

<p>Photograph 14:</p> <p>Invasive plant species impacted soils being loaded onto plastic sheeting for temporary storage pending off-site disposal</p>	 A yellow excavator is shown in the process of loading a large pile of dark, moist soil onto a blue plastic sheeting. The excavator's bucket is raised, and soil is falling from it. The background shows a construction site with other equipment and a cloudy sky.
<p>Photograph 15:</p> <p>Assurance air monitoring taking place during processing and placement of Stockpile SP105</p>	 A yellow air monitoring device is attached to a metal fence. The device has a white flexible tube connected to a metal fitting. The device is labeled 'ZIDEX' and 'SP105'. The background shows a residential building and some vegetation.

**Photograph
16:**

Placed and
compacted fill
in Phase 1



**Photograph
17:**

Placed and
compacted fill
in Phase 2



<p>Photograph 18:</p> <p>Compaction of granular material at formation along proposed road alignments</p>	
<p>Photograph 19:</p> <p>CBR Plate Load testing along road alignments</p>	



APPENDIX D

GEOTECHNICAL TESTING CERTIFICATES



LABORATORY REPORT



Contract Number: PSL24/7630

Report Date: 30 October 2024
Client's Reference: SR4798
Client Name: Sirius Durham
4245 Park Approach
Century Way
Thorpe Park
Leeds
LS15 8GB

For the attention of: Jack Clarke/Alastair Cook

Contract Title: Ivy Mills, Whitehaven
Date Received: 18/10/2024
Date Commenced: 18/10/2024
Date Completed: 30/10/2024

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.


Checked and Approved Signatories:

A Watkins
(Managing Director)

R Berriman
(Associate Director)

S Royle
(Laboratory Manager)

L Knight
(Assistant Laboratory Manager)


D Nicholson
(Senior Technician)

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SUMMARY OF SOIL CLASSIFICATION TESTS

BS 1377 - Part 2 : 2022 in accordance with BS EN ISO 17892 (as below)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Water Content %	Linear Shrinkage	Particle Density Mg/m ³	Liquid Limit %	Plastic Limit %	Plasticity Index %	Passing 0.425mm %	Remarks
Plot 35 - B1		B			26.1			46	22	24	87	Medium Plasticity CIM
Plot 39 - B1		B			25.4			48	22	26	87	Medium Plasticity CIM

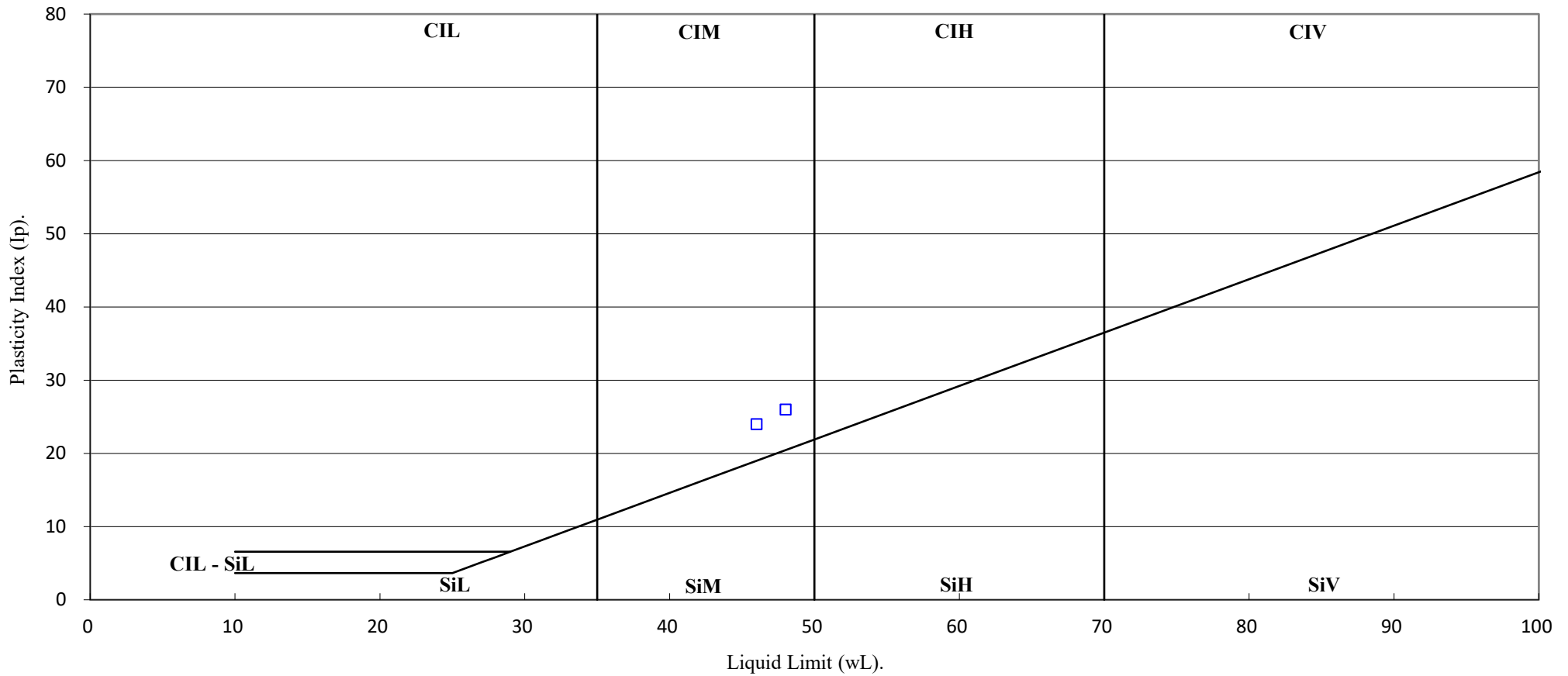
Water Content - BS 1377 - Part 2 : 2022 : Clause 4 in accordance with BS EN ISO 17892 - 1 : 2014 + A1 : 2022
 Linear Shrinkage - BS 1377 - Part 2 : 2022 : Clause 7
 Particle Density (Gas Jar method) - BS 1377 - Part 2 : 2022 : Clause 9
 Liquid, Plastic Limit & Plasticity Index - BS 1377 - Part 2 : 2022 : Clause 5 & 6 in accordance with BS EN ISO 17892 - 12 : 2018 + A2 : 2022

SYMBOLS : NP = Non Plastic

		Ivy Mills, Whitehaven	Contract No:
			PSL24/7630
			Client Ref:
			SR4798

PLASTICITY CHART

BS EN ISO 14688-2:2017 Clause 4.4



Ivy Mills, Whitehaven

Contract No:

PSL24/7630

Client Ref:

PARTICLE SIZE DISTRIBUTION TEST

BS 1377 - Part 2 : 2022 : Clause 10 in accordance with BS EN ISO 17892 - 4 : 2016
Sieve Method, Clause 5.2

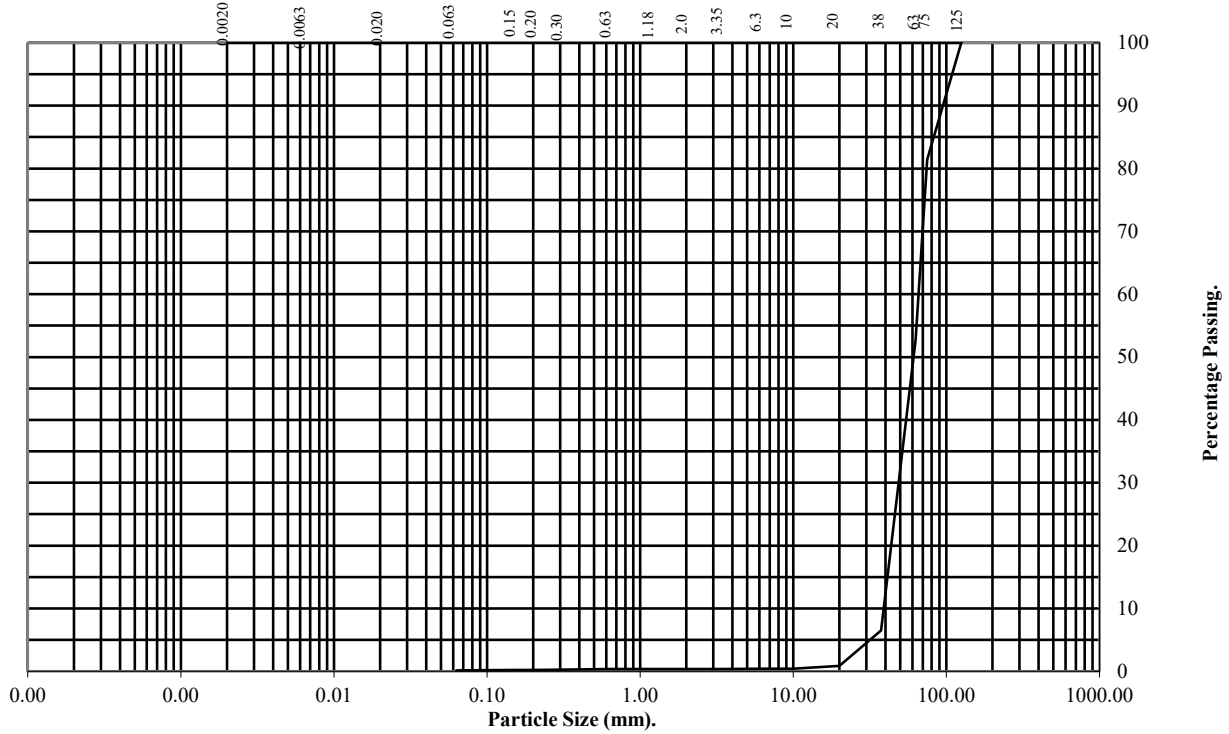
Hole Number: SP104-S1

Top Depth (m):

Sample Number:

Base Depth (m):

Sample Type: B



BS Test Sieve (mm)	Percentage Passing
125	100
75	81
63	53
37.5	7
20	1
10	0
6.3	0
3.35	0
2	0
1.18	0
0.63	0
0.3	0
0.2	0
0.15	0
0.063	0

Soil Fraction	Total Percentage
Cobbles	47
Gravel	53
Sand	0
Silt/Clay	0

Remarks:

See Summary of Soil Descriptions



Ivy Mills, Whitehaven

Contract No:
PSL24/7630
Client Ref:
SR4798

PARTICLE SIZE DISTRIBUTION TEST

BS 1377 - Part 2 : 2022 : Clause 10 in accordance with BS EN ISO 17892 - 4 : 2016
Sieve Method, Clause 5.2

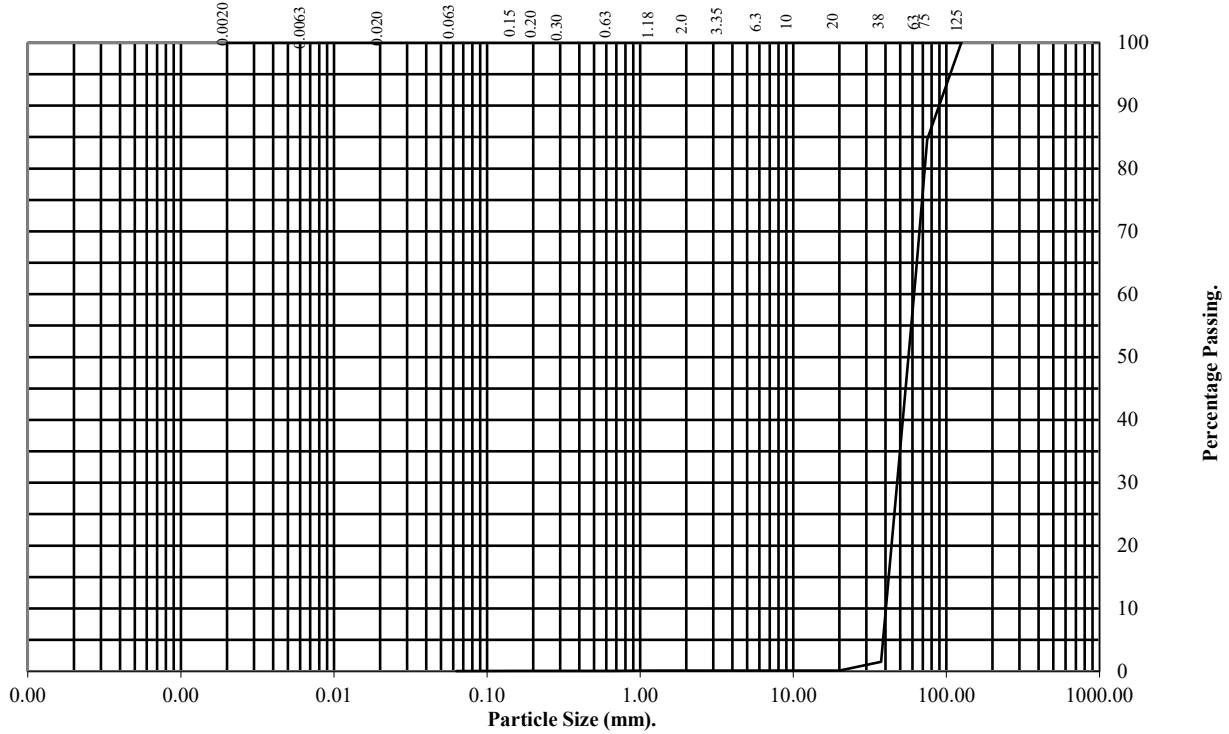
Hole Number: SP104-S2

Top Depth (m):

Sample Number:

Base Depth (m):

Sample Type: B



BS Test Sieve (mm)	Percentage Passing
125	100
75	85
63	63
37.5	1
20	0
10	0
6.3	0
3.35	0
2	0
1.18	0
0.63	0
0.3	0
0.2	0
0.15	0
0.063	0

Soil Fraction	Total Percentage
Cobbles	37
Gravel	63
Sand	0
Silt/Clay	0

Remarks:

See Summary of Soil Descriptions



Ivy Mills, Whitehaven

Contract No:
PSL24/7630
Client Ref:
SR4798

PARTICLE SIZE DISTRIBUTION TEST

BS 1377 - Part 2 : 2022 : Clause 10 in accordance with BS EN ISO 17892 - 4 : 2016
Sieve Method, Clause 5.2

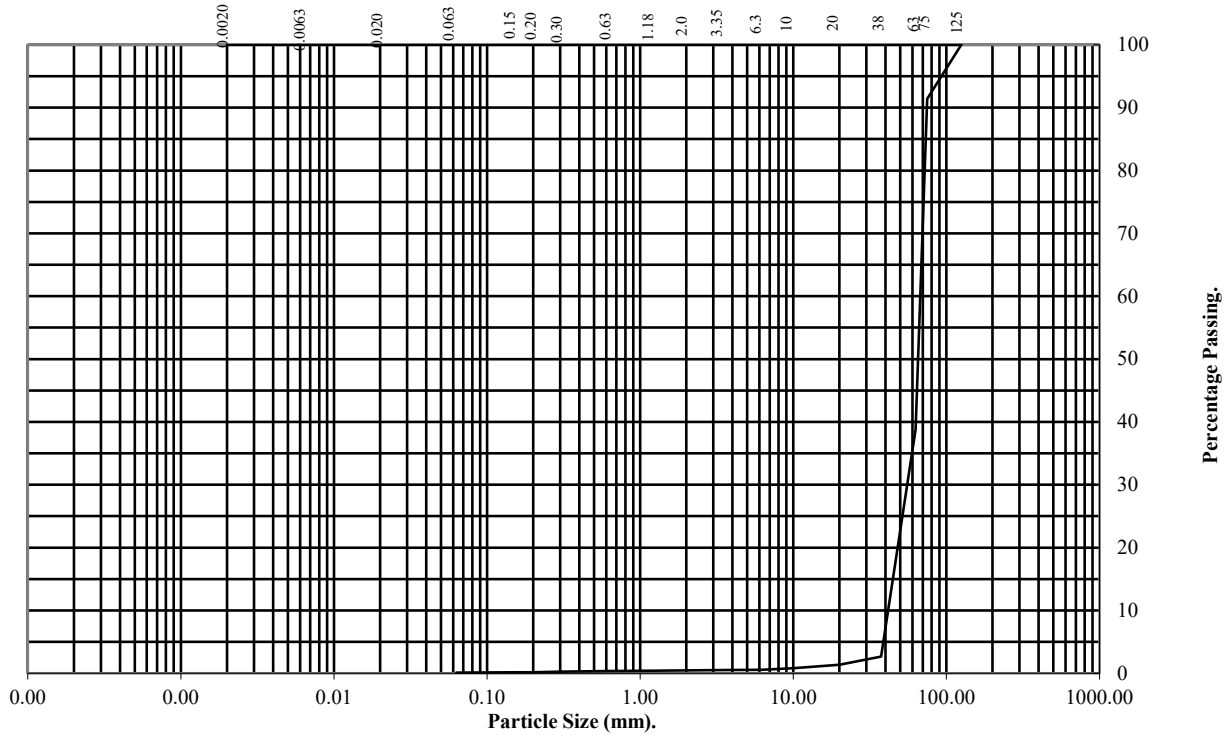
Hole Number: SP105-S1

Top Depth (m):

Sample Number:

Base Depth (m):

Sample Type: B



BS Test Sieve (mm)	Percentage Passing
125	100
75	91
63	39
37.5	3
20	1
10	1
6.3	1
3.35	0
2	0
1.18	0
0.63	0
0.3	0
0.2	0
0.15	0
0.063	0

Soil Fraction	Total Percentage
Cobbles	61
Gravel	39
Sand	0
Silt/Clay	0

Remarks:

See Summary of Soil Descriptions



Ivy Mills, Whitehaven

Contract No:
PSL24/7630
Client Ref:
SR4798

PARTICLE SIZE DISTRIBUTION TEST

BS 1377 - Part 2 : 2022 : Clause 10 in accordance with BS EN ISO 17892 - 4 : 2016

Sieve Method, Clause 5.2

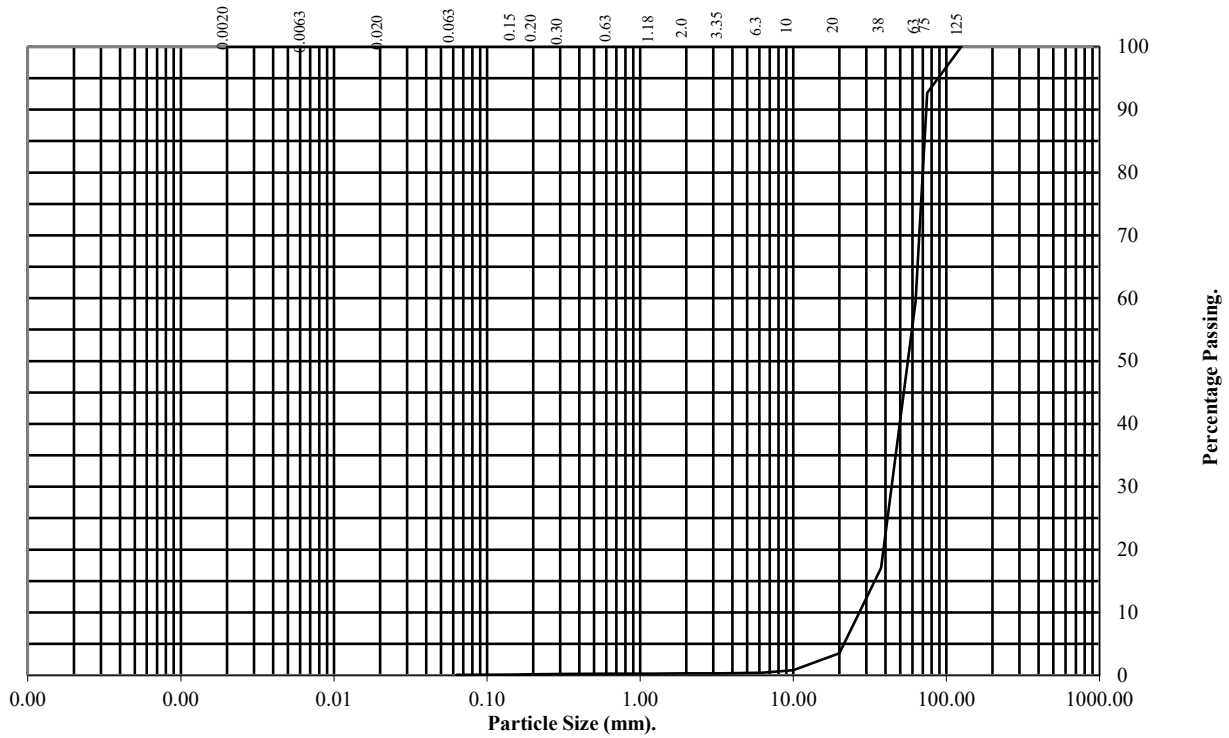
Hole Number: SP105-S2

Top Depth (m):

Sample Number:

Base Depth (m):

Sample Type: B



BS Test Sieve (mm)	Percentage Passing
125	100
75	93
63	60
37.5	17
20	4
10	1
6.3	0
3.35	0
2	0
1.18	0
0.63	0
0.3	0
0.2	0
0.15	0
0.063	0

Soil Fraction	Total Percentage
Cobbles	40
Gravel	60
Sand	0
Silt/Clay	0

Remarks:

See Summary of Soil Descriptions



Ivy Mills, Whitehaven

Contract No:
PSL24/7630
Client Ref:
SR4798

PARTICLE SIZE DISTRIBUTION TEST

BS 1377 - Part 2 : 2022 : Clause 10 in accordance with BS EN ISO 17892 - 4 : 2016

Sieve Method, Clause 5.2

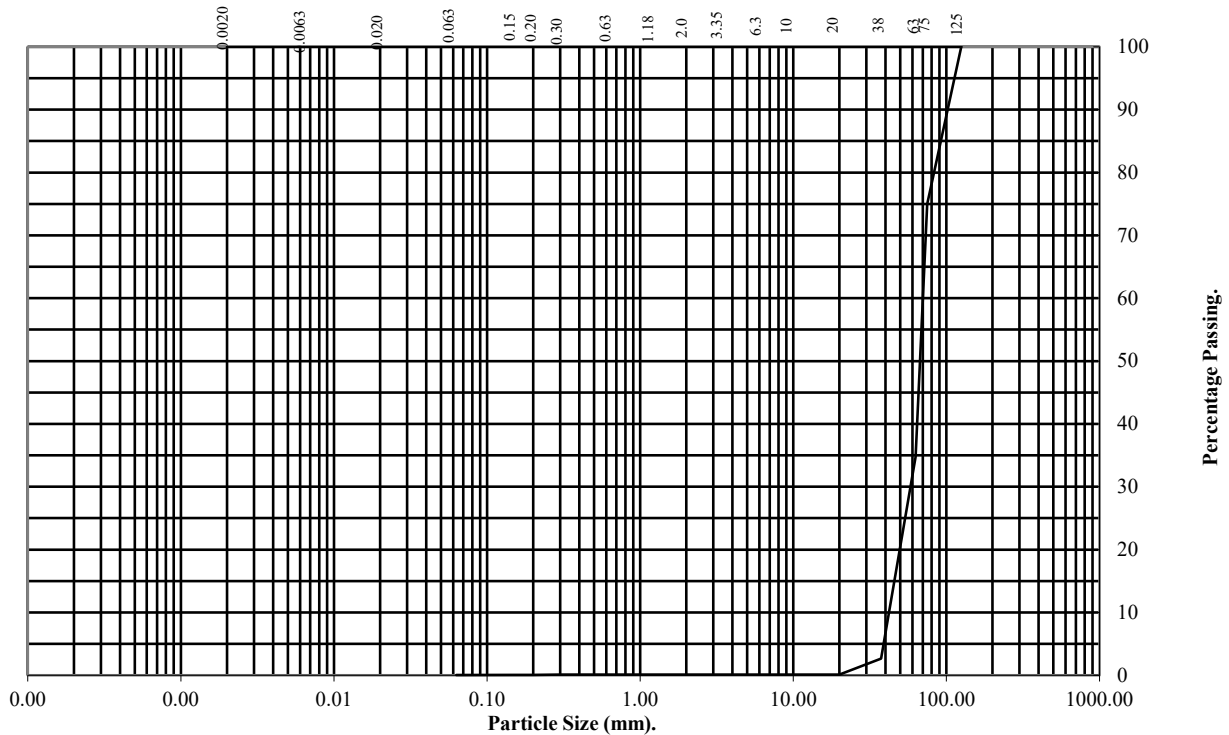
Hole Number: SP106-S1

Top Depth (m):

Sample Number:

Base Depth (m):

Sample Type: B



BS Test Sieve (mm)	Percentage Passing
125	100
75	75
63	35
37.5	3
20	0
10	0
6.3	0
3.35	0
2	0
1.18	0
0.63	0
0.3	0
0.2	0
0.15	0
0.063	0

Soil Fraction	Total Percentage
Cobbles	65
Gravel	35
Sand	0
Silt/Clay	0

Remarks:

See Summary of Soil Descriptions



Ivy Mills, Whitehaven

Contract No:
PSL24/7630
Client Ref:
SR4798

PARTICLE SIZE DISTRIBUTION TEST

BS 1377 - Part 2 : 2022 : Clause 10 in accordance with BS EN ISO 17892 - 4 : 2016
Sieve Method, Clause 5.2

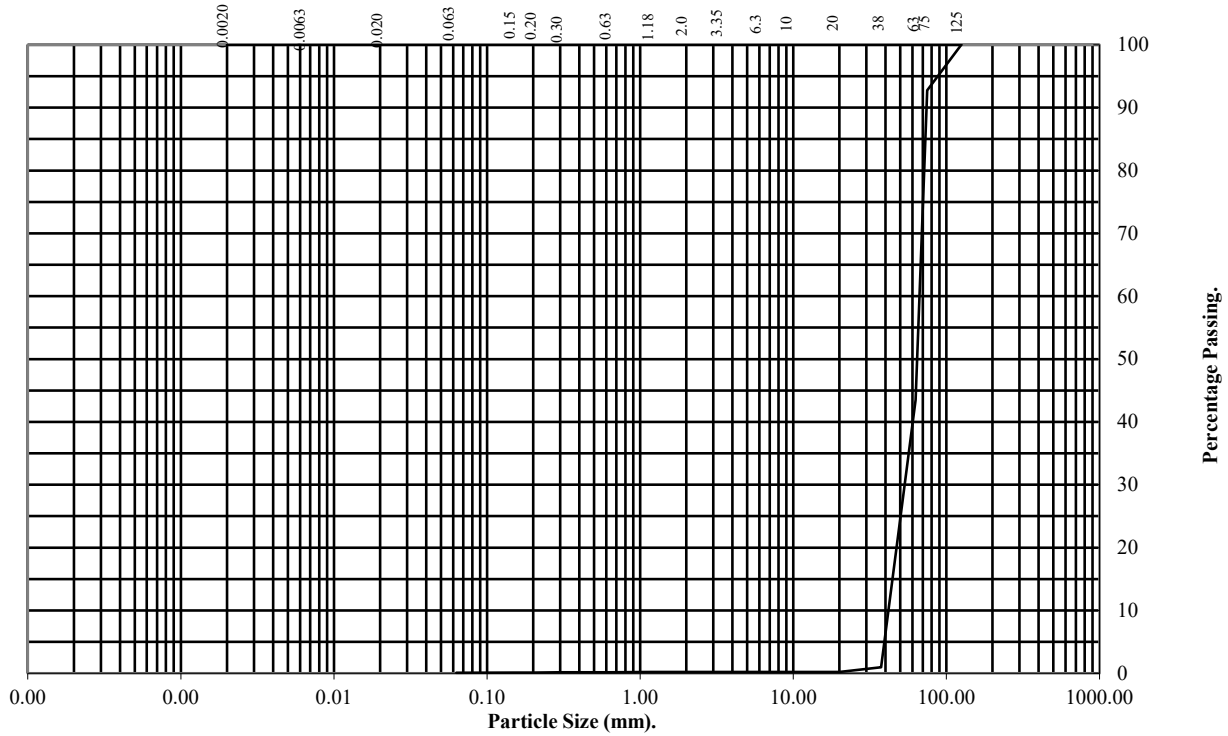
Hole Number: SP106-S2

Top Depth (m):

Sample Number:

Base Depth (m):

Sample Type: B



BS Test Sieve (mm)	Percentage Passing
125	100
75	93
63	43
37.5	1
20	0
10	0
6.3	0
3.35	0
2	0
1.18	0
0.63	0
0.3	0
0.2	0
0.15	0
0.063	0

Soil Fraction	Total Percentage
Cobbles	57
Gravel	43
Sand	0
Silt/Clay	0

Remarks:

See Summary of Soil Descriptions



Ivy Mills, Whitehaven

Contract No:
PSL24/7630
Client Ref:
SR4798

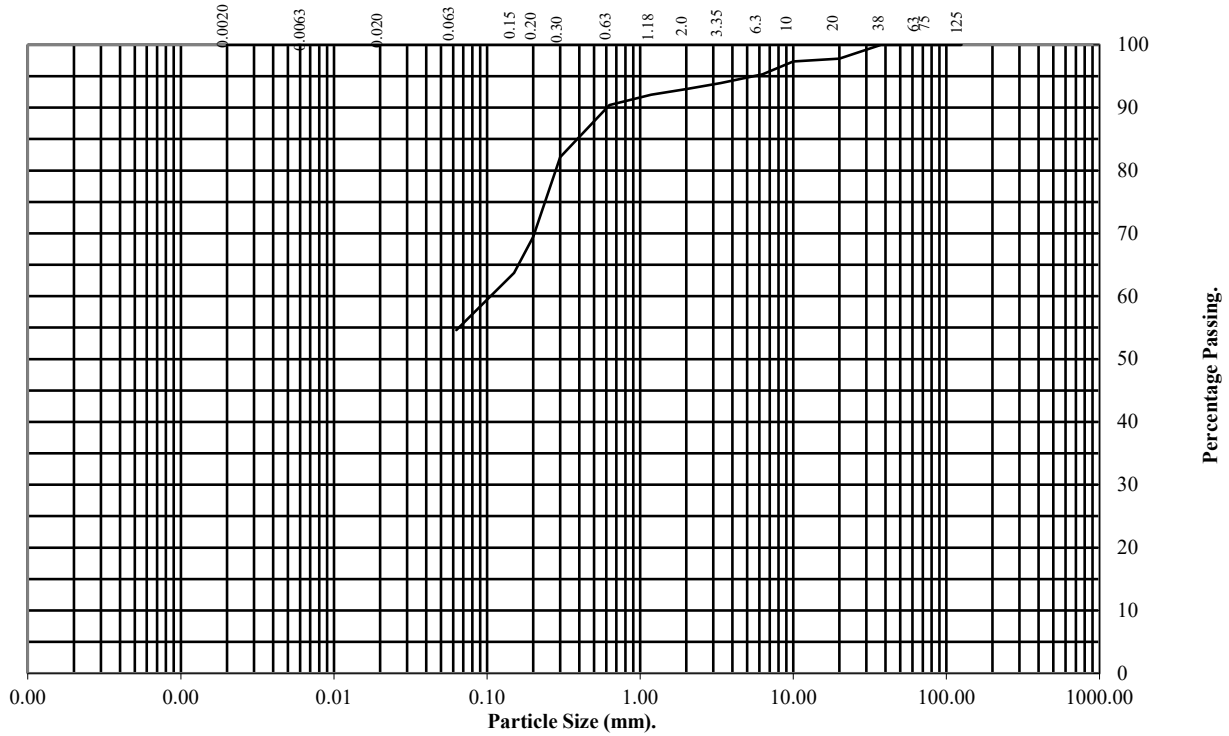
PARTICLE SIZE DISTRIBUTION TEST

BS 1377 - Part 2 : 2022 : Clause 10 in accordance with BS EN ISO 17892 - 4 : 2016
Sieve Method, Clause 5.2

Hole Number: Plot 35 - B1 Top Depth (m):

Sample Number: Base Depth (m):

Sample Type: B



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	98
10	97
6.3	95
3.35	94
2	93
1.18	92
0.63	90
0.3	82
0.2	69
0.15	64
0.063	55

Soil Fraction	Total Percentage
Cobbles	0
Gravel	7
Sand	38
Silt/Clay	55

Remarks:

See Summary of Soil Descriptions



Ivy Mills, Whitehaven

Contract No:
PSL24/7630
Client Ref:
SR4798

PARTICLE SIZE DISTRIBUTION TEST

BS 1377 - Part 2 : 2022 : Clause 10 in accordance with BS EN ISO 17892 - 4 : 2016

Sieve Method, Clause 5.2

Hole Number:

Plot 39 - B1

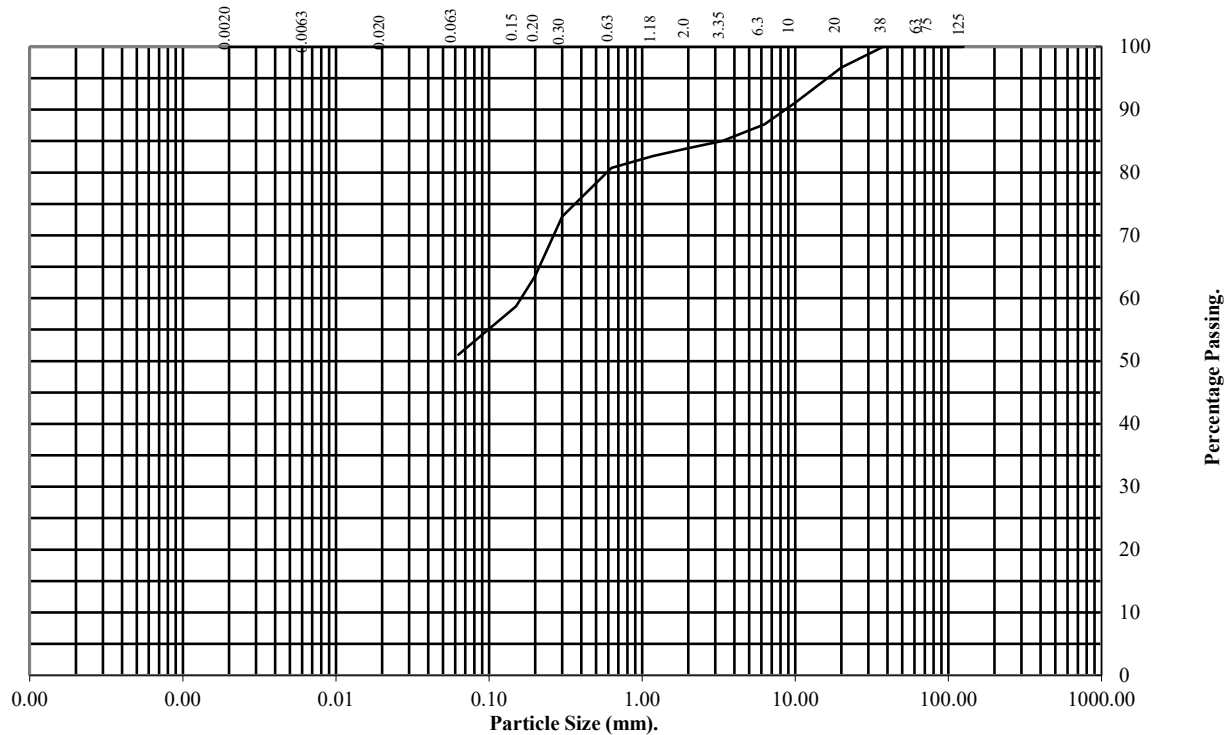
Top Depth (m):

Sample Number:

Base Depth (m):

Sample Type:

B



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	97
10	91
6.3	88
3.35	85
2	84
1.18	83
0.63	81
0.3	73
0.2	64
0.15	59
0.063	51

Soil Fraction	Total Percentage
Cobbles	0
Gravel	16
Sand	33
Silt/Clay	51

Remarks:

See Summary of Soil Descriptions



Ivy Mills, Whitehaven

Contract No:
PSL24/7630
Client Ref:
SR4798



LABORATORY REPORT



Contract Number: PSL24/7631

Report Date: 07 November 2024

Client's Reference: SR4798

Client Name: Sirius Durham
4245 Park Approach
Century Way
Thorpe Park
Leeds
LS15 8GB

For the attention of: Jack Clarke/Alastair Cook

Contract Title: Ivy Mills, Whitehaven

Date Received: 18/10/2024

Date Commenced: 18/10/2024

Date Completed: 7/11/2024

Notes: Opinions and Interpretations are outside the UKAS Accreditation

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R Berriman
(Associate Director)


S Royle
(Laboratory Manager)

L Knight
(Assistant Laboratory Manager)

S Eyre
(Senior Technician)

T Watkins
(Senior Technician)

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SUMMARY OF SOIL CLASSIFICATION TESTS

BS 1377 - Part 2 : 2022 in accordance with BS EN ISO 17892 (as below)

Sample Reference	Layer Number	Sample Type	Grid Ref	Base Depth m	Water Content %	Linear Shrinkage	Particle Density Mg/m ³	Liquid Limit %	Plastic Limit %	Plasticity Index %	Passing 0.425mm %	Remarks
Plot 3	1	B			21.5			47	21	26	59	Medium Plasticity CIM
Plot 3	1	D			21.5							

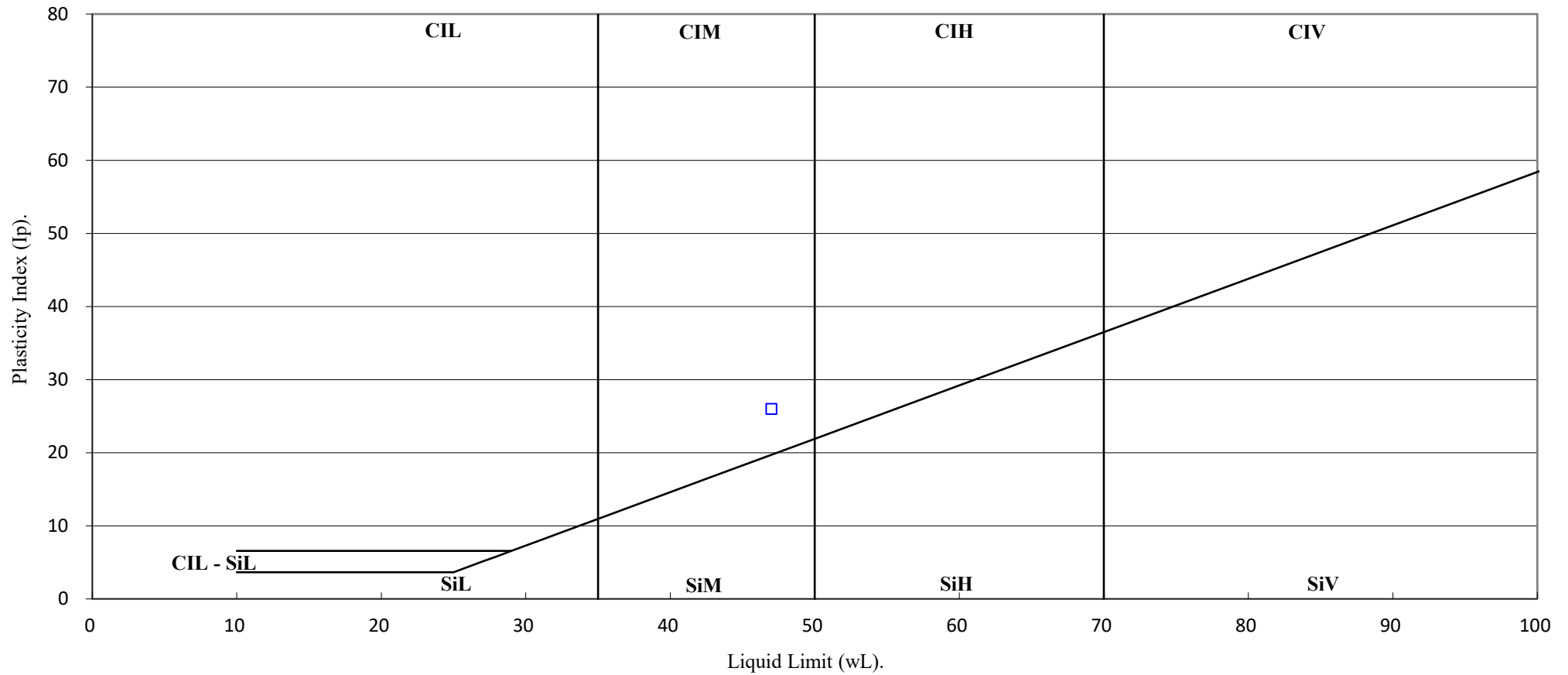
Water Content - BS 1377 - Part 2 : 2022 : Clause 4 in accordance with BS EN ISO 17892 - 1 : 2014 + A1 : 2022
 Linear Shrinkage - BS 1377 - Part 2 : 2022 : Clause 7
 Particle Density (Gas Jar method) - BS 1377 - Part 2 : 2022 : Clause 9
 Liquid, Plastic Limit & Plasticity Index - BS 1377 - Part 2 : 2022 : Clause 5 & 6 in accordance with BS EN ISO 17892 - 12 : 2018 + A2 : 2022

SYMBOLS : NP = Non Plastic

		<p>Ivy Mills, Whitehaven</p>	Contract No:
			PSL24/7631
			Client Ref:
			SR4798

PLASTICITY CHART

BS EN ISO 14688-2:2017 Clause 4.4



Ivy Mills, Whitehaven

Contract No:

PSL24/7631

Client Ref:

PARTICLE SIZE DISTRIBUTION TEST

BS 1377 - Part 2 : 2022 : Clause 10 in accordance with BS EN ISO 17892 - 4 : 2016

Sieve Method, Clause 5.2

Sample Reference:

Plot 3

Grid Ref:

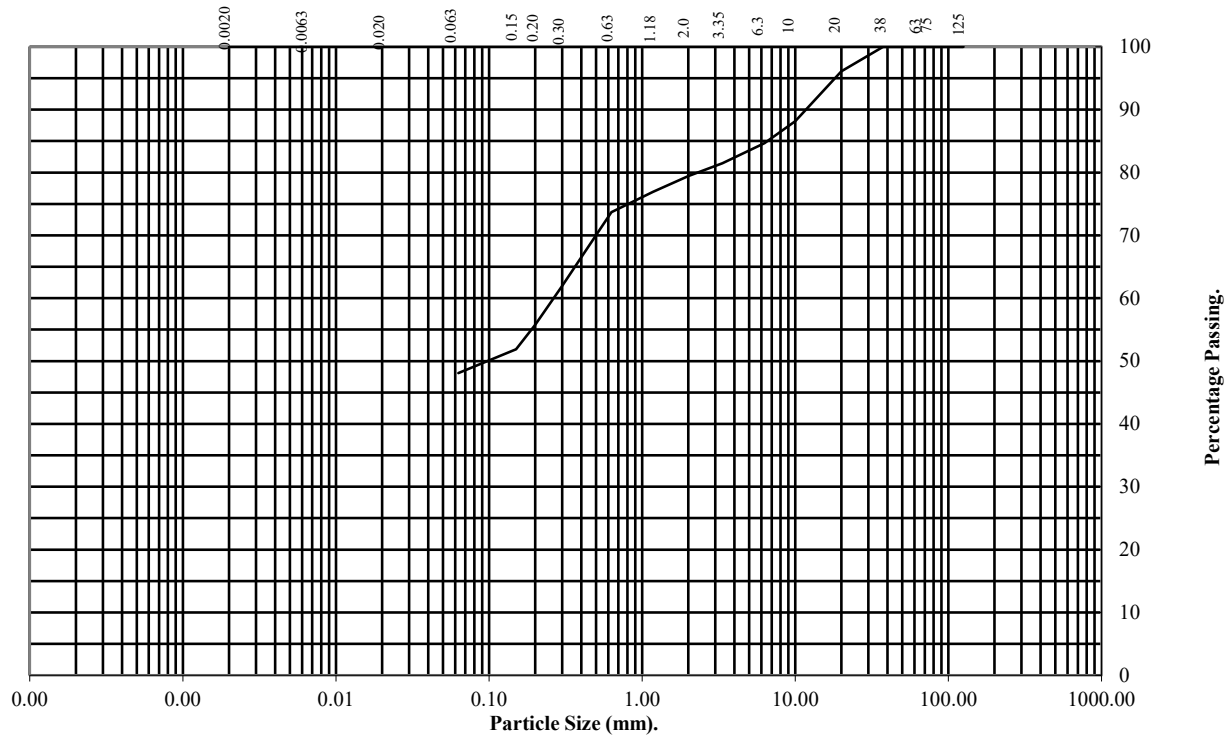
Layer Number:

1

Sample Date:

Sample Type:

B



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	96
10	88
6.3	85
3.35	82
2	79
1.18	77
0.63	74
0.3	62
0.2	56
0.15	52
0.063	48

Soil Fraction	Total Percentage
Cobbles	0
Gravel	21
Sand	31
Silt/Clay	48

Remarks:

See Summary of Soil Descriptions



Ivy Mills, Whitehaven

Contract No:
PSL24/7631
Client Ref:
SR4798

EMERY EXPANSION TEST.

Road and Transport Association of Canada 1974.

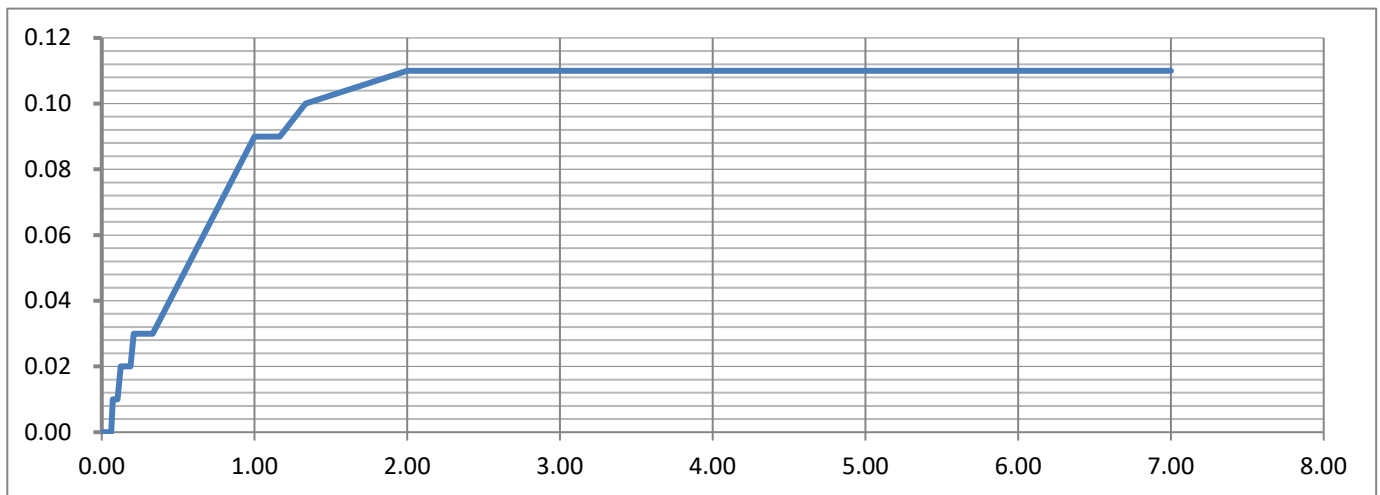
Hole Number: TT201 **Top Depth (m):** 0.60


Sample Number: **Base Depth(m):** 0.80

Sample Type: B

INITIAL CONDITIONS.		FINAL CONDITIONS.	
Initial Height - mm:	127.25	Final Height - mm:	127.36
Initial Diameter - mm:	152.08	Final Mass - g:	4114.00
Initial Mass - g:	4077.00	Final Volume - cm3:	2313.79
Initial Volume - cm3:	2311.79	Dry Mass - g:	3341.00
Dry Mass - g:	3341.00	Final Moisture Content - %:	23.1
Initial Moisture Content - %:	22.0	Final Bulk Density - Mg/m3:	1.78
Initial Bulk Density - Mg/m3:	1.76	Final Dry Density - Mg/m3:	1.44
Initial Dry Density - Mg/m3:	1.45	Test Temperature oC:	82

Elapsed Time Min	Dial Gauge Reading Div	Change In Height mm	Elapsed Time Min	Dial Gauge Reading Div	Change In Height mm	Elapsed Time Min	Dial Gauge Reading Div	Change In Height mm
0	0	0.00	120	1	0.01	2880	11	0.11
5	0	0.00	150	1	0.01	3120	11	0.11
10	0	0.00	180	2	0.02	3360	11	0.11
15	0	0.00	210	2	0.02	4320	11	0.11
20	0	0.00	240	2	0.02	4560	11	0.11
25	0	0.00	270	2	0.02	4800	11	0.11
30	0	0.00	300	3	0.03	5760	11	0.11
40	0	0.00	360	3	0.03	6240	11	0.11
50	0	0.00	420	3	0.03	7200	11	0.11
60	0	0.00	480	3	0.03	7680	11	0.11
75	0	0.00	1440	9	0.09	8640	11	0.11
90	0	0.00	1680	9	0.09	9120	11	0.11
105	1	0.01	1920	10	0.10	10080	11	0.11



 <p>PSL PROFESSIONAL SOILS LABORATORY <small>A PHENNA GROUP COMPANY</small></p>	<p>Ivy Mills, Whitehaven</p>	Contract No:
		PSL24/7631
		Client Ref:
		SR4798



LABORATORY REPORT



Contract Number: PSL24/7686

Report Date: 04 November 2024
Client's Reference: SR4798
Client Name: Sirius Durham
Suite 2, Russel House
Mill Road
Langley Moor
Durham
DH7 8HJ

For the attention of: Jack Clarke/Alastair Cook

Contract Title: Ivy Mills, Whitehaven
Date Received: 22/10/2024
Date Commenced: 22/10/2024
Date Completed: 4/11/2024

Notes: Opinions and Interpretations are outside the UKAS Accreditation

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(Managing Director)

R Berriman
(Associate Director)


S Royle
(Laboratory Manager)

L Knight
(Assistant Laboratory Manager)

S Eyre
(Senior Technician)

T Watkins
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EMERY EXPANSION TEST.

Road and Transport Association of Canada 1974.

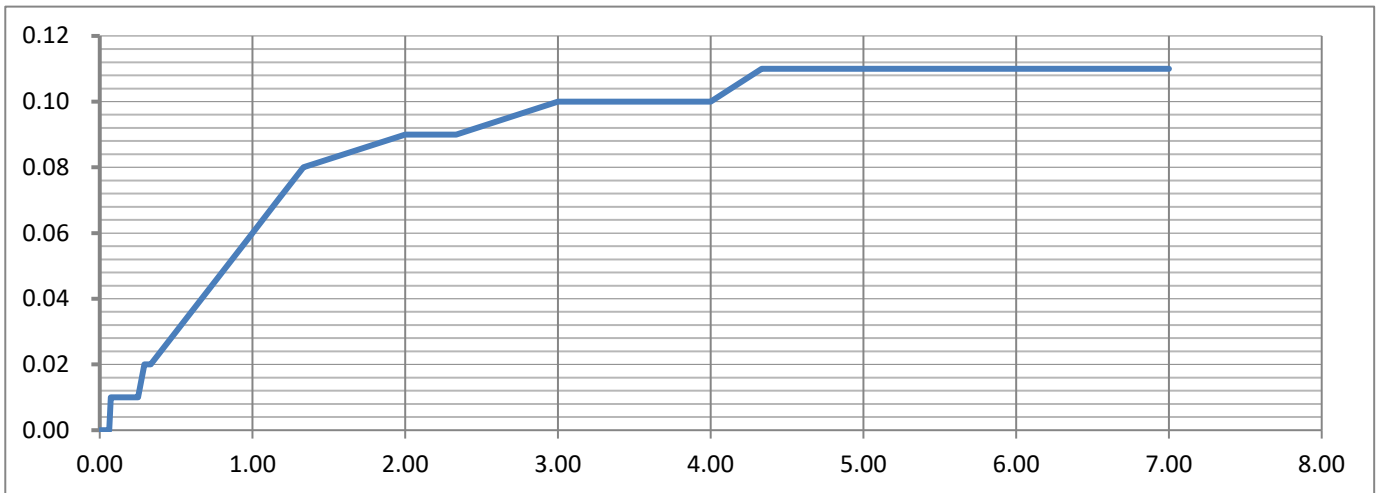
Hole Number: **SP - B1** Top Depth (m):

Sample Number: Base Depth(m):

Sample Type: **B**

INITIAL CONDITIONS.		FINAL CONDITIONS.	
Initial Height - mm:	127.23	Final Height - mm:	127.34
Initial Diameter - mm:	151.97	Final Mass - g:	4475.00
Initial Mass - g:	4435.00	Final Volume - cm3:	2310.08
Initial Volume - cm3:	2308.08	Dry Mass - g:	3684.00
Dry Mass - g:	3684.00	Final Moisture Content - %:	21.5
Initial Moisture Content - %:	20.4	Final Bulk Density - Mg/m3:	1.94
Initial Bulk Density - Mg/m3:	1.92	Final Dry Density - Mg/m3:	1.59
Initial Dry Density - Mg/m3:	1.60	Test Temperature oC:	82

Elapsed Time Min	Dial Gauge Reading Div	Change In Height mm	Elapsed Time Min	Dial Gauge Reading Div	Change In Height mm	Elapsed Time Min	Dial Gauge Reading Div	Change In Height mm
0	0	0.00	120	1	0.01	2880	9	0.09
5	0	0.00	150	1	0.01	3120	9	0.09
10	0	0.00	180	1	0.01	3360	9	0.09
15	0	0.00	210	1	0.01	4320	10	0.10
20	0	0.00	240	1	0.01	4560	10	0.10
25	0	0.00	270	1	0.01	4800	10	0.10
30	0	0.00	300	1	0.01	5760	10	0.10
40	0	0.00	360	1	0.01	6240	11	0.11
50	0	0.00	420	2	0.02	7200	11	0.11
60	0	0.00	480	2	0.02	7680	11	0.11
75	0	0.00	1440	6	0.06	8640	11	0.11
90	0	0.00	1680	7	0.07	9120	11	0.11
105	1	0.01	1920	8	0.08	10080	11	0.11



Ivy Mills, Whitehaven

Contract No:
PSL24/7686
Client Ref:
SR4798

EMERY EXPANSION TEST.

Road and Transport Association of Canada 1974.

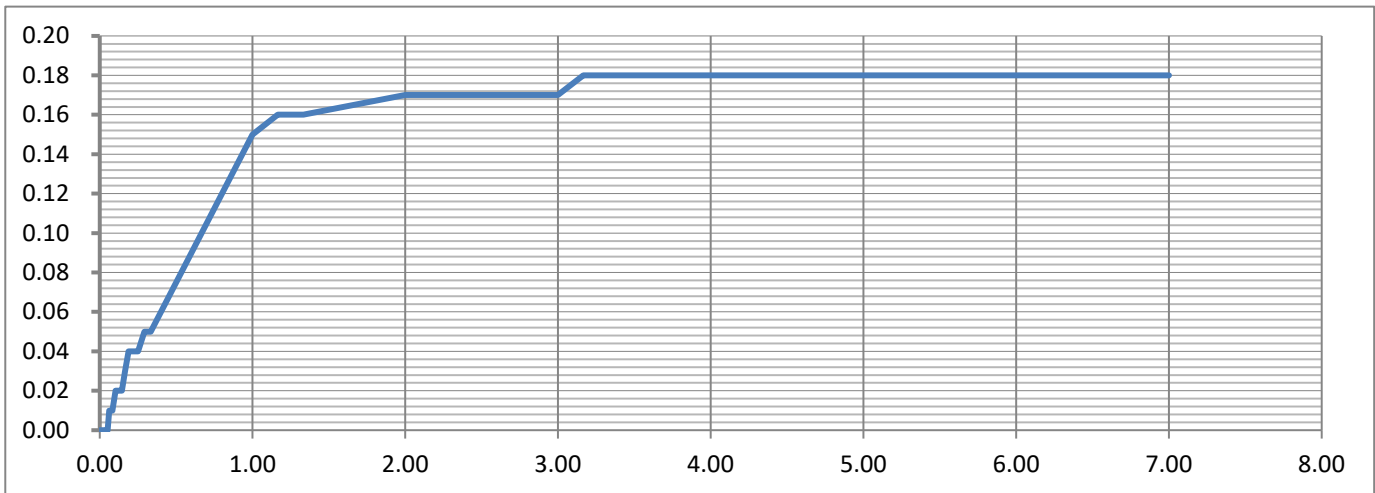
Hole Number: SP - B2 **Top Depth (m):**

Sample Number: **Base Depth(m):**

Sample Type: B

INITIAL CONDITIONS.		FINAL CONDITIONS.	
Initial Height - mm:	128.11	Final Height - mm:	128.29
Initial Diameter - mm:	151.83	Final Mass - g:	4080.00
Initial Mass - g:	4063.00	Final Volume - cm3:	2323.03
Initial Volume - cm3:	2319.77	Dry Mass - g:	3286.00
Dry Mass - g:	3286.00	Final Moisture Content - %:	24.2
Initial Moisture Content - %:	23.6	Final Bulk Density - Mg/m3:	1.76
Initial Bulk Density - Mg/m3:	1.75	Final Dry Density - Mg/m3:	1.41
Initial Dry Density - Mg/m3:	1.42	Test Temperature oC:	82

Elapsed Time Min	Dial Gauge Reading Div	Change In Height mm	Elapsed Time Min	Dial Gauge Reading Div	Change In Height mm	Elapsed Time Min	Dial Gauge Reading Div	Change In Height mm
0	0	0.00	120	1	0.01	2880	17	0.17
5	0	0.00	150	2	0.02	3120	17	0.17
10	0	0.00	180	2	0.02	3360	17	0.17
15	0	0.00	210	2	0.02	4320	17	0.17
20	0	0.00	240	3	0.03	4560	18	0.18
25	0	0.00	270	4	0.04	4800	18	0.18
30	0	0.00	300	4	0.04	5760	18	0.18
40	0	0.00	360	4	0.04	6240	18	0.18
50	0	0.00	420	5	0.05	7200	18	0.18
60	0	0.00	480	5	0.05	7680	18	0.18
75	0	0.00	1440	15	0.15	8640	18	0.18
90	1	0.01	1680	16	0.16	9120	18	0.18
105	1	0.01	1920	16	0.16	10080	18	0.18



Ivy Mills, Whitehaven

Contract No:
PSL24/7686
Client Ref:
SR4798



LABORATORY REPORT



Contract Number: PSL24/8078

Report Date: 30 November 2024
Client's Reference: SR4798
Client Name: Sirius Durham
Suite 2, Russel House
Mill Road
Langley Moor
Durham
DH7 8HJ

For the attention of: Jack Clarke/Alastair Cook

Contract Title: Ivy Mills, Whitehaven
Date Received: 4/11/2024
Date Commenced: 4/11/2024
Date Completed: 30/11/2024

Notes: Opinions and Interpretations are outside the UKAS Accreditation

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Checked and Approved Signatories:

A Watkins
(Managing Director)

R Berriman
(Associate Director)

S Royle
(Laboratory Manager)


L Knight
(Assistant Laboratory Manager)

S Eyre
(Senior Technician)

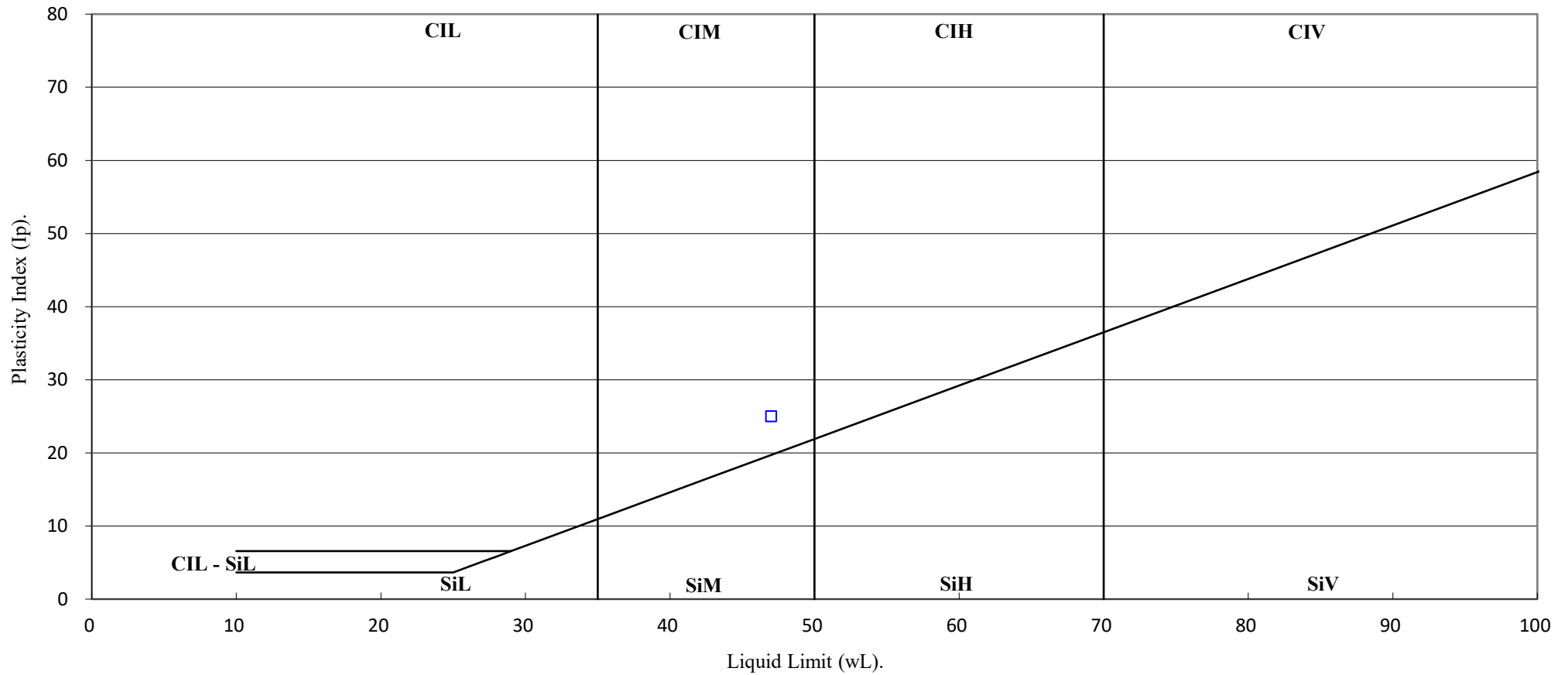
T Watkins
(Senior Technician)

5 – 7 Hexthorpe Road,
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Doncaster,
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Tel: 01302 768098
Email: rberriman@prosoils.co.uk
awatkins@prosoils.co.uk

Page 1 of

PLASTICITY CHART

BS EN ISO 14688-2:2017 Clause 4.4



Ivy Mills, Whitehaven

Contract No:

PSL24/8078

Client Ref:

PARTICLE SIZE DISTRIBUTION TEST

BS 1377 - Part 2 : 2022 : Clause 10 in accordance with BS EN ISO 17892 - 4 : 2016

Sieve Method, Clause 5.2

Hole Number:

SP - B3

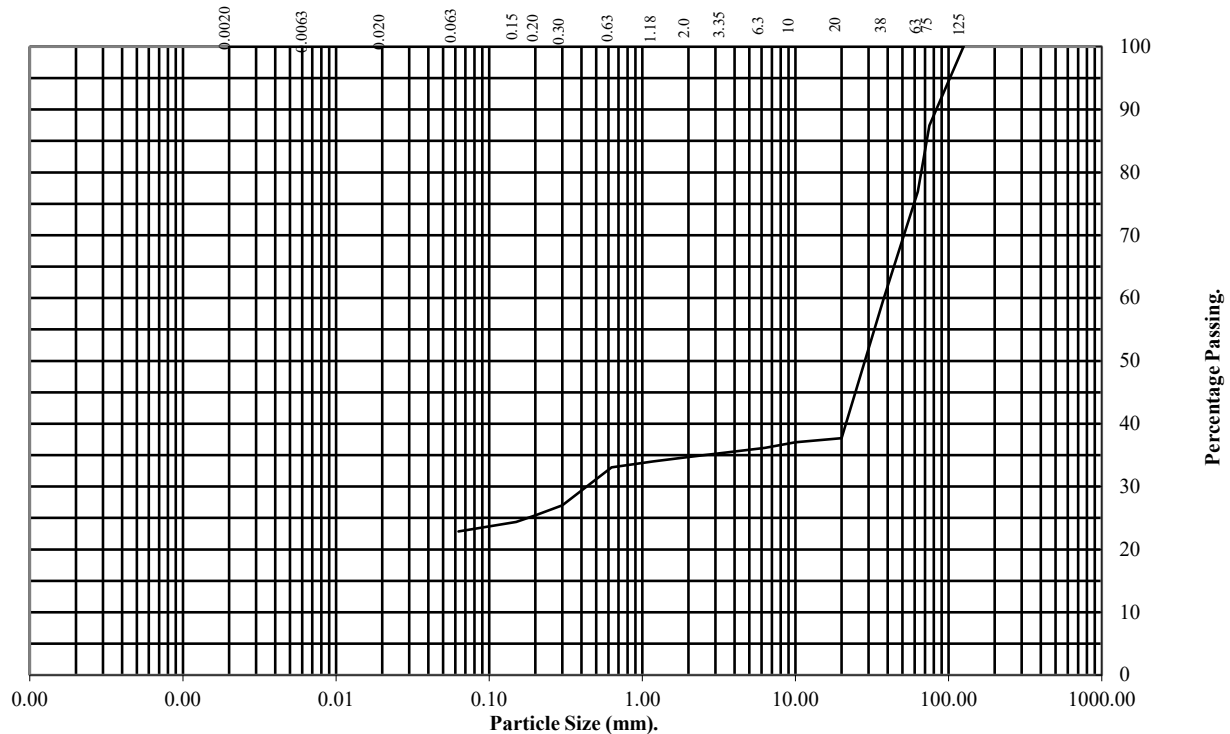
Top Depth (m):

Sample Number:

Base Depth (m):

Sample Type:

B



BS Test Sieve (mm)	Percentage Passing
125	100
75	87
63	77
37.5	60
20	38
10	37
6.3	36
3.35	35
2	35
1.18	34
0.63	33
0.3	27
0.2	25
0.15	24
0.063	23

Soil Fraction	Total Percentage
Cobbles	23
Gravel	42
Sand	12
Silt/Clay	23

Remarks:

See Summary of Soil Descriptions



Ivy Mills, Whitehaven

Contract No:
PSL24/8078
Client Ref:
SR4798

PARTICLE SIZE DISTRIBUTION TEST

BS 1377 - Part 2 : 2022 : Clause 10 in accordance with BS EN ISO 17892 - 4 : 2016

Sieve Method, Clause 5.2

Hole Number:

SP - B4

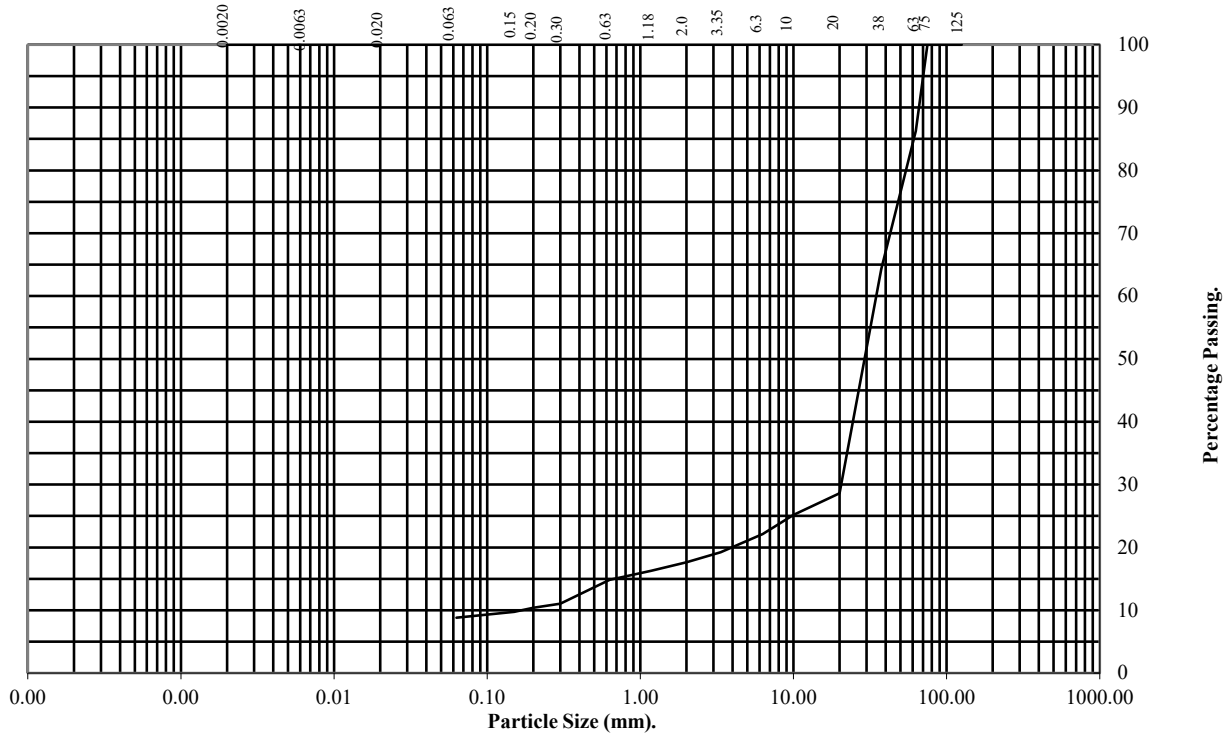
Top Depth (m):

Sample Number:

Base Depth (m):

Sample Type:

B



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	86
37.5	64
20	29
10	25
6.3	22
3.35	19
2	18
1.18	16
0.63	15
0.3	11
0.2	10
0.15	10
0.063	9

Soil Fraction	Total Percentage
Cobbles	14
Gravel	68
Sand	9
Silt/Clay	9

Remarks:

See Summary of Soil Descriptions



Ivy Mills, Whitehaven

Contract No:
PSL24/8078
Client Ref:
SR4798

PARTICLE SIZE DISTRIBUTION TEST

BS 1377 - Part 2 : 2022 : Clause 10 in accordance with BS EN ISO 17892 - 4 : 2016

Sieve Method, Clause 5.2

Hole Number:

Plot 9 - B

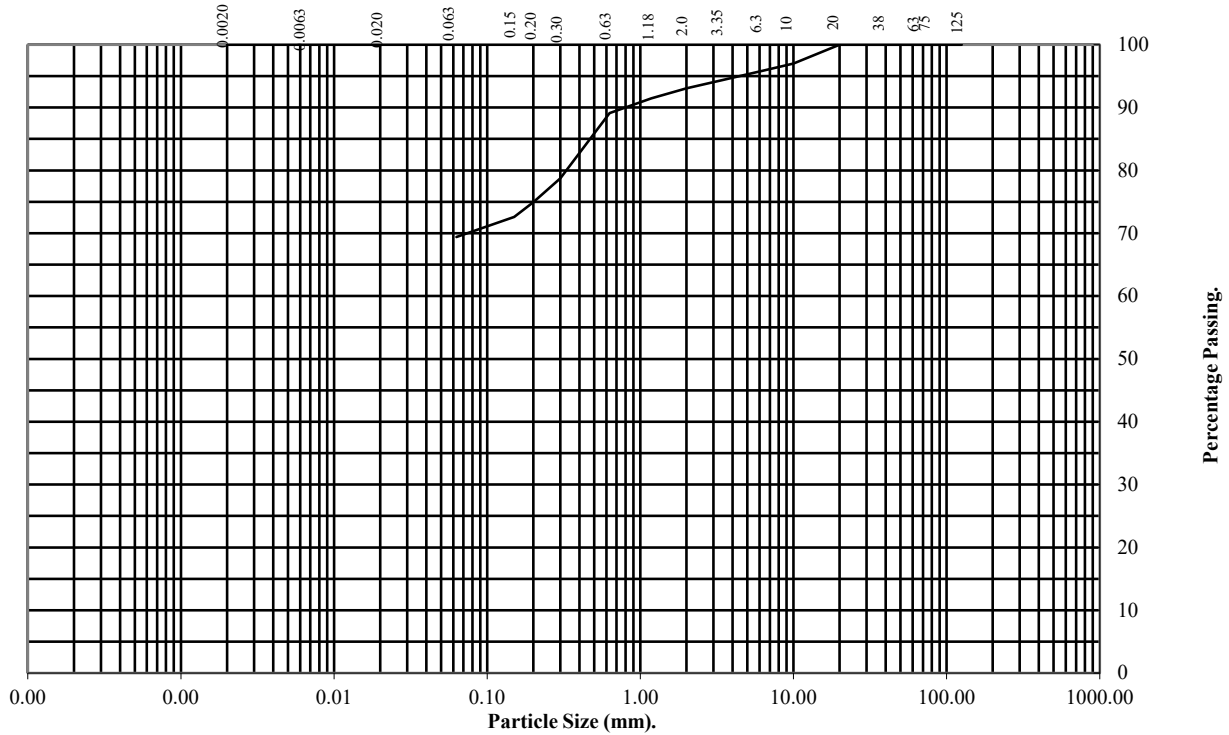
Top Depth (m):

Sample Number:

Base Depth (m):

Sample Type:

B



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	97
6.3	96
3.35	94
2	93
1.18	91
0.63	89
0.3	79
0.2	75
0.15	73
0.063	69

Soil Fraction	Total Percentage
Cobbles	0
Gravel	7
Sand	24
Silt/Clay	69

Remarks:

See Summary of Soil Descriptions



Ivy Mills, Whitehaven

Contract No:

PSL24/8078

Client Ref:

SR4798



LABORATORY REPORT



Contract Number: PSL24/8293

Report Date: 06 December 2024
Client's Reference: SR4798
Client Name: Sirius Durham
Suite 2, Russel House
Mill Road
Langley Moor
Durham
DH7 8HJ

For the attention of: Jack Clarke/Alastair Cook

Contract Title: Ivy Mills, Whitehaven
Date Received: 11/11/2024
Date Commenced: 11/11/2024
Date Completed: 06/12/2024

Notes: Opinions and Interpretations are outside the UKAS Accreditation

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(Managing Director)

R Berriman
(Associate Director)

S Royle
(Laboratory Manager)

L Knight
(Assistant Laboratory Manager)


D Nicholson
(Senior Technician)

T Watkins
(Senior Technician)

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Page 1 of

SUMMARY OF SOIL CLASSIFICATION TESTS

BS 1377 - Part 2 : 2022 in accordance with BS EN ISO 17892 (as below)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Water Content %	Linear Shrinkage	Particle Density Mg/m ³	Liquid Limit %	Plastic Limit %	Plasticity Index %	Passing 0.425mm %	Remarks
Plot 25		B			22.5			48	21	27	95	Medium Plasticity CIM
Plot 25		D			31.7							
Plot 12		B			28.6			53	23	30	98	High Plasticity CIH
Plot 12		D			21.9							
Plot 20		B			24.4			39	18	21	95	Medium Plasticity CIM
Plot 20		D			17.6							
Plot 36		B			22.7			44	21	23	92	Medium Plasticity CIM
Plot 36		D			18.5							



Water Content - BS 1377 - Part 2 : 2022 : Clause 4 in accordance with BS EN ISO 17892 - 1 : 2014 + A1 : 2022

Linear Shrinkage - BS 1377 - Part 2 : 2022 : Clause 7

Particle Density (Gas Jar method) - BS 1377 - Part 2 : 2022 : Clause 9

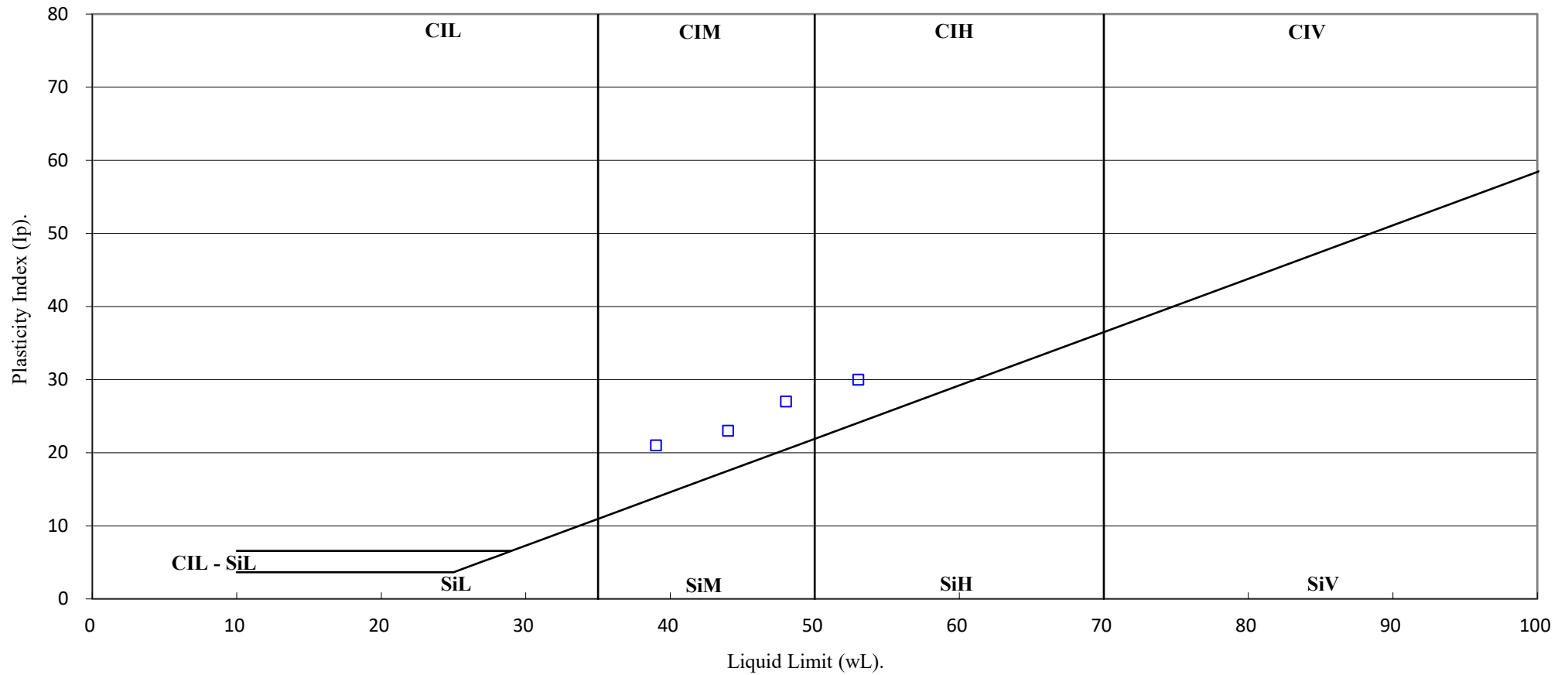
Liquid, Plastic Limit & Plasticity Index - BS 1377 - Part 2 : 2022 : Clause 5 & 6 in accordance with BS EN ISO 17892 - 12 : 2018 + A2 : 2022

SYMBOLS : NP = Non Plastic

		<p style="font-size: 1.2em;">Ivy Mills, Whitehaven</p>	Contract No:
			PSL24/8293
			Client Ref:
			SR4798

PLASTICITY CHART

BS EN ISO 14688-2:2017 Clause 4.4



Ivy Mills, Whitehaven

Contract No:

PSL24/8293

Client Ref:

SR4798

PARTICLE SIZE DISTRIBUTION TEST

BS 1377 - Part 2 : 2022 : Clause 10 in accordance with BS EN ISO 17892 - 4 : 2016
Sieve Method, Clause 5.2

Hole Number:

Plot 12

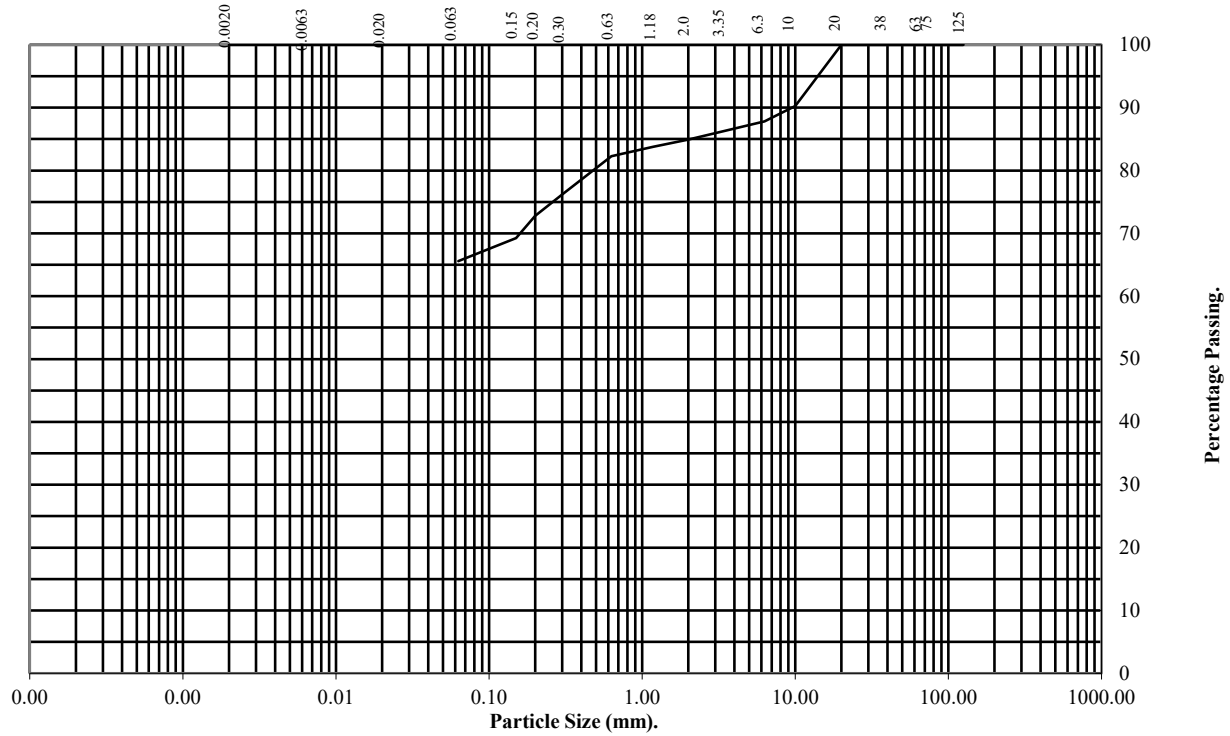
Top Depth (m):

Sample Number:

Base Depth (m):

Sample Type:

B



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	90
6.3	88
3.35	86
2	85
1.18	84
0.63	82
0.3	76
0.2	73
0.15	69
0.063	66

Soil Fraction	Total Percentage
Cobbles	0
Gravel	15
Sand	19
Silt/Clay	66

Remarks:

See Summary of Soil Descriptions



Ivy Mills, Whitehaven

Contract No:
PSL24/8293
Client Ref:
SR4798

PARTICLE SIZE DISTRIBUTION TEST

BS 1377 - Part 2 : 2022 : Clause 10 in accordance with BS EN ISO 17892 - 4 : 2016
Sieve Method, Clause 5.2

Hole Number:

Plot 20

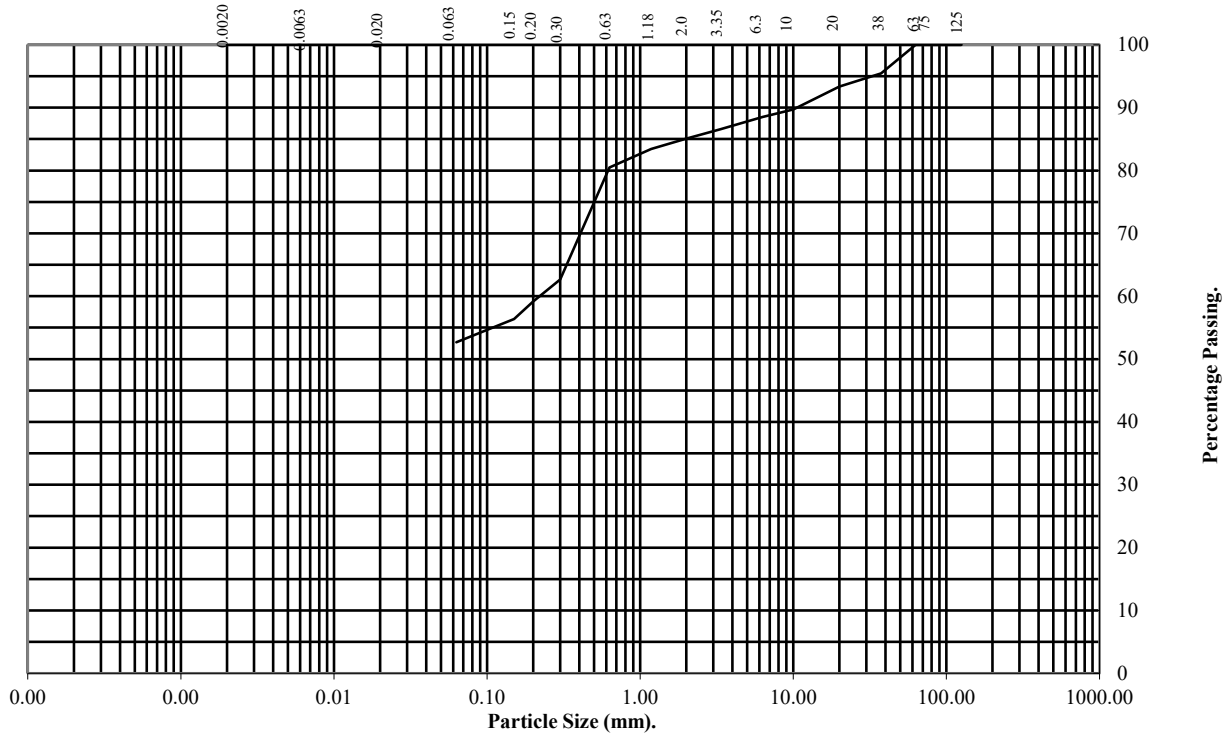
Top Depth (m):

Sample Number:

Base Depth (m):

Sample Type:

B



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	95
20	93
10	90
6.3	89
3.35	87
2	85
1.18	83
0.63	81
0.3	63
0.2	59
0.15	56
0.063	53

Soil Fraction	Total Percentage
Cobbles	0
Gravel	15
Sand	32
Silt/Clay	53

Remarks:

See Summary of Soil Descriptions



Ivy Mills, Whitehaven

Contract No:
PSL24/8293
Client Ref:
SR4798

PARTICLE SIZE DISTRIBUTION TEST

BS 1377 - Part 2 : 2022 : Clause 10 in accordance with BS EN ISO 17892 - 4 : 2016
Sieve Method, Clause 5.2

Hole Number:

Plot 25

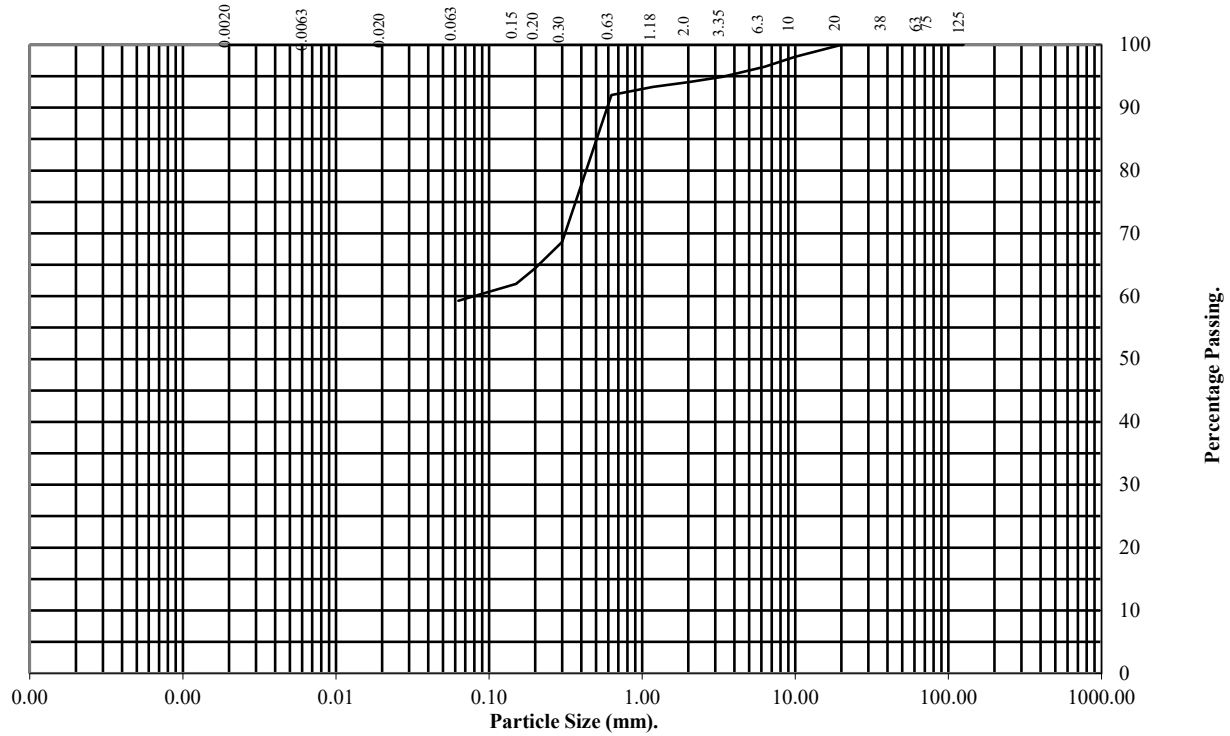
Top Depth (m):

Sample Number:

Base Depth (m):

Sample Type:

B



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	98
6.3	96
3.35	95
2	94
1.18	93
0.63	92
0.3	69
0.2	64
0.15	62
0.063	59

Soil Fraction	Total Percentage
Cobbles	0
Gravel	6
Sand	35
Silt/Clay	59

Remarks:

See Summary of Soil Descriptions



Ivy Mills, Whitehaven

Contract No:
PSL24/8293
Client Ref:
SR4798

PARTICLE SIZE DISTRIBUTION TEST

BS 1377 - Part 2 : 2022 : Clause 10 in accordance with BS EN ISO 17892 - 4 : 2016
Sieve Method, Clause 5.2

Hole Number:

Plot 36

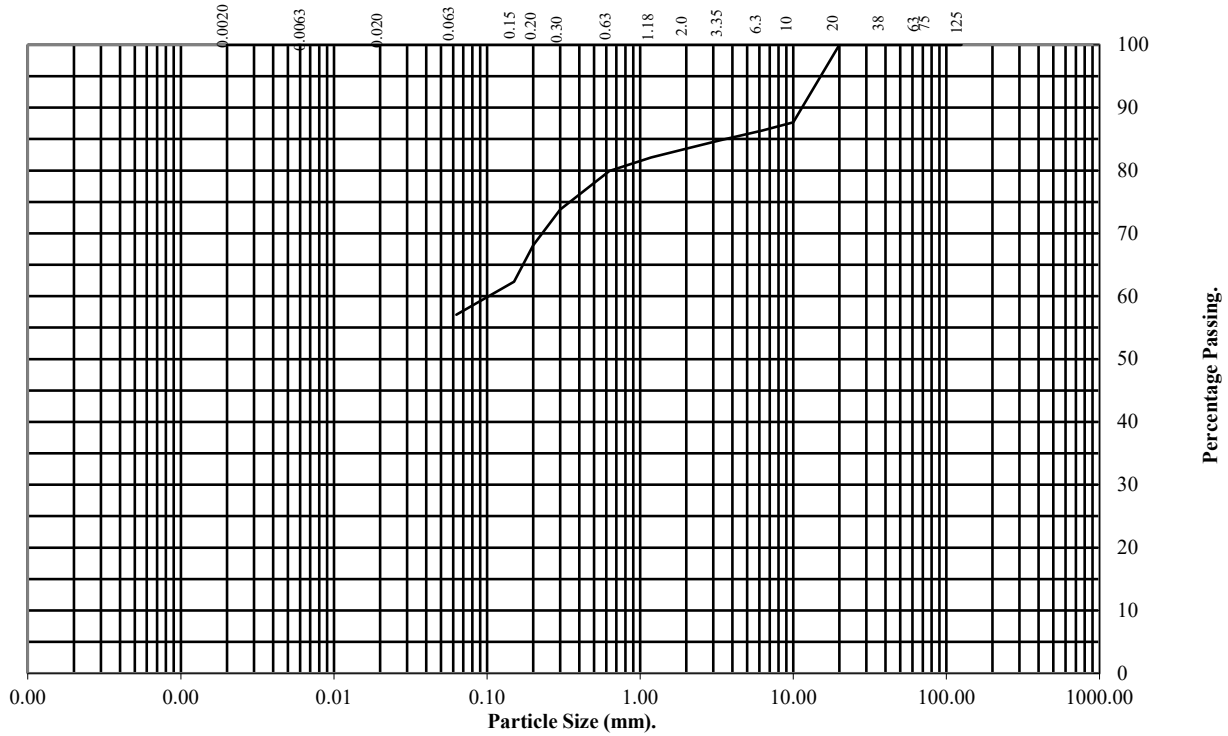
Top Depth (m):

Sample Number:

Base Depth (m):

Sample Type:

B



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	88
6.3	86
3.35	85
2	83
1.18	82
0.63	80
0.3	74
0.2	68
0.15	62
0.063	57

Soil Fraction	Total Percentage
Cobbles	0
Gravel	17
Sand	26
Silt/Clay	57

Remarks:

See Summary of Soil Descriptions



Ivy Mills, Whitehaven

Contract No:
PSL24/8293
Client Ref:
SR4798



LABORATORY REPORT



Contract Number: PSL24/8529

Report Date: 10 December 2024
Client's Reference: SR4798
Client Name: Sirius Durham
Suite 2, Russel House
Mill Road
Langley Moor
Durham
DH7 8HJ

For the attention of: Jack Clarke/Alastair Cook

Contract Title: Ivy Mills, Whitehaven
Date Received: 18/11/2024
Date Commenced: 18/11/2024
Date Completed: 10/12/2024

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(Managing Director)

R Berriman
(Associate Director)

S Royle
(Laboratory Manager)

L Knight
(Assistant Laboratory Manager)


D Nicholson
(Senior Technician)

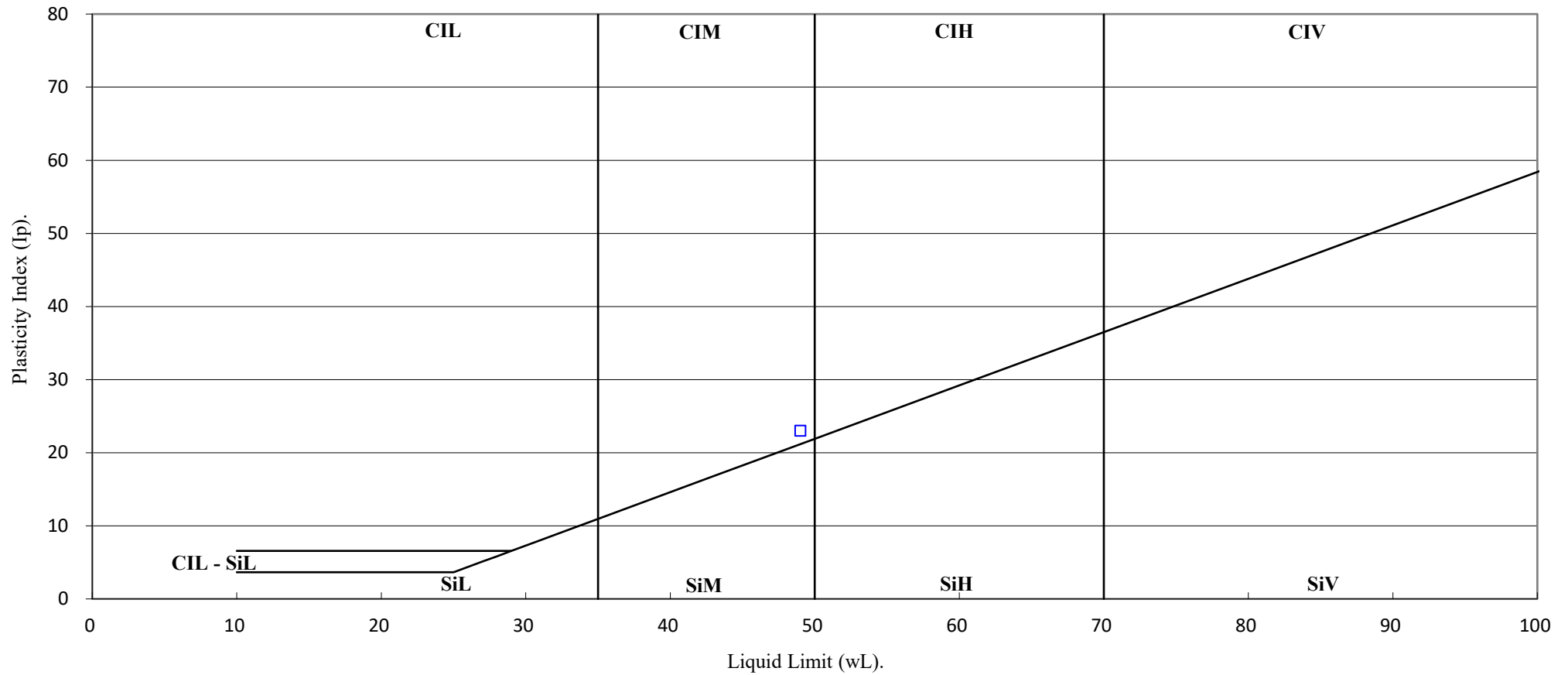
T Watkins
(Senior Technician)

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Tel: 01302 768098
Email: rberriman@prosoils.co.uk
awatkins@prosoils.co.uk

Page 1 of

PLASTICITY CHART

BS EN ISO 14688-2:2017 Clause 4.4



Ivy Mills, Whitehaven

Contract No:

PSL24/8529

Client Ref:

SR4798

PARTICLE SIZE DISTRIBUTION TEST

BS 1377 - Part 2 : 2022 : Clause 10 in accordance with BS EN ISO 17892 - 4 : 2016
Sieve Method, Clause 5.2

Hole Number:

Plot 30

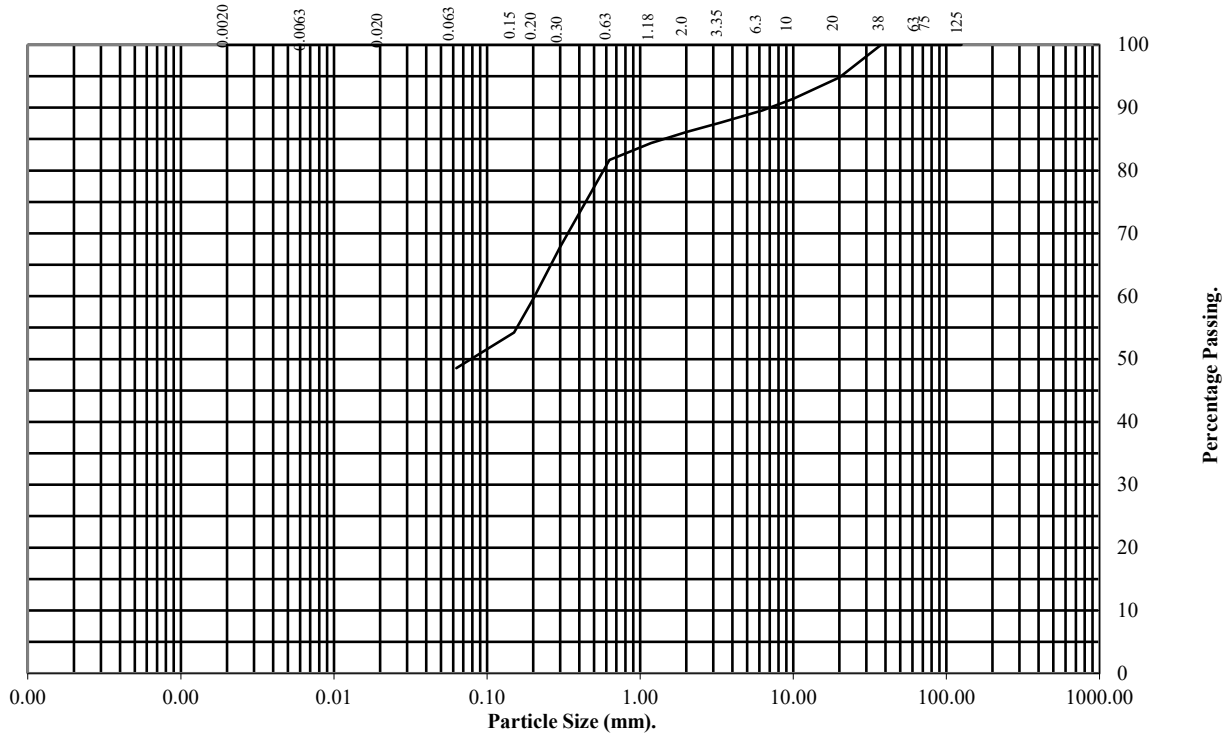
Top Depth (m):

Sample Number:

Base Depth (m):

Sample Type:

B



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	95
10	91
6.3	90
3.35	88
2	86
1.18	84
0.63	82
0.3	68
0.2	60
0.15	54
0.063	49

Soil Fraction	Total Percentage
Cobbles	0
Gravel	14
Sand	37
Silt/Clay	49

Remarks:

See Summary of Soil Descriptions



Ivy Mills, Whitehaven

Contract No:
PSL24/8529
Client Ref:
SR4798



APPENDIX E

IN SITU GEOTECHNICAL TESTING RECORDS



LABORATORY REPORT



Contract Number: PSL24/8467

Report Date: 12 December 2024
Client's Reference: SR4798
Client Name: Sirius Durham
Suite 2, Russel House
Mill Road
Langley Moor
Durham
DH7 8HJ

For the attention of: Jack Clarke/Alastair Cook

Contract Title: Ivy Mills, Whitehaven
Date Received: 14/11/2024
Date Commenced: 14/11/2024
Date Completed: 15/11/2024

Notes: Opinions and Interpretations are outside the UKAS Accreditation

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S Royle
(Laboratory Manager)

L Knight
(Assistant Laboratory Manager)

S Eyre
(Senior Technician)


T Watkins
(Senior Technician)

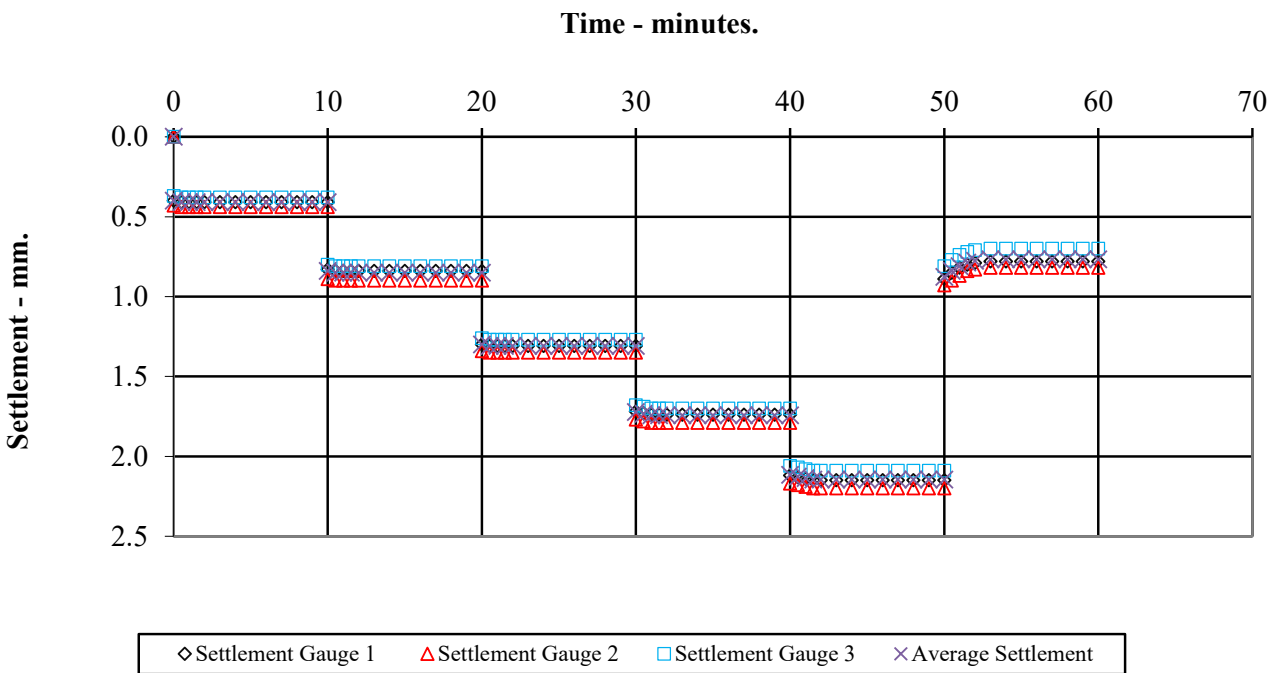
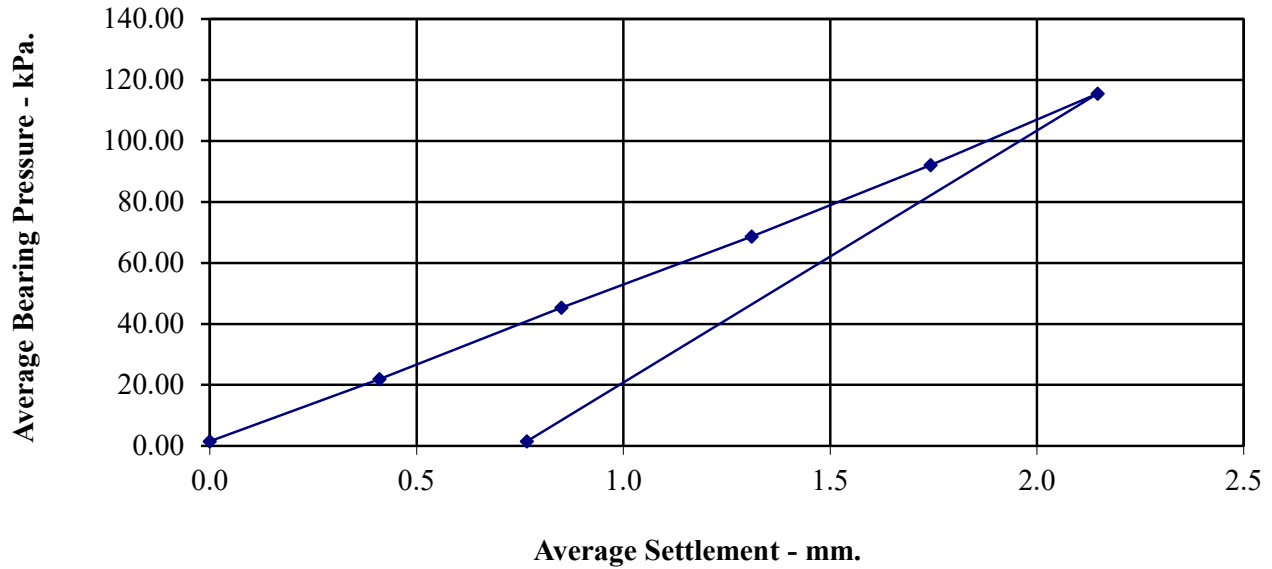
5 – 7 Hexthorpe Road,
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Doncaster,
DN4 0AR
Tel: 01302 768098
Email: rberriman@prosoils.co.uk
awatkins@prosoils.co.uk

Page 1 of

VERTICAL DEFORMATION TESTS.

BS 1377 : Part 9 : 1990.

Date of Test:	14-Nov-24	Test Ref:	Road 1-5
Grid Ref:		Depth (m):	
Layer:		Comments:	
Maximum Applied Pressure (kPa):		115.51	
Maximum Deformation (mm):		2.15	
Plate Area (m²):		0.2922	
Description:		6F2	



Calculation of Equivalent CBR Value from Plate Bearing Test
Design Manual for Roads and Bridges Volume 7 Section 2 Chapter 4
Incorporating IAN 73/06

Date of Test	14-Nov-24	
Test Ref	Road 1-5	
Depth (m)		
Grid Ref		
Layer		
Comments		
Description	6F2	
Maximum Deflection	2.15	mm
Deflection required for CBR value	1.25	mm
Load at 1.25mm	66	kN/m²
Plate diameter	610	mm
Conversion factor for plate diameter	0.816	
K₇₆₂(modulus of subgrade reaction) calculated using 1.25mm settlement	42.9	kN/m²/mm
CBR Value	6.5	%



Ivy Mills, Whitehaven

Contract No:

PSL24/8467

Client Ref:

VERTICAL DEFORMATION TESTS.

BS 1377 : Part 9 : 1990.

Date of Test: 14-Nov-24

Test Ref: Road 1-6

Grid Ref:

Depth (m):

Layer:

Comments:

Maximum Applied Pressure (kPa):

480.92

Maximum Deformation (mm):

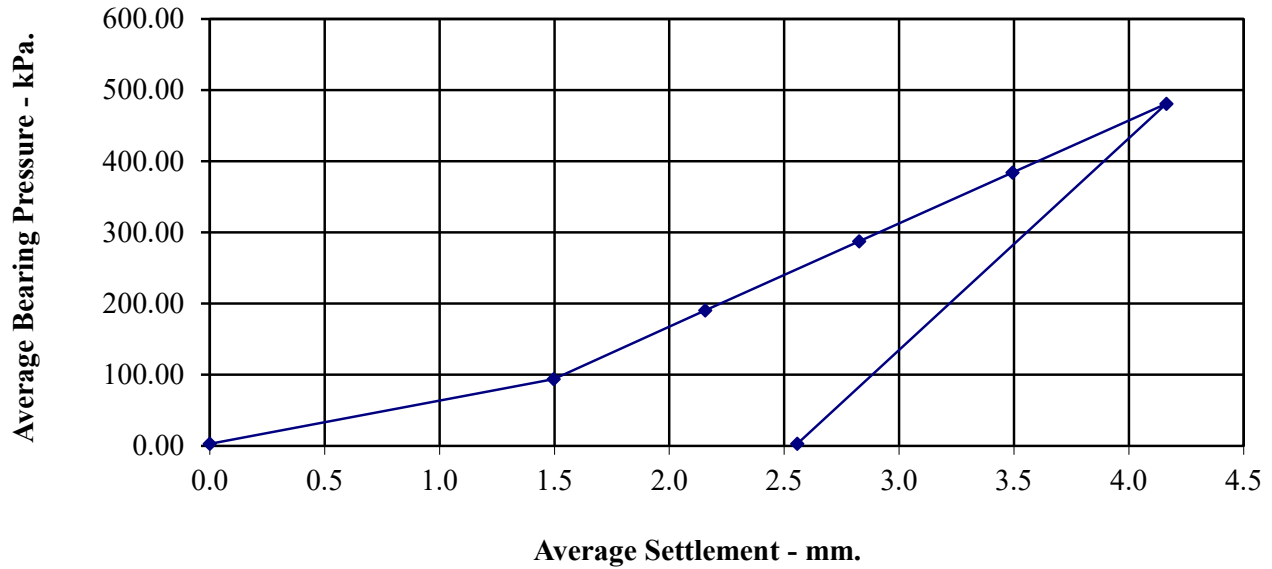
4.16

Plate Area (m2):

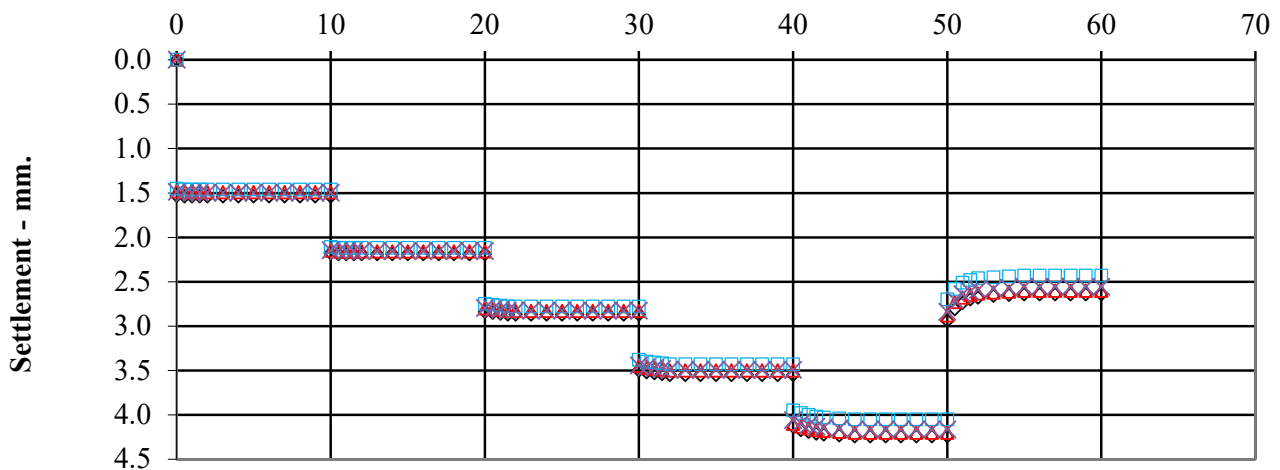
0.0707

Description:

6F2



Time - minutes.



◇ Settlement Gauge 1
△ Settlement Gauge 2
□ Settlement Gauge 3
× Average Settlement



Ivy Mills, Whitehaven

Contract No:

PSL24/8467

Client Ref:

Calculation of Equivalent CBR Value from Plate Bearing Test
Design Manual for Roads and Bridges Volume 7 Section 2 Chapter 4
Incorporating IAN 73/06

Date of Test	14-Nov-24	
Test Ref	Road 1-6	
Depth (m)		
Grid Ref		
Layer		
Comments		
Description	6F2	
Maximum Deflection	4.16	mm
Deflection required for CBR value	1.25	mm
Load at 1.25mm	79	kN/m²
Plate diameter	300	mm
Conversion factor for plate diameter	0.442	
K₇₆₂(modulus of subgrade reaction) calculated using 1.25mm settlement	27.9	kN/m²/mm
CBR Value	3.1	%



Ivy Mills, Whitehaven

Contract No:

PSL24/8467

Client Ref:

VERTICAL DEFORMATION TESTS.

BS 1377 : Part 9 : 1990.

Date of Test: 14-Nov-24 **Test Ref:** Road 2-1

Grid Ref: **Depth (m):**

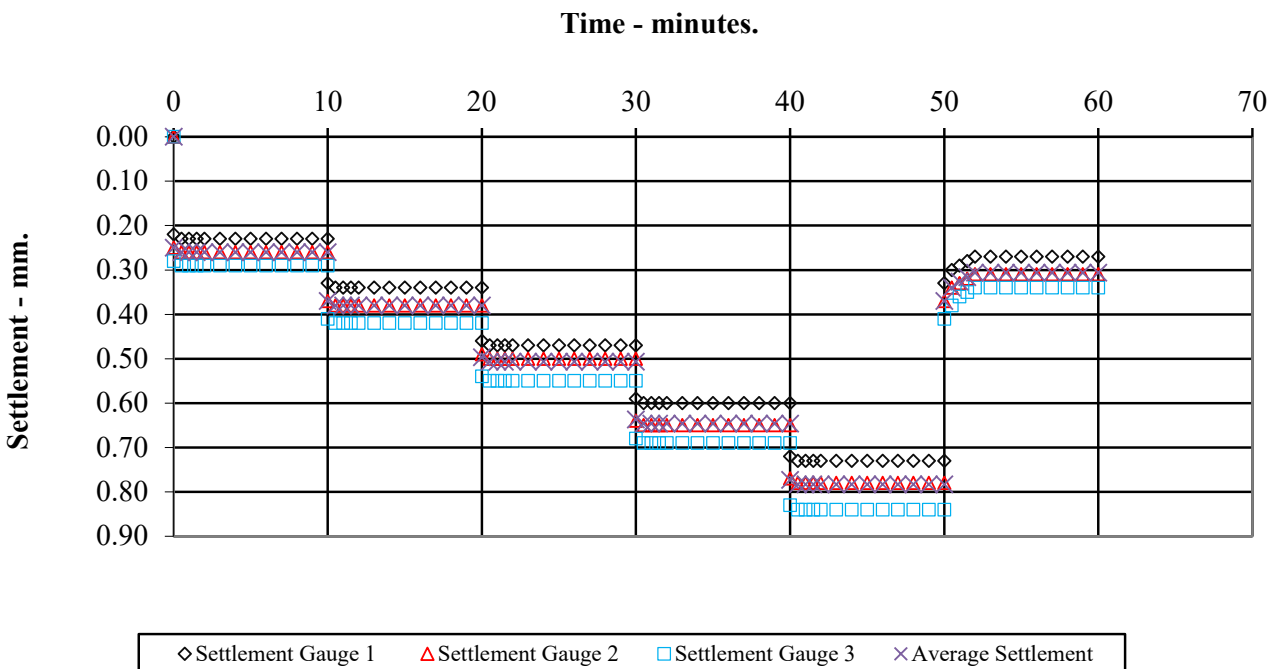
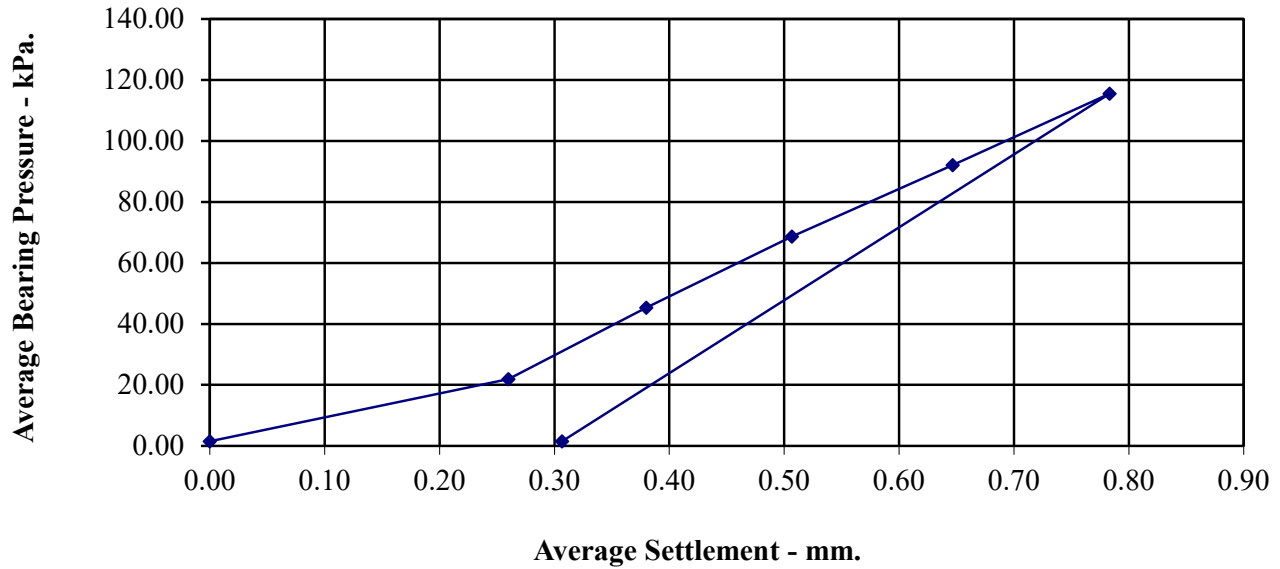
Layer: **Comments:**

Maximum Applied Pressure (kPa): 115.51

Maximum Deformation (mm): 0.78

Plate Area (m²): 0.2922

Description: 6F2



Calculation of Equivalent CBR Value from Plate Bearing Test
Design Manual for Roads and Bridges Volume 7 Section 2 Chapter 4
Incorporating IAN 73/06

Date of Test	14-Nov-24	
Test Ref	Road 2-1	
Depth (m)		
Grid Ref		
Layer		
Comments		
Description	6F2	
Maximum Deflection	0.78	mm
Deflection required for CBR value	1.25	mm
Load at 0.78mm	116	kN/m²
Plate diameter	610	mm
Conversion factor for plate diameter	0.816	
K₇₆₂(modulus of subgrade reaction) calculated using 1.25mm settlement	> 75.5	kN/m²/mm
CBR Value	> 17.3	%



Ivy Mills, Whitehaven

Contract No:

PSL24/8467

Client Ref:

VERTICAL DEFORMATION TESTS.

BS 1377 : Part 9 : 1990.

Date of Test: 14-Nov-24

Test Ref: Road 2-2

Grid Ref:

Depth (m):

Layer:

Comments:

Maximum Applied Pressure (kPa):

115.51

Maximum Deformation (mm):

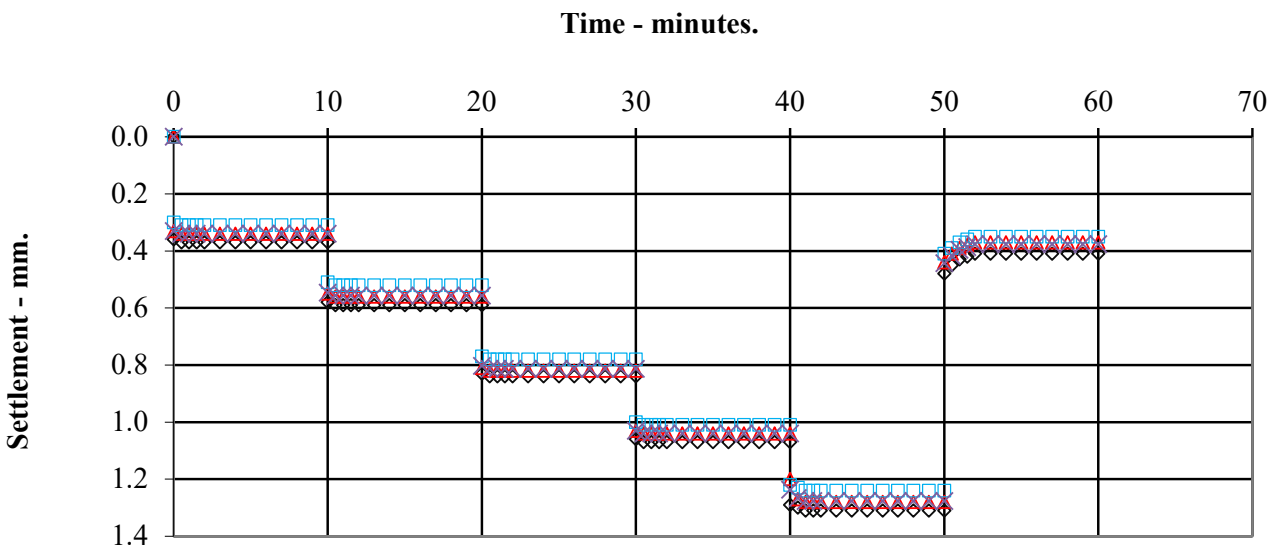
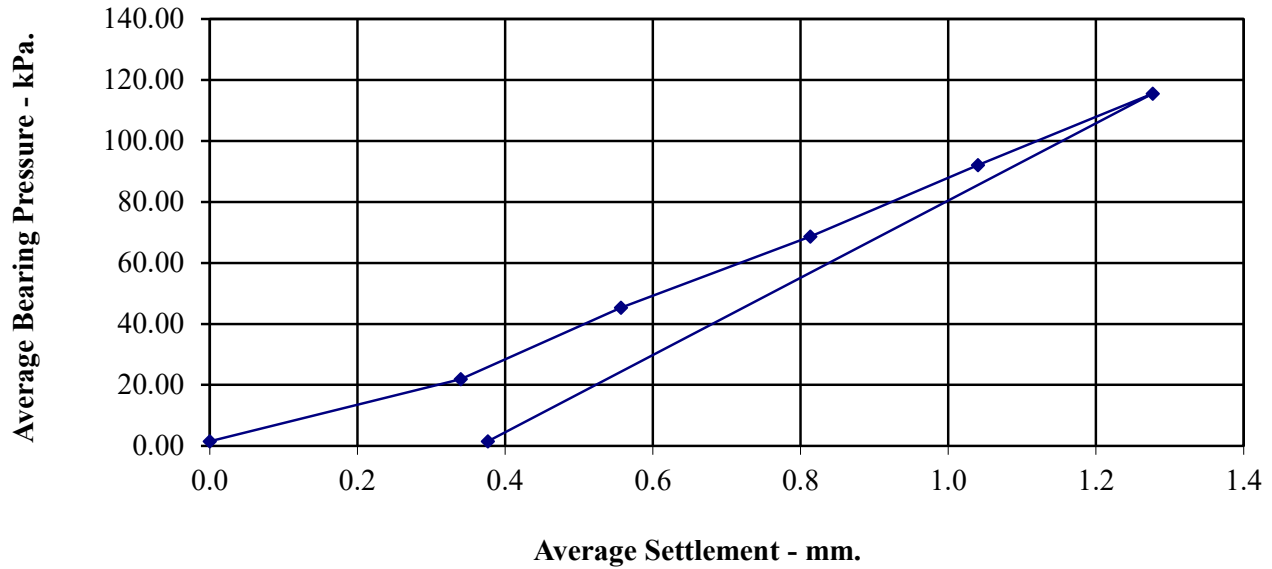
1.28

Plate Area (m²):

0.2922

Description:

6F2



◇ Settlement Gauge 1
△ Settlement Gauge 2
□ Settlement Gauge 3
× Average Settlement



Ivy Mills, Whitehaven

Contract No:

PSL24/8467

Client Ref:

Calculation of Equivalent CBR Value from Plate Bearing Test
Design Manual for Roads and Bridges Volume 7 Section 2 Chapter 4
Incorporating IAN 73/06

Date of Test	14-Nov-24	
Test Ref	Road 2-2	
Depth (m)		
Grid Ref		
Layer		
Comments		
Description	6F2	
Maximum Deflection	1.28	mm
Deflection required for CBR value	1.25	mm
Load at 1.25mm	113	kN/m²
Plate diameter	610	mm
Conversion factor for plate diameter	0.816	
K₇₆₂(modulus of subgrade reaction) calculated using 1.25mm settlement	73.7	kN/m²/mm
CBR Value	16.6	%



Ivy Mills, Whitehaven

Contract No:

PSL24/8467

Client Ref:

VERTICAL DEFORMATION TESTS.

BS 1377 : Part 9 : 1990.

Date of Test: 14-Nov-24

Test Ref: Road 2-3

Grid Ref:

Depth (m):

Layer:

Comments:

Maximum Applied Pressure (kPa):

115.51

Maximum Deformation (mm):

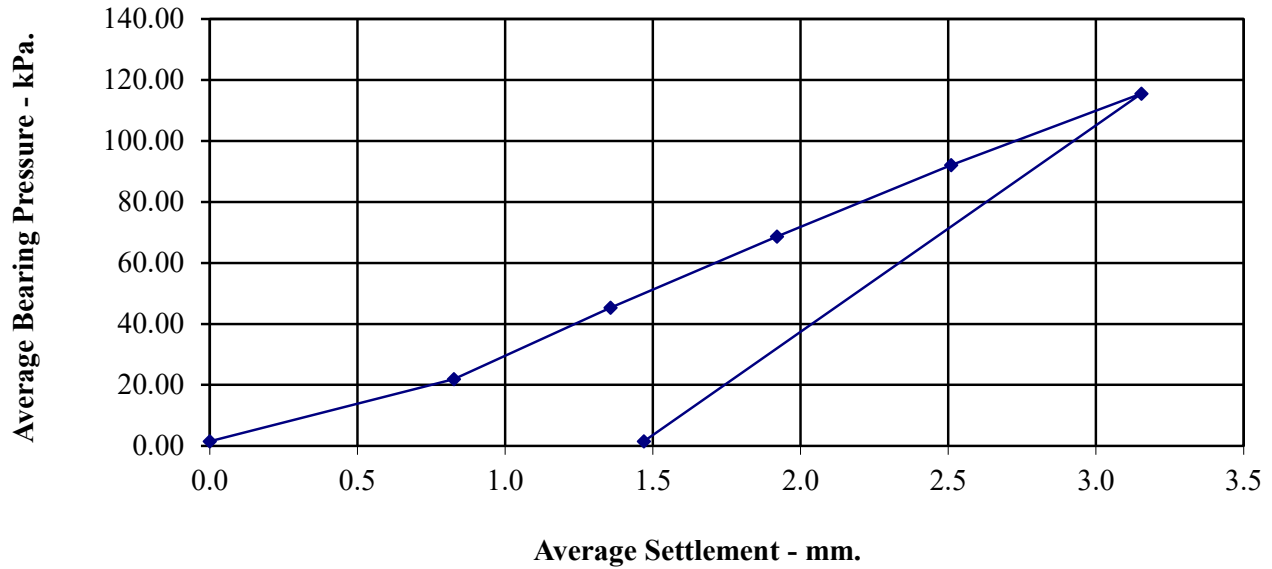
3.15

Plate Area (m²):

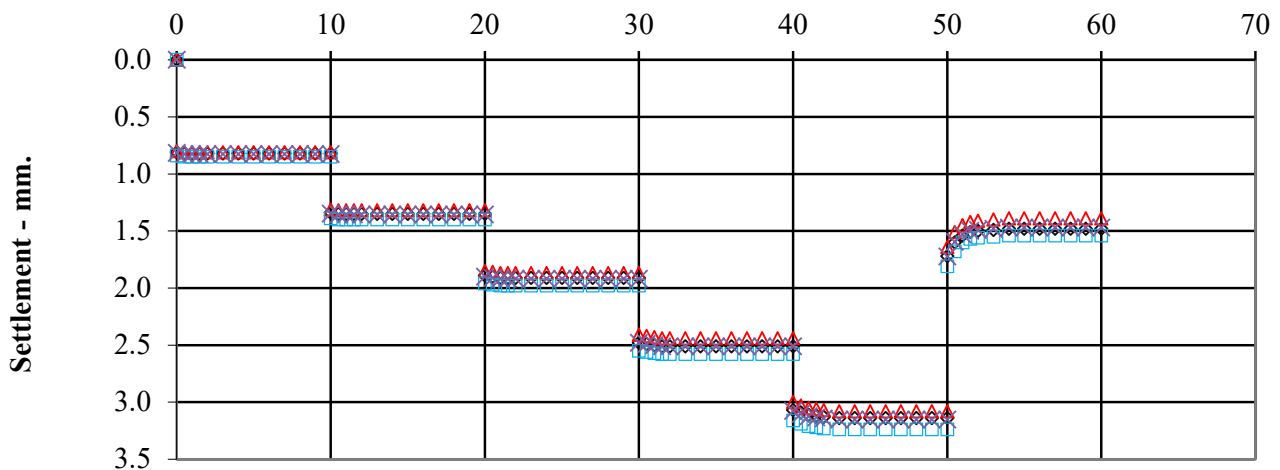
0.2922

Description:

6F2



Time - minutes.



◇ Settlement Gauge 1
△ Settlement Gauge 2
□ Settlement Gauge 3
× Average Settlement



Ivy Mills, Whitehaven

Contract No:

PSL24/8467

Client Ref:

Calculation of Equivalent CBR Value from Plate Bearing Test
Design Manual for Roads and Bridges Volume 7 Section 2 Chapter 4
Incorporating IAN 73/06

Date of Test	14-Nov-24	
Test Ref	Road 2-3	
Depth (m)		
Grid Ref		
Layer		
Comments		
Description	6F2	
Maximum Deflection	3.15	mm
Deflection required for CBR value	1.25	mm
Load at 1.25mm	41	kN/m²
Plate diameter	610	mm
Conversion factor for plate diameter	0.816	
K₇₆₂(modulus of subgrade reaction) calculated using 1.25mm settlement	26.5	kN/m²/mm
CBR Value	2.8	%



Ivy Mills, Whitehaven

Contract No:

PSL24/8467

Client Ref:

VERTICAL DEFORMATION TESTS.

BS 1377 : Part 9 : 1990.

Date of Test: 14-Nov-24

Test Ref: Road 2-4

Grid Ref:

Depth (m):

Layer:

Comments:

Maximum Applied Pressure (kPa):

115.51

Maximum Deformation (mm):

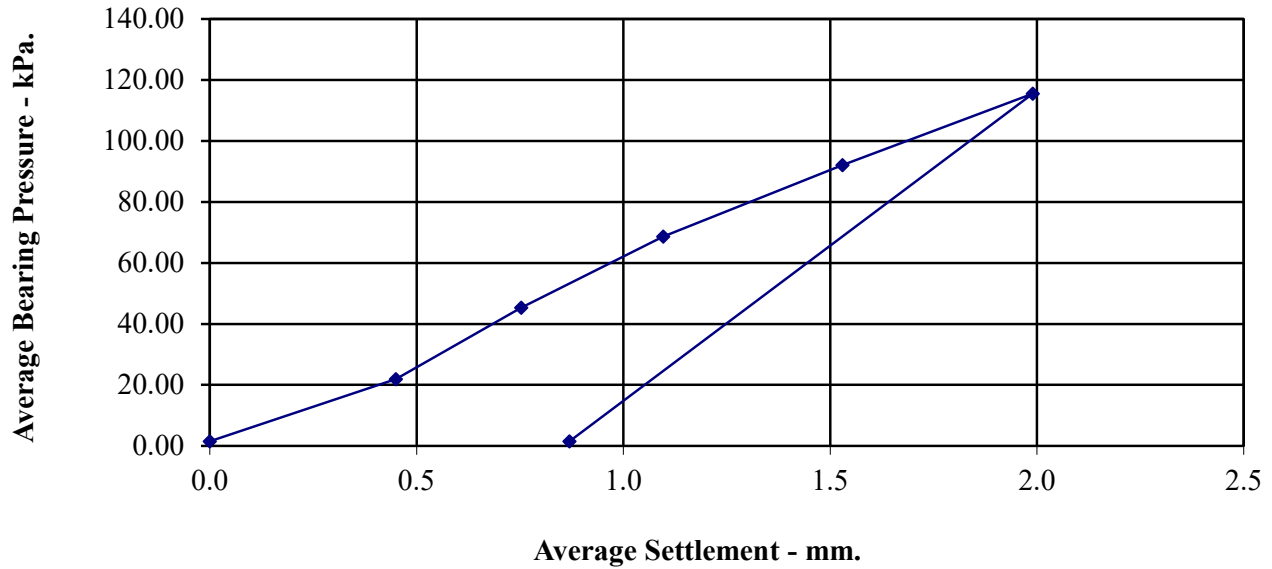
1.99

Plate Area (m²):

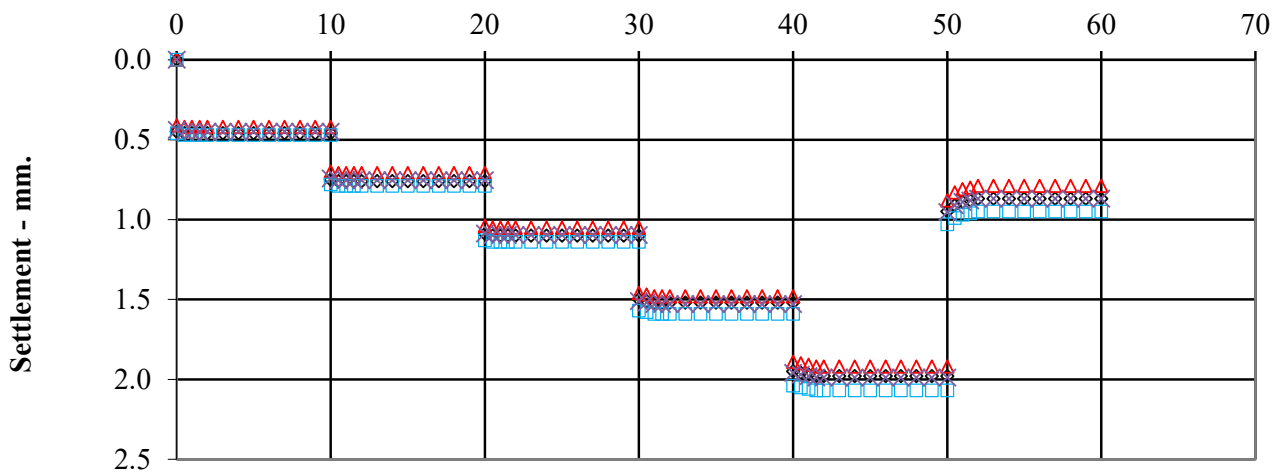
0.2922

Description:

6F2



Time - minutes.



◇ Settlement Gauge 1
△ Settlement Gauge 2
□ Settlement Gauge 3
× Average Settlement



Ivy Mills, Whitehaven

Contract No:

PSL24/8467

Client Ref:

Calculation of Equivalent CBR Value from Plate Bearing Test
Design Manual for Roads and Bridges Volume 7 Section 2 Chapter 4
Incorporating IAN 73/06

Date of Test	14-Nov-24	
Test Ref	Road 2-4	
Depth (m)		
Grid Ref		
Layer		
Comments		
Description	6F2	
Maximum Deflection	1.99	mm
Deflection required for CBR value	1.25	mm
Load at 1.25mm	77	kN/m²
Plate diameter	610	mm
Conversion factor for plate diameter	0.816	
K₇₆₂(modulus of subgrade reaction) calculated using 1.25mm settlement	50.3	kN/m²/mm
CBR Value	8.6	%



Ivy Mills, Whitehaven

Contract No:

PSL24/8467

Client Ref:



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Site Name:	Ivy Mills, Whitehaven
Project Number:	SR4798
Date tested (by):	31-Oct-24
Checked by:	JC
Material description:	Engineered fill
Test location (& ref):	Plot 2

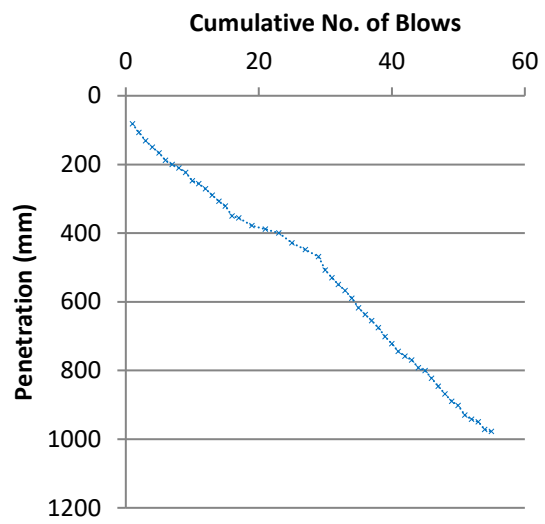
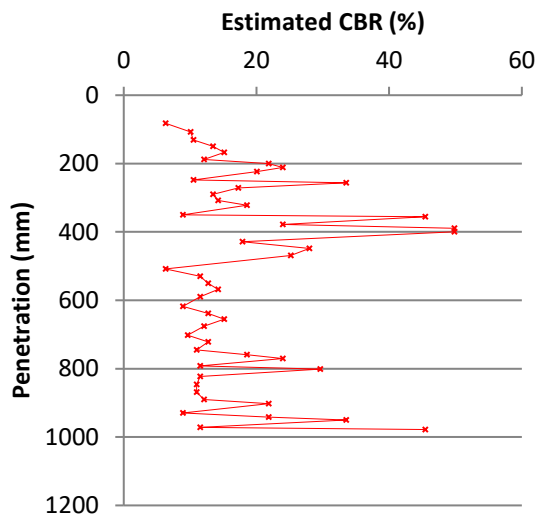
TRL Dynamic Cone Penetrometer Test Report

Page 1 of 1

(in-situ measurement of the structural properties of unbound materials)

Layer No.	No. of blows	Cumulative No. of blows	Penetration depth (mm)	Actual penetration depth (mm)	Depth tested (mm)	Pen rate (mm/blow)	Approx. CBR (%)*
Zero reading		0	43	0			
1	1	1	82	39	39	39	6.28
1	1	2	107	64	25	25	10.05
1	1	3	131	88	24	24	10.50
1	1	4	150	107	19	19	13.44
1	1	5	167	124	17	17	15.12
1	1	6	188	145	21	21	12.09
1	1	7	200	157	12	12	21.84
1	1	8	211	168	11	11	23.95
1	1	9	224	181	13	13	20.07
1	1	10	248	205	24	24	10.50
1	1	11	256	213	8	8	33.53
1	1	12	271	228	15	15	17.25
1	1	13	290	247	19	19	13.44
1	1	14	308	265	18	18	14.23
1	1	15	322	279	14	14	18.56
1	1	16	350	307	28	28	8.92
1	1	17	356	313	6	6	45.45
1	2	19	378	335	22	11	23.95
1	2	21	389	346	11	6	49.82
1	2	23	400	357	11	6	49.82
1	2	25	429	386	29	15	17.88
1	2	27	448	405	19	10	27.96
1	2	29	469	426	21	11	25.15
1	1	30	508	465	39	39	6.28
1	1	31	530	487	22	22	11.51
1	1	32	550	507	20	20	12.73
1	1	33	568	525	18	18	14.23
1	1	34	590	547	22	22	11.51
1	1	35	618	575	28	28	8.92
1	1	36	638	595	20	20	12.73
1	1	37	655	612	17	17	15.12
1	1	38	676	633	21	21	12.09
1	1	39	702	659	26	26	9.65
2	1	40	722	679	20	20	12.73
2	1	41	745	702	23	23	10.98
2	1	42	759	716	14	14	18.56
2	1	43	770	727	11	11	23.95
2	1	44	792	749	22	22	11.51
2	1	45	801	758	9	9	29.61
2	1	46	823	780	22	22	11.51
2	1	47	846	803	23	23	10.98
2	1	48	869	826	23	23	10.98
2	1	49	890	847	21	21	12.09
2	1	50	902	859	12	12	21.84
2	1	51	930	887	28	28	8.92
2	1	52	942	899	12	12	21.84
2	1	53	950	907	8	8	33.53
2	1	54	972	929	22	22	11.51
2	1	55	978	935	6	6	45.45

*Calculation of CBR: estimated from the following TRL relationship: $\text{Log}_{10}(\text{CBR}) = 2.48 - 1.057 \times \text{Log}_{10}(\text{mm/blow})$





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Site Name:	Ivy Mills, Whitehaven
Project Number:	SR4798
Date tested (by):	31-Oct-24
Checked by:	JC
Material description:	Engineered fill
Test location (& ref):	Plot 6

TRL Dynamic Cone Penetrometer Test Report

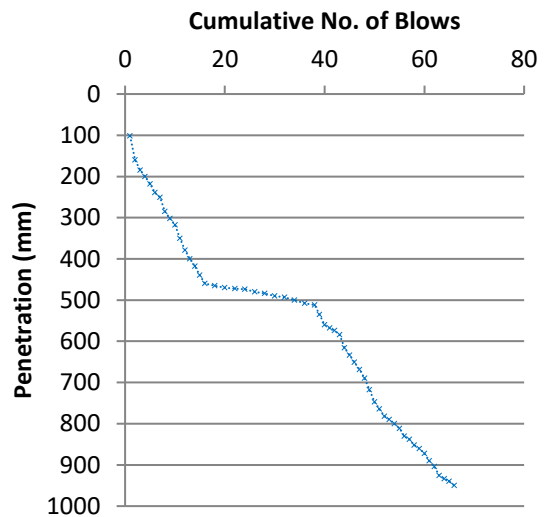
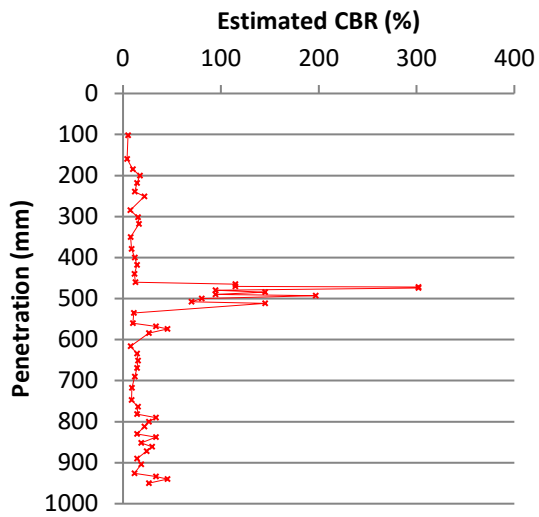
Page 1 of 1

(in-situ measurement of the structural properties of unbound materials)

Layer No.	No. of blows	Cumulative No. of blows	Penetration depth (mm)	Actual penetration depth (mm)	Depth tested (mm)	Pen rate (mm/blow)	Approx. CBR (%)*
Zero reading		0	55	0			
1	1	1	102	47	47	47	5.16
1	1	2	160	105	58	58	4.13
1	1	3	185	130	25	25	10.05
1	1	4	200	145	15	15	17.25
1	1	5	218	163	18	18	14.23
1	1	6	239	184	21	21	12.09
1	1	7	251	196	12	12	21.84
1	1	8	285	230	34	34	7.26
1	1	9	302	247	17	17	15.12
1	1	10	318	263	16	16	16.12
1	1	11	350	295	32	32	7.75
1	1	12	379	324	29	29	8.59
1	1	13	400	345	21	21	12.09
1	1	14	418	363	18	18	14.23
1	1	15	440	385	22	22	11.51
1	1	16	460	405	20	20	12.73
1	2	18	465	410	5	3	114.65
1	2	20	470	415	5	3	114.65
1	2	22	472	417	2	1	302.00
1	2	24	474	419	2	1	302.00
1	2	26	480	425	6	3	94.55
1	2	28	484	429	4	2	145.15
1	2	30	490	435	6	3	94.55
1	2	32	493	438	3	2	196.73
1	2	34	500	445	7	4	80.34
1	2	36	508	453	8	4	69.76
1	2	38	512	457	4	2	145.15
1	1	39	535	480	23	23	10.98
1	1	40	560	505	25	25	10.05
1	1	41	568	513	8	8	33.53
1	1	42	574	519	6	6	45.45
1	1	43	584	529	10	10	26.49
1	1	44	616	561	32	32	7.75
1	1	45	634	579	18	18	14.23
1	1	46	651	596	17	17	15.12
1	1	47	669	614	18	18	14.23
1	1	48	690	635	21	21	12.09
1	1	49	718	663	28	28	8.92
1	1	50	747	692	29	29	8.59
1	1	51	764	709	17	17	15.12
1	1	52	782	727	18	18	14.23
1	1	53	790	735	8	8	33.53
1	1	54	800	745	10	10	26.49
1	1	55	812	757	12	12	21.84
1	1	56	830	775	18	18	14.23
1	1	57	838	783	8	8	33.53

1	1	58	852	797	14	14	18.56
1	1	59	861	806	9	9	29.61
1	1	60	872	817	11	11	23.95
1	1	61	890	835	18	18	14.23
1	1	62	904	849	14	14	18.56
1	1	63	926	871	22	22	11.51
1	1	64	934	879	8	8	33.53
1	1	65	940	885	6	6	45.45
1	1	66	950	895	10	10	26.49

*Calculation of CBR: estimated from the following TRL relationship: $\text{Log}_{10}(\text{CBR}) = 2.48 - 1.057 \times \text{Log}_{10}(\text{mm/blow})$
 Ref - Interim Advice Note 73/06 Revision 1 (2009) Design Guidance for Road Pavement Foundations (Draft HD25)





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Site Name:	Ivy Mills, Whitehaven
Project Number:	SR4798
Date tested (by):	31-Oct-24
Checked by:	JC
Material description:	Engineered fill
Test location (& ref):	Plot 8

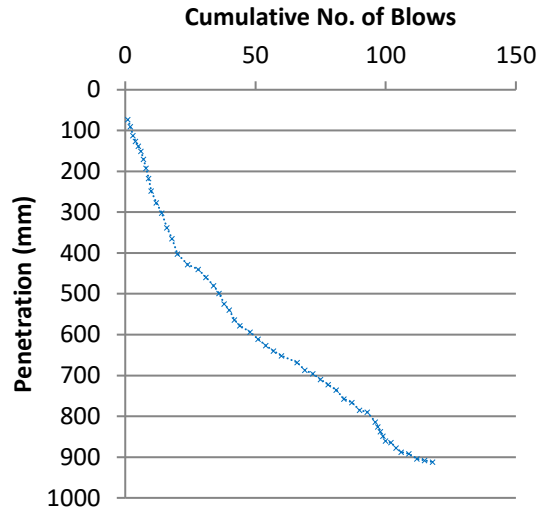
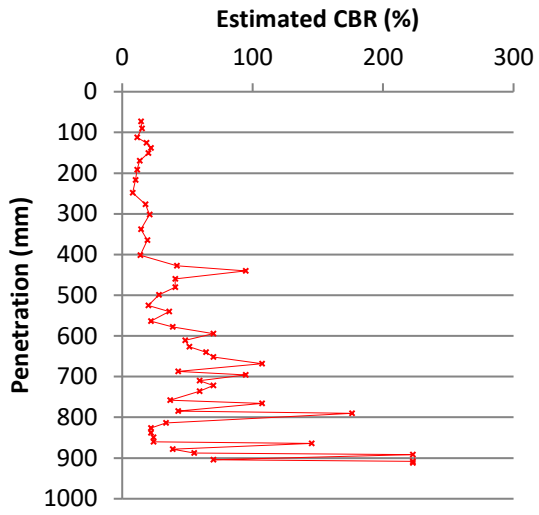
TRL Dynamic Cone Penetrometer Test Report

Page 1 of 1

(in-situ measurement of the structural properties of unbound materials)

Layer No.	No. of blows	Cumulative No. of blows	Penetration depth (mm)	Actual penetration depth (mm)	Depth tested (mm)	Pen rate (mm/blow)	Approx. CBR (%)*
Zero reading		0	55	0			
1	1	1	73	18	18	18	14.23
1	1	2	90	35	17	17	15.12
1	1	3	112	57	22	22	11.51
1	1	4	126	71	14	14	18.56
1	1	5	138	83	12	12	21.84
1	1	6	151	96	13	13	20.07
1	1	7	170	115	19	19	13.44
1	1	8	192	137	22	22	11.51
1	1	9	217	162	25	25	10.05
1	1	10	248	193	31	31	8.01
1	2	12	277	222	29	15	17.88
1	2	14	302	247	25	13	20.92
1	2	16	338	283	36	18	14.23
1	2	18	365	310	27	14	19.29
1	2	20	402	347	37	19	13.82
1	4	24	428	373	26	7	41.76
1	4	28	440	385	12	3	94.55
1	3	31	460	405	20	7	40.66
1	3	34	480	425	20	7	40.66
1	2	36	499	444	19	10	27.96
1	2	38	525	470	26	13	20.07
1	2	40	540	485	15	8	35.90
1	2	42	564	509	24	12	21.84
1	2	44	578	523	14	7	38.61
1	4	48	594	539	16	4	69.76
1	3	51	611	556	17	6	48.28
1	3	54	627	572	16	5	51.47
1	3	57	640	585	13	4	64.10
1	3	60	652	597	12	4	69.76
1	6	66	668	613	16	3	107.09
1	3	69	687	632	19	6	42.92
1	3	72	696	641	9	3	94.55
1	3	75	710	655	14	5	59.27
1	3	78	722	667	12	4	69.76
1	3	81	736	681	14	5	59.27
1	3	84	758	703	22	7	36.76
1	3	87	766	711	8	3	107.09
1	3	90	785	730	19	6	42.92
1	3	93	790	735	5	2	176.00
1	3	96	814	759	24	8	33.53
1	1	97	826	771	12	12	21.84
1	1	98	838	783	12	12	21.84
1	1	99	849	794	11	11	23.95
1	1	100	860	805	11	11	23.95
1	2	102	864	809	4	2	145.15
1	2	104	878	823	14	7	38.61
1	2	106	888	833	10	5	55.10
1	3	109	892	837	4	1	222.81
1	3	112	904	849	12	4	69.76
1	3	115	908	853	4	1	222.81
1	3	118	912	857	4	1	222.81

*Calculation of CBR: estimated from the following TRL relationship: $\text{Log}_{10}(\text{CBR}) = 2.48 - 1.057 \times \text{Log}_{10}(\text{mm/blow})$
Ref - Interim Advice Note 73/06 Revision 1 (2009) Design Guidance for Road Pavement Foundations (Draft HD25)





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Site Name:	Ivy Mills, Whitehaven
Project Number:	SR4798
Date tested (by):	07-Nov-24
Checked by:	JC
Material description:	Engineered fill
Test location (& ref):	Plot 12

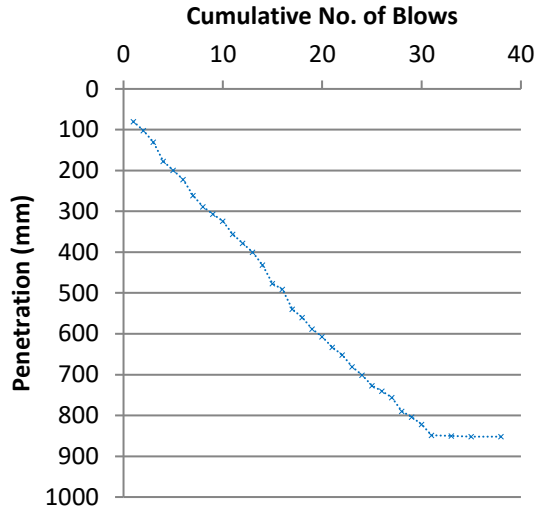
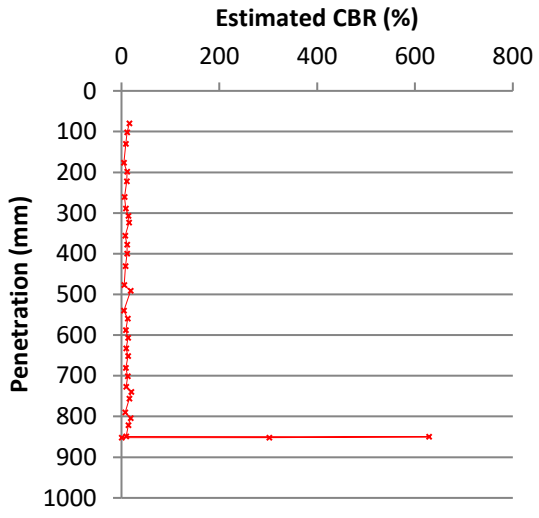
TRL Dynamic Cone Penetrometer Test Report

(in-situ measurement of the structural properties of unbound materials)

Page 1 of 1

Layer No.	No. of blows	Cumulative No. of blows	Penetration depth (mm)	Actual penetration depth (mm)	Depth tested (mm)	Pen rate (mm/blow)	Approx. CBR (%)*
Zero reading		0	64	0			
1	1	1	80	16	16	16	16.12
1	1	2	102	38	22	22	11.51
1	1	3	130	66	28	28	8.92
1	1	4	177	113	47	47	5.16
1	1	5	199	135	22	22	11.51
1	1	6	222	158	23	23	10.98
1	1	7	261	197	39	39	6.28
1	1	8	289	225	28	28	8.92
1	1	9	307	243	18	18	14.23
1	1	10	324	260	17	17	15.12
1	1	11	356	292	32	32	7.75
1	1	12	378	314	22	22	11.51
1	1	13	400	336	22	22	11.51
1	1	14	431	367	31	31	8.01
1	1	15	477	413	46	46	5.28
1	1	16	491	427	14	14	18.56
1	1	17	540	476	49	49	4.94
1	1	18	560	496	20	20	12.73
1	1	19	588	524	28	28	8.92
1	1	20	607	543	19	19	13.44
1	1	21	633	569	26	26	9.65
1	1	22	652	588	19	19	13.44
1	1	23	681	617	29	29	8.59
1	1	24	701	637	20	20	12.73
1	1	25	727	663	26	26	9.65
1	1	26	740	676	13	13	20.07
1	1	27	756	692	16	16	16.12
1	1	28	790	726	34	34	7.26
1	1	29	804	740	14	14	18.56
1	1	30	822	758	18	18	14.23
1	1	31	849	785	27	27	9.27
1	2	33	850	786	1	1	628.33
1	2	35	852	788	2	1	302.00
1	3	38	852	788	0	0	#NUM!

*Calculation of CBR: estimated from the following TRL relationship: $\text{Log}_{10}(\text{CBR}) = 2.48 - 1.057 \times \text{Log}_{10}(\text{mm/blow})$
 Ref - Interim Advice Note 73/06 Revision 1 (2009) Design Guidance for Road Pavement Foundations (Draft HD25)





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Site Name:	Ivy Mills, Whitehaven
Project Number:	SR4798
Date tested (by):	07-Nov-24
Checked by:	JC
Material description:	Engineered fill
Test location (& ref):	Plot 13

TRL Dynamic Cone Penetrometer Test Report

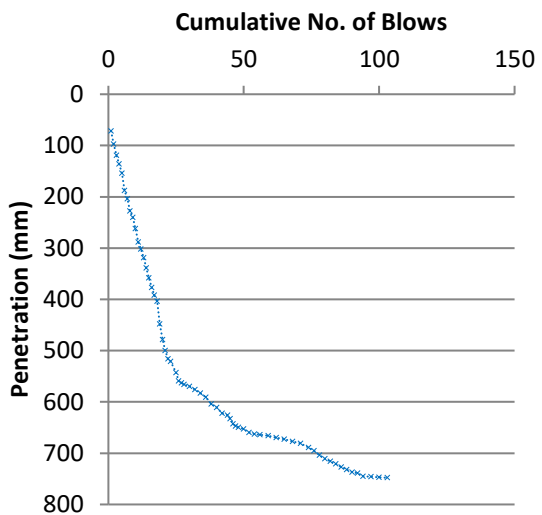
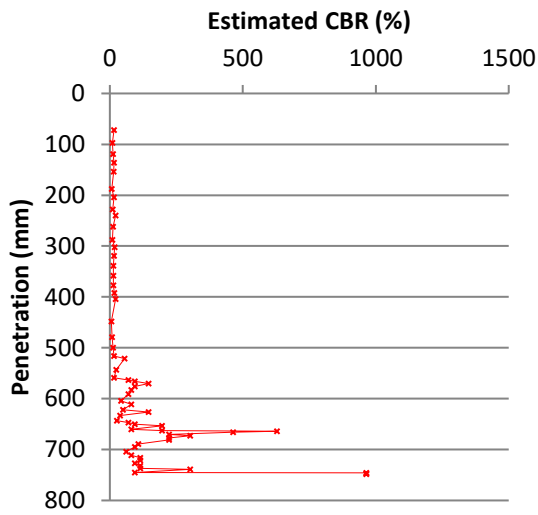
(in-situ measurement of the structural properties of unbound materials)

Page 1 of 1

Layer No.	No. of blows	Cumulative No. of blows	Penetration depth (mm)	Actual penetration depth (mm)	Depth tested (mm)	Pen rate (mm/blow)	Approx. CBR (%)*
Zero reading		0	56	0			
1	1	1	72	16	16	16	16.12
1	1	2	97	41	25	25	10.05
1	1	3	119	63	22	22	11.51
1	1	4	136	80	17	17	15.12
1	1	5	154	98	18	18	14.23
1	1	6	188	132	34	34	7.26
1	1	7	204	148	16	16	16.12
1	1	8	228	172	24	24	10.50
1	1	9	240	184	12	12	21.84
1	1	10	262	206	22	22	11.51
1	1	11	288	232	26	26	9.65
1	1	12	302	246	14	14	18.56
1	1	13	319	263	17	17	15.12
1	1	14	339	283	20	20	12.73
1	1	15	358	302	19	19	13.44
1	1	16	377	321	19	19	13.44
1	1	17	392	336	15	15	17.25
1	1	18	404	348	12	12	21.84
1	1	19	448	392	44	44	5.53
1	1	20	479	423	31	31	8.01
1	1	21	500	444	21	21	12.09
1	1	22	516	460	16	16	16.12
1	1	23	521	465	5	5	55.10
1	2	25	543	487	22	11	23.95
1	1	26	559	503	16	16	16.12
1	1	27	563	507	4	4	69.76
1	1	28	566	510	3	3	94.55
1	2	30	570	514	4	2	145.15
1	2	32	576	520	6	3	94.55
1	2	34	583	527	7	4	80.34
1	2	36	591	535	8	4	69.76
1	2	38	604	548	13	7	41.76
1	2	40	611	555	7	4	80.34
1	2	42	622	566	11	6	49.82
1	2	44	626	570	4	2	145.15
1	1	45	633	577	7	7	38.61
1	1	46	643	587	10	10	26.49
1	1	47	647	591	4	4	69.76
1	1	48	650	594	3	3	94.55
1	2	50	653	597	3	2	196.73
1	2	52	660	604	7	4	80.34
1	2	54	663	607	3	2	196.73
1	2	56	664	608	1	1	628.33
1	3	59	666	610	2	1	463.58
1	3	62	670	614	4	1	222.81
1	3	65	673	617	3	1	302.00

1	3	68	677	621	4	1	222.81
1	3	71	681	625	4	1	222.81
1	3	74	689	633	8	3	107.09
1	2	76	695	639	6	3	94.55
1	2	78	704	648	9	5	61.60
1	2	80	711	655	7	4	80.34
1	2	82	716	660	5	3	114.65
1	2	84	721	665	5	3	114.65
1	2	86	727	671	6	3	94.55
1	2	88	732	676	5	3	114.65
1	2	90	737	681	5	3	114.65
1	2	92	739	683	2	1	302.00
1	2	94	745	689	6	3	94.55
1	3	97	746	690	1	0	964.53
1	3	100	747	691	1	0	964.53
1	3	103	748	692	1	0	964.53

*Calculation of CBR: estimated from the following TRL relationship: $\text{Log}_{10}(\text{CBR}) = 2.48 - 1.057 \times \text{Log}_{10}(\text{mm/blow})$
 Ref - Interim Advice Note 73/06 Revision 1 (2009) Design Guidance for Road Pavement Foundations (Draft HD25)





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Site Name:	Ivy Mills, Whitehaven
Project Number:	SR4798
Date tested (by):	07-Nov-24
Checked by:	JC
Material description:	Engineered fill
Test location (& ref):	Plot 19

TRL Dynamic Cone Penetrometer Test Report

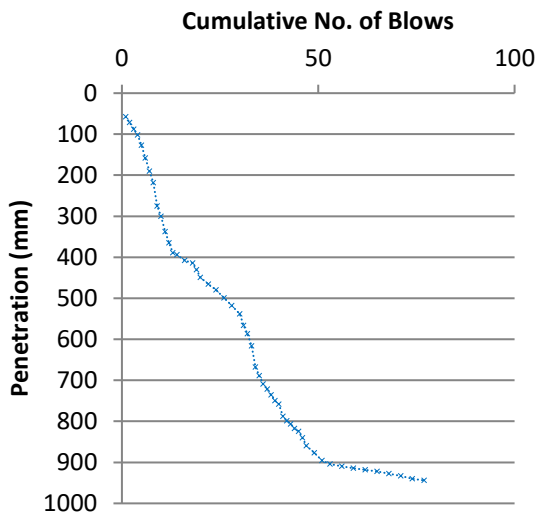
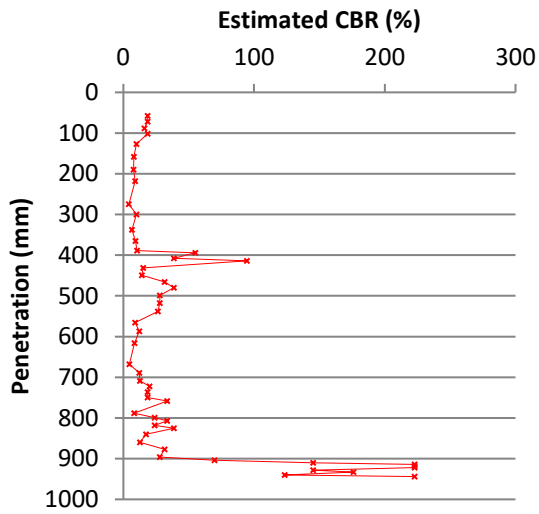
(in-situ measurement of the structural properties of unbound materials)

Page 1 of 1

Layer No.	No. of blows	Cumulative No. of blows	Penetration depth (mm)	Actual penetration depth (mm)	Depth tested (mm)	Pen rate (mm/blow)	Approx. CBR (%)*
Zero reading		0	44	0			
1	1	1	58	14	14	14	18.56
1	1	2	72	28	14	14	18.56
1	1	3	88	44	16	16	16.12
1	1	4	102	58	14	14	18.56
1	1	5	127	83	25	25	10.05
1	1	6	158	114	31	31	8.01
1	1	7	190	146	32	32	7.75
1	1	8	218	174	28	28	8.92
1	1	9	275	231	57	57	4.21
1	1	10	300	256	25	25	10.05
1	1	11	338	294	38	38	6.46
1	1	12	365	321	27	27	9.27
1	1	13	389	345	24	24	10.50
1	1	14	394	350	5	5	55.10
1	2	16	408	364	14	7	38.61
1	2	18	414	370	6	3	94.55
1	1	19	431	387	17	17	15.12
1	1	20	449	405	18	18	14.23
1	2	22	466	422	17	9	31.45
1	2	24	480	436	14	7	38.61
1	2	26	499	455	19	10	27.96
1	2	28	518	474	19	10	27.96
1	2	30	538	494	20	10	26.49
1	1	31	566	522	28	28	8.92
1	1	32	587	543	21	21	12.09
1	1	33	616	572	29	29	8.59
1	1	34	668	624	52	52	4.64
1	1	35	689	645	21	21	12.09
1	1	36	709	665	20	20	12.73
1	1	37	722	678	13	13	20.07
1	1	38	736	692	14	14	18.56
1	1	39	750	706	14	14	18.56
1	1	40	758	714	8	8	33.53
1	1	41	788	744	30	30	8.29
1	1	42	799	755	11	11	23.95
1	1	43	807	763	8	8	33.53
1	1	44	818	774	11	11	23.95
1	1	45	825	781	7	7	38.61
1	1	46	840	796	15	15	17.25
1	1	47	860	816	20	20	12.73
1	2	49	877	833	17	9	31.45
1	2	51	896	852	19	10	27.96
1	2	53	904	860	8	4	69.76
1	3	56	910	866	6	2	145.15
1	3	59	914	870	4	1	222.81
1	3	62	918	874	4	1	222.81

1	3	65	922	878	4	1	222.81
1	3	68	928	884	6	2	145.15
1	3	71	933	889	5	2	176.00
1	3	74	940	896	7	2	123.32
1	3	77	944	900	4	1	222.81

*Calculation of CBR: estimated from the following TRL relationship: $\text{Log}_{10}(\text{CBR}) = 2.48 - 1.057 \times \text{Log}_{10}(\text{mm/blow})$
 Ref - Interim Advice Note 73/06 Revision 1 (2009) Design Guidance for Road Pavement Foundations (Draft HD25)





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Site Name:	Ivy Mills, Whitehaven
Project Number:	SR4798
Date tested (by):	07-Nov-24
Checked by:	JC
Material description:	Engineered fill
Test location (& ref):	Plot 20

TRL Dynamic Cone Penetrometer Test Report

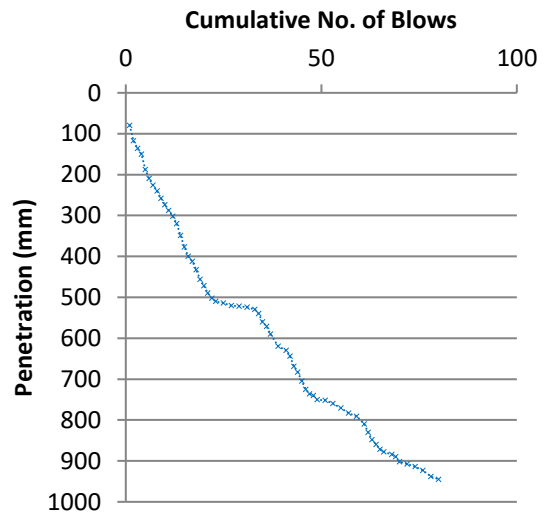
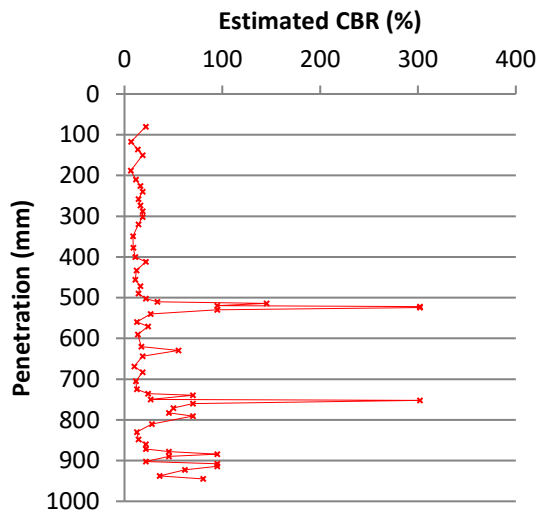
(in-situ measurement of the structural properties of unbound materials)

Page 1 of 1

Layer No.	No. of blows	Cumulative No. of blows	Penetration depth (mm)	Actual penetration depth (mm)	Depth tested (mm)	Pen rate (mm/blow)	Approx. CBR (%)*
Zero reading		0	68	0			
1	1	1	80	12	12	12	21.84
1	1	2	117	49	37	37	6.64
1	1	3	136	68	19	19	13.44
1	1	4	150	82	14	14	18.56
1	1	5	188	120	38	38	6.46
1	1	6	210	142	22	22	11.51
1	1	7	226	158	16	16	16.12
1	1	8	240	172	14	14	18.56
1	1	9	258	190	18	18	14.23
1	1	10	274	206	16	16	16.12
1	1	11	288	220	14	14	18.56
1	1	12	302	234	14	14	18.56
1	1	13	320	252	18	18	14.23
1	1	14	349	281	29	29	8.59
1	1	15	377	309	28	28	8.92
1	1	16	400	332	23	23	10.98
1	1	17	412	344	12	12	21.84
1	1	18	433	365	21	21	12.09
1	1	19	456	388	23	23	10.98
1	1	20	472	404	16	16	16.12
1	1	21	490	422	18	18	14.23
1	1	22	502	434	12	12	21.84
1	1	23	510	442	8	8	33.53
1	2	25	514	446	4	2	145.15
1	2	27	520	452	6	3	94.55
1	2	29	522	454	2	1	302.00
1	2	31	524	456	2	1	302.00
1	2	33	530	462	6	3	94.55
1	1	34	540	472	10	10	26.49
1	1	35	560	492	20	20	12.73
1	1	36	571	503	11	11	23.95
1	1	37	590	522	19	19	13.44
1	2	39	620	552	30	15	17.25
1	2	41	630	562	10	5	55.10
1	1	42	644	576	14	14	18.56
1	1	43	669	601	25	25	10.05
1	1	44	683	615	14	14	18.56
1	1	45	705	637	22	22	11.51
1	1	46	725	657	20	20	12.73
1	1	47	736	668	11	11	23.95
1	1	48	740	672	4	4	69.76
1	1	49	750	682	10	10	26.49
1	2	51	752	684	2	1	302.00
1	2	53	760	692	8	4	69.76
1	2	55	771	703	11	6	49.82
1	2	57	783	715	12	6	45.45

1	2	59	791	723	8	4	69.76
1	2	61	810	742	19	10	27.96
1	1	62	830	762	20	20	12.73
1	1	63	848	780	18	18	14.23
1	1	64	860	792	12	12	21.84
1	1	65	872	804	12	12	21.84
1	1	66	878	810	6	6	45.45
1	2	68	884	816	6	3	94.55
1	1	69	890	822	6	6	45.45
1	1	70	902	834	12	12	21.84
1	2	72	908	840	6	3	94.55
1	2	74	914	846	6	3	94.55
1	2	76	923	855	9	5	61.60
1	2	78	938	870	15	8	35.90
1	2	80	945	877	7	4	80.34

*Calculation of CBR: estimated from the following TRL relationship: $\text{Log}_{10}(\text{CBR}) = 2.48 - 1.057 \times \text{Log}_{10}(\text{mm/blow})$
 Ref - Interim Advice Note 73/06 Revision 1 (2009) Design Guidance for Road Pavement Foundations (Draft HD25)





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Site Name:	Ivy Mills, Whitehaven
Project Number:	SR4798
Date tested (by):	07-Nov-24
Checked by:	JC
Material description:	Engineered fill
Test location (& ref):	Plot 24

TRL Dynamic Cone Penetrometer Test Report

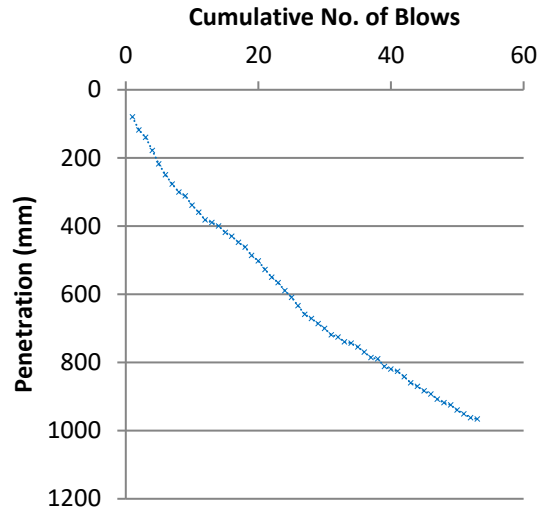
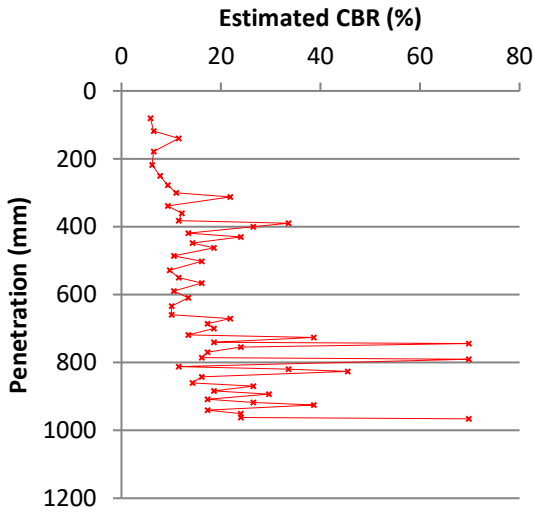
(in-situ measurement of the structural properties of unbound materials)

Page 1 of 1

Layer No.	No. of blows	Cumulative No. of blows	Penetration depth (mm)	Actual penetration depth (mm)	Depth tested (mm)	Pen rate (mm/blow)	Approx. CBR (%)*
Zero reading		0	38	0			
1	1	1	80	42	42	42	5.81
1	1	2	118	80	38	38	6.46
1	1	3	140	102	22	22	11.51
1	1	4	178	140	38	38	6.46
1	1	5	218	180	40	40	6.12
1	1	6	250	212	32	32	7.75
1	1	7	277	239	27	27	9.27
1	1	8	300	262	23	23	10.98
1	1	9	312	274	12	12	21.84
1	1	10	339	301	27	27	9.27
1	1	11	360	322	21	21	12.09
1	1	12	382	344	22	22	11.51
1	1	13	390	352	8	8	33.53
1	1	14	400	362	10	10	26.49
1	1	15	419	381	19	19	13.44
1	1	16	430	392	11	11	23.95
1	1	17	448	410	18	18	14.23
1	1	18	462	424	14	14	18.56
1	1	19	486	448	24	24	10.50
1	1	20	502	464	16	16	16.12
1	1	21	528	490	26	26	9.65
1	1	22	550	512	22	22	11.51
1	1	23	566	528	16	16	16.12
1	1	24	590	552	24	24	10.50
1	1	25	609	571	19	19	13.44
1	1	26	634	596	25	25	10.05
1	1	27	659	621	25	25	10.05
1	1	28	671	633	12	12	21.84
1	1	29	686	648	15	15	17.25
1	1	30	700	662	14	14	18.56
1	1	31	719	681	19	19	13.44
1	1	32	726	688	7	7	38.61
1	1	33	740	702	14	14	18.56
1	1	34	744	706	4	4	69.76
1	1	35	755	717	11	11	23.95
1	1	36	770	732	15	15	17.25
1	1	37	786	748	16	16	16.12
1	1	38	790	752	4	4	69.76
1	1	39	812	774	22	22	11.51
1	1	40	820	782	8	8	33.53
1	1	41	826	788	6	6	45.45
1	1	42	842	804	16	16	16.12
1	1	43	860	822	18	18	14.23
1	1	44	870	832	10	10	26.49
1	1	45	884	846	14	14	18.56
1	1	46	893	855	9	9	29.61

1	1	47	908	870	15	15	17.25
1	1	48	918	880	10	10	26.49
1	1	49	925	887	7	7	38.61
1	1	50	940	902	15	15	17.25
1	1	51	951	913	11	11	23.95
1	1	52	962	924	11	11	23.95
1	1	53	966	928	4	4	69.76

*Calculation of CBR: estimated from the following TRL relationship: $\text{Log}_{10}(\text{CBR}) = 2.48 - 1.057 \times \text{Log}_{10}(\text{mm/blow})$
 Ref - Interim Advice Note 73/06 Revision 1 (2009) Design Guidance for Road Pavement Foundations (Draft HD25)





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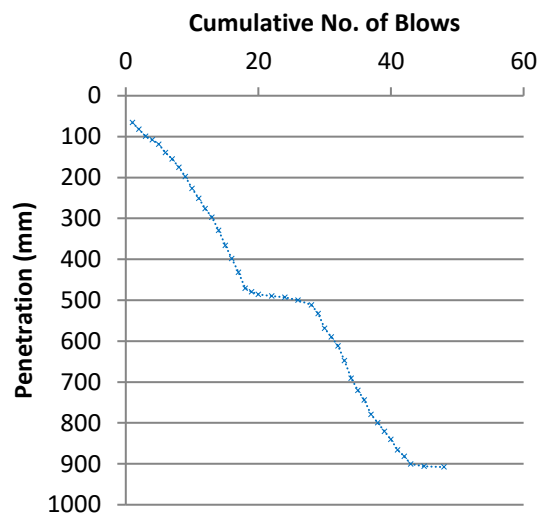
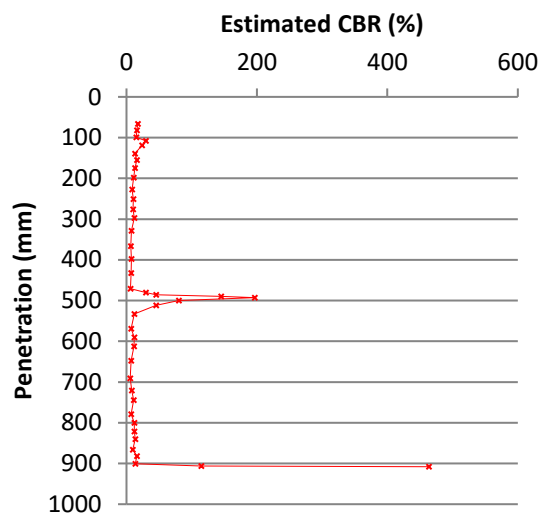
Site Name:	Ivy Mills, Whitehaven
Project Number:	SR4798
Date tested (by):	07-Nov-24
Checked by:	JC
Material description:	Engineered fill
Test location (& ref):	Plot 26

TRL Dynamic Cone Penetrometer Test Report

(in-situ measurement of the structural properties of unbound materials)

Layer No.	No. of blows	Cumulative No. of blows	Penetration depth (mm)	Actual penetration depth (mm)	Depth tested (mm)	Pen rate (mm/blow)	Approx. CBR (%)*
Zero reading		0	51	0			
1	1	1	66	15	15	15	17.25
1	1	2	82	31	16	16	16.12
1	1	3	99	48	17	17	15.12
1	1	4	108	57	9	9	29.61
1	1	5	119	68	11	11	23.95
1	1	6	139	88	20	20	12.73
1	1	7	155	104	16	16	16.12
1	1	8	175	124	20	20	12.73
1	1	9	198	147	23	23	10.98
1	1	10	227	176	29	29	8.59
1	1	11	251	200	24	24	10.50
1	1	12	276	225	25	25	10.05
1	1	13	297	246	21	21	12.09
1	1	14	329	278	32	32	7.75
1	1	15	366	315	37	37	6.64
1	1	16	398	347	32	32	7.75
1	1	17	432	381	34	34	7.26
1	1	18	471	420	39	39	6.28
1	1	19	480	429	9	9	29.61
1	1	20	486	435	6	6	45.45
1	2	22	490	439	4	2	145.15
1	2	24	493	442	3	2	196.73
1	2	26	500	449	7	4	80.34
1	2	28	512	461	12	6	45.45
1	1	29	533	482	21	21	12.09
1	1	30	569	518	36	36	6.84
1	1	31	590	539	21	21	12.09
1	1	32	612	561	22	22	11.51
1	1	33	648	597	36	36	6.84
1	1	34	691	640	43	43	5.67
1	1	35	721	670	30	30	8.29
1	1	36	744	693	23	23	10.98
1	1	37	779	728	35	35	7.05
1	1	38	800	749	21	21	12.09
1	1	39	821	770	21	21	12.09
1	1	40	840	789	19	19	13.44
1	1	41	866	815	26	26	9.65
1	1	42	882	831	16	16	16.12
1	1	43	901	850	19	19	13.44
1	2	45	906	855	5	3	114.65
1	3	48	908	857	2	1	463.58

*Calculation of CBR: estimated from the following TRL relationship: $\text{Log}_{10}(\text{CBR}) = 2.48 - 1.057 \times \text{Log}_{10}(\text{mm/blow})$
 Ref - Interim Advice Note 73/06 Revision 1 (2009) Design Guidance for Road Pavement Foundations (Draft HD25)





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Site Name:	Ivy Mills, Whitehaven
Project Number:	SR4798
Date tested (by):	14-Oct-24
Checked by:	JC
Material description:	Engineered fill
Test location (& ref):	Plot 32

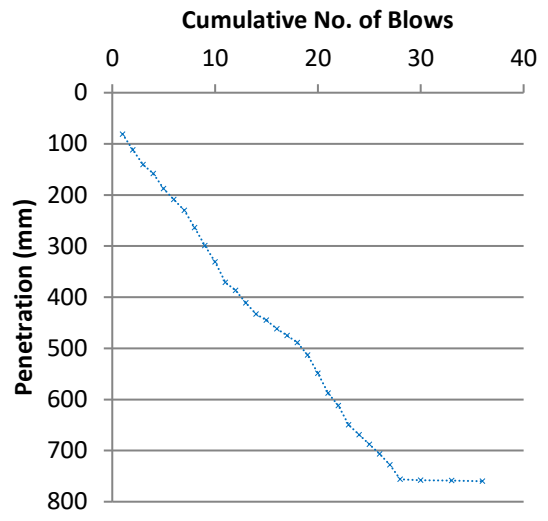
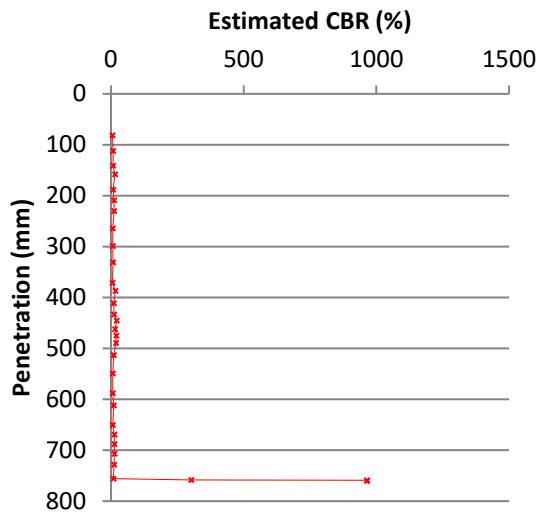
TRL Dynamic Cone Penetrometer Test Report

(in-situ measurement of the structural properties of unbound materials)

Page 1 of 1

Layer No.	No. of blows	Cumulative No. of blows	Penetration depth (mm)	Actual penetration depth (mm)	Depth tested (mm)	Pen rate (mm/blow)	Approx. CBR (%)*
Zero reading		0	37	0			
1	1	1	81	44	44	44	5.53
1	1	2	112	75	31	31	8.01
1	1	3	141	104	29	29	8.59
1	1	4	158	121	17	17	15.12
1	1	5	188	151	30	30	8.29
1	1	6	209	172	21	21	12.09
1	1	7	230	193	21	21	12.09
1	1	8	264	227	34	34	7.26
1	1	9	299	262	35	35	7.05
1	1	10	331	294	32	32	7.75
1	1	11	371	334	40	40	6.12
1	1	12	387	350	16	16	16.12
1	1	13	411	374	24	24	10.50
1	1	14	433	396	22	22	11.51
1	1	15	445	408	12	12	21.84
1	1	16	462	425	17	17	15.12
1	1	17	475	438	13	13	20.07
1	1	18	489	452	14	14	18.56
1	1	19	513	476	24	24	10.50
1	1	20	549	512	36	36	6.84
1	1	21	588	551	39	39	6.28
1	1	22	612	575	24	24	10.50
1	1	23	650	613	38	38	6.46
1	1	24	669	632	19	19	13.44
1	1	25	688	651	19	19	13.44
1	1	26	707	670	19	19	13.44
1	1	27	728	691	21	21	12.09
1	1	28	756	719	28	28	8.92
1	2	30	758	721	2	1	302.00
1	3	33	759	722	1	0	964.53
1	3	36	760	723	1	0	964.53

*Calculation of CBR: estimated from the following TRL relationship: $\text{Log}_{10}(\text{CBR}) = 2.48 - 1.057 \times \text{Log}_{10}(\text{mm/blow})$
 Ref - Interim Advice Note 73/06 Revision 1 (2009) Design Guidance for Road Pavement Foundations (Draft HD25)





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Site Name:	Ivy Mills, Whitehaven
Project Number:	SR4798
Date tested (by):	14-Oct-24
Checked by:	JC
Material description:	Engineered fill
Test location (& ref):	Plot 35

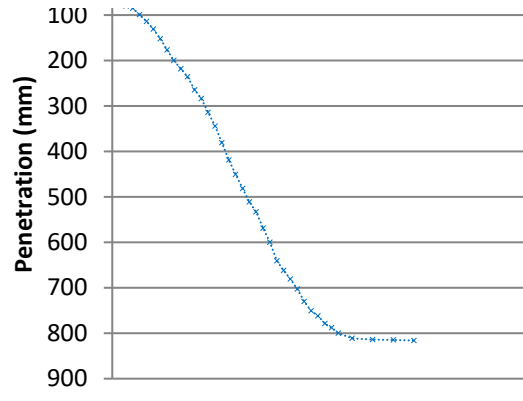
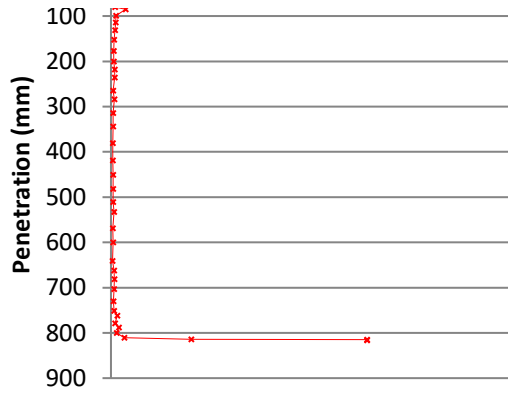
TRL Dynamic Cone Penetrometer Test Report

(in-situ measurement of the structural properties of unbound materials)

Layer No.	No. of blows	Cumulative No. of blows	Penetration depth (mm)	Actual penetration depth (mm)	Depth tested (mm)	Pen rate (mm/blow)	Approx. CBR (%)*
Zero reading		0	44	0			
1	1	1	63	19	19	19	13.44
1	1	2	80	36	17	17	15.12
1	1	3	85	41	5	5	55.10
1	1	4	99	55	14	14	18.56
1	1	5	114	70	15	15	17.25
1	1	6	131	87	17	17	15.12
1	1	7	152	108	21	21	12.09
1	1	8	177	133	25	25	10.05
1	1	9	200	156	23	23	10.98
1	1	10	218	174	18	18	14.23
1	1	11	236	192	18	18	14.23
1	1	12	265	221	29	29	8.59
1	1	13	284	240	19	19	13.44
1	1	14	314	270	30	30	8.29
1	1	15	344	300	30	30	8.29
1	1	16	381	337	37	37	6.64
1	1	17	419	375	38	38	6.46
1	1	18	451	407	32	32	7.75
1	1	19	482	438	31	31	8.01
1	1	20	511	467	29	29	8.59
1	1	21	533	489	22	22	11.51
1	1	22	569	525	36	36	6.84
1	1	23	600	556	31	31	8.01
1	1	24	641	597	41	41	5.96
1	1	25	662	618	21	21	12.09
1	1	26	681	637	19	19	13.44
1	1	27	703	659	22	22	11.51
1	1	28	730	686	27	27	9.27
1	1	29	751	707	21	21	12.09
1	1	30	762	718	11	11	23.95
1	1	31	779	735	17	17	15.12
1	1	32	788	744	9	9	29.61
1	1	33	800	756	12	12	21.84
1	2	35	811	767	11	6	49.82
1	3	38	814	770	3	1	302.00
1	3	41	815	771	1	0	964.53
1	3	44	816	772	1	0	964.53

*Calculation of CBR: estimated from the following TRL relationship: $\text{Log}_{10}(\text{CBR}) = 2.48 - 1.057 \times \text{Log}_{10}(\text{mm/blow})$
 Ref - Interim Advice Note 73/06 Revision 1 (2009) Design Guidance for Road Pavement Foundations (Draft HD25)







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Site Name:	Ivy Mills, Whitehaven
Project Number:	SR4798
Date tested (by):	14-Nov-24
Checked by:	JC
Material description:	Engineered fill
Test location (& ref):	Road 1 - DCP01

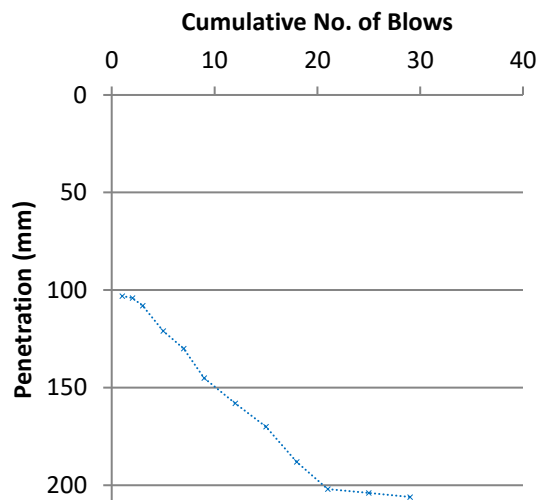
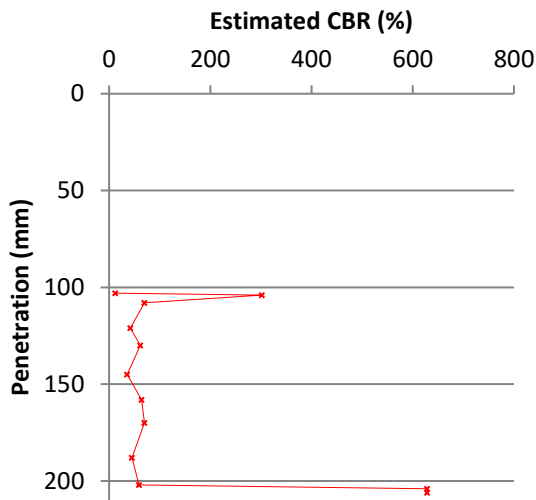
TRL Dynamic Cone Penetrometer Test Report

(in-situ measurement of the structural properties of unbound materials)

Page 1 of 1

Layer No.	No. of blows	Cumulative No. of blows	Penetration depth (mm)	Actual penetration depth (mm)	Depth tested (mm)	Pen rate (mm/blow)	Approx. CBR (%)*
Zero reading		0	82	0			
1	1	1	103	21	21	21	12.09
1	1	2	104	22	1	1	302.00
1	1	3	108	26	4	4	69.76
1	2	5	121	39	13	7	41.76
1	2	7	130	48	9	5	61.60
1	2	9	145	63	15	8	35.90
1	3	12	158	76	13	4	64.10
1	3	15	170	88	12	4	69.76
1	3	18	188	106	18	6	45.45
1	3	21	202	120	14	5	59.27
1	4	25	204	122	2	1	628.33
1	4	29	206	124	2	1	628.33

*Calculation of CBR: estimated from the following TRL relationship: $\text{Log}_{10}(\text{CBR}) = 2.48 - 1.057 \times \text{Log}_{10}(\text{mm/blow})$
 Ref - Interim Advice Note 73/06 Revision 1 (2009) Design Guidance for Road Pavement Foundations (Draft HD25)





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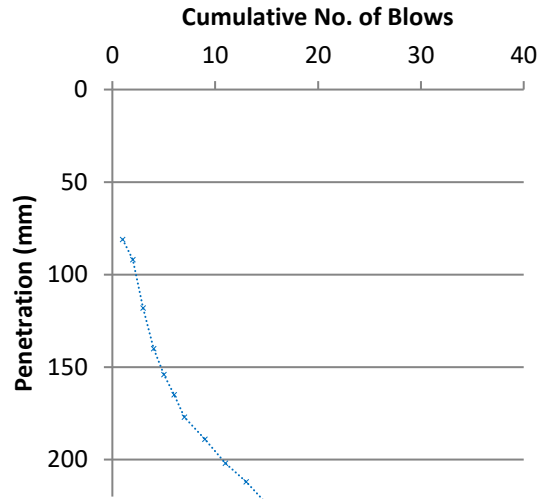
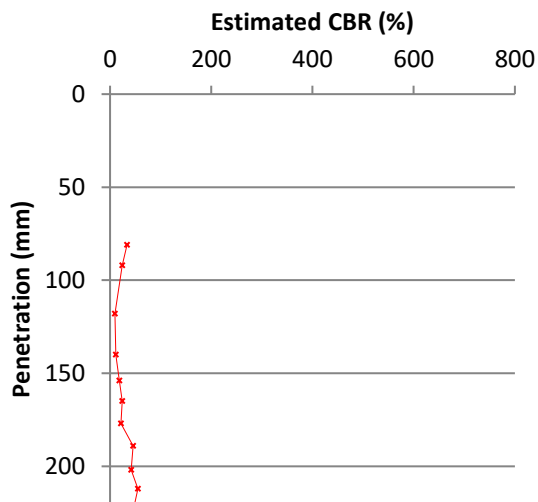
Site Name:	Ivy Mills, Whitehaven
Project Number:	SR4798
Date tested (by):	14-Nov-24
Checked by:	JC
Material description:	Engineered fill
Test location (& ref):	Road 1 - DCP02

TRL Dynamic Cone Penetrometer Test Report

(in-situ measurement of the structural properties of unbound materials)

Layer No.	No. of blows	Cumulative No. of blows	Penetration depth (mm)	Actual penetration depth (mm)	Depth tested (mm)	Pen rate (mm/blow)	Approx. CBR (%)*
Zero reading		0	73	0			
1	1	1	81	8	8	8	33.53
1	1	2	92	19	11	11	23.95
1	1	3	118	45	26	26	9.65
1	1	4	140	67	22	22	11.51
1	1	5	154	81	14	14	18.56
1	1	6	165	92	11	11	23.95
1	1	7	177	104	12	12	21.84
1	2	9	189	116	12	6	45.45
1	2	11	202	129	13	7	41.76
1	2	13	212	139	10	5	55.10
1	2	15	224	151	12	6	45.45
1	2	17	240	167	16	8	33.53
1	2	19	252	179	12	6	45.45
1	3	22	257	184	5	2	176.00
1	3	25	259	186	2	1	463.58
1	4	29	261	188	2	1	628.33

*Calculation of CBR: estimated from the following TRL relationship: $\text{Log}_{10}(\text{CBR}) = 2.48 - 1.057 \times \text{Log}_{10}(\text{mm/blow})$
 Ref - Interim Advice Note 73/06 Revision 1 (2009) Design Guidance for Road Pavement Foundations (Draft HD25)





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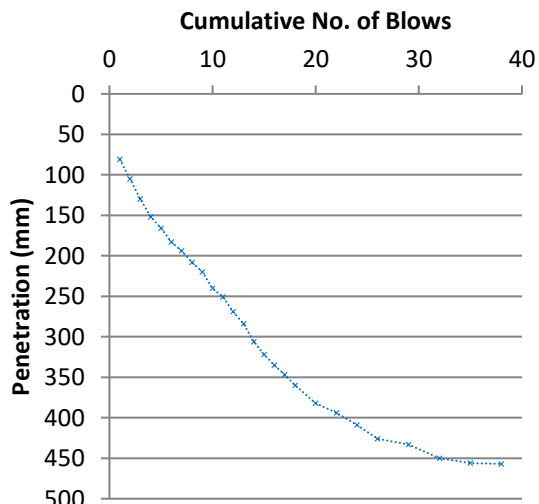
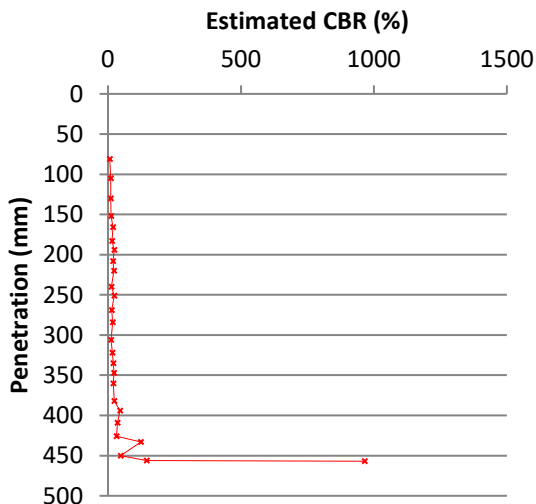
Site Name:	Ivy Mills, Whitehaven
Project Number:	SR4798
Date tested (by):	14-Nov-24
Checked by:	JC
Material description:	Engineered fill
Test location (& ref):	Road 1 - DCP03

TRL Dynamic Cone Penetrometer Test Report

(in-situ measurement of the structural properties of unbound materials)

Layer No.	No. of blows	Cumulative No. of blows	Penetration depth (mm)	Actual penetration depth (mm)	Depth tested (mm)	Pen rate (mm/blow)	Approx. CBR (%)*
Zero reading		0	43	0			
1	1	1	81	38	38	38	6.46
1	1	2	105	62	24	24	10.50
1	1	3	130	87	25	25	10.05
1	1	4	152	109	22	22	11.51
1	1	5	166	123	14	14	18.56
1	1	6	183	140	17	17	15.12
1	1	7	194	151	11	11	23.95
1	1	8	208	165	14	14	18.56
1	1	9	220	177	12	12	21.84
1	1	10	240	197	20	20	12.73
1	1	11	251	208	11	11	23.95
1	1	12	269	226	18	18	14.23
1	1	13	284	241	15	15	17.25
1	1	14	306	263	22	22	11.51
1	1	15	322	279	16	16	16.12
1	1	16	335	292	13	13	20.07
1	1	17	347	304	12	12	21.84
1	1	18	360	317	13	13	20.07
1	2	20	382	339	22	11	23.95
1	2	22	394	351	12	6	45.45
1	2	24	409	366	15	8	35.90
1	2	26	426	383	17	9	31.45
1	3	29	433	390	7	2	123.32
1	3	32	450	407	17	6	48.28
1	3	35	456	413	6	2	145.15
1	3	38	457	414	1	0	964.53

*Calculation of CBR: estimated from the following TRL relationship: $\text{Log}_{10}(\text{CBR}) = 2.48 - 1.057 \times \text{Log}_{10}(\text{mm/blow})$
 Ref - Interim Advice Note 73/06 Revision 1 (2009) Design Guidance for Road Pavement Foundations (Draft HD25)





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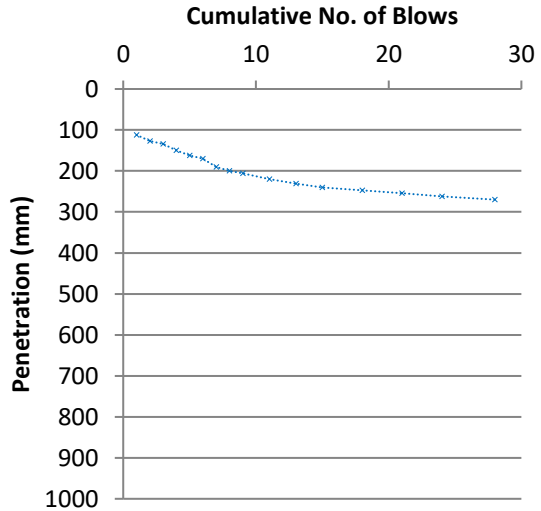
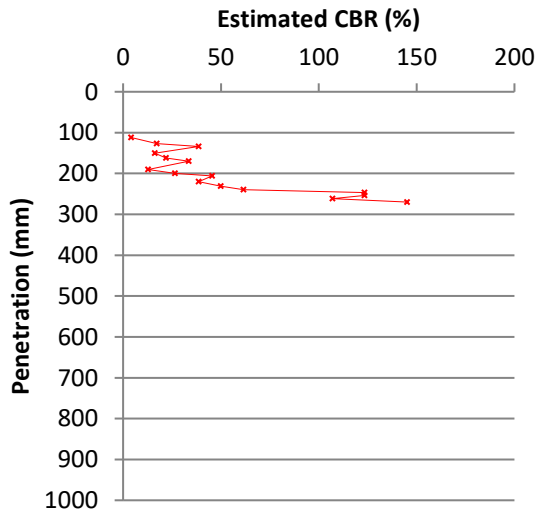
Site Name:	Ivy Mills, Whitehaven
Project Number:	SR4798
Date tested (by):	14-Nov-24
Checked by:	JC
Material description:	Engineered fill
Test location (& ref):	Road 1 - DCP04

TRL Dynamic Cone Penetrometer Test Report

(in-situ measurement of the structural properties of unbound materials)

Layer No.	No. of blows	Cumulative No. of blows	Penetration depth (mm)	Actual penetration depth (mm)	Depth tested (mm)	Pen rate (mm/blow)	Approx. CBR (%)*
Zero reading		0	54	0			
1	1	1	112	58	58	58	4.13
1	1	2	127	73	15	15	17.25
1	1	3	134	80	7	7	38.61
1	1	4	150	96	16	16	16.12
1	1	5	162	108	12	12	21.84
1	1	6	170	116	8	8	33.53
1	1	7	190	136	20	20	12.73
1	1	8	200	146	10	10	26.49
1	1	9	206	152	6	6	45.45
1	2	11	220	166	14	7	38.61
1	2	13	231	177	11	6	49.82
1	2	15	240	186	9	5	61.60
1	3	18	247	193	7	2	123.32
1	3	21	254	200	7	2	123.32
1	3	24	262	208	8	3	107.09
1	4	28	270	216	8	2	145.15

*Calculation of CBR: estimated from the following TRL relationship: $\text{Log}_{10}(\text{CBR}) = 2.48 - 1.057 \times \text{Log}_{10}(\text{mm/blow})$
 Ref - Interim Advice Note 73/06 Revision 1 (2009) Design Guidance for Road Pavement Foundations (Draft HD25)





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Site Name:	Ivy Mills, Whitehaven
Project Number:	SR4798
Date tested (by):	14-Nov-24
Checked by:	JC
Material description:	Engineered fill
Test location (& ref):	Road 2 - DCP01

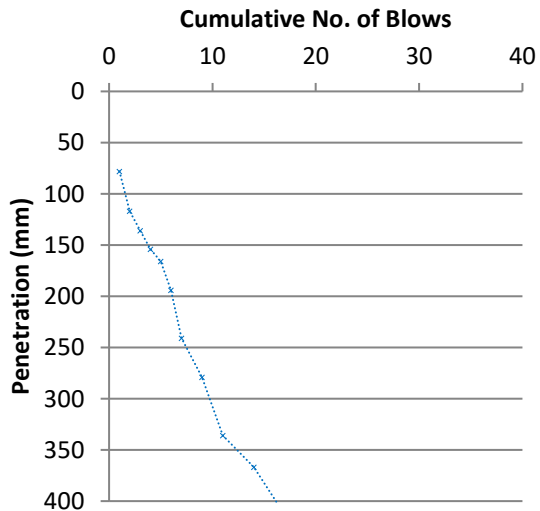
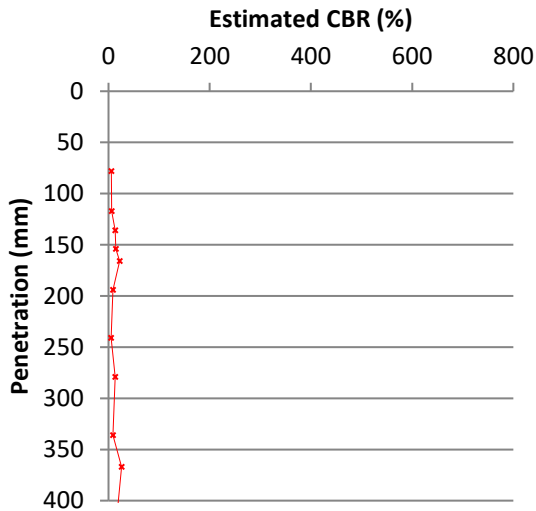
TRL Dynamic Cone Penetrometer Test Report

(in-situ measurement of the structural properties of unbound materials)

Page 1 of 1

Layer No.	No. of blows	Cumulative No. of blows	Penetration depth (mm)	Actual penetration depth (mm)	Depth tested (mm)	Pen rate (mm/blow)	Approx. CBR (%)*
Zero reading		0	35	0			
1	1	1	78	43	43	43	5.67
1	1	2	117	82	39	39	6.28
1	1	3	136	101	19	19	13.44
1	1	4	154	119	18	18	14.23
1	1	5	166	131	12	12	21.84
1	1	6	194	159	28	28	8.92
1	1	7	241	206	47	47	5.16
1	2	9	279	244	38	19	13.44
1	2	11	336	301	57	29	8.75
1	3	14	367	332	31	10	25.58
1	3	17	413	378	46	15	16.86
1	3	20	457	422	44	15	17.67
1	4	24	512	477	55	14	18.92
1	4	28	536	501	24	6	45.45
1	4	32	540	505	4	1	302.00
1	4	36	542	507	2	1	628.33

*Calculation of CBR: estimated from the following TRL relationship: $\text{Log}_{10}(\text{CBR}) = 2.48 - 1.057 \times \text{Log}_{10}(\text{mm/blow})$
 Ref - Interim Advice Note 73/06 Revision 1 (2009) Design Guidance for Road Pavement Foundations (Draft HD25)





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Site Name:	Ivy Mills, Whitehaven
Project Number:	SR4798
Date tested (by):	14-Nov-24
Checked by:	JC
Material description:	Engineered fill
Test location (& ref):	Road 2 - DCP02

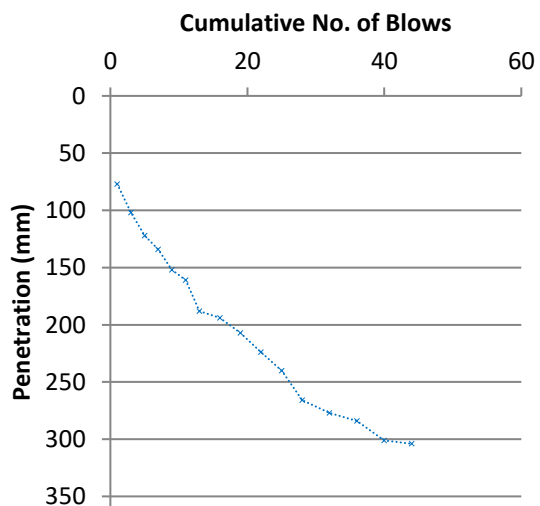
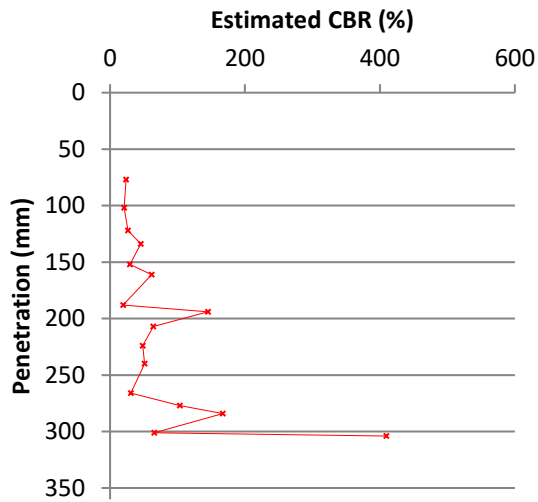
TRL Dynamic Cone Penetrometer Test Report

(in-situ measurement of the structural properties of unbound materials)

Page 1 of 1

Layer No.	No. of blows	Cumulative No. of blows	Penetration depth (mm)	Actual penetration depth (mm)	Depth tested (mm)	Pen rate (mm/blow)	Approx. CBR (%)*
Zero reading		0	66	0			
1	1	1	77	11	11	11	23.95
1	2	3	102	36	25	13	20.92
1	2	5	122	56	20	10	26.49
1	2	7	134	68	12	6	45.45
1	2	9	152	86	18	9	29.61
1	2	11	161	95	9	5	61.60
1	2	13	188	122	27	14	19.29
1	3	16	194	128	6	2	145.15
1	3	19	207	141	13	4	64.10
1	3	22	224	158	17	6	48.28
1	3	25	240	174	16	5	51.47
1	3	28	266	200	26	9	30.81
1	4	32	277	211	11	3	103.66
1	4	36	284	218	7	2	167.15
1	4	40	301	235	17	4	65.43
1	4	44	304	238	3	1	409.32

*Calculation of CBR: estimated from the following TRL relationship: $\text{Log}_{10}(\text{CBR}) = 2.48 - 1.057 \times \text{Log}_{10}(\text{mm/blow})$
 Ref - Interim Advice Note 73/06 Revision 1 (2009) Design Guidance for Road Pavement Foundations (Draft HD25)





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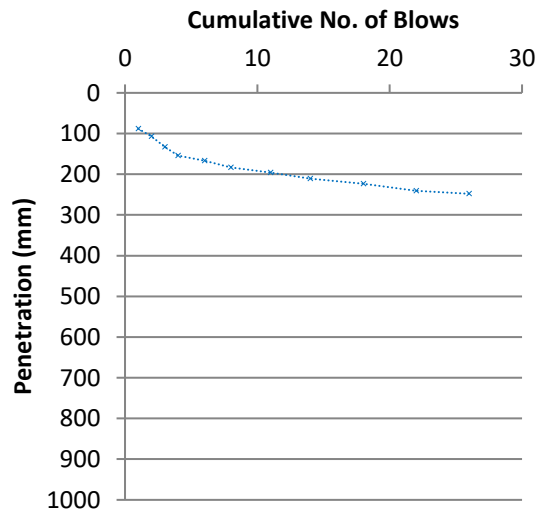
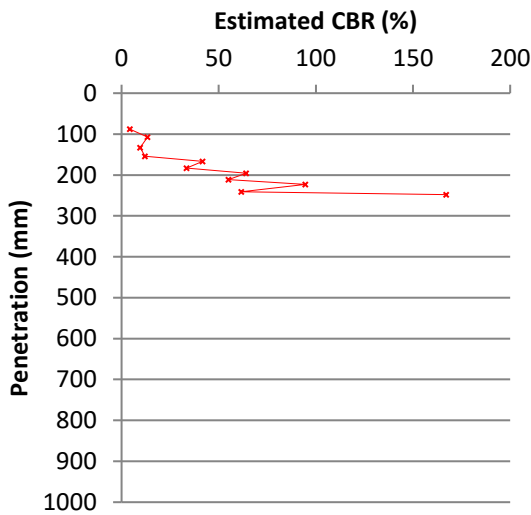
Site Name:	Ivy Mills, Whitehaven
Project Number:	SR4798
Date tested (by):	14-Nov-24
Checked by:	JC
Material description:	Engineered fill
Test location (& ref):	Road 2 - DCP03

TRL Dynamic Cone Penetrometer Test Report

(in-situ measurement of the structural properties of unbound materials)

Layer No.	No. of blows	Cumulative No. of blows	Penetration depth (mm)	Actual penetration depth (mm)	Depth tested (mm)	Pen rate (mm/blow)	Approx. CBR (%)*
Zero reading		0	32	0			
1	1	1	88	56	56	56	4.29
1	1	2	107	75	19	19	13.44
1	1	3	133	101	26	26	9.65
1	1	4	154	122	21	21	12.09
1	2	6	167	135	13	7	41.76
1	2	8	183	151	16	8	33.53
1	3	11	196	164	13	4	64.10
1	3	14	211	179	15	5	55.10
1	4	18	223	191	12	3	94.55
1	4	22	241	209	18	5	61.60
1	4	26	248	216	7	2	167.15

*Calculation of CBR: estimated from the following TRL relationship: $\text{Log}_{10}(\text{CBR}) = 2.48 - 1.057 \times \text{Log}_{10}(\text{mm/blow})$
 Ref - Interim Advice Note 73/06 Revision 1 (2009) Design Guidance for Road Pavement Foundations (Draft HD25)





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Site Name:	Ivy Mills, Whitehaven
Project Number:	SR4798
Date tested (by):	10/10/2024
Checked by:	J.C

Hand Shear Vane Test Report - 19mm Vane	Page 1 of 5
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Test Location & Depth	Material Description	Vane Reading
Plot 3	Engineered Fill	86
		90
		96



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Site Name:	Ivy Mills, Whitehaven
Project Number:	SR4798
Date tested (by):	24/10/2024
Checked by:	J.C

Hand Shear Vane Test Report - 19mm Vane Page 2 of 5

Test Location & Depth	Material Description	Vane Reading
Plot 17	Engineered Fill	94
		88
		100



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Site Name:	Ivy Mills, Whitehaven
Project Number:	SR4798
Date tested (by):	31/10/2024
Checked by:	J.C

Hand Shear Vane Test Report - 19mm Vane Page 3 of 5

Test Location & Depth	Material Description	Vane Reading
Plot 9	Engineered Fill	98
		90
		90



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Site Name:	Ivy Mills, Whitehaven
Project Number:	SR4798
Date tested (by):	07/11/2024
Checked by:	J.C

Hand Shear Vane Test Report - 19mm Vane

Page 3 of 5

Test Location & Depth	Material Description	Vane Reading
Plot 13	Engineered Fill	92
		88
		96
Plot 19	Engineered Fill	94
		100
		88
Plot 21	Engineered Fill	90
		90
		88
Plot 25	Engineered Fill	76
		84
		86
Plot 35	Engineered Fill	88
		94
		98
Plot 31	Engineered Fill	86
		90
		92



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Site Name:	Ivy Mills, Whitehaven
Project Number:	SR4798
Date tested (by):	14/11/2024
Checked by:	J.C

Hand Shear Vane Test Report - 19mm Vane Page 5 of 5

Test Location & Depth	Material Description	Vane Reading
Plot 27	Engineered Fill	66
		74
		88
Plot 22	Engineered Fill	80
		70
		66
Plot 11	Engineered Fill	68
		84
		60
Plot 16	Engineered Fill	74
		86
		86
Plot 24	Engineered Fill	88
		90
		80
Plot 5	Engineered Fill	74
		74
		82



APPENDIX F

CHEMICAL TESTING CERTIFICATES



Final Report

Report No.: 24-31621-1

Initial Date of Issue: 07-Oct-2024

Re-Issue Details:

Client Sirius Geotechnical Ltd

Client Address: Suite 10a
Stone Cross Place
Stone Cross Lane North
Warrington
WA3 2SH

Contact(s): William Fitzpatrick

Project SR4798 Ivy Mills

Quotation No.: **Date Received:** 30-Sep-2024

Order No.: PO/A14592/SR4798/WF **Date Instructed:** 30-Sep-2024

No. of Samples: 1

Turnaround (Wkdays): 6 **Results Due:** 07-Oct-2024

Date Approved: 04-Oct-2024

Approved By:

Details: David Smith, Technical Director

For details about application of accreditation to specific matrix types, please refer to the Table at the back of this report

Results - Soil

Project: SR4798 Ivy Mills

Client: Sirius Geotechnical Ltd		Chemtest Job No.:		24-31621		
Quotation No.:		Chemtest Sample ID.:		1874222		
		Client Sample ID.:		ASP1		
		Sample Type:		SOIL		
		Date Sampled:		25-Sep-2024		
Determinand	HWOL Code	Accred.	SOP	Units	LOD	
Moisture		N	2030	%	0.020	5.3
Soil Colour		N	2040		N/A	Brown
Other Material		N	2040		N/A	Stones
Soil Texture		N	2040		N/A	Sand
Naphthalene		M	2700	mg/kg	0.10	0.41
Acenaphthylene		M	2700	mg/kg	0.10	2.3
Acenaphthene		M	2700	mg/kg	0.10	0.57
Fluorene		M	2700	mg/kg	0.10	0.41
Phenanthrene		M	2700	mg/kg	0.10	5.4
Anthracene		M	2700	mg/kg	0.10	5.2
Fluoranthene		M	2700	mg/kg	0.10	48
Pyrene		M	2700	mg/kg	0.10	56
Benzo[a]anthracene		M	2700	mg/kg	0.10	48
Chrysene		M	2700	mg/kg	0.10	51
Benzo[b]fluoranthene		M	2700	mg/kg	0.10	2.0
Benzo[k]fluoranthene		M	2700	mg/kg	0.10	40
Benzo[a]pyrene		M	2700	mg/kg	0.10	93
Indeno(1,2,3-c,d)Pyrene		M	2700	mg/kg	0.10	72
Dibenz(a,h)Anthracene		M	2700	mg/kg	0.10	20
Benzo[g,h,i]perylene		M	2700	mg/kg	0.10	79
Coronene		N	2700	mg/kg	0.10	< 0.10
Total Of 17 PAH's		N	2700	mg/kg	2.0	520

Test Methods

SOP	Title	Parameters included	Method summary	Water Accred.
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 <30°C.	
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930	
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)	

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

This report shall not be reproduced except in full, and only with the prior approval of the laboratory.

Any comments or interpretations are outside the scope of UKAS accreditation.

The Laboratory is not accredited for any sampling activities and reported results relate to the samples 'as received' at the laboratory.

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 EPH, VPH, TPH, BTEX, VOCs, SVOCs, PCBs, Phenols.

For all other tests the samples were dried at $\leq 30^{\circ}\text{C}$ 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.

Water Sample Category Key for Accreditation

- DW - Drinking Water
- GW - Ground Water
- LE - Land Leachate
- NA - Not Applicable

Report Information

PL - Prepared Leachate
PW - Processed Water
RE - Recreational Water
SA - Saline Water
SW - Surface Water
TE - Treated Effluent
TS - Treated Sewage
UL - Unspecified Liquid

Clean Up Codes

NC - No Clean Up
MC - Mathematical Clean Up
FC - Florisil Clean Up

HWOL Acronym System

HS - Headspace analysis
EH - Extractable hydrocarbons – i.e. everything extracted by the solvent
CU - Clean-up – e.g. by Florisil, silica gel
1D - GC – Single coil gas chromatography
Total - Aliphatics & Aromatics
AL - Aliphatics only
AR - Aromatic only
2D - GC-GC – Double coil gas chromatography
#1 - EH_2D_Total but with humics mathematically subtracted
#2 - EH_2D_Total but with fatty acids mathematically subtracted
+ - Operator to indicate cumulative e.g. EH+EH_Total or EH_CU+HS_Total

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



Final Report

Report No.: 24-31625-1

Initial Date of Issue: 07-Oct-2024

Re-Issue Details:

Client: Sirius Geotechnical Ltd
Client Address: Suite 10a
Stone Cross Place
Stone Cross Lane North
Warrington
WA3 2SH

Contact(s): William Fitzpatrick

Project: SR4798 Ivy Mills

Quotation No.: **Date Received:** 30-Sep-2024

Order No.: PO/A14592/SR4798/WF **Date Instructed:** 30-Sep-2024

No. of Samples: 3

Turnaround (Wkdays): 6 **Results Due:** 07-Oct-2024

Date Approved: 03-Oct-2024

Approved By:

Details: David Smith, Technical Director

For details about application of accreditation to specific matrix types, please refer to the Table at the back of this report

Results - Soil

Project: SR4798 Ivy Mills

Client: Sirius Geotechnical Ltd		Chemtest Job No.:		24-31625	24-31625	24-31625
Quotation No.:		Chemtest Sample ID.:		1874230	1874231	1874232
		Client Sample ID.:		SP1	SP1 (1)	SP1 (2)
		Sample Type:		SOIL	SOIL	SOIL
		Date Sampled:		25-Sep-2024	25-Sep-2024	25-Sep-2024
		Asbestos Lab:		DURHAM	DURHAM	DURHAM
Determinand	HWOL Code	Accred.	SOP	Units	LOD	
ACM Type		U	2192		N/A	Fibres/Clumps
Asbestos Identification		U	2192		N/A	Chrysotile

Test Methods

SOP	Title	Parameters included	Method summary	Water Accred.
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry	

Report Information

Key

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N	Unaccredited
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<	"less than"
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C - Sample not received in appropriate containers

D - Broken Container

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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.

All water samples will be retained for 14 days from the date of receipt.

Charges may apply to extended sample storage.

Water Sample Category Key for Accreditation

DW - Drinking Water

GW - Ground Water

LE - Land Leachate

NA - Not Applicable

Report Information

PL - Prepared Leachate
PW - Processed Water
RE - Recreational Water
SA - Saline Water
SW - Surface Water
TE - Treated Effluent
TS - Treated Sewage
UL - Unspecified Liquid

Clean Up Codes

NC - No Clean Up
MC - Mathematical Clean Up
FC - Florisil Clean Up

HWOL Acronym System

HS - Headspace analysis
EH - Extractable hydrocarbons – i.e. everything extracted by the solvent
CU - Clean-up – e.g. by Florisil, silica gel
1D - GC – Single coil gas chromatography
Total - Aliphatics & Aromatics
AL - Aliphatics only
AR - Aromatic only
2D - GC-GC – Double coil gas chromatography
#1 - EH_2D_Total but with humics mathematically subtracted
#2 - EH_2D_Total but with fatty acids mathematically subtracted
+ - Operator to indicate cumulative e.g. EH+EH_Total or EH_CU+HS_Total

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customerservices@chemtest.com



Amended Report

Report No.: 24-31625-2

Initial Date of Issue: 07-Oct-2024 **Date of Re-Issue:** 10-Oct-2024

Re-Issue Details: This report has been revised and directly supersedes 24-31625-1 in its entirety

Client: Sirius Geotechnical Ltd

Client Address: Suite 10a
Stone Cross Place
Stone Cross Lane North
Warrington
WA3 2SH

Contact(s): William Fitzpatrick

Project: SR4798 Ivy Mills

Quotation No.: **Date Received:** 30-Sep-2024

Order No.: PO/A14592/SR4798/WF **Date Instructed:** 30-Sep-2024

No. of Samples: 3

Turnaround (Wkdays): 13 **Results Due:** 16-Oct-2024

Date Approved: 10-Oct-2024

Approved By:

Details: David Smith, Technical Director

For details about application of accreditation to specific matrix types, please refer to the Table at the back of this report

Results - Soil

Project: SR4798 Ivy Mills

Client: Sirius Geotechnical Ltd		Chemtest Job No.:		24-31625	24-31625	24-31625
Quotation No.:		Chemtest Sample ID.:		1874230	1874231	1874232
		Client Sample ID.:		SP1	SP1 (1)	SP1 (2)
		Sample Type:		SOIL	SOIL	SOIL
		Date Sampled:		25-Sep-2024	25-Sep-2024	25-Sep-2024
		Asbestos Lab:		DURHAM	DURHAM	DURHAM
Determinand	HWOL Code	Accred.	SOP	Units	LOD	
ACM Type		U	2192		N/A	Fibres/Clumps Fibres/Clumps Fibres/Clumps
Asbestos Identification		U	2192		N/A	Chrysotile Chrysotile Chrysotile
Asbestos by Gravimetry		U	2192	%	0.001	<0.001 <0.001 <0.001
Total Asbestos		U	2192	%	0.001	<0.001 <0.001 <0.001

Test Methods

SOP	Title	Parameters included	Method summary	Water Accred.
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry	

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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.

Water Sample Category Key for Accreditation

- DW - Drinking Water
- GW - Ground Water
- LE - Land Leachate
- NA - Not Applicable

Report Information

PL - Prepared Leachate
PW - Processed Water
RE - Recreational Water
SA - Saline Water
SW - Surface Water
TE - Treated Effluent
TS - Treated Sewage
UL - Unspecified Liquid

Clean Up Codes

NC - No Clean Up
MC - Mathematical Clean Up
FC - Florisil Clean Up

HWOL Acronym System

HS - Headspace analysis
EH - Extractable hydrocarbons – i.e. everything extracted by the solvent
CU - Clean-up – e.g. by Florisil, silica gel
1D - GC – Single coil gas chromatography
Total - Aliphatics & Aromatics
AL - Aliphatics only
AR - Aromatic only
2D - GC-GC – Double coil gas chromatography
#1 - EH_2D_Total but with humics mathematically subtracted
#2 - EH_2D_Total but with fatty acids mathematically subtracted
+ - Operator to indicate cumulative e.g. EH+EH_Total or EH_CU+HS_Total

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



Final Report

Report No.: 24-31626-1

Initial Date of Issue: 07-Oct-2024

Re-Issue Details:

Client: Sirius Geotechnical Ltd
Client Address: Suite 10a
Stone Cross Place
Stone Cross Lane North
Warrington
WA3 2SH

Contact(s): William Fitzpatrick

Project: SR4798 Ivy Mills

Quotation No.: **Date Received:** 30-Sep-2024

Order No.: PO/A14592/SR4798/WF **Date Instructed:** 30-Sep-2024

No. of Samples: 3

Turnaround (Wkdays): 6 **Results Due:** 07-Oct-2024

Date Approved: 04-Oct-2024

Approved By:

Details: David Smith, Technical Director

For details about application of accreditation to specific matrix types, please refer to the Table at the back of this report

Results - Soil

Project: SR4798 Ivy Mills

Client: Sirius Geotechnical Ltd		Chemtest Job No.:				24-31626	24-31626	24-31626
Quotation No.:		Chemtest Sample ID.:				1874234	1874235	1874236
		Client Sample ID.:				SP2	SP2 (1)	SP2 (2)
		Sample Type:				SOIL	SOIL	SOIL
		Date Sampled:				25-Sep-2024	25-Sep-2024	25-Sep-2024
		Asbestos Lab:				NEW-ASB	NEW-ASB	NEW-ASB
Determinand	HWOL Code	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

Test Methods

SOP	Title	Parameters included	Method summary	Water Accred.
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry	

Report Information

Key

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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.

Water Sample Category Key for Accreditation

DW - Drinking Water

GW - Ground Water

LE - Land Leachate

NA - Not Applicable

Report Information

PL - Prepared Leachate
PW - Processed Water
RE - Recreational Water
SA - Saline Water
SW - Surface Water
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UL - Unspecified Liquid

Clean Up Codes

NC - No Clean Up
MC - Mathematical Clean Up
FC - Florisil Clean Up

HWOL Acronym System

HS - Headspace analysis
EH - Extractable hydrocarbons – i.e. everything extracted by the solvent
CU - Clean-up – e.g. by Florisil, silica gel
1D - GC – Single coil gas chromatography
Total - Aliphatics & Aromatics
AL - Aliphatics only
AR - Aromatic only
2D - GC-GC – Double coil gas chromatography
#1 - EH_2D_Total but with humics mathematically subtracted
#2 - EH_2D_Total but with fatty acids mathematically subtracted
+ - Operator to indicate cumulative e.g. EH+EH_Total or EH_CU+HS_Total

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customerservices@chemtest.com



Final Report

Report No.: 24-32996-1

Initial Date of Issue: 16-Oct-2024

Re-Issue Details:

Client Sirius Geotechnical Ltd

Client Address: 4250 (Downstairs) Thorpe Park
Park Approach
Leeds
West Yorkshire
LS15 8GB

Contact(s): Alastair Cook
Jack Clarke

Project SR4798 Ivy Mills

Quotation No.: **Date Received:** 11-Oct-2024

Order No.: PO/A14614/SR4798/JC **Date Instructed:** 11-Oct-2024

No. of Samples: 1

Turnaround (Wkdays): 5 **Results Due:** 17-Oct-2024

Date Approved: 16-Oct-2024

Approved By:

Details: David Smith, Technical Director

For details about application of accreditation to specific matrix types, please refer to the Table at the back of this report

Results - Soil

Project: SR4798 Ivy Mills

Client: Sirius Geotechnical Ltd		Chemtest Job No.:					24-32996
Quotation No.:		Chemtest Sample ID.:					1879444
		Sample Location:					TP207
		Sample Type:					SOIL
		Top Depth (m):					1.60
		Date Sampled:					04-Oct-2024
Determinand	HWOL Code	Accred.	SOP	Units	LOD		
Moisture		N	2030	%	0.020	29	
Soil Colour		N	2040		N/A	Brown	
Other Material		N	2040		N/A	Stones	
Soil Texture		N	2040		N/A	Sand	
Aliphatic VPH >C5-C6	HS_2D_AL	U	2780	mg/kg	0.05	< 0.05	
Aliphatic VPH >C6-C7	HS_2D_AL	U	2780	mg/kg	0.05	< 0.05	
Aliphatic VPH >C7-C8	HS_2D_AL	U	2780	mg/kg	0.05	< 0.05	
Aliphatic VPH >C6-C8 (Sum)	HS_2D_AL	N	2780	mg/kg	0.10	< 0.10	
Aliphatic VPH >C8-C10	HS_2D_AL	U	2780	mg/kg	0.05	0.23	
Total Aliphatic VPH >C5-C10	HS_2D_AL	U	2780	mg/kg	0.25	< 0.25	
Aliphatic EPH >C10-C12 MC	EH_2D_AL_#1	M	2690	mg/kg	2.00	26	
Aliphatic EPH >C12-C16 MC	EH_2D_AL_#1	M	2690	mg/kg	1.00	95	
Aliphatic EPH >C16-C21 MC	EH_2D_AL_#1	M	2690	mg/kg	2.00	110	
Aliphatic EPH >C21-C35 MC	EH_2D_AL_#1	M	2690	mg/kg	3.00	640	
Aliphatic EPH >C35-C40 MC	EH_2D_AL_#1	N	2690	mg/kg	10.00	120	
Total Aliphatic EPH >C10-C35 MC	EH_2D_AL_#1	M	2690	mg/kg	5.00	870	
Total Aliphatic EPH >C10-C40 MC	EH_2D_AL_#1	N	2690	mg/kg	10.00	990	
Aromatic VPH >C5-C7	HS_2D_AR	U	2780	mg/kg	0.05	4.3	
Aromatic VPH >C7-C8	HS_2D_AR	U	2780	mg/kg	0.05	1.3	
Aromatic VPH >C8-C10	HS_2D_AR	U	2780	mg/kg	0.05	0.30	
Total Aromatic VPH >C5-C10	HS_2D_AR	U	2780	mg/kg	0.25	5.9	
Aromatic EPH >C10-C12 MC	EH_2D_AR_#1	U	2690	mg/kg	1.00	41	
Aromatic EPH >C12-C16 MC	EH_2D_AR_#1	U	2690	mg/kg	1.00	89	
Aromatic EPH >C16-C21 MC	EH_2D_AR_#1	U	2690	mg/kg	2.00	40	
Aromatic EPH >C21-C35 MC	EH_2D_AR_#1	U	2690	mg/kg	2.00	41	
Aromatic EPH >C35-C40 MC	EH_2D_AR_#1	N	2690	mg/kg	1.00	3.4	
Total Aromatic EPH >C10-C35 MC	EH_2D_AR_#1	U	2690	mg/kg	5.00	210	
Total Aromatic EPH >C10-C40 MC	EH_2D_AR_#1	N	2690	mg/kg	10.00	210	
Total VPH >C5-C10	HS_2D_Total	U	2780	mg/kg	0.50	5.9	
Total EPH >C10-C35 MC	EH_2D_Total_#1	U	2690	mg/kg	10.00	1100	
Total EPH >C10-C40 MC	EH_2D_Total_#1	N	2690	mg/kg	10.00	1200	
Benzene		M	2760	µg/kg	1.0	< 1.0	
Toluene		M	2760	µg/kg	1.0	3.1	
Ethylbenzene		M	2760	µg/kg	1.0	6.9	
m & p-Xylene		M	2760	µg/kg	1.0	16	
o-Xylene		M	2760	µg/kg	1.0	10	
Methyl Tert-Butyl Ether		M	2760	µg/kg	1.0	< 1.0	
PCB 28		U	2815	mg/kg	0.010	< 0.010	
PCB 52		U	2815	mg/kg	0.010	< 0.010	
PCB 101		U	2815	mg/kg	0.010	< 0.010	

Results - Soil

Project: SR4798 Ivy Mills

Client: Sirius Geotechnical Ltd		Chemtest Job No.:		24-32996		
Quotation No.:		Chemtest Sample ID.:		1879444		
		Sample Location:		TP207		
		Sample Type:		SOIL		
		Top Depth (m):		1.60		
		Date Sampled:		04-Oct-2024		
Determinand	HWOL Code	Accred.	SOP	Units	LOD	
PCB 118		U	2815	mg/kg	0.010	< 0.010
PCB 153		U	2815	mg/kg	0.010	< 0.010
PCB 138		U	2815	mg/kg	0.010	< 0.010
PCB 180		U	2815	mg/kg	0.010	< 0.010
Total PCBs (7 Congeners)		N	2815	mg/kg	0.10	< 0.10

Test Methods

SOP	Title	Parameters included	Method summary	Water Accred.
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 <30°C.	
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930	
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	
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS. Reported PCB 101 results may contain contributions from PCB 90 due to inseparable chromatography.	

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Sample Retention and Disposal

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#1 - EH_2D_Total but with humics mathematically subtracted
#2 - EH_2D_Total but with fatty acids mathematically subtracted
+ - Operator to indicate cumulative e.g. EH+EH_Total or EH_CU+HS_Total

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Final Report

Report No.: 24-34168-1

Initial Date of Issue: 28-Oct-2024

Re-Issue Details:

Client: Sirius Geotechnical Ltd
Client Address: 4250 (Downstairs) Thorpe Park
Park Approach
Leeds
West Yorkshire
LS15 8GB

Contact(s): Alastair Cook
Jack Clarke

Project: SR4798 Ivy Mills, Whitehaven

Quotation No.: **Date Received:** 22-Oct-2024

Order No.: PO/A14691/SR4798/JC **Date Instructed:** 22-Oct-2024

No. of Samples: 7

Turnaround (Wkdays): 5 **Results Due:** 28-Oct-2024

Date Approved: 28-Oct-2024

Approved By:

Details: David Smith, Technical Director

For details about application of accreditation to specific matrix types, please refer to the Table at the back of this report

Results - Soil

Project: SR4798 Ivy Mills, Whitehaven

Client: Sirius Geotechnical Ltd		Chemtest Job No.:													
Quotation No.:		24-34168		24-34168		24-34168		24-34168		24-34168		24-34168			
		Chemtest Sample ID.:													
		1883858		1883859		1883860		1883861		1883862		1883863		1883864	
		Client Sample ID.:													
		SP105 - ES1		SP105 - ES2		SP105 - ES3		SP107 - ES1		SP107 - ES2		SP107 - ES3		Invasive SP	
		Sample Type:													
		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
		Date Sampled:													
		17-Oct-2024		17-Oct-2024		17-Oct-2024		17-Oct-2024		17-Oct-2024		17-Oct-2024		17-Oct-2024	
		Asbestos Lab:													
		NEW-ASB		NEW-ASB		NEW-ASB		NEW-ASB		NEW-ASB		NEW-ASB		NEW-ASB	
Determinand	HWOL Code	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	No Asbestos Detected	No Asbestos Detected
Moisture		N	2030	%	0.020										38
Soil Colour		N	2040		N/A										Brown
Other Material		N	2040		N/A										Stones, Roots and Wood
Soil Texture		N	2040		N/A										Clay
pH at 20C		M	2010		4.0										7.4
Sulphate (2:1 Water Soluble) as SO4		M	2120	g/l	0.010										0.017
Sulphate (Total)		U	2430	%	0.010										0.21
Arsenic		M	2455	mg/kg	0.5										59
Cadmium		M	2455	mg/kg	0.10										0.97
Chromium		M	2455	mg/kg	0.5										47
Copper		M	2455	mg/kg	0.50										190
Mercury		M	2455	mg/kg	0.05										0.22
Nickel		M	2455	mg/kg	0.50										30
Lead		M	2455	mg/kg	0.50										150
Selenium		M	2455	mg/kg	0.25										1.1
Zinc		M	2455	mg/kg	0.50										270
Chromium (Hexavalent)		N	2490	mg/kg	0.50										< 0.50
Aliphatic VPH >C5-C6	HS_2D_AL	U	2780	mg/kg	0.05										< 0.05
Aliphatic VPH >C6-C7	HS_2D_AL	U	2780	mg/kg	0.05										< 0.05
Aliphatic VPH >C7-C8	HS_2D_AL	U	2780	mg/kg	0.05										< 0.05
Aliphatic VPH >C6-C8 (Sum)	HS_2D_AL	N	2780	mg/kg	0.10										< 0.10
Aliphatic VPH >C8-C10	HS_2D_AL	U	2780	mg/kg	0.05										< 0.05
Total Aliphatic VPH >C5-C10	HS_2D_AL	U	2780	mg/kg	0.25										< 0.25
Aliphatic EPH >C10-C12 MC	EH_2D_AL_#1	M	2690	mg/kg	2.00										< 2.0
Aliphatic EPH >C12-C16 MC	EH_2D_AL_#1	M	2690	mg/kg	1.00										< 1.0
Aliphatic EPH >C16-C21 MC	EH_2D_AL_#1	M	2690	mg/kg	2.00										< 2.0
Aliphatic EPH >C21-C35 MC	EH_2D_AL_#1	M	2690	mg/kg	3.00										24
Aliphatic EPH >C35-C40 MC	EH_2D_AL_#1	N	2690	mg/kg	10.00										< 10
Total Aliphatic EPH >C10-C35 MC	EH_2D_AL_#1	M	2690	mg/kg	5.00										26
Total Aliphatic EPH >C10-C40 MC	EH_2D_AL_#1	N	2690	mg/kg	10.00										26
Aromatic VPH >C5-C7	HS_2D_AR	U	2780	mg/kg	0.05										< 0.05
Aromatic VPH >C7-C8	HS_2D_AR	U	2780	mg/kg	0.05										< 0.05
Aromatic VPH >C8-C10	HS_2D_AR	U	2780	mg/kg	0.05										< 0.05
Total Aromatic VPH >C5-C10	HS_2D_AR	U	2780	mg/kg	0.25										< 0.25
Aromatic EPH >C10-C12 MC	EH_2D_AR_#1	U	2690	mg/kg	1.00										< 1.0
Aromatic EPH >C12-C16 MC	EH_2D_AR_#1	U	2690	mg/kg	1.00										< 1.0

Results - Soil

Project: SR4798 Ivy Mills, Whitehaven

Client: Sirius Geotechnical Ltd		Chemtest Job No.:		24-34168	24-34168	24-34168	24-34168	24-34168	24-34168	24-34168
Quotation No.:		Chemtest Sample ID.:		1883858	1883859	1883860	1883861	1883862	1883863	1883864
		Client Sample ID.:		SP105 - ES1	SP105 - ES2	SP105 - ES3	SP107 - ES1	SP107 - ES2	SP107 - ES3	Invasive SP
		Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		Date Sampled:		17-Oct-2024	17-Oct-2024	17-Oct-2024	17-Oct-2024	17-Oct-2024	17-Oct-2024	17-Oct-2024
		Asbestos Lab:		NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB
Determinand	HWOL Code	Accred.	SOP	Units	LOD					
Aromatic EPH >C16-C21 MC	EH_2D_AR_#1	U	2690	mg/kg	2.00					< 2.0
Aromatic EPH >C21-C35 MC	EH_2D_AR_#1	U	2690	mg/kg	2.00					7.1
Aromatic EPH >C35-C40 MC	EH_2D_AR_#1	N	2690	mg/kg	1.00					2.0
Total Aromatic EPH >C10-C35 MC	EH_2D_AR_#1	U	2690	mg/kg	5.00					7.7
Total Aromatic EPH >C10-C40 MC	EH_2D_AR_#1	N	2690	mg/kg	10.00					< 10
Total VPH >C5-C10	HS_2D_Total	U	2780	mg/kg	0.50					< 0.50
Total EPH >C10-C35 MC	EH_2D_Total_#1	U	2690	mg/kg	10.00					34
Total EPH >C10-C40 MC	EH_2D_Total_#1	N	2690	mg/kg	10.00					36
Total Organic Carbon		M	2625	%	0.20					5.6
Naphthalene		M	2700	mg/kg	0.10					< 0.10
Acenaphthylene		M	2700	mg/kg	0.10					< 0.10
Acenaphthene		M	2700	mg/kg	0.10					< 0.10
Fluorene		M	2700	mg/kg	0.10					< 0.10
Phenanthrene		M	2700	mg/kg	0.10					0.58
Anthracene		M	2700	mg/kg	0.10					0.14
Fluoranthene		M	2700	mg/kg	0.10					0.59
Pyrene		M	2700	mg/kg	0.10					0.59
Benzo[a]anthracene		M	2700	mg/kg	0.10					0.62
Chrysene		M	2700	mg/kg	0.10					0.37
Benzo[b]fluoranthene		M	2700	mg/kg	0.10					0.36
Benzo[k]fluoranthene		M	2700	mg/kg	0.10					0.26
Benzo[a]pyrene		M	2700	mg/kg	0.10					0.33
Indeno(1,2,3-c,d)Pyrene		M	2700	mg/kg	0.10					0.10
Dibenz(a,h)Anthracene		M	2700	mg/kg	0.10					0.15
Benzo[g,h,i]perylene		M	2700	mg/kg	0.10					0.36
Total Of 16 PAH's		M	2700	mg/kg	2.0					4.5
Benzene		M	2760	µg/kg	1.0					< 1.0
Toluene		M	2760	µg/kg	1.0					< 1.0
Ethylbenzene		M	2760	µg/kg	1.0					< 1.0
m & p-Xylene		M	2760	µg/kg	1.0					< 1.0
o-Xylene		M	2760	µg/kg	1.0					< 1.0
Methyl Tert-Butyl Ether		M	2760	µg/kg	1.0					< 1.0
Total Phenols		M	2920	mg/kg	0.10					< 0.10

Results - Single Stage WAC

Project: SR4798 Ivy Mills, Whitehaven

Chemtest Job No: 24-34168 Chemtest Sample ID: 1883864 Sample Ref: Sample ID: Invasive SP Sample Location: Top Depth(m): Bottom Depth(m): Sampling Date: 17-Oct-2024					Landfill Waste Acceptance Criteria			
					Limits			
					Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill	
Determinand	SOP	HWOL Code	Accred.	Units				
Total Organic Carbon	2625		M	%	5.6	3	5	6
Loss On Ignition	2610		M	%	14	--	--	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	EH_CU_1D_Total	M	mg/kg	< 10	500	--	--
Total (Of 17) PAH's	2800		N	mg/kg	< 2.0	100	--	--
pH at 20C	2010		M		7.4	--	>6	--
Acid Neutralisation Capacity	2015		N	mol/kg	0.0070	--	To evaluate	To evaluate
Eluate Analysis				10:1 Eluate mg/l	10:1 Eluate mg/kg	Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg		
Arsenic	1455		U	0.0015	0.015	0.5	2	25
Barium	1455		U	0.032	0.32	20	100	300
Cadmium	1455		U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455		U	0.0017	0.018	0.5	10	70
Copper	1455		U	0.0042	0.042	2	50	100
Mercury	1455		U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455		U	0.0012	0.012	0.5	10	30
Nickel	1455		U	0.0014	0.014	0.4	10	40
Lead	1455		U	0.0034	0.034	0.5	10	50
Antimony	1455		U	0.0010	0.010	0.06	0.7	5
Selenium	1455		U	< 0.0005	< 0.0050	0.1	0.5	7
Zinc	1455		U	0.83	8.3	4	50	200
Chloride	1220		U	1.0	10	800	15000	25000
Fluoride	1220		U	0.26	2.6	10	150	500
Sulphate	1220		U	2.0	20	1000	20000	50000
Total Dissolved Solids	1020		N	65	650	4000	60000	100000
Phenol Index	1920		U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610		U	6.6	66	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	5.6

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	Water Accred.
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity at 25°C 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.	RE PW PL LE DW FW
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).	RE PW PL SW DW FW
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation	PL SW FW
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 at 20°C	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 <30°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	
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.	
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-diphenylcarbazine.	
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	
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	

Test Methods

SOP	Title	Parameters included	Method summary	Water Accred.
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. Reported PCB 101 results may contain contributions from PCB 90 due to inseparable chromatography.	
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

This report shall not be reproduced except in full, and only with the prior approval of the laboratory.

Any comments or interpretations are outside the scope of UKAS accreditation.

The Laboratory is not accredited for any sampling activities and reported results relate to the samples 'as received' at the laboratory.

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 EPH, VPH, TPH, BTEX, VOCs, SVOCs, PCBs, Phenols.

For all other tests the samples were dried at $\leq 30^{\circ}\text{C}$ 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.

Water Sample Category Key for Accreditation

- DW - Drinking Water
- GW - Ground Water
- LE - Land Leachate
- NA - Not Applicable

Report Information

PL - Prepared Leachate
PW - Processed Water
RE - Recreational Water
SA - Saline Water
SW - Surface Water
TE - Treated Effluent
TS - Treated Sewage
UL - Unspecified Liquid

Clean Up Codes

NC - No Clean Up
MC - Mathematical Clean Up
FC - Florisil Clean Up

HWOL Acronym System

HS - Headspace analysis
EH - Extractable hydrocarbons – i.e. everything extracted by the solvent
CU - Clean-up – e.g. by Florisil, silica gel
1D - GC – Single coil gas chromatography
Total - Aliphatics & Aromatics
AL - Aliphatics only
AR - Aromatic only
2D - GC-GC – Double coil gas chromatography
#1 - EH_2D_Total but with humics mathematically subtracted
#2 - EH_2D_Total but with fatty acids mathematically subtracted
+ - Operator to indicate cumulative e.g. EH+EH_Total or EH_CU+HS_Total

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



Final Report

Report No.: 24-35102-1

Initial Date of Issue: 03-Nov-2024

Re-Issue Details:

Client Sirius Geotechnical Ltd

Client Address: 4250 (Downstairs) Thorpe Park
Park Approach
Leeds
West Yorkshire
LS15 8GB

Contact(s): Alastair Cook
Jack Clarke

Project SR4798 Ivy Mills

Quotation No.: **Date Received:** 29-Oct-2024

Order No.: PO/A14757/SR4798/JC **Date Instructed:** 29-Oct-2024

No. of Samples: 2

Turnaround (Wkdays): 5 **Results Due:** 04-Nov-2024

Date Approved: 03-Nov-2024

Approved By:

Details: David Smith, Technical Director

For details about application of accreditation to specific matrix types, please refer to the Table at the back of this report

Results - Soil

Project: SR4798 Ivy Mills

Client: Sirius Geotechnical Ltd		Chemtest Job No.:		24-35102	24-35102		
Quotation No.:		Chemtest Sample ID.:		1887125	1887126		
		Client Sample ID.:		TS SP	TP207 HS		
		Sample Type:		SOIL	SOIL		
		Date Sampled:		24-Oct-2024	24-Oct-2024		
		Asbestos Lab:		DURHAM	DURHAM		
Determinand	HWOL Code	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	32	17

Results - Single Stage WAC

Project: SR4798 Ivy Mills

Chemtest Job No: 24-35102						Landfill Waste Acceptance Criteria		
Chemtest Sample ID: 1887125						Inert Waste Landfill	Limits	
Sample Ref: TS SP							Stable, Non- reactive hazardous waste in non- hazardous Landfill	Hazardous Waste Landfill
Sample ID: TS SP								
Sample Location:								
Top Depth(m):								
Bottom Depth(m):								
Sampling Date: 24-Oct-2024								
Determinand	SOP	HWOL Code	Accred.	Units				
Total Organic Carbon	2625		M	%	4.1	3	5	6
Loss On Ignition	2610		M	%	11	--	--	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	EH_CU_1D_Total	M	mg/kg	< 10	500	--	--
Total (Of 17) PAH's	2800		N	mg/kg	< 2.0	100	--	--
pH at 20C	2010		M		7.4	--	>6	--
Acid Neutralisation Capacity	2015		N	mol/kg	0.013	--	To evaluate	To evaluate
Eluate Analysis				10:1 Eluate mg/l	10:1 Eluate mg/kg	Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg		
Arsenic	1455		U	0.0021	0.021	0.5	2	25
Barium	1455		U	0.017	0.17	20	100	300
Cadmium	1455		U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455		U	0.0013	0.013	0.5	10	70
Copper	1455		U	0.0046	0.046	2	50	100
Mercury	1455		U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455		U	0.0010	0.010	0.5	10	30
Nickel	1455		U	0.0015	0.016	0.4	10	40
Lead	1455		U	0.0030	0.031	0.5	10	50
Antimony	1455		U	0.0010	0.011	0.06	0.7	5
Selenium	1455		U	< 0.0005	< 0.0050	0.1	0.5	7
Zinc	1455		U	0.008	0.083	4	50	200
Chloride	1220		U	< 1.0	< 10	800	15000	25000
Fluoride	1220		U	0.22	2.2	10	150	500
Sulphate	1220		U	2.5	25	1000	20000	50000
Total Dissolved Solids	1020		N	46	460	4000	60000	100000
Phenol Index	1920		U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610		U	4.9	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	6.5

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 - Single Stage WAC

Project: SR4798 Ivy Mills

Chemtest Job No: 24-35102 Chemtest Sample ID: 1887126 Sample Ref: Sample ID: TP207 HS Sample Location: Top Depth(m): Bottom Depth(m): Sampling Date: 24-Oct-2024					Landfill Waste Acceptance Criteria			
					Limits			
					Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill	
Determinand	SOP	HWOL Code	Accred.	Units				
Total Organic Carbon	2625		M	%	0.83	3	5	6
Loss On Ignition	2610		M	%	4.4	--	--	10
Total BTEX	2760		M	mg/kg	0.26	6	--	--
Total PCBs (7 Congeners)	2815		M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	EH_CU_1D_Total	M	mg/kg	820	500	--	--
Total (Of 17) PAH's	2800		N	mg/kg	13	100	--	--
pH at 20C	2010		M		10.3	--	>6	--
Acid Neutralisation Capacity	2015		N	mol/kg	0.0040	--	To evaluate	To evaluate
Eluate Analysis				10:1 Eluate mg/l	10:1 Eluate mg/kg	Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg		
Arsenic	1455		U	0.0061	0.061	0.5	2	25
Barium	1455		U	0.040	0.40	20	100	300
Cadmium	1455		U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455		U	0.0010	0.0099	0.5	10	70
Copper	1455		U	0.0066	0.066	2	50	100
Mercury	1455		U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455		U	0.0025	0.025	0.5	10	30
Nickel	1455		U	0.0025	0.025	0.4	10	40
Lead	1455		U	0.0065	0.065	0.5	10	50
Antimony	1455		U	0.0026	0.026	0.06	0.7	5
Selenium	1455		U	0.0010	0.010	0.1	0.5	7
Zinc	1455		U	0.010	0.095	4	50	200
Chloride	1220		U	< 1.0	< 10	800	15000	25000
Fluoride	1220		U	0.79	7.9	10	150	500
Sulphate	1220		U	13	130	1000	20000	50000
Total Dissolved Solids	1020		N	51	510	4000	60000	100000
Phenol Index	1920		U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610		U	5.6	56	500	800	1000

Solid Information

Dry mass of test portion/kg	0.090
Moisture (%)	3.2

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	Water Accred.
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity at 25°C 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.	RE PW PL LE DW FW
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).	RE PW PL SW DW FW
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation	PL SW FW
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 at 20°C	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 <30°C.	
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930	
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry	
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	
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.	
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. Reported PCB 101 results may contain contributions from PCB 90 due to inseparable chromatography.	
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	Compliance Test for Leaching of Granular Waste Material and Sludge	

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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

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.

Water Sample Category Key for Accreditation

DW - Drinking Water

GW - Ground Water

LE - Land Leachate

NA - Not Applicable

Report Information

PL - Prepared Leachate
PW - Processed Water
RE - Recreational Water
SA - Saline Water
SW - Surface Water
TE - Treated Effluent
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UL - Unspecified Liquid

Clean Up Codes

NC - No Clean Up
MC - Mathematical Clean Up
FC - Florisil Clean Up

HWOL Acronym System

HS - Headspace analysis
EH - Extractable hydrocarbons – i.e. everything extracted by the solvent
CU - Clean-up – e.g. by Florisil, silica gel
1D - GC – Single coil gas chromatography
Total - Aliphatics & Aromatics
AL - Aliphatics only
AR - Aromatic only
2D - GC-GC – Double coil gas chromatography
#1 - EH_2D_Total but with humics mathematically subtracted
#2 - EH_2D_Total but with fatty acids mathematically subtracted
+ - Operator to indicate cumulative e.g. EH+EH_Total or EH_CU+HS_Total

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



Final Report

Report No.: 24-35904-1

Initial Date of Issue: 07-Nov-2024

Re-Issue Details:

Client Sirius Geotechnical Ltd

Client Address: 4250 (Downstairs) Thorpe Park
Park Approach
Leeds
West Yorkshire
LS15 8GB

Contact(s): Alastair Cook
Jack Clarke

Project SR4798 Ivy Mills, Whitehaven

Quotation No.: **Date Received:** 05-Nov-2024

Order No.: PO/A14812/SR4798/JC **Date Instructed:** 05-Nov-2024

No. of Samples: 2

Turnaround (Wkdays): 5 **Results Due:** 11-Nov-2024

Date Approved: 07-Nov-2024

Approved By:

Details: David Smith, Technical Director

For details about application of accreditation to specific matrix types, please refer to the Table at the back of this report

Results - Soil

Project: SR4798 Ivy Mills, Whitehaven

Client: Sirius Geotechnical Ltd		Chemtest Job No.:		24-35904	24-35904
Quotation No.:		Chemtest Sample ID.:		1890238	1890239
		Client Sample ID.:		SP107 ES4	SP107 ES5
		Sample Type:		SOIL	SOIL
		Date Sampled:		31-Oct-2024	31-Oct-2024
		Asbestos Lab:		DURHAM	DURHAM
Determinand	HWOL Code	Accred.	SOP	Units	LOD
ACM Type		U	2192		N/A
Asbestos Identification		U	2192		N/A
					No Asbestos Detected
					No Asbestos Detected

Test Methods

SOP	Title	Parameters included	Method summary	Water Accred.
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry	

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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.

Water Sample Category Key for Accreditation

DW - Drinking Water

GW - Ground Water

LE - Land Leachate

NA - Not Applicable

Report Information

PL - Prepared Leachate
PW - Processed Water
RE - Recreational Water
SA - Saline Water
SW - Surface Water
TE - Treated Effluent
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Clean Up Codes

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HWOL Acronym System

HS - Headspace analysis
EH - Extractable hydrocarbons – i.e. everything extracted by the solvent
CU - Clean-up – e.g. by Florisil, silica gel
1D - GC – Single coil gas chromatography
Total - Aliphatics & Aromatics
AL - Aliphatics only
AR - Aromatic only
2D - GC-GC – Double coil gas chromatography
#1 - EH_2D_Total but with humics mathematically subtracted
#2 - EH_2D_Total but with fatty acids mathematically subtracted
+ - Operator to indicate cumulative e.g. EH+EH_Total or EH_CU+HS_Total

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



Final Report

Report No.: 24-36761-1

Initial Date of Issue: 14-Nov-2024

Re-Issue Details:

Client Sirius Geotechnical Ltd

Client Address: 4250 (Downstairs) Thorpe Park
Park Approach
Leeds
West Yorkshire
LS15 8GB

Contact(s): Alastair Cook
Jack Clarke

Project SR4798 Ivy Mills

Quotation No.: **Date Received:** 11-Nov-2024

Order No.: PO/A14893/SR4798/JC **Date Instructed:** 11-Nov-2024

No. of Samples: 3

Turnaround (Wkdays): 5 **Results Due:** 15-Nov-2024

Date Approved: 14-Nov-2024

Approved By:

Details: David Smith, Technical Director

For details about application of accreditation to specific matrix types, please refer to the Table at the back of this report

Results - Soil

Project: SR4798 Ivy Mills

Client: Sirius Geotechnical Ltd		Chemtest Job No.: 24-36761 24-36761 24-36761						
Quotation No.:		Chemtest Sample ID.: 1893570 1893571 1893572						
Order No.: PO/A14893/SR4798/JC		Client Sample Ref.: ES ES2 ES3						
		Client Sample ID.: TP207 SP TS SP TS SP						
		Sample Type: SOIL SOIL SOIL						
		Date Sampled: 07-Nov-2024 07-Nov-2024 07-Nov-2024						
Determinand	HWOL Code	Accred.	SOP	Units	LOD			
Moisture		N	2030	%	0.020	22	28	29
Soil Colour		N	2040		N/A	Brown	Brown	Brown
Other Material		N	2040		N/A	Stones and Roots	Stones and Roots	Stones and Roots
Soil Texture		N	2040		N/A	Clay	Clay	Clay
pH at 20C		M	2010		4.0	8.9	7.5	7.4
Sulphate (2:1 Water Soluble) as SO4		M	2120	g/l	0.010	0.19	< 0.010	< 0.010
Sulphate (Total)		U	2430	%	0.010	0.46	0.21	0.22
Arsenic		M	2455	mg/kg	0.5	18	20	20
Cadmium		M	2455	mg/kg	0.10	0.14	0.31	0.36
Chromium		M	2455	mg/kg	0.5	32	22	27
Copper		M	2455	mg/kg	0.50	30	38	46
Mercury		M	2455	mg/kg	0.05	0.13	0.18	0.20
Nickel		M	2455	mg/kg	0.50	28	25	31
Lead		M	2455	mg/kg	0.50	47	89	99
Selenium		M	2455	mg/kg	0.25	1.9	1.2	1.4
Zinc		M	2455	mg/kg	0.50	60	110	130
Chromium (Hexavalent)		N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Total Organic Carbon		M	2625	%	0.20	1.6	4.7	3.6
Naphthalene		M	2700	mg/kg	0.10	0.82	< 0.10	< 0.10
Acenaphthylene		M	2700	mg/kg	0.10	2.4	< 0.10	< 0.10
Acenaphthene		M	2700	mg/kg	0.10	3.2	< 0.10	< 0.10
Fluorene		M	2700	mg/kg	0.10	3.1	< 0.10	< 0.10
Phenanthrene		M	2700	mg/kg	0.10	3.8	0.43	0.44
Anthracene		M	2700	mg/kg	0.10	1.5	< 0.10	< 0.10
Fluoranthene		M	2700	mg/kg	0.10	1.9	0.61	0.55
Pyrene		M	2700	mg/kg	0.10	2.0	0.65	0.54
Benzo[a]anthracene		M	2700	mg/kg	0.10	0.82	0.22	0.18
Chrysene		M	2700	mg/kg	0.10	1.9	0.93	0.92
Benzo[b]fluoranthene		M	2700	mg/kg	0.10	1.1	0.41	0.35
Benzo[k]fluoranthene		M	2700	mg/kg	0.10	0.77	0.54	0.70
Benzo[a]pyrene		M	2700	mg/kg	0.10	0.76	0.41	0.30
Indeno(1,2,3-c,d)Pyrene		M	2700	mg/kg	0.10	0.49	0.23	0.16
Dibenz(a,h)Anthracene		M	2700	mg/kg	0.10	0.32	0.18	0.22
Benzo[g,h,i]perylene		M	2700	mg/kg	0.10	0.67	0.25	0.15
Total Of 16 PAH's		M	2700	mg/kg	2.0	26	4.9	4.5
Total Phenols		M	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10

Test Methods

SOP	Title	Parameters included	Method summary	Water Accred.
2010	pH Value of Soils	pH at 20°C	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 <30°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	
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.	
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-diphenylcarbazine.	
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.	
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)	
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and Trimethylphenols Note: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.	

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Sirius Remediation Ltd

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Mill Road
Langley Moor
Durham
DH7 8HJ

t. 0191 378 9972
f. 0191 378 1537

4245 Park Approach
Century Way
Thorpe Park
Leeds
LS15 8GB

t. 0113 264 9960
f. 0113 264 9962

