

SA01B

Project No. AG3544-23

Sheet 1 of 1

Scale 1:25

Total Depth 1.30m

Sample / Test Type	Depth (m)	Result	Level (mAoD)	Strata Depth (thickness) (m)	Ease of Dig	Description of Strata	Legend	GW
ES	0.30		4.25	(0.12)		Asphalt.		
			4.17	(0.08)		(MADE GROUND)		
				0.20		Grey slightly sandy coarse angular GRAVEL of limestone.		
						(MADE GROUND - SUBBASE)		
						Soft brown gravelly slightly sandy CLAY. Gravel is fine to coarse subangular to subrounded flint.		
						(MADE GROUND)		
			3.47	0.90		Soft dark greyish brown slightly gravelly SILT. Gravel is fine to coarse subrounded flint and rare fragments of brick.		
			3.27	1.10		(MADE GROUND)		
				(0.20)		Brown slightly clayey slightly sandy GRAVEL. Gravel is fine to coarse subangular to subrounded flint.		
			3.07	1.30		(RIVER TERRACE DEPOSITS)		
						End of Trial Pit at 1.30m		

Checked: AS

Sample / Test Type	Depth (m)	Result	Level (mAoD)	Strata Depth (thickness) (m)	Ease of Dig	Description of Strata	Legend	GW
D	0.90		4.44	(0.09)		Asphalt.		
				0.09		(MADE GROUND)		
			4.33	(0.11)		Grey slightly sandy coarse angular GRAVEL of limestone.		
				0.20		(MADE GROUND - SUBBASE)		
B	1.50					Soft brown gravelly CLAY. Gravel is fine to coarse subrounded to subangular flint.		
				(0.60)		(MADE GROUND)		
			3.73	0.80		Soft dark brown slightly gravelly SILT. Gravel is fine to coarse subangular to subrounded flint and rare fragments of brick.		
				(0.20)		(MADE GROUND)		
			3.53	1.00		Grey slightly sandy slightly clayey GRAVEL with low cobble content. Gravel is fine to coarse subangular to subrounded flint. Cobbles are subrounded flint.		
						(RIVER TERRACE DEPOSITS)		
				(0.60)				
			2.93	1.60		End of Trial Pit at 1.60m		

Method: Wheeled backhoe excavator

Groundwater: Groundwater seepage at 1.60m bgl.

Stability: Stable.

Remarks: Soakaway test undertaken within trial pit, see separate results sheet for details. Trial pit backfilled with 20mm single sized gravel and standpipe installed to allow soakaway test to be undertaken.

Length: 1.90m

Width: 0.60m

Logged: EY

Checked: AS

Sample / Test Type	Depth (m)	Result	Level (mAoD)	Strata Depth (thickness) (m)	Ease of Dig	Description of Strata	Legend	GW
ES	0.40		4.12	(0.14)		Asphalt. (MADE GROUND)		
				0.14		Grey slightly sandy coarse angular GRAVEL of limestone.		
			3.96	(0.16)		(MADE GROUND - SUBBASE)		
D	0.70			0.30		Firm brown slightly sandy gravelly CLAY. Gravel is fine to coarse subrounded flint. (MADE GROUND)		
				(0.60)				
			3.36	0.90		Soft dark greyish brown slightly sandy slightly gravelly SILT. Gravel is fine to medium subrounded to rounded flint and rare fragments of brick and concrete.		
D	1.50		3.21	(0.15)		(MADE GROUND)		
				1.05		Light brown to cream slightly clayey slightly sandy medium to coarse subangular to subrounded GRAVEL of flint with low cobble content. Gravel is chalk and flint. Cobbles are flint.		
				(1.25)		(RIVER TERRACE DEPOSITS)		
D	2.00							
								
								
			1.96	2.30		End of Trial Pit at 2.30m		

Method: Wheeled backhoe excavator

Groundwater: Groundwater at 2.28m bgl.

Stability: Stable.

Remarks: Soakaway test undertaken within trial pit, see separate results sheet for details. Trial pit backfilled with 20mm single sized gravel and standpipe installed to allow soakaway test to be undertaken.

Length: 2.10m

Width: 0.60m

Logged: EY

Checked: AS

SPT SUMMARY SHEET

Project: Langstone Technology Park, Havant - Phase 2
Client: Havant S.a.r.l.
Project No: AG3544-23

Borehole No.	Borehole depth (m)	Bottom depth (m)	Casing depth (m)	Water Level (m)	Equipment ref.	Seating Drive		Test Drive					Test Type	N Value
						Blows	Pen (mm)	Blows		Pen (mm)		Total Pen (mm)		
CP01	1.20	1.65	1.20	DRY	AR1752	3 5	75 75	5 5 6 6	75 75 75 75	300	C	22		
CP01	2.00	2.45	1.50	DRY	AR1752	5 4	75 75	4 4 3 4	75 75 75 75	300	C	15		
CP01	3.00	3.45	3.00	3.00	AR1752	3 4	75 75	4 4 5 5	75 75 75 75	300	S	18		
CP01	4.10	4.55	4.10	2.00	AR1752	4 5	75 75	4 4 3 3	75 75 75 75	300	C	14		
CP01	5.00	5.45	5.00	2.00	AR1752	3 3	75 75	3 4 4 4	75 75 75 75	300	S	15		
CP01	6.50	6.95	6.00	2.20	AR1752	3 4	75 75	4 5 6 6	75 75 75 75	300	S	21		
CP01	8.00	8.45	8.00	2.20	AR1752	4 6	75 75	6 6 7 9	75 75 75 75	300	S	28		
CP01	9.40	9.85	9.00	2.50	AR1752	5 7	75 75	7 7 8 9	75 75 75 75	300	S	31		
CP01	10.80	11.25	9.00	2.80	AR1752	6 7	75 75	7 9 9 10	75 75 75 75	300	S	35		
CP01	12.20	12.65	10.50	2.80	AR1752	7 9	75 75	10 10 12 12	75 75 75 75	300	S	44		
CP01	13.70	14.15	12.00	3.00	AR1752	8 9	75 75	10 11 13 14	75 75 75 75	300	S	48		
CP01	15.20	15.63	13.00	3.50	AR1752	9 10	75 75	12 13 14 11	75 75 75 50	275	S	>50		
CP01	16.50	16.91	13.00	4.00	AR1752	10 11	75 75	13 14 15 8	75 75 75 30	255	S	>50		
CP02	1.20	1.65	1.20	DRY	AR1752	3 5	75 75	5 6 7 8	75 75 75 75	300	C	26		
CP02	2.10	2.50	2.00	1.50	AR1752	8 10	75 75	12 14 16 8	75 75 75 20	245	C	>50		
CP02	3.00	3.45	3.00	1.80	AR1752	4 5	75 75	5 6 7 8	75 75 75 75	300	C	26		
CP02	4.00	4.45	4.00	1.80	AR1752	5 6	75 75	6 5 4 4	75 75 75 75	300	C	19		
CP02	4.60	5.05	4.60	2.50	AR1752	3 4	75 75	4 4 5 5	75 75 75 75	300	S	18		
CP02	5.80	6.25	5.50	3.00	AR1752	4 4	75 75	4 5 6 6	75 75 75 75	300	S	21		
CP02	7.30	7.75	7.30	4.50	AR1752	5 4	75 75	5 6 6 7	75 75 75 75	300	S	24		
CP02	8.60	9.05	8.00	5.00	AR1752	4 5	75 75	5 6 8 8	75 75 75 75	300	S	27		
CP02	10.00	10.45	9.00	5.00	AR1752	5 6	75 75	6 7 8 9	75 75 75 75	300	S	30		
CP02	11.50	11.95	10.50	6.50	AR1752	7 8	75 75	8 9 9 10	75 75 75 75	300	S	36		
CP02	13.00	13.45	12.00	2.00	AR1752	6 8	75 75	9 12 13 15	75 75 75 75	300	S	49		
CP02	14.50	14.94	13.00	2.50	AR1752	8 9	75 75	10 12 14 14	75 75 75 60	285	S	>50		
CP02	15.80	16.22	14.00	3.00	AR1752	9 10	75 75	11 13 14 12	75 75 75 40	265	S	>50		
CP02	16.90	17.30	15.00	3.50	AR1752	10 11	75 75	12 13 15 10	75 75 75 20	245	S	>50		
CP03	1.20	1.65	1.20	DRY	AR1752	5 10	75 75	3 3 4 4	75 75 75 75	300	C	14		
CP03	2.00	2.45	2.00	DRY	AR1752	4 5	75 75	5 6 6 7	75 75 75 75	300	C	24		
CP03	3.00	3.45	3.00	2.60	AR1752	4 5	75 75	7 7 8 9	75 75 75 75	300	C	31		
CP03	4.00	4.45	4.00	3.00	AR1752	4 5	75 75	5 6 7 7	75 75 75 75	300	C	25		
CP03	5.20	5.65	5.00	5.00	AR1752	3 4	75 75	4 4 6 6	75 75 75 75	300	S	20		
CP03	6.50	6.95	6.50	3.00	AR1752	2 3	75 75	3 4 5 5	75 75 75 75	300	S	17		
CP03	8.00	8.45	8.00	3.50	AR1752	3 4	75 75	4 5 6 7	75 75 75 75	300	S	22		

Notes:

1. Test carried out in general accordance with BS EN ISO 22476-3:2005
2. N values have not been subjected to any correction.
3. Test carried out using split spoon S, or solid cone C.

SPT SUMMARY SHEET

Project: Langstone Technology Park, Havant - Phase 2
Client: Havant S.a.r.l.
Project No: AG3544-23

Borehole No.	Borehole depth (m)	Bottom depth (m)	Casing depth (m)	Water Level (m)	Equipment ref.	Seating Drive		Test Drive					Test Type	N Value
						Blows	Pen (mm)	Blows		Pen (mm)		Total Pen (mm)		
CP03	9.50	9.95	9.50	3.50	AR1752	5 6	75 75	6 7 7 8	75 75 75 75	300	S	28		
CP03	11.00	11.45	11.00	5.00	AR1752	6 7	75 75	8 8 9 12	75 75 75 75	300	S	37		
CP03	12.60	13.05	12.60	6.00	AR1752	7 8	75 75	9 12 13 16	75 75 75 75	300	S	50		
CP03	14.20	14.65	14.20		AR1752	8 10	75 75	10 12 13 15	75 75 75 75	300	S	50		
CP03	15.70	16.13	15.70	7.00	AR1752	9 10	75 75	12 13 14 11	75 75 75 50	275	S	>50		
CP03	16.80	17.22	16.80		AR1752	10 12	75 75	12 14 15 9	75 75 75 40	265	S	>50		
DCS01	1.20	1.65			110.119	4 4	75 75	3 3 4 4	75 75 75 75	300	C	14		
DCS01	2.00	2.45			110.119	3 4	75 75	4 4 4 5	75 75 75 75	300	C	17		
DCS01	3.00	3.45	3.00		110.119	4 4	75 75	4 4 5 5	75 75 75 75	300	C	18		
DCS01	4.00	4.45	4.00		110.119	4 4	75 75	4 5 5 5	75 75 75 75	300	C	19		
DCS01	5.00	5.45	5.00		110.119	3 3	75 75	4 4 4 4	75 75 75 75	300	S	16		
DCS02	1.20	1.65			110.119	3 4	75 75	4 4 5 5	75 75 75 75	300	C	18		
DCS02	2.00	2.45			110.119	4 4	75 75	4 4 5 5	75 75 75 75	300	C	18		
DCS02	3.00	3.45	3.00		110.119	4 4	75 75	4 4 4 5	75 75 75 75	300	C	17		
DCS02	4.00	4.45	4.00		110.119	4 4	75 75	3 3 4 4	75 75 75 75	300	C	14		
DCS02	5.00	5.45	4.00		110.119	4 4	75 75	4 5 5 5	75 75 75 75	300	S	19		
DCS03A	1.20	1.65			110.119	2 3	75 75	3 3 4 4	75 75 75 75	300	C	14		
DCS03A	2.00	2.45			110.119	3 4	75 75	4 3 4 4	75 75 75 75	300	C	15		
DCS03A	3.00	3.45	3.00		110.119	4 4	75 75	4 3 3 4	75 75 75 75	300	C	14		
DCS03A	4.00	4.45	4.00		110.119	3 3	75 75	3 4 4 4	75 75 75 75	300	C	15		
DCS03A	5.00	5.45	5.00		110.119	3 3	75 75	4 4 5 5	75 75 75 75	300	S	18		

Notes:

1. Test carried out in general accordance with BS EN ISO 22476-3:2005
2. N values have not been subjected to any correction.
3. Test carried out using split spoon S, or solid cone C.



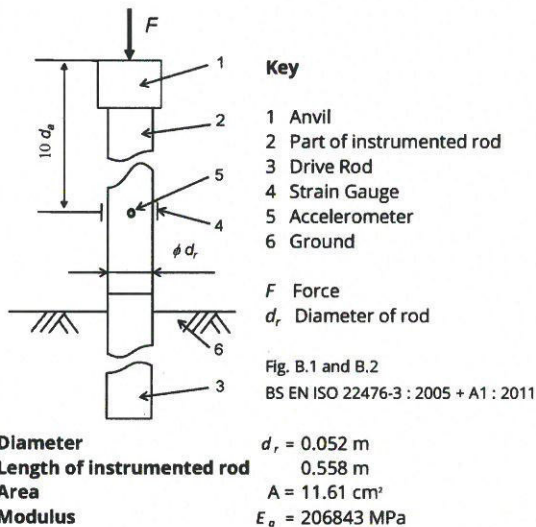
SPT Calibration Report

Hammer Energy Measurement Report

Type of Hammer SPT Hammer
 Test No EQU2023_35
 Client Applied Geology

Test Depth (m) 9.20
 Mass of hammer $m = 63.5\text{ kg}$
 Falling height $h = 0.76\text{ m}$
 $E_{\text{theor}} = m \times g \times h = 473\text{ J}$

Characteristics of the instrumented rod

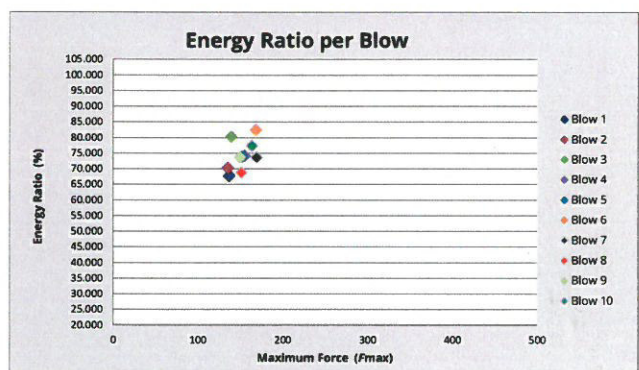
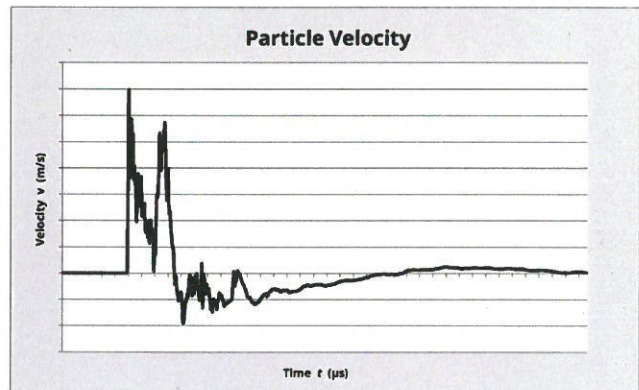
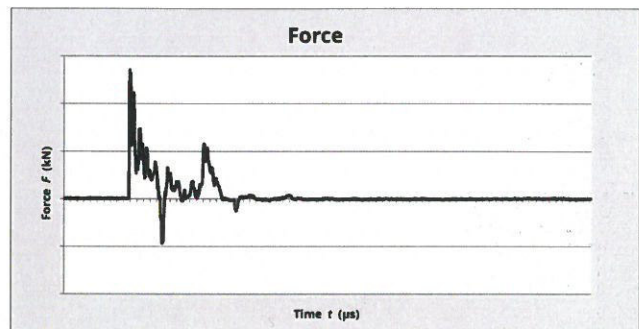
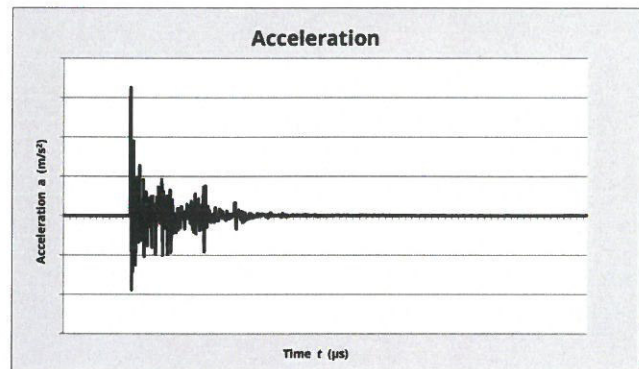


DATE OF TEST	VALID UNTIL	HAMMER ID
03/02/2023	03/02/2024	AR1752

$E_{\text{meas}} = 0.351\text{ kN-m}$

$E_{\text{theor}} = 0.473\text{ kN-m}$

Comments



$$\text{Energy Ratio (Er)} = \frac{E_{\text{meas}}}{E_{\text{theor}}}$$

74.20%
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Equipe SPT Analyzer Operator

ks

Certificate prepared by

[Signature]

Certificate checked by

[Signature]

Certificate date

10/02/2023



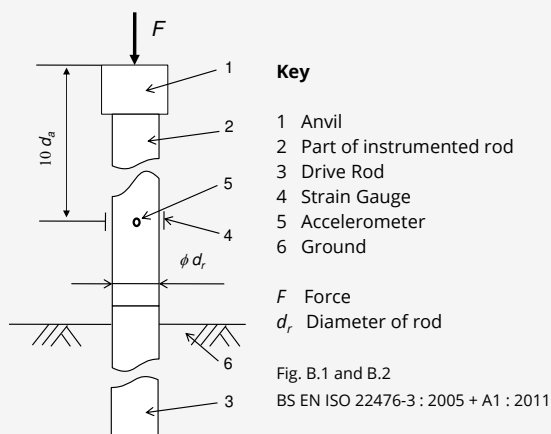
SPT Calibration Report

Hammer Energy Measurement Report

Type of Hammer Premier
 Test No EQU2023_34
 Client Applied Geology

Test Depth (m) 9.20
 Mass of hammer $m = 63.5\text{kg}$
 Falling height $h = 0.76\text{m}$
 $E_{\text{theor}} = m \times g \times h = 473\text{J}$

Characteristics of the instrumented rod



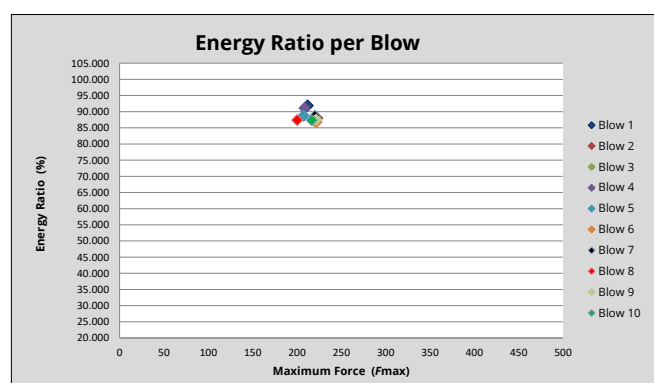
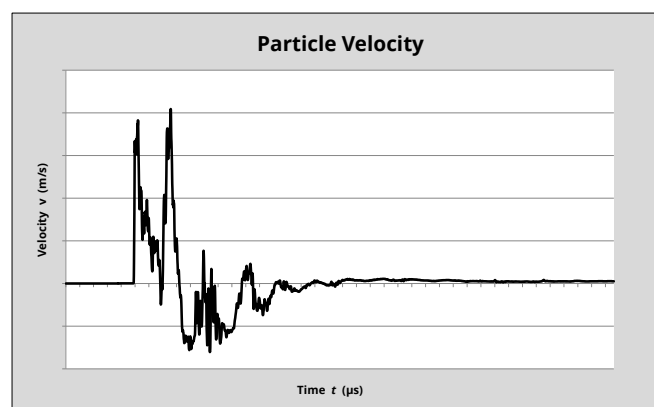
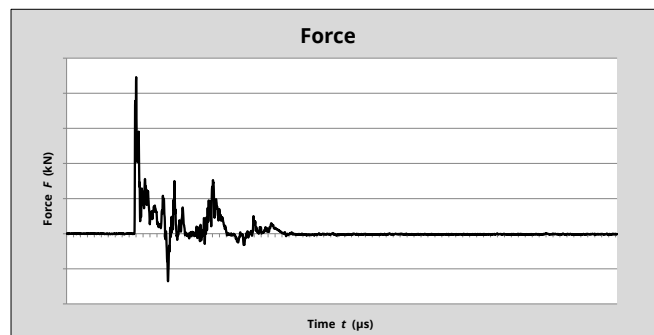
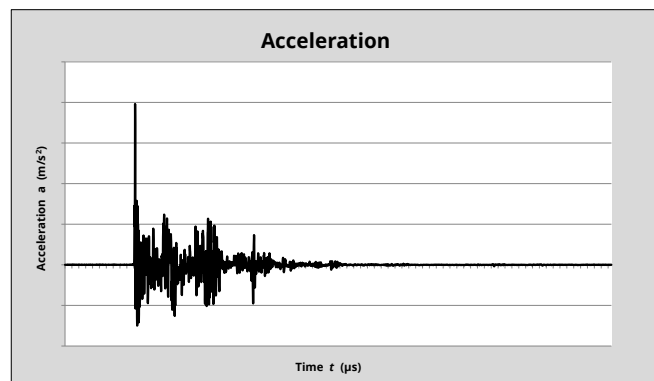
Diameter $d_r = 0.052\text{ m}$
 Length of instrumented rod 0.558 m
 Area $A = 11.61\text{ cm}^2$
 Modulus $E_a = 206843\text{ MPa}$

DATE OF TEST	VALID UNTIL	HAMMER ID
03/02/2023	03/02/2024	110 119

$E_{\text{meas}} = 0.419\text{ kN-m}$

$E_{\text{theor}} = 0.473\text{ kN-m}$

Comments



$$\text{Energy Ratio (Er)} = \frac{E_{\text{meas}}}{E_{\text{theor}}}$$

88.48%
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Equipe SPT Analyzer Operator

ks

Certificate prepared by

[Signature]

Certificate checked by

[Signature]

Certificate date

06/03/2023

Exploratory Hole Log Key Sheet

Sample Notation		Backfill Symbols		Legend Symbols	
D	Small Disturbed sample		Sand		Topsoil
B	Bulk Disturbed sample		Gravel		Made Ground
ES	Environmental sample		Concrete		Concrete
U	Undisturbed U100 sample		Bentonite		Clay
UT	Undisturbed UT100 sample		Arising		Silt
C	Core sample		Grout		Sand
W	Water sample				Gravel
In Situ Test Notation		Installation Symbols			Peat
S	Standard Penetration Test		Plain Standpipe		Cobbles
S (C)	Standard Penetration Test (cone)		Slotted Standpipe		Boulders
HV	Hand Shear Vane Test		Piezometer		Mudstone
PID	Photoionization Detector Test		Vibrating Wire Piezometer		Siltstone
MEXE	Mexecone Cone Penetrometer Test		Inclinometer		Sandstone
PP	Pocket Penetrometer Test		Extensometer (with magnet locations)		Limestone
K	Permeability Test				Chalk
Results Notation		Groundwater (GW)			Coal
Cu	Shear Strength		Rise		Breccia
N	SPT N Value		Groundwater Strike - with Recorded Rise		Conglomerate
PID	VOC Concentration		Strike		Shale
()	U/UT Blow Count		Groundwater Strike - No Recorded Rise		Igneous Rock
Rotary Core Notation					Metamorphic Rock
TCR	Total Core Recovery				No Recovery
SCR	Solid Core Recovery				
RQD	Rock Quality Designation				
FI	Fracture Index				
If	Fracture Spacing				
NI	Non Intact				
NR	No Recovery				
NA	Not Applicable				
Ease of Dig					
VE	Very Easy				
E	Easy				
M	Moderate				
H	Hard				
VH	Very Hard				
General Notes					
1. Details of the standpipe/piezometer are given on the log. The 'Install' column shows a graphical representation of the installed including depth of instruments including slotted section or piezometer depth, and backfill details. 2. Standard Penetration Test is defined in BS EN ISO 17892. Total N value is shown on the logs, full details of the test increments, equipment references, water and casing levels shown on the SPT Summary Sheet.					
Note: Most soils comprise a mixture of particle sizes. The soil type is graphically represented on the log and may be a combination of these symbols.					

APPENDIX D

Ground Gas Monitoring and Flow Results

Project Number: AG3544-23

Date and Time of Monitoring: 16/11/2023

Project Name: Langstone Technology Park, Havant - Phase 2

Phase of Monitoring: 1 of 4

BH No.	Flow Range (litres/hr over 3 mins)			Differential Pressure (mb)	Methane % v/v		Carbon dioxide % v/v		Oxygen % v/v		Diameter of installation (mm)	Water level (m bgl)
	Max	Min	Avg		Peak	Steady	Peak	Steady	Min	Steady		
DCS01	< 0.1	< 0.1	< 0.1	-0.10	0.2	0.2	1.9	1.9	14.5	14.5	50	1.67
DCS02	0.1	0.1	0.1	-0.07	0.2	0.2	2.2	2.2	18.9	18.9	50	1.54
DCS03A	1.1	1.1	1.1	-0.10	0.2	0.2	0.1	0.1	21.4	21.4	50	1.98
CP01	1.6	0.9	1.2	-3.24	0.2	0.2	0.9	0.9	12.1	12.1	50	1.63
CP02	< 0.1	< 0.1	< 0.1	-0.05	0.2	0.2	0.2	0.1	21.0	21.3	50	1.25
CP03	-	-	-	-	-	-	-	-	-	-	50	1.76

Additional gases (if required)

BH No.	VOCs (ppm)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	Diameter of installation (mm)
DCS01	< 0.1	-	-	50
DCS02	< 0.1	-	-	50
DCS03A	< 0.1	-	-	50
CP01	< 0.1	-	-	50
CP02	< 0.1	-	-	50
CP03	< 0.1	-	-	50

Borehole specific comments/observations
CP01: Headworks flooded with rain water.
CP03: Found with no bung.

Meteorological Data

Atmospheric Pressure (mb)	Start: 1014
Atmospheric Pressure (mb)	Finish: 1015
Pressure Rising or Falling	Rising (over previous 48hrs)
Weather Conditions	Raining
Atmospheric Oxygen (% vol)	21.0
Wind Speed & Direction	7 from the North
Ambient Air Temperature (°C)	6.0

Site Data

Monitoring Personnel	Ella Young
GPS Instrument	
Gasmeter Serial Number	G505737
PID Serial Number	109597
Ground Conditions (vegetation stress, visual contamination):	

General Notes:

- Instrument specification data and calibration information provided on a separate sheet

APPLIED GEOLOGY

Ground Gas Monitoring and Flow Results

Project Number: AG3544-23

Date and Time of Monitoring: 16/11/2023

Project Name: Langstone Technology Park, Havant - Phase 2

Phase of Monitoring: 2 of 4

BH No.	Flow Range (litres/hr over 3 mins)			Differential Pressure (mb)	Methane % v/v		Carbon dioxide % v/v		Oxygen % v/v		Diameter of installation (mm)	Water level (m bgl)
	Max	Min	Avg		Peak	Steady	Peak	Steady	Min	Steady		
DCS01	< 0.1	< 0.1	< 0.1	-0.10	0.2	0.2	1.8	1.8	15.0	15.0	50	1.73
DCS02	0.1	0.1	0.1	-0.10	0.2	0.2	2.1	2.1	18.3	18.3	50	1.69
DCS03A	1.0	0.9	1.0	-0.10	0.2	0.2	0.1	0.1	21.2	21.2	50	1.97
CP01	-4.2	-2.4	-3.1	-0.07	0.2	0.2	1.5	1.5	8.5	8.5	50	1.96
CP02	< 0.1	< 0.1	< 0.1	-0.10	0.2	0.2	0.3	0.3	20.3	20.3	50	1.39
CP03	< 0.1	< 0.1	< 0.1	-0.1	0.2	0.2	1.0	1.0	18.4	18.4	50	1.85

Additional gases (if required)

BH No.	VOCs (ppm)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	Diameter of installation (mm)
DCS01	-	-	-	50
DCS02	-	-	-	50
DCS03A	-	-	-	50
CP01	-	-	-	50
CP02	-	-	-	50
CP03	-	-	-	50

Borehole specific comments/observations

Meteorological Data

Atmospheric Pressure (mb)	Start: 1032
Atmospheric Pressure (mb)	Finish: 1032
Pressure Rising or Falling	Rising (over previous 48hrs)
Weather Conditions	Dry, overcast
Atmospheric Oxygen (% vol)	21.2
Wind Speed & Direction	<7 from the West
Ambient Air Temperature (°C)	7.0

Site Data

Monitoring Personnel	Ella Young
GPS Instrument	
Gasmeter Serial Number	G505737
PID Serial Number	
Ground Conditions (vegetation stress, visual contamination):	

General Notes:

1. Instrument specification data and calibration information provided on a separate sheet

APPLIED GEOLOGY

Ground Gas Monitoring and Flow Results

Project Number: AG3544-23
Project Name: Langstone Technology Park, Havant - Phase 2

Date and Time of Monitoring: 16/11/2023
Phase of Monitoring: 3 of 4

BH No.	Flow Range (litres/hr over 3 mins)			Differential Pressure (mb)	Methane % v/v		Carbon dioxide % v/v		Oxygen % v/v		Diameter of installation (mm)	Water level (m bgl)
	Max	Min	Avg		Peak	Steady	Peak	Steady	Min	Steady		
DCS01	<0.1	<0.1	<0.1	-0.03	0.2	0.2	3.1	3.1	16.1	17.8	50	1.85
DCS02	<0.1	<0.1	<0.1	0.07	0.3	0.3	1.9	1.9	20.3	20.3	50	1.75
DCS03A	0.1	<0.1	0.1	0.03	0.3	0.2	2.6	2.5	15.2	15.2	50	2.00
CP01	<0.1	<0.1	<0.1	-0.14	0.3	0.3	2.0	2.0	11.8	11.8	50	2.02
CP02	<0.1	<0.1	<0.1	0.07	0.3	0.3	0.6	0.6	20.9	20.9	50	1.46
CP03	<0.1	<0.1	<0.1	0.15	0.3	0.3	2.7	2.7	14.9	14.9	50	1.94

Additional gases (if required)

BH No.	VOCs (ppm)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	Diameter of installation (mm)
DCS01	1.0	-	-	50.00
DCS02	0.2	-	-	50.00
DCS03A	0.3	-	-	50.00
CP01	3.5	-	-	50.00
CP02	0.4	-	-	50.00
CP03	3.6	-	-	50.00

Borehole specific comments/observations
DCS01: Borehole and headworks were flooded. Monitored after 20 minutes.

Meteorological Data

Atmospheric Pressure (mb)	Start: 1002
Atmospheric Pressure (mb)	Finish: 1003
Pressure Rising or Falling	Steady (over previous 24hrs)
Weather Conditions	Overcast and dry. Light rain around 1 pm.
Atmospheric Oxygen (% vol)	21.2
Wind Speed & Direction	21 km/h N
Ambient Air Temperature (°C)	3.0

Site Data

Monitoring Personnel	Kerys Webb
GPS Instrument	
Gasmeter Serial Number	G505737
PID Serial Number	115558
Ground Conditions (vegetation stress, visual contamination):	

General Notes:

1. Instrument specification data and calibration information provided on a separate sheet

Ground Gas Monitoring and Flow Results

Project Number: AG3544-23
Project Name: Langstone Technology Park, Havant - Phase 2

Date and Time of Monitoring: 16/11/2023
Phase of Monitoring: 4 of 4

BH No.	Flow Range (litres/hr over 3 mins)			Differential Pressure (mb)	Methane % v/v		Carbon dioxide % v/v		Oxygen % v/v		Diameter of installation (mm)	Water level (m bgl)
	Max	Min	Avg		Peak	Steady	Peak	Steady	Min	Steady		
DCS01	0.1	<0.1	<0.1	0.04	<0.1	<0.1	1.7	1.7	19.7	19.7	50	1.83
DCS02	<0.1	<0.1	<0.1	0.03	<0.1	<0.1	1.2	1.2	19.4	19.4	50	1.93
DCS03A	0.1	<0.1	<0.1	0.07	<0.1	<0.1	1.2	1.2	19.6	19.6	50	1.97
CP01	0.1	<0.1	<0.1	0.14	0.1	0.1	4.3	4.3	10.0	10.0	50	2.04
CP02	0.1	<0.1	<0.1	0.07	0.1	0.1	1.8	1.8	18.4	18.4	50	2.01
CP03	0.1	<0.1	<0.1	0.03	<0.1	<0.1	1.4	1.4	18.5	18.5	50	1.60

Additional gases (if required)

BH No.	VOCs (ppm)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	Diameter of installation (mm)
DCS01	0.1	-	-	50
DCS02	<0.1	-	-	50
DCS03A	0.2	-	-	50
CP01	0.2	-	-	50
CP02	0.1	-	-	50
CP03	<0.1	-	-	50

Borehole specific comments/observations

Meteorological Data

Atmospheric Pressure (mb)	Start: 1031
Atmospheric Pressure (mb)	Finish: 1031
Pressure Rising or Falling	Falling (over previous 24hrs)
Weather Conditions	sunny, windy
Atmospheric Oxygen (% vol)	21.0
Wind Speed & Direction	
Ambient Air Temperature (°C)	10.0

Site Data

Monitoring Personnel	Ella Young
GPS Instrument	
Gasmeter Serial Number	G506560
PID Serial Number	78455
Ground Conditions (vegetation stress, visual contamination):	

General Notes:

1. Instrument specification data and calibration information provided on a separate sheet

Gas Monitoring Equipment Specification and Accuracy Details

Instrument Specifications

Instrument	Atmospheric Pressure Range	Temperature Range	Flow Range	Flow Resolution	Borehole Pressure Range
GA5000	500-1500 mb +/- 5 mb	-10°C to + 50°C	0-20 lt/hr +/- 0.3 l/hr	0.1l/hr	+.500/-500 mbar +/- 4 mbar
Phocheck Tiger	-	-20 to + 60°C (Certified to -15 to + 45°C)	-	-	-

Instrument Accuracy

Instrument		Methane	Lower Explosive Limit	Carbon Dioxide	Oxygen	Volatile Organic Compounds	Hydrogen Sulphide	Carbon Monoxide
GA5000	Detection Range	0-100%	-	0 -100%	0-25%	NA	0 -50ppm response <30 secs	0 - 1000ppm response <30 Secs
	Detection Accuracy	./- 0.5% @ 0 to 70%, ./-1.5% @ 70 to 100% Response < 10 secs	N/A	./- 0.5% @ 0 to 60%, ./-1.5% @ 60 to 100% Response < 10 secs	./- 1.0% @ 0 to 25%, Response < 20 secs	NA	./- 1.5% FS	./- 2% of FS
Phocheck Tiger	Detection Range	N/A	N/A	N/A	N/A	1 ppb - 10,000 ppm	N/A	N/A
	Detection Accuracy	N/A	N/A	N/A	N/A	+/- 1ppb +/- 5% of actual displayed accuracy +/- One digit Response < 2sec	N/A	N/A

Calibration Frequency

Equipment Serial Numbers

Instruments are calibrated annually. Details of the instrument calibration certificates and service records are available if required.		
	GA5000 (G503948, G505383, G505737)	
	Phocheck Tiger - (T-108308, T-109597, T-109598, T-110423)	

GROUNDWATER SAMPLING RECORD

PROJECT: Langstone Technology Park, Havant - Phase 2 DATE: 22/11/2023 WEATHER: Dry and overcast.	PROJECT No: AG3544-23 PHASE OF SAMPLING: Developing. FIELD PERSONNEL: EY
AIR TEMP (°C): 7	

Monitoring Well	Standpipe Depth (m bgl)	Standpipe Diameter (mm)	Purging Method*1	Sampling Depth (m bgl)	Groundwater Level Before Purging (m bgl)	Groundwater Level After Purging (m bgl)	Purge Volume (l)	Sample Colour, Odour & Turbidity	Samples Taken *2			LNAPL/ DNAPL *3	Product Thickness (mm)
									P (l)	G (l)	V (no.)		
CP01	4.69	50	1W +1P	-	1.96	-	100	-	-	-	-	-	-
CP02	3.94	50	1W +1P	-	1.39	-	100	-	-	-	-	-	-
CP03	3.87	50	1W +1P	-	1.85	-	100	-	-	-	-	-	-

COMMENTS:
 Each well was developed using a surge block for 25L and with the wasp pump for 75L.

*Notes: 1. W = Waterra Inertia Tubing, B = Disposable Bailer, P = Downhole Pump. 2. P = Plastic Bottle (l), G = Glass Bottle (l), V = Glass Vial (no.) 3. npd = No Product Detected	See Accompanying Gas Monitoring Sheet: Y/N	Sample Storage Method: Cool box
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GROUNDWATER SAMPLING RECORD

PROJECT: Langstone Technology Park, Havant - Phase 2 DATE: 30/11/2023 WEATHER: Dry and Overcast with light rain around 1pm	PROJECT No: AG3544-23 PHASE OF SAMPLING: one FIELD PERSONNEL: KW
AIR TEMP (°C): 3	

Monitoring Well	Standpipe Depth (m bgl)	Standpipe Diameter (mm)	Purging Method*1	Sampling Depth (m bgl)	Groundwater Level Before Purging (m bgl)	Groundwater Level After Purging (m bgl)	Purge Volume (l)	Sample Colour, Odour & Turbidity	Samples Taken *2			LNAPL/ DNAPL *3	Product Thickness (mm)
									P (l)	G (l)	V (no.)		
CP01	4.52	50	P	3.51	2.02	2.02	8	Silty and milky in colour, has a slight smell.	1	2	2	-	
CP02	3.71	50	P	2.98	1.46	1.49	8	Silty and creamy in colour. No smell.	1	2	2	-	
CP03	4.18	50	P	3.21	1.94	2.09	8	Silty and slightly creamy yellow in colour. Very strong possible hydrocarbon smell.	1	2	2	-	

COMMENTS:

***Notes:**

1. W = Waterra Inertia Tubing, B = Disposable Bailer, P = Downhole Pump.
2. P = Plastic Bottle (l), G = Glass Bottle (l), V = Glass Vial (no.)
3. npd = No Product Detected

See Accompanying Gas Monitoring Sheet:

Y

Sample Storage Method:

cool box

Filling	1
Trial Pit Length (m)	2.00
Trial Pit Width (m)	0.60
Trial Pit Depth (m)	1.60
Amount of Backfill placed (m)	1.4
Assumed Backfill Void Ratio	0.37

Figure 1 is a line graph showing the relationship between Depth (m bgl) and Time (minutes) for a 100% effective depth. The y-axis represents Depth (m bgl) ranging from 0.00 to 1.60, and the x-axis represents Time (minutes) ranging from 0.00 to 16.00. The graph includes a blue line with diamond markers representing the depth profile over time. Horizontal lines indicate specific depth levels: 'Max effective depth' at 0.50 m bgl, '75%' at 0.80 m bgl, '25%' at 1.30 m bgl, and 'Empty' at 1.60 m bgl.

Time (minutes)	Depth (m bgl)
0.00	0.50
1.00	0.95
2.00	1.20
2.50	1.25
3.00	1.35
3.50	1.42
4.00	1.45
5.00	1.50
6.00	1.52
8.00	1.55
10.00	1.58
12.00	1.60
14.00	1.60
15.00	1.60

Soil Infiltration Rate (m/s)

4.7E-04

Client:	Havant S.a.r.l
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Project:	Langstone Technology Park, Havant - Phase 2
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Project No.	AG3544-23
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APPLiED GEOLOGY

Filling	2
Trial Pit Length (m)	2.00
Trial Pit Width (m)	0.60
Trial Pit Depth (m)	1.60
Amount of Backfill placed (m)	1.4
Assumed Backfill Void Ratio	0.37

Figure 1 is a line graph showing the relationship between Depth (m bgl) on the Y-axis and Time (minutes) on the X-axis. The Y-axis ranges from 0.00 to 1.60 m bgl, and the X-axis ranges from 0.00 to 14.00 minutes. The graph displays a blue curve with diamond markers representing the water level in a 1000L water tank over time. Three horizontal reference lines are shown: a purple line at 0.65 m bgl labeled 'Max effective depth', a red line at 0.90 m bgl labeled '75%', and a green line at 1.35 m bgl labeled '25%'. The curve starts at approximately 0.65 m bgl at 0 minutes and reaches 1.60 m bgl at approximately 14.5 minutes.

Soil Infiltration Rate (m/s)	4.8E-04
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Client:	Havant S.a.r.l
Project:	Langstone Technology Park, Havant - Phase 2
Project No.	AG3544-23

APPLiED GEOLOGY

Filling	3
Trial Pit Length (m)	2.00
Trial Pit Width (m)	0.60
Trial Pit Depth (m)	1.60
Amount of Backfill placed (m)	1.4
Assumed Backfill Void Ratio	0.37

Figure 1 is a line graph showing the relationship between Depth (m bgl) and Time (minutes) for a 1000-gal tank. The y-axis represents Depth (m bgl) from 0.00 to 1.60, and the x-axis represents Time (minutes) from 0.00 to 12.00. A blue curve starts at (0, 0.50) and decreases towards 1.60 m bgl. Horizontal lines indicate specific depth levels: 0.50 m bgl (Max effective depth, purple), 0.75 m bgl (75%, red), 1.30 m bgl (25%, green), and 1.60 m bgl (Empty, cyan).

Time (minutes)	Depth (m bgl)
0.00	0.50
1.00	0.75
2.00	1.00
3.00	1.20
4.00	1.35
5.00	1.45
6.00	1.50
8.00	1.55
10.00	1.58
12.00	1.60

4.4E-04

* Water level did not drop sufficiently for the calculation to be made

APPLiED GEOLOGY

Filling	1
Trial Pit Length (m)	2.00
Trial Pit Width (m)	0.60
Trial Pit Depth (m)	2.30
Amount of Backfill placed (m)	2.1
Assumed Backfill Void Ratio	0.37

Figure 1 is a line graph showing the relationship between Depth (m bgl) and Time (minutes) for a 1000-gallon tank. The y-axis represents Depth (m bgl) from 0.00 to 2.00, and the x-axis represents Time (minutes) from 0.00 to 200.00. A blue line with diamond markers shows the depth increasing over time. Horizontal lines indicate specific depth levels: 'Max effective depth' at approximately 1.25 m bgl, '75%' at 1.50 m bgl, and '25%' at 2.00 m bgl. The 'Empty' point is at the bottom of the graph.

Time (minutes)	Depth (m bgl)
0.00	0.00
10.00	1.35
20.00	1.40
30.00	1.45
40.00	1.50
50.00	1.55
60.00	1.60
70.00	1.65
80.00	1.70
90.00	1.75
100.00	1.80
110.00	1.85
120.00	1.90
130.00	1.95
140.00	2.00
150.00	2.05
160.00	2.10
170.00	2.15
180.00	2.20
190.00	2.25
200.00	2.30

Soil Infiltration Rate (m/s)	4.1E-06
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Client:	Havant S.a.r.l
Project:	Langstone Technology Park, Havant - Phase 2
Project No.	AG3544-23

APPLiED GEOLOGY

Filling	2
Trial Pit Length (m)	2.00
Trial Pit Width (m)	0.60
Trial Pit Depth (m)	2.30
Amount of Backfill placed (m)	2.1
Assumed Backfill Void Ratio	0.37

Figure 1 is a line graph showing the relationship between Depth (m bgl) on the Y-axis and Time (minutes) on the X-axis. The Y-axis ranges from 0.00 to 2.00+ m bgl, and the X-axis ranges from 0.00 to 500.00 minutes. The graph displays a blue line with diamond markers representing the water level in a 1000-gal tank. The water level starts at approximately 1.45 m bgl at 0 minutes and decreases steadily, reaching approximately 2.05 m bgl at 500 minutes. Horizontal reference lines are shown at 1.15 m bgl (labeled 'Max effective depth'), 1.45 m bgl (labeled '75%'), 2.00 m bgl (labeled '25%'), and 2.25 m bgl (labeled 'Empty').

Soil Infiltration Rate (m/s)	2.2E-06
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Client:	Havant S.a.r.l
Project:	Langstone Technology Park, Havant - Phase 2
Project No.	AG3544-23

APPLiED GEOLOGY

Filling	3
Trial Pit Length (m)	2.00
Trial Pit Width (m)	0.60
Trial Pit Depth (m)	2.30
Amount of Backfill placed (m)	2.1
Assumed Backfill Void Ratio	0.37

Figure 1 is a line graph showing the relationship between Depth (m bgl) on the Y-axis and Time (minutes) on the X-axis. The Y-axis ranges from 0.00 to 2.00+ m bgl, and the X-axis ranges from 0.00 to 300.00 minutes. The graph displays a blue line with markers representing the water level in a 1000-gallon water tank. The water level starts at approximately 1.15 m bgl at 0 minutes and decreases rapidly, reaching about 2.10 m bgl at 320 minutes. Horizontal reference lines are drawn at 1.15 m bgl (labeled 'Max effective depth'), 1.45 m bgl (labeled '75%'), 2.00 m bgl (labeled '25%'), and 2.25 m bgl (labeled 'Empty').

Soil Infiltration Rate (m/s)	9.3E-06
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Client:	Havant S.a.r.l
Project:	Langstone Technology Park, Havant - Phase 2
Project No.	AG3544-23

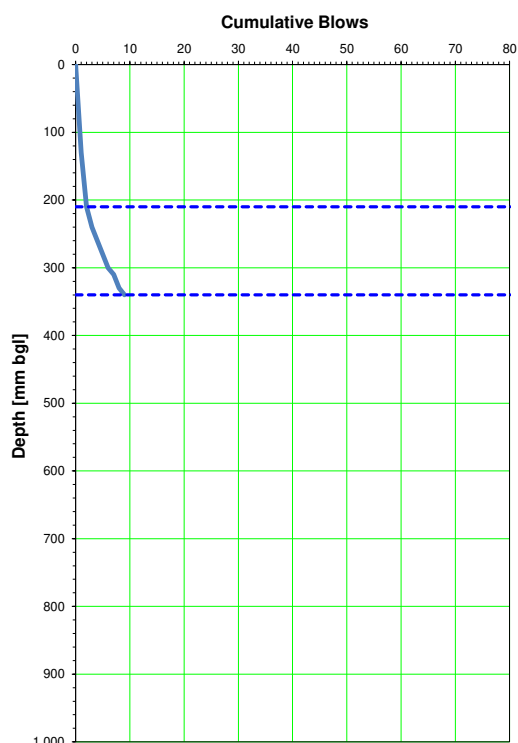
APPLIED GEOLOGY

TRL DYNAMIC CONE PENETROMETER TEST RESULT

Start Depth (mm bgl)

CBR01
02/11/2023
EY
Ground Level

Checked by: SD

[illegible]

Notes: TRL Equation : $\text{Log}_{10}(\text{CBR}) = 2.480 - 1.057 \times \text{Log}_{10}(\text{mm/blow})$ from IAN 73/06 Revision 1 (2009)
Tested in accordance with in house method, based upon TRL Road Note 31 & 8

Grass covered soft landscaping

Test started from surface

Client:	Havant S.a.r.l
Project:	Langstone Technology Park, Havant - Phase 2
Project No.	AG3544-23

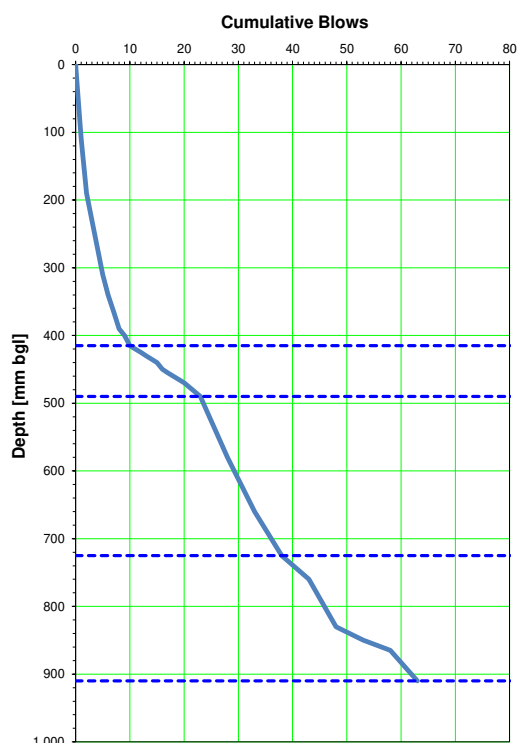
APPLIED GEOLOGY

TRL DYNAMIC CONE PENETROMETER TEST RESULT

Start Depth (mm bgl)

CBR01A
02/11/2023
EY
Ground Level

Checked by: SD

[illegible]

Notes: TRL Equation : $\text{Log}_{10}(\text{CBR}) = 2.480 - 1.057 \times \text{Log}_{10}(\text{mm/blow})$ from IAN 73/06 Revision 1 (2009)
Tested in accordance with in house method, based upon TRL Road Note 31 & 8

Grass covered soft landscaping

Test started from surface

Client:	Havant S.a.r.l
Project:	Langstone Technology Park, Havant - Phase 2
Project No.	AG3544-23

APPLIED GEOLOGY

TRL DYNAMIC CONE PENETROMETER TEST RESULT

Test Location

CBR02

Date

02/11/2023

Operator

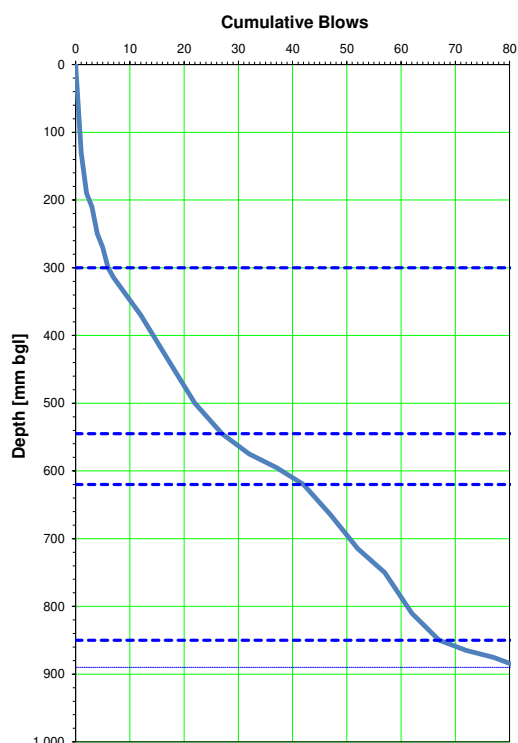
EY

Checked by: SD

Start Depth (mm bgl)

Ground Level

Layer	No of Blows	Cumulative Blows	CBR [%]	Layer Thickness [mm]	Total Depth [mm]
Layer 1	6	6	5	300	300
Layer 2	21	27	23	245	545
Layer 3	15	42	55	75	620
Layer 4	25	67	29	230	850
Layer 5	15	82	>100	40	890



Notes: TRL Equation : $\text{Log}_{10}(\text{CBR}) = 2.480 - 1.057 \times \text{Log}_{10}(\text{mm/blow})$ from IAN 73/06 Revision 1 (2009)
Tested in accordance with in house method, based upon TRL Road Note 31 & 8

Surface materials / condition:

Grass covered soft landscaping

Remarks:

Test started from surface

Client:	Havant S.a.r.l
Project:	Langstone Technology Park, Havant - Phase 2
Project No.	AG3544-23

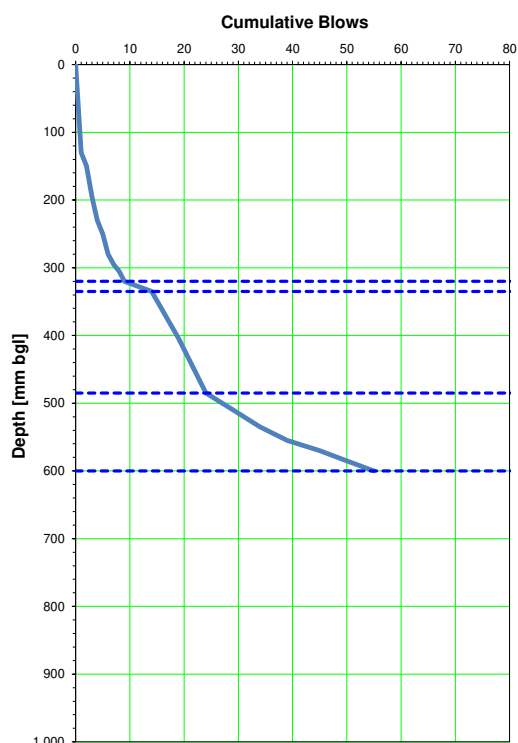
APPLIED GEOLOGY

TRL DYNAMIC CONE PENETROMETER TEST RESULT

Start Depth (mm bgl)

CBR02A
02/11/2023
EY
Ground Level

Checked by: SD

[illegible]

Notes: TRL Equation : $\text{Log}_{10}(\text{CBR}) = 2.480 - 1.057 \times \text{Log}_{10}(\text{mm/blow})$ from IAN 73/06 Revision 1 (2009)
Tested in accordance with in house method, based upon TRL Road Note 31 & 8

Grass covered soft landscaping

Test started from surface

Client:	Havant S.a.r.l
Project:	Langstone Technology Park, Havant - Phase 2
Project No.	AG3544-23

APPLIED GEOLOGY

APPENDIX E

SOIL CHEMICAL RESULTS COMPARED AGAINST SCREENING VALUES FOR HUMAN HEALTH

Site: Langstone Technology Park, Havant - Phase 2
Job No: AG3544-23

Land Use: Commercial / Industrial
Dataset: All results
Soil Organic Matter (%): 1.0 %

Exploratory Hole Reference		DCS01	DCS02	DCS03A	SA01	SA01B	SA02	CP01	CP03	No. of samples (n)	Commercial / Industrial	Source/Justification
Depth (m)		0.4	0.2	0.15	0.6	0.3	0.4	0.2	0.2			
Strata		MG	MG/Subbase	MG/Topsoil	MG	MG	MG	MG/Subbase	MG/Subbase			
	Units											
Organic Matter (%)	%	0.3	1.6	4.3	0.5	0.4	1.6	1.4	6.4	8		
pH		8.6	7.2	7.6	8.2	7.9	8.2	8.1	8.7	8		
Asbestos in Soil		Not-detected	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected	-	Not-detected	7		
Arsenic	mg/kg	13	14	9.1	12	12	3.8	6.2	7.4	8	640	LQM/CIEH S4UL (2015)
Beryllium (aqua regia extractable)	mg/kg	0.61	0.21	0.47	0.69	0.82	0.31	0.48	0.21	8	12	LQM/CIEH S4UL (2015)
Boron (total)	mg/kg	3.1	3.4	2.9	3	3.6	4	3.6	4	8	240000	LQM/CIEH S4UL (2015)
Cadmium	mg/kg	0.5	1.2	0.3	0.2	0.9	0.2	0.7	0.7	8	190	LQM/CIEH S4UL (2015)
Chromium	mg/kg	36	7.6	21	30	23	11	20	6.7	8	8600	LQM/CIEH S4UL (2015)
Chromium (Hexavalent)	mg/kg	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	8	33	LQM/CIEH S4UL (2015)
Copper	mg/kg	12	11	22	17	11	18	6	6.6	8	68000	LQM/CIEH S4UL (2015)
Lead	mg/kg	27	140	55	14	22	17	19	37	8	2330	C4SL (2014)
Mercury	mg/kg	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	8	1100	LQM/CIEH S4UL (2015)
Nickel	mg/kg	13	5.9	8.1	18	20	6	15	6.5	8	980	LQM/CIEH S4UL (2015)
Selenium	mg/kg	1	1	1	1	1	1	1	1	8	12000	LQM/CIEH S4UL (2015)
Vanadium (aqua regia extractable)	mg/kg	33	12	33	41	34	12	18	14	8	9000	LQM/CIEH S4UL (2015)
Zinc	mg/kg	78	210	70	46	60	30	63	140	8	730000	LQM/CIEH S4UL (2015)
Naphthalene	mg/kg	0.05	0.51	0.05	0.05	0.05	0.05	0.11	1.6	8	190	LQM/CIEH S4UL (2015)
Acenaphthylene	mg/kg	0.05	0.06	0.05	0.05	0.05	0.05	0.05	0.23	8	84000	LQM/CIEH S4UL (2015)
Acenaphthene	mg/kg	0.05	0.11	0.05	0.05	0.05	0.05	0.05	1.5	8	83000	LQM/CIEH S4UL (2015)
Fluorene	mg/kg	0.05	0.2	0.05	0.05	0.05	0.05	0.05	0.72	8	63000	LQM/CIEH S4UL (2015)
Phenanthrene	mg/kg	0.05	0.38	0.05	0.05	0.25	0.05	0.06	4.9	8	22000	LQM/CIEH S4UL (2015)
Anthracene	mg/kg	0.05	0.05	0.05	0.05	0.08	0.05	0.05	1.5	8	520000	LQM/CIEH S4UL (2015)
Fluoranthene	mg/kg	0.05	0.16	0.09	0.05	1.8	0.05	0.05	1.5	8	23000	LQM/CIEH S4UL (2015)
Pyrene	mg/kg	0.05	0.13	0.08	0.05	1.5	0.05	0.05	1.2	8	54000	LQM/CIEH S4UL (2015)
Benzo[a]anthracene	mg/kg	0.05	0.07	0.06	0.05	1.6	0.05	0.05	0.35	8	*	Genotoxic PAH see Benzo(a)pyrene
Chrysene	mg/kg	0.05	0.05	0.07	0.05	1.7	0.05	0.05	0.55	8	*	Genotoxic PAH see Benzo(a)pyrene
Benzo[b]fluoranthene	mg/kg	0.05	0.09	0.12	0.05	3.1	0.05	0.05	0.34	8	*	Genotoxic PAH see Benzo(a)pyrene
Benzo[k]fluoranthene	mg/kg	0.05	0.05	0.06	0.05	1.2	0.05	0.05	0.1	8	*	Genotoxic PAH see Benzo(a)pyrene
Benzo[a]pyrene	mg/kg	0.05	0.05	0.1	0.05	2.4	0.05	0.05	0.18	8	76	C4SL (2014)
Dibenzo[a,h]anthracene	mg/kg	0.05	0.05	0.05	0.05	0.42	0.05	0.05	0.05	8	*	Genotoxic PAH see Benzo(a)pyrene
Indeno[1,2,3-cd]pyrene	mg/kg	0.05	0.05	0.06	0.05	1.6	0.05	0.05	0.11	8	*	Genotoxic PAH see Benzo(a)pyrene
Benzo[g,h,i]perylene	mg/kg	0.05	0.05	0.08	0.05	1.9	0.05	0.05	0.19	8	*	Genotoxic PAH see Benzo(a)pyrene
Total of 16 PAHs	mg/kg	0.8	1.91	0.8	0.8	17.6	0.8	0.8	14.9	8	*	-
Phenols (Total)	mg/kg	1	1	1	1	1	1	1	1	8	440	LQM/CIEH S4UL (2015)
Benzene	mg/kg	0.005	0.005	0.005	-	-	0.005	-	0.005	5	27	LQM/CIEH S4UL (2015)
Toluene	mg/kg	0.005	0.005	0.005	-	-	0.005	-	0.005	5	56000	LQM/CIEH S4UL (2015)
Ethylbenzene	mg/kg	0.005	0.005	0.005	-	-	0.005	-	0.005	5	5700	LQM/CIEH S4UL (2015)
m&p Xylene	mg/kg	0.005	0.005	0.005	-	-	0.005	-	0.005	5	5900	LQM/CIEH S4UL (2015)
o-Xylene	mg/kg	0.005	0.005	0.005	-	-	0.005	-	0.005	5	6600	LQM/CIEH S4UL (2015)
MTBE (Methyl Tertiary Butyl Ether)	mg/kg	0.005	0.005	0.005	-	-	0.005	-	0.005	5	-	-
Aliphatic TPH >C5-C6	mg/kg	0.02	0.02	0.02	-	-	0.02	-	0.02	5	3200	LQM/CIEH S4UL (2015)
Aliphatic TPH >C6-C8	mg/kg	0.02	0.02	0.02	-	-	0.02	-	0.02	5	7800	LQM/CIEH S4UL (2015)
Aliphatic TPH >C8-C10	mg/kg	0.05	0.05	0.05	-	-	0.05	-	0.05	5	2000	LQM/CIEH S4UL (2015)
Aliphatic TPH >C10-C12	mg/kg	1	1	1	-	-	1	-	1	5	9700	LQM/CIEH S4UL (2015)
Aliphatic TPH >C12-C16	mg/kg	2	2	2	-	-	2	-	57	5	59000	LQM/CIEH S4UL (2015)
Aliphatic TPH >C16-C21	mg/kg	8	8	8	-	-	8	-	170	5	-	-
Aliphatic TPH >C21-C35	mg/kg	8	35	8	-	-	8	-	1000	5	No Risk	LQM/CIEH S4UL (2015)
Aliphatic TPH >C35-C44	mg/kg	8.4	77	8.4	-	-	8.4	-	1500	5	No Risk	LQM/CIEH S4UL (2015)
Total Aliphatic Hydrocarbons	mg/kg	10	110	10	-	-	10	-	2800	5	*	-
Aromatic TPH >C5-C7	mg/kg	0.01	0.01	0.01	-	-	0.01	-	0.01	5	26000	LQM/CIEH S4UL (2015)
Aromatic TPH >C7-C8	mg/kg	0.01	0.01	0.01	-	-	0.01	-	0.01	5	56000	LQM/CIEH S4UL (2015)
Aromatic TPH >C8-C10	mg/kg	0.05	0.05	0.05	-	-	0.05	-	0.05	5	3500	LQM/CIEH S4UL (2015)
Aromatic TPH >C10-C12	mg/kg	1	1.6	1	-	-	1	-	1	5	16000	LQM/CIEH S4UL (2015)
Aromatic TPH >C12-C16	mg/kg	2	3	2	-	-	2	-	93	5	36000	LQM/CIEH S4UL (2015)
Aromatic TPH >C16-C21	mg/kg	10	10	10	-	-	10	-	140	5	28000	LQM/CIEH S4UL (2015)
Aromatic TPH >C21-C35	mg/kg	10	83	10	-	-	10	-	770	5	28000	LQM/CIEH S4UL (2015)
Aromatic TPH >C35-C44	mg/kg	8.4	180	8.4	-	-	8.4	-	1200	5	28000	LQM/CIEH S4UL (2015)
Total Aromatic Hydrocarbons	mg/kg	10	270	10	-	-	10	-	2200	5	-	-
Total Petroleum Hydrocarbons	mg/kg	10	380	10	-	-	10	-	5000	5	-	-
VOC's	µg/kg	-	^	-	-	-	-	-	^	2	-	Detection Limit
SVOC's	µg/kg	-	^	-	-	-	-	-	^	2	-	Detection Limit
2-Methylnaphthalene	µg/kg	-	0.4	-	-	-	-	-	6.5	2	-	Detection Limit
Dibenzofuran	µg/kg	-	0.2	-	-	-	-	-	2.6	2	-	Detection Limit
Carbazole	µg/kg	-	0.3	-	-	-	-	-	0.6	2	-	Detection Limit
Anthraquinone	µg/kg	-	0.3	-	-	-	-	-	1.6	2	-	Detection Limit

Key -

Value within sample set exceeds screening value

* all VOC's below detection Limit

^ All SVOC's are below detection limit except ones listed below

* No Screening Values

LQM/CIEH S4UL Reference No. S4UL3159 (2015)

Values in **bold** are reported at the laboratory limit of detection

Benzo(a)pyrene has been used as a 'surrogate marker for genotoxic PAH' as discussed in Appendix E of CL:AIRE SP1010 'Development of C4SL for Assessment of Land Affected by Contamination', December 2013.

This allows assessment of the combined carcinogenic risk associated with genotoxic PAH using only b(a)p. Genotoxic PAHs include Benz(a)pyrene, Benzo(a)anthracene, Chrysene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Dibenzo(ah)anthracene, Indeno(123cd)pyrene, Benzo(ghi)perylene

SUMMARY OF GROUNDWATER TEST RESULTS

Site Langstone Technology Park, Havant - Phase 2
Job Number AG3544-23
Type of Water Groundwater

Determinand	Limit of Detection	Hazardous or Non-Hazardous^	Sample Identity Depth Sampled Date	CP01 2.02 30/11/2023	CP02 1.49 30/11/2023	CP03 2.09 30/11/2023	No. of samples (n)	Waters Screening Value	Source & Justification
Hardness	1	-	mg l ⁻¹	251	209	260	3	-	-
pH	-	-	-	7.5	7.5	7.3	3	-	-
Total Organic Carbon (TOC)	0.1	-	mg l ⁻¹	3.87	7.68	3.86	3	-	-
Arsenic	0.15	Haz	µg l ⁻¹	2.49	0.64	0.38	3	10	UK Drinking Water Standards (2010)
Cadmium	0.02	Non Haz	µg l ⁻¹	0.02	0.03	0.02	3	5	UK Drinking Water Standards (2010)
Chromium (Total)	0.2	Non Haz	µg l ⁻¹	0.2	0.2	0.2	3	50	UK Drinking Water Standards (2010)
Chromium (III)	5	Non Haz	µg l ⁻¹	5	5	5	3	detection	Detection Limit
Chromium (VI)	5	Haz	µg l ⁻¹	5	5	5	3	detection	Detection Limit
Copper	0.5	Non Haz	µg l ⁻¹	0.9	4.9	1.2	3	2000	UK Drinking Water Standards (2010)
Lead	0.2	Haz	µg l ⁻¹	0.2	0.2	0.2	3	10	UK Drinking Water Standards (2010)
Mercury	0.05	Haz	µg l ⁻¹	0.05	0.05	0.05	3	1	UK Drinking Water Standards (2010)
Nickel	0.5	Non Haz	µg l ⁻¹	1.6	1.6	1.7	3	20	UK Drinking Water Standards (2010)
Selenium	0.6	Non Haz	µg l ⁻¹	1.7	1.6	1.2	3	10	UK Drinking Water Standards (2010)
Zinc	0.5	Non Haz	µg l ⁻¹	2.8	12	4.3	3	5000	UK Drinking Water Standards (2010)
Boron	10	Non Haz	µg l ⁻¹	68	24	35	3	1000	UK Drinking Water Standards (2010)
Beryllium	0.1	Non Haz	µg l ⁻¹	0.1	0.1	0.1	3	12	UK Drinking Water Standards (2010)
Vanadium	0.2	Non Haz	µg l ⁻¹	0.4	0.9	0.2	3	60	WFD Environmental Standard, 2010
Sulphate	0.045	Non Haz	mg l ⁻¹	34.2	22	17.4	3	250	UK Drinking Water Standards (2010)
Phenols (total)	1	Non Haz	µg l ⁻¹	2.6	2	3	3	7.7	WFD Environmental Standard, 2010
Naphthalene	0.01	Non Haz	µg l ⁻¹	0.01	0.01	0.01	3	0.01	Detection limit
Acenaphthylene	0.01	Haz	µg l ⁻¹	0.01	0.01	0.01	3	0.01	Detection limit
Acenaphthene	0.01	Haz	µg l ⁻¹	0.01	0.01	0.01	3	0.01	Detection limit
Fluorene	0.01	Haz	µg l ⁻¹	0.01	0.01	0.01	3	0.01	Detection limit
Phenanthrene	0.01	Haz	µg l ⁻¹	0.01	0.01	0.01	3	0.01	Detection limit
Anthracene	0.01	Haz	µg l ⁻¹	0.01	0.01	0.01	3	0.01	Detection limit
Fluoranthene	0.01	Haz	µg l ⁻¹	0.01	0.01	0.01	3	0.01	Detection limit
Pyrene	0.01	Haz	µg l ⁻¹	0.01	0.01	0.01	3	0.01	Detection limit
Benzo[a]anthracene	0.01	Haz	µg l ⁻¹	0.01	0.01	0.01	3	0.01	Detection limit
Chrysene	0.01	Haz	µg l ⁻¹	0.01	0.01	0.01	3	0.01	Detection limit
Benzo[b]fluoranthene	0.01	Haz	µg l ⁻¹	0.01	0.01	0.01	3	0.01	Detection limit
Benzo[k]fluoranthene	0.01	Haz	µg l ⁻¹	0.01	0.01	0.01	3	0.01	Detection limit
Benzo[a]pyrene	0.01	Haz	µg l ⁻¹	0.01	0.01	0.01	3	0.01	Detection limit
Dibenz(a,h)Anthracene	0.01	Haz	µg l ⁻¹	0.01	0.01	0.01	3	0.01	Detection limit
Indeno(1,2,3-c,d)Pyrene	0.01	Haz	µg l ⁻¹	0.01	0.01	0.01	3	0.01	Detection limit
Benzo[g,h,i]perylene	0.01	Haz	µg l ⁻¹	0.01	0.01	0.01	3	0.01	Detection limit
Benzene	3	Haz	µg l ⁻¹	3	3	3	3	3	Detection limit
Toluene	3	Haz	µg l ⁻¹	3	3	3	3	3	Detection limit
Ethylbenzene	3	Haz	µg l ⁻¹	3	3	3	3	3	Detection limit
m & p-Xylene	3	Haz	µg l ⁻¹	3	3	3	3	3	Detection limit
o-Xylene	3	Haz	µg l ⁻¹	3	3	3	3	3	Detection limit

SUMMARY OF GROUNDWATER TEST RESULTS

Site Langstone Technology Park, Havant - Phase 2
Job Number AG3544-23
Type of Water Groundwater

Determinand	Limit of Detection	Hazardous or Non-Hazardous^	Sample Identity Depth Sampled Date	CP01 2.02 30/11/2023	CP02 1.49 30/11/2023	CP03 2.09 30/11/2023	No. of samples (n)	Waters Screening Value	Source & Justification
Hardness	1	-	mg l ⁻¹	251	209	260	3	-	-
pH	-	-	-	7.5	7.5	7.3	3	-	-
TPH									
Aliphatic TPH >C6-C8	1	Haz	µg l ⁻¹	1	1	1	3	1	Detection limit
Aliphatic TPH >C8-C10	1	Haz	µg l ⁻¹	1	1	1	3	1	Detection limit
Aliphatic TPH >C10-C12	10	Haz	µg l ⁻¹	10	10	10	3	10	Detection limit
Aliphatic TPH >C12-C16	10	Haz	µg l ⁻¹	10	10	10	3	10	Detection limit
Aliphatic TPH >C16-C21	10	Haz	µg l ⁻¹	10	10	10	3	10	Detection limit
Aliphatic TPH >C21-C35	10	Haz	µg l ⁻¹	10	10	10	3	10	Detection limit
Aliphatic TPH >C35-C44	10	Haz	µg l ⁻¹	10	10	10	3	10	Detection limit
Total Aliphatic Hydrocarbons	10	Haz	µg l ⁻¹	10	10	10	3	-	-
Aromatic TPH >C5-C7	1	Haz	µg l ⁻¹	1	1	1	3	1	Detection limit
Aromatic TPH >C7-C8	1	Haz	µg l ⁻¹	1	1	1	3	1	Detection limit
Aromatic TPH >C8-C10	1	Haz	µg l ⁻¹	1	1	1	3	1	Detection limit
Aromatic TPH >C10-C12	10	Haz	µg l ⁻¹	10	10	10	3	10	Detection limit
Aromatic TPH >C12-C16	10	Haz	µg l ⁻¹	10	10	10	3	10	Detection limit
Aromatic TPH >C16-C21	10	Haz	µg l ⁻¹	10	10	10	3	10	Detection limit
Aromatic TPH >C21-C35	10	Haz	µg l ⁻¹	10	10	10	3	10	Detection limit
Aromatic TPH >C35-C44	10	Haz	µg l ⁻¹	10	10	10	3	10	Detection limit
Total Aromatic Hydrocarbons	10	Haz	µg l ⁻¹	10	10	10	3	-	-
VOC	3		µg l ⁻¹	*	*	*	3	3	Detection limit
SVOC	0.01-0.05		µg l ⁻¹	*	*	*	3	0.01-0.05	Detection limit

Key-

Result exceeds test Detection Limit (for Haz determinands)
Result exceeds Screening Value (for Non Haz determinands)
Values in bold at the limit of detection

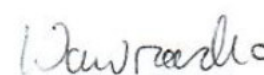
^ Note: Hazardous and non-hazardous substances determined by JAGDAG (Jan 2017) and published at <http://www.wfduk.org/sites/default/files/Media/170116%20Substance%20Determinationsfinal.pdf>. These are marked in bold.
For substances not assessed by JAGDAG, Applied Geology has assumed a determination based on our understanding of the behaviour of the chemical. These determinations are highlighted in yellow.
* All VOCs & SVOCs below detection have been omitted for clarity

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Analytical Report Number : 23-67593

Project / Site name:	Langstone Technology Park, Havant	Samples received on:	07/11/2023
Your job number:	AG3544-23	Samples instructed on/ Analysis started on:	08/11/2023
Your order number:	19917	Analysis completed by:	16/11/2023
Report Issue Number:	1	Report issued on:	16/11/2023
Samples Analysed:	7 soil samples		



Signed:

Joanna Wawrzeczko
Senior Reporting Specialist
For & on behalf of i2 Analytical Ltd.

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

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

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils - 4 weeks from reporting
leachates - 2 weeks from reporting
waters - 2 weeks from reporting
asbestos - 6 months from reporting

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

Analytical Report Number: 23-67593
Project / Site name: Langstone Technology Park, Havant
Your Order No: 19917

Lab Sample Number				2871790	2871791	2871792	2871793	2871794
Sample Reference				DCS01	DCS02	DCS03A	SA01	SA01B
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.40	0.20	0.15	0.60	0.30
Date Sampled				01/11/2023	01/11/2023	02/11/2023	31/10/2023	31/10/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	10	5.1	22	11	10
Total mass of sample received	kg	0.001	NONE	0.8	0.8	0.8	0.8	0.8

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	SPU	SPU	SPU	SPU	SPU

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.6	7.2	7.6	8.2	7.9
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	22	120	23	36	13
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.0111	0.0577	0.0115	0.0179	0.0063
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	11.1	57.7	11.5	17.9	6.3
Organic Matter (automated)	%	0.1	MCERTS	0.3	1.6	4.3	0.5	0.4

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
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Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	0.51	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	0.06	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	0.11	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	0.2	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	0.38	< 0.05	< 0.05	0.25
Anthracene	mg/kg	0.05	MCERTS	< 0.05	0.05	< 0.05	< 0.05	0.08
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	0.16	0.09	< 0.05	1.8
Pyrene	mg/kg	0.05	MCERTS	< 0.05	0.13	0.08	< 0.05	1.5
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	0.07	0.06	< 0.05	1.6
Chrysene	mg/kg	0.05	MCERTS	< 0.05	0.05	0.07	< 0.05	1.7
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	0.09	0.12	< 0.05	3.1
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05	0.06	< 0.05	1.2
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	0.05	0.1	< 0.05	2.4
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	0.05	0.06	< 0.05	1.6
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	0.42
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.08	< 0.05	1.9

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	< 0.80	1.91	< 0.80	< 0.80	17.6
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Analytical Report Number: 23-67593
Project / Site name: Langstone Technology Park, Havant
Your Order No: 19917

Lab Sample Number				2871790	2871791	2871792	2871793	2871794
Sample Reference				DCS01	DCS02	DCS03A	SA01	SA01B
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.40	0.20	0.15	0.60	0.30
Date Sampled				01/11/2023	01/11/2023	02/11/2023	31/10/2023	31/10/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	13	14	9.1	12	12
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.61	0.21	0.47	0.69	0.82
Boron (total)	mg/kg	1	MCERTS	3.1	3.4	2.9	3	3.6
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.5	1.2	0.3	< 0.2	0.9
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8
Chromium (III)	mg/kg	1	NONE	36	7.6	21	30	23
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	36	7.8	21	30	24
Copper (aqua regia extractable)	mg/kg	1	MCERTS	12	11	22	17	11
Lead (aqua regia extractable)	mg/kg	1	MCERTS	27	140	55	14	22
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	13	5.9	8.1	18	20
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	33	12	33	41	34
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	78	210	70	46	60

Magnesium (water soluble)	mg/kg	5	NONE	< 5.0	13	11	< 5.0	< 5.0
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Monoaromatics & Oxygenates

Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	-	-
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	-	-
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0#	< 5.0	-	-
p & m-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	-	-
o-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0#	< 5.0	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	-	-

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6 _{HS_1D_AL}	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020	-	-
TPH-CWG - Aliphatic >EC6 - EC8 _{HS_1D_AL}	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020	-	-
TPH-CWG - Aliphatic >EC8 - EC10 _{HS_1D_AL}	mg/kg	0.05	NONE	< 0.050	< 0.050	< 0.050	-	-
TPH-CWG - Aliphatic >EC10 - EC12 _{EH_CU_1D_AL}	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
TPH-CWG - Aliphatic >EC12 - EC16 _{EH_CU_1D_AL}	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	-	-
TPH-CWG - Aliphatic >EC16 - EC21 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	-	-
TPH-CWG - Aliphatic >EC21 - EC35 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	< 8.0	35	< 8.0	-	-
TPH-CWG - Aliphatic > EC35 - EC44 _{EH_CU_1D_AL}	mg/kg	8.4	NONE	< 8.4	77	< 8.4	-	-
TPH-CWG - Aliphatic (EC5 - EC35) _{EH_CU+HS_1D_AL}	mg/kg	10	NONE	< 10	35	< 10	-	-
TPH-CWG - Aliphatic (EC5 - EC44) _{EH_CU+HS_1D_AL}	mg/kg	10	NONE	< 10	110	< 10	-	-

TPH-CWG - Aromatic >EC5 - EC7 _{HS_1D_AR}	mg/kg	0.01	NONE	< 0.010	< 0.010	< 0.010	-	-
TPH-CWG - Aromatic >EC7 - EC8 _{HS_1D_AR}	mg/kg	0.01	NONE	< 0.010	< 0.010	< 0.010	-	-
TPH-CWG - Aromatic >EC8 - EC10 _{HS_1D_AR}	mg/kg	0.05	NONE	< 0.050	< 0.050	< 0.050	-	-
TPH-CWG - Aromatic >EC10 - EC12 _{EH_CU_1D_AR}	mg/kg	1	MCERTS	< 1.0	1.6	< 1.0	-	-
TPH-CWG - Aromatic >EC12 - EC16 _{EH_CU_1D_AR}	mg/kg	2	MCERTS	< 2.0	3	< 2.0	-	-
TPH-CWG - Aromatic >EC16 - EC21 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	< 10	< 10	< 10	-	-
TPH-CWG - Aromatic >EC21 - EC35 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	< 10	83	< 10	-	-
TPH-CWG - Aromatic > EC35 - EC44 _{EH_CU_1D_AR}	mg/kg	8.4	NONE	< 8.4	180	< 8.4	-	-
TPH-CWG - Aromatic (EC5 - EC35) _{EH_CU+HS_1D_AR}	mg/kg	10	NONE	< 10	90	< 10	-	-
TPH-CWG - Aromatic (EC5 - EC44) _{EH_CU+HS_1D_AR}	mg/kg	10	NONE	< 10	270	< 10	-	-

TPHCWG - Total C5 - C44 Aliphatic & Aromatic _{EH_CU+HS_1D}	mg/kg	10	NONE	< 10	380	< 10	-	-
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Analytical Report Number: 23-67593
Project / Site name: Langstone Technology Park, Havant
Your Order No: 19917

Lab Sample Number				2871790	2871791	2871792	2871793	2871794
Sample Reference				DCS01	DCS02	DCS03A	SA01	SA01B
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.40	0.20	0.15	0.60	0.30
Date Sampled				01/11/2023	01/11/2023	02/11/2023	31/10/2023	31/10/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					

VOCs

Chloromethane	µg/kg	5	ISO 17025	-	< 5.0	-	-	-
Chloroethane	µg/kg	5	NONE	-	< 5.0	-	-	-
Bromomethane	µg/kg	5	ISO 17025	-	< 5.0	-	-	-
Vinyl Chloride	µg/kg	5	NONE	-	< 5.0	-	-	-
Trichlorofluoromethane	µg/kg	5	NONE	-	< 5.0	-	-	-
1,1-dichloroethene	µg/kg	5	NONE	-	< 5.0	-	-	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	5	NONE	-	< 5.0	-	-	-
Trans 1,2-dichloroethylene	µg/kg	5	NONE	-	< 5.0	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	-	< 5.0	-	-	-
1,1-dichloroethane	µg/kg	5	ISO 17025	-	< 5.0	-	-	-
2,2-Dichloropropane	µg/kg	5	ISO 17025	-	< 5.0	-	-	-
Chloroform	µg/kg	5	NONE	-	< 5.0	-	-	-
1,1,1-Trichloroethane	µg/kg	5	ISO 17025	-	< 5.0	-	-	-
1,2-dichloroethane	µg/kg	5	ISO 17025	-	< 5.0	-	-	-
1,1-Dichloropropene#	µg/kg	5	NONE	-	< 5.0	-	-	-
Cis-1,2-dichloroethene	µg/kg	5	ISO 17025	-	< 5.0	-	-	-
Benzene	µg/kg	5	MCERTS	-	< 5.0	-	-	-
Carbontetrachloride	µg/kg	5	NONE	-	< 5.0	-	-	-
1,2-dichloropropane	µg/kg	5	ISO 17025	-	< 5.0	-	-	-
Trichloroethene##	µg/kg	5	ISO 17025	-	< 5.0	-	-	-
Dibromomethane	µg/kg	5	ISO 17025	-	< 5.0	-	-	-
Bromodichloromethane##	µg/kg	5	ISO 17025	-	< 5.0	-	-	-
Cis-1,3-dichloropropene	µg/kg	5	ISO 17025	-	< 5.0	-	-	-
Trans-1,3-dichloropropene	µg/kg	5	ISO 17025	-	< 5.0	-	-	-
Toluene	µg/kg	5	MCERTS	-	< 5.0	-	-	-
1,1,2-Trichloroethane	µg/kg	5	ISO 17025	-	< 5.0	-	-	-
1,3-Dichloropropane##	µg/kg	5	ISO 17025	-	< 5.0	-	-	-
Dibromochloromethane##	µg/kg	5	ISO 17025	-	< 5.0	-	-	-
Tetrachloroethene	µg/kg	5	NONE	-	< 5.0	-	-	-
1,2-Dibromoethane##	µg/kg	5	ISO 17025	-	< 5.0	-	-	-
Chlorobenzene	µg/kg	5	ISO 17025	-	< 5.0	-	-	-
1,1,1,2-Tetrachloroethane	µg/kg	5	ISO 17025	-	< 5.0	-	-	-
Ethylbenzene#	µg/kg	5	NONE	-	< 5.0	-	-	-
p & m-xylene	µg/kg	5	MCERTS	-	< 5.0	-	-	-
Styrene	µg/kg	5	ISO 17025	-	< 5.0	-	-	-
Bromoform	µg/kg	5	NONE	-	< 5.0	-	-	-
o-xylene#	µg/kg	5	NONE	-	< 5.0	-	-	-
Isopropylbenzene	µg/kg	5	ISO 17025	-	< 5.0	-	-	-
1,1,2,2-Tetrachloroethane	µg/kg	5	ISO 17025	-	< 5.0	-	-	-
Bromobenzene	µg/kg	5	NONE	-	< 5.0	-	-	-
N-Propylbenzene	µg/kg	5	ISO 17025	-	< 5.0	-	-	-
2-Chlorotoluene	µg/kg	5	ISO 17025	-	< 5.0	-	-	-
4-Chlorotoluene	µg/kg	5	ISO 17025	-	< 5.0	-	-	-
1,3,5-Trimethylbenzene#	µg/kg	5	NONE	-	< 5.0	-	-	-
Tert-Butylbenzene	µg/kg	5	ISO 17025	-	< 5.0	-	-	-
1,2,4-Trimethylbenzene	µg/kg	5	ISO 17025	-	< 5.0	-	-	-
Sec-Butylbenzene	µg/kg	5	ISO 17025	-	< 5.0	-	-	-
1,3-dichlorobenzene	µg/kg	5	ISO 17025	-	< 5.0	-	-	-
P-Isopropyltoluene	µg/kg	5	ISO 17025	-	< 5.0	-	-	-
1,4-dichlorobenzene	µg/kg	5	ISO 17025	-	< 5.0	-	-	-
1,2-dichlorobenzene	µg/kg	5	ISO 17025	-	< 5.0	-	-	-
Butylbenzene	µg/kg	5	NONE	-	< 5.0	-	-	-



Analytical Report Number: 23-67593
Project / Site name: Langstone Technology Park, Havant
Your Order No: 19917

Lab Sample Number				2871790	2871791	2871792	2871793	2871794
Sample Reference				DCS01	DCS02	DCS03A	SA01	SA01B
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.40	0.20	0.15	0.60	0.30
Date Sampled				01/11/2023	01/11/2023	02/11/2023	31/10/2023	31/10/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)				Units	Limit of detection	Accreditation Status		
1,2-Dibromo-3-chloropropane				µg/kg	5	ISO 17025	-	< 5.0
1,2,4-Trichlorobenzene				µg/kg	5	ISO 17025	-	< 5.0
Hexachlorobutadiene				µg/kg	5	NONE	-	< 5.0
1,2,3-Trichlorobenzene				µg/kg	5	ISO 17025	-	< 5.0

Analytical Report Number: 23-67593
Project / Site name: Langstone Technology Park, Havant
Your Order No: 19917

Lab Sample Number				2871790	2871791	2871792	2871793	2871794
Sample Reference				DCS01	DCS02	DCS03A	SA01	SA01B
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.40	0.20	0.15	0.60	0.30
Date Sampled				01/11/2023	01/11/2023	02/11/2023	31/10/2023	31/10/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					

SVOCs

Aniline	mg/kg	0.1	NONE	-	< 0.1	-	-	-
Phenol	mg/kg	0.2	ISO 17025	-	< 0.2	-	-	-
2-Chlorophenol	mg/kg	0.1	MCERTS	-	< 0.1	-	-	-
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-	< 0.2	-	-	-
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-	< 0.2	-	-	-
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-	< 0.1	-	-	-
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-	< 0.2	-	-	-
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-	< 0.1	-	-	-
2-Methylphenol	mg/kg	0.3	MCERTS	-	< 0.3	-	-	-
Hexachloroethane	mg/kg	0.05	ISO 17025	-	< 0.05	-	-	-
Nitrobenzene	mg/kg	0.3	MCERTS	-	< 0.3	-	-	-
4-Methylphenol	mg/kg	0.2	NONE	-	< 0.2	-	-	-
Isophorone	mg/kg	0.2	MCERTS	-	< 0.2	-	-	-
2-Nitrophenol	mg/kg	0.3	NONE	-	< 0.3	-	-	-
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-	< 0.3	-	-	-
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-	< 0.3	-	-	-
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-	< 0.3	-	-	-
Naphthalene	mg/kg	0.05	MCERTS	-	0.51	-	-	-
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-	< 0.3	-	-	-
4-Chloroaniline	mg/kg	0.1	NONE	-	< 0.1	-	-	-
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-	< 0.1	-	-	-
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-	< 0.1	-	-	-
2,4,6-Trichlorophenol	mg/kg	0.1	NONE	-	< 0.1	-	-	-
2,4,5-Trichlorophenol	mg/kg	0.2	NONE	-	< 0.2	-	-	-
2-Methylnaphthalene	mg/kg	0.1	NONE	-	0.4	-	-	-
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-	< 0.1	-	-	-
Dimethylphthalate	mg/kg	0.1	MCERTS	-	< 0.1	-	-	-
2,6-Dinitrotoluene	mg/kg	0.1	NONE	-	< 0.1	-	-	-
Acenaphthylene	mg/kg	0.05	MCERTS	-	0.06	-	-	-
Acenaphthene	mg/kg	0.05	MCERTS	-	0.11	-	-	-
2,4-Dinitrotoluene	mg/kg	0.2	NONE	-	< 0.2	-	-	-
Dibenzofuran	mg/kg	0.2	MCERTS	-	0.2	-	-	-
4-Chlorophenyl phenyl ether	mg/kg	0.3	MCERTS	-	< 0.3	-	-	-
Diethyl phthalate	mg/kg	0.2	MCERTS	-	< 0.2	-	-	-
4-Nitroaniline	mg/kg	0.2	NONE	-	< 0.2	-	-	-
Fluorene	mg/kg	0.05	MCERTS	-	0.2	-	-	-
Azobenzene	mg/kg	0.3	NONE	-	< 0.3	-	-	-
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-	< 0.2	-	-	-
Hexachlorobenzene	mg/kg	0.3	MCERTS	-	< 0.3	-	-	-
Phenanthrene	mg/kg	0.05	MCERTS	-	0.38	-	-	-
Anthracene	mg/kg	0.05	MCERTS	-	0.05	-	-	-
Carbazole	mg/kg	0.3	MCERTS	-	< 0.3	-	-	-
Dibutyl phthalate	mg/kg	0.2	NONE	-	< 0.2	-	-	-
Anthraquinone	mg/kg	0.3	NONE	-	< 0.3	-	-	-
Fluoranthene	mg/kg	0.05	MCERTS	-	0.16	-	-	-
Pyrene	mg/kg	0.05	MCERTS	-	0.13	-	-	-
Butyl benzyl phthalate	mg/kg	0.3	NONE	-	< 0.3	-	-	-
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	0.07	-	-	-
Chrysene	mg/kg	0.05	MCERTS	-	0.05	-	-	-
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	-	0.09	-	-	-
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	-	< 0.05	-	-	-
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	0.05	-	-	-



Analytical Report Number: 23-67593
Project / Site name: Langstone Technology Park, Havant
Your Order No: 19917

Lab Sample Number				2871790	2871791	2871792	2871793	2871794
Sample Reference				DCS01	DCS02	DCS03A	SA01	SA01B
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.40	0.20	0.15	0.60	0.30
Date Sampled				01/11/2023	01/11/2023	02/11/2023	31/10/2023	31/10/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	0.05	-	-	-
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	< 0.05	-	-	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	< 0.05	-	-	-

Miscellaneous Organics

Product ID		N/A	NONE	-	-	-	-	-
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U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Analytical Report Number: 23-67593
Project / Site name: Langstone Technology Park, Havant
Your Order No: 19917

Lab Sample Number				2871795	2871796
Sample Reference				SA02	CP03
Sample Number				None Supplied	None Supplied
Depth (m)				0.40	0.20
Date Sampled				31/10/2023	31/10/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		
Stone Content	%	0.1	NONE	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	8.7	4.1
Total mass of sample received	kg	0.001	NONE	0.8	0.8

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	SPU	SPU

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.2	8.7
Water Soluble Sulphate as SO4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	81	130
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.0403	0.0629
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	40.3	62.9
Organic Matter (automated)	%	0.1	MCERTS	1.6	6.4

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0
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Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	1.6
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	0.23
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	1.5
Fluorene	mg/kg	0.05	MCERTS	< 0.05	0.72
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	4.9
Anthracene	mg/kg	0.05	MCERTS	< 0.05	1.5
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	1.5
Pyrene	mg/kg	0.05	MCERTS	< 0.05	1.2
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	0.35
Chrysene	mg/kg	0.05	MCERTS	< 0.05	0.55
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	0.34
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	0.1
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	0.18
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	0.11
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	0.19

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	< 0.80	14.9
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Analytical Report Number: 23-67593

Project / Site name: Langstone Technology Park, Havant

Your Order No: 19917

Lab Sample Number				2871795	2871796
Sample Reference				SA02	CP03
Sample Number				None Supplied	None Supplied
Depth (m)				0.40	0.20
Date Sampled				31/10/2023	31/10/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		
Heavy Metals / Metalloids					
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	3.8	7.4
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.31	0.21
Boron (total)	mg/kg	1	MCERTS	4	4
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	0.7
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8
Chromium (III)	mg/kg	1	NONE	11	6.7
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	11	6.8
Copper (aqua regia extractable)	mg/kg	1	MCERTS	18	6.6
Lead (aqua regia extractable)	mg/kg	1	MCERTS	17	37
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	6	6.5
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	12	14
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	30	140

Magnesium (water soluble)	mg/kg	5	NONE	< 5.0	8.4
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Monoaromatics & Oxygenates

Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0#
p & m-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0
o-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0#
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6 _{HS_1D_AL}	mg/kg	0.02	NONE	< 0.020	< 0.020
TPH-CWG - Aliphatic >EC6 - EC8 _{HS_1D_AL}	mg/kg	0.02	NONE	< 0.020	< 0.020
TPH-CWG - Aliphatic >EC8 - EC10 _{HS_1D_AL}	mg/kg	0.05	NONE	< 0.050	< 0.050
TPH-CWG - Aliphatic >EC10 - EC12 _{EH_CU_1D_AL}	mg/kg	1	MCERTS	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 _{EH_CU_1D_AL}	mg/kg	2	MCERTS	< 2.0	57
TPH-CWG - Aliphatic >EC16 - EC21 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	< 8.0	170
TPH-CWG - Aliphatic >EC21 - EC35 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	< 8.0	1000
TPH-CWG - Aliphatic > EC35 - EC44 _{EH_CU_1D_AL}	mg/kg	8.4	NONE	< 8.4	1500
TPH-CWG - Aliphatic (EC5 - EC35) _{EH_CU+HS_1D_AL}	mg/kg	10	NONE	< 10	1300
TPH-CWG - Aliphatic (EC5 - EC44) _{EH_CU+HS_1D_AL}	mg/kg	10	NONE	< 10	2800

TPH-CWG - Aromatic >EC5 - EC7 _{HS_1D_AR}	mg/kg	0.01	NONE	< 0.010	< 0.010
TPH-CWG - Aromatic >EC7 - EC8 _{HS_1D_AR}	mg/kg	0.01	NONE	< 0.010	< 0.010
TPH-CWG - Aromatic >EC8 - EC10 _{HS_1D_AR}	mg/kg	0.05	NONE	< 0.050	< 0.050
TPH-CWG - Aromatic >EC10 - EC12 _{EH_CU_1D_AR}	mg/kg	1	MCERTS	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 _{EH_CU_1D_AR}	mg/kg	2	MCERTS	< 2.0	93
TPH-CWG - Aromatic >EC16 - EC21 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	< 10	140
TPH-CWG - Aromatic >EC21 - EC35 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	< 10	770
TPH-CWG - Aromatic > EC35 - EC44 _{EH_CU_1D_AR}	mg/kg	8.4	NONE	< 8.4	1200
TPH-CWG - Aromatic (EC5 - EC35) _{EH_CU+HS_1D_AR}	mg/kg	10	NONE	< 10	1000
TPH-CWG - Aromatic (EC5 - EC44) _{EH_CU+HS_1D_AR}	mg/kg	10	NONE	< 10	2200

TPHCWG - Total C5 - C44 Aliphatic & Aromatic _{EH_CU+HS_1D}	mg/kg	10	NONE	< 10	5000
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Analytical Report Number: 23-67593
Project / Site name: Langstone Technology Park, Havant
Your Order No: 19917

Lab Sample Number				2871795	2871796
Sample Reference				SA02	CP03
Sample Number				None Supplied	None Supplied
Depth (m)				0.40	0.20
Date Sampled				31/10/2023	31/10/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		
VOCs					
Chloromethane	µg/kg	5	ISO 17025	-	< 5.0
Chloroethane	µg/kg	5	NONE	-	< 5.0
Bromomethane	µg/kg	5	ISO 17025	-	< 5.0
Vinyl Chloride	µg/kg	5	NONE	-	< 5.0
Trichlorofluoromethane	µg/kg	5	NONE	-	< 5.0
1,1-dichloroethene	µg/kg	5	NONE	-	< 5.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	5	NONE	-	< 5.0
Trans 1,2-dichloroethylene	µg/kg	5	NONE	-	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	-	< 5.0
1,1-dichloroethane	µg/kg	5	ISO 17025	-	< 5.0
2,2-Dichloropropane	µg/kg	5	ISO 17025	-	< 5.0
Chloroform	µg/kg	5	NONE	-	< 5.0
1,1,1-Trichloroethane	µg/kg	5	ISO 17025	-	< 5.0
1,2-dichloroethane	µg/kg	5	ISO 17025	-	< 5.0
1,1-Dichloropropene#	µg/kg	5	NONE	-	< 5.0
Cis-1,2-dichloroethene	µg/kg	5	ISO 17025	-	< 5.0
Benzene	µg/kg	5	MCERTS	-	< 5.0
Carbontetrachloride	µg/kg	5	NONE	-	< 5.0
1,2-dichloropropane	µg/kg	5	ISO 17025	-	< 5.0
Trichloroethene##	µg/kg	5	ISO 17025	-	< 5.0
Dibromomethane	µg/kg	5	ISO 17025	-	< 5.0
Bromodichloromethane##	µg/kg	5	ISO 17025	-	< 5.0
Cis-1,3-dichloropropene	µg/kg	5	ISO 17025	-	< 5.0
Trans-1,3-dichloropropene	µg/kg	5	ISO 17025	-	< 5.0
Toluene	µg/kg	5	MCERTS	-	< 5.0
1,1,2-Trichloroethane	µg/kg	5	ISO 17025	-	< 5.0
1,3-Dichloropropane##	µg/kg	5	ISO 17025	-	< 5.0
Dibromochloromethane##	µg/kg	5	ISO 17025	-	< 5.0
Tetrachloroethene	µg/kg	5	NONE	-	< 5.0
1,2-Dibromoethane##	µg/kg	5	ISO 17025	-	< 5.0
Chlorobenzene	µg/kg	5	ISO 17025	-	< 5.0
1,1,1,2-Tetrachloroethane	µg/kg	5	ISO 17025	-	< 5.0
Ethylbenzene#	µg/kg	5	NONE	-	< 5.0
p & m-xylene	µg/kg	5	MCERTS	-	< 5.0
Styrene	µg/kg	5	ISO 17025	-	< 5.0
Bromoform	µg/kg	5	NONE	-	< 5.0
o-xylene#	µg/kg	5	NONE	-	< 5.0
Isopropylbenzene	µg/kg	5	ISO 17025	-	< 5.0
1,1,2,2-Tetrachloroethane	µg/kg	5	ISO 17025	-	< 5.0
Bromobenzene	µg/kg	5	NONE	-	< 5.0
N-Propylbenzene	µg/kg	5	ISO 17025	-	< 5.0
2-Chlorotoluene	µg/kg	5	ISO 17025	-	< 5.0
4-Chlorotoluene	µg/kg	5	ISO 17025	-	< 5.0
1,3,5-Trimethylbenzene#	µg/kg	5	NONE	-	< 5.0
Tert-Butylbenzene	µg/kg	5	ISO 17025	-	< 5.0
1,2,4-Trimethylbenzene	µg/kg	5	ISO 17025	-	< 5.0
Sec-Butylbenzene	µg/kg	5	ISO 17025	-	< 5.0
1,3-dichlorobenzene	µg/kg	5	ISO 17025	-	< 5.0
P-Isopropyltoluene	µg/kg	5	ISO 17025	-	< 5.0
1,4-dichlorobenzene	µg/kg	5	ISO 17025	-	< 5.0
1,2-dichlorobenzene	µg/kg	5	ISO 17025	-	< 5.0
Butylbenzene	µg/kg	5	NONE	-	< 5.0



Analytical Report Number: 23-67593
Project / Site name: Langstone Technology Park, Havant
Your Order No: 19917

Lab Sample Number				2871795	2871796
Sample Reference				SA02	CP03
Sample Number				None Supplied	None Supplied
Depth (m)				0.40	0.20
Date Sampled				31/10/2023	31/10/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		
1,2-Dibromo-3-chloropropane	µg/kg	5	ISO 17025	-	< 5.0
1,2,4-Trichlorobenzene	µg/kg	5	ISO 17025	-	< 5.0
Hexachlorobutadiene	µg/kg	5	NONE	-	< 5.0
1,2,3-Trichlorobenzene	µg/kg	5	ISO 17025	-	< 5.0

Analytical Report Number: 23-67593
Project / Site name: Langstone Technology Park, Havant
Your Order No: 19917

Lab Sample Number				2871795	2871796
Sample Reference				SA02	CP03
Sample Number				None Supplied	None Supplied
Depth (m)				0.40	0.20
Date Sampled				31/10/2023	31/10/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		
SVOCs					
Aniline	mg/kg	0.1	NONE	-	< 0.1
Phenol	mg/kg	0.2	ISO 17025	-	< 0.2
2-Chlorophenol	mg/kg	0.1	MCERTS	-	< 0.1
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-	< 0.2
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-	< 0.2
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-	< 0.1
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-	< 0.2
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-	< 0.1
2-Methylphenol	mg/kg	0.3	MCERTS	-	< 0.3
Hexachloroethane	mg/kg	0.05	ISO 17025	-	< 0.05
Nitrobenzene	mg/kg	0.3	MCERTS	-	< 0.3
4-Methylphenol	mg/kg	0.2	NONE	-	< 0.2
Isophorone	mg/kg	0.2	MCERTS	-	< 0.2
2-Nitrophenol	mg/kg	0.3	NONE	-	< 0.3
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-	< 0.3
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-	< 0.3
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-	< 0.3
Naphthalene	mg/kg	0.05	MCERTS	-	1.6
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-	< 0.3
4-Chloroaniline	mg/kg	0.1	NONE	-	< 0.1
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-	< 0.1
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-	< 0.1
2,4,6-Trichlorophenol	mg/kg	0.1	NONE	-	< 0.1
2,4,5-Trichlorophenol	mg/kg	0.2	NONE	-	< 0.2
2-Methylnaphthalene	mg/kg	0.1	NONE	-	6.5
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-	< 0.1
Dimethylphthalate	mg/kg	0.1	MCERTS	-	< 0.1
2,6-Dinitrotoluene	mg/kg	0.1	NONE	-	< 0.1
Acenaphthylene	mg/kg	0.05	MCERTS	-	0.23
Acenaphthene	mg/kg	0.05	MCERTS	-	1.5
2,4-Dinitrotoluene	mg/kg	0.2	NONE	-	< 0.2
Dibenzofuran	mg/kg	0.2	MCERTS	-	2.6
4-Chlorophenyl phenyl ether	mg/kg	0.3	MCERTS	-	< 0.3
Diethyl phthalate	mg/kg	0.2	MCERTS	-	< 0.2
4-Nitroaniline	mg/kg	0.2	NONE	-	< 0.2
Fluorene	mg/kg	0.05	MCERTS	-	0.72
Azobenzene	mg/kg	0.3	NONE	-	< 0.3
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-	< 0.2
Hexachlorobenzene	mg/kg	0.3	MCERTS	-	< 0.3
Phenanthrene	mg/kg	0.05	MCERTS	-	4.9
Anthracene	mg/kg	0.05	MCERTS	-	1.5
Carbazole	mg/kg	0.3	MCERTS	-	0.6
Dibutyl phthalate	mg/kg	0.2	NONE	-	< 0.2
Anthraquinone	mg/kg	0.3	NONE	-	1.6
Fluoranthene	mg/kg	0.05	MCERTS	-	1.5
Pyrene	mg/kg	0.05	MCERTS	-	1.2
Butyl benzyl phthalate	mg/kg	0.3	NONE	-	< 0.3
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	0.35
Chrysene	mg/kg	0.05	MCERTS	-	0.55
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	-	0.34
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	-	0.1
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	0.18



Analytical Report Number: 23-67593
Project / Site name: Langstone Technology Park, Havant
Your Order No: 19917

Lab Sample Number				2871795	2871796
Sample Reference				SA02	CP03
Sample Number				None Supplied	None Supplied
Depth (m)				0.40	0.20
Date Sampled				31/10/2023	31/10/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	0.11
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	0.19

Miscellaneous Organics

Product ID		N/A	NONE	-	See Appendix
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U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected



Analytical Report Number : 23-67593
Project / Site name: Langstone Technology Park, Havant

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2871790	DCS01	None Supplied	0.4	Brown clay with gravel.
2871791	DCS02	None Supplied	0.2	Brown gravelly loam with tar.
2871792	DCS03A	None Supplied	0.15	Brown clay with gravel and vegetation.
2871793	SA01	None Supplied	0.6	Brown clay with gravel.
2871794	SA01B	None Supplied	0.3	Brown clay with gravel.
2871795	SA02	None Supplied	0.4	Brown clay with gravel.
2871796	CP03	None Supplied	0.2	Brown gravelly loam with tar.

Analytical Report Number : 23-67593

Project / Site name: Langstone Technology Park, Havant

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Magnesium, water soluble, in soil	Determination of water soluble magnesium by extraction with water followed by ICP-OES.	In-house method based on TRL 447	L038-PL	D	NONE
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards. Refer to CoA for analyte specific accreditation.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds in soil by extraction in dichloromethane and hexane followed by GC-MS. Refer to CoA for analyte specific accreditation.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260. Refer to CoA for analyte specific accreditation	L073B-PL	W	MCERTS
Product ID in soil	Determination of product ID by interpretation against standard chromatograms - Soil.	In-house method	L064-PL/UK	W	NONE
TPH Chromatogram in Soil	TPH Chromatogram in Soil.	In-house method	L064-PL	D	NONE
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID. Refer to CoA for band specific accreditation.	In-house method with silica gel split/clean up.	L088/76-PL	D	MCERTS
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	NONE

Analytical Report Number : 23-67593
Project / Site name: Langstone Technology Park, Havant

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
TPHCWG Ali Aro Sum	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID. Refer to CoA for band specific accreditation.	In-house method with silica gel split/clean up.	L088/76-PL	W	NONE
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).

For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).

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

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

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

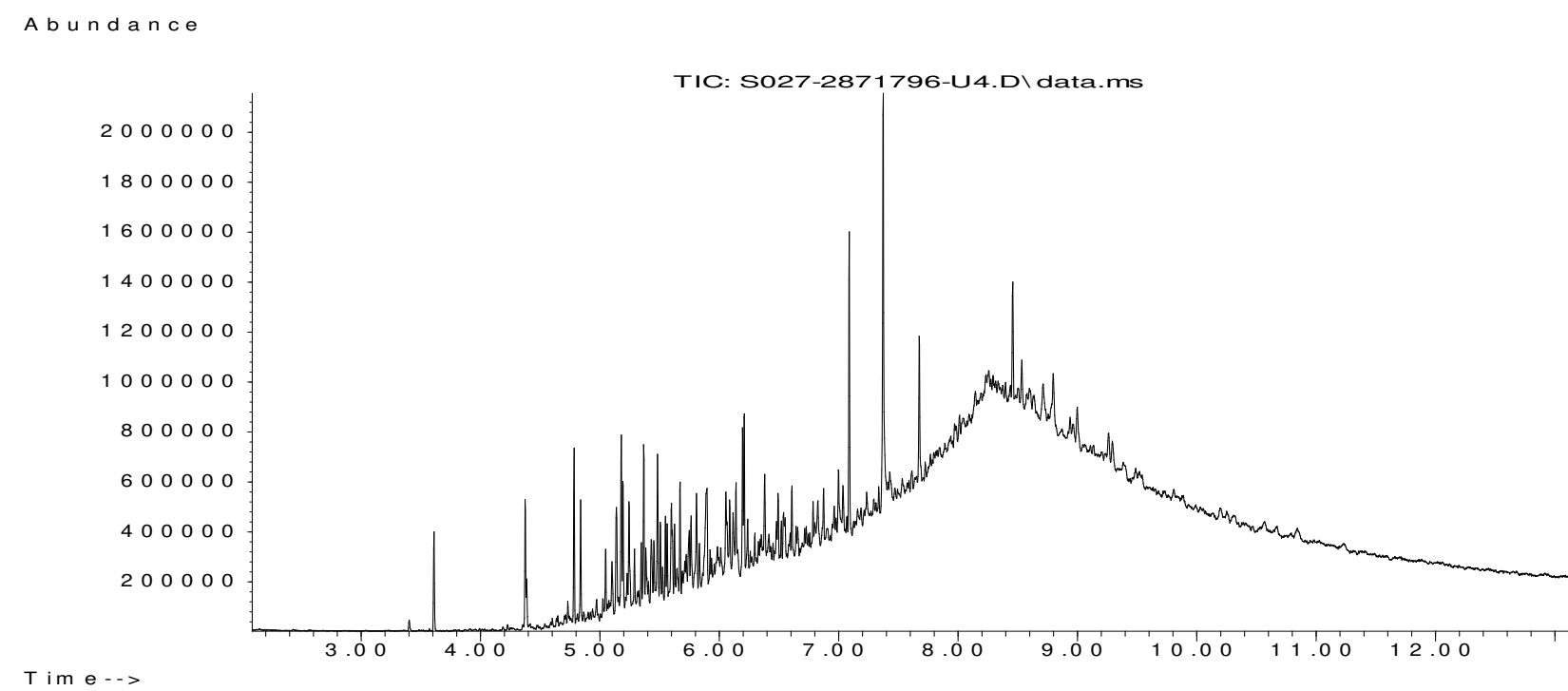
Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
-	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

- Data reported unaccredited due to quality control parameter failure associated with this result; other checks applied prior to reporting the data have been accepted. The result should be considered as being deviating and may be compromised.

- Quality control parameter has a high recovery (outside of limit); however the associated result is below the reporting limit, other checks applied prior to reporting the data have been accepted. The result should be considered as being deviating and may be compromised.



The total ion count (TIC trace) shows a carbon range from C10 to C22.
The sample TIC trace is complex, showing aliphatic and aromatic product sources.
The trace does not match the standard product profiles.

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Analytical Report Number : 23-69234

Project / Site name:	Langstone Technology Park Havant	Samples received on:	15/11/2023
Your job number:	AG3544 23	Samples instructed on/ Analysis started on:	15/11/2023
Your order number:	19944	Analysis completed by:	22/11/2023
Report Issue Number:	1	Report issued on:	22/11/2023
Samples Analysed:	1 soil sample		



Signed:

Dominika Liana
Junior Reporting Specialist
For & on behalf of i2 Analytical Ltd.

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

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

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils - 4 weeks from reporting
leachates - 2 weeks from reporting
waters - 2 weeks from reporting
asbestos - 6 months from reporting

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

Analytical Report Number: 23-69234

Project / Site name: Langstone Technology Park Havant

Your Order No: 19944

Lab Sample Number				2880745
Sample Reference				CP01
Sample Number				None Supplied
Depth (m)				0.20
Date Sampled				Deviating
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status	
Stone Content	%	0.1	NONE	52
Moisture Content	%	0.01	NONE	12
Total mass of sample received	kg	0.001	NONE	0.9

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.1
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	33
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.0165
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	16.5
Organic Matter (automated)	%	0.1	MCERTS	1.4

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0
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Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.11
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.06
Anthracene	mg/kg	0.05	MCERTS	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05
Pyrene	mg/kg	0.05	MCERTS	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	< 0.80
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Analytical Report Number: 23-69234

Project / Site name: Langstone Technology Park Havant

Your Order No: 19944

Lab Sample Number				2880745
Sample Reference				CP01
Sample Number				None Supplied
Depth (m)				0.20
Date Sampled				Deviating
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status	

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	6.2
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.48
Boron (total)	mg/kg	1	MCERTS	3.6
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.7
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8
Chromium (III)	mg/kg	1	NONE	20
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	20
Copper (aqua regia extractable)	mg/kg	1	MCERTS	6
Lead (aqua regia extractable)	mg/kg	1	MCERTS	19
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	15
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	18
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	63

Magnesium (water soluble)	mg/kg	5	NONE	5.2
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U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Analytical Report Number : 23-69234

Project / Site name: Langstone Technology Park Havant

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2880745	CP01	None Supplied	0.2	Brown sandy clay with gravel and stones.

Analytical Report Number : 23-69234

Project / Site name: Langstone Technology Park Havant

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Magnesium, water soluble, in soil	Determination of water soluble magnesium by extraction with water followed by ICP-OES.	In-house method based on TRL 447	L038-PL	D	NONE
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards. Refer to CoA for analyte specific accreditation.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).

For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).

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

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

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Sample Deviation Report



Analytical Report Number : 23-69234

Project / Site name: Langstone Technology Park Havant

This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis. Please note that the associated result(s) may be unreliable and should be interpreted with care.

Key: a - No sampling date b - Incorrect container c - Holding time d - Headspace e - Temperature

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
CP01	None Supplied	S	2880745	a	None Supplied	None Supplied	None Supplied

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Analytical Report Number : 23-69235

Project / Site name:	Langstone Technology Park Havant	Samples received on:	15/11/2023
Your job number:	AG3544 23	Samples instructed on/ Analysis started on:	15/11/2023
Your order number:	19944	Analysis completed by:	22/11/2023
Report Issue Number:	1	Report issued on:	22/11/2023
Samples Analysed:	5 10:1 WAC samples		


Signed:

Dominika Liana
Junior Reporting Specialist
For & on behalf of i2 Analytical Ltd.

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

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

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils - 4 weeks from reporting
leachates - 2 weeks from reporting
waters - 2 weeks from reporting
asbestos - 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.



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Waste Acceptance Criteria Analytical Results

Report No:	23-69235						
Location	Langstone Technology Park Havant						
Lab Reference (Sample Number)	2880746 / 2880747						
Sampling Date							
Sample ID	SA01C						
Depth (m)	1.50						
Solid Waste Analysis							
TOC (%)**	0.4				3%	5%	6%
Loss on Ignition (%) **	-				--	--	10%
BTEX (µg/kg)**	< 5.0				6000	--	--
Sum of PCBs (mg/kg)**	< 0.007				1	--	--
Mineral Oil (mg/kg) EH, ID, CU, AL	< 10				500	--	--
Total PAH (WAC-17) (mg/kg)	< 0.85				100	--	--
pH (units)**	-				--	>6	--
Acid Neutralisation Capacity (mmol / kg)	-				--	To be evaluated	To be evaluated
Eluate Analysis	10:1			10:1	Limit values for compliance leaching test		
(BS EN 12457 - 2 preparation utilising end over end leaching procedure)	mg/l			mg/kg	using BS EN 12457-2 at L/S 10 l/kg (mg/kg)		
Arsenic *	0.0015			0.0149	0.5	2	25
Barium *	0.0035			0.0351	20	100	300
Cadmium *	< 0.0001			< 0.0008	0.04	1	5
Chromium *	< 0.0004			< 0.0040	0.5	10	70
Copper *	0.0085			0.086	2	50	100
Mercury *	< 0.0005			< 0.0050	0.01	0.2	2
Molybdenum *	0.0009			0.0088	0.5	10	30
Nickel *	< 0.0003			< 0.0030	0.4	10	40
Lead *	0.0014			0.014	0.5	10	50
Antimony *	< 0.0017			< 0.017	0.06	0.7	5
Selenium *	< 0.0040			< 0.040	0.1	0.5	7
Zinc *	0.0059			0.059	4	50	200
Chloride *	1.3			13	800	15000	25000
Fluoride*	0.18			1.8	10	150	500
Sulphate *	2.4			24	1000	20000	50000
TDS*	39			390	4000	60000	100000
Phenol Index (Monohydric Phenols) *	< 0.010			< 0.10	1	-	-
DOC	7.58			75.8	500	800	1000
Leach Test Information							
Stone Content (%)	51						
Sample Mass (kg)	0.80						
Dry Matter (%)	94						
Moisture (%)	5.6						
Results are expressed on a dry weight basis, after correction for moisture content where applicable.				* = UKAS accredited (liquid eluate analysis only)			
Stated limits are for guidance only and i2 cannot be held responsible for any discrepancies with current legislation				** = MCERTS accredited			

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes as defined by the Waste (England and Wales) Regulations 2011 (as amended) and EA Guidance WM3.

This analysis is only applicable for landfill acceptance criteria (The Environmental Permitting (England and Wales) Regulations) and does not give any indication as to whether a waste may be hazardous or non-hazardous.

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Waste Acceptance Criteria Analytical Results

Report No:	23-69235						
					Client: APPLIEDGEO		
Location	Langstone Technology Park Havant						
Lab Reference (Sample Number)	2880748 / 2880749				Landfill Waste Acceptance Criteria		
					Limits		
Sampling Date					Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID	SA02						
Depth (m)	1.20						
Solid Waste Analysis							
TOC (%)**	0.2				3%	5%	6%
Loss on Ignition (%) **	-				--	--	10%
BTEX (µg/kg)**	< 5.0				6000	--	--
Sum of PCBs (mg/kg)**	< 0.007				1	--	--
Mineral Oil (mg/kg) EH, ID, CU, AL	< 10				500	--	--
Total PAH (WAC-17) (mg/kg)	< 0.85				100	--	--
pH (units)**	-				--	>6	--
Acid Neutralisation Capacity (mmol / kg)	-				--	To be evaluated	To be evaluated
Eluate Analysis		10:1		10:1	Limit values for compliance leaching test		
(BS EN 12457 - 2 preparation utilising end over end leaching procedure)		mg/l		mg/kg	using BS EN 12457-2 at L/S 10 l/kg (mg/kg)		
Arsenic *	0.0016			0.0161	0.5	2	25
Barium *	0.0034			0.0338	20	100	300
Cadmium *	< 0.0001			< 0.0008	0.04	1	5
Chromium *	< 0.0004			< 0.0040	0.5	10	70
Copper *	0.0037			0.037	2	50	100
Mercury *	< 0.0005			< 0.0050	0.01	0.2	2
Molybdenum *	0.0009			0.0093	0.5	10	30
Nickel *	0.0009			0.0088	0.4	10	40
Lead *	< 0.0010			< 0.010	0.5	10	50
Antimony *	< 0.0017			< 0.017	0.06	0.7	5
Selenium *	< 0.0040			< 0.040	0.1	0.5	7
Zinc *	0.0016			0.016	4	50	200
Chloride *	1.8			18	800	15000	25000
Fluoride*	0.17			1.7	10	150	500
Sulphate *	2.2			22	1000	20000	50000
TDS*	40			400	4000	60000	100000
Phenol Index (Monohydric Phenols) *	< 0.010			< 0.10	1	-	-
DOC	6.75			67.5	500	800	1000
Leach Test Information							
Stone Content (%)	22						
Sample Mass (kg)	0.80						
Dry Matter (%)	90						
Moisture (%)	10						
Results are expressed on a dry weight basis, after correction for moisture content where applicable.							
Stated limits are for guidance only and i2 cannot be held responsible for any discrepancies with current legislation							

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Waste Acceptance Criteria Analytical Results

Report No:	23-69235						
Location	Langstone Technology Park Havant						
Lab Reference (Sample Number)	2880750 / 2880751						
Sampling Date							
Sample ID	DCS01						
Depth (m)	1.40						
Solid Waste Analysis							
TOC (%)**	0.6				3%	5%	6%
Loss on Ignition (%) **	-				--	--	10%
BTEX (µg/kg)**	< 5.0				6000	--	--
Sum of PCBs (mg/kg)**	0.017				1	--	--
Mineral Oil (mg/kg) EH, ID, CU, AL	< 10				500	--	--
Total PAH (WAC-17) (mg/kg)	< 0.85				100	--	--
pH (units)**	-				--	>6	--
Acid Neutralisation Capacity (mmol / kg)	-				--	To be evaluated	To be evaluated
Eluate Analysis	10:1			10:1	Limit values for compliance leaching test		
(BS EN 12457 - 2 preparation utilising end over end leaching procedure)	mg/l			mg/kg	using BS EN 12457-2 at L/S 10 l/kg (mg/kg)		
Arsenic *	< 0.0010			< 0.0100	0.5	2	25
Barium *	0.0062			0.0620	20	100	300
Cadmium *	< 0.0001			< 0.0008	0.04	1	5
Chromium *	0.0004			0.0042	0.5	10	70
Copper *	0.0094			0.094	2	50	100
Mercury *	< 0.0005			< 0.0050	0.01	0.2	2
Molybdenum *	0.0016			0.0162	0.5	10	30
Nickel *	0.0007			0.0072	0.4	10	40
Lead *	< 0.0010			< 0.010	0.5	10	50
Antimony *	< 0.0017			< 0.017	0.06	0.7	5
Selenium *	< 0.0040			< 0.040	0.1	0.5	7
Zinc *	0.011			0.11	4	50	200
Chloride *	2.1			21	800	15000	25000
Fluoride*	0.33			3.3	10	150	500
Sulphate *	3.3			33	1000	20000	50000
TDS*	45			450	4000	60000	100000
Phenol Index (Monohydric Phenols) *	< 0.010			< 0.10	1	-	-
DOC	9.07			90.7	500	800	1000
Leach Test Information							
Stone Content (%)	< 0.1						
Sample Mass (kg)	0.90						
Dry Matter (%)	91						
Moisture (%)	9.1						
Results are expressed on a dry weight basis, after correction for moisture content where applicable.				* = UKAS accredited (liquid eluate analysis only)			
Stated limits are for guidance only and i2 cannot be held responsible for any discrepancies with current legislation				** = MCERTS accredited			

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Waste Acceptance Criteria Analytical Results

Report No:	23-69235						
Location	Langstone Technology Park Havant						
Lab Reference (Sample Number)	2880752 / 2880753						
Sampling Date							
Sample ID	DCS02						
Depth (m)	1.50						
Solid Waste Analysis							
TOC (%)**	0.2				3%	5%	6%
Loss on Ignition (%) **	-				--	--	10%
BTEX (µg/kg)**	< 5.0				6000	--	--
Sum of PCBs (mg/kg)**	< 0.007				1	--	--
Mineral Oil (mg/kg) EH, ID, CU, AL	< 10				500	--	--
Total PAH (WAC-17) (mg/kg)	< 0.85				100	--	--
pH (units)**	-				--	>6	--
Acid Neutralisation Capacity (mmol / kg)	-				--	To be evaluated	To be evaluated
Eluate Analysis	10:1			10:1	Limit values for compliance leaching test		
(BS EN 12457 - 2 preparation utilising end over end leaching procedure)	mg/l			mg/kg	using BS EN 12457-2 at L/S 10 l/kg (mg/kg)		
Arsenic *	0.0015			0.0154	0.5	2	25
Barium *	0.0025			0.0249	20	100	300
Cadmium *	< 0.0001			< 0.0008	0.04	1	5
Chromium *	< 0.0004			< 0.0040	0.5	10	70
Copper *	0.0043			0.044	2	50	100
Mercury *	< 0.0005			< 0.0050	0.01	0.2	2
Molybdenum *	0.0009			0.0089	0.5	10	30
Nickel *	< 0.0003			< 0.0030	0.4	10	40
Lead *	< 0.0010			< 0.010	0.5	10	50
Antimony *	< 0.0017			< 0.017	0.06	0.7	5
Selenium *	< 0.0040			< 0.040	0.1	0.5	7
Zinc *	0.0012			0.012	4	50	200
Chloride *	0.80			8.0	800	15000	25000
Fluoride*	0.22			2.2	10	150	500
Sulphate *	1.0			10	1000	20000	50000
TDS*	35			350	4000	60000	100000
Phenol Index (Monohydric Phenols) *	< 0.010			< 0.10	1	-	-
DOC	8.21			82.1	500	800	1000
Leach Test Information							
Stone Content (%)	< 0.1						
Sample Mass (kg)	0.80						
Dry Matter (%)	90						
Moisture (%)	10						
Results are expressed on a dry weight basis, after correction for moisture content where applicable.				* = UKAS accredited (liquid eluate analysis only)			
Stated limits are for guidance only and i2 cannot be held responsible for any discrepancies with current legislation				** = MCERTS accredited			

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Waste Acceptance Criteria Analytical Results

Report No:	23-69235						
Location	Langstone Technology Park Havant						
Lab Reference (Sample Number)	2880754 / 2880755						
Sampling Date							
Sample ID	DCS03						
Depth (m)	1.30						
Solid Waste Analysis							
TOC (%)**	0.3				3%	5%	6%
Loss on Ignition (%) **	-				--	--	10%
BTEX (µg/kg)**	< 5.0				6000	--	--
Sum of PCBs (mg/kg)**	< 0.007				1	--	--
Mineral Oil (mg/kg) EH, ID, CU, AL	< 10				500	--	--
Total PAH (WAC-17) (mg/kg)	< 0.85				100	--	--
pH (units)**	-				--	>6	--
Acid Neutralisation Capacity (mmol / kg)	-				--	To be evaluated	To be evaluated
Eluate Analysis	10:1			10:1	Limit values for compliance leaching test		
(BS EN 12457 - 2 preparation utilising end over end leaching procedure)	mg/l			mg/kg	using BS EN 12457-2 at L/S 10 l/kg (mg/kg)		
Arsenic *	< 0.0010			< 0.0100	0.5	2	25
Barium *	0.0017			0.0174	20	100	300
Cadmium *	< 0.0001			< 0.0008	0.04	1	5
Chromium *	0.0005			0.0045	0.5	10	70
Copper *	0.0023			0.023	2	50	100
Mercury *	< 0.0005			< 0.0050	0.01	0.2	2
Molybdenum *	0.0012			0.0122	0.5	10	30
Nickel *	0.0004			0.0039	0.4	10	40
Lead *	< 0.0010			< 0.010	0.5	10	50
Antimony *	< 0.0017			< 0.017	0.06	0.7	5
Selenium *	< 0.0040			< 0.040	0.1	0.5	7
Zinc *	0.0016			0.016	4	50	200
Chloride *	1.1			11	800	15000	25000
Fluoride*	0.17			1.7	10	150	500
Sulphate *	0.83			8.3	1000	20000	50000
TDS*	35			350	4000	60000	100000
Phenol Index (Monohydric Phenols) *	< 0.010			< 0.10	1	-	-
DOC	4.28			42.8	500	800	1000
Leach Test Information							
Stone Content (%)	< 0.1						
Sample Mass (kg)	0.80						
Dry Matter (%)	90						
Moisture (%)	10						
Results are expressed on a dry weight basis, after correction for moisture content where applicable.				* = UKAS accredited (liquid eluate analysis only)			
Stated limits are for guidance only and i2 cannot be held responsible for any discrepancies with current legislation				** = MCERTS accredited			

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Analytical Report Number : 23-69235

Project / Site name: Langstone Technology Park Havant

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2880746	SA01C	None Supplied	1.5	Brown sand with gravel and stones.
2880748	SA02	None Supplied	1.2	Brown clay and sand with gravel and stones.
2880750	DCS01	None Supplied	1.4	Brown clay with gravel and chalk.
2880752	DCS02	None Supplied	1.5	Brown clay and sand with gravel and chalk.
2880754	DCS03	None Supplied	1.3	Brown clay and sand with gravel and chalk.

Analytical Report Number : 23-69235

Project / Site name: Langstone Technology Park Havant

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
BS EN 12457-2 (10:1) Leachate Prep	10:1 (as recieved, moisture adjusted) end over end extraction with water for 24 hours. Eluate filtered prior to analysis.	In-house method based on BSEN12457-2.	L043-PL	W	NONE
Mineral Oil (Soil) C10 - C40	Determination of mineral oil fraction extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L076-PL	D	NONE
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Speciated WAC-17 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270.	L064-PL	D	MCERTS
PCB's By GC-MS in soil	Determination of PCB by extraction with acetone and hexane followed by GC-MS.	In-house method based on USEPA 8082	L027-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
BTEX in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260. Refer to CoA for analyte specific accreditation	L073B-PL	W	MCERTS
Total BTEX in soil (Poland)	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260. Refer to CoA for analyte specific accreditation	L073-PL	W	MCERTS
Metals in leachate by ICP-OES	Determination of metals in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil"	L039-PL	W	ISO 17025
Chloride 10:1 WAC	Determination of Chloride colorimetrically by discrete analyser.	In house based on MEWAM Method ISBN 0117516260.	L082-PL	W	ISO 17025
Fluoride 10:1 WAC	Determination of fluoride in leachate by 1:1ratio with a buffer solution followed by Ion Selective Electrode.	In-house method based on Use of Total Ionic Strength Adjustment Buffer for Electrode Determination"	L033B-PL	W	ISO 17025
Sulphate 10:1 WAC	Determination of sulphate in leachate by ICP-OES	In-house method based on MEWAM 1986 Methods for the Determination of Metals in Soil"	L039-PL	W	ISO 17025
Total dissolved solids 10:1 WAC	Determination of total dissolved solids in water by EC probe using a factor of 0.6.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L031-PL	W	ISO 17025
Monohydric phenols 10:1 WAC	Determination of phenols in leachate by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	ISO 17025

Analytical Report Number : 23-69235

Project / Site name: Langstone Technology Park Havant

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Dissolved organic carbon 10:1 WAC	Determination of dissolved inorganic carbon in leachate by TOC/DOC NDIR Analyser.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037-PL	W	NONE

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).

For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).

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

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

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

Sample Deviation Report



Analytical Report Number : 23-69235

Project / Site name: Langstone Technology Park Havant

This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis. Please note that the associated result(s) may be unreliable and should be interpreted with care.

Key: a - No sampling date b - Incorrect container c - Holding time d - Headspace e - Temperature

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
DCS01	None Supplied	L	2880751	a	None Supplied	None Supplied	None Supplied
DCS01	None Supplied	S	2880750	a	None Supplied	None Supplied	None Supplied
DCS02	None Supplied	L	2880753	a	None Supplied	None Supplied	None Supplied
DCS02	None Supplied	S	2880752	a	None Supplied	None Supplied	None Supplied
DCS03	None Supplied	L	2880755	a	None Supplied	None Supplied	None Supplied
DCS03	None Supplied	S	2880754	a	None Supplied	None Supplied	None Supplied
SA01C	None Supplied	L	2880747	a	None Supplied	None Supplied	None Supplied
SA01C	None Supplied	S	2880746	a	None Supplied	None Supplied	None Supplied
SA02	None Supplied	L	2880749	a	None Supplied	None Supplied	None Supplied
SA02	None Supplied	S	2880748	a	None Supplied	None Supplied	None Supplied



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Environmental Science

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Analytical Report Number : 23-72706

Project / Site name:	Langstone Technology Park, Havant	Samples received on:	01/12/2023
Your job number:	AG3544-23	Samples instructed on/ Analysis started on:	01/12/2023
Your order number:	19993	Analysis completed by:	11/12/2023
Report Issue Number:	1	Report issued on:	11/12/2023
Samples Analysed:	3 water samples		

Signed:

Dominika Liana
Junior Reporting Specialist
For & on behalf of i2 Analytical Ltd.

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

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

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils - 4 weeks from reporting
leachates - 2 weeks from reporting
waters - 2 weeks from reporting
asbestos - 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.



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Analytical Report Number: 23-72706

Project / Site name: Langstone Technology Park, Havant

Your Order No: 19993

Lab Sample Number				2898351	2898352	2898353
Sample Reference				CP01	CP02	CP03
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				2.02	1.49	2.09
Date Sampled				30/11/2023	30/11/2023	30/11/2023
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)				Units	Limit of detection	Accreditation Status

General Inorganics

pH (L099)	pH Units	N/A	ISO 17025	7.5	7.5	7.3
Sulphate as SO ₄	mg/l	0.045	ISO 17025	34.2	22	17.4
Total Organic Carbon (TOC)	mg/l	0.1	ISO 17025	3.87	7.68	3.86

Hardness - Total	mgCaCO ₃ /l	1	ISO 17025	251	209	260
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Total Phenols

Total Phenols (monohydric)	µg/l	1	ISO 17025	2.6	2	3
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Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01

Total PAH

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

Analytical Report Number: 23-72706

Project / Site name: Langstone Technology Park, Havant

Your Order No: 19993

Lab Sample Number				2898351	2898352	2898353
Sample Reference				CP01	CP02	CP03
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				2.02	1.49	2.09
Date Sampled				30/11/2023	30/11/2023	30/11/2023
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status			

Heavy Metals / Metalloids

Boron (dissolved)	µg/l	10	ISO 17025	68	24	35
Calcium (dissolved)	mg/l	0.012	ISO 17025	92	78	97
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0	< 5.0	< 5.0
Chromium (III)	µg/l	5	NONE	< 5.0	< 5.0	< 5.0
Magnesium (dissolved)	mg/l	0.005	ISO 17025	5.2	3.6	4

Chromium (total)	µg/l	0.2	ISO 17025	0.4	0.5	0.4
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Arsenic (dissolved)	µg/l	0.15	ISO 17025	2.49	0.64	0.38
Beryllium (dissolved)	µg/l	0.1	ISO 17025	< 0.1	< 0.1	< 0.1
Cadmium (dissolved)	µg/l	0.02	ISO 17025	< 0.02	0.03	< 0.02
Chromium (dissolved)	µg/l	0.2	ISO 17025	< 0.2	< 0.2	< 0.2
Copper (dissolved)	µg/l	0.5	ISO 17025	0.9	4.9	1.2
Lead (dissolved)	µg/l	0.2	ISO 17025	< 0.2	< 0.2	< 0.2
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05	< 0.05	< 0.05
Nickel (dissolved)	µg/l	0.5	ISO 17025	1.6	1.6	1.7
Selenium (dissolved)	µg/l	0.6	ISO 17025	1.7	1.6	1.2
Vanadium (dissolved)	µg/l	0.2	ISO 17025	0.4	0.9	< 0.2
Zinc (dissolved)	µg/l	0.5	ISO 17025	2.8	12	4.3

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >C5 - C6 HS_1D_AL	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8 HS_1D_AL	µg/l	1	ISO 17025	< 1.0#	< 1.0	< 1.0
TPH-CWG - Aliphatic >C8 - C10 HS_1D_AL	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C10 - C12 EH_1D_AL_MS	µg/l	10	NONE	< 10	< 10	< 10
TPH-CWG - Aliphatic >C12 - C16 EH_1D_AL_MS	µg/l	10	NONE	< 10	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21 EH_1D_AL_MS	µg/l	10	NONE	< 10	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35 EH_1D_AL_MS	µg/l	10	NONE	< 10	< 10	< 10
TPH-CWG - Aliphatic >C35 - C44 EH_1D_AL_MS	µg/l	10	NONE	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35) HS+EH_1D_AL_MS	µg/l	10	NONE	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C44) HS+EH_1D_AL_MS	µg/l	10	NONE	< 10	< 10	< 10

TPH-CWG - Aromatic >C5 - C7 HS_1D_AR	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C7 - C8 HS_1D_AR	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C8 - C10 HS_1D_AR	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C10 - C12 EH_1D_AR_MS	µg/l	10	NONE	< 10	< 10	< 10
TPH-CWG - Aromatic >C12 - C16 EH_1D_AR_MS	µg/l	10	NONE	< 10	< 10	< 10
TPH-CWG - Aromatic >C16 - C21 EH_1D_AR_MS	µg/l	10	NONE	< 10	< 10	< 10
TPH-CWG - Aromatic >C21 - C35 EH_1D_AR_MS	µg/l	10	NONE	< 10	< 10	< 10
TPH-CWG - Aromatic >C35 - C44 EH_1D_AR_MS	µg/l	10	NONE	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C35) HS+EH_1D_AR_MS	µg/l	10	NONE	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C44) HS+EH_1D_AR_MS	µg/l	10	NONE	< 10	< 10	< 10



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Environmental Science

Analytical Report Number: 23-72706

Project / Site name: Langstone Technology Park, Havant

Your Order No: 19993

Lab Sample Number				2898351	2898352	2898353
Sample Reference				CP01	CP02	CP03
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				2.02	1.49	2.09
Date Sampled				30/11/2023	30/11/2023	30/11/2023
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)				Units	Limit of detection	Accreditation Status

VOCs

Chloromethane	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0
Chloroethane	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0
Bromomethane	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0
Vinyl Chloride	µg/l	3	NONE	< 3.0	< 3.0	< 3.0
Trichlorofluoromethane	µg/l	3	NONE	< 3.0	< 3.0	< 3.0
1,1-Dichloroethene	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0
1,1,2-Trichloro-1,2,2-trifluoroethane	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0
Trans 1,2-dichloroethylene	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	3	ISO 17025	< 3.0	< 3.0#	< 3.0#
1,1-Dichloroethane	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0
2,2-Dichloropropane	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0
Chloroform	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0
1,1,1-Trichloroethane	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0
1,2-Dichloroethane	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0
1,1-Dichloropropene	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0
Cis-1,2-dichloroethene	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0
Benzene	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0
Carbontetrachloride	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0
1,2-Dichloropropane	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0
Trichloroethene	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0
Dibromomethane	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0
Bromodichloromethane	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0
Cis-1,3-dichloropropene	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0
Trans-1,3-dichloropropene	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0
Toluene	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0
1,1,2-Trichloroethane	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0
1,3-Dichloropropane	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0
Dibromochloromethane	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0
Tetrachloroethene	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0
1,2-Dibromoethane	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0
Chlorobenzene	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0
1,1,1,2-Tetrachloroethane	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0
Ethylbenzene	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0
p & m-Xylene	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0
Styrene	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0
Bromoform	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0
o-Xylene	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0
Isopropylbenzene	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0
1,1,2,2-Tetrachloroethane	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0
Bromobenzene	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0
n-Propylbenzene	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0
2-Chlorotoluene	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0
4-Chlorotoluene	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0
1,3,5-Trimethylbenzene	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0
tert-Butylbenzene	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0
1,2,4-Trimethylbenzene	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0
sec-Butylbenzene	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0
1,3-Dichlorobenzene	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0
p-Isopropyltoluene	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0
1,4-Dichlorobenzene	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0
1,2-Dichlorobenzene	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0



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Analytical Report Number: 23-72706

Project / Site name: Langstone Technology Park, Havant

Your Order No: 19993

Lab Sample Number				2898351	2898352	2898353
Sample Reference				CP01	CP02	CP03
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				2.02	1.49	2.09
Date Sampled				30/11/2023	30/11/2023	30/11/2023
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status			
Butylbenzene	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0
1,2-Dibromo-3-chloropropane	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0
1,2,4-Trichlorobenzene	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0
Hexachlorobutadiene	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0
1,2,3-Trichlorobenzene	µg/l	3	ISO 17025	< 3.0	< 3.0	< 3.0



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Environmental Science

Analytical Report Number: 23-72706

Project / Site name: Langstone Technology Park, Havant

Your Order No: 19993

Lab Sample Number				2898351	2898352	2898353
Sample Reference				CP01	CP02	CP03
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				2.02	1.49	2.09
Date Sampled				30/11/2023	30/11/2023	30/11/2023
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status			

SVOCs

Aniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05
Phenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05
2-Chlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05
Bis(2-chloroethyl)ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05
1,3-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05
1,2-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05
1,4-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05
Bis(2-chloroisopropyl)ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05
2-Methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05
Hexachloroethane	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05
Nitrobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05
4-Methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05
Isophorone	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05
2-Nitrophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05
2,4-Dimethylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05
Bis(2-chloroethoxy)methane	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05
1,2,4-Trichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
2,4-Dichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05
4-Chloroaniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05
Hexachlorobutadiene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05
4-Chloro-3-methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05
2,4,6-Trichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05
2,4,5-Trichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05
2-Methylnaphthalene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05
2-Chloronaphthalene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05
Dimethylphthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05
2,6-Dinitrotoluene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
2,4-Dinitrotoluene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05
Dibenzofuran	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05
4-Chlorophenyl phenyl ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05
Diethyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05
4-Nitroaniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Azobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05
Bromophenyl phenyl ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Carbazole	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05
Dibutyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05
Anthraquinone	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Butyl benzyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01



4041



Analytical Report Number: 23-72706

Project / Site name: Langstone Technology Park, Havant

Your Order No: 19993

Lab Sample Number				2898351	2898352	2898353
Sample Reference				CP01	CP02	CP03
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				2.02	1.49	2.09
Date Sampled				30/11/2023	30/11/2023	30/11/2023
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status			
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01
3&4-Methylphenol	µg/l	0.1	NONE	< 0.10	< 0.10	< 0.10

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected



4041



Environmental Science

Analytical Report Number : 23-72706**Project / Site name: Langstone Technology Park, Havant****Water matrix abbreviations:****Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)**

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in water by ICP-MS (total)	Determination of metals in water by acidification followed by ICP-MS. Accredited Matrices: SW, GW, PW except B=SW,GW, Hg=SW,PW, Al=SW,PW.	In-house method based on USEPA Method 6020 & 200.8 "for the determination of trace elements in water by ICP-MS.	L012-PL	W	ISO 17025
Metals in water by ICP-OES (dissolved)	Determination of metals in water by acidification followed by ICP-OES. Accredited Matrices SW, GW, PW, PrW.(Al, Cu,Fe,Zn).	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Metals in water by ICP-MS (dissolved)	Determination of metals in water by acidification followed by ICP-MS. Accredited Matrices: SW, GW, PW except B=SW,GW, Hg=SW,PW, Al=SW,PW.	In-house method based on USEPA Method 6020 & 200.8 "for the determination of trace elements in water by ICP-MS.	L012-PL	W	ISO 17025
Boron in water	Determination of boron in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW	In-house method based on MEWAM	L039-PL	W	ISO 17025
Hexavalent chromium in water	Determination of hexavalent chromium in water by acidification, addition of 1,5 diphenylcarbazine followed by colorimetry.	In-house method by continuous flow analyser. Accredited Matrices SW, GW, PW.	L080-PL	W	ISO 17025
Total Hardness of water	Determination of hardness in waters by calculation from calcium and magnesium. Accredited Matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L045-PL	W	ISO 17025
Monohydric phenols in water - LOW LEVEL 1 ug/l	Determination of phenols in water by continuous flow analyser. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
Speciated EPA-16 PAHs in water	Determination of PAH compounds in water by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards. Accredited matrices: SW PW GW	In-house method based on USEPA 8270	L102B-PL	W	ISO 17025
Sulphate in water	Determination of sulphate in water after filtration by acidification followed by ICP-OES. Accredited Matrices SW, GW, PW.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Semi-volatile organic compounds in water	Determination of semi-volatile organic compounds in leachate by extraction in dichloromethane followed by GC-MS.	In-house method based on USEPA 8270	L102B-PL	W	ISO 17025
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-PL	W	ISO 17025
Total organic carbon in water	Determination of dissolved organic carbon in water by TOC/DOC NDIR analyser. Accredited matrices: SW PW GW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037-PL	W	ISO 17025
Volatile organic compounds in water	Determination of volatile organic compounds in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Cr (III) in water	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
pH at 20oC in water (automated)	Determination of pH in water by electrometric measurement. Accredited matrices: SW PW GW	In house method.	L099-PL	W	ISO 17025

Analytical Report Number : 23-72706

Project / Site name: Langstone Technology Park, Havant

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
TPH in (Water)	Determination of TPH bands by HS-GC-MS/GC-MS	In-house method, TPH with carbon banding.	L088/70-PL	W	NONE

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).

For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).

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

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

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
-	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

- Data reported unaccredited due to quality control parameter failure associated with this result; other checks applied prior to reporting the data have been accepted. The result should be considered as being deviating and may be compromised

Sample Deviation Report



Analytical Report Number : 23-72706

Project / Site name: Langstone Technology Park, Havant

This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis. Please note that the associated result(s) may be unreliable and should be interpreted with care.

Key: a - No sampling date b - Incorrect container c - Holding time d - Headspace e - Temperature

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
CP01	None Supplied	W	2898351	c	pH at 20oC in water (automated)	L099-PL	c
CP02	None Supplied	W	2898352	c	pH at 20oC in water (automated)	L099-PL	c
CP03	None Supplied	W	2898353	c	pH at 20oC in water (automated)	L099-PL	c

Laboratory Test Certificate

Form REP008 Rev 5

Issued from:	Geotechnics Ltd The Geotechnical Centre 203 Torrington Avenue Tile Hill Coventry, CV4 9AP	Date of issue	25/01/2024
		Issue No.	1
		Client Ref. No.	N/A
		Samples / Material Source	
		Samples Recv'd	04/12/2023
Testing Start Date	05/12/2023	Sample State	As received
Testing Complete	19/01/2024	Sampled by	
Comments			
Project No	PL230031		
Project Name	Langstone Technology Park, Havant		

Summary of Tests

Standard	Test Description	Test Quantity	UKAS
BS EN ISO 17892-1:2014	Water Content	18	Yes
BS EN ISO 17892-12:2018 Cl. 5.3 & 5.5	Liquid Limit and Plastic Limit (4 Points Method)	8	Yes
BS EN ISO 17892-12:2018 Cl. 5.3.14 & 5.6	Liquid Limit and Plastic Limit (1 Point Method)	1	Yes
BS EN ISO 17892-4:2016 Cl. 5.2	Particle Size Distribution by Sieving Method	12	Yes
BS 1377-2:1990 Cl. 8.2	Particle Density by Gas Jar Method	5	Yes
BS 1377-4:1990 Cl. 3.3	2.5 kg Rammer Dry Density/Moisture Content Relationship (Compaction)	5	Yes
BS 1377-4:1990 Cl. 3.5	4.5 kg Rammer Dry Density/Moisture Content Relationship (Compaction)	5	Yes
BS 1377-4:1990 Cl. 7.2	California Bearing Ratio (CBR)	5	Yes
BS 1377-2:1990 Cl. 3.3	Saturation Moisture Content of Chalk	5	Yes

Note: Any descriptions, opinions or interpretations are outside the scope of UKAS accreditation.
The results within this report relate only to the samples tested and received from the client.



Test Results checked and approved for issue.
Signed for and on behalf of Geotechnics Limited

Paul Smart (Laboratory Testing Manager)



Project Name:
LANGSTONE TECHNOLOGY PARK, HAVANT

All tests performed in accordance with BS EN ISO 17892 unless specified otherwise.

Printed
02/02/2024



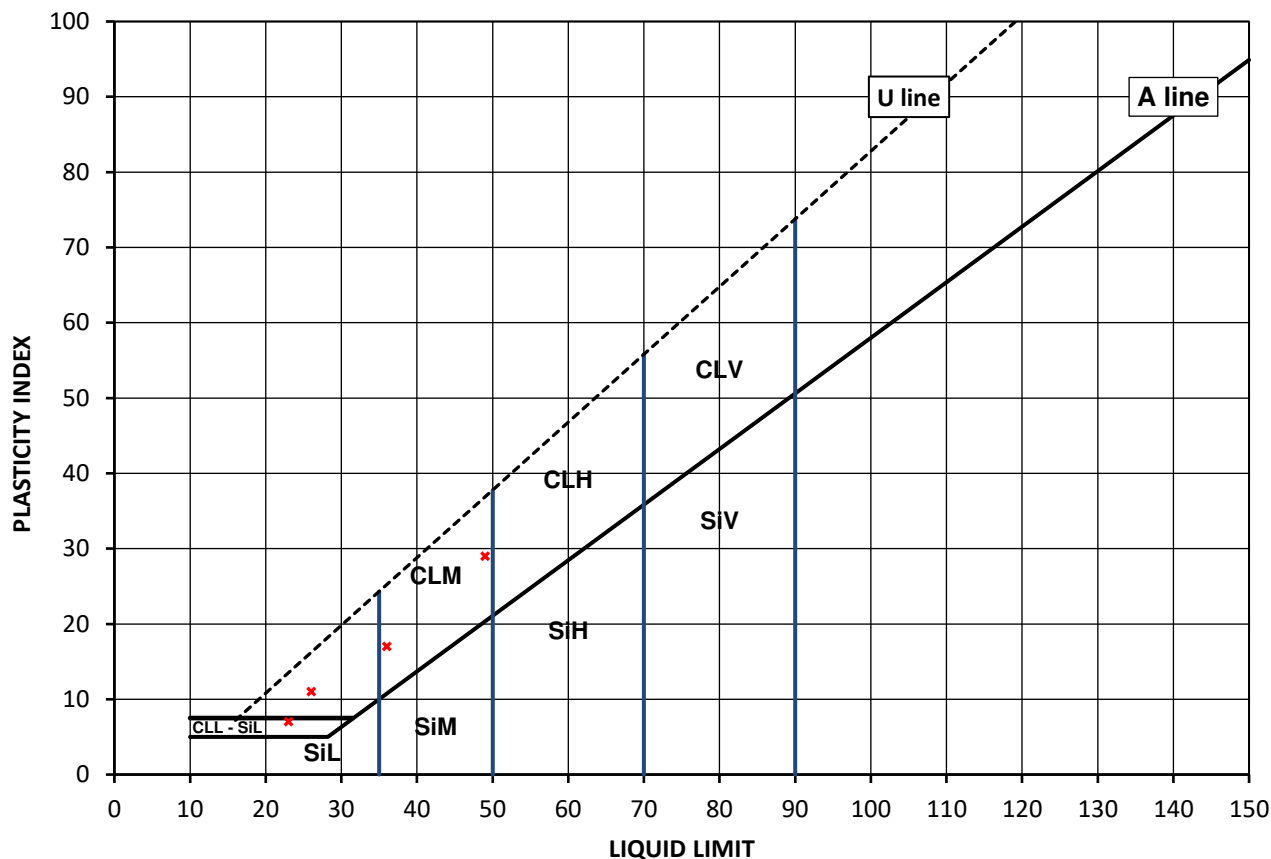
Plasticity (A-line) Chart

Project No.

PL230031

Project Name

LANGSTONE TECHNOLOGY PARK, HAVANT



Legend based on BS EN ISO 14688-2:2018

		Plasticity	Liquid Limit
CL	Clay	L Low	below 35
Si	Silt	I Medium	35 to 50
		H High	50 to 70
		V Very high	70 to 90
Organic	O	append to classification for organic material (eg CHO)	

Notes

Plotted Test results from BS EN ISO 17892-12 include 4pt and 1pt tests, unless otherwise detailed on the classification summary report. See individual results for more detail.

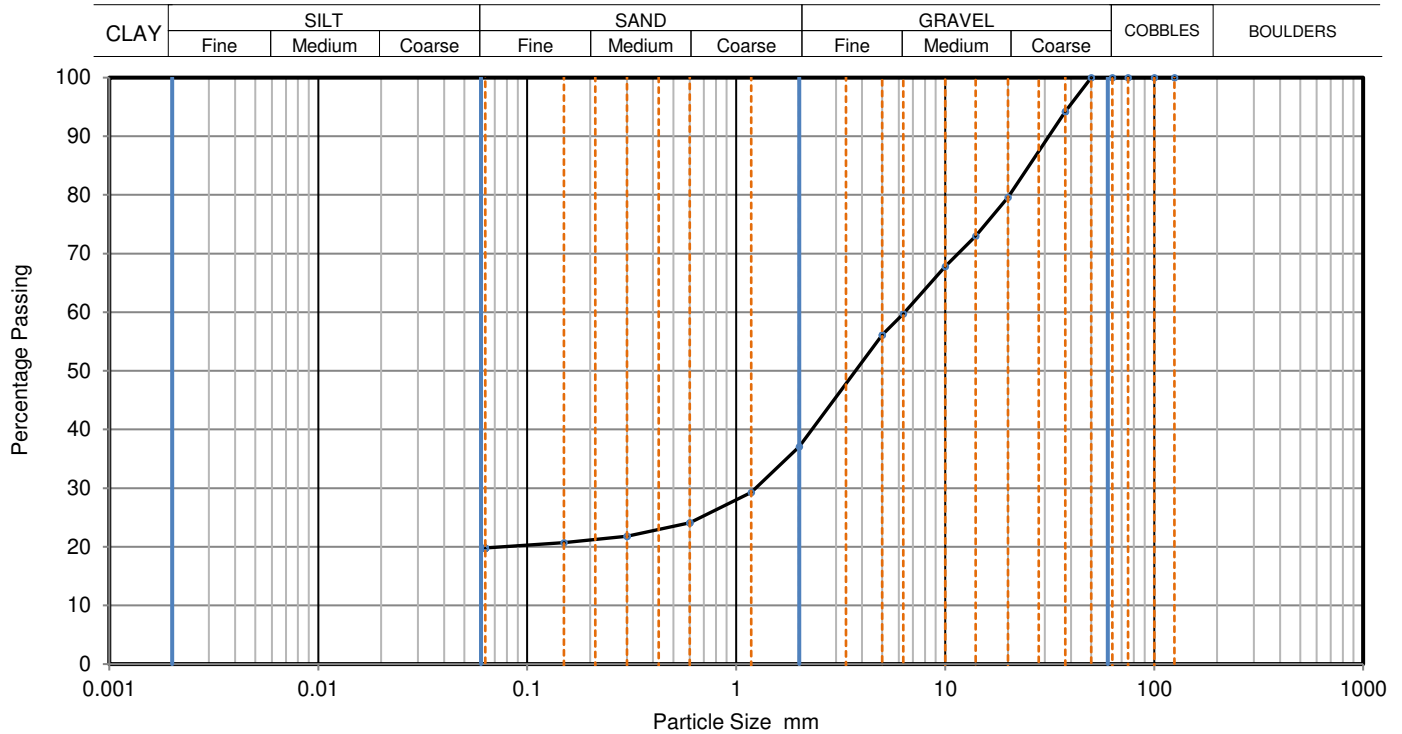
A' line derivation above PI of 6, PI = 0.73 (LL-20)

Date Printed

02/02/2024

PARTICLE SIZE DISTRIBUTION

Hole No.	CP01
Sample No.	
Project Number:	PL230031
Depth	m 3.60
Project Name:	LANGSTONE TECHNOLOGY PARK, HAVANT
Sample Type	B
Specimen Description	White sandy clayey GRAVEL.
Specimen Depth	m
Test Method	ISO 17892 -4, by sieving on as received or wet sample



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
100	100		
75	100		
63	100		
50	100		
37.5	94		
20	80		
14	73		
10	68		
6.3	60		
5	56		
2	37		
1.18	29		
0.6	24		
0.3	22		
0.15	21		
0.063	20		

Sample Proportions	% dry mass
Cobbles	0
Gravel	63
Sand	17
Fines <0.063mm	20

Grading Analysis		
D100	mm	50
D60	mm	6.4
D30	mm	1.24
D10	mm	
Uniformity Coefficient		

Remarks

Printed

02/02/2024

PARTICLE SIZE DISTRIBUTION

Hole No.

CP02

Sample No.

Project Number:

PL230031

Depth

m

2.50

Project Name:

LANGSTONE TECHNOLOGY PARK, HAVANT

Sample Type

B

Specimen Description

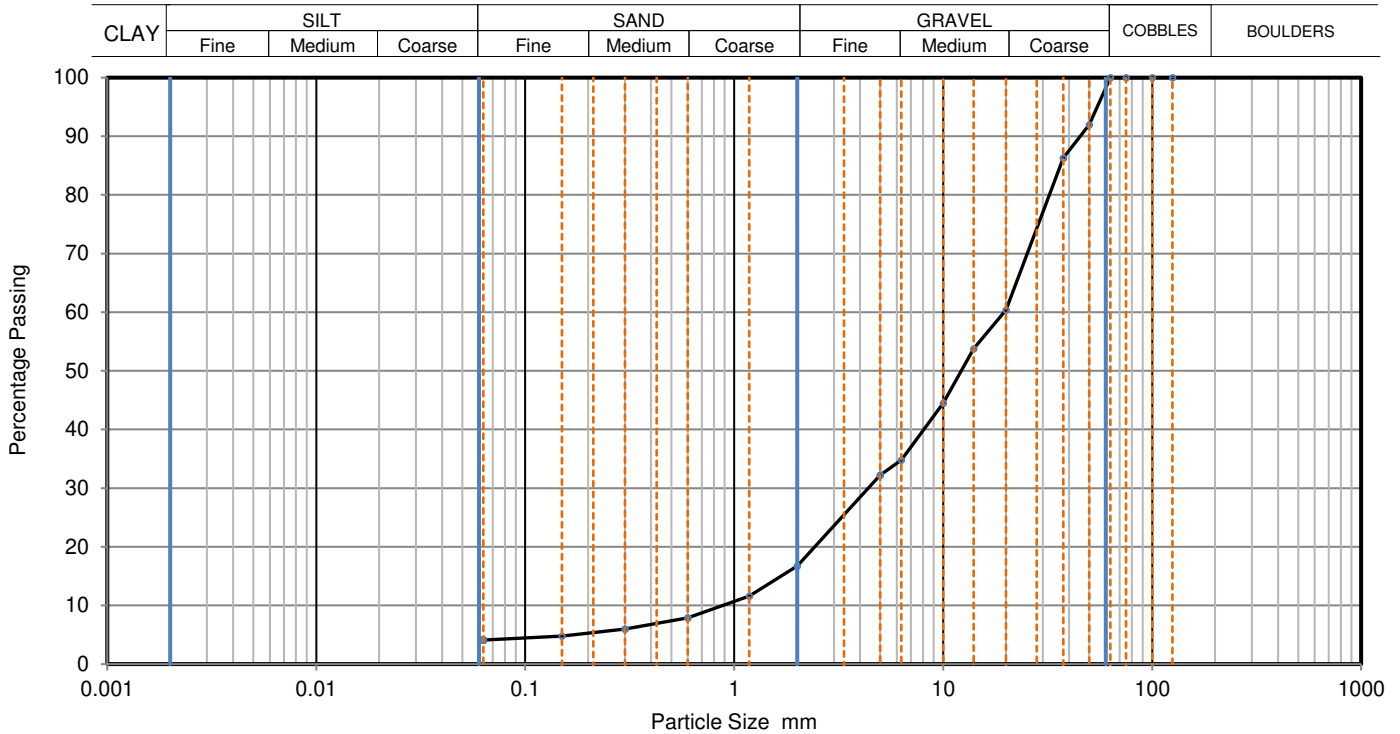
Light brown sandy slightly clayey GRAVEL.

Specimen Depth

m

Test Method

ISO 17892 -4, by sieving on as received or wet sample



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
100	100		
75	100		
63	100		
50	92		
37.5	86		
20	60		
14	54		
10	45		
6.3	35		
5	32		
2	17		
1.18	12		
0.6	8		
0.3	6		
0.15	5		
0.063	4		

Sample Proportions	% dry mass
Cobbles	0
Gravel	83
Sand	13
Fines <0.063mm	4

Grading Analysis		
D100	mm	63
D60	mm	19.6
D30	mm	4.38
D10	mm	0.877
Uniformity Coefficient		22

Initial sample mass less than BS EN ISO 17892 requirements

Remarks

Printed

02/02/2024

PARTICLE SIZE DISTRIBUTION

Hole No.

CP03

Sample No.

Project Number:

PL230031

Depth

m

4.00

Project Name:

LANGSTONE TECHNOLOGY PARK, HAVANT

Sample Type

B

Specimen Description

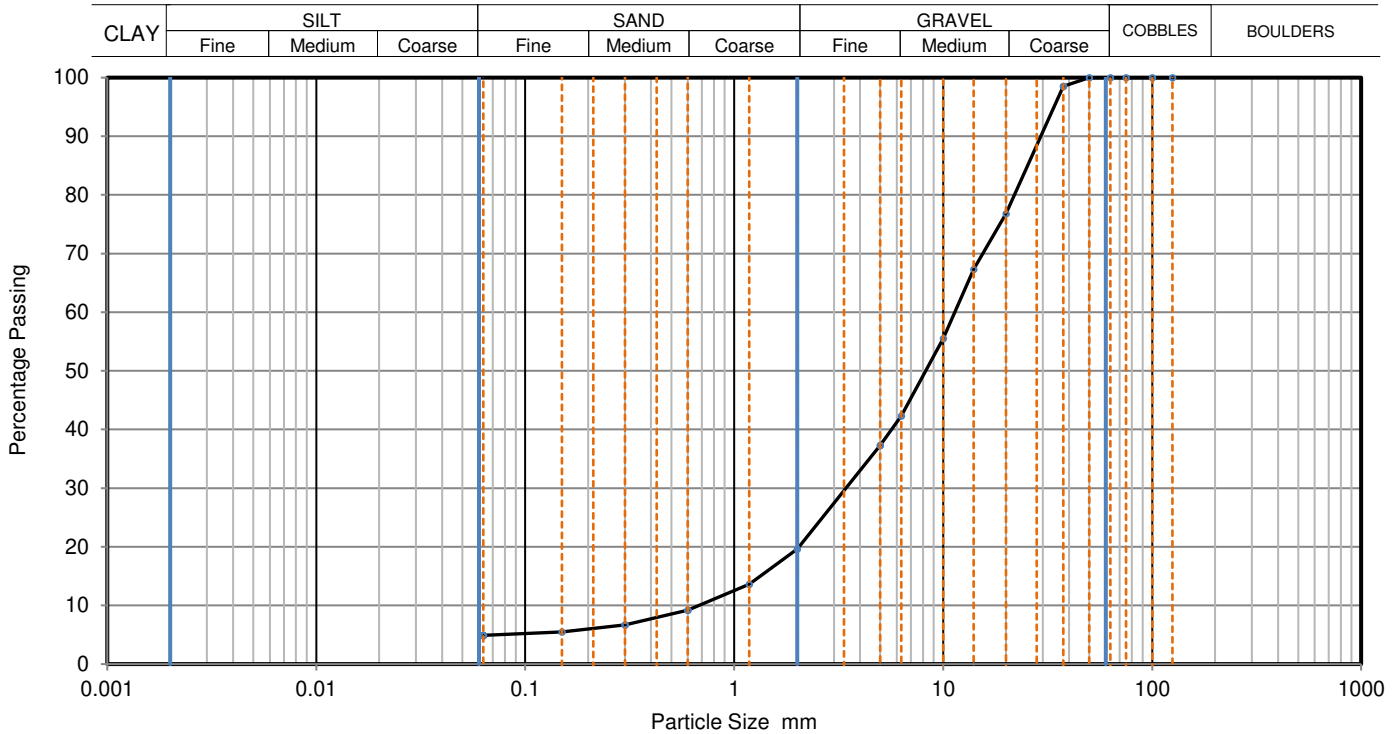
Light brown sandy clayey GRAVEL.

Specimen Depth

m

Test Method

ISO 17892 -4, by sieving on as received or wet sample



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
100	100		
75	100		
63	100		
50	100		
37.5	99		
20	77		
14	67		
10	56		
6.3	42		
5	37		
2	20		
1.18	14		
0.6	9		
0.3	7		
0.15	6		
0.063	5		

Sample Proportions	% dry mass
Cobbles	0
Gravel	80
Sand	15
Fines <0.063mm	5

Grading Analysis		
D100	mm	50
D60	mm	11.4
D30	mm	3.43
D10	mm	0.681
Uniformity Coefficient		17

Remarks

Printed

02/02/2024

PARTICLE SIZE DISTRIBUTION

Hole No.

DCS01

Sample No.

Project Number:

PL230031

Depth

m

1.40

Project Name:

LANGSTONE TECHNOLOGY PARK, HAVANT

Sample Type

B

Specimen Description

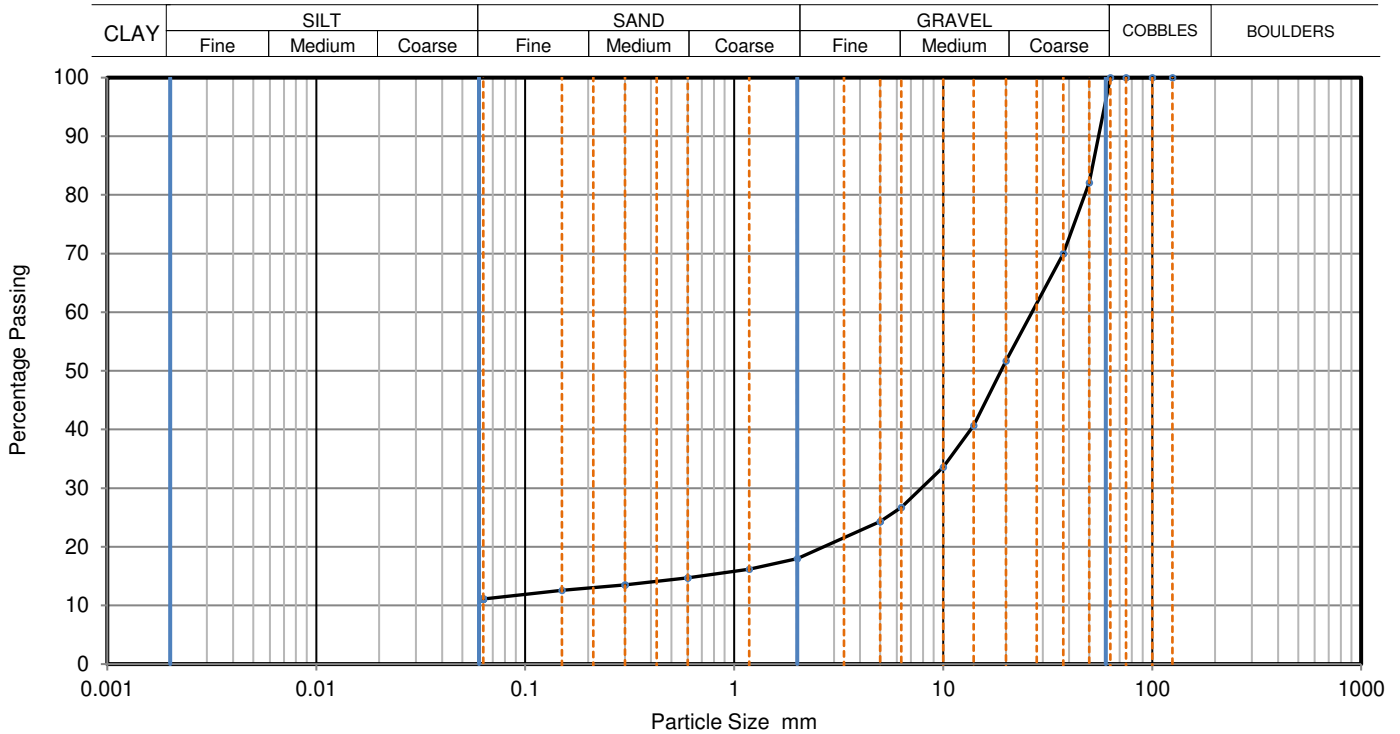
Brown sandy clayey GRAVEL.

Specimen Depth

m

Test Method

ISO 17892 -4, by sieving on as received or wet sample



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
100	100		
75	100		
63	100		
50	82		
37.5	70		
20	52		
14	41		
10	34		
6.3	27		
5	24		
2	18		
1.18	16		
0.6	15		
0.3	14		
0.15	13		
0.063	11		

Sample Proportions	% dry mass
Cobbles	0
Gravel	82
Sand	7
Fines <0.063mm	11

Grading Analysis		
D100	mm	63
D60	mm	26.6
D30	mm	7.84
D10	mm	
Uniformity Coefficient		

Initial sample mass less than BS EN ISO 17892 requirements

Remarks

Printed

02/02/2024

PARTICLE SIZE DISTRIBUTION

Hole No.

DCS02

Sample No.

Project Number:

PL230031

Depth

m

2.20

Project Name:

LANGSTONE TECHNOLOGY PARK, HAVANT

Sample Type

B

Specimen Description

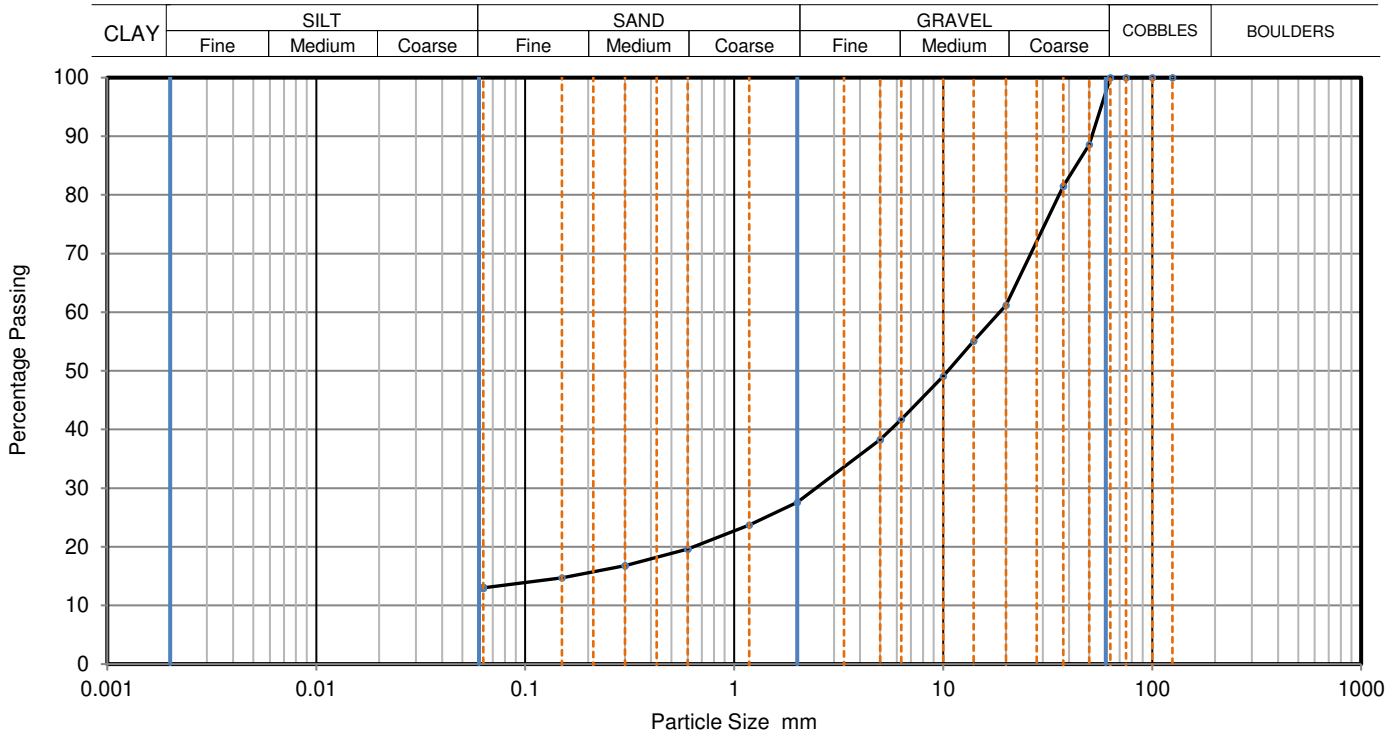
Light brown sandy slightly clayey GRAVEL.

Specimen Depth

m

Test Method

ISO 17892 -4, by sieving on as received or wet sample



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
100	100		
75	100		
63	100		
50	89		
37.5	82		
20	61		
14	55		
10	49		
6.3	42		
5	38		
2	28		
1.18	24		
0.6	20		
0.3	17		
0.15	15		
0.063	13		

Sample Proportions	% dry mass
Cobbles	0
Gravel	72
Sand	15
Fines <0.063mm	13

Grading Analysis		
D100	mm	63
D60	mm	18.7
D30	mm	2.46
D10	mm	
Uniformity Coefficient		

Initial sample mass less than BS EN ISO 17892 requirements

Remarks

Printed

02/02/2024

PARTICLE SIZE DISTRIBUTION

Hole No.

DCS3A

Sample No.

Project Number:

PL230031

Depth

m

1.30

Project Name:

LANGSTONE TECHNOLOGY PARK, HAVANT

Sample Type

B

Specimen Description

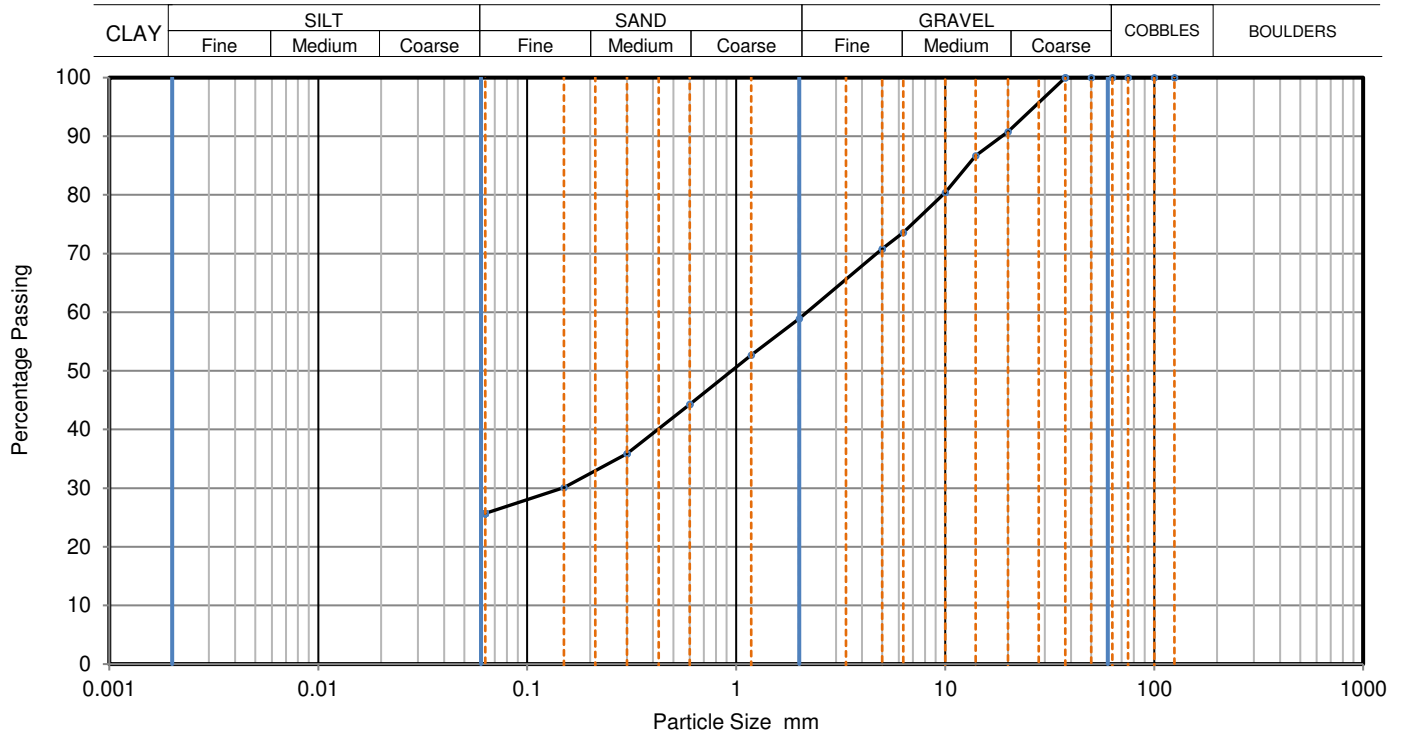
Light brown very sandy very clayey GRAVEL.

Specimen Depth

m

Test Method

ISO 17892 -4, by sieving on as received or wet sample



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
100	100		
75	100		
63	100		
50	100		
37.5	100		
20	91		
14	87		
10	80		
6.3	74		
5	71		
2	59		
1.18	53		
0.6	44		
0.3	36		
0.15	30		
0.063	26		

Sample Proportions	% dry mass
Cobbles	0
Gravel	41
Sand	33
Fines <0.063mm	26

Grading Analysis		
D100	mm	37.5
D60	mm	2.18
D30	mm	0.147
D10	mm	
Uniformity Coefficient		

Remarks

Printed

02/02/2024

PARTICLE SIZE DISTRIBUTION

Hole No.

DCS3A

Sample No.

Project Number:

PL230031

Depth

m

2.20

Project Name:

LANGSTONE TECHNOLOGY PARK, HAVANT

Sample Type

B

Specimen Description

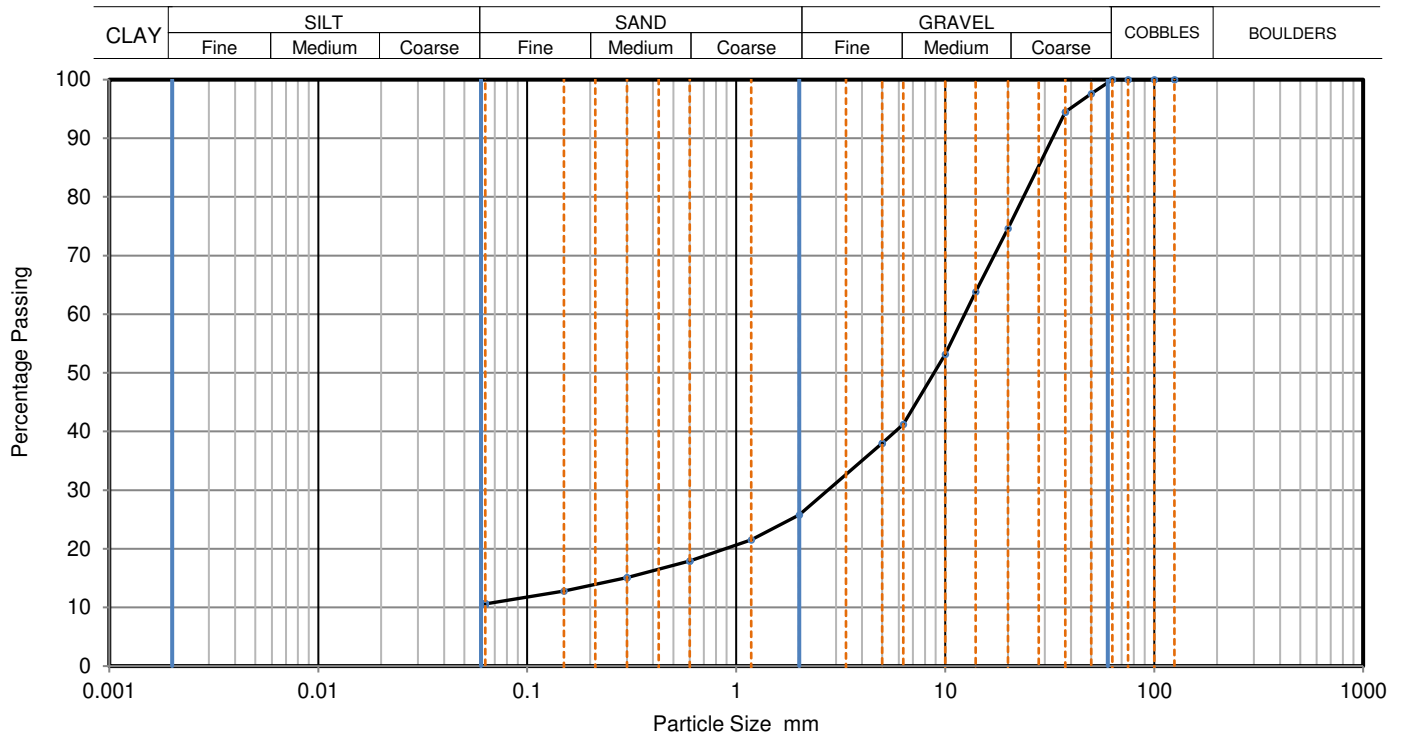
Brown sandy clayey GRAVEL.

Specimen Depth

m

Test Method

ISO 17892 -4, by sieving on as received or wet sample



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
100	100		
75	100		
63	100		
50	98		
37.5	95		
20	75		
14	64		
10	53		
6.3	41		
5	38		
2	26		
1.18	22		
0.6	18		
0.3	15		
0.15	13		
0.063	11		

Sample Proportions	% dry mass
Cobbles	0
Gravel	74
Sand	15
Fines <0.063mm	11

Grading Analysis		
D100	mm	63
D60	mm	12.4
D30	mm	2.74
D10	mm	
Uniformity Coefficient		

Remarks

Printed

02/02/2024

Project No.

PL230031

Project Name

LANGSTONE TECHNOLOGY PARK, HAVANT

[illegible]

Notes

Tested in accordance with BS1377 : Part 2 : 1990, clause 3.3 unless specified otherwise.



1365



Certificate of Analysis

Certificate Number 23-28744-0

Issued: 18-Dec-23

Client Geotechnics LTD
203 Torrington Avenue
Tile Hill
Coventry
CV4 9AP

Our Reference 23-28744-0

Client Reference PL230030

Order No OL39145

Contract Title Langstone Technology Park

Description 18 Soil samples.

Date Received 07-Dec-23

Date Started 07-Dec-23

Date Completed 18-Dec-23

Test Procedures Identified by prefix DETSn (details on request).

Notes This report supersedes 23-28744, amendments made

Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Kirk Bridgewood
General Manager



2139

Summary of Chemical Analysis Soil Samples

Our Ref 23-28744-0

Client Ref PL230030

Contract Title Langstone Technology Park

Lab No	2273067	2273068	2273069	2273070	2273071	2273072	2273073	2273074	2273075	2273076	2273077
Sample ID	CP01	CP01	CP01	CP01	CP02	CP02	CP03	CP03	TP01	TP03	TP04
Depth	2.30	2.30	2.80	4.30	1.60	4.60-5.05	1.80	6.50-6.95	1.40	1.70	2.20
Other ID	RTD	Pos Alluvi									
Sample Type	D	D	D	D	D	D	D	D	D	D	D
Sampling Date	06/10/2023	06/10/2023	06/10/2023	06/10/2023	06/10/2023	06/10/2023	06/10/2023	06/10/2023	06/10/2023	06/10/2023	06/10/2023
Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units											
Inorganics														
pH	DETSC 2008#		pH	8.3	8.4	8.2	8.7	8.4	8.6	8.2	8.9	10.8	11.7	9.7
Sulphate Aqueous Extract as SO ₄ (2:1)	DETSC 2076#	10	mg/l	46	53	78	14	17	< 10	14	13	330	72	70
Sulphur as S, Total	DETSC 2320	0.01	%		0.09	0.09								
Sulphate as SO ₄ , Total	DETSC 2321#	0.01	%		0.05	0.07								

Summary of Chemical Analysis Soil Samples

Our Ref 23-28744-0

Client Ref PL230030

Contract Title Langstone Technology Park

Lab No	2273078	2273079	2273080	2273081	2273082	2273083	2273084
Sample ID	TP05	TP07	DCS01	DCS02	DCS02	DCS03A	DCS03A
Depth	1.30	0.50	2.50	1.10	3.60	1.20	1.80
Other ID							
Sample Type	D	D	D	D	D	D	D
Sampling Date	06/10/2023	06/10/2023	06/10/2023	06/10/2023	06/10/2023	06/10/2023	06/10/2023
Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units							
Inorganics										
pH	DETSC 2008#		pH	9.9	8.0	8.9	7.7	8.2	7.8	8.5
Sulphate Aqueous Extract as SO ₄ (2:1)	DETSC 2076#	10	mg/l	130	24	16	46	40	66	10
Sulphur as S, Total	DETSC 2320	0.01	%				0.04		0.05	
Sulphate as SO ₄ , Total	DETSC 2321#	0.01	%				0.05		0.11	

Information in Support of the Analytical Results

Our Ref 23-28744-0
 Client Ref PL230030
 Contract Langstone Technology Park

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
2273067	CP01 2.30 SOIL	06/10/23	PT 500ml	Anions 2:1 (30 days), pH + Conductivity (7 days)	
2273068	CP01 2.30 SOIL	06/10/23	PT 500ml	Anions 2:1 (30 days), Total Sulphur ICP (7 days), Total Sulphate ICP (30 days), pH + Conductivity (7 days)	
2273069	CP01 2.80 SOIL	06/10/23	PT 500ml	Anions 2:1 (30 days), Total Sulphur ICP (7 days), Total Sulphate ICP (30 days), pH + Conductivity (7 days)	
2273070	CP01 4.30 SOIL	06/10/23	PT 500ml	Anions 2:1 (30 days), pH + Conductivity (7 days)	
2273071	CP02 1.60 SOIL	06/10/23	PT 500ml	Anions 2:1 (30 days), pH + Conductivity (7 days)	
2273072	CP02 4.60-5.05 SOIL	06/10/23	PT 500ml	Anions 2:1 (30 days), pH + Conductivity (7 days)	
2273073	CP03 1.80 SOIL	06/10/23	PT 500ml	Anions 2:1 (30 days), pH + Conductivity (7 days)	
2273074	CP03 6.50-6.95 SOIL	06/10/23	PT 500ml	Anions 2:1 (30 days), pH + Conductivity (7 days)	
2273075	TP01 1.40 SOIL	06/10/23	PT 500ml	Anions 2:1 (30 days), pH + Conductivity (7 days)	
2273076	TP03 1.70 SOIL	06/10/23	PT 500ml	Anions 2:1 (30 days), pH + Conductivity (7 days)	
2273077	TP04 2.20 SOIL	06/10/23	PT 500ml	Anions 2:1 (30 days), pH + Conductivity (7 days)	
2273078	TP05 1.30 SOIL	06/10/23	PT 500ml	Anions 2:1 (30 days), pH + Conductivity (7 days)	
2273079	TP07 0.50 SOIL	06/10/23	PT 500ml	Anions 2:1 (30 days), pH + Conductivity (7 days)	
2273080	DCS01 2.50 SOIL	06/10/23	PT 500ml	Anions 2:1 (30 days), pH + Conductivity (7 days)	
2273081	DCS02 1.10 SOIL	06/10/23	PT 500ml	Anions 2:1 (30 days), Total Sulphur ICP (7 days), Total Sulphate ICP (30 days), pH + Conductivity (7 days)	
2273082	DCS02 3.60 SOIL	06/10/23	PT 500ml	Anions 2:1 (30 days), pH + Conductivity (7 days)	
2273083	DCS03A 1.20 SOIL	06/10/23	PT 500ml	Anions 2:1 (30 days), Total Sulphur ICP (7 days), Total Sulphate ICP (30 days), pH + Conductivity (7 days)	
2273084	DCS03A 1.80 SOIL	06/10/23	PT 500ml	Anions 2:1 (30 days), pH + Conductivity (7 days)	

Key: P-Plastic T-Tub

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

Information in Support of the Analytical Results

Our Ref 23-28744-0
Client Ref PL230030
Contract Langstone Technology Park

Soil Analysis Notes

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

Disposal

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

End of Report

APPENDIX F

APPENDIX F

STANDARD FIELDWORK AND ASSESSMENT PROCEDURES

Scope of Work

The scope of work undertaken is defined in Section 1 of the Report. It should be noted that Applied Geology Limited does not provide arboricultural surveys, specialist surveys for the detection of invasive plant species (such as Japanese Knotweed) or protected species of wildlife. Information from environmental and ecological datasets is included from a review of the MAGIC (Multi-Agency Geographic Information for the Countryside) website, however, if a full assessment of Environmental or Ecological aspects is required, it is recommended that other specialists are consulted. Similarly, information on flood risk is included; obtained from the Environment Agency Web site and the GroundSure report; but this is not intended to be a full hydrological study and, if a flood risk assessment is needed, additional analysis by others is recommended to confirm this aspect of the development. Also, whilst our field staff have undergone asbestos awareness training, Applied Geology does not undertake asbestos surveys or provide specific advice relating to asbestos-containing materials. Any suspected asbestos-containing materials observed by our field staff will be mentioned in the report but further assessment by others may be required.

Fieldwork

Fieldwork is generally carried out in accordance with BS5930 (2015) "Code of Practice for Site Investigations" and BS10175 (2011) Investigation of Potentially Contaminated Sites, unless otherwise stated.

Prior to commencement on site, statutory services plans are generally obtained and verbal enquiries are also made regarding the positions of private or statutory services on site. Prior to excavation or drilling, locations are scanned with a cable avoidance tool (CAT) and service pits are generally excavated at borehole positions, where possible.

Descriptions and depths of the various strata recovered are presented on the exploratory hole records, reproduced in the report appendices, together with sample depths, the results of in-situ testing, comments on groundwater inflows, and any other pertinent information. The strata descriptions are in general accordance with BS5930:2015. Disturbed plastic pot and glass amber jar samples are recovered from the various strata and stored and transported in cool boxes, where relevant, for possible future laboratory testing.

Light cable percussion boreholes are generally drilled using a Pilcon Wayfarer or Dando rig and are advanced using equipment to bore 200/150mm diameter boreholes. Disturbed plastic pot samples are recovered from all deposits encountered to allow examination and laboratory testing. Certain strata are cased off due to their tendency to collapse, particularly in the presence of groundwater inflows and/or to reduce the risk of cross contamination. In situ Standard Penetration Tests, using Split Spoon (SPT) and Cone (CPT) are undertaken in the boreholes to provide a measure of the relative density of the granular (coarse grained) deposits or shear strength of the clay/chalk/ weathered rock deposits using industry recognised correlation guidelines of shear strength against SPT "N" value results. Within the fine grained (cohesive) deposits, "undisturbed" 100mm driven open tube samples were recovered from the various deposits to provide samples for examination and laboratory testing. On encountering groundwater, boring is usually suspended for 20 minutes while any rise in water level is recorded. Full details of the groundwater observations and monitoring results during boring operations are included on the borehole records. All boreholes without monitoring wells installed are usually backfilled with arisings upon completion, unless otherwise stated on the individual logs.

Unless otherwise stated on the relevant logs, trial pits are excavated using a wheeled backhoe excavator, usually with a 0.6m wide bucket. The excavations are logged from the ground surface by an Engineering Geologist / Geo-environmental Engineer and relevant field testing, appropriate to the soils encountered, is carried out on samples brought to the surface. Representative disturbed soil samples are collected from selected horizons for subsequent laboratory testing. The trial pits are

usually unshored and where reasonable, left open for a period of time to allow observations of pit stability and depth and inflow rate of any groundwater ingress. The excavations are backfilled with arisings prior to moving on to the next position. Any trial pits carried out as part of this or previous investigations may represent soft spots and conduits/sumps for groundwater or surface water. In excavations, such materials may also be loose and unstable.

Driven Continuous Sampling (DCS) boreholes are drilled using a track mounted Global mini-rig or similar using sampling tubes of varying diameter (decreasing with depth). Samples of the deposits encountered are recovered in 1m long clear plastic liners, which are logged and sub-sampled on site by an Engineering Geologist. Generally for geotechnical investigations, during the drilling process in-situ Standard Penetration Tests (SPTs) are undertaken at selected depths to provide a measure of the relative density of the granular (coarse grained) deposits or shear strength of the clay/chalk/ weathered rock deposits using industry recognised correlation guidelines of shear strength against SPT "N" value results. Groundwater seepages are noted during drilling if encountered. All boreholes without monitoring wells installed are usually backfilled with arisings upon completion.

Unless specifically stated in the report, exploratory hole locations should be regarded as approximate. Consideration should be given to accurate location of the exploratory holes where it is considered they may impact on proposed development.

It should be noted that groundwater levels at any particular site may fluctuate due to rainfall, seasonal variations etc and, therefore, levels may be different to those measured during the course of the fieldwork and monitoring period.

Laboratory Testing

The geotechnical testing was carried out in accordance with BS 1377:1990 Method of Tests for Soils for Civil Engineering Purposes and was undertaken by a UKAS accredited specialist laboratory. Chemical testing was undertaken by a UKAS accredited specialist chemical testing laboratory and MCERTS accredited methods, in accordance with Environment Agency recommendations, were specified where available.

Contamination Assessment – Human Health

Applied Geology Limited has followed the guidance given in the Land Contamination Risk Management (LCRM) publication and other available guidance to assess the contaminant concentrations. Details of the methodology followed are briefly outlined below.

The available chemical data is sorted into appropriate datasets depending on sampling regime and ground conditions. An initial generic quantitative risk assessment is undertaken on this data using statistical tests, where appropriate, and relevant screening values. Risk to human health has been initially assessed by comparing soil results against various published screening criteria. These have been sourced from the following, in order of preference:

- DEFRA. Category 4 Screening Levels (C4SL), March 2014;
- LQM/CIEH S4UL for Human Health Risk Assessment (S4UL), 2015*;
- Environment Agency/DEFRA, Soil Guideline Values (SGV) published in 2009;
- EIC/AGS/CL:AIRE Soil Generic Assessment Criteria (GAC), 2010.

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Except for lead and benzo(a)pyrene, the assessments will be carried out by comparing results against the LQM/CIEH S4UL in the first instance, where these values are exceeded, then reference will be made to the C4SLs where such exist. Lead will only be compared to the C4SL because no S4UL exists for lead. For Benzo(a)pyrene, Applied Geology has chosen to adopt the approach presented by the C4SL committee rather than the approach proposed by LQM/CIEH. Further discussion on this is presented below.

It is our view, and the view of others in the industry, that the C4SL were derived for use in both the Part IIA system and through the planning system, as they allow identification of those sites that fall within Category 4 (not contaminated) and are therefore able to be developed with no further remedial action. The C4SLs are considered to represent a contamination level that is 'low' from a toxicological view point, which we therefore consider to be 'acceptable' under planning.

Historically, the level of contamination has been assessed with reference to SGV values which were derived to represent a 'minimal' level of contamination. The SGVs are still valid and can be used alongside C4SL, however both screening values are only intended to provide guidance as to the level of contamination and, where concentrations fall below these screening values, the site is not contaminated (and is within Category 4). Exceedance of a SGV/S4UL/C4SL does not automatically indicate that an 'unacceptable' risk exists at a site; simply that further consideration of that particular contaminant is required.

At this time, there are two toxicological methodologies that can be used in the derivation of screening criteria for PAHs; Relative Potency Factor (RPFs) or the Surrogate Marker approach. Applied Geology has chosen (based on the latest guidance from the Health Protection Agency (HPA) to use the surrogate marker approach proposed in the C4SL methodology, whereby benzo(a)pyrene can be used as a surrogate marker for all 'genotoxic' (gene damaging) PAHs. The surrogate marker approach estimates the toxicity of a mixture of PAHs in an environmental matrix by using data from toxicity studies in which a PAH mixture of known composition was tested. Exposure to the surrogate marker benzo(a)pyrene is assumed to represent exposure to all the PAHs in the environmental matrix. Thus, the level of toxicity ascribed to the surrogate represents the toxicity of the PAH mixture. This allows an assessment of the combined carcinogenic risk associated with genotoxic PAHs using only benzo(a)pyrene. In order to confirm that the mixture of genotoxic PAH in the soil is similar to the coal tar mixture used in the toxicological study, various PAH ratios are plotted and checked to see that they fall within the limits set in HPA, 2010.

Contamination Assessment – Water Quality

Risks to water quality has been assessed by following the Environment Agency guidance on groundwater protection (previously known as GP3), updated on their website in March 2017, see <https://www.gov.uk/government/policies/water-quality> and 'The Environment Agency's approach to groundwater protection' (March 2017 Version 1.0).

For hazardous substances, which should be prevented from entering groundwater, the screening criteria are initially set as the limit of detection, however, if groundwater has already been impacted, an appropriate environmental standard will then be used. For hazardous substances, background quality may also be taken into account.

For non-hazardous compounds, their release should not result in any pollution or significant risk of pollution in the future, as such comparison with UK DWS or EQS standards will allow determination of whether pollution could occur. Typically screening criteria will be sourced from the following:

- Environmental Standards (ES), which are defined in European legislation such as the Water Framework Directive (WFD) (2000/60/EC) and the Priority Substances Directive (PSD) (2008/105/EC) a daughter directive of the WFD.
- The River Basin Districts Typology, Standards and Groundwater Threshold Values (Water Framework Directive) (England and Wales) Direction, 2010.
- UK Water Supply (Water Quality) Regulations, 2010.
- UK quality standards for water to be used for direct abstraction to potable supply e.g. Surface Water (Abstraction for Drinking Water) (Classification) Regulations, 1996.
- World Health Organisation (WHO) Guidelines for Drinking Water Quality.

Re-use of Soils and Waste Soil Disposal

It is noted that if any excavated material is to be reused on site, a Waste Management Plan (WMP) and / or a Materials Management Plan (MMP) will probably be required. Any such materials must be suitable for re-use without further treatment, and only the quantity necessary for the specified works should be used. Any materials not within these definitions may need to be considered as waste whereby a Waste Management Licence Exemption may also be required.

A specific categorisation and assessment of potential waste soils arising from the proposed development has not been undertaken as part of the investigation, unless otherwise detailed in the report text. However, generic comments and advice are made below for the reader.

All waste soils should be sorted to prevent mixtures of waste types. Where possible, any waste soil should be recycled and the volume of soil to be disposed of should be minimised. Any excavated soil material and excess spoil disposed of off-site should be treated as Waste and classified as Inert, Non-hazardous or Hazardous, prior to removal from site, as required by the "Duty of Care" (Environmental Protection Act, 1990) legislation together with Annex II of Directive 1999/31/EC ("Landfill Directive"). Initially, Basic Characterisation of the waste is required whereby the material should be described and its source of origin recorded (a site plan, exploratory hole records and the certificates of chemical analysis in this report should be included). This should also include data on its composition and leaching behaviour, its European Waste Catalogue (EWC) code, and where relevant any hazardous properties according to Annex III of Directive 91/689/EEC. This information should be provided to the licensed waste contractor.

Soils excavated on many sites would generally fall under the EWC description "Soil and Stones", EWC code 17 05 04. Waste Acceptance Criteria (WAC) testing is required for many Inert wastes and generally for all Hazardous Waste but not for non-hazardous waste. There are certain restrictions for inert wastes regarding topsoil and peat. Any asbestos must be disposed of by suitably licensed contractors to a suitably licensed facility.

Health & Safety Aspects

As outlined within the HSE publication 'Successful Health and Safety Management - HSG65', this report should inform your development of safe systems of work and information as an input into the safety management system.

When developing risk control systems we suggest making reference to the CIRIA report 132 "A guide for safe working on contaminated sites" and the HSE document "Protection of workers and the general public during the development of contaminated land – HSG66". All risk control measures should be in accordance with the guidelines laid down within the Management of Health and Safety at Work Regulations 1999.

The contents of this report may be used to supplement the contents of the Health and Safety File as required under the Construction Design and Management (CDM) Regulations.

Where excavations are undertaken on site, trench support or the angle of batter should be designed by an appropriately qualified engineer or competent person to suit the required depth and the ground and groundwater conditions. Care should be taken when digging excavations to prevent undermining or causing loss of support to the foundations of the nearby adjoining structures. Surcharging such as from spoil or vehicle movements close to excavation sides should be avoided. Practical guidance on trench excavation is given in CIRIA Report 97 Trenching Practice. Guidance on groundwater control is given in CIRIA Report 113 Control of groundwater for temporary works. Temporary works should be designed by a suitably qualified engineer or a competent person particularly where personnel access is necessary, in accordance with the requirements of the Construction (Design and Management) (CDM) Regulations.