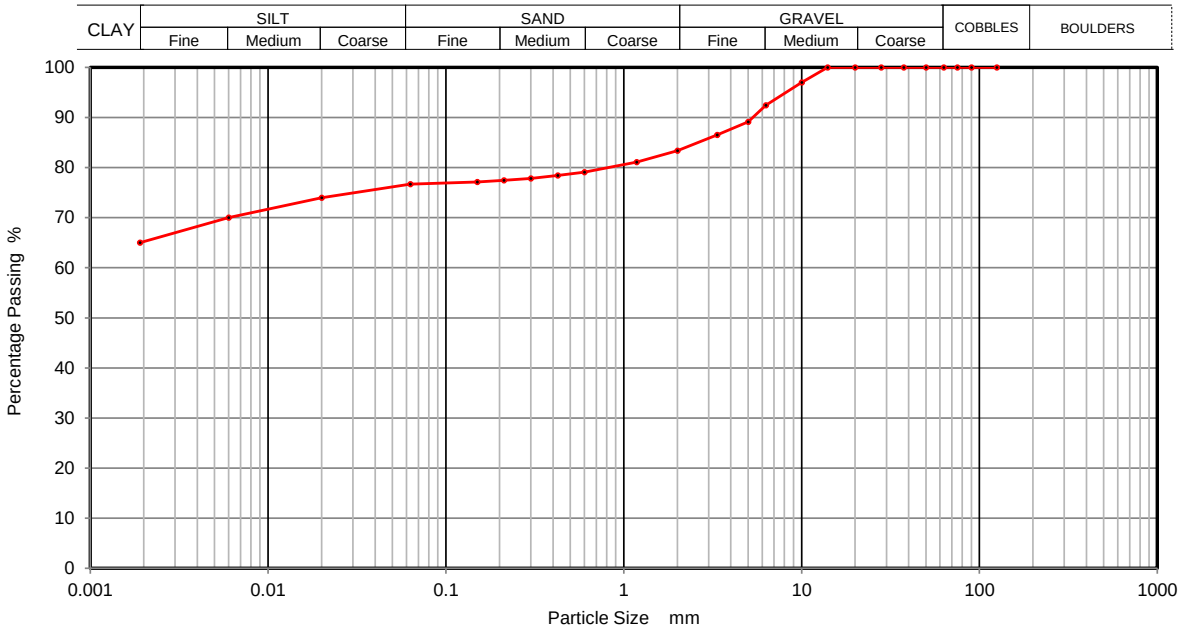
GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4**	Contract Number	66837
		Borehole/Pit No.	S2-TP2117
Project Name	Global Centre of Rail Excellence Stage 2 (24)	Sample No.	6
Soil Description	Brown grey fine to coarse sandy fine to medium gravelly silty CLAY	Depth Top	1.30
		Depth Base	1.40
Date Tested	16/06/2023	Sample Type	D



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	74
90	100	0.0060	70
75	100	0.0020	65
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	97		
6.3	92		
5	89		
3.35	87		
2	83		
1.18	81		
0.6	79		
0.425	78		
0.3	78		
0.212	77		
0.15	77		
0.063	77		

Sample Proportions	% dry mass
Cobbles	0
Gravel	17
Sand	6
Silt	12
Clay	65

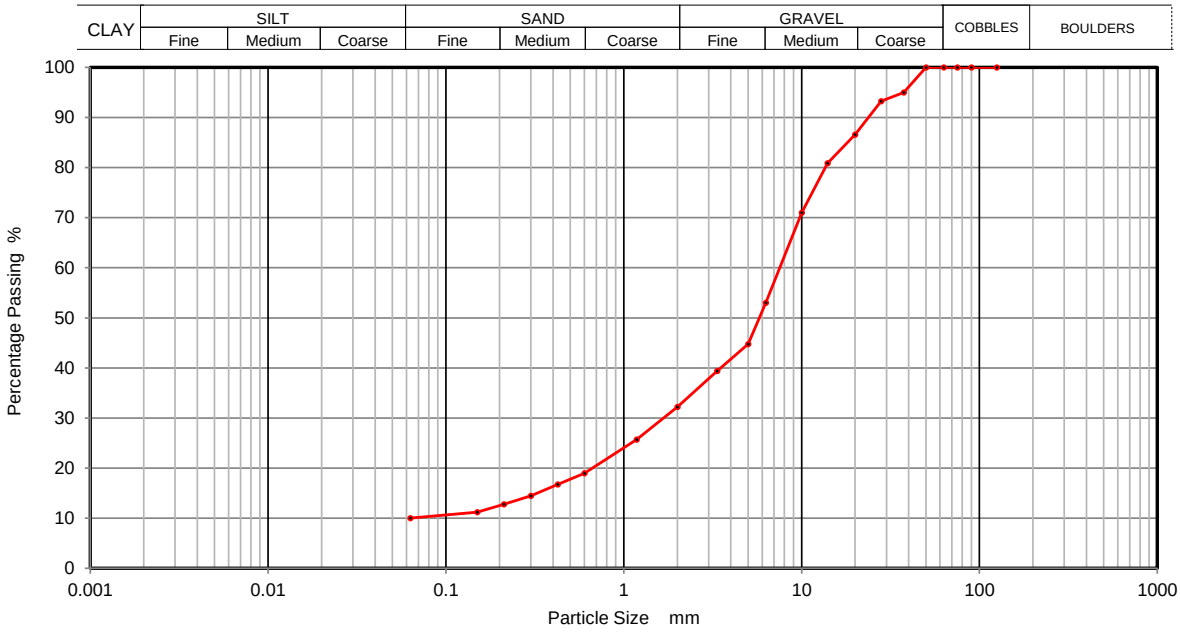
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator
David Edwards

UKAS TESTING
2788

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2**	Contract Number	66837
		Borehole/Pit No.	S2-TP2117
Project Name	Global Centre of Rail Excellence Stage 2 (24)	Sample No.	7
Soil Description	Brown silty/clayey fine to coarse sandy fine to coarse GRAVEL	Depth Top	2.00
		Depth Base	2.20
Date Tested	16/06/2023	Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	95		
28	93		
20	87		
14	81		
10	71		
6.3	53		
5	45		
3.35	39		
2	32		
1.18	26		
0.6	19		
0.425	17		
0.3	14		
0.212	13		
0.15	11		
0.063	10		

Sample Proportions	% dry mass
Cobbles	0
Gravel	68
Sand	22
Silt and Clay	10

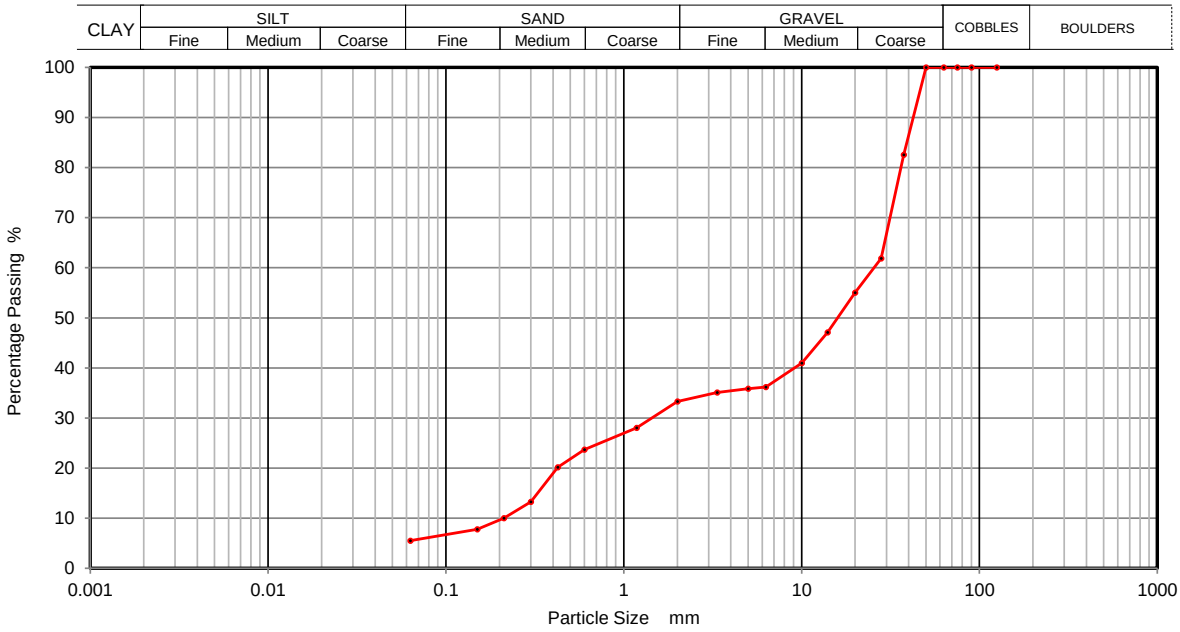
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator
David Edwards

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GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2**	Contract Number	66837
		Borehole/Pit No.	S2-TP2123
Project Name	Global Centre of Rail Excellence Stage 2 (24)	Sample No.	2
Soil Description	Brown grey clayey/silty fine to coarse sandy fine to coarse GRAVEL	Depth Top	0.20
		Depth Base	0.40
Date Tested	16/06/2023	Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	83		
28	62		
20	55		
14	47		
10	41		
6.3	36		
5	36		
3.35	35		
2	33		
1.18	28		
0.6	24		
0.425	20		
0.3	13		
0.212	10		
0.15	8		
0.063	6		

Sample Proportions	% dry mass
Cobbles	0
Gravel	67
Sand	27
Silt and Clay	6

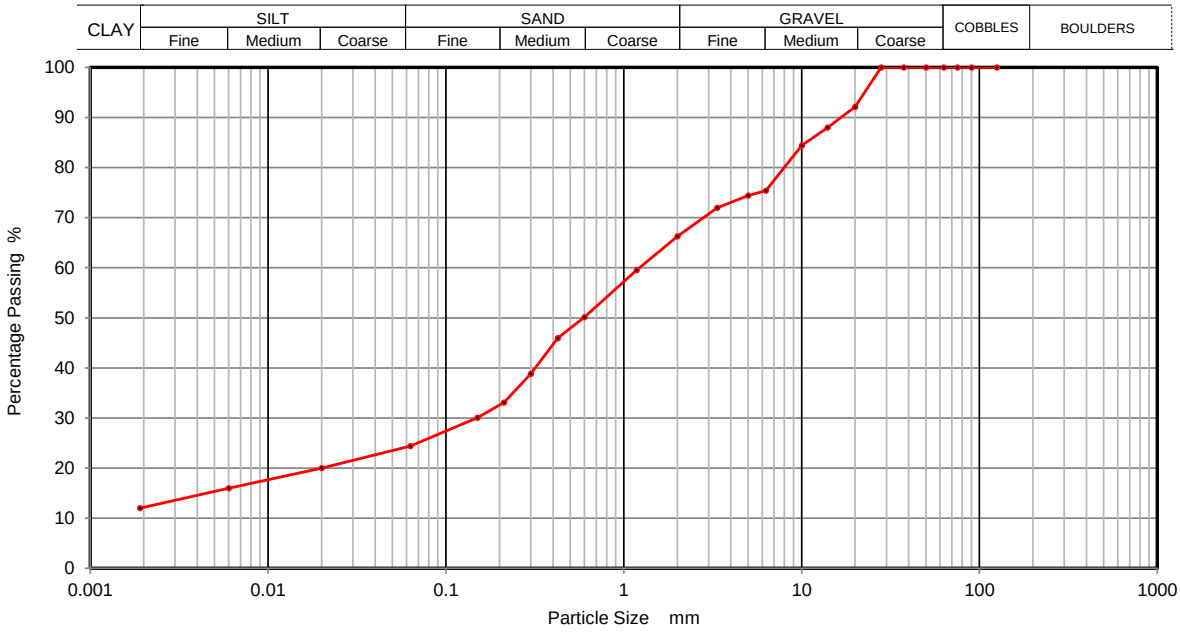
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator
David Edwards

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GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4**	Contract Number	66837
		Borehole/Pit No.	S2-TP2123
Project Name	Global Centre of Rail Excellence Stage 2 (24)	Sample No.	9
Soil Description	Brown grey silty/clayey fine to coarse gravelly fine to coarse SAND	Depth Top	2.30
		Depth Base	2.40
Date Tested	16/06/2023	Sample Type	D



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	20
90	100	0.0060	16
75	100	0.0020	12
63	100		
50	100		
37.5	100		
28	100		
20	92		
14	88		
10	84		
6.3	75		
5	74		
3.35	72		
2	66		
1.18	60		
0.6	50		
0.425	46		
0.3	39		
0.212	33		
0.15	30		
0.063	24		

Sample Proportions	% dry mass
Cobbles	0
Gravel	34
Sand	42
Silt	12
Clay	12

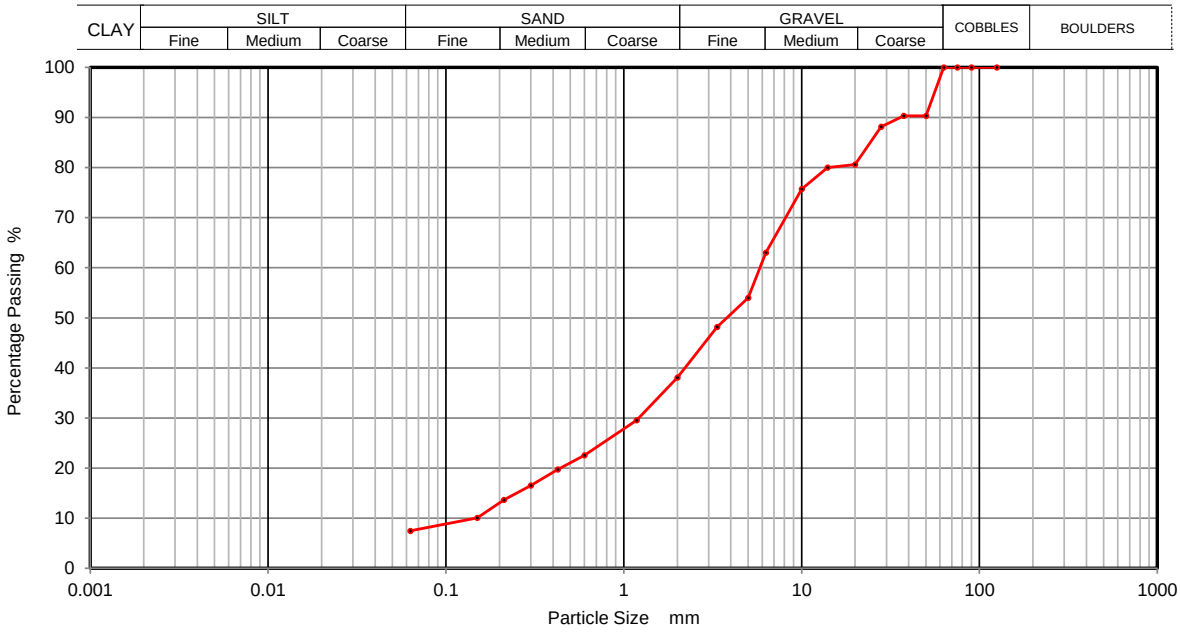
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator
David Edwards

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GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2**	Contract Number	66837
		Borehole/Pit No.	S2-TP2123
Project Name	Global Centre of Rail Excellence Stage 2 (24)	Sample No.	10
Soil Description	Brown silty/clayey fine to coarse sandy fine to coarse GRAVEL	Depth Top	2.70
		Depth Base	2.90
Date Tested	16/06/2023	Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	90		
37.5	90		
28	88		
20	81		
14	80		
10	76		
6.3	63		
5	54		
3.35	48		
2	38		
1.18	30		
0.6	23		
0.425	20		
0.3	17		
0.212	14		
0.15	10		
0.063	7		

Sample Proportions	% dry mass
Cobbles	0
Gravel	62
Sand	31
Silt and Clay	7

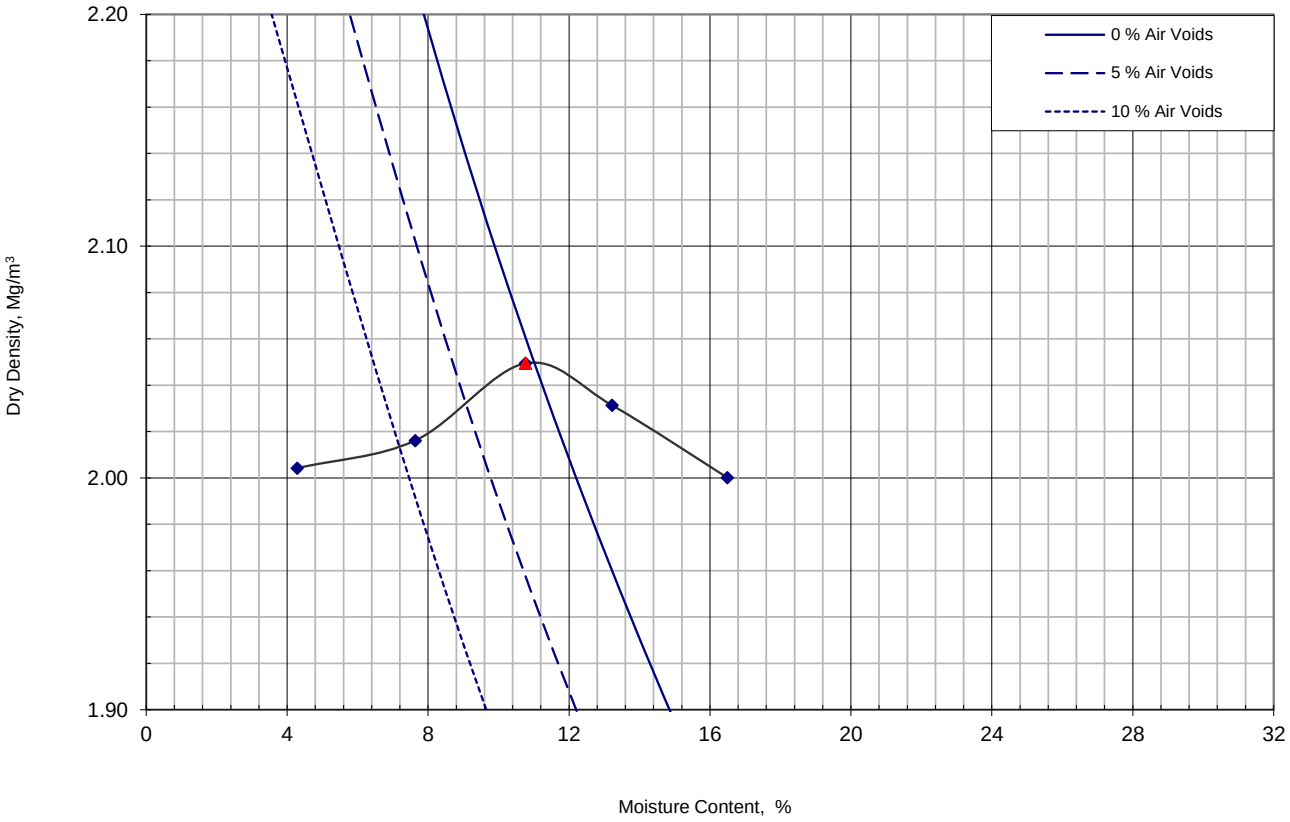
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator
David Edwards

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GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	Dry Density / Moisture Content Relationship BS 1377:Part 4:1990	Contract Number	66837
		Borehole / Pit No	S2-TP201
Project Name	Global Centre of Rail Excellence Stage 2 (24)	Sample No	11
Date Tested	20/06/2023	Depth Top	3.20
Compaction Method	4.5 Kg Rammer	Depth Base	3.40
Compaction Clause	BS1377:Part 4:1990, Clause 3.5	Sample Type	B
Sample Description	Brown silty fine to coarse gravelly CLAY	Single or Separate Sample Used	Single



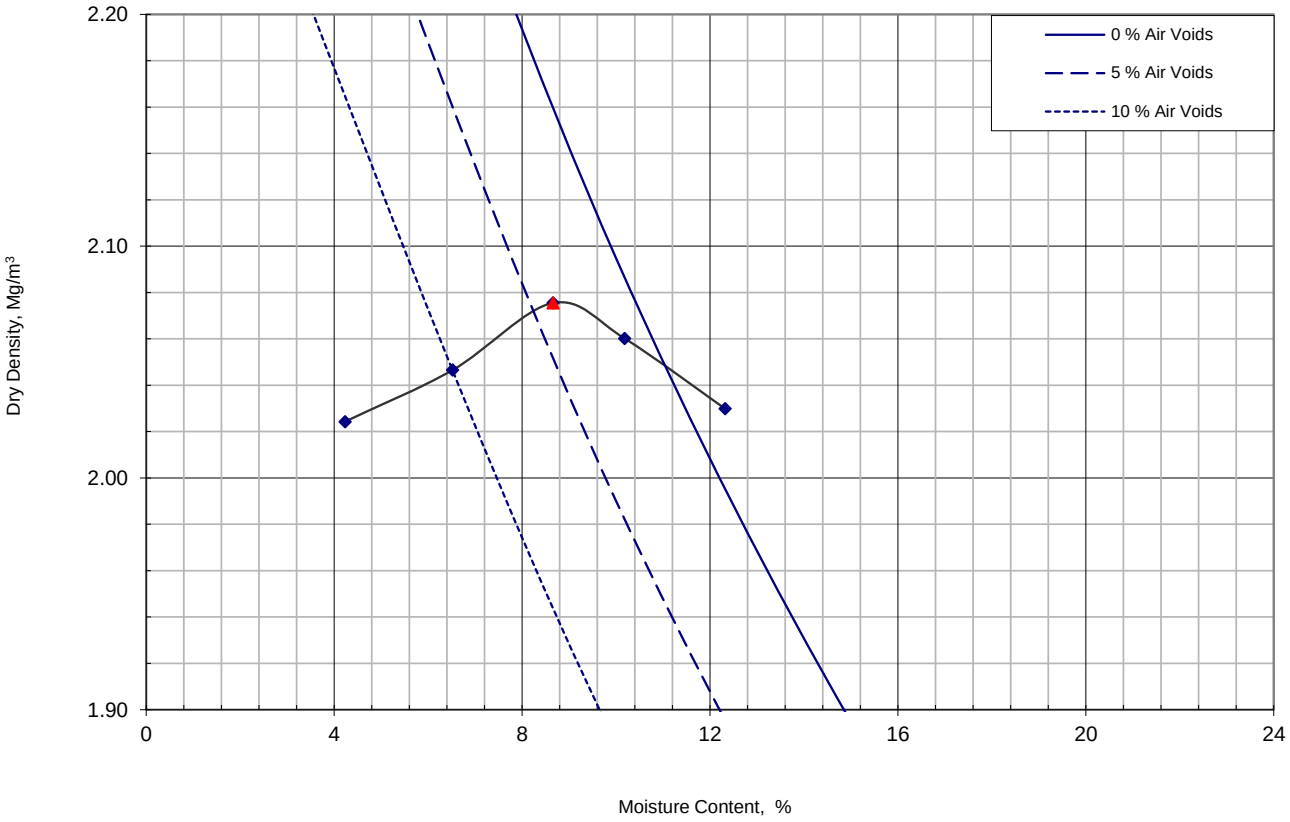
Compaction Point	1	2	3	4	5							
Moisture Content	4.3	7.6	11	13	16							
Bulk Density	2.09	2.17	2.27	2.30	2.33							
Dry Density	2.00	2.02	2.05	2.03	2.00							

Initial Moisture Content	11	%
Maximum Dry Density	2.05	Mg/m3
Optimum Moisture Content	11	%
Particle Density	2.65 Assumed	Mg/m3
Material Retained 37.5mm	0	%
Material Retained 20mm	8	%

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Operator
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GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	Dry Density / Moisture Content Relationship BS 1377:Part 4:1990	Contract Number	66837
		Borehole / Pit No	S2-TP2116
Project Name	Global Centre of Rail Excellence Stage 2 (24)	Sample No	9
Date Tested	20/06/2023	Depth Top	2.80
Compaction Method	4.5 Kg Rammer	Depth Base	3.00
Compaction Clause	BS1377:Part 4:1990, Clause 3.5	Sample Type	B
Sample Description	Grey silty fine to coarse gravelly CLAY	Single or Separate Sample Used	Single



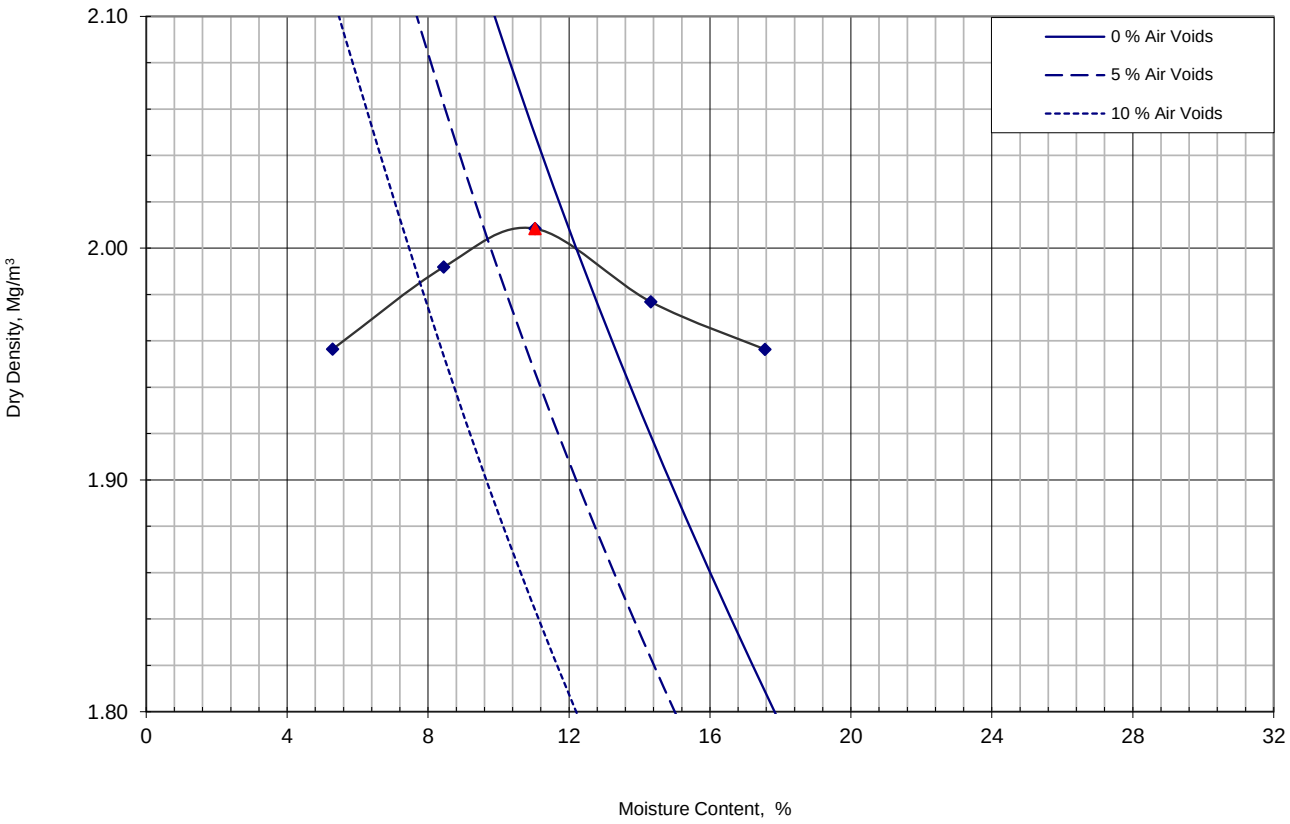
Compaction Point	1	2	3	4	5							
Moisture Content	4.2	6.5	8.7	10	12							
Bulk Density	2.11	2.18	2.26	2.27	2.28							
Dry Density	2.02	2.05	2.08	2.06	2.03							

Initial Moisture Content	8.7	%
Maximum Dry Density	2.08	Mg/m3
Optimum Moisture Content	8.7	%
Particle Density	2.65 Assumed	Mg/m3
Material Retained 37.5mm	0	%
Material Retained 20mm	7	%

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Conal

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GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	Dry Density / Moisture Content Relationship BS 1377:Part 4:1990	Contract Number	66837
		Borehole / Pit No	S2-TP2117
Project Name	Global Centre of Rail Excellence Stage 2 (24)	Sample No	8
Date Tested	20/06/2023	Depth Top	3.00
Compaction Method	4.5 Kg Rammer	Depth Base	3.20
Compaction Clause	BS1377:Part 4:1990, Clause 3.5	Sample Type	B
Sample Description	Brown fine to coarse gravelly silty CLAY	Single or Separate Sample Used	Single



Compaction Point	1	2	3	4	5							
Moisture Content	5.3	8.4	11	14	18							
Bulk Density	2.06	2.16	2.23	2.26	2.30							
Dry Density	1.96	1.99	2.01	1.98	1.96							

Initial Moisture Content	11	%
Maximum Dry Density	2.01	Mg/m3
Optimum Moisture Content	11	%
Particle Density	2.65 Assumed	Mg/m3
Material Retained 37.5mm	0	%
Material Retained 20mm	10	%

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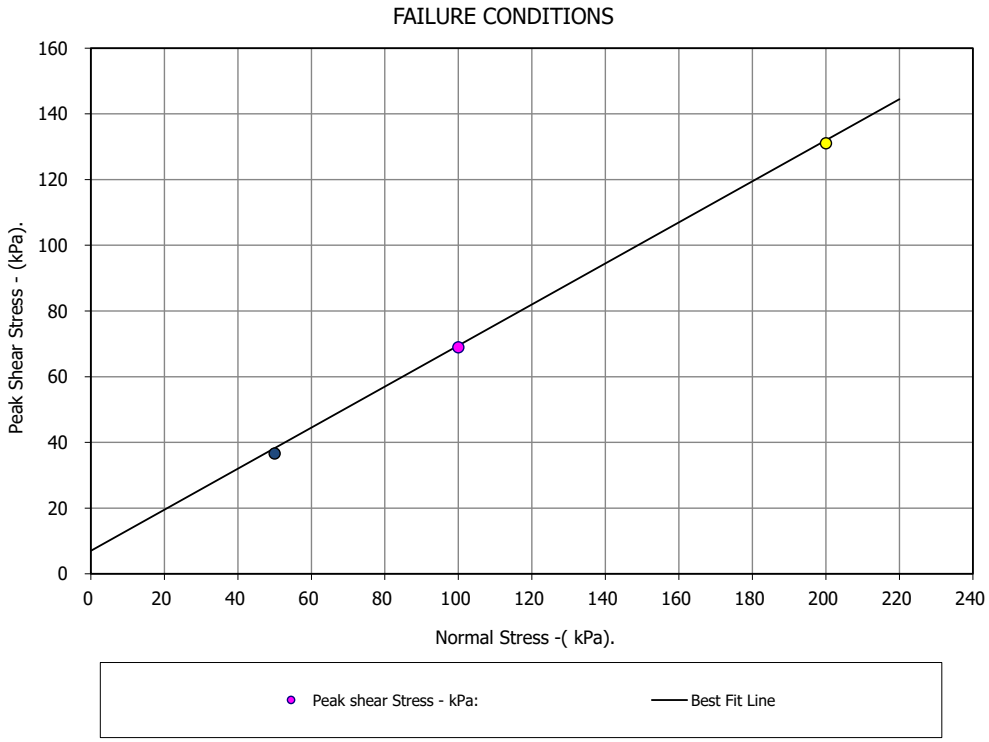
Borehole Number:	S2-TP2117	Depth from (m):	3.00
Sample Number :	8.0	Depth to (m):	3.20

Sample Type:	B
Particle Density - Mg/m3:	2.65 (Assumed)
Specimen Tested:	Submerged, Remoulded (Light Tamping) Material above 2mm removed.

Sample Description:
Brown gravelly CLAY

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	24.90	24.90	24.90
Length - mm:	60.00	60.00	60.00
Moisture Content - %:	11	11	11
Bulk Density - Mg/m3:	1.82	1.83	1.83
Dry Density - Mg/m3:	1.64	1.65	1.64
Voids Ratio:	0.6131	0.6107	0.6118
Degree of Saturation - %:	47.72	47.91	47.82
Normal Pressure- kPa	50	100	200
Consolidation			
Consolidated Height - mm:	23.25	21.76	20.91
Shear			
Rate of Horizontal Displacement (mm/min)	0.200	0.200	0.200
Horizontal Displacement at Peak Shear Stress (mm)	8.01	6.58	6.58
Peak shear Stress - kPa:	37	69	131

PEAK	
Angle of Shearing Resistance:(θ)	**32.0**
Effective Cohesion - kPa:	**7.0**

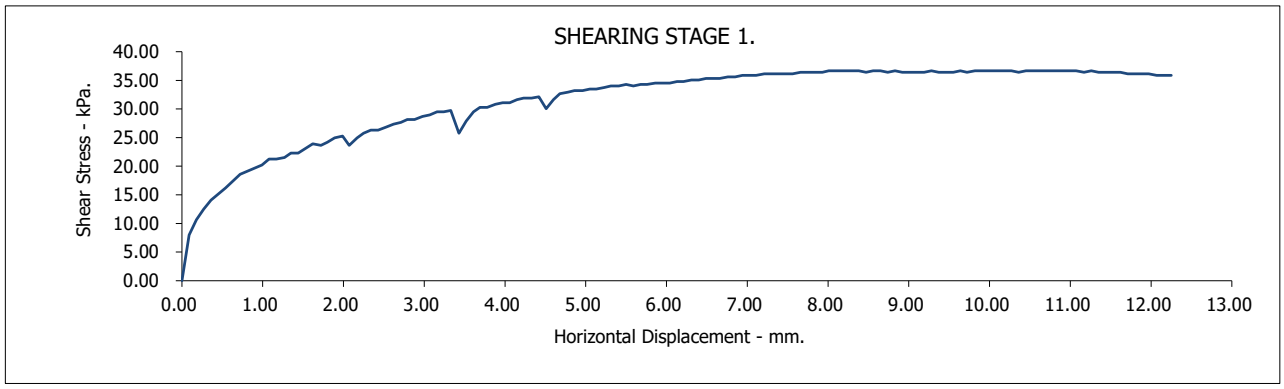


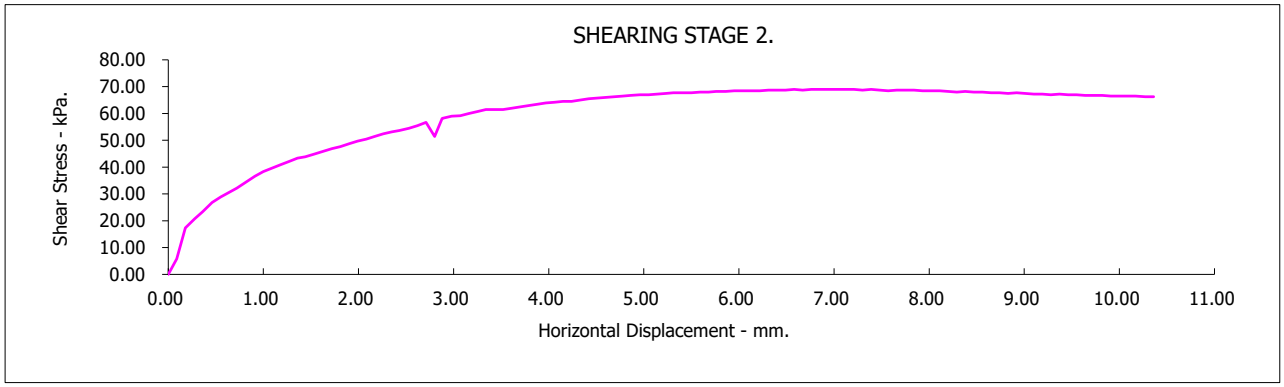
Contract No.:
66837

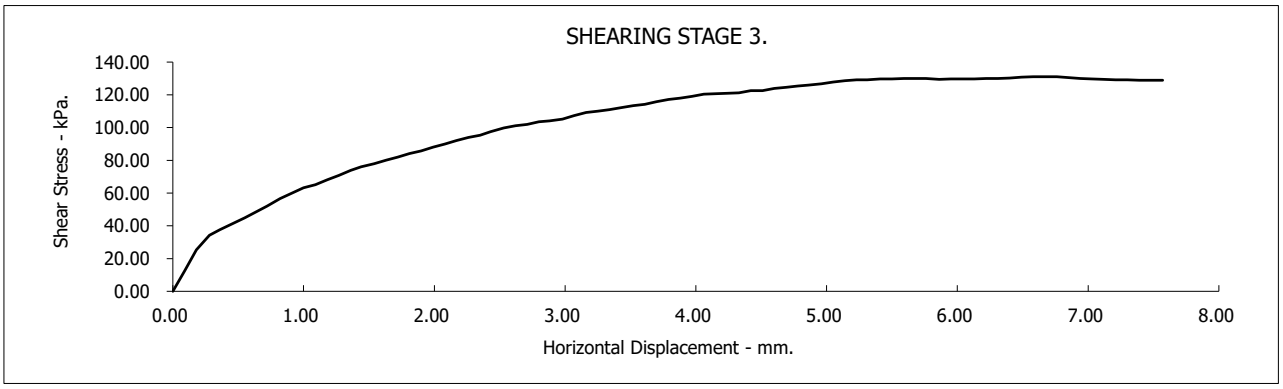
Global Centre of Rail Excellence Stage 2 (24)

Client Ref Number:
G23012

Borehole Number:	S2-TP2117	Depth from (m):	3.00
Sample Number :	8	Depth to (m):	3.20







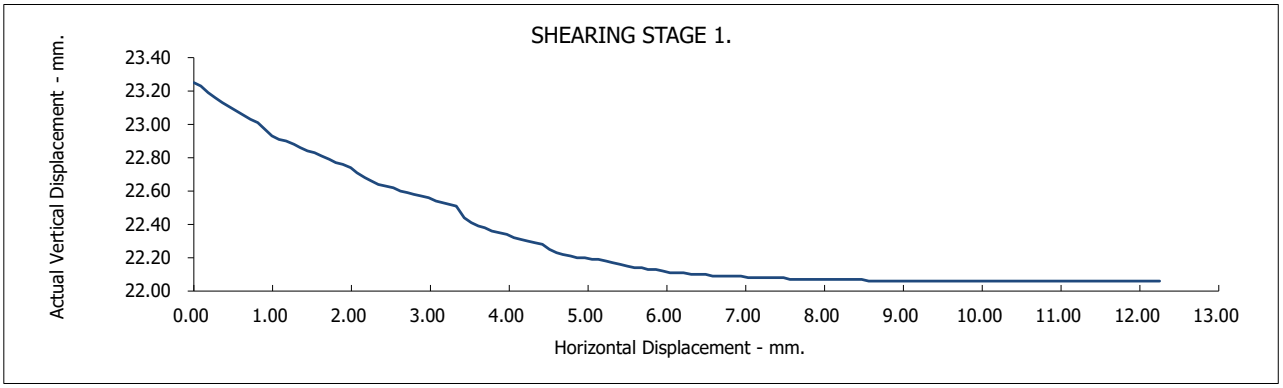
Global Centre of Rail Excellence Stage 2 (24)

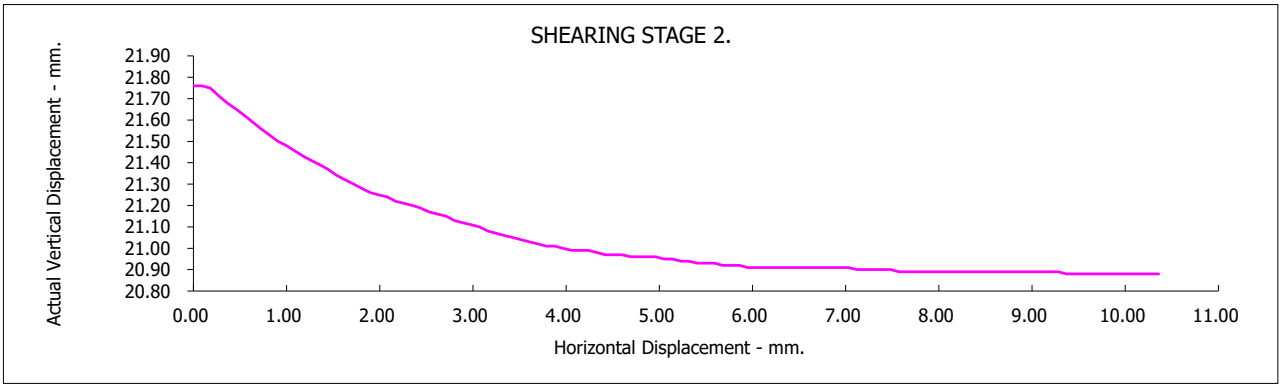
Contract No.: **66837**

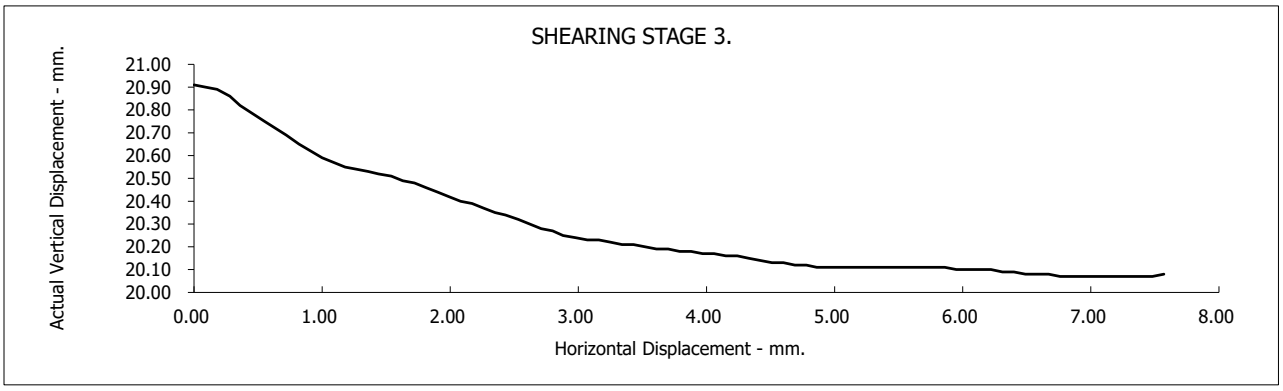
Client Ref Number: **G23012**

Figure.

Borehole Number:	S2-TP2117	Depth from (m):	3.00
Sample Number :	8	Depth to (m):	3.20





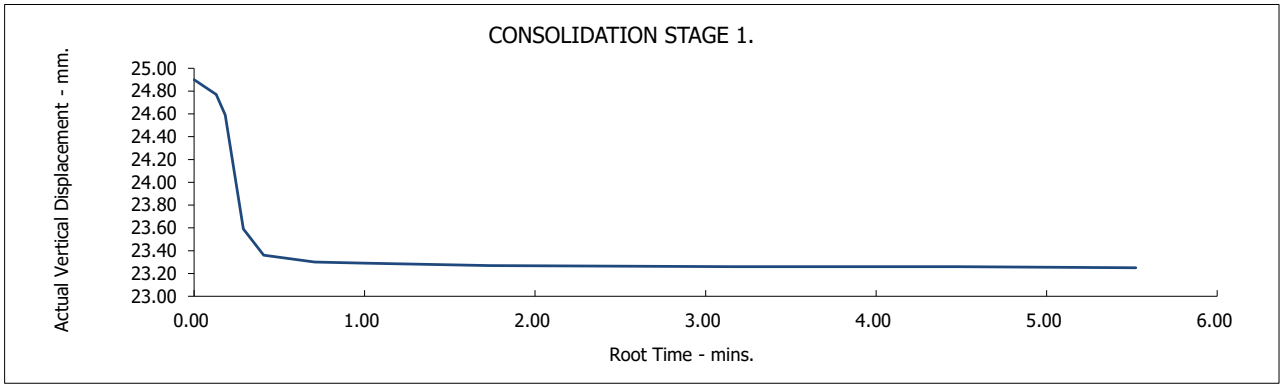


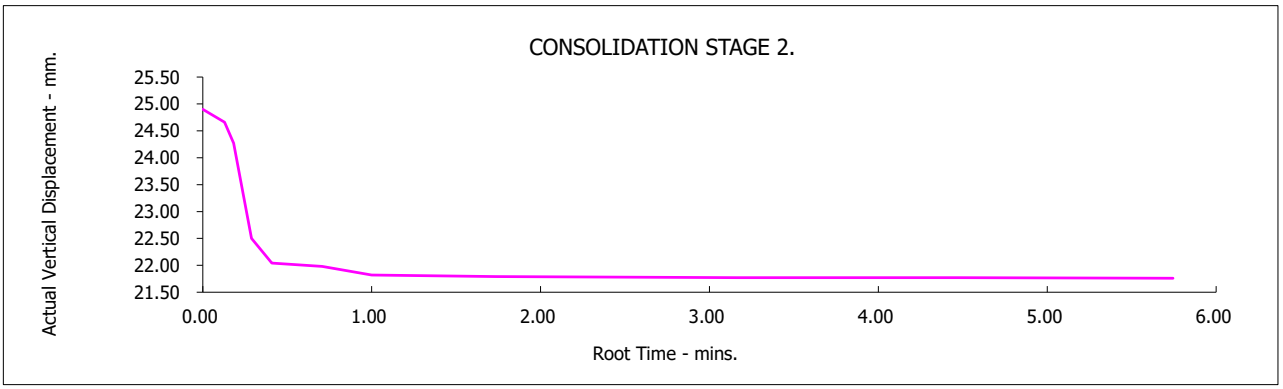
Contract No.:
66837

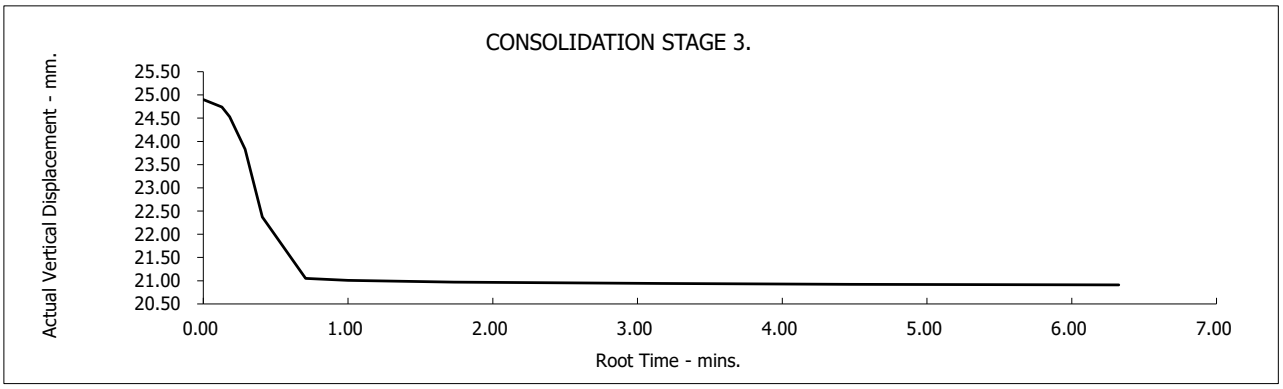
Global Centre of Rail Excellence Stage 2 (24)

Client Ref Number:
G23012

Borehole Number:	S2-TP2117	Depth from (m):	3.00
Sample Number :	8	Depth to (m):	3.20







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Global Centre of Rail Excellence Stage 2 (24)

Contract No.: **66837**

Client Ref Number: **G23012**

Laboratory Report

UKAS TESTING 2788

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES A PHENNA GROUP COMPANY

Contract Number: 66838

Client Ref: **G23012**
Client PO:

Date Received: **09-06-2023**
Date Completed: **28-06-2023**
Report Date: **28-06-2023**

Client: **Jackson Drilling Holdings Ltd**
Northwood Farm
Coxbridge Road
Baltonsborough
Somerset
BA6 8RA

This report has been checked and approved by:

B. Evans

Brendan Evans
Office Administrator

Contract Title: **Global Centre of Rail Excellence Stage 2 (25)**
For the attention of: **Adam Putt**

Test Description	Qty
Dry Den/MC (4.5kg Rammer Method 1 Litre Mould/CBR Mould) BS 1377:1990 - Part 4 : 3.5 - * UKAS	1
Consolidated Drained Peak Shear Strength - set of 3 - 60 x 60mm Shear Box Specimens by Direct Shearing (3 days) BS 1377:1990 - Part 7 : 4 - * UKAS	1
Uniaxial Compressive Strength of Rock Materials with sample preparation for 170-250mm Diameter Cores. ISRM Suggested Method for determining uniaxial compressive strength	1
Determination of Point Load Value Axial or Diametrical including WC ***Please note GSTL is not accredited for the water content of rock*** ISRM Suggested Method for Point Load Strength - * UKAS	2
Disposal of samples for job	1

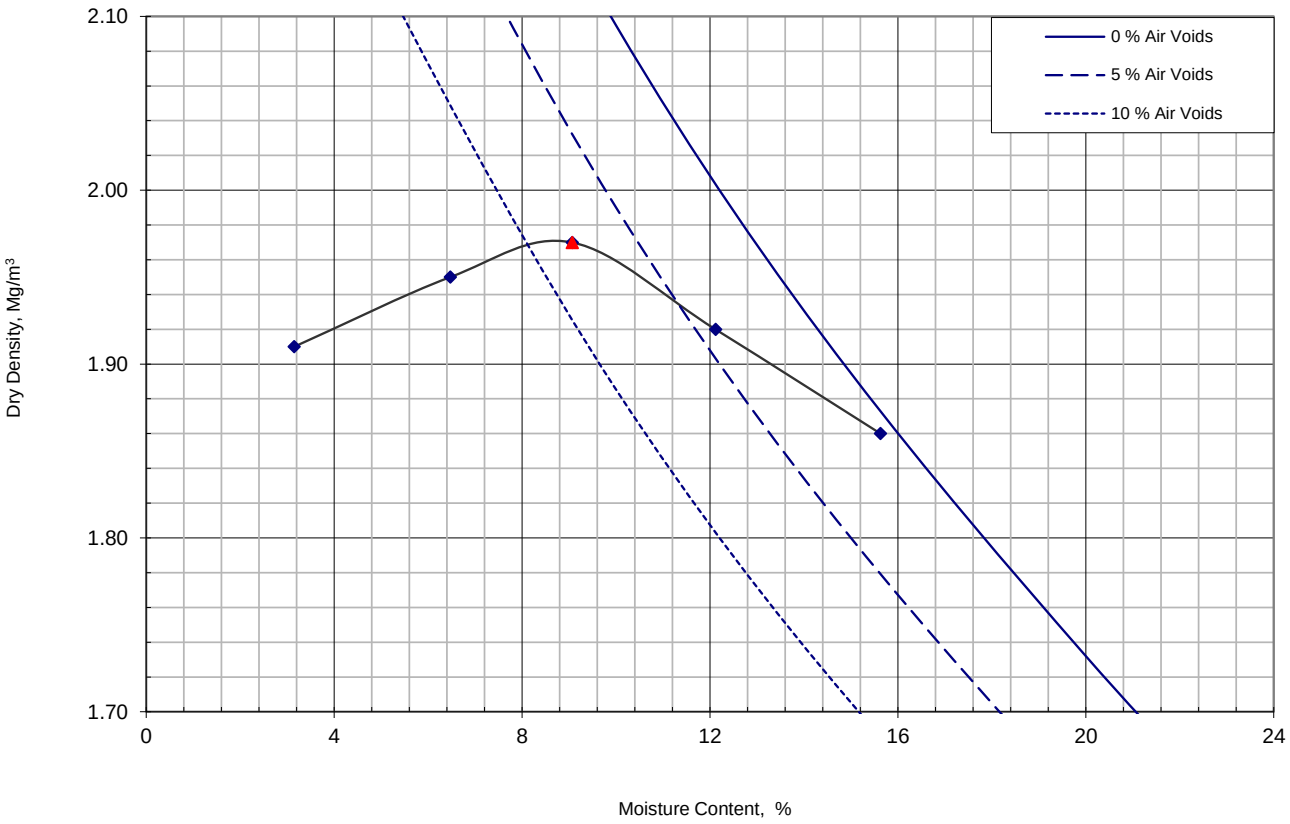
Notes: **Observations and Interpretations are outside the UKAS Accreditation**
*** - denotes test included in laboratory scope of accreditation**
- denotes test carried out by approved contractor
@ - denotes non accredited tests

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Approved Signatories:
Brendan Evans (Office Administrator) - Darren Bourne (Quality Senior Technician) - Paul Evans (Director)
Richard John (Quality/Technical Manager) - Shaun Jones (Laboratory manager) - Shaun Thomas (Site Manager)
Wayne Honey (Human Resources/ Health and Safety Manager)

GEO Site & Testing Services Ltd
Units 3-4, Heol Aur, Dafen, Llanelli, Carmarthenshire, Wales SA14 8QN
Tel: 01554 784040 Fax: 01554 784041 info@gstl.co.uk gstl.co.uk

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**Dry Density / Moisture Content Relationship BS 1377:Part 4:1990**	Contract Number	66838
		Borehole / Pit No	S2-BH214
Project Name	Global Centre of Rail Excellence Stage 2 (25)	Sample No	3
Date Tested	23/06/2023	Depth Top	0.50
Compaction Method	4.5 Kg Rammer	Depth Base	0.70
Compaction Clause	BS1377:Part 4:1990, Clause 3.5	Sample Type	B
Sample Description	Madeground	Single or Separate Sample Used	Single



Compaction Point	1	2	3	4	5							
Moisture Content	3.2	6.5	9.1	12	16							
Bulk Density	1.97	2.08	2.15	2.15	2.15							
Dry Density	1.91	1.95	1.97	1.92	1.86							

Initial Moisture Content	9.1	%
Maximum Dry Density	1.97	Mg/m3
Optimum Moisture Content	9.1	%
Particle Density	2.65 Assumed	Mg/m3
Material Retained 37.5mm	0	%
Material Retained 20mm	11	%

Operator
Conal

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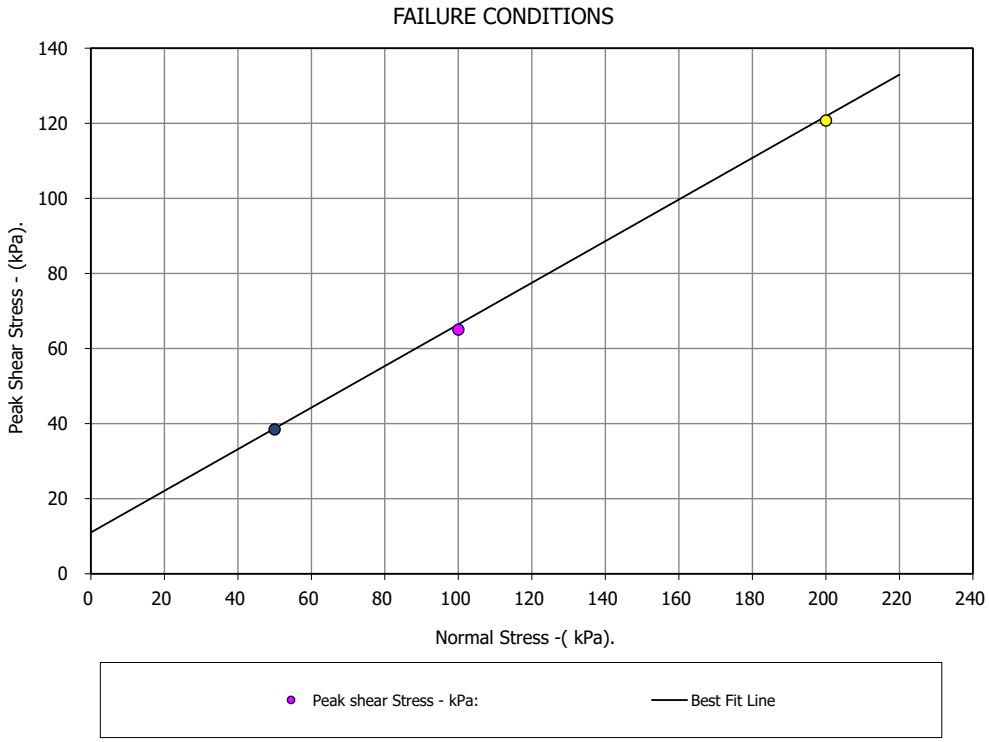
Borehole Number:	S2-BH214	Depth from (m):	0.50
Sample Number :	3.0	Depth to (m):	0.70

Sample Type:	B
Particle Density - Mg/m3:	2.65 (Assumed)
Specimen Tested:	Submerged, Remoulded (Light Tamping) Material above 2mm removed.

Sample Description:
Made Ground

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	23.30	23.30	23.30
Length - mm:	60.00	60.00	60.00
Moisture Content - %:	8.5	8.5	8.5
Bulk Density - Mg/m3:	2.05	2.05	2.05
Dry Density - Mg/m3:	1.89	1.89	1.89
Voids Ratio:	0.4025	0.4045	0.4035
Degree of Saturation - %:	56.24	55.96	56.09
Normal Pressure- kPa	50	100	200
Consolidation			
Consolidated Height - mm:	22.78	22.06	21.22
Shear			
Rate of Horizontal Displacement (mm/min)	0.200	0.200	0.200
Horizontal Displacement at Peak Shear Stress (mm)	2.53	12.07	6.13
Peak shear Stress - kPa:	38	65	121

PEAK	
Angle of Shearing Resistance:(θ)	**29.0**
Effective Cohesion - kPa:	**11**

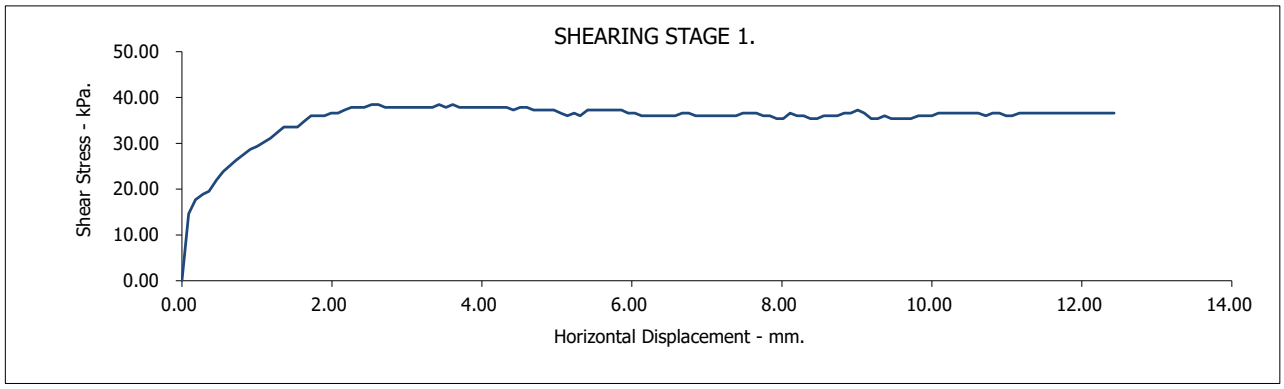


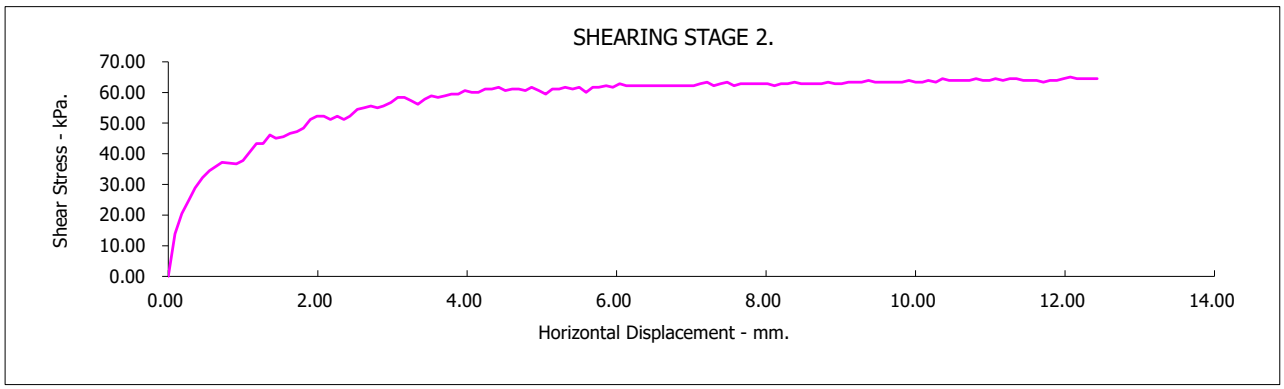
Contract No.:
66838

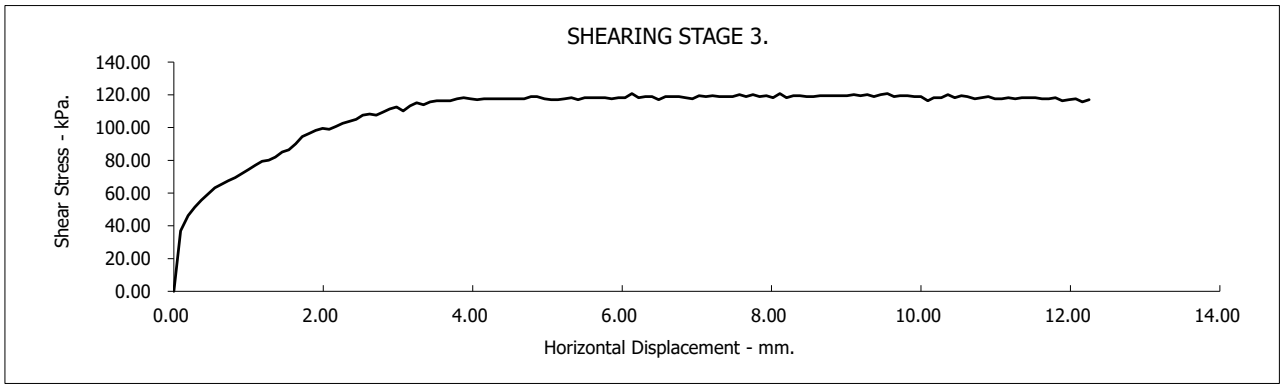
Global Centre of Rail Excellence Stage 2 (25)

Client Ref Number:
G23012

Borehole Number:	S2-BH214	Depth from (m):	0.50
Sample Number :	3	Depth to (m):	0.70







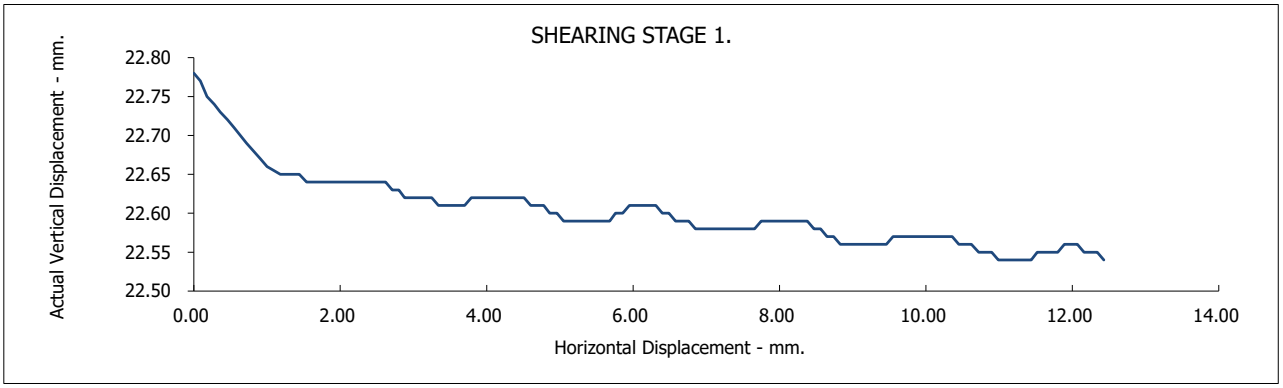
Global Centre of Rail Excellence Stage 2 (25)

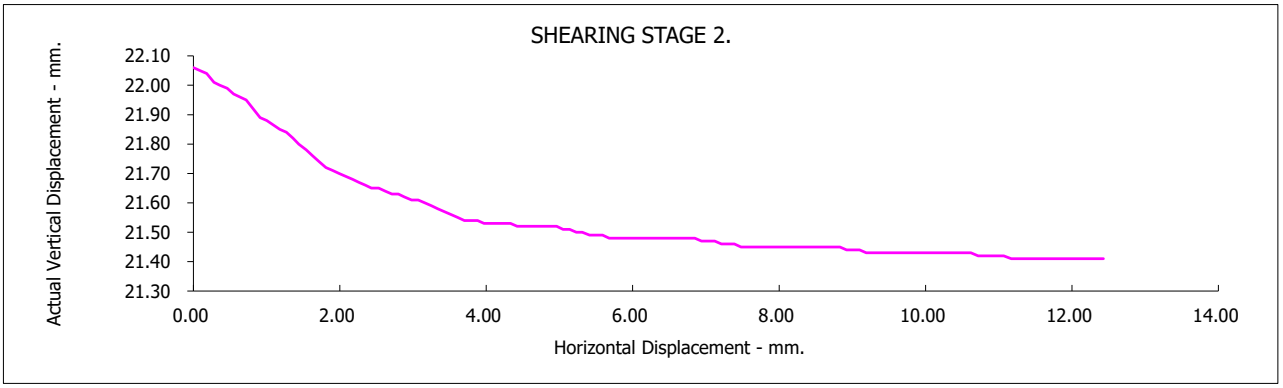
Contract No.: **66838**

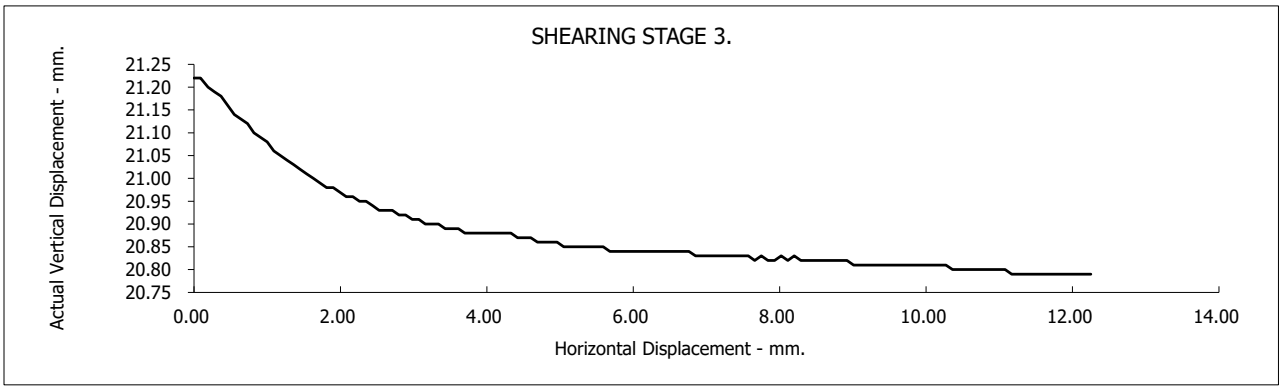
Client Ref Number: **G23012**

Figure.

Borehole Number:	S2-BH214	Depth from (m):	0.50
Sample Number :	3	Depth to (m):	0.70





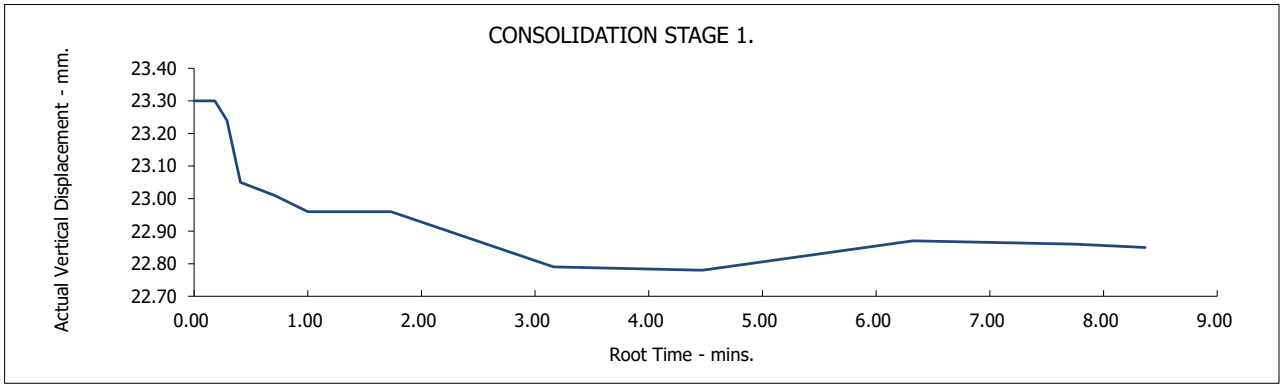


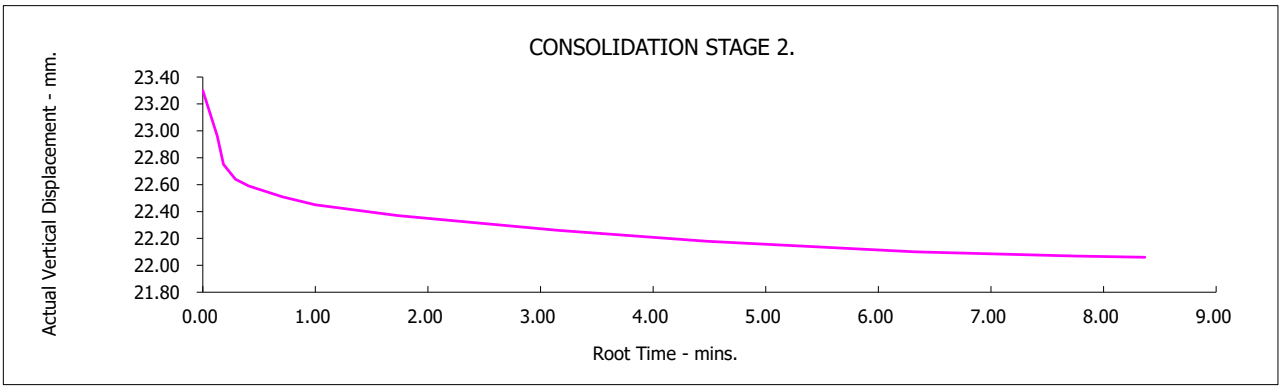
Contract No.:
66838

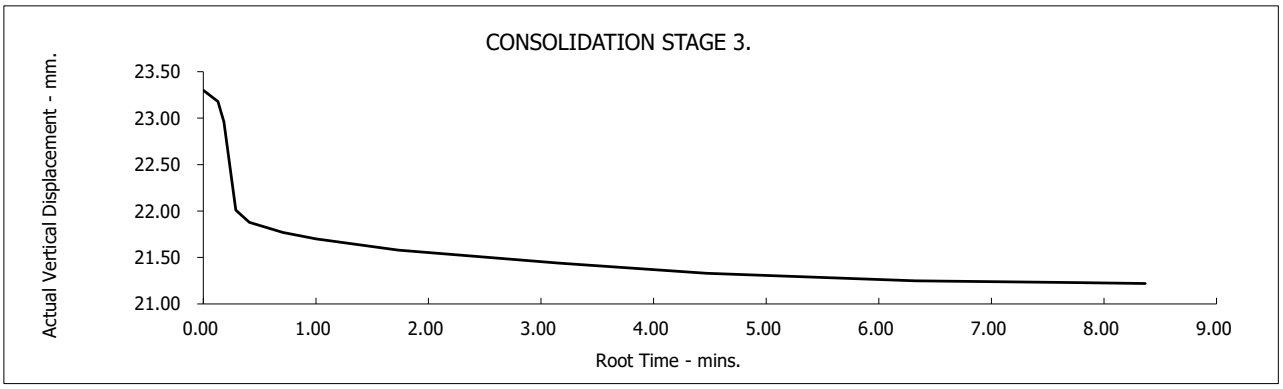
Global Centre of Rail Excellence Stage 2 (25)

Client Ref Number:
G23012

Borehole Number:	S2-BH214	Depth from (m):	0.50
Sample Number :	3	Depth to (m):	0.70







UKAS TESTING 2788

Global Centre of Rail Excellence Stage 2 (25)

Contract No.: **66838**

Client Ref Number: **G23012**

GSTL
GEOTECHNICAL SITE & TESTING LABORATORIES

Determination of Unconfined Compressive Strength
ISRM Suggested Methods Vol 16, No. 2, pp. 135-140 1979

Contract Number	66838
Project Name	Global Centre of Rail Excllence Stage 2 (25)
Sample Preperation	Sawing and Grinding
Date Tested	20/06/2023

Hole Reference	Depth (m)			Diameter	Length	Initial Mass	Moisture Content	Bulk Density	Dry Density	Load Failure	Maximum Strength	Type of Failure
S2-BH214	19.45		19.60	86.4	144.4	2252.7	1.1	2.66	2.63	123.7	21.1	Axial Splitting

Key	Reported As
Diameter	mm
Length	mm
Initial Mass	g
Moisture Content	%
Bulk Density	Mg/m^3
Dry Density	Mg/m^3
Load Failure	kN
Maximum Strength	MPa

Operator
Julian Jones

GSTL
GEOTECHNICAL SITE & TESTING LABORATORIES

Point Load Test

The complete ISRM suggested methods for rock characterization, testing and monitoring 1974-2006 Determining Point Load Strength

Contract Number	66838
Project Name	Global Centre of Rail Excllence Stage 2 (25)
Sample Type	Core
Date Tested	20/06/2023
	*Please note that GSTL is not accredited for the water content of rock

Hole Reference	Depth (m)			Sample No	Test Type		Width	Platen Seperation	Failure Load	Equivalent Diameter	Point Load	Size Factor	Point Load Index	Moisture Content	Description	Angle Between Plane of Anisotropy & Core Axis	Type of Anisotropy (Bedding or Cleavage)
					d / a / b / i	I //											
S2-BH214	20.68	-	20.94	102	d			86	1.49		0.20	1.28	0.26	1.3	SILTSTONE		
S2-BH214	23.12	-	23.35	103	d			86	0.06		0.01	1.28	0.01	2.1	SILTSTONE		
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Key	Reported As
Width	(W) mm
Platen Separation	(D) mm
Failure Load	(P) kN
Equivalent Diameter	(De) mm
Point Load	(Is) MPa
Size Factor	(F)
Point Load Index	(Is(50)) MPa
Moisture Content	%
Description	SC

Operator
Julian Jones

UKAS TESTING 2788

Laboratory Report

UKAS TESTING 2788

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES A PHENNA GROUP COMPANY

Contract Number: 66839

Client Ref: **G23012**
Client PO:

Date Received: **09-06-2023**
Date Completed: **28-06-2023**
Report Date: **28-06-2023**

Client: **Jackson Drilling Holdings Ltd**
Northwood Farm
Coxbridge Road
Baltonsborough
Somerset
BA6 8RA

This report has been checked and approved by:

B. Evans

Brendan Evans
Office Administrator

Contract Title: **Global Centre of Rail Excellence Stage 2 (26)**
For the attention of: **Adam Putt**

Test Description	Qty
Moisture Content of Soil BS1377 : Part 2 : Clause 3.2 : 1990 - * UKAS	19
4 Point Liquid & Plastic Limit BS 1377:1990 - Part 2 : 4.3 & 5.3 - * UKAS	9
PSD Wet & Dry Sieve method BS 1377:1990 - Part 2 : 9.2 - * UKAS	10
PSD: Sedimentation by pipette carried out with Wet Sieve (Wet Sieve must also be selected) BS 1377:1990 - Part 2 : 9.4 - * UKAS	5
Dry Den/MC (4.5kg Rammer Method 1 Litre Mould/CBR Mould) BS 1377:1990 - Part 4 : 3.5 - * UKAS	4
Consolidated Drained Peak Shear Strength - set of 3 - 60 x 60mm Shear Box Specimens by Direct Shearing (3 days) BS 1377:1990 - Part 7 : 4 - * UKAS	2
Determination of Point Load Value Axial or Diametrical including WC ***Please note GSTL is not accredited for the water content of rock*** ISRM Suggested Method for Point Load Strength - * UKAS	6
Disposal of samples for job	1

Notes - Observations and Interpretations are outside the UKAS Accreditation
*** - denotes test included in laboratory scope of accreditation**
- denotes test carried out by approved contractor
@ - denotes non accredited tests

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 test report/certificate shall not be reproduced except in full, without the approval of GEO Site & Testing Services Ltd. Any opinions or interpretations stated - within this report/certificate are excluded from the laboratories UKAS accreditation.

Approved Signatories:
Brendan Evans (Office Administrator) - Darren Bourne (Quality Senior Technician) - Paul Evans (Director)
Richard John (Quality/Technical Manager) - Shaun Jones (Laboratory manager) - Shaun Thomas (Site Manager)
Wayne Honey (Human Resources/ Health and Safety Manager)

GEO Site & Testing Services Ltd
Units 3-4, Heol Aur, Dafen, Llanelli, Carmarthenshire, Wales SA14 8QN
Tel: 01554 784040 Fax: 01554 784041 info@gstl.co.uk gstl.co.uk

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	NATURAL MOISTURE, LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377:1990 - Part 2 : 4.3 & 5.3)	
Contract Number	66839	
Project Name	Global Centre of Rail Excellence Stage 2 (26)	
Date Tested	16/06/2023	
	DESCRIPTIONS	

Sample/Hole Reference	Sample Number	Sample Type	Depth (m)			Descriptions
S1-BH119	1	D	1.40	-		Brown gravelly silty CLAY
S1-BH119	104	B	3.00	-	4.40	Grey brown fine to coarse sandy fine to coarse gravelly silty CLAY
S1-BH119	3	D	3.40	-		Brown silty CLAY
S1-BH119	5	D	5.40	-		Grey gravelly silty CLAY
S1-BH119	109	D	7.80	-	8.00	Grey gravelly silty CLAY
S2-BH232	4	D	0.30	-	0.40	Brown gravelly silty CLAY
S2-BH232	107	D	4.90	-	5.00	Brown sandy silty CLAY
S2-BH232	12	D	5.50	-	5.95	Brown silty CLAY
S2-BH232	13	D	7.50	-	7.95	Grey silty CLAY
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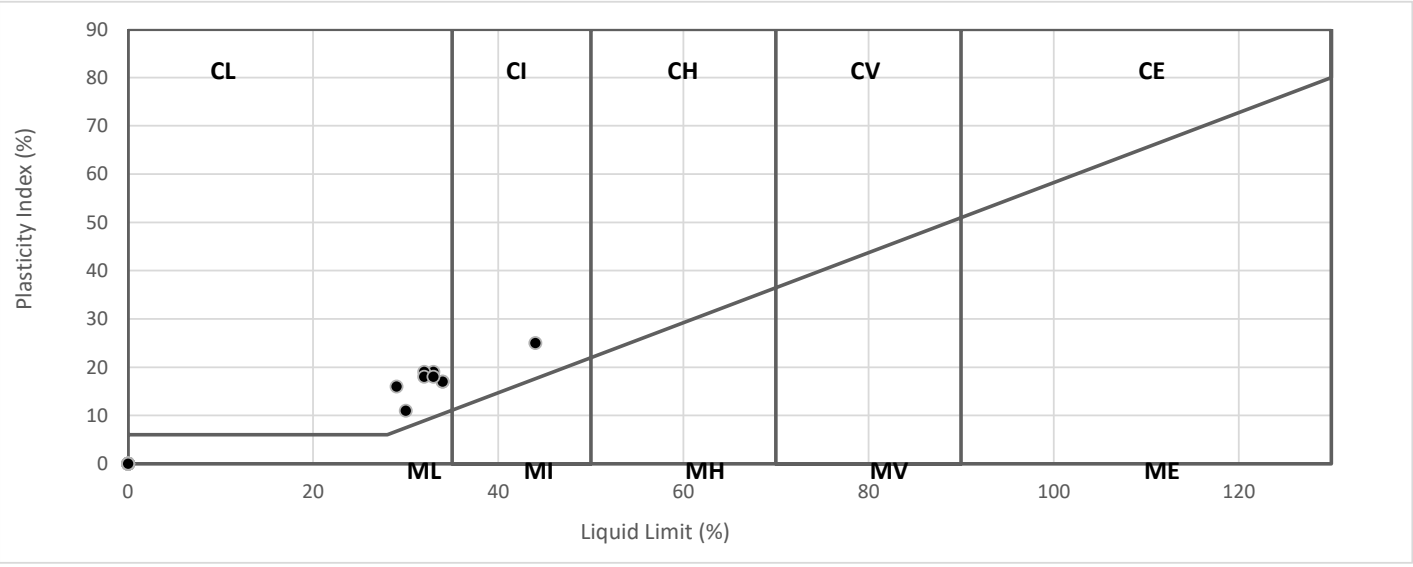
Operator
Clayton Jenkins

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	NATURAL MOISTURE, LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377:1990 - Part 2 : 4.3 & 5.3)	
Contract Number	66839	
Project Name	Global Centre of Rail Excellence Stage 2 (26)	
Date Tested	16/06/2023	

Sample/Hole Reference	Sample Number	Sample Type	Depth (m)			Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity index %	Passing 0.425mm %	Remarks
S1-BH119	1	D	1.40	-		12	33	14	19	89	CL Low Plasticity
S1-BH119	104	B	3.00	-	4.40	15	34	17	17	42	CL Low Plasticity
S1-BH119	3	D	3.40	-		9.9	32	13	19	100	CL Low Plasticity
S1-BH119	5	D	5.40	-		9.9	32	14	18	90	CL Low Plasticity
S1-BH119	109	D	7.80	-	8.00	12	34	17	17	89	CL Low Plasticity
S2-BH232	4	D	0.30	-	0.40	14	33	15	18	90	CL Low Plasticity
S2-BH232	107	D	4.90	-	5.00	21	44	19	25	100	CI Intermediate Plasticity
S2-BH232	12	D	5.50	-	5.95	16	30	19	11	100	CL Low Plasticity
S2-BH232	13	D	7.50	-	7.95	9.1	29	13	16	100	CL Low Plasticity
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Symbols: NP : Non Plastic # : Liquid Limit and Plastic Limit Wet Sieved

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION
BS 5930:2015+A1:2020



Operator
Clayton Jenkins

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GEOTECHNICAL SITE & TESTING LABORATORIES

Natural Moisture Content
(BS 1377:1990 - Part 2 : 3.2)
DESCRIPTIONS

Contract Number	66839
Site Name	Global Centre of Rail Excellence Stage 2 (26)
Date Tested	22/06/2023

Sample/Hole Reference	Sample Number	Sample Type	Depth (m)			Descriptions
S1-BH119	4	D	4.40	-		Grey silty/clayey fine to coarse sandy fine to coarse GRAVEL
S1-BH119	107	D	5.30	-	5.40	Brown silty clayey fine to coarse sandy fine to coarse GRAVEL
S1-BH119	6	D	6.00	-		Brown fine to coarse gravelly fine to coarse sandy silty CLAY
S1-BH119	9	D	9.00	-		Grey silty/clayey fine to coarse sandy fine to coarse GRAVEL
S2-BH232	3	B	0.70	-	0.90	Brown silty/clayey fine to coarse sandy fine to coarse GRAVEL (with cobbles)
S2-BH232	8	D	1.70	-	1.80	Brown silty/clayey fine to coarse sandy fine to coarse GRAVEL
S2-BH232	10	D	2.80	-	3.25	Brown fine to coarse sandy fine to medium gravelly SILT/CLAY
S2-BH232	11	D	4.20	-	4.65	Grey silty clayey fine to coarse sandy fine to coarse GRAVEL
S2-BH232	106	D	4.70	-	4.80	Brown PEAT
S2-BH232	109	B	5.20	-	6.00	Brown fine to medium gravelly fine to coarse sandy silty CLAY

Operators			
Clayton Jenkins			

GSTL
GEOTECHNICAL SITE & TESTING LABORATORIES

Natural Moisture Content
(BS 1377:1990 - Part 2 : 3.2)

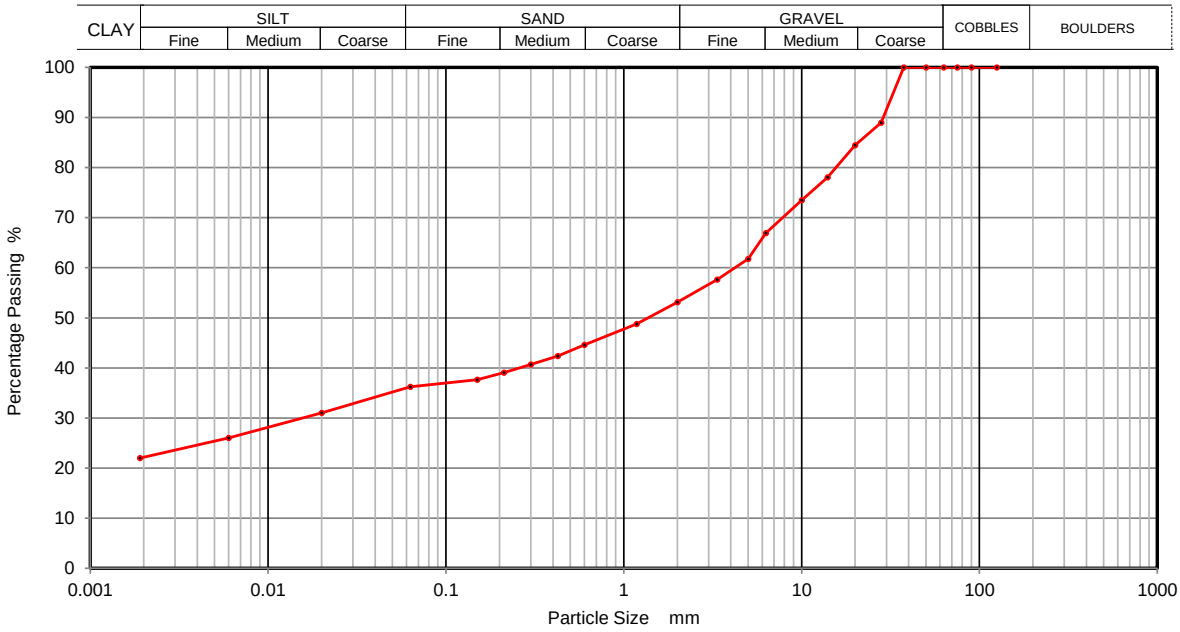
Contract Number	66839
Project Name	Global Centre of Rail Excellence Stage 2 (26)
Date Tested	22/06/2023

Sample/Hole Reference	Sample Number	Sample Type	Depth (m)			Moisture Content %	Remarks
S1-BH119	4	D	4.40	-		9.8	
S1-BH119	107	D	5.30	-	5.40	7.1	
S1-BH119	6	D	6.00	-		15	
S1-BH119	9	D	9.00	-		4.9	
S2-BH232	3	B	0.70	-	0.90	6.4	
S2-BH232	8	D	1.70	-	1.80	5.3	
S2-BH232	10	D	2.80	-	3.25	11	
S2-BH232	11	D	4.20	-	4.65	8.6	
S2-BH232	106	D	4.70	-	4.80	83	
S2-BH232	109	B	5.20	-	6.00	15	

Operator
Clayton Jenkins

UKAS TESTING
2788

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4**	Contract Number	66839
		Borehole/Pit No.	S1-BH119
Project Name	Global Centre of Rail Excellence Stage 2 (26)	Sample No.	104
Soil Description	Grey brown fine to coarse sandy fine to coarse gravelly silty CLAY	Depth Top	3.00
		Depth Base	4.40
Date Tested	22/06/2023	Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	31
90	100	0.0060	26
75	100	0.0020	22
63	100		
50	100		
37.5	100		
28	89		
20	84		
14	78		
10	73		
6.3	67		
5	62		
3.35	58		
2	53		
1.18	49		
0.6	45		
0.425	42		
0.3	41		
0.212	39		
0.15	38		
0.063	36		

Sample Proportions	% dry mass
Cobbles	0
Gravel	47
Sand	17
Silt	14
Clay	22

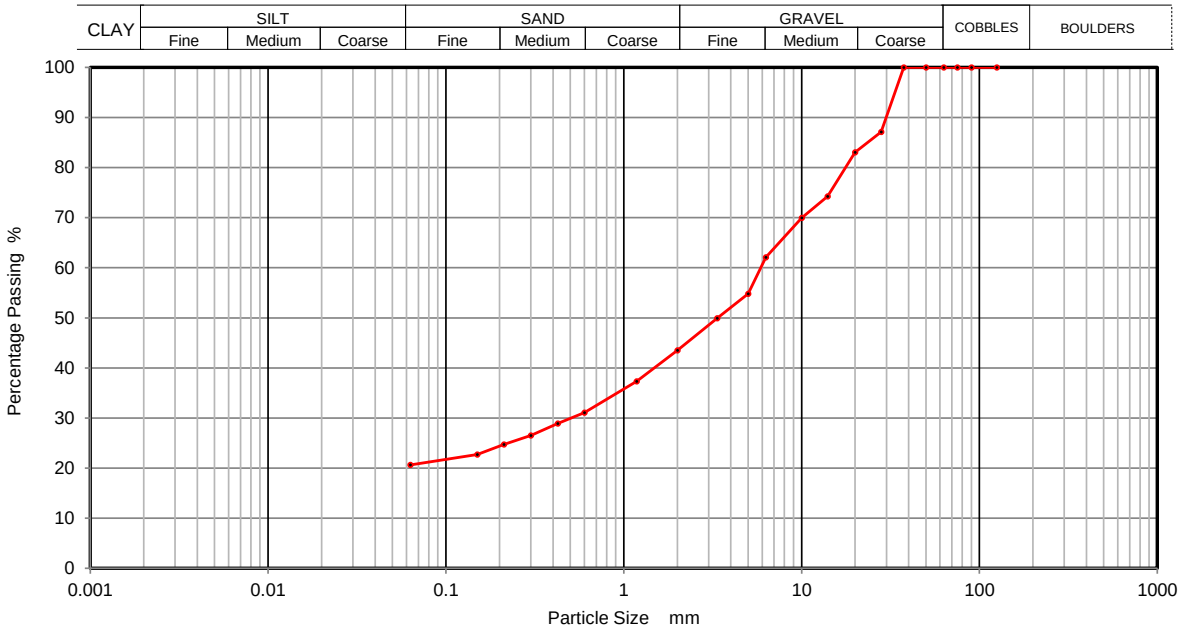
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator
David Edwards

UKAS TESTING
2788

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2**	Contract Number	66839
		Borehole/Pit No.	S1-BH119
Project Name	Global Centre of Rail Excellence Stage 2 (26)	Sample No.	4
Soil Description	Grey silty/clayey fine to coarse sandy fine to coarse GRAVEL	Depth Top	4.40
		Depth Base	
Date Tested	22/06/2023	Sample Type	D



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	87		
20	83		
14	74		
10	70		
6.3	62		
5	55		
3.35	50		
2	43		
1.18	37		
0.6	31		
0.425	29		
0.3	27		
0.212	25		
0.15	23		
0.063	21		

Sample Proportions	% dry mass
Cobbles	0
Gravel	57
Sand	22
Silt and Clay	21

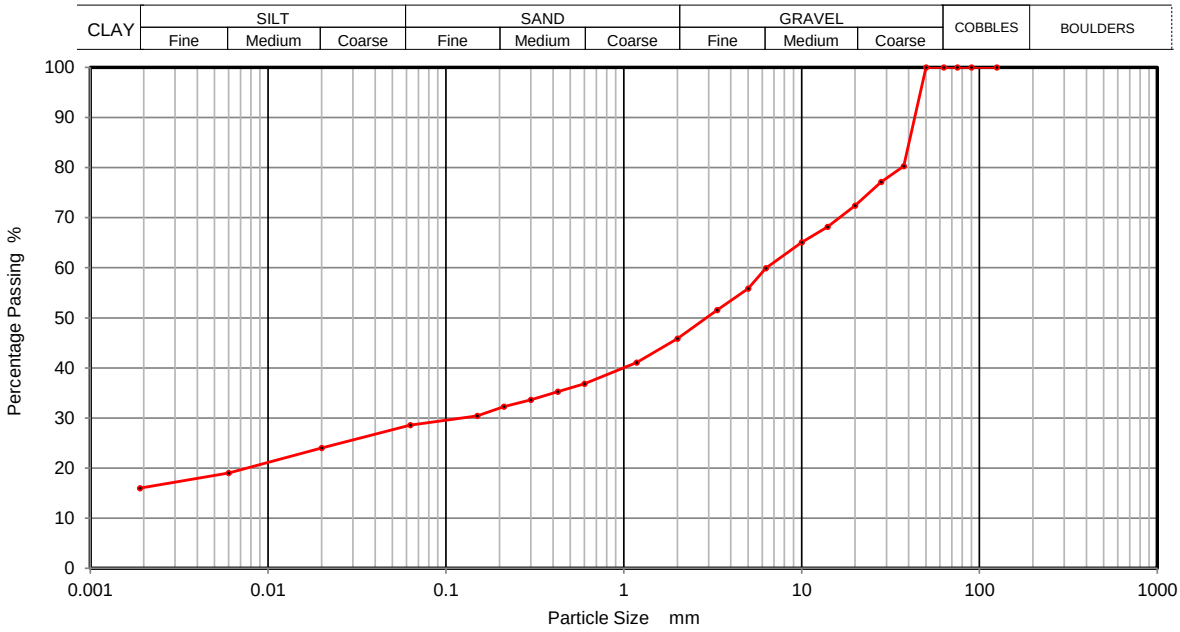
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator
David Edwards

UKAS TESTING 2788

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4**	Contract Number	66839
		Borehole/Pit No.	S1-BH119
Project Name	Global Centre of Rail Excellence Stage 2 (26)	Sample No.	107
Soil Description	Brown silty clayey fine to coarse sandy fine to coarse GRAVEL	Depth Top	5.30
		Depth Base	5.40
Date Tested	22/06/2023	Sample Type	D



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	24
90	100	0.0060	19
75	100	0.0020	16
63	100		
50	100		
37.5	80		
28	77		
20	72		
14	68		
10	65		
6.3	60		
5	56		
3.35	52		
2	46		
1.18	41		
0.6	37		
0.425	35		
0.3	34		
0.212	32		
0.15	30		
0.063	29		

Sample Proportions	% dry mass
Cobbles	0
Gravel	54
Sand	17
Silt	13
Clay	16

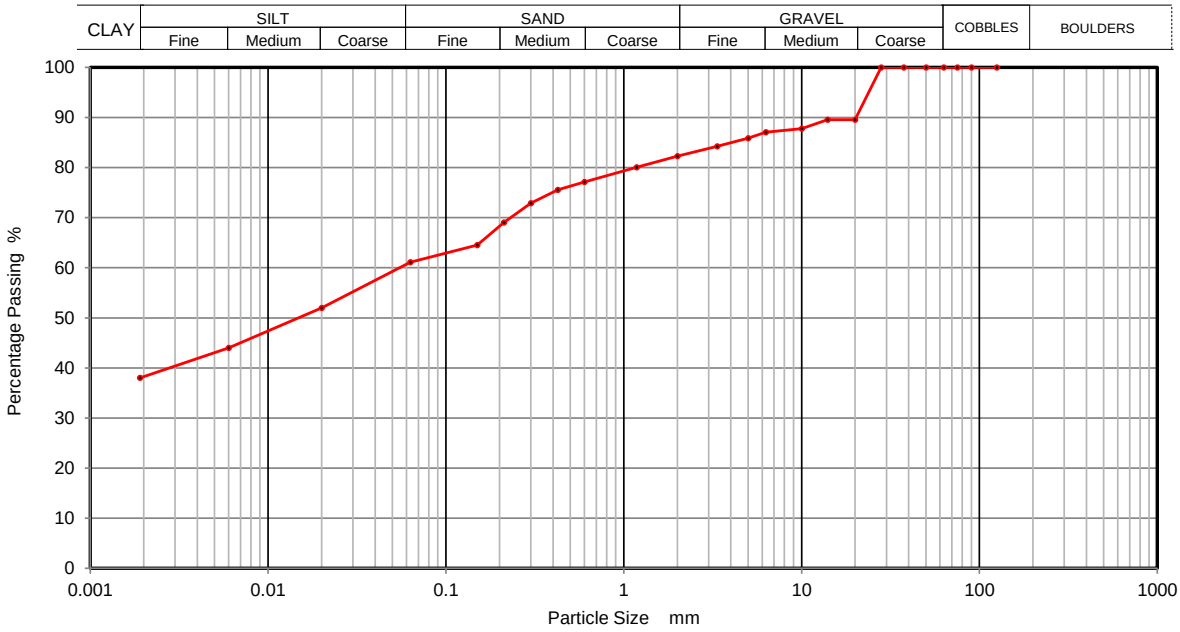
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator
David Edwards

UKAS TESTING 2788

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**PARTICLE SIZE DISTRIBUTION** **BS 1377 Part 2:1990** **Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4**	Contract Number	66839
		Borehole/Pit No.	S1-BH119
Project Name	Global Centre of Rail Excellence Stage 2 (26)	Sample No.	6
Soil Description	Brown fine to coarse gravelly fine to coarse sandy silty CLAY	Depth Top	6.00
		Depth Base	
Date Tested	22/06/2023	Sample Type	D



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	52
90	100	0.0060	44
75	100	0.0020	38
63	100		
50	100		
37.5	100		
28	100		
20	90		
14	90		
10	88		
6.3	87		
5	86		
3.35	84		
2	82		
1.18	80		
0.6	77		
0.425	76		
0.3	73		
0.212	69		
0.15	65		
0.063	61		

Sample Proportions	% dry mass
Cobbles	0
Gravel	18
Sand	21
Silt	23
Clay	38

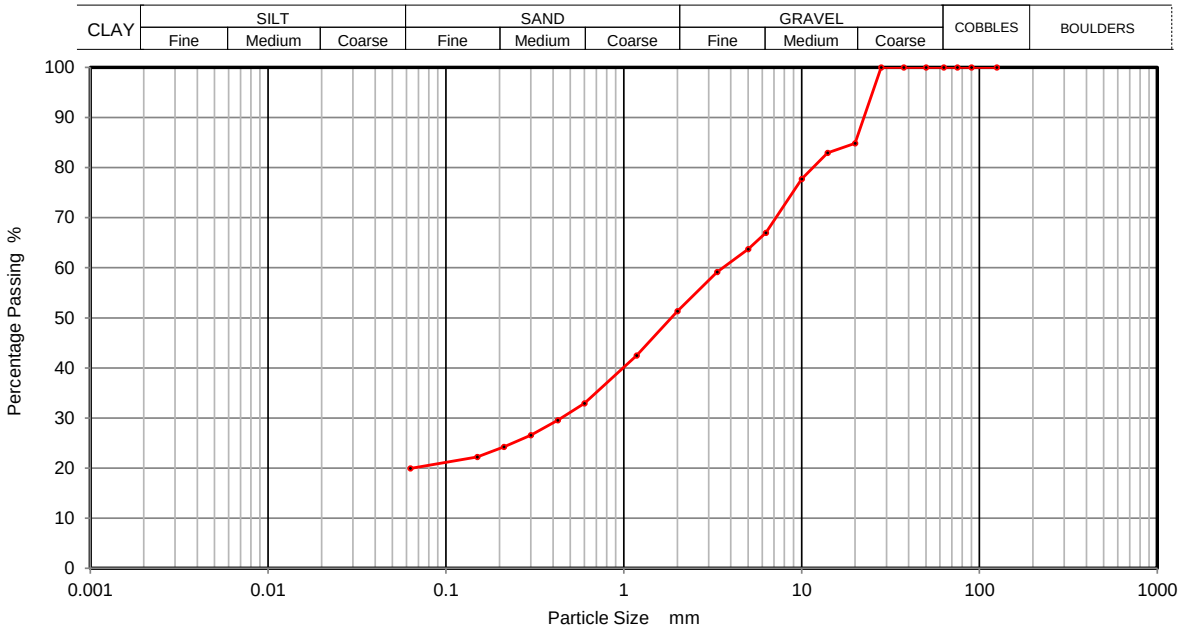
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator
David Edwards

UKAS TESTING
2788

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2**	Contract Number	66839
		Borehole/Pit No.	S1-BH119
Project Name	Global Centre of Rail Excellence Stage 2 (26)	Sample No.	9
Soil Description	Grey silty/clayey fine to coarse sandy fine to coarse GRAVEL	Depth Top	9.00
		Depth Base	
Date Tested	22/06/2023	Sample Type	D



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	85		
14	83		
10	78		
6.3	67		
5	64		
3.35	59		
2	51		
1.18	42		
0.6	33		
0.425	30		
0.3	27		
0.212	24		
0.15	22		
0.063	20		

Sample Proportions	% dry mass
Cobbles	0
Gravel	49
Sand	31
Silt and Clay	20

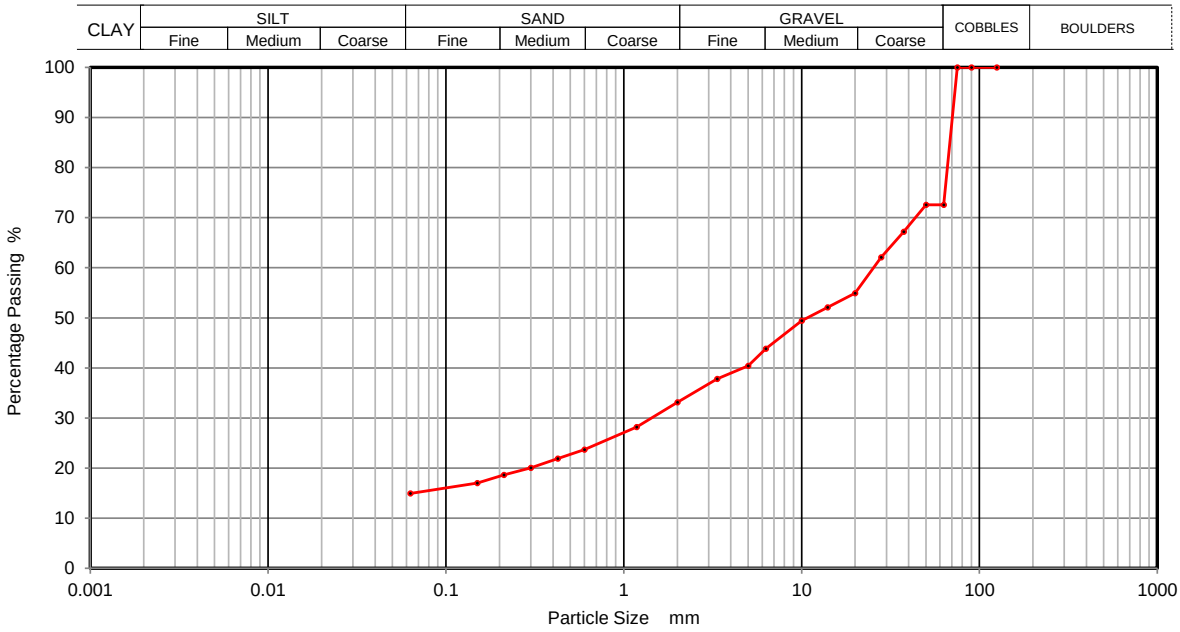
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator
David Edwards

UKAS TESTING 2788

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2**	Contract Number	66839
		Borehole/Pit No.	S2-BH232
Project Name	Global Centre of Rail Excellence Stage 2 (26)	Sample No.	3
Soil Description	Brown silty/clayey fine to coarse sandy fine to coarse GRAVEL (with cobbles)	Depth Top	0.70
		Depth Base	0.90
Date Tested	22/06/2023	Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	73		
50	73		
37.5	67		
28	62		
20	55		
14	52		
10	49		
6.3	44		
5	40		
3.35	38		
2	33		
1.18	28		
0.6	24		
0.425	22		
0.3	20		
0.212	19		
0.15	17		
0.063	15		

Sample Proportions	% dry mass
Cobbles	27
Gravel	40
Sand	18
Silt and Clay	15

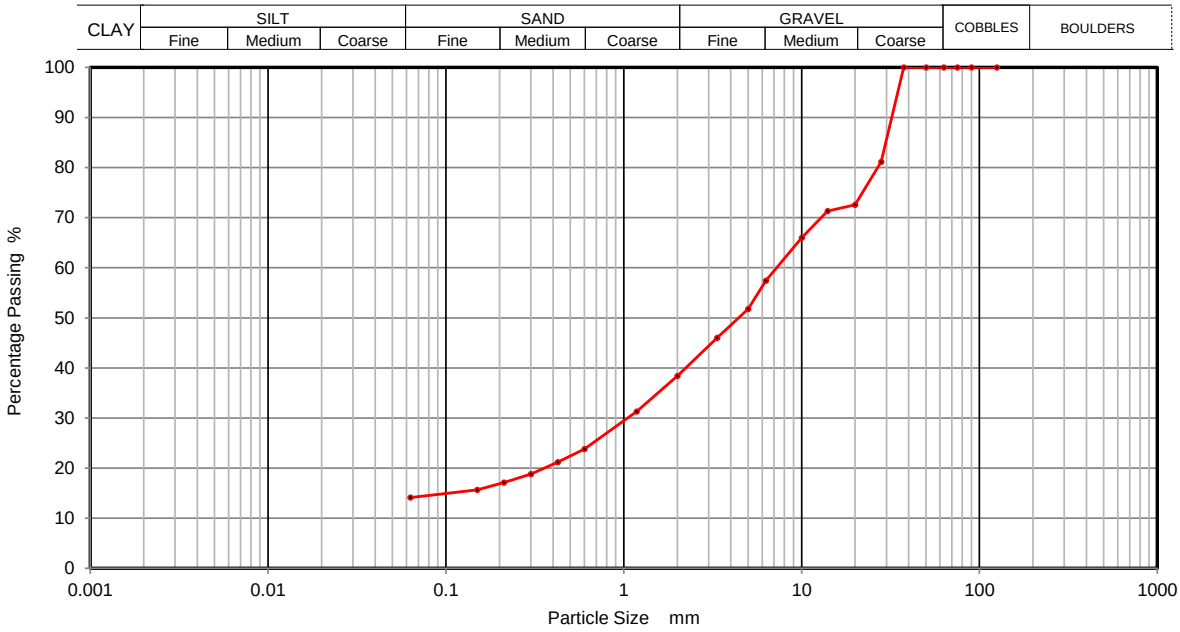
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator
David Edwards

UKAS TESTING 2788

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2**	Contract Number	66839
		Borehole/Pit No.	S2-BH232
Project Name	Global Centre of Rail Excellence Stage 2 (26)	Sample No.	8
Soil Description	Brown silty/clayey fine to coarse sandy fine to coarse GRAVEL	Depth Top	1.70
		Depth Base	1.80
Date Tested	22/06/2023	Sample Type	D



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	81		
20	73		
14	71		
10	66		
6.3	57		
5	52		
3.35	46		
2	38		
1.18	31		
0.6	24		
0.425	21		
0.3	19		
0.212	17		
0.15	16		
0.063	14		

Sample Proportions	% dry mass
Cobbles	0
Gravel	62
Sand	24
Silt and Clay	14

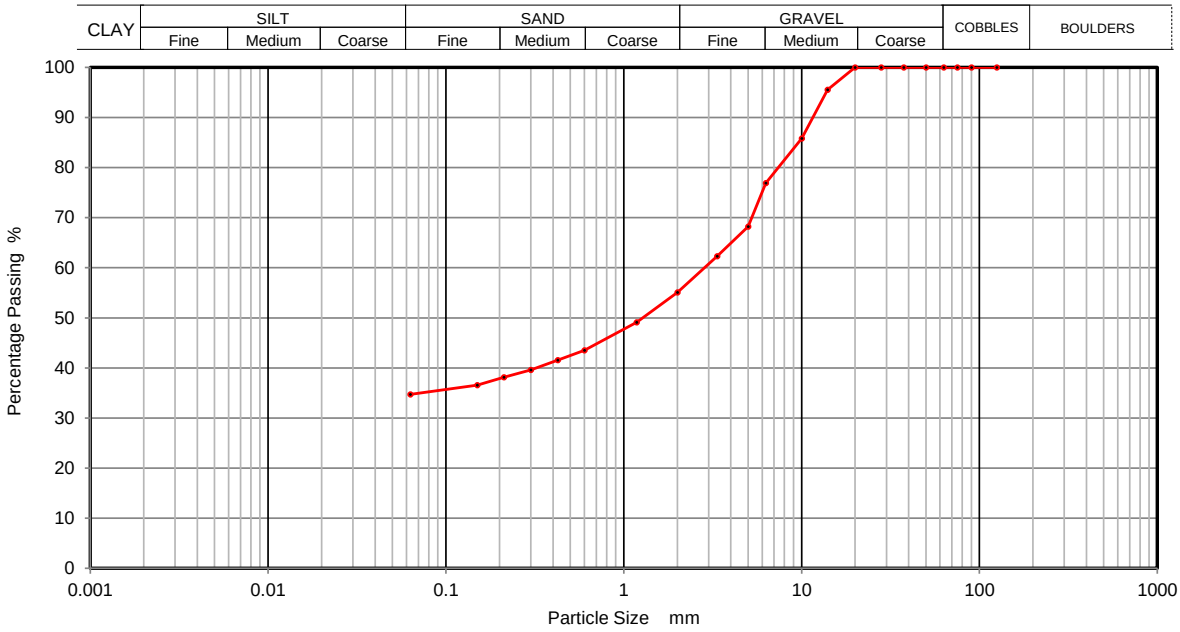
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator
David Edwards

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GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2**	Contract Number	66839
		Borehole/Pit No.	S2-BH232
Project Name	Global Centre of Rail Excellence Stage 2 (26)	Sample No.	10
Soil Description	Brown fine to coarse sandy fine to medium gravelly SILT/CLAY	Depth Top	2.80
		Depth Base	3.25
Date Tested	22/06/2023	Sample Type	D



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	96		
10	86		
6.3	77		
5	68		
3.35	62		
2	55		
1.18	49		
0.6	44		
0.425	42		
0.3	40		
0.212	38		
0.15	37		
0.063	35		

Sample Proportions	% dry mass
Cobbles	0
Gravel	45
Sand	20
Silt and Clay	35

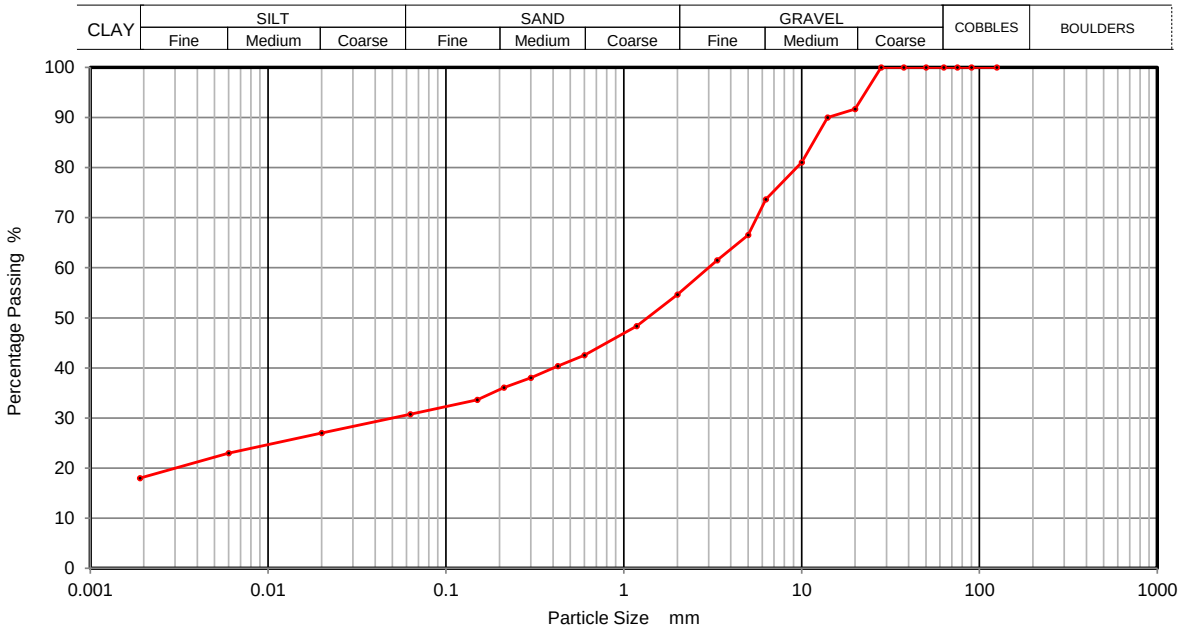
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator
David Edwards

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GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4**	Contract Number	66839
		Borehole/Pit No.	S2-BH232
Project Name	Global Centre of Rail Excellence Stage 2 (26)	Sample No.	11
Soil Description	Grey silty clayey fine to coarse sandy fine to coarse GRAVEL	Depth Top	4.20
		Depth Base	4.65
Date Tested	22/06/2023	Sample Type	D



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	27
90	100	0.0060	23
75	100	0.0020	18
63	100		
50	100		
37.5	100		
28	100		
20	92		
14	90		
10	81		
6.3	74		
5	67		
3.35	61		
2	55		
1.18	48		
0.6	43		
0.425	40		
0.3	38		
0.212	36		
0.15	34		
0.063	31		

Sample Proportions	% dry mass
Cobbles	0
Gravel	45
Sand	24
Silt	13
Clay	18

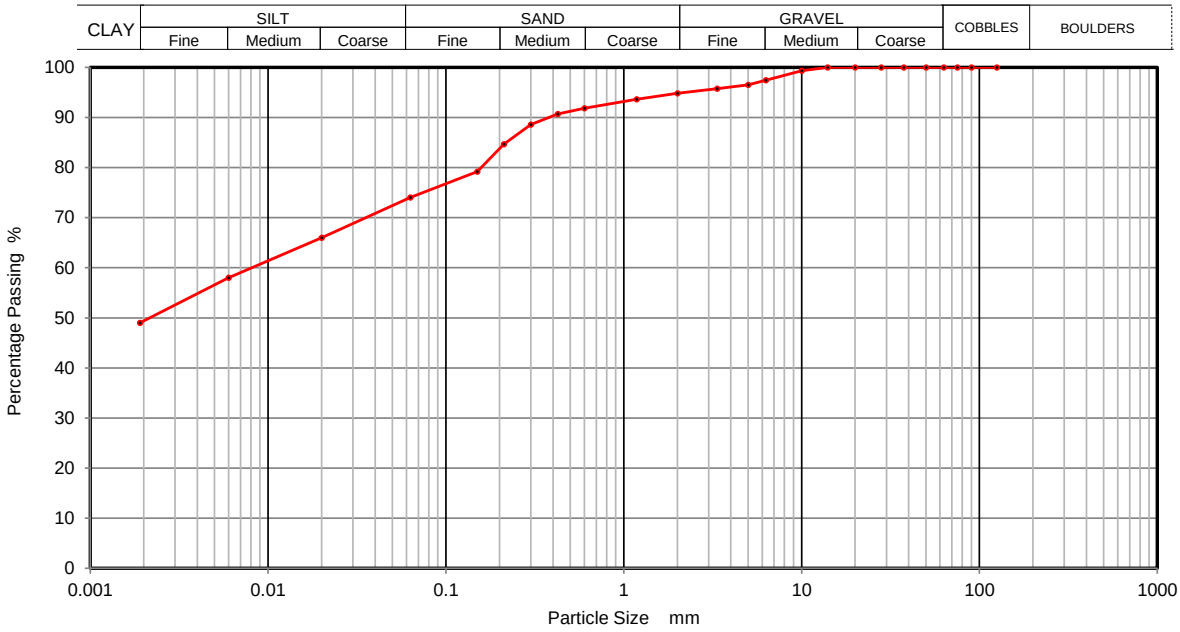
Remarks

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Operator
David Edwards

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GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4**	Contract Number	66839
		Borehole/Pit No.	S2-BH232
Project Name	Global Centre of Rail Excellence Stage 2 (26)	Sample No.	109
Soil Description	Brown fine to medium gravelly fine to coarse sandy silty CLAY	Depth Top	5.20
		Depth Base	6.00
Date Tested	22/06/2023	Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	66
90	100	0.0060	58
75	100	0.0020	49
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	99		
6.3	97		
5	97		
3.35	96		
2	95		
1.18	94		
0.6	92		
0.425	91		
0.3	89		
0.212	85		
0.15	79		
0.063	74		

Sample Proportions	% dry mass
Cobbles	0
Gravel	5
Sand	21
Silt	25
Clay	49

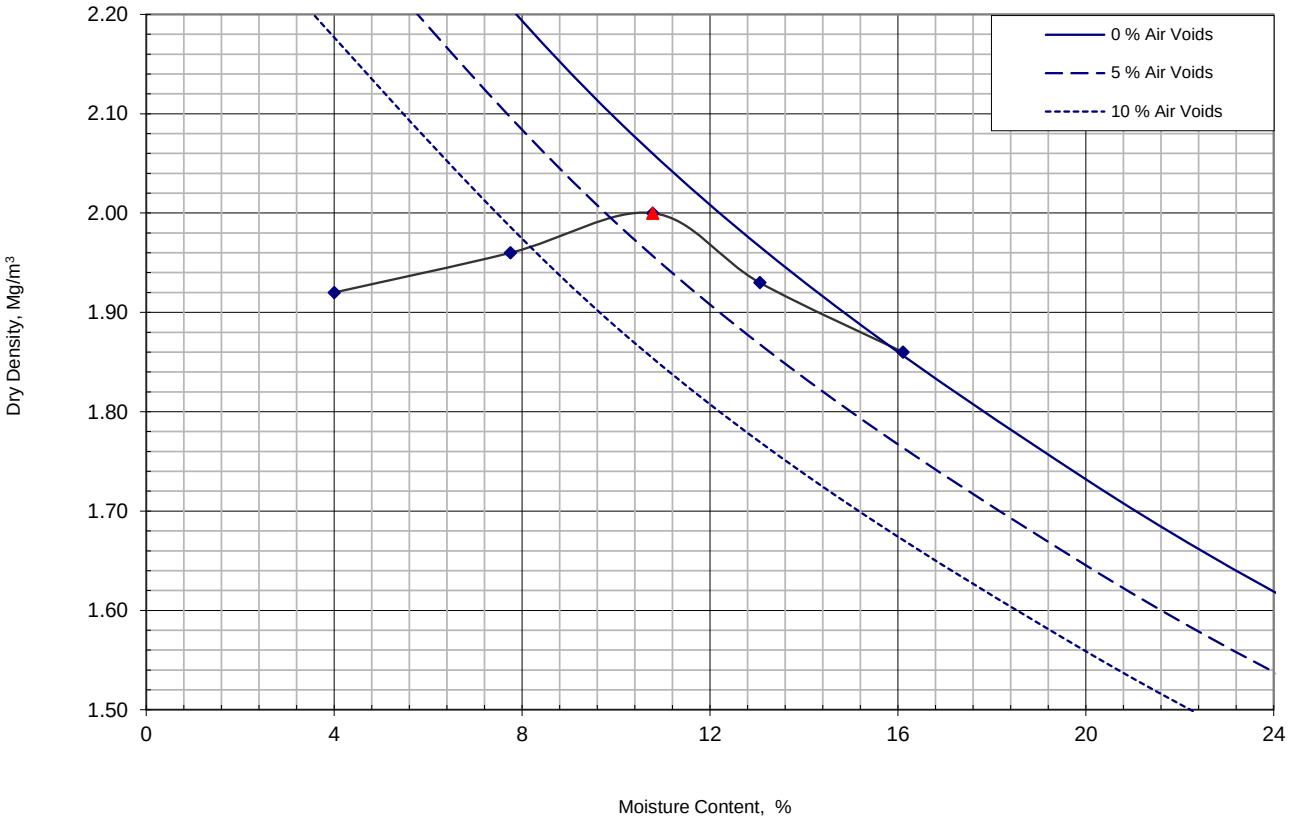
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator
David Edwards

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GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	Dry Density / Moisture Content Relationship BS 1377:Part 4:1990	Contract Number	66839
		Borehole / Pit No	S1-BH119
Project Name	Global Centre of Rail Excellence Stage 2 (26)	Sample No	102
Date Tested	26/06/2023	Depth Top	1.70
Compaction Method	4.5 Kg Rammer	Depth Base	3.00
Compaction Clause	BS1377:Part 4:1990, Clause 3.5	Sample Type	B
Sample Description	Dark grey fine to medium gravelly silty CLAY	Single or Separate Sample Used	Single



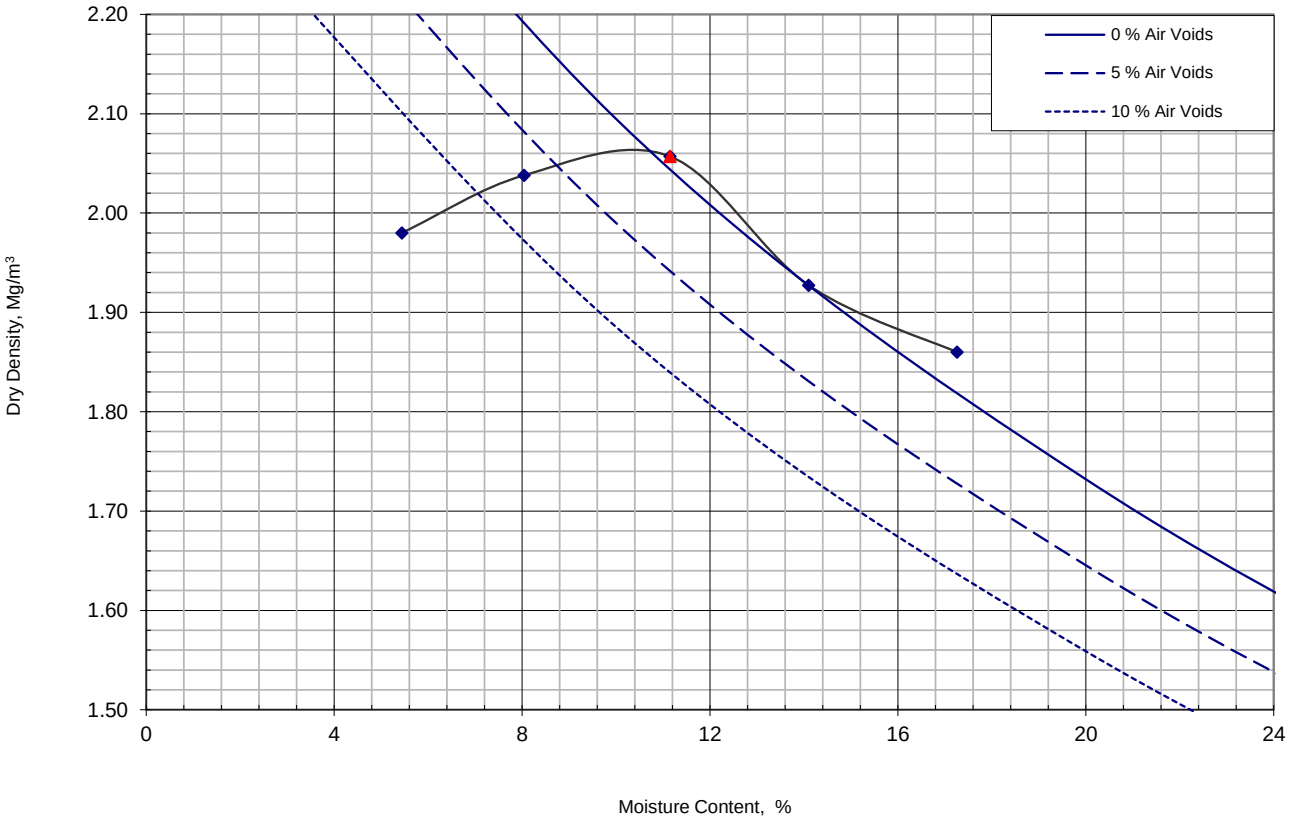
Compaction Point	1	2	3	4	5							
Moisture Content	4.0	7.8	11	13	16							
Bulk Density	2.00	2.11	2.22	2.18	2.16							
Dry Density	1.92	1.96	2.00	1.93	1.86							

Initial Moisture Content	11	%
Maximum Dry Density	2.00	Mg/m3
Optimum Moisture Content	11	%
Particle Density	2.65 Assumed	Mg/m3
Material Retained 37.5mm	0	%
Material Retained 20mm	0	%

Operator
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GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	Dry Density / Moisture Content Relationship BS 1377:Part 4:1990	Contract Number	66839
		Borehole / Pit No	S2-BH232
Project Name	Global Centre of Rail Excellence Stage 2 (26)	Sample No	6
Date Tested	26/06/2023	Depth Top	1.20
Compaction Method	4.5 Kg Rammer	Depth Base	1.60
Compaction Clause	BS1377:Part 4:1990, Clause 3.5	Sample Type	UT
Sample Description	Dark grey fine to medium gravelly silty CLAY	Single or Separate Sample Used	Single



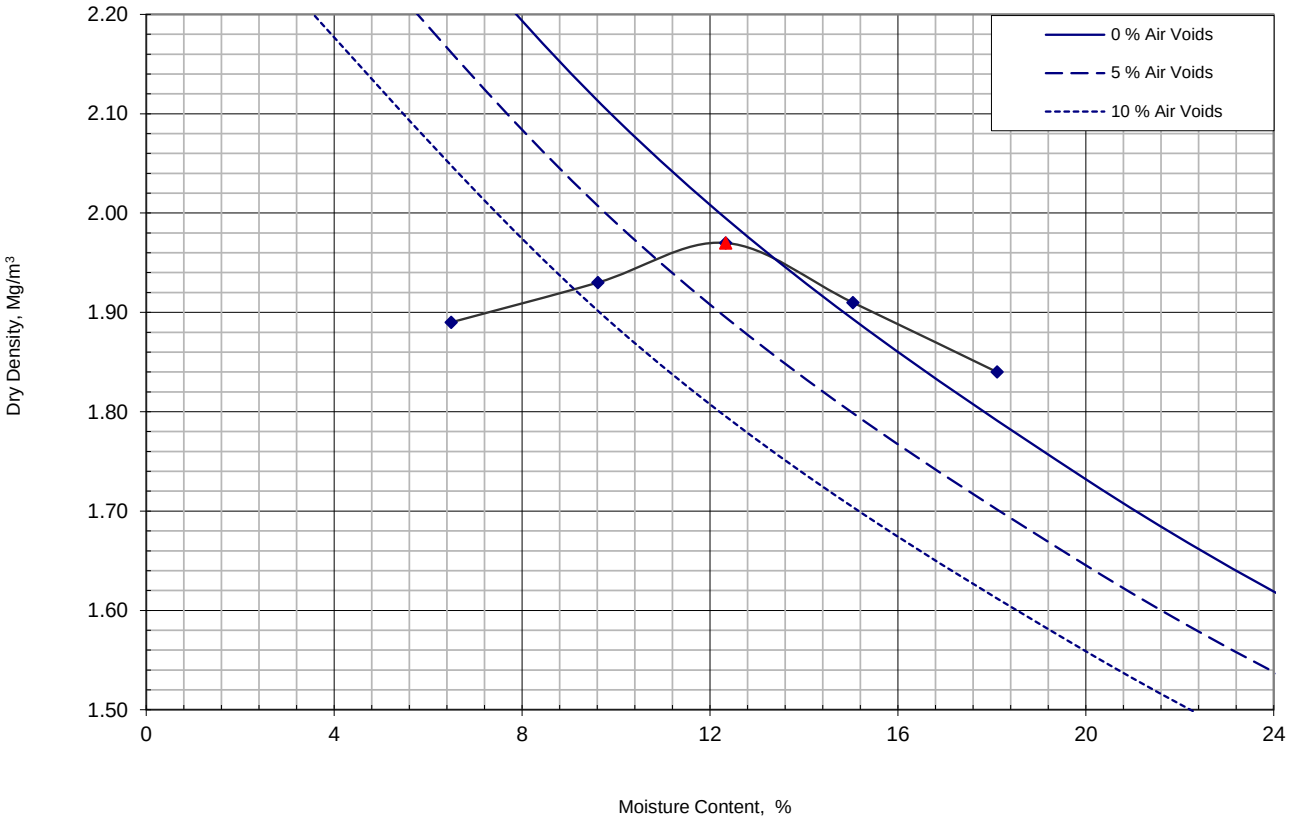
Compaction Point	1	2	3	4	5							
Moisture Content	5.4	8.0	11	14	17							
Bulk Density	2.09	2.20	2.29	2.20	2.18							
Dry Density	1.98	2.04	2.06	1.93	1.86							

Initial Moisture Content	11	%
Maximum Dry Density	2.06	Mg/m3
Optimum Moisture Content	11	%
Particle Density	2.65 Assumed	Mg/m3
Material Retained 37.5mm	0	%
Material Retained 20mm	0	%

Operator
Conal

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GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	Dry Density / Moisture Content Relationship BS 1377:Part 4:1990	Contract Number	66839
		Borehole / Pit No	S2-BH232
Project Name	Global Centre of Rail Excellence Stage 2 (26)	Sample No	102
Date Tested	26/06/2023	Depth Top	2.00
Compaction Method	4.5 Kg Rammer	Depth Base	2.80
Compaction Clause	BS1377:Part 4:1990, Clause 3.5	Sample Type	B
Sample Description	Dark grey fine to medium gravelly silty CLAY	Single or Separate Sample Used	Single



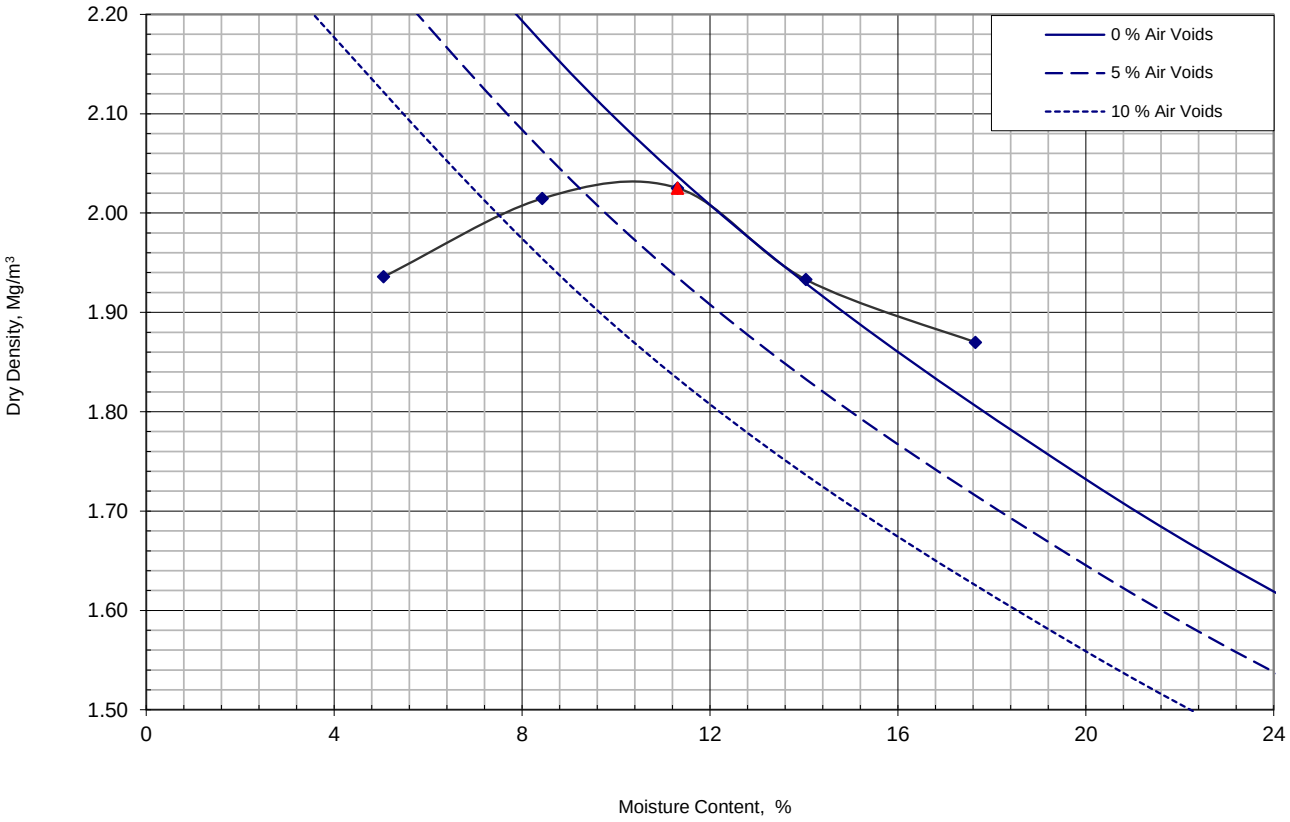
Compaction Point	1	2	3	4	5							
Moisture Content	6.5	9.6	12	15	18							
Bulk Density	2.01	2.12	2.21	2.20	2.17							
Dry Density	1.89	1.93	1.97	1.91	1.84							

Initial Moisture Content	9.6	%
Maximum Dry Density	1.97	Mg/m3
Optimum Moisture Content	12	%
Particle Density	2.65 Assumed	Mg/m3
Material Retained 37.5mm	0	%
Material Retained 20mm	0	%

Operator
Conal

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GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	Dry Density / Moisture Content Relationship BS 1377:Part 4:1990	Contract Number	66839
		Borehole / Pit No	S2-BH232
Project Name	Global Centre of Rail Excellence Stage 2 (26)	Sample No	104
Date Tested	26/06/2023	Depth Top	3.40
Compaction Method	4.5 Kg Rammer	Depth Base	4.50
Compaction Clause	BS1377:Part 4:1990, Clause 3.5	Sample Type	B
Sample Description	Dark grey fine to medium gravelly silty CLAY	Single or Separate Sample Used	Single



Compaction Point	1	2	3	4	5							
Moisture Content	5.1	8.4	11	14	18							
Bulk Density	2.03	2.18	2.25	2.20	2.20							
Dry Density	1.94	2.01	2.03	1.93	1.87							

Initial Moisture Content	8.4	%
Maximum Dry Density	2.03	Mg/m3
Optimum Moisture Content	11	%
Particle Density	2.65 Assumed	Mg/m3
Material Retained 37.5mm	0	%
Material Retained 20mm	0	%

Operator
Conal

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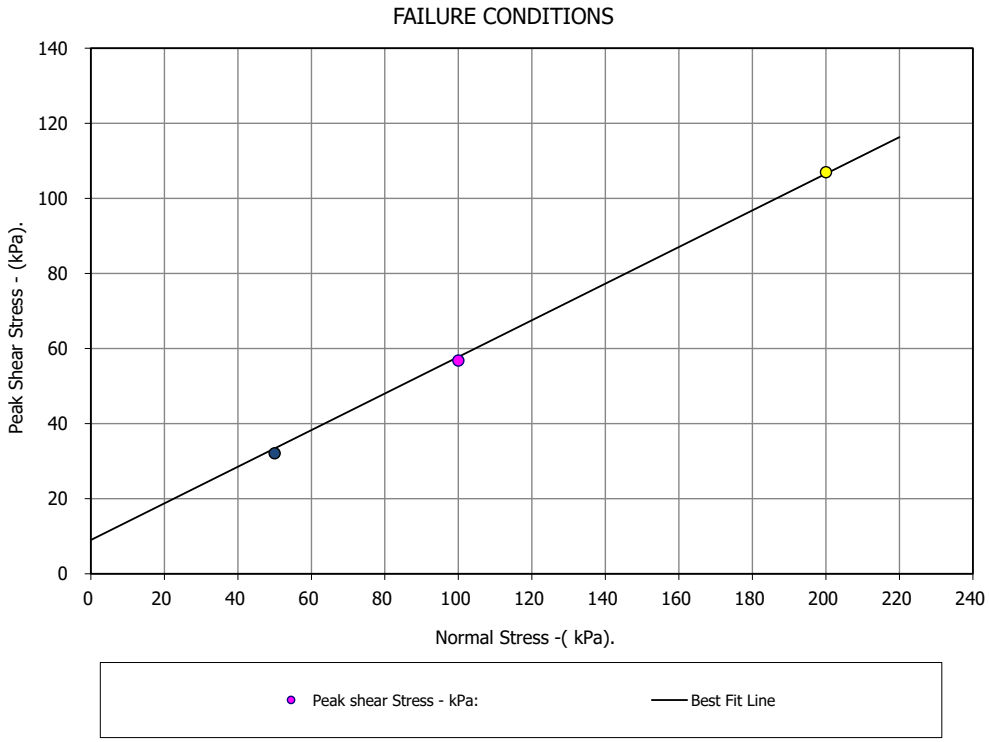
Borehole Number:	S2-BH232	Depth from (m):	1.20
Sample Number :	6.0	Depth to (m):	1.60

Sample Type:	UT
Particle Density - Mg/m3:	2.65 (Assumed)
Specimen Tested:	Submerged, Remoulded (Light Tamping) Material above 2mm removed.

Sample Description:
Brown gravelly CLAY

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	25.03	25.03	25.03
Length - mm:	60.00	60.00	60.00
Moisture Content - %:	15	15	15
Bulk Density - Mg/m3:	1.87	1.87	1.87
Dry Density - Mg/m3:	1.62	1.62	1.62
Voids Ratio:	0.6343	0.6326	0.6312
Degree of Saturation - %:	63.79	63.95	64.10
Normal Pressure- kPa	50	100	200
Consolidation			
Consolidated Height - mm:	23.44	21.71	21.04
Shear			
Rate of Horizontal Displacement (mm/min)	0.200	0.200	0.200
Horizontal Displacement at Peak Shear Stress (mm)	8.11	5.05	6.94
Peak shear Stress - kPa:	32	57	107

PEAK	
Angle of Shearing Resistance:(θ)	**26.0**
Effective Cohesion - kPa:	**9.0**

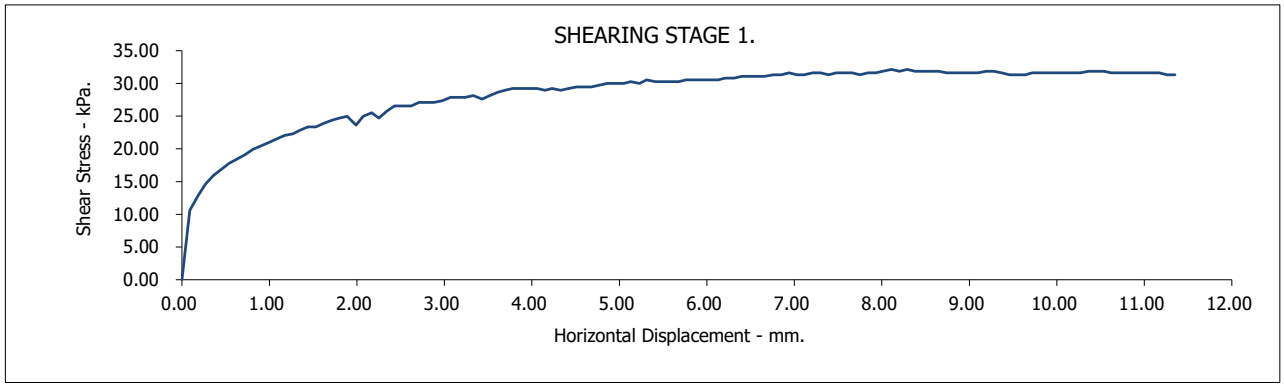


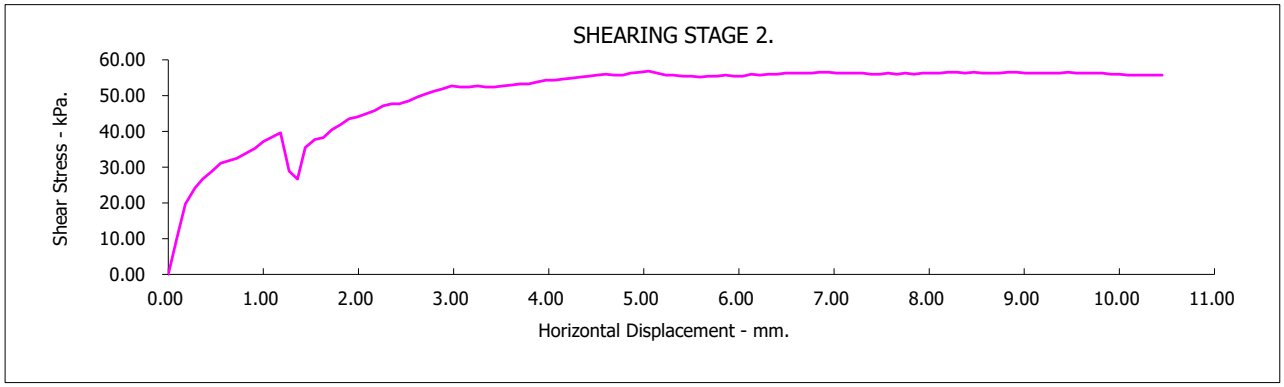
Contract No.:
66839

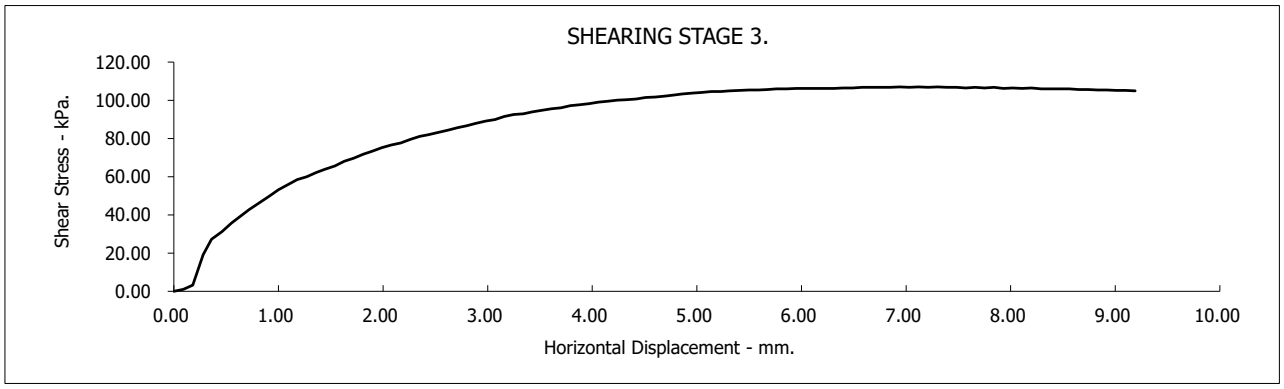
Global Centre of Rail Eaxcellence Stage 2 (26)

Client Ref Number:
G23012

Borehole Number:	S2-BH232	Depth from (m):	1.20
Sample Number :	6	Depth to (m):	1.60







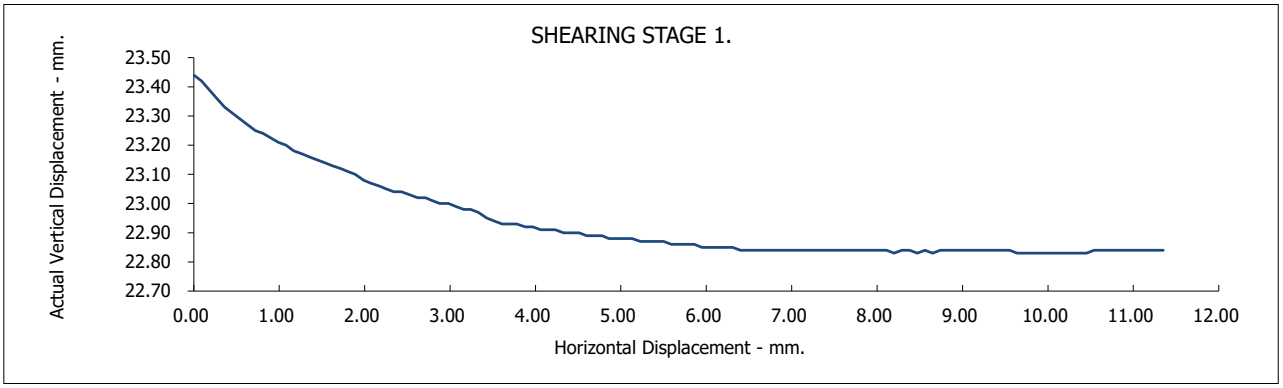
Global Centre of Rail Eaxcellence Stage 2 (26)

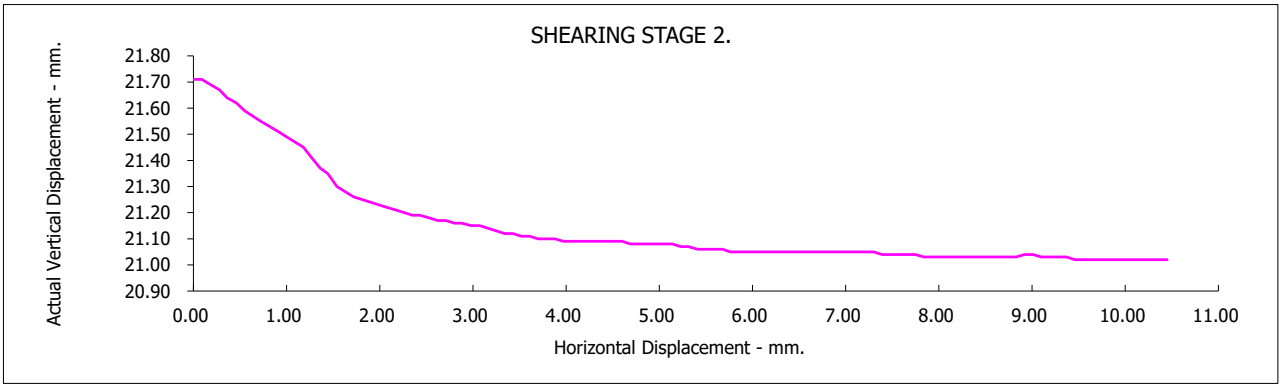
Contract No.: **66839**

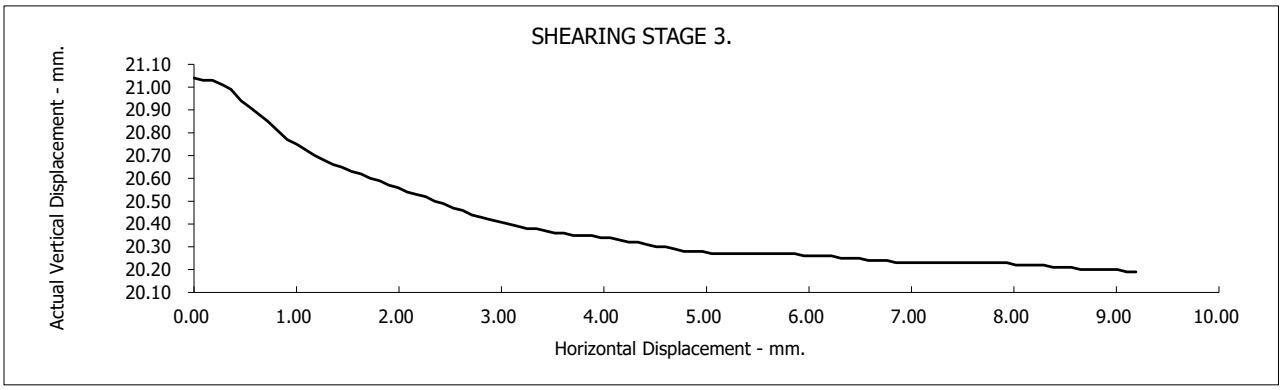
Client Ref Number: **G23012**

Figure.

Borehole Number:	S2-BH232	Depth from (m):	1.20
Sample Number :	6	Depth to (m):	1.60





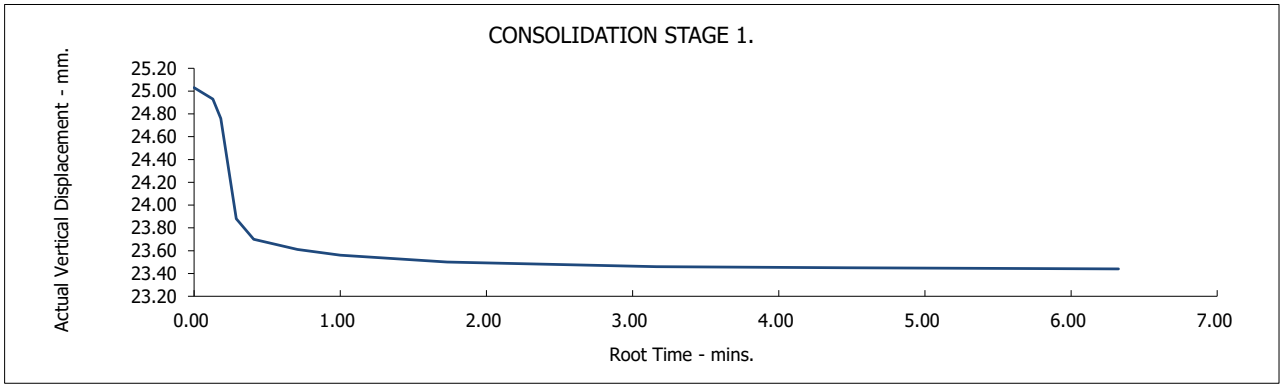


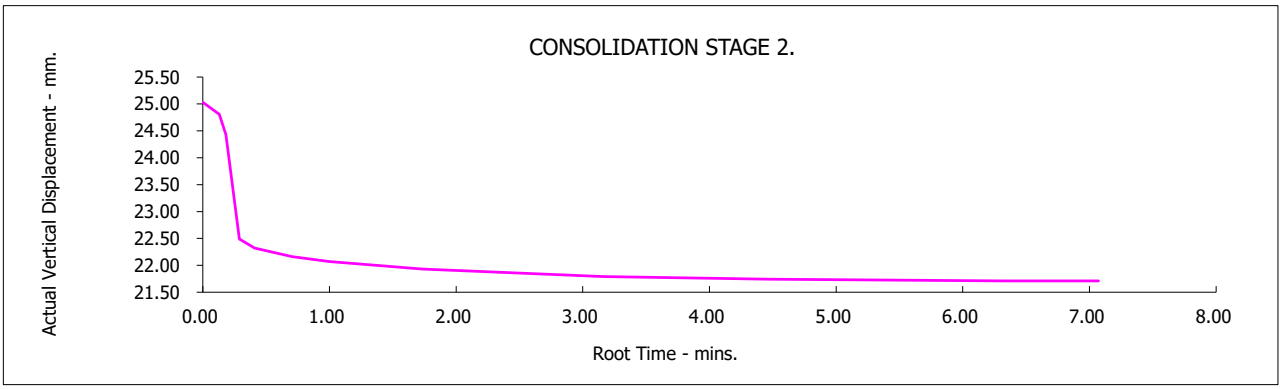
Contract No.:
66839

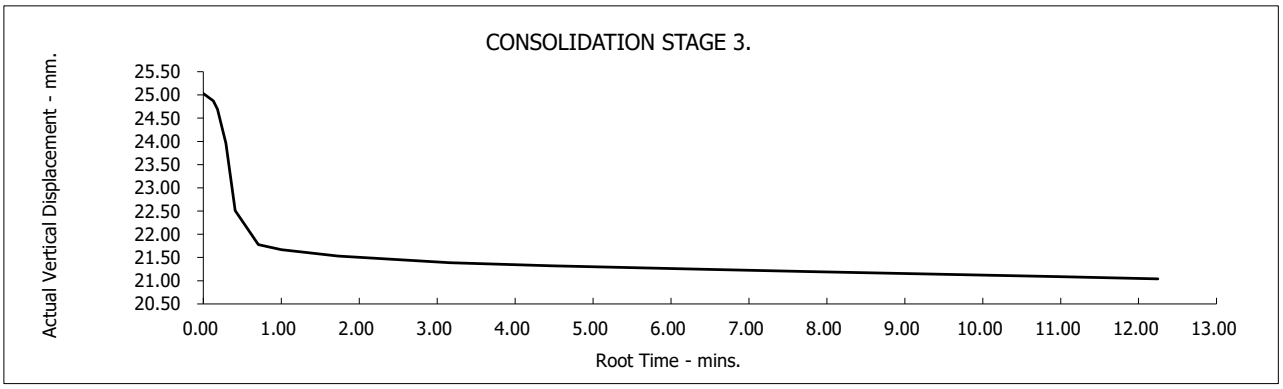
Global Centre of Rail Eaxcellence Stage 2 (26)

Client Ref Number:
G23012

Borehole Number:	S2-BH232	Depth from (m):	1.20
Sample Number :	6	Depth to (m):	1.60







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Global Centre of Rail Eaxcellence Stage 2 (26)

Contract No.: **66839**

Client Ref Number: **G23012**

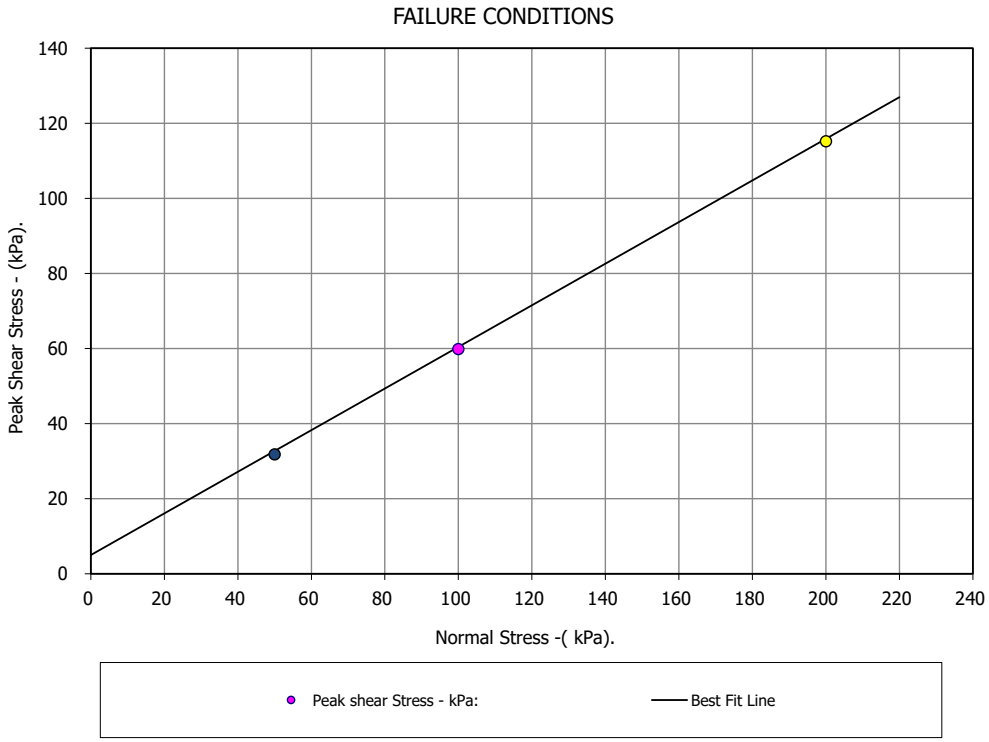
Borehole Number:	S2-BH232	Depth from (m):	2.00
Sample Number :	102.0	Depth to (m):	2.80

Sample Type:	B
Particle Density - Mg/m3:	2.65 (Assumed)
Specimen Tested:	Submerged, Remoulded (Light Tamping) Material above 2mm removed.

Sample Description:
Brown gravelly CLAY

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	23.30	23.30	23.30
Length - mm:	60.00	60.00	60.00
Moisture Content - %:	19	19	19
Bulk Density - Mg/m3:	1.78	1.78	1.78
Dry Density - Mg/m3:	1.50	1.50	1.50
Voids Ratio:	0.7682	0.7669	0.7650
Degree of Saturation - %:	64.07	64.18	64.34
Normal Pressure- kPa	50	100	200
Consolidation			
Consolidated Height - mm:	21.58	20.68	20.16
Shear			
Rate of Horizontal Displacement (mm/min)	0.200	0.200	0.200
Horizontal Displacement at Peak Shear Stress (mm)	7.48	6.22	6.22
Peak shear Stress - kPa:	32	60	115

PEAK	
Angle of Shearing Resistance:(θ)	**29.0**
Effective Cohesion - kPa:	**5.0**

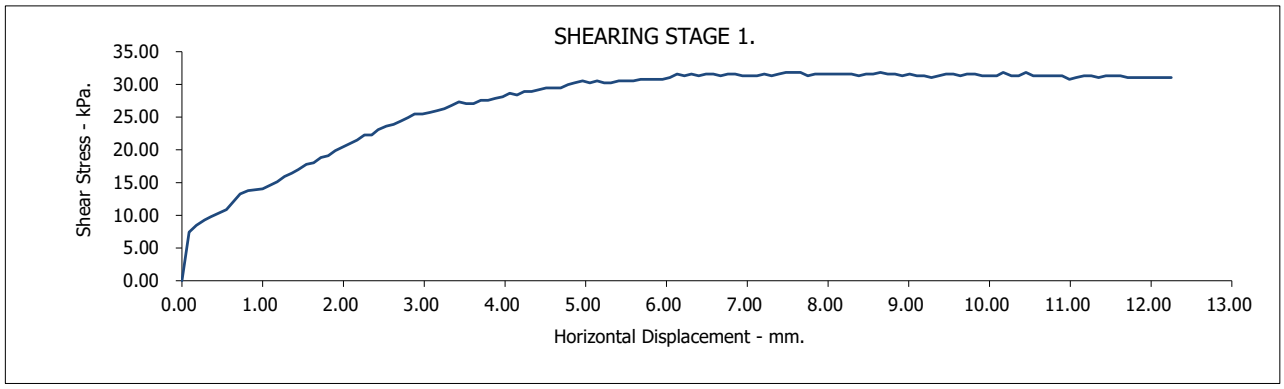


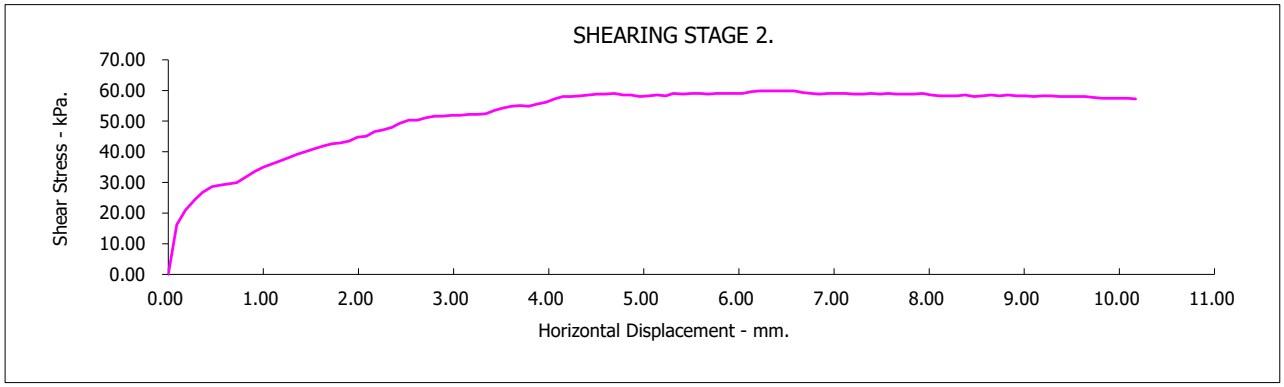
Contract No.:
66839

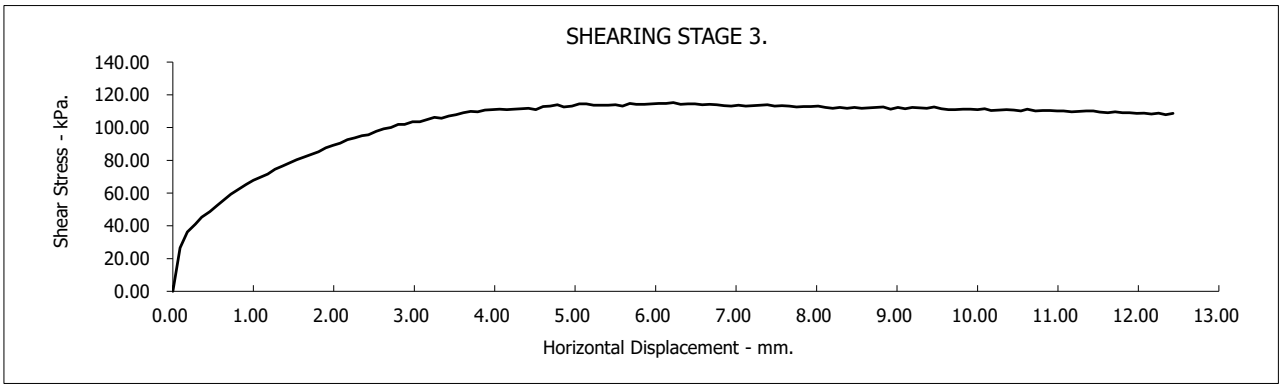
Global Centre of Rail Eaxcellence Stage 2 (26)

Client Ref Number:
G23012

Borehole Number:	S2-BH232	Depth from (m):	2.00
Sample Number :	102	Depth to (m):	2.80







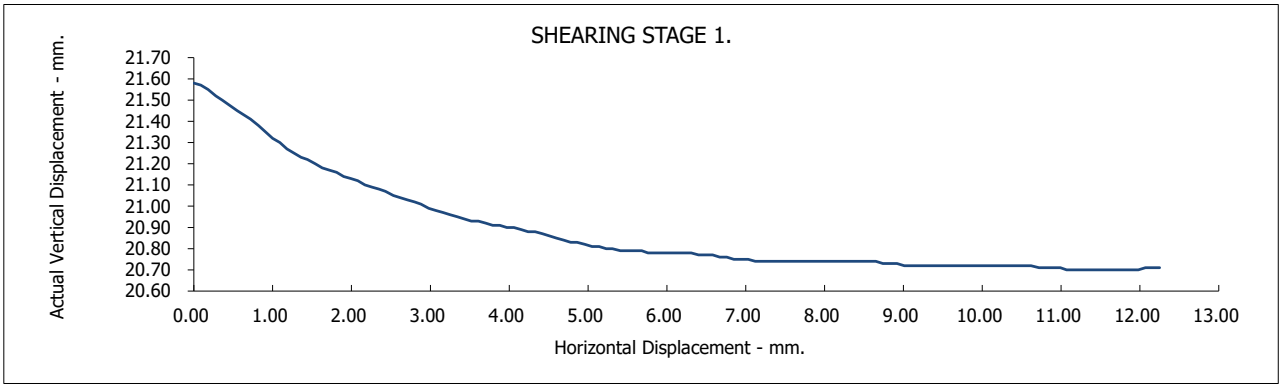
Global Centre of Rail Eaxcellence Stage 2 (26)

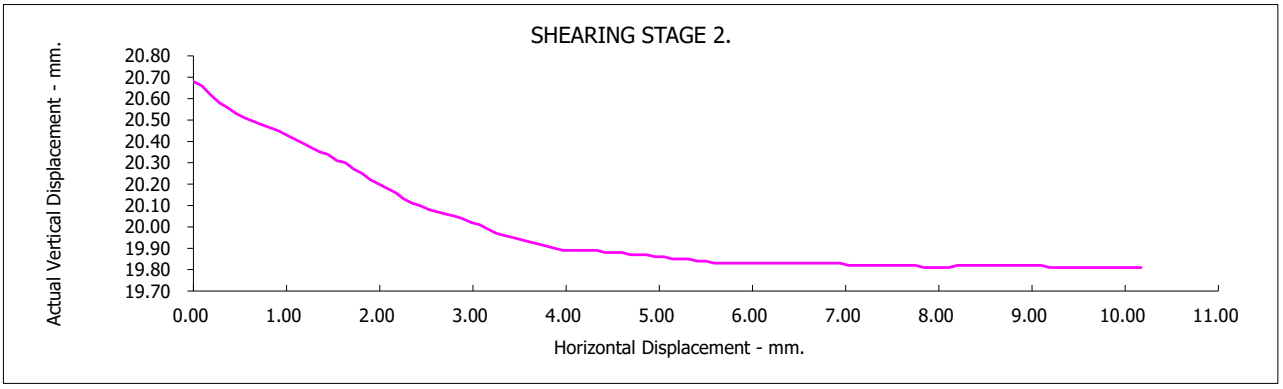
Contract No.: **66839**

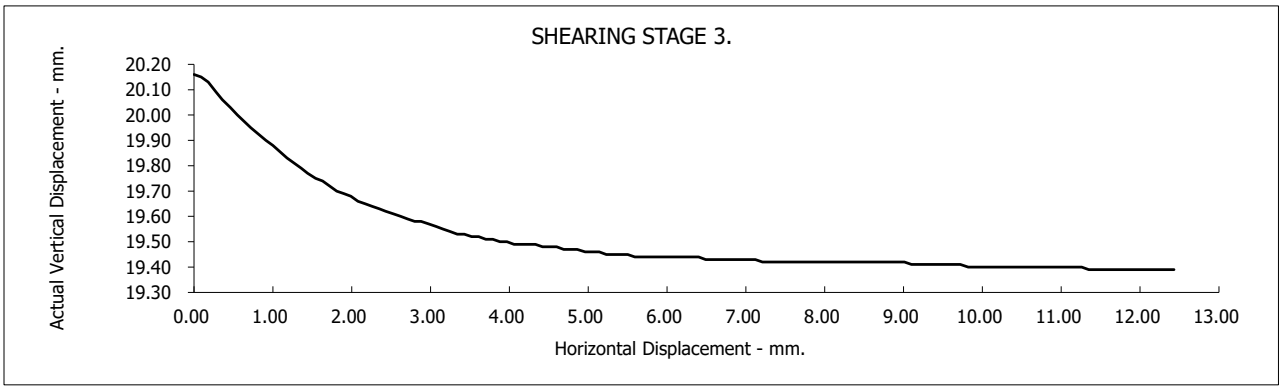
Client Ref Number: **G23012**

Figure.

Borehole Number:	S2-BH232	Depth from (m):	2.00
Sample Number :	102	Depth to (m):	2.80





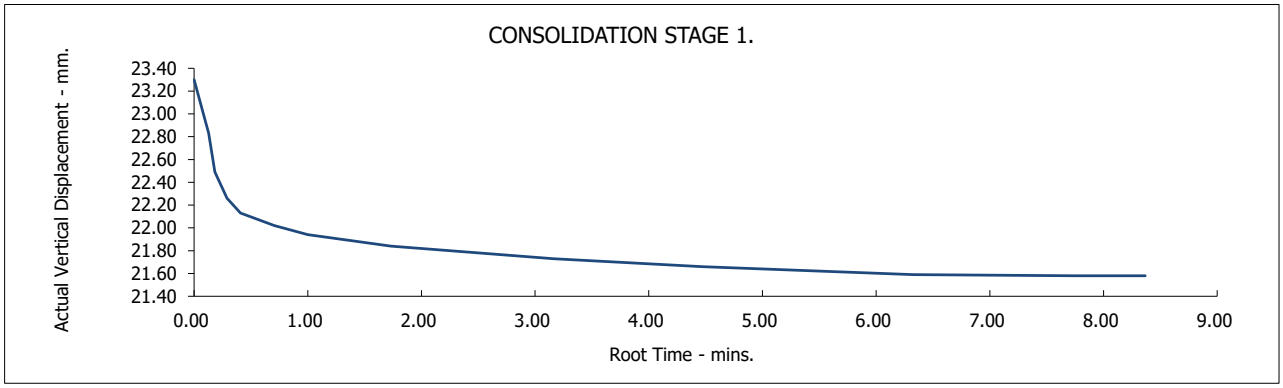


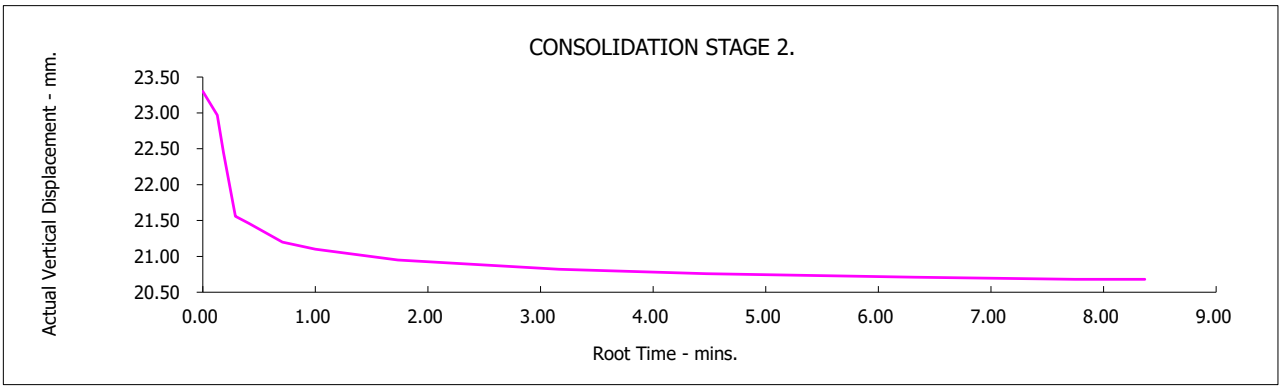
Contract No.:
66839

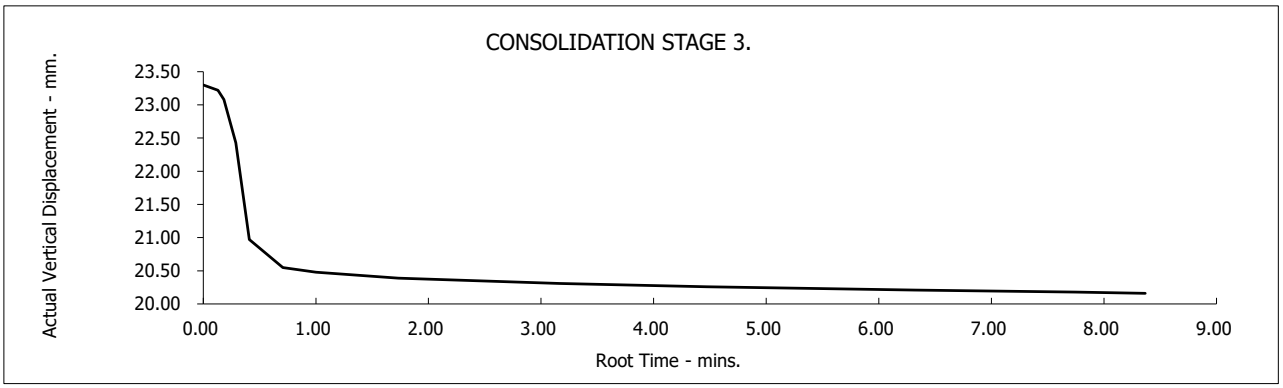
Global Centre of Rail Eaxcellence Stage 2 (26)

Client Ref Number:
G23012

Borehole Number:	S2-BH232	Depth from (m):	2.00
Sample Number :	102	Depth to (m):	2.80







UKAS TESTING 2788

Global Centre of Rail Eaxcellence Stage 2 (26)

Contract No.: **66839**

Client Ref Number: **G23012**

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**Point Load Test** **The complete ISRM suggested methods for rock characterization, testing and monitoring 1974-2006 Determining Point Load Strength**	
Contract Number	66839	
Project Name	Global Centre of Rail Excellence Stage 2 (26)	
Sample Type	Core	
Date Tested	12/06/2023	
	*Please note that GSTL is not accredited for the water content of rock	

Hole Reference	Depth (m)			Sample No	Test Type		Width	Platen Seperation	Failure Load	Equivalent Diameter	Point Load	Size Factor	Point Load Index	Moisture Content	Description	Angle Between Plane of Anisotropy & Core Axis	Type of Anisotropy (Bedding or Cleavage)
					d / a / b / i	I //											
S1-BH119	10.80	-	10.94	110	a		85	77	2.59	91.29	0.31	1.31	0.41	1.1	SILTSTONE		
S1-BH119	12.15	-	12.32	111	a		86	68	10.81	86.29	1.45	1.28	1.86	1.4	SILTSTONE		
S1-BH119	13.85	-	13.96	112	d			86	1.10		0.15	1.28	0.19	1.3	SILTSTONE		
S2-BH232	11.10	-	11.38	110	a		86	62	11.79	82.39	1.74	1.25	2.17	1.5	SILTSTONE		
S2-BH232	14.40	-	14.59	111	a		86	59	3.87	80.38	0.60	1.24	0.74	1.6	SILTSTONE		
S2-BH232	15.00	-	15.10	112	a		86	61	3.15	81.73	0.47	1.25	0.59	2.8	SILTSTONE		

Key	Reported As
Width	(W) mm
Platen Separation	(D) mm
Failure Load	(P) kN
Equivalent Diameter	(De) mm
Point Load	(Is) MPa
Size Factor	(F)
Point Load Index	(Is(50)) MPa
Moisture Content	%
Description	SC

Operator
Julian Jones

UKAS TESTING
2788

Laboratory Report

UKAS TESTING 2788

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES A PHENNA GROUP COMPANY

Contract Number: 67002

Client Ref: **G23012**
Client PO:

Date Received: **20-06-2023**
Date Completed: **06-07-2023**
Report Date: **06-07-2023**

Client: **Jackson Drilling Holdings Ltd**
Northwood Farm
Coxbridge Road
Baltonsborough
Somerset
BA6 8RA

This report has been checked and approved by:

B. Evans

Brendan Evans
Office Administrator

Contract Title: **Global Centre of Rail Excellence Stage 2 (27)**
For the attention of: **Adam Putt**

Test Description	Qty
Moisture Content of Soil BS1377 : Part 2 : Clause 3.2 : 1990 - * UKAS	26
4 Point Liquid & Plastic Limit BS 1377:1990 - Part 2 : 4.3 & 5.3 - * UKAS	14
PSD Wet & Dry Sieve method BS 1377:1990 - Part 2 : 9.2 - * UKAS	14
PSD: Sedimentation by pipette carried out with Wet Sieve (Wet Sieve must also be selected) BS 1377:1990 - Part 2 : 9.4 - * UKAS	10
Dry Den/MC (4.5kg Rammer Method 1 Litre Mould/CBR Mould) BS 1377:1990 - Part 4 : 3.5 - * UKAS	6
Consolidated Drained Peak Shear Strength - set of 3 - 60 x 60mm Shear Box Specimens by Direct Shearing (3 days) BS 1377:1990 - Part 7 : 4 - * UKAS	4
Determination of Point Load Value Axial or Diametrical including WC ***Please note GSTL is not accredited for the water content of rock*** ISRM Suggested Method for Point Load Strength - * UKAS	4

Notes: **Observations and Interpretations are outside the UKAS Accreditation**
*** - denotes test included in laboratory scope of accreditation**
- denotes test carried out by approved contractor
@ - denotes non accredited tests

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 test report/certificate shall not be reproduced except in full, without the approval of GEO Site & Testing Services Ltd. Any opinions or interpretations stated - within this report/certificate are excluded from the laboratories UKAS accreditation.

Approved Signatories:
Brendan Evans (Office Administrator) - Darren Bourne (Quality Senior Technician) - Paul Evans (Director)
Richard John (Quality/Technical Manager) - Shaun Jones (Laboratory manager) - Shaun Thomas (Site Manager)
Wayne Honey (Human Resources/ Health and Safety Manager)

GEO Site & Testing Services Ltd
Units 3-4, Heol Aur, Dafen, Llanelli, Carmarthenshire, Wales SA14 8QN
Tel: 01554 784040 Fax: 01554 784041 info@gstl.co.uk gstl.co.uk

Contract Number: 67002

Test Description	Qty
Uniaxial Compressive Strength of Rock inc sample prep 54-165mm diameter cores ISRM Suggested Method for determining uniaxial compressive strength - @ Non Accredited Test	3
Disposal of samples for job	1

Notes: **Observations and Interpretations are outside the UKAS Accreditation**
*** - denotes test included in laboratory scope of accreditation**
- denotes test carried out by approved contractor
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GEO Site & Testing Services Ltd
Units 3-4, Heol Aur, Dafen, Llanelli, Carmarthenshire, Wales SA14 8QN
Tel: 01554 784040 Fax: 01554 784041 info@gstl.co.uk gstl.co.uk

GSTL
GEOTECHNICAL SITE & TESTING LABORATORIES

Natural Moisture Content
(BS 1377:1990 - Part 2 : 3.2)

Contract Number	67002
Project Name	Global Centre of Rail Excellence Stage 2 (27)
Date Tested	29/06/2023

Sample/Hole Reference	Sample Number	Sample Type	Depth (m)			Moisture Content %	Remarks
S1-BH118	3	D	1.90	-	2.00	3.8	
S1-BH118	103	B	2.30	-	3.00	9.2	
S2-BH221	101	ES	2.00	-	2.10	1.6	
S2-BH221	105	D	3.50	-	3.60	3.6	
S2-BH221	109	B	4.50	-	6.00	2.3	
S2-BH221	114	B	8.00	-	9.40	6.6	
S2-BH222	105	D	3.00	-	3.10	9.6	
S2-BH222	117	B	9.00	-	10.10	7.4	
S2-BH222	118	D	10.50	-	10.60	12	
S2-BH222	125	D	12.70	-	12.80	8.9	
S2-BH222	127	B	16.75	-	18.00	7.0	
S2-BH226	2	D	0.30	-	0.40	16	

Operator
Darcy Etheridge

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GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	NATURAL MOISTURE, LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377:1990 - Part 2 : 4.3 & 5.3)	
Contract Number	67002	
Project Name	Global Centre of Rail Excellence Stage 2 (27)	
Date Tested	28/06/2023	
	DESCRIPTIONS	

Sample/Hole Reference	Sample Number	Sample Type	Depth (m)			Descriptions
S1-BH118	1	UT	1.40	-	1.80	Brown sandy fine to medium gravelly silty CLAY
S1-BH118	101	D	2.00	-	2.10	Brown sandy fine to medium gravelly silty CLAY
S1-BH118	104	D	3.00	-	3.10	Brown sandy fine to medium gravelly silty CLAY
S2-BH221	2	D	0.40	-	0.50	Brown sandy fine to medium gravelly silty CLAY
S2-BH221	6	D	0.90	-	1.00	Grey sandy fine to medium gravelly silty CLAY
S2-BH221	102	D	2.40	-	2.50	Grey sandy fine to medium gravelly silty CLAY
S2-BH222	101	D	1.40	-	1.50	Grey fine to medium gravelly silty CLAY
S2-BH222	107	D	4.00	-	4.10	Grey sandy fine to medium gravelly silty CLAY
S2-BH222	111	D	6.60	-	6.70	Grey sandy fine to medium gravelly silty CLAY
S2-BH222	115	D	9.10	-	9.20	Grey sandy fine to coarse gravelly silty CLAY
S2-BH222	124	D	12.20	-	12.30	Grey sandy fine to medium gravelly silty CLAY
S2-BH222	126	D	15.60	-	15.70	Grey sandy fine to coarse gravelly silty CLAY
S2-BH226	103	D	2.60	-	2.70	Grey sandy fine to medium gravelly silty CLAY
S2-BH226	111	D	9.40	-	9.50	Grey sandy fine to medium gravelly silty CLAY
				-		
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				-		

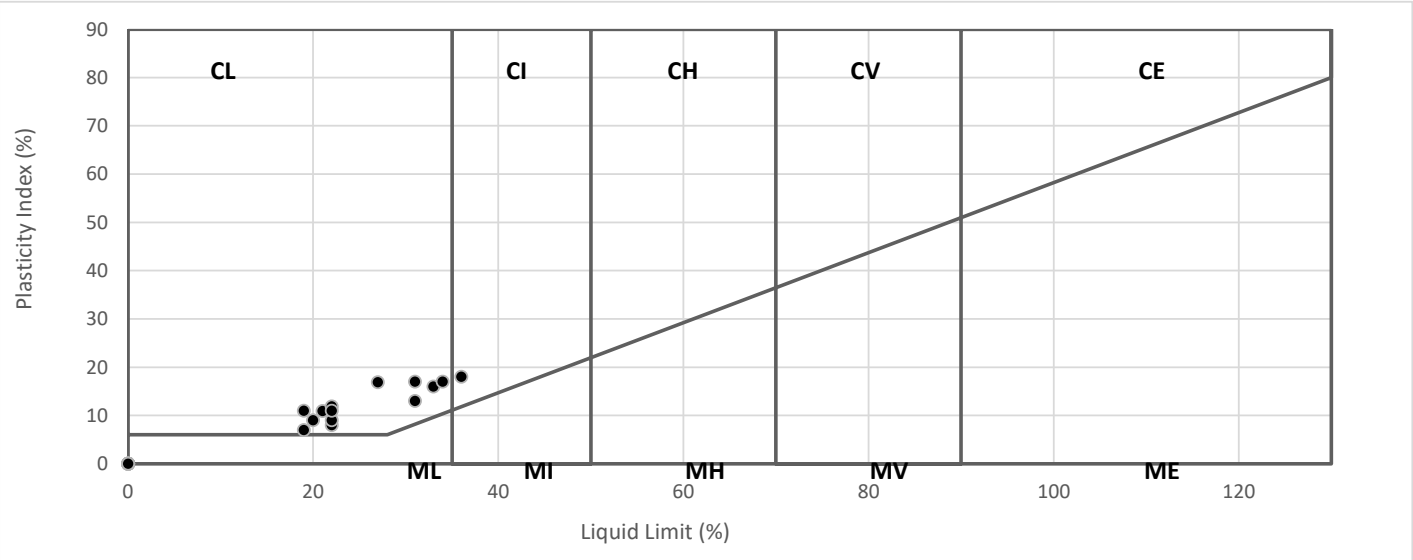
Operator
Aaron Hodge

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	NATURAL MOISTURE, LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377:1990 - Part 2 : 4.3 & 5.3)	
Contract Number	67002	
Project Name	Global Centre of Rail Excellence Stage 2 (27)	
Date Tested	28/06/2023	

Sample/Hole Reference	Sample Number	Sample Type	Depth (m)			Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity index %	Passing 0.425mm %	Remarks
S1-BH118	1	UT	1.40	-	1.80	12	33	17	16	90	CL Low Plasticity
S1-BH118	101	D	2.00	-	2.10	9.6	22	14	8	90	CL Low Plasticity
S1-BH118	104	D	3.00	-	3.10	14	31	18	13	98	CL Low Plasticity
S2-BH221	2	D	0.40	-	0.50	14	31	14	17	90	CL Low Plasticity
S2-BH221	6	D	0.90	-	1.00	16	34	17	17	91	CL Low Plasticity
S2-BH221	102	D	2.40	-	2.50	6.0	22	13	9	98	CL Low Plasticity
S2-BH222	101	D	1.40	-	1.50	17	36	18	18	92	CI Intermediate Plasticity
S2-BH222	107	D	4.00	-	4.10	7.7	19	8	11	92	CL Low Plasticity
S2-BH222	111	D	6.60	-	6.70	8.0	27	10	17	91	CL Low Plasticity
S2-BH222	115	D	9.10	-	9.20	8.7	21	10	11	60	CL Low Plasticity
S2-BH222	124	D	12.20	-	12.30	7.1	22	10	12	50	CL Low Plasticity
S2-BH222	126	D	15.60	-	15.70	7.5	19	12	7	52	CL Low Plasticity
S2-BH226	103	D	2.60	-	2.70	6.1	20	11	9	85	CL Low Plasticity
S2-BH226	111	D	9.40	-	9.50	5.8	22	11	11	60	CL Low Plasticity
				-							
				-							
				-							
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Symbols: NP : Non Plastic # : Liquid Limit and Plastic Limit Wet Sieved

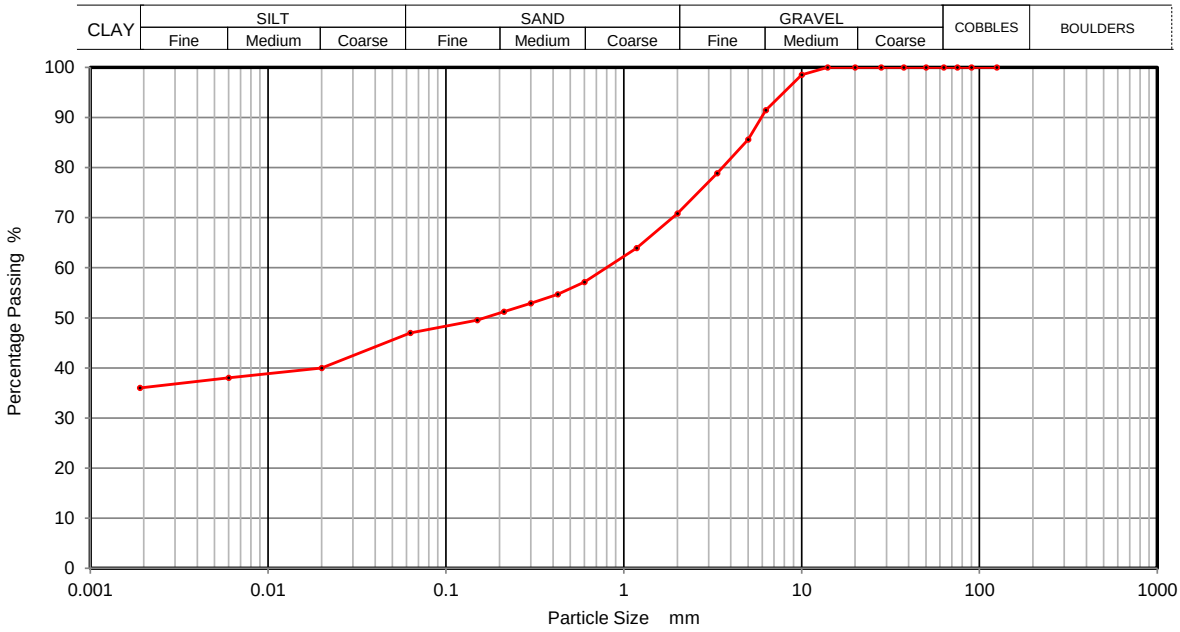
PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION
BS 5930:2015+A1:2020



Operator
Aaron Hodge

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GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4**	Contract Number	67002
		Borehole/Pit No.	S1-BH118
Project Name	Global Centre Of Rail Excellence Stage II (27)	Sample No.	3
Soil Description	Brown/Grey slightly silty fine to coarse sandy fine to medium gravelly CLAY	Depth Top	1.90
		Depth Base	2.00
Date Tested	29/06/2023	Sample Type	D



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	40
90	100	0.0060	38
75	100	0.0020	36
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	99		
6.3	91		
5	86		
3.35	79		
2	71		
1.18	64		
0.6	57		
0.425	55		
0.3	53		
0.212	51		
0.15	50		
0.063	47		

Sample Proportions	% dry mass
Cobbles	0
Gravel	29
Sand	24
Silt	11
Clay	36

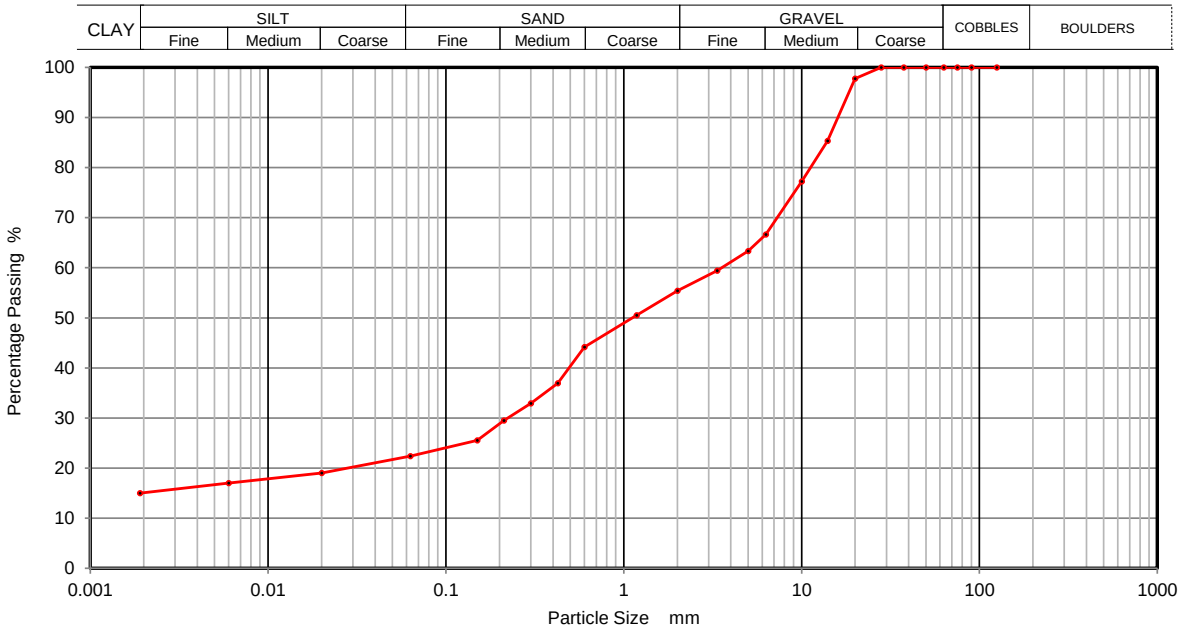
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator
David Edwards

UKAS TESTING 2788

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4**	Contract Number	67002
		Borehole/Pit No.	S1-BH118
Project Name	Global Centre Of Rail Excellence Stage II (27)	Sample No.	103
Soil Description	Brown slightly silty clayey fine to coarse sandy fine to coarse GRAVEL	Depth Top	2.30
		Depth Base	3.00
Date Tested	29/06/2023	Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	19
90	100	0.0060	17
75	100	0.0020	15
63	100		
50	100		
37.5	100		
28	100		
20	98		
14	85		
10	77		
6.3	67		
5	63		
3.35	59		
2	55		
1.18	51		
0.6	44		
0.425	37		
0.3	33		
0.212	29		
0.15	26		
0.063	22		

Sample Proportions	% dry mass
Cobbles	0
Gravel	45
Sand	33
Silt	7
Clay	15

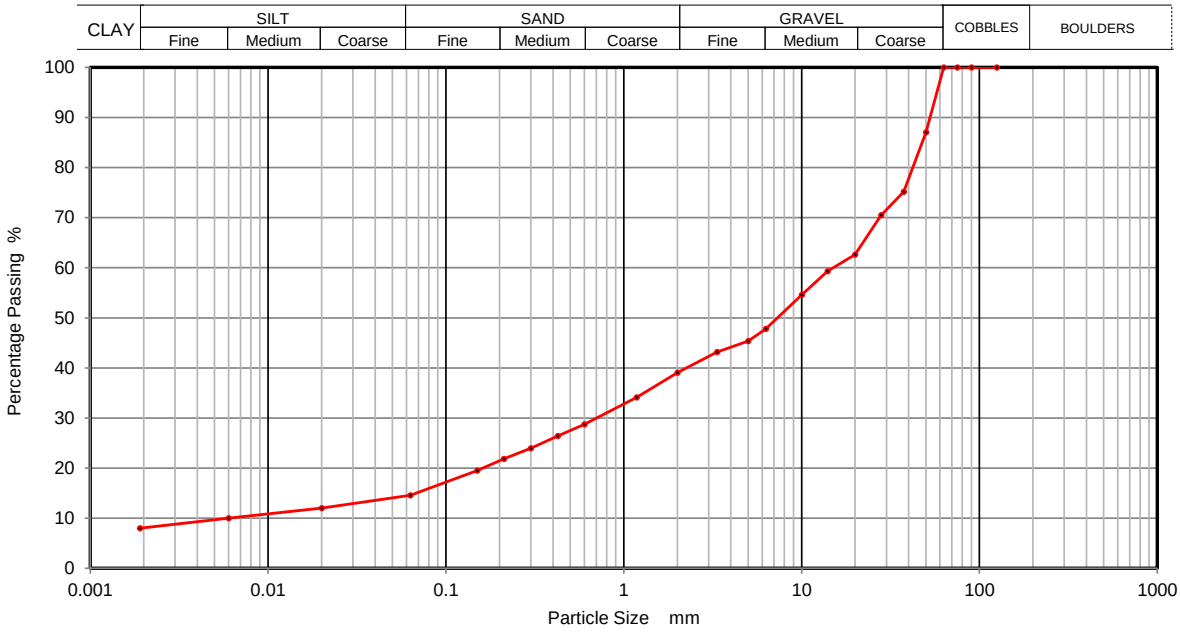
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator
David Edwards

UKAS TESTING 2788

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4**	Contract Number	67002
		Borehole/Pit No.	S2-BH221
Project Name	Global Centre Of Rail Excellence Stage II (27)	Sample No.	114
Soil Description	Grey silty clayey fine to coarse sandy fine to coarse GRAVEL	Depth Top	8.00
		Depth Base	9.40
Date Tested	29/06/2023	Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	12
90	100	0.0060	10
75	100	0.0020	8
63	100		
50	87		
37.5	75		
28	70		
20	63		
14	59		
10	55		
6.3	48		
5	45		
3.35	43		
2	39		
1.18	34		
0.6	29		
0.425	26		
0.3	24		
0.212	22		
0.15	20		
0.063	15		

Sample Proportions	% dry mass
Cobbles	0
Gravel	61
Sand	24
Silt	7
Clay	8

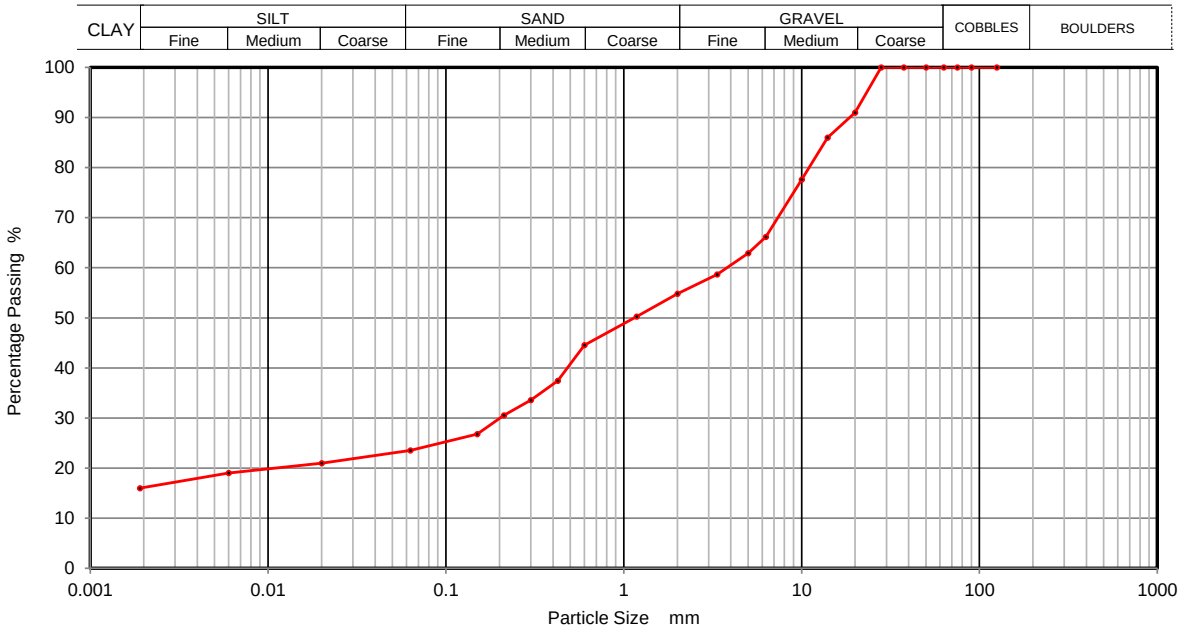
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator
David Edwards

UKAS TESTING 2788

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**PARTICLE SIZE DISTRIBUTION** **BS 1377 Part 2:1990** **Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4**	Contract Number	67002
		Borehole/Pit No.	S2-BH221
Project Name	Global Centre Of Rail Excellence Stage II (27)	Sample No.	101
Soil Description	Grey slightly silty clay fine to coarse sandy fine to coarse GRAVEL	Depth Top	2.00
		Depth Base	2.10
Date Tested	29/06/2023	Sample Type	ES



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	21
90	100	0.0060	19
75	100	0.0020	16
63	100		
50	100		
37.5	100		
28	100		
20	91		
14	86		
10	78		
6.3	66		
5	63		
3.35	59		
2	55		
1.18	50		
0.6	45		
0.425	37		
0.3	34		
0.212	31		
0.15	27		
0.063	24		

Sample Proportions	% dry mass
Cobbles	0
Gravel	45
Sand	31
Silt	8
Clay	16

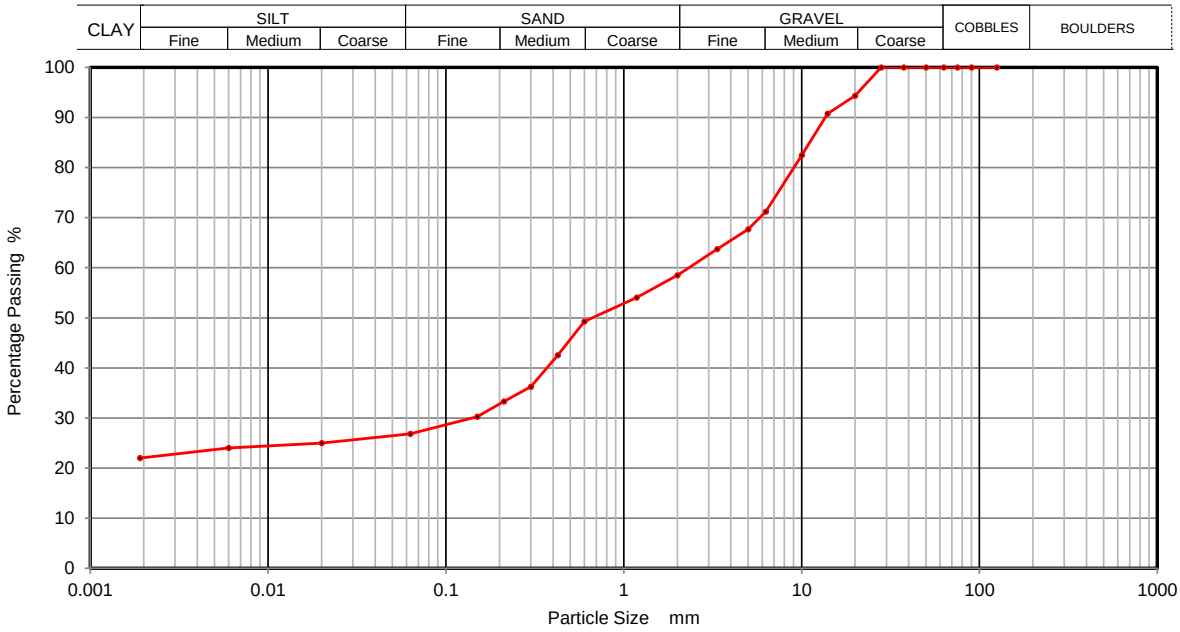
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator
David Edwards

UKAS TESTING
2788

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**PARTICLE SIZE DISTRIBUTION** **BS 1377 Part 2:1990** **Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4**	Contract Number	67002
		Borehole/Pit No.	S2-BH221
Project Name	Global Centre Of Rail Excellence Stage II (27)	Sample No.	105
Soil Description	Grey slightly silty clay fine to coarse sandy fine to coarse GRAVEL	Depth Top	3.50
		Depth Base	3.60
Date Tested	29/06/2023	Sample Type	D



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	25
90	100	0.0060	24
75	100	0.0020	22
63	100		
50	100		
37.5	100		
28	100		
20	94		
14	91		
10	82		
6.3	71		
5	68		
3.35	64		
2	58		
1.18	54		
0.6	49		
0.425	43		
0.3	36		
0.212	33		
0.15	30		
0.063	27		

Sample Proportions	% dry mass
Cobbles	0
Gravel	42
Sand	31
Silt	5
Clay	22

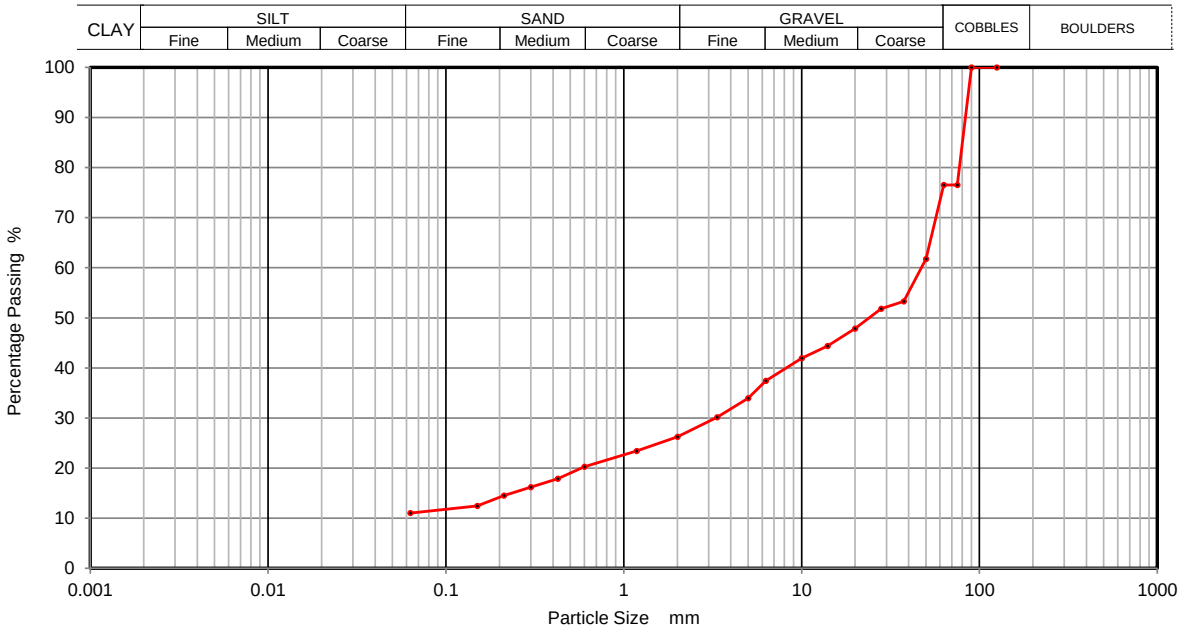
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator
David Edwards

UKAS TESTING
2788

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2**	Contract Number	67002
		Borehole/Pit No.	S2-BH221
Project Name	Global Centre Of Rail Excellence Stage II (27)	Sample No.	109
Soil Description	Grey silty/clay fine to coarse sandy fine to coarse GRAVEL with cobbles	Depth Top	4.50
		Depth Base	6.00
Date Tested	29/06/2023	Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	77		
63	77		
50	62		
37.5	53		
28	52		
20	48		
14	44		
10	42		
6.3	37		
5	34		
3.35	30		
2	26		
1.18	23		
0.6	20		
0.425	18		
0.3	16		
0.212	14		
0.15	12		
0.063	11		

Sample Proportions	% dry mass
Cobbles	23
Gravel	51
Sand	15
Silt and Clay	11

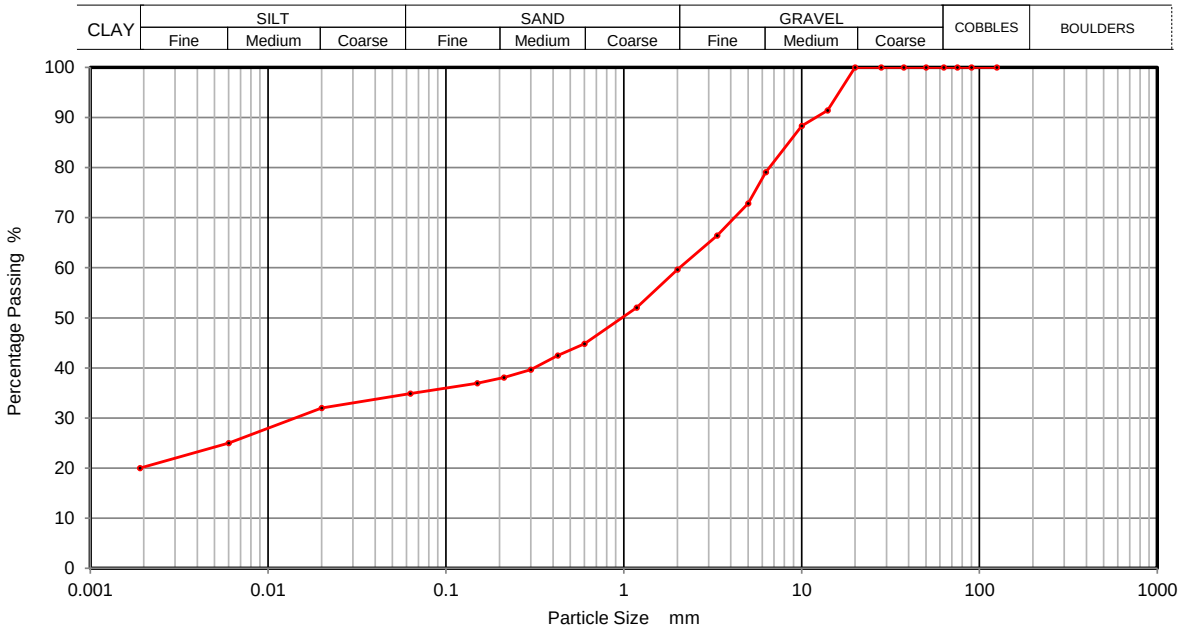
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator
David Edwards

UKAS TESTING 2788

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4**	Contract Number	67002
		Borehole/Pit No.	S2-BH222
Project Name	Global Centre Of Rail Excellence Stage II (27)	Sample No.	105
Soil Description	Grey fine to coarse sandy fine to medium gravelly silty CLAY	Depth Top	3.00
		Depth Base	3.10
Date Tested	29/06/2023	Sample Type	D



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	32
90	100	0.0060	25
75	100	0.0020	20
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	91		
10	88		
6.3	79		
5	73		
3.35	66		
2	60		
1.18	52		
0.6	45		
0.425	42		
0.3	40		
0.212	38		
0.15	37		
0.063	35		

Sample Proportions	% dry mass
Cobbles	0
Gravel	40
Sand	25
Silt	15
Clay	20

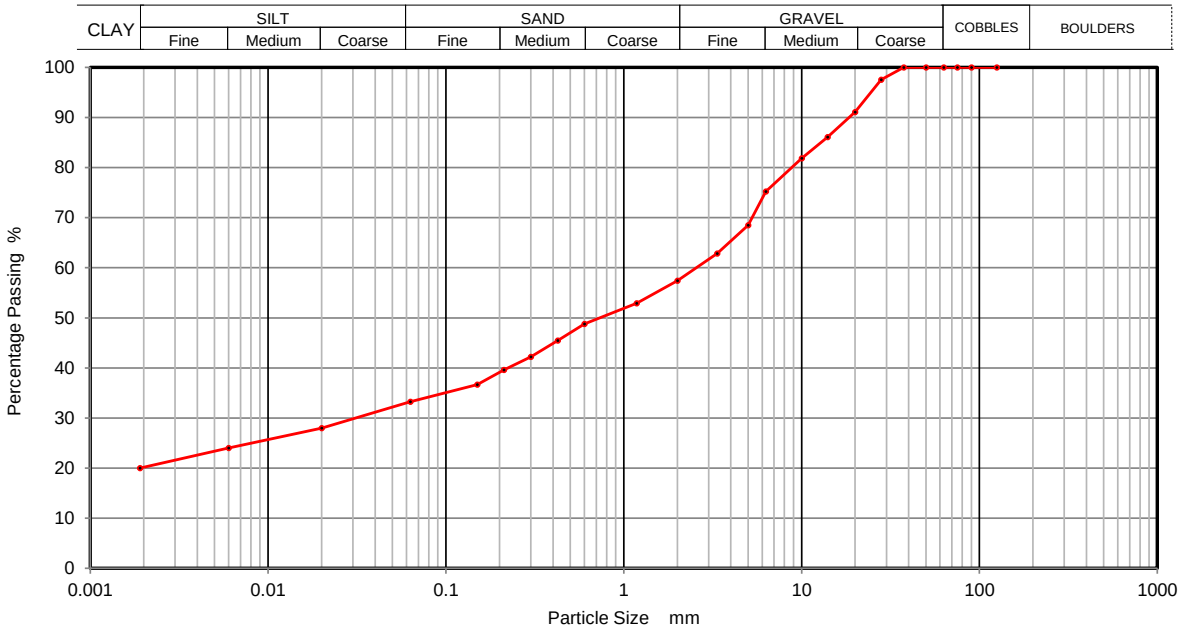
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator
David Edwards

UKAS TESTING 2788

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4**	Contract Number	67002
		Borehole/Pit No.	S2-BH222
Project Name	Global Centre Of Rail Excellence Stage II (27)	Sample No.	117
Soil Description	Grey silty clayey fine to coarse sandy fine to coarse GRAVEL	Depth Top	9.00
		Depth Base	10.10
Date Tested	29/06/2023	Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	28
90	100	0.0060	24
75	100	0.0020	20
63	100		
50	100		
37.5	100		
28	98		
20	91		
14	86		
10	82		
6.3	75		
5	69		
3.35	63		
2	57		
1.18	53		
0.6	49		
0.425	45		
0.3	42		
0.212	40		
0.15	37		
0.063	33		

Sample Proportions	% dry mass
Cobbles	0
Gravel	43
Sand	24
Silt	13
Clay	20

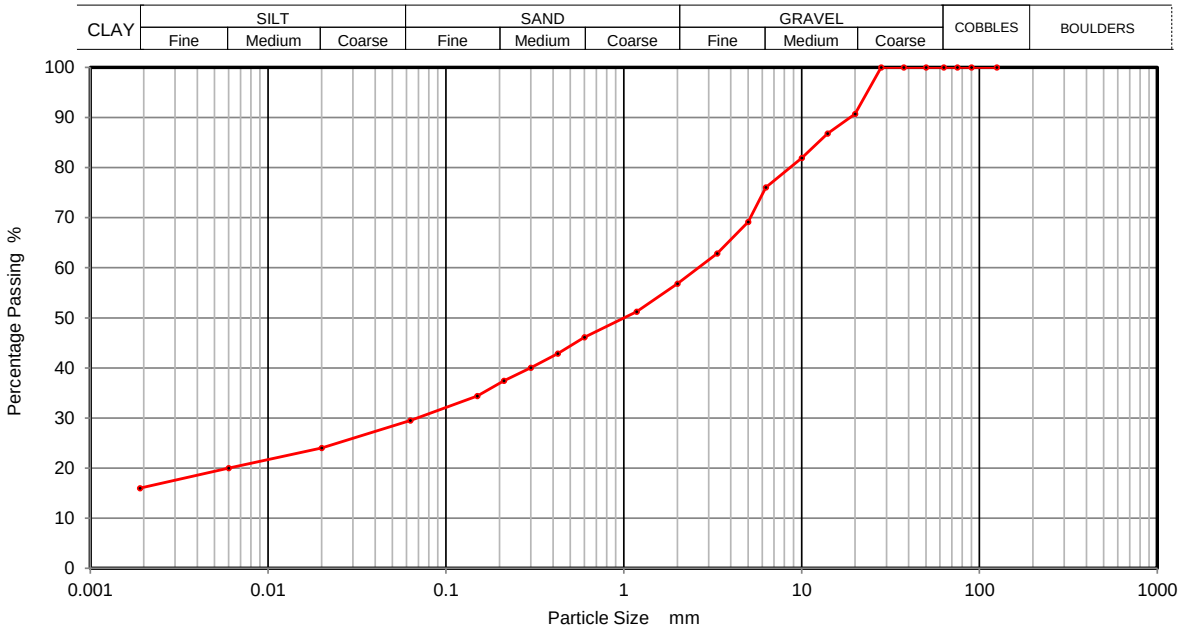
Remarks

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Operator
David Edwards

UKAS TESTING 2788

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4**	Contract Number	67002
		Borehole/Pit No.	S2-BH222
Project Name	Global Centre Of Rail Excellence Stage II (27)	Sample No.	118
Soil Description	Grey brown silty clayey fine to coarse sandy fine to coarse GRAVEL	Depth Top	10.50
		Depth Base	10.60
Date Tested	29/06/2023	Sample Type	D



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	24
90	100	0.0060	20
75	100	0.0020	16
63	100		
50	100		
37.5	100		
28	100		
20	91		
14	87		
10	82		
6.3	76		
5	69		
3.35	63		
2	57		
1.18	51		
0.6	46		
0.425	43		
0.3	40		
0.212	37		
0.15	34		
0.063	29		

Sample Proportions	% dry mass
Cobbles	0
Gravel	43
Sand	28
Silt	13
Clay	16

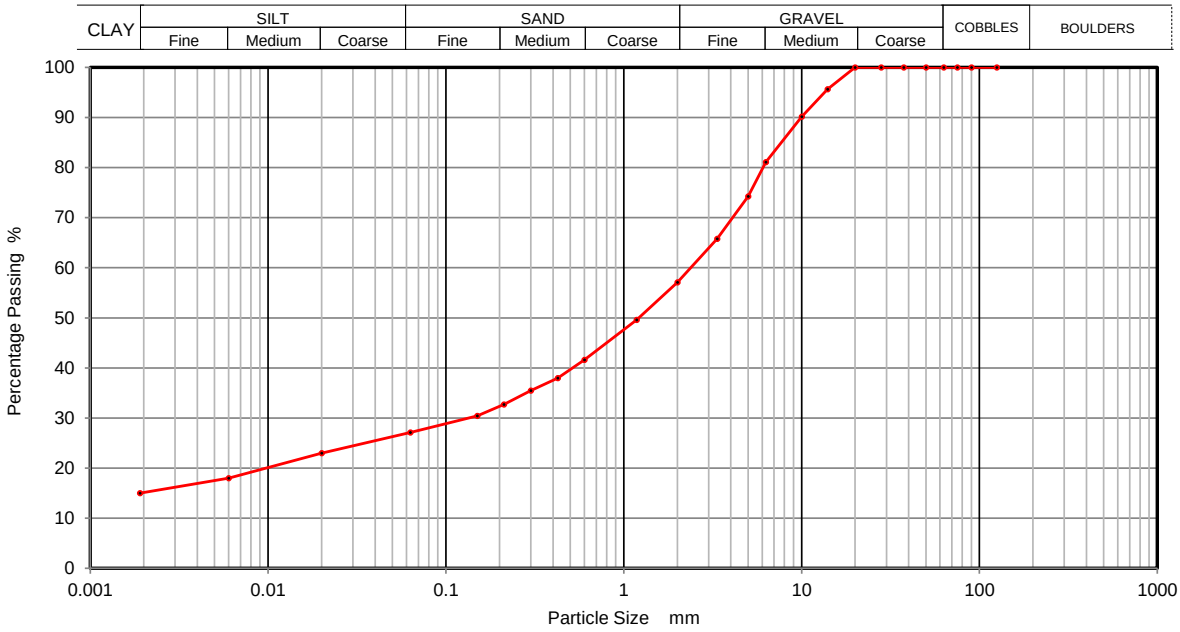
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator
David Edwards

UKAS TESTING 2788

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4**	Contract Number	67002
		Borehole/Pit No.	S2-BH222
Project Name	Global Centre Of Rail Excellence Stage II (27)	Sample No.	125
Soil Description	Grey silty clayey fine to coarse sandy fine to coarse GRAVEL	Depth Top	12.70
		Depth Base	12.80
Date Tested	29/06/2023	Sample Type	D



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	23
90	100	0.0060	18
75	100	0.0020	15
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	96		
10	90		
6.3	81		
5	74		
3.35	66		
2	57		
1.18	50		
0.6	42		
0.425	38		
0.3	35		
0.212	33		
0.15	30		
0.063	27		

Sample Proportions	% dry mass
Cobbles	0
Gravel	43
Sand	30
Silt	12
Clay	15

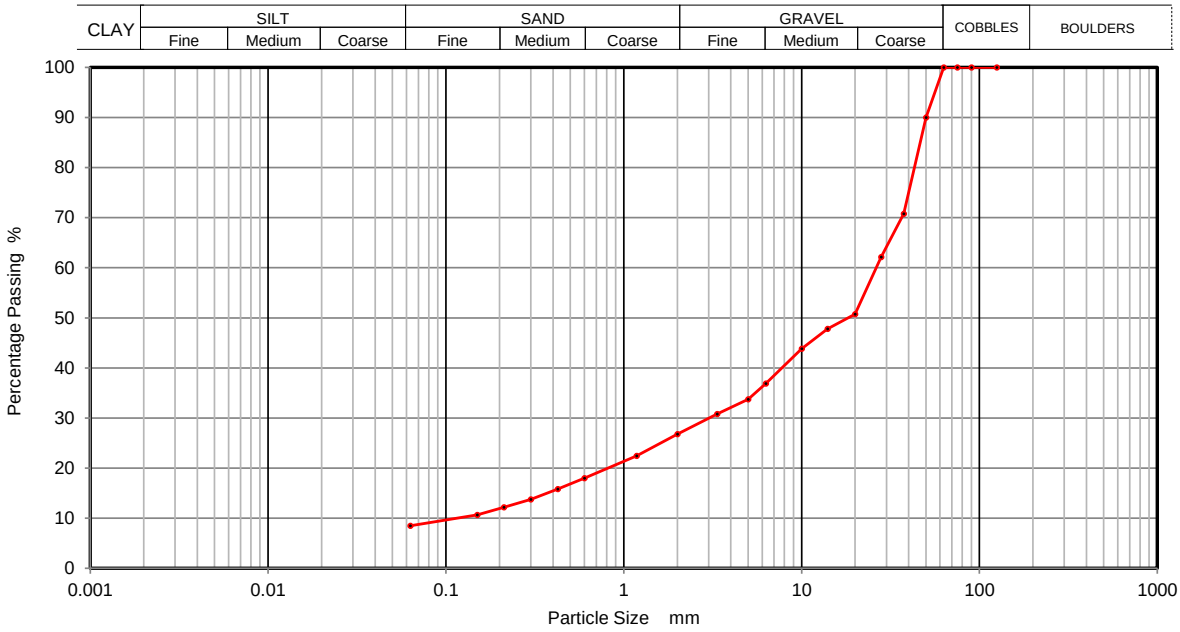
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator
David Edwards

UKAS TESTING 2788

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2**	Contract Number	67002
		Borehole/Pit No.	S2-BH222
Project Name	Global Centre Of Rail Excellence Stage II (27)	Sample No.	127
Soil Description	Grey clayey/silty fine to coarse sandy fine to coarse GRAVEL	Depth Top	16.75
		Depth Base	18.00
Date Tested	29/06/2023	Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	90		
37.5	71		
28	62		
20	51		
14	48		
10	44		
6.3	37		
5	34		
3.35	31		
2	27		
1.18	22		
0.6	18		
0.425	16		
0.3	14		
0.212	12		
0.15	11		
0.063	8		

Sample Proportions	% dry mass
Cobbles	0
Gravel	73
Sand	19
Silt and Clay	8

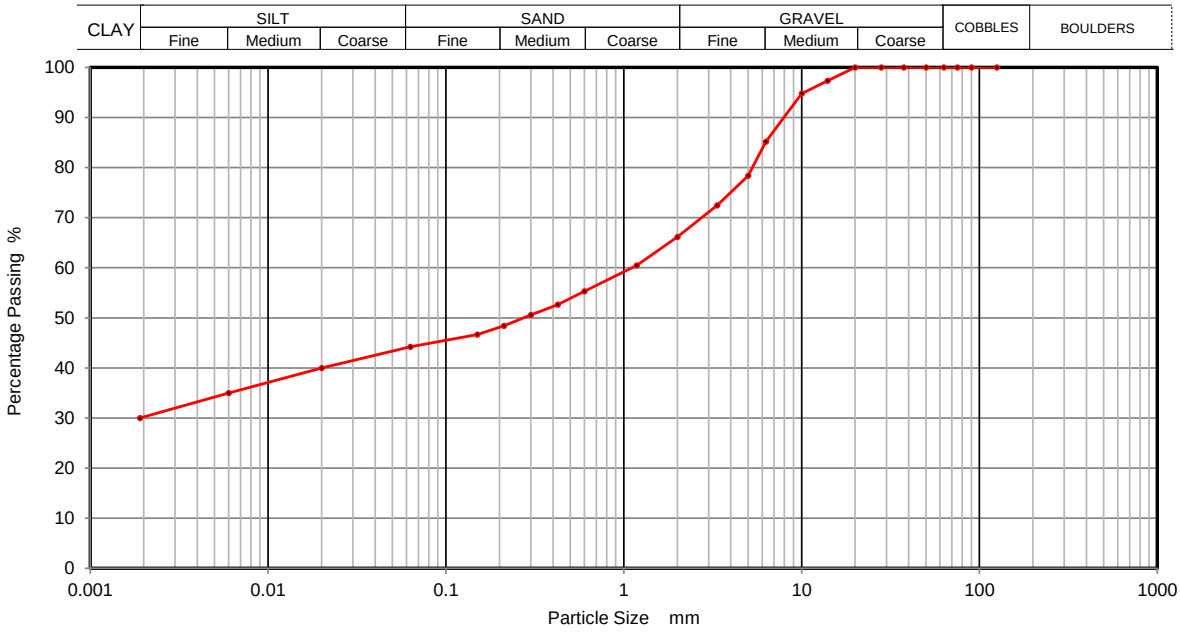
Remarks

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Operator
David Edwards

UKAS TESTING 2788

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4**	Contract Number	67002
		Borehole/Pit No.	S2-BH226
Project Name	Global Centre Of Rail Excellence Stage II (27)	Sample No.	2
Soil Description	Grey brown fine to coarse sandy fine to medium gravelly silty CLAY	Depth Top	0.30
		Depth Base	0.40
Date Tested	29/06/2023	Sample Type	D



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	40
90	100	0.0060	35
75	100	0.0020	30
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	97		
10	95		
6.3	85		
5	78		
3.35	72		
2	66		
1.18	60		
0.6	55		
0.425	53		
0.3	51		
0.212	48		
0.15	47		
0.063	44		

Sample Proportions	% dry mass
Cobbles	0
Gravel	34
Sand	22
Silt	14
Clay	30

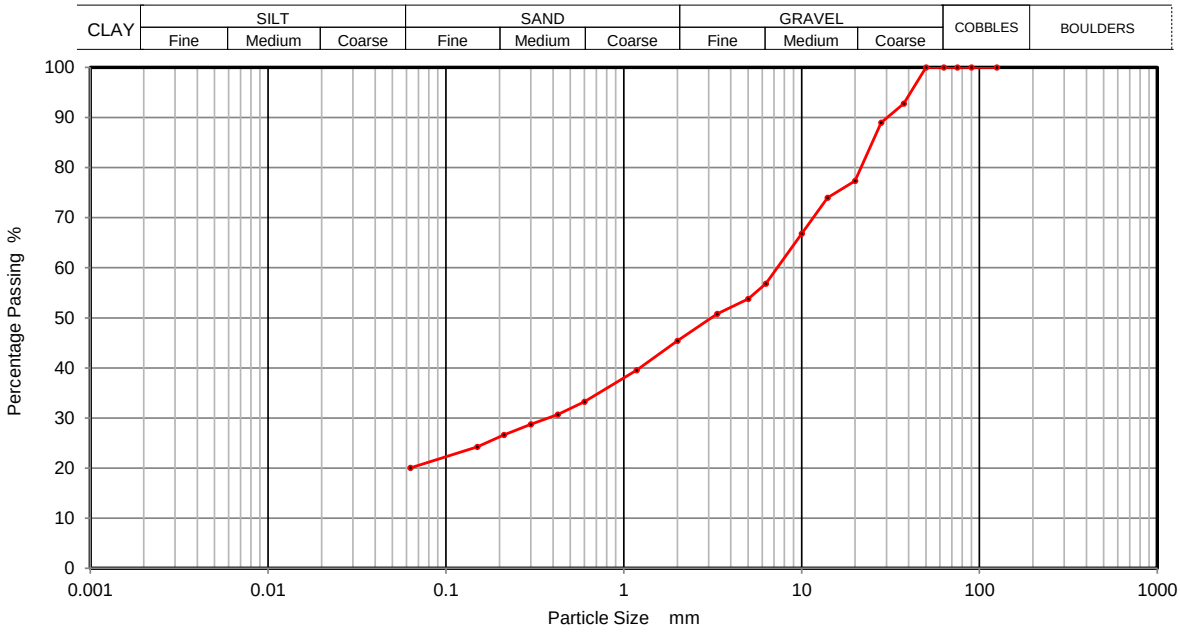
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator
David Edwards

UKAS TESTING 2788

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2**	Contract Number	67002
		Borehole/Pit No.	S2-BH226
Project Name	Global Centre Of Rail Excellence Stage II (27)	Sample No.	101
Soil Description	Grey silty/clayey fine to coarse sandy fine to coarse GRAVEL	Depth Top	1.20
		Depth Base	2.50
Date Tested	29/06/2023	Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	93		
28	89		
20	77		
14	74		
10	67		
6.3	57		
5	54		
3.35	51		
2	45		
1.18	40		
0.6	33		
0.425	31		
0.3	29		
0.212	27		
0.15	24		
0.063	20		

Sample Proportions	% dry mass
Cobbles	0
Gravel	55
Sand	25
Silt and Clay	20

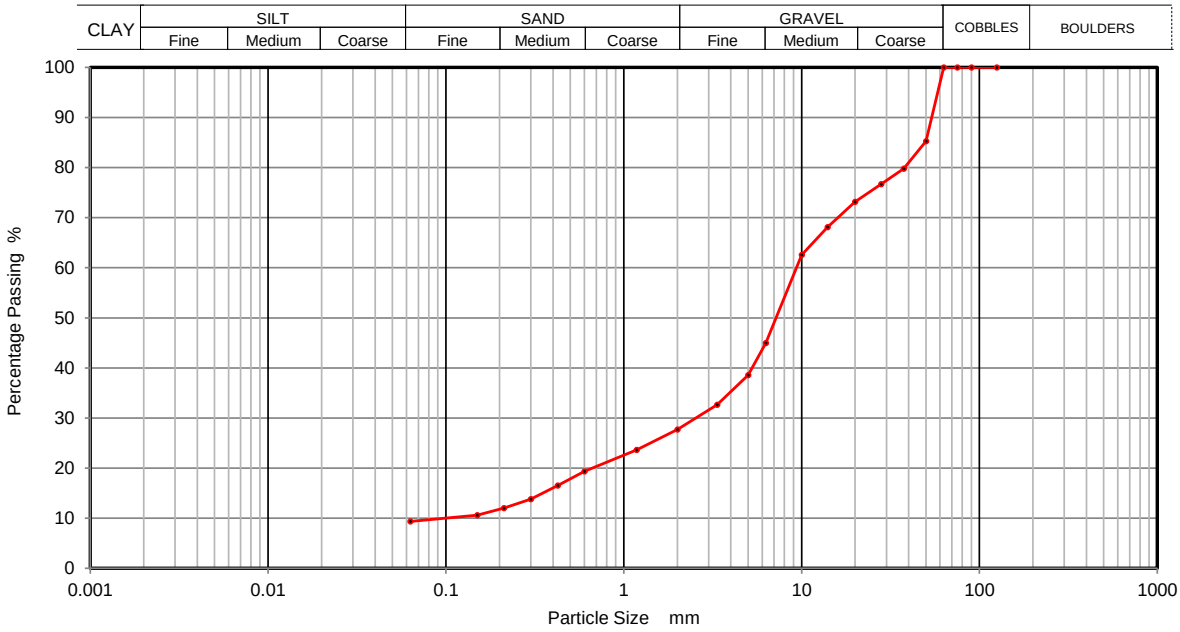
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator
David Edwards

UKAS TESTING 2788

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2**	Contract Number	67002
		Borehole/Pit No.	S2-BH226
Project Name	Global Centre Of Rail Excellence Stage II (27)	Sample No.	108
Soil Description	Grey clayey/silty fine to coarse sandy fine to coarse GRAVEL	Depth Top	6.00
		Depth Base	7.00
Date Tested	29/06/2023	Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	85		
37.5	80		
28	77		
20	73		
14	68		
10	63		
6.3	45		
5	39		
3.35	33		
2	28		
1.18	24		
0.6	19		
0.425	16		
0.3	14		
0.212	12		
0.15	11		
0.063	9		

Sample Proportions	% dry mass
Cobbles	0
Gravel	72
Sand	19
Silt and Clay	9

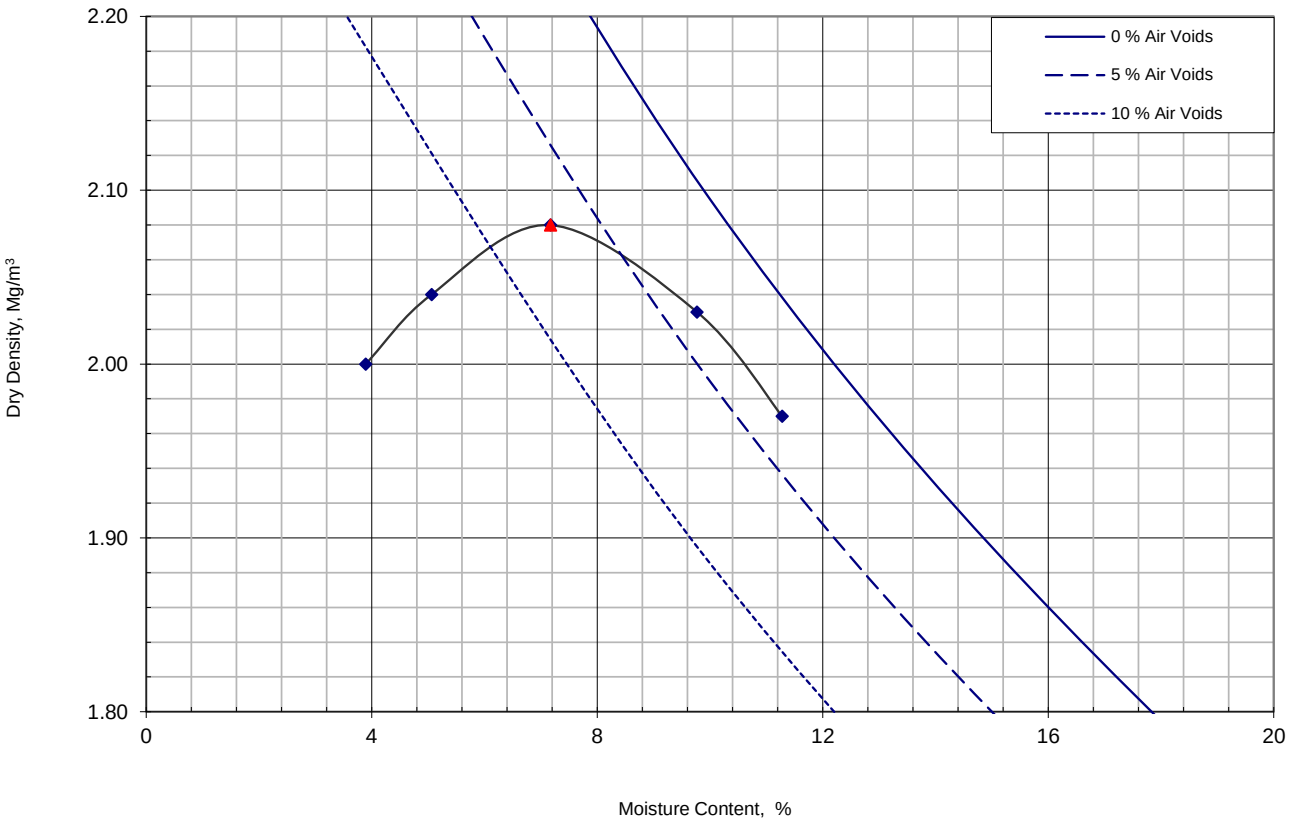
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator
David Edwards

UKAS TESTING 2788

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	Dry Density / Moisture Content Relationship BS 1377:Part 4:1990	Contract Number	67002
		Borehole / Pit No	S2-BH221
Project Name	Global Centre of Rail Excellence Stage 2 (27)	Sample No	106
Date Tested	30/06/2023	Depth Top	4.00
Compaction Method	4.5 Kg Rammer	Depth Base	4.36
Compaction Clause	BS1377:Part 4:1990, Clause 3.5	Sample Type	B
Sample Description	Brown silty clayey GRAVEL	Single or Separate Sample Used	Single



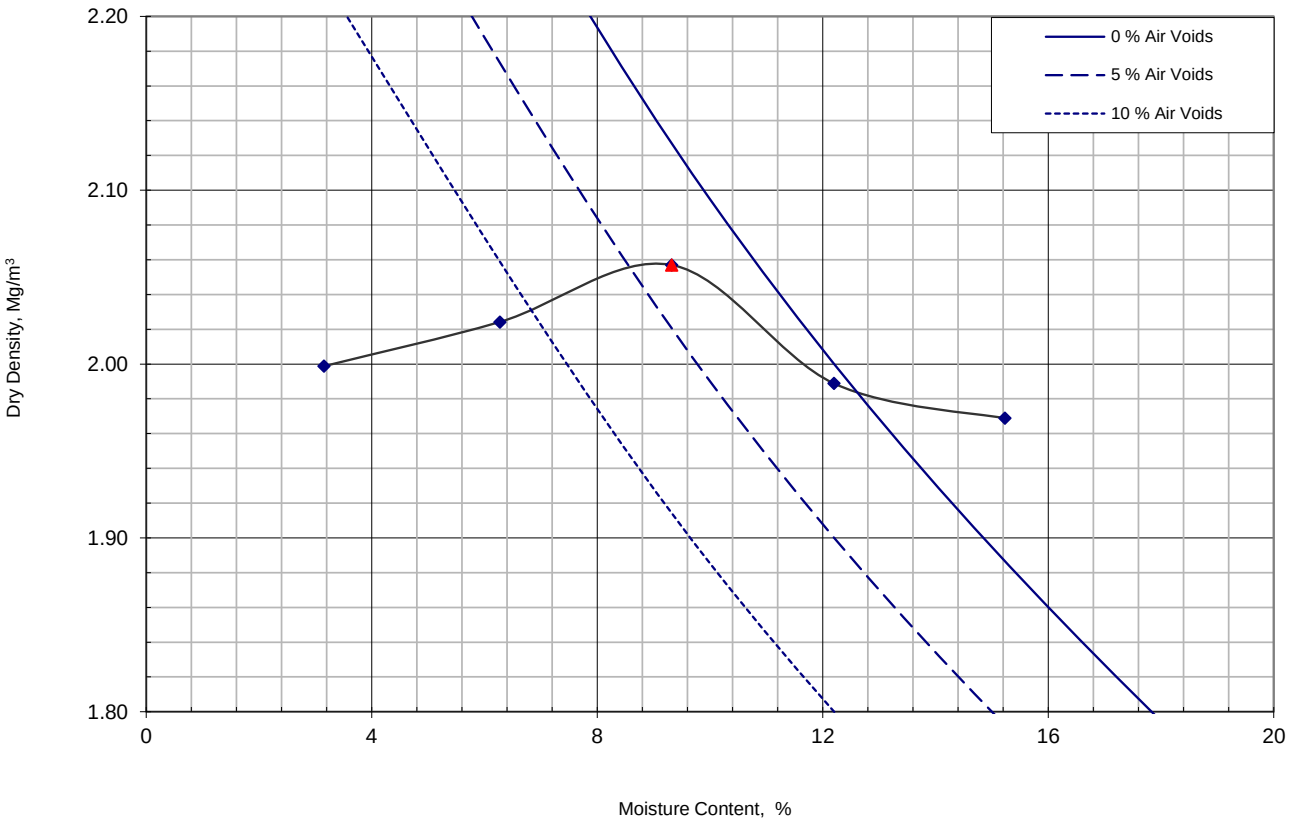
Compaction Point	1	2	3	4	5							
Moisture Content	3.9	5.1	7.2	9.8	11							
Bulk Density	2.08	2.14	2.23	2.23	2.19							
Dry Density	2.00	2.04	2.08	2.03	1.97							

Initial Moisture Content	9.8	%
Maximum Dry Density	2.08	Mg/m3
Optimum Moisture Content	7.2	%
Particle Density	2.65 Assumed	Mg/m3
Material Retained 37.5mm	18	%
Material Retained 20mm	25	%

Operator
Conal

UKAS TESTING
2788

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	Dry Density / Moisture Content Relationship BS 1377:Part 4:1990	Contract Number	67002
		Borehole / Pit No	S2-BH221
Project Name	Global Centre of Rail Excellence Stage 2 (27)	Sample No	111
Date Tested	30/06/2023	Depth Top	6.00
Compaction Method	4.5 Kg Rammer	Depth Base	8.00
Compaction Clause	BS1377:Part 4:1990, Clause 3.5	Sample Type	B
Sample Description	Grey silty clayey GRAVEL	Single or Separate Sample Used	Single



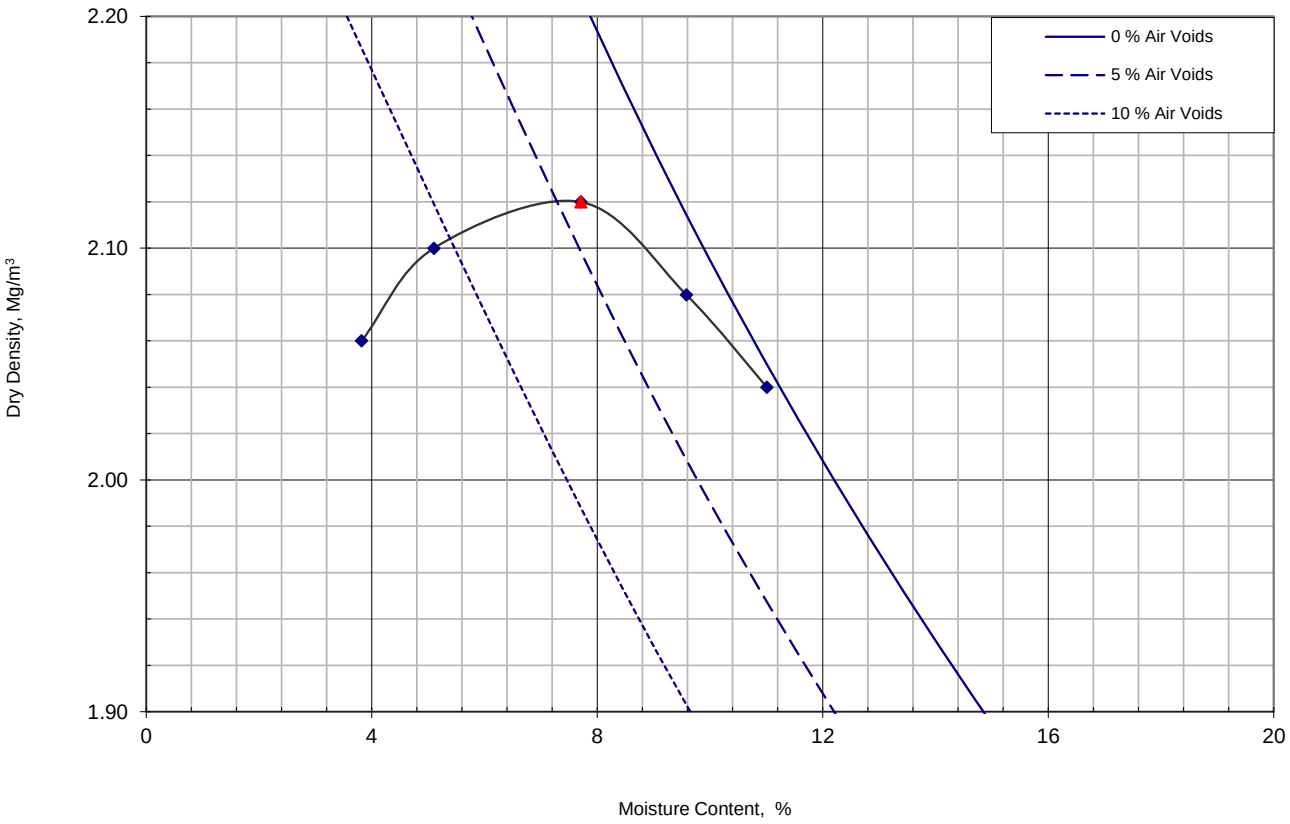
Compaction Point	1	2	3	4	5							
Moisture Content	3.2	6.3	9.3	12	15							
Bulk Density	2.06	2.15	2.25	2.23	2.27							
Dry Density	2.00	2.02	2.06	1.99	1.97							

Initial Moisture Content	6.3	%
Maximum Dry Density	2.06	Mg/m3
Optimum Moisture Content	9.3	%
Particle Density	2.65 Assumed	Mg/m3
Material Retained 37.5mm	0	%
Material Retained 20mm	0	%

Operator
Conal

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GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	Dry Density / Moisture Content Relationship BS 1377:Part 4:1990	Contract Number	67002
		Borehole / Pit No	S2-BH222
Project Name	Global Centre of Rail Excellence Stage 2 (27)	Sample No	108
Date Tested	30/06/2023	Depth Top	4.50
Compaction Method	4.5 Kg Rammer	Depth Base	6.00
Compaction Clause	BS1377:Part 4:1990, Clause 3.5	Sample Type	B
Sample Description	Grey silty GRAVEL	Single or Separate Sample Used	Single



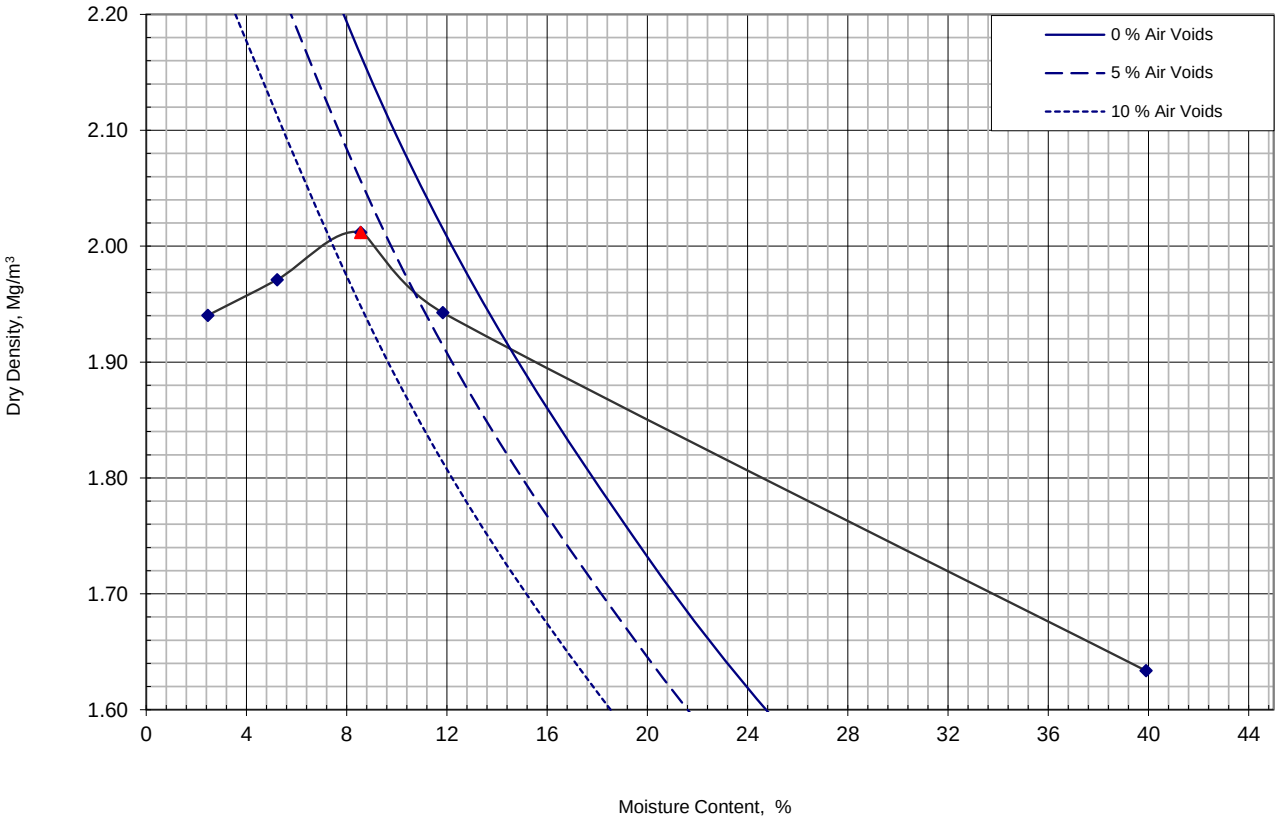
Compaction Point	1	2	3	4	5							
Moisture Content	3.8	5.1	7.7	9.6	11							
Bulk Density	2.14	2.21	2.28	2.28	2.26							
Dry Density	2.06	2.10	2.12	2.08	2.04							

Initial Moisture Content	3.8	%
Maximum Dry Density	2.12	Mg/m3
Optimum Moisture Content	7.7	%
Particle Density	2.65 Assumed	Mg/m3
Material Retained 37.5mm	20	%
Material Retained 20mm	24	%

Operator
Conal

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GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	Dry Density / Moisture Content Relationship BS 1377:Part 4:1990	Contract Number	67002
		Borehole / Pit No	S2-BH222
Project Name	Global Centre of Rail Excellence Stage 2 (27)	Sample No	120
Date Tested	30/06/2023	Depth Top	10.60
Compaction Method	4.5 Kg Rammer	Depth Base	11.50
Compaction Clause	BS1377:Part 4:1990, Clause 3.5	Sample Type	B
Sample Description	Grey silty gravelly CLAY	Single or Separate Sample Used	Single



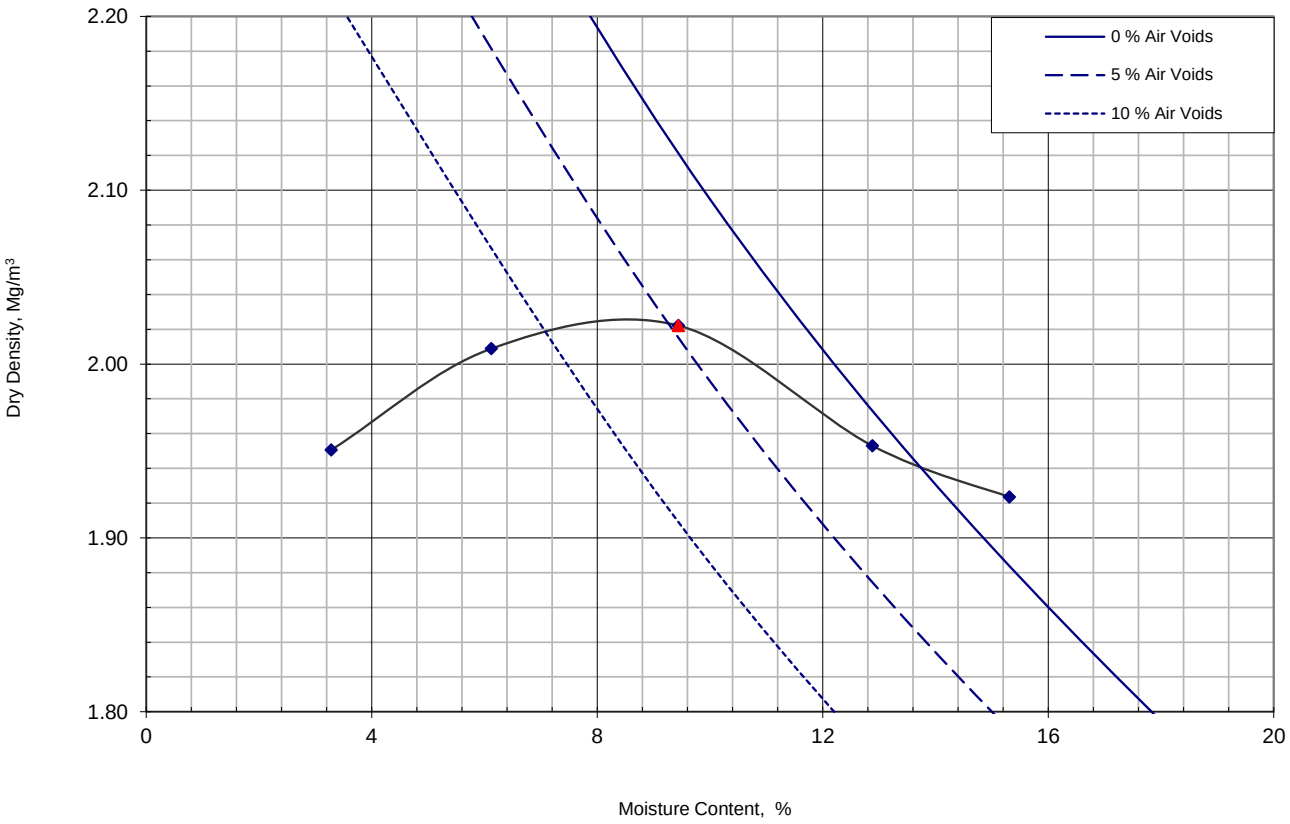
Compaction Point	1	2	3	4	5							
Moisture Content	2.5	5.2	8.6	12	40							
Bulk Density	1.99	2.07	2.18	2.17	2.29							
Dry Density	1.94	1.97	2.01	1.94	1.63							

Initial Moisture Content	40	%
Maximum Dry Density	2.01	Mg/m3
Optimum Moisture Content	8.6	%
Particle Density	2.65 Assumed	Mg/m3
Material Retained 37.5mm	9	%
Material Retained 20mm	14	%

Operator
Conal

UKAS TESTING
2788

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	Dry Density / Moisture Content Relationship BS 1377:Part 4:1990	Contract Number	67002
		Borehole / Pit No	S2-BH222
Project Name	Global Centre of Rail Excellence Stage 2 (27)	Sample No	128
Date Tested	30/06/2023	Depth Top	18.75
Compaction Method	4.5 Kg Rammer	Depth Base	19.20
Compaction Clause	BS1377:Part 4:1990, Clause 3.5	Sample Type	B
Sample Description	Brown silty clayey GRAVEL	Single or Separate Sample Used	Single



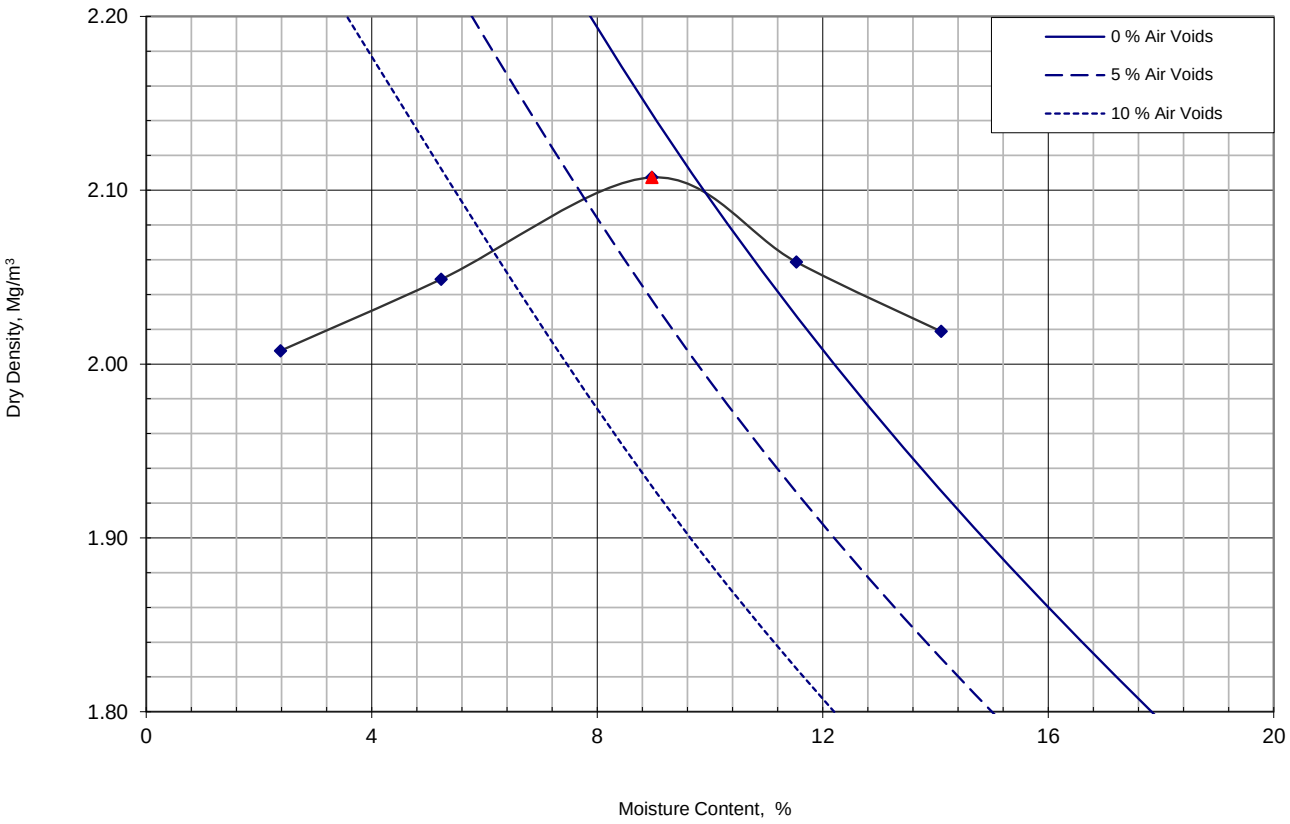
Compaction Point	1	2	3	4	5							
Moisture Content	3.3	6.1	9.4	13	15							
Bulk Density	2.01	2.13	2.21	2.20	2.22							
Dry Density	1.95	2.01	2.02	1.95	1.92							

Initial Moisture Content	6.1	%
Maximum Dry Density	2.02	Mg/m3
Optimum Moisture Content	9.4	%
Particle Density	2.65 Assumed	Mg/m3
Material Retained 37.5mm	2	%
Material Retained 20mm	4	%

Operator
Conal

UKAS TESTING
2788

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	Dry Density / Moisture Content Relationship BS 1377:Part 4:1990	Contract Number	67002
		Borehole / Pit No	S2-BH226
Project Name	Global Centre of Rail Excellence Stage 2 (27)	Sample No	105
Date Tested	30/06/2023	Depth Top	4.00
Compaction Method	4.5 Kg Rammer	Depth Base	4.80
Compaction Clause	BS1377:Part 4:1990, Clause 3.5	Sample Type	B
Sample Description	Brown silty gravelly CLAY	Single or Separate Sample Used	Single



Compaction Point	1	2	3	4	5							
Moisture Content	2.4	5.2	9.0	12	14							
Bulk Density	2.06	2.16	2.30	2.30	2.30							
Dry Density	2.01	2.05	2.11	2.06	2.02							

Initial Moisture Content	9.0	%
Maximum Dry Density	2.11	Mg/m3
Optimum Moisture Content	9.0	%
Particle Density	2.65 Assumed	Mg/m3
Material Retained 37.5mm	0	%
Material Retained 20mm	0	%

Operator
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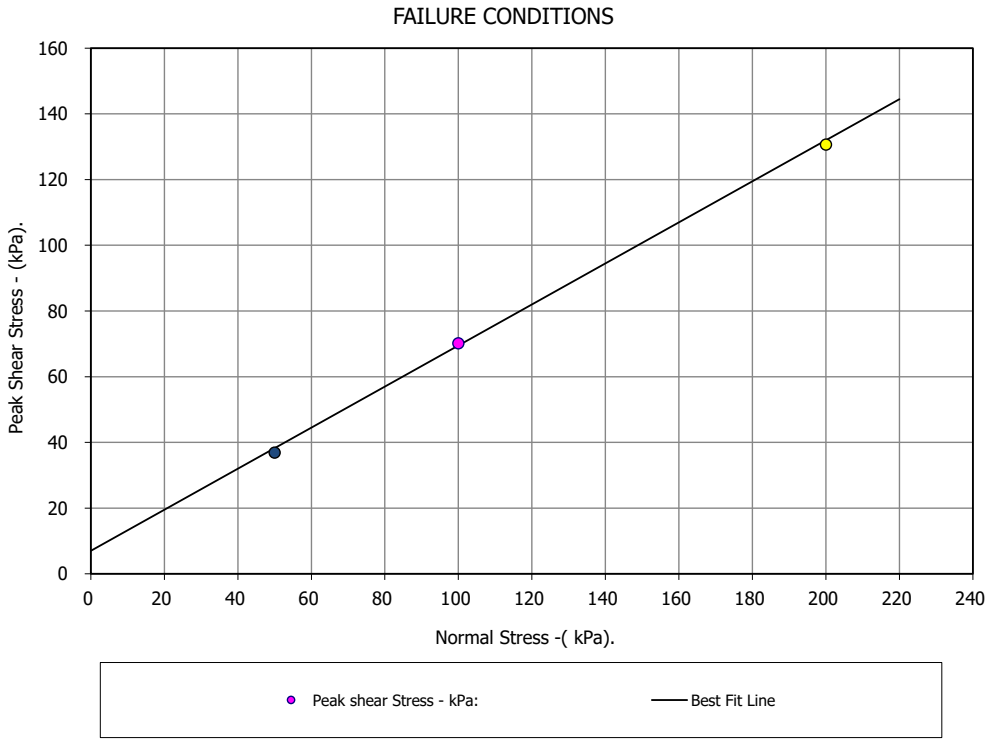
Borehole Number:	S2-BH221	Depth from (m):	6.00
Sample Number :	111.0	Depth to (m):	8.00

Sample Type:	B
Particle Density - Mg/m3:	2.65 (Assumed)
Specimen Tested:	Submerged, Remoulded (Light Tamping) Material above 2mm removed.

Sample Description:
Dark Brown CLAY

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	25.03	25.03	25.03
Length - mm:	60.00	60.00	60.00
Moisture Content - %:	5.2	5.2	5.2
Bulk Density - Mg/m3:	1.82	1.83	1.82
Dry Density - Mg/m3:	1.73	1.74	1.73
Voids Ratio:	0.5294	0.5262	0.5281
Degree of Saturation - %:	25.83	25.98	25.89
Normal Pressure- kPa	50	100	200
Consolidation			
Consolidated Height - mm:	23.40	22.01	20.44
Shear			
Rate of Horizontal Displacement (mm/min)	0.200	0.200	0.200
Horizontal Displacement at Peak Shear Stress (mm)	11.35	7.03	6.67
Peak shear Stress - kPa:	37	70	131

PEAK	
Angle of Shearing Resistance:(θ)	**32**
Effective Cohesion - kPa:	**7**

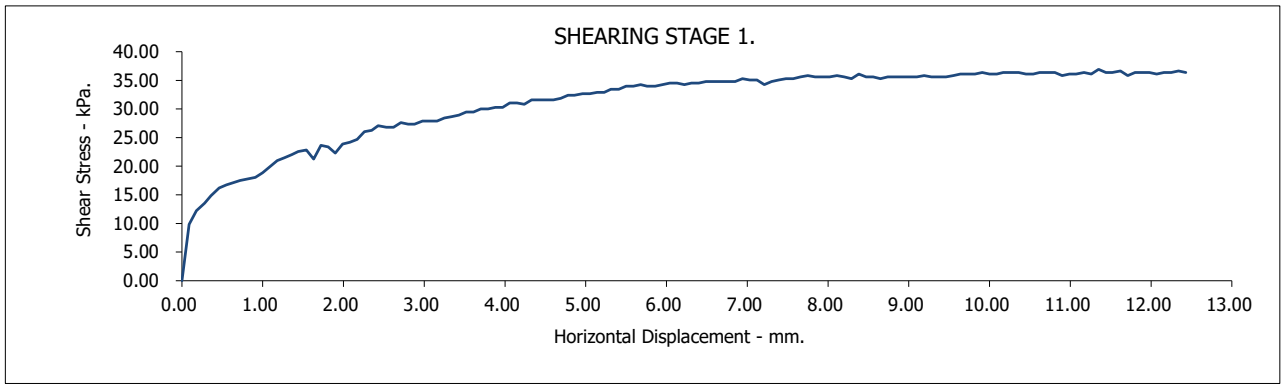


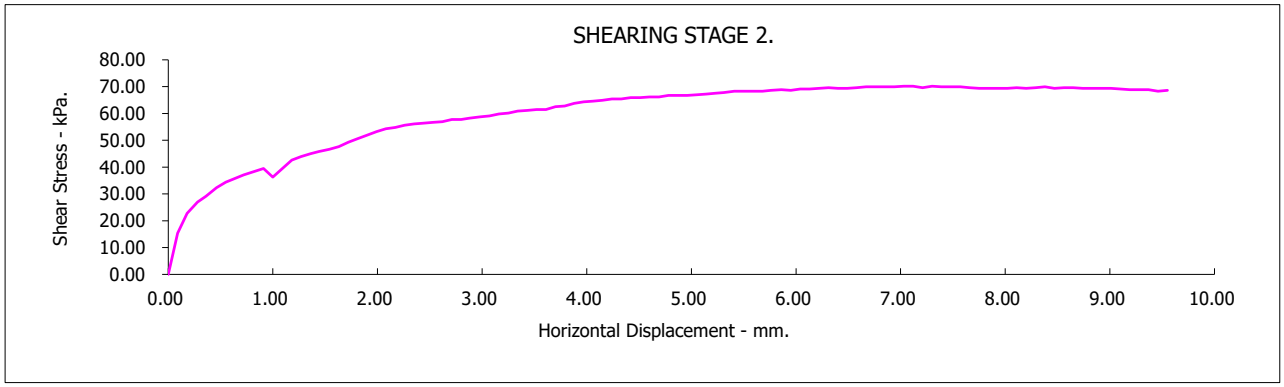
Contract No.:
67002

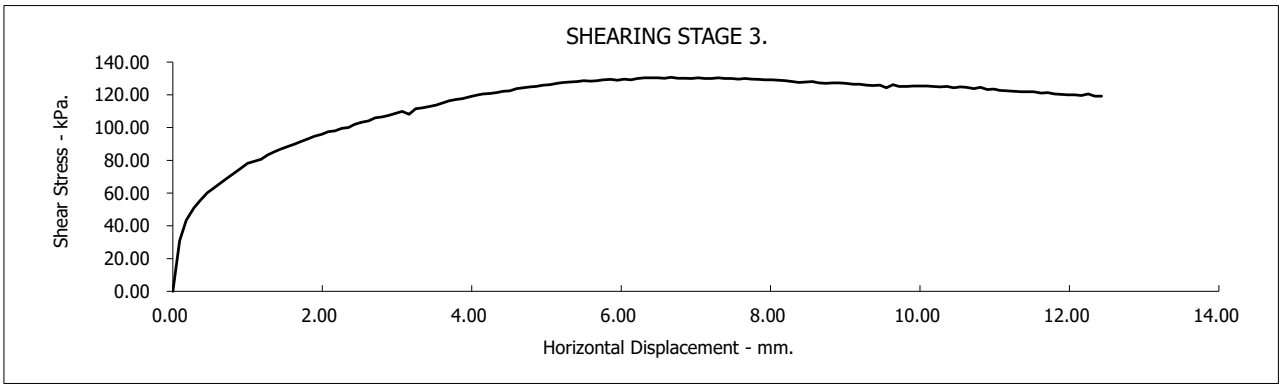
Global Centre of Rail Excellence Stage 2 (27)

Client Ref Number:
G23012

Borehole Number:	S2-BH221	Depth from (m):	6.00
Sample Number :	111	Depth to (m):	8.00







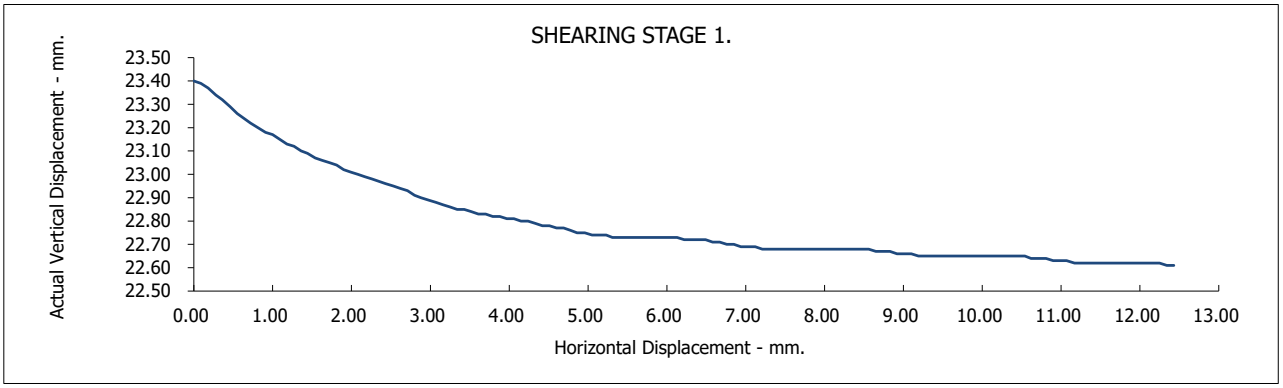
Global Centre of Rail Excellence Stage 2 (27)

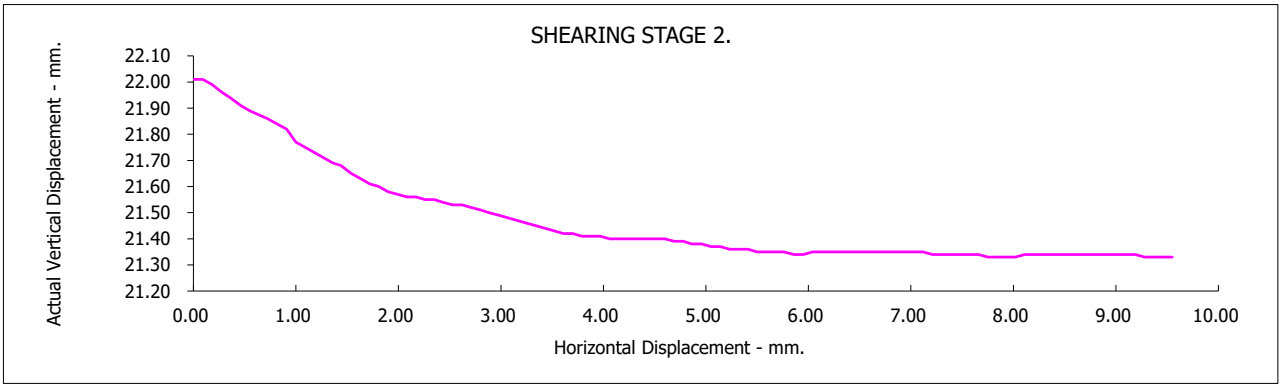
Contract No.: **67002**

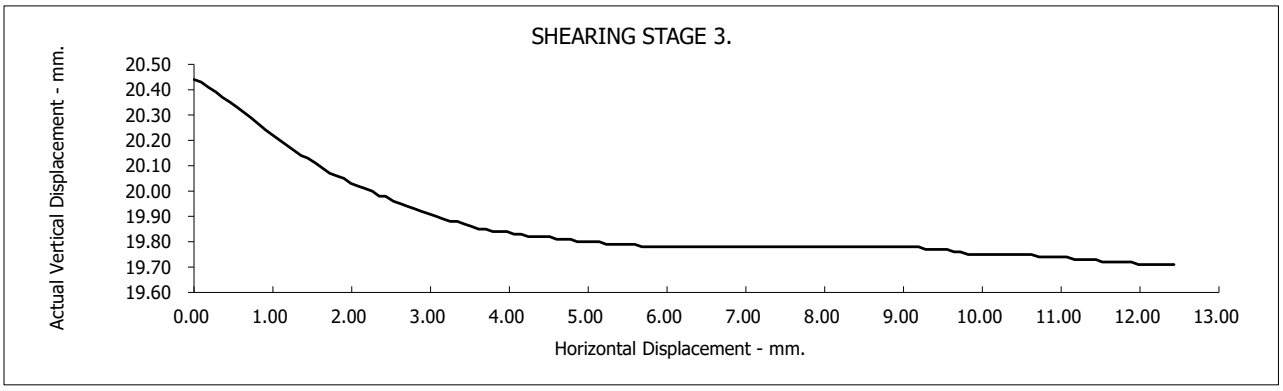
Client Ref Number: **G23012**

Figure.

Borehole Number:	S2-BH221	Depth from (m):	6.00
Sample Number :	111	Depth to (m):	8.00





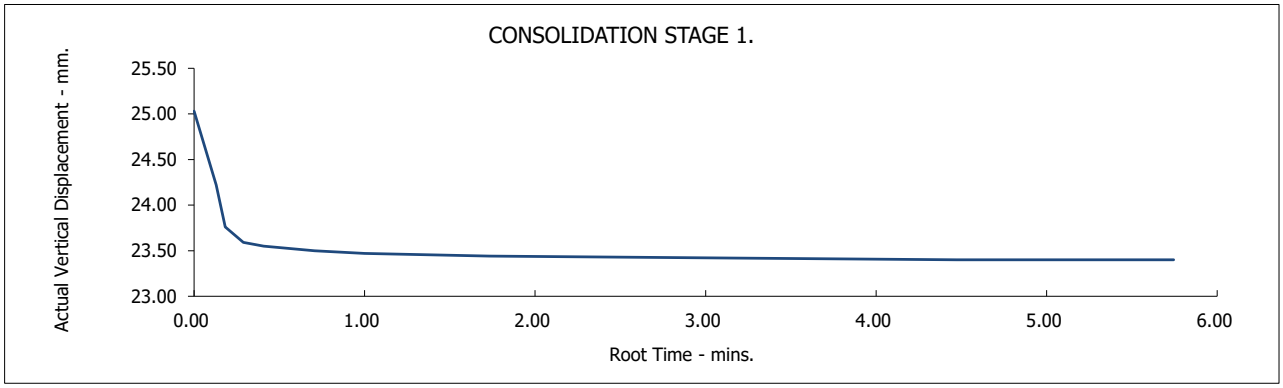


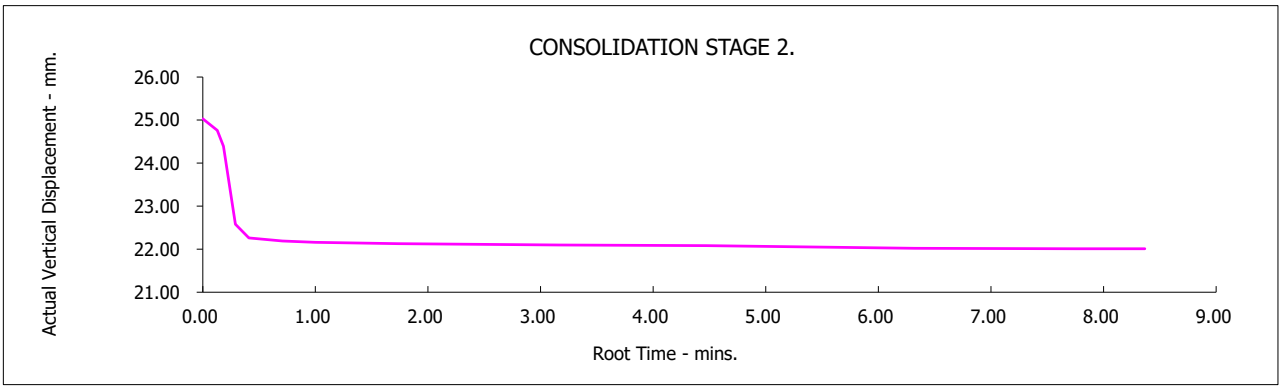
Contract No.:
67002

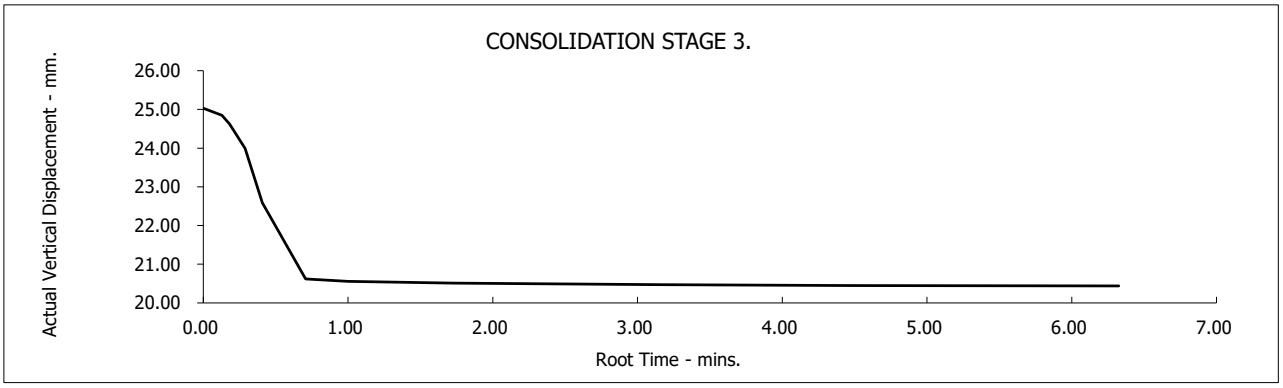
Global Centre of Rail Excellence Stage 2 (27)

Client Ref Number:
G23012

Borehole Number:	S2-BH221	Depth from (m):	6.00
Sample Number :	111	Depth to (m):	8.00







UKAS TESTING 2788

Global Centre of Rail Excellence Stage 2 (27)

Contract No.: **67002**

Client Ref Number: **G23012**

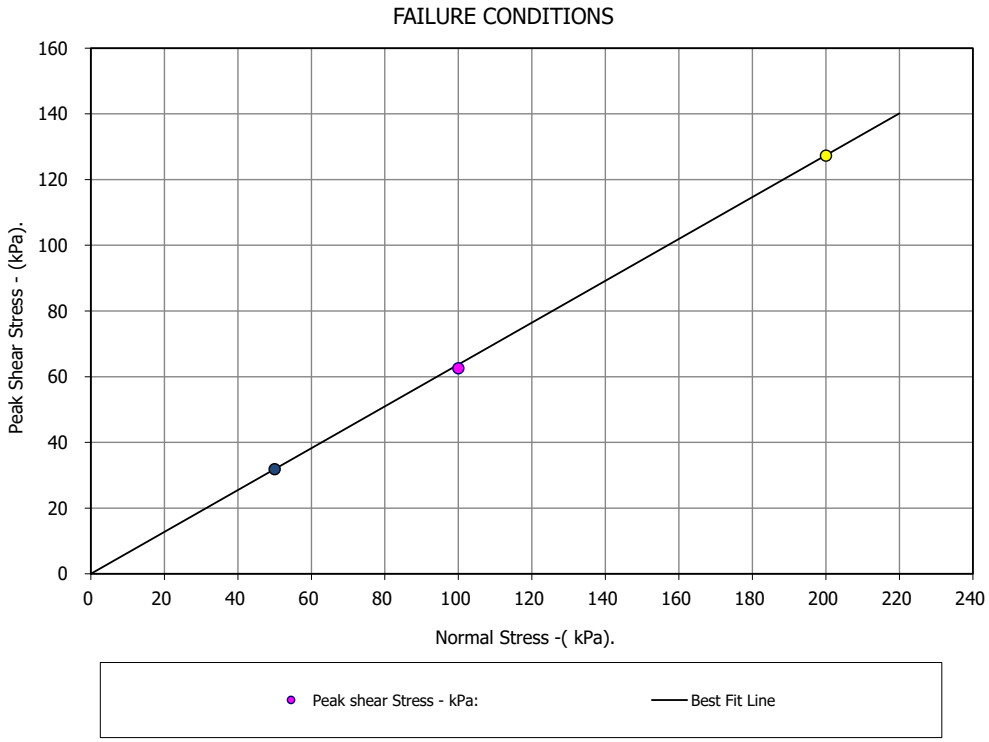
Borehole Number:	S2-BH222	Depth from (m):	4.50
Sample Number :	108.0	Depth to (m):	6.00

Sample Type:	B
Particle Density - Mg/m3:	2.65 (Assumed)
Specimen Tested:	Submerged, Remoulded (Light Tamping) Material above 2mm removed.

Sample Description:
Brown sandy, silty CLAY

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	24.98	24.98	24.98
Length - mm:	60.00	60.00	60.00
Moisture Content - %:	2.2	2.2	2.2
Bulk Density - Mg/m3:	1.85	1.85	1.85
Dry Density - Mg/m3:	1.81	1.81	1.81
Voids Ratio:	0.4631	0.4642	0.4633
Degree of Saturation - %:	12.44	12.42	12.44
Normal Pressure- kPa	50	100	200
Consolidation			
Consolidated Height - mm:	22.49	20.63	20.59
Shear			
Rate of Horizontal Displacement (mm/min)	0.200	0.200	0.200
Horizontal Displacement at Peak Shear Stress (mm)	6.13	6.04	6.31
Peak shear Stress - kPa:	32	63	127

PEAK	
Angle of Shearing Resistance:(θ)	**33**
Effective Cohesion - kPa:	**0**

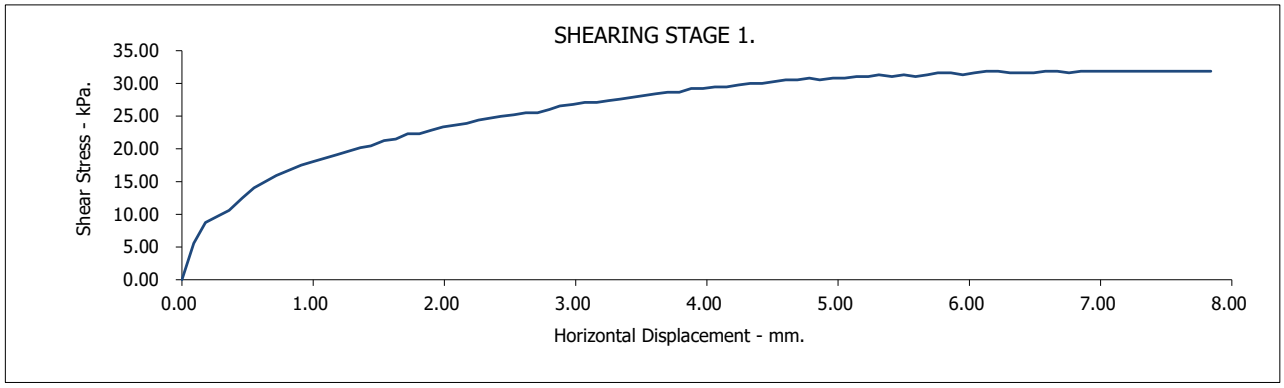


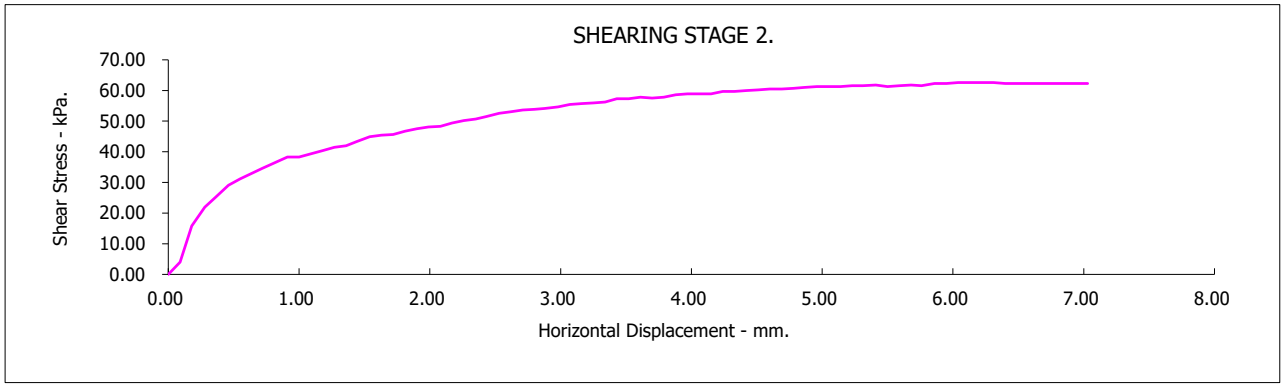
Contract No.: **67002**

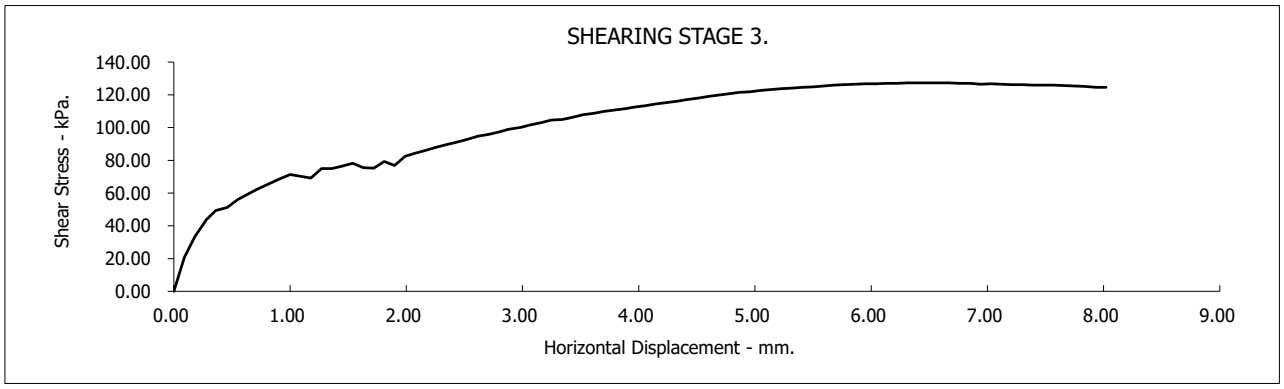
Global Centre of Rail Excellence Stage 2 (27)

Client Ref Number: **G23012**

Borehole Number:	S2-BH222	Depth from (m):	4.50
Sample Number :	108	Depth to (m):	6.00







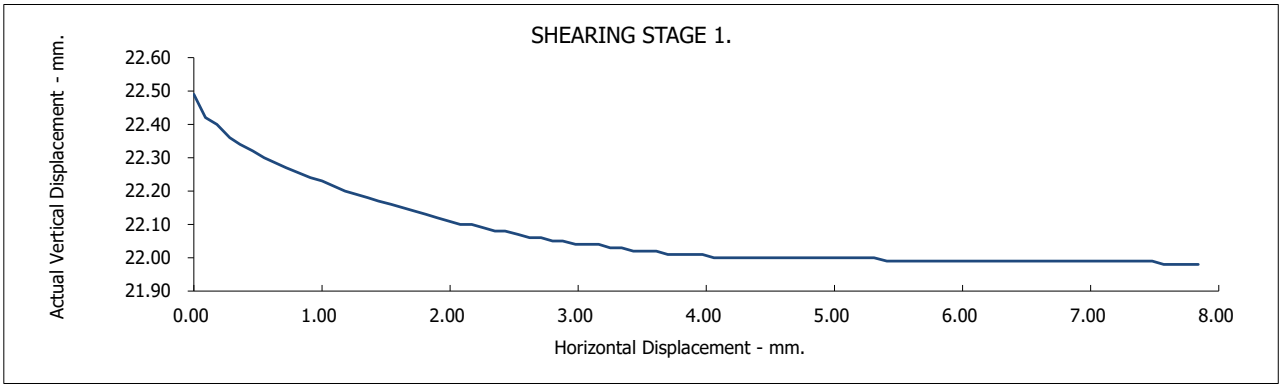
Global Centre of Rail Excellence Stage 2 (27)

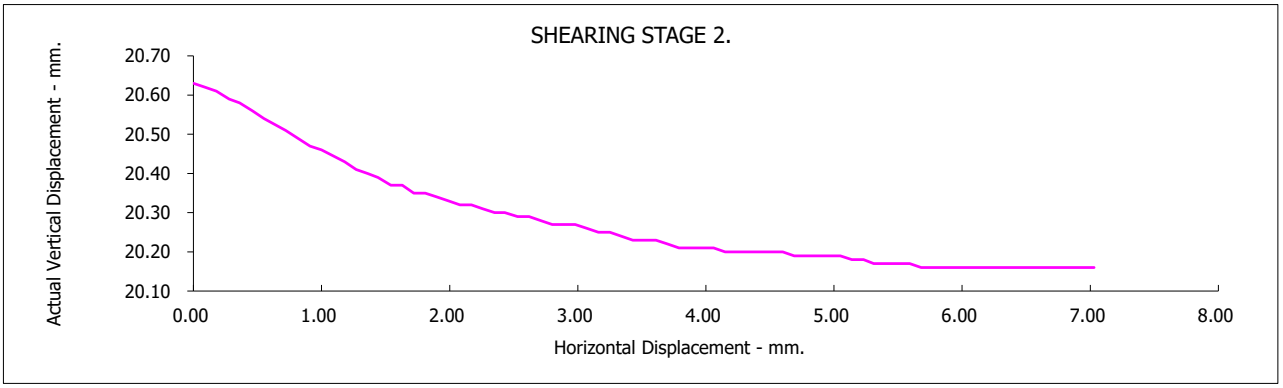
Contract No.: **67002**

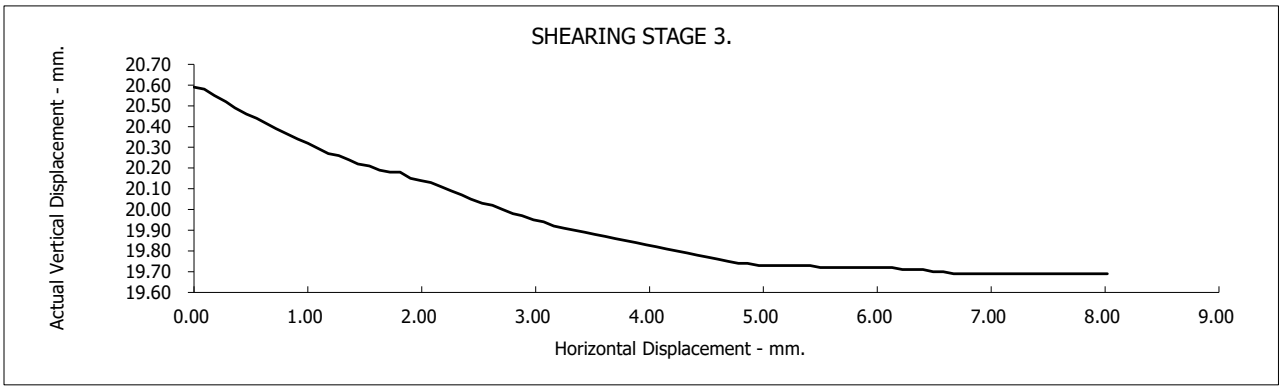
Client Ref Number: **G23012**

Figure.

Borehole Number:	S2-BH222	Depth from (m):	4.50
Sample Number :	108	Depth to (m):	6.00





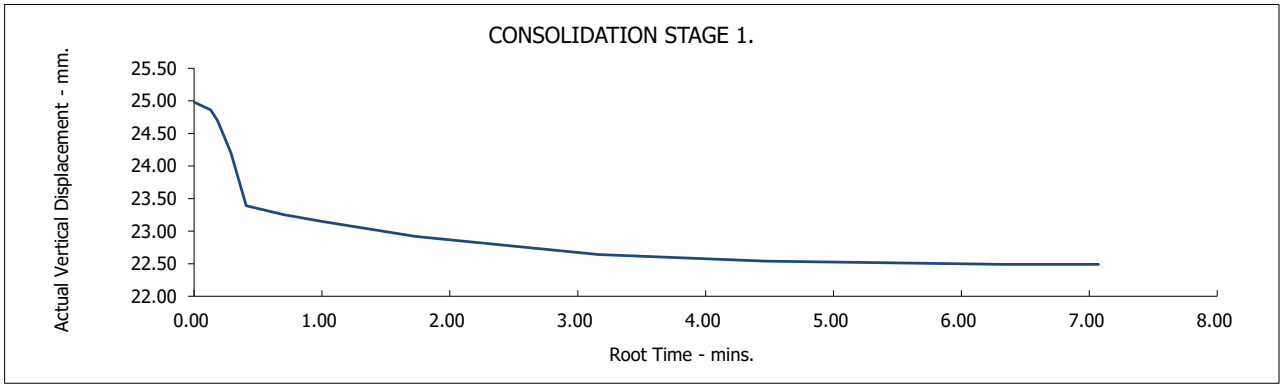


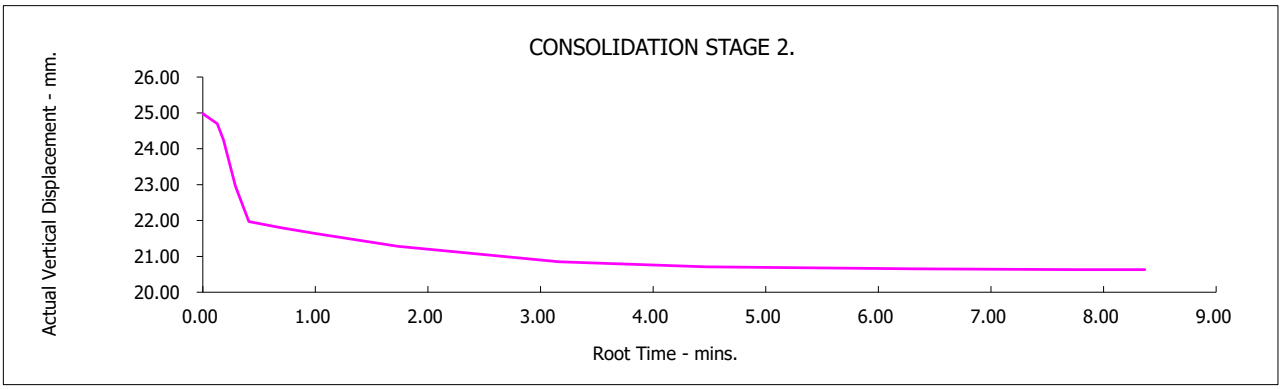
Contract No.:
67002

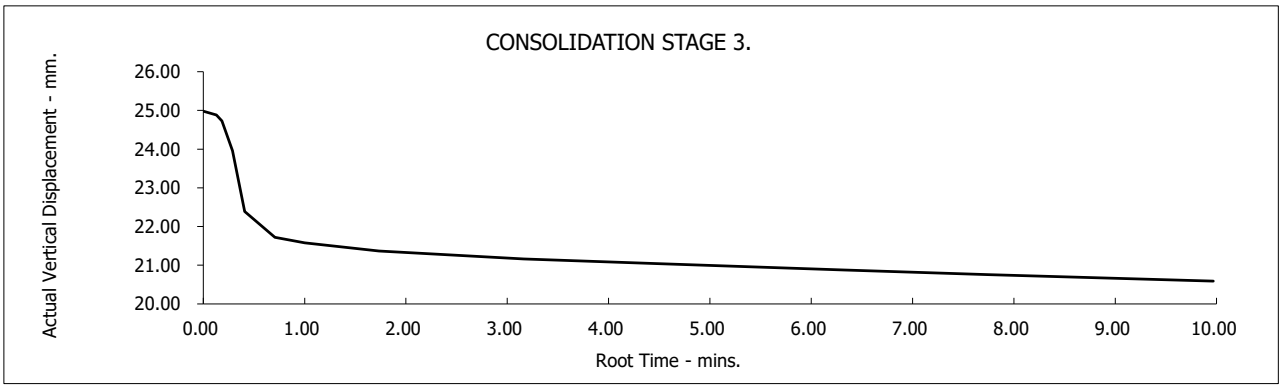
Global Centre of Rail Excellence Stage 2 (27)

Client Ref Number:
G23012

Borehole Number:	S2-BH222	Depth from (m):	4.50
Sample Number :	108	Depth to (m):	6.00







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Global Centre of Rail Excellence Stage 2 (27)

Contract No.: **67002**

Client Ref Number: **G23012**

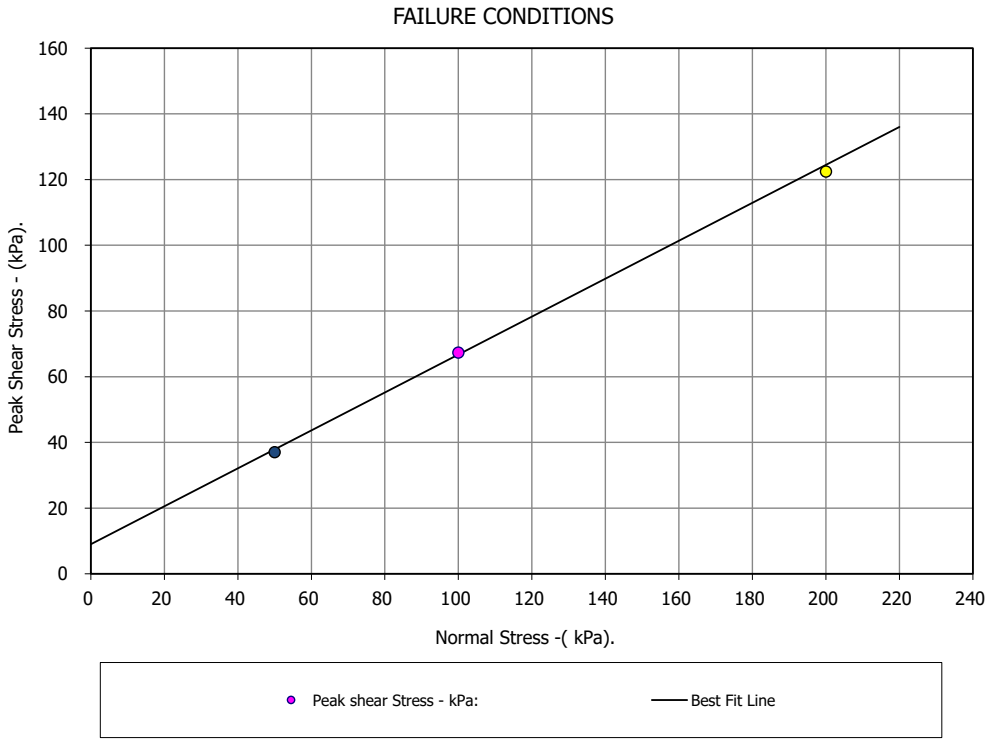
Borehole Number:	S2-BH222	Depth from (m):	18.75
Sample Number :	128.0	Depth to (m):	19.20

Sample Type:	B
Particle Density - Mg/m3:	2.65 (Assumed)
Specimen Tested:	Submerged, Remoulded (Light Tamping) Material above 2mm removed.

Sample Description:
Dark Brown gravelly CLAY

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	23.30	23.30	23.30
Length - mm:	60.00	60.00	60.00
Moisture Content - %:	5.7	5.7	5.7
Bulk Density - Mg/m3:	1.70	1.70	1.70
Dry Density - Mg/m3:	1.60	1.61	1.60
Voids Ratio:	0.6518	0.6504	0.6514
Degree of Saturation - %:	23.12	23.17	23.14
Normal Pressure- kPa	50	100	200
Consolidation			
Consolidated Height - mm:	22.35	21.79	21.08
Shear			
Rate of Horizontal Displacement (mm/min)	0.200	0.200	0.200
Horizontal Displacement at Peak Shear Stress (mm)	6.75	6.03	6.84
Peak shear Stress - kPa:	37	67	122

PEAK	
Angle of Shearing Resistance:(θ)	**30**
Effective Cohesion - kPa:	**9**

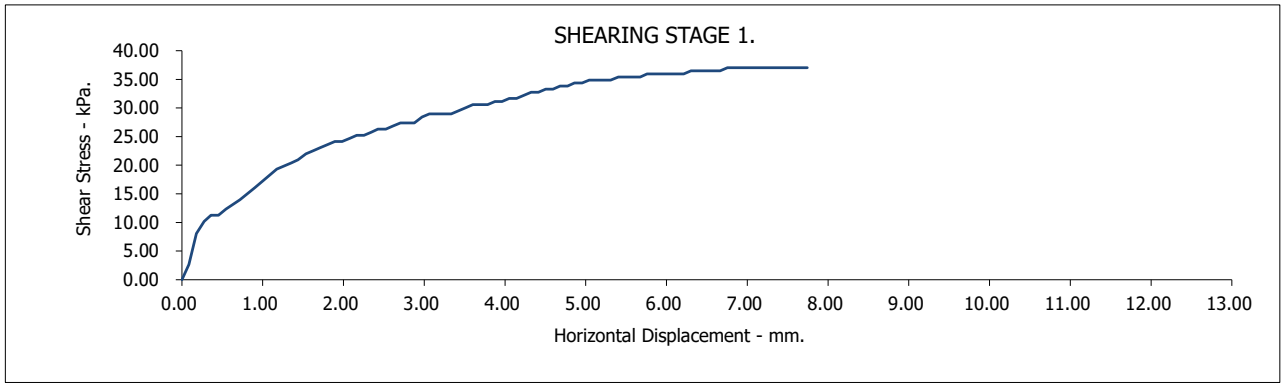


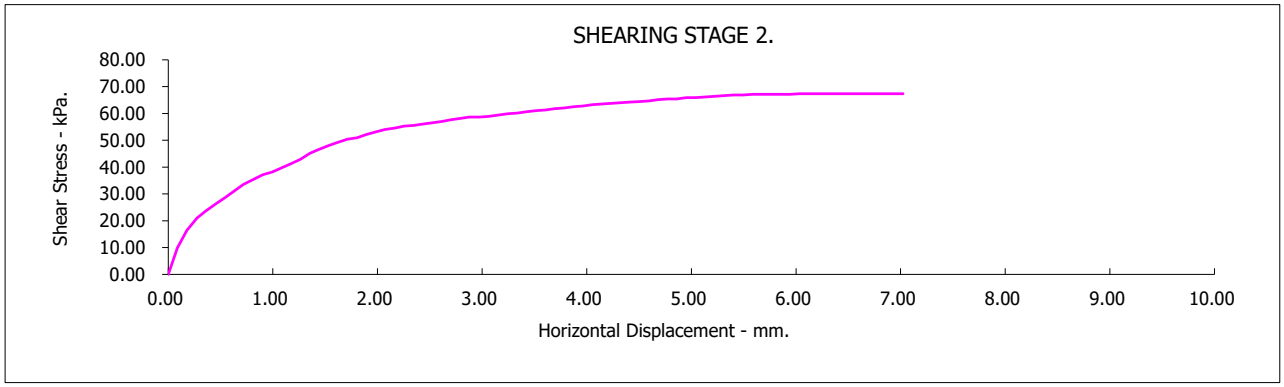
Contract No.: **67002**

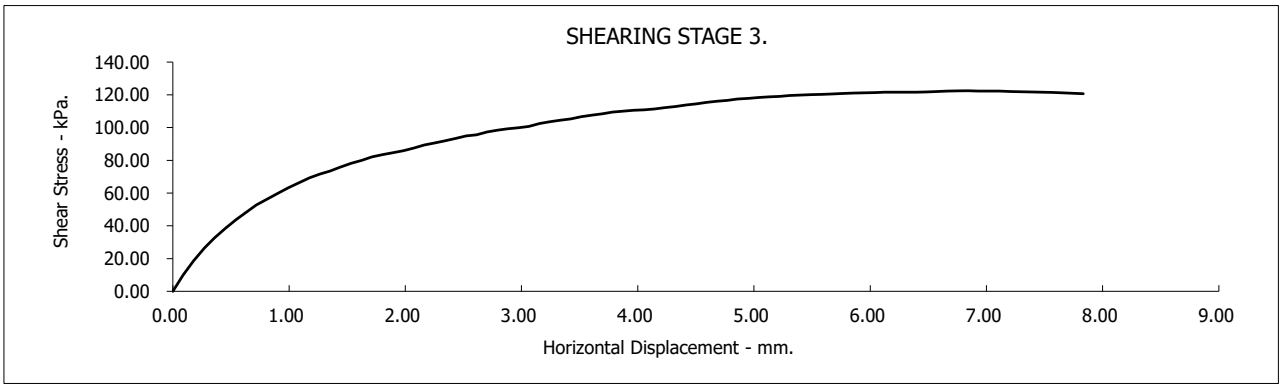
Global Centre of Rail Excellence Stage 2 (27)

Client Ref Number: **G23012**

Borehole Number:	S2-BH222	Depth from (m):	18.75
Sample Number :	128	Depth to (m):	19.20







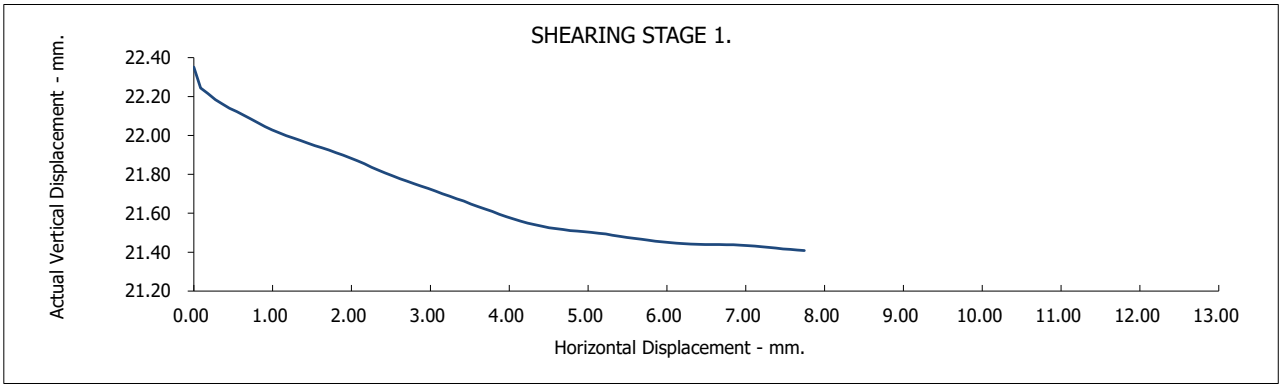
Global Centre of Rail Excellence Stage 2 (27)

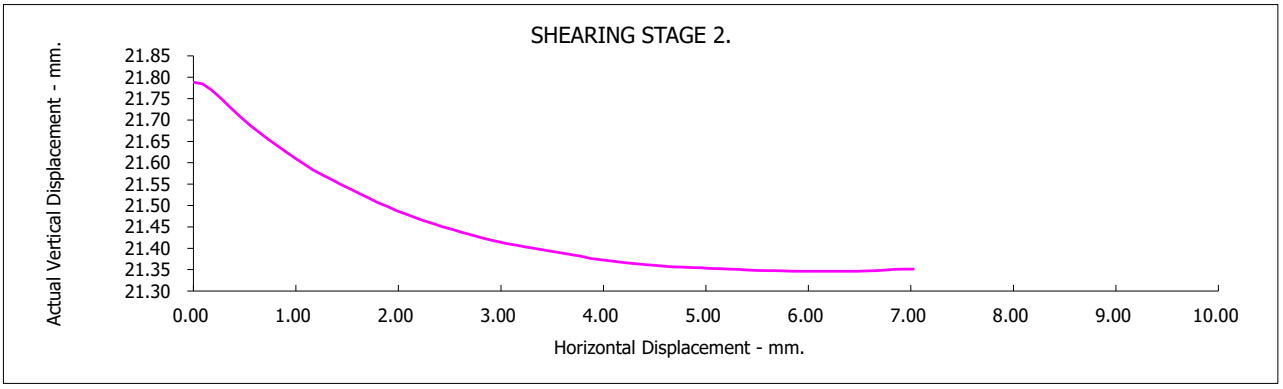
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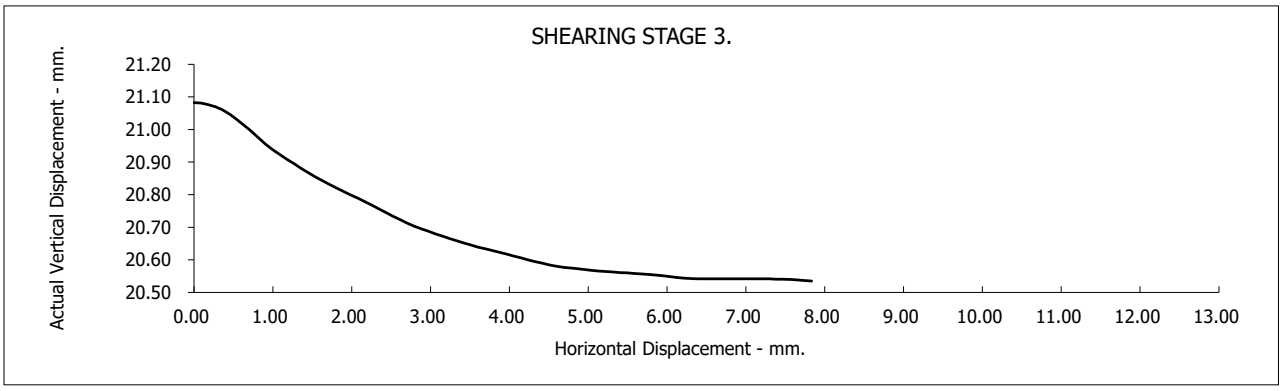
Client Ref Number: **G23012**

Figure.

Borehole Number:	S2-BH222	Depth from (m):	18.75
Sample Number :	128	Depth to (m):	19.20





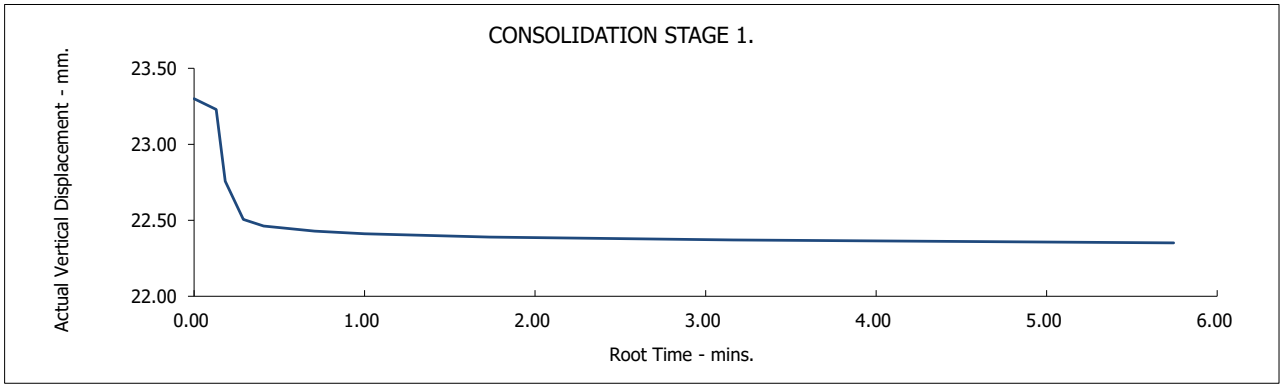


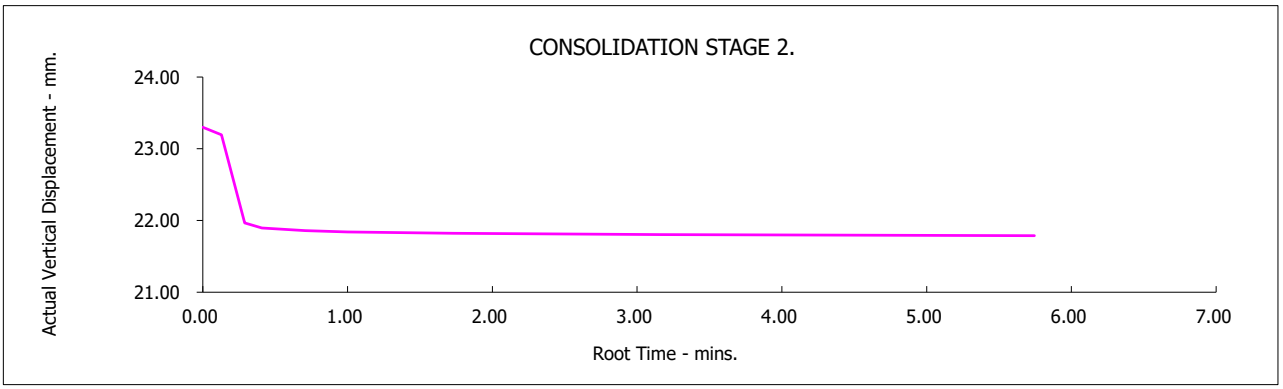
Contract No.:
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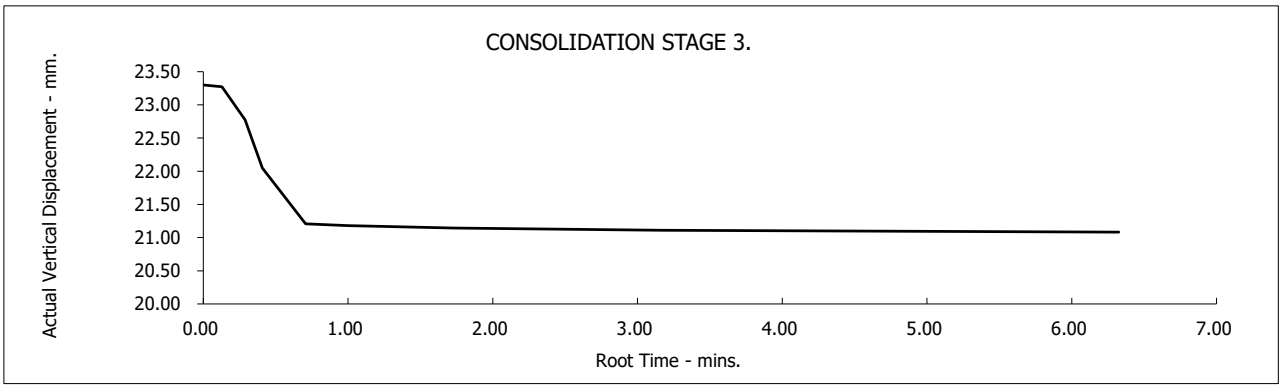
Global Centre of Rail Excellence Stage 2 (27)

Client Ref Number:
G23012

Borehole Number:	S2-BH222	Depth from (m):	18.75
Sample Number :	128	Depth to (m):	19.20







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Global Centre of Rail Excellence Stage 2 (27)

Contract No.: **67002**

Client Ref Number: **G23012**

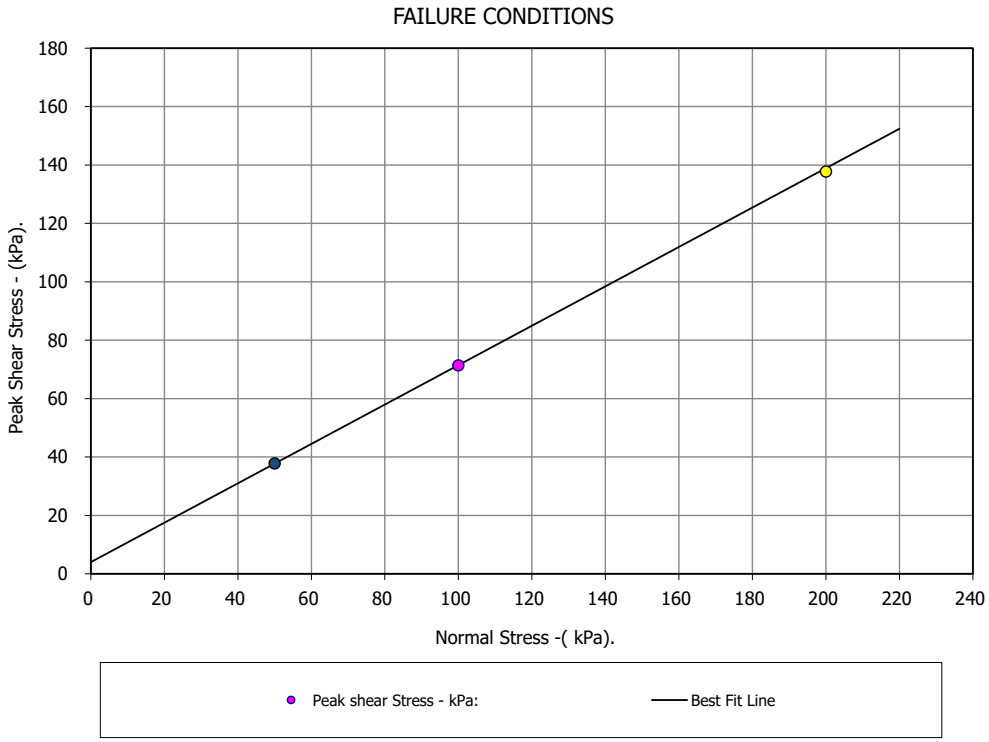
Borehole Number:	S2-BH226	Depth from (m):	4.00
Sample Number :	105.0	Depth to (m):	4.80

Sample Type:	B
Particle Density - Mg/m3:	2.65 (Assumed)
Specimen Tested:	Submerged, Remoulded (Light Tamping) Material above 2mm removed.

Sample Description:
Brown gravelly CLAY

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	23.30	23.30	23.30
Length - mm:	60.00	60.00	60.00
Moisture Content - %:	13	13	13
Bulk Density - Mg/m3:	2.04	2.05	2.04
Dry Density - Mg/m3:	1.81	1.81	1.81
Voids Ratio:	0.4636	0.4629	0.4656
Degree of Saturation - %:	73.99	74.10	73.67
Normal Pressure- kPa	50	100	200
Consolidation			
Consolidated Height - mm:	22.62	21.71	21.17
Shear			
Rate of Horizontal Displacement (mm/min)	0.200	0.200	0.200
Horizontal Displacement at Peak Shear Stress (mm)	7.92	8.64	4.68
Peak shear Stress - kPa:	38	71	138

PEAK	
Angle of Shearing Resistance:(θ)	**34**
Effective Cohesion - kPa:	**4**

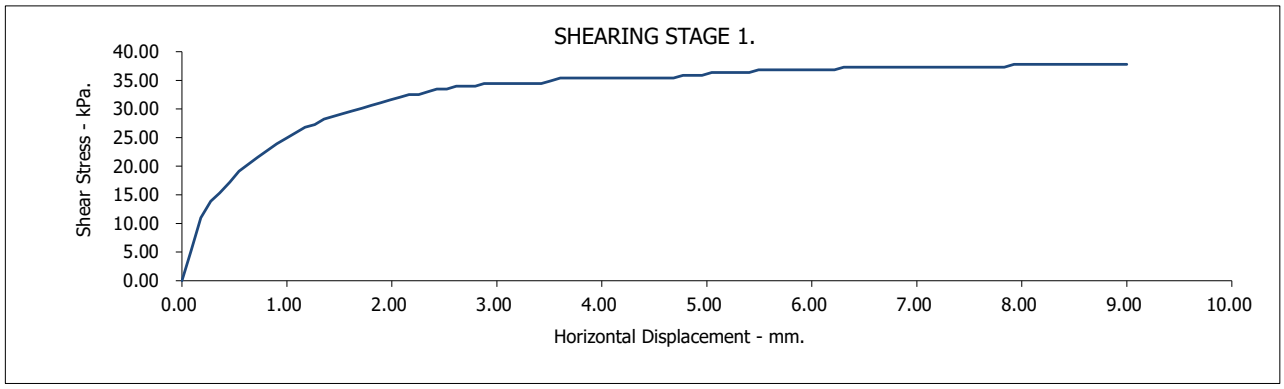


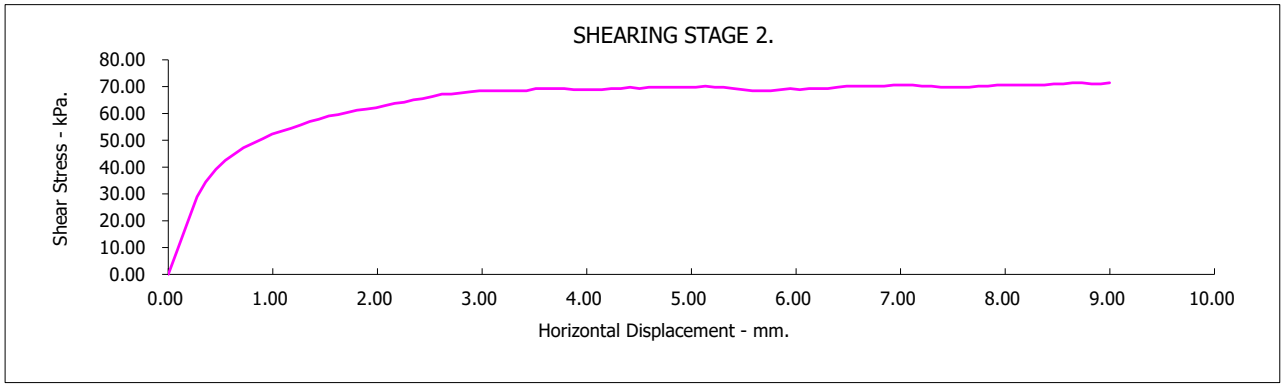
Contract No.:
67002

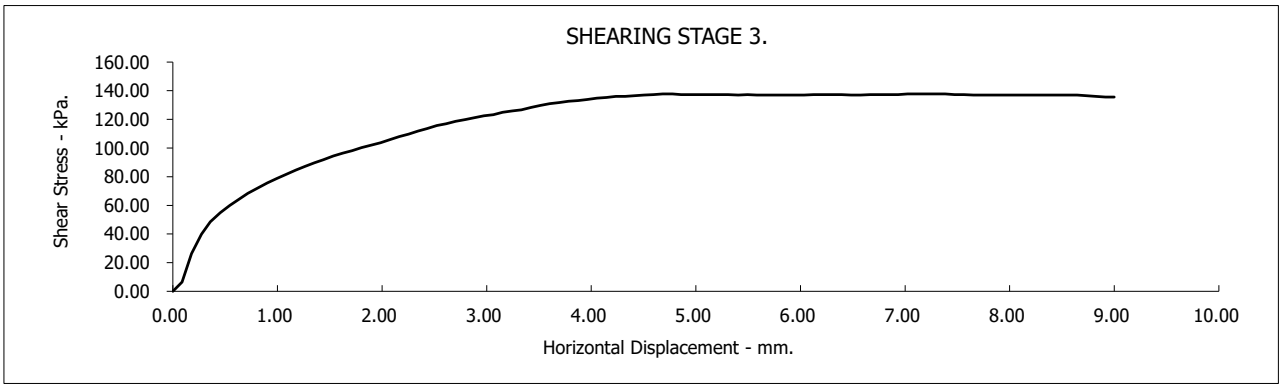
Global Centre of Rail Excellence Stage 2 (27)

Client Ref Number:
G23012

Borehole Number:	S2-BH226	Depth from (m):	4.00
Sample Number :	105	Depth to (m):	4.80







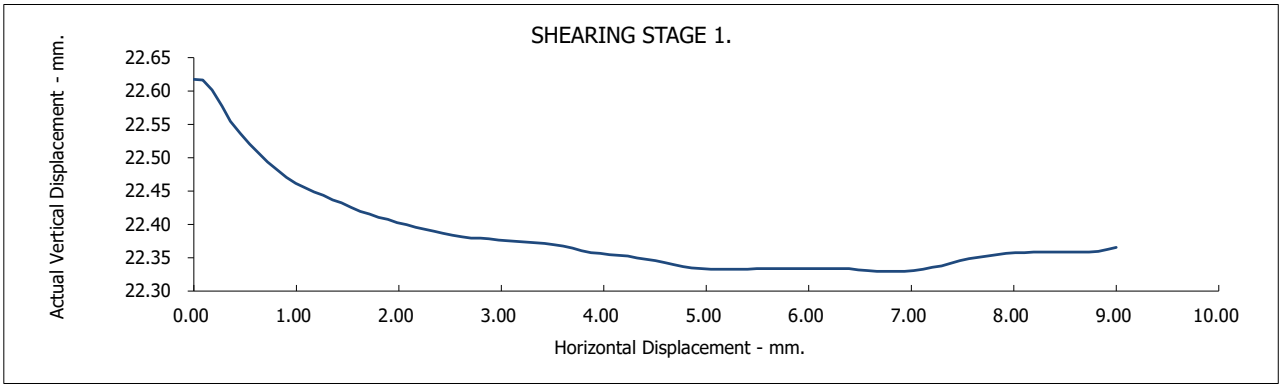
Global Centre of Rail Excellence Stage 2 (27)

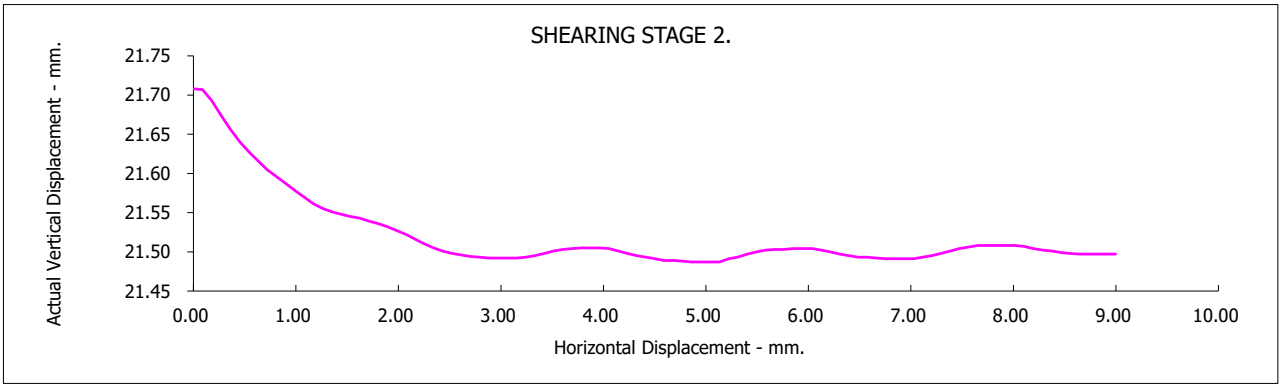
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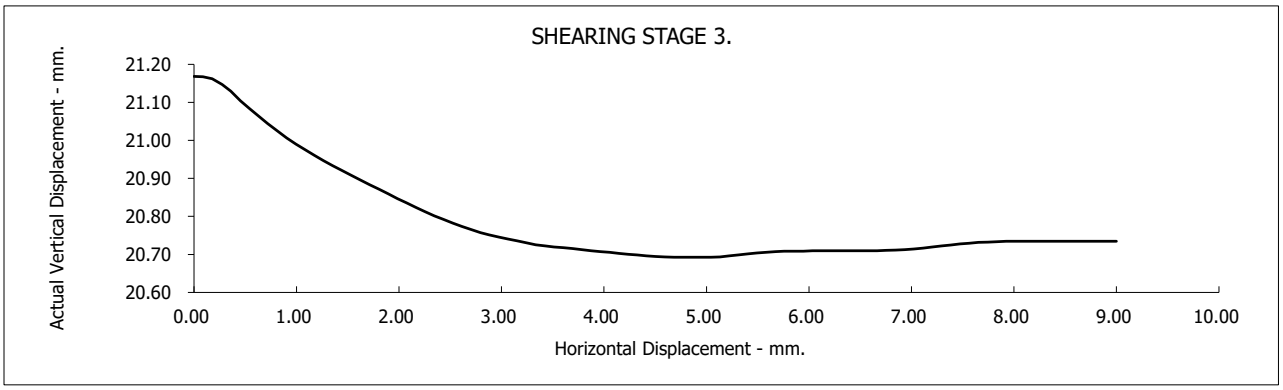
Client Ref Number: **G23012**

Figure.

Borehole Number:	S2-BH226	Depth from (m):	4.00
Sample Number :	105	Depth to (m):	4.80





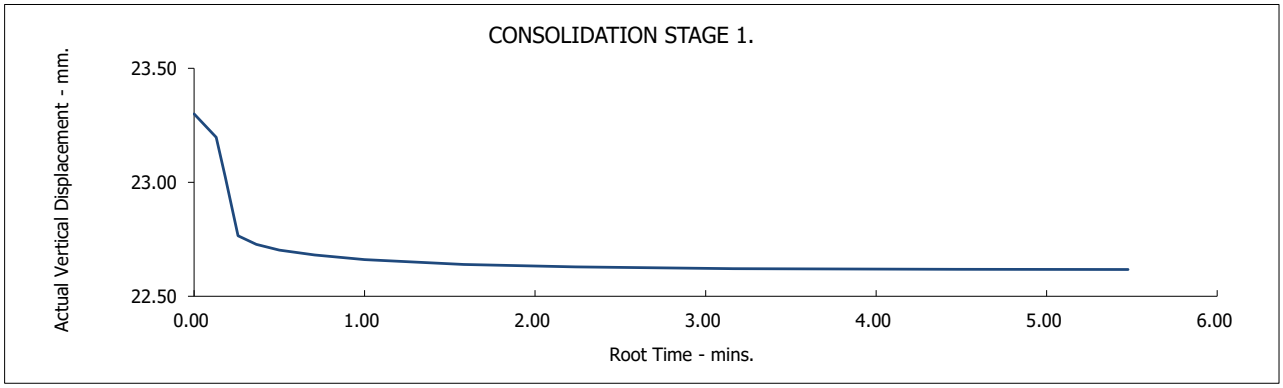


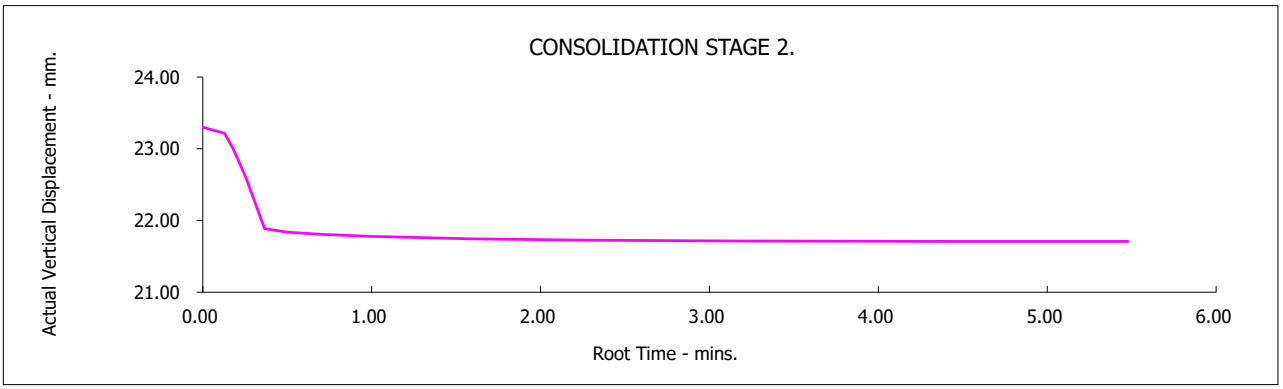
Contract No.:
67002

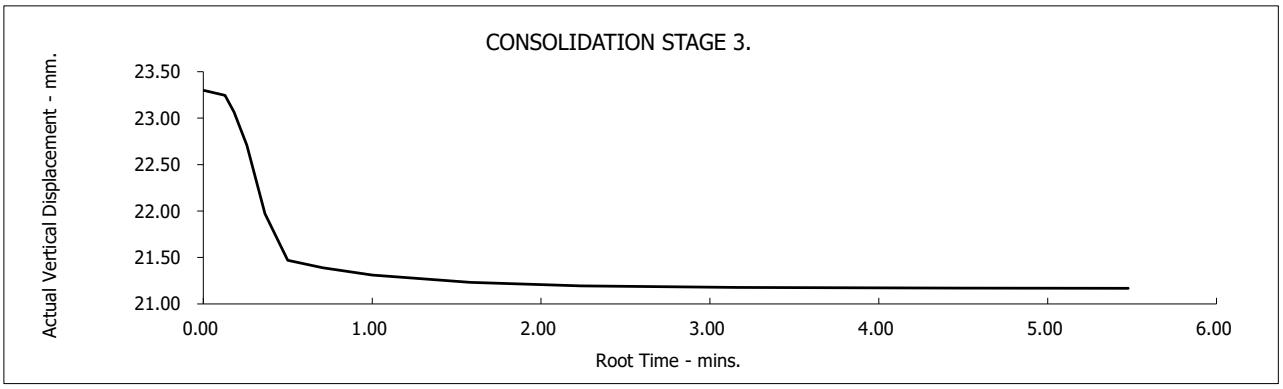
Global Centre of Rail Excellence Stage 2 (27)

Client Ref Number:
G23012

Borehole Number:	S2-BH226	Depth from (m):	4.00
Sample Number :	105	Depth to (m):	4.80







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Global Centre of Rail Excellence Stage 2 (27)

Contract No.: **67002**

Client Ref Number: **G23012**

GSTL
GEOTECHNICAL SITE & TESTING LABORATORIES

Determination of Unconfined Compressive Strength
ISRM Suggested Methods Vol 16, No. 2, pp. 135-140 1979

Contract Number	67002
Project Name	Global Centre of Rail Excellence Stage 2 (27)
Sample Preperation	Sawing and Grinding
Date Tested	22/06/2023

Hole Reference	Depth (m)			Diameter	Length	Initial Mass	Moisture Content	Bulk Density	Dry Density	Load Failure	Maximum Strength	Type of Failure
S1-BH118	8.50		8.67	85.7	159.3	2368.2	1.5	2.58	2.54	59.2	10.3	Multiple Fracture
S2-BH210	22.10		22.29	84.8	171.2	2527.9	0.9	2.61	2.59	153.0	27.1	Multiple Fracture
S2-BH210	24.90		25.40	84.3	217.2	3227.4	0.6	2.66	2.65	601.4	107.7	Explosive

Key	Reported As
Diameter	mm
Length	mm
Initial Mass	g
Moisture Content	%
Bulk Density	Mg/m^3
Dry Density	Mg/m^3
Load Failure	kN
Maximum Strength	MPa

Operator
Julian Jones

GSTL
GEOTECHNICAL SITE & TESTING LABORATORIES

Point Load Test

The complete ISRM suggested methods for rock characterization, testing and monitoring 1974-2006 Determining Point Load Strength

Contract Number	67002
Project Name	Global Centre of Rail Excellence Stage 2 (27)
Sample Type	Core
Date Tested	22/06/2023

*Please note that GSTL is not accredited for the water content of rock

Hole Reference	Depth (m)			Sample No	Test Type		Width	Platen Seperation	Failure Load	Equivalent Diameter	Point Load	Size Factor	Point Load Index	Moisture Content	Description	Angle Between Plane of Anisotropy & Core Axis	Type of Anisotropy (Bedding or Cleavage)
					d / a / b / i	I //											
S2-BH210	21.12	-	21.23	101	d			80	0.74		0.11	1.24	0.14	1.3	SILTSTONE		
S2-BH222	21.57	-	21.70	129	d			101	31.33		3.07	1.37	4.21	0.9	SILTSTONE		
S1-BH118	10.50	-	10.71	108	a		86	57	15.26	79.00	2.44	1.23	3.00	0.8	SILTSTONE		
S1-BH118	12.44	-	12.65	109	a		86	67	5.84	85.65	0.80	1.27	1.01	1.4	SILTSTONE		

Key	Reported As
Width	(W) mm
Platen Separation	(D) mm
Failure Load	(P) kN
Equivalent Diameter	(De) mm
Point Load	(Is) MPa
Size Factor	(F)
Point Load Index	(Is(50)) MPa
Moisture Content	%
Description	SC

Operator
Julian Jones

UKAS TESTING
2788

Laboratory Report

UKAS TESTING 2788

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES A PHENNA GROUP COMPANY

Contract Number: 67003

Client Ref: **G23012**
Client PO:

Date Received: **20-06-2023**
Date Completed: **30-06-2023**
Report Date: **30-06-2023**

Client: **Jackson Drilling Holdings Ltd**
Northwood Farm
Coxbridge Road
Baltonsborough
Somerset
BA6 8RA

This report has been checked and approved by:

B. Evans

Brendan Evans
Office Administrator

Contract Title: **Global Centre of Rail Excellence Stage 2 (28)**
For the attention of: **Adam Putt**

Test Description	Qty
Moisture Content of Soil BS1377 : Part 2 : Clause 3.2 : 1990 - * UKAS	6
4 Point Liquid & Plastic Limit BS 1377:1990 - Part 2 : 4.3 & 5.3 - * UKAS	5
PSD Wet & Dry Sieve method BS 1377:1990 - Part 2 : 9.2 - * UKAS	5
PSD: Sedimentation by pipette carried out with Wet Sieve (Wet Sieve must also be selected) BS 1377:1990 - Part 2 : 9.4 - * UKAS	1
Disposal of samples for job	1

Notes: **Observations and Interpretations are outside the UKAS Accreditation**
*** - denotes test included in laboratory scope of accreditation**
- denotes test carried out by approved contractor
@ - denotes non accredited tests

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Approved Signatories:
Brendan Evans (Office Administrator) - Darren Bourne (Quality Senior Technician) - Paul Evans (Director)
Richard John (Quality/Technical Manager) - Shaun Jones (Laboratory manager) - Shaun Thomas (Site Manager)
Wayne Honey (Human Resources/ Health and Safety Manager)

GEO Site & Testing Services Ltd
Units 3-4, Heol Aur, Dafen, Llanelli, Carmarthenshire, Wales SA14 8QN
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GSTL
GEOTECHNICAL SITE & TESTING LABORATORIES

Natural Moisture Content
(BS 1377:1990 - Part 2 : 3.2)

Contract Number	67003
Project Name	Global Centre of Rail Excellence Stage 2 (28)
Date Tested	22/06/2023

Sample/Hole Reference	Sample Number	Sample Type	Depth (m)			Moisture Content %	Remarks
S2-WS02	12	D	1.20	-	1.65	28	
				-			
				-			
				-			
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Operator
Ethan Harper

UKAS TESTING
2788

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	NATURAL MOISTURE, LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377:1990 - Part 2 : 4.3 & 5.3)	
Contract Number	67003	
Project Name	Global Centre of Rail Excellence Stage 2 (28)	
Date Tested	22/06/233	
	DESCRIPTIONS	

Sample/Hole Reference	Sample Number	Sample Type	Depth (m)			Descriptions
S2-WS02	14	D	1.40	-	1.50	Brown fine to medium gravelly silty CLAY
S2-WS02	17	D	2.20	-	2.30	Brown fine to medium gravelly silty CLAY
S2-WS03	4	D	0.50	-	0.60	Brown fine to medium gravelly silty CLAY
S2-WS03	15	D	2.20	-	2.30	Brown fine to medium gravelly silty CLAY
S2-WS04	11	D	1.50	-	1.60	Grey/brown silty organic ClAY
				-		
				-		
				-		
				-		
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				-		
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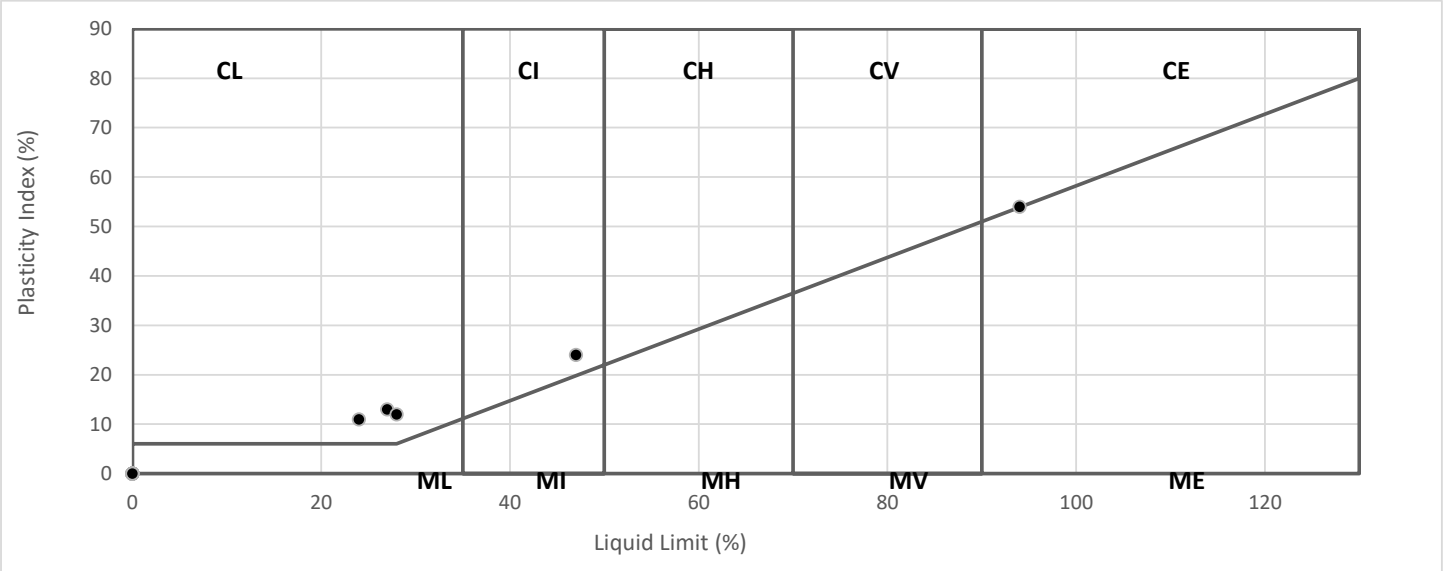
Operator
Ethan Harper

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	NATURAL MOISTURE, LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377:1990 - Part 2 : 4.3 & 5.3)	
Contract Number	67003	
Project Name	Global Centre of Rail Excellence Stage 2 (28)	
Date Tested	22/06/233	

Sample/Hole Reference	Sample Number	Sample Type	Depth (m)			Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity index %	Passing 0.425mm %	Remarks
S2-WS02	14	D	1.40	-	1.50	26	47	23	24	95	CI Intermediate Plasticity
S2-WS02	17	D	2.20	-	2.30	13	27	14	13	98	CL Low Plasticity
S2-WS03	4	D	0.50	-	0.60	14	28	16	12	90	CL Low Plasticity
S2-WS03	15	D	2.20	-	2.30	11	24	13	11	85	CL Low Plasticity
S2-WS04	11	D	1.50	-	1.60	49	94	40	54	100	CE Extremely High Plasticity
				-							
				-							
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Symbols: NP : Non Plastic # : Liquid Limit and Plastic Limit Wet Sieved

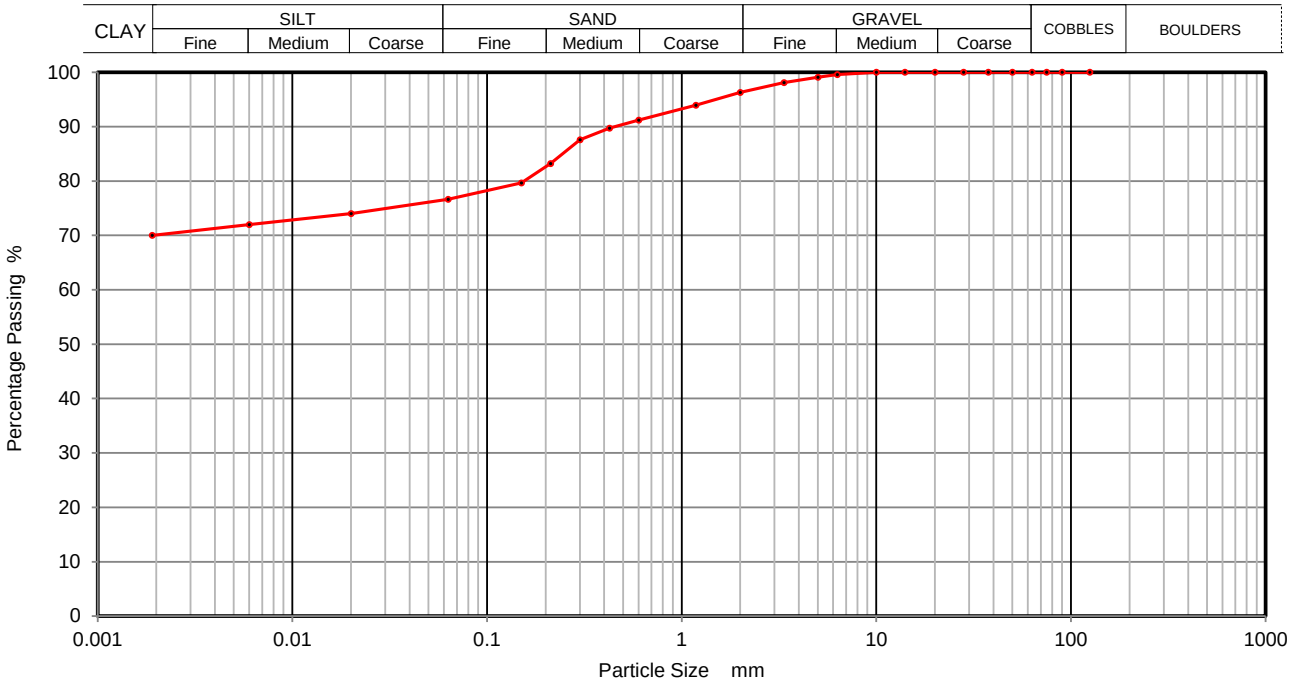
PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION
BS 5930:2015+A1:2020



Operator
Ethan Harper

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GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**PARTICLE SIZE DISTRIBUTION** **BS 1377 Part 2:1990** **Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4**	Contract Number	67003
		Borehole/Pit No.	S2-WS02
Project Name	Global Centre of Rail Excellence Stage 2 (28)	Sample No.	12
Soil Description	Brown/grey slightly fine gravelly fine to coarse sandy SILT/CLAY	Depth Top	1.20
		Depth Base	1.65
Date Tested	22/06/2023	Sample Type	D



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	74
90	100	0.0060	72
75	100	0.0020	70
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	99		
3.35	98		
2	96		
1.18	94		
0.6	91		
0.425	90		
0.3	88		
0.212	83		
0.15	80		
0.063	77		

Sample Proportions	% dry mass
Cobbles	0
Gravel	4
Sand	19
Silt	7
Clay	70

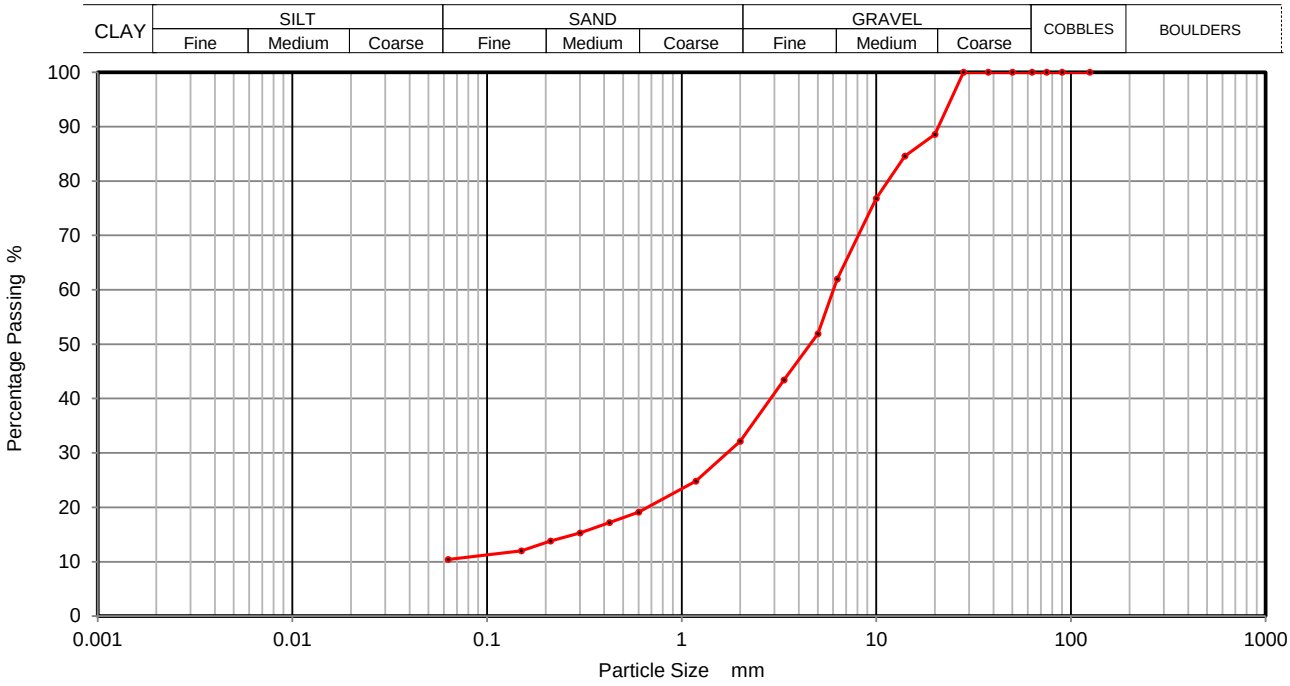
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator
David Edwards

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GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**PARTICLE SIZE DISTRIBUTION** **BS 1377 Part 2:1990** **Wet Sieve, Clause 9.2**	Contract Number	67003
		Borehole/Pit No.	S2-WS04
Project Name	Global Centre of Rail Excellence Stage 2 (28)	Sample No.	5
Soil Description	Grey silty/clayey fine to coarse sandy fine to coarse GRAVEL	Depth Top	0.80
		Depth Base	1.00
Date Tested	22/06/2023	Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	89		
14	85		
10	77		
6.3	62		
5	52		
3.35	43		
2	32		
1.18	25		
0.6	19		
0.425	17		
0.3	15		
0.212	14		
0.15	12		
0.063	10		

Sample Proportions	% dry mass
Cobbles	0
Gravel	68
Sand	22
Silt and Clay	10

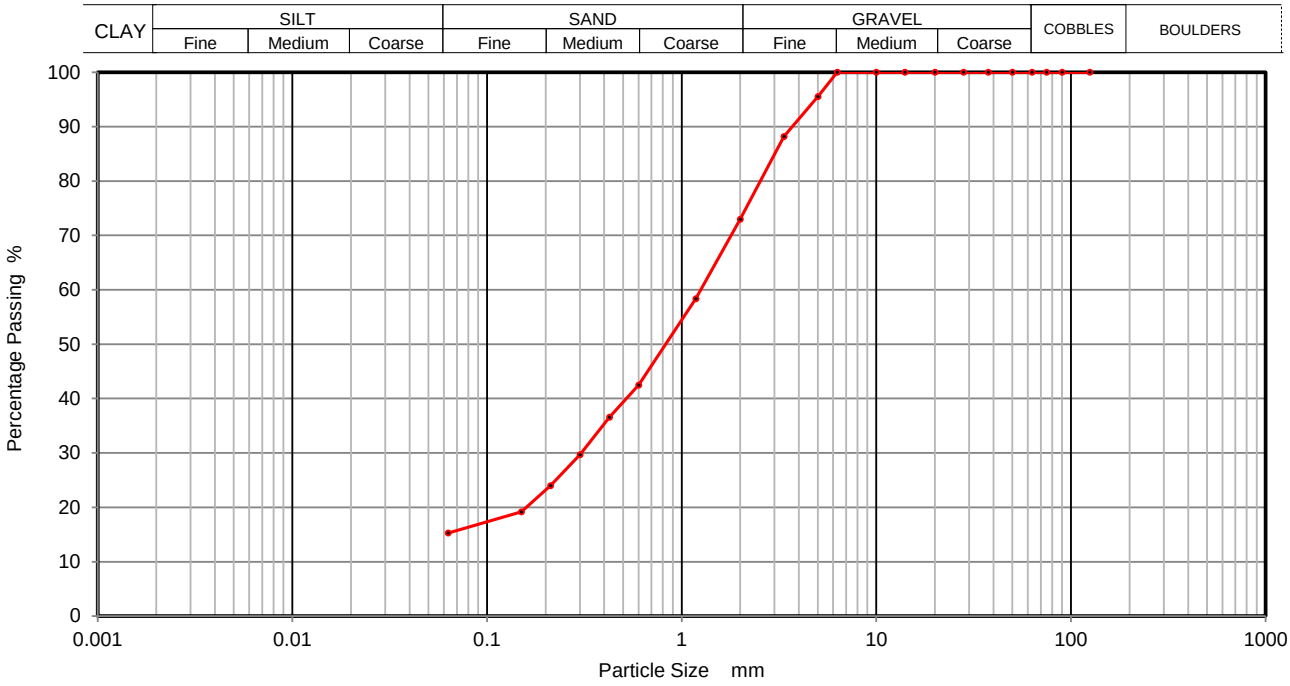
Remarks

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Operator
David Edwards

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GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**PARTICLE SIZE DISTRIBUTION** **BS 1377 Part 2:1990** **Wet Sieve, Clause 9.2**	Contract Number	67003
		Borehole/Pit No.	S2-WS04
Project Name	Global Centre of Rail Excellence Stage 2 (28)	Sample No.	17
Soil Description	Brown silty/clayey fine gravelly fine to coarse SAND	Depth Top	2.65
		Depth Base	3.10
Date Tested	22/06/2023	Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	96		
3.35	88		
2	73		
1.18	58		
0.6	42		
0.425	37		
0.3	30		
0.212	24		
0.15	19		
0.063	15		

Sample Proportions	% dry mass
Cobbles	0
Gravel	27
Sand	58
Silt and Clay	15

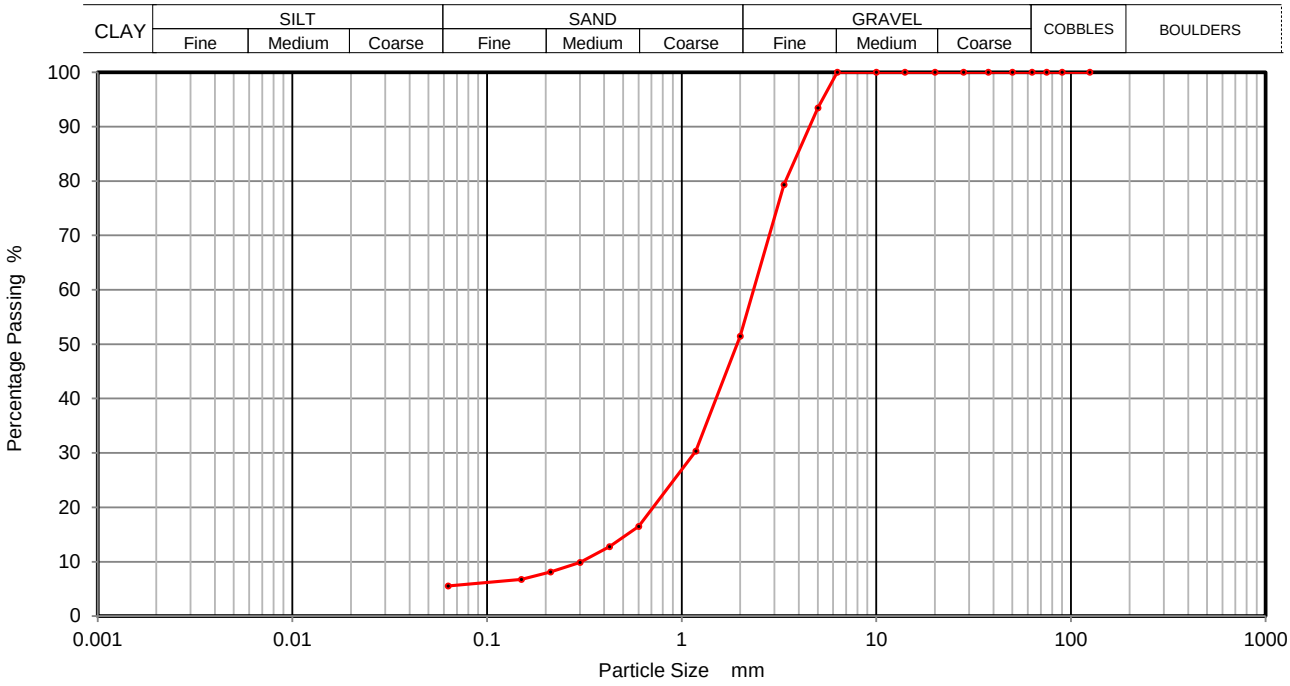
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator
David Edwards

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GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**PARTICLE SIZE DISTRIBUTION** **BS 1377 Part 2:1990** **Wet Sieve, Clause 9.2**	Contract Number	67003
		Borehole/Pit No.	S2-WS05
Project Name	Global Centre of Rail Excellence Stage 2 (28)	Sample No.	9
Soil Description	Brown silty/clayey fine to coarse sandy fine GRAVEL	Depth Top	1.20
		Depth Base	3.90
Date Tested	22/06/2023	Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	93		
3.35	79		
2	51		
1.18	30		
0.6	17		
0.425	13		
0.3	10		
0.212	8		
0.15	7		
0.063	6		

Sample Proportions	% dry mass
Cobbles	0
Gravel	49
Sand	45
Silt and Clay	6

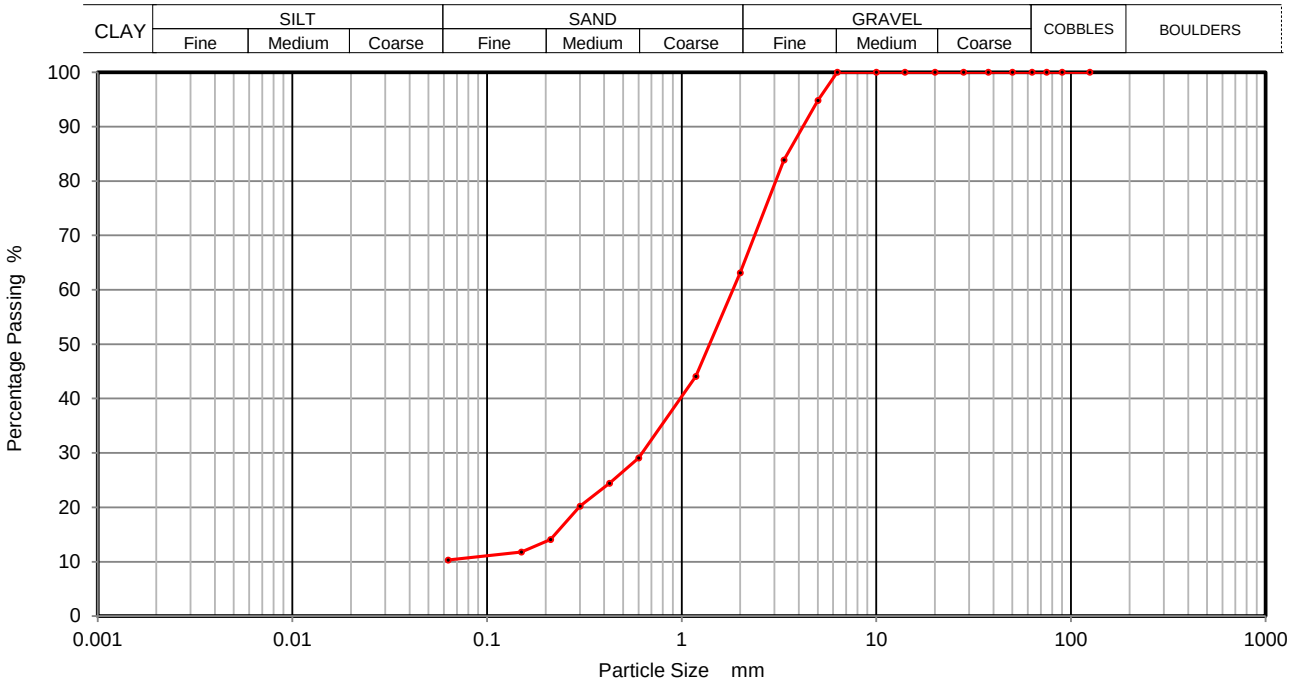
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator
David Edwards

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GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**PARTICLE SIZE DISTRIBUTION** **BS 1377 Part 2:1990** **Wet Sieve, Clause 9.2**	Contract Number	67003
		Borehole/Pit No.	S2-WS05
Project Name	Global Centre of Rail Excellence Stage 2 (28)	Sample No.	20
Soil Description	Brown silty/clayey fine gravelly fine to coarse SAND	Depth Top	3.90
		Depth Base	5.00
Date Tested	22/06/2023	Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	95		
3.35	84		
2	63		
1.18	44		
0.6	29		
0.425	24		
0.3	20		
0.212	14		
0.15	12		
0.063	10		

Sample Proportions	% dry mass
Cobbles	0
Gravel	37
Sand	53
Silt and Clay	10

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator
David Edwards

UKAS TESTING
2788

Laboratory Report

UKAS TESTING 2788

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES A PHENNA GROUP COMPANY

Contract Number: 67064

Client Ref: **G23012**
Client PO:

Date Received: **20-06-2023**
Date Completed: **28-06-2023**
Report Date: **28-06-2023**

Client: **Jackson Drilling Holdings Ltd**
Northwood Farm
Coxbridge Road
Baltonsborough
Somerset
BA6 8RA

This report has been checked and approved by:

B. Evans

Brendan Evans
Office Administrator

Contract Title: **Global Centre of Rail Excellence Stage 2 (29)**
For the attention of: **Adam Putt**

Test Description	Qty
Moisture Content of Soil BS1377 : Part 2 : Clause 3.2 : 1990 - * UKAS	1
PSD Wet & Dry Sieve method BS 1377:1990 - Part 2 : 9.2 - * UKAS	1
Determination of Point Load Value Axial or Diametrical including WC ***Please note GSTL is not accredited for the water content of rock*** ISRM Suggested Method for Point Load Strength - * UKAS	4
Uniaxial Compressive Strength of Rock inc sample prep 54-165mm diameter cores ISRM Suggested Method for determining uniaxial compressive strength - @ Non Accredited Test	2
Disposal of samples for job	1

Notes: **Observations and Interpretations are outside the UKAS Accreditation**
*** - denotes test included in laboratory scope of accreditation**
- denotes test carried out by approved contractor
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Richard John (Quality/Technical Manager) - Shaun Jones (Laboratory manager) - Shaun Thomas (Site Manager)
Wayne Honey (Human Resources/ Health and Safety Manager)

GEO Site & Testing Services Ltd
Units 3-4, Heol Aur, Dafen, Llanelli, Carmarthenshire, Wales SA14 8QN
Tel: 01554 784040 Fax: 01554 784041 info@gstl.co.uk gstl.co.uk

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GEOTECHNICAL SITE & TESTING LABORATORIES

Natural Moisture Content
(BS 1377:1990 - Part 2 : 3.2)

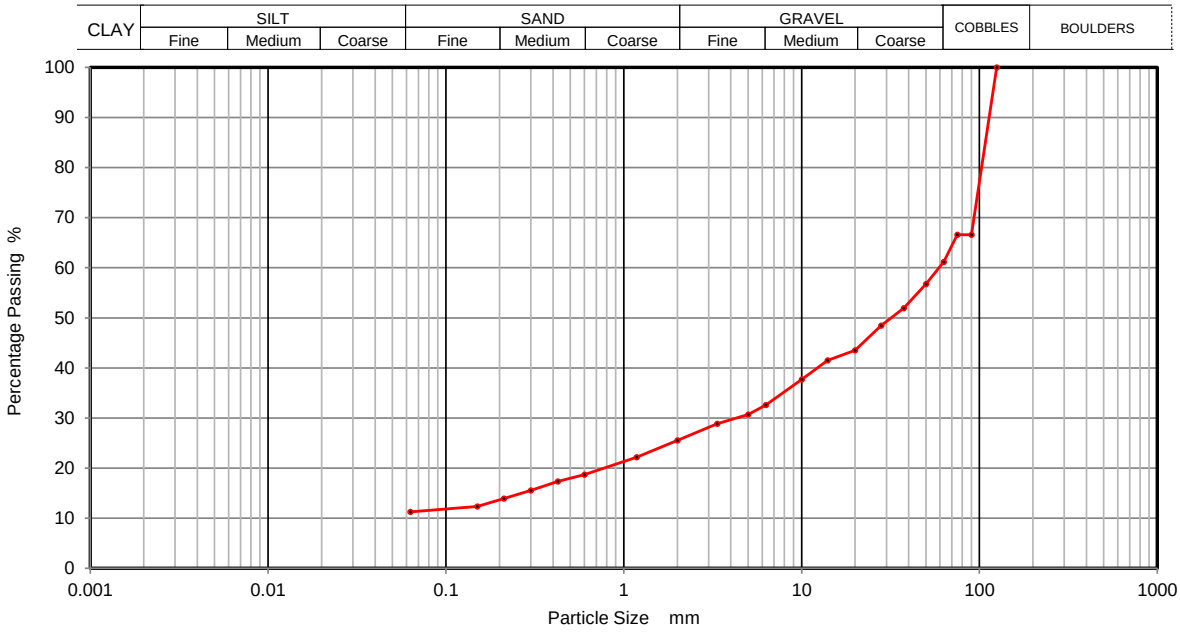
Contract Number	67064
Project Name	Global Centre of Rail Excellence Stage 2 (29)
Date Tested	16/08/2022

Sample/Hole Reference	Sample Number	Sample Type	Depth (m)			Moisture Content %	Remarks
S2-BH213	3	B	0.40	-	0.60	8.5	
				-			
				-			
				-			
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Operator
Clayton Jenkins

UKAS TESTING
2788

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2**	Contract Number	67064
		Borehole/Pit No.	S2-BH213
Project Name	Global Centre of Rail Excellence Stage 2 (29)	Sample No.	3
Soil Description	Grey silty/clayey fine to coarse sandy fine to coarse GRAVEL (with cobbles)	Depth Top	0.40
		Depth Base	0.60
Date Tested	22/06/2023	Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	67		
75	67		
63	61		
50	57		
37.5	52		
28	48		
20	44		
14	41		
10	38		
6.3	33		
5	31		
3.35	29		
2	26		
1.18	22		
0.6	19		
0.425	17		
0.3	16		
0.212	14		
0.15	12		
0.063	11		

Sample Proportions	% dry mass
Cobbles	39
Gravel	35
Sand	15
Silt and Clay	11

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator
David Edwards

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GSTL
GEOTECHNICAL SITE & TESTING LABORATORIES

Determination of Unconfined Compressive Strength
ISRM Suggested Methods Vol 16, No. 2, pp. 135-140 1979

Contract Number	67064
Project Name	Global Centre of Rail Excellence Stage 2 (29)
Sample Preperation	Sawing and Grinding
Date Tested	22/06/2023

Hole Reference	Depth (m)			Diameter	Length	Initial Mass	Moisture Content	Bulk Density	Dry Density	Load Failure	Maximum Strength	Type of Failure
S2-BH213	25.36		25.55	86.1	162.3	2101.4	2.0	2.22	2.18	48.4	8.3	Single Shear
S2-BH219	11.77		11.95	85.6	170	2587.5	0.9	2.64	2.62	80.2	13.9	Single Shear

Key	Reported As
Diameter	mm
Length	mm
Initial Mass	g
Moisture Content	%
Bulk Density	Mg/m^3
Dry Density	Mg/m^3
Load Failure	kN
Maximum Strength	MPa

Operator
Julian Jones

GSTL
GEOTECHNICAL SITE & TESTING LABORATORIES

Point Load Test

The complete ISRM suggested methods for rock characterization, testing and monitoring 1974-2006 Determining Point Load Strength

Contract Number	67064
Project Name	Global Centre of Rail Excellence Stage 2 (29)
Sample Type	Core
Date Tested	22/06/2023

*Please note that GSTL is not accredited for the water content of rock

Hole Reference	Depth (m)			Sample No	Test Type		Width	Platen Seperation	Failure Load	Equivalent Diameter	Point Load	Size Factor	Point Load Index	Moisture Content	Description	Angle Between Plane of Anisotropy & Core Axis	Type of Anisotropy (Bedding or Cleavage)
					d / a / b / i	I //											
S2-BH213	23.10	-	23.30	101	a		86	51	3.40	74.73	0.61	1.20	0.73	1.0	SILTSTONE		
S2-BH213	24.20	-	24.45	102	a		85	36	2.15	62.42	0.55	1.10	0.61	1.2	SILTSTONE		
S2-BH219	10.90	-	11.16	101	d			85	3.51		0.49	1.27	0.62	1.2	SILTSTONE		
S2-BH219	12.40	-	12.50	103	a		86	52	0.89	75.46	0.16	1.20	0.19	1.0	SILTSTONE		

Key	Reported As
Width	(W) mm
Platen Separation	(D) mm
Failure Load	(P) kN
Equivalent Diameter	(De) mm
Point Load	(Is) MPa
Size Factor	(F)
Point Load Index	(Is(50)) MPa
Moisture Content	%
Description	SC

Operator
Julian Jones

UKAS TESTING
2788

Laboratory Report

UKAS TESTING 2788

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES A PHENNA GROUP COMPANY

Contract Number: 67065

Client Ref: **G23012**
Client PO:

Date Received: **20-06-2023**
Date Completed: **01-07-2023**
Report Date: **01-07-2023**

Client: **Jackson Drilling Holdings Ltd**
Northwood Farm
Coxbridge Road
Baltonsborough
Somerset
BA6 8RA

This report has been checked and approved by:

Shaun Thomas
Site Manager

Contract Title: **Global Centre of Rail Excellence stage 2 (30)**
For the attention of: **Adam Putt**

Test Description	Qty
Moisture Content of Soil BS1377 : Part 2 : Clause 3.2 : 1990 - * UKAS	7
4 Point Liquid & Plastic Limit BS 1377:1990 - Part 2 : 4.3 & 5.3 - * UKAS	7
Particle Density (Gas Jar) BS 1377:1990 - Part 2 : 8.2 - * UKAS	5
PSD Wet & Dry Sieve method BS 1377:1990 - Part 2 : 9.2 - * UKAS	4
Dry Den/MC (4.5kg Rammer Method 1 Litre Mould/CBR Mould) BS 1377:1990 - Part 4 : 3.5 - * UKAS	1
Consolidated Drained Peak Shear Strength - set of 3 - 60 x 60mm Shear Box Specimens by Direct Shearing (3 days) BS 1377:1990 - Part 7 : 4 - * UKAS	5
Disposal of samples for job	1

Notes: **Observations and Interpretations are outside the UKAS Accreditation**
*** - denotes test included in laboratory scope of accreditation**
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Tel: 01554 784040 Fax: 01554 784041 info@gstl.co.uk gstl.co.uk

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	NATURAL MOISTURE, LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377:1990 - Part 2 : 4.3 & 5.3)	
Contract Number	67065	
Project Name	Global Centre of Rail Excellence stage 2 (30)	
Date Tested	28/06/2023	
	DESCRIPTIONS	

Sample/Hole Reference	Sample Number	Sample Type	Depth (m)			Descriptions
S2-BH228	110	D	6.50	-		Brown/grey fine to medium gravelly silty CLAY
S2-BH228	113	D	8.90	-	9.00	Brown/grey fine to medium gravelly silty CLAY
S2-BH228	119	D	13.10	-	13.20	Grey fine to medium gravelly silty CLAY
S2-BH228	127	D	18.50	-	18.60	Grey fine to medium gravelly silty CLAY
S2-BH228	132	D	21.80	-	21.90	Grey fine to medium gravelly silty CLAY
S2-BH228	138	D	24.50	-	24.60	Grey fine to medium gravelly silty CLAY
S2-BH228	150	D	31.50	-	31.60	Brown fine to medium gravelly silty CLAY
				-		
				-		
				-		
				-		
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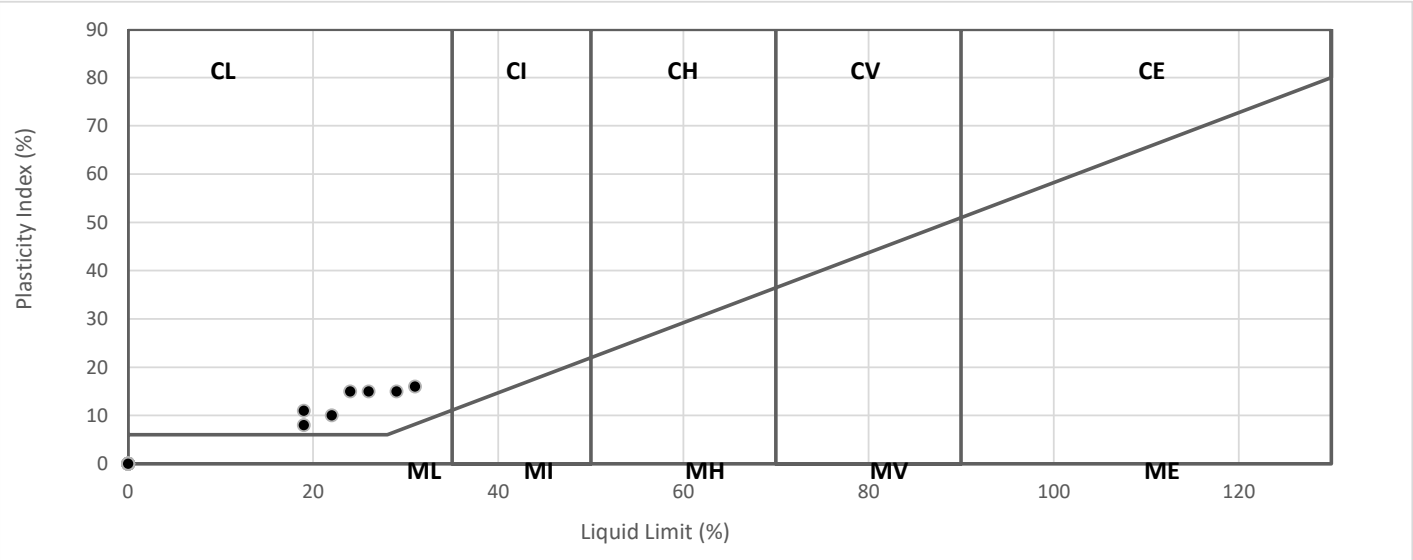
Operator
Aaron Hodge

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	NATURAL MOISTURE, LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377:1990 - Part 2 : 4.3 & 5.3)	
Contract Number	67065	
Project Name	Global Centre of Rail Excellence stage 2 (30)	
Date Tested	28/06/2023	

Sample/Hole Reference	Sample Number	Sample Type	Depth (m)			Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity index %	Passing 0.425mm %	Remarks
S2-BH228	110	D	6.50	-		8.1	24	9	15	71	CL Low Plasticity
S2-BH228	113	D	8.90	-	9.00	13	31	15	16	65	CL Low Plasticity
S2-BH228	119	D	13.10	-	13.20	4.9	19	8	11	60	CL Low Plasticity
S2-BH228	127	D	18.50	-	18.60	2.1	19	11	8	90	CL Low Plasticity
S2-BH228	132	D	21.80	-	21.90	2.8	22	12	10	85	CL Low Plasticity
S2-BH228	138	D	24.50	-	24.60	12	29	14	15	95	CL Low Plasticity
S2-BH228	150	D	31.50	-	31.60	9.2	26	11	15	85	CL Low Plasticity
				-							
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Symbols: NP : Non Plastic # : Liquid Limit and Plastic Limit Wet Sieved

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION
BS 5930:2015+A1:2020



Operator
Aaron Hodge

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2788

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	PARTICLE DENSITY BY GAS JAR (BS 1377 : PART 2 : 8.2 : 1990)	
Contract Number	67065	
Project Name	Global Centre of Rail Excellence stage 2 (30)	
Date Tested	03/06/2023	

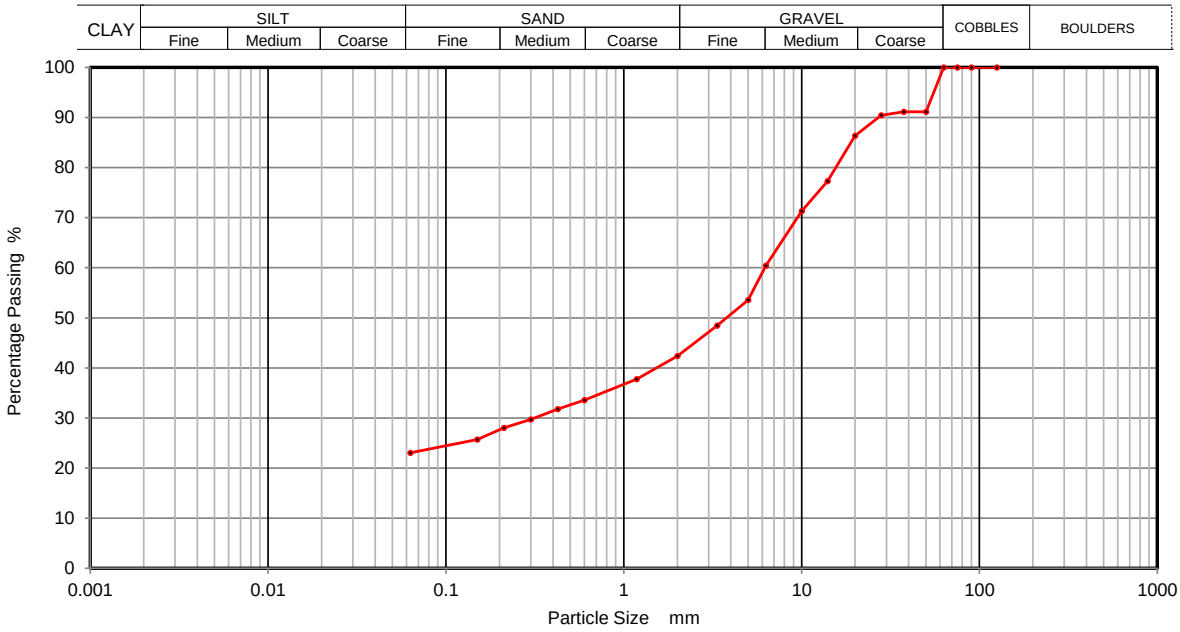
Hole Reference	Sample Number	Sample Type	Depth (m)							Particle Density		Remarks
S2-BH228	105	B	2.70	-	4.00				Natural	2.53		
S2-BH228	107	B	4.00	-	6.00				Natural	2.62		
S2-BH228	120	B	12.00	-	16.00				Natural	2.60		
S2-BH228	129	B	20.00	-	21.00				Natural	2.57		
S2-BH228	151	D	32.50	-	32.60				Natural	2.59		
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Key	Reported As
Moisture Content	%
Bulk Density	Mg/m^3
Dry Density	Mg/m^3
Particle Density	Mg/m^3
Air Voids	%

Operator
Conal Aliffe

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GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2**	Contract Number	67065
		Borehole/Pit No.	S2-BH228
Project Name	Global Centre of Rail Excellence stage 2 (30)	Sample No.	107
Soil Description	Grey fine to coarse sandy silty/clayey fine to coarse GRAVEL	Depth Top	4.00
		Depth Base	6.00
Date Tested	30/06/2023	Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	91		
37.5	91		
28	90		
20	86		
14	77		
10	71		
6.3	60		
5	54		
3.35	48		
2	42		
1.18	38		
0.6	34		
0.425	32		
0.3	30		
0.212	28		
0.15	26		
0.063	23		

Sample Proportions	% dry mass
Cobbles	0
Gravel	58
Sand	19
Silt and Clay	23

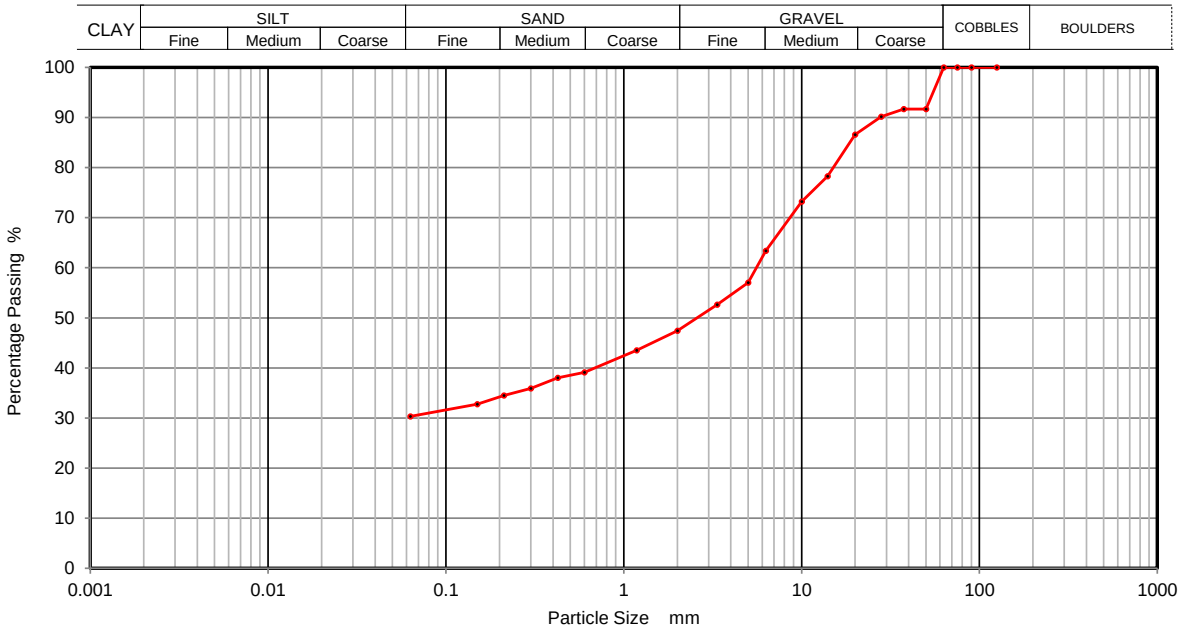
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator
David Edwards

UKAS TESTING 2788

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2**	Contract Number	67065
		Borehole/Pit No.	S2-BH228
Project Name	Global Centre of Rail Excellence stage 2 (30)	Sample No.	120
Soil Description	Grey fine to coarse sandy silty/clayey fine to coarse GRAVEL	Depth Top	12.00
		Depth Base	16.00
Date Tested	30/06/2023	Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	92		
37.5	92		
28	90		
20	87		
14	78		
10	73		
6.3	63		
5	57		
3.35	53		
2	47		
1.18	44		
0.6	39		
0.425	38		
0.3	36		
0.212	34		
0.15	33		
0.063	30		

Sample Proportions	% dry mass
Cobbles	0
Gravel	53
Sand	17
Silt and Clay	30

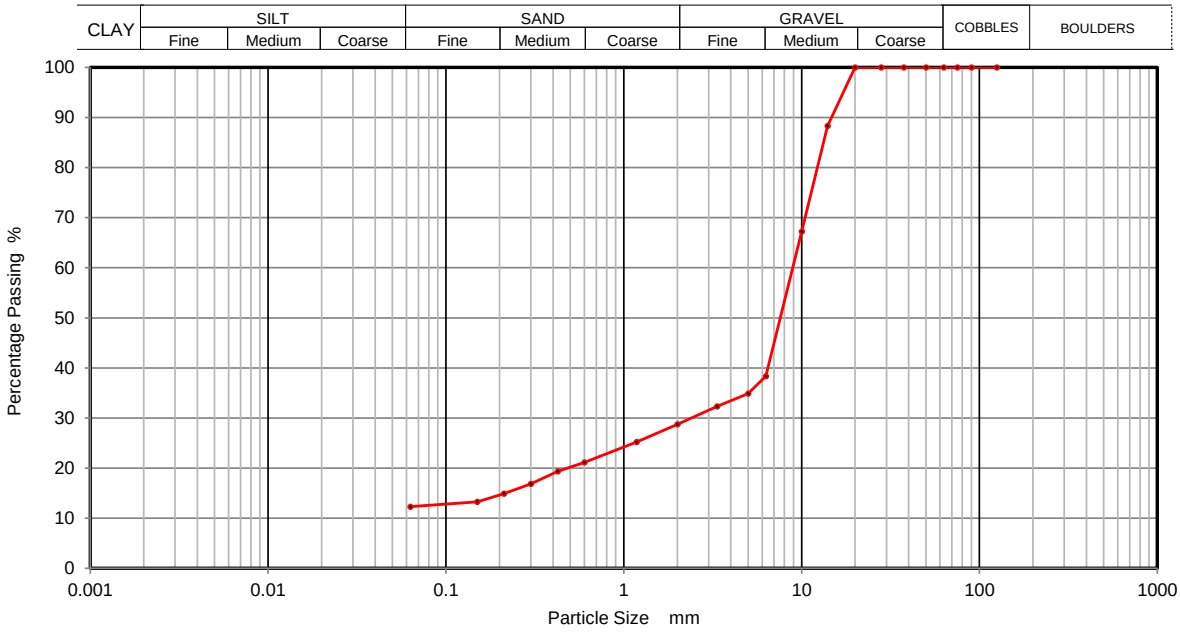
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator
David Edwards

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GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2**	Contract Number	67065
		Borehole/Pit No.	S2-BH228
Project Name	Global Centre of Rail Excellence stage 2 (30)	Sample No.	151
Soil Description	Grey/brown silty/clayey fine to coarse sandy fine to coarse GRAVEL	Depth Top	32.50
		Depth Base	32.60
Date Tested	30/06/2023	Sample Type	D



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	88		
10	67		
6.3	38		
5	35		
3.35	32		
2	29		
1.18	25		
0.6	21		
0.425	19		
0.3	17		
0.212	15		
0.15	13		
0.063	12		

Sample Proportions	% dry mass
Cobbles	0
Gravel	71
Sand	17
Silt and Clay	12

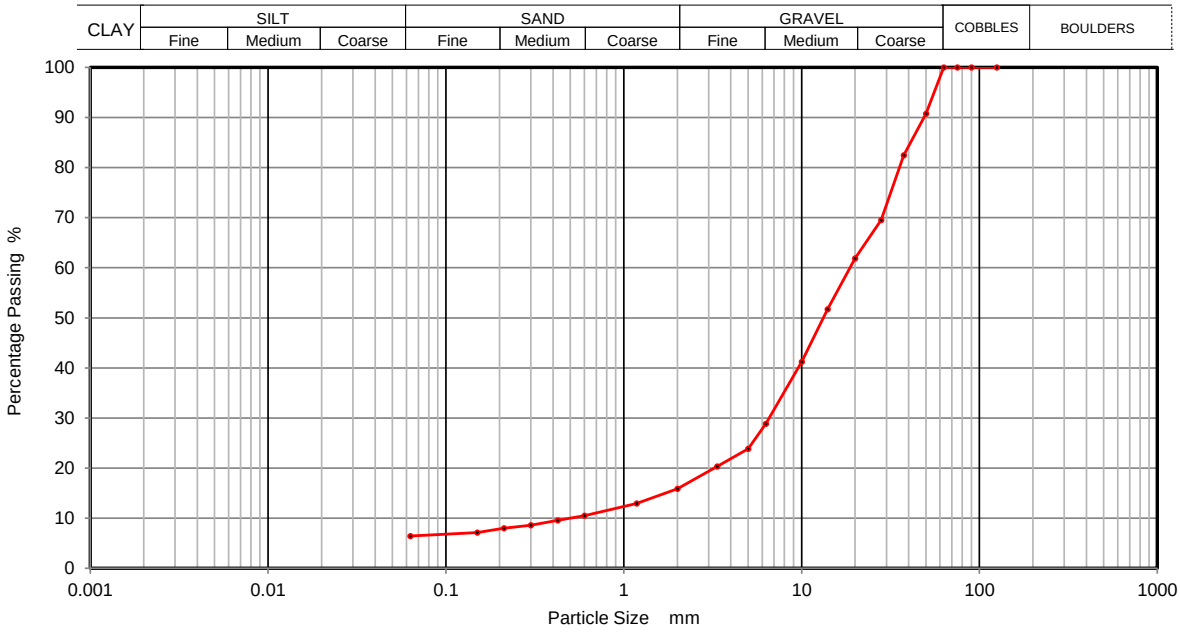
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator
David Edwards

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GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2**	Contract Number	67065
		Borehole/Pit No.	S2-BH228
Project Name	Global Centre of Rail Excellence stage 2 (30)	Sample No.	158
Soil Description	Grey silty/clayey fine to coarse sandy fine to coarse GRAVEL	Depth Top	36.00
		Depth Base	38.00
Date Tested	30/06/2023	Sample Type	D



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	91		
37.5	82		
28	70		
20	62		
14	52		
10	41		
6.3	29		
5	24		
3.35	20		
2	16		
1.18	13		
0.6	10		
0.425	10		
0.3	9		
0.212	8		
0.15	7		
0.063	6		

Sample Proportions	% dry mass
Cobbles	0
Gravel	84
Sand	10
Silt and Clay	6

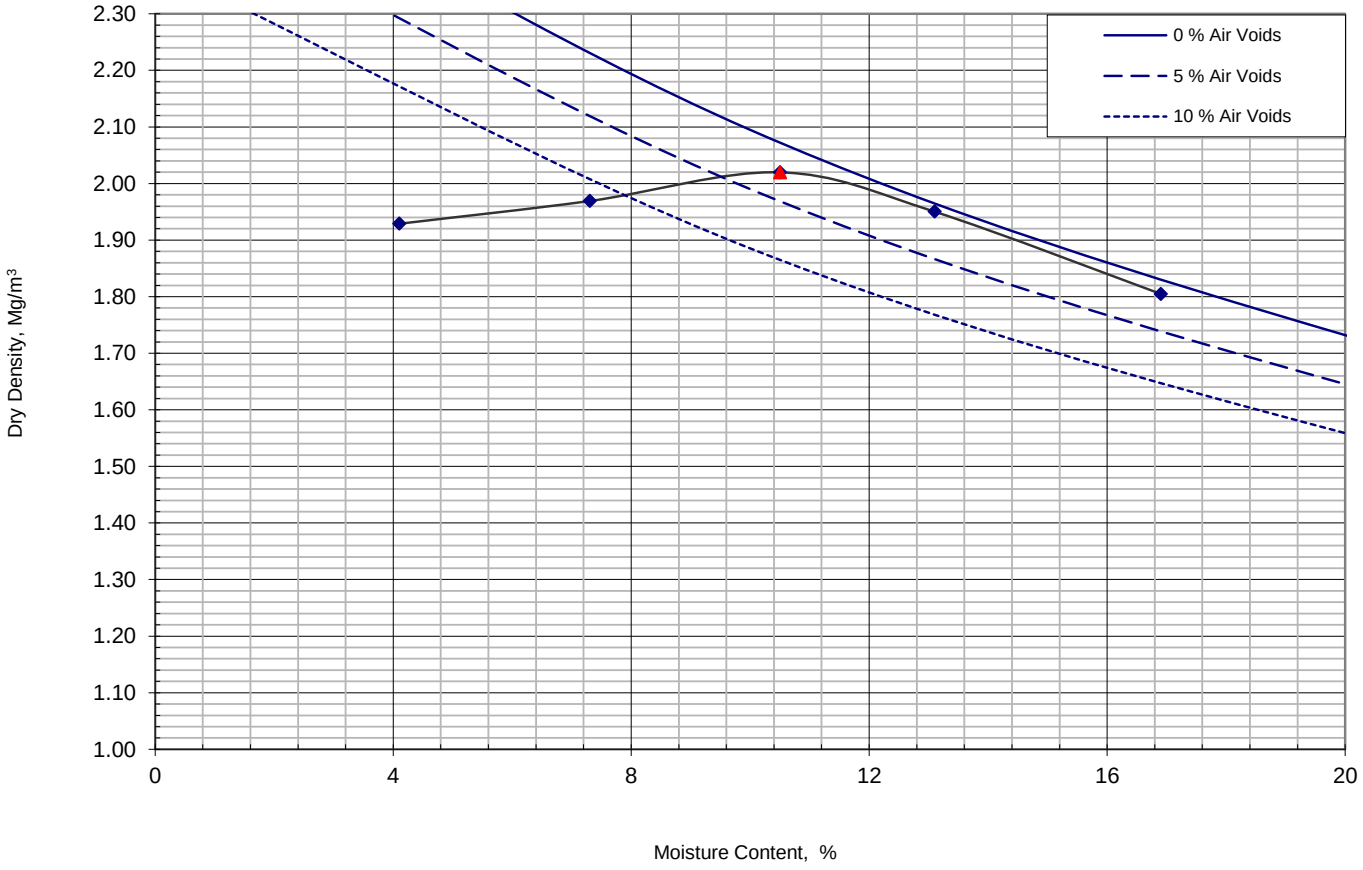
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator
David Edwards

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GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**Dry Density / Moisture Content Relationship BS 1377:Part 4:1990**	Contract Number	60765
		Borehole / Pit No	S2-BH228
Project Name	Global Centre of Rail Excellence stage 2 (30)	Sample No	115
Date Tested	29/06/2023	Depth Top	8.00
Compaction Method	4.5 Kg Rammer	Depth Base	12.00
Compaction Clause	BS1377:Part 4:1990, Clause 3.5	Sample Type	B
Sample Description	Grey fine to coarse gravelly silty CLAY	Single or Separate Sample Used	Single



Compaction Point	1	2	3	4	5							
Moisture Content	4.1	7.3	11	13	17							
Bulk Density	2.01	2.11	2.23	2.21	2.11							
Dry Density	1.93	1.97	2.02	1.95	1.80							

Initial Moisture Content	11	%
Maximum Dry Density	2.02	Mg/m3
Optimum Moisture Content	11	%
Particle Density	2.65 Assumed	Mg/m3
Material Retained 37.5mm	4	%
Material Retained 20mm	11	%

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Operator
Conal

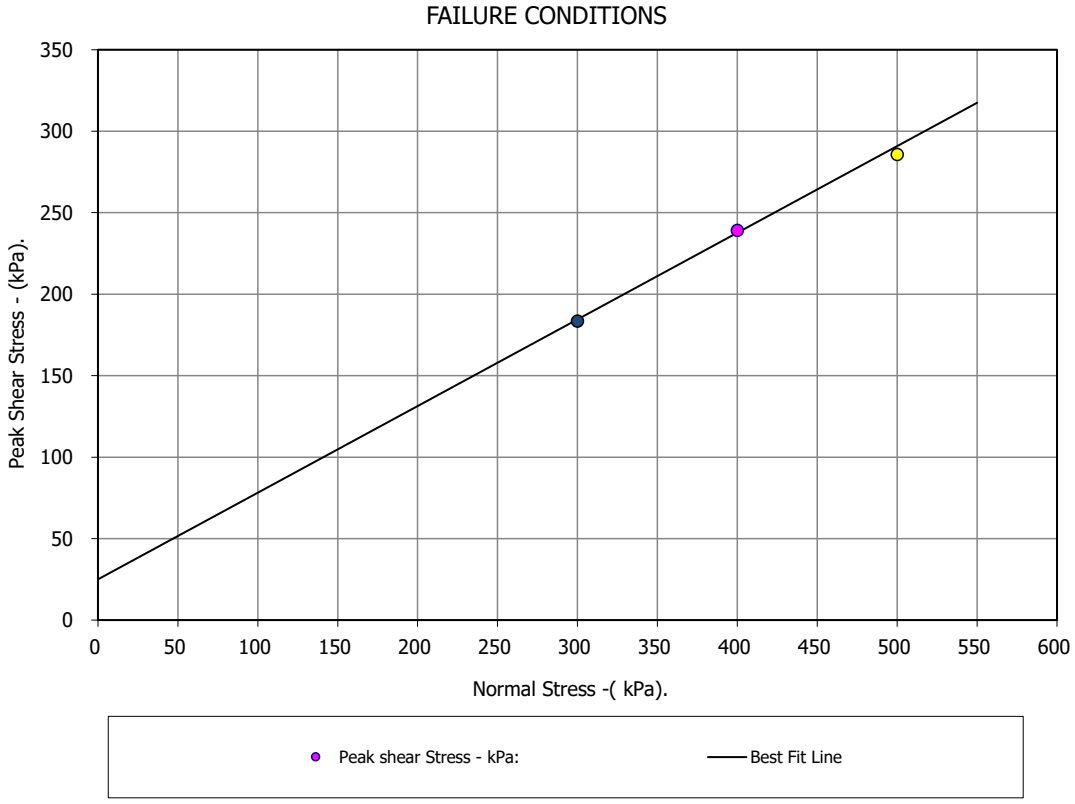
Borehole Number:	S2-BH228	Depth from (m):	4.00
Sample Number :	107.0	Depth to (m):	6.00

Sample Type:	B
Particle Density - Mg/m3:	2.65 (Assumed)
Specimen Tested:	Submerged, Remoulded (Light Tamping) Material above 2mm removed.

Sample Description:
Brown gravelly CLAY

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	25.03	25.03	25.03
Length - mm:	60.00	60.00	60.00
Moisture Content - %:	6.0	6.0	6.0
Bulk Density - Mg/m3:	1.79	1.79	1.79
Dry Density - Mg/m3:	1.69	1.69	1.69
Voids Ratio:	0.5691	0.5663	0.5671
Degree of Saturation - %:	28.17	28.30	28.27
Normal Pressure- kPa	300	400	500
Consolidation			
Consolidated Height - mm:	19.61	20.05	17.45
Shear			
Rate of Horizontal Displacement (mm/min)	0.200	0.200	0.200
Horizontal Displacement at Peak Shear Stress (mm)	5.86	6.76	6.13
Peak shear Stress - kPa:	183	239	286

PEAK	
Angle of Shearing Resistance:(θ)	**28.0**
Effective Cohesion - kPa:	**25**

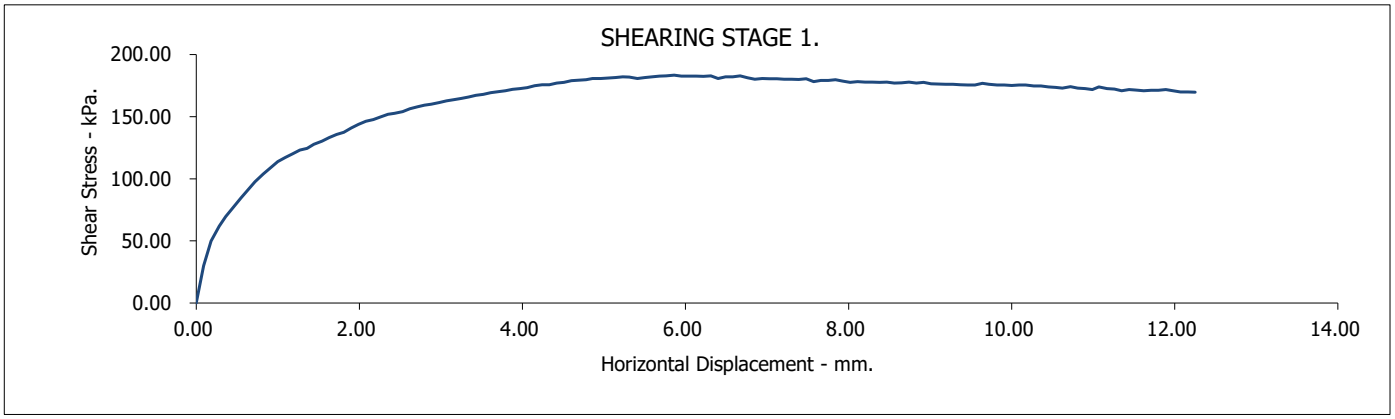


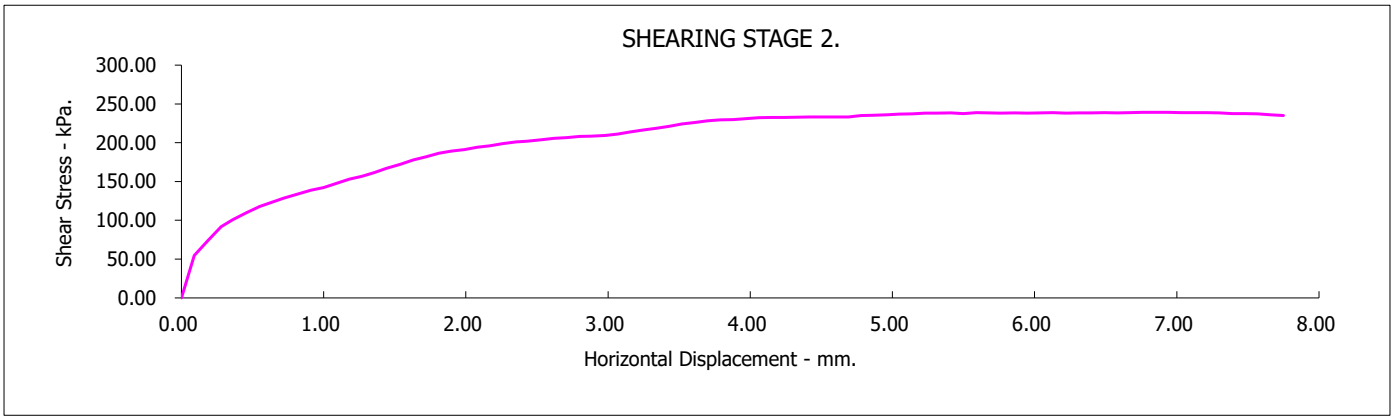
Contract No.:
67065

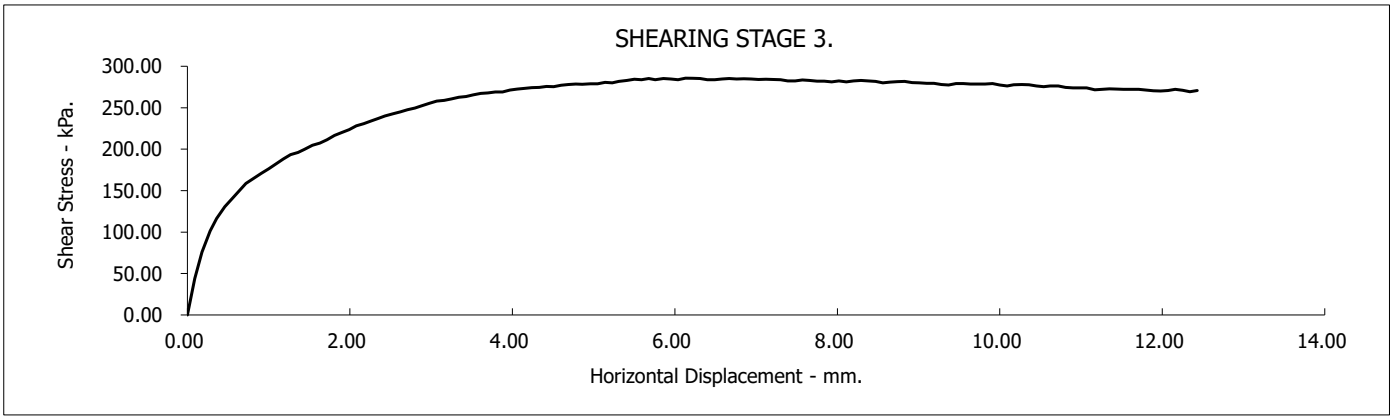
Global Centre of Rail Excellence stage 2 (30)

Client Ref Number:
G23012

Borehole Number:	S2-BH228	Depth from (m):	4.00
Sample Number :	107	Depth to (m):	6.00







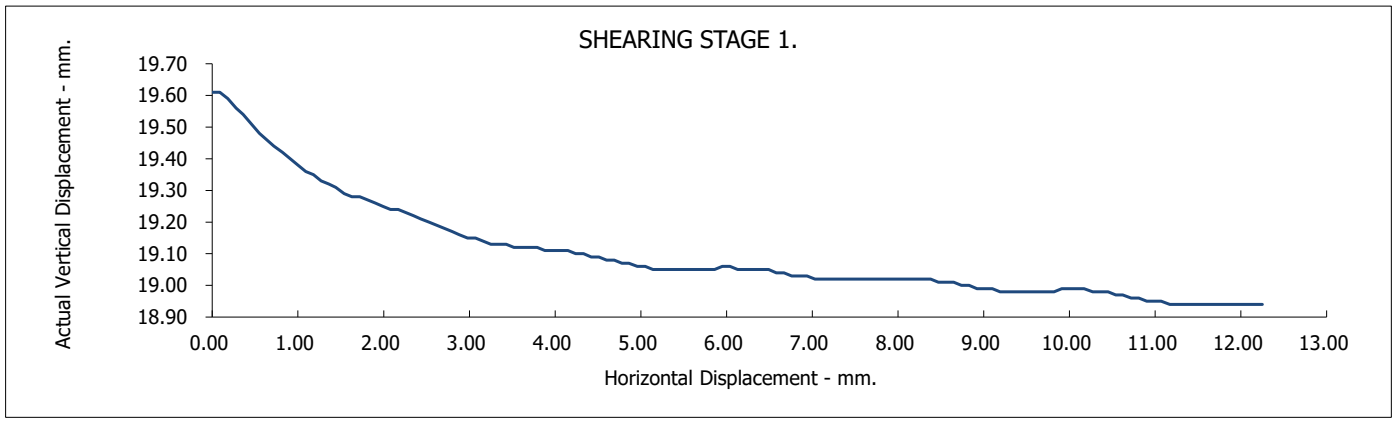
Contract No.:
67065

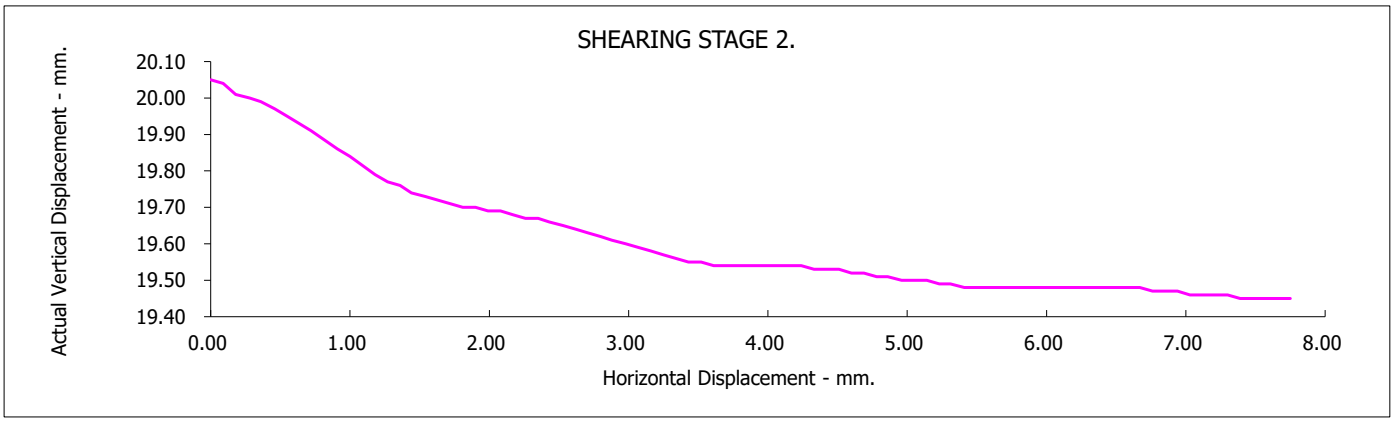
Global Centre of Rail Excellence stage 2 (30)

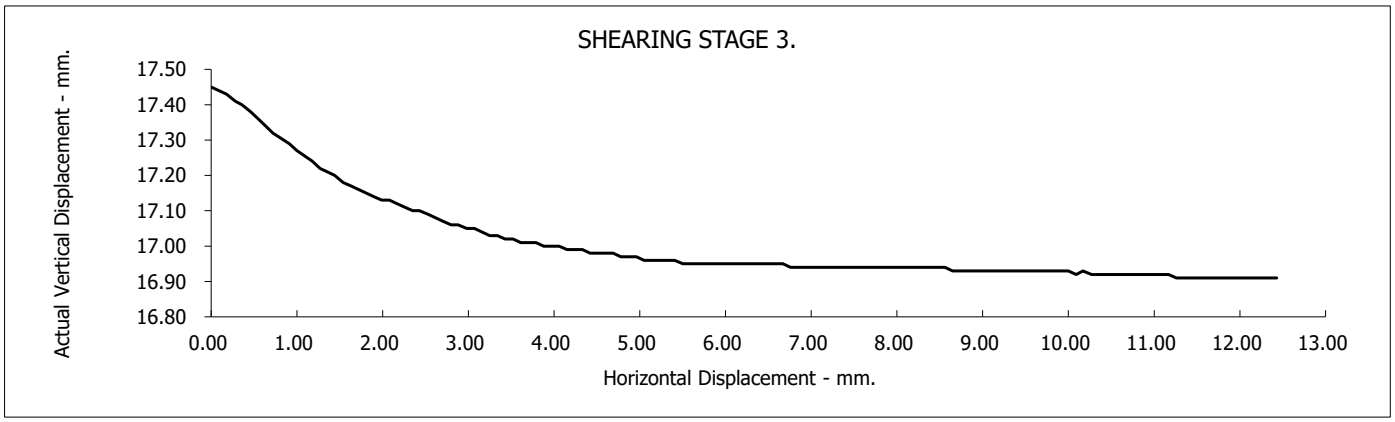
Client Ref Number:
G23012

Figure.

Borehole Number:	S2-BH228	Depth from (m):	4.00
Sample Number :	107	Depth to (m):	6.00





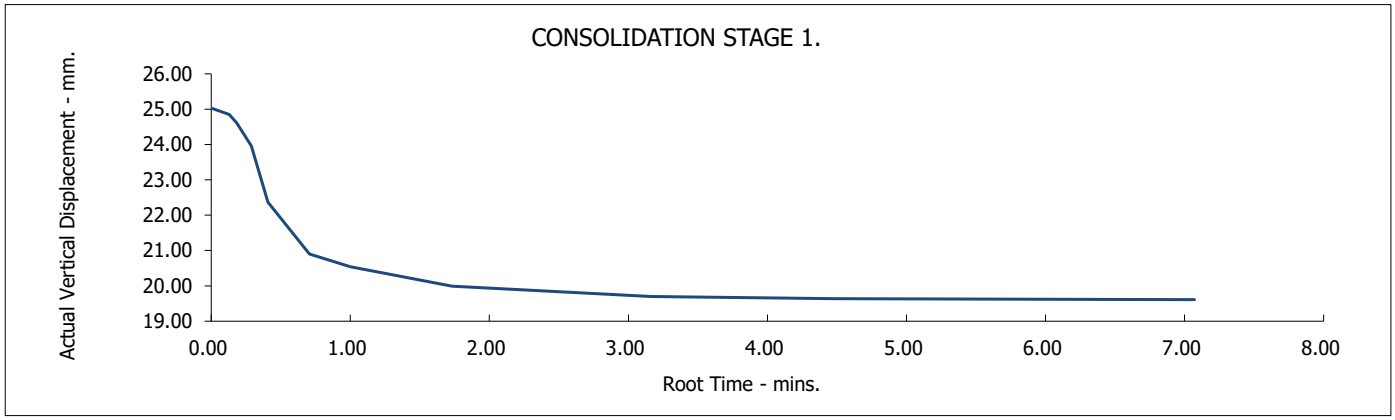


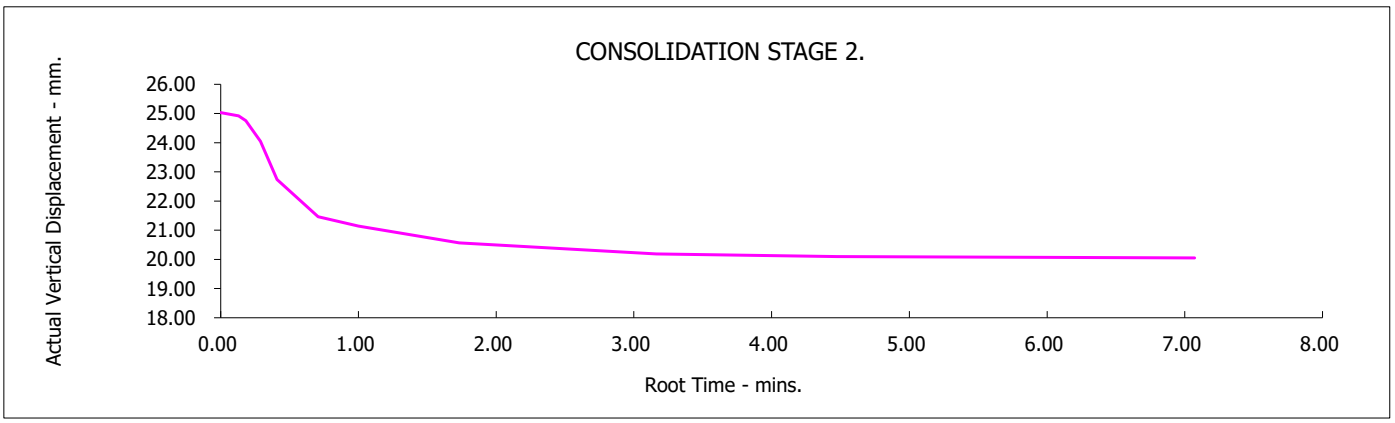
Contract No.:
67065

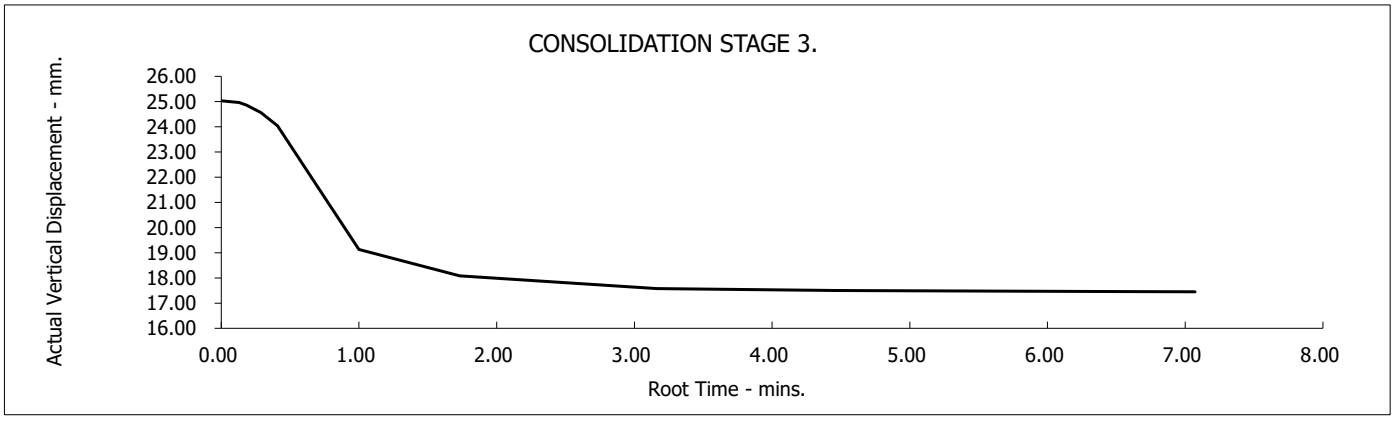
Global Centre of Rail Excellence stage 2 (30)

Client Ref Number:
G23012

Borehole Number:	S2-BH228	Depth from (m):	4.00
Sample Number :	107	Depth to (m):	6.00







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Global Centre of Rail Excellence stage 2 (30)

Contract No.:
67065

Client Ref Number:
G23012

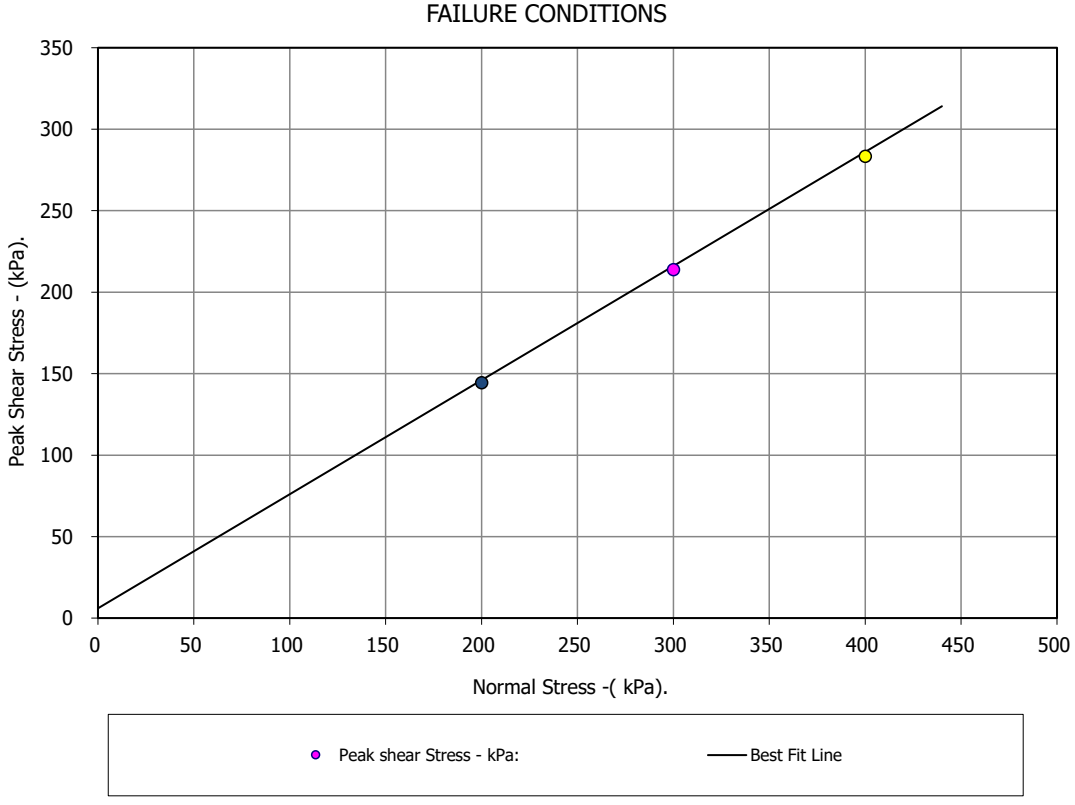
Borehole Number:	S2-BH228	Depth from (m):	8.00
Sample Number :	115.0	Depth to (m):	12.00

Sample Type:	B
Particle Density - Mg/m3:	2.65 (Assumed)
Specimen Tested:	Submerged, Remoulded (Light Tamping) Material above 2mm removed.

Sample Description:
Brown gravelly CLAY

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	23.30	23.30	23.30
Length - mm:	60.00	60.00	60.00
Moisture Content - %:	10	10	10
Bulk Density - Mg/m3:	1.89	1.89	1.89
Dry Density - Mg/m3:	1.71	1.71	1.71
Voids Ratio:	0.5487	0.5480	0.5490
Degree of Saturation - %:	50.58	50.64	50.55
Normal Pressure- kPa	200	300	400
Consolidation			
Consolidated Height - mm:	21.09	20.49	19.72
Shear			
Rate of Horizontal Displacement (mm/min)	0.200	0.200	0.200
Horizontal Displacement at Peak Shear Stress (mm)	4.59	5.04	4.95
Peak shear Stress - kPa:	144	214	283

PEAK	
Angle of Shearing Resistance:(θ)	**35**
Effective Cohesion - kPa:	**6**

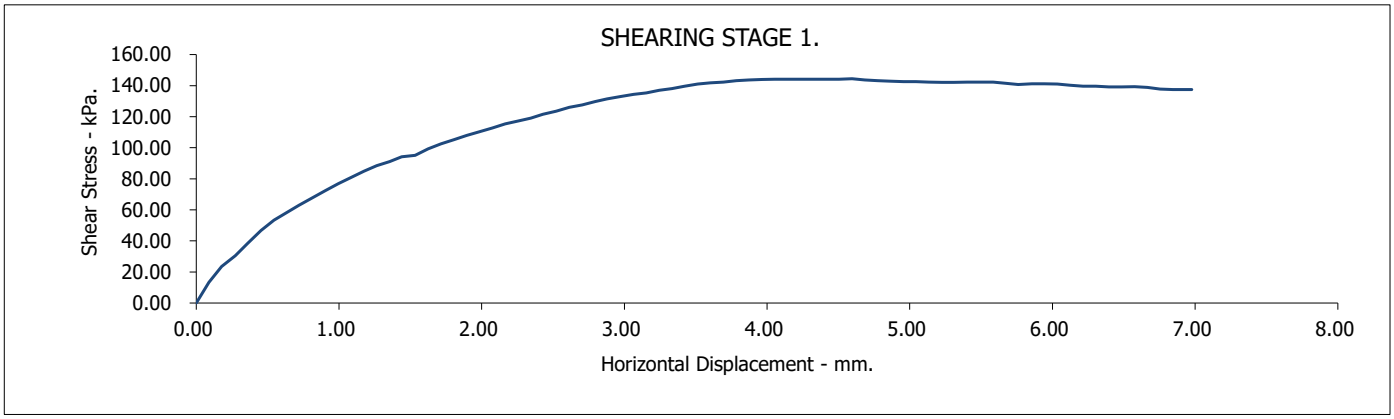


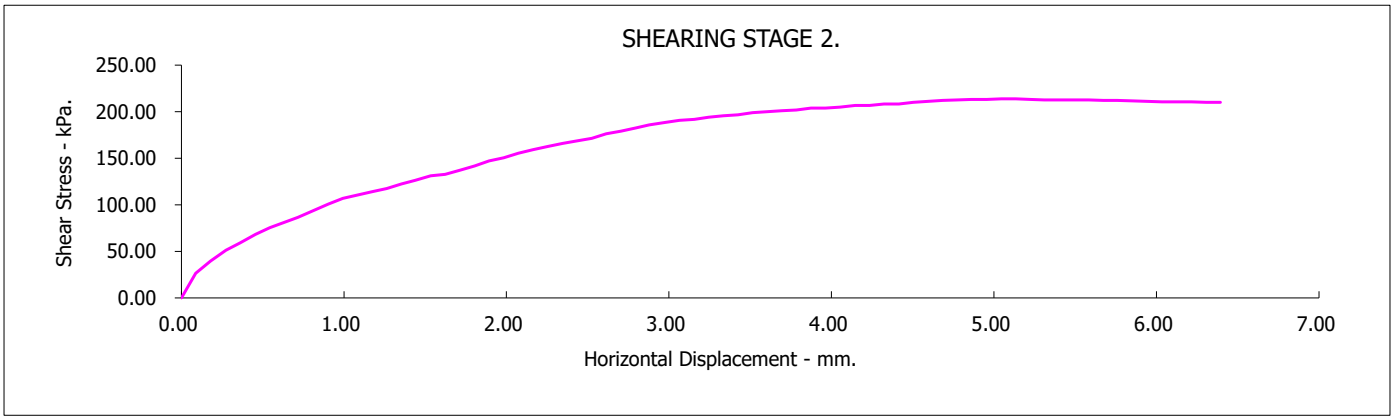
Contract No.: **67065**

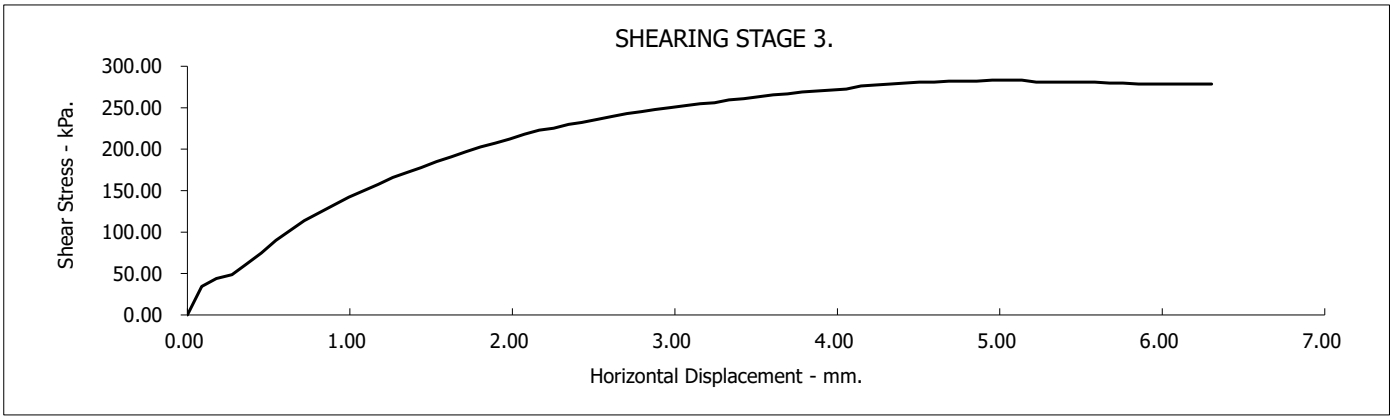
Global Centre of Rail Excellence stage 2 (30)

Client Ref Number: **G23012**

Borehole Number:	S2-BH228	Depth from (m):	8.00
Sample Number :	115	Depth to (m):	12.00







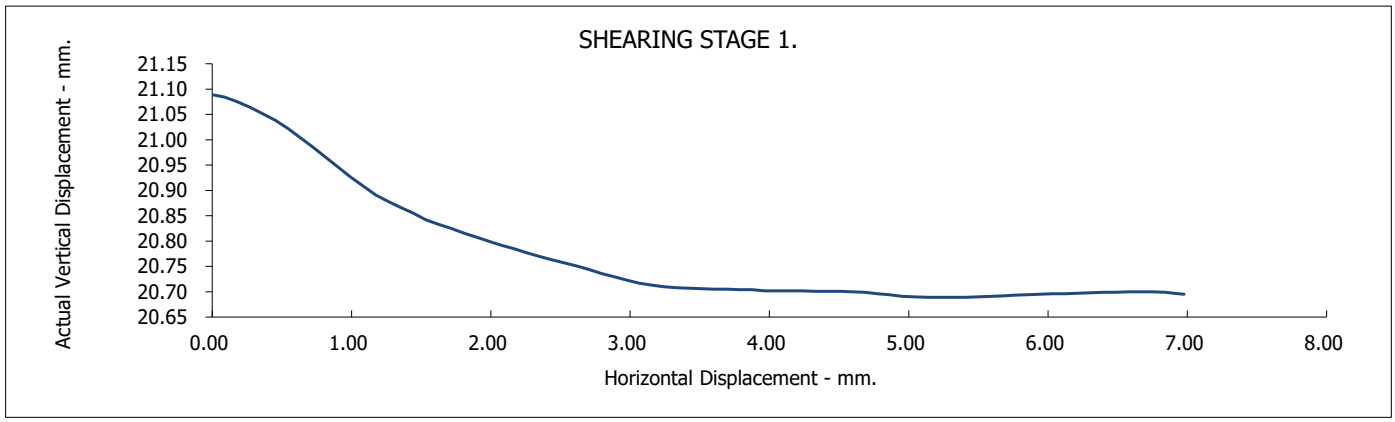
Contract No.:
67065

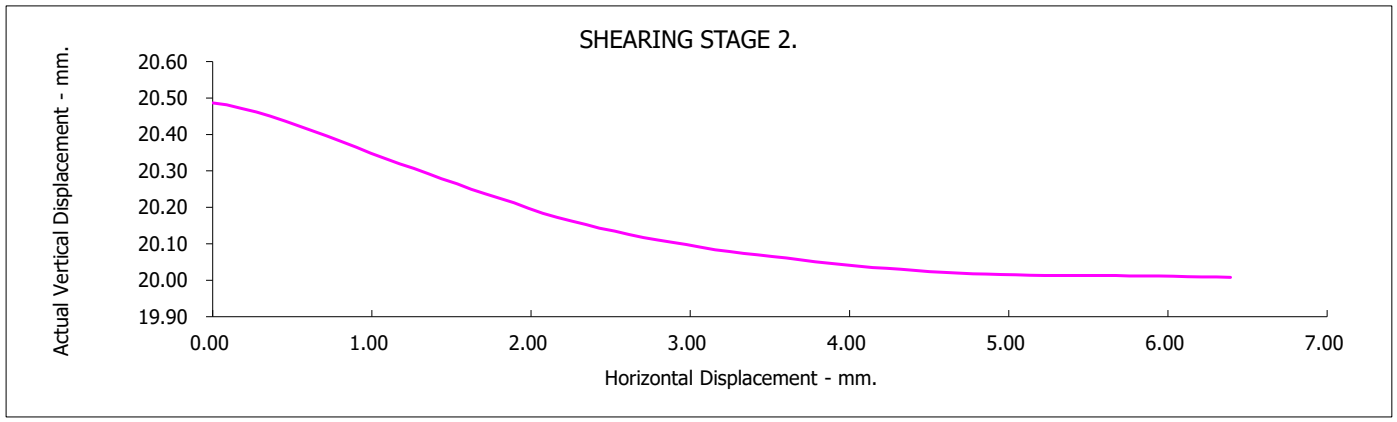
Global Centre of Rail Excellence stage 2 (30)

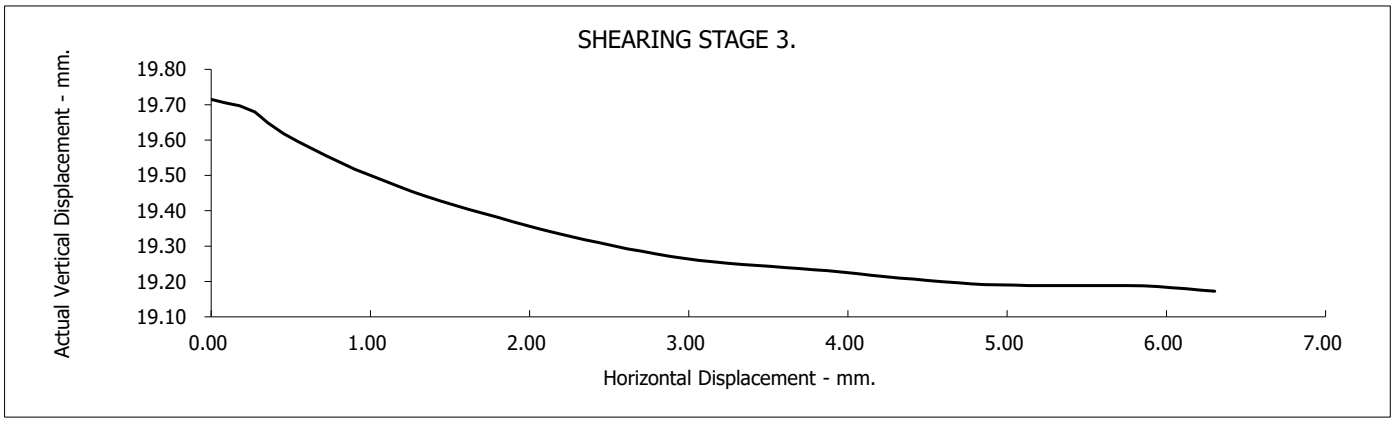
Client Ref Number:
G23012

Figure.

Borehole Number:	S2-BH228	Depth from (m):	8.00
Sample Number :	115	Depth to (m):	12.00





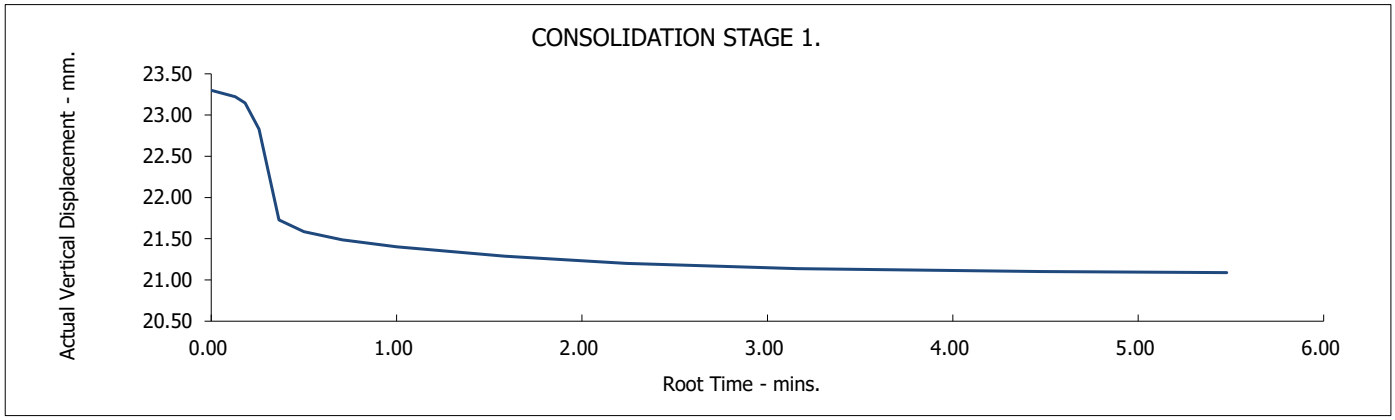


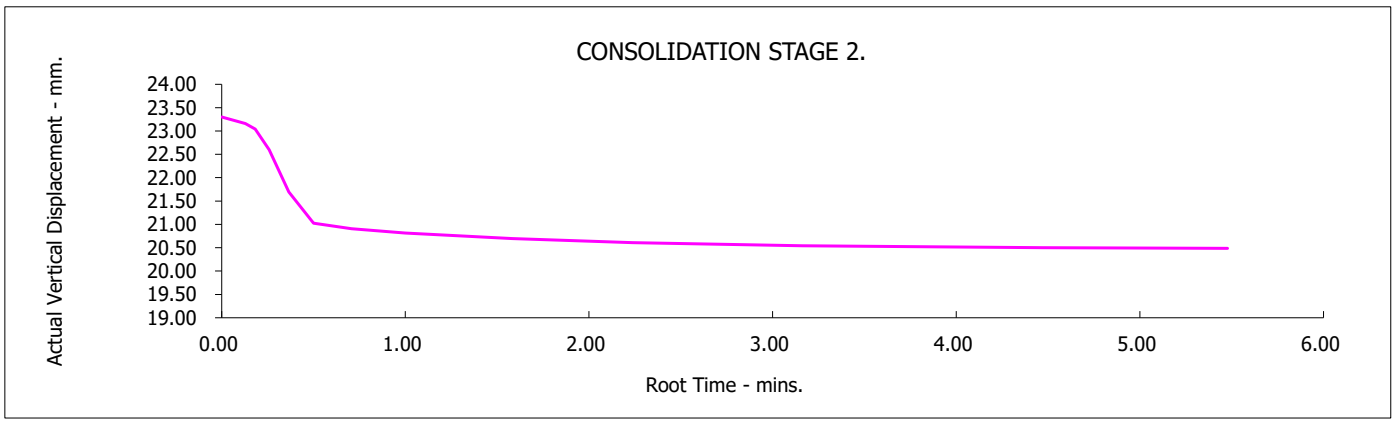
Contract No.:
67065

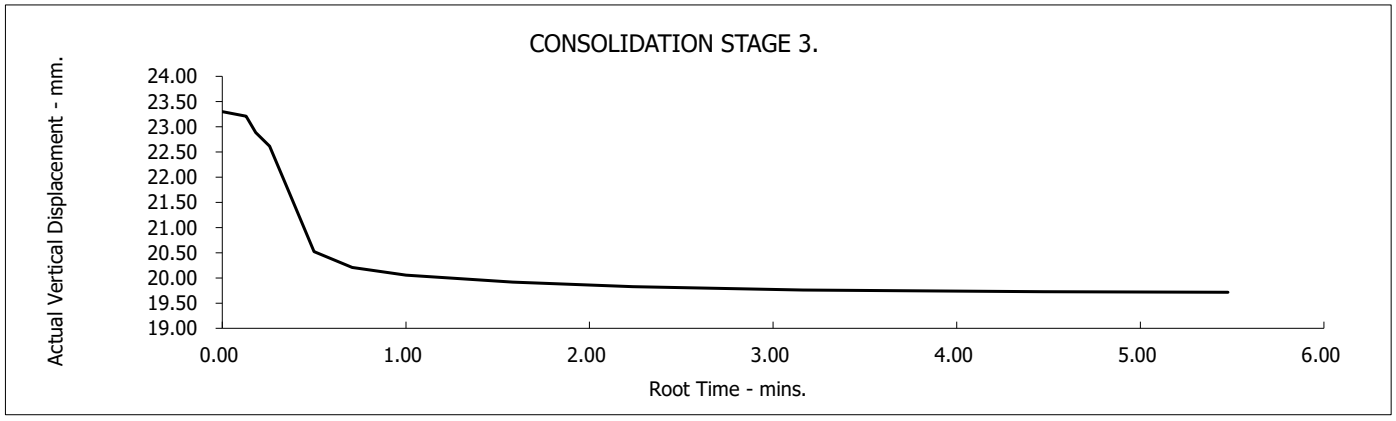
Global Centre of Rail Excellence stage 2 (30)

Client Ref Number:
G23012

Borehole Number:	S2-BH228	Depth from (m):	8.00
Sample Number :	115	Depth to (m):	12.00







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Global Centre of Rail Excellence stage 2 (30)

Contract No.: **67065**

Client Ref Number: **G23012**

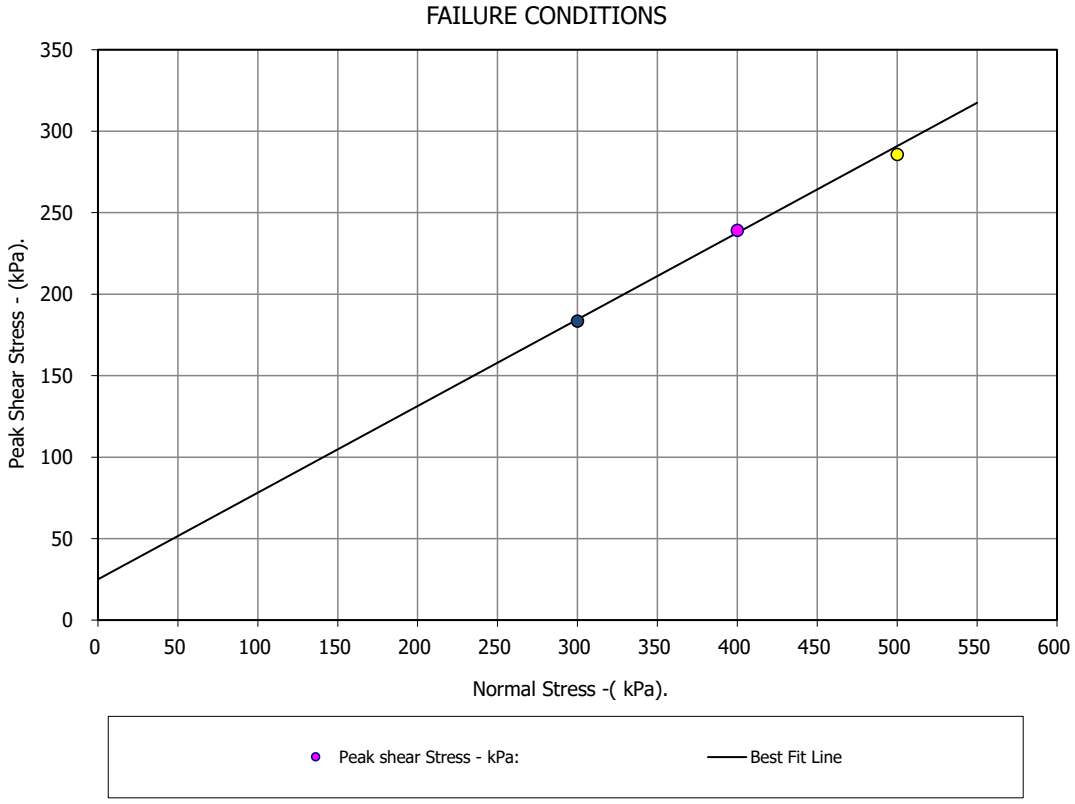
Borehole Number:	S2-BH228	Depth from (m):	12.00
Sample Number :	120.0	Depth to (m):	13.00

Sample Type:	B
Particle Density - Mg/m3:	2.65 (Assumed)
Specimen Tested:	Submerged, Remoulded (Light Tamping) Material above 2mm removed.

Sample Description:
Brown gravelly CLAY

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	25.03	25.03	25.03
Length - mm:	60.00	60.00	60.00
Moisture Content - %:	6.0	6.0	6.0
Bulk Density - Mg/m3:	1.79	1.79	1.79
Dry Density - Mg/m3:	1.69	1.69	1.69
Voids Ratio:	0.5691	0.5663	0.5671
Degree of Saturation - %:	28.17	28.30	28.27
Normal Pressure- kPa	300	400	500
Consolidation			
Consolidated Height - mm:	19.61	20.05	17.45
Shear			
Rate of Horizontal Displacement (mm/min)	0.200	0.200	0.200
Horizontal Displacement at Peak Shear Stress (mm)	5.86	6.76	6.13
Peak shear Stress - kPa:	183	239	286

PEAK	
Angle of Shearing Resistance:(θ)	**28.0**
Effective Cohesion - kPa:	**25**

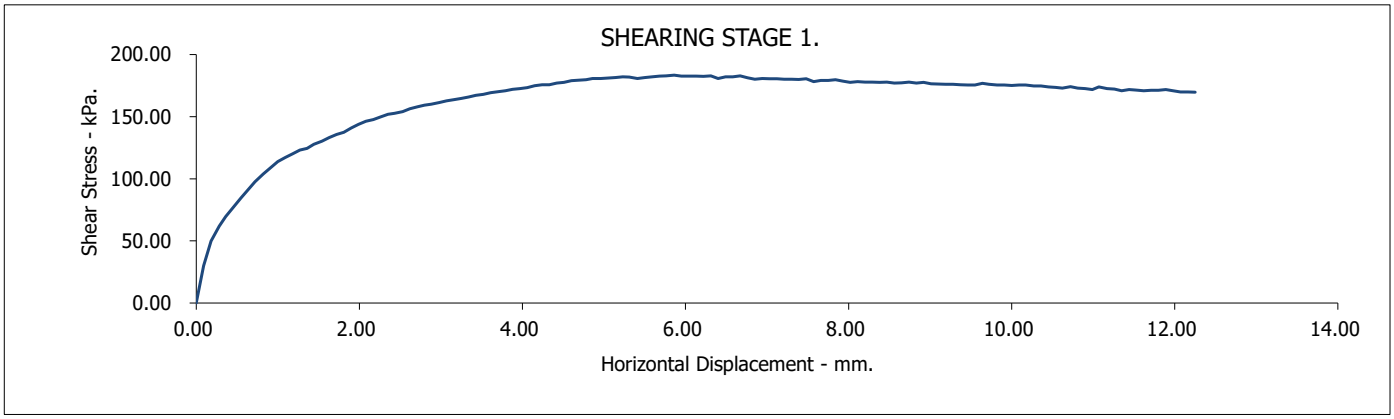


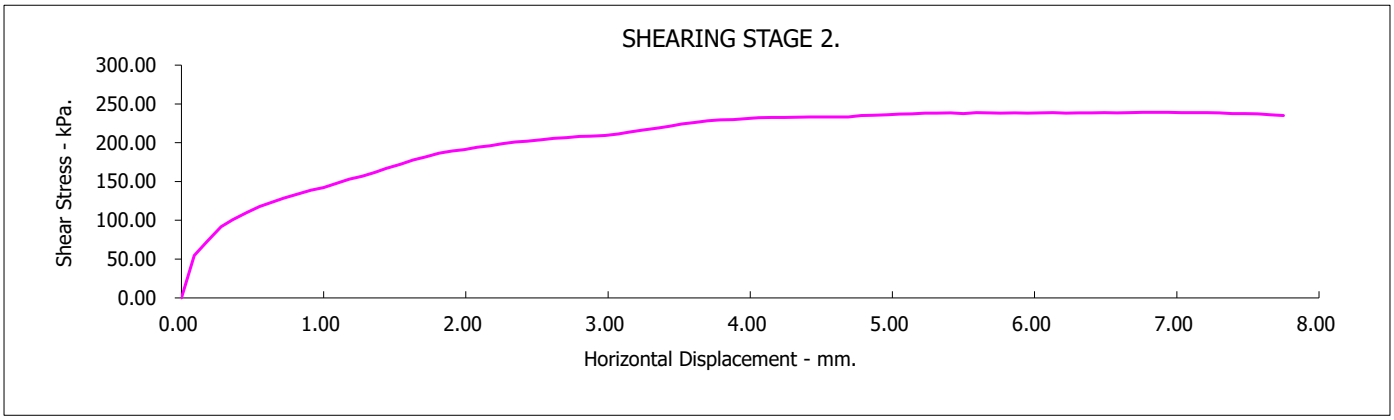
Contract No.:
67065

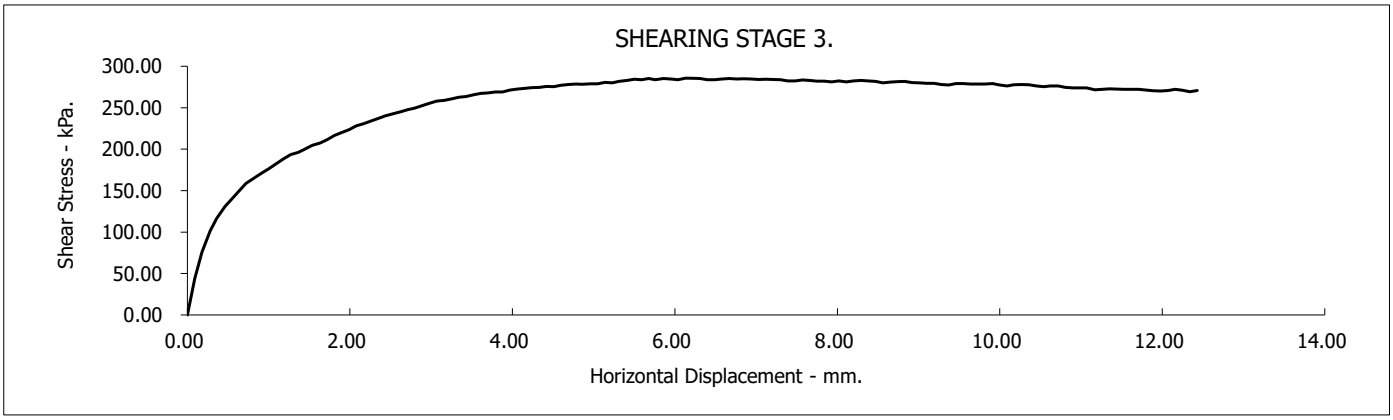
Global Centre of Rail Excellence stage 2 (30)

Client Ref Number:
G23012

Borehole Number:	S2-BH228	Depth from (m):	12.00
Sample Number :	120	Depth to (m):	13.00







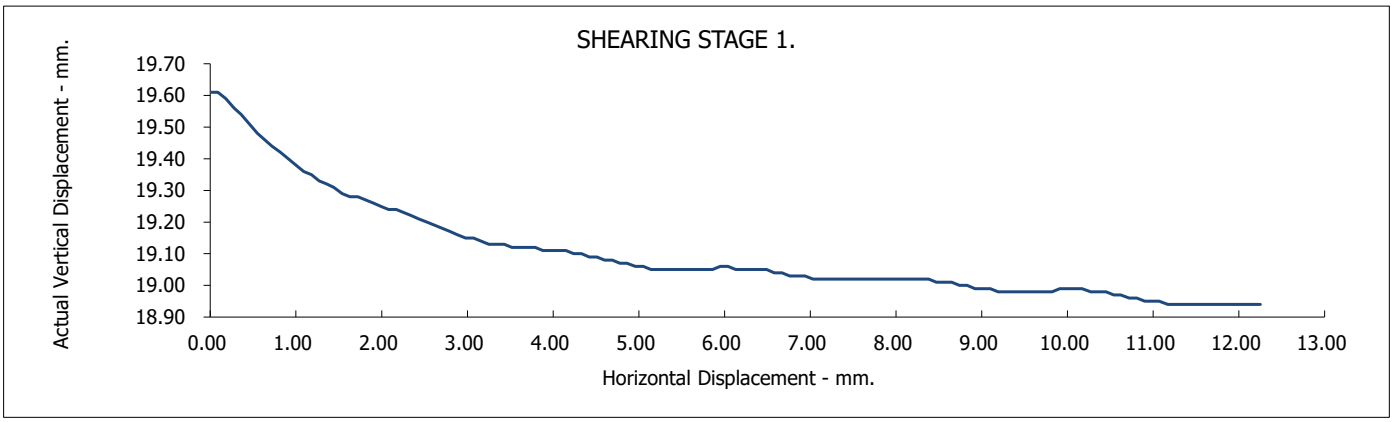
Contract No.:
67065

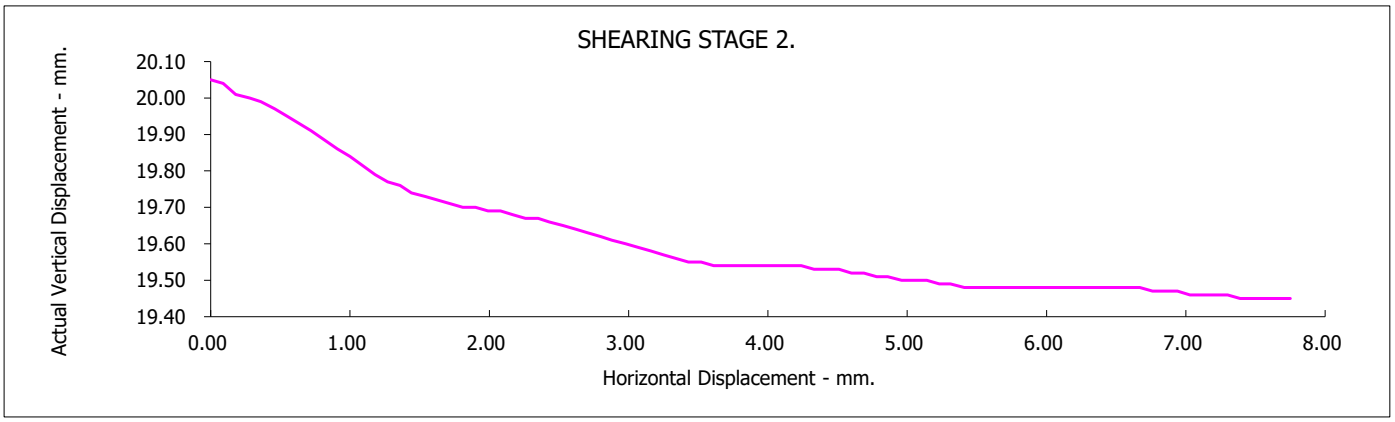
Global Centre of Rail Excellence stage 2 (30)

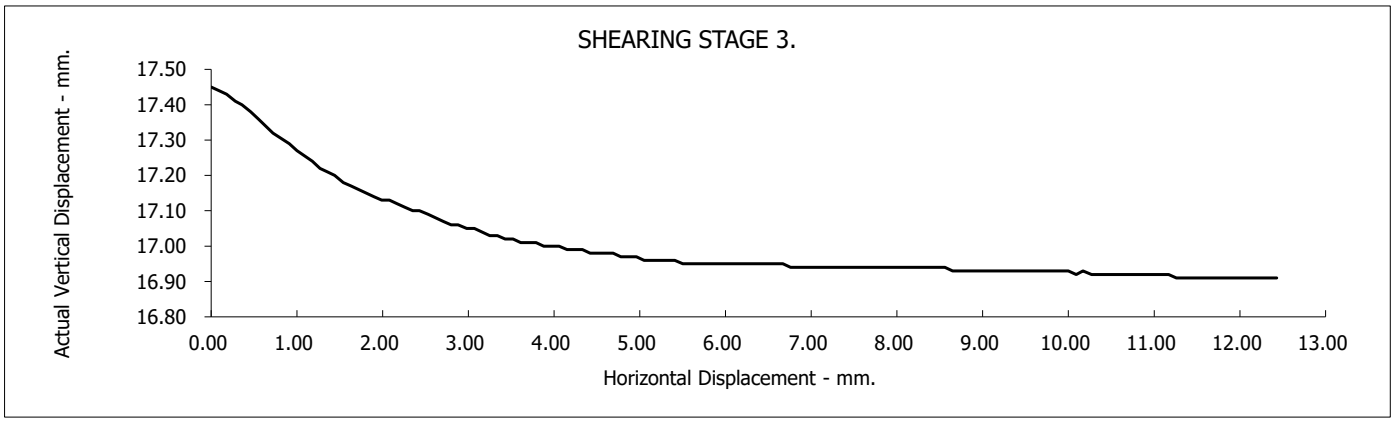
Client Ref Number:
G23012

Figure.

Borehole Number:	S2-BH228	Depth from (m):	12.00
Sample Number :	120	Depth to (m):	13.00





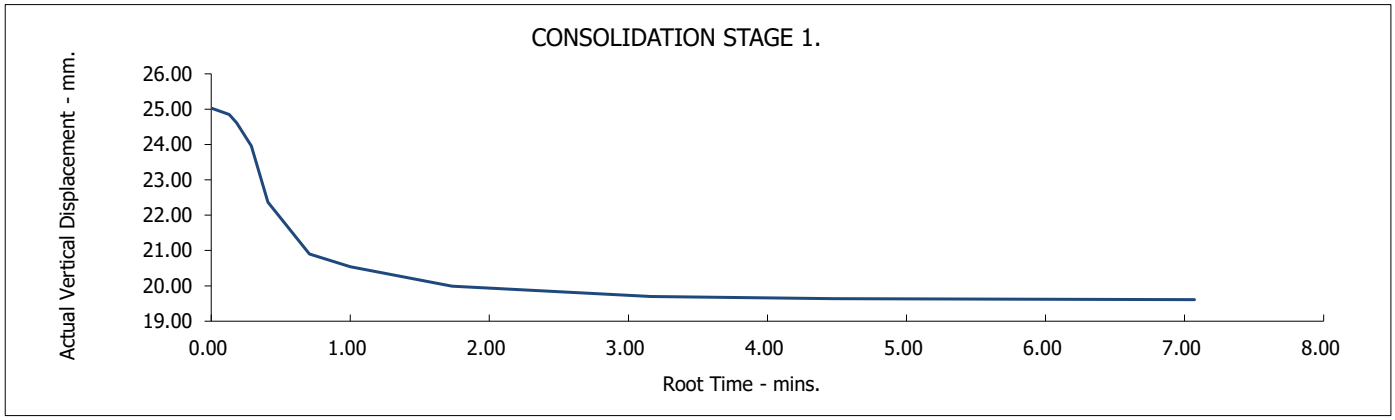


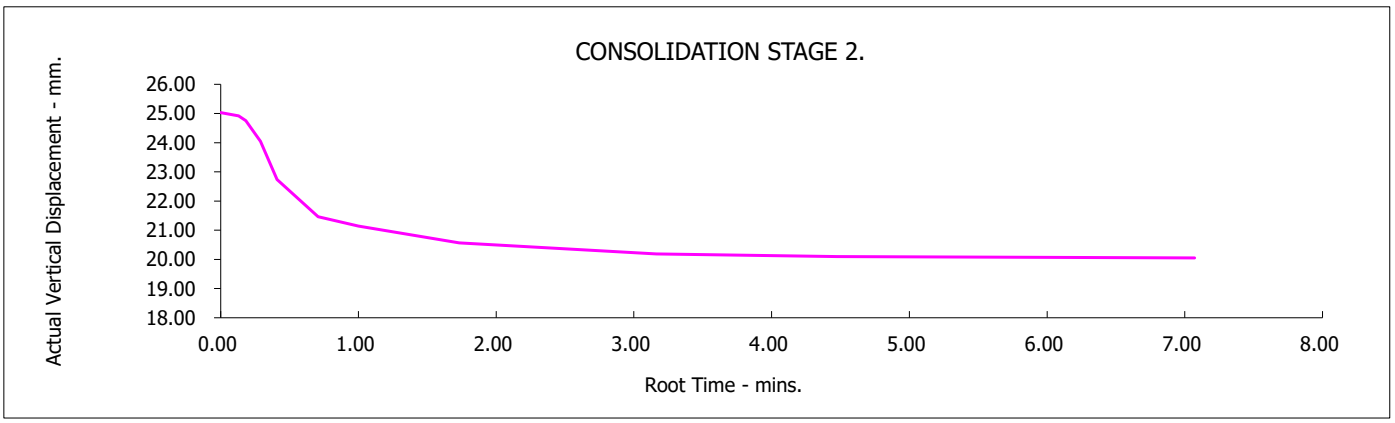
Contract No.:
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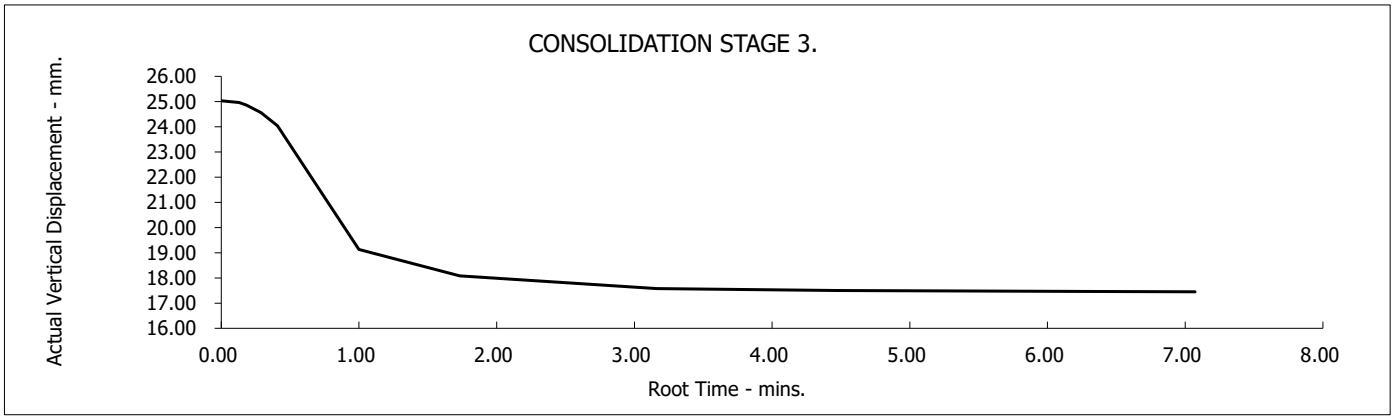
Global Centre of Rail Excellence stage 2 (30)

Client Ref Number:
G23012

Borehole Number:	S2-BH228	Depth from (m):	12.00
Sample Number :	120	Depth to (m):	13.00







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Global Centre of Rail Excellence stage 2 (30)

Contract No.:
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Client Ref Number:
G23012

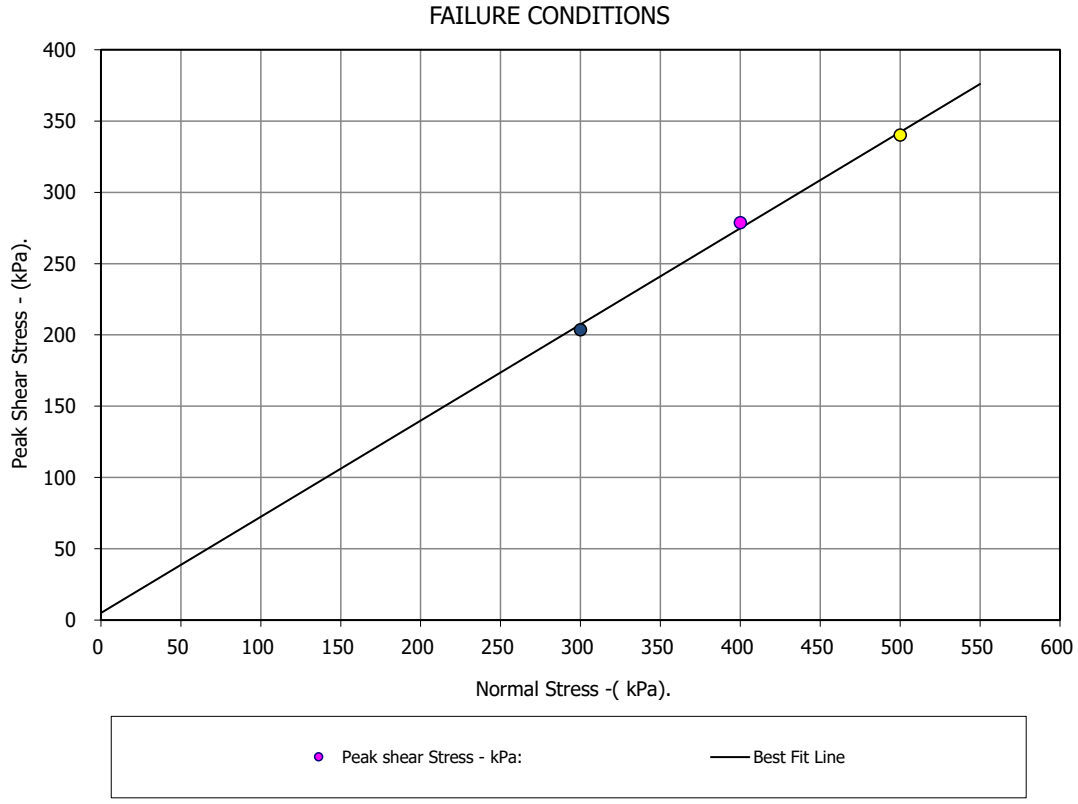
Borehole Number:	S2-BH228	Depth from (m):	22.40
Sample Number :	135.0	Depth to (m):	23.60

Sample Type:	B
Particle Density - Mg/m3:	2.65 (Assumed)
Specimen Tested:	Submerged, Remoulded (Light Tamping) Material above 2mm removed.

Sample Description:
Brown gravelly CLAY

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	23.30	23.30	23.30
Length - mm:	60.00	60.00	60.00
Moisture Content - %:	6.3	6.3	6.3
Bulk Density - Mg/m3:	1.97	1.97	1.97
Dry Density - Mg/m3:	1.85	1.85	1.85
Voids Ratio:	0.4328	0.4316	0.4339
Degree of Saturation - %:	38.77	38.88	38.67
Normal Pressure- kPa	300	400	500
Consolidation			
Consolidated Height - mm:	21.36	19.64	19.93
Shear			
Rate of Horizontal Displacement (mm/min)	0.200	0.200	0.200
Horizontal Displacement at Peak Shear Stress (mm)	5.85	8.55	4.86
Peak shear Stress - kPa:	204	279	340

PEAK	
Angle of Shearing Resistance:(θ)	**34**
Effective Cohesion - kPa:	**5**

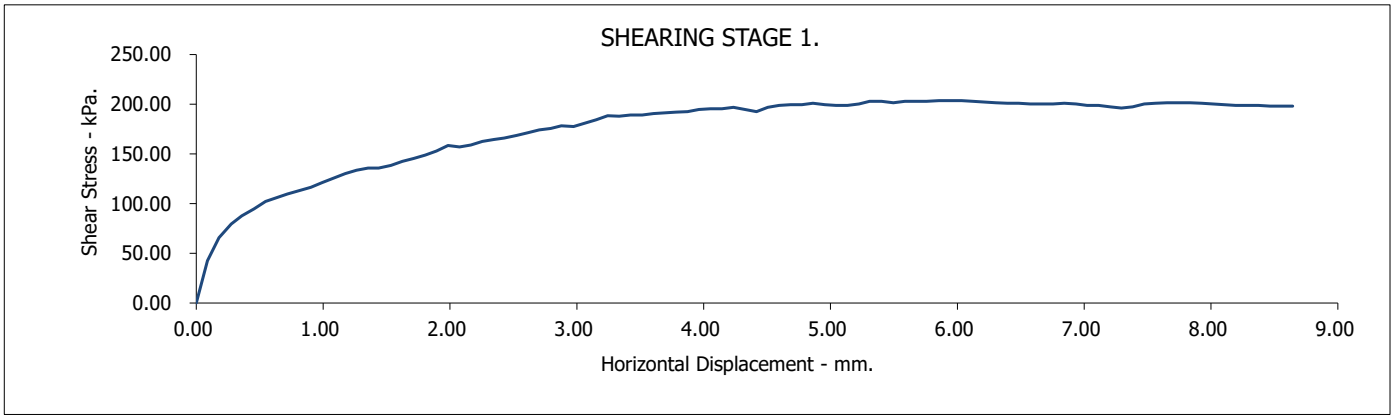


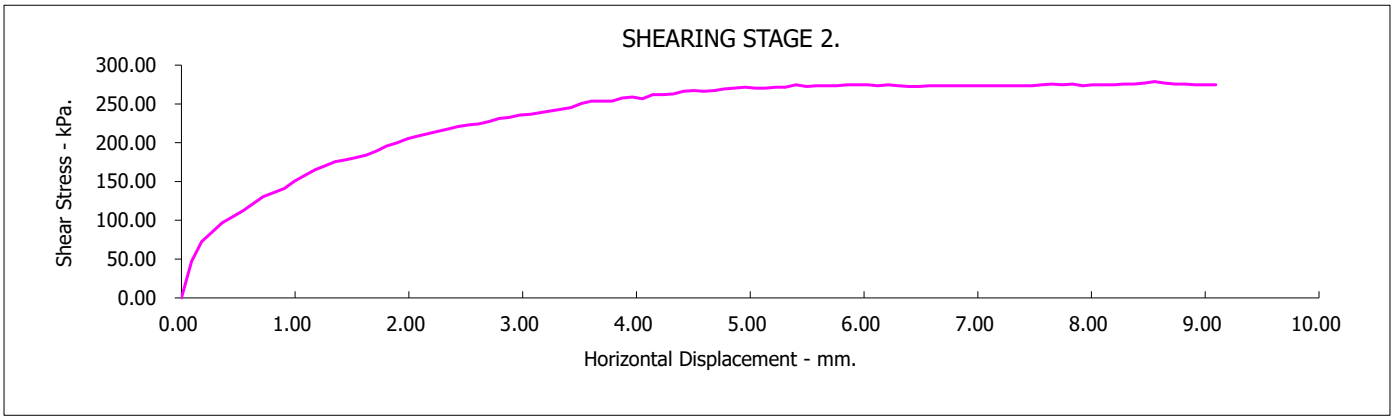
Contract No.:
67065

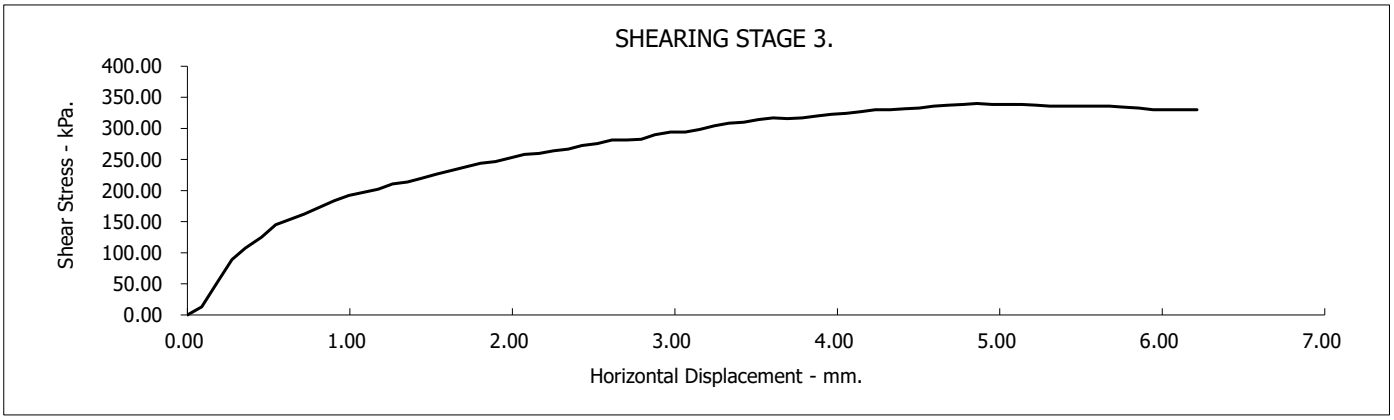
Global Centre of Rail Excellence stage 2 (30)

Client Ref Number:
G23012

Borehole Number:	S2-BH228	Depth from (m):	22.40
Sample Number :	135	Depth to (m):	23.60







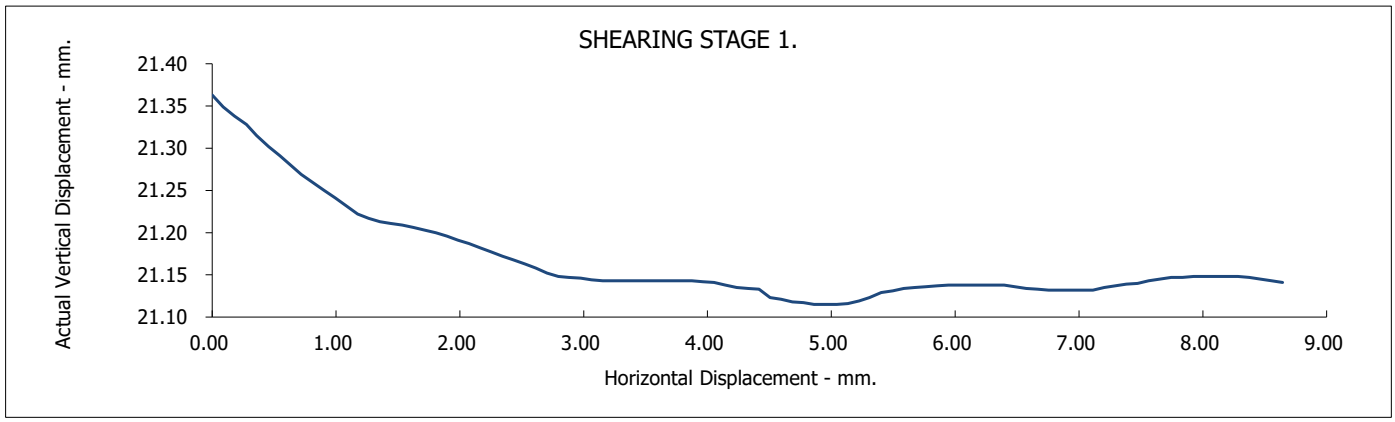
Contract No.:
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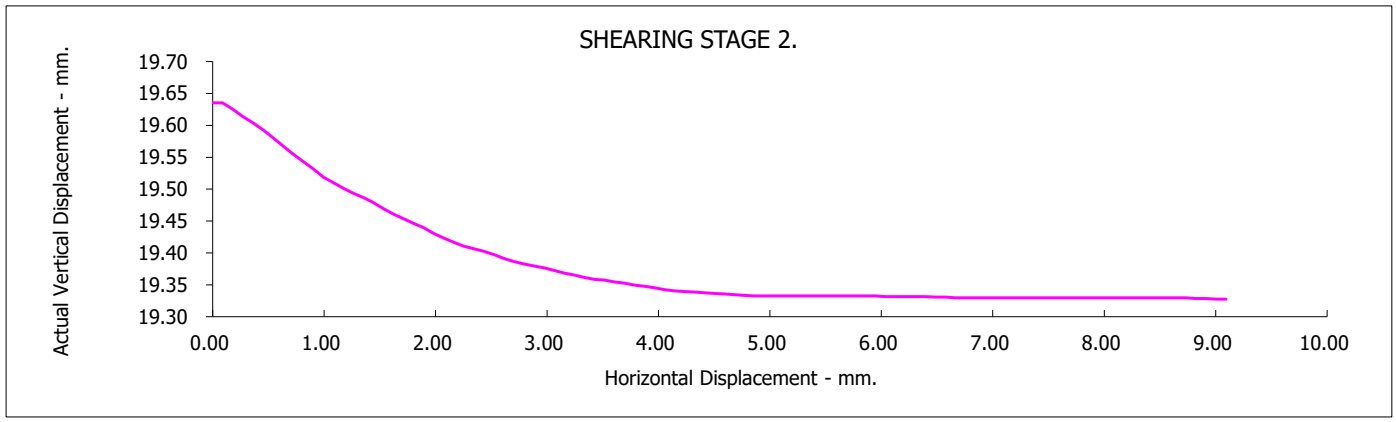
Global Centre of Rail Excellence stage 2 (30)

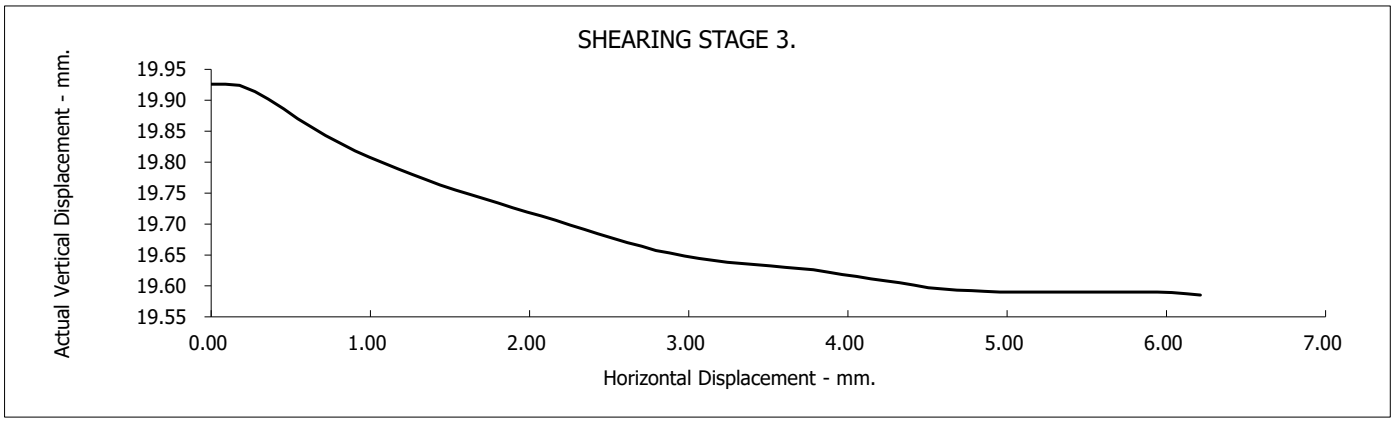
Client Ref Number:
G23012

Figure.

Borehole Number:	S2-BH228	Depth from (m):	22.40
Sample Number :	135	Depth to (m):	23.60





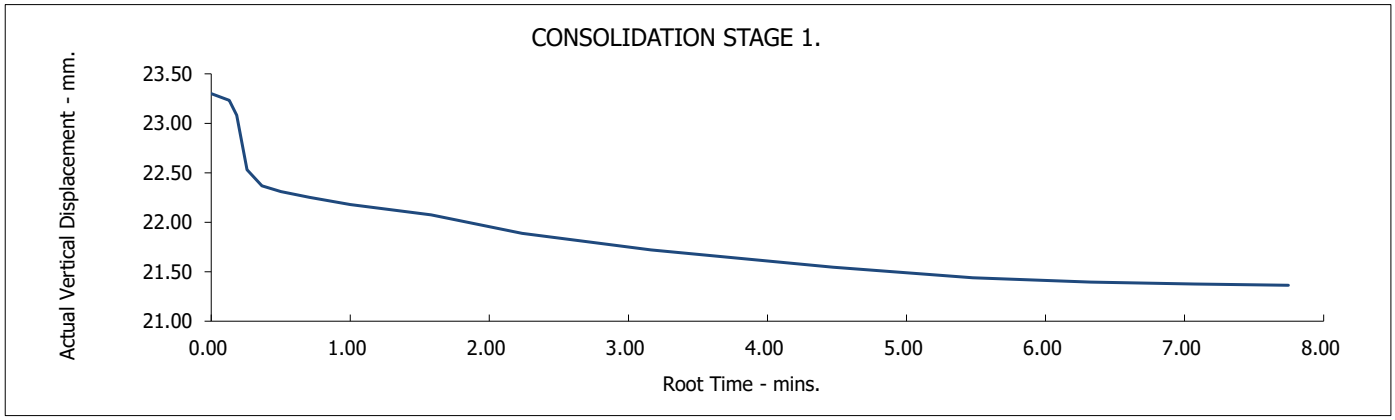


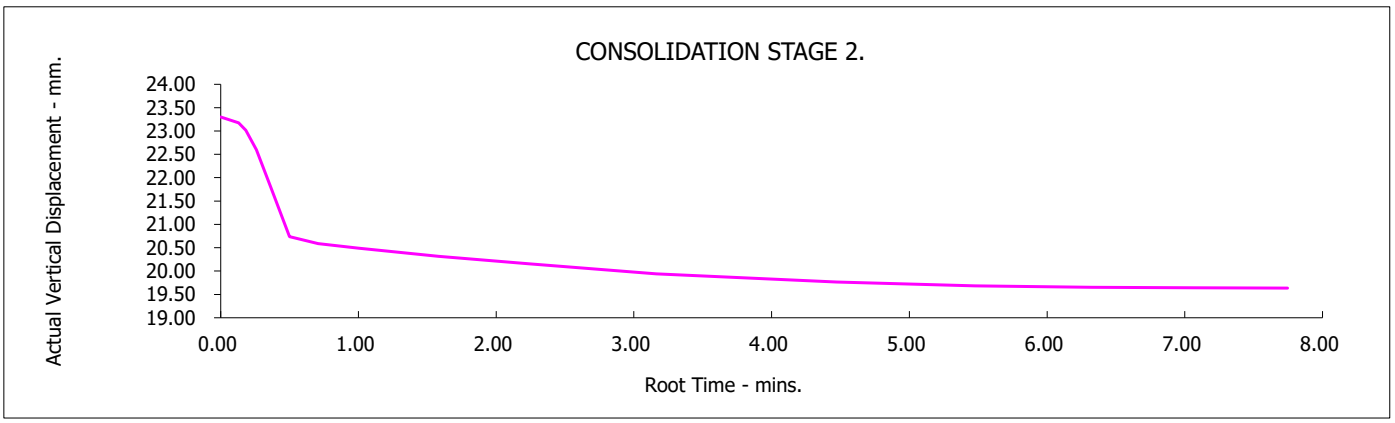
Contract No.:
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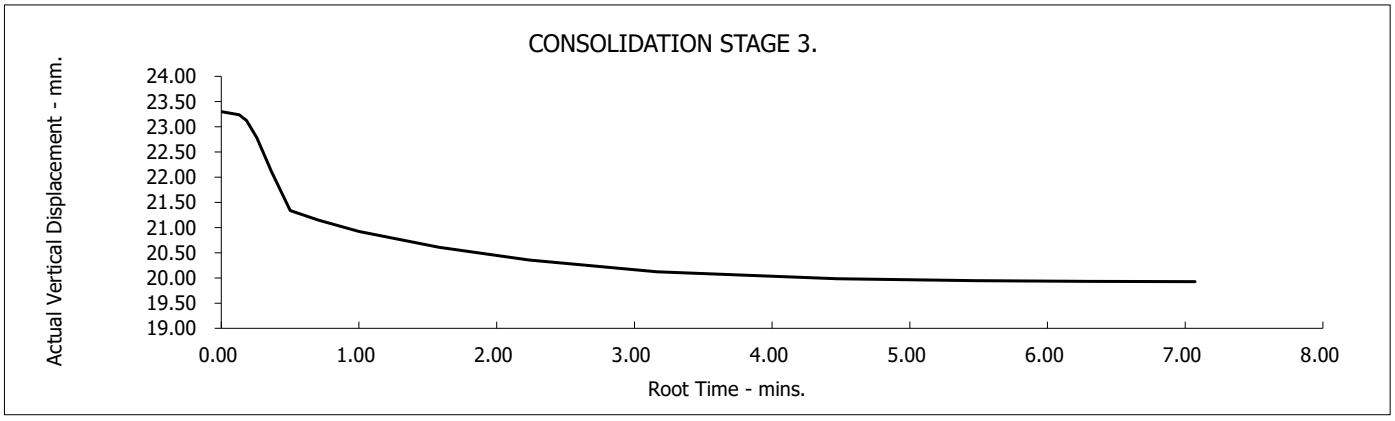
Global Centre of Rail Excellence stage 2 (30)

Client Ref Number:
G23012

Borehole Number:	S2-BH228	Depth from (m):	22.40
Sample Number :	135	Depth to (m):	23.60







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Global Centre of Rail Excellence stage 2 (30)

Contract No.:
67065

Client Ref Number:
G23012

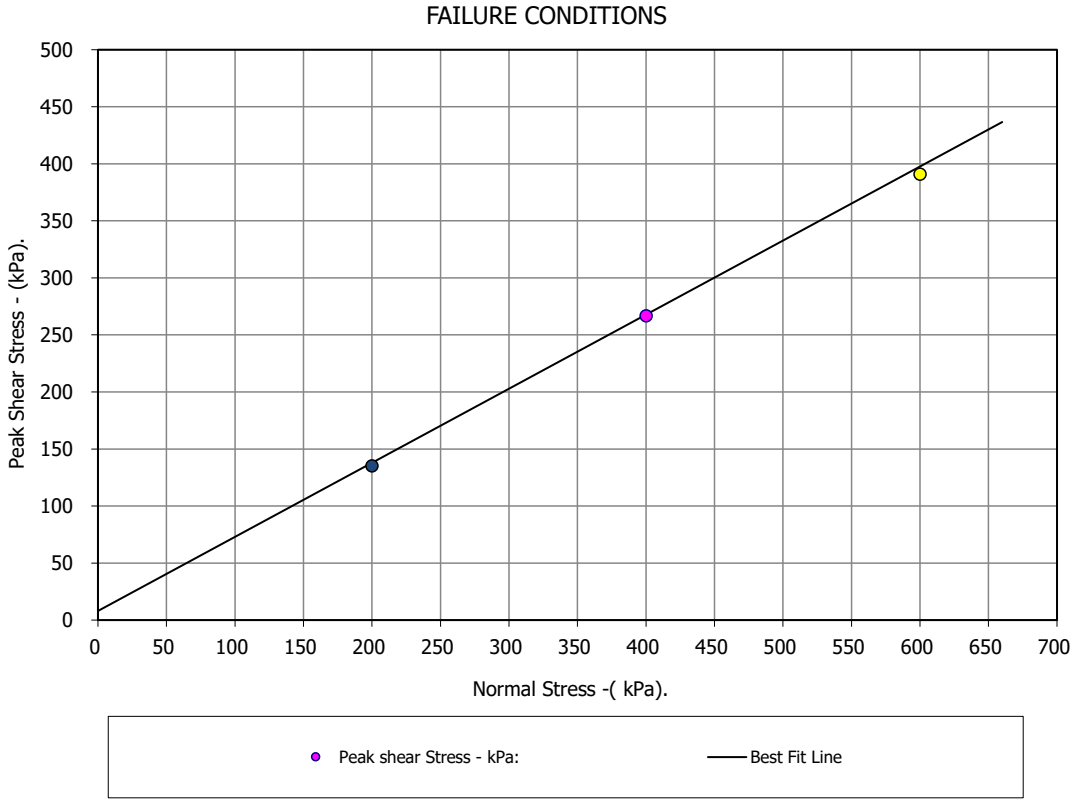
Borehole Number:	S2-BH228	Depth from (m):	36.00
Sample Number :	158.0	Depth to (m):	38.00

Sample Type:	B
Particle Density - Mg/m3:	2.65 (Assumed)
Specimen Tested:	Submerged, Remoulded (Light Tamping) Material above 2mm removed.

Sample Description:
Brown gravelly CLAY

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	24.98	24.98	24.98
Length - mm:	60.00	60.00	60.00
Moisture Content - %:	8.0	8.0	8.0
Bulk Density - Mg/m3:	1.88	1.88	1.88
Dry Density - Mg/m3:	1.74	1.74	1.74
Voids Ratio:	0.5246	0.5224	0.5233
Degree of Saturation - %:	40.54	40.71	40.64
Normal Pressure- kPa	200	400	600
Consolidation			
Consolidated Height - mm:	21.57	19.46	19.70
Shear			
Rate of Horizontal Displacement (mm/min)	0.200	0.200	0.200
Horizontal Displacement at Peak Shear Stress (mm)	7.30	6.40	6.31
Peak shear Stress - kPa:	135	267	391

PEAK	
Angle of Shearing Resistance:(θ)	**33.0**
Effective Cohesion - kPa:	**8.0**

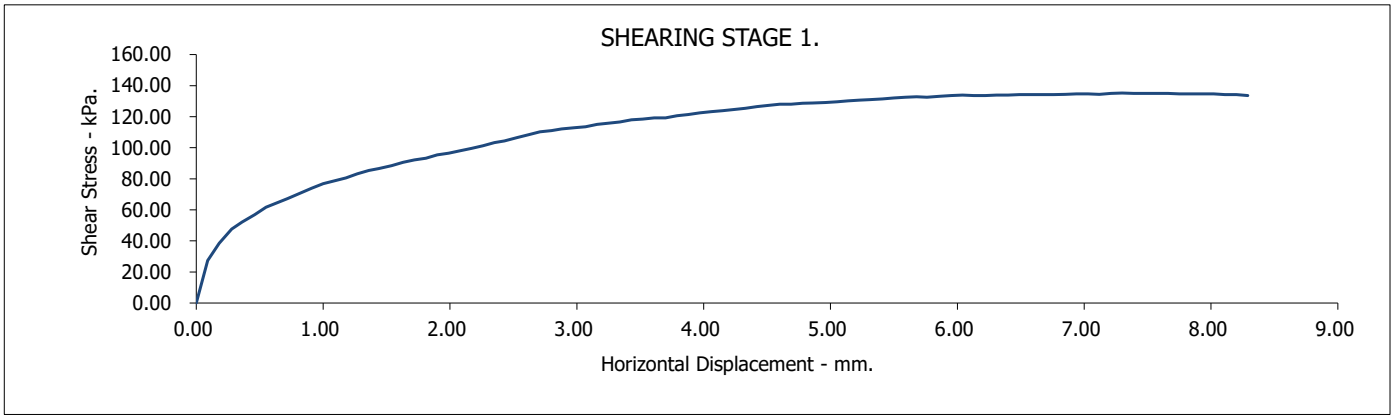


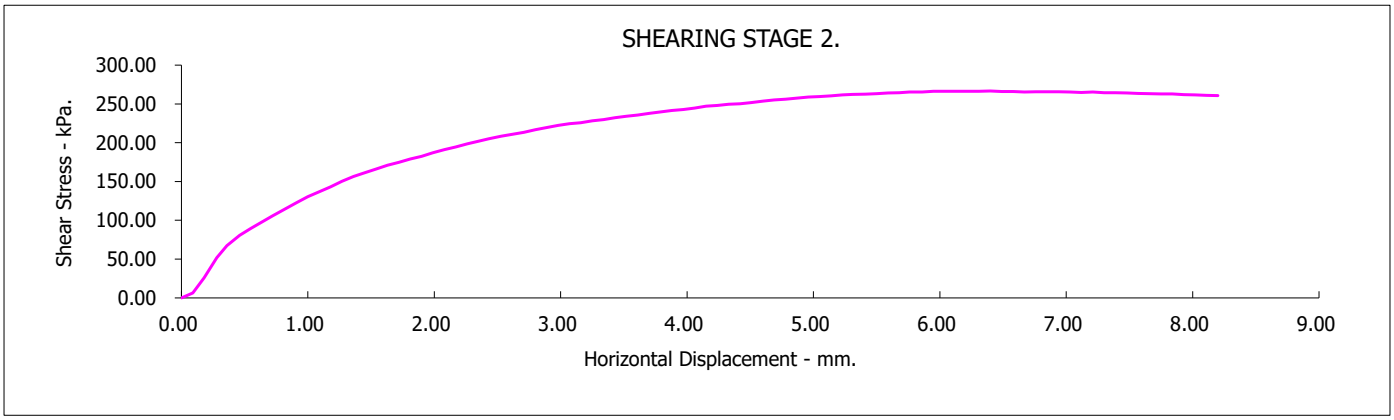
Contract No.:
67065

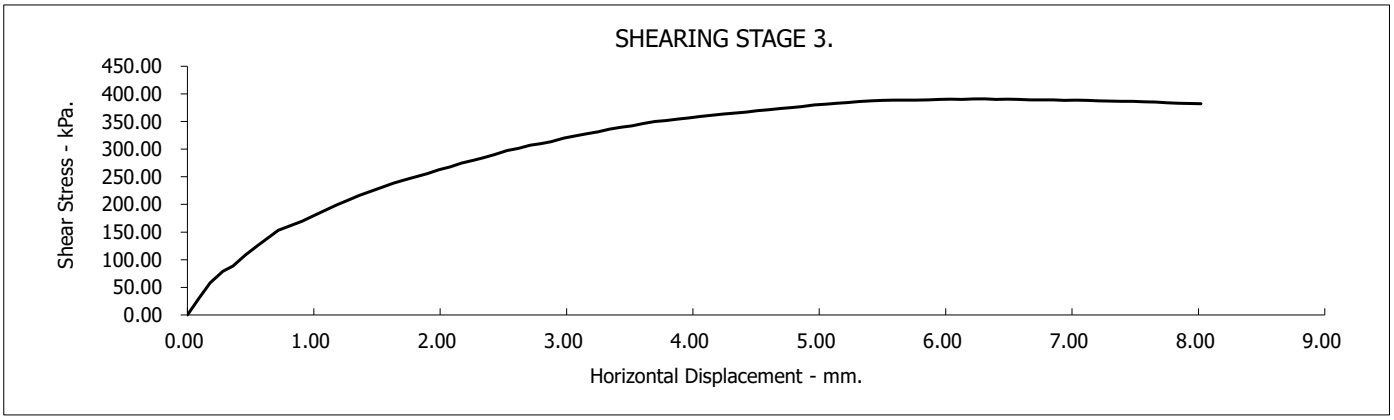
Global Centre of Rail Excellence stage 2 (30)

Client Ref Number:
G23012

Borehole Number:	S2-BH228	Depth from (m):	36.00
Sample Number :	158	Depth to (m):	38.00







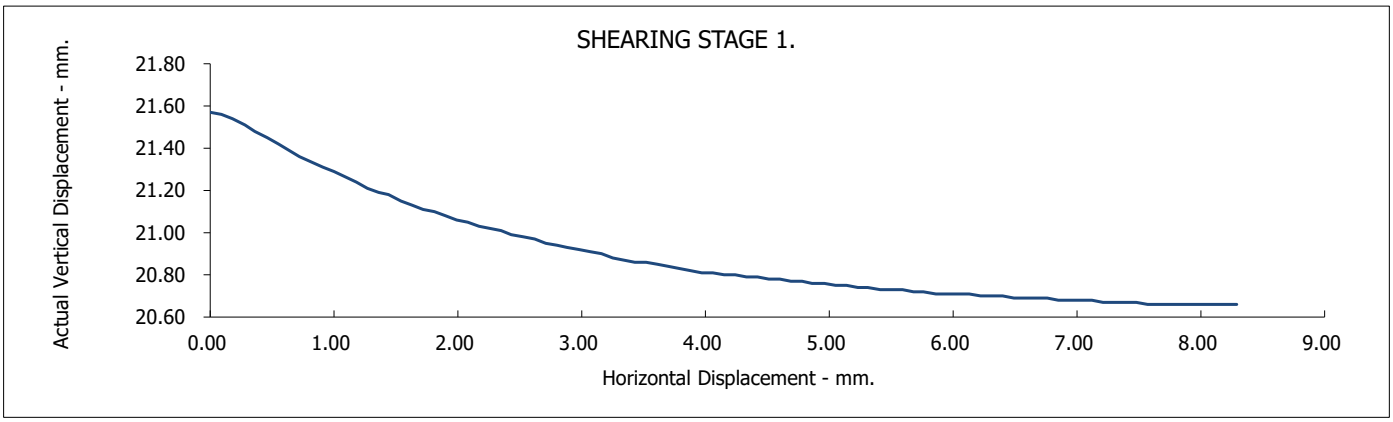
Global Centre of Rail Excellence stage 2 (30)

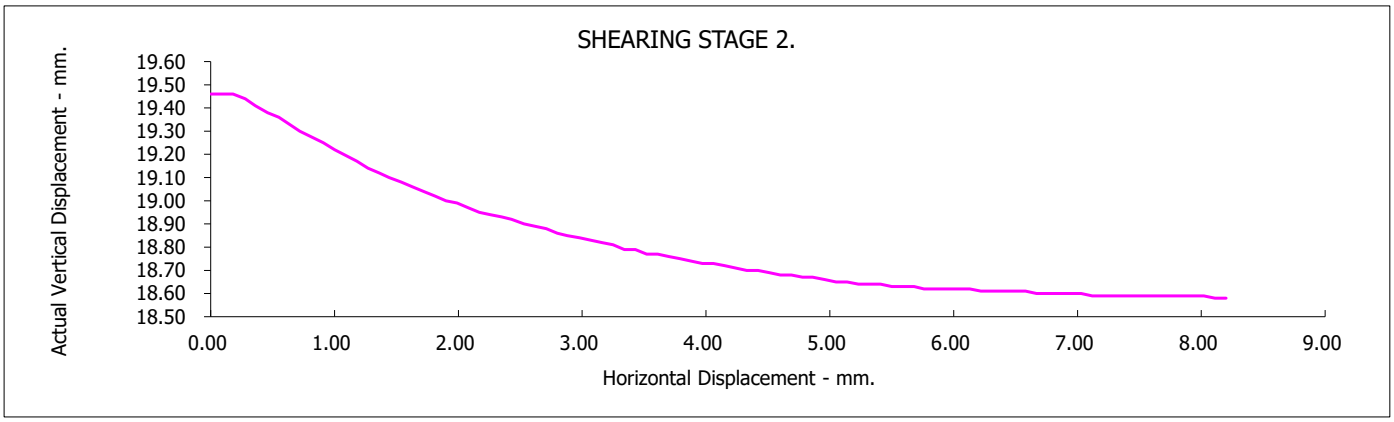
Contract No.: **67065**

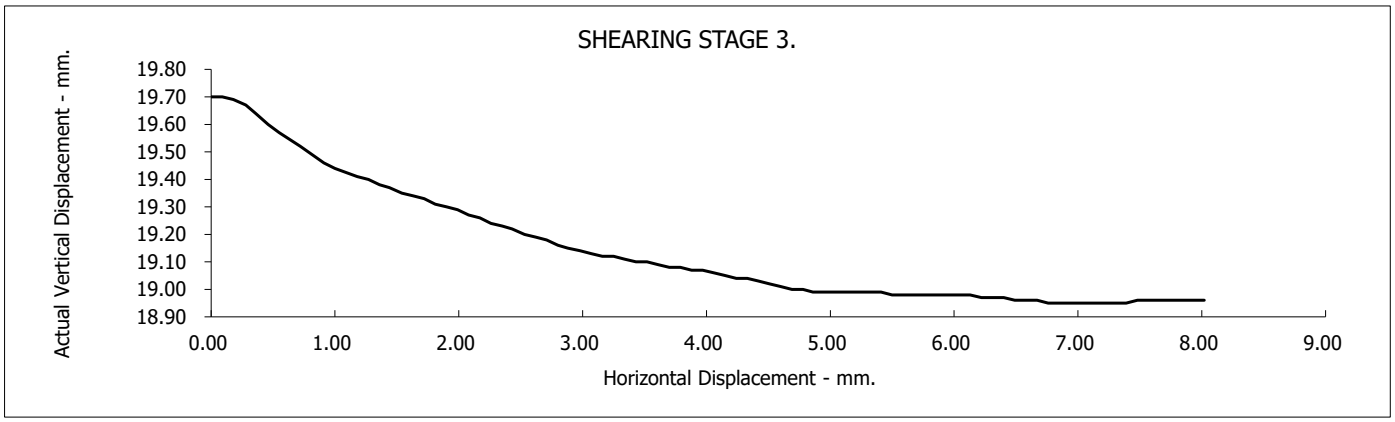
Client Ref Number: **G23012**

Figure.

Borehole Number:	S2-BH228	Depth from (m):	36.00
Sample Number :	158	Depth to (m):	38.00





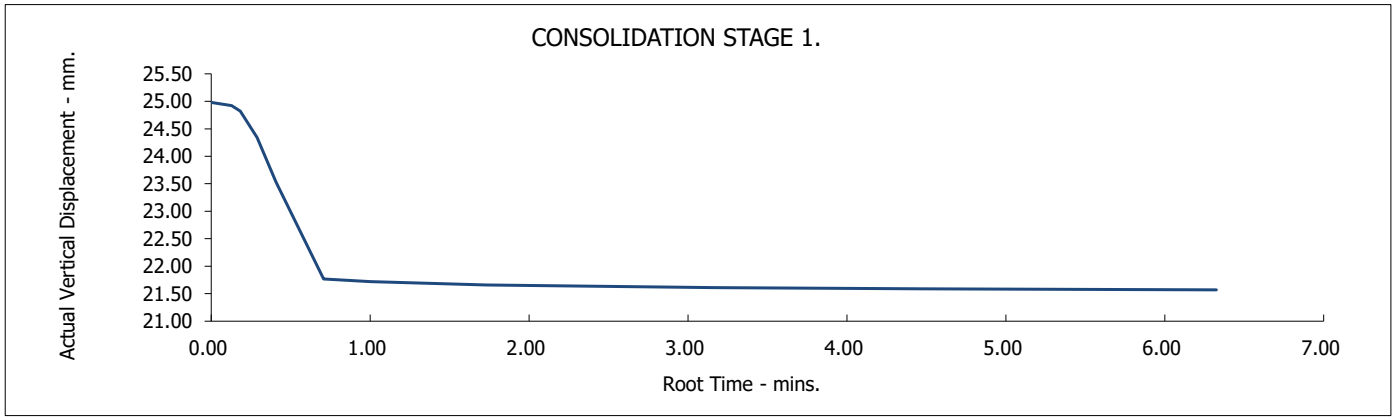


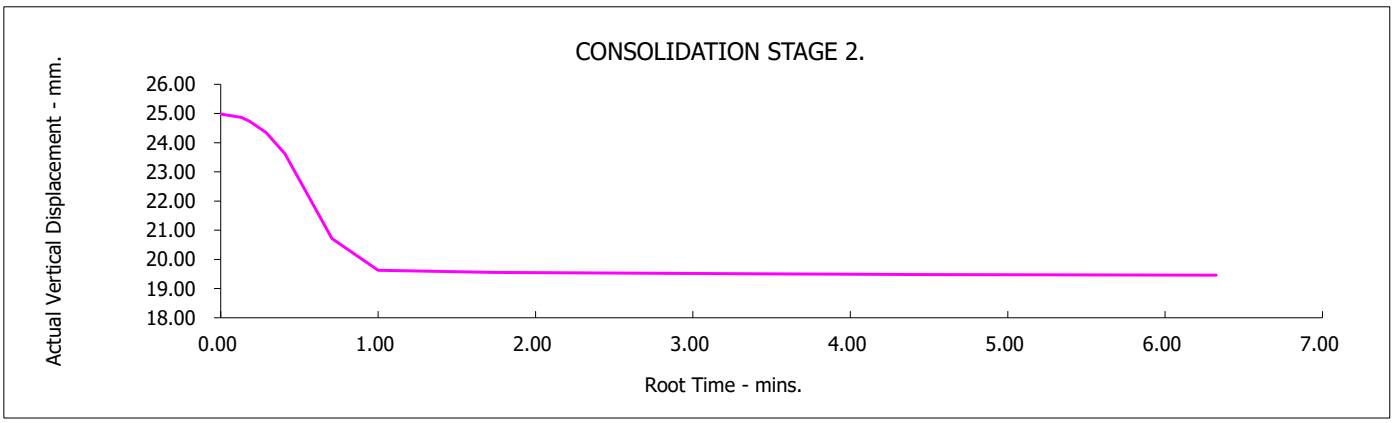
Contract No.:
67065

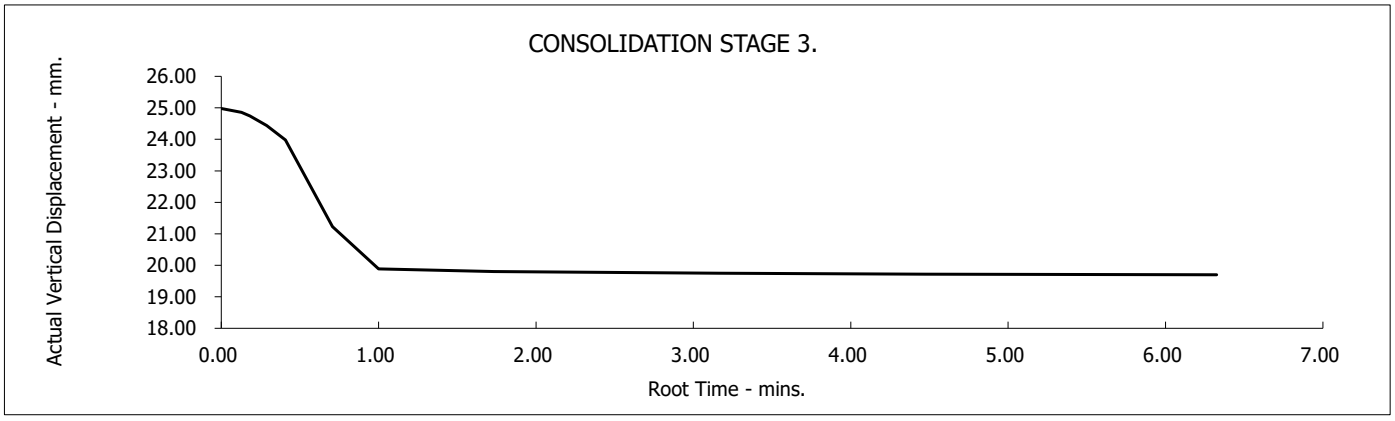
Global Centre of Rail Excellence stage 2 (30)

Client Ref Number:
G23012

Borehole Number:	S2-BH228	Depth from (m):	36.00
Sample Number :	158	Depth to (m):	38.00







UKAS TESTING 2788

Global Centre of Rail Excellence stage 2 (30)

Contract No.: **67065**

Client Ref Number: **G23012**

Laboratory Report

UKAS TESTING 2788

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES A PHENNA GROUP COMPANY

Contract Number: 67177

Client Ref: **G23012**
Client PO:

Date Received: **20-06-2023**
Date Completed: **05-07-2023**
Report Date: **05-07-2023**

Client: **Jackson Drilling Holdings Ltd**
Northwood Farm
Coxbridge Road
Baltonsborough
Somerset
BA6 8RA

This report has been checked and approved by:

Paul Evans
Director

Contract Title: **Global centre of Rail Excellence 2 (31)**
For the attention of: **Adam Putt**

Test Description	Qty
Moisture Content of Soil BS1377 : Part 2 : Clause 3.2 : 1990 - * UKAS	1
4 Point Liquid & Plastic Limit BS 1377:1990 - Part 2 : 4.3 & 5.3 - * UKAS	1
PSD Wet & Dry Sieve method BS 1377:1990 - Part 2 : 9.2 - * UKAS	5
PSD: Sedimentation by pipette carried out with Wet Sieve (Wet Sieve must also be selected) BS 1377:1990 - Part 2 : 9.4 - * UKAS	3
Dry Den/MC (4.5kg Rammer Method 1 Litre Mould/CBR Mould) BS 1377:1990 - Part 4 : 3.5 - * UKAS	2
Consolidated Drained Peak Shear Strength - set of 3 - 60 x 60mm Shear Box Specimens by Direct Shearing (3 days) BS 1377:1990 - Part 7 : 4 - * UKAS	2
Determination of Point Load Value Axial or Diametrical including WC ***Please note GSTL is not accredited for the water content of rock*** ISRM Suggested Method for Point Load Strength - * UKAS	1

Notes: **Observations and Interpretations are outside the UKAS Accreditation**
*** - denotes test included in laboratory scope of accreditation**
- denotes test carried out by approved contractor
@ - denotes non accredited tests

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Approved Signatories:
Brendan Evans (Office Administrator) - Darren Bourne (Quality Senior Technician) - Paul Evans (Director)
Richard John (Quality/Technical Manager) - Shaun Jones (Laboratory manager) - Shaun Thomas (Site Manager)
Wayne Honey (Human Resources/ Health and Safety Manager)

GEO Site & Testing Services Ltd
Units 3-4, Heol Aur, Dafen, Llanelli, Carmarthenshire, Wales SA14 8QN
Tel: 01554 784040 Fax: 01554 784041 info@gstl.co.uk gstl.co.uk

Laboratory Report

UKAS TESTING 2788

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES A PHENNA GROUP COMPANY

Contract Number: 67177

Test Description	Qty
Uniaxial Compressive Strength of Rock inc sample prep 54-165mm diameter cores ISRM Suggested Method for determining uniaxial compressive strength - @ Non Accredited Test	2
Disposal of samples for job	1

Notes: **Observations and Interpretations are outside the UKAS Accreditation**
*** - denotes test included in laboratory scope of accreditation**
- denotes test carried out by approved contractor
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GEO Site & Testing Services Ltd
Units 3-4, Heol Aur, Dafen, Llanelli, Carmarthenshire, Wales SA14 8QN
Tel: 01554 784040 Fax: 01554 784041 info@gstl.co.uk gstl.co.uk

GSTL
GEOTECHNICAL SITE & TESTING LABORATORIES

NATURAL MOISTURE, LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX
(BS 1377:1990 - Part 2 : 4.3 & 5.3)

Contract Number	67177
Project Name	Global centre of Rail Excellence 2 (31)
Date Tested	29/06/2023

DESCRIPTIONS

Sample/Hole Reference	Sample Number	Sample Type	Depth (m)			Descriptions
S2-BH230	104	B	0.70	-	2.20	Grey slightly silty clayey fine to coarse sandy fine to coarse GRAVEL
				-		
				-		
				-		
				-		
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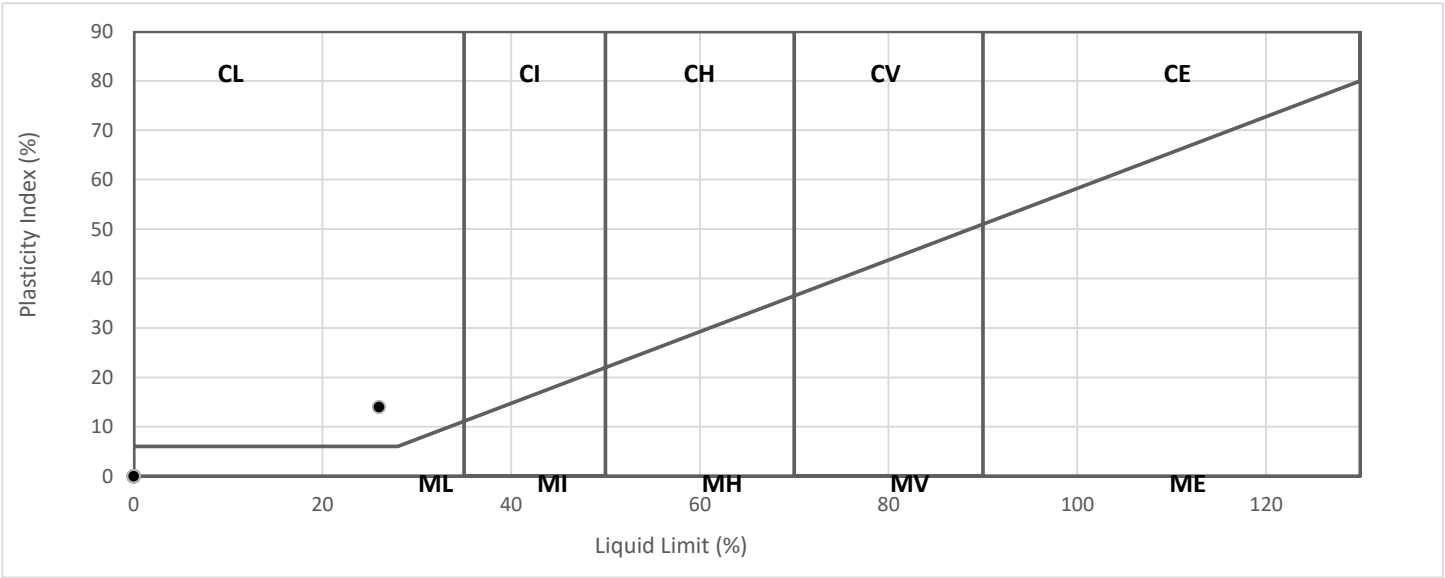
Operator
Aaron Hodge

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	NATURAL MOISTURE, LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377:1990 - Part 2 : 4.3 & 5.3)	
Contract Number	67177	
Project Name	Global centre of Rail Excellence 2 (31)	
Date Tested	29/06/2023	

Sample/Hole Reference	Sample Number	Sample Type	Depth (m)			Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity index %	Passing 0.425mm %	Remarks
S2-BH230	104	B	0.70	-	2.20	3.8	26	12	14	28	CL Low Plasticity
				-							
				-							
				-							
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Symbols: NP : Non Plastic # : Liquid Limit and Plastic Limit Wet Sieved

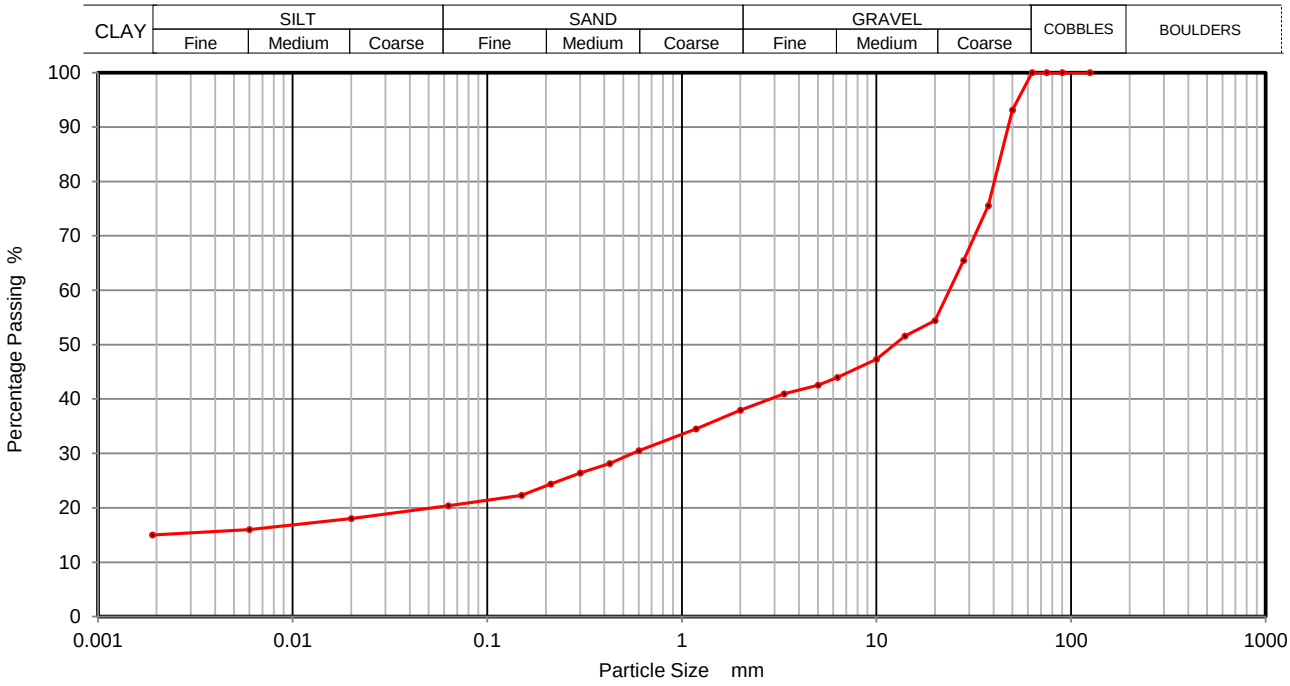
PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION
BS 5930:2015+A1:2020



Operator
Aaron Hodge

UKAS TESTING
2788

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4**	Contract Number	67177
		Borehole/Pit No.	S2-BH230
Project Name	Global centre of Rail Excellence 2 (31)	Sample No.	104
Soil Description	Grey slightly silty clayey fine to coarse sandy fine to coarse GRAVEL	Depth Top	0.70
		Depth Base	2.20
Date Tested	30/06/2023	Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	18
90	100	0.0060	16
75	100	0.0020	15
63	100		
50	93		
37.5	76		
28	65		
20	54		
14	52		
10	47		
6.3	44		
5	43		
3.35	41		
2	38		
1.18	35		
0.6	31		
0.425	28		
0.3	26		
0.212	24		
0.15	22		
0.063	20		

Sample Proportions	% dry mass
Cobbles	0
Gravel	62
Sand	18
Silt	5
Clay	15

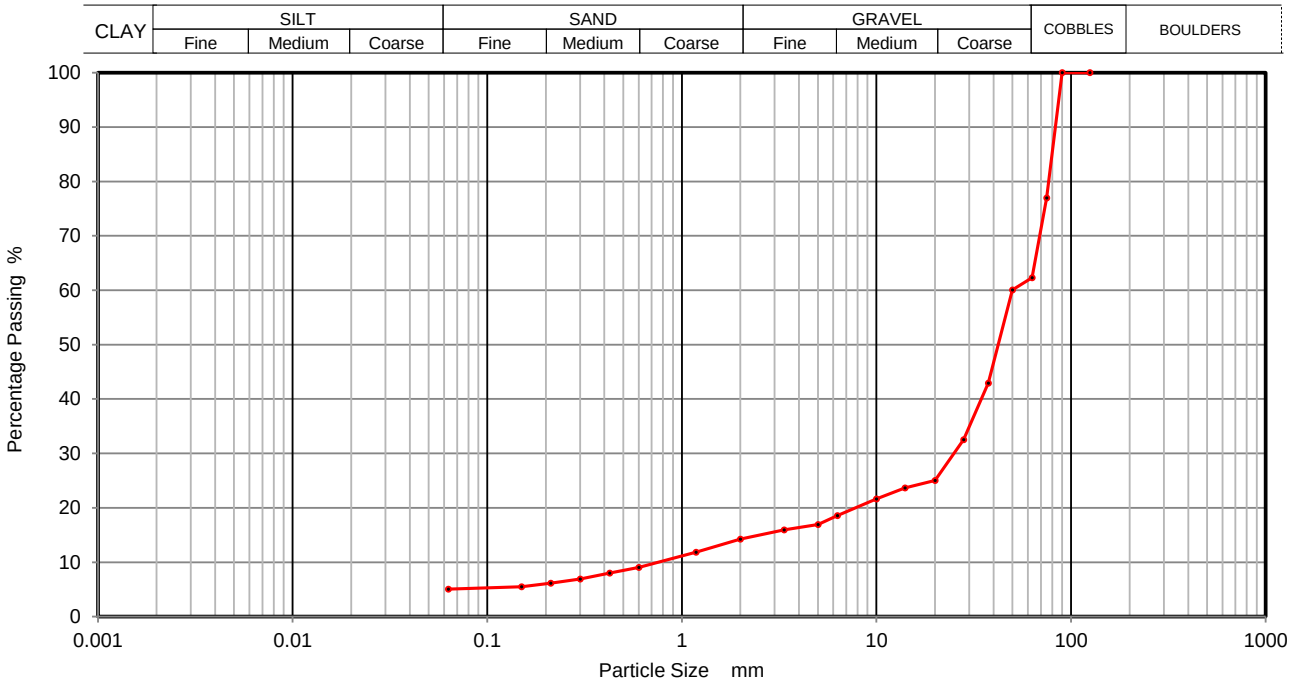
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator
David Edwards

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2788

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**PARTICLE SIZE DISTRIBUTION** **BS 1377 Part 2:1990** **Wet Sieve, Clause 9.2**	Contract Number	67177
		Borehole/Pit No.	S2-BH230
Project Name	Global centre of Rail Excellence 2 (31)	Sample No.	113
Soil Description	Grey slightly silty/ clayey slightly sandy fine to coarse GRAVEL with cobbles	Depth Top	5.50
		Depth Base	7.10
Date Tested	30/06/2023	Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	77		
63	62		
50	60		
37.5	43		
28	33		
20	25		
14	24		
10	22		
6.3	19		
5	17		
3.35	16		
2	14		
1.18	12		
0.6	9		
0.425	8		
0.3	7		
0.212	6		
0.15	5		
0.063	5		

Sample Proportions	% dry mass
Cobbles	38
Gravel	48
Sand	9
Silt and Clay	5

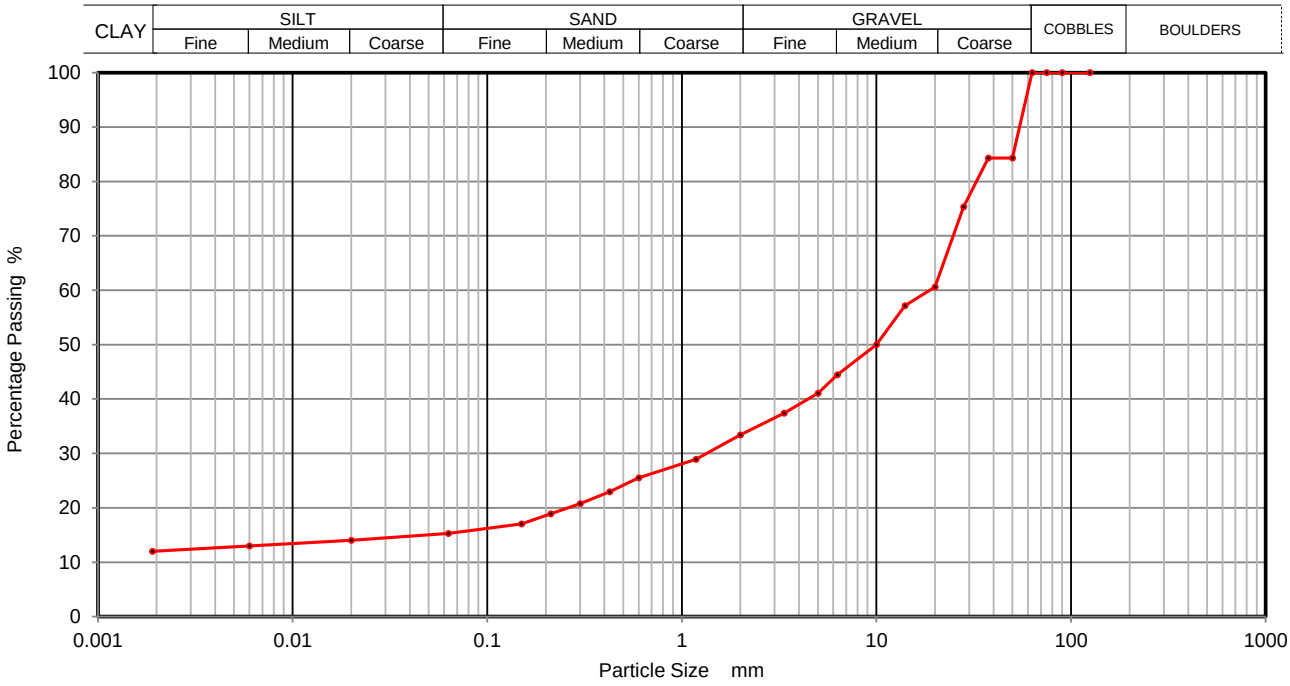
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator
David Edwards

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GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4**	Contract Number	67177
		Borehole/Pit No.	S2-BH230
Project Name	Global centre of Rail Excellence 2 (31)	Sample No.	121
Soil Description	Grey slightly silty clayey fine to coarse sandy fine to coarse GRAVEL	Depth Top	11.00
		Depth Base	12.50
Date Tested	30/06/2023	Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	14
90	100	0.0060	13
75	100	0.0020	12
63	100		
50	84		
37.5	84		
28	75		
20	61		
14	57		
10	50		
6.3	44		
5	41		
3.35	37		
2	33		
1.18	29		
0.6	26		
0.425	23		
0.3	21		
0.212	19		
0.15	17		
0.063	15		

Sample Proportions	% dry mass
Cobbles	0
Gravel	67
Sand	18
Silt	3
Clay	12

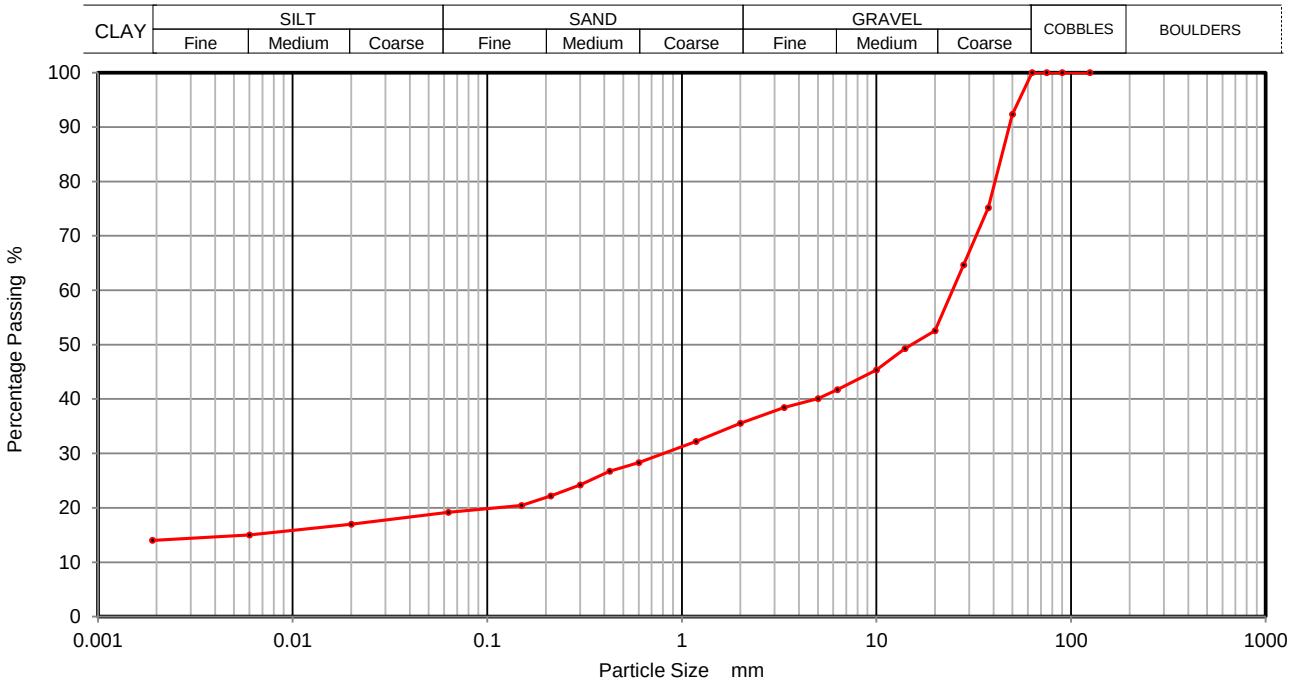
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator
David Edwards

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GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4**	Contract Number	67177
		Borehole/Pit No.	S2-BH230
Project Name	Global centre of Rail Excellence 2 (31)	Sample No.	128
Soil Description	Grey slightly silty clayey fine to coarse sandy fine to coarse GRAVEL	Depth Top	16.00
		Depth Base	18.00
Date Tested	30/06/2023	Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	17
90	100	0.0060	15
75	100	0.0020	14
63	100		
50	92		
37.5	75		
28	65		
20	53		
14	49		
10	45		
6.3	42		
5	40		
3.35	38		
2	36		
1.18	32		
0.6	28		
0.425	27		
0.3	24		
0.212	22		
0.15	20		
0.063	19		

Sample Proportions	% dry mass
Cobbles	0
Gravel	64
Sand	17
Silt	5
Clay	14

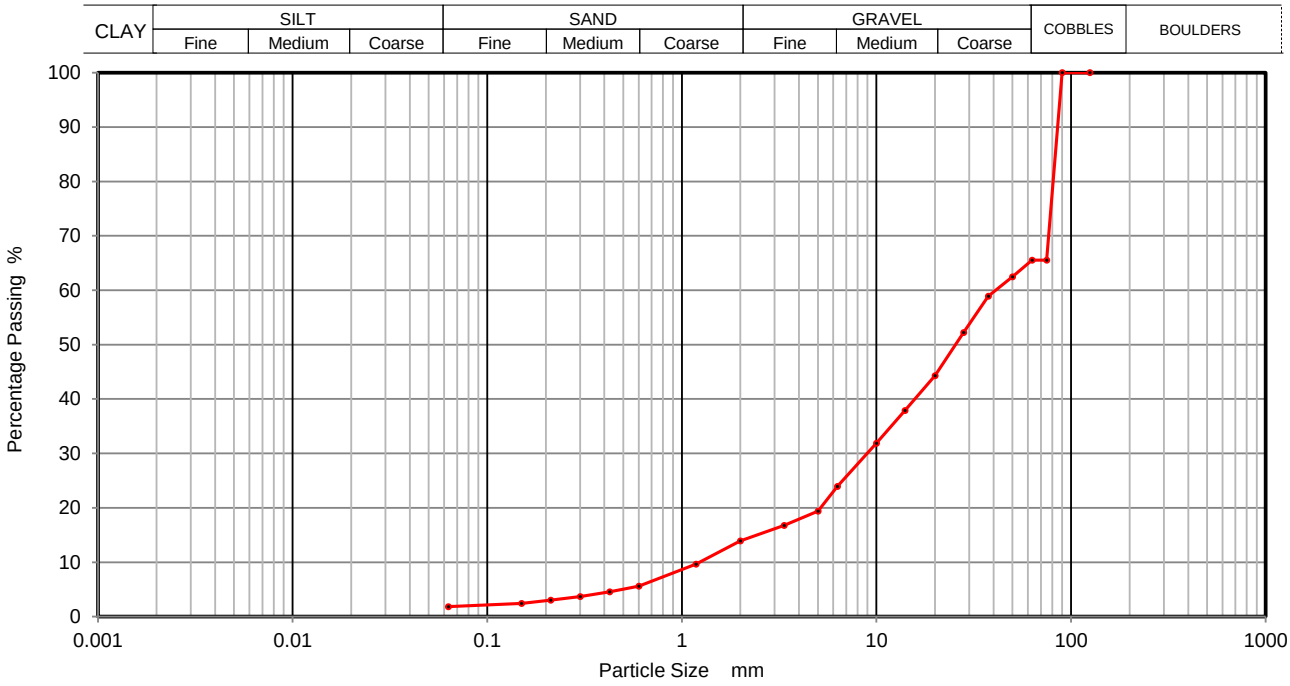
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator
David Edwards

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GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**PARTICLE SIZE DISTRIBUTION** **BS 1377 Part 2:1990** **Wet Sieve, Clause 9.2**	Contract Number	67177
		Borehole/Pit No.	S2-BH230
Project Name	Global centre of Rail Excellence 2 (31)	Sample No.	133
Soil Description	Grey slightly silty/ clayey fine to coarse sandy fine to coarse GRAVEL with cobbles	Depth Top	20.00
		Depth Base	23.30
Date Tested	30/06/2023	Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	66		
63	66		
50	62		
37.5	59		
28	52		
20	44		
14	38		
10	32		
6.3	24		
5	19		
3.35	17		
2	14		
1.18	10		
0.6	6		
0.425	5		
0.3	4		
0.212	3		
0.15	2		
0.063	2		

Sample Proportions	% dry mass
Cobbles	34
Gravel	52
Sand	12
Silt and Clay	2

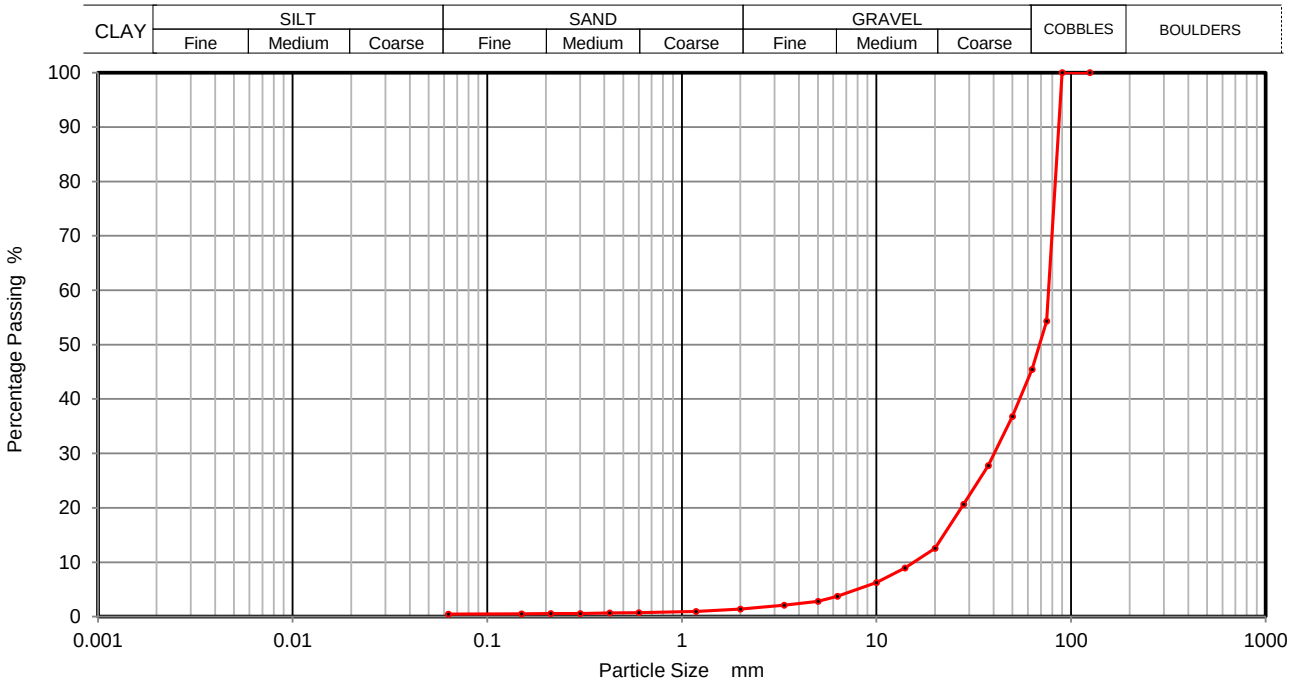
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator
David Edwards

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GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**PARTICLE SIZE DISTRIBUTION** **BS 1377 Part 2:1990** **Wet Sieve, Clause 9.2**	Contract Number	67177
		Borehole/Pit No.	S2-BH230
Project Name	Global centre of Rail Excellence 2 (31)	Sample No.	
Soil Description	Grey slightly sandy fine to coarse GRAVEL with cobbles	Depth Top	23.30
		Depth Base	26.00
Date Tested	30/06/2023	Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	54		
63	45		
50	37		
37.5	28		
28	21		
20	13		
14	9		
10	6		
6.3	4		
5	3		
3.35	2		
2	1		
1.18	1		
0.6	1		
0.425	1		
0.3	1		
0.212	1		
0.15	1		
0.063	0		

Sample Proportions	% dry mass
Cobbles	55
Gravel	44
Sand	1
Silt and Clay	0

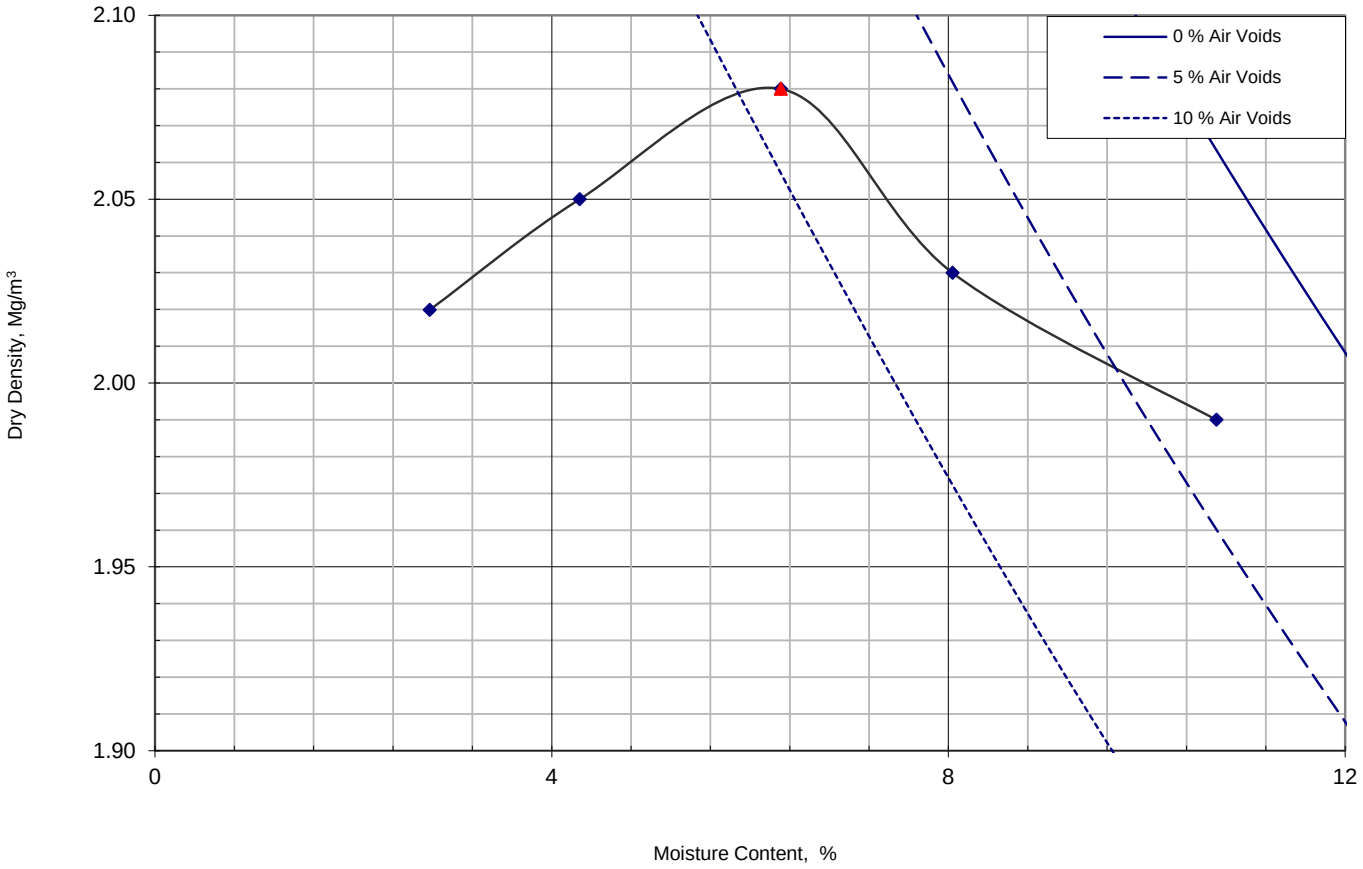
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator
David Edwards

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GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**Dry Density / Moisture Content Relationship BS 1377:Part 4:1990**	Contract Number	67177
		Borehole / Pit No	S2-BH230
Project Name	Global centre of Rail Excellence 2 (31)	Sample No	108
Date Tested	29/06/2023	Depth Top	2.50
Compaction Method	4.5 Kg Rammer	Depth Base	3.80
Compaction Clause	BS1377:Part 4:1990, Clause 3.5	Sample Type	B
Sample Description	Grey silty fine to coarse GRAVEL	Single or Separate Sample Used	Single



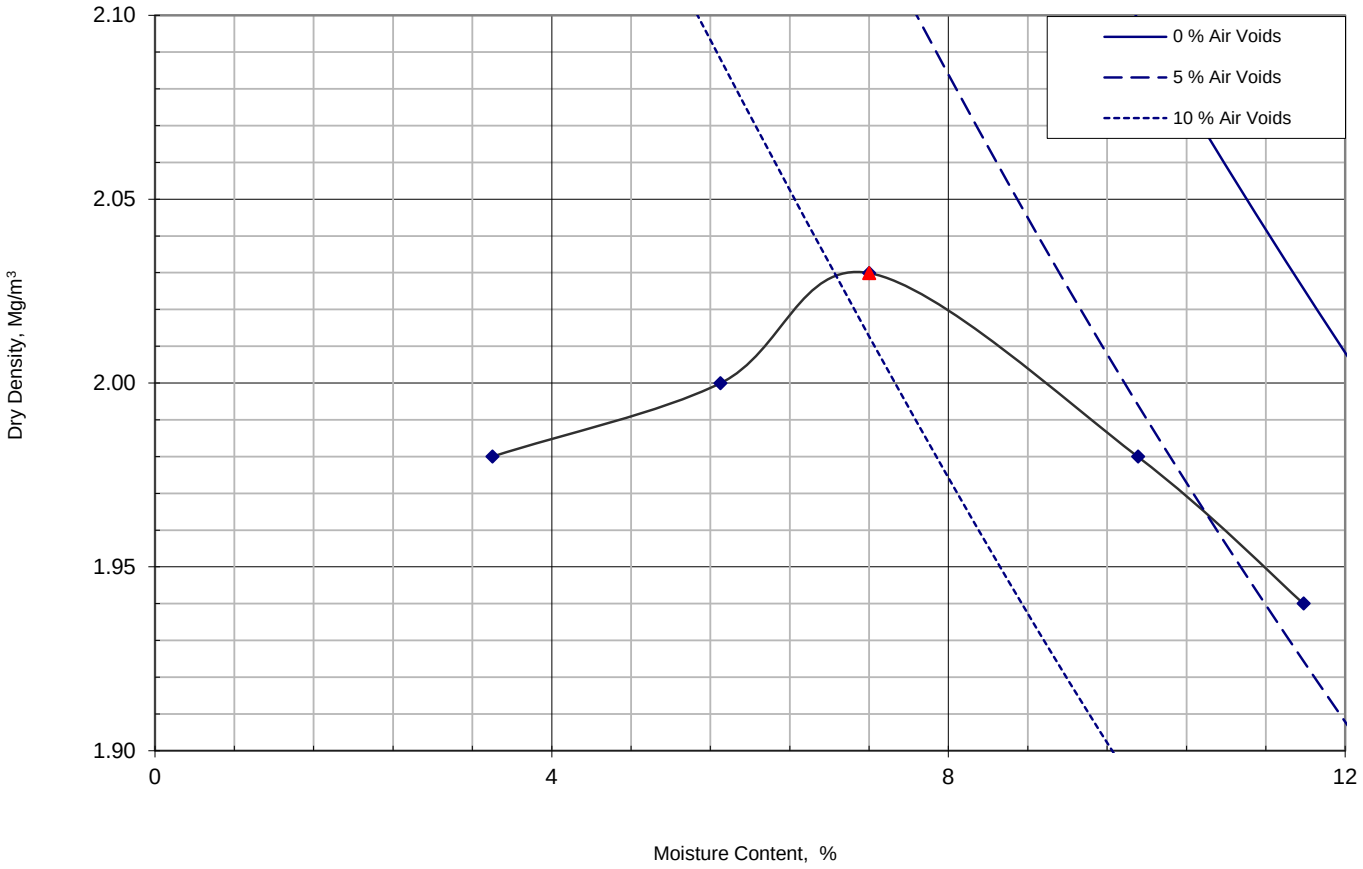
Compaction Point	1	2	3	4	5							
Moisture Content	2.8	4.3	6.3	8.0	11							
Bulk Density	2.08	2.14	2.21	2.19	2.20							
Dry Density	2.02	2.05	2.08	2.03	1.99							

Initial Moisture Content	2.8	%
Maximum Dry Density	2.08	Mg/m3
Optimum Moisture Content	6.3	%
Particle Density	2.65 Assumed	Mg/m3
Material Retained 37.5mm	9	%
Material Retained 20mm	18	%

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Operator
Conal

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**Dry Density / Moisture Content Relationship BS 1377:Part 4:1990**	Contract Number	67177
		Borehole / Pit No	S2-BH230
Project Name	Global centre of Rail Excellence 2 (31)	Sample No	119
Date Tested	29/06/2023	Depth Top	9.50
Compaction Method	4.5 Kg Rammer	Depth Base	11.00
Compaction Clause	BS1377:Part 4:1990, Clause 3.5	Sample Type	B
Sample Description	Grey silty clayey fine to coarse GRAVEL	Single or Separate Sample Used	Single



Compaction Point	1	2	3	4	5							
Moisture Content	3.4	5.7	7.2	9.9	12							
Bulk Density	2.05	2.11	2.18	2.18	2.16							
Dry Density	1.98	2.00	2.03	1.98	1.94							

Initial Moisture Content	5.7	%
Maximum Dry Density	2.03	Mg/m3
Optimum Moisture Content	7.2	%
Particle Density	2.65 Assumed	Mg/m3
Material Retained 37.5mm	7	%
Material Retained 20mm	21	%

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Operator
Conal

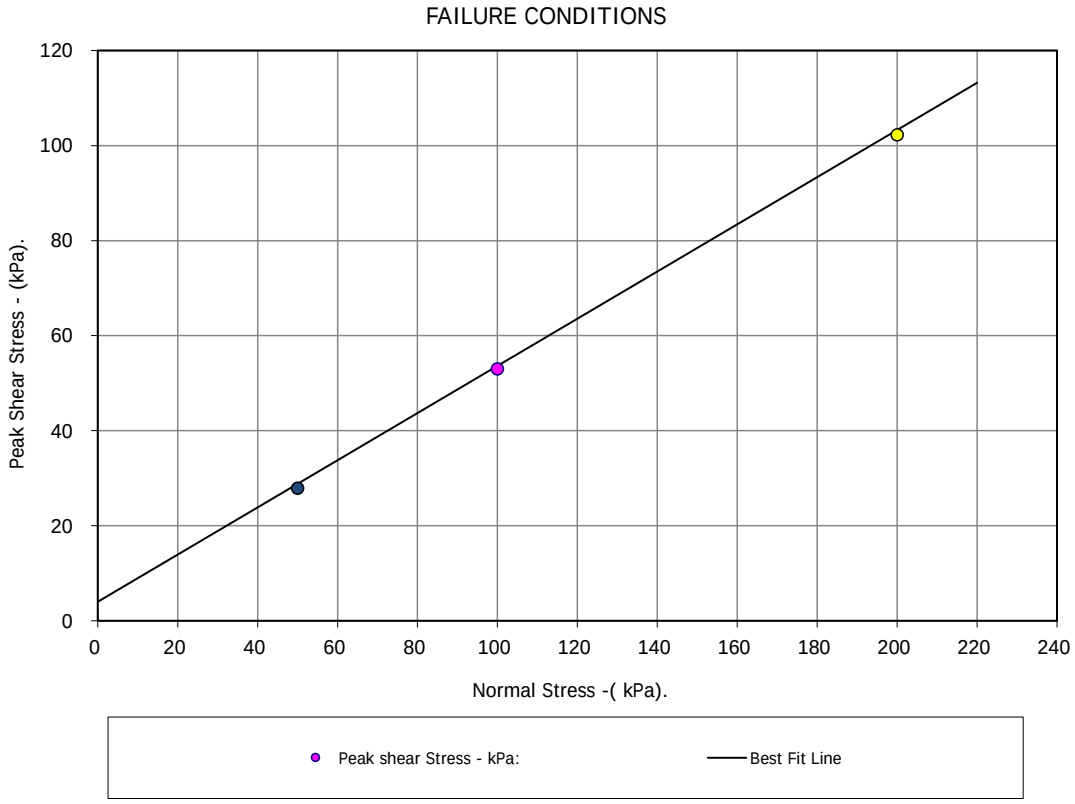
Borehole Number:	S2-BH230	Depth from (m):	0.70
Sample Number :	104	Depth to (m):	2.20

Sample Type:	B
Particle Density - Mg/m3:	2.65 (Assumed)
Specimen Tested:	Submerged, Remoulded (Light Tamping) Material above 2mm removed.

Sample Description:
Brown sandy, silty CLAY

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	23.30	23.30	23.30
Length - mm:	60.00	60.00	60.00
Moisture Content - %:	4.6	4.6	4.6
Bulk Density - Mg/m3:	1.81	1.81	1.81
Dry Density - Mg/m3:	1.73	1.73	1.73
Voids Ratio:	0.5335	0.5316	0.5329
Degree of Saturation - %:	22.95	23.03	22.97
Normal Pressure- kPa	50	100	200
Consolidation			
Consolidated Height - mm:	20.74	19.67	19.86
Shear			
Rate of Horizontal Displacement (mm/min)	0.200	0.200	0.200
Horizontal Displacement at Peak Shear Stress (mm)	5.49	8.46	7.56
Peak shear Stress - kPa:	28	53	102

PEAK	
Angle of Shearing Resistance:(θ)	**27**
Effective Cohesion - kPa:	**4**

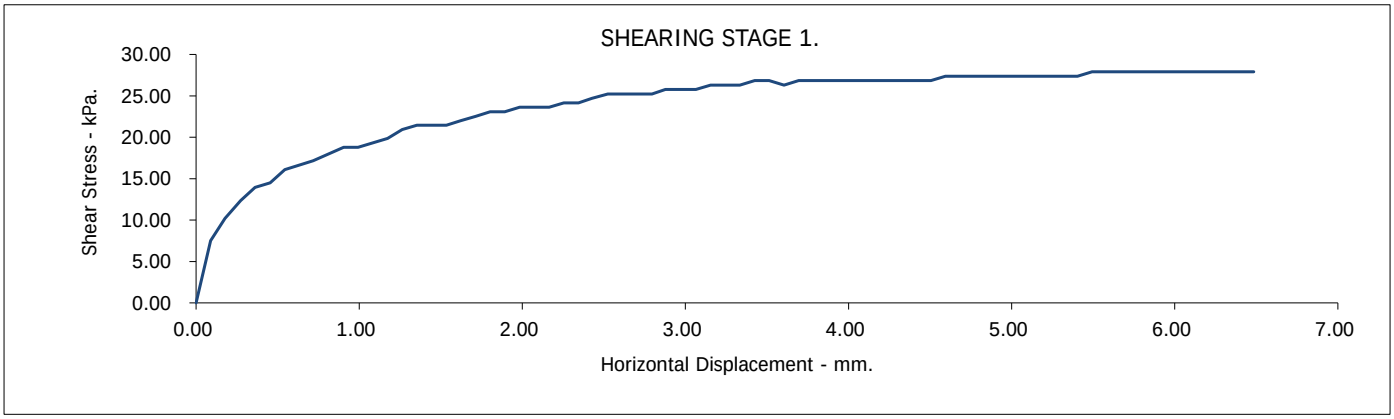


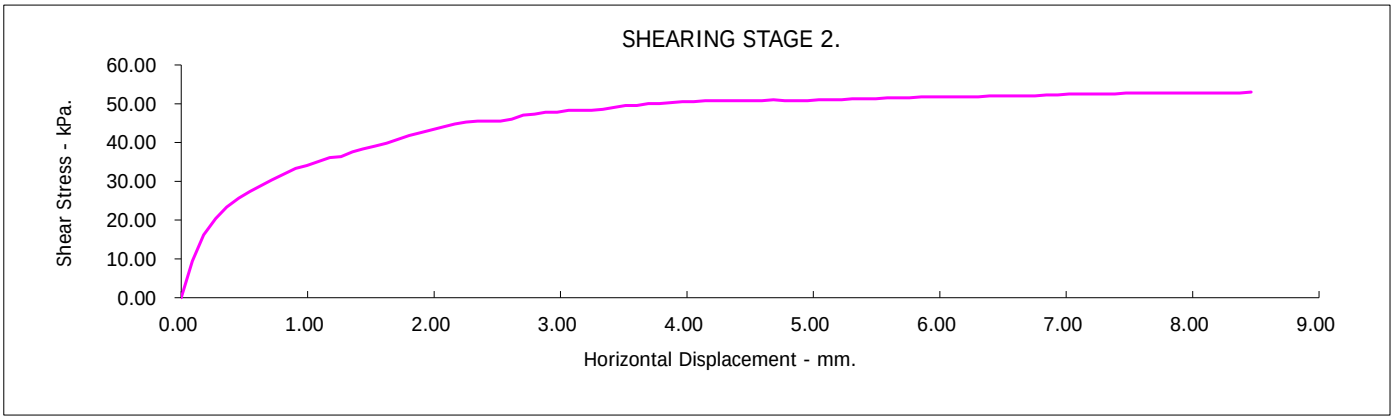
Contract No.:
67177

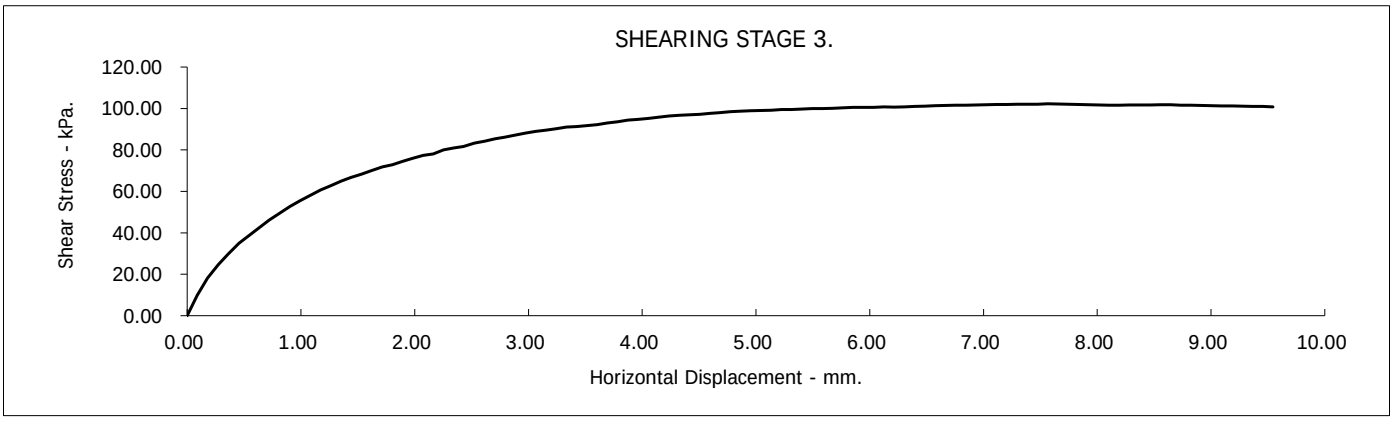
Global centre of Rail Excellence 2 (31)

Client Ref Number:
G23012

Borehole Number:	S2-BH230	Depth from (m):	0.70
Sample Number :	104	Depth to (m):	2.20







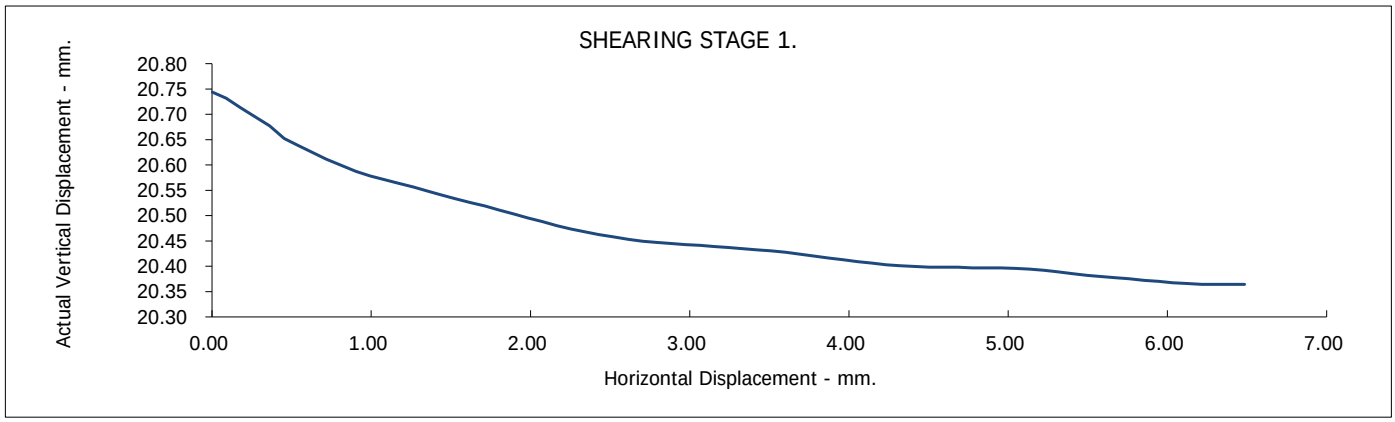
Contract No.:
67177

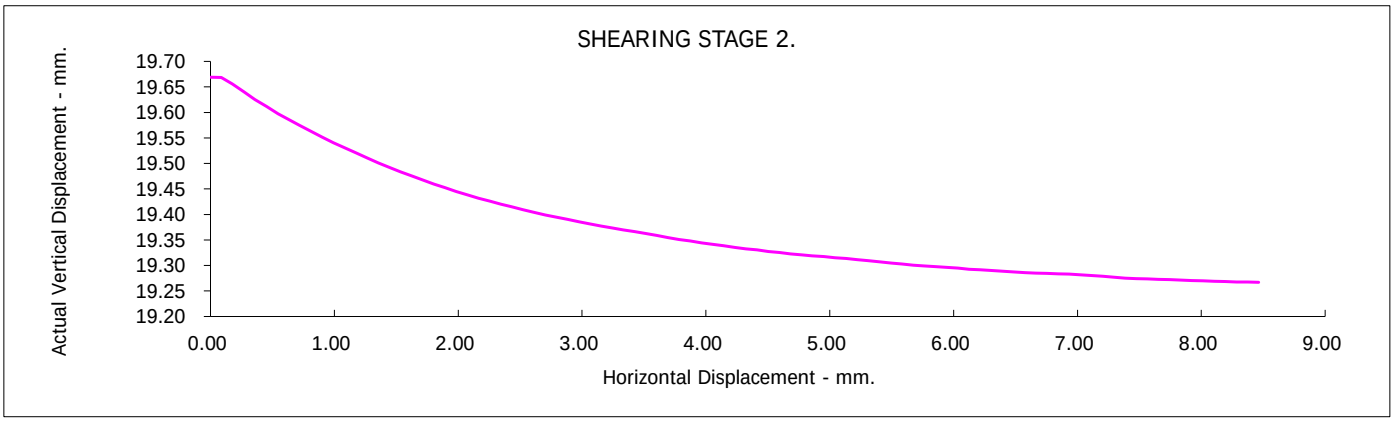
Global centre of Rail Excellence 2 (31)

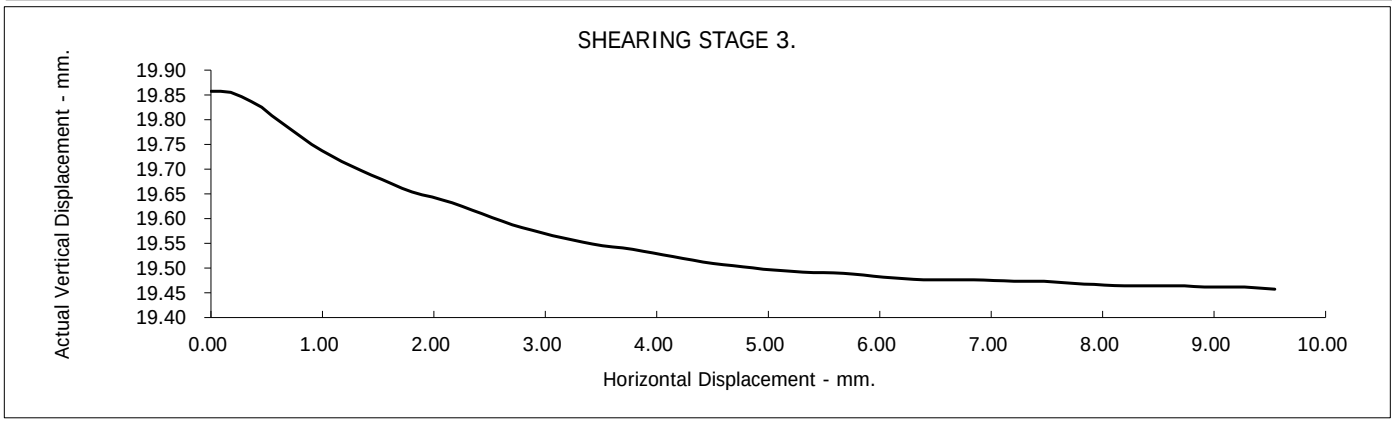
Client Ref Number:
G23012

Figure.

Borehole Number:	S2-BH230	Depth from (m):	0.70
Sample Number :	104	Depth to (m):	2.20





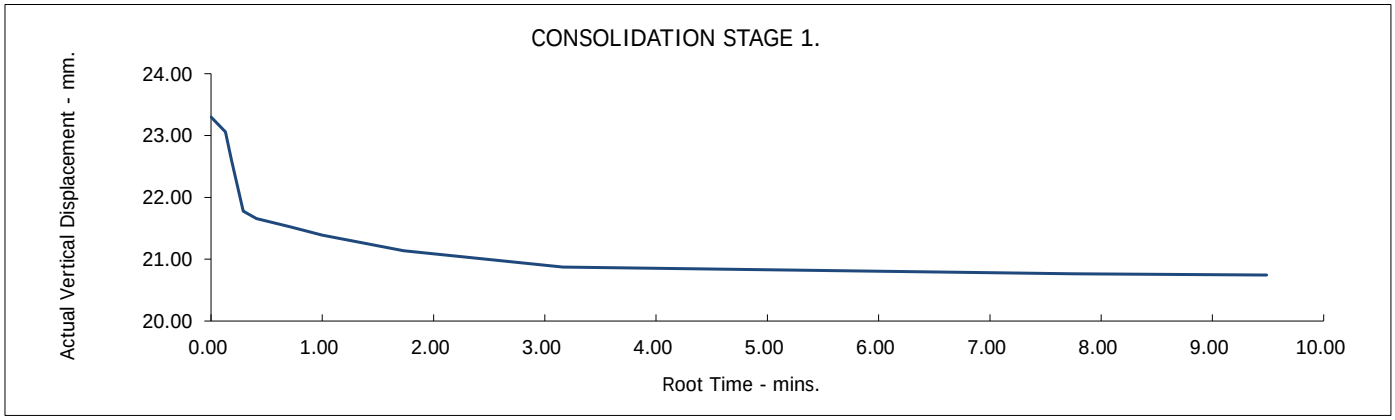


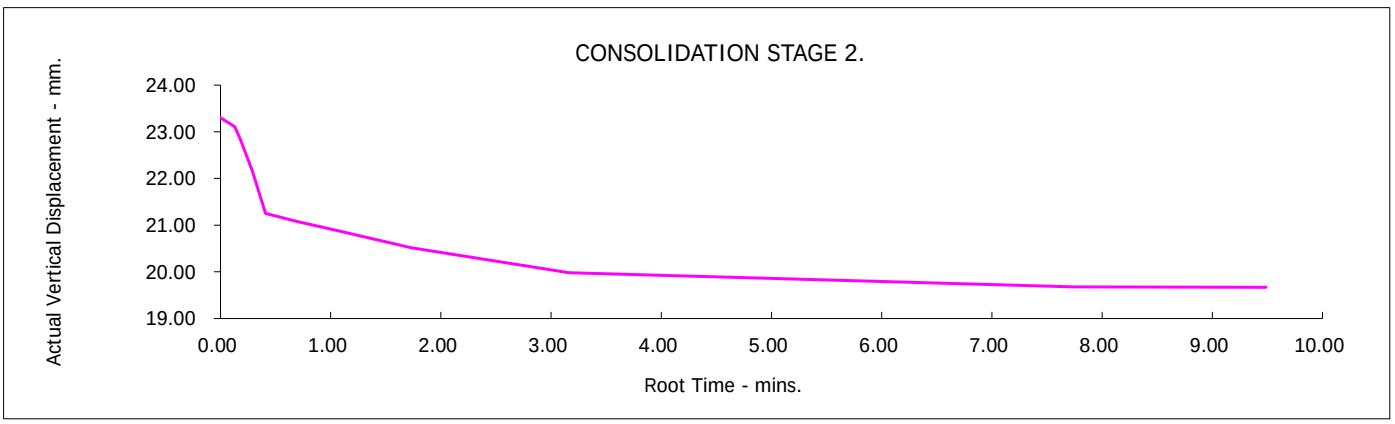
Contract No.:
67177

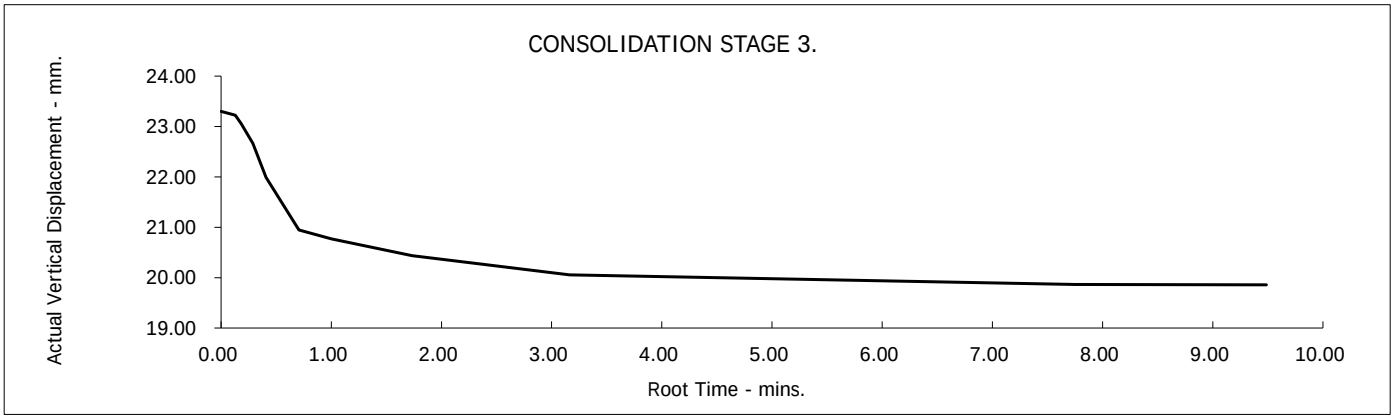
Global centre of Rail Excellence 2 (31)

Client Ref Number:
G23012

Borehole Number:	S2-BH230	Depth from (m):	0.70
Sample Number :	104	Depth to (m):	2.20







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Global centre of Rail Excellence 2 (31)

Contract No.: **67177**

Client Ref Number: **G23012**

Borehole Number:	S2-BH230	Depth from (m):	11.00
Sample Number :	121	Depth to (m):	12.50

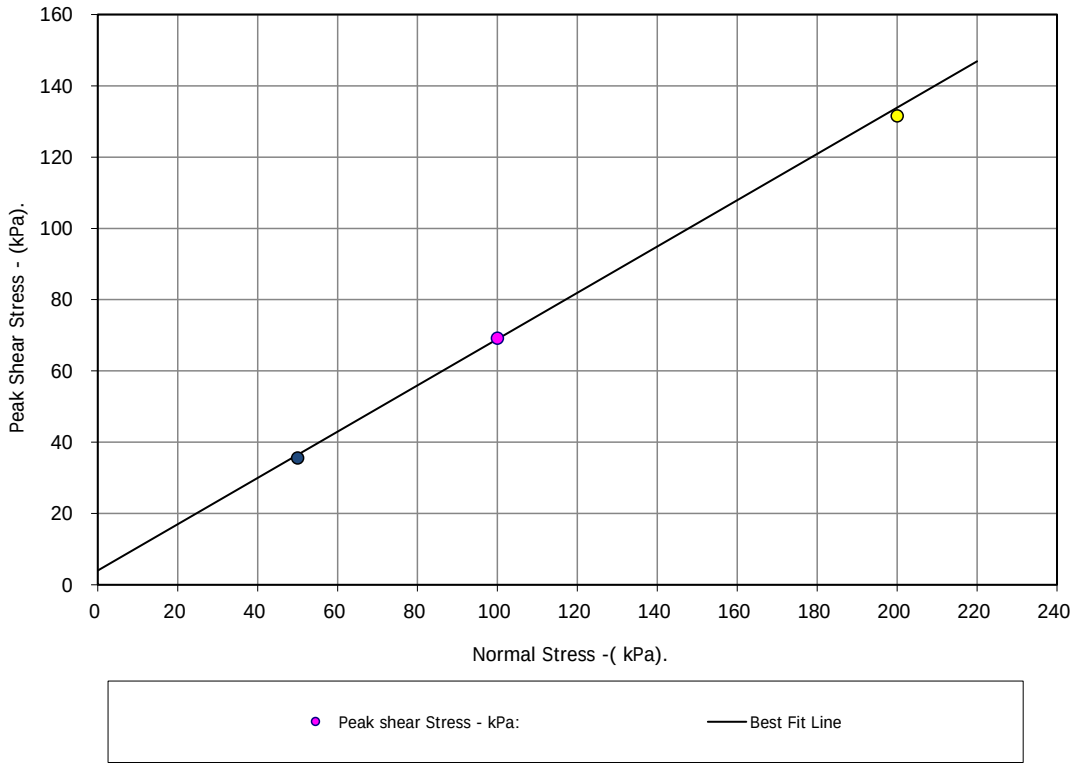
Sample Type:	B
Particle Density - Mg/m3:	2.65 (Assumed)
Specimen Tested:	Submerged, Remoulded (Light Tamping) Material above 2mm removed.

Sample Description:
Brown gravelly CLAY

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	24.98	24.98	24.98
Length - mm:	60.00	60.00	60.00
Moisture Content - %:	6.8	6.8	6.8
Bulk Density - Mg/m3:	1.74	1.75	1.75
Dry Density - Mg/m3:	1.63	1.64	1.64
Voids Ratio:	0.6220	0.6181	0.6205
Degree of Saturation - %:	28.91	29.10	28.99
Normal Pressure- kPa	50	100	200
Consolidation			
Consolidated Height - mm:	22.26	21.12	20.15
Shear			
Rate of Horizontal Displacement (mm/min)	0.200	0.200	0.200
Horizontal Displacement at Peak Shear Stress (mm)	7.21	7.93	5.86
Peak shear Stress - kPa:	36	69	132

PEAK	
Angle of Shearing Resistance:(~~θ~~)	**33.0**
Effective Cohesion - kPa:	**4.0**

FAILURE CONDITIONS



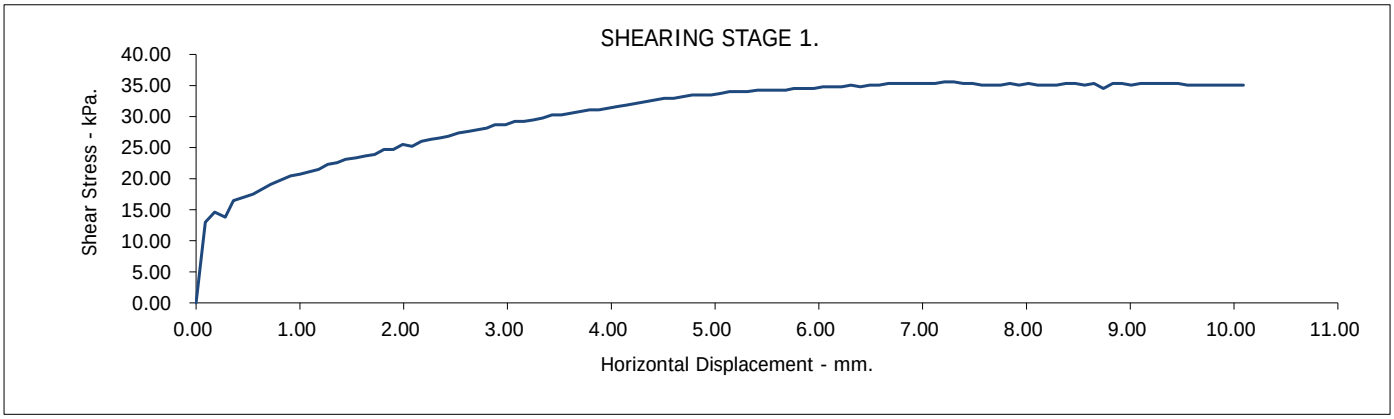
Contract No.:
67177

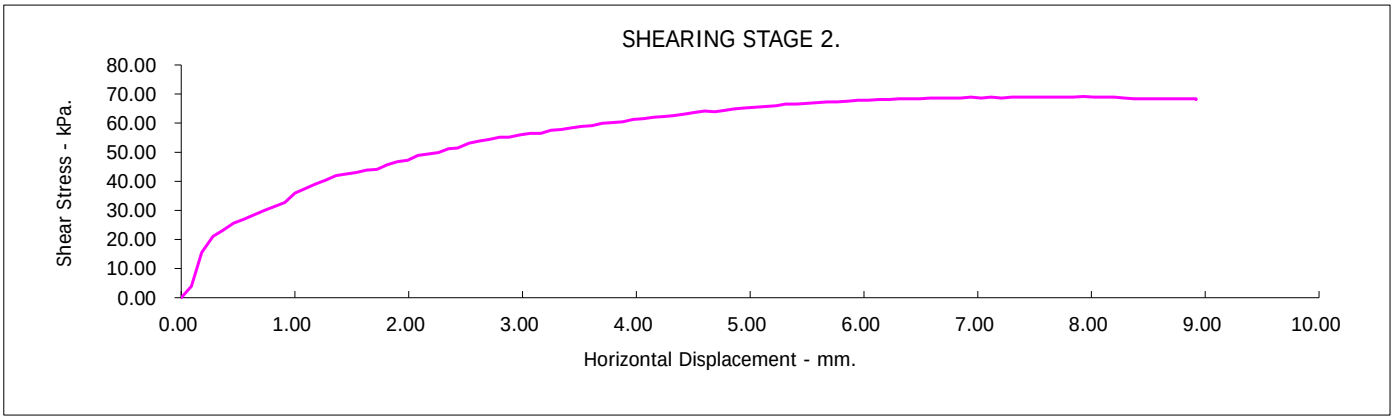
Global centre of Rail Excellence 2 (31)

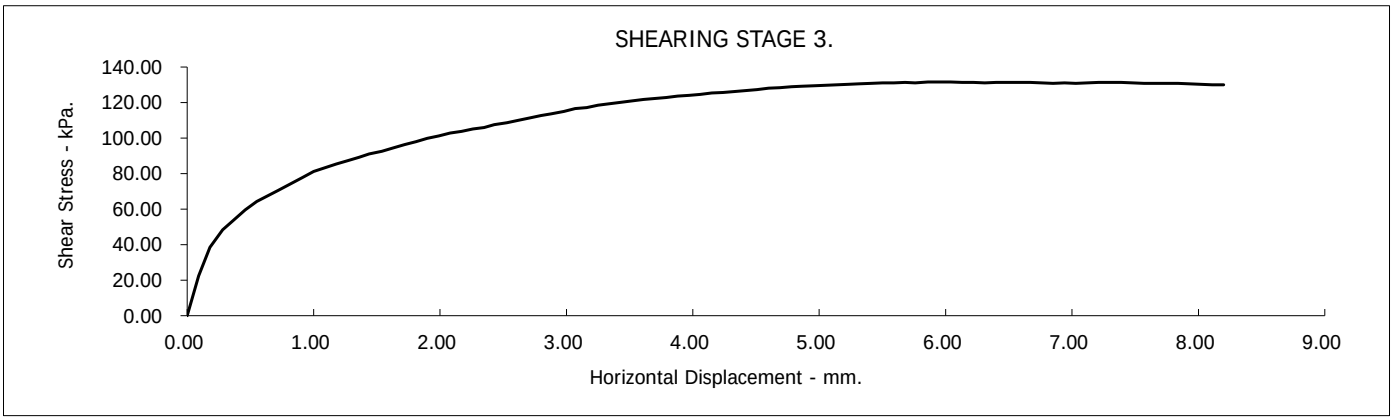
Client Ref Number:
G23012

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Borehole Number:	S2-BH230	Depth from (m):	11.00
Sample Number :	121	Depth to (m):	12.50







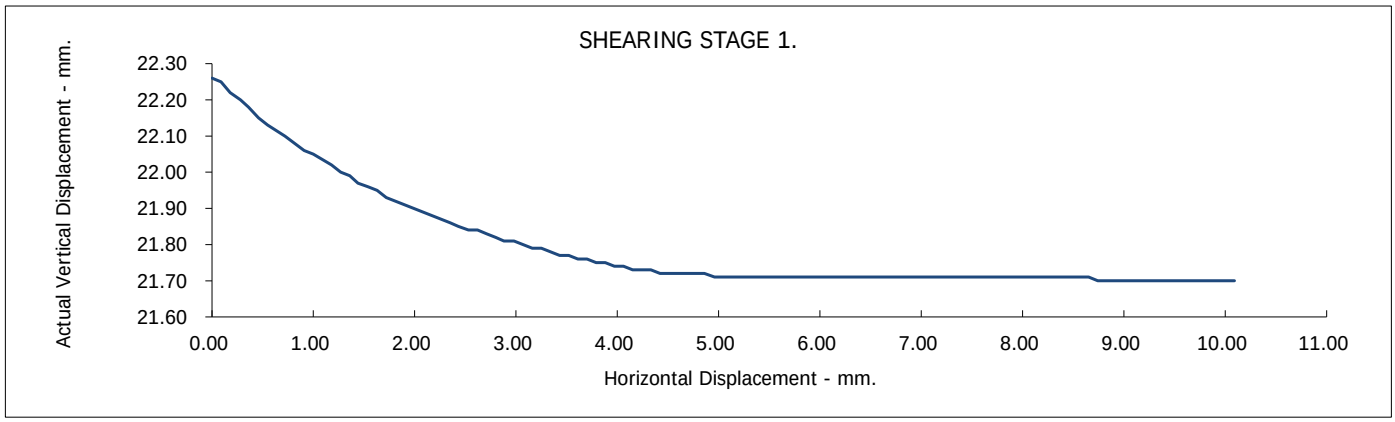
Global centre of Rail Excellence 2 (31)

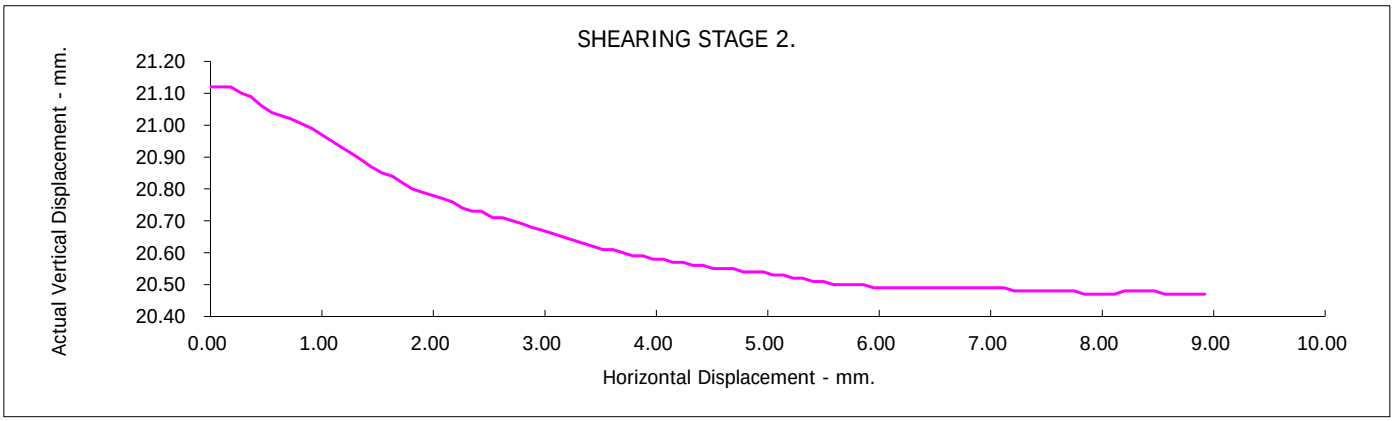
Contract No.: **67177**

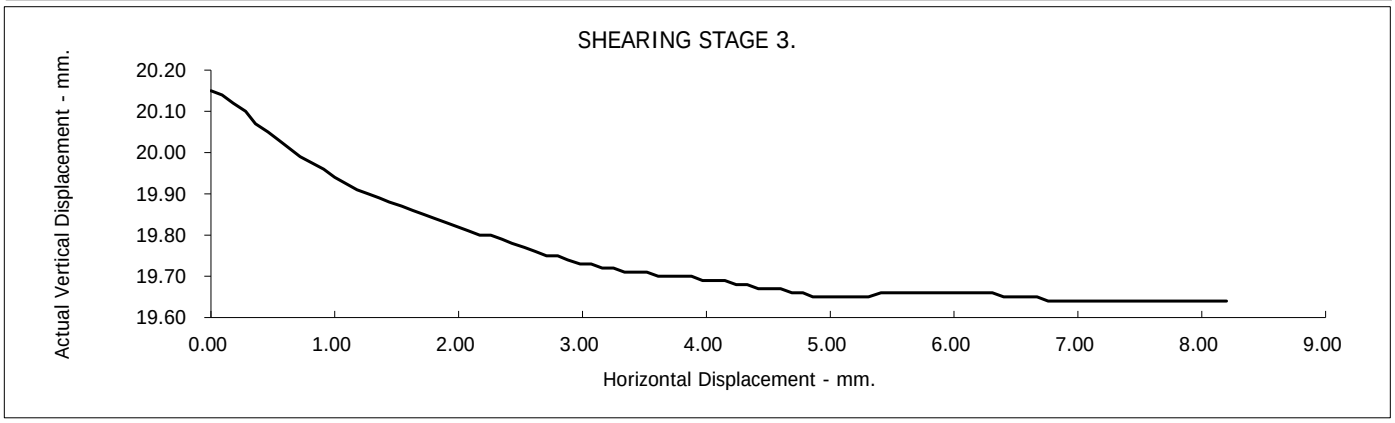
Client Ref Number: **G23012**

Figure.

Borehole Number:	S2-BH230	Depth from (m):	11.00
Sample Number :	121	Depth to (m):	12.50





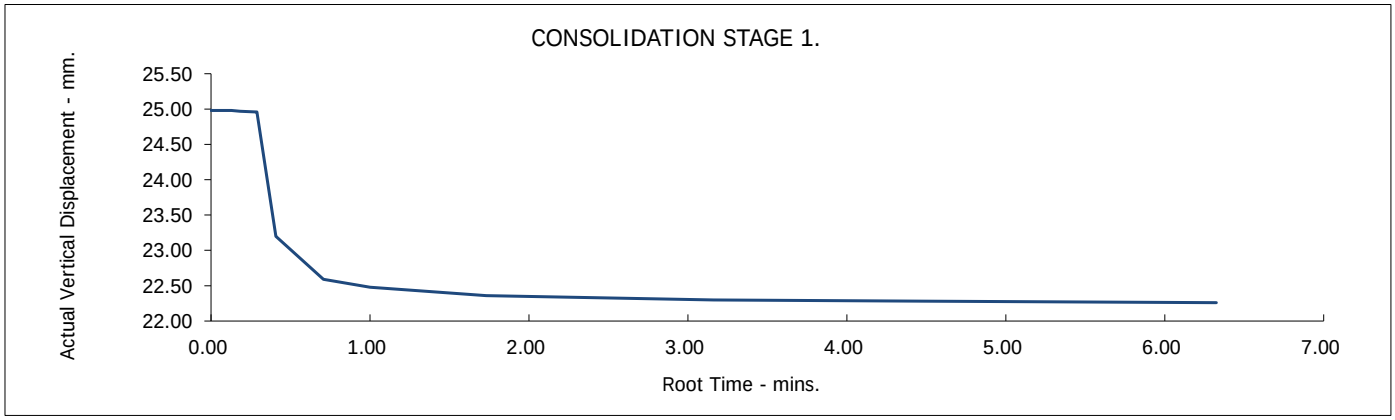


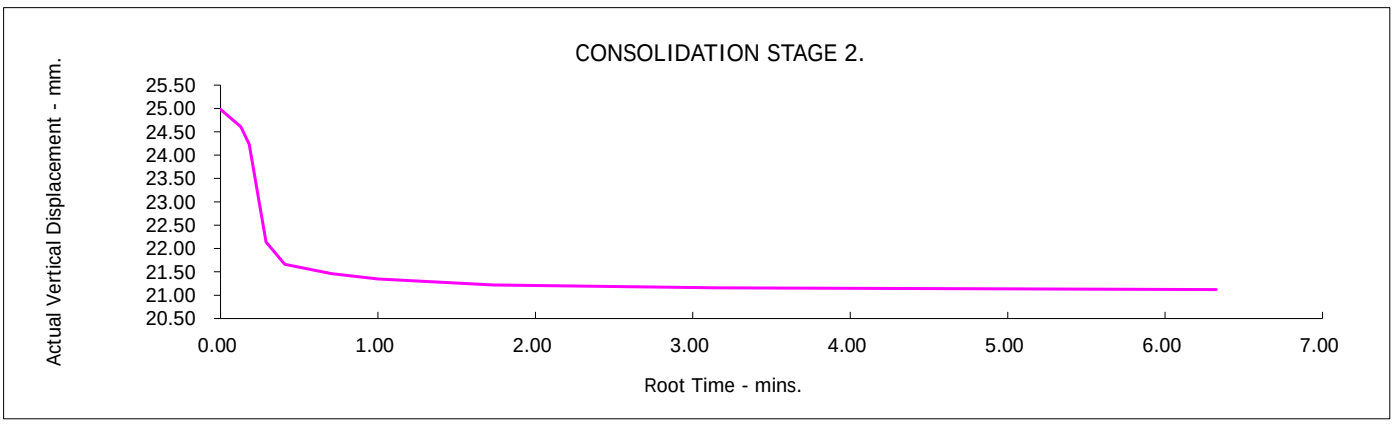
Contract No.:
67177

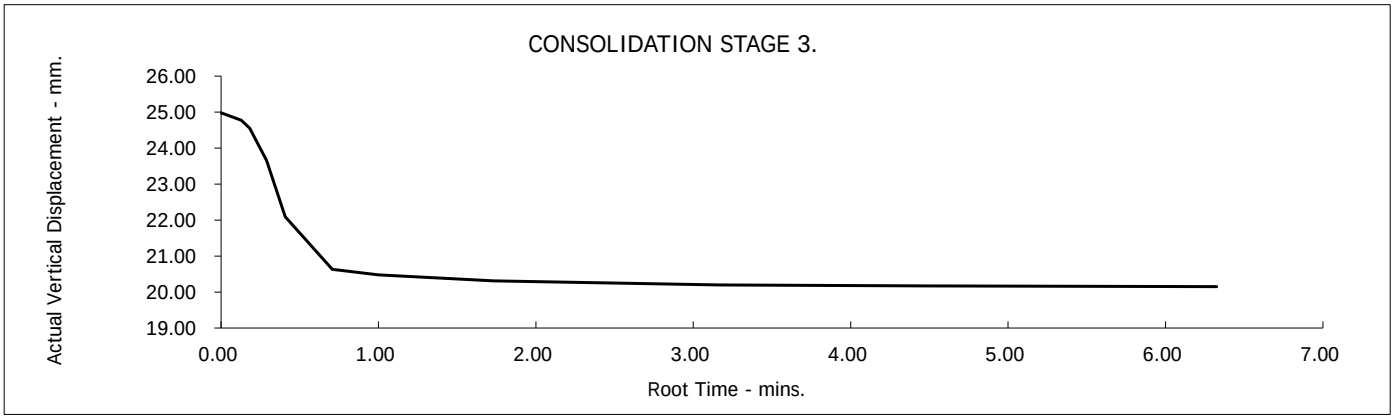
Global centre of Rail Excellence 2 (31)

Client Ref Number:
G23012

Borehole Number:	S2-BH230	Depth from (m):	11.00
Sample Number :	121	Depth to (m):	12.50







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Global centre of Rail Excellence 2 (31)

Contract No.: **67177**

Client Ref Number: **G23012**

GSTL
GEOTECHNICAL SITE & TESTING LABORATORIES

Determination of Unconfined Compressive Strength
ISRM Suggested Methods Vol 16, No. 2, pp. 135-140 1979

Contract Number	67177
Project Name	Global centre of Rail Excellence 2 (31)
Sample Preperation	Sawing and Grinding
Date Tested	22/06/2023

Hole Reference	Depth (m)			Diameter	Length	Initial Mass	Moisture Content	Bulk Density	Dry Density	Load Failure	Maximum Strength	Type of Failure
S2-BH217	12.62		12.83	85.7	211.3	3240.1	1.1	2.66	2.63	257.6	44.7	Single Shear
S2-BH217	13.62		13.82	85.8	204.3	3168.9	1.2	2.68	2.65	220.3	38.1	Multiple Fracture

Key	Reported As
Diameter	mm
Length	mm
Initial Mass	g
Moisture Content	%
Bulk Density	Mg/m^3
Dry Density	Mg/m^3
Load Failure	kN
Maximum Strength	MPa

Operator
Julian Jones

GSTL
GEOTECHNICAL SITE & TESTING LABORATORIES

Point Load Test

The complete ISRM suggested methods for rock characterization, testing and monitoring 1974-2006 Determining Point Load Strength

Contract Number	67177
Project Name	Global centre of Rail Excellence 2 (31)
Sample Type	Core
Date Tested	22/06/2023

*Please note that GSTL is not accredited for the water content of rock

Hole Reference	Depth (m)			Sample No	Test Type		Width	Platen Seperation	Failure Load	Equivalent Diameter	Point Load	Size Factor	Point Load Index	Moisture Content	Description	Angle Between Plane of Anisotropy & Core Axis	Type of Anisotropy (Bedding or Cleavage)
					d / a / b / i	I //											
S2-BH217	10.20	-	10.37	a	a		86	40	8.11	66.18	1.85	1.13	2.10	1.2	SILTSTONE		

Key	Reported As
Width	(W) mm
Platen Separation	(D) mm
Failure Load	(P) kN
Equivalent Diameter	(De) mm
Point Load	(Is) MPa
Size Factor	(F)
Point Load Index	(Is(50)) MPa
Moisture Content	%
Description	SC

Operator
Julian Jones

UKAS TESTING
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Laboratory Report

UKAS TESTING 2788

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES A PHENNA GROUP COMPANY

Contract Number: 67178

Client Ref: **G23012**
Client PO:

Date Received: **20-06-2023**
Date Completed: **05-07-2023**
Report Date: **05-07-2023**

Client: **Jackson Drilling Holdings Ltd**
Northwood Farm
Coxbridge Road
Baltonsborough
Somerset
BA6 8RA

This report has been checked and approved by:

Paul Evans
Director

Contract Title: **Global Centre of Rail Excellence Stage 2 (32)**
For the attention of: **Adam Putt**

Test Description	Qty
Moisture Content of Soil BS1377 : Part 2 : Clause 3.2 : 1990 - * UKAS	2
4 Point Liquid & Plastic Limit BS 1377:1990 - Part 2 : 4.3 & 5.3 - * UKAS	2
Particle Density (Gas Jar) BS 1377:1990 - Part 2 : 8.2 - * UKAS	4
PSD Wet & Dry Sieve method BS 1377:1990 - Part 2 : 9.2 - * UKAS	4
Dry Den/MC (4.5kg Rammer Method 1 Litre Mould/CBR Mould) BS 1377:1990 - Part 4 : 3.5 - * UKAS	2
Consolidated Drained Peak Shear Strength - set of 3 - 60 x 60mm Shear Box Specimens by Direct Shearing (3 days) BS 1377:1990 - Part 7 : 4 - * UKAS	3
Disposal of samples for job	1

Notes: **Observations and Interpretations are outside the UKAS Accreditation**
*** - denotes test included in laboratory scope of accreditation**
- denotes test carried out by approved contractor
@ - denotes non accredited tests

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 test report/certificate shall not be reproduced except in full, without the approval of GEO Site & Testing Services Ltd. Any opinions or interpretations stated - within this report/certificate are excluded from the laboratories UKAS accreditation.

Approved Signatories:
Brendan Evans (Office Administrator) - Darren Bourne (Quality Senior Technician) - Paul Evans (Director)
Richard John (Quality/Technical Manager) - Shaun Jones (Laboratory manager) - Shaun Thomas (Site Manager)
Wayne Honey (Human Resources/ Health and Safety Manager)

GEO Site & Testing Services Ltd
Units 3-4, Heol Aur, Dafen, Llanelli, Carmarthenshire, Wales SA14 8QN
Tel: 01554 784040 Fax: 01554 784041 info@gstl.co.uk gstl.co.uk

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NATURAL MOISTURE, LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX
(BS 1377:1990 - Part 2 : 4.3 & 5.3)

Contract Number	67178
Project Name	Global Centre of Rail Excellence Stage 2 (32)
Date Tested	28/06/2023

DESCRIPTIONS

Sample/Hole Reference	Sample Number	Sample Type	Depth (m)			Descriptions
S2-BH231	102	D	0.50	-	0.60	Grey fine to medium gravelly sandy silty CLAY
S2-BH231	105	D	1.40	-	1.50	Grey fine to medium gravelly sandy silty CLAY
				-		
				-		
				-		
				-		
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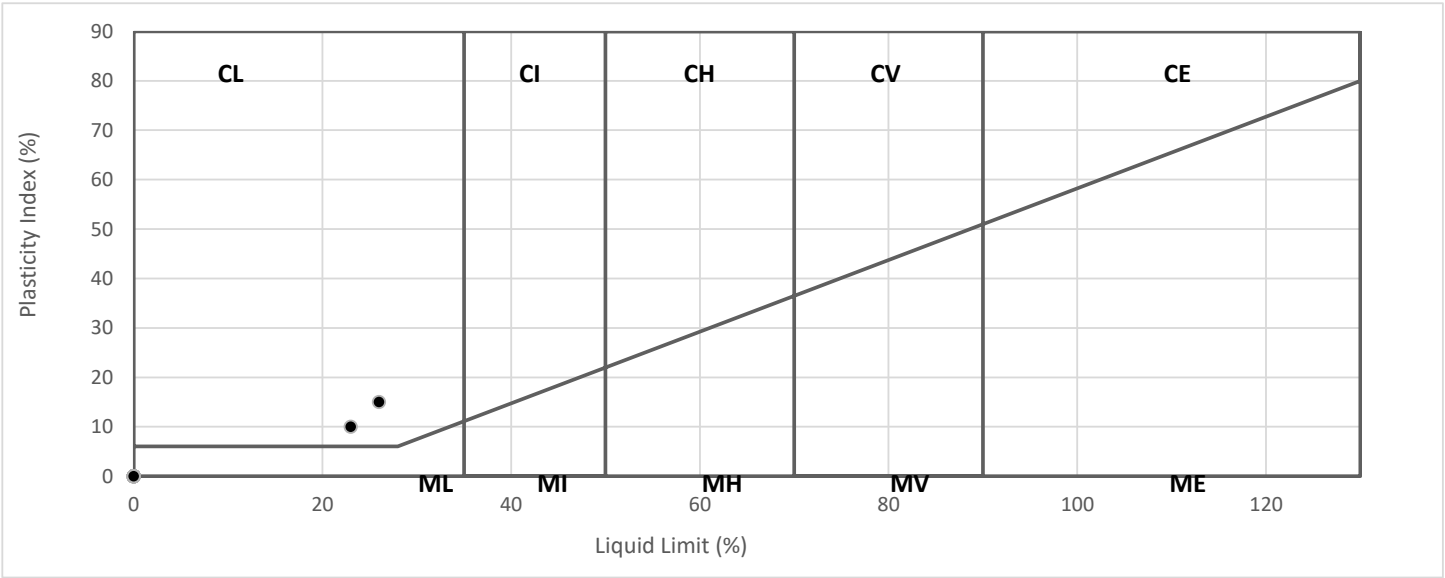
Operator
Aaron Hodge

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	NATURAL MOISTURE, LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377:1990 - Part 2 : 4.3 & 5.3)	
Contract Number	67178	
Project Name	Global Centre of Rail Excellence Stage 2 (32)	
Date Tested	28/06/2023	

Sample/Hole Reference	Sample Number	Sample Type	Depth (m)			Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity index %	Passing 0.425mm %	Remarks
S2-BH231	102	D	0.50	-	0.60	9.0	26	11	15	70	CL Low Plasticity
S2-BH231	105	D	1.40	-	1.50	1.2	23	13	10	70	CL Low Plasticity
				-							
				-							
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Symbols: NP : Non Plastic # : Liquid Limit and Plastic Limit Wet Sieved

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION
BS 5930:2015+A1:2020



Operator
Aaron Hodge

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PARTICLE DENSITY BY GAS JAR
(BS 1377 : PART 2 : 8.2 : 1990)

Contract Number	67178
Project Name	Global Centre of Rail Excellence Stage 2 (32)
Date Tested	29/06/2023

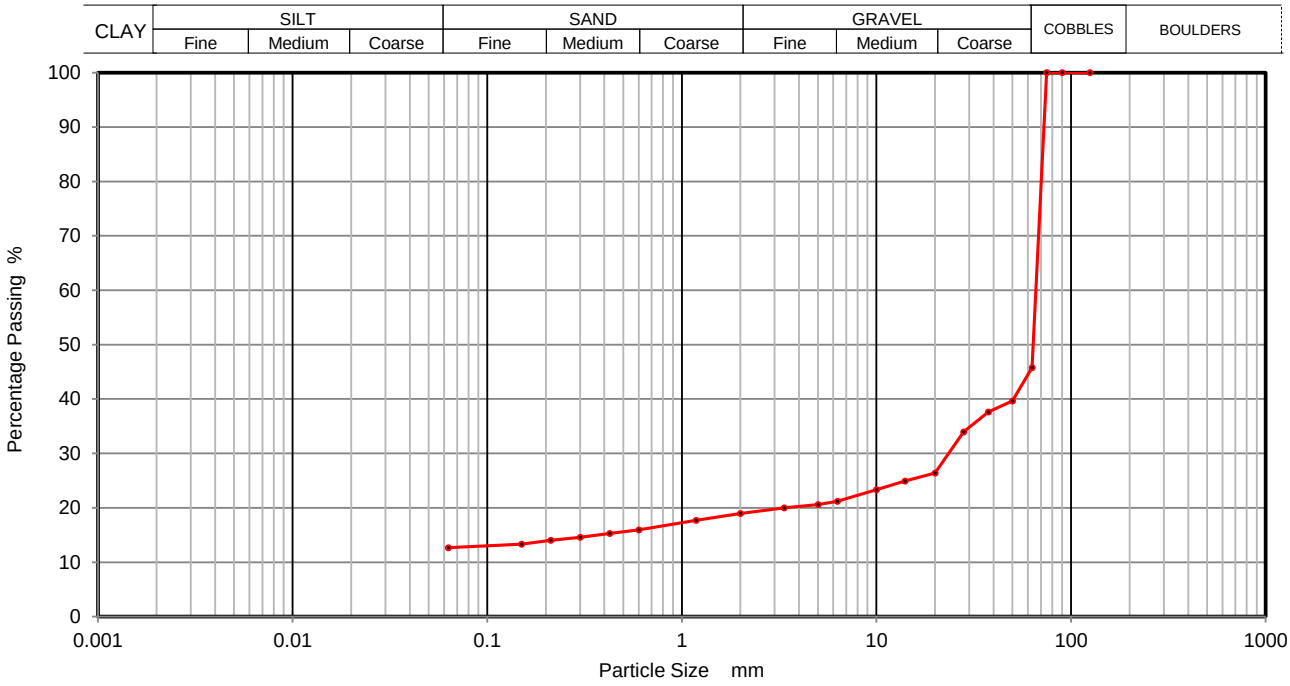
Hole Reference	Sample Number	Sample Type	Depth (m)							Particle Density		Remarks
S2-BH231	107	B	1.00	-	2.00					2.50		
S2-BH231	117	B	5.00	-	6.00					2.55		
S2-BH231	129	B	12.50	-	15.00					2.58		
S2-BH231	137	B	21.00	-	22.00					2.56		
				-								
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Key	Reported As
Moisture Content	%
Bulk Density	Mg/m^3
Dry Density	Mg/m^3
Particle Density	Mg/m^3
Air Voids	%

Operator
Conal Aliffe

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GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**PARTICLE SIZE DISTRIBUTION** **BS 1377 Part 2:1990** **Wet Sieve, Clause 9.2**	Contract Number	67178
		Borehole/Pit No.	S2-BH231
Project Name	Global Centre of Rail Excellence Stage 2 (32)	Sample No.	107
Soil Description	Grey slightly sandy silty/ clayey fine to coarse GRAVEL with cobbles	Depth Top	1.00
		Depth Base	2.00
Date Tested	29/06/2023	Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	46		
50	40		
37.5	38		
28	34		
20	26		
14	25		
10	23		
6.3	21		
5	21		
3.35	20		
2	19		
1.18	18		
0.6	16		
0.425	15		
0.3	15		
0.212	14		
0.15	13		
0.063	13		

Sample Proportions	% dry mass
Cobbles	54
Gravel	27
Sand	6
Silt and Clay	13

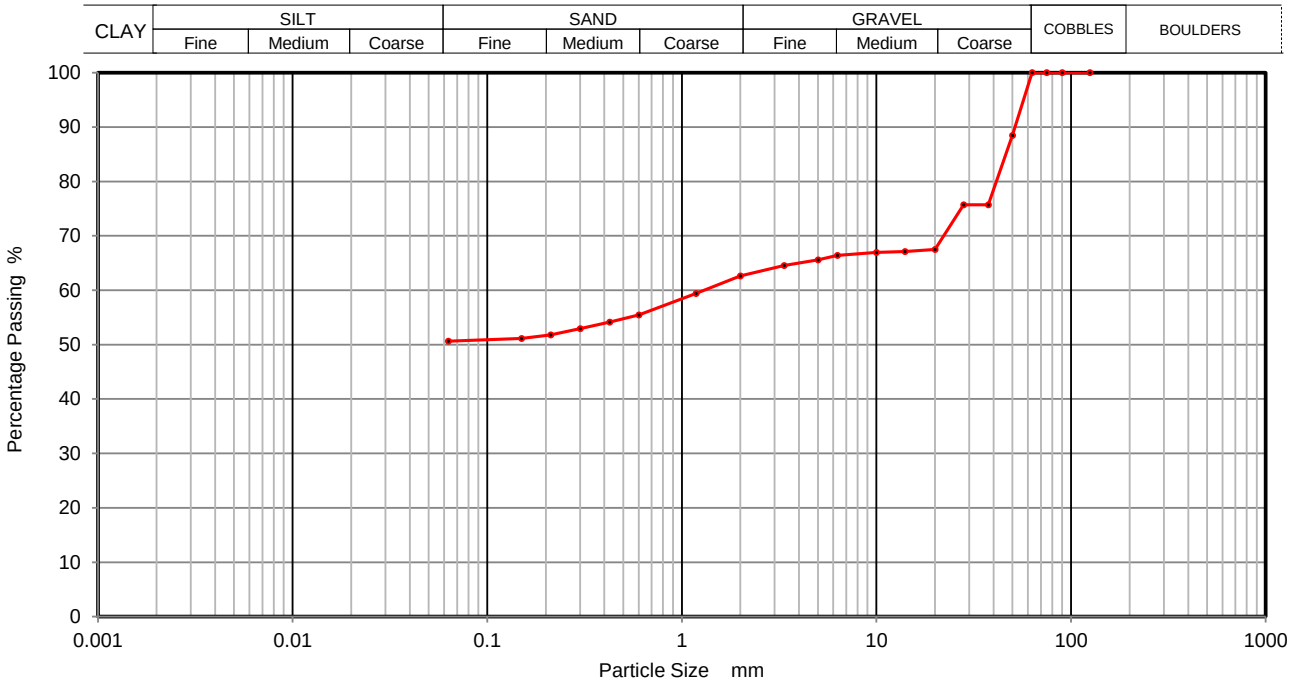
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator
David Edwards

UKAS TESTING
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GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**PARTICLE SIZE DISTRIBUTION** **BS 1377 Part 2:1990** **Wet Sieve, Clause 9.2**	Contract Number	67178
		Borehole/Pit No.	S2-BH231
Project Name	Global Centre of Rail Excellence Stage 2 (32)	Sample No.	117
Soil Description	Grey fine to coarse sandy fine to coarse gravelly SILT/ CLAY	Depth Top	5.00
		Depth Base	6.00
Date Tested	29/06/2023	Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	88		
37.5	76		
28	76		
20	67		
14	67		
10	67		
6.3	66		
5	66		
3.35	65		
2	63		
1.18	59		
0.6	55		
0.425	54		
0.3	53		
0.212	52		
0.15	51		
0.063	51		

Sample Proportions	% dry mass
Cobbles	0
Gravel	37
Sand	12
Silt and Clay	51

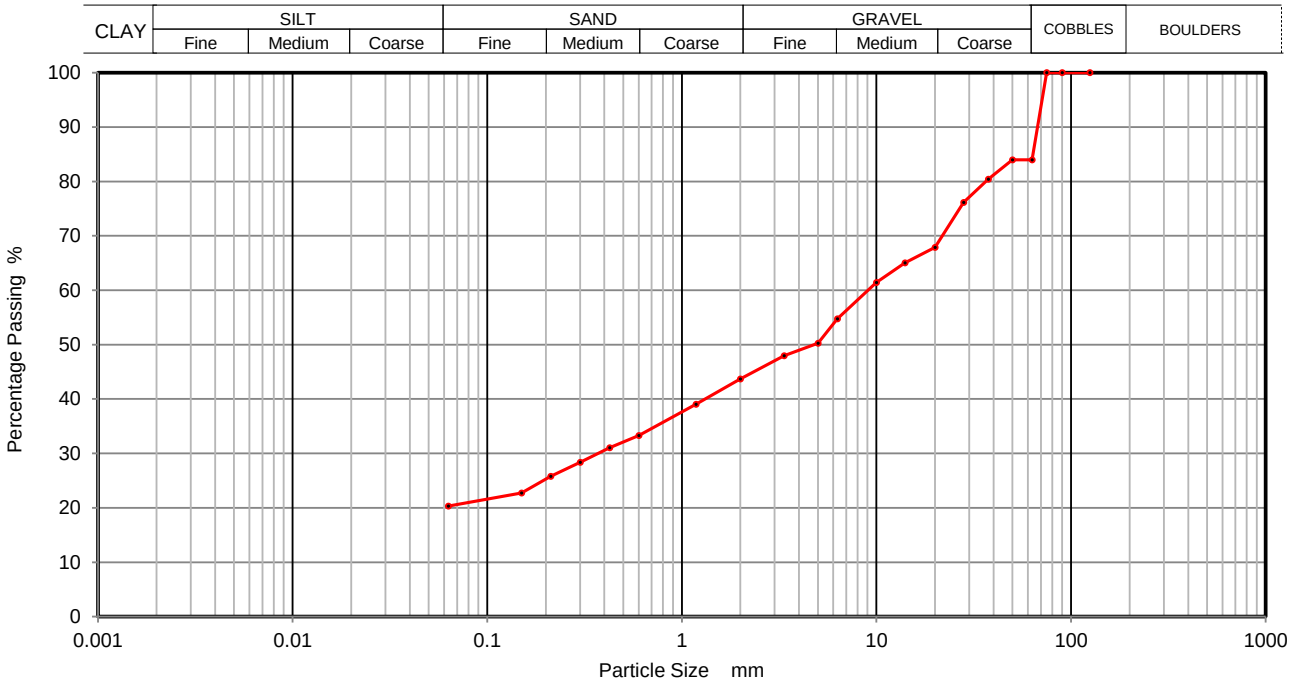
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator
David Edwards

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GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**PARTICLE SIZE DISTRIBUTION** **BS 1377 Part 2:1990** **Wet Sieve, Clause 9.2**	Contract Number	67178
		Borehole/Pit No.	S2-BH231
Project Name	Global Centre of Rail Excellence Stage 2 (32)	Sample No.	129
Soil Description	Grey silty/ clayey fine to coarse sandy fine to coarse GRAVEL with cobbles	Depth Top	12.50
		Depth Base	15.00
Date Tested	29/06/2023	Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	84		
50	84		
37.5	80		
28	76		
20	68		
14	65		
10	61		
6.3	55		
5	50		
3.35	48		
2	44		
1.18	39		
0.6	33		
0.425	31		
0.3	28		
0.212	26		
0.15	23		
0.063	20		

Sample Proportions	% dry mass
Cobbles	16
Gravel	40
Sand	24
Silt and Clay	20

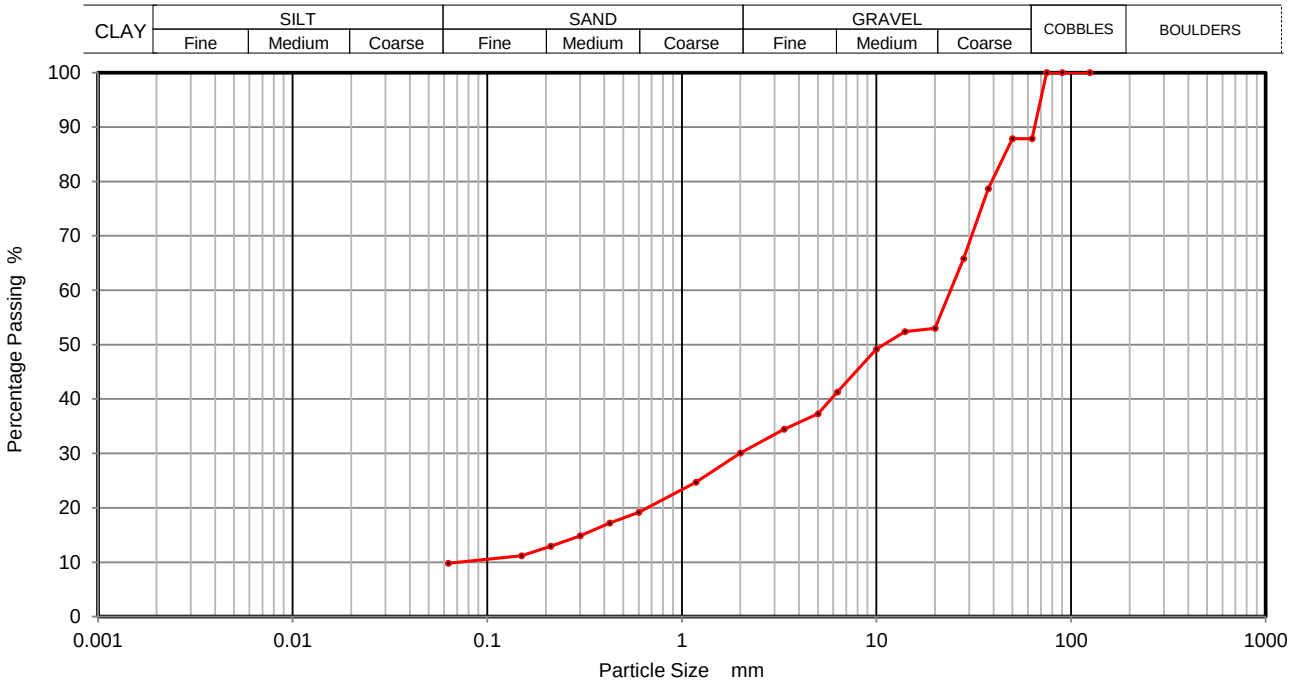
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator
David Edwards

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GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**PARTICLE SIZE DISTRIBUTION** **BS 1377 Part 2:1990** **Wet Sieve, Clause 9.2**	Contract Number	67178
		Borehole/Pit No.	S2-BH231
Project Name	Global Centre of Rail Excellence Stage 2 (32)	Sample No.	137
Soil Description	Grey silty/ clayey fine to coarse sandy fine to coarse GRAVEL with cobbles	Depth Top	21.00
		Depth Base	22.00
Date Tested	29/06/2023	Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	88		
50	88		
37.5	79		
28	66		
20	53		
14	52		
10	49		
6.3	41		
5	37		
3.35	34		
2	30		
1.18	25		
0.6	19		
0.425	17		
0.3	15		
0.212	13		
0.15	11		
0.063	10		

Sample Proportions	% dry mass
Cobbles	12
Gravel	58
Sand	20
Silt and Clay	10

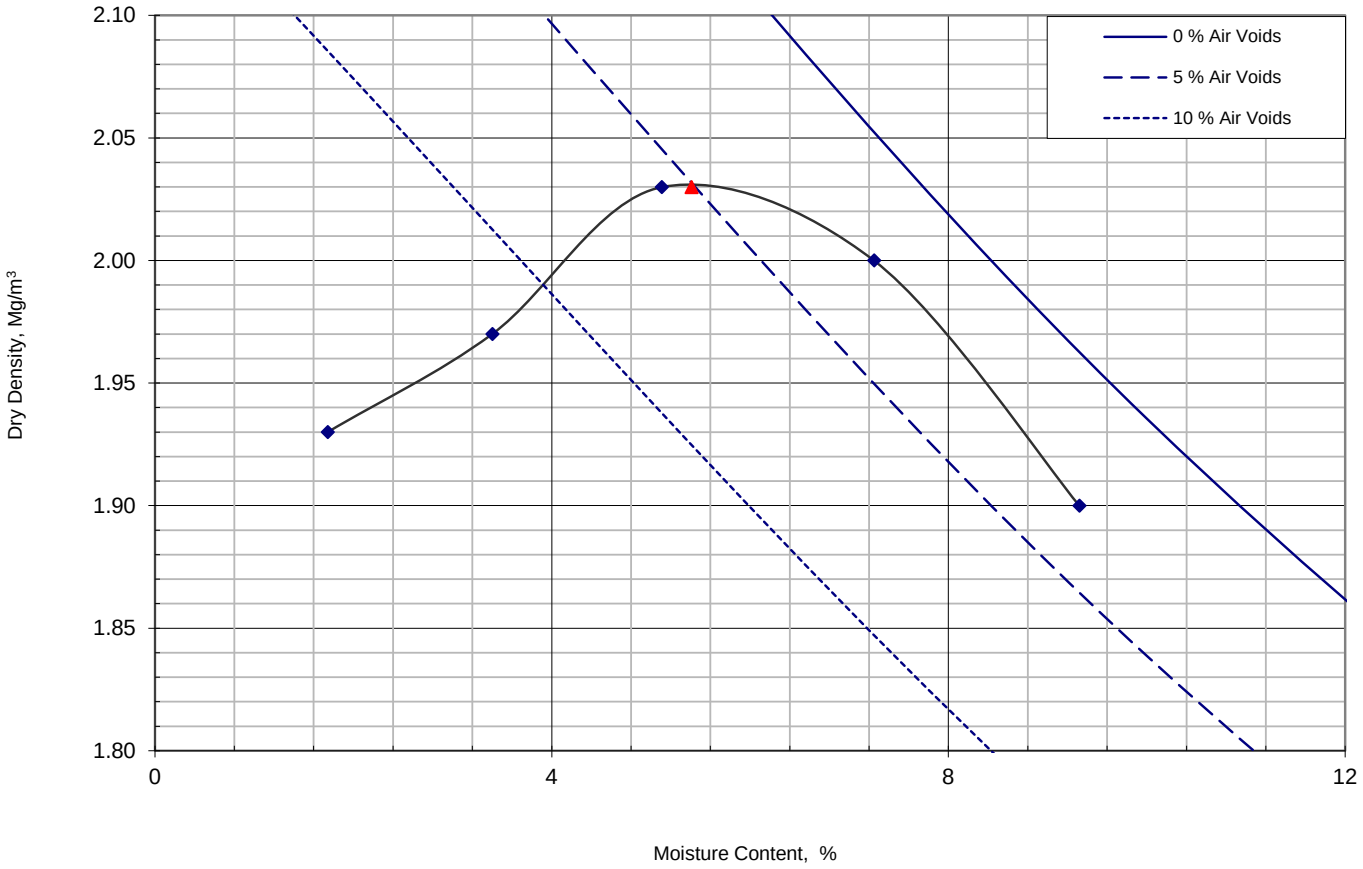
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator
David Edwards

UKAS TESTING
2788

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**Dry Density / Moisture Content Relationship BS 1377:Part 4:1990**	Contract Number	67178
		Borehole / Pit No	S2-BH231
Project Name	Global Centre of Rail Excellence Stage 2 (32)	Sample No	113
Date Tested	29/06/2023	Depth Top	3.50
Compaction Method	4.5 Kg Rammer	Depth Base	4.00
Compaction Clause	BS1377:Part 4:1990, Clause 3.5	Sample Type	B
Sample Description	Grey silty clayey fine to coarse GRAVEL	Single or Separate Sample Used	Single



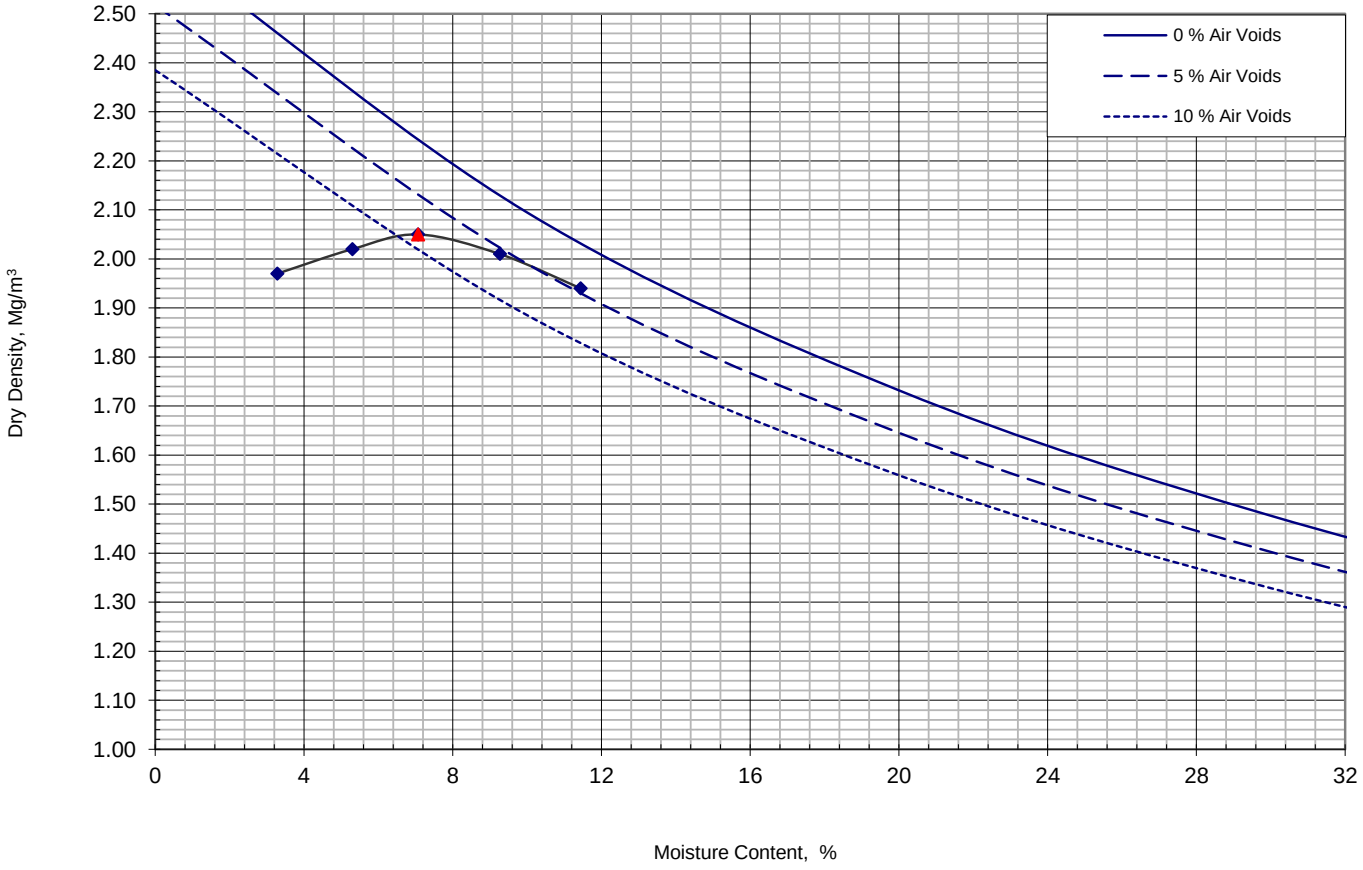
Compaction Point	1	2	3	4	5							
Moisture Content	1.7	3.4	5.1	7.3	9.3							
Bulk Density	1.96	2.04	2.13	2.14	2.08							
Dry Density	1.93	1.97	2.03	2.00	1.90							

Initial Moisture Content	5.1	%
Maximum Dry Density	2.03	Mg/m3
Optimum Moisture Content	5.4	%
Particle Density	2.4 Assumed	Mg/m3
Material Retained 37.5mm	0	%
Material Retained 20mm	14	%

UKAS TESTING 2788

Operator
Conal

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**Dry Density / Moisture Content Relationship BS 1377:Part 4:1990**	Contract Number	67178
		Borehole / Pit No	S2-BH231
Project Name	Global Centre of Rail Excellence Stage 2 (32)	Sample No	122
Date Tested	29/06/2023	Depth Top	8.00
Compaction Method	4.5 Kg Rammer	Depth Base	9.00
Compaction Clause	BS1377:Part 4:1990, Clause 3.5	Sample Type	B
Sample Description	Grey silty clayey fine to coarse GRAVEL	Single or Separate Sample Used	Single



Compaction Point	1	2	3	4	5							
Moisture Content	3.3	5.3	7.1	9.3	11							
Bulk Density	2.03	2.13	2.19	2.20	2.16							
Dry Density	1.97	2.02	2.05	2.01	1.94							

Initial Moisture Content	7.1	%
Maximum Dry Density	2.05	Mg/m3
Optimum Moisture Content	7.1	%
Particle Density	2.65 Assumed	Mg/m3
Material Retained 37.5mm	0	%
Material Retained 20mm	20	%

Operator
Conal

UKAS TESTING
2788

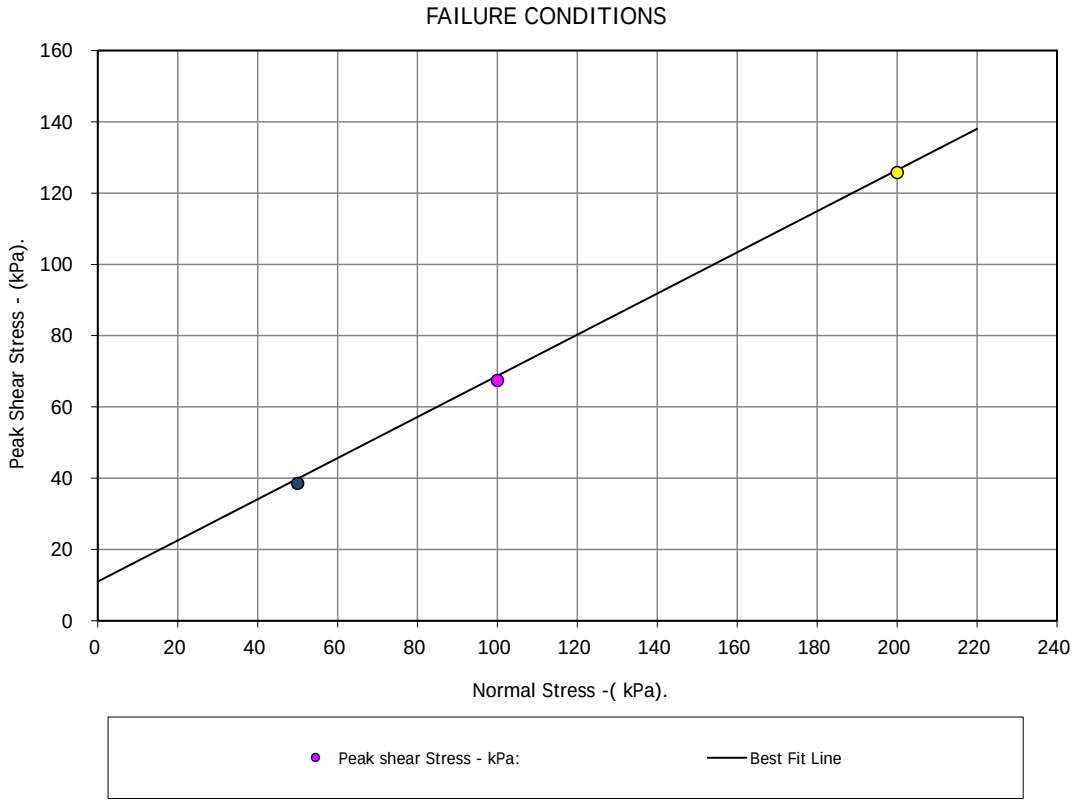
Borehole Number:	S2-BH231	Depth from (m):	2.60
Sample Number :	110	Depth to (m):	2.70

Sample Type:	B
Particle Density - Mg/m3:	2.65 (Assumed)
Specimen Tested:	Submerged, Remoulded (Light Tamping) Material above 2mm removed.

Sample Description:
Brown gravelly CLAY

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	23.30	23.30	23.30
Length - mm:	60.00	60.00	60.00
Moisture Content - %:	11	11	11
Bulk Density - Mg/m3:	2.12	2.12	2.12
Dry Density - Mg/m3:	1.91	1.91	1.91
Voids Ratio:	0.3893	0.3890	0.3900
Degree of Saturation - %:	77.45	77.51	77.31
Normal Pressure- kPa	50	100	200
Consolidation			
Consolidated Height - mm:	22.47	21.60	19.88
Shear			
Rate of Horizontal Displacement (mm/min)	0.200	0.200	0.200
Horizontal Displacement at Peak Shear Stress (mm)	8.65	7.21	6.58
Peak shear Stress - kPa:	39	67	126

PEAK	
Angle of Shearing Resistance:(~~θ~~)	**30.0**
Effective Cohesion - kPa:	**11**

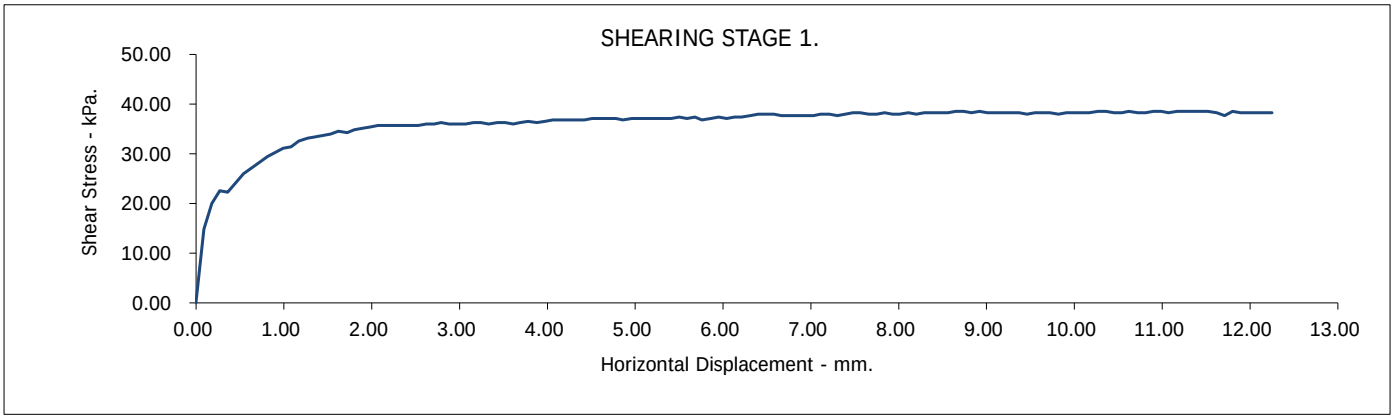


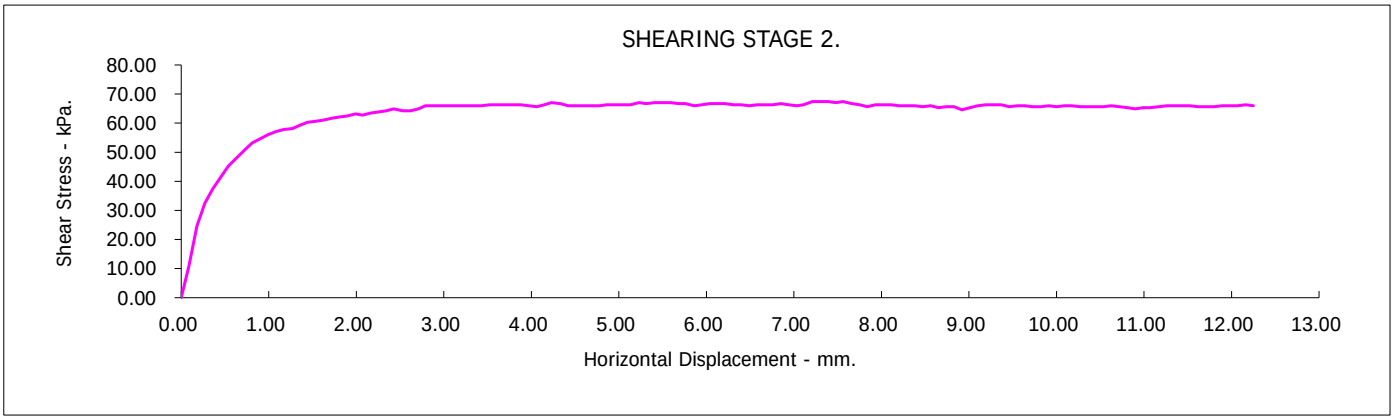
Contract No.:
67178

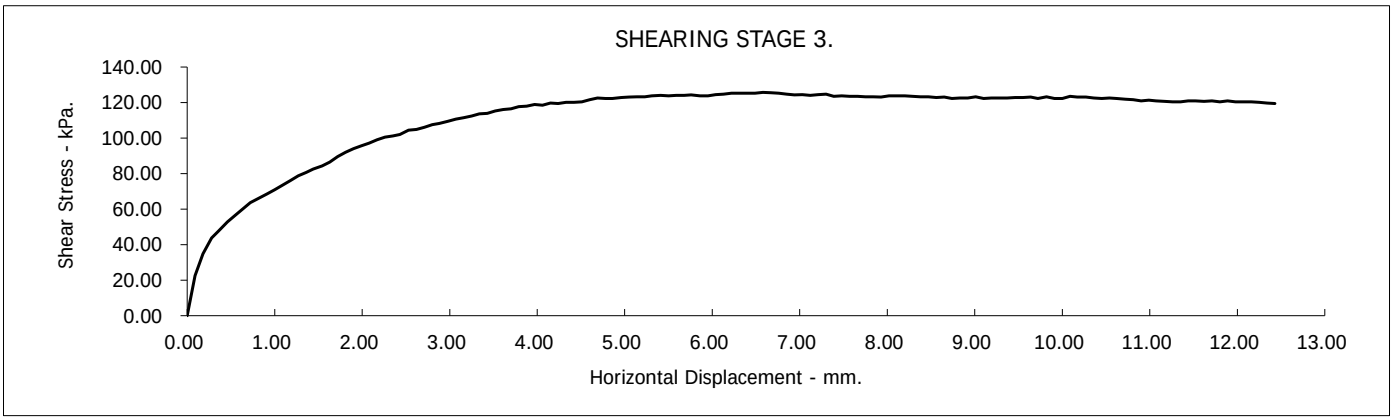
Global Centre of Rail Excellence Stage 2 (32)

Client Ref Number:
G23012

Borehole Number:	S2-BH231	Depth from (m):	2.60
Sample Number :	110	Depth to (m):	2.70







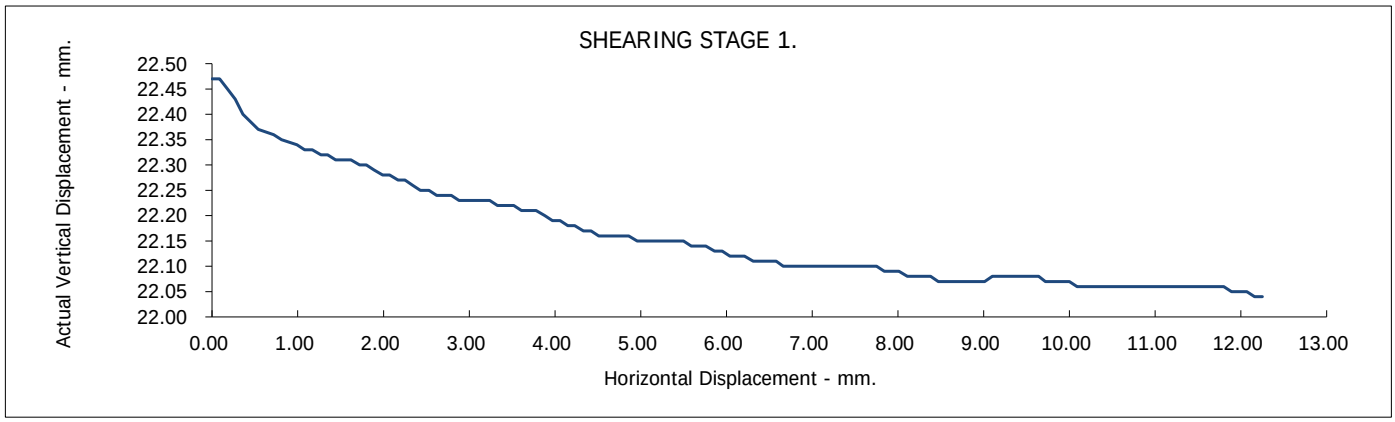
Contract No.: **67178**

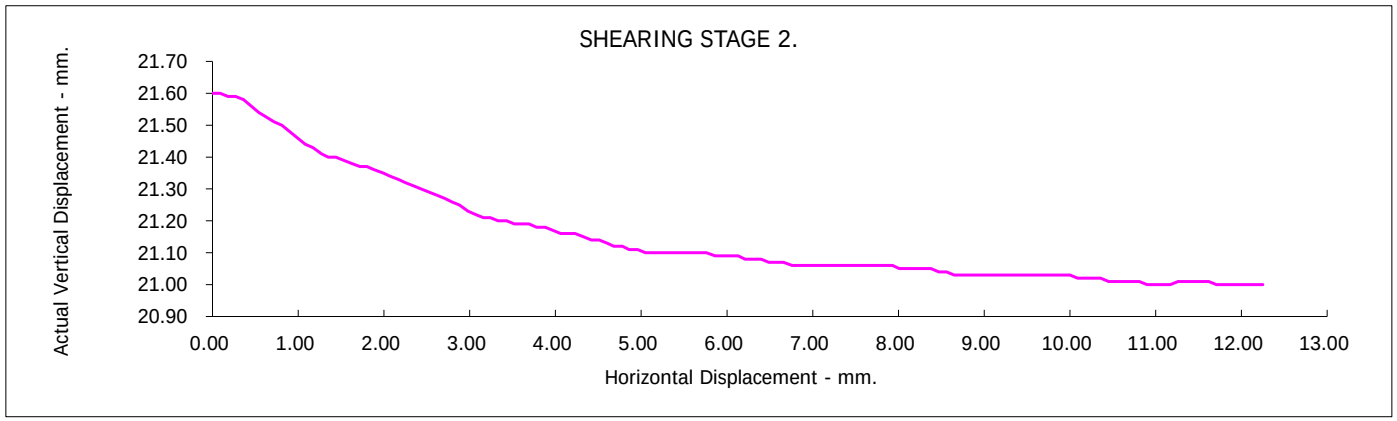
Global Centre of Rail Excellence Stage 2 (32)

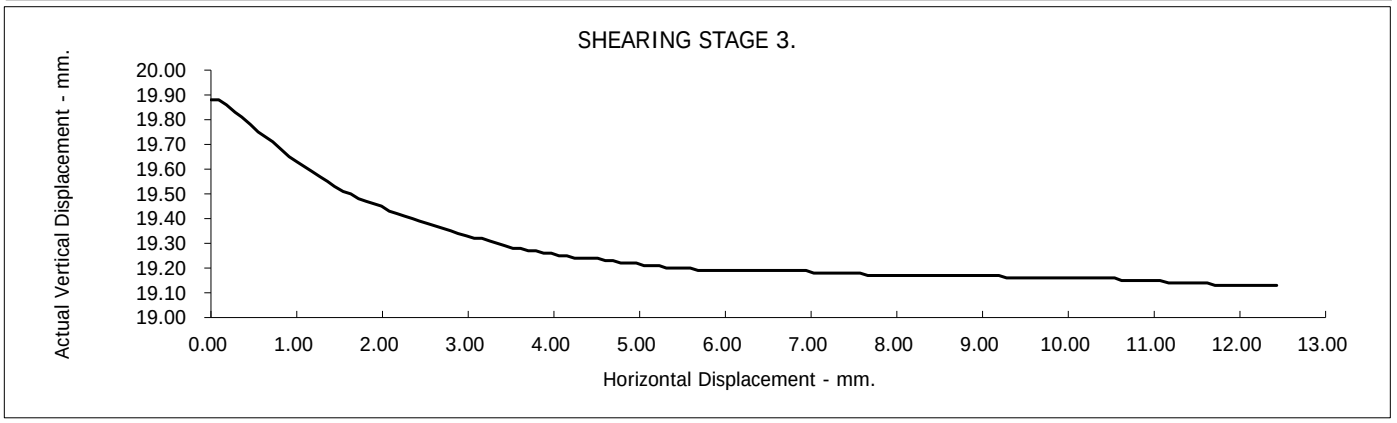
Client Ref Number: **G23012**

Figure.

Borehole Number:	S2-BH231	Depth from (m):	2.60
Sample Number :	110	Depth to (m):	2.70





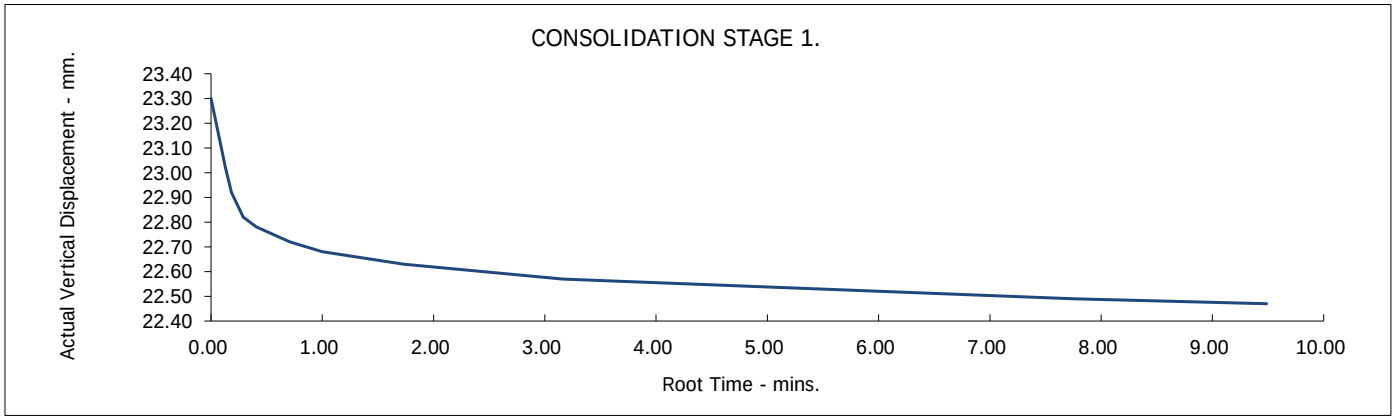


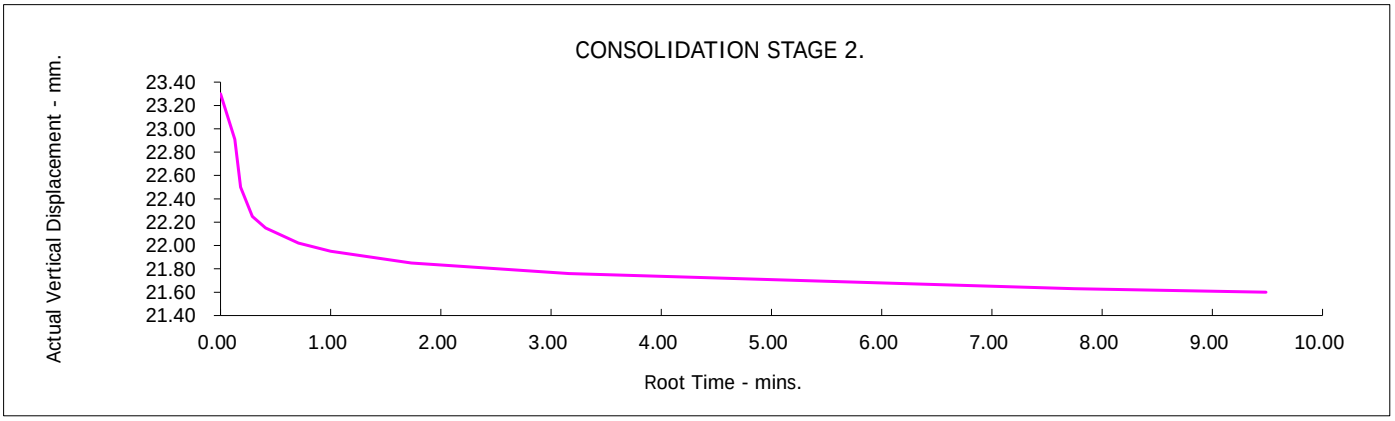
Contract No.:
67178

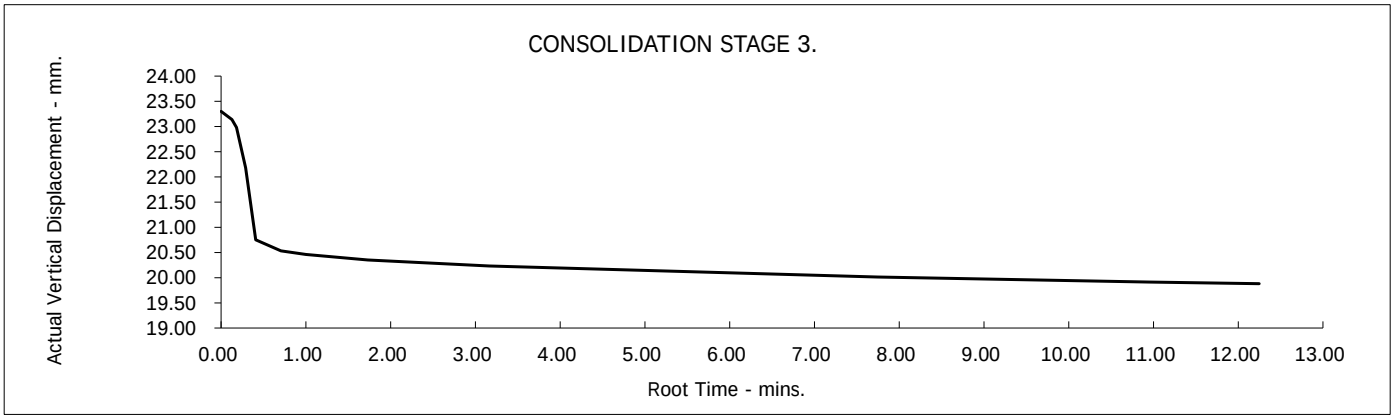
Global Centre of Rail Excellence Stage 2 (32)

Client Ref Number:
G23012

Borehole Number:	S2-BH231	Depth from (m):	2.60
Sample Number :	110	Depth to (m):	2.70







UKAS TESTING 2788

Global Centre of Rail Excellence Stage 2 (32)

Contract No.: **67178**

Client Ref Number: **G23012**

Test Report: MS DIRECT SHEARBOX TEST.BS1377:Part 7:4.5 :1990.

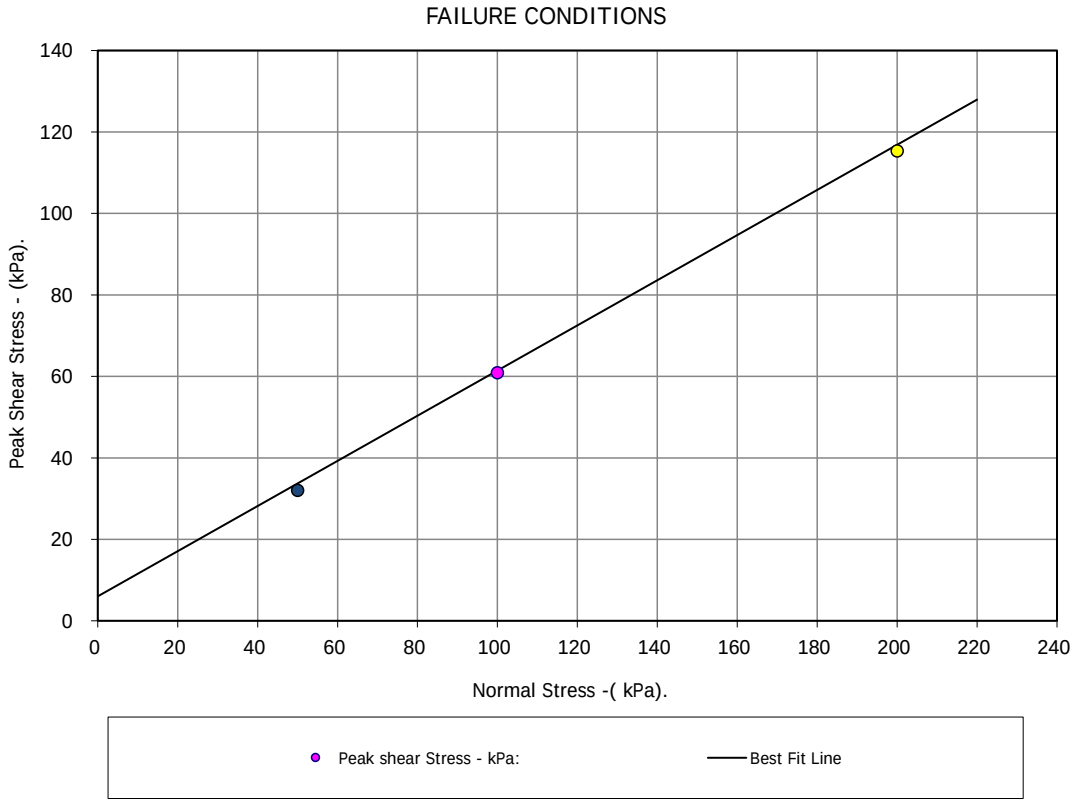
Borehole Number:	S2-BH231	Depth from (m):	7.00
Sample Number :	120	Depth to (m):	8.00

Sample Type:	B
Particle Density - Mg/m3:	2.65 (Assumed)
Specimen Tested:	Submerged, Remoulded (Light Tamping) Material above 2mm removed.

Sample Description:
Brown gravelly CLAY

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	23.30	23.30	23.30
Length - mm:	60.00	60.00	60.00
Moisture Content - %:	5.2	5.2	5.2
Bulk Density - Mg/m3:	1.86	1.86	1.86
Dry Density - Mg/m3:	1.76	1.77	1.77
Voids Ratio:	0.5020	0.5007	0.5012
Degree of Saturation - %:	27.53	27.60	27.57
Normal Pressure- kPa	50	100	200
Consolidation			
Consolidated Height - mm:	22.09	21.19	20.28
Shear			
Rate of Horizontal Displacement (mm/min)	0.200	0.200	0.200
Horizontal Displacement at Peak Shear Stress (mm)	2.97	3.24	6.12
Peak shear Stress - kPa:	32	61	115

PEAK	
Angle of Shearing Resistance:(~~θ~~)	**29.0**
Effective Cohesion - kPa:	**6.0**



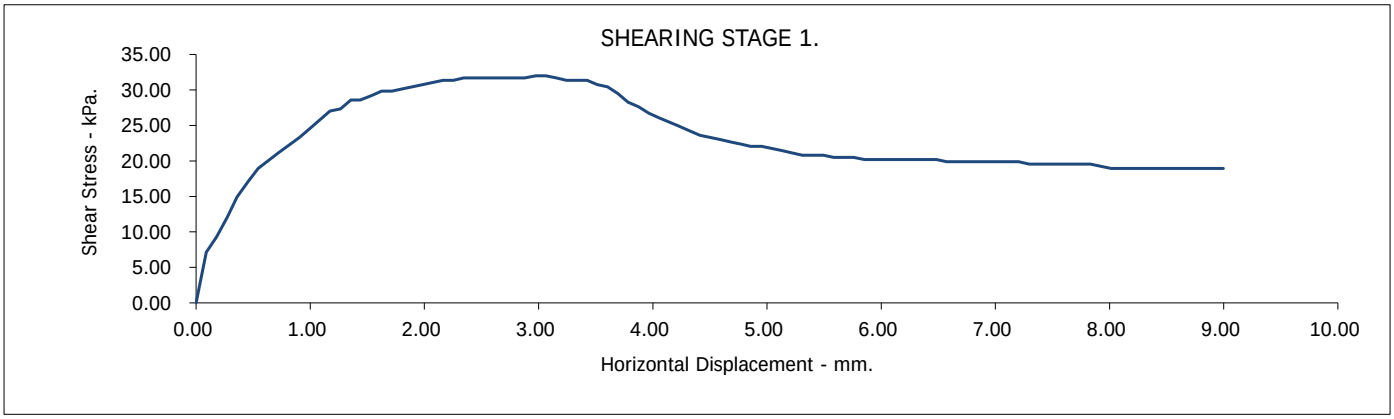
Contract No.:
67178

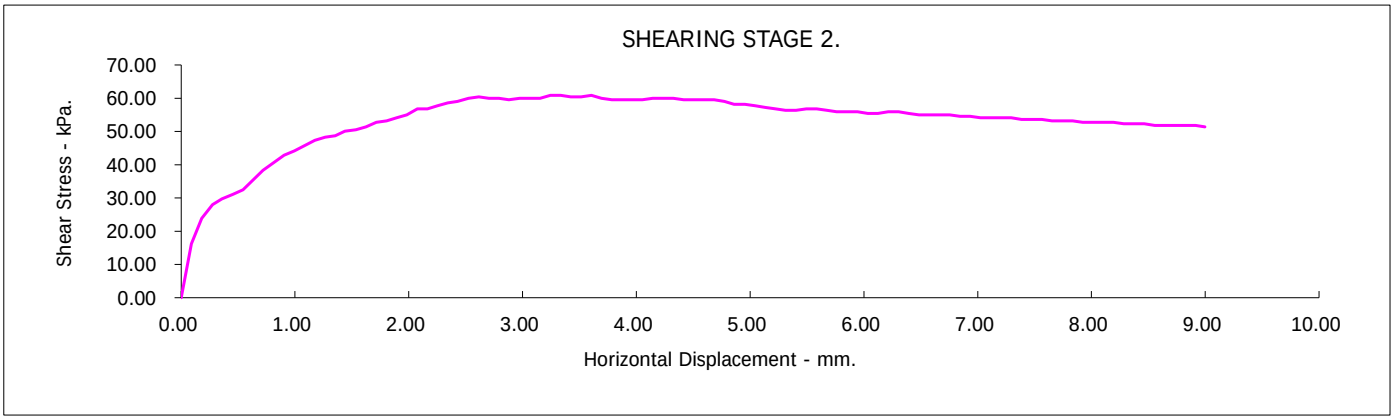
Global Centre of Rail Excellence Stage 2 (32)

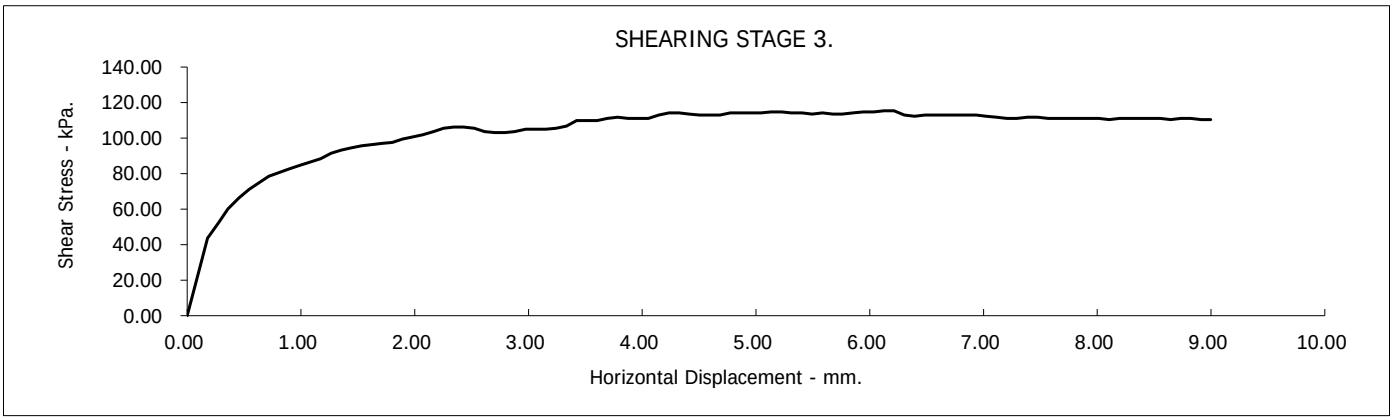
Client Ref Number:
G23012

GSTL
GEOTECHNICAL SITE & TESTING LABORATORIES

Borehole Number:	S2-BH231	Depth from (m):	7.00
Sample Number :	120	Depth to (m):	8.00







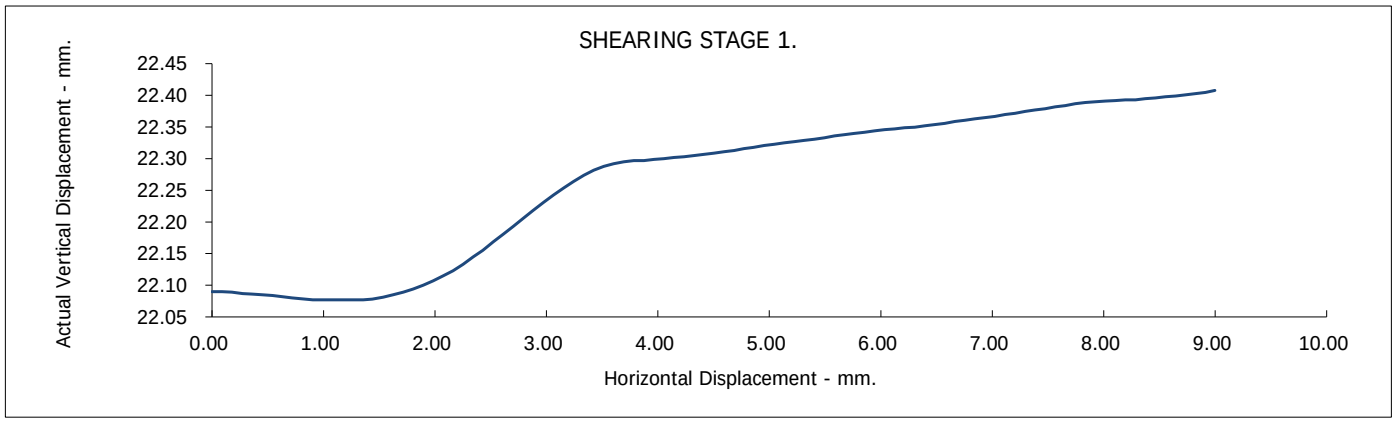
Contract No.: **67178**

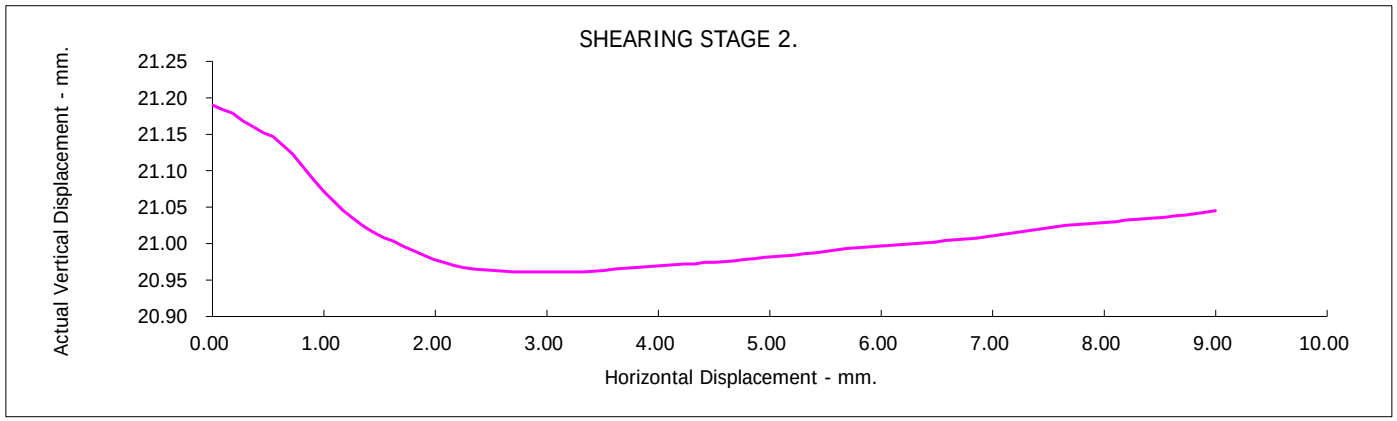
Global Centre of Rail Excellence Stage 2 (32)

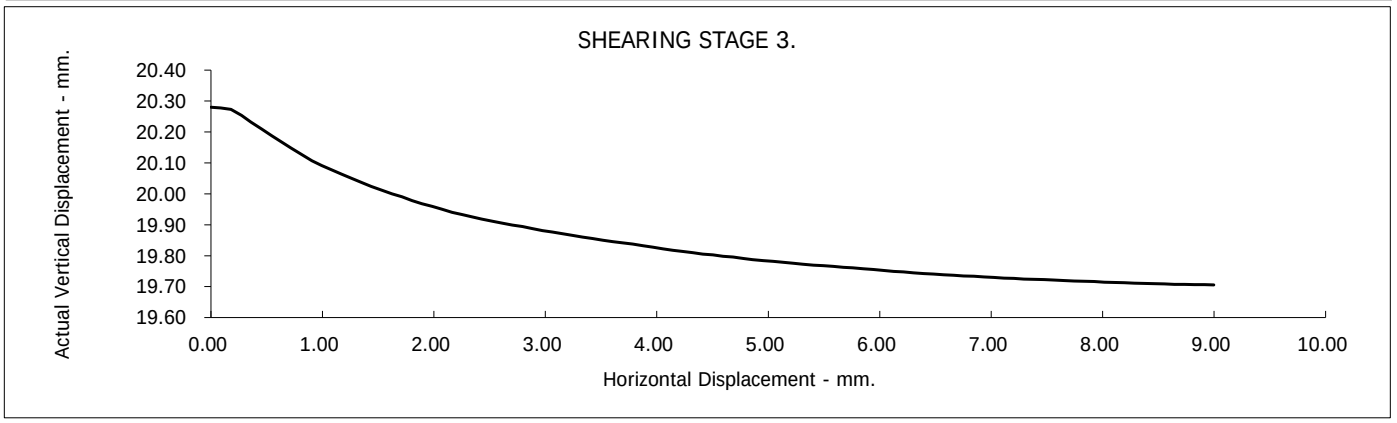
Client Ref Number: **G23012**

Figure.

Borehole Number:	S2-BH231	Depth from (m):	7.00
Sample Number :	120	Depth to (m):	8.00





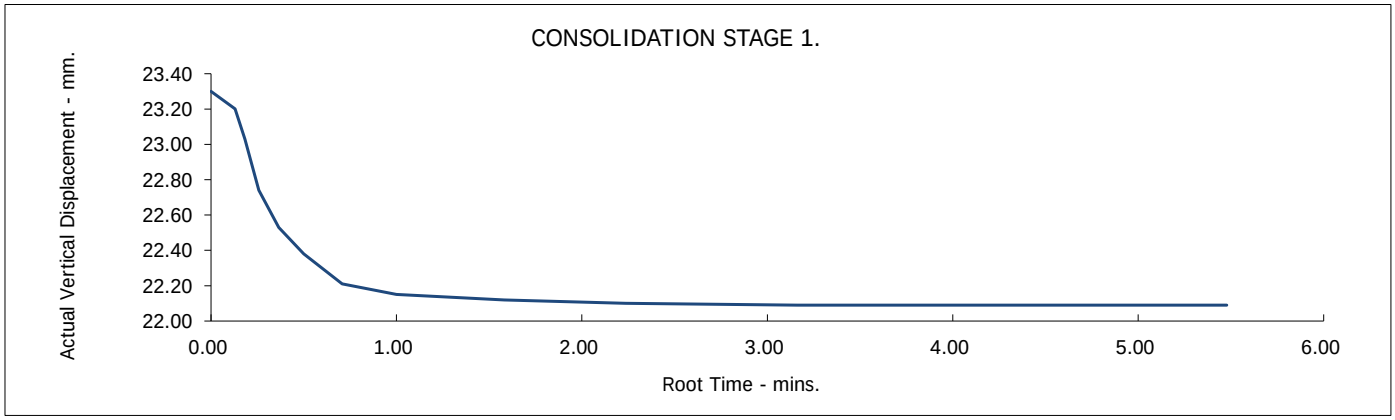


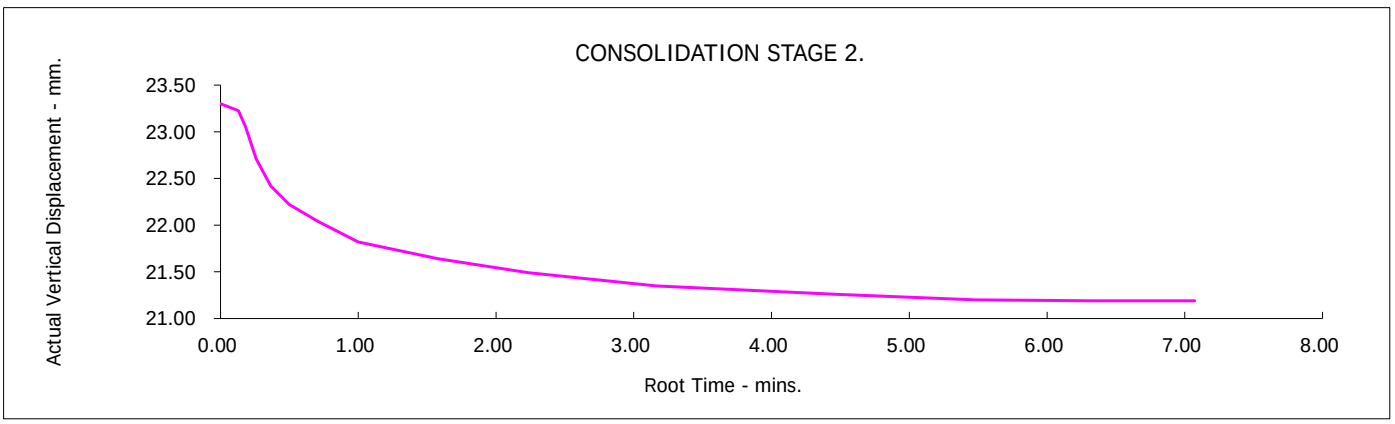
Contract No.:
67178

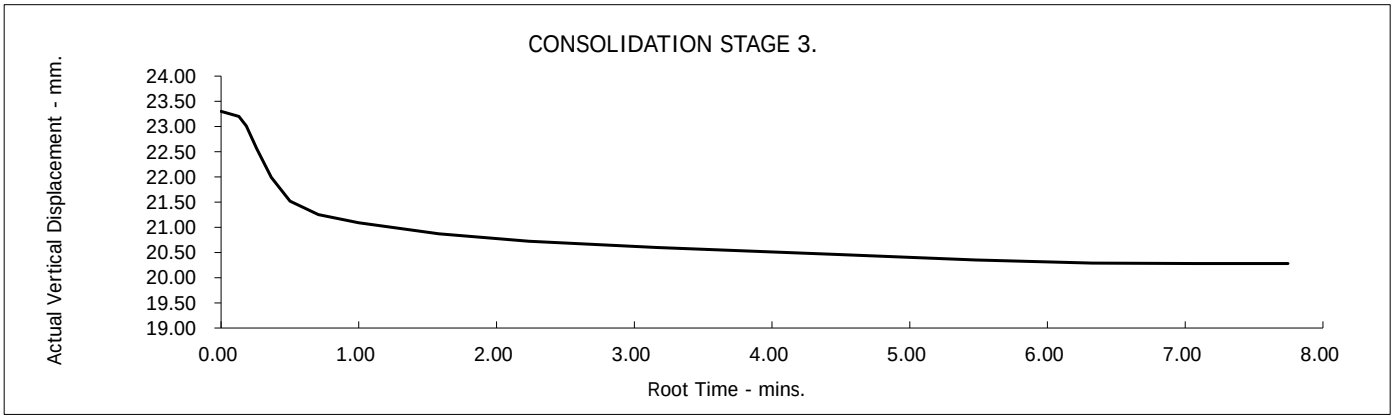
Global Centre of Rail Excellence Stage 2 (32)

Client Ref Number:
G23012

Borehole Number:	S2-BH231	Depth from (m):	7.00
Sample Number :	120	Depth to (m):	8.00







UKAS TESTING 2788

Global Centre of Rail Excellence Stage 2 (32)

Contract No.: **67178**

Client Ref Number: **G23012**

Test Report: MS DIRECT SHEARBOX TEST.BS1377:Part 7:4.5 :1990.

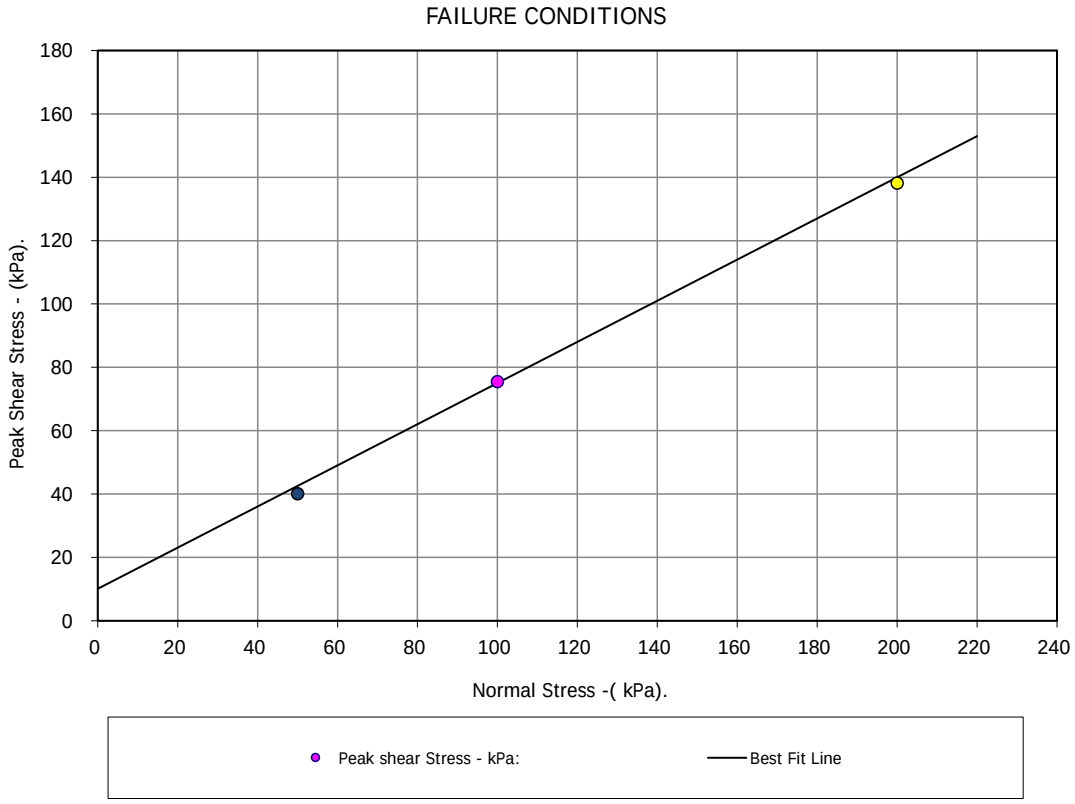
Borehole Number:	S2-BH231	Depth from (m):	10.00
Sample Number :	127	Depth to (m):	11.00

Sample Type:	B
Particle Density - Mg/m3:	2.65 (Assumed)
Specimen Tested:	Submerged, Remoulded (Light Tamping) Material above 2mm removed.

Sample Description:
Brown gravelly CLAY

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	25.03	25.03	25.03
Length - mm:	60.00	60.00	60.00
Moisture Content - %:	4.9	4.9	4.9
Bulk Density - Mg/m3:	1.79	1.79	1.79
Dry Density - Mg/m3:	1.71	1.71	1.71
Voids Ratio:	0.5501	0.5530	0.5510
Degree of Saturation - %:	23.38	23.26	23.35
Normal Pressure- kPa	50	100	200
Consolidation			
Consolidated Height - mm:	22.41	21.55	20.07
Shear			
Rate of Horizontal Displacement (mm/min)	0.200	0.200	0.200
Horizontal Displacement at Peak Shear Stress (mm)	10.90	7.03	6.58
Peak shear Stress - kPa:	40	76	138

PEAK	
Angle of Shearing Resistance:(θ)	**33.0**
Effective Cohesion - kPa:	**10**



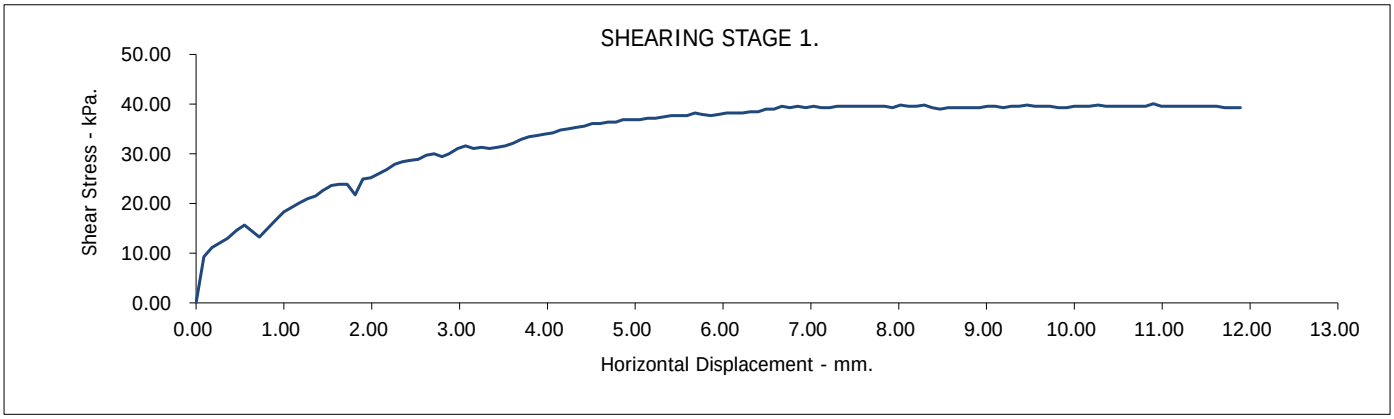
Contract No.:
67178

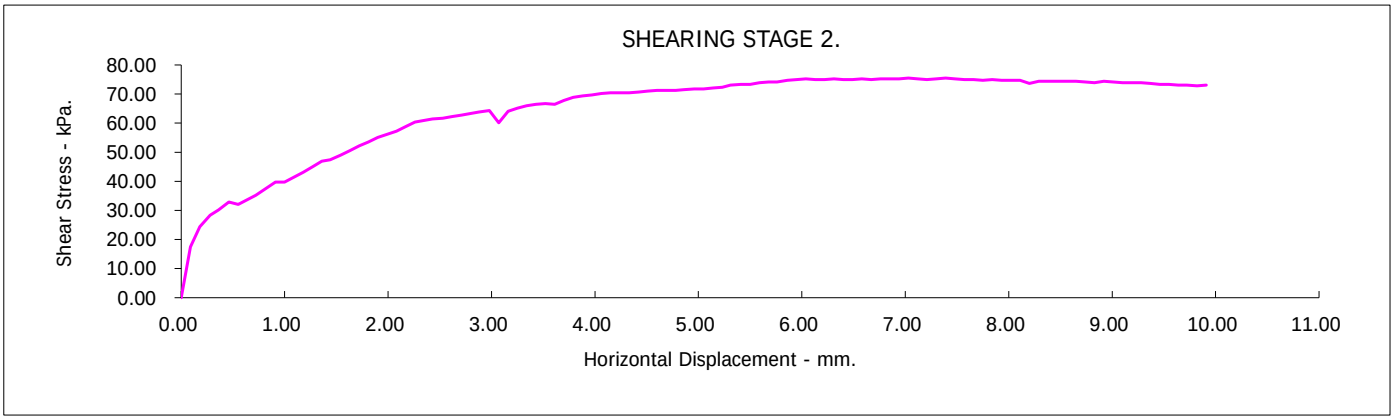
Global Centre of Rail Excellence Stage 2 (32)

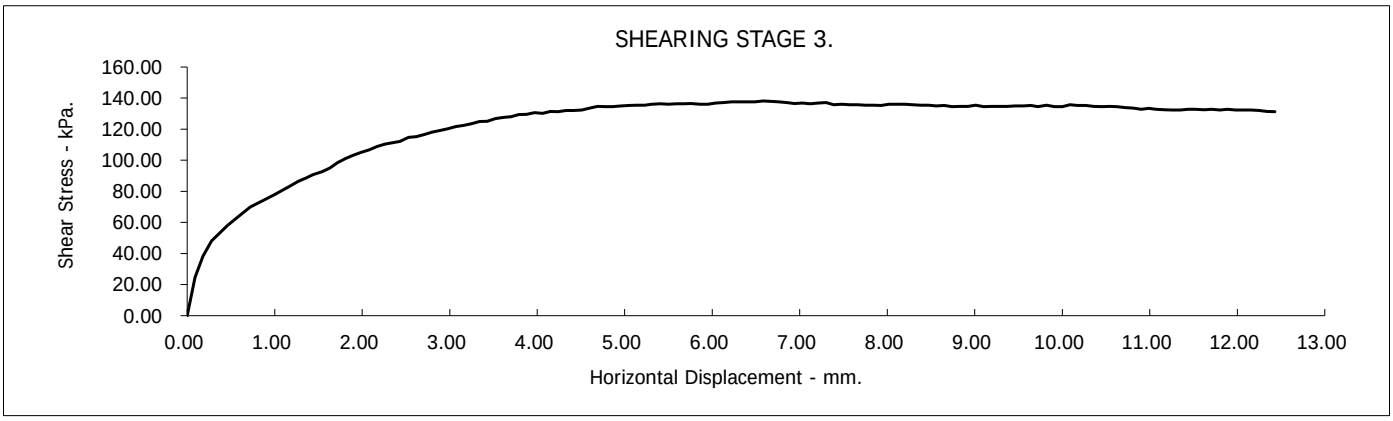
Client Ref Number:
G23012

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GEOTECHNICAL SITE & TESTING LABORATORIES

Borehole Number:	S2-BH231	Depth from (m):	10.00
Sample Number :	127	Depth to (m):	11.00







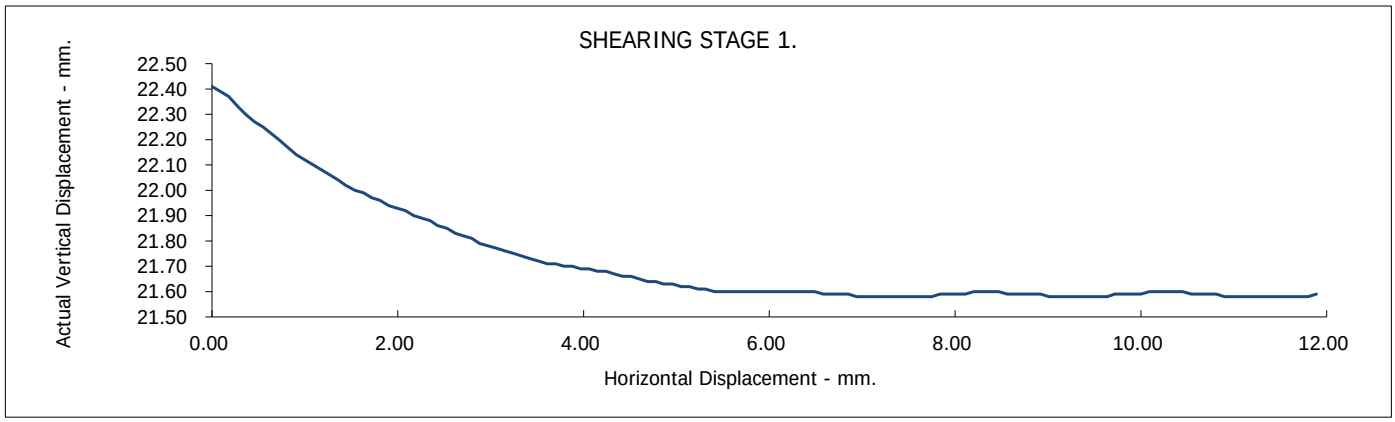
Global Centre of Rail Excellence Stage 2 (32)

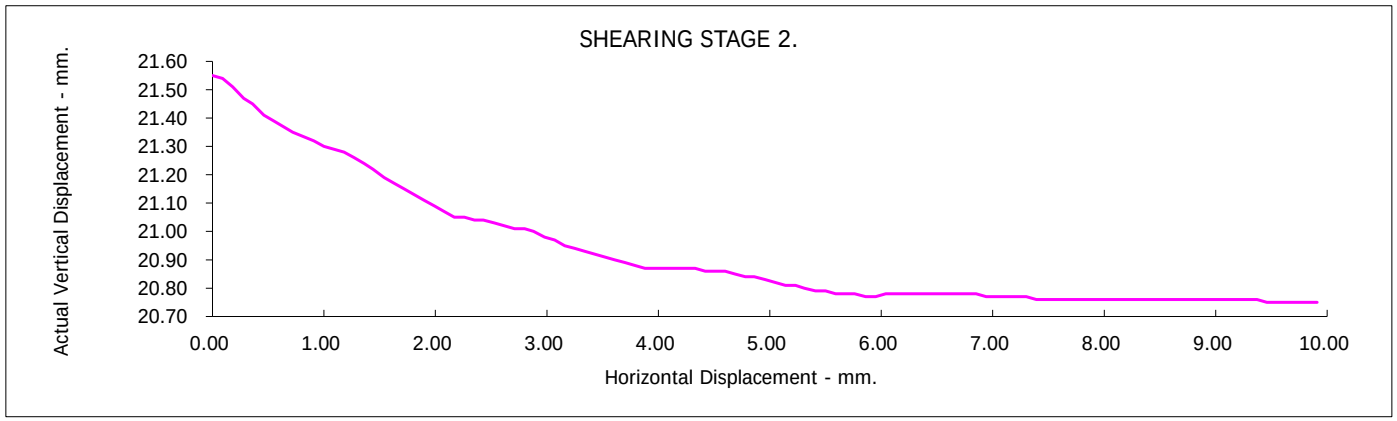
Contract No.: **67178**

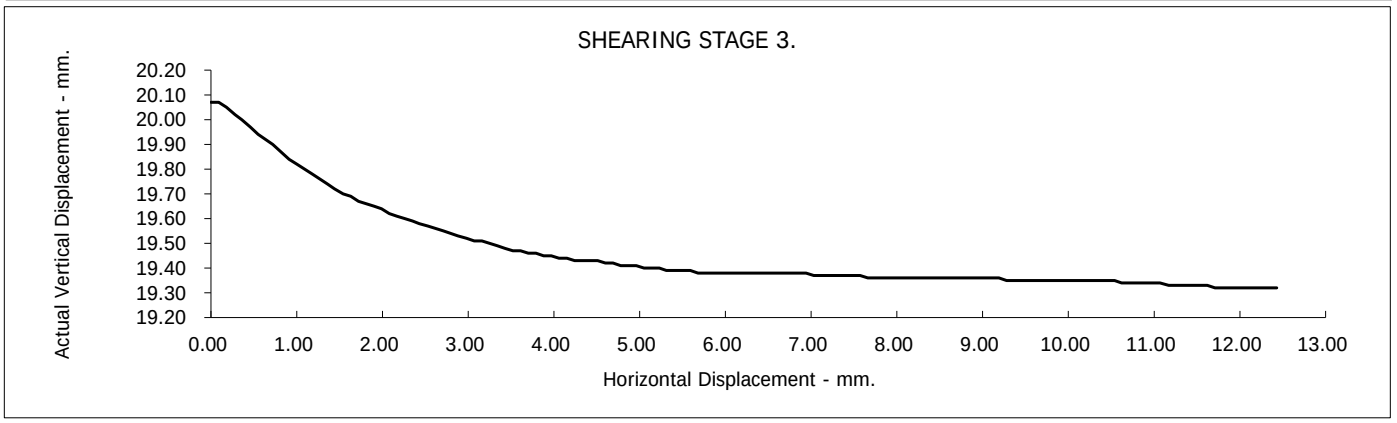
Client Ref Number: **G23012**

Figure.

Borehole Number:	S2-BH231	Depth from (m):	10.00
Sample Number :	127	Depth to (m):	11.00





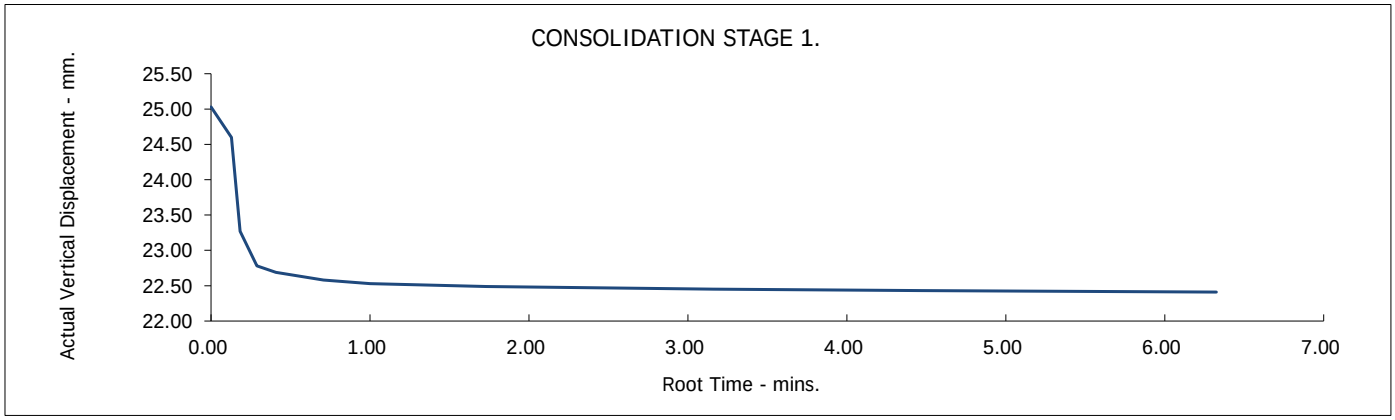


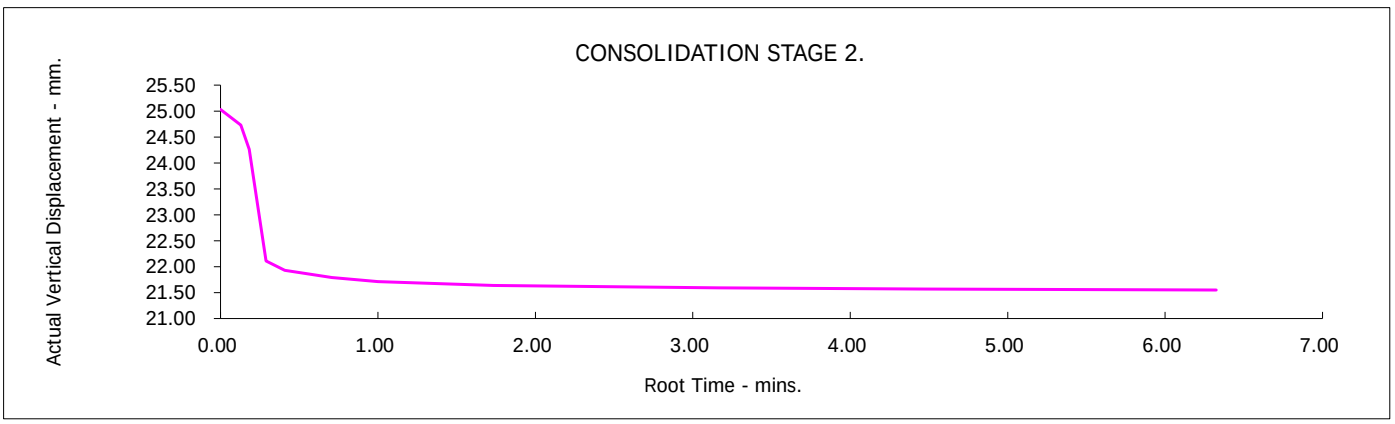
Contract No.:
67178

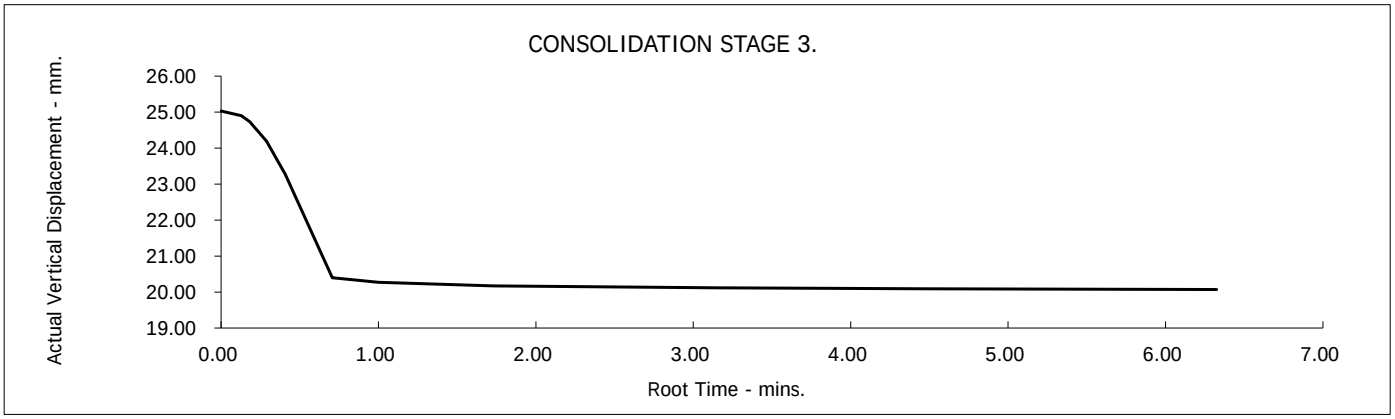
Global Centre of Rail Excellence Stage 2 (32)

Client Ref Number:
G23012

Borehole Number:	S2-BH231	Depth from (m):	10.00
Sample Number :	127	Depth to (m):	11.00







UKAS TESTING 2788

Global Centre of Rail Excellence Stage 2 (32)

Contract No.: **67178**

Client Ref Number: **G23012**

Laboratory Report

UKAS TESTING 2788

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES A PHENNA GROUP COMPANY

Contract Number: 67179

Client Ref: **G23012**
Client PO:

Date Received: **20-06-2023**
Date Completed: **05-07-2023**
Report Date: **05-07-2023**

Client: **Jackson Drilling Holdings Ltd**
Northwood Farm
Coxbridge Road
Baltonsborough
Somerset
BA6 8RA

This report has been checked and approved by:

Paul Evans
Director

Contract Title: **Global Centre of Rail Excellence Stage 2 (33)**
For the attention of: **Adam Putt**

Test Description	Qty
Moisture Content of Soil BS1377 : Part 2 : Clause 3.2 : 1990 - * UKAS	3
4 Point Liquid & Plastic Limit BS 1377:1990 - Part 2 : 4.3 & 5.3 - * UKAS	3
PSD Wet & Dry Sieve method BS 1377:1990 - Part 2 : 9.2 - * UKAS	5
PSD: Sedimentation by pipette carried out with Wet Sieve (Wet Sieve must also be selected) BS 1377:1990 - Part 2 : 9.4 - * UKAS	4
Dry Den/MC (4.5kg Rammer Method 1 Litre Mould/CBR Mould) BS 1377:1990 - Part 4 : 3.5 - * UKAS	4
Consolidated Drained Peak Shear Strength - set of 3 - 60 x 60mm Shear Box Specimens by Direct Shearing (3 days) BS 1377:1990 - Part 7 : 4 - * UKAS	2
Uniaxial Compressive Strength of Rock inc sample prep 54-165mm diameter cores ISRM Suggested Method for determining uniaxial compressive strength - @ Non Accredited Test	3

Notes: **Observations and Interpretations are outside the UKAS Accreditation**
*** - denotes test included in laboratory scope of accreditation**
- denotes test carried out by approved contractor
@ - denotes non accredited tests

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 test report/certificate shall not be reproduced except in full, without the approval of GEO Site & Testing Services Ltd. Any opinions or interpretations stated - within this report/certificate are excluded from the laboratories UKAS accreditation.

Approved Signatories:
Brendan Evans (Office Administrator) - Darren Bourne (Quality Senior Technician) - Paul Evans (Director)
Richard John (Quality/Technical Manager) - Shaun Jones (Laboratory manager) - Shaun Thomas (Site Manager)
Wayne Honey (Human Resources/ Health and Safety Manager)

GEO Site & Testing Services Ltd
Units 3-4, Heol Aur, Dafen, Llanelli, Carmarthenshire, Wales SA14 8QN
Tel: 01554 784040 Fax: 01554 784041 info@gstl.co.uk gstl.co.uk

Laboratory Report

UKAS TESTING 2788

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES A PHENNA GROUP COMPANY

Contract Number: 67179

Test Description	Qty
Determination of Point Load Value Axial or Diametrical including WC ***Please note GSTL is not accredited for the water content of rock*** ISRM Suggested Method for Point Load Strength - * UKAS	3
Disposal of samples for job	1

Notes: **Observations and Interpretations are outside the UKAS Accreditation**
*** - denotes test included in laboratory scope of accreditation**
- denotes test carried out by approved contractor
@ - denotes non accredited tests

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Tel: 01554 784040 Fax: 01554 784041 info@gstl.co.uk gstl.co.uk

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**NATURAL MOISTURE, LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377:1990 - Part 2 : 4.3 & 5.3)**	
Contract Number	67179	
Project Name	Global Centre of Rail Excellence Stage 2 (33)	
Date Tested	29/06/2023	
	DESCRIPTIONS	

Sample/Hole Reference	Sample Number	Sample Type	Depth (m)			Descriptions
S1-BH120	105	B	1.20	-	2.00	Brown fine to coarse gravelly sandy silty CLAY
S2-BH223	104	D	3.30	-	3.40	Grey fine to medium gravelly sandy silty CLAY
S2-BH223	111	D	7.30	-	7.40	Grey fine to medium gravelly sandy silty CLAY
				-		
				-		
				-		
				-		
				-		
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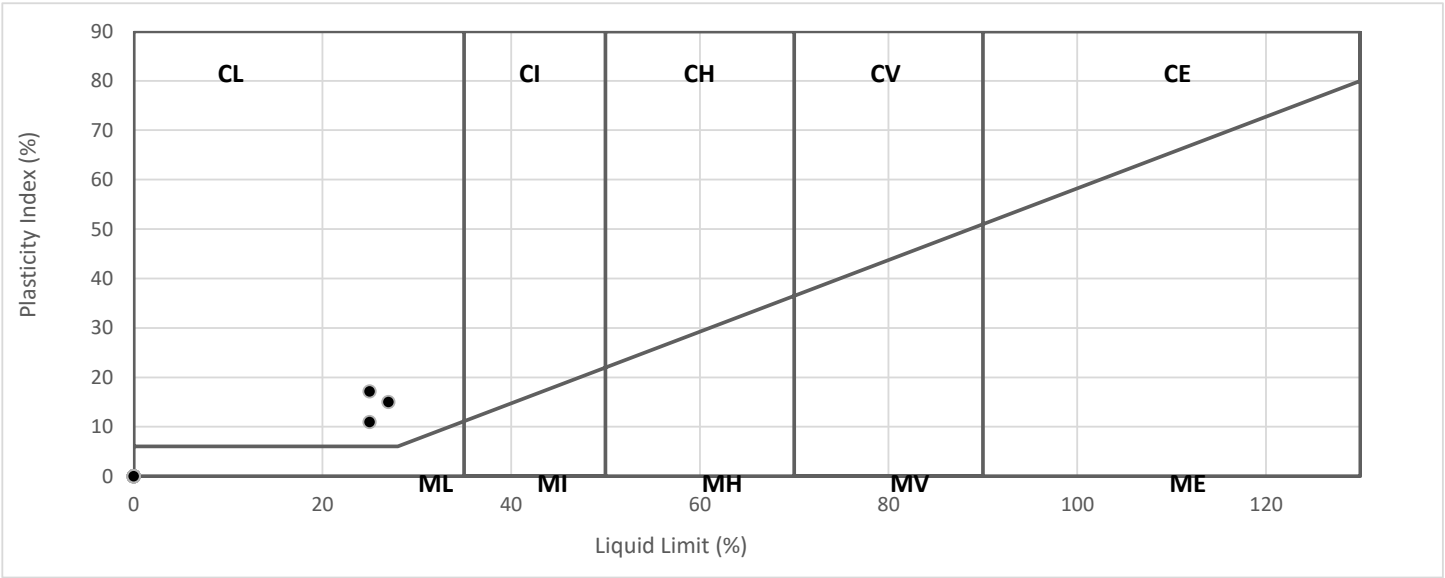
Operator
Aaron Hodge

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	NATURAL MOISTURE, LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377:1990 - Part 2 : 4.3 & 5.3)	
Contract Number	67179	
Project Name	Global Centre of Rail Excellence Stage 2 (33)	
Date Tested	29/06/2023	

Sample/Hole Reference	Sample Number	Sample Type	Depth (m)			Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity index %	Passing 0.425mm %	Remarks
S1-BH120	105	B	1.20	-	2.00	7.9	25	14	11	85	CL Low Plasticity
S2-BH223	104	D	3.30	-	3.40	8.7	25	8	17	65	CL Low Plasticity
S2-BH223	111	D	7.30	-	7.40	9.8	27	12	15	90	CL Low Plasticity
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				-							
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Symbols: NP : Non Plastic # : Liquid Limit and Plastic Limit Wet Sieved

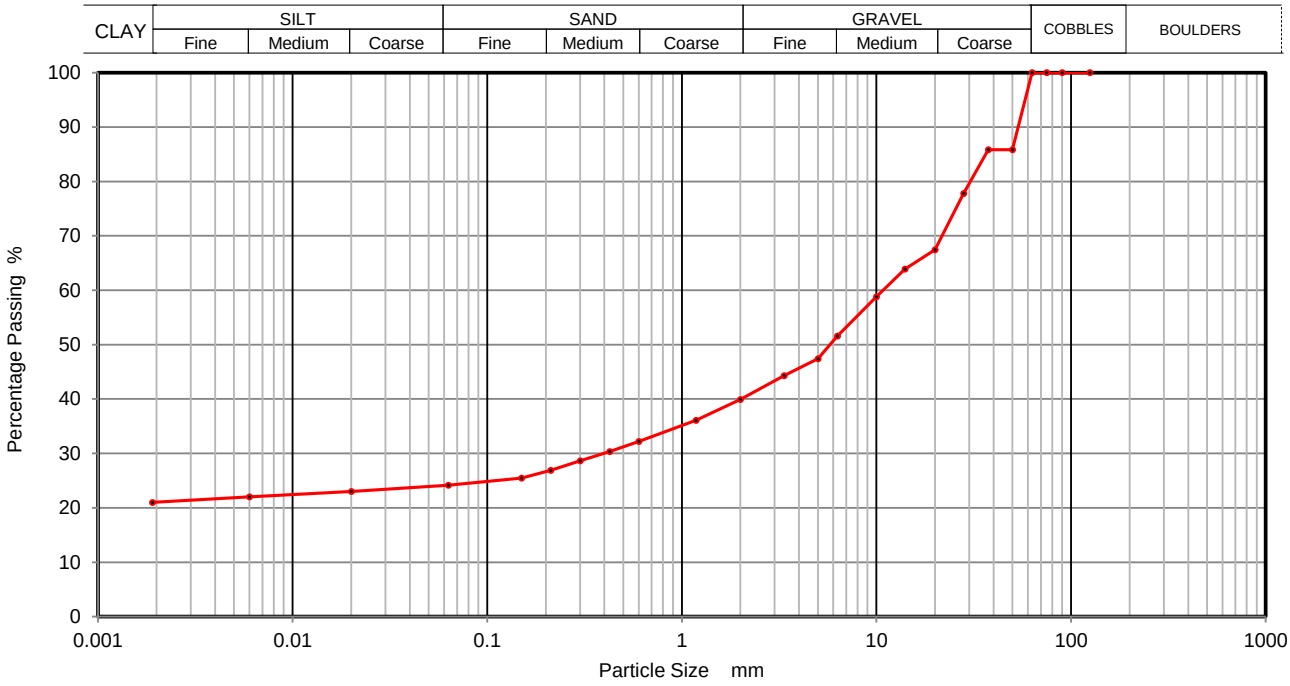
PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION
BS 5930:2015+A1:2020



Operator
Aaron Hodge

UKAS TESTING
2788

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4**	Contract Number	67179
		Borehole/Pit No.	S2-BH223
Project Name	Global Centre of Rail Excellence Stage 2 (33)	Sample No.	108
Soil Description	Grey slightly silty fine to coarse sandy clayey fine to coarse GRAVEL	Depth Top	5.00
		Depth Base	6.30
Date Tested	30/06/2023	Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	23
90	100	0.0060	22
75	100	0.0020	21
63	100		
50	86		
37.5	86		
28	78		
20	67		
14	64		
10	59		
6.3	52		
5	47		
3.35	44		
2	40		
1.18	36		
0.6	32		
0.425	30		
0.3	29		
0.212	27		
0.15	25		
0.063	24		

Sample Proportions	% dry mass
Cobbles	0
Gravel	60
Sand	16
Silt	3
Clay	21

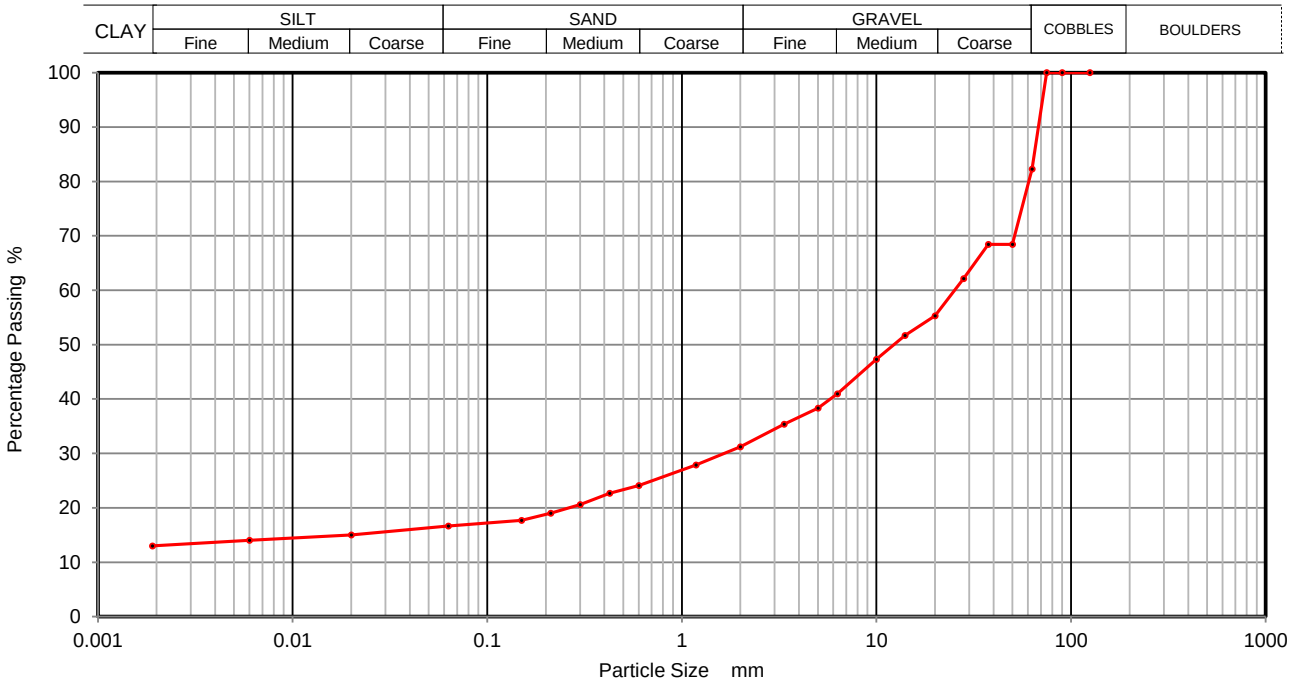
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator
David Edwards

UKAS TESTING
2788

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4**	Contract Number	67179
		Borehole/Pit No.	S2-BH223
Project Name	Global Centre of Rail Excellence Stage 2 (33)	Sample No.	113
Soil Description	Grey slightly silty clayey fine to coarse sandy fine to coarse GRAVEL with cobbles	Depth Top	7.90
		Depth Base	8.90
Date Tested	30/06/2023	Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	15
90	100	0.0060	14
75	100	0.0020	13
63	82		
50	68		
37.5	68		
28	62		
20	55		
14	52		
10	47		
6.3	41		
5	38		
3.35	35		
2	31		
1.18	28		
0.6	24		
0.425	23		
0.3	21		
0.212	19		
0.15	18		
0.063	17		

Sample Proportions	% dry mass
Cobbles	18
Gravel	51
Sand	14
Silt	4
Clay	13

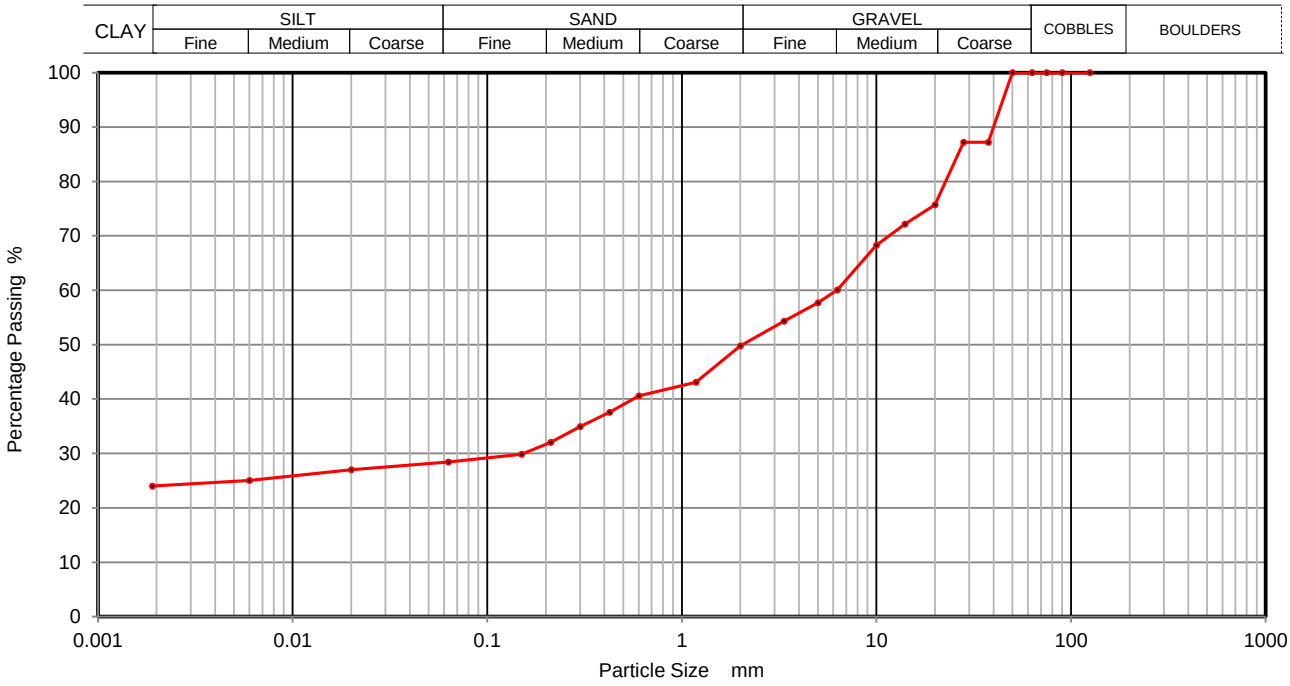
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator
David Edwards

UKAS TESTING
2788

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4**	Contract Number	67179
		Borehole/Pit No.	S2-BH224
Project Name	Global Centre of Rail Excellence Stage 2 (33)	Sample No.	101
Soil Description	Grey slightly silty fine to coarse sandy clayey fine to coarse GRAVEL	Depth Top	0.00
		Depth Base	2.88
Date Tested	30/06/2023	Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	27
90	100	0.0060	25
75	100	0.0020	24
63	100		
50	100		
37.5	87		
28	87		
20	76		
14	72		
10	68		
6.3	60		
5	58		
3.35	54		
2	50		
1.18	43		
0.6	41		
0.425	38		
0.3	35		
0.212	32		
0.15	30		
0.063	28		

Sample Proportions	% dry mass
Cobbles	0
Gravel	50
Sand	22
Silt	4
Clay	24

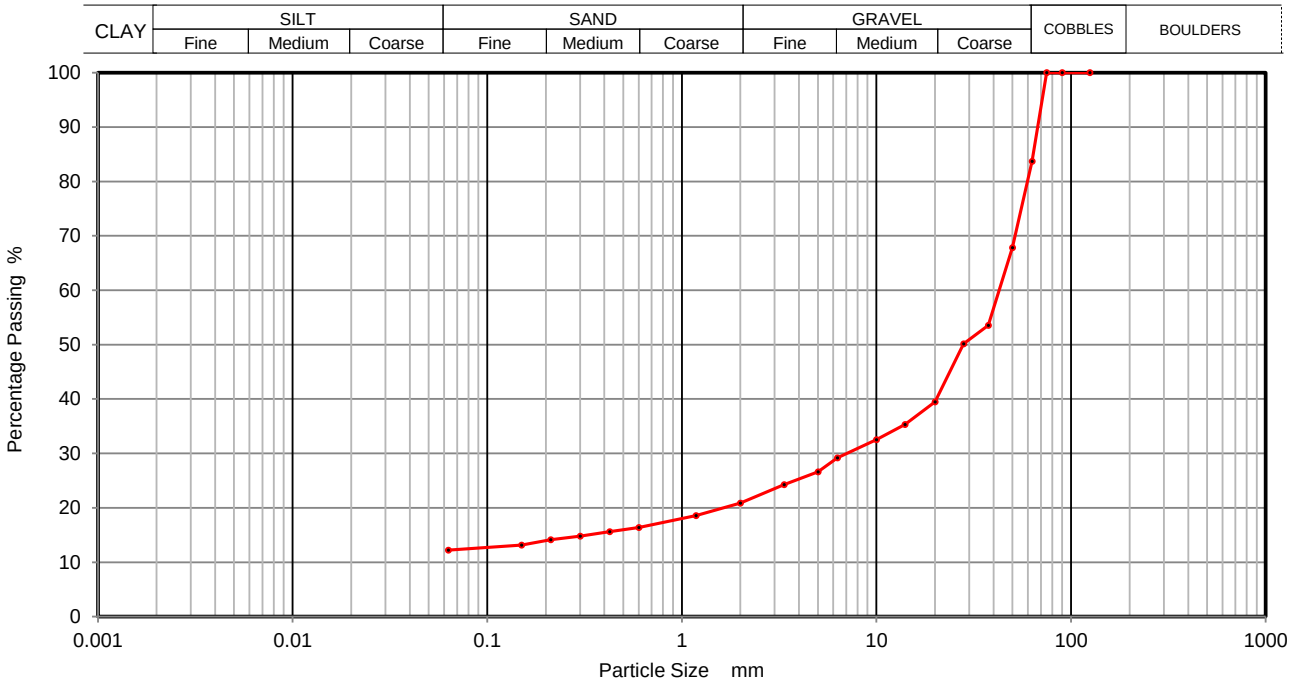
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator
David Edwards

UKAS TESTING
2788

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**PARTICLE SIZE DISTRIBUTION** **BS 1377 Part 2:1990** **Wet Sieve, Clause 9.2**	Contract Number	67179
		Borehole/Pit No.	S2-BH224
Project Name	Global Centre of Rail Excellence Stage 2 (33)	Sample No.	105
Soil Description	Grey slightly sandy silty/ clayey fine to coarse GRAVEL with cobbles	Depth Top	2.80
		Depth Base	3.70
Date Tested	30/06/2023	Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	84		
50	68		
37.5	54		
28	50		
20	40		
14	35		
10	33		
6.3	29		
5	27		
3.35	24		
2	21		
1.18	19		
0.6	16		
0.425	16		
0.3	15		
0.212	14		
0.15	13		
0.063	12		

Sample Proportions	% dry mass
Cobbles	16
Gravel	63
Sand	9
Silt and Clay	12

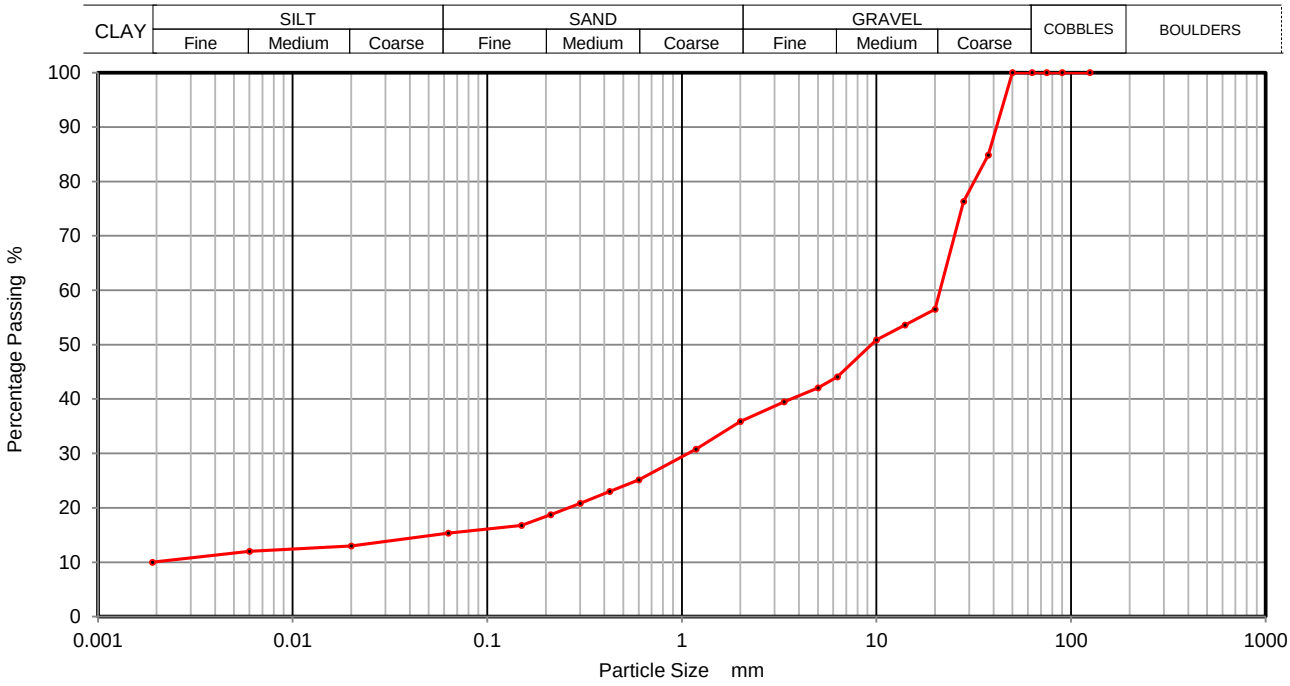
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator
David Edwards

UKAS TESTING
2788

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4**	Contract Number	67179
		Borehole/Pit No.	S2-BH224
Project Name	Global Centre of Rail Excellence Stage 2 (33)	Sample No.	111
Soil Description	Grey slightly silty clayey fine to coarse sandy fine to coarse GRAVEL	Depth Top	6.00
		Depth Base	8.00
Date Tested	30/06/2023	Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	13
90	100	0.0060	12
75	100	0.0020	10
63	100		
50	100		
37.5	85		
28	76		
20	57		
14	54		
10	51		
6.3	44		
5	42		
3.35	39		
2	36		
1.18	31		
0.6	25		
0.425	23		
0.3	21		
0.212	19		
0.15	17		
0.063	15		

Sample Proportions	% dry mass
Cobbles	0
Gravel	64
Sand	21
Silt	5
Clay	10

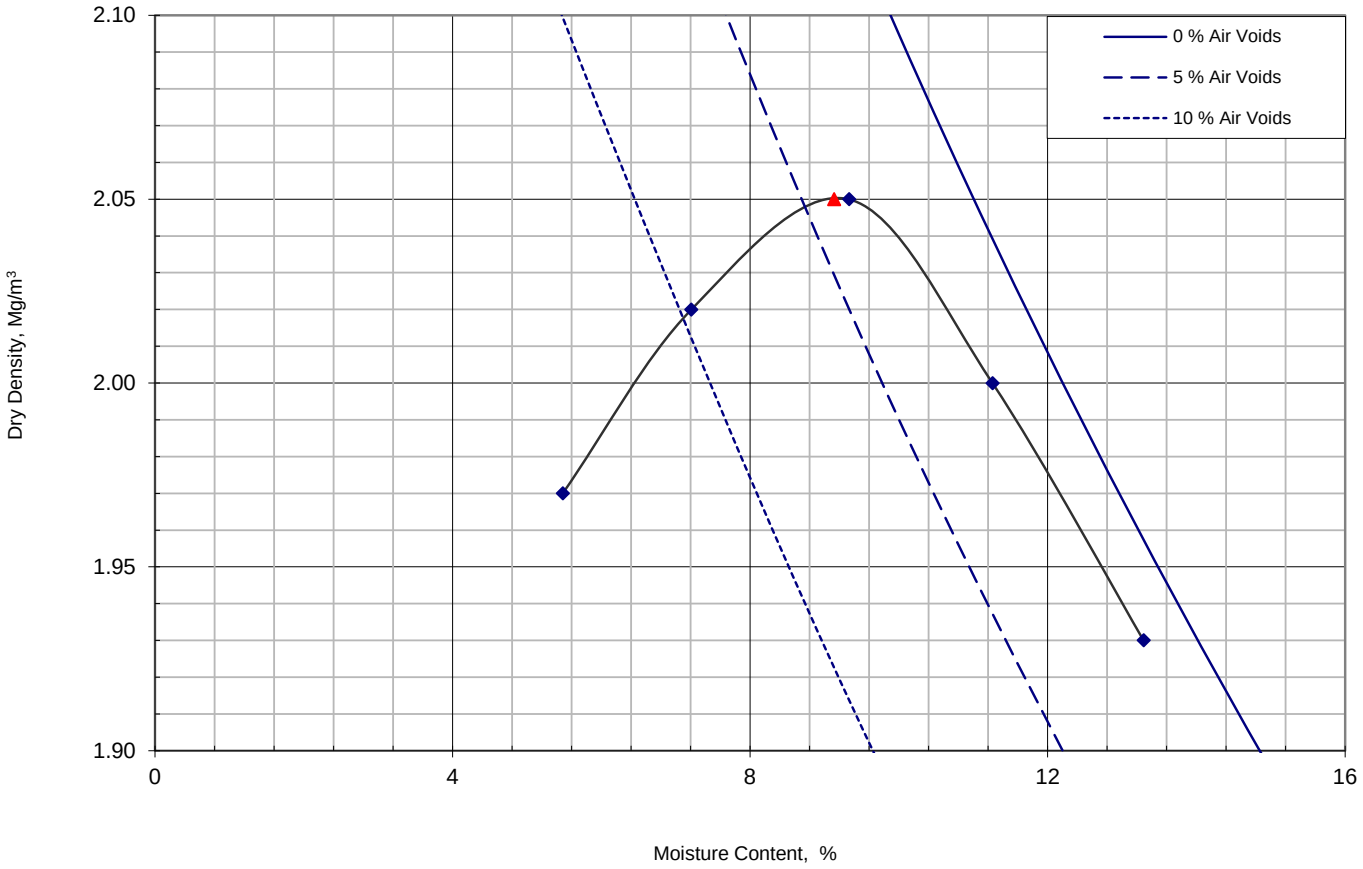
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator
David Edwards

UKAS TESTING
2788

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**Dry Density / Moisture Content Relationship BS 1377:Part 4:1990**	Contract Number	67179
		Borehole / Pit No	S2-BH223
Project Name	Global Centre of Rail Excellence Stage 2 (33)	Sample No	4
Date Tested	03/07/2023	Depth Top	0.60
Compaction Method	4.5 Kg Rammer	Depth Base	0.70
Compaction Clause	BS1377:Part 4:1990, Clause 3.5	Sample Type	B
Sample Description	Grey silty fine to coarse gravelly CLAY	Single or Separate Sample Used	Single



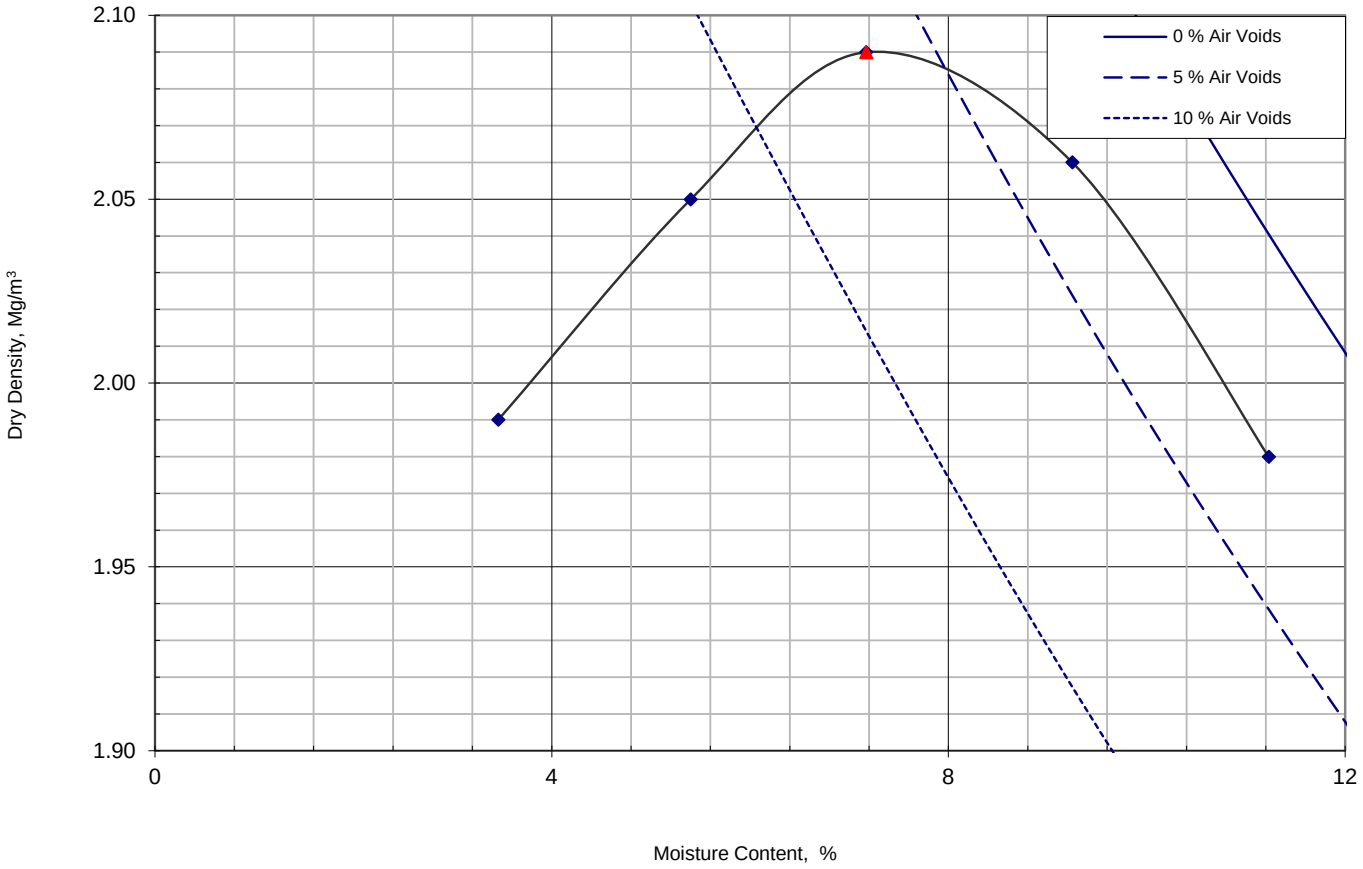
Compaction Point	1	2	3	4	5							
Moisture Content	5.5	7.2	9.3	11	13							
Bulk Density	2.08	2.17	2.24	2.23	2.19							
Dry Density	1.97	2.02	2.05	2.00	1.93							

Initial Moisture Content	11	%
Maximum Dry Density	2.05	Mg/m3
Optimum Moisture Content	9.1	%
Particle Density	2.65 Assumed	Mg/m3
Material Retained 37.5mm	2	%
Material Retained 20mm	10	%

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Operator
Conal

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**Dry Density / Moisture Content Relationship BS 1377:Part 4:1990**	Contract Number	67179
		Borehole / Pit No	S2-BH223
Project Name	Global Centre of Rail Excellence Stage 2 (33)	Sample No	108
Date Tested	03/07/2023	Depth Top	5.00
Compaction Method	4.5 Kg Rammer	Depth Base	6.30
Compaction Clause	BS1377:Part 4:1990, Clause 3.5	Sample Type	B
Sample Description	Grey slightly silty fine to coarse sandy clayey fine to coarse GRAVEL	Single or Separate Sample Used	Single



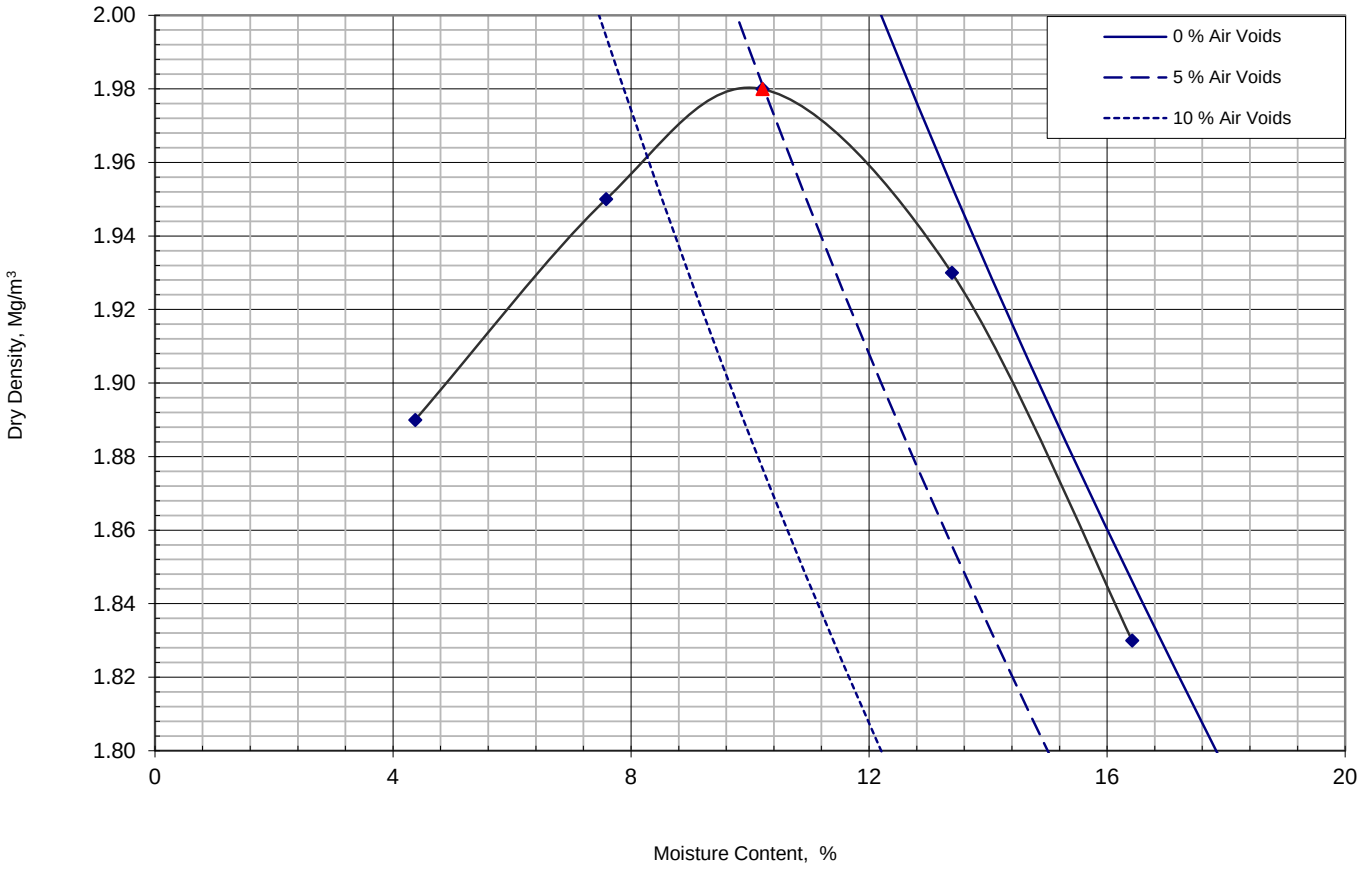
Compaction Point	1	2	3	4	5							
Moisture Content	3.5	5.4	7.2	9.3	11							
Bulk Density	2.06	2.16	2.24	2.25	2.20							
Dry Density	1.99	2.05	2.09	2.06	1.98							

Initial Moisture Content	9.3	%
Maximum Dry Density	2.09	Mg/m3
Optimum Moisture Content	7.2	%
Particle Density	2.65 Assumed	Mg/m3
Material Retained 37.5mm	14	%
Material Retained 20mm	19	%

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Operator
Conal

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**Dry Density / Moisture Content Relationship BS 1377:Part 4:1990**	Contract Number	67179
		Borehole / Pit No	S2-BH224
Project Name	Global Centre of Rail Excellence Stage 2 (33)	Sample No	101
Date Tested	03/07/2023	Depth Top	0.00
Compaction Method	4.5 Kg Rammer	Depth Base	2.88
Compaction Clause	BS1377:Part 4:1990, Clause 3.5	Sample Type	B
Sample Description	Grey slightly silty fine to coarse sandy clayey fine to coarse GRAVEL	Single or Separate Sample Used	Single



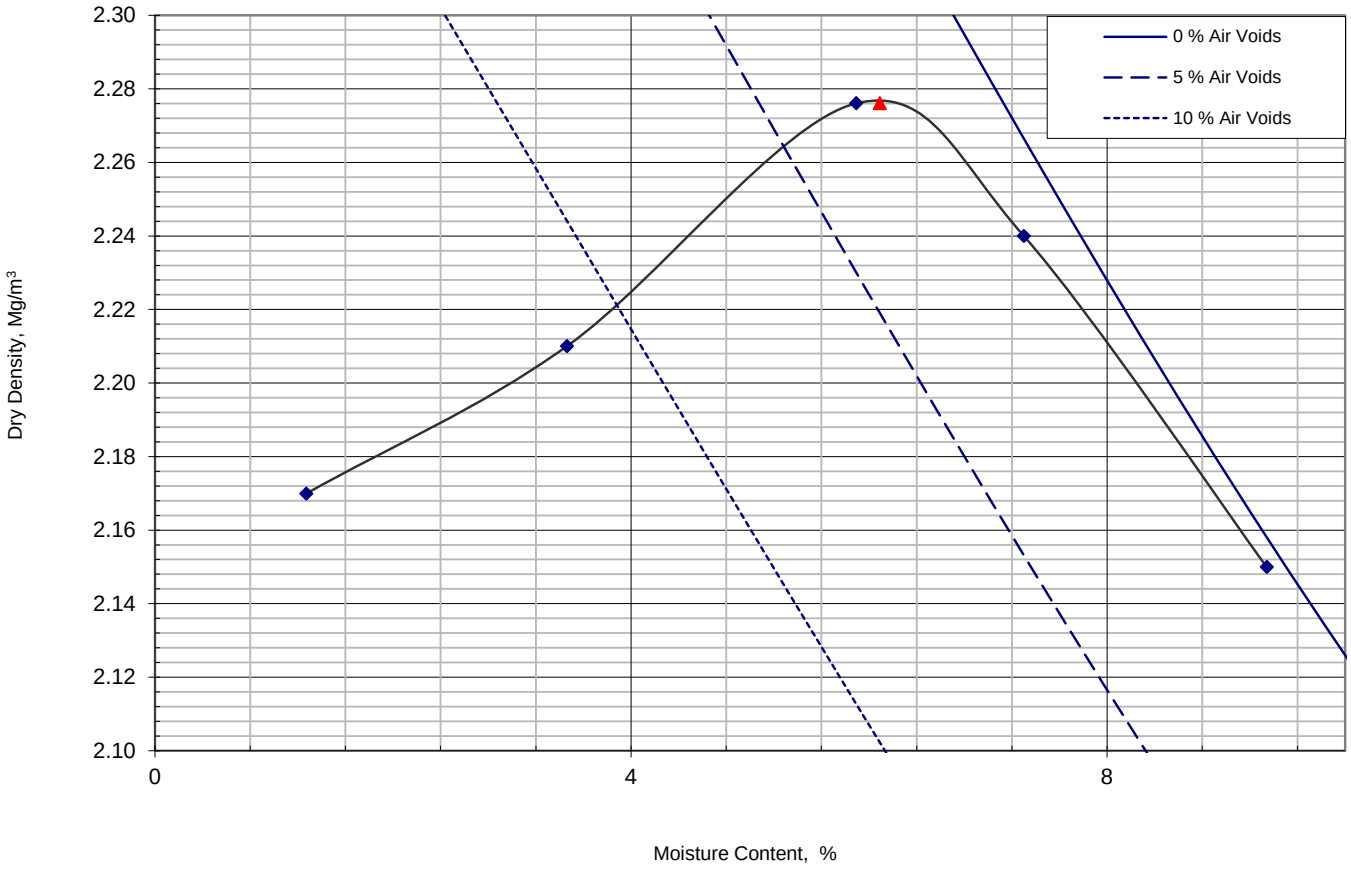
Compaction Point	1	2	3	4	5							
Moisture Content	4.4	7.6	10	13	16							
Bulk Density	1.97	2.10	2.18	2.19	2.13							
Dry Density	1.89	1.95	1.98	1.93	1.83							

Initial Moisture Content	7.6	%
Maximum Dry Density	1.98	Mg/m3
Optimum Moisture Content	10	%
Particle Density	2.65 Assumed	Mg/m3
Material Retained 37.5mm	13	%
Material Retained 20mm	11	%

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Operator
Conal

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**Dry Density / Moisture Content Relationship BS 1377:Part 4:1990**	Contract Number	67179
		Borehole / Pit No	S2-BH224
Project Name	Global Centre of Rail Excellence Stage 2 (33)	Sample No	108
Date Tested	03/07/2023	Depth Top	4.00
Compaction Method	4.5 Kg Rammer	Depth Base	6.00
Compaction Clause	BS1377:Part 4:1990, Clause 3.5	Sample Type	B
Sample Description	Grey silty fine to coarse gravelly CLAY	Single or Separate Sample Used	Single



Compaction Point	1	2	3	4	5							
Moisture Content	1.3	3.5	5.9	7.3	9.3							
Bulk Density	2.20	2.29	2.41	2.40	2.35							
Dry Density	2.17	2.21	2.28	2.24	2.15							

Initial Moisture Content	5.9	%
Maximum Dry Density	2.28	Mg/m3
Optimum Moisture Content	6.1	%
Particle Density	2.7 Assumed	Mg/m3
Material Retained 37.5mm	0	%
Material Retained 20mm	9	%

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Operator
Conal

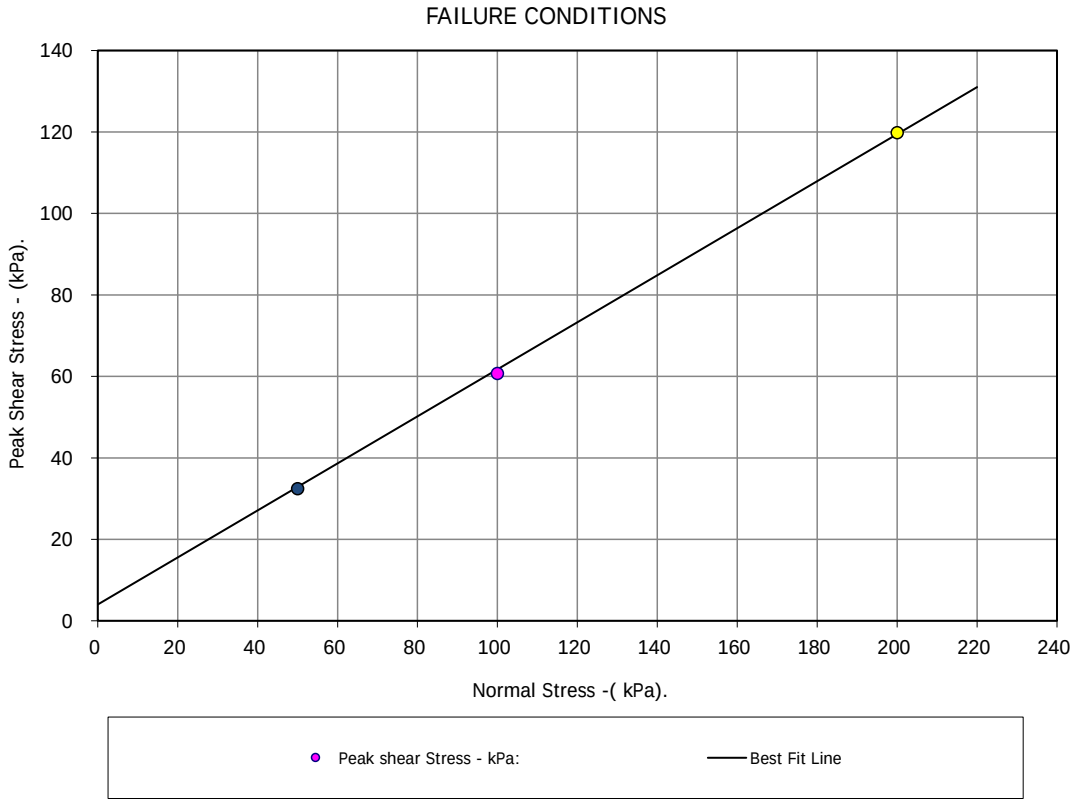
Borehole Number:	S2-BH223	Depth from (m):	0.60
Sample Number :	4	Depth to (m):	0.70

Sample Type:	B
Particle Density - Mg/m3:	2.65 (Assumed)
Specimen Tested:	Submerged, Remoulded (Light Tamping) Material above 2mm removed.

Sample Description:
Brown gravelly CLAY

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	24.98	24.98	24.98
Length - mm:	60.00	60.00	60.00
Moisture Content - %:	13	13	13
Bulk Density - Mg/m3:	1.81	1.81	1.81
Dry Density - Mg/m3:	1.61	1.61	1.61
Voids Ratio:	0.6496	0.6501	0.6487
Degree of Saturation - %:	51.57	51.53	51.64
Normal Pressure- kPa	50	100	200
Consolidation			
Consolidated Height - mm:	22.44	21.72	19.83
Shear			
Rate of Horizontal Displacement (mm/min)	0.200	0.200	0.200
Horizontal Displacement at Peak Shear Stress (mm)	7.21	12.43	7.12
Peak shear Stress - kPa:	32	61	120

PEAK	
Angle of Shearing Resistance:(θ)	**30.0**
Effective Cohesion - kPa:	**4.0**

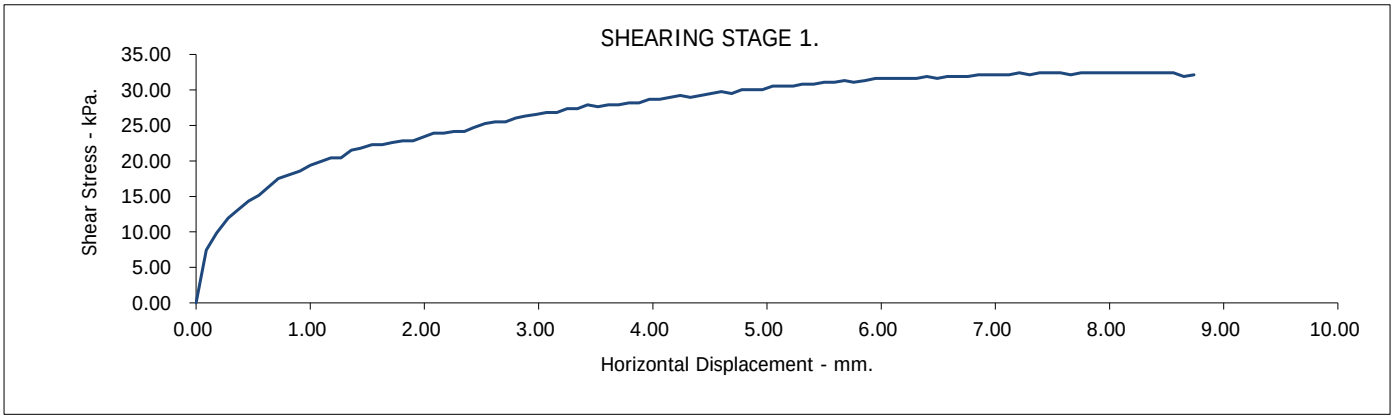


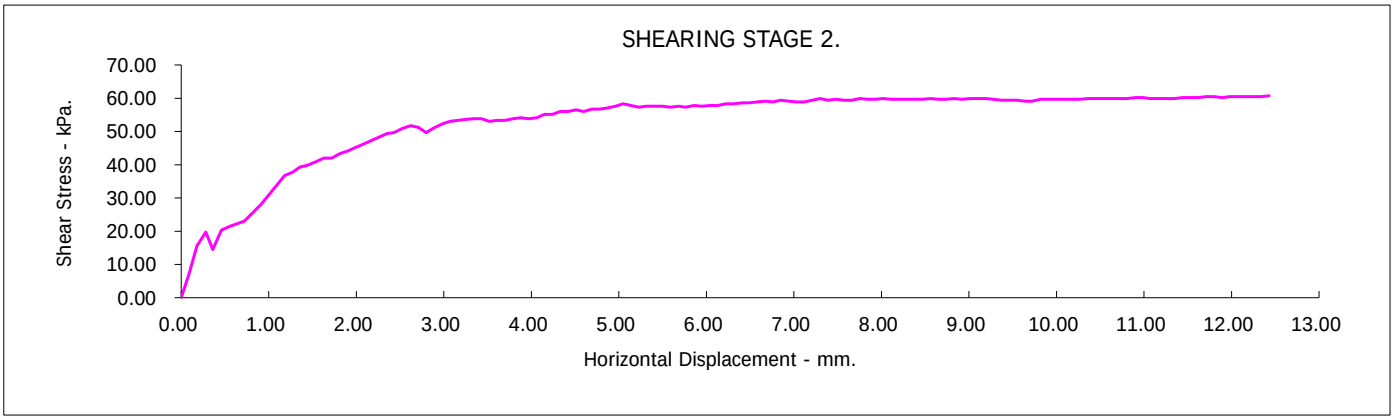
Contract No.:
67179

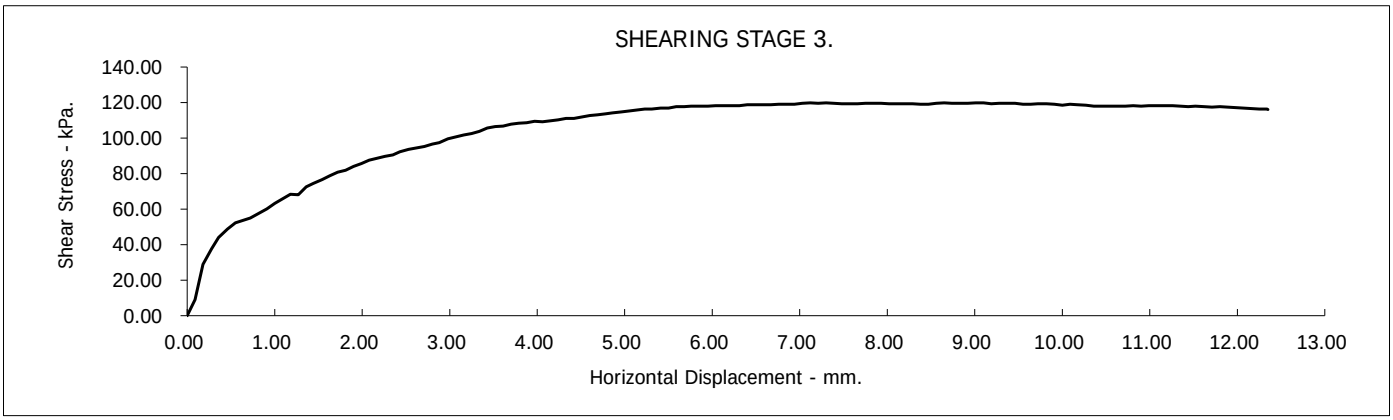
Global Centre of Rail Excellence Stage 2 (33)

Client Ref Number:
G23012

Borehole Number:	S2-BH223	Depth from (m):	0.60
Sample Number :	4	Depth to (m):	0.70







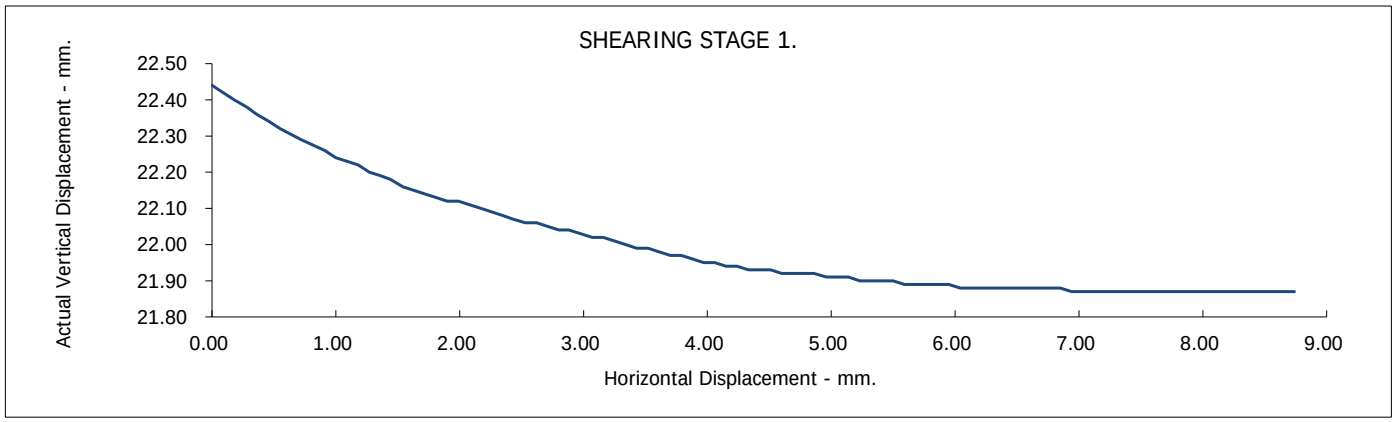
Contract No.: **67179**

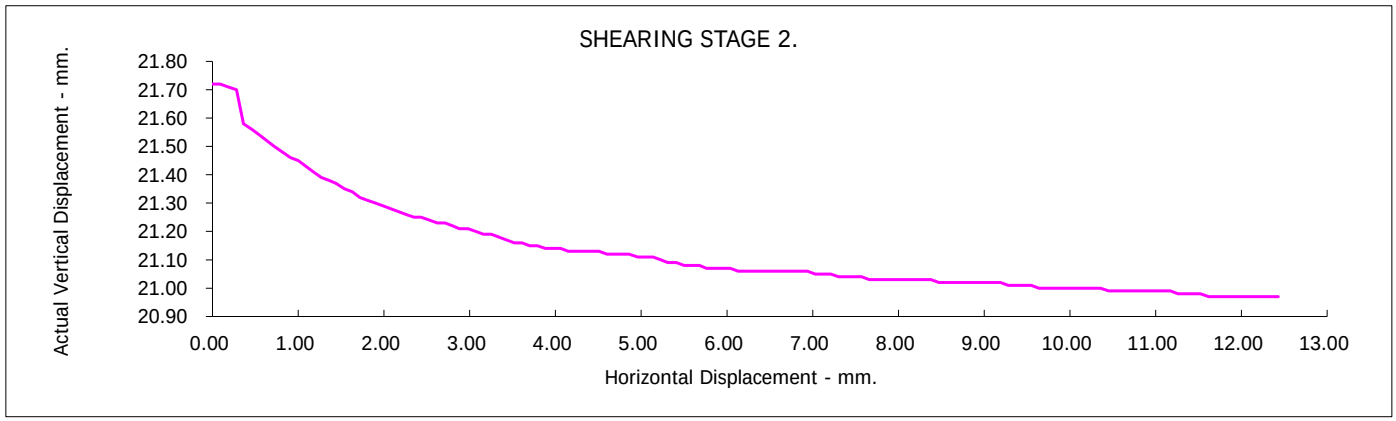
Global Centre of Rail Excellence Stage 2 (33)

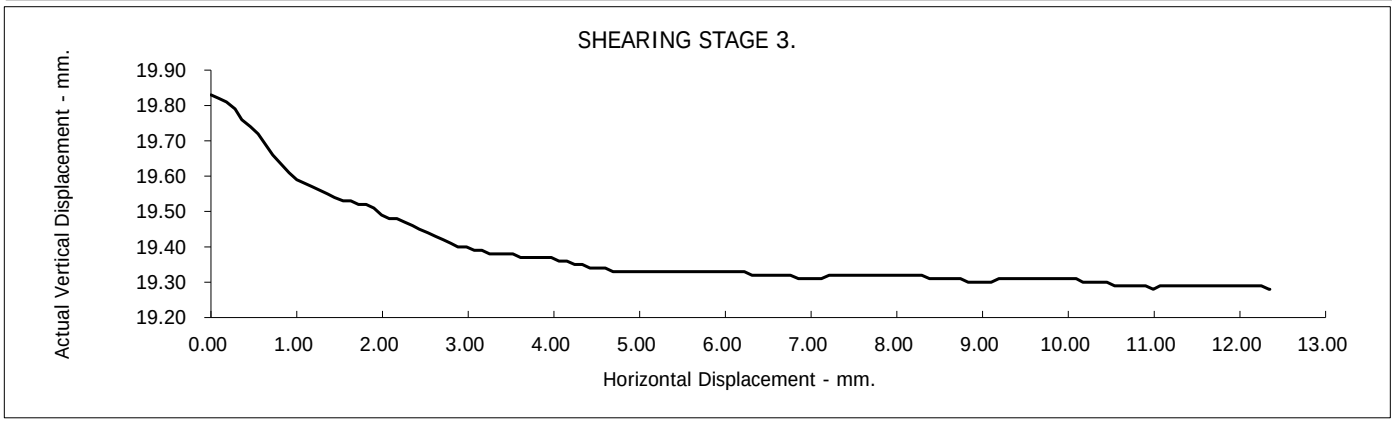
Client Ref Number: **G23012**

Figure.

Borehole Number:	S2-BH223	Depth from (m):	0.60
Sample Number :	4	Depth to (m):	0.70





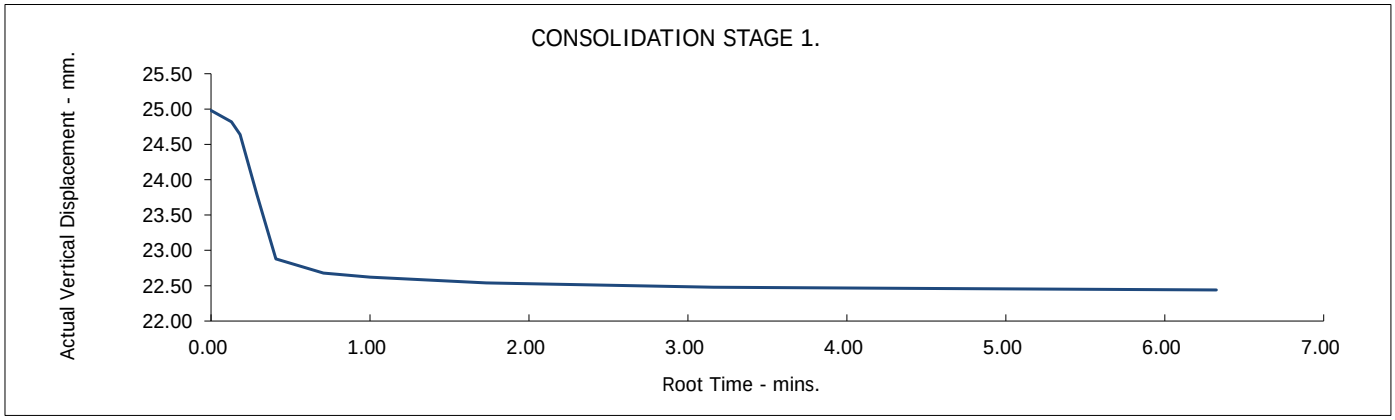


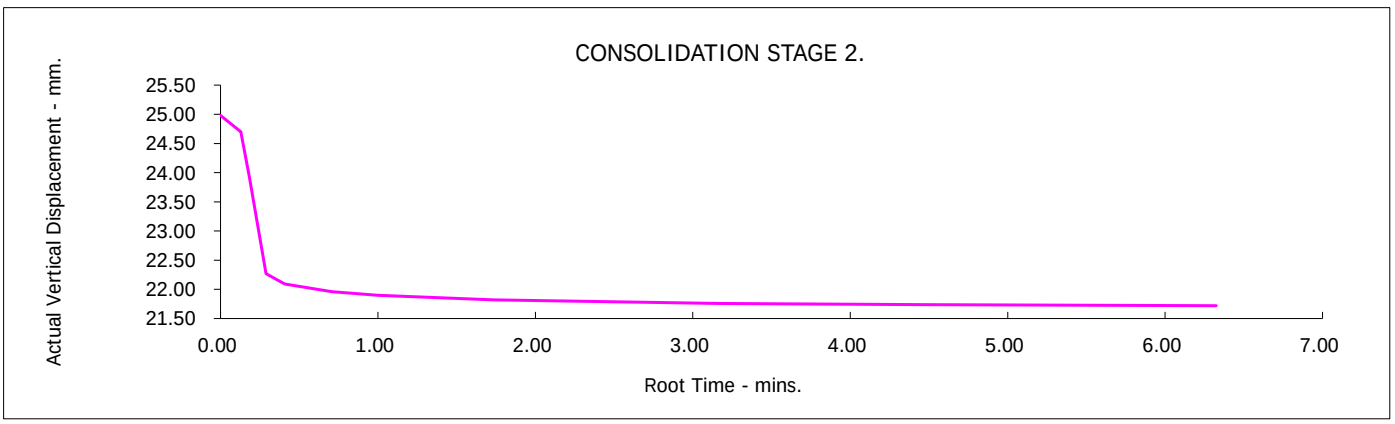
Contract No.:
67179

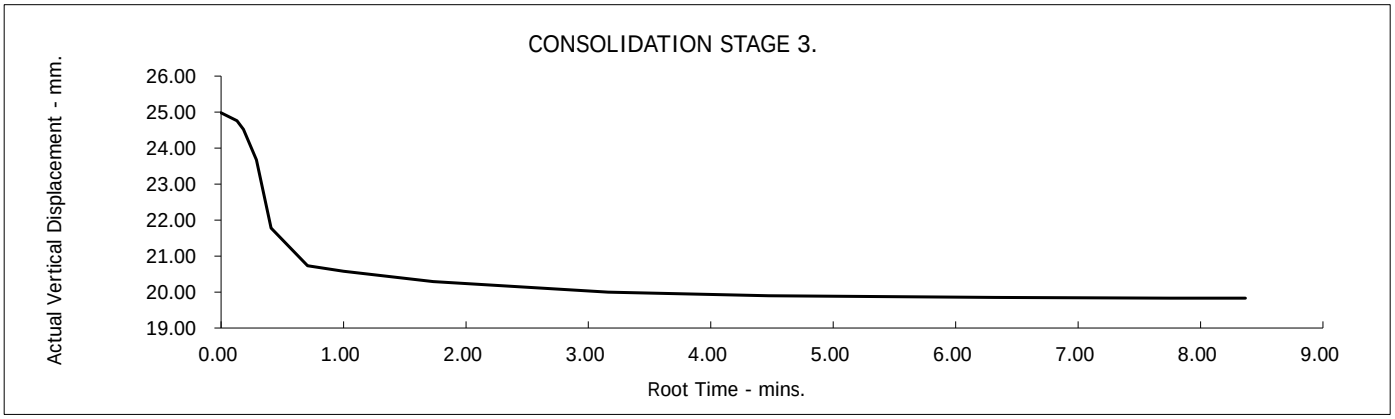
Global Centre of Rail Excellence Stage 2 (33)

Client Ref Number:
G23012

Borehole Number:	S2-BH223	Depth from (m):	0.60
Sample Number :	4	Depth to (m):	0.70







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Global Centre of Rail Excellence Stage 2 (33)

Contract No.: **67179**

Client Ref Number: **G23012**

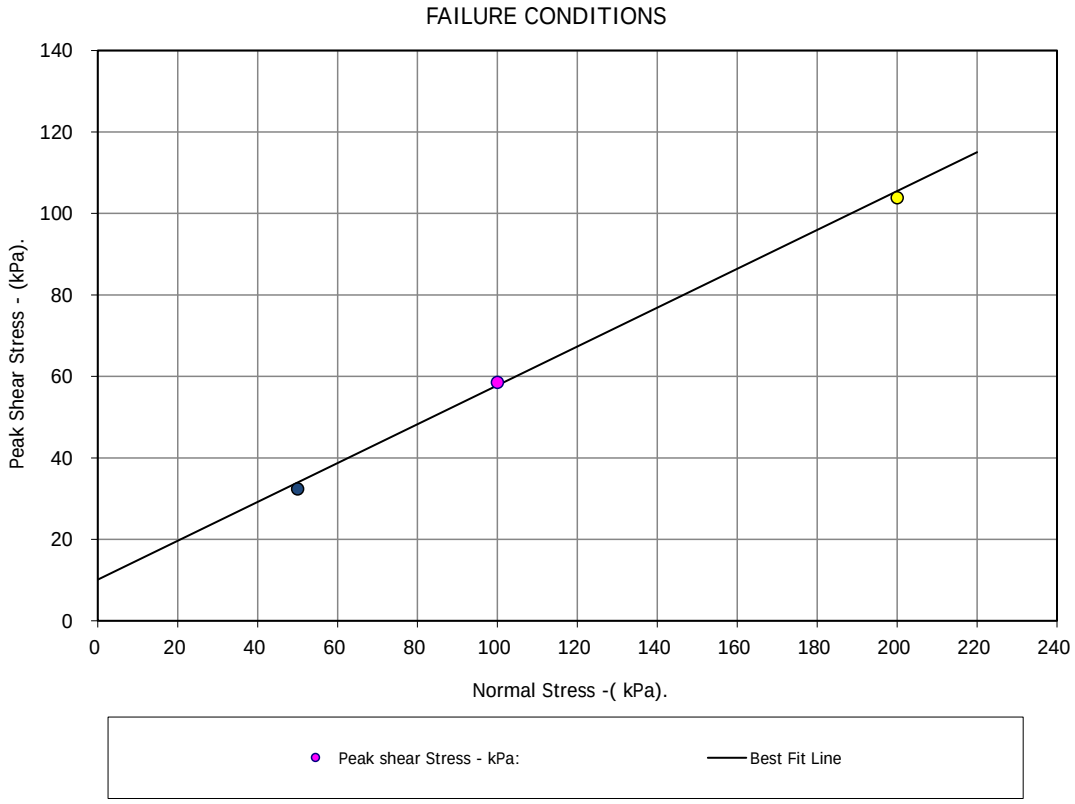
Borehole Number:	S2-BH224	Depth from (m):	0.00
Sample Number :	101	Depth to (m):	2.88

Sample Type:	B
Particle Density - Mg/m3:	2.65 (Assumed)
Specimen Tested:	Submerged, Remoulded (Light Tamping) Material above 2mm removed.

Sample Description:
Brown gravelly CLAY

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	25.03	25.03	25.03
Length - mm:	60.00	60.00	60.00
Moisture Content - %:	11	11	11
Bulk Density - Mg/m3:	1.93	1.93	1.93
Dry Density - Mg/m3:	1.74	1.74	1.74
Voids Ratio:	0.5233	0.5250	0.5237
Degree of Saturation - %:	54.96	54.78	54.91
Normal Pressure- kPa	50	100	200
Consolidation			
Consolidated Height - mm:	22.83	22.29	21.11
Shear			
Rate of Horizontal Displacement (mm/min)	0.200	0.200	0.200
Horizontal Displacement at Peak Shear Stress (mm)	8.47	7.12	6.58
Peak shear Stress - kPa:	32	59	104

PEAK	
Angle of Shearing Resistance:(θ)	**26**
Effective Cohesion - kPa:	**10**

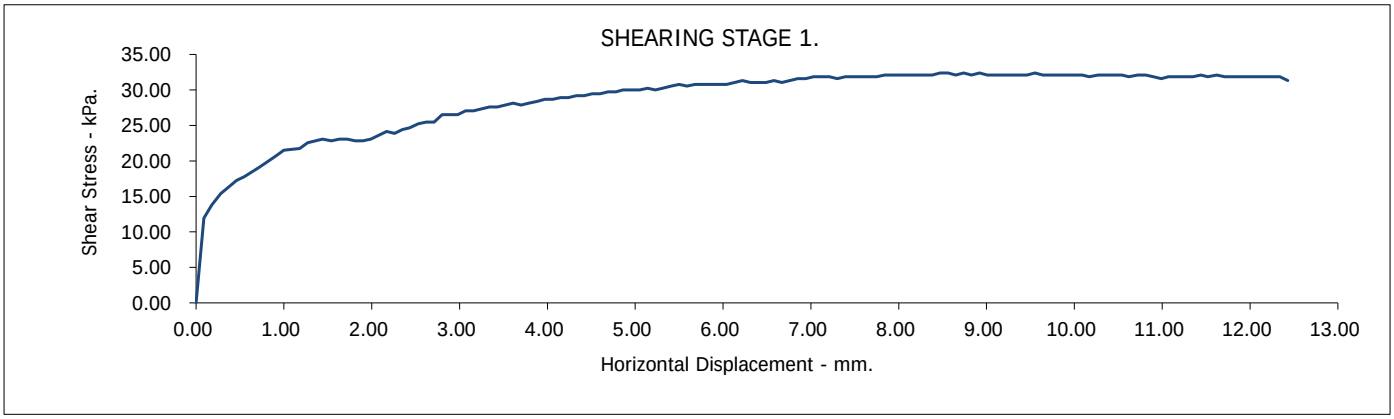


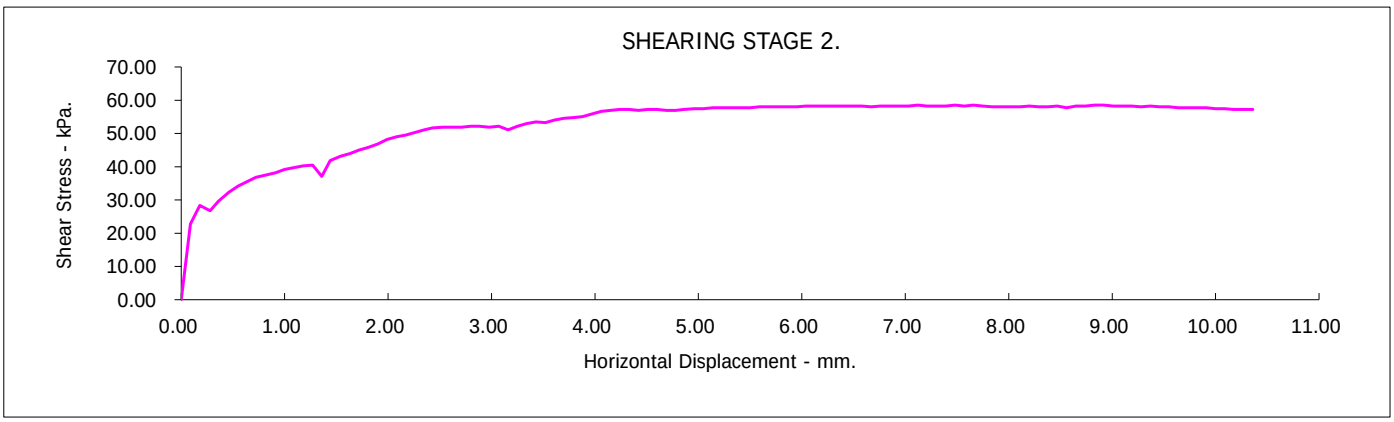
Contract No.:
67179

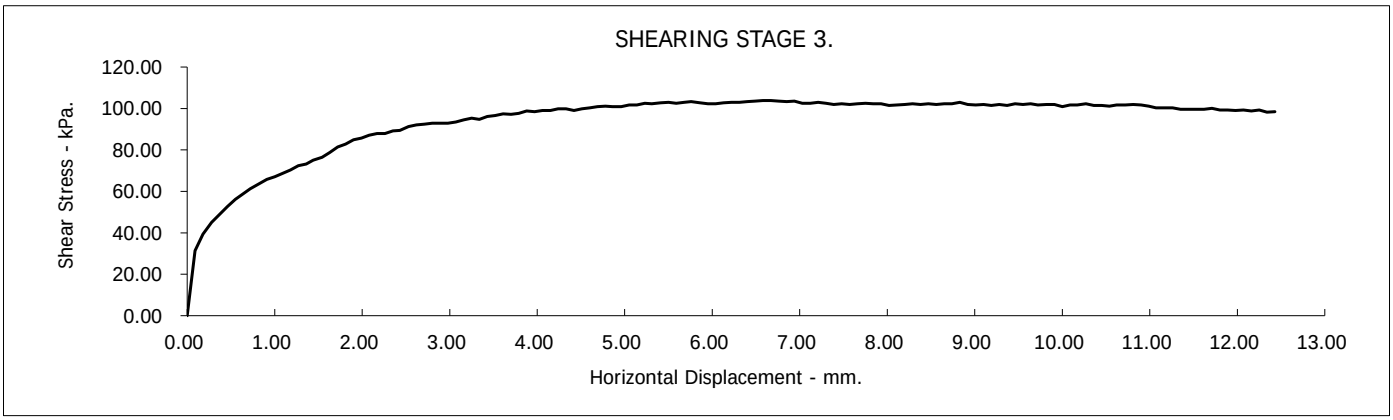
Global Centre of Rail Excellence Stage 2 (33)

Client Ref Number:
G23012

Borehole Number:	S2-BH224	Depth from (m):	0.00
Sample Number :	101	Depth to (m):	2.88







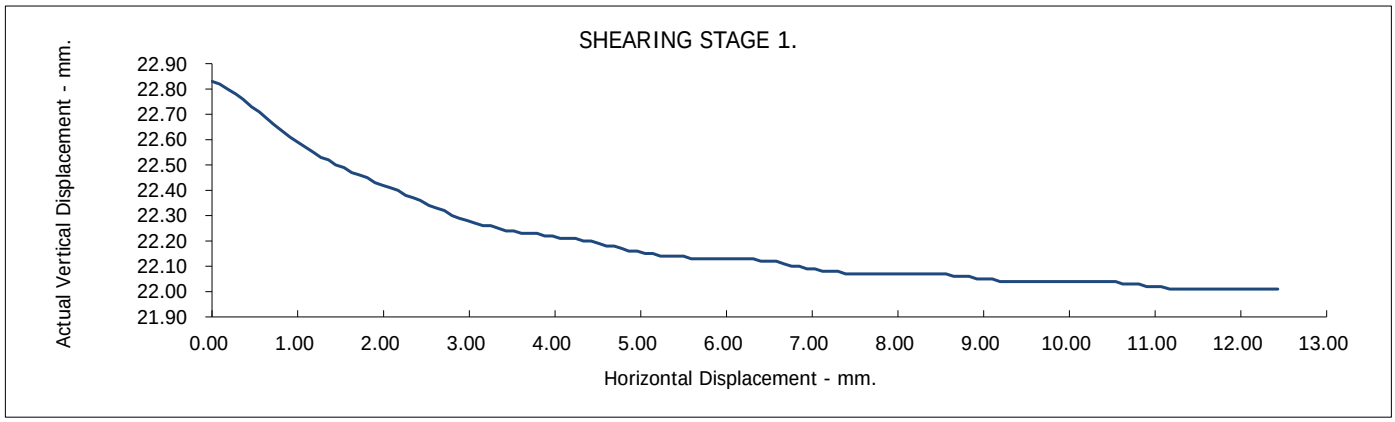
Global Centre of Rail Excellence Stage 2 (33)

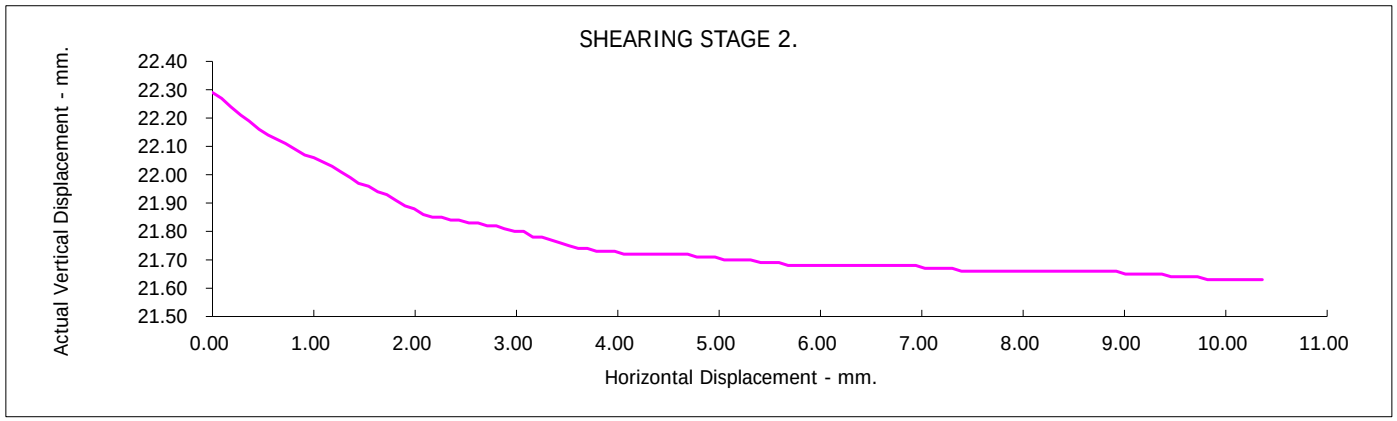
Contract No.: **67179**

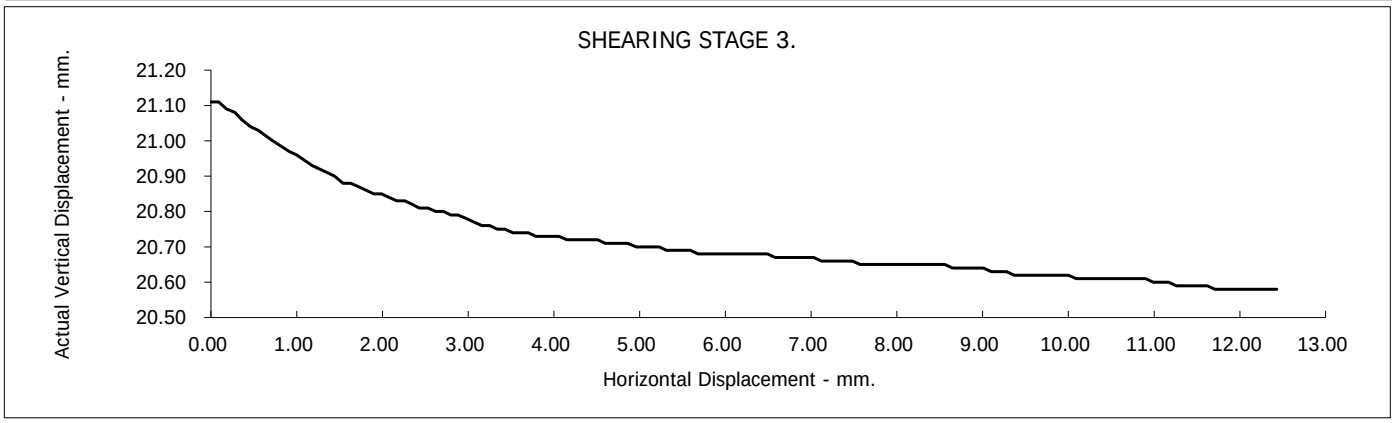
Client Ref Number: **G23012**

Figure.

Borehole Number:	S2-BH224	Depth from (m):	0.00
Sample Number :	101	Depth to (m):	2.88





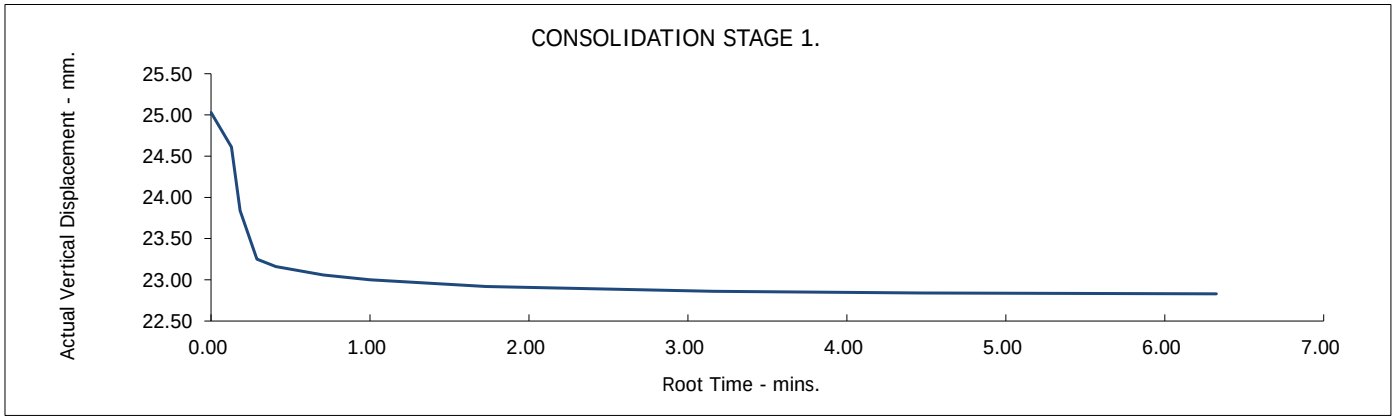


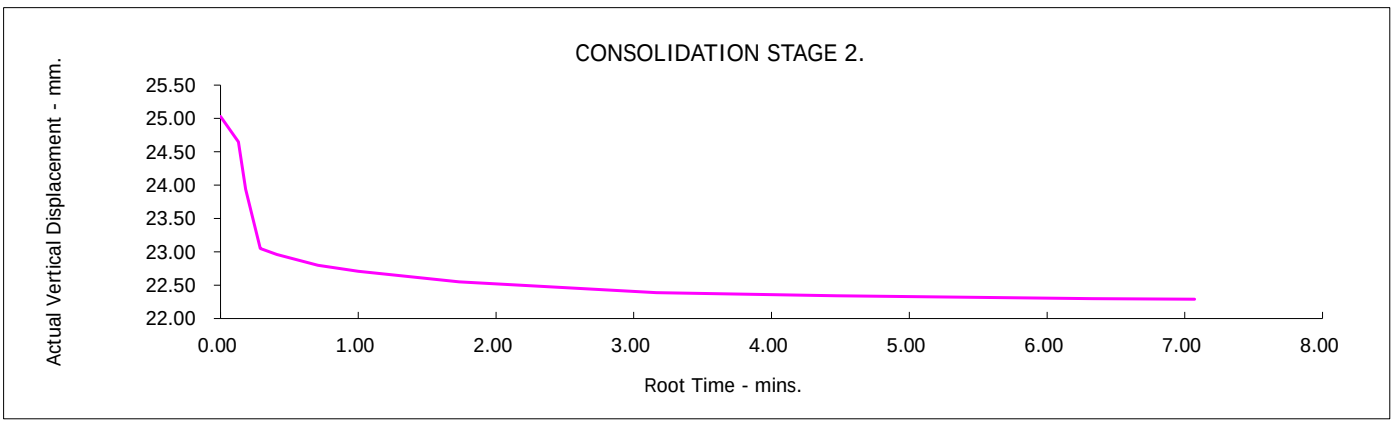
Contract No.:
67179

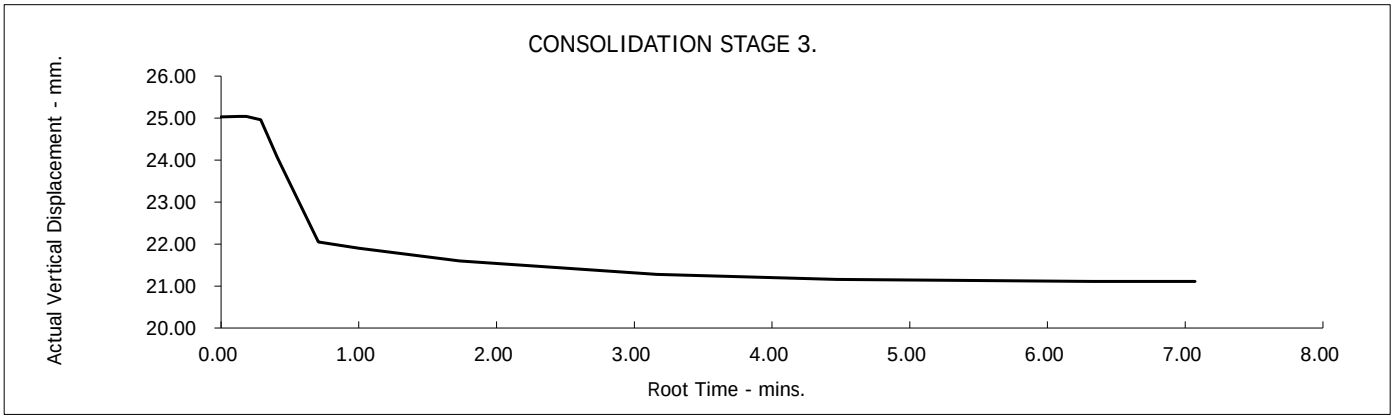
Global Centre of Rail Excellence Stage 2 (33)

Client Ref Number:
G23012

Borehole Number:	S2-BH224	Depth from (m):	0.00
Sample Number :	101	Depth to (m):	2.88







UKAS TESTING 2788

Global Centre of Rail Excellence Stage 2 (33)

Contract No.: **67179**

Client Ref Number: **G23012**

GSTL
GEOTECHNICAL SITE & TESTING LABORATORIES

Point Load Test

The complete ISRM suggested methods for rock characterization, testing and monitoring 1974-2006 Determining Point Load Strength

Contract Number	67179
Project Name	Global Centre of Rail Excellence Stage 2 (33)
Sample Type	Core
Date Tested	22/06/2023

*Please note that GSTL is not accredited for the water content of rock

Hole Reference	Depth (m)			Sample No	Test Type		Width	Platen Seperation	Failure Load	Equivalent Diameter	Point Load	Size Factor	Point Load Index	Moisture Content	Description	Angle Between Plane of Anisotropy & Core Axis	Type of Anisotropy (Bedding or Cleavage)
					d / a / b / i	I //											
S1-BH120	10.75	-	10.90		a		86	45	2.14	70.20	0.43	1.16	0.51	2.2	SILTSTONE		
S1-BH120	12.35	-	12.47		d			85	2.44		0.34	1.27	0.43	1.2	SILTSTONE		
S1-BH120	13.00	-	13.23		a		86	58	5.19	79.69	0.82	1.23	1.01	1.1	SILTSTONE		

Key	Reported As
Width	(W) mm
Platen Separation	(D) mm
Failure Load	(P) kN
Equivalent Diameter	(De) mm
Point Load	(Is) MPa
Size Factor	(F)
Point Load Index	(Is(50)) MPa
Moisture Content	%
Description	SC

Operator
Julian Jones

UKAS TESTING
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GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**Determination of Unconfined Compressive Strength** **ISRM Suggested Methods Vol 16, No. 2, pp. 135-140 1979**	
Contract Number	67179	
Project Name	Global Centre of Rail Excellence Stage 2 (33)	
Sample Preperation	Sawing and Grinding	
Date Tested	22/06/2023	

Hole Reference	Depth (m)			Diameter	Length	Initial Mass	Moisture Content	Bulk Density	Dry Density	Load Failure	Maximum Strength	Type of Failure
S2-BH216	31.26		31.43	86.1	167.3	2664.1	0.9	2.73	2.71	234.3	40.2	Multiple Fracture
S2-BH216	32.12		32.33	85.6	209	3195.7	1.3	2.66	2.62	71.7	12.5	Single Shear
S2-BH216	35.15		35.33	85.5	177.3	2737.4	1.5	2.69	2.65	53.2	9.3	Multiple Fracture

Key	**Reported As**
Diameter	mm
Length	mm
Initial Mass	g
Moisture Content	%
Bulk Density	Mg/m^3
Dry Density	Mg/m^3
Load Failure	kN
Maximum Strength	MPa

Operator
Julian Jones

Laboratory Report

UKAS TESTING 2788

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES A PHENNA GROUP COMPANY

Contract Number: 67181

Client Ref: **G23012**
Client PO:

Date Received: **20-06-2023**
Date Completed: **05-07-2023**
Report Date: **05-07-2023**

Client: **Jackson Drilling Holdings Ltd**
Northwood Farm
Coxbridge Road
Baltonsborough
Somerset
BA6 8RA

This report has been checked and approved by:

Paul Evans
Director

Contract Title: **Global Centre of Rail Excellence Stage 2 (34)**
For the attention of: **Adam Putt**

Test Description	Qty
Moisture Content of Soil BS1377 : Part 2 : Clause 3.2 : 1990 - * UKAS	1
4 Point Liquid & Plastic Limit BS 1377:1990 - Part 2 : 4.3 & 5.3 - * UKAS	1
PSD Wet & Dry Sieve method BS 1377:1990 - Part 2 : 9.2 - * UKAS	3
PSD: Sedimentation by pipette carried out with Wet Sieve (Wet Sieve must also be selected) BS 1377:1990 - Part 2 : 9.4 - * UKAS	3
Consolidated Drained Peak Shear Strength - set of 3 - 60 x 60mm Shear Box Specimens by Direct Shearing (3 days) BS 1377:1990 - Part 7 : 4 - * UKAS	2
Determination of Point Load Value Axial or Diametrical including WC ***Please note GSTL is not accredited for the water content of rock*** ISRM Suggested Method for Point Load Strength - * UKAS	2
Uniaxial Compressive Strength of Rock inc sample prep 54-165mm diameter cores ISRM Suggested Method for determining uniaxial compressive strength - @ Non Accredited Test	1
Disposal of samples for job	1

Notes: **Observations and Interpretations are outside the UKAS Accreditation**
*** - denotes test included in laboratory scope of accreditation**
- denotes test carried out by approved contractor
@ - denotes non accredited tests

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Approved Signatories:
Brendan Evans (Office Administrator) - Darren Bourne (Quality Senior Technician) - Paul Evans (Director)
Richard John (Quality/Technical Manager) - Shaun Jones (Laboratory manager) - Shaun Thomas (Site Manager)
Wayne Honey (Human Resources/ Health and Safety Manager)

GEO Site & Testing Services Ltd
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GSTL
GEOTECHNICAL SITE & TESTING LABORATORIES

NATURAL MOISTURE, LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX
(BS 1377:1990 - Part 2 : 4.3 & 5.3)

Contract Number	67181
Project Name	Global Centre of Rail Excellence Stage 2 (34)
Date Tested	29/06/2023

DESCRIPTIONS

Sample/Hole Reference	Sample Number	Sample Type	Depth (m)			Descriptions
S2-BH201	104	B	1.20	-	1.50	Grey slightly silty clayey fine to coarse sandy fine to coarse GRAVEL
				-		
				-		
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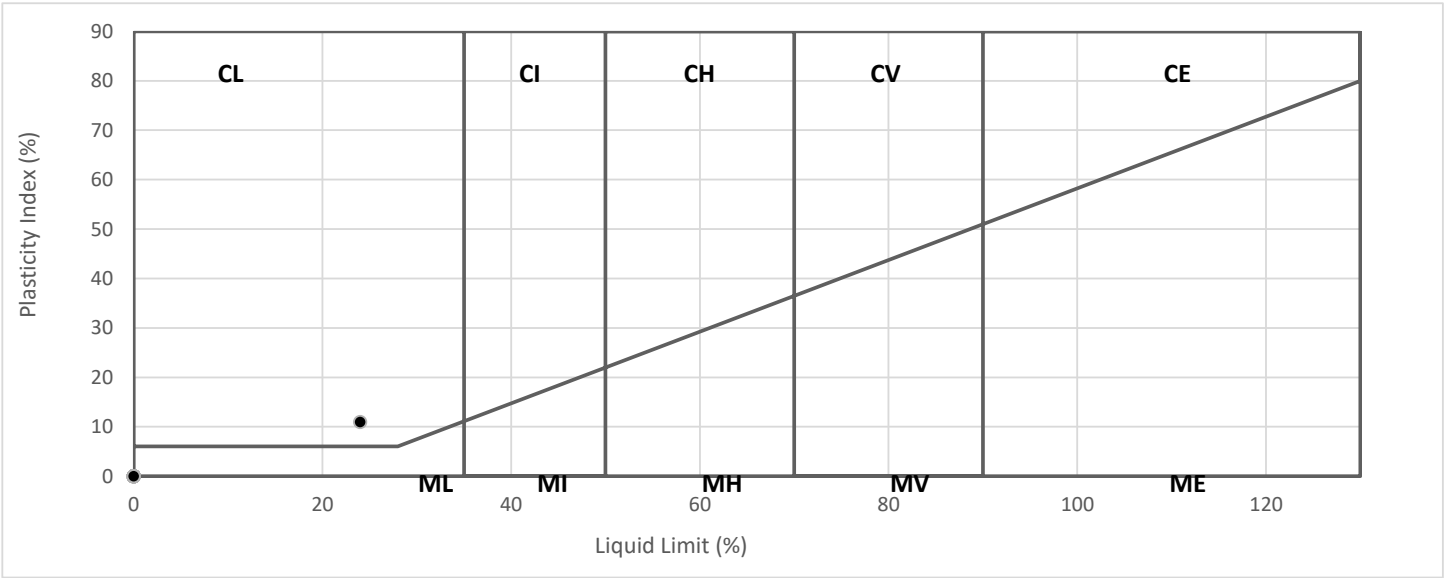
Operator
Aaron Hodge

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	NATURAL MOISTURE, LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377:1990 - Part 2 : 4.3 & 5.3)	
Contract Number	67181	
Project Name	Global Centre of Rail Excellence Stage 2 (34)	
Date Tested	29/06/2023	

Sample/Hole Reference	Sample Number	Sample Type	Depth (m)			Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity index %	Passing 0.425mm %	Remarks
S2-BH201	104	B	1.20	-	1.50	6.4	24	13	11	34	CL Low Plasticity
				-							
				-							
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Symbols: NP : Non Plastic # : Liquid Limit and Plastic Limit Wet Sieved

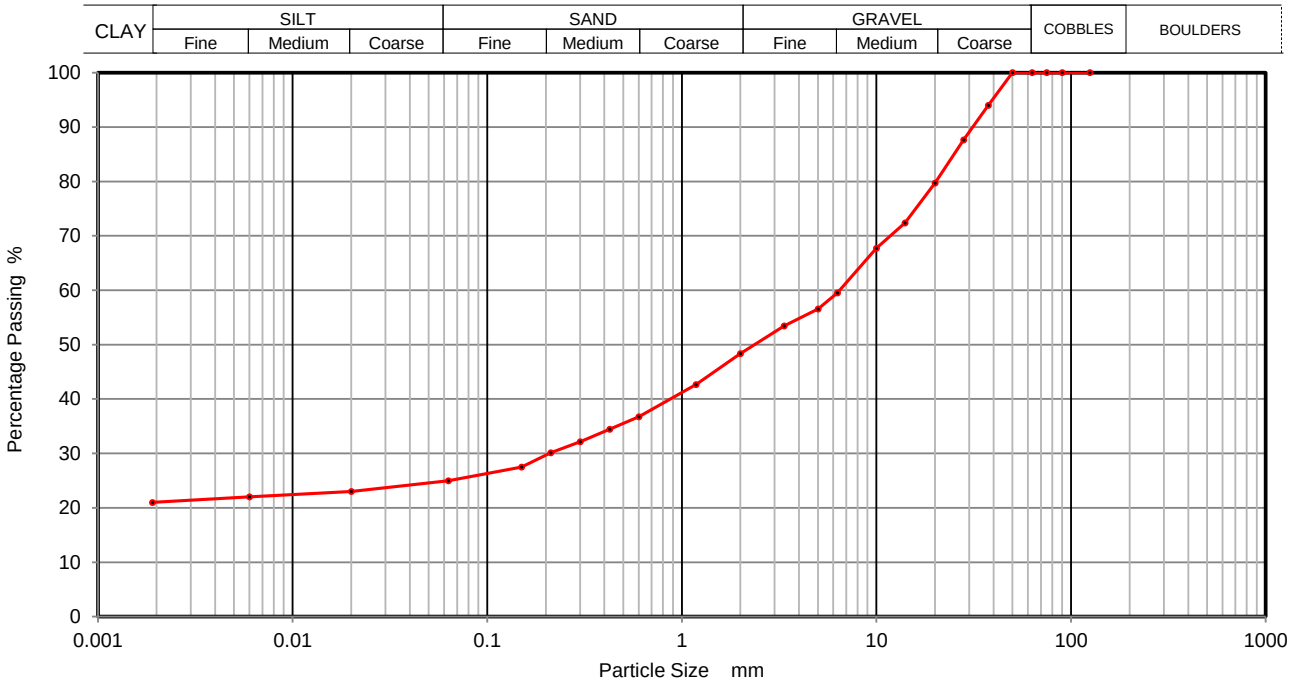
PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION
BS 5930:2015+A1:2020



Operator
Aaron Hodge

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GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4**	Contract Number	67181
		Borehole/Pit No.	S2-BH201
Project Name	Global Centre of Rail Excellence Stage 2 (34)	Sample No.	104
Soil Description	Grey slightly silty clayey fine to coarse sandy fine to coarse GRAVEL	Depth Top	1.20
		Depth Base	1.50
Date Tested	30/06/2023	Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	23
90	100	0.0060	22
75	100	0.0020	21
63	100		
50	100		
37.5	94		
28	88		
20	80		
14	72		
10	68		
6.3	60		
5	57		
3.35	53		
2	48		
1.18	43		
0.6	37		
0.425	34		
0.3	32		
0.212	30		
0.15	27		
0.063	25		

Sample Proportions	% dry mass
Cobbles	0
Gravel	52
Sand	23
Silt	4
Clay	21

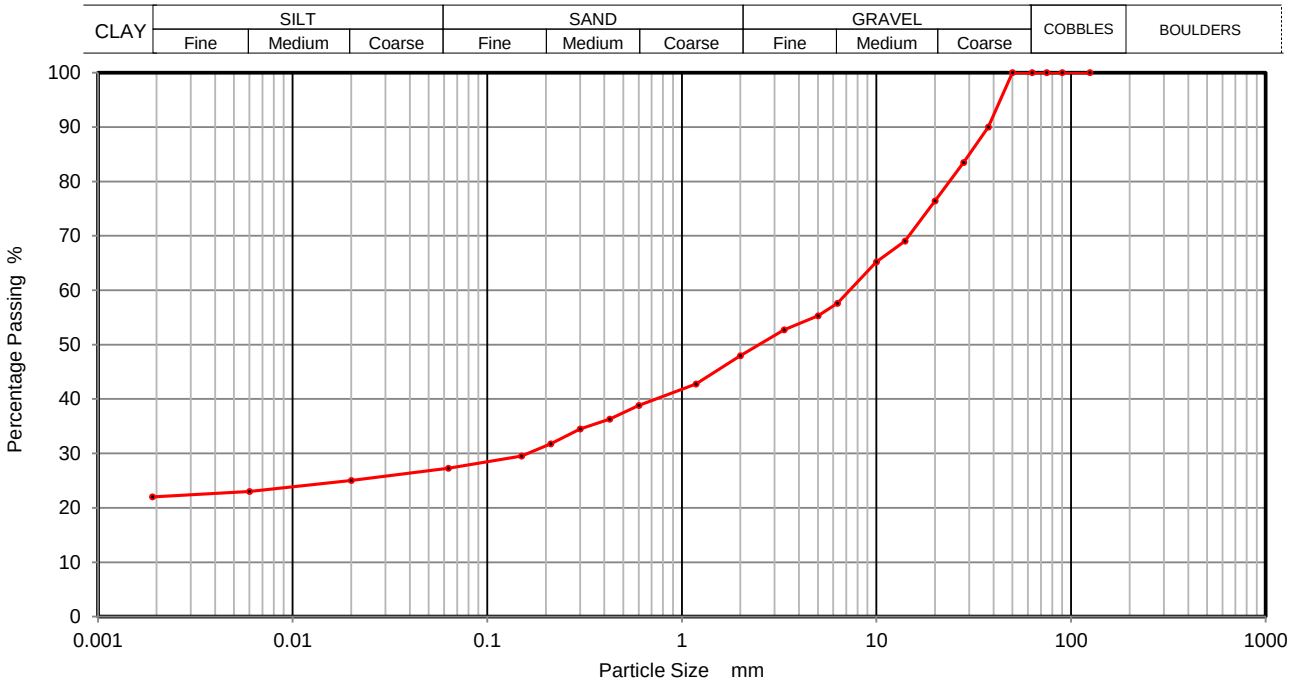
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator
David Edwards

UKAS TESTING
2788

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4**	Contract Number	67181
		Borehole/Pit No.	S2-BH201
Project Name	Global Centre of Rail Excellence Stage 2 (34)	Sample No.	105
Soil Description	Grey slightly silty fine to coarse sandy clayey fine to coarse GRAVEL	Depth Top	1.50
		Depth Base	4.00
Date Tested	30/06/2023	Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	25
90	100	0.0060	23
75	100	0.0020	22
63	100		
50	100		
37.5	90		
28	83		
20	76		
14	69		
10	65		
6.3	58		
5	55		
3.35	53		
2	48		
1.18	43		
0.6	39		
0.425	36		
0.3	34		
0.212	32		
0.15	30		
0.063	27		

Sample Proportions	% dry mass
Cobbles	0
Gravel	52
Sand	21
Silt	5
Clay	22

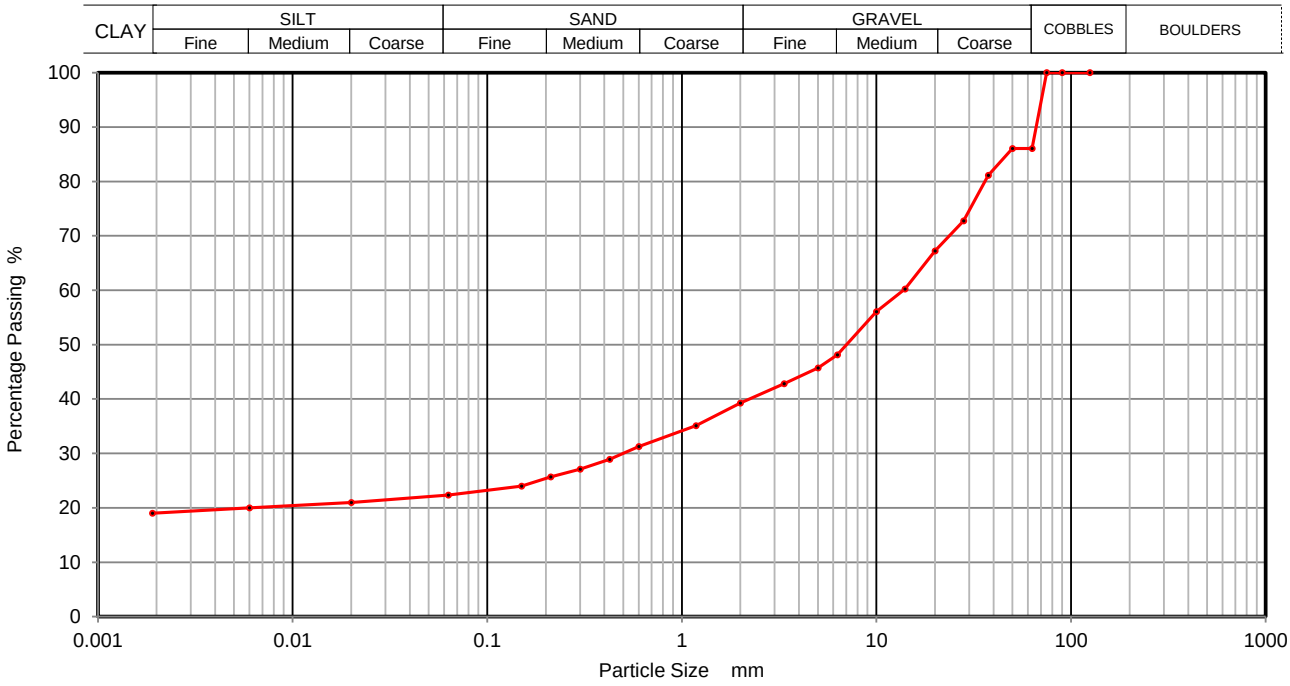
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator
David Edwards

UKAS TESTING
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GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4**	Contract Number	67181
		Borehole/Pit No.	S2-BH201
Project Name	Global Centre of Rail Excellence Stage 2 (34)	Sample No.	113
Soil Description	Grey slightly silty fine to coarse sandy clayey fine to coarse GRAVEL with cobbles	Depth Top	6.00
		Depth Base	7.90
Date Tested	30/06/2023	Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	21
90	100	0.0060	20
75	100	0.0020	19
63	86		
50	86		
37.5	81		
28	73		
20	67		
14	60		
10	56		
6.3	48		
5	46		
3.35	43		
2	39		
1.18	35		
0.6	31		
0.425	29		
0.3	27		
0.212	26		
0.15	24		
0.063	22		

Sample Proportions	% dry mass
Cobbles	14
Gravel	47
Sand	17
Silt	3
Clay	19

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator
David Edwards

UKAS TESTING
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Test Report: MS DIRECT SHEARBOX TEST.BS1377:Part 7:4.5 :1990.

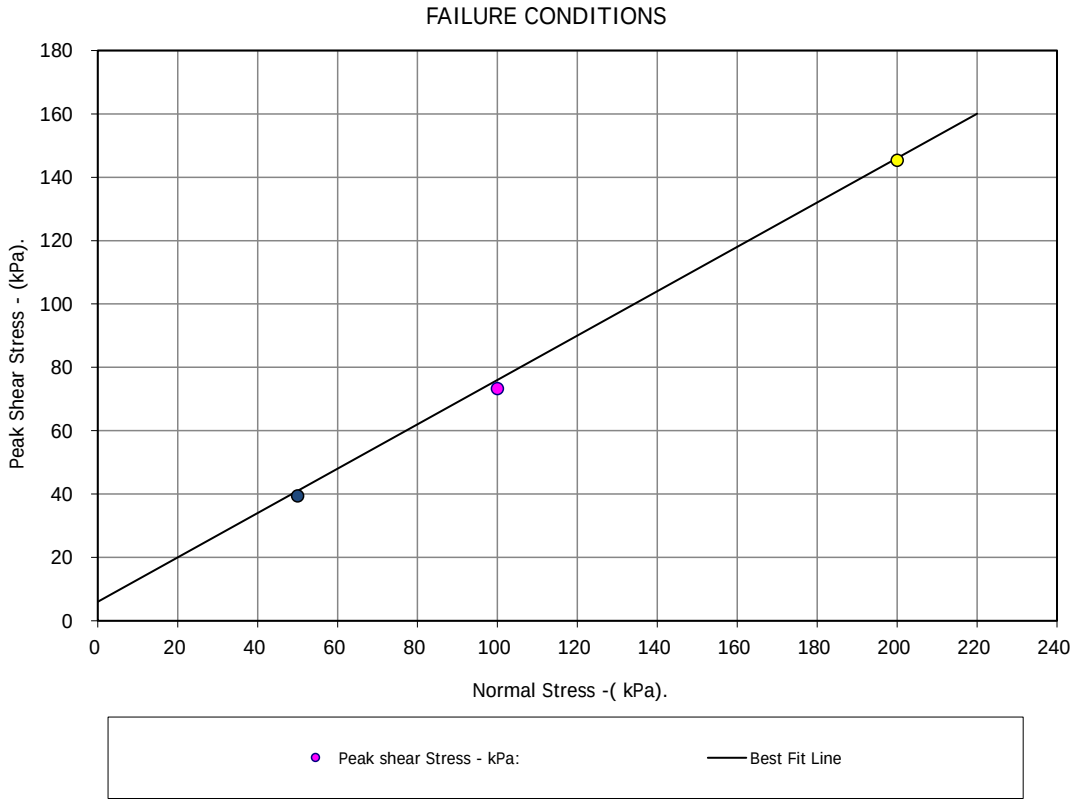
Borehole Number:	S2-BH201	Depth from (m):	1.50
Sample Number :	105	Depth to (m):	4.00

Sample Type:	B
Particle Density - Mg/m3:	2.65 (Assumed)
Specimen Tested:	Submerged, Remoulded (Light Tamping) Material above 2mm removed.

Sample Description:
Brown gravelly CLAY

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	23.30	23.30	23.30
Length - mm:	60.00	60.00	60.00
Moisture Content - %:	5.6	5.6	5.6
Bulk Density - Mg/m3:	1.81	1.81	1.81
Dry Density - Mg/m3:	1.71	1.71	1.71
Voids Ratio:	0.5471	0.5462	0.5463
Degree of Saturation - %:	27.26	27.30	27.30
Normal Pressure- kPa	50	100	200
Consolidation			
Consolidated Height - mm:	22.14	21.30	20.08
Shear			
Rate of Horizontal Displacement (mm/min)	0.200	0.200	0.200
Horizontal Displacement at Peak Shear Stress (mm)	6.48	8.91	8.92
Peak shear Stress - kPa:	39	73	145

PEAK	
Angle of Shearing Resistance:(θ)	**35.0**
Effective Cohesion - kPa:	**6.0**

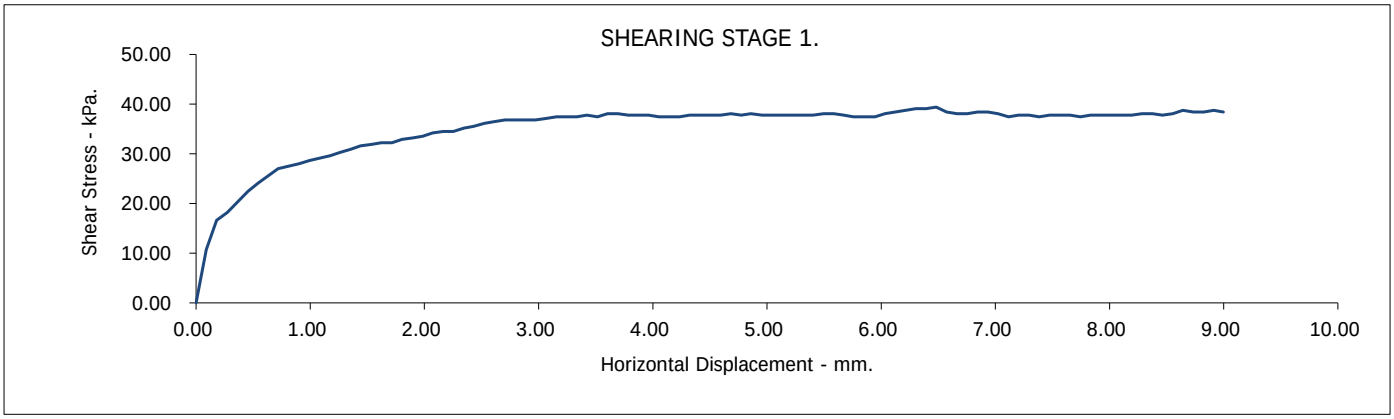


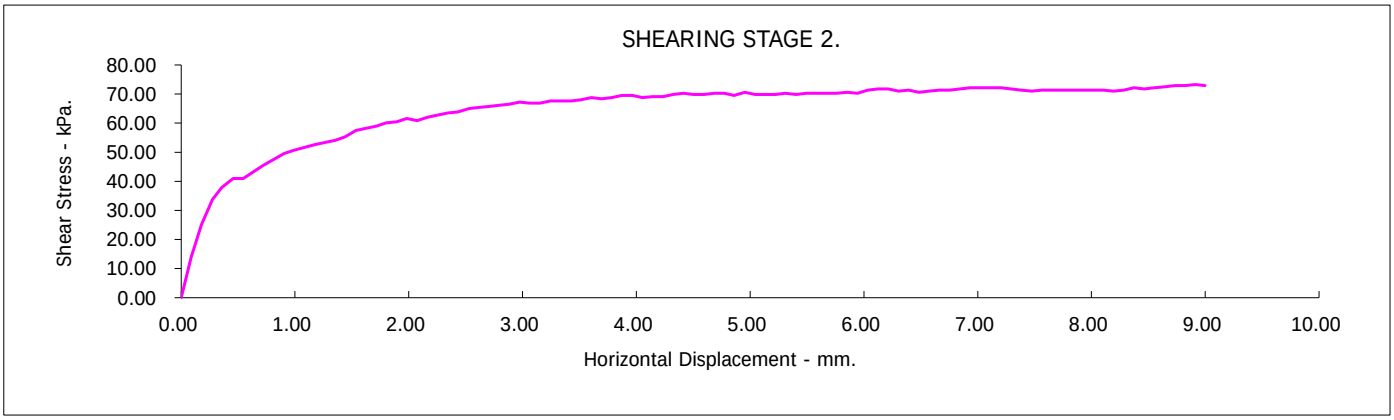
Contract No.:
67181

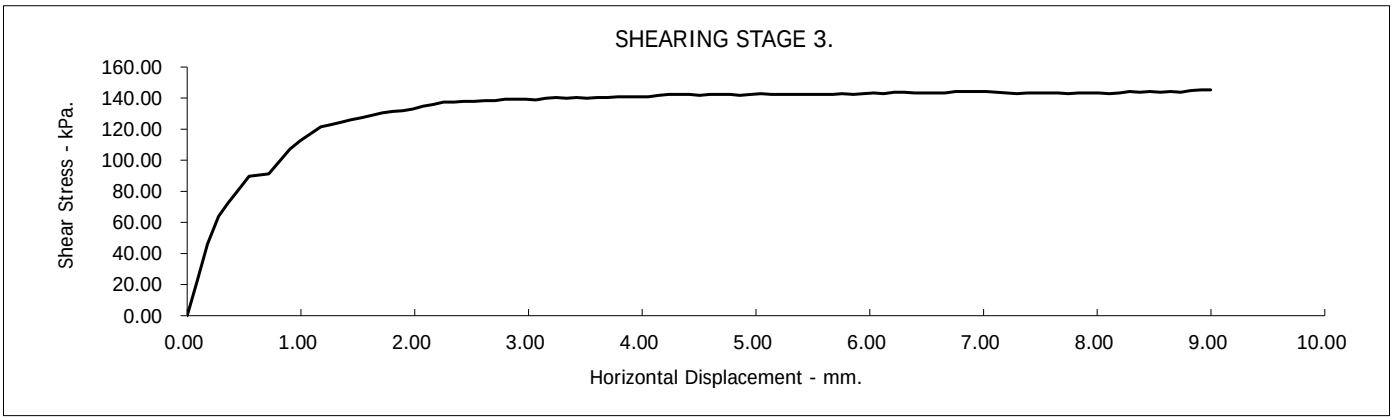
Global Centre of Rail Excellence Stage 2 (34)

Client Ref Number:
G23012

Borehole Number:	S2-BH201	Depth from (m):	1.50
Sample Number :	105	Depth to (m):	4.00







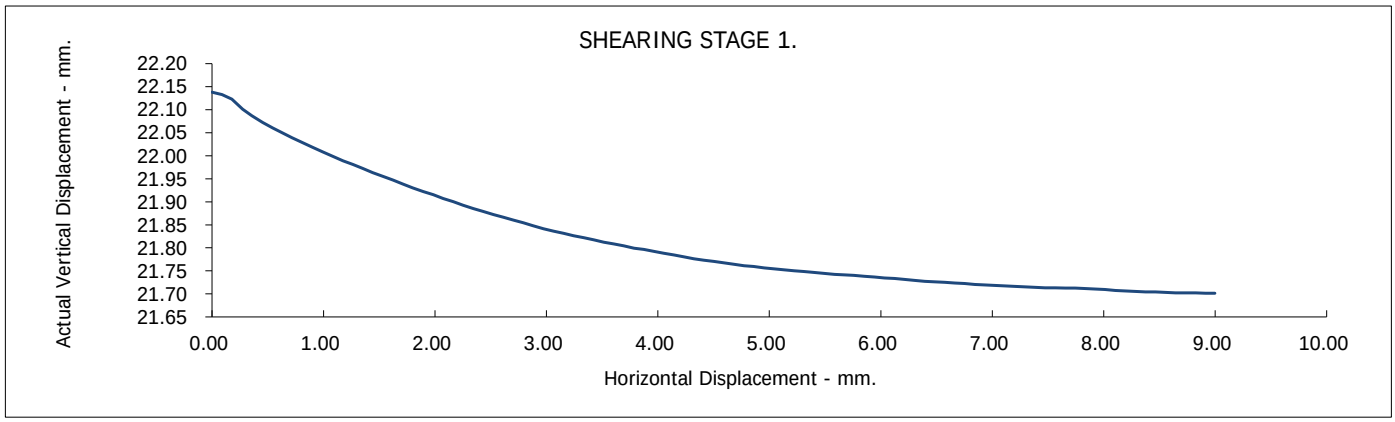
Contract No.:
67181

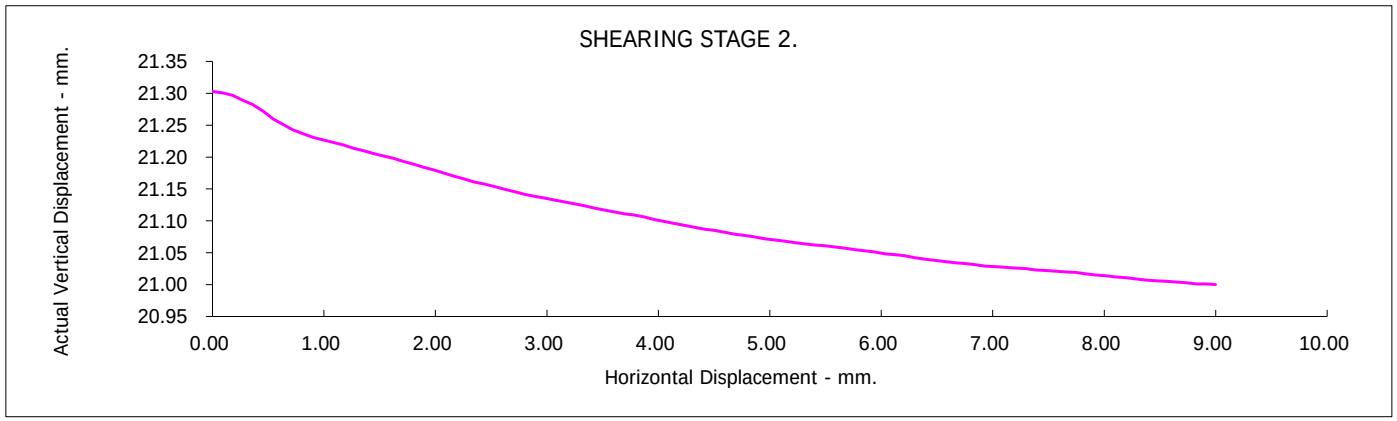
Global Centre of Rail Excellence Stage 2 (34)

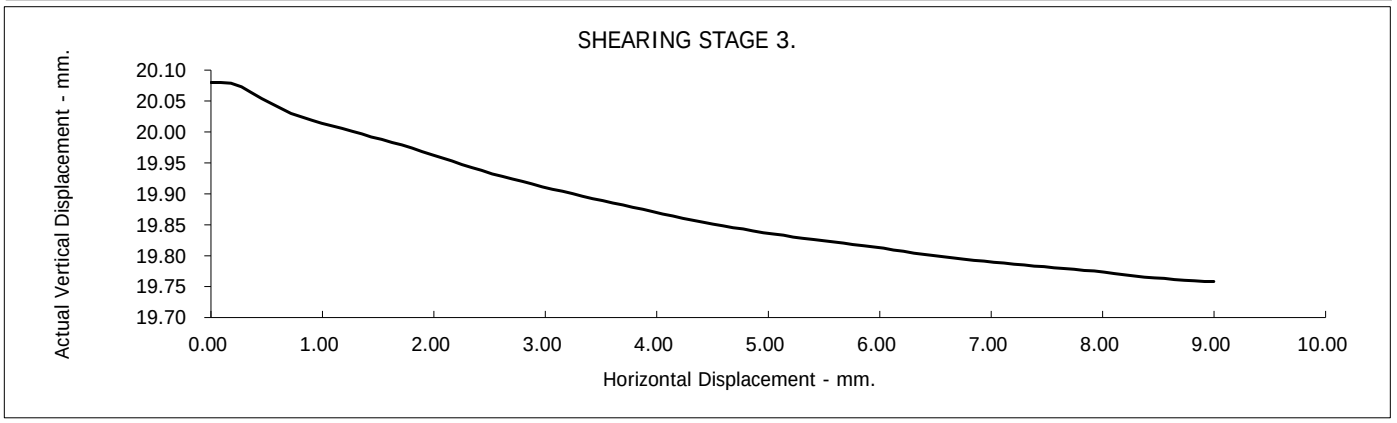
Client Ref Number:
G23012

Figure.

Borehole Number:	S2-BH201	Depth from (m):	1.50
Sample Number :	105	Depth to (m):	4.00





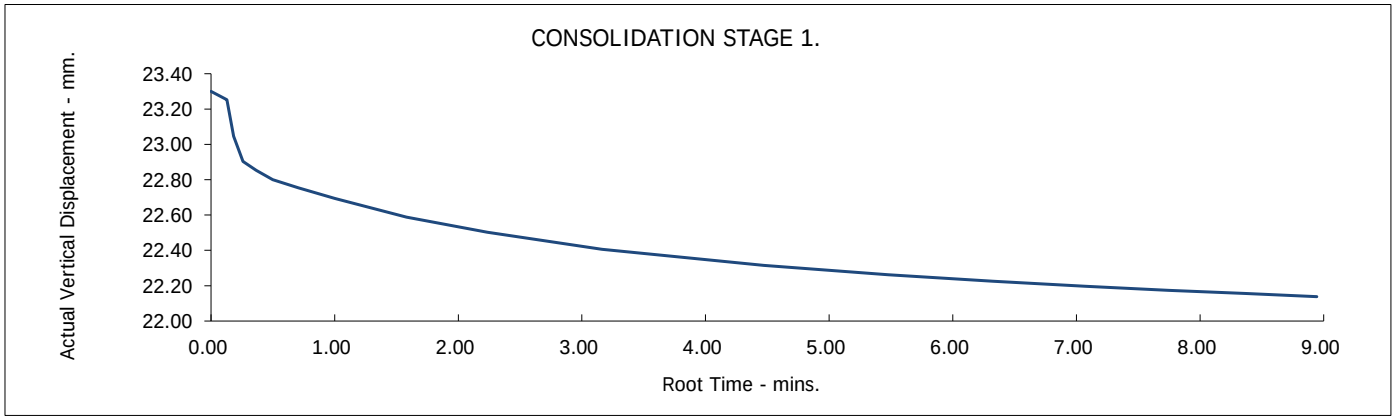


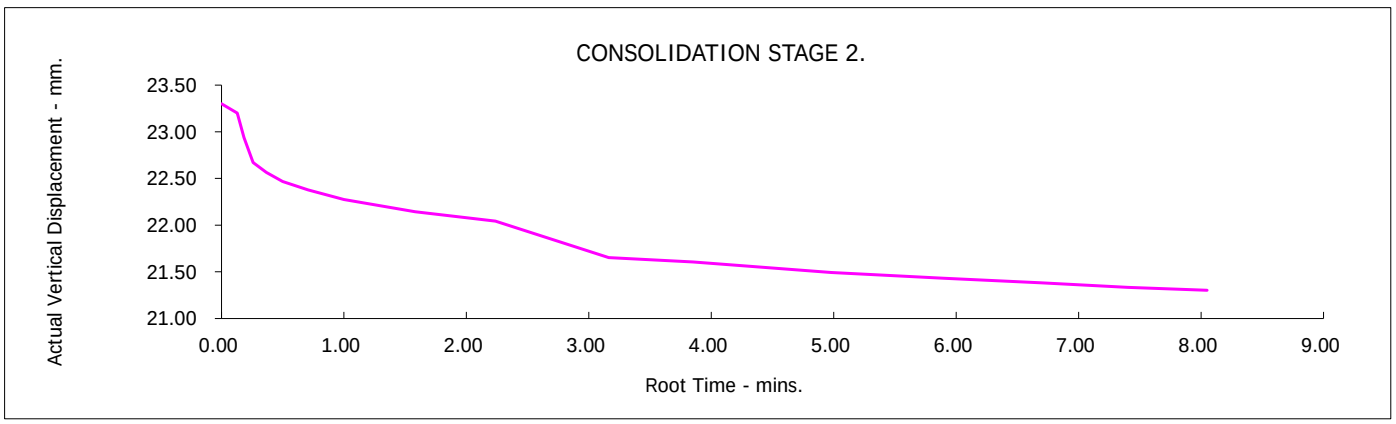
Contract No.:
67181

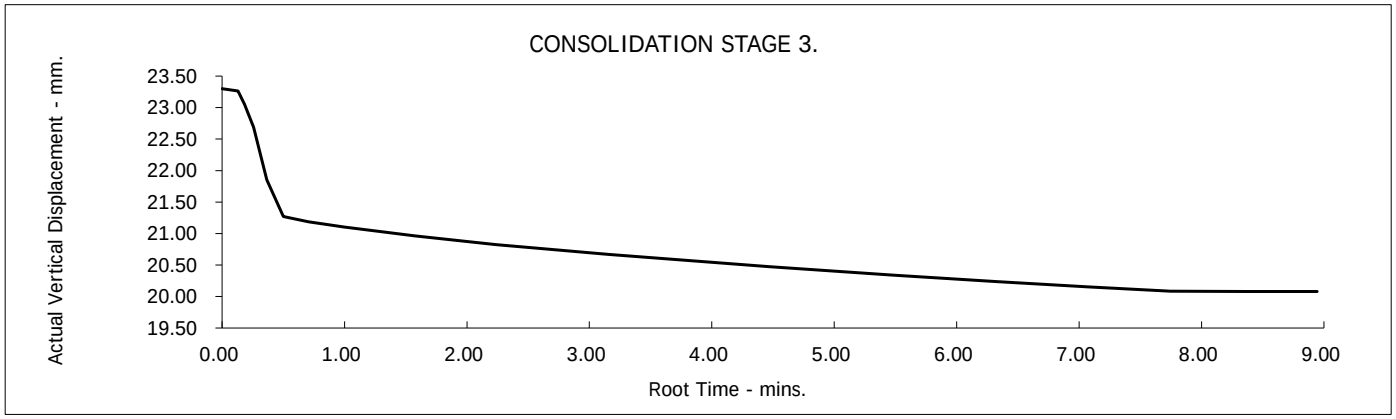
Global Centre of Rail Excellence Stage 2 (34)

Client Ref Number:
G23012

Borehole Number:	S2-BH201	Depth from (m):	1.50
Sample Number :	105	Depth to (m):	4.00







UKAS TESTING 2788

Global Centre of Rail Excellence Stage 2 (34)

Contract No.: **67181**

Client Ref Number: **G23012**

Test Report: MS DIRECT SHEARBOX TEST.BS1377:Part 7:4.5 :1990.

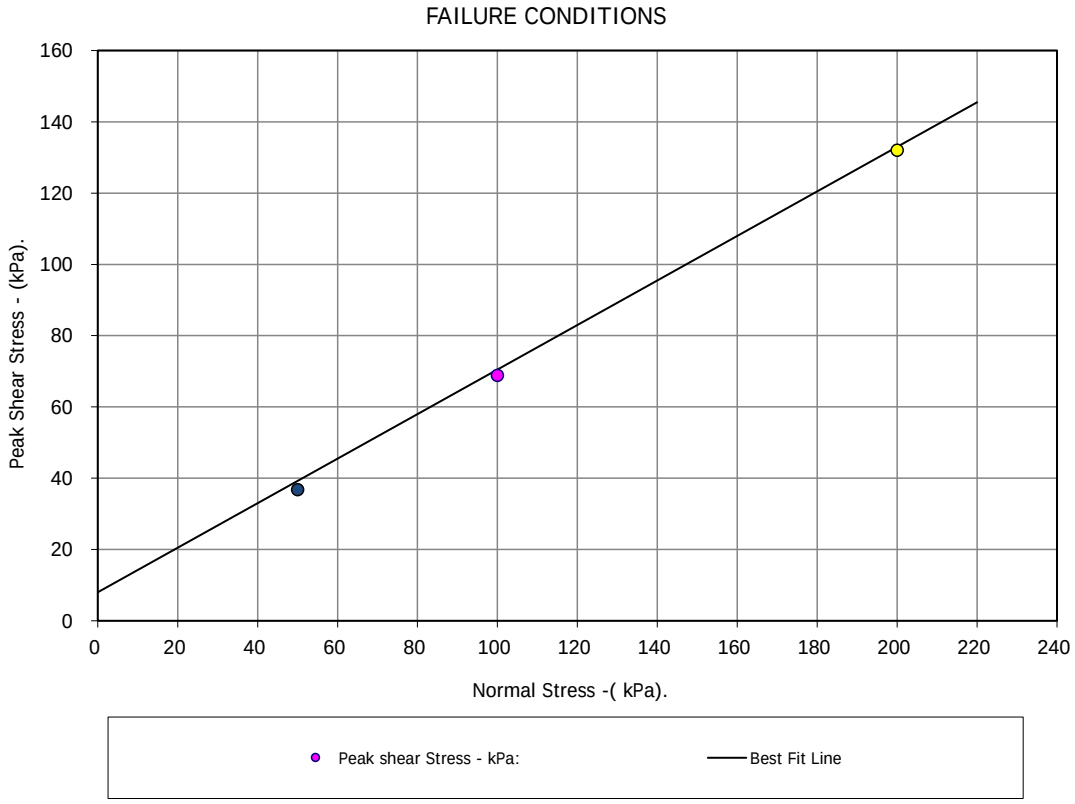
Borehole Number:	S2-BH201	Depth from (m):	6.00
Sample Number :	113.0	Depth to (m):	7.90

Sample Type:	B
Particle Density - Mg/m3:	2.65 (Assumed)
Specimen Tested:	Submerged, Remoulded (Light Tamping) Material above 2mm removed.

Sample Description:
Brown gravelly CLAY

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	23.30	23.30	23.30
Length - mm:	60.00	60.00	60.00
Moisture Content - %:	9.2	9.2	9.2
Bulk Density - Mg/m3:	1.83	1.83	1.83
Dry Density - Mg/m3:	1.68	1.68	1.68
Voids Ratio:	0.5796	0.5791	0.5807
Degree of Saturation - %:	41.93	41.96	41.85
Normal Pressure- kPa	50	100	200
Consolidation			
Consolidated Height - mm:	22.14	21.12	20.44
Shear			
Rate of Horizontal Displacement (mm/min)	0.200	0.200	0.200
Horizontal Displacement at Peak Shear Stress (mm)	4.96	5.13	8.02
Peak shear Stress - kPa:	37	69	132

PEAK	
Angle of Shearing Resistance:(~~θ~~)	**32.0**
Effective Cohesion - kPa:	**8.0**

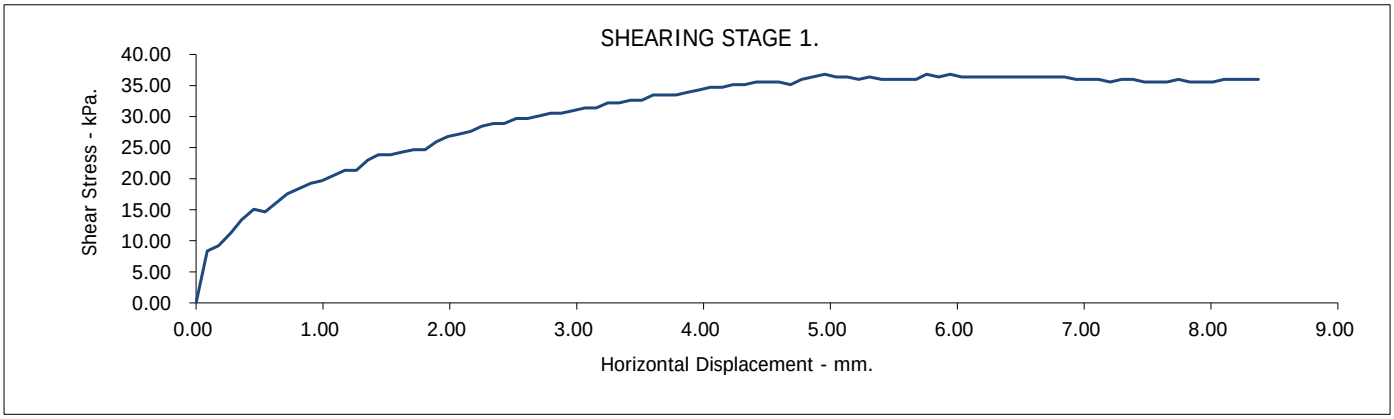


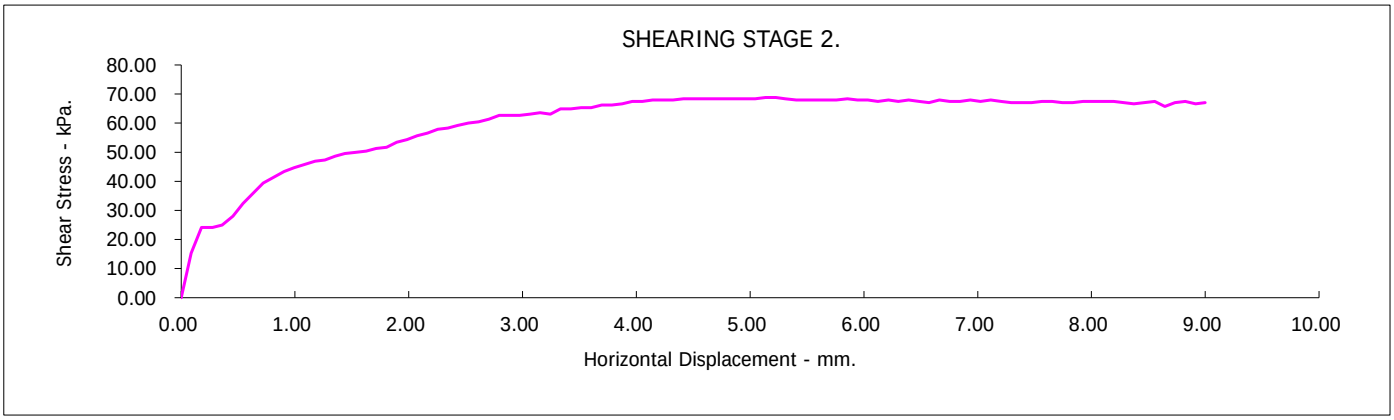
Contract No.:
67181

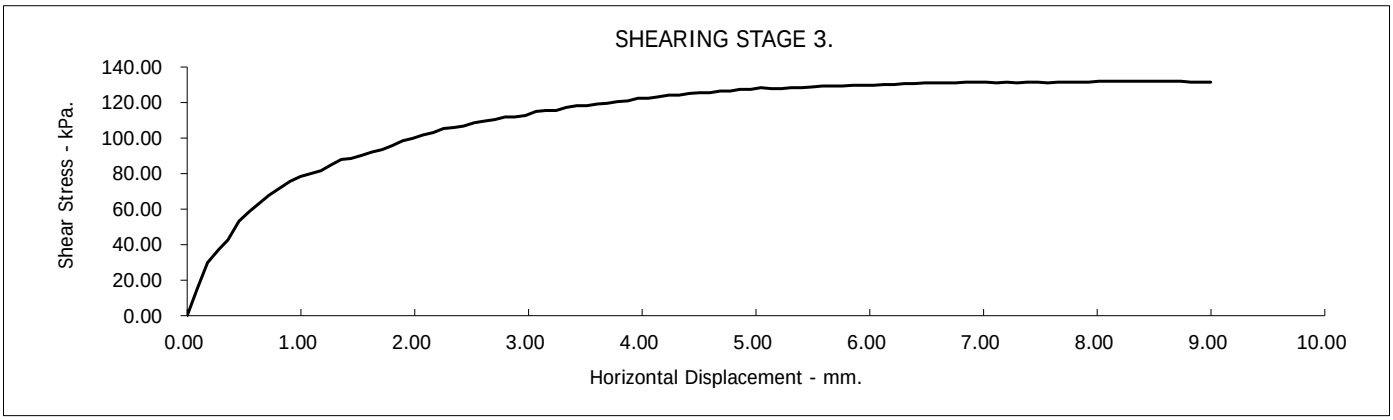
Global Centre of Rail Excellence Stage 2 (34)

Client Ref Number:
G23012

Borehole Number:	S2-BH201	Depth from (m):	6.00
Sample Number :	113	Depth to (m):	7.90







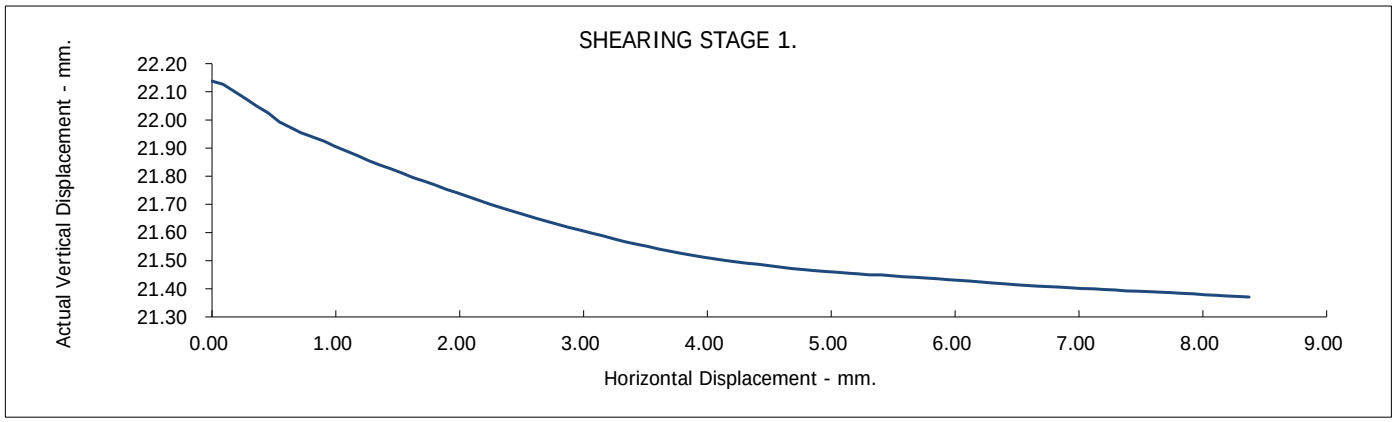
Contract No.:
67181

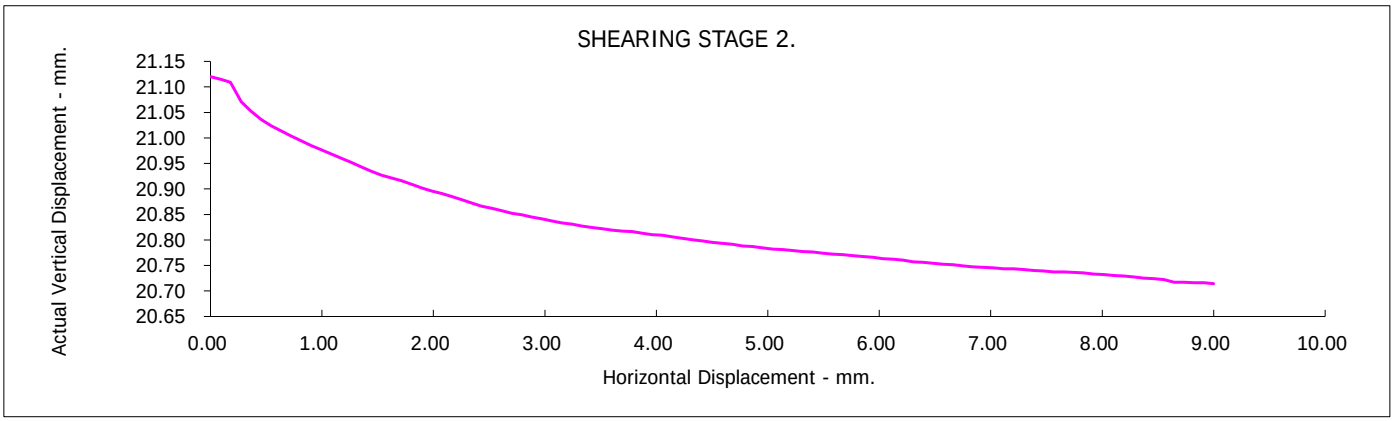
Global Centre of Rail Excellence Stage 2 (34)

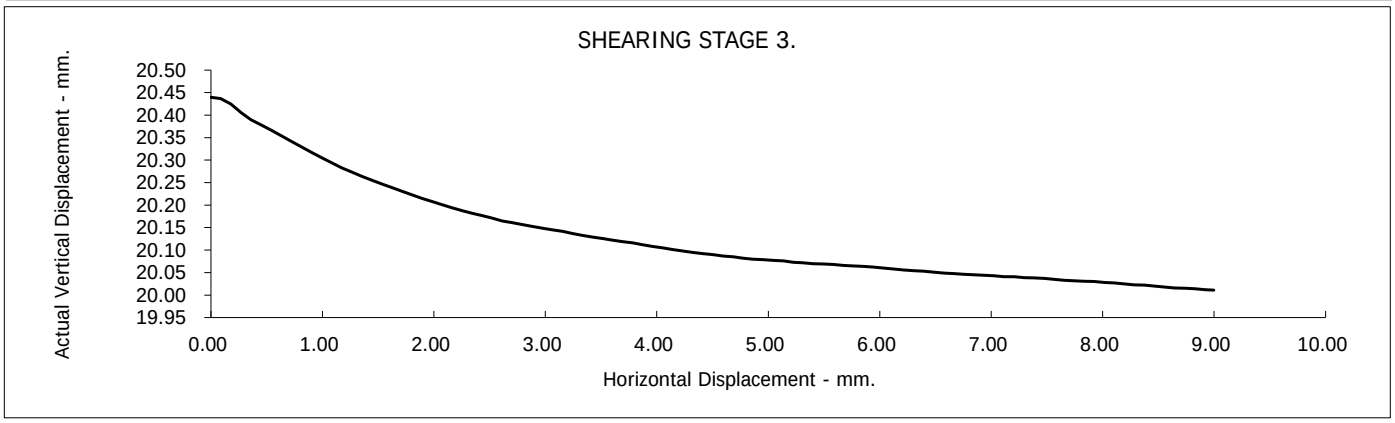
Client Ref Number:
G23012

Figure.

Borehole Number:	S2-BH201	Depth from (m):	6.00
Sample Number :	113	Depth to (m):	7.90





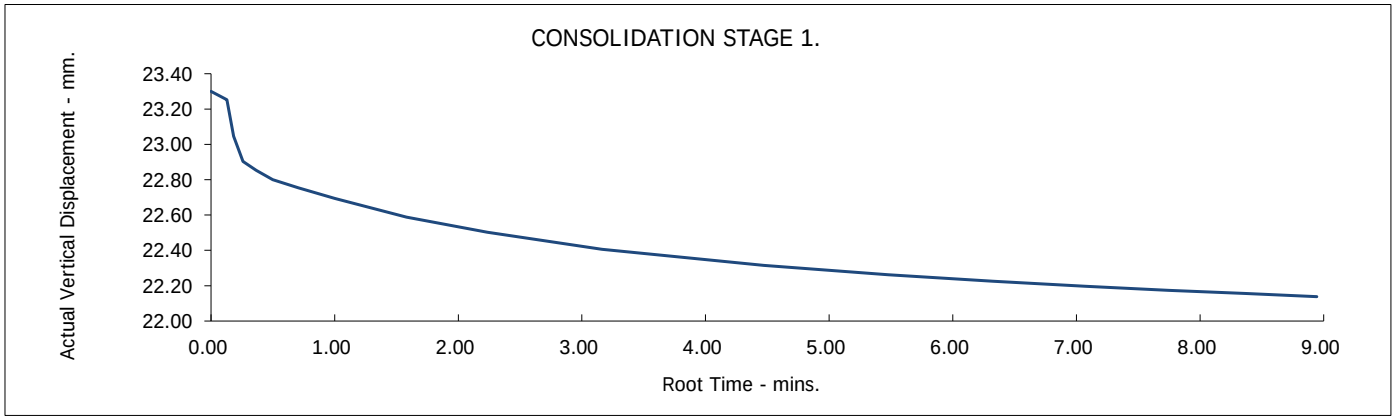


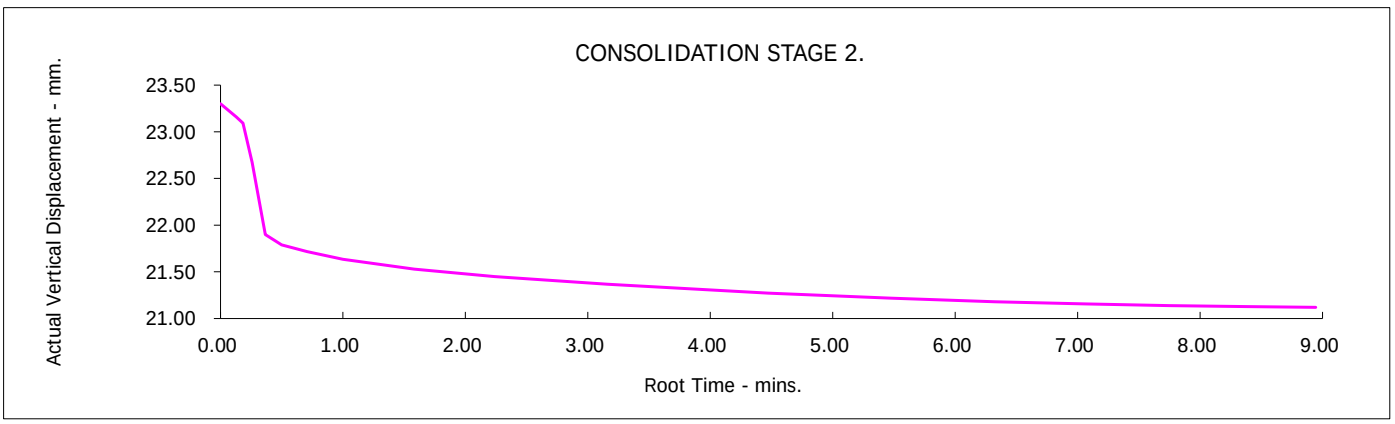
Contract No.:
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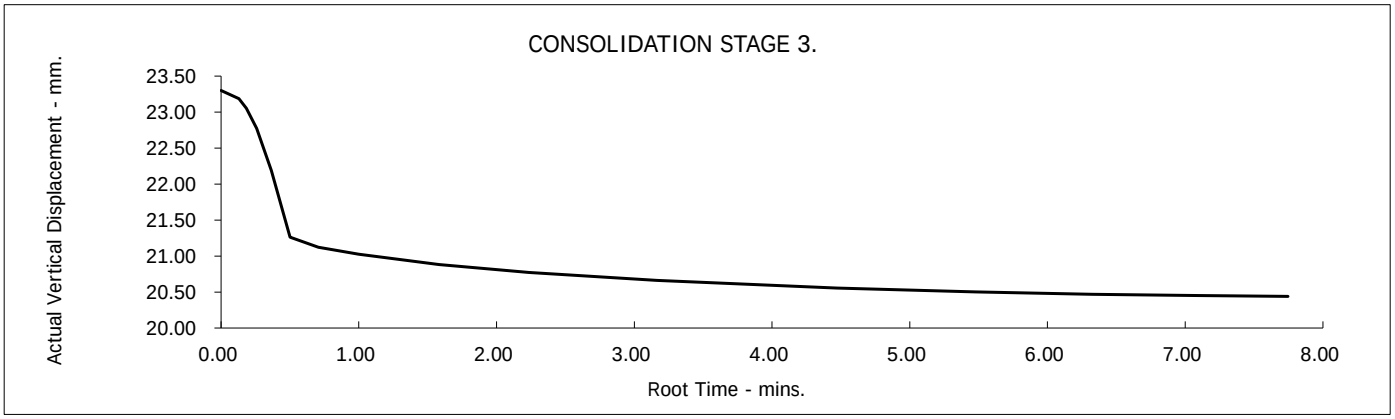
Global Centre of Rail Excellence Stage 2 (34)

Client Ref Number:
G23012

Borehole Number:	S2-BH201	Depth from (m):	6.00
Sample Number :	113	Depth to (m):	7.90







UKAS TESTING 2788

Global Centre of Rail Excellence Stage 2 (34)

Contract No.: **67181**

Client Ref Number: **G23012**

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	**Determination of Unconfined Compressive Strength** **ISRM Suggested Methods Vol 16, No. 2, pp. 135-140 1979**	
Contract Number	67181	
Project Name	Global Centre of Rail Excellence Stage 2 (34)	
Sample Preperation	Sawing and Grinding	
Date Tested	22/06/2023	

Hole Reference	Depth (m)			Diameter	Length	Initial Mass	Moisture Content	Bulk Density	Dry Density	Load Failure	Maximum Strength	Type of Failure
S2-BH201	10.37		10.53	81.5	155.2	2125.4	1.4	2.62	2.59	88.2	16.9	Multiple Fracture

Key	Reported As
Diameter	mm
Length	mm
Initial Mass	g
Moisture Content	%
Bulk Density	Mg/m^3
Dry Density	Mg/m^3
Load Failure	kN
Maximum Strength	MPa

Operator
Julian Jones

Point Load Test

The complete ISRM suggested methods for rock characterization, testing and monitoring 1974-2006 Determining Point Load Strength

Contract Number	67181
Project Name	Global Centre of Rail Excellence Stage 2 (34)
Sample Type	Core
Date Tested	22/06/2023
	*Please note that GSTL is not accredited for the water content of rock

Hole Reference	Depth (m)			Sample No	Test Type		Width	Platen Seperation	Failure Load	Equivalent Diameter	Point Load	Size Factor	Point Load Index	Moisture Content	Description	Angle Between Plane of Anisotropy & Core Axis	Type of Anisotropy (Bedding or Cleavage)
					d / a / b / i	I //											
S2-BH201	9.50	-	9.65		d			81	1.43		0.22	1.24	0.27	1.5	SILTSTONE		
S2-BH201	11.60	-	11.78		a		81	83	8.24	92.52	0.96	1.32	1.27	1.2	SILTSTONE		
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Key	Reported As
Width	(W) mm
Platen Separation	(D) mm
Failure Load	(P) kN
Equivalent Diameter	(De) mm
Point Load	(Is) MPa
Size Factor	(F)
Point Load Index	(Is(50)) MPa
Moisture Content	%
Description	SC

Operator
Julian Jones

Appendix V

Geoenvironmental and Geochemical Testing

Eurofins Chemtest Lab Report **23-10508, 23-10933, 23-10937, 23-10938, 23-11153, 23-11162, 23-11164, 23-11337, 23-11497, 23-11527, 23-11739, 23-11742, 23-11744, 23-11973, 23-11978, 23-11982, 23-12238, 23-12184, 23-12238, 23-12253, 23-12341, 23-12351, 23-12584, 23-12605, 23-12807, 23-12817, 23-12820, 23-12979, 23-12986, 23-13112, 23-13121, 23-13130, 23-13139, 23-13145, 23-13152, 23-13164, 23-13166, 23-13168, 23-13171, 23-13172, 23-13175, 23-13342, 23-13350, 23-13505, 23-13660, 23-13671, 23-13897, 23-13898, 23-13899, 23-14037, 23-14046, 23-14056, 23-14214, 23-14257, 23-14419, 23-14480, 23-14650, 23-14845, 23-14846, 23-14849, 23-14985, 23-14988, 23-15249, 23-15250, 23-15296, 23-15303, 23-15372, 23-15400, 23-15565, 23-15691, 23-15699, 23-15766, 23-15768, 23-16018, 23-16084, 23-16331, 23-16333, 23-16504,**

JACKSON GEO SERVICES

23-16508, 23-16590, 23-16745, 23-16751, 23-17016, 23-17197, 23-17206, 23-17272, 23-17431, 23-17615,23-17704, 23-17728, 23-18808, 23-18986, 23-19129, 23-19255, 23-19715, 23-19753, 23-20056, 23-20137, 23-20588, 23-20780, 23-20997, 23-1000 and 23-21003

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Amended Report

Report No.:	23-10508-2		
Initial Date of Issue:	27-Apr-2023	**Date of Re-Issue:**	28-Apr-2023
Client	Jackson Geo Services		
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA		
Contact(s):	Adam Putt James Power		
Project	G23012 Gloabal Centre of Rail Excellence (GCRE) Phase 2		
Quotation No.:	Q22-29781	**Date Received:**	30-Mar-2023
Order No.:		**Date Instructed:**	03-Apr-2023
No. of Samples:	2		
Turnaround (Wkdays):	7	**Results Due:**	13-Apr-2023
Date Approved:	27-Apr-2023		
Approved By:			
Details:	Stuart Henderson, Technical Manager		

Results - Leachate

Project: G23012 Gloabal Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services				**Chemtest Job No.:**		23-10508
Quotation No.: Q22-29781				**Chemtest Sample ID.:**		1615654
Order No.:				Client Sample Ref.:		1
				Client Sample ID.:		#2922727406450001
				Sample Location:		S2-BH220
				Sample Type:		SOIL
				Top Depth (m):		0.20
				Bottom Depth (m):		0.30
				Date Sampled:		29-Mar-2023
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**	
pH	U	1010	10:1		N/A	6.2
Sulphate	U	1220	10:1	mg/l	1.0	9.5
Cyanide (Total)	U	1300	10:1	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	10:1	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1455	10:1	µg/l	0.20	0.60
Cadmium (Dissolved)	U	1455	10:1	µg/l	0.11	< 0.11
Chromium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Copper (Dissolved)	U	1455	10:1	µg/l	0.50	1.2
Mercury (Dissolved)	U	1455	10:1	µg/l	0.05	< 0.05
Nickel (Dissolved)	U	1455	10:1	µg/l	0.50	0.82
Lead (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Selenium (Dissolved)	U	1455	10:1	µg/l	0.50	1.2
Vanadium (Dissolved)	U	1455	10:1	µg/l	0.50	0.54
Zinc (Dissolved)	U	1455	10:1	µg/l	2.5	3.7
Chromium (Hexavalent)	U	1490	10:1	µg/l	20	< 20
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030

Results - Soil

Project: G23012 Gloabal Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services			**Chemtest Job No.:**		23-10508	23-10508
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1615654	1615656
Order No.:			Client Sample Ref.:		1	4
			Client Sample ID.:		#2922727406450001	#2922727406450004
			Sample Location:		S2-BH220	S2-BH220
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.20	0.90
			Bottom Depth (m):		0.30	1.10
			Date Sampled:		29-Mar-2023	29-Mar-2023
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Moisture	N	2030	%	0.020	7.7	8.0
pH	M	2010		4.0	9.0	7.2
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	0.40	0.73
Sulphate (2:1 Water Soluble) as SO4 mg/l	M	2120	mg/l	10.000	100	< 10
Cyanide (Free)	M	2300	mg/kg	0.50	< 0.50	< 0.50
Cyanide (Total)	M	2300	mg/kg	0.50	< 0.50	< 0.50
Arsenic	M	2455	mg/kg	0.5	12	6.9
Cadmium	M	2455	mg/kg	0.10	0.26	0.21
Chromium	M	2455	mg/kg	0.5	8.4	7.0
Copper	M	2455	mg/kg	0.50	45	30
Mercury	M	2455	mg/kg	0.05	0.08	0.05
Nickel	M	2455	mg/kg	0.50	48	40
Lead	M	2455	mg/kg	0.50	28	18
Selenium	M	2455	mg/kg	0.25	1.0	0.65
Vanadium	U	2455	mg/kg	0.5	12	10
Zinc	M	2455	mg/kg	0.50	130	100
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50
Aliphatic VPH >C5-C6	M	2780	mg/kg	0.05	< 0.05	< 0.05
Aliphatic VPH >C6-C7	M	2780	mg/kg	0.05	< 0.05	< 0.05
Aliphatic VPH >C7-C8	M	2780	mg/kg	0.05	< 0.05	< 0.05
Aliphatic VPH >C8-C10	M	2780	mg/kg	0.05	< 0.05	< 0.05
Total Aliphatic VPH >C5-C10	M	2780	mg/kg	0.25	< 0.25	< 0.25
Aliphatic EPH >C10-C12	M	2690	mg/kg	2.00	< 2.0	< 2.0
Aliphatic EPH >C12-C16	M	2690	mg/kg	1.00	< 1.0	< 1.0
Aliphatic EPH >C16-C21	M	2690	mg/kg	2.00	< 2.0	< 2.0
Aliphatic EPH >C21-C35	M	2690	mg/kg	3.00	< 3.0	< 3.0
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00	< 10	< 10
Total Aliphatic EPH >C10-C35	M	2690	mg/kg	5.00	< 5.0	< 5.0
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00	< 10	< 10
Aromatic VPH >C5-C7	M	2780	mg/kg	0.05	< 0.05	< 0.05
Aromatic VPH >C7-C8	M	2780	mg/kg	0.05	< 0.05	< 0.05
Aromatic VPH >C8-C10	M	2780	mg/kg	0.05	< 0.05	< 0.05
Total Aromatic VPH >C5-C10	M	2780	mg/kg	0.25	< 0.25	< 0.25
Aromatic EPH >C10-C12	M	2690	mg/kg	1.00	< 1.0	< 1.0
Aromatic EPH >C12-C16	M	2690	mg/kg	1.00	< 1.0	< 1.0

Results - Soil

Project: G23012 Gloabal Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services			**Chemtest Job No.:**		23-10508	23-10508
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1615654	1615656
Order No.:			Client Sample Ref.:		1	4
			Client Sample ID.:		#2922727406450001	#2922727406450004
			Sample Location:		S2-BH220	S2-BH220
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.20	0.90
			Bottom Depth (m):		0.30	1.10
			Date Sampled:		29-Mar-2023	29-Mar-2023
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Aromatic EPH >C16-C21	N	2690	mg/kg	2.00	< 2.0	< 2.0
Aromatic EPH >C21-C35	M	2690	mg/kg	2.00	2.8	< 2.0
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00	< 1.0	< 1.0
Total Aromatic EPH >C10-C35	M	2690	mg/kg	5.00	< 5.0	< 5.0
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00	< 10	< 10
Total VPH >C5-C10	M	2780	mg/kg	0.50	< 0.50	< 0.50
Total EPH >C10-C35	M	2690	mg/kg	10.00	< 10	< 10
Total EPH >C10-C40	N	2690	mg/kg	10.00	< 10	< 10
Organic Matter	M	2625	%	0.40	8.5	3.9
Benzene	M	2760	µg/kg	1.0	< 1.0	< 1.0
Toluene	M	2760	µg/kg	1.0	< 1.0	< 1.0
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0
o-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0
Naphthalene	M	2800	mg/kg	0.10	< 0.10	0.15
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10
Acenaphthene	M	2800	mg/kg	0.10	< 0.10	< 0.10
Fluorene	M	2800	mg/kg	0.10	< 0.10	< 0.10
Phenanthrene	M	2800	mg/kg	0.10	< 0.10	< 0.10
Anthracene	M	2800	mg/kg	0.10	< 0.10	< 0.10
Fluoranthene	M	2800	mg/kg	0.10	< 0.10	< 0.10
Pyrene	M	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[a]anthracene	M	2800	mg/kg	0.10	< 0.10	< 0.10
Chrysene	M	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	M	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	M	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[a]pyrene	M	2800	mg/kg	0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2800	mg/kg	0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	M	2800	mg/kg	0.10	< 0.10	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	< 2.0	< 2.0
Total Phenols	M	2920	mg/kg	0.10	< 0.10	< 0.10

Results - 2 Stage WAC

Project: G23012 Gloabal Centre of Rail Excellence (GCRE) Phase 2

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	23-10508								
Chemtest Sample ID:	1615656								
Sample Ref:	4								
Sample ID:	#2922727406450004						**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample Location:	S2-BH220								
Top Depth(m):	0.90								
Bottom Depth(m):	1.10								
Sampling Date:	29-Mar-2023								
Determinand	**SOP**	**Accred.**	**Units**						
Total Organic Carbon	2625	M	%			2.3	3	5	6
Loss On Ignition	2610	M	%			4.3	--	--	10
Total BTEX	2760	M	mg/kg			< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg			< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg			< 10	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg			< 2.0	100	--	--
pH	2010	M				7.2	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg			0.013	--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0005	0.0006	0.0009	0.0062	0.5	2	25
Barium	1455	U	0.014	< 0.005	0.027	0.012	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0012	0.0011	0.0023	0.0010	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0003	0.0003	0.0005	0.0028	0.5	10	30
Nickel	1455	U	0.0008	0.0010	0.0015	0.0099	0.4	10	40
Lead	1455	U	< 0.0005	0.0007	< 0.0005	0.0059	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	0.0007	< 0.0005	0.0015	0.0007	0.1	0.5	7
Zinc	1455	U	0.005	0.006	0.011	0.057	4	50	200
Chloride	1220	U	1.4	< 1.0	< 10	< 10	800	15000	25000
Fluoride	1220	U	0.20	0.15	< 1.0	1.5	10	150	500
Sulphate	1220	U	14	1.3	28	24	1000	20000	50000
Total Dissolved Solids	1020	N	81	23	160	290	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	4.1	6.0	< 50	58	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	8.0

Leachate Test Information	
Leachant volume 1st extract/l	0.335
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.157

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C40	Acetone/Heptane extraction / GCxGC FID detection

Test Methods

SOP	Title	Parameters included	Method summary
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8-C10 Aromatics: >C5–C7,>C7-C8,>C8–C10	Water extraction / Headspace GCxGC FID detection
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge
650	Characterisation of Waste (Leaching WAC)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
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CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-10933-1
Initial Date of Issue:	28-Apr-2023
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt James Power
Project	G23012 Global Centre of Rail Excellence (GCRE) Phase 2
Quotation No.:	Q22-29781
Order No.:	
No. of Samples:	6
Turnaround (Wkdays):	7
Date Approved:	28-Apr-2023
Approved By:	
Details:	Stuart Henderson, Technical Manager

Date Received:	03-Apr-2023
Date Instructed:	03-Apr-2023
Results Due:	13-Apr-2023

Results - Leachate

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services				**Chemtest Job No.:**		23-10933	23-10933	23-10933
Quotation No.: Q22-29781				**Chemtest Sample ID.:**		1617210	1617212	1617214
Order No.:				Client Sample Ref.:		104	106	108
				Client Sample ID.:		#8324657165580009	#8324657165580011	#8324657165580013
				Sample Location:		S2-BH244	S2-BH244	S2-BH244
				Sample Type:		SOIL	SOIL	SOIL
				Top Depth (m):		1.00	5.30	8.30
				Bottom Depth (m):		1.20	5.50	8.50
				Date Sampled:		30-Mar-2023	30-Mar-2023	30-Mar-2023
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**			
pH	U	1010	10:1		N/A	7.3	6.9	6.7
Sulphate	U	1220	10:1	mg/l	1.0	1.3	3.7	2.9
Cyanide (Total)	U	1300	10:1	mg/l	0.050	< 0.050	< 0.050	< 0.050
Cyanide (Free)	U	1300	10:1	mg/l	0.050	< 0.050	< 0.050	< 0.050
Arsenic (Dissolved)	U	1455	10:1	µg/l	0.20	0.85	0.58	< 0.20
Cadmium (Dissolved)	U	1455	10:1	µg/l	0.11	< 0.11	< 0.11	< 0.11
Chromium (Dissolved)	U	1455	10:1	µg/l	0.50	0.69	< 0.50	0.60
Copper (Dissolved)	U	1455	10:1	µg/l	0.50	0.56	0.73	0.83
Mercury (Dissolved)	U	1455	10:1	µg/l	0.05	< 0.05	< 0.05	< 0.05
Nickel (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	< 0.50	0.71
Lead (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	< 0.50	< 0.50
Selenium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	0.98	0.69
Vanadium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	< 0.50	< 0.50
Zinc (Dissolved)	U	1455	10:1	µg/l	2.5	3.0	< 2.5	7.2
Chromium (Hexavalent)	U	1490	10:1	µg/l	20	< 20	< 20	< 20
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030	< 0.030	< 0.030

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services					**Chemtest Job No.:**	23-10933	23-10933	23-10933	23-10933	23-10933
Quotation No.: Q22-29781					**Chemtest Sample ID.:**	1617209	1617210	1617211	1617212	1617214	1617215
Order No.:					Client Sample Ref.:	103	104	105	106	108	2
					Client Sample ID.:	#8324657165580008	#8324657165580009	#8324657165580010	#8324657165580011	#8324657165580013	#136351866710002
					Sample Location:	S2-BH244	S2-BH244	S2-BH244	S2-BH244	S2-BH244	S2-BH246
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	0.50	1.00	1.80	5.30	8.30	0.20
					Bottom Depth (m):	0.70	1.20	2.00	5.50	8.50	0.30
					Date Sampled:	30-Mar-2023	30-Mar-2023	30-Mar-2023	30-Mar-2023	30-Mar-2023	30-Mar-2023
Determinand	**Accred.**	**SOP**	**Units**	**LOD**							
Moisture	N	2030	%	0.020		5.8	6.7	6.8	26	11	3.0
pH	U	2010		4.0		8.7	9.2	8.5	7.8	7.8	8.8
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40		< 0.40	< 0.40	0.58	0.44	< 0.40	< 0.40
Sulphate (2:1 Water Soluble) as SO4 mg/l	U	2120	mg/l	10.000		< 10	46	< 10	63	< 10	< 10
Cyanide (Free)	U	2300	mg/kg	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Arsenic	U	2455	mg/kg	0.5		16	6.4	15	11	7.7	10
Cadmium	U	2455	mg/kg	0.10		0.18	0.17	0.14	0.12	0.13	0.64
Chromium	U	2455	mg/kg	0.5		6.2	7.6	13	13	16	8.7
Copper	U	2455	mg/kg	0.50		45	40	32	29	38	50
Mercury	U	2455	mg/kg	0.05		0.21	0.09	0.09	< 0.05	< 0.05	0.06
Nickel	U	2455	mg/kg	0.50		35	26	35	20	39	15
Lead	U	2455	mg/kg	0.50		30	33	40	18	18	25
Selenium	U	2455	mg/kg	0.25		1.3	2.3	0.94	0.73	0.68	0.77
Vanadium	U	2455	mg/kg	0.5		9.2	9.5	19	14	18	8.9
Zinc	U	2455	mg/kg	0.50		72	78	59	59	100	72
Chromium (Hexavalent)	N	2490	mg/kg	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Aliphatic VPH >C5-C6	U	2780	mg/kg	0.05		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C6-C7	U	2780	mg/kg	0.05		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C7-C8	U	2780	mg/kg	0.05		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C8-C10	U	2780	mg/kg	0.05		< 0.05	< 0.05	0.98	< 0.05	< 0.05	< 0.05
Total Aliphatic VPH >C5-C10	U	2780	mg/kg	0.25		< 0.25	< 0.25	0.98	< 0.25	< 0.25	< 0.25
Aliphatic EPH >C10-C12	U	2690	mg/kg	2.00		2.1	2.1	2.4	3.1	2.4	2.5
Aliphatic EPH >C12-C16	U	2690	mg/kg	1.00		3.1	3.1	5.0	3.8	2.7	3.8
Aliphatic EPH >C16-C21	U	2690	mg/kg	2.00		2.8	3.0	5.0	3.4	2.6	2.7
Aliphatic EPH >C21-C35	U	2690	mg/kg	3.00		4.8	7.4	13	5.7	5.3	4.2
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00		< 10	< 10	< 10	< 10	< 10	< 10
Total Aliphatic EPH >C10-C35	U	2690	mg/kg	5.00		13	16	25	16	13	13
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00		13	16	25	16	13	13
Aromatic VPH >C5-C7	U	2780	mg/kg	0.05		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C7-C8	U	2780	mg/kg	0.05		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C8-C10	U	2780	mg/kg	0.05		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total Aromatic VPH >C5-C10	U	2780	mg/kg	0.25		< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25
Aromatic EPH >C10-C12	U	2690	mg/kg	1.00		12	13	27	17	12	12
Aromatic EPH >C12-C16	U	2690	mg/kg	1.00		19	22	98	27	18	18

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services					**Chemtest Job No.:**	23-10933	23-10933	23-10933	23-10933	23-10933
Quotation No.: Q22-29781					**Chemtest Sample ID.:**	1617209	1617210	1617211	1617212	1617214	1617215
Order No.:					Client Sample Ref.:	103	104	105	106	108	2
					Client Sample ID.:	#8324657165580008	#8324657165580009	#8324657165580010	#8324657165580011	#8324657165580013	#136351866710002
					Sample Location:	S2-BH244	S2-BH244	S2-BH244	S2-BH244	S2-BH244	S2-BH246
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	0.50	1.00	1.80	5.30	8.30	0.20
					Bottom Depth (m):	0.70	1.20	2.00	5.50	8.50	0.30
					Date Sampled:	30-Mar-2023	30-Mar-2023	30-Mar-2023	30-Mar-2023	30-Mar-2023	30-Mar-2023
Determinand	**Accred.**	**SOP**	**Units**	**LOD**							
Aromatic EPH >C16-C21	N	2690	mg/kg	2.00		16	22	140	25	20	24
Aromatic EPH >C21-C35	U	2690	mg/kg	2.00		< 2.0	< 2.0	86	4.5	2.1	6.4
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00		8.7	8.0	10	11	9.1	8.0
Total Aromatic EPH >C10-C35	U	2690	mg/kg	5.00		49	58	350	73	52	60
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00		57	66	360	84	61	68
Total VPH >C5-C10	U	2780	mg/kg	0.50		< 0.50	< 0.50	0.98	< 0.50	< 0.50	< 0.50
Total EPH >C10-C35	U	2690	mg/kg	10.00		61	74	380	89	65	73
Total EPH >C10-C40	N	2690	mg/kg	10.00		70	82	390	99	74	81
Organic Matter	U	2625	%	0.40		39	63	27	5.5	1.5	19
Benzene	U	2760	µg/kg	1.0		1.7	< 1.0	1.3	< 1.0	< 1.0	< 1.0
Toluene	U	2760	µg/kg	1.0		< 1.0	< 1.0	2.7	2.2	1.2	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0		< 1.0	< 1.0	1.3	< 1.0	< 1.0	< 1.0
Naphthalene	U	2800	mg/kg	0.10		0.22	3.5	2.9	21	0.20	0.81
Acenaphthylene	N	2800	mg/kg	0.10		< 0.10	< 0.10	0.27	0.26	< 0.10	< 0.10
Acenaphthene	U	2800	mg/kg	0.10		< 0.10	3.2	3.7	19	< 0.10	0.15
Fluorene	U	2800	mg/kg	0.10		< 0.10	2.6	1.5	15	< 0.10	0.19
Phenanthrene	U	2800	mg/kg	0.10		0.45	10	22	49	0.36	1.4
Anthracene	U	2800	mg/kg	0.10		0.11	3.8	3.9	7.7	< 0.10	0.40
Fluoranthene	U	2800	mg/kg	0.10		0.75	5.2	14	19	0.16	1.9
Pyrene	U	2800	mg/kg	0.10		0.75	3.9	10	14	0.14	1.3
Benzo[a]anthracene	U	2800	mg/kg	0.10		0.30	< 0.10	3.0	4.0	< 0.10	0.59
Chrysene	U	2800	mg/kg	0.10		0.41	0.81	2.8	3.6	< 0.10	0.60
Benzo[b]fluoranthene	U	2800	mg/kg	0.10		0.48	1.0	4.0	3.2	< 0.10	1.1
Benzo[k]fluoranthene	U	2800	mg/kg	0.10		0.15	0.34	1.0	1.0	< 0.10	0.43
Benzo[a]pyrene	U	2800	mg/kg	0.10		0.42	0.66	2.7	2.1	< 0.10	0.63
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10		0.31	< 0.10	1.6	0.95	< 0.10	0.51
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10	0.21	< 0.10	0.34
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10		< 0.10	< 0.10	1.9	0.83	< 0.10	0.54
Total Of 16 PAH's	N	2800	mg/kg	2.0		4.4	35	75	160	< 2.0	11
Total Phenols	U	2920	mg/kg	0.10		< 0.10	< 0.10	0.43	< 0.10	< 0.10	< 0.10

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35–C40	Acetone/Heptane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8-C10 Aromatics: >C5–C7,>C7-C8,>C8–C10	Water extraction / Headspace GCxGC FID detection
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS

Test Methods

SOP	Title	Parameters included	Method summary
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-10937-1
Initial Date of Issue:	28-Apr-2023
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt James Power
Project	G23012 Global Centre of Rail Excellence (GCRE) Phase 2
Quotation No.:	Q22-29781
Date Received:	03-Apr-2023
Order No.:	
Date Instructed:	03-Apr-2023
No. of Samples:	3
Turnaround (Wkdays):	7
Results Due:	13-Apr-2023
Date Approved:	28-Apr-2023
Approved By:	



Details:	Stuart Henderson, Technical Manager

Results - Leachate

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services				**Chemtest Job No.:**		23-10937
Quotation No.: Q22-29781				**Chemtest Sample ID.:**		1617231
Order No.:				Client Sample Ref.:		14
				Client Sample ID.:		#99990220973 10014
				Sample Location:		S2-TP276
				Sample Type:		SOIL
				Top Depth (m):		3.90
				Bottom Depth (m):		4.00
				Date Sampled:		30-Mar-2023
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**	
pH	U	1010	10:1		N/A	6.8
Sulphate	U	1220	10:1	mg/l	1.0	2.7
Cyanide (Total)	U	1300	10:1	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	10:1	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1455	10:1	µg/l	0.20	0.32
Cadmium (Dissolved)	U	1455	10:1	µg/l	0.11	< 0.11
Chromium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Copper (Dissolved)	U	1455	10:1	µg/l	0.50	0.75
Mercury (Dissolved)	U	1455	10:1	µg/l	0.05	< 0.05
Nickel (Dissolved)	U	1455	10:1	µg/l	0.50	0.61
Lead (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Selenium (Dissolved)	U	1455	10:1	µg/l	0.50	0.71
Vanadium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Zinc (Dissolved)	U	1455	10:1	µg/l	2.5	5.3
Chromium (Hexavalent)	U	1490	10:1	µg/l	20	< 20
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services			**Chemtest Job No.:**		23-10937	23-10937	23-10937
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1617226	1617228	1617231
Order No.:			Client Sample Ref.:		2	5	14
			Client Sample ID.:		#99990220973 10002	#99990220973 10005	#99990220973 10014
			Sample Location:		S2-TP276	S2-TP276	S2-TP276
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		0.30	0.90	3.90
			Bottom Depth (m):		0.40	1.00	4.00
			Date Sampled:		30-Mar-2023	30-Mar-2023	30-Mar-2023
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Moisture	N	2030	%	0.020	9.6	7.0	6.1
pH	M	2010		4.0	8.7	8.8	8.4
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	< 0.40	0.43	< 0.40
Sulphate (2:1 Water Soluble) as SO4 mg/l	M	2120	mg/l	10.000	< 10	18	47
Cyanide (Free)	M	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	M	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Arsenic	M	2455	mg/kg	0.5	21	12	9.7
Cadmium	M	2455	mg/kg	0.10	0.15	0.10	0.16
Chromium	M	2455	mg/kg	0.5	5.2	6.2	2.2
Copper	M	2455	mg/kg	0.50	59	59	45
Mercury	M	2455	mg/kg	0.05	0.32	0.25	0.34
Nickel	M	2455	mg/kg	0.50	28	27	32
Lead	M	2455	mg/kg	0.50	40	62	49
Selenium	M	2455	mg/kg	0.25	3.4	3.4	2.5
Vanadium	U	2455	mg/kg	0.5	7.6	7.1	3.9
Zinc	M	2455	mg/kg	0.50	64	45	54
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Aliphatic VPH >C5-C6	M	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C6-C7	M	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C7-C8	M	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C8-C10	M	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Total Aliphatic VPH >C5-C10	M	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25
Aliphatic EPH >C10-C12	M	2690	mg/kg	2.00	2.5	2.4	< 2.0
Aliphatic EPH >C12-C16	M	2690	mg/kg	1.00	3.3	3.0	3.4
Aliphatic EPH >C16-C21	M	2690	mg/kg	2.00	2.5	2.6	2.3
Aliphatic EPH >C21-C35	M	2690	mg/kg	3.00	5.2	4.5	4.0
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00	< 10	< 10	< 10
Total Aliphatic EPH >C10-C35	M	2690	mg/kg	5.00	14	12	12
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00	14	12	12
Aromatic VPH >C5-C7	M	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C7-C8	M	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C8-C10	M	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Total Aromatic VPH >C5-C10	M	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25
Aromatic EPH >C10-C12	M	2690	mg/kg	1.00	12	12	8.2
Aromatic EPH >C12-C16	M	2690	mg/kg	1.00	17	19	19

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services			**Chemtest Job No.:**		23-10937	23-10937	23-10937
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1617226	1617228	1617231
Order No.:			Client Sample Ref.:		2	5	14
			Client Sample ID.:		#99990220973 10002	#99990220973 10005	#99990220973 10014
			Sample Location:		S2-TP276	S2-TP276	S2-TP276
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		0.30	0.90	3.90
			Bottom Depth (m):		0.40	1.00	4.00
			Date Sampled:		30-Mar-2023	30-Mar-2023	30-Mar-2023
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Aromatic EPH >C16-C21	N	2690	mg/kg	2.00	18	17	19
Aromatic EPH >C21-C35	M	2690	mg/kg	2.00	3.5	3.3	6.2
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00	9.3	9.3	8.2
Total Aromatic EPH >C10-C35	M	2690	mg/kg	5.00	51	52	53
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00	60	61	61
Total VPH >C5-C10	M	2780	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Total EPH >C10-C35	M	2690	mg/kg	10.00	64	64	64
Total EPH >C10-C40	N	2690	mg/kg	10.00	74	73	73
Organic Matter	M	2625	%	0.40	26	32	47
Benzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Toluene	M	2760	µg/kg	1.0	< 1.0	< 1.0	1.4
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
o-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Naphthalene	M	2800	mg/kg	0.10	0.34	0.31	1.6
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	M	2800	mg/kg	0.10	< 0.10	< 0.10	0.10
Fluorene	M	2800	mg/kg	0.10	< 0.10	< 0.10	0.41
Phenanthrene	M	2800	mg/kg	0.10	0.34	< 0.10	0.91
Anthracene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Pyrene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[a]anthracene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Chrysene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	< 2.0	< 2.0	3.0
Total Phenols	M	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10

Results - 2 Stage WAC

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	23-10937								
Chemtest Sample ID:	1617228								
Sample Ref:	5								
Sample ID:	#9999022097310005								
Sample Location:	S2-TP276								
Top Depth(m):	0.90								
Bottom Depth(m):	1.00								
Sampling Date:	30-Mar-2023								
Determinand	**SOP**	**Accred.**	**Units**				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	M	%			18	3	5	6
Loss On Ignition	2610	M	%			28	--	--	10
Total BTEX	2760	M	mg/kg			< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg			< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg			150	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg			< 2.0	100	--	--
pH	2010	M				8.8	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg			0.013	--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0014	0.0008	0.0028	0.0083	0.5	2	25
Barium	1455	U	0.043	0.029	0.087	0.30	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0010	0.0008	0.0020	0.0079	0.5	10	70
Copper	1455	U	0.0027	0.0016	0.0054	0.0032	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0031	0.0008	0.0062	0.010	0.5	10	30
Nickel	1455	U	0.0006	< 0.0005	0.0011	0.0007	0.4	10	40
Lead	1455	U	< 0.0005	0.0007	< 0.0005	0.0060	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	0.005	0.006	0.011	0.059	4	50	200
Chloride	1220	U	< 1.0	< 1.0	< 10	< 10	800	15000	25000
Fluoride	1220	U	0.093	0.079	< 1.0	< 1.0	10	150	500
Sulphate	1220	U	2.5	< 1.0	< 10	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	51	21	100	250	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	4.0	2.8	< 50	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	7.0

Leachate Test Information	
Leachant volume 1st extract/l	0.337
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.206

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C40	Acetone/Heptane extraction / GCxGC FID detection

Test Methods

SOP	Title	Parameters included	Method summary
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8-C10 Aromatics: >C5–C7,>C7-C8,>C8–C10	Water extraction / Headspace GCxGC FID detection
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge
650	Characterisation of Waste (Leaching WAC)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-10938-1
Initial Date of Issue:	13-Apr-2023
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt James Power
Project	G23012 Global Centre of Rail Excellence (GCRE) Phase 2
Quotation No.:	Q22-29781
Order No.:	
No. of Samples:	2
Turnaround (Wkdays):	7
Date Approved:	13-Apr-2023
Approved By:	
Details:	Stuart Henderson, Technical Manager

Date Received:	03-Apr-2023
Date Instructed:	03-Apr-2023
Results Due:	13-Apr-2023

Results - Leachate

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services				**Chemtest Job No.:**		23-10938
Quotation No.: Q22-29781				**Chemtest Sample ID.:**		1617234
Order No.:				Client Sample Ref.:		4
				Client Sample ID.:		#87667198473 30004
				Sample Location:		S2-TP298
				Sample Type:		SOIL
				Top Depth (m):		0.90
				Bottom Depth (m):		1.00
				Date Sampled:		30-Mar-2023
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**	
pH	U	1010	10:1		N/A	6.6
Sulphate	U	1220	10:1	mg/l	1.0	1.3
Cyanide (Total)	U	1300	10:1	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	10:1	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1455	10:1	µg/l	0.20	0.98
Cadmium (Dissolved)	U	1455	10:1	µg/l	0.11	< 0.11
Chromium (Dissolved)	U	1455	10:1	µg/l	0.50	0.89
Copper (Dissolved)	U	1455	10:1	µg/l	0.50	2.2
Mercury (Dissolved)	U	1455	10:1	µg/l	0.05	< 0.05
Nickel (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Lead (Dissolved)	U	1455	10:1	µg/l	0.50	3.2
Selenium (Dissolved)	U	1455	10:1	µg/l	0.50	0.53
Vanadium (Dissolved)	U	1455	10:1	µg/l	0.50	1.1
Zinc (Dissolved)	U	1455	10:1	µg/l	2.5	5.5
Chromium (Hexavalent)	U	1490	10:1	µg/l	20	< 20
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services			**Chemtest Job No.:**		23-10938	23-10938
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1617232	1617234
Order No.:			Client Sample Ref.:		1	4
			Client Sample ID.:		#87667198473 30001	#87667198473 30004
			Sample Location:		S2-TP298	S2-TP298
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.20	0.90
			Bottom Depth (m):		0.30	1.00
			Date Sampled:		30-Mar-2023	30-Mar-2023
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Moisture	N	2030	%	0.020	10	15
pH	M	2010		4.0	8.4	8.2
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	< 0.40	< 0.40
Sulphate (2:1 Water Soluble) as SO4 mg/l	M	2120	mg/l	10.000	< 10	< 10
Cyanide (Free)	M	2300	mg/kg	0.50	< 0.50	< 0.50
Cyanide (Total)	M	2300	mg/kg	0.50	< 0.50	< 0.50
Arsenic	M	2455	mg/kg	0.5	19	11
Cadmium	M	2455	mg/kg	0.10	0.61	0.25
Chromium	M	2455	mg/kg	0.5	7.0	5.4
Copper	M	2455	mg/kg	0.50	66	42
Mercury	M	2455	mg/kg	0.05	0.22	0.21
Nickel	M	2455	mg/kg	0.50	22	16
Lead	M	2455	mg/kg	0.50	83	69
Selenium	M	2455	mg/kg	0.25	0.92	0.83
Vanadium	U	2455	mg/kg	0.5	13	10
Zinc	M	2455	mg/kg	0.50	100	66
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50
Aliphatic VPH >C5-C6	M	2780	mg/kg	0.05	< 0.05	< 0.05
Aliphatic VPH >C6-C7	M	2780	mg/kg	0.05	< 0.05	< 0.05
Aliphatic VPH >C7-C8	M	2780	mg/kg	0.05	< 0.05	< 0.05
Aliphatic VPH >C8-C10	M	2780	mg/kg	0.05	< 0.05	< 0.05
Total Aliphatic VPH >C5-C10	M	2780	mg/kg	0.25	< 0.25	< 0.25
Aliphatic EPH >C10-C12	M	2690	mg/kg	2.00	4.0	4.5
Aliphatic EPH >C12-C16	M	2690	mg/kg	1.00	4.0	5.2
Aliphatic EPH >C16-C21	M	2690	mg/kg	2.00	< 2.0	5.9
Aliphatic EPH >C21-C35	M	2690	mg/kg	3.00	< 3.0	8.7
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00	< 10	< 10
Total Aliphatic EPH >C10-C35	M	2690	mg/kg	5.00	11	24
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00	11	24
Aromatic VPH >C5-C7	M	2780	mg/kg	0.05	< 0.05	< 0.05
Aromatic VPH >C7-C8	M	2780	mg/kg	0.05	< 0.05	< 0.05
Aromatic VPH >C8-C10	M	2780	mg/kg	0.05	< 0.05	< 0.05
Total Aromatic VPH >C5-C10	M	2780	mg/kg	0.25	< 0.25	< 0.25
Aromatic EPH >C10-C12	M	2690	mg/kg	1.00	< 1.0	< 1.0
Aromatic EPH >C12-C16	M	2690	mg/kg	1.00	< 1.0	1.4

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services			**Chemtest Job No.:**		23-10938	23-10938
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1617232	1617234
Order No.:			Client Sample Ref.:		1	4
			Client Sample ID.:		#87667198473 30001	#87667198473 30004
			Sample Location:		S2-TP298	S2-TP298
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.20	0.90
			Bottom Depth (m):		0.30	1.00
			Date Sampled:		30-Mar-2023	30-Mar-2023
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Aromatic EPH >C16-C21	N	2690	mg/kg	2.00	7.3	9.8
Aromatic EPH >C21-C35	M	2690	mg/kg	2.00	< 2.0	9.2
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00	< 1.0	< 1.0
Total Aromatic EPH >C10-C35	M	2690	mg/kg	5.00	8.3	21
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00	< 10	21
Total VPH >C5-C10	M	2780	mg/kg	0.50	< 0.50	< 0.50
Total EPH >C10-C35	M	2690	mg/kg	10.00	19	45
Total EPH >C10-C40	N	2690	mg/kg	10.00	19	45
Organic Matter	M	2625	%	0.40	84	100
Benzene	M	2760	µg/kg	1.0	< 1.0	< 1.0
Toluene	M	2760	µg/kg	1.0	< 1.0	< 1.0
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0
o-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0
Naphthalene	M	2800	mg/kg	0.10	1.1	1.4
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10
Acenaphthene	M	2800	mg/kg	0.10	< 0.10	< 0.10
Fluorene	M	2800	mg/kg	0.10	< 0.10	< 0.10
Phenanthrene	M	2800	mg/kg	0.10	2.8	2.5
Anthracene	M	2800	mg/kg	0.10	< 0.10	0.44
Fluoranthene	M	2800	mg/kg	0.10	3.2	2.8
Pyrene	M	2800	mg/kg	0.10	1.8	1.9
Benzo[a]anthracene	M	2800	mg/kg	0.10	1.2	< 0.10
Chrysene	M	2800	mg/kg	0.10	0.95	< 0.10
Benzo[b]fluoranthene	M	2800	mg/kg	0.10	1.7	< 0.10
Benzo[k]fluoranthene	M	2800	mg/kg	0.10	0.25	< 0.10
Benzo[a]pyrene	M	2800	mg/kg	0.10	0.69	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2800	mg/kg	0.10	0.50	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	M	2800	mg/kg	0.10	0.76	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	15	9.0
Total Phenols	M	2920	mg/kg	0.10	< 0.10	< 0.10

Results - 2 Stage WAC

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	23-10938								
Chemtest Sample ID:	1617232								
Sample Ref:	1								
Sample ID:	#8766719847330001						**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample Location:	S2-TP298								
Top Depth(m):	0.20								
Bottom Depth(m):	0.30								
Sampling Date:	30-Mar-2023								
Determinand	**SOP**	**Accred.**	**Units**						
Total Organic Carbon	2625	M	%			49	3	5	6
Loss On Ignition	2610	M	%			21	--	--	10
Total BTEX	2760	M	mg/kg			< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg			< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg			99	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg			< 2.0	100	--	--
pH	2010	M				8.4	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg			0.0050	--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0003	0.0004	0.0005	0.0042	0.5	2	25
Barium	1455	U	0.018	0.008	0.036	0.093	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0007	0.0007	0.0014	0.0011	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.011	0.0032	0.021	0.044	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0006	< 0.0005	0.0011	0.0009	0.06	0.7	5
Selenium	1455	U	0.0006	0.0006	0.0011	0.0055	0.1	0.5	7
Zinc	1455	U	0.003	0.003	0.006	0.029	4	50	200
Chloride	1220	U	3.9	< 1.0	< 10	< 10	800	15000	25000
Fluoride	1220	U	0.46	0.22	< 1.0	2.6	10	150	500
Sulphate	1220	U	2.8	< 1.0	< 10	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	88	39	180	470	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	3.3	< 2.5	< 50	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	10

Leachate Test Information	
Leachant volume 1st extract/l	0.330
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.283

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C40	Acetone/Heptane extraction / GCxGC FID detection

Test Methods

SOP	Title	Parameters included	Method summary
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8-C10 Aromatics: >C5–C7,>C7-C8,>C8–C10	Water extraction / Headspace GCxGC FID detection
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge
650	Characterisation of Waste (Leaching WAC)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

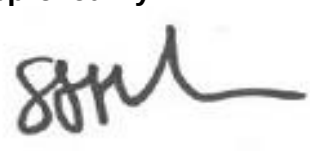
If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-11153-1
Initial Date of Issue:	18-Apr-2023
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt James Power
Project	G23012 Global Centre of Rail Excellence (GCRE) Phase 2
Quotation No.:	Q22-29781
Order No.:	
No. of Samples:	8
Turnaround (Wkdays):	7
Date Approved:	18-Apr-2023
Approved By:	

Date Received:	04-Apr-2023
Date Instructed:	05-Apr-2023
Results Due:	17-Apr-2023



Details: Stuart Henderson, Technical Manager

Results - Leachate

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services				**Chemtest Job No.:**		23-11153	23-11153
Quotation No.: Q22-29781				**Chemtest Sample ID.:**		1618175	1618179
Order No.:				Client Sample Ref.:		7	7
				Sample Location:		S2-TP292	S2-TP282
				Sample Type:		SOIL	SOIL
				Top Depth (m):		1.9	1.9
				Bottom Depth (m):		2.0	2.0
				Date Sampled:		03-Apr-2023	03-Apr-2023
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**		
pH	U	1010	10:1		N/A	7.2	7.0
Sulphate	U	1220	10:1	mg/l	1.0	25	12
Cyanide (Total)	U	1300	10:1	mg/l	0.050	< 0.050	< 0.050
Cyanide (Free)	U	1300	10:1	mg/l	0.050	< 0.050	< 0.050
Arsenic (Dissolved)	U	1455	10:1	µg/l	0.20	< 0.20	0.26
Cadmium (Dissolved)	U	1455	10:1	µg/l	0.11	< 0.11	< 0.11
Chromium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	< 0.50
Copper (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	< 0.50
Mercury (Dissolved)	U	1455	10:1	µg/l	0.05	< 0.05	< 0.05
Nickel (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	0.58
Lead (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	< 0.50
Selenium (Dissolved)	U	1455	10:1	µg/l	0.50	0.56	0.68
Vanadium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	< 0.50
Zinc (Dissolved)	U	1455	10:1	µg/l	2.5	3.7	4.9
Chromium (Hexavalent)	U	1490	10:1	µg/l	20	< 20	< 20
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030	< 0.030

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services			**Chemtest Job No.:**		23-11153	23-11153	23-11153	23-11153	23-11153	23-11153	23-11153	23-11153
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1618172	1618174	1618175	1618176	1618177	1618179	1618180	1618181
Order No.:			Client Sample Ref.:		2	5	7	2	3	7	1	3
			Sample Location:		S2-TP292	S2-TP292	S2-TP292	S2-TP282	S2-TP282	S2-TP282	S2-BH249	S2-BH249
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.2	0.9	1.9	0.3	0.5	1.9	0.6	1.1
			Bottom Depth (m):		0.3	1.0	2.0	0.4	0.6	2.0	0.7	1.2
			Date Sampled:		03-Apr-2023	03-Apr-2023	03-Apr-2023	03-Apr-2023	03-Apr-2023	03-Apr-2023	03-Apr-2023	03-Apr-2023
			Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY		COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
ACM Type	U	2192		N/A	-	-	-		-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected		No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	6.3	4.6	10	8.6	7.4	4.7	3.9	4.3
pH	U	2010		4.0	10.3	9.1	8.6	11.0	7.8	8.3	8.0	7.9
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	5.6	0.95	0.59	3.3	< 0.40	< 0.40	8.0	2.9
Sulphate (2:1 Water Soluble) as SO4 mg/l	U	2120	mg/l	10.000	1000	350	99	1300	250	120	< 10	< 10
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Arsenic	U	2455	mg/kg	0.5	1.9	6.4	8.9	1.2	19	12	61	41
Cadmium	U	2455	mg/kg	0.10	< 0.10	0.16	0.14	< 0.10	0.21	0.16	0.20	0.20
Chromium	U	2455	mg/kg	0.5	5.2	16	7.2	5.4	2.6	2.3	7.9	6.1
Copper	U	2455	mg/kg	0.50	5.6	29	44	2.4	61	71	150	140
Mercury	U	2455	mg/kg	0.05	< 0.05	< 0.05	0.26	< 0.05	0.29	0.21	0.21	0.19
Nickel	U	2455	mg/kg	0.50	2.6	15	20	1.7	21	18	36	32
Lead	U	2455	mg/kg	0.50	5.9	17	22	3.2	36	29	83	47
Selenium	U	2455	mg/kg	0.25	1.4	1.3	1.3	1.5	1.4	1.3	1.7	1.3
Vanadium	U	2455	mg/kg	0.5	6.0	4.4	8.2	6.7	5.2	4.7	11	8.7
Zinc	U	2455	mg/kg	0.50	28	40	42	7.2	56	60	83	82
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Aliphatic VPH >C5-C6	U	2780	mg/kg	0.05	< 0.05	0.17	< 0.05	< 0.05	< 0.05	< 0.05	0.11	0.12
Aliphatic VPH >C6-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	0.22	< 0.05	< 0.05	< 0.05	< 0.05	0.12	0.16
Total Aliphatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	0.39	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	0.28
Aliphatic EPH >C10-C12	U	2690	mg/kg	2.00	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Aliphatic EPH >C12-C16	U	2690	mg/kg	1.00	1.8	2.7	1.6	1.7	1.9	1.8	1.6	1.4
Aliphatic EPH >C16-C21	U	2690	mg/kg	2.00	3.4	4.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	2.1
Aliphatic EPH >C21-C35	U	2690	mg/kg	3.00	43	140	3.8	4.0	3.7	< 3.0	3.4	< 3.0
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00	< 10	16	< 10	< 10	< 10	< 10	< 10	< 10
Total Aliphatic EPH >C10-C35	U	2690	mg/kg	5.00	49	150	8.9	8.1	8.2	7.1	7.7	7.7
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00	49	170	< 10	< 10	< 10	< 10	< 10	< 10
Aromatic VPH >C5-C7	U	2780	mg/kg	0.05	< 0.05	0.33	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.21
Aromatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	0.21	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.16
Aromatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	0.24	< 0.05	0.11	< 0.05	< 0.05	< 0.05	0.20
Total Aromatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	0.77	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	0.57

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services			**Chemtest Job No.:**		23-11153	23-11153	23-11153	23-11153	23-11153	23-11153	23-11153	23-11153
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1618172	1618174	1618175	1618176	1618177	1618179	1618180	1618181
Order No.:			Client Sample Ref.:		2	5	7	2	3	7	1	3
			Sample Location:		S2-TP292	S2-TP292	S2-TP292	S2-TP282	S2-TP282	S2-TP282	S2-BH249	S2-BH249
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.2	0.9	1.9	0.3	0.5	1.9	0.6	1.1
			Bottom Depth (m):		0.3	1.0	2.0	0.4	0.6	2.0	0.7	1.2
			Date Sampled:		03-Apr-2023	03-Apr-2023	03-Apr-2023	03-Apr-2023	03-Apr-2023	03-Apr-2023	03-Apr-2023	03-Apr-2023
			Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY		COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Aromatic EPH >C10-C12	U	2690	mg/kg	1.00	7.2	8.2	9.5	8.4	7.2	8.6	8.4	8.1
Aromatic EPH >C12-C16	U	2690	mg/kg	1.00	13	14	14	16	13	14	13	13
Aromatic EPH >C16-C21	N	2690	mg/kg	2.00	18	21	17	15	14	16	19	17
Aromatic EPH >C21-C35	U	2690	mg/kg	2.00	< 2.0	26	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00	7.1	14	9.5	7.0	8.9	8.8	8.5	8.3
Total Aromatic EPH >C10-C35	U	2690	mg/kg	5.00	39	68	42	40	35	40	40	38
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00	46	82	51	47	44	49	49	47
Total VPH >C5-C10	U	2780	mg/kg	0.50	< 0.50	1.2	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.85
Total EPH >C10-C35	U	2690	mg/kg	10.00	89	220	50	48	43	47	48	46
Total EPH >C10-C40	N	2690	mg/kg	10.00	96	250	60	55	52	56	57	54
Organic Matter	U	2625	%	0.40	9.4	86	90	2.4	49	33	27	39
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Naphthalene	U	2800	mg/kg	0.10	0.22	0.32	0.16	< 0.10	< 0.10	0.12	< 0.10	0.39
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	2800	mg/kg	0.10	0.29	0.38	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.13
Anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	2800	mg/kg	0.10	0.19	0.28	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Pyrene	U	2800	mg/kg	0.10	0.18	0.25	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	U	2800	mg/kg	0.10	< 0.10	0.17	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	< 0.10	0.19	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

Results - 2 Stage WAC

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	23-11153								
Chemtest Sample ID:	1618174								
Sample Ref:	5								
Sample ID:							**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample Location:	S2-TP292								
Top Depth(m):	0.9								
Bottom Depth(m):	1.0								
Sampling Date:	03-Apr-2023								
Determinand	**SOP**	**Accred.**	**Units**						
Total Organic Carbon	2625	U	%			50	3	5	6
Loss On Ignition	2610	U	%			23	--	--	10
Total BTEX	2760	U	mg/kg			< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg			< 0.10	1	--	--
TPH Total WAC	2670	U	mg/kg			200	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg			2.5	100	--	--
pH	2010	U				9.1	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg			0.014	--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0010	0.0010	0.0021	0.0099	0.5	2	25
Barium	1455	U	0.070	0.032	0.14	0.38	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0006	< 0.0005	0.0011	0.0008	0.5	10	70
Copper	1455	U	0.0011	0.0006	0.0022	0.0015	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.089	0.011	0.18	0.22	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0053	0.0014	0.011	0.019	0.06	0.7	5
Selenium	1455	U	0.0030	0.0022	0.0059	0.023	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	< 0.003	< 0.003	4	50	200
Chloride	1220	U	8.4	< 1.0	17	12	800	15000	25000
Fluoride	1220	U	0.84	0.59	1.7	6.3	10	150	500
Sulphate	1220	U	99	15	200	270	1000	20000	50000
Total Dissolved Solids	1020	N	250	63	510	900	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	3.3	< 2.5	< 50	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	4.6

Leachate Test Information	
Leachant volume 1st extract/l	0.342
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.250

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C40	Acetone/Heptane extraction / GCxGC FID detection

Test Methods

SOP	Title	Parameters included	Method summary
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8-C10 Aromatics: >C5–C7,>C7-C8,>C8–C10	Water extraction / Headspace GCxGC FID detection
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge
650	Characterisation of Waste (Leaching WAC)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-11162-1		
Initial Date of Issue:	18-Apr-2023		
Client	Jackson Geo Services		
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA		
Contact(s):	Adam Putt James Power		
Project	G23012 Global Ventre of Rall Excellence GCRE Phase 2		
Quotation No.:	Q22-29781	**Date Received:**	04-Apr-2023
Order No.:		**Date Instructed:**	05-Apr-2023
No. of Samples:	6		
Turnaround (Wkdays):	7	**Results Due:**	17-Apr-2023
Date Approved:	18-Apr-2023		
Approved By:			



Details:	Stuart Henderson, Technical Manager

Results - Leachate

Project: G23012 Global Ventre of Rall Excellence GCRE Phase 2

Client: Jackson Geo Services				**Chemtest Job No.:**		23-11162	23-11162
Quotation No.: Q22-29781				**Chemtest Sample ID.:**		1618220	1618226
Order No.:				Client Sample Ref.:		2	2
				Sample Location:		S2-TP2101	S2-TP2112
				Sample Type:		SOIL	SOIL
				Top Depth (m):		0.2	0.2
				Bottom Depth (m):		0.3	0.3
				Date Sampled:		31-Mar-2023	31-Mar-2023
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**		
pH	U	1010	10:1		N/A	7.8	9.3
Sulphate	U	1220	10:1	mg/l	1.0	6.7	45
Cyanide (Total)	U	1300	10:1	mg/l	0.050	< 0.050	< 0.050
Cyanide (Free)	U	1300	10:1	mg/l	0.050	< 0.050	< 0.050
Arsenic (Dissolved)	U	1455	10:1	µg/l	0.20	0.25	0.50
Cadmium (Dissolved)	U	1455	10:1	µg/l	0.11	< 0.11	< 0.11
Chromium (Dissolved)	U	1455	10:1	µg/l	0.50	0.79	1.6
Copper (Dissolved)	U	1455	10:1	µg/l	0.50	0.61	0.75
Mercury (Dissolved)	U	1455	10:1	µg/l	0.05	< 0.05	< 0.05
Nickel (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	< 0.50
Lead (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	< 0.50
Selenium (Dissolved)	U	1455	10:1	µg/l	0.50	0.67	3.2
Vanadium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	7.7
Zinc (Dissolved)	U	1455	10:1	µg/l	2.5	3.9	2.7
Chromium (Hexavalent)	U	1490	10:1	µg/l	20	< 20	< 20
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030	< 0.030

Results - Soil

Project: G23012 Global Ventre of Rall Excellence GCRE Phase 2

Client: Jackson Geo Services			**Chemtest Job No.:**		23-11162	23-11162	23-11162	23-11162	23-11162	23-11162
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1618220	1618224	1618225	1618226	1618228	1618230
Order No.:			Client Sample Ref.:		2	9	12	2	4	8
			Sample Location:		S2-TP2101	S2-TP2101	S2-TP2101	S2-TP2112	S2-TP2112	S2-TP2112
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.2	2.9	3.9	0.2	0.9	2.9
			Bottom Depth (m):		0.3	3.0	4.0	0.3	1.0	3.0
			Date Sampled:		31-Mar-2023	31-Mar-2023	31-Mar-2023	31-Mar-2023	31-Mar-2023	31-Mar-2023
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
ACM Type	U	2192		N/A	-	-	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	3.6	11	9.5	7.1	7.7	7.4
pH	U	2010		4.0	8.9	8.7	8.7	9.0	8.2	8.9
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	0.54	< 0.40	0.51	0.49	0.44	< 0.40
Sulphate (2:1 Water Soluble) as SO4 mg/l	U	2120	mg/l	10.000	< 10	< 10	< 10	77	< 10	87
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Arsenic	U	2455	mg/kg	0.5	7.9	11	9.0	3.8	19	14
Cadmium	U	2455	mg/kg	0.10	0.22	0.13	0.10	0.26	0.18	0.18
Chromium	U	2455	mg/kg	0.5	15	3.7	2.1	8.1	4.2	8.6
Copper	U	2455	mg/kg	0.50	24	59	42	13	100	59
Mercury	U	2455	mg/kg	0.05	< 0.05	0.36	0.26	0.06	0.21	0.15
Nickel	U	2455	mg/kg	0.50	21	27	15	16	27	30
Lead	U	2455	mg/kg	0.50	20	36	23	14	38	36
Selenium	U	2455	mg/kg	0.25	0.77	1.4	1.6	0.93	1.3	1.3
Vanadium	U	2455	mg/kg	0.5	9.3	7.6	3.9	6.0	7.0	7.3
Zinc	U	2455	mg/kg	0.50	53	48	42	26	55	65
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Aliphatic VPH >C5-C6	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.11
Aliphatic VPH >C6-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	0.14	< 0.05	< 0.05
Aliphatic VPH >C8-C10	U	2780	mg/kg	0.05	0.13	0.21	0.16	0.22	0.13	0.17
Total Aliphatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	0.36	< 0.25	0.28
Aliphatic EPH >C10-C12	U	2690	mg/kg	2.00	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Aliphatic EPH >C12-C16	U	2690	mg/kg	1.00	1.1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic EPH >C16-C21	U	2690	mg/kg	2.00	< 2.0	< 2.0	2.6	< 2.0	< 2.0	< 2.0
Aliphatic EPH >C21-C35	U	2690	mg/kg	3.00	3.2	5.6	7.9	< 3.0	< 3.0	< 3.0
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00	< 10	< 10	< 10	< 10	< 10	< 10
Total Aliphatic EPH >C10-C35	U	2690	mg/kg	5.00	6.1	8.8	12	< 5.0	< 5.0	< 5.0
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00	< 10	< 10	12	< 10	< 10	< 10
Aromatic VPH >C5-C7	U	2780	mg/kg	0.05	< 0.05	0.23	0.16	0.36	0.13	0.18
Aromatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	0.21	0.11	0.29	0.13	0.16
Aromatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	0.23	< 0.05	0.28	0.12	0.17
Total Aromatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	0.68	0.28	0.94	0.37	0.51

Results - Soil

Project: G23012 Global Ventre of Rall Excellence GCRE Phase 2

Client: Jackson Geo Services			**Chemtest Job No.:**		23-11162	23-11162	23-11162	23-11162	23-11162	23-11162
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1618220	1618224	1618225	1618226	1618228	1618230
Order No.:			Client Sample Ref.:		2	9	12	2	4	8
			Sample Location:		S2-TP2101	S2-TP2101	S2-TP2101	S2-TP2112	S2-TP2112	S2-TP2112
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.2	2.9	3.9	0.2	0.9	2.9
			Bottom Depth (m):		0.3	3.0	4.0	0.3	1.0	3.0
			Date Sampled:		31-Mar-2023	31-Mar-2023	31-Mar-2023	31-Mar-2023	31-Mar-2023	31-Mar-2023
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
Aromatic EPH >C10-C12	U	2690	mg/kg	1.00	1.8	< 1.0	1.1	2.6	1.5	1.1
Aromatic EPH >C12-C16	U	2690	mg/kg	1.00	1.3	1.1	1.8	< 1.0	1.1	4.2
Aromatic EPH >C16-C21	N	2690	mg/kg	2.00	6.8	5.1	5.7	4.9	5.2	10
Aromatic EPH >C21-C35	U	2690	mg/kg	2.00	< 2.0	< 2.0	< 2.0	< 2.0	2.2	< 2.0
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00	1.4	1.6	< 1.0	1.8	1.6	< 1.0
Total Aromatic EPH >C10-C35	U	2690	mg/kg	5.00	11	7.7	9.2	9.2	10	15
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00	12	< 10	< 10	11	12	15
Total VPH >C5-C10	U	2780	mg/kg	0.50	< 0.50	0.68	< 0.50	1.3	< 0.50	0.78
Total EPH >C10-C35	U	2690	mg/kg	10.00	17	17	21	13	14	19
Total EPH >C10-C40	N	2690	mg/kg	10.00	18	18	21	15	16	19
Organic Matter	U	2625	%	0.40	29	87	92	22	30	19
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Naphthalene	U	2800	mg/kg	0.10	1.1	0.16	0.24	0.32	0.18	0.61
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	2800	mg/kg	0.10	0.14	< 0.10	< 0.10	< 0.10	< 0.10	0.12
Fluorene	U	2800	mg/kg	0.10	0.17	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	2800	mg/kg	0.10	1.0	< 0.10	0.16	0.23	< 0.10	0.28
Anthracene	U	2800	mg/kg	0.10	0.21	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	2800	mg/kg	0.10	1.1	< 0.10	0.16	< 0.10	< 0.10	0.13
Pyrene	U	2800	mg/kg	0.10	0.86	< 0.10	0.13	< 0.10	< 0.10	0.12
Benzo[a]anthracene	U	2800	mg/kg	0.10	0.44	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	U	2800	mg/kg	0.10	0.79	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	0.93	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	0.24	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10	0.29	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	0.30	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	0.26	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	7.8	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

Results - 2 Stage WAC

Project: G23012 Global Ventre of Rall Excellence GCRE Phase 2

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	23-11162								
Chemtest Sample ID:	1618224								
Sample Ref:	9						**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:									
Sample Location:	S2-TP2101								
Top Depth(m):	2.9								
Bottom Depth(m):	3.0								
Sampling Date:	31-Mar-2023								
Determinand	**SOP**	**Accred.**	**Units**						
Total Organic Carbon	2625	U	%			50	3	5	6
Loss On Ignition	2610	U	%			23	--	--	10
Total BTEX	2760	U	mg/kg			< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg			< 0.10	1	--	--
TPH Total WAC	2670	U	mg/kg			54	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg			< 2.0	100	--	--
pH	2010	U				8.7	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg			0.014	--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0003	0.0003	0.0006	0.0031	0.5	2	25
Barium	1455	U	0.042	0.010	0.083	0.14	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0005	< 0.0005	0.0011	0.0008	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0039	0.0038	0.0078	0.038	0.5	10	30
Nickel	1455	U	0.0007	< 0.0005	0.0013	0.0009	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	0.0034	0.0009	0.0067	0.012	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	< 0.003	< 0.003	4	50	200
Chloride	1220	U	7.2	< 1.0	14	10	800	15000	25000
Fluoride	1220	U	0.45	0.23	< 1.0	2.6	10	150	500
Sulphate	1220	U	35	3.2	70	78	1000	20000	50000
Total Dissolved Solids	1020	N	260	78	520	1000	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	2.7	3.4	< 50	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	11

Leachate Test Information	
Leachant volume 1st extract/l	0.329
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.252

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - 2 Stage WAC

Project: G23012 Global Ventre of Rall Excellence GCRE Phase 2

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	23-11162								
Chemtest Sample ID:	1618228								
Sample Ref:	4						**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:									
Sample Location:	S2-TP2112								
Top Depth(m):	0.9								
Bottom Depth(m):	1.0								
Sampling Date:	31-Mar-2023								
Determinand	**SOP**	**Accred.**	**Units**						
Total Organic Carbon	2625	U	%			17	3	5	6
Loss On Ignition	2610	U	%			16	--	--	10
Total BTEX	2760	U	mg/kg			< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg			< 0.10	1	--	--
TPH Total WAC	2670	U	mg/kg			< 10	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg			< 2.0	100	--	--
pH	2010	U				8.2	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg			0.016	--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0019	0.0010	0.0037	0.011	0.5	2	25
Barium	1455	U	0.13	0.037	0.25	0.47	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0013	0.0007	0.0025	0.0013	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0020	0.0008	0.0040	0.0093	0.5	10	30
Nickel	1455	U	0.024	0.0061	0.049	0.080	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0017	0.0005	0.0035	0.0066	0.06	0.7	5
Selenium	1455	U	0.012	0.0011	0.024	0.023	0.1	0.5	7
Zinc	1455	U	0.008	0.003	0.016	0.031	4	50	200
Chloride	1220	U	< 1.0	< 1.0	< 10	< 10	800	15000	25000
Fluoride	1220	U	0.23	0.15	< 1.0	1.6	10	150	500
Sulphate	1220	U	56	9.4	110	140	1000	20000	50000
Total Dissolved Solids	1020	N	230	64	450	810	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	4.9	3.1	< 50	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	7.7

Leachate Test Information	
Leachant volume 1st extract/l	0.335
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.186

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C40	Acetone/Heptane extraction / GCxGC FID detection

Test Methods

SOP	Title	Parameters included	Method summary
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8-C10 Aromatics: >C5–C7,>C7-C8,>C8–C10	Water extraction / Headspace GCxGC FID detection
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge
650	Characterisation of Waste (Leaching WAC)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-11164-1
Initial Date of Issue:	17-Apr-2023
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt James Power
Project	G23012 Global Centre of Rail Excellence GCRE Phase 2
Quotation No.:	Q22-29781
Order No.:	
No. of Samples:	2
Turnaround (Wkdays):	7
Date Approved:	17-Apr-2023
Approved By:	
Details:	Stuart Henderson, Technical Manager

Date Received:	04-Apr-2023
Date Instructed:	05-Apr-2023
Results Due:	17-Apr-2023

Results - Leachate

Project: G23012 Global Centre of Rail Excellence GCRE Phase 2

Client: Jackson Geo Services				**Chemtest Job No.:**		23-11164
Quotation No.: Q22-29781				**Chemtest Sample ID.:**		1618236
Order No.:				Client Sample Ref.:		102
				Sample Location:		S2-BH246
				Sample Type:		SOIL
				Top Depth (m):		1.5
				Bottom Depth (m):		1.7
				Date Sampled:		31-Mar-2023
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**	
pH	U	1010	10:1		N/A	7.8
Sulphate	U	1220	10:1	mg/l	1.0	< 1.0
Cyanide (Total)	U	1300	10:1	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	10:1	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1455	10:1	µg/l	0.20	1.4
Cadmium (Dissolved)	U	1455	10:1	µg/l	0.11	< 0.11
Chromium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Copper (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Mercury (Dissolved)	U	1455	10:1	µg/l	0.05	< 0.05
Nickel (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Lead (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Selenium (Dissolved)	U	1455	10:1	µg/l	0.50	0.74
Vanadium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Zinc (Dissolved)	U	1455	10:1	µg/l	2.5	3.2
Chromium (Hexavalent)	U	1490	10:1	µg/l	20	< 20
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030

Results - Soil

Project: G23012 Global Centre of Rail Excellence GCRE Phase 2

Client: Jackson Geo Services			**Chemtest Job No.:**		23-11164	23-11164
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1618236	1618238
Order No.:			Client Sample Ref.:		102	104
			Sample Location:		S2-BH246	S2-BH246
			Sample Type:		SOIL	SOIL
			Top Depth (m):		1.5	3.7
			Bottom Depth (m):		1.7	3.9
			Date Sampled:		31-Mar-2023	31-Mar-2023
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Moisture	N	2030	%	0.020	4.6	24
pH	U	2010		4.0	8.9	7.7
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	0.61	0.91
Sulphate (2:1 Water Soluble) as SO4 mg/l	U	2120	mg/l	10.000	< 10	30
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50
Arsenic	U	2455	mg/kg	0.5	8.6	24
Cadmium	U	2455	mg/kg	0.10	0.12	0.12
Chromium	U	2455	mg/kg	0.5	5.7	10
Copper	U	2455	mg/kg	0.50	39	7.8
Mercury	U	2455	mg/kg	0.05	0.20	0.05
Nickel	U	2455	mg/kg	0.50	19	7.1
Lead	U	2455	mg/kg	0.50	22	23
Selenium	U	2455	mg/kg	0.25	1.3	1.0
Vanadium	U	2455	mg/kg	0.5	7.1	17
Zinc	U	2455	mg/kg	0.50	51	22
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50
Aliphatic VPH >C5-C6	U	2780	mg/kg	0.05	< 0.05	< 0.05
Aliphatic VPH >C6-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05
Aliphatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05
Aliphatic VPH >C8-C10	U	2780	mg/kg	0.05	0.19	< 0.05
Total Aliphatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25
Aliphatic EPH >C10-C12	U	2690	mg/kg	2.00	< 2.0	< 2.0
Aliphatic EPH >C12-C16	U	2690	mg/kg	1.00	1.3	1.5
Aliphatic EPH >C16-C21	U	2690	mg/kg	2.00	< 2.0	< 2.0
Aliphatic EPH >C21-C35	U	2690	mg/kg	3.00	3.6	< 3.0
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00	< 10	< 10
Total Aliphatic EPH >C10-C35	U	2690	mg/kg	5.00	7.6	5.6
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00	< 10	< 10
Aromatic VPH >C5-C7	U	2780	mg/kg	0.05	0.26	< 0.05
Aromatic VPH >C7-C8	U	2780	mg/kg	0.05	0.14	< 0.05
Aromatic VPH >C8-C10	U	2780	mg/kg	0.05	0.24	< 0.05
Total Aromatic VPH >C5-C10	U	2780	mg/kg	0.25	0.64	< 0.25
Aromatic EPH >C10-C12	U	2690	mg/kg	1.00	< 1.0	1.9
Aromatic EPH >C12-C16	U	2690	mg/kg	1.00	1.3	2.9
Aromatic EPH >C16-C21	N	2690	mg/kg	2.00	5.3	6.2
Aromatic EPH >C21-C35	U	2690	mg/kg	2.00	< 2.0	< 2.0

Results - Soil

Project: G23012 Global Centre of Rail Excellence GCRE Phase 2

Client: Jackson Geo Services			**Chemtest Job No.:**		23-11164	23-11164
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1618236	1618238
Order No.:			Client Sample Ref.:		102	104
			Sample Location:		S2-BH246	S2-BH246
			Sample Type:		SOIL	SOIL
			Top Depth (m):		1.5	3.7
			Bottom Depth (m):		1.7	3.9
			Date Sampled:		31-Mar-2023	31-Mar-2023
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00	1.6	2.1
Total Aromatic EPH >C10-C35	U	2690	mg/kg	5.00	8.1	13
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00	< 10	15
Total VPH >C5-C10	U	2780	mg/kg	0.50	0.64	< 0.50
Total EPH >C10-C35	U	2690	mg/kg	10.00	16	18
Total EPH >C10-C40	N	2690	mg/kg	10.00	17	20
Organic Matter	U	2625	%	0.40	46	8.2
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Naphthalene	U	2800	mg/kg	0.10	0.16	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10
Acenaphthene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Fluorene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Phenanthrene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[a]anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Chrysene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	< 2.0	< 2.0
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35–C40	Acetone/Heptane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8-C10 Aromatics: >C5–C7,>C7-C8,>C8–C10	Water extraction / Headspace GCxGC FID detection
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS

Test Methods

SOP	Title	Parameters included	Method summary
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-11337-1		
Initial Date of Issue:	20-Apr-2023		
Client	Jackson Geo Services		
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA		
Contact(s):	Adam Putt James Power		
Project	G23012 Global Centre of Rail Excellemce (GCRE) Phase 2		
Quotation No.:	Q22-29781	**Date Received:**	05-Apr-2023
Order No.:		**Date Instructed:**	06-Apr-2023
No. of Samples:	6		
Turnaround (Wkdays):	7	**Results Due:**	18-Apr-2023
Date Approved:	20-Apr-2023		
Approved By:			



Details:	Stuart Henderson, Technical Manager

Results - Leachate

Project: G23012 Global Centre of Rail Excellemce (GCRE) Phase 2

Client: Jackson Geo Services				**Chemtest Job No.:**		23-11337	23-11337
Quotation No.: Q22-29781				**Chemtest Sample ID.:**		1619044	1619050
Order No.:				Client Sample Ref.:		7	8
				Sample Location:		S2-TP268	S2-TP277
				Sample Type:		SOIL	SOIL
				Top Depth (m):		1.9	1.9
				Bottom Depth (m):		2.0	2.0
				Date Sampled:		03-Apr-2023	03-Apr-2023
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**		
pH	U	1010	10:1		N/A	6.8	9.2
Sulphate	U	1220	10:1	mg/l	1.0	16	6.0
Cyanide (Total)	U	1300	10:1	mg/l	0.050	< 0.050	< 0.050
Cyanide (Free)	U	1300	10:1	mg/l	0.050	< 0.050	< 0.050
Arsenic (Dissolved)	U	1455	10:1	µg/l	0.20	1.2	< 0.20
Cadmium (Dissolved)	U	1455	10:1	µg/l	0.11	< 0.11	< 0.11
Chromium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	< 0.50
Copper (Dissolved)	U	1455	10:1	µg/l	0.50	2.6	< 0.50
Mercury (Dissolved)	U	1455	10:1	µg/l	0.05	< 0.05	< 0.05
Nickel (Dissolved)	U	1455	10:1	µg/l	0.50	1.3	< 0.50
Lead (Dissolved)	U	1455	10:1	µg/l	0.50	0.62	< 0.50
Selenium (Dissolved)	U	1455	10:1	µg/l	0.50	3.1	< 0.50
Vanadium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	< 0.50
Zinc (Dissolved)	U	1455	10:1	µg/l	2.5	4.4	3.7
Chromium (Hexavalent)	U	1490	10:1	µg/l	20	< 20	< 20
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030	< 0.030

Results - Soil

Project: G23012 Global Centre of Rail Excellemce (GCRE) Phase 2

Client: Jackson Geo Services			**Chemtest Job No.:**		23-11337	23-11337	23-11337	23-11337	23-11337	23-11337
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1619042	1619044	1619046	1619047	1619048	1619050
Order No.:			Client Sample Ref.:		4	7	2	2	4	8
			Sample Location:		S2-TP268	S2-TP268	S2-BH204	S2-TP277	S2-TP277	S2-TP277
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.5	1.9	0.1	0.2	0.5	1.9
			Bottom Depth (m):		0.6	2.0	0.2	0.3	0.6	2.0
			Date Sampled:		03-Apr-2023	03-Apr-2023	03-Apr-2023	03-Apr-2023	03-Apr-2023	03-Apr-2023
			Asbestos Lab:		COVENTRY	COVENTRY		COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
ACM Type	U	2192		N/A	-	Fibres/Clumps		-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	Chrysotile		No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Asbestos by Gravimetry	U	2192	%	0.001		<0.001				
Total Asbestos	U	2192	%	0.001		<0.001				
Moisture	N	2030	%	0.020	11	13	5.6	14	8.7	31
pH	U	2010		4.0	9.1	9.1	9.3	9.3	9.0	8.9
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	3.1	4.5	1.7	2.3	0.97	0.87
Sulphate (2:1 Water Soluble) as SO4 mg/l	U	2120	mg/l	10.000	990	600	280	410	160	150
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Arsenic	U	2455	mg/kg	0.5	8.3	9.0	27	17	27	20
Cadmium	U	2455	mg/kg	0.10	0.54	0.55	0.63	0.62	1.9	0.42
Chromium	U	2455	mg/kg	0.5	10	10	13	11	8.1	16
Copper	U	2455	mg/kg	0.50	45	44	97	71	94	76
Mercury	U	2455	mg/kg	0.05	0.15	0.16	0.11	0.09	0.28	0.20
Nickel	U	2455	mg/kg	0.50	14	15	45	32	29	23
Lead	U	2455	mg/kg	0.50	54	55	52	49	55	42
Selenium	U	2455	mg/kg	0.25	2.4	2.4	1.8	1.2	3.0	2.3
Vanadium	U	2455	mg/kg	0.5	9.7	16	13	10	12	26
Zinc	U	2455	mg/kg	0.50	130	110	160	110	230	84
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Aliphatic VPH >C5-C6	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C6-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	0.23	0.16	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.17
Total Aliphatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25
Aliphatic EPH >C10-C12	U	2690	mg/kg	2.00	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Aliphatic EPH >C12-C16	U	2690	mg/kg	1.00	4.9	1.1	< 1.0	1.8	8.0	1.2
Aliphatic EPH >C16-C21	U	2690	mg/kg	2.00	14	< 2.0	< 2.0	2.7	4.8	< 2.0
Aliphatic EPH >C21-C35	U	2690	mg/kg	3.00	12	6.6	3.6	5.8	< 3.0	< 3.0
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00	< 10	< 10	< 10	< 10	< 10	< 10
Total Aliphatic EPH >C10-C35	U	2690	mg/kg	5.00	32	10	5.5	11	16	5.8
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00	32	10	< 10	11	16	< 10
Aromatic VPH >C5-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C7-C8	U	2780	mg/kg	0.05	0.14	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

Results - Soil

Project: G23012 Global Centre of Rail Excellemce (GCRE) Phase 2

Client: Jackson Geo Services			**Chemtest Job No.:**		23-11337	23-11337	23-11337	23-11337	23-11337	23-11337
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1619042	1619044	1619046	1619047	1619048	1619050
Order No.:			Client Sample Ref.:		4	7	2	2	4	8
			Sample Location:		S2-TP268	S2-TP268	S2-BH204	S2-TP277	S2-TP277	S2-TP277
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.5	1.9	0.1	0.2	0.5	1.9
			Bottom Depth (m):		0.6	2.0	0.2	0.3	0.6	2.0
			Date Sampled:		03-Apr-2023	03-Apr-2023	03-Apr-2023	03-Apr-2023	03-Apr-2023	03-Apr-2023
			Asbestos Lab:		COVENTRY	COVENTRY		COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
Aromatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total Aromatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25
Aromatic EPH >C10-C12	U	2690	mg/kg	1.00	< 1.0	< 1.0	< 1.0	1.6	< 1.0	1.1
Aromatic EPH >C12-C16	U	2690	mg/kg	1.00	2.4	1.4	< 1.0	2.4	1.1	1.8
Aromatic EPH >C16-C21	N	2690	mg/kg	2.00	25	13	5.7	28	9.5	7.4
Aromatic EPH >C21-C35	U	2690	mg/kg	2.00	5.4	12	< 2.0	14	50	6.2
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00	< 1.0	1.1	1.1	1.4	2.6	2.6
Total Aromatic EPH >C10-C35	U	2690	mg/kg	5.00	33	27	8.3	47	61	17
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00	33	28	< 10	48	64	19
Total VPH >C5-C10	U	2780	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Total EPH >C10-C35	U	2690	mg/kg	10.00	65	37	14	57	78	22
Total EPH >C10-C40	N	2690	mg/kg	10.00	65	38	15	59	80	25
Organic Matter	U	2625	%	0.40	57	66	30	23	49	41
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Naphthalene	U	2800	mg/kg	0.10	1.4	1.9	1.1	1.1	0.82	0.63
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	2800	mg/kg	0.10	0.59	0.63	0.91	1.4	< 0.10	0.22
Fluorene	U	2800	mg/kg	0.10	0.72	0.75	0.68	0.78	< 0.10	0.20
Phenanthrene	U	2800	mg/kg	0.10	5.0	3.9	4.8	6.2	1.5	1.4
Anthracene	U	2800	mg/kg	0.10	1.4	1.1	1.5	1.7	0.33	0.31
Fluoranthene	U	2800	mg/kg	0.10	5.4	3.7	5.4	7.4	1.3	1.3
Pyrene	U	2800	mg/kg	0.10	4.7	3.5	5.0	6.7	1.2	1.2
Benzo[a]anthracene	U	2800	mg/kg	0.10	2.4	1.8	2.3	3.3	0.77	0.59
Chrysene	U	2800	mg/kg	0.10	3.2	2.2	2.6	3.9	0.89	0.83
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	3.1	2.2	2.8	3.9	1.1	0.83
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	0.91	0.67	0.92	1.3	0.44	0.18
Benzo[a]pyrene	U	2800	mg/kg	0.10	2.4	1.2	2.5	3.3	0.71	0.51
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	1.9	1.2	1.8	2.4	0.61	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	0.43	< 0.10	0.39	0.34	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	1.5	0.95	1.8	1.9	0.50	0.36
Total Of 16 PAH's	N	2800	mg/kg	2.0	35	26	35	46	10	8.6
Total Phenols	U	2920	mg/kg	0.10	0.21	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

Results - 2 Stage WAC

Project: G23012 Global Centre of Rail Excellemce (GCRE) Phase 2

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	23-11337								
Chemtest Sample ID:	1619047								
Sample Ref:	2								
Sample ID:									
Sample Location:	S2-TP277								
Top Depth(m):	0.2								
Bottom Depth(m):	0.3								
Sampling Date:	03-Apr-2023								
Determinand	**SOP**	**Accred.**	**Units**				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%			13	3	5	6
Loss On Ignition	2610	U	%			34	--	--	10
Total BTEX	2760	U	mg/kg			< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg			< 0.10	1	--	--
TPH Total WAC	2670	U	mg/kg			210	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg			52	100	--	--
pH	2010	U				9.3	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg			0.0070	--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.012	0.012	0.023	0.12	0.5	2	25
Barium	1455	U	0.063	0.051	0.12	0.52	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0022	0.0015	0.0043	0.016	0.5	10	70
Copper	1455	U	0.0090	0.0029	0.018	0.011	2	50	100
Mercury	1455	U	0.00009	< 0.00005	0.00018	0.00012	0.01	0.2	2
Molybdenum	1455	U	0.083	0.015	0.16	0.24	0.5	10	30
Nickel	1455	U	0.0009	< 0.0005	0.0018	0.0011	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0068	0.0046	0.014	0.049	0.06	0.7	5
Selenium	1455	U	0.038	0.019	0.074	0.22	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	< 0.003	< 0.003	4	50	200
Chloride	1220	U	160	40	310	550	800	15000	25000
Fluoride	1220	U	2.4	1.0	4.7	12	10	150	500
Sulphate	1220	U	240	66	470	870	1000	20000	50000
Total Dissolved Solids	1020	N	440	170	870	2000	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	5.7	3.7	< 50	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	14

Leachate Test Information	
Leachant volume 1st extract/l	0.322
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.218

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C40	Acetone/Heptane extraction / GCxGC FID detection

Test Methods

SOP	Title	Parameters included	Method summary
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8-C10 Aromatics: >C5–C7,>C7-C8,>C8–C10	Water extraction / Headspace GCxGC FID detection
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge
650	Characterisation of Waste (Leaching WAC)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

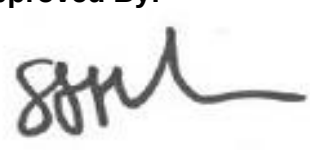
If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-11497-1
Initial Date of Issue:	24-Apr-2023
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt James Power
Project	G23012 Global Centre of Rail Excellence GCRE Phase 2
Quotation No.:	Q22-29781
Order No.:	
No. of Samples:	6
Turnaround (Wkdays):	7
Date Approved:	24-Apr-2023
Approved By:	

Date Received:	06-Apr-2023
Date Instructed:	13-Apr-2023
Results Due:	21-Apr-2023



Details: Stuart Henderson, Technical Manager

Results - Leachate

Project: G23012 Global Centre of Rail Excellence GCRE Phase 2

Client: Jackson Geo Services				**Chemtest Job No.:**		23-11497	23-11497
Quotation No.: Q22-29781				**Chemtest Sample ID.:**		1619733	1619740
Order No.:				Client Sample Ref.:		4	10
				Sample Location:		S2-TP294	S2-TP261
				Sample Type:		SOIL	SOIL
				Top Depth (m):		0.90	2.90
				Bottom Depth (m):		1.00	3.00
				Date Sampled:		04-Apr-2023	04-Apr-2023
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**		
pH	U	1010	10:1		N/A	5.9	8.2
Sulphate	U	1220	10:1	mg/l	1.0	3.6	2.4
Cyanide (Total)	U	1300	10:1	mg/l	0.050	< 0.050	< 0.050
Cyanide (Free)	U	1300	10:1	mg/l	0.050	< 0.050	< 0.050
Arsenic (Dissolved)	U	1455	10:1	µg/l	0.20	6.8	0.73
Cadmium (Dissolved)	U	1455	10:1	µg/l	0.11	< 0.11	< 0.11
Chromium (Dissolved)	U	1455	10:1	µg/l	0.50	4.7	< 0.50
Copper (Dissolved)	U	1455	10:1	µg/l	0.50	13	1.2
Mercury (Dissolved)	U	1455	10:1	µg/l	0.05	< 0.05	< 0.05
Nickel (Dissolved)	U	1455	10:1	µg/l	0.50	1.9	1.1
Lead (Dissolved)	U	1455	10:1	µg/l	0.50	6.9	0.65
Selenium (Dissolved)	U	1455	10:1	µg/l	0.50	1.6	< 0.50
Vanadium (Dissolved)	U	1455	10:1	µg/l	0.50	12	< 0.50
Zinc (Dissolved)	U	1455	10:1	µg/l	2.5	9.6	< 2.5
Chromium (Hexavalent)	U	1490	10:1	µg/l	20	< 20	< 20
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030	< 0.030

Results - Soil

Project: G23012 Global Centre of Rail Excellence GCRE Phase 2

Client: Jackson Geo Services			**Chemtest Job No.:**		23-11497	23-11497	23-11497	23-11497	23-11497	23-11497
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1619731	1619733	1619735	1619736	1619738	1619740
Order No.:			Client Sample Ref.:		1	4	10	1	4	10
			Sample Location:		S2-TP294	S2-TP294	S2-TP294	S2-TP261	S2-TP261	S2-TP261
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.20	0.90	2.90	0.20	0.90	2.90
			Bottom Depth (m):		0.30	1.00	3.00	0.30	1.00	3.00
			Date Sampled:		04-Apr-2023	04-Apr-2023	04-Apr-2023	04-Apr-2023	04-Apr-2023	04-Apr-2023
			Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
ACM Type	U	2192		N/A	-	-	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	12	8.7	11	11	18	13
pH	U	2010		4.0	8.7	5.8	8.8	8.8	6.3	6.9
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40	< 0.40	< 0.40	< 0.40	0.49	< 0.40
Sulphate (2:1 Water Soluble) as SO4 mg/l	U	2120	mg/l	10.000	55	< 10	10	40	13	27
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Arsenic	U	2455	mg/kg	0.5	4.6	12	7.3	7.7	8.6	7.3
Cadmium	U	2455	mg/kg	0.10	0.64	0.19	< 0.10	0.12	0.34	0.14
Chromium	U	2455	mg/kg	0.5	3.7	12	10	4.6	13	3.5
Copper	U	2455	mg/kg	0.50	35	83	28	34	20	28
Mercury	U	2455	mg/kg	0.05	0.15	0.80	0.09	0.10	0.08	0.06
Nickel	U	2455	mg/kg	0.50	9.7	22	29	15	11	25
Lead	U	2455	mg/kg	0.50	61	150	18	25	18	15
Selenium	U	2455	mg/kg	0.25	1.1	0.91	0.71	1.0	1.9	0.84
Vanadium	U	2455	mg/kg	0.5	4.1	16	9.9	5.8	17	5.8
Zinc	U	2455	mg/kg	0.50	130	140	70	49	28	16
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Aliphatic VPH >C5-C6	U	2780	mg/kg	0.05	0.30	0.14	0.40	0.15	0.58	0.15
Aliphatic VPH >C6-C7	U	2780	mg/kg	0.05	0.12	< 0.05	0.19	< 0.05	0.30	< 0.05
Aliphatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.82	< 0.05
Total Aliphatic VPH >C5-C10	U	2780	mg/kg	0.25	0.42	< 0.25	0.60	< 0.25	1.7	< 0.25
Aliphatic EPH >C10-C12	U	2690	mg/kg	2.00	2.2	< 2.0	< 2.0	2.1	< 2.0	< 2.0
Aliphatic EPH >C12-C16	U	2690	mg/kg	1.00	3.9	1.6	1.5	3.7	1.9	1.6
Aliphatic EPH >C16-C21	U	2690	mg/kg	2.00	5.3	< 2.0	< 2.0	4.0	< 2.0	< 2.0
Aliphatic EPH >C21-C35	U	2690	mg/kg	3.00	13	3.3	< 3.0	8.5	3.3	4.4
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00	< 10	< 10	< 10	< 10	< 10	< 10
Total Aliphatic EPH >C10-C35	U	2690	mg/kg	5.00	24	7.8	7.2	18	8.4	9.5
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00	24	< 10	< 10	18	< 10	< 10
Aromatic VPH >C5-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total Aromatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25

Results - Soil

Project: G23012 Global Centre of Rail Excellence GCRE Phase 2

Client: Jackson Geo Services			**Chemtest Job No.:**		23-11497	23-11497	23-11497	23-11497	23-11497	23-11497
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1619731	1619733	1619735	1619736	1619738	1619740
Order No.:			Client Sample Ref.:		1	4	10	1	4	10
			Sample Location:		S2-TP294	S2-TP294	S2-TP294	S2-TP261	S2-TP261	S2-TP261
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.20	0.90	2.90	0.20	0.90	2.90
			Bottom Depth (m):		0.30	1.00	3.00	0.30	1.00	3.00
			Date Sampled:		04-Apr-2023	04-Apr-2023	04-Apr-2023	04-Apr-2023	04-Apr-2023	04-Apr-2023
			Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
Aromatic EPH >C10-C12	U	2690	mg/kg	1.00	8.0	8.6	6.4	9.8	8.8	7.9
Aromatic EPH >C12-C16	U	2690	mg/kg	1.00	15	12	14	14	15	13
Aromatic EPH >C16-C21	N	2690	mg/kg	2.00	15	12	14	16	14	15
Aromatic EPH >C21-C35	U	2690	mg/kg	2.00	31	3.9	< 2.0	6.5	5.4	< 2.0
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00	10	8.1	7.2	7.3	7.8	8.0
Total Aromatic EPH >C10-C35	U	2690	mg/kg	5.00	69	37	35	46	42	36
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00	79	45	42	53	50	44
Total VPH >C5-C10	U	2780	mg/kg	0.50	< 0.50	< 0.50	0.60	< 0.50	1.7	< 0.50
Total EPH >C10-C35	U	2690	mg/kg	10.00	93	44	42	64	51	45
Total EPH >C10-C40	N	2690	mg/kg	10.00	100	52	49	71	59	53
Organic Matter	U	2625	%	0.40	100	2.7	5.5	88	17	87
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	U	2760	µg/kg	1.0	1.2	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Naphthalene	U	2800	mg/kg	0.10	1.9	< 0.10	< 0.10	1.7	< 0.10	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	2800	mg/kg	0.10	0.34	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	2800	mg/kg	0.10	0.40	< 0.10	< 0.10	0.24	< 0.10	< 0.10
Phenanthrene	U	2800	mg/kg	0.10	1.3	< 0.10	< 0.10	1.7	0.12	< 0.10
Anthracene	U	2800	mg/kg	0.10	0.29	< 0.10	< 0.10	0.32	< 0.10	< 0.10
Fluoranthene	U	2800	mg/kg	0.10	0.96	< 0.10	< 0.10	0.89	< 0.10	< 0.10
Pyrene	U	2800	mg/kg	0.10	0.80	< 0.10	< 0.10	0.63	< 0.10	< 0.10
Benzo[a]anthracene	U	2800	mg/kg	0.10	0.45	< 0.10	< 0.10	0.34	< 0.10	< 0.10
Chrysene	U	2800	mg/kg	0.10	0.70	< 0.10	< 0.10	0.52	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	0.97	< 0.10	< 0.10	0.54	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	0.25	< 0.10	< 0.10	0.20	< 0.10	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10	0.31	< 0.10	< 0.10	0.24	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	0.30	< 0.10	< 0.10	0.51	0.20	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.65	0.35	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	0.26	< 0.10	< 0.10	0.46	0.18	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	9.2	< 2.0	< 2.0	8.9	< 2.0	< 2.0
Total Phenols	U	2920	mg/kg	0.10	0.13	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

Results - 2 Stage WAC

Project: G23012 Global Centre of Rail Excellence GCRE Phase 2

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	23-11497								
Chemtest Sample ID:	1619735								
Sample Ref:	10								
Sample ID:									
Sample Location:	S2-TP294								
Top Depth(m):	2.90								
Bottom Depth(m):	3.00								
Sampling Date:	04-Apr-2023						**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**Accred.**	**Units**						
Total Organic Carbon	2625	U	%			3.2	3	5	6
Loss On Ignition	2610	U	%			6.5	--	--	10
Total BTEX	2760	U	mg/kg			< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg			< 0.10	1	--	--
TPH Total WAC	2670	U	mg/kg			< 10	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg			< 2.0	100	--	--
pH	2010	U				8.8	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg			0.014	--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0004	< 0.0002	0.0009	0.0004	0.5	2	25
Barium	1455	U	0.44	0.20	0.87	2.2	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0010	0.0006	0.0021	0.0009	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0017	0.0024	0.0033	0.023	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0006	< 0.0005	0.0012	0.0005	0.06	0.7	5
Selenium	1455	U	0.0094	0.0009	0.019	0.017	0.1	0.5	7
Zinc	1455	U	0.005	0.009	0.011	0.087	4	50	200
Chloride	1220	U	6.6	< 1.0	13	< 10	800	15000	25000
Fluoride	1220	U	0.34	0.26	< 1.0	2.7	10	150	500
Sulphate	1220	U	25	11	50	120	1000	20000	50000
Total Dissolved Solids	1020	N	180	86	360	940	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	4.5	2.6	< 50	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	11

Leachate Test Information	
Leachant volume 1st extract/l	0.329
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.155

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - 2 Stage WAC

Project: G23012 Global Centre of Rail Excellence GCRE Phase 2

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	23-11497								
Chemtest Sample ID:	1619738								
Sample Ref:	4								
Sample ID:									
Sample Location:	S2-TP261								
Top Depth(m):	0.90								
Bottom Depth(m):	1.00								
Sampling Date:	04-Apr-2023								
Determinand	**SOP**	**Accred.**	**Units**				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%			9.9	3	5	6
Loss On Ignition	2610	U	%			17	--	--	10
Total BTEX	2760	U	mg/kg			< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg			< 0.10	1	--	--
TPH Total WAC	2670	U	mg/kg			< 10	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg			< 2.0	100	--	--
pH	2010	U				6.3	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg			0.0080	--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.012	0.0005	0.023	0.011	0.5	2	25
Barium	1455	U	0.010	< 0.005	0.019	0.0053	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0041	0.0015	0.0080	0.016	0.5	10	70
Copper	1455	U	0.0066	0.0029	0.013	0.0036	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0076	< 0.0002	0.015	0.0041	0.5	10	30
Nickel	1455	U	0.0023	0.0006	0.0045	0.0072	0.4	10	40
Lead	1455	U	0.0025	0.0016	0.0049	0.017	0.5	10	50
Antimony	1455	U	0.0027	< 0.0005	0.0053	0.0015	0.06	0.7	5
Selenium	1455	U	0.0028	0.0010	0.0055	0.011	0.1	0.5	7
Zinc	1455	U	0.007	0.006	0.013	0.059	4	50	200
Chloride	1220	U	14	1.7	27	24	800	15000	25000
Fluoride	1220	U	0.33	0.12	< 1.0	1.3	10	150	500
Sulphate	1220	U	56	4.2	110	70	1000	20000	50000
Total Dissolved Solids	1020	N	130	13	250	190	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	2.6	10	< 50	96	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	18

Leachate Test Information	
Leachant volume 1st extract/l	0.312
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.095

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C40	Acetone/Heptane extraction / GCxGC FID detection

Test Methods

SOP	Title	Parameters included	Method summary
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8-C10 Aromatics: >C5–C7,>C7-C8,>C8–C10	Water extraction / Headspace GCxGC FID detection
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge
650	Characterisation of Waste (Leaching WAC)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

eurofins | Chemtest
Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Amended Report

Report No.:	23-11523-2		
Initial Date of Issue:	21-Apr-2023	**Date of Re-Issue:**	24-Apr-2023
Client	Jackson Geo Services		
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA		
Contact(s):	Adam Putt James Power		
Project	G23012 Global Centre of Rail Excellence (GCRE) Phase2		
Quotation No.:	Q22-29781	**Date Received:**	06-Apr-2023
Order No.:		**Date Instructed:**	13-Apr-2023
No. of Samples:	4		
Turnaround (Wkdays):	7	**Results Due:**	21-Apr-2023
Date Approved:	21-Apr-2023		
Approved By:			
Details:	Stuart Henderson, Technical Manager		

Results - Leachate

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase2

Client: Jackson Geo Services				**Chemtest Job No.:**		23-11523
Quotation No.: Q22-29781				**Chemtest Sample ID.:**		1619844
Order No.:				Client Sample Ref.:		5
				Sample Location:		S2-TP266
				Sample Type:		SOIL
				Top Depth (m):		0.90
				Bottom Depth (m):		1.00
				Date Sampled:		04-Apr-2023
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**	
pH	U	1010	10:1		N/A	7.8
Sulphate	U	1220	10:1	mg/l	1.0	17
Cyanide (Total)	U	1300	10:1	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	10:1	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1455	10:1	µg/l	0.20	0.60
Cadmium (Dissolved)	U	1455	10:1	µg/l	0.11	< 0.11
Chromium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Copper (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Mercury (Dissolved)	U	1455	10:1	µg/l	0.05	< 0.05
Nickel (Dissolved)	U	1455	10:1	µg/l	0.50	2.1
Lead (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Selenium (Dissolved)	U	1455	10:1	µg/l	0.50	1.2
Vanadium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Zinc (Dissolved)	U	1455	10:1	µg/l	2.5	< 2.5
Chromium (Hexavalent)	U	1490	10:1	µg/l	20	< 20
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase2

Client: Jackson Geo Services			**Chemtest Job No.:**		23-11523	23-11523	23-11523	23-11523
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1619841	1619842	1619844	1619845
Order No.:			Client Sample Ref.:		4	1	5	7
			Sample Location:		S2-BH233	S2-TP266	S2-TP266	S2-TP266
			Sample Type:		SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.90	0.20	0.90	1.90
			Bottom Depth (m):		1.00	0.30	1.00	2.00
			Date Sampled:		04-Apr-2023	04-Apr-2023	04-Apr-2023	04-Apr-2023
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
ACM Type	U	2192		N/A	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	11	10	6.2	20
pH	M	2010		4.0	8.2	7.3	8.7	6.9
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	< 0.40	0.46	< 0.40	< 0.40
Sulphate (2:1 Water Soluble) as SO4 mg/l	M	2120	mg/l	10.000	130	67	66	43
Cyanide (Free)	M	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	M	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Arsenic	M	2455	mg/kg	0.5	7.9	10	12	10
Cadmium	M	2455	mg/kg	0.10	0.12	0.11	0.74	0.10
Chromium	M	2455	mg/kg	0.5	7.5	11	7.8	8.7
Copper	M	2455	mg/kg	0.50	26	31	50	27
Mercury	M	2455	mg/kg	0.05	0.06	0.07	0.13	0.06
Nickel	M	2455	mg/kg	0.50	15	20	47	18
Lead	M	2455	mg/kg	0.50	18	23	79	20
Selenium	M	2455	mg/kg	0.25	0.86	1.1	0.81	0.92
Vanadium	U	2455	mg/kg	0.5	10	15	12	13
Zinc	M	2455	mg/kg	0.50	39	55	150	50
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Aliphatic VPH >C5-C6	M	2780	mg/kg	0.05	0.16	0.18	0.26	0.21
Aliphatic VPH >C6-C7	M	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	0.13
Aliphatic VPH >C7-C8	M	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C8-C10	M	2780	mg/kg	0.05	0.41	< 0.05	< 0.05	< 0.05
Total Aliphatic VPH >C5-C10	M	2780	mg/kg	0.25	0.58	< 0.25	0.26	0.34
Aliphatic EPH >C10-C12	M	2690	mg/kg	2.00	< 2.0	< 2.0	< 2.0	< 2.0
Aliphatic EPH >C12-C16	M	2690	mg/kg	1.00	2.5	2.3	1.9	< 1.0
Aliphatic EPH >C16-C21	M	2690	mg/kg	2.00	2.9	2.1	< 2.0	< 2.0
Aliphatic EPH >C21-C35	M	2690	mg/kg	3.00	4.7	< 3.0	5.2	4.1
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00	< 10	< 10	< 10	< 10
Total Aliphatic EPH >C10-C35	M	2690	mg/kg	5.00	11	8.7	10	5.4
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00	11	< 10	10	< 10
Aromatic VPH >C5-C7	M	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C7-C8	M	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C8-C10	M	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total Aromatic VPH >C5-C10	M	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase2

Client: Jackson Geo Services			**Chemtest Job No.:**		23-11523	23-11523	23-11523	23-11523
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1619841	1619842	1619844	1619845
Order No.:			Client Sample Ref.:		4	1	5	7
			Sample Location:		S2-BH233	S2-TP266	S2-TP266	S2-TP266
			Sample Type:		SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.90	0.20	0.90	1.90
			Bottom Depth (m):		1.00	0.30	1.00	2.00
			Date Sampled:		04-Apr-2023	04-Apr-2023	04-Apr-2023	04-Apr-2023
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
Aromatic EPH >C10-C12	M	2690	mg/kg	1.00	7.5	7.6	7.4	< 1.0
Aromatic EPH >C12-C16	M	2690	mg/kg	1.00	13	16	11	1.2
Aromatic EPH >C16-C21	N	2690	mg/kg	2.00	14	12	12	12
Aromatic EPH >C21-C35	M	2690	mg/kg	2.00	< 2.0	< 2.0	< 2.0	< 2.0
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00	8.3	8.9	7.7	1.6
Total Aromatic EPH >C10-C35	M	2690	mg/kg	5.00	35	36	31	14
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00	43	45	38	16
Total VPH >C5-C10	M	2780	mg/kg	0.50	0.58	< 0.50	< 0.50	< 0.50
Total EPH >C10-C35	M	2690	mg/kg	10.00	46	45	41	20
Total EPH >C10-C40	N	2690	mg/kg	10.00	54	54	49	21
Organic Matter	M	2625	%	0.40	15	18	11	15
Benzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Naphthalene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Anthracene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Pyrene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]anthracene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Total Phenols	M	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10

Results - 2 Stage WAC

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase2

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	23-11523								
Chemtest Sample ID:	1619841								
Sample Ref:	4								
Sample ID:							**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample Location:	S2-BH233								
Top Depth(m):	0.90								
Bottom Depth(m):	1.00								
Sampling Date:	04-Apr-2023								
Determinand	**SOP**	**Accred.**	**Units**						
Total Organic Carbon	2625	M	%			8.9	3	5	6
Loss On Ignition	2610	M	%			13	--	--	10
Total BTEX	2760	M	mg/kg			< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg			< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg			< 10	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg			< 2.0	100	--	--
pH	2010	M				8.2	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg			0.010	--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0010	0.0004	0.0019	0.0049	0.5	2	25
Barium	1455	U	0.046	0.036	0.092	0.37	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0012	0.0008	0.0023	0.0012	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0010	0.0018	0.0020	0.017	0.5	10	30
Nickel	1455	U	0.0012	< 0.0005	0.0023	0.0012	0.4	10	40
Lead	1455	U	0.0007	< 0.0005	0.0014	0.0007	0.5	10	50
Antimony	1455	U	0.0010	0.0006	0.0020	0.0065	0.06	0.7	5
Selenium	1455	U	0.0014	0.0006	0.0027	0.0072	0.1	0.5	7
Zinc	1455	U	0.012	0.005	0.023	0.058	4	50	200
Chloride	1220	U	1.4	< 1.0	< 10	< 10	800	15000	25000
Fluoride	1220	U	0.27	0.28	< 1.0	2.8	10	150	500
Sulphate	1220	U	99	19	200	270	1000	20000	50000
Total Dissolved Solids	1020	N	300	96	610	1200	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	4.5	3.7	< 50	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	11

Leachate Test Information	
Leachant volume 1st extract/l	0.327
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.183

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C40	Acetone/Heptane extraction / GCxGC FID detection

Test Methods

SOP	Title	Parameters included	Method summary
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8-C10 Aromatics: >C5–C7,>C7-C8,>C8–C10	Water extraction / Headspace GCxGC FID detection
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge
650	Characterisation of Waste (Leaching WAC)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Amended Report

Report No.:	23-11739-3		
Initial Date of Issue:	21-Apr-2023	**Date of Re-Issue:**	24-Apr-2023
Client	Jackson Geo Services		
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA		
Contact(s):	Adam Putt James Power		
Project	G23012 Global Centre of Rail Excellence (GCRE) Phase 2		
Quotation No.:	Q22-29781	**Date Received:**	11-Apr-2023
Order No.:		**Date Instructed:**	13-Apr-2023
No. of Samples:	4		
Turnaround (Wkdays):	7	**Results Due:**	21-Apr-2023
Date Approved:	21-Apr-2023		
Approved By:			
Details:	Stuart Henderson, Technical Manager		

Results - Leachate

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services				**Chemtest Job No.:**		23-11739
Quotation No.: Q22-29781				**Chemtest Sample ID.:**		1620719
Order No.:				Client Sample Ref.:		5
				Sample Location:		S2-BH245
				Sample Type:		SOIL
				Top Depth (m):		0.90
				Bottom Depth (m):		1.00
				Date Sampled:		05-Apr-2023
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**	
pH	U	1010	10:1		N/A	6.8
Sulphate	U	1220	10:1	mg/l	1.0	< 1.0
Cyanide (Total)	U	1300	10:1	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	10:1	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1455	10:1	µg/l	0.20	0.65
Cadmium (Dissolved)	U	1455	10:1	µg/l	0.11	< 0.11
Chromium (Dissolved)	U	1455	10:1	µg/l	0.50	0.62
Copper (Dissolved)	U	1455	10:1	µg/l	0.50	2.5
Mercury (Dissolved)	U	1455	10:1	µg/l	0.05	< 0.05
Nickel (Dissolved)	U	1455	10:1	µg/l	0.50	1.3
Lead (Dissolved)	U	1455	10:1	µg/l	0.50	0.92
Selenium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Vanadium (Dissolved)	U	1455	10:1	µg/l	0.50	0.53
Zinc (Dissolved)	U	1455	10:1	µg/l	2.5	4.2
Chromium (Hexavalent)	U	1490	10:1	µg/l	20	< 20
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services			**Chemtest Job No.:**		23-11739	23-11739	23-11739	23-11739
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1620717	1620719	1620720	1620722
Order No.:			Client Sample Ref.:		3	5	5	104
			Sample Location:		S2-BH245	S2-BH245	S2-BH249	S2-BH249
			Sample Type:		SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.20	0.90	1.50	3.20
			Bottom Depth (m):		0.30	1.00	1.70	3.40
			Date Sampled:		05-Apr-2023	05-Apr-2023	05-Apr-2023	05-Apr-2023
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
ACM Type	U	2192		N/A	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	13	9.3	17	14
pH	U	2010		4.0	9.0	9.2	7.3	11.4
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40	< 0.40	< 0.40	< 0.40
Sulphate (2:1 Water Soluble) as SO4 mg/l	U	2120	mg/l	10.000	23	18	150	300
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Arsenic	U	2455	mg/kg	0.5	12	9.4	6.2	10
Cadmium	U	2455	mg/kg	0.10	0.38	0.28	< 0.10	0.58
Chromium	U	2455	mg/kg	0.5	6.6	5.3	1.2	5.5
Copper	U	2455	mg/kg	0.50	46	36	40	29
Mercury	U	2455	mg/kg	0.05	0.08	0.08	0.74	0.21
Nickel	U	2455	mg/kg	0.50	35	32	11	19
Lead	U	2455	mg/kg	0.50	27	33	59	23
Selenium	U	2455	mg/kg	0.25	0.93	0.85	2.4	2.8
Vanadium	U	2455	mg/kg	0.5	8.8	7.3	3.0	12
Zinc	U	2455	mg/kg	0.50	90	79	30	62
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Aliphatic VPH >C5-C6	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C6-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	0.52
Total Aliphatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	0.52
Aliphatic EPH >C10-C12	U	2690	mg/kg	2.00	< 2.0	< 2.0	< 2.0	< 2.0
Aliphatic EPH >C12-C16	U	2690	mg/kg	1.00	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic EPH >C16-C21	U	2690	mg/kg	2.00	< 2.0	< 2.0	< 2.0	< 2.0
Aliphatic EPH >C21-C35	U	2690	mg/kg	3.00	12	< 3.0	< 3.0	4.2
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00	< 10	< 10	< 10	< 10
Total Aliphatic EPH >C10-C35	U	2690	mg/kg	5.00	13	< 5.0	< 5.0	5.7
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00	13	< 10	< 10	< 10
Aromatic VPH >C5-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total Aromatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services			**Chemtest Job No.:**		23-11739	23-11739	23-11739	23-11739
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1620717	1620719	1620720	1620722
Order No.:			Client Sample Ref.:		3	5	5	104
			Sample Location:		S2-BH245	S2-BH245	S2-BH249	S2-BH249
			Sample Type:		SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.20	0.90	1.50	3.20
			Bottom Depth (m):		0.30	1.00	1.70	3.40
			Date Sampled:		05-Apr-2023	05-Apr-2023	05-Apr-2023	05-Apr-2023
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
Aromatic EPH >C10-C12	U	2690	mg/kg	1.00	< 1.0	1.5	1.6	1.3
Aromatic EPH >C12-C16	U	2690	mg/kg	1.00	1.5	1.6	1.9	1.3
Aromatic EPH >C16-C21	N	2690	mg/kg	2.00	11	12	12	9.9
Aromatic EPH >C21-C35	U	2690	mg/kg	2.00	4.3	< 2.0	< 2.0	< 2.0
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00	6.1	< 1.0	1.6	< 1.0
Total Aromatic EPH >C10-C35	U	2690	mg/kg	5.00	17	15	15	13
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00	23	15	17	13
Total VPH >C5-C10	U	2780	mg/kg	0.50	< 0.50	< 0.50	< 0.50	0.52
Total EPH >C10-C35	U	2690	mg/kg	10.00	31	17	19	19
Total EPH >C10-C40	N	2690	mg/kg	10.00	37	17	20	19
Organic Matter	U	2625	%	0.40	21	2.8	100	50
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	2.6
Toluene	U	2760	µg/kg	1.0	1.2	2.2	< 1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Naphthalene	U	2800	mg/kg	0.10	0.20	0.15	0.15	0.12
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	2800	mg/kg	0.10	0.41	0.27	0.19	0.17
Anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	2800	mg/kg	0.10	0.44	0.31	< 0.10	< 0.10
Pyrene	U	2800	mg/kg	0.10	0.32	0.21	< 0.10	< 0.10
Benzo[a]anthracene	U	2800	mg/kg	0.10	0.16	0.15	< 0.10	< 0.10
Chrysene	U	2800	mg/kg	0.10	0.26	0.13	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	0.42	0.27	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10	0.23	0.14	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	0.22	0.14	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	0.19	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	0.16	0.14	< 0.10	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	3.0	< 2.0	< 2.0	< 2.0
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C40	Acetone/Heptane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8-C10 Aromatics: >C5–C7,>C7-C8,>C8–C10	Water extraction / Headspace GCxGC FID detection
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS

Test Methods

SOP	Title	Parameters included	Method summary
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Amended Report

Report No.:	23-11742-4		
Initial Date of Issue:	21-Apr-2023	**Date of Re-Issue:**	24-Apr-2023
Client	Jackson Geo Services		
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA		
Contact(s):	Adam Putt James Power		
Project	G23012 Global Centre of Rail Excellence (GCRE) Phase 2		
Quotation No.:	Q22-29781	**Date Received:**	11-Apr-2023
Order No.:		**Date Instructed:**	13-Apr-2023
No. of Samples:	5		
Turnaround (Wkdays):	7	**Results Due:**	21-Apr-2023
Date Approved:	21-Apr-2023		
Approved By:			
Details:	Stuart Henderson, Technical Manager		

Results - Leachate

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services				**Chemtest Job No.:**		23-11742
Quotation No.: Q22-29781				**Chemtest Sample ID.:**		1620730
Order No.:				Client Sample Ref.:		1
				Sample Location:		S2-TP263
				Sample Type:		SOIL
				Top Depth (m):		0.20
				Bottom Depth (m):		0.30
				Date Sampled:		05-Apr-2023
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**	
pH	U	1010	10:1		N/A	7.8
Sulphate	U	1220	10:1	mg/l	1.0	23
Cyanide (Total)	U	1300	10:1	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	10:1	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1455	10:1	µg/l	0.20	1.3
Cadmium (Dissolved)	U	1455	10:1	µg/l	0.11	< 0.11
Chromium (Dissolved)	U	1455	10:1	µg/l	0.50	0.89
Copper (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Mercury (Dissolved)	U	1455	10:1	µg/l	0.05	< 0.05
Nickel (Dissolved)	U	1455	10:1	µg/l	0.50	0.56
Lead (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Selenium (Dissolved)	U	1455	10:1	µg/l	0.50	1.8
Vanadium (Dissolved)	U	1455	10:1	µg/l	0.50	0.56
Zinc (Dissolved)	U	1455	10:1	µg/l	2.5	< 2.5
Chromium (Hexavalent)	U	1490	10:1	µg/l	20	< 20
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services			**Chemtest Job No.:**		23-11742	23-11742	23-11742	23-11742	23-11742
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1620730	1620732	1620734	1620736	1620738
Order No.:			Client Sample Ref.:		1	4	9	3	6
			Sample Location:		S2-TP263	S2-TP263	S2-TP263	S2-TP267	S2-TP267
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.20	0.90	2.70	0.50	1.40
			Bottom Depth (m):		0.30	1.00	2.80	0.60	1.50
			Date Sampled:		05-Apr-2023	05-Apr-2023	05-Apr-2023	05-Apr-2023	05-Apr-2023
			Asbestos Lab:		COVENTRY	COVENTRY			
Determinand	**Accred.**	**SOP**	**Units**	**LOD**					
ACM Type	U	2192		N/A	-	-			
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected			
Moisture	N	2030	%	0.020	7.5	15	16	15	8.6
pH	M	2010		4.0	8.5	8.9	8.7	8.8	9.0
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	< 0.40	0.48	< 0.40	< 0.40	< 0.40
Sulphate (2:1 Water Soluble) as SO4 mg/l	M	2120	mg/l	10.000	82	110	71	33	33
Cyanide (Free)	M	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	M	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Arsenic	M	2455	mg/kg	0.5	6.4	12	11	6.9	8.3
Cadmium	M	2455	mg/kg	0.10	0.27	0.26	0.12	0.15	< 0.10
Chromium	M	2455	mg/kg	0.5	23	7.3	7.2	5.0	2.4
Copper	M	2455	mg/kg	0.50	24	42	36	40	63
Mercury	M	2455	mg/kg	0.05	0.11	0.12	0.11	0.18	0.21
Nickel	M	2455	mg/kg	0.50	13	30	25	13	21
Lead	M	2455	mg/kg	0.50	30	34	19	25	28
Selenium	M	2455	mg/kg	0.25	1.1	1.1	1.1	0.76	2.1
Vanadium	U	2455	mg/kg	0.5	25	11	11	6.2	5.1
Zinc	M	2455	mg/kg	0.50	49	93	68	59	42
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Aliphatic VPH >C5-C6	M	2780	mg/kg	0.05	0.22	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C6-C7	M	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C7-C8	M	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C8-C10	M	2780	mg/kg	0.05	2.0	< 0.05	< 0.05	< 0.05	< 0.05
Total Aliphatic VPH >C5-C10	M	2780	mg/kg	0.25	2.2	< 0.25	< 0.25	< 0.25	< 0.25
Aliphatic EPH >C10-C12	M	2690	mg/kg	2.00	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Aliphatic EPH >C12-C16	M	2690	mg/kg	1.00	< 1.0	1.1	< 1.0	< 1.0	< 1.0
Aliphatic EPH >C16-C21	M	2690	mg/kg	2.00	< 2.0	5.6	< 2.0	2.2	< 2.0
Aliphatic EPH >C21-C35	M	2690	mg/kg	3.00	11	77	< 3.0	3.7	4.3
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00	< 10	31	< 10	< 10	< 10
Total Aliphatic EPH >C10-C35	M	2690	mg/kg	5.00	15	84	< 5.0	6.7	5.0
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00	15	110	< 10	< 10	< 10
Aromatic VPH >C5-C7	M	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C7-C8	M	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C8-C10	M	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total Aromatic VPH >C5-C10	M	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services			**Chemtest Job No.:**		23-11742	23-11742	23-11742	23-11742	23-11742
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1620730	1620732	1620734	1620736	1620738
Order No.:			Client Sample Ref.:		1	4	9	3	6
			Sample Location:		S2-TP263	S2-TP263	S2-TP263	S2-TP267	S2-TP267
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.20	0.90	2.70	0.50	1.40
			Bottom Depth (m):		0.30	1.00	2.80	0.60	1.50
			Date Sampled:		05-Apr-2023	05-Apr-2023	05-Apr-2023	05-Apr-2023	05-Apr-2023
			Asbestos Lab:		COVENTRY	COVENTRY			
Determinand	**Accred.**	**SOP**	**Units**	**LOD**					
Aromatic EPH >C10-C12	M	2690	mg/kg	1.00	1.0	< 1.0	1.2	< 1.0	1.6
Aromatic EPH >C12-C16	M	2690	mg/kg	1.00	1.8	2.0	1.4	1.9	1.9
Aromatic EPH >C16-C21	N	2690	mg/kg	2.00	10	4.2	12	11	9.0
Aromatic EPH >C21-C35	M	2690	mg/kg	2.00	< 2.0	23	< 2.0	14	< 2.0
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00	1.4	6.0	< 1.0	1.3	1.2
Total Aromatic EPH >C10-C35	M	2690	mg/kg	5.00	14	30	14	28	14
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00	15	36	14	29	15
Total VPH >C5-C10	M	2780	mg/kg	0.50	2.2	< 0.50	< 0.50	< 0.50	< 0.50
Total EPH >C10-C35	M	2690	mg/kg	10.00	28	110	18	35	19
Total EPH >C10-C40	N	2690	mg/kg	10.00	30	150	18	36	20
Organic Matter	M	2625	%	0.40	53	90	9.0	67	32
Benzene	M	2760	µg/kg	1.0	< 1.0	1.5	< 1.0	< 1.0	< 1.0
Toluene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Naphthalene	M	2800	mg/kg	0.10	0.67	1.2	< 0.10	1.4	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	0.64	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	M	2800	mg/kg	0.10	0.63	0.41	< 0.10	< 0.10	< 0.10
Fluorene	M	2800	mg/kg	0.10	0.95	0.38	< 0.10	< 0.10	< 0.10
Phenanthrene	M	2800	mg/kg	0.10	2.2	1.5	< 0.10	1.9	< 0.10
Anthracene	M	2800	mg/kg	0.10	1.3	0.60	< 0.10	0.29	< 0.10
Fluoranthene	M	2800	mg/kg	0.10	2.1	1.5	< 0.10	2.4	< 0.10
Pyrene	M	2800	mg/kg	0.10	2.0	1.5	< 0.10	1.6	< 0.10
Benzo[a]anthracene	M	2800	mg/kg	0.10	2.6	0.69	< 0.10	1.1	< 0.10
Chrysene	M	2800	mg/kg	0.10	3.0	1.0	< 0.10	1.1	< 0.10
Benzo[b]fluoranthene	M	2800	mg/kg	0.10	3.0	0.90	< 0.10	1.6	< 0.10
Benzo[k]fluoranthene	M	2800	mg/kg	0.10	2.4	0.28	< 0.10	0.58	< 0.10
Benzo[a]pyrene	M	2800	mg/kg	0.10	2.5	0.39	< 0.10	0.82	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2800	mg/kg	0.10	3.0	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	2.5	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	M	2800	mg/kg	0.10	2.7	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	32	10	< 2.0	13	< 2.0
Total Phenols	M	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.26

Results - 2 Stage WAC

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	23-11742								
Chemtest Sample ID:	1620732								
Sample Ref:	4								
Sample ID:							**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample Location:	S2-TP263								
Top Depth(m):	0.90								
Bottom Depth(m):	1.00								
Sampling Date:	05-Apr-2023								
Determinand	**SOP**	**Accred.**	**Units**						
Total Organic Carbon	2625	M	%			52	3	5	6
Loss On Ignition	2610	M	%			34	--	--	10
Total BTEX	2760	M	mg/kg			< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg			< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg			100	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg			20	100	--	--
pH	2010	M				8.9	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg			0.015	--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0004	< 0.0002	0.0008	0.0004	0.5	2	25
Barium	1455	U	0.052	0.027	0.10	0.30	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	0.0005	< 0.0005	0.0048	0.5	10	70
Copper	1455	U	0.0012	0.0007	0.0024	0.0012	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0057	0.0088	0.011	0.085	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	0.0039	0.0012	0.0078	0.015	0.1	0.5	7
Zinc	1455	U	0.010	0.003	0.019	0.035	4	50	200
Chloride	1220	U	53	9.6	110	140	800	15000	25000
Fluoride	1220	U	0.67	0.50	1.3	5.1	10	150	500
Sulphate	1220	U	91	16	180	230	1000	20000	50000
Total Dissolved Solids	1020	N	480	150	940	1800	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	4.1	2.5	< 50	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	15

Leachate Test Information	
Leachant volume 1st extract/l	0.318
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.168

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C40	Acetone/Heptane extraction / GCxGC FID detection

Test Methods

SOP	Title	Parameters included	Method summary
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8-C10 Aromatics: >C5–C7,>C7-C8,>C8–C10	Water extraction / Headspace GCxGC FID detection
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge
650	Characterisation of Waste (Leaching WAC)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Amended Report

Report No.:	23-11744-3		
Initial Date of Issue:	21-Apr-2023	**Date of Re-Issue:**	21-Apr-2023
Client	Jackson Geo Services		
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA		
Contact(s):	Adam Putt James Power		
Project	G23012 Global Centre of Rail Excellence (GCRE) Phase 2		
Quotation No.:	Q22-29781	**Date Received:**	11-Apr-2023
Order No.:		**Date Instructed:**	13-Apr-2023
No. of Samples:	2		
Turnaround (Wkdays):	7	**Results Due:**	21-Apr-2023
Date Approved:	21-Apr-2023		
Approved By:			
Details:	Stuart Henderson, Technical Manager		

Results - Leachate

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services				**Chemtest Job No.:**		23-11744
Quotation No.: Q22-29781				**Chemtest Sample ID.:**		1620750
Order No.:				Client Sample Ref.:		105
				Sample Location:		S2-BH245
				Sample Type:		SOIL
				Top Depth (m):		3.60
				Bottom Depth (m):		3.80
				Date Sampled:		06-Apr-2023
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**	
pH	U	1010	10:1		N/A	7.8
Sulphate	U	1220	10:1	mg/l	1.0	6.2
Cyanide (Total)	U	1300	10:1	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	10:1	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1455	10:1	µg/l	0.20	< 0.20
Cadmium (Dissolved)	U	1455	10:1	µg/l	0.11	< 0.11
Chromium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Copper (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Mercury (Dissolved)	U	1455	10:1	µg/l	0.05	< 0.05
Nickel (Dissolved)	U	1455	10:1	µg/l	0.50	0.64
Lead (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Selenium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Vanadium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Zinc (Dissolved)	U	1455	10:1	µg/l	2.5	< 2.5
Chromium (Hexavalent)	U	1490	10:1	µg/l	20	< 20
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services			**Chemtest Job No.:**		23-11744	23-11744
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1620748	1620750
Order No.:			Client Sample Ref.:		102	105
			Sample Location:		S2-BH245	S2-BH245
			Sample Type:		SOIL	SOIL
			Top Depth (m):		1.70	3.60
			Bottom Depth (m):		2.00	3.80
			Date Sampled:		06-Apr-2023	06-Apr-2023
			Asbestos Lab:		DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
ACM Type	U	2192		N/A	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	11	16
pH	U	2010		4.0	8.3	7.9
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40	0.83
Sulphate (2:1 Water Soluble) as SO4 mg/l	U	2120	mg/l	10.000	38	43
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50
Arsenic	U	2455	mg/kg	0.5	11	8.2
Cadmium	U	2455	mg/kg	0.10	0.11	0.11
Chromium	U	2455	mg/kg	0.5	8.8	12
Copper	U	2455	mg/kg	0.50	36	27
Mercury	U	2455	mg/kg	0.05	0.07	0.06
Nickel	U	2455	mg/kg	0.50	27	30
Lead	U	2455	mg/kg	0.50	20	18
Selenium	U	2455	mg/kg	0.25	0.71	0.88
Vanadium	U	2455	mg/kg	0.5	13	12
Zinc	U	2455	mg/kg	0.50	77	71
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50
Aliphatic VPH >C5-C6	U	2780	mg/kg	0.05	0.18	< 0.05
Aliphatic VPH >C6-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05
Aliphatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05
Aliphatic VPH >C8-C10	U	2780	mg/kg	0.05	0.16	< 0.05
Total Aliphatic VPH >C5-C10	U	2780	mg/kg	0.25	0.33	< 0.25
Aliphatic EPH >C10-C12	U	2690	mg/kg	2.00	< 2.0	< 2.0
Aliphatic EPH >C12-C16	U	2690	mg/kg	1.00	< 1.0	< 1.0
Aliphatic EPH >C16-C21	U	2690	mg/kg	2.00	< 2.0	< 2.0
Aliphatic EPH >C21-C35	U	2690	mg/kg	3.00	< 3.0	5.4
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00	< 10	< 10
Total Aliphatic EPH >C10-C35	U	2690	mg/kg	5.00	< 5.0	5.8
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00	< 10	< 10
Aromatic VPH >C5-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05
Aromatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05
Aromatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05
Total Aromatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services			**Chemtest Job No.:**		23-11744	23-11744
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1620748	1620750
Order No.:			Client Sample Ref.:		102	105
			Sample Location:		S2-BH245	S2-BH245
			Sample Type:		SOIL	SOIL
			Top Depth (m):		1.70	3.60
			Bottom Depth (m):		2.00	3.80
			Date Sampled:		06-Apr-2023	06-Apr-2023
			Asbestos Lab:		DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Aromatic EPH >C10-C12	U	2690	mg/kg	1.00	1.2	1.1
Aromatic EPH >C12-C16	U	2690	mg/kg	1.00	< 1.0	< 1.0
Aromatic EPH >C16-C21	N	2690	mg/kg	2.00	12	13
Aromatic EPH >C21-C35	U	2690	mg/kg	2.00	< 2.0	< 2.0
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00	< 1.0	< 1.0
Total Aromatic EPH >C10-C35	U	2690	mg/kg	5.00	14	14
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00	14	14
Total VPH >C5-C10	U	2780	mg/kg	0.50	< 0.50	< 0.50
Total EPH >C10-C35	U	2690	mg/kg	10.00	16	20
Total EPH >C10-C40	N	2690	mg/kg	10.00	16	20
Organic Matter	U	2625	%	0.40	2.0	5.7
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Naphthalene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10
Acenaphthene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Fluorene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Phenanthrene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[a]anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Chrysene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	< 2.0	< 2.0
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C40	Acetone/Heptane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8-C10 Aromatics: >C5–C7,>C7-C8,>C8–C10	Water extraction / Headspace GCxGC FID detection
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS

Test Methods

SOP	Title	Parameters included	Method summary
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

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Key

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All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

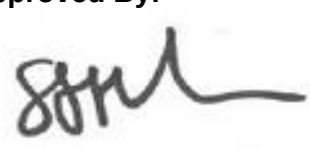
If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-11973-1
Initial Date of Issue:	28-Apr-2023
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt James Power
Project	G23012 Global Centre of Rail Excellence (GCRE) Phase 2
Quotation No.:	Q22-29781
Order No.:	
No. of Samples:	7
Turnaround (Wkdays):	7
Date Approved:	28-Apr-2023
Approved By:	

Date Received:	13-Apr-2023
Date Instructed:	21-Apr-2023
Results Due:	02-May-2023



Details: Stuart Henderson, Technical Manager

Results - Leachate

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services				**Chemtest Job No.:**		23-11973	23-11973
Quotation No.: Q22-29781				**Chemtest Sample ID.:**		1621898	1621904
Order No.:				Client Sample Ref.:		1	5
				Sample Location:		S2-TP271	S2-TP270
				Sample Type:		SOIL	SOIL
				Top Depth (m):		0.2	0.9
				Bottom Depth (m):		0.3	1.0
				Date Sampled:		11-Apr-2023	11-Apr-2023
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**		
pH	U	1010	10:1		N/A	6.6	6.6
Sulphate	U	1220	10:1	mg/l	1.0	6.0	14
Cyanide (Total)	U	1300	10:1	mg/l	0.050	< 0.050	< 0.050
Cyanide (Free)	U	1300	10:1	mg/l	0.050	< 0.050	< 0.050
Arsenic (Dissolved)	U	1455	10:1	µg/l	0.20	1.9	0.74
Cadmium (Dissolved)	U	1455	10:1	µg/l	0.11	< 0.11	< 0.11
Chromium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	< 0.50
Copper (Dissolved)	U	1455	10:1	µg/l	0.50	0.99	1.4
Mercury (Dissolved)	U	1455	10:1	µg/l	0.05	< 0.05	< 0.05
Nickel (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	< 0.50
Lead (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	< 0.50
Selenium (Dissolved)	U	1455	10:1	µg/l	0.50	1.2	< 0.50
Vanadium (Dissolved)	U	1455	10:1	µg/l	0.50	1.1	< 0.50
Zinc (Dissolved)	U	1455	10:1	µg/l	2.5	23	24
Chromium (Hexavalent)	U	1490	10:1	µg/l	20	< 20	< 20
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030	< 0.030

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services			**Chemtest Job No.:**		23-11973	23-11973	23-11973	23-11973	23-11973	23-11973	23-11973
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1621897	1621898	1621900	1621901	1621902	1621903	1621904
Order No.:			Client Sample Ref.:		6	1	4	6	1	3	5
			Sample Location:		S2-TP275	S2-TP271	S2-TP271	S2-TP271	S2-TP270	S2-TP270	S2-TP270
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		1.9	0.2	0.9	1.9	0.2	0.5	0.9
			Bottom Depth (m):		2.0	0.3	1.0	2.0	0.3	0.6	1.0
			Date Sampled:		11-Apr-2023	11-Apr-2023	11-Apr-2023	11-Apr-2023	11-Apr-2023	11-Apr-2023	11-Apr-2023
			Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**							
ACM Type	U	2192		N/A	-	-	-	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	12	10	11	8.2	5.4	6.6	10
pH	U	2010		4.0	7.6	7.7	7.6	7.5	7.8	7.7	7.8
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	0.59	0.52	0.49	1.2	1.4	0.53	0.59
Sulphate (2:1 Water Soluble) as SO4 mg/l	U	2120	mg/l	10.000	98	29	190	56	17	200	110
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Arsenic	U	2455	mg/kg	0.5	20	14	17	13	8.2	8.1	36
Cadmium	U	2455	mg/kg	0.10	0.34	0.30	0.29	0.64	0.22	0.16	0.34
Chromium	U	2455	mg/kg	0.5	8.8	6.2	6.1	6.1	3.4	5.1	16
Copper	U	2455	mg/kg	0.50	64	47	54	33	58	58	270
Mercury	U	2455	mg/kg	0.05	0.21	0.15	0.21	0.06	0.06	0.11	0.87
Nickel	U	2455	mg/kg	0.50	34	26	28	35	35	35	45
Lead	U	2455	mg/kg	0.50	51	38	39	20	40	1200	100
Selenium	U	2455	mg/kg	0.25	1.9	1.7	1.5	0.75	0.91	1.3	1.2
Vanadium	U	2455	mg/kg	0.5	12	11	9.9	12	5.9	8.0	12
Zinc	U	2455	mg/kg	0.50	100	80	86	100	110	93	210
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Aliphatic VPH >C5-C6	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C6-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total Aliphatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25
Aliphatic EPH >C10-C12	U	2690	mg/kg	2.00	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Aliphatic EPH >C12-C16	U	2690	mg/kg	1.00	2.3	3.4	6.6	1.2	< 1.0	< 1.0	2.7
Aliphatic EPH >C16-C21	U	2690	mg/kg	2.00	2.7	5.8	12	< 2.0	< 2.0	< 2.0	8.7
Aliphatic EPH >C21-C35	U	2690	mg/kg	3.00	5.8	11	6.4	< 3.0	< 3.0	< 3.0	11
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Total Aliphatic EPH >C10-C35	U	2690	mg/kg	5.00	11	21	26	5.1	< 5.0	< 5.0	24
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00	11	21	26	< 10	< 10	< 10	24
Aromatic VPH >C5-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total Aromatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services					**Chemtest Job No.:**	23-11973	23-11973	23-11973	23-11973	23-11973	23-11973
Quotation No.: Q22-29781					**Chemtest Sample ID.:**	1621897	1621898	1621900	1621901	1621902	1621903	1621904
Order No.:					Client Sample Ref.:	6	1	4	6	1	3	5
					Sample Location:	S2-TP275	S2-TP271	S2-TP271	S2-TP271	S2-TP270	S2-TP270	S2-TP270
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	1.9	0.2	0.9	1.9	0.2	0.5	0.9
					Bottom Depth (m):	2.0	0.3	1.0	2.0	0.3	0.6	1.0
					Date Sampled:	11-Apr-2023	11-Apr-2023	11-Apr-2023	11-Apr-2023	11-Apr-2023	11-Apr-2023	11-Apr-2023
					Asbestos Lab:	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Aromatic EPH >C10-C12	U	2690	mg/kg	1.00		1.8	1.8	1.1	1.0	1.7	2.1	1.5
Aromatic EPH >C12-C16	U	2690	mg/kg	1.00		2.7	2.1	2.4	2.3	2.8	1.9	5.9
Aromatic EPH >C16-C21	N	2690	mg/kg	2.00		8.5	9.1	12	6.2	5.9	5.3	15
Aromatic EPH >C21-C35	U	2690	mg/kg	2.00		5.4	14	14	2.5	< 2.0	2.0	21
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00		1.9	1.9	2.0	1.7	1.2	2.1	2.5
Total Aromatic EPH >C10-C35	U	2690	mg/kg	5.00		18	27	30	12	12	11	44
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00		20	29	32	14	13	13	46
Total VPH >C5-C10	U	2780	mg/kg	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Total EPH >C10-C35	U	2690	mg/kg	10.00		30	48	56	17	14	15	67
Total EPH >C10-C40	N	2690	mg/kg	10.00		32	50	58	19	16	17	70
Organic Matter	U	2625	%	0.40		53	65	41	2.8	3.7	4.7	62
Benzene	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Naphthalene	U	2800	mg/kg	0.10		1.8	1.4	1.7	< 0.10	1.6	2.4	2.2
Acenaphthylene	N	2800	mg/kg	0.10		0.19	0.19	0.19	< 0.10	< 0.10	< 0.10	0.43
Acenaphthene	U	2800	mg/kg	0.10		1.3	0.95	1.4	< 0.10	1.4	2.1	1.6
Fluorene	U	2800	mg/kg	0.10		0.61	0.45	0.51	< 0.10	0.34	0.58	0.69
Phenanthrene	U	2800	mg/kg	0.10		1.9	1.2	1.7	< 0.10	0.20	0.48	3.6
Anthracene	U	2800	mg/kg	0.10		0.62	0.40	0.49	< 0.10	< 0.10	< 0.10	1.0
Fluoranthene	U	2800	mg/kg	0.10		3.0	2.3	2.8	< 0.10	< 0.10	0.24	4.6
Pyrene	U	2800	mg/kg	0.10		2.7	1.7	2.4	< 0.10	< 0.10	0.18	3.9
Benzo[a]anthracene	U	2800	mg/kg	0.10		2.8	1.5	2.3	< 0.10	< 0.10	< 0.10	2.7
Chrysene	U	2800	mg/kg	0.10		3.4	2.1	2.8	< 0.10	< 0.10	< 0.10	3.8
Benzo[b]fluoranthene	U	2800	mg/kg	0.10		4.5	2.6	4.1	< 0.10	< 0.10	< 0.10	5.6
Benzo[k]fluoranthene	U	2800	mg/kg	0.10		1.5	0.81	1.6	< 0.10	< 0.10	< 0.10	2.0
Benzo[a]pyrene	U	2800	mg/kg	0.10		2.4	1.5	2.1	< 0.10	< 0.10	< 0.10	3.4
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10		2.2	1.3	2.2	< 0.10	< 0.10	< 0.10	3.0
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10		0.74	0.33	0.66	< 0.10	< 0.10	< 0.10	0.88
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10		2.0	0.93	1.8	< 0.10	< 0.10	< 0.10	2.7
Total Of 16 PAH's	N	2800	mg/kg	2.0		32	20	29	< 2.0	3.5	6.0	42
Total Phenols	U	2920	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C40	Acetone/Heptane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8-C10 Aromatics: >C5–C7,>C7-C8,>C8–C10	Water extraction / Headspace GCxGC FID detection
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS

Test Methods

SOP	Title	Parameters included	Method summary
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

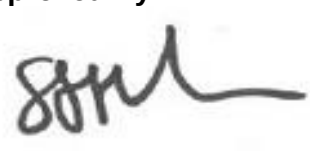
If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-11978-1
Initial Date of Issue:	26-Apr-2023
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt James Power
Project	G23012 Global Centre of Rail Excellence (GCRE) Phase 2
Quotation No.:	Q22-29781
Order No.:	
No. of Samples:	4
Turnaround (Wkdays):	7
Date Approved:	26-Apr-2023
Approved By:	

Date Received:	13-Apr-2023
Date Instructed:	20-Apr-2023
Results Due:	28-Apr-2023



Details: Stuart Henderson, Technical Manager

Results - Leachate

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services				**Chemtest Job No.:**		23-11978
Quotation No.: Q22-29781				**Chemtest Sample ID.:**		1621919
Order No.:				Client Sample Ref.:		5
				Sample Location:		S2-BH242
				Sample Type:		SOIL
				Top Depth (m):		0.9
				Bottom Depth (m):		1.0
				Date Sampled:		11-Apr-2023
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**	
pH	U	1010	10:1		N/A	8.5
Sulphate	U	1220	10:1	mg/l	1.0	3.5
Cyanide (Total)	U	1300	10:1	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	10:1	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1455	10:1	µg/l	0.20	0.34
Cadmium (Dissolved)	U	1455	10:1	µg/l	0.11	< 0.11
Chromium (Dissolved)	U	1455	10:1	µg/l	0.50	1.7
Copper (Dissolved)	U	1455	10:1	µg/l	0.50	0.95
Mercury (Dissolved)	U	1455	10:1	µg/l	0.05	< 0.05
Nickel (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Lead (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Selenium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Vanadium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Zinc (Dissolved)	U	1455	10:1	µg/l	2.5	6.2
Chromium (Hexavalent)	U	1490	10:1	µg/l	20	< 20
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services			**Chemtest Job No.:**		23-11978	23-11978	23-11978	23-11978
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1621914	1621916	1621917	1621919
Order No.:			Client Sample Ref.:		1	3	3	5
			Sample Location:		S2-BH207	S2-BH207	S2-BH242	S2-BH242
			Sample Type:		SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.2	0.9	0.2	0.9
			Bottom Depth (m):		0.3	1.0	0.3	1.0
			Date Sampled:		06-Apr-2023	06-Apr-2023	11-Apr-2023	11-Apr-2023
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
ACM Type	U	2192		N/A	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	7.8	7.6	11	4.5
pH	U	2010		4.0	8.2	7.9	7.7	7.7
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	0.62	0.96	< 0.40	< 0.40
Sulphate (2:1 Water Soluble) as SO4 mg/l	U	2120	mg/l	10.000	37	16	< 10	< 10
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Arsenic	U	2455	mg/kg	0.5	10	9.8	8.7	6.8
Cadmium	U	2455	mg/kg	0.10	0.17	0.12	0.20	0.29
Chromium	U	2455	mg/kg	0.5	7.2	9.8	51	81
Copper	U	2455	mg/kg	0.50	37	38	75	73
Mercury	U	2455	mg/kg	0.05	0.09	0.11	0.08	0.06
Nickel	U	2455	mg/kg	0.50	39	35	25	32
Lead	U	2455	mg/kg	0.50	21	23	86	39
Selenium	U	2455	mg/kg	0.25	0.81	1.0	0.91	0.67
Vanadium	U	2455	mg/kg	0.5	10	17	25	19
Zinc	U	2455	mg/kg	0.50	79	59	260	150
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Aliphatic VPH >C5-C6	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C6-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C8-C10	U	2780	mg/kg	0.05	0.11	< 0.05	< 0.05	0.21
Total Aliphatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25
Aliphatic EPH >C10-C12	U	2690	mg/kg	2.00	< 2.0	< 2.0	< 2.0	< 2.0
Aliphatic EPH >C12-C16	U	2690	mg/kg	1.00	1.6	1.8	5.4	3.1
Aliphatic EPH >C16-C21	U	2690	mg/kg	2.00	< 2.0	< 2.0	130	6.3
Aliphatic EPH >C21-C35	U	2690	mg/kg	3.00	4.3	4.9	3100	2800
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00	< 10	< 10	83	750
Total Aliphatic EPH >C10-C35	U	2690	mg/kg	5.00	8.4	9.7	3200	2800
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00	< 10	< 10	3300	3500
Aromatic VPH >C5-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total Aromatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services			**Chemtest Job No.:**		23-11978	23-11978	23-11978	23-11978
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1621914	1621916	1621917	1621919
Order No.:			Client Sample Ref.:		1	3	3	5
			Sample Location:		S2-BH207	S2-BH207	S2-BH242	S2-BH242
			Sample Type:		SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.2	0.9	0.2	0.9
			Bottom Depth (m):		0.3	1.0	0.3	1.0
			Date Sampled:		06-Apr-2023	06-Apr-2023	11-Apr-2023	11-Apr-2023
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
Aromatic EPH >C10-C12	U	2690	mg/kg	1.00	6.1	6.4	7.2	6.4
Aromatic EPH >C12-C16	U	2690	mg/kg	1.00	12	12	11	12
Aromatic EPH >C16-C21	N	2690	mg/kg	2.00	13	12	31	33
Aromatic EPH >C21-C35	U	2690	mg/kg	2.00	14	13	91	600
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00	10	5.6	5.0	7.3
Total Aromatic EPH >C10-C35	U	2690	mg/kg	5.00	45	44	140	660
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00	55	49	150	660
Total VPH >C5-C10	U	2780	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Total EPH >C10-C35	U	2690	mg/kg	10.00	54	53	3300	3400
Total EPH >C10-C40	N	2690	mg/kg	10.00	64	59	3400	4200
Organic Matter	U	2625	%	0.40	14	8.6	72	58
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Naphthalene	U	2800	mg/kg	0.10	0.11	< 0.10	0.77	0.37
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	0.23	< 0.10
Fluorene	U	2800	mg/kg	0.10	< 0.10	< 0.10	0.29	0.13
Phenanthrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	1.0	0.61
Anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10	0.32	0.13
Fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	1.8	0.68
Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	1.8	0.66
Benzo[a]anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10	0.70	0.33
Chrysene	U	2800	mg/kg	0.10	< 0.10	< 0.10	0.71	0.49
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	1.0	0.64
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	0.29	0.18
Benzo[a]pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	0.29	0.17
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	0.46	0.21
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	< 0.10	< 0.10	0.33	0.21
Total Of 16 PAH's	N	2800	mg/kg	2.0	< 2.0	< 2.0	10	4.8
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.38

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C40	Acetone/Heptane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8-C10 Aromatics: >C5–C7,>C7-C8,>C8–C10	Water extraction / Headspace GCxGC FID detection
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS

Test Methods

SOP	Title	Parameters included	Method summary
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-11982-1
Initial Date of Issue:	28-Apr-2023
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt James Power
Project	G23012 Global Centre of Rail Excellence (GCRE) Phase 2
Quotation No.:	Q22-29781
Order No.:	
No. of Samples:	3
Turnaround (Wkdays):	7
Date Approved:	28-Apr-2023
Approved By:	

Date Received:	13-Apr-2023
Date Instructed:	20-Apr-2023
Results Due:	28-Apr-2023



Details: Stuart Henderson, Technical Manager

Results - Leachate

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services				**Chemtest Job No.:**		23-11982
Quotation No.: Q22-29781				**Chemtest Sample ID.:**		1621924
Order No.:				Client Sample Ref.:		1
				Sample Location:		S2-BH250
				Sample Type:		SOIL
				Top Depth (m):		0.2
				Bottom Depth (m):		0.3
				Date Sampled:		11-Apr-2023
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**	
pH	U	1010	10:1		N/A	6.6
Sulphate	U	1220	10:1	mg/l	1.0	1.3
Cyanide (Total)	U	1300	10:1	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	10:1	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1455	10:1	µg/l	0.20	1.0
Cadmium (Dissolved)	U	1455	10:1	µg/l	0.11	< 0.11
Chromium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Copper (Dissolved)	U	1455	10:1	µg/l	0.50	1.2
Mercury (Dissolved)	U	1455	10:1	µg/l	0.05	< 0.05
Nickel (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Lead (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Selenium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Vanadium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Zinc (Dissolved)	U	1455	10:1	µg/l	2.5	23
Chromium (Hexavalent)	U	1490	10:1	µg/l	20	< 20
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services			**Chemtest Job No.:**		23-11982	23-11982	23-11982
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1621924	1621926	1621928
Order No.:			Client Sample Ref.:		1	3	2
			Sample Location:		S2-BH250	S2-BH250	S2-BH248
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		0.2	0.9	0.5
			Bottom Depth (m):		0.3	1.0	0.6
			Date Sampled:		11-Apr-2023	11-Apr-2023	11-Apr-2023
			Asbestos Lab:		NEW-ASB	DURHAM	NEW-ASB
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
ACM Type	U	2192		N/A	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	14	31	8.5
pH	U	2010		4.0	7.6	7.5	7.6
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40	< 0.40	< 0.40
Sulphate (2:1 Water Soluble) as SO4 mg/l	U	2120	mg/l	10.000	25	< 10	< 10
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Arsenic	U	2455	mg/kg	0.5	22	32	7.7
Cadmium	U	2455	mg/kg	0.10	0.18	< 0.10	0.21
Chromium	U	2455	mg/kg	0.5	8.8	16	5.2
Copper	U	2455	mg/kg	0.50	60	52	38
Mercury	U	2455	mg/kg	0.05	1.2	< 0.05	0.06
Nickel	U	2455	mg/kg	0.50	31	30	26
Lead	U	2455	mg/kg	0.50	29	13	21
Selenium	U	2455	mg/kg	0.25	1.4	1.8	0.87
Vanadium	U	2455	mg/kg	0.5	18	45	7.8
Zinc	U	2455	mg/kg	0.50	47	27	72
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Aliphatic VPH >C5-C6	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C6-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C8-C10	U	2780	mg/kg	0.05	0.14	< 0.05	< 0.05
Total Aliphatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25
Aliphatic EPH >C10-C12	U	2690	mg/kg	2.00	2.8	3.0	2.9
Aliphatic EPH >C12-C16	U	2690	mg/kg	1.00	2.4	3.1	2.6
Aliphatic EPH >C16-C21	U	2690	mg/kg	2.00	< 2.0	3.1	< 2.0
Aliphatic EPH >C21-C35	U	2690	mg/kg	3.00	4.2	5.1	4.8
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00	< 10	< 10	< 10
Total Aliphatic EPH >C10-C35	U	2690	mg/kg	5.00	11	14	12
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00	11	14	12
Aromatic VPH >C5-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Total Aromatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services			**Chemtest Job No.:**		23-11982	23-11982	23-11982
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1621924	1621926	1621928
Order No.:			Client Sample Ref.:		1	3	2
			Sample Location:		S2-BH250	S2-BH250	S2-BH248
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		0.2	0.9	0.5
			Bottom Depth (m):		0.3	1.0	0.6
			Date Sampled:		11-Apr-2023	11-Apr-2023	11-Apr-2023
			Asbestos Lab:		NEW-ASB	DURHAM	NEW-ASB
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Aromatic EPH >C10-C12	U	2690	mg/kg	1.00	17	23	17
Aromatic EPH >C12-C16	U	2690	mg/kg	1.00	18	21	16
Aromatic EPH >C16-C21	N	2690	mg/kg	2.00	13	19	14
Aromatic EPH >C21-C35	U	2690	mg/kg	2.00	2.3	< 2.0	< 2.0
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00	8.2	9.5	6.6
Total Aromatic EPH >C10-C35	U	2690	mg/kg	5.00	51	63	47
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00	59	73	54
Total VPH >C5-C10	U	2780	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Total EPH >C10-C35	U	2690	mg/kg	10.00	62	77	59
Total EPH >C10-C40	N	2690	mg/kg	10.00	70	87	66
Organic Matter	U	2625	%	0.40	37	58	39
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Naphthalene	U	2800	mg/kg	0.10	2.3	1.3	1.6
Acenaphthylene	N	2800	mg/kg	0.10	0.20	0.20	< 0.10
Acenaphthene	U	2800	mg/kg	0.10	1.9	1.2	1.4
Fluorene	U	2800	mg/kg	0.10	0.57	0.18	0.36
Phenanthrene	U	2800	mg/kg	0.10	0.60	< 0.10	0.41
Anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	2800	mg/kg	0.10	0.53	< 0.10	0.45
Pyrene	U	2800	mg/kg	0.10	0.46	< 0.10	0.41
Benzo[a]anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Chrysene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	6.6	2.9	4.6
Total Phenols	U	2920	mg/kg	0.10	0.43	< 0.10	< 0.10

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C40	Acetone/Heptane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8-C10 Aromatics: >C5–C7,>C7-C8,>C8–C10	Water extraction / Headspace GCxGC FID detection
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS

Test Methods

SOP	Title	Parameters included	Method summary
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

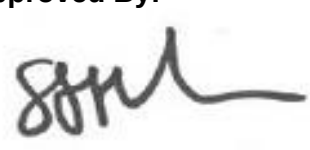
If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-12184-1
Initial Date of Issue:	02-May-2023
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt James Power
Project	G23012 Global Centre of Rail Excellence (GCRE) Phase 2
Quotation No.:	Q22-29781
Order No.:	
No. of Samples:	11
Turnaround (Wkdays):	7
Date Approved:	02-May-2023
Approved By:	

Date Received:	14-Apr-2023
Date Instructed:	21-Apr-2023
Results Due:	02-May-2023



Details: Stuart Henderson, Technical Manager

Results - Leachate

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services				**Chemtest Job No.:**		23-12184	23-12184	23-12184
Quotation No.: Q22-29781				**Chemtest Sample ID.:**		1622822	1622828	1622831
Order No.:				Client Sample Ref.:		1	2	1
				Sample Location:		S2-TP2110	S2-BH252	S2-BH227
				Sample Type:		SOIL	SOIL	SOIL
				Top Depth (m):		0.20	0.50	0.20
				Bottom Depth (m):		0.30	0.60	0.30
				Date Sampled:		11-Apr-2023	11-Apr-2023	11-Apr-2023
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**			
pH	U	1010	10:1		N/A	6.8	6.8	6.9
Sulphate	U	1220	10:1	mg/l	1.0	36	12	1.2
Cyanide (Total)	U	1300	10:1	mg/l	0.050	< 0.050	< 0.050	< 0.050
Cyanide (Free)	U	1300	10:1	mg/l	0.050	< 0.050	< 0.050	< 0.050
Arsenic (Dissolved)	U	1455	10:1	µg/l	0.20	< 0.20	0.81	0.24
Cadmium (Dissolved)	U	1455	10:1	µg/l	0.11	< 0.11	< 0.11	< 0.11
Chromium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	< 0.50	< 0.50
Copper (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	1.3	< 0.50
Mercury (Dissolved)	U	1455	10:1	µg/l	0.05	< 0.05	< 0.05	< 0.05
Nickel (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	0.67	< 0.50
Lead (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	< 0.50	< 0.50
Selenium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	0.80	< 0.50
Vanadium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	< 0.50	< 0.50
Zinc (Dissolved)	U	1455	10:1	µg/l	2.5	4.3	23	24
Chromium (Hexavalent)	U	1490	10:1	µg/l	20	< 20	< 20	< 20
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030	< 0.030	< 0.030

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services			**Chemtest Job No.:**		23-12184	23-12184	23-12184	23-12184	23-12184	23-12184	23-12184	23-12184
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1622813	1622815	1622816	1622818	1622821	1622822	1622824	1622826
Order No.:			Client Sample Ref.:		102	104	1	5	11	1	4	8
			Sample Location:		S2-BH233	S2-BH233	S2-TP2100	S2-TP2100	S2-TP2100	S2-TP2110	S2-TP2110	S2-TP2110
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		1.50	4.50	0.20	0.90	3.90	0.20	0.90	2.90
			Bottom Depth (m):		1.70	4.70	0030	1.00	4.00	0.30	1.00	3.00
			Date Sampled:		12-Apr-2023	12-Apr-2023	11-Apr-2023	11-Apr-2023	11-Apr-2023	11-Apr-2023	11-Apr-2023	11-Apr-2023
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
ACM Type	U	2192		N/A	-	-	-	-	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	14	11	10	12	19	7.8	11	11
pH	U	2010		4.0	7.5	7.4	7.5	7.7	5.1	6.4	6.9	7.2
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40	0.49	0.50	0.46	0.62	< 0.40	< 0.40	0.43
Sulphate (2:1 Water Soluble) as SO4 mg/l	U	2120	mg/l	10.000	55	38	200	200	42	< 10	18	94
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Arsenic	U	2455	mg/kg	0.5	11	11	10	11	5.9	5.6	8.4	19
Cadmium	U	2455	mg/kg	0.10	0.14	0.21	0.17	0.14	< 0.10	0.32	0.18	0.40
Chromium	U	2455	mg/kg	0.5	11	12	5.1	5.7	15	7.7	4.8	16
Copper	U	2455	mg/kg	0.50	35	30	52	73	23	48	47	51
Mercury	U	2455	mg/kg	0.05	0.06	0.05	0.19	0.25	< 0.05	0.09	0.25	0.09
Nickel	U	2455	mg/kg	0.50	29	32	26	28	17	51	21	72
Lead	U	2455	mg/kg	0.50	20	18	110	43	24	30	29	42
Selenium	U	2455	mg/kg	0.25	0.82	0.81	9.3	2.8	0.56	1.1	1.0	1.3
Vanadium	U	2455	mg/kg	0.5	12	15	7.8	9.2	13	12	7.5	24
Zinc	U	2455	mg/kg	0.50	70	78	61	61	51	140	62	110
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Aliphatic VPH >C5-C6	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C6-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C8-C10	U	2780	mg/kg	0.05	0.35	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total Aliphatic VPH >C5-C10	U	2780	mg/kg	0.25	0.35	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25
Aliphatic EPH >C10-C12	U	2690	mg/kg	2.00	< 2.0	2.5	2.3	5.8	2.7	2.4	2.1	2.2
Aliphatic EPH >C12-C16	U	2690	mg/kg	1.00	5.3	2.4	2.4	30	2.5	18	2.2	2.2
Aliphatic EPH >C16-C21	U	2690	mg/kg	2.00	6.3	< 2.0	< 2.0	63	< 2.0	36	< 2.0	< 2.0
Aliphatic EPH >C21-C35	U	2690	mg/kg	3.00	27	4.2	3.1	21	3.9	1200	5.1	3.1
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Total Aliphatic EPH >C10-C35	U	2690	mg/kg	5.00	40	11	9.1	120	10	1300	11	8.5
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00	40	11	< 10	120	10	1300	11	< 10
Aromatic VPH >C5-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total Aromatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services			**Chemtest Job No.:**		23-12184	23-12184	23-12184	23-12184	23-12184	23-12184	23-12184	23-12184
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1622813	1622815	1622816	1622818	1622821	1622822	1622824	1622826
Order No.:			Client Sample Ref.:		102	104	1	5	11	1	4	8
			Sample Location:		S2-BH233	S2-BH233	S2-TP2100	S2-TP2100	S2-TP2100	S2-TP2110	S2-TP2110	S2-TP2110
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		1.50	4.50	0.20	0.90	3.90	0.20	0.90	2.90
			Bottom Depth (m):		1.70	4.70	0030	1.00	4.00	0.30	1.00	3.00
			Date Sampled:		12-Apr-2023	12-Apr-2023	11-Apr-2023	11-Apr-2023	11-Apr-2023	11-Apr-2023	11-Apr-2023	11-Apr-2023
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Aromatic EPH >C10-C12	U	2690	mg/kg	1.00	17	15	15	17	17	15	17	16
Aromatic EPH >C12-C16	U	2690	mg/kg	1.00	18	17	16	20	18	17	17	17
Aromatic EPH >C16-C21	N	2690	mg/kg	2.00	13	11	13	16	14	13	14	11
Aromatic EPH >C21-C35	U	2690	mg/kg	2.00	< 2.0	< 2.0	< 2.0	12	< 2.0	26	< 2.0	< 2.0
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00	8.5	7.4	7.0	8.9	7.0	2.0	6.9	8.2
Total Aromatic EPH >C10-C35	U	2690	mg/kg	5.00	48	44	45	64	50	71	48	43
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00	57	51	52	73	57	73	55	51
Total VPH >C5-C10	U	2780	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Total EPH >C10-C35	U	2690	mg/kg	10.00	89	55	54	180	60	1400	59	52
Total EPH >C10-C40	N	2690	mg/kg	10.00	97	62	61	190	67	1400	66	60
Organic Matter	U	2625	%	0.40	6.3	6.7	28	37	2.3	17	78	17
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Naphthalene	U	2800	mg/kg	0.10	0.37	< 0.10	1.5	1.5	0.37	1.0	1.4	1.1
Acenaphthylene	N	2800	mg/kg	0.10	0.15	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.13
Acenaphthene	U	2800	mg/kg	0.10	0.42	< 0.10	1.1	1.1	0.48	0.87	1.0	1.2
Fluorene	U	2800	mg/kg	0.10	0.14	< 0.10	0.48	0.55	0.15	0.36	0.34	0.59
Phenanthrene	U	2800	mg/kg	0.10	0.11	< 0.10	1.3	1.3	0.20	0.27	1.7	1.8
Anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10	0.36	0.29	< 0.10	0.14	0.21	0.60
Fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	0.84	0.97	0.26	< 0.10	0.77	2.8
Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	0.65	0.76	0.22	0.14	0.59	1.9
Benzo[a]anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.35	< 0.10	< 0.10	0.19	1.4
Chrysene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.33	< 0.10	< 0.10	0.25	1.8
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.24	1.9
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.59
Benzo[a]pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	1.4
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.90
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.31
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.60
Total Of 16 PAH's	N	2800	mg/kg	2.0	< 2.0	< 2.0	6.2	7.2	< 2.0	2.8	6.7	19
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services			**Chemtest Job No.:**		23-12184	23-12184	23-12184
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1622828	1622830	1622831
Order No.:			Client Sample Ref.:		2	6	1
			Sample Location:		S2-BH252	S2-BH252	S2-BH227
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		0.50	1.10	0.20
			Bottom Depth (m):		0.60	1.20	0.30
			Date Sampled:		11-Apr-2023	11-Apr-2023	11-Apr-2023
			Asbestos Lab:		DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
ACM Type	U	2192		N/A	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	10	23	11
pH	U	2010		4.0	7.1	7.3	6.7
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	0.43	0.57	< 0.40
Sulphate (2:1 Water Soluble) as SO4 mg/l	U	2120	mg/l	10.000	84	69	48
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Arsenic	U	2455	mg/kg	0.5	16	21	19
Cadmium	U	2455	mg/kg	0.10	0.36	0.44	0.25
Chromium	U	2455	mg/kg	0.5	15	10	22
Copper	U	2455	mg/kg	0.50	47	93	45
Mercury	U	2455	mg/kg	0.05	0.09	0.23	0.08
Nickel	U	2455	mg/kg	0.50	56	48	49
Lead	U	2455	mg/kg	0.50	32	55	37
Selenium	U	2455	mg/kg	0.25	1.0	2.2	1.3
Vanadium	U	2455	mg/kg	0.5	24	16	22
Zinc	U	2455	mg/kg	0.50	94	130	110
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Aliphatic VPH >C5-C6	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C6-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Total Aliphatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25
Aliphatic EPH >C10-C12	U	2690	mg/kg	2.00	2.1	2.9	2.6
Aliphatic EPH >C12-C16	U	2690	mg/kg	1.00	2.2	2.8	1.5
Aliphatic EPH >C16-C21	U	2690	mg/kg	2.00	< 2.0	< 2.0	< 2.0
Aliphatic EPH >C21-C35	U	2690	mg/kg	3.00	3.5	4.0	3.6
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00	< 10	< 10	< 10
Total Aliphatic EPH >C10-C35	U	2690	mg/kg	5.00	9.3	12	8.6
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00	< 10	12	< 10
Aromatic VPH >C5-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Total Aromatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services			**Chemtest Job No.:**		23-12184	23-12184	23-12184
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1622828	1622830	1622831
Order No.:			Client Sample Ref.:		2	6	1
			Sample Location:		S2-BH252	S2-BH252	S2-BH227
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		0.50	1.10	0.20
			Bottom Depth (m):		0.60	1.20	0.30
			Date Sampled:		11-Apr-2023	11-Apr-2023	11-Apr-2023
			Asbestos Lab:		DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Aromatic EPH >C10-C12	U	2690	mg/kg	1.00	15	19	16
Aromatic EPH >C12-C16	U	2690	mg/kg	1.00	17	20	16
Aromatic EPH >C16-C21	N	2690	mg/kg	2.00	18	14	13
Aromatic EPH >C21-C35	U	2690	mg/kg	2.00	7.9	< 2.0	4.9
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00	7.6	8.7	7.3
Total Aromatic EPH >C10-C35	U	2690	mg/kg	5.00	58	53	50
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00	66	62	58
Total VPH >C5-C10	U	2780	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Total EPH >C10-C35	U	2690	mg/kg	10.00	67	65	59
Total EPH >C10-C40	N	2690	mg/kg	10.00	75	73	66
Organic Matter	U	2625	%	0.40	11	56	8.5
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Naphthalene	U	2800	mg/kg	0.10	1.2	1.8	1.4
Acenaphthylene	N	2800	mg/kg	0.10	0.21	0.23	0.28
Acenaphthene	U	2800	mg/kg	0.10	1.3	1.2	1.6
Fluorene	U	2800	mg/kg	0.10	0.64	0.60	0.67
Phenanthrene	U	2800	mg/kg	0.10	2.0	1.5	2.4
Anthracene	U	2800	mg/kg	0.10	0.70	0.46	1.4
Fluoranthene	U	2800	mg/kg	0.10	3.4	2.6	3.6
Pyrene	U	2800	mg/kg	0.10	2.3	1.9	2.9
Benzo[a]anthracene	U	2800	mg/kg	0.10	1.7	1.7	1.9
Chrysene	U	2800	mg/kg	0.10	1.8	2.5	2.1
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	2.0	3.3	< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	0.72	1.1	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10	1.5	2.1	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	0.98	1.8	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	0.26	0.58	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	0.65	1.1	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	21	25	18
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35–C40	Acetone/Heptane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8-C10 Aromatics: >C5–C7,>C7-C8,>C8–C10	Water extraction / Headspace GCxGC FID detection
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS

Test Methods

SOP	Title	Parameters included	Method summary
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-12238-1
Initial Date of Issue:	28-Apr-2023
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt James Power
Project	G23012 Global Centre of Rail Excellence (GCRE) Phase 2
Quotation No.:	Q22-29781
Order No.:	
No. of Samples:	6
Turnaround (Wkdays):	7
Date Approved:	28-Apr-2023
Approved By:	
Details:	Stuart Henderson, Technical Manager

Date Received:	14-Apr-2023
Date Instructed:	20-Apr-2023
Results Due:	28-Apr-2023

Results - Leachate

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services				**Chemtest Job No.:**		23-12238
Quotation No.: Q22-29781				**Chemtest Sample ID.:**		1623100
Order No.:				Client Sample Ref.:		1
				Sample Location:		S2-TP2115
				Sample Type:		SOIL
				Top Depth (m):		0.20
				Bottom Depth (m):		0.30
				Date Sampled:		12-Apr-2023
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**	
pH	U	1010	10:1		N/A	8.0
Sulphate	U	1220	10:1	mg/l	1.0	1.9
Cyanide (Total)	U	1300	10:1	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	10:1	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1455	10:1	µg/l	0.20	0.70
Cadmium (Dissolved)	U	1455	10:1	µg/l	0.11	< 0.11
Chromium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Copper (Dissolved)	U	1455	10:1	µg/l	0.50	1.8
Mercury (Dissolved)	U	1455	10:1	µg/l	0.05	< 0.05
Nickel (Dissolved)	U	1455	10:1	µg/l	0.50	0.59
Lead (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Selenium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Vanadium (Dissolved)	U	1455	10:1	µg/l	0.50	0.64
Zinc (Dissolved)	U	1455	10:1	µg/l	2.5	5.5
Chromium (Hexavalent)	U	1490	10:1	µg/l	20	< 20
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services			**Chemtest Job No.:**		23-12238	23-12238	23-12238	23-12238	23-12238	23-12238
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1623096	1623098	1623099	1623100	1623103	1623104
Order No.:			Client Sample Ref.:		1	4	6	1	8	4
			Sample Location:		S2-TP2122	S2-TP2122	S2-TP2122	S2-TP2115	S2-TP2115	S2-TP2115
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.20	0.90	1.90	0.20	2.90	0.90
			Bottom Depth (m):		0.30	1.00	1.00	0.30	3.00	1.00
			Date Sampled:		12-Apr-2023	12-Apr-2023	12-Apr-2023	12-Apr-2023	12-Apr-2023	12-Apr-2023
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
ACM Type	U	2192		N/A	-	-	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	12	10	17	17	75	17
pH	M	2010		4.0	6.8	7.6	8.0	7.9	8.0	8.2
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	< 0.40	0.68	0.41	6.2	6.0	< 0.40
Sulphate (2:1 Water Soluble) as SO4 mg/l	M	2120	mg/l	10.000	< 10	< 10	< 10	< 10	< 10	22
Cyanide (Free)	M	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	M	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Arsenic	M	2455	mg/kg	0.5	11	8.5	21	44	25	33
Cadmium	M	2455	mg/kg	0.10	0.30	0.26	0.42	0.84	1.9	2.4
Chromium	M	2455	mg/kg	0.5	6.5	8.5	11	30	17	19
Copper	M	2455	mg/kg	0.50	55	44	72	190	220	270
Mercury	M	2455	mg/kg	0.05	0.19	0.15	0.58	0.20	0.22	0.27
Nickel	M	2455	mg/kg	0.50	31	39	53	64	43	54
Lead	M	2455	mg/kg	0.50	36	22	40	95	330	400
Selenium	M	2455	mg/kg	0.25	1.1	1.0	2.1	2.0	1.2	1.6
Vanadium	U	2455	mg/kg	0.5	12	11	14	53	30	36
Zinc	M	2455	mg/kg	0.50	75	81	110	170	330	410
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Aliphatic VPH >C5-C6	M	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C6-C7	M	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C7-C8	M	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C8-C10	M	2780	mg/kg	0.05	< 0.05	0.31	< 0.05	< 0.05	< 0.05	< 0.05
Total Aliphatic VPH >C5-C10	M	2780	mg/kg	0.25	< 0.25	0.31	< 0.25	< 0.25	< 0.25	< 0.25
Aliphatic EPH >C10-C12	M	2690	mg/kg	2.00	< 2.0	< 2.0	< 2.0	< 2.0	4.1	< 2.0
Aliphatic EPH >C12-C16	M	2690	mg/kg	1.00	3.8	2.5	2.4	3.8	6.5	2.5
Aliphatic EPH >C16-C21	M	2690	mg/kg	2.00	3.3	2.4	2.8	5.2	16	3.6
Aliphatic EPH >C21-C35	M	2690	mg/kg	3.00	4.5	6.3	7.6	8.8	38	5.5
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00	< 10	< 10	< 10	< 10	< 10	< 10
Total Aliphatic EPH >C10-C35	M	2690	mg/kg	5.00	13	12	14	20	64	12
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00	13	12	14	20	64	12
Aromatic VPH >C5-C7	M	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C7-C8	M	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C8-C10	M	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total Aromatic VPH >C5-C10	M	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services			**Chemtest Job No.:**		23-12238	23-12238	23-12238	23-12238	23-12238	23-12238
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1623096	1623098	1623099	1623100	1623103	1623104
Order No.:			Client Sample Ref.:		1	4	6	1	8	4
			Sample Location:		S2-TP2122	S2-TP2122	S2-TP2122	S2-TP2115	S2-TP2115	S2-TP2115
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.20	0.90	1.90	0.20	2.90	0.90
			Bottom Depth (m):		0.30	1.00	1.00	0.30	3.00	1.00
			Date Sampled:		12-Apr-2023	12-Apr-2023	12-Apr-2023	12-Apr-2023	12-Apr-2023	12-Apr-2023
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
Aromatic EPH >C10-C12	M	2690	mg/kg	1.00	7.4	5.8	5.8	9.0	22	7.6
Aromatic EPH >C12-C16	M	2690	mg/kg	1.00	12	11	9.9	14	34	12
Aromatic EPH >C16-C21	N	2690	mg/kg	2.00	13	13	15	120	68	19
Aromatic EPH >C21-C35	M	2690	mg/kg	2.00	16	14	11	250	530	41
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00	5.0	5.3	4.8	8.4	110	5.4
Total Aromatic EPH >C10-C35	M	2690	mg/kg	5.00	49	44	42	390	650	79
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00	54	49	47	400	770	84
Total VPH >C5-C10	M	2780	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Total EPH >C10-C35	M	2690	mg/kg	10.00	62	56	56	410	710	91
Total EPH >C10-C40	N	2690	mg/kg	10.00	67	61	61	420	830	97
Organic Matter	M	2625	%	0.40	86	46	67	74	49	56
Benzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Naphthalene	M	2800	mg/kg	0.10	0.58	0.53	0.51	2.2	< 0.10	1.5
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	1.3	< 0.10	< 0.10
Acenaphthene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.36	< 0.10	< 0.10
Fluorene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.31	< 0.10	< 0.10
Phenanthrene	M	2800	mg/kg	0.10	0.81	0.49	0.68	4.5	< 0.10	2.2
Anthracene	M	2800	mg/kg	0.10	0.36	< 0.10	0.16	4.0	< 0.10	< 0.10
Fluoranthene	M	2800	mg/kg	0.10	1.2	0.69	0.54	37	< 0.10	4.6
Pyrene	M	2800	mg/kg	0.10	0.84	0.55	0.40	32	< 0.10	2.8
Benzo[a]anthracene	M	2800	mg/kg	0.10	0.35	< 0.10	< 0.10	17	< 0.10	2.4
Chrysene	M	2800	mg/kg	0.10	0.61	< 0.10	< 0.10	21	< 0.10	2.8
Benzo[b]fluoranthene	M	2800	mg/kg	0.10	0.99	< 0.10	< 0.10	23	< 0.10	3.9
Benzo[k]fluoranthene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	8.4	< 0.10	1.2
Benzo[a]pyrene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	13	< 0.10	1.9
Indeno(1,2,3-c,d)Pyrene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	6.6	< 0.10	1.6
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	1.2	< 0.10	< 0.10
Benzo[g,h,i]perylene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	4.7	< 0.10	1.1
Total Of 16 PAH's	N	2800	mg/kg	2.0	5.7	2.3	2.3	180	< 2.0	26
Total Phenols	M	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.24	< 0.10

Results - 2 Stage WAC

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	23-12238								
Chemtest Sample ID:	1623103								
Sample Ref:	8						**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:									
Sample Location:	S2-TP2115								
Top Depth(m):	2.90								
Bottom Depth(m):	3.00								
Sampling Date:	12-Apr-2023								
Determinand	**SOP**	**Accred.**	**Units**						
Total Organic Carbon	2625	M	%			29	3	5	6
Loss On Ignition	2610	M	%			91	--	--	10
Total BTEX	2760	M	mg/kg			< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg			< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg			450	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg			< 2.0	100	--	--
pH	2010	M				8.0	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg			0.010	--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0027	0.0018	0.0020	0.016	0.5	2	25
Barium	1455	U	0.009	< 0.005	0.0068	0.0013	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0013	0.0005	0.0010	< 0.0005	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0003	0.0002	0.0002	0.0018	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0009	< 0.0005	0.0007	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	0.0005	< 0.0005	0.0045	0.1	0.5	7
Zinc	1455	U	0.006	0.005	0.005	0.048	4	50	200
Chloride	1220	U	4.5	1.3	< 10	12	800	15000	25000
Fluoride	1220	U	0.15	0.14	< 1.0	1.2	10	150	500
Sulphate	1220	U	8.2	1.6	< 10	15	1000	20000	50000
Total Dissolved Solids	1020	N	43	17	32	150	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	36	22	< 50	190	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	75

Leachate Test Information	
Leachant volume 1st extract/l	0.000
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.025

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C40	Acetone/Heptane extraction / GCxGC FID detection

Test Methods

SOP	Title	Parameters included	Method summary
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8-C10 Aromatics: >C5–C7,>C7-C8,>C8–C10	Water extraction / Headspace GCxGC FID detection
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge
650	Characterisation of Waste (Leaching WAC)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-12253-1		
Initial Date of Issue:	27-Apr-2023		
Client	Jackson Geo Services		
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA		
Contact(s):	Adam Putt James Power		
Project	G23012 Global Centre of Rail Excellence (GCRE) Phase 2		
Quotation No.:	Q22-29781	**Date Received:**	14-Apr-2023
Order No.:		**Date Instructed:**	20-Apr-2023
No. of Samples:	1		
Turnaround (Wkdays):	7	**Results Due:**	28-Apr-2023
Date Approved:	27-Apr-2023		
Approved By:			



Details:	Stuart Henderson, Technical Manager

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services			**Chemtest Job No.:**		23-12253
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1623192
Order No.:			Client Sample Ref.:		105
			Sample Location:		S2-BH242
			Sample Type:		SOIL
			Top Depth (m):		3.10
			Bottom Depth (m):		3.30
			Date Sampled:		12-Apr-2023
			Asbestos Lab:		NEW-ASB
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
ACM Type	U	2192		N/A	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected
Moisture	N	2030	%	0.020	17
pH	U	2010		4.0	6.5
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	0.47
Sulphate (2:1 Water Soluble) as SO4 mg/l	U	2120	mg/l	10.000	< 10
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50
Arsenic	U	2455	mg/kg	0.5	4.4
Cadmium	U	2455	mg/kg	0.10	< 0.10
Chromium	U	2455	mg/kg	0.5	12
Copper	U	2455	mg/kg	0.50	14
Mercury	U	2455	mg/kg	0.05	< 0.05
Nickel	U	2455	mg/kg	0.50	18
Lead	U	2455	mg/kg	0.50	12
Selenium	U	2455	mg/kg	0.25	0.42
Vanadium	U	2455	mg/kg	0.5	11
Zinc	U	2455	mg/kg	0.50	35
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50
Aliphatic VPH >C5-C6	U	2780	mg/kg	0.05	< 0.05
Aliphatic VPH >C6-C7	U	2780	mg/kg	0.05	< 0.05
Aliphatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05
Aliphatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05
Total Aliphatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25
Aliphatic EPH >C10-C12	U	2690	mg/kg	2.00	< 2.0
Aliphatic EPH >C12-C16	U	2690	mg/kg	1.00	2.1
Aliphatic EPH >C16-C21	U	2690	mg/kg	2.00	2.0
Aliphatic EPH >C21-C35	U	2690	mg/kg	3.00	5.1
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00	< 10
Total Aliphatic EPH >C10-C35	U	2690	mg/kg	5.00	11
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00	11
Aromatic VPH >C5-C7	U	2780	mg/kg	0.05	< 0.05
Aromatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05
Aromatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05
Total Aromatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services			**Chemtest Job No.:**		23-12253
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1623192
Order No.:			Client Sample Ref.:		105
			Sample Location:		S2-BH242
			Sample Type:		SOIL
			Top Depth (m):		3.10
			Bottom Depth (m):		3.30
			Date Sampled:		12-Apr-2023
			Asbestos Lab:		NEW-ASB
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Aromatic EPH >C10-C12	U	2690	mg/kg	1.00	6.6
Aromatic EPH >C12-C16	U	2690	mg/kg	1.00	11
Aromatic EPH >C16-C21	N	2690	mg/kg	2.00	13
Aromatic EPH >C21-C35	U	2690	mg/kg	2.00	22
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00	5.6
Total Aromatic EPH >C10-C35	U	2690	mg/kg	5.00	52
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00	57
Total VPH >C5-C10	U	2780	mg/kg	0.50	< 0.50
Total EPH >C10-C35	U	2690	mg/kg	10.00	62
Total EPH >C10-C40	N	2690	mg/kg	10.00	68
Organic Matter	U	2625	%	0.40	2.4
Benzene	U	2760	µg/kg	1.0	< 1.0
Toluene	U	2760	µg/kg	1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0
Naphthalene	U	2800	mg/kg	0.10	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10
Acenaphthene	U	2800	mg/kg	0.10	< 0.10
Fluorene	U	2800	mg/kg	0.10	< 0.10
Phenanthrene	U	2800	mg/kg	0.10	< 0.10
Anthracene	U	2800	mg/kg	0.10	< 0.10
Fluoranthene	U	2800	mg/kg	0.10	< 0.10
Pyrene	U	2800	mg/kg	0.10	< 0.10
Benzo[a]anthracene	U	2800	mg/kg	0.10	< 0.10
Chrysene	U	2800	mg/kg	0.10	< 0.10
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	< 2.0
Total Phenols	U	2920	mg/kg	0.10	< 0.10

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C40	Acetone/Heptane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8-C10 Aromatics: >C5–C7,>C7-C8,>C8–C10	Water extraction / Headspace GCxGC FID detection
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-12341-1		
Initial Date of Issue:	03-May-2023		
Client	Jackson Geo Services		
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA		
Contact(s):	Adam Putt James Power		
Project	G23012 Global Centre of Rail Excellence (GCRE) Stage II		
Quotation No.:	Q22-29781	**Date Received:**	17-Apr-2023
Order No.:		**Date Instructed:**	21-Apr-2023
No. of Samples:	7		
Turnaround (Wkdays):	7	**Results Due:**	02-May-2023
Date Approved:	03-May-2023		

Approved By:



Details: Stuart Henderson, Technical Manager

Results - Leachate

Project: G23012 Global Centre of Rail Excellence (GCRE) Stage II

Client: Jackson Geo Services				**Chemtest Job No.:**		23-12341	23-12341
Quotation No.: Q22-29781				**Chemtest Sample ID.:**		1623701	1623708
Order No.:				Client Sample Ref.:		1	7
				Sample Location:		S2-TP2105	S2-TP2106
				Sample Type:		SOIL	SOIL
				Top Depth (m):		0.20	1.90
				Bottom Depth (m):		0.30	2.00
				Date Sampled:		13-Apr-2023	13-Apr-2023
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**		
pH	U	1010	10:1		N/A	6.3	6.4
Sulphate	U	1220	10:1	mg/l	1.0	16	6.6
Cyanide (Total)	U	1300	10:1	mg/l	0.050	< 0.050	< 0.050
Cyanide (Free)	U	1300	10:1	mg/l	0.050	< 0.050	< 0.050
Arsenic (Dissolved)	U	1455	10:1	µg/l	0.20	0.46	2.9
Cadmium (Dissolved)	U	1455	10:1	µg/l	0.11	< 0.11	< 0.11
Chromium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	2.6
Copper (Dissolved)	U	1455	10:1	µg/l	0.50	1.0	5.8
Mercury (Dissolved)	U	1455	10:1	µg/l	0.05	< 0.05	< 0.05
Nickel (Dissolved)	U	1455	10:1	µg/l	0.50	0.60	1.2
Lead (Dissolved)	U	1455	10:1	µg/l	0.50	0.51	3.8
Selenium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	0.52
Vanadium (Dissolved)	U	1455	10:1	µg/l	0.50	0.56	4.7
Zinc (Dissolved)	U	1455	10:1	µg/l	2.5	39	80
Chromium (Hexavalent)	U	1490	10:1	µg/l	20	< 20	< 20
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030	< 0.030

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Stage II

Client: Jackson Geo Services			**Chemtest Job No.:**		23-12341	23-12341	23-12341	23-12341	23-12341	23-12341	23-12341
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1623701	1623703	1623704	1623706	1623708	1623709	1623712
Order No.:			Client Sample Ref.:		1	4	6	3	7	1	7
			Sample Location:		S2-TP2105	S2-TP2105	S2-TP2105	S2-TP2106	S2-TP2106	S2-TP2109	S2-TP2109
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.20	0.90	1.80	0.50	1.90	0.20	1.90
			Bottom Depth (m):		0.30	1.00	1.90	0.60	2.00	0.30	2.00
			Date Sampled:		13-Apr-2023	13-Apr-2023	13-Apr-2023	13-Apr-2023	13-Apr-2023	13-Apr-2023	13-Apr-2023
			Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**							
ACM Type	U	2192		N/A	-	-	-	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	18	13	31	11	23	6.0	21
pH	U	2010		4.0	6.7	7.6	7.1	7.7	6.9	11.2	6.9
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	2.1	0.77	< 0.40	0.54	< 0.40	1.6	< 0.40
Sulphate (2:1 Water Soluble) as SO4 mg/l	U	2120	mg/l	10.000	510	120	14	120	< 10	600	< 10
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	2.3	< 0.50	< 0.50	< 0.50	< 0.50	0.50	< 0.50
Arsenic	U	2455	mg/kg	0.5	6.8	19	7.0	27	7.5	24	9.7
Cadmium	U	2455	mg/kg	0.10	0.16	0.49	< 0.10	0.69	< 0.10	1.8	< 0.10
Chromium	U	2455	mg/kg	0.5	9.3	5.9	21	8.4	16	31	14
Copper	U	2455	mg/kg	0.50	970	270	24	50	14	130	21
Mercury	U	2455	mg/kg	0.05	0.06	0.11	< 0.05	0.19	< 0.05	0.64	< 0.05
Nickel	U	2455	mg/kg	0.50	18	29	18	42	13	56	17
Lead	U	2455	mg/kg	0.50	19	23	12	32	15	370	12
Selenium	U	2455	mg/kg	0.25	0.76	1.2	0.49	1.5	0.58	0.68	0.53
Vanadium	U	2455	mg/kg	0.5	11	8.6	18	13	19	19	14
Zinc	U	2455	mg/kg	0.50	540	130	92	170	28	630	83
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Aliphatic VPH >C5-C6	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C6-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total Aliphatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25
Aliphatic EPH >C10-C12	U	2690	mg/kg	2.00	2.3	2.1	3.5	2.8	2.5	2.4	2.5
Aliphatic EPH >C12-C16	U	2690	mg/kg	1.00	2.5	2.5	3.0	2.5	2.2	2.3	1.8
Aliphatic EPH >C16-C21	U	2690	mg/kg	2.00	< 2.0	< 2.0	2.1	< 2.0	< 2.0	< 2.0	< 2.0
Aliphatic EPH >C21-C35	U	2690	mg/kg	3.00	3.8	3.3	5.7	3.9	4.1	25	6.6
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Total Aliphatic EPH >C10-C35	U	2690	mg/kg	5.00	9.9	9.0	14	11	10	31	12
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00	< 10	< 10	14	11	10	31	12
Aromatic VPH >C5-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total Aromatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Stage II

Client: Jackson Geo Services			**Chemtest Job No.:**		23-12341	23-12341	23-12341	23-12341	23-12341	23-12341	23-12341
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1623701	1623703	1623704	1623706	1623708	1623709	1623712
Order No.:			Client Sample Ref.:		1	4	6	3	7	1	7
			Sample Location:		S2-TP2105	S2-TP2105	S2-TP2105	S2-TP2106	S2-TP2106	S2-TP2109	S2-TP2109
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.20	0.90	1.80	0.50	1.90	0.20	1.90
			Bottom Depth (m):		0.30	1.00	1.90	0.60	2.00	0.30	2.00
			Date Sampled:		13-Apr-2023	13-Apr-2023	13-Apr-2023	13-Apr-2023	13-Apr-2023	13-Apr-2023	13-Apr-2023
			Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**							
Aromatic EPH >C10-C12	U	2690	mg/kg	1.00	16	16	18	17	18	15	17
Aromatic EPH >C12-C16	U	2690	mg/kg	1.00	17	16	22	15	20	14	18
Aromatic EPH >C16-C21	N	2690	mg/kg	2.00	12	11	15	12	13	19	14
Aromatic EPH >C21-C35	U	2690	mg/kg	2.00	< 2.0	< 2.0	11	12	< 2.0	36	< 2.0
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00	7.7	6.7	11	6.6	8.5	5.4	8.1
Total Aromatic EPH >C10-C35	U	2690	mg/kg	5.00	45	43	66	56	52	84	49
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00	53	50	77	63	60	89	57
Total VPH >C5-C10	U	2780	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Total EPH >C10-C35	U	2690	mg/kg	10.00	55	52	81	67	62	120	61
Total EPH >C10-C40	N	2690	mg/kg	10.00	63	59	91	74	71	120	69
Organic Matter	U	2625	%	0.40	25	18	2.1	20	1.4	14	4.9
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Naphthalene	U	2800	mg/kg	0.10	0.86	0.88	0.25	0.67	< 0.10	2.1	0.26
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.33	< 0.10
Acenaphthene	U	2800	mg/kg	0.10	0.64	< 0.10	0.48	0.56	< 0.10	1.7	0.45
Fluorene	U	2800	mg/kg	0.10	0.47	< 0.10	0.13	0.19	< 0.10	1.7	0.16
Phenanthrene	U	2800	mg/kg	0.10	1.1	0.51	< 0.10	0.38	< 0.10	5.8	0.15
Anthracene	U	2800	mg/kg	0.10	0.25	< 0.10	< 0.10	< 0.10	< 0.10	1.3	< 0.10
Fluoranthene	U	2800	mg/kg	0.10	1.3	< 0.10	< 0.10	0.32	< 0.10	8.9	0.16
Pyrene	U	2800	mg/kg	0.10	1.1	< 0.10	< 0.10	0.21	< 0.10	6.3	0.11
Benzo[a]anthracene	U	2800	mg/kg	0.10	1.3	< 0.10	< 0.10	0.23	< 0.10	5.0	< 0.10
Chrysene	U	2800	mg/kg	0.10	1.1	< 0.10	< 0.10	0.26	< 0.10	4.4	< 0.10
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	1.3	< 0.10	< 0.10	0.39	< 0.10	5.6	< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	0.54	< 0.10	< 0.10	< 0.10	< 0.10	1.6	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10	0.98	< 0.10	< 0.10	< 0.10	< 0.10	3.5	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	0.96	< 0.10	< 0.10	< 0.10	< 0.10	2.4	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	0.27	< 0.10	< 0.10	< 0.10	< 0.10	0.61	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	0.55	< 0.10	< 0.10	< 0.10	< 0.10	1.6	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	13	< 2.0	< 2.0	3.2	< 2.0	53	< 2.0
Total Phenols	U	2920	mg/kg	0.10	0.13	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C40	Acetone/Heptane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8-C10 Aromatics: >C5–C7,>C7-C8,>C8–C10	Water extraction / Headspace GCxGC FID detection
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS

Test Methods

SOP	Title	Parameters included	Method summary
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

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I/S	Insufficient Sample
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LOD	Limit of detection

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All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-12351-1		
Initial Date of Issue:	25-Apr-2023		
Client	Jackson Geo Services		
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA		
Contact(s):	Adam Putt James Power		
Project	G23012 Global Centre of Rail Excellence (GCRE) Phase 2		
Quotation No.:	Q22-29781	**Date Received:**	17-Apr-2023
Order No.:		**Date Instructed:**	20-Apr-2023
No. of Samples:	1		
Turnaround (Wkdays):	7	**Results Due:**	28-Apr-2023
Date Approved:	25-Apr-2023		
Approved By:			



Details:	Stuart Henderson, Technical Manager

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services			**Chemtest Job No.:**		23-12351
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1623728
Order No.:			Client Sample Ref.:		2
			Sample Location:		S2-BH260
			Sample Type:		SOIL
			Top Depth (m):		0.50
			Bottom Depth (m):		0.60
			Date Sampled:		14-Apr-2023
			Asbestos Lab:		DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
ACM Type	U	2192		N/A	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected
Moisture	N	2030	%	0.020	17
pH	U	2010		4.0	8.0
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40
Sulphate (2:1 Water Soluble) as SO4 mg/l	U	2120	mg/l	10.000	< 10
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50
Arsenic	U	2455	mg/kg	0.5	7.1
Cadmium	U	2455	mg/kg	0.10	0.14
Chromium	U	2455	mg/kg	0.5	3.7
Copper	U	2455	mg/kg	0.50	38
Mercury	U	2455	mg/kg	0.05	0.12
Nickel	U	2455	mg/kg	0.50	15
Lead	U	2455	mg/kg	0.50	39
Selenium	U	2455	mg/kg	0.25	1.1
Vanadium	U	2455	mg/kg	0.5	5.7
Zinc	U	2455	mg/kg	0.50	35
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50
Aliphatic VPH >C5-C6	U	2780	mg/kg	0.05	< 0.05
Aliphatic VPH >C6-C7	U	2780	mg/kg	0.05	< 0.05
Aliphatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05
Aliphatic VPH >C8-C10	U	2780	mg/kg	0.05	0.43
Total Aliphatic VPH >C5-C10	U	2780	mg/kg	0.25	0.43
Aliphatic EPH >C10-C12	U	2690	mg/kg	2.00	2.8
Aliphatic EPH >C12-C16	U	2690	mg/kg	1.00	8.3
Aliphatic EPH >C16-C21	U	2690	mg/kg	2.00	8.6
Aliphatic EPH >C21-C35	U	2690	mg/kg	3.00	14
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00	< 10
Total Aliphatic EPH >C10-C35	U	2690	mg/kg	5.00	33
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00	33
Aromatic VPH >C5-C7	U	2780	mg/kg	0.05	< 0.05
Aromatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05
Aromatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05
Total Aromatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services			**Chemtest Job No.:**		23-12351
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1623728
Order No.:			Client Sample Ref.:		2
			Sample Location:		S2-BH260
			Sample Type:		SOIL
			Top Depth (m):		0.50
			Bottom Depth (m):		0.60
			Date Sampled:		14-Apr-2023
			Asbestos Lab:		DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Aromatic EPH >C10-C12	U	2690	mg/kg	1.00	42
Aromatic EPH >C12-C16	U	2690	mg/kg	1.00	57
Aromatic EPH >C16-C21	N	2690	mg/kg	2.00	24
Aromatic EPH >C21-C35	U	2690	mg/kg	2.00	36
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00	4.7
Total Aromatic EPH >C10-C35	U	2690	mg/kg	5.00	160
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00	160
Total VPH >C5-C10	U	2780	mg/kg	0.50	< 0.50
Total EPH >C10-C35	U	2690	mg/kg	10.00	190
Total EPH >C10-C40	N	2690	mg/kg	10.00	200
Organic Matter	U	2625	%	0.40	94
Benzene	U	2760	µg/kg	1.0	3.4
Toluene	U	2760	µg/kg	1.0	1.5
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0
Naphthalene	U	2800	mg/kg	0.10	2.2
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10
Acenaphthene	U	2800	mg/kg	0.10	< 0.10
Fluorene	U	2800	mg/kg	0.10	< 0.10
Phenanthrene	U	2800	mg/kg	0.10	0.61
Anthracene	U	2800	mg/kg	0.10	< 0.10
Fluoranthene	U	2800	mg/kg	0.10	< 0.10
Pyrene	U	2800	mg/kg	0.10	< 0.10
Benzo[a]anthracene	U	2800	mg/kg	0.10	< 0.10
Chrysene	U	2800	mg/kg	0.10	< 0.10
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	2.8
Total Phenols	U	2920	mg/kg	0.10	6.4

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C40	Acetone/Heptane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8-C10 Aromatics: >C5–C7,>C7-C8,>C8–C10	Water extraction / Headspace GCxGC FID detection
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-12584-1
Initial Date of Issue:	02-May-2023
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt James Power
Project	G23012 Global Centre of Rail Excellence (GCRE) Phase 2
Quotation No.:	Q22-29781
Order No.:	
No. of Samples:	7
Turnaround (Wkdays):	7
Date Approved:	02-May-2023
Approved By:	

Date Received:	18-Apr-2023
Date Instructed:	21-Apr-2023
Results Due:	02-May-2023



Details: Stuart Henderson, Technical Manager

Results - Leachate

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services				**Chemtest Job No.:**		23-12584	23-12584
Quotation No.: Q22-29781				**Chemtest Sample ID.:**		1624611	1624616
Order No.:				Client Sample Ref.:		1	3
				Sample Location:		S2-TP220	S2-BH208
				Sample Type:		SOIL	SOIL
				Top Depth (m):		0.2	0.9
				Bottom Depth (m):		0.3	1.0
				Date Sampled:		14-Apr-2023	14-Apr-2023
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**		
pH	U	1010	10:1		N/A	7.3	6.7
Sulphate	U	1220	10:1	mg/l	1.0	2.0	1.4
Cyanide (Total)	U	1300	10:1	mg/l	0.050	< 0.050	< 0.050
Cyanide (Free)	U	1300	10:1	mg/l	0.050	< 0.050	< 0.050
Arsenic (Dissolved)	U	1455	10:1	µg/l	0.20	0.28	0.29
Cadmium (Dissolved)	U	1455	10:1	µg/l	0.11	< 0.11	< 0.11
Chromium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	< 0.50
Copper (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	0.99
Mercury (Dissolved)	U	1455	10:1	µg/l	0.05	< 0.05	< 0.05
Nickel (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	0.65
Lead (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	< 0.50
Selenium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	< 0.50
Vanadium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	< 0.50
Zinc (Dissolved)	U	1455	10:1	µg/l	2.5	5.3	7.8
Chromium (Hexavalent)	U	1490	10:1	µg/l	20	< 20	< 20
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030	< 0.030

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services			**Chemtest Job No.:**		23-12584	23-12584	23-12584	23-12584	23-12584	23-12584	23-12584
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1624605	1624607	1624609	1624611	1624613	1624614	1624616
Order No.:			Client Sample Ref.:		1	4	1	1	4	1	3
			Sample Location:		S2-TP218	S2-TP218	S2-BH206	S2-TP220	S2-TP220	S2-BH208	S2-BH208
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.2	0.9	0.2	0.2	1.2	0.2	0.9
			Bottom Depth (m):		0.3	1.0	0.3	0.3	1.3	0.3	1.0
			Date Sampled:		14-Apr-2023	14-Apr-2023	14-Apr-2023	14-Apr-2023	14-Apr-2023	14-Apr-2023	14-Apr-2023
			Asbestos Lab:		NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB
Determinand	**Accred.**	**SOP**	**Units**	**LOD**							
ACM Type	U	2192		N/A	-	-	-	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	2.7	2.6	5.7	5.9	14	11	9.6
pH	U	2010		4.0	8.8	8.1	7.9	6.5	6.6	6.5	7.7
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	0.63	< 0.40	98	1.4	6.6	0.60	9.0
Sulphate (2:1 Water Soluble) as SO4 mg/l	U	2120	mg/l	10.000	110	14	67	< 10	< 10	< 10	< 10
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Arsenic	U	2455	mg/kg	0.5	7.1	6.8	7.3	14	7.4	7.5	6.9
Cadmium	U	2455	mg/kg	0.10	0.20	0.16	0.27	0.11	0.22	0.13	0.31
Chromium	U	2455	mg/kg	0.5	12	9.3	71	9.9	20	8.8	30
Copper	U	2455	mg/kg	0.50	40	31	740	21	55	35	82
Mercury	U	2455	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.05	< 0.05
Nickel	U	2455	mg/kg	0.50	53	39	58	27	26	35	37
Lead	U	2455	mg/kg	0.50	21	17	32	7.4	19	23	27
Selenium	U	2455	mg/kg	0.25	0.40	0.45	0.50	0.30	0.38	0.64	0.48
Vanadium	U	2455	mg/kg	0.5	18	11	760	17	53	11	79
Zinc	U	2455	mg/kg	0.50	90	74	300	80	63	87	92
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Aliphatic VPH >C5-C6	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C6-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total Aliphatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25
Aliphatic EPH >C10-C12	U	2690	mg/kg	2.00	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Aliphatic EPH >C12-C16	U	2690	mg/kg	1.00	1.5	2.1	1.9	1.2	1.5	1.8	1.6
Aliphatic EPH >C16-C21	U	2690	mg/kg	2.00	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Aliphatic EPH >C21-C35	U	2690	mg/kg	3.00	11	3.3	3.8	5.6	3.8	3.7	3.8
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Total Aliphatic EPH >C10-C35	U	2690	mg/kg	5.00	15	8.1	8.9	9.9	9.2	8.8	8.2
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00	15	< 10	< 10	< 10	< 10	< 10	< 10
Aromatic VPH >C5-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total Aromatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services			**Chemtest Job No.:**		23-12584	23-12584	23-12584	23-12584	23-12584	23-12584	23-12584
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1624605	1624607	1624609	1624611	1624613	1624614	1624616
Order No.:			Client Sample Ref.:		1	4	1	1	4	1	3
			Sample Location:		S2-TP218	S2-TP218	S2-BH206	S2-TP220	S2-TP220	S2-BH208	S2-BH208
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.2	0.9	0.2	0.2	1.2	0.2	0.9
			Bottom Depth (m):		0.3	1.0	0.3	0.3	1.3	0.3	1.0
			Date Sampled:		14-Apr-2023	14-Apr-2023	14-Apr-2023	14-Apr-2023	14-Apr-2023	14-Apr-2023	14-Apr-2023
			Asbestos Lab:		NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB
Determinand	**Accred.**	**SOP**	**Units**	**LOD**							
Aromatic EPH >C10-C12	U	2690	mg/kg	1.00	7.5	6.8	8.1	8.5	8.6	8.5	5.7
Aromatic EPH >C12-C16	U	2690	mg/kg	1.00	12	13	15	13	14	13	9.4
Aromatic EPH >C16-C21	N	2690	mg/kg	2.00	13	14	16	16	16	16	10
Aromatic EPH >C21-C35	U	2690	mg/kg	2.00	7.5	2.9	3.1	2.7	2.7	8.8	6.1
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00	6.3	6.6	7.6	6.4	9.3	13	4.2
Total Aromatic EPH >C10-C35	U	2690	mg/kg	5.00	40	37	43	39	41	46	31
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00	46	43	50	46	51	60	35
Total VPH >C5-C10	U	2780	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Total EPH >C10-C35	U	2690	mg/kg	10.00	55	45	52	49	50	55	39
Total EPH >C10-C40	N	2690	mg/kg	10.00	62	51	59	56	60	68	44
Organic Matter	U	2625	%	0.40	4.6	1.8	5.6	2.4	1.6	14	16
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Naphthalene	U	2800	mg/kg	0.10	0.60	0.50	0.67	0.65	< 0.10	0.47	0.58
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.12	< 0.10	< 0.10	< 0.10
Acenaphthene	U	2800	mg/kg	0.10	0.74	0.49	0.66	0.11	< 0.10	0.46	0.60
Fluorene	U	2800	mg/kg	0.10	0.24	< 0.10	0.17	0.23	< 0.10	0.18	0.19
Phenanthrene	U	2800	mg/kg	0.10	0.54	< 0.10	0.26	< 0.10	< 0.10	< 0.10	0.30
Anthracene	U	2800	mg/kg	0.10	0.14	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	2800	mg/kg	0.10	0.79	< 0.10	0.32	< 0.10	< 0.10	< 0.10	0.53
Pyrene	U	2800	mg/kg	0.10	0.57	< 0.10	0.25	< 0.10	< 0.10	< 0.10	0.30
Benzo[a]anthracene	U	2800	mg/kg	0.10	0.33	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	U	2800	mg/kg	0.10	0.25	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	0.39	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	0.19	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10	0.36	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	0.38	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	0.24	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	5.8	< 2.0	2.3	< 2.0	< 2.0	< 2.0	2.5
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C40	Acetone/Heptane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8-C10 Aromatics: >C5–C7,>C7-C8,>C8–C10	Water extraction / Headspace GCxGC FID detection
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS

Test Methods

SOP	Title	Parameters included	Method summary
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-12605-1		
Initial Date of Issue:	28-Apr-2023		
Client	Jackson Geo Services		
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA		
Contact(s):	Adam Putt James Power		
Project	G23012 Global Centre of Rail excellence (GCRE)		
Quotation No.:	Q22-29781	**Date Received:**	18-Apr-2023
Order No.:		**Date Instructed:**	21-Apr-2023
No. of Samples:	13		
Turnaround (Wkdays):	7	**Results Due:**	02-May-2023
Date Approved:	28-Apr-2023		
Approved By:			
Details:	Stuart Henderson, Technical Manager		

Results - Leachate

Project: G23012 Global Centre of Rail excellence (GCRE)

Client: Jackson Geo Services				**Chemtest Job No.:**		23-12605	23-12605	23-12605
Quotation No.: Q22-29781				**Chemtest Sample ID.:**		1624723	1624729	1624738
Order No.:				Client Sample Ref.:		3	2	3
				Sample Location:		S2-TP216	S2-BH235	S2-TP214
				Sample Type:		SOIL	SOIL	SOIL
				Top Depth (m):		0.50	0.50	0.50
				Bottom Depth (m):		0.60	0.60	0.60
				Date Sampled:		14-Apr-2023	14-Apr-2023	14-Apr-2023
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**			
pH	U	1010	10:1		N/A	6.4	6.4	6.2
Sulphate	U	1220	10:1	mg/l	1.0	30	< 1.0	< 1.0
Cyanide (Total)	U	1300	10:1	mg/l	0.050	< 0.050	< 0.050	< 0.050
Cyanide (Free)	U	1300	10:1	mg/l	0.050	< 0.050	< 0.050	< 0.050
Arsenic (Dissolved)	U	1455	10:1	µg/l	0.20	< 0.20	< 0.20	< 0.20
Cadmium (Dissolved)	U	1455	10:1	µg/l	0.11	< 0.11	< 0.11	< 0.11
Chromium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	< 0.50	< 0.50
Copper (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	< 0.50	< 0.50
Mercury (Dissolved)	U	1455	10:1	µg/l	0.05	< 0.05	< 0.05	< 0.05
Nickel (Dissolved)	U	1455	10:1	µg/l	0.50	0.53	< 0.50	< 0.50
Lead (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	< 0.50	< 0.50
Selenium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	< 0.50	< 0.50
Vanadium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	< 0.50	< 0.50
Zinc (Dissolved)	U	1455	10:1	µg/l	2.5	3.5	7.6	3.7
Chromium (Hexavalent)	U	1490	10:1	µg/l	20	< 20	< 20	< 20
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030	< 0.030	< 0.030

Results - Soil

Project: G23012 Global Centre of Rail excellence (GCRE)

Client: Jackson Geo Services			**Chemtest Job No.:**		23-12605	23-12605	23-12605	23-12605	23-12605	23-12605	23-12605	23-12605
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1624723	1624724	1624727	1624729	1624731	1624735	1624738	1624741
Order No.:			Client Sample Ref.:		3	4	10	2	1	2	3	8
			Sample Location:		S2-TP216	S2-TP216	S2-TP216	S2-BH235	S2-BH236	S2-BH241	S2-TP214	S2-TP214
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.50	0.90	3.90	0.50	0.20	0.50	0.50	2.90
			Bottom Depth (m):		0.60	1.00	4.00	0.60	0.30	0.60	0.60	3.00
			Date Sampled:		14-Apr-2023	14-Apr-2023	14-Apr-2023	14-Apr-2023	14-Apr-2023	14-Apr-2023	14-Apr-2023	14-Apr-2023
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
ACM Type	U	2192		N/A	-	-	-	-	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	7.4	4.8	9.1	13	5.4	12	6.4	7.0
pH	U	2010		4.0	6.7	6.6	< 4.0	6.4	8.2	6.1	7.8	8.2
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40	< 0.40	0.51	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40
Sulphate (2:1 Water Soluble) as SO4 mg/l	U	2120	mg/l	10.000	300	500	2300	35	51	< 10	28	45
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Arsenic	U	2455	mg/kg	0.5	14	15	6.9	8.6	9.4	15	7.3	5.8
Cadmium	U	2455	mg/kg	0.10	0.12	0.10	< 0.10	0.15	0.21	0.23	0.18	0.16
Chromium	U	2455	mg/kg	0.5	12	14	8.2	17	15	23	9.2	9.7
Copper	U	2455	mg/kg	0.50	43	45	33	28	58	38	40	43
Mercury	U	2455	mg/kg	0.05	0.12	0.12	< 0.05	0.05	0.05	0.07	0.05	< 0.05
Nickel	U	2455	mg/kg	0.50	41	35	24	33	67	45	46	44
Lead	U	2455	mg/kg	0.50	42	43	13	21	21	23	18	18
Selenium	U	2455	mg/kg	0.25	1.2	1.0	0.56	0.77	0.87	1.2	0.76	0.70
Vanadium	U	2455	mg/kg	0.5	12	12	7.7	16	14	23	11	9.8
Zinc	U	2455	mg/kg	0.50	98	92	47	70	110	100	99	110
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Aliphatic VPH >C5-C6	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C6-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total Aliphatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25
Aliphatic EPH >C10-C12	U	2690	mg/kg	2.00	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Aliphatic EPH >C12-C16	U	2690	mg/kg	1.00	5.4	1.4	1.9	1.1	2.0	1.5	1.7	1.2
Aliphatic EPH >C16-C21	U	2690	mg/kg	2.00	20	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	2.4	< 2.0
Aliphatic EPH >C21-C35	U	2690	mg/kg	3.00	17	< 3.0	< 3.0	3.2	4.2	< 3.0	5.6	3.3
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Total Aliphatic EPH >C10-C35	U	2690	mg/kg	5.00	43	5.7	6.7	6.3	8.3	6.3	11	6.7
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00	43	< 10	< 10	< 10	< 10	< 10	11	< 10
Aromatic VPH >C5-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total Aromatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25
Aromatic EPH >C10-C12	U	2690	mg/kg	1.00	5.7	6.4	5.4	6.1	5.7	6.1	5.3	5.5

Results - Soil

Project: G23012 Global Centre of Rail excellence (GCRE)

Client: Jackson Geo Services			**Chemtest Job No.:**		23-12605	23-12605	23-12605	23-12605	23-12605	23-12605	23-12605	23-12605
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1624723	1624724	1624727	1624729	1624731	1624735	1624738	1624741
Order No.:			Client Sample Ref.:		3	4	10	2	1	2	3	8
			Sample Location:		S2-TP216	S2-TP216	S2-TP216	S2-BH235	S2-BH236	S2-BH241	S2-TP214	S2-TP214
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.50	0.90	3.90	0.50	0.20	0.50	0.50	2.90
			Bottom Depth (m):		0.60	1.00	4.00	0.60	0.30	0.60	0.60	3.00
			Date Sampled:		14-Apr-2023	14-Apr-2023	14-Apr-2023	14-Apr-2023	14-Apr-2023	14-Apr-2023	14-Apr-2023	14-Apr-2023
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Aromatic EPH >C12-C16	U	2690	mg/kg	1.00	8.0	10	10	9.9	8.5	9.2	8.7	8.5
Aromatic EPH >C16-C21	N	2690	mg/kg	2.00	9.9	11	12	12	11	11	10	12
Aromatic EPH >C21-C35	U	2690	mg/kg	2.00	7.2	4.5	5.0	5.2	4.7	5.5	8.0	4.1
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00	3.6	3.2	4.7	3.9	4.8	4.7	3.9	3.4
Total Aromatic EPH >C10-C35	U	2690	mg/kg	5.00	31	32	32	34	30	32	32	30
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00	34	36	37	37	35	37	36	33
Total VPH >C5-C10	U	2780	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Total EPH >C10-C35	U	2690	mg/kg	10.00	74	38	39	40	38	38	43	37
Total EPH >C10-C40	N	2690	mg/kg	10.00	77	41	43	44	43	43	47	40
Organic Matter	U	2625	%	0.40	9.2	8.2	0.91	1.9	5.8	1.7	8.9	11
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Naphthalene	U	2800	mg/kg	0.10	0.27	0.30	< 0.10	< 0.10	0.22	< 0.10	< 0.10	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	2800	mg/kg	0.10	0.17	< 0.10	< 0.10	0.30	< 0.10	< 0.10	< 0.10	< 0.10
Anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.35	< 0.10	< 0.10	< 0.10	< 0.10
Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.31	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

Results - Soil

Project: G23012 Global Centre of Rail excellence (GCRE)

Client: Jackson Geo Services			**Chemtest Job No.:**		23-12605	23-12605	23-12605	23-12605	23-12605
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1624742	1624744	1624746	1624748	1624751
Order No.:			Client Sample Ref.:		1	4	8	103	106
			Sample Location:		S2-TP215	S2-TP215	S2-TP215	S2-BH227	S2-BH227
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.20	0.90	2.90	3.60	6.00
			Bottom Depth (m):		0.30	1.00	3.00	3.80	6.20
			Date Sampled:		14-Apr-2023	14-Apr-2023	14-Apr-2023	14-Apr-2023	14-Apr-2023
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**					
ACM Type	U	2192		N/A	-	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	6.9	5.5	7.9	8.9	12
pH	U	2010		4.0	7.4	8.1	8.1	7.7	5.8
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40
Sulphate (2:1 Water Soluble) as SO4 mg/l	U	2120	mg/l	10.000	17	36	36	40	44
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Arsenic	U	2455	mg/kg	0.5	5.2	6.7	4.9	4.4	6.8
Cadmium	U	2455	mg/kg	0.10	0.10	0.23	0.12	0.12	0.18
Chromium	U	2455	mg/kg	0.5	10	9.7	11	13	11
Copper	U	2455	mg/kg	0.50	26	33	34	34	34
Mercury	U	2455	mg/kg	0.05	< 0.05	0.05	< 0.05	< 0.05	0.05
Nickel	U	2455	mg/kg	0.50	37	37	37	40	42
Lead	U	2455	mg/kg	0.50	15	31	15	14	20
Selenium	U	2455	mg/kg	0.25	0.65	0.92	0.79	0.78	0.78
Vanadium	U	2455	mg/kg	0.5	13	11	12	11	13
Zinc	U	2455	mg/kg	0.50	89	91	72	73	110
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Aliphatic VPH >C5-C6	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C6-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	0.11	< 0.05
Total Aliphatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25
Aliphatic EPH >C10-C12	U	2690	mg/kg	2.00	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Aliphatic EPH >C12-C16	U	2690	mg/kg	1.00	1.8	1.7	27	15	1.3
Aliphatic EPH >C16-C21	U	2690	mg/kg	2.00	7.8	< 2.0	260	30	< 2.0
Aliphatic EPH >C21-C35	U	2690	mg/kg	3.00	5.2	3.5	120	160	4.6
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00	< 10	< 10	< 10	< 10	< 10
Total Aliphatic EPH >C10-C35	U	2690	mg/kg	5.00	16	6.9	410	210	8.0
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00	16	< 10	410	210	< 10
Aromatic VPH >C5-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total Aromatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25
Aromatic EPH >C10-C12	U	2690	mg/kg	1.00	5.6	5.3	5.7	4.2	6.5

Results - Soil

Project: G23012 Global Centre of Rail excellence (GCRE)

Client: Jackson Geo Services			**Chemtest Job No.:**		23-12605	23-12605	23-12605	23-12605	23-12605
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1624742	1624744	1624746	1624748	1624751
Order No.:			Client Sample Ref.:		1	4	8	103	106
			Sample Location:		S2-TP215	S2-TP215	S2-TP215	S2-BH227	S2-BH227
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.20	0.90	2.90	3.60	6.00
			Bottom Depth (m):		0.30	1.00	3.00	3.80	6.20
			Date Sampled:		14-Apr-2023	14-Apr-2023	14-Apr-2023	14-Apr-2023	14-Apr-2023
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**					
Aromatic EPH >C12-C16	U	2690	mg/kg	1.00	7.8	8.6	10	9.4	8.6
Aromatic EPH >C16-C21	N	2690	mg/kg	2.00	8.8	12	10	11	11
Aromatic EPH >C21-C35	U	2690	mg/kg	2.00	4.6	4.4	4.5	13	4.3
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00	3.7	4.1	4.0	3.8	4.6
Total Aromatic EPH >C10-C35	U	2690	mg/kg	5.00	27	30	31	38	30
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00	30	34	35	42	35
Total VPH >C5-C10	U	2780	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Total EPH >C10-C35	U	2690	mg/kg	10.00	42	37	440	240	38
Total EPH >C10-C40	N	2690	mg/kg	10.00	46	41	440	250	43
Organic Matter	U	2625	%	0.40	7.3	3.2	2.9	3.0	2.3
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Naphthalene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.11
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.11
Phenanthrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.20
Anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.15
Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.16
Benzo[a]anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35–C40	Acetone/Heptane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8-C10 Aromatics: >C5–C7,>C7-C8,>C8–C10	Water extraction / Headspace GCxGC FID detection
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS

Test Methods

SOP	Title	Parameters included	Method summary
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-12807-1		
Initial Date of Issue:	02-May-2023		
Client	Jackson Geo Services		
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA		
Contact(s):	Adam Putt James Power		
Project	G23012 Global Centre of Rail Excellence (GCRE) Phase 2		
Quotation No.:	Q22-29781	**Date Received:**	19-Apr-2023
Order No.:		**Date Instructed:**	21-Apr-2023
No. of Samples:	11		
Turnaround (Wkdays):	7	**Results Due:**	02-May-2023
Date Approved:	02-May-2023		
Approved By:			



Details:	Stuart Henderson, Technical Manager

Results - Leachate

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services				**Chemtest Job No.:**		23-12807	23-12807
Quotation No.: Q22-29781				**Chemtest Sample ID.:**		1625728	1625747
Order No.:				Client Sample Ref.:		1	5
				Sample Location:		S2-TP227	S2-BH261
				Sample Type:		SOIL	SOIL
				Top Depth (m):		0.20	0.90
				Bottom Depth (m):		0.30	1.00
				Date Sampled:		17-Apr-2023	17-Apr-2023
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**		
pH	U	1010	10:1		N/A	7.7	7.4
Sulphate	U	1220	10:1	mg/l	1.0	4.8	1.1
Cyanide (Total)	U	1300	10:1	mg/l	0.050	< 0.050	< 0.050
Cyanide (Free)	U	1300	10:1	mg/l	0.050	< 0.050	< 0.050
Arsenic (Dissolved)	U	1455	10:1	µg/l	0.20	< 0.20	0.61
Cadmium (Dissolved)	U	1455	10:1	µg/l	0.11	< 0.11	< 0.11
Chromium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	< 0.50
Copper (Dissolved)	U	1455	10:1	µg/l	0.50	0.94	2.6
Mercury (Dissolved)	U	1455	10:1	µg/l	0.05	< 0.05	< 0.05
Nickel (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	0.76
Lead (Dissolved)	U	1455	10:1	µg/l	0.50	2.4	1.2
Selenium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	< 0.50
Vanadium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	< 0.50
Zinc (Dissolved)	U	1455	10:1	µg/l	2.5	17	7.1
Chromium (Hexavalent)	U	1490	10:1	µg/l	20	< 20	< 20
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030	< 0.030

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services			**Chemtest Job No.:**		23-12807	23-12807	23-12807	23-12807	23-12807	23-12807	23-12807	23-12807
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1625728	1625730	1625732	1625734	1625736	1625738	1625739	1625744
Order No.:			Client Sample Ref.:		1	4	8	3	6	10	1	10
			Sample Location:		S2-TP227	S2-TP227	S2-TP227	S2-TP224	S2-TP224	S2-TP224	S2-TP235	S2-TP235
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.20	0.90	2.90	0.50	1.40	3.40	0.20	3.90
			Bottom Depth (m):		0.30	1.00	3.00	0.60	1.50	3.50	0.30	4.00
			Date Sampled:		17-Apr-2023	17-Apr-2023	17-Apr-2023	17-Apr-2023	17-Apr-2023	17-Apr-2023	17-Apr-2023	17-Apr-2023
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
ACM Type	U	2192		N/A	-	-	-	-	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	5.4	3.7	4.7	3.1	5.2	13	4.5	4.1
pH	U	2010		4.0	6.9	6.1	7.6	7.9	6.0	5.7	7.3	7.1
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	0.55	< 0.40	< 0.40
Sulphate (2:1 Water Soluble) as SO4 mg/l	U	2120	mg/l	10.000	44	81	160	< 10	< 10	< 10	110	130
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Arsenic	U	2455	mg/kg	0.5	7.9	4.6	4.5	7.2	5.5	4.4	5.9	7.8
Cadmium	U	2455	mg/kg	0.10	0.11	0.13	0.35	0.13	0.14	< 0.10	0.20	0.13
Chromium	U	2455	mg/kg	0.5	10	8.8	9.8	5.4	8.9	11	12	9.5
Copper	U	2455	mg/kg	0.50	30	42	39	32	23	25	38	35
Mercury	U	2455	mg/kg	0.05	< 0.05	< 0.05	0.06	0.06	< 0.05	< 0.05	< 0.05	0.07
Nickel	U	2455	mg/kg	0.50	41	43	45	28	34	35	52	41
Lead	U	2455	mg/kg	0.50	18	18	19	24	11	9.7	20	26
Selenium	U	2455	mg/kg	0.25	0.75	0.95	0.77	0.84	0.46	0.54	0.77	0.97
Vanadium	U	2455	mg/kg	0.5	11	9.4	14	7.5	8.4	10	14	11
Zinc	U	2455	mg/kg	0.50	87	88	240	76	93	88	140	96
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Aliphatic VPH >C5-C6	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C6-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C8-C10	U	2780	mg/kg	0.05	0.15	0.16	0.47	0.17	0.18	0.18	0.22	0.22
Total Aliphatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	0.47	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25
Aliphatic EPH >C10-C12	U	2690	mg/kg	2.00	3.1	< 2.0	< 2.0	3.0	< 2.0	< 2.0	< 2.0	< 2.0
Aliphatic EPH >C12-C16	U	2690	mg/kg	1.00	4.2	3.3	2.7	22	3.5	4.2	3.0	2.8
Aliphatic EPH >C16-C21	U	2690	mg/kg	2.00	3.6	3.6	2.4	140	2.5	12	4.0	2.6
Aliphatic EPH >C21-C35	U	2690	mg/kg	3.00	420	17	5.1	320	5.8	15	9.9	5.7
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00	55	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Total Aliphatic EPH >C10-C35	U	2690	mg/kg	5.00	430	25	12	490	14	33	19	13
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00	490	25	12	490	14	33	19	13
Aromatic VPH >C5-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total Aromatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services			**Chemtest Job No.:**		23-12807	23-12807	23-12807	23-12807	23-12807	23-12807	23-12807	23-12807
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1625728	1625730	1625732	1625734	1625736	1625738	1625739	1625744
Order No.:			Client Sample Ref.:		1	4	8	3	6	10	1	10
			Sample Location:		S2-TP227	S2-TP227	S2-TP227	S2-TP224	S2-TP224	S2-TP224	S2-TP235	S2-TP235
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.20	0.90	2.90	0.50	1.40	3.40	0.20	3.90
			Bottom Depth (m):		0.30	1.00	3.00	0.60	1.50	3.50	0.30	4.00
			Date Sampled:		17-Apr-2023	17-Apr-2023	17-Apr-2023	17-Apr-2023	17-Apr-2023	17-Apr-2023	17-Apr-2023	17-Apr-2023
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Aromatic EPH >C10-C12	U	2690	mg/kg	1.00	15	9.6	12	12	11	13	11	12
Aromatic EPH >C12-C16	U	2690	mg/kg	1.00	20	20	19	19	20	20	18	18
Aromatic EPH >C16-C21	N	2690	mg/kg	2.00	47	17	17	15	16	17	16	17
Aromatic EPH >C21-C35	U	2690	mg/kg	2.00	660	4.5	< 2.0	6.4	< 2.0	< 2.0	< 2.0	< 2.0
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00	4.2	8.6	8.3	7.6	8.6	8.8	9.2	8.2
Total Aromatic EPH >C10-C35	U	2690	mg/kg	5.00	740	51	49	53	48	51	46	48
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00	750	59	57	60	57	59	55	57
Total VPH >C5-C10	U	2780	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Total EPH >C10-C35	U	2690	mg/kg	10.00	1200	76	61	540	62	84	64	61
Total EPH >C10-C40	N	2690	mg/kg	10.00	1200	84	69	550	70	93	73	69
Organic Matter	U	2625	%	0.40	1.5	3.2	3.7	20	2.2	1.5	3.4	9.3
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Naphthalene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.14	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.11	< 0.10
Phenanthrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.29	< 0.10
Anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.19	< 0.10
Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.20	< 0.10
Benzo[a]anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services			**Chemtest Job No.:**		23-12807	23-12807
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1625745	1625747
Order No.:			Client Sample Ref.:		3	5
			Sample Location:		S2-BH261	S2-BH261
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.20	0.90
			Bottom Depth (m):		0.30	1.00
			Date Sampled:		17-Apr-2023	17-Apr-2023
			Asbestos Lab:		DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
ACM Type	U	2192		N/A	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	11	8.6
pH	U	2010		4.0	7.8	7.7
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40	0.56
Sulphate (2:1 Water Soluble) as SO4 mg/l	U	2120	mg/l	10.000	15	91
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50
Arsenic	U	2455	mg/kg	0.5	14	13
Cadmium	U	2455	mg/kg	0.10	0.20	0.33
Chromium	U	2455	mg/kg	0.5	5.4	22
Copper	U	2455	mg/kg	0.50	61	25
Mercury	U	2455	mg/kg	0.05	0.12	0.19
Nickel	U	2455	mg/kg	0.50	37	21
Lead	U	2455	mg/kg	0.50	46	83
Selenium	U	2455	mg/kg	0.25	1.4	0.68
Vanadium	U	2455	mg/kg	0.5	7.8	34
Zinc	U	2455	mg/kg	0.50	100	140
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50
Aliphatic VPH >C5-C6	U	2780	mg/kg	0.05	< 0.05	< 0.05
Aliphatic VPH >C6-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05
Aliphatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05
Aliphatic VPH >C8-C10	U	2780	mg/kg	0.05	0.19	0.25
Total Aliphatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25
Aliphatic EPH >C10-C12	U	2690	mg/kg	2.00	< 2.0	< 2.0
Aliphatic EPH >C12-C16	U	2690	mg/kg	1.00	3.8	2.6
Aliphatic EPH >C16-C21	U	2690	mg/kg	2.00	3.0	3.5
Aliphatic EPH >C21-C35	U	2690	mg/kg	3.00	5.1	26
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00	< 10	< 10
Total Aliphatic EPH >C10-C35	U	2690	mg/kg	5.00	13	34
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00	13	34
Aromatic VPH >C5-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05
Aromatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05
Aromatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05
Total Aromatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services			**Chemtest Job No.:**		23-12807	23-12807
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1625745	1625747
Order No.:			Client Sample Ref.:		3	5
			Sample Location:		S2-BH261	S2-BH261
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.20	0.90
			Bottom Depth (m):		0.30	1.00
			Date Sampled:		17-Apr-2023	17-Apr-2023
			Asbestos Lab:		DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Aromatic EPH >C10-C12	U	2690	mg/kg	1.00	14	10
Aromatic EPH >C12-C16	U	2690	mg/kg	1.00	20	19
Aromatic EPH >C16-C21	N	2690	mg/kg	2.00	18	19
Aromatic EPH >C21-C35	U	2690	mg/kg	2.00	< 2.0	< 2.0
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00	9.7	8.4
Total Aromatic EPH >C10-C35	U	2690	mg/kg	5.00	53	49
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00	63	57
Total VPH >C5-C10	U	2780	mg/kg	0.50	< 0.50	< 0.50
Total EPH >C10-C35	U	2690	mg/kg	10.00	67	83
Total EPH >C10-C40	N	2690	mg/kg	10.00	76	91
Organic Matter	U	2625	%	0.40	32	1.6
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Naphthalene	U	2800	mg/kg	0.10	< 0.10	0.75
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	0.24
Acenaphthene	U	2800	mg/kg	0.10	< 0.10	0.68
Fluorene	U	2800	mg/kg	0.10	< 0.10	0.85
Phenanthrene	U	2800	mg/kg	0.10	< 0.10	4.0
Anthracene	U	2800	mg/kg	0.10	< 0.10	1.0
Fluoranthene	U	2800	mg/kg	0.10	< 0.10	5.4
Pyrene	U	2800	mg/kg	0.10	< 0.10	4.4
Benzo[a]anthracene	U	2800	mg/kg	0.10	< 0.10	2.0
Chrysene	U	2800	mg/kg	0.10	< 0.10	2.2
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	< 0.10	2.3
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	< 0.10	0.64
Benzo[a]pyrene	U	2800	mg/kg	0.10	< 0.10	1.8
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	< 0.10	1.2
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	< 0.10	0.99
Total Of 16 PAH's	N	2800	mg/kg	2.0	< 2.0	29
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35–C40	Acetone/Heptane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8-C10 Aromatics: >C5–C7,>C7-C8,>C8–C10	Water extraction / Headspace GCxGC FID detection
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS

Test Methods

SOP	Title	Parameters included	Method summary
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

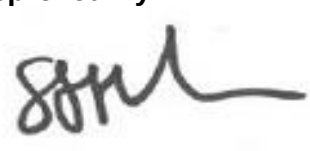
If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-12817-1
Initial Date of Issue:	28-Apr-2023
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt James Power
Project	G23012 Global Centre of Rail Excellence (GCRE) Phase 2
Quotation No.:	Q22-29781
Order No.:	
No. of Samples:	4
Turnaround (Wkdays):	7
Date Approved:	28-Apr-2023
Approved By:	

Date Received:	19-Apr-2023
Date Instructed:	21-Apr-2023
Results Due:	02-May-2023



Details: Stuart Henderson, Technical Manager

Results - Leachate

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services				**Chemtest Job No.:**		23-12817
Quotation No.: Q22-29781				**Chemtest Sample ID.:**		1625789
Order No.:				Client Sample Ref.:		101
				Sample Location:		S2-TP217
				Sample Type:		SOIL
				Top Depth (m):		0.40
				Bottom Depth (m):		0.50
				Date Sampled:		17-Apr-2023
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**	
pH	U	1010	10:1		N/A	7.3
Sulphate	U	1220	10:1	mg/l	1.0	2.2
Cyanide (Total)	U	1300	10:1	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	10:1	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1455	10:1	µg/l	0.20	< 0.20
Cadmium (Dissolved)	U	1455	10:1	µg/l	0.11	< 0.11
Chromium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Copper (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Mercury (Dissolved)	U	1455	10:1	µg/l	0.05	< 0.05
Nickel (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Lead (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Selenium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Vanadium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Zinc (Dissolved)	U	1455	10:1	µg/l	2.5	5.5
Chromium (Hexavalent)	U	1490	10:1	µg/l	20	< 20
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services			**Chemtest Job No.:**		23-12817	23-12817	23-12817	23-12817
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1625786	1625787	1625789	1625791
Order No.:			Client Sample Ref.:		3	4	101	5
			Sample Location:		S2-TP219	S2-TP219	S2-TP217	S2-TP217
			Sample Type:		SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.50	0.90	0.40	0.90
			Bottom Depth (m):		0.60	1.00	0.50	1.00
			Date Sampled:		17-Apr-2023	17-Apr-2023	17-Apr-2023	17-Apr-2023
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
ACM Type	U	2192		N/A	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	7.0	7.6	8.1	11
pH	U	2010		4.0	8.1	8.1	7.3	6.8
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40	< 0.40	7.4	0.43
Sulphate (2:1 Water Soluble) as SO4 mg/l	U	2120	mg/l	10.000	14	24	920	< 10
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Arsenic	U	2455	mg/kg	0.5	6.5	4.8	5.8	3.8
Cadmium	U	2455	mg/kg	0.10	0.12	< 0.10	0.49	0.12
Chromium	U	2455	mg/kg	0.5	12	12	36	11
Copper	U	2455	mg/kg	0.50	36	26	49	21
Mercury	U	2455	mg/kg	0.05	0.05	< 0.05	0.09	< 0.05
Nickel	U	2455	mg/kg	0.50	36	28	41	26
Lead	U	2455	mg/kg	0.50	14	15	31	9.4
Selenium	U	2455	mg/kg	0.25	0.42	0.35	0.93	0.35
Vanadium	U	2455	mg/kg	0.5	12	9.5	22	13
Zinc	U	2455	mg/kg	0.50	80	65	190	81
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Aliphatic VPH >C5-C6	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C6-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C8-C10	U	2780	mg/kg	0.05	0.17	0.18	0.18	0.19
Total Aliphatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25
Aliphatic EPH >C10-C12	U	2690	mg/kg	2.00	< 2.0	< 2.0	< 2.0	< 2.0
Aliphatic EPH >C12-C16	U	2690	mg/kg	1.00	2.7	2.8	3.7	2.6
Aliphatic EPH >C16-C21	U	2690	mg/kg	2.00	2.8	2.7	5.3	2.7
Aliphatic EPH >C21-C35	U	2690	mg/kg	3.00	5.2	5.2	9.2	4.7
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00	< 10	< 10	< 10	< 10
Total Aliphatic EPH >C10-C35	U	2690	mg/kg	5.00	12	13	20	12
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00	12	13	20	12
Aromatic VPH >C5-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total Aromatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services			**Chemtest Job No.:**		23-12817	23-12817	23-12817	23-12817
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1625786	1625787	1625789	1625791
Order No.:			Client Sample Ref.:		3	4	101	5
			Sample Location:		S2-TP219	S2-TP219	S2-TP217	S2-TP217
			Sample Type:		SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.50	0.90	0.40	0.90
			Bottom Depth (m):		0.60	1.00	0.50	1.00
			Date Sampled:		17-Apr-2023	17-Apr-2023	17-Apr-2023	17-Apr-2023
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
Aromatic EPH >C10-C12	U	2690	mg/kg	1.00	12	12	13	12
Aromatic EPH >C12-C16	U	2690	mg/kg	1.00	19	18	20	21
Aromatic EPH >C16-C21	N	2690	mg/kg	2.00	16	18	15	17
Aromatic EPH >C21-C35	U	2690	mg/kg	2.00	3.0	4.7	2.7	< 2.0
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00	9.6	8.7	9.1	9.4
Total Aromatic EPH >C10-C35	U	2690	mg/kg	5.00	49	52	50	52
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00	59	61	59	61
Total VPH >C5-C10	U	2780	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Total EPH >C10-C35	U	2690	mg/kg	10.00	62	65	70	63
Total EPH >C10-C40	N	2690	mg/kg	10.00	71	74	79	73
Organic Matter	U	2625	%	0.40	14	3.1	10	2.1
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Naphthalene	U	2800	mg/kg	0.10	0.96	0.97	< 0.10	0.42
Acenaphthylene	N	2800	mg/kg	0.10	0.15	0.15	< 0.10	0.10
Acenaphthene	U	2800	mg/kg	0.10	1.8	1.8	< 0.10	0.12
Fluorene	U	2800	mg/kg	0.10	0.73	0.78	< 0.10	0.26
Phenanthrene	U	2800	mg/kg	0.10	0.49	0.46	< 0.10	0.19
Anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	4.1	4.2	< 2.0	< 2.0
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C40	Acetone/Heptane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8-C10 Aromatics: >C5–C7,>C7-C8,>C8–C10	Water extraction / Headspace GCxGC FID detection
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS

Test Methods

SOP	Title	Parameters included	Method summary
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

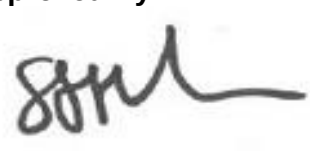
If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-12820-1
Initial Date of Issue:	28-Apr-2023
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt James Power
Project	G23012 Global Centre of Rail Excellence (GCRE) Phase 2
Quotation No.:	Q22-29781
Order No.:	
No. of Samples:	3
Turnaround (Wkdays):	7
Date Approved:	28-Apr-2023
Approved By:	

Date Received:	19-Apr-2023
Date Instructed:	21-Apr-2023
Results Due:	02-May-2023



Details: Stuart Henderson, Technical Manager

Results - Leachate

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services				**Chemtest Job No.:**		23-12820
Quotation No.: Q22-29781				**Chemtest Sample ID.:**		1625803
Order No.:				Client Sample Ref.:		5
				Sample Location:		S2-TP265
				Sample Type:		SOIL
				Top Depth (m):		0.90
				Bottom Depth (m):		1.00
				Date Sampled:		18-Apr-2023
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**	
pH	U	1010	10:1		N/A	6.9
Sulphate	U	1220	10:1	mg/l	1.0	1.3
Cyanide (Total)	U	1300	10:1	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	10:1	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1455	10:1	µg/l	0.20	< 0.20
Cadmium (Dissolved)	U	1455	10:1	µg/l	0.11	< 0.11
Chromium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Copper (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Mercury (Dissolved)	U	1455	10:1	µg/l	0.05	< 0.05
Nickel (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Lead (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Selenium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Vanadium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Zinc (Dissolved)	U	1455	10:1	µg/l	2.5	6.9
Chromium (Hexavalent)	U	1490	10:1	µg/l	20	< 20
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services			**Chemtest Job No.:**		23-12820	23-12820	23-12820
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1625801	1625803	1625805
Order No.:			Client Sample Ref.:		1	5	9
			Sample Location:		S2-TP265	S2-TP265	S2-TP265
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		0.20	0.90	2.90
			Bottom Depth (m):		0.30	1.00	3.00
			Date Sampled:		18-Apr-2023	18-Apr-2023	18-Apr-2023
			Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
ACM Type	U	2192		N/A	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	26	14	14
pH	U	2010		4.0	4.6	4.7	5.6
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	0.54	< 0.40	0.46
Sulphate (2:1 Water Soluble) as SO4 mg/l	U	2120	mg/l	10.000	< 10	< 10	< 10
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Arsenic	U	2455	mg/kg	0.5	13	2.6	1.7
Cadmium	U	2455	mg/kg	0.10	0.14	< 0.10	< 0.10
Chromium	U	2455	mg/kg	0.5	8.2	6.0	4.0
Copper	U	2455	mg/kg	0.50	17	23	31
Mercury	U	2455	mg/kg	0.05	0.19	0.07	0.05
Nickel	U	2455	mg/kg	0.50	3.2	3.5	6.4
Lead	U	2455	mg/kg	0.50	17	12	14
Selenium	U	2455	mg/kg	0.25	1.4	0.74	0.56
Vanadium	U	2455	mg/kg	0.5	18	8.4	6.9
Zinc	U	2455	mg/kg	0.50	10	14	15
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Aliphatic VPH >C5-C6	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C6-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C8-C10	U	2780	mg/kg	0.05	0.16	0.14	< 0.05
Total Aliphatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25
Aliphatic EPH >C10-C12	U	2690	mg/kg	2.00	2.1	< 2.0	< 2.0
Aliphatic EPH >C12-C16	U	2690	mg/kg	1.00	3.0	2.5	< 1.0
Aliphatic EPH >C16-C21	U	2690	mg/kg	2.00	3.0	2.8	< 2.0
Aliphatic EPH >C21-C35	U	2690	mg/kg	3.00	5.1	5.0	< 3.0
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00	< 10	< 10	< 10
Total Aliphatic EPH >C10-C35	U	2690	mg/kg	5.00	13	12	< 5.0
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00	13	12	< 10
Aromatic VPH >C5-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Total Aromatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services			**Chemtest Job No.:**		23-12820	23-12820	23-12820
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1625801	1625803	1625805
Order No.:			Client Sample Ref.:		1	5	9
			Sample Location:		S2-TP265	S2-TP265	S2-TP265
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		0.20	0.90	2.90
			Bottom Depth (m):		0.30	1.00	3.00
			Date Sampled:		18-Apr-2023	18-Apr-2023	18-Apr-2023
			Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Aromatic EPH >C10-C12	U	2690	mg/kg	1.00	13	13	1.3
Aromatic EPH >C12-C16	U	2690	mg/kg	1.00	22	20	2.2
Aromatic EPH >C16-C21	N	2690	mg/kg	2.00	19	19	12
Aromatic EPH >C21-C35	U	2690	mg/kg	2.00	< 2.0	< 2.0	< 2.0
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00	12	11	1.1
Total Aromatic EPH >C10-C35	U	2690	mg/kg	5.00	56	53	16
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00	68	64	17
Total VPH >C5-C10	U	2780	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Total EPH >C10-C35	U	2690	mg/kg	10.00	69	66	18
Total EPH >C10-C40	N	2690	mg/kg	10.00	81	76	19
Organic Matter	U	2625	%	0.40	9.7	3.9	2.1
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Naphthalene	U	2800	mg/kg	0.10	< 0.10	1.6	1.7
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	0.16	0.35
Acenaphthene	U	2800	mg/kg	0.10	< 0.10	1.4	1.8
Fluorene	U	2800	mg/kg	0.10	< 0.10	0.47	0.82
Phenanthrene	U	2800	mg/kg	0.10	< 0.10	0.15	0.33
Anthracene	U	2800	mg/kg	0.10	< 0.10	0.17	< 0.10
Fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[a]anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Chrysene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	< 2.0	4.0	5.0
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C40	Acetone/Heptane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8-C10 Aromatics: >C5–C7,>C7-C8,>C8–C10	Water extraction / Headspace GCxGC FID detection
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS

Test Methods

SOP	Title	Parameters included	Method summary
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

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I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-12979-1
Initial Date of Issue:	27-Apr-2023
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt
Project	G23012 Global Centre of Rail Excellence
Quotation No.:	Q22-28967
Order No.:	
No. of Samples:	1
Turnaround (Wkdays):	7
Date Approved:	27-Apr-2023
Approved By:	
Details:	Stuart Henderson, Technical Manager

Date Received:	20-Apr-2023
Date Instructed:	20-Apr-2023
Results Due:	28-Apr-2023

Results - Soil

Project: G23012 Global Centre of Rail Excellence

Client: Jackson Geo Services			**Chemtest Job No.:**		23-12979
Quotation No.: Q22-28967			**Chemtest Sample ID.:**		1626454
			Sample Location:		S2-BH242
			Sample Type:		SOIL
			Top Depth (m):		0.90
			Bottom Depth (m):		1.00
			Date Sampled:		11-Apr-2023
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Moisture	N	2030	%	0.020	4.5
pH	U	2010		4.0	7.7
Acid Neutralisation Capacity	N	2015	mol/kg	0.0020	0.010
Total Organic Carbon	U	2625	%	0.20	30

Results - 2 Stage WAC

Project: G23012 Global Centre of Rail Excellence

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	23-12979								
Chemtest Sample ID:	1626454								
Sample Ref:									
Sample ID:									
Sample Location:	S2-BH242								
Top Depth(m):	0.90								
Bottom Depth(m):	1.00								
Sampling Date:	11-Apr-2023								
Determinand	**SOP**	**Accred.**	**Units**				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon							3	5	6
Loss on Ignition							--	--	10
Total BTEX							6	--	--
Total PCBs (7 congeners)							1	--	--
TPH Total WAC (Mineral Oil)							500	--	--
Total (of 17) PAHs							100	--	--
pH							--	>6	--
Acid Neutralisation Capacity							--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0003	0.0002	0.0006	0.0023	0.5	2	25
Barium	1455	U	0.11	0.14	0.21	1.4	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0032	0.0041	0.0064	0.040	0.5	10	70
Copper	1455	U	0.0016	0.0009	0.0032	0.0015	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.034	0.027	0.067	0.28	0.5	10	30
Nickel	1455	U	0.0013	< 0.0005	0.0025	0.0012	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0016	0.0008	0.0031	0.0086	0.06	0.7	5
Selenium	1455	U	0.0013	< 0.0005	0.0026	0.0012	0.1	0.5	7
Zinc	1455	U	0.013	0.006	0.026	0.070	4	50	200
Chloride	1220	U	20	3.1	40	47	800	15000	25000
Fluoride	1220	U	0.24	0.23	< 1.0	2.3	10	150	500
Sulphate	1220	U	44	13	88	160	1000	20000	50000
Total Dissolved Solids	1020	N	280	93	560	1100	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	4.3	2.6	< 50	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	4.5

Leachate Test Information	
Leachant volume 1st extract/l	0.342
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.161

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Test Methods

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge
650	Characterisation of Waste (Leaching WAC)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

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customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-12986-1
Initial Date of Issue:	03-May-2023
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt James Power
Project	G23012 Global Centre of Rail Excellence (GCRE) Phase 2
Quotation No.:	Q22-29781
Order No.:	
No. of Samples:	7
Turnaround (Wkdays):	7
Date Approved:	03-May-2023
Approved By:	

Date Received:	20-Apr-2023
Date Instructed:	24-Apr-2023
Results Due:	03-May-2023



Details: Stuart Henderson, Technical Manager

Results - Leachate

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services				**Chemtest Job No.:**		23-12986
Quotation No.: Q22-29781				**Chemtest Sample ID.:**		1626500
Order No.:				Client Sample Ref.:		1
				Sample Location:		S2-TP238
				Sample Type:		SOIL
				Top Depth (m):		0.20
				Bottom Depth (m):		0.30
				Date Sampled:		18-Apr-2023
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**	
pH	U	1010	10:1		N/A	7.9
Sulphate	U	1220	10:1	mg/l	1.0	57
Cyanide (Total)	U	1300	10:1	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	10:1	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1455	10:1	µg/l	0.20	11
Cadmium (Dissolved)	U	1455	10:1	µg/l	0.11	< 0.11
Chromium (Dissolved)	U	1455	10:1	µg/l	0.50	23
Copper (Dissolved)	U	1455	10:1	µg/l	0.50	11
Mercury (Dissolved)	U	1455	10:1	µg/l	0.05	< 0.05
Nickel (Dissolved)	U	1455	10:1	µg/l	0.50	0.90
Lead (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Selenium (Dissolved)	U	1455	10:1	µg/l	0.50	2.1
Vanadium (Dissolved)	U	1455	10:1	µg/l	0.50	38
Zinc (Dissolved)	U	1455	10:1	µg/l	2.5	2.9
Chromium (Hexavalent)	U	1490	10:1	µg/l	20	21
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services			**Chemtest Job No.:**		23-12986	23-12986	23-12986	23-12986	23-12986	23-12986	23-12986
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1626491	1626494	1626496	1626498	1626500	1626502	1626504
Order No.:			Client Sample Ref.:		3	8	3	7	1	4	10
			Sample Location:		S2-TP245	S2-TP245	S2-TP207	S2-TP207	S2-TP238	S2-TP238	S2-TP238
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.50	2.90	0.50	1.90	0.20	0.90	2.90
			Bottom Depth (m):		0.60	3.00	0.60	2.00	0.30	1.00	3.00
			Date Sampled:		18-Apr-2023	18-Apr-2023	18-Apr-2023	18-Apr-2023	18-Apr-2023	18-Apr-2023	18-Apr-2023
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**							
ACM Type	U	2192		N/A	-	-	-	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	7.6	11	3.5	5.8	15	9.0	6.8
pH	U	2010		4.0	8.2	8.1	8.3	8.1	8.2	8.2	8.1
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	0.62	< 0.40
Sulphate (2:1 Water Soluble) as SO4 mg/l	U	2120	mg/l	10.000	90	86	110	67	66	44	59
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Arsenic	U	2455	mg/kg	0.5	6.8	7.9	8.1	8.5	7.2	3.1	20
Cadmium	U	2455	mg/kg	0.10	0.17	0.16	0.17	0.14	< 0.10	< 0.10	0.42
Chromium	U	2455	mg/kg	0.5	10	13	8.9	13	5.7	4.3	18
Copper	U	2455	mg/kg	0.50	27	33	40	36	31	16	72
Mercury	U	2455	mg/kg	0.05	< 0.05	0.05	0.06	< 0.05	0.06	< 0.05	0.21
Nickel	U	2455	mg/kg	0.50	27	35	36	37	31	15	41
Lead	U	2455	mg/kg	0.50	15	20	23	20	16	15	220
Selenium	U	2455	mg/kg	0.25	0.72	0.72	0.82	0.83	0.62	0.53	1.0
Vanadium	U	2455	mg/kg	0.5	9.4	9.7	9.7	11	6.3	4.0	22
Zinc	U	2455	mg/kg	0.50	60	79	86	81	60	33	150
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Aliphatic VPH >C5-C6	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C6-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total Aliphatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25
Aliphatic EPH >C10-C12	U	2690	mg/kg	2.00	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Aliphatic EPH >C12-C16	U	2690	mg/kg	1.00	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	1.3
Aliphatic EPH >C16-C21	U	2690	mg/kg	2.00	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Aliphatic EPH >C21-C35	U	2690	mg/kg	3.00	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Total Aliphatic EPH >C10-C35	U	2690	mg/kg	5.00	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	5.5
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Aromatic VPH >C5-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total Aromatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services					**Chemtest Job No.:**	23-12986	23-12986	23-12986	23-12986	23-12986	23-12986
Quotation No.: Q22-29781					**Chemtest Sample ID.:**	1626491	1626494	1626496	1626498	1626500	1626502	1626504
Order No.:					Client Sample Ref.:	3	8	3	7	1	4	10
					Sample Location:	S2-TP245	S2-TP245	S2-TP207	S2-TP207	S2-TP238	S2-TP238	S2-TP238
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	0.50	2.90	0.50	1.90	0.20	0.90	2.90
					Bottom Depth (m):	0.60	3.00	0.60	2.00	0.30	1.00	3.00
					Date Sampled:	18-Apr-2023	18-Apr-2023	18-Apr-2023	18-Apr-2023	18-Apr-2023	18-Apr-2023	18-Apr-2023
					Asbestos Lab:	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Aromatic EPH >C10-C12	U	2690	mg/kg	1.00		< 1.0	< 1.0	1.4	1.5	1.2	1.1	1.4
Aromatic EPH >C12-C16	U	2690	mg/kg	1.00		1.6	1.6	1.4	1.5	2.4	< 1.0	2.1
Aromatic EPH >C16-C21	N	2690	mg/kg	2.00		8.3	8.1	8.9	8.0	7.9	8.0	7.8
Aromatic EPH >C21-C35	U	2690	mg/kg	2.00		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00		1.0	1.1	< 1.0	1.1	1.6	< 1.0	1.2
Total Aromatic EPH >C10-C35	U	2690	mg/kg	5.00		12	12	14	12	12	11	13
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00		13	13	14	13	14	11	14
Total VPH >C5-C10	U	2780	mg/kg	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Total EPH >C10-C35	U	2690	mg/kg	10.00		16	16	18	15	15	13	18
Total EPH >C10-C40	N	2690	mg/kg	10.00		17	17	18	16	17	13	19
Organic Matter	U	2625	%	0.40		2.8	4.1	6.3	3.9	2.6	5.2	7.1
Benzene	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Naphthalene	U	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.22
Acenaphthylene	N	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.12
Acenaphthene	U	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.20
Fluorene	U	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.89
Anthracene	U	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.29
Fluoranthene	U	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	1.9
Pyrene	U	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	1.9
Benzo[a]anthracene	U	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.91
Chrysene	U	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.83
Benzo[b]fluoranthene	U	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	1.4
Benzo[k]fluoranthene	U	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.49
Benzo[a]pyrene	U	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	1.3
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.69
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.85
Total Of 16 PAH's	N	2800	mg/kg	2.0		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	12
Total Phenols	U	2920	mg/kg	0.10		< 0.10	< 0.10	0.18	< 0.10	< 0.10	< 0.10	< 0.10

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C40	Acetone/Heptane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8-C10 Aromatics: >C5–C7,>C7-C8,>C8–C10	Water extraction / Headspace GCxGC FID detection
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS

Test Methods

SOP	Title	Parameters included	Method summary
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
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S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
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T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-13112-1
Initial Date of Issue:	28-Apr-2023
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt
Project	G23012 Global Centre of Rail Excellence
Quotation No.:	Q22-29781
Order No.:	
No. of Samples:	1
Turnaround (Wkdays):	7
Date Approved:	28-Apr-2023
Approved By:	
Details:	Stuart Henderson, Technical Manager

Date Received:	20-Apr-2023
Date Instructed:	20-Apr-2023
Results Due:	28-Apr-2023

Results - Soil

Project: G23012 Global Centre of Rail Excellence

Client: Jackson Geo Services			**Chemtest Job No.:**		23-13112
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1627130
			Sample Location:		S2-BH250
			Sample Type:		SOIL
			Top Depth (m):		0.20
			Bottom Depth (m):		0.30
			Date Sampled:		11-Apr-2023
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Moisture	N	2030	%	0.020	18
pH	U	2010		4.0	7.6
Acid Neutralisation Capacity	N	2015	mol/kg	0.0020	0.010
Total Organic Carbon	U	2625	%	0.20	9.8

Results - 2 Stage WAC

Project: G23012 Global Centre of Rail Excellence

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	23-13112								
Chemtest Sample ID:	1627130								
Sample Ref:									
Sample ID:									
Sample Location:	S2-BH250								
Top Depth(m):	0.20								
Bottom Depth(m):	0.30								
Sampling Date:	11-Apr-2023								
Determinand	**SOP**	**Accred.**	**Units**				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%			9.8	3	5	6
Loss on Ignition							--	--	10
Total BTEX							6	--	--
Total PCBs (7 congeners)							1	--	--
TPH Total WAC (Mineral Oil)							500	--	--
Total (of 17) PAHs							100	--	--
pH	2010	U				7.6	--	>6	--
Acid Neutralisation Capacity							--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0007	0.0006	0.0013	0.0062	0.5	2	25
Barium	1455	U	0.035	0.013	0.068	0.16	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0012	0.0016	0.0023	0.0014	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0087	0.0052	0.017	0.056	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0006	< 0.0005	0.0011	0.0007	0.06	0.7	5
Selenium	1455	U	0.0010	< 0.0005	0.0020	0.0013	0.1	0.5	7
Zinc	1455	U	0.023	0.041	0.044	0.39	4	50	200
Chloride	1220	U	6.5	1.5	13	21	800	15000	25000
Fluoride	1220	U	1.0	0.67	2.0	7.1	10	150	500
Sulphate	1220	U	4.0	< 1.0	< 10	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	130	49	250	580	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	4.1	3.9	< 50	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	18

Leachate Test Information	
Leachant volume 1st extract/l	0.311
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.214

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Test Methods

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge
650	Characterisation of Waste (Leaching WAC)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

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customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-13121-1
Initial Date of Issue:	02-May-2023
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt
Project	G23012 Global Centre of Rail Excellence
Quotation No.:	Q22-29781
Order No.:	
No. of Samples:	1
Turnaround (Wkdays):	7
Date Approved:	02-May-2023
Approved By:	
Details:	Stuart Henderson, Technical Manager

Date Received:	21-Apr-2023
Date Instructed:	21-Apr-2023
Results Due:	02-May-2023

Results - Soil

Project: G23012 Global Centre of Rail Excellence

Client: Jackson Geo Services			**Chemtest Job No.:**		23-13121
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1627156
			Sample Location:		S2-TP271
			Sample Type:		SOIL
			Top Depth (m):		0.20
			Bottom Depth (m):		0.30
			Date Sampled:		11-Apr-2023
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Moisture	N	2030	%	0.020	10
pH	U	2010		4.0	7.7
Acid Neutralisation Capacity	N	2015	mol/kg	0.0020	0.0080
Total Organic Carbon	U	2625	%	0.20	6.5

Results - 2 Stage WAC

Project: G23012 Global Centre of Rail Excellence

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	23-13121								
Chemtest Sample ID:	1627156								
Sample Ref:									
Sample ID:									
Sample Location:	S2-TP271								
Top Depth(m):	0.20								
Bottom Depth(m):	0.30								
Sampling Date:	11-Apr-2023								
Determinand	**SOP**	**Accred.**	**Units**				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%			6.5	3	5	6
Loss on Ignition							--	--	10
Total BTEX							6	--	--
Total PCBs (7 congeners)							1	--	--
TPH Total WAC (Mineral Oil)							500	--	--
Total (of 17) PAHs							100	--	--
pH	2010	U				7.7	--	>6	--
Acid Neutralisation Capacity							--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0011	0.0011	0.0021	0.011	0.5	2	25
Barium	1455	U	0.055	0.034	0.11	0.36	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0006	0.0007	0.0013	0.0067	0.5	10	70
Copper	1455	U	0.0011	0.0008	0.0022	0.0011	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.022	0.011	0.044	0.12	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0008	< 0.0005	0.0016	0.0008	0.06	0.7	5
Selenium	1455	U	0.0042	0.0019	0.0083	0.021	0.1	0.5	7
Zinc	1455	U	0.026	0.021	0.051	0.21	4	50	200
Chloride	1220	U	17	3.1	34	45	800	15000	25000
Fluoride	1220	U	1.1	0.66	2.2	7.0	10	150	500
Sulphate	1220	U	77	15	150	210	1000	20000	50000
Total Dissolved Solids	1020	N	280	100	560	1200	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	3.7	2.5	< 50	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	10

Leachate Test Information	
Leachant volume 1st extract/l	0.330
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.177

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Test Methods

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge
650	Characterisation of Waste (Leaching WAC)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-13130-1
Initial Date of Issue:	02-May-2023
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt
Project	G23012 Global Centre for Rail Excellence
Quotation No.:	Q22-29781
Order No.:	
No. of Samples:	3
Turnaround (Wkdays):	7
Date Approved:	02-May-2023
Approved By:	
Details:	Stuart Henderson, Technical Manager

Date Received:	21-Apr-2023
Date Instructed:	21-Apr-2023
Results Due:	02-May-2023

Results - Soil

Project: G23012 Global Centre for Rail Excellence

Client: Jackson Geo Services			**Chemtest Job No.:**		23-13130	23-13130	23-13130
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1627213	1627214	1627215
			Sample Location:		S2-TP2100	S2-BH252	S2-BH227
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		0.20	0.50	0.20
			Bottom Depth (m):		0.30	0.60	0.30
			Date Sampled:		11-Apr-2023	11-Apr-2023	19-Apr-2023
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Moisture	N	2030	%	0.020	3.8	10	27
pH	U	2010		4.0	7.5	7.1	6.5
Acid Neutralisation Capacity	N	2015	mol/kg	0.0020	0.011	0.012	0.010
Total Organic Carbon	U	2625	%	0.20	20	8.6	1.5

Results - 2 Stage WAC

Project: G23012 Global Centre for Rail Excellence

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	23-13130								
Chemtest Sample ID:	1627213								
Sample Ref:									
Sample ID:									
Sample Location:	S2-TP2100								
Top Depth(m):	0.20								
Bottom Depth(m):	0.30								
Sampling Date:	11-Apr-2023								
Determinand	**SOP**	**Accred.**	**Units**				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%			20	3	5	6
Loss on Ignition							--	--	10
Total BTEX							6	--	--
Total PCBs (7 congeners)							1	--	--
TPH Total WAC (Mineral Oil)							500	--	--
Total (of 17) PAHs							100	--	--
pH	2010	U				7.5	--	>6	--
Acid Neutralisation Capacity							--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0010	0.0008	0.0019	0.0077	0.5	2	25
Barium	1455	U	0.034	0.026	0.069	0.27	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0012	0.0009	0.0025	0.0012	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.021	0.0065	0.043	0.079	0.5	10	30
Nickel	1455	U	0.0006	< 0.0005	0.0013	0.0006	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.011	0.0046	0.021	0.052	0.06	0.7	5
Selenium	1455	U	0.0062	0.0044	0.013	0.046	0.1	0.5	7
Zinc	1455	U	0.022	0.022	0.044	0.22	4	50	200
Chloride	1220	U	1.1	< 1.0	< 10	< 10	800	15000	25000
Fluoride	1220	U	0.55	0.29	1.1	3.1	10	150	500
Sulphate	1220	U	150	30	290	410	1000	20000	50000
Total Dissolved Solids	1020	N	320	110	640	1300	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	4.2	3.4	< 50	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	3.8

Leachate Test Information	
Leachant volume 1st extract/l	0.343
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.164

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - 2 Stage WAC

Project: G23012 Global Centre for Rail Excellence

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	23-13130								
Chemtest Sample ID:	1627214								
Sample Ref:									
Sample ID:									
Sample Location:	S2-BH252								
Top Depth(m):	0.50								
Bottom Depth(m):	0.60								
Sampling Date:	11-Apr-2023								
Determinand	**SOP**	**Accred.**	**Units**				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%			8.6	3	5	6
Loss on Ignition							--	--	10
Total BTEX							6	--	--
Total PCBs (7 congeners)							1	--	--
TPH Total WAC (Mineral Oil)							500	--	--
Total (of 17) PAHs							100	--	--
pH	2010	U				7.1	--	>6	--
Acid Neutralisation Capacity							--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0057	0.0066	0.011	0.065	0.5	2	25
Barium	1455	U	0.023	0.012	0.046	0.13	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.038	0.0077	0.076	0.11	0.5	10	70
Copper	1455	U	0.0034	0.0027	0.0068	0.0032	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.019	0.0035	0.038	0.050	0.5	10	30
Nickel	1455	U	0.0006	< 0.0005	0.0012	0.0006	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0046	0.0020	0.0092	0.023	0.06	0.7	5
Selenium	1455	U	0.010	0.0037	0.020	0.043	0.1	0.5	7
Zinc	1455	U	0.018	0.018	0.035	0.18	4	50	200
Chloride	1220	U	21	4.0	42	56	800	15000	25000
Fluoride	1220	U	0.89	0.30	1.8	3.6	10	150	500
Sulphate	1220	U	78	15	160	210	1000	20000	50000
Total Dissolved Solids	1020	N	180	75	360	850	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	6.1	4.0	< 50	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	10

Leachate Test Information	
Leachant volume 1st extract/l	0.330
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.166

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - 2 Stage WAC

Project: G23012 Global Centre for Rail Excellence

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	23-13130								
Chemtest Sample ID:	1627215								
Sample Ref:									
Sample ID:									
Sample Location:	S2-BH227								
Top Depth(m):	0.20								
Bottom Depth(m):	0.30								
Sampling Date:	19-Apr-2023								
Determinand	**SOP**	**Accred.**	**Units**				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%			1.5	3	5	6
Loss on Ignition							--	--	10
Total BTEX							6	--	--
Total PCBs (7 congeners)							1	--	--
TPH Total WAC (Mineral Oil)							500	--	--
Total (of 17) PAHs							100	--	--
pH	2010	U				6.5	--	>6	--
Acid Neutralisation Capacity							--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0004	0.0002	0.0007	0.0024	0.5	2	25
Barium	1455	U	< 0.005	< 0.005	< 0.0005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0010	0.0006	0.0019	0.0008	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	0.023	0.025	0.044	0.24	4	50	200
Chloride	1220	U	1.5	< 1.0	< 10	< 10	800	15000	25000
Fluoride	1220	U	0.094	0.094	< 1.0	< 1.0	10	150	500
Sulphate	1220	U	5.0	1.6	< 10	19	1000	20000	50000
Total Dissolved Solids	1020	N	19	9.2	36	99	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	5.6	4.0	< 50	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	27

Leachate Test Information	
Leachant volume 1st extract/l	0.284
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.142

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Test Methods

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge
650	Characterisation of Waste (Leaching WAC)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-13139-1
Initial Date of Issue:	02-May-2023
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt
Project	G23012 Global Centre for Rail Excellence
Quotation No.:	Q22-29781
Order No.:	
No. of Samples:	2
Turnaround (Wkdays):	7
Date Approved:	02-May-2023
Approved By:	
Details:	Stuart Henderson, Technical Manager

Date Received:	21-Apr-2023
Date Instructed:	21-Apr-2023
Results Due:	02-May-2023

Results - Soil

Project: G23012 Global Centre for Rail Excellence

Client: Jackson Geo Services			**Chemtest Job No.:**		23-13139
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1627243
			Sample Location:		S2-TP2105
			Sample Type:		SOIL
			Top Depth (m):		0.20
			Bottom Depth (m):		0.30
			Date Sampled:		13-Apr-2023
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Moisture	N	2030	%	0.020	18
pH	M	2010		4.0	6.7
Acid Neutralisation Capacity	N	2015	mol/kg	0.0020	0.012
Total Organic Carbon	M	2625	%	0.20	14

Results - 2 Stage WAC

Project: G23012 Global Centre for Rail Excellence

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	23-13139								
Chemtest Sample ID:	1627243								
Sample Ref:									
Sample ID:									
Sample Location:	S2-TP2105								
Top Depth(m):	0.20								
Bottom Depth(m):	0.30								
Sampling Date:	13-Apr-2023								
Determinand	**SOP**	**Accred.**	**Units**				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	M	%			14	3	5	6
Loss on Ignition							--	--	10
Total BTEX							6	--	--
Total PCBs (7 congeners)							1	--	--
TPH Total WAC (Mineral Oil)							500	--	--
Total (of 17) PAHs							100	--	--
pH	2010	M				6.7	--	>6	--
Acid Neutralisation Capacity							--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0003	0.0007	0.0005	0.0063	0.5	2	25
Barium	1455	U	0.019	0.009	0.036	0.098	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	0.0008	< 0.0005	0.0077	0.5	10	70
Copper	1455	U	0.0015	0.0023	0.0030	0.0010	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.5	10	30
Nickel	1455	U	0.0015	0.0008	0.0030	0.0088	0.4	10	40
Lead	1455	U	< 0.0005	0.0009	< 0.0005	0.0082	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	0.023	0.078	0.045	0.74	4	50	200
Chloride	1220	U	2.2	1.1	< 10	12	800	15000	25000
Fluoride	1220	U	0.18	0.21	< 1.0	2.1	10	150	500
Sulphate	1220	U	59	12	120	150	1000	20000	50000
Total Dissolved Solids	1020	N	110	32	210	370	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	6.6	5.3	< 50	54	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	18

Leachate Test Information	
Leachant volume 1st extract/l	0.312
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.110

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - 2 Stage WAC

Project: G23012 Global Centre for Rail Excellence

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	23-13139								
Chemtest Sample ID:	1627244								
Sample Ref:									
Sample ID:									
Sample Location:	S2-TP2106								
Top Depth(m):	1.90								
Bottom Depth(m):	2.00								
Sampling Date:	13-Apr-2023								
Determinand	**SOP**	**Accred.**	**Units**				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	M	%			1.3	3	5	6
Loss On Ignition	2610	M	%			4.2	--	--	10
Total BTEX	2760	M	mg/kg			< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg			< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg			< 10	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg			< 2.0	100	--	--
pH	2010	M				6.9	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg			0.012	--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0031	0.0026	0.0061	0.026	0.5	2	25
Barium	1455	U	0.037	0.007	0.072	0.085	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0006	0.0023	0.0011	0.022	0.5	10	70
Copper	1455	U	0.0059	0.0066	0.011	0.0033	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0025	0.0003	0.0048	0.0042	0.5	10	30
Nickel	1455	U	0.0017	0.0014	0.0033	0.014	0.4	10	40
Lead	1455	U	< 0.0005	0.0027	< 0.0005	0.025	0.5	10	50
Antimony	1455	U	0.0014	< 0.0005	0.0026	0.0008	0.06	0.7	5
Selenium	1455	U	0.0008	0.0006	0.0015	0.0063	0.1	0.5	7
Zinc	1455	U	0.044	0.15	0.085	1.4	4	50	200
Chloride	1220	U	3.7	2.1	< 10	22	800	15000	25000
Fluoride	1220	U	0.14	0.13	< 1.0	1.3	10	150	500
Sulphate	1220	U	140	7.1	280	150	1000	20000	50000
Total Dissolved Solids	1020	N	340	29	660	460	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	14	13	< 50	130	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	23

Leachate Test Information	
Leachant volume 1st extract/l	0.299
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.096

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Test Methods

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge
650	Characterisation of Waste (Leaching WAC)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-13145-1
Initial Date of Issue:	02-May-2023
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt
Project	G23012 Global Centre for Rail Excellence
Quotation No.:	Q22-29781
Order No.:	
No. of Samples:	3
Turnaround (Wkdays):	7
Date Approved:	02-May-2023
Approved By:	
Details:	Stuart Henderson, Technical Manager

Date Received:	21-Apr-2023
Date Instructed:	21-Apr-2023
Results Due:	02-May-2023

Results - Soil

Project: G23012 Global Centre for Rail Excellence

Client: Jackson Geo Services			**Chemtest Job No.:**		23-13145	23-13145	23-13145
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1627318	1627319	1627320
			Sample Location:		S2-TP216	S2-BH235	S2-TP214
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		0.50	0.50	0.50
			Bottom Depth (m):		0.60	0.60	0.60
			Date Sampled:		14-Apr-2023	14-Apr-2023	14-Apr-2023
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Moisture	N	2030	%	0.020	8.4	13	5.2
pH	U	2010		4.0	6.7	6.4	7.8
Acid Neutralisation Capacity	N	2015	mol/kg	0.0020	0.018	0.018	0.016
Total Organic Carbon	U	2625	%	0.20	3.3	1.0	2.6

Results - 2 Stage WAC

Project: G23012 Global Centre for Rail Excellence

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	23-13145								
Chemtest Sample ID:	1627318								
Sample Ref:									
Sample ID:									
Sample Location:	S2-TP216								
Top Depth(m):	0.50								
Bottom Depth(m):	0.60								
Sampling Date:	14-Apr-2023								
Determinand	**SOP**	**Accred.**	**Units**				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%			3.3	3	5	6
Loss on Ignition							--	--	10
Total BTEX							6	--	--
Total PCBs (7 congeners)							1	--	--
TPH Total WAC (Mineral Oil)							500	--	--
Total (of 17) PAHs							100	--	--
pH	2010	U				6.7	--	>6	--
Acid Neutralisation Capacity							--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0002	< 0.0002	0.0005	0.0003	0.5	2	25
Barium	1455	U	0.030	0.010	0.059	0.12	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0008	0.0008	0.0015	0.0077	0.5	10	70
Copper	1455	U	0.0017	0.0006	0.0034	0.0020	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0002	0.0009	0.0005	0.0079	0.5	10	30
Nickel	1455	U	0.0027	< 0.0005	0.0055	0.0032	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	0.0018	< 0.0005	0.0037	0.0022	0.1	0.5	7
Zinc	1455	U	0.024	0.021	0.047	0.21	4	50	200
Chloride	1220	U	2.2	4.7	< 10	44	800	15000	25000
Fluoride	1220	U	0.34	0.14	< 1.0	1.6	10	150	500
Sulphate	1220	U	200	8.0	400	310	1000	20000	50000
Total Dissolved Solids	1020	N	370	47	740	850	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	5.1	2.9	< 50	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	8.4

Leachate Test Information	
Leachant volume 1st extract/l	0.334
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.206

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - 2 Stage WAC

Project: G23012 Global Centre for Rail Excellence

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	23-13145								
Chemtest Sample ID:	1627319								
Sample Ref:									
Sample ID:									
Sample Location:	S2-BH235								
Top Depth(m):	0.50								
Bottom Depth(m):	0.60								
Sampling Date:	14-Apr-2023								
Determinand	**SOP**	**Accred.**	**Units**				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%			1.0	3	5	6
Loss on Ignition							--	--	10
Total BTEX							6	--	--
Total PCBs (7 congeners)							1	--	--
TPH Total WAC (Mineral Oil)							500	--	--
Total (of 17) PAHs							100	--	--
pH	2010	U				6.4	--	>6	--
Acid Neutralisation Capacity							--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.5	2	25
Barium	1455	U	< 0.005	< 0.005	< 0.0005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0011	0.0010	0.0021	0.0006	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.5	10	30
Nickel	1455	U	0.0006	0.0007	0.0012	0.0073	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	0.023	0.041	0.046	0.40	4	50	200
Chloride	1220	U	1.2	< 1.0	< 10	< 10	800	15000	25000
Fluoride	1220	U	0.13	0.14	< 1.0	1.4	10	150	500
Sulphate	1220	U	6.6	1.0	13	13	1000	20000	50000
Total Dissolved Solids	1020	N	14	12	27	130	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	6.4	4.3	< 50	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	13

Leachate Test Information	
Leachant volume 1st extract/l	0.325
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.105

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - 2 Stage WAC

Project: G23012 Global Centre for Rail Excellence

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	23-13145								
Chemtest Sample ID:	1627320								
Sample Ref:									
Sample ID:									
Sample Location:	S2-TP214								
Top Depth(m):	0.50								
Bottom Depth(m):	0.60								
Sampling Date:	14-Apr-2023								
Determinand	**SOP**	**Accred.**	**Units**				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%			2.6	3	5	6
Loss on Ignition							--	--	10
Total BTEX							6	--	--
Total PCBs (7 congeners)							1	--	--
TPH Total WAC (Mineral Oil)							500	--	--
Total (of 17) PAHs							100	--	--
pH	2010	U				7.8	--	>6	--
Acid Neutralisation Capacity							--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.5	2	25
Barium	1455	U	0.016	< 0.005	0.033	0.018	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0071	0.0016	0.014	0.022	0.5	10	70
Copper	1455	U	0.0008	0.0007	0.0017	0.0009	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0006	0.0002	0.0011	0.0025	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	0.020	0.022	0.041	0.22	4	50	200
Chloride	1220	U	1.5	< 1.0	< 10	< 10	800	15000	25000
Fluoride	1220	U	0.23	0.11	< 1.0	1.2	10	150	500
Sulphate	1220	U	8.0	< 1.0	16	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	86	18	170	260	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	5.0	4.2	< 50	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	5.2

Leachate Test Information	
Leachant volume 1st extract/l	0.340
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.187

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Test Methods

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge
650	Characterisation of Waste (Leaching WAC)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
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None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
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Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-13152-1
Initial Date of Issue:	02-May-2023
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt
Project	G23012 Global Centre for Rail Excellence
Quotation No.:	Q22-29781
Order No.:	
No. of Samples:	2
Turnaround (Wkdays):	7
Date Approved:	02-May-2023
Approved By:	
Details:	Stuart Henderson, Technical Manager

Date Received:	21-Apr-2023
Date Instructed:	21-Apr-2023
Results Due:	02-May-2023

Results - Soil

Project: G23012 Global Centre for Rail Excellence

Client: Jackson Geo Services			**Chemtest Job No.:**		23-13152
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1627352
			Sample Location:		S2-BH208
			Sample Type:		SOIL
			Top Depth (m):		0.90
			Date Sampled:		14-Apr-2023
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Moisture	N	2030	%	0.020	9.6
pH	M	2010		4.0	7.7
Acid Neutralisation Capacity	N	2015	mol/kg	0.0020	0.0090
Total Organic Carbon	M	2625	%	0.20	7.7

Results - 2 Stage WAC

Project: G23012 Global Centre for Rail Excellence

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	23-13152								
Chemtest Sample ID:	1627351								
Sample Ref:									
Sample ID:									
Sample Location:	S2-TP220								
Top Depth(m):	1.20								
Bottom Depth(m):									
Sampling Date:	14-Apr-2023								
Determinand	**SOP**	**Accred.**	**Units**				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	M	%			0.90	3	5	6
Loss On Ignition	2610	M	%			5.5	--	--	10
Total BTEX	2760	M	mg/kg			< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg			< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg			< 10	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg			< 2.0	100	--	--
pH	2010	M				6.6	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg			17	--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0002	0.0002	0.0005	0.0024	0.5	2	25
Barium	1455	U	0.020	< 0.005	0.039	0.018	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0007	< 0.0005	0.0014	0.0007	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.5	10	30
Nickel	1455	U	0.0080	0.0013	0.016	0.019	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	0.0006	< 0.0005	0.0057	0.1	0.5	7
Zinc	1455	U	0.031	0.021	0.060	0.22	4	50	200
Chloride	1220	U	1.3	< 1.0	< 10	< 10	800	15000	25000
Fluoride	1220	U	0.10	0.10	< 1.0	< 1.0	10	150	500
Sulphate	1220	U	12	2.7	24	36	1000	20000	50000
Total Dissolved Solids	1020	N	41	15	80	170	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	5.1	4.4	< 50	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	15

Leachate Test Information	
Leachant volume 1st extract/l	0.320
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.163

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - 2 Stage WAC

Project: G23012 Global Centre for Rail Excellence

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	23-13152								
Chemtest Sample ID:	1627352								
Sample Ref:									
Sample ID:									
Sample Location:	S2-BH208								
Top Depth(m):	0.90								
Bottom Depth(m):									
Sampling Date:	14-Apr-2023								
Determinand	**SOP**	**Accred.**	**Units**				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	M	%			7.7	3	5	6
Loss on Ignition							--	--	10
Total BTEX							6	--	--
Total PCBs (7 congeners)							1	--	--
TPH Total WAC (Mineral Oil)							500	--	--
Total (of 17) PAHs							100	--	--
pH	2010	M				7.7	--	>6	--
Acid Neutralisation Capacity							--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0003	0.0002	0.0006	0.0022	0.5	2	25
Barium	1455	U	0.007	< 0.005	0.014	0.0041	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	0.0005	< 0.0005	0.0049	0.5	10	70
Copper	1455	U	0.0015	0.0016	0.0030	0.0009	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.5	10	30
Nickel	1455	U	0.0005	0.0006	0.0011	0.0056	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	0.023	0.062	0.045	0.60	4	50	200
Chloride	1220	U	2.2	< 1.0	< 10	< 10	800	15000	25000
Fluoride	1220	U	0.28	0.22	< 1.0	2.2	10	150	500
Sulphate	1220	U	4.9	1.2	< 10	14	1000	20000	50000
Total Dissolved Solids	1020	N	42	22	83	230	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	7.1	6.4	< 50	65	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	9.6

Leachate Test Information	
Leachant volume 1st extract/l	0.331
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.102

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Test Methods

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge
650	Characterisation of Waste (Leaching WAC)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
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Newmarket
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Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-13164-1
Initial Date of Issue:	02-May-2023
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt
Project	G23012 Global Centre for Rail Excellence
Quotation No.:	Q22-29781
Order No.:	
No. of Samples:	1
Turnaround (Wkdays):	7
Date Approved:	02-May-2023
Approved By:	
Details:	Stuart Henderson, Technical Manager

Date Received:	21-Apr-2023
Date Instructed:	21-Apr-2023
Results Due:	02-May-2023

Results - Soil

Project: G23012 Global Centre for Rail Excellence

Client: Jackson Geo Services			**Chemtest Job No.:**		23-13164
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1627389
			Sample Location:		S2-TP227
			Sample Type:		SOIL
			Top Depth (m):		0.20
			Bottom Depth (m):		0.30
			Date Sampled:		17-Apr-2023
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Moisture	N	2030	%	0.020	5.4
pH	U	2010		4.0	6.1
Acid Neutralisation Capacity	N	2015	mol/kg	0.0020	0.0060
Total Organic Carbon	U	2625	%	0.20	0.77

Results - 2 Stage WAC

Project: G23012 Global Centre for Rail Excellence

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	23-13164								
Chemtest Sample ID:	1627389								
Sample Ref:									
Sample ID:									
Sample Location:	S2-TP227								
Top Depth(m):	0.20								
Bottom Depth(m):	0.30								
Sampling Date:	17-Apr-2023								
Determinand	**SOP**	**Accred.**	**Units**				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%			0.77	3	5	6
Loss on Ignition							--	--	10
Total BTEX							6	--	--
Total PCBs (7 congeners)							1	--	--
TPH Total WAC (Mineral Oil)							500	--	--
Total (of 17) PAHs							100	--	--
pH	2010	U				6.1	--	>6	--
Acid Neutralisation Capacity							--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0003	0.0007	0.0005	0.0068	0.5	2	25
Barium	1455	U	0.057	0.013	0.11	0.17	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0008	0.0012	0.0016	0.0009	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0004	0.0003	0.0008	0.0033	0.5	10	30
Nickel	1455	U	0.0006	0.0008	0.0012	0.0081	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	0.0007	< 0.0005	0.0014	0.0008	0.1	0.5	7
Zinc	1455	U	0.022	0.060	0.044	0.55	4	50	200
Chloride	1220	U	1.2	< 1.0	< 10	< 10	800	15000	25000
Fluoride	1220	U	0.20	0.13	< 1.0	1.4	10	150	500
Sulphate	1220	U	23	3.6	46	58	1000	20000	50000
Total Dissolved Solids	1020	N	120	38	230	470	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	8.0	7.4	< 50	74	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	5.4

Leachate Test Information	
Leachant volume 1st extract/l	0.340
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.195

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Test Methods

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge
650	Characterisation of Waste (Leaching WAC)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

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The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

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Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

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A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

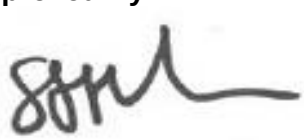
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All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

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customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-13166-1
Initial Date of Issue:	08-May-2023
Re-Issue Details:	
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt James Power
Project	G23012 Global Centre of Rail Excellence (GCRE)
Quotation No.:	Q22-29781
Order No.:	
No. of Samples:	7
Turnaround (Wkdays):	7
Date Approved:	08-May-2023
Approved By:	



Details:	Stuart Henderson, Technical Manager

Date Received:	21-Apr-2023
Date Instructed:	26-Apr-2023
Results Due:	05-May-2023

Results - Leachate

Project: G23012 Global Centre of Rail Excellence (GCRE)

Client: Jackson Geo Services				**Chemtest Job No.:**		23-13166
Quotation No.: Q22-29781				**Chemtest Sample ID.:**		1627393
Order No.:				Client Sample Ref.:		3
				Sample Location:		S2-TP229
				Sample Type:		SOIL
				Top Depth (m):		0.50
				Bottom Depth (m):		0.60
				Date Sampled:		19-Apr-2023
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**	
pH	U	1010	10:1		N/A	8.1
Sulphate	U	1220	10:1	mg/l	1.0	17
Cyanide (Total)	U	1300	10:1	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	10:1	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1455	10:1	µg/l	0.20	< 0.20
Cadmium (Dissolved)	U	1455	10:1	µg/l	0.11	< 0.11
Chromium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Copper (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Mercury (Dissolved)	U	1455	10:1	µg/l	0.05	< 0.05
Nickel (Dissolved)	U	1455	10:1	µg/l	0.50	0.65
Lead (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Selenium (Dissolved)	U	1455	10:1	µg/l	0.50	1.0
Vanadium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Zinc (Dissolved)	U	1455	10:1	µg/l	2.5	< 2.5
Chromium (Hexavalent)	U	1490	10:1	µg/l	20	< 20
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE)

Client: Jackson Geo Services				**Chemtest Job No.:**	23-13166	23-13166	23-13166	23-13166	23-13166	23-13166	23-13166
Quotation No.: Q22-29781				**Chemtest Sample ID.:**	1627392	1627393	1627396	1627398	1627399	1627401	1627404
Order No.:				Client Sample Ref.:	1	3	9	2	5	9	105
				Sample Location:	S2-TP229	S2-TP229	S2-TP229	S2-TP206	S2-TP206	S2-TP206	S2-BH235
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.20	0.50	3.20	0.50	0.90	2.90	3.50
				Bottom Depth (m):	0.30	0.60	3.30	0.60	1.00	3.00	3.70
				Date Sampled:	19-Apr-2023	19-Apr-2023	19-Apr-2023	19-Apr-2023	19-Apr-2023	19-Apr-2023	19-Apr-2023
				Asbestos Lab:	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**							
ACM Type	U	2192		N/A	-	-	-	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	6.8	6.4	7.3	5.7	5.9	11	7.8
pH	U	2010		4.0	6.8	7.4	6.5	7.4	7.7	8.2	5.6
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40	< 0.40	0.40	< 0.40	< 0.40	< 0.40	< 0.40
Sulphate (2:1 Water Soluble) as SO4 mg/l	U	2120	mg/l	10.000	56	40	< 10	< 10	< 10	< 10	< 10
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Arsenic	U	2455	mg/kg	0.5	8.8	6.7	12	15	12	14	11
Cadmium	U	2455	mg/kg	0.10	0.25	0.18	0.24	0.16	0.17	0.22	< 0.10
Chromium	U	2455	mg/kg	0.5	7.9	6.2	13	11	9.3	7.2	3.7
Copper	U	2455	mg/kg	0.50	36	27	42	53	44	43	32
Mercury	U	2455	mg/kg	0.05	< 0.05	< 0.05	0.06	0.07	0.07	0.15	0.14
Nickel	U	2455	mg/kg	0.50	27	21	64	47	50	29	20
Lead	U	2455	mg/kg	0.50	6.0	4.2	18	33	32	35	16
Selenium	U	2455	mg/kg	0.25	0.61	0.46	0.90	0.83	0.94	1.6	1.1
Vanadium	U	2455	mg/kg	0.5	11	8.4	28	11	12	10	7.6
Zinc	U	2455	mg/kg	0.50	40	33	120	110	100	70	73
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Aliphatic VPH >C5-C6	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C6-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total Aliphatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25
Aliphatic EPH >C10-C12	U	2690	mg/kg	2.00	2.9	4.1	2.3	2.7	< 2.0	< 2.0	< 2.0
Aliphatic EPH >C12-C16	U	2690	mg/kg	1.00	15	18	2.5	3.1	1.9	2.0	1.1
Aliphatic EPH >C16-C21	U	2690	mg/kg	2.00	35	41	< 2.0	2.5	< 2.0	< 2.0	< 2.0
Aliphatic EPH >C21-C35	U	2690	mg/kg	3.00	78	57	3.4	4.3	5.0	5.1	3.2
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Total Aliphatic EPH >C10-C35	U	2690	mg/kg	5.00	130	120	10	13	9.4	9.0	< 5.0
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00	130	120	10	13	< 10	< 10	< 10
Aromatic VPH >C5-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total Aromatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25
Aromatic EPH >C10-C12	U	2690	mg/kg	1.00	10	10	10	11	1.3	1.4	1.4

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE)

Client: Jackson Geo Services					**Chemtest Job No.:**	23-13166	23-13166	23-13166	23-13166	23-13166	23-13166
Quotation No.: Q22-29781					**Chemtest Sample ID.:**	1627392	1627393	1627396	1627398	1627399	1627401	1627404
Order No.:					Client Sample Ref.:	1	3	9	2	5	9	105
					Sample Location:	S2-TP229	S2-TP229	S2-TP229	S2-TP206	S2-TP206	S2-TP206	S2-BH235
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	0.20	0.50	3.20	0.50	0.90	2.90	3.50
					Bottom Depth (m):	0.30	0.60	3.30	0.60	1.00	3.00	3.70
					Date Sampled:	19-Apr-2023	19-Apr-2023	19-Apr-2023	19-Apr-2023	19-Apr-2023	19-Apr-2023	19-Apr-2023
					Asbestos Lab:	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Aromatic EPH >C12-C16	U	2690	mg/kg	1.00		15	17	17	16	2.0	1.7	2.7
Aromatic EPH >C16-C21	U	2690	mg/kg	2.00		13	15	17	13	3.2	4.2	3.2
Aromatic EPH >C21-C35	U	2690	mg/kg	2.00		2.0	< 2.0	< 2.0	2.1	8.9	4.7	4.2
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00		8.4	8.0	8.5	8.7	5.5	2.6	2.5
Total Aromatic EPH >C10-C35	U	2690	mg/kg	5.00		40	43	46	42	15	12	12
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00		49	51	54	51	21	15	14
Total VPH >C5-C10	U	2780	mg/kg	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Total EPH >C10-C35	U	2690	mg/kg	10.00		170	160	56	55	25	21	16
Total EPH >C10-C40	N	2690	mg/kg	10.00		180	170	64	63	30	24	19
Organic Matter	U	2625	%	0.40		2.5	1.5	1.4	5.3	7.9	14	7.1
Benzene	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Naphthalene	U	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10	0.41	< 0.10	0.73	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10	0.13	< 0.10	0.23	< 0.10
Fluorene	U	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.21	< 0.10
Phenanthrene	U	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10	0.24	< 0.10	0.46	< 0.10
Anthracene	U	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10	0.74	< 0.10	< 0.10	< 0.10
Pyrene	U	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10	0.55	< 0.10	< 0.10	< 0.10
Benzo[a]anthracene	U	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	U	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0		< 2.0	< 2.0	< 2.0	2.1	< 2.0	< 2.0	< 2.0
Total Phenols	U	2920	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C40	Acetone/Heptane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8-C10 Aromatics: >C5–C7,>C7-C8,>C8–C10	Water extraction / Headspace GCxGC FID detection
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS

Test Methods

SOP	Title	Parameters included	Method summary
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-13168-1
Initial Date of Issue:	02-May-2023
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt
Project	G23012 Global Centre for Rail Excellence
Quotation No.:	Q22-29781
Order No.:	
No. of Samples:	1
Turnaround (Wkdays):	7
Date Approved:	02-May-2023
Approved By:	
Details:	Stuart Henderson, Technical Manager

Date Received:	21-Apr-2023
Date Instructed:	21-Apr-2023
Results Due:	02-May-2023

Results - Soil

Project: G23012 Global Centre for Rail Excellence

Client: Jackson Geo Services			**Chemtest Job No.:**		23-13168
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1627408
			Sample Location:		S2-TP217
			Sample Type:		SOIL
			Top Depth (m):		0.40
			Bottom Depth (m):		0.50
			Date Sampled:		17-Apr-2023
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Moisture	N	2030	%	0.020	8.1
pH	U	2010		4.0	7.3
Acid Neutralisation Capacity	N	2015	mol/kg	0.0020	0.0090
Total Organic Carbon	U	2625	%	0.20	4.2

Results - 2 Stage WAC

Project: G23012 Global Centre for Rail Excellence

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	23-13168								
Chemtest Sample ID:	1627408								
Sample Ref:									
Sample ID:									
Sample Location:	S2-TP217								
Top Depth(m):	0.40								
Bottom Depth(m):	0.50								
Sampling Date:	17-Apr-2023								
Determinand	**SOP**	**Accred.**	**Units**				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%			4.2	3	5	6
Loss on Ignition							--	--	10
Total BTEX							6	--	--
Total PCBs (7 congeners)							1	--	--
TPH Total WAC (Mineral Oil)							500	--	--
Total (of 17) PAHs							100	--	--
pH	2010	U				7.3	--	>6	--
Acid Neutralisation Capacity							--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0002	< 0.0002	0.0005	0.0002	0.5	2	25
Barium	1455	U	0.007	< 0.005	0.014	0.0059	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0007	0.0006	0.0014	0.0006	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0005	< 0.0005	0.0010	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	0.020	0.039	0.039	0.37	4	50	200
Chloride	1220	U	< 1.0	< 1.0	< 10	< 10	800	15000	25000
Fluoride	1220	U	0.099	0.085	< 1.0	< 1.0	10	150	500
Sulphate	1220	U	10	3.0	20	36	1000	20000	50000
Total Dissolved Solids	1020	N	23	8.7	45	99	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	6.1	3.4	< 50	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	8.1

Leachate Test Information	
Leachant volume 1st extract/l	0.335
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.146

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Test Methods

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge
650	Characterisation of Waste (Leaching WAC)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

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U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
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SOP	Standard operating procedure
LOD	Limit of detection

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Uncertainty of measurement for the determinands tested are available upon request
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All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-13171-1
Initial Date of Issue:	02-May-2023
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt
Project	G23012 Global Centre for Rail Excellence
Quotation No.:	Q22-29781
Order No.:	
No. of Samples:	1
Turnaround (Wkdays):	7
Date Approved:	02-May-2023
Approved By:	
Details:	Stuart Henderson, Technical Manager

Date Received:	21-Apr-2023
Date Instructed:	21-Apr-2023
Results Due:	02-May-2023

Results - Soil

Project: G23012 Global Centre for Rail Excellence

Client: Jackson Geo Services			**Chemtest Job No.:**		23-13171
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1627413
			Sample Location:		S2-TP265
			Sample Type:		SOIL
			Top Depth (m):		0.90
			Bottom Depth (m):		1.00
			Date Sampled:		18-Apr-2023
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Moisture	N	2030	%	0.020	18
pH	U	2010		4.0	5.3
Acid Neutralisation Capacity	N	2015	mol/kg	0.0020	0.017
Total Organic Carbon	U	2625	%	0.20	1.3

Results - 2 Stage WAC

Project: G23012 Global Centre for Rail Excellence

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	23-13171								
Chemtest Sample ID:	1627413								
Sample Ref:									
Sample ID:									
Sample Location:	S2-TP265								
Top Depth(m):	0.90								
Bottom Depth(m):	1.00								
Sampling Date:	18-Apr-2023								
Determinand	**SOP**	**Accred.**	**Units**				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%			1.3	3	5	6
Loss on Ignition							--	--	10
Total BTEX							6	--	--
Total PCBs (7 congeners)							1	--	--
TPH Total WAC (Mineral Oil)							500	--	--
Total (of 17) PAHs							100	--	--
pH	2010	U				5.3	--	>6	--
Acid Neutralisation Capacity							--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0027	< 0.0002	0.0052	0.0023	0.5	2	25
Barium	1455	U	0.007	< 0.005	0.013	0.0058	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0021	< 0.0005	0.0041	0.0018	0.5	10	70
Copper	1455	U	0.010	0.0005	0.020	0.0088	2	50	100
Mercury	1455	U	0.00015	< 0.00005	0.00029	0.00013	0.01	0.2	2
Molybdenum	1455	U	0.0004	< 0.0002	0.0009	0.0004	0.5	10	30
Nickel	1455	U	0.0007	< 0.0005	0.0014	0.0006	0.4	10	40
Lead	1455	U	0.0037	< 0.0005	0.0073	0.0032	0.5	10	50
Antimony	1455	U	0.0007	< 0.0005	0.0013	0.0006	0.06	0.7	5
Selenium	1455	U	0.0012	< 0.0005	0.0024	0.0010	0.1	0.5	7
Zinc	1455	U	0.028	0.022	0.055	0.22	4	50	200
Chloride	1220	U	2.6	< 1.0	< 10	< 10	800	15000	25000
Fluoride	1220	U	0.086	0.086	< 1.0	< 1.0	10	150	500
Sulphate	1220	U	6.3	1.4	12	18	1000	20000	50000
Total Dissolved Solids	1020	N	13	6.8	26	73	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	6.9	5.1	< 50	52	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	18

Leachate Test Information	
Leachant volume 1st extract/l	0.311
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.153

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Test Methods

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
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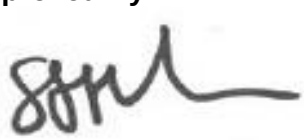
If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-13172-1
Initial Date of Issue:	08-May-2023
Re-Issue Details:	
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt James Power
Project	G23012 Global centre of Rail Excellence (GCRE
Quotation No.:	Q22-29781
Order No.:	
No. of Samples:	8
Turnaround (Wkdays):	7
Date Approved:	08-May-2023
Approved By:	

Date Received:	21-Apr-2023
Date Instructed:	26-Apr-2023
Results Due:	05-May-2023



Details: Stuart Henderson, Technical Manager

Results - Leachate

Project: G23012 Global centre of Rail Excellence (GCRE

Client: Jackson Geo Services				**Chemtest Job No.:**		23-13172	23-13172
Quotation No.: Q22-29781				**Chemtest Sample ID.:**		1627418	1627423
Order No.:				Client Sample Ref.:		1	3
				Sample Location:		S2-TP226	S2-TP223
				Sample Type:		SOIL	SOIL
				Top Depth (m):		0.20	0.50
				Bottom Depth (m):		0.30	0.60
				Date Sampled:		19-Apr-2023	19-Apr-2023
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**		
pH	U	1010	10:1		N/A	7.9	8.1
Sulphate	U	1220	10:1	mg/l	1.0	6.5	12
Cyanide (Total)	U	1300	10:1	mg/l	0.050	< 0.050	< 0.050
Cyanide (Free)	U	1300	10:1	mg/l	0.050	< 0.050	< 0.050
Arsenic (Dissolved)	U	1455	10:1	µg/l	0.20	< 0.20	0.26
Cadmium (Dissolved)	U	1455	10:1	µg/l	0.11	< 0.11	< 0.11
Chromium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	0.58
Copper (Dissolved)	U	1455	10:1	µg/l	0.50	0.51	0.50
Mercury (Dissolved)	U	1455	10:1	µg/l	0.05	< 0.05	< 0.05
Nickel (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	0.55
Lead (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	< 0.50
Selenium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	< 0.50
Vanadium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	< 0.50
Zinc (Dissolved)	U	1455	10:1	µg/l	2.5	24	24
Chromium (Hexavalent)	U	1490	10:1	µg/l	20	< 20	< 20
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030	< 0.030

Results - Soil

Project: G23012 Global centre of Rail Excellence (GCRE

Client: Jackson Geo Services			**Chemtest Job No.:**		23-13172	23-13172	23-13172	23-13172	23-13172	23-13172	23-13172	23-13172
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1627415	1627417	1627418	1627419	1627421	1627422	1627423	1627425
Order No.:			Client Sample Ref.:		3	6	1	3	7	1	3	7
			Sample Location:		S2-TP225	S2-TP225	S2-TP226	S2-TP226	S2-TP226	S2-TP223	S2-TP223	S2-TP223
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.50	1.90	0.20	0.50	1.80	0.20	0.50	1.90
			Bottom Depth (m):		0.60	2.00	0.30	0.60	1.90	0.30	0.60	2.00
			Date Sampled:		19-Apr-2023	19-Apr-2023	19-Apr-2023	19-Apr-2023	19-Apr-2023	19-Apr-2023	19-Apr-2023	19-Apr-2023
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
ACM Type	U	2192		N/A	-	-	-	-	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	5.4	7.9	5.7	8.3	4.6	3.3	6.3	6.1
pH	U	2010		4.0	6.4	5.4	7.1	5.2	5.1	8.2	6.9	5.4
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40	< 0.40	< 0.40	< 0.40	0.79	< 0.40	< 0.40	0.53
Sulphate (2:1 Water Soluble) as SO4 mg/l	U	2120	mg/l	10.000	20	< 10	< 10	< 10	< 10	< 10	13	14
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Arsenic	U	2455	mg/kg	0.5	5.0	7.9	9.3	7.4	3.3	6.5	9.9	16
Cadmium	U	2455	mg/kg	0.10	0.10	0.13	< 0.10	< 0.10	0.10	0.11	< 0.10	0.15
Chromium	U	2455	mg/kg	0.5	20	19	14	10	14	6.5	20	18
Copper	U	2455	mg/kg	0.50	25	36	30	22	28	29	30	37
Mercury	U	2455	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nickel	U	2455	mg/kg	0.50	32	49	29	22	40	32	25	46
Lead	U	2455	mg/kg	0.50	7.5	16	15	11	14	17	9.7	16
Selenium	U	2455	mg/kg	0.25	0.53	0.86	0.70	0.43	0.56	0.68	0.54	0.61
Vanadium	U	2455	mg/kg	0.5	10	22	16	12	16	7.4	12	20
Zinc	U	2455	mg/kg	0.50	38	96	63	46	77	59	37	78
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Aliphatic VPH >C5-C6	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C6-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total Aliphatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25
Aliphatic EPH >C10-C12	U	2690	mg/kg	2.00	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Aliphatic EPH >C12-C16	U	2690	mg/kg	1.00	< 1.0	< 1.0	1.1	10	< 1.0	1.3	3.8	< 1.0
Aliphatic EPH >C16-C21	U	2690	mg/kg	2.00	4.6	< 2.0	4.7	18	< 2.0	3.5	25	< 2.0
Aliphatic EPH >C21-C35	U	2690	mg/kg	3.00	15	3.1	61	120	< 3.0	13	42	< 3.0
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00	< 10	< 10	< 10	14	< 10	< 10	11	< 10
Total Aliphatic EPH >C10-C35	U	2690	mg/kg	5.00	20	< 5.0	67	150	< 5.0	18	71	< 5.0
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00	20	< 10	67	160	< 10	18	82	< 10
Aromatic VPH >C5-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total Aromatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25
Aromatic EPH >C10-C12	U	2690	mg/kg	1.00	1.3	2.8	1.6	1.6	1.7	3.8	1.6	2.2

Results - Soil

Project: G23012 Global centre of Rail Excellence (GCRE

Client: Jackson Geo Services			**Chemtest Job No.:**		23-13172	23-13172	23-13172	23-13172	23-13172	23-13172	23-13172	23-13172
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1627415	1627417	1627418	1627419	1627421	1627422	1627423	1627425
Order No.:			Client Sample Ref.:		3	6	1	3	7	1	3	7
			Sample Location:		S2-TP225	S2-TP225	S2-TP226	S2-TP226	S2-TP226	S2-TP223	S2-TP223	S2-TP223
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.50	1.90	0.20	0.50	1.80	0.20	0.50	1.90
			Bottom Depth (m):		0.60	2.00	0.30	0.60	1.90	0.30	0.60	2.00
			Date Sampled:		19-Apr-2023	19-Apr-2023	19-Apr-2023	19-Apr-2023	19-Apr-2023	19-Apr-2023	19-Apr-2023	19-Apr-2023
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Aromatic EPH >C12-C16	U	2690	mg/kg	1.00	3.2	2.1	2.2	2.7	3.3	3.2	4.5	2.5
Aromatic EPH >C16-C21	U	2690	mg/kg	2.00	3.4	3.6	3.3	4.1	4.6	4.6	6.3	2.9
Aromatic EPH >C21-C35	U	2690	mg/kg	2.00	3.6	3.7	6.7	10	2.7	14	19	3.3
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00	2.3	2.6	2.7	2.9	2.7	3.5	4.3	2.9
Total Aromatic EPH >C10-C35	U	2690	mg/kg	5.00	11	12	14	19	12	26	31	11
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00	14	15	16	22	15	29	35	14
Total VPH >C5-C10	U	2780	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Total EPH >C10-C35	U	2690	mg/kg	10.00	31	17	81	160	17	43	100	14
Total EPH >C10-C40	N	2690	mg/kg	10.00	34	19	83	180	19	47	120	17
Organic Matter	U	2625	%	0.40	6.3	1.3	2.7	1.2	1.2	12	3.5	1.8
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Naphthalene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

Results - 2 Stage WAC

Project: G23012 Global centre of Rail Excellence (GCRE

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	23-13172								
Chemtest Sample ID:	1627425								
Sample Ref:	7						**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:									
Sample Location:	S2-TP223								
Top Depth(m):	1.90								
Bottom Depth(m):	2.00								
Sampling Date:	19-Apr-2023								
Determinand	**SOP**	**Accred.**	**Units**						
Total Organic Carbon	2625	U	%			1.1	3	5	6
Loss On Ignition	2610	U	%			2.0	--	--	10
Total BTEX	2760	U	mg/kg			< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg			< 0.10	1	--	--
TPH Total WAC	2670	U	mg/kg			< 10	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg			< 2.0	100	--	--
pH	2010	U				5.4	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg			0.0060	--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0012	0.0008	0.0025	0.0082	0.5	2	25
Barium	1455	U	0.016	0.022	0.032	0.22	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	0.0007	< 0.0005	0.0061	0.5	10	70
Copper	1455	U	0.0007	0.0010	0.0014	0.0007	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	< 0.0002	0.0009	< 0.0002	0.0077	0.5	10	30
Nickel	1455	U	0.019	0.0010	0.037	0.026	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	0.0010	0.0007	0.0020	0.0077	0.1	0.5	7
Zinc	1455	U	0.009	0.020	0.017	0.19	4	50	200
Chloride	1220	U	< 1.0	1.4	< 10	13	800	15000	25000
Fluoride	1220	U	0.12	0.31	< 1.0	2.9	10	150	500
Sulphate	1220	U	< 1.0	11	< 10	99	1000	20000	50000
Total Dissolved Solids	1020	N	120	230	230	2200	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	4.1	3.5	< 50	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	6.1

Leachate Test Information	
Leachant volume 1st extract/l	0.339
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.167

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C40	Acetone/Heptane extraction / GCxGC FID detection

Test Methods

SOP	Title	Parameters included	Method summary
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8-C10 Aromatics: >C5–C7,>C7-C8,>C8–C10	Water extraction / Headspace GCxGC FID detection
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge
650	Characterisation of Waste (Leaching WAC)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

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N	Unaccredited
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SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

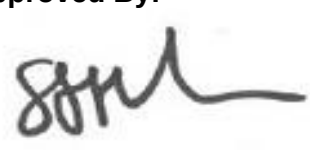
All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-13175-1
Initial Date of Issue:	02-May-2023
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt James Power
Project	G23012 Global Centre of Rail Excellence (GCRE)
Quotation No.:	Q22-29781
Date Received:	21-Apr-2023
Order No.:	
Date Instructed:	25-Apr-2023
No. of Samples:	1
Turnaround (Wkdays):	5
Results Due:	02-May-2023
Date Approved:	02-May-2023
Approved By:	



Details:	Stuart Henderson, Technical Manager

Results - Water

Project: G23012 Global Centre of Rail Excellence (GCRE)

Client: Jackson Geo Services			**Chemtest Job No.:**		23-13175
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1627428
Order No.:			Client Sample Ref.:		1
			Sample Location:		S2-BH264.5
			Sample Type:		WATER
			Top Depth (m):		11.56
			Date Sampled:		19-Apr-2023
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
pH	U	1010		N/A	7.4
Sulphate	U	1220	mg/l	1.0	240
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050
Calcium (Dissolved)	U	1455	mg/l	2.00	110
Total Hardness as CaCO3	U	1270	mg/l	15	410
Arsenic (Dissolved)	U	1455	µg/l	0.20	0.42
Boron (Dissolved)	U	1455	µg/l	10.0	31
Cadmium (Dissolved)	U	1455	µg/l	0.11	< 0.11
Chromium (Dissolved)	U	1455	µg/l	0.50	< 0.50
Copper (Dissolved)	U	1455	µg/l	0.50	0.78
Mercury (Dissolved)	U	1455	µg/l	0.05	< 0.05
Manganese (Dissolved)	U	1455	µg/l	0.50	190
Nickel (Dissolved)	U	1455	µg/l	0.50	7.6
Lead (Dissolved)	U	1455	µg/l	0.50	< 0.50
Selenium (Dissolved)	U	1455	µg/l	0.50	0.51
Vanadium (Dissolved)	U	1455	µg/l	0.50	< 0.50
Zinc (Dissolved)	U	1455	µg/l	2.5	27
Chromium (Hexavalent)	U	1490	µg/l	20	[B] < 20
Dissolved Organic Carbon	U	1610	mg/l	2.0	2.3
Naphthalene	U	1800	µg/l	0.10	< 0.10
Acenaphthylene	U	1800	µg/l	0.10	< 0.10
Acenaphthene	U	1800	µg/l	0.10	< 0.10
Fluorene	U	1800	µg/l	0.10	< 0.10
Phenanthrene	U	1800	µg/l	0.10	< 0.10
Anthracene	U	1800	µg/l	0.10	< 0.10
Fluoranthene	U	1800	µg/l	0.10	< 0.10
Pyrene	U	1800	µg/l	0.10	< 0.10
Benzo[a]anthracene	U	1800	µg/l	0.10	< 0.10
Chrysene	U	1800	µg/l	0.10	< 0.10
Benzo[b]fluoranthene	U	1800	µg/l	0.10	< 0.10
Benzo[k]fluoranthene	U	1800	µg/l	0.10	< 0.10
Benzo[a]pyrene	U	1800	µg/l	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1800	µg/l	0.10	< 0.10
Dibenz(a,h)Anthracene	U	1800	µg/l	0.10	< 0.10
Benzo[g,h,i]perylene	U	1800	µg/l	0.10	< 0.10
Total Of 16 PAH's	U	1800	µg/l	2.0	< 2.0
Total Phenols	U	1920	mg/l	0.030	< 0.030

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1627428	1		S2-BH264.5	19-Apr-2023	B	Coloured Winchester 1000ml
1627428	1		S2-BH264.5	19-Apr-2023	B	EPA Vial 40ml
1627428	1		S2-BH264.5	19-Apr-2023	B	Plastic Bottle 1000ml

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1270	Total Hardness of Waters	Total hardness	Calculation applied to calcium and magnesium results, expressed as mg l-1 CaCO3 equivalent.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-MS	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.

Report Information

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U	UKAS accredited
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I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
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>	"greater than"
SOP	Standard operating procedure
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All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-13342-1
Initial Date of Issue:	03-May-2023
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt
Project	G23012 Global Centre for Rail Excellence
Quotation No.:	Q22-29781
Order No.:	
No. of Samples:	1
Turnaround (Wkdays):	7
Date Approved:	03-May-2023
Approved By:	
Details:	Stuart Henderson, Technical Manager

Date Received:	24-Apr-2023
Date Instructed:	24-Apr-2023
Results Due:	03-May-2023

Results - Soil

Project: G23012 Global Centre for Rail Excellence

Client: Jackson Geo Services			**Chemtest Job No.:**		23-13342
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1628075
			Sample Location:		S2-TP238
			Sample Type:		SOIL
			Top Depth (m):		0.20
			Bottom Depth (m):		0.30
			Date Sampled:		18-Apr-2023
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Moisture	N	2030	%	0.020	5.1
pH	U	2010		4.0	8.2
Acid Neutralisation Capacity	N	2015	mol/kg	0.0020	0.0080
Total Organic Carbon	U	2625	%	0.20	2.2

Results - 2 Stage WAC

Project: G23012 Global Centre for Rail Excellence

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	23-13342								
Chemtest Sample ID:	1628075								
Sample Ref:									
Sample ID:									
Sample Location:	S2-TP238								
Top Depth(m):	0.20								
Bottom Depth(m):	0.30								
Sampling Date:	18-Apr-2023								
Determinand	**SOP**	**Accred.**	**Units**				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%			2.2	3	5	6
Loss on Ignition							--	--	10
Total BTEX							6	--	--
Total PCBs (7 congeners)							1	--	--
TPH Total WAC (Mineral Oil)							500	--	--
Total (of 17) PAHs							100	--	--
pH	2010	U				8.2	--	>6	--
Acid Neutralisation Capacity							--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0008	0.0008	0.0016	0.0076	0.5	2	25
Barium	1455	U	0.041	0.038	0.081	0.38	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0008	0.0018	0.0016	0.017	0.5	10	30
Nickel	1455	U	0.0007	< 0.0005	0.0014	0.0007	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	0.0006	< 0.0005	0.0053	0.06	0.7	5
Selenium	1455	U	0.0015	< 0.0005	0.0030	0.0015	0.1	0.5	7
Zinc	1455	U	0.004	0.005	0.007	0.045	4	50	200
Chloride	1220	U	1.3	< 1.0	< 10	< 10	800	15000	25000
Fluoride	1220	U	0.27	0.24	< 1.0	2.4	10	150	500
Sulphate	1220	U	83	19	170	250	1000	20000	50000
Total Dissolved Solids	1020	N	260	110	510	1300	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	3.3	< 2.5	< 50	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	5.1

Leachate Test Information	
Leachant volume 1st extract/l	0.341
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.172

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Test Methods

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge
650	Characterisation of Waste (Leaching WAC)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-13350-1
Initial Date of Issue:	09-May-2023
Re-Issue Details:	
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt
Project	G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Quotation No.:	Q22-29781	**Date Received:**	24-Apr-2023
Order No.:		**Date Instructed:**	28-Apr-2023
No. of Samples:	4		
Turnaround (Wkdays):	7	**Results Due:**	10-May-2023

Date Approved: 09-May-2023

Approved By:



Details: Stuart Henderson, Technical Manager

Results - Leachate

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services				**Chemtest Job No.:**		23-13350
Quotation No.: Q22-29781				**Chemtest Sample ID.:**		1628102
Order No.:				Client Sample Ref.:		3
				Sample Location:		S2-TP244
				Sample Type:		SOIL
				Top Depth (m):		0.50
				Bottom Depth (m):		0.60
				Date Sampled:		20-Apr-2023
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**	
pH	U	1010	10:1		N/A	8.4
Sulphate	U	1220	10:1	mg/l	1.0	10
Cyanide (Total)	U	1300	10:1	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	10:1	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1455	10:1	µg/l	0.20	< 0.20
Cadmium (Dissolved)	U	1455	10:1	µg/l	0.11	< 0.11
Chromium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Copper (Dissolved)	U	1455	10:1	µg/l	0.50	0.86
Mercury (Dissolved)	U	1455	10:1	µg/l	0.05	< 0.05
Nickel (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Lead (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Selenium (Dissolved)	U	1455	10:1	µg/l	0.50	0.84
Vanadium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Zinc (Dissolved)	U	1455	10:1	µg/l	2.5	27
Chromium (Hexavalent)	U	1490	10:1	µg/l	20	< 20
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services			**Chemtest Job No.:**		23-13350	23-13350	23-13350	23-13350
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1628096	1628099	1628102	1628105
Order No.:			Client Sample Ref.:		1	6	3	9
			Sample Location:		S2-TP210	S2-TP210	S2-TP244	S2-TP244
			Sample Type:		SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.20	1.90	0.50	2.90
			Bottom Depth (m):		0.30	2.00	0.60	3.00
			Date Sampled:		20-Apr-2023	20-Apr-2023	20-Apr-2023	20-Apr-2023
			Asbestos Lab:		COVENTRY	COVENTRY	DURHAM	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
ACM Type	U	2192		N/A	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	10	5.8	7.4	7.9
pH	U	2010		4.0	7.0	8.3	8.3	6.5
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40	< 0.40	0.58	< 0.40
Sulphate (2:1 Water Soluble) as SO4 mg/l	U	2120	mg/l	10.000	78	23	44	< 10
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Arsenic	U	2455	mg/kg	0.5	13	6.5	31	15
Cadmium	U	2455	mg/kg	0.10	0.21	< 0.10	1.9	0.22
Chromium	U	2455	mg/kg	0.5	11	6.0	51	23
Copper	U	2455	mg/kg	0.50	47	34	130	39
Mercury	U	2455	mg/kg	0.05	0.21	0.06	0.21	0.06
Nickel	U	2455	mg/kg	0.50	43	24	82	53
Lead	U	2455	mg/kg	0.50	64	17	200	26
Selenium	U	2455	mg/kg	0.25	1.0	0.72	1.2	1.2
Vanadium	U	2455	mg/kg	0.5	14	9.9	27	23
Zinc	U	2455	mg/kg	0.50	130	62	320	110
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Aliphatic VPH >C5-C6	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C6-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	0.24	< 0.05	< 0.05
Total Aliphatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25
Aliphatic EPH >C10-C12	U	2690	mg/kg	2.00	< 2.0	< 2.0	< 2.0	< 2.0
Aliphatic EPH >C12-C16	U	2690	mg/kg	1.00	1.5	1.5	1.3	1.6
Aliphatic EPH >C16-C21	U	2690	mg/kg	2.00	< 2.0	< 2.0	< 2.0	< 2.0
Aliphatic EPH >C21-C35	U	2690	mg/kg	3.00	< 3.0	< 3.0	3.2	< 3.0
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00	< 10	< 10	< 10	< 10
Total Aliphatic EPH >C10-C35	U	2690	mg/kg	5.00	6.7	6.3	7.5	5.8
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00	< 10	< 10	< 10	< 10
Aromatic VPH >C5-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total Aromatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services			**Chemtest Job No.:**		23-13350	23-13350	23-13350	23-13350
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1628096	1628099	1628102	1628105
Order No.:			Client Sample Ref.:		1	6	3	9
			Sample Location:		S2-TP210	S2-TP210	S2-TP244	S2-TP244
			Sample Type:		SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.20	1.90	0.50	2.90
			Bottom Depth (m):		0.30	2.00	0.60	3.00
			Date Sampled:		20-Apr-2023	20-Apr-2023	20-Apr-2023	20-Apr-2023
			Asbestos Lab:		COVENTRY	COVENTRY	DURHAM	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
Aromatic EPH >C10-C12	U	2690	mg/kg	1.00	7.1	5.8	7.0	7.7
Aromatic EPH >C12-C16	U	2690	mg/kg	1.00	6.5	6.3	8.1	7.2
Aromatic EPH >C16-C21	U	2690	mg/kg	2.00	8.9	8.5	9.6	8.7
Aromatic EPH >C21-C35	U	2690	mg/kg	2.00	< 2.0	< 2.0	< 2.0	< 2.0
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00	5.1	5.2	5.8	6.1
Total Aromatic EPH >C10-C35	U	2690	mg/kg	5.00	23	21	25	24
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00	28	26	30	30
Total VPH >C5-C10	U	2780	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Total EPH >C10-C35	U	2690	mg/kg	10.00	30	27	32	30
Total EPH >C10-C40	N	2690	mg/kg	10.00	35	33	38	36
Organic Matter	U	2625	%	0.40	13	3.5	7.7	7.2
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Naphthalene	U	2800	mg/kg	0.10	0.40	0.64	0.59	0.45
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10	0.11	< 0.10
Acenaphthene	U	2800	mg/kg	0.10	0.16	< 0.10	0.25	0.13
Fluorene	U	2800	mg/kg	0.10	< 0.10	< 0.10	0.25	0.12
Phenanthrene	U	2800	mg/kg	0.10	0.33	< 0.10	1.2	0.21
Anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10	0.28	< 0.10
Fluoranthene	U	2800	mg/kg	0.10	0.28	< 0.10	2.6	< 0.10
Pyrene	U	2800	mg/kg	0.10	0.23	< 0.10	2.2	< 0.10
Benzo[a]anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10	1.3	< 0.10
Chrysene	U	2800	mg/kg	0.10	< 0.10	< 0.10	1.6	< 0.10
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	2.1	< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	0.72	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	1.7	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	1.4	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10	0.23	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	< 0.10	< 0.10	1.3	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	< 2.0	< 2.0	18	< 2.0
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C40	Acetone/Heptane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8-C10 Aromatics: >C5–C7,>C7-C8,>C8–C10	Water extraction / Headspace GCxGC FID detection
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS

Test Methods

SOP	Title	Parameters included	Method summary
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

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Key

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If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Amended Report

Report No.:	23-13505-2		
Initial Date of Issue:	03-May-2023	**Date of Re-Issue:**	04-May-2023
Client	Jackson Geo Services		
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA		
Contact(s):	Adam Putt James Power		
Project	G23012 Global Centre of Rail Excellence (GCRE) Phase 2		
Quotation No.:	Q22-29781	**Date Received:**	25-Apr-2023
Order No.:		**Date Instructed:**	26-Apr-2023
No. of Samples:	5		
Turnaround (Wkdays):	5	**Results Due:**	03-May-2023
Date Approved:	03-May-2023		
Approved By:			
Details:	Stuart Henderson, Technical Manager		

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services			**Chemtest Job No.:**		23-13505	23-13505	23-13505	23-13505	23-13505
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1628771	1628772	1628773	1628774	1628775
Order No.:			Client Sample Ref.:		6	2	7	9	10
			Sample Location:		S2-BH233	S2-TP2115	S2-TP2115	S2-TP2115	S2-TP2115
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		2.20	0.30	2.00	3.10	3.70
			Bottom Depth (m):		2.65	0.50	2.10	3.20	3.90
			Date Sampled:		05-Apr-2023	21-Apr-2023	21-Apr-2023	21-Apr-2023	21-Apr-2023
Determinand	**Accred.**	**SOP**	**Units**	**LOD**					
Moisture	N	2030	%	0.020	7.8	15	75	24	14
pH (2.5:1)	N	2010		4.0	7.7	7.8			
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	0.027	< 0.010			
Total Sulphur	U	2175	%	0.010	0.17	0.50			
Sulphate (Acid Soluble)	U	2430	%	0.010	0.029	0.098			
Organic Matter	U	2625	%	0.40			20	52	9.3

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2175	Total Sulphur in Soils	Total Sulphur	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.

Report Information

Key

U	UKAS accredited
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U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

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The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

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A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
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D - Broken Container
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customerservices@chemtest.com

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Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-13660-1
Initial Date of Issue:	04-May-2023
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt
Project	G23012 Global Centre of Rail Excellence
Quotation No.:	Q22-29781
Order No.:	
No. of Samples:	1
Turnaround (Wkdays):	7
Date Approved:	04-May-2023
Approved By:	
Details:	Stuart Henderson, Technical Manager

Date Received:	26-Apr-2023
Date Instructed:	26-Apr-2023
Results Due:	05-May-2023

Results - Soil

Project: G23012 Global Centre of Rail Excellence

Client: Jackson Geo Services			**Chemtest Job No.:**		23-13660
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1629461
			Sample Location:		S2-TP226
			Sample Type:		SOIL
			Top Depth (m):		0.20
			Bottom Depth (m):		0.30
			Date Sampled:		19-Apr-2023
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Moisture	N	2030	%	0.020	5.9
pH	U	2010		4.0	7.1
Acid Neutralisation Capacity	N	2015	mol/kg	0.0020	0.011
Total Organic Carbon	U	2625	%	0.20	1.9

Results - 2 Stage WAC

Project: G23012 Global Centre of Rail Excellence

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	23-13660								
Chemtest Sample ID:	1629461								
Sample Ref:									
Sample ID:									
Sample Location:	S2-TP226								
Top Depth(m):	0.20								
Bottom Depth(m):	0.30								
Sampling Date:	19-Apr-2023								
Determinand	**SOP**	**Accred.**	**Units**				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%			1.9	3	5	6
Loss on Ignition							--	--	10
Total BTEX							6	--	--
Total PCBs (7 congeners)							1	--	--
TPH Total WAC (Mineral Oil)							500	--	--
Total (of 17) PAHs							100	--	--
pH	2010	U				7.1	--	>6	--
Acid Neutralisation Capacity							--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0005	0.0004	0.0010	0.0038	0.5	2	25
Barium	1455	U	0.096	0.11	0.19	1.1	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0041	0.021	0.0081	0.20	0.5	10	70
Copper	1455	U	0.0018	0.0010	0.0035	0.0016	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0017	0.0047	0.0034	0.044	0.5	10	30
Nickel	1455	U	0.0018	0.0010	0.0036	0.011	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0008	0.0006	0.0017	0.0058	0.06	0.7	5
Selenium	1455	U	0.0023	0.0012	0.0046	0.013	0.1	0.5	7
Zinc	1455	U	0.067	0.037	0.14	0.39	4	50	200
Chloride	1220	U	2.5	1.5	< 10	16	800	15000	25000
Fluoride	1220	U	0.71	0.55	1.4	5.6	10	150	500
Sulphate	1220	U	44	16	88	190	1000	20000	50000
Total Dissolved Solids	1020	N	640	260	1300	2900	4000	60000	100000
Phenol Index	1920	U	< 0.030	0.080	< 0.30	0.73	1	-	-
Dissolved Organic Carbon	1610	U	4.9	4.3	< 50	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	5.9

Leachate Test Information	
Leachant volume 1st extract/l	0.339
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.157

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Test Methods

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge
650	Characterisation of Waste (Leaching WAC)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

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The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

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Sample Deviation Codes

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Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
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Email: info@chemtest.com

Final Report

Report No.:	23-13671-1
Initial Date of Issue:	04-May-2023
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt
Project	G23012 Global Centre of Rail Excellence
Quotation No.:	Q22-29781
Order No.:	
No. of Samples:	1
Turnaround (Wkdays):	7
Date Approved:	04-May-2023
Approved By:	
Details:	Stuart Henderson, Technical Manager

Date Received:	26-Apr-2023
Date Instructed:	26-Apr-2023
Results Due:	05-May-2023

Results - Soil

Project: G23012 Global Centre of Rail Excellence

Client: Jackson Geo Services			**Chemtest Job No.:**		23-13671
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1629487
			Sample Location:		S2-TP229
			Sample Type:		SOIL
			Top Depth (m):		0.50
			Bottom Depth (m):		0.60
			Date Sampled:		19-Apr-2023
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Moisture	N	2030	%	0.020	6.4
pH	U	2010		4.0	7.4
Acid Neutralisation Capacity	N	2015	mol/kg	0.0020	0.0060
Total Organic Carbon	U	2625	%	0.20	1.3

Results - 2 Stage WAC

Project: G23012 Global Centre of Rail Excellence

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	23-13671								
Chemtest Sample ID:	1629487								
Sample Ref:									
Sample ID:									
Sample Location:	S2-TP229								
Top Depth(m):	0.50								
Bottom Depth(m):	0.60								
Sampling Date:	19-Apr-2023								
Determinand	**SOP**	**Accred.**	**Units**				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%			1.3	3	5	6
Loss on Ignition							--	--	10
Total BTEX							6	--	--
Total PCBs (7 congeners)							1	--	--
TPH Total WAC (Mineral Oil)							500	--	--
Total (of 17) PAHs							100	--	--
pH	2010	U				7.4	--	>6	--
Acid Neutralisation Capacity							--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0002	< 0.0002	0.0004	0.0003	0.5	2	25
Barium	1455	U	0.018	0.020	0.036	0.20	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0007	0.0007	0.0013	0.0067	0.5	10	70
Copper	1455	U	0.0006	0.0010	0.0013	0.0008	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.5	10	30
Nickel	1455	U	0.0049	0.0025	0.0098	0.028	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0006	0.0007	0.0011	0.0068	0.06	0.7	5
Selenium	1455	U	0.0015	0.0007	0.0031	0.0076	0.1	0.5	7
Zinc	1455	U	0.023	0.021	0.045	0.21	4	50	200
Chloride	1220	U	2.2	< 1.0	< 10	< 10	800	15000	25000
Fluoride	1220	U	0.11	0.13	< 1.0	1.3	10	150	500
Sulphate	1220	U	48	16	96	200	1000	20000	50000
Total Dissolved Solids	1020	N	95	74	190	760	4000	60000	100000
Phenol Index	1920	U	< 0.030	0.035	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	4.5	3.6	< 50	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	6.4

Leachate Test Information	
Leachant volume 1st extract/l	0.338
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.213

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Test Methods

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge
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Amended Report

Report No.:	23-13897-2		
Initial Date of Issue:	07-May-2023	**Date of Re-Issue:**	09-May-2023
Re-Issue Details:	This report has been revised and directly supersedes 23-13897-1 in its entirety		
Client	Jackson Geo Services		
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA		
Contact(s):	Adam Putt James Power		
Project	G3012 Global Centre of Rail Excellence (GCRE) Phase 2		
Quotation No.:	Q22-29781	**Date Received:**	27-Apr-2023
Order No.:		**Date Instructed:**	02-May-2023
No. of Samples:	6		
Turnaround (Wkdays):	5	**Results Due:**	09-May-2023
Date Approved:	07-May-2023		
Approved By:			
Details:	Stuart Henderson, Technical Manager		

Results - Soil

Project: G3012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services		**Chemtest Job No.:**			23-13897	23-13897	23-13897	23-13897	23-13897	23-13897
Quotation No.: Q22-29781		**Chemtest Sample ID.:**			1630264	1630265	1630266	1630267	1630268	1630269
Order No.:		Client Sample Ref.:			4	9	12	4	102	5
		Sample Location:			S2-BH227	S2-BH227	S2-BH227	S2-BH235	S2-BH235	S2-TP227
		Sample Type:			SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		Top Depth (m):			0.30	4.20	7.50	0.20	2.70	1.40
		Bottom Depth (m):			0.40	4.65	7.95	0.40	2.80	1.60
		Date Sampled:			24-Apr-2023	13-Apr-2023	13-Apr-2023	24-Apr-2023	19-Apr-2023	24-Apr-2023
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
Moisture	N	2030	%	0.020	7.1	8.7	13	9.6	11	4.7
pH (2.5:1)	N	2010		4.0	10.1	7.9		7.3	7.3	7.1
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	0.46	0.12		0.029	0.028	0.034
Total Sulphur	U	2175	%	0.010	0.064	0.11		0.044	0.051	0.016
Sulphate (Acid Soluble)	U	2430	%	0.010	0.19	0.038		0.018	0.021	0.021
Organic Matter	U	2625	%	0.40			4.1			

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2175	Total Sulphur in Soils	Total Sulphur	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.

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Amended Report

Report No.:	23-13898-2		
Initial Date of Issue:	09-May-2023	**Date of Re-Issue:**	10-May-2023
Re-Issue Details:	This report has been revised and directly supersedes 23-13898-1 in its entirety		
Client	Jackson Geo Services		
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA		
Contact(s):	Adam Putt James Power		
Project	Global Centre of Rail Excellence (GCRE) Phase 2		
Quotation No.:	Q22-29781	**Date Received:**	27-Apr-2023
Order No.:		**Date Instructed:**	28-Apr-2023
No. of Samples:	1		
Turnaround (Wkdays):	7	**Results Due:**	10-May-2023
Date Approved:	09-May-2023		
Approved By:			
Details:	Stuart Henderson, Technical Manager		

Results - Leachate

Project: Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services				**Chemtest Job No.:**		23-13898
Quotation No.: Q22-29781				**Chemtest Sample ID.:**		1630272
Order No.:				Client Sample Ref.:		105
				Sample Location:		S2-BH236
				Sample Type:		SOIL
				Top Depth (m):		7.80
				Bottom Depth (m):		8.00
				Date Sampled:		24-Apr-2023
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**	
pH	U	1010	10:1		N/A	8.3
Sulphate	U	1220	10:1	mg/l	1.0	< 1.0
Cyanide (Total)	U	1300	10:1	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	10:1	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1455	10:1	µg/l	0.20	0.22
Cadmium (Dissolved)	U	1455	10:1	µg/l	0.11	< 0.11
Chromium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Copper (Dissolved)	U	1455	10:1	µg/l	0.50	0.55
Mercury (Dissolved)	U	1455	10:1	µg/l	0.05	< 0.05
Nickel (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Lead (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Selenium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Vanadium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Zinc (Dissolved)	U	1455	10:1	µg/l	2.5	22
Chromium (Hexavalent)	U	1490	10:1	µg/l	20	< 20
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030

Results - Soil

Project: Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services			**Chemtest Job No.:**		23-13898
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1630272
Order No.:			Client Sample Ref.:		105
			Sample Location:		S2-BH236
			Sample Type:		SOIL
			Top Depth (m):		7.80
			Bottom Depth (m):		8.00
			Date Sampled:		24-Apr-2023
			Asbestos Lab:		DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
ACM Type	U	2192		N/A	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected
Moisture	N	2030	%	0.020	15
pH	U	2010		4.0	8.7
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40
Sulphate (2:1 Water Soluble) as SO4 mg/l	U	2120	mg/l	10.000	< 10
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50
Arsenic	U	2455	mg/kg	0.5	12
Cadmium	U	2455	mg/kg	0.10	0.15
Chromium	U	2455	mg/kg	0.5	16
Copper	U	2455	mg/kg	0.50	33
Mercury	U	2455	mg/kg	0.05	< 0.05
Nickel	U	2455	mg/kg	0.50	43
Lead	U	2455	mg/kg	0.50	22
Selenium	U	2455	mg/kg	0.25	1.1
Vanadium	U	2455	mg/kg	0.5	19
Zinc	U	2455	mg/kg	0.50	88
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50
Aliphatic VPH >C5-C6	U	2780	mg/kg	0.05	< 0.05
Aliphatic VPH >C6-C7	U	2780	mg/kg	0.05	< 0.05
Aliphatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05
Aliphatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05
Total Aliphatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25
Aliphatic EPH >C10-C12	U	2690	mg/kg	2.00	< 2.0
Aliphatic EPH >C12-C16	U	2690	mg/kg	1.00	1.1
Aliphatic EPH >C16-C21	U	2690	mg/kg	2.00	< 2.0
Aliphatic EPH >C21-C35	U	2690	mg/kg	3.00	7.9
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00	< 10
Total Aliphatic EPH >C10-C35	U	2690	mg/kg	5.00	12
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00	12
Aromatic VPH >C5-C7	U	2780	mg/kg	0.05	< 0.05
Aromatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05
Aromatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05
Total Aromatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25
Aromatic EPH >C10-C12	U	2690	mg/kg	1.00	7.4

Results - Soil

Project: Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services			**Chemtest Job No.:**		23-13898
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1630272
Order No.:			Client Sample Ref.:		105
			Sample Location:		S2-BH236
			Sample Type:		SOIL
			Top Depth (m):		7.80
			Bottom Depth (m):		8.00
			Date Sampled:		24-Apr-2023
			Asbestos Lab:		DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Aromatic EPH >C12-C16	U	2690	mg/kg	1.00	8.2
Aromatic EPH >C16-C21	U	2690	mg/kg	2.00	8.7
Aromatic EPH >C21-C35	U	2690	mg/kg	2.00	5.5
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00	6.0
Total Aromatic EPH >C10-C35	U	2690	mg/kg	5.00	30
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00	36
Total VPH >C5-C10	U	2780	mg/kg	0.50	< 0.50
Total EPH >C10-C35	U	2690	mg/kg	10.00	42
Total EPH >C10-C40	N	2690	mg/kg	10.00	48
Organic Matter	U	2625	%	0.40	17
Benzene	U	2760	µg/kg	1.0	< 1.0
Toluene	U	2760	µg/kg	1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0
Naphthalene	U	2800	mg/kg	0.10	0.57
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10
Acenaphthene	U	2800	mg/kg	0.10	0.15
Fluorene	U	2800	mg/kg	0.10	0.13
Phenanthrene	U	2800	mg/kg	0.10	0.23
Anthracene	U	2800	mg/kg	0.10	< 0.10
Fluoranthene	U	2800	mg/kg	0.10	< 0.10
Pyrene	U	2800	mg/kg	0.10	< 0.10
Benzo[a]anthracene	U	2800	mg/kg	0.10	< 0.10
Chrysene	U	2800	mg/kg	0.10	< 0.10
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	< 2.0
Total Phenols	U	2920	mg/kg	0.10	< 0.10

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C40	Acetone/Heptane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8-C10 Aromatics: >C5–C7,>C7-C8,>C8–C10	Water extraction / Headspace GCxGC FID detection
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS

Test Methods

SOP	Title	Parameters included	Method summary
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

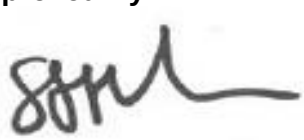
Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-13899-1
Initial Date of Issue:	09-May-2023
Re-Issue Details:	
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt James Power
Project	G23012 Global Centre of Rail Excellence (GCRE) Stage II

Quotation No.:	Q22-29781	**Date Received:**	27-Apr-2023
Order No.:		**Date Instructed:**	28-Apr-2023
No. of Samples:	8		
Turnaround (Wkdays):	7	**Results Due:**	10-May-2023
Date Approved:	09-May-2023		

Approved By:



Details: Stuart Henderson, Technical Manager

Results - Leachate

Project: G23012 Global Centre of Rail Excellence (GCRE) Stage II

Client: Jackson Geo Services				**Chemtest Job No.:**		23-13899	23-13899
Quotation No.: Q22-29781				**Chemtest Sample ID.:**		1630273	1630288
Order No.:				Client Sample Ref.:		1	1
				Sample Location:		S2-TP251	S2-TP241
				Sample Type:		SOIL	SOIL
				Top Depth (m):		0.20	0.20
				Bottom Depth (m):		0.30	0.30
				Date Sampled:		24-Apr-2023	24-Apr-2023
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**		
pH	U	1010	10:1		N/A	7.8	7.6
Sulphate	U	1220	10:1	mg/l	1.0	1.4	11
Cyanide (Total)	U	1300	10:1	mg/l	0.050	< 0.050	< 0.050
Cyanide (Free)	U	1300	10:1	mg/l	0.050	< 0.050	< 0.050
Arsenic (Dissolved)	U	1455	10:1	µg/l	0.20	0.37	0.52
Cadmium (Dissolved)	U	1455	10:1	µg/l	0.11	< 0.11	< 0.11
Chromium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	< 0.50
Copper (Dissolved)	U	1455	10:1	µg/l	0.50	1.8	0.75
Mercury (Dissolved)	U	1455	10:1	µg/l	0.05	< 0.05	< 0.05
Nickel (Dissolved)	U	1455	10:1	µg/l	0.50	1.5	0.93
Lead (Dissolved)	U	1455	10:1	µg/l	0.50	0.58	< 0.50
Selenium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	< 0.50
Vanadium (Dissolved)	U	1455	10:1	µg/l	0.50	0.51	< 0.50
Zinc (Dissolved)	U	1455	10:1	µg/l	2.5	23	22
Chromium (Hexavalent)	U	1490	10:1	µg/l	20	< 20	< 20
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030	< 0.030

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Stage II

Client: Jackson Geo Services			**Chemtest Job No.:**		23-13899	23-13899	23-13899	23-13899	23-13899	23-13899	23-13899	23-13899
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1630273	1630276	1630279	1630282	1630284	1630287	1630288	1630291
Order No.:			Client Sample Ref.:		1	7	3	8	3	8	1	7
			Sample Location:		S2-TP251	S2-TP251	S2-TP250	S2-TP250	S2-TP212	S2-TP212	S2-TP241	S2-TP241
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.20	1.90	0.50	2.90	0.50	2.90	0.20	1.90
			Bottom Depth (m):		0.30	2.00	0.60	3.00	0.60	3.00	0.30	2.00
			Date Sampled:		24-Apr-2023	24-Apr-2023	24-Apr-2023	24-Apr-2023	24-Apr-2023	24-Apr-2023	24-Apr-2023	24-Apr-2023
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
ACM Type	U	2192		N/A	-	-	-	-	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	11	8.6	5.1	5.8	4.4	4.4	8.9	6.7
pH	U	2010		4.0	6.5	7.2	7.9	8.0	8.5	8.6	6.7	7.9
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40
Sulphate (2:1 Water Soluble) as SO4 mg/l	U	2120	mg/l	10.000	< 10	35	810	930	23	22	< 10	76
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Arsenic	U	2455	mg/kg	0.5	5.8	10	12	7.3	7.8	10	12	10
Cadmium	U	2455	mg/kg	0.10	0.22	0.15	0.16	0.15	0.17	0.16	0.20	0.15
Chromium	U	2455	mg/kg	0.5	20	17	18	10	10	14	12	10
Copper	U	2455	mg/kg	0.50	37	38	39	42	41	43	51	42
Mercury	U	2455	mg/kg	0.05	< 0.05	< 0.05	0.06	0.05	0.06	0.06	0.09	0.06
Nickel	U	2455	mg/kg	0.50	45	50	53	47	46	42	54	47
Lead	U	2455	mg/kg	0.50	27	23	32	36	30	26	91	28
Selenium	U	2455	mg/kg	0.25	0.82	0.81	0.74	0.95	0.98	0.94	1.0	0.95
Vanadium	U	2455	mg/kg	0.5	21	18	19	17	14	17	19	13
Zinc	U	2455	mg/kg	0.50	85	96	94	120	130	80	120	94
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Aliphatic VPH >C5-C6	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C6-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total Aliphatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25
Aliphatic EPH >C10-C12	U	2690	mg/kg	2.00	< 2.0	2.0	< 2.0	< 2.0	< 2.0	< 2.0	2.1	< 2.0
Aliphatic EPH >C12-C16	U	2690	mg/kg	1.00	1.3	1.9	2.0	2.0	1.4	1.9	2.3	1.6
Aliphatic EPH >C16-C21	U	2690	mg/kg	2.00	< 2.0	< 2.0	2.2	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Aliphatic EPH >C21-C35	U	2690	mg/kg	3.00	3.2	3.1	4.1	3.1	3.9	< 3.0	4.0	3.0
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Total Aliphatic EPH >C10-C35	U	2690	mg/kg	5.00	7.8	8.4	10	8.5	8.2	8.5	10	7.9
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00	< 10	< 10	10	< 10	< 10	< 10	10	< 10
Aromatic VPH >C5-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total Aromatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Stage II

Client: Jackson Geo Services			**Chemtest Job No.:**		23-13899	23-13899	23-13899	23-13899	23-13899	23-13899	23-13899	23-13899
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1630273	1630276	1630279	1630282	1630284	1630287	1630288	1630291
Order No.:			Client Sample Ref.:		1	7	3	8	3	8	1	7
			Sample Location:		S2-TP251	S2-TP251	S2-TP250	S2-TP250	S2-TP212	S2-TP212	S2-TP241	S2-TP241
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.20	1.90	0.50	2.90	0.50	2.90	0.20	1.90
			Bottom Depth (m):		0.30	2.00	0.60	3.00	0.60	3.00	0.30	2.00
			Date Sampled:		24-Apr-2023	24-Apr-2023	24-Apr-2023	24-Apr-2023	24-Apr-2023	24-Apr-2023	24-Apr-2023	24-Apr-2023
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Aromatic EPH >C10-C12	U	2690	mg/kg	1.00	7.2	7.4	7.5	7.2	7.2	7.0	7.8	8.0
Aromatic EPH >C12-C16	U	2690	mg/kg	1.00	7.3	7.2	6.7	6.8	7.6	8.4	8.0	6.9
Aromatic EPH >C16-C21	U	2690	mg/kg	2.00	11	9.2	9.3	10	8.9	10	9.5	9.9
Aromatic EPH >C21-C35	U	2690	mg/kg	2.00	< 2.0	< 2.0	2.4	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00	5.8	7.3	6.0	5.3	6.4	5.7	5.4	5.7
Total Aromatic EPH >C10-C35	U	2690	mg/kg	5.00	26	24	26	25	25	25	26	25
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00	32	32	32	30	32	31	31	30
Total VPH >C5-C10	U	2780	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Total EPH >C10-C35	U	2690	mg/kg	10.00	34	33	36	33	33	34	36	33
Total EPH >C10-C40	N	2690	mg/kg	10.00	39	40	42	38	40	40	41	38
Organic Matter	U	2625	%	0.40	1.1	5.5	2.5	1.8	4.9	2.9	3.0	13
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Naphthalene	U	2800	mg/kg	0.10	< 0.10	0.88	0.51	0.77	0.78	0.92	0.26	0.75
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	2800	mg/kg	0.10	0.17	0.19	0.42	0.31	0.32	0.28	< 0.10	0.26
Fluorene	U	2800	mg/kg	0.10	0.17	0.21	0.29	0.18	0.18	0.15	< 0.10	0.21
Phenanthrene	U	2800	mg/kg	0.10	1.8	0.54	2.4	0.88	0.74	0.34	0.25	0.52
Anthracene	U	2800	mg/kg	0.10	0.39	0.13	0.54	0.13	0.11	< 0.10	< 0.10	0.10
Fluoranthene	U	2800	mg/kg	0.10	3.9	0.69	4.8	0.78	1.2	0.29	0.45	0.73
Pyrene	U	2800	mg/kg	0.10	3.7	0.70	4.5	0.64	1.1	0.28	0.34	0.61
Benzo[a]anthracene	U	2800	mg/kg	0.10	1.9	0.37	2.2	< 0.10	0.48	< 0.10	< 0.10	< 0.10
Chrysene	U	2800	mg/kg	0.10	1.8	0.40	2.6	< 0.10	0.60	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	2.3	0.38	2.7	< 0.10	0.57	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	0.88	0.14	1.2	< 0.10	0.16	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10	2.0	0.36	2.2	< 0.10	0.49	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	1.4	0.27	1.4	< 0.10	0.42	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	0.27	< 0.10	0.25	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	1.3	0.25	1.3	< 0.10	0.32	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	22	5.5	27	3.7	7.5	2.3	< 2.0	3.2
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C40	Acetone/Heptane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8-C10 Aromatics: >C5–C7,>C7-C8,>C8–C10	Water extraction / Headspace GCxGC FID detection
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS

Test Methods

SOP	Title	Parameters included	Method summary
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Amended Report

Report No.:	23-14037-2		
Initial Date of Issue:	11-May-2023	**Date of Re-Issue:**	12-May-2023
Re-Issue Details:	This report has been revised and directly supersedes 23-14037-1 in its entirety		
Client	Jackson Geo Services		
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA		
Contact(s):	Adam Putt James Power		
Project	G23012 Global Centre of Rail Excellence (GCRE) Stage II		
Quotation No.:	Q23-30933	**Date Received:**	27-Apr-2023
Order No.:		**Date Instructed:**	02-May-2023
No. of Samples:	7		
Turnaround (Wkdays):	7	**Results Due:**	11-May-2023
Date Approved:	11-May-2023		
Approved By:			
Details:	Stuart Henderson, Technical Manager		

Results - Leachate

Project: G23012 Global Centre of Rail Excellence (GCRE) Stage II

Client: Jackson Geo Services				**Chemtest Job No.:**		23-14037
Quotation No.: Q23-30933				**Chemtest Sample ID.:**		1630858
Order No.:				Client Sample Ref.:		1
				Sample Location:		S2-TP242
				Sample Type:		SOIL
				Top Depth (m):		0.20
				Bottom Depth (m):		0.30
				Date Sampled:		25-Apr-2023
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**	
pH	U	1010	10:1		N/A	8.2
Sulphate	U	1220	10:1	mg/l	1.0	1.5
Cyanide (Total)	U	1300	10:1	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	10:1	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1455	10:1	µg/l	0.20	0.24
Cadmium (Dissolved)	U	1455	10:1	µg/l	0.11	< 0.11
Chromium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Copper (Dissolved)	U	1455	10:1	µg/l	0.50	0.65
Mercury (Dissolved)	U	1455	10:1	µg/l	0.05	< 0.05
Nickel (Dissolved)	U	1455	10:1	µg/l	0.50	0.69
Lead (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Selenium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Vanadium (Dissolved)	U	1455	10:1	µg/l	0.50	0.53
Zinc (Dissolved)	U	1455	10:1	µg/l	2.5	22
Chromium (Hexavalent)	U	1490	10:1	µg/l	20	< 20
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Stage II

Client: Jackson Geo Services				**Chemtest Job No.:**	23-14037	23-14037	23-14037	23-14037	23-14037	23-14037	23-14037
Quotation No.: Q23-30933				**Chemtest Sample ID.:**	1630846	1630849	1630850	1630854	1630857	1630858	1630861
Order No.:				Client Sample Ref.:	3	8	2	3	10	1	7
				Sample Location:	S2-TP243	S2-TP243	S2-BH229	S2-TP240	S2-TP240	S2-TP242	S2-TP242
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.50	2.90	0.20	0.50	2.30	0.20	1.90
				Bottom Depth (m):	0.60	3.00	0.30	0.60	2.40	0.30	2.00
				Date Sampled:	25-Apr-2023	25-Apr-2023	25-Apr-2023	25-Apr-2023	25-Apr-2023	25-Apr-2023	25-Apr-2023
				Asbestos Lab:	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**							
ACM Type	U	2192		N/A	-	-	-	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	6.1	7.1	12	12	17	11	6.2
pH	U	2010		4.0	9.0	8.9	8.2	5.9	5.7	5.8	7.4
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40	0.41	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40
Sulphate (2:1 Water Soluble) as SO4 mg/l	U	2120	mg/l	10.000	< 10	10	< 10	< 10	< 10	< 10	< 10
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Arsenic	U	2455	mg/kg	0.5	10	7.1	8.8	26	5.9	19	7.1
Cadmium	U	2455	mg/kg	0.10	0.11	< 0.10	0.18	0.17	< 0.10	0.31	0.12
Chromium	U	2455	mg/kg	0.5	6.8	5.7	14	26	18	14	8.7
Copper	U	2455	mg/kg	0.50	31	33	29	36	19	39	37
Mercury	U	2455	mg/kg	0.05	0.06	0.05	< 0.05	0.08	< 0.05	0.15	0.05
Nickel	U	2455	mg/kg	0.50	49	38	38	37	16	42	51
Lead	U	2455	mg/kg	0.50	17	15	22	28	16	42	31
Selenium	U	2455	mg/kg	0.25	0.74	0.67	0.67	1.2	0.66	1.5	0.62
Vanadium	U	2455	mg/kg	0.5	10	8.3	16	28	20	22	14
Zinc	U	2455	mg/kg	0.50	85	70	79	93	39	70	120
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Aliphatic VPH >C5-C6	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C6-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C8-C10	U	2780	mg/kg	0.05	0.15	0.12	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total Aliphatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25
Aliphatic EPH >C10-C12	U	2690	mg/kg	2.00	< 2.0	2.1	2.2	2.3	3.2	< 2.0	< 2.0
Aliphatic EPH >C12-C16	U	2690	mg/kg	1.00	1.5	1.9	2.3	1.4	3.4	1.6	1.4
Aliphatic EPH >C16-C21	U	2690	mg/kg	2.00	< 2.0	< 2.0	< 2.0	< 2.0	3.1	< 2.0	< 2.0
Aliphatic EPH >C21-C35	U	2690	mg/kg	3.00	3.1	4.0	3.5	3.5	7.4	3.8	< 3.0
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Total Aliphatic EPH >C10-C35	U	2690	mg/kg	5.00	7.3	8.7	9.7	8.3	17	8.3	6.7
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00	< 10	< 10	< 10	< 10	17	< 10	< 10
Aromatic VPH >C5-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total Aromatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Stage II

Client: Jackson Geo Services					**Chemtest Job No.:**	23-14037	23-14037	23-14037	23-14037	23-14037	23-14037	23-14037
Quotation No.: Q23-30933					**Chemtest Sample ID.:**	1630846	1630849	1630850	1630854	1630857	1630858	1630861
Order No.:					Client Sample Ref.:	3	8	2	3	10	1	7
					Sample Location:	S2-TP243	S2-TP243	S2-BH229	S2-TP240	S2-TP240	S2-TP242	S2-TP242
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	0.50	2.90	0.20	0.50	2.30	0.20	1.90
					Bottom Depth (m):	0.60	3.00	0.30	0.60	2.40	0.30	2.00
					Date Sampled:	25-Apr-2023	25-Apr-2023	25-Apr-2023	25-Apr-2023	25-Apr-2023	25-Apr-2023	25-Apr-2023
					Asbestos Lab:	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Aromatic EPH >C10-C12	U	2690	mg/kg	1.00		7.9	7.7	7.8	7.5	8.0	7.0	8.1
Aromatic EPH >C12-C16	U	2690	mg/kg	1.00		6.9	7.2	9.0	7.5	8.4	7.8	8.8
Aromatic EPH >C16-C21	U	2690	mg/kg	2.00		9.1	8.8	10	10	12	10	10
Aromatic EPH >C21-C35	U	2690	mg/kg	2.00		< 2.0	< 2.0	2.5	5.6	12	< 2.0	< 2.0
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00		6.0	6.0	6.7	5.6	9.0	6.1	6.0
Total Aromatic EPH >C10-C35	U	2690	mg/kg	5.00		24	24	30	30	40	26	27
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00		30	30	36	36	49	33	33
Total VPH >C5-C10	U	2780	mg/kg	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Total EPH >C10-C35	U	2690	mg/kg	10.00		31	33	39	39	57	35	34
Total EPH >C10-C40	N	2690	mg/kg	10.00		37	39	46	44	66	41	40
Organic Matter	U	2625	%	0.40		11	19	2.6	3.4	1.3	32	6.5
Benzene	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Naphthalene	U	2800	mg/kg	0.10		0.43	0.56	0.22	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Anthracene	U	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.11	< 0.10
Pyrene	U	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.10	< 0.10
Benzo[a]anthracene	U	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	U	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Total Phenols	U	2920	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C40	Acetone/Heptane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8-C10 Aromatics: >C5–C7,>C7-C8,>C8–C10	Water extraction / Headspace GCxGC FID detection
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS

Test Methods

SOP	Title	Parameters included	Method summary
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

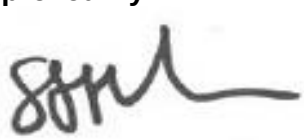
If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-14046-1
Initial Date of Issue:	11-May-2023
Re-Issue Details:	
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt James Power
Project	G23012 Global Centre of Rail Excellence
Quotation No.:	Q22-29781
Order No.:	
No. of Samples:	6
Turnaround (Wkdays):	7
Date Approved:	11-May-2023
Approved By:	

Date Received:	27-Apr-2023
Date Instructed:	02-May-2023
Results Due:	11-May-2023



Details: Stuart Henderson, Technical Manager

Results - Leachate

Project: G23012 Global Centre of Rail Excellence

Client: Jackson Geo Services				**Chemtest Job No.:**		23-14046
Quotation No.: Q22-29781				**Chemtest Sample ID.:**		1630912
Order No.:				Client Sample Ref.:		101
				Sample Location:		S2-BH250
				Sample Type:		SOIL
				Top Depth (m):		1.50
				Bottom Depth (m):		1.80
				Date Sampled:		26-Apr-2023
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**	
pH	U	1010	10:1		N/A	7.8
Sulphate	U	1220	10:1	mg/l	1.0	2.2
Cyanide (Total)	U	1300	10:1	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	10:1	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1455	10:1	µg/l	0.20	4.5
Cadmium (Dissolved)	U	1455	10:1	µg/l	0.11	< 0.11
Chromium (Dissolved)	U	1455	10:1	µg/l	0.50	0.51
Copper (Dissolved)	U	1455	10:1	µg/l	0.50	2.1
Mercury (Dissolved)	U	1455	10:1	µg/l	0.05	< 0.05
Nickel (Dissolved)	U	1455	10:1	µg/l	0.50	0.94
Lead (Dissolved)	U	1455	10:1	µg/l	0.50	2.1
Selenium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Vanadium (Dissolved)	U	1455	10:1	µg/l	0.50	6.5
Zinc (Dissolved)	U	1455	10:1	µg/l	2.5	25
Chromium (Hexavalent)	U	1490	10:1	µg/l	20	< 20
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030

Results - Soil

Project: G23012 Global Centre of Rail Excellence

Client: Jackson Geo Services				**Chemtest Job No.:**	23-14046	23-14046	23-14046	23-14046	23-14046
Quotation No.: Q22-29781				**Chemtest Sample ID.:**	1630906	1630909	1630911	1630912	1630914
Order No.:				Client Sample Ref.:	3	8	1	101	104
				Sample Location:	S2-TP2126	S2-TP2126	S2-BH205	S2-BH250	S2-BH250
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.50	2.90	0.20	1.50	3.50
				Bottom Depth (m):	0.60	3.00	0.30	1.80	3.70
				Date Sampled:	26-Apr-2023	26-Apr-2023	26-Apr-2023	26-Apr-2023	26-Apr-2023
				Asbestos Lab:	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**					
ACM Type	U	2192		N/A	-	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	16	20	4.9	27	11
pH	U	2010		4.0	8.8	7.4	8.9	7.4	8.2
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40	4.0	0.43	0.55	< 0.40
Sulphate (2:1 Water Soluble) as SO4 mg/l	U	2120	mg/l	10.000	230	680	630	< 10	120
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	5.0	< 0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	120	< 0.50	< 0.50	< 0.50
Arsenic	U	2455	mg/kg	0.5	33	44	10	31	9.0
Cadmium	U	2455	mg/kg	0.10	0.27	0.27	0.16	< 0.10	0.25
Chromium	U	2455	mg/kg	0.5	8.8	22	8.0	11	12
Copper	U	2455	mg/kg	0.50	35	52	46	34	47
Mercury	U	2455	mg/kg	0.05	0.13	2.4	0.06	< 0.05	0.07
Nickel	U	2455	mg/kg	0.50	18	37	57	20	38
Lead	U	2455	mg/kg	0.50	640	190	40	19	860
Selenium	U	2455	mg/kg	0.25	1.7	3.6	0.83	1.4	1.3
Vanadium	U	2455	mg/kg	0.5	12	25	12	35	19
Zinc	U	2455	mg/kg	0.50	64	110	120	48	97
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Aliphatic VPH >C5-C6	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C6-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	0.20	0.11	0.19	0.16
Total Aliphatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25
Aliphatic EPH >C10-C12	U	2690	mg/kg	2.00	2.5	2.1	< 2.0	2.7	< 2.0
Aliphatic EPH >C12-C16	U	2690	mg/kg	1.00	2.2	2.2	1.5	3.5	1.2
Aliphatic EPH >C16-C21	U	2690	mg/kg	2.00	2.4	2.6	< 2.0	3.3	< 2.0
Aliphatic EPH >C21-C35	U	2690	mg/kg	3.00	4.9	4.9	11	6.4	3.2
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00	< 10	< 10	< 10	< 10	< 10
Total Aliphatic EPH >C10-C35	U	2690	mg/kg	5.00	12	12	16	16	7.1
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00	12	12	16	16	< 10
Aromatic VPH >C5-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total Aromatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25
Aromatic EPH >C10-C12	U	2690	mg/kg	1.00	9.4	8.7	7.4	8.0	7.1

Results - Soil

Project: G23012 Global Centre of Rail Excellence

Client: Jackson Geo Services					**Chemtest Job No.:**	23-14046	23-14046	23-14046	23-14046	23-14046
Quotation No.: Q22-29781					**Chemtest Sample ID.:**	1630906	1630909	1630911	1630912	1630914
Order No.:					Client Sample Ref.:	3	8	1	101	104
					Sample Location:	S2-TP2126	S2-TP2126	S2-BH205	S2-BH250	S2-BH250
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	0.50	2.90	0.20	1.50	3.50
					Bottom Depth (m):	0.60	3.00	0.30	1.80	3.70
					Date Sampled:	26-Apr-2023	26-Apr-2023	26-Apr-2023	26-Apr-2023	26-Apr-2023
					Asbestos Lab:	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
Aromatic EPH >C12-C16	U	2690	mg/kg	1.00		7.6	10	5.8	7.5	6.7
Aromatic EPH >C16-C21	U	2690	mg/kg	2.00		13	11	10	11	8.6
Aromatic EPH >C21-C35	U	2690	mg/kg	2.00		3.7	< 2.0	< 2.0	3.3	< 2.0
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00		4.9	5.4	5.7	6.0	5.8
Total Aromatic EPH >C10-C35	U	2690	mg/kg	5.00		34	31	24	29	22
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00		39	36	30	35	28
Total VPH >C5-C10	U	2780	mg/kg	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Total EPH >C10-C35	U	2690	mg/kg	10.00		46	42	40	45	30
Total EPH >C10-C40	N	2690	mg/kg	10.00		51	48	45	51	35
Organic Matter	U	2625	%	0.40		20	53	11	65	5.1
Benzene	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Naphthalene	U	2800	mg/kg	0.10		< 0.10	0.12	0.39	< 0.10	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10		< 0.10	0.12	< 0.10	< 0.10	< 0.10
Acenaphthene	U	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	2800	mg/kg	0.10		< 0.10	0.15	< 0.10	< 0.10	< 0.10
Anthracene	U	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	2800	mg/kg	0.10		< 0.10	0.31	< 0.10	< 0.10	< 0.10
Pyrene	U	2800	mg/kg	0.10		< 0.10	0.46	< 0.10	< 0.10	< 0.10
Benzo[a]anthracene	U	2800	mg/kg	0.10		< 0.10	0.18	< 0.10	< 0.10	< 0.10
Chrysene	U	2800	mg/kg	0.10		< 0.10	0.19	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2800	mg/kg	0.10		< 0.10	0.84	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10		< 0.10	0.29	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10		< 0.10	0.77	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10		< 0.10	0.48	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10		< 0.10	0.47	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0		< 2.0	4.4	< 2.0	< 2.0	< 2.0
Total Phenols	U	2920	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C40	Acetone/Heptane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8-C10 Aromatics: >C5–C7,>C7-C8,>C8–C10	Water extraction / Headspace GCxGC FID detection
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS

Test Methods

SOP	Title	Parameters included	Method summary
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

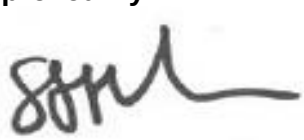
If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-14056-1
Initial Date of Issue:	09-May-2023
Re-Issue Details:	
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt James Power
Project	G23012 Global Centre of Rail Excellence (GCRE) Stage II
Quotation No.:	Q22-29781
Order No.:	
No. of Samples:	3
Turnaround (Wkdays):	7
Date Approved:	09-May-2023
Approved By:	

Date Received:	27-Apr-2023
Date Instructed:	28-Apr-2023
Results Due:	10-May-2023



Details: Stuart Henderson, Technical Manager

Results - Leachate

Project: G23012 Global Centre of Rail Excellence (GCRE) Stage II

Client: Jackson Geo Services				**Chemtest Job No.:**		23-14056	23-14056
Quotation No.: Q22-29781				**Chemtest Sample ID.:**		1630991	1630999
Order No.:				Client Sample Ref.:		106	110
				Sample Location:		S2-BH248	S2-BH252
				Sample Type:		SOIL	SOIL
				Top Depth (m):		6.50	4.70
				Bottom Depth (m):		6.70	5.00
				Date Sampled:		25-Apr-2023	25-Apr-2023
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**		
pH	U	1010	10:1		N/A	8.1	7.6
Sulphate	U	1220	10:1	mg/l	1.0	5.9	23
Cyanide (Total)	U	1300	10:1	mg/l	0.050	< 0.050	< 0.050
Cyanide (Free)	U	1300	10:1	mg/l	0.050	< 0.050	< 0.050
Arsenic (Dissolved)	U	1455	10:1	µg/l	0.20	< 0.20	0.74
Cadmium (Dissolved)	U	1455	10:1	µg/l	0.11	< 0.11	< 0.11
Chromium (Dissolved)	U	1455	10:1	µg/l	0.50	0.58	< 0.50
Copper (Dissolved)	U	1455	10:1	µg/l	0.50	0.90	1.1
Mercury (Dissolved)	U	1455	10:1	µg/l	0.05	< 0.05	< 0.05
Nickel (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	9.5
Lead (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	< 0.50
Selenium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	< 0.50
Vanadium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	< 0.50
Zinc (Dissolved)	U	1455	10:1	µg/l	2.5	22	56
Chromium (Hexavalent)	U	1490	10:1	µg/l	20	< 20	< 20
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030	< 0.030

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Stage II

Client: Jackson Geo Services			**Chemtest Job No.:**		23-14056	23-14056	23-14056
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1630986	1630991	1630999
Order No.:			Client Sample Ref.:		109	106	110
			Sample Location:		S2-BH241	S2-BH248	S2-BH252
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		4.80	6.50	4.70
			Bottom Depth (m):		5.00	6.70	5.00
			Date Sampled:		25-Apr-2023	25-Apr-2023	25-Apr-2023
			Asbestos Lab:		COVENTRY	COVENTRY	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
ACM Type	U	2192		N/A	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	12	6.1	9.5
pH	U	2010		4.0	8.1	8.5	6.9
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40	< 0.40	< 0.40
Sulphate (2:1 Water Soluble) as SO4 mg/l	U	2120	mg/l	10.000	100	28	94
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Arsenic	U	2455	mg/kg	0.5	8.9	8.0	16
Cadmium	U	2455	mg/kg	0.10	< 0.10	0.10	0.26
Chromium	U	2455	mg/kg	0.5	13	6.6	14
Copper	U	2455	mg/kg	0.50	33	38	57
Mercury	U	2455	mg/kg	0.05	0.05	0.06	0.22
Nickel	U	2455	mg/kg	0.50	35	27	52
Lead	U	2455	mg/kg	0.50	19	21	77
Selenium	U	2455	mg/kg	0.25	0.89	0.90	1.2
Vanadium	U	2455	mg/kg	0.5	16	11	18
Zinc	U	2455	mg/kg	0.50	70	70	150
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Aliphatic VPH >C5-C6	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C6-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Total Aliphatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25
Aliphatic EPH >C10-C12	U	2690	mg/kg	2.00	2.3	< 2.0	2.2
Aliphatic EPH >C12-C16	U	2690	mg/kg	1.00	4.0	2.7	2.0
Aliphatic EPH >C16-C21	U	2690	mg/kg	2.00	4.1	3.3	3.3
Aliphatic EPH >C21-C35	U	2690	mg/kg	3.00	19	5.8	14
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00	< 10	< 10	< 10
Total Aliphatic EPH >C10-C35	U	2690	mg/kg	5.00	30	14	21
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00	30	14	21
Aromatic VPH >C5-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Total Aromatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Stage II

Client: Jackson Geo Services			**Chemtest Job No.:**		23-14056	23-14056	23-14056
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1630986	1630991	1630999
Order No.:			Client Sample Ref.:		109	106	110
			Sample Location:		S2-BH241	S2-BH248	S2-BH252
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		4.80	6.50	4.70
			Bottom Depth (m):		5.00	6.70	5.00
			Date Sampled:		25-Apr-2023	25-Apr-2023	25-Apr-2023
			Asbestos Lab:		COVENTRY	COVENTRY	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Aromatic EPH >C10-C12	U	2690	mg/kg	1.00	8.0	7.4	6.5
Aromatic EPH >C12-C16	U	2690	mg/kg	1.00	6.5	7.5	6.6
Aromatic EPH >C16-C21	U	2690	mg/kg	2.00	9.2	8.9	12
Aromatic EPH >C21-C35	U	2690	mg/kg	2.00	18	4.8	34
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00	6.4	6.2	5.1
Total Aromatic EPH >C10-C35	U	2690	mg/kg	5.00	42	29	60
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00	48	35	65
Total VPH >C5-C10	U	2780	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Total EPH >C10-C35	U	2690	mg/kg	10.00	72	42	81
Total EPH >C10-C40	N	2690	mg/kg	10.00	78	49	86
Organic Matter	U	2625	%	0.40	8.8	4.6	4.3
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Naphthalene	U	2800	mg/kg	0.10	0.73	0.86	0.45
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	0.21
Fluorene	U	2800	mg/kg	0.10	< 0.10	< 0.10	0.13
Phenanthrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	0.41
Anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10	0.10
Fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	0.36
Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	0.29
Benzo[a]anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Chrysene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	< 2.0	< 2.0	< 2.0
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C40	Acetone/Heptane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8-C10 Aromatics: >C5–C7,>C7-C8,>C8–C10	Water extraction / Headspace GCxGC FID detection
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS

Test Methods

SOP	Title	Parameters included	Method summary
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

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S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
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T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
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None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
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Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

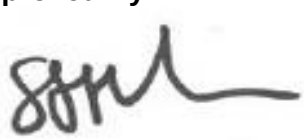
Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-14214-1
Initial Date of Issue:	15-May-2023
Re-Issue Details:	
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt James Power
Project	G23012 Global Centre of Rail Excellence (GCRE) Stage II

Quotation No.:	Q22-29781	**Date Received:**	28-Apr-2023
Order No.:		**Date Instructed:**	02-May-2023
No. of Samples:	6		
Turnaround (Wkdays):	7	**Results Due:**	11-May-2023
Date Approved:	15-May-2023		

Approved By:



Details: Stuart Henderson, Technical Manager

Results - Leachate

Project: G23012 Global Centre of Rail Excellence (GCRE) Stage II

Client: Jackson Geo Services				**Chemtest Job No.:**		23-14214
Quotation No.: Q22-29781				**Chemtest Sample ID.:**		1631394
Order No.:				Client Sample Ref.:		3
				Sample Location:		S2-TP279
				Sample Type:		SOIL
				Top Depth (m):		0.50
				Bottom Depth (m):		0.60
				Date Sampled:		26-Apr-2023
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**	
pH	U	1010	10:1		N/A	11.4
Sulphate	U	1220	10:1	mg/l	1.0	43
Cyanide (Total)	U	1300	10:1	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	10:1	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1455	10:1	µg/l	0.20	0.26
Cadmium (Dissolved)	U	1455	10:1	µg/l	0.11	< 0.11
Chromium (Dissolved)	U	1455	10:1	µg/l	0.50	0.58
Copper (Dissolved)	U	1455	10:1	µg/l	0.50	5.1
Mercury (Dissolved)	U	1455	10:1	µg/l	0.05	< 0.05
Nickel (Dissolved)	U	1455	10:1	µg/l	0.50	0.73
Lead (Dissolved)	U	1455	10:1	µg/l	0.50	1.1
Selenium (Dissolved)	U	1455	10:1	µg/l	0.50	1.2
Vanadium (Dissolved)	U	1455	10:1	µg/l	0.50	2.6
Zinc (Dissolved)	U	1455	10:1	µg/l	2.5	14
Chromium (Hexavalent)	U	1490	10:1	µg/l	20	< 20
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Stage II

Client: Jackson Geo Services			**Chemtest Job No.:**		23-14214	23-14214	23-14214	23-14214	23-14214
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1631385	1631389	1631394	1631396	1631398
Order No.:			Client Sample Ref.:		3	3	3	7	3
			Sample Location:		S2-TP2124	S2-TP2125	S2-TP279	S2-TP279	S2-BH247
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.50	0.50	0.50	1.90	0.20
			Bottom Depth (m):		0.60	0.60	0.60	2.00	0.30
			Date Sampled:		26-Apr-2023	26-Apr-2023	26-Apr-2023	26-Apr-2023	26-Apr-2023
			Asbestos Lab:		NEW-ASB	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**					
ACM Type	U	2192		N/A	-	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	24	23	9.1	22	6.3
pH	U	2010		4.0	5.5	4.8	10.4	8.9	10.7
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	0.44	0.77	5.5	0.42	1.5
Sulphate (2:1 Water Soluble) as SO4 mg/l	U	2120	mg/l	10.000	< 10	190	2100	54	670
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Arsenic	U	2455	mg/kg	0.5	24	14	2.7	14	11
Cadmium	U	2455	mg/kg	0.10	3.0	1.1	< 0.10	0.37	0.33
Chromium	U	2455	mg/kg	0.5	12	6.0	10	3.3	31
Copper	U	2455	mg/kg	0.50	61	31	10	60	36
Mercury	U	2455	mg/kg	0.05	0.25	0.08	< 0.05	0.33	0.09
Nickel	U	2455	mg/kg	0.50	18	9.5	6.4	10	22
Lead	U	2455	mg/kg	0.50	16000	6200	190	56	27
Selenium	U	2455	mg/kg	0.25	2.6	1.3	1.4	0.98	0.97
Vanadium	U	2455	mg/kg	0.5	18	8.9	16	4.7	19
Zinc	U	2455	mg/kg	0.50	120	36	28	120	77
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Aliphatic VPH >C5-C6	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C6-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	0.15	0.17	0.24	< 0.05
Total Aliphatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25
Aliphatic EPH >C10-C12	U	2690	mg/kg	2.00	3.9	2.5	3.4	2.6	2.2
Aliphatic EPH >C12-C16	U	2690	mg/kg	1.00	4.7	1.8	5.1	3.7	2.1
Aliphatic EPH >C16-C21	U	2690	mg/kg	2.00	5.3	< 2.0	5.2	9.5	2.2
Aliphatic EPH >C21-C35	U	2690	mg/kg	3.00	20	4.1	35	17	14
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00	< 10	< 10	< 10	< 10	< 10
Total Aliphatic EPH >C10-C35	U	2690	mg/kg	5.00	34	9.3	49	32	20
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00	34	< 10	49	32	20
Aromatic VPH >C5-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total Aromatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Stage II

Client: Jackson Geo Services			**Chemtest Job No.:**		23-14214	23-14214	23-14214	23-14214	23-14214
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1631385	1631389	1631394	1631396	1631398
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			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.50	0.50	0.50	1.90	0.20
			Bottom Depth (m):		0.60	0.60	0.60	2.00	0.30
			Date Sampled:		26-Apr-2023	26-Apr-2023	26-Apr-2023	26-Apr-2023	26-Apr-2023
			Asbestos Lab:		NEW-ASB	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**					
Aromatic EPH >C10-C12	U	2690	mg/kg	1.00	13	3.1	9.7	2.9	3.1
Aromatic EPH >C12-C16	U	2690	mg/kg	1.00	20	3.4	20	68	3.1
Aromatic EPH >C16-C21	U	2690	mg/kg	2.00	21	8.7	26	430	7.1
Aromatic EPH >C21-C35	U	2690	mg/kg	2.00	13	2.0	22	650	3.6
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00	11	5.0	12	28	4.1
Total Aromatic EPH >C10-C35	U	2690	mg/kg	5.00	67	17	77	1100	17
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00	78	22	89	1200	21
Total VPH >C5-C10	U	2780	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Total EPH >C10-C35	U	2690	mg/kg	10.00	100	27	130	1200	37
Total EPH >C10-C40	N	2690	mg/kg	10.00	110	32	140	1200	41
Organic Matter	U	2625	%	0.40	10	8.8	5.2	< 0.40	17
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Naphthalene	U	2800	mg/kg	0.10	< 0.10	0.16	0.27	0.20	0.77
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.18	0.54
Fluorene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.60
Phenanthrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	0.31	0.60	1.7
Anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.17	0.46
Fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	0.27	0.72	1.2
Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	0.22	0.68	0.71
Benzo[a]anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.32	0.30
Chrysene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.30	0.28
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.43	0.27
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.16	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.38	0.11
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.31	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	< 2.0	< 2.0	< 2.0	4.5	6.9
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C40	Acetone/Heptane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8-C10 Aromatics: >C5–C7,>C7-C8,>C8–C10	Water extraction / Headspace GCxGC FID detection
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS

Test Methods

SOP	Title	Parameters included	Method summary
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

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I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-14257-1
Initial Date of Issue:	10-May-2023
Re-Issue Details:	
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt
Project	G23012 Global Centre of Rail Excellence

Quotation No.:	Q22-29781	**Date Received:**	28-Apr-2023
Order No.:		**Date Instructed:**	28-Apr-2023
No. of Samples:	1		
Turnaround (Wkdays):	7	**Results Due:**	10-May-2023
Date Approved:	10-May-2023		

Approved By:



Details: Stuart Henderson, Technical Manager

Results - 2 Stage WAC

Project: G23012 Global Centre of Rail Excellence

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	23-14257								
Chemtest Sample ID:	1631513								
Sample Ref:									
Sample ID:									
Sample Location:	S2-BH252								
Top Depth(m):	4.70								
Bottom Depth(m):	5.00								
Sampling Date:	25-Apr-2023								
Determinand	**SOP**	**Accred.**	**Units**				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	M	%			3.5	3	5	6
Loss On Ignition	2610	M	%			5.7	--	--	10
Total BTEX	2760	M	mg/kg			< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg			< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg			180	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg			< 2.0	100	--	--
pH	2010	M				6.9	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg			0.0080	--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0005	0.0004	0.0009	0.0038	0.5	2	25
Barium	1455	U	0.022	0.014	0.043	0.15	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.5	10	30
Nickel	1455	U	0.017	0.0057	0.033	0.070	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	0.021	0.014	0.041	0.15	4	50	200
Chloride	1220	U	1.2	< 1.0	< 10	< 10	800	15000	25000
Fluoride	1220	U	0.11	0.10	< 1.0	1.0	10	150	500
Sulphate	1220	U	42	18	84	210	1000	20000	50000
Total Dissolved Solids	1020	N	78	38	160	420	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	3.6	3.2	< 50	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	3.9

Leachate Test Information	
Leachant volume 1st extract/l	0.343
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.203

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Test Methods

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge
650	Characterisation of Waste (Leaching WAC)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

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All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

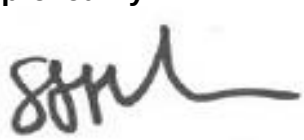
If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-14419-1
Initial Date of Issue:	17-May-2023
Re-Issue Details:	
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt James Power
Project	G23012 Global Centre of Rail EWxcellence (GCRE) Stage II
Quotation No.:	Q22-29781
Order No.:	
No. of Samples:	6
Turnaround (Wkdays):	7
Date Approved:	17-May-2023
Approved By:	

Date Received:	02-May-2023
Date Instructed:	09-May-2023
Results Due:	17-May-2023



Details: Stuart Henderson, Technical Manager

Results - Leachate

Project: G23012 Global Centre of Rail EWxcellence (GCRE) Stage II

Client: Jackson Geo Services				**Chemtest Job No.:**		23-14419	23-14419
Quotation No.: Q22-29781				**Chemtest Sample ID.:**		1632363	1632365
Order No.:				Client Sample Ref.:		3	1
				Sample Location:		S2-TP280	S2-TP255
				Sample Type:		SOIL	SOIL
				Top Depth (m):		0.50	0.2
				Bottom Depth (m):		0.6	0.3
				Date Sampled:		27-Apr-2023	27-Apr-2023
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**		
pH	U	1010	10:1		N/A	8.2	8.3
Sulphate	U	1220	10:1	mg/l	1.0	4.1	3.1
Cyanide (Total)	U	1300	10:1	mg/l	0.050	< 0.050	< 0.050
Cyanide (Free)	U	1300	10:1	mg/l	0.050	< 0.050	< 0.050
Arsenic (Dissolved)	U	1455	10:1	µg/l	0.20	1.7	0.40
Cadmium (Dissolved)	U	1455	10:1	µg/l	0.11	< 0.11	< 0.11
Chromium (Dissolved)	U	1455	10:1	µg/l	0.50	1.6	< 0.50
Copper (Dissolved)	U	1455	10:1	µg/l	0.50	2.7	1.7
Mercury (Dissolved)	U	1455	10:1	µg/l	0.05	< 0.05	< 0.05
Nickel (Dissolved)	U	1455	10:1	µg/l	0.50	0.52	< 0.50
Lead (Dissolved)	U	1455	10:1	µg/l	0.50	0.73	< 0.50
Selenium (Dissolved)	U	1455	10:1	µg/l	0.50	0.75	1.1
Vanadium (Dissolved)	U	1455	10:1	µg/l	0.50	3.4	< 0.50
Zinc (Dissolved)	U	1455	10:1	µg/l	2.5	28	24
Chromium (Hexavalent)	U	1490	10:1	µg/l	20	< 20	< 20
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030	< 0.030

Results - Soil

Project: G23012 Global Centre of Rail EWxcellence (GCRE) Stage II

Client: Jackson Geo Services			**Chemtest Job No.:**		23-14419	23-14419	23-14419	23-14419	23-14419	23-14419
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1632359	1632363	1632365	1632368	1632369	1632373
Order No.:			Client Sample Ref.:		5	3	1	6	1	8
			Sample Location:		S2-TP252	S2-TP280	S2-TP255	S2-TP255	S2-TP258	S2-TP258
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.9	0.50	0.2	1.9	0.2	2.9
			Bottom Depth (m):		1.0	0.6	0.3	2.0	0.3	3.0
			Date Sampled:		27-Apr-2023	27-Apr-2023	27-Apr-2023	27-Apr-2023	27-Apr-2023	27-Apr-2023
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
ACM Type	U	2192		N/A	-	-	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	16	29	8.2	5.5	5.7	14
pH	U	2010		4.0	5.8	5.5	8.0	7.1	7.9	5.7
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40	0.50	< 0.40	< 0.40	< 0.40	< 0.40
Sulphate (2:1 Water Soluble) as SO4 mg/l	U	2120	mg/l	10.000	< 10	< 10	< 10	27	< 10	< 10
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Arsenic	U	2455	mg/kg	0.5	5.6	5.0	7.8	8.9	9.4	13
Cadmium	U	2455	mg/kg	0.10	0.17	0.13	0.17	0.21	0.17	0.27
Chromium	U	2455	mg/kg	0.5	11	12	13	17	15	14
Copper	U	2455	mg/kg	0.50	22	8.8	21	27	28	40
Mercury	U	2455	mg/kg	0.05	0.06	< 0.05	0.07	0.06	0.06	0.15
Nickel	U	2455	mg/kg	0.50	9.8	5.8	28	36	36	38
Lead	U	2455	mg/kg	0.50	16	18	35	24	22	30
Selenium	U	2455	mg/kg	0.25	0.55	0.54	0.57	0.51	0.40	1.3
Vanadium	U	2455	mg/kg	0.5	18	16	13	18	15	21
Zinc	U	2455	mg/kg	0.50	51	25	64	84	78	97
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Aliphatic VPH >C5-C6	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C6-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total Aliphatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25
Aliphatic EPH >C10-C12	U	2690	mg/kg	2.00	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Aliphatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic EPH >C12-C16	U	2690	mg/kg	1.00	1.2	2.0	1.3	1.8	2.6	3.7
Aliphatic EPH >C16-C21	U	2690	mg/kg	2.00	< 2.0	< 2.0	< 2.0	< 2.0	2.6	3.5
Aliphatic EPH >C21-C35	U	2690	mg/kg	3.00	4.2	4.9	3.4	3.8	5.8	7.5
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00	< 10	< 10	< 10	< 10	< 10	< 10
Total Aliphatic EPH >C10-C35	U	2690	mg/kg	5.00	8.3	10	7.1	8.8	12	16
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00	< 10	10	< 10	< 10	12	16
Aromatic VPH >C5-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total Aromatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25

Results - Soil

Project: G23012 Global Centre of Rail EWxcellence (GCRE) Stage II

Client: Jackson Geo Services			**Chemtest Job No.:**		23-14419	23-14419	23-14419	23-14419	23-14419	23-14419
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1632359	1632363	1632365	1632368	1632369	1632373
Order No.:			Client Sample Ref.:		5	3	1	6	1	8
			Sample Location:		S2-TP252	S2-TP280	S2-TP255	S2-TP255	S2-TP258	S2-TP258
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.9	0.50	0.2	1.9	0.2	2.9
			Bottom Depth (m):		1.0	0.6	0.3	2.0	0.3	3.0
			Date Sampled:		27-Apr-2023	27-Apr-2023	27-Apr-2023	27-Apr-2023	27-Apr-2023	27-Apr-2023
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
Aromatic EPH >C10-C12	U	2690	mg/kg	1.00	5.3	7.0	5.5	5.1	5.2	5.4
Aromatic EPH >C12-C16	U	2690	mg/kg	1.00	10	11	8.6	8.7	8.1	8.7
Aromatic EPH >C16-C21	U	2690	mg/kg	2.00	12	11	7.6	9.1	8.0	8.5
Aromatic EPH >C21-C35	U	2690	mg/kg	2.00	2.6	6.1	3.0	3.1	5.8	6.1
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00	5.2	6.2	3.6	5.1	4.7	5.4
Total Aromatic EPH >C10-C35	U	2690	mg/kg	5.00	30	35	25	26	27	29
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00	35	41	28	31	32	34
Total VPH >C5-C10	U	2780	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Total EPH >C10-C35	U	2690	mg/kg	10.00	38	45	32	35	39	45
Total EPH >C10-C40	N	2690	mg/kg	10.00	43	51	35	40	44	50
Organic Matter	U	2625	%	0.40	3.7	4.2	3.1	2.2	3.3	28
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Naphthalene	U	2800	mg/kg	0.10	< 0.10	< 0.10	2.1	2.9	2.3	1.7
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10	0.22	0.24	0.19	0.14
Acenaphthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.12	0.13	< 0.10
Phenanthrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	0.15	0.10	0.13	0.11
Anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	< 2.0	< 2.0	2.5	3.4	2.8	< 2.0
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C40	Acetone/Heptane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8-C10 Aromatics: >C5–C7,>C7-C8,>C8–C10	Water extraction / Headspace GCxGC FID detection
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS

Test Methods

SOP	Title	Parameters included	Method summary
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-14480-1
Initial Date of Issue:	10-May-2023
Re-Issue Details:	
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt James Power
Project	G0182 Nant Helen - Phase 2
Quotation No.:	Q22-29781
Order No.:	
No. of Samples:	1
Turnaround (Wkdays):	7
Date Approved:	10-May-2023
Approved By:	

Date Received:	02-May-2023
Date Instructed:	02-May-2023
Results Due:	11-May-2023



Details: Stuart Henderson, Technical Manager

Results - Soil

Project: G0182 Nant Helen - Phase 2

Client: Jackson Geo Services			**Chemtest Job No.:**		23-14480
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1632571
Order No.:			Client Sample Ref.:		101
			Client Sample ID.:		#7263063051380007
			Sample Location:		S2-BH250
			Sample Type:		SOIL
			Top Depth (m):		1.50
			Bottom Depth (m):		1.80
			Date Sampled:		11-Apr-2023
			Time Sampled:		11:05
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Moisture	N	2030	%	0.020	43
pH	U	2010		4.0	7.4
Acid Neutralisation Capacity	N	2015	mol/kg	0.0020	0.0060
Total Organic Carbon	U	2625	%	0.20	38

Results - 2 Stage WAC

Project: G0182 Nant Helen - Phase 2

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	23-14480								
Chemtest Sample ID:	1632571								
Sample Ref:	101								
Sample ID:	#7263063051380007						**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample Location:	S2-BH250								
Top Depth(m):	1.50								
Bottom Depth(m):	1.80								
Sampling Date:	11-Apr-2023								
Determinand	**SOP**	**Accred.**	**Units**						
Total Organic Carbon	2625	U	%			38	3	5	6
Loss on Ignition							--	--	10
Total BTEX							6	--	--
Total PCBs (7 congeners)							1	--	--
TPH Total WAC (Mineral Oil)							500	--	--
Total (of 17) PAHs							100	--	--
pH	2010	U				7.4	--	>6	--
Acid Neutralisation Capacity							--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0019	0.0019	0.0031	0.019	0.5	2	25
Barium	1455	U	0.011	0.007	0.019	0.070	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0005	0.0006	0.0009	0.0005	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.019	0.012	0.031	0.12	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0016	0.0010	0.0028	0.010	0.06	0.7	5
Selenium	1455	U	0.0008	0.0005	0.0013	0.0053	0.1	0.5	7
Zinc	1455	U	0.007	0.005	0.011	0.046	4	50	200
Chloride	1220	U	2.0	< 1.0	< 10	< 10	800	15000	25000
Fluoride	1220	U	2.8	3.2	4.7	31	10	150	500
Sulphate	1220	U	14	3.5	23	44	1000	20000	50000
Total Dissolved Solids	1020	N	98	48	160	510	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	4.3	4.7	< 50	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	43

Leachate Test Information	
Leachant volume 1st extract/l	0.218
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.176

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Test Methods

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge
650	Characterisation of Waste (Leaching WAC)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

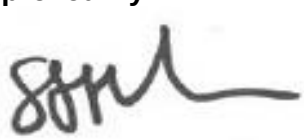
If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-14650-1
Initial Date of Issue:	17-May-2023
Re-Issue Details:	
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt James Power
Project	G23012 Global Centre of Rail Ecellence (GCRE) Stage II
Quotation No.:	Q22-29781
Order No.:	
No. of Samples:	3
Turnaround (Wkdays):	7
Date Approved:	17-May-2023
Approved By:	

Date Received:	03-May-2023
Date Instructed:	09-May-2023
Results Due:	17-May-2023



Details: Stuart Henderson, Technical Manager

Results - Soil

Project: G23012 Global Centre of Rail Ecellence (GCRE) Stage II

Client: Jackson Geo Services			**Chemtest Job No.:**		23-14650	23-14650	23-14650
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1633312	1633315	1633317
Order No.:			Client Sample Ref.:		3	8	3
			Sample Location:		S2-TP202	S2-TP202	S2-BH225
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		0.5	2.9	0.5
			Bottom Depth (m):		0.6	3.0	0.6
			Date Sampled:		28-Apr-2023	28-Apr-2023	27-Apr-2023
			Asbestos Lab:		DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
ACM Type	U	2192		N/A	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	12	12	16
pH	U	2010		4.0	8.0	8.3	5.9
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40	< 0.40	< 0.40
Sulphate (2:1 Water Soluble) as SO4 mg/l	U	2120	mg/l	10.000	< 10	< 10	< 10
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Arsenic	U	2455	mg/kg	0.5	1.0	7.1	3.4
Cadmium	U	2455	mg/kg	0.10	< 0.10	0.11	< 0.10
Chromium	U	2455	mg/kg	0.5	4.7	7.5	8.0
Copper	U	2455	mg/kg	0.50	3.2	23	9.4
Mercury	U	2455	mg/kg	0.05	< 0.05	0.06	< 0.05
Nickel	U	2455	mg/kg	0.50	3.1	21	9.5
Lead	U	2455	mg/kg	0.50	6.8	16	9.3
Selenium	U	2455	mg/kg	0.25	0.25	0.75	0.39
Vanadium	U	2455	mg/kg	0.5	9.8	12	8.5
Zinc	U	2455	mg/kg	0.50	8.9	45	21
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Aliphatic VPH >C5-C6	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C6-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Total Aliphatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25
Aliphatic EPH >C10-C12	U	2690	mg/kg	2.00	< 2.0	< 2.0	< 2.0
Aliphatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Aliphatic EPH >C12-C16	U	2690	mg/kg	1.00	1.6	1.7	1.6
Aliphatic EPH >C16-C21	U	2690	mg/kg	2.00	< 2.0	2.0	< 2.0
Aliphatic EPH >C21-C35	U	2690	mg/kg	3.00	3.1	< 3.0	3.0
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00	< 10	< 10	< 10
Total Aliphatic EPH >C10-C35	U	2690	mg/kg	5.00	7.9	8.2	6.8
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00	< 10	< 10	< 10
Aromatic VPH >C5-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Total Aromatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25

Results - Soil

Project: G23012 Global Centre of Rail Ecellence (GCRE) Stage II

Client: Jackson Geo Services			**Chemtest Job No.:**		23-14650	23-14650	23-14650
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1633312	1633315	1633317
Order No.:			Client Sample Ref.:		3	8	3
			Sample Location:		S2-TP202	S2-TP202	S2-BH225
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		0.5	2.9	0.5
			Bottom Depth (m):		0.6	3.0	0.6
			Date Sampled:		28-Apr-2023	28-Apr-2023	27-Apr-2023
			Asbestos Lab:		DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Aromatic EPH >C10-C12	U	2690	mg/kg	1.00	5.9	5.6	6.6
Aromatic EPH >C12-C16	U	2690	mg/kg	1.00	8.0	8.8	8.9
Aromatic EPH >C16-C21	U	2690	mg/kg	2.00	9.2	8.7	14
Aromatic EPH >C21-C35	U	2690	mg/kg	2.00	2.5	3.0	5.4
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00	5.2	8.6	5.1
Total Aromatic EPH >C10-C35	U	2690	mg/kg	5.00	26	26	34
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00	31	35	39
Total VPH >C5-C10	U	2780	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Total EPH >C10-C35	U	2690	mg/kg	10.00	34	34	41
Total EPH >C10-C40	N	2690	mg/kg	10.00	39	43	46
Organic Matter	U	2625	%	0.40	11	5.8	1.4
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Naphthalene	U	2800	mg/kg	0.10	1.3	0.51	0.34
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	2800	mg/kg	0.10	0.14	< 0.10	< 0.10
Anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	2800	mg/kg	0.10	0.28	< 0.10	< 0.10
Pyrene	U	2800	mg/kg	0.10	0.31	< 0.10	< 0.10
Benzo[a]anthracene	U	2800	mg/kg	0.10	0.26	< 0.10	< 0.10
Chrysene	U	2800	mg/kg	0.10	0.26	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	0.34	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	0.26	< 0.10	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10	0.21	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	0.26	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	0.23	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	0.33	< 0.10	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	4.2	< 2.0	< 2.0
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C40	Acetone/Heptane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8-C10 Aromatics: >C5–C7,>C7-C8,>C8–C10	Water extraction / Headspace GCxGC FID detection
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

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N	Unaccredited
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All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

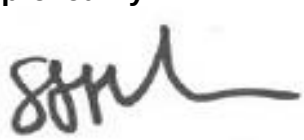
If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-14845-1
Initial Date of Issue:	18-May-2023
Re-Issue Details:	
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt James Power
Project	G23012 Global Centre of Rail Excellence (GCRE) Phase II
Quotation No.:	Q22-29781
Order No.:	
No. of Samples:	2
Turnaround (Wkdays):	7
Date Approved:	18-May-2023
Approved By:	

Date Received:	04-May-2023
Date Instructed:	10-May-2023
Results Due:	18-May-2023



Details: Stuart Henderson, Technical Manager

Results - Leachate

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase II

Client: Jackson Geo Services				**Chemtest Job No.:**		23-14845
Quotation No.: Q22-29781				**Chemtest Sample ID.:**		1634295
Order No.:				Client Sample Ref.:		1
				Sample Location:		S2-BH232
				Sample Type:		SOIL
				Top Depth (m):		0.2
				Bottom Depth (m):		0.3
				Date Sampled:		03-May-2023
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**	
pH	U	1010	10:1		N/A	7.6
Sulphate	U	1220	10:1	mg/l	1.0	7.2
Cyanide (Total)	U	1300	10:1	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	10:1	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1455	10:1	µg/l	0.20	< 0.20
Cadmium (Dissolved)	U	1455	10:1	µg/l	0.11	< 0.11
Chromium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Copper (Dissolved)	U	1455	10:1	µg/l	0.50	0.67
Mercury (Dissolved)	U	1455	10:1	µg/l	0.05	< 0.05
Nickel (Dissolved)	U	1455	10:1	µg/l	0.50	2.6
Lead (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Selenium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Vanadium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Zinc (Dissolved)	U	1455	10:1	µg/l	2.5	24
Chromium (Hexavalent)	U	1490	10:1	µg/l	20	< 20
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase II

Client: Jackson Geo Services			**Chemtest Job No.:**		23-14845	23-14845
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1634292	1634295
Order No.:			Client Sample Ref.:		1	1
			Sample Location:		S1-BH120	S2-BH232
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.2	0.2
			Bottom Depth (m):		0.63	0.3
			Date Sampled:		03-May-2023	03-May-2023
			Asbestos Lab:		NEW-ASB	NEW-ASB
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
ACM Type	U	2192		N/A	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	6.0	15
pH	U	2010		4.0	5.2	6.0
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	1.6	0.49
Sulphate (2:1 Water Soluble) as SO4 mg/l	U	2120	mg/l	10.000	25	< 10
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50
Arsenic	U	2455	mg/kg	0.5	12	5.9
Cadmium	U	2455	mg/kg	0.10	< 0.10	0.13
Chromium	U	2455	mg/kg	0.5	6.8	12
Copper	U	2455	mg/kg	0.50	25	25
Mercury	U	2455	mg/kg	0.05	0.05	< 0.05
Nickel	U	2455	mg/kg	0.50	18	27
Lead	U	2455	mg/kg	0.50	16	15
Selenium	U	2455	mg/kg	0.25	0.53	0.67
Vanadium	U	2455	mg/kg	0.5	8.2	13
Zinc	U	2455	mg/kg	0.50	45	57
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50
Aliphatic VPH >C5-C6	U	2780	mg/kg	0.05	< 0.05	< 0.05
Aliphatic VPH >C6-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05
Aliphatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05
Total Aliphatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25
Aliphatic EPH >C10-C12	U	2690	mg/kg	2.00	2.3	2.8
Aliphatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05
Aliphatic EPH >C12-C16	U	2690	mg/kg	1.00	1.3	1.1
Aliphatic EPH >C16-C21	U	2690	mg/kg	2.00	< 2.0	< 2.0
Aliphatic EPH >C21-C35	U	2690	mg/kg	3.00	< 3.0	< 3.0
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00	< 10	< 10
Total Aliphatic EPH >C10-C35	U	2690	mg/kg	5.00	< 5.0	5.2
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00	< 10	< 10
Aromatic VPH >C5-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05
Aromatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05
Aromatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05
Total Aromatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase II

Client: Jackson Geo Services			**Chemtest Job No.:**		23-14845	23-14845
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1634292	1634295
Order No.:			Client Sample Ref.:		1	1
			Sample Location:		S1-BH120	S2-BH232
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.2	0.2
			Bottom Depth (m):		0.63	0.3
			Date Sampled:		03-May-2023	03-May-2023
			Asbestos Lab:		NEW-ASB	NEW-ASB
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Aromatic EPH >C10-C12	U	2690	mg/kg	1.00	< 1.0	< 1.0
Aromatic EPH >C12-C16	U	2690	mg/kg	1.00	< 1.0	< 1.0
Aromatic EPH >C16-C21	U	2690	mg/kg	2.00	< 2.0	< 2.0
Aromatic EPH >C21-C35	U	2690	mg/kg	2.00	< 2.0	6.8
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00	< 1.0	< 1.0
Total Aromatic EPH >C10-C35	U	2690	mg/kg	5.00	< 5.0	7.9
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00	< 10	< 10
Total VPH >C5-C10	U	2780	mg/kg	0.50	< 0.50	< 0.50
Total EPH >C10-C35	U	2690	mg/kg	10.00	< 10	13
Total EPH >C10-C40	N	2690	mg/kg	10.00	< 10	13
Organic Matter	U	2625	%	0.40	2.3	2.2
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Naphthalene	U	2800	mg/kg	0.10	1.8	1.4
Acenaphthylene	N	2800	mg/kg	0.10	0.14	0.14
Acenaphthene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Fluorene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Phenanthrene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[a]anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Chrysene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	< 2.0	< 2.0
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C40	Acetone/Heptane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8-C10 Aromatics: >C5–C7,>C7-C8,>C8–C10	Water extraction / Headspace GCxGC FID detection
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS

Test Methods

SOP	Title	Parameters included	Method summary
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

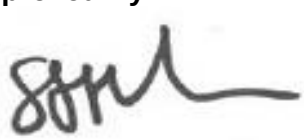
If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-14846-1
Initial Date of Issue:	17-May-2023
Re-Issue Details:	
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt James Power
Project	G23012 Global Centre of Rail Excellence (GCRE) Phase II
Quotation No.:	Q22-29781
Order No.:	
No. of Samples:	1
Turnaround (Wkdays):	7
Date Approved:	17-May-2023
Approved By:	

Date Received:	04-May-2023
Date Instructed:	09-May-2023
Results Due:	17-May-2023



Details: Stuart Henderson, Technical Manager

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase II

Client: Jackson Geo Services			**Chemtest Job No.:**		23-14846
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1634299
Order No.:			Client Sample Ref.:		3
			Sample Location:		S2-BH221
			Sample Type:		SOIL
			Top Depth (m):		0.5
			Bottom Depth (m):		0.6
			Date Sampled:		02-May-2023
			Asbestos Lab:		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
ACM Type	U	2192		N/A	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected
Moisture	N	2030	%	0.020	13
pH	U	2010		4.0	8.3
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40
Sulphate (2:1 Water Soluble) as SO4 mg/l	U	2120	mg/l	10.000	< 10
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50
Arsenic	U	2455	mg/kg	0.5	5.7
Cadmium	U	2455	mg/kg	0.10	0.10
Chromium	U	2455	mg/kg	0.5	11
Copper	U	2455	mg/kg	0.50	17
Mercury	U	2455	mg/kg	0.05	0.16
Nickel	U	2455	mg/kg	0.50	20
Lead	U	2455	mg/kg	0.50	21
Selenium	U	2455	mg/kg	0.25	0.57
Vanadium	U	2455	mg/kg	0.5	9.4
Zinc	U	2455	mg/kg	0.50	45
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50
Aliphatic VPH >C5-C6	U	2780	mg/kg	0.05	< 0.05
Aliphatic VPH >C6-C7	U	2780	mg/kg	0.05	< 0.05
Aliphatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05
Total Aliphatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25
Aliphatic EPH >C10-C12	U	2690	mg/kg	2.00	< 2.0
Aliphatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05
Aliphatic EPH >C12-C16	U	2690	mg/kg	1.00	2.0
Aliphatic EPH >C16-C21	U	2690	mg/kg	2.00	2.2
Aliphatic EPH >C21-C35	U	2690	mg/kg	3.00	3.4
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00	< 10
Total Aliphatic EPH >C10-C35	U	2690	mg/kg	5.00	8.8
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00	< 10
Aromatic VPH >C5-C7	U	2780	mg/kg	0.05	< 0.05
Aromatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05
Aromatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05
Total Aromatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase II

Client: Jackson Geo Services			**Chemtest Job No.:**		23-14846
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1634299
Order No.:			Client Sample Ref.:		3
			Sample Location:		S2-BH221
			Sample Type:		SOIL
			Top Depth (m):		0.5
			Bottom Depth (m):		0.6
			Date Sampled:		02-May-2023
			Asbestos Lab:		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Aromatic EPH >C10-C12	U	2690	mg/kg	1.00	5.8
Aromatic EPH >C12-C16	U	2690	mg/kg	1.00	9.6
Aromatic EPH >C16-C21	U	2690	mg/kg	2.00	8.6
Aromatic EPH >C21-C35	U	2690	mg/kg	2.00	4.4
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00	5.8
Total Aromatic EPH >C10-C35	U	2690	mg/kg	5.00	28
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00	34
Total VPH >C5-C10	U	2780	mg/kg	0.50	< 0.50
Total EPH >C10-C35	U	2690	mg/kg	10.00	37
Total EPH >C10-C40	N	2690	mg/kg	10.00	43
Organic Matter	U	2625	%	0.40	3.8
Benzene	U	2760	µg/kg	1.0	< 1.0
Toluene	U	2760	µg/kg	1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0
Naphthalene	U	2800	mg/kg	0.10	0.44
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10
Acenaphthene	U	2800	mg/kg	0.10	< 0.10
Fluorene	U	2800	mg/kg	0.10	< 0.10
Phenanthrene	U	2800	mg/kg	0.10	< 0.10
Anthracene	U	2800	mg/kg	0.10	< 0.10
Fluoranthene	U	2800	mg/kg	0.10	< 0.10
Pyrene	U	2800	mg/kg	0.10	< 0.10
Benzo[a]anthracene	U	2800	mg/kg	0.10	< 0.10
Chrysene	U	2800	mg/kg	0.10	< 0.10
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	< 2.0
Total Phenols	U	2920	mg/kg	0.10	< 0.10

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C40	Acetone/Heptane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8-C10 Aromatics: >C5–C7,>C7-C8,>C8–C10	Water extraction / Headspace GCxGC FID detection
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

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All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

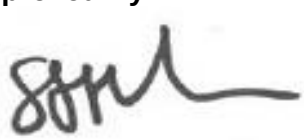
If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-14849-1
Initial Date of Issue:	17-May-2023
Re-Issue Details:	
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt James Power
Project	G23012 Global Centre of Rail Excellence (GCRE) Phase II
Quotation No.:	Q22-29781
Order No.:	
No. of Samples:	4
Turnaround (Wkdays):	7
Date Approved:	17-May-2023
Approved By:	

Date Received:	04-May-2023
Date Instructed:	09-May-2023
Results Due:	17-May-2023



Details: Stuart Henderson, Technical Manager

Results - Leachate

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase II

Client: Jackson Geo Services				**Chemtest Job No.:**		23-14849
Quotation No.: Q22-29781				**Chemtest Sample ID.:**		1634315
Order No.:				Client Sample Ref.:		1
				Sample Location:		S2-BH240
				Sample Type:		SOIL
				Top Depth (m):		0.2
				Bottom Depth (m):		0.3
				Date Sampled:		02-May-2023
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**	
pH	U	1010	10:1		N/A	12.2
Sulphate	U	1220	10:1	mg/l	1.0	4.7
Cyanide (Total)	U	1300	10:1	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	10:1	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1455	10:1	µg/l	0.20	< 0.20
Cadmium (Dissolved)	U	1455	10:1	µg/l	0.11	< 0.11
Chromium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Copper (Dissolved)	U	1455	10:1	µg/l	0.50	3.4
Mercury (Dissolved)	U	1455	10:1	µg/l	0.05	< 0.05
Nickel (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Lead (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Selenium (Dissolved)	U	1455	10:1	µg/l	0.50	2.4
Vanadium (Dissolved)	U	1455	10:1	µg/l	0.50	0.99
Zinc (Dissolved)	U	1455	10:1	µg/l	2.5	19
Chromium (Hexavalent)	U	1490	10:1	µg/l	20	< 20
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase II

Client: Jackson Geo Services			**Chemtest Job No.:**		23-14849	23-14849	23-14849	23-14849
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1634310	1634313	1634315	1634317
Order No.:			Client Sample Ref.:		4	1	1	1
			Sample Location:		S2-BH243	S2-BH224	S2-BH240	S2-BH239
			Sample Type:		SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.5	0.2	0.2	0.2
			Bottom Depth (m):		0.6	0.3	0.3	0.3
			Date Sampled:		02-May-2023	02-May-2023	02-May-2023	02-May-2023
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
ACM Type	U	2192		N/A	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	4.6	5.8	5.4	4.7
pH	U	2010		4.0	8.1	8.5	11.8	9.5
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40	< 0.40	1.4	< 0.40
Sulphate (2:1 Water Soluble) as SO4 mg/l	U	2120	mg/l	10.000	18	< 10	330	37
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Arsenic	U	2455	mg/kg	0.5	19	2.4	8.4	4.0
Cadmium	U	2455	mg/kg	0.10	0.14	0.15	0.13	< 0.10
Chromium	U	2455	mg/kg	0.5	6.1	8.5	5.5	7.1
Copper	U	2455	mg/kg	0.50	67	36	21	26
Mercury	U	2455	mg/kg	0.05	0.15	0.08	0.70	0.11
Nickel	U	2455	mg/kg	0.50	30	26	20	28
Lead	U	2455	mg/kg	0.50	35	21	19	19
Selenium	U	2455	mg/kg	0.25	1.5	0.75	0.77	0.51
Vanadium	U	2455	mg/kg	0.5	8.4	9.9	6.6	9.1
Zinc	U	2455	mg/kg	0.50	60	84	37	41
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Aliphatic VPH >C5-C6	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C6-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total Aliphatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25
Aliphatic EPH >C10-C12	U	2690	mg/kg	2.00	< 2.0	< 2.0	< 2.0	< 2.0
Aliphatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic EPH >C12-C16	U	2690	mg/kg	1.00	1.6	2.4	< 1.0	4.4
Aliphatic EPH >C16-C21	U	2690	mg/kg	2.00	< 2.0	2.8	< 2.0	< 2.0
Aliphatic EPH >C21-C35	U	2690	mg/kg	3.00	3.3	6.2	29	< 3.0
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00	< 10	< 10	< 10	< 10
Total Aliphatic EPH >C10-C35	U	2690	mg/kg	5.00	7.2	13	32	8.2
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00	< 10	13	32	< 10
Aromatic VPH >C5-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total Aromatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase II

Client: Jackson Geo Services			**Chemtest Job No.:**		23-14849	23-14849	23-14849	23-14849
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1634310	1634313	1634315	1634317
Order No.:			Client Sample Ref.:		4	1	1	1
			Sample Location:		S2-BH243	S2-BH224	S2-BH240	S2-BH239
			Sample Type:		SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.5	0.2	0.2	0.2
			Bottom Depth (m):		0.6	0.3	0.3	0.3
			Date Sampled:		02-May-2023	02-May-2023	02-May-2023	02-May-2023
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
Aromatic EPH >C10-C12	U	2690	mg/kg	1.00	6.1	4.5	< 1.0	< 1.0
Aromatic EPH >C12-C16	U	2690	mg/kg	1.00	8.2	8.7	< 1.0	2.8
Aromatic EPH >C16-C21	U	2690	mg/kg	2.00	8.6	8.6	< 2.0	2.6
Aromatic EPH >C21-C35	U	2690	mg/kg	2.00	< 2.0	3.1	< 2.0	< 2.0
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00	4.4	5.0	< 1.0	< 1.0
Total Aromatic EPH >C10-C35	U	2690	mg/kg	5.00	25	25	< 5.0	7.3
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00	29	30	< 10	< 10
Total VPH >C5-C10	U	2780	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Total EPH >C10-C35	U	2690	mg/kg	10.00	32	38	34	16
Total EPH >C10-C40	N	2690	mg/kg	10.00	36	43	34	16
Organic Matter	U	2625	%	0.40	36	3.1	10	31
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Naphthalene	U	2800	mg/kg	0.10	1.5	2.6	< 0.10	0.71
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	< 2.0	2.6	< 2.0	< 2.0
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C40	Acetone/Heptane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8-C10 Aromatics: >C5–C7,>C7-C8,>C8–C10	Water extraction / Headspace GCxGC FID detection
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS

Test Methods

SOP	Title	Parameters included	Method summary
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

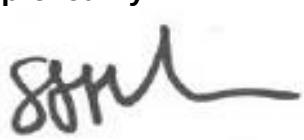
If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-14985-1
Initial Date of Issue:	17-May-2023
Re-Issue Details:	
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt James Power
Project	G23012 Global Centre of Rail Excellence (GCRE) Phase II
Quotation No.:	Q22-29781
Order No.:	
No. of Samples:	5
Turnaround (Wkdays):	7
Date Approved:	17-May-2023
Approved By:	

Date Received:	05-May-2023
Date Instructed:	09-May-2023
Results Due:	17-May-2023



Details: Stuart Henderson, Technical Manager

Results - Leachate

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase II

Client: Jackson Geo Services				**Chemtest Job No.:**		23-14985
Quotation No.: Q22-29781				**Chemtest Sample ID.:**		1634987
Order No.:				Client Sample Ref.:		1
				Sample Location:		S2-TP209
				Sample Type:		SOIL
				Top Depth (m):		0.2
				Bottom Depth (m):		0.3
				Date Sampled:		03-May-2023
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**	
pH	U	1010	10:1		N/A	10.1
Sulphate	U	1220	10:1	mg/l	1.0	23
Cyanide (Total)	U	1300	10:1	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	10:1	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1455	10:1	µg/l	0.20	0.23
Cadmium (Dissolved)	U	1455	10:1	µg/l	0.11	< 0.11
Chromium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Copper (Dissolved)	U	1455	10:1	µg/l	0.50	0.84
Mercury (Dissolved)	U	1455	10:1	µg/l	0.05	< 0.05
Nickel (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Lead (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Selenium (Dissolved)	U	1455	10:1	µg/l	0.50	0.82
Vanadium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Zinc (Dissolved)	U	1455	10:1	µg/l	2.5	27
Chromium (Hexavalent)	U	1490	10:1	µg/l	20	< 20
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase II

Client: Jackson Geo Services			**Chemtest Job No.:**		23-14985	23-14985	23-14985	23-14985	23-14985
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1634975	1634977	1634981	1634985	1634987
Order No.:			Client Sample Ref.:		1	1	3	5	1
			Sample Location:		S2-BH223	S2-BH226	S2-BH222	S2-TP213	S2-TP209
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.2	0.2	0.5	0.9	0.2
			Bottom Depth (m):		0.3	0.3	0.6	1.0	0.3
			Date Sampled:		03-May-2023	03-May-2023	03-May-2023	03-May-2023	03-May-2023
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**					
ACM Type	U	2192		N/A	-	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	12	10	7.1	11	8.0
pH	U	2010		4.0	8.3	7.5	8.1	7.5	7.9
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40	< 0.40	< 0.40	< 0.40	4.6
Sulphate (2:1 Water Soluble) as SO4 mg/l	U	2120	mg/l	10.000	10	34	< 10	25	1300
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Arsenic	U	2455	mg/kg	0.5	10	5.7	6.0	7.2	11
Cadmium	U	2455	mg/kg	0.10	0.25	0.13	0.13	0.14	0.13
Chromium	U	2455	mg/kg	0.5	14	9.3	11	12	13
Copper	U	2455	mg/kg	0.50	25	20	29	28	31
Mercury	U	2455	mg/kg	0.05	0.05	< 0.05	< 0.05	< 0.05	0.06
Nickel	U	2455	mg/kg	0.50	31	21	30	33	38
Lead	U	2455	mg/kg	0.50	16	11	15	19	19
Selenium	U	2455	mg/kg	0.25	1.1	0.71	0.93	0.81	0.94
Vanadium	U	2455	mg/kg	0.5	14	9.6	11	12	13
Zinc	U	2455	mg/kg	0.50	73	45	62	64	78
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Aliphatic VPH >C5-C6	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C6-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total Aliphatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25
Aliphatic EPH >C10-C12	U	2690	mg/kg	2.00	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Aliphatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic EPH >C12-C16	U	2690	mg/kg	1.00	1.0	< 1.0	< 1.0	1.5	1.9
Aliphatic EPH >C16-C21	U	2690	mg/kg	2.00	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Aliphatic EPH >C21-C35	U	2690	mg/kg	3.00	< 3.0	3.2	3.3	6.6	5.5
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00	< 10	< 10	< 10	< 10	< 10
Total Aliphatic EPH >C10-C35	U	2690	mg/kg	5.00	5.5	6.0	6.0	11	10
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00	< 10	< 10	< 10	11	< 10
Aromatic VPH >C5-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total Aromatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase II

Client: Jackson Geo Services			**Chemtest Job No.:**		23-14985	23-14985	23-14985	23-14985	23-14985
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1634975	1634977	1634981	1634985	1634987
Order No.:			Client Sample Ref.:		1	1	3	5	1
			Sample Location:		S2-BH223	S2-BH226	S2-BH222	S2-TP213	S2-TP209
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.2	0.2	0.5	0.9	0.2
			Bottom Depth (m):		0.3	0.3	0.6	1.0	0.3
			Date Sampled:		03-May-2023	03-May-2023	03-May-2023	03-May-2023	03-May-2023
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**					
Aromatic EPH >C10-C12	U	2690	mg/kg	1.00	< 1.0	< 1.0	< 1.0	1.3	2.4
Aromatic EPH >C12-C16	U	2690	mg/kg	1.00	< 1.0	< 1.0	< 1.0	2.1	3.7
Aromatic EPH >C16-C21	U	2690	mg/kg	2.00	< 2.0	< 2.0	< 2.0	7.2	7.2
Aromatic EPH >C21-C35	U	2690	mg/kg	2.00	4.5	5.2	6.5	8.6	5.8
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00	< 1.0	< 1.0	4.0	4.0	3.8
Total Aromatic EPH >C10-C35	U	2690	mg/kg	5.00	< 5.0	5.5	6.7	19	19
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00	< 10	< 10	11	23	23
Total VPH >C5-C10	U	2780	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Total EPH >C10-C35	U	2690	mg/kg	10.00	10	12	13	30	29
Total EPH >C10-C40	N	2690	mg/kg	10.00	10	12	17	34	33
Organic Matter	U	2625	%	0.40	4.8	3.4	5.1	6.2	5.7
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Naphthalene	U	2800	mg/kg	0.10	< 0.10	< 0.10	2.8	1.6	4.9
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10	0.22	0.10	1.5
Acenaphthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.29
Fluorene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	1.2
Phenanthrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	3.9
Anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.93
Fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	1.1
Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	1.5
Benzo[a]anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.57
Chrysene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.54
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.34
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.15
Benzo[a]pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.57
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.27
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.11
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.24
Total Of 16 PAH's	N	2800	mg/kg	2.0	< 2.0	< 2.0	3.0	< 2.0	18
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C40	Acetone/Heptane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8-C10 Aromatics: >C5–C7,>C7-C8,>C8–C10	Water extraction / Headspace GCxGC FID detection
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS

Test Methods

SOP	Title	Parameters included	Method summary
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-14988-1
Initial Date of Issue:	11-May-2023
Re-Issue Details:	
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt James Power
Project	G23012 Global Centre of Rail Excellence Stage II
Quotation No.:	Q22-29781
Order No.:	
No. of Samples:	2
Turnaround (Wkdays):	5
Date Approved:	11-May-2023
Approved By:	
Details:	Stuart Henderson, Technical Manager

Date Received:	05-May-2023
Date Instructed:	05-May-2023
Results Due:	12-May-2023

Results - Soil

Project: G23012 Global Centre of Rail Excellence Stage II

Client: Jackson Geo Services		**Chemtest Job No.:**			23-14988	23-14988
Quotation No.: Q22-29781		**Chemtest Sample ID.:**			1634998	1634999
Order No.:		Client Sample Ref.:			4	9
		Client Sample ID.:			#47941391797 60004	#30154814398 80009
		Sample Location:			S2-TP229	S2-TP235
		Sample Type:			SOIL	SOIL
		Top Depth (m):			0.9	3.3
		Bottom Depth (m):			1.0	3.5
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Moisture	N	2030	%	0.020	3.7	3.1
pH (2.5:1)	N	2010		4.0	[A] 7.9	[A] 8.1
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	[A] 0.088	[A] 0.30
Total Sulphur	U	2175	%	0.010	[A] 0.10	[A] 0.22
Sulphate (Acid Soluble)	U	2430	%	0.010	[A] 0.031	[A] 0.12

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1634998	4	#4794139179760004	S2-TP229		A	Plastic Tub 500g
1634999	9	#3015481439880009	S2-TP235		A	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2175	Total Sulphur in Soils	Total Sulphur	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.

Report Information

Key

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SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

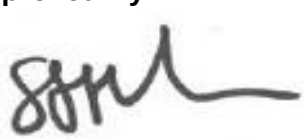
If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-15249-1
Initial Date of Issue:	15-May-2023
Re-Issue Details:	
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt James Power
Project	G23012 Global Centre of Rail Excellence (GCRE) Stage II
Quotation No.:	Q22-29781
Order No.:	
No. of Samples:	1
Turnaround (Wkdays):	7
Date Approved:	15-May-2023
Approved By:	

Date Received:	09-May-2023
Date Instructed:	10-May-2023
Results Due:	18-May-2023



Details: Stuart Henderson, Technical Manager

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Stage II

Client: Jackson Geo Services			**Chemtest Job No.:**		23-15249
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1636087
Order No.:			Client Sample Ref.:		3
			Sample Location:		S2-TP239
			Sample Type:		SOIL
			Top Depth (m):		0.50
			Bottom Depth (m):		0.60
			Date Sampled:		04-May-2023
			Asbestos Lab:		NEW-ASB
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
ACM Type	U	2192		N/A	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected
Moisture	N	2030	%	0.020	3.4
pH	U	2010		4.0	8.6
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40
Sulphate (2:1 Water Soluble) as SO4 mg/l	U	2120	mg/l	10.000	22
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50
Arsenic	U	2455	mg/kg	0.5	7.7
Cadmium	U	2455	mg/kg	0.10	0.10
Chromium	U	2455	mg/kg	0.5	15
Copper	U	2455	mg/kg	0.50	30
Mercury	U	2455	mg/kg	0.05	< 0.05
Nickel	U	2455	mg/kg	0.50	38
Lead	U	2455	mg/kg	0.50	17
Selenium	U	2455	mg/kg	0.25	0.74
Vanadium	U	2455	mg/kg	0.5	15
Zinc	U	2455	mg/kg	0.50	76
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50
Aliphatic VPH >C5-C6	U	2780	mg/kg	0.05	< 0.05
Aliphatic VPH >C6-C7	U	2780	mg/kg	0.05	< 0.05
Aliphatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05
Total Aliphatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25
Aliphatic EPH >C10-C12	U	2690	mg/kg	2.00	2.6
Aliphatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05
Aliphatic EPH >C12-C16	U	2690	mg/kg	1.00	< 1.0
Aliphatic EPH >C16-C21	U	2690	mg/kg	2.00	< 2.0
Aliphatic EPH >C21-C35	U	2690	mg/kg	3.00	< 3.0
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00	< 10
Total Aliphatic EPH >C10-C35	U	2690	mg/kg	5.00	< 5.0
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00	< 10
Aromatic VPH >C5-C7	U	2780	mg/kg	0.05	< 0.05
Aromatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05
Aromatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05
Total Aromatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Stage II

Client: Jackson Geo Services			**Chemtest Job No.:**		23-15249
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1636087
Order No.:			Client Sample Ref.:		3
			Sample Location:		S2-TP239
			Sample Type:		SOIL
			Top Depth (m):		0.50
			Bottom Depth (m):		0.60
			Date Sampled:		04-May-2023
			Asbestos Lab:		NEW-ASB
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Aromatic EPH >C10-C12	U	2690	mg/kg	1.00	< 1.0
Aromatic EPH >C12-C16	U	2690	mg/kg	1.00	< 1.0
Aromatic EPH >C16-C21	U	2690	mg/kg	2.00	< 2.0
Aromatic EPH >C21-C35	U	2690	mg/kg	2.00	< 2.0
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00	< 1.0
Total Aromatic EPH >C10-C35	U	2690	mg/kg	5.00	< 5.0
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00	< 10
Total VPH >C5-C10	U	2780	mg/kg	0.50	< 0.50
Total EPH >C10-C35	U	2690	mg/kg	10.00	< 10
Total EPH >C10-C40	N	2690	mg/kg	10.00	< 10
Organic Matter	U	2625	%	0.40	3.6
Benzene	U	2760	µg/kg	1.0	< 1.0
Toluene	U	2760	µg/kg	1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0
Naphthalene	U	2800	mg/kg	0.10	1.4
Acenaphthylene	N	2800	mg/kg	0.10	0.13
Acenaphthene	U	2800	mg/kg	0.10	< 0.10
Fluorene	U	2800	mg/kg	0.10	< 0.10
Phenanthrene	U	2800	mg/kg	0.10	0.11
Anthracene	U	2800	mg/kg	0.10	< 0.10
Fluoranthene	U	2800	mg/kg	0.10	< 0.10
Pyrene	U	2800	mg/kg	0.10	< 0.10
Benzo[a]anthracene	U	2800	mg/kg	0.10	< 0.10
Chrysene	U	2800	mg/kg	0.10	< 0.10
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	< 2.0
Total Phenols	U	2920	mg/kg	0.10	< 0.10

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C40	Acetone/Heptane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8-C10 Aromatics: >C5–C7,>C7-C8,>C8–C10	Water extraction / Headspace GCxGC FID detection
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

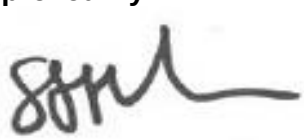
Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-15250-1
Initial Date of Issue:	18-May-2023
Re-Issue Details:	
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt James Power
Project	G23012 Global Centre of Rail Excellence (GCRE) Stage II

Quotation No.:	Q22-29781	**Date Received:**	09-May-2023
Order No.:		**Date Instructed:**	10-May-2023
No. of Samples:	3		
Turnaround (Wkdays):	7	**Results Due:**	18-May-2023
Date Approved:	18-May-2023		

Approved By:



Details: Stuart Henderson, Technical Manager

Results - Leachate

Project: G23012 Global Centre of Rail Excellence (GCRE) Stage II

Client: Jackson Geo Services				**Chemtest Job No.:**		23-15250
Quotation No.: Q22-29781				**Chemtest Sample ID.:**		1636095
Order No.:				Client Sample Ref.:		103
				Sample Location:		S2-BH240
				Sample Type:		SOIL
				Top Depth (m):		1.20
				Bottom Depth (m):		1.30
				Date Sampled:		04-May-2023
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**	
pH	U	1010	10:1		N/A	9.7
Sulphate	U	1220	10:1	mg/l	1.0	9.4
Cyanide (Total)	U	1300	10:1	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	10:1	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1455	10:1	µg/l	0.20	1.3
Cadmium (Dissolved)	U	1455	10:1	µg/l	0.11	< 0.11
Chromium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Copper (Dissolved)	U	1455	10:1	µg/l	0.50	1.1
Mercury (Dissolved)	U	1455	10:1	µg/l	0.05	< 0.05
Nickel (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Lead (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Selenium (Dissolved)	U	1455	10:1	µg/l	0.50	0.55
Vanadium (Dissolved)	U	1455	10:1	µg/l	0.50	1.0
Zinc (Dissolved)	U	1455	10:1	µg/l	2.5	22
Chromium (Hexavalent)	U	1490	10:1	µg/l	20	< 20
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Stage II

Client: Jackson Geo Services			**Chemtest Job No.:**		23-15250	23-15250	23-15250
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1636092	1636095	1636098
Order No.:			Client Sample Ref.:		103	103	106
			Sample Location:		S2-BH243	S2-BH240	S2-BH240
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		3.50	1.20	4.20
			Bottom Depth (m):		3.70	1.30	4.30
			Date Sampled:		04-May-2023	04-May-2023	04-May-2023
			Asbestos Lab:		NEW-ASB	NEW-ASB	NEW-ASB
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
ACM Type	U	2192		N/A	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	6.0	7.1	4.1
pH	U	2010		4.0	8.9	9.5	9.1
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	0.53	0.48	0.65
Sulphate (2:1 Water Soluble) as SO4 mg/l	U	2120	mg/l	10.000	19	210	170
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Arsenic	U	2455	mg/kg	0.5	13	6.6	8.7
Cadmium	U	2455	mg/kg	0.10	0.12	0.11	0.32
Chromium	U	2455	mg/kg	0.5	6.1	8.5	8.4
Copper	U	2455	mg/kg	0.50	27	24	31
Mercury	U	2455	mg/kg	0.05	0.14	0.07	0.09
Nickel	U	2455	mg/kg	0.50	19	25	33
Lead	U	2455	mg/kg	0.50	14	10	21
Selenium	U	2455	mg/kg	0.25	0.82	0.53	0.73
Vanadium	U	2455	mg/kg	0.5	7.2	10	11
Zinc	U	2455	mg/kg	0.50	56	63	150
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Aliphatic VPH >C5-C6	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C6-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Total Aliphatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25
Aliphatic EPH >C10-C12	U	2690	mg/kg	2.00	3.0	2.4	2.8
Aliphatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Aliphatic EPH >C12-C16	U	2690	mg/kg	1.00	1.3	1.6	1.1
Aliphatic EPH >C16-C21	U	2690	mg/kg	2.00	< 2.0	< 2.0	< 2.0
Aliphatic EPH >C21-C35	U	2690	mg/kg	3.00	< 3.0	5.9	< 3.0
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00	< 10	< 10	< 10
Total Aliphatic EPH >C10-C35	U	2690	mg/kg	5.00	6.1	11	< 5.0
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00	< 10	11	< 10
Aromatic VPH >C5-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Total Aromatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Stage II

Client: Jackson Geo Services			**Chemtest Job No.:**		23-15250	23-15250	23-15250
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1636092	1636095	1636098
Order No.:			Client Sample Ref.:		103	103	106
			Sample Location:		S2-BH243	S2-BH240	S2-BH240
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		3.50	1.20	4.20
			Bottom Depth (m):		3.70	1.30	4.30
			Date Sampled:		04-May-2023	04-May-2023	04-May-2023
			Asbestos Lab:		NEW-ASB	NEW-ASB	NEW-ASB
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Aromatic EPH >C10-C12	U	2690	mg/kg	1.00	< 1.0	< 1.0	< 1.0
Aromatic EPH >C12-C16	U	2690	mg/kg	1.00	< 1.0	< 1.0	< 1.0
Aromatic EPH >C16-C21	U	2690	mg/kg	2.00	< 2.0	< 2.0	< 2.0
Aromatic EPH >C21-C35	U	2690	mg/kg	2.00	< 2.0	< 2.0	< 2.0
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00	< 1.0	< 1.0	< 1.0
Total Aromatic EPH >C10-C35	U	2690	mg/kg	5.00	< 5.0	< 5.0	< 5.0
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00	< 10	< 10	< 10
Total VPH >C5-C10	U	2780	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Total EPH >C10-C35	U	2690	mg/kg	10.00	< 10	12	< 10
Total EPH >C10-C40	N	2690	mg/kg	10.00	< 10	12	< 10
Organic Matter	U	2625	%	0.40	32	4.5	4.6
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Naphthalene	U	2800	mg/kg	0.10	3.2	5.5	3.4
Acenaphthylene	N	2800	mg/kg	0.10	0.32	0.58	0.20
Acenaphthene	U	2800	mg/kg	0.10	0.11	0.11	< 0.10
Fluorene	U	2800	mg/kg	0.10	0.18	0.52	0.16
Phenanthrene	U	2800	mg/kg	0.10	0.24	1.5	0.20
Anthracene	U	2800	mg/kg	0.10	< 0.10	0.25	< 0.10
Fluoranthene	U	2800	mg/kg	0.10	< 0.10	0.90	< 0.10
Pyrene	U	2800	mg/kg	0.10	< 0.10	0.62	< 0.10
Benzo[a]anthracene	U	2800	mg/kg	0.10	< 0.10	0.26	< 0.10
Chrysene	U	2800	mg/kg	0.10	< 0.10	0.16	< 0.10
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	< 0.10	0.34	< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	< 0.10	0.11	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10	< 0.10	0.23	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	< 0.10	0.12	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	< 0.10	0.13	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	4.1	11	4.0
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C40	Acetone/Heptane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8-C10 Aromatics: >C5–C7,>C7-C8,>C8–C10	Water extraction / Headspace GCxGC FID detection
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS

Test Methods

SOP	Title	Parameters included	Method summary
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

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I/S	Insufficient Sample
U/S	Unsuitable Sample
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<	"less than"
>	"greater than"
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LOD	Limit of detection

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All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
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All water samples will be retained for 14 days from the date of receipt
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If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-15296-1
Initial Date of Issue:	24-May-2023
Re-Issue Details:	
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt
Project	G23012 Global Centre of Rail Excellence
Quotation No.:	Q22-29781
Order No.:	
No. of Samples:	1
Turnaround (Wkdays):	7
Date Approved:	24-May-2023
Approved By:	
Details:	Stuart Henderson, Technical Manager

Date Received:	09-May-2023
Date Instructed:	09-May-2023
Results Due:	17-May-2023

Results - 2 Stage WAC

Project: G23012 Global Centre of Rail Excellence

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	23-15296								
Chemtest Sample ID:	1636303								
Sample Ref:									
Sample ID:									
Sample Location:	S2-TP280								
Top Depth(m):	0.50								
Bottom Depth(m):	0.60								
Sampling Date:	27-Apr-2023								
Determinand	**SOP**	**Accred.**	**Units**				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	M	%			0.80	3	5	6
Loss On Ignition	2610	M	%			6.1	--	--	10
Total BTEX	2760	M	mg/kg			< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg			< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg			50	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg			< 2.0	100	--	--
pH	2010	M				5.5	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg			< 0.0020	--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.026	0.0022	0.049	0.051	0.5	2	25
Barium	1455	U	< 0.005	< 0.005	< 0.0005	< 0.0005	20	100	300
Cadmium	1455	U	0.00016	< 0.00011	0.00030	0.00020	0.04	1	5
Chromium	1455	U	0.026	0.0025	0.048	0.053	0.5	10	70
Copper	1455	U	0.035	0.0036	0.066	0.043	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0021	0.0003	0.0039	0.0047	0.5	10	30
Nickel	1455	U	0.0059	0.0010	0.011	0.016	0.4	10	40
Lead	1455	U	0.0094	0.0013	0.018	0.023	0.5	10	50
Antimony	1455	U	0.0018	< 0.0005	0.0035	0.0023	0.06	0.7	5
Selenium	1455	U	0.0036	< 0.0005	0.0067	0.0044	0.1	0.5	7
Zinc	1455	U	0.056	0.031	0.11	0.34	4	50	200
Chloride	1220	U	31	< 1.0	58	38	800	15000	25000
Fluoride	1220	U	0.74	0.081	1.4	1.6	10	150	500
Sulphate	1220	U	84	5.0	160	150	1000	20000	50000
Total Dissolved Solids	1020	N	12	8.0	22	84	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	13	6.4	< 50	71	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	29

Leachate Test Information	
Leachant volume 1st extract/l	0.278
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.215

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Test Methods

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge
650	Characterisation of Waste (Leaching WAC)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

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I/S	Insufficient Sample
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LOD	Limit of detection

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None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-15303-1
Initial Date of Issue:	17-May-2023
Re-Issue Details:	
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt
Project	G23012 Global Centre of Rail Excellence
Quotation No.:	Q22-29781
Order No.:	
No. of Samples:	1
Turnaround (Wkdays):	7
Date Approved:	17-May-2023
Approved By:	
Details:	Stuart Henderson, Technical Manager

Date Received:	09-May-2023
Date Instructed:	09-May-2023
Results Due:	17-May-2023

Results - Soil

Project: G23012 Global Centre of Rail Excellence

Client: Jackson Geo Services			**Chemtest Job No.:**		23-15303
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1636353
			Sample Location:		S2-BH240
			Sample Type:		SOIL
			Top Depth (m):		0.20
			Bottom Depth (m):		0.30
			Date Sampled:		02-May-2023
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Moisture	N	2030	%	0.020	5.4
pH	U	2010		4.0	11.8
Acid Neutralisation Capacity	N	2015	mol/kg	0.0020	0.023
Total Organic Carbon	U	2625	%	0.20	3.5

Results - 2 Stage WAC

Project: G23012 Global Centre of Rail Excellence

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	23-15303								
Chemtest Sample ID:	1636353								
Sample Ref:									
Sample ID:									
Sample Location:	S2-BH240								
Top Depth(m):	0.20								
Bottom Depth(m):	0.30								
Sampling Date:	02-May-2023								
Determinand	**SOP**	**Accred.**	**Units**				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%			3.5	3	5	6
Loss on Ignition							--	--	10
Total BTEX							6	--	--
Total PCBs (7 congeners)							1	--	--
TPH Total WAC (Mineral Oil)							500	--	--
Total (of 17) PAHs							100	--	--
pH	2010	U				11.8	--	>6	--
Acid Neutralisation Capacity							--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0004	< 0.0002	0.0007	0.0005	0.5	2	25
Barium	1455	U	3.0	0.91	6.0	12	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0049	0.0026	0.0097	0.0063	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0041	0.0028	0.0082	0.030	0.5	10	30
Nickel	1455	U	0.0008	< 0.0005	0.0016	0.0010	0.4	10	40
Lead	1455	U	0.0011	< 0.0005	0.0022	0.0015	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	0.0025	0.0021	0.0050	0.022	0.1	0.5	7
Zinc	1455	U	0.020	0.018	0.041	0.18	4	50	200
Chloride	1220	U	33	23	66	240	800	15000	25000
Fluoride	1220	U	0.21	0.24	< 1.0	2.4	10	150	500
Sulphate	1220	U	< 1.0	3.3	< 10	29	1000	20000	50000
Total Dissolved Solids	1020	N	4900	2500	9700	28000	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	25	5.8	< 50	82	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	5.4

Leachate Test Information	
Leachant volume 1st extract/l	0.340
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.228

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Test Methods

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge
650	Characterisation of Waste (Leaching WAC)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

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<	"less than"
>	"greater than"
SOP	Standard operating procedure
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None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-15372-1
Initial Date of Issue:	16-May-2023
Re-Issue Details:	
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt
Project	G23012 Global Centre of Rail Excellence
Quotation No.:	Q22-29781
Order No.:	
No. of Samples:	1
Turnaround (Wkdays):	7
Date Approved:	16-May-2023
Approved By:	
Details:	Stuart Henderson, Technical Manager

Date Received:	10-May-2023
Date Instructed:	10-May-2023
Results Due:	18-May-2023

Results - Soil

Project: G23012 Global Centre of Rail Excellence

Client: Jackson Geo Services			**Chemtest Job No.:**		23-15372
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1636660
			Sample Location:		S2-BH232
			Sample Type:		SOIL
			Top Depth (m):		0.20
			Bottom Depth (m):		0.30
			Date Sampled:		03-May-2023
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Moisture	N	2030	%	0.020	15
pH	U	2010		4.0	6.0
Acid Neutralisation Capacity	N	2015	mol/kg	0.0020	0.0080
Total Organic Carbon	U	2625	%	0.20	1.7

Results - 2 Stage WAC

Project: G23012 Global Centre of Rail Excellence

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	23-15372								
Chemtest Sample ID:	1636660								
Sample Ref:									
Sample ID:									
Sample Location:	S2-BH232								
Top Depth(m):	0.20								
Bottom Depth(m):	0.30								
Sampling Date:	03-May-2023								
Determinand	**SOP**	**Accred.**	**Units**				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%			1.7	3	5	6
Loss on Ignition							--	--	10
Total BTEX							6	--	--
Total PCBs (7 congeners)							1	--	--
TPH Total WAC (Mineral Oil)							500	--	--
Total (of 17) PAHs							100	--	--
pH	2010	U				6.0	--	>6	--
Acid Neutralisation Capacity							--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.5	2	25
Barium	1455	U	0.005	< 0.005	0.010	0.0045	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	< 0.0005	0.0011	< 0.0005	< 0.0005	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0002	< 0.0002	0.0005	0.0002	0.5	10	30
Nickel	1455	U	0.0019	0.0017	0.0037	0.017	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0006	< 0.0005	0.0013	0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	0.006	0.013	0.013	0.13	4	50	200
Chloride	1220	U	1.7	< 1.0	< 10	< 10	800	15000	25000
Fluoride	1220	U	0.097	0.10	< 1.0	< 1.0	10	150	500
Sulphate	1220	U	18	10	36	110	1000	20000	50000
Total Dissolved Solids	1020	N	32	23	63	240	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	4.9	3.6	< 50	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	15

Leachate Test Information	
Leachant volume 1st extract/l	0.319
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.148

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Test Methods

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2010	pH Value of Soils	pH	pH Meter
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2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge
650	Characterisation of Waste (Leaching WAC)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

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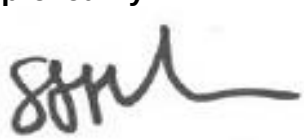
Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-15400-1
Initial Date of Issue:	22-May-2023
Re-Issue Details:	
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt James Power
Project	G23012 Global Centre of Rail Excellence (GCRE) Stage II

Quotation No.:	Q22-29781	**Date Received:**	10-May-2023
Order No.:		**Date Instructed:**	12-May-2023
No. of Samples:	9		
Turnaround (Wkdays):	7	**Results Due:**	22-May-2023
Date Approved:	22-May-2023		

Approved By:



Details: Stuart Henderson, Technical Manager

Results - Leachate

Project: G23012 Global Centre of Rail Excellence (GCRE) Stage II

Client: Jackson Geo Services				**Chemtest Job No.:**		23-15400	23-15400	23-15400	23-15400
Quotation No.: Q22-29781				**Chemtest Sample ID.:**		1636760	1636763	1636771	1636774
Order No.:				Client Sample Ref.:		1	1	1	2
				Sample Location:		S2-BH228	S2-TP208	S2-BH214	S2-TP211
				Sample Type:		SOIL	SOIL	SOIL	SOIL
				Top Depth (m):		0.20	0.20	0.20	0.50
				Bottom Depth (m):		0.30	0.30	0.30	0.60
				Date Sampled:		05-May-2023	05-May-2023	05-May-2023	05-May-2023
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**				
pH	U	1010	10:1		N/A	7.9	7.2	7.2	7.2
Sulphate	U	1220	10:1	mg/l	1.0	3.9	5.9	2.2	1.9
Cyanide (Total)	U	1300	10:1	mg/l	0.050	< 0.050	< 0.050	< 0.050	< 0.050
Cyanide (Free)	U	1300	10:1	mg/l	0.050	< 0.050	< 0.050	< 0.050	< 0.050
Arsenic (Dissolved)	U	1455	10:1	µg/l	0.20	0.33	< 0.20	0.66	0.22
Cadmium (Dissolved)	U	1455	10:1	µg/l	0.11	< 0.11	< 0.11	< 0.11	< 0.11
Chromium (Dissolved)	U	1455	10:1	µg/l	0.50	0.55	< 0.50	0.51	< 0.50
Copper (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	0.73	1.9	0.70
Mercury (Dissolved)	U	1455	10:1	µg/l	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nickel (Dissolved)	U	1455	10:1	µg/l	0.50	0.66	< 0.50	1.3	< 0.50
Lead (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	< 0.50	0.73	< 0.50
Selenium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	< 0.50	0.66	< 0.50
Vanadium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Zinc (Dissolved)	U	1455	10:1	µg/l	2.5	3.7	4.8	7.0	4.4
Chromium (Hexavalent)	U	1490	10:1	µg/l	20	< 20	< 20	< 20	< 20
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030	< 0.030	< 0.030	< 0.030

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Stage II

Client: Jackson Geo Services			**Chemtest Job No.:**		23-15400	23-15400	23-15400	23-15400	23-15400	23-15400	23-15400	23-15400
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1636759	1636760	1636762	1636763	1636766	1636768	1636771	1636774
Order No.:			Client Sample Ref.:		2	1	102	1	6	2	1	2
			Sample Location:		S2-BH230	S2-BH228	S1-BH117	S2-TP208	S2-TP208	S2-BH212	S2-BH214	S2-TP211
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.40	0.20	2.40	0.20	1.90	0.40	0.20	0.50
			Bottom Depth (m):		0.50	0.30	2.60	0.30	2.00	0.50	0.30	0.60
			Date Sampled:		05-May-2023	05-May-2023	05-May-2023	05-May-2023	05-May-2023	05-May-2023	05-May-2023	05-May-2023
			Asbestos Lab:		NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
ACM Type	U	2192		N/A	-	-	-	-	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	11	10	7.3	9.8	5.2	7.5	9.1	6.0
pH	U	2010		4.0	5.9	5.7	5.8	7.8	8.4	7.9	7.6	8.7
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40
Sulphate (2:1 Water Soluble) as SO4 mg/l	U	2120	mg/l	10.000	49	< 10	< 10	55	230	< 10	< 10	< 10
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Arsenic	U	2455	mg/kg	0.5	12	10	2.2	6.5	12	5.5	5.1	5.7
Cadmium	U	2455	mg/kg	0.10	0.12	0.17	< 0.10	0.21	0.17	< 0.10	0.13	< 0.10
Chromium	U	2455	mg/kg	0.5	7.7	14	8.2	11	16	4.6	5.5	5.9
Copper	U	2455	mg/kg	0.50	34	27	33	25	41	23	21	25
Mercury	U	2455	mg/kg	0.05	0.07	< 0.05	< 0.05	0.05	0.05	< 0.05	< 0.05	< 0.05
Nickel	U	2455	mg/kg	0.50	23	30	29	30	55	22	23	30
Lead	U	2455	mg/kg	0.50	23	19	19	15	24	13	15	17
Selenium	U	2455	mg/kg	0.25	1.0	0.80	0.64	0.92	1.2	0.54	0.63	0.53
Vanadium	U	2455	mg/kg	0.5	11	17	11	11	18	6.2	6.7	8.3
Zinc	U	2455	mg/kg	0.50	63	69	90	53	110	45	45	65
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Aliphatic VPH >C5-C6	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C6-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total Aliphatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25
Aliphatic EPH >C10-C12	U	2690	mg/kg	2.00	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Aliphatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic EPH >C12-C16	U	2690	mg/kg	1.00	< 1.0	< 1.0	< 1.0	1.5	1.6	< 1.0	2.8	< 1.0
Aliphatic EPH >C16-C21	U	2690	mg/kg	2.00	< 2.0	< 2.0	< 2.0	< 2.0	2.4	2.6	3.0	< 2.0
Aliphatic EPH >C21-C35	U	2690	mg/kg	3.00	7.2	6.5	7.1	7.0	6.8	7.0	6.7	< 3.0
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Total Aliphatic EPH >C10-C35	U	2690	mg/kg	5.00	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Aromatic VPH >C5-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total Aromatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Stage II

Client: Jackson Geo Services			**Chemtest Job No.:**		23-15400	23-15400	23-15400	23-15400	23-15400	23-15400	23-15400	23-15400
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1636759	1636760	1636762	1636763	1636766	1636768	1636771	1636774
Order No.:			Client Sample Ref.:		2	1	102	1	6	2	1	2
			Sample Location:		S2-BH230	S2-BH228	S1-BH117	S2-TP208	S2-TP208	S2-BH212	S2-BH214	S2-TP211
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.40	0.20	2.40	0.20	1.90	0.40	0.20	0.50
			Bottom Depth (m):		0.50	0.30	2.60	0.30	2.00	0.50	0.30	0.60
			Date Sampled:		05-May-2023	05-May-2023	05-May-2023	05-May-2023	05-May-2023	05-May-2023	05-May-2023	05-May-2023
			Asbestos Lab:		NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Aromatic EPH >C10-C12	U	2690	mg/kg	1.00	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic EPH >C12-C16	U	2690	mg/kg	1.00	2.8	2.2	2.7	3.0	2.3	2.8	2.9	< 1.0
Aromatic EPH >C16-C21	U	2690	mg/kg	2.00	9.8	9.7	9.2	10	9.5	11	10	4.9
Aromatic EPH >C21-C35	U	2690	mg/kg	2.00	41	36	34	35	33	35	33	< 2.0
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aromatic EPH >C10-C35	U	2690	mg/kg	5.00	53	48	45	48	45	48	46	6.2
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00	53	48	45	48	45	48	46	< 10
Total VPH >C5-C10	U	2780	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Total EPH >C10-C35	U	2690	mg/kg	10.00	62	56	53	59	57	59	61	< 10
Total EPH >C10-C40	N	2690	mg/kg	10.00	62	56	53	59	57	59	61	< 10
Organic Matter	U	2625	%	0.40	4.6	3.0	0.59	7.7	7.6	13	6.6	4.1
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Naphthalene	U	2800	mg/kg	0.10	0.38	< 0.10	< 0.10	< 0.10	0.37	< 0.10	< 0.10	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.16	< 0.10	< 0.10	< 0.10
Anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Stage II

Client: Jackson Geo Services			**Chemtest Job No.:**		23-15400
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1636777
Order No.:			Client Sample Ref.:		8
			Sample Location:		S2-TP211
			Sample Type:		SOIL
			Top Depth (m):		2.90
			Bottom Depth (m):		3.00
			Date Sampled:		05-May-2023
			Asbestos Lab:		NEW-ASB
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
ACM Type	U	2192		N/A	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected
Moisture	N	2030	%	0.020	5.5
pH	U	2010		4.0	8.8
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	0.42
Sulphate (2:1 Water Soluble) as SO4 mg/l	U	2120	mg/l	10.000	< 10
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50
Arsenic	U	2455	mg/kg	0.5	8.0
Cadmium	U	2455	mg/kg	0.10	0.15
Chromium	U	2455	mg/kg	0.5	9.3
Copper	U	2455	mg/kg	0.50	36
Mercury	U	2455	mg/kg	0.05	< 0.05
Nickel	U	2455	mg/kg	0.50	45
Lead	U	2455	mg/kg	0.50	19
Selenium	U	2455	mg/kg	0.25	0.70
Vanadium	U	2455	mg/kg	0.5	14
Zinc	U	2455	mg/kg	0.50	100
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50
Aliphatic VPH >C5-C6	U	2780	mg/kg	0.05	< 0.05
Aliphatic VPH >C6-C7	U	2780	mg/kg	0.05	< 0.05
Aliphatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05
Total Aliphatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25
Aliphatic EPH >C10-C12	U	2690	mg/kg	2.00	< 2.0
Aliphatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05
Aliphatic EPH >C12-C16	U	2690	mg/kg	1.00	< 1.0
Aliphatic EPH >C16-C21	U	2690	mg/kg	2.00	< 2.0
Aliphatic EPH >C21-C35	U	2690	mg/kg	3.00	< 3.0
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00	< 10
Total Aliphatic EPH >C10-C35	U	2690	mg/kg	5.00	< 5.0
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00	< 10
Aromatic VPH >C5-C7	U	2780	mg/kg	0.05	< 0.05
Aromatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05
Aromatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05
Total Aromatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Stage II

Client: Jackson Geo Services			**Chemtest Job No.:**		23-15400
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1636777
Order No.:			Client Sample Ref.:		8
			Sample Location:		S2-TP211
			Sample Type:		SOIL
			Top Depth (m):		2.90
			Bottom Depth (m):		3.00
			Date Sampled:		05-May-2023
			Asbestos Lab:		NEW-ASB
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Aromatic EPH >C10-C12	U	2690	mg/kg	1.00	< 1.0
Aromatic EPH >C12-C16	U	2690	mg/kg	1.00	< 1.0
Aromatic EPH >C16-C21	U	2690	mg/kg	2.00	5.3
Aromatic EPH >C21-C35	U	2690	mg/kg	2.00	< 2.0
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00	< 1.0
Total Aromatic EPH >C10-C35	U	2690	mg/kg	5.00	5.9
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00	< 10
Total VPH >C5-C10	U	2780	mg/kg	0.50	< 0.50
Total EPH >C10-C35	U	2690	mg/kg	10.00	< 10
Total EPH >C10-C40	N	2690	mg/kg	10.00	< 10
Organic Matter	U	2625	%	0.40	1.8
Benzene	U	2760	µg/kg	1.0	< 1.0
Toluene	U	2760	µg/kg	1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0
Naphthalene	U	2800	mg/kg	0.10	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10
Acenaphthene	U	2800	mg/kg	0.10	< 0.10
Fluorene	U	2800	mg/kg	0.10	< 0.10
Phenanthrene	U	2800	mg/kg	0.10	< 0.10
Anthracene	U	2800	mg/kg	0.10	< 0.10
Fluoranthene	U	2800	mg/kg	0.10	< 0.10
Pyrene	U	2800	mg/kg	0.10	< 0.10
Benzo[a]anthracene	U	2800	mg/kg	0.10	< 0.10
Chrysene	U	2800	mg/kg	0.10	< 0.10
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	< 2.0
Total Phenols	U	2920	mg/kg	0.10	< 0.10

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35–C40	Acetone/Heptane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8-C10 Aromatics: >C5–C7,>C7-C8,>C8–C10	Water extraction / Headspace GCxGC FID detection
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS

Test Methods

SOP	Title	Parameters included	Method summary
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

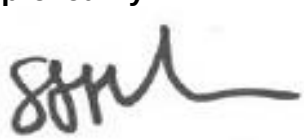
Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-15565-1
Initial Date of Issue:	23-May-2023
Re-Issue Details:	
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt James Power
Project	G23012 Global Centre of Rail Excellence (GCRE) Stage II

Quotation No.:	Q22-29781	**Date Received:**	11-May-2023
Order No.:		**Date Instructed:**	12-May-2023
No. of Samples:	6		
Turnaround (Wkdays):	7	**Results Due:**	22-May-2023
Date Approved:	23-May-2023		

Approved By:



Details: Stuart Henderson, Technical Manager

Results - Leachate

Project: G23012 Global Centre of Rail Excellence (GCRE) Stage II

Client: Jackson Geo Services				**Chemtest Job No.:**		23-15565	23-15565	23-15565
Quotation No.: Q22-29781				**Chemtest Sample ID.:**		1637362	1637371	1637374
Order No.:				Client Sample Ref.:		3	2	7
				Sample Location:		S2-TP237	S2-TP288	S2-TP288
				Sample Type:		SOIL	SOIL	SOIL
				Top Depth (m):		0.50	0.20	1.90
				Bottom Depth (m):		0.60	0.30	2.00
				Date Sampled:		09-May-2023	09-May-2023	09-May-2023
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**			
pH	U	1010	10:1		N/A	7.1	7.1	6.3
Sulphate	U	1220	10:1	mg/l	1.0	6.9	2.9	3.1
Cyanide (Total)	U	1300	10:1	mg/l	0.050	< 0.050	< 0.050	< 0.050
Cyanide (Free)	U	1300	10:1	mg/l	0.050	< 0.050	< 0.050	< 0.050
Arsenic (Dissolved)	U	1455	10:1	µg/l	0.20	0.34	< 0.20	1.6
Cadmium (Dissolved)	U	1455	10:1	µg/l	0.11	< 0.11	< 0.11	< 0.11
Chromium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	< 0.50	1.1
Copper (Dissolved)	U	1455	10:1	µg/l	0.50	0.66	< 0.50	2.1
Mercury (Dissolved)	U	1455	10:1	µg/l	0.05	< 0.05	< 0.05	< 0.05
Nickel (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	< 0.50	1.2
Lead (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	< 0.50	0.89
Selenium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	< 0.50	< 0.50
Vanadium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	< 0.50	2.3
Zinc (Dissolved)	U	1455	10:1	µg/l	2.5	5.6	3.9	6.3
Chromium (Hexavalent)	U	1490	10:1	µg/l	20	< 20	< 20	< 20
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030	< 0.030	< 0.030

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Stage II

Client: Jackson Geo Services			**Chemtest Job No.:**		23-15565	23-15565	23-15565	23-15565	23-15565	23-15565
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1637359	1637362	1637367	1637370	1637371	1637374
Order No.:			Client Sample Ref.:		105	3	2	8	2	7
			Sample Location:		S2-BH239	S2-TP237	S2-TP203	S2-TP203	S2-TP288	S2-TP288
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		4.50	0.50	0.50	2.90	0.20	1.90
			Bottom Depth (m):		4.70	0.60	0.60	3.00	0.30	2.00
			Date Sampled:		09-May-2023	09-May-2023	09-May-2023	09-May-2023	09-May-2023	09-May-2023
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
ACM Type	U	2192		N/A	-	-	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	12	9.4	7.3	7.8	11	25
pH	U	2010		4.0	8.9	8.8	8.3	8.3	8.6	7.4
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	2.2	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40
Sulphate (2:1 Water Soluble) as SO4 mg/l	U	2120	mg/l	10.000	710	21	21	14	28	32
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Arsenic	U	2455	mg/kg	0.5	19	13	9.4	9.5	6.7	12
Cadmium	U	2455	mg/kg	0.10	1.1	0.17	0.17	0.19	0.15	0.12
Chromium	U	2455	mg/kg	0.5	30	11	11	12	3.9	16
Copper	U	2455	mg/kg	0.50	540	46	36	39	33	15
Mercury	U	2455	mg/kg	0.05	0.46	0.09	0.06	0.06	0.08	0.06
Nickel	U	2455	mg/kg	0.50	47	41	41	45	15	16
Lead	U	2455	mg/kg	0.50	390	29	36	25	27	24
Selenium	U	2455	mg/kg	0.25	1.1	0.76	0.99	0.81	0.93	0.50
Vanadium	U	2455	mg/kg	0.5	36	13	13	14	5.6	28
Zinc	U	2455	mg/kg	0.50	550	92	85	92	56	46
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Aliphatic VPH >C5-C6	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C6-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total Aliphatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25	0.68	< 0.25
Aliphatic EPH >C10-C12	U	2690	mg/kg	2.00	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Aliphatic VPH >C8-C10	U	2780	mg/kg	0.05	0.20	0.13	0.13	0.18	0.68	0.15
Aliphatic EPH >C12-C16	U	2690	mg/kg	1.00	1.2	1.2	2.2	1.2	1.1	1.1
Aliphatic EPH >C16-C21	U	2690	mg/kg	2.00	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Aliphatic EPH >C21-C35	U	2690	mg/kg	3.00	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00	< 10	< 10	< 10	< 10	< 10	< 10
Total Aliphatic EPH >C10-C35	U	2690	mg/kg	5.00	5.7	6.1	5.3	< 5.0	< 5.0	< 5.0
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00	< 10	< 10	< 10	< 10	< 10	< 10
Aromatic VPH >C5-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total Aromatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Stage II

Client: Jackson Geo Services			**Chemtest Job No.:**		23-15565	23-15565	23-15565	23-15565	23-15565	23-15565
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1637359	1637362	1637367	1637370	1637371	1637374
Order No.:			Client Sample Ref.:		105	3	2	8	2	7
			Sample Location:		S2-BH239	S2-TP237	S2-TP203	S2-TP203	S2-TP288	S2-TP288
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		4.50	0.50	0.50	2.90	0.20	1.90
			Bottom Depth (m):		4.70	0.60	0.60	3.00	0.30	2.00
			Date Sampled:		09-May-2023	09-May-2023	09-May-2023	09-May-2023	09-May-2023	09-May-2023
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
Aromatic EPH >C10-C12	U	2690	mg/kg	1.00	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic EPH >C12-C16	U	2690	mg/kg	1.00	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic EPH >C16-C21	U	2690	mg/kg	2.00	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Aromatic EPH >C21-C35	U	2690	mg/kg	2.00	2.9	13	3.7	3.8	< 2.0	3.1
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aromatic EPH >C10-C35	U	2690	mg/kg	5.00	< 5.0	14	< 5.0	5.1	< 5.0	< 5.0
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00	< 10	14	< 10	< 10	< 10	< 10
Total VPH >C5-C10	U	2780	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.68	< 0.50
Total EPH >C10-C35	U	2690	mg/kg	10.00	< 10	20	< 10	< 10	< 10	< 10
Total EPH >C10-C40	N	2690	mg/kg	10.00	< 10	20	< 10	< 10	< 10	< 10
Organic Matter	U	2625	%	0.40	6.3	9.9	13	12	11	2.5
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Naphthalene	U	2800	mg/kg	0.10	0.53	0.53	0.94	0.90	1.7	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	0.11	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	2800	mg/kg	0.10	0.33	< 0.10	< 0.10	< 0.10	0.30	< 0.10
Fluorene	U	2800	mg/kg	0.10	0.28	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	2800	mg/kg	0.10	1.1	0.30	0.65	0.44	0.50	< 0.10
Anthracene	U	2800	mg/kg	0.10	0.36	< 0.10	0.20	< 0.10	< 0.10	< 0.10
Fluoranthene	U	2800	mg/kg	0.10	1.7	0.30	0.71	0.46	< 0.10	< 0.10
Pyrene	U	2800	mg/kg	0.10	1.4	0.24	0.57	0.28	< 0.10	< 0.10
Benzo[a]anthracene	U	2800	mg/kg	0.10	0.82	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	U	2800	mg/kg	0.10	0.70	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	1.2	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	0.44	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10	0.83	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	0.59	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	0.42	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	11	< 2.0	3.1	2.1	2.5	< 2.0
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C40	Acetone/Heptane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8-C10 Aromatics: >C5–C7,>C7-C8,>C8–C10	Water extraction / Headspace GCxGC FID detection
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS

Test Methods

SOP	Title	Parameters included	Method summary
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
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N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-15691-1
Initial Date of Issue:	22-May-2023
Re-Issue Details:	
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt
Project	G23012 Global centre of Rail Excellence Stage II

Quotation No.:	Q22-29781	**Date Received:**	12-May-2023
Order No.:		**Date Instructed:**	12-May-2023
No. of Samples:	1		
Turnaround (Wkdays):	7	**Results Due:**	22-May-2023

Date Approved: 22-May-2023

Approved By:



Details: Stuart Henderson, Technical Manager

Results - Soil

Project: G23012 Global centre of Rail Excellence Stage II

Client: Jackson Geo Services			**Chemtest Job No.:**		23-15691
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1638008
			Sample Location:		S2-TP208
			Sample Type:		SOIL
			Top Depth (m):		0.20
			Bottom Depth (m):		0.30
			Date Sampled:		05-May-2023
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Moisture	N	2030	%	0.020	6.3
pH	U	2010		4.0	8.3
Acid Neutralisation Capacity	N	2015	mol/kg	0.0020	0.0030
Total Organic Carbon	U	2625	%	0.20	2.3

Results - 2 Stage WAC

Project: G23012 Global centre of Rail Excellence Stage II

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	23-15691								
Chemtest Sample ID:	1638008								
Sample Ref:									
Sample ID:									
Sample Location:	S2-TP208								
Top Depth(m):	0.20								
Bottom Depth(m):	0.30								
Sampling Date:	05-May-2023								
Determinand	**SOP**	**Accred.**	**Units**				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%			2.3	3	5	6
Loss on Ignition							--	--	10
Total BTEX							6	--	--
Total PCBs (7 congeners)							1	--	--
TPH Total WAC (Mineral Oil)							500	--	--
Total (of 17) PAHs							100	--	--
pH	2010	U				8.3	--	>6	--
Acid Neutralisation Capacity							--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.5	2	25
Barium	1455	U	< 0.005	0.008	< 0.0005	0.071	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0004	0.0002	0.0007	0.0024	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	0.004	< 0.003	0.036	4	50	200
Chloride	1220	U	1.5	< 1.0	< 10	< 10	800	15000	25000
Fluoride	1220	U	0.44	0.34	< 1.0	3.5	10	150	500
Sulphate	1220	U	25	3.5	50	57	1000	20000	50000
Total Dissolved Solids	1020	N	150	47	310	580	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	4.7	3.8	< 50	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	6.3

Leachate Test Information	
Leachant volume 1st extract/l	0.338
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.179

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Test Methods

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge
650	Characterisation of Waste (Leaching WAC)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
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Newmarket
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Email: info@chemtest.com

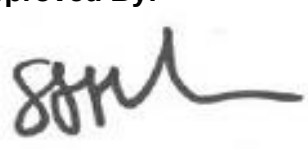
Final Report

Report No.:	23-15699-1
Initial Date of Issue:	19-May-2023
Re-Issue Details:	
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt
Project	G23012 Global Centre of Rail Excellence Stage II

Quotation No.:	Q22-29781	**Date Received:**	12-May-2023
Order No.:		**Date Instructed:**	12-May-2023
No. of Samples:	1		
Turnaround (Wkdays):	7	**Results Due:**	22-May-2023

Date Approved: 19-May-2023

Approved By:



Details: Stuart Henderson, Technical Manager

Results - Soil

Project: G23012 Global Centre of Rail Excellence Stage II

Client: Jackson Geo Services			**Chemtest Job No.:**		23-15699
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1638054
			Sample Location:		S2-TP288
			Sample Type:		SOIL
			Top Depth (m):		0.20
			Bottom Depth (m):		0.30
			Date Sampled:		09-May-2023
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Moisture	N	2030	%	0.020	15
pH	U	2010		4.0	8.6
Acid Neutralisation Capacity	N	2015	mol/kg	0.0020	0.010
Total Organic Carbon	U	2625	%	0.20	58

Results - 2 Stage WAC

Project: G23012 Global Centre of Rail Excellence Stage II

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	23-15699								
Chemtest Sample ID:	1638054								
Sample Ref:									
Sample ID:									
Sample Location:	S2-TP288								
Top Depth(m):	0.20								
Bottom Depth(m):	0.30								
Sampling Date:	09-May-2023								
Determinand	**SOP**	**Accred.**	**Units**				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%			58	3	5	6
Loss on Ignition							--	--	10
Total BTEX							6	--	--
Total PCBs (7 congeners)							1	--	--
TPH Total WAC (Mineral Oil)							500	--	--
Total (of 17) PAHs							100	--	--
pH	2010	U				8.6	--	>6	--
Acid Neutralisation Capacity							--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0002	0.0003	0.0004	0.0026	0.5	2	25
Barium	1455	U	0.053	0.015	0.11	0.19	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0014	0.0010	0.0027	0.0016	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0024	0.0015	0.0047	0.016	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0006	< 0.0005	0.0011	0.0006	0.06	0.7	5
Selenium	1455	U	0.0018	< 0.0005	0.0036	0.0021	0.1	0.5	7
Zinc	1455	U	0.005	0.003	0.009	0.028	4	50	200
Chloride	1220	U	3.7	< 1.0	< 10	< 10	800	15000	25000
Fluoride	1220	U	0.23	0.13	< 1.0	1.4	10	150	500
Sulphate	1220	U	23	6.5	45	84	1000	20000	50000
Total Dissolved Solids	1020	N	130	47	260	570	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	3.6	4.7	< 50	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	15

Leachate Test Information	
Leachant volume 1st extract/l	0.320
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.203

Waste Acceptance Criteria

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Test Methods

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1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
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2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
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640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge
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>	"greater than"
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All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

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Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

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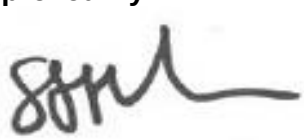
Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-15766-1
Initial Date of Issue:	30-May-2023
Re-Issue Details:	
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt James Power
Project	G23012 Global Centre of Rail Excellence (GCRE) Stage II

Quotation No.:	Q22-29781	**Date Received:**	12-May-2023
Order No.:		**Date Instructed:**	17-May-2023
No. of Samples:	5		
Turnaround (Wkdays):	7	**Results Due:**	25-May-2023
Date Approved:	30-May-2023		

Approved By:



Details:	Stuart Henderson, Technical Manager

Results - Leachate

Project: G23012 Global Centre of Rail Excellence (GCRE) Stage II

Client: Jackson Geo Services				**Chemtest Job No.:**		23-15766	23-15766
Quotation No.: Q22-29781				**Chemtest Sample ID.:**		1638420	1638426
Order No.:				Client Sample Ref.:		2	2
				Sample Location:		S2-TP2104	S2-TP284
				Sample Type:		SOIL	SOIL
				Top Depth (m):		0.20	0.20
				Bottom Depth (m):		0.30	0.30
				Date Sampled:		10-May-2023	10-May-2023
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**		
pH	U	1010	10:1		N/A	7.5	11.2
Sulphate	U	1220	10:1	mg/l	1.0	47	14
Cyanide (Total)	U	1300	10:1	mg/l	0.050	< 0.050	< 0.050
Cyanide (Free)	U	1300	10:1	mg/l	0.050	< 0.050	< 0.050
Arsenic (Dissolved)	U	1455	10:1	µg/l	0.20	0.31	3.5
Cadmium (Dissolved)	U	1455	10:1	µg/l	0.11	< 0.11	< 0.11
Chromium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	< 0.50
Copper (Dissolved)	U	1455	10:1	µg/l	0.50	0.71	4.8
Mercury (Dissolved)	U	1455	10:1	µg/l	0.05	< 0.05	< 0.05
Nickel (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	0.74
Lead (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	0.64
Selenium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	< 0.50
Vanadium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	< 0.50
Zinc (Dissolved)	U	1455	10:1	µg/l	2.5	2.8	2.6
Chromium (Hexavalent)	U	1490	10:1	µg/l	20	< 20	< 20
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030	< 0.030

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Stage II

Client: Jackson Geo Services			**Chemtest Job No.:**		23-15766	23-15766	23-15766	23-15766	23-15766
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1638420	1638422	1638426	1638429	1638432
Order No.:			Client Sample Ref.:		2	5	2	7	3
			Sample Location:		S2-TP2104	S2-TP2104	S2-TP284	S2-TP284	S2-TP289b
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.20	0.90	0.20	1.90	0.50
			Bottom Depth (m):		0.30	1.00	0.30	2.00	0.60
			Date Sampled:		10-May-2023	10-May-2023	10-May-2023	10-May-2023	10-May-2023
			Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**					
ACM Type	U	2192		N/A	-	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	0.98	9.8	7.6	9.9	6.4
pH	U	2010		4.0	8.5	8.3	11.2	11.1	8.9
Acid Neutralisation Capacity	N	2015	mol/kg	0.0020		0.012			
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40	< 0.40	0.77	1.1	< 0.40
Sulphate (2:1 Water Soluble) as SO4 mg/l	U	2120	mg/l	10.000	16	230	630	240	< 10
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Arsenic	U	2455	mg/kg	0.5	6.5	6.8	6.4	6.7	4.7
Cadmium	U	2455	mg/kg	0.10	0.17	0.20	0.22	0.24	0.17
Chromium	U	2455	mg/kg	0.5	5.7	10	300	17	7.4
Copper	U	2455	mg/kg	0.50	30	31	28	20	14
Mercury	U	2455	mg/kg	0.05	0.13	0.18	< 0.05	< 0.05	0.05
Nickel	U	2455	mg/kg	0.50	19	16	81	22	7.8
Lead	U	2455	mg/kg	0.50	15	20	12	39	18
Selenium	U	2455	mg/kg	0.25	0.49	0.68	0.56	0.66	0.63
Vanadium	U	2455	mg/kg	0.5	6.8	11	190	16	8.8
Zinc	U	2455	mg/kg	0.50	52	48	63	82	46
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Aliphatic VPH >C5-C6	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C6-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total Aliphatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25
Aliphatic EPH >C10-C12	U	2690	mg/kg	2.00	3.6	4.3	3.2	3.5	3.3
Aliphatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic EPH >C12-C16	U	2690	mg/kg	1.00	2.0	5.8	1.7	6.0	4.3
Aliphatic EPH >C16-C21	U	2690	mg/kg	2.00	2.7	10	2.9	19	7.6
Aliphatic EPH >C21-C35	U	2690	mg/kg	3.00	37	16	30	110	40
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00	18	< 10	< 10	14	< 10
Total Aliphatic EPH >C10-C35	U	2690	mg/kg	5.00	45	37	37	130	55
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00	63	37	37	150	55
Aromatic VPH >C5-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Stage II

Client: Jackson Geo Services			**Chemtest Job No.:**		23-15766	23-15766	23-15766	23-15766	23-15766
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1638420	1638422	1638426	1638429	1638432
Order No.:			Client Sample Ref.:		2	5	2	7	3
			Sample Location:		S2-TP2104	S2-TP2104	S2-TP284	S2-TP284	S2-TP289b
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.20	0.90	0.20	1.90	0.50
			Bottom Depth (m):		0.30	1.00	0.30	2.00	0.60
			Date Sampled:		10-May-2023	10-May-2023	10-May-2023	10-May-2023	10-May-2023
			Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**					
Total Aromatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25
Aromatic EPH >C10-C12	U	2690	mg/kg	1.00	1.3	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic EPH >C12-C16	U	2690	mg/kg	1.00	< 1.0	< 1.0	< 1.0	< 1.0	3.2
Aromatic EPH >C16-C21	U	2690	mg/kg	2.00	4.0	13	< 2.0	13	17
Aromatic EPH >C21-C35	U	2690	mg/kg	2.00	51	45	2.2	61	46
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00	11	32	< 1.0	7.0	4.9
Total Aromatic EPH >C10-C35	U	2690	mg/kg	5.00	57	59	< 5.0	74	66
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00	68	91	< 10	81	71
Total VPH >C5-C10	U	2780	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Total EPH >C10-C35	U	2690	mg/kg	10.00	100	95	40	210	120
Total EPH >C10-C40	N	2690	mg/kg	10.00	130	130	40	230	130
Organic Matter	U	2625	%	0.40	53	53	7.5	3.4	57
Total Organic Carbon	U	2625	%	0.20		31			
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Naphthalene	U	2800	mg/kg	0.10	0.97	1.5	1.2	0.30	0.82
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	2800	mg/kg	0.10	< 0.10	0.19	< 0.10	< 0.10	< 0.10
Fluorene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	2800	mg/kg	0.10	< 0.10	1.5	0.20	< 0.10	0.90
Anthracene	U	2800	mg/kg	0.10	< 0.10	0.21	< 0.10	< 0.10	0.14
Fluoranthene	U	2800	mg/kg	0.10	< 0.10	1.4	< 0.10	< 0.10	0.90
Pyrene	U	2800	mg/kg	0.10	0.25	1.1	< 0.10	< 0.10	0.71
Benzo[a]anthracene	U	2800	mg/kg	0.10	< 0.10	0.58	< 0.10	< 0.10	0.56
Chrysene	U	2800	mg/kg	0.10	< 0.10	0.76	< 0.10	< 0.10	0.54
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	< 0.10	0.75	< 0.10	< 0.10	0.81
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.29
Benzo[a]pyrene	U	2800	mg/kg	0.10	< 0.10	0.29	< 0.10	< 0.10	0.53
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	< 0.10	0.16	< 0.10	< 0.10	0.48
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.21
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	< 0.10	0.25	< 0.10	< 0.10	0.41
Total Of 16 PAH's	N	2800	mg/kg	2.0	< 2.0	8.7	< 2.0	< 2.0	7.3
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

Results - 2 Stage WAC

Project: G23012 Global Centre of Rail Excellence (GCRE) Stage II

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	23-15766								
Chemtest Sample ID:	1638422								
Sample Ref:	5								
Sample ID:							**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample Location:	S2-TP2104								
Top Depth(m):	0.90								
Bottom Depth(m):	1.00								
Sampling Date:	10-May-2023								
Determinand	**SOP**	**Accred.**	**Units**						
Total Organic Carbon	2625	U	%			31	3	5	6
Loss on Ignition							--	--	10
Total BTEX							6	--	--
Total PCBs (7 congeners)							1	--	--
TPH Total WAC (Mineral Oil)							500	--	--
Total (of 17) PAHs							100	--	--
pH	2010	U				8.3	--	>6	--
Acid Neutralisation Capacity							--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0005	0.0003	0.0010	0.0034	0.5	2	25
Barium	1455	U	0.077	0.010	0.15	0.15	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	0.0007	< 0.0005	0.0064	0.5	10	70
Copper	1455	U	0.0018	0.0008	0.0037	0.0013	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0026	0.0027	0.0052	0.027	0.5	10	30
Nickel	1455	U	0.0010	< 0.0005	0.0020	0.0007	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0010	< 0.0005	0.0019	0.0007	0.06	0.7	5
Selenium	1455	U	0.0045	0.0007	0.0089	0.0092	0.1	0.5	7
Zinc	1455	U	0.004	< 0.003	0.009	0.003	4	50	200
Chloride	1220	U	50	2.5	99	58	800	15000	25000
Fluoride	1220	U	0.32	0.14	< 1.0	1.5	10	150	500
Sulphate	1220	U	180	18	350	290	1000	20000	50000
Total Dissolved Solids	1020	N	370	75	730	960	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	3.1	2.5	< 50	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	9.8

Leachate Test Information	
Leachant volume 1st extract/l	0.331
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.122

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C40	Acetone/Heptane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8-C10 Aromatics: >C5–C7,>C7-C8,>C8–C10	Water extraction / Headspace GCxGC FID detection

Test Methods

SOP	Title	Parameters included	Method summary
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge
650	Characterisation of Waste (Leaching WAC)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-15768-1
Initial Date of Issue:	17-May-2023
Re-Issue Details:	
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt
Project	G23012 Global Centre of Rail Excellence Stage II

Quotation No.:	Q22-29781	**Date Received:**	12-May-2023
Order No.:		**Date Instructed:**	12-May-2023
No. of Samples:	4		
Turnaround (Wkdays):	5	**Results Due:**	18-May-2023

Date Approved: 17-May-2023

Approved By:



Details: Stuart Henderson, Technical Manager

Results - Soil

Project: G23012 Global Centre of Rail Excellence Stage II

Client: Jackson Geo Services		**Chemtest Job No.:**			23-15768	23-15768	23-15768	23-15768
Quotation No.: Q22-29781		**Chemtest Sample ID.:**			1638439	1638440	1638441	1638442
Order No.:		Client Sample Ref.:			2	4	111	112
		Client Sample ID.:			#2581966706820002	#2581966706820004	#6759405600250015	#6759405600250016
		Sample Location:			S2-TP206	S2-TP206	S2-BH248	S2-BH248
		Sample Type:			SOIL	SOIL	SOIL	SOIL
		Top Depth (m):			0.20	0.60	9.80	9.88
		Bottom Depth (m):			0.30	0.80	9.88	10.00
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
Moisture	N	2030	%	0.020	13	6.1	57	49
pH (2.5:1)	N	2010		4.0		[A] 8.1		
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010		[A] 0.040		
Total Sulphur	U	2175	%	0.010		[A] 0.11		
Sulphate (Acid Soluble)	U	2430	%	0.010		[A] < 0.010		
Organic Matter	U	2625	%	0.40	[A] 3.7		[A] 66	[A] 18

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1638439	2	#2581966706820002	S2-TP206		A	Plastic Tub 500g
1638440	4	#2581966706820004	S2-TP206		A	Plastic Tub 500g
1638441	111	#6759405600250015	S2-BH248		A	Plastic Tub 500g
1638442	112	#6759405600250016	S2-BH248		A	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2175	Total Sulphur in Soils	Total Sulphur	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.

Report Information

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All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

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Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
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D - Broken Container
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Sample Retention and Disposal

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All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

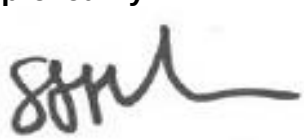
If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-16018-1
Initial Date of Issue:	25-May-2023
Re-Issue Details:	
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt James Power
Project	G23012 Global Centre of Rail Excellence (GCRE) Stage II
Quotation No.:	Q22-29781
Order No.:	
No. of Samples:	4
Turnaround (Wkdays):	7
Date Approved:	25-May-2023
Approved By:	
Details:	Stuart Henderson, Technical Manager

Date Received:	15-May-2023
Date Instructed:	17-May-2023
Results Due:	25-May-2023



Results - Leachate

Project: G23012 Global Centre of Rail Excellence (GCRE) Stage II

Client: Jackson Geo Services				**Chemtest Job No.:**		23-16018
Quotation No.: Q22-29781				**Chemtest Sample ID.:**		1639309
Order No.:				Client Sample Ref.:		4
				Sample Location:		S2-TP2108
				Sample Type:		SOIL
				Top Depth (m):		0.50
				Bottom Depth (m):		0.60
				Date Sampled:		11-May-2023
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**	
pH	U	1010	10:1		N/A	7.4
Sulphate	U	1220	10:1	mg/l	1.0	13
Cyanide (Total)	U	1300	10:1	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	10:1	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1455	10:1	µg/l	0.20	0.50
Cadmium (Dissolved)	U	1455	10:1	µg/l	0.11	< 0.11
Chromium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Copper (Dissolved)	U	1455	10:1	µg/l	0.50	0.89
Mercury (Dissolved)	U	1455	10:1	µg/l	0.05	< 0.05
Nickel (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Lead (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Selenium (Dissolved)	U	1455	10:1	µg/l	0.50	0.82
Vanadium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Zinc (Dissolved)	U	1455	10:1	µg/l	2.5	4.0
Chromium (Hexavalent)	U	1490	10:1	µg/l	20	< 20
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Stage II

Client: Jackson Geo Services			**Chemtest Job No.:**		23-16018	23-16018	23-16018	23-16018
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1639309	1639311	1639314	1639318
Order No.:			Client Sample Ref.:		4	8	2	9
			Sample Location:		S2-TP2108	S2-TP2108	S2-TP2114	S2-TP2114
			Sample Type:		SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.50	1.90	0.20	2.90
			Bottom Depth (m):		0.60	2.00	0.30	3.00
			Date Sampled:		11-May-2023	11-May-2023	11-May-2023	11-May-2023
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
ACM Type	U	2192		N/A	Fibres/Clumps	-	Fibres/Clumps	-
Asbestos Identification	U	2192		N/A	Chrysotile	No Asbestos Detected	Chrysotile	No Asbestos Detected
Asbestos by Gravimetry	U	2192	%	0.001	0.001		<0.001	
Total Asbestos	U	2192	%	0.001	0.001		<0.001	
Moisture	N	2030	%	0.020	14	21	1.5	10
pH	U	2010		4.0	8.2	7.8	8.2	7.6
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	0.91	0.72	< 0.40	< 0.40
Sulphate (2:1 Water Soluble) as SO4 mg/l	U	2120	mg/l	10.000	< 10	< 10	< 10	490
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Arsenic	U	2455	mg/kg	0.5	31	5.4	6.2	16
Cadmium	U	2455	mg/kg	0.10	0.58	0.21	0.22	0.15
Chromium	U	2455	mg/kg	0.5	7.2	7.1	9.5	2.2
Copper	U	2455	mg/kg	0.50	56	57	23	64
Mercury	U	2455	mg/kg	0.05	0.21	0.10	0.06	0.50
Nickel	U	2455	mg/kg	0.50	31	19	11	16
Lead	U	2455	mg/kg	0.50	34	21	22	32
Selenium	U	2455	mg/kg	0.25	1.3	1.0	0.61	1.8
Vanadium	U	2455	mg/kg	0.5	12	19	10	4.0
Zinc	U	2455	mg/kg	0.50	120	65	63	60
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Aliphatic VPH >C5-C6	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C6-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total Aliphatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25
Aliphatic EPH >C10-C12	U	2690	mg/kg	2.00	< 2.0	< 2.0	< 2.0	< 2.0
Aliphatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	0.13	< 0.05	0.20
Aliphatic EPH >C12-C16	U	2690	mg/kg	1.00	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic EPH >C16-C21	U	2690	mg/kg	2.00	< 2.0	< 2.0	< 2.0	< 2.0
Aliphatic EPH >C21-C35	U	2690	mg/kg	3.00	< 3.0	3.5	18	49
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00	10	12	16	21
Total Aliphatic EPH >C10-C35	U	2690	mg/kg	5.00	< 5.0	< 5.0	18	51
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00	10	12	34	72
Aromatic VPH >C5-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Stage II

Client: Jackson Geo Services			**Chemtest Job No.:**		23-16018	23-16018	23-16018	23-16018
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1639309	1639311	1639314	1639318
Order No.:			Client Sample Ref.:		4	8	2	9
			Sample Location:		S2-TP2108	S2-TP2108	S2-TP2114	S2-TP2114
			Sample Type:		SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.50	1.90	0.20	2.90
			Bottom Depth (m):		0.60	2.00	0.30	3.00
			Date Sampled:		11-May-2023	11-May-2023	11-May-2023	11-May-2023
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
Aromatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total Aromatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25
Aromatic EPH >C10-C12	U	2690	mg/kg	1.00	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic EPH >C12-C16	U	2690	mg/kg	1.00	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic EPH >C16-C21	U	2690	mg/kg	2.00	< 2.0	< 2.0	2.5	3.2
Aromatic EPH >C21-C35	U	2690	mg/kg	2.00	< 2.0	< 2.0	57	53
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00	3.4	4.0	9.6	7.6
Total Aromatic EPH >C10-C35	U	2690	mg/kg	5.00	< 5.0	< 5.0	60	57
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00	< 10	< 10	69	64
Total VPH >C5-C10	U	2780	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Total EPH >C10-C35	U	2690	mg/kg	10.00	< 10	< 10	78	110
Total EPH >C10-C40	N	2690	mg/kg	10.00	14	16	100	140
Organic Matter	U	2625	%	0.40	78	84	74	100
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Naphthalene	U	2800	mg/kg	0.10	0.72	1.1	0.68	1.1
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	2800	mg/kg	0.10	< 0.10	0.16	0.66	0.51
Anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	0.57	0.26
Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	0.40	0.19
Benzo[a]anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10	0.27	< 0.10
Chrysene	U	2800	mg/kg	0.10	< 0.10	< 0.10	0.35	< 0.10
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	0.44	< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	< 0.10	< 0.10	0.17	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	< 2.0	< 2.0	3.5	2.1
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C40	Acetone/Heptane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8-C10 Aromatics: >C5–C7,>C7-C8,>C8–C10	Water extraction / Headspace GCxGC FID detection
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS

Test Methods

SOP	Title	Parameters included	Method summary
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.: 23-16084-1

Initial Date of Issue: 25-May-2023

Re-Issue Details:

Client Jackson Geo Services

Client Address: Northwood Farm
Coxbridge Road
Baltonsborough
Somerset
BA68 RA

Contact(s): Adam Putt
James Power

Project G23012 Global centre of Rail Excellence

Quotation No.: Q22-29781

Date Received: 16-May-2023

Order No.:

Date Instructed: 17-May-2023

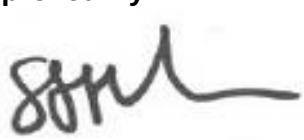
No. of Samples: 4

Turnaround (Wkdays): 7

Results Due: 25-May-2023

Date Approved: 25-May-2023

Approved By:



Details: Stuart Henderson, Technical Manager

Results - Leachate

Project: G23012 Global centre of Rail Excellence

Client: Jackson Geo Services				**Chemtest Job No.:**		23-16084
Quotation No.: Q22-29781				**Chemtest Sample ID.:**		1639550
Order No.:				Client Sample Ref.:		1
				Sample Location:		S2-TP256
				Sample Type:		SOIL
				Top Depth (m):		0.20
				Bottom Depth (m):		0.30
				Date Sampled:		12-May-2023
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**	
pH	U	1010	10:1		N/A	7.4
Sulphate	U	1220	10:1	mg/l	1.0	2.3
Cyanide (Total)	U	1300	10:1	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	10:1	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1455	10:1	µg/l	0.20	0.37
Cadmium (Dissolved)	U	1455	10:1	µg/l	0.11	< 0.11
Chromium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Copper (Dissolved)	U	1455	10:1	µg/l	0.50	1.4
Mercury (Dissolved)	U	1455	10:1	µg/l	0.05	< 0.05
Nickel (Dissolved)	U	1455	10:1	µg/l	0.50	1.0
Lead (Dissolved)	U	1455	10:1	µg/l	0.50	0.73
Selenium (Dissolved)	U	1455	10:1	µg/l	0.50	0.57
Vanadium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Zinc (Dissolved)	U	1455	10:1	µg/l	2.5	4.9
Chromium (Hexavalent)	U	1490	10:1	µg/l	20	< 20
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030

Results - Soil

Project: G23012 Global centre of Rail Excellence

Client: Jackson Geo Services			**Chemtest Job No.:**		23-16084	23-16084	23-16084	23-16084
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1639548	1639550	1639553	1639556
Order No.:			Client Sample Ref.:		102	1	7	3
			Sample Location:		S1-BH118	S2-TP256	S2-TP256	S2-TP259
			Sample Type:		SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		2.10	0.20	1.80	0.60
			Bottom Depth (m):		2.30	0.30	1.90	0.70
			Date Sampled:		12-May-2023	12-May-2023	12-May-2023	12-May-2023
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
ACM Type	U	2192		N/A	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	8.7	14	51	23
pH	U	2010		4.0	6.8	7.3	7.6	6.8
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40	< 0.40	< 0.40	< 0.40
Sulphate (2:1 Water Soluble) as SO4 mg/l	U	2120	mg/l	10.000	< 10	< 10	< 10	67
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Arsenic	U	2455	mg/kg	0.5	6.8	8.3	11	15
Cadmium	U	2455	mg/kg	0.10	0.62	0.22	0.19	0.24
Chromium	U	2455	mg/kg	0.5	13	3.4	4.3	19
Copper	U	2455	mg/kg	0.50	35	33	37	32
Mercury	U	2455	mg/kg	0.05	0.09	0.11	0.09	0.07
Nickel	U	2455	mg/kg	0.50	100	20	17	18
Lead	U	2455	mg/kg	0.50	29	26	37	32
Selenium	U	2455	mg/kg	0.25	0.84	1.2	1.2	1.2
Vanadium	U	2455	mg/kg	0.5	22	5.1	6.1	23
Zinc	U	2455	mg/kg	0.50	170	69	62	74
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Aliphatic VPH >C5-C6	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C6-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total Aliphatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25
Aliphatic EPH >C10-C12	U	2690	mg/kg	2.00	< 2.0	< 2.0	< 2.0	< 2.0
Aliphatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	0.25	0.21	< 0.05
Aliphatic EPH >C12-C16	U	2690	mg/kg	1.00	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic EPH >C16-C21	U	2690	mg/kg	2.00	< 2.0	< 2.0	4.5	< 2.0
Aliphatic EPH >C21-C35	U	2690	mg/kg	3.00	15	17	33	11
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00	< 10	< 10	< 10	< 10
Total Aliphatic EPH >C10-C35	U	2690	mg/kg	5.00	15	20	38	11
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00	15	20	38	11
Aromatic VPH >C5-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total Aromatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25
Aromatic EPH >C10-C12	U	2690	mg/kg	1.00	< 1.0	< 1.0	3.2	< 1.0

Results - Soil

Project: G23012 Global centre of Rail Excellence

Client: Jackson Geo Services			**Chemtest Job No.:**		23-16084	23-16084	23-16084	23-16084
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1639548	1639550	1639553	1639556
Order No.:			Client Sample Ref.:		102	1	7	3
			Sample Location:		S1-BH118	S2-TP256	S2-TP256	S2-TP259
			Sample Type:		SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		2.10	0.20	1.80	0.60
			Bottom Depth (m):		2.30	0.30	1.90	0.70
			Date Sampled:		12-May-2023	12-May-2023	12-May-2023	12-May-2023
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
Aromatic EPH >C12-C16	U	2690	mg/kg	1.00	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic EPH >C16-C21	U	2690	mg/kg	2.00	5.0	6.8	22	7.8
Aromatic EPH >C21-C35	U	2690	mg/kg	2.00	7.4	19	280	7.8
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00	11	15	71	11
Total Aromatic EPH >C10-C35	U	2690	mg/kg	5.00	12	25	300	16
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00	23	40	370	27
Total VPH >C5-C10	U	2780	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Total EPH >C10-C35	U	2690	mg/kg	10.00	28	45	340	28
Total EPH >C10-C40	N	2690	mg/kg	10.00	39	60	410	39
Organic Matter	U	2625	%	0.40	1.3	74	20	26
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	4.6	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Naphthalene	U	2800	mg/kg	0.10	0.17	1.5	2.4	0.94
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	0.16	< 0.10
Fluorene	U	2800	mg/kg	0.10	< 0.10	< 0.10	0.16	< 0.10
Phenanthrene	U	2800	mg/kg	0.10	< 0.10	0.67	0.86	0.35
Anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10	0.17	< 0.10
Fluoranthene	U	2800	mg/kg	0.10	< 0.10	0.37	0.43	0.19
Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	0.30	0.13
Benzo[a]anthracene	U	2800	mg/kg	0.10	< 0.10	0.17	0.15	< 0.10
Chrysene	U	2800	mg/kg	0.10	< 0.10	0.24	0.32	0.13
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	< 0.10	0.32	0.31	< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	< 0.10	0.20	< 0.10	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	< 2.0	3.5	5.3	< 2.0
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10	0.29	< 0.10

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C40	Acetone/Heptane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8-C10 Aromatics: >C5–C7,>C7-C8,>C8–C10	Water extraction / Headspace GCxGC FID detection
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS

Test Methods

SOP	Title	Parameters included	Method summary
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Amended Report

Report No.:	23-16331-2		
Initial Date of Issue:	26-May-2023	**Date of Re-Issue:**	26-May-2023
Re-Issue Details:	This report has been revised and directly supersedes 23-16331-1 in its entirety		
Client	Jackson Geo Services		
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA		
Contact(s):	Adam Putt James Power		
Project	G23012 Global Centre of Rail Excellence (GCRE) Stage II		
Quotation No.:	Q22-29781	**Date Received:**	18-May-2023
Order No.:		**Date Instructed:**	18-May-2023
No. of Samples:	6		
Turnaround (Wkdays):	7	**Results Due:**	26-May-2023
Date Approved:	26-May-2023		
Approved By:			
Details:	Stuart Henderson, Technical Manager		

Results - Leachate

Project: G23012 Global Centre of Rail Excellence (GCRE) Stage II

Client: Jackson Geo Services				**Chemtest Job No.:**		23-16331	23-16331	23-16331
Quotation No.: Q22-29781				**Chemtest Sample ID.:**		1640643	1640646	1640650
Order No.:				Client Sample Ref.:		2	2	2
				Client Sample ID.:		#69605603427 30002	#54564291776 30002	#05199420314 80002
				Sample Location:		S2-TP2107	S2-TP2113	S2-TP272
				Sample Type:		SOIL	SOIL	SOIL
				Top Depth (m):		0.20	0.20	0.20
				Bottom Depth (m):		0.30	0.30	0.30
				Date Sampled:		15-May-2023	15-May-2023	15-May-2023
				Time Sampled:		11:45	10:06	14:54
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**			
pH	U	1010	10:1		N/A	10.4	8.6	9.1
Sulphate	U	1220	10:1	mg/l	1.0	42	7.6	21
Cyanide (Total)	U	1300	10:1	mg/l	0.050	< 0.050	< 0.050	< 0.050
Cyanide (Free)	U	1300	10:1	mg/l	0.050	< 0.050	< 0.050	< 0.050
Arsenic (Dissolved)	U	1455	10:1	µg/l	0.20	4.6	83	1.4
Cadmium (Dissolved)	U	1455	10:1	µg/l	0.11	< 0.11	0.62	< 0.11
Chromium (Dissolved)	U	1455	10:1	µg/l	0.50	1.2	1.7	< 0.50
Copper (Dissolved)	U	1455	10:1	µg/l	0.50	4.1	50	0.67
Mercury (Dissolved)	U	1455	10:1	µg/l	0.05	< 0.05	< 0.05	< 0.05
Nickel (Dissolved)	U	1455	10:1	µg/l	0.50	0.80	4.0	< 0.50
Lead (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	33	< 0.50
Selenium (Dissolved)	U	1455	10:1	µg/l	0.50	3.3	0.88	3.5
Vanadium (Dissolved)	U	1455	10:1	µg/l	0.50	11	3.2	3.7
Zinc (Dissolved)	U	1455	10:1	µg/l	2.5	< 2.5	21	< 2.5
Chromium (Hexavalent)	U	1490	10:1	µg/l	20	< 20	< 20	< 20
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030	< 0.030	< 0.030

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Stage II

Client: Jackson Geo Services				**Chemtest Job No.:**	23-16331	23-16331	23-16331	23-16331	23-16331	23-16331
Quotation No.: Q22-29781				**Chemtest Sample ID.:**	1640643	1640645	1640646	1640648	1640650	1640653
Order No.:				Client Sample Ref.:	2	5	2	5	2	6
				Client Sample ID.:	#69605603427 30002	#69605603427 30005	#54564291776 30002	#54564291776 30005	#05199420314 80002	#05199420314 80006
				Sample Location:	S2-TP2107	S2-TP2107	S2-TP2113	S2-TP2113	S2-TP272	S2-TP272
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.20	0.90	0.20	0.90	0.20	1.80
				Bottom Depth (m):	0.30	1.00	0.30	1.00	0.30	1.90
				Date Sampled:	15-May-2023	15-May-2023	15-May-2023	15-May-2023	15-May-2023	15-May-2023
				Time Sampled:	11:45	11:45	10:06	10:08	14:54	14:55
				Asbestos Lab:	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
ACM Type	U	2192		N/A	-	-	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	5.5	17	26	25	4.3	11
pH	U	2010		4.0	9.9	9.1	7.5	7.8	8.7	7.4
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	0.77	0.93	1.3	0.88	3.2	0.69
Sulphate (2:1 Water Soluble) as SO4 mg/l	U	2120	mg/l	10.000	310	190	47	< 10	160	55
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Arsenic	U	2455	mg/kg	0.5	14	14	42	7.4	6.3	12
Cadmium	U	2455	mg/kg	0.10	0.21	0.80	0.57	< 0.10	< 0.10	0.31
Chromium	U	2455	mg/kg	0.5	21	32	4.8	14	11	6.5
Copper	U	2455	mg/kg	0.50	60	91	32	10	8.5	36
Mercury	U	2455	mg/kg	0.05	0.10	0.13	0.11	< 0.05	< 0.05	0.10
Nickel	U	2455	mg/kg	0.50	29	37	15	9.5	7.8	17
Lead	U	2455	mg/kg	0.50	29	140	82	16	13	32
Selenium	U	2455	mg/kg	0.25	1.2	1.5	0.87	0.52	0.59	1.4
Vanadium	U	2455	mg/kg	0.5	58	29	8.8	19	16	7.8
Zinc	U	2455	mg/kg	0.50	94	1200	54	22	22	85
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Aliphatic VPH >C5-C6	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C6-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total Aliphatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25
Aliphatic EPH >C10-C12	U	2690	mg/kg	2.00	4.2	4.1	11	8.0	5.9	9.5
Aliphatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic EPH >C12-C16	U	2690	mg/kg	1.00	4.9	14	4.9	7.4	4.2	8.6
Aliphatic EPH >C16-C21	U	2690	mg/kg	2.00	4.1	22	2.6	< 2.0	< 2.0	3.5
Aliphatic EPH >C21-C35	U	2690	mg/kg	3.00	34	71	15	9.1	6.9	11
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00	14	46	17	13	11	14
Total Aliphatic EPH >C10-C35	U	2690	mg/kg	5.00	47	110	34	25	17	32
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00	61	160	51	38	28	46
Aromatic VPH >C5-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Stage II

Client: Jackson Geo Services					**Chemtest Job No.:**	23-16331	23-16331	23-16331	23-16331	23-16331	23-16331
Quotation No.: Q22-29781					**Chemtest Sample ID.:**	1640643	1640645	1640646	1640648	1640650	1640653
Order No.:					Client Sample Ref.:	2	5	2	5	2	6
					Client Sample ID.:	#69605603427 30002	#69605603427 30005	#54564291776 30002	#54564291776 30005	#05199420314 80002	#05199420314 80006
					Sample Location:	S2-TP2107	S2-TP2107	S2-TP2113	S2-TP2113	S2-TP272	S2-TP272
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	0.20	0.90	0.20	0.90	0.20	1.80
					Bottom Depth (m):	0.30	1.00	0.30	1.00	0.30	1.90
					Date Sampled:	15-May-2023	15-May-2023	15-May-2023	15-May-2023	15-May-2023	15-May-2023
					Time Sampled:	11:45	11:45	10:06	10:08	14:54	14:55
					Asbestos Lab:	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**							
Aromatic VPH >C7-C8	U	2780	mg/kg	0.05		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C8-C10	U	2780	mg/kg	0.05		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total Aromatic VPH >C5-C10	U	2780	mg/kg	0.25		< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25
Aromatic EPH >C10-C12	U	2690	mg/kg	1.00		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic EPH >C12-C16	U	2690	mg/kg	1.00		< 1.0	6.5	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic EPH >C16-C21	U	2690	mg/kg	2.00		3.5	72	2.4	3.3	< 2.0	2.5
Aromatic EPH >C21-C35	U	2690	mg/kg	2.00		22	200	42	13	7.8	29
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00		6.1	50	16	8.6	5.2	9.3
Total Aromatic EPH >C10-C35	U	2690	mg/kg	5.00		25	280	44	16	9.0	32
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00		31	330	61	25	14	41
Total VPH >C5-C10	U	2780	mg/kg	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Total EPH >C10-C35	U	2690	mg/kg	10.00		73	390	79	41	26	64
Total EPH >C10-C40	N	2690	mg/kg	10.00		93	480	110	63	42	87
Organic Matter	U	2625	%	0.40		23	36	34	2.1	3.9	43
Benzene	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Naphthalene	U	2800	mg/kg	0.10		< 0.10	1.0	0.67	< 0.10	0.33	2.6
Acenaphthylene	N	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.31
Fluorene	U	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.31
Phenanthrene	U	2800	mg/kg	0.10		< 0.10	0.59	0.40	< 0.10	< 0.10	1.5
Anthracene	U	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.28
Fluoranthene	U	2800	mg/kg	0.10		< 0.10	0.42	0.42	< 0.10	< 0.10	1.3
Pyrene	U	2800	mg/kg	0.10		< 0.10	0.35	0.32	< 0.10	< 0.10	1.0
Benzo[a]anthracene	U	2800	mg/kg	0.10		< 0.10	0.22	< 0.10	< 0.10	< 0.10	0.48
Chrysene	U	2800	mg/kg	0.10		< 0.10	0.30	< 0.10	< 0.10	< 0.10	0.54
Benzo[b]fluoranthene	U	2800	mg/kg	0.10		< 0.10	0.43	< 0.10	< 0.10	< 0.10	0.65
Benzo[k]fluoranthene	U	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.23
Benzo[a]pyrene	U	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.40
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.28

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Stage II

Client: Jackson Geo Services			**Chemtest Job No.:**		23-16331	23-16331	23-16331	23-16331	23-16331	23-16331
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1640643	1640645	1640646	1640648	1640650	1640653
Order No.:			Client Sample Ref.:		2	5	2	5	2	6
			Client Sample ID.:		#69605603427 30002	#69605603427 30005	#54564291776 30002	#54564291776 30005	#05199420314 80002	#05199420314 80006
			Sample Location:		S2-TP2107	S2-TP2107	S2-TP2113	S2-TP2113	S2-TP272	S2-TP272
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.20	0.90	0.20	0.90	0.20	1.80
			Bottom Depth (m):		0.30	1.00	0.30	1.00	0.30	1.90
			Date Sampled:		15-May-2023	15-May-2023	15-May-2023	15-May-2023	15-May-2023	15-May-2023
			Time Sampled:		11:45	11:45	10:06	10:08	14:54	14:55
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.24
Total Of 16 PAH's	N	2800	mg/kg	2.0	< 2.0	3.3	< 2.0	< 2.0	< 2.0	10
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35–C40	Acetone/Heptane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8-C10 Aromatics: >C5–C7,>C7-C8,>C8–C10	Water extraction / Headspace GCxGC FID detection
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS

Test Methods

SOP	Title	Parameters included	Method summary
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-16333-1
Initial Date of Issue:	26-May-2023
Re-Issue Details:	
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt James Power
Project	G23012 Global Centre of Rail Excellence (GCRE) Stage II
Quotation No.:	Q22-29781
Order No.:	
No. of Samples:	1
Turnaround (Wkdays):	7
Date Approved:	26-May-2023
Approved By:	
Details:	Stuart Henderson, Technical Manager

Date Received:	18-May-2023
Date Instructed:	18-May-2023
Results Due:	26-May-2023

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Stage II

Client: Jackson Geo Services			**Chemtest Job No.:**		23-16333
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1640675
Order No.:			Client Sample Ref.:		2
			Client Sample ID.:		#69605603427 30002
			Sample Location:		S2-TP2107
			Sample Type:		SOIL
			Top Depth (m):		0.20
			Bottom Depth (m):		0.30
			Date Sampled:		15-May-2023
			Time Sampled:		11:45
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Moisture	N	2030	%	0.020	5.5
pH	U	2010		4.0	9.9
Acid Neutralisation Capacity	N	2015	mol/kg	0.0020	0.0080
Total Organic Carbon	U	2625	%	0.20	18

Results - 2 Stage WAC

Project: G23012 Global Centre of Rail Excellence (GCRE) Stage II

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	23-16333								
Chemtest Sample ID:	1640675								
Sample Ref:	2								
Sample ID:	#6960560342730002						**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample Location:	S2-TP2107								
Top Depth(m):	0.20								
Bottom Depth(m):	0.30								
Sampling Date:	15-May-2023								
Determinand	**SOP**	**Accred.**	**Units**						
Total Organic Carbon	2625	U	%			18	3	5	6
Loss on Ignition							--	--	10
Total BTEX							6	--	--
Total PCBs (7 congeners)							1	--	--
TPH Total WAC (Mineral Oil)							500	--	--
Total (of 17) PAHs							100	--	--
pH	2010	U				9.9	--	>6	--
Acid Neutralisation Capacity							--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0024	0.0020	0.0048	0.020	0.5	2	25
Barium	1455	U	0.058	0.032	0.12	0.34	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.012	0.0010	0.023	0.020	0.5	10	70
Copper	1455	U	0.0051	0.0015	0.010	0.0047	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.15	0.0078	0.31	0.21	0.5	10	30
Nickel	1455	U	0.0008	< 0.0005	0.0016	0.0007	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0065	0.0015	0.013	0.020	0.06	0.7	5
Selenium	1455	U	0.045	0.0072	0.090	0.11	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	< 0.003	< 0.003	4	50	200
Chloride	1220	U	35	1.2	70	43	800	15000	25000
Fluoride	1220	U	0.48	0.19	< 1.0	2.2	10	150	500
Sulphate	1220	U	270	22	540	450	1000	20000	50000
Total Dissolved Solids	1020	N	450	71	910	1100	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	6.9	< 2.5	< 50	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	5.5

Leachate Test Information	
Leachant volume 1st extract/l	0.340
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.160

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Test Methods

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge
650	Characterisation of Waste (Leaching WAC)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

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The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
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If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-16504-1
Initial Date of Issue:	31-May-2023
Re-Issue Details:	
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt James Power
Project	G23012 Global Centre of Rail Excellence (GCRE) stage 11
Quotation No.:	Q22-29781
Order No.:	
No. of Samples:	1
Turnaround (Wkdays):	7
Date Approved:	31-May-2023
Approved By:	
Details:	Stuart Henderson, Technical Manager

Date Received:	18-May-2023
Date Instructed:	23-May-2023
Results Due:	01-Jun-2023

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) stage 11

Client: Jackson Geo Services			**Chemtest Job No.:**		23-16504
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1641485
Order No.:			Client Sample Ref.:		1
			Sample Location:		S2-TP204
			Sample Type:		SOIL
			Top Depth (m):		0.20
			Bottom Depth (m):		0.30
			Date Sampled:		16-May-2023
			Asbestos Lab:		DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
ACM Type	U	2192		N/A	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected
Moisture	N	2030	%	0.020	15
pH	U	2010		4.0	8.1
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	0.48
Sulphate (2:1 Water Soluble) as SO4 mg/l	U	2120	mg/l	10.000	< 10
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50
Arsenic	U	2455	mg/kg	0.5	5.5
Cadmium	U	2455	mg/kg	0.10	0.13
Chromium	U	2455	mg/kg	0.5	10
Copper	U	2455	mg/kg	0.50	20
Mercury	U	2455	mg/kg	0.05	< 0.05
Nickel	U	2455	mg/kg	0.50	22
Lead	U	2455	mg/kg	0.50	13
Selenium	U	2455	mg/kg	0.25	0.54
Vanadium	U	2455	mg/kg	0.5	9.3
Zinc	U	2455	mg/kg	0.50	55
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50
Aliphatic VPH >C5-C6	U	2780	mg/kg	0.05	< 0.05
Aliphatic VPH >C6-C7	U	2780	mg/kg	0.05	< 0.05
Aliphatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05
Total Aliphatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25
Aliphatic EPH >C10-C12	U	2690	mg/kg	2.00	3.3
Aliphatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05
Aliphatic EPH >C12-C16	U	2690	mg/kg	1.00	1.5
Aliphatic EPH >C16-C21	U	2690	mg/kg	2.00	5.3
Aliphatic EPH >C21-C35	U	2690	mg/kg	3.00	29
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00	< 10
Total Aliphatic EPH >C10-C35	U	2690	mg/kg	5.00	39
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00	39
Aromatic VPH >C5-C7	U	2780	mg/kg	0.05	< 0.05
Aromatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05
Aromatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05
Total Aromatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) stage 11

Client: Jackson Geo Services			**Chemtest Job No.:**		23-16504
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1641485
Order No.:			Client Sample Ref.:		1
			Sample Location:		S2-TP204
			Sample Type:		SOIL
			Top Depth (m):		0.20
			Bottom Depth (m):		0.30
			Date Sampled:		16-May-2023
			Asbestos Lab:		DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Aromatic EPH >C10-C12	U	2690	mg/kg	1.00	< 1.0
Aromatic EPH >C12-C16	U	2690	mg/kg	1.00	< 1.0
Aromatic EPH >C16-C21	U	2690	mg/kg	2.00	14
Aromatic EPH >C21-C35	U	2690	mg/kg	2.00	65
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00	14
Total Aromatic EPH >C10-C35	U	2690	mg/kg	5.00	79
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00	93
Total VPH >C5-C10	U	2780	mg/kg	0.50	< 0.50
Total EPH >C10-C35	U	2690	mg/kg	10.00	120
Total EPH >C10-C40	N	2690	mg/kg	10.00	130
Organic Matter	U	2625	%	0.40	3.4
Benzene	U	2760	µg/kg	1.0	< 1.0
Toluene	U	2760	µg/kg	1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0
Naphthalene	U	2800	mg/kg	0.10	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10
Acenaphthene	U	2800	mg/kg	0.10	< 0.10
Fluorene	U	2800	mg/kg	0.10	< 0.10
Phenanthrene	U	2800	mg/kg	0.10	< 0.10
Anthracene	U	2800	mg/kg	0.10	< 0.10
Fluoranthene	U	2800	mg/kg	0.10	< 0.10
Pyrene	U	2800	mg/kg	0.10	< 0.10
Benzo[a]anthracene	U	2800	mg/kg	0.10	< 0.10
Chrysene	U	2800	mg/kg	0.10	< 0.10
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	< 2.0
Total Phenols	U	2920	mg/kg	0.10	< 0.10

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C40	Acetone/Heptane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8-C10 Aromatics: >C5–C7,>C7-C8,>C8–C10	Water extraction / Headspace GCxGC FID detection
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-16508-1
Initial Date of Issue:	31-May-2023
Re-Issue Details:	
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt James Power
Project	G23012 Global Centre of Rail Excellence
Quotation No.:	Q22-29781
Order No.:	
No. of Samples:	2
Turnaround (Wkdays):	7
Date Approved:	31-May-2023
Approved By:	
Details:	Stuart Henderson, Technical Manager

Date Received:	18-May-2023
Date Instructed:	23-May-2023
Results Due:	01-Jun-2023

Results - Leachate

Project: G23012 Global Centre of Rail Excellence

Client: Jackson Geo Services				**Chemtest Job No.:**		23-16508
Quotation No.: Q22-29781				**Chemtest Sample ID.:**		1641499
Order No.:				Client Sample Ref.:		101
				Sample Location:		S1-BH119
				Sample Type:		SOIL
				Top Depth (m):		1.50
				Bottom Depth (m):		1.70
				Date Sampled:		17-May-2023
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**	
pH	U	1010	10:1		N/A	5.5
Sulphate	U	1220	10:1	mg/l	1.0	5.5
Cyanide (Total)	U	1300	10:1	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	10:1	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1455	10:1	µg/l	0.20	0.90
Cadmium (Dissolved)	U	1455	10:1	µg/l	0.11	< 0.11
Chromium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Copper (Dissolved)	U	1455	10:1	µg/l	0.50	0.58
Mercury (Dissolved)	U	1455	10:1	µg/l	0.05	< 0.05
Nickel (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Lead (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Selenium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Vanadium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Zinc (Dissolved)	U	1455	10:1	µg/l	2.5	9.4
Chromium (Hexavalent)	U	1490	10:1	µg/l	20	< 20
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030

Results - Soil

Project: G23012 Global Centre of Rail Excellence

Client: Jackson Geo Services			**Chemtest Job No.:**		23-16508	23-16508
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1641499	1641502
Order No.:			Client Sample Ref.:		101	106
			Sample Location:		S1-BH119	S1-BH119
			Sample Type:		SOIL	SOIL
			Top Depth (m):		1.50	5.10
			Bottom Depth (m):		1.70	5.30
			Date Sampled:		17-May-2023	17-May-2023
			Asbestos Lab:		DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
ACM Type	U	2192		N/A	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	9.9	9.8
pH	U	2010		4.0	7.9	9.1
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40	0.79
Sulphate (2:1 Water Soluble) as SO4 mg/l	U	2120	mg/l	10.000	29	160
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50
Arsenic	U	2455	mg/kg	0.5	7.2	5.2
Cadmium	U	2455	mg/kg	0.10	0.12	0.20
Chromium	U	2455	mg/kg	0.5	15	22
Copper	U	2455	mg/kg	0.50	27	45
Mercury	U	2455	mg/kg	0.05	< 0.05	< 0.05
Nickel	U	2455	mg/kg	0.50	29	25
Lead	U	2455	mg/kg	0.50	19	18
Selenium	U	2455	mg/kg	0.25	0.73	1.1
Vanadium	U	2455	mg/kg	0.5	13	28
Zinc	U	2455	mg/kg	0.50	63	80
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50
Aliphatic VPH >C5-C6	U	2780	mg/kg	0.05	< 0.05	< 0.05
Aliphatic VPH >C6-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05
Aliphatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05
Total Aliphatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25
Aliphatic EPH >C10-C12	U	2690	mg/kg	2.00	< 2.0	2.8
Aliphatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05
Aliphatic EPH >C12-C16	U	2690	mg/kg	1.00	1.3	1.3
Aliphatic EPH >C16-C21	U	2690	mg/kg	2.00	4.8	3.8
Aliphatic EPH >C21-C35	U	2690	mg/kg	3.00	62	29
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00	10	< 10
Total Aliphatic EPH >C10-C35	U	2690	mg/kg	5.00	70	36
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00	80	36
Aromatic VPH >C5-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05
Aromatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05
Aromatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05
Total Aromatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25
Aromatic EPH >C10-C12	U	2690	mg/kg	1.00	< 1.0	< 1.0

Results - Soil

Project: G23012 Global Centre of Rail Excellence

Client: Jackson Geo Services			**Chemtest Job No.:**		23-16508	23-16508
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1641499	1641502
Order No.:			Client Sample Ref.:		101	106
			Sample Location:		S1-BH119	S1-BH119
			Sample Type:		SOIL	SOIL
			Top Depth (m):		1.50	5.10
			Bottom Depth (m):		1.70	5.30
			Date Sampled:		17-May-2023	17-May-2023
			Asbestos Lab:		DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Aromatic EPH >C12-C16	U	2690	mg/kg	1.00	< 1.0	< 1.0
Aromatic EPH >C16-C21	U	2690	mg/kg	2.00	9.7	10
Aromatic EPH >C21-C35	U	2690	mg/kg	2.00	55	51
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00	11	10
Total Aromatic EPH >C10-C35	U	2690	mg/kg	5.00	65	62
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00	76	72
Total VPH >C5-C10	U	2780	mg/kg	0.50	< 0.50	< 0.50
Total EPH >C10-C35	U	2690	mg/kg	10.00	130	98
Total EPH >C10-C40	N	2690	mg/kg	10.00	160	110
Organic Matter	U	2625	%	0.40	2.0	6.4
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Naphthalene	U	2800	mg/kg	0.10	< 0.10	0.14
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10
Acenaphthene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Fluorene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Phenanthrene	U	2800	mg/kg	0.10	< 0.10	0.18
Anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Fluoranthene	U	2800	mg/kg	0.10	< 0.10	0.14
Pyrene	U	2800	mg/kg	0.10	< 0.10	0.16
Benzo[a]anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Chrysene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	< 2.0	< 2.0
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C40	Acetone/Heptane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8-C10 Aromatics: >C5–C7,>C7-C8,>C8–C10	Water extraction / Headspace GCxGC FID detection
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS

Test Methods

SOP	Title	Parameters included	Method summary
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

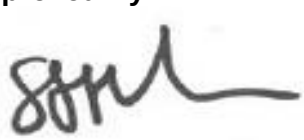
Eurofins Chemtest Ltd
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CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-16590-1
Initial Date of Issue:	01-Jun-2023
Re-Issue Details:	
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt James Power
Project	G23012 Global Centre Of Rail Excellence (GCRE) Phase 2

Quotation No.:	Q22-29781	**Date Received:**	19-May-2023
Order No.:		**Date Instructed:**	23-May-2023
No. of Samples:	3		
Turnaround (Wkdays):	7	**Results Due:**	01-Jun-2023
Date Approved:	01-Jun-2023		

Approved By:



Details: Stuart Henderson, Technical Manager

Results - Leachate

Project: G23012 Global Centre Of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services				**Chemtest Job No.:**		23-16590
Quotation No.: Q22-29781				**Chemtest Sample ID.:**		1641917
Order No.:				Client Sample Ref.:		1
				Sample Location:		S2-TP201
				Sample Type:		SOIL
				Top Depth (m):		0.20
				Bottom Depth (m):		0.30
				Date Sampled:		17-May-2023
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**	
pH	U	1010	10:1		N/A	5.7
Sulphate	U	1220	10:1	mg/l	1.0	3.2
Cyanide (Total)	U	1300	10:1	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	10:1	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1455	10:1	µg/l	0.20	1.1
Cadmium (Dissolved)	U	1455	10:1	µg/l	0.11	< 0.11
Chromium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Copper (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Mercury (Dissolved)	U	1455	10:1	µg/l	0.05	< 0.05
Nickel (Dissolved)	U	1455	10:1	µg/l	0.50	0.94
Lead (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Selenium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Vanadium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Zinc (Dissolved)	U	1455	10:1	µg/l	2.5	5.8
Chromium (Hexavalent)	U	1490	10:1	µg/l	20	< 20
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030

Results - Soil

Project: G23012 Global Centre Of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services			**Chemtest Job No.:**		23-16590	23-16590	23-16590
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1641912	1641917	1641920
Order No.:			Client Sample Ref.:		3	1	8
			Sample Location:		S2-TP230	S2-TP201	S2-TP201
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		0.60	0.20	2.00
			Bottom Depth (m):		0.70	0.30	2.10
			Date Sampled:		17-May-2023	17-May-2023	17-May-2023
			Asbestos Lab:		DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
ACM Type	U	2192		N/A	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	7.0	5.6	18
pH	U	2010		4.0	6.7	8.4	7.7
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40	0.43	< 0.40
Sulphate (2:1 Water Soluble) as SO4 mg/l	U	2120	mg/l	10.000	11	51	< 10
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	2.0	< 0.50	< 0.50
Arsenic	U	2455	mg/kg	0.5	8.4	5.7	5.6
Cadmium	U	2455	mg/kg	0.10	< 0.10	0.18	< 0.10
Chromium	U	2455	mg/kg	0.5	4.8	18	11
Copper	U	2455	mg/kg	0.50	12	34	11
Mercury	U	2455	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Nickel	U	2455	mg/kg	0.50	8.1	28	10
Lead	U	2455	mg/kg	0.50	5.1	18	11
Selenium	U	2455	mg/kg	0.25	0.63	0.99	0.59
Vanadium	U	2455	mg/kg	0.5	7.7	20	10
Zinc	U	2455	mg/kg	0.50	12	80	28
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Aliphatic VPH >C5-C6	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C6-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Total Aliphatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25
Aliphatic EPH >C10-C12	U	2690	mg/kg	2.00	3.5	4.1	< 2.0
Aliphatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Aliphatic EPH >C12-C16	U	2690	mg/kg	1.00	1.4	1.8	2.9
Aliphatic EPH >C16-C21	U	2690	mg/kg	2.00	3.8	4.4	4.7
Aliphatic EPH >C21-C35	U	2690	mg/kg	3.00	32	26	27
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00	13	< 10	< 10
Total Aliphatic EPH >C10-C35	U	2690	mg/kg	5.00	41	37	36
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00	54	37	36
Aromatic VPH >C5-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Total Aromatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25

Results - Soil

Project: G23012 Global Centre Of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services			**Chemtest Job No.:**		23-16590	23-16590	23-16590
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1641912	1641917	1641920
Order No.:			Client Sample Ref.:		3	1	8
			Sample Location:		S2-TP230	S2-TP201	S2-TP201
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		0.60	0.20	2.00
			Bottom Depth (m):		0.70	0.30	2.10
			Date Sampled:		17-May-2023	17-May-2023	17-May-2023
			Asbestos Lab:		DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Aromatic EPH >C10-C12	U	2690	mg/kg	1.00	< 1.0	< 1.0	< 1.0
Aromatic EPH >C12-C16	U	2690	mg/kg	1.00	< 1.0	< 1.0	< 1.0
Aromatic EPH >C16-C21	U	2690	mg/kg	2.00	9.0	8.7	6.9
Aromatic EPH >C21-C35	U	2690	mg/kg	2.00	46	44	46
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00	10	9.3	10
Total Aromatic EPH >C10-C35	U	2690	mg/kg	5.00	56	53	53
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00	66	63	63
Total VPH >C5-C10	U	2780	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Total EPH >C10-C35	U	2690	mg/kg	10.00	97	90	88
Total EPH >C10-C40	N	2690	mg/kg	10.00	120	99	98
Organic Matter	U	2625	%	0.40	1.2	6.9	2.4
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Naphthalene	U	2800	mg/kg	0.10	< 0.10	0.11	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	2800	mg/kg	0.10	< 0.10	0.17	< 0.10
Anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	2800	mg/kg	0.10	< 0.10	0.12	< 0.10
Pyrene	U	2800	mg/kg	0.10	< 0.10	0.13	< 0.10
Benzo[a]anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Chrysene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	< 2.0	< 2.0	< 2.0
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C40	Acetone/Heptane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8-C10 Aromatics: >C5–C7,>C7-C8,>C8–C10	Water extraction / Headspace GCxGC FID detection
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS

Test Methods

SOP	Title	Parameters included	Method summary
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

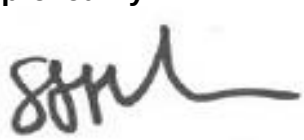
Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-16745-1
Initial Date of Issue:	02-Jun-2023
Re-Issue Details:	
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt James Power
Project	G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Quotation No.:	Q22-29781	**Date Received:**	22-May-2023
Order No.:		**Date Instructed:**	26-May-2023
No. of Samples:	2		
Turnaround (Wkdays):	5	**Results Due:**	02-Jun-2023
Date Approved:	02-Jun-2023		

Approved By:



Details: Stuart Henderson, Technical Manager

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services			**Chemtest Job No.:**		23-16745	23-16745
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1642448	1642451
Order No.:			Client Sample Ref.:		104	110
			Sample Location:		S2-BH222	S2-BH222
			Sample Type:		SOIL	SOIL
			Top Depth (m):		2.9	5.9
			Bottom Depth (m):		3.0	6.0
			Date Sampled:		19-May-2023	19-May-2023
			Asbestos Lab:		DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
ACM Type	U	2192		N/A	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	8.2	2.1
pH	U	2010		4.0	8.5	9.2
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	0.48	0.62
Sulphate (2:1 Water Soluble) as SO4 mg/l	U	2120	mg/l	10.000	67	50
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50
Arsenic	U	2455	mg/kg	0.5	5.5	6.0
Cadmium	U	2455	mg/kg	0.10	< 0.10	< 0.10
Chromium	U	2455	mg/kg	0.5	9.8	16
Copper	U	2455	mg/kg	0.50	21	30
Mercury	U	2455	mg/kg	0.05	< 0.05	< 0.05
Nickel	U	2455	mg/kg	0.50	29	39
Lead	U	2455	mg/kg	0.50	12	14
Selenium	U	2455	mg/kg	0.25	0.66	0.98
Vanadium	U	2455	mg/kg	0.5	9.6	22
Zinc	U	2455	mg/kg	0.50	58	88
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50
Aliphatic VPH >C5-C6	U	2780	mg/kg	0.05	< 0.05	< 0.05
Aliphatic VPH >C6-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05
Aliphatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05
Aliphatic VPH >C6-C8 (Sum)	N	2780	mg/kg	0.10	< 0.10	< 0.10
Total Aliphatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25
Aliphatic EPH >C10-C12	U	2690	mg/kg	2.00	3.6	3.4
Aliphatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05
Aliphatic EPH >C12-C16	U	2690	mg/kg	1.00	2.6	2.2
Aliphatic EPH >C16-C21	U	2690	mg/kg	2.00	3.5	2.1
Aliphatic EPH >C21-C35	U	2690	mg/kg	3.00	51	19
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00	11	< 10
Total Aliphatic EPH >C10-C35	U	2690	mg/kg	5.00	61	27
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00	72	27
Aromatic VPH >C5-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05
Aromatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05
Aromatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services			**Chemtest Job No.:**		23-16745	23-16745
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1642448	1642451
Order No.:			Client Sample Ref.:		104	110
			Sample Location:		S2-BH222	S2-BH222
			Sample Type:		SOIL	SOIL
			Top Depth (m):		2.9	5.9
			Bottom Depth (m):		3.0	6.0
			Date Sampled:		19-May-2023	19-May-2023
			Asbestos Lab:		DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Total Aromatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25
Aromatic EPH >C10-C12	U	2690	mg/kg	1.00	1.2	1.5
Aromatic EPH >C12-C16	U	2690	mg/kg	1.00	< 1.0	< 1.0
Aromatic EPH >C16-C21	U	2690	mg/kg	2.00	< 2.0	< 2.0
Aromatic EPH >C21-C35	U	2690	mg/kg	2.00	16	4.6
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00	9.3	7.0
Total Aromatic EPH >C10-C35	U	2690	mg/kg	5.00	18	6.6
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00	27	14
Total VPH >C5-C10	U	2780	mg/kg	0.50	< 0.50	< 0.50
Total EPH >C10-C35	U	2690	mg/kg	10.00	79	34
Total EPH >C10-C40	N	2690	mg/kg	10.00	99	41
Organic Matter	U	2625	%	0.40	3.0	3.4
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Naphthalene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10
Acenaphthene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Fluorene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Phenanthrene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[a]anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Chrysene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	< 2.0	< 2.0
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C40	Acetone/Heptane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8-C10 Aromatics: >C5–C7,>C7-C8,>C8–C10	Water extraction / Headspace GCxGC FID detection
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
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U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

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All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

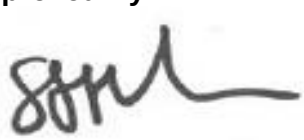
All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-16751-1
Initial Date of Issue:	02-Jun-2023
Re-Issue Details:	
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt James Power
Project	G23012 Global Centre of Rail Excellence (GCRE) Phase 2
Quotation No.:	Q22-29781
Order No.:	
No. of Samples:	2
Turnaround (Wkdays):	5
Date Approved:	02-Jun-2023
Approved By:	



Details:	Stuart Henderson, Technical Manager

Date Received:	22-May-2023
Date Instructed:	26-May-2023
Results Due:	02-Jun-2023

Results - Leachate

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services				**Chemtest Job No.:**		23-16751
Quotation No.: Q22-29781				**Chemtest Sample ID.:**		1642488
Order No.:				Client Sample Ref.:		6
				Sample Location:		S2-TP205
				Sample Type:		SOIL
				Top Depth (m):		0.90
				Bottom Depth (m):		1.00
				Date Sampled:		18-May-2023
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**	
pH	U	1010	10:1		N/A	6.3
Sulphate	U	1220	10:1	mg/l	1.0	2.9
Cyanide (Total)	U	1300	10:1	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	10:1	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1455	10:1	µg/l	0.20	0.57
Cadmium (Dissolved)	U	1455	10:1	µg/l	0.11	< 0.11
Chromium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Copper (Dissolved)	U	1455	10:1	µg/l	0.50	1.5
Mercury (Dissolved)	U	1455	10:1	µg/l	0.05	< 0.05
Nickel (Dissolved)	U	1455	10:1	µg/l	0.50	0.80
Lead (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Selenium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Vanadium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Zinc (Dissolved)	U	1455	10:1	µg/l	2.5	4.2
Chromium (Hexavalent)	U	1490	10:1	µg/l	20	< 20
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services			**Chemtest Job No.:**		23-16751	23-16751
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1642482	1642488
Order No.:			Client Sample Ref.:		1	6
			Sample Location:		S2-TP2123	S2-TP205
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.20	0.90
			Bottom Depth (m):		0.30	1.00
			Date Sampled:		18-May-2023	18-May-2023
			Asbestos Lab:		DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
ACM Type	U	2192		N/A	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	3.4	9.4
pH	U	2010		4.0	8.7	8.1
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	0.65	0.45
Sulphate (2:1 Water Soluble) as SO4 mg/l	U	2120	mg/l	10.000	< 10	51
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50
Arsenic	U	2455	mg/kg	0.5	7.3	12
Cadmium	U	2455	mg/kg	0.10	0.16	0.13
Chromium	U	2455	mg/kg	0.5	7.1	13
Copper	U	2455	mg/kg	0.50	36	22
Mercury	U	2455	mg/kg	0.05	0.10	< 0.05
Nickel	U	2455	mg/kg	0.50	13	25
Lead	U	2455	mg/kg	0.50	100	24
Selenium	U	2455	mg/kg	0.25	0.30	0.87
Vanadium	U	2455	mg/kg	0.5	10	23
Zinc	U	2455	mg/kg	0.50	110	85
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50
Aliphatic VPH >C5-C6	U	2780	mg/kg	0.05	< 0.05	< 0.05
Aliphatic VPH >C6-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05
Aliphatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05
Aliphatic VPH >C6-C8 (Sum)	N	2780	mg/kg	0.10	< 0.10	< 0.10
Total Aliphatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25
Aliphatic EPH >C10-C12	U	2690	mg/kg	2.00	3.2	5.6
Aliphatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05
Aliphatic EPH >C12-C16	U	2690	mg/kg	1.00	< 1.0	< 1.0
Aliphatic EPH >C16-C21	U	2690	mg/kg	2.00	< 2.0	< 2.0
Aliphatic EPH >C21-C35	U	2690	mg/kg	3.00	4.0	21
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00	< 10	12
Total Aliphatic EPH >C10-C35	U	2690	mg/kg	5.00	8.0	29
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00	< 10	41
Aromatic VPH >C5-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05
Aromatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05
Aromatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services			**Chemtest Job No.:**		23-16751	23-16751
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1642482	1642488
Order No.:			Client Sample Ref.:		1	6
			Sample Location:		S2-TP2123	S2-TP205
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.20	0.90
			Bottom Depth (m):		0.30	1.00
			Date Sampled:		18-May-2023	18-May-2023
			Asbestos Lab:		DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Total Aromatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25
Aromatic EPH >C10-C12	U	2690	mg/kg	1.00	< 1.0	< 1.0
Aromatic EPH >C12-C16	U	2690	mg/kg	1.00	< 1.0	< 1.0
Aromatic EPH >C16-C21	U	2690	mg/kg	2.00	8.5	6.8
Aromatic EPH >C21-C35	U	2690	mg/kg	2.00	13	110
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00	2.3	21
Total Aromatic EPH >C10-C35	U	2690	mg/kg	5.00	22	120
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00	24	140
Total VPH >C5-C10	U	2780	mg/kg	0.50	< 0.50	< 0.50
Total EPH >C10-C35	U	2690	mg/kg	10.00	30	140
Total EPH >C10-C40	N	2690	mg/kg	10.00	32	180
Organic Matter	U	2625	%	0.40	10	3.9
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Naphthalene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10
Acenaphthene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Fluorene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Phenanthrene	U	2800	mg/kg	0.10	< 0.10	0.17
Anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Fluoranthene	U	2800	mg/kg	0.10	0.46	0.46
Pyrene	U	2800	mg/kg	0.10	0.31	0.28
Benzo[a]anthracene	U	2800	mg/kg	0.10	< 0.10	0.18
Chrysene	U	2800	mg/kg	0.10	< 0.10	0.18
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	< 2.0	< 2.0
Total Phenols	U	2920	mg/kg	0.10	< 0.10	0.15

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C40	Acetone/Heptane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8-C10 Aromatics: >C5–C7,>C7-C8,>C8–C10	Water extraction / Headspace GCxGC FID detection
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS

Test Methods

SOP	Title	Parameters included	Method summary
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

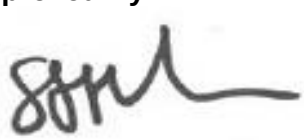
Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-17016-1
Initial Date of Issue:	05-Jun-2023
Re-Issue Details:	
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt James Power
Project	G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Quotation No.:	Q22-29781	**Date Received:**	23-May-2023
Order No.:		**Date Instructed:**	26-May-2023
No. of Samples:	2		
Turnaround (Wkdays):	5	**Results Due:**	02-Jun-2023
Date Approved:	05-Jun-2023		

Approved By:



Details: Stuart Henderson, Technical Manager

Results - Leachate

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services				**Chemtest Job No.:**		23-17016
Quotation No.: Q22-29781				**Chemtest Sample ID.:**		1643665
Order No.:				Client Sample Ref.:		3
				Sample Location:		S2-TP2116
				Sample Type:		SOIL
				Top Depth (m):		0.50
				Bottom Depth (m):		0.60
				Date Sampled:		22-May-2023
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**	
pH	U	1010	10:1		N/A	8.0
Sulphate	U	1220	10:1	mg/l	1.0	4.8
Cyanide (Total)	U	1300	10:1	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	10:1	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1455	10:1	µg/l	0.20	0.30
Cadmium (Dissolved)	U	1455	10:1	µg/l	0.11	< 0.11
Chromium (Dissolved)	U	1455	10:1	µg/l	0.50	0.82
Copper (Dissolved)	U	1455	10:1	µg/l	0.50	0.67
Mercury (Dissolved)	U	1455	10:1	µg/l	0.05	< 0.05
Nickel (Dissolved)	U	1455	10:1	µg/l	0.50	1.0
Lead (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Selenium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Vanadium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Zinc (Dissolved)	U	1455	10:1	µg/l	2.5	< 2.5
Chromium (Hexavalent)	U	1490	10:1	µg/l	20	< 20
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services			**Chemtest Job No.:**		23-17016	23-17016
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1643665	1643667
Order No.:			Client Sample Ref.:		3	2
			Sample Location:		S2-TP2116	S2-TP2117
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.50	0.20
			Bottom Depth (m):		0.60	0.30
			Date Sampled:		22-May-2023	22-May-2023
			Asbestos Lab:		COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
ACM Type	U	2192		N/A	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	31	21
pH	U	2010		4.0	7.5	7.8
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	2.2	0.76
Sulphate (2:1 Water Soluble) as SO4 mg/l	U	2120	mg/l	10.000	< 10	< 10
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50
Arsenic	U	2455	mg/kg	0.5	5.3	7.3
Cadmium	U	2455	mg/kg	0.10	< 0.10	< 0.10
Chromium	U	2455	mg/kg	0.5	13	12
Copper	U	2455	mg/kg	0.50	13	3.5
Mercury	U	2455	mg/kg	0.05	< 0.05	< 0.05
Nickel	U	2455	mg/kg	0.50	13	3.4
Lead	U	2455	mg/kg	0.50	11	17
Selenium	U	2455	mg/kg	0.25	0.35	1.3
Vanadium	U	2455	mg/kg	0.5	17	19
Zinc	U	2455	mg/kg	0.50	30	12
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50
Aliphatic VPH >C5-C6	U	2780	mg/kg	0.05	< 0.05	< 0.05
Aliphatic VPH >C6-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05
Aliphatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05
Aliphatic VPH >C6-C8 (Sum)	N	2780	mg/kg	0.10	< 0.10	< 0.10
Total Aliphatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25
Aliphatic EPH >C10-C12	U	2690	mg/kg	2.00	2.2	3.6
Aliphatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05
Aliphatic EPH >C12-C16	U	2690	mg/kg	1.00	3.4	4.6
Aliphatic EPH >C16-C21	U	2690	mg/kg	2.00	< 2.0	2.9
Aliphatic EPH >C21-C35	U	2690	mg/kg	3.00	< 3.0	< 3.0
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00	< 10	< 10
Total Aliphatic EPH >C10-C35	U	2690	mg/kg	5.00	7.9	12
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00	< 10	12
Aromatic VPH >C5-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05
Aromatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05
Aromatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services			**Chemtest Job No.:**		23-17016	23-17016
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1643665	1643667
Order No.:			Client Sample Ref.:		3	2
			Sample Location:		S2-TP2116	S2-TP2117
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.50	0.20
			Bottom Depth (m):		0.60	0.30
			Date Sampled:		22-May-2023	22-May-2023
			Asbestos Lab:		COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Total Aromatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25
Aromatic EPH >C10-C12	U	2690	mg/kg	1.00	< 1.0	< 1.0
Aromatic EPH >C12-C16	U	2690	mg/kg	1.00	< 1.0	< 1.0
Aromatic EPH >C16-C21	U	2690	mg/kg	2.00	3.5	3.0
Aromatic EPH >C21-C35	U	2690	mg/kg	2.00	5.7	3.8
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00	53	< 1.0
Total Aromatic EPH >C10-C35	U	2690	mg/kg	5.00	9.2	6.7
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00	62	< 10
Total VPH >C5-C10	U	2780	mg/kg	0.50	< 0.50	< 0.50
Total EPH >C10-C35	U	2690	mg/kg	10.00	17	19
Total EPH >C10-C40	N	2690	mg/kg	10.00	70	19
Organic Matter	U	2625	%	0.40	1.5	3.7
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0
Naphthalene	U	2800	mg/kg	0.10	< 0.10	0.30
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10
Acenaphthene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Fluorene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Phenanthrene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[a]anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Chrysene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	< 2.0	< 2.0
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C40	Acetone/Heptane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8-C10 Aromatics: >C5–C7,>C7-C8,>C8–C10	Water extraction / Headspace GCxGC FID detection
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS

Test Methods

SOP	Title	Parameters included	Method summary
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Amended Report

Report No.:	23-17197-2		
Initial Date of Issue:	31-May-2023	**Date of Re-Issue:**	05-Jun-2023
Re-Issue Details:	This report has been revised and directly supersedes 23-17197-1 in its entirety		
Client	Jackson Geo Services		
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA		
Contact(s):	Adam Putt		
Project	G23012 Global Centre of Rail Excellence Stage II		
Quotation No.:	Q22-29781	**Date Received:**	24-May-2023
Order No.:		**Date Instructed:**	24-May-2023
No. of Samples:	28		
Turnaround (Wkdays):	5	**Results Due:**	31-May-2023
Date Approved:	31-May-2023		
Approved By:			
Details:	Stuart Henderson, Technical Manager		

Results - Soil

Project: G23012 Global Centre of Rail Excellence Stage II

Client: Jackson Geo Services			**Chemtest Job No.:**		23-17197	23-17197	23-17197	23-17197	23-17197	23-17197	23-17197	23-17197
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1644325	1644326	1644327	1644328	1644329	1644330	1644331	1644332
Order No.:			Client Sample Ref.:		4	6	2	5	4	8	9	5
			Client Sample ID.:		#4889689141360004	#6694573679320006	#3400263429330002	#9707568632290005	#2353352314020004	#2353352314020008	#0759078916510009	#4551328329620005
			Sample Location:		S2-BH229	S2-BH260	S2-TP207	S2-TP210	S2-TP2124	S2-TP2124	S2-TP2125	S2-TP2126
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.50	0.80	0.30	0.90	0.70	2.20	2.80	1.40
			Bottom Depth (m):		1.00	1.00	0.50	1.10	0.80	2.40	3.00	1.60
			Date Sampled:		25-Apr-2023	14-Apr-2023	18-Apr-2023	20-Apr-2023	26-Apr-2023	26-Apr-2023	26-Apr-2023	26-Apr-2023
			Time Sampled:		14:48	9:10	14:57	14:23	12:24	12:28	11:22	9:23
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Moisture	N	2030	%	0.020	8.8	15	6.1	5.5	15	6.9	13	15
pH (2.5:1)	N	2010		4.0		[B] 8.8	[B] 8.6	[B] 8.5		6.3	6.6	8.1
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010		[B] < 0.010	[B] 0.029	[B] < 0.010		< 0.010	< 0.010	0.052
Total Sulphur	U	2175	%	0.010		[B] 0.46	[B] 0.052	[B] 0.045		0.13	0.052	0.35
Sulphate (Acid Soluble)	U	2430	%	0.010		[B] 0.017	[B] 0.031	[B] 0.020		0.028	0.012	0.25
Organic Matter	U	2625	%	0.40	[B] 2.0				12			

Results - Soil

Project: G23012 Global Centre of Rail Excellence Stage II

Client: Jackson Geo Services			**Chemtest Job No.:**		23-17197	23-17197	23-17197	23-17197	23-17197	23-17197	23-17197	23-17197
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1644333	1644334	1644335	1644336	1644337	1644338	1644339	1644340
Order No.:			Client Sample Ref.:		9	5	4	6	7	9	11	12
			Client Sample ID.:		#4551328329620009	#5462117812340005	#9913157504000004	#9913157504000006	#9913157504000007	#9913157504000009	#9913157504000011	#9913157504000012
			Sample Location:		S2-TP2126	S2-TP238	S2-TP240	S2-TP240	S2-TP240	S2-TP240	S2-TP240	S2-TP240
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		3.30	1.00	0.60	1.60	1.70	2.00	2.50	3.00
			Bottom Depth (m):		3.40	1.10	0.80	1.80	1.80	2.10	2.60	3.10
			Date Sampled:		26-Apr-2023	18-Apr-2023	25-Apr-2023	25-Apr-2023	25-Apr-2023	25-Apr-2023	25-Apr-2023	25-Apr-2023
			Time Sampled:		9:32	14:00	15:37	16:06	16:06	16:07	16:07	16:08
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Moisture	N	2030	%	0.020	27	9.6	10	9.1	20	22	30	14
pH (2.5:1)	N	2010		4.0		[B] 7.2	[B] 6.5			[B] 5.7		
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010		[B] 0.19	[B] < 0.010			[B] < 0.010		
Total Sulphur	U	2175	%	0.010		[B] 0.37	[B] 0.074			[B] 0.019		
Sulphate (Acid Soluble)	U	2430	%	0.010		[B] 0.31	[B] 0.037			[B] 0.016		
Organic Matter	U	2625	%	0.40	46			[B] 0.82	[B] 3.6		[B] 0.96	[B] 1.1

Results - Soil

Project: G23012 Global Centre of Rail Excellence Stage II

Client: Jackson Geo Services		**Chemtest Job No.:**			23-17197	23-17197	23-17197	23-17197	23-17197	23-17197	23-17197	23-17197
Quotation No.: Q22-29781		**Chemtest Sample ID.:**			1644341	1644342	1644343	1644344	1644345	1644346	1644347	1644348
Order No.:		Client Sample Ref.:			4	4	2	4	4	6	2	11
		Client Sample ID.:			#2288486516230004	#1738728164570004	#2741305335760002	#1140230871330004	#1346200849550004	#1346200849550006	#0983615299210002	#4185864042570011
		Sample Location:			S2-TP241	S2-TP242	S2-TP250	S2-TP251	S2-TP252	S2-TP252	S2-TP255	S2-TP258
		Sample Type:			SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		Top Depth (m):			0.60	0.70	0.40	0.70	0.90	1.40	0.40	3.80
		Bottom Depth (m):			0.80	0.90	0.60	0.90	1.00	1.60	0.60	3.90
		Date Sampled:			24-Apr-2023	25-Apr-2023	24-Apr-2023	24-Apr-2023	27-Apr-2023	27-Apr-2023	27-Apr-2023	27-Apr-2023
		Time Sampled:			15:54	14:24	10:10	13:46	14:59	15:03	11:57	11:50
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Moisture	N	2030	%	0.020	8.1	6.9	8.1	7.6	12	11	5.0	18
pH (2.5:1)	N	2010		4.0	[B] 7.6	[B] 7.8	[B] 7.7	[B] 6.5		5.9	8.1	
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	[B] 0.098	[B] < 0.010	[B] 0.069	[B] 0.010		< 0.010	< 0.010	
Total Sulphur	U	2175	%	0.010	[B] 0.26	[B] 0.019	[B] 0.15	[B] 0.076		0.14	0.082	
Sulphate (Acid Soluble)	U	2430	%	0.010	[B] 0.069	[B] < 0.010	[B] 0.023	[B] 0.065		0.026	0.044	
Organic Matter	U	2625	%	0.40					0.68			3.5

Results - Soil

Project: G23012 Global Centre of Rail Excellence Stage II

Client: Jackson Geo Services			**Chemtest Job No.:**		23-17197	23-17197	23-17197	23-17197
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1644349	1644350	1644351	1644352
Order No.:			Client Sample Ref.:		4	4	9	11
			Client Sample ID.:		#4981856613870004	#6752160637050004	#6752160637050009	#6752160637050011
			Sample Location:		S2-TP265	S2-TP280	S2-TP280	S2-TP280
			Sample Type:		SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.80	0.50	1.90	2.90
			Bottom Depth (m):		0.90	0.60	2.00	3.00
			Date Sampled:		18-Apr-2023	27-Apr-2023	27-Apr-2023	27-Apr-2023
			Time Sampled:		10:52	9:32	9:35	9:36
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
Moisture	N	2030	%	0.020	21	24	11	8.9
pH (2.5:1)	N	2010		4.0				7.3
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010				< 0.010
Total Sulphur	U	2175	%	0.010				0.20
Sulphate (Acid Soluble)	U	2430	%	0.010				0.017
Organic Matter	U	2625	%	0.40	[B] 4.6	1.2	16	

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1644325	4	#4889689141360004	S2-BH229	25-Apr-2023	B	Plastic Tub 500g
1644326	6	#6694573679320006	S2-BH260	14-Apr-2023	B	Plastic Tub 500g
1644327	2	#3400263429330002	S2-TP207	18-Apr-2023	B	Plastic Tub 500g
1644328	5	#9707568632290005	S2-TP210	20-Apr-2023	B	Plastic Tub 500g
1644334	5	#5462117812340005	S2-TP238	18-Apr-2023	B	Plastic Tub 500g
1644335	4	#9913157504000004	S2-TP240	25-Apr-2023	B	Plastic Tub 500g
1644336	6	#9913157504000006	S2-TP240	25-Apr-2023	B	Plastic Tub 500g
1644337	7	#9913157504000007	S2-TP240	25-Apr-2023	B	Plastic Tub 500g
1644338	9	#9913157504000009	S2-TP240	25-Apr-2023	B	Plastic Tub 500g
1644339	11	#9913157504000011	S2-TP240	25-Apr-2023	B	Plastic Tub 500g
1644340	12	#9913157504000012	S2-TP240	25-Apr-2023	B	Plastic Tub 500g
1644341	4	#2288486516230004	S2-TP241	24-Apr-2023	B	Plastic Tub 500g
1644342	4	#1738728164570004	S2-TP242	25-Apr-2023	B	Plastic Tub 500g
1644343	2	#2741305335760002	S2-TP250	24-Apr-2023	B	Plastic Tub 500g
1644344	4	#1140230871330004	S2-TP251	24-Apr-2023	B	Plastic Tub 500g
1644349	4	#4981856613870004	S2-TP265	18-Apr-2023	B	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2175	Total Sulphur in Soils	Total Sulphur	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
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I/S	Insufficient Sample
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>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

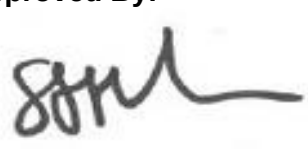
Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-17206-1
Initial Date of Issue:	01-Jun-2023
Re-Issue Details:	
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt
Project	G23012 Global Centre of Rail Excellence Stage II

Quotation No.:	Q22-29781	**Date Received:**	24-May-2023
Order No.:		**Date Instructed:**	24-May-2023
No. of Samples:	17		
Turnaround (Wkdays):	5	**Results Due:**	31-May-2023
Date Approved:	01-Jun-2023		

Approved By:



Details: Stuart Henderson, Technical Manager

Results - Soil

Project: G23012 Global Centre of Rail Excellence Stage II

Client: Jackson Geo Services			**Chemtest Job No.:**		23-17206	23-17206	23-17206	23-17206	23-17206	23-17206	23-17206	23-17206
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1644405	1644406	1644407	1644408	1644409	1644410	1644411	1644412
Order No.:			Client Sample Ref.:		101	106	5	6	111	7	3	4
			Client Sample ID.:		#3059374789260006	#3059374789260011	#1501359651560005	#1501359651560006	#1513002813560016	#6422631822710007	#6342394317650003	#2964718515490004
			Sample Location:		S2-BH236	S2-BH236	S2-BH241	S2-BH241	S2-BH241	S2-TP202	S2-TP209	S2-TP213
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		1.20	8.00	0.20	0.70	9.00	2.40	0.60	0.90
			Bottom Depth (m):		3.00	8.30	0.30	0.90	9.10	2.60	0.80	1.00
			Date Sampled:		24-Apr-2023	24-Apr-2023	14-Apr-2023	14-Apr-2023	25-Apr-2023	28-Apr-2023	03-May-2023	03-May-2023
			Time Sampled:		10:11	10:21	12:12	12:13	11:51	10:13	16:00	10:07
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Moisture	N	2030	%	0.020	6.0	11	13	11	13	10	5.2	16
pH (2.5:1)	N	2010		4.0	[B] 6.9		[B] 6.2	[B] 6.3	[B] 8.0	7.4	8.1	
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	[B] < 0.010		[B] < 0.010	[B] < 0.010	[B] < 0.010	< 0.010	0.037	
Total Sulphur	U	2175	%	0.010	[B] < 0.010		[B] 0.016	[B] 0.026	[B] 0.033	0.094	0.058	
Chloride (Water Soluble)	U	2220	g/l	0.010								
Nitrate (Water Soluble)	N	2220	g/l	0.010								
Sulphate (Acid Soluble)	U	2430	%	0.010	[B] 0.020		[B] 0.039	[B] 0.033	[B] 0.021	0.038	0.038	
Organic Matter	U	2625	%	0.40		[B] 3.6						3.5

Results - Soil

Project: G23012 Global Centre of Rail Excellence Stage II

Client: Jackson Geo Services		**Chemtest Job No.:**			23-17206	23-17206	23-17206	23-17206	23-17206	23-17206	23-17206	23-17206
Quotation No.: Q22-29781		**Chemtest Sample ID.:**			1644413	1644414	1644415	1644416	1644417	1644418	1644419	1644420
Order No.:		Client Sample Ref.:			6	8	9	6	13	1	5	101
		Client Sample ID.:			#2964718515490006	#2964718515490009	#2964718515490010	#4238197800810006	#4238197800810013	#2585606413230001	#2585606413230005	#7805538175617008
		Sample Location:			S2-TP213	S2-TP213	S2-TP213	S2-TP239	S2-TP239	S2-BH225	S2-BH225	S2-BH225
		Sample Type:			SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		Top Depth (m):			1.40	2.00	2.60	1.00	3.70	0.10	1.00	1.40
		Bottom Depth (m):			1.50	2.10	2.70	1.10	3.80	0.20	1.10	1.50
		Date Sampled:			03-May-2023	03-May-2023	03-May-2023	04-May-2023	04-May-2023	27-Apr-2023	27-Apr-2023	02-May-2023
		Time Sampled:			10:21	10:42	10:59	11:50	11:52	13:24	13:36	14:39
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Moisture	N	2030	%	0.020	57	57	11	6.9	7.8	54	19	7.4
pH (2.5:1)	N	2010		4.0				6.8		4.9		
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010				< 0.010		< 0.010		
Total Sulphur	U	2175	%	0.010				0.048		0.15		
Chloride (Water Soluble)	U	2220	g/l	0.010						0.014		
Nitrate (Water Soluble)	N	2220	g/l	0.010						0.010		
Sulphate (Acid Soluble)	U	2430	%	0.010				0.014		0.21		
Organic Matter	U	2625	%	0.40	45	43	0.74		0.71		1.2	0.65

Results - Soil

Project: G23012 Global Centre of Rail Excellence Stage II

Client: Jackson Geo Services			**Chemtest Job No.:**		23-17206
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1644421
Order No.:			Client Sample Ref.:		7
			Client Sample ID.:		#2585606413230007
			Sample Location:		S2-BH225
			Sample Type:		SOIL
			Top Depth (m):		2.20
			Bottom Depth (m):		2.65
			Date Sampled:		27-Apr-2023
			Time Sampled:		14:22
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Moisture	N	2030	%	0.020	12
pH (2.5:1)	N	2010		4.0	7.8
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	< 0.010
Total Sulphur	U	2175	%	0.010	< 0.010
Chloride (Water Soluble)	U	2220	g/l	0.010	
Nitrate (Water Soluble)	N	2220	g/l	0.010	
Sulphate (Acid Soluble)	U	2430	%	0.010	< 0.010
Organic Matter	U	2625	%	0.40	

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1644405	101	#3059374789260006	S2-BH236	24-Apr-2023	B	Plastic Tub 500g
1644406	106	#3059374789260011	S2-BH236	24-Apr-2023	B	Plastic Tub 500g
1644407	5	#1501359651560005	S2-BH241	14-Apr-2023	B	Plastic Tub 500g
1644408	6	#1501359651560006	S2-BH241	14-Apr-2023	B	Plastic Tub 500g
1644409	111	#1513002813560016	S2-BH241	25-Apr-2023	B	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2175	Total Sulphur in Soils	Total Sulphur	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2220	Water soluble Chloride in Soils	Chloride	Aqueous extraction and measuremernt by 'Aquakem 600' Discrete Analyser using ferric nitrate / mercuric thiocyanate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

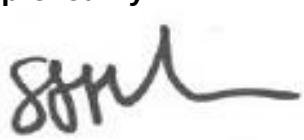
Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-17272-1
Initial Date of Issue:	05-Jun-2023
Re-Issue Details:	
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt James Power
Project	G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Quotation No.:	Q22-29781	**Date Received:**	25-May-2023
Order No.:		**Date Instructed:**	26-May-2023
No. of Samples:	1		
Turnaround (Wkdays):	5	**Results Due:**	02-Jun-2023
Date Approved:	05-Jun-2023		

Approved By:



Details: Stuart Henderson, Technical Manager

Results - Leachate

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services				**Chemtest Job No.:**		23-17272
Quotation No.: Q22-29781				**Chemtest Sample ID.:**		1644650
Order No.:				Client Sample Ref.:		3
				Sample Location:		S2-WS03
				Sample Type:		SOIL
				Top Depth (m):		0.20
				Bottom Depth (m):		0.30
				Date Sampled:		22-May-2023
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**	
pH	U	1010	10:1		N/A	8.1
Sulphate	U	1220	10:1	mg/l	1.0	11
Cyanide (Total)	U	1300	10:1	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	10:1	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1455	10:1	µg/l	0.20	2.0
Cadmium (Dissolved)	U	1455	10:1	µg/l	0.11	< 0.11
Chromium (Dissolved)	U	1455	10:1	µg/l	0.50	0.73
Copper (Dissolved)	U	1455	10:1	µg/l	0.50	6.1
Mercury (Dissolved)	U	1455	10:1	µg/l	0.05	< 0.05
Nickel (Dissolved)	U	1455	10:1	µg/l	0.50	0.60
Lead (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Selenium (Dissolved)	U	1455	10:1	µg/l	0.50	1.4
Vanadium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Zinc (Dissolved)	U	1455	10:1	µg/l	2.5	2.7
Chromium (Hexavalent)	U	1490	10:1	µg/l	20	< 20
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services			**Chemtest Job No.:**		23-17272
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1644650
Order No.:			Client Sample Ref.:		3
			Sample Location:		S2-WS03
			Sample Type:		SOIL
			Top Depth (m):		0.20
			Bottom Depth (m):		0.30
			Date Sampled:		22-May-2023
			Asbestos Lab:		DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
ACM Type	U	2192		N/A	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected
Moisture	N	2030	%	0.020	11
pH	U	2010		4.0	8.6
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40
Sulphate (2:1 Water Soluble) as SO4 mg/l	U	2120	mg/l	10.000	< 10
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50
Arsenic	U	2455	mg/kg	0.5	29
Cadmium	U	2455	mg/kg	0.10	0.48
Chromium	U	2455	mg/kg	0.5	6.1
Copper	U	2455	mg/kg	0.50	410
Mercury	U	2455	mg/kg	0.05	0.05
Nickel	U	2455	mg/kg	0.50	21
Lead	U	2455	mg/kg	0.50	42
Selenium	U	2455	mg/kg	0.25	0.96
Vanadium	U	2455	mg/kg	0.5	8.9
Zinc	U	2455	mg/kg	0.50	99
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50
Aliphatic VPH >C5-C6	U	2780	mg/kg	0.05	< 0.05
Aliphatic VPH >C6-C7	U	2780	mg/kg	0.05	< 0.05
Aliphatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05
Aliphatic VPH >C6-C8 (Sum)	N	2780	mg/kg	0.10	< 0.10
Total Aliphatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25
Aliphatic EPH >C10-C12	U	2690	mg/kg	2.00	3.6
Aliphatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05
Aliphatic EPH >C12-C16	U	2690	mg/kg	1.00	2.2
Aliphatic EPH >C16-C21	U	2690	mg/kg	2.00	< 2.0
Aliphatic EPH >C21-C35	U	2690	mg/kg	3.00	< 3.0
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00	< 10
Total Aliphatic EPH >C10-C35	U	2690	mg/kg	5.00	6.7
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00	< 10
Aromatic VPH >C5-C7	U	2780	mg/kg	0.05	< 0.05
Aromatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05
Aromatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services			**Chemtest Job No.:**		23-17272
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1644650
Order No.:			Client Sample Ref.:		3
			Sample Location:		S2-WS03
			Sample Type:		SOIL
			Top Depth (m):		0.20
			Bottom Depth (m):		0.30
			Date Sampled:		22-May-2023
			Asbestos Lab:		DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Total Aromatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25
Aromatic EPH >C10-C12	U	2690	mg/kg	1.00	< 1.0
Aromatic EPH >C12-C16	U	2690	mg/kg	1.00	< 1.0
Aromatic EPH >C16-C21	U	2690	mg/kg	2.00	2.3
Aromatic EPH >C21-C35	U	2690	mg/kg	2.00	< 2.0
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00	< 1.0
Total Aromatic EPH >C10-C35	U	2690	mg/kg	5.00	< 5.0
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00	< 10
Total VPH >C5-C10	U	2780	mg/kg	0.50	< 0.50
Total EPH >C10-C35	U	2690	mg/kg	10.00	10
Total EPH >C10-C40	N	2690	mg/kg	10.00	10
Organic Matter	U	2625	%	0.40	7.0
Benzene	U	2760	µg/kg	1.0	< 1.0
Toluene	U	2760	µg/kg	1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0
Naphthalene	U	2800	mg/kg	0.10	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10
Acenaphthene	U	2800	mg/kg	0.10	< 0.10
Fluorene	U	2800	mg/kg	0.10	< 0.10
Phenanthrene	U	2800	mg/kg	0.10	< 0.10
Anthracene	U	2800	mg/kg	0.10	< 0.10
Fluoranthene	U	2800	mg/kg	0.10	< 0.10
Pyrene	U	2800	mg/kg	0.10	< 0.10
Benzo[a]anthracene	U	2800	mg/kg	0.10	< 0.10
Chrysene	U	2800	mg/kg	0.10	< 0.10
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	< 2.0
Total Phenols	U	2920	mg/kg	0.10	< 0.10

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C40	Acetone/Heptane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8-C10 Aromatics: >C5–C7,>C7-C8,>C8–C10	Water extraction / Headspace GCxGC FID detection
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS

Test Methods

SOP	Title	Parameters included	Method summary
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

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Sample Deviation Codes

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B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

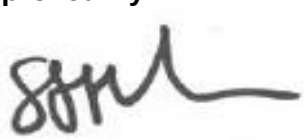
All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-17431-1
Initial Date of Issue:	05-Jun-2023
Re-Issue Details:	
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt James Power
Project	G23012 Global Centre of Rail Excellence (GCRE) Phase 2
Quotation No.:	Q22-29781
Order No.:	
No. of Samples:	9
Turnaround (Wkdays):	5
Date Approved:	05-Jun-2023
Approved By:	



Details:	Stuart Henderson, Technical Manager

Date Received:	25-May-2023
Date Instructed:	26-May-2023
Results Due:	02-Jun-2023

Bulk Identification Certificate

Client: Jackson Geo Services

Site Address:

Date Sampled: 23-May-2023

Date Received: 25-May-2023

Your Ref.:

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Job Number: 23-17431

No Samples:

Date Reported: 05-Jun-2023

Sample No.	Sample ID	Sample Ref.	Description	Top (m)	Bottom (m)	SOP	Accred.	Laboratory	Material	Result
1645327		6	S2-WS01	0.60	0.70	2185	U	NEW-ASB	Cement	Chrysotile
1645330		7	S2-WS01b	0.60	0.70	2185	U	NEW-ASB	Cement	Chrysotile

The in-house procedure SOP2185 is in accordance with the requirements of Appendix 2 of the Analyst Guide (HSG 248).
The results relate only to items tested as supplied by the client.
Comments and interpretations are beyond the scope of UKAS accreditation.
Samples associated with asbestos in building surveys are retained for six months (HSG 264 refers)

Results - Leachate

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services				**Chemtest Job No.:**		23-17431	23-17431
Quotation No.: Q22-29781				**Chemtest Sample ID.:**		1645314	1645321
Order No.:				Client Sample Ref.:		104	3
				Sample Location:		S2-BH221	S2-WS02
				Sample Type:		SOIL	SOIL
				Top Depth (m):		3.00	0.20
				Bottom Depth (m):		3.10	0.30
				Date Sampled:		23-May-2023	23-May-2023
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**		
pH	U	1010	10:1		N/A	9.0	8.1
Sulphate	U	1220	10:1	mg/l	1.0	16	23
Cyanide (Total)	U	1300	10:1	mg/l	0.050	< 0.050	< 0.050
Cyanide (Free)	U	1300	10:1	mg/l	0.050	< 0.050	< 0.050
Arsenic (Dissolved)	U	1455	10:1	µg/l	0.20	1.4	< 0.20
Cadmium (Dissolved)	U	1455	10:1	µg/l	0.11	< 0.11	< 0.11
Chromium (Dissolved)	U	1455	10:1	µg/l	0.50	1.2	< 0.50
Copper (Dissolved)	U	1455	10:1	µg/l	0.50	1.6	0.53
Mercury (Dissolved)	U	1455	10:1	µg/l	0.05	< 0.05	< 0.05
Nickel (Dissolved)	U	1455	10:1	µg/l	0.50	0.69	0.62
Lead (Dissolved)	U	1455	10:1	µg/l	0.50	0.93	< 0.50
Selenium (Dissolved)	U	1455	10:1	µg/l	0.50	2.3	0.85
Vanadium (Dissolved)	U	1455	10:1	µg/l	0.50	0.59	< 0.50
Zinc (Dissolved)	U	1455	10:1	µg/l	2.5	2.8	< 2.5
Chromium (Hexavalent)	U	1490	10:1	µg/l	20	< 20	< 20
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030	< 0.030

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services			**Chemtest Job No.:**		23-17431	23-17431	23-17431	23-17431	23-17431	23-17431	23-17431
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1645314	1645321	1645324	1645325	1645328	1645331	1645333
Order No.:			Client Sample Ref.:		104	3	13	2	3	11	103
			Sample Location:		S2-BH221	S2-WS02	S2-WS02	S2-WS01	S2-WS01b	S2-WS03	S2-BH232
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		3.00	0.20	1.30	0.20	0.23	1.40	3.20
			Bottom Depth (m):		3.10	0.30	1.40	0.30	0.30	1.50	3.40
			Date Sampled:		23-May-2023	23-May-2023	24-May-2023	23-May-2023	23-May-2023	24-May-2023	24-May-2023
			Asbestos Lab:		NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB
Determinand	**Accred.**	**SOP**	**Units**	**LOD**							
ACM Type	U	2192		N/A	-	-	-	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	6.7	6.9	22	7.0	10	14	7.7
pH	U	2010		4.0	8.9	9.3	7.8	9.2	8.8	7.7	6.9
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	5.0	5.0	4.6	0.70	3.9	1.1	0.40
Sulphate (2:1 Water Soluble) as SO4 mg/l	U	2120	mg/l	10.000	< 10	< 10	< 10	120	< 10	< 10	< 10
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Arsenic	U	2455	mg/kg	0.5	8.1	10	9.8	20	62	7.3	13
Cadmium	U	2455	mg/kg	0.10	< 0.10	0.15	< 0.10	0.31	0.40	0.12	0.20
Chromium	U	2455	mg/kg	0.5	17	8.8	15	8.3	7.7	11	25
Copper	U	2455	mg/kg	0.50	39	47	27	75	49	26	39
Mercury	U	2455	mg/kg	0.05	0.07	0.07	< 0.05	0.08	0.15	0.05	< 0.05
Nickel	U	2455	mg/kg	0.50	41	40	11	43	28	12	52
Lead	U	2455	mg/kg	0.50	25	58	19	39	53	18	23
Selenium	U	2455	mg/kg	0.25	1.2	0.87	0.84	0.95	1.7	1.2	1.7
Vanadium	U	2455	mg/kg	0.5	17	11	15	11	12	11	25
Zinc	U	2455	mg/kg	0.50	74	80	29	95	80	34	120
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Aliphatic VPH >C5-C6	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C6-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C6-C8 (Sum)	N	2780	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Aliphatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25
Aliphatic EPH >C10-C12	U	2690	mg/kg	2.00	3.9	2.5	3.4	3.0	3.1	3.4	4.8
Aliphatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic EPH >C12-C16	U	2690	mg/kg	1.00	5.2	2.6	2.4	1.7	1.9	2.2	2.3
Aliphatic EPH >C16-C21	U	2690	mg/kg	2.00	2.7	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Aliphatic EPH >C21-C35	U	2690	mg/kg	3.00	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	50
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Total Aliphatic EPH >C10-C35	U	2690	mg/kg	5.00	12	5.1	5.7	< 5.0	5.4	5.6	58
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00	12	< 10	< 10	< 10	< 10	< 10	58
Aromatic VPH >C5-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services			**Chemtest Job No.:**		23-17431	23-17431	23-17431	23-17431	23-17431	23-17431	23-17431
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1645314	1645321	1645324	1645325	1645328	1645331	1645333
Order No.:			Client Sample Ref.:		104	3	13	2	3	11	103
			Sample Location:		S2-BH221	S2-WS02	S2-WS02	S2-WS01	S2-WS01b	S2-WS03	S2-BH232
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		3.00	0.20	1.30	0.20	0.23	1.40	3.20
			Bottom Depth (m):		3.10	0.30	1.40	0.30	0.30	1.50	3.40
			Date Sampled:		23-May-2023	23-May-2023	24-May-2023	23-May-2023	23-May-2023	24-May-2023	24-May-2023
			Asbestos Lab:		NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB
Determinand	**Accred.**	**SOP**	**Units**	**LOD**							
Total Aromatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25
Aromatic EPH >C10-C12	U	2690	mg/kg	1.00	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic EPH >C12-C16	U	2690	mg/kg	1.00	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic EPH >C16-C21	U	2690	mg/kg	2.00	2.4	2.7	3.1	< 2.0	3.0	3.1	7.6
Aromatic EPH >C21-C35	U	2690	mg/kg	2.00	< 2.0	< 2.0	< 2.0	3.1	< 2.0	< 2.0	8.4
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	34
Total Aromatic EPH >C10-C35	U	2690	mg/kg	5.00	< 5.0	< 5.0	5.1	5.0	< 5.0	< 5.0	16
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00	< 10	< 10	< 10	< 10	< 10	< 10	50
Total VPH >C5-C10	U	2780	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Total EPH >C10-C35	U	2690	mg/kg	10.00	14	< 10	11	< 10	< 10	10	74
Total EPH >C10-C40	N	2690	mg/kg	10.00	14	< 10	11	< 10	< 10	10	110
Organic Matter	U	2625	%	0.40	11	6.9	9.4	5.6	12	11	8.8
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Naphthalene	U	2800	mg/kg	0.10	1.3	< 0.10	< 0.10	0.77	< 0.10	< 0.10	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	2800	mg/kg	0.10	0.41	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	2800	mg/kg	0.10	0.29	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	2800	mg/kg	0.10	0.44	< 0.10	< 0.10	0.38	< 0.10	< 0.10	< 0.10
Anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.15	< 0.10	< 0.10
Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.23	< 0.10	< 0.10
Benzo[a]anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.10	< 0.10	< 0.10
Chrysene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.12	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	2.4	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2185	Asbestos	Asbestos	Polarised light microscopy
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35–C40	Acetone/Heptane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8-C10 Aromatics: >C5–C7,>C7-C8,>C8–C10	Water extraction / Headspace GCxGC FID detection
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS

Test Methods

SOP	Title	Parameters included	Method summary
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

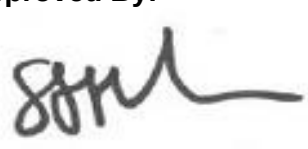
Final Report

Report No.:	23-17615-1
Initial Date of Issue:	02-Jun-2023
Re-Issue Details:	
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt
Project	G23012 Global Centre of Rail Excellence

Quotation No.:	Q22-29781	**Date Received:**	26-May-2023
Order No.:		**Date Instructed:**	26-May-2023
No. of Samples:	1		
Turnaround (Wkdays):	5	**Results Due:**	02-Jun-2023

Date Approved: 02-Jun-2023

Approved By:



Details: Stuart Henderson, Technical Manager

Results - Soil

Project: G23012 Global Centre of Rail Excellence

Client: Jackson Geo Services			**Chemtest Job No.:**		23-17615
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1645902
			Sample Location:		S2-TP2116
			Sample Type:		SOIL
			Top Depth (m):		0.50
			Bottom Depth (m):		0.60
			Date Sampled:		19-May-2023
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Moisture	N	2030	%	0.020	31
pH	U	2010		4.0	7.5
Acid Neutralisation Capacity	N	2015	mol/kg	0.0020	0.018
Total Organic Carbon	U	2625	%	0.20	0.83

Results - 2 Stage WAC

Project: G23012 Global Centre of Rail Excellence

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	23-17615								
Chemtest Sample ID:	1645902								
Sample Ref:									
Sample ID:									
Sample Location:	S2-TP2116								
Top Depth(m):	0.50								
Bottom Depth(m):	0.60								
Sampling Date:	19-May-2023								
Determinand	**SOP**	**Accred.**	**Units**				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%			0.83	3	5	6
Loss on Ignition							--	--	10
Total BTEX							6	--	--
Total PCBs (7 congeners)							1	--	--
TPH Total WAC (Mineral Oil)							500	--	--
Total (of 17) PAHs							100	--	--
pH	2010	U				7.5	--	>6	--
Acid Neutralisation Capacity							--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0015	0.0018	0.0028	0.017	0.5	2	25
Barium	1455	U	< 0.005	< 0.005	< 0.0005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0017	0.0020	0.0031	0.020	0.5	10	70
Copper	1455	U	0.0041	0.0043	0.0076	0.0038	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.5	10	30
Nickel	1455	U	0.0024	0.0021	0.0045	0.021	0.4	10	40
Lead	1455	U	0.0015	0.0012	0.0027	0.012	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	0.018	0.015	0.034	0.16	4	50	200
Chloride	1220	U	1.6	1.9	< 10	18	800	15000	25000
Fluoride	1220	U	0.088	0.095	< 1.0	< 1.0	10	150	500
Sulphate	1220	U	7.7	2.7	14	31	1000	20000	50000
Total Dissolved Solids	1020	N	41	4.8	76	80	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	< 2.5	5.5	< 50	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	31

Leachate Test Information	
Leachant volume 1st extract/l	0.271
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.161

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Test Methods

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge
650	Characterisation of Waste (Leaching WAC)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
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N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-17704-1
Initial Date of Issue:	01-Jun-2023
Re-Issue Details:	
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt
Project	G23012 Walters UK Ltd
Quotation No.:	Q22-29781
Order No.:	
No. of Samples:	7
Turnaround (Wkdays):	5
Date Approved:	01-Jun-2023
Approved By:	
Details:	Stuart Henderson, Technical Manager

Date Received:	26-May-2023
Date Instructed:	26-May-2023
Results Due:	02-Jun-2023

Results - Soil

Project: G23012 Walters UK Ltd

Client: Jackson Geo Services				**Chemtest Job No.:**	23-17704	23-17704	23-17704	23-17704	23-17704	23-17704	23-17704
Quotation No.: Q22-29781				**Chemtest Sample ID.:**	1646157	1646158	1646159	1646160	1646161	1646162	1646163
Order No.:				Client Sample Ref.:	2	5	9	13	10	7	12
				Client Sample ID.:	#6024301166650002	#4664411272220005	#4664411272220009	#4664411272220013	#0519942031480010	#4664411272220007	#4664411272220012
				Sample Location:	S2-BH208	S2-TP204	S2-TP204	S2-TP204	S2-TP272	S2-TP204	S2-TP204
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.50	0.70	1.70	3.70	3.20	1.20	3.20
				Bottom Depth (m):	0.60	0.80	1.80	3.90	3.30	1.30	3.30
Determinand	**Accred.**	**SOP**	**Units**	**LOD**							
Moisture	N	2030	%	0.020	3.9	29	20	9.6	9.8	16	10
pH (2.5:1)	N	2010		4.0	[A] 7.7	[A] 6.4	[A] 6.9	[A] 7.8	[A] 8.0		
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	[A] < 0.010	[A] < 0.010	[A] 0.011	[A] 0.043	[A] 0.079		
Total Sulphur	U	2175	%	0.010	[A] 0.051	[A] 0.033	[A] 0.043	[A] 0.066	[A] 0.12		
Sulphate (Acid Soluble)	U	2430	%	0.010	[A] 0.015	[A] 0.011	[A] 0.012	[A] 0.016	[A] 0.032		
Organic Matter	U	2625	%	0.40						[A] 6.9	[A] 1.1

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1646157	2	#6024301166650002	S2-BH208		A	Plastic Tub 500g
1646158	5	#4664411272220005	S2-TP204		A	Plastic Tub 500g
1646159	9	#4664411272220009	S2-TP204		A	Plastic Tub 500g
1646160	13	#4664411272220013	S2-TP204		A	Plastic Tub 500g
1646161	10	#0519942031480010	S2-TP272		A	Plastic Tub 500g
1646162	7	#4664411272220007	S2-TP204		A	Plastic Tub 500g
1646163	12	#4664411272220012	S2-TP204		A	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2175	Total Sulphur in Soils	Total Sulphur	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.

Report Information

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I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

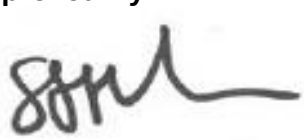
All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-17728-1
Initial Date of Issue:	12-Jun-2023
Re-Issue Details:	
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt James Power
Project	G23012 Globel Centre Of Rail Excellence
Quotation No.:	Q22-29781
Order No.:	
No. of Samples:	2
Turnaround (Wkdays):	5
Date Approved:	12-Jun-2023
Approved By:	



Details:	Stuart Henderson, Technical Manager

Date Received:	26-May-2023
Date Instructed:	05-Jun-2023
Results Due:	09-Jun-2023

Results - Leachate

Project: G23012 Globel Centre Of Rail Excellence

Client: Jackson Geo Services				**Chemtest Job No.:**		23-17728
Quotation No.: Q22-29781				**Chemtest Sample ID.:**		1646265
Order No.:				Client Sample Ref.:		104
				Sample Location:		S2-BH228
				Sample Type:		SOIL
				Top Depth (m):		3.00
				Bottom Depth (m):		3.10
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**	
pH	U	1010	10:1		N/A	7.8
Sulphate	U	1220	10:1	mg/l	1.0	26
Cyanide (Total)	U	1300	10:1	mg/l	0.050	< 0.050
Cyanide (Free)	U	1300	10:1	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1455	10:1	µg/l	0.20	< 0.20
Cadmium (Dissolved)	U	1455	10:1	µg/l	0.11	< 0.11
Chromium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Copper (Dissolved)	U	1455	10:1	µg/l	0.50	1.1
Mercury (Dissolved)	U	1455	10:1	µg/l	0.05	< 0.05
Nickel (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Lead (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Selenium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Vanadium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Zinc (Dissolved)	U	1455	10:1	µg/l	2.5	< 2.5
Chromium (Hexavalent)	U	1490	10:1	µg/l	20	[A] < 20
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030

Results - Soil

Project: G23012 Globel Centre Of Rail Excellence

Client: Jackson Geo Services			**Chemtest Job No.:**		23-17728	23-17728
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1646265	1646269
Order No.:			Client Sample Ref.:		104	111
			Sample Location:		S2-BH228	S2-BH228
			Sample Type:		SOIL	SOIL
			Top Depth (m):		3.00	7.00
			Bottom Depth (m):		3.10	7.10
			Asbestos Lab:		DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
ACM Type	U	2192		N/A	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	2.3	5.5
pH	U	2010		4.0	[A] 8.6	[A] 5.7
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	[A] < 0.40	[A] < 0.40
Sulphate (2:1 Water Soluble) as SO4 mg/l	U	2120	mg/l	10.000	[A] 82	[A] 640
Cyanide (Free)	U	2300	mg/kg	0.50	[A] < 0.50	[A] < 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	[A] < 0.50	[A] < 0.50
Arsenic	U	2455	mg/kg	0.5	4.7	9.9
Cadmium	U	2455	mg/kg	0.10	< 0.10	< 0.10
Chromium	U	2455	mg/kg	0.5	10	14
Copper	U	2455	mg/kg	0.50	37	67
Mercury	U	2455	mg/kg	0.05	< 0.05	0.10
Nickel	U	2455	mg/kg	0.50	45	33
Lead	U	2455	mg/kg	0.50	18	25
Selenium	U	2455	mg/kg	0.25	0.52	1.1
Vanadium	U	2455	mg/kg	0.5	14	20
Zinc	U	2455	mg/kg	0.50	100	89
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50
Aliphatic VPH >C5-C6	U	2780	mg/kg	0.05	[A] < 0.05	[A] < 0.05
Aliphatic VPH >C6-C7	U	2780	mg/kg	0.05	[A] < 0.05	[A] < 0.05
Aliphatic VPH >C7-C8	U	2780	mg/kg	0.05	[A] < 0.05	[A] < 0.05
Aliphatic VPH >C6-C8 (Sum)	N	2780	mg/kg	0.10	[A] < 0.10	[A] < 0.10
Total Aliphatic VPH >C5-C10	U	2780	mg/kg	0.25	[A] < 0.25	[A] < 0.25
Aliphatic EPH >C10-C12	U	2690	mg/kg	2.00	[A] 3.5	[A] 4.0
Aliphatic VPH >C8-C10	U	2780	mg/kg	0.05	[A] < 0.05	[A] < 0.05
Aliphatic EPH >C12-C16	U	2690	mg/kg	1.00	[A] 2.1	[A] 1.3
Aliphatic EPH >C16-C21	U	2690	mg/kg	2.00	[A] 2.3	[A] < 2.0
Aliphatic EPH >C21-C35	U	2690	mg/kg	3.00	[A] 120	[A] 3.0
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00	[A] 36	[A] < 10
Total Aliphatic EPH >C10-C35	U	2690	mg/kg	5.00	[A] 130	[A] 8.7
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00	[A] 170	[A] < 10
Aromatic VPH >C5-C7	U	2780	mg/kg	0.05	[A] < 0.05	[A] < 0.05
Aromatic VPH >C7-C8	U	2780	mg/kg	0.05	[A] < 0.05	[A] < 0.05
Aromatic VPH >C8-C10	U	2780	mg/kg	0.05	[A] < 0.05	[A] < 0.05
Total Aromatic VPH >C5-C10	U	2780	mg/kg	0.25	[A] < 0.25	[A] < 0.25
Aromatic EPH >C10-C12	U	2690	mg/kg	1.00	[A] < 1.0	[A] < 1.0

Results - Soil

Project: G23012 Globel Centre Of Rail Excellence

Client: Jackson Geo Services			**Chemtest Job No.:**		23-17728	23-17728
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1646265	1646269
Order No.:			Client Sample Ref.:		104	111
			Sample Location:		S2-BH228	S2-BH228
			Sample Type:		SOIL	SOIL
			Top Depth (m):		3.00	7.00
			Bottom Depth (m):		3.10	7.10
			Asbestos Lab:		DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Aromatic EPH >C12-C16	U	2690	mg/kg	1.00	[A] < 1.0	[A] < 1.0
Aromatic EPH >C16-C21	U	2690	mg/kg	2.00	[A] 3.4	[A] < 2.0
Aromatic EPH >C21-C35	U	2690	mg/kg	2.00	[A] 120	[A] < 2.0
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00	[A] 9.6	[A] 2.2
Total Aromatic EPH >C10-C35	U	2690	mg/kg	5.00	[A] 120	[A] < 5.0
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00	[A] 130	[A] < 10
Total VPH >C5-C10	U	2780	mg/kg	0.50	[A] < 0.50	[A] < 0.50
Total EPH >C10-C35	U	2690	mg/kg	10.00	[A] 260	[A] 10
Total EPH >C10-C40	N	2690	mg/kg	10.00	[A] 300	[A] 13
Organic Matter	U	2625	%	0.40	[A] 2.8	[A] 1.7
Benzene	U	2760	µg/kg	1.0	[A] 1.1	[A] < 1.0
Toluene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0
Ethylbenzene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0
m & p-Xylene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0
o-Xylene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0
Naphthalene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10
Acenaphthene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Fluorene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Phenanthrene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[a]anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Chrysene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	< 2.0	< 2.0
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1646265	104		S2-BH228		A	Amber Glass 250ml
1646265	104		S2-BH228		A	Amber Glass 60ml
1646265	104		S2-BH228		A	Plastic Tub 500g
1646269	111		S2-BH228		A	Amber Glass 250ml
1646269	111		S2-BH228		A	Amber Glass 60ml
1646269	111		S2-BH228		A	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C40	Acetone/Heptane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8-C10 Aromatics: >C5–C7,>C7-C8,>C8–C10	Water extraction / Headspace GCxGC FID detection
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS

Test Methods

SOP	Title	Parameters included	Method summary
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
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I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Amended Report

Report No.:	23-18808-2		
Initial Date of Issue:	09-Jun-2023	**Date of Re-Issue:**	12-Jun-2023
Re-Issue Details:	This report has been revised and directly supersedes 23-18808-1 in its entirety		
Client	Jackson Geo Services		
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA		
Contact(s):	Adam Putt		
Project	G23012 Global Centre of Rail Excellence		
Quotation No.:	Q22-29781	**Date Received:**	05-Jun-2023
Order No.:		**Date Instructed:**	05-Jun-2023
No. of Samples:	1		
Turnaround (Wkdays):	5	**Results Due:**	09-Jun-2023
Date Approved:	09-Jun-2023		
Approved By:			
Details:	Stuart Henderson, Technical Manager		

Results - Soil

Project: G23012 Global Centre of Rail Excellence

Client: Jackson Geo Services			**Chemtest Job No.:**		23-18808
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1650980
			Sample Location:		S2-BH228
			Sample Type:		SOIL
			Top Depth (m):		3.00
			Date Sampled:		25-May-2023
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Moisture	N	2030	%	0.020	1.8
pH	U	2010		4.0	8.7
Acid Neutralisation Capacity	N	2015	mol/kg	0.0020	0.0080
Total Organic Carbon	U	2625	%	0.20	1.8

Results - 2 Stage WAC

Project: G23012 Global Centre of Rail Excellence

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	23-18808								
Chemtest Sample ID:	1650980								
Sample Ref:									
Sample ID:									
Sample Location:	S2-BH228								
Top Depth(m):	3.00								
Bottom Depth(m):									
Sampling Date:	25-May-2023								
Determinand	**SOP**	**Accred.**	**Units**				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%			1.8	3	5	6
Loss on Ignition							--	--	10
Total BTEX							6	--	--
Total PCBs (7 congeners)							1	--	--
TPH Total WAC (Mineral Oil)							500	--	--
Total (of 17) PAHs							100	--	--
pH	2010	U				8.7	--	>6	--
Acid Neutralisation Capacity							--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0005	0.0005	0.0011	0.0047	0.5	2	25
Barium	1455	U	0.007	< 0.005	0.013	0.0074	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0006	< 0.0005	0.0012	0.0007	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0033	0.0010	0.0066	0.013	0.5	10	30
Nickel	1455	U	0.0013	0.0008	0.0026	0.0086	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0005	< 0.0005	0.0010	0.0006	0.06	0.7	5
Selenium	1455	U	0.0010	< 0.0005	0.0021	0.0012	0.1	0.5	7
Zinc	1455	U	0.012	0.004	0.024	0.052	4	50	200
Chloride	1220	U	< 1.0	< 1.0	< 10	< 10	800	15000	25000
Fluoride	1220	U	0.13	0.084	< 1.0	< 1.0	10	150	500
Sulphate	1220	U	22	4.0	44	60	1000	20000	50000
Total Dissolved Solids	1020	N	48	14	95	180	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	4.2	3.6	< 50	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	1.8

Leachate Test Information	
Leachant volume 1st extract/l	0.347
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.198

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Test Methods

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge
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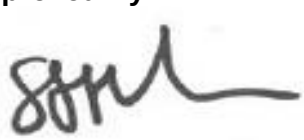
Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-18986-1
Initial Date of Issue:	19-Jun-2023
Re-Issue Details:	
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt James Power
Project	G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Quotation No.:	Q22-29781	**Date Received:**	06-Jun-2023
Order No.:		**Date Instructed:**	12-Jun-2023
No. of Samples:	2		
Turnaround (Wkdays):	5	**Results Due:**	16-Jun-2023
Date Approved:	19-Jun-2023		

Approved By:



Details: Stuart Henderson, Technical Manager

Results - Leachate

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services				**Chemtest Job No.:**		23-18986	23-18986
Quotation No.: Q22-29781				**Chemtest Sample ID.:**		1651738	1651752
				Client Sample ID.:		137	160
				Sample Location:		S2-BH228	S2-BH228
				Sample Type:		SOIL	SOIL
				Top Depth (m):		24.00	38.00
				Bottom Depth (m):		24.10	38.10
				Date Sampled:		01-Apr-2023	01-Apr-2023
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**		
pH	U	1010	10:1		N/A	6.2	10.0
Sulphate	U	1220	10:1	mg/l	1.0	7.9	10
Cyanide (Total)	U	1300	10:1	mg/l	0.050	< 0.050	< 0.050
Cyanide (Free)	U	1300	10:1	mg/l	0.050	< 0.050	< 0.050
Arsenic (Dissolved)	U	1455	10:1	µg/l	0.20	0.31	0.65
Cadmium (Dissolved)	U	1455	10:1	µg/l	0.11	< 0.11	< 0.11
Chromium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	< 0.50
Copper (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	< 0.50
Mercury (Dissolved)	U	1455	10:1	µg/l	0.05	< 0.05	< 0.05
Nickel (Dissolved)	U	1455	10:1	µg/l	0.50	1.3	0.79
Lead (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	< 0.50
Selenium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	< 0.50
Vanadium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	< 0.50
Zinc (Dissolved)	U	1455	10:1	µg/l	2.5	< 2.5	2.7
Chromium (Hexavalent)	U	1490	10:1	µg/l	20	[B] < 20	[B] < 20
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030	< 0.030

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services			**Chemtest Job No.:**		23-18986	23-18986
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1651738	1651752
			Client Sample ID.:		137	160
			Sample Location:		S2-BH228	S2-BH228
			Sample Type:		SOIL	SOIL
			Top Depth (m):		24.00	38.00
			Bottom Depth (m):		24.10	38.10
			Date Sampled:		01-Apr-2023	01-Apr-2023
			Asbestos Lab:		COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
ACM Type	U	2192		N/A	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	6.1	6.9
pH	U	2010		4.0	[B] 9.3	[B] 9.1
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	[B] < 0.40	[B] < 0.40
Sulphate (2:1 Water Soluble) as SO4 mg/l	U	2120	mg/l	10.000	[B] < 10	[B] < 10
Cyanide (Free)	U	2300	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Arsenic	U	2455	mg/kg	0.5	5.8	5.7
Cadmium	U	2455	mg/kg	0.10	< 0.10	< 0.10
Chromium	U	2455	mg/kg	0.5	7.7	7.0
Copper	U	2455	mg/kg	0.50	28	27
Mercury	U	2455	mg/kg	0.05	< 0.05	< 0.05
Nickel	U	2455	mg/kg	0.50	42	36
Lead	U	2455	mg/kg	0.50	15	14
Selenium	U	2455	mg/kg	0.25	0.43	0.54
Vanadium	U	2455	mg/kg	0.5	14	12
Zinc	U	2455	mg/kg	0.50	64	54
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50
Aliphatic VPH >C5-C6	U	2780	mg/kg	0.05	[B] < 0.05	[B] < 0.05
Aliphatic VPH >C6-C7	U	2780	mg/kg	0.05	[B] < 0.05	[B] < 0.05
Aliphatic VPH >C7-C8	U	2780	mg/kg	0.05	[B] < 0.05	[B] < 0.05
Aliphatic VPH >C6-C8 (Sum)	N	2780	mg/kg	0.10	[B] < 0.10	[B] < 0.10
Total Aliphatic VPH >C5-C10	U	2780	mg/kg	0.25	[B] < 0.25	[B] < 0.25
Aliphatic EPH >C10-C12	U	2690	mg/kg	2.00	[B] 6.9	[B] 4.6
Aliphatic VPH >C8-C10	U	2780	mg/kg	0.05	[B] < 0.05	[B] < 0.05
Aliphatic EPH >C12-C16	U	2690	mg/kg	1.00	[B] 1.8	[B] < 1.0
Aliphatic EPH >C16-C21	U	2690	mg/kg	2.00	[B] < 2.0	[B] < 2.0
Aliphatic EPH >C21-C35	U	2690	mg/kg	3.00	[B] < 3.0	[B] 5.3
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00	[B] < 10	[B] < 10
Total Aliphatic EPH >C10-C35	U	2690	mg/kg	5.00	[B] 8.6	[B] 11
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00	[B] < 10	[B] 11
Aromatic VPH >C5-C7	U	2780	mg/kg	0.05	[B] < 0.05	[B] < 0.05
Aromatic VPH >C7-C8	U	2780	mg/kg	0.05	[B] < 0.05	[B] < 0.05
Aromatic VPH >C8-C10	U	2780	mg/kg	0.05	[B] < 0.05	[B] < 0.05

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services			**Chemtest Job No.:**		23-18986	23-18986
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1651738	1651752
			Client Sample ID.:		137	160
			Sample Location:		S2-BH228	S2-BH228
			Sample Type:		SOIL	SOIL
			Top Depth (m):		24.00	38.00
			Bottom Depth (m):		24.10	38.10
			Date Sampled:		01-Apr-2023	01-Apr-2023
			Asbestos Lab:		COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Total Aromatic VPH >C5-C10	U	2780	mg/kg	0.25	[B] < 0.25	[B] < 0.25
Aromatic EPH >C10-C12	U	2690	mg/kg	1.00	[B] < 1.0	[B] < 1.0
Aromatic EPH >C12-C16	U	2690	mg/kg	1.00	[B] < 1.0	[B] < 1.0
Aromatic EPH >C16-C21	U	2690	mg/kg	2.00	[B] < 2.0	[B] < 2.0
Aromatic EPH >C21-C35	U	2690	mg/kg	2.00	[B] < 2.0	[B] < 2.0
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00	[B] < 1.0	[B] 1.4
Total Aromatic EPH >C10-C35	U	2690	mg/kg	5.00	[B] < 5.0	[B] < 5.0
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00	[B] < 10	[B] < 10
Total VPH >C5-C10	U	2780	mg/kg	0.50	[B] < 0.50	[B] < 0.50
Total EPH >C10-C35	U	2690	mg/kg	10.00	[B] 11	[B] 14
Total EPH >C10-C40	N	2690	mg/kg	10.00	[B] 11	[B] 15
Organic Matter	U	2625	%	0.40	[B] 2.3	[B] 2.1
Benzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Toluene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Ethylbenzene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
m & p-Xylene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
o-Xylene	U	2760	µg/kg	1.0	[B] < 1.0	[B] < 1.0
Naphthalene	U	2800	mg/kg	0.10	< 0.10	1.4
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10
Acenaphthene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Fluorene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Phenanthrene	U	2800	mg/kg	0.10	< 0.10	0.24
Anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Fluoranthene	U	2800	mg/kg	0.10	< 0.10	0.33
Pyrene	U	2800	mg/kg	0.10	< 0.10	0.29
Benzo[a]anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Chrysene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	< 2.0	2.3
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1651738		137	S2-BH228	01-Apr-2023	B	Amber Glass 250ml
1651738		137	S2-BH228	01-Apr-2023	B	Amber Glass 60ml
1651738		137	S2-BH228	01-Apr-2023	B	Plastic Tub 500g
1651752		160	S2-BH228	01-Apr-2023	B	Amber Glass 250ml
1651752		160	S2-BH228	01-Apr-2023	B	Amber Glass 60ml
1651752		160	S2-BH228	01-Apr-2023	B	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35–C40	Acetone/Heptane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8-C10 Aromatics: >C5–C7,>C7-C8,>C8–C10	Water extraction / Headspace GCxGC FID detection
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS

Test Methods

SOP	Title	Parameters included	Method summary
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Amended Report

Report No.:	23-19129-2		
Initial Date of Issue:	13-Jun-2023	**Date of Re-Issue:**	15-Jun-2023
Re-Issue Details:	This report has been revised and directly supersedes 23-19129-1 in its entirety		
Client	Jackson Geo Services		
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA		
Contact(s):	Adam Putt		
Project	G23012 Global Centre of Rail Excellence Stage II		
Quotation No.:	Q22-29781	**Date Received:**	07-Jun-2023
Order No.:		**Date Instructed:**	07-Jun-2023
No. of Samples:	31		
Turnaround (Wkdays):	5	**Results Due:**	13-Jun-2023
Date Approved:	13-Jun-2023		
Approved By:			
Details:	Stuart Henderson, Technical Manager		

Results - Soil

Project: G23012 Global Centre of Rail Excellence Stage II

Client: Jackson Geo Services		**Chemtest Job No.:**			23-19129	23-19129	23-19129	23-19129	23-19129	23-19129	23-19129	23-19129
Quotation No.: Q22-29781		**Chemtest Sample ID.:**			1652188	1652189	1652190	1652191	1652192	1652193	1652194	1652195
Order No.:		Client Sample Ref.:			101	11	13	6	10	7	9	6
		Client Sample ID.:			#1904717689330005	#8096896469630011	#8096896469630013	#9028302873020006	#9028302873020010	#5573438678660007	#5573438678660009	#5551711784460006
		Sample Location:			S1-BH117	S2-TP2108	S2-TP2108	S2-TP256	S2-TP256	S2-TP259	S2-TP259	S2-TP288
		Sample Type:			SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		Top Depth (m):			2.00	3.40	3.90	1.80	2.90	2.00	3.10	1.40
		Bottom Depth (m):			2.20	3.50	4.00	1.90	3.10	2.10	3.30	1.50
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Moisture	N	2030	%	0.020	1.6	2.5	2.9	50	2.4	2.1	0.96	7.3
pH (2.5:1)	N	2010		4.0	[A] 6.5	[A] 8.9				[A] 6.8	[A] 7.1	
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	[A] < 0.010	[A] 0.53				[A] < 0.010	[A] < 0.010	
Total Sulphur	U	2175	%	0.010	[A] 0.011	[A] 0.15				[A] 0.014	[A] 0.036	
Sulphate (Acid Soluble)	U	2430	%	0.010	[A] 0.020	[A] 0.15				[A] < 0.010	[A] 0.012	
Organic Matter	U	2625	%	0.40			[A] 3.6	[A] 12	[A] 3.5			[A] 3.8

Results - Soil

Project: G23012 Global Centre of Rail Excellence Stage II

Client: Jackson Geo Services		**Chemtest Job No.:**			23-19129	23-19129	23-19129	23-19129	23-19129	23-19129	23-19129	23-19129
Quotation No.: Q22-29781		**Chemtest Sample ID.:**			1652196	1652197	1652198	1652199	1652200	1652201	1652202	1652203
Order No.:		Client Sample Ref.:			10	5	7	9	5	9	11	4
		Client Sample ID.:			#5551711784460010	#4821831264910005	#4821831264910007	#4821831264910009	#2700798387030005	#2700798387030009	#2700798387030011	#6499189709530004
		Sample Location:			S2-TP288	S2-TP201	S2-TP201	S2-TP201	S2-TP205	S2-TP205	S2-TP205	S2-TP2116
		Sample Type:			SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		Top Depth (m):			3.00	0.90	1.80	2.40	0.90	1.90	3.00	0.60
		Bottom Depth (m):			3.10	1.00	1.90	2.50	1.00	2.00	3.20	0.70
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Moisture	N	2030	%	0.020	8.1	4.1	23	3.1	3.3	1.6	1.4	1.8
pH (2.5:1)	N	2010		4.0	[A] 6.4		[A] 6.7			[A] 6.2	[A] 6.9	
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	[A] < 0.010		[A] 0.14			[A] < 0.010	[A] < 0.010	
Total Sulphur	U	2175	%	0.010	[A] 0.034		[A] 0.28			[A] 0.039	[A] 0.026	
Sulphate (Acid Soluble)	U	2430	%	0.010	[A] 0.012		[A] 0.18			[A] 0.028	[A] < 0.010	
Organic Matter	U	2625	%	0.40		[A] 2.8		[A] 4.1	[A] 2.3			[A] 1.4

Results - Soil

Project: G23012 Global Centre of Rail Excellence Stage II

Client: Jackson Geo Services		**Chemtest Job No.:**			23-19129	23-19129	23-19129	23-19129	23-19129	23-19129	23-19129	23-19129
Quotation No.: Q22-29781		**Chemtest Sample ID.:**			1652204	1652205	1652206	1652207	1652208	1652209	1652210	1652211
Order No.:		Client Sample Ref.:			7	8	4	6	7	9	2	5
		Client Sample ID.:			#64991897095 30007	#64991897095 30008	#29145394884 50004	#02044360806 20006	#02044360806 20007	#22545962791 10009	#08570145586 70002	#08570145586 70005
		Sample Location:			S2-TP2116	S2-TP2116	S2-TP2117	S2-TP2123	S2-TP2123	S2-TP230	S1-BH119	S1-BH119
		Sample Type:			SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		Top Depth (m):			1.80	2.30	0.80	1.00	1.80	2.60	2.40	5.40
		Bottom Depth (m):			1.90	2.40	0.90	1.20	1.90	2.70		
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Moisture	N	2030	%	0.020	0.26	5.9	3.2	4.7	2.2	3.6	1.5	7.7
pH (2.5:1)	N	2010		4.0	[A] 7.6			[A] 8.2			[A] 7.5	
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	[A] 0.024			[A] < 0.010			[A] 0.026	
Total Sulphur	U	2175	%	0.010	[A] 0.098			[A] 0.35			[A] 0.15	
Sulphate (Acid Soluble)	U	2430	%	0.010	[A] 0.013			[A] 0.048			[A] 0.033	
Organic Matter	U	2625	%	0.40		[A] 3.1	[A] 7.4		[A] 0.84	[A] 1.2		[A] 8.3

Results - Soil

Project: G23012 Global Centre of Rail Excellence Stage II

Client: Jackson Geo Services		**Chemtest Job No.:**			23-19129	23-19129	23-19129	23-19129	23-19129	23-19129	23-19129
Quotation No.: Q22-29781		**Chemtest Sample ID.:**			1652212	1652213	1652214	1652215	1652216	1652217	1652218
Order No.:		Client Sample Ref.:			7	109	7	9	106	107	12
		Client Sample ID.:			#0857014558670007	#5498670812450018	#9013213999100007	#9013213999100013	#9013213999100019	#9013213999100020	#9013213999100011
		Sample Location:			S1-BH119	S1-BH119	S2-BH232	S2-BH232	S2-BH232	S2-BH232	S2-BH232
		Sample Type:			SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		Top Depth (m):			7.50	7.80	1.60	1.80	4.70	4.90	5.50
		Bottom Depth (m):				8.00	1.70	2.25	4.80	5.00	5.95
Determinand	**Accred.**	**SOP**	**Units**	**LOD**							
Moisture	N	2030	%	0.020	7.1	9.0	4.6	4.0	39	15	11
pH (2.5:1)	N	2010		4.0	[A] 6.9		[A] 7.2	[A] 6.8			
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	[A] 0.091		[A] < 0.010	[A] < 0.010			
Total Sulphur	U	2175	%	0.010	[A] 0.12		[A] 0.049	[A] 0.046			
Sulphate (Acid Soluble)	U	2430	%	0.010	[A] 0.029		[A] 0.010	[A] < 0.010			
Organic Matter	U	2625	%	0.40		[A] 1.6			[A] 56	[A] 13	[A] 1.6

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1652188	101	#1904717689330005	S1-BH117		A	Plastic Tub 500g
1652189	11	#8096896469630011	S2-TP2108		A	Plastic Tub 500g
1652190	13	#8096896469630013	S2-TP2108		A	Plastic Tub 500g
1652191	6	#9028302873020006	S2-TP256		A	Plastic Tub 500g
1652192	10	#9028302873020010	S2-TP256		A	Plastic Tub 500g
1652193	7	#5573438678660007	S2-TP259		A	Plastic Tub 500g
1652194	9	#5573438678660009	S2-TP259		A	Plastic Tub 500g
1652195	6	#5551711784460006	S2-TP288		A	Plastic Tub 500g
1652196	10	#5551711784460010	S2-TP288		A	Plastic Tub 500g
1652197	5	#4821831264910005	S2-TP201		A	Plastic Tub 500g
1652198	7	#4821831264910007	S2-TP201		A	Plastic Tub 500g
1652199	9	#4821831264910009	S2-TP201		A	Plastic Tub 500g
1652200	5	#2700798387030005	S2-TP205		A	Plastic Tub 500g
1652201	9	#2700798387030009	S2-TP205		A	Plastic Tub 500g
1652202	11	#2700798387030011	S2-TP205		A	Plastic Tub 500g
1652203	4	#6499189709530004	S2-TP2116		A	Plastic Tub 500g
1652204	7	#6499189709530007	S2-TP2116		A	Plastic Tub 500g
1652205	8	#6499189709530008	S2-TP2116		A	Plastic Tub 500g
1652206	4	#2914539488450004	S2-TP2117		A	Plastic Tub 500g
1652207	6	#0204436080620006	S2-TP2123		A	Plastic Tub 500g
1652208	7	#0204436080620007	S2-TP2123		A	Plastic Tub 500g
1652209	9	#2254596279110009	S2-TP230		A	Plastic Tub 500g
1652210	2	#0857014558670002	S1-BH119		A	Plastic Tub 500g
1652211	5	#0857014558670005	S1-BH119		A	Plastic Tub 500g
1652212	7	#0857014558670007	S1-BH119		A	Plastic Tub 500g
1652213	109	#5498670812450018	S1-BH119		A	Plastic Tub 500g
1652214	7	#9013213999100007	S2-BH232		A	Plastic Tub 500g
1652215	9	#9013213999100013	S2-BH232		A	Plastic Tub 500g

Deviations

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Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1652216	106	#9013213999100019	S2-BH232		A	Plastic Tub 500g
1652217	107	#9013213999100020	S2-BH232		A	Plastic Tub 500g
1652218	12	#9013213999100011	S2-BH232		A	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2175	Total Sulphur in Soils	Total Sulphur	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

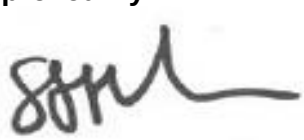
Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-19255-1
Initial Date of Issue:	16-Jun-2023
Re-Issue Details:	
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt James Power
Project	G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Quotation No.:	Q22-29781	**Date Received:**	08-Jun-2023
Order No.:		**Date Instructed:**	12-Jun-2023
No. of Samples:	4		
Turnaround (Wkdays):	5	**Results Due:**	16-Jun-2023
Date Approved:	16-Jun-2023		

Approved By:



Details: Stuart Henderson, Technical Manager

Results - Leachate

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services				**Chemtest Job No.:**		23-19255	23-19255
Quotation No.: Q22-29781				**Chemtest Sample ID.:**		1652737	1652746
Order No.:				Client Sample Ref.:		106	124
				Sample Location:		S2-BH230	S2-BH230
				Sample Type:		SOIL	SOIL
				Top Depth (m):		2.00	13.00
				Bottom Depth (m):		2.20	13.20
				Date Sampled:		07-Jun-2023	07-Jun-2023
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**		
pH	U	1010	10:1		N/A	7.9	8.0
Sulphate	U	1220	10:1	mg/l	1.0	11	11
Cyanide (Total)	U	1300	10:1	mg/l	0.050	< 0.050	< 0.050
Cyanide (Free)	U	1300	10:1	mg/l	0.050	< 0.050	< 0.050
Arsenic (Dissolved)	U	1455	10:1	µg/l	0.20	0.65	0.48
Cadmium (Dissolved)	U	1455	10:1	µg/l	0.11	< 0.11	< 0.11
Chromium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	< 0.50
Copper (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	< 0.50
Mercury (Dissolved)	U	1455	10:1	µg/l	0.05	< 0.05	< 0.05
Nickel (Dissolved)	U	1455	10:1	µg/l	0.50	0.92	< 0.50
Lead (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	< 0.50
Selenium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	< 0.50
Vanadium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	< 0.50
Zinc (Dissolved)	U	1455	10:1	µg/l	2.5	< 2.5	< 2.5
Chromium (Hexavalent)	U	1490	10:1	µg/l	20	< 20	< 20
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030	< 0.030

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services			**Chemtest Job No.:**		23-19255	23-19255	23-19255	23-19255
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1652735	1652737	1652740	1652746
Order No.:			Client Sample Ref.:		102	106	112	124
			Sample Location:		S2-BH230	S2-BH230	S2-BH230	S2-BH230
			Sample Type:		SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.20	2.00	5.00	13.00
			Bottom Depth (m):		0.30	2.20	5.20	13.20
			Date Sampled:		07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023
			Asbestos Lab:		NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
ACM Type	U	2192		N/A	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	12	6.7	2.5	4.4
pH	U	2010		4.0	6.2	7.7	8.6	8.7
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40	< 0.40	< 0.40	< 0.40
Sulphate (2:1 Water Soluble) as SO4 mg/l	U	2120	mg/l	10.000	< 10	< 10	< 10	< 10
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Arsenic	U	2455	mg/kg	0.5	15	6.1	2.3	5.1
Cadmium	U	2455	mg/kg	0.10	0.11	< 0.10	< 0.10	< 0.10
Chromium	U	2455	mg/kg	0.5	13	6.6	6.2	8.3
Copper	U	2455	mg/kg	0.50	33	38	30	32
Mercury	U	2455	mg/kg	0.05	0.05	< 0.05	< 0.05	0.05
Nickel	U	2455	mg/kg	0.50	29	38	21	31
Lead	U	2455	mg/kg	0.50	27	22	13	12
Selenium	U	2455	mg/kg	0.25	1.0	0.55	0.49	0.48
Vanadium	U	2455	mg/kg	0.5	20	10	6.9	8.6
Zinc	U	2455	mg/kg	0.50	73	65	67	53
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Aliphatic VPH >C5-C6	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C6-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C6-C8 (Sum)	N	2780	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Aliphatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25
Aliphatic EPH >C10-C12	U	2690	mg/kg	2.00	4.3	9.4	4.9	2.7
Aliphatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	0.13	< 0.05	< 0.05
Aliphatic EPH >C12-C16	U	2690	mg/kg	1.00	1.4	16	3.1	2.4
Aliphatic EPH >C16-C21	U	2690	mg/kg	2.00	< 2.0	3.7	< 2.0	< 2.0
Aliphatic EPH >C21-C35	U	2690	mg/kg	3.00	29	170	13	5.8
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00	12	46	< 10	< 10
Total Aliphatic EPH >C10-C35	U	2690	mg/kg	5.00	36	200	22	11
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00	48	250	22	11
Aromatic VPH >C5-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services			**Chemtest Job No.:**		23-19255	23-19255	23-19255	23-19255
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1652735	1652737	1652740	1652746
Order No.:			Client Sample Ref.:		102	106	112	124
			Sample Location:		S2-BH230	S2-BH230	S2-BH230	S2-BH230
			Sample Type:		SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.20	2.00	5.00	13.00
			Bottom Depth (m):		0.30	2.20	5.20	13.20
			Date Sampled:		07-Jun-2023	07-Jun-2023	07-Jun-2023	07-Jun-2023
			Asbestos Lab:		NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
Total Aromatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25
Aromatic EPH >C10-C12	U	2690	mg/kg	1.00	< 1.0	1.4	1.9	1.3
Aromatic EPH >C12-C16	U	2690	mg/kg	1.00	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic EPH >C16-C21	U	2690	mg/kg	2.00	2.8	6.1	< 2.0	< 2.0
Aromatic EPH >C21-C35	U	2690	mg/kg	2.00	20	130	4.6	< 2.0
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00	3.7	4.4	< 1.0	< 1.0
Total Aromatic EPH >C10-C35	U	2690	mg/kg	5.00	22	140	7.9	< 5.0
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00	26	140	< 10	< 10
Total VPH >C5-C10	U	2780	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Total EPH >C10-C35	U	2690	mg/kg	10.00	58	340	30	15
Total EPH >C10-C40	N	2690	mg/kg	10.00	74	390	30	15
Organic Matter	U	2625	%	0.40	2.4	3.0	1.4	5.1
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	4.6	< 1.0
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Naphthalene	U	2800	mg/kg	0.10	1.5	2.9	< 0.10	2.5
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	2800	mg/kg	0.10	0.15	< 0.10	< 0.10	0.31
Anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	2800	mg/kg	0.10	0.23	< 0.10	< 0.10	0.39
Pyrene	U	2800	mg/kg	0.10	0.21	< 0.10	< 0.10	0.40
Benzo[a]anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.16
Chrysene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.12
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	2.1	2.9	< 2.0	3.9
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10

Results - 2 Stage WAC

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	23-19255								
Chemtest Sample ID:	1652740								
Sample Ref:	112								
Sample ID:									
Sample Location:	S2-BH230								
Top Depth(m):	5.00								
Bottom Depth(m):	5.20								
Sampling Date:	07-Jun-2023								
Determinand	**SOP**	**Accred.**	**Units**				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%			0.83	3	5	6
Loss On Ignition	2610	U	%			5.2	--	--	10
Total BTEX	2760	U	mg/kg			< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg			< 0.10	1	--	--
TPH Total WAC	2670	U	mg/kg			< 10	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg			< 2.0	100	--	--
pH	2010	U				8.6	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg			0.0090	--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0013	0.0009	0.0025	0.0088	0.5	2	25
Barium	1455	U	0.064	< 0.005	0.13	0.043	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0007	< 0.0005	0.0014	< 0.0005	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.016	0.0014	0.032	0.024	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0032	0.0009	0.0063	0.011	0.06	0.7	5
Selenium	1455	U	0.016	0.0013	0.031	0.023	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	< 0.003	< 0.003	4	50	200
Chloride	1220	U	2.6	11	< 10	100	800	15000	25000
Fluoride	1220	U	0.41	0.11	< 1.0	1.3	10	150	500
Sulphate	1220	U	36	1.5	72	38	1000	20000	50000
Total Dissolved Solids	1020	N	220	29	430	410	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	5.7	3.2	< 50	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	2.5

Leachate Test Information	
Leachant volume 1st extract/l	0.346
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.116

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C40	Acetone/Heptane extraction / GCxGC FID detection

Test Methods

SOP	Title	Parameters included	Method summary
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8-C10 Aromatics: >C5–C7,>C7-C8,>C8–C10	Water extraction / Headspace GCxGC FID detection
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge
650	Characterisation of Waste (Leaching WAC)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

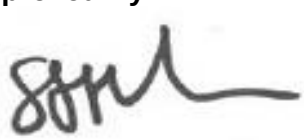
Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-19715-1
Initial Date of Issue:	20-Jun-2023
Re-Issue Details:	
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt James Power
Project	G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Quotation No.:	Q22-29781	**Date Received:**	12-Jun-2023
Order No.:		**Date Instructed:**	14-Jun-2023
No. of Samples:	4		
Turnaround (Wkdays):	5	**Results Due:**	20-Jun-2023
Date Approved:	20-Jun-2023		

Approved By:



Details: Stuart Henderson, Technical Manager

Results - Leachate

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services				**Chemtest Job No.:**		23-19715	23-19715
Quotation No.: Q22-29781				**Chemtest Sample ID.:**		1654849	1654857
				Client Sample ID.:		125	116
				Sample Location:		S2-BH231	S2-BH231
				Sample Type:		SOIL	SOIL
				Top Depth (m):		9.50	5.50
				Bottom Depth (m):		9.60	5.60
				Date Sampled:		08-Jun-2023	08-Jun-2023
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**		
pH	U	1010	10:1		N/A	9.4	8.8
Sulphate	U	1220	10:1	mg/l	1.0	61	55
Cyanide (Total)	U	1300	10:1	mg/l	0.050	< 0.050	< 0.050
Cyanide (Free)	U	1300	10:1	mg/l	0.050	< 0.050	< 0.050
Arsenic (Dissolved)	U	1455	10:1	µg/l	0.20	< 0.20	0.83
Cadmium (Dissolved)	U	1455	10:1	µg/l	0.11	< 0.11	< 0.11
Chromium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	< 0.50
Copper (Dissolved)	U	1455	10:1	µg/l	0.50	0.56	0.60
Mercury (Dissolved)	U	1455	10:1	µg/l	0.05	< 0.05	< 0.05
Nickel (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	< 0.50
Lead (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	< 0.50
Selenium (Dissolved)	U	1455	10:1	µg/l	0.50	2.5	7.6
Vanadium (Dissolved)	U	1455	10:1	µg/l	0.50	39	5.2
Zinc (Dissolved)	U	1455	10:1	µg/l	2.5	< 2.5	25
Chromium (Hexavalent)	U	1490	10:1	µg/l	20	< 20	< 20
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030	< 0.030

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

Client: Jackson Geo Services			**Chemtest Job No.:**		23-19715	23-19715	23-19715	23-19715
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1654846	1654849	1654854	1654857
			Client Sample ID.:		104	125	103	116
			Sample Location:		S1-BH120	S2-BH231	S2-BH231	S2-BH231
			Sample Type:		SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		1.80	9.50	0.50	5.50
			Bottom Depth (m):		2.00	9.60	0.60	5.60
			Date Sampled:		08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023
			Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
ACM Type	U	2192		N/A	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	3.5	5.2	5.1	3.7
pH	U	2010		4.0	8.1	8.3	8.2	8.4
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40	< 0.40	< 0.40	0.45
Sulphate (2:1 Water Soluble) as SO4 mg/l	U	2120	mg/l	10.000	< 10	260	< 10	93
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	3.9	< 0.50	< 0.50	< 0.50
Arsenic	U	2455	mg/kg	0.5	13	6.2	5.4	4.0
Cadmium	U	2455	mg/kg	0.10	0.22	0.25	0.19	0.12
Chromium	U	2455	mg/kg	0.5	13	13	13	12
Copper	U	2455	mg/kg	0.50	78	53	52	48
Mercury	U	2455	mg/kg	0.05	0.16	0.08	0.07	0.05
Nickel	U	2455	mg/kg	0.50	41	49	48	44
Lead	U	2455	mg/kg	0.50	29	24	23	21
Selenium	U	2455	mg/kg	0.25	0.68	0.87	0.73	0.95
Vanadium	U	2455	mg/kg	0.5	18	14	13	12
Zinc	U	2455	mg/kg	0.50	200	110	120	130
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Aliphatic VPH >C5-C6	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C6-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C6-C8 (Sum)	N	2780	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Aliphatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25
Aliphatic EPH >C10-C12	U	2690	mg/kg	2.00	7.8	6.9	6.9	6.2
Aliphatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic EPH >C12-C16	U	2690	mg/kg	1.00	2.0	2.4	1.4	1.9
Aliphatic EPH >C16-C21	U	2690	mg/kg	2.00	< 2.0	< 2.0	< 2.0	< 2.0
Aliphatic EPH >C21-C35	U	2690	mg/kg	3.00	7.2	70	7.4	3.1
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00	< 10	26	14	11
Total Aliphatic EPH >C10-C35	U	2690	mg/kg	5.00	17	79	16	11
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00	17	110	30	22
Aromatic VPH >C5-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05	< 0.05

Results - Soil

Project: G23012 Global Centre of Rail Excellence (GCRE) Phase 2

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			Top Depth (m):		1.80	9.50	0.50	5.50
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			Date Sampled:		08-Jun-2023	08-Jun-2023	08-Jun-2023	08-Jun-2023
			Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
Total Aromatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25	< 0.25
Aromatic EPH >C10-C12	U	2690	mg/kg	1.00	8.0	15	9.5	12
Aromatic EPH >C12-C16	U	2690	mg/kg	1.00	2.1	< 1.0	1.6	< 1.0
Aromatic EPH >C16-C21	U	2690	mg/kg	2.00	11	21	21	21
Aromatic EPH >C21-C35	U	2690	mg/kg	2.00	3.0	69	< 2.0	< 2.0
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00	32	10	1.8	< 1.0
Total Aromatic EPH >C10-C35	U	2690	mg/kg	5.00	24	110	32	32
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00	56	120	34	32
Total VPH >C5-C10	U	2780	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Total EPH >C10-C35	U	2690	mg/kg	10.00	41	180	48	43
Total EPH >C10-C40	N	2690	mg/kg	10.00	73	220	64	55
Organic Matter	U	2625	%	0.40	1.3	7.2	1.5	1.2
Benzene	U	2760	µg/kg	1.0	4.6	4.0	4.0	6.0
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	2.6
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	6.6
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	6.3
Naphthalene	U	2800	mg/kg	0.10	1.4	< 0.10	< 0.10	0.45
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	2800	mg/kg	0.10	0.12	< 0.10	< 0.10	< 0.10
Anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	2800	mg/kg	0.10	0.14	< 0.10	< 0.10	< 0.10
Pyrene	U	2800	mg/kg	0.10	0.18	< 0.10	< 0.10	< 0.10
Benzo[a]anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C40	Acetone/Heptane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8-C10 Aromatics: >C5–C7,>C7-C8,>C8–C10	Water extraction / Headspace GCxGC FID detection
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS

Test Methods

SOP	Title	Parameters included	Method summary
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

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I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-19753-1
Initial Date of Issue:	20-Jun-2023
Re-Issue Details:	
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt
Project	G23012 Global Centre of Rail Excellence
Quotation No.:	Q22-29781
Order No.:	
No. of Samples:	1
Turnaround (Wkdays):	7
Date Approved:	20-Jun-2023
Approved By:	
Details:	Stuart Henderson, Technical Manager

Date Received:	12-Jun-2023
Date Instructed:	12-Jun-2023
Results Due:	20-Jun-2023

Results - 2 Stage WAC

Project: G23012 Global Centre of Rail Excellence

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	23-19753								
Chemtest Sample ID:	1655027								
Sample Ref:									
Sample ID:									
Sample Location:	S2-BH228								
Top Depth(m):	24.00								
Bottom Depth(m):	24.10								
Sampling Date:	01-Jun-2023								
Determinand	**SOP**	**Accred.**	**Units**				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	M	%			2.8	3	5	6
Loss On Ignition	2610	M	%			9.7	--	--	10
Total BTEX	2760	M	mg/kg			< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg			< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg			< 10	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg			< 2.0	100	--	--
pH	2010	M				8.5	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg			0.0060	--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0022	0.0011	0.0043	0.012	0.5	2	25
Barium	1455	U	0.035	< 0.005	0.069	0.050	20	100	300
Cadmium	1455	U	0.00023	< 0.00011	0.00046	0.00034	0.04	1	5
Chromium	1455	U	0.0013	< 0.0005	0.0026	0.0019	0.5	10	70
Copper	1455	U	0.0021	0.0006	0.0042	0.0031	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0093	0.0020	0.019	0.030	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0025	< 0.0005	0.0050	0.0037	0.06	0.7	5
Selenium	1455	U	0.0037	0.0011	0.0075	0.015	0.1	0.5	7
Zinc	1455	U	0.004	< 0.003	0.008	0.006	4	50	200
Chloride	1220	U	2.0	< 1.0	< 10	< 10	800	15000	25000
Fluoride	1220	U	0.79	0.086	1.6	1.9	10	150	500
Sulphate	1220	U	27	< 1.0	54	39	1000	20000	50000
Total Dissolved Solids	1020	N	120	26	240	400	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	3.4	3.0	< 50	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	6.1

Leachate Test Information	
Leachant volume 1st extract/l	0.339
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.255

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Test Methods

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge
650	Characterisation of Waste (Leaching WAC)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

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C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-20056-1
Initial Date of Issue:	22-Jun-2023
Re-Issue Details:	
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt
Project	G23012 Global Centre of Rail Excellence
Quotation No.:	Q22-29781
Order No.:	
No. of Samples:	3
Turnaround (Wkdays):	7
Date Approved:	22-Jun-2023
Approved By:	
Details:	Stuart Henderson, Technical Manager

Date Received:	14-Jun-2023
Date Instructed:	14-Jun-2023
Results Due:	22-Jun-2023

Results - 2 Stage WAC

Project: G23012 Global Centre of Rail Excellence

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	23-20056								
Chemtest Sample ID:	1656153								
Sample Ref:									
Sample ID:									
Sample Location:	S1-BH120								
Top Depth(m):	1.80								
Bottom Depth(m):	2.00								
Sampling Date:	08-Jun-2023								
Determinand	**SOP**	**Accred.**	**Units**				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	M	%			1.2	3	5	6
Loss On Ignition	2610	M	%			6.1	--	--	10
Total BTEX	2760	M	mg/kg			< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg			< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg			< 10	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg			< 2.0	100	--	--
pH	2010	M				8.1	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg			0.0080	--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0025	0.0009	0.0050	0.011	0.5	2	25
Barium	1455	U	0.012	< 0.005	0.024	0.011	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0007	< 0.0005	0.0013	0.0006	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0005	0.046	0.0009	0.42	0.5	10	30
Nickel	1455	U	0.0006	0.0018	0.0012	0.017	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0007	< 0.0005	0.0013	0.0006	0.06	0.7	5
Selenium	1455	U	0.0020	0.0008	0.0040	0.0094	0.1	0.5	7
Zinc	1455	U	0.004	0.010	0.007	0.090	4	50	200
Chloride	1220	U	< 1.0	< 1.0	< 10	< 10	800	15000	25000
Fluoride	1220	U	0.46	0.22	< 1.0	2.4	10	150	500
Sulphate	1220	U	33	3.4	66	61	1000	20000	50000
Total Dissolved Solids	1020	N	96	31	190	370	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	4.9	3.9	< 50	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	9.2

Leachate Test Information	
Leachant volume 1st extract/l	0.332
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.163

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - 2 Stage WAC

Project: G23012 Global Centre of Rail Excellence

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	23-20056								
Chemtest Sample ID:	1656154								
Sample Ref:									
Sample ID:									
Sample Location:	S2-BH231								
Top Depth(m):	0.50								
Bottom Depth(m):	0.60								
Sampling Date:	08-Jun-2023								
Determinand	**SOP**	**Accred.**	**Units**				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	M	%			0.98	3	5	6
Loss On Ignition	2610	M	%			1.6	--	--	10
Total BTEX	2760	M	mg/kg			< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg			< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg			< 10	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg			< 2.0	100	--	--
pH	2010	M				8.2	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg			0.013	--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0007	< 0.0002	0.0013	0.0007	0.5	2	25
Barium	1455	U	0.092	0.037	0.18	0.42	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.044	0.027	0.088	0.29	0.5	10	30
Nickel	1455	U	0.0011	0.0023	0.0021	0.022	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0013	< 0.0005	0.0025	0.0013	0.06	0.7	5
Selenium	1455	U	0.0031	< 0.0005	0.0061	0.0031	0.1	0.5	7
Zinc	1455	U	0.006	0.006	0.013	0.058	4	50	200
Chloride	1220	U	< 1.0	< 1.0	< 10	< 10	800	15000	25000
Fluoride	1220	U	0.32	0.11	< 1.0	1.3	10	150	500
Sulphate	1220	U	25	2.7	50	49	1000	20000	50000
Total Dissolved Solids	1020	N	160	66	320	750	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	4.7	< 2.5	< 50	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	5.3

Leachate Test Information	
Leachant volume 1st extract/l	0.340
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.176

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - 2 Stage WAC

Project: G23012 Global Centre of Rail Excellence

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	23-20056								
Chemtest Sample ID:	1656155								
Sample Ref:									
Sample ID:									
Sample Location:	S2-BH231								
Top Depth(m):	5.50								
Bottom Depth(m):	5.60								
Sampling Date:	08-Jun-2023								
Determinand	**SOP**	**Accred.**	**Units**				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	M	%			0.88	3	5	6
Loss On Ignition	2610	M	%			1.1	--	--	10
Total BTEX	2760	M	mg/kg			< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg			< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg			< 10	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg			< 2.0	100	--	--
pH	2010	M				8.4	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg			0.0080	--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0007	< 0.0002	0.0015	0.0005	0.5	2	25
Barium	1455	U	0.054	0.053	0.11	0.53	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.058	0.039	0.12	0.40	0.5	10	30
Nickel	1455	U	0.0026	0.0026	0.0053	0.026	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0022	< 0.0005	0.0043	0.0015	0.06	0.7	5
Selenium	1455	U	0.031	0.0029	0.063	0.048	0.1	0.5	7
Zinc	1455	U	0.010	0.008	0.021	0.078	4	50	200
Chloride	1220	U	< 1.0	< 1.0	< 10	< 10	800	15000	25000
Fluoride	1220	U	0.24	0.12	< 1.0	1.3	10	150	500
Sulphate	1220	U	370	23	740	460	1000	20000	50000
Total Dissolved Solids	1020	N	590	110	1200	1400	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	5.3	< 2.5	< 50	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	3.7

Leachate Test Information	
Leachant volume 1st extract/l	0.343
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.118

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Test Methods

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge
650	Characterisation of Waste (Leaching WAC)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Amended Report

Report No.:	23-20137-6		
Initial Date of Issue:	20-Jun-2023	**Date of Re-Issue:**	21-Jun-2023
Re-Issue Details:	This report has been revised and directly supersedes 23-20137-5 in its entirety		
Client	Jackson Geo Services		
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA		
Contact(s):	Adam Putt James Power		
Project	G23012 Global Centre Of Rail Excellence		
Quotation No.:	Q22-29781	**Date Received:**	14-Jun-2023
Order No.:		**Date Instructed:**	14-Jun-2023
No. of Samples:	1		
Turnaround (Wkdays):	5	**Results Due:**	20-Jun-2023
Date Approved:	20-Jun-2023		
Approved By:			
Details:	Stuart Henderson, Technical Manager		

Results - Leachate

Project: G23012 Global Centre Of Rail Excellence

Client: Jackson Geo Services				**Chemtest Job No.:**		23-20137
Quotation No.: Q22-29781				**Chemtest Sample ID.:**		1656449
Order No.:				Client Sample Ref.:		#13904037752 10040
				Client Sample ID.:		140
				Sample Location:		S2-BH231
				Sample Type:		SOIL
				Top Depth (m):		24.80
				Bottom Depth (m):		25.00
				Date Sampled:		12-Jun-2023
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**	
pH	U	1010	10:1		N/A	8.6
Sulphate	U	1220	10:1	mg/l	1.0	16
Cyanide (Total)	U	1300	10:1	mg/l	0.050	0.34
Cyanide (Free)	U	1300	10:1	mg/l	0.050	< 0.050
Arsenic (Dissolved)	U	1455	10:1	µg/l	0.20	12
Cadmium (Dissolved)	U	1455	10:1	µg/l	0.11	0.75
Chromium (Dissolved)	U	1455	10:1	µg/l	0.50	0.55
Copper (Dissolved)	U	1455	10:1	µg/l	0.50	0.91
Mercury (Dissolved)	U	1455	10:1	µg/l	0.05	0.05
Nickel (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50
Lead (Dissolved)	U	1455	10:1	µg/l	0.50	0.60
Selenium (Dissolved)	U	1455	10:1	µg/l	0.50	5.4
Vanadium (Dissolved)	U	1455	10:1	µg/l	0.50	2.9
Zinc (Dissolved)	U	1455	10:1	µg/l	2.5	3.4
Chromium (Hexavalent)	U	1490	10:1	µg/l	20	< 20
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030

Results - Soil

Project: G23012 Global Centre Of Rail Excellence

Client: Jackson Geo Services			**Chemtest Job No.:**		23-20137
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1656449
Order No.:			Client Sample Ref.:		#13904037752 10040
			Client Sample ID.:		140
			Sample Location:		S2-BH231
			Sample Type:		SOIL
			Top Depth (m):		24.80
			Bottom Depth (m):		25.00
			Date Sampled:		12-Jun-2023
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Moisture	N	2030	%	0.020	0.38
pH	U	2010		4.0	8.4
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40
Sulphate (2:1 Water Soluble) as SO4 mg/l	U	2120	mg/l	10.000	26
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50
Arsenic	U	2455	mg/kg	0.5	21
Cadmium	U	2455	mg/kg	0.10	0.15
Chromium	U	2455	mg/kg	0.5	30
Copper	U	2455	mg/kg	0.50	34
Mercury	U	2455	mg/kg	0.05	0.17
Nickel	U	2455	mg/kg	0.50	57
Lead	U	2455	mg/kg	0.50	27
Selenium	U	2455	mg/kg	0.25	0.62
Vanadium	U	2455	mg/kg	0.5	25
Zinc	U	2455	mg/kg	0.50	130
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50
Aliphatic VPH >C5-C6	U	2780	mg/kg	0.05	< 0.05
Aliphatic VPH >C6-C7	U	2780	mg/kg	0.05	< 0.05
Aliphatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05
Aliphatic VPH >C6-C8 (Sum)	N	2780	mg/kg	0.10	< 0.10
Total Aliphatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25
Aliphatic EPH >C10-C12	U	2690	mg/kg	2.00	5.1
Aliphatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05
Aliphatic EPH >C12-C16	U	2690	mg/kg	1.00	4.4
Aliphatic EPH >C16-C21	U	2690	mg/kg	2.00	< 2.0
Aliphatic EPH >C21-C35	U	2690	mg/kg	3.00	11
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00	< 10
Total Aliphatic EPH >C10-C35	U	2690	mg/kg	5.00	22
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00	22
Aromatic VPH >C5-C7	U	2780	mg/kg	0.05	< 0.05
Aromatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05
Aromatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05
Total Aromatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25
Aromatic EPH >C10-C12	U	2690	mg/kg	1.00	< 1.0
Aromatic EPH >C12-C16	U	2690	mg/kg	1.00	< 1.0

Results - Soil

Project: G23012 Global Centre Of Rail Excellence

Client: Jackson Geo Services			**Chemtest Job No.:**		23-20137
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1656449
Order No.:			Client Sample Ref.:		#13904037752 10040
			Client Sample ID.:		140
			Sample Location:		S2-BH231
			Sample Type:		SOIL
			Top Depth (m):		24.80
			Bottom Depth (m):		25.00
			Date Sampled:		12-Jun-2023
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Aromatic EPH >C16-C21	U	2690	mg/kg	2.00	< 2.0
Aromatic EPH >C21-C35	U	2690	mg/kg	2.00	2.9
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00	3.7
Total Aromatic EPH >C10-C35	U	2690	mg/kg	5.00	< 5.0
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00	< 10
Total VPH >C5-C10	U	2780	mg/kg	0.50	< 0.50
Total EPH >C10-C35	U	2690	mg/kg	10.00	27
Total EPH >C10-C40	N	2690	mg/kg	10.00	30
Organic Matter	U	2625	%	0.40	2.9
Benzene	U	2760	µg/kg	1.0	< 1.0
Toluene	U	2760	µg/kg	1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0
Naphthalene	U	2800	mg/kg	0.10	0.93
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10
Acenaphthene	U	2800	mg/kg	0.10	< 0.10
Fluorene	U	2800	mg/kg	0.10	< 0.10
Phenanthrene	U	2800	mg/kg	0.10	< 0.10
Anthracene	U	2800	mg/kg	0.10	< 0.10
Fluoranthene	U	2800	mg/kg	0.10	< 0.10
Pyrene	U	2800	mg/kg	0.10	< 0.10
Benzo[a]anthracene	U	2800	mg/kg	0.10	< 0.10
Chrysene	U	2800	mg/kg	0.10	< 0.10
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	< 2.0
Total Phenols	U	2920	mg/kg	0.10	< 0.10

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35–C40	Acetone/Heptane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8-C10 Aromatics: >C5–C7,>C7-C8,>C8–C10	Water extraction / Headspace GCxGC FID detection
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS

Test Methods

SOP	Title	Parameters included	Method summary
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
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N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-20583-1
Initial Date of Issue:	21-Jun-2023
Re-Issue Details:	
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt
Project	G23012 Global Centre Of Rail Excellence

Quotation No.:	Q22-29781	**Date Received:**	16-Jun-2023
Order No.:		**Date Instructed:**	16-Jun-2023
No. of Samples:	19		
Turnaround (Wkdays):	5	**Results Due:**	22-Jun-2023

Date Approved: 21-Jun-2023

Approved By:



Details: Stuart Henderson, Technical Manager

Results - Soil

Project: G23012 Global Centre Of Rail Excellence

Client: Jackson Geo Services		**Chemtest Job No.:**			23-20583	23-20583	23-20583	23-20583	23-20583	23-20583	23-20583	23-20583
Quotation No.: Q22-29781		**Chemtest Sample ID.:**			1658845	1658846	1658847	1658848	1658849	1658850	1658851	1658852
Order No.:		Client Sample Ref.:			2	104	103	103	113	123	124	126
		Client Sample ID.:			#0533338249900002	#0828187605750008	#8831597486880009	#3268987416870007	#6999497267870017	#6999497267870027	#9218277474490028	#9218277474490030
		Sample Location:			S1-BH118	S1-BH118	S2-BH221	S2-BH222	S2-BH222	S2-BH222	S2-BH222	S2-BH222
		Sample Type:			SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		Top Depth (m):			1.80	3.00	2.90	2.40	8.50	11.80	12.20	15.60
		Bottom Depth (m):			1.90	3.10	3.00	2.50	8.60	11.90	12.30	15.70
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Moisture	N	2030	%	0.020	10	11	5.8	13	3.2	9.3	4.6	5.4
pH (2.5:1)	N	2010		4.0	[A] 6.1		[A] 7.1	[A] 6.9	[A] 8.7	[A] 7.2		
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	[A] < 0.010		[A] 0.32	[A] 0.11	[A] 0.031	[A] 0.10		
Total Sulphur	U	2175	%	0.010	[A] 0.015		[A] 0.20	[A] 0.026	[A] 0.035	[A] 0.18		
Sulphate (Acid Soluble)	U	2430	%	0.010	[A] 0.049		[A] 0.090	[A] 0.069	[A] 0.029	[A] 0.017		
Organic Matter	U	2625	%	0.40		[A] 4.4					[A] 1.9	[A] 33

Results - Soil

Project: G23012 Global Centre Of Rail Excellence

Client: Jackson Geo Services		**Chemtest Job No.:**			23-20583	23-20583	23-20583	23-20583	23-20583	23-20583	23-20583	23-20583
Quotation No.: Q22-29781		**Chemtest Sample ID.:**			1658853	1658854	1658855	1658856	1658857	1658858	1658859	1658860
Order No.:		Client Sample Ref.:			4	11	14	18	2	16	5	9
		Client Sample ID.:			#4969778198260004	#0106298355430011	#0106298355430014	#0106298355430018	#0180873307480002	#9503130395650015	#8871600068570005	#3098389782510009
		Sample Location:			S2-BH226	S2-WS02	S2-WS02	S2-WS02	S2-WS03	S2-WS03	S2-WS04	S2-WS04
		Sample Type:			SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		Top Depth (m):			0.70	1.20	1.40	2.70	0.13	2.70	0.80	1.20
		Bottom Depth (m):			0.90	1.70	1.50	2.80	0.80	2.80	1.00	2.45
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Moisture	N	2030	%	0.020	9.5	21	17	8.9	15	9.2	7.5	24
pH (2.5:1)	N	2010		4.0	[A] 7.7	[A] 6.3		[A] 7.3	[A] 7.5	[A] 7.1		[A] 6.9
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	[A] 0.11	[A] < 0.010		[A] < 0.010	[A] 0.20	[A] < 0.010		[A] < 0.010
Total Sulphur	U	2175	%	0.010	[A] 0.050	[A] 0.11		[A] 0.033	[A] 0.19	[A] 0.053		[A] 0.039
Sulphate (Acid Soluble)	U	2430	%	0.010	[A] 0.068	[A] 0.028		[A] 0.057	[A] 0.23	[A] 0.051		[A] 0.033
Organic Matter	U	2625	%	0.40			[A] 6.1				[A] 5.7	

Results - Soil

Project: G23012 Global Centre Of Rail Excellence

Client: Jackson Geo Services		**Chemtest Job No.:**			23-20583	23-20583	23-20583
Quotation No.: Q22-29781		**Chemtest Sample ID.:**			1658861	1658862	1658863
Order No.:		Client Sample Ref.:			18	12	22
		Client Sample ID.:			#3098389782510018	#6184335698450012	#6184335698450022
		Sample Location:			S2-WS04	S2-WS05	S2-WS05
		Sample Type:			SOIL	SOIL	SOIL
		Top Depth (m):			2.80	1.70	4.30
		Bottom Depth (m):			2.90	1.80	4.40
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Moisture	N	2030	%	0.020	13	8.7	17
pH (2.5:1)	N	2010		4.0	[A] 6.8	[A] 7.1	[A] 8.2
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Total Sulphur	U	2175	%	0.010	[A] 0.86	[A] 0.85	[A] 0.77
Sulphate (Acid Soluble)	U	2430	%	0.010	[A] 0.065	[A] 0.026	[A] 0.025
Organic Matter	U	2625	%	0.40			

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1658845	2	#0533338249900002	S1-BH118		A	Plastic Tub 500g
1658846	104	#0828187605750008	S1-BH118		A	Plastic Tub 500g
1658847	103	#8831597486880009	S2-BH221		A	Plastic Tub 500g
1658848	103	#3268987416870007	S2-BH222		A	Plastic Tub 500g
1658849	113	#6999497267870017	S2-BH222		A	Plastic Tub 500g
1658850	123	#6999497267870027	S2-BH222		A	Plastic Tub 500g
1658851	124	#9218277474490028	S2-BH222		A	Plastic Tub 500g
1658852	126	#9218277474490030	S2-BH222		A	Plastic Tub 500g
1658853	4	#4969778198260004	S2-BH226		A	Plastic Tub 500g
1658854	11	#0106298355430011	S2-WS02		A	Plastic Tub 500g
1658855	14	#0106298355430014	S2-WS02		A	Plastic Tub 500g
1658856	18	#0106298355430018	S2-WS02		A	Plastic Tub 500g
1658857	2	#0180873307480002	S2-WS03		A	Plastic Tub 500g
1658858	16	#9503130395650015	S2-WS03		A	Plastic Tub 500g
1658859	5	#8871600068570005	S2-WS04		A	Plastic Tub 500g
1658860	9	#3098389782510009	S2-WS04		A	Plastic Tub 500g
1658861	18	#3098389782510018	S2-WS04		A	Plastic Tub 500g
1658862	12	#6184335698450012	S2-WS05		A	Plastic Tub 500g
1658863	22	#6184335698450022	S2-WS05		A	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2175	Total Sulphur in Soils	Total Sulphur	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
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I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

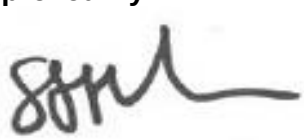
Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-20588-1
Initial Date of Issue:	23-Jun-2023
Re-Issue Details:	
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt James Power
Project	G23012 Global Centre Of Rail Excellence

Quotation No.:	Q22-29781	**Date Received:**	16-Jun-2023
Order No.:		**Date Instructed:**	19-Jun-2023
No. of Samples:	3		
Turnaround (Wkdays):	5	**Results Due:**	23-Jun-2023
Date Approved:	23-Jun-2023		

Approved By:



Details: Stuart Henderson, Technical Manager

Results - Leachate

Project: G23012 Global Centre Of Rail Excellence

Client: Jackson Geo Services					**Chemtest Job No.:**	23-20588	23-20588	23-20588
Quotation No.: Q22-29781					**Chemtest Sample ID.:**	1658923	1658927	1658932
Order No.:					Client Sample Ref.:	103	109	116
					Sample Location:	S2-BH224	S2-BH224	S2-BH224
					Sample Type:	SOIL	SOIL	SOIL
					Top Depth (m):	1.00	4.80	9.80
					Bottom Depth (m):	1.20	5.00	10.00
					Date Sampled:	14-Jun-2023	14-Jun-2023	14-Jun-2023
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**			
pH	U	1010	10:1		N/A	6.5	6.5	6.2
Sulphate	U	1220	10:1	mg/l	1.0	7.6	26	43
Cyanide (Total)	U	1300	10:1	mg/l	0.050	< 0.050	< 0.050	< 0.050
Cyanide (Free)	U	1300	10:1	mg/l	0.050	< 0.050	< 0.050	< 0.050
Arsenic (Dissolved)	U	1455	10:1	µg/l	0.20	0.53	< 0.20	< 0.20
Cadmium (Dissolved)	U	1455	10:1	µg/l	0.11	< 0.11	< 0.11	< 0.11
Chromium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	< 0.50	< 0.50
Copper (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	< 0.50	< 0.50
Mercury (Dissolved)	U	1455	10:1	µg/l	0.05	< 0.05	< 0.05	< 0.05
Nickel (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	1.2	13
Lead (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	< 0.50	< 0.50
Selenium (Dissolved)	U	1455	10:1	µg/l	0.50	1.2	2.9	2.7
Vanadium (Dissolved)	U	1455	10:1	µg/l	0.50	< 0.50	< 0.50	< 0.50
Zinc (Dissolved)	U	1455	10:1	µg/l	2.5	10	6.3	8.3
Chromium (Hexavalent)	U	1490	10:1	µg/l	20	< 20	< 20	< 20
Total Phenols	U	1920	10:1	mg/l	0.030	< 0.030	< 0.030	< 0.030

Results - Soil

Project: G23012 Global Centre Of Rail Excellence

Client: Jackson Geo Services			**Chemtest Job No.:**		23-20588	23-20588	23-20588
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1658923	1658927	1658932
Order No.:			Client Sample Ref.:		103	109	116
			Sample Location:		S2-BH224	S2-BH224	S2-BH224
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		1.00	4.80	9.80
			Bottom Depth (m):		1.20	5.00	10.00
			Date Sampled:		14-Jun-2023	14-Jun-2023	14-Jun-2023
			Asbestos Lab:		DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
ACM Type	U	2192		N/A	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	6.7	0.73	3.2
pH	U	2010		4.0	8.4	8.1	7.6
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	0.42	< 0.40	0.50
Sulphate (2:1 Water Soluble) as SO4 mg/l	U	2120	mg/l	10.000	22	170	510
Cyanide (Free)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Arsenic	U	2455	mg/kg	0.5	3.3	4.2	11
Cadmium	U	2455	mg/kg	0.10	0.13	0.22	0.16
Chromium	U	2455	mg/kg	0.5	13	13	20
Copper	U	2455	mg/kg	0.50	60	56	55
Mercury	U	2455	mg/kg	0.05	0.05	0.06	0.18
Nickel	U	2455	mg/kg	0.50	40	82	59
Lead	U	2455	mg/kg	0.50	29	30	28
Selenium	U	2455	mg/kg	0.25	0.75	1.4	1.7
Vanadium	U	2455	mg/kg	0.5	14	13	21
Zinc	U	2455	mg/kg	0.50	120	150	110
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Aliphatic VPH >C5-C6	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C6-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Aliphatic VPH >C6-C8 (Sum)	N	2780	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Total Aliphatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	0.90	< 0.25
Aliphatic EPH >C10-C12	U	2690	mg/kg	2.00	4.5	3.9	4.6
Aliphatic VPH >C8-C10	U	2780	mg/kg	0.05	0.12	0.90	< 0.05
Aliphatic EPH >C12-C16	U	2690	mg/kg	1.00	2.0	1.9	3.4
Aliphatic EPH >C16-C21	U	2690	mg/kg	2.00	< 2.0	< 2.0	< 2.0
Aliphatic EPH >C21-C35	U	2690	mg/kg	3.00	21	3.3	25
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00	< 10	< 10	< 10
Total Aliphatic EPH >C10-C35	U	2690	mg/kg	5.00	29	9.4	34
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00	29	< 10	34
Aromatic VPH >C5-C7	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C7-C8	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Aromatic VPH >C8-C10	U	2780	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Total Aromatic VPH >C5-C10	U	2780	mg/kg	0.25	< 0.25	< 0.25	< 0.25

Results - Soil

Project: G23012 Global Centre Of Rail Excellence

Client: Jackson Geo Services					**Chemtest Job No.:**	23-20588	23-20588	23-20588
Quotation No.: Q22-29781					**Chemtest Sample ID.:**	1658923	1658927	1658932
Order No.:					Client Sample Ref.:	103	109	116
					Sample Location:	S2-BH224	S2-BH224	S2-BH224
					Sample Type:	SOIL	SOIL	SOIL
					Top Depth (m):	1.00	4.80	9.80
					Bottom Depth (m):	1.20	5.00	10.00
					Date Sampled:	14-Jun-2023	14-Jun-2023	14-Jun-2023
					Asbestos Lab:	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
Aromatic EPH >C10-C12	U	2690	mg/kg	1.00		< 1.0	< 1.0	< 1.0
Aromatic EPH >C12-C16	U	2690	mg/kg	1.00		< 1.0	< 1.0	< 1.0
Aromatic EPH >C16-C21	U	2690	mg/kg	2.00		< 2.0	2.6	< 2.0
Aromatic EPH >C21-C35	U	2690	mg/kg	2.00		13	< 2.0	21
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00		6.9	2.8	7.1
Total Aromatic EPH >C10-C35	U	2690	mg/kg	5.00		14	< 5.0	22
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00		21	< 10	29
Total VPH >C5-C10	U	2780	mg/kg	0.50		< 0.50	0.90	< 0.50
Total EPH >C10-C35	U	2690	mg/kg	10.00		42	13	56
Total EPH >C10-C40	N	2690	mg/kg	10.00		49	16	63
Organic Matter	U	2625	%	0.40		2.7	3.1	5.5
Benzene	U	2760	µg/kg	1.0		< 1.0	14	< 1.0
Toluene	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0		< 1.0	< 1.0	< 1.0
Naphthalene	U	2800	mg/kg	0.10		2.3	1.1	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10
Acenaphthene	U	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10
Fluorene	U	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10
Phenanthrene	U	2800	mg/kg	0.10		< 0.10	0.11	< 0.10
Anthracene	U	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10
Fluoranthene	U	2800	mg/kg	0.10		< 0.10	0.15	< 0.10
Pyrene	U	2800	mg/kg	0.10		< 0.10	0.15	< 0.10
Benzo[a]anthracene	U	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10
Chrysene	U	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10		< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0		2.3	< 2.0	< 2.0
Total Phenols	U	2920	mg/kg	0.10		< 0.10	< 0.10	< 0.10

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C40	Acetone/Heptane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8-C10 Aromatics: >C5–C7,>C7-C8,>C8–C10	Water extraction / Headspace GCxGC FID detection
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS

Test Methods

SOP	Title	Parameters included	Method summary
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

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SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-20780-1
Initial Date of Issue:	26-Jun-2023
Re-Issue Details:	
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt
Project	G23012 Global Centre of Rail Excellence

Quotation No.:	Q22-29781	**Date Received:**	19-Jun-2023
Order No.:		**Date Instructed:**	19-Jun-2023
No. of Samples:	1		
Turnaround (Wkdays):	7	**Results Due:**	27-Jun-2023

Date Approved: 26-Jun-2023

Approved By:



Details: Stuart Henderson, Technical Manager

Results - 2 Stage WAC

Project: G23012 Global Centre of Rail Excellence

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	23-20780								
Chemtest Sample ID:	1660347								
Sample Ref:									
Sample ID:									
Sample Location:	S2-BH224								
Top Depth(m):	4.80								
Bottom Depth(m):	5.00								
Sampling Date:	14-Jun-2023								
Determinand	**SOP**	**Accred.**	**Units**				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	M	%			2.3	3	5	6
Loss On Ignition	2610	M	%			3.3	--	--	10
Total BTEX	2760	M	mg/kg			< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg			< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg			< 10	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg			< 2.0	100	--	--
pH	2010	M				8.1	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg			0.070	--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0003	0.0009	0.0006	0.0085	0.5	2	25
Barium	1455	U	0.037	0.020	0.074	0.22	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0086	0.012	0.017	0.11	0.5	10	30
Nickel	1455	U	0.0049	0.0051	0.0098	0.051	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0011	0.0033	0.0023	0.030	0.06	0.7	5
Selenium	1455	U	0.0098	0.0051	0.020	0.057	0.1	0.5	7
Zinc	1455	U	0.013	0.008	0.026	0.086	4	50	200
Chloride	1220	U	< 1.0	< 1.0	< 10	< 10	800	15000	25000
Fluoride	1220	U	0.14	0.16	< 1.0	1.6	10	150	500
Sulphate	1220	U	120	34	240	460	1000	20000	50000
Total Dissolved Solids	1020	N	180	70	370	850	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	< 2.5	< 2.5	< 50	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	0.73

Leachate Test Information	
Leachant volume 1st extract/l	0.349
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.242

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Test Methods

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge
650	Characterisation of Waste (Leaching WAC)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

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All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
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Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

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A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
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D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Amended Report

Report No.:	23-20997-2		
Initial Date of Issue:	26-Jun-2023	**Date of Re-Issue:**	26-Jun-2023
Re-Issue Details:	This report has been revised and directly supersedes 23-20997-1 in its entirety		
Client	Jackson Geo Services		
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA		
Contact(s):	Adam Putt		
Project	G23012 Global Centre of Rail Excellence Stage II		
Quotation No.:	Q22-29781	**Date Received:**	21-Jun-2023
Order No.:		**Date Instructed:**	21-Jun-2023
No. of Samples:	11		
Turnaround (Wkdays):	5	**Results Due:**	27-Jun-2023
Date Approved:	26-Jun-2023		
Approved By:			
Details:	Stuart Henderson, Technical Manager		

Results - Soil

Project: G23012 Global Centre of Rail Excellence Stage II

Client: Jackson Geo Services		**Chemtest Job No.:**			23-20997	23-20997	23-20997	23-20997	23-20997	23-20997	23-20997	23-20997	23-20997
Quotation No.: Q22-29781		**Chemtest Sample ID.:**			1661340	1661341	1661342	1661343	1661344	1661345	1661346	1661347	1661348
Order No.:		Client Sample Ref.:			107	110	123	130	106	108	118	132	4
		Client Sample ID.:			#92513661921 10010	#92513661921 10013	#92513661921 10026	#92513661921 10033	#21417691475 40012	#21417691475 40014	#21417691475 40024	#13904037752 10032	#78870744900 10004
		Sample Location:			S2-BH230	S2-BH230	S2-BH230	S2-BH230	S2-BH231	S2-BH231	S2-BH231	S2-BH231	S1-BH120
		Sample Type:			SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		Top Depth (m):			2.00	3.80	12.50	18.00	0.00	2.00	6.00	15.00	0.70
		Bottom Depth (m):			2.50	5.50	14.00	19.50	1.00	2.90	7.00	17.00	0.80
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
Moisture	N	2030	%	0.020	9.1	4.8	3.5	3.5	7.8	6.8	8.2	2.3	5.9
pH (2.5:1)	N	2010		4.0	[A] 7.6	[A] 8.4	[A] 8.8	[A] 8.6	[A] 8.1	[A] 8.0	[A] 8.1	[A] 8.7	[A] 5.8
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	[A] 0.042	[A] 0.010	[A] 0.027	[A] 0.022	[A] 0.048	[A] 0.24	[A] 0.22	[A] < 0.010	[A] < 0.010
Total Sulphur	U	2175	%	0.010	[A] 0.19	[A] 0.038	[A] 0.16	[A] 0.083	[A] 0.11	[A] 0.16	[A] 0.052	[A] 0.031	[A] 0.13
Sulphate (Acid Soluble)	U	2430	%	0.010	[A] 0.038	[A] 0.019	[A] 0.033	[A] 0.024	[A] 0.043	[A] 0.10	[A] 0.12	[A] 0.014	[A] 0.14

Results - Soil

Project: G23012 Global Centre of Rail Excellence Stage II

Client: Jackson Geo Services		**Chemtest Job No.:**			23-20997	23-20997
Quotation No.: Q22-29781		**Chemtest Sample ID.:**			1661349	1661350
Order No.:		Client Sample Ref.:			106	3
		Client Sample ID.:			#67039484142 70011	#10565841808 20003
		Sample Location:			S2-BH223	S2-BH224
		Sample Type:			SOIL	SOIL
		Top Depth (m):			4.60	0.40
		Bottom Depth (m):			5.00	0.50
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Moisture	N	2030	%	0.020	6.7	8.8
pH (2.5:1)	N	2010		4.0	[A] 7.6	[A] 7.8
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	[A] 0.22	[A] 0.14
Total Sulphur	U	2175	%	0.010	[A] 0.29	[A] 0.29
Sulphate (Acid Soluble)	U	2430	%	0.010	[A] 0.093	[A] 0.073

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1661340	107	#9251366192110010	S2-BH230		A	Plastic Tub 500g
1661341	110	#9251366192110013	S2-BH230		A	Plastic Tub 500g
1661342	123	#9251366192110026	S2-BH230		A	Plastic Tub 500g
1661343	130	#9251366192110033	S2-BH230		A	Plastic Tub 500g
1661344	106	#2141769147540012	S2-BH231		A	Plastic Tub 500g
1661345	108	#2141769147540014	S2-BH231		A	Plastic Tub 500g
1661346	118	#2141769147540024	S2-BH231		A	Plastic Tub 500g
1661347	132	#1390403775210032	S2-BH231		A	Plastic Tub 500g
1661348	4	#7887074490010004	S1-BH120		A	Plastic Tub 500g
1661349	106	#6703948414270011	S2-BH223		A	Plastic Tub 500g
1661350	3	#1056584180820003	S2-BH224		A	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2175	Total Sulphur in Soils	Total Sulphur	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.

Report Information

Key

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N	Unaccredited
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SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

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Uncertainty of measurement for the determinands tested are available upon request
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All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-21000-1
Initial Date of Issue:	26-Jun-2023
Re-Issue Details:	
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt
Project	G23012 Global Centre of Rail Excellence Stage II

Quotation No.:	Q22-29781	**Date Received:**	21-Jun-2023
Order No.:		**Date Instructed:**	21-Jun-2023
No. of Samples:	1		
Turnaround (Wkdays):	5	**Results Due:**	27-Jun-2023

Date Approved: 26-Jun-2023

Approved By:



Details: Stuart Henderson, Technical Manager

Results - Soil

Project: G23012 Global Centre of Rail Excellence Stage II

Client: Jackson Geo Services			**Chemtest Job No.:**		23-21000
Quotation No.: Q22-29781			**Chemtest Sample ID.:**		1661375
Order No.:			Client Sample Ref.:		108
			Client Sample ID.:		#14043416089 30008
			Sample Location:		S2-BH201
			Sample Type:		SOIL
			Top Depth (m):		4.00
			Bottom Depth (m):		5.70
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Moisture	N	2030	%	0.020	1.4
pH (2.5:1)	N	2010		4.0	[A] 7.3
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	[A] 0.071
Total Sulphur	U	2175	%	0.010	[A] 0.62
Sulphate (Acid Soluble)	U	2430	%	0.010	[A] 0.047

Deviations

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Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1661375	108	#1404341608930008	S2-BH201		A	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2175	Total Sulphur in Soils	Total Sulphur	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.

Report Information

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<	"less than"
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SOP	Standard operating procedure
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All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

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All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

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A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

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All soil samples will be retained for a period of 30 days from the date of receipt
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Email: info@chemtest.com

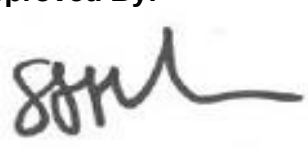
Final Report

Report No.:	23-21003-1
Initial Date of Issue:	26-Jun-2023
Re-Issue Details:	
Client	Jackson Geo Services
Client Address:	Northwood Farm Coxbridge Road Baltonsborough Somerset BA68 RA
Contact(s):	Adam Putt
Project	G23012 Global Centre of Rail Excellence Stage II

Quotation No.:	Q22-29781	**Date Received:**	21-Jun-2023
Order No.:		**Date Instructed:**	21-Jun-2023
No. of Samples:	4		
Turnaround (Wkdays):	5	**Results Due:**	27-Jun-2023

Date Approved: 26-Jun-2023

Approved By:



Details: Stuart Henderson, Technical Manager

Results - Soil

Project: G23012 Global Centre of Rail Excellence Stage II

Client: Jackson Geo Services		**Chemtest Job No.:**			23-21003	23-21003	23-21003	23-21003
Quotation No.: Q22-29781		**Chemtest Sample ID.:**			1661378	1661379	1661380	1661381
Order No.:		Client Sample Ref.:			103	112	117	122
		Client Sample ID.:			#52318075370 10006	#52318075370 10015	#52318075370 10020	#52318075370 10025
		Sample Location:			S2-BH228	S2-BH228	S2-BH228	S2-BH228
		Sample Type:			SOIL	SOIL	SOIL	SOIL
		Top Depth (m):			2.30	7.30	11.10	15.10
		Bottom Depth (m):			2.40	8.00	11.20	15.20
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
Moisture	N	2030	%	0.020	4.8	9.2	7.9	8.8
pH (2.5:1)	N	2010		4.0	[A] 7.9	[A] 4.3	[A] 6.4	[A] 7.5
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	[A] 0.058	[A] 0.91	[A] 0.22	[A] 0.064
Total Sulphur	U	2175	%	0.010	[A] 0.081	[A] 0.34	[A] 0.25	[A] 0.11
Chloride (Water Soluble)	U	2220	g/l	0.010		[A] < 0.010		
Nitrate (Water Soluble)	N	2220	g/l	0.010		< 0.010		
Sulphate (Acid Soluble)	U	2430	%	0.010	[A] 0.039	[A] 0.92	[A] 0.25	[A] 0.058

Deviations

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1661378	103	#5231807537010006	S2-BH228		A	Plastic Tub 500g
1661379	112	#5231807537010015	S2-BH228		A	Plastic Tub 500g
1661380	117	#5231807537010020	S2-BH228		A	Plastic Tub 500g
1661381	122	#5231807537010025	S2-BH228		A	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2175	Total Sulphur in Soils	Total Sulphur	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2220	Water soluble Chloride in Soils	Chloride	Aqueous extraction and measuremernt by 'Aquakem 600' Discrete Analyser using ferric nitrate / mercuric thiocyanate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.

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Global Centre of Rail Excellence (GCRE)

Stage 2 Ground Investigation

Monitoring Addendum Report

G23012C

September 2023

GCRE Limited

Global Centre of Rail Excellence
Onllwyn
Neath Port Talbot
SA10 9HN

Unit B3
Fram Enterprise Centre at Parc Busnes Edwards
Llantrisant
Pontyclun
CF72 8QZ

www.jacksongeo.co.uk

JACKSON GEO SERVICES

Report Control Sheet

Report Number

G23012C

Date of Issue

September 2023

Site Address

GCRE, Onllwyn, Neath Port Talbot, SA10 9HN

Report Preparation

Revision	Writer	Approver
Rev 0	James Power BSc (Hons) FGS	Adam Putt BSc (Hons) FGS CGeol CSci EurGeol MIEnvSc Registered Ground Engineering Professional
	Signature 	Signature 
Rev 1		
	Signature	Signature

Jackson Geo Services is a trading name of Jackson Drilling Holdings Limited – registered company number 06919550.

Table of Contents

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1.2 Proposed Development 1
1.3 Scope of Works 1
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1 Introduction

1.1 General

GCRE entered into a contract with Jackson Geo Services (JGS) to complete a ground investigation at the Global Centre of Rail Excellence (GCRE) site (hereafter referred to as The Site). The contract was agreed during March 2023. As per the Construction Design and Management (CDM) Regulations (2015), parties were attributed the following responsibilities:

Table 1: Responsibility Under CDM

Client	GCRE Limited
Designer	Atkins (SNC-Lavalin)
Principal Contractor	Walters UK Limited
Sub-Contractor	Jackson Geo Services (JGS)

1.2 Proposed Development

The site is proposed to be developed as a new rail testing and training centre, with the proposed development comprising a rail testing, storage and maintenance facility. The works associated to this phase of investigation comprise the monitoring and sampling of boreholes installed by JGS during the Stage 2 Ground Investigation. Details of this investigation are presented within JGS factual report number G23012 Rev1 (dated September 2023).

1.3 Scope of Works

The scope of investigation was defined by Atkins and is detailed within a series of documents referenced as follows:

- GCRE001-AWJV-EW-XX-SP-GE-00001 3.0 (dated November 2022)
- GCRE001-AWJV-EW-XX-SP-GE-00004 4.0 (dated December 2022)
- GCRE001-AWJV-EW-XX-SP-GE-00001 2.0 (dated May 2023)

The documents, when read in conjunction with one another, comprise the full project specification and are hereafter referred to as The Specification within this document.

In summary, the scope of investigation comprised:

- Well Development
- Ground Gas Monitoring
- Ground Water Monitoring
- Water Purging and Sampling
- In-situ Testing
- Geoenvironmental Testing
- Factual Reporting
- Production of Digital Data in AGS 4 format

1.4 Limitations

The project has been undertaken in accordance with The Specification and current standards and guidance as applicable (see References).

This report presents the observations made during desk-based studies and the fieldwork period on a factual basis. Any observations within the report are limited to those which can be made based upon the information available at the time.

JGS consider the contents of the report have been produced accurately and the data presented is representative of the site conditions at the time. JGS assumes any third-party data included in the report is accurate and correct. No responsibility is accepted by JGS for inaccuracies within third party data.

This report has been written to The Specification and is for use only in this context by the named Client and their advisers and is confidential to the named Client.

This report presents information on ground conditions, including groundwater, gas and contamination concentrations and soil properties, which are based upon the available dataset for the investigation. This dataset is considered representative of the site as whole, however is limited by the locations of investigation. Ground conditions, in particular Made Ground, can vary substantially and JGS do not accept responsibility for local unforeseen changes. Furthermore, groundwater, gas concentrations and chemical concentrations can vary with time, atmospheric conditions and spatially dependent upon a variety of confining factors.

Consideration should be made as to the relevance of the information if the dataset is to be utilised after a significant period of time has elapsed from the date of investigation.

2 The Site and Anticipated Ground Conditions

A description of the site, its location and the anticipated ground conditions are presented within JGS factual report number G23012 Rev1 (dated September 2023).

3 Fieldwork

3.1 General Information

The fieldwork was completed over the course of three visits between 26 July and 4 September 2023, with the well development taking place on an ad-hoc basis during the main phase of ground investigation works (27 March to 16 June 2023). Records of the well development are presented within Appendix I.

The ground investigation was undertaken in accordance with BS5930:2015+A1:2020. The works were supervised by a trained and competent JGS engineer.

3.2 Exploratory Holes

The details of the exploratory holes monitored, including the location ID, construction method, termination depth and installation detail, are listed within Table 2.

Table 2: Exploratory Hole Details

Exploratory Hole ID	Construction Method	Termination Depth (m)	Installation Details		
			Type	Diameter (mm)	Response Zone (m bgl)
S1-BH118	IP+DS+RO+RC	30.70	SP	50	8.00 – 15.00
S1-BH119	RO+DS+RC	31.50	SP SP	50 50	2.00 – 4.00 8.00 – 15.00
S1-BH120	IP+DS+RO+RC	30.00	SP	50	12.00 – 20.00
S2-BH204	IP+RO+RC	33.00	SP	50	21.00 – 32.00
S2-BH207	IP+RO+RC	40.00	SP	50	36.00 – 40.00
S2-BH208	IP+RO+RC	40.50	SP	50	32.50 – 40.50
S2-BH210	IP+RO+RC	40.00	SP	50	30.00 – 40.00
S2-BH214	IP+RO+RC	40.00	SP	50	20.00 – 30.00
S2-BH217	RO+RC	40.50	Packer installed at 34.50m. SP SP	 50 19	 2.00 – 6.00 25.00 – 30.00
S2-BH219	IP+RO+RC	39.00	SP SP	50 50	2.00 – 4.00 5.00 – 9.00
S2-BH220	IP+RO+RC	40.00	SP SP	19 50	1.00 – 30.50 31.00 – 39.00
S2-BH221	IP+SNC	10.00	SP	50	4.00 – 10.00
S2-BH222	SNC+RC	25.00	SP SP	50 50	2.00 – 4.00 15.00 – 25.00
S2-BH223	SNC	10.00	SP	50	4.00 – 10.00
S2-BH224	IP+SNC	10.00	SP	50	2.00 – 10.00
S2-BH225	IP+DS+RO+RC	25.60	SP	50	3.00 – 6.90
S2-BH226	SNC	10.00	SP	50	4.00 – 6.00
S2-BH227	IP+DS+RC	20.80	SP SP	19 50	1.00 – 5.50 8.00 – 14.00
S2-BH228	IP+SNC	40.00	SP	50	2.00 – 40.00
S2-BH229	IP+RO+RC	15.00	SP SP	50 50	2.00 – 3.00 8.00 – 14.00
S2-BH230	IP+SNC	28.00	SP	50	2.00 – 28.00
S2-BH231	SNC	25.00	SP	50	2.00 – 25.00
S2-BH232	IP+DS+RC	25.50	SP	50	1.00 – 7.00
S2-BH233	IP+DS+RC	25.00	SP	50	1.00 – 25.00
S2-BH235	IP+DS+RC	15.00	SP	50	8.00 – 15.00
S2-BH236	IP+DS+RO+RC	15.00	SP	50	10.00 – 15.00
S2-BH237	IP+DS+RC	24.80	SP	50	2.00 – 24.80
S2-BH239	IP+DS+RC	10.00	SP SP	50 50	1.00 – 3.60 7.00 – 10.00
S2-BH240	IP+DS+RC	6.50	SP	50	1.00 – 6.00
S2-BH241	IP+DS+RO+RC	15.00	SP	50	10.00 – 15.00
S2-BH242	IP+DS+RC	10.00	SP	50	1.00 – 3.70
S2-BH243	DS+RC	10.00	SP	50	5.00 – 6.00
S2-BH244	IP+DS+RC	10.00	SP SP	50 50	1.00 – 3.50 4.50 – 10.00
S2-BH245	IP+DS+RC	10.00	SP	50	1.50 – 4.00
S2-BH246	IP+DS+RC	10.00	SP SP	50 50	1.00 – 2.80 3.50 – 8.00
S2-BH247	DS+RC	10.50	SP SP	50 50	1.00 – 2.00 6.00 – 9.00
S2-BH248	IP+DS+RC	10.00	SP SP	50 50	1.00 – 4.00 6.50 – 9.50
S2-BH249	IP+DS+RC	10.00	SP SP	19 50	1.00 – 2.80 3.50 – 8.00
S2-BH250	IP+DS+RC	10.00	SP SP	50 50	1.00 – 2.00 7.50 – 9.50
S2-BH252	IP+DS+RC	10.00	SP SP	50 50	1.00 – 2.60 6.00 – 9.00

S2-BH261	IP+RO+RC	25.00	SP SP	50 50	3.00 – 8.00 10.00 – 15.00

Notes: DS – Dynamic Sampling, IP – Inspection Pit, RC- Rotary Coring, RO – Rotary Open Holing, SNC – Sonic Drilling, TP – Trial Pit, WLS – Dynamic Windowless Sampling, SP – Standpipe piezometer

3.3 Monitoring and Sampling

Monitoring of the groundwater and ground gas was undertaken by JGS in accordance with The Specification and relevant technical standards. Three monitoring visits were undertaken; these visits comprised monitoring groundwater and ground gas levels from within the installations. The monitoring was completed between; 26 June to 7 July, 24 July to 02 August and 21 August to 4 September 2023. Records of the groundwater and gas levels recorded during monitoring are presented within Appendix II along with associated calibration certificates for the equipment used. Continuous supplementary barometric and temperature data was collected throughout the duration of the monitoring period and is presented within Appendix II.

During the second monitoring visit undertaken between 24 July to 02 August 2023 inclement weather and poor surface conditions on site meant that access to several boreholes was not possible with a conventional 4x4 vehicle. Walters UK Ltd hired in an agricultural 4x4 (Kawasaki Mule) to facilitate access. The affected boreholes are listed below:

- S2-BH221
- S2-BH222
- S2-BH223
- S2-BH225
- S2-BH232

During the third monitoring visit undertaken between 21 August to 04 September 2023 the following boreholes were not visited due to deteriorating surface ground conditions on site making access to the locations unsafe:

- S2-BH225
- S2-BH232

Samples of the groundwater were obtained from the installations post fieldwork in accordance with The Specification and the requirements of BS10175+A1 (2011). The samples were obtained using low flow techniques. The samples were obtained during the monitoring visits listed above. Records of the purge and sampling sheets and in-situ parameters recorded during purging and sampling are presented within Appendix III.

Where groundwater was encountered within 19 mm diameter standpipes, samples were obtained using a low flow inertial pump with a Waterra PP1 (power pack). The installations where this method was utilised were:

- S2-BH217 (install 1) on all three visits
- S2-BH227 (install 1) on the second visit

Where groundwater was unable to be sampled using the downhole impellor pump and flow controller within 50 mm diameter standpipes, an attempt was made to obtain a sample using a low flow inertial pump and a Waterra PP1. This methodology was attempted at the following location:

- S2-BH223 on the first monitoring visit

Sampling using this methodology was unsuccessful.

Where groundwater was unable to be sampled using the downhole impellor pump and flow controller within 50 mm diameter standpipes, and in the case of location S2-BH223 where low flow inertial pump and a Waterra PP1 had previously failed, an attempt was made to obtain a sample using a high flow inertial pump and a Waterra PP1. This methodology was attempted at the following locations:

- S2-BH204 on the third monitoring visit.
- S2-BH208 on the third monitoring visit.
- S2-BH223 on the second and third monitoring visit.
- S2-BH231 on the third monitoring visit.
- S2-BH236 on the third monitoring visit.

Sampling using this methodology was unsuccessful.

3.4 Geoenvironmental Testing

Laboratory testing for geoenvironmental purposes was completed at Eurofins Chemtest, UKAS registration number 2183. The testing requirements were specified by Atkins and the testing has been completed in accordance with The Specification and relevant technical standards. The geoenvironmental testing was completed on 12 September 2023. The testing in summarised within Table 3 and the results are presented within Appendix IV.

Table 3: Geoenvironmental Testing Summary

Test Type	Number of Tests
Suite G – Water	63

4 References

- AGS. Electronic Transfer of Geotechnical and Geoenvironmental Data (Edition 4.1.1). Association of Geotechnical and Geoenvironmental Specialists. (2022)
- BS 5930:2015+A1. Code of practice for ground investigations. British Standards Institution. (2020)
- BS 10175:2011+A2. Investigation of potentially contaminated sites. Code of practice. (2017)
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- BS EN ISO 22282-1:2012. Geotechnical investigation and testing. Geohydraulic testing. Part 1 General rules (2012)
- BS EN ISO 22475-1. Geotechnical investigation and testing. Sampling methods and groundwater measurements. Part 1Technical principles for the sampling of soil, rock and groundwater. British Standards Institution. (2021)
- G23012. Global Centre of Rail Excellence (GCRE) Stage 2 Ground Investigation. Factual Report Rev1. Jackson Geo Services. (2023)

Appendix I

Fieldwork Monitoring

Groundwater Monitoring Well Development Records

Fieldwork Groundwater Data

S1-BH118, S1-BH119 (1 and 2), S1-BH120, S2-BH204, S2-BH207, S2-BH208, S2-BH210, S2-BH214, S2-BH217 (1 and 2), S2-BH219 (1 and 2), S2-BH220 (1), S2-BH225, S2-BH226, S2-BH227 (1 and 2), S2-BH229 (1 and 2), S2-BH232, S2-BH233, S2-BH236, S2-BH237, S2-BH239 (1 and 2), S2-BH240, S2-BH241, S2-BH242, S2-BH243 (1 and 2), S2-BH244 (1 and 2), S2-BH245, S2-BH246 (1 and 2), S2-BH247 (1 and 2), S2-BH248 (1 and 2), S2-BH250 (1 and 2), S2-BH252 (1 and 2), S2-BH261 (1 and 2)

INSTALLATION INSPECTION AND WELL DEVELOPMENT RECORD

Project	Global Centre of Rail Excellence Stage II	Project No	G23012	Client	Walters UK Ltd

Exploratory Hole Number	Installation Reference	Installation Diameter (mm)	Anticipated Well Depth (m bgl)	Date and Time
S1-BH118	1	50	15.00	24/05/2023 14:30
Cover Type	Pipe Cover	Top of Response Zone (m bgl)	Base of Response Zone (m bgl)	Weather
Box Cover	Pipe Plug	8.00	15.00	Sunny

Installation Inspection

Surface Conditions	Dry	Damage to Headworks?	No
Check Dip of Base (m bgl)	15.30	Pipe Cover/Bung Present?	Yes

Remedial actions undertaken to well:

N/A

Purging and Well Development

Guidance Notes

Well development undertaken in accordance with BS10175:2011+A2:2017.

Purge volumes to include the annulus of the filter pack.

Purging must continue until insitu parameters have stabilised unless agreed with clients representative.

Approx. Guidance Volumes for Field Calculation of Wet Well Volume

Volume of 50mm diameter plain pipe	2 litres / metre	Volume of 50mm diameter slotted pipe with 200mm diameter gravel filter pack	11 litres / metre
Porosity of 10mm pea gravel	0.33	Volume of 50mm diameter slotted pipe with 150mm diameter gravel filter pack	6 litres / metre

Groundwater Prior to Well Development

Groundwater Level (m bgl)	7.55	LNAPL/ DNAPL (m bgl)	N/A

Purging Details

Purge Method/ Device	Wasp Pump	Average Flow Rate (litres/min)	4.9
Time to Purge (mins)	8	Number of Well Volumes Purged	1.1
Total Volume Purged (litres)	39.0	Operative	KW

Observations During Well Development (see Vu-situ output for insitu parameter readings)

In-situ Parameter Device Model	N/A	Groundwater Odour	No odour
In-situ Parameter Device SN	N/A	Visual Turbidity	Fairly turbid
Confirm Field Calibration Completed	N/A	Groundwater Colour	Light brown

Well Volume Calculation

Volume of the Filter Pack

Saturated length of Filter Pack (L) (m)	7.00
Porosity of Filter Pack (ø)	0.33
Diameter of Filter Pack (mm) (df)	121
Volume of Filter Pack (litres) (Lø)((πdf2/4)-((πdp2/4))	22.0

Volume of the Standpipe

Diameter of Standpipe (mm) (dp)	50
Saturated depth (m) (sd) (installation base - groundwater level)	7.45
Volume of the Standpipe (litres) (πdp2/4)*10-3	14.6

Total Well Volume

Total Well Volume (litres) Volume of Filter Pack + Volume of Standpipe)	**36.6**

Additional Notes and Observations

No in situ parameters required during well development. Well purged until dry.

INSTALLATION INSPECTION AND WELL DEVELOPMENT RECORD

Project	Global Centre of Rail Excellence Stage II	Project No	G23012	Client	Walters UK Ltd

Exploratory Hole Number	Installation Reference	Installation Diameter (mm)	Anticipated Well Depth (m bgl)	Date and Time
S1-BH119	1	50	15.00	24/05/2023 12:00
Cover Type	Pipe Cover	Top of Response Zone (m bgl)	Base of Response Zone (m bgl)	Weather
Box Cover	Pipe Plug	8.00	15.00	Sunny

Installation Inspection

Surface Conditions	Dry	Damage to Headworks?	No
Check Dip of Base (m bgl)	15.00	Pipe Cover/Bung Present?	Yes

Remedial actions undertaken to well:

N/A

Purging and Well Development

Guidance Notes

Well development undertaken in accordance with BS10175:2011+A2:2017.

Purge volumes to include the annulus of the filter pack.

Purging must continue until insitu parameters have stabilised unless agreed with clients representative.

Approx. Guidance Volumes for Field Calculation of Wet Well Volume

Volume of 50mm diameter plain pipe	2 litres / metre	Volume of 50mm diameter slotted pipe with 200mm diameter gravel filter pack	11 litres / metre
Porosity of 10mm pea gravel	0.33	Volume of 50mm diameter slotted pipe with 150mm diameter gravel filter pack	6 litres / metre

Groundwater Prior to Well Development

Groundwater Level (m bgl)	2.20	LNAPL/ DNAPL (m bgl)	N/A

Purging Details

Purge Method/ Device	Wasp Pump	Average Flow Rate (litres/min)	6.0
Time to Purge (mins)	25	Number of Well Volumes Purged	3.2
Total Volume Purged (litres)	150.0	Operative	KW

Observations During Well Development (see Vu-situ output for insitu parameter readings)

In-situ Parameter Device Model	N/A	Groundwater Odour	No odour
In-situ Parameter Device SN	N/A	Visual Turbidity	Highly Turbid
Confirm Field Calibration Completed	N/A	Groundwater Colour	Grey

Well Volume Calculation

Volume of the Filter Pack

Saturated length of Filter Pack (L) (m)	7.00
Porosity of Filter Pack (ø)	0.33
Diameter of Filter Pack (mm) (df)	121
Volume of Filter Pack (litres) (Lø)((πdf2/4)-((πdp2/4))	22.0

Volume of the Standpipe

Diameter of Standpipe (mm) (dp)	50
Saturated depth (m) (sd) (installation base - groundwater level)	12.80
Volume of the Standpipe (litres) (πdp2/4)*10-3	25.1

Total Well Volume

Total Well Volume (litres) Volume of Filter Pack + Volume of Standpipe)	**47.1**

Additional Notes and Observations

No in situ parameters required during well development.

INSTALLATION INSPECTION AND WELL DEVELOPMENT RECORD

Project	Global Centre of Rail Excellence Stage II	Project No	G23012	Client	Walters UK Ltd

Exploratory Hole Number	Installation Reference	Installation Diameter (mm)	Anticipated Well Depth (m bgl)	Date and Time
S1-BH119	2	50	4.00	24/05/2023 12:30
Cover Type	Pipe Cover	Top of Response Zone (m bgl)	Base of Response Zone (m bgl)	Weather
Box Cover	Pipe Plug	2.00	4.00	Sunny

Installation Inspection

Surface Conditions	Dry	Damage to Headworks?	No
Check Dip of Base (m bgl)	4.10	Pipe Cover/Bung Present?	Yes

Remedial actions undertaken to well:

N/A

Purging and Well Development

Guidance Notes

Well development undertaken in accordance with BS10175:2011+A2:2017.

Purge volumes to include the annulus of the filter pack.

Purging must continue until insitu parameters have stabilised unless agreed with clients representative.

Approx. Guidance Volumes for Field Calculation of Wet Well Volume

Volume of 50mm diameter plain pipe	2 litres / metre	Volume of 50mm diameter slotted pipe with 200mm diameter gravel filter pack	11 litres / metre
Porosity of 10mm pea gravel	0.33	Volume of 50mm diameter slotted pipe with 150mm diameter gravel filter pack	6 litres / metre

Groundwater Prior to Well Development

Groundwater Level (m bgl)	2.07	LNAPL/ DNAPL (m bgl)	N/A

Purging Details

Purge Method/ Device	Wasp Pump	Average Flow Rate (litres/min)	6.0
Time to Purge (mins)	2	Number of Well Volumes Purged	1.0
Total Volume Purged (litres)	12.0	Operative	KW

Observations During Well Development (see Vu-situ output for insitu parameter readings)

In-situ Parameter Device Model	N/A	Groundwater Odour	No odour
In-situ Parameter Device SN	N/A	Visual Turbidity	Highly Turbid
Confirm Field Calibration Completed	N/A	Groundwater Colour	Grey

Well Volume Calculation

Volume of the Filter Pack

Saturated length of Filter Pack (L) (m)	1.93
Porosity of Filter Pack (ø)	0.33
Diameter of Filter Pack (mm) (df)	140
Volume of Filter Pack (litres) (Lø)((πdf2/4)-((πdp2/4))	8.5

Volume of the Standpipe

Diameter of Standpipe (mm) (dp)	50
Saturated depth (m) (sd) (installation base - groundwater level)	1.93
Volume of the Standpipe (litres) (πdp2/4)*10-3	3.8

Total Well Volume

Total Well Volume (litres) Volume of Filter Pack + Volume of Standpipe)	**12.3**

Additional Notes and Observations

No in situ parameters required during well development. Well purged dry.

INSTALLATION INSPECTION AND WELL DEVELOPMENT RECORD

Project	Global Centre of Rail Excellence Stage II	Project No	G23012	Client	Walters UK Ltd

Exploratory Hole Number	Installation Reference	Installation Diameter (mm)	Anticipated Well Depth (m bgl)	Date and Time
S1-BH120	1	50	20.00	30/05/2023 12:30
Cover Type	Pipe Cover	Top of Response Zone (m bgl)	Base of Response Zone (m bgl)	Weather
Box Cover	Pipe Plug	12.00	20.00	Sunny and windy

Installation Inspection

Surface Conditions	Dry	Damage to Headworks?	No
Check Dip of Base (m bgl)	20.10	Pipe Cover/Bung Present?	Yes

Remedial actions undertaken to well:

N/A

Purging and Well Development

Guidance Notes

Well development undertaken in accordance with BS10175:2011+A2:2017.

Purge volumes to include the annulus of the filter pack.

Purging must continue until insitu parameters have stabilised unless agreed with clients representative.

Approx. Guidance Volumes for Field Calculation of Wet Well Volume

Volume of 50mm diameter plain pipe	2 litres / metre	Volume of 50mm diameter slotted pipe with 200mm diameter gravel filter pack	11 litres / metre
Porosity of 10mm pea gravel	0.33	Volume of 50mm diameter slotted pipe with 150mm diameter gravel filter pack	6 litres / metre

Groundwater Prior to Well Development

Groundwater Level (m bgl)	9.95	LNAPL/ DNAPL (m bgl)	N/A

Purging Details

Purge Method/ Device	Wasp pump	Average Flow Rate (litres/min)	6.5
Time to Purge (mins)	26	Number of Well Volumes Purged	3.0
Total Volume Purged (litres)	168.0	Operative	KW

Observations During Well Development (see Vu-situ output for insitu parameter readings)

In-situ Parameter Device Model	N/A	Groundwater Odour	No odour
In-situ Parameter Device SN	N/A	Visual Turbidity	Fairly turbid
Confirm Field Calibration Completed	N/A	Groundwater Colour	Light brown running clear.

Well Volume Calculation

Volume of the Filter Pack

Saturated length of Filter Pack (L) (m)	8.00
Porosity of Filter Pack (ø)	0.33
Diameter of Filter Pack (mm) (df)	140
Volume of Filter Pack (litres) (Lø)((πdf2/4)-((πdp2/4))	35.4

Volume of the Standpipe

Diameter of Standpipe (mm) (dp)	50
Saturated depth (m) (sd) (installation base - groundwater level)	10.05
Volume of the Standpipe (litres) (πdp2/4)*10-3	19.7

Total Well Volume

Total Well Volume (litres) Volume of Filter Pack + Volume of Standpipe)	**55.2**

Additional Notes and Observations

No in situ parameters required for well development.

INSTALLATION INSPECTION AND WELL DEVELOPMENT RECORD

Project	Global Centre of Rail Excellence Stage II	Project No	G23012	Client	Walters UK Ltd

Exploratory Hole Number	Installation Reference	Installation Diameter (mm)	Anticipated Well Depth (m bgl)	Date and Time
S2-BH204	1	50	32.00	23/05/2023 14:45
Cover Type	Pipe Cover	Top of Response Zone (m bgl)	Base of Response Zone (m bgl)	Weather
Box Cover	Pipe Plug	21.00	32.00	Sunny

Installation Inspection

Surface Conditions	Dry	Damage to Headworks?	No
Check Dip of Base (m bgl)	30.00	Pipe Cover/Bung Present?	Yes

Remedial actions undertaken to well:

N/A

Purging and Well Development

Guidance Notes

Well development undertaken in accordance with BS10175:2011+A2:2017.

Purge volumes to include the annulus of the filter pack.

Purging must continue until insitu parameters have stabilised unless agreed with clients representative.

Approx. Guidance Volumes for Field Calculation of Wet Well Volume

Volume of 50mm diameter plain pipe	2 litres / metre	Volume of 50mm diameter slotted pipe with 200mm diameter gravel filter pack	11 litres / metre
Porosity of 10mm pea gravel	0.33	Volume of 50mm diameter slotted pipe with 150mm diameter gravel filter pack	6 litres / metre

Groundwater Prior to Well Development

Groundwater Level (m bgl)	28.12	LNAPL/ DNAPL (m bgl)	N/A

Purging Details

Purge Method/ Device	Wasp Pump	Average Flow Rate (litres/min)	3.2
Time to Purge (mins)	13	Number of Well Volumes Purged	2.1
Total Volume Purged (litres)	42.0	Operative	KW

Observations During Well Development (see Vu-situ output for insitu parameter readings)

In-situ Parameter Device Model	N/A	Groundwater Odour	Earthy odour
In-situ Parameter Device SN	N/A	Visual Turbidity	Highly turbid
Confirm Field Calibration Completed	N/A	Groundwater Colour	Greyish brown

Well Volume Calculation

Volume of the Filter Pack

Saturated length of Filter Pack (L) (m)	3.88
Porosity of Filter Pack (ø)	0.33
Diameter of Filter Pack (mm) (df)	120
Volume of Filter Pack (litres) (Lø)((πdf2/4)-((πdp2/4))	12.0

Volume of the Standpipe

Diameter of Standpipe (mm) (dp)	50
Saturated depth (m) (sd) (installation base - groundwater level)	3.88
Volume of the Standpipe (litres) (πdp2/4)*10-3	7.6

Total Well Volume

Total Well Volume (litres) Volume of Filter Pack + Volume of Standpipe)	**19.6**

Additional Notes and Observations

No in situ parameters required for during development. Well purged until dry.

INSTALLATION INSPECTION AND WELL DEVELOPMENT RECORD

Project	Global Centre of Rail Excellence Stage II	Project No	G23012	Client	Walters UK Ltd

Exploratory Hole Number	Installation Reference	Installation Diameter (mm)	Anticipated Well Depth (m bgl)	Date and Time
S2-BH207	1	50	40.00	17/05/2023 10:40
Cover Type	Pipe Cover	Top of Response Zone (m bgl)	Base of Response Zone (m bgl)	Weather
Box Cover	Pipe Plug	36.00	40.00	Sunny

Installation Inspection

Surface Conditions	Dry	Damage to Headworks?	No
Check Dip of Base (m bgl)	41.10	Pipe Cover/Bung Present?	Yes

Remedial actions undertaken to well:

N/A

Purging and Well Development

Guidance Notes

Well development undertaken in accordance with BS10175:2011+A2:2017.

Purge volumes to include the annulus of the filter pack.

Purging must continue until insitu parameters have stabilised unless agreed with clients representative.

Approx. Guidance Volumes for Field Calculation of Wet Well Volume

Volume of 50mm diameter plain pipe	2 litres / metre	Volume of 50mm diameter slotted pipe with 200mm diameter gravel filter pack	11 litres / metre
Porosity of 10mm pea gravel	0.33	Volume of 50mm diameter slotted pipe with 150mm diameter gravel filter pack	6 litres / metre

Groundwater Prior to Well Development

Groundwater Level (m bgl)	Dry	LNAPL/ DNAPL (m bgl)	N/A

Purging Details

Purge Method/ Device	N/A	Average Flow Rate (litres/min)	
Time to Purge (mins)	N/A	Number of Well Volumes Purged	
Total Volume Purged (litres)	N/A	Operative	KW

Observations During Well Development (see Vu-situ output for insitu parameter readings)

In-situ Parameter Device Model	N/A	Groundwater Odour	N/A
In-situ Parameter Device SN	N/A	Visual Turbidity	N/A
Confirm Field Calibration Completed	N/A	Groundwater Colour	N/A

Well Volume Calculation

Volume of the Filter Pack

Saturated length of Filter Pack (L) (m)	
Porosity of Filter Pack (ø)	0.33
Diameter of Filter Pack (mm) (df)	120
Volume of Filter Pack (litres) (Lø)((πdf2/4)-((πdp2/4))	0.0

Volume of the Standpipe

Diameter of Standpipe (mm) (dp)	50
Saturated depth (m) (sd) (installation base - groundwater level)	
Volume of the Standpipe (litres) (πdp2/4)*10-3	0.0

Total Well Volume

Total Well Volume (litres) Volume of Filter Pack + Volume of Standpipe)	**0.0**

Additional Notes and Observations

Borehole dipped dry.

INSTALLATION INSPECTION AND WELL DEVELOPMENT RECORD

Project	Global Centre of Rail Excellence Stage II	Project No	G23012	Client	Walters UK Ltd

Exploratory Hole Number	Installation Reference	Installation Diameter (mm)	Anticipated Well Depth (m bgl)	Date and Time
S2-BH208	1	50	40.50	24/05/2023 10:45
Cover Type	Pipe Cover	Top of Response Zone (m bgl)	Base of Response Zone (m bgl)	Weather
Box Cover	Pipe Plug	32.50	40.50	Sunny

Installation Inspection

Surface Conditions	Dry	Damage to Headworks?	No
Check Dip of Base (m bgl)	40.00	Pipe Cover/Bung Present?	Yes

Remedial actions undertaken to well:

N/A

Purging and Well Development

Guidance Notes

Well development undertaken in accordance with BS10175:2011+A2:2017.

Purge volumes to include the annulus of the filter pack.

Purging must continue until insitu parameters have stabilised unless agreed with clients representative.

Approx. Guidance Volumes for Field Calculation of Wet Well Volume

Volume of 50mm diameter plain pipe	2 litres / metre	Volume of 50mm diameter slotted pipe with 200mm diameter gravel filter pack	11 litres / metre
Porosity of 10mm pea gravel	0.33	Volume of 50mm diameter slotted pipe with 150mm diameter gravel filter pack	6 litres / metre

Groundwater Prior to Well Development

Groundwater Level (m bgl)	Dry	LNAPL/ DNAPL (m bgl)	N/A

Purging Details

Purge Method/ Device	N/A	Average Flow Rate (litres/min)	
Time to Purge (mins)	N/A	Number of Well Volumes Purged	
Total Volume Purged (litres)	N/A	Operative	KW

Observations During Well Development (see Vu-situ output for insitu parameter readings)

In-situ Parameter Device Model	N/A	Groundwater Odour	N/A
In-situ Parameter Device SN	N/A	Visual Turbidity	N/A
Confirm Field Calibration Completed	N/A	Groundwater Colour	N/A

Well Volume Calculation

Volume of the Filter Pack

Saturated length of Filter Pack (L) (m)	
Porosity of Filter Pack (ø)	0.33
Diameter of Filter Pack (mm) (df)	120
Volume of Filter Pack (litres) (Lø)((πdf2/4)-((πdp2/4))	0.0

Volume of the Standpipe

Diameter of Standpipe (mm) (dp)	50
Saturated depth (m) (sd) (installation base - groundwater level)	
Volume of the Standpipe (litres) (πdp2/4)*10-3	0.0

Total Well Volume

Total Well Volume (litres) Volume of Filter Pack + Volume of Standpipe)	**0.0**

Additional Notes and Observations

Well dipped Dry, no purging required.

INSTALLATION INSPECTION AND WELL DEVELOPMENT RECORD

Project	Global Centre of Rail Excellence Stage II	Project No	G23012	Client	Walters UK Ltd

Exploratory Hole Number	Installation Reference	Installation Diameter (mm)	Anticipated Well Depth (m bgl)	Date and Time
S2-BH210	1	50	40.00	24/05/2023 10:00
Cover Type	Pipe Cover	Top of Response Zone (m bgl)	Base of Response Zone (m bgl)	Weather
Steel Cover	Pipe Plug	30.00	40.00	Sunny

Installation Inspection

Surface Conditions	Dry	Damage to Headworks?	No
Check Dip of Base (m bgl)	40.00	Pipe Cover/Bung Present?	Yes

Remedial actions undertaken to well:

N/A

Purging and Well Development

Guidance Notes

Well development undertaken in accordance with BS10175:2011+A2:2017.

Purge volumes to include the annulus of the filter pack.

Purging must continue until insitu parameters have stabilised unless agreed with clients representative.

Approx. Guidance Volumes for Field Calculation of Wet Well Volume

Volume of 50mm diameter plain pipe	2 litres / metre	Volume of 50mm diameter slotted pipe with 200mm diameter gravel filter pack	11 litres / metre
Porosity of 10mm pea gravel	0.33	Volume of 50mm diameter slotted pipe with 150mm diameter gravel filter pack	6 litres / metre

Groundwater Prior to Well Development

Groundwater Level (m bgl)	Dry	LNAPL/ DNAPL (m bgl)	N/A

Purging Details

Purge Method/ Device	N/A	Average Flow Rate (litres/min)	
Time to Purge (mins)	N/A	Number of Well Volumes Purged	
Total Volume Purged (litres)	N/A	Operative	KW

Observations During Well Development (see Vu-situ output for insitu parameter readings)

In-situ Parameter Device Model	N/A	Groundwater Odour	N/A
In-situ Parameter Device SN	N/A	Visual Turbidity	N/A
Confirm Field Calibration Completed	N/A	Groundwater Colour	N/A

Well Volume Calculation

Volume of the Filter Pack

Saturated length of Filter Pack (L) (m)	
Porosity of Filter Pack (ø)	0.33
Diameter of Filter Pack (mm) (df)	120
Volume of Filter Pack (litres) (Lø)((πdf2/4)-((πdp2/4))	0.0

Volume of the Standpipe

Diameter of Standpipe (mm) (dp)	50
Saturated depth (m) (sd) (installation base - groundwater level)	
Volume of the Standpipe (litres) (πdp2/4)*10-3	0.0

Total Well Volume

Total Well Volume (litres) Volume of Filter Pack + Volume of Standpipe)	**0.0**

Additional Notes and Observations

Well dipped dry. No purging required.

INSTALLATION INSPECTION AND WELL DEVELOPMENT RECORD

Project	Global Centre of Rail Excellence Stage II	Project No	G23012	Client	Walters UK Ltd

Exploratory Hole Number	Installation Reference	Installation Diameter (mm)	Anticipated Well Depth (m bgl)	Date and Time
S2-BH214	1	50	30.00	05/06/2023 13:30
Cover Type	Pipe Cover	Top of Response Zone (m bgl)	Base of Response Zone (m bgl)	Weather
Box Cover	Pipe Plug	20.00	30.00	Sunny breezy

Installation Inspection

Surface Conditions	Dry	Damage to Headworks?	No
Check Dip of Base (m bgl)	30.00	Pipe Cover/Bung Present?	Yes

Remedial actions undertaken to well:

N/A

Purging and Well Development

Guidance Notes

Well development undertaken in accordance with BS10175:2011+A2:2017.

Purge volumes to include the annulus of the filter pack.

Purging must continue until insitu parameters have stabilised unless agreed with clients representative.

Approx. Guidance Volumes for Field Calculation of Wet Well Volume

Volume of 50mm diameter plain pipe	2 litres / metre	Volume of 50mm diameter slotted pipe with 200mm diameter gravel filter pack	11 litres / metre
Porosity of 10mm pea gravel	0.33	Volume of 50mm diameter slotted pipe with 150mm diameter gravel filter pack	6 litres / metre

Groundwater Prior to Well Development

Groundwater Level (m bgl)	29.30	LNAPL/ DNAPL (m bgl)	N/A

Purging Details

Purge Method/ Device	Wasp Pump	Average Flow Rate (litres/min)	1.5
Time to Purge (mins)	2	Number of Well Volumes Purged	0.8
Total Volume Purged (litres)	3.0	Operative	KW

Observations During Well Development (see Vu-situ output for insitu parameter readings)

In-situ Parameter Device Model	N/A	Groundwater Odour	No odour
In-situ Parameter Device SN	N/A	Visual Turbidity	Fairly turbid
Confirm Field Calibration Completed	N/A	Groundwater Colour	Brown

Well Volume Calculation

Volume of the Filter Pack

Saturated length of Filter Pack (L) (m)	0.70
Porosity of Filter Pack (ø)	0.33
Diameter of Filter Pack (mm) (df)	121
Volume of Filter Pack (litres) (Lø)((πdf2/4)-((πdp2/4))	2.2

Volume of the Standpipe

Diameter of Standpipe (mm) (dp)	50
Saturated depth (m) (sd) (installation base - groundwater level)	0.70
Volume of the Standpipe (litres) (πdp2/4)*10-3	1.4

Total Well Volume

Total Well Volume (litres) Volume of Filter Pack + Volume of Standpipe)	**3.6**

Additional Notes and Observations

No in situ parameters required for well development. Well purged until dry.

INSTALLATION INSPECTION AND WELL DEVELOPMENT RECORD

Project	Global Centre of Rail Excellence Stage II	Project No	G23012	Client	Walters UK Ltd

Exploratory Hole Number	Installation Reference	Installation Diameter (mm)	Anticipated Well Depth (m bgl)	Date and Time
S2-BH217	1	19	30.00	05/06/2023 11:00
Cover Type	Pipe Cover	Top of Response Zone (m bgl)	Base of Response Zone (m bgl)	Weather
Box Cover	Pipe Plug	25.00	30.00	Sunny Windy

Installation Inspection

Surface Conditions	Dry	Damage to Headworks?	No
Check Dip of Base (m bgl)	29.90	Pipe Cover/Bung Present?	Yes

Remedial actions undertaken to well:

N/A

Purging and Well Development

Guidance Notes

Well development undertaken in accordance with BS10175:2011+A2:2017.

Purge volumes to include the annulus of the filter pack.

Purging must continue until insitu parameters have stabilised unless agreed with clients representative.

Approx. Guidance Volumes for Field Calculation of Wet Well Volume

Volume of 50mm diameter plain pipe	2 litres / metre	Volume of 50mm diameter slotted pipe with 200mm diameter gravel filter pack	11 litres / metre
Porosity of 10mm pea gravel	0.33	Volume of 50mm diameter slotted pipe with 150mm diameter gravel filter pack	6 litres / metre

Groundwater Prior to Well Development

Groundwater Level (m bgl)	Dry	LNAPL/ DNAPL (m bgl)	N/A

Purging Details

Purge Method/ Device	N/A	Average Flow Rate (litres/min)	
Time to Purge (mins)	N/A	Number of Well Volumes Purged	
Total Volume Purged (litres)	N/A	Operative	KW

Observations During Well Development (see Vu-situ output for insitu parameter readings)

In-situ Parameter Device Model	N/A	Groundwater Odour	N/A
In-situ Parameter Device SN	N/A	Visual Turbidity	N/A
Confirm Field Calibration Completed	N/A	Groundwater Colour	N/A

Well Volume Calculation

Volume of the Filter Pack

Saturated length of Filter Pack (L) (m)	
Porosity of Filter Pack (ø)	0.33
Diameter of Filter Pack (mm) (df)	120
Volume of Filter Pack (litres) (Lø)((πdf2/4)-((πdp2/4))	0.0

Volume of the Standpipe

Diameter of Standpipe (mm) (dp)	19
Saturated depth (m) (sd) (installation base - groundwater level)	
Volume of the Standpipe (litres) (πdp2/4)*10-3	0.0

Total Well Volume

Total Well Volume (litres) Volume of Filter Pack + Volume of Standpipe)	**0.0**

Additional Notes and Observations

Well dipped dry, unable to purge.

INSTALLATION INSPECTION AND WELL DEVELOPMENT RECORD

Project	Global Centre of Rail Excellence Stage II	Project No	G23012	Client	Walters UK Ltd

Exploratory Hole Number	Installation Reference	Installation Diameter (mm)	Anticipated Well Depth (m bgl)	Date and Time
S2-BH217	2	50	6.00	05/06/2023 11:30
Cover Type	Pipe Cover	Top of Response Zone (m bgl)	Base of Response Zone (m bgl)	Weather
Box Cover	Pipe Plug	2.00	6.00	Sunny

Installation Inspection

Surface Conditions	Dry	Damage to Headworks?	No
Check Dip of Base (m bgl)	6.20	Pipe Cover/Bung Present?	Yes

Remedial actions undertaken to well:

N/A

Purging and Well Development

Guidance Notes

Well development undertaken in accordance with BS10175:2011+A2:2017.

Purge volumes to include the annulus of the filter pack.

Purging must continue until insitu parameters have stabilised unless agreed with clients representative.

Approx. Guidance Volumes for Field Calculation of Wet Well Volume

Volume of 50mm diameter plain pipe	2 litres / metre	Volume of 50mm diameter slotted pipe with 200mm diameter gravel filter pack	11 litres / metre
Porosity of 10mm pea gravel	0.33	Volume of 50mm diameter slotted pipe with 150mm diameter gravel filter pack	6 litres / metre

Groundwater Prior to Well Development

Groundwater Level (m bgl)	4.70	LNAPL/ DNAPL (m bgl)	N/A

Purging Details

Purge Method/ Device	Wasp Pump	Average Flow Rate (litres/min)	4.0
Time to Purge (mins)	5	Number of Well Volumes Purged	3.0
Total Volume Purged (litres)	20.0	Operative	KW

Observations During Well Development (see Vu-situ output for insitu parameter readings)

In-situ Parameter Device Model	N/A	Groundwater Odour	No odour
In-situ Parameter Device SN	N/A	Visual Turbidity	Highly Turbid
Confirm Field Calibration Completed	N/A	Groundwater Colour	Light brown

Well Volume Calculation

Volume of the Filter Pack

Saturated length of Filter Pack (L) (m)	1.30
Porosity of Filter Pack (ø)	0.33
Diameter of Filter Pack (mm) (df)	120
Volume of Filter Pack (litres) (Lø)((πdf2/4)-((πdp2/4))	4.0

Volume of the Standpipe

Diameter of Standpipe (mm) (dp)	50
Saturated depth (m) (sd) (installation base - groundwater level)	1.30
Volume of the Standpipe (litres) (πdp2/4)*10-3	2.6

Total Well Volume

Total Well Volume (litres) Volume of Filter Pack + Volume of Standpipe)	**6.6**

Additional Notes and Observations

No in situ parameters required for well development.

INSTALLATION INSPECTION AND WELL DEVELOPMENT RECORD

Project	Global Centre of Rail Excellence Stage II	Project No	G23012	Client	Walters UK Ltd

Exploratory Hole Number	Installation Reference	Installation Diameter (mm)	Anticipated Well Depth (m bgl)	Date and Time
S2-BH219	1	50	4.00	05/06/2023 10:00
Cover Type	Pipe Cover	Top of Response Zone (m bgl)	Base of Response Zone (m bgl)	Weather
Box Cover	Pipe Plug	2.00	4.00	Sunny Windy

Installation Inspection

Surface Conditions	Dry	Damage to Headworks?	No
Check Dip of Base (m bgl)	4.00	Pipe Cover/Bung Present?	Yes

Remedial actions undertaken to well:

N/A

Purging and Well Development

Guidance Notes

Well development undertaken in accordance with BS10175:2011+A2:2017.

Purge volumes to include the annulus of the filter pack.

Purging must continue until insitu parameters have stabilised unless agreed with clients representative.

Approx. Guidance Volumes for Field Calculation of Wet Well Volume

Volume of 50mm diameter plain pipe	2 litres / metre	Volume of 50mm diameter slotted pipe with 200mm diameter gravel filter pack	11 litres / metre
Porosity of 10mm pea gravel	0.33	Volume of 50mm diameter slotted pipe with 150mm diameter gravel filter pack	6 litres / metre

Groundwater Prior to Well Development

Groundwater Level (m bgl)	Dry	LNAPL/ DNAPL (m bgl)	N/A

Purging Details

Purge Method/ Device	N/A	Average Flow Rate (litres/min)	
Time to Purge (mins)	N/A	Number of Well Volumes Purged	
Total Volume Purged (litres)	N/A	Operative	KW

Observations During Well Development (see Vu-situ output for insitu parameter readings)

In-situ Parameter Device Model	N/A	Groundwater Odour	N/A
In-situ Parameter Device SN	N/A	Visual Turbidity	N/A
Confirm Field Calibration Completed	N/A	Groundwater Colour	N/A

Well Volume Calculation

Volume of the Filter Pack

Saturated length of Filter Pack (L) (m)	
Porosity of Filter Pack (ø)	0.33
Diameter of Filter Pack (mm) (df)	120
Volume of Filter Pack (litres) (Lø)((πdf2/4)-((πdp2/4))	0.0

Volume of the Standpipe

Diameter of Standpipe (mm) (dp)	50
Saturated depth (m) (sd) (installation base - groundwater level)	
Volume of the Standpipe (litres) (πdp2/4)*10-3	0.0

Total Well Volume

Total Well Volume (litres) Volume of Filter Pack + Volume of Standpipe)	**0.0**

Additional Notes and Observations

Well dipped dry. Unable to purge.

INSTALLATION INSPECTION AND WELL DEVELOPMENT RECORD

Project	Global Centre of Rail Excellence Stage II	Project No	G23012	Client	Walters UK Ltd

Exploratory Hole Number	Installation Reference	Installation Diameter (mm)	Anticipated Well Depth (m bgl)	Date and Time
S2-BH219	2	50	9.00	05/06/2023 10:30
Cover Type	Pipe Cover	Top of Response Zone (m bgl)	Base of Response Zone (m bgl)	Weather
Box Cover	Pipe Plug	5.00	9.00	Sunny Windy

Installation Inspection

Surface Conditions	Dry	Damage to Headworks?	No
Check Dip of Base (m bgl)	9.00	Pipe Cover/Bung Present?	Yes

Remedial actions undertaken to well:

N/A

Purging and Well Development

Guidance Notes

Well development undertaken in accordance with BS10175:2011+A2:2017.

Purge volumes to include the annulus of the filter pack.

Purging must continue until insitu parameters have stabilised unless agreed with clients representative.

Approx. Guidance Volumes for Field Calculation of Wet Well Volume

Volume of 50mm diameter plain pipe	2 litres / metre	Volume of 50mm diameter slotted pipe with 200mm diameter gravel filter pack	11 litres / metre
Porosity of 10mm pea gravel	0.33	Volume of 50mm diameter slotted pipe with 150mm diameter gravel filter pack	6 litres / metre

Groundwater Prior to Well Development

Groundwater Level (m bgl)	7.40	LNAPL/ DNAPL (m bgl)	N/A

Purging Details

Purge Method/ Device	Wasp Pump	Average Flow Rate (litres/min)	4.2
Time to Purge (mins)	6	Number of Well Volumes Purged	3.1
Total Volume Purged (litres)	25.0	Operative	KW

Observations During Well Development (see Vu-situ output for insitu parameter readings)

In-situ Parameter Device Model	N/A	Groundwater Odour	No odour
In-situ Parameter Device SN	N/A	Visual Turbidity	Highly Turbid
Confirm Field Calibration Completed	N/A	Groundwater Colour	Light Brown

Well Volume Calculation

Volume of the Filter Pack

Saturated length of Filter Pack (L) (m)	1.60
Porosity of Filter Pack (ø)	0.33
Diameter of Filter Pack (mm) (df)	120
Volume of Filter Pack (litres) (Lø)((πdf2/4)-((πdp2/4))	4.9

Volume of the Standpipe

Diameter of Standpipe (mm) (dp)	50
Saturated depth (m) (sd) (installation base - groundwater level)	1.60
Volume of the Standpipe (litres) (πdp2/4)*10-3	3.1

Total Well Volume

Total Well Volume (litres) Volume of Filter Pack + Volume of Standpipe)	**8.1**

Additional Notes and Observations

No in situ parameters required for well development.

INSTALLATION INSPECTION AND WELL DEVELOPMENT RECORD

Project	Global Centre of Rail Excellence Stage II	Project No	G23012	Client	Walters UK Ltd

Exploratory Hole Number	Installation Reference	Installation Diameter (mm)	Anticipated Well Depth (m bgl)	Date and Time
S2-BH220	1	50	39.00	17/05/2023 10:30
Cover Type	Pipe Cover	Top of Response Zone (m bgl)	Base of Response Zone (m bgl)	Weather
Box Cover	Pipe Plug	31.00	39.00	Sunny

Installation Inspection

Surface Conditions	Dry	Damage to Headworks?	No
Check Dip of Base (m bgl)	40.00	Pipe Cover/Bung Present?	Yes

Remedial actions undertaken to well:

N/A

Purging and Well Development

Guidance Notes

Well development undertaken in accordance with BS10175:2011+A2:2017.

Purge volumes to include the annulus of the filter pack.

Purging must continue until insitu parameters have stabilised unless agreed with clients representative.

Approx. Guidance Volumes for Field Calculation of Wet Well Volume

Volume of 50mm diameter plain pipe	2 litres / metre	Volume of 50mm diameter slotted pipe with 200mm diameter gravel filter pack	11 litres / metre
Porosity of 10mm pea gravel	0.33	Volume of 50mm diameter slotted pipe with 150mm diameter gravel filter pack	6 litres / metre

Groundwater Prior to Well Development

Groundwater Level (m bgl)	Dry	LNAPL/ DNAPL (m bgl)	N/A

Purging Details

Purge Method/ Device	N/A	Average Flow Rate (litres/min)	
Time to Purge (mins)	N/A	Number of Well Volumes Purged	
Total Volume Purged (litres)	N/A	Operative	KW

Observations During Well Development (see Vu-situ output for insitu parameter readings)

In-situ Parameter Device Model	N/A	Groundwater Odour	N/A
In-situ Parameter Device SN	N/A	Visual Turbidity	N/A
Confirm Field Calibration Completed	N/A	Groundwater Colour	N/A

Well Volume Calculation

Volume of the Filter Pack

Saturated length of Filter Pack (L) (m)	
Porosity of Filter Pack (ø)	0.33
Diameter of Filter Pack (mm) (df)	168
Volume of Filter Pack (litres) (Lø)((πdf2/4)-((πdp2/4))	0.0

Volume of the Standpipe

Diameter of Standpipe (mm) (dp)	50
Saturated depth (m) (sd) (installation base - groundwater level)	
Volume of the Standpipe (litres) (πdp2/4)*10-3	0.0

Total Well Volume

Total Well Volume (litres) Volume of Filter Pack + Volume of Standpipe)	**0.0**

Additional Notes and Observations

Borehole dipped dry.

INSTALLATION INSPECTION AND WELL DEVELOPMENT RECORD

Project	Global Centre of Rail Excellence Stage II	Project No	G23012	Client	Walters UK Ltd

Exploratory Hole Number	Installation Reference	Installation Diameter (mm)	Anticipated Well Depth (m bgl)	Date and Time
S2-BH225	1	50	6.90	25/05/2023 12:00
Cover Type	Pipe Cover	Top of Response Zone (m bgl)	Base of Response Zone (m bgl)	Weather
Box Cover	Pipe Plug	3.00	6.90	Sunny with wind

Installation Inspection

Surface Conditions	Dry	Damage to Headworks?	No
Check Dip of Base (m bgl)	6.90	Pipe Cover/Bung Present?	Yes

Remedial actions undertaken to well:

N/A

Purging and Well Development

Guidance Notes

Well development undertaken in accordance with BS10175:2011+A2:2017.

Purge volumes to include the annulus of the filter pack.

Purging must continue until insitu parameters have stabilised unless agreed with clients representative.

Approx. Guidance Volumes for Field Calculation of Wet Well Volume

Volume of 50mm diameter plain pipe	2 litres / metre	Volume of 50mm diameter slotted pipe with 200mm diameter gravel filter pack	11 litres / metre
Porosity of 10mm pea gravel	0.33	Volume of 50mm diameter slotted pipe with 150mm diameter gravel filter pack	6 litres / metre

Groundwater Prior to Well Development

Groundwater Level (m bgl)	6.80	LNAPL/ DNAPL (m bgl)	N/A

Purging Details

Purge Method/ Device	Wasp Pump	Average Flow Rate (litres/min)	2.0
Time to Purge (mins)	1	Number of Well Volumes Purged	3.9
Total Volume Purged (litres)	2.0	Operative	KW

Observations During Well Development (see Vu-situ output for insitu parameter readings)

In-situ Parameter Device Model	N/A	Groundwater Odour	No odour
In-situ Parameter Device SN	N/A	Visual Turbidity	Fairly turbid
Confirm Field Calibration Completed	N/A	Groundwater Colour	Greyish brown

Well Volume Calculation

Volume of the Filter Pack

Saturated length of Filter Pack (L) (m)	0.10
Porosity of Filter Pack (ø)	0.33
Diameter of Filter Pack (mm) (df)	121
Volume of Filter Pack (litres) (Lø)((πdf2/4)-((πdp2/4))	0.3

Volume of the Standpipe

Diameter of Standpipe (mm) (dp)	50
Saturated depth (m) (sd) (installation base - groundwater level)	0.10
Volume of the Standpipe (litres) (πdp2/4)*10-3	0.2

Total Well Volume

Total Well Volume (litres) Volume of Filter Pack + Volume of Standpipe)	**0.5**

Additional Notes and Observations

No in situ parameters required for well development. Well purged until dry

INSTALLATION INSPECTION AND WELL DEVELOPMENT RECORD

Project	Global Centre of Rail Excellence Stage II	Project No	G23012	Client	Walters UK Ltd

Exploratory Hole Number	Installation Reference	Installation Diameter (mm)	Anticipated Well Depth (m bgl)	Date and Time
S2-BH226	1	50	10.00	02/06/2023 12:00
Cover Type	Pipe Cover	Top of Response Zone (m bgl)	Base of Response Zone (m bgl)	Weather
Box Cover	Pipe Cover	4.00	10.00	Sunny

Installation Inspection

Surface Conditions	Dry	Damage to Headworks?	No
Check Dip of Base (m bgl)	9.80	Pipe Cover/Bung Present?	Yes

Remedial actions undertaken to well:

N/A

Purging and Well Development

Guidance Notes

Well development undertaken in accordance with BS10175:2011+A2:2017.

Purge volumes to include the annulus of the filter pack.

Purging must continue until insitu parameters have stabilised unless agreed with clients representative.

Approx. Guidance Volumes for Field Calculation of Wet Well Volume

Volume of 50mm diameter plain pipe	2 litres / metre	Volume of 50mm diameter slotted pipe with 200mm diameter gravel filter pack	11 litres / metre
Porosity of 10mm pea gravel	0.33	Volume of 50mm diameter slotted pipe with 150mm diameter gravel filter pack	6 litres / metre

Groundwater Prior to Well Development

Groundwater Level (m bgl)	6.90	LNAPL/ DNAPL (m bgl)	N/A

Purging Details

Purge Method/ Device	Wasp Pump	Average Flow Rate (litres/min)	5.4
Time to Purge (mins)	7	Number of Well Volumes Purged	3.1
Total Volume Purged (litres)	38.0	Operative	KW

Observations During Well Development (see Vu-situ output for insitu parameter readings)

In-situ Parameter Device Model	N/A	Groundwater Odour	No odour
In-situ Parameter Device SN	N/A	Visual Turbidity	Fairly turbid
Confirm Field Calibration Completed	N/A	Groundwater Colour	Light brown running cloudy then clear

Well Volume Calculation

Volume of the Filter Pack

Saturated length of Filter Pack (L) (m)	3.10
Porosity of Filter Pack (ø)	0.33
Diameter of Filter Pack (mm) (df)	101
Volume of Filter Pack (litres) (Lø)((πdf2/4)-((πdp2/4))	6.2

Volume of the Standpipe

Diameter of Standpipe (mm) (dp)	50
Saturated depth (m) (sd) (installation base - groundwater level)	3.10
Volume of the Standpipe (litres) (πdp2/4)*10-3	6.1

Total Well Volume

Total Well Volume (litres) Volume of Filter Pack + Volume of Standpipe)	**12.3**

Additional Notes and Observations

No in situ parameters required for well development.

INSTALLATION INSPECTION AND WELL DEVELOPMENT RECORD

Project	Global Centre of Rail Excellence Stage II	Project No	G23012	Client	Walters UK Ltd

Exploratory Hole Number	Installation Reference	Installation Diameter (mm)	Anticipated Well Depth (m bgl)	Date and Time
S2-BH227	1	19	5.50	25/05/2023 10:30
Cover Type	Pipe Cover	Top of Response Zone (m bgl)	Base of Response Zone (m bgl)	Weather
Box Cover	Pipe Plug	1.00	5.50	Sunny with wind

Installation Inspection

Surface Conditions	Dry	Damage to Headworks?	No
Check Dip of Base (m bgl)	5.40	Pipe Cover/Bung Present?	Yes

Remedial actions undertaken to well:

N/A

Purging and Well Development

Guidance Notes

Well development undertaken in accordance with BS10175:2011+A2:2017.

Purge volumes to include the annulus of the filter pack.

Purging must continue until insitu parameters have stabilised unless agreed with clients representative.

Approx. Guidance Volumes for Field Calculation of Wet Well Volume

Volume of 50mm diameter plain pipe	2 litres / metre	Volume of 50mm diameter slotted pipe with 200mm diameter gravel filter pack	11 litres / metre
Porosity of 10mm pea gravel	0.33	Volume of 50mm diameter slotted pipe with 150mm diameter gravel filter pack	6 litres / metre

Groundwater Prior to Well Development

Groundwater Level (m bgl)	5.40	LNAPL/ DNAPL (m bgl)	N/A

Purging Details

Purge Method/ Device	N/A	Average Flow Rate (litres/min)	
Time to Purge (mins)	N/A	Number of Well Volumes Purged	
Total Volume Purged (litres)	N/A	Operative	KW

Observations During Well Development (see Vu-situ output for insitu parameter readings)

In-situ Parameter Device Model	N/A	Groundwater Odour	N/A
In-situ Parameter Device SN	N/A	Visual Turbidity	N/A
Confirm Field Calibration Completed	N/A	Groundwater Colour	N/A

Well Volume Calculation

Volume of the Filter Pack

Saturated length of Filter Pack (L) (m)	0.10
Porosity of Filter Pack (ø)	0.33
Diameter of Filter Pack (mm) (df)	178
Volume of Filter Pack (litres) (Lø)((πdf2/4)-((πdp2/4))	0.8

Volume of the Standpipe

Diameter of Standpipe (mm) (dp)	19
Saturated depth (m) (sd) (installation base - groundwater level)	0.10
Volume of the Standpipe (litres) (πdp2/4)*10-3	0.0

Total Well Volume

Total Well Volume (litres) Volume of Filter Pack + Volume of Standpipe)	**0.8**

Additional Notes and Observations

Well damp at base, no purging carried out.

INSTALLATION INSPECTION AND WELL DEVELOPMENT RECORD

Project	Global Centre of Rail Excellence Stage II	Project No	G23012	Client	Walters UK Ltd

Exploratory Hole Number	Installation Reference	Installation Diameter (mm)	Anticipated Well Depth (m bgl)	Date and Time
S2-BH227	2	50	14.00	25/05/2023 10:00
Cover Type	Pipe Cover	Top of Response Zone (m bgl)	Base of Response Zone (m bgl)	Weather
Box Cover	Pipe Plug	8.00	14.00	Sunny and breezy

Installation Inspection

Surface Conditions	Dry	Damage to Headworks?	No
Check Dip of Base (m bgl)	14.40	Pipe Cover/Bung Present?	Yes

Remedial actions undertaken to well:

N/A

Purging and Well Development

Guidance Notes

Well development undertaken in accordance with BS10175:2011+A2:2017.

Purge volumes to include the annulus of the filter pack.

Purging must continue until insitu parameters have stabilised unless agreed with clients representative.

Approx. Guidance Volumes for Field Calculation of Wet Well Volume

Volume of 50mm diameter plain pipe	2 litres / metre	Volume of 50mm diameter slotted pipe with 200mm diameter gravel filter pack	11 litres / metre
Porosity of 10mm pea gravel	0.33	Volume of 50mm diameter slotted pipe with 150mm diameter gravel filter pack	6 litres / metre

Groundwater Prior to Well Development

Groundwater Level (m bgl)	11.20	LNAPL/ DNAPL (m bgl)	N/A

Purging Details

Purge Method/ Device	Wasp Pump	Average Flow Rate (litres/min)	4.3
Time to Purge (mins)	3	Number of Well Volumes Purged	0.5
Total Volume Purged (litres)	13.0	Operative	KW

Observations During Well Development (see Vu-situ output for insitu parameter readings)

In-situ Parameter Device Model	N/A	Groundwater Odour	No odour
In-situ Parameter Device SN	N/A	Visual Turbidity	Fairly turbid
Confirm Field Calibration Completed	N/A	Groundwater Colour	Light yellowish brown

Well Volume Calculation

Volume of the Filter Pack

Saturated length of Filter Pack (L) (m)	2.80
Porosity of Filter Pack (ø)	0.33
Diameter of Filter Pack (mm) (df)	178
Volume of Filter Pack (litres) (Lø)((πdf2/4)-((πdp2/4))	21.2

Volume of the Standpipe

Diameter of Standpipe (mm) (dp)	50
Saturated depth (m) (sd) (installation base - groundwater level)	2.80
Volume of the Standpipe (litres) (πdp2/4)*10-3	5.5

Total Well Volume

Total Well Volume (litres) Volume of Filter Pack + Volume of Standpipe)	**26.7**

Additional Notes and Observations

No in situ parameters required for well development. Well purged until dry.

INSTALLATION INSPECTION AND WELL DEVELOPMENT RECORD

Project	Global Centre of Rail Excellence Stage II	Project No	G23012	Client	Walters UK Ltd

Exploratory Hole Number	Installation Reference	Installation Diameter (mm)	Anticipated Well Depth (m bgl)	Date and Time
S2-BH229	1	50	14.00	25/05/2023 11:30
Cover Type	Pipe Cover	Top of Response Zone (m bgl)	Base of Response Zone (m bgl)	Weather
Box Cover	Pipe Plug	8.00	14.00	Sunny

Installation Inspection

Surface Conditions	Dry	Damage to Headworks?	No
Check Dip of Base (m bgl)	14.00	Pipe Cover/Bung Present?	Yes

Remedial actions undertaken to well:

N/A

Purging and Well Development

Guidance Notes

Well development undertaken in accordance with BS10175:2011+A2:2017.

Purge volumes to include the annulus of the filter pack.

Purging must continue until insitu parameters have stabilised unless agreed with clients representative.

Approx. Guidance Volumes for Field Calculation of Wet Well Volume

Volume of 50mm diameter plain pipe	2 litres / metre	Volume of 50mm diameter slotted pipe with 200mm diameter gravel filter pack	11 litres / metre
Porosity of 10mm pea gravel	0.33	Volume of 50mm diameter slotted pipe with 150mm diameter gravel filter pack	6 litres / metre

Groundwater Prior to Well Development

Groundwater Level (m bgl)	12.60	LNAPL/ DNAPL (m bgl)	N/A

Purging Details

Purge Method/ Device	Wasp pump	Average Flow Rate (litres/min)	2.7
Time to Purge (mins)	2	Number of Well Volumes Purged	0.6
Total Volume Purged (litres)	4.0	Operative	KW

Observations During Well Development (see Vu-situ output for insitu parameter readings)

In-situ Parameter Device Model	N/A	Groundwater Odour	No odour
In-situ Parameter Device SN	N/A	Visual Turbidity	Fairly Turbid
Confirm Field Calibration Completed	N/A	Groundwater Colour	Light brown running cloudy grey

Well Volume Calculation

Volume of the Filter Pack

Saturated length of Filter Pack (L) (m)	1.40
Porosity of Filter Pack (ø)	0.33
Diameter of Filter Pack (mm) (df)	120
Volume of Filter Pack (litres) (Lø)((πdf2/4)-((πdp2/4))	4.3

Volume of the Standpipe

Diameter of Standpipe (mm) (dp)	50
Saturated depth (m) (sd) (installation base - groundwater level)	1.40
Volume of the Standpipe (litres) (πdp2/4)*10-3	2.7

Total Well Volume

Total Well Volume (litres) Volume of Filter Pack + Volume of Standpipe)	**7.1**

Additional Notes and Observations

No in situ parameters required for well development. Well purged until dry.

INSTALLATION INSPECTION AND WELL DEVELOPMENT RECORD

Project	Global Centre of Rail Excellence Stage II	Project No	G23012	Client	Walters UK Ltd

Exploratory Hole Number	Installation Reference	Installation Diameter (mm)	Anticipated Well Depth (m bgl)	Date and Time
S2-BH229	2	50	3.00	25/05/2023 11:15
Cover Type	Pipe Cover	Top of Response Zone (m bgl)	Base of Response Zone (m bgl)	Weather
Box Cover	Pipe Plug	2.00	3.00	Sunny

Installation Inspection

Surface Conditions	Dry	Damage to Headworks?	No
Check Dip of Base (m bgl)	2.90	Pipe Cover/Bung Present?	Yes

Remedial actions undertaken to well:

N/A

Purging and Well Development

Guidance Notes

Well development undertaken in accordance with BS10175:2011+A2:2017.

Purge volumes to include the annulus of the filter pack.

Purging must continue until insitu parameters have stabilised unless agreed with clients representative.

Approx. Guidance Volumes for Field Calculation of Wet Well Volume

Volume of 50mm diameter plain pipe	2 litres / metre	Volume of 50mm diameter slotted pipe with 200mm diameter gravel filter pack	11 litres / metre
Porosity of 10mm pea gravel	0.33	Volume of 50mm diameter slotted pipe with 150mm diameter gravel filter pack	6 litres / metre

Groundwater Prior to Well Development

Groundwater Level (m bgl)	Dry	LNAPL/ DNAPL (m bgl)	N/A

Purging Details

Purge Method/ Device	N/A	Average Flow Rate (litres/min)	
Time to Purge (mins)	N/A	Number of Well Volumes Purged	
Total Volume Purged (litres)	N/A	Operative	KW

Observations During Well Development (see Vu-situ output for insitu parameter readings)

In-situ Parameter Device Model	N/A	Groundwater Odour	N/A
In-situ Parameter Device SN	N/A	Visual Turbidity	N/A
Confirm Field Calibration Completed	N/A	Groundwater Colour	N/A

Well Volume Calculation

Volume of the Filter Pack

Saturated length of Filter Pack (L) (m)	
Porosity of Filter Pack (ø)	0.33
Diameter of Filter Pack (mm) (df)	120
Volume of Filter Pack (litres) (Lø)((πdf2/4)-((πdp2/4))	0.0

Volume of the Standpipe

Diameter of Standpipe (mm) (dp)	50
Saturated depth (m) (sd) (installation base - groundwater level)	
Volume of the Standpipe (litres) (πdp2/4)*10-3	0.0

Total Well Volume

Total Well Volume (litres) Volume of Filter Pack + Volume of Standpipe)	**0.0**

Additional Notes and Observations

Well dipped dry. No purging required.

INSTALLATION INSPECTION AND WELL DEVELOPMENT RECORD

Project	Global Centre of Rail Excellence Stage II	Project No	G23012	Client	Walters UK Ltd

Exploratory Hole Number	Installation Reference	Installation Diameter (mm)	Anticipated Well Depth (m bgl)	Date and Time
S2-BH232	1	50	7.00	30/05/2023 10:30
Cover Type	Pipe Cover	Top of Response Zone (m bgl)	Base of Response Zone (m bgl)	Weather
0	Pipe Plug	1.00	7.00	Sunny with Wind

Installation Inspection

Surface Conditions	Dry	Damage to Headworks?	No
Check Dip of Base (m bgl)	7.20	Pipe Cover/Bung Present?	Yes

Remedial actions undertaken to well:

N/A

Purging and Well Development

Guidance Notes

Well development undertaken in accordance with BS10175:2011+A2:2017.

Purge volumes to include the annulus of the filter pack.

Purging must continue until insitu parameters have stabilised unless agreed with clients representative.

Approx. Guidance Volumes for Field Calculation of Wet Well Volume

Volume of 50mm diameter plain pipe	2 litres / metre	Volume of 50mm diameter slotted pipe with 200mm diameter gravel filter pack	11 litres / metre
Porosity of 10mm pea gravel	0.33	Volume of 50mm diameter slotted pipe with 150mm diameter gravel filter pack	6 litres / metre

Groundwater Prior to Well Development

Groundwater Level (m bgl)	4.55	LNAPL/ DNAPL (m bgl)	N/A

Purging Details

Purge Method/ Device	Wasp Pump	Average Flow Rate (litres/min)	3.8
Time to Purge (mins)	4	Number of Well Volumes Purged	1.2
Total Volume Purged (litres)	15.0	Operative	KW

Observations During Well Development (see Vu-situ output for insitu parameter readings)

In-situ Parameter Device Model	N/A	Groundwater Odour	No odour
In-situ Parameter Device SN	N/A	Visual Turbidity	Highly turbid
Confirm Field Calibration Completed	N/A	Groundwater Colour	Yellowish brown

Well Volume Calculation

Volume of the Filter Pack

Saturated length of Filter Pack (L) (m)	2.45
Porosity of Filter Pack (ø)	0.33
Diameter of Filter Pack (mm) (df)	122
Volume of Filter Pack (litres) (Lø)((πdf2/4)-((πdp2/4))	7.9

Volume of the Standpipe

Diameter of Standpipe (mm) (dp)	50
Saturated depth (m) (sd) (installation base - groundwater level)	2.45
Volume of the Standpipe (litres) (πdp2/4)*10-3	4.8

Total Well Volume

Total Well Volume (litres) Volume of Filter Pack + Volume of Standpipe)	**12.7**

Additional Notes and Observations

No in situ parameters required for well development. Well purged until dry.

INSTALLATION INSPECTION AND WELL DEVELOPMENT RECORD

Project	Global Centre of Rail Excellence Stage II	Project No	G23012	Client	Walters UK Ltd

Exploratory Hole Number	Installation Reference	Installation Diameter (mm)	Anticipated Well Depth (m bgl)	Date and Time
S2-BH233	1	50	25.00	01/06/2023 13:30
Cover Type	Pipe Cover	Top of Response Zone (m bgl)	Base of Response Zone (m bgl)	Weather
Box Cover	Pipe Plug	1.00	25.00	Sunny

Installation Inspection

Surface Conditions	Dry	Damage to Headworks?	No
Check Dip of Base (m bgl)	25.10	Pipe Cover/Bung Present?	Yes

Remedial actions undertaken to well:

N/A

Purging and Well Development

Guidance Notes

Well development undertaken in accordance with BS10175:2011+A2:2017.

Purge volumes to include the annulus of the filter pack.

Purging must continue until insitu parameters have stabilised unless agreed with clients representative.

Approx. Guidance Volumes for Field Calculation of Wet Well Volume

Volume of 50mm diameter plain pipe	2 litres / metre	Volume of 50mm diameter slotted pipe with 200mm diameter gravel filter pack	11 litres / metre
Porosity of 10mm pea gravel	0.33	Volume of 50mm diameter slotted pipe with 150mm diameter gravel filter pack	6 litres / metre

Groundwater Prior to Well Development

Groundwater Level (m bgl)	22.33	LNAPL/ DNAPL (m bgl)	N/A

Purging Details

Purge Method/ Device	Wasp Pump	Average Flow Rate (litres/min)	9.4
Time to Purge (mins)	7	Number of Well Volumes Purged	2.9
Total Volume Purged (litres)	66.0	Operative	KW

Observations During Well Development (see Vu-situ output for insitu parameter readings)

In-situ Parameter Device Model	N/A	Groundwater Odour	No odour
In-situ Parameter Device SN	N/A	Visual Turbidity	Fairly turbid
Confirm Field Calibration Completed	N/A	Groundwater Colour	Light brown

Well Volume Calculation

Volume of the Filter Pack

Saturated length of Filter Pack (L) (m)	2.67
Porosity of Filter Pack (ø)	0.33
Diameter of Filter Pack (mm) (df)	168
Volume of Filter Pack (litres) (Lø)((πdf2/4)-((πdp2/4))	17.8

Volume of the Standpipe

Diameter of Standpipe (mm) (dp)	50
Saturated depth (m) (sd) (installation base - groundwater level)	2.67
Volume of the Standpipe (litres) (πdp2/4)*10-3	5.2

Total Well Volume

Total Well Volume (litres) Volume of Filter Pack + Volume of Standpipe)	**23.0**

Additional Notes and Observations

No in situ parameters required for well development. Well purged until dry.

INSTALLATION INSPECTION AND WELL DEVELOPMENT RECORD

Project	Global Centre of Rail Excellence Stage II	Project No	G23012	Client	Walters UK Ltd

Exploratory Hole Number	Installation Reference	Installation Diameter (mm)	Anticipated Well Depth (m bgl)	Date and Time
S2-BH236	1	50	15.00	23/05/2023 10:45
Cover Type	Pipe Cover	Top of Response Zone (m bgl)	Base of Response Zone (m bgl)	Weather
Box Cover	Pipe Plug	10.00	15.00	Overcast

Installation Inspection

Surface Conditions	Dry	Damage to Headworks?	No
Check Dip of Base (m bgl)	15.00	Pipe Cover/Bung Present?	Yes

Remedial actions undertaken to well:

N/A

Purging and Well Development

Guidance Notes

Well development undertaken in accordance with BS10175:2011+A2:2017.

Purge volumes to include the annulus of the filter pack.

Purging must continue until insitu parameters have stabilised unless agreed with clients representative.

Approx. Guidance Volumes for Field Calculation of Wet Well Volume

Volume of 50mm diameter plain pipe	2 litres / metre	Volume of 50mm diameter slotted pipe with 200mm diameter gravel filter pack	11 litres / metre
Porosity of 10mm pea gravel	0.33	Volume of 50mm diameter slotted pipe with 150mm diameter gravel filter pack	6 litres / metre

Groundwater Prior to Well Development

Groundwater Level (m bgl)	13.91	LNAPL/ DNAPL (m bgl)	N/A

Purging Details

Purge Method/ Device	Wasp Pump	Average Flow Rate (litres/min)	2.0
Time to Purge (mins)	6	Number of Well Volumes Purged	3.1
Total Volume Purged (litres)	12.0	Operative	KW

Observations During Well Development (see Vu-situ output for insitu parameter readings)

In-situ Parameter Device Model	N/A	Groundwater Odour	No odour
In-situ Parameter Device SN	N/A	Visual Turbidity	Fairly Turbid
Confirm Field Calibration Completed	N/A	Groundwater Colour	Light brown running clear

Well Volume Calculation

Volume of the Filter Pack

Saturated length of Filter Pack (L) (m)	1.09
Porosity of Filter Pack (ø)	0.33
Diameter of Filter Pack (mm) (df)	92
Volume of Filter Pack (litres) (Lø)((πdf2/4)-((πdp2/4))	1.7

Volume of the Standpipe

Diameter of Standpipe (mm) (dp)	50
Saturated depth (m) (sd) (installation base - groundwater level)	1.09
Volume of the Standpipe (litres) (πdp2/4)*10-3	2.1

Total Well Volume

Total Well Volume (litres) Volume of Filter Pack + Volume of Standpipe)	**3.8**

Additional Notes and Observations

No in situ parameters required during well development.

INSTALLATION INSPECTION AND WELL DEVELOPMENT RECORD

Project	Global Centre of Rail Excellence Stage II	Project No	G23012	Client	Walters UK Ltd

Exploratory Hole Number	Installation Reference	Installation Diameter (mm)	Anticipated Well Depth (m bgl)	Date and Time
S2-BH237	1	50	24.80	01/06/2023 11:00
Cover Type	Pipe Cover	Top of Response Zone (m bgl)	Base of Response Zone (m bgl)	Weather
Box Cover	Pipe Plug	2.00	24.80	Sunny Windy

Installation Inspection

Surface Conditions	Dry	Damage to Headworks?	No
Check Dip of Base (m bgl)	25.00	Pipe Cover/Bung Present?	Yes

Remedial actions undertaken to well:

N/A

Purging and Well Development

Guidance Notes

Well development undertaken in accordance with BS10175:2011+A2:2017.

Purge volumes to include the annulus of the filter pack.

Purging must continue until insitu parameters have stabilised unless agreed with clients representative.

Approx. Guidance Volumes for Field Calculation of Wet Well Volume

Volume of 50mm diameter plain pipe	2 litres / metre	Volume of 50mm diameter slotted pipe with 200mm diameter gravel filter pack	11 litres / metre
Porosity of 10mm pea gravel	0.33	Volume of 50mm diameter slotted pipe with 150mm diameter gravel filter pack	6 litres / metre

Groundwater Prior to Well Development

Groundwater Level (m bgl)	11.90	LNAPL/ DNAPL (m bgl)	N/A

Purging Details

Purge Method/ Device	Wasp Pump	Average Flow Rate (litres/min)	9.3
Time to Purge (mins)	22	Number of Well Volumes Purged	2.2
Total Volume Purged (litres)	204.0	Operative	KW

Observations During Well Development (see Vu-situ output for insitu parameter readings)

In-situ Parameter Device Model	N/A	Groundwater Odour	No odour
In-situ Parameter Device SN	N/A	Visual Turbidity	Highly turbid
Confirm Field Calibration Completed	N/A	Groundwater Colour	Greyish brown running clear

Well Volume Calculation

Volume of the Filter Pack

Saturated length of Filter Pack (L) (m)	12.90
Porosity of Filter Pack (ø)	0.33
Diameter of Filter Pack (mm) (df)	150
Volume of Filter Pack (litres) (Lø)((πdf2/4)-((πdp2/4))	66.8

Volume of the Standpipe

Diameter of Standpipe (mm) (dp)	50
Saturated depth (m) (sd) (installation base - groundwater level)	12.90
Volume of the Standpipe (litres) (πdp2/4)*10-3	25.3

Total Well Volume

Total Well Volume (litres) Volume of Filter Pack + Volume of Standpipe)	**92.2**

Additional Notes and Observations

No in situ parameters required for well development. Well purged until dry.

INSTALLATION INSPECTION AND WELL DEVELOPMENT RECORD

Project	Global Centre of Rail Excellence Stage II	Project No	G23012	Client	Walters UK Ltd

Exploratory Hole Number	Installation Reference	Installation Diameter (mm)	Anticipated Well Depth (m bgl)	Date and Time
S2-BH239	1	50	3.60	15/05/2023 10:56
Cover Type	Pipe Cover	Top of Response Zone (m bgl)	Base of Response Zone (m bgl)	Weather
Box Cover	Pipe Plug	1.00	3.60	Sunny and windy

Installation Inspection

Surface Conditions	Dry	Damage to Headworks?	No
Check Dip of Base (m bgl)	4.60	Pipe Cover/Bung Present?	Yes

Remedial actions undertaken to well:

N/A

Purging and Well Development

Guidance Notes

Well development undertaken in accordance with BS10175:2011+A2:2017.

Purge volumes to include the annulus of the filter pack.

Purging must continue until insitu parameters have stabilised unless agreed with clients representative.

Approx. Guidance Volumes for Field Calculation of Wet Well Volume

Volume of 50mm diameter plain pipe	2 litres / metre	Volume of 50mm diameter slotted pipe with 200mm diameter gravel filter pack	11 litres / metre
Porosity of 10mm pea gravel	0.33	Volume of 50mm diameter slotted pipe with 150mm diameter gravel filter pack	6 litres / metre

Groundwater Prior to Well Development

Groundwater Level (m bgl)	1.40	LNAPL/ DNAPL (m bgl)	N/A

Purging Details

Purge Method/ Device	Wasp Pump	Average Flow Rate (litres/min)	6.9
Time to Purge (mins)	7	Number of Well Volumes Purged	3.1
Total Volume Purged (litres)	48.0	Operative	KW

Observations During Well Development (see Vu-situ output for insitu parameter readings)

In-situ Parameter Device Model	N/A	Groundwater Odour	No odour
In-situ Parameter Device SN	N/A	Visual Turbidity	Highly turbid
Confirm Field Calibration Completed	N/A	Groundwater Colour	Light greyish brown

Well Volume Calculation

Volume of the Filter Pack

Saturated length of Filter Pack (L) (m)	2.20
Porosity of Filter Pack (ø)	0.33
Diameter of Filter Pack (mm) (df)	150
Volume of Filter Pack (litres) (Lø)((πdf2/4)-((πdp2/4))	11.4

Volume of the Standpipe

Diameter of Standpipe (mm) (dp)	50
Saturated depth (m) (sd) (installation base - groundwater level)	2.20
Volume of the Standpipe (litres) (πdp2/4)*10-3	4.3

Total Well Volume

Total Well Volume (litres) Volume of Filter Pack + Volume of Standpipe)	**15.7**

Additional Notes and Observations

No in situ parameters required during well development.

INSTALLATION INSPECTION AND WELL DEVELOPMENT RECORD

Project	Global Centre of Rail Excellence Stage II	Project No	G23012	Client	Walters UK Ltd

Exploratory Hole Number	Installation Reference	Installation Diameter (mm)	Anticipated Well Depth (m bgl)	Date and Time
S2-BH239	2	0	10.00	15/05/2023 11:17
Cover Type	Pipe Cover	Top of Response Zone (m bgl)	Base of Response Zone (m bgl)	Weather
Box Cover	Pipe Plug	7.00	10.00	Sunny and windy

Installation Inspection

Surface Conditions	Dry	Damage to Headworks?	No
Check Dip of Base (m bgl)	7.60	Pipe Cover/Bung Present?	Yes

Remedial actions undertaken to well:

N/A

Purging and Well Development

Guidance Notes

Well development undertaken in accordance with BS10175:2011+A2:2017.

Purge volumes to include the annulus of the filter pack.

Purging must continue until insitu parameters have stabilised unless agreed with clients representative.

Approx. Guidance Volumes for Field Calculation of Wet Well Volume

Volume of 50mm diameter plain pipe	2 litres / metre	Volume of 50mm diameter slotted pipe with 200mm diameter gravel filter pack	11 litres / metre
Porosity of 10mm pea gravel	0.33	Volume of 50mm diameter slotted pipe with 150mm diameter gravel filter pack	6 litres / metre

Groundwater Prior to Well Development

Groundwater Level (m bgl)	1.16	LNAPL/ DNAPL (m bgl)	N/A

Purging Details

Purge Method/ Device	Wasp Pump	Average Flow Rate (litres/min)	6.8
Time to Purge (mins)	14.5	Number of Well Volumes Purged	3.0
Total Volume Purged (litres)	99.0	Operative	KW

Observations During Well Development (see Vu-situ output for insitu parameter readings)

In-situ Parameter Device Model	N/A	Groundwater Odour	No odour
In-situ Parameter Device SN	N/A	Visual Turbidity	Highly Turbid
Confirm Field Calibration Completed	N/A	Groundwater Colour	Light grey

Well Volume Calculation

Volume of the Filter Pack

Saturated length of Filter Pack (L) (m)	3.00
Porosity of Filter Pack (ø)	0.33
Diameter of Filter Pack (mm) (df)	150
Volume of Filter Pack (litres) (Lø)((πdf2/4)-((πdp2/4))	15.5

Volume of the Standpipe

Diameter of Standpipe (mm) (dp)	50
Saturated depth (m) (sd) (installation base - groundwater level)	8.84
Volume of the Standpipe (litres) (πdp2/4)*10-3	17.3

Total Well Volume

Total Well Volume (litres) Volume of Filter Pack + Volume of Standpipe)	**32.9**

Additional Notes and Observations

No in situ parameters required during well development.

INSTALLATION INSPECTION AND WELL DEVELOPMENT RECORD

Project	Global Centre of Rail Excellence Stage II	Project No	G23012	Client	Walters UK Ltd

Exploratory Hole Number	Installation Reference	Installation Diameter (mm)	Anticipated Well Depth (m bgl)	Date and Time
S2-BH240	1	50	6.00	11/05/2023 14:23
Cover Type	Pipe Cover	Top of Response Zone (m bgl)	Base of Response Zone (m bgl)	Weather
Box Cover	Pipe Plug	1.00	6.00	Raining

Installation Inspection

Surface Conditions	Wet	Damage to Headworks?	No
Check Dip of Base (m bgl)	5.10	Pipe Cover/Bung Present?	Yes

Remedial actions undertaken to well:

N/A

Purging and Well Development

Guidance Notes

Well development undertaken in accordance with BS10175:2011+A2:2017.

Purge volumes to include the annulus of the filter pack.

Purging must continue until insitu parameters have stabilised unless agreed with clients representative.

Approx. Guidance Volumes for Field Calculation of Wet Well Volume

Volume of 50mm diameter plain pipe	2 litres / metre	Volume of 50mm diameter slotted pipe with 200mm diameter gravel filter pack	11 litres / metre
Porosity of 10mm pea gravel	0.33	Volume of 50mm diameter slotted pipe with 150mm diameter gravel filter pack	6 litres / metre

Groundwater Prior to Well Development

Groundwater Level (m bgl)	1.60	LNAPL/ DNAPL (m bgl)	N/A

Purging Details

Purge Method/ Device	Wasp Pump	Average Flow Rate (litres/min)	7.4
Time to Purge (mins)	21	Number of Well Volumes Purged	3.0
Total Volume Purged (litres)	156.0	Operative	KW

Observations During Well Development (see Vu-situ output for insitu parameter readings)

In-situ Parameter Device Model	N/A	Groundwater Odour	No
In-situ Parameter Device SN	N/A	Visual Turbidity	No
Confirm Field Calibration Completed	N/A	Groundwater Colour	Grey running clear

Well Volume Calculation

Volume of the Filter Pack

Saturated length of Filter Pack (L) (m)	4.40
Porosity of Filter Pack (ø)	0.33
Diameter of Filter Pack (mm) (df)	200
Volume of Filter Pack (litres) (Lø)((πdf2/4)-((πdp2/4))	42.7

Volume of the Standpipe

Diameter of Standpipe (mm) (dp)	50
Saturated depth (m) (sd) (installation base - groundwater level)	4.40
Volume of the Standpipe (litres) (πdp2/4)*10-3	8.6

Total Well Volume

Total Well Volume (litres) Volume of Filter Pack + Volume of Standpipe)	**51.4**

Additional Notes and Observations

No in situ parameters required during well development.

INSTALLATION INSPECTION AND WELL DEVELOPMENT RECORD

Project	Global Centre of Rail Excellence Stage II	Project No	G23012	Client	Walters UK Ltd

Exploratory Hole Number	Installation Reference	Installation Diameter (mm)	Anticipated Well Depth (m bgl)	Date and Time
S2-BH241	1	50	15.00	17/05/2023 11:00
Cover Type	Pipe Cover	Top of Response Zone (m bgl)	Base of Response Zone (m bgl)	Weather
Box Cover	Pipe Plug	10.00	15.00	Sunny

Installation Inspection

Surface Conditions	Dry	Damage to Headworks?	No
Check Dip of Base (m bgl)	15.15	Pipe Cover/Bung Present?	Yes

Remedial actions undertaken to well:

N/A

Purging and Well Development

Guidance Notes

Well development undertaken in accordance with BS10175:2011+A2:2017.

Purge volumes to include the annulus of the filter pack.

Purging must continue until insitu parameters have stabilised unless agreed with clients representative.

Approx. Guidance Volumes for Field Calculation of Wet Well Volume

Volume of 50mm diameter plain pipe	2 litres / metre	Volume of 50mm diameter slotted pipe with 200mm diameter gravel filter pack	11 litres / metre
Porosity of 10mm pea gravel	0.33	Volume of 50mm diameter slotted pipe with 150mm diameter gravel filter pack	6 litres / metre

Groundwater Prior to Well Development

Groundwater Level (m bgl)	14.50	LNAPL/ DNAPL (m bgl)	N/A

Purging Details

Purge Method/ Device	Wasp Pump	Average Flow Rate (litres/min)	2.8
Time to Purge (mins)	2	Number of Well Volumes Purged	3.1
Total Volume Purged (litres)	5.5	Operative	KW

Observations During Well Development (see Vu-situ output for insitu parameter readings)

In-situ Parameter Device Model	N/A	Groundwater Odour	No odour
In-situ Parameter Device SN	N/A	Visual Turbidity	Not turbid
Confirm Field Calibration Completed	N/A	Groundwater Colour	light brown running clear

Well Volume Calculation

Volume of the Filter Pack

Saturated length of Filter Pack (L) (m)	0.50
Porosity of Filter Pack (ø)	0.33
Diameter of Filter Pack (mm) (df)	92
Volume of Filter Pack (litres) (Lø)((πdf2/4)-((πdp2/4))	0.8

Volume of the Standpipe

Diameter of Standpipe (mm) (dp)	50
Saturated depth (m) (sd) (installation base - groundwater level)	0.50
Volume of the Standpipe (litres) (πdp2/4)*10-3	1.0

Total Well Volume

Total Well Volume (litres) Volume of Filter Pack + Volume of Standpipe)	**1.8**

Additional Notes and Observations

No in situ parameters required during well development.

INSTALLATION INSPECTION AND WELL DEVELOPMENT RECORD

Project	Global Centre of Rail Excellence Stage II	Project No	G23012	Client	Walters UK Ltd

Exploratory Hole Number	Installation Reference	Installation Diameter (mm)	Anticipated Well Depth (m bgl)	Date and Time
S2-BH242	1	50	3.70	10/05/2023 14:45
Cover Type	Pipe Cover	Top of Response Zone (m bgl)	Base of Response Zone (m bgl)	Weather
Box Cover	Pipe Plug	1.00	3.70	Rain Showers

Installation Inspection

Surface Conditions	Wet	Damage to Headworks?	No
Check Dip of Base (m bgl)	3.70	Pipe Cover/Bung Present?	Yes

Remedial actions undertaken to well:

N/A

Purging and Well Development

Guidance Notes

Well development undertaken in accordance with BS10175:2011+A2:2017.

Purge volumes to include the annulus of the filter pack.

Purging must continue until insitu parameters have stabilised unless agreed with clients representative.

Approx. Guidance Volumes for Field Calculation of Wet Well Volume

Volume of 50mm diameter plain pipe	2 litres / metre	Volume of 50mm diameter slotted pipe with 200mm diameter gravel filter pack	11 litres / metre
Porosity of 10mm pea gravel	0.33	Volume of 50mm diameter slotted pipe with 150mm diameter gravel filter pack	6 litres / metre

Groundwater Prior to Well Development

Groundwater Level (m bgl)	2.10	LNAPL/ DNAPL (m bgl)	N/A

Purging Details

Purge Method/ Device	Wasp Pump	Average Flow Rate (litres/min)	1.3
Time to Purge (mins)	2	Number of Well Volumes Purged	0.2
Total Volume Purged (litres)	2.0	Operative	KW

Observations During Well Development (see Vu-situ output for insitu parameter readings)

In-situ Parameter Device Model	N/A	Groundwater Odour	No odour
In-situ Parameter Device SN	N/A	Visual Turbidity	Fairly turbid
Confirm Field Calibration Completed	N/A	Groundwater Colour	Brown

Well Volume Calculation

Volume of the Filter Pack

Saturated length of Filter Pack (L) (m)	1.60
Porosity of Filter Pack (ø)	0.33
Diameter of Filter Pack (mm) (df)	150
Volume of Filter Pack (litres) (Lø)((πdf2/4)-((πdp2/4))	8.3

Volume of the Standpipe

Diameter of Standpipe (mm) (dp)	50
Saturated depth (m) (sd) (installation base - groundwater level)	1.60
Volume of the Standpipe (litres) (πdp2/4)*10-3	3.1

Total Well Volume

Total Well Volume (litres) Volume of Filter Pack + Volume of Standpipe)	**11.4**

Additional Notes and Observations

No in situ parameters required during well development.
Borehole purged dry.

INSTALLATION INSPECTION AND WELL DEVELOPMENT RECORD

Project	Global Centre of Rail Excellence Stage II	Project No	G23012	Client	Walters UK Ltd

Exploratory Hole Number	Installation Reference	Installation Diameter (mm)	Anticipated Well Depth (m bgl)	Date and Time
S2-BH243	1	50	6.00	12/05/2023 13:45
Cover Type	Pipe Cover	Top of Response Zone (m bgl)	Base of Response Zone (m bgl)	Weather
Box Cover	Pipe Plug	1.00	3.00	Sunny and windy

Installation Inspection

Surface Conditions	Dry	Damage to Headworks?	No
Check Dip of Base (m bgl)	5.80	Pipe Cover/Bung Present?	Yes

Remedial actions undertaken to well:

N/A

Purging and Well Development

Guidance Notes

Well development undertaken in accordance with BS10175:2011+A2:2017.

Purge volumes to include the annulus of the filter pack.

Purging must continue until insitu parameters have stabilised unless agreed with clients representative.

Approx. Guidance Volumes for Field Calculation of Wet Well Volume

Volume of 50mm diameter plain pipe	2 litres / metre	Volume of 50mm diameter slotted pipe with 200mm diameter gravel filter pack	11 litres / metre
Porosity of 10mm pea gravel	0.33	Volume of 50mm diameter slotted pipe with 150mm diameter gravel filter pack	6 litres / metre

Groundwater Prior to Well Development

Groundwater Level (m bgl)	3.20	LNAPL/ DNAPL (m bgl)	N/A

Purging Details

Purge Method/ Device	Wasp Pump	Average Flow Rate (litres/min)	5.7
Time to Purge (mins)	7	Number of Well Volumes Purged	3.1
Total Volume Purged (litres)	40.0	Operative	KW

Observations During Well Development (see Vu-situ output for insitu parameter readings)

In-situ Parameter Device Model	N/A	Groundwater Odour	No odour
In-situ Parameter Device SN	N/A	Visual Turbidity	Highly Turbid
Confirm Field Calibration Completed	N/A	Groundwater Colour	Greyush brown

Well Volume Calculation

Volume of the Filter Pack

Saturated length of Filter Pack (L) (m)	2.80
Porosity of Filter Pack (ø)	0.33
Diameter of Filter Pack (mm) (df)	112
Volume of Filter Pack (litres) (Lø)((πdf2/4)-((πdp2/4))	7.3

Volume of the Standpipe

Diameter of Standpipe (mm) (dp)	50
Saturated depth (m) (sd) (installation base - groundwater level)	2.80
Volume of the Standpipe (litres) (πdp2/4)*10-3	5.5

Total Well Volume

Total Well Volume (litres) Volume of Filter Pack + Volume of Standpipe)	**12.8**

Additional Notes and Observations

No in situ parameters required during well development.

INSTALLATION INSPECTION AND WELL DEVELOPMENT RECORD

Project	Global Centre of Rail Excellence Stage II	Project No	G23012	Client	Walters UK Ltd

Exploratory Hole Number	Installation Reference	Installation Diameter (mm)	Anticipated Well Depth (m bgl)	Date and Time
S2-BH243	2	0	3.00	12/05/2023 14:04
Cover Type	Pipe Cover	Top of Response Zone (m bgl)	Base of Response Zone (m bgl)	Weather
Box Cover	Pipe Plug	1.00	3.00	Sunny and windy

Installation Inspection

Surface Conditions	Dry	Damage to Headworks?	No
Check Dip of Base (m bgl)	2.9	Pipe Cover/Bung Present?	Yes

Remedial actions undertaken to well:

N/A

Purging and Well Development

Guidance Notes

Well development undertaken in accordance with BS10175:2011+A2:2017.

Purge volumes to include the annulus of the filter pack.

Purging must continue until insitu parameters have stabilised unless agreed with clients representative.

Approx. Guidance Volumes for Field Calculation of Wet Well Volume

Volume of 50mm diameter plain pipe	2 litres / metre	Volume of 50mm diameter slotted pipe with 200mm diameter gravel filter pack	11 litres / metre
Porosity of 10mm pea gravel	0.33	Volume of 50mm diameter slotted pipe with 150mm diameter gravel filter pack	6 litres / metre

Groundwater Prior to Well Development

Groundwater Level (m bgl)	Dry	LNAPL/ DNAPL (m bgl)	N/A

Purging Details

Purge Method/ Device	N/A	Average Flow Rate (litres/min)	
Time to Purge (mins)	N/A	Number of Well Volumes Purged	
Total Volume Purged (litres)	N/A	Operative	KW

Observations During Well Development (see Vu-situ output for insitu parameter readings)

In-situ Parameter Device Model	N/A	Groundwater Odour	N/A
In-situ Parameter Device SN	N/A	Visual Turbidity	N/A
Confirm Field Calibration Completed	N/A	Groundwater Colour	N/A

Well Volume Calculation

Volume of the Filter Pack

Saturated length of Filter Pack (L) (m)	
Porosity of Filter Pack (ø)	0.33
Diameter of Filter Pack (mm) (df)	112
Volume of Filter Pack (litres) (Lø)((πdf2/4)-((πdp2/4))	0.0

Volume of the Standpipe

Diameter of Standpipe (mm) (dp)	50
Saturated depth (m) (sd) (installation base - groundwater level)	
Volume of the Standpipe (litres) (πdp2/4)*10-3	0.0

Total Well Volume

Total Well Volume (litres) Volume of Filter Pack + Volume of Standpipe)	**0.0**

Additional Notes and Observations

Borehole dipped dry.

INSTALLATION INSPECTION AND WELL DEVELOPMENT RECORD

Project	Global Centre of Rail Excellence Stage II	Project No	G23012	Client	Walters UK Ltd

Exploratory Hole Number	Installation Reference	Installation Diameter (mm)	Anticipated Well Depth (m bgl)	Date and Time
S2-BH244	1	50	4.50	10/05/2023 12:00
Cover Type	Pipe Cover	Top of Response Zone (m bgl)	Base of Response Zone (m bgl)	Weather
Box Cover	Pipe Plug	1.00	3.50	Sunny

Installation Inspection

Surface Conditions	Dry	Damage to Headworks?	No
Check Dip of Base (m bgl)	3.50	Pipe Cover/Bung Present?	Yes

Remedial actions undertaken to well:

N/A

Purging and Well Development

Guidance Notes

Well development undertaken in accordance with BS10175:2011+A2:2017.

Purge volumes to include the annulus of the filter pack.

Purging must continue until insitu parameters have stabilised unless agreed with clients representative.

Approx. Guidance Volumes for Field Calculation of Wet Well Volume

Volume of 50mm diameter plain pipe	2 litres / metre	Volume of 50mm diameter slotted pipe with 200mm diameter gravel filter pack	11 litres / metre
Porosity of 10mm pea gravel	0.33	Volume of 50mm diameter slotted pipe with 150mm diameter gravel filter pack	6 litres / metre

Groundwater Prior to Well Development

Groundwater Level (m bgl)	Dry	LNAPL/ DNAPL (m bgl)	N/A

Purging Details

Purge Method/ Device	N/A	Average Flow Rate (litres/min)	
Time to Purge (mins)	N/A	Number of Well Volumes Purged	
Total Volume Purged (litres)	N/A	Operative	KW

Observations During Well Development (see Vu-situ output for insitu parameter readings)

In-situ Parameter Device Model	N/A	Groundwater Odour	N/A
In-situ Parameter Device SN	N/A	Visual Turbidity	N/A
Confirm Field Calibration Completed	N/A	Groundwater Colour	N/A

Well Volume Calculation

Volume of the Filter Pack

Saturated length of Filter Pack (L) (m)	
Porosity of Filter Pack (ø)	0.33
Diameter of Filter Pack (mm) (df)	146
Volume of Filter Pack (litres) (Lø)((πdf2/4)-((πdp2/4))	0.0

Volume of the Standpipe

Diameter of Standpipe (mm) (dp)	50
Saturated depth (m) (sd) (installation base - groundwater level)	
Volume of the Standpipe (litres) (πdp2/4)*10-3	0.0

Total Well Volume

Total Well Volume (litres) Volume of Filter Pack + Volume of Standpipe)	**0.0**

Additional Notes and Observations

Well dipped dry.

INSTALLATION INSPECTION AND WELL DEVELOPMENT RECORD

Project	Global Centre of Rail Excellence Stage II	Project No	G23012	Client	Walters UK Ltd

Exploratory Hole Number	Installation Reference	Installation Diameter (mm)	Anticipated Well Depth (m bgl)	Date and Time
S2-BH244	2	50	10.00	10/05/2023 11:24
Cover Type	Pipe Cover	Top of Response Zone (m bgl)	Base of Response Zone (m bgl)	Weather
Box Cover	Pipe Plug	4.50	10.00	Rain Showers

Installation Inspection

Surface Conditions	Wet	Damage to Headworks?	No
Check Dip of Base (m bgl)	9.34	Pipe Cover/Bung Present?	Yes

Remedial actions undertaken to well:

N/A

Purging and Well Development

Guidance Notes

Well development undertaken in accordance with BS10175:2011+A2:2017.

Purge volumes to include the annulus of the filter pack.

Purging must continue until insitu parameters have stabilised unless agreed with clients representative.

Approx. Guidance Volumes for Field Calculation of Wet Well Volume

Volume of 50mm diameter plain pipe	2 litres / metre	Volume of 50mm diameter slotted pipe with 200mm diameter gravel filter pack	11 litres / metre
Porosity of 10mm pea gravel	0.33	Volume of 50mm diameter slotted pipe with 150mm diameter gravel filter pack	6 litres / metre

Groundwater Prior to Well Development

Groundwater Level (m bgl)	2.90	LNAPL/ DNAPL (m bgl)	N/A

Purging Details

Purge Method/ Device	Wasp Pump	Average Flow Rate (litres/min)	6.2
Time to Purge (mins)	16	Number of Well Volumes Purged	1.4
Total Volume Purged (litres)	96.0	Operative	KW

Observations During Well Development (see Vu-situ output for insitu parameter readings)

In-situ Parameter Device Model	N/A	Groundwater Odour	Stagnant smell
In-situ Parameter Device SN	N/A	Visual Turbidity	Highly turbid
Confirm Field Calibration Completed	N/A	Groundwater Colour	Brown running clear

Well Volume Calculation

Volume of the Filter Pack

Saturated length of Filter Pack (L) (m)	5.50
Porosity of Filter Pack (ø)	0.33
Diameter of Filter Pack (mm) (df)	200
Volume of Filter Pack (litres) (Lø)((πdf2/4)-((πdp2/4))	53.4

Volume of the Standpipe

Diameter of Standpipe (mm) (dp)	50
Saturated depth (m) (sd) (installation base - groundwater level)	7.10
Volume of the Standpipe (litres) (πdp2/4)*10-3	13.9

Total Well Volume

Total Well Volume (litres) Volume of Filter Pack + Volume of Standpipe)	**67.4**

Additional Notes and Observations

No in situ parameters required during well development.
Borehole purged dry.

INSTALLATION INSPECTION AND WELL DEVELOPMENT RECORD

Project	Global Centre of Rail Excellence Stage II	Project No	G23012	Client	Walters UK Ltd

Exploratory Hole Number	Installation Reference	Installation Diameter (mm)	Anticipated Well Depth (m bgl)	Date and Time
S2-BH245	1	50	4.00	10/05/2023 15:15
Cover Type	Pipe Cover	Top of Response Zone (m bgl)	Base of Response Zone (m bgl)	Weather
Box Cover	Pipe Plug	1.50	4.00	Rain Showers

Installation Inspection

Surface Conditions	Wet	Damage to Headworks?	No
Check Dip of Base (m bgl)	3.85	Pipe Cover/Bung Present?	Yes

Remedial actions undertaken to well:

N/A

Purging and Well Development

Guidance Notes

Well development undertaken in accordance with BS10175:2011+A2:2017.

Purge volumes to include the annulus of the filter pack.

Purging must continue until insitu parameters have stabilised unless agreed with clients representative.

Approx. Guidance Volumes for Field Calculation of Wet Well Volume

Volume of 50mm diameter plain pipe	2 litres / metre	Volume of 50mm diameter slotted pipe with 200mm diameter gravel filter pack	11 litres / metre
Porosity of 10mm pea gravel	0.33	Volume of 50mm diameter slotted pipe with 150mm diameter gravel filter pack	6 litres / metre

Groundwater Prior to Well Development

Groundwater Level (m bgl)	2.93	LNAPL/ DNAPL (m bgl)	N/A

Purging Details

Purge Method/ Device	Wasp Pump	Average Flow Rate (litres/min)	1.3
Time to Purge (mins)	2	Number of Well Volumes Purged	0.3
Total Volume Purged (litres)	2.0	Operative	KW

Observations During Well Development (see Vu-situ output for insitu parameter readings)

In-situ Parameter Device Model	N/A	Groundwater Odour	No odour
In-situ Parameter Device SN	N/A	Visual Turbidity	Fairly turbid
Confirm Field Calibration Completed	N/A	Groundwater Colour	Brown

Well Volume Calculation

Volume of the Filter Pack

Saturated length of Filter Pack (L) (m)	1.07
Porosity of Filter Pack (ø)	0.33
Diameter of Filter Pack (mm) (df)	150
Volume of Filter Pack (litres) (Lø)((πdf2/4)-((πdp2/4))	5.5

Volume of the Standpipe

Diameter of Standpipe (mm) (dp)	50
Saturated depth (m) (sd) (installation base - groundwater level)	1.07
Volume of the Standpipe (litres) (πdp2/4)*10-3	2.1

Total Well Volume

Total Well Volume (litres) Volume of Filter Pack + Volume of Standpipe)	**7.6**

Additional Notes and Observations

No in situ parameters required during well development.
Borehole purged dry.

INSTALLATION INSPECTION AND WELL DEVELOPMENT RECORD

Project	Global Centre of Rail Excellence Stage II	Project No	G23012	Client	Walters UK Ltd

Exploratory Hole Number	Installation Reference	Installation Diameter (mm)	Anticipated Well Depth (m bgl)	Date and Time
S2-BH246	1	19	2.80	15/05/2023 13:57
Cover Type	Pipe Cover	Top of Response Zone (m bgl)	Base of Response Zone (m bgl)	Weather
Box Cover	Pipe Plug	1.00	2.80	Cloudy and windy

Installation Inspection

Surface Conditions	Dry	Damage to Headworks?	No
Check Dip of Base (m bgl)	2.40	Pipe Cover/Bung Present?	Yes

Remedial actions undertaken to well:

N/A

Purging and Well Development

Guidance Notes

Well development undertaken in accordance with BS10175:2011+A2:2017.

Purge volumes to include the annulus of the filter pack.

Purging must continue until insitu parameters have stabilised unless agreed with clients representative.

Approx. Guidance Volumes for Field Calculation of Wet Well Volume

Volume of 50mm diameter plain pipe	2 litres / metre	Volume of 50mm diameter slotted pipe with 200mm diameter gravel filter pack	11 litres / metre
Porosity of 10mm pea gravel	0.33	Volume of 50mm diameter slotted pipe with 150mm diameter gravel filter pack	6 litres / metre

Groundwater Prior to Well Development

Groundwater Level (m bgl)	Dry	LNAPL/ DNAPL (m bgl)	N/A

Purging Details

Purge Method/ Device	N/A	Average Flow Rate (litres/min)	
Time to Purge (mins)	N/A	Number of Well Volumes Purged	
Total Volume Purged (litres)	N/A	Operative	KW

Observations During Well Development (see Vu-situ output for insitu parameter readings)

In-situ Parameter Device Model	N/A	Groundwater Odour	N/A
In-situ Parameter Device SN	N/A	Visual Turbidity	N/A
Confirm Field Calibration Completed	N/A	Groundwater Colour	N/A

Well Volume Calculation

Volume of the Filter Pack

Saturated length of Filter Pack (L) (m)	
Porosity of Filter Pack (ø)	0.33
Diameter of Filter Pack (mm) (df)	150
Volume of Filter Pack (litres) (Lø)((πdf2/4)-((πdp2/4))	0.0

Volume of the Standpipe

Diameter of Standpipe (mm) (dp)	19
Saturated depth (m) (sd) (installation base - groundwater level)	
Volume of the Standpipe (litres) (πdp2/4)*10-3	0.0

Total Well Volume

Total Well Volume (litres) Volume of Filter Pack + Volume of Standpipe)	**0.0**

Additional Notes and Observations

Well dipped dry, no purging required.

INSTALLATION INSPECTION AND WELL DEVELOPMENT RECORD

Project	Global Centre of Rail Excellence Stage II	Project No	G23012	Client	Walters UK Ltd

Exploratory Hole Number	Installation Reference	Installation Diameter (mm)	Anticipated Well Depth (m bgl)	Date and Time
S2-BH246	2	50	8.00	10/05/2023 10:36
Cover Type	**Pipe Cover**	**Top of Response Zone (m bgl)**	**Base of Response Zone (m bgl)**	**Weather**
Box Cover	Pipe Plug	3.50	8.00	Rain Showers

Installation Inspection

Surface Conditions	Wet	Damage to Headworks?	No
Check Dip of Base (m bgl)	7.80	Pipe Cover/Bung Present?	Yes

Remedial actions undertaken to well:

N/A

Purging and Well Development

Guidance Notes

Well development undertaken in accordance with BS10175:2011+A2:2017.

Purge volumes to include the annulus of the filter pack.

Purging must continue until insitu parameters have stabilised unless agreed with clients representative.

Approx. Guidance Volumes for Field Calculation of Wet Well Volume

Volume of 50mm diameter plain pipe	2 litres / metre	Volume of 50mm diameter slotted pipe with 200mm diameter gravel filter pack	11 litres / metre
Porosity of 10mm pea gravel	0.33	Volume of 50mm diameter slotted pipe with 150mm diameter gravel filter pack	6 litres / metre

Groundwater Prior to Well Development

Groundwater Level (m bgl)	3.10	LNAPL/ DNAPL (m bgl)	N/A

Purging Details

Purge Method/ Device	Wasp Pump	Average Flow Rate (litres/min)	7.0
Time to Purge (mins)	16	Number of Well Volumes Purged	3.3
Total Volume Purged (litres)	108.0	Operative	KW

Observations During Well Development (see Vu-situ output for insitu parameter readings)

In-situ Parameter Device Model	N/A	Groundwater Odour	No odour
In-situ Parameter Device SN	N/A	Visual Turbidity	Fairly turbid
Confirm Field Calibration Completed	N/A	Groundwater Colour	Greyish brown running clear

Well Volume Calculation

Volume of the Filter Pack

Saturated length of Filter Pack (L) (m)	4.50
Porosity of Filter Pack (ø)	0.33
Diameter of Filter Pack (mm) (df)	150
Volume of Filter Pack (litres) (Lø)((πdf2/4)-((πdp2/4))	23.3

Volume of the Standpipe

Diameter of Standpipe (mm) (dp)	50
Saturated depth (m) (sd) (installation base - groundwater level)	4.90
Volume of the Standpipe (litres) (πdp2/4)*10-3	9.6

Total Well Volume

Total Well Volume (litres) Volume of Filter Pack + Volume of Standpipe)	**32.9**

Additional Notes and Observations

No in situ parameters required during well development.

INSTALLATION INSPECTION AND WELL DEVELOPMENT RECORD

Project	Global Centre of Rail Excellence Stage II	Project No	G23012	Client	Walters UK Ltd

Exploratory Hole Number	Installation Reference	Installation Diameter (mm)	Anticipated Well Depth (m bgl)	Date and Time
S2-BH247	1	50	9.00	16/05/2023 11:00
Cover Type	Pipe Cover	Top of Response Zone (m bgl)	Base of Response Zone (m bgl)	Weather
Box Cover	Pipe Plug	6.00	9.00	Sunny

Installation Inspection

Surface Conditions	Dry	Damage to Headworks?	No
Check Dip of Base (m bgl)	8.90	Pipe Cover/Bung Present?	Yes

Remedial actions undertaken to well:

N/A

Purging and Well Development

Guidance Notes

Well development undertaken in accordance with BS10175:2011+A2:2017.

Purge volumes to include the annulus of the filter pack.

Purging must continue until insitu parameters have stabilised unless agreed with clients representative.

Approx. Guidance Volumes for Field Calculation of Wet Well Volume

Volume of 50mm diameter plain pipe	2 litres / metre	Volume of 50mm diameter slotted pipe with 200mm diameter gravel filter pack	11 litres / metre
Porosity of 10mm pea gravel	0.33	Volume of 50mm diameter slotted pipe with 150mm diameter gravel filter pack	6 litres / metre

Groundwater Prior to Well Development

Groundwater Level (m bgl)	Dry	LNAPL/ DNAPL (m bgl)	N/A

Purging Details

Purge Method/ Device	N/A	Average Flow Rate (litres/min)	
Time to Purge (mins)	N/A	Number of Well Volumes Purged	
Total Volume Purged (litres)	N/A	Operative	KW

Observations During Well Development (see Vu-situ output for insitu parameter readings)

In-situ Parameter Device Model	N/A	Groundwater Odour	N/A
In-situ Parameter Device SN	N/A	Visual Turbidity	N/A
Confirm Field Calibration Completed	N/A	Groundwater Colour	N/A

Well Volume Calculation

Volume of the Filter Pack

Saturated length of Filter Pack (L) (m)	
Porosity of Filter Pack (ø)	0.33
Diameter of Filter Pack (mm) (df)	150
Volume of Filter Pack (litres) (Lø)((πdf2/4)-((πdp2/4))	0.0

Volume of the Standpipe

Diameter of Standpipe (mm) (dp)	50
Saturated depth (m) (sd) (installation base - groundwater level)	
Volume of the Standpipe (litres) (πdp2/4)*10-3	0.0

Total Well Volume

Total Well Volume (litres) Volume of Filter Pack + Volume of Standpipe)	**0.0**

Additional Notes and Observations

Borehole dipped dry.

INSTALLATION INSPECTION AND WELL DEVELOPMENT RECORD

Project	Global Centre of Rail Excellence Stage II	Project No	G23012	Client	Walters UK Ltd

Exploratory Hole Number	Installation Reference	Installation Diameter (mm)	Anticipated Well Depth (m bgl)	Date and Time
S2-BH247	2	0	2.00	16/05/2023 11:30
Cover Type	Pipe Cover	Top of Response Zone (m bgl)	Base of Response Zone (m bgl)	Weather
Box Cover	Pipe Plug	1.00	2.00	Sunny

Installation Inspection

Surface Conditions	Dry	Damage to Headworks?	No
Check Dip of Base (m bgl)	1.70	Pipe Cover/Bung Present?	Yes

Remedial actions undertaken to well:

N/A

Purging and Well Development

Guidance Notes

Well development undertaken in accordance with BS10175:2011+A2:2017.

Purge volumes to include the annulus of the filter pack.

Purging must continue until insitu parameters have stabilised unless agreed with clients representative.

Approx. Guidance Volumes for Field Calculation of Wet Well Volume

Volume of 50mm diameter plain pipe	2 litres / metre	Volume of 50mm diameter slotted pipe with 200mm diameter gravel filter pack	11 litres / metre
Porosity of 10mm pea gravel	0.33	Volume of 50mm diameter slotted pipe with 150mm diameter gravel filter pack	6 litres / metre

Groundwater Prior to Well Development

Groundwater Level (m bgl)	Dry	LNAPL/ DNAPL (m bgl)	N/A

Purging Details

Purge Method/ Device	N/A	Average Flow Rate (litres/min)	
Time to Purge (mins)	N/A	Number of Well Volumes Purged	
Total Volume Purged (litres)	N/A	Operative	KW

Observations During Well Development (see Vu-situ output for insitu parameter readings)

In-situ Parameter Device Model	N/A	Groundwater Odour	N/A
In-situ Parameter Device SN	N/A	Visual Turbidity	N/A
Confirm Field Calibration Completed	N/A	Groundwater Colour	N/A

Well Volume Calculation

Volume of the Filter Pack

Saturated length of Filter Pack (L) (m)	
Porosity of Filter Pack (ø)	0.33
Diameter of Filter Pack (mm) (df)	150
Volume of Filter Pack (litres) (Lø)((πdf2/4)-((πdp2/4))	0.0

Volume of the Standpipe

Diameter of Standpipe (mm) (dp)	0
Saturated depth (m) (sd) (installation base - groundwater level)	
Volume of the Standpipe (litres) (πdp2/4)*10-3	0.0

Total Well Volume

Total Well Volume (litres) Volume of Filter Pack + Volume of Standpipe)	**0.0**

Additional Notes and Observations

Borehole dipped dry.

INSTALLATION INSPECTION AND WELL DEVELOPMENT RECORD

Project	Global Centre of Rail Excellence Stage II	Project No	G23012	Client	Walters UK Ltd

Exploratory Hole Number	Installation Reference	Installation Diameter (mm)	Anticipated Well Depth (m bgl)	Date and Time
S2-BH248	1	50	9.50	11/05/2023 13:14
Cover Type	Pipe Cover	Top of Response Zone (m bgl)	Base of Response Zone (m bgl)	Weather
Box Cover	Pipe Plug	6.50	9.50	Rain Showers

Installation Inspection

Surface Conditions	Wet	Damage to Headworks?	No
Check Dip of Base (m bgl)	9.10	Pipe Cover/Bung Present?	Yes

Remedial actions undertaken to well:

N/A

Purging and Well Development

Guidance Notes

Well development undertaken in accordance with BS10175:2011+A2:2017.

Purge volumes to include the annulus of the filter pack.

Purging must continue until insitu parameters have stabilised unless agreed with clients representative.

Approx. Guidance Volumes for Field Calculation of Wet Well Volume

Volume of 50mm diameter plain pipe	2 litres / metre	Volume of 50mm diameter slotted pipe with 200mm diameter gravel filter pack	11 litres / metre
Porosity of 10mm pea gravel	0.33	Volume of 50mm diameter slotted pipe with 150mm diameter gravel filter pack	6 litres / metre

Groundwater Prior to Well Development

Groundwater Level (m bgl)	6.10	LNAPL/ DNAPL (m bgl)	N/A

Purging Details

Purge Method/ Device	Wasp Pump	Average Flow Rate (litres/min)	0.8
Time to Purge (mins)	6	Number of Well Volumes Purged	0.2
Total Volume Purged (litres)	5.0	Operative	KW

Observations During Well Development (see Vu-situ output for insitu parameter readings)

In-situ Parameter Device Model	N/A	Groundwater Odour	No odour
In-situ Parameter Device SN	N/A	Visual Turbidity	Fairly Turbid
Confirm Field Calibration Completed	N/A	Groundwater Colour	Grey

Well Volume Calculation

Volume of the Filter Pack

Saturated length of Filter Pack (L) (m)	3.00
Porosity of Filter Pack (ø)	0.33
Diameter of Filter Pack (mm) (df)	150
Volume of Filter Pack (litres) (Lø)((πdf2/4)-((πdp2/4))	15.5

Volume of the Standpipe

Diameter of Standpipe (mm) (dp)	50
Saturated depth (m) (sd) (installation base - groundwater level)	3.40
Volume of the Standpipe (litres) (πdp2/4)*10-3	6.7

Total Well Volume

Total Well Volume (litres) Volume of Filter Pack + Volume of Standpipe)	**22.2**

Additional Notes and Observations

No in situ parameters required for well development.
Borehole purged until dry.

INSTALLATION INSPECTION AND WELL DEVELOPMENT RECORD

Project	Global Centre of Rail Excellence Stage II	Project No	G23012	Client	Walters UK Ltd

Exploratory Hole Number	Installation Reference	Installation Diameter (mm)	Anticipated Well Depth (m bgl)	Date and Time
S2-BH248	2	50	4.00	11/05/2023 13:55
Cover Type	Pipe Cover	Top of Response Zone (m bgl)	Base of Response Zone (m bgl)	Weather
Box Cover	Pipe Plug	1.00	4.00	Rain Showers

Installation Inspection

Surface Conditions	Wet	Damage to Headworks?	No
Check Dip of Base (m bgl)	3.95	Pipe Cover/Bung Present?	Yes

Remedial actions undertaken to well:

N/A

Purging and Well Development

Guidance Notes

Well development undertaken in accordance with BS10175:2011+A2:2017.

Purge volumes to include the annulus of the filter pack.

Purging must continue until insitu parameters have stabilised unless agreed with clients representative.

Approx. Guidance Volumes for Field Calculation of Wet Well Volume

Volume of 50mm diameter plain pipe	2 litres / metre	Volume of 50mm diameter slotted pipe with 200mm diameter gravel filter pack	11 litres / metre
Porosity of 10mm pea gravel	0.33	Volume of 50mm diameter slotted pipe with 150mm diameter gravel filter pack	6 litres / metre

Groundwater Prior to Well Development

Groundwater Level (m bgl)	Dry	LNAPL/ DNAPL (m bgl)	N/A

Purging Details

Purge Method/ Device	N/A	Average Flow Rate (litres/min)	N/A
Time to Purge (mins)	N/A	Number of Well Volumes Purged	N/A
Total Volume Purged (litres)	N/A	Operative	KW

Observations During Well Development (see Vu-situ output for insitu parameter readings)

In-situ Parameter Device Model	N/A	Groundwater Odour	N/A
In-situ Parameter Device SN	N/A	Visual Turbidity	N/A
Confirm Field Calibration Completed	N/A	Groundwater Colour	N/A

Well Volume Calculation

Volume of the Filter Pack

Saturated length of Filter Pack (L) (m)	
Porosity of Filter Pack (ø)	0.33
Diameter of Filter Pack (mm) (df)	150
Volume of Filter Pack (litres) (Lø)((πdf2/4)-((πdp2/4))	0.0

Volume of the Standpipe

Diameter of Standpipe (mm) (dp)	50
Saturated depth (m) (sd) (installation base - groundwater level)	
Volume of the Standpipe (litres) (πdp2/4)*10-3	0.0

Total Well Volume

Total Well Volume (litres) Volume of Filter Pack + Volume of Standpipe)	**0.0**

Additional Notes and Observations

Borehole dipped dry.

INSTALLATION INSPECTION AND WELL DEVELOPMENT RECORD

Project	Global Centre of Rail Excellence Stage II	Project No	G23012	Client	Walters UK Ltd

Exploratory Hole Number	Installation Reference	Installation Diameter (mm)	Anticipated Well Depth (m bgl)	Date and Time
S2-BH249	2	50	8.00	10/05/2023 13:29
Cover Type	**Pipe Cover**	**Top of Response Zone (m bgl)**	**Base of Response Zone (m bgl)**	**Weather**
Box Cover	Pipe Plug	3.50	8.00	Rain Showers

Installation Inspection

Surface Conditions	Wet	Damage to Headworks?	No
Check Dip of Base (m bgl)	7.20	Pipe Cover/Bung Present?	Yes

Remedial actions undertaken to well:

N/A

Purging and Well Development

Guidance Notes

Well development undertaken in accordance with BS10175:2011+A2:2017.

Purge volumes to include the annulus of the filter pack.

Purging must continue until insitu parameters have stabilised unless agreed with clients representative.

Approx. Guidance Volumes for Field Calculation of Wet Well Volume

Volume of 50mm diameter plain pipe	2 litres / metre	Volume of 50mm diameter slotted pipe with 200mm diameter gravel filter pack	11 litres / metre
Porosity of 10mm pea gravel	0.33	Volume of 50mm diameter slotted pipe with 150mm diameter gravel filter pack	6 litres / metre

Groundwater Prior to Well Development

Groundwater Level (m bgl)	3.75	LNAPL/ DNAPL (m bgl)	N/A

Purging Details

Purge Method/ Device	Wasp Pump	Average Flow Rate (litres/min)	6.8
Time to Purge (mins)	23	Number of Well Volumes Purged	3.1
Total Volume Purged (litres)	156.0	Operative	KW

Observations During Well Development (see Vu-situ output for insitu parameter readings)

In-situ Parameter Device Model	N/A	Groundwater Odour	No odour
In-situ Parameter Device SN	N/A	Visual Turbidity	Highly turbid
Confirm Field Calibration Completed	N/A	Groundwater Colour	Brown

Well Volume Calculation

Volume of the Filter Pack

Saturated length of Filter Pack (L) (m)	4.25
Porosity of Filter Pack (ø)	0.33
Diameter of Filter Pack (mm) (df)	200
Volume of Filter Pack (litres) (Lø)((πdf2/4)-((πdp2/4))	41.3

Volume of the Standpipe

Diameter of Standpipe (mm) (dp)	50
Saturated depth (m) (sd) (installation base - groundwater level)	4.25
Volume of the Standpipe (litres) (πdp2/4)*10-3	8.3

Total Well Volume

Total Well Volume (litres) Volume of Filter Pack + Volume of Standpipe)	**49.6**

Additional Notes and Observations

No in situ parameters required during well development.

INSTALLATION INSPECTION AND WELL DEVELOPMENT RECORD

Project	Global Centre of Rail Excellence Stage II	Project No	G23012	Client	Walters UK Ltd

Exploratory Hole Number	Installation Reference	Installation Diameter (mm)	Anticipated Well Depth (m bgl)	Date and Time
S2-BH250	1	50	9.50	11/05/2023 11:09
Cover Type	Pipe Cover	Top of Response Zone (m bgl)	Base of Response Zone (m bgl)	Weather
Box Cover	Pipe Plug	7.50	9.50	Sunny

Installation Inspection

Surface Conditions	Damp	Damage to Headworks?	No
Check Dip of Base (m bgl)	8.80	Pipe Cover/Bung Present?	Yes

Remedial actions undertaken to well:

N/A

Purging and Well Development

Guidance Notes

Well development undertaken in accordance with BS10175:2011+A2:2017.

Purge volumes to include the annulus of the filter pack.

Purging must continue until insitu parameters have stabilised unless agreed with clients representative.

Approx. Guidance Volumes for Field Calculation of Wet Well Volume

Volume of 50mm diameter plain pipe	2 litres / metre	Volume of 50mm diameter slotted pipe with 200mm diameter gravel filter pack	11 litres / metre
Porosity of 10mm pea gravel	0.33	Volume of 50mm diameter slotted pipe with 150mm diameter gravel filter pack	6 litres / metre

Groundwater Prior to Well Development

Groundwater Level (m bgl)	3.40	LNAPL/ DNAPL (m bgl)	N/A

Purging Details

Purge Method/ Device	Wasp Pump	Average Flow Rate (litres/min)	1.6
Time to Purge (mins)	12	Number of Well Volumes Purged	0.8
Total Volume Purged (litres)	18.0	Operative	KW

Observations During Well Development (see Vu-situ output for insitu parameter readings)

In-situ Parameter Device Model	N/A	Groundwater Odour	No odour
In-situ Parameter Device SN	N/A	Visual Turbidity	Fairly Turbid
Confirm Field Calibration Completed	N/A	Groundwater Colour	Dark Brown

Well Volume Calculation

Volume of the Filter Pack

Saturated length of Filter Pack (L) (m)	2.00
Porosity of Filter Pack (ø)	0.33
Diameter of Filter Pack (mm) (df)	150
Volume of Filter Pack (litres) (Lø)((πdf2/4)-((πdp2/4))	10.4

Volume of the Standpipe

Diameter of Standpipe (mm) (dp)	50
Saturated depth (m) (sd) (installation base - groundwater level)	6.10
Volume of the Standpipe (litres) (πdp2/4)*10-3	12.0

Total Well Volume

Total Well Volume (litres) Volume of Filter Pack + Volume of Standpipe)	**22.3**

Additional Notes and Observations

No in situ parameters required during well development.
Borehole purged until dry.

INSTALLATION INSPECTION AND WELL DEVELOPMENT RECORD

Project	Global Centre of Rail Excellence Stage II	Project No	G23012	Client	Walters UK Ltd

Exploratory Hole Number	Installation Reference	Installation Diameter (mm)	Anticipated Well Depth (m bgl)	Date and Time
S2-BH250	2	50	2.00	11/05/2023 11:35
Cover Type	Pipe Cover	Top of Response Zone (m bgl)	Base of Response Zone (m bgl)	Weather
Box Cover	Pipe Plug	1.00	2.00	Sunny

Installation Inspection

Surface Conditions	Damp	Damage to Headworks?	No
Check Dip of Base (m bgl)	2.10	Pipe Cover/Bung Present?	Yes

Remedial actions undertaken to well:

N/A

Purging and Well Development

Guidance Notes

Well development undertaken in accordance with BS10175:2011+A2:2017.

Purge volumes to include the annulus of the filter pack.

Purging must continue until insitu parameters have stabilised unless agreed with clients representative.

Approx. Guidance Volumes for Field Calculation of Wet Well Volume

Volume of 50mm diameter plain pipe	2 litres / metre	Volume of 50mm diameter slotted pipe with 200mm diameter gravel filter pack	11 litres / metre
Porosity of 10mm pea gravel	0.33	Volume of 50mm diameter slotted pipe with 150mm diameter gravel filter pack	6 litres / metre

Groundwater Prior to Well Development

Groundwater Level (m bgl)	Dry	LNAPL/ DNAPL (m bgl)	N/A

Purging Details

Purge Method/ Device	N/A	Average Flow Rate (litres/min)	N/A
Time to Purge (mins)	N/A	Number of Well Volumes Purged	N/A
Total Volume Purged (litres)	N/A	Operative	KW

Observations During Well Development (see Vu-situ output for insitu parameter readings)

In-situ Parameter Device Model	N/A	Groundwater Odour	N/A
In-situ Parameter Device SN	N/A	Visual Turbidity	N/A
Confirm Field Calibration Completed	N/A	Groundwater Colour	N/A

Well Volume Calculation

Volume of the Filter Pack

Saturated length of Filter Pack (L) (m)	
Porosity of Filter Pack (ø)	0.33
Diameter of Filter Pack (mm) (df)	150
Volume of Filter Pack (litres) (Lø)((πdf2/4)-((πdp2/4))	0.0

Volume of the Standpipe

Diameter of Standpipe (mm) (dp)	50
Saturated depth (m) (sd) (installation base - groundwater level)	
Volume of the Standpipe (litres) (πdp2/4)*10-3	0.0

Total Well Volume

Total Well Volume (litres) Volume of Filter Pack + Volume of Standpipe)	**0.0**

Additional Notes and Observations

Borehole dipped dry.

INSTALLATION INSPECTION AND WELL DEVELOPMENT RECORD

Project	Global Centre of Rail Excellence Stage II	Project No	G23012	Client	Walters UK Ltd

Exploratory Hole Number	Installation Reference	Installation Diameter (mm)	Anticipated Well Depth (m bgl)	Date and Time
S2-BH252	1	50	2.60	01/06/2023 14:30
Cover Type	Pipe Cover	Top of Response Zone (m bgl)	Base of Response Zone (m bgl)	Weather
Box Cover	Pipe Plug	1.00	2.60	Sunny

Installation Inspection

Surface Conditions	Dry	Damage to Headworks?	No
Check Dip of Base (m bgl)	2.60	Pipe Cover/Bung Present?	Yes

Remedial actions undertaken to well:

N/A

Purging and Well Development

Guidance Notes

Well development undertaken in accordance with BS10175:2011+A2:2017.

Purge volumes to include the annulus of the filter pack.

Purging must continue until insitu parameters have stabilised unless agreed with clients representative.

Approx. Guidance Volumes for Field Calculation of Wet Well Volume

Volume of 50mm diameter plain pipe	2 litres / metre	Volume of 50mm diameter slotted pipe with 200mm diameter gravel filter pack	11 litres / metre
Porosity of 10mm pea gravel	0.33	Volume of 50mm diameter slotted pipe with 150mm diameter gravel filter pack	6 litres / metre

Groundwater Prior to Well Development

Groundwater Level (m bgl)	Dry	LNAPL/ DNAPL (m bgl)	N/A

Purging Details

Purge Method/ Device	N/A	Average Flow Rate (litres/min)	
Time to Purge (mins)	N/A	Number of Well Volumes Purged	
Total Volume Purged (litres)	N/A	Operative	KW

Observations During Well Development (see Vu-situ output for insitu parameter readings)

In-situ Parameter Device Model	N/A	Groundwater Odour	N/A
In-situ Parameter Device SN	N/A	Visual Turbidity	N/A
Confirm Field Calibration Completed	N/A	Groundwater Colour	N/A

Well Volume Calculation

Volume of the Filter Pack

Saturated length of Filter Pack (L) (m)	
Porosity of Filter Pack (ø)	0.33
Diameter of Filter Pack (mm) (df)	146
Volume of Filter Pack (litres) (Lø)((πdf2/4)-((πdp2/4))	0.0

Volume of the Standpipe

Diameter of Standpipe (mm) (dp)	50
Saturated depth (m) (sd) (installation base - groundwater level)	
Volume of the Standpipe (litres) (πdp2/4)*10-3	0.0

Total Well Volume

Total Well Volume (litres) Volume of Filter Pack + Volume of Standpipe)	**0.0**

Additional Notes and Observations

Well dipped dry. Unable to purge.

INSTALLATION INSPECTION AND WELL DEVELOPMENT RECORD

Project	Global Centre of Rail Excellence Stage II	Project No	G23012	Client	Walters UK Ltd

Exploratory Hole Number	Installation Reference	Installation Diameter (mm)	Anticipated Well Depth (m bgl)	Date and Time
S2-BH252	2	50	9.00	10/05/2023 15:31
Cover Type	Pipe Cover	Top of Response Zone (m bgl)	Base of Response Zone (m bgl)	Weather
Box Cover	Pipe Plug	6.00	9.00	Rain Showers

Installation Inspection

Surface Conditions	Wet	Damage to Headworks?	No
Check Dip of Base (m bgl)	9.00	Pipe Cover/Bung Present?	Yes

Remedial actions undertaken to well:

N/A

Purging and Well Development

Guidance Notes

Well development undertaken in accordance with BS10175:2011+A2:2017.

Purge volumes to include the annulus of the filter pack.

Purging must continue until insitu parameters have stabilised unless agreed with clients representative.

Approx. Guidance Volumes for Field Calculation of Wet Well Volume

Volume of 50mm diameter plain pipe	2 litres / metre	Volume of 50mm diameter slotted pipe with 200mm diameter gravel filter pack	11 litres / metre
Porosity of 10mm pea gravel	0.33	Volume of 50mm diameter slotted pipe with 150mm diameter gravel filter pack	6 litres / metre

Groundwater Prior to Well Development

Groundwater Level (m bgl)	5.10	LNAPL/ DNAPL (m bgl)	N/A

Purging Details

Purge Method/ Device	Wasp Pump	Average Flow Rate (litres/min)	4.8
Time to Purge (mins)	10	Number of Well Volumes Purged	3.1
Total Volume Purged (litres)	48.0	Operative	KW

Observations During Well Development (see Vu-situ output for insitu parameter readings)

In-situ Parameter Device Model	N/A	Groundwater Odour	No odour
In-situ Parameter Device SN	N/A	Visual Turbidity	Highly Turbid
Confirm Field Calibration Completed	N/A	Groundwater Colour	Dark Grey

Well Volume Calculation

Volume of the Filter Pack

Saturated length of Filter Pack (L) (m)	3.00
Porosity of Filter Pack (ø)	0.33
Diameter of Filter Pack (mm) (df)	112
Volume of Filter Pack (litres) (Lø)((πdf2/4)-((πdp2/4))	7.8

Volume of the Standpipe

Diameter of Standpipe (mm) (dp)	50
Saturated depth (m) (sd) (installation base - groundwater level)	3.90
Volume of the Standpipe (litres) (πdp2/4)*10-3	7.7

Total Well Volume

Total Well Volume (litres) Volume of Filter Pack + Volume of Standpipe)	**15.5**

Additional Notes and Observations

No in situ parameters required during well development.

INSTALLATION INSPECTION AND WELL DEVELOPMENT RECORD

Project	Global Centre of Rail Excellence Stage II	Project No	G23012	Client	Walters UK Ltd

Exploratory Hole Number	Installation Reference	Installation Diameter (mm)	Anticipated Well Depth (m bgl)	Date and Time
S2-BH261	1	50	15.00	16/05/2023 15:16
Cover Type	Pipe Cover	Top of Response Zone (m bgl)	Base of Response Zone (m bgl)	Weather
Box Cover	Pipe Plug	10.00	15.00	Sunny

Installation Inspection

Surface Conditions	Dry	Damage to Headworks?	No
Check Dip of Base (m bgl)	15.00	Pipe Cover/Bung Present?	Yes

Remedial actions undertaken to well:

N/A

Purging and Well Development

Guidance Notes

Well development undertaken in accordance with BS10175:2011+A2:2017.

Purge volumes to include the annulus of the filter pack.

Purging must continue until insitu parameters have stabilised unless agreed with clients representative.

Approx. Guidance Volumes for Field Calculation of Wet Well Volume

Volume of 50mm diameter plain pipe	2 litres / metre	Volume of 50mm diameter slotted pipe with 200mm diameter gravel filter pack	11 litres / metre
Porosity of 10mm pea gravel	0.33	Volume of 50mm diameter slotted pipe with 150mm diameter gravel filter pack	6 litres / metre

Groundwater Prior to Well Development

Groundwater Level (m bgl)	12.00	LNAPL/ DNAPL (m bgl)	N/A

Purging Details

Purge Method/ Device	Wasp Pump	Average Flow Rate (litres/min)	6.0
Time to Purge (mins)	8	Number of Well Volumes Purged	3.1
Total Volume Purged (litres)	48.0	Operative	KW

Observations During Well Development (see Vu-situ output for insitu parameter readings)

In-situ Parameter Device Model	N/A	Groundwater Odour	No odour
In-situ Parameter Device SN	N/A	Visual Turbidity	Highly turbid
Confirm Field Calibration Completed	N/A	Groundwater Colour	Greyish brown

Well Volume Calculation

Volume of the Filter Pack

Saturated length of Filter Pack (L) (m)	3.00
Porosity of Filter Pack (ø)	0.33
Diameter of Filter Pack (mm) (df)	121
Volume of Filter Pack (litres) (Lø)((πdf2/4)-((πdp2/4))	9.4

Volume of the Standpipe

Diameter of Standpipe (mm) (dp)	50
Saturated depth (m) (sd) (installation base - groundwater level)	3.00
Volume of the Standpipe (litres) (πdp2/4)*10-3	5.9

Total Well Volume

Total Well Volume (litres) Volume of Filter Pack + Volume of Standpipe)	**15.3**

Additional Notes and Observations

No in situ parameters required during well development.

INSTALLATION INSPECTION AND WELL DEVELOPMENT RECORD

Project	Global Centre of Rail Excellence Stage II	Project No	G23012	Client	Walters UK Ltd

Exploratory Hole Number	Installation Reference	Installation Diameter (mm)	Anticipated Well Depth (m bgl)	Date and Time
S2-BH261	2	0	8.00	16/05/2023 16:00
Cover Type	Pipe Cover	Top of Response Zone (m bgl)	Base of Response Zone (m bgl)	Weather
Box Cover	Pipe Plug	3.00	8.00	Sunny

Installation Inspection

Surface Conditions	Dry	Damage to Headworks?	No
Check Dip of Base (m bgl)	7.80	Pipe Cover/Bung Present?	Yes

Remedial actions undertaken to well:

N/A

Purging and Well Development

Guidance Notes

Well development undertaken in accordance with BS10175:2011+A2:2017.

Purge volumes to include the annulus of the filter pack.

Purging must continue until insitu parameters have stabilised unless agreed with clients representative.

Approx. Guidance Volumes for Field Calculation of Wet Well Volume

Volume of 50mm diameter plain pipe	2 litres / metre	Volume of 50mm diameter slotted pipe with 200mm diameter gravel filter pack	11 litres / metre
Porosity of 10mm pea gravel	0.33	Volume of 50mm diameter slotted pipe with 150mm diameter gravel filter pack	6 litres / metre

Groundwater Prior to Well Development

Groundwater Level (m bgl)	Dry	LNAPL/ DNAPL (m bgl)	N/A

Purging Details

Purge Method/ Device	N/A	Average Flow Rate (litres/min)	
Time to Purge (mins)	0	Number of Well Volumes Purged	
Total Volume Purged (litres)	0.0	Operative	KW

Observations During Well Development (see Vu-situ output for insitu parameter readings)

In-situ Parameter Device Model	N/A	Groundwater Odour	N/A
In-situ Parameter Device SN	N/A	Visual Turbidity	N/A
Confirm Field Calibration Completed	N/A	Groundwater Colour	N/A

Well Volume Calculation

Volume of the Filter Pack

Saturated length of Filter Pack (L) (m)	
Porosity of Filter Pack (ø)	0.33
Diameter of Filter Pack (mm) (df)	121
Volume of Filter Pack (litres) (Lø)((πdf2/4)-((πdp2/4))	0.0

Volume of the Standpipe

Diameter of Standpipe (mm) (dp)	0
Saturated depth (m) (sd) (installation base - groundwater level)	
Volume of the Standpipe (litres) (πdp2/4)*10-3	0.0

Total Well Volume

Total Well Volume (litres) Volume of Filter Pack + Volume of Standpipe)	**0.0**

Additional Notes and Observations

Borehole dipped dry.

Appendix II

Monitoring

Gas Monitor Calibration Certificates	Certificate Number: G508511_2/32102 G508511_1/33397 G504748_2/32981
Groundwater and Gas Monitoring	S1-BH118, S1-BH119 (1 and 2), S1-BH120, S2-BH204, S2-BH207, S2-BH208, S2-BH210, S2-BH214, S2-BH217 (1 and 2), S2-BH219 (1 and 2), S2-BH220 (1 and 2), S2-BH225, S2-BH226, S2-BH227 (1 and 2), S2-BH229 (1 and 2), S2-BH232, S2-BH233, S2-BH236, S2-BH237, S2-BH239 (1 and 2), S2-BH240, S2-BH241, S2-BH242, S2-BH243 (1 and 2), S2-BH244 (1 and 2), S2-BH245, S2-BH246 (1 and 2), S2-BH247 (1 and 2), S2-BH248 (1 and 2), S2-BH250 (1 and 2), S2-BH252 (1 and 2), S2-BH261 (1 and 2)
Barometric/Temperature Monitoring	Stage 2 Monitoring Barometric Pressure and Temperature

CERTIFICATION OF CALIBRATION

4533

Date Of Calibration: 01-Feb-2023

Certificate Number: G508511_2/32102

Issued by: QED Environmental Systems Ltd.

Customer: **Jackson Drilling Ltd**

Jackson Drilling Northwood Farm Coxbridge Road Baltonsborough
GLASTONBURY Somerset BA6 8RA UNITED KINGDOM

Description: Gas Analyser

Model: GA5000

Serial Number: G508511

UKAS Accredited results:

Results after adjustment :

Methane (CH_4)		
Certified Gas (%)	**Instrument Reading (%)**	**Uncertainty (%)**
5.0	4.9	0.072
15.0	14.9	0.13
60.0	59.6	0.42

Carbon Dioxide (CO_2)		
Certified Gas (%)	**Instrument Reading (%)**	**Uncertainty (%)**
5.0	4.9	0.074
15.0	15.0	0.13
40.0	40.1	0.29

Oxygen (O_2)		
Certified Gas (%)	**Instrument Reading (%)**	**Uncertainty (%)**
21.5	21.5	0.25

The inwards assessment was carried out 23-Jan-2023.

The maximum adjustment is larger than the specification limit.

Inwards assessment data is available if requested.

All concentrations are molar.

CH_4, CO_2 readings recorded at : 31.3 °C ± 2.5 °C

O2 readings recorded at : 21.3 °C ± 2.5 °C

Barometric Pressure : 1013 mbar ± 4 mbar

Method of Test : The analyser is calibrated in a temperature controlled chamber using a series of reference gases, in compliance with procedure LP004.

Instrument has passed calibration as the measurement result is within the specification limit. The specification limit takes into account the measurement uncertainty.

The results relate only to the item calibrated

This certificate is issued in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service. It provides traceability of measurement to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

Calibration Instance:114 IGC Instance:114

www.qedenv.com +44 (0) 333 800 0088 sales@qedenv.co.uk

QED Environmental Systems Ltd. Cyan Park - Unit 3, Jimmy Hill Way, Coventry, CV2 4QP, UNITED KINGDOM

Registered in England and Wales 1898734

CERTIFICATION OF CALIBRATION

4533

Date Of Calibration: 01-Feb-2023

Certificate Number: G508511_2/32102

Issued by: QED Environmental Systems Ltd.

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95%. The uncertainty evaluation has been carried out in accordance with UKAS requirements.

Calibrations marked 'Non-UKAS Accredited results' on this certificate have been included for completeness.

Non-UKAS accredited results after adjustment:

Barometer (mbar)	
Reference	**Instrument Reading**
1013	1013

Additional Gas Cells		
Gas	**Certified Gas (ppm)**	**Instrument Reading (ppm)**
CO	505	505
H_2S	258.8	259

Internal Flow	
Applied (l/hr)	**Instrument Reading (l/hr)**
5.0	5.1
10.0	10.1

Date of Issue : 02-Feb-2023 **Approved by Signatory**

Laura McBride

Laboratory Inspection

End of Certificate

This certificate is issued in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service. It provides traceability of measurement to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

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Registered in England and Wales 1898734

CERTIFICATION OF CALIBRATION

4533

Date Of Calibration: 16-Aug-2023

Certificate Number: G508511_1/33397

Issued by: QED Environmental Systems Ltd.

Customer: **Jackson Drilling Ltd**
Jackson Drilling Northwood Farm Coxbridge Road Baltonsborough
GLASTONBURY Somerset BA6 8RA UNITED KINGDOM

Description: Gas Analyser

Model: GA5000

Serial Number: G508511

UKAS Accredited results:

Results after adjustment :

Methane (CH_4)		
Certified Gas (%)	**Instrument Reading (%)**	**Uncertainty (%)**
5.0	4.9	0.072
15.0	14.9	0.13
60.0	59.7	0.42

Carbon Dioxide (CO_2)		
Certified Gas (%)	**Instrument Reading (%)**	**Uncertainty (%)**
5.0	5.0	0.074
15.0	15.0	0.13
40.0	40.1	0.29

Oxygen (O_2)		
Certified Gas (%)	**Instrument Reading (%)**	**Uncertainty (%)**
20.2	20.3	0.25

The inwards assessment was carried out 09-Aug-2023.
The maximum adjustment is larger than the specification limit.
Inwards assessment data is available if requested.

All concentrations are molar.

CH_4, CO_2 readings recorded at : 33.8 °C ± 2.5 °C

O2 readings recorded at : 25.5 °C ± 2.5 °C

Barometric Pressure : 1011 mbar ± 4 mbar

Method of Test : The analyser is calibrated in a temperature controlled chamber using a series of reference gases, in compliance with procedure LP004.

Instrument has passed calibration as the measurement result is within the specification limit. The specification limit takes into account the measurement uncertainty.
The results relate only to the item calibrated

This certificate is issued in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service. It provides traceability of measurement to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

Calibration Instance:117 IGC Instance:117

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QED Environmental Systems Ltd. Cyan Park - Unit 3, Jimmy Hill Way, Coventry, CV2 4QP, UNITED KINGDOM

Registered in England and Wales 1898734

CERTIFICATION OF CALIBRATION

4533

Date Of Calibration: 16-Aug-2023

Certificate Number: G508511_1/33397

Issued by: QED Environmental Systems Ltd.

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95%. The uncertainty evaluation has been carried out in accordance with UKAS requirements.

Calibrations marked 'Non-UKAS Accredited results' on this certificate have been included for completeness.

Non-UKAS accredited results after adjustment:

Barometer (mbar)	
Reference	**Instrument Reading**
1011	1011

Additional Gas Cells		
Gas	**Certified Gas (ppm)**	**Instrument Reading (ppm)**
CO	500	500
H_2S	273.5	274

Internal Flow	
Applied (l/hr)	**Instrument Reading (l/hr)**
5	5.2
10	10.2

Date of Issue : 17-Aug-2023 **Approved by Signatory**

Fani Zolota

Laboratory Inspection

End of Certificate

This certificate is issued in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service. It provides traceability of measurement to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

Calibration Instance:117 IGC Instance:117

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