APPENDIX D - GEOTECHNICAL LABORATORY TESTING

(i) Laboratory Test Verification Sheet

(ii) Laboratory Test Results

STRUCTURAL SOILS LTD

TEST REPORT

Report No. 736036-01 (00) 1774

Date	16-December-2021	Contract	Langstone Flood & Coastal Erosion Management Scheme

Client Structural Soils Ltd
Address The Old School
Stillhouse Lane
Bedminster
Bristol
BS3 4EB

For the Attention of Eloise Harman

Samples submitted by client	08-October-2021	Client Reference	736036
Testing Started	13-October-2021	Client Order No.	n/a
Testing Completed	16-December-2021	Instruction Type	Written

Tests marked 'Not UKAS Accredited' in this report are not included in the UKAS Accreditation Schedule for our Laboratory.

UKAS Accredited Tests

P105	Water Content BS EN ISO 17892-1
P108	PSD BS EN ISO 17892-4
P109	Oedometer BS EN ISO17892-5
P112	UU Triaxial BS EN ISO 17892-8
P114	Liquid and plastic limits BS EN ISO 17892-12
10.02	Saturated moisture content of chalk BS1377:Part 2:1990,clause 3.3

Undertaken by a sub-contractor

2.06	Sulphate content (acid extract) in accordance with BRE Special Digest 1:2005
2.04	Sulphate content (water extract) in accordance with BRE Special Digest 1:2005
2.07	pH value in accordance with BRE Special Digest 1:2005
2.05	Total sulphur in accordance with BRE Special Digest 1:2005
2.01	Organic matter content in accordance with BRE Special Digest 1:2005

* This clause of BS1377 is no longer the most up to date method due to the publication of ISO17892

Please Note: Remaining samples will be retained for a period of one month from today and will then be disposed of .
Test were undertaken on samples 'as received' unless otherwise stated.
Opinions and interpretations expressed in this report are outside the scope of accreditation for this laboratory.

Structural Soils Ltd 18 Frogmore Rd Hemel Hempstead HP3 9RT Tel.01442 416661 e-mail dimitris.xirouchakis@soils.co.uk

TESTING VERIFICATION CERTIFICATE

UKAS TESTING
1774

The test results included in this report are certified as:-

ISSUE STATUS: **FINAL**

In accordance with the Structural Soils Ltd Laboratory Quality Management System, results sheets and summaries of results issued by the laboratory are checked by an approved signatory. The integrity of the test data and results are ensured by control of the computer system employed by the laboratory as part of the Software Verification Program as detailed in the Laboratory Quality Manual.

This testing verification certificate covers all testing compiled on or before the following datetime: **16/12/2021 07:15:16**.

Testing reported after this date is not covered by this Verification Certificate.



Approved Signatory
Alan Frost (Data Quality Manager)

(Head Office)
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TN11 9HU

	Contract:	Job No:
STRUCTURAL SOILS LTD	**Langstone Flood & Coastal Erosion Management Scheme**	**736036**

AGS

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | GrfcText L - LAB VERIFICATION REPORT - V02 - A4P | 736036_LANGSTONE_FLOOD_&_COASTAL_EROSION_MANAGEMENT_SCHEME.GPJ - v10_01.
Structural Soils Ltd, Head Office - Bristol: The Old School, Stillhouse Lane, Bedminster, Bristol, BS3 4EB. Tel: 0117-947-1000, Fax: 0117-947-1004, Web: www.soils.co.uk, Email: ask@soils.co.uk. | 16/12/21 - 10:20 | SC1 |

TESTING VERIFICATION CERTIFICATE

UKAS TESTING
1774

The test results included in this report are certified as:-

ISSUE STATUS: **FINAL**

In accordance with the Structural Soils Ltd Laboratory Quality Management System, results sheets and summaries of results issued by the laboratory are checked by an approved signatory. The integrity of the test data and results are ensured by control of the computer system employed by the laboratory as part of the Software Verification Program as detailed in the Laboratory Quality Manual.

This testing verification certificate covers all testing compiled on or before the following datetime: **16/12/2021 09:20:37**.

Testing reported after this date is not covered by this Verification Certificate.

Approved Signatory
Sharon Cairns (Laboratory Manager)

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Structural Soils Ltd, Head Office - Bristol: The Old School, Stillhouse Lane, Bedminster, Bristol, BS3 4EB. Tel: 0117-947-1000, Fax: 0117-947-1004, Web: www.soils.co.uk, Email: ask@soils.co.uk. | 16/12/21 - 10:20 | SC1 |

SUMMARY OF SOIL CLASSIFICATION TESTS

In accordance with Part 1,Part 12 of BS EN ISO 17892
In accordance with clauses 3.2 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Water Content %	Liquid Limit %	Plastic Limit %	Plasticity Index	% <425um	Description of Sample
BH101	3	UT100	1.20	14.1	43	20	23	80	Light brown mottled grey slightly gravelly slightly sandy silty CLAY
BH101	9	UT100	2.20	20.7					Brown mottled grey and white slightly gravelly CLAY
BH101	20	B	4.50	16.9					Very light grey gravelly slightly sandy CLAY
BH101	36	B	11.00	27.5					White gravelly sandy CLAY
BH102	1	B	0.20	12.1					Brown mottled red and white sandy silty GRAVEL with low cobble content MAN-MADE MATERIAL
BH102	2	B	0.50	21.6	35	18	17	82	Brown mottled white and dark grey slightly gravelly slightly sandy clayey SILT MAN-MADE MATERIAL
BH102	3	UT100	1.20	20.0					Brown mottled red white and grey gravelly slightly sandy CLAY with man-made material
BH102	8	UT100	2.20	18.9					Light grey mottled white and light brown slightly gravelly CHALK

SYMBOLS: * denotes BS 1377

SUMMARY OF SOIL CLASSIFICATION TESTS

In accordance with Part 1,Part 12 of BS EN ISO 17892
In accordance with clauses 3.2 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Water Content %	Liquid Limit %	Plastic Limit %	Plasticity Index	% <425um	Description of Sample
BH102	22	UT100	4.50	23.8					White mottled light brown gravelly CHALK
BH102	27	UT100	5.50	23.6					White mottled light brown and brown gravelly CHALK
BH102	31	B	6.10	27.5					White slightly gravelly slightly sandy CLAY
BH102	41	UT100	9.00	27.9					White gravelly CHALK
BH103	3	B	0.60	27.8	32	19	13	67	Brown slightly gravelly slightly sandy CLAY
BH103	6	B	1.20	24.5	32	19	13	80	Brown slightly gravelly slightly sandy SILT
BH103	8	UT	2.00	21.2					Light grey mottled orangish brown and white slightly gravelly slightly sandy CLAY
BH103	14	UT	3.00	19.7					Light grey mottled brown and white slightly gravelly slightly sandy CLAY

SYMBOLS: * denotes BS 1377

SUMMARY OF SOIL CLASSIFICATION TESTS

In accordance with Part 1,Part 12 of BS EN ISO 17892
In accordance with clauses 3.2 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Water Content %	Liquid Limit %	Plastic Limit %	Plasticity Index	% <425um	Description of Sample
BH103	19	UT	4.00	19.0					Grey mottled brown brown and white slightly gravelly slightly sandy CLAY
BH103	28	UT	6.00	23.8					Light grey nottled orangish brown slightly gravelly slightly sandy CLAY
BH103	35	B	7.00	26.1					White slightly gravelly slightly sandy CLAY
BH104	2	B	0.50	11.0	35	19	16	39	Brown mottled dark grey and white gravelly slightly sandy CLAY
BH104	3	B	1.00	20.3	44	19	25	32	Brown mottled grey very sandy silty GRAVEL
BH104	6	B	1.30	16.7	42	23	19	46	Grey mottled dark grey and greyish brown sandy very silty GRAVEL MADE-GROUND
BH104	10	B	2.00	27.9	73	29	44	83	Dark grey mottled brown gravelly slightly sandy SILT
BH104	12	UT100	3.00	21.4	33	18	15	97	Light brown mottled grey slightly gravelly slightly sandy CLAY

SYMBOLS: * denotes BS 1377

SUMMARY OF SOIL CLASSIFICATION TESTS

In accordance with Part 1,Part 12 of BS EN ISO 17892
In accordance with clauses 3.2 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Water Content %	Liquid Limit %	Plastic Limit %	Plasticity Index	% <425um	Description of Sample
BH104	17	UT100	4.00	22.4	33	18	15	99	Brown mottled grey slightly sandy silty CLAY
BH104	21	B	4.55	24.7	32	18	14	99	Brown mottled light grey slightly gravelly slightly sandy CLAY
BH104	23	UT100	5.00	16.2					Light grey mottled orangish brown and white slightly gravelly slightly sandy CLAY
BH104	29	UT100	6.00	21.3					Grey mottled brown gravelly CLAY
BH104	35	U	7.50	24.9					White slightly gravelly slightly sandy CLAY
BH104	41	UT100	9.00	25.3					White mottled light brown and light grey gravelly slightly sandy CLAY
BH104	46	UT100	10.50	24.8					White gravelly slightly gravelly CLAY
BH104	57	B	13.50	27.9					White slightly clayey ROCK CHALK

SYMBOLS: * denotes BS 1377

SUMMARY OF SOIL CLASSIFICATION TESTS

In accordance with Part 1,Part 12 of BS EN ISO 17892
In accordance with clauses 3.2 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Water Content %	Liquid Limit %	Plastic Limit %	Plasticity Index	% <425um	Description of Sample
BH105	6	UT100	1.20	22.0	35	19	16	88	Brown mottled grey slightly gravelly slightly sandy silty CLAY
BH105	9	B	1.70	25.6	42	23	19	77	Brown mottled dark grey slightly gravelly slightly sandy CLAY
BH105	21	UT100	5.20	18.2	30	20	10	76	Grey CHALK with occasional flint gravel
BH105	31	B	7.00	16.4	30	20	10	34	Light grey slightly sandy very clayey GRAVEL
BH105	35	B	8.50	18.2	30	21	9	31	Grey mottled white gravelly slightly sandy silty CLAY
BH106	2	B	0.60	20.0	78	31	47	35	Very dark grey mottled light brown and grey sandy silty GRAVEL
BH106	12	B	3.00	18.7					White mottled grey gravelly CHALK
BH106	18	UT100	5.00	26.9					White gravelly CHALK
									White gravelly CHALK

SYMBOLS: * denotes BS 1377

SUMMARY OF SOIL CLASSIFICATION TESTS

In accordance with Part 1,Part 12 of BS EN ISO 17892
In accordance with clauses 3.2 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Water Content %	Liquid Limit %	Plastic Limit %	Plasticity Index	% <425um	Description of Sample
BH106	30	B	7.00	28.0					White gravelly CHALK
BH106	36	UT100	9.50	22.3					White gravelly CHALK
									White gravelly CHALK
DS101	2	B	0.30	21.1	48	36	12	37	Dark brown mottled red slightly sandy gravelly CLAY
DS101	11	D	2.40	19.7	42	24	18	68	Grey mottled brown and dark grey slightly gravelly slightly sandy CLAY
DS102	2	B	0.30	13.8	39	22	17	31	MADE-GROUND. Brown mottled dark grey very sandy silty GRAVEL.
DS102	4	B	0.90	76.6	73	31	42	91	Dark grey slightly gravelly slightly sandy silty CLAY
DS102	8	D	1.57	17.9	35	18	17	85	Brown slightly gravelly slightly sandy CLAY
DS102	15	D	3.35	16.7					Light brown mottled brown and white sandy gravelly CLAY

SYMBOLS: * denotes BS 1377

SUMMARY OF SOIL CLASSIFICATION TESTS

In accordance with Part 1,Part 12 of BS EN ISO 17892
In accordance with clauses 3.2 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Water Content %	Liquid Limit %	Plastic Limit %	Plasticity Index	% <425um	Description of Sample
DS102	21	DSPT	5.00	25.8					White mottled off white slightly gravelly slightly sandy CLAY
DS103	2	B	0.30	16.2	46	22	24	48	Brown mottled dark grey slightly sandy gravelly CLAY with a low cobble content
DS103	5	U70	1.20	27.2	53	23	30	90	Grey slightly gravelly slightly sandy silty CLAY
DS103	13	U70	3.00	22.3	32	17	15	96	Dark grey slightly gravelly slightly sandy silty CLAY
DS103	22	D	4.64	18.6	30	21	9	79	Grey mottled white, brown and dark brown slightly sandy slightly gravelly CLAY. Gravel includes chalk
DS104	9	U70	2.00	24.7	49	20	29	72	Brownish grey slightly gravelly slightly sandy CLAY
DS104	18	B	4.45	14.8	29	19	10	35	Light grey mottled light brown gravelly CLAY. Gravel includes chalk
DS105	10	U70	2.00	23.9	30	20	10	99	Brown slightly sandy SILT

SYMBOLS: * denotes BS 1377

SUMMARY OF SOIL CLASSIFICATION TESTS

In accordance with Part 1,Part 12 of BS EN ISO 17892
In accordance with clauses 3.2 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Water Content %	Liquid Limit %	Plastic Limit %	Plasticity Index	% <425um	Description of Sample
DS105	18	B	3.30	19.5					White gravelly slightly sandy CLAY
DS105	21	B	4.00	25.6					White gravelly slightly sandy CLAY
DS106	5	U70	1.20	21.8	31	19	12	100	Brown slightly gravelly slightly sandy silty CLAY
DS106	10	U70	2.00	17.9	78	39	39	83	Brown slightly sandy slightly gravelly CLAY
DS106	15	B	2.62	12.6	35	22	13	46	Light brown mottled light grey and dark grey slightly sandy gravelly CLAY
DS106	24	D	5.79	16.8					White gravelly sandy CLAY
DS107	5	U70	1.20	22.0	32	18	14	88	Brown gravelly slightly sandy silty CLAY
DS107	11	B	2.42	15.2	37	18	19	46	Light brown slightly sandy gravelly CLAY

SYMBOLS: * denotes BS 1377

SUMMARY OF SOIL CLASSIFICATION TESTS

In accordance with Part 1,Part 12 of BS EN ISO 17892
In accordance with clauses 3.2 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Water Content %	Liquid Limit %	Plastic Limit %	Plasticity Index	% <425um	Description of Sample
DS107	14	D	3.50	15.4	28	18	10	47	Light brown mottled light grey sandy very clayey GRAVEL
DS107	21	B	5.20	21.2					White mottled off-white slightly gravelly CHALK
DS109	4	B	0.80	26.7	26	18	8	71	Brown slightly sandy slightly gravelly silty CLAY
DS109	6	UT	1.20	15.2	27	17	10	54	Light grey gravelly slightly sandy silty CLAY
DS109	12	B	2.17	14.6	26	17	9	42	Light grey sandy very clayey GRAVEL with chalk
DS109	16	UT	4.00	17.6	27	18	9	73	Light grey slightly gravelly slightly sandy silty CLAY
DS109	21	D	4.55	18.2					Light brown mottled white gravelly CHALK
HDTP102	2	B	0.30	19.8	80	21	59	65	Dark brown mottled white and red gravelly slightly sandy CLAY. MAN MADE MATERIAL

SYMBOLS: * denotes BS 1377

SUMMARY OF SOIL CLASSIFICATION TESTS

In accordance with Part 1,Part 12 of BS EN ISO 17892
In accordance with clauses 3.2 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Water Content %	Liquid Limit %	Plastic Limit %	Plasticity Index	% <425um	Description of Sample
HDTP103	3	D	0.50	23.2	32	20	12	66	Brown slightly gravelly slightly sandy CLAY
HDTP104	2	B	0.40	28.4	43	19	24	82	Brown mottled black slightly gravelly slightly sandy SILT with organics
HDTP104	3	B	0.80	17.0					Brown mottled greenish brown and greyish brown slightly gravelly slightly sandy CLAY
HDTP105	1	LB	0.30	15.3					Brown slightly sandy slightly silty GRAVEL
HDTP106	2	B	0.30	28.7	42	22	20	76	Brown mottled dark brown slightly sandy SILT
HDTP106	4	B	0.80	30.4	64	37	27	87	Brown slightly gravelly slightly sandy SILT
HDTP107	2	B	0.30	13.7					Dark brown very sandy very clayey GRAVEL. MADE-GROUND
HDTP107	4	B	0.50	13.2					Dark brown mottled red slightly gravelly slightly sandy CLAY with brick fragments

SYMBOLS: * denotes BS 1377

SUMMARY OF SOIL CLASSIFICATION TESTS

In accordance with Part 1,Part 12 of BS EN ISO 17892
In accordance with clauses 3.2 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Water Content %	Liquid Limit %	Plastic Limit %	Plasticity Index	% <425um	Description of Sample
HDTP108	3	B	0.70	23.8	39	22	17	64	Very dark brown mottled orangish brown and white slightly gravelly slightly sandy CLAY with man-made material
HDTP109	2	B	0.30	22.6	43	24	19	59	Dark brown mottled red gravelly slightly sandy CLAY with man made material
HDTP109	4	B	1.00	26.2	46	21	25	81	Dark brown mottled orangish brown sandy gravelly CLAY
HDTP110	2	B	0.30	16.7					Dark brown mottled red slightly sandy clayey GRAVEL
HDTP111	2	B	0.30	76.0	80	21	59	62	Brown mottled very dark brown slightly gravelly slightly sandy CLAY with organics and MAN MADE MATERIAL.
									Asbestos found.
MDTP101	6	LB	1.70	72.9	80	35	45	98	Dark grey slightly gravelly slightly sandy SILT with organics
MDTP102	8	B	1.70	32.4	79	33	46	87	Grey mottled brown slightly sandy CLAY with organic matters
MDTP103	7	B	2.90	15.4	35	19	16	34	Brown mottled reddish brown sandy silty GRAVEL with low cobble content

SYMBOLS: * denotes BS 1377

SUMMARY OF SOIL CLASSIFICATION TESTS

In accordance with Part 1,Part 12 of BS EN ISO 17892
In accordance with clauses 3.2 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Water Content %	Liquid Limit %	Plastic Limit %	Plasticity Index	% <425um	Description of Sample
MDTP103	9	B	3.30	13.8	43	25	18	46	Brown mottled reddish brown sandy silty GRAVEL with low cobble content

SYMBOLS: * denotes BS 1377

STRUCTURAL SOILS LTD

Contract:

Langstone Flood & Coastal Erosion Management Scheme

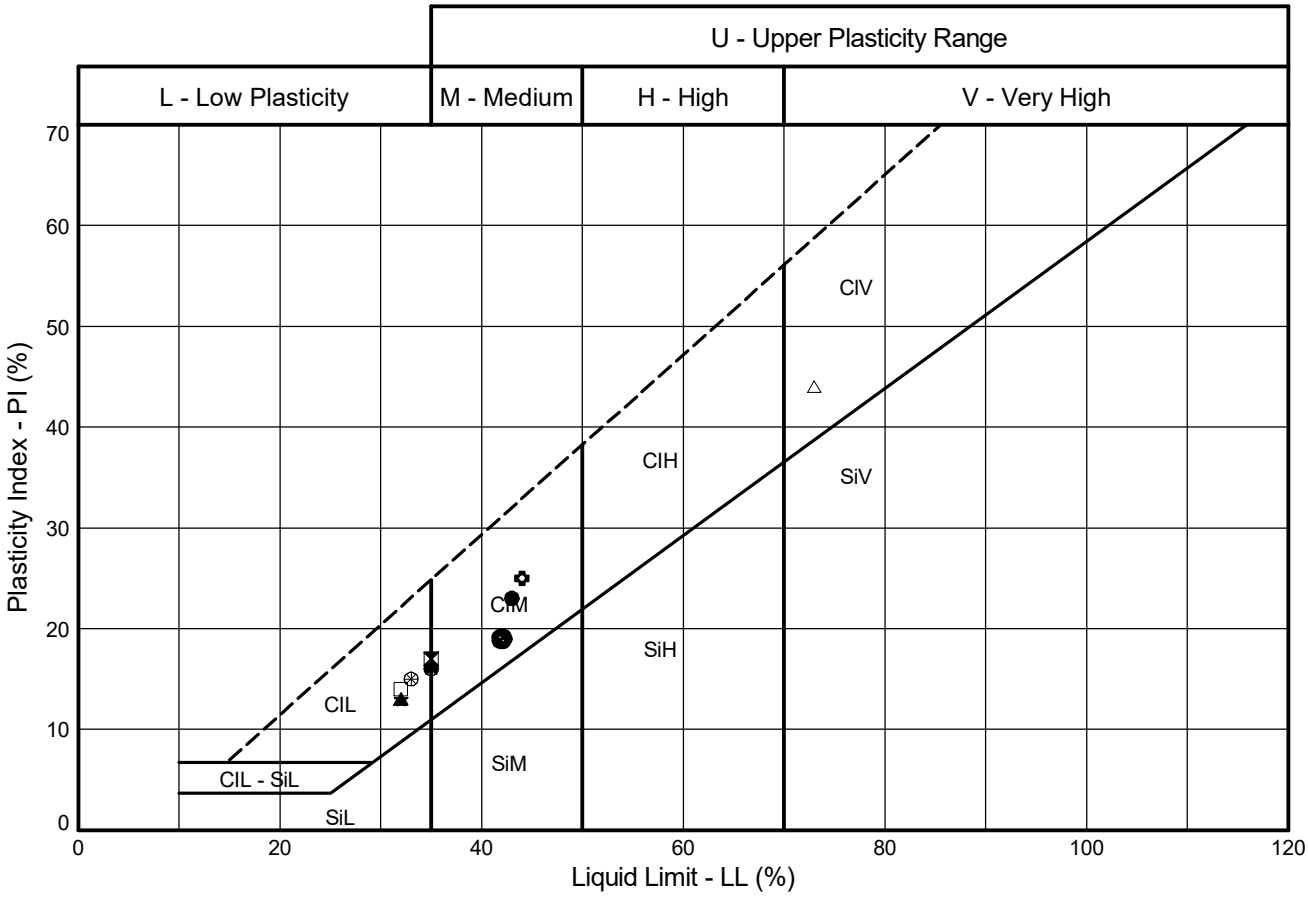
Contract Ref:

736036

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PI vs LL CHART

According to BS EN 14688-2:2018
Testing in accordance with BS EN ISO 17892-12:2018



Sample Identification				Test Method #	Preparation Method +	WC	LL	PL	PI	<425µm	Lab location	Notes
	Exploratory Position ID	Sample	Depth (m)			%	%	%	%	%		
●	BH101	3UT100	1.20	5.3/5.5/6.5	5.2.7	14.1	43	20	23	80	B	I
⊠	BH102	2B	0.50	5.3/5.5/6.5	5.2.7	21.6	35	18	17	82	H	I
▲	BH103	3B	0.60	5.3/5.5/6.5	5.2.7	27.8	32	19	13	67	H	I
★	BH103	6B	1.20	5.3/5.5/6.5	5.2.7	24.5	32	19	13	80	H	I
⊙	BH104	2B	0.50	5.3/5.5/6.5	5.2.7	11.0	35	19	16	39	H	I
✿	BH104	3B	1.00	5.3/5.5/6.5	5.2.7	20.3	44	19	25	32	H	I
◉	BH104	6B	1.30	5.3/5.5/6.5	5.2.7	16.7	42	23	19	46	H	I
△	BH104	10B	2.00	5.3/5.5/6.5	5.2.7	27.9	73	29	44	83	H	I
⊗	BH104	12UT100	3.00	5.3/5.5/6.5	5.2.1	21.4	33	18	15	97	B	I
⊕	BH104	17UT100	4.00	5.3/5.5/6.5	5.2.1	22.4	33	18	15	99	B	I
□	BH104	21B	4.55	5.3/5.5/6.5	5.2.7	24.7	32	18	14	99	H	I
⊠	BH105	6UT100	1.20	5.3/5.5/6.5	5.2.1	22.0	35	19	16	88	B	I
◓	BH105	9B	1.70	5.3/5.5/6.5	5.2.7	25.6	42	23	19	77	H	I

Tested in accordance with the following clauses of BS EN ISO 17892-12:2018.

5.3 - Cone Penetrometer Method
5.3.14 - One-Point Cone Penetrometer Method
5.4 - Casagrande Method
5.5 - Plastic Limit Method
6.5 - Plasticity Index

Water Content (WC) tested in accordance with BS EN ISO 17892-1:2014

+ Tested in accordance with the following clauses of BS EN ISO 17892-12:2018.

5.2.1 - Natural State
5.2.7 - Wet Sieved

Key: * = Non-standard test, NP = Non plastic,
I = Increasing WC, D = Decreasing WC.

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

STRUCTURAL SOILS LTD

Compiled By		Date
SC	**SHARON CAIRNS**	**16/12/21**

Contract
Langstone Flood & Coastal Erosion Management Scheme

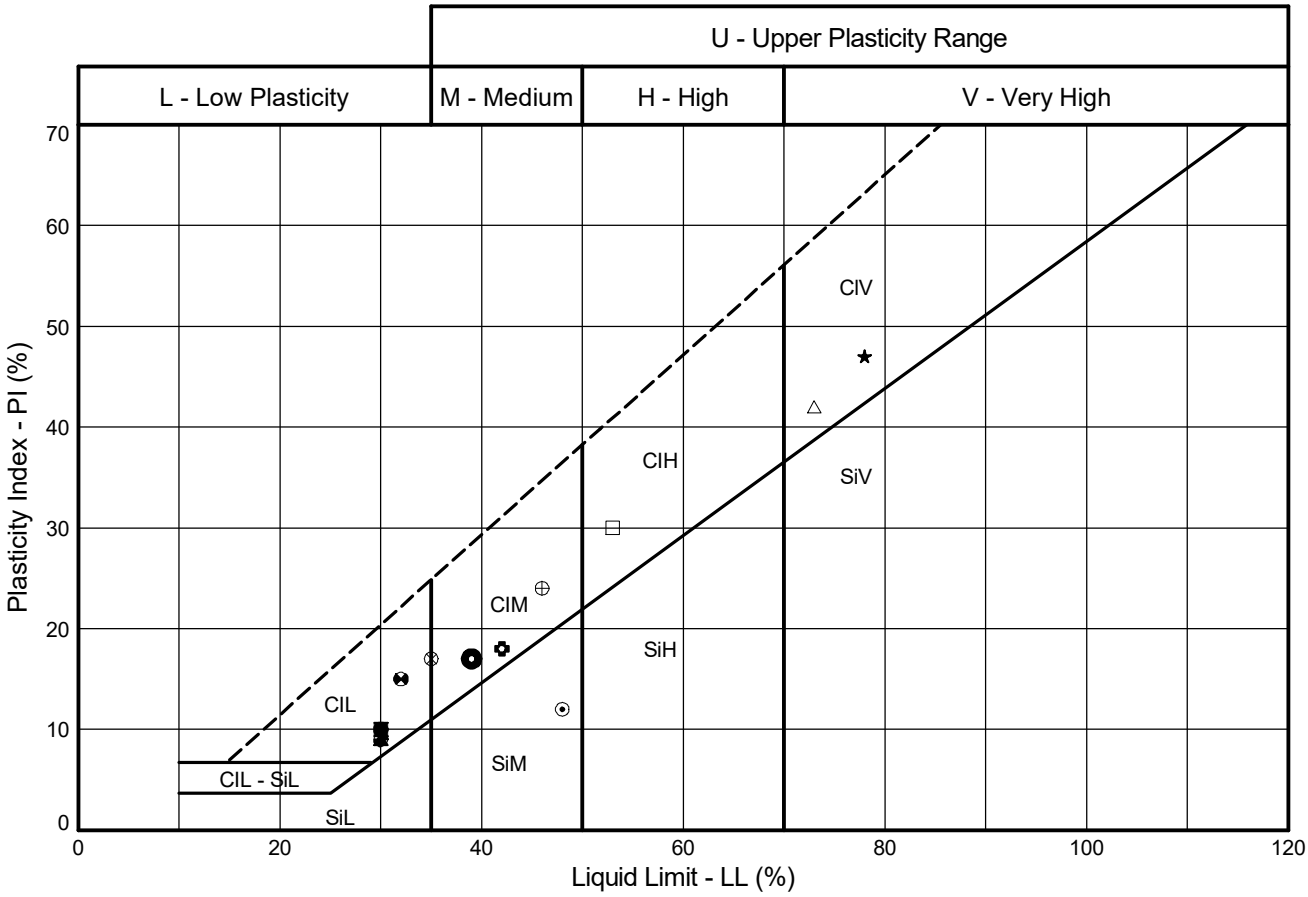
Contract Ref:
736036

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GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Graph L - ALINE STANDARD - 17892 - A4P | 736036_LANGSTONE_FLOOD_&_COASTAL_EROSION_MANAGEMENT_SCHEME.GPJ - v10_01.
Structural Soils Ltd, Head Office - Bristol: The Old School, Stillhouse Lane, Bedminster, Bristol, BS3 4EB. Tel: 0117-947-1000, Fax: 0117-947-1004, Web: www.soils.co.uk, Email: ask@soils.co.uk. | 16/12/21 - 09:21 | SC1 |

PI vs LL CHART

According to BS EN 14688-2:2018
Testing in accordance with BS EN ISO 17892-12:2018



Sample Identification				Test Method #	Preparation Method +	WC	LL	PL	PI	<425µm	Lab location	Notes
	Exploratory Position ID	Sample	Depth (m)			%	%	%	%	%		
●	BH105	21UT100	5.20	5.3/5.5/6.5	5.2.7	18.2	30	20	10	76	B	I
⊠	BH105	31B	7.00	5.3/5.5/6.5	5.2.7	16.4	30	20	10	34	H	I
▲	BH105	35B	8.50	5.3/5.5/6.5	5.2.7	18.2	30	21	9	31	H	I
★	BH106	2B	0.60	5.3/5.5/6.5	5.2.7	20.0	78	31	47	35	H	I
⊙	DS101	2B	0.30	5.3/5.5/6.5	5.2.7	21.1	48	36	12	37	H	
✿	DS101	11D	2.40	5.3/5.5/6.5	5.2.7	19.7	42	24	18	68	H	I
◉	DS102	2B	0.30	5.3/5.5/6.5	5.2.7	13.8	39	22	17	31	H	I
△	DS102	4B	0.90	5.3/5.5/6.5	5.2.7	76.6	73	31	42	91	H	I
⊗	DS102	8D	1.57	5.3/5.5/6.5	5.2.7	17.9	35	18	17	85	H	
⊕	DS103	2B	0.30	5.3/5.5/6.5	5.2.7	16.2	46	22	24	48	H	I
□	DS103	5U70	1.20	5.3/5.5/6.5	5.2.7	27.2	53	23	30	90	B	I
⊠	DS103	13U70	3.00	5.3/5.5/6.5	5.2.1	22.3	32	17	15	96	B	I
◓	DS103	22D	4.64	5.3/5.5/6.5	5.2.7	18.6	30	21	9	79	H	

Tested in accordance with the following clauses of BS EN ISO 17892-12:2018.

5.3 - Cone Penetrometer Method
5.3.14 - One-Point Cone Penetrometer Method
5.4 - Casagrande Method
5.5 - Plastic Limit Method
6.5 - Plasticity Index

Water Content (WC) tested in accordance with BS EN ISO 17892-1:2014

+ Tested in accordance with the following clauses of BS EN ISO 17892-12:2018.

5.2.1 - Natural State
5.2.7 - Wet Sieved

Key: * = Non-standard test, NP = Non plastic,
I = Increasing WC, D = Decreasing WC.

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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Contract
Langstone Flood & Coastal Erosion Management Scheme

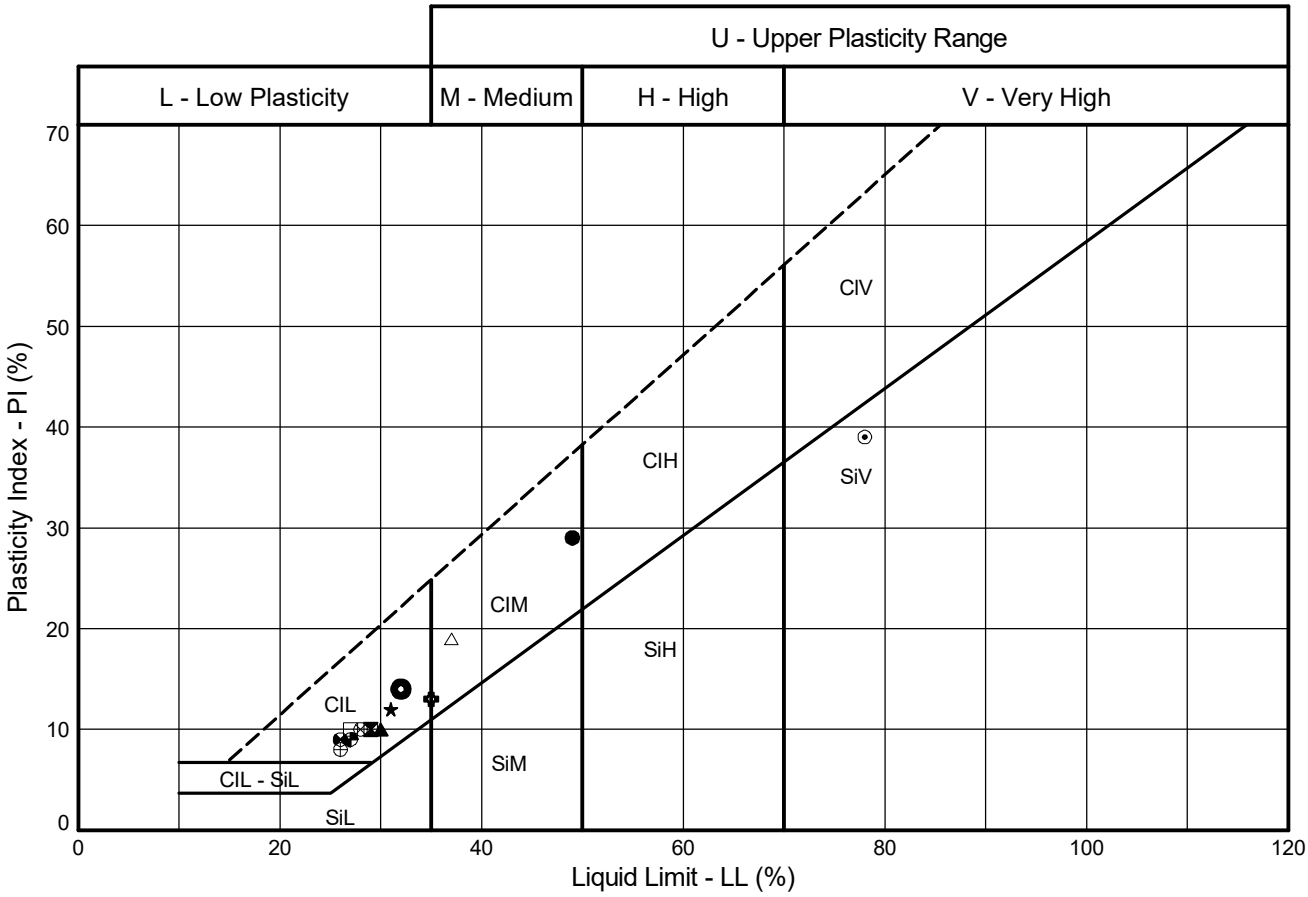
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PI vs LL CHART

According to BS EN 14688-2:2018
Testing in accordance with BS EN ISO 17892-12:2018



Sample Identification				Test Method #	Preparation Method +	WC	LL	PL	PI	<425µm	Lab location	Notes
	Exploratory Position ID	Sample	Depth (m)			%	%	%	%	%		
●	DS104	9U70	2.00	5.3/5.5/6.5	5.2.1	24.7	49	20	29	72	B	I
⊠	DS104	18B	4.45	5.3/5.5/6.5	5.2.7	14.8	29	19	10	35	H	
▲	DS105	10U70	2.00	5.3/5.5/6.5	5.2.1	23.9	30	20	10	99	B	I
★	DS106	5U70	1.20	5.3/5.5/6.5	5.2.1	21.8	31	19	12	100	B	I
⊙	DS106	10U70	2.00	5.3/5.5/6.5	5.2.7	17.9	78	39	39	83	H	
✿	DS106	15B	2.62	5.3/5.5/6.5	5.2.7	12.6	35	22	13	46	H	
◉	DS107	5U70	1.20	5.3/5.5/6.5	5.2.1	22.0	32	18	14	88	B	I
△	DS107	11B	2.42	5.3/5.5/6.5	5.2.7	15.2	37	18	19	46	H	I
⊗	DS107	14D	3.50	5.3/5.5/6.5	5.2.7	15.4	28	18	10	47	H	
⊕	DS109	4B	0.80	5.3/5.5/6.5	5.2.7	26.7	26	18	8	71	H	
□	DS109	6UT	1.20	5.3/5.5/6.5	5.2.7	15.2	27	17	10	54	B	I
⊠	DS109	12B	2.17	5.3/5.5/6.5	5.2.7	14.6	26	17	9	42	H	
◓	DS109	16UT	4.00	5.3/5.5/6.5	5.2.7	17.6	27	18	9	73	B	I

Tested in accordance with the following clauses of BS EN ISO 17892-12:2018.

5.3 - Cone Penetrometer Method
5.3.14 - One-Point Cone Penetrometer Method
5.4 - Casagrande Method
5.5 - Plastic Limit Method
6.5 - Plasticity Index

Water Content (WC) tested in accordance with BS EN ISO 17892-1:2014

+ Tested in accordance with the following clauses of BS EN ISO 17892-12:2018.

5.2.1 - Natural State
5.2.7 - Wet Sieved

Key: * = Non-standard test, NP = Non plastic,
I = Increasing WC, D = Decreasing WC.

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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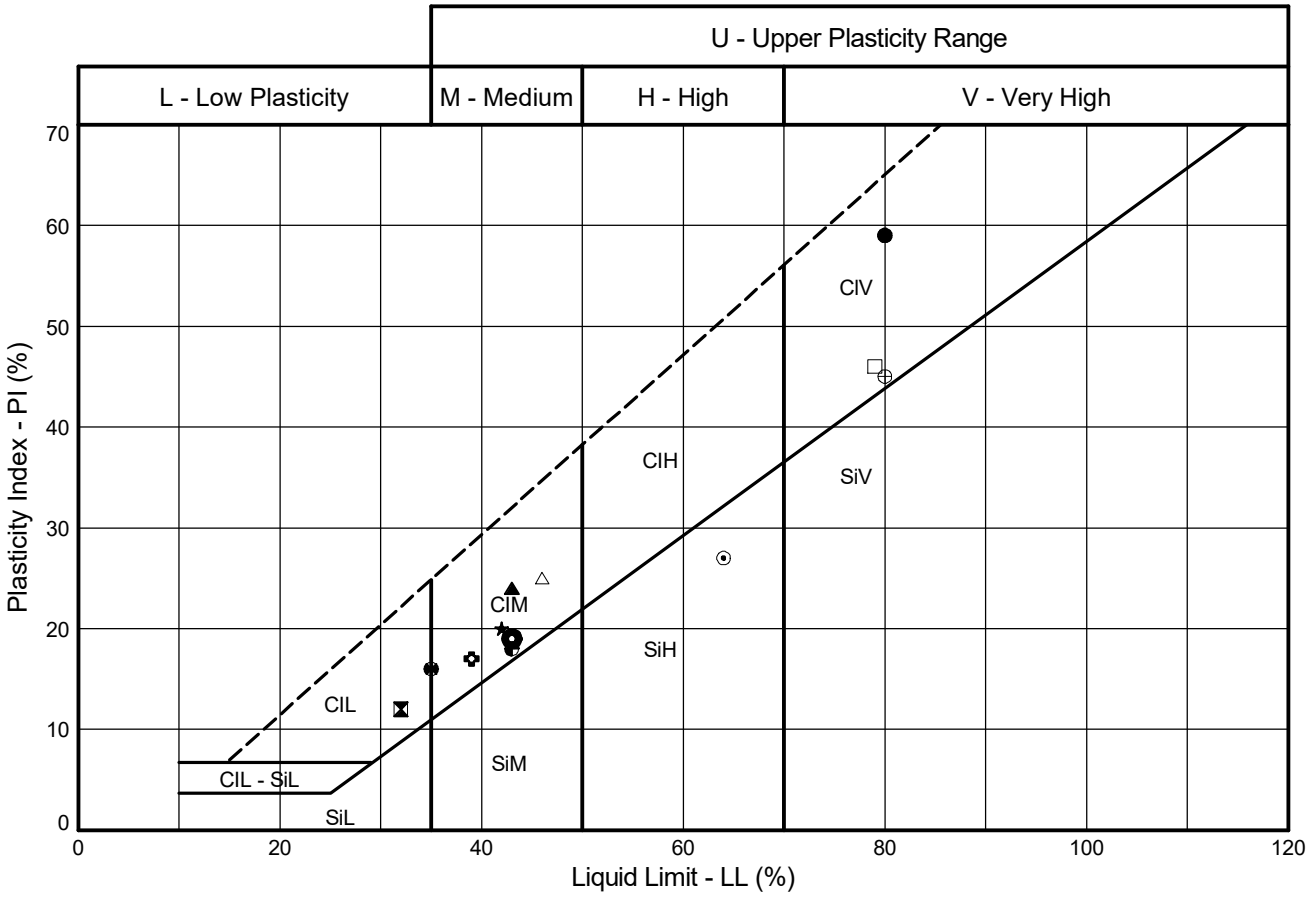
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PI vs LL CHART

According to BS EN 14688-2:2018
Testing in accordance with BS EN ISO 17892-12:2018



Sample Identification				Test Method #	Preparation Method +	WC	LL	PL	PI	<425µm	Lab location	Notes
	Exploratory Position ID	Sample	Depth (m)			%	%	%	%	%		
●	HDTP102	2B	0.30	5.3/5.5/6.5	5.2.7	19.8	80	21	59	65	H	I
⊠	HDTP103	3D	0.50	5.3/5.5/6.5	5.2.7	23.2	32	20	12	66	H	I
▲	HDTP104	2B	0.40	5.3/5.5/6.5	5.2.7	28.4	43	19	24	82	H	I
★	HDTP106	2B	0.30	5.3/5.5/6.5	5.2.7	28.7	42	22	20	76	H	I
⊙	HDTP106	4B	0.80	5.3/5.5/6.5	5.2.7	30.4	64	37	27	87	H	I
✿	HDTP108	3B	0.70	5.3/5.5/6.5	5.2.7	23.8	39	22	17	64	H	I
◉	HDTP109	2B	0.30	5.3/5.5/6.5	5.2.7	22.6	43	24	19	59	H	I
△	HDTP109	4B	1.00	5.3/5.5/6.5	5.2.7	26.2	46	21	25	81	H	I
⊗	HDTP111	2B	0.30	5.3/5.5/6.5	5.2.7	76.0	80	21	59	62	H	I
⊕	MDTP101	6LB	1.70	5.3/5.5/6.5	5.2.7	72.9	80	35	45	98	H	I
□	MDTP102	8B	1.70	5.3/5.5/6.5	5.2.7	32.4	79	33	46	87	H	I
⊠	MDTP103	7B	2.90	5.3/5.5/6.5	5.2.7	15.4	35	19	16	34	H	I
◓	MDTP103	9B	3.30	5.3/5.5/6.5	5.2.7	13.8	43	25	18	46	H	I

Tested in accordance with the following clauses of BS EN ISO 17892-12:2018.

5.3 - Cone Penetrometer Method
5.3.14 - One-Point Cone Penetrometer Method
5.4 - Casagrande Method
5.5 - Plastic Limit Method
6.5 - Plasticity Index

Water Content (WC) tested in accordance with BS EN ISO 17892-1:2014

+ Tested in accordance with the following clauses of BS EN ISO 17892-12:2018.

5.2.1 - Natural State
5.2.7 - Wet Sieved

Key: * = Non-standard test, NP = Non plastic,
I = Increasing WC, D = Decreasing WC.

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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Langstone Flood & Coastal Erosion Management Scheme

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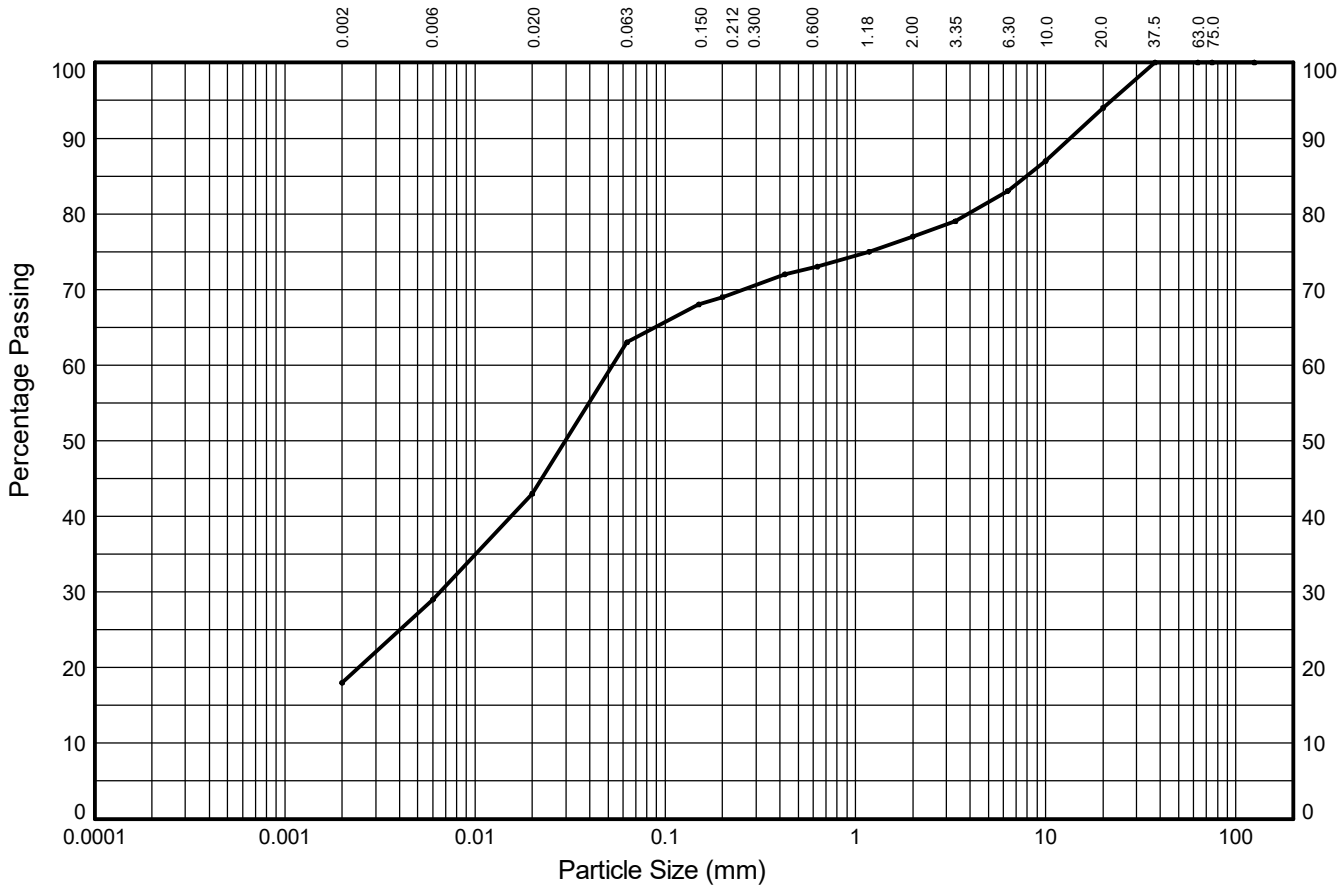
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.3 of BS EN ISO 17892:Part 4:2016

Borehole: **BH101** Sample Ref: **3** Sample Type: **UT100** Depth (m): **1.20**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	11%	14%	20%	6%	4%	4%	6%	11%	6%	
	SILT			SAND			GRAVEL			
18%	45%			14%			23%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**94**
10.0	**87**
6.30	**83**
3.35	**79**
2.00	**77**
1.18	**75**
0.630	**73**
0.425	**72**
0.200	**69**
0.150	**68**
0.063	**63**

Particle Diameter (mm)	Percent Passing (%)
0.02	**43**
0.006	**29**
0.002	**18**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**0.007**
D_{50} (mm)	**0.030**
D_{60} (mm)	**0.053**
D_{85} (mm)	**7.937**
D_{90} (mm)	**13.459**
C_U	**NA**
C_C	**NA**

Soil Description:

Light brown mottled grey slightly gravelly slightly sandy silty CLAY

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2

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Bedminster
Bristol
BS3 4AG

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A.D. Frost — **ALAN FROST**	**16/12/21**

Contract: **Langstone Flood & Coastal Erosion Management Scheme**

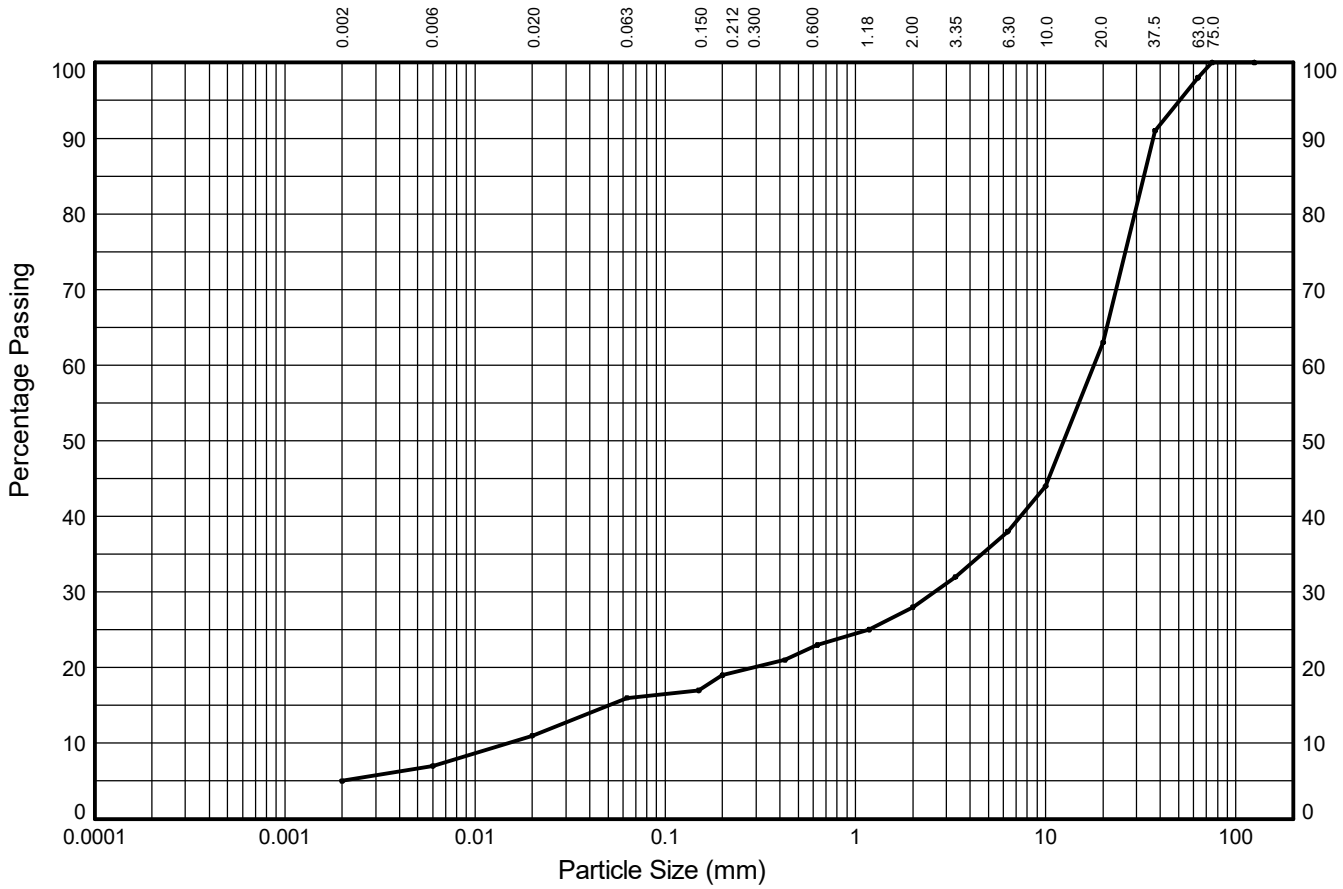
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

Borehole: **BH102** Sample Ref: **1** Sample Type: **B** Depth (m): **0.20**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	2%	4%	5%	3%	4%	5%	10%	25%	35%	
	SILT			SAND			GRAVEL			
5%	11%			12%			70%			2%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**98**
37.5	**91**
20.0	**63**
10.0	**44**
6.30	**38**
3.35	**32**
2.00	**28**
1.18	**25**
0.630	**23**
0.425	**21**
0.200	**19**
0.150	**17**
0.063	**16**

Particle Diameter (mm)	Percent Passing (%)
0.02	**11**
0.006	**7**
0.002	**5**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**0.015**
D_{15} (mm)	**0.050**
D_{30} (mm)	**2.588**
D_{50} (mm)	**12.447**
D_{60} (mm)	**17.927**
D_{85} (mm)	**32.774**
D_{90} (mm)	**36.667**
C_U	**1211**
C_C	**25**

Soil Description:

Brown mottled red and white sandy silty GRAVEL with low cobble content MAN-MADE MATERIAL

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2

STRUCTURAL SOILS
18 Frogmore Road
Hemel Hempstead
Hertfordshire
HP3 9RT

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DAVID NICKELLS	16/12/21

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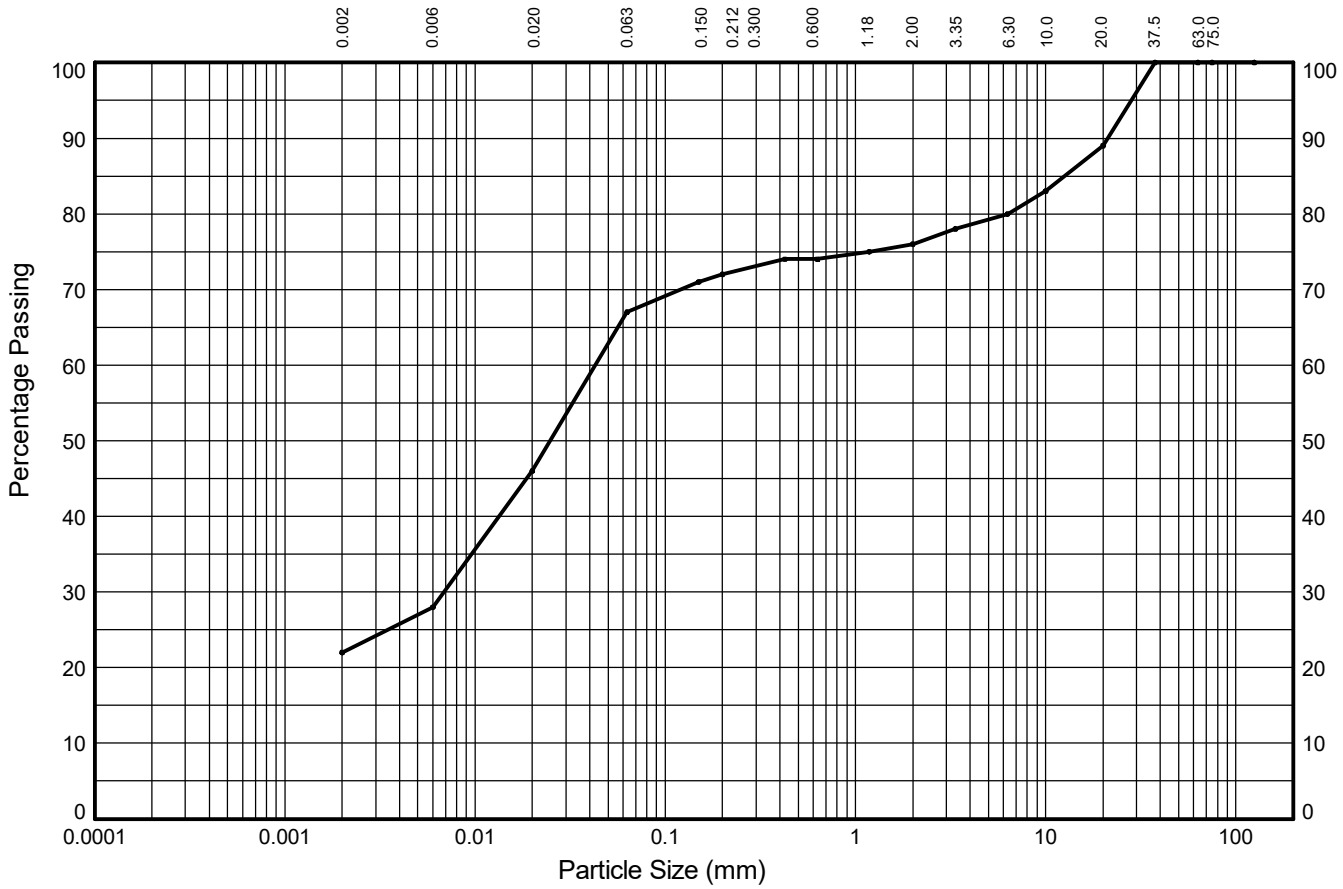
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

Borehole: **BH102** Sample Ref: **2** Sample Type: **B** Depth (m): **0.50**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	6%	18%	21%	5%	2%	2%	4%	9%	11%	
	SILT			SAND			GRAVEL			
22%	45%			9%			24%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**89**
10.0	**83**
6.30	**80**
3.35	**78**
2.00	**76**
1.18	**75**
0.630	**74**
0.425	**74**
0.200	**72**
0.150	**71**
0.063	**67**

Particle Diameter (mm)	Percent Passing (%)
0.02	**46**
0.006	**28**
0.002	**22**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**0.007**
D_{50} (mm)	**0.025**
D_{60} (mm)	**0.043**
D_{85} (mm)	**12.599**
D_{90} (mm)	**21.176**
C_U	**NA**
C_C	**NA**

Soil Description:

Brown mottled white and dark grey slightly gravelly slightly sandy clayey SILT MAN-MADE MATERIAL

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2

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Hertfordshire
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Compiled By	Date
DAVID NICKELLS	16/12/21

Contract: **Langstone Flood & Coastal Erosion Management Scheme**

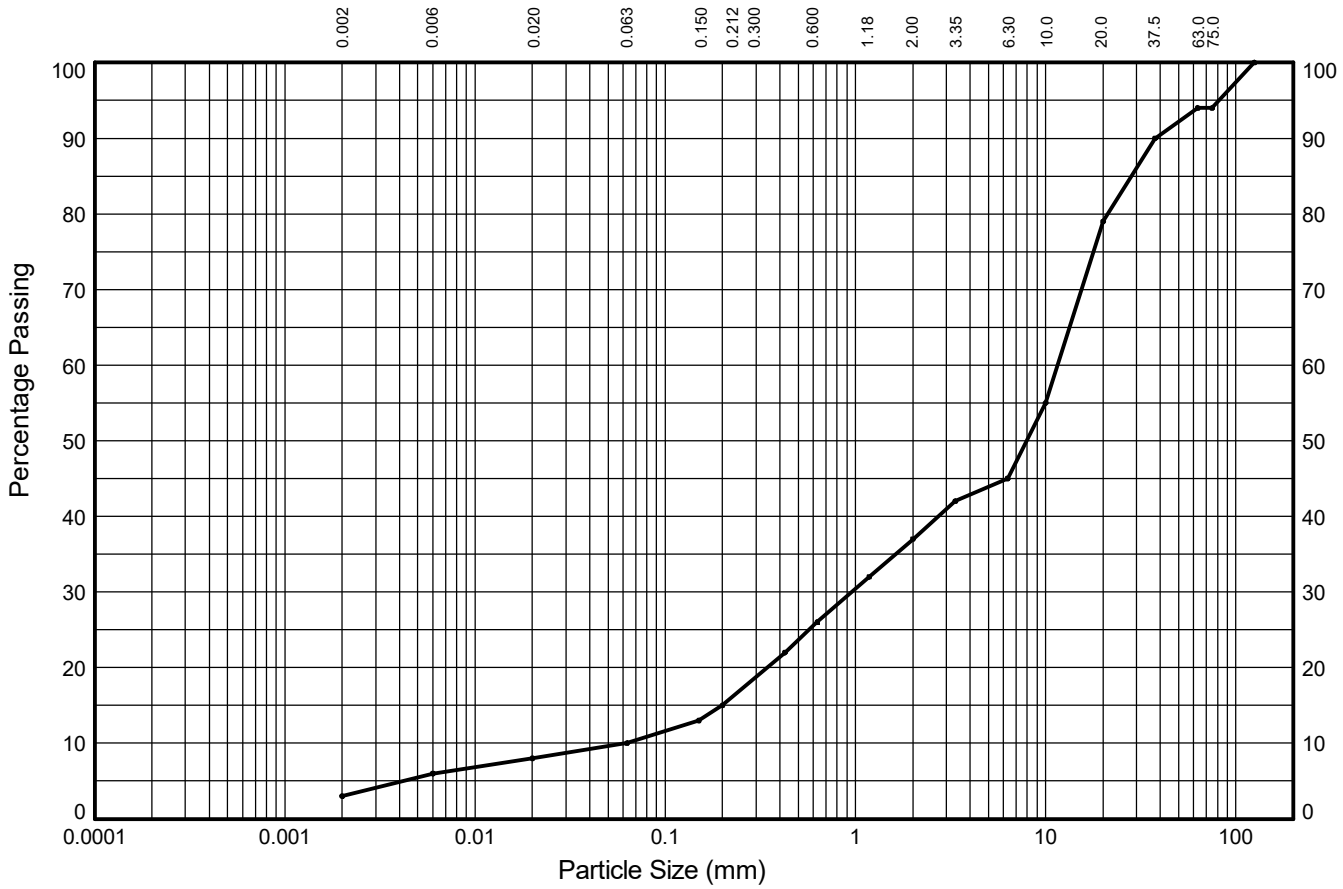
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016
NON-STANDARD TEST

Borehole: **BH103** Sample Ref: **2** Sample Type: **B** Depth (m): **0.30**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	3%	2%	2%	5%	11%	11%	8%	34%	15%	
	SILT			SAND			GRAVEL			
3%	7%			27%			57%			6%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**94**
63.0	**94**
37.5	**90**
20.0	**79**
10.0	**55**
6.30	**45**
3.35	**42**
2.00	**37**
1.18	**32**
0.630	**26**
0.425	**22**
0.200	**15**
0.150	**13**
0.063	**10**

Particle Diameter (mm)	Percent Passing (%)
0.02	**8**
0.006	**6**
0.002	**3**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**0.063**
D_{15} (mm)	**0.200**
D_{30} (mm)	**0.957**
D_{50} (mm)	**7.937**
D_{60} (mm)	**11.554**
D_{85} (mm)	**28.180**
D_{90} (mm)	**37.500**
C_U	**183**
C_C	**1**

Soil Description:
Dark greyish brown very sandy silty GRAVEL with low cobble content

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2

STRUCTURAL SOILS
18 Frogmore Road
Hemel Hempstead
Hertfordshire
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Contract Ref: **736036**

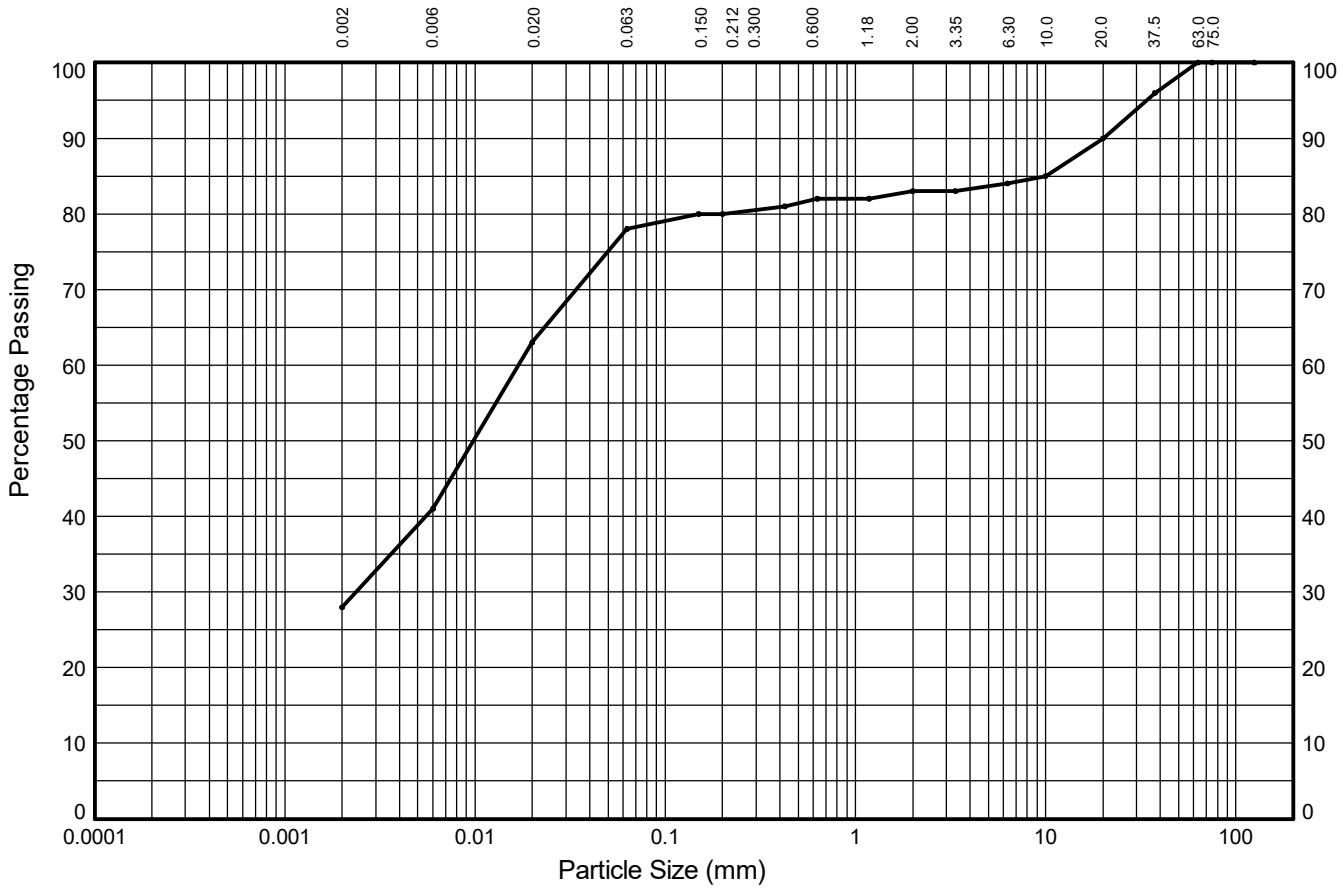
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

Borehole: **BH103** Sample Ref: **6** Sample Type: **B** Depth (m): **1.20**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	13%	22%	15%	2%	2%	1%	1%	6%	10%	
	SILT			SAND			GRAVEL			
28%	50%			5%			17%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**96**
20.0	**90**
10.0	**85**
6.30	**84**
3.35	**83**
2.00	**83**
1.18	**82**
0.630	**82**
0.425	**81**
0.200	**80**
0.150	**80**
0.063	**78**

Particle Diameter (mm)	Percent Passing (%)
0.02	**63**
0.006	**41**
0.002	**28**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**0.002**
D_{50} (mm)	**0.010**
D_{60} (mm)	**0.017**
D_{85} (mm)	**10.000**
D_{90} (mm)	**20.000**
C_U	**NA**
C_C	**NA**

Soil Description:

Brown slightly gravelly slightly sandy SILT

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2

STRUCTURAL SOILS
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Hemel Hempstead
Hertfordshire
HP3 9RT

Compiled By	Date
DAVID NICKELLS	16/12/21

Contract	Contract Ref:
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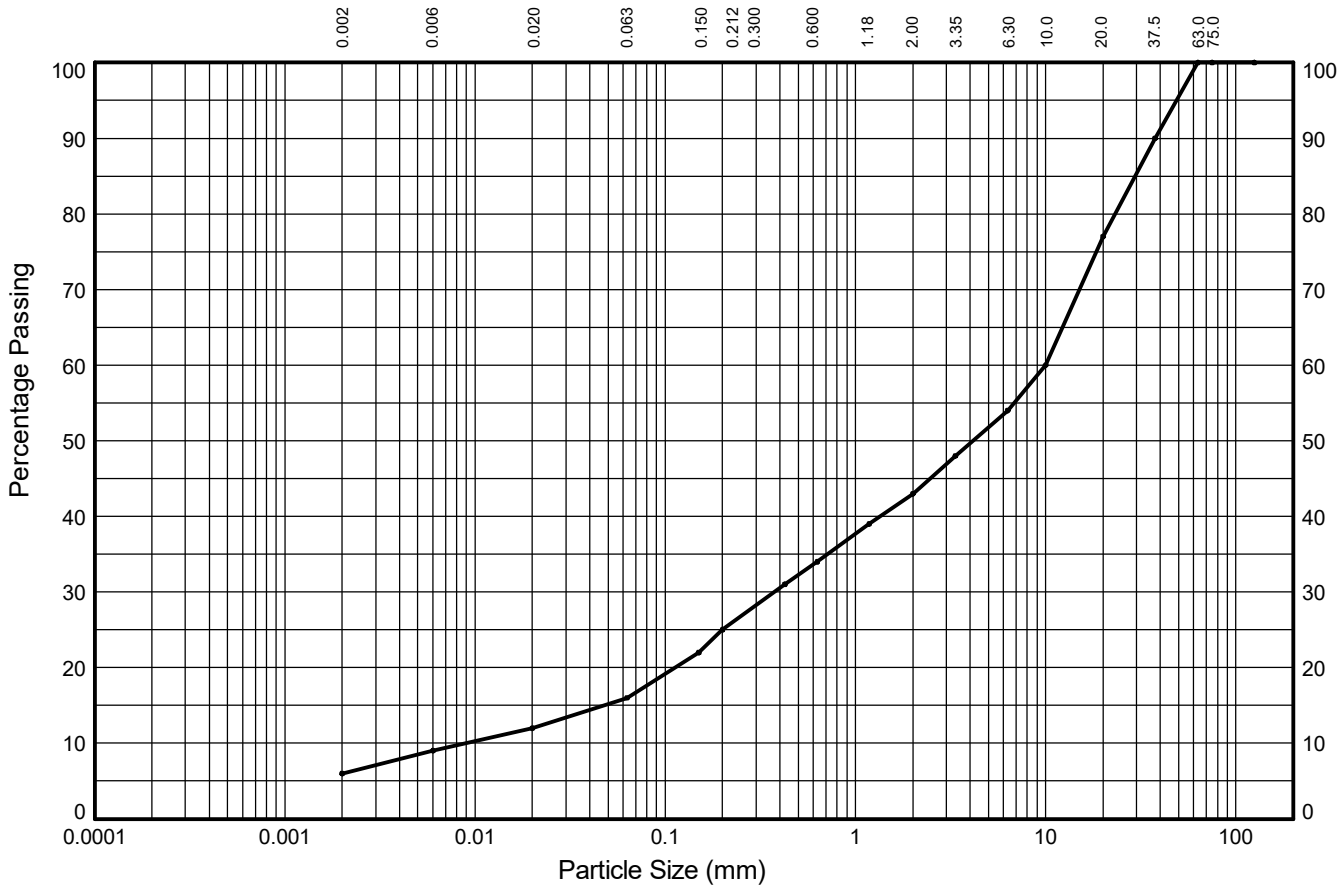
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016
NON-STANDARD TEST

Borehole: **BH104** Sample Ref: **3** Sample Type: **B** Depth (m): **1.00**



CLAY				SILT			SAND			GRAVEL			COBBLES
	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse				
6%	3%	3%	4%	9%	9%	9%	11%	23%	23%				0%
	10%			27%			57%						

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**90**
20.0	**77**
10.0	**60**
6.30	**54**
3.35	**48**
2.00	**43**
1.18	**39**
0.630	**34**
0.425	**31**
0.200	**25**
0.150	**22**
0.063	**16**

Particle Diameter (mm)	Percent Passing (%)
0.02	**12**
0.006	**9**
0.002	**6**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**0.009**
D_{15} (mm)	**0.047**
D_{30} (mm)	**0.375**
D_{50} (mm)	**4.135**
D_{60} (mm)	**10.000**
D_{85} (mm)	**29.446**
D_{90} (mm)	**37.500**
C_U	**1116**
C_C	**2**

Soil Description:

Brown mottled grey very sandy silty GRAVEL

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2

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18 Frogmore Road
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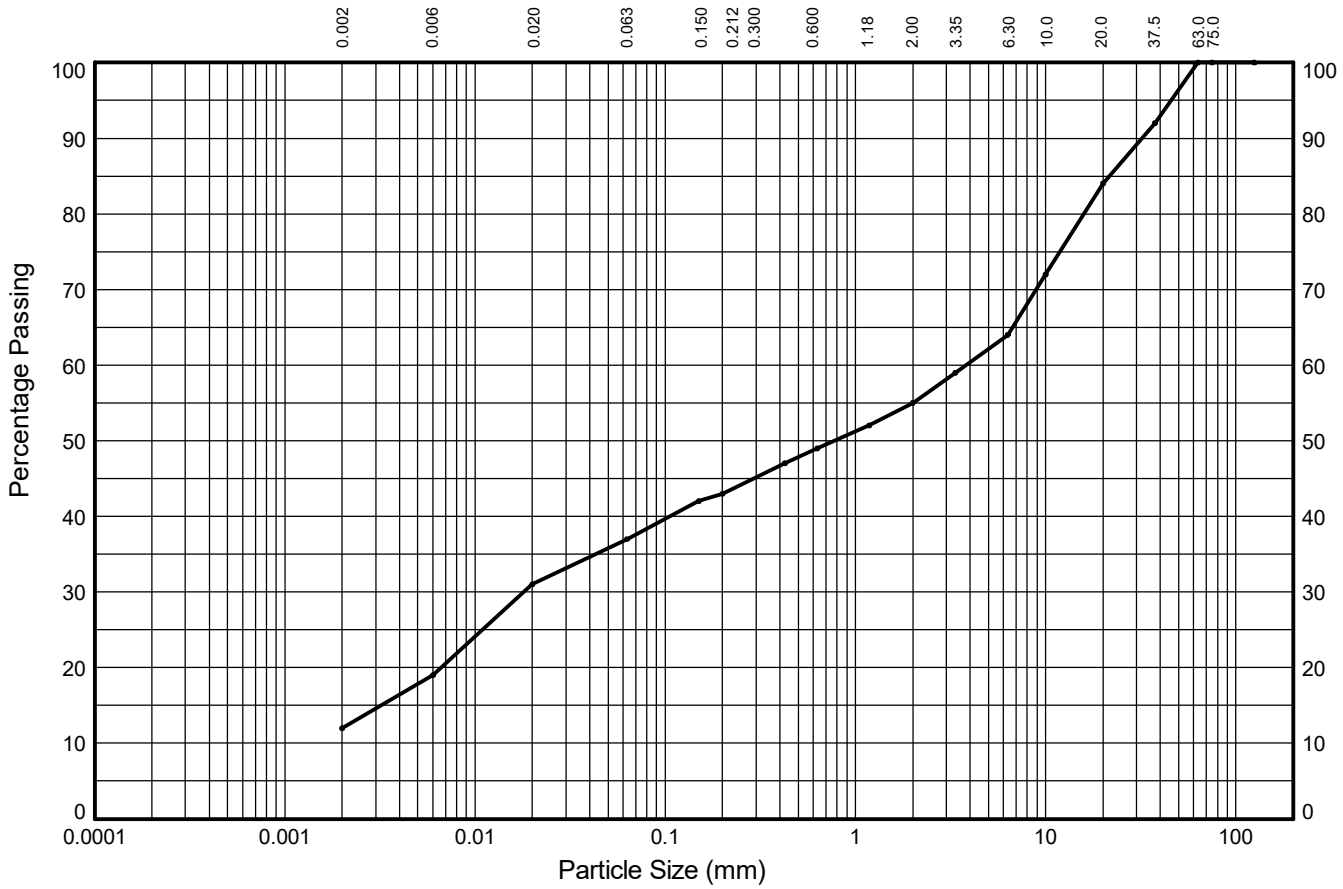
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

Borehole: **BH104** Sample Ref: **6** Sample Type: **B** Depth (m): **1.30**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	7%	12%	6%	6%	6%	6%	9%	20%	16%	
	SILT			SAND			GRAVEL			
12%	25%			18%			45%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**92**
20.0	**84**
10.0	**72**
6.30	**64**
3.35	**59**
2.00	**55**
1.18	**52**
0.630	**49**
0.425	**47**
0.200	**43**
0.150	**42**
0.063	**37**

Particle Diameter (mm)	Percent Passing (%)
0.02	**31**
0.006	**19**
0.002	**12**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**0.003**
D_{30} (mm)	**0.018**
D_{50} (mm)	**0.777**
D_{60} (mm)	**3.801**
D_{85} (mm)	**21.635**
D_{90} (mm)	**32.047**
C_U	**NA**
C_C	**NA**

Soil Description:

Grey mottled dark grey and greyish brown sandy very silty GRAVEL MADE-GROUND

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2

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Contract Ref: **736036**

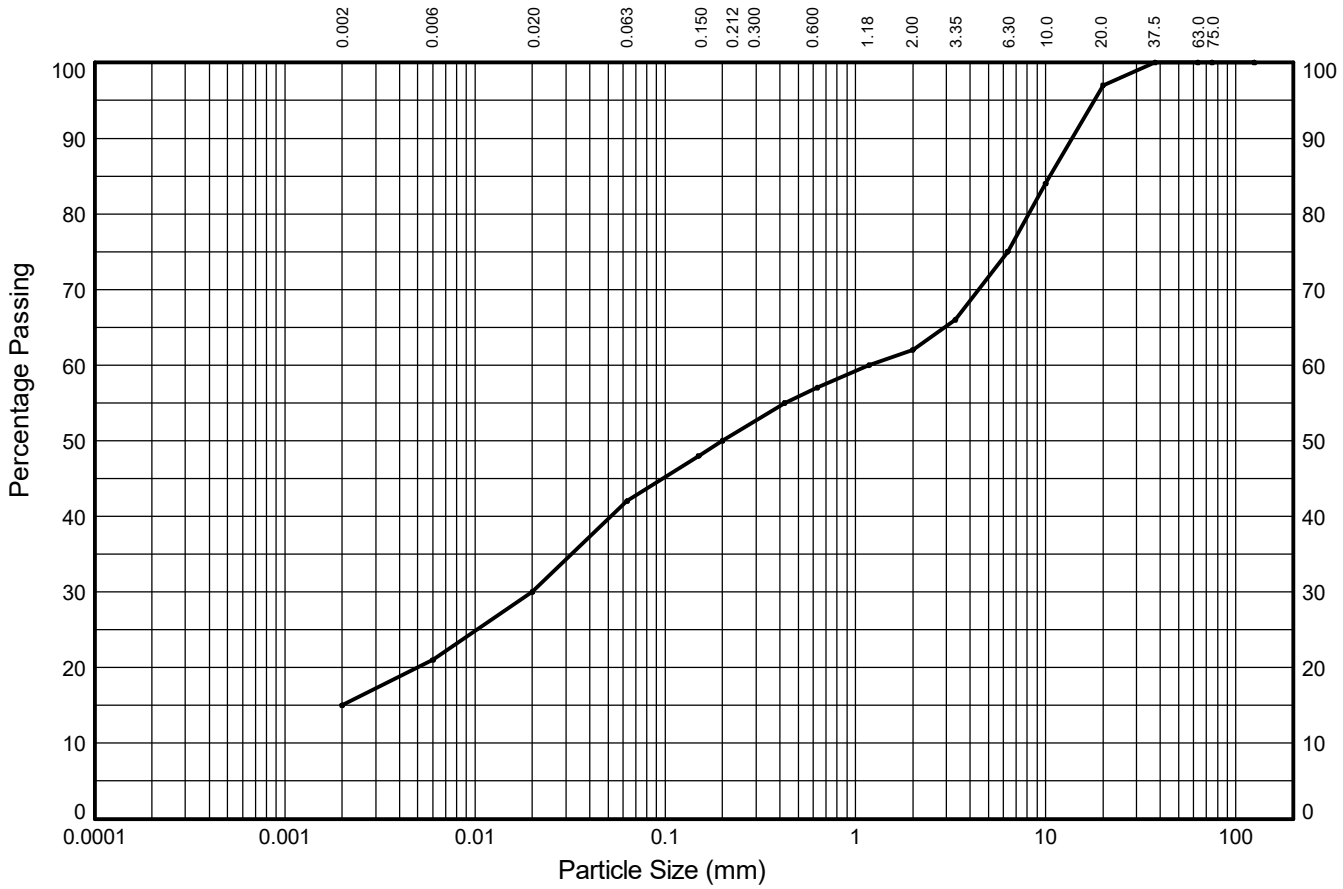
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

Borehole: **BH104** Sample Ref: **10** Sample Type: **B** Depth (m): **2.00**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	6%	9%	12%	8%	7%	5%	13%	22%	3%	
	SILT			SAND			GRAVEL			
15%	27%			20%			38%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**97**
10.0	**84**
6.30	**75**
3.35	**66**
2.00	**62**
1.18	**60**
0.630	**57**
0.425	**55**
0.200	**50**
0.150	**48**
0.063	**42**

Particle Diameter (mm)	Percent Passing (%)
0.02	**30**
0.006	**21**
0.002	**15**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**0.002**
D_{30} (mm)	**0.020**
D_{50} (mm)	**0.200**
D_{60} (mm)	**1.180**
D_{85} (mm)	**10.548**
D_{90} (mm)	**13.770**
C_U	**NA**
C_C	**NA**

Soil Description:

Dark grey mottled brown gravelly slightly sandy SILT

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2

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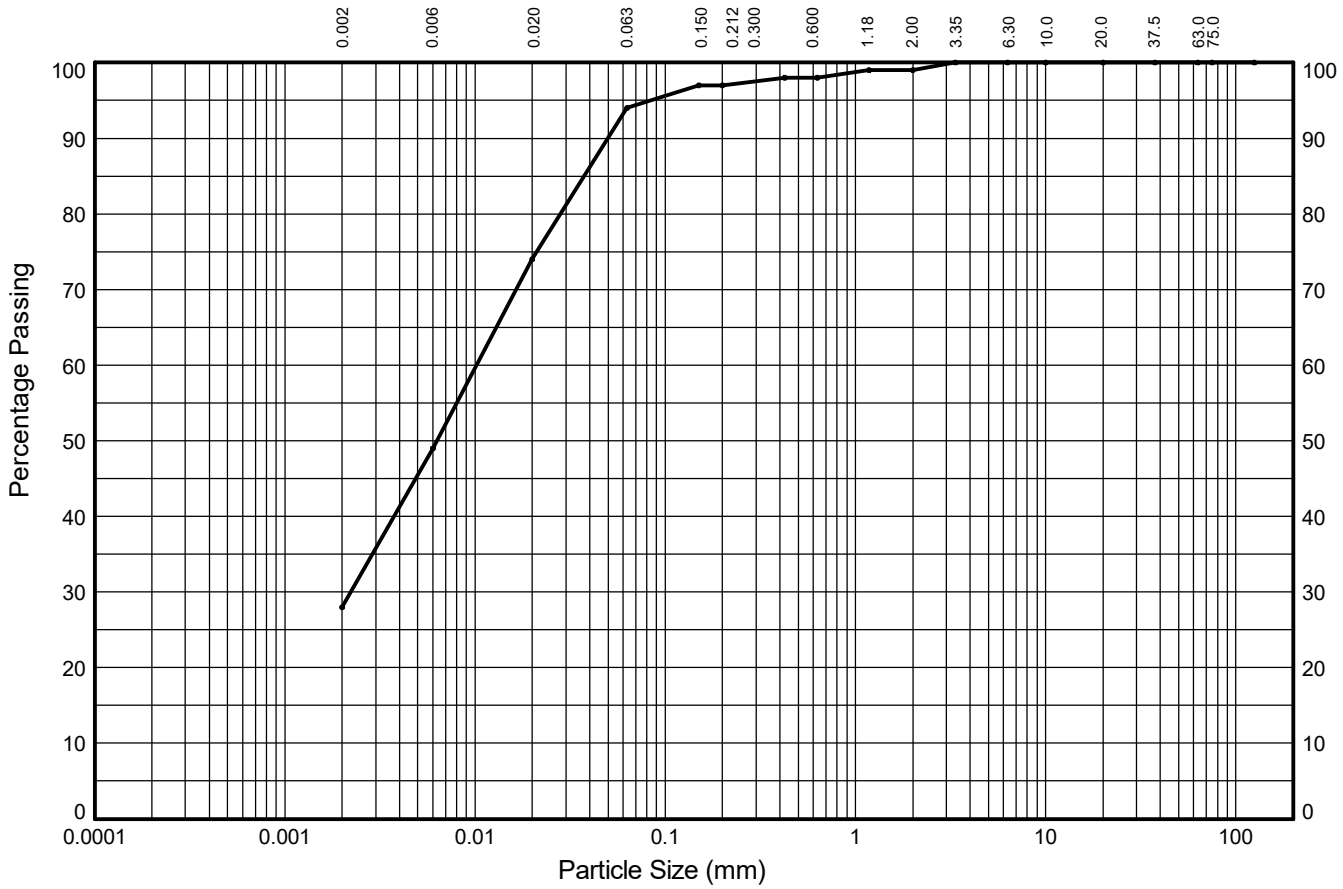
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.3 of BS EN ISO 17892:Part 4:2016

Borehole: **BH104** Sample Ref: **12** Sample Type: **UT100** Depth (m): **3.00**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	22%	24%	20%	3%	1%	1%	1%	0%	0%	
	SILT			SAND			GRAVEL			
28%	66%			5%			1%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**100**
10.0	**100**
6.30	**100**
3.35	**100**
2.00	**99**
1.18	**99**
0.630	**98**
0.425	**98**
0.200	**97**
0.150	**97**
0.063	**94**

Particle Diameter (mm)	Percent Passing (%)
0.02	**74**
0.006	**49**
0.002	**28**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**0.002**
D_{50} (mm)	**0.006**
D_{60} (mm)	**0.010**
D_{85} (mm)	**0.038**
D_{90} (mm)	**0.050**
C_U	**NA**
C_C	**NA**

Soil Description:

Light brown mottled grey slightly gravelly slightly sandy CLAY

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2

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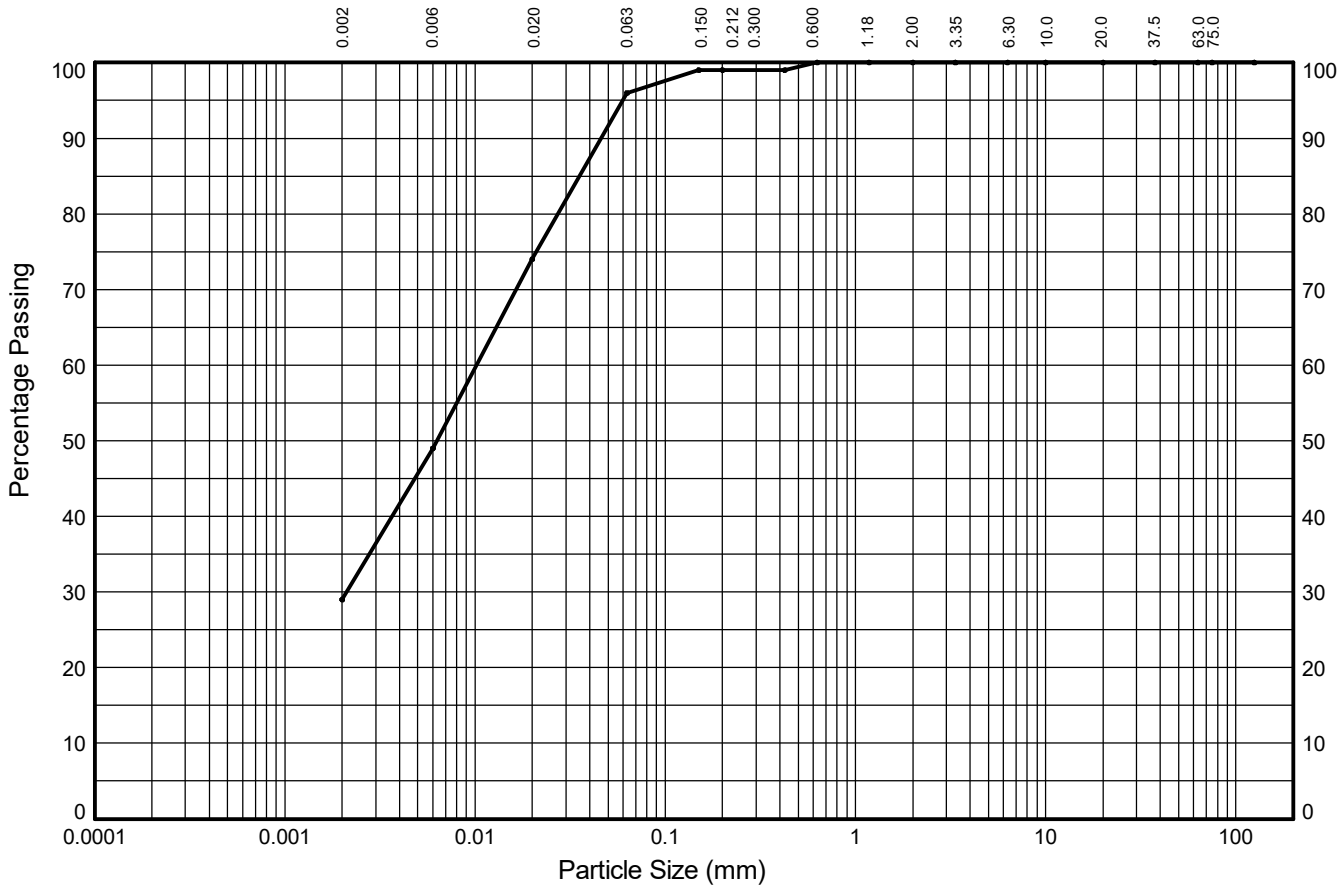
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.3 of BS EN ISO 17892:Part 4:2016

Borehole: **BH104** Sample Ref: **17** Sample Type: **UT100** Depth (m): **4.00**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	21%	24%	22%	3%	1%	0%	0%	0%	0%	
	SILT			SAND			GRAVEL			
29%	67%			4%			0%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**100**
10.0	**100**
6.30	**100**
3.35	**100**
2.00	**100**
1.18	**100**
0.630	**100**
0.425	**99**
0.200	**99**
0.150	**99**
0.063	**96**

Particle Diameter (mm)	Percent Passing (%)
0.02	**74**
0.006	**49**
0.002	**29**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**0.002**
D_{50} (mm)	**0.006**
D_{60} (mm)	**0.010**
D_{85} (mm)	**0.035**
D_{90} (mm)	**0.046**
C_U	**NA**
C_C	**NA**

Soil Description:

Brown mottled grey slightly sandy silty CLAY

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2

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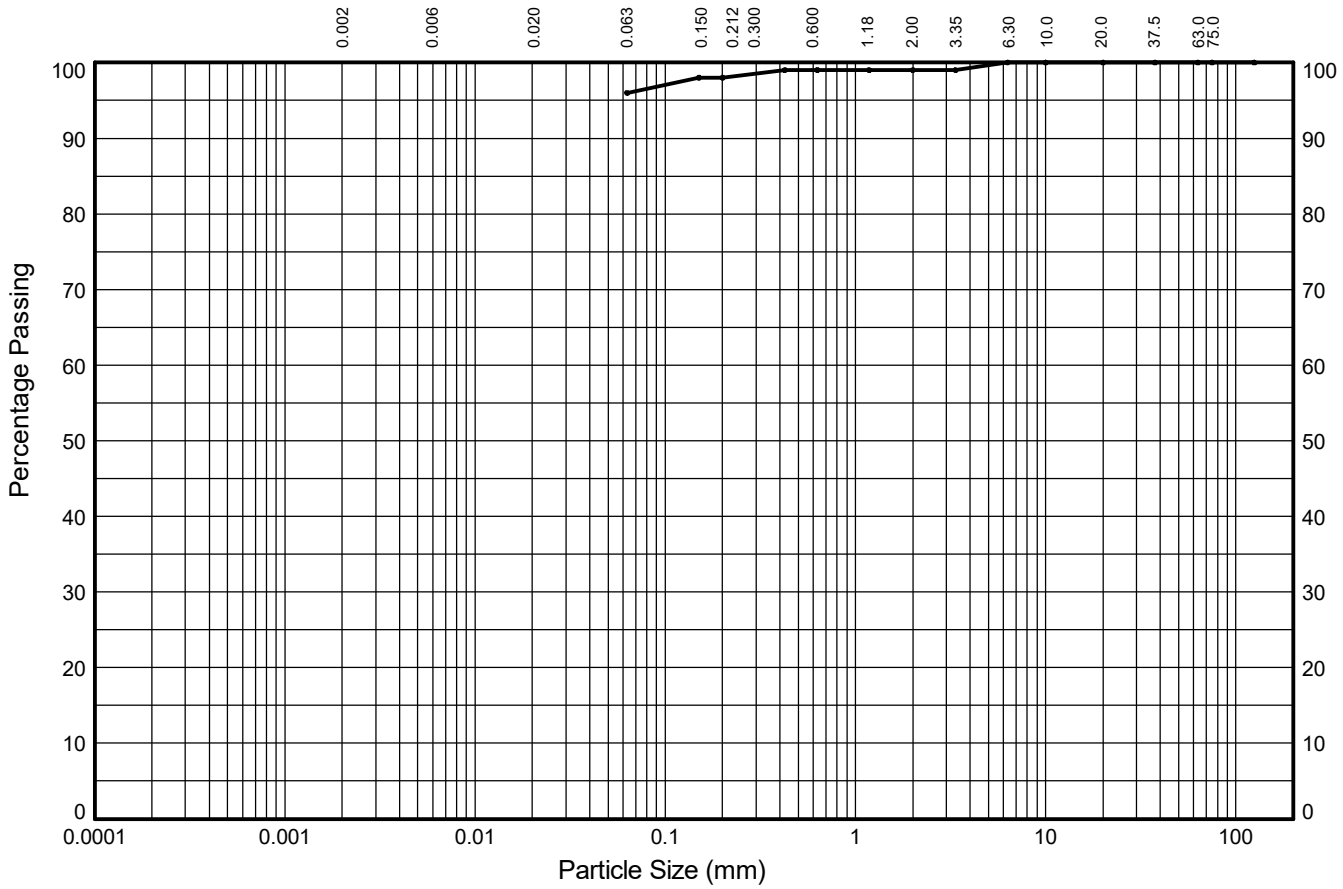
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2 of BS EN ISO 17892:Part 4:2016

Borehole: **BH104** Sample Ref: **21** Sample Type: **B** Depth (m): **4.55**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	-	-	-	2%	1%	0%	1%	0%	0%	
	SILT			SAND			GRAVEL			
96%				3%			1%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**100**
10.0	**100**
6.30	**100**
3.35	**99**
2.00	**99**
1.18	**99**
0.630	**99**
0.425	**99**
0.200	**98**
0.150	**98**
0.063	**96**

Particle Diameter (mm)	Percent Passing (%)

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**NA**
D_{50} (mm)	**NA**
D_{60} (mm)	**NA**
D_{85} (mm)	**NA**
D_{90} (mm)	**NA**
C_U	**NA**
C_C	**NA**

Soil Description:

Brown mottled light grey slightly gravelly slightly sandy CLAY

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2

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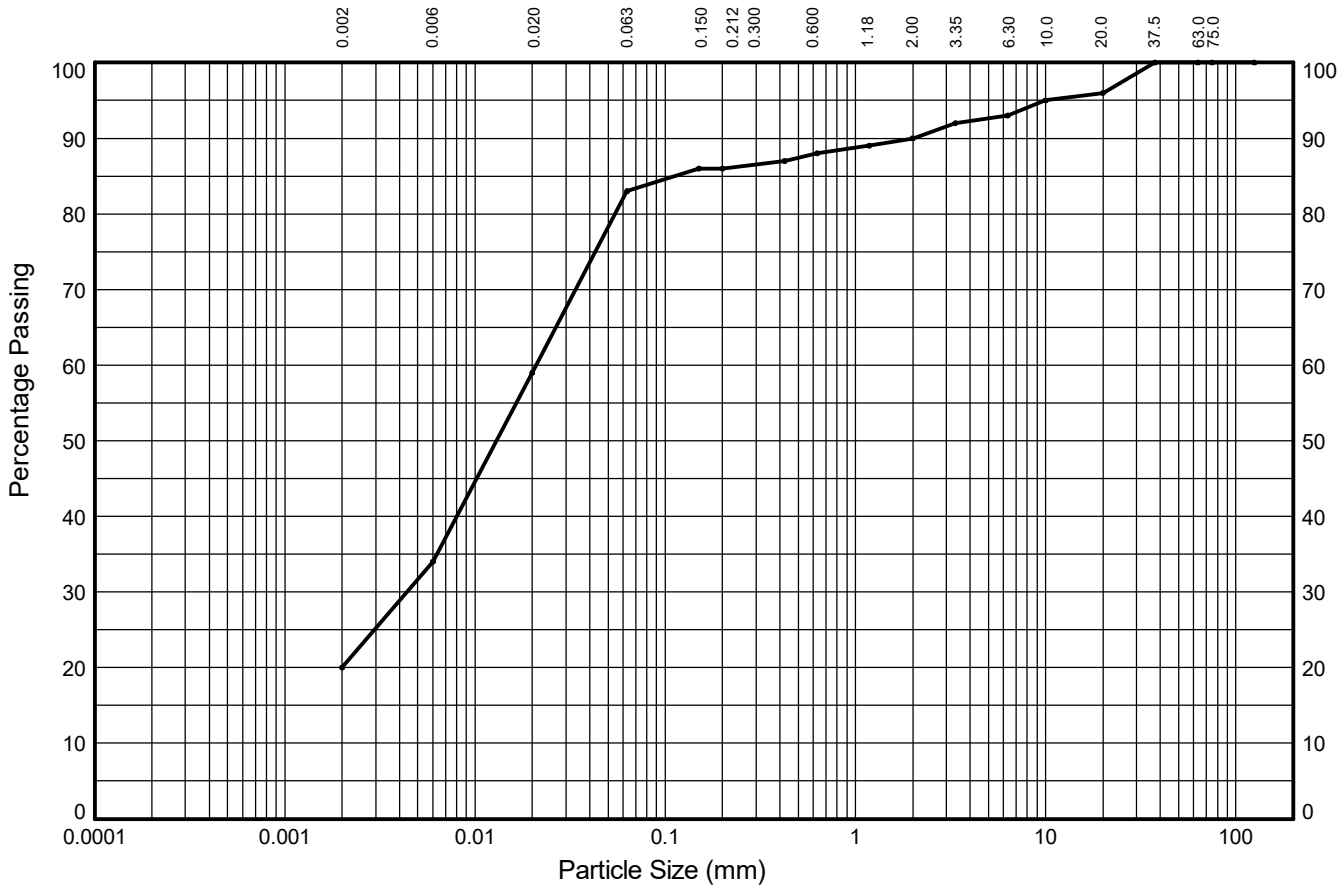
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.3 of BS EN ISO 17892:Part 4:2016

Borehole: **BH105** Sample Ref: **6** Sample Type: **UT100** Depth (m): **1.20**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	15%	24%	24%	3%	2%	2%	3%	3%	4%	
	SILT			SAND			GRAVEL			
20%	63%			7%			10%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**96**
10.0	**95**
6.30	**93**
3.35	**92**
2.00	**90**
1.18	**89**
0.630	**88**
0.425	**87**
0.200	**86**
0.150	**86**
0.063	**83**

Particle Diameter (mm)	Percent Passing (%)
0.02	**59**
0.006	**34**
0.002	**20**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**0.004**
D_{50} (mm)	**0.013**
D_{60} (mm)	**0.021**
D_{85} (mm)	**0.112**
D_{90} (mm)	**2.000**
C_U	**NA**
C_C	**NA**

Soil Description:

Brown mottled grey slightly gravelly slightly sandy silty CLAY

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2

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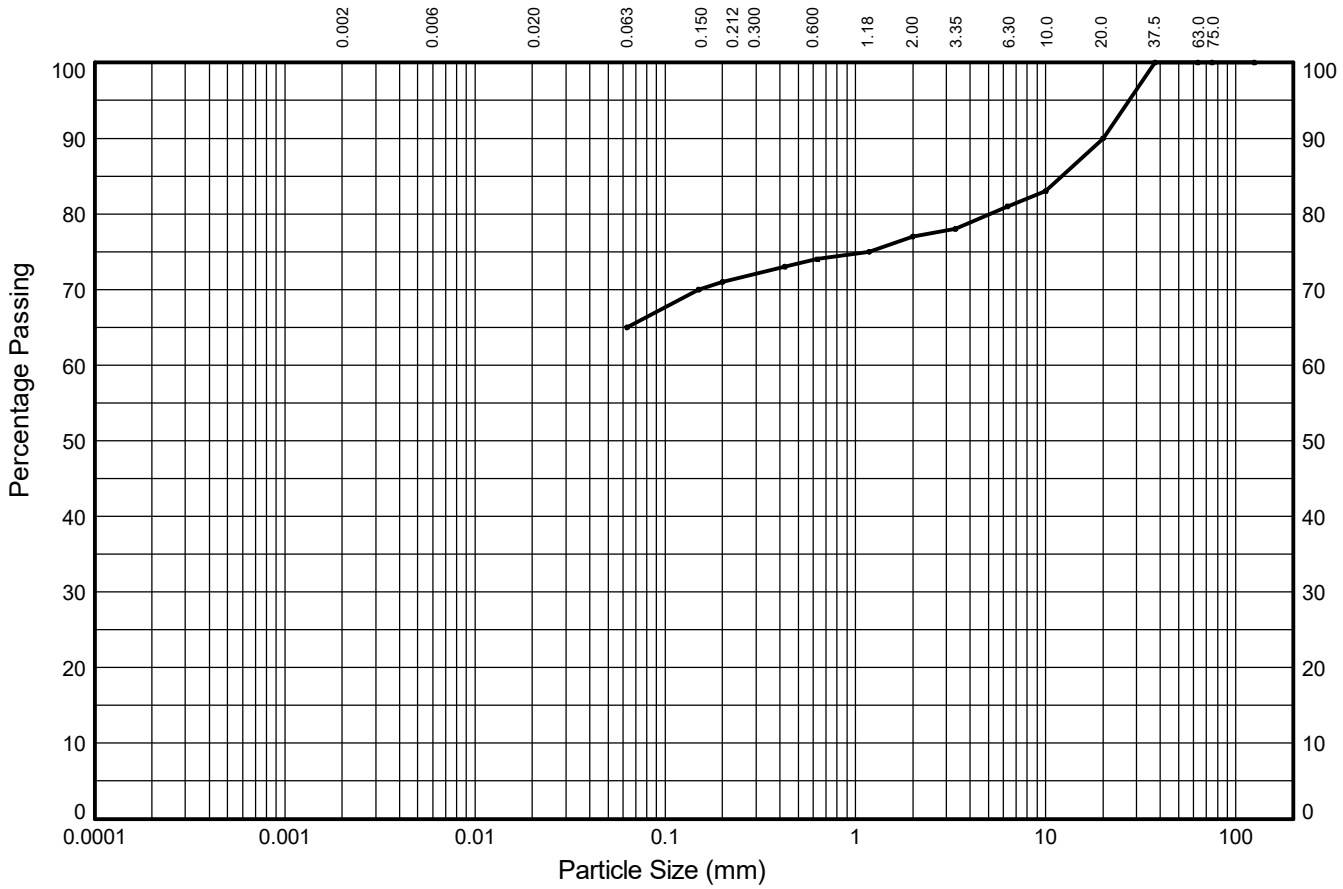
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2 of BS EN ISO 17892:Part 4:2016

Borehole: **BH105** Sample Ref: **9** Sample Type: **B** Depth (m): **1.70**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	-	-	-	6%	3%	3%	4%	9%	10%	
	SILT			SAND			GRAVEL			
65%				12%			23%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**90**
10.0	**83**
6.30	**81**
3.35	**78**
2.00	**77**
1.18	**75**
0.630	**74**
0.425	**73**
0.200	**71**
0.150	**70**
0.063	**65**

Particle Diameter (mm)	Percent Passing (%)

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**NA**
D_{50} (mm)	**NA**
D_{60} (mm)	**NA**
D_{85} (mm)	**12.190**
D_{90} (mm)	**20.000**
C_U	**NA**
C_C	**NA**

Soil Description:

Brown mottled dark grey slightly gravelly slightly sandy CLAY

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2

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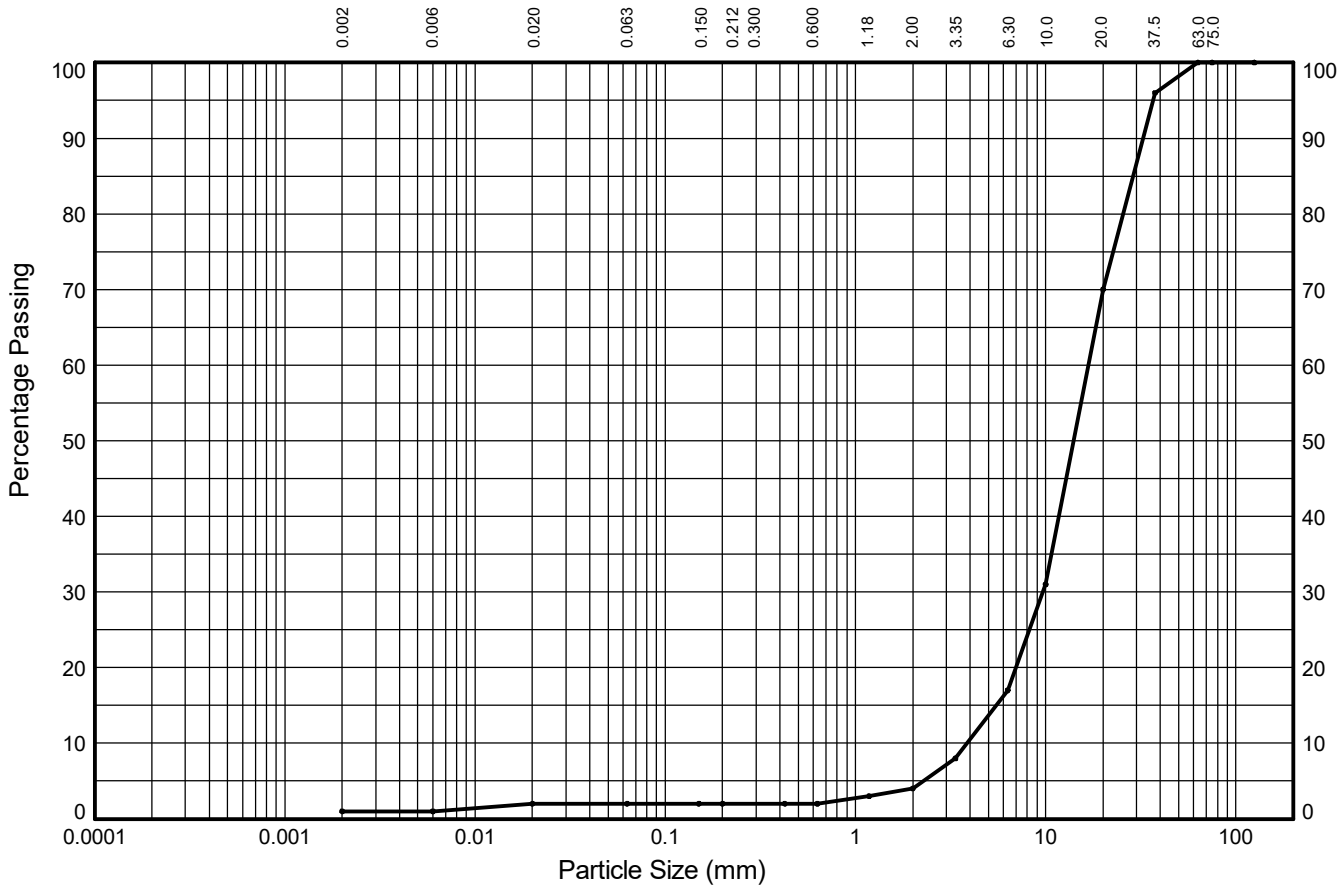
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

Borehole: **BH105** Sample Ref: **15** Sample Type: **B** Depth (m): **3.10**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	0%	1%	0%	0%	0%	2%	13%	53%	30%	
	SILT			SAND			GRAVEL			
1%	1%			2%			96%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**96**
20.0	**70**
10.0	**31**
6.30	**17**
3.35	**8**
2.00	**4**
1.18	**3**
0.630	**2**
0.425	**2**
0.200	**2**
0.150	**2**
0.063	**2**

Particle Diameter (mm)	Percent Passing (%)
0.02	**2**
0.006	**1**
0.002	**1**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**3.855**
D_{15} (mm)	**5.475**
D_{30} (mm)	**9.675**
D_{50} (mm)	**14.017**
D_{60} (mm)	**16.743**
D_{85} (mm)	**28.743**
D_{90} (mm)	**32.436**
C_U	**4.3**
C_C	**1.5**

Soil Description:

Brown mottled grey white and yellow slightly sandy slightly clayey GRAVEL

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2

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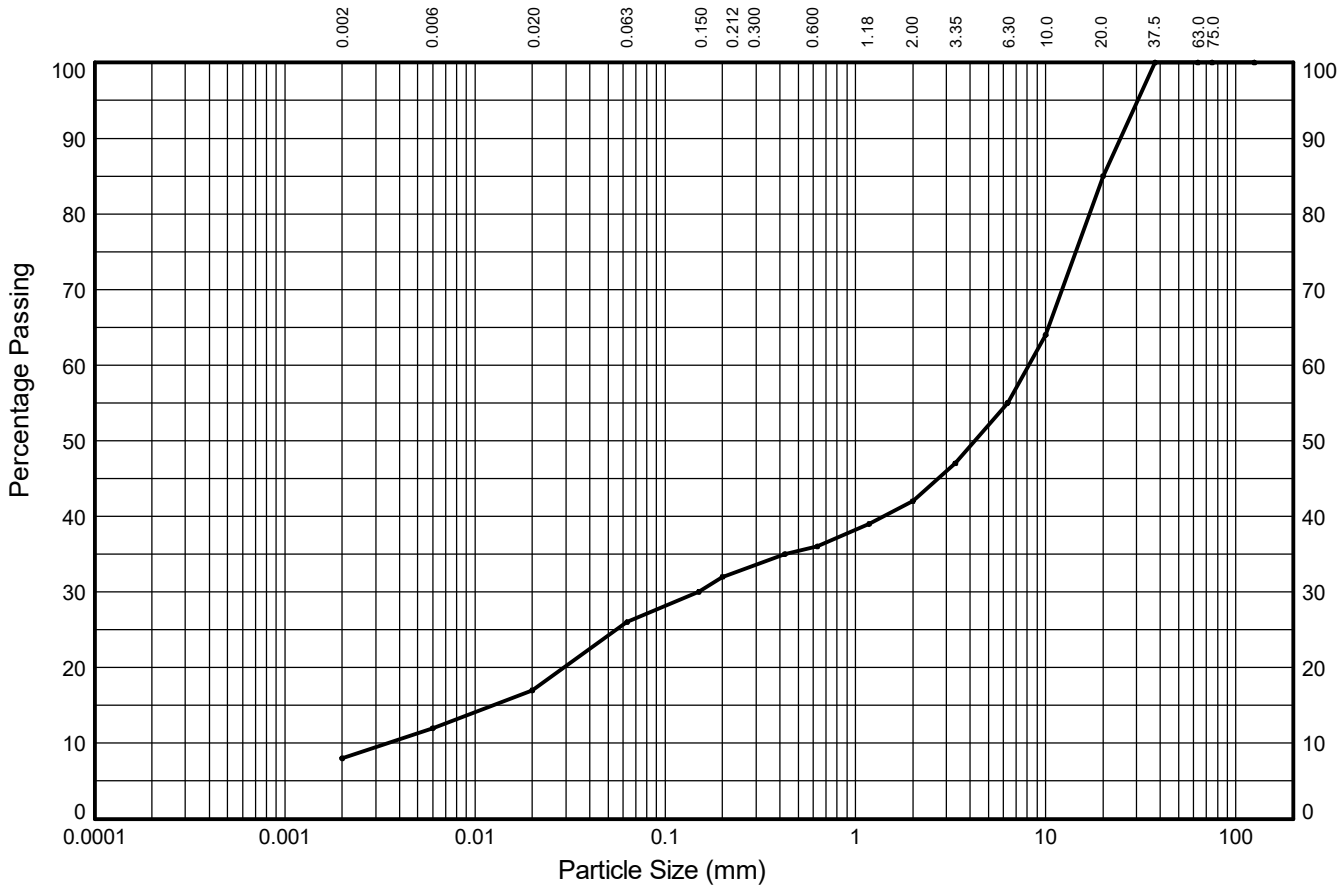
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

Borehole: **BH106** Sample Ref: **2** Sample Type: **B** Depth (m): **0.60**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	4%	5%	9%	6%	4%	6%	13%	30%	15%	
	SILT			SAND			GRAVEL			
8%	18%			16%			58%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**85**
10.0	**64**
6.30	**55**
3.35	**47**
2.00	**42**
1.18	**39**
0.630	**36**
0.425	**35**
0.200	**32**
0.150	**30**
0.063	**26**

Particle Diameter (mm)	Percent Passing (%)
0.02	**17**
0.006	**12**
0.002	**8**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**0.003**
D_{15} (mm)	**0.012**
D_{30} (mm)	**0.150**
D_{50} (mm)	**4.245**
D_{60} (mm)	**8.144**
D_{85} (mm)	**20.000**
D_{90} (mm)	**24.662**
C_U	**2351**
C_C	**0.80**

Soil Description:

Very dark grey mottled light brown and grey sandy silty GRAVEL

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2

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Contract Ref: **736036**

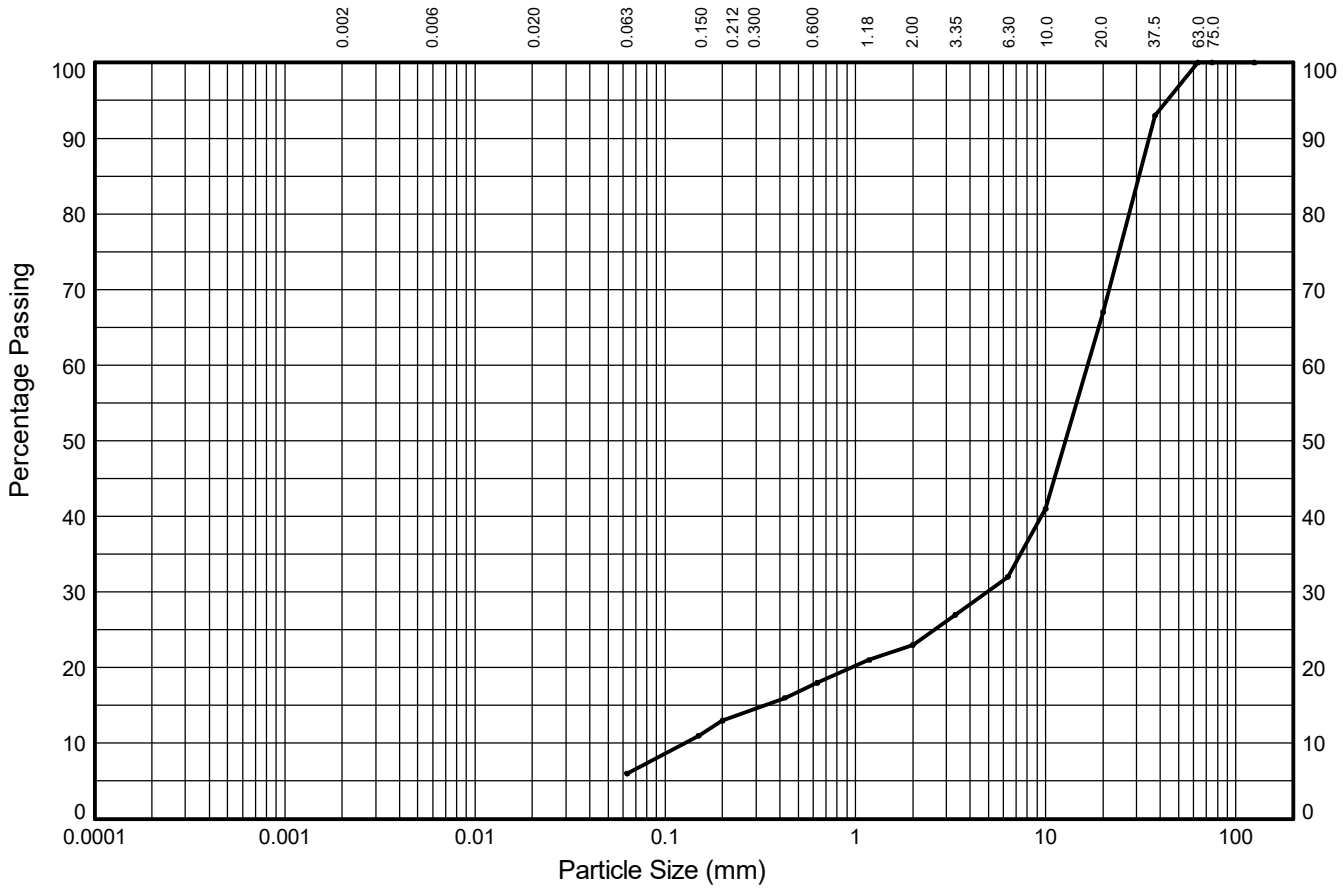
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2 of BS EN ISO 17892:Part 4:2016

Position ID: **DS101** Sample Ref: **4** Sample Type: **B** Depth (m): **0.70**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	-	-	-	7%	5%	5%	9%	35%	33%	
	SILT			SAND			GRAVEL			
6%				17%			77%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**93**
20.0	**67**
10.0	**41**
6.30	**32**
3.35	**27**
2.00	**23**
1.18	**21**
0.630	**18**
0.425	**16**
0.200	**13**
0.150	**11**
0.063	**6**

Particle Diameter (mm)	Percent Passing (%)

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**0.126**
D_{15} (mm)	**0.331**
D_{30} (mm)	**4.894**
D_{50} (mm)	**12.712**
D_{60} (mm)	**16.595**
D_{85} (mm)	**30.905**
D_{90} (mm)	**34.876**
C_U	**132**
C_C	**11**

Soil Description:

Very dark brown clayey sandy GRAVEL

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2

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Contract Ref: **736036**

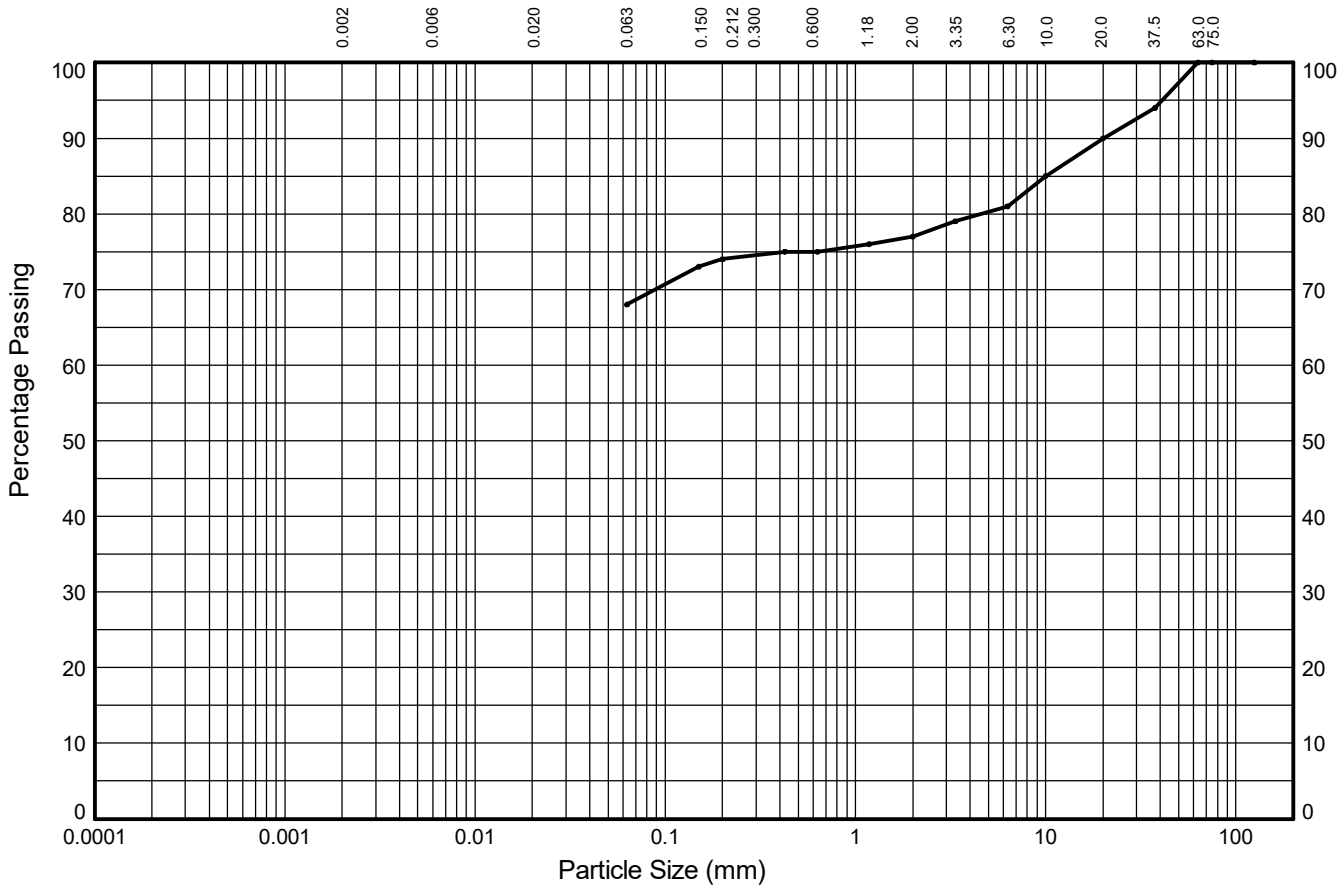
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2 of BS EN ISO 17892:Part 4:2016

Position ID: **DS101** Sample Ref: **11** Sample Type: **D** Depth (m): **2.40**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	-	-	-	6%	1%	2%	4%	9%	10%	
	SILT			SAND			GRAVEL			
68%				9%			23%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**94**
20.0	**90**
10.0	**85**
6.30	**81**
3.35	**79**
2.00	**77**
1.18	**76**
0.630	**75**
0.425	**75**
0.200	**74**
0.150	**73**
0.063	**68**

Particle Diameter (mm)	Percent Passing (%)

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**NA**
D_{50} (mm)	**NA**
D_{60} (mm)	**NA**
D_{85} (mm)	**10.000**
D_{90} (mm)	**20.000**
C_U	**NA**
C_C	**NA**

Soil Description:

Grey mottled brown and dark grey slightly gravelly slightly sandy CLAY

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2

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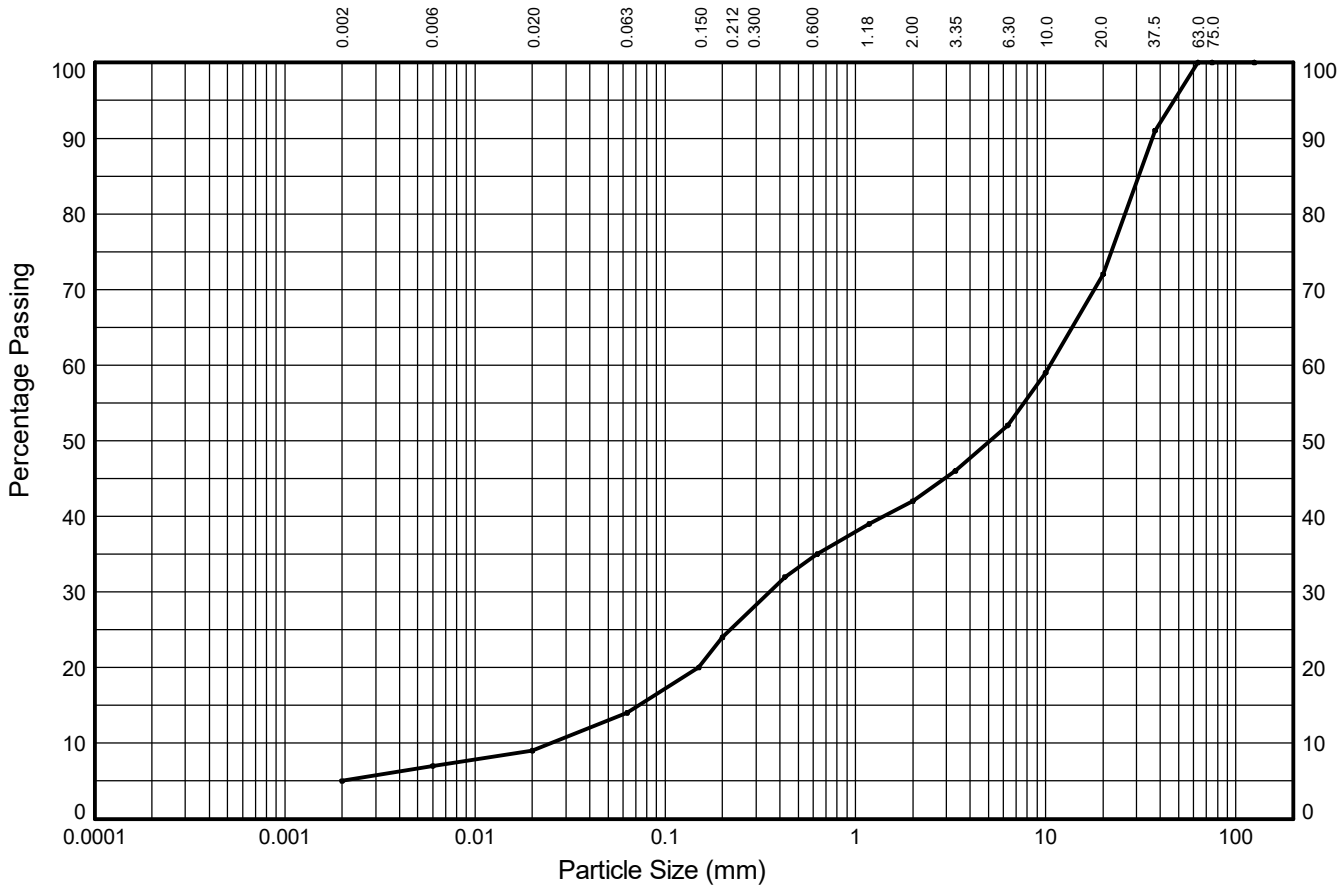
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

Position ID: **DS102** Sample Ref: **2** Sample Type: **B** Depth (m): **0.30**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	2%	2%	5%	10%	11%	7%	10%	20%	28%	
	SILT			SAND			GRAVEL			
5%	9%			28%			58%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**91**
20.0	**72**
10.0	**59**
6.30	**52**
3.35	**46**
2.00	**42**
1.18	**39**
0.630	**35**
0.425	**32**
0.200	**24**
0.150	**20**
0.063	**14**

Particle Diameter (mm)	Percent Passing (%)
0.02	**9**
0.006	**7**
0.002	**5**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**0.025**
D_{15} (mm)	**0.073**
D_{30} (mm)	**0.352**
D_{50} (mm)	**5.104**
D_{60} (mm)	**10.548**
D_{85} (mm)	**30.748**
D_{90} (mm)	**36.280**
C_U	**419**
C_C	**0.47**

Soil Description:

MADE-GROUND. Brown mottled dark grey very sandy silty GRAVEL.

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2

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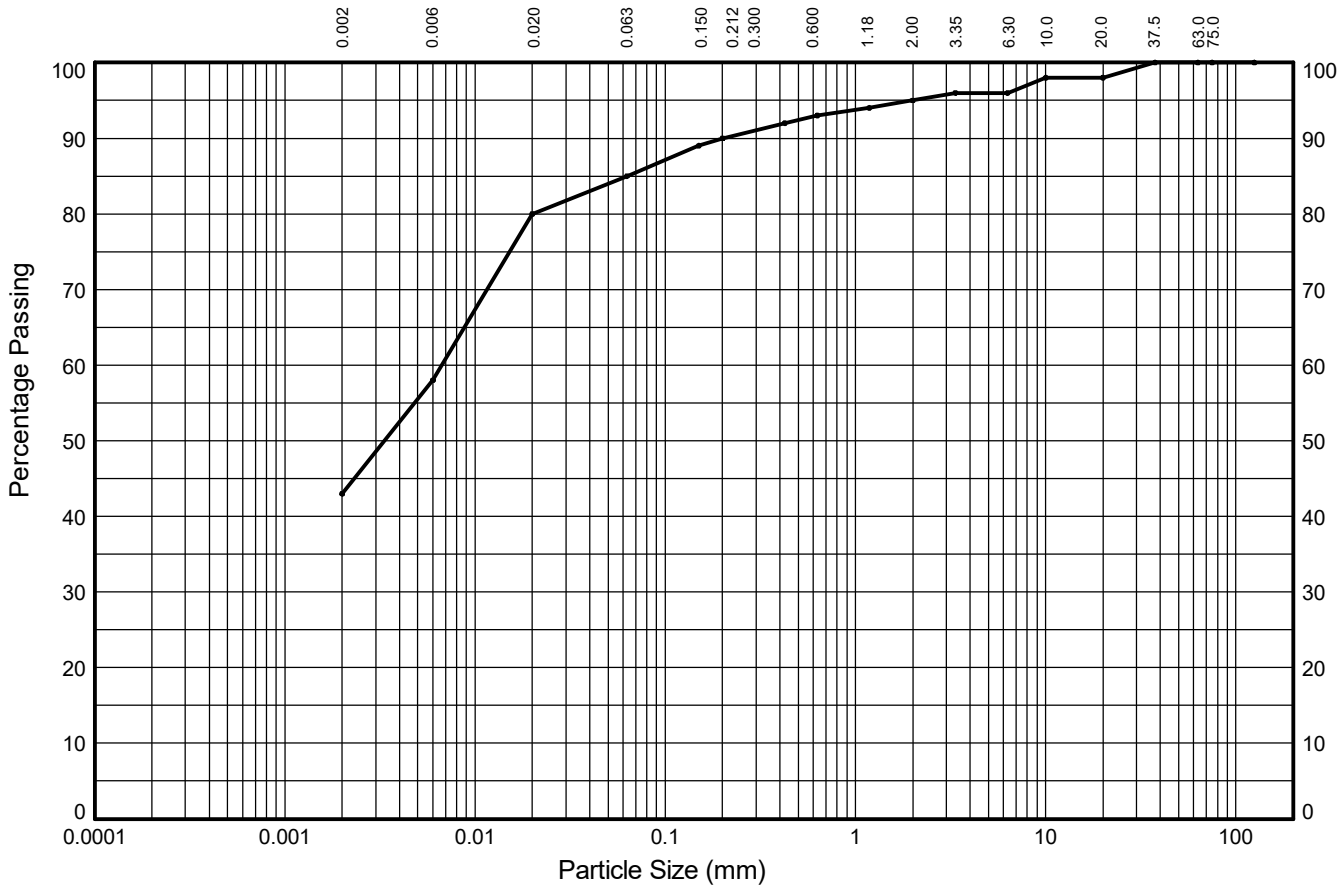
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

Position ID: **DS102** Sample Ref: **4** Sample Type: **B** Depth (m): **0.90**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	15%	22%	5%	5%	3%	2%	1%	2%	2%	
	SILT			SAND			GRAVEL			
43%	42%			10%			5%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**98**
10.0	**98**
6.30	**96**
3.35	**96**
2.00	**95**
1.18	**94**
0.630	**93**
0.425	**92**
0.200	**90**
0.150	**89**
0.063	**85**

Particle Diameter (mm)	Percent Passing (%)
0.02	**80**
0.006	**58**
0.002	**43**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**NA**
D_{50} (mm)	**0.003**
D_{60} (mm)	**0.007**
D_{85} (mm)	**0.063**
D_{90} (mm)	**0.200**
C_U	**NA**
C_C	**NA**

Soil Description:

Dark grey slightly gravelly slightly sandy silty CLAY

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2

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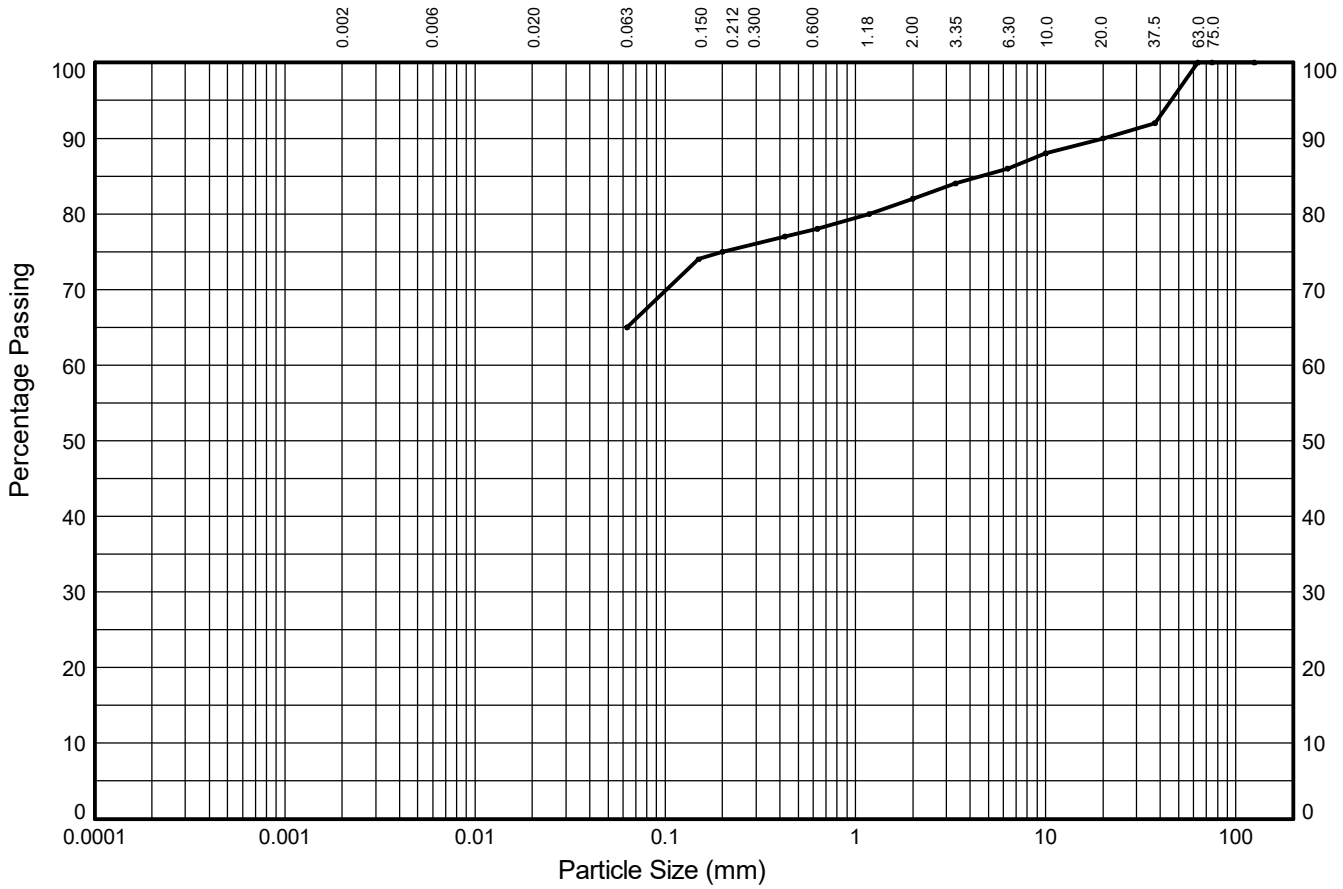
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2 of BS EN ISO 17892:Part 4:2016

Position ID: **DS102** Sample Ref: **8** Sample Type: **D** Depth (m): **1.57**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	-	-	-	10%	3%	4%	4%	4%	10%	
	SILT			SAND			GRAVEL			
65%				17%			18%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**92**
20.0	**90**
10.0	**88**
6.30	**86**
3.35	**84**
2.00	**82**
1.18	**80**
0.630	**78**
0.425	**77**
0.200	**75**
0.150	**74**
0.063	**65**

Particle Diameter (mm)	Percent Passing (%)

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**NA**
D_{50} (mm)	**NA**
D_{60} (mm)	**NA**
D_{85} (mm)	**4.594**
D_{90} (mm)	**20.000**
C_U	**NA**
C_C	**NA**

Soil Description:

Brown slightly gravelly slightly sandy CLAY

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2

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Contract Ref: **736036**

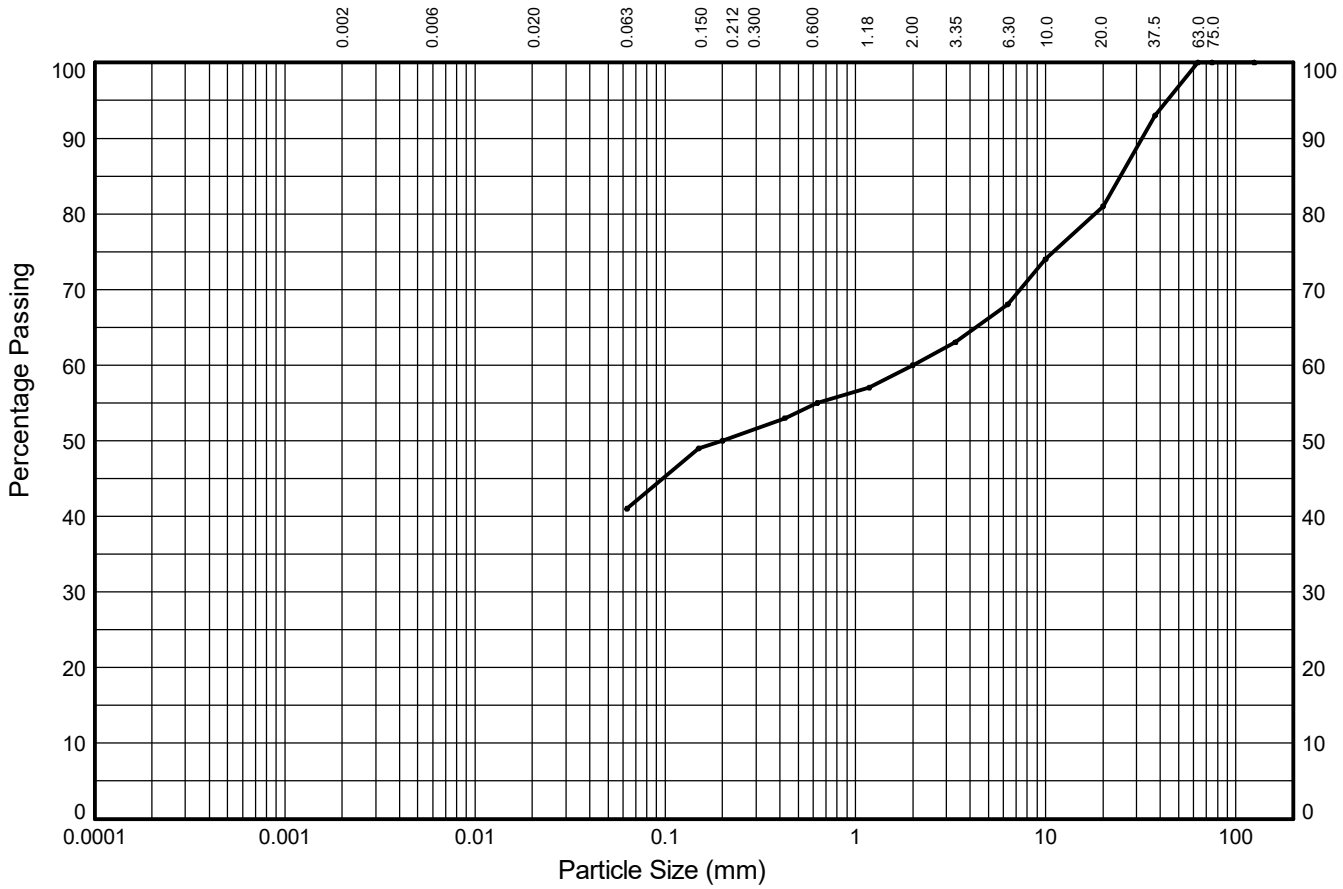
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2 of BS EN ISO 17892:Part 4:2016

Position ID: **DS102** Sample Ref: **15** Sample Type: **D** Depth (m): **3.35**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	-	-	-	9%	5%	5%	8%	13%	19%	
	SILT			SAND			GRAVEL			
41%				19%			40%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**93**
20.0	**81**
10.0	**74**
6.30	**68**
3.35	**63**
2.00	**60**
1.18	**57**
0.630	**55**
0.425	**53**
0.200	**50**
0.150	**49**
0.063	**41**

Particle Diameter (mm)	Percent Passing (%)

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**NA**
D_{50} (mm)	**0.200**
D_{60} (mm)	**2.000**
D_{85} (mm)	**24.662**
D_{90} (mm)	**32.047**
C_U	**NA**
C_C	**NA**

Soil Description:

Light brown mottled brown and white gravelly slightly sandy CLAY

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2

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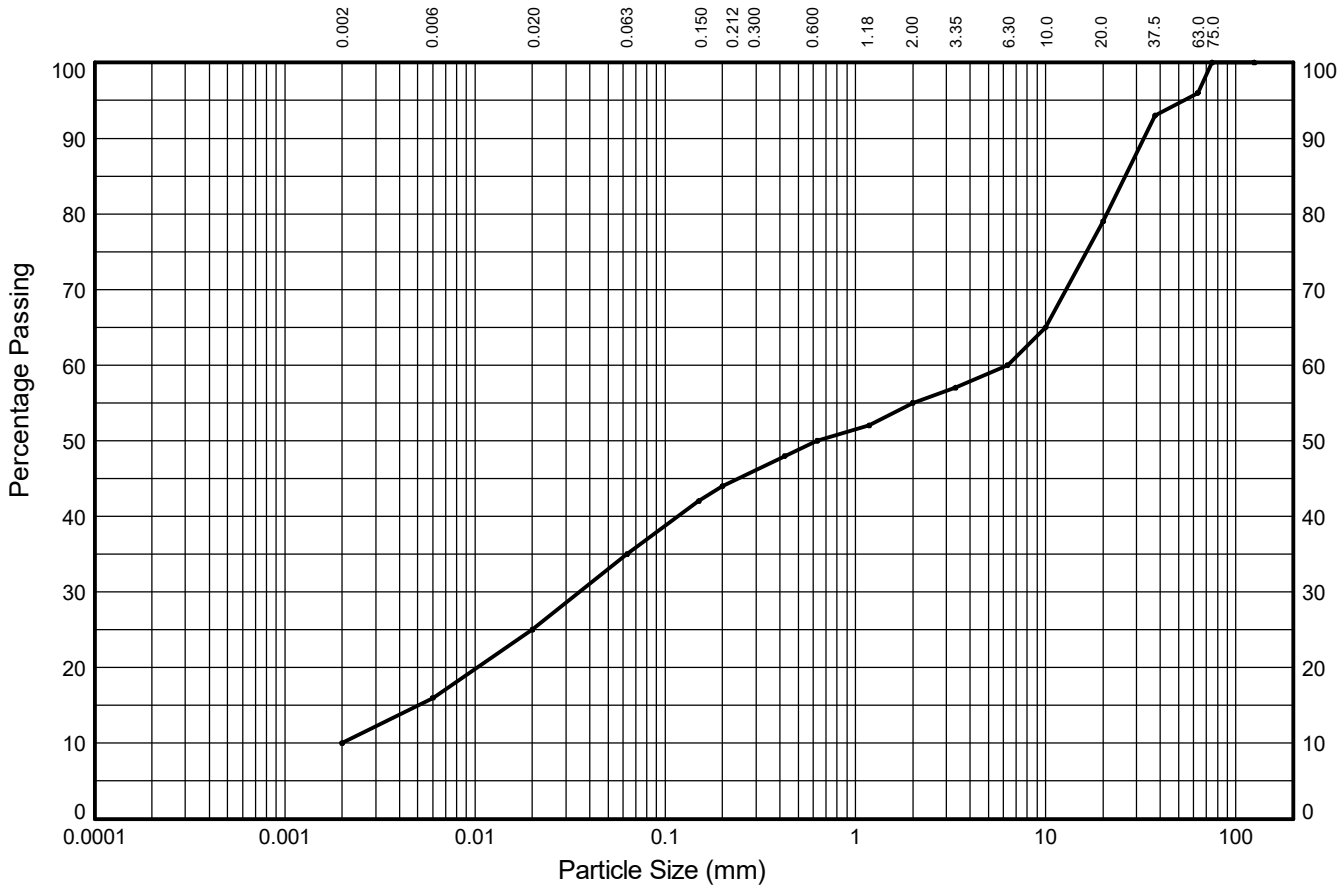
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

Position ID: **DS103** Sample Ref: **2** Sample Type: **B** Depth (m): **0.30**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	6%	9%	10%	9%	6%	5%	5%	19%	17%	
	SILT			SAND			GRAVEL			
10%	25%			20%			41%			4%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**96**
37.5	**93**
20.0	**79**
10.0	**65**
6.30	**60**
3.35	**57**
2.00	**55**
1.18	**52**
0.630	**50**
0.425	**48**
0.200	**44**
0.150	**42**
0.063	**35**

Particle Diameter (mm)	Percent Passing (%)
0.02	**25**
0.006	**16**
0.002	**10**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**0.002**
D_{15} (mm)	**0.005**
D_{30} (mm)	**0.035**
D_{50} (mm)	**0.630**
D_{60} (mm)	**6.300**
D_{85} (mm)	**26.184**
D_{90} (mm)	**32.774**
C_U	**3150**
C_C	**0.10**

Soil Description:

Brown mottled dark grey slightly sandy gravelly CLAY with a low cobble content

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2

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Contract Ref: **736036**

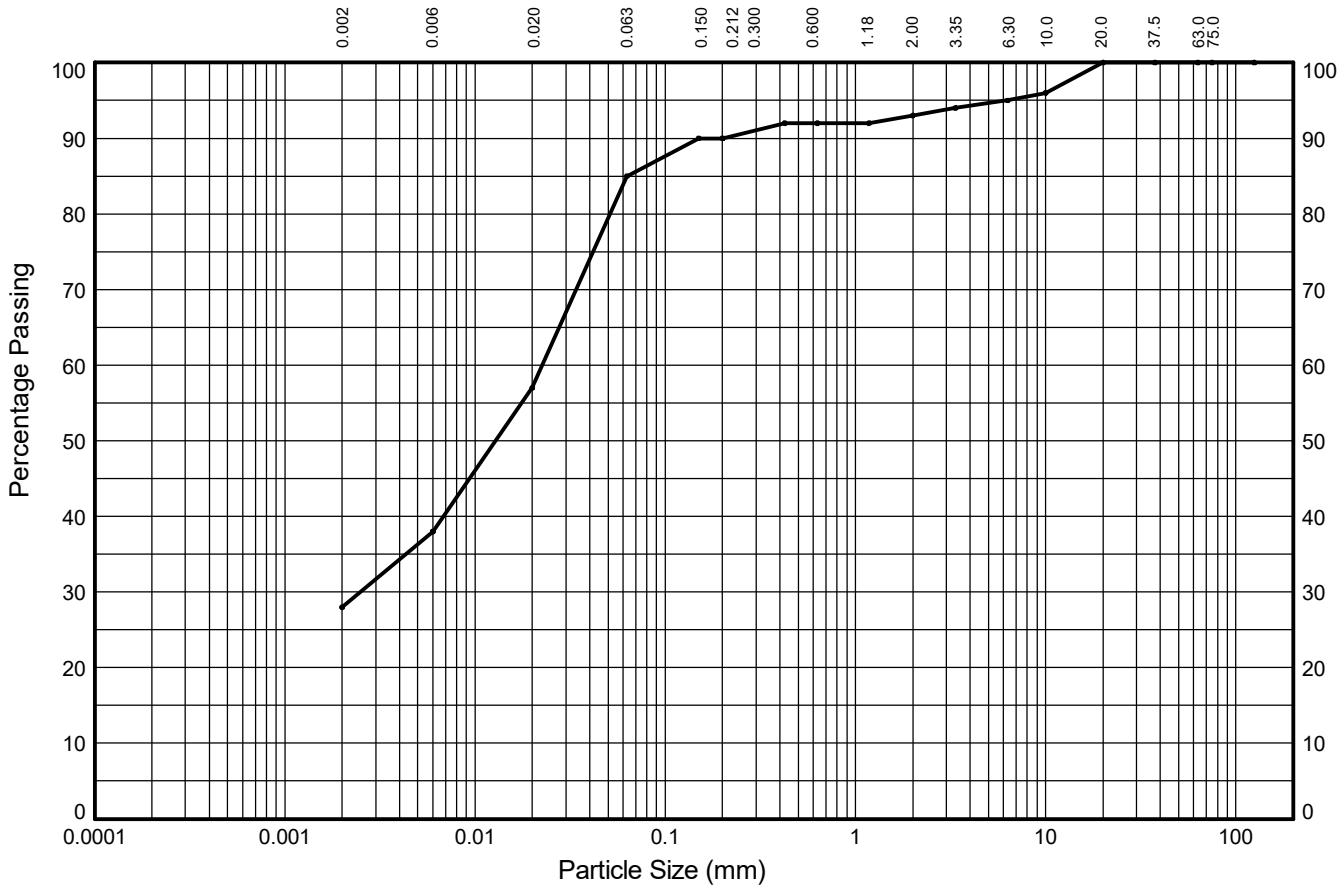
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.3 of BS EN ISO 17892:Part 4:2016

Position ID: **DS103** Sample Ref: **5** Sample Type: **U70** Depth (m): **1.20**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	10%	19%	28%	5%	2%	1%	2%	5%	0%	
	SILT			SAND			GRAVEL			
28%	57%			8%			7%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**100**
10.0	**96**
6.30	**95**
3.35	**94**
2.00	**93**
1.18	**92**
0.630	**92**
0.425	**92**
0.200	**90**
0.150	**90**
0.063	**85**

Particle Diameter (mm)	Percent Passing (%)
0.02	**57**
0.006	**38**
0.002	**28**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**0.002**
D_{50} (mm)	**0.013**
D_{60} (mm)	**0.023**
D_{85} (mm)	**0.063**
D_{90} (mm)	**0.150**
C_U	**NA**
C_C	**NA**

Soil Description:

Grey slightly gravelly slightly sandy silty CLAY

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2

STRUCTURAL SOILS
1a Princess Street
Bedminster
Bristol
BS3 4AG

Compiled By		Date
Francesca Bennett	**FRANCESCA BENNETT**	**16/12/21**

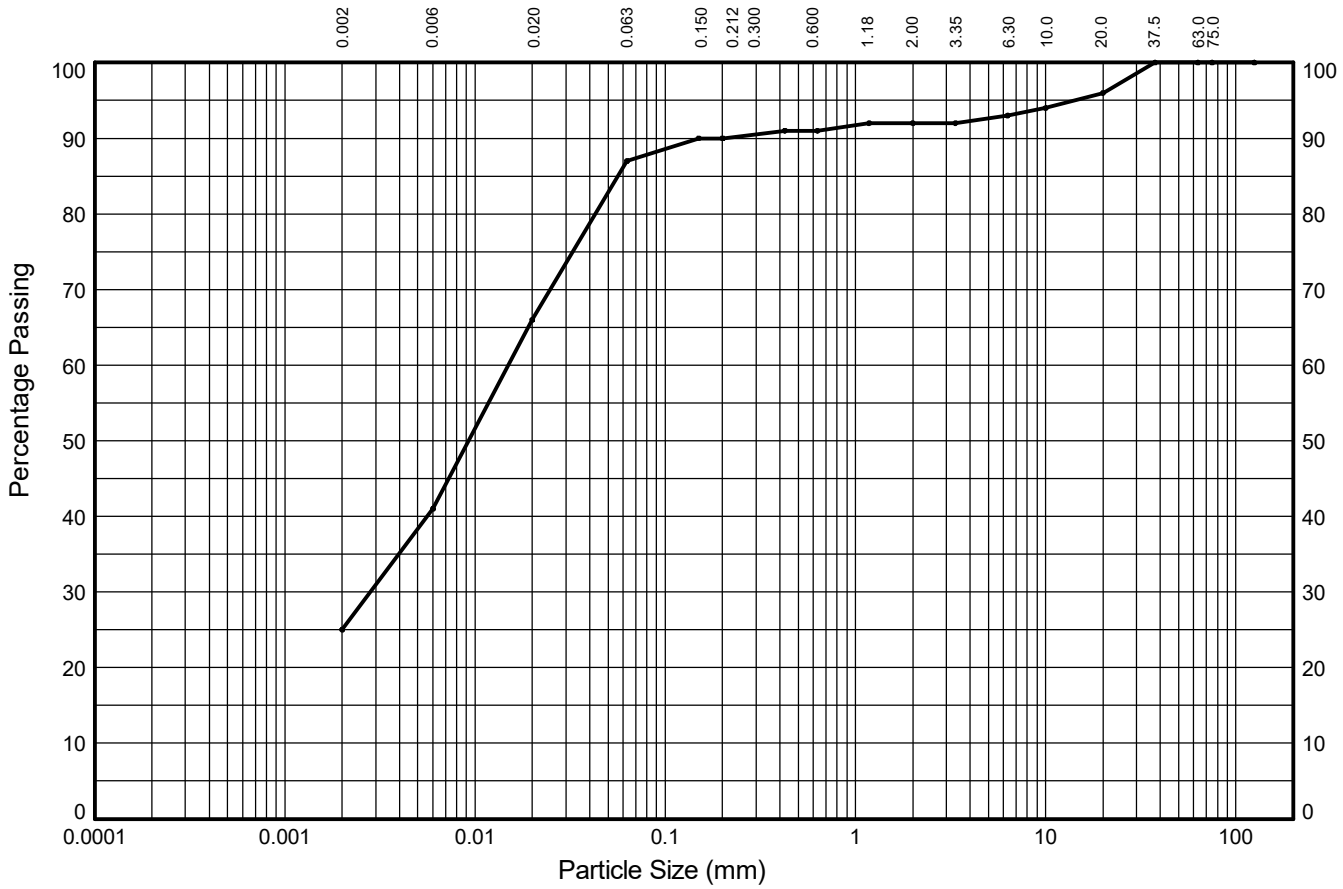
Contract	Contract Ref:
Langstone Flood & Coastal Erosion Management Scheme	**736036**

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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.3 of BS EN ISO 17892:Part 4:2016

Position ID: **DS103** Sample Ref: **13** Sample Type: **U70** Depth (m): **3.00**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	17%	24%	21%	3%	1%	1%	1%	3%	4%	
	SILT			SAND			GRAVEL			
25%	62%			5%			8%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**96**
10.0	**94**
6.30	**93**
3.35	**92**
2.00	**92**
1.18	**92**
0.630	**91**
0.425	**91**
0.200	**90**
0.150	**90**
0.063	**87**

Particle Diameter (mm)	Percent Passing (%)
0.02	**66**
0.006	**41**
0.002	**25**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**0.003**
D_{50} (mm)	**0.009**
D_{60} (mm)	**0.015**
D_{85} (mm)	**0.056**
D_{90} (mm)	**0.150**
C_U	**NA**
C_C	**NA**

Soil Description:

Dark grey slightly gravelly slightly sandy silty CLAY

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2

STRUCTURAL SOILS
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Compiled By		Date
Francesca Bennett	**FRANCESCA BENNETT**	**16/12/21**

Contract: **Langstone Flood & Coastal Erosion Management Scheme**

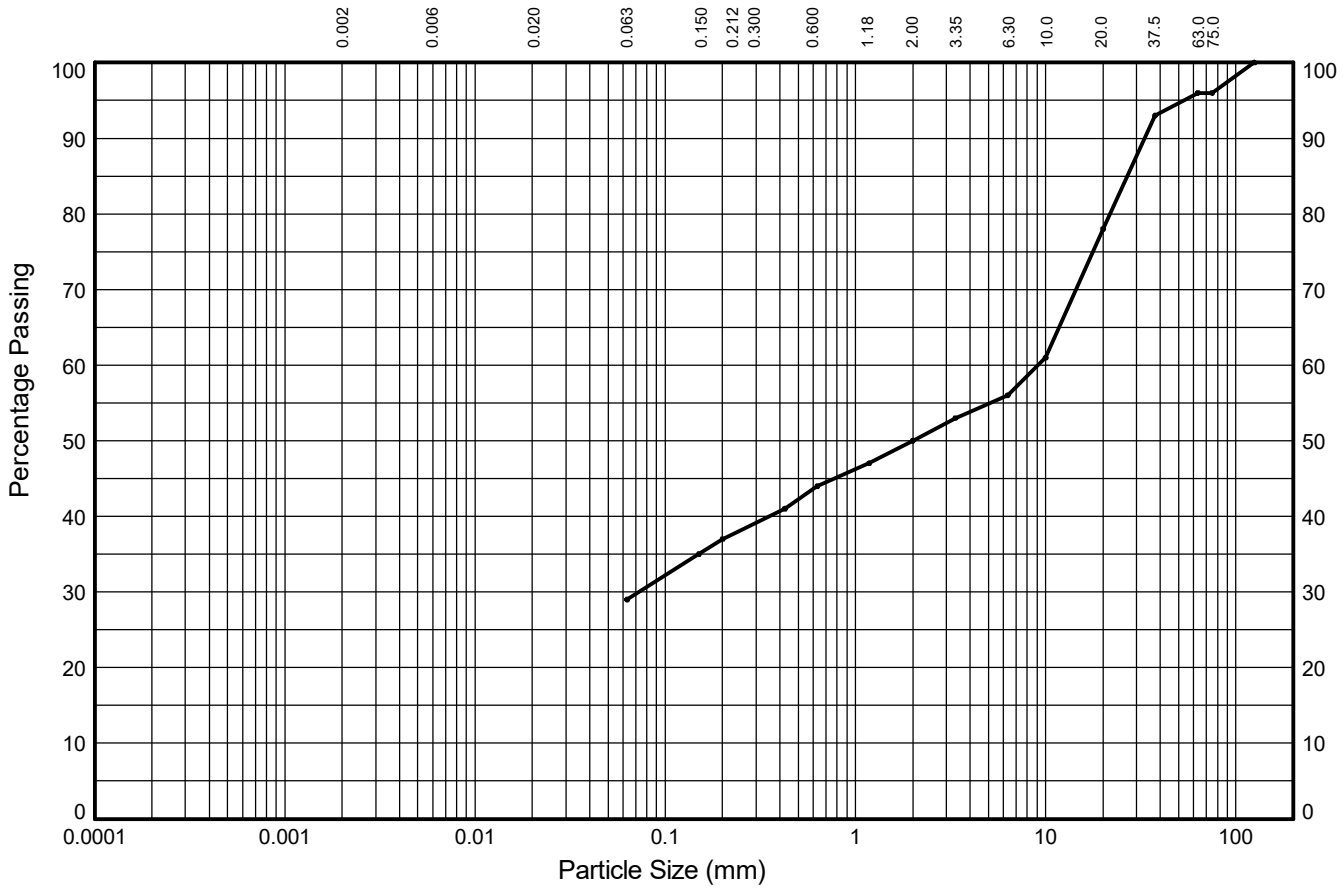
Contract Ref: **736036**

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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2 of BS EN ISO 17892:Part 4:2016

Position ID: **DS104** Sample Ref: **2** Sample Type: **B** Depth (m): **0.30**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	-	-	-	8%	7%	6%	6%	22%	18%	
	SILT			SAND			GRAVEL			
29%				21%			46%			4%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**96**
63.0	**96**
37.5	**93**
20.0	**78**
10.0	**61**
6.30	**56**
3.35	**53**
2.00	**50**
1.18	**47**
0.630	**44**
0.425	**41**
0.200	**37**
0.150	**35**
0.063	**29**

Particle Diameter (mm)	Percent Passing (%)

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**0.073**
D_{50} (mm)	**2.000**
D_{60} (mm)	**9.117**
D_{85} (mm)	**26.818**
D_{90} (mm)	**33.070**
C_U	**NA**
C_C	**NA**

Soil Description:

Dark brown mottled white very sandy very clayey GRAVEL with low cobble content

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2

STRUCTURAL SOILS
18 Frogmore Road
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Compiled By	Date
DAVID NICKELLS	16/12/21

Contract: **Langstone Flood & Coastal Erosion Management Scheme**

Contract Ref: **736036**

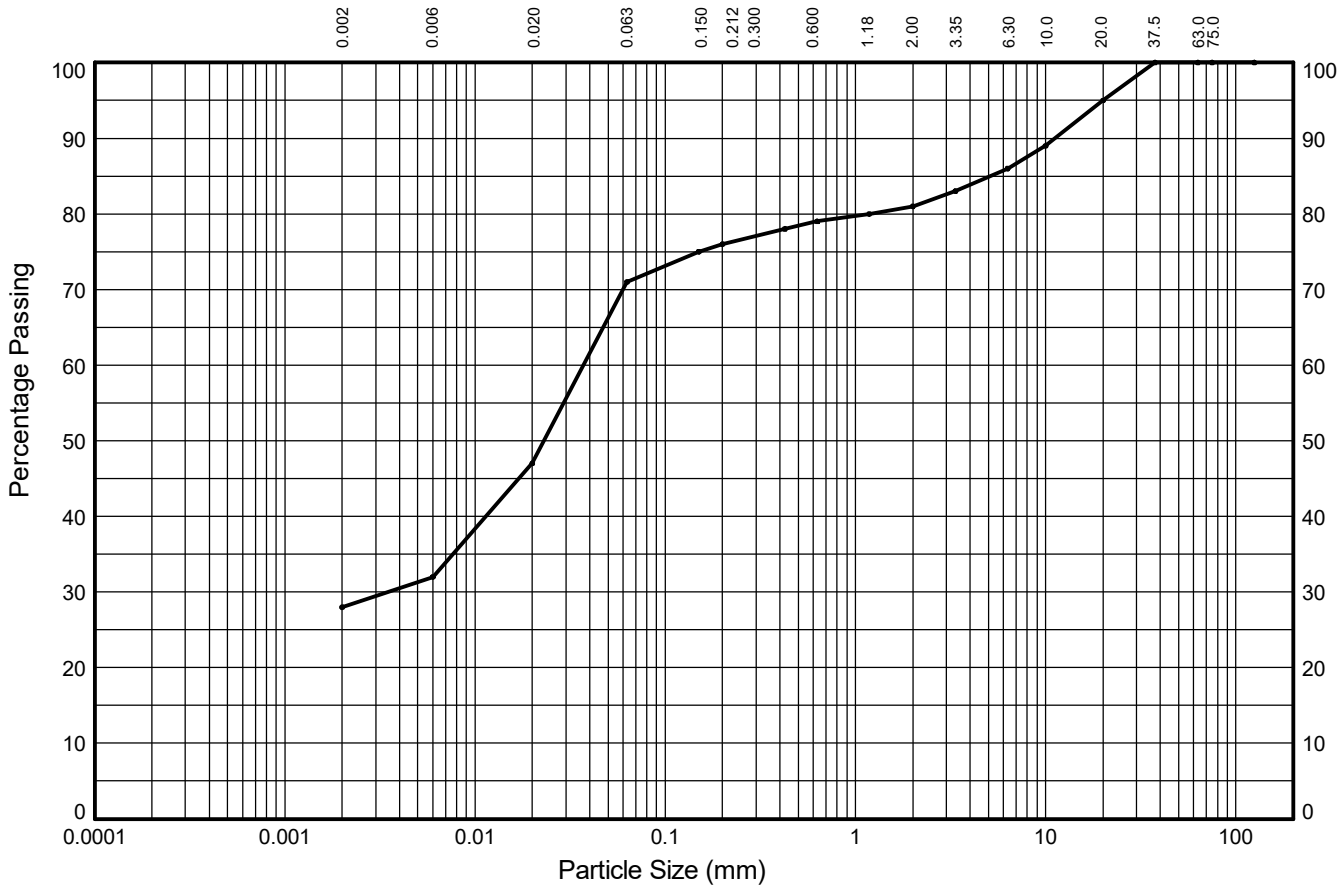
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.3 of BS EN ISO 17892:Part 4:2016

Position ID: **DS104** Sample Ref: **9** Sample Type: **U70** Depth (m): **2.00**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	4%	15%	24%	5%	3%	2%	5%	9%	5%	
	SILT			SAND			GRAVEL			
28%	43%			10%			19%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**95**
10.0	**89**
6.30	**86**
3.35	**83**
2.00	**81**
1.18	**80**
0.630	**79**
0.425	**78**
0.200	**76**
0.150	**75**
0.063	**71**

Particle Diameter (mm)	Percent Passing (%)
0.02	**47**
0.006	**32**
0.002	**28**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**0.003**
D_{50} (mm)	**0.023**
D_{60} (mm)	**0.037**
D_{85} (mm)	**5.104**
D_{90} (mm)	**11.225**
C_U	**NA**
C_C	**NA**

Soil Description:

Brownish grey slightly gravelly slightly sandy CLAY

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2

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Compiled By	Date
A.D. Frost — **ALAN FROST**	**16/12/21**

Contract: **Langstone Flood & Coastal Erosion Management Scheme**

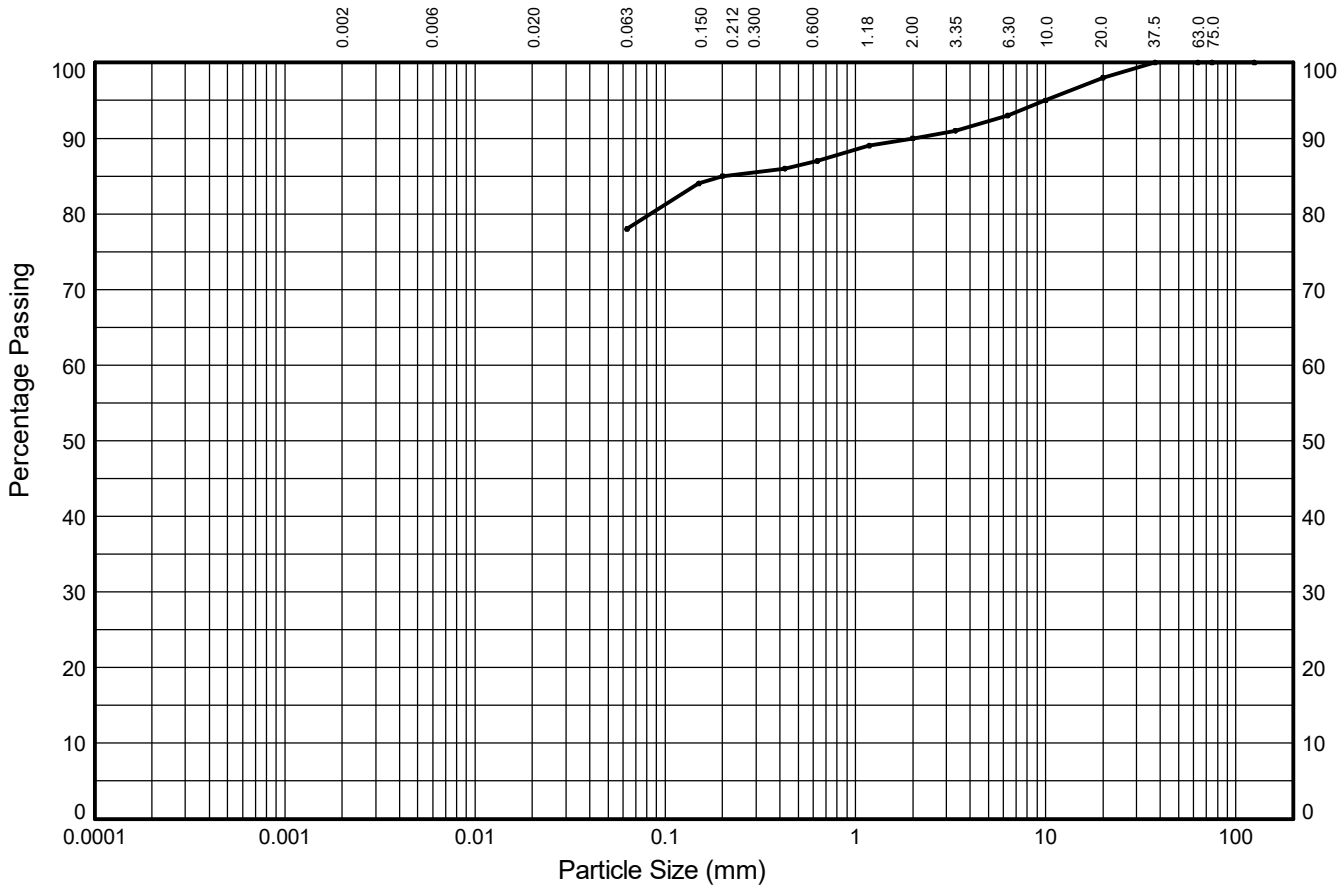
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2 of BS EN ISO 17892:Part 4:2016

Position ID: **DS105** Sample Ref: **4** Sample Type: **B** Depth (m): **0.80**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	-	-	-	7%	2%	3%	3%	5%	2%	
	SILT			SAND			GRAVEL			
78%				12%			10%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**98**
10.0	**95**
6.30	**93**
3.35	**91**
2.00	**90**
1.18	**89**
0.630	**87**
0.425	**86**
0.200	**85**
0.150	**84**
0.063	**78**

Particle Diameter (mm)	Percent Passing (%)

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**NA**
D_{50} (mm)	**NA**
D_{60} (mm)	**NA**
D_{85} (mm)	**0.200**
D_{90} (mm)	**2.000**
C_U	**NA**
C_C	**NA**

Soil Description:

Brown slightly sandy slightly gravelly CLAY

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2

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Compiled By	Date
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Contract: **Langstone Flood & Coastal Erosion Management Scheme**

Contract Ref: **736036**

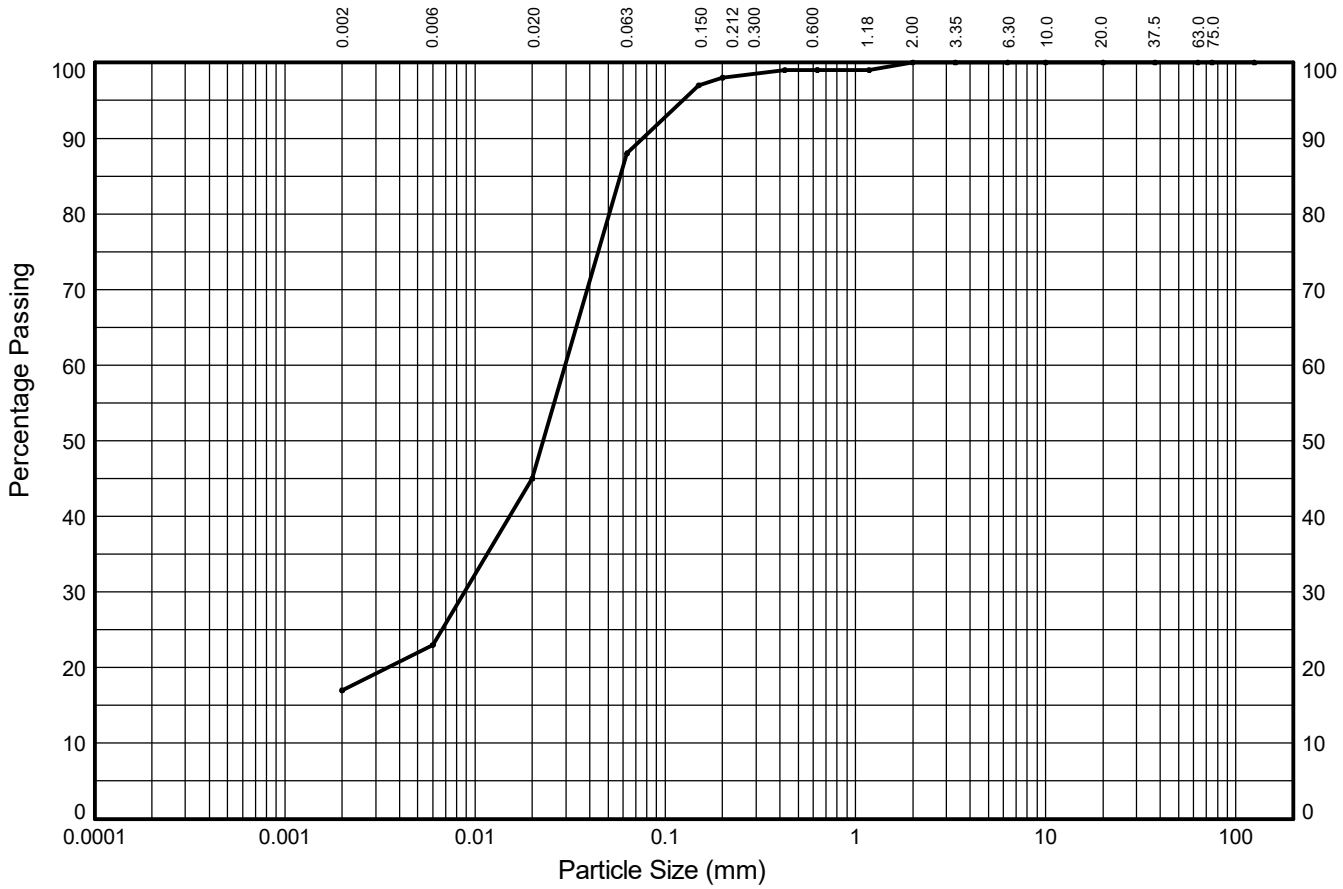
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.3 of BS EN ISO 17892:Part 4:2016

Position ID: **DS105** Sample Ref: **10** Sample Type: **U70** Depth (m): **2.00**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	6%	22%	43%	10%	1%	1%	0%	0%	0%	
	SILT			SAND			GRAVEL			
17%	71%			12%			0%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**100**
10.0	**100**
6.30	**100**
3.35	**100**
2.00	**100**
1.18	**99**
0.630	**99**
0.425	**99**
0.200	**98**
0.150	**97**
0.063	**88**

Particle Diameter (mm)	Percent Passing (%)
0.02	**45**
0.006	**23**
0.002	**17**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**0.009**
D_{50} (mm)	**0.023**
D_{60} (mm)	**0.030**
D_{85} (mm)	**0.058**
D_{90} (mm)	**0.076**
C_U	**NA**
C_C	**NA**

Soil Description:

Brown slightly sandy SILT

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2

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Bedminster
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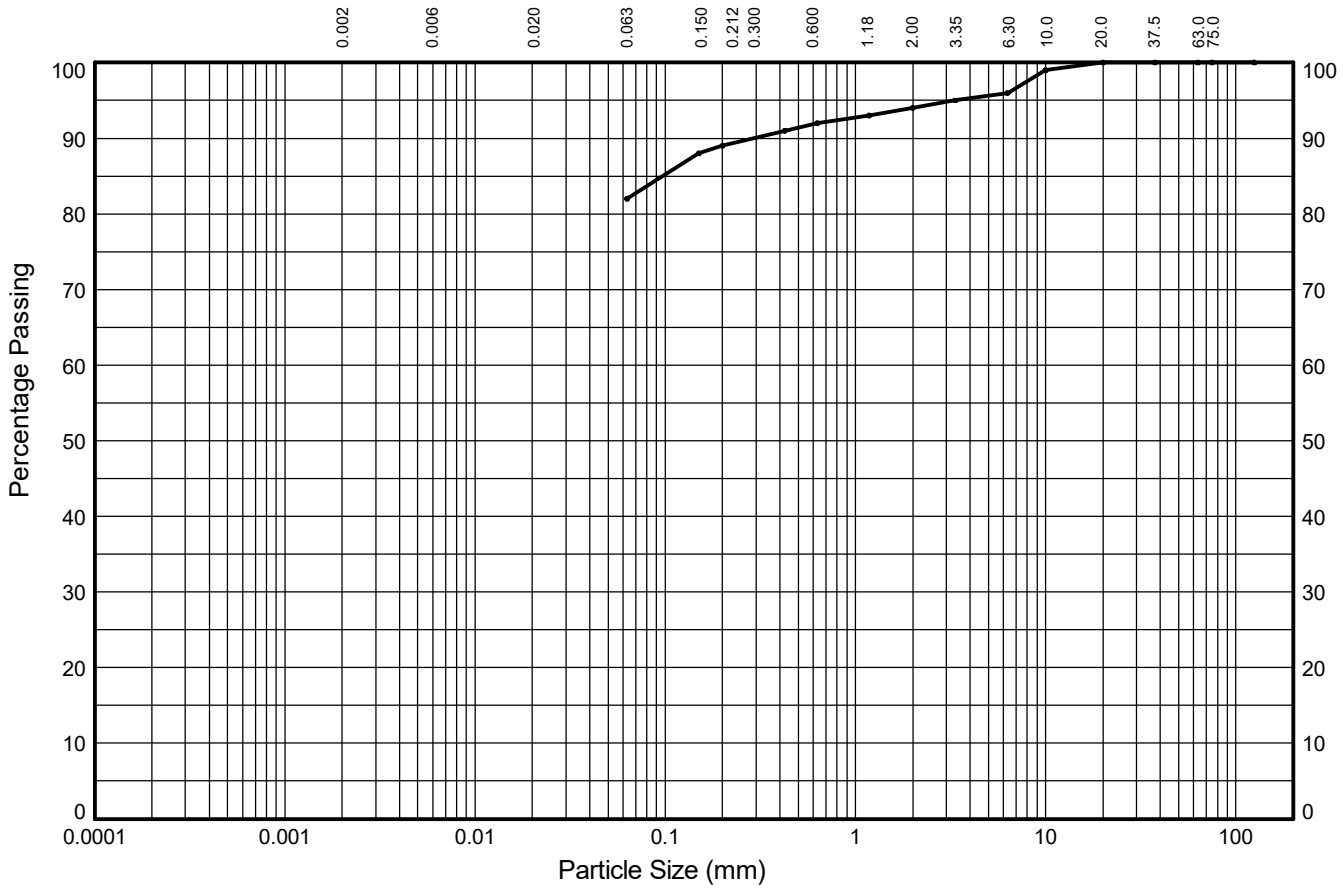
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2 of BS EN ISO 17892:Part 4:2016

Position ID: **DS106** Sample Ref: **2** Sample Type: **B** Depth (m): **0.20**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	-	-	-	7%	3%	2%	2%	4%	0%	
	SILT			SAND			GRAVEL			
82%				12%			6%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**100**
10.0	**99**
6.30	**96**
3.35	**95**
2.00	**94**
1.18	**93**
0.630	**92**
0.425	**91**
0.200	**89**
0.150	**88**
0.063	**82**

Particle Diameter (mm)	Percent Passing (%)

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**NA**
D_{50} (mm)	**NA**
D_{60} (mm)	**NA**
D_{85} (mm)	**0.097**
D_{90} (mm)	**0.292**
C_U	**NA**
C_C	**NA**

Soil Description:

Brown slightly gravelly slightly sandy CLAY

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2

STRUCTURAL SOILS
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DAVID NICKELLS	16/12/21

Contract	Contract Ref:
Langstone Flood & Coastal Erosion Management Scheme	**736036**

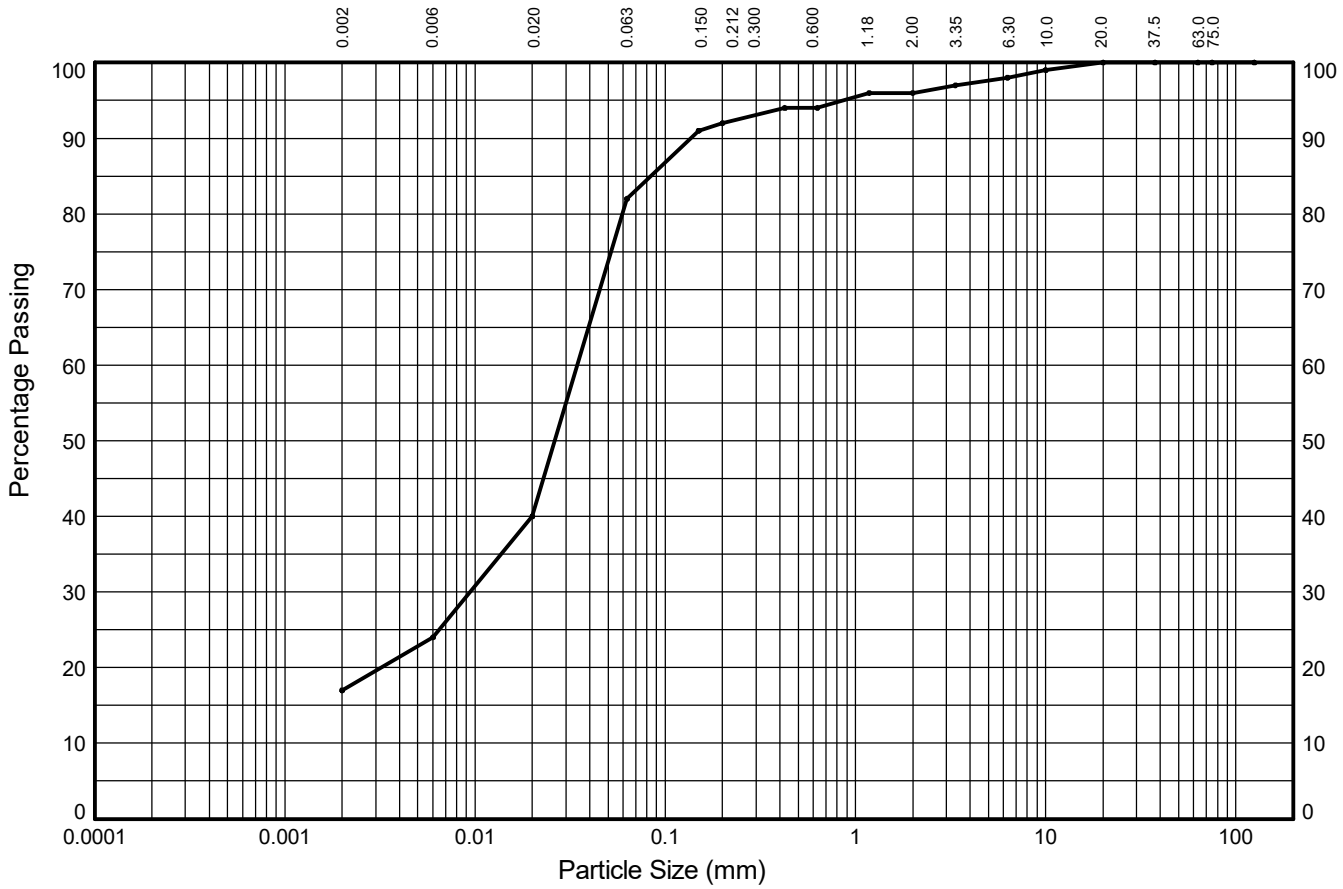
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.3 of BS EN ISO 17892:Part 4:2016

Position ID: **DS106** Sample Ref: **5** Sample Type: **U70** Depth (m): **1.20**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	7%	16%	42%	10%	2%	2%	2%	2%	0%	
	SILT			SAND			GRAVEL			
17%	65%			14%			4%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**100**
10.0	**99**
6.30	**98**
3.35	**97**
2.00	**96**
1.18	**96**
0.630	**94**
0.425	**94**
0.200	**92**
0.150	**91**
0.063	**82**

Particle Diameter (mm)	Percent Passing (%)
0.02	**40**
0.006	**24**
0.002	**17**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**0.009**
D_{50} (mm)	**0.026**
D_{60} (mm)	**0.035**
D_{85} (mm)	**0.084**
D_{90} (mm)	**0.136**
C_U	**NA**
C_C	**NA**

Soil Description:

Brown slightly gravelly slightly sandy silty CLAY

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2

STRUCTURAL SOILS
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Contract: **Langstone Flood & Coastal Erosion Management Scheme**

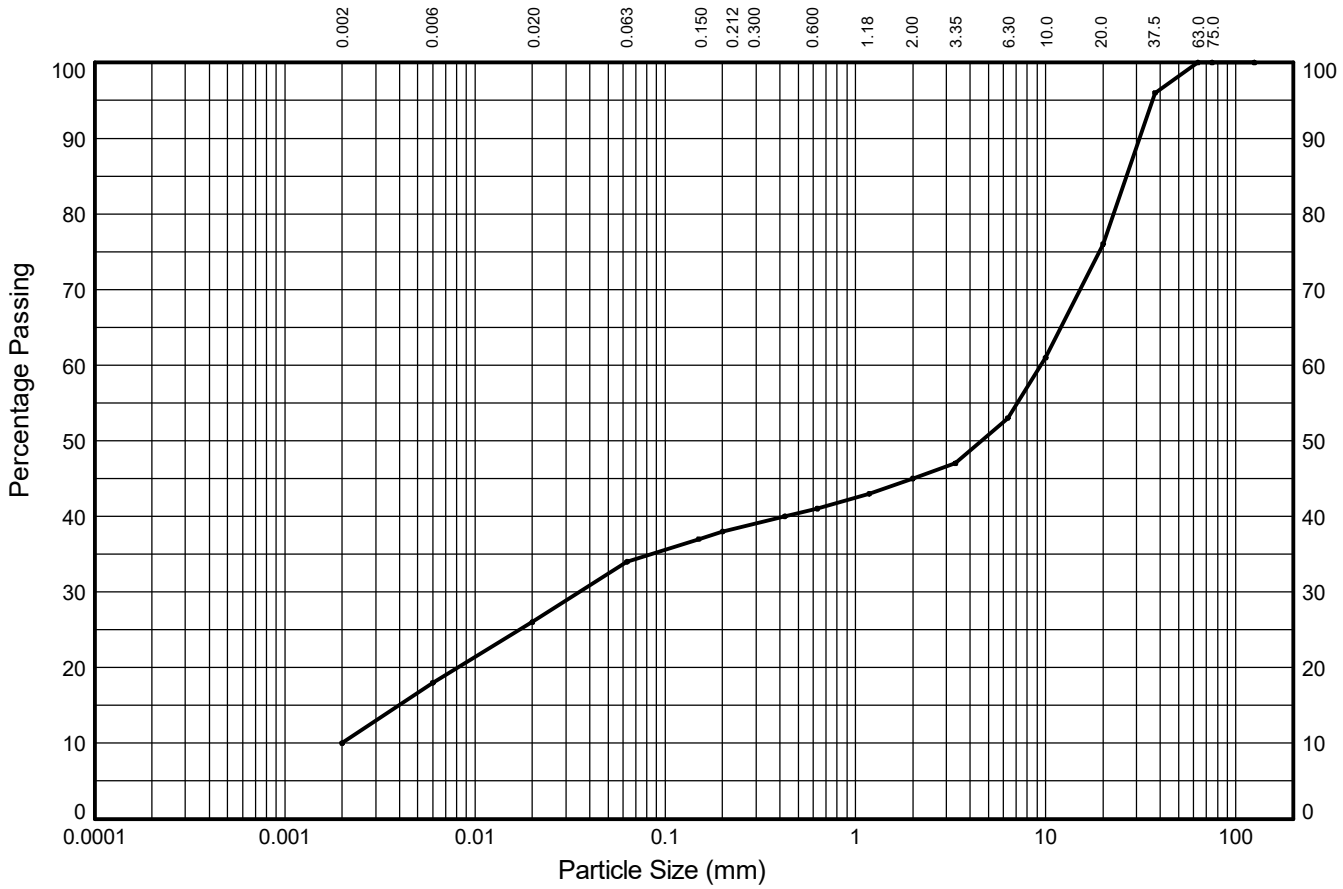
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

Position ID: **DS106** Sample Ref: **15** Sample Type: **B** Depth (m): **2.62**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	8%	8%	8%	4%	3%	4%	8%	23%	24%	
	SILT			SAND			GRAVEL			
10%	24%			11%			55%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**96**
20.0	**76**
10.0	**61**
6.30	**53**
3.35	**47**
2.00	**45**
1.18	**43**
0.630	**41**
0.425	**40**
0.200	**38**
0.150	**37**
0.063	**34**

Particle Diameter (mm)	Percent Passing (%)
0.02	**26**
0.006	**18**
0.002	**10**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**0.002**
D_{15} (mm)	**0.004**
D_{30} (mm)	**0.035**
D_{50} (mm)	**4.594**
D_{60} (mm)	**9.439**
D_{85} (mm)	**26.539**
D_{90} (mm)	**31.055**
C_U	**4719**
C_C	**0.07**

Soil Description:

Light brown mottled light grey and dark grey slightly sandy gravelly CLAY

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2

STRUCTURAL SOILS
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Compiled By	Date
SHARON CAIRNS	16/12/21

Contract: **Langstone Flood & Coastal Erosion Management Scheme**

Contract Ref: **736036**

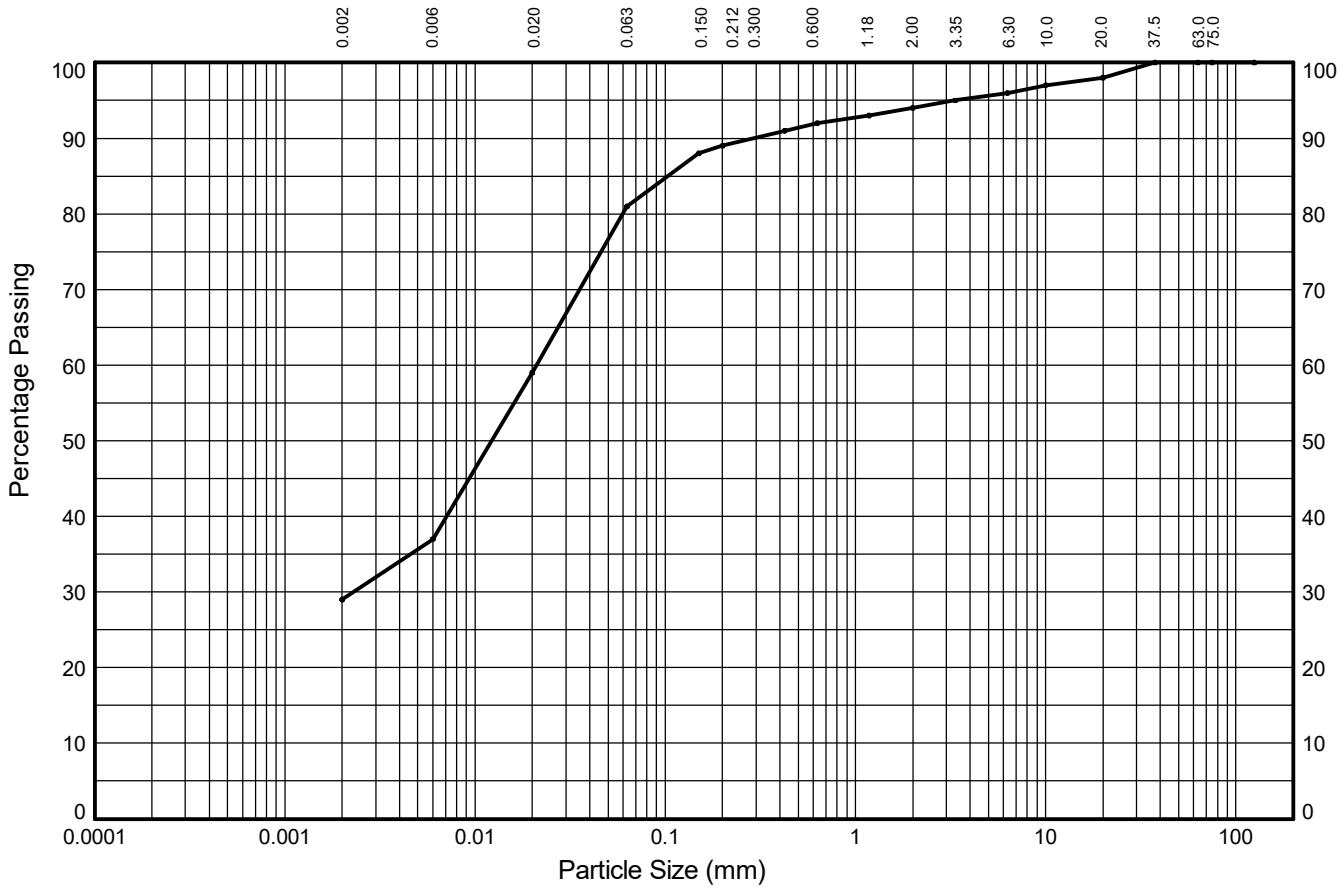
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

Position ID: **DS107** Sample Ref: **2** Sample Type: **B** Depth (m): **0.30**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	8%	22%	22%	8%	3%	2%	2%	2%	2%	
	SILT			SAND			GRAVEL			
29%	52%			13%			6%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**98**
10.0	**97**
6.30	**96**
3.35	**95**
2.00	**94**
1.18	**93**
0.630	**92**
0.425	**91**
0.200	**89**
0.150	**88**
0.063	**81**

Particle Diameter (mm)	Percent Passing (%)
0.02	**59**
0.006	**37**
0.002	**29**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**0.002**
D_{50} (mm)	**0.012**
D_{60} (mm)	**0.021**
D_{85} (mm)	**0.103**
D_{90} (mm)	**0.292**
C_U	**NA**
C_C	**NA**

Soil Description:

MADE-GROUND. Brown with black spots slightly gravelly slightly sandy silty CLAY

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2

STRUCTURAL SOILS
18 Frogmore Road
Hemel Hempstead
Hertfordshire
HP3 9RT

Compiled By	Date
SHARON CAIRNS	16/12/21

Contract: **Langstone Flood & Coastal Erosion Management Scheme**

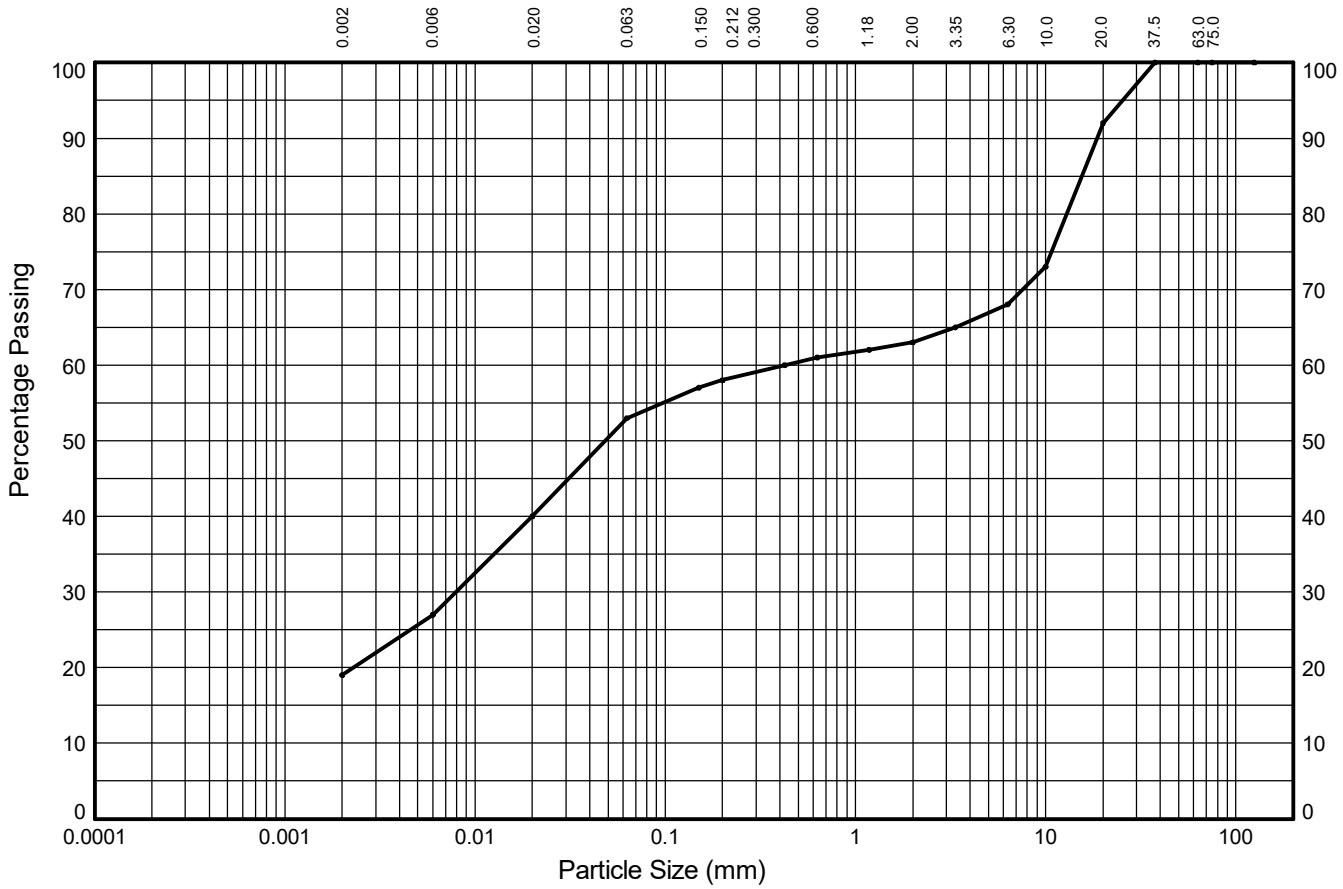
Contract Ref: **736036**

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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.3 of BS EN ISO 17892:Part 4:2016

Position ID: **DS107** Sample Ref: **5** Sample Type: **U70** Depth (m): **1.20**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	8%	13%	13%	5%	3%	2%	5%	24%	8%	
	SILT			SAND			GRAVEL			
19%	34%			10%			37%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**92**
10.0	**73**
6.30	**68**
3.35	**65**
2.00	**63**
1.18	**62**
0.630	**61**
0.425	**60**
0.200	**58**
0.150	**57**
0.063	**53**

Particle Diameter (mm)	Percent Passing (%)
0.02	**40**
0.006	**27**
0.002	**19**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**0.008**
D_{50} (mm)	**0.048**
D_{60} (mm)	**0.425**
D_{85} (mm)	**15.493**
D_{90} (mm)	**18.593**
C_U	**NA**
C_C	**NA**

Soil Description:

Brown gravelly slightly sandy silty CLAY

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2

STRUCTURAL SOILS
1a Princess Street
Bedminster
Bristol
BS3 4AG

Compiled By	Date
A.D. Frost — **ALAN FROST**	**16/12/21**

Contract: **Langstone Flood & Coastal Erosion Management Scheme**

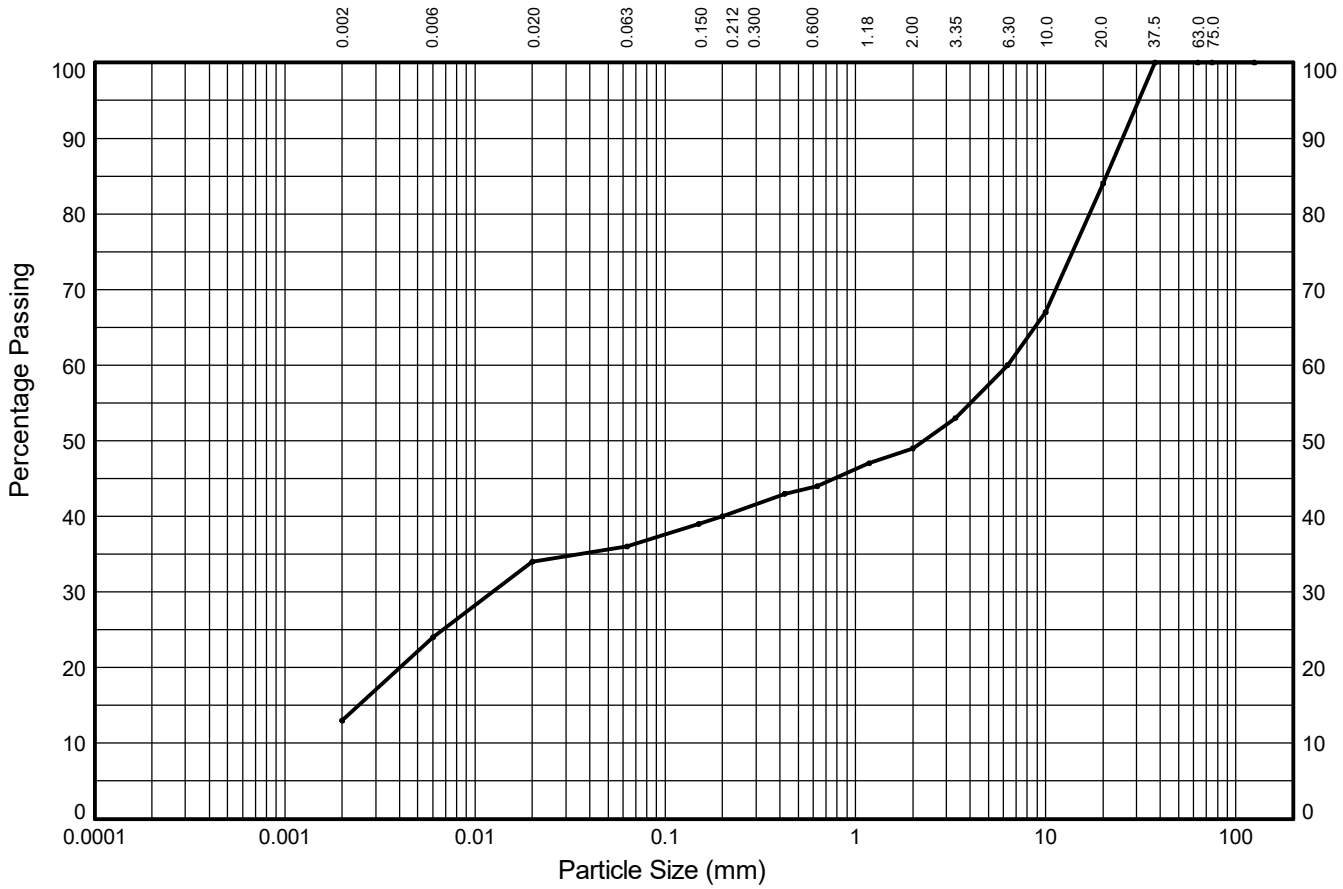
Contract Ref: **736036**

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Graph L - PSD - A4P | 736036_LANGSTONE_FLOOD_&_COASTAL_EROSION_MANAGEMENT_SCHEME.GPJ - v10_01.
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

Position ID: **DS107** Sample Ref: **14** Sample Type: **D** Depth (m): **3.50**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	11%	10%	2%	4%	4%	5%	11%	24%	16%	
	SILT			SAND			GRAVEL			
13%	23%			13%			51%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**84**
10.0	**67**
6.30	**60**
3.35	**53**
2.00	**49**
1.18	**47**
0.630	**44**
0.425	**43**
0.200	**40**
0.150	**39**
0.063	**36**

Particle Diameter (mm)	Percent Passing (%)
0.02	**34**
0.006	**24**
0.002	**13**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**0.002**
D_{30} (mm)	**0.012**
D_{50} (mm)	**2.275**
D_{60} (mm)	**6.300**
D_{85} (mm)	**20.801**
D_{90} (mm)	**25.317**
C_U	**NA**
C_C	**NA**

Soil Description:

Light brown mottled light grey sandy very clayey GRAVEL

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2

STRUCTURAL SOILS
18 Frogmore Road
Hemel Hempstead
Hertfordshire
HP3 9RT

Compiled By	Date
SHARON CAIRNS	16/12/21

Contract: **Langstone Flood & Coastal Erosion Management Scheme**

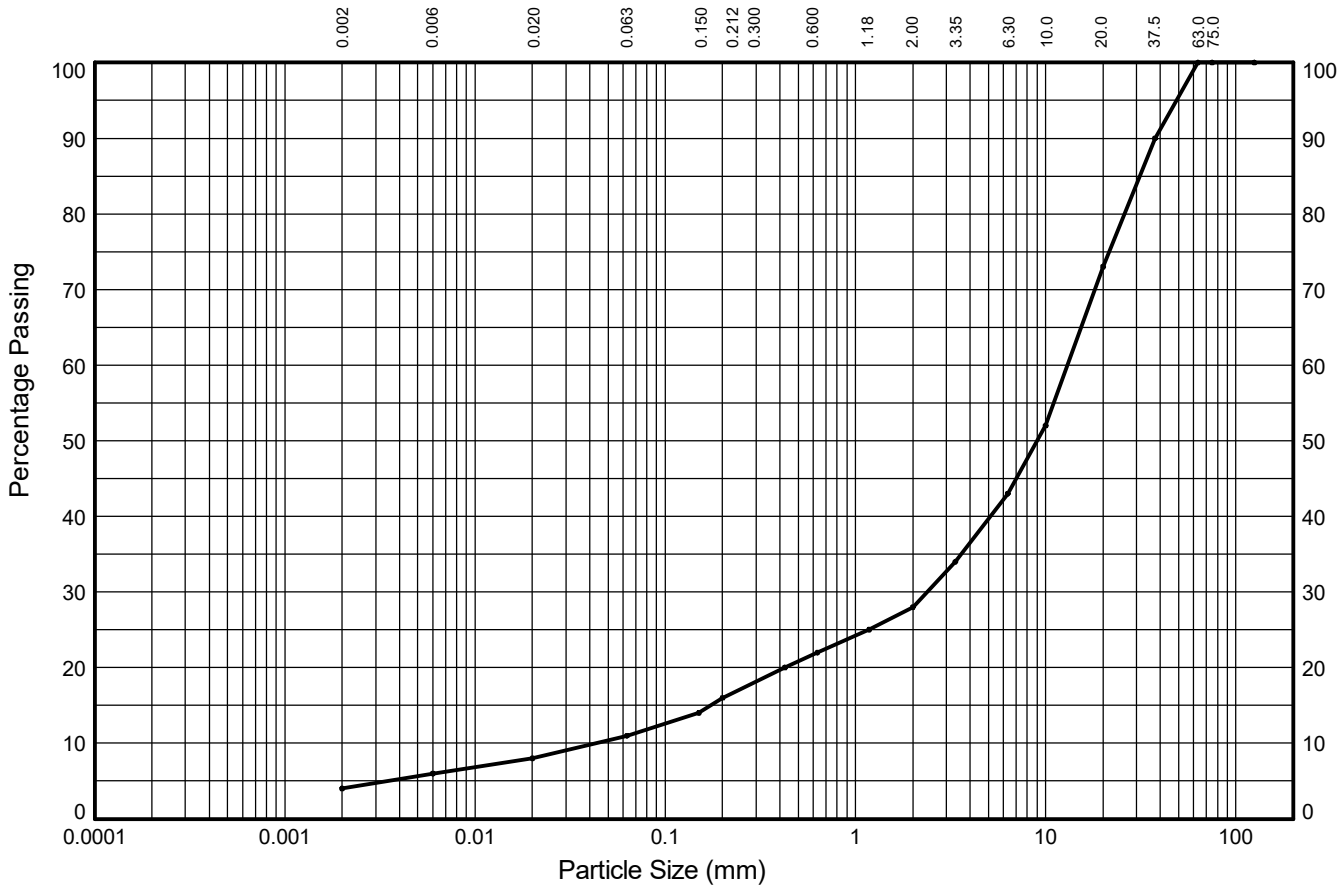
Contract Ref: **736036**

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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

Position ID: **DS109** Sample Ref: **2** Sample Type: **B** Depth (m): **0.30**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	2%	2%	3%	5%	6%	6%	15%	30%	27%	
	SILT			SAND			GRAVEL			
4%	7%			17%			72%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**90**
20.0	**73**
10.0	**52**
6.30	**43**
3.35	**34**
2.00	**28**
1.18	**25**
0.630	**22**
0.425	**20**
0.200	**16**
0.150	**14**
0.063	**11**

Particle Diameter (mm)	Percent Passing (%)
0.02	**8**
0.006	**6**
0.002	**4**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**0.043**
D_{15} (mm)	**0.173**
D_{30} (mm)	**2.375**
D_{50} (mm)	**9.024**
D_{60} (mm)	**13.022**
D_{85} (mm)	**31.170**
D_{90} (mm)	**37.500**
C_U	**303**
C_C	**10**

Soil Description:

Dark brown mottled dark grey and brown sandy clayey GRAVEL

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2

STRUCTURAL SOILS
18 Frogmore Road
Hemel Hempstead
Hertfordshire
HP3 9RT

Compiled By	Date
SHARON CAIRNS	16/12/21

Contract: **Langstone Flood & Coastal Erosion Management Scheme**

Contract Ref: **736036**

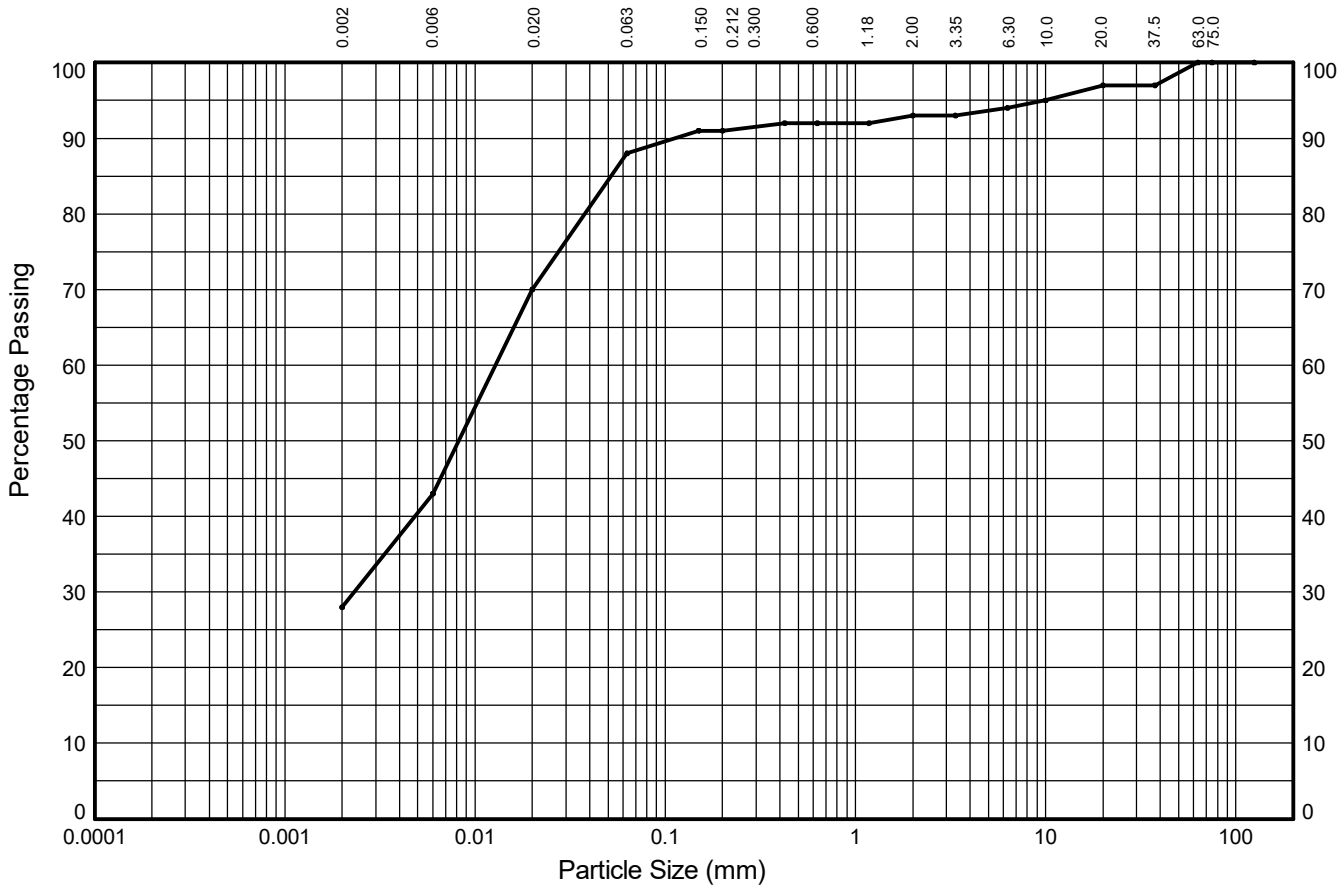
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

Position ID: **DS109** Sample Ref: **4** Sample Type: **B** Depth (m): **0.80**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	16%	26%	18%	3%	1%	1%	1%	3%	3%	
	SILT			SAND			GRAVEL			
28%	60%			5%			7%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**97**
20.0	**97**
10.0	**95**
6.30	**94**
3.35	**93**
2.00	**93**
1.18	**92**
0.630	**92**
0.425	**92**
0.200	**91**
0.150	**91**
0.063	**88**

Particle Diameter (mm)	Percent Passing (%)
0.02	**70**
0.006	**43**
0.002	**28**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**0.002**
D_{50} (mm)	**0.008**
D_{60} (mm)	**0.013**
D_{85} (mm)	**0.052**
D_{90} (mm)	**0.112**
C_U	**NA**
C_C	**NA**

Soil Description:

Brown slightly sandy slightly gravelly silty CLAY

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2

STRUCTURAL SOILS
18 Frogmore Road
Hemel Hempstead
Hertfordshire
HP3 9RT

Compiled By	Date
SHARON CAIRNS	16/12/21

Contract: **Langstone Flood & Coastal Erosion Management Scheme**

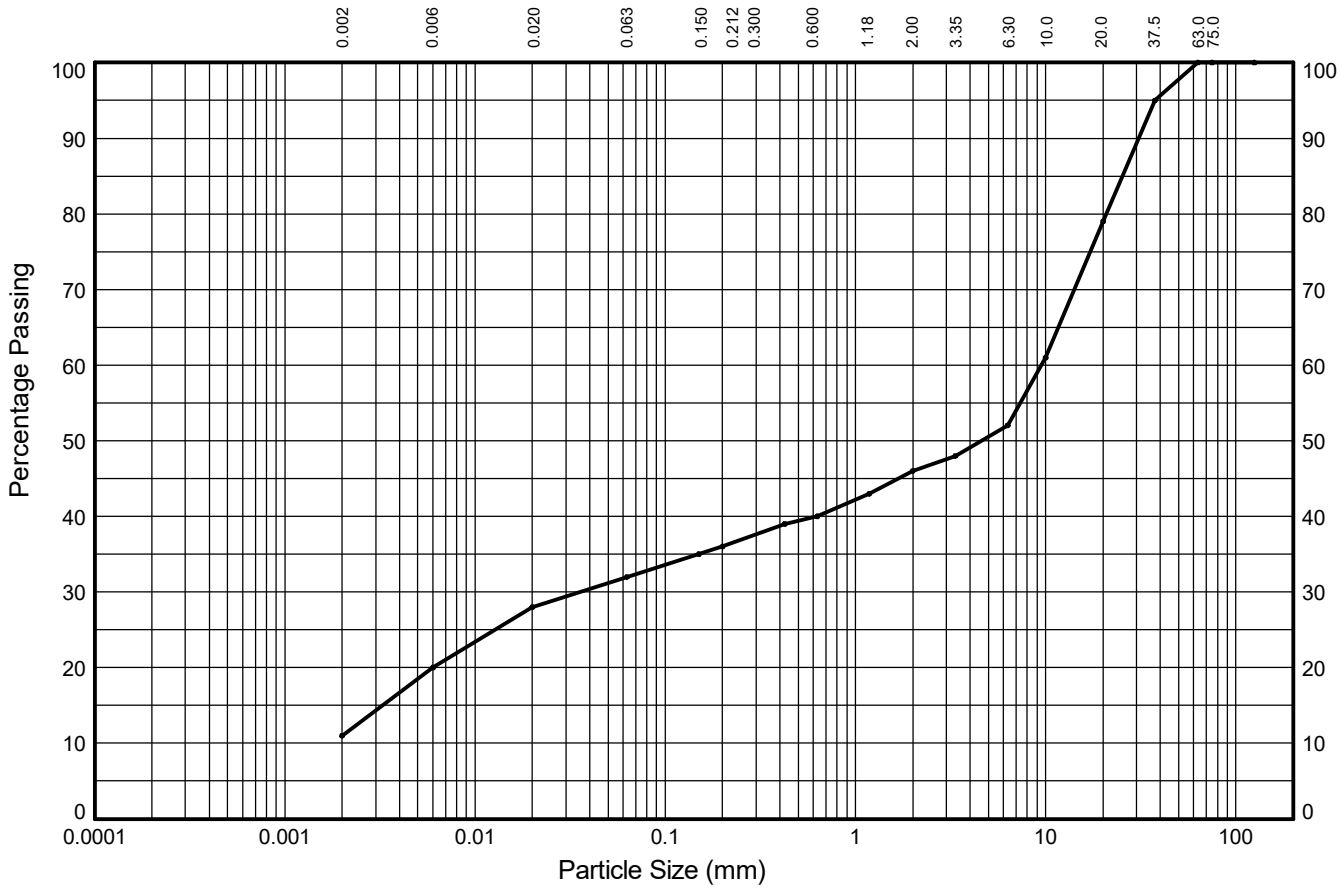
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

Position ID: **DS109** Sample Ref: **12** Sample Type: **B** Depth (m): **2.17**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	9%	8%	4%	4%	4%	6%	6%	27%	21%	
	SILT			SAND			GRAVEL			
11%	21%			14%			54%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**95**
20.0	**79**
10.0	**61**
6.30	**52**
3.35	**48**
2.00	**46**
1.18	**43**
0.630	**40**
0.425	**39**
0.200	**36**
0.150	**35**
0.063	**32**

Particle Diameter (mm)	Percent Passing (%)
0.02	**28**
0.006	**20**
0.002	**11**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**0.003**
D_{30} (mm)	**0.035**
D_{50} (mm)	**4.594**
D_{60} (mm)	**9.500**
D_{85} (mm)	**25.317**
D_{90} (mm)	**30.812**
C_U	**NA**
C_C	**NA**

Soil Description:

Light grey sandy very clayey GRAVEL with chalk

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2

STRUCTURAL SOILS
18 Frogmore Road
Hemel Hempstead
Hertfordshire
HP3 9RT

Compiled By	Date
SHARON CAIRNS	16/12/21

Contract: **Langstone Flood & Coastal Erosion Management Scheme**

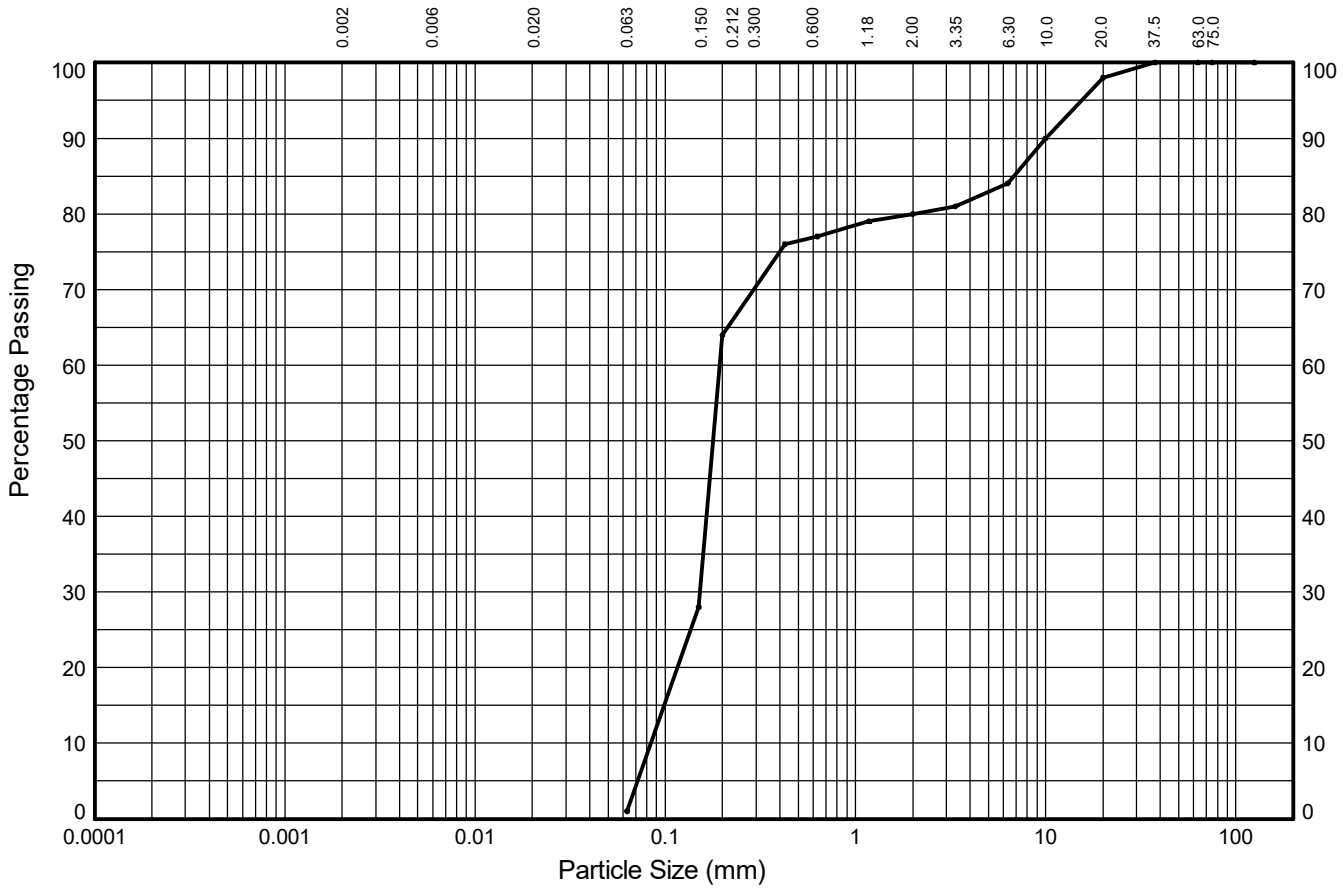
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2 of BS EN ISO 17892:Part 4:2016

Position ID: **DS110** Sample Ref: **1** Sample Type: **D** Depth (m): **0.20**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	-	-	-	63%	13%	3%	4%	14%	2%	
	SILT			SAND			GRAVEL			
1%				79%			20%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**98**
10.0	**90**
6.30	**84**
3.35	**81**
2.00	**80**
1.18	**79**
0.630	**77**
0.425	**76**
0.200	**64**
0.150	**28**
0.063	**1**

Particle Diameter (mm)	Percent Passing (%)

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**0.084**
D_{15} (mm)	**0.099**
D_{30} (mm)	**0.152**
D_{50} (mm)	**0.179**
D_{60} (mm)	**0.194**
D_{85} (mm)	**6.804**
D_{90} (mm)	**10.000**
C_U	**2.3**
C_C	**1.4**

Soil Description:

Light brow mottled orangish brown gravelly slightly clayey SAND

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2

STRUCTURAL SOILS
18 Frogmore Road
Hemel Hempstead
Hertfordshire
HP3 9RT

Compiled By	Date
DAVID NICKELLS	16/12/21

Contract: **Langstone Flood & Coastal Erosion Management Scheme**

Contract Ref: **736036**

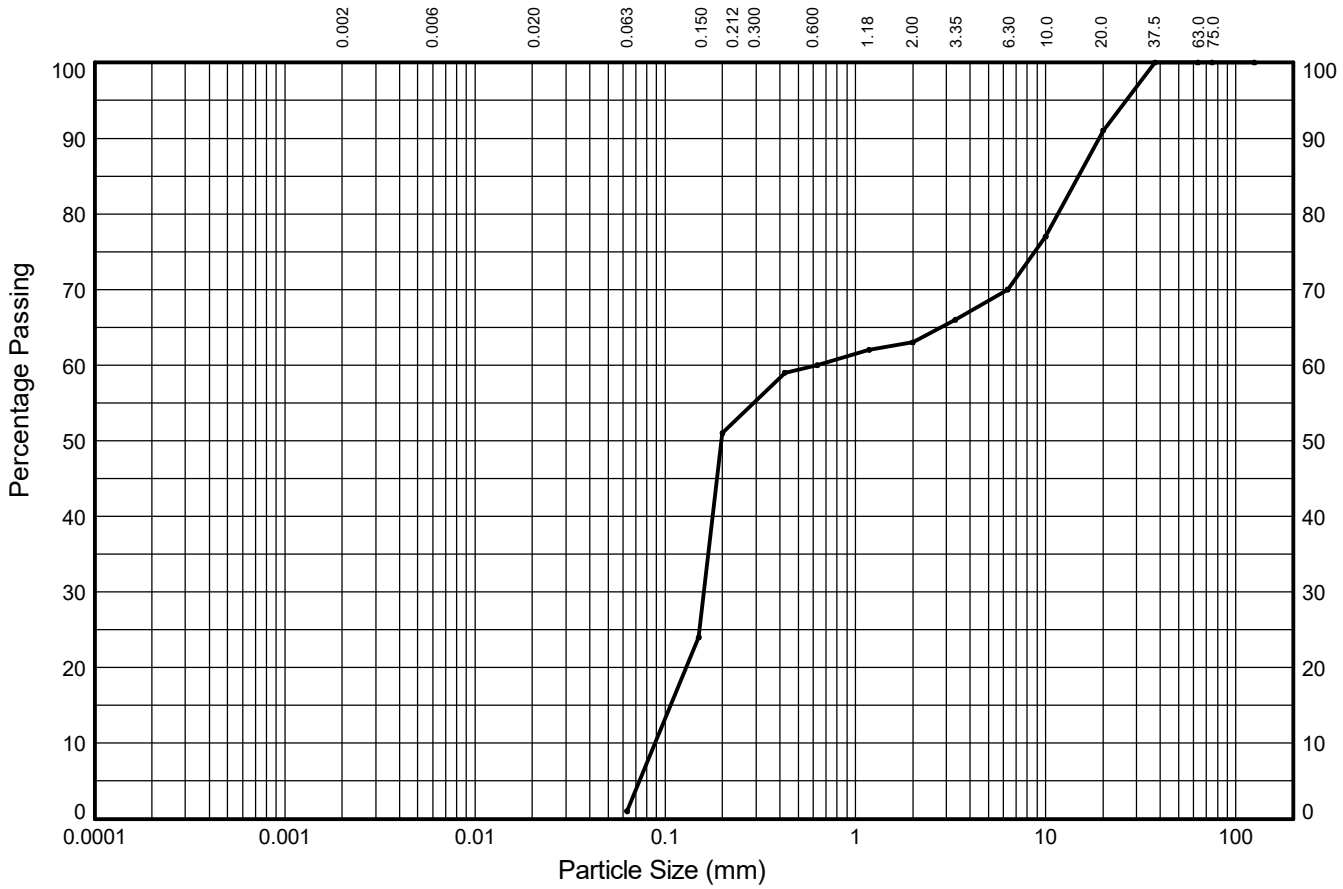
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2 of BS EN ISO 17892:Part 4:2016

Position ID: **DS110** Sample Ref: **2** Sample Type: **B** Depth (m): **0.30**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	-	-	-	50%	9%	3%	7%	21%	9%	
	SILT			SAND			GRAVEL			
1%				62%			37%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**91**
10.0	**77**
6.30	**70**
3.35	**66**
2.00	**63**
1.18	**62**
0.630	**60**
0.425	**59**
0.200	**51**
0.150	**24**
0.063	**1**

Particle Diameter (mm)	Percent Passing (%)

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**0.088**
D_{15} (mm)	**0.107**
D_{30} (mm)	**0.160**
D_{50} (mm)	**0.198**
D_{60} (mm)	**0.630**
D_{85} (mm)	**14.860**
D_{90} (mm)	**19.034**
C_U	**7.1**
C_C	**0.46**

Soil Description:

Very light brown mottled orangish brown very gravelly slightly clayey SAND

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2

STRUCTURAL SOILS
18 Frogmore Road
Hemel Hempstead
Hertfordshire
HP3 9RT

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DAVID NICKELLS	16/12/21

Contract: **Langstone Flood & Coastal Erosion Management Scheme**

Contract Ref: **736036**

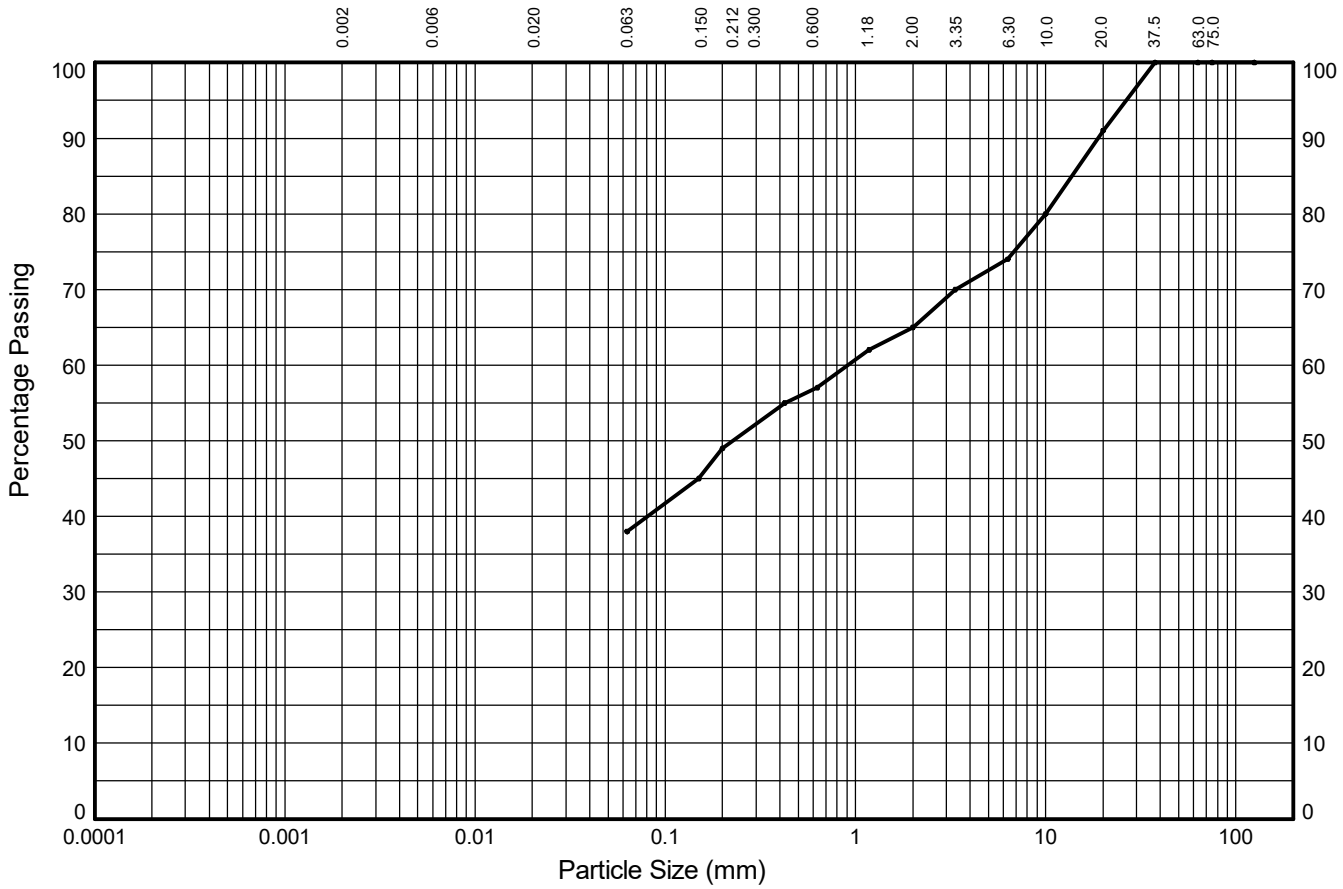
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2 of BS EN ISO 17892:Part 4:2016

Position ID: **HDTP102** Sample Ref: **2** Sample Type: **B** Depth (m): **0.30**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	-	-	-	11%	8%	8%	9%	17%	9%	
	SILT			SAND			GRAVEL			
38%				27%			35%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**91**
10.0	**80**
6.30	**74**
3.35	**70**
2.00	**65**
1.18	**62**
0.630	**57**
0.425	**55**
0.200	**49**
0.150	**45**
0.063	**38**

Particle Diameter (mm)	Percent Passing (%)

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**NA**
D_{50} (mm)	**0.227**
D_{60} (mm)	**0.918**
D_{85} (mm)	**13.704**
D_{90} (mm)	**18.779**
C_U	**NA**
C_C	**NA**

Soil Description:

Dark brown mottled white and red gravelly slightly sandy CLAY.
MAN MADE MATERIAL

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2

STRUCTURAL SOILS
18 Frogmore Road
Hemel Hempstead
Hertfordshire
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Compiled By	Date
DAVID NICKELLS	16/12/21

Contract: **Langstone Flood & Coastal Erosion Management Scheme**

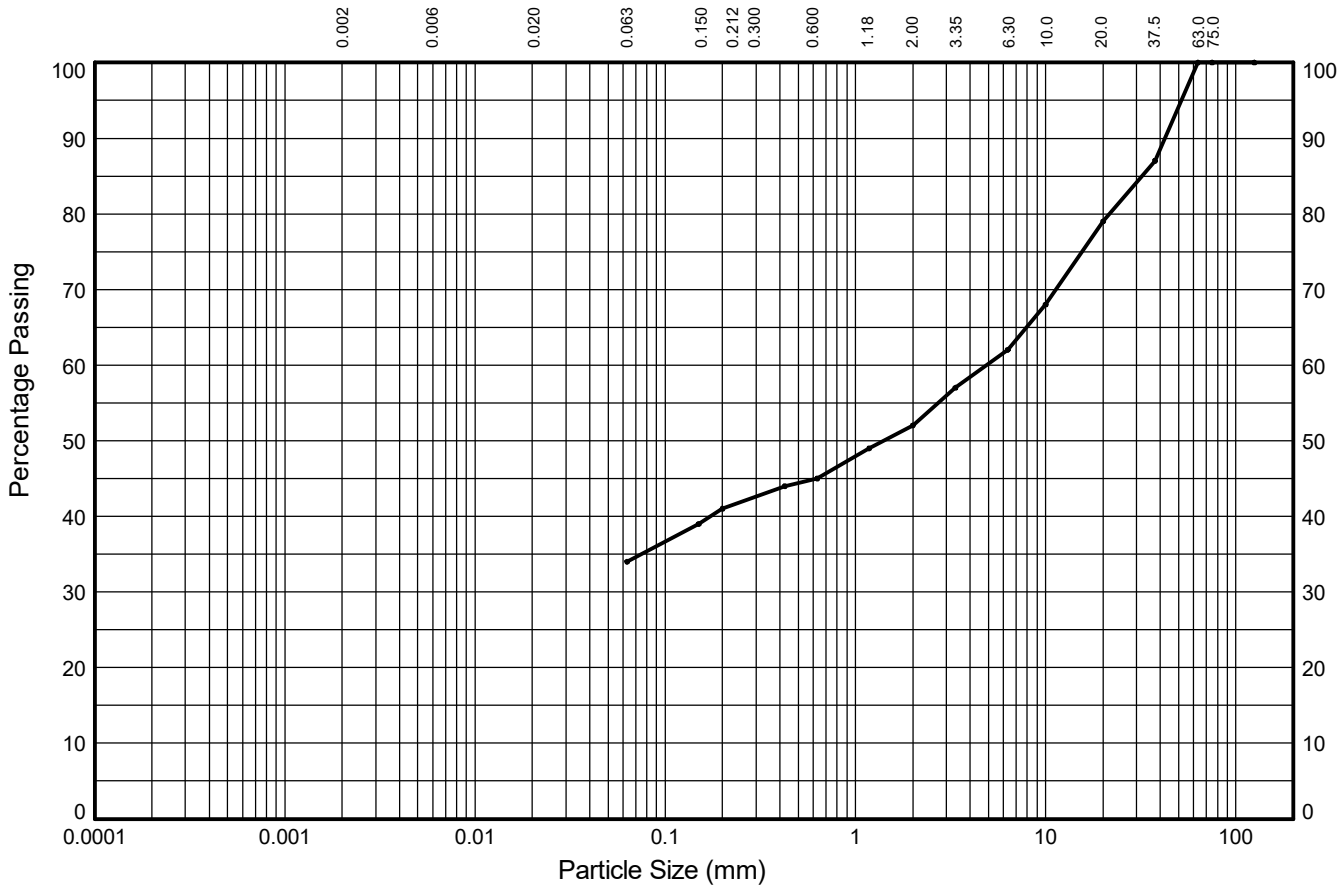
Contract Ref: **736036**

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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2 of BS EN ISO 17892:Part 4:2016

Position ID: **HDTP102** Sample Ref: **4** Sample Type: **B** Depth (m): **0.80**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	-	-	-	7%	4%	7%	10%	17%	21%	
	SILT			SAND			GRAVEL			
34%				18%			48%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**87**
20.0	**79**
10.0	**68**
6.30	**62**
3.35	**57**
2.00	**52**
1.18	**49**
0.630	**45**
0.425	**44**
0.200	**41**
0.150	**39**
0.063	**34**

Particle Diameter (mm)	Percent Passing (%)

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**NA**
D_{50} (mm)	**1.407**
D_{60} (mm)	**4.894**
D_{85} (mm)	**32.047**
D_{90} (mm)	**42.269**
C_U	**NA**
C_C	**NA**

Soil Description:

Brown mottled white sandy very clayey GRAVEL with shell fragments

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2

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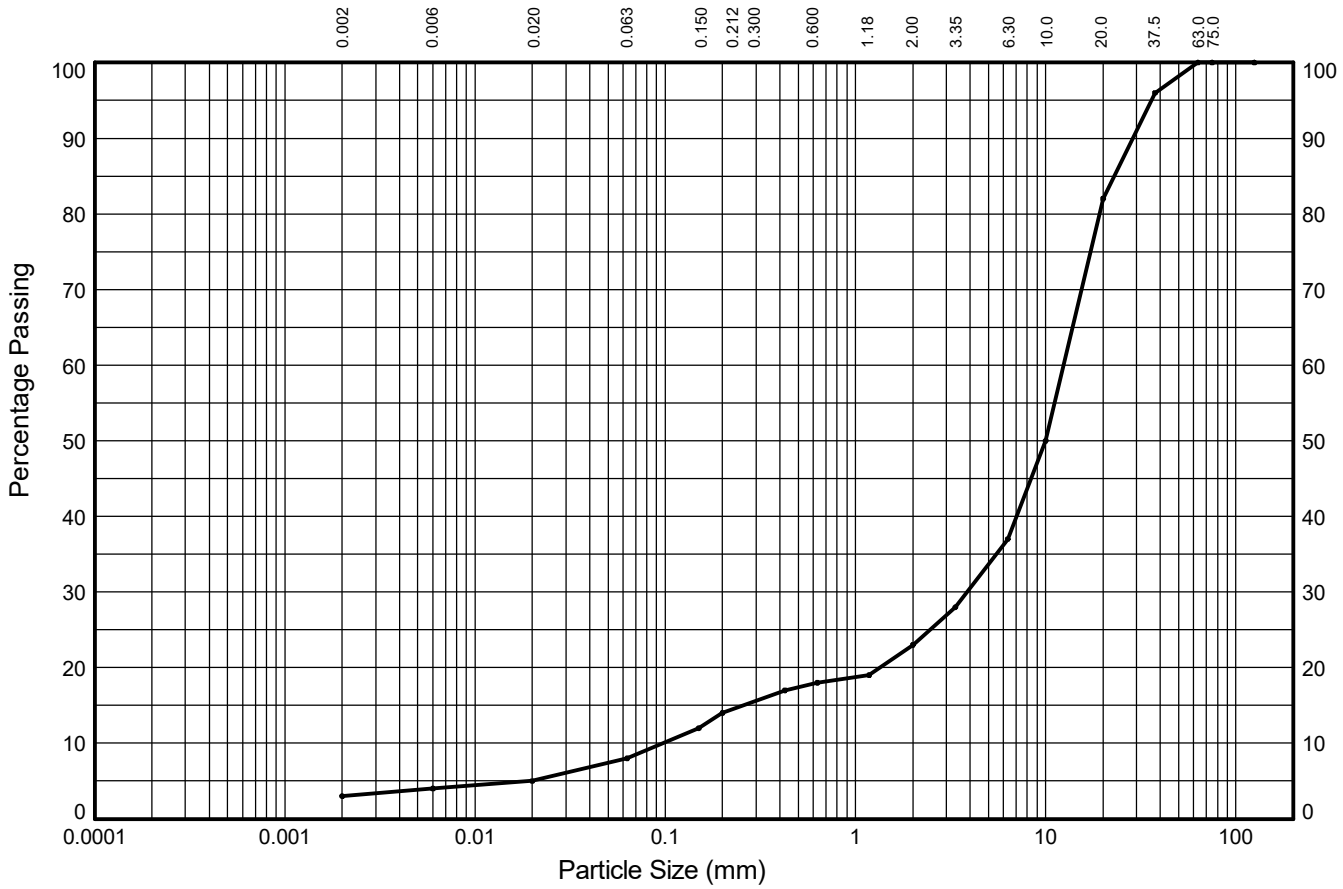
Contract Ref: **736036**

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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

Position ID: **HDTP103** Sample Ref: **2** Sample Type: **B** Depth (m): **0.20**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	1%	1%	3%	6%	4%	5%	14%	45%	18%	
	SILT			SAND			GRAVEL			
3%	5%			15%			77%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**96**
20.0	**82**
10.0	**50**
6.30	**37**
3.35	**28**
2.00	**23**
1.18	**19**
0.630	**18**
0.425	**17**
0.200	**14**
0.150	**12**
0.063	**8**

Particle Diameter (mm)	Percent Passing (%)
0.02	**5**
0.006	**4**
0.002	**3**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**0.097**
D_{15} (mm)	**0.257**
D_{30} (mm)	**3.855**
D_{50} (mm)	**10.000**
D_{60} (mm)	**12.419**
D_{85} (mm)	**22.884**
D_{90} (mm)	**28.644**
C_U	**128**
C_C	**12**

Soil Description:

Grey mottled dark grey sandy slightly clayey GRAVEL

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2

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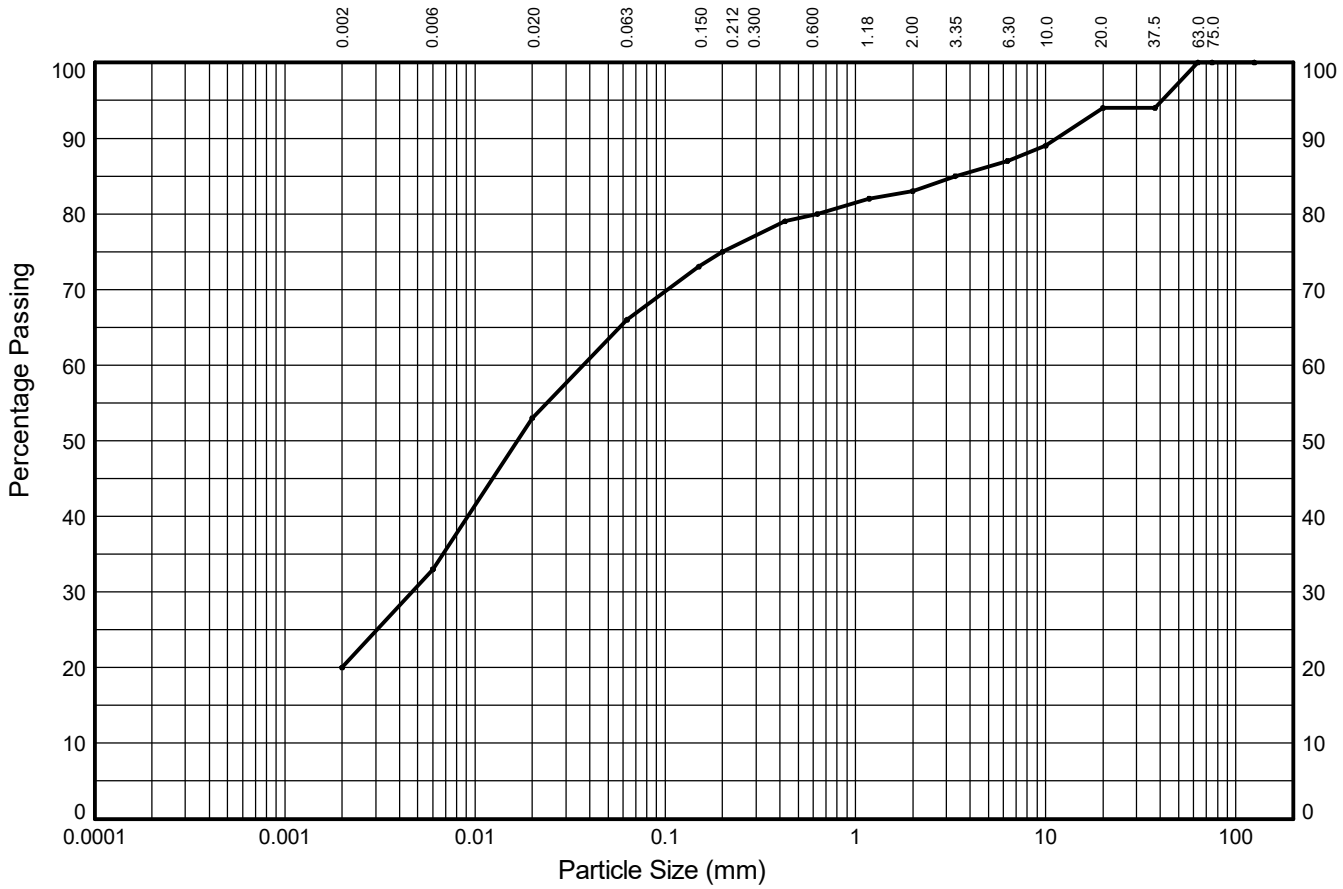
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

Position ID: **HDTP104** Sample Ref: **2** Sample Type: **B** Depth (m): **0.40**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	13%	20%	13%	9%	5%	3%	4%	7%	6%	
	SILT			SAND			GRAVEL			
20%	46%			17%			17%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**94**
20.0	**94**
10.0	**89**
6.30	**87**
3.35	**85**
2.00	**83**
1.18	**82**
0.630	**80**
0.425	**79**
0.200	**75**
0.150	**73**
0.063	**66**

Particle Diameter (mm)	Percent Passing (%)
0.02	**53**
0.006	**33**
0.002	**20**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**0.005**
D_{50} (mm)	**0.017**
D_{60} (mm)	**0.037**
D_{85} (mm)	**3.350**
D_{90} (mm)	**11.487**
C_U	**NA**
C_C	**NA**

Soil Description:

Brown mottled black slightly gravelly slightly sandy SILT with organics

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2

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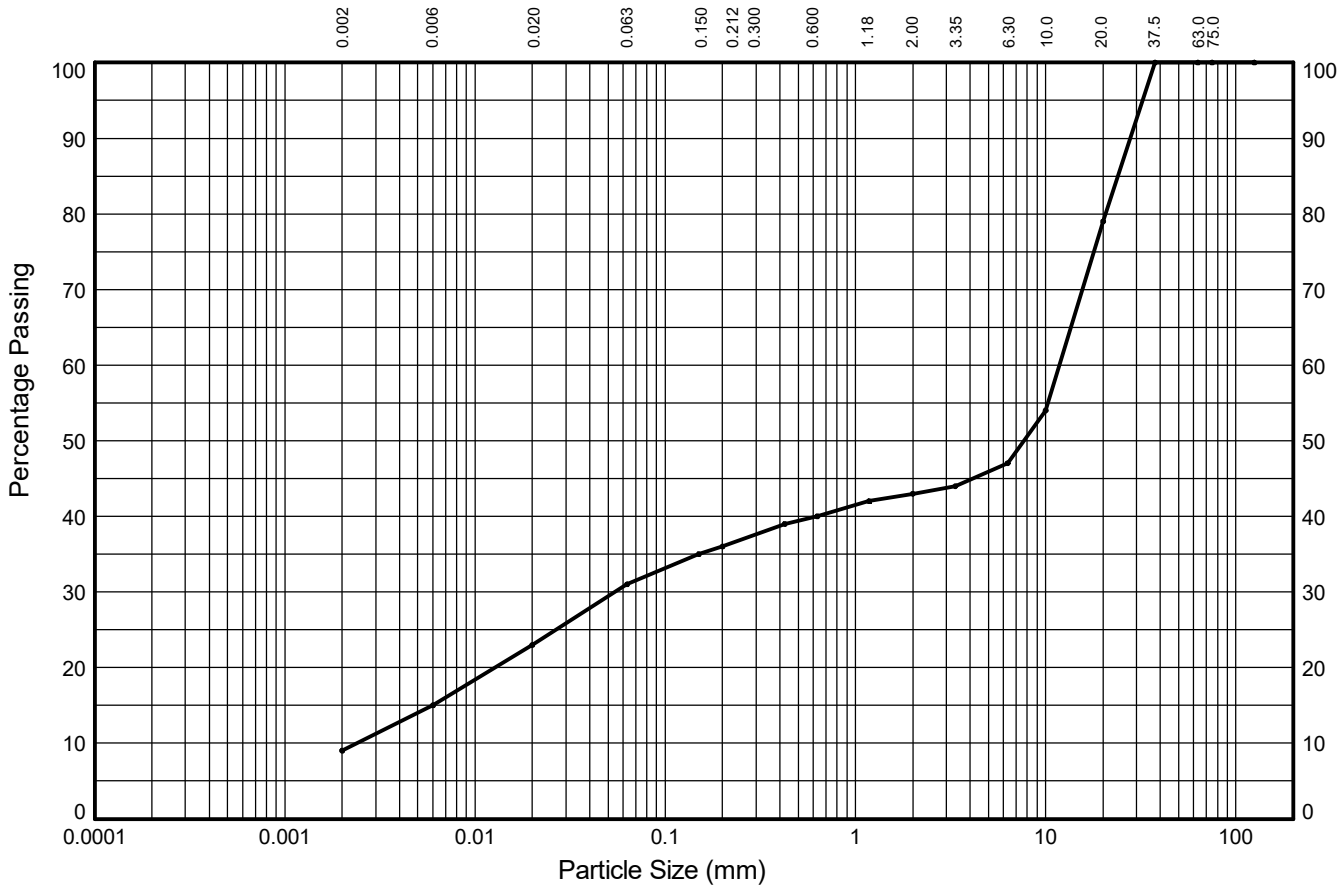
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

Position ID: **HDTP104** Sample Ref: **3** Sample Type: **B** Depth (m): **0.80**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	6%	8%	8%	5%	4%	3%	4%	32%	21%	
	SILT			SAND			GRAVEL			
9%	22%			12%			57%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**79**
10.0	**54**
6.30	**47**
3.35	**44**
2.00	**43**
1.18	**42**
0.630	**40**
0.425	**39**
0.200	**36**
0.150	**35**
0.063	**31**

Particle Diameter (mm)	Percent Passing (%)
0.02	**23**
0.006	**15**
0.002	**9**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**0.002**
D_{15} (mm)	**0.006**
D_{30} (mm)	**0.055**
D_{50} (mm)	**7.680**
D_{60} (mm)	**11.810**
D_{85} (mm)	**23.935**
D_{90} (mm)	**27.799**
C_U	**4917**
C_C	**0.11**

Soil Description:

Brown mottled greenish brown and greyish brown slightly gravelly slightly sandy CLAY

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2

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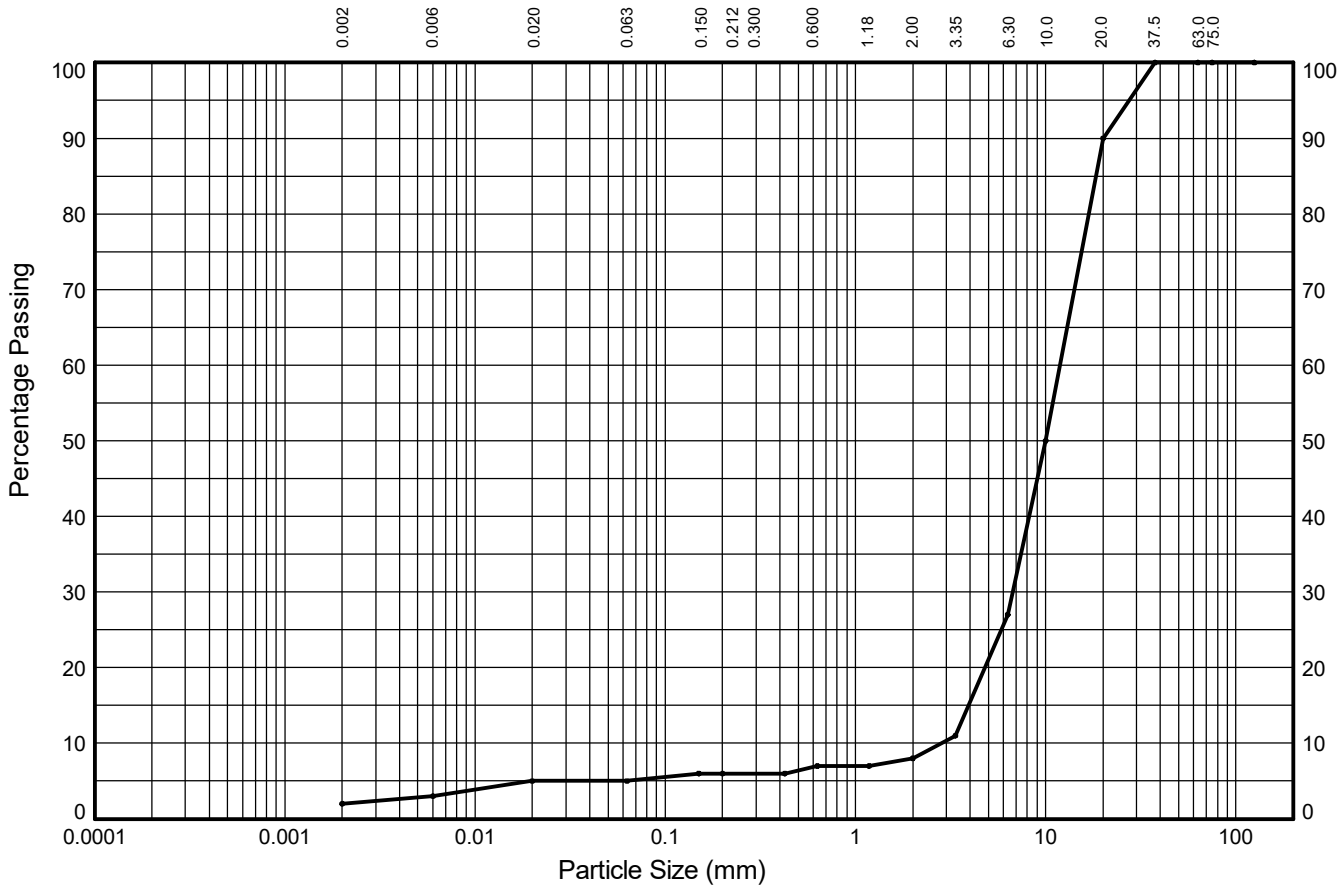
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

Position ID: **HDTP105** Sample Ref: **1** Sample Type: **LB** Depth (m): **0.30**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	1%	2%	0%	1%	1%	1%	19%	63%	10%	
	SILT			SAND			GRAVEL			
2%	3%			3%			92%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**90**
10.0	**50**
6.30	**27**
3.35	**11**
2.00	**8**
1.18	**7**
0.630	**7**
0.425	**6**
0.200	**6**
0.150	**6**
0.063	**5**

Particle Diameter (mm)	Percent Passing (%)
0.02	**5**
0.006	**3**
0.002	**2**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**2.821**
D_{15} (mm)	**3.923**
D_{30} (mm)	**6.691**
D_{50} (mm)	**10.000**
D_{60} (mm)	**11.892**
D_{85} (mm)	**18.340**
D_{90} (mm)	**20.000**
C_U	**4.2**
C_C	**1.3**

Soil Description:

Brown slightly sandy slightly silty GRAVEL

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2

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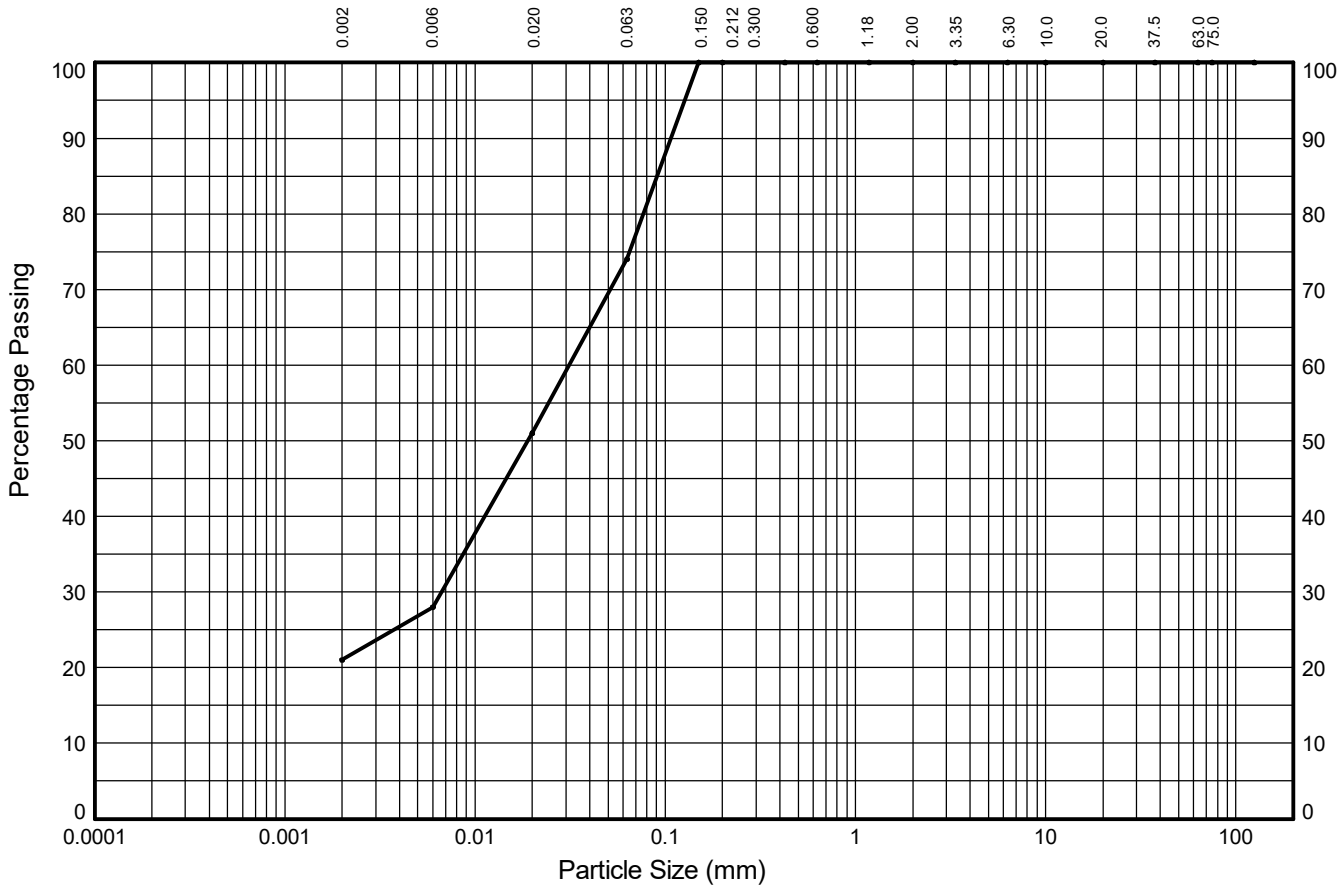
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

Position ID: **HDTP106** Sample Ref: **2** Sample Type: **B** Depth (m): **0.30**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	7%	23%	23%	26%	0%	0%	0%	0%	0%	
	SILT			SAND			GRAVEL			
21%	53%			26%			0%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**100**
10.0	**100**
6.30	**100**
3.35	**100**
2.00	**100**
1.18	**100**
0.630	**100**
0.425	**100**
0.200	**100**
0.150	**100**
0.063	**74**

Particle Diameter (mm)	Percent Passing (%)
0.02	**51**
0.006	**28**
0.002	**21**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**0.007**
D_{50} (mm)	**0.019**
D_{60} (mm)	**0.031**
D_{85} (mm)	**0.091**
D_{90} (mm)	**0.107**
C_U	**NA**
C_C	**NA**

Soil Description:

Brown mottled dark brown slightly sandy SILT

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2

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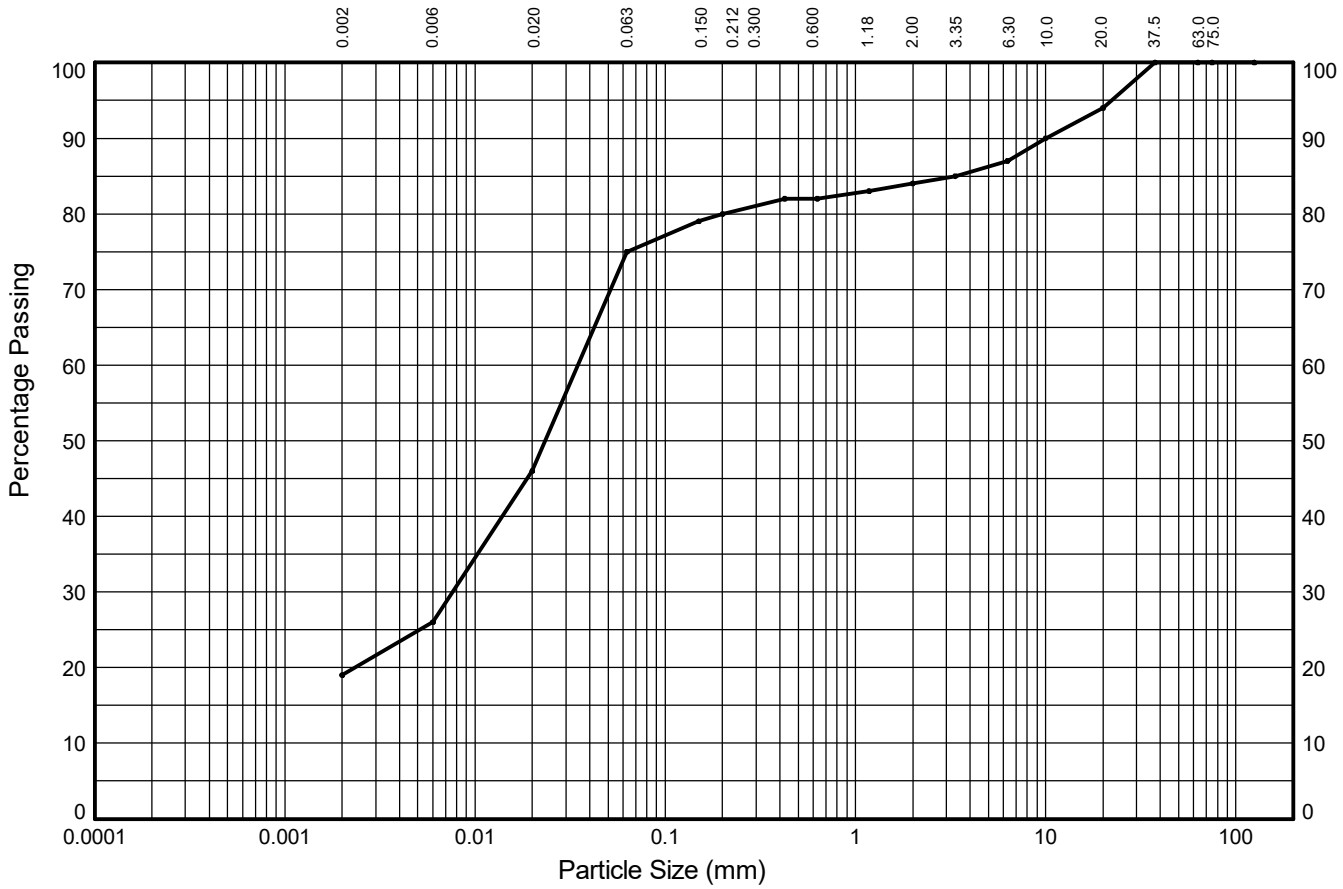
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

Position ID: **HDTP106** Sample Ref: **4** Sample Type: **B** Depth (m): **0.80**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	7%	20%	29%	5%	2%	2%	3%	7%	6%	
	SILT			SAND			GRAVEL			
19%	56%			9%			16%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**94**
10.0	**90**
6.30	**87**
3.35	**85**
2.00	**84**
1.18	**83**
0.630	**82**
0.425	**82**
0.200	**80**
0.150	**79**
0.063	**75**

Particle Diameter (mm)	Percent Passing (%)
0.02	**46**
0.006	**26**
0.002	**19**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**0.008**
D_{50} (mm)	**0.023**
D_{60} (mm)	**0.035**
D_{85} (mm)	**3.350**
D_{90} (mm)	**10.000**
C_U	**NA**
C_C	**NA**

Soil Description:

Brown slightly gravelly slightly sandy SILT

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2

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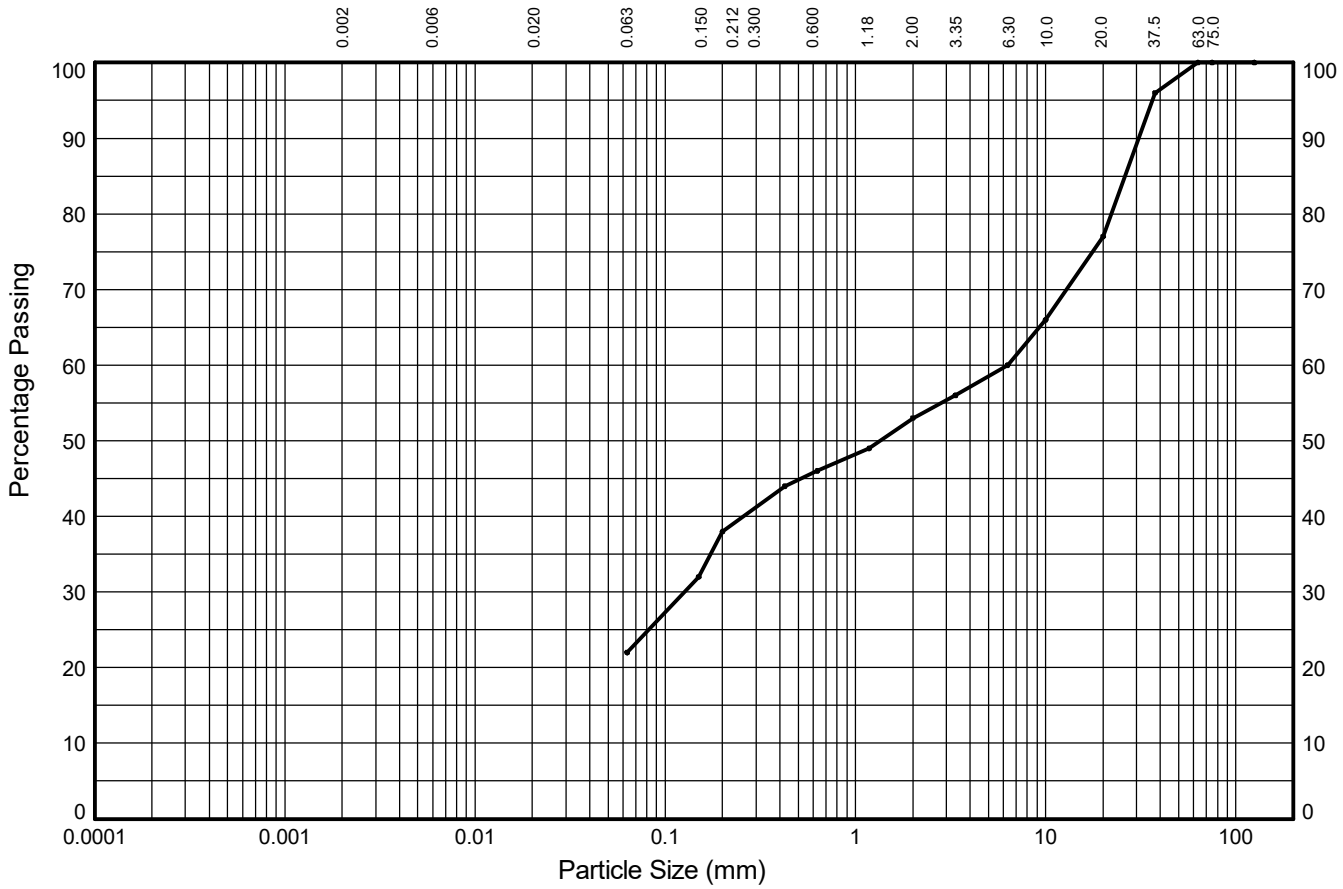
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2 of BS EN ISO 17892:Part 4:2016

Position ID: **HDTP107** Sample Ref: **2** Sample Type: **B** Depth (m): **0.30**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	-	-	-	16%	8%	7%	7%	17%	23%	
	SILT			SAND			GRAVEL			
22%				31%			47%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**96**
20.0	**77**
10.0	**66**
6.30	**60**
3.35	**56**
2.00	**53**
1.18	**49**
0.630	**46**
0.425	**44**
0.200	**38**
0.150	**32**
0.063	**22**

Particle Diameter (mm)	Percent Passing (%)

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**0.126**
D_{50} (mm)	**1.346**
D_{60} (mm)	**6.300**
D_{85} (mm)	**26.060**
D_{90} (mm)	**30.748**
C_U	**NA**
C_C	**NA**

Soil Description:

Dark brown very sandy very clayey GRAVEL. MADE-GROUND

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2

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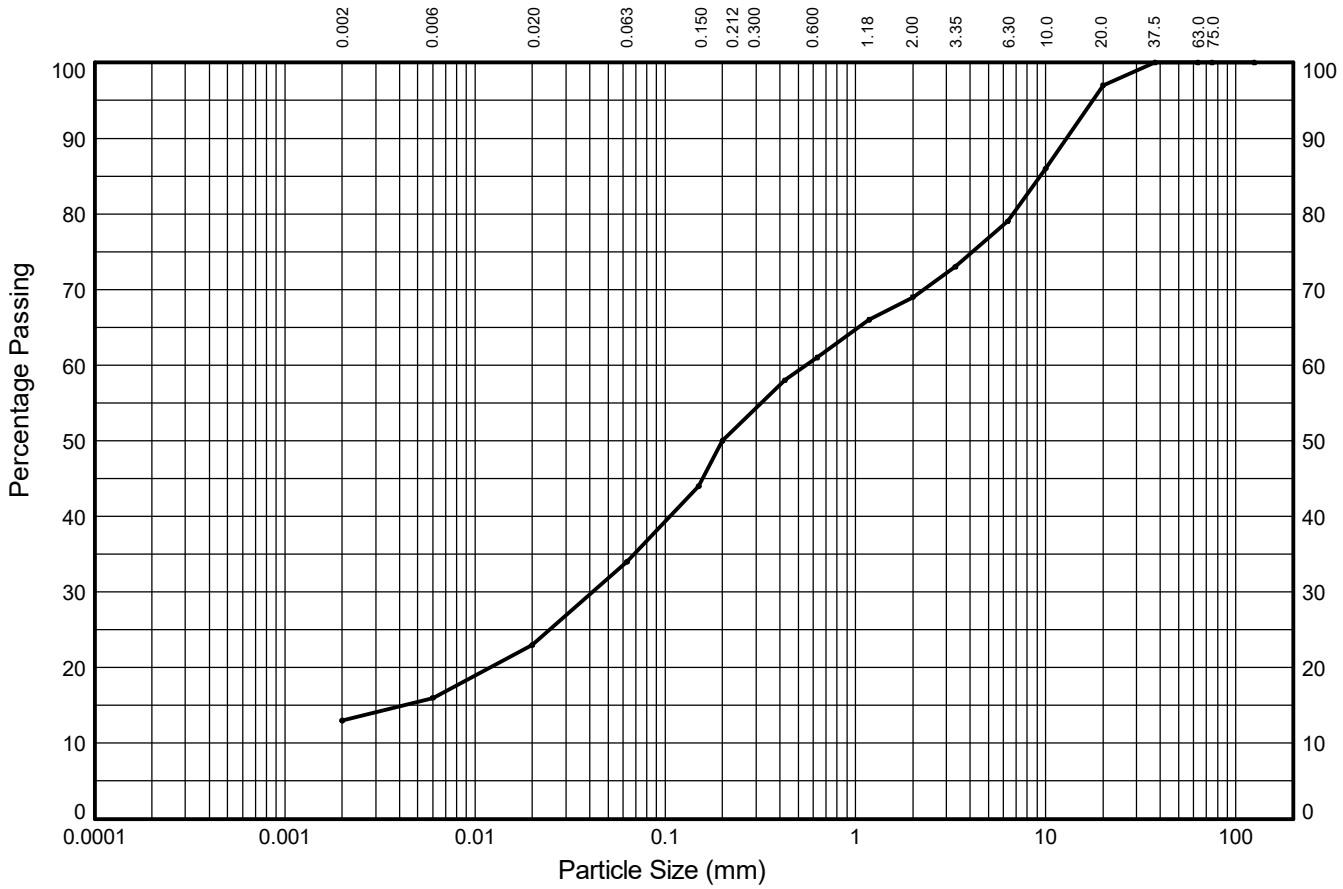
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

Position ID: **HDTP108** Sample Ref: **1** Sample Type: **B** Depth (m): **0.20**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	3%	7%	11%	16%	11%	8%	10%	18%	3%	
	SILT			SAND			GRAVEL			
13%	21%			35%			31%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**97**
10.0	**86**
6.30	**79**
3.35	**73**
2.00	**69**
1.18	**66**
0.630	**61**
0.425	**58**
0.200	**50**
0.150	**44**
0.063	**34**

Particle Diameter (mm)	Percent Passing (%)
0.02	**23**
0.006	**16**
0.002	**13**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**0.004**
D_{30} (mm)	**0.042**
D_{50} (mm)	**0.200**
D_{60} (mm)	**0.553**
D_{85} (mm)	**9.361**
D_{90} (mm)	**12.867**
C_U	**NA**
C_C	**NA**

Soil Description:

Dark brown very gravelly very silty SAND. MAN MADE MATERIAL

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2

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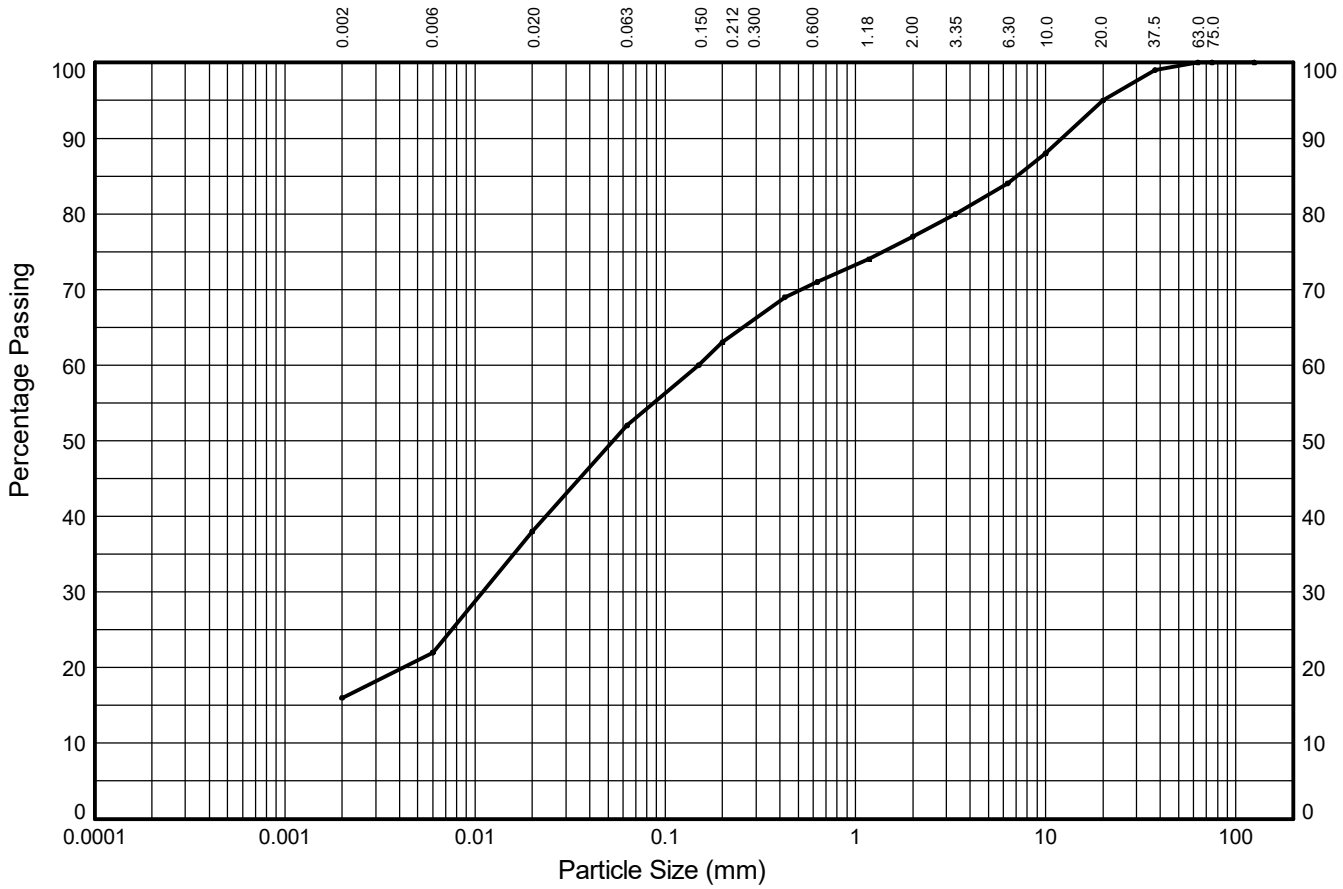
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

Position ID: **HDTP108** Sample Ref: **3** Sample Type: **B** Depth (m): **0.70**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	6%	16%	14%	11%	8%	6%	7%	11%	5%	
	SILT			SAND			GRAVEL			
16%	36%			25%			23%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**99**
20.0	**95**
10.0	**88**
6.30	**84**
3.35	**80**
2.00	**77**
1.18	**74**
0.630	**71**
0.425	**69**
0.200	**63**
0.150	**60**
0.063	**52**

Particle Diameter (mm)	Percent Passing (%)
0.02	**38**
0.006	**22**
0.002	**16**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**0.011**
D_{50} (mm)	**0.053**
D_{60} (mm)	**0.150**
D_{85} (mm)	**7.071**
D_{90} (mm)	**12.190**
C_U	**NA**
C_C	**NA**

Soil Description:

Very dark brown mottled orangish brown and white slightly gravelly slightly sandy CLAY with man-made material

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2

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18 Frogmore Road
Hemel Hempstead
Hertfordshire
HP3 9RT

Compiled By	Date
DAVID NICKELLS	16/12/21

Contract	Contract Ref:
Langstone Flood & Coastal Erosion Management Scheme	**736036**

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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2 of BS EN ISO 17892:Part 4:2016

Position ID: **HDTP109** Sample Ref: **2** Sample Type: **B** Depth (m): **0.30**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	-	-	-	12%	8%	7%	8%	16%	11%	
	SILT			SAND			GRAVEL			
38%				27%			35%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**89**
10.0	**80**
6.30	**73**
3.35	**68**
2.00	**65**
1.18	**61**
0.630	**58**
0.425	**55**
0.200	**50**
0.150	**47**
0.063	**38**

Particle Diameter (mm)	Percent Passing (%)

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**NA**
D_{50} (mm)	**0.200**
D_{60} (mm)	**0.957**
D_{85} (mm)	**14.697**
D_{90} (mm)	**21.176**
C_U	**NA**
C_C	**NA**

Soil Description:

Dark brown mottled red gravelly slightly sandy CLAY with man made material

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2

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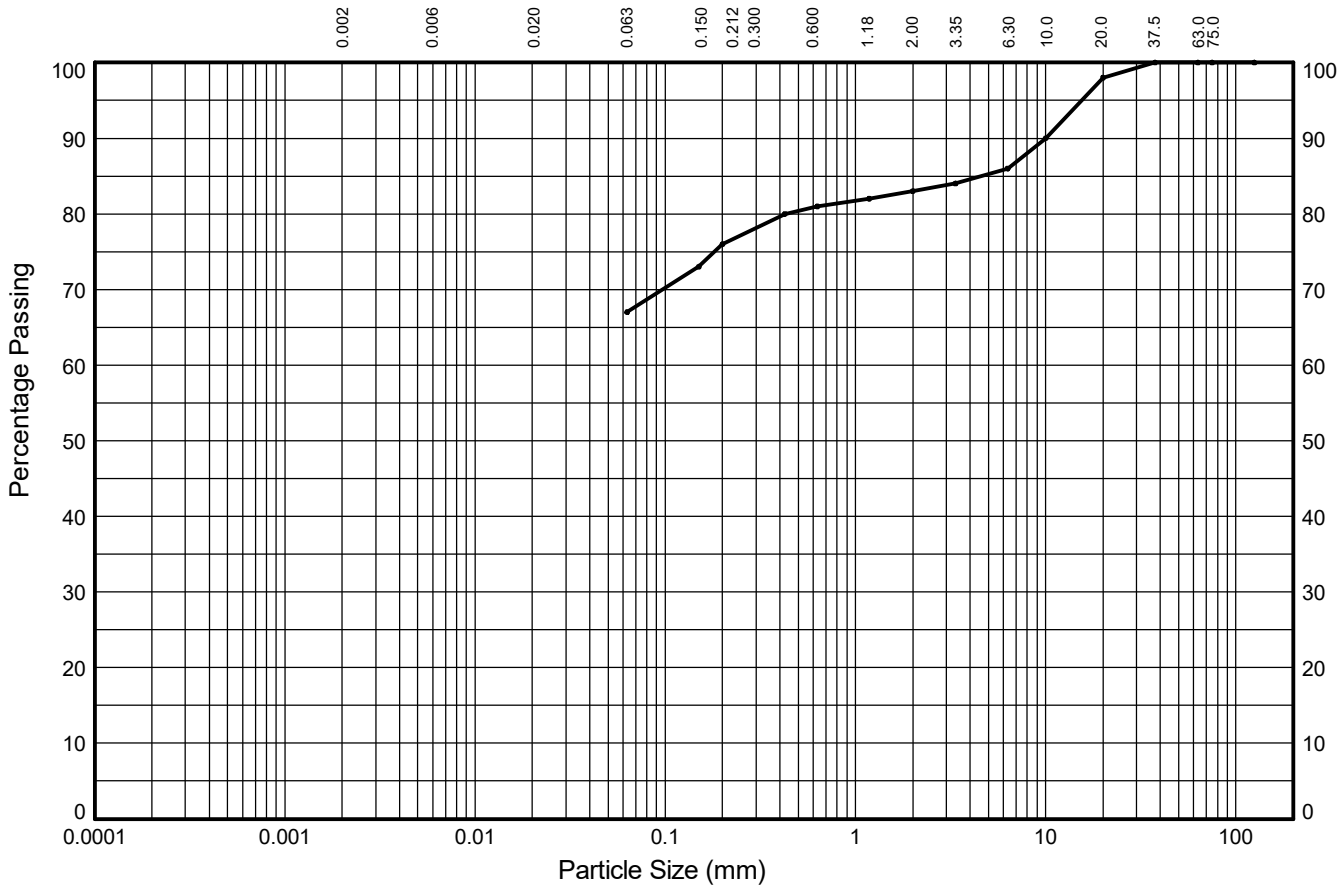
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2 of BS EN ISO 17892:Part 4:2016

Position ID: **HDTP109** Sample Ref: **4** Sample Type: **B** Depth (m): **1.00**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	-	-	-	9%	5%	2%	3%	12%	2%	
	SILT			SAND			GRAVEL			
67%				16%			17%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**98**
10.0	**90**
6.30	**86**
3.35	**84**
2.00	**83**
1.18	**82**
0.630	**81**
0.425	**80**
0.200	**76**
0.150	**73**
0.063	**67**

Particle Diameter (mm)	Percent Passing (%)

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**NA**
D_{50} (mm)	**NA**
D_{60} (mm)	**NA**
D_{85} (mm)	**4.594**
D_{90} (mm)	**10.000**
C_U	**NA**
C_C	**NA**

Soil Description:

Dark brown mottled orangish brown sandy gravelly CLAY

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2

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Contract Ref: **736036**

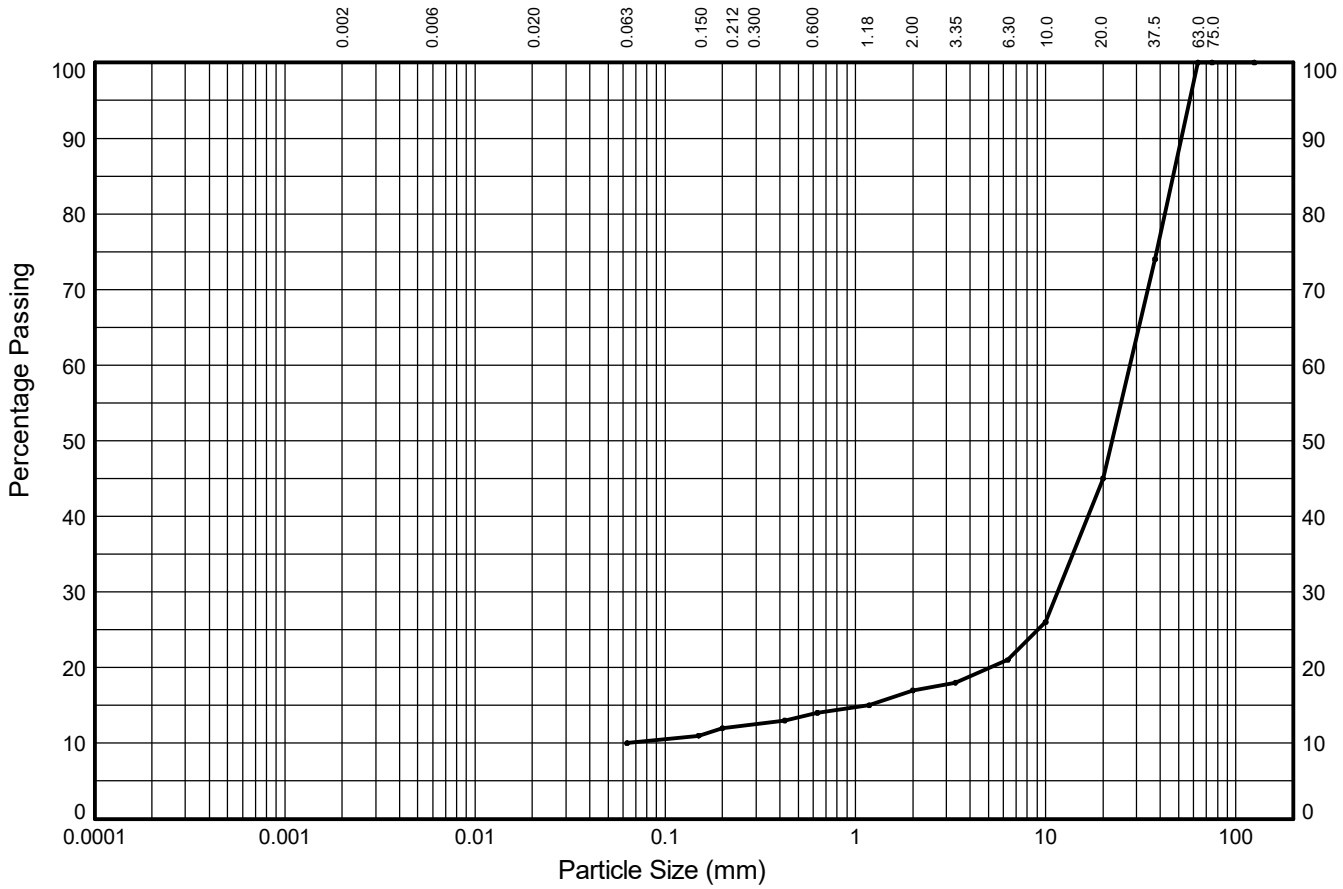
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2 of BS EN ISO 17892:Part 4:2016

Position ID: **HDTP111** Sample Ref: **3** Sample Type: **B** Depth (m): **0.70**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	-	-	-	2%	2%	3%	4%	24%	55%	
	SILT			SAND			GRAVEL			
10%				7%			83%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**74**
20.0	**45**
10.0	**26**
6.30	**21**
3.35	**18**
2.00	**17**
1.18	**15**
0.630	**14**
0.425	**13**
0.200	**12**
0.150	**11**
0.063	**10**

Particle Diameter (mm)	Percent Passing (%)

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**0.063**
D_{15} (mm)	**1.180**
D_{30} (mm)	**11.571**
D_{50} (mm)	**22.289**
D_{60} (mm)	**27.685**
D_{85} (mm)	**46.704**
D_{90} (mm)	**51.604**
C_U	**439**
C_C	**77**

Soil Description:

Dark brown mottled very dark grey sandy clayey GRAVEL with organics

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2

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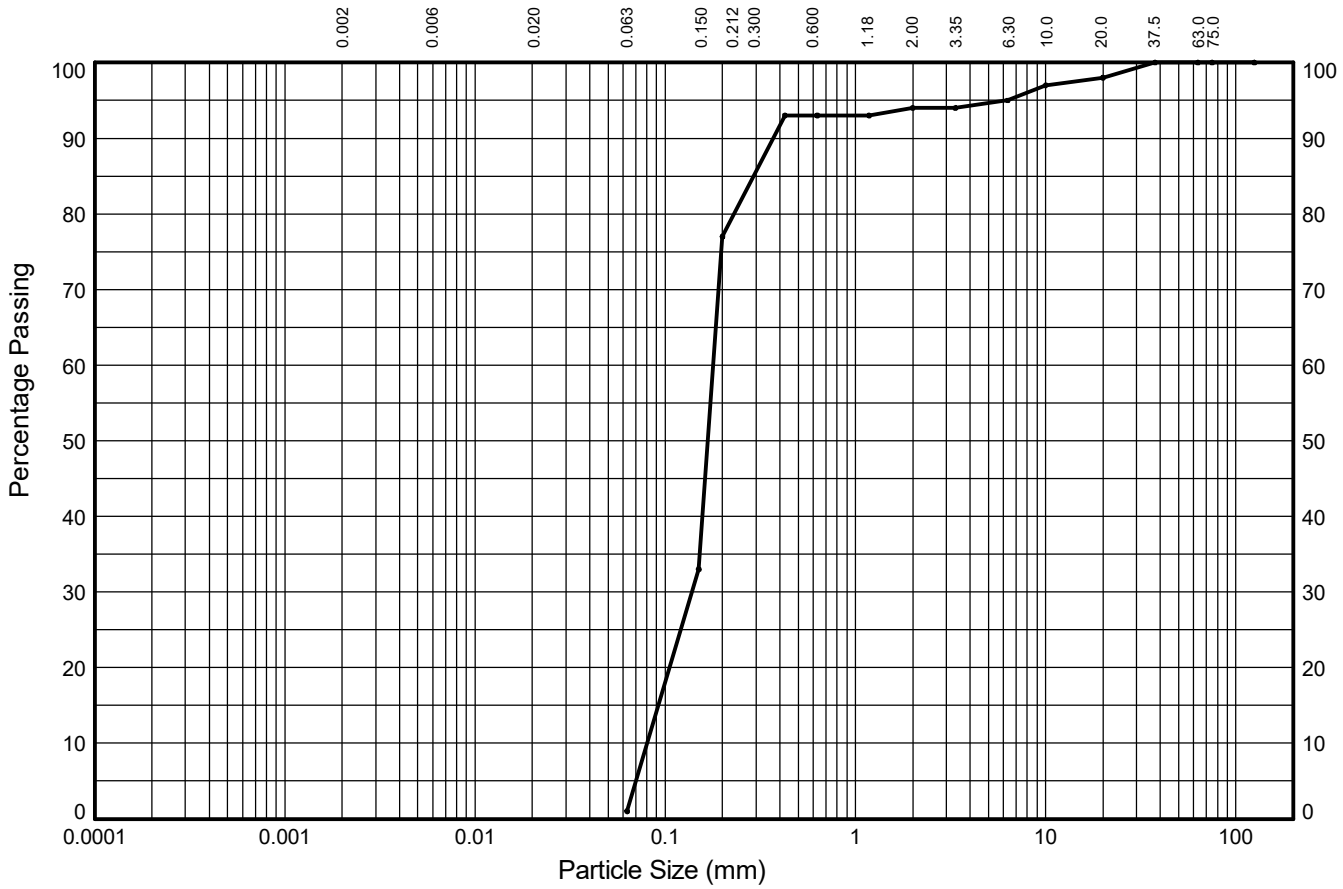
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2 of BS EN ISO 17892:Part 4:2016

Position ID: **MDTP101** Sample Ref: **2** Sample Type: **LB** Depth (m): **0.50**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	-	-	-	76%	16%	1%	1%	3%	2%	
	SILT			SAND			GRAVEL			
1%				93%			6%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**98**
10.0	**97**
6.30	**95**
3.35	**94**
2.00	**94**
1.18	**93**
0.630	**93**
0.425	**93**
0.200	**77**
0.150	**33**
0.063	**1**

Particle Diameter (mm)	Percent Passing (%)

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**0.080**
D_{15} (mm)	**0.092**
D_{30} (mm)	**0.138**
D_{50} (mm)	**0.168**
D_{60} (mm)	**0.179**
D_{85} (mm)	**0.292**
D_{90} (mm)	**0.369**
C_U	**2.2**
C_C	**1.3**

Soil Description:

Very light brown gravelly slightly clayey SAND

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2

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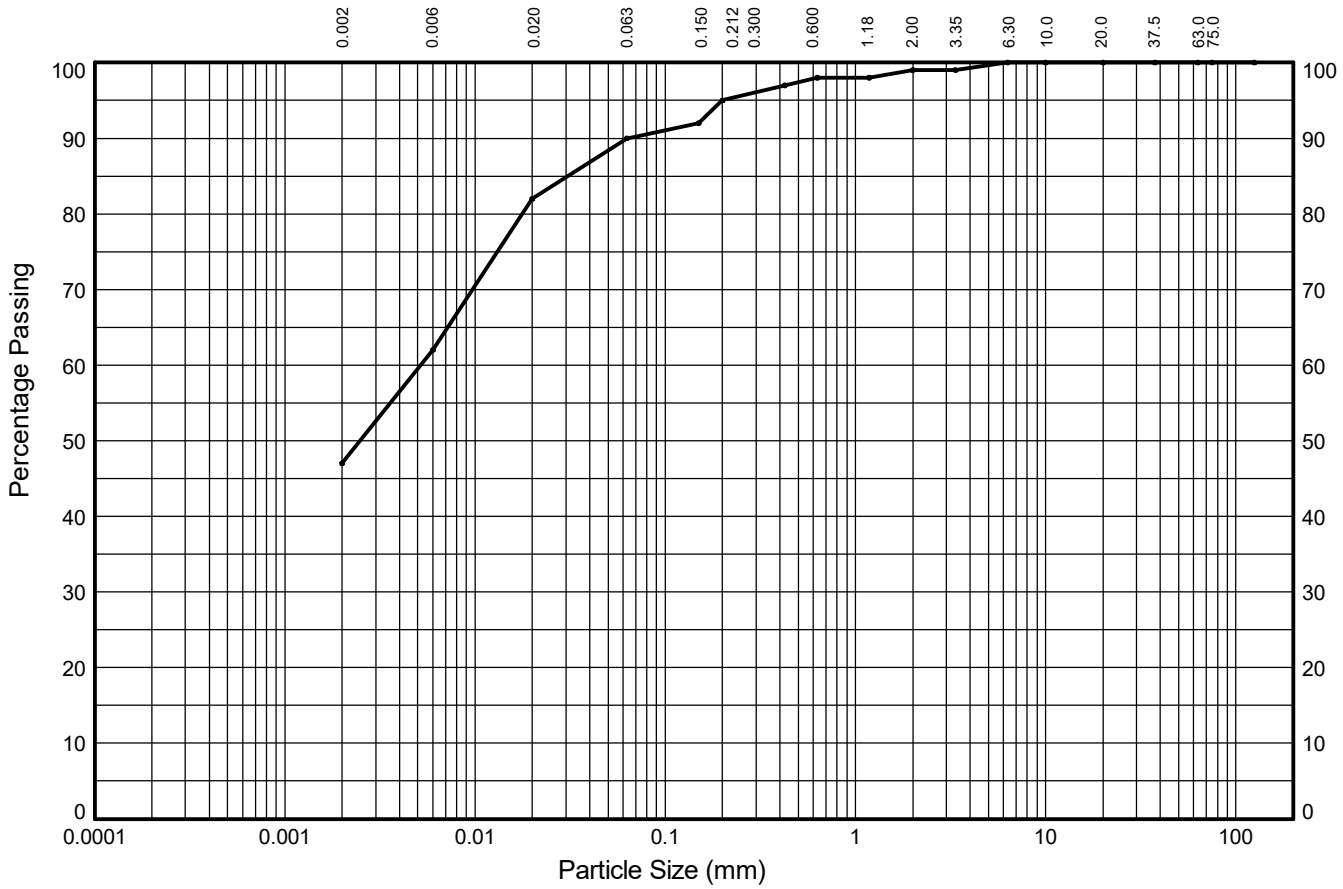
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

Position ID: **MDTP101** Sample Ref: **6** Sample Type: **LB** Depth (m): **1.70**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	15%	20%	8%	5%	3%	1%	1%	0%	0%	
	SILT			SAND			GRAVEL			
47%	43%			9%			1%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**100**
10.0	**100**
6.30	**100**
3.35	**99**
2.00	**99**
1.18	**98**
0.630	**98**
0.425	**97**
0.200	**95**
0.150	**92**
0.063	**90**

Particle Diameter (mm)	Percent Passing (%)
0.02	**82**
0.006	**62**
0.002	**47**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**NA**
D_{50} (mm)	**0.002**
D_{60} (mm)	**0.005**
D_{85} (mm)	**0.031**
D_{90} (mm)	**0.063**
C_U	**NA**
C_C	**NA**

Soil Description:

Dark grey slightly gravelly slightly sandy SILT with organics

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2

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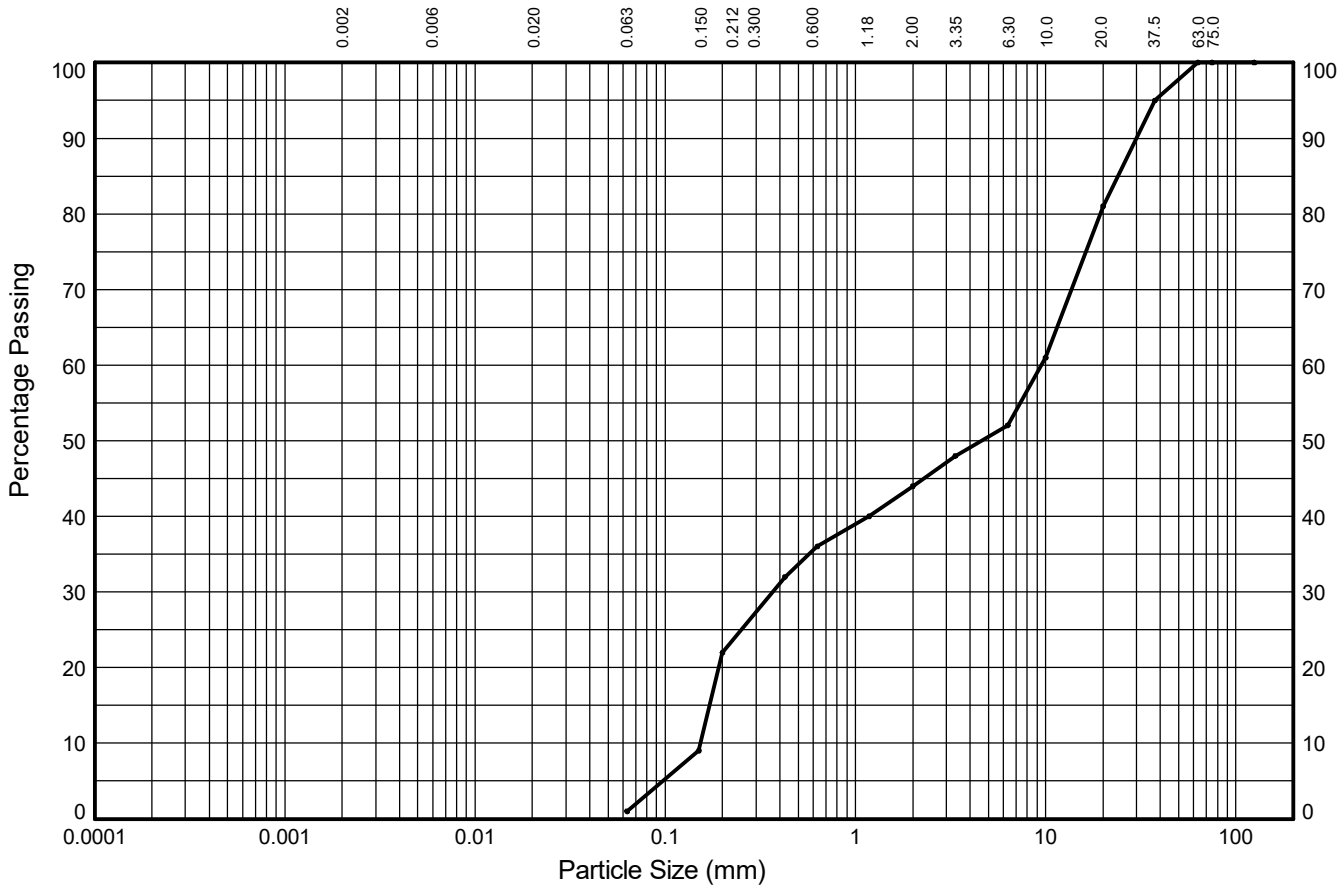
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2 of BS EN ISO 17892:Part 4:2016

Position ID: **MDTP102** Sample Ref: **4** Sample Type: **LB** Depth (m): **1.20**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	-	-	-	21%	14%	8%	8%	29%	19%	
	SILT			SAND			GRAVEL			
1%				43%			56%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**95**
20.0	**81**
10.0	**61**
6.30	**52**
3.35	**48**
2.00	**44**
1.18	**40**
0.630	**36**
0.425	**32**
0.200	**22**
0.150	**9**
0.063	**1**

Particle Diameter (mm)	Percent Passing (%)

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**0.153**
D_{15} (mm)	**0.171**
D_{30} (mm)	**0.366**
D_{50} (mm)	**4.594**
D_{60} (mm)	**9.500**
D_{85} (mm)	**23.935**
D_{90} (mm)	**29.959**
C_U	**62**
C_C	**0.09**

Soil Description:

Light brown mottled orange and white slightly clayey very sandy GRAVEL

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2

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Contract: **Langstone Flood & Coastal Erosion Management Scheme**

Contract Ref: **736036**

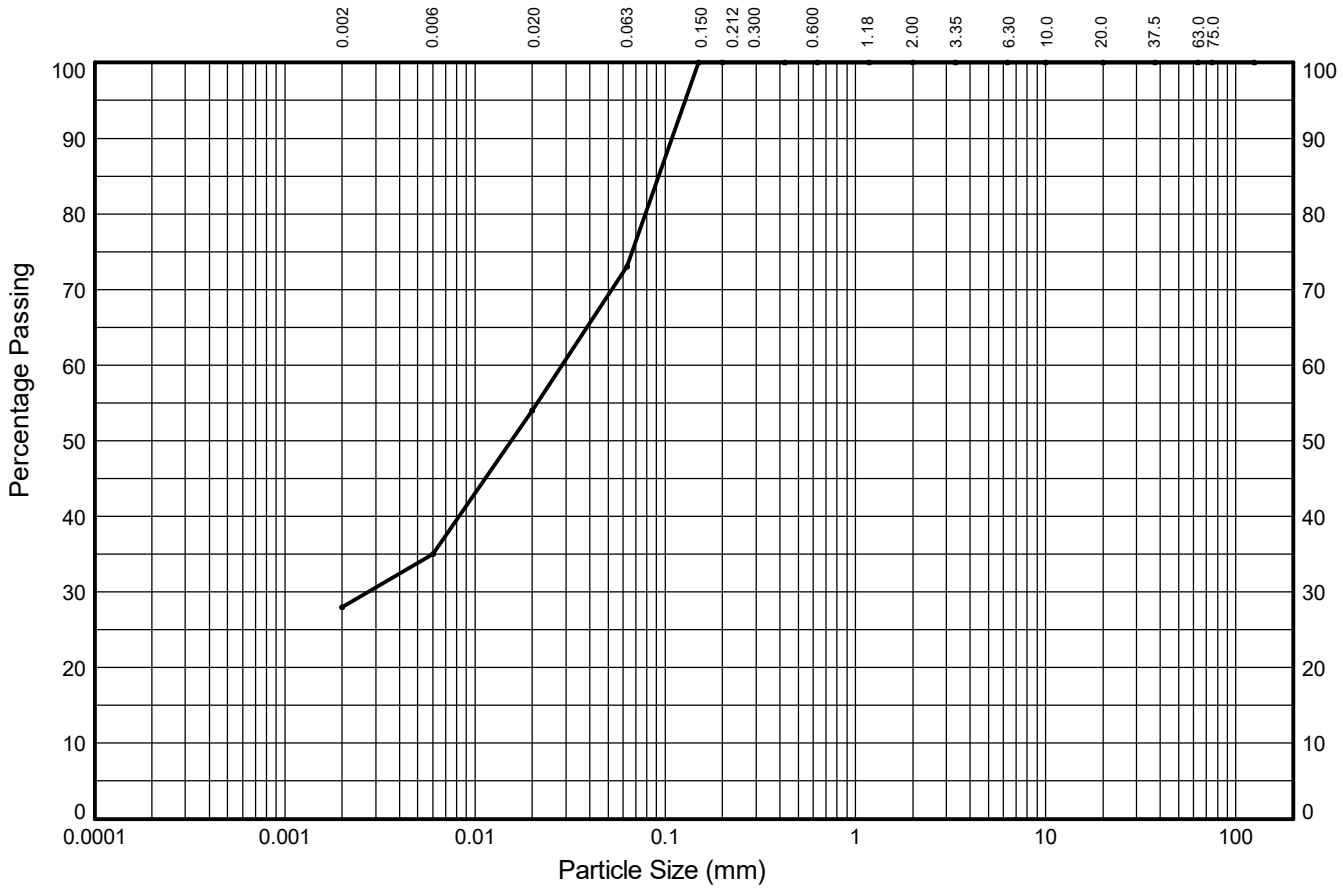
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

Position ID: **MDTP102** Sample Ref: **8** Sample Type: **B** Depth (m): **1.70**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	7%	19%	19%	27%	0%	0%	0%	0%	0%	
	SILT			SAND			GRAVEL			
28%	45%			27%			0%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**100**
10.0	**100**
6.30	**100**
3.35	**100**
2.00	**100**
1.18	**100**
0.630	**100**
0.425	**100**
0.200	**100**
0.150	**100**
0.063	**73**

Particle Diameter (mm)	Percent Passing (%)
0.02	**54**
0.006	**35**
0.002	**28**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**0.003**
D_{50} (mm)	**0.016**
D_{60} (mm)	**0.029**
D_{85} (mm)	**0.093**
D_{90} (mm)	**0.109**
C_U	**NA**
C_C	**NA**

Soil Description:

Grey mottled brown slightly sandy CLAY with organic matters

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2

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Contract Ref: **736036**

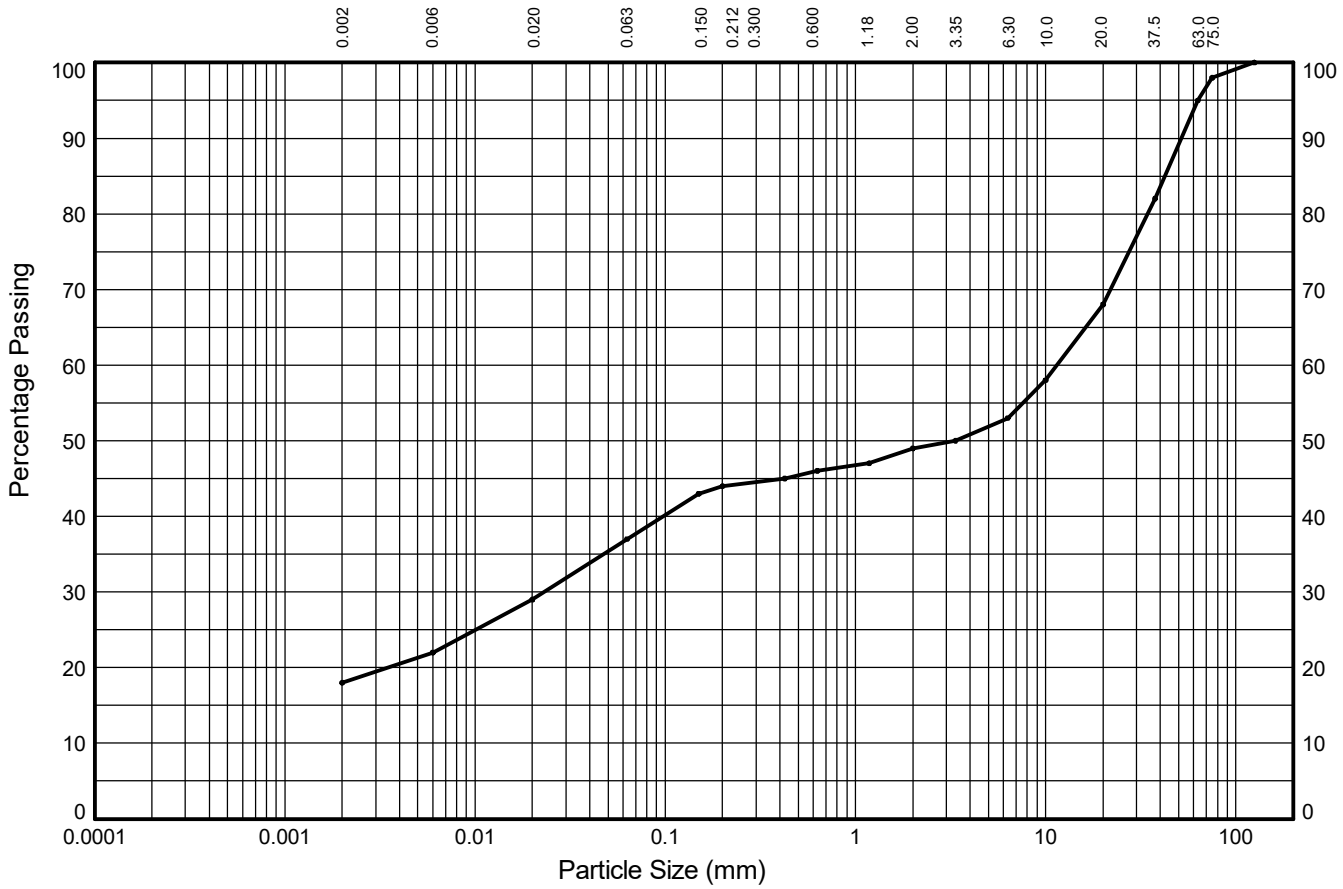
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

Position ID: **MDTP103** Sample Ref: **7** Sample Type: **B** Depth (m): **2.90**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	4%	7%	8%	7%	2%	3%	4%	15%	27%	
	SILT			SAND			GRAVEL			
18%	19%			12%			46%			5%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**98**
63.0	**95**
37.5	**82**
20.0	**68**
10.0	**58**
6.30	**53**
3.35	**50**
2.00	**49**
1.18	**47**
0.630	**46**
0.425	**45**
0.200	**44**
0.150	**43**
0.063	**37**

Particle Diameter (mm)	Percent Passing (%)
0.02	**29**
0.006	**22**
0.002	**18**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**0.023**
D_{50} (mm)	**3.350**
D_{60} (mm)	**11.487**
D_{85} (mm)	**42.269**
D_{90} (mm)	**51.604**
C_U	**NA**
C_C	**NA**

Soil Description:

Brown mottled reddish brown sandy silty GRAVEL with low cobble content

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2

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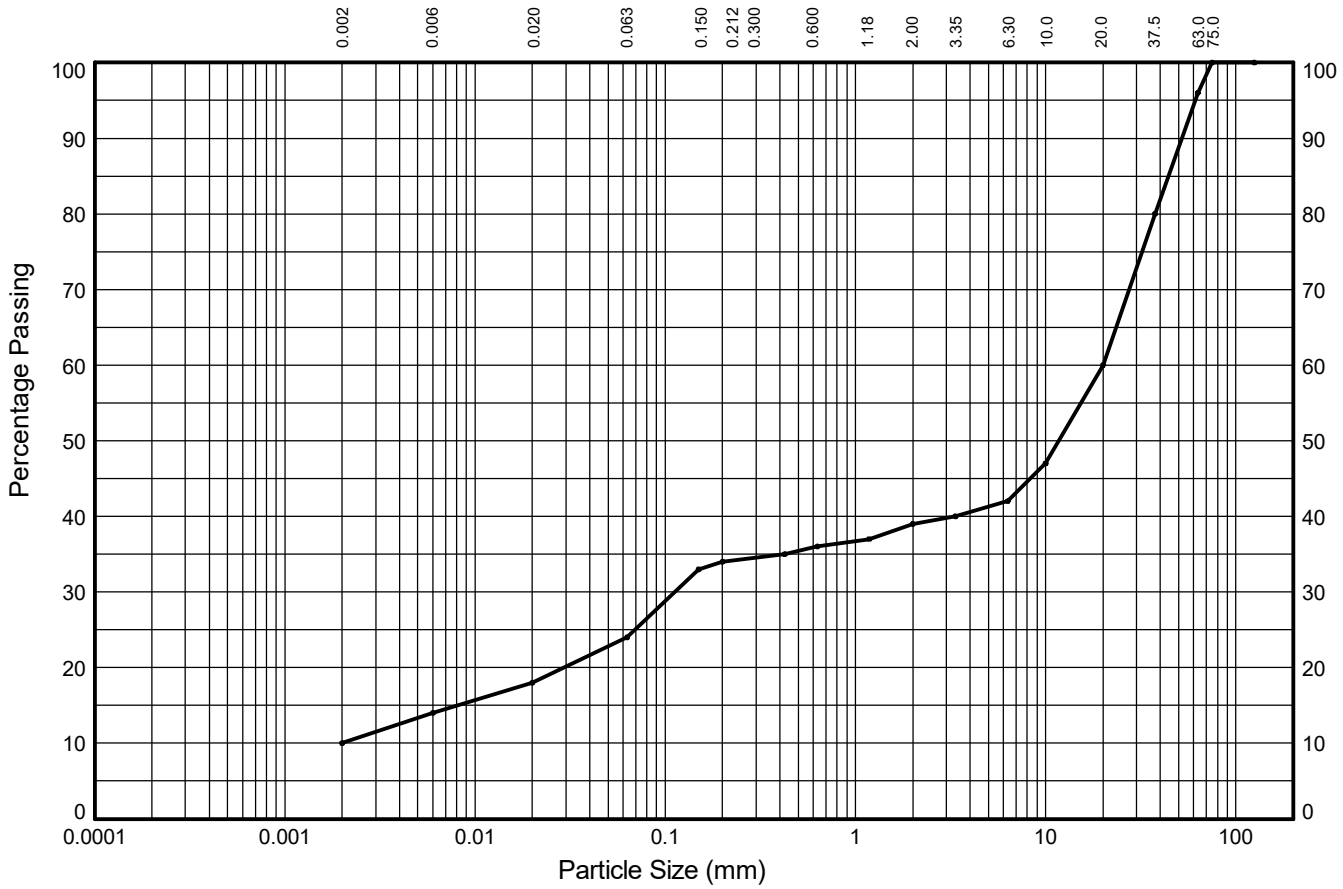
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016
NON-STANDARD TEST

Position ID: **MDTP103** Sample Ref: **9** Sample Type: **B** Depth (m): **3.30**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	4%	4%	6%	10%	2%	3%	3%	18%	36%	
	SILT			SAND			GRAVEL			
10%	14%			15%			57%			4%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**96**
37.5	**80**
20.0	**60**
10.0	**47**
6.30	**42**
3.35	**40**
2.00	**39**
1.18	**37**
0.630	**36**
0.425	**35**
0.200	**34**
0.150	**33**
0.063	**24**

Particle Diameter (mm)	Percent Passing (%)
0.02	**18**
0.006	**14**
0.002	**10**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**0.002**
D_{15} (mm)	**0.008**
D_{30} (mm)	**0.112**
D_{50} (mm)	**11.735**
D_{60} (mm)	**20.000**
D_{85} (mm)	**44.100**
D_{90} (mm)	**51.862**
C_U	**10000**
C_C	**0.32**

Soil Description:
Brown mottled reddish brown sandy silty GRAVEL with low cobble content

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2

STRUCTURAL SOILS
18 Frogmore Road
Hemel Hempstead
Hertfordshire
HP3 9RT

Compiled By	Date
DAVID NICKELLS	16/12/21

Contract: **Langstone Flood & Coastal Erosion Management Scheme**

Contract Ref: **736036**

AGS

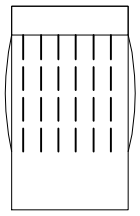
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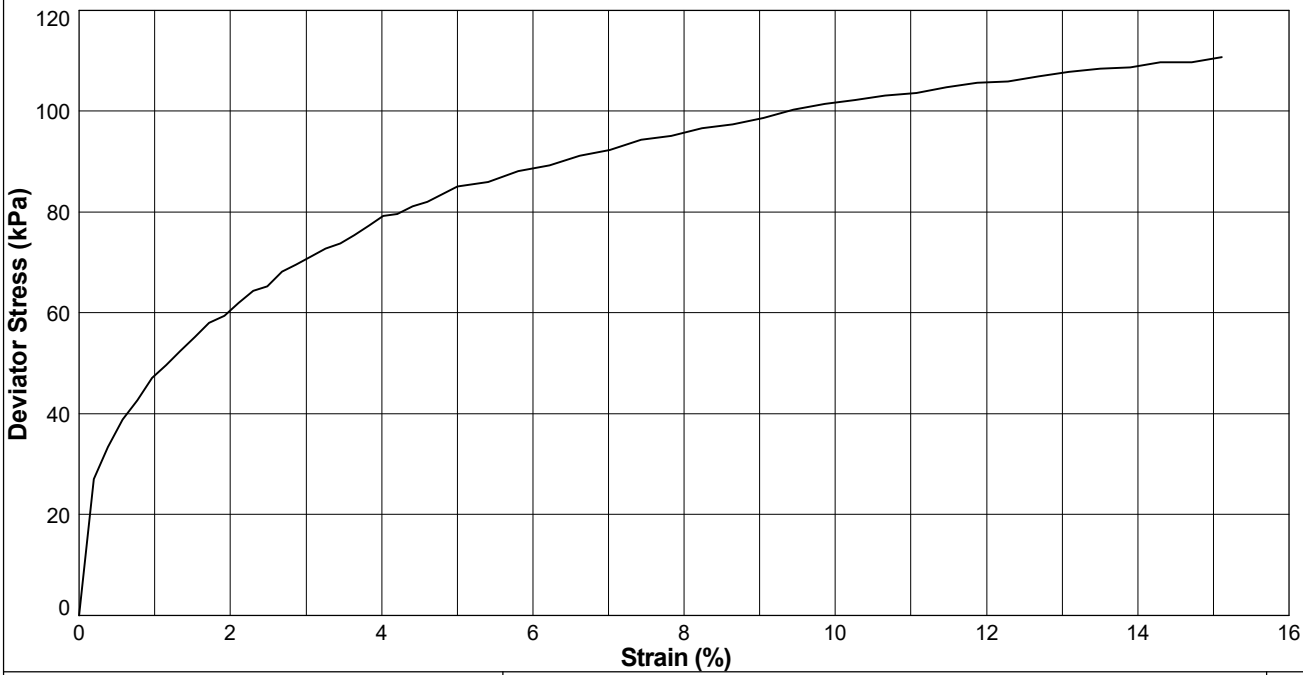
UNCONSOLIDATED QUICK UNDRAINED (SINGLE STAGE) TRIAXIAL COMPRESSION TEST

In accordance with BS EN ISO 17892 Part 8

Borehole: **BH101** Sample Ref: **3** Sample Type: **UT100** Depth (m): **1.27**

Description : **Light brown slightly gravelly slightly sandy silty CLAY**

STAGE NUMBER			1	2	3
SAMPLE DETAILS	Sample Condition		Undisturbed		
	Orientation of sample		Vertical		
	Diameter	(mm)	101.63		
	Height	(mm)	200.60		
	Water Content	(%)	18.3		
	Bulk Density	(Mg/m^3)	2.05		
	Dry Density	(Mg/m^3)	1.73		
TEST DETAILS	Membrane Type		Rubber		
	Membrane Thickness	(mm)	0.55		
	Rate of Axial Displacement	(%/min)	1.35		
	Cell Pressure	(kPa)	35		
	Membrane Correction	(kPa)	1.66		
	Corrected Deviator Stress	(kPa)	110		
	Undrained Shear Strength	(kPa)	55		
FAILURE DETAILS	Strain at Failure	(%)	15.0		
	Mode of Failure 1 : **Semi-plastic (axial splitting with bulging)**				



STRUCTURAL SOILS
1a Princess Street
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Bristol
BS3 4AG

Compiled By		Date
Francesca Bennett	FRANCESCA BENNETT	16/12/21

Contract	Contract Ref:
Langstone Flood & Coastal Erosion Management Scheme	**736036**

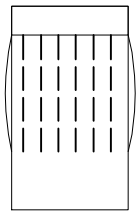
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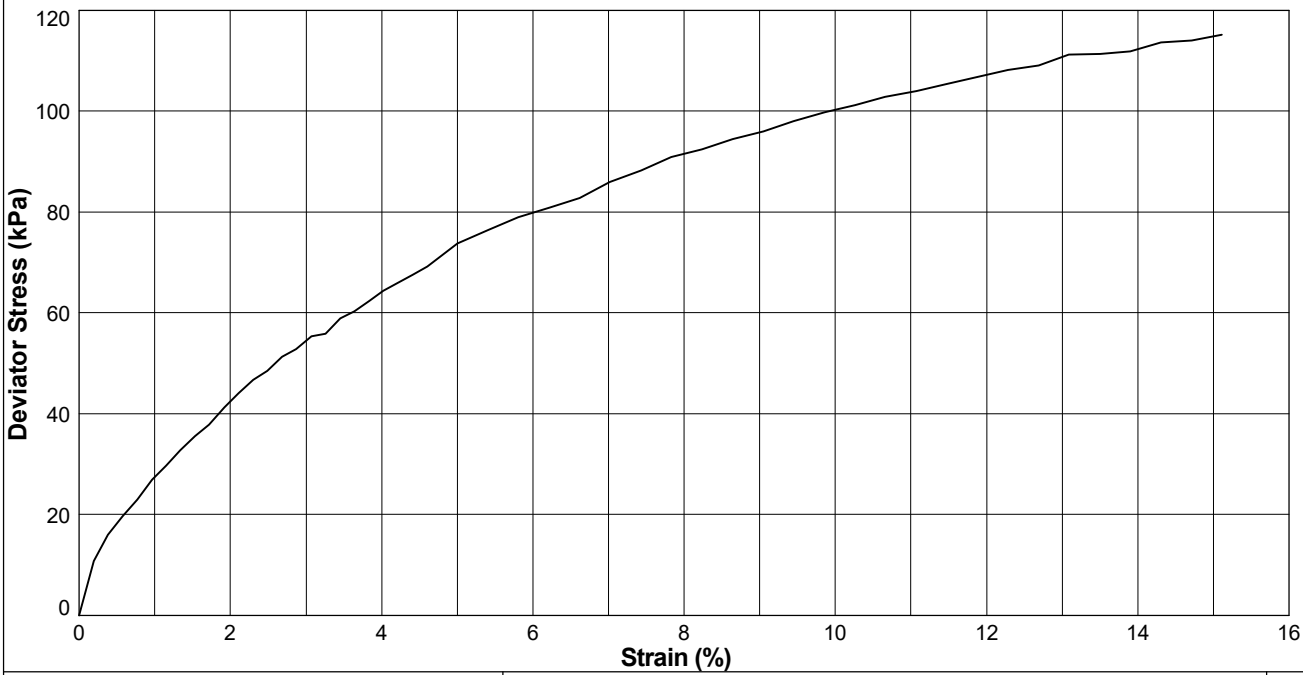
UNCONSOLIDATED QUICK UNDRAINED (SINGLE STAGE) TRIAXIAL COMPRESSION TEST

In accordance with BS EN ISO 17892 Part 8

Borehole: **BH104** Sample Ref: **12** Sample Type: **UT100** Depth (m): **3.14**

Description : **Light brown mottled grey slightly sandy silty CLAY**

STAGE NUMBER			**1**	**2**	**3**
SAMPLE DETAILS	Sample Condition		**Undisturbed**		
	Orientation of sample		**Vertical**		
	Diameter	(mm)	**102.59**		
	Height	(mm)	**200.59**		
	Water Content	(%)	**21.0**		
	Bulk Density	(Mg/m^3)	**2.09**		
	Dry Density	(Mg/m^3)	**1.73**		
TEST DETAILS	Membrane Type		**Rubber**		
	Membrane Thickness	(mm)	**0.55**		
	Rate of Axial Displacement	(%/min)	**1.35**		
	Cell Pressure	(kPa)	**60**		
	Membrane Correction	(kPa)	**1.64**		
	Corrected Deviator Stress	(kPa)	**115**		
	Undrained Shear Strength	(kPa)	**57**		
FAILURE DETAILS	Strain at Failure	(%)	**15.0**		
	Mode of Failure 1 : **Semi-plastic (axial splitting with bulging)**				



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Bristol
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Compiled By		Date
A.D.Frost	**ALAN FROST**	**16/12/21**

Contract	Contract Ref:
Langstone Flood & Coastal Erosion Management Scheme	**736036**

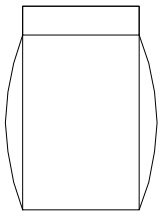
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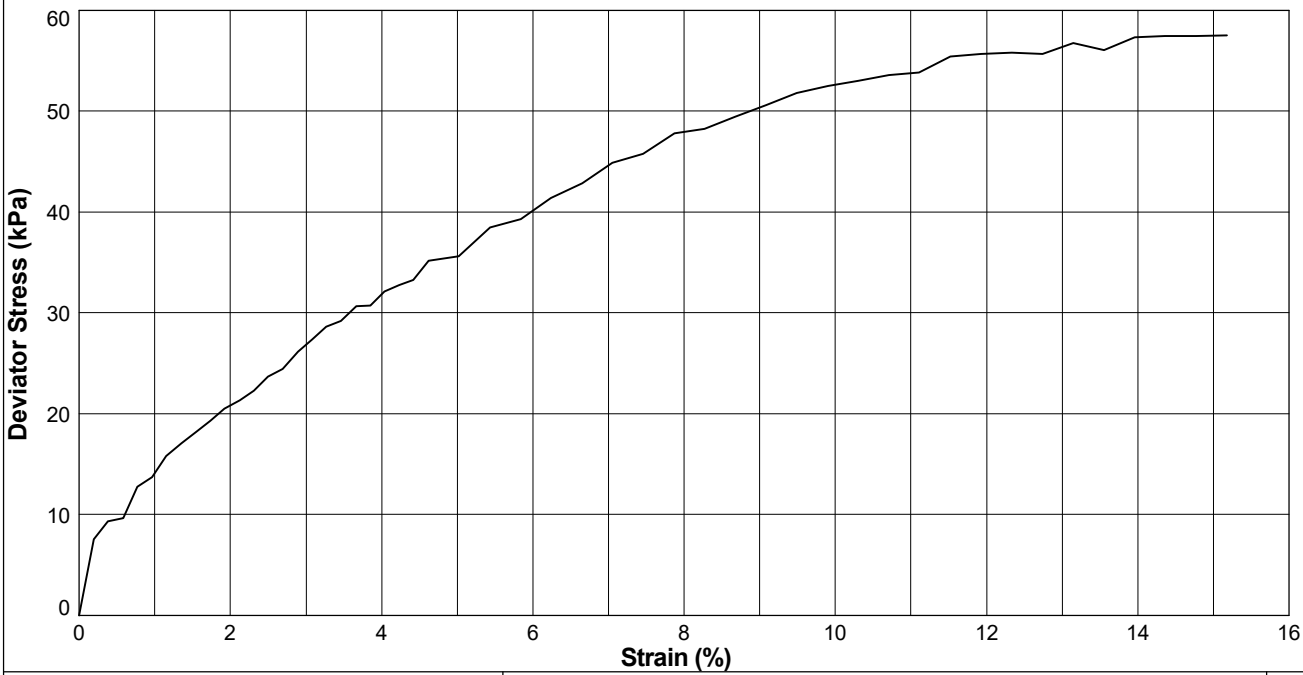
UNCONSOLIDATED QUICK UNDRAINED (SINGLE STAGE) TRIAXIAL COMPRESSION TEST

In accordance with BS EN ISO 17892 Part 8

Borehole: **BH104** Sample Ref: **17** Sample Type: **UT100** Depth (m): **4.07**

Description : **Brown mottled grey slightly gravelly slightly sandy silty CLAY**

STAGE NUMBER			1	2	3
SAMPLE DETAILS	Sample Condition		Undisturbed		
	Orientation of sample		Vertical		
	Diameter	(mm)	101.87		
	Height	(mm)	199.76		
	Water Content	(%)	23.0		
	Bulk Density	(Mg/m^3)	2.07		
	Dry Density	(Mg/m^3)	1.68		
TEST DETAILS	Membrane Type		Rubber		
	Membrane Thickness	(mm)	0.55		
	Rate of Axial Displacement	(%/min)	1.35		
	Cell Pressure	(kPa)	80		
	Membrane Correction	(kPa)	1.65		
	Corrected Deviator Stress	(kPa)	57		
	Undrained Shear Strength	(kPa)	29		
FAILURE DETAILS	Strain at Failure	(%)	15.0		
	Mode of Failure 1 : **Plastic (Barrelling)**				



STRUCTURAL SOILS 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By		Date
	D. Richards	DAISY RICHARDS	16/12/21
	Contract **Langstone Flood & Coastal Erosion Management Scheme**	Contract Ref: **736036**	

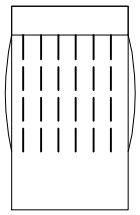
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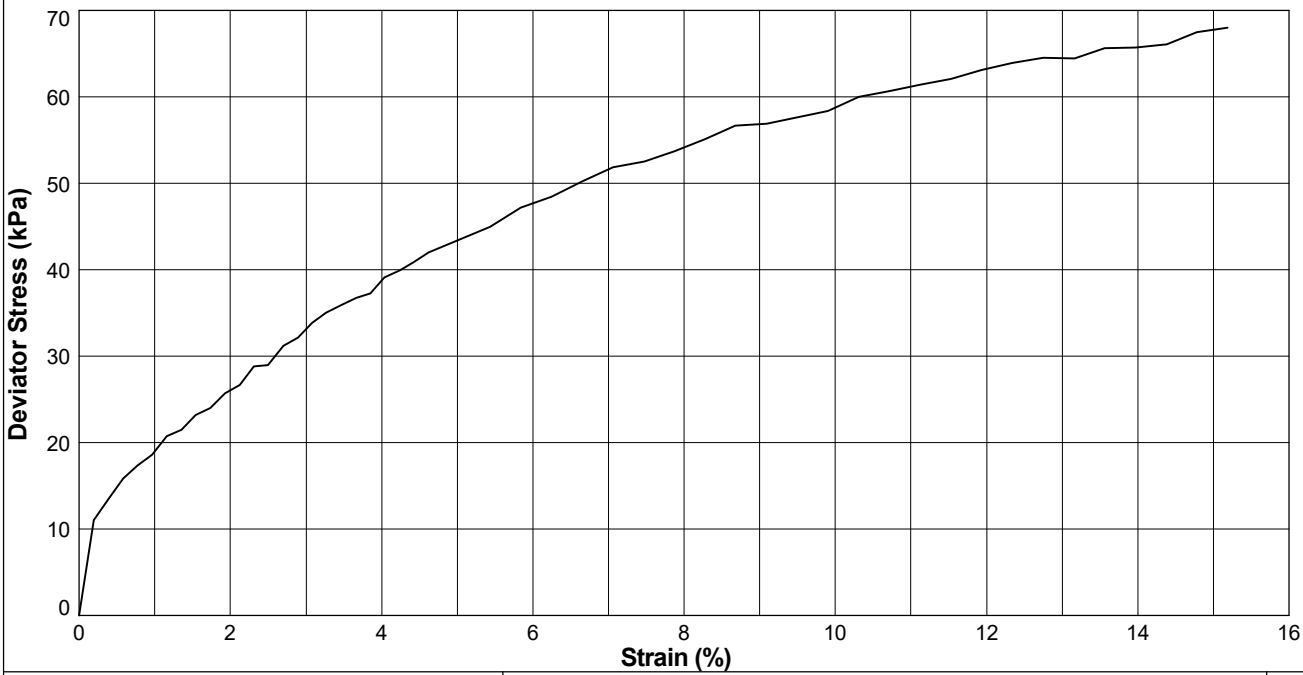
UNCONSOLIDATED QUICK UNDRAINED (SINGLE STAGE) TRIAXIAL COMPRESSION TEST

In accordance with BS EN ISO 17892 Part 8

Borehole: **BH105** Sample Ref: **6** Sample Type: **UT100** Depth (m): **1.45**

Description : **Brown mottled grey slightly gravelly slightly sandy silty CLAY**

STAGE NUMBER			1	2	3
SAMPLE DETAILS	Sample Condition		Undisturbed		
	Orientation of sample		Vertical		
	Diameter	(mm)	102.91		
	Height	(mm)	199.61		
	Water Content	(%)	22.0		
	Bulk Density	(Mg/m^3)	2.08		
	Dry Density	(Mg/m^3)	1.70		
TEST DETAILS	Membrane Type		Rubber		
	Membrane Thickness	(mm)	0.55		
	Rate of Axial Displacement	(%/min)	1.35		
	Cell Pressure	(kPa)	35		
	Membrane Correction	(kPa)	1.64		
	Corrected Deviator Stress	(kPa)	68		
	Undrained Shear Strength	(kPa)	34		
FAILURE DETAILS	Strain at Failure	(%)	15.0		
	Mode of Failure 1 : **Semi-plastic (axial splitting with bulging)**				



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Francesca Bennett	FRANCESCA BENNETT	16/12/21

Contract	Contract Ref:
Langstone Flood & Coastal Erosion Management Scheme	**736036**

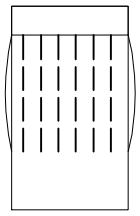
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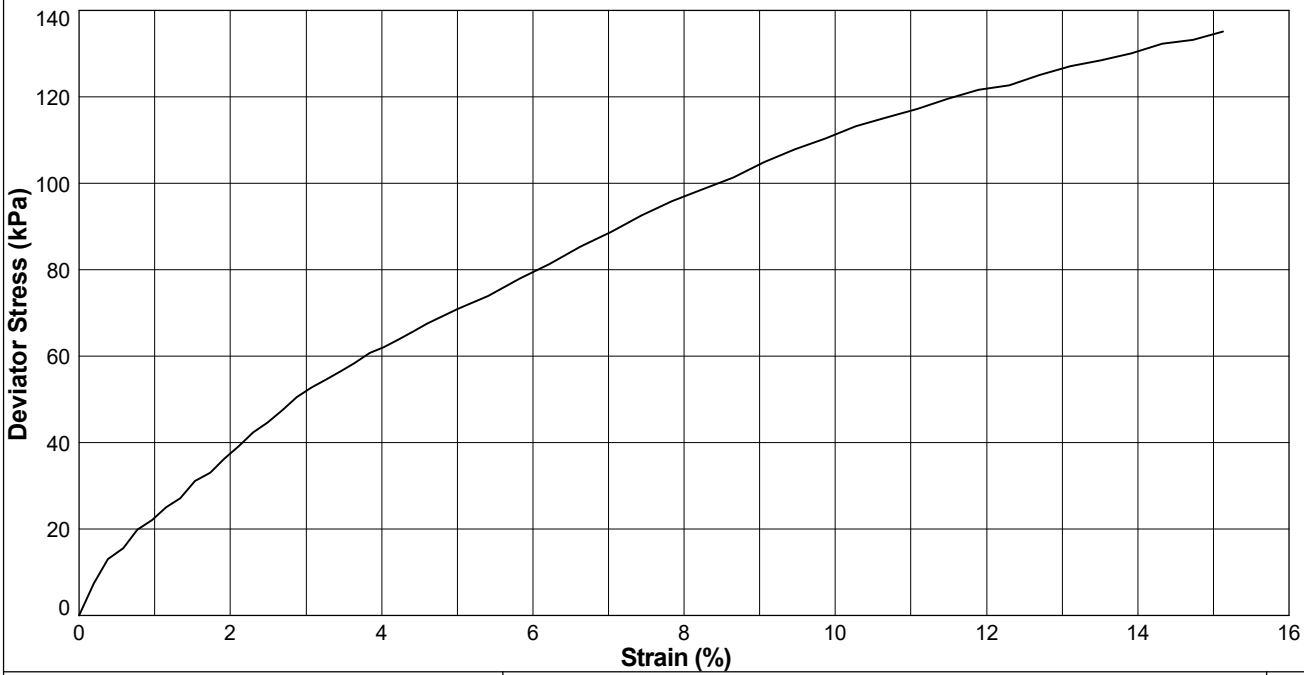
UNCONSOLIDATED QUICK UNDRAINED (SINGLE STAGE) TRIAXIAL COMPRESSION TEST

In accordance with BS EN ISO 17892 Part 8

Borehole: **BH105** Sample Ref: **21** Sample Type: **UT100** Depth (m): **5.25**

Description : **Grey CHALK with occasional flint gravel**

STAGE NUMBER			1	2	3
SAMPLE DETAILS	Sample Condition		Undisturbed		
	Orientation of sample		Vertical		
	Diameter	(mm)	103.67		
	Height	(mm)	200.35		
	Water Content	(%)	17.6		
	Bulk Density	(Mg/m^3)	2.12		
	Dry Density	(Mg/m^3)	1.81		
TEST DETAILS	Membrane Type		Rubber		
	Membrane Thickness	(mm)	0.53		
	Rate of Axial Displacement	(%/min)	1.35		
	Cell Pressure	(kPa)	115		
	Membrane Correction	(kPa)	1.57		
	Corrected Deviator Stress	(kPa)	134		
	Undrained Shear Strength	(kPa)	67		
FAILURE DETAILS	Strain at Failure	(%)	15.0		
	Mode of Failure 1 : **Semi-plastic (axial splitting with bulging)**				



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DAISY RICHARDS	16/12/21

Contract: **Langstone Flood & Coastal Erosion Management Scheme**

Contract Ref: **736036**

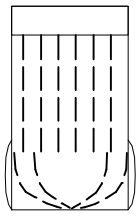
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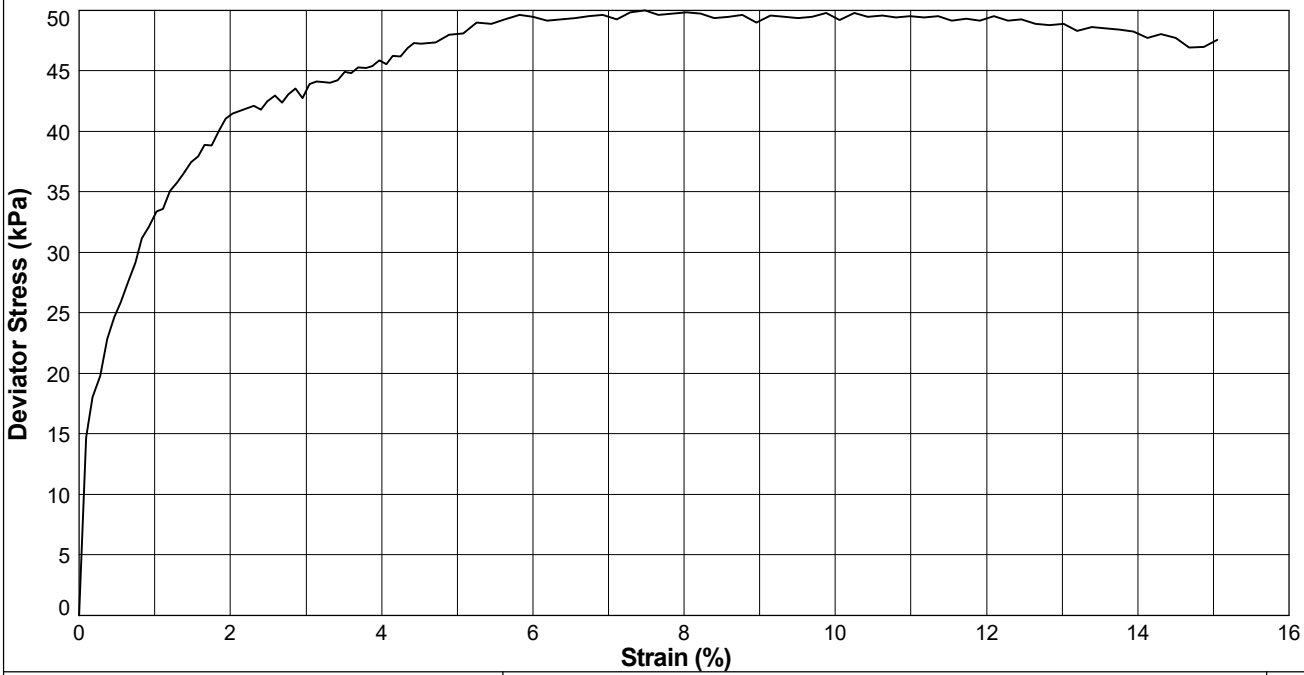
UNCONSOLIDATED QUICK UNDRAINED (SINGLE STAGE) TRIAXIAL COMPRESSION TEST

In accordance with BS EN ISO 17892 Part 8

Position ID: **DS104** Sample Ref: **9** Sample Type: **U70** Depth (m): **2.07**

Description : **Brownish grey slightly gravelly slightly sandy CLAY**

STAGE NUMBER			1	2	3
SAMPLE DETAILS	Sample Condition		Undisturbed		
	Orientation of sample		Vertical		
	Diameter	(mm)	70.17		
	Height	(mm)	138.74		
	Water Content	(%)	28.2		
	Bulk Density	(Mg/m^3)	2.01		
	Dry Density	(Mg/m^3)	1.56		
TEST DETAILS	Membrane Type		Rubber		
	Membrane Thickness	(mm)	0.38		
	Rate of Axial Displacement	(%/min)	1.44		
	Cell Pressure	(kPa)	50		
	Membrane Correction	(kPa)	0.99		
	Corrected Deviator Stress	(kPa)	50		
	Undrained Shear Strength	(kPa)	25		
FAILURE DETAILS	Strain at Failure	(%)	7.5		
	Mode of Failure 1 : **Semi-plastic (bulging, shear & axial splitting)**				



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Francesca Bennett	FRANCESCA BENNETT	16/12/21

Contract	Contract Ref:
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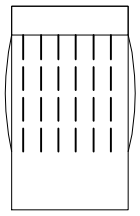
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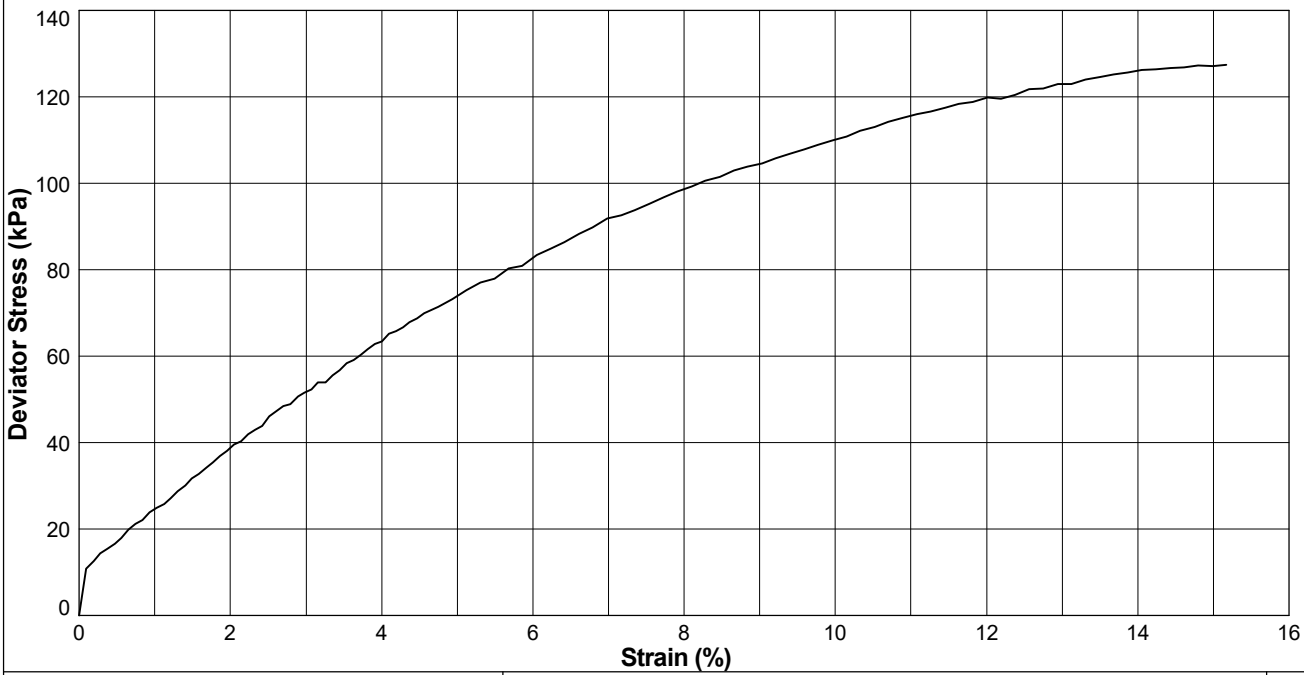
UNCONSOLIDATED QUICK UNDRAINED (SINGLE STAGE) TRIAXIAL COMPRESSION TEST

In accordance with BS EN ISO 17892 Part 8

Position ID: **DS106** Sample Ref: **5** Sample Type: **U70** Depth (m): **1.29**

Description : **Brown slightly sandy silty CLAY**

STAGE NUMBER			**1**	**2**	**3**
SAMPLE DETAILS	Sample Condition		**Undisturbed**		
	Orientation of sample		**Vertical**		
	Diameter	(mm)	**70.32**		
	Height	(mm)	**137.63**		
	Water Content	(%)	**21.8**		
	Bulk Density	(Mg/m^3)	**2.10**		
	Dry Density	(Mg/m^3)	**1.73**		
TEST DETAILS	Membrane Type		**Rubber**		
	Membrane Thickness	(mm)	**0.38**		
	Rate of Axial Displacement	(%/min)	**1.45**		
	Cell Pressure	(kPa)	**35**		
	Membrane Correction	(kPa)	**1.66**		
	Corrected Deviator Stress	(kPa)	**127**		
	Undrained Shear Strength	(kPa)	**64**		
FAILURE DETAILS	Strain at Failure	(%)	**15.0**		
	Mode of Failure 1 : **Semi-plastic (axial splitting with bulging)**				



STRUCTURAL SOILS 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By		Date
	A.D.Frost	**ALAN FROST**	**16/12/21**
	Contract **Langstone Flood & Coastal Erosion Management Scheme**	Contract Ref: **736036**	

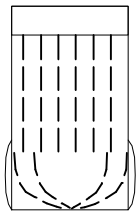
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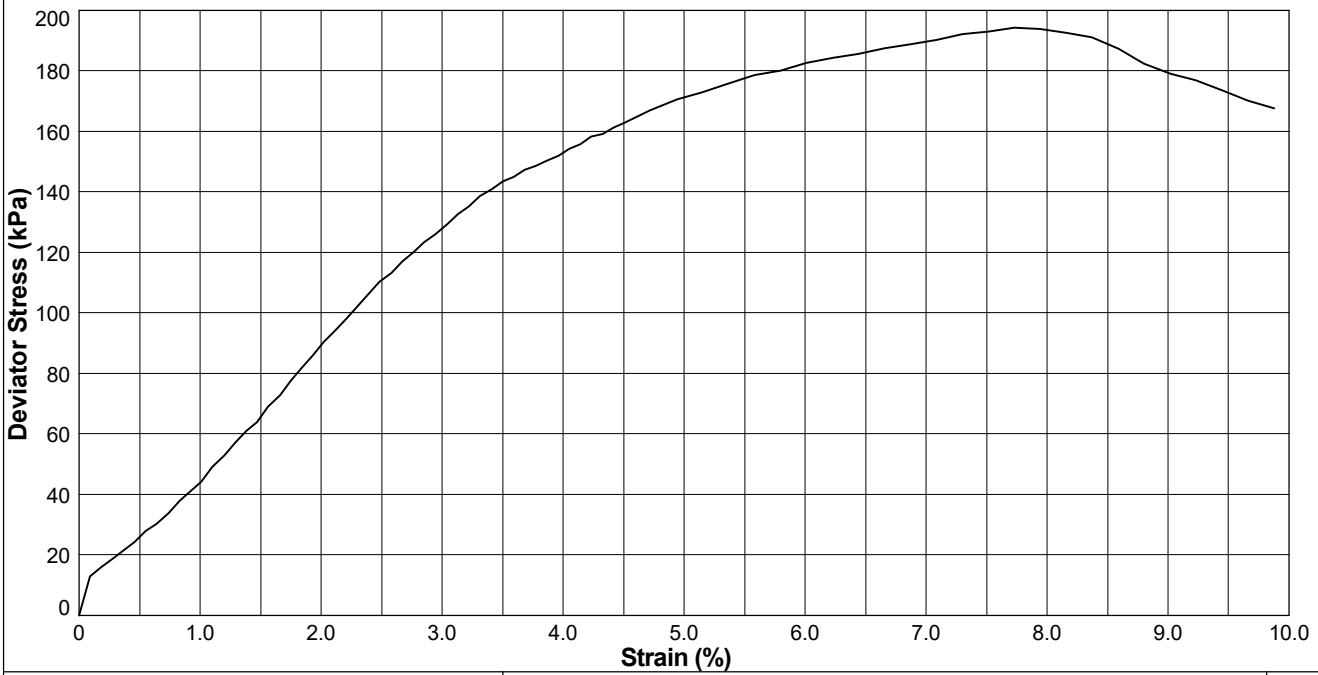
UNCONSOLIDATED QUICK UNDRAINED (SINGLE STAGE) TRIAXIAL COMPRESSION TEST

In accordance with BS EN ISO 17892 Part 8

Position ID: **DS107** Sample Ref: **5** Sample Type: **U70** Depth (m): **1.20**

Description : **Brown gravelly slightly sandy silty CLAY**

STAGE NUMBER			1	2	3
SAMPLE DETAILS	Sample Condition		Undisturbed		
	Orientation of sample		Vertical		
	Diameter	(mm)	70.68		
	Height	(mm)	139.20		
	Water Content	(%)	19.1		
	Bulk Density	(Mg/m^3)	2.10		
	Dry Density	(Mg/m^3)	1.77		
TEST DETAILS	Membrane Type		Rubber		
	Membrane Thickness	(mm)	0.38		
	Rate of Axial Displacement	(%/min)	1.44		
	Cell Pressure	(kPa)	25		
	Membrane Correction	(kPa)	1.01		
	Corrected Deviator Stress	(kPa)	194		
	Undrained Shear Strength	(kPa)	97		
FAILURE DETAILS	Strain at Failure	(%)	7.7		
	Mode of Failure 1 : **Semi-plastic (bulging, shear & axial splitting)**				



STRUCTURAL SOILS
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Bedminster
Bristol
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Compiled By		Date
Francesca Bennett	FRANCESCA BENNETT	16/12/21

Contract: **Langstone Flood & Coastal Erosion Management Scheme**

Contract Ref: **736036**

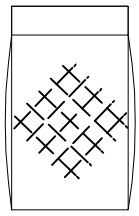
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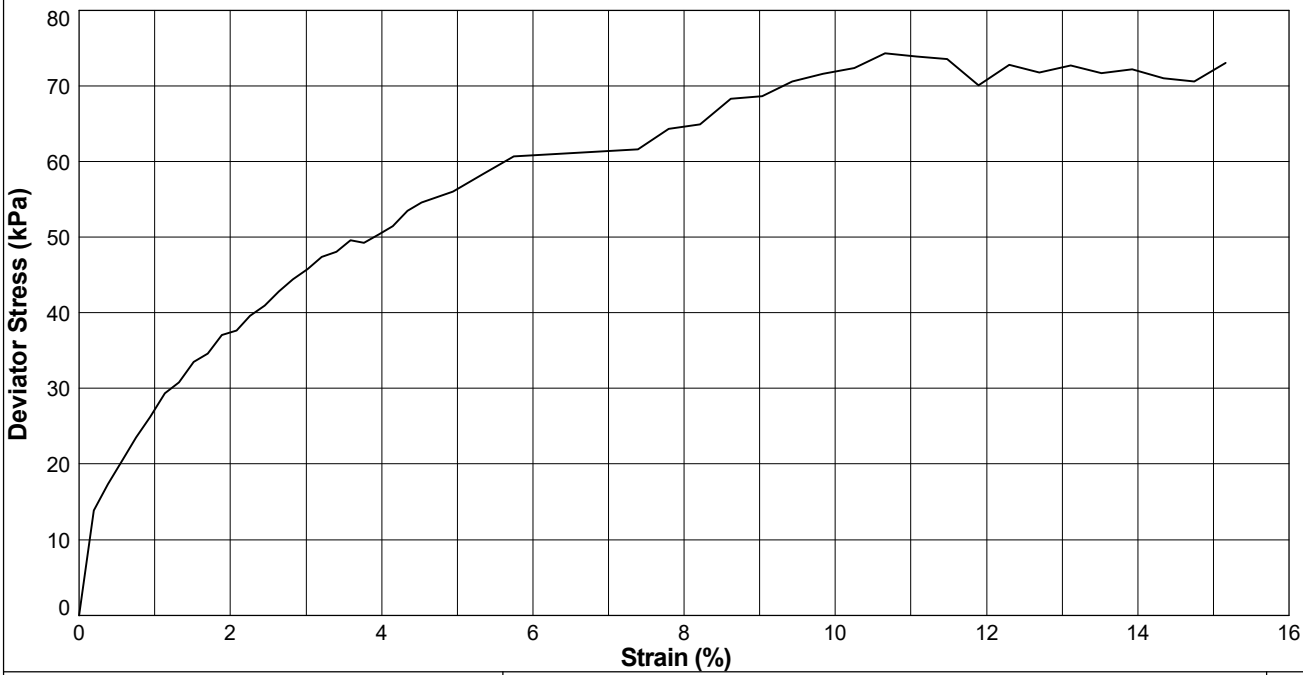
UNCONSOLIDATED QUICK UNDRAINED (SINGLE STAGE) TRIAXIAL COMPRESSION TEST

In accordance with BS EN ISO 17892 Part 8

Position ID: **DS109** Sample Ref: **6** Sample Type: **UT** Depth (m): **1.25**

Description : **Light grey gravelly slightly sandy silty CLAY**

STAGE NUMBER			1	2	3
SAMPLE DETAILS	Sample Condition		Undisturbed		
	Orientation of sample		Vertical		
	Diameter	(mm)	70.91		
	Height	(mm)	135.78		
	Water Content	(%)	16.4		
	Bulk Density	(Mg/m^3)	2.16		
	Dry Density	(Mg/m^3)	1.86		
TEST DETAILS	Membrane Type		Rubber		
	Membrane Thickness	(mm)	0.30		
	Rate of Axial Displacement	(%/min)	1.47		
	Cell Pressure	(kPa)	35		
	Membrane Correction	(kPa)	1.02		
	Corrected Deviator Stress	(kPa)	74		
	Undrained Shear Strength	(kPa)	37		
FAILURE DETAILS	Strain at Failure	(%)	10.7		
	Mode of Failure 1 : **Semi-plastic (intermediate)**				



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Compiled By		Date
D. Richards	DAISY RICHARDS	16/12/21

Contract	Contract Ref:
Langstone Flood & Coastal Erosion Management Scheme	**736036**

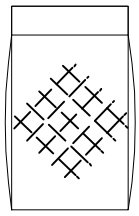
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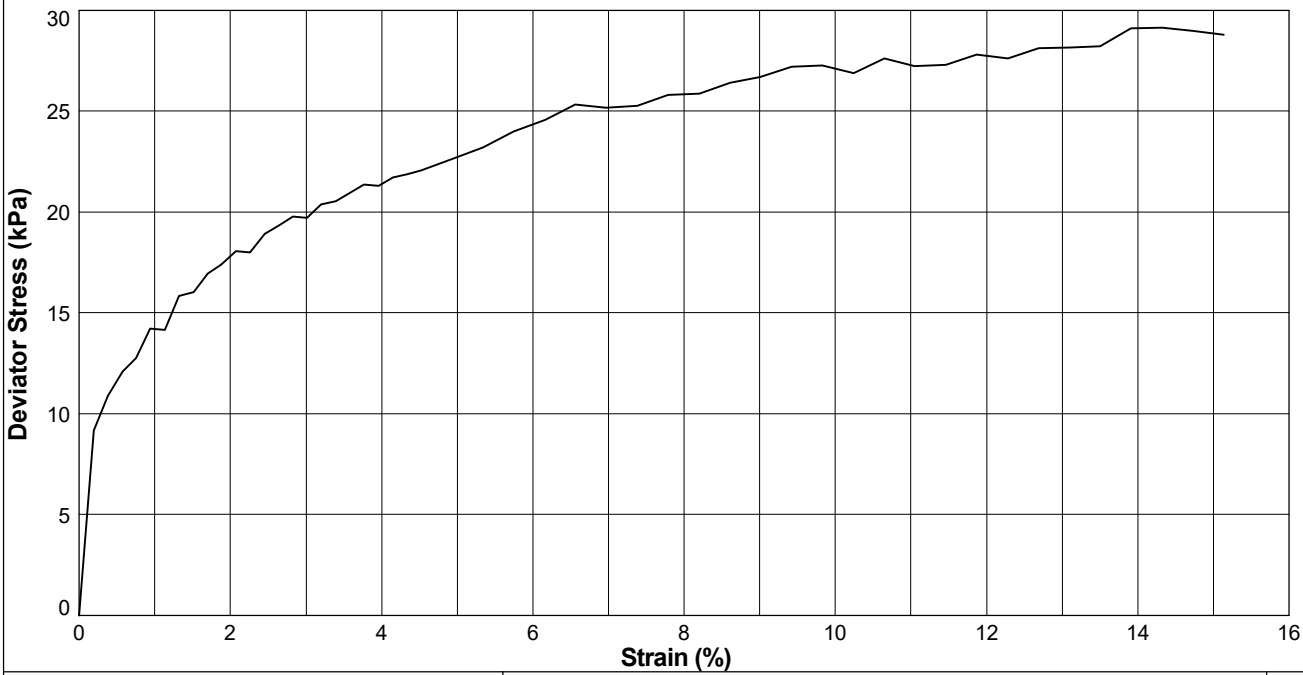
UNCONSOLIDATED QUICK UNDRAINED (SINGLE STAGE) TRIAXIAL COMPRESSION TEST

In accordance with BS EN ISO 17892 Part 8

Position ID: **DS109** Sample Ref: **16** Sample Type: **UT** Depth (m): **4.15**

Description : **Light grey slightly gravelly slightly sandy silty CLAY**

STAGE NUMBER			1	2	3
SAMPLE DETAILS	Sample Condition		Undisturbed		
	Orientation of sample		Vertical		
	Diameter	(mm)	71.39		
	Height	(mm)	135.96		
	Water Content	(%)	17.5		
	Bulk Density	(Mg/m^3)	2.15		
	Dry Density	(Mg/m^3)	1.83		
TEST DETAILS	Membrane Type		Rubber		
	Membrane Thickness	(mm)	0.35		
	Rate of Axial Displacement	(%/min)	1.47		
	Cell Pressure	(kPa)	100		
	Membrane Correction	(kPa)	1.45		
	Corrected Deviator Stress	(kPa)	29		
	Undrained Shear Strength	(kPa)	15		
FAILURE DETAILS	Strain at Failure	(%)	14.3		
	Mode of Failure 1 : **Semi-plastic (intermediate)**				



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Contract	Contract Ref:
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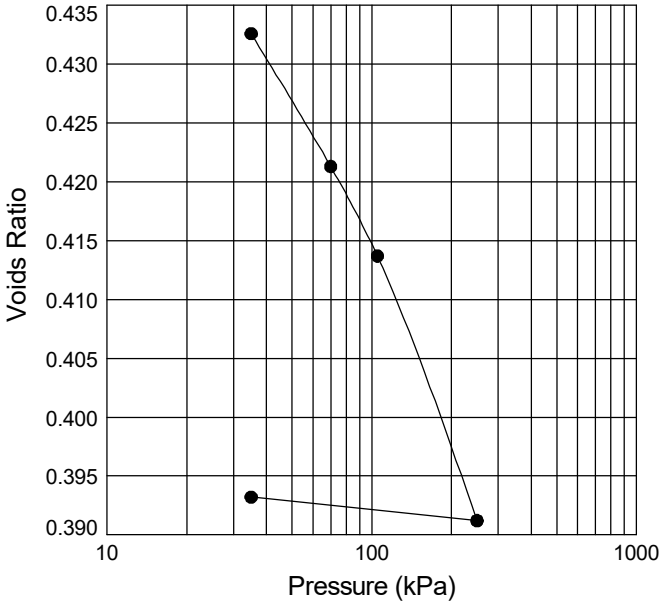
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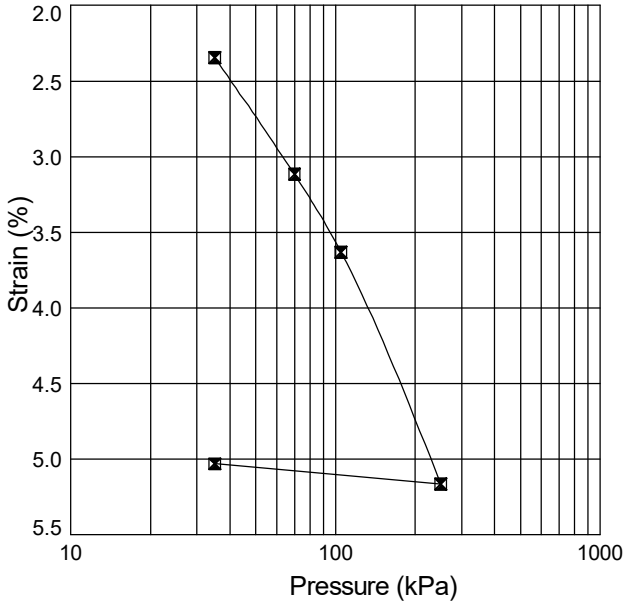
ONE-DIMENSIONAL CONSOLIDATION TEST

In accordance with BS EN ISO 17892 Part 5

Borehole: **BH104** Sample Ref: **12** Sample Type: **UT100** Depth (m): **3.10**

Description : Light brown mottled grey slightly sandy silty CLAY





SPECIMEN DETAILS	INITIAL	FINAL
Diameter (mm) :	74.91	74.91
Height (mm) :	19.44	18.46
Assumed Particle Density (Mg/m^3) :	2.65	2.65
Water Content (%) :	20.2	17.1
Wet Density (Mg/m^3) :	2.17	2.23
Dry Density (Mg/m^3) :	1.81	1.90
Voids Ratio :	0.4670	0.3932

TEST DETAILS

Stage	Duration (days)	Pressure (kPa)	Strain (%)	Void Ratio	M_v (m^2/MN)	T_{90}	C_v (m^2/yr)	Comments etc.
Loading	1	0 - 35	2.346	0.4326	0.67	31.8	1.3	
Loading	1	35 - 70	3.117	0.4213	0.23	12.1	3.3	
Loading	1	70 - 105	3.632	0.4137	0.15	15.2	2.6	
Loading	1	105 - 250	5.165	0.3912	0.11	5.4	7.1	
Unloading	1	250 - 35	5.031	0.3932	NA	NA	NA	

Notes: Method of time-setting used: **T_{90}.** Temperature range during test (degC): **19.5 - 21.4.**
Frame Correction Applied

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Compiled By		Date
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Contract
Langstone Flood & Coastal Erosion Management Scheme

Contract Ref:
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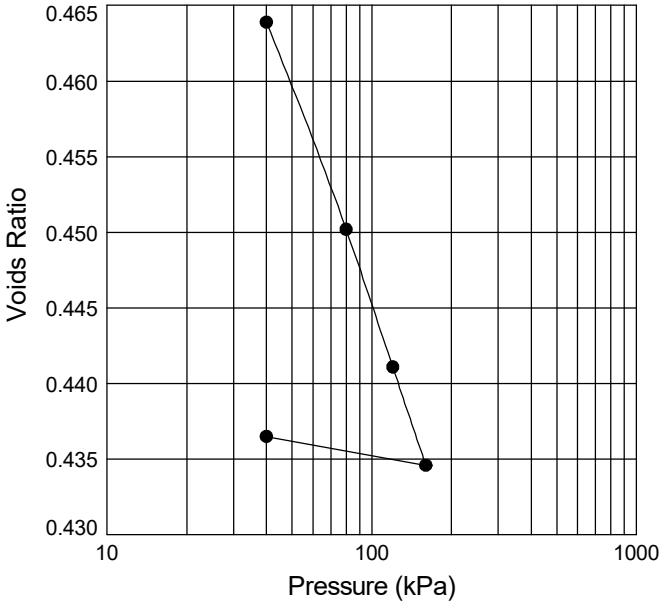
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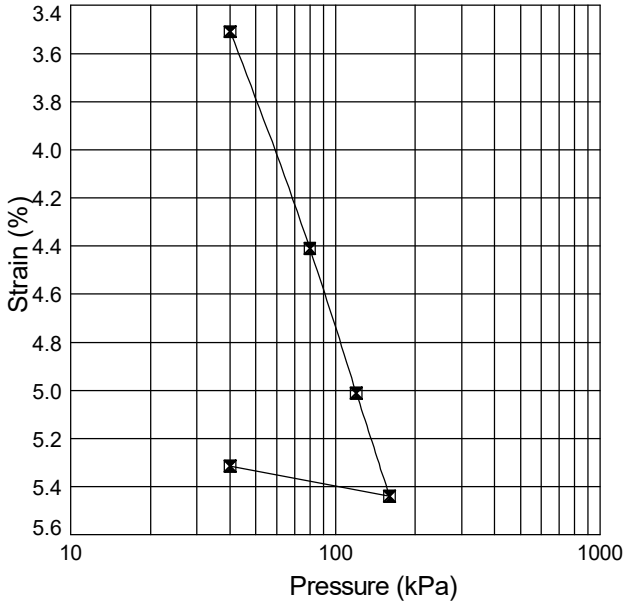
ONE-DIMENSIONAL CONSOLIDATION TEST

In accordance with BS EN ISO 17892 Part 5

Borehole: **BH104** Sample Ref: **17** Sample Type: **UT100** Depth (m): **4.04**

Description : Brown mottled grey slightly gravelly slightly sandy silty CLAY





SPECIMEN DETAILS	INITIAL	FINAL
Diameter (mm) :	74.92	74.92
Height (mm) :	19.12	18.10
Assumed Particle Density (Mg/m^3) :	2.65	2.65
Water Content (%) :	22.8	19.6
Wet Density (Mg/m^3) :	2.14	2.21
Dry Density (Mg/m^3) :	1.75	1.84
Voids Ratio :	0.5171	0.4365

TEST DETAILS

Stage	Duration (days)	Pressure (kPa)	Strain (%)	Void Ratio	M_v (m^2/MN)	T_{90}	C_v (m^2/yr)	Comments etc.
Loading	1	0 - 40	3.509	0.4639	0.88	18.5	2.1	
Loading	1	40 - 80	4.409	0.4502	0.23	7.9	4.7	
Loading	1	80 - 120	5.011	0.4411	0.16	6.4	5.8	
Loading	1	120 - 160	5.439	0.4346	0.11	2.6	14	
Unloading	1	160 - 40	5.314	0.4365	NA	NA	NA	

Notes: Method of time-setting used: **T_{90}.** Temperature range during test (degC): **19.5 - 21.4.**
Frame Correction Applied

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D. Richards	**DAISY RICHARDS**	**10/12/21**

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Langstone Flood & Coastal Erosion Management Scheme

Contract Ref:
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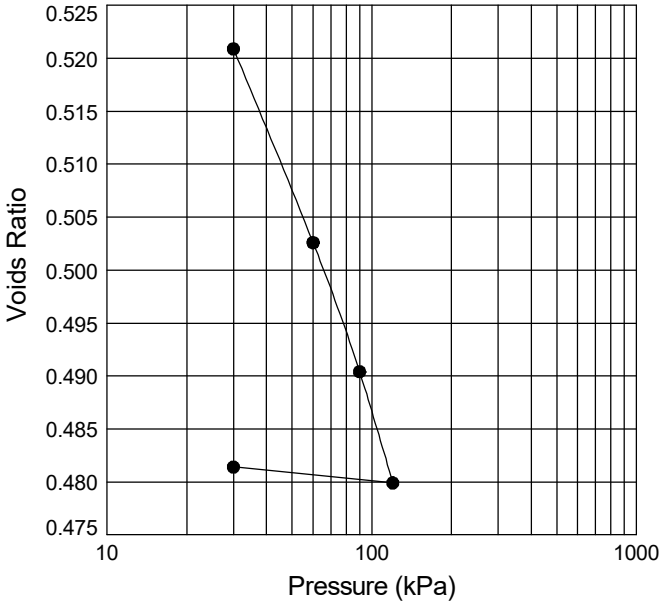
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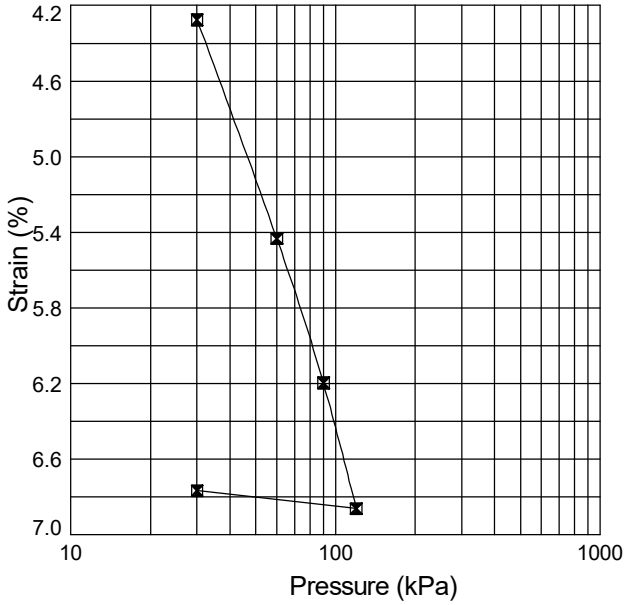
ONE-DIMENSIONAL CONSOLIDATION TEST

In accordance with BS EN ISO 17892 Part 5

Borehole: **BH105** Sample Ref: **6** Sample Type: **UT100** Depth (m): **1.42**

Description : Brown mottled grey slightly gravelly slightly sandy silty CLAY





SPECIMEN DETAILS	INITIAL	FINAL
Diameter (mm) :	74.88	74.88
Height (mm) :	18.96	17.68
Assumed Particle Density (Mg/m^3) :	2.65	2.65
Water Content (%) :	24.2	20.7
Wet Density (Mg/m^3) :	2.07	2.16
Dry Density (Mg/m^3) :	1.67	1.79
Voids Ratio :	0.5889	0.4814

TEST DETAILS

Stage	Duration (days)	Pressure (kPa)	Strain (%)	Void Ratio	M_v (m^2/MN)	T_{90}	C_v (m^2/yr)	Comments etc.
Loading	1	0 - 30	4.277	0.5209	1.4	39.2	0.97	
Loading	1	30 - 60	5.433	0.5026	0.40	19.6	1.8	
Loading	1	60 - 90	6.197	0.4904	0.27	25.3	1.4	
Loading	1	90 - 120	6.862	0.4799	0.24	44.8	0.78	
Unloading	1	120 - 30	6.767	0.4814	NA	NA	NA	

Notes: Method of time-setting used: **T_{90}.** Temperature range during test (degC): **19.5 - 21.1.**
Frame Correction Applied

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Compiled By		Date
D. Richards	**DAISY RICHARDS**	**10/12/21**

Contract: **Langstone Flood & Coastal Erosion Management Scheme**

Contract Ref: **736036**

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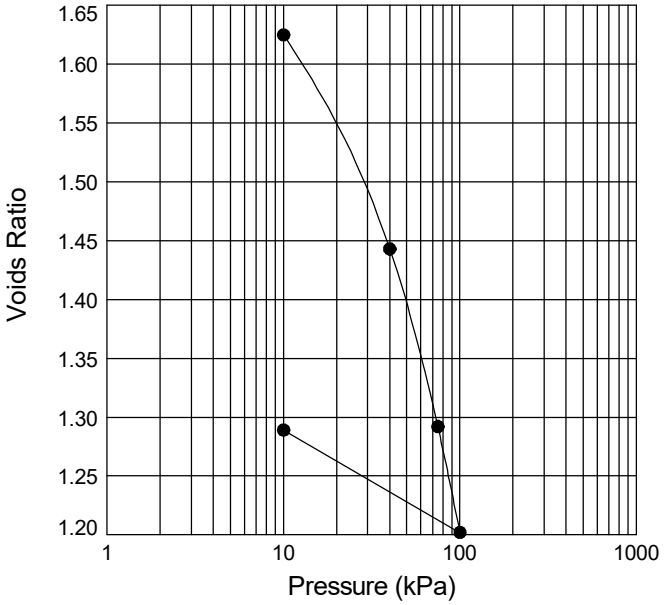
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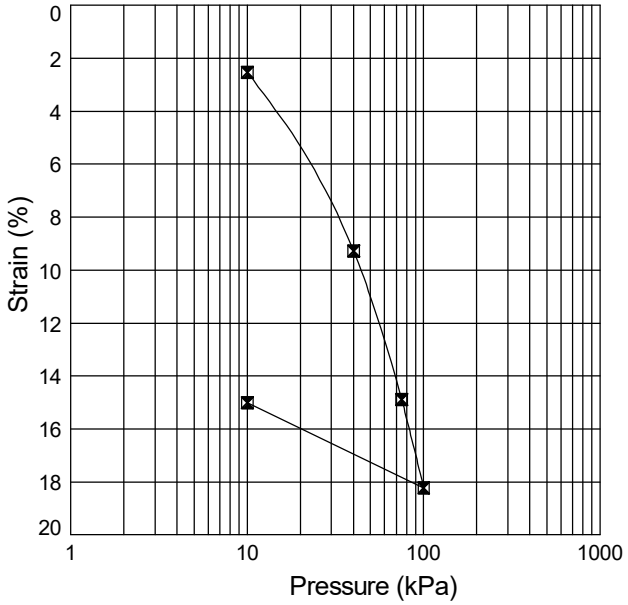
ONE-DIMENSIONAL CONSOLIDATION TEST

In accordance with BS EN ISO 17892 Part 5

Position ID: **DS103** Sample Ref: **5** Sample Type: **U70** Depth (m): **1.61**

Description : Grey slightly sandy organic silty CLAY





SPECIMEN DETAILS	INITIAL	FINAL
Diameter (mm) :	50.01	50.01
Height (mm) :	18.99	16.14
Assumed Particle Density (Mg/m^3) :	2.25	2.25
Water Content (%) :	82.8	64.8
Wet Density (Mg/m^3) :	1.53	1.62
Dry Density (Mg/m^3) :	0.84	0.98
Voids Ratio :	1.693	1.289

TEST DETAILS

Stage	Duration (days)	Pressure (kPa)	Strain (%)	Void Ratio	M_v (m^2/MN)	T_{90}	C_v (m^2/yr)	Comments etc.
Loading	1	0 - 10	2.528	1.625	2.5	52.7	0.74	
Loading	1	10 - 40	9.284	1.443	2.3	54.6	0.65	
Loading	1	40 - 75	14.882	1.292	1.8	87.1	0.36	
Loading	1	75 - 100	18.220	1.202	1.6	142.2	0.20	
Unloading	1	100 - 10	15.018	1.289	NA	NA	NA	

Notes: Method of time-setting used: **T_{90}.** Temperature range during test (degC): **19.8 - 22.4.**
Frame Correction Applied

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Francesca Bennett	FRANCESCA BENNETT	10/12/21

Contract	Contract Ref:
Langstone Flood & Coastal Erosion Management Scheme	**736036**

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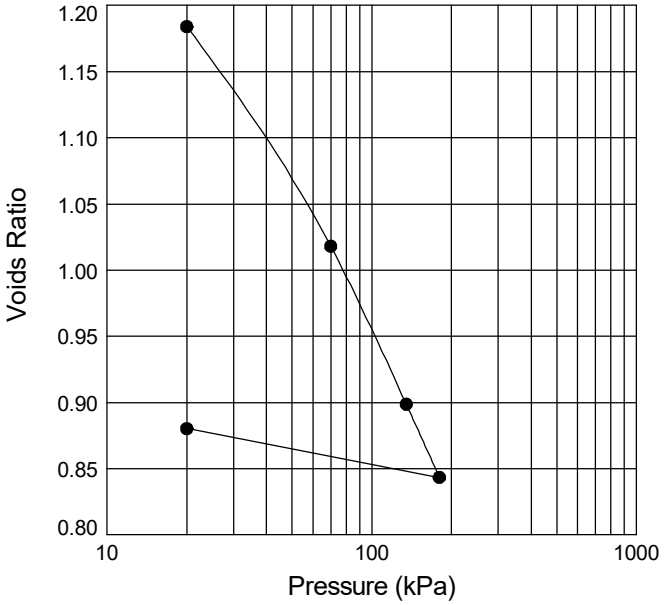
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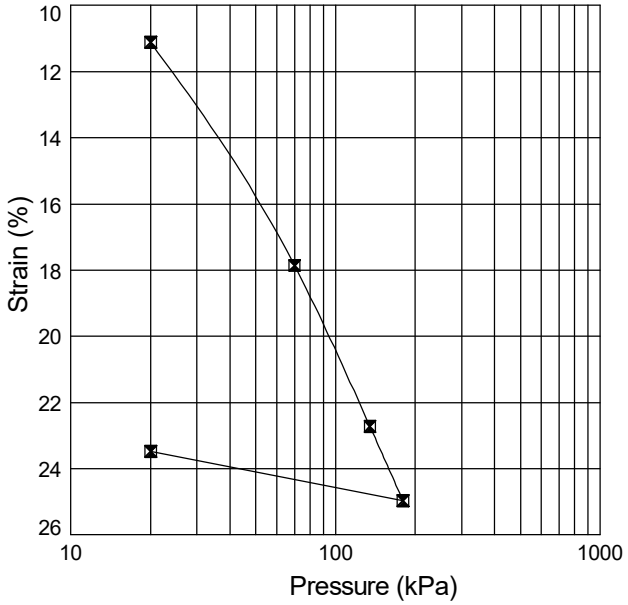
ONE-DIMENSIONAL CONSOLIDATION TEST

In accordance with BS EN ISO 17892 Part 5

Position ID: **DS103** Sample Ref: **13** Sample Type: **U70** Depth (m): **3.07**

Description : Dark grey slightly sandy organic silty CLAY





SPECIMEN DETAILS	INITIAL	FINAL
Diameter (mm) :	50.00	50.00
Height (mm) :	20.08	15.37
Assumed Particle Density (Mg/m^3) :	2.25	2.25
Water Content (%) :	73.6	49.3
Wet Density (Mg/m^3) :	1.59	1.79
Dry Density (Mg/m^3) :	0.92	1.20
Voids Ratio :	1.457	0.8802

TEST DETAILS

Stage	Duration (days)	Pressure (kPa)	Strain (%)	Void Ratio	M_v (m^2/MN)	T_{90}	C_v (m^2/yr)	Comments etc.
Loading	1	0 - 20	11.111	1.184	5.6	37.8	1.1	
Loading	1	20 - 70	17.859	1.018	1.5	72.4	0.45	
Loading	1	70 - 135	22.724	0.8987	0.91	86.9	0.33	
Loading	1	135 - 180	24.975	0.8434	0.65	156.6	0.17	
Unloading	1	180 - 20	23.476	0.8802	NA	NA	NA	

Notes: Method of time-setting used: **T_{90}.** Temperature range during test (degC): **18.8 - 22.1.**
Frame Correction Applied

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Compiled By		Date
Francesca Bennett	FRANCESCA BENNETT	10/12/21

Contract: **Langstone Flood & Coastal Erosion Management Scheme**

Contract Ref: **736036**

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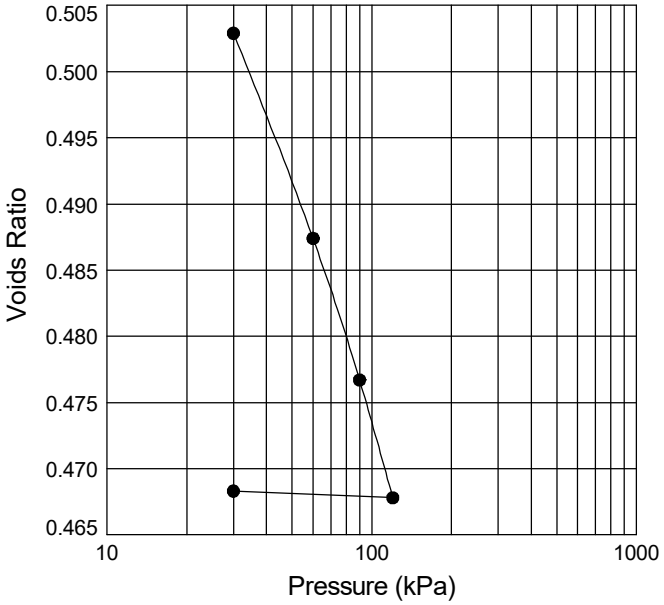
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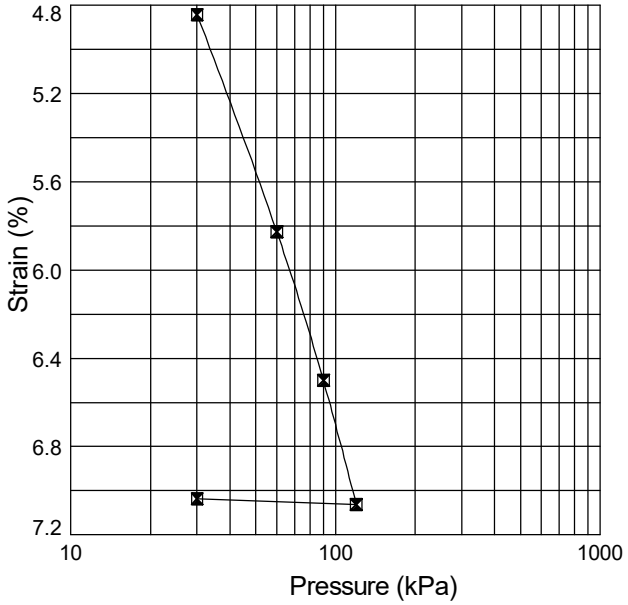
ONE-DIMENSIONAL CONSOLIDATION TEST

In accordance with BS EN ISO 17892 Part 5

Position ID: **DS105** Sample Ref: **10** Sample Type: **U70** Depth (m): **2.40**

Description : Brown slightly sandy SILT





SPECIMEN DETAILS	INITIAL	FINAL
Diameter (mm) :	50.01	50.01
Height (mm) :	19.00	17.66
Assumed Particle Density (Mg/m^3) :	2.65	2.65
Water Content (%) :	24.6	20.3
Wet Density (Mg/m^3) :	2.09	2.17
Dry Density (Mg/m^3) :	1.68	1.81
Voids Ratio :	0.5794	0.4683

TEST DETAILS

Stage	Duration (days)	Pressure (kPa)	Strain (%)	Void Ratio	M_v (m^2/MN)	T_{90}	C_v (m^2/yr)	Comments etc.
Loading	1	0 - 30	4.842	0.5029	1.6	20.5	1.9	
Loading	1	30 - 60	5.826	0.4874	0.34	8.2	4.4	
Loading	1	60 - 90	6.500	0.4767	0.24	10.5	3.4	
Loading	1	90 - 120	7.063	0.4678	0.20	19.2	1.8	
Unloading	1	120 - 30	7.037	0.4683	NA	NA	NA	

Notes: Method of time-setting used: **T_{90}.** Temperature range during test (degC): **18.9 - 21.5.**
Frame Correction Applied

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Compiled By		Date
D. Richards	**DAISY RICHARDS**	**10/12/21**

Contract
Langstone Flood & Coastal Erosion Management Scheme

Contract Ref:
736036

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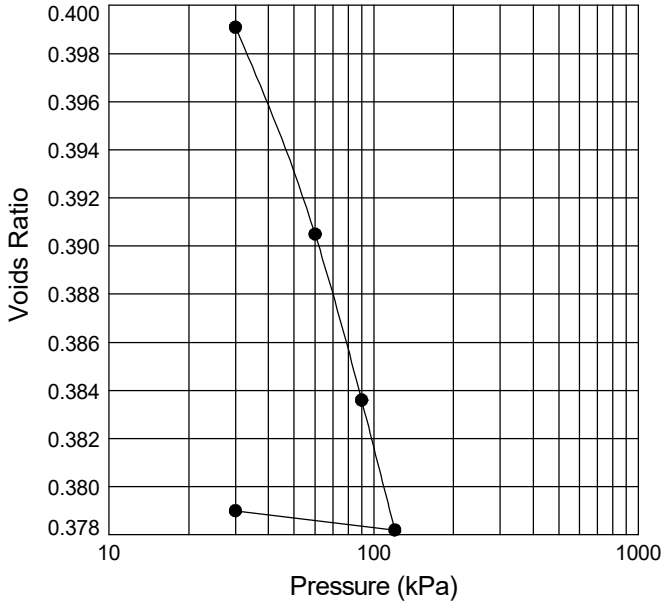
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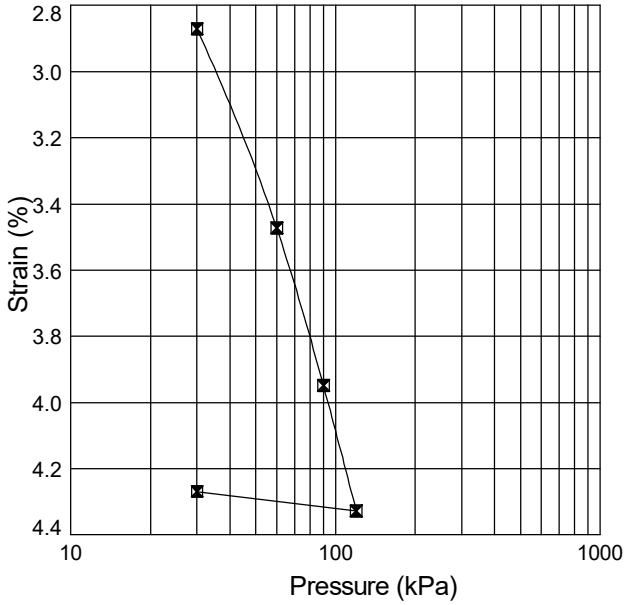
ONE-DIMENSIONAL CONSOLIDATION TEST

In accordance with BS EN ISO 17892 Part 5

Position ID: **DS106** Sample Ref: **5** Sample Type: **U70** Depth (m): **1.26**

Description : Brown slightly sandy silty CLAY





SPECIMEN DETAILS	INITIAL	FINAL
Diameter (mm) :	49.99	49.99
Height (mm) :	20.24	19.38
Assumed Particle Density (Mg/m^3) :	2.65	2.65
Water Content (%) :	18.6	16.4
Wet Density (Mg/m^3) :	2.18	2.24
Dry Density (Mg/m^3) :	1.84	1.92
Voids Ratio :	0.4405	0.3790

TEST DETAILS

Stage	Duration (days)	Pressure (kPa)	Strain (%)	Void Ratio	M_v (m^2/MN)	T_{90}	C_v (m^2/yr)	Comments etc.
Loading	1	0 - 30	2.871	0.3991	0.96	23.5	1.9	
Loading	1	30 - 60	3.473	0.3905	0.21	8.0	5.3	
Loading	1	60 - 90	3.948	0.3836	0.16	7.6	5.5	
Loading	1	90 - 120	4.328	0.3782	0.13	7.0	6.0	
Unloading	1	120 - 30	4.269	0.3790	NA	NA	NA	

Notes: Method of time-setting used: **T_{90}.** Temperature range during test (degC): **20.1 - 22.5.**
Frame Correction Applied

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1a Princess Street
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Bristol
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Compiled By		Date
Francesca Bennett	FRANCESCA BENNETT	10/12/21

Contract: **Langstone Flood & Coastal Erosion Management Scheme**

Contract Ref: **736036**

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STRUCTURAL SOILS

SAMPLE REPORT

Contract:	Client:	Exploratory Position:
Langstone Flood & Coastal Erosion Management Scheme	**Havant Borough Council**	**BH105**

Contract Ref:	Sample Details:	Sheet:
736036	Depth (m): **5.20** - Base (m): **5.65** - Ref: **21** - Type: **UT100**	**1** of **1**



Sample Description

Soft to firm grey mottled white slightly sandy gravelly silty CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of chalk and flint.

Logged By:	RRocha
Blows:	50
Recovery:	67%
Sampled:	21/09/2021
Sampled By:	ROwen



GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PjtVersion: v8_07 | GrfcText G - SAMPLE DESCRIPTION REPORT V7 | 736036_LANGSTONE_FLOOD_&_COASTAL_EROSION_MANAGEMENT_SCHEME.GPJ - v10_01. | 10/12/21 - 06:27 | AF3 |

SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m^3	Dry Density Mg/m^3	Saturated Moisture Content %	Description of Sample	Lab location
BH102	22	UT100	4.50	1	22	2.03	1.67	23	White stained brown CHALK	**H**
BH106	18	UT100	5.00	1	24	1.99	1.60	25	White CHALK	**H**

* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

STRUCTURAL SOILS
18 Frogmore Road
Hemel Hempstead
Hertfordshire
HP3 9RT

Compiled By		Date	Contract Ref:
	DAVID NICKELLS	**19.11.21**	**736036**

Contract:

Langstone Flood & Coastal Erosion Management Scheme

envirolab
Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 21/11348
Issue Number: 1 **Date:** 26 October, 2021

Client: Structural Soils Limited (Hemel Hempstead Lab)
18 Frogmore Road
Hemel Hempstead
UK
HP3 9RT

Project Manager: Hemel Lab/Sharon Cairns
Project Name: Langstone Flood & Coastal Erosion Management Scheme
Project Ref: 736036
Order No: N/A
Date Samples Received: 19/10/21
Date Instructions Received: 19/10/21
Date Analysis Completed: 26/10/21

Prepared by:

Melanie Marshall
Laboratory Coordinator

Approved by:

Sophie France
Client Service Manager

Envirolab Job Number: 21/11348

Client Project Name: Langstone Flood & Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/11348/1	21/11348/2	21/11348/3	21/11348/4	21/11348/5	21/11348/6	21/11348/7	Units	Limit of Detection	Method ref
Client Sample No	8	4	2	3	3	2	2			
Client Sample ID	MDTP102	MDTP102	DS102	HDTP103	HDTP104	HDTP107	HDTP102			
Depth to Top	1.70	1.20	0.30	0.50	0.80	0.30	0.30			
Depth To Bottom	1.80	1.30	0.50	0.60	1.00	0.50	0.50			
Date Sampled	15-Sep-21	15-Sep-21	24-Sep-21		16-Sep-21	17-Sep-21	23-Sep-21			
Sample Type	Soil - B	Solid	Soil - B	Solid	Solid	Soil - B	Soil - B			
Sample Matrix Code	6A	7	6AE	7	7	6AE	6A			
% Stones >10mm$_A$	6.3	<0.1	40.0	<0.1	<0.1	34.8	5.3	% w/w	0.1	A-T-044
pH BRE$_D$$^{M\#}$	10.01	9.65	8.57	9.44	9.63	8.95	9.55	pH	0.01	A-T-031s
Sulphate BRE (water sol 2:1)$_D$$^{M\#}$	188	48	126	183	170	43	<10	mg/l	10	A-T-026s
Sulphate BRE (acid sol)$_D$$^{M\#}$	-	-	-	-	-	-	-	% w/w	0.02	A-T-028s
Sulphur BRE (total)$_D$	-	-	-	-	-	-	-	% w/w	0.01	A-T-024s
Organic matter$_D$$^{M\#}$	1.3	0.3	-	-	-	-	-	% w/w	0.1	A-T-032 OM

Envirolab Job Number: 21/11348

Client Project Name: Langstone Flood & Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/11348/8	21/11348/9	21/11348/10	21/11348/11	21/11348/12	21/11348/13	21/11348/14	Units	Limit of Detection	Method ref
Client Sample No	2	10	3	3	9	2	1			
Client Sample ID	HDTP106	BH104	BH104	MDTP103	MDTP103	BH102	DS110			
Depth to Top	0.30	2.00	1.00	1.30	3.30	0.50	0.20			
Depth To Bottom	0.50	2.50	1.30	1.40	3.50	1.00	0.30			
Date Sampled	28-Sep-21			15-Sep-21	15-Oct-21		28-Sep-21			
Sample Type	Soil - B	Soil - B	Soil - B	Soil - B	Soil - B	Soil - B	Soil - D			
Sample Matrix Code	6AE	6A	6AE	6A	6A	6AB	4A			
% Stones >10mm$_A$	<0.1	19.0	40.4	25.9	51.6	29.8	53.1	% w/w	0.1	A-T-044
pH BRE$_D^{M\#}$	8.90	9.17	10.80	10.15	10.11	10.18	9.44	pH	0.01	A-T-031s
Sulphate BRE (water sol 2:1)$_D^{M\#}$	<10	212	66	47	67	61	36	mg/l	10	A-T-026s
Sulphate BRE (acid sol)$_D^{M\#}$	-	-	-	-	-	-	-	% w/w	0.02	A-T-028s
Sulphur BRE (total)$_D$	-	-	-	-	-	-	-	% w/w	0.01	A-T-024s
Organic matter$_D^{M\#}$	5.5	1.5	2.0	-	-	-	-	% w/w	0.1	A-T-032 OM

Envirolab Job Number: 21/11348

Client Project Name: Langstone Flood & Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/11348/15	21/11348/16	21/11348/17	21/11348/18				Units	Limit of Detection	Method ref
Client Sample No	6	3	2	1						
Client Sample ID	MDTP101	HDTP108	HDTP111	HDTP105						
Depth to Top	1.70	0.70	0.30	0.30						
Depth To Bottom	1.80	0.90	0.50	0.50						
Date Sampled	15-Sep-21	17-Sep-21	23-Sep-21	16-Sep-21						
Sample Type	Soil	Soil - B	Soil - B	Solid						
Sample Matrix Code	6A	6AE	6AE	7						
% Stones >10mm$_A$	1.5	6.1	<0.1	<0.1				% w/w	0.1	A-T-044
pH BRE$_D$$^{M\#}$	7.28	9.00	8.14	8.95				pH	0.01	A-T-031s
Sulphate BRE (water sol 2:1)$_D$$^{M\#}$	908	64	332	131				mg/l	10	A-T-026s
Sulphate BRE (acid sol)$_D$$^{M\#}$	-	-	-	0.10				% w/w	0.02	A-T-028s
Sulphur BRE (total)$_D$	-	-	-	0.08				% w/w	0.01	A-T-024s
Organic matter$_D$$^{M\#}$	5.2	-	-	-				% w/w	0.1	A-T-032 OM

REPORT NOTES

General
This report shall not be reproduced, except in full, without written approval from Envirolab.
The results reported herein relate only to the material supplied to the laboratory.
The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.
Analytical results reflect the quality of the sample at the time of analysis only.
Opinions and interpretations expressed are outside the scope of our accreditation.
If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample, 9 = INCINERATOR ASH.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

Key:
IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Please contact us if you need any further information.

v1

Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: Structural Soils Limited (Hemel Hempstead Lab), 18 Frogmore Road, Hemel Hempstead, UK, HP3 9RT

Project: Langstone Flood & Coastal Erosion Management Scheme

Clients Project No: 736036

Project No: 21/11348

Date Received: 19/10/2021 (am)

Cool Box Temperatures (°C): 16.8,17.0

Lab Sample ID	21/11348/1	21/11348/2	21/11348/3	21/11348/4	21/11348/5	21/11348/6	21/11348/7	21/11348/9	21/11348/10	21/11348/11	21/11348/13	21/11348/15
Client Sample No	8	4	2	3	3	2	2	10	3	3	2	6
Client Sample ID/Depth	MDTP102 1.70-1.80m	MDTP102 1.20-1.30m	DS102 0.30-0.50m	HDTP103 0.50-0.60m	HDTP104 0.80-1.00m	HDTP107 0.30-0.50m	HDTP102 0.30-0.50m	BH104 2.00-2.50m	BH104 1.00-1.30m	MDTP103 1.30-1.40m	BH102 0.50-1.00m	MDTP101 1.70-1.80m
Date Sampled	15/09/21	15/09/21	24/09/21		16/09/21	17/09/21	23/09/21			15/09/21		15/09/21
Deviation Code												
E (no date)				✓				✓	✓		✓	
F	✓	✓	✓		✓	✓	✓			✓		✓

Lab Sample ID	21/11348/16	21/11348/17	21/11348/18
Client Sample No	3	2	1
Client Sample ID/Depth	HDTP108 0.70-0.90m	HDTP111 0.30-0.50m	HDTP105 0.30-0.50m
Date Sampled	17/09/21	23/09/21	16/09/21
Deviation Code			
E (no date)			
F	✓	✓	✓

Key

E (no date) *No sampling date provided (all results affected if not provided)*

F *Maximum holding time exceeded between sampling date and analysis for analytes listed below*

HOLDING TIME EXCEEDANCES

Lab Sample ID	21/11348/1	21/11348/2	21/11348/3	21/11348/5	21/11348/6	21/11348/7	21/11348/11	21/11348/15	21/11348/16	21/11348/17	21/11348/18
Client Sample No	8	4	2	3	2	2	3	6	3	2	1
Client Sample ID/Depth	MDTP102 1.70-1.80m	MDTP102 1.20-1.30m	DS102 0.30-0.50m	HDTP104 0.80-1.00m	HDTP107 0.30-0.50m	HDTP102 0.30-0.50m	MDTP103 1.30-1.40m	MDTP101 1.70-1.80m	HDTP108 0.70-0.90m	HDTP111 0.30-0.50m	HDTP105 0.30-0.50m
Date Sampled	15/09/21	15/09/21	24/09/21	16/09/21	17/09/21	23/09/21	15/09/21	15/09/21	17/09/21	23/09/21	16/09/21
Sulphate BRE (water sol 2:1)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Lab Sample ID	21/11348/1	21/11348/2	21/11348/3	21/11348/5	21/11348/6	21/11348/7	21/11348/11	21/11348/15	21/11348/16	21/11348/17	21/11348/18
Client Sample No	8	4	2	3	2	2	3	6	3	2	1
Client Sample ID/Depth	MDTP102 1.70-1.80m	MDTP102 1.20-1.30m	DS102 0.30-0.50m	HDTP104 0.80-1.00m	HDTP107 0.30-0.50m	HDTP102 0.30-0.50m	MDTP103 1.30-1.40m	MDTP101 1.70-1.80m	HDTP108 0.70-0.90m	HDTP111 0.30-0.50m	HDTP105 0.30-0.50m
Date Sampled	15/09/21	15/09/21	24/09/21	16/09/21	17/09/21	23/09/21	15/09/21	15/09/21	17/09/21	23/09/21	16/09/21
Organic matter	✓	✓						✓			
Sulphate BRE (acid sol)											✓

Note: If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3 (for water samples 5 ± 3°C), ISO 18400-105:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	21/11348/1	21/11348/2	21/11348/3	21/11348/4	21/11348/5	21/11348/6	21/11348/7	21/11348/8	21/11348/9	21/11348/10	21/11348/11	21/11348/12
Client Sample No	8	4	2	3	3	2	2	2	10	3	3	9
Client Sample ID/Depth	MDTP102 1.70-1.80m	MDTP102 1.20-1.30m	DS102 0.30-0.50m	HDTP103 0.50-0.60m	HDTP104 0.80-1.00m	HDTP107 0.30-0.50m	HDTP102 0.30-0.50m	HDTP106 0.30-0.50m	BH104 2.00-2.50m	BH104 1.00-1.30m	MDTP103 1.30-1.40m	MDTP103 3.30-3.50m
Date Sampled	15/09/21	15/09/21	24/09/21		16/09/21	17/09/21	23/09/21	28/09/21			15/09/21	15/10/21
A-T-024s												
A-T-026s	25/10/2021	25/10/2021	25/10/2021	25/10/2021	25/10/2021	25/10/2021	25/10/2021	25/10/2021	25/10/2021	25/10/2021	25/10/2021	25/10/2021
A-T-028s												
A-T-031s	25/10/2021	25/10/2021	25/10/2021	25/10/2021	25/10/2021	25/10/2021	25/10/2021	25/10/2021	25/10/2021	25/10/2021	25/10/2021	25/10/2021
A-T-032 OM	26/10/2021	26/10/2021						26/10/2021	26/10/2021	26/10/2021		
A-T-044	25/10/2021	25/10/2021	25/10/2021	25/10/2021	25/10/2021	25/10/2021	25/10/2021	25/10/2021	25/10/2021	25/10/2021	25/10/2021	25/10/2021

Lab Sample ID	21/11348/13	21/11348/14	21/11348/15	21/11348/16	21/11348/17	21/11348/18
Client Sample No	2	1	6	3	2	1
Client Sample ID/Depth	BH102 0.50-1.00m	DS110 0.20-0.30m	MDTP101 1.70-1.80m	HDTP108 0.70-0.90m	HDTP111 0.30-0.50m	HDTP105 0.30-0.50m
Date Sampled		28/09/21	15/09/21	17/09/21	23/09/21	16/09/21
A-T-024s						25/10/2021
A-T-026s	25/10/2021	25/10/2021	25/10/2021	25/10/2021	25/10/2021	25/10/2021
A-T-028s						26/10/2021
A-T-031s	25/10/2021	25/10/2021	25/10/2021	25/10/2021	25/10/2021	25/10/2021
A-T-032 OM			26/10/2021			
A-T-044	25/10/2021	25/10/2021	25/10/2021	25/10/2021	25/10/2021	25/10/2021

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report

envirolab
Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 21/11378
Issue Number: 1 **Date:** 26 October, 2021

Client: Structural Soils Limited (Hemel Hempstead Lab)
18 Frogmore Road
Hemel Hempstead
UK
HP3 9RT

Project Manager: Hemel Lab/Sharon Cairns
Project Name: Langstone Flood & Coastal Erosion Management Scheme
Project Ref: 736036
Order No: N/A
Date Samples Received: 20/10/21
Date Instructions Received: 20/10/21
Date Analysis Completed: 26/10/21

Prepared by:

Melanie Marshall
Laboratory Coordinator

Approved by:

Sophie France
Client Service Manager

Envirolab Job Number: 21/11378

Client Project Name: Langstone Flood & Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/11378/1	21/11378/2	21/11378/3	21/11378/4	21/11378/5	21/11378/6		Units	Limit of Detection	Method ref
Client Sample No	4	2	11	11	2	4				
Client Sample ID	DS102	DS103	DS101	DS103	BH106	HDTP109				
Depth to Top	0.90	0.30	2.40	2.00	0.60	1.00				
Depth To Bottom	1.10	0.50	2.90	2.66	1.00	1.20				
Date Sampled	24-Sep-21	23-Sep-21		23-Sep-21		17-Sep-21				
Sample Type	Soil - B	Soil - B	Soil - D	Soil - D	Soil - B	Soil - B				
Sample Matrix Code	6A	6AE	6A	6A	6A	6A				
% Stones >10mm$_A$	1.5	38.0	18.0	<0.1	57.1	2.3		% w/w	0.1	A-T-044
pH BRE$_D$$^{M\#}$	7.73	8.36	8.85	8.13	8.25	8.62		pH	0.01	A-T-031s
Sulphate BRE (water sol 2:1)$_D$$^{M\#}$	720	92	190	718	126	137		mg/l	10	A-T-026s
Organic matter$_D$$^{M\#}$	5.6	-	-	5.6	-	-		% w/w	0.1	A-T-032 OM

REPORT NOTES

General
This report shall not be reproduced, except in full, without written approval from Envirolab.
The results reported herein relate only to the material supplied to the laboratory.
The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.
Analytical results reflect the quality of the sample at the time of analysis only.
Opinions and interpretations expressed are outside the scope of our accreditation.
If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample, 9 = INCINERATOR ASH.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

Key:
IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Please contact us if you need any further information.

v1

Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: Structural Soils Limited (Hemel Hempstead Lab), 18 Frogmore Road, Hemel Hempstead, UK, HP3 9RT

Project: Langstone Flood & Coastal Erosion Management Scheme

Clients Project No: 736036

Project No: 21/11378

Date Received: 20/10/2021 (am)

Cool Box Temperatures (°C): 14.1

Lab Sample ID	21/11378/1	21/11378/2	21/11378/3	21/11378/4	21/11378/5	21/11378/6
Client Sample No	4	2	11	11	2	4
Client Sample ID/Depth	DS102 0.90-1.10m	DS103 0.30-0.50m	DS101 2.40-2.90m	DS103 2.00-2.66m	BH106 0.60-1.00m	HDTP109 1.00-1.20m
Date Sampled	24/09/21	23/09/21		23/09/21		17/09/21
Deviation Code						
E (no date)			✓		✓	
F	✓	✓		✓		✓

Key

E (no date) *No sampling date provided (all results affected if not provided)*

F *Maximum holding time exceeded between sampling date and analysis for analytes listed below*

HOLDING TIME EXCEEDANCES

Lab Sample ID	21/11378/1	21/11378/2	21/11378/4	21/11378/6
Client Sample No	4	2	11	4
Client Sample ID/Depth	DS102 0.90-1.10m	DS103 0.30-0.50m	DS103 2.00-2.66m	HDTP109 1.00-1.20m
Date Sampled	24/09/21	23/09/21	23/09/21	17/09/21
Sulphate BRE (water sol 2:1)	✓	✓	✓	✓
Organic matter	✓		✓	

Note: If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3 (for water samples 5 ± 3°C), ISO 18400-105:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	21/11378/1	21/11378/2	21/11378/3	21/11378/4	21/11378/5	21/11378/6
Client Sample No	4	2	11	11	2	4
Client Sample ID/Depth	DS102 0.90-1.10m	DS103 0.30-0.50m	DS101 2.40-2.90m	DS103 2.00-2.66m	BH106 0.60-1.00m	HDTP109 1.00-1.20m
Date Sampled	24/09/21	23/09/21		23/09/21		17/09/21
A-T-026s	25/10/2021	25/10/2021	25/10/2021	25/10/2021	25/10/2021	25/10/2021
A-T-031s	25/10/2021	25/10/2021	25/10/2021	25/10/2021	25/10/2021	25/10/2021
A-T-032 OM	26/10/2021			26/10/2021		
A-T-044	25/10/2021	25/10/2021	25/10/2021	25/10/2021	25/10/2021	25/10/2021

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report

envirolab
Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 21/11460
Issue Number: 1 **Date:** 27 October, 2021

Client:
Structural Soils Limited (Bristol Lab)
Unit 1a
Princess Street
Bedminster
Bristol
UK
BS3 4AG

Project Manager: Lisa Frost / Gary Emms/ Valeria Chacin Mijova/Alan
Project Name: Langstone Flood & Coastal Erosion Management Scheme
Project Ref: 736036
Order No: N/A
Date Samples Received: 21/10/21
Date Instructions Received: 21/10/21
Date Analysis Completed: 27/10/21

Prepared by:

Sophie France
Client Service Manager

Approved by:

Danielle Brierley
Deputy Client Services Supervisor

Envirolab Job Number: 21/11460

Client Project Name: Langstone Flood & Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/11460/1							Units	Limit of Detection	Method ref
Client Sample No	12									
Client Sample ID	BH104									
Depth to Top	3.00									
Depth To Bottom	3.45									
Date Sampled										
Sample Type	Soil - UT									
Sample Matrix Code	6A									
% Stones >10mm$_A$	<0.1							% w/w	0.1	A-T-044
pH BRE$_D$$^{M\#}$	8.61							pH	0.01	A-T-031s
Sulphate BRE (water sol 2:1)$_D$$^{M\#}$	349							mg/l	10	A-T-026s

REPORT NOTES

General
This report shall not be reproduced, except in full, without written approval from Envirolab.
The results reported herein relate only to the material supplied to the laboratory.
The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.
Analytical results reflect the quality of the sample at the time of analysis only.
Opinions and interpretations expressed are outside the scope of our accreditation.
If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample, 9 = INCINERATOR ASH.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

Key:
IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Please contact us if you need any further information.

v1

Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: Structural Soils Limited (Bristol Lab), Unit 1a, Princess Street, Bedminster, Bristol, UK, BS3 4AG

Project: Langstone Flood & Coastal Erosion Management Scheme

Clients Project No: 736036

Project No: 21/11460

Date Received: 21/10/2021 (am)

Cool Box Temperatures (°C): 7.9

Lab Sample ID	21/11460/1
Client Sample No	12
Client Sample ID/Depth	BH104 3.00-3.45m
Date Sampled	
Deviation Code	
E (no date)	✓

Key

E (no date) *No sampling date provided (all results affected if not provided)*

Note: If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3 (for water samples 5 ± 3°C), ISO 18400-105:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	21/11460/1
Client Sample No	12
Client Sample ID/Depth	BH104 3.00-3.45m
Date Sampled	
A-T-026s	27/10/2021
A-T-031s	26/10/2021
A-T-044	26/10/2021

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report

envirolab
Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 21/11675
Issue Number: 1 **Date:** 01 November, 2021

Client: Structural Soils Limited (Hemel Hempstead Lab)
18 Frogmore Road
Hemel Hempstead
UK
HP3 9RT

Project Manager: Hemel Lab/Sharon Cairns
Project Name: Langstone Flood & Coastal Erosion Management Scheme
Project Ref: 736036
Order No: N/A
Date Samples Received: 27/10/21
Date Instructions Received: 27/10/21
Date Analysis Completed: 01/11/21

Prepared by:

Melanie Marshall
Laboratory Coordinator

Approved by:

Richard Wong
Client Manager

Envirolab Job Number: 21/11675

Client Project Name: Langstone Flood & Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/11675/1	21/11675/2						Units	Limit of Detection	Method ref
Client Sample No	2	2								
Client Sample ID	DS101	HDTP110								
Depth to Top	0.3	0.3								
Depth To Bottom	0.5	0.5								
Date Sampled	27-Sep-21	27-Sep-21								
Sample Type	Soil - B	Soil - B								
Sample Matrix Code	6AE	7BS								
% Stones >10mm$_A$	37.9	<0.1						% w/w	0.1	A-T-044
pH BRE$_D$$^{M\#}$	7.84	8.83						pH	0.01	A-T-031s
Sulphate BRE (water sol 2:1)$_D$$^{M\#}$	465	76						mg/l	10	A-T-026s

REPORT NOTES

General
This report shall not be reproduced, except in full, without written approval from Envirolab.
The results reported herein relate only to the material supplied to the laboratory.
The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.
Analytical results reflect the quality of the sample at the time of analysis only.
Opinions and interpretations expressed are outside the scope of our accreditation.
If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample, 9 = INCINERATOR ASH.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

Key:
IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Please contact us if you need any further information.

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Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: Structural Soils Limited (Hemel Hempstead Lab), 18 Frogmore Road, Hemel Hempstead, UK, HP3 9RT

Project: Langstone Flood & Coastal Erosion Management Scheme

Clients Project No: 736036

Project No: 21/11675

Date Received: 27/10/2021 (am)

Cool Box Temperatures (°C): 15.5

Lab Sample ID	21/11675/1	21/11675/2
Client Sample No	2	2
Client Sample ID/Depth	DS101 0.3-0.5m	HDTP110 0.3-0.5m
Date Sampled	27/09/21	27/09/21
Deviation Code		
F	✓	✓

Key

F *Maximum holding time exceeded between sampling date and analysis for analytes listed below*

HOLDING TIME EXCEEDANCES

Lab Sample ID	21/11675/1	21/11675/2
Client Sample No	2	2
Client Sample ID/Depth	DS101 0.3-0.5m	HDTP110 0.3-0.5m
Date Sampled	27/09/21	27/09/21
Sulphate BRE (water sol 2:1)	✓	✓

Note: If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3 (for water samples 5 ± 3°C), ISO 18400-105:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	21/11675/1	21/11675/2
Client Sample No	2	2
Client Sample ID/Depth	DS101 0.3-0.5m	HDTP110 0.3-0.5m
Date Sampled	27/09/21	27/09/21
A-T-026s	01/11/2021	01/11/2021
A-T-031s	01/11/2021	01/11/2021
A-T-044	01/11/2021	01/11/2021

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report

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Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 21/12052
Issue Number: 1 **Date:** 11 November, 2021

Client: Structural Soils Limited (Hemel Hempstead Lab)
18 Frogmore Road
Hemel Hempstead
UK
HP3 9RT

Project Manager: Hemel Lab/Sharon Cairns
Project Name: Langstone Flood & Coastal Erosion Management Scheme
Project Ref: 736036
Order No: N/A
Date Samples Received: 05/11/21
Date Instructions Received: 05/11/21
Date Analysis Completed: 11/11/21

Approved by:



Sophie France
Client Service Manager

Envirolab Job Number: 21/12052

Client Project Name: Langstone Flood & Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/12052/1	21/12052/2	21/12052/3					Units	Limit of Detection	Method ref
Client Sample No	3	6	4							
Client Sample ID	BH103	BH103	DS109							
Depth to Top	0.60	1.20	0.80							
Depth To Bottom	1.20	1.70	1.00							
Date Sampled			29-Sep-21							
Sample Type	Soil - B	Soil - B	Soil - B							
Sample Matrix Code	6A	6A	3A							
% Stones >10mm$_A$	2.1	16.8	<0.1					% w/w	0.1	A-T-044
pH BRE$_D$$^{M\#}$	8.44	8.67	9.50					pH	0.01	A-T-031s
Sulphate BRE (water sol 2:1)$_D$$^{M\#}$	168	109	19					mg/l	10	A-T-026s

REPORT NOTES

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The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.
Analytical results reflect the quality of the sample at the time of analysis only.
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A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample, 9 = INCINERATOR ASH.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

Key:
IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Please contact us if you need any further information.

v1

Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: Structural Soils Limited (Hemel Hempstead Lab), 18 Frogmore Road, Hemel Hempstead, UK, HP3 9RT

Project: Langstone Flood & Coastal Erosion Management Scheme

Clients Project No: 736036

Project No: 21/12052

Date Received: 05/11/2021 (am)

Cool Box Temperatures (°C): 9.2

Lab Sample ID	21/12052/1	21/12052/2	21/12052/3
Client Sample No	3	6	4
Client Sample ID/Depth	BH103 0.60-1.20m	BH103 1.20-1.70m	DS109 0.80-1.00m
Date Sampled			29/09/21
Deviation Code			
E (no date)	✓	✓	
F			✓

Key
E (no date) *No sampling date provided (all results affected if not provided)*
F *Maximum holding time exceeded between sampling date and analysis for analytes listed below*

HOLDING TIME EXCEEDANCES

Lab Sample ID	21/12052/3
Client Sample No	4
Client Sample ID/Depth	DS109 0.80-1.00m
Date Sampled	29/09/21
Sulphate BRE (water sol 2:1)	✓

Note: If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3 (for water samples 5 ± 3°C), ISO 18400-105:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	21/12052/1	21/12052/2	21/12052/3
Client Sample No	3	6	4
Client Sample ID/Depth	BH103 0.60-1.20m	BH103 1.20-1.70m	DS109 0.80-1.00m
Date Sampled			29/09/21
A-T-026s	11/11/2021	11/11/2021	11/11/2021
A-T-031s	10/11/2021	10/11/2021	10/11/2021
A-T-044	10/11/2021	10/11/2021	10/11/2021

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report

envirolab
Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 21/12491
Issue Number: 1 **Date:** 24 November, 2021

Client:
Structural Soils Limited (Bristol Lab)
Unit 1a
Princess Street
Bedminster
Bristol
UK
BS3 4AG

Project Manager: Lisa Frost / Gary Emms/ Valeria Chacin Mijova/Alan
Project Name: Langstone Flood and Coastal Eroision Management Scheme
Project Ref: 736036
Order No: N/A
Date Samples Received: 18/11/21
Date Instructions Received: 19/11/21
Date Analysis Completed: 24/11/21

Approved by:



Sophie France
Client Service Manager

Envirolab Job Number: 21/12491

Client Project Name: Langstone Flood and Coastal Eroision Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/12491/1							Units	Limit of Detection	Method ref
Client Sample No	5									
Client Sample ID	DS103									
Depth to Top	1.20									
Depth To Bottom	1.65									
Date Sampled										
Sample Type	Soil									
Sample Matrix Code	6ABE									
% Stones >10mm$_A$	5.0							% w/w	0.1	A-T-044
pH BRE$_D$$^{M\#}$	8.38							pH	0.01	A-T-031s
Sulphate BRE (water sol 2:1)$_D$$^{M\#}$	550							mg/l	10	A-T-026s
Organic matter$_D$$^{M\#}$	1.0							% w/w	0.1	A-T-032 OM

REPORT NOTES

General

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The results reported herein relate only to the material supplied to the laboratory.
The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.
Analytical results reflect the quality of the sample at the time of analysis only.
Opinions and interpretations expressed are outside the scope of our accreditation.
If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:

All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:

Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:

Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:

Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:

1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample, 9 = INCINERATOR ASH.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.

Secondary Matrix Codes:

A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

Key:

IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Please contact us if you need any further information.

v1

Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: Structural Soils Limited (Bristol Lab), Unit 1a, Princess Street, Bedminster, Bristol, UK, BS3 4AG

Project: Langstone Flood and Coastal Eroision Management Scheme

Clients Project No: 736036

Project No: 21/12491

Date Received: 19/11/2021 (am)

Cool Box Temperatures (°C): 11.4

Lab Sample ID	21/12491/1
Client Sample No	5
Client Sample ID/Depth	DS103 1.20-1.65m
Date Sampled	
Deviation Code	
E (no date)	✓

Key
E (no date) *No sampling date provided (all results affected if not provided)*

If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3, ISO 18400-102:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	21/12491/1
Client Sample No	5
Client Sample ID/Depth	DS103 1.20-1.65m
Date Sampled	
A-T-026s	24/11/2021
A-T-031s	23/11/2021
A-T-032 OM	23/11/2021
A-T-044	24/11/2021

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report

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Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 21/12705
Issue Number: 1 **Date:** 29 November, 2021

Client:
Structural Soils Limited (Bristol Lab)
Unit 1a
Princess Street
Bedminster
Bristol
UK
BS3 4AG

Project Manager: Lisa Frost / Gary Emms/ Valeria Chacin Mijova/Alan
Project Name: Langstone Flood & Costal Erosion Management Scheme
Project Ref: 736036
Order No: N/A
Date Samples Received: 24/11/21
Date Instructions Received: 24/11/21
Date Analysis Completed: 29/11/21

Approved by:



Sophie France
Client Service Manager

Envirolab Job Number: 21/12705

Client Project Name: Langstone Flood & Costal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/12705/1							Units	Limit of Detection	Method ref
Client Sample No	10									
Client Sample ID	DS106									
Depth to Top	2.00									
Depth To Bottom	2.45									
Date Sampled										
Sample Type	Soil - U									
Sample Matrix Code	3A									
% Stones >10mm$_A$	<0.1							% w/w	0.1	A-T-044
pH BRE$_D$$^{M\#}$	8.84							pH	0.01	A-T-031s
Sulphate BRE (water sol 2:1)$_D$$^{M\#}$	67							mg/l	10	A-T-026s
Organic matter$_D$$^{M\#}$	0.2							% w/w	0.1	A-T-032 OM

REPORT NOTES

General

This report shall not be reproduced, except in full, without written approval from Envirolab.
The results reported herein relate only to the material supplied to the laboratory.
The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.
Analytical results reflect the quality of the sample at the time of analysis only.
Opinions and interpretations expressed are outside the scope of our accreditation.
If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample, 9 = INCINERATOR ASH.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

Key:
IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Please contact us if you need any further information.

v1

Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: Structural Soils Limited (Bristol Lab), Unit 1a, Princess Street, Bedminster, Bristol, UK, BS3 4AG

Project: Langstone Flood & Costal Erosion Management Scheme

Clients Project No: 736036

Project No: 21/12705

Date Received: 24/11/2021 (am)

Cool Box Temperatures (°C): 9.5

Lab Sample ID	21/12705/1
Client Sample No	10
Client Sample ID/Depth	DS106 2.00-2.45m
Date Sampled	
Deviation Code	
E (no date)	✓

Key
E (no date) *No sampling date provided (all results affected if not provided)*

If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3, ISO 18400-102:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	21/12705/1
Client Sample No	10
Client Sample ID/Depth	DS106 2.00-2.45m
Date Sampled	
A-T-026s	29/11/2021
A-T-031s	29/11/2021
A-T-032 OM	26/11/2021
A-T-044	26/11/2021

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report

envirolab
Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 21/13392
Issue Number: 1 **Date:** 15 December, 2021

Client:
Structural Soils Limited (Bristol Lab)
Unit 1a
Princess Street
Bedminster
Bristol
UK
BS3 4AG

Project Manager: Lisa Frost / Gary Emms/ Valeria Chacin Mijova/Alan
Project Name: Langstone Flood & Coastal Erosion Management Scheme
Project Ref: 736036
Order No: N/A
Date Samples Received: 10/12/21
Date Instructions Received: 10/12/21
Date Analysis Completed: 15/12/21

Approved by:



Sophie France
Client Service Manager

Envirolab Job Number: 21/13392

Client Project Name: Langstone Flood & Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/13392/1							Units	Limit of Detection	Method ref
Client Sample No	6									
Client Sample ID	DS109									
Depth to Top	1.20									
Depth To Bottom	1.23									
Date Sampled										
Sample Type	Soil - UT									
Sample Matrix Code	6A									
% Stones >10mm$_A$	2.0							% w/w	0.1	A-T-044
pH BRE$_D$$^{M\#}$	9.51							pH	0.01	A-T-031s
Sulphate BRE (water sol 2:1)$_D$$^{M\#}$	148							mg/l	10	A-T-026s

REPORT NOTES

General

This report shall not be reproduced, except in full, without written approval from Envirolab.
The results reported herein relate only to the material supplied to the laboratory.
The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.
Analytical results reflect the quality of the sample at the time of analysis only.
Opinions and interpretations expressed are outside the scope of our accreditation.
If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample, 9 = INCINERATOR ASH.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

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NDP indicates No Determination Possible.
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Please contact us if you need any further information.

v1

Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: Structural Soils Limited (Bristol Lab), Unit 1a, Princess Street, Bedminster, Bristol, UK, BS3 4AG

Project: Langstone Flood & Coastal Erosion Management Scheme

Clients Project No: 736036

Project No: 21/13392

Date Received: 10/12/2021 (am)

Cool Box Temperatures (°C): 8.1

Lab Sample ID	21/13392/1
Client Sample No	6
Client Sample ID/Depth	DS109 1.20-1.23m
Date Sampled	
Deviation Code	
E (no date)	✓

Key
E (no date) *No sampling date provided (all results affected if not provided)*

If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3, ISO 18400-102:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	21/13392/1
Client Sample No	6
Client Sample ID/Depth	DS109 1.20-1.23m
Date Sampled	
A-T-026s	15/12/2021
A-T-031s	15/12/2021
A-T-044	14/12/2021

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report

APPENDIX E - GEOENVIRONMENTAL TESTING

(i) Laboratory Test Results

(ii) Laboratory UKAS Accreditation Certificate

envirolab
Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 21/10066
Issue Number: 1 **Date:** 08 October, 2021

Client:
Structural Soils Limited (Bristol)
The Old School
Stillhouse Lane
Bedminster
Bristol
UK
BS3 4EB

Project Manager: Andrew Pope/Eric Downey/Sasha Layton
Project Name: Langstone Flood and Coastal Erosion Management Scheme
Project Ref: 736036
Order No: N/A
Date Samples Received: 16/09/21
Date Instructions Received: 20/09/21
Date Analysis Completed: 08/10/21

Prepared by:



Sophie France
Client Service Manager

Approved by:



Richard Wong
Client Manager

Envirolab Job Number: 21/10066

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/10066/1	21/10066/3	21/10066/6	21/10066/8				Units	Limit of Detection	Method ref
Client Sample No	101	103	103	102						
Client Sample ID	MDTP103	MDTP103	MDTP102	MDTP101						
Depth to Top	0.20	1.00	1.00	0.50						
Depth To Bottom										
Date Sampled	15-Sep-21	15-Sep-21	15-Sep-21	15-Sep-21						
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES						
Sample Matrix Code	5A	5A	4AB	4AB						
% Stones >10mm$_A$	10.4	7.3	37.3	<0.1				% w/w	0.1	A-T-044
pH$_D$$^{M\#}$	8.73	9.54	9.08	8.96				pH	0.01	A-T-031s
Total Organic Carbon$_D$$^{M\#}$	0.10	0.11	0.06	<0.03				% w/w	0.03	A-T-032s
Arsenic$_D$$^{M\#}$	4	5	2	<1				mg/kg	1	A-T-024s
Barium$_D$	33	43	3	5				mg/kg	1	A-T-024s
Beryllium$_D$	0.5	0.7	<0.5	<0.5				mg/kg	0.5	A-T-024s
Boron (water soluble)$_D$	3.9	4.7	1.0	1.8				mg/kg	1	A-T-027s
Cadmium$_D$$^{M\#}$	0.8	0.8	<0.5	<0.5				mg/kg	0.5	A-T-024s
Copper$_D$$^{M\#}$	14	13	1	<1				mg/kg	1	A-T-024s
Chromium$_D$$^{M\#}$	21	19	3	5				mg/kg	1	A-T-024s
Chromium (hexavalent)$_D$	<1	<1	<1	<1				mg/kg	1	A-T-040s
Lead$_D$$^{M\#}$	12	12	5	2				mg/kg	1	A-T-024s
Mercury$_D$	0.31	<0.17	<0.17	<0.17				mg/kg	0.17	A-T-024s
Nickel$_D$$^{M\#}$	13	19	<1	1				mg/kg	1	A-T-024s
Selenium$_D$$^{M\#}$	<1	<1	<1	<1				mg/kg	1	A-T-024s
Vanadium$_D$$^{M\#}$	32	32	5	9				mg/kg	1	A-T-024s
Zinc$_D$$^{M\#}$	29	33	<5	6				mg/kg	5	A-T-024s

Envirolab Job Number: 21/10066

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/10066/1	21/10066/3	21/10066/6	21/10066/8				Units	Limit of Detection	Method ref
Client Sample No	101	103	103	102						
Client Sample ID	MDTP103	MDTP103	MDTP102	MDTP101						
Depth to Top	0.20	1.00	1.00	0.50						
Depth To Bottom										
Date Sampled	15-Sep-21	15-Sep-21	15-Sep-21	15-Sep-21						
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES						
Sample Matrix Code	5A	5A	4AB	4AB						
Asbestos in Soil (inc. matrix)										
Asbestos in soil$_{D}^{\#}$	NAD	-	NAD	NAD						A-T-045
Asbestos ACM - Suitable for Water Absorption Test?$_{D}$	N/A	-	N/A	N/A						A-T-045
Organotins										
Tetrabutyltin$_{A}$	-	-	<10	-				µg/kg	10	Subcon Chemtest
Tributyltin$_{A}$	-	-	<10	-				µg/kg	10	Subcon Chemtest
Triphenyltin$_{A}$	-	-	<10	-				µg/kg	10	Subcon Chemtest
Dibutyltin$_{A}$	-	-	<10	-				µg/kg	10	Subcon Chemtest
Monobutyltin$_{A}$	-	-	<10	-				µg/kg	10	Subcon Chemtest

Envirolab Job Number: 21/10066

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/10066/1	21/10066/3	21/10066/6	21/10066/8				Units	Limit of Detection	Method ref
Client Sample No	101	103	103	102						
Client Sample ID	MDTP103	MDTP103	MDTP102	MDTP101						
Depth to Top	0.20	1.00	1.00	0.50						
Depth To Bottom										
Date Sampled	15-Sep-21	15-Sep-21	15-Sep-21	15-Sep-21						
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES						
Sample Matrix Code	5A	5A	4AB	4AB						
PAH-16MS										
Acenaphthene$_A^{M\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-019s
Acenaphthylene$_A^{M\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-019s
Anthracene$_A^{M\#}$	<0.02	<0.02	<0.02	<0.02				mg/kg	0.02	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	<0.04	<0.04	<0.04	<0.04				mg/kg	0.04	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	<0.04	<0.04	<0.04	<0.04				mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	<0.05	<0.05	<0.05	<0.05				mg/kg	0.05	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	<0.05	<0.05	<0.05	<0.05				mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	<0.07	<0.07	<0.07	<0.07				mg/kg	0.07	A-T-019s
Chrysene$_A^{M\#}$	<0.06	<0.06	<0.06	<0.06				mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	<0.04	<0.04	<0.04	<0.04				mg/kg	0.04	A-T-019s
Fluoranthene$_A^{M\#}$	<0.08	<0.08	<0.08	<0.08				mg/kg	0.08	A-T-019s
Fluorene$_A^{M\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	<0.03	<0.03	<0.03	<0.03				mg/kg	0.03	A-T-019s
Naphthalene $_A^{M\#}$	<0.03	<0.03	<0.03	<0.03				mg/kg	0.03	A-T-019s
Phenanthrene$_A^{M\#}$	<0.03	<0.03	<0.03	<0.03				mg/kg	0.03	A-T-019s
Pyrene$_A^{M\#}$	<0.07	<0.07	<0.07	<0.07				mg/kg	0.07	A-T-019s
Total PAH-16MS$_A^{M\#}$	<0.08	<0.08	<0.08	<0.08				mg/kg	0.01	A-T-019s

Envirolab Job Number: 21/10066

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/10066/1	21/10066/3	21/10066/6	21/10066/8				Units	Limit of Detection	Method ref
Client Sample No	101	103	103	102						
Client Sample ID	MDTP103	MDTP103	MDTP102	MDTP101						
Depth to Top	0.20	1.00	1.00	0.50						
Depth To Bottom										
Date Sampled	15-Sep-21	15-Sep-21	15-Sep-21	15-Sep-21						
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES						
Sample Matrix Code	5A	5A	4AB	4AB						
VOC										
Dichlorodifluoromethane$_{A}$	-	-	<1	<1				µg/kg	1	A-T-006s
Chloromethane$_{A}$	-	-	<10	<10				µg/kg	10	A-T-006s
Vinyl Chloride (Chloroethene)$_{A}^{\#}$	-	-	<1	<1				µg/kg	1	A-T-006s
Bromomethane$_{A}^{\#}$	-	-	<1	<1				µg/kg	1	A-T-006s
Chloroethane$_{A}^{\#}$	-	-	<1	<1				µg/kg	1	A-T-006s
Trichlorofluoromethane$_{A}^{\#}$	-	-	<1	<1				µg/kg	1	A-T-006s
1,1-Dichloroethene$_{A}^{\#}$	-	-	<1	<1				µg/kg	1	A-T-006s
Carbon Disulphide$_{A}^{\#}$	-	-	<1	<1				µg/kg	1	A-T-006s
Dichloromethane$_{A}$	-	-	<5	<5				µg/kg	5	A-T-006s
trans 1,2-Dichloroethene$_{A}^{\#}$	-	-	<1	<1				µg/kg	1	A-T-006s
1,1-Dichloroethane$_{A}^{\#}$	-	-	<1	<1				µg/kg	1	A-T-006s
cis 1,2-Dichloroethene$_{A}^{\#}$	-	-	<1	<1				µg/kg	1	A-T-006s
2,2-Dichloropropane$_{A}^{\#}$	-	-	<1	<1				µg/kg	1	A-T-006s
Bromochloromethane$_{A}^{\#}$	-	-	<5	<5				µg/kg	5	A-T-006s
Chloroform$_{A}^{\#}$	-	-	<1	<1				µg/kg	1	A-T-006s
1,1,1-Trichloroethane$_{A}^{\#}$	-	-	<1	<1				µg/kg	1	A-T-006s
1,1-Dichloropropene$_{A}^{\#}$	-	-	<1	<1				µg/kg	1	A-T-006s
Carbon Tetrachloride$_{A}^{\#}$	-	-	<1	<1				µg/kg	1	A-T-006s
1,2-Dichloroethane$_{A}^{\#}$	-	-	<2	<2				µg/kg	2	A-T-006s
Benzene$_{A}^{\#}$	-	-	<1	<1				µg/kg	1	A-T-006s
Trichloroethene$_{A}^{\#}$	-	-	<1	<1				µg/kg	1	A-T-006s
1,2-Dichloropropane$_{A}^{\#}$	-	-	<1	<1				µg/kg	1	A-T-006s
Dibromomethane$_{A}^{\#}$	-	-	<1	<1				µg/kg	1	A-T-006s
Bromodichloromethane$_{A}^{\#}$	-	-	<10	<10				µg/kg	10	A-T-006s
cis 1,3-Dichloropropene$_{A}^{\#}$	-	-	<1	<1				µg/kg	1	A-T-006s
Toluene$_{A}^{\#}$	-	-	<1	<1				µg/kg	1	A-T-006s
trans 1,3-Dichloropropene$_{A}^{\#}$	-	-	<1	<1				µg/kg	1	A-T-006s
1,1,2-Trichloroethane$_{A}^{\#}$	-	-	<1	<1				µg/kg	1	A-T-006s
1,3-Dichloropropane$_{A}^{\#}$	-	-	<1	<1				µg/kg	1	A-T-006s
Tetrachloroethene$_{A}^{\#}$	-	-	<1	<1				µg/kg	1	A-T-006s
Dibromochloromethane$_{A}^{\#}$	-	-	<3	<3				µg/kg	3	A-T-006s
1,2-Dibromoethane$_{A}^{\#}$	-	-	<1	<1				µg/kg	1	A-T-006s

Lab Sample ID	21/10066/1	21/10066/3	21/10066/6	21/10066/8				Units	Limit of Detection	Method ref
Client Sample No	101	103	103	102						
Client Sample ID	MDTP103	MDTP103	MDTP102	MDTP101						
Depth to Top	0.20	1.00	1.00	0.50						
Depth To Bottom										
Date Sampled	15-Sep-21	15-Sep-21	15-Sep-21	15-Sep-21						
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES						
Sample Matrix Code	5A	5A	4AB	4AB						
Chlorobenzene$_{A}^{\#}$	-	-	<1	<1				µg/kg	1	A-T-006s
1,1,1,2-Tetrachloroethane$_{A}$	-	-	<1	<1				µg/kg	1	A-T-006s
Ethylbenzene$_{A}^{\#}$	-	-	<1	<1				µg/kg	1	A-T-006s
m & p Xylene$_{A}^{\#}$	-	-	<1	<1				µg/kg	1	A-T-006s
o-Xylene$_{A}^{\#}$	-	-	<1	<1				µg/kg	1	A-T-006s
Styrene$_{A}^{\#}$	-	-	<1	<1				µg/kg	1	A-T-006s
Bromoform$_{A}^{\#}$	-	-	<1	<1				µg/kg	1	A-T-006s
Isopropylbenzene$_{A}^{\#}$	-	-	<1	<1				µg/kg	1	A-T-006s
1,1,2,2-Tetrachloroethane$_{A}$	-	-	<1	<1				µg/kg	1	A-T-006s
1,2,3-Trichloropropane$_{A}^{\#}$	-	-	<1	<1				µg/kg	1	A-T-006s
Bromobenzene$_{A}^{\#}$	-	-	<1	<1				µg/kg	1	A-T-006s
n-Propylbenzene$_{A}^{\#}$	-	-	<1	<1				µg/kg	1	A-T-006s
2-Chlorotoluene$_{A}^{\#}$	-	-	<1	<1				µg/kg	1	A-T-006s
1,3,5-Trimethylbenzene$_{A}^{\#}$	-	-	<1	<1				µg/kg	1	A-T-006s
4-Chlorotoluene$_{A}^{\#}$	-	-	<1	<1				µg/kg	1	A-T-006s
tert-Butylbenzene$_{A}^{\#}$	-	-	<2	<2				µg/kg	2	A-T-006s
1,2,4-Trimethylbenzene$_{A}^{\#}$	-	-	<1	<1				µg/kg	1	A-T-006s
sec-Butylbenzene$_{A}^{\#}$	-	-	<1	<1				µg/kg	1	A-T-006s
4-Isopropyltoluene$_{A}^{\#}$	-	-	<1	<1				µg/kg	1	A-T-006s
1,3-Dichlorobenzene$_{A}$	-	-	<1	<1				µg/kg	1	A-T-006s
1,4-Dichlorobenzene$_{A}^{\#}$	-	-	<1	<1				µg/kg	1	A-T-006s
n-Butylbenzene$_{A}^{\#}$	-	-	<1	<1				µg/kg	1	A-T-006s
1,2-Dichlorobenzene$_{A}^{\#}$	-	-	<1	<1				µg/kg	1	A-T-006s
1,2-Dibromo-3-chloropropane (DCBP)$_{A}$	-	-	<2	<2				µg/kg	2	A-T-006s
1,2,4-Trichlorobenzene$_{A}$	-	-	<3	<3				µg/kg	3	A-T-006s
Hexachlorobutadiene$_{A}^{\#}$	-	-	<1	<1				µg/kg	1	A-T-006s
1,2,3-Trichlorobenzene$_{A}$	-	-	<3	<3				µg/kg	3	A-T-006s

Envirolab Job Number: 21/10066

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/10066/1	21/10066/3	21/10066/6	21/10066/8				Units	Limit of Detection	Method ref
Client Sample No	101	103	103	102						
Client Sample ID	MDTP103	MDTP103	MDTP102	MDTP101						
Depth to Top	0.20	1.00	1.00	0.50						
Depth To Bottom										
Date Sampled	15-Sep-21	15-Sep-21	15-Sep-21	15-Sep-21						
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES						
Sample Matrix Code	5A	5A	4AB	4AB						
TPH CWG										
Ali >C5-C6$_A^{\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-022s
Ali >C6-C8$_A^{\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-022s
Ali >C8-C10$_A$	<1	<1	<1	<1				mg/kg	1	A-T-055s
Ali >C10-C12$_A^{M\#}$	<1	<1	<1	<1				mg/kg	1	A-T-055s
Ali >C12-C16$_A^{M\#}$	<1	<1	<1	<1				mg/kg	1	A-T-055s
Ali >C16-C21$_A^{M\#}$	<1	<1	<1	<1				mg/kg	1	A-T-055s
Ali >C21-C35$_A^{M\#}$	<1	<1	<1	<1				mg/kg	1	A-T-055s
Total Aliphatics$_A$	<1	<1	<1	<1				mg/kg	1	A-T-055s
Aro >C5-C7$_A^{\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-022s
Aro >C7-C8$_A^{\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-022s
Aro >C8-C10$_A$	<1	<1	<1	<1				mg/kg	1	A-T-055s
Aro >C10-C12$_A$	<1	<1	<1	<1				mg/kg	1	A-T-055s
Aro >C12-C16$_A$	<1	<1	<1	<1				mg/kg	1	A-T-055s
Aro >C16-C21$_A^{M\#}$	<1	<1	<1	<1				mg/kg	1	A-T-055s
Aro >C21-C35$_A^{M\#}$	<1	<1	<1	<1				mg/kg	1	A-T-055s
Total Aromatics$_A$	<1	<1	<1	<1				mg/kg	1	A-T-055s
TPH (Ali & Aro >C5-C35)$_A$	<1	<1	<1	<1				mg/kg	1	A-T-055s
BTEX - Benzene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-022s
BTEX - Toluene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-022s
BTEX - m & p Xylene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-022s
BTEX - o Xylene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-022s
MTBE$_A^{\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-022s

REPORT NOTES

General
This report shall not be reproduced, except in full, without written approval from Envirolab.
The results reported herein relate only to the material supplied to the laboratory.
The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.
Analytical results reflect the quality of the sample at the time of analysis only.
Opinions and interpretations expressed are outside the scope of our accreditation.
If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample, 9 = INCINERATOR ASH.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

Key:
IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Please contact us if you need any further information.

v1

Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: Structural Soils Limited (Bristol), The Old School , Stillhouse Lane, Bedminster, Bristol, UK, BS3 4EB

Project: Langstone Flood and Coastal Erosion Management Scheme

Clients Project No: 736036

Project No: 21/10066

Date Received: 20/09/2021 (am)

Cool Box Temperatures (°C): 16.5

NO DEVIATIONS IDENTIFIED with respect to sampling dates or containers received.

Note: If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3 (for water samples 5 ± 3°C), ISO 18400-105:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	21/10066/1	21/10066/3	21/10066/6	21/10066/8
Client Sample No	101	103	103	102
Client Sample ID/Depth	MDTP103 0.20m	MDTP103 1.00m	MDTP102 1.00m	MDTP101 0.50m
Date Sampled	15/09/21	15/09/21	15/09/21	15/09/21
A-T-006s			22/09/2021	22/09/2021
A-T-019s	23/09/2021	23/09/2021	23/09/2021	23/09/2021
A-T-022s	27/09/2021	27/09/2021	27/09/2021	30/09/2021
A-T-024s	04/10/2021	04/10/2021	04/10/2021	04/10/2021
A-T-027s	01/10/2021	01/10/2021	01/10/2021	01/10/2021
A-T-031s	01/10/2021	01/10/2021	01/10/2021	01/10/2021
A-T-032s	01/10/2021	01/10/2021	01/10/2021	01/10/2021
A-T-040s	08/10/2021	08/10/2021	08/10/2021	08/10/2021
A-T-044	24/09/2021	24/09/2021	24/09/2021	24/09/2021
A-T-045	22/09/2021		22/09/2021	22/09/2021
A-T-055s	27/09/2021	27/09/2021	27/09/2021	30/09/2021

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report

envirolab
Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 21/10160
Issue Number: 1 **Date:** 11 October, 2021

Client:
Structural Soils Limited (Bristol)
The Old School
Stillhouse Lane
Bedminster
Bristol
UK
BS3 4EB

Project Manager: Andrew Pope/Eloise Harman/Eric Downey/Sasha Layton
Project Name: Langstone Flood and Coastal Erosion Management Scheme
Project Ref: 736036
Order No: N/A
Date Samples Received: 20/09/21
Date Instructions Received: 20/09/21
Date Analysis Completed: 08/10/21

Prepared by:

Melanie Marshall
Laboratory Coordinator

Approved by:

Richard Wong
Client Manager

mCERTS THE ENVIRONMENT AGENCY'S MONITORING CERTIFICATION SCHEME
UKAS TESTING 1247

Envirolab Job Number: 21/10160

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/10160/2	21/10160/4	21/10160/5	21/10160/7				Units	Limit of Detection	Method ref
Client Sample No	102	101	101	101						
Client Sample ID	HDTP110	HDTP105	HDTP104	HDTP103						
Depth to Top	0.50	0.20	0.20	0.20						
Depth To Bottom										
Date Sampled	16-Sep-21	16-Sep-21	16-Sep-21	16-Sep-21						
Sample Type	Soil - ES	Solid	Soil - ES	Solid						
Sample Matrix Code	4ABE	7	6A	7						
% Stones >10mm$_A$	10.0	<0.1	<0.1	<0.1				% w/w	0.1	A-T-044
pH$_D$$^{M\#}$	8.88	8.78	8.69	7.38				pH	0.01	A-T-031s
Ammoniacal nitrogen as N$_D$	0.5	-	0.7	-				mg/kg	0.2	A-T-033s
Cyanide (free)$_A$$^{M\#}$	<1	-	<1	-				mg/kg	1	A-T-042sFCN
Cyanide (total)$_A$$^{M\#}$	<1	-	<1	-				mg/kg	1	A-T-042sTCN
Phenols - Total by HPLC$_A$	<0.2	-	<0.2	-				mg/kg	0.2	A-T-050s
Total Organic Carbon$_D$$^{M\#}$	0.84	0.31	0.15	0.27				% w/w	0.03	A-T-032s
Arsenic$_D$$^{M\#}$	4	7	5	10				mg/kg	1	A-T-024s
Barium$_D$	110	24	123	29				mg/kg	1	A-T-024s
Beryllium$_D$	0.5	<0.5	0.8	<0.5				mg/kg	0.5	A-T-024s
Boron (water soluble)$_D$	3.7	2.9	6.3	3.2				mg/kg	1	A-T-027s
Cadmium$_D$$^{M\#}$	0.5	0.6	0.8	<0.5				mg/kg	0.5	A-T-024s
Copper$_D$$^{M\#}$	18	12	12	11				mg/kg	1	A-T-024s
Chromium$_D$$^{M\#}$	15	98	31	46				mg/kg	1	A-T-024s
Chromium (hexavalent)$_D$	<1	<1	<1	<1				mg/kg	1	A-T-040s
Lead$_D$$^{M\#}$	292	23	10	32				mg/kg	1	A-T-024s
Mercury$_D$	1.38	<0.17	1.34	0.63				mg/kg	0.17	A-T-024s
Nickel$_D$$^{M\#}$	12	72	27	41				mg/kg	1	A-T-024s
Selenium$_D$$^{M\#}$	<1	<1	<1	<1				mg/kg	1	A-T-024s
Vanadium$_D$$^{M\#}$	20	20	39	18				mg/kg	1	A-T-024s
Zinc$_D$$^{M\#}$	164	37	40	43				mg/kg	5	A-T-024s

Envirolab Job Number: 21/10160

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/10160/2	21/10160/4	21/10160/5	21/10160/7				Units	Limit of Detection	Method ref
Client Sample No	102	101	101	101						
Client Sample ID	HDTP110	HDTP105	HDTP104	HDTP103						
Depth to Top	0.50	0.20	0.20	0.20						
Depth To Bottom										
Date Sampled	16-Sep-21	16-Sep-21	16-Sep-21	16-Sep-21						
Sample Type	Soil - ES	Solid	Soil - ES	Solid						
Sample Matrix Code	4ABE	7	6A	7						
Asbestos in Soil (inc. matrix) ^										
Asbestos in soil$_{D}^{\#}$	NAD	-	-	-						A-T-045
Asbestos ACM - Suitable for Water Absorption Test?$_{D}$	N/A	-	-	-						A-T-045
Organotins										
Tetrabutyltin$_{A}$	-	-	<10	-				µg/kg	10	Subcon Chemtest
Tributyltin$_{A}$	-	-	<10	-				µg/kg	10	Subcon Chemtest
Triphenyltin$_{A}$	-	-	<10	-				µg/kg	10	Subcon Chemtest
Dibutyltin$_{A}$	-	-	<10	-				µg/kg	10	Subcon Chemtest
Monobutyltin$_{A}$	-	-	<10	-				µg/kg	10	Subcon Chemtest

Envirolab Job Number: 21/10160

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/10160/2	21/10160/4	21/10160/5	21/10160/7				Units	Limit of Detection	Method ref
Client Sample No	102	101	101	101						
Client Sample ID	HDTP110	HDTP105	HDTP104	HDTP103						
Depth to Top	0.50	0.20	0.20	0.20						
Depth To Bottom										
Date Sampled	16-Sep-21	16-Sep-21	16-Sep-21	16-Sep-21						
Sample Type	Soil - ES	Solid	Soil - ES	Solid						
Sample Matrix Code	4ABE	7	6A	7						
PAH-16MS										
Acenaphthene$_A^{M\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-019s
Acenaphthylene$_A^{M\#}$	0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-019s
Anthracene$_A^{M\#}$	0.02	<0.02	<0.02	<0.02				mg/kg	0.02	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	0.20	<0.04	<0.04	<0.04				mg/kg	0.04	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	0.21	<0.04	<0.04	<0.04				mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	0.23	<0.05	<0.05	<0.05				mg/kg	0.05	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	0.12	<0.05	<0.05	<0.05				mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	0.11	<0.07	<0.07	<0.07				mg/kg	0.07	A-T-019s
Chrysene$_A^{M\#}$	0.21	<0.06	<0.06	<0.06				mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	<0.04	<0.04	<0.04	<0.04				mg/kg	0.04	A-T-019s
Fluoranthene$_A^{M\#}$	0.32	<0.08	<0.08	<0.08				mg/kg	0.08	A-T-019s
Fluorene$_A^{M\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	0.15	<0.03	<0.03	<0.03				mg/kg	0.03	A-T-019s
Naphthalene $_A^{M\#}$	<0.03	<0.03	<0.03	<0.03				mg/kg	0.03	A-T-019s
Phenanthrene$_A^{M\#}$	0.10	<0.03	<0.03	<0.03				mg/kg	0.03	A-T-019s
Pyrene$_A^{M\#}$	0.29	<0.07	<0.07	<0.07				mg/kg	0.07	A-T-019s
Total PAH-16MS$_A^{M\#}$	1.97	<0.08	<0.08	<0.08				mg/kg	0.01	A-T-019s

Envirolab Job Number: 21/10160

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/10160/2	21/10160/4	21/10160/5	21/10160/7				Units	Limit of Detection	Method ref
Client Sample No	102	101	101	101						
Client Sample ID	HDTP110	HDTP105	HDTP104	HDTP103						
Depth to Top	0.50	0.20	0.20	0.20						
Depth To Bottom										
Date Sampled	16-Sep-21	16-Sep-21	16-Sep-21	16-Sep-21						
Sample Type	Soil - ES	Solid	Soil - ES	Solid						
Sample Matrix Code	4ABE	7	6A	7						
TPH CWG										
Ali >C5-C6$_A^{\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-022s
Ali >C6-C8$_A^{\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-022s
Ali >C8-C10$_A$	<1	<1	<1	<1				mg/kg	1	A-T-055s
Ali >C10-C12$_A^{M\#}$	<1	<1	<1	<1				mg/kg	1	A-T-055s
Ali >C12-C16$_A^{M\#}$	<1	<1	<1	<1				mg/kg	1	A-T-055s
Ali >C16-C21$_A^{M\#}$	<1	<1	<1	<1				mg/kg	1	A-T-055s
Ali >C21-C35$_A^{M\#}$	4	<1	<1	<1				mg/kg	1	A-T-055s
Total Aliphatics$_A$	4	<1	<1	<1				mg/kg	1	A-T-055s
Aro >C5-C7$_A^{\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-022s
Aro >C7-C8$_A^{\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-022s
Aro >C8-C10$_A$	1	<1	<1	<1				mg/kg	1	A-T-055s
Aro >C10-C12$_A$	<1	<1	<1	<1				mg/kg	1	A-T-055s
Aro >C12-C16$_A$	1	<1	<1	<1				mg/kg	1	A-T-055s
Aro >C16-C21$_A^{M\#}$	6	<1	<1	<1				mg/kg	1	A-T-055s
Aro >C21-C35$_A^{M\#}$	37	<1	<1	<1				mg/kg	1	A-T-055s
Total Aromatics$_A$	46	<1	<1	<1				mg/kg	1	A-T-055s
TPH (Ali & Aro >C5-C35)$_A$	50	<1	<1	<1				mg/kg	1	A-T-055s
BTEX - Benzene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-022s
BTEX - Toluene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-022s
BTEX - m & p Xylene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-022s
BTEX - o Xylene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-022s
MTBE$_A^{\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-022s

Envirolab Job Number: 21/10160

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/10160/2	21/10160/4	21/10160/5	21/10160/7				Units	Limit of Detection	Method ref
Client Sample No	102	101	101	101						
Client Sample ID	HDTP110	HDTP105	HDTP104	HDTP103						
Depth to Top	0.50	0.20	0.20	0.20						
Depth To Bottom										
Date Sampled	16-Sep-21	16-Sep-21	16-Sep-21	16-Sep-21						
Sample Type	Soil - ES	Solid	Soil - ES	Solid						
Sample Matrix Code	4ABE	7	6A	7						
SVOC + TICs (excluding PAH-16)										
4-Bromophenyl phenyl ether$_A$	<100	-	<100	-				µg/kg	100	A-T-052s
SVOC TICs (Tentatively Identified Compounds)$_A$	Appended	-	Appended	-						A-T-052s
Hexachlorobenzene$_A$	<100	-	<100	-				µg/kg	100	A-T-052s
Diethyl phthalate$_A$	<100	-	<100	-				µg/kg	100	A-T-052s
Dimethyl phthalate$_A$	<100	-	<100	-				µg/kg	100	A-T-052s
Dibenzofuran$_A$	<100	-	<100	-				µg/kg	100	A-T-052s
Carbazole$_A$	<100	-	<100	-				µg/kg	100	A-T-052s
Butylbenzyl phthalate$_A$	<100	-	<100	-				µg/kg	100	A-T-052s
Bis(2-ethylhexyl)phthalate$_A$	<500	-	<500	-				µg/kg	500	A-T-052s
Bis(2-chloroethoxy)methane$_A$	<100	-	<100	-				µg/kg	100	A-T-052s
Bis(2-chloroethyl)ether$_A$	<100	-	<100	-				µg/kg	100	A-T-052s
4-Nitrophenol$_A$	<100	-	<100	-				µg/kg	100	A-T-052s
3+4-Methylphenol$_A$	<100	-	<100	-				µg/kg	100	A-T-052s
4-Chloro-3-methylphenol$_A$	<100	-	<100	-				µg/kg	100	A-T-052s
2-Nitrophenol$_A$	<100	-	<100	-				µg/kg	100	A-T-052s
2-Methylphenol$_A$	<100	-	<100	-				µg/kg	100	A-T-052s
2-Chlorophenol$_A$	<100	-	<100	-				µg/kg	100	A-T-052s
2,6-Dinitrotoluene$_A$	<100	-	<100	-				µg/kg	100	A-T-052s
2,4-Dinitrotoluene$_A$	<100	-	<100	-				µg/kg	100	A-T-052s
2,4-Dimethylphenol$_A$	<100	-	<100	-				µg/kg	100	A-T-052s
2,4-Dichlorophenol$_A$	<100	-	<100	-				µg/kg	100	A-T-052s
2,4,6-Trichlorophenol$_A$	<100	-	<100	-				µg/kg	100	A-T-052s
2,4,5-Trichlorophenol$_A$	<100	-	<100	-				µg/kg	100	A-T-052s
2-Chloronaphthalene$_A$	<100	-	<100	-				µg/kg	100	A-T-052s
2-Methylnaphthalene$_A$	<100	-	<100	-				µg/kg	100	A-T-052s
Bis(2-chloroisopropyl)ether$_A$	<100	-	<100	-				µg/kg	100	A-T-052s
Phenol$_A$	<100	-	<100	-				µg/kg	100	A-T-052s
Pentachlorophenol (SVOC)$_A$	<100	-	<100	-				µg/kg	100	A-T-052s
n-Nitroso-n-dipropylamine$_A$	<100	-	<100	-				µg/kg	100	A-T-052s
n-Dioctylphthalate$_A$	<500	-	<500	-				µg/kg	500	A-T-052s
n-Dibutylphthalate$_A$	<100	-	<100	-				µg/kg	100	A-T-052s

Lab Sample ID	21/10160/2	21/10160/4	21/10160/5	21/10160/7				Units	Limit of Detection	Method ref
Client Sample No	102	101	101	101						
Client Sample ID	HDTP110	HDTP105	HDTP104	HDTP103						
Depth to Top	0.50	0.20	0.20	0.20						
Depth To Bottom										
Date Sampled	16-Sep-21	16-Sep-21	16-Sep-21	16-Sep-21						
Sample Type	Soil - ES	Solid	Soil - ES	Solid						
Sample Matrix Code	4ABE	7	6A	7						
Nitrobenzene$_A$	<100	-	<100	-				µg/kg	100	A-T-052s
Isophorone$_A$	<100	-	<100	-				µg/kg	100	A-T-052s
Hexachloroethane$_A$	<100	-	<100	-				µg/kg	100	A-T-052s
Hexachlorocyclopentadiene$_A$	<100	-	<100	-				µg/kg	100	A-T-052s
Perylene$_A$	222	-	<100	-				µg/kg	100	A-T-052s

Envirolab Job Number: 21/10160

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/10160/2	21/10160/4	21/10160/5	21/10160/7				Units	Limit of Detection	Method ref
Client Sample No	102	101	101	101						
Client Sample ID	HDTP110	HDTP105	HDTP104	HDTP103						
Depth to Top	0.50	0.20	0.20	0.20						
Depth To Bottom										
Date Sampled	16-Sep-21	16-Sep-21	16-Sep-21	16-Sep-21						
Sample Type	Soil - ES	Solid	Soil - ES	Solid						
Sample Matrix Code	4ABE	7	6A	7						
VOC										
Dichlorodifluoromethane$_{A}$	<1	-	<1	-				µg/kg	1	A-T-006s
Chloromethane$_{A}$	<10	-	<10	-				µg/kg	10	A-T-006s
Vinyl Chloride (Chloroethene)$_{A}^{\#}$	<1	-	<1	-				µg/kg	1	A-T-006s
Bromomethane$_{A}^{\#}$	<1	-	<1	-				µg/kg	1	A-T-006s
Chloroethane$_{A}^{\#}$	<1	-	<1	-				µg/kg	1	A-T-006s
Trichlorofluoromethane$_{A}^{\#}$	<1	-	<1	-				µg/kg	1	A-T-006s
1,1-Dichloroethene$_{A}^{\#}$	<1	-	<1	-				µg/kg	1	A-T-006s
Carbon Disulphide$_{A}^{\#}$	<1	-	<1	-				µg/kg	1	A-T-006s
Dichloromethane$_{A}$	<5	-	<5	-				µg/kg	5	A-T-006s
trans 1,2-Dichloroethene$_{A}^{\#}$	<1	-	<1	-				µg/kg	1	A-T-006s
1,1-Dichloroethane$_{A}^{\#}$	<1	-	<1	-				µg/kg	1	A-T-006s
cis 1,2-Dichloroethene$_{A}^{\#}$	<1	-	<1	-				µg/kg	1	A-T-006s
2,2-Dichloropropane$_{A}^{\#}$	<1	-	<1	-				µg/kg	1	A-T-006s
Bromochloromethane$_{A}^{\#}$	<5	-	<5	-				µg/kg	5	A-T-006s
Chloroform$_{A}^{\#}$	<1	-	<1	-				µg/kg	1	A-T-006s
1,1,1-Trichloroethane$_{A}^{\#}$	<1	-	<1	-				µg/kg	1	A-T-006s
1,1-Dichloropropene$_{A}^{\#}$	<1	-	<1	-				µg/kg	1	A-T-006s
Carbon Tetrachloride$_{A}^{\#}$	<1	-	<1	-				µg/kg	1	A-T-006s
1,2-Dichloroethane$_{A}^{\#}$	<2	-	<2	-				µg/kg	2	A-T-006s
Benzene$_{A}^{\#}$	<1	-	<1	-				µg/kg	1	A-T-006s
Trichloroethene$_{A}^{\#}$	<1	-	<1	-				µg/kg	1	A-T-006s
1,2-Dichloropropane$_{A}^{\#}$	<1	-	<1	-				µg/kg	1	A-T-006s
Dibromomethane$_{A}^{\#}$	<1	-	<1	-				µg/kg	1	A-T-006s
Bromodichloromethane$_{A}^{\#}$	<10	-	<10	-				µg/kg	10	A-T-006s
cis 1,3-Dichloropropene$_{A}^{\#}$	<1	-	<1	-				µg/kg	1	A-T-006s
Toluene$_{A}^{\#}$	<1	-	<1	-				µg/kg	1	A-T-006s
trans 1,3-Dichloropropene$_{A}^{\#}$	<1	-	<1	-				µg/kg	1	A-T-006s
1,1,2-Trichloroethane$_{A}^{\#}$	<1	-	<1	-				µg/kg	1	A-T-006s
1,3-Dichloropropane$_{A}^{\#}$	<1	-	<1	-				µg/kg	1	A-T-006s
Tetrachloroethene$_{A}^{\#}$	<1	-	<1	-				µg/kg	1	A-T-006s
Dibromochloromethane$_{A}^{\#}$	<3	-	<3	-				µg/kg	3	A-T-006s
1,2-Dibromoethane$_{A}^{\#}$	<1	-	<1	-				µg/kg	1	A-T-006s

Lab Sample ID	21/10160/2	21/10160/4	21/10160/5	21/10160/7				Units	Limit of Detection	Method ref
Client Sample No	102	101	101	101						
Client Sample ID	HDTP110	HDTP105	HDTP104	HDTP103						
Depth to Top	0.50	0.20	0.20	0.20						
Depth To Bottom										
Date Sampled	16-Sep-21	16-Sep-21	16-Sep-21	16-Sep-21						
Sample Type	Soil - ES	Solid	Soil - ES	Solid						
Sample Matrix Code	4ABE	7	6A	7						
Chlorobenzene$_{A}^{\#}$	<1	-	<1	-				µg/kg	1	A-T-006s
1,1,1,2-Tetrachloroethane$_{A}$	<1	-	<1	-				µg/kg	1	A-T-006s
Ethylbenzene$_{A}^{\#}$	<1	-	<1	-				µg/kg	1	A-T-006s
m & p Xylene$_{A}^{\#}$	<1	-	<1	-				µg/kg	1	A-T-006s
o-Xylene$_{A}^{\#}$	<1	-	<1	-				µg/kg	1	A-T-006s
Styrene$_{A}^{\#}$	<1	-	<1	-				µg/kg	1	A-T-006s
Bromoform$_{A}^{\#}$	<1	-	<1	-				µg/kg	1	A-T-006s
Isopropylbenzene$_{A}^{\#}$	<1	-	<1	-				µg/kg	1	A-T-006s
1,1,2,2-Tetrachloroethane$_{A}$	<1	-	<1	-				µg/kg	1	A-T-006s
1,2,3-Trichloropropane$_{A}^{\#}$	<1	-	<1	-				µg/kg	1	A-T-006s
Bromobenzene$_{A}^{\#}$	<1	-	<1	-				µg/kg	1	A-T-006s
n-Propylbenzene$_{A}^{\#}$	<1	-	<1	-				µg/kg	1	A-T-006s
2-Chlorotoluene$_{A}^{\#}$	<1	-	<1	-				µg/kg	1	A-T-006s
1,3,5-Trimethylbenzene$_{A}^{\#}$	<1	-	<1	-				µg/kg	1	A-T-006s
4-Chlorotoluene$_{A}^{\#}$	<1	-	<1	-				µg/kg	1	A-T-006s
tert-Butylbenzene$_{A}^{\#}$	<2	-	<2	-				µg/kg	2	A-T-006s
1,2,4-Trimethylbenzene$_{A}^{\#}$	<1	-	<1	-				µg/kg	1	A-T-006s
sec-Butylbenzene$_{A}^{\#}$	<1	-	<1	-				µg/kg	1	A-T-006s
4-Isopropyltoluene$_{A}^{\#}$	<1	-	<1	-				µg/kg	1	A-T-006s
1,3-Dichlorobenzene$_{A}$	<1	-	<1	-				µg/kg	1	A-T-006s
1,4-Dichlorobenzene$_{A}^{\#}$	<1	-	<1	-				µg/kg	1	A-T-006s
n-Butylbenzene$_{A}^{\#}$	<1	-	<1	-				µg/kg	1	A-T-006s
1,2-Dichlorobenzene$_{A}^{\#}$	<1	-	<1	-				µg/kg	1	A-T-006s
1,2-Dibromo-3-chloropropane (DCBP)$_{A}$	<2	-	<2	-				µg/kg	2	A-T-006s
1,2,4-Trichlorobenzene$_{A}$	<3	-	<3	-				µg/kg	3	A-T-006s
Hexachlorobutadiene$_{A}^{\#}$	<1	-	<1	-				µg/kg	1	A-T-006s
1,2,3-Trichlorobenzene$_{A}$	<3	-	<3	-				µg/kg	3	A-T-006s

REPORT NOTES

General
This report shall not be reproduced, except in full, without written approval from Envirolab.
The results reported herein relate only to the material supplied to the laboratory.
The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.
Analytical results reflect the quality of the sample at the time of analysis only.
Opinions and interpretations expressed are outside the scope of our accreditation.
If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample, 9 = INCINERATOR ASH.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

Key:
IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Please contact us if you need any further information.

v1

Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: Structural Soils Limited (Bristol), The Old School , Stillhouse Lane, Bedminster, Bristol, UK, BS3 4EB

Project: Langstone Flood and Coastal Erosion Management Scheme

Clients Project No: 736036

Project No: 21/10160

Date Received: 20/09/2021 (am)

Cool Box Temperatures (°C): 10.0, 10.4

NO DEVIATIONS IDENTIFIED with respect to sampling dates or containers received.

Note: If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3 (for water samples 5 ± 3°C), ISO 18400-105:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	21/10160/2	21/10160/4	21/10160/5	21/10160/7
Client Sample No	102	101	101	101
Client Sample ID/Depth	HDTP110 0.50m	HDTP105 0.20m	HDTP104 0.20m	HDTP103 0.20m
Date Sampled	16/09/21	16/09/21	16/09/21	16/09/21
A-T-006s	23/09/2021		23/09/2021	
A-T-019s	23/09/2021	23/09/2021	23/09/2021	23/09/2021
A-T-022s	29/09/2021	29/09/2021	29/09/2021	29/09/2021
A-T-024s	04/10/2021	04/10/2021	04/10/2021	04/10/2021
A-T-027s	05/10/2021	05/10/2021	05/10/2021	05/10/2021
A-T-031s	04/10/2021	04/10/2021	04/10/2021	04/10/2021
A-T-032s	04/10/2021	04/10/2021	04/10/2021	04/10/2021
A-T-033s	04/10/2021		04/10/2021	
A-T-040s	08/10/2021	08/10/2021	08/10/2021	08/10/2021
A-T-042sFCN	23/09/2021		23/09/2021	
A-T-042sTCN	23/09/2021		23/09/2021	
A-T-044	24/09/2021	24/09/2021	24/09/2021	24/09/2021
A-T-045	22/09/2021			
A-T-050s	23/09/2021		23/09/2021	
A-T-052s	30/09/2021		30/09/2021	
A-T-055s	29/09/2021	29/09/2021	29/09/2021	29/09/2021

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report

SVOC Tentatively Identified Compounds

(Note: TIC Results are reported on an as received basis and are not moisture corrected).

Appendix to Envirolab Report:

Lab Client Sample ID	21/10160/2		
Client Sample ID	HDTP110		
Depth to top	0.50m		
Depth to bottom			
Top 10	Compound	CAS number	Estimated Concentration µg/kg
1	Diphenylbutadiyne	886-66-8	14040.8684
2	Benzo[b]naphtho[1,2-d]thiophene	205-43-6	853.2388552
3	Benzo[c]phenanthrene	195-19-7	564.5375981
4			0
5			0
6			0
7			0
8			0
9			0
10			0

Lab Client Sample ID	21/10160/5		
Client Sample ID	HDTP104		
Depth to top	0.20m		
Depth to bottom			
Top 10	Compound	CAS number	Estimated Concentration µg/kg
1	Cyclic octaatomic sulphur	10544-50-0	1226.060712
2			0
3			0
4			0
5			0
6			0
7			0
8			0
9			0
10			0

envirolab
Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 21/10209
Issue Number: 1 **Date:** 08 October, 2021

Client:
Structural Soils Limited (Bristol)
The Old School
Stillhouse Lane
Bedminster
Bristol
UK
BS3 4EB

Project Manager: Andrew Pope/Eloise Harman/Sasha Layton
Project Name: Langstone Flood and Coastal Erosion Management Scheme
Project Ref: 736036
Order No: N/A
Date Samples Received: 20/09/21
Date Instructions Received: 21/09/21
Date Analysis Completed: 08/10/21

Prepared by:

Melanie Marshall
Laboratory Coordinator

Approved by:

Richard Wong
Client Manager

Envirolab Job Number: 21/10209

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/10209/3	21/10209/5	21/10209/7					Units	Limit of Detection	Method ref
Client Sample No	103	102	101							
Client Sample ID	HDTP109	HDTP108	HDTP107							
Depth to Top	1.00	0.50	0.20							
Depth To Bottom										
Date Sampled	17-Sep-21	17-Sep-21	17-Sep-21							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	6A	6A	6ABE							
% Stones >10mm$_A$	26.3	11.2	15.6					% w/w	0.1	A-T-044
pH$_D$$^{M\#}$	8.43	8.99	8.96					pH	0.01	A-T-031s
Ammoniacal nitrogen as N$_D$	-	0.7	2.8					mg/kg	0.2	A-T-033s
Cyanide (free)$_A$$^{M\#}$	-	<1	<1					mg/kg	1	A-T-042sFCN
Cyanide (total)$_A$$^{M\#}$	-	<1	<1					mg/kg	1	A-T-042sTCN
Phenols - Total by HPLC$_A$	-	<0.2	<0.2					mg/kg	0.2	A-T-050s
Total Organic Carbon$_D$$^{M\#}$	0.36	4.42	2.20					% w/w	0.03	A-T-032s
Arsenic$_D$$^{M\#}$	6	10	5					mg/kg	1	A-T-024s
Barium$_D$	30	83	60					mg/kg	1	A-T-024s
Beryllium$_D$	0.6	0.6	<0.5					mg/kg	0.5	A-T-024s
Boron (water soluble)$_D$	4.9	5.0	2.5					mg/kg	1	A-T-027s
Cadmium$_D$$^{M\#}$	0.6	0.7	0.7					mg/kg	0.5	A-T-024s
Copper$_D$$^{M\#}$	14	41	32					mg/kg	1	A-T-024s
Chromium$_D$$^{M\#}$	22	20	17					mg/kg	1	A-T-024s
Chromium (hexavalent)$_D$	<1	<1	<1					mg/kg	1	A-T-040s
Lead$_D$$^{M\#}$	32	533	231					mg/kg	1	A-T-024s
Mercury$_D$	<0.17	0.56	2.93					mg/kg	0.17	A-T-024s
Nickel$_D$$^{M\#}$	20	21	17					mg/kg	1	A-T-024s
Selenium$_D$$^{M\#}$	<1	<1	<1					mg/kg	1	A-T-024s
Vanadium$_D$$^{M\#}$	29	26	19					mg/kg	1	A-T-024s
Zinc$_D$$^{M\#}$	46	211	73					mg/kg	5	A-T-024s

Envirolab Job Number: 21/10209

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/10209/3	21/10209/5	21/10209/7					Units	Limit of Detection	Method ref
Client Sample No	103	102	101							
Client Sample ID	HDTP109	HDTP108	HDTP107							
Depth to Top	1.00	0.50	0.20							
Depth To Bottom										
Date Sampled	17-Sep-21	17-Sep-21	17-Sep-21							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	6A	6A	6ABE							
Asbestos in Soil (inc. matrix) ^										
Asbestos in soil$_{D}^{\#}$	-	NAD	NAD							A-T-045
Asbestos ACM - Suitable for Water Absorption Test?$_{D}$	-	N/A	N/A							A-T-045
Organotins										
Tetrabutyltin$_{A}$	-	<10	<10					µg/kg	10	Subcon Chemtest
Tributyltin$_{A}$	-	<10	<10					µg/kg	10	Subcon Chemtest
Triphenyltin$_{A}$	-	<10	<10					µg/kg	10	Subcon Chemtest
Dibutyltin$_{A}$	-	<10	<10					µg/kg	10	Subcon Chemtest
Monobutyltin$_{A}$	-	<10	<10					µg/kg	10	Subcon Chemtest

Envirolab Job Number: 21/10209

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/10209/3	21/10209/5	21/10209/7					Units	Limit of Detection	Method ref
Client Sample No	103	102	101							
Client Sample ID	HDTP109	HDTP108	HDTP107							
Depth to Top	1.00	0.50	0.20							
Depth To Bottom										
Date Sampled	17-Sep-21	17-Sep-21	17-Sep-21							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	6A	6A	6ABE							
PAH-16MS										
Acenaphthene$_A^{M\#}$	<0.01	0.01	<0.01					mg/kg	0.01	A-T-019s
Acenaphthylene$_A^{M\#}$	<0.01	0.02	<0.01					mg/kg	0.01	A-T-019s
Anthracene$_A^{M\#}$	<0.02	0.07	<0.02					mg/kg	0.02	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	<0.04	0.54	0.07					mg/kg	0.04	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	<0.04	0.56	0.09					mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	<0.05	0.62	0.11					mg/kg	0.05	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	<0.05	0.23	<0.05					mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	<0.07	0.23	<0.07					mg/kg	0.07	A-T-019s
Chrysene$_A^{M\#}$	<0.06	0.63	0.09					mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	<0.04	0.06	<0.04					mg/kg	0.04	A-T-019s
Fluoranthene$_A^{M\#}$	<0.08	1.12	0.13					mg/kg	0.08	A-T-019s
Fluorene$_A^{M\#}$	<0.01	0.02	<0.01					mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	<0.03	0.31	0.05					mg/kg	0.03	A-T-019s
Naphthalene $_A^{M\#}$	<0.03	<0.03	<0.03					mg/kg	0.03	A-T-019s
Phenanthrene$_A^{M\#}$	<0.03	0.43	0.05					mg/kg	0.03	A-T-019s
Pyrene$_A^{M\#}$	<0.07	0.95	0.12					mg/kg	0.07	A-T-019s
Total PAH-16MS$_A^{M\#}$	<0.08	5.80	0.71					mg/kg	0.01	A-T-019s

Envirolab Job Number: 21/10209

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/10209/3	21/10209/5	21/10209/7					Units	Limit of Detection	Method ref
Client Sample No	103	102	101							
Client Sample ID	HDTP109	HDTP108	HDTP107							
Depth to Top	1.00	0.50	0.20							
Depth To Bottom										
Date Sampled	17-Sep-21	17-Sep-21	17-Sep-21							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	6A	6A	6ABE							
TPH CWG										
Ali >C5-C6$_A^{\#}$	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-022s
Ali >C6-C8$_A^{\#}$	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-022s
Ali >C8-C10$_A$	<1	<1	<1					mg/kg	1	A-T-055s
Ali >C10-C12$_A^{M\#}$	<1	<1	<1					mg/kg	1	A-T-055s
Ali >C12-C16$_A^{M\#}$	<1	<1	<1					mg/kg	1	A-T-055s
Ali >C16-C21$_A^{M\#}$	<1	<1	1					mg/kg	1	A-T-055s
Ali >C21-C35$_A^{M\#}$	<1	4	5					mg/kg	1	A-T-055s
Total Aliphatics$_A$	<1	4	6					mg/kg	1	A-T-055s
Aro >C5-C7$_A^{\#}$	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-022s
Aro >C7-C8$_A^{\#}$	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-022s
Aro >C8-C10$_A$	<1	<1	<1					mg/kg	1	A-T-055s
Aro >C10-C12$_A$	<1	1	<1					mg/kg	1	A-T-055s
Aro >C12-C16$_A$	<1	3	2					mg/kg	1	A-T-055s
Aro >C16-C21$_A^{M\#}$	<1	7	3					mg/kg	1	A-T-055s
Aro >C21-C35$_A^{M\#}$	<1	30	19					mg/kg	1	A-T-055s
Total Aromatics$_A$	<1	41	24					mg/kg	1	A-T-055s
TPH (Ali & Aro >C5-C35)$_A$	<1	45	31					mg/kg	1	A-T-055s
BTEX - Benzene$_A^{\#}$	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-022s
BTEX - Toluene$_A^{\#}$	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene$_A^{\#}$	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-022s
BTEX - m & p Xylene$_A^{\#}$	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-022s
BTEX - o Xylene$_A^{\#}$	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-022s
MTBE$_A^{\#}$	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-022s

Lab Sample ID	21/10209/3	21/10209/5	21/10209/7					Units	Limit of Detection	Method ref
Client Sample No	103	102	101							
Client Sample ID	HDTP109	HDTP108	HDTP107							
Depth to Top	1.00	0.50	0.20							
Depth To Bottom										
Date Sampled	17-Sep-21	17-Sep-21	17-Sep-21							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	6A	6A	6ABE							
SVOC + TICs (excluding PAH-16)										
4-Bromophenyl phenyl ether$_A$	-	<100	<100					µg/kg	100	A-T-052s
SVOC TICs (Tentatively Identified Compounds)$_A$	-	None detected	None detected							A-T-052s
Hexachlorobenzene$_A$	-	<100	<100					µg/kg	100	A-T-052s
Diethyl phthalate$_A$	-	<100	<100					µg/kg	100	A-T-052s
Dimethyl phthalate$_A$	-	<100	<100					µg/kg	100	A-T-052s
Dibenzofuran$_A$	-	<100	<100					µg/kg	100	A-T-052s
Carbazole$_A$	-	<100	<100					µg/kg	100	A-T-052s
Butylbenzyl phthalate$_A$	-	<100	<100					µg/kg	100	A-T-052s
Bis(2-ethylhexyl)phthalate$_A$	-	<500	<500					µg/kg	500	A-T-052s
Bis(2-chloroethoxy)methane$_A$	-	<100	<100					µg/kg	100	A-T-052s
Bis(2-chloroethyl)ether$_A$	-	<100	<100					µg/kg	100	A-T-052s
4-Nitrophenol$_A$	-	<100	<100					µg/kg	100	A-T-052s
3+4-Methylphenol$_A$	-	<100	<100					µg/kg	100	A-T-052s
4-Chloro-3-methylphenol$_A$	-	<100	<100					µg/kg	100	A-T-052s
2-Nitrophenol$_A$	-	<100	<100					µg/kg	100	A-T-052s
2-Methylphenol$_A$	-	<100	<100					µg/kg	100	A-T-052s
2-Chlorophenol$_A$	-	<100	<100					µg/kg	100	A-T-052s
2,6-Dinitrotoluene$_A$	-	<100	<100					µg/kg	100	A-T-052s
2,4-Dinitrotoluene$_A$	-	<100	<100					µg/kg	100	A-T-052s
2,4-Dimethylphenol$_A$	-	<100	<100					µg/kg	100	A-T-052s
2,4-Dichlorophenol$_A$	-	<100	<100					µg/kg	100	A-T-052s
2,4,6-Trichlorophenol$_A$	-	<100	<100					µg/kg	100	A-T-052s
2,4,5-Trichlorophenol$_A$	-	<100	<100					µg/kg	100	A-T-052s
2-Chloronaphthalene$_A$	-	<100	<100					µg/kg	100	A-T-052s
2-Methylnaphthalene$_A$	-	<100	<100					µg/kg	100	A-T-052s
Bis(2-chloroisopropyl)ether$_A$	-	<100	<100					µg/kg	100	A-T-052s
Phenol$_A$	-	<100	<100					µg/kg	100	A-T-052s
Pentachlorophenol (SVOC)$_A$	-	<100	<100					µg/kg	100	A-T-052s
n-Nitroso-n-dipropylamine$_A$	-	<100	<100					µg/kg	100	A-T-052s
n-Dioctylphthalate$_A$	-	<500	<500					µg/kg	500	A-T-052s
n-Dibutylphthalate$_A$	-	<100	<100					µg/kg	100	A-T-052s

Envirolab Job Number: 21/10209

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/10209/3	21/10209/5	21/10209/7					Units	Limit of Detection	Method ref
Client Sample No	103	102	101							
Client Sample ID	HDTP109	HDTP108	HDTP107							
Depth to Top	1.00	0.50	0.20							
Depth To Bottom										
Date Sampled	17-Sep-21	17-Sep-21	17-Sep-21							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	6A	6A	6ABE							
Nitrobenzene$_A$	-	<100	<100					µg/kg	100	A-T-052s
Isophorone$_A$	-	<100	<100					µg/kg	100	A-T-052s
Hexachloroethane$_A$	-	<100	<100					µg/kg	100	A-T-052s
Hexachlorocyclopentadiene$_A$	-	<100	<100					µg/kg	100	A-T-052s
Perylene$_A$	-	195	<100					µg/kg	100	A-T-052s

Envirolab Job Number: 21/10209

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Client Project Ref: 736036

Lab Sample ID	21/10209/3	21/10209/5	21/10209/7					Units	Limit of Detection	Method ref
Client Sample No	103	102	101							
Client Sample ID	HDTP109	HDTP108	HDTP107							
Depth to Top	1.00	0.50	0.20							
Depth To Bottom										
Date Sampled	17-Sep-21	17-Sep-21	17-Sep-21							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	6A	6A	6ABE							
VOC										
Dichlorodifluoromethane$_{A}$	-	<1	<1					µg/kg	1	A-T-006s
Chloromethane$_{A}$	-	<10	<10					µg/kg	10	A-T-006s
Vinyl Chloride (Chloroethene)$_{A}^{\#}$	-	<1	<1					µg/kg	1	A-T-006s
Bromomethane$_{A}^{\#}$	-	<1	<1					µg/kg	1	A-T-006s
Chloroethane$_{A}^{\#}$	-	<1	<1					µg/kg	1	A-T-006s
Trichlorofluoromethane$_{A}^{\#}$	-	<1	<1					µg/kg	1	A-T-006s
1,1-Dichloroethene$_{A}^{\#}$	-	<1	<1					µg/kg	1	A-T-006s
Carbon Disulphide$_{A}^{\#}$	-	<1	<1					µg/kg	1	A-T-006s
Dichloromethane$_{A}$	-	<5	<5					µg/kg	5	A-T-006s
trans 1,2-Dichloroethene$_{A}^{\#}$	-	<1	<1					µg/kg	1	A-T-006s
1,1-Dichloroethane$_{A}^{\#}$	-	<1	<1					µg/kg	1	A-T-006s
cis 1,2-Dichloroethene$_{A}^{\#}$	-	<1	<1					µg/kg	1	A-T-006s
2,2-Dichloropropane$_{A}^{\#}$	-	<1	<1					µg/kg	1	A-T-006s
Bromochloromethane$_{A}^{\#}$	-	<5	<5					µg/kg	5	A-T-006s
Chloroform$_{A}^{\#}$	-	<1	<1					µg/kg	1	A-T-006s
1,1,1-Trichloroethane$_{A}^{\#}$	-	<1	<1					µg/kg	1	A-T-006s
1,1-Dichloropropene$_{A}^{\#}$	-	<1	<1					µg/kg	1	A-T-006s
Carbon Tetrachloride$_{A}^{\#}$	-	<1	<1					µg/kg	1	A-T-006s
1,2-Dichloroethane$_{A}^{\#}$	-	<2	<2					µg/kg	2	A-T-006s
Benzene$_{A}^{\#}$	-	<1	<1					µg/kg	1	A-T-006s
Trichloroethene$_{A}^{\#}$	-	<1	<1					µg/kg	1	A-T-006s
1,2-Dichloropropane$_{A}^{\#}$	-	<1	<1					µg/kg	1	A-T-006s
Dibromomethane$_{A}^{\#}$	-	<1	<1					µg/kg	1	A-T-006s
Bromodichloromethane$_{A}^{\#}$	-	<10	<10					µg/kg	10	A-T-006s
cis 1,3-Dichloropropene$_{A}^{\#}$	-	<1	<1					µg/kg	1	A-T-006s
Toluene$_{A}^{\#}$	-	<1	<1					µg/kg	1	A-T-006s
trans 1,3-Dichloropropene$_{A}^{\#}$	-	<1	<1					µg/kg	1	A-T-006s
1,1,2-Trichloroethane$_{A}^{\#}$	-	<1	<1					µg/kg	1	A-T-006s
1,3-Dichloropropane$_{A}^{\#}$	-	<1	<1					µg/kg	1	A-T-006s
Tetrachloroethene$_{A}^{\#}$	-	<1	<1					µg/kg	1	A-T-006s
Dibromochloromethane$_{A}^{\#}$	-	<3	<3					µg/kg	3	A-T-006s
1,2-Dibromoethane$_{A}^{\#}$	-	<1	<1					µg/kg	1	A-T-006s

Lab Sample ID	21/10209/3	21/10209/5	21/10209/7					Units	Limit of Detection	Method ref
Client Sample No	103	102	101							
Client Sample ID	HDTP109	HDTP108	HDTP107							
Depth to Top	1.00	0.50	0.20							
Depth To Bottom										
Date Sampled	17-Sep-21	17-Sep-21	17-Sep-21							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	6A	6A	6ABE							
Chlorobenzene$_{A}^{\#}$	-	<1	<1					µg/kg	1	A-T-006s
1,1,1,2-Tetrachloroethane$_{A}$	-	<1	<1					µg/kg	1	A-T-006s
Ethylbenzene$_{A}^{\#}$	-	<1	<1					µg/kg	1	A-T-006s
m & p Xylene$_{A}^{\#}$	-	<1	<1					µg/kg	1	A-T-006s
o-Xylene$_{A}^{\#}$	-	<1	<1					µg/kg	1	A-T-006s
Styrene$_{A}^{\#}$	-	<1	<1					µg/kg	1	A-T-006s
Bromoform$_{A}^{\#}$	-	<1	<1					µg/kg	1	A-T-006s
Isopropylbenzene$_{A}^{\#}$	-	<1	<1					µg/kg	1	A-T-006s
1,1,2,2-Tetrachloroethane$_{A}$	-	<1	<1					µg/kg	1	A-T-006s
1,2,3-Trichloropropane$_{A}^{\#}$	-	<1	<1					µg/kg	1	A-T-006s
Bromobenzene$_{A}^{\#}$	-	<1	<1					µg/kg	1	A-T-006s
n-Propylbenzene$_{A}^{\#}$	-	<1	<1					µg/kg	1	A-T-006s
2-Chlorotoluene$_{A}^{\#}$	-	<1	<1					µg/kg	1	A-T-006s
1,3,5-Trimethylbenzene$_{A}^{\#}$	-	<1	<1					µg/kg	1	A-T-006s
4-Chlorotoluene$_{A}^{\#}$	-	<1	<1					µg/kg	1	A-T-006s
tert-Butylbenzene$_{A}^{\#}$	-	<2	<2					µg/kg	2	A-T-006s
1,2,4-Trimethylbenzene$_{A}^{\#}$	-	<1	<1					µg/kg	1	A-T-006s
sec-Butylbenzene$_{A}^{\#}$	-	<1	<1					µg/kg	1	A-T-006s
4-Isopropyltoluene$_{A}^{\#}$	-	<1	<1					µg/kg	1	A-T-006s
1,3-Dichlorobenzene$_{A}$	-	<1	<1					µg/kg	1	A-T-006s
1,4-Dichlorobenzene$_{A}^{\#}$	-	<1	<1					µg/kg	1	A-T-006s
n-Butylbenzene$_{A}^{\#}$	-	<1	<1					µg/kg	1	A-T-006s
1,2-Dichlorobenzene$_{A}^{\#}$	-	<1	<1					µg/kg	1	A-T-006s
1,2-Dibromo-3-chloropropane (DCBP)$_{A}$	-	<2	<2					µg/kg	2	A-T-006s
1,2,4-Trichlorobenzene$_{A}$	-	<3	<3					µg/kg	3	A-T-006s
Hexachlorobutadiene$_{A}^{\#}$	-	<1	<1					µg/kg	1	A-T-006s
1,2,3-Trichlorobenzene$_{A}$	-	<3	<3					µg/kg	3	A-T-006s

REPORT NOTES

General
This report shall not be reproduced, except in full, without written approval from Envirolab.
The results reported herein relate only to the material supplied to the laboratory.
The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.
Analytical results reflect the quality of the sample at the time of analysis only.
Opinions and interpretations expressed are outside the scope of our accreditation.
If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample, 9 = INCINERATOR ASH.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

Key:
IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Please contact us if you need any further information.

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Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: Structural Soils Limited (Bristol), The Old School , Stillhouse Lane, Bedminster, Bristol, UK, BS3 4EB

Project: Langstone Flood and Coastal Erosion Management Scheme

Clients Project No: 736036

Project No: 21/10209

Date Received: 21/09/2021 (am)

Cool Box Temperatures (°C): 10.0, 10.4

NO DEVIATIONS IDENTIFIED with respect to sampling dates or containers received.

Note: If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3 (for water samples 5 ± 3°C), ISO 18400-105:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	21/10209/3	21/10209/5	21/10209/7
Client Sample No	103	102	101
Client Sample ID/Depth	HDTP109 1.00m	HDTP108 0.50m	HDTP107 0.20m
Date Sampled	17/09/21	17/09/21	17/09/21
A-T-006s		27/09/2021	27/09/2021
A-T-019s	24/09/2021	24/09/2021	24/09/2021
A-T-022s	29/09/2021	29/09/2021	29/09/2021
A-T-024s	04/10/2021	04/10/2021	04/10/2021
A-T-027s	05/10/2021	05/10/2021	05/10/2021
A-T-031s	05/10/2021	05/10/2021	05/10/2021
A-T-032s	04/10/2021	04/10/2021	04/10/2021
A-T-033s		04/10/2021	04/10/2021
A-T-040s	08/10/2021	08/10/2021	08/10/2021
A-T-042sFCN		23/09/2021	23/09/2021
A-T-042sTCN		23/09/2021	23/09/2021
A-T-044	04/10/2021	04/10/2021	04/10/2021
A-T-045		27/09/2021	27/09/2021
A-T-050s		24/09/2021	24/09/2021
A-T-052s		01/10/2021	01/10/2021
A-T-055s	29/09/2021	29/09/2021	29/09/2021

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report

envirolab
Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 21/10442
Issue Number: 1 **Date:** 08 October, 2021

Client:
Structural Soils Limited (Bristol)
The Old School
Stillhouse Lane
Bedminster
Bristol
UK
BS3 4EB

Project Manager: Andrew Pope/Eloise Harman
Project Name: Langstone Flood and Coastal Erosion Mangament Scheme
Project Ref: 736036
Order No: N/A
Date Samples Received: 22/09/21
Date Instructions Received: 24/09/21
Date Analysis Completed: 08/10/21

Prepared by:

Melanie Marshall
Laboratory Coordinator

Approved by:

Richard Wong
Client Manager

Envirolab Job Number: 21/10442

Client Project Name: Langstone Flood and Coastal Erosion Mangament Scheme

Client Project Ref: 736036

Lab Sample ID	21/10442/1	21/10442/2	21/10442/3	21/10442/5	21/10442/6			Units	Limit of Detection	Method ref
Client Sample No	101	102	103	102	103					
Client Sample ID	BH105	BH105	BH105	DS106	DS106					
Depth to Top	0.20	0.40	1.00	0.50	1.00					
Depth To Bottom										
Date Sampled	20-Sep-21	20-Sep-21	20-Sep-21	20-Sep-21	20-Sep-21					
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES					
Sample Matrix Code	6AE	6AE	6AE	6AE	6A					
% Stones >10mm$_A$	-	<0.1	<0.1	4.2	<0.1			% w/w	0.1	A-T-044
pH$_D$$^{M\#}$	-	8.03	8.38	7.35	8.67			pH	0.01	A-T-031s
Cyanide (free)$_A$$^{M\#}$	-	<1	-	-	-			mg/kg	1	A-T-042sFCN
Cyanide (total)$_A$$^{M\#}$	-	<1	-	-	-			mg/kg	1	A-T-042sTCN
Total Organic Carbon$_D$$^{M\#}$	-	0.43	0.23	1.40	0.25			% w/w	0.03	A-T-032s
Arsenic$_D$$^{M\#}$	-	2	3	2	1			mg/kg	1	A-T-024s
Barium$_D$	-	69	73	39	82			mg/kg	1	A-T-024s
Beryllium$_D$	-	1.1	0.9	<0.5	0.8			mg/kg	0.5	A-T-024s
Boron (water soluble)$_D$	-	2.9	2.8	1.6	1.0			mg/kg	1	A-T-027s
Cadmium$_D$$^{M\#}$	-	1.1	1.0	0.7	0.9			mg/kg	0.5	A-T-024s
Copper$_D$$^{M\#}$	-	24	19	12	11			mg/kg	1	A-T-024s
Chromium$_D$$^{M\#}$	-	35	28	22	30			mg/kg	1	A-T-024s
Chromium (hexavalent)$_D$	-	<1	<1	<1	<1			mg/kg	1	A-T-040s
Lead$_D$$^{M\#}$	-	19	14	54	12			mg/kg	1	A-T-024s
Mercury$_D$	-	<0.17	<0.17	<0.17	0.47			mg/kg	0.17	A-T-024s
Nickel$_D$$^{M\#}$	-	26	29	14	22			mg/kg	1	A-T-024s
Selenium$_D$$^{M\#}$	-	<1	<1	<1	<1			mg/kg	1	A-T-024s
Vanadium$_D$$^{M\#}$	-	46	35	26	38			mg/kg	1	A-T-024s
Zinc$_D$$^{M\#}$	-	57	50	34	38			mg/kg	5	A-T-024s
pH (leachable)$_A$$^{\#}$	-	7.74	-	-	-			pH	0.01	A-T-031w
Alkalinity by titration (total) (pH 4.5) (leachable)$_A$	-	100	-	-	-			mg/l Ca CO3	15	Titration w
Alkalinity by titration (carbonate) (leachable)$_A$	-	80	-	-	-			mg/l Ca CO3	15	Titration w
Hardness Total (leachable)$_A$	-	59	-	-	-			mg/l Ca CO3	2	A-T-049w
Ammoniacal nitrogen as N (leachable)$_A$	-	<0.02	-	-	-			mg/l	0.02	A-T-033w
Chloride (leachable)$_A$$^{\#}$	-	183.16	-	-	-			mg/l	1	A-T-026w
Nitrite (leachable)$_A$$^{\#}$	-	<0.1	-	-	-			mg/l	0.1	A-T-026w
Nitrate (leachable)$_A$$^{\#}$	-	0.8	-	-	-			mg/l	0.1	A-T-026w
Sulphate (leachable)$_A$$^{\#}$	-	38.3	-	-	-			mg/l	1	A-T-026w
Cyanide (free) (leachable)$_A$$^{\#}$	-	<0.005	-	-	-			mg/l	0.005	A-T-042wFCN
Cyanide (total) (leachable)$_A$$^{\#}$	-	<0.005	-	-	-			mg/l	0.005	A-T-042wTCN
Phenol (leachable)$_A$	-	<0.01	-	-	-			mg/l	0.01	A-T-050w

Envirolab Job Number: 21/10442

Client Project Name: Langstone Flood and Coastal Erosion Mangament Scheme

Client Project Ref: 736036

Lab Sample ID	21/10442/1	21/10442/2	21/10442/3	21/10442/5	21/10442/6			Units	Limit of Detection	Method ref
Client Sample No	101	102	103	102	103					
Client Sample ID	BH105	BH105	BH105	DS106	DS106					
Depth to Top	0.20	0.40	1.00	0.50	1.00					
Depth To Bottom										
Date Sampled	20-Sep-21	20-Sep-21	20-Sep-21	20-Sep-21	20-Sep-21					
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES					
Sample Matrix Code	6AE	6AE	6AE	6AE	6A					
DOC (leachable)$_{A}^{\#}$	-	9.3	-	-	-			mg/l	0.2	A-T-032w
Antimony (leachable)$_{A}^{\#}$	-	<1	-	-	-			µg/l	1	A-T-025w
Arsenic (leachable)$_{A}^{\#}$	-	<1	-	-	-			µg/l	1	A-T-025w
Boron (leachable)$_{A}^{\#}$	-	272	-	-	-			µg/l	10	A-T-025w
Barium (leachable)$_{A}^{\#}$	-	15	-	-	-			µg/l	1	A-T-025w
Beryllium (leachable)$_{A}^{\#}$	-	<1	-	-	-			µg/l	1	A-T-025w
Cadmium (leachable)$_{A}^{\#}$	-	<1	-	-	-			µg/l	1	A-T-025w
Copper (leachable)$_{A}^{\#}$	-	<1	-	-	-			µg/l	1	A-T-025w
Chromium (leachable)$_{A}^{\#}$	-	<1	-	-	-			µg/l	1	A-T-025w
Chromium (hexavalent) (leachable)$_{A}$	-	<0.05	-	-	-			mg/l	0.05	A-T-040w
Lead (leachable)$_{A}^{\#}$	-	<1	-	-	-			µg/l	1	A-T-025w
Magnesium (leachable)$_{A}$	-	7	-	-	-			mg/l	1	A-T-049w
Mercury (leachable)$_{A}^{\#}$	-	<0.1	-	-	-			µg/l	0.1	A-T-025w
Molybdenum (leachable)$_{A}^{\#}$	-	<1	-	-	-			µg/l	1	A-T-025w
Nickel (leachable)$_{A}^{\#}$	-	<1	-	-	-			µg/l	1	A-T-025w
Selenium (leachable)$_{A}^{\#}$	-	<1	-	-	-			µg/l	1	A-T-025w
Zinc (leachable)$_{A}^{\#}$	-	3	-	-	-			µg/l	1	A-T-025w
Leachate Prep BS EN 12457-1 (2:1) (1 no) (250ml)+inorg	-	*	-	-	-					
Potassium (leachable)$_{A}$	-	6	-	-	-			mg/l	1.2	A-T-049w
Sodium (leachable)$_{A}$	-	147	-	-	-			mg/l	1	A-T-049w

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Client Project Ref: 736036

Lab Sample ID	21/10442/1	21/10442/2	21/10442/3	21/10442/5	21/10442/6			Units	Limit of Detection	Method ref
Client Sample No	101	102	103	102	103					
Client Sample ID	BH105	BH105	BH105	DS106	DS106					
Depth to Top	0.20	0.40	1.00	0.50	1.00					
Depth To Bottom										
Date Sampled	20-Sep-21	20-Sep-21	20-Sep-21	20-Sep-21	20-Sep-21					
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES					
Sample Matrix Code	6AE	6AE	6AE	6AE	6A					
Asbestos in Soil (inc. matrix) ^										
Asbestos in soil$_D^{\#}$	NAD	NAD	-	NAD	NAD					A-T-045
Asbestos ACM - Suitable for Water Absorption Test?$_D$	N/A	N/A	-	N/A	N/A					A-T-045

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Client Sample No	101	102	103	102	103					
Client Sample ID	BH105	BH105	BH105	DS106	DS106					
Depth to Top	0.20	0.40	1.00	0.50	1.00					
Depth To Bottom										
Date Sampled	20-Sep-21	20-Sep-21	20-Sep-21	20-Sep-21	20-Sep-21					
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES					
Sample Matrix Code	6AE	6AE	6AE	6AE	6A					
PAH-16MS										
Acenaphthene$_A^{M\#}$	-	<0.01	<0.01	<0.01	<0.01			mg/kg	0.01	A-T-019s
Acenaphthylene$_A^{M\#}$	-	<0.01	<0.01	<0.01	<0.01			mg/kg	0.01	A-T-019s
Anthracene$_A^{M\#}$	-	<0.02	<0.02	<0.02	<0.02			mg/kg	0.02	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	-	<0.04	<0.04	<0.04	<0.04			mg/kg	0.04	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	-	<0.04	<0.04	<0.04	<0.04			mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	-	<0.05	<0.05	<0.05	<0.05			mg/kg	0.05	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	-	<0.05	<0.05	<0.05	<0.05			mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	-	<0.07	<0.07	<0.07	<0.07			mg/kg	0.07	A-T-019s
Chrysene$_A^{M\#}$	-	<0.06	<0.06	<0.06	<0.06			mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	-	<0.04	<0.04	<0.04	<0.04			mg/kg	0.04	A-T-019s
Fluoranthene$_A^{M\#}$	-	<0.08	<0.08	<0.08	<0.08			mg/kg	0.08	A-T-019s
Fluorene$_A^{M\#}$	-	<0.01	<0.01	<0.01	<0.01			mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	-	<0.03	<0.03	<0.03	<0.03			mg/kg	0.03	A-T-019s
Naphthalene $_A^{M\#}$	-	<0.03	<0.03	<0.03	<0.03			mg/kg	0.03	A-T-019s
Phenanthrene$_A^{M\#}$	-	<0.03	<0.03	<0.03	<0.03			mg/kg	0.03	A-T-019s
Pyrene$_A^{M\#}$	-	<0.07	<0.07	<0.07	<0.07			mg/kg	0.07	A-T-019s
Total PAH-16MS$_A^{M\#}$	-	<0.08	<0.08	<0.08	<0.08			mg/kg	0.01	A-T-019s

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Lab Sample ID	21/10442/1	21/10442/2	21/10442/3	21/10442/5	21/10442/6			Units	Limit of Detection	Method ref
Client Sample No	101	102	103	102	103					
Client Sample ID	BH105	BH105	BH105	DS106	DS106					
Depth to Top	0.20	0.40	1.00	0.50	1.00					
Depth To Bottom										
Date Sampled	20-Sep-21	20-Sep-21	20-Sep-21	20-Sep-21	20-Sep-21					
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES					
Sample Matrix Code	6AE	6AE	6AE	6AE	6A					
PAH 16MS (leachable)										
Acenaphthene (leachable)$_A$	-	<0.02	-	-	-			µg/l	0.02	A-T-019w
Acenaphthylene (leachable)$_A$	-	<0.02	-	-	-			µg/l	0.02	A-T-019w
Anthracene (leachable)$_A$	-	<0.02	-	-	-			µg/l	0.02	A-T-019w
Benzo(a)anthracene (leachable)$_A$	-	<0.02	-	-	-			µg/l	0.02	A-T-019w
Benzo(a)pyrene (leachable) $_A$	-	<0.02	-	-	-			µg/l	0.02	A-T-019w
Benzo(b)fluoranthene (leachable)$_A$	-	<0.02	-	-	-			µg/l	0.02	A-T-019w
Benzo(ghi)perylene (leachable)$_A$	-	<0.02	-	-	-			µg/l	0.02	A-T-019w
Benzo(k)fluoranthene (leachable)$_A$	-	<0.02	-	-	-			µg/l	0.02	A-T-019w
Chrysene (leachable)$_A$	-	<0.02	-	-	-			µg/l	0.02	A-T-019w
Dibenzo(ah)anthracene (leachable)$_A$	-	<0.02	-	-	-			µg/l	0.02	A-T-019w
Fluoranthene (leachable)$_A$	-	<0.02	-	-	-			µg/l	0.02	A-T-019w
Fluorene (leachable)$_A$	-	<0.02	-	-	-			µg/l	0.02	A-T-019w
Indeno(123-cd)pyrene (leachable)$_A$	-	<0.02	-	-	-			µg/l	0.02	A-T-019w
Naphthalene (leachable) $_A$	-	0.09	-	-	-			µg/l	0.02	A-T-019w
Phenanthrene (leachable)$_A$	-	0.03	-	-	-			µg/l	0.02	A-T-019w
Pyrene (leachable)$_A$	-	<0.02	-	-	-			µg/l	0.02	A-T-019w
Total PAH 16MS (leachable)$_A$	-	0.12	-	-	-			µg/l	0.02	A-T-019w

Envirolab Job Number: 21/10442

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Client Project Ref: 736036

Lab Sample ID	21/10442/1	21/10442/2	21/10442/3	21/10442/5	21/10442/6			Units	Limit of Detection	Method ref
Client Sample No	101	102	103	102	103					
Client Sample ID	BH105	BH105	BH105	DS106	DS106					
Depth to Top	0.20	0.40	1.00	0.50	1.00					
Depth To Bottom										
Date Sampled	20-Sep-21	20-Sep-21	20-Sep-21	20-Sep-21	20-Sep-21					
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES					
Sample Matrix Code	6AE	6AE	6AE	6AE	6A					
Speciated PCB-EC7 & WHO12										
PCB BZ 28$_{A}^{M\#}$	-	-	-	-	<0.002			mg/kg	0.002	A-T-004s
PCB BZ 52$_{A}^{M\#}$	-	-	-	-	<0.002			mg/kg	0.002	A-T-004s
PCB BZ 81$_{A}$	-	-	-	-	<0.005			mg/kg	0.005	A-T-004s
PCB BZ 101$_{A}^{M\#}$	-	-	-	-	<0.004			mg/kg	0.004	A-T-004s
PCB BZ 105$_{A}$	-	-	-	-	<0.005			mg/kg	0.005	A-T-004s
PCB BZ 114$_{A}$	-	-	-	-	<0.005			mg/kg	0.005	A-T-004s
PCB BZ 118$_{A}^{M\#}$	-	-	-	-	<0.007			mg/kg	0.007	A-T-004s
PCB BZ 123$_{A}$	-	-	-	-	<0.005			mg/kg	0.005	A-T-004s
PCB BZ 126$_{A}$	-	-	-	-	<0.005			mg/kg	0.005	A-T-004s
PCB BZ 138$_{A}^{M\#}$	-	-	-	-	<0.006			mg/kg	0.006	A-T-004s
PCB BZ 153$_{A}^{M\#}$	-	-	-	-	<0.004			mg/kg	0.004	A-T-004s
PCB BZ 156$_{A}$	-	-	-	-	<0.005			mg/kg	0.005	A-T-004s
PCB BZ 157$_{A}$	-	-	-	-	<0.005			mg/kg	0.005	A-T-004s
PCB BZ 167$_{A}$	-	-	-	-	<0.005			mg/kg	0.005	A-T-004s
PCB BZ 169$_{A}$	-	-	-	-	<0.005			mg/kg	0.005	A-T-004s
PCB BZ 180$_{A}^{M\#}$	-	-	-	-	<0.004			mg/kg	0.004	A-T-004s
PCB BZ 189$_{A}$	-	-	-	-	<0.005			mg/kg	0.005	A-T-004s
PCB BZ 77$_{A}$	-	-	-	-	<0.005			mg/kg	0.005	A-T-004s
Total Speciated PCB-EC7 & WHO12$_{A}$	-	-	-	-	<0.007			mg/kg	0.002	A-T-004s

Envirolab Job Number: 21/10442

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Client Sample No	101	102	103	102	103					
Client Sample ID	BH105	BH105	BH105	DS106	DS106					
Depth to Top	0.20	0.40	1.00	0.50	1.00					
Depth To Bottom										
Date Sampled	20-Sep-21	20-Sep-21	20-Sep-21	20-Sep-21	20-Sep-21					
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES					
Sample Matrix Code	6AE	6AE	6AE	6AE	6A					
TPH CWG										
Ali >C5-C6$_A^{\#}$	-	<0.01	<0.01	<0.01	<0.01			mg/kg	0.01	A-T-022s
Ali >C6-C8$_A^{\#}$	-	<0.01	<0.01	<0.01	<0.01			mg/kg	0.01	A-T-022s
Ali >C8-C10$_A$	-	<1	<1	<1	<1			mg/kg	1	A-T-055s
Ali >C10-C12$_A^{M\#}$	-	<1	<1	<1	<1			mg/kg	1	A-T-055s
Ali >C12-C16$_A^{M\#}$	-	<1	<1	<1	<1			mg/kg	1	A-T-055s
Ali >C16-C21$_A^{M\#}$	-	<1	<1	<1	<1			mg/kg	1	A-T-055s
Ali >C21-C35$_A^{M\#}$	-	<1	<1	<1	<1			mg/kg	1	A-T-055s
Total Aliphatics$_A$	-	<1	<1	<1	<1			mg/kg	1	A-T-055s
Aro >C5-C7$_A^{\#}$	-	<0.01	<0.01	<0.01	<0.01			mg/kg	0.01	A-T-022s
Aro >C7-C8$_A^{\#}$	-	<0.01	<0.01	<0.01	<0.01			mg/kg	0.01	A-T-022s
Aro >C8-C10$_A$	-	<1	<1	<1	<1			mg/kg	1	A-T-055s
Aro >C10-C12$_A$	-	<1	<1	<1	<1			mg/kg	1	A-T-055s
Aro >C12-C16$_A$	-	<1	<1	<1	<1			mg/kg	1	A-T-055s
Aro >C16-C21$_A^{M\#}$	-	<1	<1	<1	<1			mg/kg	1	A-T-055s
Aro >C21-C35$_A^{M\#}$	-	<1	<1	<1	<1			mg/kg	1	A-T-055s
Total Aromatics$_A$	-	<1	<1	<1	<1			mg/kg	1	A-T-055s
TPH (Ali & Aro >C5-C35)$_A$	-	<1	<1	<1	<1			mg/kg	1	A-T-055s
BTEX - Benzene$_A^{\#}$	-	<0.01	<0.01	<0.01	<0.01			mg/kg	0.01	A-T-022s
BTEX - Toluene$_A^{\#}$	-	<0.01	<0.01	<0.01	<0.01			mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene$_A^{\#}$	-	<0.01	<0.01	<0.01	<0.01			mg/kg	0.01	A-T-022s
BTEX - m & p Xylene$_A^{\#}$	-	<0.01	<0.01	<0.01	<0.01			mg/kg	0.01	A-T-022s
BTEX - o Xylene$_A^{\#}$	-	<0.01	<0.01	<0.01	<0.01			mg/kg	0.01	A-T-022s
MTBE$_A^{\#}$	-	<0.01	<0.01	<0.01	<0.01			mg/kg	0.01	A-T-022s

Lab Sample ID	21/10442/1	21/10442/2	21/10442/3	21/10442/5	21/10442/6			Units	Limit of Detection	Method ref
Client Sample No	101	102	103	102	103					
Client Sample ID	BH105	BH105	BH105	DS106	DS106					
Depth to Top	0.20	0.40	1.00	0.50	1.00					
Depth To Bottom										
Date Sampled	20-Sep-21	20-Sep-21	20-Sep-21	20-Sep-21	20-Sep-21					
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES					
Sample Matrix Code	6AE	6AE	6AE	6AE	6A					
SVOC + TICs (excluding PAH-16)										
4-Bromophenyl phenyl ether$_A$	-	<100	-	-	-			µg/kg	100	A-T-052s
SVOC TICs (Tentatively Identified Compounds)$_A$	-	None detected	-	-	-					A-T-052s
Hexachlorobenzene$_A$	-	<100	-	-	-			µg/kg	100	A-T-052s
Diethyl phthalate$_A$	-	<100	-	-	-			µg/kg	100	A-T-052s
Dimethyl phthalate$_A$	-	<100	-	-	-			µg/kg	100	A-T-052s
Dibenzofuran$_A$	-	<100	-	-	-			µg/kg	100	A-T-052s
Carbazole$_A$	-	<100	-	-	-			µg/kg	100	A-T-052s
Butylbenzyl phthalate$_A$	-	<100	-	-	-			µg/kg	100	A-T-052s
Bis(2-ethylhexyl)phthalate$_A$	-	<500	-	-	-			µg/kg	500	A-T-052s
Bis(2-chloroethoxy)methane$_A$	-	<100	-	-	-			µg/kg	100	A-T-052s
Bis(2-chloroethyl)ether$_A$	-	<100	-	-	-			µg/kg	100	A-T-052s
4-Nitrophenol$_A$	-	<100	-	-	-			µg/kg	100	A-T-052s
3+4-Methylphenol$_A$	-	<100	-	-	-			µg/kg	100	A-T-052s
4-Chloro-3-methylphenol$_A$	-	<100	-	-	-			µg/kg	100	A-T-052s
2-Nitrophenol$_A$	-	<100	-	-	-			µg/kg	100	A-T-052s
2-Methylphenol$_A$	-	<100	-	-	-			µg/kg	100	A-T-052s
2-Chlorophenol$_A$	-	<100	-	-	-			µg/kg	100	A-T-052s
2,6-Dinitrotoluene$_A$	-	<100	-	-	-			µg/kg	100	A-T-052s
2,4-Dinitrotoluene$_A$	-	<100	-	-	-			µg/kg	100	A-T-052s
2,4-Dimethylphenol$_A$	-	<100	-	-	-			µg/kg	100	A-T-052s
2,4-Dichlorophenol$_A$	-	<100	-	-	-			µg/kg	100	A-T-052s
2,4,6-Trichlorophenol$_A$	-	<100	-	-	-			µg/kg	100	A-T-052s
2,4,5-Trichlorophenol$_A$	-	<100	-	-	-			µg/kg	100	A-T-052s
2-Chloronaphthalene$_A$	-	<100	-	-	-			µg/kg	100	A-T-052s
2-Methylnaphthalene$_A$	-	<100	-	-	-			µg/kg	100	A-T-052s
Bis(2-chloroisopropyl)ether$_A$	-	<100	-	-	-			µg/kg	100	A-T-052s
Phenol$_A$	-	<100	-	-	-			µg/kg	100	A-T-052s
Pentachlorophenol (SVOC)$_A$	-	<100	-	-	-			µg/kg	100	A-T-052s
n-Nitroso-n-dipropylamine$_A$	-	<100	-	-	-			µg/kg	100	A-T-052s
n-Dioctylphthalate$_A$	-	<500	-	-	-			µg/kg	500	A-T-052s
n-Dibutylphthalate$_A$	-	<100	-	-	-			µg/kg	100	A-T-052s

Envirolab Job Number: 21/10442

Client Project Name: Langstone Flood and Coastal Erosion Mangament Scheme

Client Project Ref: 736036

Lab Sample ID	21/10442/1	21/10442/2	21/10442/3	21/10442/5	21/10442/6			Units	Limit of Detection	Method ref
Client Sample No	101	102	103	102	103					
Client Sample ID	BH105	BH105	BH105	DS106	DS106					
Depth to Top	0.20	0.40	1.00	0.50	1.00					
Depth To Bottom										
Date Sampled	20-Sep-21	20-Sep-21	20-Sep-21	20-Sep-21	20-Sep-21					
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES					
Sample Matrix Code	6AE	6AE	6AE	6AE	6A					
Nitrobenzene$_A$	-	<100	-	-	-			µg/kg	100	A-T-052s
Isophorone$_A$	-	<100	-	-	-			µg/kg	100	A-T-052s
Hexachloroethane$_A$	-	<100	-	-	-			µg/kg	100	A-T-052s
Hexachlorocyclopentadiene$_A$	-	<100	-	-	-			µg/kg	100	A-T-052s
Perylene$_A$	-	<100	-	-	-			µg/kg	100	A-T-052s

Envirolab Job Number: 21/10442

Client Project Name: Langstone Flood and Coastal Erosion Mangament Scheme

Client Project Ref: 736036

Lab Sample ID	21/10442/1	21/10442/2	21/10442/3	21/10442/5	21/10442/6			Units	Limit of Detection	Method ref
Client Sample No	101	102	103	102	103					
Client Sample ID	BH105	BH105	BH105	DS106	DS106					
Depth to Top	0.20	0.40	1.00	0.50	1.00					
Depth To Bottom										
Date Sampled	20-Sep-21	20-Sep-21	20-Sep-21	20-Sep-21	20-Sep-21					
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES					
Sample Matrix Code	6AE	6AE	6AE	6AE	6A					
VOC										
Dichlorodifluoromethane$_{A}$	-	<1	-	-	-			µg/kg	1	A-T-006s
Chloromethane$_{A}$	-	<10	-	-	-			µg/kg	10	A-T-006s
Vinyl Chloride (Chloroethene)$_{A}^{\#}$	-	<1	-	-	-			µg/kg	1	A-T-006s
Bromomethane$_{A}^{\#}$	-	<1	-	-	-			µg/kg	1	A-T-006s
Chloroethane$_{A}^{\#}$	-	<1	-	-	-			µg/kg	1	A-T-006s
Trichlorofluoromethane$_{A}^{\#}$	-	<1	-	-	-			µg/kg	1	A-T-006s
1,1-Dichloroethene$_{A}^{\#}$	-	<1	-	-	-			µg/kg	1	A-T-006s
Carbon Disulphide$_{A}^{\#}$	-	<1	-	-	-			µg/kg	1	A-T-006s
Dichloromethane$_{A}$	-	<5	-	-	-			µg/kg	5	A-T-006s
trans 1,2-Dichloroethene$_{A}^{\#}$	-	<1	-	-	-			µg/kg	1	A-T-006s
1,1-Dichloroethane$_{A}^{\#}$	-	<1	-	-	-			µg/kg	1	A-T-006s
cis 1,2-Dichloroethene$_{A}^{\#}$	-	<1	-	-	-			µg/kg	1	A-T-006s
2,2-Dichloropropane$_{A}^{\#}$	-	<1	-	-	-			µg/kg	1	A-T-006s
Bromochloromethane$_{A}^{\#}$	-	<5	-	-	-			µg/kg	5	A-T-006s
Chloroform$_{A}^{\#}$	-	<1	-	-	-			µg/kg	1	A-T-006s
1,1,1-Trichloroethane$_{A}^{\#}$	-	<1	-	-	-			µg/kg	1	A-T-006s
1,1-Dichloropropene$_{A}^{\#}$	-	<1	-	-	-			µg/kg	1	A-T-006s
Carbon Tetrachloride$_{A}^{\#}$	-	<1	-	-	-			µg/kg	1	A-T-006s
1,2-Dichloroethane$_{A}^{\#}$	-	<2	-	-	-			µg/kg	2	A-T-006s
Benzene$_{A}^{\#}$	-	<1	-	-	-			µg/kg	1	A-T-006s
Trichloroethene$_{A}^{\#}$	-	<1	-	-	-			µg/kg	1	A-T-006s
1,2-Dichloropropane$_{A}^{\#}$	-	<1	-	-	-			µg/kg	1	A-T-006s
Dibromomethane$_{A}^{\#}$	-	<1	-	-	-			µg/kg	1	A-T-006s
Bromodichloromethane$_{A}^{\#}$	-	<10	-	-	-			µg/kg	10	A-T-006s
cis 1,3-Dichloropropene$_{A}^{\#}$	-	<1	-	-	-			µg/kg	1	A-T-006s
Toluene$_{A}^{\#}$	-	<1	-	-	-			µg/kg	1	A-T-006s
trans 1,3-Dichloropropene$_{A}^{\#}$	-	<1	-	-	-			µg/kg	1	A-T-006s
1,1,2-Trichloroethane$_{A}^{\#}$	-	<1	-	-	-			µg/kg	1	A-T-006s
1,3-Dichloropropane$_{A}^{\#}$	-	<1	-	-	-			µg/kg	1	A-T-006s
Tetrachloroethene$_{A}^{\#}$	-	<1	-	-	-			µg/kg	1	A-T-006s
Dibromochloromethane$_{A}^{\#}$	-	<3	-	-	-			µg/kg	3	A-T-006s
1,2-Dibromoethane$_{A}^{\#}$	-	<1	-	-	-			µg/kg	1	A-T-006s

Lab Sample ID	21/10442/1	21/10442/2	21/10442/3	21/10442/5	21/10442/6			Units	Limit of Detection	Method ref
Client Sample No	101	102	103	102	103					
Client Sample ID	BH105	BH105	BH105	DS106	DS106					
Depth to Top	0.20	0.40	1.00	0.50	1.00					
Depth To Bottom										
Date Sampled	20-Sep-21	20-Sep-21	20-Sep-21	20-Sep-21	20-Sep-21					
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES					
Sample Matrix Code	6AE	6AE	6AE	6AE	6A					
Chlorobenzene$_{A}^{\#}$	-	<1	-	-	-			µg/kg	1	A-T-006s
1,1,1,2-Tetrachloroethane$_{A}$	-	<1	-	-	-			µg/kg	1	A-T-006s
Ethylbenzene$_{A}^{\#}$	-	<1	-	-	-			µg/kg	1	A-T-006s
m & p Xylene$_{A}^{\#}$	-	<1	-	-	-			µg/kg	1	A-T-006s
o-Xylene$_{A}^{\#}$	-	<1	-	-	-			µg/kg	1	A-T-006s
Styrene$_{A}^{\#}$	-	<1	-	-	-			µg/kg	1	A-T-006s
Bromoform$_{A}^{\#}$	-	<1	-	-	-			µg/kg	1	A-T-006s
Isopropylbenzene$_{A}^{\#}$	-	<1	-	-	-			µg/kg	1	A-T-006s
1,1,2,2-Tetrachloroethane$_{A}$	-	<1	-	-	-			µg/kg	1	A-T-006s
1,2,3-Trichloropropane$_{A}^{\#}$	-	<1	-	-	-			µg/kg	1	A-T-006s
Bromobenzene$_{A}^{\#}$	-	<1	-	-	-			µg/kg	1	A-T-006s
n-Propylbenzene$_{A}^{\#}$	-	<1	-	-	-			µg/kg	1	A-T-006s
2-Chlorotoluene$_{A}^{\#}$	-	<1	-	-	-			µg/kg	1	A-T-006s
1,3,5-Trimethylbenzene$_{A}^{\#}$	-	<1	-	-	-			µg/kg	1	A-T-006s
4-Chlorotoluene$_{A}^{\#}$	-	<1	-	-	-			µg/kg	1	A-T-006s
tert-Butylbenzene$_{A}^{\#}$	-	<2	-	-	-			µg/kg	2	A-T-006s
1,2,4-Trimethylbenzene$_{A}^{\#}$	-	<1	-	-	-			µg/kg	1	A-T-006s
sec-Butylbenzene$_{A}^{\#}$	-	<1	-	-	-			µg/kg	1	A-T-006s
4-Isopropyltoluene$_{A}^{\#}$	-	<1	-	-	-			µg/kg	1	A-T-006s
1,3-Dichlorobenzene$_{A}$	-	<1	-	-	-			µg/kg	1	A-T-006s
1,4-Dichlorobenzene$_{A}^{\#}$	-	<1	-	-	-			µg/kg	1	A-T-006s
n-Butylbenzene$_{A}^{\#}$	-	<1	-	-	-			µg/kg	1	A-T-006s
1,2-Dichlorobenzene$_{A}^{\#}$	-	<1	-	-	-			µg/kg	1	A-T-006s
1,2-Dibromo-3-chloropropane (DCBP)$_{A}$	-	<2	-	-	-			µg/kg	2	A-T-006s
1,2,4-Trichlorobenzene$_{A}$	-	<3	-	-	-			µg/kg	3	A-T-006s
Hexachlorobutadiene$_{A}^{\#}$	-	<1	-	-	-			µg/kg	1	A-T-006s
1,2,3-Trichlorobenzene$_{A}$	-	<3	-	-	-			µg/kg	3	A-T-006s

REPORT NOTES

General
This report shall not be reproduced, except in full, without written approval from Envirolab.
The results reported herein relate only to the material supplied to the laboratory.
The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.
Analytical results reflect the quality of the sample at the time of analysis only.
Opinions and interpretations expressed are outside the scope of our accreditation.
If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample, 9 = INCINERATOR ASH.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

Key:
IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Please contact us if you need any further information.

v1

Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: Structural Soils Limited (Bristol), The Old School , Stillhouse Lane, Bedminster, Bristol, UK, BS3 4EB

Project: Langstone Flood and Coastal Erosion Mangament Scheme

Clients Project No: 736036

Project No: 21/10442

Date Received: 24/09/2021 (am)

Cool Box Temperatures (°C): 15.6

NO DEVIATIONS IDENTIFIED with respect to sampling dates or containers received.

Note: If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3 (for water samples 5 ± 3°C), ISO 18400-105:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	21/10442/1	21/10442/2	21/10442/3	21/10442/5	21/10442/6
Client Sample No	101	102	103	102	103
Client Sample ID/Depth	BH105 0.20m	BH105 0.40m	BH105 1.00m	DS106 0.50m	DS106 1.00m
Date Sampled	20/09/21	20/09/21	20/09/21	20/09/21	20/09/21
A-T-004s					30/09/2021
A-T-006s		30/09/2021			
A-T-019s		30/09/2021	30/09/2021	30/09/2021	30/09/2021
A-T-019w		06/10/2021			
A-T-022s		01/10/2021	01/10/2021	01/10/2021	01/10/2021
A-T-024s		08/10/2021	08/10/2021	08/10/2021	08/10/2021
A-T-025w		08/10/2021			
A-T-026w		07/10/2021			
A-T-027s		07/10/2021	07/10/2021	07/10/2021	07/10/2021
A-T-031s		07/10/2021	07/10/2021	07/10/2021	07/10/2021
A-T-031w		07/10/2021			
A-T-032s		06/10/2021	06/10/2021	06/10/2021	06/10/2021
A-T-032w		06/10/2021			
A-T-033w		06/10/2021			
A-T-040s		06/10/2021	06/10/2021	06/10/2021	06/10/2021
A-T-040w		07/10/2021			
A-T-042sFCN		30/09/2021			
A-T-042sTCN		30/09/2021			
A-T-042wFCN		06/10/2021			
A-T-042wTCN		06/10/2021			
A-T-044		05/10/2021	05/10/2021	05/10/2021	05/10/2021
A-T-045	30/09/2021	30/09/2021		30/09/2021	30/09/2021
A-T-049w		07/10/2021			
A-T-050w		07/10/2021			
A-T-052s		05/10/2021			
A-T-055s		01/10/2021	01/10/2021	01/10/2021	01/10/2021
Titration w		06/10/2021			

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report

envirolab
Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 21/10421
Issue Number: 1 **Date:** 13 October, 2021

Client:
Structural Soils Limited (Bristol)
The Old School
Stillhouse Lane
Bedminster
Bristol
UK
BS3 4EB

Project Manager: Andrew Pope/Eloise Harman
Project Name: Langstone Flood and Coastal Erosion Management Scheme
Project Ref: 736036
Order No: N/A
Date Samples Received: 24/09/21
Date Instructions Received: 24/09/21
Date Analysis Completed: 13/10/21

Prepared by:

Melanie Marshall
Laboratory Coordinator

Approved by:

Richard Wong
Client Manager

envirolab

Envirolab Job Number: 21/10421

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/10421/3	21/10421/5	21/10421/8	21/10421/9	21/10421/10	21/10421/12	21/10421/13	Units	Limit of Detection	Method ref
Client Sample No	106	102	102	103	104	106	107			
Client Sample ID	BH105	DS104	BH104	BH104	BH104	BH104	BH104			
Depth to Top	6.20	0.50	0.20	0.50	1.00	2.80	4.90			
Depth To Bottom			0.40	0.80	1.30		5.00			
Date Sampled	21-Sep-21	21-Sep-21	22-Sep-21	22-Sep-21	22-Sep-21	22-Sep-21	22-Sep-21			
Sample Type	Solid	Soil - ES	Solid	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	7	6AE	7	6A	5A	6A	6A			
% Stones >10mm$_A$	<0.1	7.4	<0.1	23.6	24.4	<0.1	8.4	% w/w	0.1	A-T-044
pH$_D$$^{M\#}$	8.53	8.20	8.92	-	11.92	9.41	9.80	pH	0.01	A-T-031s
Ammoniacal nitrogen as N$_D$	-	-	-	-	0.9	1.4	-	mg/kg	0.2	A-T-033s
Cyanide (free)$_A$$^{M\#}$	-	-	-	-	<1	<1	-	mg/kg	1	A-T-042sFCN
Cyanide (total)$_A$$^{M\#}$	-	-	-	-	<1	<1	-	mg/kg	1	A-T-042sTCN
Phenols - Total by HPLC$_A$	-	-	-	-	<0.2	<0.2	-	mg/kg	0.2	A-T-050s
Total Organic Carbon$_D$$^{M\#}$	0.16	1.41	0.41	-	0.59	0.15	0.13	% w/w	0.03	A-T-032s
Arsenic$_D$$^{M\#}$	<1	<1	6	-	2	3	<1	mg/kg	1	A-T-024s
Barium$_D$	24	61	33	-	76	53	25	mg/kg	1	A-T-024s
Beryllium$_D$	<0.5	0.6	<0.5	-	0.6	0.7	<0.5	mg/kg	0.5	A-T-024s
Boron (water soluble)$_D$	<1.0	<1.0	1.8	-	1.1	3.2	2.9	mg/kg	1	A-T-027s
Cadmium$_D$$^{M\#}$	<0.5	0.7	0.7	-	0.5	0.8	<0.5	mg/kg	0.5	A-T-024s
Copper$_D$$^{M\#}$	5	23	11	-	11	7	4	mg/kg	1	A-T-024s
Chromium$_D$$^{M\#}$	16	40	57	-	23	29	12	mg/kg	1	A-T-024s
Chromium (hexavalent)$_D$	<1	<1	<1	-	<1	<1	<1	mg/kg	1	A-T-040s
Lead$_D$$^{M\#}$	5	35	24	-	29	6	4	mg/kg	1	A-T-024s
Mercury$_D$	3.68	0.53	0.56	-	1.99	3.28	3.14	mg/kg	0.17	A-T-024s
Nickel$_D$$^{M\#}$	11	34	47	-	14	21	8	mg/kg	1	A-T-024s
Selenium$_D$$^{M\#}$	<1	<1	<1	-	<1	<1	<1	mg/kg	1	A-T-024s
Vanadium$_D$$^{M\#}$	13	19	27	-	26	24	12	mg/kg	1	A-T-024s
Zinc$_D$$^{M\#}$	20	47	31	-	40	31	16	mg/kg	5	A-T-024s
pH (leachable)$_A$$^{\#}$	-	7.87	-	-	12.24	8.74	-	pH	0.01	A-T-031w
Alkalinity by titration (total) (pH 4.5) (leachable)$_A$	-	20	-	-	1220	60	-	mg/l Ca CO3	15	Titration w
Alkalinity by titration (carbonate) (leachable)$_A$	-	<15	-	-	320	<15	-	mg/l Ca CO3	15	Titration w
Hardness Total (leachable)$_A$	-	57	-	-	881	208	-	mg/l Ca CO3	2	A-T-049w
Ammoniacal nitrogen as N (leachable)$_A$	-	0.09	-	-	0.65	0.84	-	mg/l	0.02	A-T-033w
Chloride (leachable)$_A$$^{\#}$	-	10.5	-	-	671	1348.62	-	mg/l	1	A-T-026w
Nitrite (leachable)$_A$$^{\#}$	-	<0.1	-	-	0.1	<0.1	-	mg/l	0.1	A-T-026w
Nitrate (leachable)$_A$$^{\#}$	-	19.5	-	-	0.3	0.2	-	mg/l	0.1	A-T-026w
Sulphate (leachable)$_A$$^{\#}$	-	5.27	-	-	<1.00	297.94	-	mg/l	1	A-T-026w
Cyanide (free) (leachable)$_A$$^{\#}$	-	<0.005	-	-	<0.005	<0.005	-	mg/l	0.005	A-T-042wFCN

Envirolab Job Number: 21/10421

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/10421/3	21/10421/5	21/10421/8	21/10421/9	21/10421/10	21/10421/12	21/10421/13	Units	Limit of Detection	Method ref
Client Sample No	106	102	102	103	104	106	107			
Client Sample ID	BH105	DS104	BH104	BH104	BH104	BH104	BH104			
Depth to Top	6.20	0.50	0.20	0.50	1.00	2.80	4.90			
Depth To Bottom			0.40	0.80	1.30		5.00			
Date Sampled	21-Sep-21	21-Sep-21	22-Sep-21	22-Sep-21	22-Sep-21	22-Sep-21	22-Sep-21			
Sample Type	Solid	Soil - ES	Solid	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	7	6AE	7	6A	5A	6A	6A			
Cyanide (total) (leachable)$_{A}^{\#}$	-	<0.005	-	-	<0.005	<0.005	-	mg/l	0.005	A-T-042wTCN
Phenol (leachable)$_{A}$	-	<0.01	-	-	<0.01	<0.01	-	mg/l	0.01	A-T-050w
DOC (leachable)$_{A}^{\#}$	-	17.1	-	-	16.9	11.4	-	mg/l	0.2	A-T-032w
Antimony (leachable)$_{A}^{\#}$	-	<1	-	-	<2	<2	-	µg/l	1	A-T-025w
Arsenic (leachable)$_{A}^{\#}$	-	1	-	-	<2	<2	-	µg/l	1	A-T-025w
Boron (leachable)$_{A}^{\#}$	-	31	-	-	<20	496	-	µg/l	10	A-T-025w
Barium (leachable)$_{A}^{\#}$	-	58	-	-	361	31	-	µg/l	1	A-T-025w
Beryllium (leachable)$_{A}^{\#}$	-	<1	-	-	<2	<2	-	µg/l	1	A-T-025w
Cadmium (leachable)$_{A}^{\#}$	-	<1	-	-	<2	<2	-	µg/l	1	A-T-025w
Copper (leachable)$_{A}^{\#}$	-	7	-	-	24	<2	-	µg/l	1	A-T-025w
Chromium (leachable)$_{A}^{\#}$	-	1	-	-	<2	<2	-	µg/l	1	A-T-025w
Chromium (hexavalent) (leachable)$_{A}$	-	<0.05	-	-	<0.05	<0.05	-	mg/l	0.05	A-T-040w
Lead (leachable)$_{A}^{\#}$	-	10	-	-	3	<2	-	µg/l	1	A-T-025w
Magnesium (leachable)$_{A}$	-	6	-	-	<1	10	-	mg/l	1	A-T-049w
Mercury (leachable)$_{A}^{\#}$	-	<0.1	-	-	<0.2	<0.2	-	µg/l	0.1	A-T-025w
Molybdenum (leachable)$_{A}^{\#}$	-	<1	-	-	3	21	-	µg/l	1	A-T-025w
Nickel (leachable)$_{A}^{\#}$	-	2	-	-	12	<2	-	µg/l	1	A-T-025w
Selenium (leachable)$_{A}^{\#}$	-	<1	-	-	<2	<2	-	µg/l	1	A-T-025w
Zinc (leachable)$_{A}^{\#}$	-	17	-	-	12	3	-	µg/l	1	A-T-025w
Leachate Prep BS EN 12457-1 (2:1) (1 no) (250ml)+inorg	-	*	-	-	*	*	-			
Potassium (leachable)$_{A}$	-	11	-	-	21	57	-	mg/l	1.2	A-T-049w
Sodium (leachable)$_{A}$	-	13	-	-	144	778	-	mg/l	1	A-T-049w

Envirolab Job Number: 21/10421

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/10421/3	21/10421/5	21/10421/8	21/10421/9	21/10421/10	21/10421/12	21/10421/13	Units	Limit of Detection	Method ref
Client Sample No	106	102	102	103	104	106	107			
Client Sample ID	BH105	DS104	BH104	BH104	BH104	BH104	BH104			
Depth to Top	6.20	0.50	0.20	0.50	1.00	2.80	4.90			
Depth To Bottom			0.40	0.80	1.30		5.00			
Date Sampled	21-Sep-21	21-Sep-21	22-Sep-21	22-Sep-21	22-Sep-21	22-Sep-21	22-Sep-21			
Sample Type	Solid	Soil - ES	Solid	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	7	6AE	7	6A	5A	6A	6A			
Asbestos in Soil (inc. matrix) ^										
Asbestos in soil$_D^{\#}$	-	-	NAD	NAD	NAD	-	-			A-T-045
Asbestos ACM - Suitable for Water Absorption Test?$_D$	-	-	N/A	N/A	N/A	-	-			A-T-045

Envirolab Job Number: 21/10421

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/10421/3	21/10421/5	21/10421/8	21/10421/9	21/10421/10	21/10421/12	21/10421/13	Units	Limit of Detection	Method ref
Client Sample No	106	102	102	103	104	106	107			
Client Sample ID	BH105	DS104	BH104	BH104	BH104	BH104	BH104			
Depth to Top	6.20	0.50	0.20	0.50	1.00	2.80	4.90			
Depth To Bottom			0.40	0.80	1.30		5.00			
Date Sampled	21-Sep-21	21-Sep-21	22-Sep-21	22-Sep-21	22-Sep-21	22-Sep-21	22-Sep-21			
Sample Type	Solid	Soil - ES	Solid	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	7	6AE	7	6A	5A	6A	6A			
PAH-16MS										
Acenaphthene$_A^{M\#}$	<0.01	<0.01	0.02	-	0.23	<0.01	<0.01	mg/kg	0.01	A-T-019s
Acenaphthylene$_A^{M\#}$	<0.01	0.02	0.08	-	0.11	<0.01	<0.01	mg/kg	0.01	A-T-019s
Anthracene$_A^{M\#}$	<0.02	0.04	0.18	-	0.61	<0.02	<0.02	mg/kg	0.02	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	<0.04	0.25	1.28	-	1.90	<0.04	<0.04	mg/kg	0.04	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	<0.04	0.33	1.48	-	1.89	<0.04	<0.04	mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	<0.05	0.41	1.50	-	2.12	<0.05	<0.05	mg/kg	0.05	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	<0.05	0.16	0.74	-	0.84	<0.05	<0.05	mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	<0.07	0.16	0.61	-	0.84	<0.07	<0.07	mg/kg	0.07	A-T-019s
Chrysene$_A^{M\#}$	<0.06	0.35	1.15	-	1.76	<0.06	<0.06	mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	<0.04	<0.04	0.18	-	0.23	<0.04	<0.04	mg/kg	0.04	A-T-019s
Fluoranthene$_A^{M\#}$	<0.08	0.40	1.80	-	3.93	<0.08	<0.08	mg/kg	0.08	A-T-019s
Fluorene$_A^{M\#}$	<0.01	<0.01	0.03	-	0.27	<0.01	<0.01	mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	<0.03	0.18	0.85	-	1.03	<0.03	<0.03	mg/kg	0.03	A-T-019s
Naphthalene $_A^{M\#}$	<0.03	<0.03	<0.03	-	0.04	<0.03	<0.03	mg/kg	0.03	A-T-019s
Phenanthrene$_A^{M\#}$	<0.03	0.12	0.41	-	2.02	<0.03	<0.03	mg/kg	0.03	A-T-019s
Pyrene$_A^{M\#}$	<0.07	0.37	1.85	-	3.55	<0.07	<0.07	mg/kg	0.07	A-T-019s
Total PAH-16MS$_A^{M\#}$	<0.08	2.79	12.2	-	21.4	<0.08	<0.08	mg/kg	0.01	A-T-019s

Envirolab Job Number: 21/10421

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/10421/3	21/10421/5	21/10421/8	21/10421/9	21/10421/10	21/10421/12	21/10421/13	Units	Limit of Detection	Method ref
Client Sample No	106	102	102	103	104	106	107			
Client Sample ID	BH105	DS104	BH104	BH104	BH104	BH104	BH104			
Depth to Top	6.20	0.50	0.20	0.50	1.00	2.80	4.90			
Depth To Bottom			0.40	0.80	1.30		5.00			
Date Sampled	21-Sep-21	21-Sep-21	22-Sep-21	22-Sep-21	22-Sep-21	22-Sep-21	22-Sep-21			
Sample Type	Solid	Soil - ES	Solid	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	7	6AE	7	6A	5A	6A	6A			
PAH 16MS (leachable)										
Acenaphthene (leachable)$_A$	-	<0.02	-	-	1.46	<0.02	-	µg/l	0.02	A-T-019w
Acenaphthylene (leachable)$_A$	-	<0.02	-	-	0.12	<0.02	-	µg/l	0.02	A-T-019w
Anthracene (leachable)$_A$	-	<0.02	-	-	0.40	<0.02	-	µg/l	0.02	A-T-019w
Benzo(a)anthracene (leachable)$_A$	-	<0.02	-	-	0.12	<0.02	-	µg/l	0.02	A-T-019w
Benzo(a)pyrene (leachable) $_A$	-	<0.02	-	-	0.07	<0.02	-	µg/l	0.02	A-T-019w
Benzo(b)fluoranthene (leachable)$_A$	-	<0.02	-	-	0.07	<0.02	-	µg/l	0.02	A-T-019w
Benzo(ghi)perylene (leachable)$_A$	-	<0.02	-	-	0.04	<0.02	-	µg/l	0.02	A-T-019w
Benzo(k)fluoranthene (leachable)$_A$	-	<0.02	-	-	0.04	<0.02	-	µg/l	0.02	A-T-019w
Chrysene (leachable)$_A$	-	<0.02	-	-	0.08	<0.02	-	µg/l	0.02	A-T-019w
Dibenzo(ah)anthracene (leachable)$_A$	-	<0.02	-	-	0.03	<0.02	-	µg/l	0.02	A-T-019w
Fluoranthene (leachable)$_A$	-	0.03	-	-	0.66	<0.02	-	µg/l	0.02	A-T-019w
Fluorene (leachable)$_A$	-	<0.02	-	-	0.87	<0.02	-	µg/l	0.02	A-T-019w
Indeno(123-cd)pyrene (leachable)$_A$	-	<0.02	-	-	0.05	<0.02	-	µg/l	0.02	A-T-019w
Naphthalene (leachable) $_A$	-	0.03	-	-	0.69	0.19	-	µg/l	0.02	A-T-019w
Phenanthrene (leachable)$_A$	-	0.05	-	-	1.99	<0.02	-	µg/l	0.02	A-T-019w
Pyrene (leachable)$_A$	-	0.03	-	-	0.53	<0.02	-	µg/l	0.02	A-T-019w
Total PAH 16MS (leachable)$_A$	-	0.14	-	-	7.22	0.19	-	µg/l	0.02	A-T-019w

Envirolab Job Number: 21/10421

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/10421/3	21/10421/5	21/10421/8	21/10421/9	21/10421/10	21/10421/12	21/10421/13	Units	Limit of Detection	Method ref
Client Sample No	106	102	102	103	104	106	107			
Client Sample ID	BH105	DS104	BH104	BH104	BH104	BH104	BH104			
Depth to Top	6.20	0.50	0.20	0.50	1.00	2.80	4.90			
Depth To Bottom			0.40	0.80	1.30		5.00			
Date Sampled	21-Sep-21	21-Sep-21	22-Sep-21	22-Sep-21	22-Sep-21	22-Sep-21	22-Sep-21			
Sample Type	Solid	Soil - ES	Solid	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	7	6AE	7	6A	5A	6A	6A			
Speciated PCB-EC7 & WHO12										
PCB BZ $28_A^{M\#}$	-	-	-	-	<0.002	-	-	mg/kg	0.002	A-T-004s
PCB BZ $52_A^{M\#}$	-	-	-	-	<0.002	-	-	mg/kg	0.002	A-T-004s
PCB BZ 81_A	-	-	-	-	<0.005	-	-	mg/kg	0.005	A-T-004s
PCB BZ $101_A^{M\#}$	-	-	-	-	<0.004	-	-	mg/kg	0.004	A-T-004s
PCB BZ 105_A	-	-	-	-	<0.005	-	-	mg/kg	0.005	A-T-004s
PCB BZ 114_A	-	-	-	-	<0.005	-	-	mg/kg	0.005	A-T-004s
PCB BZ $118_A^{M\#}$	-	-	-	-	<0.007	-	-	mg/kg	0.007	A-T-004s
PCB BZ 123_A	-	-	-	-	<0.005	-	-	mg/kg	0.005	A-T-004s
PCB BZ 126_A	-	-	-	-	<0.005	-	-	mg/kg	0.005	A-T-004s
PCB BZ $138_A^{M\#}$	-	-	-	-	<0.006	-	-	mg/kg	0.006	A-T-004s
PCB BZ $153_A^{M\#}$	-	-	-	-	<0.004	-	-	mg/kg	0.004	A-T-004s
PCB BZ 156_A	-	-	-	-	<0.005	-	-	mg/kg	0.005	A-T-004s
PCB BZ 157_A	-	-	-	-	<0.005	-	-	mg/kg	0.005	A-T-004s
PCB BZ 167_A	-	-	-	-	<0.005	-	-	mg/kg	0.005	A-T-004s
PCB BZ 169_A	-	-	-	-	<0.005	-	-	mg/kg	0.005	A-T-004s
PCB BZ $180_A^{M\#}$	-	-	-	-	<0.004	-	-	mg/kg	0.004	A-T-004s
PCB BZ 189_A	-	-	-	-	<0.005	-	-	mg/kg	0.005	A-T-004s
PCB BZ 77_A	-	-	-	-	<0.005	-	-	mg/kg	0.005	A-T-004s
Total Speciated PCB-EC7 & $WHO12_A$	-	-	-	-	<0.007	-	-	mg/kg	0.002	A-T-004s

Lab Sample ID	21/10421/3	21/10421/5	21/10421/8	21/10421/9	21/10421/10	21/10421/12	21/10421/13	Units	Limit of Detection	Method ref
Client Sample No	106	102	102	103	104	106	107			
Client Sample ID	BH105	DS104	BH104	BH104	BH104	BH104	BH104			
Depth to Top	6.20	0.50	0.20	0.50	1.00	2.80	4.90			
Depth To Bottom			0.40	0.80	1.30		5.00			
Date Sampled	21-Sep-21	21-Sep-21	22-Sep-21	22-Sep-21	22-Sep-21	22-Sep-21	22-Sep-21			
Sample Type	Solid	Soil - ES	Solid	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	7	6AE	7	6A	5A	6A	6A			
VOC										
Dichlorodifluoromethane$_{A}$	-	-	-	-	<1	<1	-	µg/kg	1	A-T-006s
Chloromethane$_{A}$	-	-	-	-	<10	<10	-	µg/kg	10	A-T-006s
Vinyl Chloride (Chloroethene)$_{A}^{\#}$	-	-	-	-	<1	<1	-	µg/kg	1	A-T-006s
Bromomethane$_{A}^{\#}$	-	-	-	-	<1	<1	-	µg/kg	1	A-T-006s
Chloroethane$_{A}^{\#}$	-	-	-	-	<1	<1	-	µg/kg	1	A-T-006s
Trichlorofluoromethane$_{A}^{\#}$	-	-	-	-	<1	<1	-	µg/kg	1	A-T-006s
1,1-Dichloroethene$_{A}^{\#}$	-	-	-	-	<1	<1	-	µg/kg	1	A-T-006s
Carbon Disulphide$_{A}^{\#}$	-	-	-	-	<1	<1	-	µg/kg	1	A-T-006s
Dichloromethane$_{A}$	-	-	-	-	<5	<5	-	µg/kg	5	A-T-006s
trans 1,2-Dichloroethene$_{A}^{\#}$	-	-	-	-	<1	<1	-	µg/kg	1	A-T-006s
1,1-Dichloroethane$_{A}^{\#}$	-	-	-	-	<1	<1	-	µg/kg	1	A-T-006s
cis 1,2-Dichloroethene$_{A}^{\#}$	-	-	-	-	<1	<1	-	µg/kg	1	A-T-006s
2,2-Dichloropropane$_{A}^{\#}$	-	-	-	-	<1	<1	-	µg/kg	1	A-T-006s
Bromochloromethane$_{A}^{\#}$	-	-	-	-	<5	<5	-	µg/kg	5	A-T-006s
Chloroform$_{A}^{\#}$	-	-	-	-	<1	<1	-	µg/kg	1	A-T-006s
1,1,1-Trichloroethane$_{A}^{\#}$	-	-	-	-	<1	<1	-	µg/kg	1	A-T-006s
1,1-Dichloropropene$_{A}^{\#}$	-	-	-	-	<1	<1	-	µg/kg	1	A-T-006s
Carbon Tetrachloride$_{A}^{\#}$	-	-	-	-	<1	<1	-	µg/kg	1	A-T-006s
1,2-Dichloroethane$_{A}^{\#}$	-	-	-	-	<2	<2	-	µg/kg	2	A-T-006s
Benzene$_{A}^{\#}$	-	-	-	-	<1	<1	-	µg/kg	1	A-T-006s
Trichloroethene$_{A}^{\#}$	-	-	-	-	<1	<1	-	µg/kg	1	A-T-006s
1,2-Dichloropropane$_{A}^{\#}$	-	-	-	-	<1	<1	-	µg/kg	1	A-T-006s
Dibromomethane$_{A}^{\#}$	-	-	-	-	<1	<1	-	µg/kg	1	A-T-006s
Bromodichloromethane$_{A}^{\#}$	-	-	-	-	<10	<10	-	µg/kg	10	A-T-006s
cis 1,3-Dichloropropene$_{A}^{\#}$	-	-	-	-	<1	<1	-	µg/kg	1	A-T-006s
Toluene$_{A}^{\#}$	-	-	-	-	<1	<1	-	µg/kg	1	A-T-006s
trans 1,3-Dichloropropene$_{A}^{\#}$	-	-	-	-	<1	<1	-	µg/kg	1	A-T-006s
1,1,2-Trichloroethane$_{A}^{\#}$	-	-	-	-	<1	<1	-	µg/kg	1	A-T-006s
1,3-Dichloropropane$_{A}^{\#}$	-	-	-	-	<1	<1	-	µg/kg	1	A-T-006s
Tetrachloroethene$_{A}^{\#}$	-	-	-	-	<1	<1	-	µg/kg	1	A-T-006s
Dibromochloromethane$_{A}^{\#}$	-	-	-	-	<3	<3	-	µg/kg	3	A-T-006s
1,2-Dibromoethane$_{A}^{\#}$	-	-	-	-	<1	<1	-	µg/kg	1	A-T-006s

Lab Sample ID	21/10421/3	21/10421/5	21/10421/8	21/10421/9	21/10421/10	21/10421/12	21/10421/13	Units	Limit of Detection	Method ref
Client Sample No	106	102	102	103	104	106	107			
Client Sample ID	BH105	DS104	BH104	BH104	BH104	BH104	BH104			
Depth to Top	6.20	0.50	0.20	0.50	1.00	2.80	4.90			
Depth To Bottom			0.40	0.80	1.30		5.00			
Date Sampled	21-Sep-21	21-Sep-21	22-Sep-21	22-Sep-21	22-Sep-21	22-Sep-21	22-Sep-21			
Sample Type	Solid	Soil - ES	Solid	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	7	6AE	7	6A	5A	6A	6A			
Chlorobenzene$_{A}^{\#}$	-	-	-	-	<1	<1	-	µg/kg	1	A-T-006s
1,1,1,2-Tetrachloroethane$_{A}$	-	-	-	-	<1	<1	-	µg/kg	1	A-T-006s
Ethylbenzene$_{A}^{\#}$	-	-	-	-	<1	<1	-	µg/kg	1	A-T-006s
m & p Xylene$_{A}^{\#}$	-	-	-	-	<1	<1	-	µg/kg	1	A-T-006s
o-Xylene$_{A}^{\#}$	-	-	-	-	<1	<1	-	µg/kg	1	A-T-006s
Styrene$_{A}^{\#}$	-	-	-	-	<1	<1	-	µg/kg	1	A-T-006s
Bromoform$_{A}^{\#}$	-	-	-	-	<1	<1	-	µg/kg	1	A-T-006s
Isopropylbenzene$_{A}^{\#}$	-	-	-	-	<35	<1	-	µg/kg	1	A-T-006s
1,1,2,2-Tetrachloroethane$_{A}$	-	-	-	-	<1	<1	-	µg/kg	1	A-T-006s
1,2,3-Trichloropropane$_{A}^{\#}$	-	-	-	-	<1	<1	-	µg/kg	1	A-T-006s
Bromobenzene$_{A}^{\#}$	-	-	-	-	<1	<1	-	µg/kg	1	A-T-006s
n-Propylbenzene$_{A}^{\#}$	-	-	-	-	<1	<1	-	µg/kg	1	A-T-006s
2-Chlorotoluene$_{A}^{\#}$	-	-	-	-	<1	<1	-	µg/kg	1	A-T-006s
1,3,5-Trimethylbenzene$_{A}^{\#}$	-	-	-	-	<1	<1	-	µg/kg	1	A-T-006s
4-Chlorotoluene$_{A}^{\#}$	-	-	-	-	<1	<1	-	µg/kg	1	A-T-006s
tert-Butylbenzene$_{A}^{\#}$	-	-	-	-	<2	<2	-	µg/kg	2	A-T-006s
1,2,4-Trimethylbenzene$_{A}^{\#}$	-	-	-	-	<1	<1	-	µg/kg	1	A-T-006s
sec-Butylbenzene$_{A}^{\#}$	-	-	-	-	<1	<1	-	µg/kg	1	A-T-006s
4-Isopropyltoluene$_{A}^{\#}$	-	-	-	-	34	<1	-	µg/kg	1	A-T-006s
1,3-Dichlorobenzene$_{A}$	-	-	-	-	<1	<1	-	µg/kg	1	A-T-006s
1,4-Dichlorobenzene$_{A}^{\#}$	-	-	-	-	<1	<1	-	µg/kg	1	A-T-006s
n-Butylbenzene$_{A}^{\#}$	-	-	-	-	<1	<1	-	µg/kg	1	A-T-006s
1,2-Dichlorobenzene$_{A}^{\#}$	-	-	-	-	<1	<1	-	µg/kg	1	A-T-006s
1,2-Dibromo-3-chloropropane (DCBP)$_{A}$	-	-	-	-	<2	<2	-	µg/kg	2	A-T-006s
1,2,4-Trichlorobenzene$_{A}$	-	-	-	-	<3	<3	-	µg/kg	3	A-T-006s
Hexachlorobutadiene$_{A}^{\#}$	-	-	-	-	<1	<1	-	µg/kg	1	A-T-006s
1,2,3-Trichlorobenzene$_{A}$	-	-	-	-	<3	<3	-	µg/kg	3	A-T-006s

Envirolab Job Number: 21/10421

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/10421/3	21/10421/5	21/10421/8	21/10421/9	21/10421/10	21/10421/12	21/10421/13	Units	Limit of Detection	Method ref
Client Sample No	106	102	102	103	104	106	107			
Client Sample ID	BH105	DS104	BH104	BH104	BH104	BH104	BH104			
Depth to Top	6.20	0.50	0.20	0.50	1.00	2.80	4.90			
Depth To Bottom			0.40	0.80	1.30		5.00			
Date Sampled	21-Sep-21	21-Sep-21	22-Sep-21	22-Sep-21	22-Sep-21	22-Sep-21	22-Sep-21			
Sample Type	Solid	Soil - ES	Solid	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	7	6AE	7	6A	5A	6A	6A			
TPH CWG										
Ali >C5-C6$_A^{\#}$	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
Ali >C6-C8$_A^{\#}$	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
Ali >C8-C10$_A$	<1	<1	<1	-	9	<1	<1	mg/kg	1	A-T-055s
Ali >C10-C12$_A^{M\#}$	<1	<1	2	-	10	<1	<1	mg/kg	1	A-T-055s
Ali >C12-C16$_A^{M\#}$	<1	<1	5	-	15	<1	<1	mg/kg	1	A-T-055s
Ali >C16-C21$_A^{M\#}$	<1	<1	5	-	20	<1	<1	mg/kg	1	A-T-055s
Ali >C21-C35$_A^{M\#}$	<1	9	27	-	23	<1	<1	mg/kg	1	A-T-055s
Total Aliphatics$_A$	<1	9	40	-	77	<1	<1	mg/kg	1	A-T-055s
Aro >C5-C7$_A^{\#}$	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
Aro >C7-C8$_A^{\#}$	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
Aro >C8-C10$_A$	<1	1	1	-	17	<1	<1	mg/kg	1	A-T-055s
Aro >C10-C12$_A$	<1	<1	1	-	14	<1	<1	mg/kg	1	A-T-055s
Aro >C12-C16$_A$	<1	2	5	-	9	<1	<1	mg/kg	1	A-T-055s
Aro >C16-C21$_A^{M\#}$	<1	4	12	-	30	<1	<1	mg/kg	1	A-T-055s
Aro >C21-C35$_A^{M\#}$	<1	22	73	-	70	<1	<1	mg/kg	1	A-T-055s
Total Aromatics$_A$	<1	29	93	-	140	<1	<1	mg/kg	1	A-T-055s
TPH (Ali & Aro >C5-C35)$_A$	<1	38	133	-	217	<1	<1	mg/kg	1	A-T-055s
BTEX - Benzene$_A^{\#}$	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
BTEX - Toluene$_A^{\#}$	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene$_A^{\#}$	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
BTEX - m & p Xylene$_A^{\#}$	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
BTEX - o Xylene$_A^{\#}$	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
MTBE$_A^{\#}$	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s

Lab Sample ID	21/10421/3	21/10421/5	21/10421/8	21/10421/9	21/10421/10	21/10421/12	21/10421/13	Units	Limit of Detection	Method ref
Client Sample No	106	102	102	103	104	106	107			
Client Sample ID	BH105	DS104	BH104	BH104	BH104	BH104	BH104			
Depth to Top	6.20	0.50	0.20	0.50	1.00	2.80	4.90			
Depth To Bottom			0.40	0.80	1.30		5.00			
Date Sampled	21-Sep-21	21-Sep-21	22-Sep-21	22-Sep-21	22-Sep-21	22-Sep-21	22-Sep-21			
Sample Type	Solid	Soil - ES	Solid	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	7	6AE	7	6A	5A	6A	6A			
SVOC + TICs (excluding PAH-16)										
4-Bromophenyl phenyl ether$_A$	-	-	-	-	<100	<100	-	µg/kg	100	A-T-052s
SVOC TICs (Tentatively Identified Compounds)$_A$	-	-	-	-	Appended	None detected	-			A-T-052s
Hexachlorobenzene$_A$	-	-	-	-	<100	<100	-	µg/kg	100	A-T-052s
Diethyl phthalate$_A$	-	-	-	-	<100	<100	-	µg/kg	100	A-T-052s
Dimethyl phthalate$_A$	-	-	-	-	<100	<100	-	µg/kg	100	A-T-052s
Dibenzofuran$_A$	-	-	-	-	154	<100	-	µg/kg	100	A-T-052s
Carbazole$_A$	-	-	-	-	<100	<100	-	µg/kg	100	A-T-052s
Butylbenzyl phthalate$_A$	-	-	-	-	<100	<100	-	µg/kg	100	A-T-052s
Bis(2-ethylhexyl)phthalate$_A$	-	-	-	-	<500	<500	-	µg/kg	500	A-T-052s
Bis(2-chloroethoxy)methane$_A$	-	-	-	-	<100	<100	-	µg/kg	100	A-T-052s
Bis(2-chloroethyl)ether$_A$	-	-	-	-	<100	<100	-	µg/kg	100	A-T-052s
4-Nitrophenol$_A$	-	-	-	-	<100	<100	-	µg/kg	100	A-T-052s
3+4-Methylphenol$_A$	-	-	-	-	<100	<100	-	µg/kg	100	A-T-052s
4-Chloro-3-methylphenol$_A$	-	-	-	-	<100	<100	-	µg/kg	100	A-T-052s
2-Nitrophenol$_A$	-	-	-	-	<100	<100	-	µg/kg	100	A-T-052s
2-Methylphenol$_A$	-	-	-	-	<100	<100	-	µg/kg	100	A-T-052s
2-Chlorophenol$_A$	-	-	-	-	<100	<100	-	µg/kg	100	A-T-052s
2,6-Dinitrotoluene$_A$	-	-	-	-	<100	<100	-	µg/kg	100	A-T-052s
2,4-Dinitrotoluene$_A$	-	-	-	-	<100	<100	-	µg/kg	100	A-T-052s
2,4-Dimethylphenol$_A$	-	-	-	-	<100	<100	-	µg/kg	100	A-T-052s
2,4-Dichlorophenol$_A$	-	-	-	-	<100	<100	-	µg/kg	100	A-T-052s
2,4,6-Trichlorophenol$_A$	-	-	-	-	<100	<100	-	µg/kg	100	A-T-052s
2,4,5-Trichlorophenol$_A$	-	-	-	-	<100	<100	-	µg/kg	100	A-T-052s
2-Chloronaphthalene$_A$	-	-	-	-	<100	<100	-	µg/kg	100	A-T-052s
2-Methylnaphthalene$_A$	-	-	-	-	<100	<100	-	µg/kg	100	A-T-052s
Bis(2-chloroisopropyl)ether$_A$	-	-	-	-	<100	<100	-	µg/kg	100	A-T-052s
Phenol$_A$	-	-	-	-	<100	<100	-	µg/kg	100	A-T-052s
Pentachlorophenol (SVOC)$_A$	-	-	-	-	<100	<100	-	µg/kg	100	A-T-052s
n-Nitroso-n-dipropylamine$_A$	-	-	-	-	<100	<100	-	µg/kg	100	A-T-052s
n-Dioctylphthalate$_A$	-	-	-	-	<500	<500	-	µg/kg	500	A-T-052s
n-Dibutylphthalate$_A$	-	-	-	-	<100	<100	-	µg/kg	100	A-T-052s

Lab Sample ID	21/10421/3	21/10421/5	21/10421/8	21/10421/9	21/10421/10	21/10421/12	21/10421/13	Units	Limit of Detection	Method ref
Client Sample No	106	102	102	103	104	106	107			
Client Sample ID	BH105	DS104	BH104	BH104	BH104	BH104	BH104			
Depth to Top	6.20	0.50	0.20	0.50	1.00	2.80	4.90			
Depth To Bottom			0.40	0.80	1.30		5.00			
Date Sampled	21-Sep-21	21-Sep-21	22-Sep-21	22-Sep-21	22-Sep-21	22-Sep-21	22-Sep-21			
Sample Type	Solid	Soil - ES	Solid	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	7	6AE	7	6A	5A	6A	6A			
Nitrobenzene$_A$	-	-	-	-	<100	<100	-	µg/kg	100	A-T-052s
Isophorone$_A$	-	-	-	-	<100	<100	-	µg/kg	100	A-T-052s
Hexachloroethane$_A$	-	-	-	-	<100	<100	-	µg/kg	100	A-T-052s
Hexachlorocyclopentadiene$_A$	-	-	-	-	<100	<100	-	µg/kg	100	A-T-052s
Perylene$_A$	-	-	-	-	255	<100	-	µg/kg	100	A-T-052s

Envirolab Job Number: 21/10421

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/10421/14	21/10421/17	21/10421/18					Units	Limit of Detection	Method ref
Client Sample No	101	104	1054							
Client Sample ID	DS105	DS105	DS105							
Depth to Top	0.20	1.40	3.30							
Depth To Bottom										
Date Sampled	22-Sep-21	22-Sep-21	22-Sep-21							
Sample Type	Soil - ES	Soil - ES	Solid							
Sample Matrix Code	6AE	6A	7							
% Stones >10mm$_A$	29.3	<0.1	<0.1					% w/w	0.1	A-T-044
pH$_D$$^{M\#}$	-	8.37	9.07					pH	0.01	A-T-031s
Total Organic Carbon$_D$$^{M\#}$	-	0.29	0.10					% w/w	0.03	A-T-032s
Arsenic$_D$$^{M\#}$	-	7	<1					mg/kg	1	A-T-024s
Barium$_D$	-	71	23					mg/kg	1	A-T-024s
Beryllium$_D$	-	0.8	<0.5					mg/kg	0.5	A-T-024s
Boron (water soluble)$_D$	-	<1.0	<1.0					mg/kg	1	A-T-027s
Cadmium$_D$$^{M\#}$	-	1.1	<0.5					mg/kg	0.5	A-T-024s
Copper$_D$$^{M\#}$	-	14	4					mg/kg	1	A-T-024s
Chromium$_D$$^{M\#}$	-	30	28					mg/kg	1	A-T-024s
Chromium (hexavalent)$_D$	-	<1	<1					mg/kg	1	A-T-040s
Lead$_D$$^{M\#}$	-	14	3					mg/kg	1	A-T-024s
Mercury$_D$	-	<0.17	3.58					mg/kg	0.17	A-T-024s
Nickel$_D$$^{M\#}$	-	31	21					mg/kg	1	A-T-024s
Selenium$_D$$^{M\#}$	-	<1	<1					mg/kg	1	A-T-024s
Vanadium$_D$$^{M\#}$	-	41	13					mg/kg	1	A-T-024s
Zinc$_D$$^{M\#}$	-	41	19					mg/kg	5	A-T-024s

Envirolab Job Number: 21/10421

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/10421/14	21/10421/17	21/10421/18					Units	Limit of Detection	Method ref
Client Sample No	101	104	1054							
Client Sample ID	DS105	DS105	DS105							
Depth to Top	0.20	1.40	3.30							
Depth To Bottom										
Date Sampled	22-Sep-21	22-Sep-21	22-Sep-21							
Sample Type	Soil - ES	Soil - ES	Solid							
Sample Matrix Code	6AE	6A	7							
Asbestos in Soil (inc. matrix) ^										
Asbestos in soil$_D^{\#}$	NAD	-	-							A-T-045
Asbestos ACM - Suitable for Water Absorption Test?$_D$	N/A	-	-							A-T-045

Envirolab Job Number: 21/10421

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/10421/14	21/10421/17	21/10421/18					Units	Limit of Detection	Method ref
Client Sample No	101	104	1054							
Client Sample ID	DS105	DS105	DS105							
Depth to Top	0.20	1.40	3.30							
Depth To Bottom										
Date Sampled	22-Sep-21	22-Sep-21	22-Sep-21							
Sample Type	Soil - ES	Soil - ES	Solid							
Sample Matrix Code	6AE	6A	7							
PAH-16MS										
Acenaphthene$_A^{M\#}$	-	<0.01	<0.01					mg/kg	0.01	A-T-019s
Acenaphthylene$_A^{M\#}$	-	<0.01	<0.01					mg/kg	0.01	A-T-019s
Anthracene$_A^{M\#}$	-	<0.02	<0.02					mg/kg	0.02	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	-	<0.04	<0.04					mg/kg	0.04	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	-	<0.04	<0.04					mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	-	<0.05	<0.05					mg/kg	0.05	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	-	<0.05	<0.05					mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	-	<0.07	<0.07					mg/kg	0.07	A-T-019s
Chrysene$_A^{M\#}$	-	<0.06	<0.06					mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	-	<0.04	<0.04					mg/kg	0.04	A-T-019s
Fluoranthene$_A^{M\#}$	-	<0.08	<0.08					mg/kg	0.08	A-T-019s
Fluorene$_A^{M\#}$	-	<0.01	<0.01					mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	-	<0.03	<0.03					mg/kg	0.03	A-T-019s
Naphthalene $_A^{M\#}$	-	<0.03	<0.03					mg/kg	0.03	A-T-019s
Phenanthrene$_A^{M\#}$	-	<0.03	<0.03					mg/kg	0.03	A-T-019s
Pyrene$_A^{M\#}$	-	<0.07	<0.07					mg/kg	0.07	A-T-019s
Total PAH-16MS$_A^{M\#}$	-	<0.08	<0.08					mg/kg	0.01	A-T-019s

Lab Sample ID	21/10421/14	21/10421/17	21/10421/18					Units	Limit of Detection	Method ref
Client Sample No	101	104	1054							
Client Sample ID	DS105	DS105	DS105							
Depth to Top	0.20	1.40	3.30							
Depth To Bottom										
Date Sampled	22-Sep-21	22-Sep-21	22-Sep-21							
Sample Type	Soil - ES	Soil - ES	Solid							
Sample Matrix Code	6AE	6A	7							
VOC										
Dichlorodifluoromethane$_{A}$	-	<1	-					µg/kg	1	A-T-006s
Chloromethane$_{A}$	-	<10	-					µg/kg	10	A-T-006s
Vinyl Chloride (Chloroethene)$_{A}^{\#}$	-	<1	-					µg/kg	1	A-T-006s
Bromomethane$_{A}^{\#}$	-	<1	-					µg/kg	1	A-T-006s
Chloroethane$_{A}^{\#}$	-	<1	-					µg/kg	1	A-T-006s
Trichlorofluoromethane$_{A}^{\#}$	-	<1	-					µg/kg	1	A-T-006s
1,1-Dichloroethene$_{A}^{\#}$	-	<1	-					µg/kg	1	A-T-006s
Carbon Disulphide$_{A}^{\#}$	-	<1	-					µg/kg	1	A-T-006s
Dichloromethane$_{A}$	-	<5	-					µg/kg	5	A-T-006s
trans 1,2-Dichloroethene$_{A}^{\#}$	-	<1	-					µg/kg	1	A-T-006s
1,1-Dichloroethane$_{A}^{\#}$	-	<1	-					µg/kg	1	A-T-006s
cis 1,2-Dichloroethene$_{A}^{\#}$	-	<1	-					µg/kg	1	A-T-006s
2,2-Dichloropropane$_{A}^{\#}$	-	<1	-					µg/kg	1	A-T-006s
Bromochloromethane$_{A}^{\#}$	-	<5	-					µg/kg	5	A-T-006s
Chloroform$_{A}^{\#}$	-	<1	-					µg/kg	1	A-T-006s
1,1,1-Trichloroethane$_{A}^{\#}$	-	<1	-					µg/kg	1	A-T-006s
1,1-Dichloropropene$_{A}^{\#}$	-	<1	-					µg/kg	1	A-T-006s
Carbon Tetrachloride$_{A}^{\#}$	-	<1	-					µg/kg	1	A-T-006s
1,2-Dichloroethane$_{A}^{\#}$	-	<2	-					µg/kg	2	A-T-006s
Benzene$_{A}^{\#}$	-	<1	-					µg/kg	1	A-T-006s
Trichloroethene$_{A}^{\#}$	-	<1	-					µg/kg	1	A-T-006s
1,2-Dichloropropane$_{A}^{\#}$	-	<1	-					µg/kg	1	A-T-006s
Dibromomethane$_{A}^{\#}$	-	<1	-					µg/kg	1	A-T-006s
Bromodichloromethane$_{A}^{\#}$	-	<10	-					µg/kg	10	A-T-006s
cis 1,3-Dichloropropene$_{A}^{\#}$	-	<1	-					µg/kg	1	A-T-006s
Toluene$_{A}^{\#}$	-	<1	-					µg/kg	1	A-T-006s
trans 1,3-Dichloropropene$_{A}^{\#}$	-	<1	-					µg/kg	1	A-T-006s
1,1,2-Trichloroethane$_{A}^{\#}$	-	<1	-					µg/kg	1	A-T-006s
1,3-Dichloropropane$_{A}^{\#}$	-	<1	-					µg/kg	1	A-T-006s
Tetrachloroethene$_{A}^{\#}$	-	<1	-					µg/kg	1	A-T-006s
Dibromochloromethane$_{A}^{\#}$	-	<3	-					µg/kg	3	A-T-006s
1,2-Dibromoethane$_{A}^{\#}$	-	<1	-					µg/kg	1	A-T-006s

Lab Sample ID	21/10421/14	21/10421/17	21/10421/18					Units	Limit of Detection	Method ref
Client Sample No	101	104	1054							
Client Sample ID	DS105	DS105	DS105							
Depth to Top	0.20	1.40	3.30							
Depth To Bottom										
Date Sampled	22-Sep-21	22-Sep-21	22-Sep-21							
Sample Type	Soil - ES	Soil - ES	Solid							
Sample Matrix Code	6AE	6A	7							
Chlorobenzene$_{A}^{\#}$	-	<1	-					µg/kg	1	A-T-006s
1,1,1,2-Tetrachloroethane$_{A}$	-	<1	-					µg/kg	1	A-T-006s
Ethylbenzene$_{A}^{\#}$	-	<1	-					µg/kg	1	A-T-006s
m & p Xylene$_{A}^{\#}$	-	<1	-					µg/kg	1	A-T-006s
o-Xylene$_{A}^{\#}$	-	<1	-					µg/kg	1	A-T-006s
Styrene$_{A}^{\#}$	-	<1	-					µg/kg	1	A-T-006s
Bromoform$_{A}^{\#}$	-	<1	-					µg/kg	1	A-T-006s
Isopropylbenzene$_{A}^{\#}$	-	<1	-					µg/kg	1	A-T-006s
1,1,2,2-Tetrachloroethane$_{A}$	-	<1	-					µg/kg	1	A-T-006s
1,2,3-Trichloropropane$_{A}^{\#}$	-	<1	-					µg/kg	1	A-T-006s
Bromobenzene$_{A}^{\#}$	-	<1	-					µg/kg	1	A-T-006s
n-Propylbenzene$_{A}^{\#}$	-	<1	-					µg/kg	1	A-T-006s
2-Chlorotoluene$_{A}^{\#}$	-	<1	-					µg/kg	1	A-T-006s
1,3,5-Trimethylbenzene$_{A}^{\#}$	-	<1	-					µg/kg	1	A-T-006s
4-Chlorotoluene$_{A}^{\#}$	-	<1	-					µg/kg	1	A-T-006s
tert-Butylbenzene$_{A}^{\#}$	-	<2	-					µg/kg	2	A-T-006s
1,2,4-Trimethylbenzene$_{A}^{\#}$	-	<1	-					µg/kg	1	A-T-006s
sec-Butylbenzene$_{A}^{\#}$	-	<1	-					µg/kg	1	A-T-006s
4-Isopropyltoluene$_{A}^{\#}$	-	<1	-					µg/kg	1	A-T-006s
1,3-Dichlorobenzene$_{A}$	-	<1	-					µg/kg	1	A-T-006s
1,4-Dichlorobenzene$_{A}^{\#}$	-	<1	-					µg/kg	1	A-T-006s
n-Butylbenzene$_{A}^{\#}$	-	<1	-					µg/kg	1	A-T-006s
1,2-Dichlorobenzene$_{A}^{\#}$	-	<1	-					µg/kg	1	A-T-006s
1,2-Dibromo-3-chloropropane (DCBP)$_{A}$	-	<2	-					µg/kg	2	A-T-006s
1,2,4-Trichlorobenzene$_{A}$	-	<3	-					µg/kg	3	A-T-006s
Hexachlorobutadiene$_{A}^{\#}$	-	<1	-					µg/kg	1	A-T-006s
1,2,3-Trichlorobenzene$_{A}$	-	<3	-					µg/kg	3	A-T-006s

Envirolab Job Number: 21/10421

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/10421/14	21/10421/17	21/10421/18					Units	Limit of Detection	Method ref
Client Sample No	101	104	1054							
Client Sample ID	DS105	DS105	DS105							
Depth to Top	0.20	1.40	3.30							
Depth To Bottom										
Date Sampled	22-Sep-21	22-Sep-21	22-Sep-21							
Sample Type	Soil - ES	Soil - ES	Solid							
Sample Matrix Code	6AE	6A	7							
TPH CWG										
Ali >C5-C6$_A^{\#}$	-	<0.01	<0.01					mg/kg	0.01	A-T-022s
Ali >C6-C8$_A^{\#}$	-	<0.01	<0.01					mg/kg	0.01	A-T-022s
Ali >C8-C10$_A$	-	6	<1					mg/kg	1	A-T-055s
Ali >C10-C12$_A^{M\#}$	-	17	<1					mg/kg	1	A-T-055s
Ali >C12-C16$_A^{M\#}$	-	<1	<1					mg/kg	1	A-T-055s
Ali >C16-C21$_A^{M\#}$	-	1	<1					mg/kg	1	A-T-055s
Ali >C21-C35$_A^{M\#}$	-	17	<1					mg/kg	1	A-T-055s
Total Aliphatics$_A$	-	42	<1					mg/kg	1	A-T-055s
Aro >C5-C7$_A^{\#}$	-	<0.01	<0.01					mg/kg	0.01	A-T-022s
Aro >C7-C8$_A^{\#}$	-	<0.01	<0.01					mg/kg	0.01	A-T-022s
Aro >C8-C10$_A$	-	2	<1					mg/kg	1	A-T-055s
Aro >C10-C12$_A$	-	8	<1					mg/kg	1	A-T-055s
Aro >C12-C16$_A$	-	2	<1					mg/kg	1	A-T-055s
Aro >C16-C21$_A^{M\#}$	-	3	<1					mg/kg	1	A-T-055s
Aro >C21-C35$_A^{M\#}$	-	3	<1					mg/kg	1	A-T-055s
Total Aromatics$_A$	-	20	<1					mg/kg	1	A-T-055s
TPH (Ali & Aro >C5-C35)$_A$	-	62	<1					mg/kg	1	A-T-055s
BTEX - Benzene$_A^{\#}$	-	<0.01	<0.01					mg/kg	0.01	A-T-022s
BTEX - Toluene$_A^{\#}$	-	<0.01	<0.01					mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene$_A^{\#}$	-	<0.01	<0.01					mg/kg	0.01	A-T-022s
BTEX - m & p Xylene$_A^{\#}$	-	<0.01	<0.01					mg/kg	0.01	A-T-022s
BTEX - o Xylene$_A^{\#}$	-	<0.01	<0.01					mg/kg	0.01	A-T-022s
MTBE$_A^{\#}$	-	<0.01	<0.01					mg/kg	0.01	A-T-022s

REPORT NOTES

General
This report shall not be reproduced, except in full, without written approval from Envirolab.
The results reported herein relate only to the material supplied to the laboratory.
The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.
Analytical results reflect the quality of the sample at the time of analysis only.
Opinions and interpretations expressed are outside the scope of our accreditation.
If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample, 9 = INCINERATOR ASH.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

Key:
IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Please contact us if you need any further information.

v1

Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: Structural Soils Limited (Bristol), The Old School , Stillhouse Lane, Bedminster, Bristol, UK, BS3 4EB

Project: Langstone Flood and Coastal Erosion Management Scheme

Clients Project No: 736036

Project No: 21/10421

Date Received: 24/09/2021 (am)

Cool Box Temperatures (°C): 16.0, 15.4

Lab Sample ID	21/10421/10	21/10421/12
Client Sample No	104	106
Client Sample ID/Depth	BH104 1.00-1.30m	BH104 2.80m
Date Sampled	22/09/21	22/09/21
Deviation Code		
F	✓	✓

Key

F *Maximum holding time exceeded between sampling date and analysis for analytes listed below*

HOLDING TIME EXCEEDANCES

Lab Sample ID	21/10421/10	21/10421/12
Client Sample No	104	106
Client Sample ID/Depth	BH104 1.00-1.30m	BH104 2.80m
Date Sampled	22/09/21	22/09/21
Cyanide (free)	✓	✓
Cyanide (total)	✓	✓

Note: If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3 (for water samples 5 ± 3°C), ISO 18400-105:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	21/10421/3	21/10421/5	21/10421/8	21/10421/9	21/10421/10	21/10421/12	21/10421/13	21/10421/14	21/10421/17	21/10421/18
Client Sample No	106	102	102	103	104	106	107	101	104	1054
Client Sample ID/Depth	BH105 6.20m	DS104 0.50m	BH104 0.20-0.40m	BH104 0.50-0.80m	BH104 1.00-1.30m	BH104 2.80m	BH104 4.90-5.00m	DS105 0.20m	DS105 1.40m	DS105 3.30m
Date Sampled	21/09/21	21/09/21	22/09/21	22/09/21	22/09/21	22/09/21	22/09/21	22/09/21	22/09/21	22/09/21
A-T-004s					08/10/2021					
A-T-006s					07/10/2021	07/10/2021			07/10/2021	
A-T-019s	06/10/2021	06/10/2021	07/10/2021		07/10/2021	07/10/2021	07/10/2021		07/10/2021	07/10/2021
A-T-019w		11/10/2021			12/10/2021	12/10/2021				
A-T-022s	07/10/2021	07/10/2021	07/10/2021		07/10/2021	07/10/2021	07/10/2021		07/10/2021	07/10/2021
A-T-024s	09/10/2021	09/10/2021	11/10/2021		11/10/2021	11/10/2021	11/10/2021		11/10/2021	11/10/2021
A-T-025w		11/10/2021			13/10/2021	13/10/2021				
A-T-026w		11/10/2021			13/10/2021	13/10/2021				
A-T-027s	08/10/2021	08/10/2021	12/10/2021		12/10/2021	12/10/2021	12/10/2021		12/10/2021	12/10/2021
A-T-031s	07/10/2021	07/10/2021	11/10/2021		11/10/2021	11/10/2021	11/10/2021		11/10/2021	11/10/2021
A-T-031w		11/10/2021			13/10/2021	13/10/2021				
A-T-032s	07/10/2021	08/10/2021	11/10/2021		11/10/2021	11/10/2021	11/10/2021		11/10/2021	11/10/2021
A-T-032w		11/10/2021			13/10/2021	13/10/2021				
A-T-033s					11/10/2021	11/10/2021				
A-T-033w		11/10/2021			13/10/2021	13/10/2021				
A-T-040s	07/10/2021	07/10/2021	11/10/2021		11/10/2021	11/10/2021	11/10/2021		11/10/2021	11/10/2021
A-T-040w		11/10/2021			13/10/2021	13/10/2021				
A-T-042sFCN					07/10/2021	07/10/2021				
A-T-042sTCN					07/10/2021	07/10/2021				
A-T-042wFCN		08/10/2021			13/10/2021	13/10/2021				
A-T-042wTCN		08/10/2021			13/10/2021	13/10/2021				
A-T-044	07/10/2021	07/10/2021	08/10/2021	08/10/2021	08/10/2021	08/10/2021	08/10/2021	08/10/2021	08/10/2021	08/10/2021
A-T-045			01/10/2021	01/10/2021	01/10/2021			01/10/2021		
A-T-049w		11/10/2021			13/10/2021	13/10/2021				
A-T-050s					07/10/2021	07/10/2021				
A-T-050w		08/10/2021			13/10/2021	13/10/2021				
A-T-052s					11/10/2021	11/10/2021				
A-T-055s	07/10/2021	07/10/2021	08/10/2021		08/10/2021	08/10/2021	08/10/2021		08/10/2021	08/10/2021
Titration w		12/10/2021			12/10/2021	12/10/2021				

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report

SVOC Tentatively Identified Compounds

(Note: TIC Results are reported on an as received basis and are not moisture corrected).

Appendix to Envirolab Report:

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Lab Client Sample ID	21/10421/10		
Client Sample ID	BH104		
Depth to top	1.00m		
Depth to bottom	1.30m		
Top 10	Compound	CAS number	Estimated Concentration µg/kg
1	1R-α-Pinene	7785-70-8	50791.72749
2	3-Carene	13466-78-9	37754.11274
3	D-Limonene	5989-27-5	6141.406783
4	Tetradecane	629-59-4	2291.09523
5	Pentadecane	629-62-9	4522.173623
6	Hexadecane	544-76-3	8343.117065
7	Heptadecane	629-78-7	10366.48442
8	Octadecane	593-45-3	5704.334488
9	Nonadecane	629-92-5	2866.143488
10	Heptadecane, 9-hexyl-	55124-79-3	3701.936088

envirolab
Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 21/10369
Issue Number: 1 **Date:** 14 October, 2021

Client:
Structural Soils Limited (Bristol)
The Old School
Stillhouse Lane
Bedminster
Bristol
UK
BS3 4EB

Project Manager: Andrew Pope/Eloise Harman/Sasha Layton
Project Name: Langstone Flood and Coastal Erosion Management Scheme
Project Ref: 736036
Order No: N/A
Date Samples Received: 20/09/21
Date Instructions Received: 24/09/21
Date Analysis Completed: 14/10/21

Prepared by:



Sophie France
Client Service Manager

Approved by:



Richard Wong
Client Manager

Envirolab Job Number: 21/10369

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/10369/2							Units	Limit of Detection	Method ref
Client Sample No	102									
Client Sample ID	DS107									
Depth to Top	0.50									
Depth To Bottom										
Date Sampled	21-Sep-21									
Sample Type	Soil - ES									
Sample Matrix Code	6AE									
% Stones >10mm$_A$	4.1							% w/w	0.1	A-T-044
pH$_D$$^{M\#}$	5.55							pH	0.01	A-T-031s
Total Organic Carbon$_D$$^{M\#}$	1.52							% w/w	0.03	A-T-032s
Arsenic$_D$$^{M\#}$	2							mg/kg	1	A-T-024s
Barium$_D$	64							mg/kg	1	A-T-024s
Beryllium$_D$	<0.5							mg/kg	0.5	A-T-024s
Boron (water soluble)$_D$	<1.0							mg/kg	1	A-T-027s
Cadmium$_D$$^{M\#}$	0.7							mg/kg	0.5	A-T-024s
Copper$_D$$^{M\#}$	13							mg/kg	1	A-T-024s
Chromium$_D$$^{M\#}$	22							mg/kg	1	A-T-024s
Chromium (hexavalent)$_D$	<1							mg/kg	1	A-T-040s
Lead$_D$$^{M\#}$	58							mg/kg	1	A-T-024s
Mercury$_D$	<0.17							mg/kg	0.17	A-T-024s
Nickel$_D$$^{M\#}$	17							mg/kg	1	A-T-024s
Selenium$_D$$^{M\#}$	<1							mg/kg	1	A-T-024s
Vanadium$_D$$^{M\#}$	29							mg/kg	1	A-T-024s
Zinc$_D$$^{M\#}$	52							mg/kg	5	A-T-024s
pH (leachable)$_A$$^{\#}$	6.55							pH	0.01	A-T-031w
Alkalinity by titration (total) (pH 4.5) (leachable)$_A$	40							mg/l Ca CO3	15	Titration w
Alkalinity by titration (carbonate) (leachable)$_A$	<15							mg/l Ca CO3	15	Titration w
Hardness Total (leachable)$_A$	197							mg/l Ca CO3	2	A-T-049w
Ammoniacal nitrogen as N (leachable)$_A$	0.31							mg/l	0.02	A-T-033w
Chloride (leachable)$_A$$^{\#}$	13.98							mg/l	1	A-T-026w
Nitrite (leachable)$_A$$^{\#}$	<0.1							mg/l	0.1	A-T-026w
Nitrate (leachable)$_A$$^{\#}$	9.4							mg/l	0.1	A-T-026w
Sulphate (leachable)$_A$$^{\#}$	12.73							mg/l	1	A-T-026w
Cyanide (free) (leachable)$_A$$^{\#}$	<0.005							mg/l	0.005	A-T-042wFCN
Cyanide (total) (leachable)$_A$$^{\#}$	<0.005							mg/l	0.005	A-T-042wTCN
Phenol (leachable)$_A$	<0.01							mg/l	0.01	A-T-050w
DOC (leachable)$_A$$^{\#}$	25.0							mg/l	0.2	A-T-032w
Antimony (leachable)$_A$$^{\#}$	<1							µg/l	1	A-T-025w

Envirolab Job Number: 21/10369

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/10369/2							Units	Limit of Detection	Method ref
Client Sample No	102									
Client Sample ID	DS107									
Depth to Top	0.50									
Depth To Bottom										
Date Sampled	21-Sep-21									
Sample Type	Soil - ES									
Sample Matrix Code	6AE									
Arsenic (leachable)$_{A}^{\#}$	2							µg/l	1	A-T-025w
Boron (leachable)$_{A}^{\#}$	36							µg/l	10	A-T-025w
Barium (leachable)$_{A}^{\#}$	333							µg/l	1	A-T-025w
Beryllium (leachable)$_{A}^{\#}$	1							µg/l	1	A-T-025w
Cadmium (leachable)$_{A}^{\#}$	<1							µg/l	1	A-T-025w
Copper (leachable)$_{A}^{\#}$	40							µg/l	1	A-T-025w
Chromium (leachable)$_{A}^{\#}$	<1							µg/l	1	A-T-025w
Chromium (hexavalent) (leachable)$_{A}$	<0.05							mg/l	0.05	A-T-040w
Lead (leachable)$_{A}^{\#}$	168							µg/l	1	A-T-025w
Magnesium (leachable)$_{A}$	37							mg/l	1	A-T-049w
Mercury (leachable)$_{A}^{\#}$	<0.1							µg/l	0.1	A-T-025w
Molybdenum (leachable)$_{A}^{\#}$	<1							µg/l	1	A-T-025w
Nickel (leachable)$_{A}^{\#}$	15							µg/l	1	A-T-025w
Selenium (leachable)$_{A}^{\#}$	3							µg/l	1	A-T-025w
Zinc (leachable)$_{A}^{\#}$	34							µg/l	1	A-T-025w
Leachate Prep BS EN 12457-1 (2:1) (1 no) (250ml)+inorg	*									
Potassium (leachable)$_{A}$	53							mg/l	1.2	A-T-049w
Sodium (leachable)$_{A}$	10							mg/l	1	A-T-049w

Envirolab Job Number: 21/10369

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/10369/2							Units	Limit of Detection	Method ref
Client Sample No	102									
Client Sample ID	DS107									
Depth to Top	0.50									
Depth To Bottom										
Date Sampled	21-Sep-21									
Sample Type	Soil - ES									
Sample Matrix Code	6AE									
PAH-16MS										
Acenaphthene$_A^{M\#}$	<0.01							mg/kg	0.01	A-T-019s
Acenaphthylene$_A^{M\#}$	<0.01							mg/kg	0.01	A-T-019s
Anthracene$_A^{M\#}$	<0.02							mg/kg	0.02	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	<0.04							mg/kg	0.04	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	<0.04							mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	<0.05							mg/kg	0.05	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	<0.05							mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	<0.07							mg/kg	0.07	A-T-019s
Chrysene$_A^{M\#}$	<0.06							mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	<0.04							mg/kg	0.04	A-T-019s
Fluoranthene$_A^{M\#}$	<0.08							mg/kg	0.08	A-T-019s
Fluorene$_A^{M\#}$	<0.01							mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	<0.03							mg/kg	0.03	A-T-019s
Naphthalene $_A^{M\#}$	<0.03							mg/kg	0.03	A-T-019s
Phenanthrene$_A^{M\#}$	<0.03							mg/kg	0.03	A-T-019s
Pyrene$_A^{M\#}$	<0.07							mg/kg	0.07	A-T-019s
Total PAH-16MS$_A^{M\#}$	<0.08							mg/kg	0.01	A-T-019s

Envirolab Job Number: 21/10369

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/10369/2							Units	Limit of Detection	Method ref
Client Sample No	102									
Client Sample ID	DS107									
Depth to Top	0.50									
Depth To Bottom										
Date Sampled	21-Sep-21									
Sample Type	Soil - ES									
Sample Matrix Code	6AE									
PAH 16MS (leachable)										
Acenaphthene (leachable)$_A$	0.04							µg/l	0.02	A-T-019w
Acenaphthylene (leachable)$_A$	<0.02							µg/l	0.02	A-T-019w
Anthracene (leachable)$_A$	0.02							µg/l	0.02	A-T-019w
Benzo(a)anthracene (leachable)$_A$	<0.02							µg/l	0.02	A-T-019w
Benzo(a)pyrene (leachable) $_A$	<0.02							µg/l	0.02	A-T-019w
Benzo(b)fluoranthene (leachable)$_A$	<0.02							µg/l	0.02	A-T-019w
Benzo(ghi)perylene (leachable)$_A$	<0.02							µg/l	0.02	A-T-019w
Benzo(k)fluoranthene (leachable)$_A$	<0.02							µg/l	0.02	A-T-019w
Chrysene (leachable)$_A$	<0.02							µg/l	0.02	A-T-019w
Dibenzo(ah)anthracene (leachable)$_A$	<0.02							µg/l	0.02	A-T-019w
Fluoranthene (leachable)$_A$	0.13							µg/l	0.02	A-T-019w
Fluorene (leachable)$_A$	0.04							µg/l	0.02	A-T-019w
Indeno(123-cd)pyrene (leachable)$_A$	<0.02							µg/l	0.02	A-T-019w
Naphthalene (leachable) $_A$	0.10							µg/l	0.02	A-T-019w
Phenanthrene (leachable)$_A$	0.18							µg/l	0.02	A-T-019w
Pyrene (leachable)$_A$	0.10							µg/l	0.02	A-T-019w
Total PAH 16MS (leachable)$_A$	0.61							µg/l	0.02	A-T-019w

Envirolab Job Number: 21/10369

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/10369/2							Units	Limit of Detection	Method ref
Client Sample No	102									
Client Sample ID	DS107									
Depth to Top	0.50									
Depth To Bottom										
Date Sampled	21-Sep-21									
Sample Type	Soil - ES									
Sample Matrix Code	6AE									
TPH CWG										
Ali >C5-C6$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s
Ali >C6-C8$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s
Ali >C8-C10$_A$	<1							mg/kg	1	A-T-055s
Ali >C10-C12$_A^{M\#}$	<1							mg/kg	1	A-T-055s
Ali >C12-C16$_A^{M\#}$	<1							mg/kg	1	A-T-055s
Ali >C16-C21$_A^{M\#}$	<1							mg/kg	1	A-T-055s
Ali >C21-C35$_A^{M\#}$	39							mg/kg	1	A-T-055s
Total Aliphatics$_A$	39							mg/kg	1	A-T-055s
Aro >C5-C7$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s
Aro >C7-C8$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s
Aro >C8-C10$_A$	<1							mg/kg	1	A-T-055s
Aro >C10-C12$_A$	<1							mg/kg	1	A-T-055s
Aro >C12-C16$_A$	1							mg/kg	1	A-T-055s
Aro >C16-C21$_A^{M\#}$	8							mg/kg	1	A-T-055s
Aro >C21-C35$_A^{M\#}$	56							mg/kg	1	A-T-055s
Total Aromatics$_A$	65							mg/kg	1	A-T-055s
TPH (Ali & Aro >C5-C35)$_A$	104							mg/kg	1	A-T-055s
BTEX - Benzene$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s
BTEX - Toluene$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s
BTEX - m & p Xylene$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s
BTEX - o Xylene$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s
MTBE$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s

REPORT NOTES

General
This report shall not be reproduced, except in full, without written approval from Envirolab.
The results reported herein relate only to the material supplied to the laboratory.
The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.
Analytical results reflect the quality of the sample at the time of analysis only.
Opinions and interpretations expressed are outside the scope of our accreditation.
If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample, 9 = INCINERATOR ASH.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

Key:
IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Please contact us if you need any further information.

v1

Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: Structural Soils Limited (Bristol), The Old School , Stillhouse Lane, Bedminster, Bristol, UK, BS3 4EB

Project: Langstone Flood and Coastal Erosion Management Scheme

Clients Project No: 736036

Project No: 21/10369

Date Received: 24/09/2021 (am)

Cool Box Temperatures (°C): 15.4

NO DEVIATIONS IDENTIFIED with respect to sampling dates or containers received.

Note: If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3 (for water samples 5 ± 3°C), ISO 18400-105:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	21/10369/2
Client Sample No	102
Client Sample ID/Depth	DS107 0.50m
Date Sampled	21/09/21
A-T-019s	29/09/2021
A-T-019w	11/10/2021
A-T-022s	29/09/2021
A-T-024s	12/10/2021
A-T-025w	13/10/2021
A-T-026w	11/10/2021
A-T-027s	08/10/2021
A-T-031s	07/10/2021
A-T-031w	11/10/2021
A-T-032s	07/10/2021
A-T-032w	11/10/2021
A-T-033w	11/10/2021
A-T-040s	14/10/2021
A-T-040w	11/10/2021
A-T-042wFCN	08/10/2021
A-T-042wTCN	08/10/2021
A-T-044	07/10/2021
A-T-049w	08/10/2021
A-T-050w	08/10/2021
A-T-055s	29/09/2021
Titration w	12/10/2021

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report

envirolab
Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 21/10550
Issue Number: 1 **Date:** 07 October, 2021

Client:
Structural Soils Limited (Bristol)
The Old School
Stillhouse Lane
Bedminster
Bristol
UK
BS3 4EB

Project Manager: Andrew Pope/Eloise Harman
Project Name: Langstone Flood and Coastal Erosion Management Scheme
Project Ref: 736036
Order No: N/A
Date Samples Received: 18/09/21
Date Instructions Received: 28/09/21
Date Analysis Completed: 07/10/21

Prepared by:

Melanie Marshall
Laboratory Coordinator

Approved by:

Richard Wong
Client Manager

Envirolab Job Number: 21/10550

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/10550/5							Units	Limit of Detection	Method ref
Client Sample No	102									
Client Sample ID	DS103									
Depth to Top	0.55									
Depth To Bottom										
Date Sampled	23-Sep-21									
Sample Type	Soil - ES									
Sample Matrix Code	6A									
% Stones >10mm$_A$	10.0							% w/w	0.1	A-T-044
pH$_D$ M#	8.11							pH	0.01	A-T-031s
Total Organic Carbon$_D$ M#	0.64							% w/w	0.03	A-T-032s
Arsenic$_D$ M#	4							mg/kg	1	A-T-024s
Barium$_D$	31							mg/kg	1	A-T-024s
Beryllium$_D$	<0.5							mg/kg	0.5	A-T-024s
Boron (water soluble)$_D$	6.8							mg/kg	1	A-T-027s
Cadmium$_D$ M#	<0.5							mg/kg	0.5	A-T-024s
Copper$_D$ M#	12							mg/kg	1	A-T-024s
Chromium$_D$ M#	21							mg/kg	1	A-T-024s
Chromium (hexavalent)$_D$	<1							mg/kg	1	A-T-040s
Lead$_D$ M#	39							mg/kg	1	A-T-024s
Mercury$_D$	0.41							mg/kg	0.17	A-T-024s
Nickel$_D$ M#	15							mg/kg	1	A-T-024s
Selenium$_D$ M#	<1							mg/kg	1	A-T-024s
Vanadium$_D$ M#	27							mg/kg	1	A-T-024s
Zinc$_D$ M#	42							mg/kg	5	A-T-024s

Envirolab Job Number: 21/10550

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/10550/5							Units	Limit of Detection	Method ref
Client Sample No	102									
Client Sample ID	DS103									
Depth to Top	0.55									
Depth To Bottom										
Date Sampled	23-Sep-21									
Sample Type	Soil - ES									
Sample Matrix Code	6A									
PAH-16MS										
Acenaphthene$_A^{M\#}$	<0.01							mg/kg	0.01	A-T-019s
Acenaphthylene$_A^{M\#}$	<0.01							mg/kg	0.01	A-T-019s
Anthracene$_A^{M\#}$	<0.02							mg/kg	0.02	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	<0.04							mg/kg	0.04	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	<0.04							mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	<0.05							mg/kg	0.05	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	<0.05							mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	<0.07							mg/kg	0.07	A-T-019s
Chrysene$_A^{M\#}$	<0.06							mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	<0.04							mg/kg	0.04	A-T-019s
Fluoranthene$_A^{M\#}$	<0.08							mg/kg	0.08	A-T-019s
Fluorene$_A^{M\#}$	<0.01							mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	<0.03							mg/kg	0.03	A-T-019s
Naphthalene $_A^{M\#}$	<0.03							mg/kg	0.03	A-T-019s
Phenanthrene$_A^{M\#}$	<0.03							mg/kg	0.03	A-T-019s
Pyrene$_A^{M\#}$	<0.07							mg/kg	0.07	A-T-019s
Total PAH-16MS$_A^{M\#}$	<0.08							mg/kg	0.01	A-T-019s

Envirolab Job Number: 21/10550

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/10550/5							Units	Limit of Detection	Method ref
Client Sample No	102									
Client Sample ID	DS103									
Depth to Top	0.55									
Depth To Bottom										
Date Sampled	23-Sep-21									
Sample Type	Soil - ES									
Sample Matrix Code	6A									
TPH CWG										
Ali >C5-C6$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s
Ali >C6-C8$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s
Ali >C8-C10$_A$	<1							mg/kg	1	A-T-055s
Ali >C10-C12$_A^{M\#}$	<1							mg/kg	1	A-T-055s
Ali >C12-C16$_A^{M\#}$	<1							mg/kg	1	A-T-055s
Ali >C16-C21$_A^{M\#}$	<1							mg/kg	1	A-T-055s
Ali >C21-C35$_A^{M\#}$	<1							mg/kg	1	A-T-055s
Total Aliphatics$_A$	<1							mg/kg	1	A-T-055s
Aro >C5-C7$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s
Aro >C7-C8$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s
Aro >C8-C10$_A$	<1							mg/kg	1	A-T-055s
Aro >C10-C12$_A$	<1							mg/kg	1	A-T-055s
Aro >C12-C16$_A$	<1							mg/kg	1	A-T-055s
Aro >C16-C21$_A^{M\#}$	<1							mg/kg	1	A-T-055s
Aro >C21-C35$_A^{M\#}$	<1							mg/kg	1	A-T-055s
Total Aromatics$_A$	<1							mg/kg	1	A-T-055s
TPH (Ali & Aro >C5-C35)$_A$	<1							mg/kg	1	A-T-055s
BTEX - Benzene$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s
BTEX - Toluene$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s
BTEX - m & p Xylene$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s
BTEX - o Xylene$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s
MTBE$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s

REPORT NOTES

General
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Analytical results reflect the quality of the sample at the time of analysis only.
Opinions and interpretations expressed are outside the scope of our accreditation.
If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample, 9 = INCINERATOR ASH.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

Key:
IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Please contact us if you need any further information.

v1

Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: Structural Soils Limited (Bristol), The Old School , Stillhouse Lane, Bedminster, Bristol, UK, BS3 4EB

Project: Langstone Flood and Coastal Erosion Management Scheme

Clients Project No: 736036

Project No: 21/10550

Date Received: 28/09/2021 (am)

Cool Box Temperatures (°C): 13.9

NO DEVIATIONS IDENTIFIED with respect to sampling dates or containers received.

Note: If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3 (for water samples 5 ± 3°C), ISO 18400-105:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	21/10550/5
Client Sample No	102
Client Sample ID/Depth	DS103 0.55m
Date Sampled	23/09/21
A-T-019s	05/10/2021
A-T-022s	06/10/2021
A-T-024s	06/10/2021
A-T-027s	06/10/2021
A-T-031s	06/10/2021
A-T-032s	07/10/2021
A-T-040s	06/10/2021
A-T-044	05/10/2021
A-T-055s	06/10/2021

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report

envirolab
Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 21/10546
Issue Number: 1 **Date:** 13 October, 2021

Client:
Structural Soils Limited (Bristol)
The Old School
Stillhouse Lane
Bedminster
Bristol
UK
BS3 4EB

Project Manager: Andrew Pope/Eloise Harman/Eric Downey/Sasha Layton
Project Name: Langstone Flood and Coastal Erosion Management Scheme
Project Ref: 736036
Order No: N/A
Date Samples Received: 28/09/21
Date Instructions Received: 28/09/21
Date Analysis Completed: 13/10/21

Prepared by:

Melanie Marshall
Laboratory Coordinator

Approved by:

Richard Wong
Client Manager

Envirolab Job Number: 21/10546

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/10546/2							Units	Limit of Detection	Method ref
Client Sample No	102									
Client Sample ID	HDTP111									
Depth to Top	0.50									
Depth To Bottom										
Date Sampled	23-Sep-21									
Sample Type	Soil - ES									
Sample Matrix Code	6AE									
% Stones >10mm$_A$	0.4							% w/w	0.1	A-T-044
pH$_D$$^{M\#}$	7.91							pH	0.01	A-T-031s
Ammoniacal nitrogen as N$_D$	6.8							mg/kg	0.2	A-T-033s
Cyanide (free)$_A$$^{M\#}$	<1							mg/kg	1	A-T-042sFCN
Cyanide (total)$_A$$^{M\#}$	<1							mg/kg	1	A-T-042sTCN
Phenols - Total by HPLC$_A$	<0.2							mg/kg	0.2	A-T-050s
Total Organic Carbon$_D$$^{M\#}$	6.60							% w/w	0.03	A-T-032s
Arsenic$_D$$^{M\#}$	14							mg/kg	1	A-T-024s
Barium$_D$	66							mg/kg	1	A-T-024s
Beryllium$_D$	1.2							mg/kg	0.5	A-T-024s
Boron (water soluble)$_D$	14.3							mg/kg	1	A-T-027s
Cadmium$_D$$^{M\#}$	1.2							mg/kg	0.5	A-T-024s
Copper$_D$$^{M\#}$	51							mg/kg	1	A-T-024s
Chromium$_D$$^{M\#}$	35							mg/kg	1	A-T-024s
Chromium (hexavalent)$_D$	<1							mg/kg	1	A-T-040s
Lead$_D$$^{M\#}$	91							mg/kg	1	A-T-024s
Mercury$_D$	2.74							mg/kg	0.17	A-T-024s
Nickel$_D$$^{M\#}$	24							mg/kg	1	A-T-024s
Selenium$_D$$^{M\#}$	<1							mg/kg	1	A-T-024s
Vanadium$_D$$^{M\#}$	48							mg/kg	1	A-T-024s
Zinc$_D$$^{M\#}$	107							mg/kg	5	A-T-024s
pH (leachable)$_A$$^{\#}$	7.58							pH	0.01	A-T-031w
Alkalinity by titration (total) (pH 4.5) (leachable)$_A$	220							mg/l Ca CO3	15	Titration w
Alkalinity by titration (carbonate) (leachable)$_A$	<15							mg/l Ca CO3	15	Titration w
Hardness Total (leachable)$_A$	1309							mg/l Ca CO3	2	A-T-049w
Ammoniacal nitrogen as N (leachable)$_A$	0.37							mg/l	0.02	A-T-033w
Chloride (leachable)$_A$$^{\#}$	4400							mg/l	1	A-T-026w
Nitrite (leachable)$_A$$^{\#}$	0.2							mg/l	0.1	A-T-026w
Nitrate (leachable)$_A$$^{\#}$	3.2							mg/l	0.1	A-T-026w
Sulphate (leachable)$_A$$^{\#}$	697.90							mg/l	1	A-T-026w
Cyanide (free) (leachable)$_A$$^{\#}$	<0.005							mg/l	0.005	A-T-042wFCN

Envirolab Job Number: 21/10546

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/10546/2							Units	Limit of Detection	Method ref
Client Sample No	102									
Client Sample ID	HDTP111									
Depth to Top	0.50									
Depth To Bottom										
Date Sampled	23-Sep-21									
Sample Type	Soil - ES									
Sample Matrix Code	6AE									
Cyanide (total) (leachable)$_{A}^{\#}$	<0.005							mg/l	0.005	A-T-042wTCN
Phenol (leachable)$_{A}$	<0.01							mg/l	0.01	A-T-050w
DOC (leachable)$_{A}^{\#}$	14.7							mg/l	0.2	A-T-032w
Antimony (leachable)$_{A}^{\#}$	<5							µg/l	1	A-T-025w
Arsenic (leachable)$_{A}^{\#}$	<5							µg/l	1	A-T-025w
Boron (leachable)$_{A}^{\#}$	1380							µg/l	10	A-T-025w
Barium (leachable)$_{A}^{\#}$	16							µg/l	1	A-T-025w
Beryllium (leachable)$_{A}^{\#}$	<5							µg/l	1	A-T-025w
Cadmium (leachable)$_{A}^{\#}$	<5							µg/l	1	A-T-025w
Copper (leachable)$_{A}^{\#}$	11							µg/l	1	A-T-025w
Chromium (leachable)$_{A}^{\#}$	<5							µg/l	1	A-T-025w
Chromium (hexavalent) (leachable)$_{A}$	<0.05							mg/l	0.05	A-T-040w
Lead (leachable)$_{A}^{\#}$	<5							µg/l	1	A-T-025w
Magnesium (leachable)$_{A}$	234							mg/l	1	A-T-049w
Mercury (leachable)$_{A}^{\#}$	<0.5							µg/l	0.1	A-T-025w
Molybdenum (leachable)$_{A}^{\#}$	13							µg/l	1	A-T-025w
Nickel (leachable)$_{A}^{\#}$	<5							µg/l	1	A-T-025w
Selenium (leachable)$_{A}^{\#}$	<5							µg/l	1	A-T-025w
Zinc (leachable)$_{A}^{\#}$	9							µg/l	1	A-T-025w
Leachate Prep BS EN 12457-1 (2:1) (1 no) (250ml)+inorg	*									
Potassium (leachable)$_{A}$	118							mg/l	1.2	A-T-049w
Sodium (leachable)$_{A}$	2490							mg/l	1	A-T-049w

Envirolab Job Number: 21/10546

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Client Project Ref: 736036

Lab Sample ID	21/10546/2							Units	Limit of Detection	Method ref
Client Sample No	102									
Client Sample ID	HDTP111									
Depth to Top	0.50									
Depth To Bottom										
Date Sampled	23-Sep-21									
Sample Type	Soil - ES									
Sample Matrix Code	6AE									
Asbestos in Soil (inc. matrix) ^										
Asbestos in soil$_{D}^{\#}$	NAD									A-T-045
Asbestos ACM - Suitable for Water Absorption Test?$_{D}$	N/A									A-T-045
Organotins										
Tetrabutyltin$_{A}$	<10							µg/kg	10	Subcon Chemtest
Tributyltin$_{A}$	<10							µg/kg	10	Subcon Chemtest
Triphenyltin$_{A}$	<10							µg/kg	10	Subcon Chemtest
Dibutyltin$_{A}$	<10							µg/kg	10	Subcon Chemtest
Monobutyltin$_{A}$	<10							µg/kg	10	Subcon Chemtest

Envirolab Job Number: 21/10546

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/10546/2							Units	Limit of Detection	Method ref
Client Sample No	102									
Client Sample ID	HDTP111									
Depth to Top	0.50									
Depth To Bottom										
Date Sampled	23-Sep-21									
Sample Type	Soil - ES									
Sample Matrix Code	6AE									
PAH-16MS										
Acenaphthene$_A^{M\#}$	0.02							mg/kg	0.01	A-T-019s
Acenaphthylene$_A^{M\#}$	0.07							mg/kg	0.01	A-T-019s
Anthracene$_A^{M\#}$	0.13							mg/kg	0.02	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	0.70							mg/kg	0.04	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	0.59							mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	0.70							mg/kg	0.05	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	0.33							mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	0.24							mg/kg	0.07	A-T-019s
Chrysene$_A^{M\#}$	0.85							mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	<0.04							mg/kg	0.04	A-T-019s
Fluoranthene$_A^{M\#}$	1.60							mg/kg	0.08	A-T-019s
Fluorene$_A^{M\#}$	0.02							mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	0.39							mg/kg	0.03	A-T-019s
Naphthalene $_A^{M\#}$	<0.03							mg/kg	0.03	A-T-019s
Phenanthrene$_A^{M\#}$	0.24							mg/kg	0.03	A-T-019s
Pyrene$_A^{M\#}$	2.50							mg/kg	0.07	A-T-019s
Total PAH-16MS$_A^{M\#}$	8.38							mg/kg	0.01	A-T-019s

Envirolab Job Number: 21/10546

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/10546/2							Units	Limit of Detection	Method ref
Client Sample No	102									
Client Sample ID	HDTP111									
Depth to Top	0.50									
Depth To Bottom										
Date Sampled	23-Sep-21									
Sample Type	Soil - ES									
Sample Matrix Code	6AE									
PAH 16MS (leachable)										
Acenaphthene (leachable)$_A$	<0.02							µg/l	0.02	A-T-019w
Acenaphthylene (leachable)$_A$	<0.02							µg/l	0.02	A-T-019w
Anthracene (leachable)$_A$	<0.02							µg/l	0.02	A-T-019w
Benzo(a)anthracene (leachable)$_A$	<0.02							µg/l	0.02	A-T-019w
Benzo(a)pyrene (leachable) $_A$	<0.02							µg/l	0.02	A-T-019w
Benzo(b)fluoranthene (leachable)$_A$	<0.02							µg/l	0.02	A-T-019w
Benzo(ghi)perylene (leachable)$_A$	<0.02							µg/l	0.02	A-T-019w
Benzo(k)fluoranthene (leachable)$_A$	<0.02							µg/l	0.02	A-T-019w
Chrysene (leachable)$_A$	<0.02							µg/l	0.02	A-T-019w
Dibenzo(ah)anthracene (leachable)$_A$	<0.02							µg/l	0.02	A-T-019w
Fluoranthene (leachable)$_A$	0.02							µg/l	0.02	A-T-019w
Fluorene (leachable)$_A$	<0.02							µg/l	0.02	A-T-019w
Indeno(123-cd)pyrene (leachable)$_A$	<0.02							µg/l	0.02	A-T-019w
Naphthalene (leachable) $_A$	0.38							µg/l	0.02	A-T-019w
Phenanthrene (leachable)$_A$	0.06							µg/l	0.02	A-T-019w
Pyrene (leachable)$_A$	<0.02							µg/l	0.02	A-T-019w
Total PAH 16MS (leachable)$_A$	0.46							µg/l	0.02	A-T-019w

Envirolab Job Number: 21/10546

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Client Project Ref: 736036

Lab Sample ID	21/10546/2							Units	Limit of Detection	Method ref
Client Sample No	102									
Client Sample ID	HDTP111									
Depth to Top	0.50									
Depth To Bottom										
Date Sampled	23-Sep-21									
Sample Type	Soil - ES									
Sample Matrix Code	6AE									
TPH CWG										
Ali >C5-C6$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s
Ali >C6-C8$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s
Ali >C8-C10$_A$	<1							mg/kg	1	A-T-055s
Ali >C10-C12$_A^{M\#}$	<1							mg/kg	1	A-T-055s
Ali >C12-C16$_A^{M\#}$	2							mg/kg	1	A-T-055s
Ali >C16-C21$_A^{M\#}$	7							mg/kg	1	A-T-055s
Ali >C21-C35$_A^{M\#}$	45							mg/kg	1	A-T-055s
Total Aliphatics$_A$	54							mg/kg	1	A-T-055s
Aro >C5-C7$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s
Aro >C7-C8$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s
Aro >C8-C10$_A$	2							mg/kg	1	A-T-055s
Aro >C10-C12$_A$	4							mg/kg	1	A-T-055s
Aro >C12-C16$_A$	13							mg/kg	1	A-T-055s
Aro >C16-C21$_A^{M\#}$	65							mg/kg	1	A-T-055s
Aro >C21-C35$_A^{M\#}$	312							mg/kg	1	A-T-055s
Total Aromatics$_A$	395							mg/kg	1	A-T-055s
TPH (Ali & Aro >C5-C35)$_A$	449							mg/kg	1	A-T-055s
BTEX - Benzene$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s
BTEX - Toluene$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s
BTEX - m & p Xylene$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s
BTEX - o Xylene$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s
MTBE$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s

Lab Sample ID	21/10546/2							Units	Limit of Detection	Method ref
Client Sample No	102									
Client Sample ID	HDTP111									
Depth to Top	0.50									
Depth To Bottom										
Date Sampled	23-Sep-21									
Sample Type	Soil - ES									
Sample Matrix Code	6AE									
SVOC + TICs (excluding PAH-16)										
4-Bromophenyl phenyl ether$_A$	<100							µg/kg	100	A-T-052s
SVOC TICs (Tentatively Identified Compounds)$_A$	Appended									A-T-052s
Hexachlorobenzene$_A$	<100							µg/kg	100	A-T-052s
Diethyl phthalate$_A$	<100							µg/kg	100	A-T-052s
Dimethyl phthalate$_A$	<100							µg/kg	100	A-T-052s
Dibenzofuran$_A$	<100							µg/kg	100	A-T-052s
Carbazole$_A$	330							µg/kg	100	A-T-052s
Butylbenzyl phthalate$_A$	<100							µg/kg	100	A-T-052s
Bis(2-ethylhexyl)phthalate$_A$	<500							µg/kg	500	A-T-052s
Bis(2-chloroethoxy)methane$_A$	<100							µg/kg	100	A-T-052s
Bis(2-chloroethyl)ether$_A$	<100							µg/kg	100	A-T-052s
4-Nitrophenol$_A$	<100							µg/kg	100	A-T-052s
3+4-Methylphenol$_A$	<100							µg/kg	100	A-T-052s
4-Chloro-3-methylphenol$_A$	<100							µg/kg	100	A-T-052s
2-Nitrophenol$_A$	<100							µg/kg	100	A-T-052s
2-Methylphenol$_A$	<100							µg/kg	100	A-T-052s
2-Chlorophenol$_A$	<100							µg/kg	100	A-T-052s
2,6-Dinitrotoluene$_A$	<100							µg/kg	100	A-T-052s
2,4-Dinitrotoluene$_A$	<100							µg/kg	100	A-T-052s
2,4-Dimethylphenol$_A$	<100							µg/kg	100	A-T-052s
2,4-Dichlorophenol$_A$	<100							µg/kg	100	A-T-052s
2,4,6-Trichlorophenol$_A$	<100							µg/kg	100	A-T-052s
2,4,5-Trichlorophenol$_A$	<100							µg/kg	100	A-T-052s
2-Chloronaphthalene$_A$	<100							µg/kg	100	A-T-052s
2-Methylnaphthalene$_A$	<100							µg/kg	100	A-T-052s
Bis(2-chloroisopropyl)ether$_A$	<100							µg/kg	100	A-T-052s
Phenol$_A$	<100							µg/kg	100	A-T-052s
Pentachlorophenol (SVOC)$_A$	<100							µg/kg	100	A-T-052s
n-Nitroso-n-dipropylamine$_A$	<100							µg/kg	100	A-T-052s
n-Dioctylphthalate$_A$	<500							µg/kg	500	A-T-052s
n-Dibutylphthalate$_A$	<100							µg/kg	100	A-T-052s

Envirolab Job Number: 21/10546

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/10546/2							Units	Limit of Detection	Method ref
Client Sample No	102									
Client Sample ID	HDTP111									
Depth to Top	0.50									
Depth To Bottom										
Date Sampled	23-Sep-21									
Sample Type	Soil - ES									
Sample Matrix Code	6AE									
Nitrobenzene$_A$	<100							µg/kg	100	A-T-052s
Isophorone$_A$	<100							µg/kg	100	A-T-052s
Hexachloroethane$_A$	<100							µg/kg	100	A-T-052s
Hexachlorocyclopentadiene$_A$	<100							µg/kg	100	A-T-052s
Perylene$_A$	1360							µg/kg	100	A-T-052s

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Client Sample No	102									
Client Sample ID	HDTP111									
Depth to Top	0.50									
Depth To Bottom										
Date Sampled	23-Sep-21									
Sample Type	Soil - ES									
Sample Matrix Code	6AE									
VOC										
Dichlorodifluoromethane$_{A}$	<1							µg/kg	1	A-T-006s
Chloromethane$_{A}$	<10							µg/kg	10	A-T-006s
Vinyl Chloride (Chloroethene)$_{A}^{\#}$	<1							µg/kg	1	A-T-006s
Bromomethane$_{A}^{\#}$	<1							µg/kg	1	A-T-006s
Chloroethane$_{A}^{\#}$	<1							µg/kg	1	A-T-006s
Trichlorofluoromethane$_{A}^{\#}$	<1							µg/kg	1	A-T-006s
1,1-Dichloroethene$_{A}^{\#}$	<1							µg/kg	1	A-T-006s
Carbon Disulphide$_{A}^{\#}$	<1							µg/kg	1	A-T-006s
Dichloromethane$_{A}$	<5							µg/kg	5	A-T-006s
trans 1,2-Dichloroethene$_{A}^{\#}$	<1							µg/kg	1	A-T-006s
1,1-Dichloroethane$_{A}^{\#}$	<1							µg/kg	1	A-T-006s
cis 1,2-Dichloroethene$_{A}^{\#}$	<1							µg/kg	1	A-T-006s
2,2-Dichloropropane$_{A}^{\#}$	<1							µg/kg	1	A-T-006s
Bromochloromethane$_{A}^{\#}$	<5							µg/kg	5	A-T-006s
Chloroform$_{A}^{\#}$	<1							µg/kg	1	A-T-006s
1,1,1-Trichloroethane$_{A}^{\#}$	<1							µg/kg	1	A-T-006s
1,1-Dichloropropene$_{A}^{\#}$	<1							µg/kg	1	A-T-006s
Carbon Tetrachloride$_{A}^{\#}$	<1							µg/kg	1	A-T-006s
1,2-Dichloroethane$_{A}^{\#}$	<2							µg/kg	2	A-T-006s
Benzene$_{A}^{\#}$	<1							µg/kg	1	A-T-006s
Trichloroethene$_{A}^{\#}$	<1							µg/kg	1	A-T-006s
1,2-Dichloropropane$_{A}^{\#}$	<1							µg/kg	1	A-T-006s
Dibromomethane$_{A}^{\#}$	<1							µg/kg	1	A-T-006s
Bromodichloromethane$_{A}^{\#}$	<10							µg/kg	10	A-T-006s
cis 1,3-Dichloropropene$_{A}^{\#}$	<1							µg/kg	1	A-T-006s
Toluene$_{A}^{\#}$	<1							µg/kg	1	A-T-006s
trans 1,3-Dichloropropene$_{A}^{\#}$	<1							µg/kg	1	A-T-006s
1,1,2-Trichloroethane$_{A}^{\#}$	<1							µg/kg	1	A-T-006s
1,3-Dichloropropane$_{A}^{\#}$	<1							µg/kg	1	A-T-006s
Tetrachloroethene$_{A}^{\#}$	<1							µg/kg	1	A-T-006s
Dibromochloromethane$_{A}^{\#}$	<3							µg/kg	3	A-T-006s
1,2-Dibromoethane$_{A}^{\#}$	<1							µg/kg	1	A-T-006s

Lab Sample ID	21/10546/2							Units	Limit of Detection	Method ref
Client Sample No	102									
Client Sample ID	HDTP111									
Depth to Top	0.50									
Depth To Bottom										
Date Sampled	23-Sep-21									
Sample Type	Soil - ES									
Sample Matrix Code	6AE									
Chlorobenzene$_{A}^{\#}$	<1							µg/kg	1	A-T-006s
1,1,1,2-Tetrachloroethane$_{A}$	<1							µg/kg	1	A-T-006s
Ethylbenzene$_{A}^{\#}$	<1							µg/kg	1	A-T-006s
m & p Xylene$_{A}^{\#}$	<1							µg/kg	1	A-T-006s
o-Xylene$_{A}^{\#}$	<1							µg/kg	1	A-T-006s
Styrene$_{A}^{\#}$	<1							µg/kg	1	A-T-006s
Bromoform$_{A}^{\#}$	<1							µg/kg	1	A-T-006s
Isopropylbenzene$_{A}^{\#}$	<1							µg/kg	1	A-T-006s
1,1,2,2-Tetrachloroethane$_{A}$	<1							µg/kg	1	A-T-006s
1,2,3-Trichloropropane$_{A}^{\#}$	<1							µg/kg	1	A-T-006s
Bromobenzene$_{A}^{\#}$	<1							µg/kg	1	A-T-006s
n-Propylbenzene$_{A}^{\#}$	<1							µg/kg	1	A-T-006s
2-Chlorotoluene$_{A}^{\#}$	<1							µg/kg	1	A-T-006s
1,3,5-Trimethylbenzene$_{A}^{\#}$	<1							µg/kg	1	A-T-006s
4-Chlorotoluene$_{A}^{\#}$	<1							µg/kg	1	A-T-006s
tert-Butylbenzene$_{A}^{\#}$	<2							µg/kg	2	A-T-006s
1,2,4-Trimethylbenzene$_{A}^{\#}$	<1							µg/kg	1	A-T-006s
sec-Butylbenzene$_{A}^{\#}$	<1							µg/kg	1	A-T-006s
4-Isopropyltoluene$_{A}^{\#}$	<1							µg/kg	1	A-T-006s
1,3-Dichlorobenzene$_{A}$	<1							µg/kg	1	A-T-006s
1,4-Dichlorobenzene$_{A}^{\#}$	<1							µg/kg	1	A-T-006s
n-Butylbenzene$_{A}^{\#}$	<1							µg/kg	1	A-T-006s
1,2-Dichlorobenzene$_{A}^{\#}$	<1							µg/kg	1	A-T-006s
1,2-Dibromo-3-chloropropane (DCBP)$_{A}$	<2							µg/kg	2	A-T-006s
1,2,4-Trichlorobenzene$_{A}$	<3							µg/kg	3	A-T-006s
Hexachlorobutadiene$_{A}^{\#}$	<1							µg/kg	1	A-T-006s
1,2,3-Trichlorobenzene$_{A}$	<3							µg/kg	3	A-T-006s

REPORT NOTES

General
This report shall not be reproduced, except in full, without written approval from Envirolab.
The results reported herein relate only to the material supplied to the laboratory.
The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.
Analytical results reflect the quality of the sample at the time of analysis only.
Opinions and interpretations expressed are outside the scope of our accreditation.
If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample, 9 = INCINERATOR ASH.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

Key:
IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Please contact us if you need any further information.

v1

Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: Structural Soils Limited (Bristol), The Old School , Stillhouse Lane, Bedminster, Bristol, UK, BS3 4EB

Project: Langstone Flood and Coastal Erosion Management Scheme

Clients Project No: 736036

Project No: 21/10546

Date Received: 28/09/2021 (am)

Cool Box Temperatures (°C): 14.0

NO DEVIATIONS IDENTIFIED with respect to sampling dates or containers received.

Note: If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3 (for water samples 5 ± 3°C), ISO 18400-105:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	21/10546/2
Client Sample No	102
Client Sample ID/Depth	HDTP111 0.50m
Date Sampled	23/09/21
A-T-006s	08/10/2021
A-T-019s	07/10/2021
A-T-019w	11/10/2021
A-T-022s	08/10/2021
A-T-024s	12/10/2021
A-T-025w	13/10/2021
A-T-026w	11/10/2021
A-T-027s	13/10/2021
A-T-031s	12/10/2021
A-T-031w	11/10/2021
A-T-032s	12/10/2021
A-T-032w	12/10/2021
A-T-033s	12/10/2021
A-T-033w	11/10/2021
A-T-040s	12/10/2021
A-T-040w	11/10/2021
A-T-042sFCN	07/10/2021
A-T-042sTCN	07/10/2021
A-T-042wFCN	11/10/2021
A-T-042wTCN	11/10/2021
A-T-044	11/10/2021
A-T-045	04/10/2021
A-T-049w	12/10/2021
A-T-050s	07/10/2021
A-T-050w	07/10/2021
A-T-052s	12/10/2021
A-T-055s	11/10/2021
Titration w	12/10/2021

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report

SVOC Tentatively Identified Compounds

(Note: TIC Results are reported on an as received basis and are not moisture corrected).

Appendix to Envirolab Report:

Lab Client Sample ID	21/10546/2		
Client Sample ID	HDTP111		
Depth to top	0.50m		
Depth to bottom			
Top 10	Compound	CAS number	Estimated Concentration µg/kg
1	Dibenzothiophene	132-65-0	1078.434297
2	4H-Cyclopenta[def]phenanthrene	203-64-5	2835.89128
3	Naphthalene, 2-phenyl-	612-94-2	2056.044277
4	Isomers of dimethyl phenanthrene	e.g. 1576-69-8	5595.728032
5	Isomers of Benzo fluorene	e.g. 243-17-4	4560.777571
6	Isomers of methyl pyrene	e.g. 3442-78-2	6423.075376
7	Benzo[b]naphtho[2,1-d]thiophene	239-35-0	1545.536299
8	Cyclobutenedione, diphenyl-	24234-76-2	1436.409055
9	Cyclopenta(cd)pyrene, 3,4-dihydro-	25732-74-5	2991.95494
10	Isomers of methyl phenanthrene	e.g. 832-69-9	7203.482978

envirolab
Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 21/10561
Issue Number: 1 **Date:** 14 October, 2021

Client:
Structural Soils Limited (Bristol)
The Old School
Stillhouse Lane
Bedminster
Bristol
UK
BS3 4EB

Project Manager: Andrew Pope/Eloise Harman/Eric Downey/Sasha Layton
Project Name: Langstone Flood and Coastal Erosion Management Scheme
Project Ref: 736036
Order No: N/A
Date Samples Received: 28/09/21
Date Instructions Received: 29/09/21
Date Analysis Completed: 14/10/21

Prepared by:

Melanie Marshall
Laboratory Coordinator

Approved by:

Danielle Brierley
Deputy Client Services Supervisor

Envirolab Job Number: 21/10561

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/10561/3	21/10561/6	21/10561/7	21/10561/8				Units	Limit of Detection	Method ref
Client Sample No	103	102	103	104						
Client Sample ID	DS102	BH101	BH101	BH101						
Depth to Top	1.00	0.20	0.40	2.70						
Depth To Bottom		0.40	0.80	3.10						
Date Sampled	24-Sep-21	24-Sep-21	24-Sep-21	24-Sep-21						
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES						
Sample Matrix Code	6A	6AE	6AE	6A						
% Stones >10mm$_A$	<0.1	0.8	11.5	8.4				% w/w	0.1	A-T-044
pH$_D$$^{M\#}$	7.98	7.18	8.37	8.65				pH	0.01	A-T-031s
Ammoniacal nitrogen as N$_D$	-	4.5	-	-				mg/kg	0.2	A-T-033s
Cyanide (free)$_A$$^{M\#}$	-	<1	-	-				mg/kg	1	A-T-042sFCN
Cyanide (total)$_A$$^{M\#}$	-	<1	-	-				mg/kg	1	A-T-042sTCN
Phenols - Total by HPLC$_A$	-	<0.2	-	-				mg/kg	0.2	A-T-050s
Total Organic Carbon$_D$$^{M\#}$	2.11	1.63	0.25	0.18				% w/w	0.03	A-T-032s
Arsenic$_D$$^{M\#}$	<1	3	<1	<1				mg/kg	1	A-T-024s
Barium$_D$	29	62	86	32				mg/kg	1	A-T-024s
Beryllium$_D$	0.6	0.9	0.5	<0.5				mg/kg	0.5	A-T-024s
Boron (water soluble)$_D$	21.5	<1.0	<1.0	<1.0				mg/kg	1	A-T-027s
Cadmium$_D$$^{M\#}$	<0.5	1.1	<0.5	<0.5				mg/kg	0.5	A-T-024s
Copper$_D$$^{M\#}$	10	21	11	7				mg/kg	1	A-T-024s
Chromium$_D$$^{M\#}$	27	26	25	16				mg/kg	1	A-T-024s
Chromium (hexavalent)$_D$	<1	<1	<1	<1				mg/kg	1	A-T-040s
Lead$_D$$^{M\#}$	17	136	21	5				mg/kg	1	A-T-024s
Mercury$_D$	<0.17	<0.17	0.31	1.87				mg/kg	0.17	A-T-024s
Nickel$_D$$^{M\#}$	17	18	21	11				mg/kg	1	A-T-024s
Selenium$_D$$^{M\#}$	<1	<1	<1	<1				mg/kg	1	A-T-024s
Vanadium$_D$$^{M\#}$	42	37	31	17				mg/kg	1	A-T-024s
Zinc$_D$$^{M\#}$	44	49	36	27				mg/kg	5	A-T-024s
pH (leachable)$_A$$^{\#}$	-	-	7.89	7.86				pH	0.01	A-T-031w
Alkalinity by titration (total) (pH 4.5) (leachable)$_A$	-	-	80	120				mg/l Ca CO3	15	Titration w
Alkalinity by titration (carbonate) (leachable)$_A$	-	-	<15	<15				mg/l Ca CO3	15	Titration w
Hardness Total (leachable)$_A$	-	-	170	71				mg/l Ca CO3	2	A-T-049w
Ammoniacal nitrogen as N (leachable)$_A$	-	-	<0.02	0.10				mg/l	0.02	A-T-033w
Chloride (leachable)$_A$$^{\#}$	-	-	82.95	225				mg/l	1	A-T-026w
Nitrite (leachable)$_A$$^{\#}$	-	-	<0.1	<0.1				mg/l	0.1	A-T-026w
Nitrate (leachable)$_A$$^{\#}$	-	-	<0.1	<0.1				mg/l	0.1	A-T-026w
Sulphate (leachable)$_A$$^{\#}$	-	-	23.55	49.73				mg/l	1	A-T-026w
Cyanide (free) (leachable)$_A$$^{\#}$	-	-	<0.005	<0.005				mg/l	0.005	A-T-042wFCN

Envirolab Job Number: 21/10561

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/10561/3	21/10561/6	21/10561/7	21/10561/8				Units	Limit of Detection	Method ref
Client Sample No	103	102	103	104						
Client Sample ID	DS102	BH101	BH101	BH101						
Depth to Top	1.00	0.20	0.40	2.70						
Depth To Bottom		0.40	0.80	3.10						
Date Sampled	24-Sep-21	24-Sep-21	24-Sep-21	24-Sep-21						
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES						
Sample Matrix Code	6A	6AE	6AE	6A						
Cyanide (total) (leachable)$_{A}^{\#}$	-	-	<0.005	<0.005				mg/l	0.005	A-T-042wTCN
Phenol (leachable)$_{A}$	-	-	<0.01	<0.01				mg/l	0.01	A-T-050w
DOC (leachable)$_{A}^{\#}$	-	-	9.0	39.2				mg/l	0.2	A-T-032w
Antimony (leachable)$_{A}^{\#}$	-	-	<5	<1				µg/l	1	A-T-025w
Arsenic (leachable)$_{A}^{\#}$	-	-	6	<1				µg/l	1	A-T-025w
Boron (leachable)$_{A}^{\#}$	-	-	85	91				µg/l	10	A-T-025w
Barium (leachable)$_{A}^{\#}$	-	-	1160	9				µg/l	1	A-T-025w
Beryllium (leachable)$_{A}^{\#}$	-	-	<5	<1				µg/l	1	A-T-025w
Cadmium (leachable)$_{A}^{\#}$	-	-	<5	<1				µg/l	1	A-T-025w
Copper (leachable)$_{A}^{\#}$	-	-	20	<1				µg/l	1	A-T-025w
Chromium (leachable)$_{A}^{\#}$	-	-	<5	<1				µg/l	1	A-T-025w
Chromium (hexavalent) (leachable)$_{A}$	-	-	<0.05	<0.05				mg/l	0.05	A-T-040w
Lead (leachable)$_{A}^{\#}$	-	-	34	<1				µg/l	1	A-T-025w
Magnesium (leachable)$_{A}$	-	-	9	5				mg/l	1	A-T-049w
Mercury (leachable)$_{A}^{\#}$	-	-	<0.5	<0.1				µg/l	0.1	A-T-025w
Molybdenum (leachable)$_{A}^{\#}$	-	-	<5	1				µg/l	1	A-T-025w
Nickel (leachable)$_{A}^{\#}$	-	-	12	<1				µg/l	1	A-T-025w
Selenium (leachable)$_{A}^{\#}$	-	-	8	<1				µg/l	1	A-T-025w
Zinc (leachable)$_{A}^{\#}$	-	-	21	4				µg/l	1	A-T-025w
Leachate Prep BS EN 12457-1 (2:1) (1 no) (250ml)+inorg	-	-	*	*						
Potassium (leachable)$_{A}$	-	-	11	1				mg/l	1.2	A-T-049w
Sodium (leachable)$_{A}$	-	-	86	174				mg/l	1	A-T-049w

Envirolab Job Number: 21/10561

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/10561/3	21/10561/6	21/10561/7	21/10561/8				Units	Limit of Detection	Method ref
Client Sample No	103	102	103	104						
Client Sample ID	DS102	BH101	BH101	BH101						
Depth to Top	1.00	0.20	0.40	2.70						
Depth To Bottom		0.40	0.80	3.10						
Date Sampled	24-Sep-21	24-Sep-21	24-Sep-21	24-Sep-21						
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES						
Sample Matrix Code	6A	6AE	6AE	6A						
Asbestos in Soil (inc. matrix) ^										
Asbestos in soil$_D^{\#}$	-	NAD	-	-						A-T-045
Asbestos ACM - Suitable for Water Absorption Test?$_D$	-	N/A	-	-						A-T-045

Envirolab Job Number: 21/10561

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/10561/3	21/10561/6	21/10561/7	21/10561/8				Units	Limit of Detection	Method ref
Client Sample No	103	102	103	104						
Client Sample ID	DS102	BH101	BH101	BH101						
Depth to Top	1.00	0.20	0.40	2.70						
Depth To Bottom		0.40	0.80	3.10						
Date Sampled	24-Sep-21	24-Sep-21	24-Sep-21	24-Sep-21						
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES						
Sample Matrix Code	6A	6AE	6AE	6A						
PAH-16MS										
Acenaphthene$_A^{M\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-019s
Acenaphthylene$_A^{M\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-019s
Anthracene$_A^{M\#}$	<0.02	<0.02	<0.02	<0.02				mg/kg	0.02	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	<0.04	0.08	<0.04	<0.04				mg/kg	0.04	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	<0.04	0.10	<0.04	<0.04				mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	<0.05	0.09	<0.05	<0.05				mg/kg	0.05	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	<0.05	<0.05	<0.05	<0.05				mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	<0.07	<0.07	<0.07	<0.07				mg/kg	0.07	A-T-019s
Chrysene$_A^{M\#}$	<0.06	0.12	<0.06	<0.06				mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	<0.04	<0.04	<0.04	<0.04				mg/kg	0.04	A-T-019s
Fluoranthene$_A^{M\#}$	<0.08	0.18	<0.08	<0.08				mg/kg	0.08	A-T-019s
Fluorene$_A^{M\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	<0.03	0.06	<0.03	<0.03				mg/kg	0.03	A-T-019s
Naphthalene $_A^{M\#}$	<0.03	<0.03	<0.03	<0.03				mg/kg	0.03	A-T-019s
Phenanthrene$_A^{M\#}$	<0.03	0.06	<0.03	<0.03				mg/kg	0.03	A-T-019s
Pyrene$_A^{M\#}$	<0.07	0.15	<0.07	<0.07				mg/kg	0.07	A-T-019s
Total PAH-16MS$_A^{M\#}$	<0.08	0.84	<0.08	<0.08				mg/kg	0.01	A-T-019s

Envirolab Job Number: 21/10561

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/10561/3	21/10561/6	21/10561/7	21/10561/8				Units	Limit of Detection	Method ref
Client Sample No	103	102	103	104						
Client Sample ID	DS102	BH101	BH101	BH101						
Depth to Top	1.00	0.20	0.40	2.70						
Depth To Bottom		0.40	0.80	3.10						
Date Sampled	24-Sep-21	24-Sep-21	24-Sep-21	24-Sep-21						
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES						
Sample Matrix Code	6A	6AE	6AE	6A						
PAH 16MS (leachable)										
Acenaphthene (leachable)$_A$	-	-	<0.02	<0.02				µg/l	0.02	A-T-019w
Acenaphthylene (leachable)$_A$	-	-	<0.02	<0.02				µg/l	0.02	A-T-019w
Anthracene (leachable)$_A$	-	-	<0.02	<0.02				µg/l	0.02	A-T-019w
Benzo(a)anthracene (leachable)$_A$	-	-	<0.02	<0.02				µg/l	0.02	A-T-019w
Benzo(a)pyrene (leachable) $_A$	-	-	<0.02	<0.02				µg/l	0.02	A-T-019w
Benzo(b)fluoranthene (leachable)$_A$	-	-	<0.02	<0.02				µg/l	0.02	A-T-019w
Benzo(ghi)perylene (leachable)$_A$	-	-	<0.02	<0.02				µg/l	0.02	A-T-019w
Benzo(k)fluoranthene (leachable)$_A$	-	-	<0.02	<0.02				µg/l	0.02	A-T-019w
Chrysene (leachable)$_A$	-	-	<0.02	<0.02				µg/l	0.02	A-T-019w
Dibenzo(ah)anthracene (leachable)$_A$	-	-	<0.02	<0.02				µg/l	0.02	A-T-019w
Fluoranthene (leachable)$_A$	-	-	0.03	<0.02				µg/l	0.02	A-T-019w
Fluorene (leachable)$_A$	-	-	<0.02	<0.02				µg/l	0.02	A-T-019w
Indeno(123-cd)pyrene (leachable)$_A$	-	-	<0.02	<0.02				µg/l	0.02	A-T-019w
Naphthalene (leachable) $_A$	-	-	0.09	0.14				µg/l	0.02	A-T-019w
Phenanthrene (leachable)$_A$	-	-	<0.02	<0.02				µg/l	0.02	A-T-019w
Pyrene (leachable)$_A$	-	-	0.02	<0.02				µg/l	0.02	A-T-019w
Total PAH 16MS (leachable)$_A$	-	-	0.14	0.14				µg/l	0.02	A-T-019w

Envirolab Job Number: 21/10561

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/10561/3	21/10561/6	21/10561/7	21/10561/8				Units	Limit of Detection	Method ref
Client Sample No	103	102	103	104						
Client Sample ID	DS102	BH101	BH101	BH101						
Depth to Top	1.00	0.20	0.40	2.70						
Depth To Bottom		0.40	0.80	3.10						
Date Sampled	24-Sep-21	24-Sep-21	24-Sep-21	24-Sep-21						
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES						
Sample Matrix Code	6A	6AE	6AE	6A						
Speciated PCB-EC7 & WHO12										
PCB BZ $28_A^{M\#}$	-	<0.002	-	-				mg/kg	0.002	A-T-004s
PCB BZ $52_A^{M\#}$	-	<0.002	-	-				mg/kg	0.002	A-T-004s
PCB BZ 81_A	-	<0.005	-	-				mg/kg	0.005	A-T-004s
PCB BZ $101_A^{M\#}$	-	<0.004	-	-				mg/kg	0.004	A-T-004s
PCB BZ 105_A	-	<0.005	-	-				mg/kg	0.005	A-T-004s
PCB BZ 114_A	-	<0.005	-	-				mg/kg	0.005	A-T-004s
PCB BZ $118_A^{M\#}$	-	<0.007	-	-				mg/kg	0.007	A-T-004s
PCB BZ 123_A	-	<0.005	-	-				mg/kg	0.005	A-T-004s
PCB BZ 126_A	-	<0.005	-	-				mg/kg	0.005	A-T-004s
PCB BZ $138_A^{M\#}$	-	<0.006	-	-				mg/kg	0.006	A-T-004s
PCB BZ $153_A^{M\#}$	-	<0.004	-	-				mg/kg	0.004	A-T-004s
PCB BZ 156_A	-	<0.005	-	-				mg/kg	0.005	A-T-004s
PCB BZ 157_A	-	<0.005	-	-				mg/kg	0.005	A-T-004s
PCB BZ 167_A	-	<0.005	-	-				mg/kg	0.005	A-T-004s
PCB BZ 169_A	-	<0.005	-	-				mg/kg	0.005	A-T-004s
PCB BZ $180_A^{M\#}$	-	<0.004	-	-				mg/kg	0.004	A-T-004s
PCB BZ 189_A	-	<0.005	-	-				mg/kg	0.005	A-T-004s
PCB BZ 77_A	-	<0.005	-	-				mg/kg	0.005	A-T-004s
Total Speciated PCB-EC7 & $WHO12_A$	-	<0.007	-	-				mg/kg	0.002	A-T-004s

Envirolab Job Number: 21/10561

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/10561/3	21/10561/6	21/10561/7	21/10561/8				Units	Limit of Detection	Method ref
Client Sample No	103	102	103	104						
Client Sample ID	DS102	BH101	BH101	BH101						
Depth to Top	1.00	0.20	0.40	2.70						
Depth To Bottom		0.40	0.80	3.10						
Date Sampled	24-Sep-21	24-Sep-21	24-Sep-21	24-Sep-21						
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES						
Sample Matrix Code	6A	6AE	6AE	6A						
TPH CWG										
Ali >C5-C6$_A^{\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-022s
Ali >C6-C8$_A^{\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-022s
Ali >C8-C10$_A$	<1	<1	<1	<1				mg/kg	1	A-T-055s
Ali >C10-C12$_A^{M\#}$	<1	<1	<1	<1				mg/kg	1	A-T-055s
Ali >C12-C16$_A^{M\#}$	<1	<1	<1	<1				mg/kg	1	A-T-055s
Ali >C16-C21$_A^{M\#}$	<1	<1	<1	<1				mg/kg	1	A-T-055s
Ali >C21-C35$_A^{M\#}$	<1	1	<1	<1				mg/kg	1	A-T-055s
Total Aliphatics$_A$	<1	1	<1	<1				mg/kg	1	A-T-055s
Aro >C5-C7$_A^{\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-022s
Aro >C7-C8$_A^{\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-022s
Aro >C8-C10$_A$	<1	<1	<1	<1				mg/kg	1	A-T-055s
Aro >C10-C12$_A$	<1	<1	<1	<1				mg/kg	1	A-T-055s
Aro >C12-C16$_A$	<1	<1	<1	<1				mg/kg	1	A-T-055s
Aro >C16-C21$_A^{M\#}$	<1	<1	<1	<1				mg/kg	1	A-T-055s
Aro >C21-C35$_A^{M\#}$	<1	2	<1	<1				mg/kg	1	A-T-055s
Total Aromatics$_A$	<1	2	<1	<1				mg/kg	1	A-T-055s
TPH (Ali & Aro >C5-C35)$_A$	<1	3	<1	<1				mg/kg	1	A-T-055s
BTEX - Benzene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-022s
BTEX - Toluene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-022s
BTEX - m & p Xylene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-022s
BTEX - o Xylene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-022s
MTBE$_A^{\#}$	<0.01	<0.01	<0.01	<0.01				mg/kg	0.01	A-T-022s

Lab Sample ID	21/10561/3	21/10561/6	21/10561/7	21/10561/8				Units	Limit of Detection	Method ref
Client Sample No	103	102	103	104						
Client Sample ID	DS102	BH101	BH101	BH101						
Depth to Top	1.00	0.20	0.40	2.70						
Depth To Bottom		0.40	0.80	3.10						
Date Sampled	24-Sep-21	24-Sep-21	24-Sep-21	24-Sep-21						
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES						
Sample Matrix Code	6A	6AE	6AE	6A						
SVOC + TICs (excluding PAH-16)										
4-Bromophenyl phenyl ether$_A$	-	<100	-	-				µg/kg	100	A-T-052s
SVOC TICs (Tentatively Identified Compounds)$_A$	-	None detected	-	-						A-T-052s
Hexachlorobenzene$_A$	-	<100	-	-				µg/kg	100	A-T-052s
Diethyl phthalate$_A$	-	<100	-	-				µg/kg	100	A-T-052s
Dimethyl phthalate$_A$	-	<100	-	-				µg/kg	100	A-T-052s
Dibenzofuran$_A$	-	<100	-	-				µg/kg	100	A-T-052s
Carbazole$_A$	-	<100	-	-				µg/kg	100	A-T-052s
Butylbenzyl phthalate$_A$	-	<100	-	-				µg/kg	100	A-T-052s
Bis(2-ethylhexyl)phthalate$_A$	-	<500	-	-				µg/kg	500	A-T-052s
Bis(2-chloroethoxy)methane$_A$	-	<100	-	-				µg/kg	100	A-T-052s
Bis(2-chloroethyl)ether$_A$	-	<100	-	-				µg/kg	100	A-T-052s
4-Nitrophenol$_A$	-	<100	-	-				µg/kg	100	A-T-052s
3+4-Methylphenol$_A$	-	<100	-	-				µg/kg	100	A-T-052s
4-Chloro-3-methylphenol$_A$	-	<100	-	-				µg/kg	100	A-T-052s
2-Nitrophenol$_A$	-	<100	-	-				µg/kg	100	A-T-052s
2-Methylphenol$_A$	-	<100	-	-				µg/kg	100	A-T-052s
2-Chlorophenol$_A$	-	<100	-	-				µg/kg	100	A-T-052s
2,6-Dinitrotoluene$_A$	-	<100	-	-				µg/kg	100	A-T-052s
2,4-Dinitrotoluene$_A$	-	<100	-	-				µg/kg	100	A-T-052s
2,4-Dimethylphenol$_A$	-	<100	-	-				µg/kg	100	A-T-052s
2,4-Dichlorophenol$_A$	-	<100	-	-				µg/kg	100	A-T-052s
2,4,6-Trichlorophenol$_A$	-	<100	-	-				µg/kg	100	A-T-052s
2,4,5-Trichlorophenol$_A$	-	<100	-	-				µg/kg	100	A-T-052s
2-Chloronaphthalene$_A$	-	<100	-	-				µg/kg	100	A-T-052s
2-Methylnaphthalene$_A$	-	<100	-	-				µg/kg	100	A-T-052s
Bis(2-chloroisopropyl)ether$_A$	-	<100	-	-				µg/kg	100	A-T-052s
Phenol$_A$	-	<100	-	-				µg/kg	100	A-T-052s
Pentachlorophenol (SVOC)$_A$	-	<100	-	-				µg/kg	100	A-T-052s
n-Nitroso-n-dipropylamine$_A$	-	<100	-	-				µg/kg	100	A-T-052s
n-Dioctylphthalate$_A$	-	<500	-	-				µg/kg	500	A-T-052s
n-Dibutylphthalate$_A$	-	<100	-	-				µg/kg	100	A-T-052s

Lab Sample ID	21/10561/3	21/10561/6	21/10561/7	21/10561/8				Units	Limit of Detection	Method ref
Client Sample No	103	102	103	104						
Client Sample ID	DS102	BH101	BH101	BH101						
Depth to Top	1.00	0.20	0.40	2.70						
Depth To Bottom		0.40	0.80	3.10						
Date Sampled	24-Sep-21	24-Sep-21	24-Sep-21	24-Sep-21						
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES						
Sample Matrix Code	6A	6AE	6AE	6A						
Nitrobenzene$_A$	-	<100	-	-				µg/kg	100	A-T-052s
Isophorone$_A$	-	<100	-	-				µg/kg	100	A-T-052s
Hexachloroethane$_A$	-	<100	-	-				µg/kg	100	A-T-052s
Hexachlorocyclopentadiene$_A$	-	<100	-	-				µg/kg	100	A-T-052s
Perylene$_A$	-	<100	-	-				µg/kg	100	A-T-052s

Envirolab Job Number: 21/10561

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/10561/3	21/10561/6	21/10561/7	21/10561/8				Units	Limit of Detection	Method ref
Client Sample No	103	102	103	104						
Client Sample ID	DS102	BH101	BH101	BH101						
Depth to Top	1.00	0.20	0.40	2.70						
Depth To Bottom		0.40	0.80	3.10						
Date Sampled	24-Sep-21	24-Sep-21	24-Sep-21	24-Sep-21						
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES						
Sample Matrix Code	6A	6AE	6AE	6A						
VOC										
Dichlorodifluoromethane$_{A}$	-	<1	-	-				µg/kg	1	A-T-006s
Chloromethane$_{A}$	-	<10	-	-				µg/kg	10	A-T-006s
Vinyl Chloride (Chloroethene)$_{A}^{\#}$	-	<1	-	-				µg/kg	1	A-T-006s
Bromomethane$_{A}^{\#}$	-	<1	-	-				µg/kg	1	A-T-006s
Chloroethane$_{A}^{\#}$	-	<1	-	-				µg/kg	1	A-T-006s
Trichlorofluoromethane$_{A}^{\#}$	-	<1	-	-				µg/kg	1	A-T-006s
1,1-Dichloroethene$_{A}^{\#}$	-	*<1*	-	-				µg/kg	1	A-T-006s
Carbon Disulphide$_{A}^{\#}$	-	<1	-	-				µg/kg	1	A-T-006s
Dichloromethane$_{A}$	-	<5	-	-				µg/kg	5	A-T-006s
trans 1,2-Dichloroethene$_{A}^{\#}$	-	<1	-	-				µg/kg	1	A-T-006s
1,1-Dichloroethane$_{A}^{\#}$	-	<1	-	-				µg/kg	1	A-T-006s
cis 1,2-Dichloroethene$_{A}^{\#}$	-	<1	-	-				µg/kg	1	A-T-006s
2,2-Dichloropropane$_{A}^{\#}$	-	<1	-	-				µg/kg	1	A-T-006s
Bromochloromethane$_{A}^{\#}$	-	<5	-	-				µg/kg	5	A-T-006s
Chloroform$_{A}^{\#}$	-	<1	-	-				µg/kg	1	A-T-006s
1,1,1-Trichloroethane$_{A}^{\#}$	-	<1	-	-				µg/kg	1	A-T-006s
1,1-Dichloropropene$_{A}^{\#}$	-	<1	-	-				µg/kg	1	A-T-006s
Carbon Tetrachloride$_{A}^{\#}$	-	<1	-	-				µg/kg	1	A-T-006s
1,2-Dichloroethane$_{A}^{\#}$	-	<2	-	-				µg/kg	2	A-T-006s
Benzene$_{A}^{\#}$	-	<1	-	-				µg/kg	1	A-T-006s
Trichloroethene$_{A}^{\#}$	-	<1	-	-				µg/kg	1	A-T-006s
1,2-Dichloropropane$_{A}^{\#}$	-	<1	-	-				µg/kg	1	A-T-006s
Dibromomethane$_{A}^{\#}$	-	<1	-	-				µg/kg	1	A-T-006s
Bromodichloromethane$_{A}^{\#}$	-	<10	-	-				µg/kg	10	A-T-006s
cis 1,3-Dichloropropene$_{A}^{\#}$	-	<1	-	-				µg/kg	1	A-T-006s
Toluene$_{A}^{\#}$	-	<1	-	-				µg/kg	1	A-T-006s
trans 1,3-Dichloropropene$_{A}^{\#}$	-	<1	-	-				µg/kg	1	A-T-006s
1,1,2-Trichloroethane$_{A}^{\#}$	-	<1	-	-				µg/kg	1	A-T-006s
1,3-Dichloropropane$_{A}^{\#}$	-	<1	-	-				µg/kg	1	A-T-006s
Tetrachloroethene$_{A}^{\#}$	-	<1	-	-				µg/kg	1	A-T-006s
Dibromochloromethane$_{A}^{\#}$	-	<3	-	-				µg/kg	3	A-T-006s
1,2-Dibromoethane$_{A}^{\#}$	-	<1	-	-				µg/kg	1	A-T-006s

Envirolab Job Number: 21/10561

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/10561/3	21/10561/6	21/10561/7	21/10561/8				Units	Limit of Detection	Method ref
Client Sample No	103	102	103	104						
Client Sample ID	DS102	BH101	BH101	BH101						
Depth to Top	1.00	0.20	0.40	2.70						
Depth To Bottom		0.40	0.80	3.10						
Date Sampled	24-Sep-21	24-Sep-21	24-Sep-21	24-Sep-21						
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES						
Sample Matrix Code	6A	6AE	6AE	6A						
Chlorobenzene$_{A}^{\#}$	-	<1	-	-				µg/kg	1	A-T-006s
1,1,1,2-Tetrachloroethane$_{A}$	-	<1	-	-				µg/kg	1	A-T-006s
Ethylbenzene$_{A}^{\#}$	-	<1	-	-				µg/kg	1	A-T-006s
m & p Xylene$_{A}^{\#}$	-	<1	-	-				µg/kg	1	A-T-006s
o-Xylene$_{A}^{\#}$	-	<1	-	-				µg/kg	1	A-T-006s
Styrene$_{A}^{\#}$	-	<1	-	-				µg/kg	1	A-T-006s
Bromoform$_{A}^{\#}$	-	<1	-	-				µg/kg	1	A-T-006s
Isopropylbenzene$_{A}^{\#}$	-	<1	-	-				µg/kg	1	A-T-006s
1,1,2,2-Tetrachloroethane$_{A}$	-	<1	-	-				µg/kg	1	A-T-006s
1,2,3-Trichloropropane$_{A}^{\#}$	-	<1	-	-				µg/kg	1	A-T-006s
Bromobenzene$_{A}^{\#}$	-	<1	-	-				µg/kg	1	A-T-006s
n-Propylbenzene$_{A}^{\#}$	-	<1	-	-				µg/kg	1	A-T-006s
2-Chlorotoluene$_{A}^{\#}$	-	<1	-	-				µg/kg	1	A-T-006s
1,3,5-Trimethylbenzene$_{A}^{\#}$	-	<1	-	-				µg/kg	1	A-T-006s
4-Chlorotoluene$_{A}^{\#}$	-	<1	-	-				µg/kg	1	A-T-006s
tert-Butylbenzene$_{A}^{\#}$	-	<2	-	-				µg/kg	2	A-T-006s
1,2,4-Trimethylbenzene$_{A}^{\#}$	-	<1	-	-				µg/kg	1	A-T-006s
sec-Butylbenzene$_{A}^{\#}$	-	<1	-	-				µg/kg	1	A-T-006s
4-Isopropyltoluene$_{A}^{\#}$	-	<1	-	-				µg/kg	1	A-T-006s
1,3-Dichlorobenzene$_{A}$	-	<1	-	-				µg/kg	1	A-T-006s
1,4-Dichlorobenzene$_{A}^{\#}$	-	<1	-	-				µg/kg	1	A-T-006s
n-Butylbenzene$_{A}^{\#}$	-	<1	-	-				µg/kg	1	A-T-006s
1,2-Dichlorobenzene$_{A}^{\#}$	-	<1	-	-				µg/kg	1	A-T-006s
1,2-Dibromo-3-chloropropane (DCBP)$_{A}$	-	<2	-	-				µg/kg	2	A-T-006s
1,2,4-Trichlorobenzene$_{A}$	-	<3	-	-				µg/kg	3	A-T-006s
Hexachlorobutadiene$_{A}^{\#}$	-	<1	-	-				µg/kg	1	A-T-006s
1,2,3-Trichlorobenzene$_{A}$	-	<3	-	-				µg/kg	3	A-T-006s

REPORT NOTES

General
This report shall not be reproduced, except in full, without written approval from Envirolab.
The results reported herein relate only to the material supplied to the laboratory.
The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.
Analytical results reflect the quality of the sample at the time of analysis only.
Opinions and interpretations expressed are outside the scope of our accreditation.
If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample, 9 = INCINERATOR ASH.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

Key:
IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Please contact us if you need any further information.

v1

Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: Structural Soils Limited (Bristol), The Old School , Stillhouse Lane, Bedminster, Bristol, UK, BS3 4EB

Project: Langstone Flood and Coastal Erosion Management Scheme

Clients Project No: 736036

Project No: 21/10561

Date Received: 29/09/2021 (am)

Cool Box Temperatures (°C): 15.6 & 16.2

NO DEVIATIONS IDENTIFIED with respect to sampling dates or containers received.

Note: If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3 (for water samples 5 ± 3°C), ISO 18400-105:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	21/10561/3	21/10561/6	21/10561/7	21/10561/8
Client Sample No	103	102	103	104
Client Sample ID/Depth	DS102 1.00m	BH101 0.20-0.40m	BH101 0.40-0.80m	BH101 2.70-3.10m
Date Sampled	24/09/21	24/09/21	24/09/21	24/09/21
A-T-004s		05/10/2021		
A-T-006s		05/10/2021		
A-T-019s	08/10/2021	08/10/2021	08/10/2021	08/10/2021
A-T-019w			13/10/2021	13/10/2021
A-T-022s	08/10/2021	08/10/2021	08/10/2021	08/10/2021
A-T-024s	13/10/2021	13/10/2021	13/10/2021	13/10/2021
A-T-025w			13/10/2021	13/10/2021
A-T-026w			14/10/2021	14/10/2021
A-T-027s	13/10/2021	13/10/2021	13/10/2021	13/10/2021
A-T-031s	12/10/2021	12/10/2021	12/10/2021	12/10/2021
A-T-031w			14/10/2021	14/10/2021
A-T-032s	13/10/2021	13/10/2021	13/10/2021	13/10/2021
A-T-032w			13/10/2021	13/10/2021
A-T-033s		12/10/2021		
A-T-033w			14/10/2021	14/10/2021
A-T-040s	13/10/2021	13/10/2021	13/10/2021	13/10/2021
A-T-040w			14/10/2021	14/10/2021
A-T-042sFCN		06/10/2021		
A-T-042sTCN		06/10/2021		
A-T-042wFCN			13/10/2021	13/10/2021
A-T-042wTCN			13/10/2021	13/10/2021
A-T-044	12/10/2021	12/10/2021	12/10/2021	12/10/2021
A-T-045		06/10/2021		
A-T-049w			12/10/2021	12/10/2021
A-T-050s		05/10/2021		
A-T-050w			14/10/2021	14/10/2021
A-T-052s		06/10/2021		
A-T-055s	08/10/2021	08/10/2021	08/10/2021	08/10/2021
Titration w			12/10/2021	12/10/2021

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report

envirolab
Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 21/10587
Issue Number: 1 **Date:** 14 October, 2021

Client:
Structural Soils Limited (Bristol)
The Old School
Stillhouse Lane
Bedminster
Bristol
UK
BS3 4EB

Project Manager: Andrew Pope/Eloise Harman/Eric Downey/Sasha Layton
Project Name: Langstone Flood and Coastal Erosion Management Scheme
Project Ref: 736036
Order No: N/A
Date Samples Received: 29/09/21
Date Instructions Received: 29/09/21
Date Analysis Completed: 14/10/21

Prepared by:

Melanie Marshall
Laboratory Coordinator

Approved by:

Richard Wong
Client Manager

Envirolab Job Number: 21/10587

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/10587/1	21/10587/2	21/10587/4					Units	Limit of Detection	Method ref
Client Sample No	101	102	104							
Client Sample ID	DS101	DS101	DS101							
Depth to Top	0.20	0.50	1.70							
Depth To Bottom										
Date Sampled	27-Sep-21	27-Sep-21	27-Sep-21							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	4A	6AE	3							
% Stones >10mm$_A$	-	32.1	<0.1					% w/w	0.1	A-T-044
pH$_D$$^{M\#}$	-	8.28	9.07					pH	0.01	A-T-031s
Total Organic Carbon$_D$$^{M\#}$	-	2.65	0.23					% w/w	0.03	A-T-032s
Arsenic$_D$$^{M\#}$	-	4	<1					mg/kg	1	A-T-024s
Barium$_D$	-	120	55					mg/kg	1	A-T-024s
Beryllium$_D$	-	<0.5	<0.5					mg/kg	0.5	A-T-024s
Boron (water soluble)$_D$	-	4.9	3.3					mg/kg	1	A-T-027s
Cadmium$_D$$^{M\#}$	-	<0.5	<0.5					mg/kg	0.5	A-T-024s
Copper$_D$$^{M\#}$	-	22	9					mg/kg	1	A-T-024s
Chromium$_D$$^{M\#}$	-	12	20					mg/kg	1	A-T-024s
Chromium (hexavalent)$_D$	-	<1	<1					mg/kg	1	A-T-040s
Lead$_D$$^{M\#}$	-	782	15					mg/kg	1	A-T-024s
Mercury$_D$	-	0.26	1.84					mg/kg	0.17	A-T-024s
Nickel$_D$$^{M\#}$	-	21	12					mg/kg	1	A-T-024s
Selenium$_D$$^{M\#}$	-	<1	<1					mg/kg	1	A-T-024s
Vanadium$_D$$^{M\#}$	-	17	27					mg/kg	1	A-T-024s
Zinc$_D$$^{M\#}$	-	176	31					mg/kg	5	A-T-024s
pH (leachable)$_A$$^{\#}$	-	7.53	-					pH	0.01	A-T-031w
Alkalinity by titration (total) (pH 4.5) (leachable)$_A$	-	160	-					mg/l Ca CO3	15	Titration w
Alkalinity by titration (carbonate) (leachable)$_A$	-	<15	-					mg/l Ca CO3	15	Titration w
Hardness Total (leachable)$_A$	-	724	-					mg/l Ca CO3	2	A-T-049w
Ammoniacal nitrogen as N (leachable)$_A$	-	2.48	-					mg/l	0.02	A-T-033w
Chloride (leachable)$_A$$^{\#}$	-	1750	-					mg/l	1	A-T-026w
Nitrite (leachable)$_A$$^{\#}$	-	<0.1	-					mg/l	0.1	A-T-026w
Nitrate (leachable)$_A$$^{\#}$	-	<0.1	-					mg/l	0.1	A-T-026w
Sulphate (leachable)$_A$$^{\#}$	-	636.53	-					mg/l	1	A-T-026w
Cyanide (free) (leachable)$_A$$^{\#}$	-	<0.005	-					mg/l	0.005	A-T-042wFCN
Cyanide (total) (leachable)$_A$$^{\#}$	-	<0.005	-					mg/l	0.005	A-T-042wTCN
Phenol (leachable)$_A$	-	<0.01	-					mg/l	0.01	A-T-050w
DOC (leachable)$_A$$^{\#}$	-	27.1	-					mg/l	0.2	A-T-032w
Antimony (leachable)$_A$$^{\#}$	-	148	-					µg/l	1	A-T-025w

Envirolab Job Number: 21/10587

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/10587/1	21/10587/2	21/10587/4					Units	Limit of Detection	Method ref
Client Sample No	101	102	104							
Client Sample ID	DS101	DS101	DS101							
Depth to Top	0.20	0.50	1.70							
Depth To Bottom										
Date Sampled	27-Sep-21	27-Sep-21	27-Sep-21							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	4A	6AE	3							
Arsenic (leachable)$_{A}^{\#}$	-	45	-					µg/l	1	A-T-025w
Boron (leachable)$_{A}^{\#}$	-	1520	-					µg/l	10	A-T-025w
Barium (leachable)$_{A}^{\#}$	-	191	-					µg/l	1	A-T-025w
Beryllium (leachable)$_{A}^{\#}$	-	<5	-					µg/l	1	A-T-025w
Cadmium (leachable)$_{A}^{\#}$	-	<5	-					µg/l	1	A-T-025w
Copper (leachable)$_{A}^{\#}$	-	83	-					µg/l	1	A-T-025w
Chromium (leachable)$_{A}^{\#}$	-	8	-					µg/l	1	A-T-025w
Chromium (hexavalent) (leachable)$_{A}$	-	<0.05	-					mg/l	0.05	A-T-040w
Lead (leachable)$_{A}^{\#}$	-	7080	-					µg/l	1	A-T-025w
Magnesium (leachable)$_{A}$	-	109	-					mg/l	1	A-T-049w
Mercury (leachable)$_{A}^{\#}$	-	<0.5	-					µg/l	0.1	A-T-025w
Molybdenum (leachable)$_{A}^{\#}$	-	66	-					µg/l	1	A-T-025w
Nickel (leachable)$_{A}^{\#}$	-	203	-					µg/l	1	A-T-025w
Selenium (leachable)$_{A}^{\#}$	-	<5	-					µg/l	1	A-T-025w
Zinc (leachable)$_{A}^{\#}$	-	878	-					µg/l	1	A-T-025w
Leachate Prep BS EN 12457-1 (2:1) (1 no) (250ml)+inorg	-	*	-							
Potassium (leachable)$_{A}$	-	83	-					mg/l	1.2	A-T-049w
Sodium (leachable)$_{A}$	-	1030	-					mg/l	1	A-T-049w

Envirolab Job Number: 21/10587

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/10587/1	21/10587/2	21/10587/4					Units	Limit of Detection	Method ref
Client Sample No	101	102	104							
Client Sample ID	DS101	DS101	DS101							
Depth to Top	0.20	0.50	1.70							
Depth To Bottom										
Date Sampled	27-Sep-21	27-Sep-21	27-Sep-21							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	4A	6AE	3							
Asbestos in Soil (inc. matrix) ^										
Asbestos in soil$_D^{\#}$	NAD	NAD	-							A-T-045
Asbestos ACM - Suitable for Water Absorption Test?$_D$	N/A	N/A	-							A-T-045

Envirolab Job Number: 21/10587

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/10587/1	21/10587/2	21/10587/4					Units	Limit of Detection	Method ref
Client Sample No	101	102	104							
Client Sample ID	DS101	DS101	DS101							
Depth to Top	0.20	0.50	1.70							
Depth To Bottom										
Date Sampled	27-Sep-21	27-Sep-21	27-Sep-21							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	4A	6AE	3							
PAH-16MS										
Acenaphthene$_A^{M\#}$	-	0.04	<0.01					mg/kg	0.01	A-T-019s
Acenaphthylene$_A^{M\#}$	-	0.04	<0.01					mg/kg	0.01	A-T-019s
Anthracene$_A^{M\#}$	-	0.25	<0.02					mg/kg	0.02	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	-	1.18	<0.04					mg/kg	0.04	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	-	1.23	<0.04					mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	-	1.39	<0.05					mg/kg	0.05	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	-	0.59	<0.05					mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	-	0.55	<0.07					mg/kg	0.07	A-T-019s
Chrysene$_A^{M\#}$	-	1.28	<0.06					mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	-	0.14	<0.04					mg/kg	0.04	A-T-019s
Fluoranthene$_A^{M\#}$	-	2.17	<0.08					mg/kg	0.08	A-T-019s
Fluorene$_A^{M\#}$	-	0.05	<0.01					mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	-	0.74	<0.03					mg/kg	0.03	A-T-019s
Naphthalene $_A^{M\#}$	-	<0.03	<0.03					mg/kg	0.03	A-T-019s
Phenanthrene$_A^{M\#}$	-	0.68	<0.03					mg/kg	0.03	A-T-019s
Pyrene$_A^{M\#}$	-	1.77	<0.07					mg/kg	0.07	A-T-019s
Total PAH-16MS$_A^{M\#}$	-	12.1	<0.08					mg/kg	0.01	A-T-019s

Envirolab Job Number: 21/10587

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/10587/1	21/10587/2	21/10587/4					Units	Limit of Detection	Method ref
Client Sample No	101	102	104							
Client Sample ID	DS101	DS101	DS101							
Depth to Top	0.20	0.50	1.70							
Depth To Bottom										
Date Sampled	27-Sep-21	27-Sep-21	27-Sep-21							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	4A	6AE	3							
PAH 16MS (leachable)										
Acenaphthene (leachable)$_A$	-	0.10	-					µg/l	0.02	A-T-019w
Acenaphthylene (leachable)$_A$	-	0.20	-					µg/l	0.02	A-T-019w
Anthracene (leachable)$_A$	-	0.34	-					µg/l	0.02	A-T-019w
Benzo(a)anthracene (leachable)$_A$	-	2.02	-					µg/l	0.02	A-T-019w
Benzo(a)pyrene (leachable) $_A$	-	2.63	-					µg/l	0.02	A-T-019w
Benzo(b)fluoranthene (leachable)$_A$	-	3.03	-					µg/l	0.02	A-T-019w
Benzo(ghi)perylene (leachable)$_A$	-	1.59	-					µg/l	0.02	A-T-019w
Benzo(k)fluoranthene (leachable)$_A$	-	1.23	-					µg/l	0.02	A-T-019w
Chrysene (leachable)$_A$	-	2.30	-					µg/l	0.02	A-T-019w
Dibenzo(ah)anthracene (leachable)$_A$	-	0.35	-					µg/l	0.02	A-T-019w
Fluoranthene (leachable)$_A$	-	4.25	-					µg/l	0.02	A-T-019w
Fluorene (leachable)$_A$	-	0.11	-					µg/l	0.02	A-T-019w
Indeno(123-cd)pyrene (leachable)$_A$	-	1.72	-					µg/l	0.02	A-T-019w
Naphthalene (leachable) $_A$	-	0.06	-					µg/l	0.02	A-T-019w
Phenanthrene (leachable)$_A$	-	1.24	-					µg/l	0.02	A-T-019w
Pyrene (leachable)$_A$	-	3.93	-					µg/l	0.02	A-T-019w
Total PAH 16MS (leachable)$_A$	-	25.1	-					µg/l	0.02	A-T-019w

Envirolab Job Number: 21/10587

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/10587/1	21/10587/2	21/10587/4					Units	Limit of Detection	Method ref
Client Sample No	101	102	104							
Client Sample ID	DS101	DS101	DS101							
Depth to Top	0.20	0.50	1.70							
Depth To Bottom										
Date Sampled	27-Sep-21	27-Sep-21	27-Sep-21							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	4A	6AE	3							
TPH CWG										
Ali >C5-C6$_A^{\#}$	-	<0.01	<0.01					mg/kg	0.01	A-T-022s
Ali >C6-C8$_A^{\#}$	-	<0.01	<0.01					mg/kg	0.01	A-T-022s
Ali >C8-C10$_A$	-	<1	<1					mg/kg	1	A-T-055s
Ali >C10-C12$_A^{M\#}$	-	<1	<1					mg/kg	1	A-T-055s
Ali >C12-C16$_A^{M\#}$	-	2	<1					mg/kg	1	A-T-055s
Ali >C16-C21$_A^{M\#}$	-	8	<1					mg/kg	1	A-T-055s
Ali >C21-C35$_A^{M\#}$	-	27	<1					mg/kg	1	A-T-055s
Total Aliphatics$_A$	-	36	<1					mg/kg	1	A-T-055s
Aro >C5-C7$_A^{\#}$	-	<0.01	<0.01					mg/kg	0.01	A-T-022s
Aro >C7-C8$_A^{\#}$	-	<0.01	<0.01					mg/kg	0.01	A-T-022s
Aro >C8-C10$_A$	-	<1	<1					mg/kg	1	A-T-055s
Aro >C10-C12$_A$	-	<1	<1					mg/kg	1	A-T-055s
Aro >C12-C16$_A$	-	3	<1					mg/kg	1	A-T-055s
Aro >C16-C21$_A^{M\#}$	-	15	<1					mg/kg	1	A-T-055s
Aro >C21-C35$_A^{M\#}$	-	86	1					mg/kg	1	A-T-055s
Total Aromatics$_A$	-	104	1					mg/kg	1	A-T-055s
TPH (Ali & Aro >C5-C35)$_A$	-	140	1					mg/kg	1	A-T-055s
BTEX - Benzene$_A^{\#}$	-	<0.01	<0.01					mg/kg	0.01	A-T-022s
BTEX - Toluene$_A^{\#}$	-	<0.01	<0.01					mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene$_A^{\#}$	-	<0.01	<0.01					mg/kg	0.01	A-T-022s
BTEX - m & p Xylene$_A^{\#}$	-	<0.01	<0.01					mg/kg	0.01	A-T-022s
BTEX - o Xylene$_A^{\#}$	-	<0.01	<0.01					mg/kg	0.01	A-T-022s
MTBE$_A^{\#}$	-	<0.01	<0.01					mg/kg	0.01	A-T-022s

REPORT NOTES

General
This report shall not be reproduced, except in full, without written approval from Envirolab.
The results reported herein relate only to the material supplied to the laboratory.
The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.
Analytical results reflect the quality of the sample at the time of analysis only.
Opinions and interpretations expressed are outside the scope of our accreditation.
If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample, 9 = INCINERATOR ASH.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

Key:
IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Please contact us if you need any further information.

v1

Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: Structural Soils Limited (Bristol), The Old School , Stillhouse Lane, Bedminster, Bristol, UK, BS3 4EB

Project: Langstone Flood and Coastal Erosion Management Scheme

Clients Project No: 736036

Project No: 21/10587

Date Received: 29/09/2021 (am)

Cool Box Temperatures (°C): 14.8

NO DEVIATIONS IDENTIFIED with respect to sampling dates or containers received.

Note: If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3 (for water samples 5 ± 3°C), ISO 18400-105:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	21/10587/1	21/10587/2	21/10587/4
Client Sample No	101	102	104
Client Sample ID/Depth	DS101 0.20m	DS101 0.50m	DS101 1.70m
Date Sampled	27/09/21	27/09/21	27/09/21
A-T-019s		08/10/2021	08/10/2021
A-T-019w		13/10/2021	
A-T-022s		08/10/2021	08/10/2021
A-T-024s		13/10/2021	13/10/2021
A-T-025w		14/10/2021	
A-T-026w		14/10/2021	
A-T-027s		13/10/2021	13/10/2021
A-T-031s		12/10/2021	12/10/2021
A-T-031w		13/10/2021	
A-T-032s		13/10/2021	13/10/2021
A-T-032w		14/10/2021	
A-T-033w		14/10/2021	
A-T-040s		13/10/2021	13/10/2021
A-T-040w		14/10/2021	
A-T-042wFCN		13/10/2021	
A-T-042wTCN		13/10/2021	
A-T-044		12/10/2021	12/10/2021
A-T-045	07/10/2021	07/10/2021	
A-T-049w		12/10/2021	
A-T-050w		13/10/2021	
A-T-055s		11/10/2021	11/10/2021
Titration w		12/10/2021	

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report

envirolab
Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 21/10814
Issue Number: 1 **Date:** 25 October, 2021

Client:
Structural Soils Limited (Bristol)
The Old School
Stillhouse Lane
Bedminster
Bristol
UK
BS3 4EB

Project Manager: Eloise Harman/Sasha Layton
Project Name: Langstone Flood and Coastal Erosion Managment Scheme
Project Ref: 736036
Order No: N/A
Date Samples Received: 01/10/21
Date Instructions Received: 05/10/21
Date Analysis Completed: 23/10/21

Prepared by:

Melanie Marshall
Laboratory Coordinator

Approved by:

Richard Wong
Client Manager

Envirolab Job Number: 21/10814

Client Project Name: Langstone Flood and Coastal Erosion Managment Scheme

Client Project Ref: 736036

Lab Sample ID	21/10814/7	21/10814/9						Units	Limit of Detection	Method ref
Client Sample No	101	103								
Client Sample ID	BH106	BH106								
Depth to Top	0.20	1.50								
Depth To Bottom		1.70								
Date Sampled	28-Sep-21	28-Sep-21								
Sample Type	Solid	Soil - ES								
Sample Matrix Code	7	6A								
% Stones >10mm$_A$	<0.1	24.4						% w/w	0.1	A-T-044
pH$_D$$^{M\#}$	8.37	8.64						pH	0.01	A-T-031s
Ammoniacal nitrogen as N$_D$	-	0.7						mg/kg	0.2	A-T-033s
Cyanide (free)$_A$$^{M\#}$	-	<1						mg/kg	1	A-T-042sFCN
Cyanide (total)$_A$$^{M\#}$	-	<1						mg/kg	1	A-T-042sTCN
Phenols - Total by HPLC$_A$	-	<0.2						mg/kg	0.2	A-T-050s
Total Organic Carbon$_D$$^{M\#}$	1.45	0.15						% w/w	0.03	A-T-032s
Arsenic$_D$$^{M\#}$	7	<1						mg/kg	1	A-T-024s
Barium$_D$	10	36						mg/kg	1	A-T-024s
Beryllium$_D$	<0.5	<0.5						mg/kg	0.5	A-T-024s
Boron (water soluble)$_D$	3.4	2.7						mg/kg	1	A-T-027s
Cadmium$_D$$^{M\#}$	<0.5	0.6						mg/kg	0.5	A-T-024s
Copper$_D$$^{M\#}$	4	5						mg/kg	1	A-T-024s
Chromium$_D$$^{M\#}$	19	12						mg/kg	1	A-T-024s
Lead$_D$$^{M\#}$	9	5						mg/kg	1	A-T-024s
Mercury$_D$	0.25	2.02						mg/kg	0.17	A-T-024s
Nickel$_D$$^{M\#}$	21	11						mg/kg	1	A-T-024s
Selenium$_D$$^{M\#}$	<1	<1						mg/kg	1	A-T-024s
Vanadium$_D$$^{M\#}$	10	17						mg/kg	1	A-T-024s
Zinc$_D$$^{M\#}$	19	23						mg/kg	5	A-T-024s
pH (leachable)$_A$$^{\#}$	-	8.68						pH	0.01	A-T-031w
Alkalinity by titration (total) (pH 4.5) (leachable)$_A$	-	140						mg/l Ca CO3	15	Titration w
Alkalinity by titration (carbonate) (leachable)$_A$	-	<15						mg/l Ca CO3	15	Titration w
Hardness Total (leachable)$_A$	-	223						mg/l Ca CO3	2	A-T-049w
Ammoniacal nitrogen as N (leachable)$_A$	-	<0.02						mg/l	0.02	A-T-033w
Chloride (leachable)$_A$$^{\#}$	-	847						mg/l	1	A-T-026w
Nitrite (leachable)$_A$$^{\#}$	-	<0.1						mg/l	0.1	A-T-026w
Nitrate (leachable)$_A$$^{\#}$	-	<0.1						mg/l	0.1	A-T-026w
Sulphate (leachable)$_A$$^{\#}$	-	240.14						mg/l	1	A-T-026w
Cyanide (free) (leachable)$_A$$^{\#}$	-	<0.005						mg/l	0.005	A-T-042wFCN
Cyanide (total) (leachable)$_A$$^{\#}$	-	<0.005						mg/l	0.005	A-T-042wTCN

Envirolab Job Number: 21/10814

Client Project Name: Langstone Flood and Coastal Erosion Managment Scheme

Client Project Ref: 736036

Lab Sample ID	21/10814/7	21/10814/9						Units	Limit of Detection	Method ref
Client Sample No	101	103								
Client Sample ID	BH106	BH106								
Depth to Top	0.20	1.50								
Depth To Bottom		1.70								
Date Sampled	28-Sep-21	28-Sep-21								
Sample Type	Solid	Soil - ES								
Sample Matrix Code	7	6A								
Phenol (leachable)$_{A}$	-	<0.01						mg/l	0.01	A-T-050w
DOC (leachable)$_{A}^{\#}$	-	65.1						mg/l	0.2	A-T-032w
Antimony (leachable)$_{A}^{\#}$	-	9						µg/l	1	A-T-025w
Arsenic (leachable)$_{A}^{\#}$	-	12						µg/l	1	A-T-025w
Boron (leachable)$_{A}^{\#}$	-	23						µg/l	10	A-T-025w
Barium (leachable)$_{A}^{\#}$	-	49						µg/l	1	A-T-025w
Beryllium (leachable)$_{A}^{\#}$	-	<1						µg/l	1	A-T-025w
Cadmium (leachable)$_{A}^{\#}$	-	<1						µg/l	1	A-T-025w
Copper (leachable)$_{A}^{\#}$	-	26						µg/l	1	A-T-025w
Chromium (leachable)$_{A}^{\#}$	-	4						µg/l	1	A-T-025w
Chromium (hexavalent) (leachable)$_{A}$	-	<0.05						mg/l	0.05	A-T-040w
Lead (leachable)$_{A}^{\#}$	-	120						µg/l	1	A-T-025w
Magnesium (leachable)$_{A}$	-	33						mg/l	1	A-T-049w
Mercury (leachable)$_{A}^{\#}$	-	<0.1						µg/l	0.1	A-T-025w
Molybdenum (leachable)$_{A}^{\#}$	-	2						µg/l	1	A-T-025w
Nickel (leachable)$_{A}^{\#}$	-	4						µg/l	1	A-T-025w
Selenium (leachable)$_{A}^{\#}$	-	<1						µg/l	1	A-T-025w
Zinc (leachable)$_{A}^{\#}$	-	80						µg/l	1	A-T-025w
Leachate Prep BS EN 12457-1 (2:1) (1 no) (250ml)+inorg	-	*								
Potassium (leachable)$_{A}$	-	38						mg/l	1.2	A-T-049w
Sodium (leachable)$_{A}$	-	562						mg/l	1	A-T-049w

Envirolab Job Number: 21/10814

Client Project Name: Langstone Flood and Coastal Erosion Managment Scheme

Client Project Ref: 736036

Lab Sample ID	21/10814/7	21/10814/9						Units	Limit of Detection	Method ref
Client Sample No	101	103								
Client Sample ID	BH106	BH106								
Depth to Top	0.20	1.50								
Depth To Bottom		1.70								
Date Sampled	28-Sep-21	28-Sep-21								
Sample Type	Solid	Soil - ES								
Sample Matrix Code	7	6A								
PAH-16MS										
Acenaphthene$_A^{M\#}$	0.01	<0.01						mg/kg	0.01	A-T-019s
Acenaphthylene$_A^{M\#}$	<0.01	<0.01						mg/kg	0.01	A-T-019s
Anthracene$_A^{M\#}$	0.16	<0.02						mg/kg	0.02	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	0.48	<0.04						mg/kg	0.04	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	0.36	<0.04						mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	0.36	<0.05						mg/kg	0.05	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	0.12	<0.05						mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	0.19	<0.07						mg/kg	0.07	A-T-019s
Chrysene$_A^{M\#}$	0.40	<0.06						mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	<0.04	<0.04						mg/kg	0.04	A-T-019s
Fluoranthene$_A^{M\#}$	1.14	<0.08						mg/kg	0.08	A-T-019s
Fluorene$_A^{M\#}$	0.02	<0.01						mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	0.16	<0.03						mg/kg	0.03	A-T-019s
Naphthalene $_A^{M\#}$	<0.03	<0.03						mg/kg	0.03	A-T-019s
Phenanthrene$_A^{M\#}$	0.42	<0.03						mg/kg	0.03	A-T-019s
Pyrene$_A^{M\#}$	0.89	<0.07						mg/kg	0.07	A-T-019s
Total PAH-16MS$_A^{M\#}$	4.71	<0.08						mg/kg	0.01	A-T-019s

Envirolab Job Number: 21/10814

Client Project Name: Langstone Flood and Coastal Erosion Managment Scheme

Client Project Ref: 736036

Lab Sample ID	21/10814/7	21/10814/9						Units	Limit of Detection	Method ref
Client Sample No	101	103								
Client Sample ID	BH106	BH106								
Depth to Top	0.20	1.50								
Depth To Bottom		1.70								
Date Sampled	28-Sep-21	28-Sep-21								
Sample Type	Solid	Soil - ES								
Sample Matrix Code	7	6A								
PAH 16MS (leachable)										
Acenaphthene (leachable)$_A$	-	0.05						µg/l	0.02	A-T-019w
Acenaphthylene (leachable)$_A$	-	<0.02						µg/l	0.02	A-T-019w
Anthracene (leachable)$_A$	-	0.14						µg/l	0.02	A-T-019w
Benzo(a)anthracene (leachable)$_A$	-	0.11						µg/l	0.02	A-T-019w
Benzo(a)pyrene (leachable) $_A$	-	0.09						µg/l	0.02	A-T-019w
Benzo(b)fluoranthene (leachable)$_A$	-	0.08						µg/l	0.02	A-T-019w
Benzo(ghi)perylene (leachable)$_A$	-	0.03						µg/l	0.02	A-T-019w
Benzo(k)fluoranthene (leachable)$_A$	-	0.04						µg/l	0.02	A-T-019w
Chrysene (leachable)$_A$	-	0.13						µg/l	0.02	A-T-019w
Dibenzo(ah)anthracene (leachable)$_A$	-	<0.02						µg/l	0.02	A-T-019w
Fluoranthene (leachable)$_A$	-	0.27						µg/l	0.02	A-T-019w
Fluorene (leachable)$_A$	-	0.14						µg/l	0.02	A-T-019w
Indeno(123-cd)pyrene (leachable)$_A$	-	0.04						µg/l	0.02	A-T-019w
Naphthalene (leachable) $_A$	-	0.11						µg/l	0.02	A-T-019w
Phenanthrene (leachable)$_A$	-	0.41						µg/l	0.02	A-T-019w
Pyrene (leachable)$_A$	-	0.22						µg/l	0.02	A-T-019w
Total PAH 16MS (leachable)$_A$	-	1.86						µg/l	0.02	A-T-019w

Envirolab Job Number: 21/10814

Client Project Name: Langstone Flood and Coastal Erosion Managment Scheme

Client Project Ref: 736036

Lab Sample ID	21/10814/7	21/10814/9						Units	Limit of Detection	Method ref
Client Sample No	101	103								
Client Sample ID	BH106	BH106								
Depth to Top	0.20	1.50								
Depth To Bottom		1.70								
Date Sampled	28-Sep-21	28-Sep-21								
Sample Type	Solid	Soil - ES								
Sample Matrix Code	7	6A								
TPH CWG										
Ali >C5-C6$_A^{\#}$	0.01	<0.01						mg/kg	0.01	A-T-022s
Ali >C6-C8$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
Ali >C8-C10$_A$	<1	<1						mg/kg	1	A-T-055s
Ali >C10-C12$_A^{M\#}$	<1	<1						mg/kg	1	A-T-055s
Ali >C12-C16$_A^{M\#}$	1	<1						mg/kg	1	A-T-055s
Ali >C16-C21$_A^{M\#}$	7	<1						mg/kg	1	A-T-055s
Ali >C21-C35$_A^{M\#}$	12	<1						mg/kg	1	A-T-055s
Total Aliphatics$_A$	20	<1						mg/kg	1	A-T-055s
Aro >C5-C7$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
Aro >C7-C8$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
Aro >C8-C10$_A$	<1	<1						mg/kg	1	A-T-055s
Aro >C10-C12$_A$	<1	<1						mg/kg	1	A-T-055s
Aro >C12-C16$_A$	2	<1						mg/kg	1	A-T-055s
Aro >C16-C21$_A^{M\#}$	6	<1						mg/kg	1	A-T-055s
Aro >C21-C35$_A^{M\#}$	30	<1						mg/kg	1	A-T-055s
Total Aromatics$_A$	38	<1						mg/kg	1	A-T-055s
TPH (Ali & Aro >C5-C35)$_A$	58	<1						mg/kg	1	A-T-055s
BTEX - Benzene$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
BTEX - Toluene$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
BTEX - m & p Xylene$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
BTEX - o Xylene$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
MTBE$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s

REPORT NOTES

General
This report shall not be reproduced, except in full, without written approval from Envirolab.
The results reported herein relate only to the material supplied to the laboratory.
The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.
Analytical results reflect the quality of the sample at the time of analysis only.
Opinions and interpretations expressed are outside the scope of our accreditation.
If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample, 9 = INCINERATOR ASH.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

Key:
IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Please contact us if you need any further information.

v1

Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: Structural Soils Limited (Bristol), The Old School , Stillhouse Lane, Bedminster, Bristol, UK, BS3 4EB

Project: Langstone Flood and Coastal Erosion Managment Scheme

Clients Project No: 736036

Project No: 21/10814

Date Received: 05/10/2021 (am)

Cool Box Temperatures (°C): 10.2, 11.4

NO DEVIATIONS IDENTIFIED with respect to sampling dates or containers received.

Note: If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3 (for water samples 5 ± 3°C), ISO 18400-105:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	21/10814/7	21/10814/9
Client Sample No	101	103
Client Sample ID/Depth	BH106 0.20m	BH106 1.50-1.70m
Date Sampled	28/09/21	28/09/21
A-T-019s	12/10/2021	12/10/2021
A-T-019w		13/10/2021
A-T-022s	12/10/2021	12/10/2021
A-T-024s	18/10/2021	18/10/2021
A-T-025w		18/10/2021
A-T-026w		18/10/2021
A-T-027s	19/10/2021	19/10/2021
A-T-031s	18/10/2021	18/10/2021
A-T-031w		18/10/2021
A-T-032s	23/10/2021	23/10/2021
A-T-032w		16/10/2021
A-T-033s		18/10/2021
A-T-033w		18/10/2021
A-T-040w		18/10/2021
A-T-042sFCN		11/10/2021
A-T-042sTCN		11/10/2021
A-T-042wFCN		18/10/2021
A-T-042wTCN		18/10/2021
A-T-044	14/10/2021	14/10/2021
A-T-049w		18/10/2021
A-T-050s		11/10/2021
A-T-050w		11/10/2021
A-T-055s	12/10/2021	12/10/2021
Titration w		18/10/2021

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report

envirolab
Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 21/10812
Issue Number: 1 **Date:** 25 October, 2021

Client:
Structural Soils Limited (Bristol)
The Old School
Stillhouse Lane
Bedminster
Bristol
UK
BS3 4EB

Project Manager: Eloise Harman/Sasha Layton
Project Name: Langstone Flood and Coastal Erosion Management Scheme
Project Ref: 736036
Order No: N/A
Date Samples Received: 01/10/21
Date Instructions Received: 05/10/21
Date Analysis Completed: 23/10/21

Prepared by:

Melanie Marshall
Laboratory Coordinator

Approved by:

Richard Wong
Client Manager

Envirolab Job Number: 21/10812

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/10812/1	21/10812/2	21/10812/3	21/10812/5				Units	Limit of Detection	Method ref
Client Sample No	103	101	102	104						
Client Sample ID	DS109	BH102	BH102	BH102						
Depth to Top	1.00	0.20	0.50	1.80						
Depth To Bottom				2.20						
Date Sampled	29-Sep-21	29-Sep-21	29-Sep-21	29-Sep-21						
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES						
Sample Matrix Code	6A	6A	6A	6A						
% Stones >10mm$_A$	1.6	-	5.4	<0.1				% w/w	0.1	A-T-044
pH$_D$$^{M\#}$	8.74	-	8.40	8.68				pH	0.01	A-T-031s
Ammoniacal nitrogen as N$_D$	-	-	0.6	-				mg/kg	0.2	A-T-033s
Cyanide (free)$_A$$^{M\#}$	-	-	<1	-				mg/kg	1	A-T-042sFCN
Cyanide (total)$_A$$^{M\#}$	-	-	<1	-				mg/kg	1	A-T-042sTCN
Phenols - Total by HPLC$_A$	-	-	<0.2	-				mg/kg	0.2	A-T-050s
Total Organic Carbon$_D$$^{M\#}$	0.14	-	0.15	0.14				% w/w	0.03	A-T-032s
Arsenic$_D$$^{M\#}$	<1	-	3	<1				mg/kg	1	A-T-024s
Barium$_D$	29	-	33	28				mg/kg	1	A-T-024s
Beryllium$_D$	0.7	-	0.9	0.6				mg/kg	0.5	A-T-024s
Boron (water soluble)$_D$	3.2	-	5.0	3.0				mg/kg	1	A-T-027s
Cadmium$_D$$^{M\#}$	0.8	-	1.0	0.7				mg/kg	0.5	A-T-024s
Copper$_D$$^{M\#}$	11	-	11	7				mg/kg	1	A-T-024s
Chromium$_D$$^{M\#}$	20	-	26	17				mg/kg	1	A-T-024s
Chromium (hexavalent)$_D$	<1	-	<1	<1				mg/kg	1	A-T-040s
Lead$_D$$^{M\#}$	9	-	20	11				mg/kg	1	A-T-024s
Mercury$_D$	1.96	-	1.28	2.86				mg/kg	0.17	A-T-024s
Nickel$_D$$^{M\#}$	18	-	25	14				mg/kg	1	A-T-024s
Selenium$_D$$^{M\#}$	<1	-	<1	<1				mg/kg	1	A-T-024s
Vanadium$_D$$^{M\#}$	27	-	37	20				mg/kg	1	A-T-024s
Zinc$_D$$^{M\#}$	34	-	46	30				mg/kg	5	A-T-024s
pH (leachable)$_A$$^{\#}$	-	-	8.78	-				pH	0.01	A-T-031w
Alkalinity by titration (total) (pH 4.5) (leachable)$_A$	-	-	100	-				mg/l Ca CO3	15	Titration w
Alkalinity by titration (carbonate) (leachable)$_A$	-	-	<15	-				mg/l Ca CO3	15	Titration w
Hardness Total (leachable)$_A$	-	-	137	-				mg/l Ca CO3	2	A-T-049w
Ammoniacal nitrogen as N (leachable)$_A$	-	-	<0.02	-				mg/l	0.02	A-T-033w
Chloride (leachable)$_A$$^{\#}$	-	-	1120	-				mg/l	1	A-T-026w
Nitrite (leachable)$_A$$^{\#}$	-	-	<0.1	-				mg/l	0.1	A-T-026w
Nitrate (leachable)$_A$$^{\#}$	-	-	<0.1	-				mg/l	0.1	A-T-026w
Sulphate (leachable)$_A$$^{\#}$	-	-	198.65	-				mg/l	1	A-T-026w
Cyanide (free) (leachable)$_A$$^{\#}$	-	-	<0.005	-				mg/l	0.005	A-T-042wFCN

Envirolab Job Number: 21/10812

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/10812/1	21/10812/2	21/10812/3	21/10812/5				Units	Limit of Detection	Method ref
Client Sample No	103	101	102	104						
Client Sample ID	DS109	BH102	BH102	BH102						
Depth to Top	1.00	0.20	0.50	1.80						
Depth To Bottom				2.20						
Date Sampled	29-Sep-21	29-Sep-21	29-Sep-21	29-Sep-21						
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES						
Sample Matrix Code	6A	6A	6A	6A						
Cyanide (total) (leachable)$_{A}^{\#}$	-	-	<0.005	-				mg/l	0.005	A-T-042wTCN
Phenol (leachable)$_{A}$	-	-	<0.01	-				mg/l	0.01	A-T-050w
DOC (leachable)$_{A}^{\#}$	-	-	6.5	-				mg/l	0.2	A-T-032w
Antimony (leachable)$_{A}^{\#}$	-	-	2	-				µg/l	1	A-T-025w
Arsenic (leachable)$_{A}^{\#}$	-	-	1	-				µg/l	1	A-T-025w
Boron (leachable)$_{A}^{\#}$	-	-	41	-				µg/l	10	A-T-025w
Barium (leachable)$_{A}^{\#}$	-	-	53	-				µg/l	1	A-T-025w
Beryllium (leachable)$_{A}^{\#}$	-	-	<1	-				µg/l	1	A-T-025w
Cadmium (leachable)$_{A}^{\#}$	-	-	<1	-				µg/l	1	A-T-025w
Copper (leachable)$_{A}^{\#}$	-	-	4	-				µg/l	1	A-T-025w
Chromium (leachable)$_{A}^{\#}$	-	-	<1	-				µg/l	1	A-T-025w
Chromium (hexavalent) (leachable)$_{A}$	-	-	<0.10	-				mg/l	0.05	A-T-040w
Lead (leachable)$_{A}^{\#}$	-	-	3	-				µg/l	1	A-T-025w
Magnesium (leachable)$_{A}$	-	-	23	-				mg/l	1	A-T-049w
Mercury (leachable)$_{A}^{\#}$	-	-	<0.1	-				µg/l	0.1	A-T-025w
Molybdenum (leachable)$_{A}^{\#}$	-	-	11	-				µg/l	1	A-T-025w
Nickel (leachable)$_{A}^{\#}$	-	-	2	-				µg/l	1	A-T-025w
Selenium (leachable)$_{A}^{\#}$	-	-	<1	-				µg/l	1	A-T-025w
Zinc (leachable)$_{A}^{\#}$	-	-	5	-				µg/l	1	A-T-025w
Leachate Prep BS EN 12457-1 (2:1) (1 no) (250ml)+inorg	-	-	*	-						
Potassium (leachable)$_{A}$	-	-	43	-				mg/l	1.2	A-T-049w
Sodium (leachable)$_{A}$	-	-	772	-				mg/l	1	A-T-049w

Envirolab Job Number: 21/10812

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/10812/1	21/10812/2	21/10812/3	21/10812/5				Units	Limit of Detection	Method ref
Client Sample No	103	101	102	104						
Client Sample ID	DS109	BH102	BH102	BH102						
Depth to Top	1.00	0.20	0.50	1.80						
Depth To Bottom				2.20						
Date Sampled	29-Sep-21	29-Sep-21	29-Sep-21	29-Sep-21						
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES						
Sample Matrix Code	6A	6A	6A	6A						
Asbestos in Soil (inc. matrix) ^										
Asbestos in soil$_D^{\#}$	NAD	NAD	-	-						A-T-045
Asbestos ACM - Suitable for Water Absorption Test?$_D$	N/A	N/A	-	-						A-T-045

Envirolab Job Number: 21/10812

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/10812/1	21/10812/2	21/10812/3	21/10812/5				Units	Limit of Detection	Method ref
Client Sample No	103	101	102	104						
Client Sample ID	DS109	BH102	BH102	BH102						
Depth to Top	1.00	0.20	0.50	1.80						
Depth To Bottom				2.20						
Date Sampled	29-Sep-21	29-Sep-21	29-Sep-21	29-Sep-21						
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES						
Sample Matrix Code	6A	6A	6A	6A						
PAH-16MS										
Acenaphthene$_A^{M\#}$	<0.01	-	<0.01	<0.01				mg/kg	0.01	A-T-019s
Acenaphthylene$_A^{M\#}$	<0.01	-	<0.01	<0.01				mg/kg	0.01	A-T-019s
Anthracene$_A^{M\#}$	<0.02	-	0.02	<0.02				mg/kg	0.02	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	<0.04	-	0.13	0.10				mg/kg	0.04	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	<0.04	-	0.15	0.15				mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	<0.05	-	0.11	0.12				mg/kg	0.05	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	<0.05	-	<0.05	0.06				mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	<0.07	-	0.10	<0.07				mg/kg	0.07	A-T-019s
Chrysene$_A^{M\#}$	<0.06	-	0.15	0.11				mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	<0.04	-	<0.04	<0.04				mg/kg	0.04	A-T-019s
Fluoranthene$_A^{M\#}$	<0.08	-	0.29	0.17				mg/kg	0.08	A-T-019s
Fluorene$_A^{M\#}$	<0.01	-	<0.01	<0.01				mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	<0.03	-	0.06	0.07				mg/kg	0.03	A-T-019s
Naphthalene $_A^{M\#}$	<0.03	-	<0.03	<0.03				mg/kg	0.03	A-T-019s
Phenanthrene$_A^{M\#}$	<0.03	-	0.09	0.06				mg/kg	0.03	A-T-019s
Pyrene$_A^{M\#}$	<0.07	-	0.26	0.16				mg/kg	0.07	A-T-019s
Total PAH-16MS$_A^{M\#}$	<0.08	-	1.36	1.00				mg/kg	0.01	A-T-019s

Envirolab Job Number: 21/10812

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/10812/1	21/10812/2	21/10812/3	21/10812/5				Units	Limit of Detection	Method ref
Client Sample No	103	101	102	104						
Client Sample ID	DS109	BH102	BH102	BH102						
Depth to Top	1.00	0.20	0.50	1.80						
Depth To Bottom				2.20						
Date Sampled	29-Sep-21	29-Sep-21	29-Sep-21	29-Sep-21						
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES						
Sample Matrix Code	6A	6A	6A	6A						
PAH 16MS (leachable)										
Acenaphthene (leachable)$_A$	-	-	<0.02	-				µg/l	0.02	A-T-019w
Acenaphthylene (leachable)$_A$	-	-	<0.02	-				µg/l	0.02	A-T-019w
Anthracene (leachable)$_A$	-	-	<0.02	-				µg/l	0.02	A-T-019w
Benzo(a)anthracene (leachable)$_A$	-	-	<0.02	-				µg/l	0.02	A-T-019w
Benzo(a)pyrene (leachable) $_A$	-	-	<0.02	-				µg/l	0.02	A-T-019w
Benzo(b)fluoranthene (leachable)$_A$	-	-	<0.02	-				µg/l	0.02	A-T-019w
Benzo(ghi)perylene (leachable)$_A$	-	-	<0.02	-				µg/l	0.02	A-T-019w
Benzo(k)fluoranthene (leachable)$_A$	-	-	<0.02	-				µg/l	0.02	A-T-019w
Chrysene (leachable)$_A$	-	-	<0.02	-				µg/l	0.02	A-T-019w
Dibenzo(ah)anthracene (leachable)$_A$	-	-	<0.02	-				µg/l	0.02	A-T-019w
Fluoranthene (leachable)$_A$	-	-	<0.02	-				µg/l	0.02	A-T-019w
Fluorene (leachable)$_A$	-	-	<0.02	-				µg/l	0.02	A-T-019w
Indeno(123-cd)pyrene (leachable)$_A$	-	-	<0.02	-				µg/l	0.02	A-T-019w
Naphthalene (leachable) $_A$	-	-	0.11	-				µg/l	0.02	A-T-019w
Phenanthrene (leachable)$_A$	-	-	<0.02	-				µg/l	0.02	A-T-019w
Pyrene (leachable)$_A$	-	-	<0.02	-				µg/l	0.02	A-T-019w
Total PAH 16MS (leachable)$_A$	-	-	0.11	-				µg/l	0.02	A-T-019w

Envirolab Job Number: 21/10812

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/10812/1	21/10812/2	21/10812/3	21/10812/5				Units	Limit of Detection	Method ref
Client Sample No	103	101	102	104						
Client Sample ID	DS109	BH102	BH102	BH102						
Depth to Top	1.00	0.20	0.50	1.80						
Depth To Bottom				2.20						
Date Sampled	29-Sep-21	29-Sep-21	29-Sep-21	29-Sep-21						
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES						
Sample Matrix Code	6A	6A	6A	6A						
TPH CWG										
Ali >C5-C6$_A^{\#}$	<0.01	-	<0.01	<0.01				mg/kg	0.01	A-T-022s
Ali >C6-C8$_A^{\#}$	<0.01	-	<0.01	<0.01				mg/kg	0.01	A-T-022s
Ali >C8-C10$_A$	<1	-	<1	<1				mg/kg	1	A-T-055s
Ali >C10-C12$_A^{M\#}$	<1	-	<1	<1				mg/kg	1	A-T-055s
Ali >C12-C16$_A^{M\#}$	<1	-	<1	<1				mg/kg	1	A-T-055s
Ali >C16-C21$_A^{M\#}$	<1	-	<1	<1				mg/kg	1	A-T-055s
Ali >C21-C35$_A^{M\#}$	<1	-	<1	<1				mg/kg	1	A-T-055s
Total Aliphatics$_A$	<1	-	<1	<1				mg/kg	1	A-T-055s
Aro >C5-C7$_A^{\#}$	<0.01	-	<0.01	<0.01				mg/kg	0.01	A-T-022s
Aro >C7-C8$_A^{\#}$	<0.01	-	<0.01	<0.01				mg/kg	0.01	A-T-022s
Aro >C8-C10$_A$	<1	-	<1	<1				mg/kg	1	A-T-055s
Aro >C10-C12$_A$	<1	-	<1	<1				mg/kg	1	A-T-055s
Aro >C12-C16$_A$	<1	-	<1	<1				mg/kg	1	A-T-055s
Aro >C16-C21$_A^{M\#}$	<1	-	<1	<1				mg/kg	1	A-T-055s
Aro >C21-C35$_A^{M\#}$	<1	-	<1	<1				mg/kg	1	A-T-055s
Total Aromatics$_A$	<1	-	<1	<1				mg/kg	1	A-T-055s
TPH (Ali & Aro >C5-C35)$_A$	<1	-	<1	<1				mg/kg	1	A-T-055s
BTEX - Benzene$_A^{\#}$	<0.01	-	<0.01	<0.01				mg/kg	0.01	A-T-022s
BTEX - Toluene$_A^{\#}$	<0.01	-	<0.01	<0.01				mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene$_A^{\#}$	<0.01	-	<0.01	<0.01				mg/kg	0.01	A-T-022s
BTEX - m & p Xylene$_A^{\#}$	<0.01	-	<0.01	<0.01				mg/kg	0.01	A-T-022s
BTEX - o Xylene$_A^{\#}$	<0.01	-	<0.01	<0.01				mg/kg	0.01	A-T-022s
MTBE$_A^{\#}$	<0.01	-	<0.01	<0.01				mg/kg	0.01	A-T-022s

REPORT NOTES

General
This report shall not be reproduced, except in full, without written approval from Envirolab.
The results reported herein relate only to the material supplied to the laboratory.
The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.
Analytical results reflect the quality of the sample at the time of analysis only.
Opinions and interpretations expressed are outside the scope of our accreditation.
If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample, 9 = INCINERATOR ASH.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

Key:
IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Please contact us if you need any further information.

v1

Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: Structural Soils Limited (Bristol), The Old School , Stillhouse Lane, Bedminster, Bristol, UK, BS3 4EB

Project: Langstone Flood and Coastal Erosion Management Scheme

Clients Project No: 736036

Project No: 21/10812

Date Received: 05/10/2021 (am)

Cool Box Temperatures (°C): 10.2

NO DEVIATIONS IDENTIFIED with respect to sampling dates or containers received.

Note: If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3 (for water samples 5 ± 3°C), ISO 18400-105:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	21/10812/1	21/10812/2	21/10812/3	21/10812/5
Client Sample No	103	101	102	104
Client Sample ID/Depth	DS109 1.00m	BH102 0.20m	BH102 0.50m	BH102 1.80-2.20m
Date Sampled	29/09/21	29/09/21	29/09/21	29/09/21
A-T-019s	12/10/2021		12/10/2021	12/10/2021
A-T-019w			13/10/2021	
A-T-022s	12/10/2021		12/10/2021	12/10/2021
A-T-024s	18/10/2021		18/10/2021	18/10/2021
A-T-025w			18/10/2021	
A-T-026w			18/10/2021	
A-T-027s	19/10/2021		19/10/2021	19/10/2021
A-T-031s	18/10/2021		18/10/2021	18/10/2021
A-T-031w			18/10/2021	
A-T-032s	23/10/2021		23/10/2021	23/10/2021
A-T-032w			20/10/2021	
A-T-033s			18/10/2021	
A-T-033w			18/10/2021	
A-T-040s	18/10/2021		18/10/2021	18/10/2021
A-T-040w			18/10/2021	
A-T-042sFCN			11/10/2021	
A-T-042sTCN			11/10/2021	
A-T-042wFCN			18/10/2021	
A-T-042wTCN			18/10/2021	
A-T-044	13/10/2021		13/10/2021	13/10/2021
A-T-045	12/10/2021	12/10/2021		
A-T-049w			18/10/2021	
A-T-050s			11/10/2021	
A-T-050w			11/10/2021	
A-T-055s	12/10/2021		12/10/2021	12/10/2021
Titration w			18/10/2021	

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report

envirolab
Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 21/10810
Issue Number: 1 **Date:** 25 October, 2021

Client:
Structural Soils Limited (Bristol)
The Old School
Stillhouse Lane
Bedminster
Bristol
UK
BS3 4EB

Project Manager: Eloise Harman/Sasha Layton
Project Name: Langstone Flood and Coastal Erosion Management Scheme
Project Ref: 736036
Order No: N/A
Date Samples Received: 01/10/21
Date Instructions Received: 05/10/21
Date Analysis Completed: 23/10/21

Prepared by:

Melanie Marshall
Laboratory Coordinator

Approved by:

Richard Wong
Client Manager

Envirolab Job Number: 21/10810

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/10810/2							Units	Limit of Detection	Method ref
Client Sample No	102									
Client Sample ID	DS109									
Depth to Top	0.60									
Depth To Bottom										
Date Sampled	29-Sep-21									
Sample Type	Soil - ES									
Sample Matrix Code	6AB									
% Stones >10mm$_A$	17.6							% w/w	0.1	A-T-044
pH$_D$ M#	8.84							pH	0.01	A-T-031s
Total Organic Carbon$_D$ M#	0.41							% w/w	0.03	A-T-032s
Arsenic$_D$ M#	<1							mg/kg	1	A-T-024s
Barium$_D$	61							mg/kg	1	A-T-024s
Beryllium$_D$	0.6							mg/kg	0.5	A-T-024s
Boron (water soluble)$_D$	2.6							mg/kg	1	A-T-027s
Cadmium$_D$ M#	0.7							mg/kg	0.5	A-T-024s
Copper$_D$ M#	33							mg/kg	1	A-T-024s
Chromium$_D$ M#	21							mg/kg	1	A-T-024s
Chromium (hexavalent)$_D$	<1							mg/kg	1	A-T-040s
Lead$_D$ M#	71							mg/kg	1	A-T-024s
Mercury$_D$	1.72							mg/kg	0.17	A-T-024s
Nickel$_D$ M#	19							mg/kg	1	A-T-024s
Selenium$_D$ M#	<1							mg/kg	1	A-T-024s
Vanadium$_D$ M#	23							mg/kg	1	A-T-024s
Zinc$_D$ M#	40							mg/kg	5	A-T-024s

Envirolab Job Number: 21/10810

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/10810/2							Units	Limit of Detection	Method ref
Client Sample No	102									
Client Sample ID	DS109									
Depth to Top	0.60									
Depth To Bottom										
Date Sampled	29-Sep-21									
Sample Type	Soil - ES									
Sample Matrix Code	6AB									
PAH-16MS										
Acenaphthene$_A^{M\#}$	<0.01							mg/kg	0.01	A-T-019s
Acenaphthylene$_A^{M\#}$	<0.01							mg/kg	0.01	A-T-019s
Anthracene$_A^{M\#}$	<0.02							mg/kg	0.02	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	<0.04							mg/kg	0.04	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	0.05							mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	<0.05							mg/kg	0.05	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	<0.05							mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	<0.07							mg/kg	0.07	A-T-019s
Chrysene$_A^{M\#}$	<0.06							mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	<0.04							mg/kg	0.04	A-T-019s
Fluoranthene$_A^{M\#}$	<0.08							mg/kg	0.08	A-T-019s
Fluorene$_A^{M\#}$	<0.01							mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	<0.03							mg/kg	0.03	A-T-019s
Naphthalene $_A^{M\#}$	<0.03							mg/kg	0.03	A-T-019s
Phenanthrene$_A^{M\#}$	<0.03							mg/kg	0.03	A-T-019s
Pyrene$_A^{M\#}$	<0.07							mg/kg	0.07	A-T-019s
Total PAH-16MS$_A^{M\#}$	<0.08							mg/kg	0.01	A-T-019s

Envirolab Job Number: 21/10810

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/10810/2							Units	Limit of Detection	Method ref
Client Sample No	102									
Client Sample ID	DS109									
Depth to Top	0.60									
Depth To Bottom										
Date Sampled	29-Sep-21									
Sample Type	Soil - ES									
Sample Matrix Code	6AB									
TPH CWG										
Ali >C5-C6$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s
Ali >C6-C8$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s
Ali >C8-C10$_A$	<1							mg/kg	1	A-T-055s
Ali >C10-C12$_A^{M\#}$	<1							mg/kg	1	A-T-055s
Ali >C12-C16$_A^{M\#}$	<1							mg/kg	1	A-T-055s
Ali >C16-C21$_A^{M\#}$	<1							mg/kg	1	A-T-055s
Ali >C21-C35$_A^{M\#}$	2							mg/kg	1	A-T-055s
Total Aliphatics$_A$	2							mg/kg	1	A-T-055s
Aro >C5-C7$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s
Aro >C7-C8$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s
Aro >C8-C10$_A$	<1							mg/kg	1	A-T-055s
Aro >C10-C12$_A$	<1							mg/kg	1	A-T-055s
Aro >C12-C16$_A$	<1							mg/kg	1	A-T-055s
Aro >C16-C21$_A^{M\#}$	3							mg/kg	1	A-T-055s
Aro >C21-C35$_A^{M\#}$	14							mg/kg	1	A-T-055s
Total Aromatics$_A$	19							mg/kg	1	A-T-055s
TPH (Ali & Aro >C5-C35)$_A$	20							mg/kg	1	A-T-055s
BTEX - Benzene$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s
BTEX - Toluene$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s
BTEX - m & p Xylene$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s
BTEX - o Xylene$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s
MTBE$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s

REPORT NOTES

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Analytical results reflect the quality of the sample at the time of analysis only.
Opinions and interpretations expressed are outside the scope of our accreditation.
If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample, 9 = INCINERATOR ASH.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

Key:
IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Please contact us if you need any further information.

v1

Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: Structural Soils Limited (Bristol), The Old School , Stillhouse Lane, Bedminster, Bristol, UK, BS3 4EB

Project: Langstone Flood and Coastal Erosion Management Scheme

Clients Project No: 736036

Project No: 21/10810

Date Received: 05/10/2021 (am)

Cool Box Temperatures (°C): 10.4

NO DEVIATIONS IDENTIFIED with respect to sampling dates or containers received.

Note: If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3 (for water samples 5 ± 3°C), ISO 18400-105:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	21/10810/2
Client Sample No	102
Client Sample ID/Depth	DS109 0.60m
Date Sampled	29/09/21
A-T-019s	12/10/2021
A-T-022s	12/10/2021
A-T-024s	18/10/2021
A-T-027s	19/10/2021
A-T-031s	18/10/2021
A-T-032s	23/10/2021
A-T-040s	18/10/2021
A-T-044	14/10/2021
A-T-055s	12/10/2021

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report

envirolab
Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 21/10806
Issue Number: 1 **Date:** 25 October, 2021

Client:
Structural Soils Limited (Bristol)
The Old School
Stillhouse Lane
Bedminster
Bristol
UK
BS3 4EB

Project Manager: Eloise Harman/Sasha Layton
Project Name: Langstone Flood and Coastal Erosion Managment Scheme
Project Ref: 736036
Order No: N/A
Date Samples Received: 01/10/21
Date Instructions Received: 05/10/21
Date Analysis Completed: 23/10/21

Prepared by:

Melanie Marshall
Laboratory Coordinator

Approved by:

Richard Wong
Client Manager

Envirolab Job Number: 21/10806

Client Project Name: Langstone Flood and Coastal Erosion Managment Scheme

Client Project Ref: 736036

Lab Sample ID	21/10806/1	21/10806/2	21/10806/5					Units	Limit of Detection	Method ref
Client Sample No	101	102	105							
Client Sample ID	BH103	BH103	BH103							
Depth to Top	0.10	0.50	2.60							
Depth To Bottom	0.20		3.00							
Date Sampled	30-Sep-21	30-Sep-21	30-Sep-21							
Sample Type	Soil - ES	Soil - ES	Soil							
Sample Matrix Code	4A	4A	6A							
% Stones >10mm$_A$	-	19.1	<0.1					% w/w	0.1	A-T-044
pH$_D$$^{M\#}$	-	8.43	8.70					pH	0.01	A-T-031s
Total Organic Carbon$_D$$^{M\#}$	-	0.49	0.12					% w/w	0.03	A-T-032s
Arsenic$_D$$^{M\#}$	-	4	1					mg/kg	1	A-T-024s
Barium$_D$	-	41	48					mg/kg	1	A-T-024s
Beryllium$_D$	-	<0.5	0.7					mg/kg	0.5	A-T-024s
Boron (water soluble)$_D$	-	2.8	3.2					mg/kg	1	A-T-027s
Cadmium$_D$$^{M\#}$	-	<0.5	0.8					mg/kg	0.5	A-T-024s
Copper$_D$$^{M\#}$	-	33	10					mg/kg	1	A-T-024s
Chromium$_D$$^{M\#}$	-	8	21					mg/kg	1	A-T-024s
Chromium (hexavalent)$_D$	-	<1	<1					mg/kg	1	A-T-040s
Lead$_D$$^{M\#}$	-	267	9					mg/kg	1	A-T-024s
Mercury$_D$	-	1.81	2.36					mg/kg	0.17	A-T-024s
Nickel$_D$$^{M\#}$	-	6	19					mg/kg	1	A-T-024s
Selenium$_D$$^{M\#}$	-	<1	<1					mg/kg	1	A-T-024s
Vanadium$_D$$^{M\#}$	-	12	24					mg/kg	1	A-T-024s
Zinc$_D$$^{M\#}$	-	33	37					mg/kg	5	A-T-024s
pH (leachable)$_A$$^{\#}$	-	8.60	8.90					pH	0.01	A-T-031w
Alkalinity by titration (total) (pH 4.5) (leachable)$_A$	-	240	240					mg/l Ca CO3	15	Titration w
Alkalinity by titration (carbonate) (leachable)$_A$	-	40	<15					mg/l Ca CO3	15	Titration w
Hardness Total (leachable)$_A$	-	283	157					mg/l Ca CO3	2	A-T-049w
Ammoniacal nitrogen as N (leachable)$_A$	-	<0.02	<0.02					mg/l	0.02	A-T-033w
Chloride (leachable)$_A$$^{\#}$	-	1170	1150					mg/l	1	A-T-026w
Nitrite (leachable)$_A$$^{\#}$	-	<0.1	<0.1					mg/l	0.1	A-T-026w
Nitrate (leachable)$_A$$^{\#}$	-	<0.1	<0.1					mg/l	0.1	A-T-026w
Sulphate (leachable)$_A$$^{\#}$	-	203.84	202.43					mg/l	1	A-T-026w
Cyanide (free) (leachable)$_A$$^{\#}$	-	<0.005	<0.005					mg/l	0.005	A-T-042wFCN
Cyanide (total) (leachable)$_A$$^{\#}$	-	<0.005	<0.005					mg/l	0.005	A-T-042wTCN
Phenol (leachable)$_A$	-	<0.01	<0.01					mg/l	0.01	A-T-050w
DOC (leachable)$_A$$^{\#}$	-	6.7	6.0					mg/l	0.2	A-T-032w
Antimony (leachable)$_A$$^{\#}$	-	<2	<1					µg/l	1	A-T-025w

Envirolab Job Number: 21/10806

Client Project Name: Langstone Flood and Coastal Erosion Managment Scheme

Client Project Ref: 736036

Lab Sample ID	21/10806/1	21/10806/2	21/10806/5					Units	Limit of Detection	Method ref
Client Sample No	101	102	105							
Client Sample ID	BH103	BH103	BH103							
Depth to Top	0.10	0.50	2.60							
Depth To Bottom	0.20		3.00							
Date Sampled	30-Sep-21	30-Sep-21	30-Sep-21							
Sample Type	Soil - ES	Soil - ES	Soil							
Sample Matrix Code	4A	4A	6A							
Arsenic (leachable)$_{A}^{\#}$	-	6	<1					µg/l	1	A-T-025w
Boron (leachable)$_{A}^{\#}$	-	512	23					µg/l	10	A-T-025w
Barium (leachable)$_{A}^{\#}$	-	14	34					µg/l	1	A-T-025w
Beryllium (leachable)$_{A}^{\#}$	-	<2	<1					µg/l	1	A-T-025w
Cadmium (leachable)$_{A}^{\#}$	-	<2	<1					µg/l	1	A-T-025w
Copper (leachable)$_{A}^{\#}$	-	10	5					µg/l	1	A-T-025w
Chromium (leachable)$_{A}^{\#}$	-	<2	3					µg/l	1	A-T-025w
Chromium (hexavalent) (leachable)$_{A}$	-	<0.05	<0.05					mg/l	0.05	A-T-040w
Lead (leachable)$_{A}^{\#}$	-	7	2					µg/l	1	A-T-025w
Magnesium (leachable)$_{A}$	-	52	28					mg/l	1	A-T-049w
Mercury (leachable)$_{A}^{\#}$	-	<0.2	<0.1					µg/l	0.1	A-T-025w
Molybdenum (leachable)$_{A}^{\#}$	-	<2	8					µg/l	1	A-T-025w
Nickel (leachable)$_{A}^{\#}$	-	<2	2					µg/l	1	A-T-025w
Selenium (leachable)$_{A}^{\#}$	-	<2	<1					µg/l	1	A-T-025w
Zinc (leachable)$_{A}^{\#}$	-	3	16					µg/l	1	A-T-025w
Leachate Prep BS EN 12457-1 (2:1) (1 no) (250ml)+inorg	-	*	*							
Potassium (leachable)$_{A}$	-	37	41					mg/l	1.2	A-T-049w
Sodium (leachable)$_{A}$	-	769	775					mg/l	1	A-T-049w

Envirolab Job Number: 21/10806

Client Project Name: Langstone Flood and Coastal Erosion Managment Scheme

Client Project Ref: 736036

Lab Sample ID	21/10806/1	21/10806/2	21/10806/5					Units	Limit of Detection	Method ref
Client Sample No	101	102	105							
Client Sample ID	BH103	BH103	BH103							
Depth to Top	0.10	0.50	2.60							
Depth To Bottom	0.20		3.00							
Date Sampled	30-Sep-21	30-Sep-21	30-Sep-21							
Sample Type	Soil - ES	Soil - ES	Soil							
Sample Matrix Code	4A	4A	6A							
Asbestos in Soil (inc. matrix) ^										
Asbestos in soil$_D^{\#}$	NAD	-	-							A-T-045
Asbestos ACM - Suitable for Water Absorption Test?$_D$	N/A	-	-							A-T-045

Envirolab Job Number: 21/10806

Client Project Name: Langstone Flood and Coastal Erosion Managment Scheme

Client Project Ref: 736036

Lab Sample ID	21/10806/1	21/10806/2	21/10806/5					Units	Limit of Detection	Method ref
Client Sample No	101	102	105							
Client Sample ID	BH103	BH103	BH103							
Depth to Top	0.10	0.50	2.60							
Depth To Bottom	0.20		3.00							
Date Sampled	30-Sep-21	30-Sep-21	30-Sep-21							
Sample Type	Soil - ES	Soil - ES	Soil							
Sample Matrix Code	4A	4A	6A							
PAH-16MS										
Acenaphthene$_A^{M\#}$	-	<0.01	<0.01					mg/kg	0.01	A-T-019s
Acenaphthylene$_A^{M\#}$	-	<0.01	<0.01					mg/kg	0.01	A-T-019s
Anthracene$_A^{M\#}$	-	<0.02	<0.02					mg/kg	0.02	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	-	<0.04	<0.04					mg/kg	0.04	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	-	<0.04	<0.04					mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	-	<0.05	<0.05					mg/kg	0.05	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	-	<0.05	<0.05					mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	-	<0.07	<0.07					mg/kg	0.07	A-T-019s
Chrysene$_A^{M\#}$	-	<0.06	<0.06					mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	-	<0.04	<0.04					mg/kg	0.04	A-T-019s
Fluoranthene$_A^{M\#}$	-	<0.08	<0.08					mg/kg	0.08	A-T-019s
Fluorene$_A^{M\#}$	-	<0.01	<0.01					mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	-	<0.03	<0.03					mg/kg	0.03	A-T-019s
Naphthalene $_A^{M\#}$	-	<0.03	<0.03					mg/kg	0.03	A-T-019s
Phenanthrene$_A^{M\#}$	-	<0.03	<0.03					mg/kg	0.03	A-T-019s
Pyrene$_A^{M\#}$	-	<0.07	<0.07					mg/kg	0.07	A-T-019s
Total PAH-16MS$_A^{M\#}$	-	<0.08	<0.08					mg/kg	0.01	A-T-019s

Envirolab Job Number: 21/10806

Client Project Name: Langstone Flood and Coastal Erosion Managment Scheme

Client Project Ref: 736036

Lab Sample ID	21/10806/1	21/10806/2	21/10806/5					Units	Limit of Detection	Method ref
Client Sample No	101	102	105							
Client Sample ID	BH103	BH103	BH103							
Depth to Top	0.10	0.50	2.60							
Depth To Bottom	0.20		3.00							
Date Sampled	30-Sep-21	30-Sep-21	30-Sep-21							
Sample Type	Soil - ES	Soil - ES	Soil							
Sample Matrix Code	4A	4A	6A							
PAH 16MS (leachable)										
Acenaphthene (leachable)$_A$	-	<0.02	<0.02					µg/l	0.02	A-T-019w
Acenaphthylene (leachable)$_A$	-	<0.02	<0.02					µg/l	0.02	A-T-019w
Anthracene (leachable)$_A$	-	<0.02	<0.02					µg/l	0.02	A-T-019w
Benzo(a)anthracene (leachable)$_A$	-	<0.02	<0.02					µg/l	0.02	A-T-019w
Benzo(a)pyrene (leachable) $_A$	-	<0.02	<0.02					µg/l	0.02	A-T-019w
Benzo(b)fluoranthene (leachable)$_A$	-	<0.02	<0.02					µg/l	0.02	A-T-019w
Benzo(ghi)perylene (leachable)$_A$	-	<0.02	<0.02					µg/l	0.02	A-T-019w
Benzo(k)fluoranthene (leachable)$_A$	-	<0.02	<0.02					µg/l	0.02	A-T-019w
Chrysene (leachable)$_A$	-	<0.02	<0.02					µg/l	0.02	A-T-019w
Dibenzo(ah)anthracene (leachable)$_A$	-	<0.02	<0.02					µg/l	0.02	A-T-019w
Fluoranthene (leachable)$_A$	-	<0.02	<0.02					µg/l	0.02	A-T-019w
Fluorene (leachable)$_A$	-	<0.02	<0.02					µg/l	0.02	A-T-019w
Indeno(123-cd)pyrene (leachable)$_A$	-	<0.02	<0.02					µg/l	0.02	A-T-019w
Naphthalene (leachable) $_A$	-	0.03	0.13					µg/l	0.02	A-T-019w
Phenanthrene (leachable)$_A$	-	<0.02	<0.02					µg/l	0.02	A-T-019w
Pyrene (leachable)$_A$	-	<0.02	<0.02					µg/l	0.02	A-T-019w
Total PAH 16MS (leachable)$_A$	-	0.03	0.13					µg/l	0.02	A-T-019w

Envirolab Job Number: 21/10806

Client Project Name: Langstone Flood and Coastal Erosion Managment Scheme

Client Project Ref: 736036

Lab Sample ID	21/10806/1	21/10806/2	21/10806/5					Units	Limit of Detection	Method ref
Client Sample No	101	102	105							
Client Sample ID	BH103	BH103	BH103							
Depth to Top	0.10	0.50	2.60							
Depth To Bottom	0.20		3.00							
Date Sampled	30-Sep-21	30-Sep-21	30-Sep-21							
Sample Type	Soil - ES	Soil - ES	Soil							
Sample Matrix Code	4A	4A	6A							
TPH CWG										
Ali >C5-C6$_A^{\#}$	-	<0.01	<0.01					mg/kg	0.01	A-T-022s
Ali >C6-C8$_A^{\#}$	-	<0.01	<0.01					mg/kg	0.01	A-T-022s
Ali >C8-C10$_A$	-	<1	<1					mg/kg	1	A-T-055s
Ali >C10-C12$_A^{M\#}$	-	<1	<1					mg/kg	1	A-T-055s
Ali >C12-C16$_A^{M\#}$	-	<1	<1					mg/kg	1	A-T-055s
Ali >C16-C21$_A^{M\#}$	-	<1	<1					mg/kg	1	A-T-055s
Ali >C21-C35$_A^{M\#}$	-	<1	<1					mg/kg	1	A-T-055s
Total Aliphatics$_A$	-	<1	<1					mg/kg	1	A-T-055s
Aro >C5-C7$_A^{\#}$	-	<0.01	<0.01					mg/kg	0.01	A-T-022s
Aro >C7-C8$_A^{\#}$	-	<0.01	<0.01					mg/kg	0.01	A-T-022s
Aro >C8-C10$_A$	-	<1	<1					mg/kg	1	A-T-055s
Aro >C10-C12$_A$	-	<1	<1					mg/kg	1	A-T-055s
Aro >C12-C16$_A$	-	<1	<1					mg/kg	1	A-T-055s
Aro >C16-C21$_A^{M\#}$	-	<1	<1					mg/kg	1	A-T-055s
Aro >C21-C35$_A^{M\#}$	-	<1	<1					mg/kg	1	A-T-055s
Total Aromatics$_A$	-	<1	<1					mg/kg	1	A-T-055s
TPH (Ali & Aro >C5-C35)$_A$	-	<1	<1					mg/kg	1	A-T-055s
BTEX - Benzene$_A^{\#}$	-	<0.01	<0.01					mg/kg	0.01	A-T-022s
BTEX - Toluene$_A^{\#}$	-	<0.01	<0.01					mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene$_A^{\#}$	-	<0.01	<0.01					mg/kg	0.01	A-T-022s
BTEX - m & p Xylene$_A^{\#}$	-	<0.01	<0.01					mg/kg	0.01	A-T-022s
BTEX - o Xylene$_A^{\#}$	-	<0.01	<0.01					mg/kg	0.01	A-T-022s
MTBE$_A^{\#}$	-	<0.01	<0.01					mg/kg	0.01	A-T-022s

REPORT NOTES

General
This report shall not be reproduced, except in full, without written approval from Envirolab.
The results reported herein relate only to the material supplied to the laboratory.
The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.
Analytical results reflect the quality of the sample at the time of analysis only.
Opinions and interpretations expressed are outside the scope of our accreditation.
If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample, 9 = INCINERATOR ASH.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

Key:
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Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Please contact us if you need any further information.

v1

Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: Structural Soils Limited (Bristol), The Old School , Stillhouse Lane, Bedminster, Bristol, UK, BS3 4EB

Project: Langstone Flood and Coastal Erosion Managment Scheme

Clients Project No: 736036

Project No: 21/10806

Date Received: 05/10/2021 (am)

Cool Box Temperatures (°C): 11.0,10.9

NO DEVIATIONS IDENTIFIED with respect to sampling dates or containers received.

Note: If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3 (for water samples 5 ± 3°C), ISO 18400-105:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	21/10806/1	21/10806/2	21/10806/5
Client Sample No	101	102	105
Client Sample ID/Depth	BH103 0.10-0.20m	BH103 0.50m	BH103 2.60-3.00m
Date Sampled	30/09/21	30/09/21	30/09/21
A-T-019s		13/10/2021	13/10/2021
A-T-019w		13/10/2021	13/10/2021
A-T-022s		12/10/2021	12/10/2021
A-T-024s		18/10/2021	18/10/2021
A-T-025w		18/10/2021	18/10/2021
A-T-026w		18/10/2021	18/10/2021
A-T-027s		19/10/2021	19/10/2021
A-T-031s		15/10/2021	15/10/2021
A-T-031w		18/10/2021	18/10/2021
A-T-032s		23/10/2021	23/10/2021
A-T-032w		20/10/2021	20/10/2021
A-T-033w		18/10/2021	18/10/2021
A-T-040s		18/10/2021	18/10/2021
A-T-040w		18/10/2021	18/10/2021
A-T-042wFCN		18/10/2021	18/10/2021
A-T-042wTCN		18/10/2021	18/10/2021
A-T-044		13/10/2021	13/10/2021
A-T-045	12/10/2021		
A-T-049w		18/10/2021	18/10/2021
A-T-050w		18/10/2021	18/10/2021
A-T-055s		12/10/2021	12/10/2021
Titration w		18/10/2021	18/10/2021

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report

envirolab
Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 21/11687
Issue Number: 1 **Date:** 09 November, 2021

Client: Structural Soils Limited (Hemel Hempstead)
18 Frogmore Road
Hemel Hempstead
UK
HP3 9RT

Project Manager: Eloise Harman/Eric Downey
Project Name: Langstone Flood and Coastal Erosion Management Scheme
Project Ref: 736036
Order No: N/A
Date Samples Received: 15/10/21
Date Instructions Received: 27/10/21
Date Analysis Completed: 09/11/21

Approved by:



Michael Knight
Laboratory Manager

UKAS TESTING 1247

Envirolab Job Number: 21/11687

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/11687/1							Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	BH03									
Depth to Top	3.01									
Depth To Bottom										
Date Sampled	14-Oct-21									
Sample Type	Water - EW									
Sample Matrix Code	N/A									
pH (w)$_A^\#$	7.50							pH	0.01	A-T-031w
Alkalinity by titration (total) (pH 4.5) (w)$_A$	410							mg/l Ca CO3	15	Titration w
Alkalinity by titration (carbonate) (w)$_A$	<15							mg/l Ca CO3	15	Titration w
Hardness Total$_A^\#$	4580							mg/l Ca CO3	2	A-T-049w
Total Suspended Solids (w)$_A^\#$	<10							mg/l	10	A-T-036w
Ammoniacal nitrogen as N (w)$_A^\#$	3.24							mg/l	0.02	A-T-033w
Chloride (w)$_A^\#$	15400							mg/l	1	A-T-026w
Nitrite (w)$_A^\#$	<0.1							mg/l	0.1	A-T-026w
Nitrate (w)$_A^\#$	<0.1							mg/l	0.1	A-T-026w
Sulphate (w)$_A^\#$	1850							mg/l	1	A-T-026w
Cyanide (free) (w)$_A^\#$	<0.005							mg/l	0.005	A-T-042wFCN
Cyanide (total) (w)$_A^\#$	<0.005							mg/l	0.005	A-T-042wTCN
Phenols - Total by HPLC (w)$_A$	<0.01							mg/l	0.01	A-T-050w
DOC (w)$_A^\#$	9.3							mg/l	0.2	A-T-032w
Antimony (dissolved)$_A$	<20							µg/l	1	A-T-025w
Arsenic (dissolved)$_A^\#$	<20							µg/l	1	A-T-025w
Boron (dissolved)$_A^\#$	4480							µg/l	10	A-T-025w
Barium (dissolved)$_A^\#$	138							µg/l	1	A-T-025w
Beryllium (dissolved)$_A^\#$	<20							µg/l	1	A-T-025w
Cadmium (dissolved)$_A^\#$	<4.0							µg/l	0.2	A-T-025w
Copper (dissolved)$_A^\#$	<20							µg/l	1	A-T-025w
Chromium (dissolved)$_A^\#$	<20							µg/l	1	A-T-025w
Chromium (hexavalent) (w)$_A^\#$	<0.01							mg/l	0.01	A-T-040w
Lead (dissolved)$_A^\#$	<20							µg/l	1	A-T-025w
Magnesium (dissolved)$_A^\#$	863							mg/l	1	A-T-049w
Mercury (dissolved)$_A^\#$	<2.0							µg/l	0.1	A-T-025w
Molybdenum (dissolved)$_A^\#$	<10.0							µg/l	0.5	A-T-025w
Nickel (dissolved)$_A^\#$	<20							µg/l	1	A-T-025w
Potassium (dissolved)$_A^\#$	287							mg/l	1.2	A-T-049w
Selenium (dissolved)$_A^\#$	<20							µg/l	1	A-T-025w
Sodium (dissolved)$_A^\#$	7710							mg/l	1	A-T-049w

Envirolab Job Number: 21/11687

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	**21/11687/1**							**Units**	**Limit of Detection**	**Method ref**
Client Sample No										
Client Sample ID	**BH03**									
Depth to Top	**3.01**									
Depth To Bottom										
Date Sampled	**14-Oct-21**									
Sample Type	**Water - EW**									
Sample Matrix Code	**N/A**									
Zinc (dissolved)$_{A}^{\#}$	**23**							**µg/l**	**1**	**A-T-025w**

Envirolab Job Number: 21/11687

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/11687/1							Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	BH03									
Depth to Top	3.01									
Depth To Bottom										
Date Sampled	14-Oct-21									
Sample Type	Water - EW									
Sample Matrix Code	N/A									
PAH 16MS (w)										
Acenaphthene (w)$_A^{\#}$	<0.01							µg/l	0.01	A-T-019w
Acenaphthylene (w)$_A^{\#}$	<0.01							µg/l	0.01	A-T-019w
Anthracene (w)$_A^{\#}$	<0.01							µg/l	0.01	A-T-019w
Benzo(a)anthracene (w)$_A^{\#}$	<0.01							µg/l	0.01	A-T-019w
Benzo(a)pyrene (w)$_A^{\#}$	<0.01							µg/l	0.01	A-T-019w
Benzo(b)fluoranthene (w)$_A^{\#}$	<0.01							µg/l	0.01	A-T-019w
Benzo(ghi)perylene (w)$_A^{\#}$	<0.01							µg/l	0.01	A-T-019w
Benzo(k)fluoranthene (w)$_A^{\#}$	<0.01							µg/l	0.01	A-T-019w
Chrysene (w)$_A^{\#}$	<0.01							µg/l	0.01	A-T-019w
Dibenzo(ah)anthracene (w)$_A^{\#}$	<0.01							µg/l	0.01	A-T-019w
Fluoranthene (w)$_A^{\#}$	<0.01							µg/l	0.01	A-T-019w
Fluorene (w)$_A^{\#}$	<0.01							µg/l	0.01	A-T-019w
Indeno(123-cd)pyrene (w)$_A^{\#}$	<0.01							µg/l	0.01	A-T-019w
Naphthalene (w)$_A^{\#}$	<0.01							µg/l	0.01	A-T-019w
Phenanthrene (w)$_A^{\#}$	<0.01							µg/l	0.01	A-T-019w
Pyrene (w)$_A^{\#}$	<0.01							µg/l	0.01	A-T-019w
Total PAH 16MS (w)$_A^{\#}$	<0.01							µg/l	0.01	A-T-019w

Envirolab Job Number: 21/11687

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/11687/1							Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	BH03									
Depth to Top	3.01									
Depth To Bottom										
Date Sampled	14-Oct-21									
Sample Type	Water - EW									
Sample Matrix Code	N/A									
TPH CWG (w)										
Ali >C5-C6 $(w)_A^{\#}$	<1							µg/l	1	A-T-022w
Ali >C6-C8 $(w)_A^{\#}$	<1							µg/l	1	A-T-022w
Ali >C8-C10 $(w)_A^{\#}$	<5							µg/l	5	A-T-055w
Ali >C10-C12 $(w)_A^{\#}$	<5							µg/l	5	A-T-055w
Ali >C12-C16 $(w)_A^{\#}$	<5							µg/l	5	A-T-055w
Ali >C16-C21 $(w)_A^{\#}$	<5							µg/l	5	A-T-055w
Ali >C21-C35 $(w)_A^{\#}$	7							µg/l	5	A-T-055w
Total Aliphatics $(w)_A^{\#}$	7							µg/l	5	A-T-055w
Aro >C5-C7 $(w)_A^{\#}$	<1							µg/l	1	A-T-022w
Aro >C7-C8 $(w)_A^{\#}$	<1							µg/l	1	A-T-022w
Aro >C8-C10 $(w)_A$	<5							µg/l	5	A-T-055w
Aro >C10-C12 $(w)_A^{\#}$	<5							µg/l	5	A-T-055w
Aro >C12-C16 $(w)_A^{\#}$	<5							µg/l	5	A-T-055w
Aro >C16-C21 $(w)_A^{\#}$	<5							µg/l	5	A-T-055w
Aro >C21-C35 $(w)_A^{\#}$	<10							µg/l	10	A-T-055w
Total Aromatics $(w)_A$	<10							µg/l	10	A-T-055w
TPH (Ali & Aro >C5-C35) $(w)_A$	<10							µg/l	10	A-T-055w
BTEX - Benzene $(w)_A^{\#}$	<1							µg/l	1	A-T-022w
BTEX - Toluene $(w)_A^{\#}$	<1							µg/l	1	A-T-022w
BTEX - Ethyl Benzene $(w)_A^{\#}$	<1							µg/l	1	A-T-022w
BTEX - m & p Xylene $(w)_A^{\#}$	<1							µg/l	1	A-T-022w
BTEX - o Xylene $(w)_A^{\#}$	<1							µg/l	1	A-T-022w
MTBE $(w)_A^{\#}$	<1							µg/l	1	A-T-022w

REPORT NOTES

General
This report shall not be reproduced, except in full, without written approval from Envirolab.
The results reported herein relate only to the material supplied to the laboratory.
The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.
Analytical results reflect the quality of the sample at the time of analysis only.
Opinions and interpretations expressed are outside the scope of our accreditation.
If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample, 9 = INCINERATOR ASH.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

Key:
IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Please contact us if you need any further information.

v1

Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: Structural Soils Limited (Hemel Hempstead), 18 Frogmore Road, Hemel Hempstead, UK, HP3 9RT

Project: Langstone Flood and Coastal Erosion Management Scheme

Clients Project No: 736036

Project No: 21/11687

Date Received: 27/10/2021 (am)

Cool Box Temperatures (°C): 11.8 & 12.1

Lab Sample ID	21/11687/1
Client Sample No	
Client Sample ID/Depth	BH03 3.01m
Date Sampled	14/10/21
Deviation Code	
F	✓

Key
F *Maximum holding time exceeded between sampling date and analysis for analytes listed below*

HOLDING TIME EXCEEDANCES

Lab Sample ID	21/11687/1
Client Sample No	
Client Sample ID/Depth	BH03 3.01m
Date Sampled	14/10/21
VPHCWG (w)	✓
PAH 16MS (w)	✓
Chromium (hexavalent) (w)	✓
Total Suspended Solids (w)	✓

Note: If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3 (for water samples 5 ± 3°C), ISO 18400-105:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	21/11687/1
Client Sample No	
Client Sample ID/Depth	BH03 3.01m
Date Sampled	14/10/21
A-T-019w	01/11/2021
A-T-022w	01/11/2021
A-T-025w	09/11/2021
A-T-026w	05/11/2021
A-T-031w	29/10/2021
A-T-032w	09/11/2021
A-T-033w	01/11/2021
A-T-036w	08/11/2021
A-T-040w	05/11/2021
A-T-042wFCN	29/10/2021
A-T-042wTCN	29/10/2021
A-T-049w	01/11/2021
A-T-050w	29/10/2021
A-T-055w	01/11/2021
Titration w	01/11/2021

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report

envirolab
Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 21/11436
Issue Number: 1 **Date:** 09 November, 2021

Client: Structural Soils Limited (Hemel Hempstead)
18 Frogmore Road
Hemel Hempstead
UK
HP3 9RT

Project Manager: Eloise Harman/Eric Downey
Project Name: Langstone Flood and Coastal Erosion Management Scheme
Project Ref: 736036
Order No: N/A
Date Samples Received: 20/10/21
Date Instructions Received: 21/10/21
Date Analysis Completed: 09/11/21

Approved by:



Michael Knight
Laboratory Manager

UKAS TESTING 1247

Envirolab Job Number: 21/11436

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/11436/1	21/11436/2	21/11436/3	21/11436/4	21/11436/5	21/11436/6	21/11436/7	Units	Limit of Detection	Method ref
Client Sample No	1	3	4	5	6	7	8			
Client Sample ID	BH104	DS107	DS106	BH105	BH101	DS103	DS104			
Depth to Top	2.72	2.03	1.62	1.425	2.62	2.27	2.38			
Depth To Bottom										
Date Sampled	18-Oct-21	18-Oct-21	18-Oct-21	18-Oct-21	18-Oct-21	18-Oct-21	18-Oct-21			
Sample Type	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW			
Sample Matrix Code	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
pH (w)$_A^{\#}$	7.15	7.10	7.14	6.90	7.01	7.04	7.11	pH	0.01	A-T-031w
pH BRE (w)$_A^{\#}$	-	7.10	7.14	-	-	7.04	7.11	pH	0.01	A-T-031w
Alkalinity by titration (total) (pH 4.5) (w)$_A$	440	470	685	455	450	880	560	mg/l Ca CO3	15	Titration w
Alkalinity by titration (carbonate) (w)$_A$	<15	<15	<15	<15	<15	<15	<15	mg/l Ca CO3	15	Titration w
Hardness Total$_A^{\#}$	3760	369	303	2280	1182	7210	713	mg/l Ca CO3	2	A-T-049w
Total Suspended Solids (w)$_A^{\#}$	319	112	67	317	42	90	34	mg/l	10	A-T-036w
Ammoniacal nitrogen as N (w)$_A^{\#}$	7.63	0.18	0.03	0.17	0.09	14.1	0.07	mg/l	0.02	A-T-033w
Chloride (w)$_A^{\#}$	11200	97	149	6060	2230	17900	889	mg/l	1	A-T-026w
Nitrite (w)$_A^{\#}$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/l	0.1	A-T-026w
Nitrate (w)$_A^{\#}$	<0.1	2.1	1.1	0.3	<0.1	<0.1	<0.1	mg/l	0.1	A-T-026w
Sulphate (w)$_A^{\#}$	1490	23	82	705	311	2710	213	mg/l	1	A-T-026w
Sulphate BRE (w)$_A^{\#}$	-	23	82	-	-	2705	213	mg/l	1	A-T-026w
Cyanide (free) (w)$_A^{\#}$	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	mg/l	0.005	A-T-042wFCN
Cyanide (total) (w)$_A^{\#}$	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	mg/l	0.005	A-T-042wTCN
Phenols - Total by HPLC (w)$_A$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/l	0.01	A-T-050w
DOC (w)$_A^{\#}$	5.5	1.5	2.6	3.6	2.4	11.1	4.0	mg/l	0.2	A-T-032w
Antimony (dissolved)$_A$	<20	<1	<1	<1	<5	<20	<1	µg/l	1	A-T-025w
Arsenic (dissolved)$_A^{\#}$	<20	10	<1	<10	<5	<20	2	µg/l	1	A-T-025w
Boron (dissolved)$_A^{\#}$	3430	114	476	884	307	3770	586	µg/l	10	A-T-025w
Barium (dissolved)$_A^{\#}$	331	34	76	165	174	351	116	µg/l	1	A-T-025w
Beryllium (dissolved)$_A^{\#}$	<20	<1	<1	<10	<5	<20	<1	µg/l	1	A-T-025w
Cadmium (dissolved)$_A^{\#}$	<4.0	<0.2	<0.2	<2.0	<1.0	<4.0	<0.2	µg/l	0.2	A-T-025w
Copper (dissolved)$_A^{\#}$	<20	2	<1	<10	<5	<20	<1	µg/l	1	A-T-025w
Chromium (dissolved)$_A^{\#}$	<20	<1	<1	<10	<5	<20	<1	µg/l	1	A-T-025w
Chromium (hexavalent) (w)$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/l	0.01	A-T-040w
Lead (dissolved)$_A^{\#}$	<20	<1	<1	<10	<5	<20	<1	µg/l	1	A-T-025w
Magnesium (dissolved)$_A^{\#}$	674	10	21	285	98	1300	70	mg/l	1	A-T-049w
Mercury (dissolved)$_A^{\#}$	<2.0	<0.1	<0.1	<2.0	<0.5	<2.0	<0.1	µg/l	0.1	A-T-025w
Molybdenum (dissolved)$_A^{\#}$	<10.0	<0.5	<0.5	<5.0	<2.5	<10.0	0.8	µg/l	0.5	A-T-025w
Nickel (dissolved)$_A^{\#}$	<20	7	3	10	6	<20	6	µg/l	1	A-T-025w
Potassium (dissolved)$_A^{\#}$	233	<1	<1	21	5	315	10	mg/l	1.2	A-T-049w

Envirolab Job Number: 21/11436

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/11436/1	21/11436/2	21/11436/3	21/11436/4	21/11436/5	21/11436/6	21/11436/7	Units	Limit of Detection	Method ref
Client Sample No	1	3	4	5	6	7	8			
Client Sample ID	BH104	DS107	DS106	BH105	BH101	DS103	DS104			
Depth to Top	2.72	2.03	1.62	1.425	2.62	2.27	2.38			
Depth To Bottom										
Date Sampled	18-Oct-21	18-Oct-21	18-Oct-21	18-Oct-21	18-Oct-21	18-Oct-21	18-Oct-21			
Sample Type	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW			
Sample Matrix Code	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Selenium (dissolved)$_{A}^{\#}$	<20	<1	<1	<10	<5	<20	<1	µg/l	1	A-T-025w
Sodium (dissolved)$_{A}^{\#}$	6880	79	285	2680	983	10500	491	mg/l	1	A-T-049w
Zinc (dissolved)$_{A}^{\#}$	21	10	4	27	10	<20	8	µg/l	1	A-T-025w
BTEX (w)										
BTEX - Benzene (w)$_{A}^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-022w
BTEX - Toluene (w)$_{A}^{\#}$	<1	<1	<1	<1	<1	7	15	µg/l	1	A-T-022w
BTEX - Ethyl Benzene (w)$_{A}^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-022w
BTEX - m & p Xylene (w)$_{A}^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-022w
BTEX - o Xylene (w)$_{A}^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-022w

Envirolab Job Number: 21/11436

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/11436/1	21/11436/2	21/11436/3	21/11436/4	21/11436/5	21/11436/6	21/11436/7	Units	Limit of Detection	Method ref
Client Sample No	1	3	4	5	6	7	8			
Client Sample ID	BH104	DS107	DS106	BH105	BH101	DS103	DS104			
Depth to Top	2.72	2.03	1.62	1.425	2.62	2.27	2.38			
Depth To Bottom										
Date Sampled	18-Oct-21	18-Oct-21	18-Oct-21	18-Oct-21	18-Oct-21	18-Oct-21	18-Oct-21			
Sample Type	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW			
Sample Matrix Code	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
PAH 16MS (w)										
Acenaphthene (w)$_A^{\#}$	0.02	<0.01	0.01	<0.01	<0.01	0.30	0.01	µg/l	0.01	A-T-019w
Acenaphthylene (w)$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	µg/l	0.01	A-T-019w
Anthracene (w)$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	µg/l	0.01	A-T-019w
Benzo(a)anthracene (w)$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	µg/l	0.01	A-T-019w
Benzo(a)pyrene (w)$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	µg/l	0.01	A-T-019w
Benzo(b)fluoranthene (w)$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	µg/l	0.01	A-T-019w
Benzo(ghi)perylene (w)$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	µg/l	0.01	A-T-019w
Benzo(k)fluoranthene (w)$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	µg/l	0.01	A-T-019w
Chrysene (w)$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	µg/l	0.01	A-T-019w
Dibenzo(ah)anthracene (w)$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	µg/l	0.01	A-T-019w
Fluoranthene (w)$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	<0.01	µg/l	0.01	A-T-019w
Fluorene (w)$_A^{\#}$	0.01	<0.01	<0.01	<0.01	<0.01	0.12	<0.01	µg/l	0.01	A-T-019w
Indeno(123-cd)pyrene (w)$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	µg/l	0.01	A-T-019w
Naphthalene (w)$_A^{\#}$	0.04	0.01	0.02	<0.01	0.02	0.36	0.57	µg/l	0.01	A-T-019w
Phenanthrene (w)$_A^{\#}$	0.03	<0.01	<0.01	<0.01	<0.01	0.10	<0.01	µg/l	0.01	A-T-019w
Pyrene (w)$_A^{\#}$	<0.01	0.01	<0.01	<0.01	<0.01	0.03	<0.01	µg/l	0.01	A-T-019w
Total PAH 16MS (w)$_A^{\#}$	0.10	0.02	0.03	<0.01	0.02	0.94	0.58	µg/l	0.01	A-T-019w

Envirolab Job Number: 21/11436

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/11436/1	21/11436/2	21/11436/3	21/11436/4	21/11436/5	21/11436/6	21/11436/7	Units	Limit of Detection	Method ref
Client Sample No	1	3	4	5	6	7	8			
Client Sample ID	BH104	DS107	DS106	BH105	BH101	DS103	DS104			
Depth to Top	2.72	2.03	1.62	1.425	2.62	2.27	2.38			
Depth To Bottom										
Date Sampled	18-Oct-21	18-Oct-21	18-Oct-21	18-Oct-21	18-Oct-21	18-Oct-21	18-Oct-21			
Sample Type	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW			
Sample Matrix Code	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Speciated PCB-EC7 & WHO12 (w)										
PCB BZ 28 $(w)_A^{\#}$	-	<0.001	-	-	<0.001	<0.001	-	µg/l	0.001	A-T-004w
PCB BZ 52 $(w)_A^{\#}$	-	<0.001	-	-	<0.001	<0.001	-	µg/l	0.001	A-T-004w
PCB BZ 81 $(w)_A$	-	<0.001	-	-	<0.001	<0.001	-	µg/l	0.001	A-T-004w
PCB BZ 101 $(w)_A^{\#}$	-	<0.001	-	-	<0.001	<0.001	-	µg/l	0.001	A-T-004w
PCB BZ 105 $(w)_A$	-	<0.001	-	-	<0.001	<0.001	-	µg/l	0.001	A-T-004w
PCB BZ 114 $(w)_A$	-	<0.001	-	-	<0.001	<0.001	-	µg/l	0.001	A-T-004w
PCB BZ 118 $(w)_A^{\#}$	-	<0.002	-	-	<0.002	<0.002	-	µg/l	0.002	A-T-004w
PCB BZ 123 $(w)_A$	-	<0.001	-	-	<0.001	<0.001	-	µg/l	0.001	A-T-004w
PCB BZ 126 $(w)_A$	-	<0.001	-	-	<0.001	<0.001	-	µg/l	0.001	A-T-004w
PCB BZ 138 $(w)_A^{\#}$	-	<0.001	-	-	<0.001	<0.001	-	µg/l	0.001	A-T-004w
PCB BZ 153 $(w)_A^{\#}$	-	<0.001	-	-	<0.001	<0.001	-	µg/l	0.001	A-T-004w
PCB BZ 156 $(w)_A$	-	<0.001	-	-	<0.001	<0.001	-	µg/l	0.001	A-T-004w
PCB BZ 157 $(w)_A$	-	<0.001	-	-	<0.001	<0.001	-	µg/l	0.001	A-T-004w
PCB BZ 167 $(w)_A$	-	<0.001	-	-	<0.001	<0.001	-	µg/l	0.001	A-T-004w
PCB BZ 169 $(w)_A$	-	<0.001	-	-	<0.001	<0.001	-	µg/l	0.001	A-T-004w
PCB BZ 180 $(w)_A^{\#}$	-	<0.001	-	-	<0.001	<0.001	-	µg/l	0.001	A-T-004w
PCB BZ 189 $(w)_A$	-	<0.001	-	-	<0.001	<0.001	-	µg/l	0.001	A-T-004w
PCB BZ 77 $(w)_A$	-	<0.001	-	-	<0.001	<0.001	-	µg/l	0.001	A-T-004w
Total Speciated PCB-EC7 & WHO12 $(w)_A$	-	<0.002	-	-	<0.002	<0.002	-	µg/l	0.001	A-T-004w

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Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/11436/1	21/11436/2	21/11436/3	21/11436/4	21/11436/5	21/11436/6	21/11436/7	Units	Limit of Detection	Method ref
Client Sample No	1	3	4	5	6	7	8			
Client Sample ID	BH104	DS107	DS106	BH105	BH101	DS103	DS104			
Depth to Top	2.72	2.03	1.62	1.425	2.62	2.27	2.38			
Depth To Bottom										
Date Sampled	18-Oct-21	18-Oct-21	18-Oct-21	18-Oct-21	18-Oct-21	18-Oct-21	18-Oct-21			
Sample Type	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW			
Sample Matrix Code	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
VOC (w)										
Dichlorodifluoromethane$_{A}$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-006w
Chloromethane$_{A}$	<10	<10	-	-	<10	<10	-	µg/l	10	A-T-006w
Vinyl Chloride$_{A}^{\#}$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-006w
Bromomethane$_{A}^{\#}$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-006w
Chloroethane$_{A}^{\#}$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-006w
Trichlorofluoromethane$_{A}^{\#}$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-006w
trans 1,2-Dichloroethene$_{A}^{\#}$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-006w
Dichloromethane$_{A}$	<5	<5	-	-	<5	<5	-	µg/l	5	A-T-006w
Carbon Disulphide$_{A}^{\#}$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-006w
1,1-Dichloroethene$_{A}^{\#}$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-006w
1,1-Dichloroethane$_{A}^{\#}$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-006w
cis 1,2-Dichloroethene$_{A}^{\#}$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-006w
Bromochloromethane$_{A}^{\#}$	<5	<5	-	-	<5	<5	-	µg/l	5	A-T-006w
Chloroform$_{A}^{\#}$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-006w
2,2-Dichloropropane$_{A}^{\#}$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-006w
1,2-Dichloroethane$_{A}^{\#}$	<2	<2	-	-	<2	<2	-	µg/l	2	A-T-006w
1,1,1-Trichloroethane$_{A}^{\#}$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-006w
1,1-Dichloropropene$_{A}^{\#}$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-006w
Benzene$_{A}^{\#}$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-006w
Carbon Tetrachloride$_{A}^{\#}$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-006w
Dibromomethane$_{A}^{\#}$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-006w
1,2-Dichloropropane$_{A}^{\#}$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-006w
Bromodichloromethane$_{A}^{\#}$	<10	<10	-	-	<10	<10	-	µg/l	10	A-T-006w
Trichloroethene$_{A}^{\#}$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-006w
cis 1,3-Dichloropropene$_{A}^{\#}$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-006w
trans 1,3-Dichloropropene$_{A}^{\#}$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-006w
1,1,2-Trichloroethane$_{A}^{\#}$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-006w
Toluene$_{A}^{\#}$	<1	<1	-	-	<1	7	-	µg/l	1	A-T-006w
1,3-Dichloropropane$_{A}^{\#}$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-006w
Dibromochloromethane$_{A}^{\#}$	<3	<3	-	-	<3	<3	-	µg/l	3	A-T-006w
1,2-Dibromoethane$_{A}^{\#}$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-006w
Tetrachloroethene$_{A}$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-006w

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Lab Sample ID	21/11436/1	21/11436/2	21/11436/3	21/11436/4	21/11436/5	21/11436/6	21/11436/7	Units	Limit of Detection	Method ref
Client Sample No	1	3	4	5	6	7	8			
Client Sample ID	BH104	DS107	DS106	BH105	BH101	DS103	DS104			
Depth to Top	2.72	2.03	1.62	1.425	2.62	2.27	2.38			
Depth To Bottom										
Date Sampled	18-Oct-21	18-Oct-21	18-Oct-21	18-Oct-21	18-Oct-21	18-Oct-21	18-Oct-21			
Sample Type	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW			
Sample Matrix Code	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
1,1,1,2-Tetrachloroethane$_A$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-006w
Chlorobenzene$_A^{\#}$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-006w
Ethylbenzene$_A^{\#}$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-006w
m & p Xylene$_A^{\#}$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-006w
Bromoform$_A^{\#}$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-006w
Styrene$_A^{\#}$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-006w
1,1,2,2-Tetrachloroethane$_A$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-006w
o-Xylene$_A^{\#}$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-006w
1,2,3-Trichloropropane$_A^{\#}$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-006w
Isopropylbenzene$_A^{\#}$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-006w
Bromobenzene$_A^{\#}$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-006w
2-Chlorotoluene$_A^{\#}$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-006w
n-propylbenzene$_A^{\#}$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-006w
4-Chlorotoluene$_A^{\#}$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-006w
1,2,4-Trimethylbenzene$_A^{\#}$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-006w
4-Isopropyltoluene$_A^{\#}$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-006w
1,3,5-Trimethylbenzene$_A^{\#}$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-006w
1,2-Dichlorobenzene$_A^{\#}$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-006w
1,4-Dichlorobenzene$_A^{\#}$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-006w
sec-Butylbenzene$_A^{\#}$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-006w
tert-Butylbenzene$_A^{\#}$	<2	<2	-	-	<2	<2	-	µg/l	2	A-T-006w
1,3-Dichlorobenzene$_A^{\#}$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-006w
n-butylbenzene$_A^{\#}$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-006w
1,2-Dibromo-3-chloropropane$_A^{\#}$	<2	<2	-	-	<2	<2	-	µg/l	2	A-T-006w
1,2,4-Trichlorobenzene$_A^{\#}$	<3	<3	-	-	<3	<3	-	µg/l	3	A-T-006w
1,2,3-Trichlorobenzene$_A^{\#}$	<3	<3	-	-	<3	<3	-	µg/l	3	A-T-006w
Hexachlorobutadiene$_A^{\#}$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-006w

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Lab Sample ID	21/11436/1	21/11436/2	21/11436/3	21/11436/4	21/11436/5	21/11436/6	21/11436/7	Units	Limit of Detection	Method ref
Client Sample No	1	3	4	5	6	7	8			
Client Sample ID	BH104	DS107	DS106	BH105	BH101	DS103	DS104			
Depth to Top	2.72	2.03	1.62	1.425	2.62	2.27	2.38			
Depth To Bottom										
Date Sampled	18-Oct-21	18-Oct-21	18-Oct-21	18-Oct-21	18-Oct-21	18-Oct-21	18-Oct-21			
Sample Type	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW			
Sample Matrix Code	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
TPH CWG (w)										
Ali >C5-C6 $(w)_A^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-022w
Ali >C6-C8 $(w)_A^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-022w
Ali >C8-C10 $(w)_A^{\#}$	<5	<5	<5	<5	<5	<5	<5	µg/l	5	A-T-055w
Ali >C10-C12 $(w)_A^{\#}$	<5	<5	<5	<5	<5	<5	<5	µg/l	5	A-T-055w
Ali >C12-C16 $(w)_A^{\#}$	<5	<5	<5	<5	<5	<5	<5	µg/l	5	A-T-055w
Ali >C16-C21 $(w)_A^{\#}$	<5	<5	<5	<5	<5	<5	241	µg/l	5	A-T-055w
Ali >C21-C35 $(w)_A^{\#}$	<5	<5	<5	<5	6	<5	7667	µg/l	5	A-T-055w
Total Aliphatics $(w)_A^{\#}$	<5	<5	<5	<5	6	<5	7910	µg/l	5	A-T-055w
Aro >C5-C7 $(w)_A^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-022w
Aro >C7-C8 $(w)_A^{\#}$	<1	<1	<1	<1	<1	7	15	µg/l	1	A-T-022w
Aro >C8-C10 $(w)_A$	<5	<5	9	<5	<5	<5	<5	µg/l	5	A-T-055w
Aro >C10-C12 $(w)_A^{\#}$	<5	<5	20	<5	<5	<5	<5	µg/l	5	A-T-055w
Aro >C12-C16 $(w)_A^{\#}$	<5	<5	30	<5	<5	<5	<5	µg/l	5	A-T-055w
Aro >C16-C21 $(w)_A^{\#}$	<5	<5	29	<5	<5	<5	89	µg/l	5	A-T-055w
Aro >C21-C35 $(w)_A^{\#}$	<10	<10	<10	<10	<10	<10	109	µg/l	10	A-T-055w
Total Aromatics $(w)_A$	<10	<10	88	<10	<10	<10	213	µg/l	10	A-T-055w
TPH (Ali & Aro >C5-C35) $(w)_A$	<10	<10	88	<10	<10	<10	8120	µg/l	10	A-T-055w
BTEX - Benzene $(w)_A^{\#}$	-	-	-	-	-	-	-	µg/l	1	A-T-022w
BTEX - Toluene $(w)_A^{\#}$	-	-	-	-	-	-	-	µg/l	1	A-T-022w
BTEX - Ethyl Benzene $(w)_A^{\#}$	-	-	-	-	-	-	-	µg/l	1	A-T-022w
BTEX - m & p Xylene $(w)_A^{\#}$	-	-	-	-	-	-	-	µg/l	1	A-T-022w
BTEX - o Xylene $(w)_A^{\#}$	-	-	-	-	-	-	-	µg/l	1	A-T-022w
MTBE $(w)_A^{\#}$	<1	<1	<1	<1	<1	<1	<1	µg/l	1	A-T-022w

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Client Sample No	1	3	4	5	6	7	8			
Client Sample ID	BH104	DS107	DS106	BH105	BH101	DS103	DS104			
Depth to Top	2.72	2.03	1.62	1.425	2.62	2.27	2.38			
Depth To Bottom										
Date Sampled	18-Oct-21	18-Oct-21	18-Oct-21	18-Oct-21	18-Oct-21	18-Oct-21	18-Oct-21			
Sample Type	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW			
Sample Matrix Code	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
SVOC+TIC (excluding PAH-16) (w)										
SVOC TICs (Tentatively Identified Compounds)$_A$	None detected	None detected	-	-	None detected	Appended	-			A-T-052w
2,4,5-Trichlorophenol$_A$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-052w
2,4,6-Trichlorophenol (w)$_A$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-052w
2,4-Dichlorophenol$_A$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-052w
2,4-Dimethylphenol$_A$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-052w
2,4-Dinitrotoluene$_A$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-052w
2,6-Dinitrotoluene$_A$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-052w
2-Chloronaphthalene$_A$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-052w
2-Chlorophenol$_A$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-052w
2-Methylnaphthalene$_A$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-052w
2-Methylphenol$_A$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-052w
2-Nitrophenol$_A$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-052w
4-Bromophenyl phenyl ether$_A$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-052w
4-Chloro-3-methylphenol$_A$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-052w
Bis(2-chloroisopropyl)ether$_A$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-052w
3+4-Methylphenol$_A$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-052w
4-Nitrophenol$_A$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-052w
Bis(2-chloroethyl)ether$_A$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-052w
Bis(2-chloroethoxy)methane$_A$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-052w
Bis(2-ethylhexyl)phthalate$_A$	<10	<10	-	-	<10	<10	-	µg/l	10	A-T-052w
Butylbenzyl phthalate$_A$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-052w
Carbazole$_A$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-052w
Dibenzofuran$_A$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-052w
n-Dibutylphthalate$_A$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-052w
n-Dioctylphthalate$_A$	<10	<10	-	-	<10	<10	-	µg/l	10	A-T-052w
n-Nitroso-n-dipropylamine$_A$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-052w
Diethyl phthalate$_A$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-052w
Dimethyl phthalate$_A$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-052w
Hexachlorobenzene$_A$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-052w
Pentachlorophenol (SVOC)$_A$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-052w
Phenol$_A$	<11	<11	-	-	<11	<11	-	µg/l	1	A-T-052w

Lab Sample ID	21/11436/1	21/11436/2	21/11436/3	21/11436/4	21/11436/5	21/11436/6	21/11436/7	Units	Limit of Detection	Method ref
Client Sample No	1	3	4	5	6	7	8			
Client Sample ID	BH104	DS107	DS106	BH105	BH101	DS103	DS104			
Depth to Top	2.72	2.03	1.62	1.425	2.62	2.27	2.38			
Depth To Bottom										
Date Sampled	18-Oct-21	18-Oct-21	18-Oct-21	18-Oct-21	18-Oct-21	18-Oct-21	18-Oct-21			
Sample Type	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW	Water - EW			
Sample Matrix Code	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Hexachloroethane$_A$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-052w
Nitrobenzene$_A$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-052w
Isophorone$_A$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-052w
Hexachlorocyclopentadiene$_A$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-052w
Perylene$_A$	<1	<1	-	-	<1	<1	-	µg/l	1	A-T-052w

Lab Sample ID	21/11436/8	21/11436/9						Units	Limit of Detection	Method ref
Client Sample No	9	10								
Client Sample ID	DS106 duplicate	DS106 QC1								
Depth to Top										
Depth To Bottom										
Date Sampled	18-Oct-21	18-Oct-21								
Sample Type	Water - EW	Water - EW								
Sample Matrix Code	N/A	N/A								
pH (w)$_A^\#$	7.17	-						pH	0.01	A-T-031w
pH BRE (w)$_A^\#$	-	-						pH	0.01	A-T-031w
Alkalinity by titration (total) (pH 4.5) (w)$_A$	670	-						mg/l CaCO3	15	Titration w
Alkalinity by titration (carbonate) (w)$_A$	<15	-						mg/l CaCO3	15	Titration w
Hardness Total$_A^\#$	154	-						mg/l CaCO3	2	A-T-049w
Total Suspended Solids (w)$_A^\#$	27	-						mg/l	10	A-T-036w
Ammoniacal nitrogen as N (w)$_A^\#$	0.02	-						mg/l	0.02	A-T-033w
Chloride (w)$_A^\#$	146	-						mg/l	1	A-T-026w
Nitrite (w)$_A^\#$	<0.1	-						mg/l	0.1	A-T-026w
Nitrate (w)$_A^\#$	<0.1	-						mg/l	0.1	A-T-026w
Sulphate (w)$_A^\#$	89	-						mg/l	1	A-T-026w
Sulphate BRE (w)$_A^\#$	-	-						mg/l	1	A-T-026w
Cyanide (free) (w)$_A^\#$	<0.005	-						mg/l	0.005	A-T-042wFCN
Cyanide (total) (w)$_A^\#$	<0.005	-						mg/l	0.005	A-T-042wTCN
Phenols - Total by HPLC (w)$_A$	<0.01	-						mg/l	0.01	A-T-050w
DOC (w)$_A^\#$	4.4	-						mg/l	0.2	A-T-032w
Antimony (dissolved)$_A$	<1	-						µg/l	1	A-T-025w
Arsenic (dissolved)$_A^\#$	<1	-						µg/l	1	A-T-025w
Boron (dissolved)$_A^\#$	448	-						µg/l	10	A-T-025w
Barium (dissolved)$_A^\#$	65	-						µg/l	1	A-T-025w
Beryllium (dissolved)$_A^\#$	<1	-						µg/l	1	A-T-025w
Cadmium (dissolved)$_A^\#$	<0.2	-						µg/l	0.2	A-T-025w
Copper (dissolved)$_A^\#$	2	-						µg/l	1	A-T-025w
Chromium (dissolved)$_A^\#$	8	-						µg/l	1	A-T-025w
Chromium (hexavalent) (w)$_A^\#$	<0.01	-						mg/l	0.01	A-T-040w
Lead (dissolved)$_A^\#$	<1	-						µg/l	1	A-T-025w
Magnesium (dissolved)$_A^\#$	20	-						mg/l	1	A-T-049w
Mercury (dissolved)$_A^\#$	<0.1	-						µg/l	0.1	A-T-025w
Molybdenum (dissolved)$_A^\#$	<0.5	-						µg/l	0.5	A-T-025w
Nickel (dissolved)$_A^\#$	2	-						µg/l	1	A-T-025w
Potassium (dissolved)$_A^\#$	<1	-						mg/l	1.2	A-T-049w

Envirolab Job Number: 21/11436

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/11436/8	21/11436/9						Units	Limit of Detection	Method ref
Client Sample No	9	10								
Client Sample ID	DS106 duplicate	DS106 QC1								
Depth to Top										
Depth To Bottom										
Date Sampled	18-Oct-21	18-Oct-21								
Sample Type	Water - EW	Water - EW								
Sample Matrix Code	N/A	N/A								
Selenium (dissolved)$_{A}^{\#}$	<1	-						µg/l	1	A-T-025w
Sodium (dissolved)$_{A}^{\#}$	282	-						mg/l	1	A-T-049w
Zinc (dissolved)$_{A}^{\#}$	<1	-						µg/l	1	A-T-025w
BTEX (w)										
BTEX - Benzene (w)$_{A}^{\#}$	<1	<1						µg/l	1	A-T-022w
BTEX - Toluene (w)$_{A}^{\#}$	<1	<1						µg/l	1	A-T-022w
BTEX - Ethyl Benzene (w)$_{A}^{\#}$	<1	<1						µg/l	1	A-T-022w
BTEX - m & p Xylene (w)$_{A}^{\#}$	<1	<1						µg/l	1	A-T-022w
BTEX - o Xylene (w)$_{A}^{\#}$	<1	<1						µg/l	1	A-T-022w

Envirolab Job Number: 21/11436

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/11436/8	21/11436/9						Units	Limit of Detection	Method ref
Client Sample No	9	10								
Client Sample ID	DS106 duplicate	DS106 QC1								
Depth to Top										
Depth To Bottom										
Date Sampled	18-Oct-21	18-Oct-21								
Sample Type	Water - EW	Water - EW								
Sample Matrix Code	N/A	N/A								
PAH 16MS (w)										
Acenaphthene (w)$_A^{\#}$	<0.01	-						µg/l	0.01	A-T-019w
Acenaphthylene (w)$_A^{\#}$	<0.01	-						µg/l	0.01	A-T-019w
Anthracene (w)$_A^{\#}$	<0.01	-						µg/l	0.01	A-T-019w
Benzo(a)anthracene (w)$_A^{\#}$	<0.01	-						µg/l	0.01	A-T-019w
Benzo(a)pyrene (w)$_A^{\#}$	<0.01	-						µg/l	0.01	A-T-019w
Benzo(b)fluoranthene (w)$_A^{\#}$	<0.01	-						µg/l	0.01	A-T-019w
Benzo(ghi)perylene (w)$_A^{\#}$	<0.01	-						µg/l	0.01	A-T-019w
Benzo(k)fluoranthene (w)$_A^{\#}$	<0.01	-						µg/l	0.01	A-T-019w
Chrysene (w)$_A^{\#}$	<0.01	-						µg/l	0.01	A-T-019w
Dibenzo(ah)anthracene (w)$_A^{\#}$	<0.01	-						µg/l	0.01	A-T-019w
Fluoranthene (w)$_A^{\#}$	<0.01	-						µg/l	0.01	A-T-019w
Fluorene (w)$_A^{\#}$	<0.01	-						µg/l	0.01	A-T-019w
Indeno(123-cd)pyrene (w)$_A^{\#}$	<0.01	-						µg/l	0.01	A-T-019w
Naphthalene (w)$_A^{\#}$	<0.01	-						µg/l	0.01	A-T-019w
Phenanthrene (w)$_A^{\#}$	<0.01	-						µg/l	0.01	A-T-019w
Pyrene (w)$_A^{\#}$	<0.01	-						µg/l	0.01	A-T-019w
Total PAH 16MS (w)$_A^{\#}$	<0.01	-						µg/l	0.01	A-T-019w

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Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/11436/8	21/11436/9						Units	Limit of Detection	Method ref
Client Sample No	9	10								
Client Sample ID	DS106 duplicate	DS106 QC1								
Depth to Top										
Depth To Bottom										
Date Sampled	18-Oct-21	18-Oct-21								
Sample Type	Water - EW	Water - EW								
Sample Matrix Code	N/A	N/A								
Speciated PCB-EC7 & WHO12 (w)										
PCB BZ 28 $(w)_A^{\#}$	-	-						µg/l	0.001	A-T-004w
PCB BZ 52 $(w)_A^{\#}$	-	-						µg/l	0.001	A-T-004w
PCB BZ 81 $(w)_A$	-	-						µg/l	0.001	A-T-004w
PCB BZ 101 $(w)_A^{\#}$	-	-						µg/l	0.001	A-T-004w
PCB BZ 105 $(w)_A$	-	-						µg/l	0.001	A-T-004w
PCB BZ 114 $(w)_A$	-	-						µg/l	0.001	A-T-004w
PCB BZ 118 $(w)_A^{\#}$	-	-						µg/l	0.002	A-T-004w
PCB BZ 123 $(w)_A$	-	-						µg/l	0.001	A-T-004w
PCB BZ 126 $(w)_A$	-	-						µg/l	0.001	A-T-004w
PCB BZ 138 $(w)_A^{\#}$	-	-						µg/l	0.001	A-T-004w
PCB BZ 153 $(w)_A^{\#}$	-	-						µg/l	0.001	A-T-004w
PCB BZ 156 $(w)_A$	-	-						µg/l	0.001	A-T-004w
PCB BZ 157 $(w)_A$	-	-						µg/l	0.001	A-T-004w
PCB BZ 167 $(w)_A$	-	-						µg/l	0.001	A-T-004w
PCB BZ 169 $(w)_A$	-	-						µg/l	0.001	A-T-004w
PCB BZ 180 $(w)_A^{\#}$	-	-						µg/l	0.001	A-T-004w
PCB BZ 189 $(w)_A$	-	-						µg/l	0.001	A-T-004w
PCB BZ 77 $(w)_A$	-	-						µg/l	0.001	A-T-004w
Total Speciated PCB-EC7 & WHO12 $(w)_A$	-	-						µg/l	0.001	A-T-004w

Lab Sample ID	21/11436/8	21/11436/9						Units	Limit of Detection	Method ref
Client Sample No	9	10								
Client Sample ID	DS106 duplicate	DS106 QC1								
Depth to Top										
Depth To Bottom										
Date Sampled	18-Oct-21	18-Oct-21								
Sample Type	Water - EW	Water - EW								
Sample Matrix Code	N/A	N/A								
VOC (w)										
Dichlorodifluoromethane$_{A}$	-	<1						µg/l	1	A-T-006w
Chloromethane$_{A}$	-	<10						µg/l	10	A-T-006w
Vinyl Chloride$_{A}^{\#}$	-	<1						µg/l	1	A-T-006w
Bromomethane$_{A}^{\#}$	-	<1						µg/l	1	A-T-006w
Chloroethane$_{A}^{\#}$	-	<1						µg/l	1	A-T-006w
Trichlorofluoromethane$_{A}^{\#}$	-	<1						µg/l	1	A-T-006w
trans 1,2-Dichloroethene$_{A}^{\#}$	-	<1						µg/l	1	A-T-006w
Dichloromethane$_{A}$	-	<5						µg/l	5	A-T-006w
Carbon Disulphide$_{A}^{\#}$	-	<1						µg/l	1	A-T-006w
1,1-Dichloroethene$_{A}^{\#}$	-	<1						µg/l	1	A-T-006w
1,1-Dichloroethane$_{A}^{\#}$	-	<1						µg/l	1	A-T-006w
cis 1,2-Dichloroethene$_{A}^{\#}$	-	<1						µg/l	1	A-T-006w
Bromochloromethane$_{A}^{\#}$	-	<5						µg/l	5	A-T-006w
Chloroform$_{A}^{\#}$	-	<1						µg/l	1	A-T-006w
2,2-Dichloropropane$_{A}^{\#}$	-	<1						µg/l	1	A-T-006w
1,2-Dichloroethane$_{A}^{\#}$	-	<2						µg/l	2	A-T-006w
1,1,1-Trichloroethane$_{A}^{\#}$	-	<1						µg/l	1	A-T-006w
1,1-Dichloropropene$_{A}^{\#}$	-	<1						µg/l	1	A-T-006w
Benzene$_{A}^{\#}$	-	<1						µg/l	1	A-T-006w
Carbon Tetrachloride$_{A}^{\#}$	-	<1						µg/l	1	A-T-006w
Dibromomethane$_{A}^{\#}$	-	<1						µg/l	1	A-T-006w
1,2-Dichloropropane$_{A}^{\#}$	-	<1						µg/l	1	A-T-006w
Bromodichloromethane$_{A}^{\#}$	-	<10						µg/l	10	A-T-006w
Trichloroethene$_{A}^{\#}$	-	<1						µg/l	1	A-T-006w
cis 1,3-Dichloropropene$_{A}^{\#}$	-	<1						µg/l	1	A-T-006w
trans 1,3-Dichloropropene$_{A}^{\#}$	-	<1						µg/l	1	A-T-006w
1,1,2-Trichloroethane$_{A}^{\#}$	-	<1						µg/l	1	A-T-006w
Toluene$_{A}^{\#}$	-	<1						µg/l	1	A-T-006w
1,3-Dichloropropane$_{A}^{\#}$	-	<1						µg/l	1	A-T-006w
Dibromochloromethane$_{A}^{\#}$	-	<3						µg/l	3	A-T-006w
1,2-Dibromoethane$_{A}^{\#}$	-	<1						µg/l	1	A-T-006w

Lab Sample ID	21/11436/8	21/11436/9						Units	Limit of Detection	Method ref
Client Sample No	9	10								
Client Sample ID	DS106 duplicate	DS106 QC1								
Depth to Top										
Depth To Bottom										
Date Sampled	18-Oct-21	18-Oct-21								
Sample Type	Water - EW	Water - EW								
Sample Matrix Code	N/A	N/A								
Tetrachloroethene$_{A}$	-	<1						µg/l	1	A-T-006w
1,1,1,2-Tetrachloroethane$_{A}$	-	<1						µg/l	1	A-T-006w
Chlorobenzene$_{A}^{\#}$	-	<1						µg/l	1	A-T-006w
Ethylbenzene$_{A}^{\#}$	-	<1						µg/l	1	A-T-006w
m & p Xylene$_{A}^{\#}$	-	<1						µg/l	1	A-T-006w
Bromoform$_{A}^{\#}$	-	<1						µg/l	1	A-T-006w
Styrene$_{A}^{\#}$	-	<1						µg/l	1	A-T-006w
1,1,2,2-Tetrachloroethane$_{A}$	-	<1						µg/l	1	A-T-006w
o-Xylene$_{A}^{\#}$	-	<1						µg/l	1	A-T-006w
1,2,3-Trichloropropane$_{A}^{\#}$	-	<1						µg/l	1	A-T-006w
Isopropylbenzene$_{A}^{\#}$	-	<1						µg/l	1	A-T-006w
Bromobenzene$_{A}^{\#}$	-	<1						µg/l	1	A-T-006w
2-Chlorotoluene$_{A}^{\#}$	-	<1						µg/l	1	A-T-006w
n-propylbenzene$_{A}^{\#}$	-	<1						µg/l	1	A-T-006w
4-Chlorotoluene$_{A}^{\#}$	-	<1						µg/l	1	A-T-006w
1,2,4-Trimethylbenzene$_{A}^{\#}$	-	<1						µg/l	1	A-T-006w
4-Isopropyltoluene$_{A}^{\#}$	-	<1						µg/l	1	A-T-006w
1,3,5-Trimethylbenzene$_{A}^{\#}$	-	<1						µg/l	1	A-T-006w
1,2-Dichlorobenzene$_{A}^{\#}$	-	<1						µg/l	1	A-T-006w
1,4-Dichlorobenzene$_{A}^{\#}$	-	<1						µg/l	1	A-T-006w
sec-Butylbenzene$_{A}^{\#}$	-	<1						µg/l	1	A-T-006w
tert-Butylbenzene$_{A}^{\#}$	-	<2						µg/l	2	A-T-006w
1,3-Dichlorobenzene$_{A}^{\#}$	-	<1						µg/l	1	A-T-006w
n-butylbenzene$_{A}^{\#}$	-	<1						µg/l	1	A-T-006w
1,2-Dibromo-3-chloropropane$_{A}^{\#}$	-	<2						µg/l	2	A-T-006w
1,2,4-Trichlorobenzene$_{A}^{\#}$	-	<3						µg/l	3	A-T-006w
1,2,3-Trichlorobenzene$_{A}^{\#}$	-	<3						µg/l	3	A-T-006w
Hexachlorobutadiene$_{A}^{\#}$	-	<1						µg/l	1	A-T-006w

Envirolab Job Number: 21/11436

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/11436/8	21/11436/9						Units	Limit of Detection	Method ref
Client Sample No	9	10								
Client Sample ID	DS106 duplicate	DS106 QC1								
Depth to Top										
Depth To Bottom										
Date Sampled	18-Oct-21	18-Oct-21								
Sample Type	Water - EW	Water - EW								
Sample Matrix Code	N/A	N/A								
TPH CWG (w)										
Ali >C5-C6 $(w)_A^{\#}$	<1	-						µg/l	1	A-T-022w
Ali >C6-C8 $(w)_A^{\#}$	<1	-						µg/l	1	A-T-022w
Ali >C8-C10 $(w)_A^{\#}$	<5	-						µg/l	5	A-T-055w
Ali >C10-C12 $(w)_A^{\#}$	<5	-						µg/l	5	A-T-055w
Ali >C12-C16 $(w)_A^{\#}$	<5	-						µg/l	5	A-T-055w
Ali >C16-C21 $(w)_A^{\#}$	<5	-						µg/l	5	A-T-055w
Ali >C21-C35 $(w)_A^{\#}$	7	-						µg/l	5	A-T-055w
Total Aliphatics $(w)_A^{\#}$	7	-						µg/l	5	A-T-055w
Aro >C5-C7 $(w)_A^{\#}$	<1	-						µg/l	1	A-T-022w
Aro >C7-C8 $(w)_A^{\#}$	<1	-						µg/l	1	A-T-022w
Aro >C8-C10 $(w)_A$	<5	-						µg/l	5	A-T-055w
Aro >C10-C12 $(w)_A^{\#}$	<5	-						µg/l	5	A-T-055w
Aro >C12-C16 $(w)_A^{\#}$	<5	-						µg/l	5	A-T-055w
Aro >C16-C21 $(w)_A^{\#}$	<5	-						µg/l	5	A-T-055w
Aro >C21-C35 $(w)_A^{\#}$	<10	-						µg/l	10	A-T-055w
Total Aromatics $(w)_A$	<10	-						µg/l	10	A-T-055w
TPH (Ali & Aro >C5-C35) $(w)_A$	<10	-						µg/l	10	A-T-055w
BTEX - Benzene $(w)_A^{\#}$	-	-						µg/l	1	A-T-022w
BTEX - Toluene $(w)_A^{\#}$	-	-						µg/l	1	A-T-022w
BTEX - Ethyl Benzene $(w)_A^{\#}$	-	-						µg/l	1	A-T-022w
BTEX - m & p Xylene $(w)_A^{\#}$	-	-						µg/l	1	A-T-022w
BTEX - o Xylene $(w)_A^{\#}$	-	-						µg/l	1	A-T-022w
MTBE $(w)_A^{\#}$	<1	-						µg/l	1	A-T-022w

Lab Sample ID	21/11436/8	21/11436/9						Units	Limit of Detection	Method ref
Client Sample No	9	10								
Client Sample ID	DS106 duplicate	DS106 QC1								
Depth to Top										
Depth To Bottom										
Date Sampled	18-Oct-21	18-Oct-21								
Sample Type	Water - EW	Water - EW								
Sample Matrix Code	N/A	N/A								
SVOC+TIC (excluding PAH-16) (w)										
SVOC TICs (Tentatively Identified Compounds)$_A$	-	-								A-T-052w
2,4,5-Trichlorophenol$_A$	-	-						µg/l	1	A-T-052w
2,4,6-Trichlorophenol (w)$_A$	-	-						µg/l	1	A-T-052w
2,4-Dichlorophenol$_A$	-	-						µg/l	1	A-T-052w
2,4-Dimethylphenol$_A$	-	-						µg/l	1	A-T-052w
2,4-Dinitrotoluene$_A$	-	-						µg/l	1	A-T-052w
2,6-Dinitrotoluene$_A$	-	-						µg/l	1	A-T-052w
2-Chloronaphthalene$_A$	-	-						µg/l	1	A-T-052w
2-Chlorophenol$_A$	-	-						µg/l	1	A-T-052w
2-Methylnaphthalene$_A$	-	-						µg/l	1	A-T-052w
2-Methylphenol$_A$	-	-						µg/l	1	A-T-052w
2-Nitrophenol$_A$	-	-						µg/l	1	A-T-052w
4-Bromophenyl phenyl ether$_A$	-	-						µg/l	1	A-T-052w
4-Chloro-3-methylphenol$_A$	-	-						µg/l	1	A-T-052w
Bis(2-chloroisopropyl)ether$_A$	-	-						µg/l	1	A-T-052w
3+4-Methylphenol$_A$	-	-						µg/l	1	A-T-052w
4-Nitrophenol$_A$	-	-						µg/l	1	A-T-052w
Bis(2-chloroethyl)ether$_A$	-	-						µg/l	1	A-T-052w
Bis(2-chloroethoxy)methane$_A$	-	-						µg/l	1	A-T-052w
Bis(2-ethylhexyl)phthalate$_A$	-	-						µg/l	10	A-T-052w
Butylbenzyl phthalate$_A$	-	-						µg/l	1	A-T-052w
Carbazole$_A$	-	-						µg/l	1	A-T-052w
Dibenzofuran$_A$	-	-						µg/l	1	A-T-052w
n-Dibutylphthalate$_A$	-	-						µg/l	1	A-T-052w
n-Dioctylphthalate$_A$	-	-						µg/l	10	A-T-052w
n-Nitroso-n-dipropylamine$_A$	-	-						µg/l	1	A-T-052w
Diethyl phthalate$_A$	-	-						µg/l	1	A-T-052w
Dimethyl phthalate$_A$	-	-						µg/l	1	A-T-052w
Hexachlorobenzene$_A$	-	-						µg/l	1	A-T-052w
Pentachlorophenol (SVOC)$_A$	-	-						µg/l	1	A-T-052w
Phenol$_A$	-	-						µg/l	1	A-T-052w

Envirolab Job Number: 21/11436

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/11436/8	21/11436/9						Units	Limit of Detection	Method ref
Client Sample No	9	10								
Client Sample ID	DS106 duplicate	DS106 QC1								
Depth to Top										
Depth To Bottom										
Date Sampled	18-Oct-21	18-Oct-21								
Sample Type	Water - EW	Water - EW								
Sample Matrix Code	N/A	N/A								
Hexachloroethane$_A$	-	-						µg/l	1	A-T-052w
Nitrobenzene$_A$	-	-						µg/l	1	A-T-052w
Isophorone$_A$	-	-						µg/l	1	A-T-052w
Hexachlorocyclopentadiene$_A$	-	-						µg/l	1	A-T-052w
Perylene$_A$	-	-						µg/l	1	A-T-052w

REPORT NOTES

General
This report shall not be reproduced, except in full, without written approval from Envirolab.
The results reported herein relate only to the material supplied to the laboratory.
The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.
Analytical results reflect the quality of the sample at the time of analysis only.
Opinions and interpretations expressed are outside the scope of our accreditation.
If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample, 9 = INCINERATOR ASH.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

Key:
IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Please contact us if you need any further information.

v1

Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: Structural Soils Limited (Hemel Hempstead), 18 Frogmore Road, Hemel Hempstead, UK, HP3 9RT

Project: Langstone Flood and Coastal Erosion Management Scheme

Clients Project No: 736036

Project No: 21/11436

Date Received: 21/10/2021 (am)

Cool Box Temperatures (°C): 3.4 & 4.1

Lab Sample ID	21/11436/8
Client Sample No	9
Client Sample ID/Depth	DS106 duplicate
Date Sampled	18/10/21
Deviation Code	
A7 (no HNO3)	✓
A8 (no NaOH)	✓
A9 (no H2SO4)	✓

Key

A7 (no HNO3)	*No HNO3 preserved bottle provided (dissolved metals will be deviating)*
A8 (no NaOH)	*No NaOH preserved bottle provided (cyanides, sulphide will be deviating)*
A9 (no H2SO4)	*No H2SO4 preserved bottle provided (phenols, ammonia, DOC, COD will be deviating)*

Note: If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3 (for water samples 5 ± 3°C), ISO 18400-105:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	21/11436/1	21/11436/2	21/11436/3	21/11436/4	21/11436/5	21/11436/6	21/11436/7	21/11436/8	21/11436/9
Client Sample No	1	3	4	5	6	7	8	9	10
Client Sample ID/Depth	BH104 2.72m	DS107 2.03m	DS106 1.62m	BH105 1.425m	BH101 2.62m	DS103 2.27m	DS104 2.38m	DS106 duplicate	DS106 QC1
Date Sampled	18/10/21	18/10/21	18/10/21	18/10/21	18/10/21	18/10/21	18/10/21	18/10/21	18/10/21
A-T-004w		01/11/2021			01/11/2021	01/11/2021			
A-T-006w	29/10/2021	29/10/2021			29/10/2021	29/10/2021			29/10/2021
A-T-019w	29/10/2021	29/10/2021	29/10/2021	29/10/2021	29/10/2021	29/10/2021	29/10/2021	29/10/2021	
A-T-022w	01/11/2021	01/11/2021	01/11/2021	01/11/2021	01/11/2021	01/11/2021	01/11/2021	01/11/2021	29/10/2021
A-T-025w	09/11/2021	04/11/2021	04/11/2021	08/11/2021	08/11/2021	09/11/2021	04/11/2021	04/11/2021	
A-T-026w	02/11/2021	02/11/2021	02/11/2021	02/11/2021	02/11/2021	02/11/2021	02/11/2021	02/11/2021	
A-T-031w	27/10/2021	27/10/2021	27/10/2021	27/10/2021	27/10/2021	27/10/2021	27/10/2021	27/10/2021	
A-T-032w	08/11/2021	08/11/2021	08/11/2021	08/11/2021	08/11/2021	08/11/2021	08/11/2021	08/11/2021	
A-T-033w	28/10/2021	28/10/2021	28/10/2021	28/10/2021	28/10/2021	28/10/2021	28/10/2021	28/10/2021	
A-T-036w	01/11/2021	01/11/2021	01/11/2021	01/11/2021	01/11/2021	01/11/2021	01/11/2021	01/11/2021	
A-T-040w	02/11/2021	02/11/2021	02/11/2021	02/11/2021	02/11/2021	02/11/2021	02/11/2021	02/11/2021	
A-T-042wFCN	28/10/2021	28/10/2021	28/10/2021	28/10/2021	28/10/2021	28/10/2021	28/10/2021	28/10/2021	
A-T-042wTCN	28/10/2021	28/10/2021	28/10/2021	28/10/2021	28/10/2021	28/10/2021	28/10/2021	28/10/2021	
A-T-049w	01/11/2021	01/11/2021	01/11/2021	01/11/2021	01/11/2021	01/11/2021	01/11/2021	01/11/2021	
A-T-050w	28/10/2021	28/10/2021	28/10/2021	28/10/2021	28/10/2021	28/10/2021	28/10/2021	28/10/2021	
A-T-052w	02/11/2021	02/11/2021			02/11/2021	02/11/2021			
A-T-055w	01/11/2021	01/11/2021	01/11/2021	01/11/2021	01/11/2021	01/11/2021	01/11/2021	01/11/2021	
Titration w	25/10/2021	25/10/2021	25/10/2021	25/10/2021	25/10/2021	25/10/2021	25/10/2021	25/10/2021	

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report

SVOC Tentatively Identified Compounds

(Note: TIC Results are reported on an as received basis and are not moisture corrected).

Appendix to Envirolab Report:

Lab Client Sample ID	21/11436/6		
Client Sample ID	DS103		
Depth to top	2.27m		
Depth to bottom			
Top 10	Compound	CAS number	Estimated Concentration µg/l
1	Dodecane, 5,8-diethyl-	24251-86-3	28.92892472
2	Phenol glucoside	1464-44-4	37.46730537
3	2-Myristynoyl pantetheine	-	22.09198894
4	Unidentified compound 1	-	30.35712895
5	Unidentified compound 2	-	38.99133551
6	Unidentified compound 3	-	38.87728033
7	Unidentified compound 4	-	24.15851199
8	Unidentified compound 5	-	20.57160008
9	Unidentified compound 6	-	17.12134253
10	Undecane	1120-21-4	11.35325768

envirolab
Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

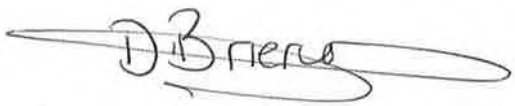
FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 21/11840
Issue Number: 1 **Date:** 12 November, 2021

Client: Structural Soils Limited (Hemel Hempstead)
18 Frogmore Road
Hemel Hempstead
UK
HP3 9RT

Project Manager: Eloise Harman/Eric Downey
Project Name: Langstone Flood and Coastal Erosion Management Scheme
Project Ref: 736036
Order No: N/A
Date Samples Received: 01/11/21
Date Instructions Received: 01/11/21
Date Analysis Completed: 12/11/21

Approved by:



Danielle Brierley
Deputy Client Services Supervisor

UKAS TESTING 1247

Envirolab Job Number: 21/11840

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/11840/1	21/11840/3						Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	DS105(S)	QC1								
Depth to Top	1.2									
Depth To Bottom										
Date Sampled	25-Oct-21	25-Oct-21								
Sample Type	Water - EW	Water - EW								
Sample Matrix Code	N/A	N/A								
pH (w)$_A^\#$	6.99	-						pH	0.01	A-T-031w
Alkalinity by titration (total) (pH 4.5) (w)$_A$	360	-						mg/l Ca CO3	15	Titration w
Alkalinity by titration (carbonate) (w)$_A$	<15	-						mg/l Ca CO3	15	Titration w
Hardness Total$_A^\#$	462	-						mg/l Ca CO3	2	A-T-049w
Total Suspended Solids (w)$_A^\#$	<10	-						mg/l	10	A-T-036w
Ammoniacal nitrogen as N (w)$_A^\#$	0.05	-						mg/l	0.02	A-T-033w
Chloride (w)$_A^\#$	81	-						mg/l	1	A-T-026w
Nitrite (w)$_A^\#$	<0.1	-						mg/l	0.1	A-T-026w
Nitrate (w)$_A^\#$	<0.1	-						mg/l	0.1	A-T-026w
Sulphate (w)$_A^\#$	54	-						mg/l	1	A-T-026w
Cyanide (free) (w)$_A^\#$	<0.005	-						mg/l	0.005	A-T-042wFCN
Cyanide (total) (w)$_A^\#$	0.005	-						mg/l	0.005	A-T-042wTCN
Phenols - Total by HPLC (w)$_A$	<0.01	-						mg/l	0.01	A-T-050w
DOC (w)$_A^\#$	1.8	-						mg/l	0.2	A-T-032w
Antimony (dissolved)$_A$	<1	-						µg/l	1	A-T-025w
Arsenic (dissolved)$_A^\#$	1	-						µg/l	1	A-T-025w
Boron (dissolved)$_A^\#$	135	-						µg/l	10	A-T-025w
Barium (dissolved)$_A^\#$	65	-						µg/l	1	A-T-025w
Beryllium (dissolved)$_A^\#$	<1	-						µg/l	1	A-T-025w
Cadmium (dissolved)$_A^\#$	<0.2	-						µg/l	0.2	A-T-025w
Copper (dissolved)$_A^\#$	<1	-						µg/l	1	A-T-025w
Chromium (dissolved)$_A^\#$	<1	-						µg/l	1	A-T-025w
Chromium (hexavalent) (w)$_A^\#$	<0.01	-						mg/l	0.01	A-T-040w
Lead (dissolved)$_A^\#$	<1	-						µg/l	1	A-T-025w
Magnesium (dissolved)$_A^\#$	23	-						mg/l	1	A-T-049w
Mercury (dissolved)$_A^\#$	<0.1	-						µg/l	0.1	A-T-025w
Molybdenum (dissolved)$_A^\#$	<0.5	-						µg/l	0.5	A-T-025w
Nickel (dissolved)$_A^\#$	3	-						µg/l	1	A-T-025w
Potassium (dissolved)$_A^\#$	1	-						mg/l	1.2	A-T-049w
Selenium (dissolved)$_A^\#$	<1	-						µg/l	1	A-T-025w
Sodium (dissolved)$_A^\#$	43	-						mg/l	1	A-T-049w

Envirolab Job Number: 21/11840

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/11840/1	21/11840/3						Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	DS105(S)	QC1								
Depth to Top	1.2									
Depth To Bottom										
Date Sampled	25-Oct-21	25-Oct-21								
Sample Type	Water - EW	Water - EW								
Sample Matrix Code	N/A	N/A								
Zinc (dissolved)$_{A}^{\#}$	2	-						µg/l	1	A-T-025w
BTEX (w)										
BTEX - Benzene (w)$_{A}^{\#}$	<1	<1						µg/l	1	A-T-022w
BTEX - Toluene (w)$_{A}^{\#}$	<1	<1						µg/l	1	A-T-022w
BTEX - Ethyl Benzene (w)$_{A}^{\#}$	<1	<1						µg/l	1	A-T-022w
BTEX - m & p Xylene (w)$_{A}^{\#}$	<1	<1						µg/l	1	A-T-022w
BTEX - o Xylene (w)$_{A}^{\#}$	<1	<1						µg/l	1	A-T-022w

Envirolab Job Number: 21/11840

Client Project Name: Langstone Flood and Coastal Erosion Management Scheme

Client Project Ref: 736036

Lab Sample ID	21/11840/1	21/11840/3						Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	DS105(S)	QC1								
Depth to Top	1.2									
Depth To Bottom										
Date Sampled	25-Oct-21	25-Oct-21								
Sample Type	Water - EW	Water - EW								
Sample Matrix Code	N/A	N/A								
PAH 16MS (w)										
Acenaphthene (w)$_A^{\#}$	<0.01	-						µg/l	0.01	A-T-019w
Acenaphthylene (w)$_A^{\#}$	<0.01	-						µg/l	0.01	A-T-019w
Anthracene (w)$_A^{\#}$	<0.01	-						µg/l	0.01	A-T-019w
Benzo(a)anthracene (w)$_A^{\#}$	<0.01	-						µg/l	0.01	A-T-019w
Benzo(a)pyrene (w)$_A^{\#}$	<0.01	-						µg/l	0.01	A-T-019w
Benzo(b)fluoranthene (w)$_A^{\#}$	<0.01	-						µg/l	0.01	A-T-019w
Benzo(ghi)perylene (w)$_A^{\#}$	<0.01	-						µg/l	0.01	A-T-019w
Benzo(k)fluoranthene (w)$_A^{\#}$	<0.01	-						µg/l	0.01	A-T-019w
Chrysene (w)$_A^{\#}$	<0.01	-						µg/l	0.01	A-T-019w
Dibenzo(ah)anthracene (w)$_A^{\#}$	<0.01	-						µg/l	0.01	A-T-019w
Fluoranthene (w)$_A^{\#}$	<0.01	-						µg/l	0.01	A-T-019w
Fluorene (w)$_A^{\#}$	<0.01	-						µg/l	0.01	A-T-019w
Indeno(123-cd)pyrene (w)$_A^{\#}$	<0.01	-						µg/l	0.01	A-T-019w
Naphthalene (w)$_A^{\#}$	<0.01	-						µg/l	0.01	A-T-019w
Phenanthrene (w)$_A^{\#}$	<0.01	-						µg/l	0.01	A-T-019w
Pyrene (w)$_A^{\#}$	<0.01	-						µg/l	0.01	A-T-019w
Total PAH 16MS (w)$_A^{\#}$	<0.01	-						µg/l	0.01	A-T-019w

Envirolab Job Number: 21/11840

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Client Project Ref: 736036

Lab Sample ID	21/11840/1	21/11840/3						Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	DS105(S)	QC1								
Depth to Top	1.2									
Depth To Bottom										
Date Sampled	25-Oct-21	25-Oct-21								
Sample Type	Water - EW	Water - EW								
Sample Matrix Code	N/A	N/A								
TPH CWG (w)										
Ali >C5-C6 $(w)_A^{\#}$	<1	-						µg/l	1	A-T-022w
Ali >C6-C8 $(w)_A^{\#}$	<1	-						µg/l	1	A-T-022w
Ali >C8-C10 $(w)_A^{\#}$	<5	-						µg/l	5	A-T-055w
Ali >C10-C12 $(w)_A^{\#}$	<5	-						µg/l	5	A-T-055w
Ali >C12-C16 $(w)_A^{\#}$	<5	-						µg/l	5	A-T-055w
Ali >C16-C21 $(w)_A^{\#}$	<5	-						µg/l	5	A-T-055w
Ali >C21-C35 $(w)_A^{\#}$	<5	-						µg/l	5	A-T-055w
Total Aliphatics $(w)_A^{\#}$	<5	-						µg/l	5	A-T-055w
Aro >C5-C7 $(w)_A^{\#}$	<1	-						µg/l	1	A-T-022w
Aro >C7-C8 $(w)_A^{\#}$	<1	-						µg/l	1	A-T-022w
Aro >C8-C10 $(w)_A$	<5	-						µg/l	5	A-T-055w
Aro >C10-C12 $(w)_A^{\#}$	<5	-						µg/l	5	A-T-055w
Aro >C12-C16 $(w)_A^{\#}$	<5	-						µg/l	5	A-T-055w
Aro >C16-C21 $(w)_A^{\#}$	<5	-						µg/l	5	A-T-055w
Aro >C21-C35 $(w)_A^{\#}$	<10	-						µg/l	10	A-T-055w
Total Aromatics $(w)_A$	<10	-						µg/l	10	A-T-055w
TPH (Ali & Aro >C5-C35) $(w)_A$	<10	-						µg/l	10	A-T-055w
BTEX - Benzene $(w)_A^{\#}$	-	-						µg/l	1	A-T-022w
BTEX - Toluene $(w)_A^{\#}$	-	-						µg/l	1	A-T-022w
BTEX - Ethyl Benzene $(w)_A^{\#}$	-	-						µg/l	1	A-T-022w
BTEX - m & p Xylene $(w)_A^{\#}$	-	-						µg/l	1	A-T-022w
BTEX - o Xylene $(w)_A^{\#}$	-	-						µg/l	1	A-T-022w
MTBE $(w)_A^{\#}$	<1	-						µg/l	1	A-T-022w

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Soil chemical analysis:
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample, 9 = INCINERATOR ASH.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

Key:
IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Please contact us if you need any further information.

v1

Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: Structural Soils Limited (Hemel Hempstead), 18 Frogmore Road, Hemel Hempstead, UK, HP3 9RT

Project: Langstone Flood and Coastal Erosion Management Scheme

Clients Project No: 736036

Project No: 21/11840

Date Received: 01/11/2021 (am)

Cool Box Temperatures (°C): 11.2

Lab Sample ID	21/11840/1
Client Sample No	
Client Sample ID/Depth	DS105(S) 1.2m
Date Sampled	25/10/21
Deviation Code	
F	✓

Key
F *Maximum holding time exceeded between sampling date and analysis for analytes listed below*

HOLDING TIME EXCEEDANCES

Lab Sample ID	21/11840/1
Client Sample No	
Client Sample ID/Depth	DS105(S) 1.2m
Date Sampled	25/10/21
PAH 16MS (w)	✓

Note: If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3 (for water samples 5 ± 3°C), ISO 18400-105:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	21/11840/1	21/11840/3
Client Sample No		
Client Sample ID/Depth	DS105(S) 1.2m	QC1
Date Sampled	25/10/21	25/10/21
A-T-019w	11/11/2021	
A-T-022w	08/11/2021	08/11/2021
A-T-025w	10/11/2021	
A-T-026w	05/11/2021	
A-T-031w	03/11/2021	
A-T-032w	12/11/2021	
A-T-033w	04/11/2021	
A-T-036w	09/11/2021	
A-T-040w	05/11/2021	
A-T-042wFCN	09/11/2021	
A-T-042wTCN	04/11/2021	
A-T-049w	08/11/2021	
A-T-050w	04/11/2021	
A-T-055w	08/11/2021	
Titration w	08/11/2021	

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report

Certificate of Accreditation

Envirolab

Testing Laboratory No. 1247

Is accredited in accordance with International Standard ISO/IEC 17025:2017 – General Requirements for the competence of testing and calibration laboratories.

This accreditation demonstrates technical competence for a defined scope specified in the schedule to this certificate, and the operation of a management system (refer joint ISO-ILAC-IAF Communiqué dated April 2017). The schedule to this certificate is an essential accreditation document and from time to time may be revised and reissued.

The most recent issue of the schedule of accreditation, which bears the same accreditation number as this certificate, is available from www.ukas.com.

This accreditation is subject to continuing conformity with United Kingdom Accreditation Service requirements.

Matt Gantley, *Chief Executive Officer*
United Kingdom Accreditation Service

Initial Accreditation: December 2, 1992
Certificate Issued: December 9, 2019

Scan QR Code to verify

UKAS is appointed as the sole national accreditation body for the UK by The Accreditation Regulations 2009 (SI No 3155/2009) and operates under a Memorandum of Understanding (MoU) with the Department for Business, Energy and Industrial Strategy (BEIS).

APPENDIX F - MONITORING RECORDS

(i) Gas/Groundwater Monitoring Results

IN-SITU MONITORING ROUNDS SUMMARY

Monitoring Round Reference	Round Description	Start Date	End Date	Atmospheric Pressure Prior to Monitoring (mb)	Atmospheric Pressure During Monitoring (mb)	Atmospheric Pressure at Start of Round (mb)	Atmospheric Pressure at End of Round (mb)	Equipment Used	Weather Conditions	Ground Conditions	Wind Conditions	Air Temp (°C)
1	Water-during sitework	23/09/2021	24/09/2021	---	---	---	---	Dipmeter	Sunny	Dry	Light	21
2	Water-during sitework	27/09/2021	30/09/2021	---	---	---	---	Dipmeter	Sunny	Dry	---	18
3	Water-during sitework	04/10/2021	04/10/2021	---	---	---	---	Dipmeter	Rainy	Damp	Light	15
4	Gas and Water	08/10/2021	08/10/2021	Rising	---	1029	1031	GA5000 SN-G503219 + Dipmeter + Water Quality Sensor	Cloudy	Damp	---	16
5	Gas and Water	14/10/2021	18/10/2021	Fluctuating	---	1028	1023	GA5000 SN-G503220 + Dipmeter + Water Quality Sensor	Cloudy	Damp	---	15
6	Gas and Water	25/10/2021	25/10/2021	Falling	---	1014	1015	GA5000 SN-G503220 + Dipmeter + Water Quality Sensor	Cloudy	Dry	---	14

Key: Dates in parenthesis after the equipment name refer to the calibration date

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Compiled By	Date	Checked By	Date
	05/01/2022		05/01/2022

Contract Ref: 736036

Contract: Langstone Flood & Coastal Erosion Management Scheme

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IN-SITU GAS MONITORING RESULTS

	Start Date	End Date	Previous	Pressures During	Start	End	Equipment Used & Remarks
Round 4	08/10/2021	08/10/2021	Rising	Constant	1029	1031	GA5000 SN-G503219 | Dipmeter | Water Quality Sensor | Weather: Cloudy | Ground: Damp | Air Temp: 16°C | Summary: Gas and Water
Round 5	14/10/2021	18/10/2021	Fluctuating	Falling	1028	1023	GA5000 SN-G503220 | Dipmeter | Water Quality Sensor | Weather: Cloudy | Ground: Damp | Air Temp: 15°C | Summary: Gas and Water
Round 6	25/10/2021	25/10/2021	Falling	Rising	1014	1015	GA5000 SN-G503220 | Dipmeter | Water Quality Sensor | Weather: Cloudy | Ground: Dry | Air Temp: 14°C | Summary: Gas and Water

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	PID (ppm)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
BH03	1	50	5	10.00	---	2.00 to 10.00	14/10/2021 11:20:06	1026	1027	$0.1_{(I)}$	-	-	-	-	-	-	-	-
BH03	1	50	5	---	---	2.00 to 10.00	25 secs	-	-	$0.3_{(SS)}$	-	-	-	-	-	-	-	-
BH03	1	50	5 (2)	10.00	---	2.00 to 10.00	14/10/2021 11:21:14	-	-	-	-	0.1	0.0	20.9	0.0	-	0	0
BH03	1	50	5 (2)	---	---	2.00 to 10.00	15 secs	-	-	-	-	0.0	0.0	20.7	0.0	-	0	0
BH03	1	50	5 (2)	---	---	2.00 to 10.00	31 secs	-	-	-	-	0.1	0.0	20.4	0.0	-	0	0
BH03	1	50	5 (2)	---	---	2.00 to 10.00	61 secs	-	-	-	-	0.1	0.0	20.3	0.0	-	0	0
BH03	1	50	5 (2)	---	---	2.00 to 10.00	91 secs	-	-	-	-	0.1	0.0	20.3	0.0	-	0	0
BH03	1	50	5 (2)	---	---	2.00 to 10.00	121 secs	-	-	-	-	0.1	0.0	20.3	0.0	-	0	0
BH03	1	50	5 (2)	---	---	2.00 to 10.00	183 secs	-	-	-	-	0.1	0.0	20.3	0.0	-	0	0
BH03	1	50	5 (2)	---	---	2.00 to 10.00	243 secs	-	-	-	-	0.1	0.0	20.3	0.0	-	0	0
BH03	1	50	5 (2)	---	---	2.00 to 10.00	303 secs	-	-	-	-	0.1	0.0	20.3	0.0	-	0	0
BH03	1	50	5 (3)	10.00	9.06	2.00 to 10.00	14/10/2021 11:27:18	-	-	-	2.11	-	-	-	-	0.0	-	-
BH03	1	50	6	10.00	---	2.00 to 10.00	25/10/2021 10:58:44	1015	1015	$1.0_{(I)}$	-	-	-	-	-	-	-	-
BH03	1	50	6	---	---	2.00 to 10.00	30 secs	-	-	$0.0_{(SS)}$	-	-	-	-	-	-	-	-
BH03	1	50	6 (2)	10.00	---	2.00 to 10.00	25/10/2021 11:00:08	-	-	-	-	0.1	0.0	20.7	0.0	-	0	0
BH03	1	50	6 (2)	---	---	2.00 to 10.00	16 secs	-	-	-	-	0.1	0.0	20.9	0.0	-	0	0
BH03	1	50	6 (2)	---	---	2.00 to 10.00	32 secs	-	-	-	-	0.1	0.0	20.6	0.0	-	0	0
BH03	1	50	6 (2)	---	---	2.00 to 10.00	62 secs	-	-	-	-	0.1	0.0	20.6	0.0	-	0	0

Key: I = Initial, Min = Minimum, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

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Compiled By	Date	Checked By	Date	Contract Ref:
	05/01/2022		05/01/2022	736036

Contract:
Langstone Flood & Coastal Erosion Management Scheme

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IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	PID (ppm)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
BH03	1	50	6 (2)	---	---	2.00 to 10.00	92 secs	-	-	-	-	0.1	0.0	20.5	0.0	-	1	0
BH03	1	50	6 (2)	---	---	2.00 to 10.00	122 secs	-	-	-	-	0.1	0.0	20.6	0.0	-	0	0
BH03	1	50	6 (2)	---	---	2.00 to 10.00	182 secs	-	-	-	-	0.1	0.0	20.7	0.0	-	1	0
BH03	1	50	6 (2)	---	---	2.00 to 10.00	243 secs	-	-	-	-	0.1	0.0	20.7	0.0	-	1	0
BH03	1	50	6 (2)	---	---	2.00 to 10.00	304 secs	-	-	-	-	0.1	0.0	20.8	0.0	-	1	0
BH03	1	50	6 (3)	10.00	9.06	2.00 to 10.00	25/10/2021 11:09:42	-	-	-	2.11	-	-	-	-	0.1	-	-
BH101	1	50	4	14.00	---	11.00 to 14.00	08/10/2021 13:44:58	1030	1031	$0.1_{(I)}$	-	-	-	-	-	-	-	-
BH101	1	50	4	---	---	11.00 to 14.00	35 secs	-	-	$0.4_{(SS)}$	-	-	-	-	-	-	-	-
BH101	1	50	4 (2)	14.00	---	11.00 to 14.00	08/10/2021 13:46:21	-	-	-	-	0.0	0.0	20.7	0.0	-	0	0
BH101	1	50	4 (2)	---	---	11.00 to 14.00	15 secs	-	-	-	-	0.0	0.0	17.9	0.0	-	2	0
BH101	1	50	4 (2)	---	---	11.00 to 14.00	31 secs	-	-	-	-	0.0	0.0	16.9	0.0	-	2	0
BH101	1	50	4 (2)	---	---	11.00 to 14.00	62 secs	-	-	-	-	0.0	0.0	16.8	0.0	-	2	0
BH101	1	50	4 (2)	---	---	11.00 to 14.00	94 secs	-	-	-	-	0.0	0.0	16.8	0.0	-	2	0
BH101	1	50	4 (2)	---	---	11.00 to 14.00	124 secs	-	-	-	-	0.0	0.0	16.8	0.0	-	2	0
BH101	1	50	4 (2)	---	---	11.00 to 14.00	185 secs	-	-	-	-	0.0	0.0	16.8	0.0	-	2	0
BH101	1	50	4 (2)	---	---	11.00 to 14.00	245 secs	-	-	-	-	0.0	0.0	16.8	0.0	-	2	0
BH101	1	50	4 (2)	---	---	11.00 to 14.00	306 secs	-	-	-	-	0.0	0.0	16.8	0.0	-	2	0
BH101	1	50	4 (3)	14.00	13.19	11.00 to 14.00	08/10/2021 13:52:27	-	-	-	0.79	-	-	-	-	0.8	-	-
BH101	1	50	5	14.00	---	11.00 to 14.00	14/10/2021 13:20:50	1024	1025	$0.1_{(I)}$	-	-	-	-	-	-	-	-
BH101	1	50	5	---	---	11.00 to 14.00	40 secs	-	-	$0.2_{(SS)}$	-	-	-	-	-	-	-	-
BH101	1	50	5 (2)	14.00	---	11.00 to 14.00	14/10/2021 13:22:13	-	-	-	-	0.0	0.0	20.8	0.0	-	0	0
BH101	1	50	5 (2)	---	---	11.00 to 14.00	16 secs	-	-	-	-	0.0	0.0	16.5	0.0	-	1	0
BH101	1	50	5 (2)	---	---	11.00 to 14.00	30 secs	-	-	-	-	0.0	0.0	14.7	0.0	-	1	0
BH101	1	50	5 (2)	---	---	11.00 to 14.00	61 secs	-	-	-	-	0.0	0.0	16.0	0.0	-	1	0

Key: I = Initial, Min = Minimum, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

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Langstone Flood & Coastal Erosion Management Scheme

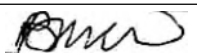
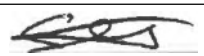
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IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	PID (ppm)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
BH101	1	50	5 (2)	---	---	11.00 to 14.00	92 secs	-	-	-	-	0.0	0.0	16.8	0.0	-	1	0
BH101	1	50	5 (2)	---	---	11.00 to 14.00	122 secs	-	-	-	-	0.0	0.0	17.2	0.0	-	0	0
BH101	1	50	5 (2)	---	---	11.00 to 14.00	182 secs	-	-	-	-	0.0	0.0	17.6	0.0	-	0	0
BH101	1	50	5 (2)	---	---	11.00 to 14.00	242 secs	-	-	-	-	0.0	0.0	17.8	0.0	-	0	0
BH101	1	50	5 (2)	---	---	11.00 to 14.00	303 secs	-	-	-	-	0.0	0.0	18.1	0.0	0.7	0	0
BH101	1	50	5 (3)	14.00	13.20	11.00 to 14.00	14/10/2021 13:28:01	-	-	-	2.16	-	-	-	-	-	-	-
BH101	1	50	5 (4)	14.00	---	11.00 to 14.00	18/10/2021 14:54:40	1015	1015	$0.1_{(I)}$	-	-	-	-	-	-	-	-
BH101	1	50	5 (4)	---	---	11.00 to 14.00	25 secs	-	-	$0.2_{(SS)}$	-	-	-	-	-	-	-	-
BH101	1	50	5 (5)	14.00	---	11.00 to 14.00	18/10/2021 14:55:52	-	-	-	-	0.1	0.0	20.6	0.0	-	0	0
BH101	1	50	5 (5)	---	---	11.00 to 14.00	17 secs	-	-	-	-	0.1	0.0	20.0	0.0	-	1	0
BH101	1	50	5 (5)	---	---	11.00 to 14.00	31 secs	-	-	-	-	0.1	0.0	18.1	0.0	-	1	0
BH101	1	50	5 (5)	---	---	11.00 to 14.00	62 secs	-	-	-	-	0.1	0.0	19.0	0.0	-	1	0
BH101	1	50	5 (5)	---	---	11.00 to 14.00	92 secs	-	-	-	-	0.1	0.0	18.9	0.0	-	1	0
BH101	1	50	5 (5)	---	---	11.00 to 14.00	123 secs	-	-	-	-	0.1	0.0	18.9	0.0	-	1	0
BH101	1	50	5 (5)	---	---	11.00 to 14.00	183 secs	-	-	-	-	0.1	0.0	18.8	0.0	-	1	0
BH101	1	50	5 (5)	---	---	11.00 to 14.00	243 secs	-	-	-	-	0.1	0.0	18.8	0.0	-	1	0
BH101	1	50	5 (5)	---	---	11.00 to 14.00	303 secs	-	-	-	-	0.1	0.0	18.5	0.0	-	1	0
BH101	1	50	5 (6)	14.00	13.20	11.00 to 14.00	18/10/2021 15:02:07	-	-	-	1.76	-	-	-	-	0.4	-	-
BH101	1	50	6	14.00	---	11.00 to 14.00	25/10/2021 12:15:36	1016	1016	$0.0_{(I)}$	-	-	-	-	-	-	-	-
BH101	1	50	6	---	---	11.00 to 14.00	25 secs	-	-	$0.0_{(SS)}$	-	-	-	-	-	-	-	-
BH101	1	50	6 (2)	14.00	---	11.00 to 14.00	25/10/2021 12:17:45	-	-	-	-	0.1	0.0	20.9	0.0	-	0	0
BH101	1	50	6 (2)	---	---	11.00 to 14.00	16 secs	-	-	-	-	0.1	0.0	19.2	0.0	-	1	0
BH101	1	50	6 (2)	---	---	11.00 to 14.00	31 secs	-	-	-	-	0.1	0.0	19.0	0.0	-	2	0
BH101	1	50	6 (2)	---	---	11.00 to 14.00	61 secs	-	-	-	-	0.1	0.0	18.9	0.0	-	2	0
BH101	1	50	6 (2)	---	---	11.00 to 14.00	91 secs	-	-	-	-	0.1	0.0	18.9	0.0	-	2	0

Key: I = Initial, Min = Minimum, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

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	**05/01/2022**		**05/01/2022**	**736036**

Contract:
Langstone Flood & Coastal Erosion Management Scheme

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IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	PID (ppm)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
BH101	1	50	6 (2)	---	---	11.00 to 14.00	122 secs	-	-	-	-	0.1	0.0	19.0	0.0	-	2	0
BH101	1	50	6 (2)	---	---	11.00 to 14.00	183 secs	-	-	-	-	0.1	0.0	19.0	0.0	-	2	0
BH101	1	50	6 (2)	---	---	11.00 to 14.00	243 secs	-	-	-	-	0.1	0.0	19.0	0.0	-	2	0
BH101	1	50	6 (2)	---	---	11.00 to 14.00	303 secs	-	-	-	-	0.1	0.0	19.0	0.0	-	2	0
BH101	1	50	6 (3)	14.00	13.20	11.00 to 14.00	25/10/2021 12:24:27	-	-	-	1.83	-	-	-	-	0.4	-	-
BH101	2	35	4	5.50	---	2.50 to 5.50	08/10/2021 13:33:30	1031	1031	$0.0_{(I)}$	-	-	-	-	-	-	-	-
BH101	2	35	4	---	---	2.50 to 5.50	40 secs	-	-	$0.2_{(SS)}$	-	-	-	-	-	-	-	-
BH101	2	35	4 (2)	5.50	---	2.50 to 5.50	08/10/2021 13:36:05	-	-	-	-	0.1	0.0	20.9	0.0	-	0	0
BH101	2	35	4 (2)	---	---	2.50 to 5.50	15 secs	-	-	-	-	0.0	0.0	20.7	0.0	-	4	0
BH101	2	35	4 (2)	---	---	2.50 to 5.50	30 secs	-	-	-	-	0.0	0.0	20.7	0.0	-	3	0
BH101	2	35	4 (2)	---	---	2.50 to 5.50	61 secs	-	-	-	-	0.0	0.0	20.8	0.0	-	1	0
BH101	2	35	4 (2)	---	---	2.50 to 5.50	91 secs	-	-	-	-	0.0	0.0	20.8	0.0	-	1	0
BH101	2	35	4 (2)	---	---	2.50 to 5.50	121 secs	-	-	-	-	0.0	0.0	20.8	0.0	-	0	0
BH101	2	35	4 (2)	---	---	2.50 to 5.50	182 secs	-	-	-	-	0.0	0.0	20.8	0.0	-	0	0
BH101	2	35	4 (2)	---	---	2.50 to 5.50	244 secs	-	-	-	-	0.0	0.0	20.8	0.0	-	0	0
BH101	2	35	4 (2)	---	---	2.50 to 5.50	306 secs	-	-	-	-	0.0	0.0	20.8	0.0	-	0	0
BH101	2	35	4 (3)	5.50	4.97	2.50 to 5.50	08/10/2021 13:43:57	-	-	-	0.98	-	-	-	-	4.2	-	-
BH101	2	35	5	5.50	---	2.50 to 5.50	14/10/2021 13:09:37	1024	1025	$0.1_{(I)}$	-	-	-	-	-	-	-	-
BH101	2	35	5	---	---	2.50 to 5.50	45 secs	-	-	$0.5_{(SS)}$	-	-	-	-	-	-	-	-
BH101	2	35	5 (2)	5.50	---	2.50 to 5.50	14/10/2021 13:11:12	-	-	-	-	0.1	0.0	20.8	0.0	-	0	0
BH101	2	35	5 (2)	---	---	2.50 to 5.50	15 secs	-	-	-	-	0.0	0.0	20.7	0.0	-	2	0
BH101	2	35	5 (2)	---	---	2.50 to 5.50	30 secs	-	-	-	-	0.0	0.0	20.7	0.0	-	1	0
BH101	2	35	5 (2)	---	---	2.50 to 5.50	60 secs	-	-	-	-	0.0	0.0	20.7	0.0	-	0	0
BH101	2	35	5 (2)	---	---	2.50 to 5.50	91 secs	-	-	-	-	0.0	0.0	20.8	0.0	-	0	0

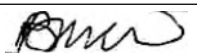
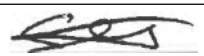
Key: I = Initial, Min = Minimum, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	PID (ppm)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
BH101	2	35	5 (2)	---	---	2.50 to 5.50	122 secs	-	-	-	-	0.0	0.0	20.8	0.0	-	0	0
BH101	2	35	5 (2)	---	---	2.50 to 5.50	182 secs	-	-	-	-	0.0	0.0	20.7	0.0	-	0	0
BH101	2	35	5 (2)	---	---	2.50 to 5.50	242 secs	-	-	-	-	0.0	0.0	20.7	0.0	-	0	0
BH101	2	35	5 (2)	---	---	2.50 to 5.50	304 secs	-	-	-	-	0.0	0.0	20.7	0.0	-	0	0
BH101	2	35	5 (3)	5.50	4.97	2.50 to 5.50	14/10/2021 13:19:27	-	-	-	1.23	-	-	-	-	2.4	-	-
BH101	2	35	5 (4)	5.50	---	2.50 to 5.50	18/10/2021 14:46:04	1015	1015	$0.0_{(I)}$	-	-	-	-	-	-	-	-
BH101	2	35	5 (4)	---	---	2.50 to 5.50	30 secs	-	-	$0.1_{(SS)}$	-	-	-	-	-	-	-	-
BH101	2	35	5 (5)	5.50	---	2.50 to 5.50	18/10/2021 14:47:23	-	-	-	-	0.1	0.0	20.9	0.0	-	0	0
BH101	2	35	5 (5)	---	---	2.50 to 5.50	16 secs	-	-	-	-	0.1	0.0	20.8	0.0	-	2	0
BH101	2	35	5 (5)	---	---	2.50 to 5.50	31 secs	-	-	-	-	0.1	0.0	10.4	0.0	-	1	0
BH101	2	35	5 (5)	---	---	2.50 to 5.50	61 secs	-	-	-	-	0.1	0.0	6.5	0.0	-	0	0
BH101	2	35	5 (5)	---	---	2.50 to 5.50	91 secs	-	-	-	-	0.1	0.0	11.8	0.0	-	0	0
BH101	2	35	5 (5)	---	---	2.50 to 5.50	121 secs	-	-	-	-	0.1	0.0	13.1	0.0	-	0	0
BH101	2	35	5 (5)	---	---	2.50 to 5.50	181 secs	-	-	-	-	0.1	0.0	14.0	0.0	-	0	0
BH101	2	35	5 (5)	---	---	2.50 to 5.50	242 secs	-	-	-	-	0.1	0.0	15.8	0.0	-	0	0
BH101	2	35	5 (5)	---	---	2.50 to 5.50	302 secs	-	-	-	-	0.1	0.0	9.4	0.0	-	0	0
BH101	2	35	5 (6)	5.50	5.00	2.50 to 5.50	18/10/2021 14:53:47	-	-	-	1.19	-	-	-	-	2.1	-	-
BH101	2	35	6	5.50	---	2.50 to 5.50	25/10/2021 12:06:25	1015	1015	$0.1_{(I)}$	-	-	-	-	-	-	-	-
BH101	2	35	6	---	---	2.50 to 5.50	25 secs	-	-	$0.4_{(SS)}$	-	-	-	-	-	-	-	-
BH101	2	35	6 (2)	5.50	---	2.50 to 5.50	25/10/2021 12:07:35	-	-	-	-	0.1	0.0	20.9	0.0	-	0	0
BH101	2	35	6 (2)	---	---	2.50 to 5.50	15 secs	-	-	-	-	0.1	0.0	20.6	0.0	-	5	0
BH101	2	35	6 (2)	---	---	2.50 to 5.50	30 secs	-	-	-	-	0.1	0.0	20.6	0.0	-	4	0
BH101	2	35	6 (2)	---	---	2.50 to 5.50	61 secs	-	-	-	-	0.1	0.0	20.7	0.0	-	3	0
BH101	2	35	6 (2)	---	---	2.50 to 5.50	91 secs	-	-	-	-	0.1	0.0	20.7	0.0	-	2	0
BH101	2	35	6 (2)	---	---	2.50 to 5.50	122 secs	-	-	-	-	0.1	0.0	20.8	0.0	-	1	0

Key: I = Initial, Min = Minimum, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

STRUCTURAL SOILS
The Old School
Stillhouse Lane
Bedminster
Bristol BS3 4EB

Compiled By	Date	Checked By	Date	Contract Ref:
	**05/01/2022**		**05/01/2022**	**736036**

Contract:
Langstone Flood & Coastal Erosion Management Scheme

GINT_LIBRARY_V10_01.GLB : E - GAS MON - STANDARD - 7A - A4L : 736036_LANGSTONE_FLOOD_&_COASTAL_EROSION_MANAGEMENT_SCHEME.GPJ : 05/01/22 16:28 : PS7 :

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	PID (ppm)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
BH101	2	35	6 (2)	---	---	2.50 to 5.50	183 secs	-	-	-	-	0.1	0.0	20.8	0.0	-	1	0
BH101	2	35	6 (2)	---	---	2.50 to 5.50	243 secs	-	-	-	-	0.1	0.0	20.8	0.0	-	1	0
BH101	2	35	6 (2)	---	---	2.50 to 5.50	304 secs	-	-	-	-	0.1	0.0	20.8	0.0	-	1	0
BH101	2	35	6 (3)	5.50	5.00	2.50 to 5.50	25/10/2021 12:14:44	-	-	-	0.92	-	-	-	-	4.8	-	-
BH104	1	50	4	10.00	---	7.00 to 10.00	08/10/2021 08:14:36	1028	1029	$0.0_{(I)}$	-	-	-	-	-	-	-	-
BH104	1	50	4	---	---	7.00 to 10.00	110 secs	-	-	$-0.4_{(SS)}$	-	-	-	-	-	-	-	-
BH104	1	50	4 (2)	10.00	---	7.00 to 10.00	08/10/2021 08:16:31	-	-	-	-	0.2	0.0	20.7	0.0	-	0	0
BH104	1	50	4 (2)	---	---	7.00 to 10.00	83 secs	-	-	-	-	0.1	0.0	20.8	0.0	-	6	0
BH104	1	50	4 (2)	---	---	7.00 to 10.00	99 secs	-	-	-	-	0.0	0.0	20.9	0.0	-	8	0
BH104	1	50	4 (2)	---	---	7.00 to 10.00	129 secs	-	-	-	-	0.0	0.0	20.9	0.0	-	8	0
BH104	1	50	4 (2)	---	---	7.00 to 10.00	159 secs	-	-	-	-	0.0	0.0	20.8	0.0	-	7	0
BH104	1	50	4 (2)	---	---	7.00 to 10.00	189 secs	-	-	-	-	0.0	0.0	20.5	0.0	-	7	0
BH104	1	50	4 (2)	---	---	7.00 to 10.00	249 secs	-	-	-	-	0.0	0.0	18.6	0.0	-	5	0
BH104	1	50	4 (2)	---	---	7.00 to 10.00	310 secs	-	-	-	-	0.0	0.0	16.6	0.0	-	4	0
BH104	1	50	4 (2)	---	---	7.00 to 10.00	370 secs	-	-	-	-	0.1	0.0	15.2	0.0	-	3	0
BH104	1	50	4 (3)	10.00	9.29	7.00 to 10.00	08/10/2021 08:29:10	-	-	-	2.79	-	-	-	-	0.1	-	-
BH104	1	50	5	10.00	---	7.00 to 10.00	18/10/2021 09:03:25	1016	1016	$0.1_{(I)}$	-	-	-	-	-	-	-	-
BH104	1	50	5	---	---	7.00 to 10.00	45 secs	-	-	$0.4_{(SS)}$	-	-	-	-	-	-	-	-
BH104	1	50	5 (2)	10.00	---	7.00 to 10.00	18/10/2021 09:06:02	-	-	-	-	0.2	0.0	20.6	0.0	-	0	0
BH104	1	50	5 (2)	---	---	7.00 to 10.00	15 secs	-	-	-	-	0.1	0.0	12.4	0.0	-	0	0
BH104	1	50	5 (2)	---	---	7.00 to 10.00	30 secs	-	-	-	-	0.1	0.0	7.5	0.0	-	1	0
BH104	1	50	5 (2)	---	---	7.00 to 10.00	60 secs	-	-	-	-	0.1	0.0	6.8	0.0	-	1	0
BH104	1	50	5 (2)	---	---	7.00 to 10.00	90 secs	-	-	-	-	0.1	0.0	6.5	0.0	-	1	0
BH104	1	50	5 (2)	---	---	7.00 to 10.00	120 secs	-	-	-	-	0.1	0.0	6.5	0.0	-	1	0
BH104	1	50	5 (2)	---	---	7.00 to 10.00	181 secs	-	-	-	-	0.1	0.0	6.4	0.0	-	0	0

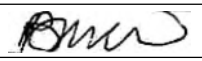
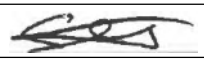
Key: I = Initial, Min = Minimum, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	PID (ppm)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
BH104	1	50	5 (2)	---	---	7.00 to 10.00	241 secs	-	-	-	-	0.1	0.0	6.4	0.0	-	0	0
BH104	1	50	5 (2)	---	---	7.00 to 10.00	301 secs	-	-	-	-	0.1	0.0	6.4	0.0	-	0	0
BH104	1	50	5 (3)	10.00	9.77	7.00 to 10.00	18/10/2021 09:14:06	-	-	-	1.81	-	-	-	-	1.0	-	-
BH104	1	50	6	10.00	---	7.00 to 10.00	25/10/2021 10:41:43	1015	1015	$0.1_{(I)}$	-	-	-	-	-	-	-	-
BH104	1	50	6	---	---	7.00 to 10.00	40 secs	-	-	$0.4_{(SS)}$	-	-	-	-	-	-	-	-
BH104	1	50	6 (2)	10.00	---	7.00 to 10.00	25/10/2021 10:43:25	-	-	-	-	0.1	0.0	20.8	0.0	-	0	0
BH104	1	50	6 (2)	---	---	7.00 to 10.00	16 secs	-	-	-	-	0.2	0.0	16.0	0.0	-	0	0
BH104	1	50	6 (2)	---	---	7.00 to 10.00	31 secs	-	-	-	-	0.2	0.0	13.4	0.0	-	0	0
BH104	1	50	6 (2)	---	---	7.00 to 10.00	62 secs	-	-	-	-	0.2	0.0	12.9	0.0	-	0	0
BH104	1	50	6 (2)	---	---	7.00 to 10.00	93 secs	-	-	-	-	0.2	0.0	12.7	0.0	-	0	0
BH104	1	50	6 (2)	---	---	7.00 to 10.00	123 secs	-	-	-	-	0.2	0.0	12.6	0.0	-	0	0
BH104	1	50	6 (2)	---	---	7.00 to 10.00	184 secs	-	-	-	-	0.2	0.0	12.5	0.0	-	0	0
BH104	1	50	6 (2)	---	---	7.00 to 10.00	245 secs	-	-	-	-	0.2	0.0	12.5	0.0	-	0	0
BH104	1	50	6 (3)	10.00	---	7.00 to 10.00	25/10/2021 10:48:30	-	-	-	-	0.2	0.0	12.4	0.0	-	0	0
BH104	1	50	6 (3)	---	9.75	7.00 to 10.00	60 secs	-	-	-	2.58	-	-	-	-	0.3	-	-
BH104	2	19	4	2.50	---	1.00 to 2.50	08/10/2021 08:30:10	1029	1029	$0.1_{(I)}$	-	-	-	-	-	-	-	-
BH104	2	19	4	---	---	1.00 to 2.50	20 secs	-	-	$0.2_{(SS)}$	-	-	-	-	-	-	-	-
BH104	2	19	4 (2)	2.50	---	1.00 to 2.50	08/10/2021 08:30:35	-	-	-	-	0.1	0.0	21.0	0.0	-	0	0
BH104	2	19	4 (2)	---	---	1.00 to 2.50	63 secs	-	-	-	-	0.1	0.0	21.0	0.0	-	0	0
BH104	2	19	4 (2)	---	---	1.00 to 2.50	79 secs	-	-	-	-	0.1	0.0	21.1	0.0	-	0	0
BH104	2	19	4 (2)	---	---	1.00 to 2.50	109 secs	-	-	-	-	0.1	0.0	21.1	0.0	-	0	0
BH104	2	19	4 (2)	---	---	1.00 to 2.50	139 secs	-	-	-	-	0.1	0.0	21.1	0.0	-	0	0
BH104	2	19	4 (2)	---	---	1.00 to 2.50	170 secs	-	-	-	-	0.1	0.0	21.1	0.0	-	0	0
BH104	2	19	4 (2)	---	---	1.00 to 2.50	230 secs	-	-	-	-	0.1	0.0	21.1	0.0	-	0	0

Key: I = Initial, Min = Minimum, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

STRUCTURAL SOILS
The Old School
Stillhouse Lane
Bedminster
Bristol BS3 4EB

Compiled By	Date	Checked By	Date	Contract Ref:
	**05/01/2022**		**05/01/2022**	**736036**

Contract:
Langstone Flood & Coastal Erosion Management Scheme

GINT_LIBRARY_V10_01.GLB : E - GAS MON - STANDARD - 7A - A4L : 736036_LANGSTONE_FLOOD_&_COASTAL_EROSION_MANAGEMENT_SCHEME.GPJ : 05/01/22 16:28 : PS7 :

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	PID (ppm)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
BH104	2	19	4 (2)	---	---	1.00 to 2.50	291 secs	-	-	-	-	0.1	0.0	21.1	0.0	-	0	0
BH104	2	19	4 (2)	---	---	1.00 to 2.50	352 secs	-	-	-	-	0.1	0.0	21.1	0.0	-	0	0
BH104	2	19	4 (3)	2.50	2.54	1.00 to 2.50	08/10/2021 09:02:57	-	-	-	1.52	-	-	-	-	0.9	-	-
BH104	2	19	5	2.50	---	1.00 to 2.50	18/10/2021 09:15:24	1016	1016	$0.1_{(I)}$	-	-	-	-	-	-	-	-
BH104	2	19	5	---	---	1.00 to 2.50	25 secs	-	-	$0.3_{(SS)}$	-	-	-	-	-	-	-	-
BH104	2	19	5 (2)	2.50	---	1.00 to 2.50	18/10/2021 09:16:43	-	-	-	-	0.1	0.0	20.6	0.0	-	0	0
BH104	2	19	5 (2)	---	---	1.00 to 2.50	15 secs	-	-	-	-	0.1	0.0	10.1	0.0	-	1	0
BH104	2	19	5 (2)	---	---	1.00 to 2.50	31 secs	-	-	-	-	0.1	0.0	5.2	0.0	-	1	0
BH104	2	19	5 (2)	---	---	1.00 to 2.50	61 secs	-	-	-	-	0.1	0.0	4.9	0.0	-	0	0
BH104	2	19	5 (2)	---	---	1.00 to 2.50	91 secs	-	-	-	-	0.1	0.0	4.9	0.0	-	0	0
BH104	2	19	5 (2)	---	---	1.00 to 2.50	121 secs	-	-	-	-	0.1	0.0	4.9	0.0	-	0	0
BH104	2	19	5 (2)	---	---	1.00 to 2.50	182 secs	-	-	-	-	0.1	0.0	5.1	0.0	-	1	0
BH104	2	19	5 (2)	---	---	1.00 to 2.50	243 secs	-	-	-	-	0.1	0.0	5.3	0.0	-	0	0
BH104	2	19	5 (2)	---	---	1.00 to 2.50	303 secs	-	-	-	-	0.1	0.0	5.7	0.0	-	0	0
BH104	2	19	5 (3)	2.50	2.51	1.00 to 2.50	18/10/2021 09:25:15	-	-	-	1.46	-	-	-	-	0.8	-	-
BH104	2	19	6	2.50	---	1.00 to 2.50	25/10/2021 10:30:39	1014	1014	$0.0_{(I)}$	-	-	-	-	-	-	-	-
BH104	2	19	6	---	---	1.00 to 2.50	25 secs	-	-	$0.0_{(SS)}$	-	-	-	-	-	-	-	-
BH104	2	19	6 (2)	2.50	---	1.00 to 2.50	25/10/2021 10:33:25	-	-	-	-	0.2	0.0	20.6	0.0	-	0	0
BH104	2	19	6 (2)	---	---	1.00 to 2.50	16 secs	-	-	-	-	0.3	0.0	12.8	0.0	-	2	0
BH104	2	19	6 (2)	---	---	1.00 to 2.50	31 secs	-	-	-	-	0.3	0.0	9.9	0.0	-	2	0
BH104	2	19	6 (2)	---	---	1.00 to 2.50	61 secs	-	-	-	-	0.3	0.0	11.1	0.0	-	1	0
BH104	2	19	6 (2)	---	---	1.00 to 2.50	91 secs	-	-	-	-	0.2	0.0	11.2	0.0	-	0	0
BH104	2	19	6 (2)	---	---	1.00 to 2.50	122 secs	-	-	-	-	0.2	0.0	11.3	0.0	-	0	0
BH104	2	19	6 (2)	---	---	1.00 to 2.50	182 secs	-	-	-	-	0.2	0.0	11.5	0.0	-	0	0
BH104	2	19	6 (2)	---	---	1.00 to 2.50	243 secs	-	-	-	-	0.2	0.0	11.7	0.0	-	0	0

Key: I = Initial, Min = Minimum, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	PID (ppm)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
BH104	2	19	6 (2)	---	---	1.00 to 2.50	303 secs	-	-	-	-	0.2	0.0	12.0	0.0	-	0	0
BH104	2	19	6 (3)	2.50	2.60	1.00 to 2.50	25/10/2021 10:39:36	-	-	-	1.37	-	-	-	-	0.7	-	-
BH105	1	50	4	9.00	---	6.00 to 9.00	08/10/2021 12:02:43	1031	1031	$0.0_{(I)}$	-	-	-	-	-	-	-	-
BH105	1	50	4	---	---	6.00 to 9.00	205 secs	-	-	$-0.7_{(SS)}$	-	-	-	-	-	-	-	-
BH105	1	50	4 (2)	9.00	---	6.00 to 9.00	08/10/2021 12:07:35	-	-	-	-	0.1	0.0	20.9	0.0	-	0	0
BH105	1	50	4 (2)	---	---	6.00 to 9.00	15 secs	-	-	-	-	0.1	0.0	20.7	0.0	-	2	0
BH105	1	50	4 (2)	---	---	6.00 to 9.00	31 secs	-	-	-	-	0.1	0.0	20.5	0.0	-	2	0
BH105	1	50	4 (2)	---	---	6.00 to 9.00	61 secs	-	-	-	-	0.1	0.0	20.5	0.0	-	2	0
BH105	1	50	4 (2)	---	---	6.00 to 9.00	92 secs	-	-	-	-	0.1	0.0	20.5	0.0	-	2	0
BH105	1	50	4 (2)	---	---	6.00 to 9.00	123 secs	-	-	-	-	0.0	0.0	20.5	0.0	-	2	0
BH105	1	50	4 (2)	---	---	6.00 to 9.00	183 secs	-	-	-	-	0.0	0.0	20.5	0.0	-	2	0
BH105	1	50	4 (2)	---	---	6.00 to 9.00	244 secs	-	-	-	-	0.0	0.0	20.5	0.0	-	2	0
BH105	1	50	4 (2)	---	---	6.00 to 9.00	304 secs	-	-	-	-	0.0	0.0	20.6	0.0	-	2	0
BH105	1	50	4 (3)	9.00	7.91	6.00 to 9.00	08/10/2021 12:13:23	-	-	-	0.43	-	-	-	-	1.0	-	-
BH105	1	50	5	9.00	---	6.00 to 9.00	14/10/2021 10:26:23	1027	1028	$0.0_{(I)}$	-	-	-	-	-	-	-	-
BH105	1	50	5	---	---	6.00 to 9.00	25 secs	-	-	$0.1_{(SS)}$	-	-	-	-	-	-	-	-
BH105	1	50	5 (2)	9.00	---	6.00 to 9.00	14/10/2021 10:28:19	-	-	-	-	0.1	0.0	20.8	0.0	-	0	0
BH105	1	50	5 (2)	---	---	6.00 to 9.00	14 secs	-	-	-	-	0.1	0.0	20.7	0.0	-	0	0
BH105	1	50	5 (2)	---	---	6.00 to 9.00	30 secs	-	-	-	-	0.3	0.0	20.6	0.0	-	0	0
BH105	1	50	5 (2)	---	---	6.00 to 9.00	62 secs	-	-	-	-	0.3	0.0	20.6	0.0	-	0	0
BH105	1	50	5 (2)	---	---	6.00 to 9.00	92 secs	-	-	-	-	0.3	0.0	20.6	0.0	-	0	0
BH105	1	50	5 (2)	---	---	6.00 to 9.00	124 secs	-	-	-	-	0.3	0.0	20.6	0.0	-	0	0
BH105	1	50	5 (2)	---	---	6.00 to 9.00	185 secs	-	-	-	-	0.3	0.0	20.6	0.0	-	0	0
BH105	1	50	5 (2)	---	---	6.00 to 9.00	246 secs	-	-	-	-	0.3	0.0	20.6	0.0	-	0	0
BH105	1	50	5 (2)	---	---	6.00 to 9.00	307 secs	-	-	-	-	0.3	0.0	20.6	0.0	-	0	0

Key: I = Initial, Min = Minimum, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	PID (ppm)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
BH105	1	50	5 (3)	9.00	8.25	6.00 to 9.00	14/10/2021 10:41:16	-	-	-	0.68	-	-	-	-	0.7	-	-
BH105	1	50	5 (4)	9.00	---	6.00 to 9.00	18/10/2021 13:45:42	1015	1015	$0.0_{(I)}$	-	-	-	-	-	-	-	-
BH105	1	50	5 (4)	---	---	6.00 to 9.00	25 secs	-	-	$0.0_{(SS)}$	-	-	-	-	-	-	-	-
BH105	1	50	5 (5)	9.00	---	6.00 to 9.00	18/10/2021 13:46:57	-	-	-	-	0.1	0.0	20.8	0.0	-	0	0
BH105	1	50	5 (5)	---	---	6.00 to 9.00	15 secs	-	-	-	-	0.2	0.0	20.7	0.0	-	0	0
BH105	1	50	5 (5)	---	---	6.00 to 9.00	30 secs	-	-	-	-	0.2	0.0	20.7	0.0	-	0	0
BH105	1	50	5 (5)	---	---	6.00 to 9.00	60 secs	-	-	-	-	0.2	0.0	20.7	0.0	-	0	0
BH105	1	50	5 (5)	---	---	6.00 to 9.00	90 secs	-	-	-	-	0.2	0.0	20.7	0.0	-	0	0
BH105	1	50	5 (5)	---	---	6.00 to 9.00	121 secs	-	-	-	-	0.1	0.0	20.7	0.0	-	0	0
BH105	1	50	5 (5)	---	---	6.00 to 9.00	182 secs	-	-	-	-	0.1	0.0	20.7	0.0	-	0	0
BH105	1	50	5 (5)	---	---	6.00 to 9.00	242 secs	-	-	-	-	0.1	0.0	20.7	0.0	-	0	0
BH105	1	50	5 (5)	---	---	6.00 to 9.00	302 secs	-	-	-	-	0.1	0.0	20.7	0.0	-	0	0
BH105	1	50	5 (6)	9.00	8.22	6.00 to 9.00	18/10/2021 13:52:59	-	-	-	0.68	-	-	-	-	0.1	-	-
BH105	1	50	6	9.00	---	6.00 to 9.00	25/10/2021 11:45:54	1016	1016	$0.0_{(I)}$	-	-	-	-	-	-	-	-
BH105	1	50	6	---	---	6.00 to 9.00	35 secs	-	-	$0.0_{(SS)}$	-	-	-	-	-	-	-	-
BH105	1	50	6 (2)	9.00	---	6.00 to 9.00	25/10/2021 11:47:34	-	-	-	-	0.1	0.0	20.8	0.0	-	0	0
BH105	1	50	6 (2)	---	---	6.00 to 9.00	15 secs	-	-	-	-	0.2	0.0	20.8	0.0	-	0	0
BH105	1	50	6 (2)	---	---	6.00 to 9.00	30 secs	-	-	-	-	0.2	0.0	20.8	0.0	-	0	0
BH105	1	50	6 (2)	---	---	6.00 to 9.00	61 secs	-	-	-	-	0.2	0.0	20.8	0.0	-	0	0
BH105	1	50	6 (2)	---	---	6.00 to 9.00	91 secs	-	-	-	-	0.2	0.0	20.8	0.0	-	0	0
BH105	1	50	6 (2)	---	---	6.00 to 9.00	121 secs	-	-	-	-	0.2	0.0	20.9	0.0	-	0	0
BH105	1	50	6 (2)	---	---	6.00 to 9.00	181 secs	-	-	-	-	0.2	0.0	20.9	0.0	-	0	0
BH105	1	50	6 (2)	---	---	6.00 to 9.00	241 secs	-	-	-	-	0.2	0.0	21.0	0.0	-	0	0
BH105	1	50	6 (2)	---	---	6.00 to 9.00	302 secs	-	-	-	-	0.2	0.1	21.0	2.0	-	0	0
BH105	1	50	6 (3)	9.00	8.20	6.00 to 9.00	25/10/2021 11:56:07	-	-	-	0.50	-	-	-	-	0.2	-	-

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IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	PID (ppm)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
BH105	2	19	4	3.00	---	1.00 to 3.00	08/10/2021 11:51:54	1030	1031	$0.1_{(I)}$	-	-	-	-	-	-	-	-
BH105	2	19	4	---	---	1.00 to 3.00	25 secs	-	-	$0.3_{(SS)}$	-	-	-	-	-	-	-	-
BH105	2	19	4 (2)	3.00	---	1.00 to 3.00	08/10/2021 11:53:09	-	-	-	-	0.1	0.0	20.9	0.0	-	0	0
BH105	2	19	4 (3)	3.00	2.83	1.00 to 3.00	08/10/2021 12:01:27	-	-	-	0.42	-	-	-	-	2.8	-	-
BH105	2	19	5	3.00	---	1.00 to 3.00	14/10/2021 10:17:03	1027	1028	$0.0_{(I)}$	-	-	-	-	-	-	-	-
BH105	2	19	5	---	---	1.00 to 3.00	25 secs	-	-	$-0.1_{(SS)}$	-	-	-	-	-	-	-	-
BH105	2	19	5 (2)	3.00	---	1.00 to 3.00	14/10/2021 10:18:13	-	-	-	-	0.1	0.0	20.9	0.0	-	0	0
BH105	2	19	5 (2)	---	---	1.00 to 3.00	15 secs	-	-	-	-	0.0	0.0	20.9	0.0	-	0	0
BH105	2	19	5 (3)	3.00	2.83	1.00 to 3.00	14/10/2021 10:19:20	-	-	-	0.61	-	-	-	-	0.1	-	-
BH105	2	19	5 (4)	3.00	---	1.00 to 3.00	18/10/2021 13:40:24	1015	1015	$0.0_{(I)}$	-	-	-	-	-	-	-	-
BH105	2	19	5 (4)	---	---	1.00 to 3.00	25 secs	-	-	$0.0_{(SS)}$	-	-	-	-	-	-	-	-
BH105	2	19	5 (5)	3.00	---	1.00 to 3.00	18/10/2021 13:41:31	-	-	-	-	0.2	0.0	20.9	0.0	-	0	0
BH105	2	19	5 (5)	---	---	1.00 to 3.00	15 secs	-	-	-	-	0.2	0.0	20.8	0.0	-	0	2
BH105	2	19	5 (6)	3.00	2.83	1.00 to 3.00	18/10/2021 13:42:01	-	-	-	0.64	-	-	-	-	0.1	-	-
BH105	2	19	6	3.00	---	1.00 to 3.00	25/10/2021 11:41:11	1016	1016	$0.1_{(I)}$	-	-	-	-	-	-	-	-
BH105	2	19	6	---	---	1.00 to 3.00	25 secs	-	-	$0.3_{(SS)}$	-	-	-	-	-	-	-	-
BH105	2	19	6 (2)	3.00	---	1.00 to 3.00	25/10/2021 11:42:18	-	-	-	-	0.1	0.0	20.8	0.0	-	0	0
BH105	2	19	6 (2)	---	---	1.00 to 3.00	15 secs	-	-	-	-	0.4	0.0	20.5	0.0	-	2	0
BH105	2	19	6 (3)	3.00	2.85	1.00 to 3.00	25/10/2021 11:44:27	-	-	-	0.49	-	-	-	-	0.1	-	-
DS103	1	50	4	3.00	---	1.00 to 3.00	08/10/2021 09:21:33	1029	1029	$0.0_{(I)}$	-	-	-	-	-	-	-	-
DS103	1	50	4	---	---	1.00 to 3.00	29 secs	-	-	$0.2_{(SS)}$	-	-	-	-	-	-	-	-
DS103	1	50	4 (2)	3.00	---	1.00 to 3.00	08/10/2021 09:23:10	-	-	-	-	0.1	0.0	21.2	0.0	-	0	0
DS103	1	50	4 (2)	---	---	1.00 to 3.00	15 secs	-	-	-	-	0.1	0.0	21.1	0.0	-	1	0
DS103	1	50	4 (2)	---	---	1.00 to 3.00	45 secs	-	-	-	-	0.1	0.0	21.2	0.0	-	0	0

Key: I = Initial, Min = Minimum, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	PID (ppm)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
DS103	1	50	4 (2)	---	---	1.00 to 3.00	75 secs	-	-	-	-	0.1	0.0	21.2	0.0	-	0	0
DS103	1	50	4 (2)	---	---	1.00 to 3.00	105 secs	-	-	-	-	0.1	0.0	21.2	0.0	-	0	0
DS103	1	50	4 (2)	---	---	1.00 to 3.00	165 secs	-	-	-	-	0.1	0.0	21.2	0.0	-	0	0
DS103	1	50	4 (2)	---	---	1.00 to 3.00	226 secs	-	-	-	-	0.1	0.0	21.2	0.0	-	0	0
DS103	1	50	4 (2)	---	---	1.00 to 3.00	286 secs	-	-	-	-	0.1	0.0	21.2	0.0	-	0	0
DS103	1	50	4 (2)	---	---	1.00 to 3.00	346 secs	-	-	-	-	0.1	0.0	21.2	0.0	-	0	0
DS103	1	50	4 (3)	3.00	3.11	1.00 to 3.00	08/10/2021 09:31:33	-	-	-	0.31	-	-	-	-	0.3	-	-
DS103	1	50	5	3.00	---	1.00 to 3.00	14/10/2021 15:35:15	1023	1024	$0.1_{(I)}$	-	-	-	-	-	-	-	-
DS103	1	50	5	---	---	1.00 to 3.00	30 secs	-	-	$0.3_{(SS)}$	-	-	-	-	-	-	-	-
DS103	1	50	5 (2)	3.00	---	1.00 to 3.00	14/10/2021 15:36:35	-	-	-	-	0.1	0.0	20.8	0.0	-	0	0
DS103	1	50	5 (2)	---	---	1.00 to 3.00	15 secs	-	-	-	-	0.1	0.0	20.3	0.0	-	1	0
DS103	1	50	5 (2)	---	---	1.00 to 3.00	31 secs	-	-	-	-	0.2	0.0	20.1	0.0	-	1	0
DS103	1	50	5 (2)	---	---	1.00 to 3.00	61 secs	-	-	-	-	0.3	0.0	19.9	0.0	-	1	0
DS103	1	50	5 (2)	---	---	1.00 to 3.00	91 secs	-	-	-	-	0.3	0.0	19.9	0.0	-	1	0
DS103	1	50	5 (2)	---	---	1.00 to 3.00	122 secs	-	-	-	-	0.3	0.0	19.8	0.0	-	1	0
DS103	1	50	5 (2)	---	---	1.00 to 3.00	183 secs	-	-	-	-	0.3	0.0	19.8	0.0	-	1	0
DS103	1	50	5 (2)	---	---	1.00 to 3.00	243 secs	-	-	-	-	0.3	0.0	19.7	0.0	-	1	0
DS103	1	50	5 (2)	---	---	1.00 to 3.00	304 secs	-	-	-	-	0.3	0.0	19.7	0.0	-	1	1
DS103	1	50	5 (3)	3.00	3.20	1.00 to 3.00	14/10/2021 15:42:10	-	-	-	0.97	-	-	-	-	0.3	-	-
DS103	1	50	5 (4)	3.00	---	1.00 to 3.00	18/10/2021 16:11:40	1015	1015	$0.0_{(I)}$	-	-	-	-	-	-	-	-
DS103	1	50	5 (4)	---	---	1.00 to 3.00	25 secs	-	-	$0.0_{(SS)}$	-	-	-	-	-	-	-	-
DS103	1	50	5 (5)	3.00	---	1.00 to 3.00	18/10/2021 16:12:56	-	-	-	-	0.1	0.0	21.0	0.0	-	0	0
DS103	1	50	5 (5)	---	---	1.00 to 3.00	15 secs	-	-	-	-	0.3	0.0	20.6	0.0	-	0	0
DS103	1	50	5 (5)	---	---	1.00 to 3.00	30 secs	-	-	-	-	0.3	0.0	20.5	0.0	-	0	0
DS103	1	50	5 (5)	---	---	1.00 to 3.00	61 secs	-	-	-	-	0.3	0.0	17.7	0.0	-	0	0

Key: I = Initial, Min = Minimum, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	PID (ppm)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
DS103	1	50	5 (5)	---	---	1.00 to 3.00	91 secs	-	-	-	-	0.3	0.0	18.2	0.0	-	0	0
DS103	1	50	5 (5)	---	---	1.00 to 3.00	121 secs	-	-	-	-	0.3	0.0	20.6	0.0	-	0	0
DS103	1	50	5 (5)	---	---	1.00 to 3.00	181 secs	-	-	-	-	0.3	0.0	20.5	0.0	-	0	0
DS103	1	50	5 (5)	---	---	1.00 to 3.00	241 secs	-	-	-	-	0.3	0.0	20.5	0.0	-	0	0
DS103	1	50	5 (5)	---	---	1.00 to 3.00	302 secs	-	-	-	-	0.3	0.0	20.5	0.0	-	0	0
DS103	1	50	5 (6)	3.00	3.20	1.00 to 3.00	18/10/2021 16:19:55	-	-	-	1.12	-	-	-	-	0.1	-	-
DS103	1	50	6	3.00	---	1.00 to 3.00	25/10/2021 13:10:53	1015	1015	1.0$_{(I)}$	-	-	-	-	-	-	-	-
DS103	1	50	6	---	---	1.00 to 3.00	25 secs	-	-	0.0$_{(SS)}$	-	-	-	-	-	-	-	-
DS103	1	50	6 (2)	3.00	---	1.00 to 3.00	25/10/2021 13:12:08	-	-	-	-	0.3	0.0	20.8	0.0	-	0	0
DS103	1	50	6 (2)	---	---	1.00 to 3.00	14 secs	-	-	-	-	0.2	0.0	20.7	0.0	-	0	0
DS103	1	50	6 (2)	---	---	1.00 to 3.00	29 secs	-	-	-	-	0.2	0.0	20.6	0.0	-	0	0
DS103	1	50	6 (2)	---	---	1.00 to 3.00	60 secs	-	-	-	-	0.2	0.0	20.6	0.0	-	0	0
DS103	1	50	6 (2)	---	---	1.00 to 3.00	90 secs	-	-	-	-	0.2	0.0	20.6	0.0	-	0	0
DS103	1	50	6 (2)	---	---	1.00 to 3.00	120 secs	-	-	-	-	0.2	0.0	20.6	0.0	-	0	0
DS103	1	50	6 (2)	---	---	1.00 to 3.00	180 secs	-	-	-	-	0.2	0.0	20.5	0.0	-	0	0
DS103	1	50	6 (2)	---	---	1.00 to 3.00	240 secs	-	-	-	-	0.2	0.0	20.5	0.0	-	0	0
DS103	1	50	6 (2)	---	---	1.00 to 3.00	301 secs	-	-	-	-	0.2	0.0	20.5	0.0	-	0	0
DS103	1	50	6 (3)	3.00	3.20	1.00 to 3.00	25/10/2021 13:19:48	-	-	-	0.76	-	-	-	-	0.1	-	-
DS104	1	50	4	3.00	---	1.00 to 3.00	08/10/2021 09:57:34	1029	1029	0.0$_{(I)}$	-	-	-	-	-	-	-	-
DS104	1	50	4	---	---	1.00 to 3.00	25 secs	-	-	0.2$_{(SS)}$	-	-	-	-	-	-	-	-
DS104	1	50	4 (2)	3.00	---	1.00 to 3.00	08/10/2021 09:59:04	-	-	-	-	0.1	0.0	20.9	0.0	-	0	0
DS104	1	50	4 (2)	---	---	1.00 to 3.00	15 secs	-	-	-	-	3.3	0.0	18.0	0.0	-	0	0
DS104	1	50	4 (2)	---	---	1.00 to 3.00	45 secs	-	-	-	-	3.4	0.0	17.8	0.0	-	0	0
DS104	1	50	4 (2)	---	---	1.00 to 3.00	76 secs	-	-	-	-	3.5	0.0	17.8	0.0	-	0	0

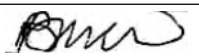
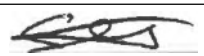
Key: I = Initial, Min = Minimum, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	PID (ppm)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
DS104	1	50	4 (2)	---	---	1.00 to 3.00	107 secs	-	-	-	-	3.5	0.0	17.7	0.0	-	0	0
DS104	1	50	4 (2)	---	---	1.00 to 3.00	167 secs	-	-	-	-	3.6	0.0	17.7	0.0	-	0	0
DS104	1	50	4 (2)	---	---	1.00 to 3.00	228 secs	-	-	-	-	3.7	0.0	17.6	0.0	-	0	0
DS104	1	50	4 (2)	---	---	1.00 to 3.00	288 secs	-	-	-	-	3.7	0.0	17.6	0.0	-	0	0
DS104	1	50	4 (2)	---	---	1.00 to 3.00	348 secs	-	-	-	-	3.7	0.0	17.6	0.0	-	0	0
DS104	1	50	4 (3)	3.00	2.99	1.00 to 3.00	08/10/2021 10:10:01	-	-	-	1.97	-	-	-	-	0.5	-	-
DS104	1	50	5	3.00	---	1.00 to 3.00	14/10/2021 15:50:21	1022	1023	$0.1_{(I)}$	-	-	-	-	-	-	-	-
DS104	1	50	5	---	---	1.00 to 3.00	30 secs	-	-	$0.4_{(SS)}$	-	-	-	-	-	-	-	-
DS104	1	50	5 (2)	3.00	---	1.00 to 3.00	14/10/2021 15:51:50	-	-	-	-	0.1	0.0	20.9	0.0	-	0	0
DS104	1	50	5 (2)	---	---	1.00 to 3.00	15 secs	-	-	-	-	2.6	0.0	19.8	0.0	-	0	0
DS104	1	50	5 (2)	---	---	1.00 to 3.00	30 secs	-	-	-	-	3.3	0.0	18.7	0.0	-	0	0
DS104	1	50	5 (2)	---	---	1.00 to 3.00	61 secs	-	-	-	-	3.6	0.0	18.3	0.0	-	0	0
DS104	1	50	5 (2)	---	---	1.00 to 3.00	92 secs	-	-	-	-	3.7	0.0	18.3	0.0	-	0	0
DS104	1	50	5 (2)	---	---	1.00 to 3.00	123 secs	-	-	-	-	3.6	0.0	18.3	0.0	-	0	0
DS104	1	50	5 (2)	---	---	1.00 to 3.00	184 secs	-	-	-	-	3.6	0.0	18.3	0.0	-	0	0
DS104	1	50	5 (2)	---	---	1.00 to 3.00	245 secs	-	-	-	-	3.6	0.0	18.4	0.0	-	0	0
DS104	1	50	5 (2)	---	---	1.00 to 3.00	306 secs	-	-	-	-	3.6	0.0	18.4	0.0	-	0	0
DS104	1	50	5 (3)	3.00	3.05	1.00 to 3.00	14/10/2021 15:58:46	-	-	-	1.50	-	-	-	-	0.4	-	-
DS104	1	50	5 (4)	3.00	---	1.00 to 3.00	18/10/2021 17:03:02	1014	1014	$0.0_{(I)}$	-	-	-	-	-	-	-	-
DS104	1	50	5 (4)	---	---	1.00 to 3.00	25 secs	-	-	$0.2_{(SS)}$	-	-	-	-	-	-	-	-
DS104	1	50	5 (5)	3.00	---	1.00 to 3.00	18/10/2021 17:04:33	-	-	-	-	0.1	0.0	21.1	0.0	-	0	0
DS104	1	50	5 (5)	---	---	1.00 to 3.00	16 secs	-	-	-	-	3.0	0.0	19.6	0.0	-	0	0
DS104	1	50	5 (5)	---	---	1.00 to 3.00	31 secs	-	-	-	-	3.2	0.0	18.7	0.0	-	0	0
DS104	1	50	5 (5)	---	---	1.00 to 3.00	61 secs	-	-	-	-	3.3	0.0	18.5	0.0	-	0	0
DS104	1	50	5 (5)	---	---	1.00 to 3.00	92 secs	-	-	-	-	3.4	0.0	18.5	0.0	-	0	0

Key: I = Initial, Min = Minimum, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

STRUCTURAL SOILS
The Old School
Stillhouse Lane
Bedminster
Bristol BS3 4EB

Compiled By	Date	Checked By	Date	Contract Ref:
	**05/01/2022**		**05/01/2022**	**736036**

Contract:
Langstone Flood & Coastal Erosion Management Scheme

AGS

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	PID (ppm)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
DS104	1	50	5 (5)	---	---	1.00 to 3.00	122 secs	-	-	-	-	3.4	0.0	18.4	0.0	-	0	0
DS104	1	50	5 (5)	---	---	1.00 to 3.00	183 secs	-	-	-	-	3.5	0.0	18.3	0.0	-	0	0
DS104	1	50	5 (5)	---	---	1.00 to 3.00	244 secs	-	-	-	-	3.6	0.0	18.3	0.0	-	0	0
DS104	1	50	5 (5)	---	---	1.00 to 3.00	304 secs	-	-	-	-	3.6	0.0	18.2	0.0	-	0	0
DS104	1	50	5 (6)	3.00	3.05	1.00 to 3.00	18/10/2021 17:10:23	-	-	-	1.55	-	-	-	-	0.2	-	-
DS104	1	50	6	3.00	---	1.00 to 3.00	25/10/2021 12:57:53	1015	1015	$1.0_{(I)}$	-	-	-	-	-	-	-	-
DS104	1	50	6	---	---	1.00 to 3.00	25 secs	-	-	$0.0_{(SS)}$	-	-	-	-	-	-	-	-
DS104	1	50	6 (2)	3.00	---	1.00 to 3.00	25/10/2021 12:59:01	-	-	-	-	0.1	0.0	21.0	0.0	-	0	0
DS104	1	50	6 (2)	---	---	1.00 to 3.00	15 secs	-	-	-	-	3.7	0.0	18.0	0.0	-	0	0
DS104	1	50	6 (2)	---	---	1.00 to 3.00	30 secs	-	-	-	-	3.7	0.0	17.3	0.0	-	0	0
DS104	1	50	6 (2)	---	---	1.00 to 3.00	61 secs	-	-	-	-	3.8	0.0	17.2	0.0	-	0	0
DS104	1	50	6 (2)	---	---	1.00 to 3.00	92 secs	-	-	-	-	3.8	0.0	17.2	0.0	-	0	0
DS104	1	50	6 (2)	---	---	1.00 to 3.00	123 secs	-	-	-	-	3.8	0.0	17.1	0.0	-	0	0
DS104	1	50	6 (2)	---	---	1.00 to 3.00	183 secs	-	-	-	-	3.9	0.0	17.1	0.0	-	0	0
DS104	1	50	6 (2)	---	---	1.00 to 3.00	243 secs	-	-	-	-	4.0	0.0	17.1	0.0	-	0	0
DS104	1	50	6 (2)	---	---	1.00 to 3.00	304 secs	-	-	-	-	4.0	0.0	17.1	0.0	-	0	0
DS104	1	50	6 (3)	3.00	3.05	1.00 to 3.00	25/10/2021 13:07:32	-	-	-	1.35	-	-	-	-	0.2	-	-
DS105	1	35	4	2.50	---	1.50 to 2.50	08/10/2021 10:25:00	1029	1029	$0.0_{(I)}$	-	-	-	-	-	-	-	-
DS105	1	35	4	---	---	1.50 to 2.50	24 secs	-	-	$0.0_{(SS)}$	-	-	-	-	-	-	-	-
DS105	1	35	4 (2)	2.50	---	1.50 to 2.50	08/10/2021 10:25:29	-	-	-	-	0.3	0.0	20.8	0.0	-	0	0
DS105	1	35	4 (2)	---	---	1.50 to 2.50	64 secs	-	-	-	-	1.4	0.0	18.9	0.0	-	1	0
DS105	1	35	4 (2)	---	---	1.50 to 2.50	79 secs	-	-	-	-	1.3	0.0	18.3	0.0	-	1	0
DS105	1	35	4 (2)	---	---	1.50 to 2.50	110 secs	-	-	-	-	1.0	0.0	19.1	0.0	-	1	0
DS105	1	35	4 (2)	---	---	1.50 to 2.50	140 secs	-	-	-	-	0.7	0.0	19.7	0.0	-	1	0

Key: I = Initial, Min = Minimum, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	PID (ppm)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
DS105	1	35	4 (2)	---	---	1.50 to 2.50	170 secs	-	-	-	-	0.5	0.0	20.0	0.0	-	0	0
DS105	1	35	4 (2)	---	---	1.50 to 2.50	230 secs	-	-	-	-	0.3	0.0	20.4	0.0	-	0	0
DS105	1	35	4 (2)	---	---	1.50 to 2.50	291 secs	-	-	-	-	0.2	0.0	20.6	0.0	-	0	0
DS105	1	35	4 (2)	---	---	1.50 to 2.50	351 secs	-	-	-	-	0.2	0.0	20.6	0.0	-	0	0
DS105	1	35	4 (3)	2.50	2.90	1.50 to 2.50	08/10/2021 10:35:27	-	-	-	2.46	-	-	-	-	0.5	-	-
DS105	1	35	5	2.50	---	1.50 to 2.50	14/10/2021 16:02:15	1022	1023	$0.0_{(I)}$	-	-	-	-	-	-	-	-
DS105	1	35	5	---	---	1.50 to 2.50	25 secs	-	-	$0.1_{(SS)}$	-	-	-	-	-	-	-	-
DS105	1	35	5 (2)	2.50	---	1.50 to 2.50	14/10/2021 16:03:40	-	-	-	-	0.1	0.0	21.0	0.0	-	0	0
DS105	1	35	5 (2)	---	---	1.50 to 2.50	15 secs	-	-	-	-	0.9	0.0	20.6	0.0	-	0	0
DS105	1	35	5 (2)	---	---	1.50 to 2.50	30 secs	-	-	-	-	1.0	0.0	20.1	0.0	-	0	0
DS105	1	35	5 (2)	---	---	1.50 to 2.50	61 secs	-	-	-	-	0.7	0.0	20.5	0.0	-	0	0
DS105	1	35	5 (2)	---	---	1.50 to 2.50	91 secs	-	-	-	-	0.4	0.0	20.7	0.0	-	0	0
DS105	1	35	5 (2)	---	---	1.50 to 2.50	121 secs	-	-	-	-	0.3	0.0	20.9	0.0	-	0	0
DS105	1	35	5 (2)	---	---	1.50 to 2.50	182 secs	-	-	-	-	0.1	0.0	21.1	0.0	-	0	0
DS105	1	35	5 (2)	---	---	1.50 to 2.50	243 secs	-	-	-	-	0.1	0.0	21.1	0.0	-	0	0
DS105	1	35	5 (2)	---	---	1.50 to 2.50	304 secs	-	-	-	-	0.1	0.0	21.2	0.0	-	0	0
DS105	1	35	5 (3)	2.50	2.54	1.50 to 2.50	14/10/2021 16:10:29	-	-	-	1.58	-	-	-	-	0.3	-	-
DS105	1	35	6	2.50	---	1.50 to 2.50	25/10/2021 12:48:22	1016	1016	$1.0_{(I)}$	-	-	-	-	-	-	-	-
DS105	1	35	6	---	---	1.50 to 2.50	35 secs	-	-	$0.0_{(SS)}$	-	-	-	-	-	-	-	-
DS105	1	35	6 (2)	2.50	---	1.50 to 2.50	25/10/2021 12:49:41	-	-	-	-	0.1	0.0	20.9	0.0	-	0	0
DS105	1	35	6 (2)	---	---	1.50 to 2.50	15 secs	-	-	-	-	1.6	0.0	19.2	0.0	-	0	0
DS105	1	35	6 (2)	---	---	1.50 to 2.50	31 secs	-	-	-	-	1.4	0.0	19.1	0.0	-	0	0
DS105	1	35	6 (2)	---	---	1.50 to 2.50	61 secs	-	-	-	-	1.0	0.0	19.8	0.0	-	0	0
DS105	1	35	6 (2)	---	---	1.50 to 2.50	92 secs	-	-	-	-	0.6	0.0	20.3	0.0	-	0	0
DS105	1	35	6 (2)	---	---	1.50 to 2.50	122 secs	-	-	-	-	0.5	0.0	20.6	0.0	-	0	0

Key: I = Initial, Min = Minimum, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	PID (ppm)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
DS105	1	35	6 (2)	---	---	1.50 to 2.50	182 secs	-	-	-	-	0.3	0.0	20.8	0.0	-	0	0
DS105	1	35	6 (2)	---	---	1.50 to 2.50	242 secs	-	-	-	-	0.3	0.0	20.9	0.0	-	0	0
DS105	1	35	6 (2)	---	---	1.50 to 2.50	303 secs	-	-	-	-	0.3	0.0	20.9	0.0	-	0	0
DS105	1	35	6 (3)	2.50	2.54	1.50 to 2.50	25/10/2021 12:56:17	-	-	-	1.33	-	-	-	-	0.1	-	-
DS106	1	50	4	3.60	---	1.60 to 3.60	08/10/2021 11:58:07	1030	1030	$0.1_{(I)}$	-	-	-	-	-	-	-	-
DS106	1	50	4	---	---	1.60 to 3.60	24 secs	-	-	$0.2_{(SS)}$	-	-	-	-	-	-	-	-
DS106	1	50	4 (2)	3.60	---	1.60 to 3.60	08/10/2021 11:58:37	-	-	-	-	0.1	0.0	20.7	0.0	-	0	0
DS106	1	50	4 (2)	---	---	1.60 to 3.60	71 secs	-	-	-	-	0.4	0.0	18.7	0.0	-	0	0
DS106	1	50	4 (2)	---	---	1.60 to 3.60	86 secs	-	-	-	-	0.3	0.0	18.2	0.0	-	0	0
DS106	1	50	4 (2)	---	---	1.60 to 3.60	117 secs	-	-	-	-	0.2	0.0	19.2	0.0	-	0	0
DS106	1	50	4 (2)	---	---	1.60 to 3.60	148 secs	-	-	-	-	0.2	0.0	19.6	0.0	-	0	0
DS106	1	50	4 (2)	---	---	1.60 to 3.60	178 secs	-	-	-	-	0.1	0.0	19.8	0.0	-	0	0
DS106	1	50	4 (2)	---	---	1.60 to 3.60	239 secs	-	-	-	-	0.1	0.0	20.2	0.0	-	0	0
DS106	1	50	4 (2)	---	---	1.60 to 3.60	299 secs	-	-	-	-	0.1	0.0	20.3	0.0	-	0	0
DS106	1	50	4 (2)	---	---	1.60 to 3.60	359 secs	-	-	-	-	0.1	0.0	20.4	0.0	-	0	0
DS106	1	50	4 (3)	3.60	3.28	1.60 to 3.60	08/10/2021 12:08:22	-	-	-	0.61	-	-	-	-	1.3	-	-
DS106	1	50	5	3.60	---	1.60 to 3.60	14/10/2021 09:35:53	1027	1028	$0.0_{(I)}$	-	-	-	-	-	-	-	-
DS106	1	50	5	---	---	1.60 to 3.60	25 secs	-	-	$0.0_{(SS)}$	-	-	-	-	-	-	-	-
DS106	1	50	5 (2)	3.60	---	1.60 to 3.60	14/10/2021 09:37:17	-	-	-	-	0.1	0.0	21.0	0.0	-	0	0
DS106	1	50	5 (2)	---	---	1.60 to 3.60	15 secs	-	-	-	-	0.3	0.0	19.7	0.0	-	0	0
DS106	1	50	5 (2)	---	---	1.60 to 3.60	31 secs	-	-	-	-	0.2	0.0	20.0	0.0	-	0	0
DS106	1	50	5 (2)	---	---	1.60 to 3.60	62 secs	-	-	-	-	0.1	0.0	20.4	0.0	-	0	0
DS106	1	50	5 (2)	---	---	1.60 to 3.60	92 secs	-	-	-	-	0.1	0.0	20.6	0.0	-	0	0
DS106	1	50	5 (2)	---	---	1.60 to 3.60	123 secs	-	-	-	-	0.0	0.0	20.8	0.0	-	0	0

Key: I = Initial, Min = Minimum, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	PID (ppm)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
DS106	1	50	5 (2)	---	---	1.60 to 3.60	184 secs	-	-	-	-	0.0	0.0	20.9	0.0	-	0	0
DS106	1	50	5 (2)	---	---	1.60 to 3.60	245 secs	-	-	-	-	0.0	0.0	20.9	0.0	-	0	0
DS106	1	50	5 (2)	---	---	1.60 to 3.60	306 secs	-	-	-	-	0.0	0.0	21.0	0.0	-	0	0
DS106	1	50	5 (3)	3.60	3.40	1.60 to 3.60	14/10/2021 09:49:58	-	-	-	0.70	-	-	-	-	0.1	-	-
DS106	1	50	5 (4)	3.60	---	1.60 to 3.60	18/10/2021 12:30:32	1016	1016	$0.1_{(I)}$	-	-	-	-	-	-	-	-
DS106	1	50	5 (4)	---	---	1.60 to 3.60	29 secs	-	-	$0.3_{(SS)}$	-	-	-	-	-	-	-	-
DS106	1	50	5 (5)	3.60	---	1.60 to 3.60	18/10/2021 12:31:54	-	-	-	-	0.1	0.0	20.9	0.0	-	0	0
DS106	1	50	5 (5)	---	---	1.60 to 3.60	15 secs	-	-	-	-	0.4	0.0	20.4	0.0	-	0	0
DS106	1	50	5 (5)	---	---	1.60 to 3.60	31 secs	-	-	-	-	0.3	0.0	20.3	0.0	-	0	0
DS106	1	50	5 (5)	---	---	1.60 to 3.60	61 secs	-	-	-	-	0.2	0.0	20.5	0.0	-	0	0
DS106	1	50	5 (5)	---	---	1.60 to 3.60	91 secs	-	-	-	-	0.2	0.0	20.7	0.0	-	0	0
DS106	1	50	5 (5)	---	---	1.60 to 3.60	122 secs	-	-	-	-	0.2	0.0	20.7	0.0	-	0	0
DS106	1	50	5 (5)	---	---	1.60 to 3.60	183 secs	-	-	-	-	0.1	0.0	20.7	0.0	-	0	0
DS106	1	50	5 (5)	---	---	1.60 to 3.60	245 secs	-	-	-	-	0.1	0.0	20.7	0.0	-	0	0
DS106	1	50	5 (5)	---	---	1.60 to 3.60	304 secs	-	-	-	-	0.1	0.0	20.7	0.0	-	0	0
DS106	1	50	5 (6)	3.60	3.38	1.60 to 3.60	18/10/2021 12:43:00	-	-	-	0.77	-	-	-	-	0.4	-	-
DS106	1	50	6	3.60	---	1.60 to 3.60	25/10/2021 11:28:56	1015	1015	$1.0_{(I)}$	-	-	-	-	-	-	-	-
DS106	1	50	6	---	---	1.60 to 3.60	25 secs	-	-	$0.1_{(SS)}$	-	-	-	-	-	-	-	-
DS106	1	50	6 (2)	3.60	---	1.60 to 3.60	25/10/2021 11:30:15	-	-	-	-	0.1	0.0	20.9	0.0	-	0	0
DS106	1	50	6 (2)	---	---	1.60 to 3.60	15 secs	-	-	-	-	0.2	0.0	20.1	0.0	-	0	0
DS106	1	50	6 (2)	---	---	1.60 to 3.60	30 secs	-	-	-	-	0.2	0.0	20.3	0.0	-	0	0
DS106	1	50	6 (2)	---	---	1.60 to 3.60	60 secs	-	-	-	-	0.2	0.0	20.5	0.0	-	0	0
DS106	1	50	6 (2)	---	---	1.60 to 3.60	90 secs	-	-	-	-	0.2	0.0	20.5	0.0	-	0	0
DS106	1	50	6 (2)	---	---	1.60 to 3.60	121 secs	-	-	-	-	0.2	0.0	20.6	0.0	-	0	0
DS106	1	50	6 (2)	---	---	1.60 to 3.60	182 secs	-	-	-	-	0.1	0.0	20.6	0.0	-	0	0

Key: I = Initial, Min = Minimum, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	PID (ppm)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
DS106	1	50	6 (2)	---	---	1.60 to 3.60	242 secs	-	-	-	-	0.1	0.0	20.7	0.0	-	0	0
DS106	1	50	6 (2)	---	---	1.60 to 3.60	303 secs	-	-	-	-	0.1	0.0	20.7	0.0	-	0	0
DS106	1	50	6 (3)	3.60	3.37	1.60 to 3.60	25/10/2021 11:39:16	-	-	-	0.45	-	-	-	-	0.1	-	-
DS107	1	50	4	5.00	---	1.50 to 5.00	08/10/2021 12:29:22	1030	1030	$0.0_{(I)}$	-	-	-	-	-	-	-	-
DS107	1	50	4	---	---	1.50 to 5.00	24 secs	-	-	$0.0_{(SS)}$	-	-	-	-	-	-	-	-
DS107	1	50	4 (2)	5.00	---	1.50 to 5.00	08/10/2021 12:31:17	-	-	-	-	0.1	0.0	20.7	0.0	-	0	0
DS107	1	50	4 (2)	---	---	1.50 to 5.00	15 secs	-	-	-	-	0.1	0.0	20.6	0.0	-	0	0
DS107	1	50	4 (2)	---	---	1.50 to 5.00	30 secs	-	-	-	-	0.2	0.0	20.6	0.0	-	0	0
DS107	1	50	4 (2)	---	---	1.50 to 5.00	60 secs	-	-	-	-	0.1	0.0	20.6	0.0	-	0	0
DS107	1	50	4 (2)	---	---	1.50 to 5.00	90 secs	-	-	-	-	0.1	0.0	20.6	0.0	-	0	0
DS107	1	50	4 (2)	---	---	1.50 to 5.00	121 secs	-	-	-	-	0.1	0.0	20.7	0.0	-	0	0
DS107	1	50	4 (2)	---	---	1.50 to 5.00	181 secs	-	-	-	-	0.1	0.0	20.7	0.0	-	0	0
DS107	1	50	4 (2)	---	---	1.50 to 5.00	241 secs	-	-	-	-	0.1	0.0	20.7	0.0	-	0	0
DS107	1	50	4 (2)	---	---	1.50 to 5.00	301 secs	-	-	-	-	0.1	0.0	20.7	0.0	-	0	0
DS107	1	50	4 (3)	5.00	4.77	1.50 to 5.00	08/10/2021 12:41:10	-	-	-	1.44	-	-	-	-	1.0	-	-
DS107	1	50	5	5.00	---	1.50 to 5.00	14/10/2021 09:20:46	1027	1028	$0.1_{(I)}$	-	-	-	-	-	-	-	-
DS107	1	50	5	---	---	1.50 to 5.00	25 secs	-	-	$0.3_{(SS)}$	-	-	-	-	-	-	-	-
DS107	1	50	5 (2)	5.00	---	1.50 to 5.00	14/10/2021 09:22:44	-	-	-	-	0.1	0.0	20.8	0.0	-	0	0
DS107	1	50	5 (2)	---	---	1.50 to 5.00	15 secs	-	-	-	-	0.1	0.0	20.8	0.0	-	0	0
DS107	1	50	5 (2)	---	---	1.50 to 5.00	32 secs	-	-	-	-	0.1	0.0	20.8	0.0	-	0	0
DS107	1	50	5 (2)	---	---	1.50 to 5.00	62 secs	-	-	-	-	0.1	0.0	20.8	0.0	-	0	0
DS107	1	50	5 (2)	---	---	1.50 to 5.00	93 secs	-	-	-	-	0.1	0.0	20.8	0.0	-	0	0
DS107	1	50	5 (2)	---	---	1.50 to 5.00	125 secs	-	-	-	-	0.1	0.0	20.8	0.0	-	0	0
DS107	1	50	5 (2)	---	---	1.50 to 5.00	185 secs	-	-	-	-	0.1	0.0	20.8	0.0	-	0	0

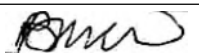
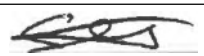
Key: I = Initial, Min = Minimum, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	PID (ppm)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
DS107	1	50	5 (2)	---	---	1.50 to 5.00	246 secs	-	-	-	-	0.1	0.0	20.8	0.0	-	0	0
DS107	1	50	5 (2)	---	---	1.50 to 5.00	306 secs	-	-	-	-	0.1	0.0	20.9	0.0	-	0	0
DS107	1	50	5 (3)	5.00	4.70	1.50 to 5.00	14/10/2021 09:30:20	-	-	-	1.14	-	-	-	-	0.5	-	-
DS107	1	50	5 (4)	5.00	---	1.50 to 5.00	18/10/2021 11:24:03	1016	1016	$0.0_{(I)}$	-	-	-	-	-	-	-	-
DS107	1	50	5 (4)	---	---	1.50 to 5.00	25 secs	-	-	$-0.1_{(SS)}$	-	-	-	-	-	-	-	-
DS107	1	50	5 (5)	5.00	---	1.50 to 5.00	18/10/2021 11:25:21	-	-	-	-	0.1	0.0	20.8	0.0	-	0	0
DS107	1	50	5 (5)	---	---	1.50 to 5.00	15 secs	-	-	-	-	0.2	0.0	20.8	0.0	-	0	0
DS107	1	50	5 (5)	---	---	1.50 to 5.00	30 secs	-	-	-	-	0.2	0.0	20.8	0.0	-	0	0
DS107	1	50	5 (5)	---	---	1.50 to 5.00	61 secs	-	-	-	-	0.2	0.0	20.7	0.0	-	0	0
DS107	1	50	5 (5)	---	---	1.50 to 5.00	91 secs	-	-	-	-	0.1	0.0	20.8	0.0	-	0	0
DS107	1	50	5 (5)	---	---	1.50 to 5.00	121 secs	-	-	-	-	0.1	0.0	20.7	0.0	-	0	0
DS107	1	50	5 (5)	---	---	1.50 to 5.00	181 secs	-	-	-	-	0.1	0.0	20.8	0.0	-	0	0
DS107	1	50	5 (5)	---	---	1.50 to 5.00	243 secs	-	-	-	-	0.1	0.0	20.8	0.0	-	0	0
DS107	1	50	5 (5)	---	---	1.50 to 5.00	302 secs	-	-	-	-	0.1	0.0	20.7	0.0	-	0	0
DS107	1	50	5 (6)	5.00	4.68	1.50 to 5.00	18/10/2021 11:31:23	-	-	-	1.22	-	-	-	-	0.3	-	-
DS107	1	50	6	5.00	---	1.50 to 5.00	25/10/2021 11:16:03	-	-	$1.0_{(I)}$	-	-	-	-	-	-	-	-
DS107	1	50	6	---	---	1.50 to 5.00	40 secs	-	-	$0.1_{(SS)}$	-	-	-	-	-	-	-	-
DS107	1	50	6 (2)	5.00	---	1.50 to 5.00	25/10/2021 11:17:45	-	-	-	-	0.1	0.0	21.0	0.0	-	0	0
DS107	1	50	6 (2)	---	---	1.50 to 5.00	15 secs	-	-	-	-	0.1	0.0	21.0	0.0	-	0	0
DS107	1	50	6 (2)	---	---	1.50 to 5.00	30 secs	-	-	-	-	0.1	0.0	21.0	0.0	-	0	0
DS107	1	50	6 (2)	---	---	1.50 to 5.00	61 secs	-	-	-	-	0.1	0.0	21.0	0.0	-	0	0
DS107	1	50	6 (2)	---	---	1.50 to 5.00	91 secs	-	-	-	-	0.1	0.0	21.1	0.0	-	0	0
DS107	1	50	6 (2)	---	---	1.50 to 5.00	121 secs	-	-	-	-	0.1	0.0	21.1	0.0	-	0	0
DS107	1	50	6 (2)	---	---	1.50 to 5.00	182 secs	-	-	-	-	0.1	0.0	21.1	0.0	-	0	0
DS107	1	50	6 (2)	---	---	1.50 to 5.00	243 secs	-	-	-	-	0.1	0.0	21.2	0.0	-	0	0

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STRUCTURAL SOILS
The Old School
Stillhouse Lane
Bedminster
Bristol BS3 4EB

Compiled By	Date	Checked By	Date	Contract Ref:
	**05/01/2022**		**05/01/2022**	**736036**

Contract:
Langstone Flood & Coastal Erosion Management Scheme

AGS

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	PID (ppm)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
DS107	1	50	6 (2)	---	---	1.50 to 5.00	303 secs	-	-	-	-	0.1	0.0	21.2	0.0	-	0	0
DS107	1	50	6 (3)	5.00	4.65	1.50 to 5.00	25/10/2021 11:23:59	-	-	-	0.77	-	-	-	-	0.2	-	-

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IN-SITU WATER MONITORING RESULTS

Exploratory Position ID	Ground Level (m AOD)	Pipe Ref	Pipe Diameter (mm)	Monitoring Round / Test Number	Reported Installation Depth (mbgl)	Measured Installation Depth (mbgl)	Response Zone (m)	Date & Time of Monitoring	Water Depth (mbgl)	Water Elevation (m AOD)	pH	ORP (mV)	Eh (mV)	Conduc-tivity (uS/cm)	Temp-erature (°C)	Dissolved Oxygen (mg/l)
BH03		1	50	1 / 1	10.00	9.08	2.00 to 10.00	23/09/2021 15:45	1.35	---	---	---	---	---	---	---
BH03		1	50	2 / 1	10.00	9.07	2.00 to 10.00	30/09/2021 09:40	1.87	---	---	---	---	---	---	---
BH03		1	50	3 / 1	10.00	9.08	2.00 to 10.00	04/10/2021 15:00	1.52	---	---	---	---	---	---	---
BH03		1	50	5 / 1	10.00	9.06	2.00 to 10.00	14/10/2021 11:27	2.11	---	---	---	---	---	---	---
BH03		1	50	5 / 2	10.00	NDA	2.00 to 10.00	14/10/2021 12:13	2.02	---	7.63	-291	-52	30680	17.0	5.9
BH03		1	50	5 / 2	---	NDA	---	14/10/2021 12:16	2.02	---	7.64	-307	-70	30590	17.6	3.5
BH03		1	50	5 / 2	---	NDA	---	14/10/2021 12:19	2.02	---	7.59	-307	-69	30530	17.8	2.4
BH03		1	50	5 / 2	---	NDA	---	14/10/2021 12:22	2.02	---	7.62	-309	-72	30410	18.0	1.5
BH03		1	50	5 / 2	---	NDA	---	14/10/2021 12:25	2.02	---	7.48	-314	-76	30330	17.9	1.2
BH03		1	50	5 / 2	---	NDA	---	14/10/2021 12:28	2.02	---	7.37	-323	-86	30400	17.8	1.0
BH03		1	50	5 / 2	---	NDA	---	14/10/2021 12:31	2.02	---	7.31	-326	-88	30340	17.7	0.8
BH03		1	50	5 / 2	---	NDA	---	14/10/2021 12:34	2.02	---	7.33	-325	-87	30210	17.5	0.6
BH03		1	50	5 / 2	---	NDA	---	14/10/2021 12:37	2.02	---	7.27	-325	-87	30390	17.2	0.5
	General Remarks: Clear, sulphur odour. Samples taken															
BH03		1	50	6 / 1	10.00	9.06	2.00 to 10.00	25/10/2021 10:01	2.11	---	---	---	---	---	---	---
BH101	3.104	1	50	2 / 1	14.00	13.52	11.00 to 14.00	30/09/2021 10:16	1.10	2.00	---	---	---	---	---	---
BH101	3.104	1	50	4 / 1	14.00	13.19	11.00 to 14.00	08/10/2021 13:52	0.79	2.32	---	---	---	---	---	---
BH101	3.104	1	50	4 / 1	---	13.19	---	08/10/2021 14:47	11.93	-8.82	---	---	---	---	---	---
BH101	3.104	1	50	5 / 1	14.00	13.20	11.00 to 14.00	14/10/2021 13:28	2.16	0.95	---	---	---	---	---	---
BH101	3.104	1	50	5 / 2	14.00	13.20	11.00 to 14.00	14/10/2021 14:25	2.16	0.95	7.64	-126	112	5012	17.4	5.0
BH101	3.104	1	50	5 / 2	---	NDA	---	14/10/2021 14:28	---	---	7.62	-125	115	4953	15.8	2.6
BH101	3.104	1	50	5 / 2	---	NDA	---	14/10/2021 14:31	---	---	7.36	-132	110	4974	14.8	1.1
BH101	3.104	1	50	5 / 2	---	NDA	---	14/10/2021 14:34	---	---	7.25	-133	108	4959	14.6	0.9

Key: NDA denotes 'no data available'.

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Compiled By	Date	Checked By	Date	Contract Ref:
	05/01/2022		05/01/22	736036

Contract:
Langstone Flood & Coastal Erosion Management Scheme

AGS

IN-SITU WATER MONITORING RESULTS

Exploratory Position ID	Ground Level (m AOD)	Pipe Ref	Pipe Diameter (mm)	Monitoring Round / Test Number	Reported Installation Depth (mbgl)	Measured Installation Depth (mbgl)	Response Zone (m)	Date & Time of Monitoring	Water Depth (mbgl)	Water Elevation (m AOD)	pH	ORP (mV)	Eh (mV)	Conduc-tivity (uS/cm)	Temp-erature (°C)	Dissolved Oxygen (mg/l)
BH101	3.104	1	50	5 / 2	---	NDA	---	14/10/2021 14:37	---	---	7.22	-123	118	4942	14.5	0.7
BH101	3.104	1	50	5 / 2	---	NDA	---	14/10/2021 14:40	---	---	7.18	-124	118	4929	14.5	0.6
	General Remarks: Cloudy, no odour. Samples taken.															
BH101	3.104	1	50	5 / 3	14.00	13.20	11.00 to 14.00	18/10/2021 15:02	1.76	1.35	---	---	---	---	---	---
BH101	3.104	1	50	5 / 4	14.00	13.20	11.00 to 14.00	18/10/2021 15:10	1.81	1.29	7.52	-149	92	6662	15.5	4.7
BH101	3.104	1	50	5 / 4	---	13.20	---	18/10/2021 15:13	1.84	1.26	7.34	-150	91	6375	15.2	3.6
BH101	3.104	1	50	5 / 4	---	13.20	---	18/10/2021 15:16	1.85	1.26	7.27	-158	83	6135	15.0	2.6
BH101	3.104	1	50	5 / 4	---	13.20	---	18/10/2021 15:19	1.86	1.24	7.22	-168	73	6014	14.9	2.0
BH101	3.104	1	50	5 / 4	---	13.20	---	18/10/2021 15:22	1.88	1.22	7.18	-181	60	5919	14.8	1.5
BH101	3.104	1	50	5 / 4	---	13.20	---	18/10/2021 15:25	1.89	1.21	7.16	-194	47	5873	14.7	1.3
BH101	3.104	1	50	5 / 4	---	13.20	---	18/10/2021 15:28	1.91	1.19	7.14	-205	36	5848	14.6	1.0
BH101	3.104	1	50	5 / 4	---	13.20	---	18/10/2021 15:31	1.91	1.19	7.13	-213	28	5818	14.6	1.0
BH101	3.104	1	50	5 / 4	---	13.20	---	18/10/2021 15:34	1.92	1.18	7.13	-216	25	5800	14.6	1.0
BH101	3.104	1	50	5 / 4	---	13.20	---	18/10/2021 15:37	1.94	1.17	7.12	-222	20	5788	14.6	0.9
BH101	3.104	1	50	6 / 1	14.00	13.20	11.00 to 14.00	25/10/2021 09:15	1.83	1.28	---	---	---	---	---	---
BH101	3.104	2	35	2 / 1	5.50	5.10	2.50 to 5.50	30/09/2021 10:15	1.56	1.54	---	---	---	---	---	---
BH101	3.104	2	35	3 / 1	5.50	5.10	2.50 to 5.50	04/10/2021 11:40	1.23	1.87	---	---	---	---	---	---
BH101	3.104	2	35	3 / 1	---	1.23	---	04/10/2021 11:41	0.91	2.19	---	---	---	---	---	---
BH101	3.104	2	35	5 / 1	5.50	4.97	2.50 to 5.50	14/10/2021 13:19	1.23	1.88	---	---	---	---	---	---
BH101	3.104	2	35	5 / 2	5.50	4.97	2.50 to 5.50	14/10/2021 13:39	1.23	1.88	6.96	-191	47	9341	17.1	4.6
BH101	3.104	2	35	5 / 2	---	4.97	---	14/10/2021 13:42	1.27	1.83	7.27	-188	51	8773	16.5	3.0
BH101	3.104	2	35	5 / 2	---	4.97	---	14/10/2021 13:45	1.32	1.79	7.26	-183	56	8667	16.4	1.8
BH101	3.104	2	35	5 / 2	---	4.97	---	14/10/2021 13:48	1.36	1.74	7.21	-180	59	8426	16.2	1.1

Key: NDA denotes 'no data available'.

IN-SITU WATER MONITORING RESULTS

Exploratory Position ID	Ground Level (m AOD)	Pipe Ref	Pipe Diameter (mm)	Monitoring Round / Test Number	Reported Installation Depth (mbgl)	Measured Installation Depth (mbgl)	Response Zone (m)	Date & Time of Monitoring	Water Depth (mbgl)	Water Elevation (m AOD)	pH	ORP (mV)	Eh (mV)	Conduc-tivity (uS/cm)	Temp-erature (°C)	Dissolved Oxygen (mg/l)
BH101	3.104	2	35	5 / 2	---	4.97	---	14/10/2021 13:51	1.41	1.70	7.26	-174	65	8333	16.1	1.0
BH101	3.104	2	35	5 / 2	---	4.97	---	14/10/2021 13:54	1.45	1.65	7.27	-175	65	8277	16.0	0.9
BH101	3.104	2	35	5 / 4	5.50	5.00	2.50 to 5.50	18/10/2021 15:45	1.19	1.91	---	---	---	---	---	---
BH101	3.104	2	35	6 / 1	5.50	5.00	2.50 to 5.50	25/10/2021 09:00	0.92	2.19	---	---	---	---	---	---
BH104	2.675	1	50	1 / 1	10.00	9.96	7.00 to 10.00	24/09/2021 12:30	2.33	0.35	---	---	---	---	---	---
BH104	2.675	1	50	2 / 1	10.00	9.41	7.00 to 10.00	30/09/2021 09:46	1.90	0.78	---	---	---	---	---	---
BH104	2.675	1	50	3 / 1	10.00	9.29	7.00 to 10.00	04/10/2021 14:51	1.76	0.92	---	---	---	---	---	---
BH104	2.675	1	50	4 / 1	10.00	9.23	7.00 to 10.00	08/10/2021 08:40	6.54	-3.86	---	---	---	---	---	---
BH104	2.675	1	50	4 / 1	---	9.23	---	08/10/2021 09:01	9.06	-6.38	---	---	---	---	---	---
BH104	2.675	1	50	5 / 1	10.00	9.77	7.00 to 10.00	18/10/2021 09:14	1.81	0.87	---	---	---	---	---	---
BH104	2.675	1	50	5 / 2	10.00	9.23	7.00 to 10.00	18/10/2021 09:32	1.64	1.04	6.68	-175	67	24650	14.3	6.2
BH104	2.675	1	50	5 / 2	---	9.23	---	18/10/2021 09:35	1.62	1.06	7.17	-197	44	29640	14.7	3.8
BH104	2.675	1	50	5 / 2	---	9.23	---	18/10/2021 09:38	1.59	1.09	7.26	-202	39	29910	14.9	3.1
BH104	2.675	1	50	5 / 2	---	9.23	---	18/10/2021 09:41	1.55	1.13	7.34	-207	35	30200	14.9	2.4
BH104	2.675	1	50	5 / 2	---	9.23	---	18/10/2021 09:44	1.52	1.16	7.37	-210	31	30280	15.0	1.9
BH104	2.675	1	50	5 / 2	---	9.23	---	18/10/2021 09:47	1.49	1.19	7.39	-208	34	30400	15.0	1.6
BH104	2.675	1	50	5 / 2	---	9.23	---	18/10/2021 09:50	1.46	1.22	7.41	-214	27	30420	15.1	1.3
BH104	2.675	1	50	5 / 2	---	9.23	---	18/10/2021 09:53	1.42	1.26	7.42	-216	25	30450	15.1	1.2
BH104	2.675	1	50	5 / 2	---	9.23	---	18/10/2021 09:56	1.40	1.28	7.42	-217	24	30360	15.2	1.1
BH104	2.675	1	50	6 / 1	10.00	9.77	7.00 to 10.00	25/10/2021 09:45	2.60	0.07	---	---	---	---	---	---
BH104	2.675	2	19	1 / 1	2.50	2.58	1.00 to 2.50	24/09/2021 12:31	DRY	DRY	---	---	---	---	---	---
BH104	2.675	2	19	2 / 1	2.50	2.56	1.00 to 2.50	30/09/2021 09:45	DRY	DRY	---	---	---	---	---	---
BH104	2.675	2	19	3 / 1	2.50	2.46	1.00 to 2.50	04/10/2021 14:50	1.20	1.48	---	---	---	---	---	---
BH104	2.675	2	19	5 / 1	2.50	2.51	1.00 to 2.50	18/10/2021 09:25	1.46	1.22	---	---	---	---	---	---

Key: NDA denotes 'no data available'.

IN-SITU WATER MONITORING RESULTS

Exploratory Position ID	Ground Level (m AOD)	Pipe Ref	Pipe Diameter (mm)	Monitoring Round / Test Number	Reported Installation Depth (mbgl)	Measured Installation Depth (mbgl)	Response Zone (m)	Date & Time of Monitoring	Water Depth (mbgl)	Water Elevation (m AOD)	pH	ORP (mV)	Eh (mV)	Conduc-tivity (uS/cm)	Temp-erature (°C)	Dissolved Oxygen (mg/l)
BH104	2.675	2	19	5 / 2	2.50	NDA	1.00 to 2.50	18/10/2021 10:20	1.35	1.33	7.85	-172	68	24750	15.4	5.2
BH104	2.675	2	19	5 / 2	---	NDA	---	18/10/2021 10:23	1.35	1.33	7.87	-261	-21	23960	15.5	1.1
BH104	2.675	2	19	5 / 2	---	NDA	---	18/10/2021 10:26	1.35	1.33	7.95	-282	-42	24540	15.5	0.2
BH104	2.675	2	19	5 / 2	---	NDA	---	18/10/2021 10:29	1.35	1.33	8.05	-304	-64	24060	15.5	0.0
BH104	2.675	2	19	5 / 2	---	NDA	---	18/10/2021 10:32	1.35	1.33	8.10	-315	-75	24210	15.6	0.0
BH104	2.675	2	19	5 / 2	---	NDA	---	18/10/2021 10:35	1.35	1.33	8.10	-326	-85	24930	15.6	0.0
BH104	2.675	2	19	6 / 1	2.50	2.58	1.00 to 2.50	25/10/2021 09:48	1.35	1.33	---	---	---	---	---	---
BH105	2.443	1	50	1 / 1	9.00	8.45	6.00 to 9.00	23/09/2021 08:31	0.83	1.61	---	---	---	---	---	---
BH105	2.443	1	50	2 / 1	9.00	8.10	6.00 to 9.00	27/09/2021 15:31	0.87	1.57	---	---	---	---	---	---
BH105	2.443	1	50	3 / 1	9.00	7.90	6.00 to 9.00	04/10/2021 11:56	0.43	2.01	---	---	---	---	---	---
BH105	2.443	1	50	4 / 1	9.00	7.91	6.00 to 9.00	08/10/2021 12:13	0.43	2.01	---	---	---	---	---	---
BH105	2.443	1	50	4 / 1	---	7.91	---	08/10/2021 12:52	7.00	-4.56	---	---	---	---	---	---
BH105	2.443	1	50	5 / 1	9.00	8.22	6.00 to 9.00	18/10/2021 13:52	0.68	1.77	---	---	---	---	---	---
BH105	2.443	1	50	5 / 2	9.00	7.97	6.00 to 9.00	18/10/2021 13:59	0.52	1.92	7.02	-166	74	11240	15.8	5.0
BH105	2.443	1	50	5 / 2	---	7.97	---	18/10/2021 14:02	0.54	1.90	6.92	-181	59	12190	15.5	3.7
BH105	2.443	1	50	5 / 2	---	7.97	---	18/10/2021 14:05	0.56	1.88	6.92	-191	50	12700	15.3	2.5
BH105	2.443	1	50	5 / 2	---	7.97	---	18/10/2021 14:11	0.58	1.86	6.97	-197	44	12960	15.0	1.6
BH105	2.443	1	50	5 / 2	---	7.97	---	18/10/2021 14:14	0.59	1.86	6.99	-211	31	13050	15.0	1.4
BH105	2.443	1	50	5 / 2	---	7.97	---	18/10/2021 14:17	0.59	1.85	7.00	-217	24	13190	15.0	1.3
BH105	2.443	1	50	5 / 2	---	7.97	---	18/10/2021 14:20	0.59	1.85	7.01	-221	21	13310	15.0	1.2
BH105	2.443	1	50	6 / 1	9.00	8.10	6.00 to 9.00	25/10/2021 12:56	1.33	1.11	---	---	---	---	---	---
BH105	2.443	1	50	6 / 2	9.00	8.10	6.00 to 9.00	25/10/2021 13:35	1.38	1.07	8.42	-177	65	1237	14.8	7.3
BH105	2.443	1	50	6 / 2	---	8.10	---	25/10/2021 13:38	1.39	1.06	8.54	-187	55	1138	14.6	4.8

Key: NDA denotes 'no data available'.

IN-SITU WATER MONITORING RESULTS

Exploratory Position ID	Ground Level (m AOD)	Pipe Ref	Pipe Diameter (mm)	Monitoring Round / Test Number	Reported Installation Depth (mbgl)	Measured Installation Depth (mbgl)	Response Zone (m)	Date & Time of Monitoring	Water Depth (mbgl)	Water Elevation (m AOD)	pH	ORP (mV)	Eh (mV)	Conduc-tivity (uS/cm)	Temp-erature (°C)	Dissolved Oxygen (mg/l)
BH105	2.443	1	50	6 / 2	---	8.10	---	25/10/2021 13:41	1.40	1.05	8.61	-190	52	1085	14.4	3.2
BH105	2.443	1	50	6 / 2	---	8.10	---	25/10/2021 13:44	1.40	1.04	8.63	-191	51	1077	14.4	2.4
BH105	2.443	1	50	6 / 2	---	8.10	---	25/10/2021 13:47	1.41	1.04	8.65	-192	50	1065	14.3	1.6
BH105	2.443	1	50	6 / 2	---	8.10	---	25/10/2021 13:50	1.41	1.04	8.64	-194	48	1044	14.2	1.1
BH105	2.443	1	50	6 / 2	---	8.10	---	25/10/2021 13:53	1.41	1.03	8.63	-195	47	1015	14.2	1.0
BH105	2.443	1	50	6 / 2	---	8.10	---	25/10/2021 13:56	1.42	1.03	8.61	-196	46	1000	14.3	1.0
	General Remarks: No odour, slight brown colour. Samples taken.															
BH105	2.443	2	19	1 / 1	3.00	2.92	1.00 to 3.00	23/09/2021 08:30	0.91	1.53	---	---	---	---	---	---
BH105	2.443	2	19	2 / 1	3.00	2.90	1.00 to 3.00	27/09/2021 15:30	0.85	1.59	---	---	---	---	---	---
BH105	2.443	2	19	3 / 1	3.00	2.89	1.00 to 3.00	04/10/2021 11:55	0.41	2.03	---	---	---	---	---	---
BH105	2.443	2	19	5 / 2	3.00	2.78	1.00 to 3.00	18/10/2021 14:22	0.59	1.85	---	---	---	---	---	---
BH105	2.443	2	19	6 / 2	3.00	2.85	1.00 to 3.00	25/10/2021 14:00	0.49	1.95	---	---	---	---	---	---
DS103	2.208	1	50	3 / 1	3.00	3.34	1.00 to 3.00	04/10/2021 14:45	0.77	1.44	---	---	---	---	---	---
DS103	2.208	1	50	4 / 1	3.00	3.11	1.00 to 3.00	08/10/2021 09:25	0.31	1.90	---	---	---	---	---	---
DS103	2.208	1	50	4 / 1	---	3.11	---	08/10/2021 09:34	2.80	-0.59	---	---	---	---	---	---
DS103	2.208	1	50	5 / 1	3.00	3.20	1.00 to 3.00	18/10/2021 16:19	1.12	1.09	---	---	---	---	---	---
DS103	2.208	1	50	5 / 2	3.00	3.20	1.00 to 3.00	18/10/2021 16:23	1.19	1.02	7.15	-194	46	41580	15.6	4.8
DS103	2.208	1	50	5 / 2	---	3.20	---	18/10/2021 16:26	1.22	0.99	7.11	-217	24	44070	15.2	3.4
DS103	2.208	1	50	5 / 2	---	3.20	---	18/10/2021 16:29	1.26	0.95	7.13	-223	18	44800	15.1	2.3
DS103	2.208	1	50	5 / 2	---	3.20	---	18/10/2021 16:32	1.30	0.91	7.16	-224	17	45060	15.1	1.9
DS103	2.208	1	50	5 / 2	---	3.20	---	18/10/2021 16:39	1.39	0.82	7.20	-225	16	45290	15.1	1.4
DS103	2.208	1	50	5 / 2	---	3.20	---	18/10/2021 16:42	1.44	0.77	7.21	-224	17	45310	15.1	1.2
DS103	2.208	1	50	5 / 2	---	3.20	---	18/10/2021 16:45	1.48	0.73	7.21	-220	21	45280	15.1	1.1

Key: NDA denotes 'no data available'.

IN-SITU WATER MONITORING RESULTS

Exploratory Position ID	Ground Level (m AOD)	Pipe Ref	Pipe Diameter (mm)	Monitoring Round / Test Number	Reported Installation Depth (mbgl)	Measured Installation Depth (mbgl)	Response Zone (m)	Date & Time of Monitoring	Water Depth (mbgl)	Water Elevation (m AOD)	pH	ORP (mV)	Eh (mV)	Conduc-tivity (uS/cm)	Temp-erature (°C)	Dissolved Oxygen (mg/l)
	General Remarks: Clean, no odour. Samples taken.															
DS103	2.208	1	50	6 / 1	3.00	3.20	1.00 to 3.00	25/10/2021 11:00	0.76	1.45	---	---	---	---	---	---
DS104	3.194	1	50	1 / 1	3.00	3.03	1.00 to 3.00	23/09/2021 13:45	1.73	1.46	---	---	---	---	---	---
DS104	3.194	1	50	3 / 1	3.00	3.04	1.00 to 3.00	04/10/2021	1.48	1.71	---	---	---	---	---	---
DS104	3.194	1	50	4 / 1	3.00	2.99	1.00 to 3.00	08/10/2021 09:08	1.97	1.22	---	---	---	---	---	---
DS104	3.194	1	50	4 / 1	---	2.99	---	08/10/2021 09:12	2.71	0.48	---	---	---	---	---	---
DS104	3.194	1	50	5 / 1	3.00	3.05	1.00 to 3.00	18/10/2021 17:10	1.55	1.64	---	---	---	---	---	---
DS104	3.194	1	50	5 / 2	3.00	3.05	1.00 to 3.00	18/10/2021 17:20	1.57	1.62	7.82	-200	40	7174	15.3	4.2
DS104	3.194	1	50	5 / 2	---	3.05	---	18/10/2021 17:23	1.58	1.62	7.53	-213	28	6225	15.2	2.8
DS104	3.194	1	50	5 / 2	---	3.05	---	18/10/2021 17:26	1.58	1.62	7.42	-219	22	5222	15.2	2.0
DS104	3.194	1	50	5 / 2	---	3.05	---	18/10/2021 17:29	1.58	1.62	7.36	-222	19	4623	15.1	1.6
DS104	3.194	1	50	5 / 2	---	3.05	---	18/10/2021 17:32	1.58	1.61	7.32	-225	16	4261	15.1	1.4
DS104	3.194	1	50	5 / 2	---	3.05	---	18/10/2021 17:35	1.58	1.61	7.30	-226	15	4055	15.1	1.2
DS104	3.194	1	50	5 / 2	---	3.05	---	18/10/2021 17:38	1.58	1.61	7.28	-226	15	3915	15.0	1.1
DS104	3.194	1	50	5 / 2	---	3.05	---	18/10/2021 17:41	1.58	1.61	7.27	-225	16	3873	15.0	1.1
DS104	3.194	1	50	5 / 2	---	3.05	---	18/10/2021 17:44	1.59	1.61	7.26	-225	16	3858	15.0	1.1
	General Remarks: Clear, very slight sweet odour. Samples taken.															
DS104	3.194	1	50	6 / 1	3.00	3.05	1.00 to 3.00	25/10/2021 11:30	1.35	1.85	---	---	---	---	---	---
DS105	3.185	1	35	1 / 1	2.50	2.54	1.50 to 2.50	23/09/2021 13:30	1.79	1.40	---	---	---	---	---	---
DS105	3.185	1	35	3 / 1	2.50	2.51	1.50 to 2.50	04/10/2021 14:20	1.40	1.79	---	---	---	---	---	---
DS105	3.185	1	35	4 / 1	2.50	2.90	1.50 to 2.50	08/10/2021 10:50	2.46	0.73	---	---	---	---	---	---
DS105	3.185	1	35	6 / 1	2.50	2.54	1.50 to 2.50	25/10/2021 11:50	1.33	1.85	---	---	---	---	---	---

Key: NDA denotes 'no data available'.

IN-SITU WATER MONITORING RESULTS

Exploratory Position ID	Ground Level (m AOD)	Pipe Ref	Pipe Diameter (mm)	Monitoring Round / Test Number	Reported Installation Depth (mbgl)	Measured Installation Depth (mbgl)	Response Zone (m)	Date & Time of Monitoring	Water Depth (mbgl)	Water Elevation (m AOD)	pH	ORP (mV)	Eh (mV)	Conduc-tivity (uS/cm)	Temp-erature (°C)	Dissolved Oxygen (mg/l)
DS106	2.974	1	50	1 / 1	3.60	3.49	1.60 to 3.60	23/09/2021 08:38	1.00	1.97	---	---	---	---	---	---
DS106	2.974	1	50	2 / 1	3.60	3.44	1.60 to 3.60	27/09/2021 15:40	DRY	DRY	---	---	---	---	---	---
DS106	2.974	1	50	3 / 1	3.60	3.45	1.60 to 3.60	04/10/2021 12:05	0.59	2.38	---	---	---	---	---	---
DS106	2.974	1	50	4 / 1	3.60	3.28	1.60 to 3.60	08/10/2021 12:00	0.61	2.37	---	---	---	---	---	---
DS106	2.974	1	50	4 / 1	---	3.28	---	08/10/2021 12:20	2.94	0.03	---	---	---	---	---	---
DS106	2.974	1	50	5 / 1	3.60	3.38	1.60 to 3.60	18/10/2021 12:43	0.77	2.21	---	---	---	---	---	---
DS106	2.974	1	50	5 / 2	3.60	3.38	1.60 to 3.60	18/10/2021 12:50	0.82	2.15	7.56	-160	---	1602	16.1	5.1
DS106	2.974	1	50	5 / 2	---	3.38	---	18/10/2021 12:53	0.83	2.14	7.34	-172	---	1578	15.6	3.5
DS106	2.974	1	50	5 / 2	---	3.38	---	18/10/2021 12:56	0.84	2.14	7.23	-190	---	1551	15.3	2.1
DS106	2.974	1	50	5 / 2	---	3.38	---	18/10/2021 12:59	0.84	2.13	7.19	-195	---	1546	15.3	1.8
DS106	2.974	1	50	5 / 2	---	3.38	---	18/10/2021 13:02	0.84	2.13	7.16	-200	---	1540	15.2	1.5
DS106	2.974	1	50	5 / 2	---	3.38	---	18/10/2021 13:05	0.85	2.13	7.14	-206	---	1530	15.2	1.1
DS106	2.974	1	50	5 / 2	---	3.38	---	18/10/2021 13:08	0.85	2.13	7.12	-208	---	1529	15.1	1.1
DS106	2.974	1	50	5 / 2	---	3.38	---	18/10/2021 13:11	0.85	2.13	7.10	-211	---	1527	15.0	1.0
	General Remarks: Clear, no odour. Sample taken															
DS106	2.974	1	50	6 / 1	3.60	3.37	1.60 to 3.60	25/10/2021 12:00	0.45	2.53	---	---	---	---	---	---
DS107	2.533	1	50	1 / 1	5.00	4.93	1.50 to 5.00	23/09/2021 08:45	1.37	1.16	---	---	---	---	---	---
DS107	2.533	1	50	2 / 1	5.00	4.84	1.50 to 5.00	27/09/2021 15:48	DRY	DRY	---	---	---	---	---	---
DS107	2.533	1	50	3 / 1	5.00	4.80	1.50 to 5.00	04/10/2021	1.04	1.49	---	---	---	---	---	---
DS107	2.533	1	50	4 / 1	5.00	4.77	1.50 to 5.00	08/10/2021 12:31	1.44	1.09	---	---	---	---	---	---
DS107	2.533	1	50	4 / 1	---	4.77	---	08/10/2021 12:50	4.31	-1.78	---	---	---	---	---	---
DS107	2.533	1	50	5 / 1	5.00	4.76	1.50 to 5.00	18/10/2021 11:31	1.22	1.32	---	---	---	---	---	---

Key: NDA denotes 'no data available'.

IN-SITU WATER MONITORING RESULTS

Exploratory Position ID	Ground Level (m AOD)	Pipe Ref	Pipe Diameter (mm)	Monitoring Round / Test Number	Reported Installation Depth (mbgl)	Measured Installation Depth (mbgl)	Response Zone (m)	Date & Time of Monitoring	Water Depth (mbgl)	Water Elevation (m AOD)	pH	ORP (mV)	Eh (mV)	Conduc-tivity (uS/cm)	Temp-erature (°C)	Dissolved Oxygen (mg/l)
DS107	2.533	1	50	5 / 2	5.00	NDA	1.50 to 5.00	18/10/2021 11:44	1.03	1.50	7.75	-194	46	1790	16.0	4.2
DS107	2.533	1	50	5 / 2	---	NDA	---	18/10/2021 11:47	1.03	1.50	7.54	-202	38	1775	15.7	2.9
DS107	2.533	1	50	5 / 2	---	NDA	---	18/10/2021 11:50	1.03	1.50	7.47	-204	36	1516	15.7	2.3
DS107	2.533	1	50	5 / 2	---	NDA	---	18/10/2021 11:53	1.03	1.50	7.41	-203	37	1415	15.6	2.0
DS107	2.533	1	50	5 / 2	---	NDA	---	18/10/2021 11:56	1.03	1.50	7.40	-208	33	1259	15.6	1.9
DS107	2.533	1	50	5 / 2	---	NDA	---	18/10/2021 11:59	1.03	1.50	7.36	-210	30	1154	15.5	1.8
DS107	2.533	1	50	5 / 2	---	NDA	---	18/10/2021 12:02	1.03	1.50	7.33	-213	27	1103	15.5	1.5
DS107	2.533	1	50	5 / 2	---	NDA	---	18/10/2021 12:05	1.03	1.50	7.32	-216	24	1090	15.5	1.4
DS107	2.533	1	50	5 / 2	---	NDA	---	18/10/2021 12:08	1.03	1.50	7.32	-219	22	1086	15.5	1.4
DS107	2.533	1	50	6 / 1	5.00	4.65	1.50 to 5.00	25/10/2021 13:00	0.77	1.77	---	---	---	---	---	---

Key: NDA denotes 'no data available'.

APPENDIX G - CALIBRATION CERTIFICATES

(i) SPT Calibration Records

(ii) Hand Vane Calibration Records

(iii) Gas Analyser Calibration Records

(iv) Photo ionisation Detector (PID) Calibration Records

SPT Hammer Energy Test Repor

in accordance with BSEN ISO 22476-3:20(

ARCHWAY ENGINEERING (UK) LTD
AINLEYS INDUSTRIAL ESTATE
ELLAND
WEST YORKSHIRE
HX5 9JP

SPT Hammer Ref:	AR3508
Test Date:	28/01/2021
Report Date:	28/01/2021
File Name:	AR3508.spt
Test Operator:	ED

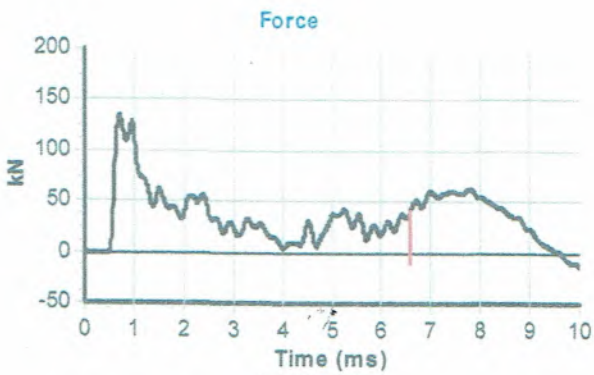
Instrumented Rod Data

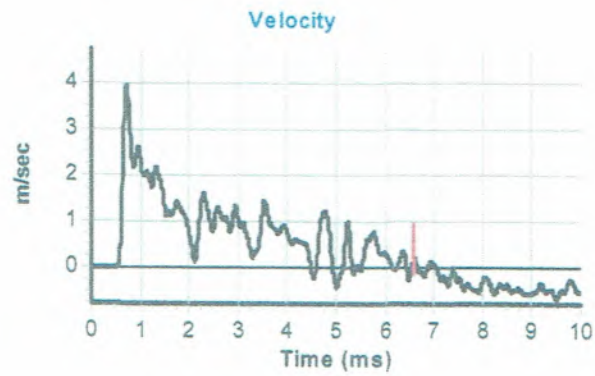
Diameter d_r (mm):	54
Wall Thickness t_r (mm):	6.3
Assumed Modulus E_a (GPa):	208
Accelerometer No.1:	7080
Accelerometer No.2:	11609

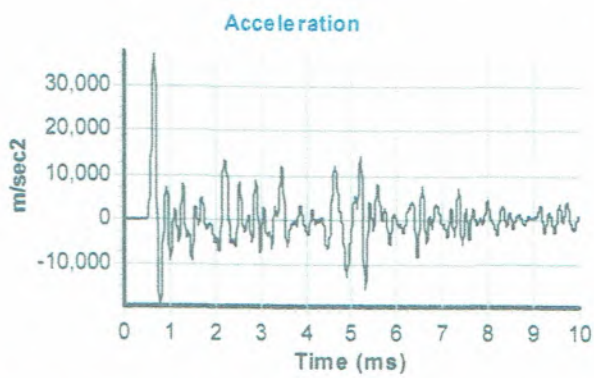
SPT Hammer Information

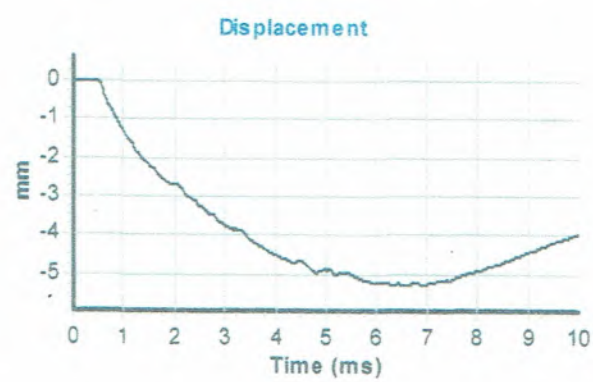
Hammer Mass m (kg):	63.5
Falling Height h (mm):	760
SPT String Length L (m):	10.0

Comments / Location
STRUCTURAL SOILS/74029









Calculations

Area of Rod A (mm2):	944
Theoretical Energy E_{theor} (J):	473
Measured Energy E_{meas} (J):	321

Energy Ratio E_r (%): **68**

Signed: J.Lock
Title: FITTER

The recommended calibration interval is 12 months

SPTMAN ver.1.93 All rights reserved, Testconsult ©20

SPT Calibration Report

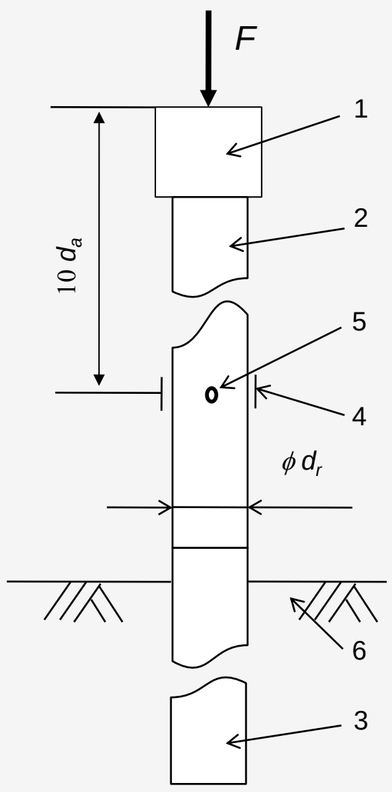
Hammer Energy Measurement Report

Type of Hammer	SUPACAT
Test No	EQU2596
Client	STRUCTURAL SOILS

Test Depth (m)		10.70
Mass of hammer	m =	63.5kg
Falling height	h =	0.76m
E_{theor} =	$m \times g \times h$ =	473J

Characteristics of the instrumented rod

Diameter	d_r =	0.052 m
Length of instrumented rod		0.558 m
Area	A =	11.61 cm²
Modulus	E_a =	206843 MPa



Key

1 Anvil
2 Part of instrumented rod
3 Drive Rod
4 Strain Gauge
5 Accelerometer
6 Ground

F Force
d_r Diameter of rod

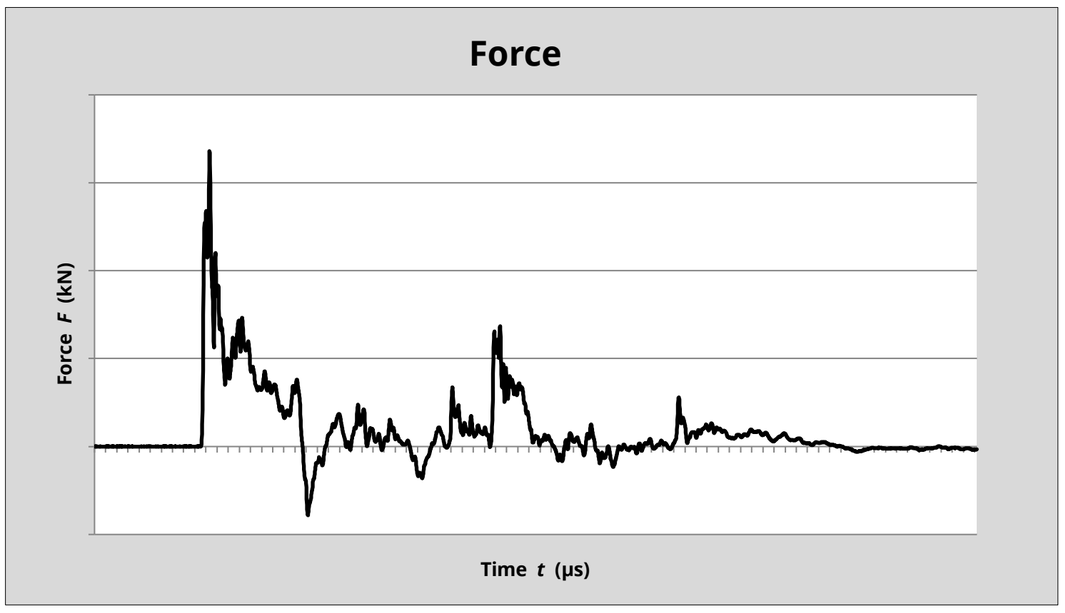
Fig. B.1 and B.2
BS EN ISO 22476-3 : 2005 + A1 : 2011

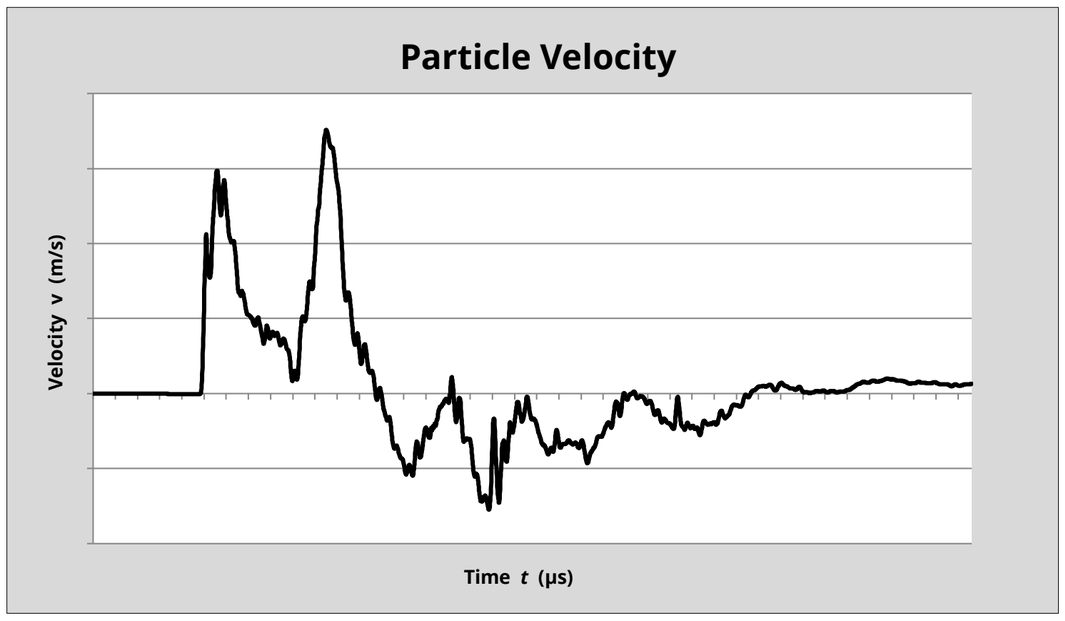
DATE OF TEST	VALID UNTIL	HAMMER ID
12/08/2020	12/08/2021	DART 227

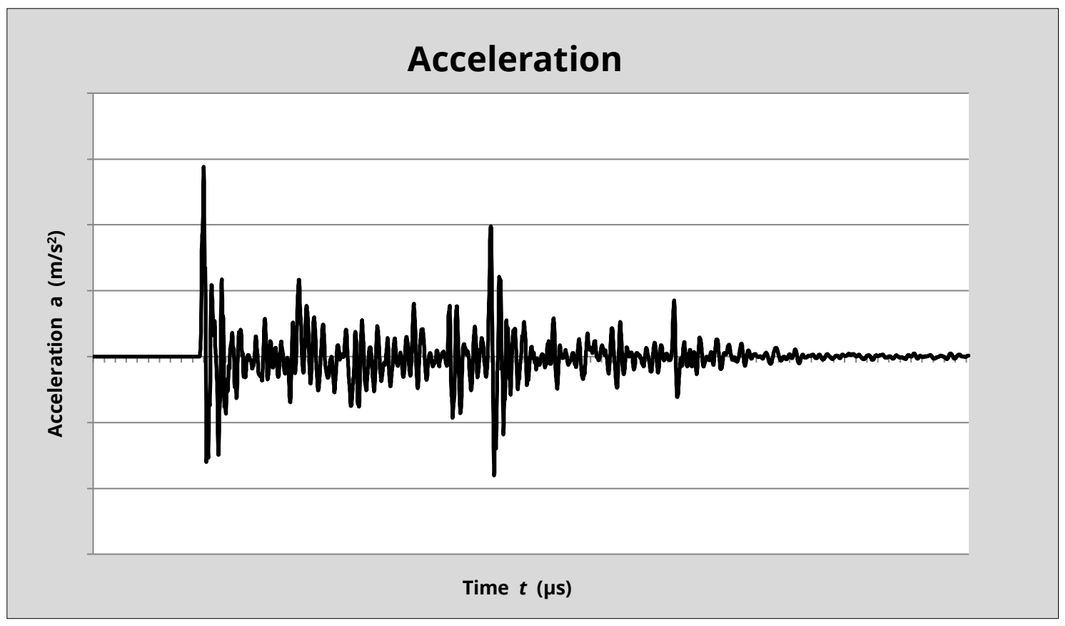
E_{meas} = **0.349** kN-m

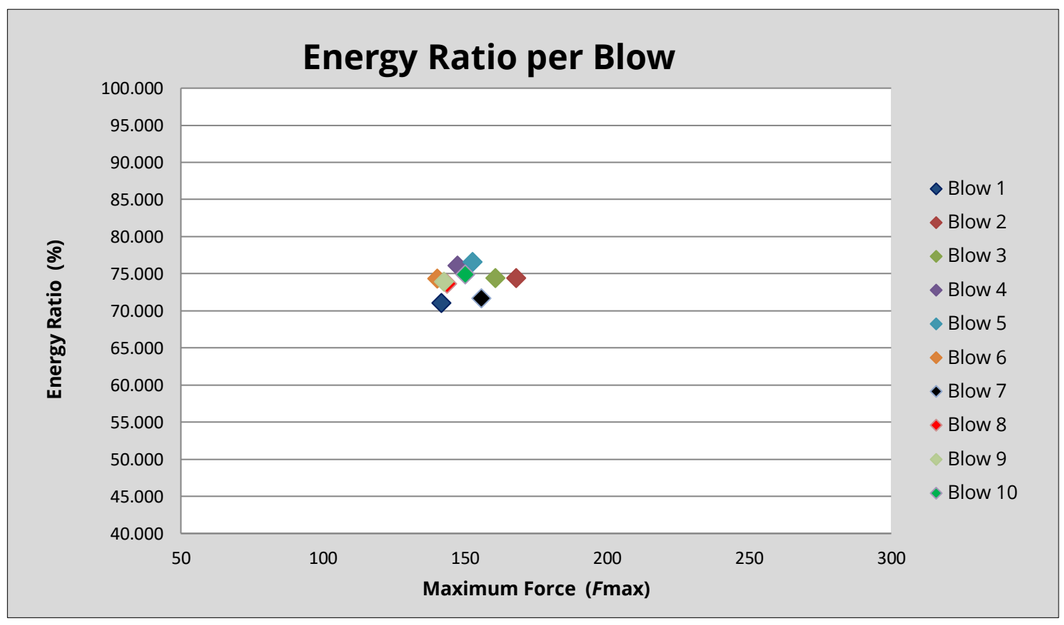
E_{theor} = **0.473** kN-m

Comments









Energy Ratio (Er) = $\frac{E_{meas}}{E_{theor}}$ **73.80%**

©COPYRIGHT 2020

Equipe SPT Analyzer Operator	Certificate prepared by	Certificate checked by	Certificate date
KS			17/09/2020

© Copyright 2020 **Equipe Group**, The Paddocks, Home Farm Offices, The Upton Estate, Banbury, Oxfordshire, OX15 6HU
Tel: +44 (0)1295 670990 Fax: +44 (0)1295 678232 Email: info@equipegroup.com

CONTROLS
Testing equipment for the construction industry

VANE TESTER
CALIBRATION CERTIFICATE

Wykeham Farrance
Soil Mechanics Division of CONTROLS

SSL 501554

Certificate Number VT02003

Date of Issue 04/02/2021

Vane Ref/S No TK1

Page 1 of 2

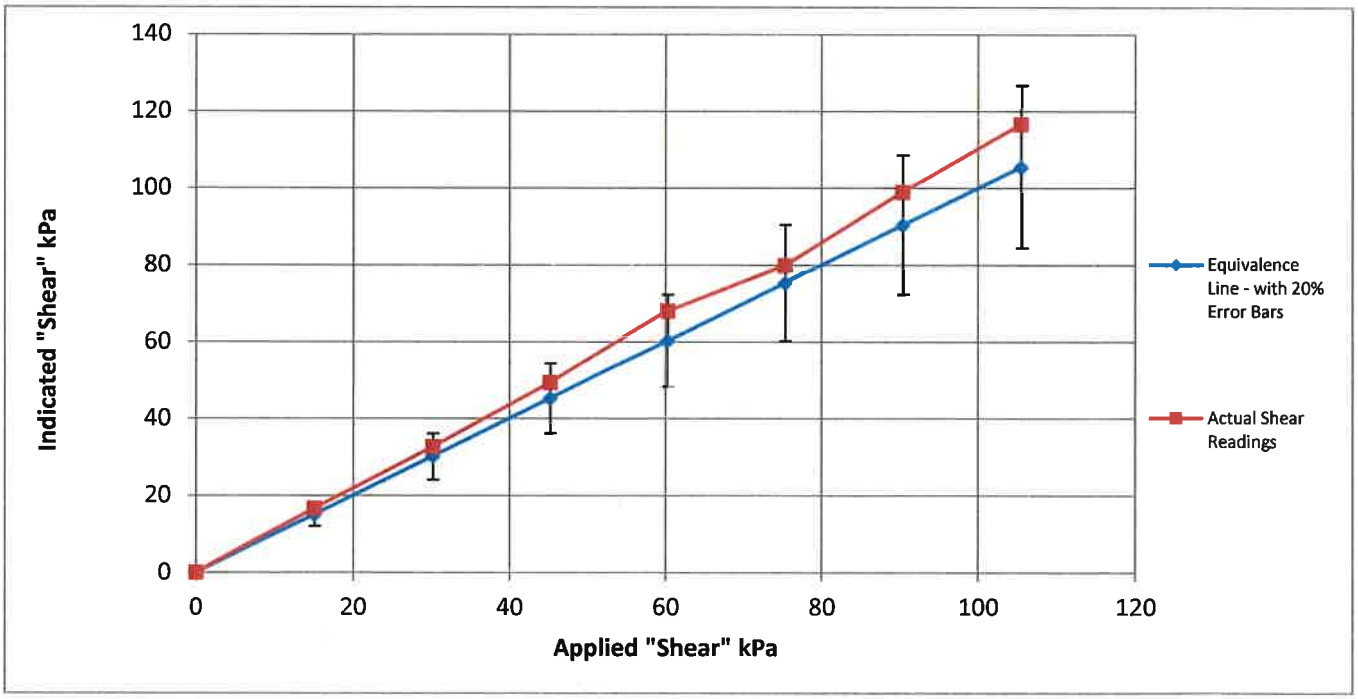
Manufacturer Controls

Model No T0174

Approved Signatory
I Knight

Date of Calibration 04/02/2021

Actual "Shear Stress" Applied kPa	Average "Shear Stress" Recorded kPa	Error %	Repeatability %
0.0	0	0.0%	0.0%
15.1	16.7	9.6%	12.0%
30.1	32.7	7.7%	6.1%
45.2	49.3	8.3%	2.0%
60.3	68.0	11.3%	0.0%
75.4	80.0	5.8%	0.0%
90.4	99.0	8.7%	3.0%
105.5	116.7	9.6%	1.7%



The above Vane tester was mounted in a "frictionless" rotation lever device and was loaded with traceable weights (Cert No 5120) at fixed centres measured using traceable equipment (Cert No 130040MAH). The shear strength reading recorded was compared back through calculation to BS1377 Part 7 Clause 3.4.2 to the actual torque ("shear strength") applied. The above results were recorded. These apply to the middle size of vane 20mmx40mm. For a simple "lookup" of vane strengths for all 3 sizes of vanes please see over.

CONTROLS TESTING EQUIPMENT LTD – Controls House, Icknield Way Tring Hertfordshire HP23 4JX
Tel +44 (0)1442 828311 – Fax +44 (0)1442 828466 – sales@controlstesting.co.uk www.controlsgroup.net

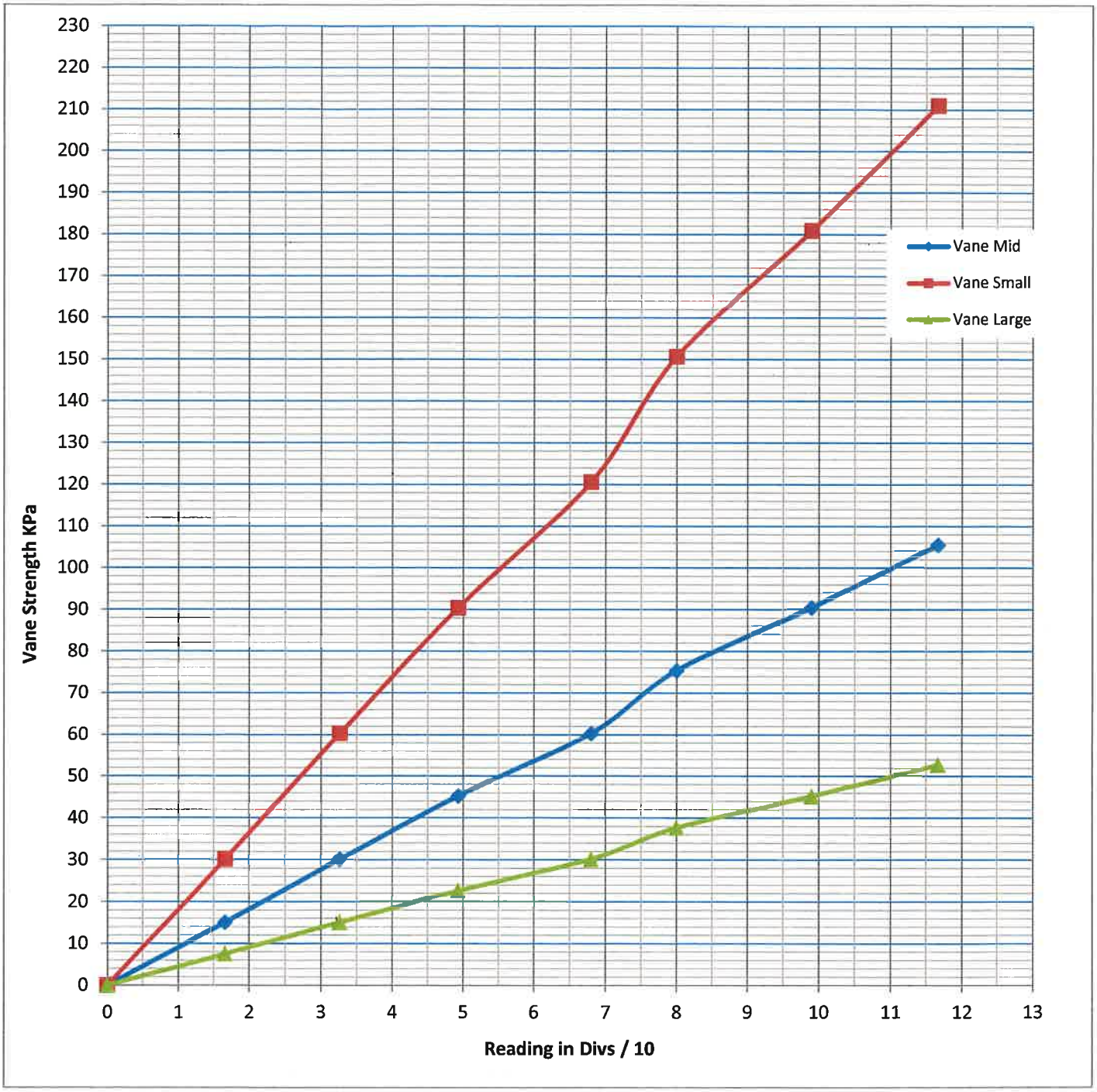
CONTROLS
Testing equipment for the construction industry

VANE TESTER
CALIBRATION CERTIFICATE

Wykeham Farrance
Soil Mechanics Division of CONTROLS

Quick Ref Lookup Chart for Certificate Vane Ref/S No TK1

Find Indicted Reading on X Axis and follow up to graph and across to Y Axis to read the "True" Shear Vane Reading



Note: 1 Divs = 10KPa

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Tel +44 (0)1442 828311 – Fax +44 (0)1442 828466 – sales@controlstesting.co.uk www.controlsgroup.net

CONTROLS
Testing equipment for the construction industry

VANE TESTER
CALIBRATION CERTIFICATE

Wykeham Farrance
Soil Mechanics Division of CONTROLS

501555

Certificate Number VT02002

Date of Issue 04/02/2021

Vane Ref/S No FTK3

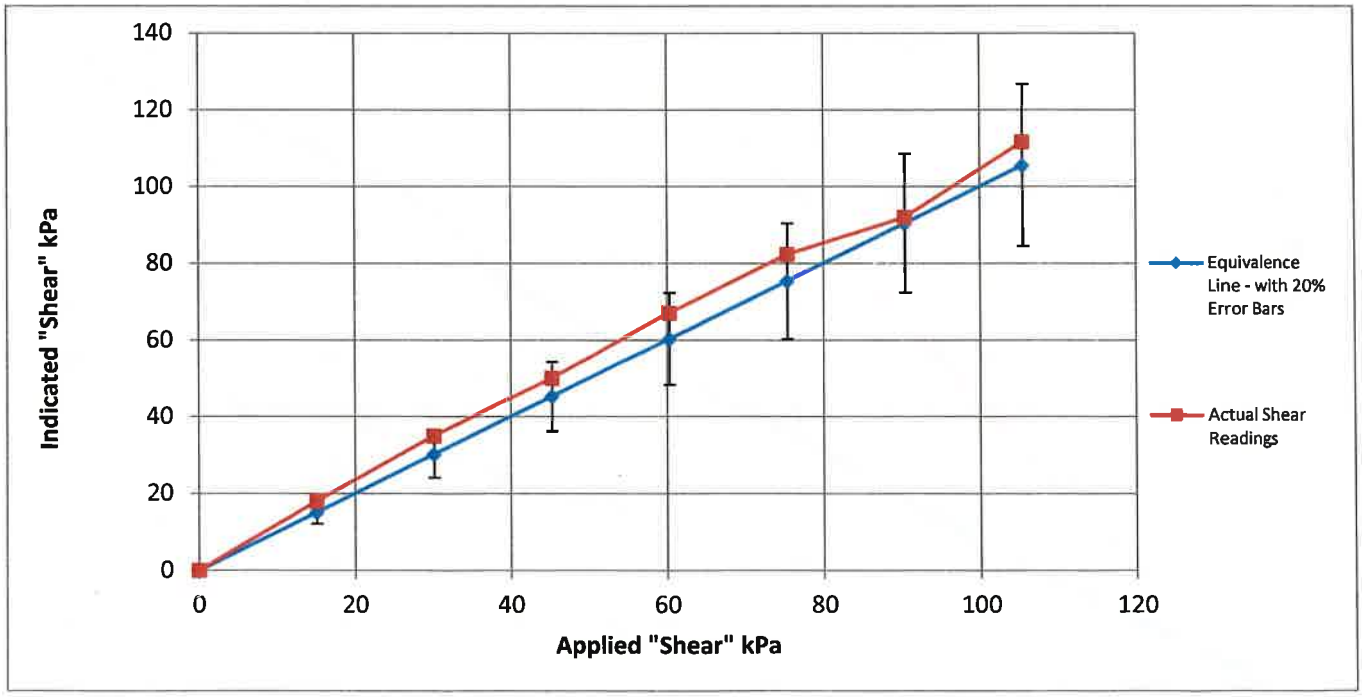
Manufacturer Controls

Model No T0174

Approved Signatory
I Knight

Date of Calibration 04/02/2021

Actual "Shear Stress" Applied kPa	Average "Shear Stress" Recorded kPa	Error %	Repeatability %
0.0	0	0.0%	0.0%
15.1	18.0	16.3%	0.0%
30.1	35.0	13.9%	0.0%
45.2	50.0	9.6%	0.0%
60.3	67.0	10.0%	3.0%
75.4	82.3	8.5%	1.2%
90.4	92.0	1.7%	4.3%
105.5	111.7	5.5%	4.5%



The above Vane tester was mounted in a "frictionless" rotation lever device and was loaded with traceable weights (Cert No 5120) at fixed centres measured using traceable equipment (Cert No 130040MAH). The shear strength reading recorded was compared back through calculation to BS1377 Part 7 Clause 3.4.2 to the actual torque ("shear strength") applied. The above results were recorded. These apply to the middle size of vane 20mmx40mm. For a simple "lookup" of vane strengths for all 3 sizes of vanes please see over.

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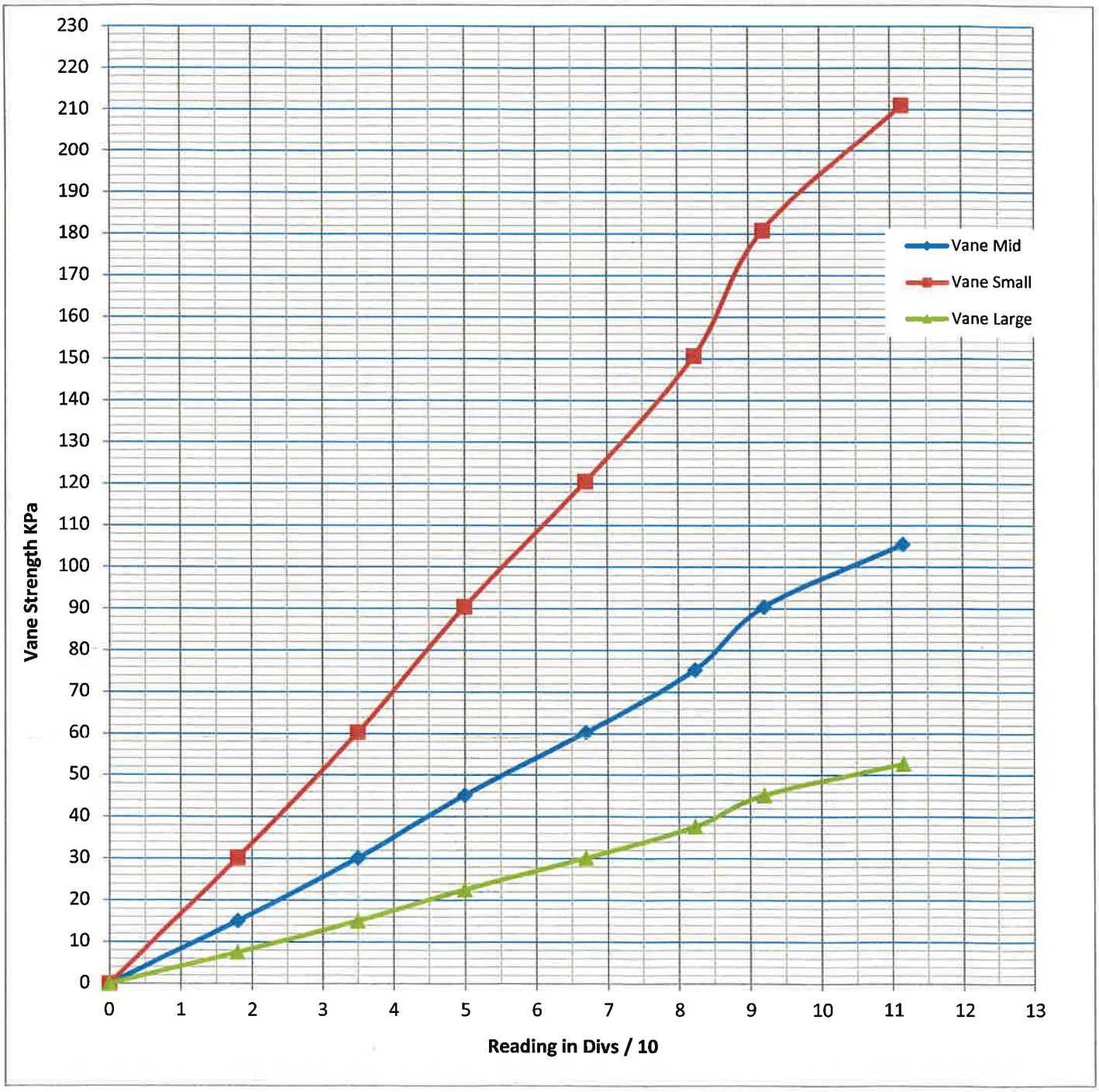
CONTROLS
Testing equipment for the construction industry

VANE TESTER
CALIBRATION CERTIFICATE

Wykeham Farrance
Soil Mechanics Division of CONTROLS

Quick Ref Lookup Chart for Certificate Vane Ref/S No FTK3

Find Indicted Reading on X Axis and follow up to graph and across to Y Axis to read the "True" Shear Vane Reading



Note: 1 Divs = 10KPa

CONTROLS TESTING EQUIPMENT LTD – Controls House, Icknield Way Tring Hertfordshire HP23 4JX
Tel +44 (0)1442 828311 – Fax +44 (0)1442 828466 – sales@controlstesting.co.uk www.controlsgroup.net

CERTIFICATION OF CALIBRATION

4533

Date Of Calibration: 12-Aug-2021

Certificate Number: G503219_1/28653

Issued by: QED Environmental Systems Ltd.

Customer: **Structural Soils Limited**
Spring Lodge 172 Chester Road Helsby
Frodsham Cheshire WA6 0AR UNITED KINGDOM

Description: Gas Analyser

Model: GA5000

Serial Number: G503219

UKAS Accredited results:

Results after adjustment :

Methane (CH_4)		
Certified Gas (%)	**Instrument Reading (%)**	**Uncertainty (%)**
5.0	4.9	0.072
14.9	14.8	0.13
59.7	59.4	0.42

Carbon Dioxide (CO_2)		
Certified Gas (%)	**Instrument Reading (%)**	**Uncertainty (%)**
5.0	4.8	0.074
15.1	14.9	0.13
40.3	40.2	0.29

Oxygen (O_2)		
Certified Gas (%)	**Instrument Reading (%)**	**Uncertainty (%)**
21.1	21.2	0.25

The inwards assessment was carried out 03-Aug-2021.
The maximum adjustment is larger than the specification limit.
Inwards assessment data is available if requested.

All concentrations are molar.

CH_4, CO_2 readings recorded at : 32.3 °C ± 2.5 °C

O2 readings recorded at : 22.5 °C ± 2.5 °C

Barometric Pressure : 1006 mbar ± 4 mbar

Method of Test : The analyser is calibrated in a temperature controlled chamber using a series of reference gases, in compliance with procedure LP004.
Instrument has passed calibration as the measurement result is within the specification limit. The specification limit takes into account the measurement uncertainty.
The results relate only to the item calibrated

This certificate is issued in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service. It provides traceability of measurement to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

Calibration Instance:112 IGC Instance:112

www.qedenv.com +44 (0) 333 800 0088 sales@qedenv.co.uk

QED Environmental Systems Ltd. Cyan Park - Unit 3, Jimmy Hill Way, Coventry, CV2 4QP, UNITED KINGDOM

Registered in England and Wales 1898734

CERTIFICATION OF CALIBRATION

4533

Date Of Calibration: 12-Aug-2021

Certificate Number: G503219_1/28653

Issued by: QED Environmental Systems Ltd.

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95%. The uncertainty evaluation has been carried out in accordance with UKAS requirements.

Calibrations marked 'Non-UKAS Accredited results' on this certificate have been included for completeness.

Non-UKAS accredited results after adjustment:

Barometer (mbar)	
Reference	**Instrument Reading**
1006	1006

Additional Gas Cells		
Gas	**Certified Gas (ppm)**	**Instrument Reading (ppm)**
CO	509	509
H_2S	53.6	54

Internal Flow	
Applied (l/hr)	**Instrument Reading (l/hr)**
5	5.3
10	10.3

Date of Issue : 25-Aug-2021 **Approved by Signatory**

Dawn Hemings

Laboratory Inspection

End of Certificate

This certificate is issued in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service. It provides traceability of measurement to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

Calibration Instance:112 IGC Instance:112

www.qedenv.com +44 (0) 333 800 0088 sales@qedenv.co.uk

QED Environmental Systems Ltd. Cyan Park - Unit 3, Jimmy Hill Way, Coventry, CV2 4QP, UNITED KINGDOM

Registered in England and Wales 1898734

Instrument Service Report

Unit Type: GA5000	Part Number:	Date:	Next Service Due:	Customer Name:
Serial Number: G503219	GA5KB0B0-101	25-Aug-2021	12-Feb-2022	Structural Soils Limited

Actions/Investigation Description	Result	Comments
Serial Number Check	Yes	
Battery Requires Replacing	No	
Internal Flow Calibrated	Yes	
Full Automatic Calibration	Pass	
Serial Comms Test (USB)	Pass	
Service history of instrument reviewed	Yes	
Inwards gas check data reviewed	Yes	
Instrument turns on	Pass	
Backlight operates correctly	Yes	
External visual inspection performed	Pass	
Internal visual inspection performed	Pass	
All screws tightened to correct torque	Yes	
All connectors are secure	Pass	
Check diagnostic channels	Pass	
Case compression test	Pass	
Impact and stability test	Pass	
Pressure transducer test(s) as per user operation	Pass	

Instrument Service Report

Unit Type: GA5000	Part Number:	Date:	Next Service Due:	Customer Name:
Serial Number: G503219	GA5KB0B0-101	25-Aug-2021	12-Feb-2022	Structural Soils Limited

Actions/Investigation Description	Result	Comments
Final visual inspection on instrument	Pass	
Case assembly closed and screws tightened to correct torque	Yes	
PTFE filters replaced	Yes	
Pump flow greater than 550 ml/min	Pass	
Automated instrument pressure system test (leak test)	Pass	
Pump vacuum greater than -400 mb and flow fails	Pass	
GPS function test	Pass	
Temperature probe tested	Pass	
Anemometer tested	Pass	
Chemical gas sensors calibrated – refer to Calibration Certificate	Pass	
Check main PCB and sensor PCB have the latest software	Yes	
Transducers calibrated	Pass	
As Received Chemical Cell Gas Assessment Performed (CAL16)	Yes	
As Received Gas Assessment Performed (CAL01 or CAL02)	Yes	
Chemical sensor(s) replacement over 2yrs UK and 21mths overseas.	No	
O2 sensor replacement over 3yrs UK, 33mths overseas	Pass	

Instrument Service Report

Unit Type: GA5000	Part Number:	Date:	Next Service Due:	Customer Name:
Serial Number: G503219	GA5KB0B0-101	25-Aug-2021	12-Feb-2022	Structural Soils Limited

Customer Comments

Returned for full service and calibration

General Comments/Feedback

This instrument was tested against known certified gas values and the user calibration was seen to be worse than the factory calibration for the following channels: CH4 . Common reasons for this are an out of date or poor user calibration. Regular user calibrations carried out in accordance with our operating manual will help to optimise performance. For further information on user calibration please visit the FAQ section of our website.
Thank you for returning your gas analyser to the QED Service Centre for full service and calibration. We are pleased to inform you that the analyser was received and fully assessed by one of our experienced Service Engineers and no significant faults or issues were observed during the assessment. Our extensive service was carried out, and any necessary components replaced. The analyser has successfully passed all of our rigorous testing and quality checks and has been calibrated using our bespoke, state of the art calibration facility.
For further information about how to get the best use from your instrument please visit our YouTube channel http://www.youtube.com/GeotechTV and on our Website https://qedenv.com

If you require any further assistance with your instrument please email our Technical Support Team at technical@qedenv.co.uk or call us on +44 (0) 333 800 0088 (Monday to Thursday 08.30 - 17.00 & Friday 08.30 - 15.30) UK time zone.

Service Details:		Service Engineer:	Calibration Engineer:	Approved By:	Signature:
Service Scheme	√	Ricky Cottrill	Suk Balrey	Dawn Hemings	
Standard Service					

CERTIFICATION OF CALIBRATION

4533

Date Of Calibration: 16-Jul-2021

Certificate Number: G503220_1/28472

Issued by: QED Environmental Systems Ltd.

Customer: **Structural Soils Limited**
Spring Lodge 172 Chester Road Helsby
Frodsham Cheshire WA6 0AR UNITED KINGDOM

Description: Gas Analyser

Model: GA5000

Serial Number: G503220

UKAS Accredited results:

Results after adjustment :

Methane (CH_4)		
Certified Gas (%)	**Instrument Reading (%)**	**Uncertainty (%)**
5.0	4.9	0.072
14.9	14.8	0.13
60.0	59.8	0.42

Carbon Dioxide (CO_2)		
Certified Gas (%)	**Instrument Reading (%)**	**Uncertainty (%)**
5.0	4.9	0.074
15.1	14.9	0.13
40.0	40.0	0.29

Oxygen (O_2)		
Certified Gas (%)	**Instrument Reading (%)**	**Uncertainty (%)**
21.1	21.2	0.25

The inwards assessment was carried out 02-Jul-2021.
The maximum adjustment is larger than the specification limit.
Inwards assessment data is available if requested.

All concentrations are molar.

CH_4, CO_2 readings recorded at : 32.2 °C ± 2.5 °C

O2 readings recorded at : 22.5 °C ± 2.5 °C

Barometric Pressure : 1016 mbar ± 4 mbar

Method of Test : The analyser is calibrated in a temperature controlled chamber using a series of reference gases, in compliance with procedure LP004.

Instrument has passed calibration as the measurement result is within the specification limit. The specification limit takes into account the measurement uncertainty.
The results relate only to the item calibrated

This certificate is issued in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service. It provides traceability of measurement to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

Calibration Instance:112 IGC Instance:112

www.qedenv.com +44 (0) 333 800 0088 sales@qedenv.co.uk

QED Environmental Systems Ltd. Cyan Park - Unit 3, Jimmy Hill Way, Coventry, CV2 4QP, UNITED KINGDOM

Registered in England and Wales 1898734

CERTIFICATION OF CALIBRATION

4533

Date Of Calibration: 16-Jul-2021

Certificate Number: G503220_1/28472

Issued by: QED Environmental Systems Ltd.

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95%. The uncertainty evaluation has been carried out in accordance with UKAS requirements.

Calibrations marked 'Non-UKAS Accredited results' on this certificate have been included for completeness.

Non-UKAS accredited results after adjustment:

Barometer (mbar)	
Reference	**Instrument Reading**
1016	1016

Additional Gas Cells		
Gas	**Certified Gas (ppm)**	**Instrument Reading (ppm)**
CO	509	509
H_2S	53.6	54

Internal Flow	
Applied (l/hr)	**Instrument Reading (l/hr)**
5.00	5.00
10.00	10.00

Date of Issue : 23-Jul-2021 **Approved by Signatory** Laura McBride

Laboratory Inspection

End of Certificate

This certificate is issued in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service. It provides traceability of measurement to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

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Registered in England and Wales 1898734

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Life-saving solutions

CERTIFICATE OF CALIBRATION
Phocheck Tiger

CALIBRATION CERTIFICATE NO: 71159

ISSUED BY: SHAWCITY LIMITED
DATE: 17-Jun-21

APPROVED SIGNATORY: JCheshire

NAME: Jack Cheshire

CUSTOMER: Structural Soils Ltd
INSTRUMENT: PhoCheck Tiger
SERIAL NUMBER: T-108219

CALIBRATION METHOD: CM03
AMBIENT CONDITIONS: 20°C ± 2°C and 50% (± 20%) RH

Prior to calibration the instrument was allowed to stabilise in the laboratory for at least 30 minutes.
The instrument was calibrated by exposing the sensor to known values of gas concentrations.
All gases were sampled through the complete probe and in line filter, where applicable.
The reference value is that generated by the certified source and the indicated value is that measured by the instrument.

CALIBRATION RESULTS

GAS	LOT No	REF. VALUE	INDICATED VALUE
Isobutylene	WO297301-1	100 ppm	100 ppm
Isobutylene	WO256926-1	1000 ppm	1000 ppm

COMMENTS:
The reported uncertainty is based on a standard uncertainty multiplied by a coverage factor of $k=2$.
This provides a level of confidence of uncertainty of approximately 95%.
The uncertainty of measurement is ±2 %
The results indicate that the instrument conforms to the applicable parts of the published specification.

HEALTH & SAFETY, OCCUPATIONAL HYGIENE AND ENVIRONMENTAL MONITORING INSTRUMENTS

Tel: 01793 780622
www.shawcity.co.uk

Instrument House, 91-92 Shrivenham Hundred Business Park
Watchfield, Oxfordshire, SN6 8TY

Fax: 01793 784466
service@shawcity.co.uk

PARTS REQUIRED FOR JOB NUMBER: 71159

DESCRIPTION	PART NO.	QTY	Serial No.	LOC
10.6 Lamp	LA4TM600			S4H B1
Lamp Stack	A-846267	1		S4H B3
PTFE Filter Disk	A-861632	1		S4H B2
Probe O-Ring	5/OV-02			S4H B4
Sensor seal	A-861214	1		S4H B1
Probe	880207			S4E B1
Probe Kit	A-880210			S4H B4
Filter Clamp (black)	880201			S4E B1
Probe Seal	880202			S4E B5
Filter Clamp (clear)	861219			S4H B6
Pump	A-861298			S4F B2
Manifold	861213			S4E B6
Outlet Barbs	5/JHS-03			S4E B6
Nozzle O-Ring	5/OV-04			S4H B2
Probe pipe	A-861286a			S4G B5
Tubing Inv Cone	5/JO-01			S4D B1
Tiger Battery	A-861240			S4G B1
Inlet Outlet Seal	861215	2		S4H B5
Display	1/OM-05			S4E B3
Battery Charging Cradle/Dock	A-861220			S4F B2
Charger Lead	1/VS-22	1		S4F B3
Fuse FU100/101/103/105/106	1/FB-10			S4G B3
FU1 fuse	1/FB-12			S3A B1
Standard Top Housing	A-861551			service
LT Top Housing	A-880218			
Charging Dock Magnet	2/AP-08			S4C B2
Bottom Housing	861203-2			S4F B4
Pneumatics Kit	A-861509			S4F B3
Tiger Battery	A-861240			S4G B1
Sensor PCB	A-861103			S4E B5
Orange stack for Tiger LT	A-846496			S4C B1
PAT Test	PAT 1			
Mainboard Assembly	A-861120			

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SERVICE / INSPECTION SHEET

JOB NUMBER: 71159
INSTRUMENT: Phocheck Tiger

SERIAL NUMBER: T-108219
DATE RECEIVED: 14/06/2021

FIRMWARE: V0.8.14
UPGRADED TO:

CUSTOMER: Structural Soils Ltd

ITEMS RECEIVED	Received	RTN?
Instrument	YES	
Rubber Boot	YES	
Battery Charger		
Charging Cradle		
Operation Manual		
Quick Start Guide		
Spares Kit		
Comms Cable		
Probe FLEXI		
Peli Case	YES	
Tubing		
Regulator		
Software (Memory Stick)		
PLASTIC CASE		
	SIGNED:	

TESTS	Pre Service	Post Service
Charger Test		OK
Battery charge Test		OK
Lamp Test		OK
Air Flow Test ≥ 220ml/min		242ml/min
Block Flow Test ≤ 15ml/min		10ml/min
Moisture Sensitivity = 0.0ppm		0.0ppm
Switch Test		OK
Sensor Test		OK
Alarm Test		OK
PC Comms Test		OK
Datalog Test		N/A
Display Test		OK
Physical Inspection		OK
PAT Test	FAIL	
Firmware Upgrade		N/A
Software Upgrade (usb)		N/A
Function Test		OK
Run time		6:45

Comments:
Lamp over 2 years, replaced
Replaced the sensor seal, stack, inlet outlet seals and filter as part of the service
Firmware version V0.8.14
Flowrate measured at 242ml/min
Unit has been calibrated and bump tested
PAT test failed visual inspection as copper wire was showing, supplied new power supply

TECHNICIAN: Jack Cheshire JCheshire DATE: 17/06/2021