990						0.0	0	0.00	0.0
Borehole Seismic								0.0	0	0.00	0.0
Mob of Check shot equipment	15.1		1					0.0	0	0.00	0.0
E/O day rate for equipment only onboard JUB	15.2			30				0.0	0	0.00	0.0
E/O day rate for operator onboard JUB	15.3			30.00				0.0	0	0.00	0.0
Move and setup for Check shot	15.4		7					0.0	0	0.00	0.0
Perform Check shot	15.5	495.0						0.0	0	0.00	0.0
Reporting of Check shot	15.6		7					0.0	0	0.00	0.0
E/O Rate for Additional Casing Pulls (2 / hole)								0.0	0	0.00	0.0
Geophysical Logging								0.0	0	0.00	0.0
GL acquisition & report for P/S velocity logging	16.2	1155.0						0.0	0	0.00	0.0
Geo-logging mob-demob for GAMMA ray	16.3		1					0.0	0	0.00	0.0
E/O day rate for equipment onboard the JUB	16.4.1			64.00				0.0	0	0.00	0.0
Setup for Gamma Ray	16.4.2		18					0.0	0	0.00	0.0
Gamma Ray Logging	16.4.3	1155.0						0.0	0	0.00	0.0
Reporting of Gamma Ray	16.4.4		18					0.0	0	0.00	0.0
GL acquisition and report for Calliper	16.6	1155.0						0.0	0	0.00	0.0
Mobilisation of additional wireline engineer	16.7		1					0.0	0	0.00	0.0
Daily rate for additional WL logging engineer	16.8			64.00				0.0	0	0.00	0.0
E/O mob/demob of the Robertson's PSSL tool	25.3							0.0	0	0.00	0.0
E/O day rate for the Robertson's PSSL tool	25.4							0.0	0	0.00	0.0
Variation Orders								0.0	0	0.00	0.0
								0.0	0	0.00	0.0
								0.0	0	0.00	0.0
								0.0	0	0.00	0.0
								0.0	0	0.00	0.0
								0.0	0	0.00	0.0
								0.0	0	0.00	0.0
								0.0	0	0.00	0.0
								0.0	0	0.00	0.0
								0.0	0	0.00	0.0
								0.0	0	0.00	0.0
								0.0	0	0.00	0.0
								0.0	0	0.00	0.0
								0.0	0	0.00	0.0
								0.0	0	0.00	0.0

Health & Safety Summary	Today	Actual To Date
HOCs	0	0
Safety Drills	0	0
Tool Box Talks	2	2
HSE Meetings	0	0
Incidents/Near Miss	0	0
Environmental	0	0
Inspections / Audits	0	0
Hours Worked	276	276

Lost or damaged equipment / materials

Nothing to report

Fugro GeoServices Representative Comments

Client Representative Comments

Client Representative not present on JUB

FGSL Representative: Colin Mulvey / Work Package Manager

Signed: [redacted]

Client Representative:

Signed:

NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

Daily Report No. 02

Job No:	C1984	Vessel:	Excalibur	Date:	Wednesday 22-May-19	Revision	0

To	□d□□□□□	Attn.		No./email	ed.1.flint@edf-energy.com
cc	□□□□□□□ □r□□d□□	Attn.		No./email	kyriaki.semertzidou@edf-energy.com
cc	□□□rr□D□□□□□	Attn.		No./email	thierry.denois@edf-en.com
cc	□ □□□□□ □□□	Attn.		No./email	gavin.hails@edf-energy.com
cc	□□□□□□□rr□□	Attn.		No./email	stephen.parrish@nnb-edfenergy.com
cc	Adr□□□□□r	Attn.		No./email	a.ivor@fugro.com
cc	□ □□□□□□Ar□ □r□□□	Attn.		No./email	n.armstrong@fugro.com
cc	□□□r□□ □□ □ □□	Attn.		No./email	p.gummow@fugro.com

Observed Weather	Wind		Wave Hs (m)	Period (Tp s)	Sea State	Visibility	Weather Forecast Vs Operational Requirements
Time 00:00	Speed m/s	Direction					
□□:□□	□	□ □□	□.□A	□□.□d□□	□□□□□	□.□□d	□□□r□□□r□□□□□□□□□□r□□□□□□□□□□□□□□□□r□□d□□□□d□□□□
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Leg Penetration (m)									Operational Status
BH no.	1	2	3	4	5	6	7	8	
	□□□	□□□	□□□	□□□	□□□	□□□	□□□	□□□	□□□□□□□□□□□□□□□□□

NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

Daily Report No. 02

Job No:	C1984	Vessel:	Excalibur	Date:	Wednesday 22-May-19	Revision	0

Work planned - Next 72hrs:

□□d□r□□□

NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

Daily Report No. **02**

Job No:	C1984	Vessel:	Excalibur	Date:	Wednesday 22-May-19	Revision	0

Project Program / Progress		Programmed			Today			Actual To Date			% Program Completed
Activity	BoQ Item	m.	No.	Hours	m.	No.	Hours	m.	No.	Hours	
Platform mobilisation/demobilisation	3.1		1			0		0.0	0	0.00	0.0
Platform set-up	3.4		18			0		0.0	0	0.00	0.0
Weather standby								0.0	0	0.00	0.0
Standby by other								0.0	0	0.00	0.0
SONIC (Vibration) drilling								0.0	0	0.00	0.0
Sonic Drilling between sea bed and 10m	5.2	180						0.0	0	0.00	0.0
Sonic Drilling between 10m and 20m	5.2.1	180						0.0	0	0.00	0.0
Sonic Drilling between 20m and 30m	5.2.2	180						0.0	0	0.00	0.0
Sonic Drilling between 30m and 40m	5.2.3	180						0.0	0	0.00	0.0
Sonic Drilling between 40m and 50m	5.2.4	180						0.0	0	0.00	0.0
Sonic Drilling between 50m and 55m	5.2.5	90						0.0	0	0.00	0.0
Back fill Sonic Borehole	5.3	990						0.0	0	0.00	0.0
Rotary Drilling								0.0	0	0.00	0.0
Rotary Coring between 45m and 55m	6.1.1	30						0.0	0	0.00	0.0
Rotary Coring between 55m and 65m	6.1.2	30						0.0	0	0.00	0.0
Rotary Coring between 65m and 75m	6.1.3	30						0.0	0	0.00	0.0
Rotary Coring between 75m and 85m	6.1.4	30						0.0	0	0.00	0.0
Rotary Coring between 85m and 95m	6.1.5	30						0.0	0	0.00	0.0
Rotary Coring between 95m and 105m	6.1.6	30						0.0	0	0.00	0.0
Rotary Coring between 105m and 110m	6.1.7	15						0.0	0	0.00	0.0
Borehole cementation (E/O)	6.2	165						0.0	0	0.00	0.0
Borehole cementation from 55-110m bgl	6.3	165						0.0	0	0.00	0.0
SPT Destructive Drilling								0.0	0	0.00	0.0
Destructive drilling between Sea bed & 10m	9.2	180						0.0	0	0.00	0.0
Destructive drilling between 10m and 20m	9.2.1	180						0.0	0	0.00	0.0
Destructive drilling between 20m and 30m	9.2.2	180						0.0	0	0.00	0.0
Destructive drilling between 30m and 40m	9.2.3	180						0.0	0	0.00	0.0
Destructive drilling between 40m and 50m	9.2.4	180						0.0	0	0.00	0.0
Destructive drilling between 50m and 55m	9.2.5	90						0.0	0	0.00	0.0
Undertake SPT test	9.3		467					0.0	0	0.00	0.0
Back fill SPT Borehole	9.6	990						0.0	0	0.00	0.0
Borehole Seismic								0.0	0	0.00	0.0
Mob of Check shot equipment	15.1		1					0.0	0	0.00	0.0
E/O day rate for equipment only onboard the JUB	15.2			30				0.0	0	0.00	0.0
E/O day rate for operator onboard the JUB	15.3			30.00				0.0	0	0.00	0.0
Move and setup for Check shot	15.4		7					0.0	0	0.00	0.0
Perform Check shot	15.5	495.0						0.0	0	0.00	0.0
Reporting of Check shot	15.6		7					0.0	0	0.00	0.0
E/O rate for Additional casing pulls (2 per BH)								0.0	0	0.00	0.0
Geophysical Logging								0.0	0	0.00	0.0
GL acquisition & Report for P/S velocity logging	16.2	1155.0						0.0	0	0.00	0.0
Geo-logging mob-demob for GAMMA ray	16.3		1					0.0	0	0.00	0.0
E/O day rate for equipment onboard the jack-up	16.4.1			64.00				0.0	0	0.00	0.0
Setup for Gamma Ray	16.4.2		18					0.0	0	0.00	0.0
Gamma Ray Logging	16.4.3	1155.0						0.0	0	0.00	0.0
Reporting of Gamma Ray	16.4.4		18					0.0	0	0.00	0.0
GL acquisition and report for Calliper	16.6	1155.0						0.0	0	0.00	0.0
Mobilisation of additional wireline engineer to site	16.7		1					0.0	0	0.00	0.0
Daily rate for additional WL Logging Engineer	16.8			64.00				0.0	0	0.00	0.0
E/O mob/demob of the Robertson's PSSL tool	25.3							0.0	0	0.00	0.0
E/O day rate for the Robertson's PSSL tool	25.4							0.0	0	0.00	0.0
Variation Orders								0.0	0	0.00	0.0
								0.0	0	0.00	0.0
								0.0	0	0.00	0.0
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Health & Safety Summary	Today	Actual To Date
HOCs	0	0
Safety Drills	0	0
Tool Box Talks	2	4
HSE Meetings	0	0
Incidents/Near Miss	0	0
Environmental	0	0
Inspections / Audits	0	0
Hours Worked	336	612

Lost or damaged equipment / materials

n/a

Fugro GeoServices Representative Comments

Client Representative Comments

Client Representative not present on JUB

FGSL Representative: Colin Mulvey / Work Package Manager

Signed: [redacted]

Client Representative:

Signed:

NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

Daily Report No. 03

Job No:	C1984	Vessel:	Excalibur	Date:	Thursday 23-May-19	Revision	0

To	□d□□□□	Attn.		No./email	ed.1.flint@edf-energy.com
cc	□□□□□□ □r□□d□□	Attn.		No./email	kyriaki.semertzidou@edf-energy.com
cc	□□□rr□□D□□□□□	Attn.		No./email	thierry.denois@edf-en.com
cc	□ □□□□□ □□□	Attn.		No./email	gavin.hails@edf-energy.com
cc	□□□□□□□rr□□	Attn.		No./email	stephen.parrish@nnb-edfenergy.com
cc	Adr□□□□□r	Attn.		No./email	a.ivor@fugro.com
cc	□ □□□□□□Ar□ □r□□□	Attn.		No./email	n.armstrong@fugro.com
cc	□□□r□□ □□ □ □□	Attn.		No./email	p.gummow@fugro.com

Observed Weather	Wind		Wave Hs (m)	Period (Tp s)	Sea State	Visibility	Weather Forecast Vs Operational Requirements
Time 00:00	Speed m/s	Direction					
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Leg Penetration (m)								
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Operational Status

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NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

Daily Report No. 03

Job No:	C1984	Vessel:	Excalibur	Date:	Thursday 23-May-19	Revision	0

Work planned - Next 72hrs:

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NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

Daily Report No. **03**

Job No:	C1984	Vessel:	Excalibur	Date:	Thursday 23-May-19	Revision	0

Project Program / Progress		Programmed			Today			Actual To Date			% Program Completed
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NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

Daily Report No. 04

Job No:	C1984	Vessel:	Excalibur	Date:	Friday 24-May-19	Revision	0

To	□d□□□□	Attn.		No./email	ed.1.flint@edf-energy.com
cc	□□□□□□ □r□□d□□	Attn.		No./email	kyriaki.semertzidou@edf-energy.com
cc	□□□rr□□D□□□□□	Attn.		No./email	thierry.denois@edf-en.com
cc	□ □□□□□ □□□	Attn.		No./email	gavin.hails@edf-energy.com
cc	□□□□□□□rr□□	Attn.		No./email	stephen.parrish@nnb-edfenergy.com
cc	Adr□□□□□r	Attn.		No./email	a.ivor@fugro.com
cc	□ □□□□□□Ar□ □r□□□	Attn.		No./email	n.armstrong@fugro.com
cc	□□□r□□ □□ □ □□	Attn.		No./email	p.gummow@fugro.com

Observed Weather	Wind		Wave Hs (m)	Period (Tp s)	Sea State	Visibility	Weather Forecast Vs Operational Requirements
Time 00:00	Speed m/s	Direction					
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Leg Penetration (m)									Operational Status
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NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

Daily Report No. 04

Job No:	C1984	Vessel:	Excalibur	Date:	Friday 24-May-19	Revision	0

Work planned - Next 72hrs:

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NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

Daily Report No. **04**

Job No:	C1984	Vessel:	Excalibur	Date:	Friday 24-May-19	Revision	0

Project Program / Progress		Programmed			Today			Actual To Date			% Program Completed
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Lost or damaged equipment / materials

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Fugro GeoServices Representative Comments

Client Representative Comments

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FGSL Representative: Colin Mulvey / Work Package Manager

Signed: [redacted]

Client Representative:

Signed:

NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

Daily Report No. 05

Job No:	C1984	Vessel:	Excalibur	Date:	Saturday 25-May-19	Revision	0

To	□d□□□□	Attn.		No./email	ed.1.flint@edf-energy.com
cc	□□□□□□ □r□□d□□	Attn.		No./email	kyriaki.semertzidou@edf-energy.com
cc	□□□rr□□D□□□□□	Attn.		No./email	thierry.denois@edf-en.com
cc	□ □□□□□ □□□	Attn.		No./email	gavin.hails@edf-energy.com
cc	□□□□□□□rr□□	Attn.		No./email	stephen.parrish@nnb-edfenergy.com
cc	Adr□□□□□r	Attn.		No./email	a.ivor@fugro.com
cc	□ □□□□□□Ar□ □r□□□	Attn.		No./email	n.armstrong@fugro.com
cc	□□□r□□ □□ □ □□	Attn.		No./email	p.gummow@fugro.com

Observed Weather	Wind		Wave Hs	Period	Sea State	Visibility	Weather Forecast Vs Operational Requirements
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Moon Pool #1 - Summary of GeoSonic Borehole Drilling and Sampling Operations (LS 600 rig) - last 24hrs:

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NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

Daily Report No. **05**

Job No:	C1984	Vessel:	Excalibur	Date:	Saturday 25-May-19	Revision	0

Work planned - Next 72hrs:

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NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

Daily Report No. **05**

Job No:	C1984	Vessel:	Excalibur	Date:	Saturday 25-May-19	Revision	0

Project Program / Progress		Programmed			Today			Actual To Date			% Program Completed
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NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

Daily Report No. 06

Job No:	C1984	Vessel:	Excalibur	Date:	Sunday 26-May-19	Revision	0

To	□d□□□□	Attn.		No./email	ed.1.flint@edf-energy.com
cc	□□□□□□ □r□□d□□	Attn.		No./email	kyriaki.semertzidou@edf-energy.com
cc	□□□rr□D□□□□	Attn.		No./email	thierry.denois@edf-en.com
cc	□ □□□□□ □□□	Attn.		No./email	gavin.hails@edf-energy.com
cc	□□□□□□rr□□	Attn.		No./email	stephen.parrish@nnb-edfenergy.com
cc	Adr□□□□□r	Attn.		No./email	a.ivor@fugro.com
cc	□ □□□□□□Ar□ □r□□□	Attn.		No./email	n.armstrong@fugro.com
cc	□□□r□□ □□ □ □□	Attn.		No./email	p.gummow@fugro.com

Observed Weather	Wind		Wave Hs (m)	Period (Tp s)	Sea State	Visibility	Weather Forecast Vs Operational Requirements
Time 00:00	Speed m/s	Direction					
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NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

Daily Report No. 06

Job No:	C1984	Vessel:	Excalibur	Date:	Sunday 26-May-19	Revision	0

Work planned - Next 72hrs:

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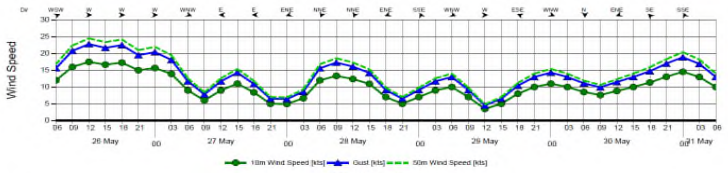
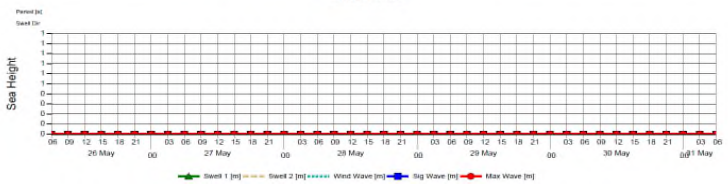
Weather forecast

Wind Chart



Wave Chart



Health Safety & the Environment

	Moon Pool #1 - Summary of GeoSonic Borehole Drilling and Sampling Operations (GS 600 rig) - last 24hrs:		Moon Pool #2 - Summary of Destructive drilling / Rotary Coring & Sampling Operations (Comacchio 12.1 Rig) - last 24hrs:	
Activity Time Summary	**Today**	**To Date**	**Today**	**To Date**
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Personnel on Board (Fugro/Client/Subcontractors)			
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No. Personnel	**19**	**Total Man Hours Worked**	□□□

Fugro GeoServices Representative Comments	Client Representative Comments
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FGSL Representative:	Client Representative:
Signed:	**Signed:**

NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

Daily Report No. **06**

Job No:	C1984	Vessel:	Excalibur	Date:	Sunday 26-May-19	Revision	0

Project Program / Progress		Programmed			Today			Actual To Date			% Program Completed
Activity	BoQ Item	m.	No.	Hours	m.	No.	Hours	m.	No.	Hours	
Platform mobilisation/demobilisation	3.1		1			1		0.0	1	0.00	100.0
Platform set-up	3.4		18					0.0	0	0.00	0.0
Weather standby								0.0	0	0.00	0.0
Standby by other								0.0	0	0.00	0.0
SONIC (Vibration) drilling								0.0	0	0.00	0.0
Sonic Drilling between sea bed and 10m	5.2	180						0.0	0	0.00	0.0
Sonic Drilling between 10m and 20m	5.2.1	180						0.0	0	0.00	0.0
Sonic Drilling between 20m and 30m	5.2.2	180						0.0	0	0.00	0.0
Sonic Drilling between 30m and 40m	5.2.3	180						0.0	0	0.00	0.0
Sonic Drilling between 40m and 50m	5.2.4	180						0.0	0	0.00	0.0
Sonic Drilling between 50m and 55m	5.2.5	90						0.0	0	0.00	0.0
Back fill Sonic Borehole	5.3	990						0.0	0	0.00	0.0
Rotary Drilling								0.0	0	0.00	0.0
Rotary Coring between 45m and 55m	6.1.1	30						0.0	0	0.00	0.0
Rotary Coring between 55m and 65m	6.1.2	30						0.0	0	0.00	0.0
Rotary Coring between 65m and 75m	6.1.3	30						0.0	0	0.00	0.0
Rotary Coring between 75m and 85m	6.1.4	30						0.0	0	0.00	0.0
Rotary Coring between 85m and 95m	6.1.5	30						0.0	0	0.00	0.0
Rotary Coring between 95m and 105m	6.1.6	30						0.0	0	0.00	0.0
Rotary Coring between 105m and 110m	6.1.7	15						0.0	0	0.00	0.0
Borehole cementation (E/O)	6.2	165						0.0	0	0.00	0.0
Borehole cementation from 55-110m bgl	6.3	165						0.0	0	0.00	0.0
SPT Destructive Drilling								0.0	0	0.00	0.0
Destructive drilling between Sea bed & 10m	9.2	180						0.0	0	0.00	0.0
Destructive drilling between 10m and 20m	9.2.1	180						0.0	0	0.00	0.0
Destructive drilling between 20m and 30m	9.2.2	180						0.0	0	0.00	0.0
Destructive drilling between 30m and 40m	9.2.3	180						0.0	0	0.00	0.0
Destructive drilling between 40m and 50m	9.2.4	180						0.0	0	0.00	0.0
Destructive drilling between 50m and 55m	9.2.5	90						0.0	0	0.00	0.0
Undertake SPT test	9.3		467					0.0	0	0.00	0.0
Back fill SPT Borehole	9.6	990						0.0	0	0.00	0.0
Borehole Seismic								0.0	0	0.00	0.0
Mob of Check shot equipment	15.1		1					0.0	0	0.00	0.0
E/O day rate for equipment only onboard the JUB	15.2			30				0.0	0	0.00	0.0
E/O day rate for operator onboard the JUB	15.3			30.00				0.0	0	0.00	0.0
Move and setup for Check shot	15.4		7					0.0	0	0.00	0.0
Perform Check shot	15.5	495.0						0.0	0	0.00	0.0
Reporting of Check shot	15.6		7					0.0	0	0.00	0.0
E/O rate for Additional casing pulls (2 per BH)								0.0	0	0.00	0.0
Geophysical Logging								0.0	0	0.00	0.0
GL acquisition & Report for P/S velocity logging	16.2	1155.0						0.0	0	0.00	0.0
Geo-logging mob-demob for GAMMA ray	16.3		1					0.0	0	0.00	0.0
E/O day rate for equipment onboard the jack-up	16.4.1			64.00				0.0	0	0.00	0.0
Setup for Gamma Ray	16.4.2		18					0.0	0	0.00	0.0
Gamma Ray Logging	16.4.3	1155.0						0.0	0	0.00	0.0
Reporting of Gamma Ray	16.4.4		18					0.0	0	0.00	0.0
GL acquisition and report for Calliper	16.6	1155.0						0.0	0	0.00	0.0
Mobilisation of additional wireline engineer to site	16.7		1					0.0	0	0.00	0.0
Daily rate for additional WL Logging Engineer	16.8			64.00				0.0	0	0.00	0.0
E/O mob/demob of the Robertson's PSSL tool	25.3							0.0	0	0.00	0.0
E/O day rate for the Robertson's PSSL tool	25.4							0.0	0	0.00	0.0
Variation Orders								0.0	0	0.00	0.0
								0.0	0	0.00	0.0
								0.0	0	0.00	0.0
								0.0	0	0.00	0.0
								0.0	0	0.00	0.0
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								0.0	0	0.00	0.0

Health & Safety Summary	Today	Actual To Date
HOCs	0	0
Safety Drills	0	0
Tool Box Talks	1	11
HSE Meetings	0	0
Incidents/Near Miss	0	0
Environmental	0	0
Inspections / Audits	1	3
Hours Worked	228	1848

Lost or damaged equipment / materials

n/a

Fugro GeoServices Representative Comments

Client inspecetion of survey system complete and function check.

Client Representative Comments

Client Representative not present on JUB

FGSL Representative: Colin Mulvey / Work Package Manager

Signed: [redacted]

Client Representative:

Signed:

NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

Daily Report No. 07

Job No:	C1984	Vessel:	Excalibur	Date:	Monday 27-May-19	Revision	0

To	□d□□□□	Attn.		No./email	ed.1.flint@edf-energy.com
cc	□□□□□□ □r□□d□□	Attn.		No./email	kyriaki.semertzidou@edf-energy.com
cc	□□□rr□D□□□□	Attn.		No./email	thierry.denois@edf-en.com
cc	□ □□□□□ □□□	Attn.		No./email	gavin.hails@edf-energy.com
cc	□□□□□□□rr□□	Attn.		No./email	stephen.parrish@nnb-edfenergy.com
cc	Adr□□□□□r	Attn.		No./email	a.ivor@fugro.com
cc	□ □□□□□□Ar□ □r□□□	Attn.		No./email	n.armstrong@fugro.com
cc	□□□r□□ □□ □ □□	Attn.		No./email	p.gummow@fugro.com

Observed Weather	Wind		Wave Hs	Period	Sea State	Visibility	Weather Forecast Vs Operational Requirements
Time 00:00	Speed m/s	Direction	(m)	(Tp s)			
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Leg Penetration (m)									Operational Status
BH no.	1	2	3	4	5	6	7	8	
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NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

Daily Report No. 07

Job No:	C1984	Vessel:	Excalibur	Date:	Monday 27-May-19	Revision	0

Work planned - Next 72hrs:

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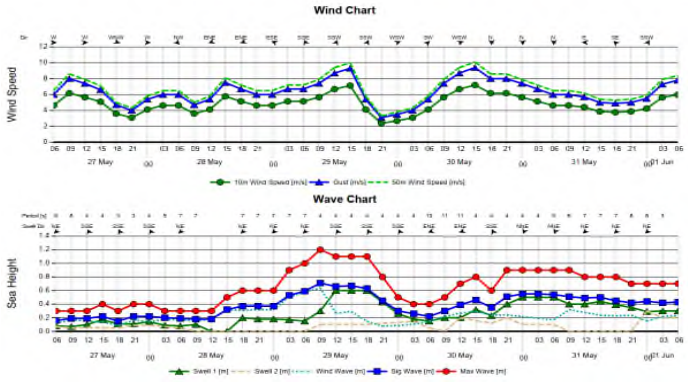
Weather forecast



Health Safety & the Environment

Moon Pool #1 - Summary of GeoSonic Borehole Drilling and Sampling Operations (GS 600 rig) - last 24hrs:

Moon Pool #2 - Summary of Destructive drilling / Rotary Coring & Sampling Operations (Comacchio 12.1 Rig) - last 24hrs:

Activity Time Summary	Today	To Date	Today	To Date
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Personnel on Board (Fugro/Client/Subcontractors)			
0000-1200	1200-2400	Company	Position
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No. Personnel	**8**	**Total Man Hours Worked**	□□

Fugro GeoServices Representative Comments	Client Representative Comments
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FGSL Representative:

Signed:

Client Representative:

Signed:

NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

Daily Report No. **07**

Job No:	C1984	Vessel:	Excalibur	Date:	Monday 27-May-19	Revision	0

Project Program / Progress		Programmed			Today			Actual To Date			% Program Completed
Activity	BoQ Item	m.	No.	Hours	m.	No.	Hours	m.	No.	Hours	
Platform mobilisation/demobilisation	3.1		1			1		0.0	2	0.00	
Platform set-up	3.4		18					0.0	0	0.00	0.0
Weather standby								0.0	0	0.00	0.0
Standby by other								0.0	0	0.00	0.0
SONIC (Vibration) drilling								0.0	0	0.00	0.0
Sonic Drilling between sea bed and 10m	5.2	180						0.0	0	0.00	0.0
Sonic Drilling between 10m and 20m	5.2.1	180						0.0	0	0.00	0.0
Sonic Drilling between 20m and 30m	5.2.2	180						0.0	0	0.00	0.0
Sonic Drilling between 30m and 40m	5.2.3	180						0.0	0	0.00	0.0
Sonic Drilling between 40m and 50m	5.2.4	180						0.0	0	0.00	0.0
Sonic Drilling between 50m and 55m	5.2.5	90						0.0	0	0.00	0.0
Back fill Sonic Borehole	5.3	990						0.0	0	0.00	0.0
Rotary Drilling								0.0	0	0.00	0.0
Rotary Coring between 45m and 55m	6.1.1	30						0.0	0	0.00	0.0
Rotary Coring between 55m and 65m	6.1.2	30						0.0	0	0.00	0.0
Rotary Coring between 65m and 75m	6.1.3	30						0.0	0	0.00	0.0
Rotary Coring between 75m and 85m	6.1.4	30						0.0	0	0.00	0.0
Rotary Coring between 85m and 95m	6.1.5	30						0.0	0	0.00	0.0
Rotary Coring between 95m and 105m	6.1.6	30						0.0	0	0.00	0.0
Rotary Coring between 105m and 110m	6.1.7	15						0.0	0	0.00	0.0
Borehole cementation (E/O)	6.2	165						0.0	0	0.00	0.0
Borehole cementation from 55-110m bgl	6.3	165						0.0	0	0.00	0.0
SPT Destructive Drilling								0.0	0	0.00	0.0
Destructive drilling between Sea bed & 10m	9.2	180						0.0	0	0.00	0.0
Destructive drilling between 10m and 20m	9.2.1	180						0.0	0	0.00	0.0
Destructive drilling between 20m and 30m	9.2.2	180						0.0	0	0.00	0.0
Destructive drilling between 30m and 40m	9.2.3	180						0.0	0	0.00	0.0
Destructive drilling between 40m and 50m	9.2.4	180						0.0	0	0.00	0.0
Destructive drilling between 50m and 55m	9.2.5	90						0.0	0	0.00	0.0
Undertake SPT test	9.3		467					0.0	0	0.00	0.0
Back fill SPT Borehole	9.6	990						0.0	0	0.00	0.0
Borehole Seismic								0.0	0	0.00	0.0
Mob of Check shot equipment	15.1		1					0.0	0	0.00	0.0
E/O day rate for equipment only onboard the JUB	15.2			30				0.0	0	0.00	0.0
E/O day rate for operator onboard the JUB	15.3			30.00				0.0	0	0.00	0.0
Move and setup for Check shot	15.4		7					0.0	0	0.00	0.0
Perform Check shot	15.5	495.0						0.0	0	0.00	0.0
Reporting of Check shot	15.6		7					0.0	0	0.00	0.0
E/O rate for Additional casing pulls (2 per BH)								0.0	0	0.00	0.0
Geophysical Logging								0.0	0	0.00	0.0
GL acquisition & Report for P/S velocity logging	16.2	1155.0						0.0	0	0.00	0.0
Geo-logging mob-demob for GAMMA ray	16.3		1					0.0	0	0.00	0.0
E/O day rate for equipment onboard the jack-up	16.4.1			64.00				0.0	0	0.00	0.0
Setup for Gamma Ray	16.4.2		18					0.0	0	0.00	0.0
Gamma Ray Logging	16.4.3	1155.0						0.0	0	0.00	0.0
Reporting of Gamma Ray	16.4.4		18					0.0	0	0.00	0.0
GL acquisition and report for Calliper	16.6	1155.0						0.0	0	0.00	0.0
Mobilisation of additional wireline engineer to site	16.7		1					0.0	0	0.00	0.0
Daily rate for additional WL Logging Engineer	16.8			64.00				0.0	0	0.00	0.0
E/O mob/demob of the Robertson's PSSL tool	25.3							0.0	0	0.00	0.0
E/O day rate for the Robertson's PSSL tool	25.4							0.0	0	0.00	0.0
Variation Orders								0.0	0	0.00	0.0
								0.0	0	0.00	0.0
								0.0	0	0.00	0.0
								0.0	0	0.00	0.0
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								0.0	0	0.00	0.0
								0.0	0	0.00	0.0

Health & Safety Summary	Today	Actual To Date
HOCs	0	0
Safety Drills	0	0
Tool Box Talks	1	12
HSE Meetings	0	0
Incidents/Near Miss	0	0
Environmental	0	0
Inspections / Audits	1	4
Hours Worked	96	1944

Lost or damaged equipment / materials

n/a

Fugro GeoServices Representative Comments

Client inspection of survey system complete and function check.

Client Representative Comments

Client Representative not present on JUB

FGSL Representative: Colin Mulvey / Work Package Manager

Signed: [redacted]

Client Representative:

Signed:

NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

Daily Report No. 08

Job No:	C1984	Vessel:	Excalibur	Date:	Tuesday 28-May-19	Revision	0

To	□d□□□□	Attn.	No./email	ed.1.flint@edf-energy.com
cc	□□□□□ □r□□d□□	Attn.	No./email	kyriaki.semertzidou@edf-energy.com
cc	□□□rr□D□□□□	Attn.	No./email	thierry.denois@edf-en.com
cc	□ □□□□□ □□□	Attn.	No./email	gavin.hails@edf-energy.com
cc	□□□□□□□rr□□	Attn.	No./email	stephen.parrish@nnb-edfenergy.com
cc	Adr□□□□□r	Attn.	No./email	a.ivor@fugro.com
cc	□ □□□□□□Ar□ □r□□□	Attn.	No./email	n.armstrong@fugro.com
cc	□□□r□□ □□ □ □□	Attn.	No./email	p.gummow@fugro.com

Observed Weather	Wind		Wave Hs	Period	Sea State	Visibility	Weather Forecast Vs Operational Requirements
Time 00:00	Speed m/s	Direction	(m)	(Tp s)			
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Leg Penetration (m)									Operational Status
BH no.	1	2	3	4	5	6	7	8	
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NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

Daily Report No. 08

Job No:	C1984	Vessel:	Excalibur	Date:	Tuesday 28-May-19	Revision	0

Work planned - Next 72hrs:

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NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

Daily Report No. **08**

Job No:	C1984	Vessel:	Excalibur	Date:	Tuesday 28-May-19	Revision	0

Project Program / Progress		Programmed			Today			Actual To Date			% Program Completed
Activity	BoQ Item	m.	No.	Hours	m.	No.	Hours	m.	No.	Hours	
Platform mobilisation/demobilisation	3.1		1			1		0.0	3	0.00	
Platform set-up	3.4		18					0.0	0	0.00	
Weather standby								0.0	0	0.00	
Standby by other								0.0	0	0.00	
SONIC (Vibration) drilling								0.0	0	0.00	
Sonic Drilling between sea bed and 10m	5.2	180						0.0	0	0.00	
Sonic Drilling between 10m and 20m	5.2.1	180						0.0	0	0.00	
Sonic Drilling between 20m and 30m	5.2.2	180						0.0	0	0.00	
Sonic Drilling between 30m and 40m	5.2.3	180						0.0	0	0.00	
Sonic Drilling between 40m and 50m	5.2.4	180						0.0	0	0.00	
Sonic Drilling between 50m and 55m	5.2.5	90						0.0	0	0.00	
Back fill Sonic Borehole	5.3	990						0.0	0	0.00	
Rotary Drilling								0.0	0	0.00	
Rotary Coring between 45m and 55m	6.1.1	30						0.0	0	0.00	
Rotary Coring between 55m and 65m	6.1.2	30						0.0	0	0.00	
Rotary Coring between 65m and 75m	6.1.3	30						0.0	0	0.00	
Rotary Coring between 75m and 85m	6.1.4	30						0.0	0	0.00	
Rotary Coring between 85m and 95m	6.1.5	30						0.0	0	0.00	
Rotary Coring between 95m and 105m	6.1.6	30						0.0	0	0.00	
Rotary Coring between 105m and 110m	6.1.7	15						0.0	0	0.00	
Borehole cementation (E/O)	6.2	165						0.0	0	0.00	
Borehole cementation from 55-110m bgl	6.3	165						0.0	0	0.00	
SPT Destructive Drilling								0.0	0	0.00	
Destructive drilling between Sea bed & 10m	9.2	180						0.0	0	0.00	
Destructive drilling between 10m and 20m	9.2.1	180						0.0	0	0.00	
Destructive drilling between 20m and 30m	9.2.2	180						0.0	0	0.00	
Destructive drilling between 30m and 40m	9.2.3	180						0.0	0	0.00	
Destructive drilling between 40m and 50m	9.2.4	180						0.0	0	0.00	
Destructive drilling between 50m and 55m	9.2.5	90						0.0	0	0.00	
Undertake SPT test	9.3		467					0.0	0	0.00	
Back fill SPT Borehole	9.6	990						0.0	0	0.00	
Borehole Seismic								0.0	0	0.00	
Mob of Check shot equipment	15.1		1					0.0	0	0.00	
E/O day rate for equipment only onboard the JUB	15.2			30				0.0	0	0.00	
E/O day rate for operator onboard the JUB	15.3			30.00				0.0	0	0.00	
Move and setup for Check shot	15.4		7					0.0	0	0.00	
Perform Check shot	15.5	495.0						0.0	0	0.00	
Reporting of Check shot	15.6		7					0.0	0	0.00	
E/O rate for Additional casing pulls (2 per BH)								0.0	0	0.00	
Geophysical Logging								0.0	0	0.00	
GL acquisition & Report for P/S velocity logging	16.2	1155.0						0.0	0	0.00	
Geo-logging mob-demob for GAMMA ray	16.3		1					0.0	0	0.00	
E/O day rate for equipment onboard the jack-up	16.4.1			64.00				0.0	0	0.00	
Setup for Gamma Ray	16.4.2		18					0.0	0	0.00	
Gamma Ray Logging	16.4.3	1155.0						0.0	0	0.00	
Reporting of Gamma Ray	16.4.4		18					0.0	0	0.00	
GL acquisition and report for Calliper	16.6	1155.0						0.0	0	0.00	
Mobilisation of additional wireline engineer to site	16.7		1					0.0	0	0.00	
Daily rate for additional WL Logging Engineer	16.8			64.00				0.0	0	0.00	
E/O mob/demob of the Robertson's PSSL tool	25.3							0.0	0	0.00	
E/O day rate for the Robertson's PSSL tool	25.4							0.0	0	0.00	
Variation Orders								0.0	0	0.00	
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Health & Safety Summary	Today	Actual To Date
HOCs	0	0
Safety Drills	0	0
Tool Box Talks	1	13
HSE Meetings	1	1
Incidents/Near Miss	0	0
Environmental	0	0
Inspections / Audits	0	3
Hours Worked	96	2040

Lost or damaged equipment / materials

n/a

Fugro GeoServices Representative Comments

Project manager lead kick off meeting for the entire Sizewell C Work Package 2.

Client Representative Comments

Client Representative present for Project Kick off meeting

FGSL Representative: Colin Mulvey / Work Package Manager

Signed: [redacted]

Client Representative:

Signed:

NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

Daily Report No. 09

Job No:	C1984	Vessel:	Excalibur	Date:	Wednesday 29-May-19	Revision	0

To	□d□□□□	Attn.		No./email	ed.1.flint@edf-energy.com
cc	□□□□□□ □r□□d□□	Attn.		No./email	kyriaki.semertzidou@edf-energy.com
cc	□□□rr□□D□□□□□	Attn.		No./email	thierry.denois@edf-en.com
cc	□ □□□□□ □□□	Attn.		No./email	gavin.hails@edf-energy.com
cc	□□□□□□□rr□□	Attn.		No./email	stephen.parrish@nnb-edfenergy.com
cc	Adr□□□□□r	Attn.		No./email	a.ivor@fugro.com
cc	□ □□□□□□Ar□ □r□□□	Attn.		No./email	n.armstrong@fugro.com
cc	□□□r□□ □□ □ □□	Attn.		No./email	p.gummow@fugro.com

Observed Weather	Wind		Wave Hs (m)	Period (Tp s)	Sea State	Visibility	Weather Forecast Vs Operational Requirements
Time 00:00	Speed m/s	Direction					
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Leg Penetration (m)									Operational Status
BH no.	1	2	3	4	5	6	7	8	
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Moon Pool #1 - Summary of GeoSonic Borehole Drilling and Sampling Operations (LS 600 rig) - last 24hrs:

From	To (local)	Code	Description
□□□□	□□□□	□□□ □□□□□	**Start of Reporting Period** □□□□□□□□r□□□ □□□□□□ □□ □□r□□□□□
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NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

Daily Report No. 09

Job No:	C1984	Vessel:	Excalibur	Date:	Wednesday 29-May-19	Revision	0

Work planned - Next 72hrs:

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NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

Daily Report No. **09**

Job No:	C1984	Vessel:	Excalibur	Date:	Wednesday 29-May-19	Revision	0

Project Program / Progress		Programmed			Today			Actual To Date			% Program Completed
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SONIC (Vibration) drilling								□□□	□	□ □□□	
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NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

Daily Report No. 10

Job No:	C1984	Vessel:	Excalibur	Date:	Thursday 30-May-19	Revision	0

To	□d□□□□□	Attn.		No./email	ed.1.flint@edf-energy.com
cc	□□□□□□ □r□□d□□	Attn.		No./email	kyriaki.semertzidou@edf-energy.com
cc	□□□rr□D□□□□	Attn.		No./email	thierry.denois@edf-en.com
cc	□ □□□□□ □□□	Attn.		No./email	gavin.hails@edf-energy.com
cc	□□□□□□ □rr□□	Attn.		No./email	stephen.parrish@nnb-edfenergy.com
cc	Adr□□□□r	Attn.		No./email	a.ivor@fugro.com
cc	□ □□□□□□Ar□ □r□□□	Attn.		No./email	n.armstrong@fugro.com
cc	□□□r□□ □□ □ □□	Attn.		No./email	p.gummow@fugro.com

Observed Weather	Wind		Wave Hs (m)	Period (Tp s)	Sea State	Visibility	Weather Forecast Vs Operational Requirements
Time 00:00	Speed m/s	Direction					
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Leg Penetration (m)									Operational Status
BH no.	1	2	3	4	5	6	7	8	
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Moon Pool #1 - Summary of GeoSonic Borehole Drilling and Sampling Operations / JUB Operations (LS 600 rig) - last 24hrs:

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Moon Pool #2 - Summary of Destructive drilling / Rotary Coring and Sampling Operations (Comacchio 12.1 Rig) - last 24hrs:

From	To (local)	Code	Description
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Fugro GeoServices Representative Comments	Client Representative Comments

FGSL Representative:	**Client Representative:**
Signed:	**Signed:**

NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

Daily Report No. 10

Job No:	C1984	Vessel:	Excalibur	Date:	Thursday 30-May-19	Revision	0

Work planned - Next 72hrs:

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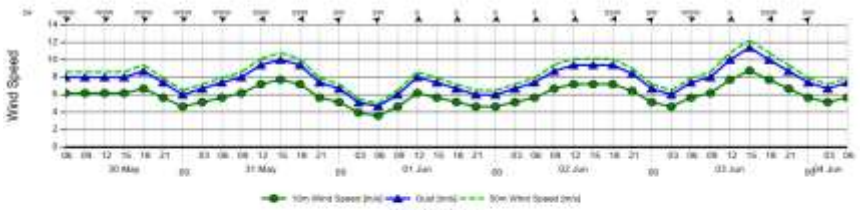
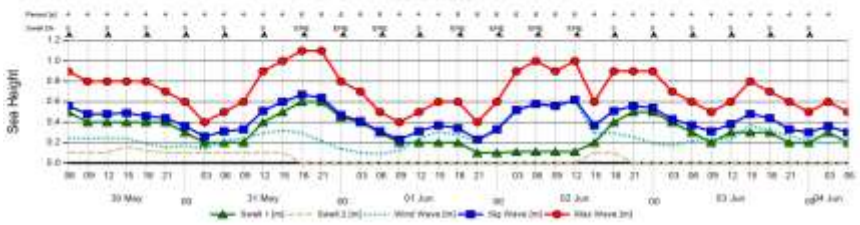
Weather forecast

Wind Chart



Wave Chart



Health Safety & the Environment

Moon Pool #1 - Summary of GeoSonic Borehole Drilling and Sampling Operations / JUB Operations (GS 600 rig) - last 24hrs:

Moon Pool #2 - Summary of Destructive drilling / Rotary Coring & Sampling Operations (Comacchio 12.1 Rig) - last 24hrs:

Activity Time Summary	Today	To Date	Today	To Date
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Personnel on Board (Fugro/Client/Subcontractors)

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No. Personnel	**31**	**Total Man Hours Worked**	□□□

Fugro GeoServices Representative Comments	Client Representative Comments

FGSL Representative:	Client Representative:
Signed:	Signed:

NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

Daily Report No. 10

Job No:	C1984	Vessel:	Excalibur	Date:	Thursday 30-May-19	Revision	0

Project Program / Progress		Programmed			Today			Actual To Date			% Program Completed
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Health & Safety Summary	Today	Actual To Date
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Lost or damaged equipment / materials

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Fugro GeoServices Representative Comments

Client Representative Comments

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NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

Daily Report No. 11

Job No:	C1984	Vessel:	Excalibur	Date:	Friday 31-May-19	Revision	0

To	Ed Flint	Attn.	No./email	ed.1.flint@edf-energy.com
cc	Kiki Semertzidou	Attn.	No./email	kyriaki.semertzidou@edf-energy.com
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cc	Adrian Ivor	Attn.	No./email	a.ivor@fugro.com
cc	Nicholas Armstrong	Attn.	No./email	n.armstrong@fugro.com
cc	Peter Gummow	Attn.	No./email	p.gummow@fugro.com

Observed Weather	Wind		Wave Hs	Period	Sea State	Visibility	Weather Forecast Vs Operational Requirements
Time 00:00	Speed m/s	Direction	(m)	(Tp s)			
00:00	8	WSW	N/A	No data	Slight	Good	Weather Forecast generally aligning with observed conditions
06:00	6	WSW	N/A	No data	Slight	Good	
12:00	10	SW	N/A	No data	Slight	Good	
18:00	10	SSW	N/A	No data	Slight	Good	
00:00	4	WSW	N/A	No data	Slight	Good	

Leg Penetration (m)									Operational Status
BH no.	1	2	3	4	5	6	7	8	
IT1_SB_03	3	3	4	4	4	4	3	3	Continue drilling operations running on both moon pools
Preloading	860t	860t	860t	860t	860t	860t	860t	860t	
IT1_SPT_03	3	3	4	4	4	4	3	3	

Moon Pool #1 - Summary of GeoSonic Borehole Drilling and Sampling Operations (LS 600 rig) - last 24hrs:

From	To (local)	Code	Description
00:00	03:00	Sonic Drilling	**Start of Reporting Period** / Start of Shift / Bore hole at 21m depth / continue sonic coring in 1m intervals
03:00	06:00	Sonic Drilling	Bore hole at 24m depth by 03:00 / continue sonic coring in 1m intervals
06:00	11:45	Sonic Drilling	Bore hole at 27m depth by 06:00 / continue sonic coring in 1m intervals
11:45	12:00	Crew handover / TBT	Borehole at 33m depth by 11.45 / Handover Briefing / Crew attend tool box talk and shift start up briefing
12:00	18:00	Sonic Drilling	Bore hole at 38m depth by 18:00 / continue sonic coring in 1m intervals
18:00	21:00	Sonic Drilling	Bore hole at 44m depth by 21:00 / continue sonic coring in 1m intervals
21:00	23:45	Sonic Drilling	Bore hole at 47m depth by 11:45 / continue sonic coring in 1m intervals
23:45	24:00	Crew handover / TBT	Handover Briefing / Tool box on Q1 safety statistics / **End of Reporting Period**
24:00			
00:00			
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Moon Pool #2 - Summary of Destructive drilling / Rotary Coring and Sampling Operations (Comacchio 12.1 Rig) - last 24hrs:

From	To (local)	Code	Description
00:00	03:00	Destructive Drilling	**Start of Reporting Period** / Start of Shift / Bore hole at 24m depth / continue drilling with SPT samples taken at 2m intervals
03:00	06:00	Destructive Drilling	Bore hole at 28m depth by 03:00 / Continue drilling with SPT samples taken at 2m intervals
06:00	11:45	Destructive Drilling	Bore hole at 34m depth by 06:00 / Continue drilling with SPT samples taken at 2m intervals
11:45	12:00	Crew handover / TBT	Borehole at 44m depth by 11.45 / Handover Briefing / Crew attend tool box talk and shift start up briefing
12:00	18:00	Destructive Drilling	Bore hole at 52m depth by 18:00 / Continue drilling with SPT samples taken at 2m intervals
18:00	22:00	Destructive Drilling	Bore hole completed to depth of 55m at 22:00
22:00	23:45	Fugro Standby	Running NGR in borehole from 55m to Mudline / problem encountered with tool or winch / Geophysics Engineer trying to find fault
23:45	24:00	Crew handover / TBT	Handover Briefing / Tool box on Q1 safety statistics / **End of Reporting Period**
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Fugro GeoServices Representative Comments	Client Representative Comments

FGSL Representative:	**Client Representative:**
Signed:	**Signed:**

NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

Daily Report No. 11

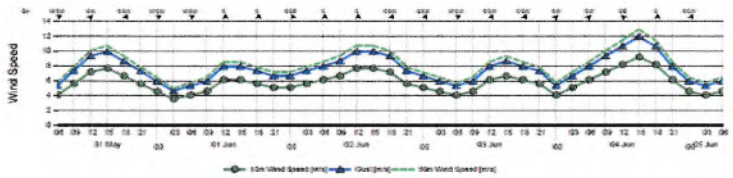
Job No:	C1984	Vessel:	Excalibur	Date:	Friday 31-May-19	Revision	0

Work planned - Next 72hrs:

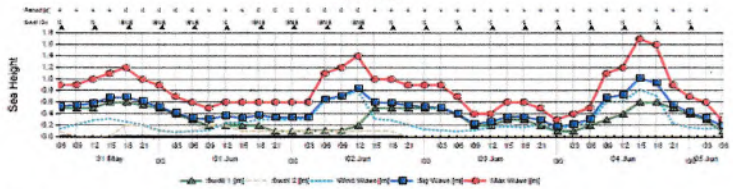
Complete drilling operations on IT1_SPT_03 and IT1_SB03 / reinstate bore holes by grouting / jack down barge / move to new location at IT1_SPT_07 / IT1_SB_07 / position barge and jack up / commence drilling operations

Weather forecast

Wind Chart



Wave Chart



Health Safety & the Environment

Tool box talk on Q1 health and Safety statistics undertaken

	Moon Pool #1 - Summary of GeoSonic Borehole Drilling and Sampling Operations / JUB Operations (GS 600 rig) - last 24hrs:		Moon Pool #2 - Summary of Destructive drilling / Rotary Coring & Sampling Operations (Comacchio 12.1 Rig) - last 24hrs:	
Activity Time Summary	**Today**	**To Date**	**Today**	**To Date**
Mobilisation	0.00	120.00	0.00	0.00
Tow to site	0.00	52.17	0.00	0.00
Moving to next Drilling location	0.00	0.00	0.00	0.00
Casing Installation	0.00	2.00	0.00	0.17
Destructive Drilling	0.00	0.00	21.75	23.50
Sample Drilling	0.00	0.00	0.00	0.00
Rotary Core Drilling	0.00	0.00	0.00	0.00
Sonic Drilling	23.50	41.00	0.00	0.00
SPT Operations	0.00	0.00	0.00	16.75
Geophysics Operations	0.00	0.00	0.00	0.00
Seismic Operations	0.00	0.00	0.00	0.00
Grouting Operations	0.00	0.00	0.00	0.00
Casing removal	0.00	0.00	0.00	0.00
Other operations	0.00	10.00	0.00	4.83
Crew/Materials Transfer	0.00	11.50	0.00	0.00
Crew handover / TBT	0.50	6.50	0.50	1.00
Weather Standby	0.00	11.00	0.00	0.00
3rd Party Standby	0.00	0.00	0.00	0.00
Fugro Standby	0.00	0.00	1.75	1.75
Demobilisation	0.00	0.00	0.00	0.00
Jacking Operation	0.00	3.83	0.00	0.00
0	0.00	0.00	0.00	0.00
0	0.00	0.00	0.00	0.00
Total	24.00	256.00	24.00	48.00

Personnel on Board (Fugro/Client/Subcontractors)

0000-1200	1200-2400	Company	Position
Colin Mulvey	Julian North	Fugro	Site Project Manager
Charlie Crawford	Darren Bolitho	Fugro	Bargemaster
Andy Rowe	Matt Blight	Fugro	Drilling Supervisor
James Lawson	Jake Warner	Fugro	Driller
Houston Russell	Adam Williams	Fugro	Assistant Driller
Justin Smith	Andrew Wills	Fugro	Assistant Driller
Carl Tucker	Kevin Thomson	Fugro	Crane Operator
Steve McInnes	Steve Hancock	Fugro	Fitter/Electrician
Gaby DE Francesco	James Baily	Fugro	Geotechnical Engineers
Matthew Hewiston	Elliot Sampson	Fugro	Geotechnical Engineers
Lenard Pal	Szabolcs Boncz	Fugro	Geophysics
Theirry Denois		EDF	Client Representative
Paul Jeans		Geosonic	Drilling Supervisor
Lee McCallagh	Tim McCarthy	Geosonic	Driller
Craig Jackson	David Bailey	Geosonic	Assistant Driller
Jerzy Ossowski	Maciej Treder	Sodexo	Chef
	Mihai Surelu	Sodexo	Steward
No. Personnel	31	**Total Man Hours Worked**	372

Fugro GeoServices Representative Comments	Client Representative Comments

FGSL Representative:	Client Representative:
Signed:	Signed:

NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

Daily Report No. **11**

Job No:	C1984	Vessel:	Excalibur	Date:	Friday 31-May-19	Revision	0

Project Program / Progress		Programmed			Today			Actual To Date			% Program Completed
Activity	BoQ Item	m.	No.	Hours	m.	No.	Hours	m.	No.	Hours	
Platform mobilisation/demobilisation	3.1		1					0.0	0.8	0.00	80.0
Platform set-up	3.4		18					0.0	1	0.00	5.6
Weather standby								0.0	0	0.00	0.0
Standby by other								0.0	0	0.00	0.0
SONIC (Vibration) drilling								0.0	0	0.00	0.0
Sonic Drilling between sea bed and 10m	5.2	180						10.0	0	0.00	5.6
Sonic Drilling between 10m and 20m	5.2.1	180						10.0	0	0.00	5.6
Sonic Drilling between 20m and 30m	5.2.2	180			9.00			10.0	0	0.00	5.6
Sonic Drilling between 30m and 40m	5.2.3	180			10.0			10.0	0	0.00	5.6
Sonic Drilling between 40m and 50m	5.2.4	180			7.0			7.0	0	0.00	3.9
Sonic Drilling between 50m and 55m	5.2.5	90						0.0	0	0.00	0.0
Back fill Sonic Borehole	5.3	990						0.0	0	0.00	0.0
Rotary Drilling								0.0	0	0.00	0.0
Rotary Coring between 45m and 55m	6.1.1	30						0.0	0	0.00	0.0
Rotary Coring between 55m and 65m	6.1.2	30						0.0	0	0.00	0.0
Rotary Coring between 65m and 75m	6.1.3	30						0.0	0	0.00	0.0
Rotary Coring between 75m and 85m	6.1.4	30						0.0	0	0.00	0.0
Rotary Coring between 85m and 95m	6.1.5	30						0.0	0	0.00	0.0
Rotary Coring between 95m and 105m	6.1.6	30						0.0	0	0.00	0.0
Rotary Coring between 105m and 110m	6.1.7	15						0.0	0	0.00	0.0
Borehole cementation (E/O)	6.2	165						0.0	0	0.00	0.0
Borehole cementation from 55-110m bgl	6.3	165						0.0	0	0.00	0.0
SPT Destructive Drilling								0.0	0	0.00	0.0
Destructive drilling between Sea bed & 10m	9.2	180						10.0	0	0.00	5.6
Destructive drilling between 10m and 20m	9.2.1	180						10.0	0	0.00	5.6
Destructive drilling between 20m and 30m	9.2.2	180			6.0			10.0	0	0.00	5.6
Destructive drilling between 30m and 40m	9.2.3	180			10.0			10.0	0	0.00	5.6
Destructive drilling between 40m and 50m	9.2.4	180			10.0			10.0	0	0.00	5.6
Destructive drilling between 50m and 55m	9.2.5	90			5.0			5.0	0	0.00	5.6
Undertake SPT test	9.3		467			15.0		0.0	27	0.00	5.8
Back fill SPT Borehole	9.6	990						0.0	0	0.00	0.0
Borehole Seismic								0.0	0	0.00	0.0
Mob of Check shot equipment	15.1		1					0.0	0	0.00	0.0
E/O day rate for equipment only onboard the JUB	15.2			30				0.0	0	0.00	0.0
E/O day rate for operator onboard the JUB	15.3			30.00				0.0	0	0.00	0.0
Move and setup for Check shot	15.4		7					0.0	0	0.00	0.0
Perform Check shot	15.5	495.0						0.0	0	0.00	0.0
Reporting of Check shot	15.6		7					0.0	0	0.00	0.0
E/O rate for Additional casing pulls (2 per BH)								0.0	0	0.00	0.0
Geophysical Logging								0.0	0	0.00	0.0
GL acquisition & Report for P/S velocity logging	16.2	1155.0						0.0	0	0.00	0.0
Geo-logging mob-demob for GAMMA ray	16.3		1					0.0	1	0.00	50.0
E/O day rate for equipment onboard the jack-up	16.4.1			64.00				0.0	0	0.00	0.0
Setup for Gamma Ray	16.4.2		18					0.0	0	0.00	0.0
Gamma Ray Logging	16.4.3	1155.0						0.0	0	0.00	0.0
Reporting of Gamma Ray	16.4.4		18					0.0	0	0.00	0.0
GL acquisition and report for Caliper	16.6	1155.0						0.0	0	0.00	0.0
Mobilisation of additional wireline engineer to site	16.7		1					0.0	1	0.00	100.0
Daily rate for additional WL Logging Engineer	16.8			64.00				0.0	0	0.00	0.0
E/O mob/demob of the Robertson's PSSL tool	25.3							0.0	1	0.00	0.0
E/O day rate for the Robertson's PSSL tool	25.4					1		0.0	3	0.00	0.0
Variation Orders								0.0	0	0.00	0.0
Mobilise equipment for Environmental Samples	27.1	1.0						0.0	1	0.00	100.0
Sampling Operations within SPT BH	27.2							0.0	1	0.00	0.0
Additional Geotechnical Engineers	27.3							0.0	0	0.00	0.0
Additional engineer shore side	27.4							0.0	0	0.00	0.0
Mobilisation of engineers	27.5	1.0						0.0	0	0.00	0.0
10ft Cooler container for jack-up	27.6							0.0	1	0.00	0.0
Daily hire of 10ft cooler container	27.7					1		0.0	3	0.00	0.0
Provision of enviro sample containers	27.8	1.0						0.0	1	0.00	100.0
Estimated cost of Environmental testing	27.11							0.0	0	0.00	0.0
Uplift for weather Risk	27.12							0.0	0	0.00	0.0
Mobilisation of ABI Equipment	28.1	1.0						0.0	0	0.00	0.0
Set up per section of logging ABI	28.2							0.0	0	0.00	0.0
ABI Logging	28.3		186					0.0	0	0.00	0.0
Reporting ABI	28.4		3					0.0	0	0.00	0.0
Day rate of ABI equipment	28.5							0.0	0	0.00	0.0
Uplift for weather Risk in line with item 24.2	28.6							0.0	0	0.00	0.0

Health & Safety Summary	Today	Actual To Date
HOCs	0	2
Safety Drills	1	1
Tool Box Talks	2	19
HSE Meetings	0	0
Incidents/Near Miss	0	0
Environmental	0	0
Inspections / Audits	0	3
Hours Worked	372	3156

Lost or damaged equipment / materials

n/a

Fugro GeoServices Representative Comments

Client Representative Comments

No energy measurement on SPT Hammer
IT1_SB_07 and IT1_SPT_07 sampling instruction issued — EDF
HSE Inspecion Report on JUB issued

FGSL Represen[redacted]ger

Signed: [redacted] 02/06/19

Clie[redacted]

Sign[redacted]

NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

Daily Report No. 12

Job No:	C1984	Vessel:	Excalibur	Date:	Saturday 01-Jun-19	Revision	0

To	Ed Flint	Attn.	No./email	ed.1.flint@edf-energy.com
cc	Kiki Semertzidou	Attn.	No./email	kyriaki.semertzidou@edf-energy.com
cc	Thierry Denois	Attn.	No./email	thierry.denois@edf-en.com
cc	Gavin Hails	Attn.	No./email	gavin.hails@edf-energy.com
cc	Steve Parrish	Attn.	No./email	stephen.parrish@nnb-edfenergy.com
cc	Adrian Ivor	Attn.	No./email	a.ivor@fugro.com
cc	Nicholas Armstrong	Attn.	No./email	n.armstrong@fugro.com
cc	Peter Gummow	Attn.	No./email	p.gummow@fugro.com

Observed Weather	Wind		Wave Hs (m)	Period (Tp s)	Sea State	Visibility	Weather Forecast Vs Operational Requirements
Time 00:00	Speed m/s	Direction					
00:00	8	WSW	N/A	No data	Moderate	Good	Weather Forecast generally aligning with observed conditions
06:00	4	WSW	N/A	No data	Slight	Good	
12:00	6	S	N/A	No data	Slight	Good	
18:00	5	S	N/A	No data	Slight	Good	
00:00	5	S	N/A	No data	Slight	Good	

Leg Penetration (m)									Operational Status
BH no.	1	2	3	4	5	6	7	8	
IT1_SB_03	3	3	4	4	4	4	3	3	Complete drilling operations / undertake Geophysics logging / Continue to facilitate remove of stuck 7" casing in SPT hole.
Preloading	860t	860t	860t	860t	860t	860t	860t	860t	
IT1_SPT_03	3	3	4	4	4	4	3	3	

Moon Pool #1 - Summary of GeoSonic Borehole Drilling and Sampling Operations (LS 600 rig) - last 24hrs:

From	To (local)	Code	Description
00:00	03:00	Sonic Drilling	**Start of Reporting Period** / Start of Shift / Bore hole at 47m depth / continue sonic coring in 1m intervals
03:00	06:00	Sonic Drilling	Bore hole at 50m depth by 03:00 / Continue sonic coring in 1m intervals
06:00	10:00	Sonic Drilling	Bore hole at 52m depth by 06:00 / Continue sonic coring in 1m intervals / Bore hole coompleted to 55m at 10:00
10:00	11:45	Casing removal	Casing to be pulled on Geosonic hole from 55m to 16m / Pulling geosonic casing
11:45	12:00	Crew handover / TBT	Shift Handover / Crew attend tool box talk and shift start up briefing
12:00	12:45	Casing removal	Casing pulled back to 16m
12:45	14:00	Geophysics Operations	Set up for caliper logging / Caliper logging indicates BH collase at 17m / Unable to continue PSL logging of open borehole from 24m to 16m
14:00	14:15	Casing removal	Additonal Pull casing from 16m to 10m at instruction of Client representative
14:15	15:30	Geophysics Operations	Set up for caliper logging / 14:45 Caliper logging in open section of borehole from 16m to 8m / Bore hole collapsed completely at 11m
15:30	16:00	Casing Installation	Geosonic rig reinstalls casing in Bore hole without sonic drilling / Casing hits obstruction at 16m
16:00	18:00	Fugro Standby	Client Representative agrees hole can be grouted from 16m to mud line / Drilling equipment set up ready to commence grouting of borehole
18:00	23:45	Fugro Standby	Drill crew on standby whilst operations continue to remove stuck 7" casing on SPT borehole
23:45	24:00	Crew handover / TBT	Handover Briefing / **End of Reporting Period**
24:00			
00:00			
00:00			
00:00			
00:00			
00:00			
00:00			

Moon Pool #2 - Summary of Destructive drilling / Rotary Coring and Sampling Operations (Comacchio 12.1 Rig) - last 24hrs:

From	To (local)	Code	Description
00:00	00:30	Fugro Standby	**Start of Reporting Period** / Start of Shift / Geophysics engineers locating fault with NGR tool
00:30	02:30	Geophysics Operations	Geophysics engineers locate fault switch to smaller winch and complete NGR in borehole from 55m
02:30	03:00	Casing removal	NGR Logging completed / pull back geobore casing to 23.85m
03:00	04:30	Geophysics Operations	Set up for caliper logging / caliper loging in open section of borehole from 55m to 23.85m
04:30	07:00	Geophysics Operations	Commence PSL logging of open borehole from 55m to 35m
07:00	07:45	Fugro Standby	Fault with PSL tool / tool recovered to deck / geophysics engineer working to locate fault
07:45	09:00	Fugro Standby	Resume PSL logging from 35m / fault with PSL tool / tool recovered to deck / geophysics engineer working to locate fault
09:00	10:00	Geophysics Operations	Resume PSL logging from 35m to 24m recover tool ready to commence removal of geobore casing
10:00	10:30	Casing removal	Complete pulling Geobore from borehole 24m to 0m
10:30	11:45	Casing removal	Commence pulling back 7" casing from 22m to 16m / Casing becomes stuck / Decision made to move PSSL logging to Moonpool 1 Sonic BH
11:45	12:00	Crew handover / TBT	Shift Handover / Crew attend tool box talk and shift start up briefing
12:00	18:00	Fugro Standby	7" casing remains stuck at 22m / Try various means to free including back hammering
18:00	23:45	Fugro Standby	Continue recovery of stuck 7" casing
23:45	24:00	Crew handover / TBT	Handover Briefing / **End of Reporting Period**
24:00			
00:00			
00:00			
00:00			
00:00			
00:00			

Fugro GeoServices Representative Comments	Client Representative Comments

FGSL Representative:	Client Representative:
Signed:	Signed:

NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

Daily Report No. 12

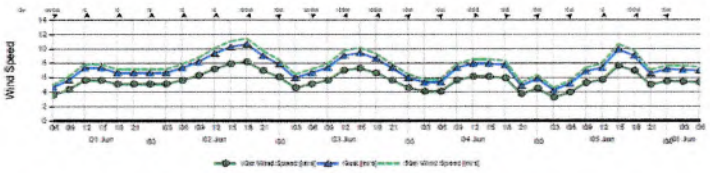
Job No:	C1984	Vessel:	Excalibur	Date:	Saturday 01-Jun-19	Revision	0

Work planned - Next 72hrs:

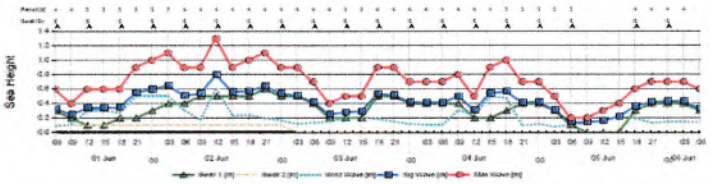
Remove stuck casings on IT1_SPT_03 / Reinstate bore holes by grouting / jack down barge / Move to new location at IT1_SPT_07 / IT1_SB_07 / Position barge and jack up / Commence drilling operations

Weather forecast

Wind Chart



Wave Chart



Health Safety & the Environment

Barge drills on Man overboard and Spill response.

Activity Time Summary	Moon Pool #1 - Summary of GeoSonic Borehole Drilling and Sampling Operations / JUB Operations (GS 600 rig) - last 24hrs: Today	To Date	Moon Pool #2 - Summary of Destructive drilling / Rotary Coring & Sampling Operations (Comacchio 12.1 Rig) - last 24hrs: Today	To Date
Mobilisation	0.00	120.00	0.00	0.00
Tow to site	0.00	52.17	0.00	0.00
Moving to next Drilling location	0.00	0.00	0.00	0.00
Casing Installation	0.50	2.50	0.00	0.17
Destructive Drilling	0.00	0.00	0.00	23.50
Sample Drilling	0.00	0.00	0.00	0.00
Rotary Core Drilling	0.00	0.00	0.00	0.00
Sonic Drilling	10.00	51.00	0.00	0.00
SPT Operations	0.00	0.00	0.00	16.75
Geophysics Operations	2.50	2.50	7.00	7.00
Seismic Operations	0.00	0.00	0.00	0.00
Grouting Operations	0.00	0.00	0.00	0.00
Casing removal	2.75	2.75	2.25	2.25
Other operations	0.00	10.00	0.00	4.83
Crew/Materials Transfer	0.00	11.50	0.00	0.00
Crew handover / TBT	0.50	7.00	0.50	1.50
Weather Standby	0.00	11.00	0.00	0.00
3rd Party Standby	0.00	0.00	0.00	0.00
Fugro Standby	7.75	7.75	14.25	16.00
Demobilisation	0.00	0.00	0.00	0.00
Jacking Operation	0.00	3.83	0.00	0.00
0	0.00	0.00	0.00	0.00
0	0.00	0.00	0.00	0.00
Total	24.00	282.00	24.00	72.00

Personnel on Board (Fugro/Client/Subcontractors)

0000-1200	1200-2400	Company	Position
Colin Mulvey	Julian North	Fugro	Site Project Manager
Charlie Crawford	Darren Bolitho	Fugro	Bargemaster
Andy Rowe	Matt Blight	Fugro	Drilling Supervisor
James Lawson	Jake Warner	Fugro	Driller
Houston Russell	Adam Williams	Fugro	Assistant Driller
Justin Smith	Andrew Wills	Fugro	Assistant Driller
Carl Tucker	Kevin Thomson	Fugro	Crane Operator
Steve McInnes	Steve Hancock	Fugro	Fitter/Electrician
Gaby DE Francesco	James Baily	Fugro	Geotechnical Engineers
Matthew Hewiston	Elliot Sampson	Fugro	Geotechnical Engineers
Lenard Pal	Szabolcs Boncz	Fugro	Geophysics
Thierry Denois		EDF	Client Representative
Paul Jeans		Geosonic	Drilling Supervisor
Lee McCallagh	Tim McCarthy	Geosonic	Driller
Craig Jackson	David Bailey	Geosonic	Assistant Driller
Jerzy Ossowski	Maciej Treder	Sodexo	Chef
	Mihai Surelu	Sodexo	Steward
No. Personnel	31	Total Man Hours Worked	372

Fugro GeoServices Representative Comments	Client Representative Comments

FGSL Representative:	Client Representative:
Signed:	Signed:

NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

Daily Report No. 12

Job No:	C1984	Vessel:	Excalibur	Date:	Saturday 01-Jun-19	Revision	0

Project Program / Progress		Programmed			Today			Actual To Date			% Program Completed
Activity	BoQ Item	m.	No.	Hours	m.	No.	Hours	m.	No.	Hours	
Platform mobilisation/demobilisation	3.1		1					0.0	0.8	0.00	80.0
Platform set-up	3.4		18					0.0	1	0.00	5.6
Weather standby								0.0	0	0.00	0.0
Standby by other								0.0	0	0.00	0.0
SONIC (Vibration) drilling								0.0	0	0.00	0.0
Sonic Drilling between sea bed and 10m	5.2	180						10.0	0	0.00	5.6
Sonic Drilling between 10m and 20m	5.2.1	180						10.0	0	0.00	5.6
Sonic Drilling between 20m and 30m	5.2.2	180						10.0	0	0.00	5.6
Sonic Drilling between 30m and 40m	5.2.3	180						10.0	0	0.00	5.6
Sonic Drilling between 40m and 50m	5.2.4	180			3.0			10.0	0	0.00	5.6
Sonic Drilling between 50m and 55m	5.2.5	90			5.0			5.0	0	0.00	5.6
Back fill Sonic Borehole	5.3	990						0.0	0	0.00	0.0
Rotary Drilling								0.0	0	0.00	0.0
Rotary Coring between 45m and 55m	6.1.1	30						0.0	0	0.00	0.0
Rotary Coring between 55m and 65m	6.1.2	30						0.0	0	0.00	0.0
Rotary Coring between 65m and 75m	6.1.3	30						0.0	0	0.00	0.0
Rotary Coring between 75m and 85m	6.1.4	30						0.0	0	0.00	0.0
Rotary Coring between 85m and 95m	6.1.5	30						0.0	0	0.00	0.0
Rotary Coring between 95m and 105m	6.1.6	30						0.0	0	0.00	0.0
Rotary Coring between 105m and 110m	6.1.7	15						0.0	0	0.00	0.0
Borehole cementation (E/O)	6.2	165						0.0	0	0.00	0.0
Borehole cementation from 55-110m bgl	6.3	165						0.0	0	0.00	0.0
SPT Destructive Drilling								0.0	0	0.00	0.0
Destructive drilling between Sea bed & 10m	9.2	180						10.0	0	0.00	5.6
Destructive drilling between 10m and 20m	9.2.1	180						10.0	0	0.00	5.6
Destructive drilling between 20m and 30m	9.2.2	180						10.0	0	0.00	5.6
Destructive drilling between 30m and 40m	9.2.3	180						10.0	0	0.00	5.6
Destructive drilling between 40m and 50m	9.2.4	180						10.0	0	0.00	5.6
Destructive drilling between 50m and 55m	9.2.5	90						5.0	0	0.00	5.6
Undertake SPT test	9.3		467					0.0	27	0.00	5.8
Back fill SPT Borehole	9.6	990						0.0	0	0.00	0.0
Borehole Seismic								0.0	0	0.00	0.0
Mob of Check shot equipment	15.1		1					0.0	0	0.00	0.0
E/O day rate for equipment only onboard the JUB	15.2			30				0.0	0	0.00	0.0
E/O day rate for operator onboard the JUB	15.3			30.00				0.0	0	0.00	0.0
Move and setup for Check shot	15.4		7					0.0	0	0.00	0.0
Perform Check shot	15.5	495.0						0.0	0	0.00	0.0
Reporting of Check shot	15.6		7					0.0	0	0.00	0.0
E/O rate for Additional casing pulls (2 per BH)							0.75	0.0	0	0.75	0.0
Geophysical Logging								0.0	0	0.00	0.0
GL acquisition & Report for P/S velocity logging	16.2	1155.0			55.0			55.0	0	0.00	4.8
Geo-logging mob-demob for GAMMA ray	16.3		1					0.0	1	0.00	50.0
E/O day rate for equipment onboard the jack-up	16.4.1			64.00				0.0	0	0.00	0.0
Setup for Gamma Ray	16.4.2		18			1		0.0	1	0.00	5.6
Gamma Ray Logging	16.4.3	1155.0			55.0			55.0	0	0.00	4.8
Reporting of Gamma Ray	16.4.4		18			1		0.0	1	0.00	5.6
GL acquisition and report for Caliper	16.6	1155.0			55.0			55.0	0	0.00	4.8
Mobilisation of additional wireline engineer to site	16.7		1					0.0	1	0.00	100.0
Daily rate for additional WL Logging Engineer	16.8			64.00		1		0.0	1	0.00	1.6
E/O mob/demob of the Robertson's PSSL tool	25.3							0.0	1	0.00	0.0
E/O day rate for the Robertson's PSSL tool	25.4					1		0.0	4	0.00	0.0
Variation Orders								0.0	0	0.00	0.0
Mobilise equipment for Environmental Samples	27.1	1.0						0.0	1	0.00	100.0
Sampling Operations within SPT BH	27.2							0.0	1	0.00	0.0
Additional Geotechnical Engineers	27.3							0.0	0	0.00	0.0
Additional engineer shore side	27.4							0.0	0	0.00	0.0
Mobilisation of engineers	27.5	1.0						0.0	0	0.00	0.0
10ft Cooler container for jack-up	27.6							0.0	1	0.00	0.0
Daily hire of 10ft cooler container	27.7					1		0.0	4	0.00	0.0
Provision of enviro sample containers	27.8	1.0						0.0	1	0.00	100.0
Estimated cost of Environmental testing	27.11							0.0	0	0.00	0.0
Uplift for weather Risk	27.12							0.0	0	0.00	0.0
Mobilisation of ABI Equipment	28.1	1.0						0.0	0	0.00	0.0
Set up per section of logging ABI	28.2							0.0	0	0.00	0.0
ABI Logging	28.3		186					0.0	0	0.00	0.0
Reporting ABI	28.4		3					0.0	0	0.00	0.0
Day rate of ABI equipment	28.5							0.0	0	0.00	0.0
Uplift for weather Risk in line with item 24.2	28.6							0.0	0	0.00	0.0

Health & Safety Summary	Today	Actual To Date
HOCs	0	2
Safety Drills	2	3
Tool Box Talks	2	21
HSE Meetings	0	0
Incidents/Near Miss	0	0
Environmental	0	0
Inspections / Audits	0	3
Hours Worked	372	3528

Lost or damaged equipment / materials

Fugro GeoServices Representative Comments

Client Representative Comments

At this stage, the cleint does not require the caplier results. SPT Energy measurement avaible on site.

FGSL R [redacted] 06/19

Signed [redacted]

Clien [redacted]

Signe [redacted]

NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

Daily Report No. 13

Job No:	C1984	Vessel:	Excalibur	Date:	Sunday 02-Jun-19	Revision	0

To	Ed Flint	Attn.	No./email	ed.1.flint@edf-energy.com
cc	Kiki Semertzidou	Attn.	No./email	kyriaki.semertzidou@edf-energy.com
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cc	Adrian Ivor	Attn.	No./email	a.ivor@fugro.com
cc	Nicholas Armstrong	Attn.	No./email	n.armstrong@fugro.com
cc	Peter Gummow	Attn.	No./email	p.gummow@fugro.com

Observed Weather	Wind		Wave Hs (m)	Period (Tp s)	Sea State	Visibility	Weather Forecast Vs Operational Requirements
Time 00:00	Speed m/s	Direction					
00:00	8	WSW	N/A	No data	slight	Good	Weather Forecast generally aligning with observed conditions
06:00	10	S	N/A	No data	Moderate	moderate	
12:00	10	SSW	N/A	No data	Moderate	Good	
18:00	10	SW	N/A	No data	Moderate	Good	
00:00	8	WSW	N/A	No data	Moderate	Good	

Leg Penetration (m)									Operational Status
BH no.	1	2	3	4	5	6	7	8	
IT1_SB_03	3	3	4	4	4	4	3	3	Continue extracting 7" casing from SPT hole / reinstate both holes by grouting / jack down and move to next location / position, jackup / commence drilling operations.
Preloading	860t	860t	860t	860t	860t	860t	860t	860t	
IT1_SPT_03	3	3	4	4	4	4	3	3	

Moon Pool #1 - Summary of GeoSonic Borehole Drilling and Sampling Operations (LS 600 rig) - last 24hrs:

From	To (local)	Code	Description
00:00	03:30	Fugro Standby	**Start of Reporting Period** / Start of Shift / Casing at 16m / Drill rig ready to grout hole when 7" casing removed on adjoining SPT hole.
03:30	04:00	Grouting Operations	Instal NQ grouting rods to 16m below mud line (base of casing) and set up grout hoses / grout borehole using 9 bags of CM13 grout
04:00	04:45	Casing removal	Remove NQ grouting rods / pull 5" Geosonic casing
04:45	05:30	Casing removal	Stack casing in stillages and secure / dismatle platform / track rig forward to enable 10" to be removed/ remove deck clamps
05:30	06:00	Casing removal	Remove 10" casing from Sonic borehole and secure on deck
06:00	07:30	Other operations	Preparing and seafastening items on deck prior to jacking down and towing.
07:30	08:00	Jacking Operation	Jacking down to water in preperation for tow
08:00	10:00	Moving to next Drilling location	Commence move to next drilling location IT1_SB_07 / IT1_SPT_07
10:00	14:00	Jacking Operation	On location / undertake final positioning within 0.70m from traget location / Jacking up to drilling height
14:00	16:00	Standby Current	Attempt made to place casing / Awaiting LW slack at 16:00 to continue installation of 10" casing
16:00	18:00	Casing Installation	Installing 10" casing / Deck to Mudline 23.50m / casing set to 24.5m / set up ready to run 5" Geosonic casing
18:00	21:00	Sonic Drilling	Instal 5" Casings to mudline / commence sonic coring in 1.5m runs / 4 x 1.5m sonoc core runs completed
21:00	23:45	Sonic Drilling	Continue sonic coring in 1m intervals / Depth of BH at end of shift 11.00m
23:45	24:00	Crew handover / TBT	Handover Briefing / **End of Reporting Period**
24:00			
00:00			
00:00			
00:00			
00:00			
00:00			

Moon Pool #2 - Summary of Destructive drilling / Rotary Coring and Sampling Operations (Comacchio 12.1 Rig) - last 24hrs:

From	To (local)	Code	Description
00:00	00:45	Fugro Standby	**Start of Reporting Period** / Start of Shift / Continue extracting 7" casing using CP casing Jar casing moved 400mm
00:45	03:00	Fugro Standby	Casing gradually became free / pulled casing in 3m lengths / joints required heat to break / all casing lengths recovered inc casing bit
03:00	03:30	Grouting Operations	SPT hole dipping at 10m below mud line / hole collapsed / NQ rods would not go past 17m / set up grout pump to grout Sonic borehole
03:30	04:00	Grouting Operations	Grouting Geosonic hole / washing out grout mixer / set up to pull 10" casing on SPT hole
04:00	05:30	Casing removal	remove 10" casing from SPT hole and secure on deck
05:30	06:00	Casing removal	Drill crew assisting with removal of 10" casing from Sonic borehole / wash down deck / fasten casing and drill rod stillages
06:00	07:30	Other operations	Preparing and seafastening items on deck prior to jacking down and towing.
07:30	08:00	Jacking Operation	Jacking down to water in preperation for tow
08:00	10:00	Moving to next Drilling location	Commence move to next drilling location IT1_SB_07 / IT1_SPT_07
10:00	14:00	Jacking Operation	On location / undertake final positioning within 0.70m from traget location / Jacking up to drilling height
14:00	16:00	Standby Current	Attempt made to place casing / Awaiting LW slack at 16:00 to continue installation of 10" casing
16:00	18:00	Casing Installation	Installing 10" casing / Deck to Mudline 23.80m / casing set to 24.5m / set up ready to run 7" casing
18:00	23:45	Destructive Drilling	Installing 7" casing / Wash boring to depth of 10m / Continue with SPT sampling at 2m intervals
23:45	24:00	Crew handover / TBT	Handover Briefing / **End of Reporting Period**
24:00			
00:00			
00:00			
00:00			
00:00			
00:00			

Fugro GeoServices Representative Comments	Client Representative Comments

FGSL Representative:	**Client Representative:**
Signed:	**Signed:**

NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

Daily Report No. 13

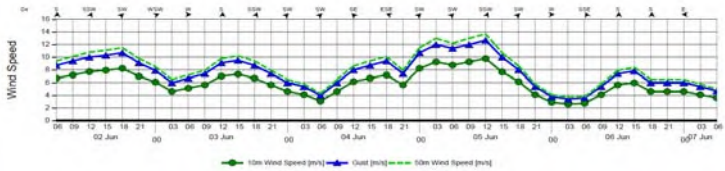
Job No:	C1984	Vessel:	Excalibur	Date:	Sunday 02-Jun-19	Revision	0

Work planned - Next 72hrs:

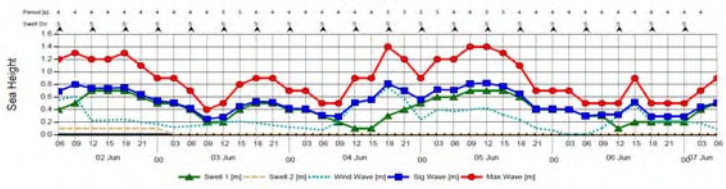
Remove stuck casings on IT1_SPT_03 / reinstate bore holes by grouting / jack down barge / move to new location at IT1_SPT_07 / IT1_SB_07 / position barge and jack up / commence drilling operations

Weather forecast

Wind Chart



Wave Chart



Health Safety & the Environment

Tool box talk on Q1 health and Safety statistics undertaken

	Moon Pool #1 - Summary of GeoSonic Borehole Drilling and Sampling Operations / JUB Operations (GS 600 rig) - last 24hrs:		Moon Pool #2 - Summary of Destructive drilling / Rotary Coring & Sampling Operations (Comacchio 12.1 Rig) - last 24hrs:	
Activity Time Summary	**Today**	**To Date**	**Today**	**To Date**
Mobilisation	0.00	120.00	0.00	0.00
Tow to site	0.00	52.17	0.00	0.00
Moving to next Drilling location	2.00	2.00	2.00	2.00
Casing Installation	2.00	4.50	2.00	2.17
Destructive Drilling	0.00	0.00	5.75	29.25
Sample Drilling	0.00	0.00	0.00	0.00
Rotary Core Drilling	0.00	0.00	0.00	0.00
Sonic Drilling	5.75	56.75	0.00	0.00
SPT Operations	0.00	0.00	0.00	16.75
Geophysics Operations	0.00	2.50	0.00	7.00
Seismic Operations	0.00	0.00	0.00	0.00
Grouting Operations	0.50	0.50	1.00	1.00
Casing removal	2.00	4.75	2.00	4.25
Other operations	1.50	11.50	1.50	6.33
Crew/Materials Transfer	0.00	11.50	0.00	0.00
Crew handover / TBT	0.25	7.25	0.25	1.75
Weather Standby	0.00	11.00	0.00	0.00
3rd Party Standby	0.00	0.00	0.00	0.00
Fugro Standby	3.50	11.25	3.00	19.00
Demobilisation	0.00	0.00	0.00	0.00
Jacking Operation	4.50	8.33	4.50	4.50
Standby Current	2.00	2.00	2.00	2.00
0	0.00	0.00	0.00	0.00
Total	24.00	306.00	24.00	96.00

Personnel on Board (Fugro/Client/Subcontractors)

0000-1200	1200-2400	Company	Position
Colin Mulvey	Julian North	Fugro	Site Project Manager
Charlie Crawford	Darren Bolitho	Fugro	Bargemaster
Andy Rowe	Matt Blight	Fugro	Drilling Supervisor
James Lawson	Jake Warner	Fugro	Driller
Houston Russell	Adam Williams	Fugro	Assistant Driller
Justin Smith	Andrew Wills	Fugro	Assistant Driller
Carl Tucker	Kevin Thomson	Fugro	Crane Operator
Steve McInnes	Steve Hancock	Fugro	Fitter/Electrician
Gaby DE Francesco	James Baily	Fugro	Geotechnical Engineers
Matthew Hewiston	Elliot Sampson	Fugro	Geotechnical Engineers
Lenard Pal	Szabolcs Boncz	Fugro	Geophysics
Theirry Denois		EDF	Client Representative
Paul Jeans		Geosonic	Drilling Supervisor
Lee McCallagh	Tim McCarthy	Geosonic	Driller
Craig Jackson	David Bailey	Geosonic	Assistant Driller
Jerzy Ossowski	Maciej Treder	Sodexo	Chef
	Mihai Surelu	Sodexo	Steward

No. Personnel	31	Total Man Hours Worked	372

Fugro GeoServices Representative Comments	Client Representative Comments

FGSL Representative:

Signed:

Client Representative:

Signed:

NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

Daily Report No. 13

Job No:	C1984	Vessel:	Excalibur	Date:	Sunday 02-Jun-19	Revision	0

Project Program / Progress		Programmed			Today			Actual To Date			% Program Completed
Activity	BoQ Item	m.	No.	Hours	m.	No.	Hours	m.	No.	Hours	
Platform mobilisation/demobilisation	3.1		1					0.0	0.8	0.00	80.0
Platform set-up	3.4		18			1		0.0	2	0.00	11.1
Weather standby								0.0	0	0.00	0.0
Standby by other								0.0	0	0.00	0.0
SONIC (Vibration) drilling								0.0	0	0.00	0.0
Sonic Drilling between sea bed and 10m	5.2	180			10.0			20.0	0	0.00	11.1
Sonic Drilling between 10m and 20m	5.2.1	180			1.00			11.0	0	0.00	6.1
Sonic Drilling between 20m and 30m	5.2.2	180						10.0	0	0.00	5.6
Sonic Drilling between 30m and 40m	5.2.3	180						10.0	0	0.00	5.6
Sonic Drilling between 40m and 50m	5.2.4	180						10.0	0	0.00	5.6
Sonic Drilling between 50m and 55m	5.2.5	90						5.0	0	0.00	5.6
Back fill Sonic Borehole	5.3	990			16.0			16.0	0	0.00	1.6
Rotary Drilling								0.0	0	0.00	0.0
Rotary Coring between 45m and 55m	6.1.1	30						0.0	0	0.00	0.0
Rotary Coring between 55m and 65m	6.1.2	30						0.0	0	0.00	0.0
Rotary Coring between 65m and 75m	6.1.3	30						0.0	0	0.00	0.0
Rotary Coring between 75m and 85m	6.1.4	30						0.0	0	0.00	0.0
Rotary Coring between 85m and 95m	6.1.5	30						0.0	0	0.00	0.0
Rotary Coring between 95m and 105m	6.1.6	30						0.0	0	0.00	0.0
Rotary Coring between 105m and 110m	6.1.7	15						0.0	0	0.00	0.0
Borehole cementation (E/O)	6.2	165						0.0	0	0.00	0.0
Borehole cementation from 55-110m bgl	6.3	165						0.0	0	0.00	0.0
SPT Destructive Drilling								0.0	0	0.00	0.0
Destructive drilling between Sea bed & 10m	9.2	180			10.0			20.0	0	0.00	11.1
Destructive drilling between 10m and 20m	9.2.1	180						10.0	0	0.00	5.6
Destructive drilling between 20m and 30m	9.2.2	180						10.0	0	0.00	5.6
Destructive drilling between 30m and 40m	9.2.3	180						10.0	0	0.00	5.6
Destructive drilling between 40m and 50m	9.2.4	180						10.0	0	0.00	5.6
Destructive drilling between 50m and 55m	9.2.5	90						5.0	0	0.00	5.6
Undertake SPT test	9.3		467			5.0		0.0	32	0.00	6.9
Back fill SPT Borehole	9.6	990						0.0	0	0.00	0.0
Borehole Seismic								0.0	0	0.00	0.0
Mob of Check shot equipment	15.1		1					0.0	0	0.00	0.0
E/O day rate for equipment only onboard the JUB	15.2			30				0.0	0	0.00	0.0
E/O day rate for operator onboard the JUB	15.3			30.00				0.0	0	0.00	0.0
Move and setup for Check shot	15.4		7					0.0	0	0.00	0.0
Perform Check shot	15.5	495.0						0.0	0	0.00	0.0
Reporting of Check shot	15.6		7					0.0	0	0.00	0.0
E/O rate for Additional casing pulls (2 per BH)								0.0	0	0.75	0.0
Geophysical Logging								0.0	0	0.00	0.0
GL acquisition & Report for P/S velocity logging	16.2	1155.0						55.0	0	0.00	4.8
Geo-logging mob-demob for GAMMA ray	16.3		1					0.0	1	0.00	50.0
E/O day rate for equipment onboard the jack-up	16.4.1		64			1		0.0	1	0.00	1.6
Setup for Gamma Ray	16.4.2		18					0.0	1	0.00	5.6
Gamma Ray Logging	16.4.3	1155.0						55.0	0	0.00	4.8
Reporting of Gamma Ray	16.4.4		18					0.0	1	0.00	5.6
GL acquisition and report for Calliper	16.6	1155.0						55.0	0	0.00	4.8
Mobilisation of additional wireline engineer to site	16.7		1					0.0	1	0.00	100.0
Daily rate for additional WL Logging Engineer	16.8		64			1		0.0	2	0.00	3.1
E/O mob/demob of the Robertson's PSSL tool	25.3							0.0	1	0.00	0.0
E/O day rate for the Robertson's PSSL tool	25.4					1		0.0	5	0.00	0.0
Variation Orders								0.0	0	0.00	0.0
Mobilise equipment for Environmental Samples	27.1		1					0.0	1	0.00	100.0
Sampling Operations within SPT BH	27.2							0.0	1	0.00	0.0
Additional Geotechnical Engineers	27.3							0.0	0	0.00	0.0
Additional engineer shore side	27.4							0.0	0	0.00	0.0
Mobilisation of engineers	27.5							0.0	0	0.00	0.0
10ft Cooler container for jack-up	27.6		1					0.0	1	0.00	100.0
Daily hire of 10ft cooler container	27.7					1		0.0	5	0.00	0.0
Provision of enviro sample containers	27.8		1					0.0	1	0.00	100.0
Estimated cost of Environmental testing	27.11							0.0	0	0.00	0.0
Uplift for weather Risk	27.12							0.0	0	0.00	0.0
Mobilisation of ABI Equipment	28.1		1					0.0	0	0.00	0.0
Set up per section of logging ABI	28.2							0.0	0	0.00	0.0
ABI Logging	28.3	186.0						0.0	0	0.00	0.0
Reporting ABI	28.4		3					0.0	0	0.00	0.0
Day rate of ABI equipment	28.5							0.0	0	0.00	0.0
Uplift for weather Risk in line with item 24.2	28.6							0.0	0	0.00	0.0

Health & Safety Summary	Today	Actual To Date
HOCs	0	2
Safety Drills	0	3
Tool Box Talks	2	23
HSE Meetings	1	1
Incidents/Near Miss	0	0
Environmental	0	0
Inspections / Audits	0	3
Hours Worked	372	3900

Lost or damaged equipment / materials

n/a

Fugro GeoServices Representative Comments

Client Representative Comments

- Sharing of UXO results to be solved prior next JUP move.

FGSL Representative: Colin Mulvey / Work Package Manager

Signed [redacted]

Client Representative:

Signed:

NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

Daily Report No. 14

Job No:	C1984	Vessel:	Excalibur	Date:	Monday 03-Jun-19	Revision	0

To	Ed Flint	Attn.		No./email	ed.1.flint@edf-energy.com
cc	Kiki Semertzidou	Attn.		No./email	kyriaki.semertzidou@edf-energy.com
cc	Thierry Denois	Attn.		No./email	thierry.denois@edf-en.com
cc	Gavin Hails	Attn.		No./email	gavin.hails@edf-energy.com
cc	Steve Parrish	Attn.		No./email	stephen.parrish@nnb-edfenergy.com
cc	Adrian Ivor	Attn.		No./email	a.ivor@fugro.com
cc	Nicholas Armstrong	Attn.		No./email	n.armstrong@fugro.com
cc	Peter Gummow	Attn.		No./email	p.gummow@fugro.com

Observed Weather	Wind		Wave Hs	Period	Sea State	Visibility	Weather Forecast Vs Operational Requirements
Time 00:00	Speed m/s	Direction	(m)	(Tp s)			
00:00	6	WSW	N/A	No data	slight	Good	Weather Forecast generally aligning with observed conditions
06:00	6	WSW	N/A	No data	slight	Good	
12:00	9	SSW	N/A	No data	Moderate	Good	
18:00	8	SSW	N/A	No data	Moderate	Good	
00:00	6	SW	N/A	No data	Moderate	Good	

Leg Penetration (m)									Operational Status
BH no.	1	2	3	4	5	6	7	8	
IT1_SB_07	3	3	4	4	4	4	3	3	Jack up barge is fully operational with all project crew / Drilling operations running on both moon pools
Preloading	860t	860t	860t	860t	860t	860t	860t	860t	

Moon Pool #1 - Summary of GeoSonic Borehole Drilling and Sampling Operations (LS 600 rig) - last 24hrs:

From	To (local)	Code	Description
00:00	00:01	Sonic Drilling	**Start of Reporting Period** / Start of Shift / Bore hole at 11m depth / continue sonic coring in 1m intervals
00:01	03:00	Sonic Drilling	Bore hole at 14m depth by 03:00 / Continue sonic coring in 1m intervals
03:00	06:00	Sonic Drilling	Bore hole at 18.5m depth by 06:00
06:00	11:45	Sonic Drilling	Bore hole at 24.5m depth by EOS
11:45	12:00	Crew handover / TBT	Shift Handover / Crew attend tool box talk and shift start up briefing
12:00	18:00	Sonic Drilling	Start of shift / Bore hole at 32m depth by 18:00 / Continue sonic coring in 1m intervals
18:00	21:00	Sonic Drilling	Bore hole at 38m depth by 21:00 / Core recovery below 50% @ 32-33m / Barrel tripped in again and recovered
21:00	23:45	Sonic Drilling	Bore hole at 38m depth by 23:45 EOS
23:45	24:00	Crew handover / TBT	Handover Briefing / **End of Reporting Period**
24:00			
00:00			
00:00			
00:00			
00:00			
00:00			
00:00			
00:00			
00:00			
00:00			
00:00			
00:00			

Moon Pool #2 - Summary of Destructive drilling / Rotary Coring and Sampling Operations (Comacchio 12.1 Rig) - last 24hrs:

From	To (local)	Code	Description
00:00	00:01	Casing Installation	**Start of Reporting Period** / Start of Shift / 7" Casing installed to 10m depth / continue drilling with SPT samples taken at 2m intervals
00:01	03:00	Casing Installation	7" casing at 22m depth by 03:00 / Continue drilling with SPT samples taken at 2m intervals
03:00	06:00	Destructive Drilling	Bore hole at 27m depth by 06:00
06:00	11:45	Destructive Drilling	Bore hole at 36m depth by 11:45
11:45	12:00	Crew handover / TBT	Shift Handover / Crew attend tool box talk and shift start up briefing
12:00	18:00	Destructive Drilling	Bore hole at 44m depth by 18:00
18:00	21:00	Destructive Drilling	Bore hole at 52m depth by 21:00
21:00	23:45	Destructive Drilling	Bore hole at 54m depth by 11:45 / Continue drilling with SPT samples taken at 2m intervals
23:45	24:00	Crew handover / TBT	Handover Briefing / **End of Reporting Period**
24:00			
00:00			
00:00			
00:00			
00:00			
00:00			
00:00			
00:00			
00:00			
00:00			
00:00			

Fugro GeoServices Representative Comments	Client Representative Comments

FGSL Representative:

Signed:

Client Re

Signed:

[redacted]

NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

Daily Report No. 14

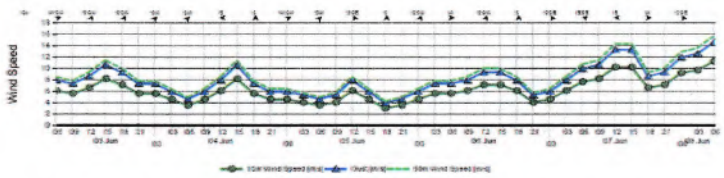
Job No:	C1984	Vessel:	Excalibur	Date:	Monday 03-Jun-19	Revision	0

Work planned - Next 72hrs:

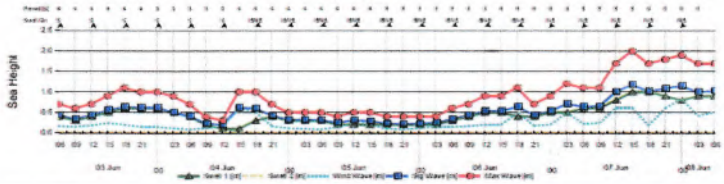
Continue drilling both Sonic and SPT bore holes to target depths / Compelte geophyiscs and move to next lcaotion IT1_SB_06.

Weather forecast

Wind Chart



Wave Chart



Health Safety & the Environment

	Moon Pool #1 - Summary of GeoSonic Borehole Drilling and Sampling Operations / JUB Operations (GS 600 rig) - last 24hrs:		Moon Pool #2 - Summary of Destructive drilling / Rotary Coring & Sampling Operations (Comacchio 12.1 Rig) - last 24hrs:	
Activity Time Summary	**Today**	**To Date**	**Today**	**To Date**
Mobilisation	0.00	120.00	0.00	0.00
Tow to site	0.00	52.17	0.00	0.00
Moving to next Drilling location	0.00	2.00	0.00	2.00
Casing Installation	0.00	4.50	3.00	5.17
Destructive Drilling	0.00	0.00	20.50	49.75
Sample Drilling	0.00	0.00	0.00	0.00
Rotary Core Drilling	0.00	0.00	0.00	0.00
Sonic Drilling	23.50	80.25	0.00	0.00
SPT Operations	0.00	0.00	0.00	16.75
Geophysics Operations	0.00	2.50	0.00	7.00
Seismic Operations	0.00	0.00	0.00	0.00
Grouting Operations	0.00	0.50	0.00	1.00
Casing removal	0.00	4.75	0.00	4.25
Other operations	0.00	11.50	0.00	6.33
Crew/Materials Transfer	0.00	11.50	0.00	0.00
Crew handover / TBT	0.50	7.75	0.50	2.25
Weather Standby	0.00	11.00	0.00	0.00
3rd Party Standby	0.00	0.00	0.00	0.00
Fugro Standby	0.00	11.25	0.00	19.00
Demobilisation	0.00	0.00	0.00	0.00
Jacking Operation	0.00	8.33	0.00	4.50
Standby Current	0.00	2.00	0.00	2.00
0	0.00	0.00	0.00	0.00
Total	24.00	330.00	24.00	120.00

Personnel on Board (Fugro/Client/Subcontractors)

0000-1200	1200-2400	Company	Position
Colin Mulvey	Julian North	Fugro	Site Project Manager
Charlie Crawford	Darren Bolitho	Fugro	Bargemaster
Andy Rowe	Matt Blight	Fugro	Drilling Supervisor
James Lawson	Jake Warner	Fugro	Driller
Houston Russell	Adam Williams	Fugro	Assistant Driller
Justin Smith	Andrew Willis	Fugro	Assistant Driller
Carl Tucker	Kevin Thomson	Fugro	Crane Operator
Steve McInnes	Steve Hancock	Fugro	Fitter/Electrician
Gaby DE Francesco	James Baily	Fugro	Geotechnical Engineers
Matthew Hewiston	Elliot Sampson	Fugro	Geotechnical Engineers
Lenard Pal	Szabolcs Boncz	Fugro	Geophysics
Theirry Denois		EDF	Client Representative
Paul Jeans		Geosonic	Drilling Supervisor
Lee McCallagh	Tim McCarthy	Geosonic	Driller
Craig Jackson	David Bailey	Geosonic	Assistant Driller
Jerzy Ossowski	Maciej Treder	Sodexo	Chef
	Mihai Sureiu	Sodexo	Steward

No. Personnel	31	Total Man Hours Worked	372

Fugro GeoServices Representative Comments

Client Representative Comments

FGSL Representative:

Signed:

[redacted]

NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

Daily Report No. **14**

Job No:	C1984	Vessel:	Excalibur	Date:	Monday 03-Jun-19	Revision	0

Project Program / Progress		Programmed			Today			Actual To Date			% Program Completed
Activity	BoQ Item	m.	No.	Hours	m.	No.	Hours	m.	No.	Hours	
Platform mobilisation/demobilisation	3.1		1					0.0	0.8	0.00	80.0
Platform set-up	3.4		18					0.0	2	0.00	11.1
Weather standby								0.0	0	3.50	0.0
Standby by other								0.0	0	2.00	0.0
SONIC (Vibration) drilling								0.0	0	0.00	0.0
Sonic Drilling between sea bed and 10m	5.2	180						20.0	0	0.00	11.1
Sonic Drilling between 10m and 20m	5.2.1	180			9.00			20.0	0	0.00	11.1
Sonic Drilling between 20m and 30m	5.2.2	180			10.00			20.0	0	0.00	11.1
Sonic Drilling between 30m and 40m	5.2.3	180			8.0			18.0	0	0.00	10.0
Sonic Drilling between 40m and 50m	5.2.4	180						10.0	0	0.00	5.6
Sonic Drilling between 50m and 55m	5.2.5	90						5.0	0	0.00	5.6
Back fill Sonic Borehole	5.3	990						16.0	0	0.00	1.6
Rotary Drilling								0.0	0	0.00	0.0
Rotary Coring between 45m and 55m	6.1.1	30						0.0	0	0.00	0.0
Rotary Coring between 55m and 65m	6.1.2	30						0.0	0	0.00	0.0
Rotary Coring between 65m and 75m	6.1.3	30						0.0	0	0.00	0.0
Rotary Coring between 75m and 85m	6.1.4	30						0.0	0	0.00	0.0
Rotary Coring between 85m and 95m	6.1.5	30						0.0	0	0.00	0.0
Rotary Coring between 95m and 105m	6.1.6	30						0.0	0	0.00	0.0
Rotary Coring between 105m and 110m	6.1.7	15						0.0	0	0.00	0.0
Borehole cementation (E/O)	6.2	165						0.0	0	0.00	0.0
Borehole cementation from 55-110m bgl	6.3	165						0.0	0	0.00	0.0
SPT Destructive Drilling								0.0	0	0.00	0.0
Destructive drilling between Sea bed & 10m	9.2	180						20.0	0	0.00	11.1
Destructive drilling between 10m and 20m	9.2.1	180			10.0			20.0	0	0.00	11.1
Destructive drilling between 20m and 30m	9.2.2	180			10.0			20.0	0	0.00	11.1
Destructive drilling between 30m and 40m	9.2.3	180			10.0			20.0	0	0.00	11.1
Destructive drilling between 40m and 50m	9.2.4	180			10.0			20.0	0	0.00	11.1
Destructive drilling between 50m and 55m	9.2.5	90			4.0			9.0	0	0.00	10.0
Undertake SPT test	9.3		467			21.0		0.0	53	0.00	11.3
Back fill SPT Borehole	9.6	990						0.0	0	0.00	0.0
Borehole Seismic								0.0	0	0.00	0.0
Mob of Check shot equipment	15.1		1					0.0	0	0.00	0.0
E/O day rate for equipment only onboard the JUB	15.2		30					0.0	0	0.00	0.0
E/O day rate for operator onboard the JUB	15.3		30					0.0	0	0.00	0.0
Move and setup for Check shot	15.4		7					0.0	0	0.00	0.0
Perform Check shot	15.5	495.0						0.0	0	0.00	0.0
Reporting of Check shot	15.6		7					0.0	0	0.00	0.0
E/O rate for Additional casing pulls (2 per BH)								0.0	0	0.75	0.0
Geophysical Logging								0.0	0	0.00	0.0
GL acquisition & Report for P/S velocity logging	16.2	1155.0						55.0	0	0.00	4.8
Geo-logging mob-demob for GAMMA ray	16.3		1					0.0	1	0.00	50.0
E/O day rate for equipment onboard the jack-up	16.4.1		64			1		0.0	2	0.00	3.1
Setup for Gamma Ray	16.4.2		18					0.0	1	0.00	5.6
Gamma Ray Logging	16.4.3	1155.0						55.0	0	0.00	4.8
Reporting of Gamma Ray	16.4.4		18					0.0	1	0.00	5.6
GL acquisition and report for Calliper	16.6	1155.0						55.0	0	0.00	4.8
Mobilisation of additional wireline engineer to site	16.7		1					0.0	1	0.00	100.0
Daily rate for additional WL Logging Engineer	16.8		64			1		0.0	3	0.00	4.7
E/O mob/demob of the Robertson's PSSL tool	25.3							0.0	1	0.00	0.0
E/O day rate for the Robertson's PSSL tool	25.4					1		0.0	6	0.00	0.0
Variation Orders								0.0	0	0.00	0.0
Mobilise equipment for Environmental Samples	27.1		1					0.0	1	0.00	100.0
Sampling Operations within SPT BH	27.2							0.0	1	0.00	0.0
Additional Geotechnical Engineers	27.3							0.0	0	0.00	0.0
Additional engineer shore side	27.4							0.0	0	0.00	0.0
Mobilisation of engineers	27.5							0.0	0	0.00	0.0
10ft Cooler container for jack-up	27.6		1					0.0	1	0.00	100.0
Daily hire of 10ft cooler container	27.7					1		0.0	6	0.00	0.0
Provision of enviro sample containers	27.8		1					0.0	1	0.00	100.0
Estimated cost of Environmental testing	27.11							0.0	0	0.00	0.0
Uplift for weather Risk	27.12							0.0	0	0.00	0.0
Mobilisation of ABI Equipment	28.1		1					0.0	0	0.00	0.0
Set up per section of logging ABI	28.2							0.0	0	0.00	0.0
ABI Logging	28.3	186.0						0.0	0	0.00	0.0
Reporting ABI	28.4		3					0.0	0	0.00	0.0
Day rate of ABI equipment	28.5							0.0	0	0.00	0.0
Uplift for weather Risk in line with item 24.2	28.6							0.0	0	0.00	0.0

Health & Safety Summary	Today	Actual To Date
HOCs	2	8
Safety Drills	0	3
Tool Box Talks	2	25
HSE Meetings		1
Incidents/Near Miss	0	0
Environmental	0	0
Inspections / Audits	0	3
Hours Worked	372	4272

Lost or damaged equipment / materials

n/a

Fugro GeoServices Representative Comments

Client Representative Comments

- Sharing of UXO results to be solved prior next JUP move. 'No energy measurement on SPT Hammer

FG[redacted]

Sig[redacted]

Client R[redacted]

Signed: [redacted]

NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

Daily Report No. **15**

Job No:	C1984	Vessel:	Excalibur	Date:	Tuesday 04-Jun-19	Revision	0

To	Ed Flint	Attn.		No./email	ed.1.flint@edf-energy.com
cc	Kiki Semertzidou	Attn.		No./email	kyriaki.semertzidou@edf-energy.com
cc	Thierry Denois	Attn.		No./email	thierry.denois@edf-en.com
cc	Gavin Hails	Attn.		No./email	gavin.hails@edf-energy.com
cc	Steve Parrish	Attn.		No./email	stephen.parrish@nnb-edfenergy.com
cc	Adrian Ivor	Attn.		No./email	a.ivor@fugro.com
cc	Nicholas Armstrong	Attn.		No./email	n.armstrong@fugro.com
cc	Peter Gummow	Attn.		No./email	p.gummow@fugro.com

Observed Weather	Wind		Wave Hs	Period	Sea State	Visibility	Weather Forecast Vs Operational Requirements
Time 00:00	Speed m/s	Direction	(m)	(Tp s)			
00:00	6	WSW	N/A	No data	slight	Good	Weather Forecast generally aligning with observed conditions
06:00	5	SSW	N/A	No data	slight	Good	
12:00	6	ESE	N/A	No data	slight	Good	
18:00	10	ESE	N/A	No data	Moderate	Good	
00:00	6	ESE	N/A	No data	Moderate	Good	

Leg Penetration (m)									Operational Status
BH no.	1	2	3	4	5	6	7	8	
IT1_SB_07	3	3	4	4	4	4	3	3	Jack up barge is fully operational with all project crew / Drilling operations running on both moon pools
Preloading	860t	860t	860t	860t	860t	860t	860t	860t	
IT1_SB_08	3	3	3	4	4	3	3	4	

Moon Pool #1 - Summary of GeoSonic Borehole Drilling and Sampling Operations (LS 600 rig) - last 24hrs:

From	To (local)	Code	Description
00:00	03:00	Sonic Drilling	**Start of Reporting Period** / Start of Shift / Bore hole at 38.50m depth / Continue sonic coring in 1m intervals
03:00	06:00	Sonic Drilling	Bore hole at 42.5m depth by 06:00 / Continue sonic coring in 1m intervals
06:00	11:45	Sonic Drilling	Bore hole at 49.5m depth by end of shift
11:45	12:00	Crew handover / TBT	Shift Handover / Crew attend tool box talk and shift start up briefing
12:00	16:40	Sonic Drilling	Bore hole at 55.00m / **End of Hole**
16:40	17:30	Casing removal	Withdraw casings from 55m to 24m / bore hole collapsed at 24m
17:30	18:00	Grouting Operations	Grout bore hole from 24m to 0m
18:00	19:00	Casing removal	Withdraw remaining 5" casing from 24m to deck
19:00	19:30	Casing removal	Remove 10" casing and place on deck / secure drilling equipment ready for moving to next borehole location.
19:30	23:30	Moving to next Drilling location	Jacking down / moving to next location / positioning on bore hole location / jackin up / pre loading legs
23:30	23:45	Casing Installation	Commence installation of 10 " casing
23:45	24:00	Crew handover / TBT	Handover Briefing / **End of Reporting Period**
24:00			
00:00			
00:00			
00:00			
00:00			
00:00			
00:00			
00:00			

Moon Pool #2 - Summary of Destructive drilling / Rotary Coring and Sampling Operations (Comacchio 12.1 Rig) - last 24hrs:

From	To (local)	Code	Description
00:00	00:01	Destructive Drilling	**Start of Reporting Period** / Start of Shift / Bore hole at 54m depth
00:01	01:30	Destructive Drilling	Complete last SPT sample at 54m / Complete drilling borehole to 55m
01:30	03:30	Geophysics Operations	Set up geophysics winch and equipment / 02:30 Commence NGR Logging of borehole in casing from -55m to 0m (mud line)
03:30	04:00	Casing removal	Withdraw Geobore S casings from hole -55m to deck
04:00	04:30	Geophysics Operations	Set up winch and commence caliper logging from -55m to 24.2m / Bore hole diping to 52m
04:30	07:50	Geophysics Operations	Commence PSL logging from base of bore hole / Further collapse of bore hole / PSL logging commenced at 48m bml
07:50	08:30	Casing removal	Recover PSL tool to deck / withdraw 7" casing from 24.2m to 17.65m / set up and run in caliper tool
08:30	09:30	Geophysics Operations	Calliper logging completed back to 17.65m, Run in PS Tool and start logging / PSL logging completed back to 17.65m
09:30	10:00	Casing removal	withdraw 7" casing back to 11.70m set up to run in calliper (3rd Casing Pull)
10:00	11:00	Geophysics Operations	Complete caliper and Psl logging between 17.65m and 11.70m
11:00	11:30	Casing removal	Withdraw 7" casing from 11.70m to 5.70m / set up to run calliper (4th Casing Pull)
11:30	11:45	Geophysics Operations	Undertake calliper logging from 11.70m to 5.70m
11:45	12:00	Crew handover / TBT	*Shift Handover / Crew attend tool box talk and shift start up briefing*
12:00	12:45	Geophysics Operations	Complete PSL logging between 11.70m and 5.70m / recover PSL tool to deck
12:45	15:30	Grouting Operations	Bore hole collapsed at 21m / grout borehole from 21m to 0m / withdraw remaining 7" casing
15:30	18:30	Casing removal	Pull 10" casings and secure drilling equipment for next move
18:30	19:30	Moving to next Drilling location	Sea fastening Huismann crane in preperation for moving
19:30	23:30	Moving to next Drilling location	Jacking down / moving to next location / positioning on bore hole location / jackin up / pre loading legs
23:30	23:45	Casing Installation	Commence installation of 10 " casing
23:45	24:00	Crew handover / TBT	Handover Briefing / **End of Reporting Period**

Fugro GeoServices Representative Comments	Client Representative Comments
Stand by time pulling 3rd and 4th Casing runs = 09:30 - 10:00 / 11:00 - 11:30 Total = 1 **Hour @ standby rate**	

FGSL Represe [redacted]

Signed: [redacted]

NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

Daily Report No. 15

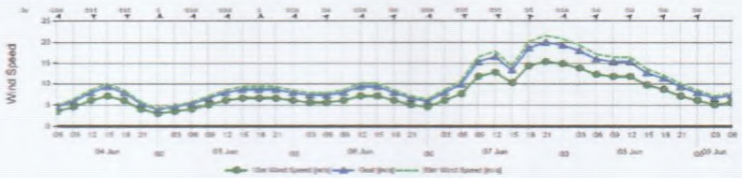
Job No:	C1984	Vessel:	Excalibur	Date:	Tuesday 04-Jun-19	Revision	0

Work planned - Next 72hrs:

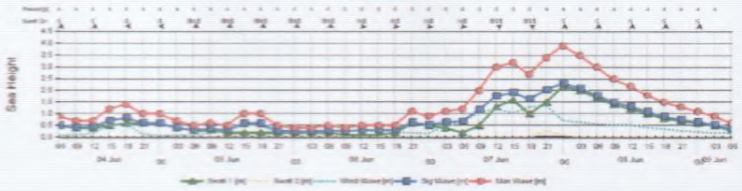
Continue drilling both Sonic and SPT bore holes to target depths

Weather forecast

Wind Chart



Wave Chart



Health Safety & the Environment

	Moon Pool #1 - Summary of GeoSonic Borehole Drilling and Sampling Operations / JUB Operations (GS 600 rig) - last 24hrs:		Moon Pool #2 - Summary of Destructive drilling / Rotary Coring & Sampling Operations (Comacchio 12.1 Rig) - last 24hrs:	
Activity Time Summary	**Today**	**To Date**	**Today**	**To Date**
Mobilisation	0.00	120.00	0.00	0.00
Tow to site	0.00	52.17	0.00	0.00
Moving to next Drilling location	4.00	6.00	5.00	7.00
Casing Installation	0.25	4.75	0.25	5.42
Destructive Drilling	0.00	0.00	1.50	51.25
Sample Drilling	0.00	0.00	0.00	0.00
Rotary Core Drilling	0.00	0.00	0.00	0.00
Sonic Drilling	16.42	96.67	0.00	0.00
SPT Operations	0.00	0.00	0.00	16.75
Geophysics Operations	0.00	2.50	8.83	15.83
Seismic Operations	0.00	0.00	0.00	0.00
Grouting Operations	0.50	1.00	2.75	3.75
Casing removal	2.33	7.08	5.17	9.42
Other operations	0.00	11.50	0.00	6.33
Crew/Materials Transfer	0.00	11.50	0.00	0.00
Crew handover / TBT	0.50	8.25	0.50	2.75
Weather Standby	0.00	11.00	0.00	0.00
3rd Party Standby	0.00	0.00	0.00	0.00
Fugro Standby	0.00	11.25	0.00	19.00
Demobilisation	0.00	0.00	0.00	0.00
Jacking Operation	0.00	8.33	0.00	4.50
Standby Current	0.00	2.00	0.00	2.00
0	0.00	0.00	0.00	0.00
Total	24.00	354.00	24.00	144.00

Personnel on Board (Fugro/Client/Subcontractors)

0000-1200	1200-2400	Company	Position
Colin Mulvey	Julian North	Fugro	Site Project Manager
Charlie Crawford	Darren Bolitho	Fugro	Bargemaster
Andy Rowe	Matt Blight	Fugro	Drilling Supervisor
James Lawson	Jake Warner	Fugro	Driller
Houston Russell	Adam Williams	Fugro	Assistant Driller
Justin Smith	Andrew Wills	Fugro	Assistant Driller
Carl Tucker	Kevin Thomson	Fugro	Crane Operator
Steve McInnes	Steve Hancock	Fugro	Fitter/Electrician
Gaby DE Francesco	James Baily	Fugro	Geotechnical Engineers
Matthew Hewiston	Elliot Sampson	Fugro	Geotechnical Engineers
Lenard Pal	Szaboics Boncz	Fugro	Geophysics
Theirry Denois		EDF	Client Representative
Paul Jeans		Geosonic	Drilling Supervisor
Lee McCallagh	Tim McCarthy	Geosonic	Driller
Craig Jackson	David Bailey	Geosonic	Assistant Driller
Jerzy Ossowski	Maciej Treder	Sodexo	Chef
	Mihai Surelu	Sodexo	Steward
No. Personnel	**31**	**Total Man Hours Worked**	372

Fugro GeoServices Representative Comments

Client Representative Comments

FGSL Representative:

Signed:

[redacted]

Clie

Sign

[redacted]

NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

Daily Report No. **15**

Job No:	C1984	Vessel:	Excalibur	Date:	Tuesday 04-Jun-19	Revision	0

Project Program / Progress		Programmed			Today			Actual To Date			% Program Completed
Activity	BoQ Item	m.	No.	Hours	m.	No.	Hours	m.	No.	Hours	
Platform mobilisation/demobilisation	3.1		1					0.0	0.8	0.00	80.0
Platform set-up	3.4		18					0.0	2	0.00	11.1
Weather standby								0.0	0	3.50	0.0
Standby by other								0.0	0	2.00	0.0
SONIC (Vibration) drilling								0.0	0	0.00	0.0
Sonic Drilling between sea bed and 10m	5.2	180						20.0	0	0.00	11.1
Sonic Drilling between 10m and 20m	5.2.1	180						20.0	0	0.00	11.1
Sonic Drilling between 20m and 30m	5.2.2	180						20.0	0	0.00	11.1
Sonic Drilling between 30m and 40m	5.2.3	180			2.0			20.0	0	0.00	11.1
Sonic Drilling between 40m and 50m	5.2.4	180			10.0			20.0	0	0.00	11.1
Sonic Drilling between 50m and 55m	5.2.5	90			5.0			10.0	0	0.00	11.1
Back fill Sonic Borehole	5.3	990			24.0			40.0	0	0.00	4.0
Rotary Drilling								0.0	0	0.00	0.0
Rotary Coring between 45m and 55m	6.1.1	30						0.0	0	0.00	0.0
Rotary Coring between 55m and 65m	6.1.2	30						0.0	0	0.00	0.0
Rotary Coring between 65m and 75m	6.1.3	30						0.0	0	0.00	0.0
Rotary Coring between 75m and 85m	6.1.4	30						0.0	0	0.00	0.0
Rotary Coring between 85m and 95m	6.1.5	30						0.0	0	0.00	0.0
Rotary Coring between 95m and 105m	6.1.6	30						0.0	0	0.00	0.0
Rotary Coring between 105m and 110m	6.1.7	15						0.0	0	0.00	0.0
Borehole cementation (E/O)	6.2	165						0.0	0	0.00	0.0
Borehole cementation from 55-110m bgl	6.3	165						0.0	0	0.00	0.0
SPT Destructive Drilling								0.0	0	0.00	0.0
Destructive drilling between Sea bed & 10m	9.2	180						20.0	0	0.00	11.1
Destructive drilling between 10m and 20m	9.2.1	180						20.0	0	0.00	11.1
Destructive drilling between 20m and 30m	9.2.2	180						20.0	0	0.00	11.1
Destructive drilling between 30m and 40m	9.2.3	180						20.0	0	0.00	11.1
Destructive drilling between 40m and 50m	9.2.4	180						20.0	0	0.00	11.1
Destructive drilling between 50m and 55m	9.2.5	90			1.0			10.0	0	0.00	11.1
Undertake SPT test	9.3		467			1.0		0.0	54	0.00	11.6
Back fill SPT Borehole	9.6	990			21.0			21.0	0	0.00	2.1
Borehole Seismic								0.0	0	0.00	0.0
Mob of Check shot equipment	15.1		1					0.0	0	0.00	0.0
E/O day rate for equipment only onboard the JUB	15.2		30					0.0	0	0.00	0.0
E/O day rate for operator onboard the JUB	15.3		30					0.0	0	0.00	0.0
Move and setup for Check shot	15.4		7					0.0	0	0.00	0.0
Perform Check shot	15.5	495.0						0.0	0	0.00	0.0
Reporting of Check shot	15.6		7					0.0	0	0.00	0.0
E/O rate for Additional casing pulls (2 per BH)								0.0	0	0.75	0.0
Geophysical Logging								0.0	0	0.00	0.0
GL acquisition & Report for P/S velocity logging	16.2	1155.0			50.0			105.0	0	0.00	9.1
Geo-logging mob-demob for GAMMA ray	16.3		1					0.0	1	0.00	50.0
E/O day rate for equipment onboard the jack-up	16.4.1		64			1		0.0	3	0.00	4.7
Setup for Gamma Ray	16.4.2		18			1		0.0	2	0.00	11.1
Gamma Ray Logging	16.4.3	1155.0			55.0			110.0	0	0.00	9.5
Reporting of Gamma Ray	16.4.4		18			1		0.0	2	0.00	11.1
GL acquisition and report for Calliper	16.6	1155.0			50.0			105.0	0	0.00	9.1
Mobilisation of additional wireline engineer to site	16.7		1					0.0	1	0.00	100.0
Daily rate for additional WL Logging Engineer	16.8		64			1		0.0	4	0.00	6.3
E/O mob/demob of the Robertson's PSSL tool	25.3							0.0	1	0.00	0.0
E/O day rate for the Robertson's PSSL tool	25.4					1		0.0	7	0.00	0.0
Variation Orders								0.0	0	0.00	0.0
Mobilise equipment for Environmental Samples	27.1		1					0.0	1	0.00	100.0
Sampling Operations within SPT BH	27.2							0.0	1	0.00	0.0
Additional Geotechnical Engineers	27.3							0.0	0	0.00	0.0
Additional engineer shore side	27.4							0.0	0	0.00	0.0
Mobilisation of engineers	27.5							0.0	0	0.00	0.0
10ft Cooler container for jack-up	27.6		1					0.0	1	0.00	100.0
Daily hire of 10ft cooler container	27.7					1		0.0	7	0.00	0.0
Provision of enviro sample containers	27.8		1					0.0	1	0.00	100.0
Estimated cost of Environmental testing	27.11							0.0	0	0.00	0.0
Uplift for weather Risk	27.12							0.0	0	0.00	0.0
Mobilisation of ABI Equipment	28.1		1					0.0	0	0.00	0.0
Set up per section of logging ABI	28.2							0.0	0	0.00	0.0
ABI Logging	28.3	186.0						0.0	0	0.00	0.0
Reporting ABI	28.4		3					0.0	0	0.00	0.0
Day rate of ABI equipment	28.5							0.0	0	0.00	0.0
Uplift for weather Risk in line with item 24.2	28.6							0.0	0	0.00	0.0

Health & Safety Summary	Today	Actual To Date
HOCs	2	10
Safety Drills	0	3
Tool Box Talks	2	27
HSE Meetings		1
Incidents/Near Miss	0	0
Environmental	0	0
Inspections / Audits	0	3
Hours Worked	372	4644

Lost or damaged equipment / materials

n/a

Fugro GeoServices Representative Comments

Client Representative Comments

FGSL Representative: Colin Mu [redacted]

Signed:

C

S

[redacted]

NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

Daily Report No. **16**

Job No:	C1984	Vessel:	Excalibur	Date:	Wednesday 05-Jun-19	Revision	0

To	Ed Flint	Attn.		No./email	ed.1.flint@edf-energy.com
cc	Kiki Semertzidou	Attn.		No./email	kyriaki.semertzidou@edf-energy.com
cc	Thierry Denois	Attn.		No./email	thierry.denois@edf-en.com
cc	Gavin Hails	Attn.		No./email	gavin.hails@edf-energy.com
cc	Steve Parrish	Attn.		No./email	stephen.parrish@nnb-edfenergy.com
cc	Adrian Ivor	Attn.		No./email	a.ivor@fugro.com
cc	Nicholas Armstrong	Attn.		No./email	n.armstrong@fugro.com
cc	Peter Gummow	Attn.		No./email	p.gummow@fugro.com

Observed Weather	Wind		Wave Hs	Period	Sea State	Visibility	Weather Forecast Vs Operational Requirements
Time 00:00	Speed m/s	Direction	(m)	(Tp s)			
00:00	6	225°	1.0	5	Moderate	Good	Weather Forecast generally aligning with observed conditions
06:00	2	225°	1.0	4	Slight	Good	
12:00	6	225°	1.5	4	Slight	Good	
18:00	3	225°	0.8	4	Slight	Good	
00:00	2	253°	0.5	4	Slight	Good	

Leg Penetration (m)								
BH no.	1	2	3	4	5	6	7	8
IT1_SB_06	3	3	3	4	4	3	3	4
Preloading	860t	860t	860t	860t	860t	860t	860t	860t

Operational Status

Jack up barge is fully operational with all project crew / Drilling operations running on both moon pools at location IT1_SB 06 & IT1_SPT_06

Moon Pool #1 - Summary of GeoSonic Borehole Drilling and Sampling Operations (LS 600 rig) - last 24hrs:

From	To (local)	Code	Description
00:00	01:30	Casing Installation	**Start of Reporting Period** / Start of Shift / Continue installing 10" casing during slack water
01:30	01:50	Jacking Operation	Jack up to adjust to height of 10" casings to align both moon pools
01:50	03:00	Casing Installation	Set 10" casing to 26m / Set up deck clamps / Move rig back into position over moon pool / Install 5" casing to sea bed / Deck to Mudline =25.0m
03:00	06:00	Sonic Drilling	Commence first coring run / Continue sonic coring in 1.5m intervals Depth @ 06:00 = 3m
06:00	06:30	Crew/Materials Transfer	Transfer 10' core container to tug with SB/SPT 03 & 07 / 7 PAX Offsigned / Continue with drilling operations
06:30	11:45	Sonic Drilling	Environmental samples off-loaded shoreside and awaiting collection / Bore hole at 14m depth by 11:45 / Continue sonic coring in 1m intervals
11:45	12:00	Crew handover / TBT	Shift Handover / Crew attend tool box talk and shift start up briefing
12:00	18:00	Sonic Drilling	13:00 Kermor alogside 6 PAX On signed and inducted / Bore hole at 26m depth by 18:00 / 15:05 Instruction to commence coring in 1.5m runs
18:00	23:45	Sonic Drilling	19:00 1 PAX Day visitor off signed / Bore hole at 36m depth by 23:45 / Continue sonic coring in 1.5m intervals
23:45	24:00	Crew handover / TBT	Handover Briefing / **End of Reporting Period**
24:00			
00:00			
00:00			
00:00			
00:00			
00:00			
00:00			
00:00			
00:00			
00:00			
00:00			

Moon Pool #2 - Summary of Destructive drilling / Rotary Coring and Sampling Operations (Comacchio 12.1 Rig) - last 24hrs:

From	To (local)	Code	Description
00:00	01:30	Casing Installation	**Start of Reporting Period** / Start of Shift / Continue installing 10" casing during slack water
01:30	01:50	Jacking Operation	Jack up barge to adjust to height of 10" casings in both moon pools
01:50	03:00	Casing Installation	Surge 10" casing to depth of 27m / run in SPT rods for first sample Deck to mudline = 25.2m
03:00	06:00	Casing Installation	Installing 7" casing / Wash boring to depth / Continue with SPT sampling at 2m intervals depth of casing @ 06:00 = 6m
06:00	06:30	Crew/Materials Transfer	Continue with drilling operations
06:30	11:45	Casing Installation	Installing 7" casing / Wash boring to depth / Continue with SPT sampling at 2m intervals depth of casing @ 11:45 = 22m
11:45	12:00	Crew handover / TBT	Shift Handover / Crew attend tool box talk and shift start up briefing
12:00	18:00	Destructive Drilling	Install casing to 24m / Continue drilling NCD with SPT sampling at 2m intervals depth of borehole 30m @ 18:00
18:00	23:45	Destructive Drilling	Bore hole at 40m depth by 11:45 / Continue drilling with SPT samples taken at 2m intervals
23:45	24:00	Crew handover / TBT	Handover Briefing / **End of Reporting Period**
24:00			
00:00			
00:00			
00:00			
00:00			
00:00			
00:00			
00:00			
00:00			
00:00			
00:00			

Fugro GeoServices Representative Comments	Client Representative Comments

FGSL Representative:	**Client Representative:**
Signed:	**Signed:**

NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

Daily Report No. **16**

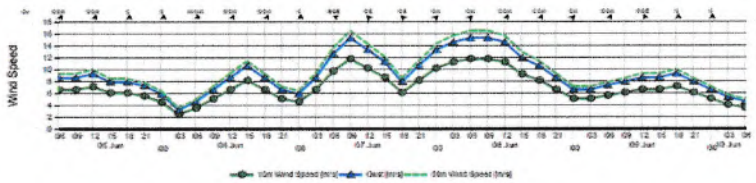
Job No:	C1984	Vessel:	Excalibur	Date:	Wednesday 05-Jun-19	Revision	0

Work planned - Next 72hrs:

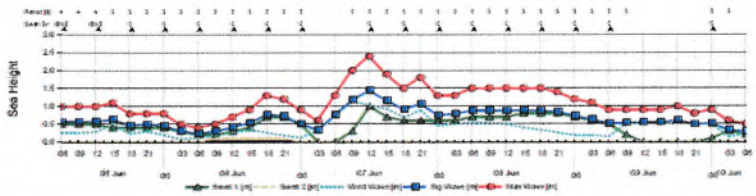
Continue drilling both Sonic and SPT bore holes to target depths / Undertake Geophysics / Reinstate boreholes and move to IT2_SB_01

Weather forecast

Wind Chart



Wave Chart



Health Safety & the Environment

	Moon Pool #1 - Summary of GeoSonic Borehole Drilling and Sampling Operations / JUB Operations (GS 600 rig) - last 24hrs:		Moon Pool #2 - Summary of Destructive drilling / Rotary Coring & Sampling Operations (Comacchio 12.1 Rig) - last 24hrs:	
Activity Time Summary	**Today**	**To Date**	**Today**	**To Date**
Mobilisation	0.00	120.00	0.00	0.00
Tow to site	0.00	52.17	0.00	0.00
Moving to next Drilling location	0.00	6.00	0.00	7.00
Casing Installation	2.67	7.42	10.92	16.33
Destructive Drilling	0.00	0.00	11.75	63.00
Sample Drilling	0.00	0.00	0.00	0.00
Rotary Core Drilling	0.00	0.00	0.00	0.00
Sonic Drilling	20.00	116.67	0.00	0.00
SPT Operations	0.00	0.00	0.00	16.75
Geophysics Operations	0.00	2.50	0.00	15.83
Seismic Operations	0.00	0.00	0.00	0.00
Grouting Operations	0.00	1.00	0.00	3.75
Casing removal	0.00	7.08	0.00	9.42
Other operations	0.00	11.50	0.00	6.33
Crew/Materials Transfer	0.50	12.00	0.50	0.50
Crew handover / TBT	0.50	8.75	0.50	3.25
Weather Standby	0.00	11.00	0.00	0.00
3rd Party Standby	0.00	0.00	0.00	0.00
Fugro Standby	0.00	11.25	0.00	19.00
Demobilisation	0.00	0.00	0.00	0.00
Jacking Operation	0.33	6.67	0.33	4.83
Standby Current	0.00	2.00	0.00	2.00
0	0.00	0.00	0.00	0.00
Total	24.00	376.00	24.00	168.00

Personnel on Board (Fugro/Client/Subcontractors)

0000-1200	1200-2400	Company	Position
Colin Mulvey	Julian North	Fugro	Site Project Manager
Charlie Crawford	Darren Bolitho	Fugro	Bargemaster
Andy Rowe	Matt Blight	Fugro	Drilling Supervisor
James Lawson	Jake Warner	Fugro	Driller
Houston Russell	Adam Williams	Fugro	Assistant Driller
Justin Smith	Andrew Wills	Fugro	Assistant Driller
Carl Tucker	Kevin Thomson	Fugro	Crane Operator
Steve McInnes	Steve Hancock	Fugro	Fitter/Electrician
Gaby DE Francesco	James Baily	Fugro	Geotechnical Engineers
Matthew Hewiston	Elliot Sampson	Fugro	Geotechnical Engineers
Lenard Pal	Szabolcs Boncz	Fugro	Geophysics
Thierry Denois		EDF	Client Representative
		GeoSonic	Drilling Supervisor
Lee McCallagh	Tim McCarthy	GeoSonic	Driller
Craig Jackson	David Bailey	GeoSonic	Assistant Driller
Jerzy Ossowski	Maciej Treder	Sodexo	Chef
	Mihai Surelu	Sodexo	Steward
No. Personnel	**30**	**Total Man Hours Worked**	360

Fugro GeoServices Representative Comments	Client Representative Comments

FGSL Representative:	Client Representative:
Signed:	Signed:

NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

Daily Report No. **16**

Job No:	C1984	Vessel:	Excalibur	Date:	Wednesday 05-Jun-19	Revision	0

Project Program / Progress		Programmed			Today			Actual To Date			% Program Completed
Activity	BoQ Item	m.	No.	Hours	m.	No.	Hours	m.	No.	Hours	
Platform mobilisation/demobilisation	3.1		1					0.0	0.8	0.00	80.0
Platform set-up	3.4		18					0.0	3	0.00	16.7
Weather standby								0.0	0	3.50	0.0
Standby by other								0.0	0	2.00	0.0
SONIC (Vibration) drilling								0.0	0	0.00	0.0
Sonic Drilling between sea bed and 10m	5.2	180			10.0			30.0	0	0.00	16.7
Sonic Drilling between 10m and 20m	5.2.1	180			10.00			30.0	0	0.00	16.7
Sonic Drilling between 20m and 30m	5.2.2	180			10.00			30.0	0	0.00	16.7
Sonic Drilling between 30m and 40m	5.2.3	180			6.0			26.0	0	0.00	14.4
Sonic Drilling between 40m and 50m	5.2.4	180						20.0	0	0.00	11.1
Sonic Drilling between 50m and 55m	5.2.5	90						10.0	0	0.00	11.1
Back fill Sonic Borehole	5.3	990						40.0	0	0.00	4.0
Rotary Drilling								0.0	0	0.00	0.0
Rotary Coring between 45m and 55m	6.1.1	30						0.0	0	0.00	0.0
Rotary Coring between 55m and 65m	6.1.2	30						0.0	0	0.00	0.0
Rotary Coring between 65m and 75m	6.1.3	30						0.0	0	0.00	0.0
Rotary Coring between 75m and 85m	6.1.4	30						0.0	0	0.00	0.0
Rotary Coring between 85m and 95m	6.1.5	30						0.0	0	0.00	0.0
Rotary Coring between 95m and 105m	6.1.6	30						0.0	0	0.00	0.0
Rotary Coring between 105m and 110m	6.1.7	15						0.0	0	0.00	0.0
Borehole cementation (E/O)	6.2	165						0.0	0	0.00	0.0
Borehole cementation from 55-110m bgl	6.3	165						0.0	0	0.00	0.0
SPT Destructive Drilling								0.0	0	0.00	0.0
Destructive drilling between Sea bed & 10m	9.2	180			10.0			30.0	0	0.00	16.7
Destructive drilling between 10m and 20m	9.2.1	180			10.0			30.0	0	0.00	16.7
Destructive drilling between 20m and 30m	9.2.2	180			10.0			30.0	0	0.00	16.7
Destructive drilling between 30m and 40m	9.2.3	180			10.0			30.0	0	0.00	16.7
Destructive drilling between 40m and 50m	9.2.4	180						20.0	0	0.00	11.1
Destructive drilling between 50m and 55m	9.2.5	90						10.0	0	0.00	11.1
Undertake SPT test	9.3		467			21.0		0.0	77	0.00	16.5
Back fill SPT Borehole	9.6	990						21.0	0	0.00	2.1
Borehole Seismic								0.0	0	0.00	0.0
Mob of Check shot equipment	15.1		1					0.0	0	0.00	0.0
E/O day rate for equipment only onboard the JUB	15.2		30					0.0	0	0.00	0.0
E/O day rate for operator onboard the JUB	15.3		30					0.0	0	0.00	0.0
Move and setup for Check shot	15.4		7					0.0	0	0.00	0.0
Perform Check shot	15.5	495.0						0.0	0	0.00	0.0
Reporting of Check shot	15.6		7					0.0	0	0.00	0.0
E/O rate for Additional casing pulls (2 per BH)								0.0	0	0.75	0.0
Geophysical Logging								0.0	0	0.00	0.0
GL acquisition & Report for P/S velocity logging	16.2	1155.0						68.0	0	0.00	5.9
Geo-logging mob-demob for GAMMA ray	16.3		1					0.0	1	0.00	50.0
E/O day rate for equipment onboard the jack-up	16.4.1		64			1		0.0	6	0.00	9.4
Setup for Gamma Ray	16.4.2		18					0.0	2	0.00	11.1
Gamma Ray Logging	16.4.3	1155.0						110.0	0	0.00	9.5
Reporting of Gamma Ray	16.4.4		18					0.0	2	0.00	11.1
GL acquisition and report for Calliper	16.6	1155.0						68.0	0	0.00	5.9
Mobilisation of additional wireline engineer to site	16.7		1					0.0	1	0.00	100.0
Daily rate for additional WL Logging Engineer	16.8		64			1		0.0	7	0.00	10.9
E/O mobidemob of the Robertson's PSSL tool	25.3							0.0	1	0.00	0.0
E/O day rate for the Robertson's PSSL tool	25.4					1		0.0	8	0.00	0.0
Variation Orders								0.0	0	0.00	0.0
Mobilise equipment for Environmental Samples	27.1		1					0.0	1	0.00	100.0
Sampling Operations within SPT BH	27.2							0.0	1	0.00	0.0
Additional Geotechnical Engineers	27.3							0.0	0	0.00	0.0
Additional engineer shore side	27.4							0.0	0	0.00	0.0
Mobilisation of engineers	27.5							0.0	0	0.00	0.0
10ft Cooler container for jack-up	27.6		1					0.0	1	0.00	100.0
Daily hire of 10ft cooler container	27.7					1		0.0	8	0.00	0.0
Provision of enviro sample containers	27.8		1					0.0	1	0.00	100.0
Estimated cost of Environmental testing	27.11							0.0	0	0.00	0.0
Uplift for weather Risk	27.12							0.0	0	0.00	0.0
Mobilisation of ABI Equipment	28.1		1					0.0	0	0.00	0.0
Set up per section of logging ABI	28.2							0.0	0	0.00	0.0
ABI Logging	28.3	186.0						0.0	0	0.00	0.0
Reporting ABI	28.4		3					0.0	0	0.00	0.0
Day rate of ABI equipment	28.5							0.0	0	0.00	0.0
Uplift for weather Risk in line with item 24.2	28.6							0.0	0	0.00	0.0

Health & Safety Summary	Today	Actual To Date
HOCs	2	12
Safety Drills	0	3
Tool Box Talks	2	29
HSE Meetings	0	1
Incidents/Near Miss	0	0
Environmental	0	0
Inspections / Audits	0	3
Hours Worked	360	5004

Lost or damaged equipment / materials

n/a

Fugro GeoServices Representative Comments

15:05 Client Instruction to commence coring in 1.5m runs on Moonpool 1 GeoSonic. Client instruciton not to redrill or grout 55m BH below collapsed depth. Correction of SPT total BoQ Item 9.3.

[redacted]

Client Comments

[redacted]

Client Represer

Signed:

[redacted]

NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

Daily Report No. 17

Job No:	C1984	Vessel:	Excalibur	Date:	Thursday 06-Jun-19	Revision	0

To	□d□□□□□	Attn.		No./email	ed.1.flint@edf-energy.com
cc	□□□□□□□ □r□□d□□	Attn.		No./email	kyriaki.semertzidou@edf-energy.com
cc	□□□rr□□D□□□□□	Attn.		No./email	thierry.denois@edf-en.com
cc	□ □□□□□ □□□	Attn.		No./email	gavin.hails@edf-energy.com
cc	□□□□□□□rr□□	Attn.		No./email	stephen.parrish@nnb-edfenergy.com
cc	Adr□□□□□r	Attn.		No./email	a.ivor@fugro.com
cc	□□□□□□Ar□ □r□□□	Attn.		No./email	n.armstrong@fugro.com
cc	□□□r□□ □□ □ □□	Attn.		No./email	p.gummow@fugro.com

Observed Weather	Wind		Wave Hs (m)	Period (Tp s)	Sea State	Visibility	Weather Forecast Vs Operational Requirements
Time 00:00	Speed m/s	Direction					
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Leg Penetration (m)									Operational Status
BH no.	1	2	3	4	5	6	7	8	
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NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

Daily Report No. 17

Job No:	C1984	Vessel:	Excalibur	Date:	Thursday 06-Jun-19	Revision	0

Work planned - Next 72hrs:

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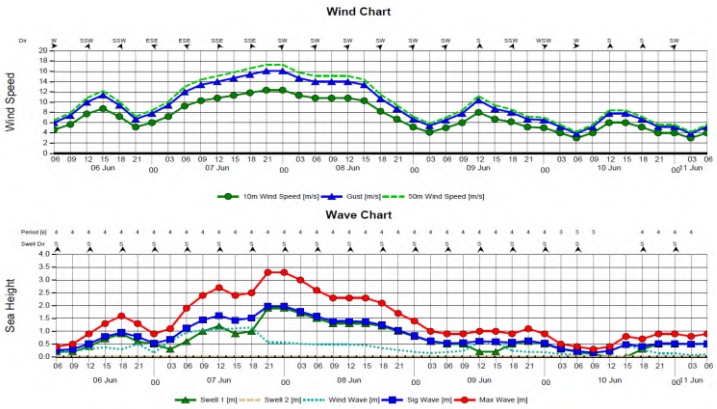
Weather forecast



Health Safety & the Environment

Moon Pool #1 - Summary of GeoSonic Borehole Drilling and Sampling Operations / JUB Operations (GS 600 rig) - last 24hrs:

Moon Pool #2 - Summary of Destructive drilling / Rotary Coring & Sampling Operations (Comacchio 12.1 Rig) - last 24hrs:

Activity Time Summary	Today	To Date	Today	To Date
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Personnel on Board (Fugro/Client/Subcontractors)

0000-1200	1200-2400	Company	Position
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Fugro GeoServices Representative Comments	Client Representative Comments

FGSL Representative:	Client Representative:
Signed:	Signed:

No. Personnel	30	Total Man Hours Worked	□□□

NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

Daily Report No. 17

Job No:	C1984	Vessel:	Excalibur	Date:	Thursday 06-Jun-19	Revision	0

Project Program / Progress		Programmed			Today			Actual To Date			% Program Completed
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NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

Daily Report No. 18

Job No:	C1984	Vessel:	Excalibur	Date:	Friday 07-Jun-19	Revision	0

To	□d□□□□□	Attn.	No./email	ed.1.flint@edf-energy.com
cc	□□□□□ □□ □r□□d□□	Attn.	No./email	kyriaki.semertzidou@edf-energy.com
cc	□□□rr□D□□□□□	Attn.	No./email	thierry.denois@edf-en.com
cc	□ □□□□□ □□□	Attn.	No./email	gavin.hails@edf-energy.com
cc	□□□□□□□rr□□	Attn.	No./email	stephen.parrish@nnb-edfenergy.com
cc	Adr□□□□□r	Attn.	No./email	a.ivor@fugro.com
cc	□□□□□□Ar□ □r□□□	Attn.	No./email	n.armstrong@fugro.com
cc	□□□r□□ □□ □ □□	Attn.	No./email	p.gummow@fugro.com

Observed Weather	Wind		Wave Hs (m)	Period (Tp s)	Sea State	Visibility	Weather Forecast Vs Operational Requirements
Time 00:00	Speed m/s	Direction					
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NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

Daily Report No. 18

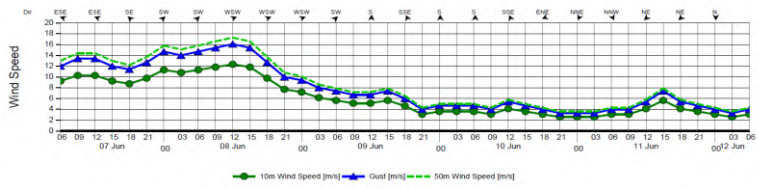
Job No:	C1984	Vessel:	Excalibur	Date:	Friday 07-Jun-19	Revision	0

Work planned - Next 72hrs:

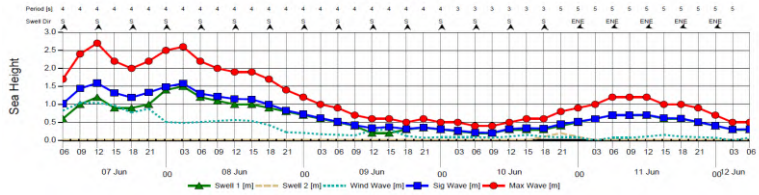
[illegible]

Weather forecast

Wind Chart



Wave Chart



Health Safety & the Environment

[illegible]

	Moon Pool #1 - Summary of GeoSonic Borehole Drilling and Sampling Operations / JUB Operations (GS 600 rig) - last 24hrs:		Moon Pool #2 - Summary of Destructive drilling / Rotary Coring & Sampling Operations (Comacchio 12.1 Rig) - last 24hrs:	
Activity Time Summary	**Today**	**To Date**	**Today**	**To Date**
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

Daily Report No. **18**

Job No:	C1984	Vessel:	Excalibur	Date:	Friday 07-Jun-19	Revision	0

Project Program / Progress		Programmed			Today			Actual To Date			% Program Completed
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NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

Daily Report No. 19

Job No:	C1984	Vessel:	Excalibur	Date:	Saturday 08-Jun-19	Revision	0

To	□d□□□□	Attn.		No./email	ed.1.flint@edf-energy.com
cc	□□□□□□ □r□□d□□	Attn.		No./email	kyriaki.semertzidou@edf-energy.com
cc	□□□rr□D□□□□□	Attn.		No./email	thierry.denois@edf-en.com
cc	□ □□□□ □□□	Attn.		No./email	gavin.hails@edf-energy.com
cc	□□□□□□rr□□	Attn.		No./email	stephen.parrish@nnb-edfenergy.com
cc	Adr□□□□□r	Attn.		No./email	a.ivor@fugro.com
cc	□□□□□□Ar□ □r□□□	Attn.		No./email	n.armstrong@fugro.com
cc	□□□r□□ □□ □ □□	Attn.		No./email	p.gummow@fugro.com

Observed Weather	Wind		Wave Hs (m)	Period (Tp s)	Sea State	Visibility	Weather Forecast Vs Operational Requirements
Time 00:00	Speed m/s	Direction					
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NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

Daily Report No. 19

Job No:	C1984	Vessel:	Excalibur	Date:	Saturday 08-Jun-19	Revision	0

Work planned - Next 72hrs:

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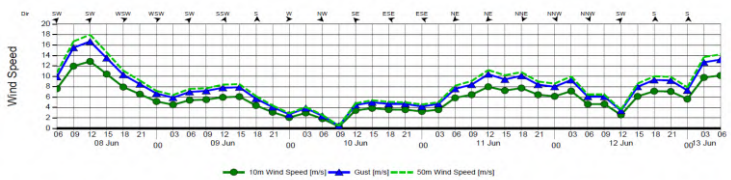
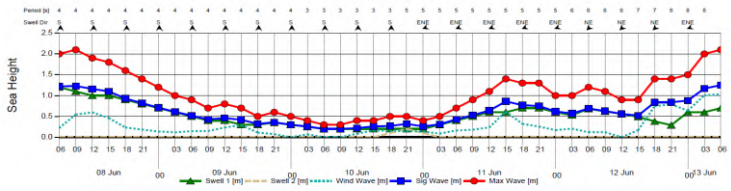
Weather forecast

Wind Chart



Wave Chart



Health Safety & the Environment

	Moon Pool #1 - Summary of GeoSonic Borehole Drilling and Sampling Operations / JUB Operations (GS 600 rig) - last 24hrs:		Moon Pool #2 - Summary of Destructive drilling / Rotary Coring & Sampling Operations (Comacchio 12.1 Rig) - last 24hrs:	
Activity Time Summary	**Today**	**To Date**	**Today**	**To Date**
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Personnel on Board (Fugro/Client/Subcontractors)			
0000-1200	**1200-2400**	**Company**	**Position**
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No. Personnel	**30**	**Total Man Hours Worked**	□□□

Fugro GeoServices Representative Comments	**Client Representative Comments**

FGSL Representative:	**Client Representative:**
Signed:	**Signed:**

NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

Daily Report No. 19

Job No:	C1984	Vessel:	Excalibur	Date:	Saturday 08-Jun-19	Revision	0

Project Program / Progress		Programmed			Today			Actual To Date			% Program Completed
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Lost or damaged equipment / materials

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Fugro GeoServices Representative Comments

Client Representative Comments

[redacted]

NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

Daily Report No. 20

Job No:	C1984	Vessel:	Excalibur	Date:	Sunday 09-Jun-19	Revision	0

To	□d□□□□	Attn.		No./email	ed.1.flint@edf-energy.com
cc	□□□□□□ □□ □r□□d□□	Attn.		No./email	kyriaki.semertzidou@edf-energy.com
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Observed Weather	Wind		Wave Hs (m)	Period (Tp s)	Sea State	Visibility	Weather Forecast Vs Operational Requirements
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NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

Daily Report No. 20

Job No:	C1984	Vessel:	Excalibur	Date:	Sunday 09-Jun-19	Revision	0

Work planned - Next 72hrs:

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Jack-up Barge Excalibur

Daily Report No. 20

Job No:	C1984	Vessel:	Excalibur	Date:	Sunday 09-Jun-19	Revision	0

Project Program / Progress		Programmed			Today			Actual To Date			% Program Completed
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SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

Daily Report No. 21

Job No:	C1984	Vessel:	Excalibur	Date:	Monday 10-Jun-19	Revision	0

To	□d□□□□□	Attn.		No./email	ed.1.flint@edf-energy.com
cc	□□□□□□ □□ □r□□d□□	Attn.		No./email	kyriaki.semertzidou@edf-energy.com
cc	□□□rr□□D□□□□□	Attn.		No./email	thierry.denois@edf-en.com
cc	□ □□□□□ □□□	Attn.		No./email	gavin.hails@edf-energy.com
cc	□□□□□□□rr□□	Attn.		No./email	stephen.parrish@nnb-edfenergy.com
cc	Adr□□□□□r	Attn.		No./email	a.ivor@fugro.com
cc	□□□□□□Ar□ □r□□□	Attn.		No./email	n.armstrong@fugro.com
cc	□□□r□□ □□ □ □□	Attn.		No./email	p.gummow@fugro.com

Observed Weather	Wind		Wave Hs (m)	Period (Tp s)	Sea State	Visibility	Weather Forecast Vs Operational Requirements
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Operational Status

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Moon Pool #1 - Summary of GeoSonic Borehole Drilling and Sampling Operations (LS 600 rig) - last 24hrs:

From	To (local)	Code	Description
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NEARSHORE DAILY PROGRESS REPORT
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Work planned - Next 72hrs:

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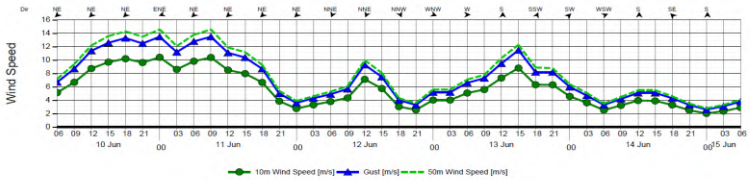
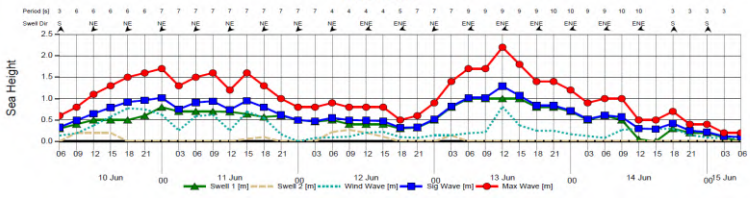
Weather forecast

Wind Chart



Wave Chart



Health Safety & the Environment

	Moon Pool #1 - Summary of GeoSonic Borehole Drilling and Sampling Operations / JUB Operations (GS 600 rig) - last 24hrs:		Moon Pool #2 - Summary of Destructive drilling / Rotary Coring & Sampling Operations (Comacchio 12.1 Rig) - last 24hrs:	
Activity Time Summary	**Today**	**To Date**	**Today**	**To Date**
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Personnel on Board (Fugro/Client/Subcontractors)			
0000-1200	**1200-2400**	**Company**	**Position**
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No. Personnel	**30**	**Total Man Hours Worked**	□□□

Fugro GeoServices Representative Comments	**Client Representative Comments**

FGSL Representative:	**Client Representative:**
Signed:	**Signed:**

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SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

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Project Program / Progress		Programmed			Today			Actual To Date			% Program Completed
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Health & Safety Summary	Today	Actual To Date
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Lost or damaged equipment / materials

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Fugro GeoServices Representative Comments

Client Representative Comments

[redacted]

Client Representative: Venancio Carrillo

[redacted]

NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

Daily Report No. 22

Job No:	C1984	Vessel:	Excalibur	Date:	Tuesday 11-Jun-19	Revision	0

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cc	□□□□□□ □□ □r□□d□□	Attn.		No./email	kyriaki.semertzidou@edf-energy.com
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Moon Pool #1 - Summary of GeoSonic Borehole Drilling and Sampling Operations (LS 600 rig) - last 24hrs:

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NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

Daily Report No. 22

Job No:	C1984	Vessel:	Excalibur	Date:	Tuesday 11-Jun-19	Revision	0

Work planned - Next 72hrs:

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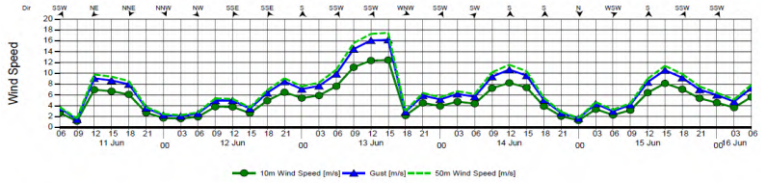
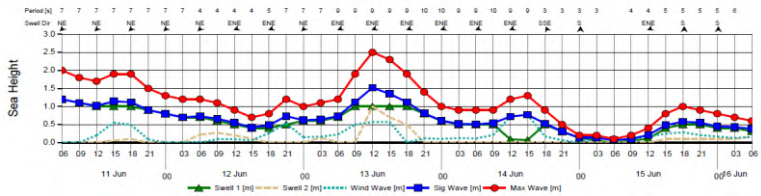
Weather forecast

Wind Chart



Wave Chart



Health Safety & the Environment

	Moon Pool #1 - Summary of GeoSonic Borehole Drilling and Sampling Operations / JUB Operations (GS 600 rig) - last 24hrs:		Moon Pool #2 - Summary of Destructive drilling / Rotary Coring & Sampling Operations (Comacchio 12.1 Rig) - last 24hrs:	
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Personnel on Board (Fugro/Client/Subcontractors)			
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Fugro GeoServices Representative Comments	**Client Representative Comments**

FGSL Representative:	**Client Representative:**
Signed:	**Signed:**

NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

Daily Report No. **22**

Job No:	C1984	Vessel:	Excalibur	Date:	Tuesday 11-Jun-19	Revision	0

Project Program / Progress		Programmed			Today			Actual To Date			% Program Completed
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Lost or damaged equipment / materials
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Fugro GeoServices Representative Comments	Client Representative Comments

FGSL Representative: Colin Mulvey / Work Package Manager

Signed: [redacted]

Client Representative: Venancio Carrillo

[redacted]

NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

Daily Report No. 23

Job No:	C1984	Vessel:	Excalibur	Date:	Wednesday 12-Jun-19	Revision	0

To	□d□□□□□	Attn.		No./email	ed.1.flint@edf-energy.com
cc	□ □□□□ □□ □r□□d□□	Attn.		No./email	kyriaki.semertzidou@edf-energy.com
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Observed Weather	Wind		Wave Hs (m)	Period (Tp s)	Sea State	Visibility	Weather Forecast Vs Operational Requirements
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Moon Pool #1 - Summary of GeoSonic Borehole Drilling and Sampling Operations (LS 600 rig) - last 24hrs:

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NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

Daily Report No. 23

Job No:	C1984	Vessel:	Excalibur	Date:	Wednesday 12-Jun-19	Revision	0

Work planned - Next 72hrs:

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Jack-up Barge Excalibur

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Job No:	C1984	Vessel:	Excalibur	Date:	Wednesday 12-Jun-19	Revision	0

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SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

Daily Report No. 24

Job No:	C1984	Vessel:	Excalibur	Date:	Thursday 13-Jun-19	Revision	0

To	□d□□□□	Attn.		No./email	ed.1.flint@edf-energy.com
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Job No:	C1984	Vessel:	Excalibur	Date:	Thursday 13-Jun-19	Revision	0

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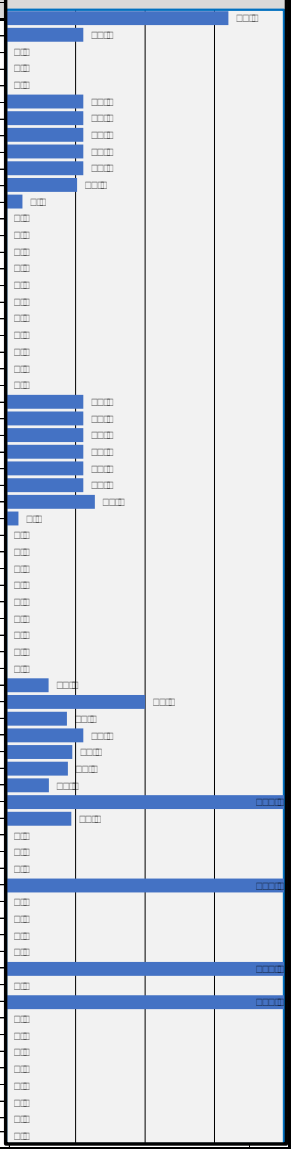

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Fugro GeoServices Representative Comments

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Client Representative Comments

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NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

Daily Report No. 25

Job No:	C1984	Vessel:	Excalibur	Date:	Friday 14-Jun-19	Revision	0

To	□d□□□□□	Attn.		No./email	ed.1.flint@edf-energy.com
cc	□□□□□ □□ □r□□d□□	Attn.		No./email	kyriaki.semertzidou@edf-energy.com
cc	□□□rr□D□□□□□	Attn.		No./email	thierry.denois@edf-en.com
cc	□ □□□□□ □□□	Attn.		No./email	gavin.hails@edf-energy.com
cc	□□□□□□ □rr□□	Attn.		No./email	stephen.parrish@nnb-edfenergy.com
cc	Adr□□□□□r	Attn.		No./email	a.ivor@fugro.com
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Moon Pool #1 - Summary of GeoSonic Borehole Drilling and Sampling Operations (LS 600 rig) - last 24hrs:

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NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

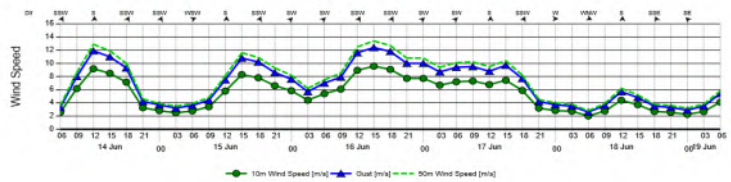
Daily Report No. 25

Job No:	C1984	Vessel:	Excalibur	Date:	Friday 14-Jun-19	Revision	0

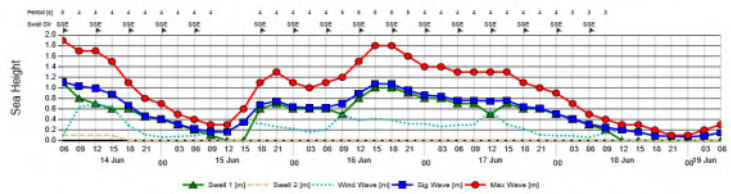
Work planned - Next 72hrs:

Weather forecast

Wind Chart



Wave Chart



Health Safety & the Environment

Moon Pool #1 - Summary of GeoSonic Borehole Drilling and Sampling Operations / JUB Operations (GS 600 rig) - last 24hrs:

Moon Pool #2 - Summary of Destructive drilling / Rotary Coring & Sampling Operations (Comacchio 12.1 Rig) - last 24hrs:

Activity Time Summary	Today	To Date	Today	To Date
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Personnel on Board (Fugro/Client/Subcontractors)

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Fugro GeoServices Representative Comments	Client Representative Comments

FGSL Representative:

Signed:

Client Representative:

Signed:

NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

Daily Report No. **25**

Job No:	C1984	Vessel:	Excalibur	Date:	Friday 14-Jun-19	Revision	0

Project Program / Progress		Programmed			Today			Actual To Date			% Program Completed
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Lost or damaged equipment / materials
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Fugro GeoServices Representative Comments	Client Representative Comments

FGSL Representative: Colin Mulvey / Work Package Manager

Signed: [redacted]

Client Representative: Venancio Carrillo

Sign [redacted]

NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

Daily Report No. 26

Job No:	C1984	Vessel:	Excalibur	Date:	Saturday 15-Jun-19	Revision	0

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cc	□□□□□□ □□ □r□□d□□	Attn.	No./email	kyriaki.semertzidou@edf-energy.com
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Observed Weather	Wind		Wave Hs (m)	Period (Tp s)	Sea State	Visibility	Weather Forecast Vs Operational Requirements
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NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

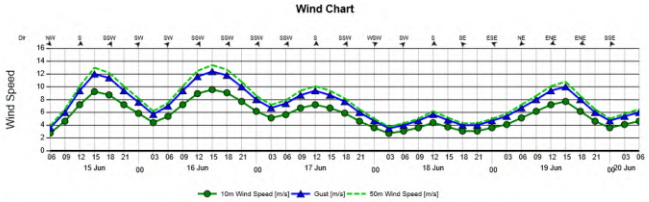
Daily Report No. 26

Job No:	C1984	Vessel:	Excalibur	Date:	Saturday 15-Jun-19	Revision	0

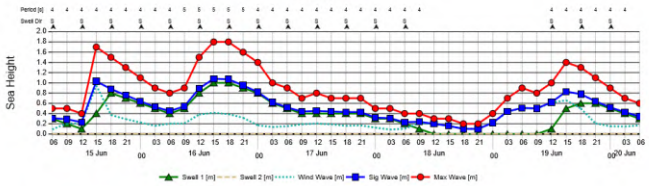
Work planned - Next 72hrs:

Weather forecast

Wind Chart



Wave Chart



Health Safety & the Environment

[illegible]

	Moon Pool #1 - Summary of GeoSonic Borehole Drilling and Sampling Operations / JUB Operations (GS 600 rig) - last 24hrs:		Moon Pool #2 - Summary of Destructive drilling / Rotary Coring & Sampling Operations (Comacchio 12.1 Rig) - last 24hrs:	
Activity Time Summary	**Today**	**To Date**	**Today**	**To Date**
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

Daily Report No. 26

Job No:	C1984	Vessel:	Excalibur	Date:	Saturday 15-Jun-19	Revision	0

Project Program / Progress		Programmed			Today			Actual To Date			% Program Completed
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Lost or damaged equipment / materials

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Fugro GeoServices Representative Comments

Client Representative Comments

FGSL Representative: Colin Mulvey / Work Package Manager

Client Representative: Venancio Carrillo

Signed: [redacted] [redacted]

NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

Daily Report No. 27

Job No:	C1984	Vessel:	Excalibur	Date:	Sunday 16-Jun-19	Revision	0

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cc	□□□□□ □□ □r□□d□□	Attn.		No./email	kyriaki.semertzidou@edf-energy.com
cc	□□□rr□D□□□□□	Attn.		No./email	thierry.denois@edf-en.com
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Observed Weather	Wind		Wave Hs (m)	Period (Tp s)	Sea State	Visibility	Weather Forecast Vs Operational Requirements
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Moon Pool #1 - Summary of GeoSonic Borehole Drilling and Sampling Operations (LS 600 rig) - last 24hrs:

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NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

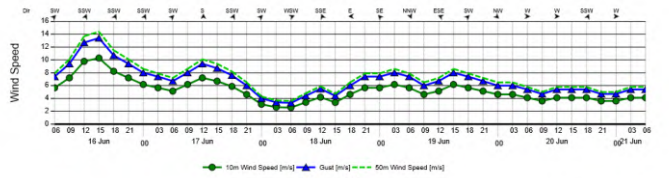
Daily Report No. 27

Job No:	C1984	Vessel:	Excalibur	Date:	Sunday 16-Jun-19	Revision	0

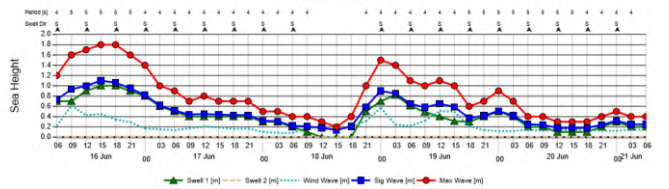
Work planned - Next 72hrs:

Weather forecast

Wind Chart



Wave Chart



Health Safety & the Environment

	Moon Pool #1 - Summary of GeoSonic Borehole Drilling and Sampling Operations / JUB Operations (GS 600 rig) - last 24hrs:		Moon Pool #2 - Summary of Destructive drilling / Rotary Coring & Sampling Operations (Comacchio 12.1 Rig) - last 24hrs:	
Activity Time Summary	**Today**	**To Date**	**Today**	**To Date**
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Personnel on Board (Fugro/Client/Subcontractors)			
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Fugro GeoServices Representative Comments	Client Representative Comments

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NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

Daily Report No. 27

Job No:	C1984	Vessel:	Excalibur	Date:	Sunday 16-Jun-19	Revision	0

Project Program / Progress		Programmed			Today			Actual To Date			% Program Completed
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Health & Safety Summary	Today	Actual To Date
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Lost or damaged equipment / materials

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Fugro GeoServices Representative Comments

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Client Representative Comments

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FGSL Representative: Colin Mulvey / Work Package Manager

Signed: [redacted]

Client Representative: Venancio Carrillo

Sig [redacted]

NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

Daily Report No. 28

Job No:	C1984	Vessel:	Excalibur	Date:	Monday 17-Jun-19	Revision	0

To	□d□□□□□	Attn.		No./email	ed.1.flint@edf-energy.com
cc	□□□□□ □□ □r□□d□□	Attn.		No./email	kyriaki.semertzidou@edf-energy.com
cc	□□□rr□D□□□□□	Attn.		No./email	thierry.denois@edf-en.com
cc	□ □□□□□ □□□	Attn.		No./email	gavin.hails@edf-energy.com
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Observed Weather	Wind		Wave Hs (m)	Period (Tp s)	Sea State	Visibility	Weather Forecast Vs Operational Requirements
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NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

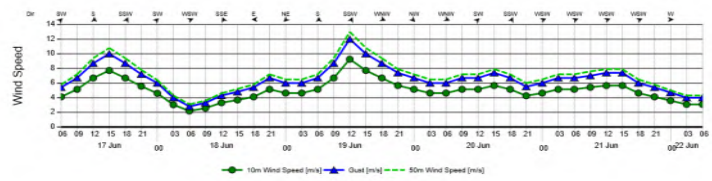
Daily Report No. 28

Job No:	C1984	Vessel:	Excalibur	Date:	Monday 17-Jun-19	Revision	0

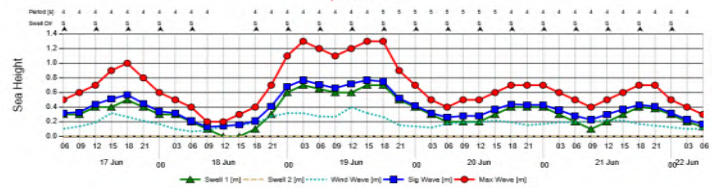
Work planned - Next 72hrs:

Weather forecast

Wind Chart



Wave Chart



Health Safety & the Environment

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NEARSHORE DAILY PROGRESS REPORT
SZC 2019 Offshore Ground Investigation
Jack-up Barge Excalibur

Daily Report No. **28**

Job No:	C1984	Vessel:	Excalibur	Date:	Monday 17-Jun-19	Revision	0

Project Program / Progress		Programmed			Today			Actual To Date			% Program Completed
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Health & Safety Summary	Today	Actual To Date
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Lost or damaged equipment / materials

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Fugro GeoServices Representative Comments

Client Representative Comments

FGSL Representative: Colin Mulvey / Work Package Manager

Client Representative: Venancio Carrillo

Signed: [redacted]

Si [redacted]