

Site Investigation Photograph 25	
Date: 20.09.22	
Direction Photograph Taken: N/A	
Description: TP04 arisings.	

Site Investigation Photograph 26	
Date: 20.09.22	
Direction Photograph Taken: N/A	
Description: TP05.	

Site Investigation Photograph 27	
Date: 20.09.22	
Direction Photograph Taken: N/A	
Description: TP05 pit and side-wall.	

Site Investigation Photograph 28	
Date: 20.09.22	
Direction Photograph Taken: N/A	
Description: TP05 arising.	

Site Investigation Photograph 29	
Date: 21.09.22	
Direction Photograph Taken: N/A	
Description: TP06.	

Site Investigation Photograph 30	
Date: 21.09.22	
Direction Photograph Taken: N/A	
Description: TP06 pit and side-wall.	

Site Investigation Photograph 31	
Date: 21.09.22	
Direction Photograph Taken: N/A	
Description: TP06 arising.	

Site Investigation Photograph 32	
Date: 21.09.22	
Direction Photograph Taken: N/A	
Description: TP07.	

Site Investigation Photograph 33	
Date: 21.09.22	
Direction Photograph Taken: N/A	
Description: TP07 pit.	

Site Investigation Photograph 34	
Date: 21.09.22	
Direction Photograph Taken: N/A	
Description: TP07 arising.	

Site Investigation Photograph 35	
Date: 21.09.22	
Direction Photograph Taken: N/A	
Description: TP08.	

Site Investigation Photograph 36	
Date: 21.09.22	
Direction Photograph Taken: N/A	
Description: TP08 pit.	

Site Investigation Photograph 37	
Date: 21.09.22	
Direction Photograph Taken: N/A	
Description: TP08 arising.	

Site Investigation Photograph 38	
Date: 21.09.22	
Direction Photograph Taken: N/A	
Description: TP09 black plastic pipe.	

Site Investigation Photograph 39		
Date: 21.09.22		
Direction Photograph Taken: N/A		
Description: TP10.		

Site Investigation Photograph 40		
Date: 21.09.22		
Direction Photograph Taken: N/A		
Description: TP10 pit and side-wall.		

Site Investigation Photograph 41	
Date: 21.09.22	
Direction Photograph Taken: N/A	
Description: TP10 arisings.	

Site Investigation Photograph 42	
Date: 21.09.22	
Direction Photograph Taken: N/A	
Description: TP09 pit.	

Site Investigation Photograph 43	
Date: 21.09.22	
Direction Photograph Taken: N/A	
Description: TP09 arising.	

Site Investigation Photograph 44	
Date: 21.09.22	
Direction Photograph Taken: N/A	
Description: TP11.	

Site Investigation Photograph 45	
Date: 21.09.22	
Direction Photograph Taken: N/A	
Description: TP11 pit and side-wall.	

Site Investigation Photograph 46	
Date: 21.09.22	
Direction Photograph Taken: N/A	
Description: TP11 arising.	

Site Investigation Photograph 47	
Date: 21.09.22	
Direction Photograph Taken: N/A	
Description: TP12.	

Site Investigation Photograph 48	
Date: 21.09.22	
Direction Photograph Taken: N/A	
Description: TP12 pit.	

Site Investigation Photograph 49	
Date: 21.09.22	
Direction Photograph Taken: N/A	
Description: TP13.	

Site Investigation Photograph 50	
Date: 21.09.22	
Direction Photograph Taken: N/A	
Description: TP13 pit.	

Site Investigation Photograph 51	
Date: 21.09.22	
Direction Photograph Taken: N/A	
Description: TP13 arising.	

Site Investigation Photograph 52	
Date: 21.09.22	
Direction Photograph Taken: N/A	
Description: TP14 pit.	

Site Investigation Photograph 53	
Date: 23.09.22	
Direction Photograph Taken: N/A	
Description: TP14 arisings.	

Site Investigation Photograph 54	
Date: 23.09.22	
Direction Photograph Taken: N/A	
Description: TP15.	

Site Investigation Photograph 55	
Date: 23.09.22	
Direction Photograph Taken: N/A	
Description: TP15 pit.	

Site Investigation Photograph 56	
Date: 23.09.22	
Direction Photograph Taken: N/A	
Description: TP15 arising.	

Site Investigation Photograph 57	
Date: 23.09.22	
Direction Photograph Taken: N/A	
Description: TP16.	

Site Investigation Photograph 58	
Date: 23.09.22	
Direction Photograph Taken: N/A	
Description: TP16 pit.	

Site Investigation Photograph 59	
Date: 23.09.22	
Direction Photograph Taken: N/A	
Description: TP16 arising.	

Site Investigation Photograph 60	
Date: 23.09.22	
Direction Photograph Taken: N/A	
Description: TP17.	

Site Investigation Photograph 61	
Date: 23.09.22	
Direction Photograph Taken: N/A	
Description: TP17 pit.	

Site Investigation Photograph 62	
Date: 23.09.22	
Direction Photograph Taken: N/A	
Description: TP17 arisings.	

Site Investigation Photograph 63	
Date: 23.09.22	
Direction Photograph Taken: N/A	
Description: TP18.	

Site Investigation Photograph 64	
Date: 23.09.22	
Direction Photograph Taken: N/A	
Description: TP18 pit.	

Site Investigation Photograph 65	
Date: 23.09.22	
Direction Photograph Taken: N/A	
Description: TP18 arisings.	

Site Investigation Photograph 66	
Date: 23.09.22	
Direction Photograph Taken: N/A	
Description: TP19.	

Site Investigation Photograph 67	
Date: 23.09.22	
Direction Photograph Taken: N/A	
Description: TP19 pit.	

Site Investigation Photograph 68	
Date: 23.09.22	
Direction Photograph Taken: N/A	
Description: TP19 arisings.	

Site Investigation Photograph 69		
Date: 26.09.22		
Direction Photograph Taken: N/A		
Description: SA01.		

Site Investigation Photograph 70		
Date: 26.09.22		
Direction Photograph Taken: N/A		
Description: SA01 pit.		

Site Investigation Photograph 71	
Date: 26.09.22	
Direction Photograph Taken: N/A	
Description: SA01 arising.	

Site Investigation Photograph 72	
Date: 27.09.22	
Direction Photograph Taken: N/A	
Description: SA03.	

Site Investigation Photograph 73		
Date: 27.09.22		
Direction Photograph Taken: N/A		
Description: SA03 arisings.		

Site Investigation Photograph 74		
Date: 27.09.22		
Direction Photograph Taken: N/A		
Description: TP25.		

Site Investigation Photograph 75	
Date: 27.09.22	
Direction Photograph Taken: N/A	
Description: TP25 pit.	

Site Investigation Photograph 76	
Date: 27.09.22	
Direction Photograph Taken: N/A	
Description: TP25 arisings.	

Site Investigation Photograph 77	
Date: 28.09.22	
Direction Photograph Taken: N/A	
Description: TP28.	

Site Investigation Photograph 78	
Date: 28.09.22	
Direction Photograph Taken: N/A	
Description: TP28 pit.	

Site Investigation Photograph 79	
Date: 28.09.22	
Direction Photograph Taken: N/A	
Description: TP28 arising.	

Site Investigation Photograph 80	
Date: 28.09.22	
Direction Photograph Taken: N/A	
Description: TP31.	

Site Investigation Photograph 81	
Date: 28.09.22	
Direction Photograph Taken: N/A	
Description: TP31 pit.	

Site Investigation Photograph 82	
Date: 28.09.22	
Direction Photograph Taken: N/A	
Description: TP30 arising.	

Site Investigation Photograph 83	
Date: 28.09.22	
Direction Photograph Taken: N/A	
Description: TP31.	

Site Investigation Photograph 84	
Date: 28.09.22	
Direction Photograph Taken: N/A	
Description: TP31 pit and drainage pipe.	

Site Investigation Photograph 85		
Date: 28.09.22		
Direction Photograph Taken: N/A		
Description: TP31 arisings.		

Site Investigation Photograph 86		
Date: 29.09.22		
Direction Photograph Taken: N/A		
Description: TP34.		

Site Investigation Photograph 87	
Date: 29.09.22	
Direction Photograph Taken: N/A	
Description: TP34 pit.	

Site Investigation Photograph 88	
Date: 29.09.22	
Direction Photograph Taken: N/A	
Description: TP34 arising.	

Site Investigation Photograph 89	
Date: 29.09.22	
Direction Photograph Taken: N/A	
Description: TP36.	

Site Investigation Photograph 90	
Date: 29.09.22	
Direction Photograph Taken: N/A	
Description: TP36 pit.	

Site Investigation Photograph 91	
Date: 29.09.22	
Direction Photograph Taken: N/A	
Description: TP36 arising.	

Site Investigation Photograph 92	
Date: 29.09.22	
Direction Photograph Taken: N/A	
Description: TP39.	

Site Investigation Photograph 93	
Date: 29.09.22	
Direction Photograph Taken: N/A	
Description: TP39 black metal pipe encountered in side- wall.	

Site Investigation Photograph 94	
Date: 29.09.22	
Direction Photograph Taken: N/A	
Description: TP39 arising.	

Appendix F Geotechnical Test Results

TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with: BS 1377-2:1990: Clause 4.3 and 5

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

Client: Hydrock Consultants Ltd
Client Address: Over Court Barns, Over Lane,
Bristol, BS32 4DF

Contact: Daniel Gadsby
Site Address: Penn Hill, Calne

Client Reference: 24863
Job Number: 22-88322
Date Sampled: 20/09/2022
Date Received: 04/10/2022
Date Tested: 10/10/2022
Sampled By: Client - DG

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

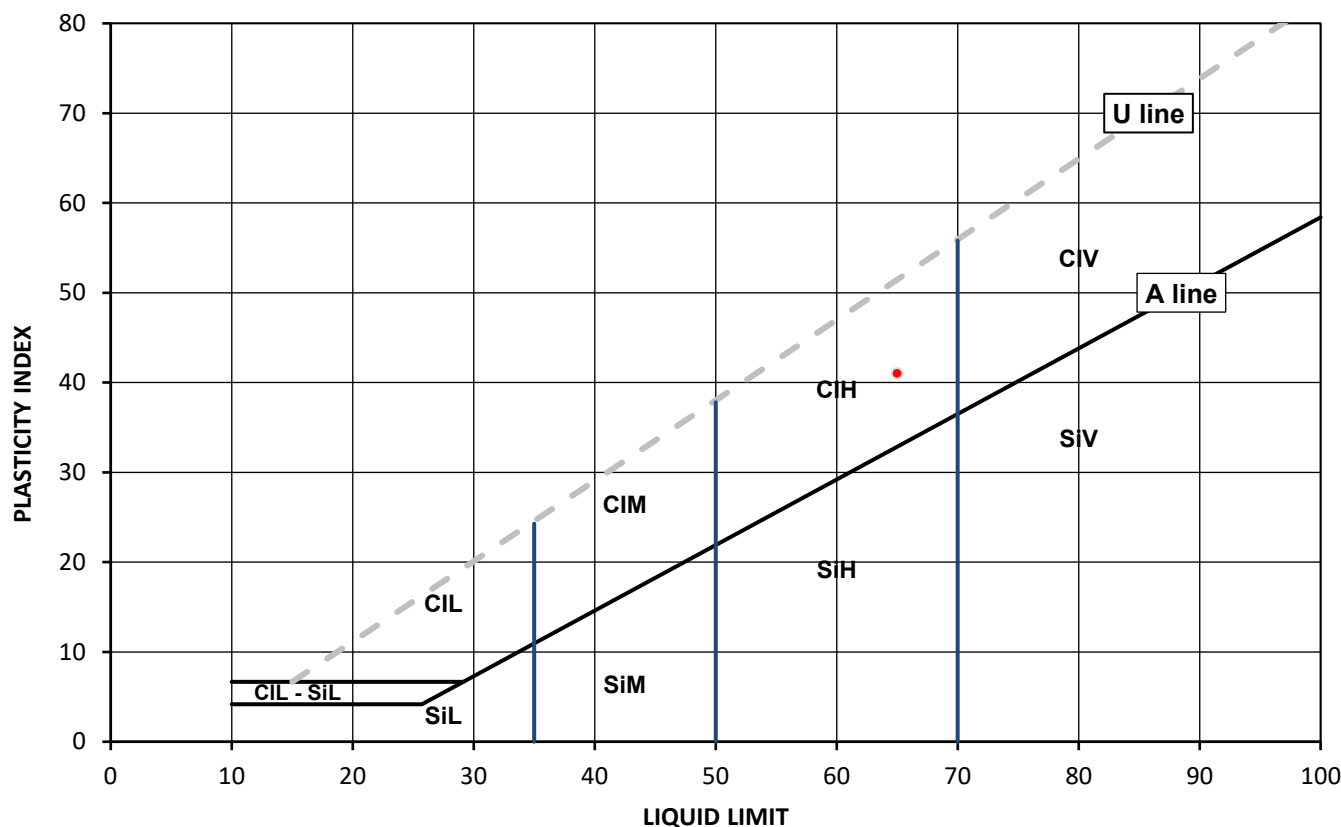
Test Results:

Laboratory Reference: 2449957
Hole No.: TP02
Sample Reference: Not Given
Sample Description: Brownish grey slightly gravelly CLAY

Depth Top [m]: 1.20
Depth Base [m]: Not Given
Sample Type: D

Sample Preparation: Tested after >425um removed by hand

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
35	65	24	41	99



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

	Plasticity	Liquid Limit
Cl Clay	L Low	below 35
Si Silt	M Medium	35 to 50
	H High	50 to 70
	V Very high	exceeding 70
	O Organic	append to classification for organic material (eg CIHO)

Note: Water Content by BS 1377-2: 1990: Clause 3.2

Remarks:

Signed:

Anna Dudzinska
PL Deputy Head of Reporting Team
for and on behalf of i2 Analytical Ltd

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TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

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Bristol, BS32 4DF

Contact: Daniel Gadsby
Site Address: Penn Hill, Calne

Client Reference: 24863
Job Number: 22-88322
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Date Tested: 10/10/2022
Sampled By: Client - DG

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

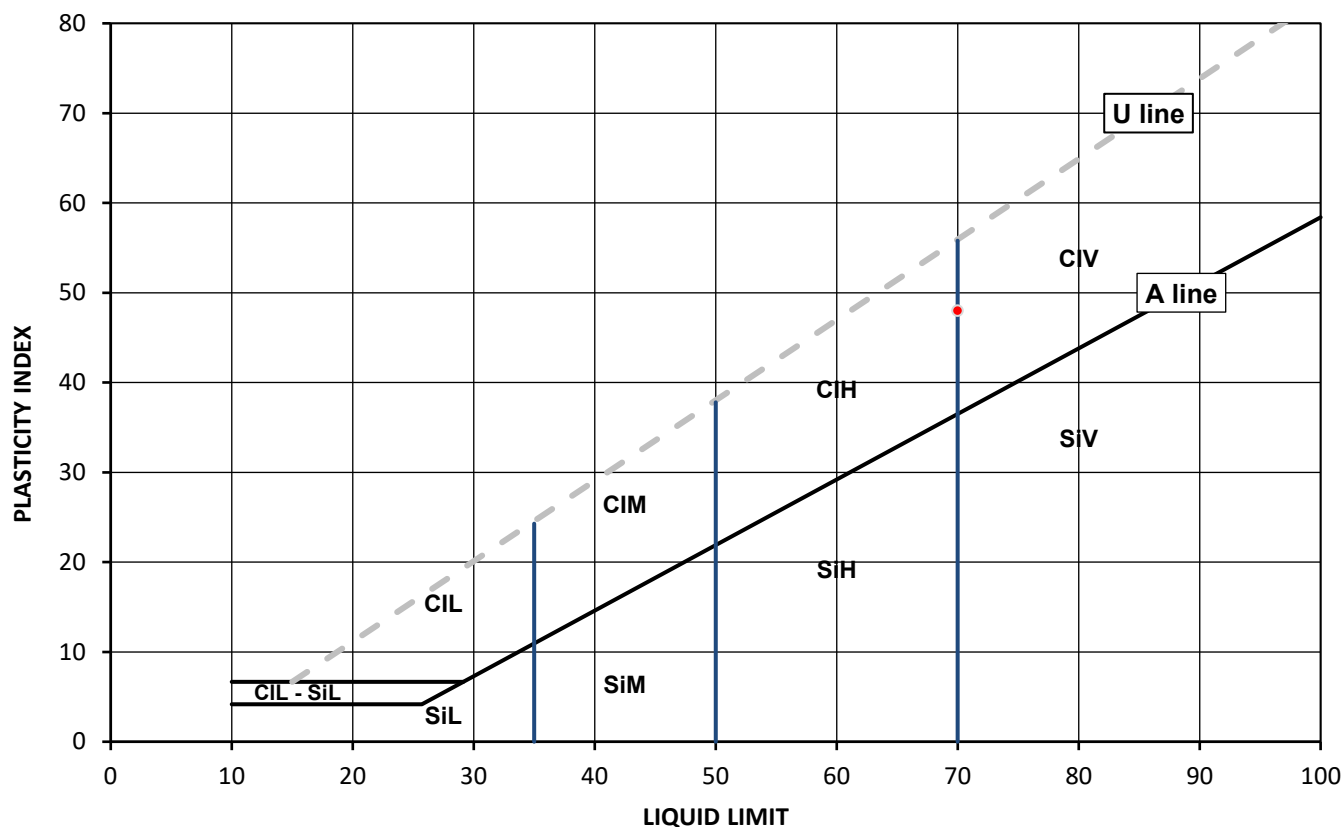
Test Results:

Laboratory Reference: 2449958
Hole No.: TP12
Sample Reference: Not Given
Sample Description: Greyish brown CLAY

Depth Top [m]: 2.00
Depth Base [m]: Not Given
Sample Type: D

Sample Preparation: Tested in natural condition

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
44	70	22	48	100



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

	Plasticity	Liquid Limit
Cl Clay	L Low	below 35
Si Silt	M Medium	35 to 50
	H High	50 to 70
	V Very high	exceeding 70
	O Organic	append to classification for organic material (eg CIHO)

Note: Water Content by BS 1377-2: 1990: Clause 3.2

Remarks:

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DETERMINATION OF LIQUID AND PLASTIC LIMITS

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Bristol, BS32 4DF

Contact: Daniel Gadsby
Site Address: Penn Hill, Calne

Client Reference: 24863
Job Number: 22-88322
Date Sampled: 23/09/2022
Date Received: 04/10/2022
Date Tested: 10/10/2022
Sampled By: Client - DG

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

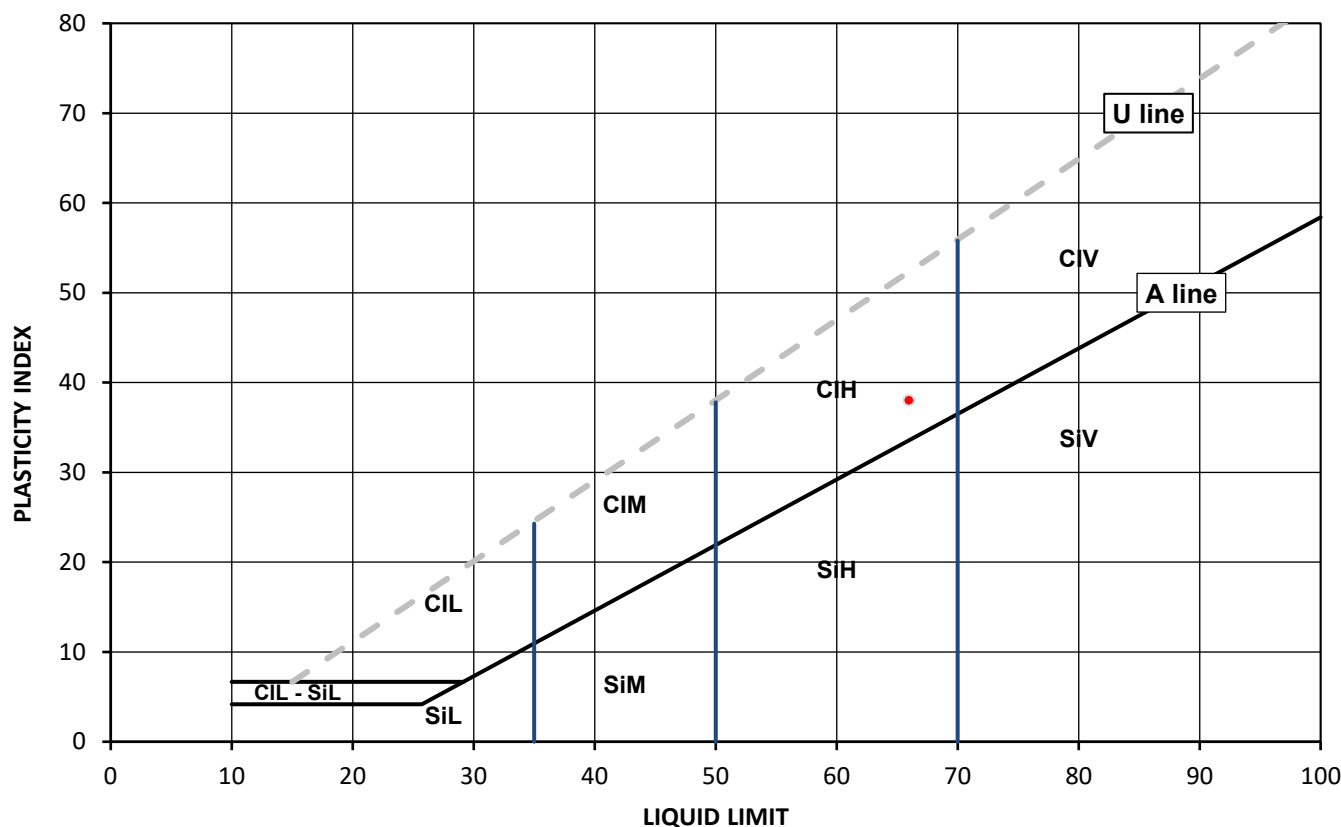
Test Results:

Laboratory Reference: 2449959
Hole No.: TP17
Sample Reference: Not Given
Sample Description: Greyish brown CLAY

Depth Top [m]: 1.20
Depth Base [m]: Not Given
Sample Type: D

Sample Preparation: Tested in natural condition

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
33	66	28	38	100



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

	Plasticity	Liquid Limit
Cl Clay	L Low	below 35
Si Silt	M Medium	35 to 50
	H High	50 to 70
	V Very high	exceeding 70
	O Organic	append to classification for organic material (eg CIHO)

Note: Water Content by BS 1377-2: 1990: Clause 3.2

Remarks:

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Bristol, BS32 4DF

Contact: Daniel Gadsby
Site Address: Penn Hill, Calne

Client Reference: 24863
Job Number: 22-88322
Date Sampled: 23/09/2022
Date Received: 04/10/2022
Date Tested: 10/10/2022
Sampled By: Client - DG

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

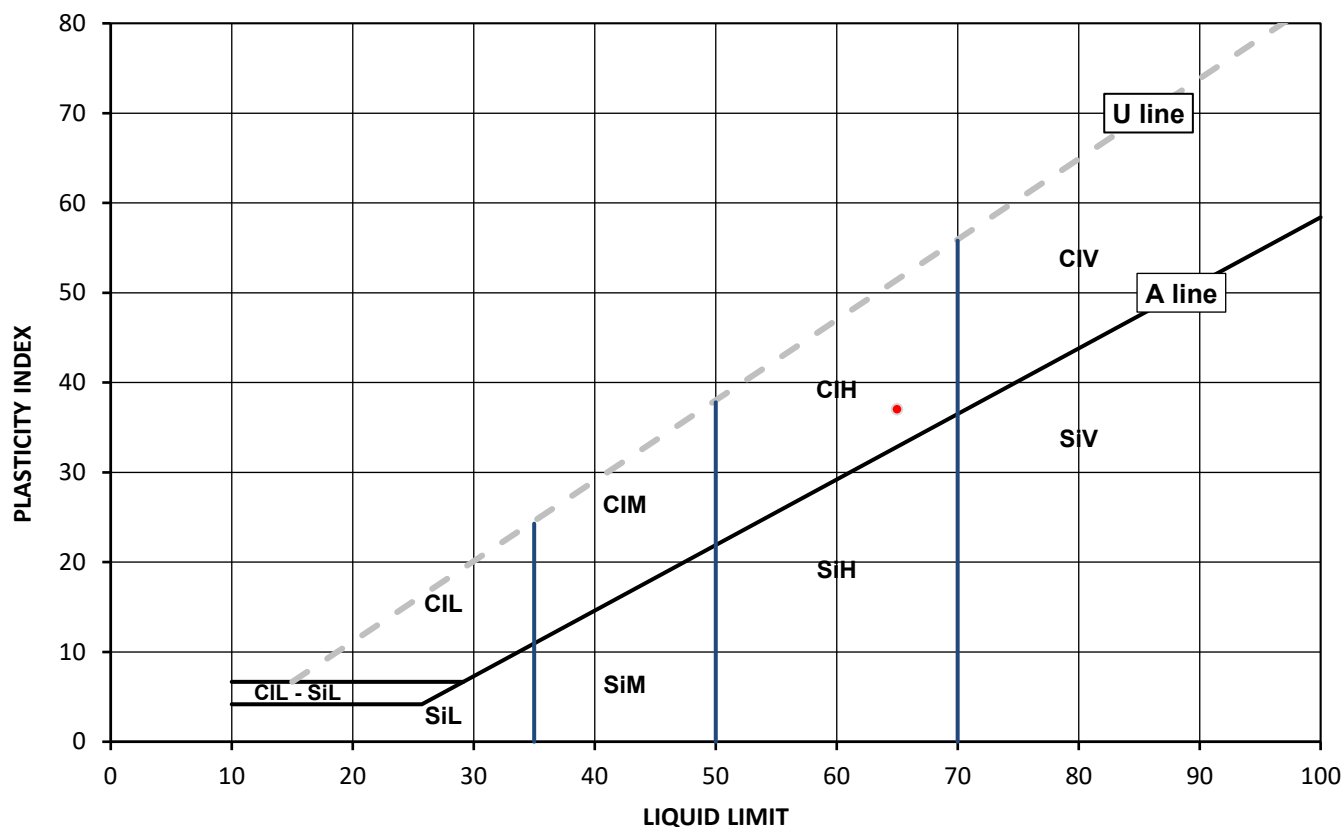
Test Results:

Laboratory Reference: 2449960
Hole No.: TP17
Sample Reference: Not Given
Sample Description: Greyish brown slightly gravelly CLAY

Depth Top [m]: 2.00
Depth Base [m]: Not Given
Sample Type: D

Sample Preparation: Tested after >425um removed by hand

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
37	65	28	37	99



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

	Plasticity	Liquid Limit
Cl Clay	L Low	below 35
Si Silt	M Medium	35 to 50
	H High	50 to 70
	V Very high	exceeding 70
	O Organic	append to classification for organic material (eg CIHO)

Note: Water Content by BS 1377-2: 1990: Clause 3.2

Remarks:

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TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

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Client: Hydrock Consultants Ltd
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Contact: Daniel Gadsby
Site Address: Penn Hill, Calne

Client Reference: 24863
Job Number: 22-88322
Date Sampled: 29/09/2022
Date Received: 04/10/2022
Date Tested: 10/10/2022
Sampled By: Client - DG

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

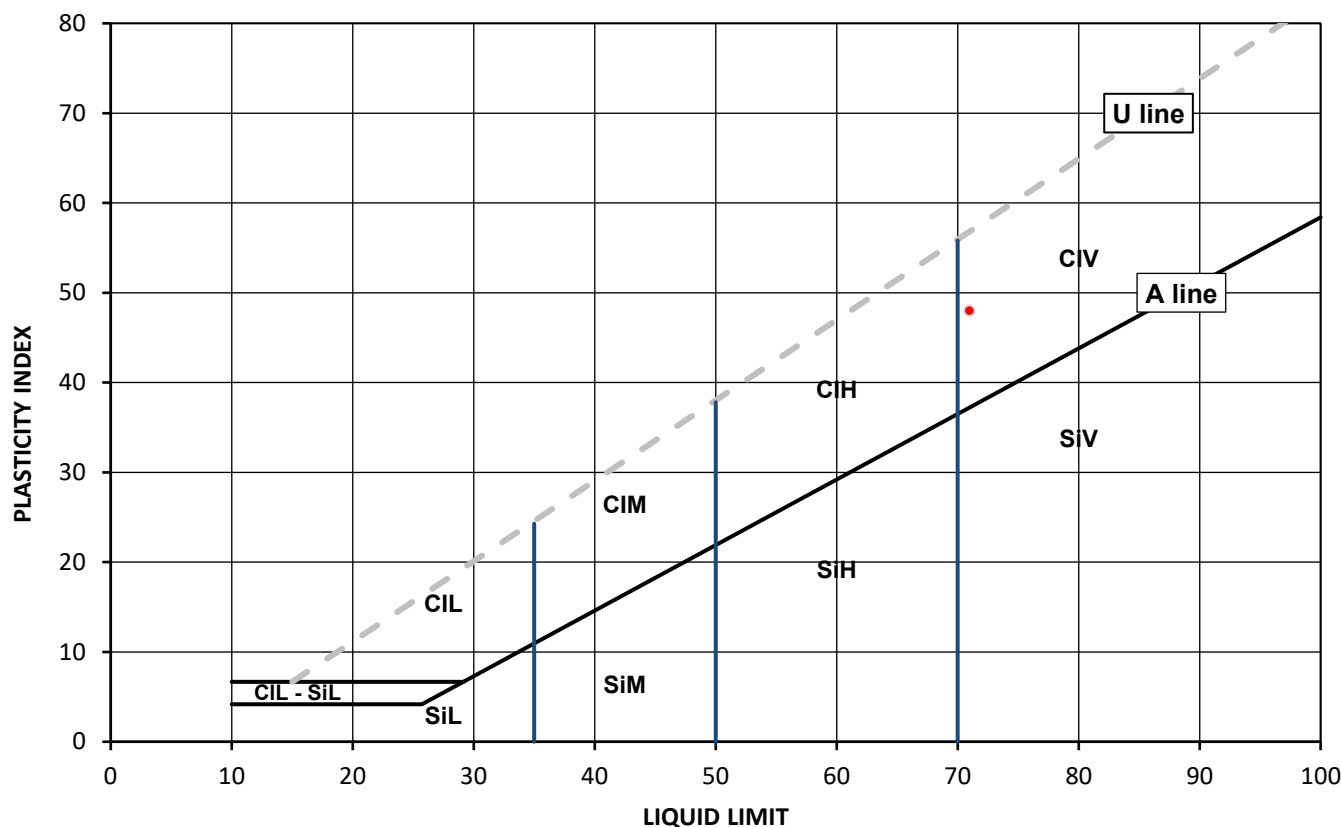
Test Results:

Laboratory Reference: 2449961
Hole No.: TP34
Sample Reference: Not Given
Sample Description: Greyish brown slightly gravelly CLAY

Depth Top [m]: 1.00
Depth Base [m]: Not Given
Sample Type: D

Sample Preparation: Tested after >425um removed by hand

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
32	71	23	48	99



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

	Plasticity	Liquid Limit
Cl Clay	L Low	below 35
Si Silt	M Medium	35 to 50
	H High	50 to 70
	V Very high	exceeding 70
	O Organic	append to classification for organic material (eg CIHO)

Note: Water Content by BS 1377-2: 1990: Clause 3.2

Remarks:

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4041

Client: Hydrock Consultants Ltd
Client Address: Over Court Barns, Over Lane,
Bristol, BS32 4DF

Contact: Daniel Gadsby
Site Address: Penn Hill, Calne

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Client Reference: 24863
Job Number: 22-88322
Date Sampled: 29/09/2022
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Date Tested: 10/10/2022
Sampled By: Client - DG

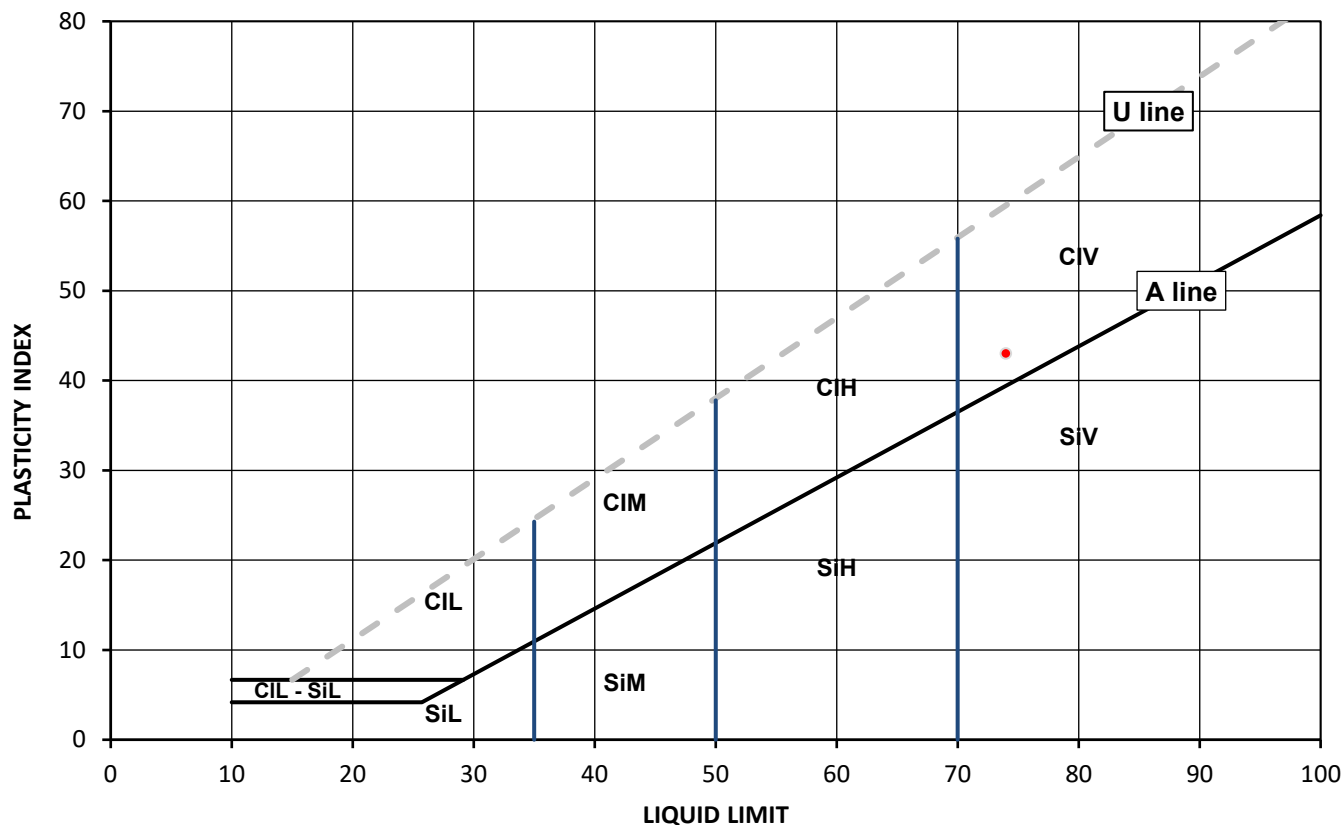
Test Results:

Laboratory Reference: 2449962
Hole No.: TP34
Sample Reference: Not Given
Sample Description: Greyish brown CLAY

Depth Top [m]: 2.70
Depth Base [m]: Not Given
Sample Type: D

Sample Preparation: Tested in natural condition

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
38	74	31	43	100



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

	Plasticity	Liquid Limit
Cl Clay	L Low	below 35
Si Silt	M Medium	35 to 50
	H High	50 to 70
	V Very high	exceeding 70
	O Organic	append to classification for organic material (eg CIHO)

Note: Water Content by BS 1377-2: 1990: Clause 3.2

Remarks:

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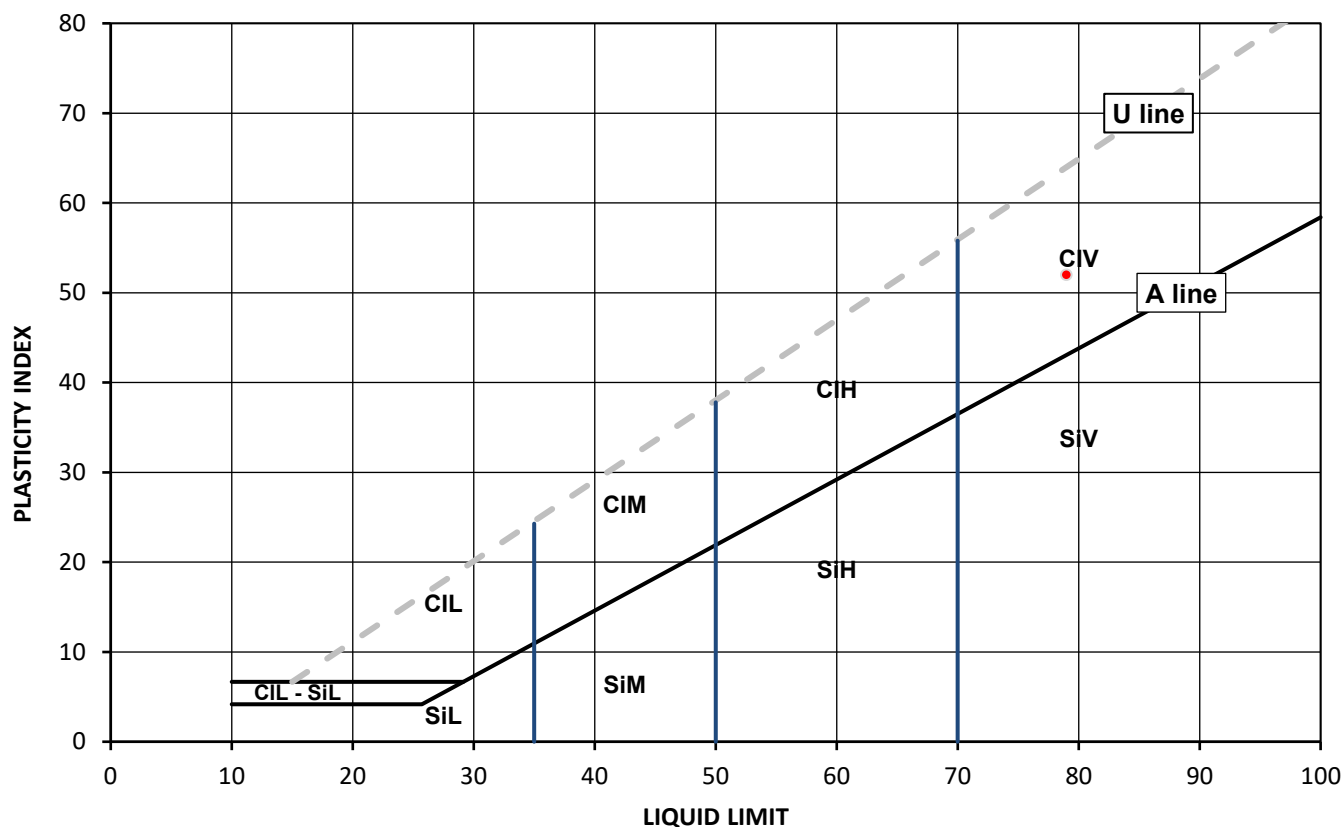
Test Results:

Laboratory Reference: 2449963
Hole No.: TP37
Sample Reference: Not Given
Sample Description: Brown slightly gravelly CLAY

Depth Top [m]: 0.60
Depth Base [m]: Not Given
Sample Type: D

Sample Preparation: Tested after >425um removed by hand

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
20	79	27	52	99



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

	Plasticity	Liquid Limit
Cl	Clay	below 35
Si	Silt	35 to 50
	L Low	50 to 70
	M Medium	exceeding 70
	H High	append to classification for organic material (eg CIHO)
	V Very high	
	O Organic	

Note: Water Content by BS 1377-2: 1990: Clause 3.2

Remarks:

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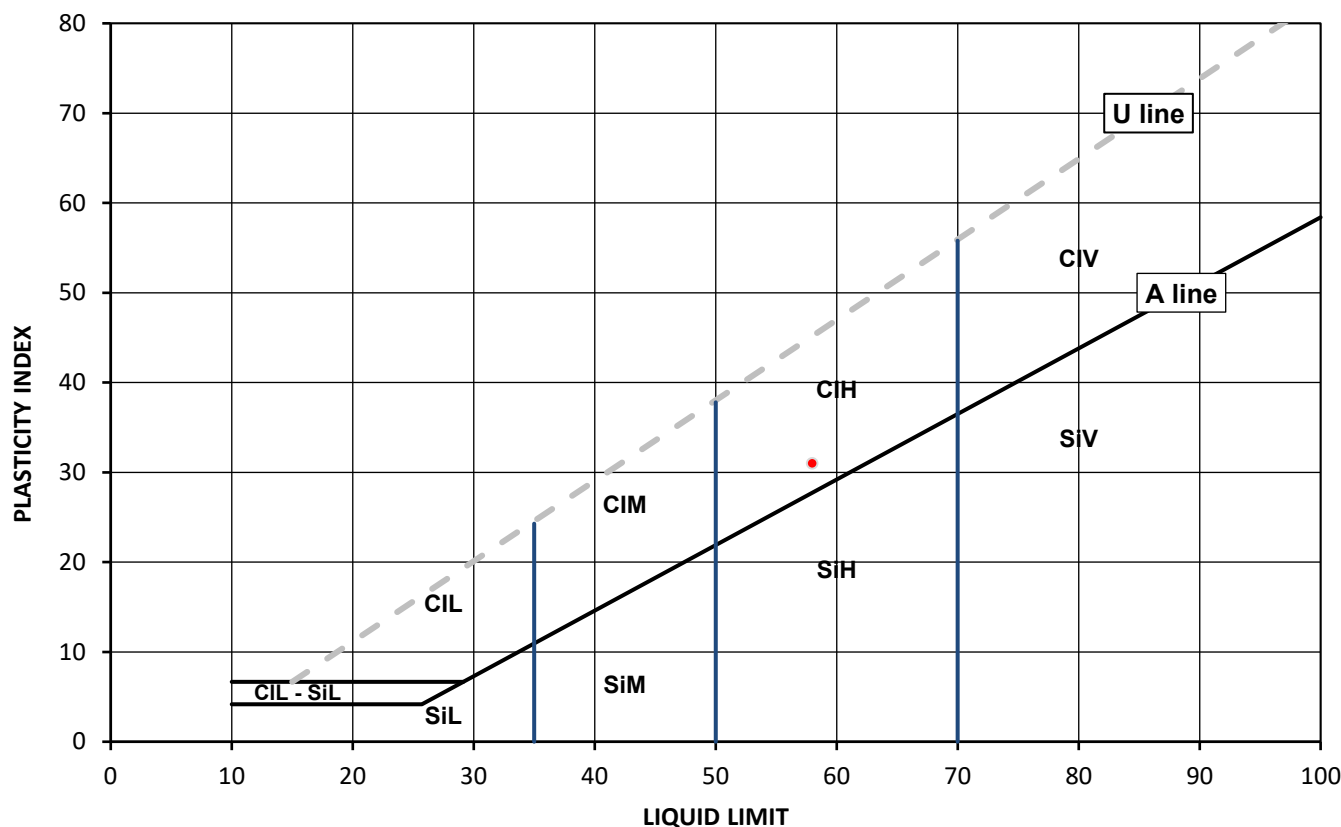
Test Results:

Laboratory Reference: 2449964
Hole No.: TP39
Sample Reference: Not Given
Sample Description: Light brown slightly sandy CLAY with fragments of chalk

Depth Top [m]: 1.50
Depth Base [m]: Not Given
Sample Type: D

Sample Preparation: Tested in natural condition

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
30	58	27	31	100



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

	Plasticity	Liquid Limit
Cl Clay	L Low	below 35
Si Silt	M Medium	35 to 50
	H High	50 to 70
	V Very high	exceeding 70
	O Organic	append to classification for organic material (eg CIHO)

Note: Water Content by BS 1377-2: 1990: Clause 3.2

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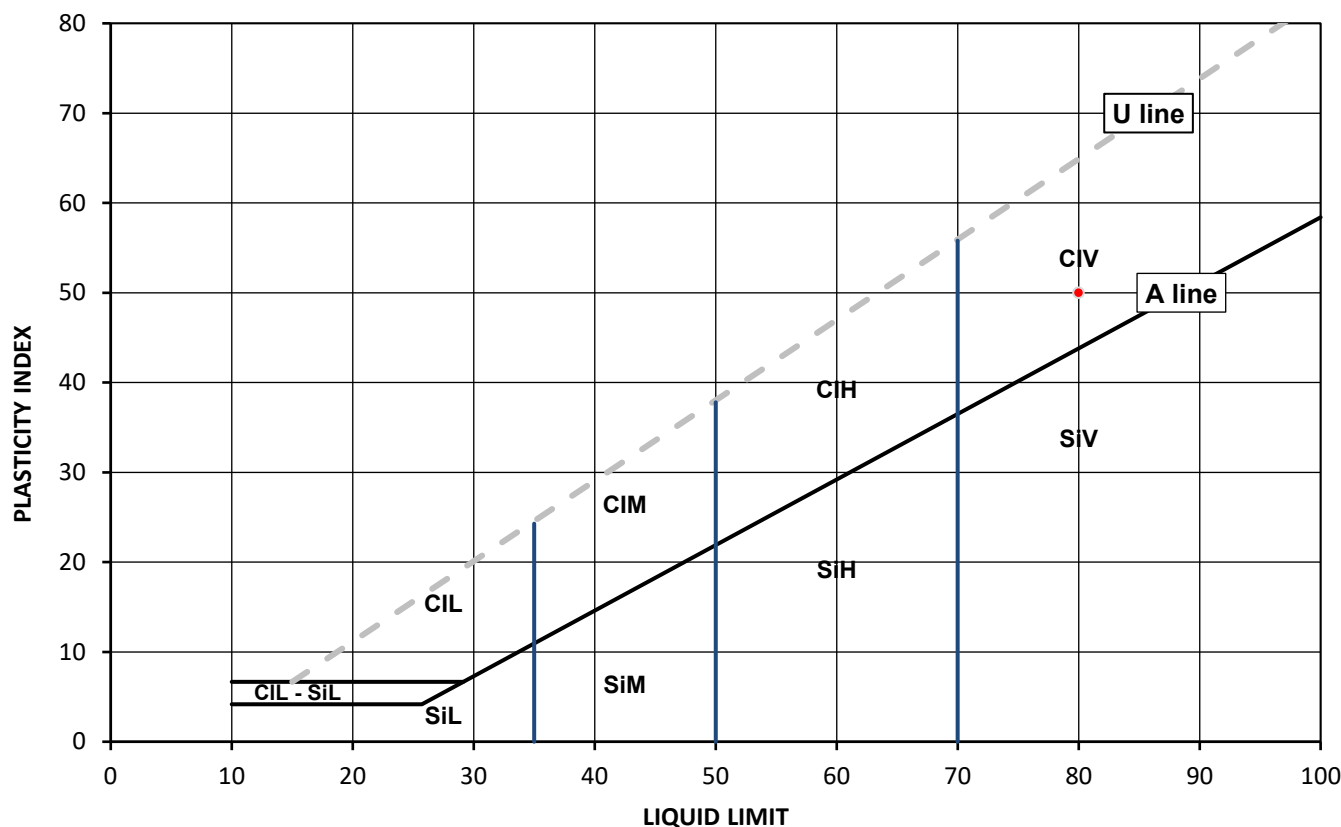
Test Results:

Laboratory Reference: 2450374
Hole No.: TP20
Sample Reference: Not Given
Sample Description: Brownish grey CLAY

Depth Top [m]: 0.70
Depth Base [m]: 1.10
Sample Type: B

Sample Preparation: Tested in natural condition

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
29	80	30	50	100



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

	Plasticity	Liquid Limit
Cl Clay	L Low	below 35
Si Silt	M Medium	35 to 50
	H High	50 to 70
	V Very high	exceeding 70
	O Organic	append to classification for organic material (eg CIHO)

Note: Water Content by BS 1377-2: 1990: Clause 3.2

Remarks:

Signed:

Anna Dudzinska
PL Deputy Head of Reporting Team
for and on behalf of i2 Analytical Ltd

Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation. This report may not be reproduced other than in full without the prior written approval of the issuing laboratory. The results included within the report relate only to the sample(s) submitted for testing.



SUMMARY REPORT

SUMMARY OF CLASSIFICATION TEST RESULTS

Tested in Accordance with:

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



4041

Client: Hydrock Consultants Ltd
Client Address: Over Court Barns, Over Lane,
Bristol, BS32 4DF

Contact: Daniel Gadsby
Site Address: Penn Hill, Calne

Water Content by BS 1377-2:1990: Clause 3.2; Atterberg by BS 1377-2: 1990:
Clause 4.3 (4 Point Test), Clause 4.4 (1 Point Test) and 5; PD by BS 1377-2:
1990: Clause 8.2

Client Reference: 24863
Job Number: 22-88322
Date Sampled: 20/09 - 29/09/2022
Date Received: 04/10/2022
Date Tested: 10/10 - 20/10/2022
Sampled By: Client - DG

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	Water Content BS 1377-2 [W] %	Water Content BS EN ISO 17892-2 [W] %	Atterberg				Density			Total Porosity# %		
		Reference	Depth Top m	Depth Base m	Type					% Passing 425um	WL %	Wp %	Ip %	bulk Mg/m3	dry Mg/m3	PD Mg/m3			
2449957	TP02	Not Given	1.20	Not Given	D	Brownish grey slightly gravelly CLAY	Atterberg 4 Point	35		99	65	24	41						
2449958	TP12	Not Given	2.00	Not Given	D	Greyish brown CLAY	Atterberg 4 Point	44		100	70	22	48						
2450372	TP15	Not Given	1.00	1.30	B	Grey CLAY		40											
2449959	TP17	Not Given	1.20	Not Given	D	Greyish brown CLAY	Atterberg 4 Point	33		100	66	28	38						
2449960	TP17	Not Given	2.00	Not Given	D	Greyish brown slightly gravelly CLAY	Atterberg 4 Point	37		99	65	28	37						
2450374	TP20	Not Given	0.70	1.10	B	Brownish grey CLAY	Atterberg 4 Point	29		100	80	30	50						
2449961	TP34	Not Given	1.00	Not Given	D	Greyish brown slightly gravelly CLAY	Atterberg 4 Point	32		99	71	23	48						
2449962	TP34	Not Given	2.70	Not Given	D	Greyish brown CLAY	Atterberg 4 Point	38		100	74	31	43						
2449963	TP37	Not Given	0.60	Not Given	D	Brown slightly gravelly CLAY	Atterberg 4 Point	20		99	79	27	52						
2449964	TP39	Not Given	1.50	Not Given	D	Light brown slightly sandy CLAY with fragments of chalk	Atterberg 4 Point	30		100	58	27	31						

Note: # Non accredited; NP - Non plastic

Comments:

Signed:

Anna Dudzinska
PL Deputy Head of Reporting Team
for and on behalf of i2 Analytical Ltd

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4041

Client: Hydrock Consultants Ltd
 Client Address: Over Court Barns, Over Lane,
 Bristol, BS32 4DF

Contact: Daniel Gadsby
 Site Address: Penn Hill, Calne

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

SUMMARY REPORT

DETERMINATION OF WATER CONTENT

Tested in Accordance with: BS 1377-2: 1990: Clause 3.2

i2 Analytical Ltd
 Unit 8 Harrowden Road
 Brackmills Industrial Estate
 Northampton NN4 7EB



Client Reference: 24863
 Job Number: 22-88322
 Date Sampled: 20/09 - 29/09/2022
 Date Received: 04/10/2022
 Date Tested: 10/10 - 20/10/2022
 Sampled By: Client - DG

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	WC	Sample preparation / Oven temperature at the time of testing			
		Reference	Depth Top m	Depth Base m	Type							
2449957	TP02	Not Given	1.20	Not Given	D	Brownish grey slightly gravelly CLAY		35	Sample was quartered, oven dried at 109 °C			
2449958	TP12	Not Given	2.00	Not Given	D	Greyish brown CLAY		44	Sample was quartered, oven dried at 109 °C			
2450372	TP15	Not Given	1.00	1.30	B	Grey CLAY		40	Sample was quartered, oven dried at 109 °C			
2449959	TP17	Not Given	1.20	Not Given	D	Greyish brown CLAY		33	Sample was quartered, oven dried at 109 °C			
2449960	TP17	Not Given	2.00	Not Given	D	Greyish brown slightly gravelly CLAY		37	Sample was quartered, oven dried at 109 °C			
2450374	TP20	Not Given	0.70	1.10	B	Brownish grey CLAY		29	Sample was quartered, oven dried at 109 °C			
2449961	TP34	Not Given	1.00	Not Given	D	Greyish brown slightly gravelly CLAY		32	Sample was quartered, oven dried at 109 °C			
2449962	TP34	Not Given	2.70	Not Given	D	Greyish brown CLAY		38	Sample was quartered, oven dried at 109 °C			
2449963	TP37	Not Given	0.60	Not Given	D	Brown slightly gravelly CLAY		20	Sample was quartered, oven dried at 109 °C			
2449964	TP39	Not Given	1.50	Not Given	D	Light brown slightly sandy CLAY with fragments of chalk		30	Sample was quartered, oven dried at 109 °C			

Comments:

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Signed:

Anna Dudzinska
 PL Deputy Head of Reporting Team
 for and on behalf of i2 Analytical Ltd

Client: Hydrock Consultants Ltd
Client Address: Over Court Barns, Over Lane,
Bristol, BS32 4DF

Contact: Daniel Gadsby
Site Address: Penn Hill, Calne

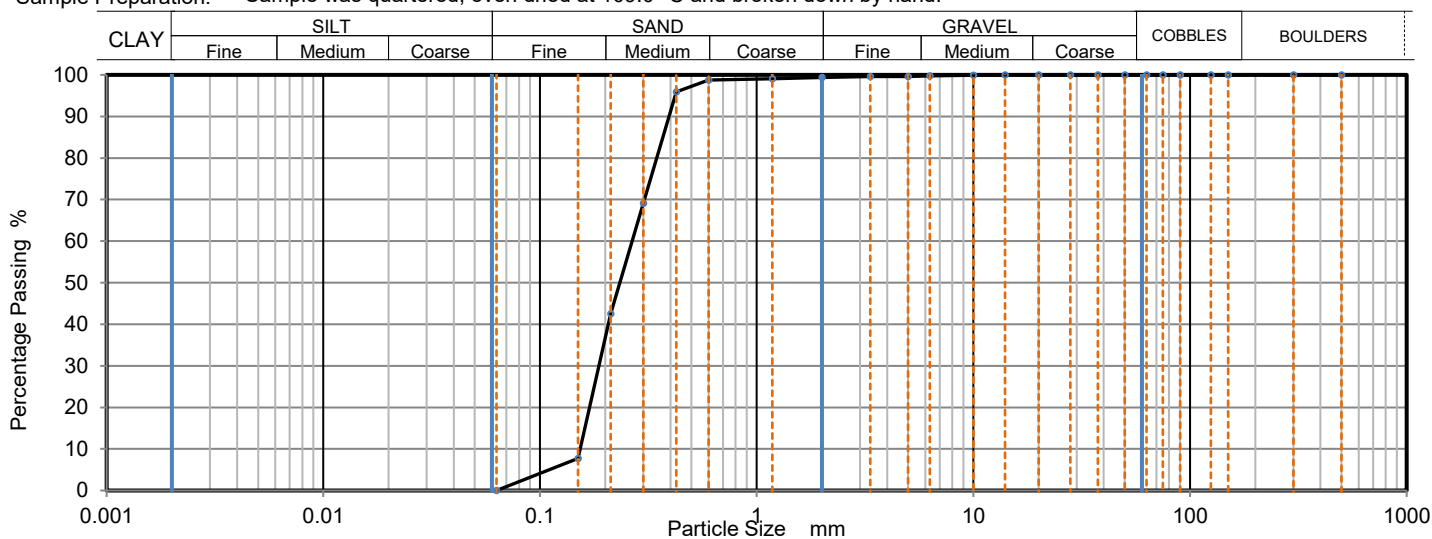
Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Client Reference: 24863
Job Number: 22-88322
Date Sampled: 21/09/2022
Date Received: 04/10/2022
Date Tested: 20/10/2022
Sampled By: Client - DG

Test Results:

Laboratory Reference: 2450371
Hole No.: TP13
Sample Reference: Not Given
Sample Description: Light brown SAND
Sample Preparation: Sample was quartered, oven dried at 109.0 °C and broken down by hand.

Depth Top [m]: 1.40
Depth Base [m]: 2.00
Sample Type: B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
150	100		
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	99		
1.18	99		
0.6	99		
0.425	96		
0.3	69		
0.212	43		
0.15	8		
0.063	0		

Sample Proportions	% dry mass
Very coarse	0
Gravel	1
Sand	99
Fines <0.063mm	0

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	1.7
Curvature Coefficient	0.86

Uniformity Coefficient calculated in accordance with BS EN ISO 14688-2:2018

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.3

Remarks:

Signed:

Anna Dudzinska
PL Deputy Head of Reporting Team
for and on behalf of i2 Analytical Ltd

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Client: Hydrock Consultants Ltd
Client Address: Over Court Barns, Over Lane,
Bristol, BS32 4DF

Contact: Daniel Gadsby
Site Address: Penn Hill, Calne

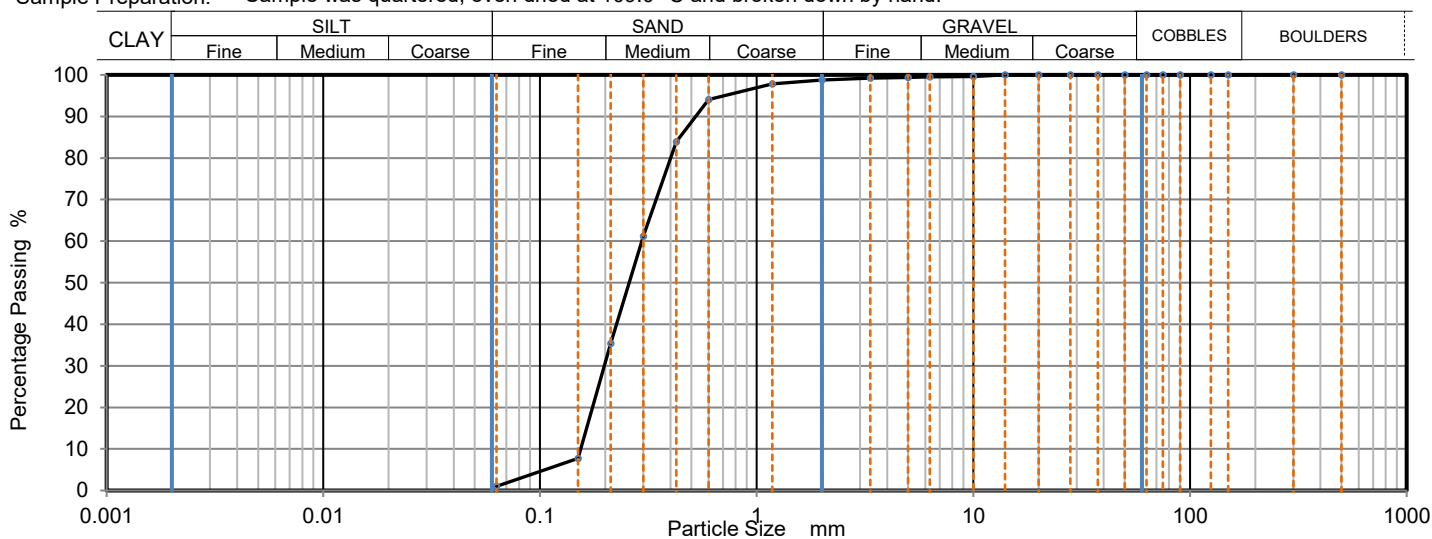
Client Reference: 24863
Job Number: 22-88322
Date Sampled: 23/09/2022
Date Received: 04/10/2022
Date Tested: 20/10/2022
Sampled By: Client - DG

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference: 2450373
Hole No.: TP18
Sample Reference: Not Given
Sample Description: Dark brown slightly clayey SAND
Sample Preparation: Sample was quartered, oven dried at 109.0 °C and broken down by hand.

Depth Top [m]: 0.50
Depth Base [m]: 0.80
Sample Type: B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
150	100		
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	99		
3.35	99		
2	99		
1.18	98		
0.6	94		
0.425	84		
0.3	61		
0.212	35		
0.15	8		
0.063	2		

Sample Proportions	% dry mass
Very coarse	0
Gravel	1
Sand	97
Fines <0.063mm	2

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	1.9
Curvature Coefficient	0.86

Uniformity Coefficient calculated in accordance with BS EN ISO 14688-2:2018

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks:

Signed:

Anna Dudzinska
PL Deputy Head of Reporting Team
for and on behalf of i2 Analytical Ltd

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Client: Hydrock Consultants Ltd
Client Address: Over Court Barns, Over Lane,
Bristol, BS32 4DF

Contact: Daniel Gadsby
Site Address: Penn Hill, Calne

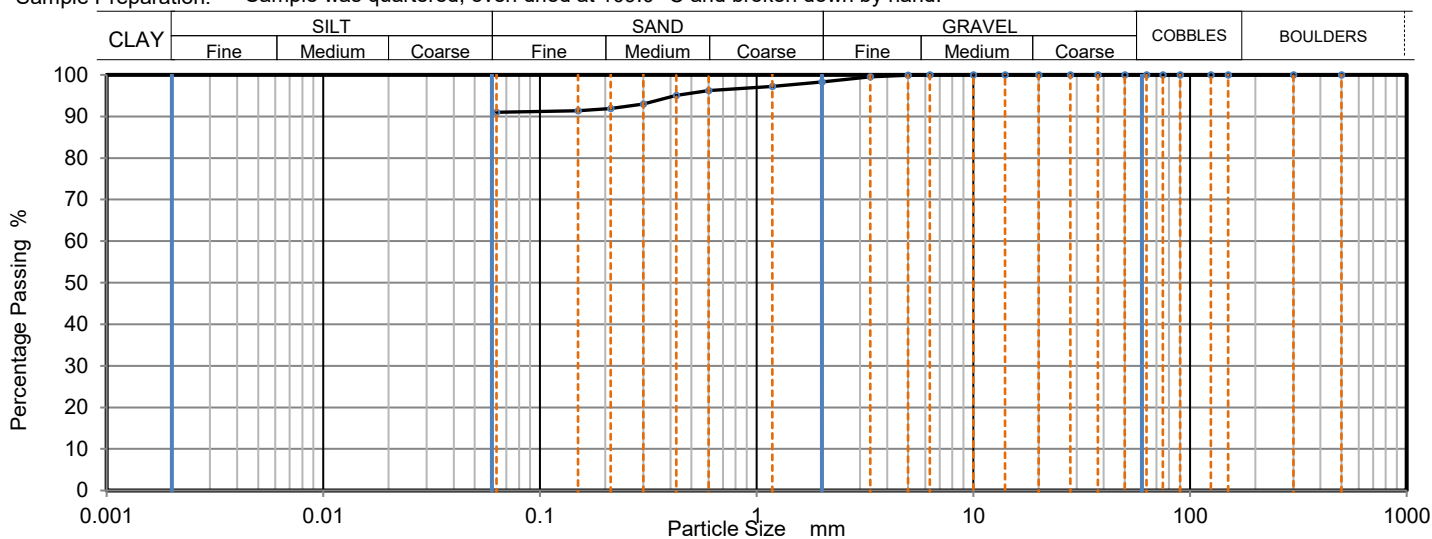
Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Client Reference: 24863
Job Number: 22-88322
Date Sampled: 27/09/2022
Date Received: 04/10/2022
Date Tested: 20/10/2022
Sampled By: Client - DG

Test Results:

Laboratory Reference: 2450375
Hole No.: WS08
Sample Reference: Not Given
Sample Description: Greyish brown slightly gravelly slightly sandy CLAY
Sample Preparation: Sample was quartered, oven dried at 109.0 °C and broken down by hand.

Depth Top [m]: 1.20
Depth Base [m]: 2.00
Sample Type: B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
150	100		
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	98		
1.18	97		
0.6	96		
0.425	95		
0.3	93		
0.212	92		
0.15	91		
0.063	91		

Sample Proportions	% dry mass
Very coarse	0
Gravel	2
Sand	7
Fines <0.063mm	91

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	N/A
Curvature Coefficient	

Uniformity Coefficient calculated in accordance with BS EN ISO 14688-2:2018

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks:

Signed:

Anna Dudzinska
PL Deputy Head of Reporting Team
for and on behalf of i2 Analytical Ltd

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Hydrock Consultants Ltd
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e: Group Bristol cc engineer

i2 Analytical Ltd.
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WD18 8YS

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e: reception@i2analytical.com

Analytical Report Number : 22-88341

Project / Site name:	Penn Hill, Calne	Samples received on:	04/10/2022
Your job number:	24863	Samples instructed on/ Analysis started on:	04/10/2022
Your order number:	PO20526	Analysis completed by:	21/10/2022
Report Issue Number:	1	Report issued on:	21/10/2022
Samples Analysed:	4 soil samples		


Signed:

Adam Fenwick
Technical Reviewer
For & on behalf of i2 Analytical Ltd.

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

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

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

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

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

Analytical Report Number: 22-88341
Project / Site name: Penn Hill, Calne
Your Order No: PO20526

Lab Sample Number				2450105	2450106	2450107	2450442
Sample Reference				TP03	TP11	TP18	TP26
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.50	2.40	1.50	0.90-1.20
Date Sampled				20/09/2022	21/09/2022	23/09/2022	23/09/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status				
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	15	28	18	16
Total mass of sample received	kg	0.001	NONE	0.9	0.5	1	0.4

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.3	7.4	5.8	8.7
Total Sulphate as SO ₄	mg/kg	50	MCERTS	780	530	73	250
Total Sulphate as SO ₄	%	0.005	MCERTS	0.078	0.053	0.007	0.025
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.14	0.17	0.0072	0.015
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	142	172	7.2	14.9
Water Soluble Chloride (2:1)	mg/kg	1	MCERTS	2.2	12	4.1	1.3
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	1.1	6	2.1	0.7
Total Sulphur	mg/kg	50	MCERTS	760	2700	< 50	160
Total Sulphur	%	0.005	MCERTS	0.076	0.267	< 0.005	0.016
Ammoniacal Nitrogen as NH ₄	mg/kg	0.5	MCERTS	< 0.5	1.9	< 0.5	< 0.5
Ammonium as NH ₄ (10:1 leachate equivalent)	mg/l	0.05	MCERTS	< 0.05	0.19	< 0.05	< 0.05
Water Soluble Nitrate (2:1) as NO ₃	mg/kg	2	NONE	3.4	< 2.0	< 2.0	2.3
Water Soluble Nitrate (2:1) as NO ₃ (leachate equivalent)	mg/l	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0

Heavy Metals / Metalloids

Magnesium (water soluble)	mg/kg	5	NONE	< 5.0	< 5.0	5.4	7.9
Magnesium (leachate equivalent)	mg/l	2.5	NONE	< 2.5	< 2.5	2.7	3.9

U/S = Unsuitable Sample I/S = Insufficient Sample

Analytical Report Number : 22-88341

Project / Site name: Penn Hill, Calne

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2450105	TP03	None Supplied	0.5	Brown clay.
2450106	TP11	None Supplied	2.4	Brown clay.
2450107	TP18	None Supplied	1.5	Brown clay and sand.
2450442	TP26	None Supplied	0.90-1.20	Brown clay and sand with gravel.

Analytical Report Number : 22-88341
Project / Site name: Penn Hill, Calne

Water matrix abbreviations:

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Chloride, water soluble, in soil	Determination of Chloride colorimetrically by discrete analyser.	In house method.	L082-PL	D	MCERTS
Magnesium, water soluble, in soil	Determination of water soluble magnesium by extraction with water followed by ICP-OES.	In-house method based on TRL 447	L038-PL	D	NONE
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Nitrate, water soluble, in soil	Determination of nitrate by reaction with sodium salicylate and colorimetry.	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08, 2:1 extraction.	L078-PL	D	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total Sulphur in soil	Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Ammonium as NH4 in soil	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method, 10:1 water extraction.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	MCERTS
Total Sulphate in soil as %	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Total Sulphur in soil as %	Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Water Soluble Nitrate (leachate equivalent)	Determination of nitrate by reaction with sodium salicylate and colorimetry.	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08, 2:1 extraction.	L078-PL	D	NONE
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS

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

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

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

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

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

**Daniel Gadsby**

Hydrock Consultants Ltd
Over Court Barns
Over Lane
Bristol
BS32 4DF

t: 01454 619533
f: 01454 614125
e: Group Bristol cc engineer

i2 Analytical Ltd.
7 Woodshots Meadow,
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Business Park,
Watford,
Herts,
WD18 8YS

t: 01923 225404
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e: reception@i2analytical.com

Analytical Report Number : 22-91801

Project / Site name:	Penn Hill, Calne	Samples received on:	21/10/2022
Your job number:	24863	Samples instructed on/ Analysis started on:	21/10/2022
Your order number:	PO20526	Analysis completed by:	27/10/2022
Report Issue Number:	1	Report issued on:	27/10/2022
Samples Analysed:	1 soil sample		

Signed:

Anna Goc
Junior Reporting Specialist
For & on behalf of i2 Analytical Ltd.

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

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

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

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

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

Analytical Report Number: 22-91801
Project / Site name: Penn Hill, Calne
Your Order No: PO20526

Lab Sample Number				2471207
Sample Reference				TP24
Sample Number				None Supplied
Depth (m)				1.80
Date Sampled				27/09/2022
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status	
Stone Content	%	0.1	NONE	< 0.1
Moisture Content	%	0.01	NONE	19
Total mass of sample received	kg	0.001	NONE	0.5

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.2
Total Sulphate as SO ₄	mg/kg	50	MCERTS	450
Total Sulphate as SO ₄	%	0.005	MCERTS	0.045
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.021
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	21.1
Water Soluble Chloride (2:1)	mg/kg	1	MCERTS	13
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	6.6
Total Sulphur	mg/kg	50	MCERTS	450
Total Sulphur	%	0.005	MCERTS	0.045
Ammoniacal Nitrogen as NH ₄	mg/kg	0.5	MCERTS	< 0.5
Ammonium as NH ₄ (10:1 leachate equivalent)	mg/l	0.05	MCERTS	< 0.05
Water Soluble Nitrate (2:1) as NO ₃	mg/kg	2	NONE	< 2.0
Water Soluble Nitrate (2:1) as NO ₃ (leachate equivalent)	mg/l	5	NONE	< 5.0

Heavy Metals / Metalloids

Magnesium (water soluble)	mg/kg	5	NONE	< 5.0
Magnesium (leachate equivalent)	mg/l	2.5	NONE	< 2.5

U/S = Unsuitable Sample I/S = Insufficient Sample

Analytical Report Number : 22-91801
Project / Site name: Penn Hill, Calne

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2471207	TP24	None Supplied	1.8	Brown clay and sand with gravel.

Analytical Report Number : 22-91801
Project / Site name: Penn Hill, Calne

Water matrix abbreviations:

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Chloride, water soluble, in soil	Determination of Chloride colorimetrically by discrete analyser.	In house method.	L082-PL	D	MCERTS
Magnesium, water soluble, in soil	Determination of water soluble magnesium by extraction with water followed by ICP-OES.	In-house method based on TRL 447	L038-PL	D	NONE
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Nitrate, water soluble, in soil	Determination of nitrate by reaction with sodium salicylate and colorimetry.	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08, 2:1 extraction.	L078-PL	D	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total Sulphur in soil	Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Ammonium as NH4 in soil	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method, 10:1 water extraction.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	MCERTS
Total Sulphate in soil as %	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Total Sulphur in soil as %	Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Water Soluble Nitrate (leachate equivalent)	Determination of nitrate by reaction with sodium salicylate and colorimetry.	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08, 2:1 extraction.	L078-PL	D	NONE
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS

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

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

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

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

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

Client Castlewood Properties Ventures Limited	Location or material to which this assessment applies Kimmeridge Clay Formation	
Project Land at Penn Hill, Calne		
Job number 24863		

Concrete in aggressive ground		After BRE Special Digest 1, 2005
Soil data		
	(Adjusted) water soluble sulfate (mg/l)	Total potential sulfate (%)
Number of tests	5	5
No. tests in 20% data set	1	1
No. tests with suspected pyrite		1
Maximum value	172	0.8
Mean of highest two values	157	1
Mean of highest 20%		
Characteristic Value	157	1
	[no pyrite]	[pyrite suspected]
DS Class	DS-1	DS-3
If pyrite suspected, DS Class limited to		DS-3
Is pyrite assumed to be present?	Yes	Adopted DS Class = DS-3
Water data		
	(Adjusted) soluble sulfate (mg/l)	Soluble magnesium (mg/l)
Characteristic Value (Maximum Level)	0	0
DS Class		
pH data		
	Soil	Water
Number of tests	5	0
No. tests in 20% data set	1	
Lowest pH	5.8	
Mean of lowest 20%	5.8	
Characteristic value	5.8	
Design value	5.8	
Number of soil pH results less than 5.5	0	
DS Class design value		ACEC Class design value
Based on higher of soil and water data		Natural ground
		Mobile groundwater
		DS-3
		AC-3

TEST CERTIFICATE

Determination of TRL Dynamic Cone Penetrometer

Tested in accordance with In TRL Road Note 31 & 8 and IAN 73/06 (2009 amendment)

Construction
Infrastructure
Environment

3 Hawthorn Park
Holdenby Road
Spratton
Northampton
NN6 8LD

United Kingdom

Tel: +44 (0)1604 842888
Fax: +44 (0)1604 842666

Email: northampton@hydrock.com

Client: Castlewood Properties
Client Address: 43-45 Devizes Road
Swindon
Wiltshire
Postcode: SN1 4BG

Site Name: Penn Hill, Calne
Site Address: Wiltshire

Job Number: 24863

Date Tested: 27.09.22

Test Results:

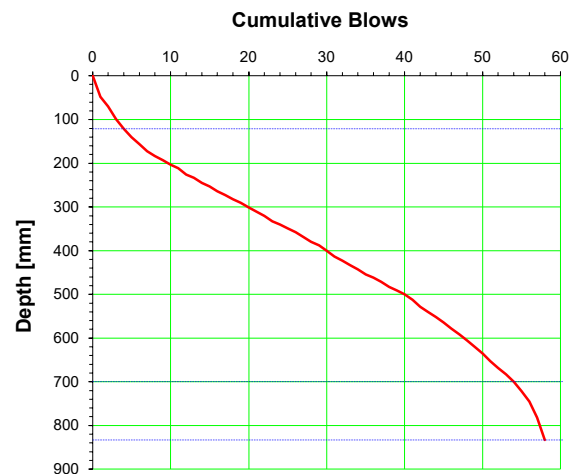
Sample Description:

Sample Number:

Start Depth [mm]: 112

Test Location: TRL01

Layer	No of Blows	Cumulative Blows	CBR [%]	Layer Thickness [mm]	Total Depth [mm]
Layer 1	4	4	8	121	121
Layer 2	50	54	23	579	700
Layer 3	4	58	7	133	833



Comments: TRL Equation : $\log_{10}(\text{CBR}) = 2.480 - 1.057 \times \log_{10}(\text{Strength})$

Approved Signatory:

Name: D Gadsby

Signed: DG

Position: Geotechnical Engineer

Date Reported: 03.10.22
Form Number: HD-TRL-DCP ver1

Page 1 of 1

for and behalf of
Hydrock
Registered Office:
Hydrock Consultants Ltd
Over Court Barns
Over Lane Almondsbury
Bristol BS32 4DF U.K.

TEST CERTIFICATE

Determination of TRL Dynamic Cone Penetrometer

Tested in accordance with In TRL Road Note 31 & 8 and IAN 73/06 (2009 amendment)

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Fax: +44 (0)1604 842666

Email: northampton@hydrock.com

Client: Castlewood Properties

Client Address: 43-45 Devizes Road
Swindon
Wiltshire

Postcode: SN1 4BG

Site Name: Penn Hill, Calne

Site Address: Wiltshire

Job Number: 24863

Date Tested: 27.09.22

Test Results:

Sample Description:

Sample Number:

Start Depth [mm]: 92

Test Location: TRL02

Layer	No of Blows	Cumulative Blows	CBR [%]	Layer Thickness [mm]	Total Depth [mm]
Layer 1	9	9	11	203	203
Layer 2	23	32	18	340	543
Layer 3	7	39	6	275	818



Comments: TRL Equation : $\log_{10}(\text{CBR}) = 2.480 - 1.057 \times \log_{10}(\text{Strength})$

Approved Signatory:

Name: D Gadsby

Signed: DG

Position: Geotechnical Engineer

Date Reported: 03.10.22
Form Number: HD-TRL-DCP ver1

Page 1 of 1

for and behalf of

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NN6 8LD

United Kingdom

Tel: +44 (0)1604 842888
Fax: +44 (0)1604 842666

Email: northampton@hydrock.com

Client: Castlewood Properties
Client Address: 43-45 Devizes Road
Swindon
Wiltshire
Postcode: SN1 4BG

Site Name: Penn Hill, Calne
Site Address: Wiltshire

Job Number: 24863

Date Tested: 27.09.22

Test Results:

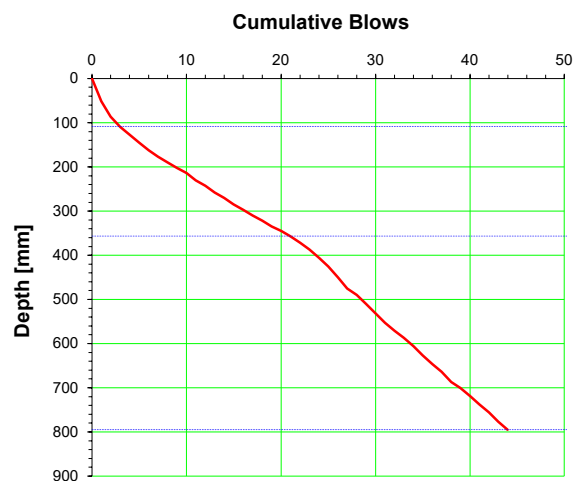
Sample Description:

Sample Number:

Start Depth [mm]: 116

Test Location: TRL04

Layer	No of Blows	Cumulative Blows	CBR [%]	Layer Thickness [mm]	Total Depth [mm]
Layer 1	3	3	7	109	109
Layer 2	18	21	19	248	357
Layer 3	23	44	13	438	795



Comments: TRL Equation : $\log_{10}(\text{CBR}) = 2.480 - 1.057 \times \log_{10}(\text{Strength})$

Approved Signatory:

Name: D Gadsby

Signed: DG

Position: Geotechnical Engineer

Date Reported: 03.10.22
Form Number: HD-TRL-DCP ver1

Page 1 of 1

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Registered Office:
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United Kingdom

Tel: +44 (0)1604 842888
Fax: +44 (0)1604 842666

Email: northampton@hydrock.com

Client: Castlewood Properties
Client Address: 43-45 Devizes Road
Swindon
Wiltshire
Postcode: SN1 4BG

Site Name: Penn Hill, Calne
Site Address: Wiltshire

Job Number: 24863

Date Tested: 27.09.22

Test Results:

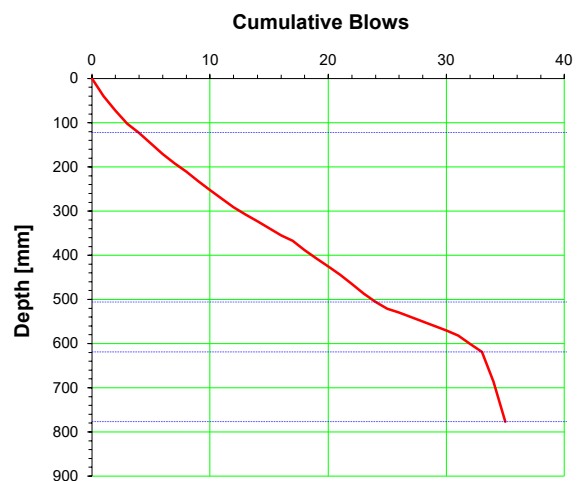
Sample Description:

Sample Number:

Start Depth [mm]: 105

Test Location: TRL05

Layer	No of Blows	Cumulative Blows	CBR [%]	Layer Thickness [mm]	Total Depth [mm]
Layer 1	4	4	8	123	123
Layer 2	20	24	13	383	506
Layer 3	9	33	21	113	619
Layer 4	2	35	3	158	777



Comments: TRL Equation : $\log_{10}(\text{CBR}) = 2.480 - 1.057 \times \log_{10}(\text{Strength})$

Approved Signatory:

Name: D Gadsby

Signed: DG

Position: Geotechnical Engineer

Date Reported: 03.10.22
Form Number: HD-TRL-DCP ver1

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Tel: +44 (0)1604 842888
Fax: +44 (0)1604 842666

Email: northampton@hydrock.com

Client: Castlewood Properties

Client Address: 43-45 Devizes Road
Swindon
Wiltshire

Postcode: SN1 4BG

Site Name: Penn Hill, Calne

Site Address: Wiltshire

Job Number: 24863

Date Tested: 27.09.22

Test Results:

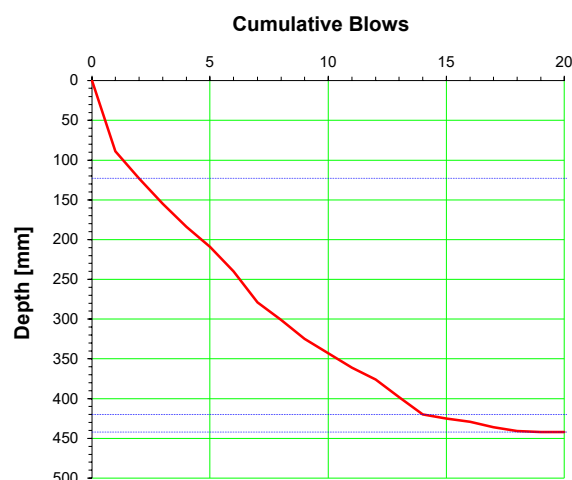
Sample Description:

Sample Number:

Start Depth [mm]: 112

Test Location: TRL06

Layer	No of Blows	Cumulative Blows	CBR [%]	Layer Thickness [mm]	Total Depth [mm]
Layer 1	2	2	4	123	123
Layer 2	12	14	10	297	420
Layer 3	6	20	76	22	442



Comments: TRL Equation : $\text{Log}_{10}(\text{CBR}) = 2.480 - 1.057 \times \text{Log}_{10}(\text{Strength})$

Approved Signatory:

Name: D Gadsby

Signed: DG

Position: Geotechnical Engineer

Date Reported: 03.10.22
Form Number: HD-TRL-DCP ver1

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NN6 8LD

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Email: northampton@hydrock.com

Client: Castlewood Properties

Client Address: 43-45 Devizes Road
Swindon
Wiltshire

Postcode: SN1 4BG

Site Name: Penn Hill, Calne

Site Address: Wiltshire

Job Number: 24863

Date Tested: 27.09.22

Test Results:

Sample Description:

Sample Number:

Start Depth [mm]: 142

Test Location: TRL07

Layer	No of Blows	Cumulative Blows	CBR [%]	Layer Thickness [mm]	Total Depth [mm]
Layer 1	5	5	9	146	146
Layer 2	45	50	20	597	743
Layer 3	2	52	16	33	776



Comments: TRL Equation : $\text{Log}_{10}(\text{CBR}) = 2.480 - 1.057 \times \text{Log}_{10}(\text{Strength})$

Approved Signatory:

Name: D Gadsby

Signed: DG

Position: Geotechnical Engineer

Date Reported: 03.10.22
Form Number: HD-TRL-DCP ver1

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TEST CERTIFICATE

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Fax: +44 (0)1604 842666

Email: northampton@hydrock.com

Client: Castlewood Properties

Client Address: 43-45 Devizes Road
Swindon
Wiltshire

Postcode: SN1 4BG

Site Name: Penn Hill, Calne

Site Address: Wiltshire

Job Number: 24863

Date Tested: 27.09.22

Test Results:

Sample Description:

Sample Number:

Start Depth [mm]: 102

Test Location: TRL08

Layer	No of Blows	Cumulative Blows	CBR [%]	Layer Thickness [mm]	Total Depth [mm]
Layer 1	4	4	9	111	111
Layer 2	39	43	22	474	585
Layer 3	9	52	10	234	819



Comments: TRL Equation : $\text{Log}_{10}(\text{CBR}) = 2.480 - 1.057 \times \text{Log}_{10}(\text{Strength})$

Approved Signatory:

Name: D Gadsby

Signed: DG

Position: Geotechnical Engineer

Date Reported: 03.10.22
Form Number: HD-TRL-DCP ver1

Page 1 of 1

for and behalf of
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Registered Office:
Hydrock Consultants Ltd
Over Court Barns
Over Lane Almondsbury
Bristol BS32 4DF U.K.



STRUCTURAL SOILS LTD

INSITU TESTING REPORT



1774

Report No. 751000R.01(00)

Date 28-September-2022 Contract Penn Hill, Calne

Client Hydrock Contracting Limited
Address Over Court Barns
Over Lane
Almondsbury
Bristol
BS32 4DF

For the Attention of Daniel Gadsby

Order received	06-September-2022	Client Reference	24863-GSWB
Testing Started	28-September-2022	Client Order No.	PO19750
Testing Completed	28-September-2022	Instruction Type	Written

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

UKAS Accredited Tests

Not UKAS Accredited Tests

4no. Soakaway tests carried out at locations specified by client.

The results represent the ground conditions at the specified locations and depths at the time of testing.

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

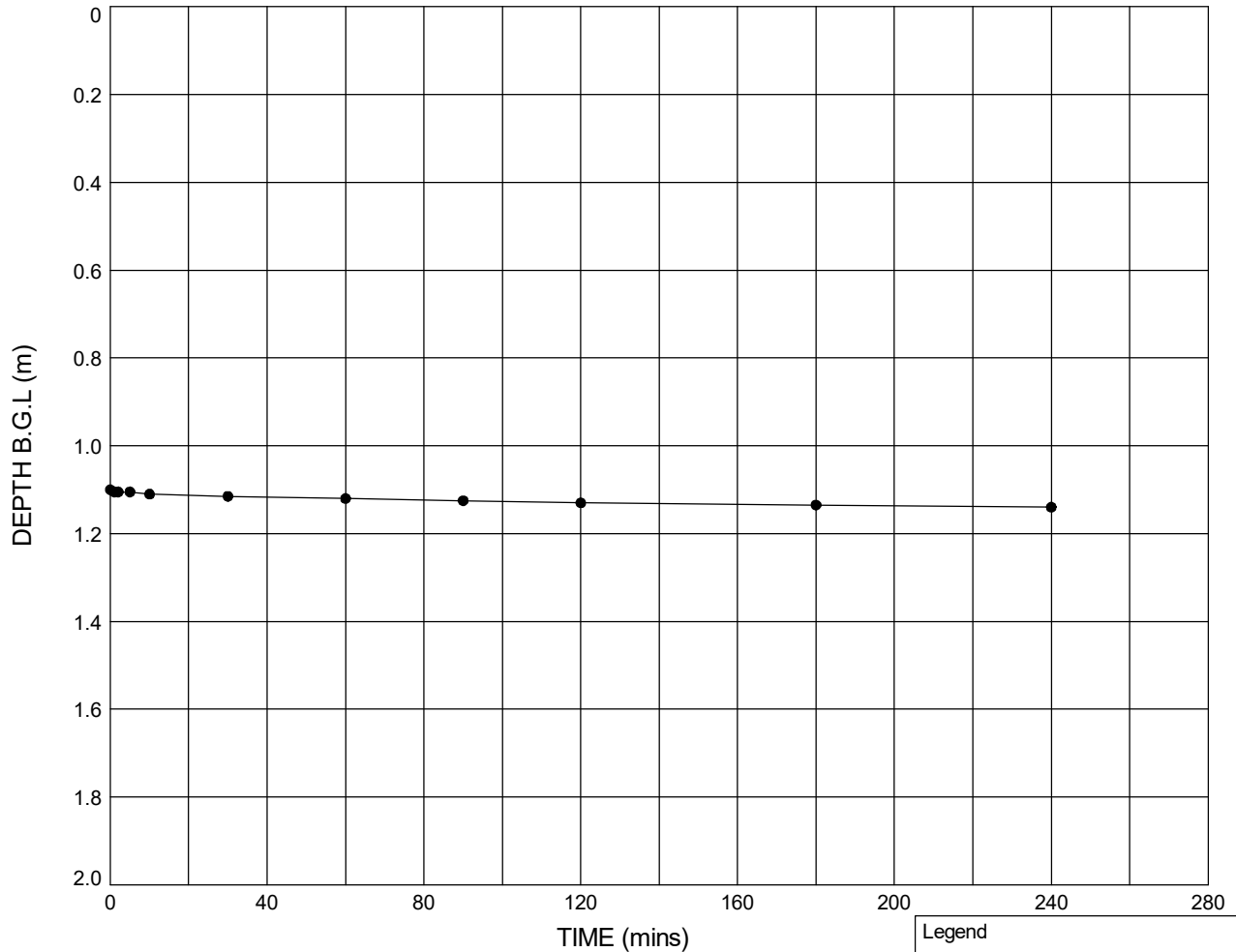
Structural Soils Ltd 1a Princess Street Bedminster Bristol BS3 4AG Tel.0117 9471000. e-mail dimitris.xirouchakis@soils.co.uk

FULL SCALE SOAKAWAY TEST

Non-standard test

Soakaway Test - Position ID : **SA1**

PLOT OF DEPTH OF WATER BELOW GROUND LEVEL AGAINST TIME



Test 1

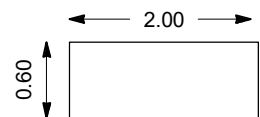
Pit start depth: = **1.95** m
Pit final depth: = **1.92** m
Effective depth, D_e = **0.82** m
Effective storage volume, V_{p75-25} = **0.4920** m³
Surface area, a_{s50} = **3.3320** m²
Time, t_{p75-25} = **N/A** secs
Infiltration rate, f = **N/A** m/s

Notes: Test 1 - Unable to calculate infiltration rate due to insufficient drop in water level.

Legend

● Test 1 (26.09.22)

Plan (Not to scale)



No Bearing Taken



STRUCTURAL SOILS
1a Princess Street
Bedminster
Bristol
BS3 4AG

Compiled By

Date

Checked By

Date

K. Flunacher

27/09/22

S. H. R.

28/09/22

Contract

Penn Hill, Calne

Contract Ref:

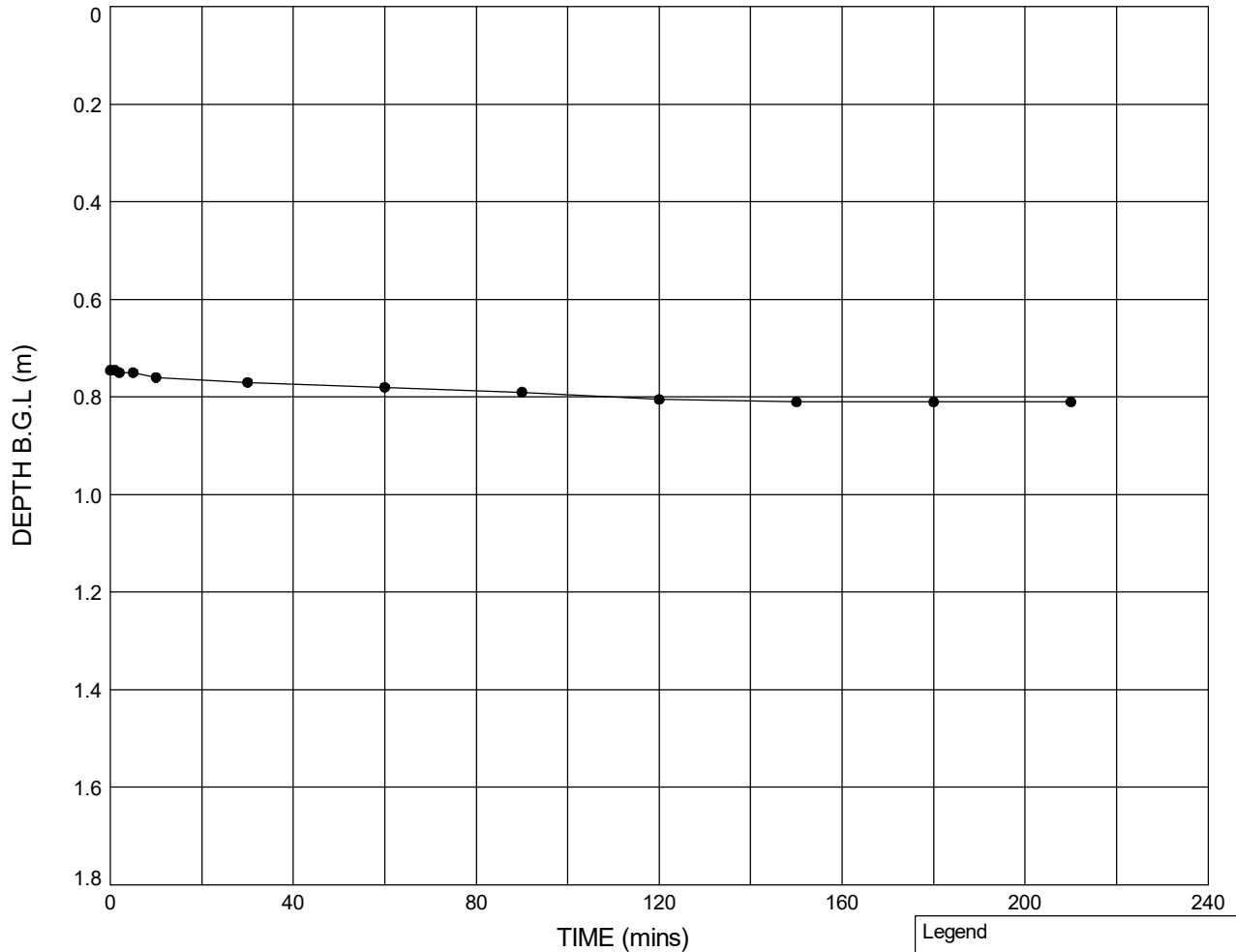
751000

FULL SCALE SOAKAWAY TEST

Non-standard test

Soakaway Test - Position ID : **SA2**

PLOT OF DEPTH OF WATER BELOW GROUND LEVEL AGAINST TIME



Test 1

Pit start depth: = **1.75** m

Pit final depth: = **1.64** m

Effective depth, D_e = **0.90** m

Effective storage volume, V_{p75-25} = **0.5370** m³

Surface area, a_{s50} = **3.5270** m²

Time, t_{p75-25} = **N/A** secs

Infiltration rate, f = **N/A** m/s

Notes: Test 1 - Unable to calculate infiltration rate due to insufficient drop in water level.

Legend

● Test 1 (26.09.22)

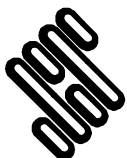
Plan (Not to scale)

← 2.00 →

0.60 ↑

↓

No Bearing Taken



STRUCTURAL SOILS
1a Princess Street
Bedminster
Bristol
BS3 4AG

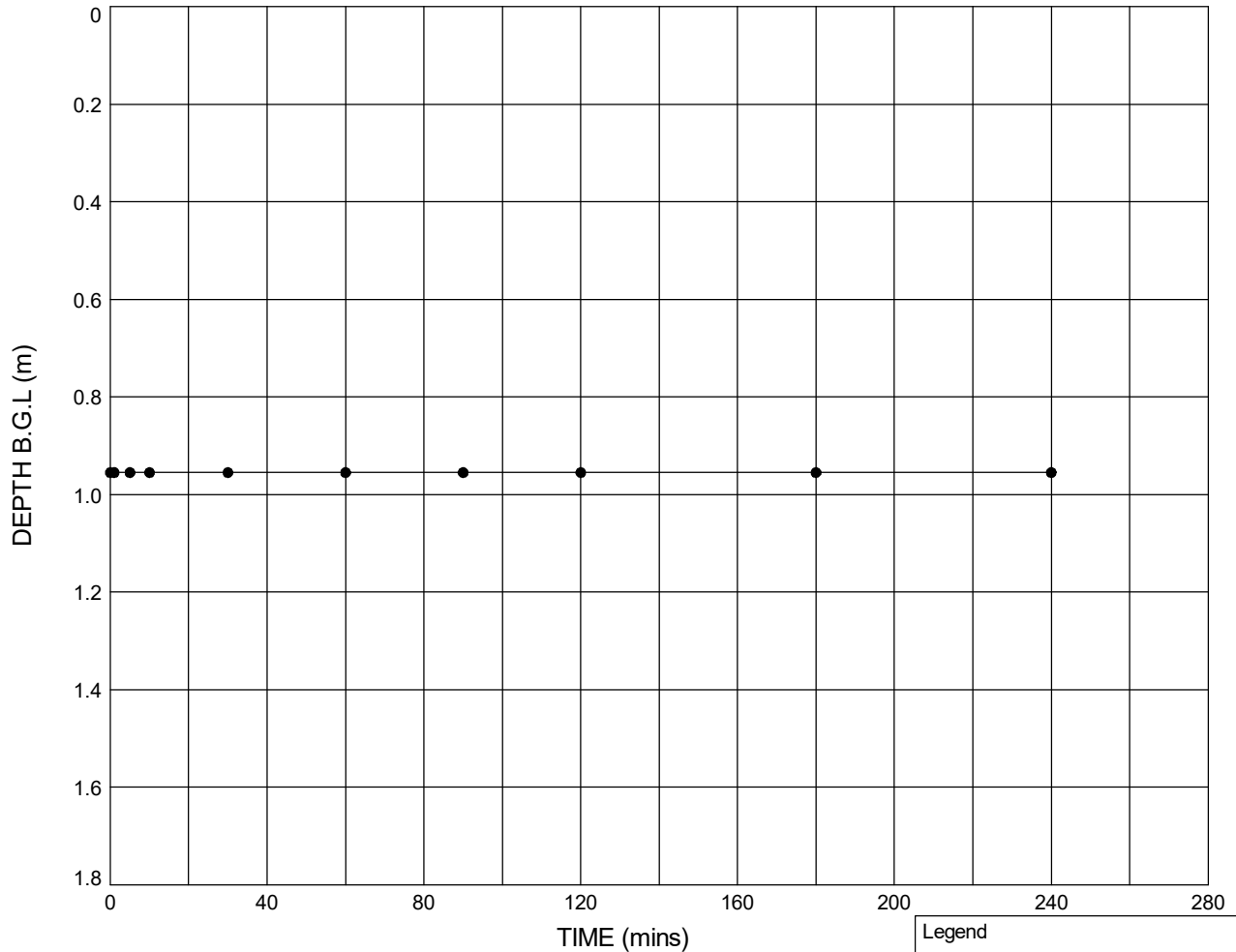
Compiled By	Date	Checked By	Date
<i>K. Flunacher</i>	27/09/22	<i>S. A. R.</i>	28/09/22
Contract		Contract Ref:	
Penn Hill, Calne		751000	

FULL SCALE SOAKAWAY TEST

Non-standard test

Soakaway Test - Position ID : **SA3**

PLOT OF DEPTH OF WATER BELOW GROUND LEVEL AGAINST TIME



Test 1

Pit start depth: = **1.85** m

Pit final depth: = **1.85** m

Effective depth, D_e = **0.90** m

Effective storage volume, V_{p75-25} = **0.5907** m³

Surface area, a_{s50} = **3.8260** m²

Time, t_{p75-25} = **N/A** secs

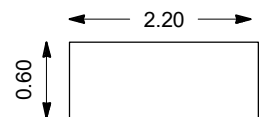
Infiltration rate, f = **N/A** m/s

Notes: Test 1 - Unable to calculate infiltration rate due to insufficient drop in water level.

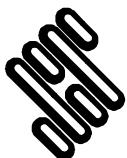
Legend

● Test 1 (27.09.22)

Plan (Not to scale)



No Bearing Taken



STRUCTURAL SOILS
1a Princess Street
Bedminster
Bristol
BS3 4AG

Compiled By

Date

Checked By

Date

K. Flunacher

27/09/22

S. A. R.

28/09/22

Contract

Penn Hill, Calne

Contract Ref:

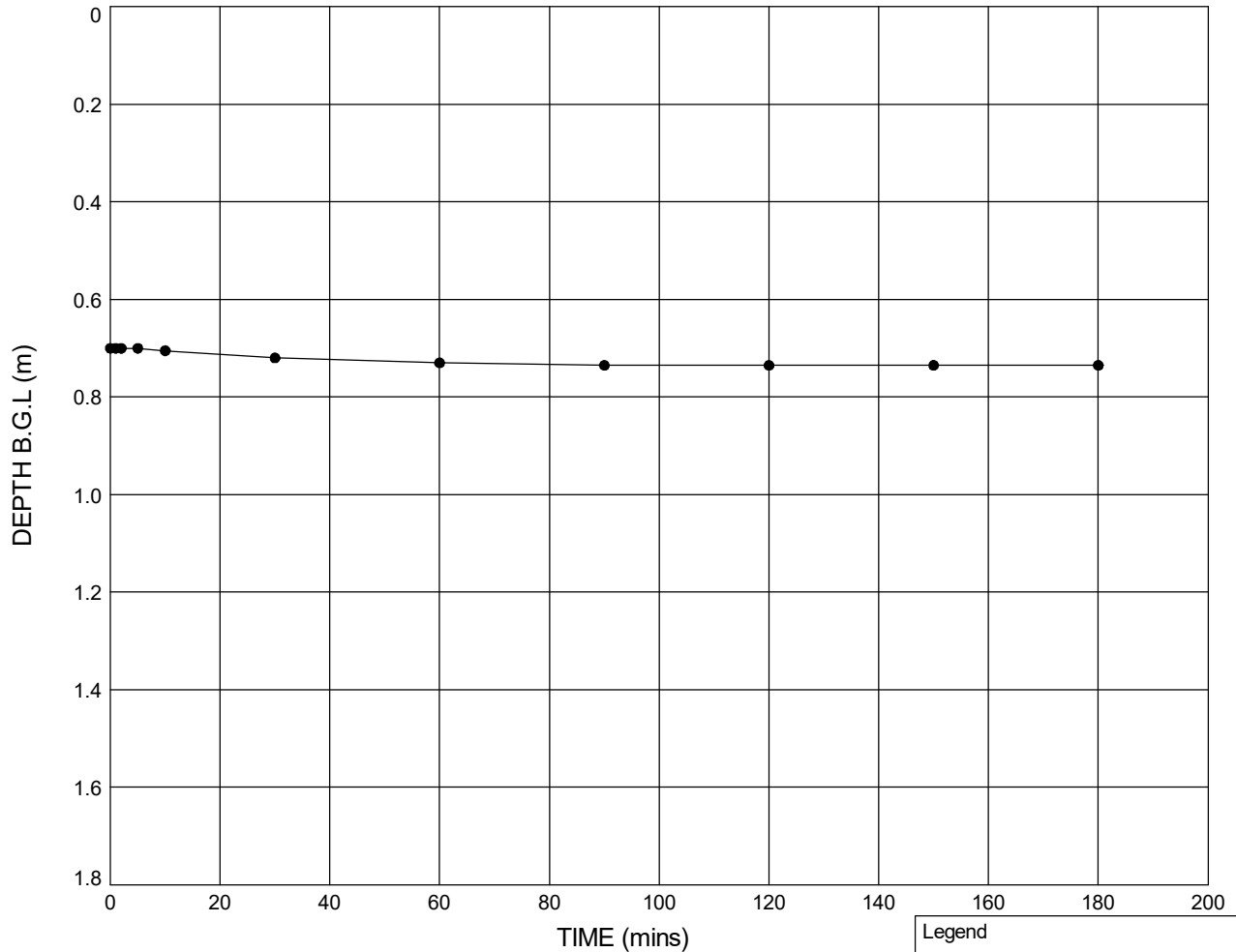
751000

FULL SCALE SOAKAWAY TEST

Non-standard test

Soakaway Test - Position ID : **SA4**

PLOT OF DEPTH OF WATER BELOW GROUND LEVEL AGAINST TIME



Test 1

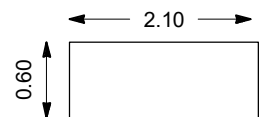
Pit start depth: = **1.80** m
 Pit final depth: = **1.80** m
 Effective depth, D_e = **1.10** m
 Effective storage volume, V_{p75-25} = **0.6930** m³
 Surface area, a_{s50} = **4.2300** m²
 Time, t_{p75-25} = **N/A** secs
 Infiltration rate, f = **N/A** m/s

Notes: Test 1 - Unable to calculate infiltration rate due to insufficient drop in water level.

Legend

● Test 1 (27.09.22)

Plan (Not to scale)



No Bearing Taken



STRUCTURAL SOILS
 1a Princess Street
 Bedminster
 Bristol
 BS3 4AG

Compiled By

Date

Checked By

Date

K. Flunacher

27/09/22

S. H. R.

28/09/22

Contract

Penn Hill, Calne

Contract Ref:

751000

Appendix G Site Monitoring Data and Ground Gas Risk Assessment

Site: Penn Hill, Calne Job number: C-24863 Client: Castlewood Properties Ventures Limited								Notes on site conditions: 06.10.22 - warm 19°C, sunny, breezy, dry but rainfall in previous 24 hours. 18.10.22 - warm, sunny - heavy rainfall in previous 48 hours.																			
Gas analyser: GA5000																											
Equipment check OK: Y																											
Service in date: Y																											
Calibration check OK: Y																											
Name of person monitoring: AH / DG																											
Monitoring round		Borehole details						Pressure and flow					Gas concentrations									GSV		Local conditions			
Date	Time	Borehole	Single or dual gas tap	Response zone depth (m)	Depth to water or depth of hole if dry (m)	D denotes dry hole	Volume of headspace in BH (well pipe & filter pack) (m³)	Atmospheric pressure (hPa)	Atm pressure falling / rising / steady	Relative BH pressure (hPa)	Gas flow* (l/hr)	Gas flow* (absolute value) (l/hr)	VOC (as ppm using PID)	CH ₄ (%v/v)		CH ₄ (%LEL)		CO ₂ (%v/v)		O ₂ (%v/v)		Other Gases	PID	Gas Screening Value (CH ₄) (l/hr)	Gas Screening Value (CO ₂) (l/hr)	Notes on condition of borehole and surrounding ground	
														Initial	Steady	Initial	Steady	Initial	Steady	Initial	Steady						
								Max. individual values:				0.2	0.1		0.6		21.2		0.0001		0.0012		Summary statistics for this monitoring period.				
								Min. individual values:				0.0	0.0		0.1		20.5		0		0						
								Worst-case GSVs based on max. individual flow and max. individual conc. over the duration of this table:						0.0002		0.0012											
06.10.22	13:35	WS01	S		1.81		0.00675	1014	F	0.07	0.0	0.0		0.1	0.0			0.5	0.6	21.1	20.8			0	0	DTB = 4.79m bgl.	
18.10.22		WS01	S		1.9		0.00709	1016	F	0.02	0.1	0.1		0.1	0.1			0.1	0.4	21.5	21.2			0.0001	0.0004	DTB = 4.80m bgl. Groundwater samples taken. Sulphuric odour after 3rd bail of groundwater.	
		WS01	S																								
		WS01	S																								
		WS01	S																								
06.10.22	14:05	WS03	S		4.41		0.01645	1015	F	0.09	0.1	0.1		0.0	0.0			0.1	0.1	20.8	20.8			0	0.0001	DTB = 4.48m bgl.	
18.10.22	13:10	WS03	S		4.21		0.01571	1016	F	0.02	0.1	0.1		0.1	0.1			0.1	0.4	21.5	21.2			0.0001	0.0004	DTB = 4.52m bgl. No monitoring undertaken due to broken gas tap.	
		WS03	S																								
		WS03	S																								
		WS03	S																								
06.10.22	12:35	WS05	S		4.43		0.01653	1015	F	0.07	0.1	0.1		0.1	0.0			0.2	0.6	20.8	20.5			0	0.0006	DTB = 4.49m bgl.	
18.10.22	12:48	WS05	S		4.27		0.01593	1017	F	0.09	0.1	0.1		0.1	0.1			0.1	0.4	21.4	21.2			0.0001	0.0004	DTB = 4.49m bgl. CO = 1ppm for first 15 seconds.	
		WS05	S																								
		WS05	S																								
		WS05	S																								
06.10.22	13:00	WS07	S		4.57		0.01705	1015	F	0.05	0.2	0.2		0.0	0.0			0.5	0.6	20.7	20.5			0	0.0012	DTB = 4.66m bgl.	
18.10.22	12:58	WS07	S		4.44		0.01656	1017	F	0.07	0.1	0.1		0.1	0.1			0.1	0.5	21.4	21			0.0001	0.0005	DTB = 4.63m bgl. CO = 1ppm for first 20 secnds.	
		WS07	S																								
		WS07	S																								
		WS07	S																								
06.10.22	12:15	WS10	S		0.20		0.00075	1014	F	0.05																DTB = 4.48m bgl. Water level at top of standpipe, gas monitoring not done.	

Monitoring round		Borehole details						Pressure and flow					Gas concentrations									GSV		Local conditions		
Date	Time	Borehole	Single or dual gas tap	Response zone depth (m)	Depth to water or depth of hole if dry (m)	D denotes dry hole	Volume of headspace in BH (well pipie & filter pack) (m³)	Atmospheric pressure (hPa)	Atm pressure falling / rising / steady	Relative BH pressure (hPa)	Gas flow* (l/hr)	Gas flow* (absolute value) (l/hr)	VOC (as ppm using PID)	CH ₄ (%v/v)		CH ₄ (%LEL)		CO ₂ (%v/v)		O ₂ (%v/v)		Other Gases	PID	Gas Screening Value (CH ₄) (l/hr)	Gas Screening Value (CO ₂) (l/hr)	Notes on condition of borehole and surrounding ground
														Initial	Steady	Initial	Steady	Initial	Steady	Initial	Steady					
18.10.22		WS10	S		0.2		0.00075																		DTB = 4.46m bgl. Water level at top of standpipe, gas monitoring not done. Groundwater samples taken.	

Appendix H Contamination Test Results and GQRA

Contamination Test Results



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Analytical Report Number : 22-87620

Project / Site name:	Penn Hill, Calne	Samples received on:	30/09/2022
Your job number:	24863	Samples instructed on/ Analysis started on:	30/09/2022
Your order number:	PO20486	Analysis completed by:	07/10/2022
Report Issue Number:	1	Report issued on:	07/10/2022
Samples Analysed:	1 soil sample		


Signed:

Adam Fenwick
Technical Reviewer
For & on behalf of i2 Analytical Ltd.

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

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

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

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

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

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

Analytical Report Number: 22-87620
Project / Site name: Penn Hill, Calne
Your Order No: PO20486

Lab Sample Number				2445719
Sample Reference				WS08
Sample Number				102
Depth (m)				0.40
Date Sampled				27/09/2022
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status	
Stone Content	%	0.1	NONE	< 0.1
Moisture Content	%	0.01	NONE	13
Total mass of sample received	kg	0.001	NONE	1

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

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0
Water Soluble SO ₄ ²⁻ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.035
Fraction Organic Carbon (FOC) Automated	N/A	0.001	MCERTS	0.0092

Total Phenols

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

Naphthalene	mg/kg	0.05	MCERTS	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.35
Pyrene	mg/kg	0.05	MCERTS	0.29
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.2
Chrysene	mg/kg	0.05	MCERTS	0.18
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	1.02
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	49
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.71
Boron (water soluble)	mg/kg	0.2	MCERTS	0.3
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8
Chromium (III)	mg/kg	1	NONE	22
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	22
Copper (aqua regia extractable)	mg/kg	1	MCERTS	14
Lead (aqua regia extractable)	mg/kg	1	MCERTS	13
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	12
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	37
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	30

Analytical Report Number: 22-87620
 Project / Site name: Penn Hill, Calne
 Your Order No: PO20486

Lab Sample Number				2445719
Sample Reference				WS08
Sample Number				102
Depth (m)				0.40
Date Sampled				27/09/2022
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status	

U/S = Unsuitable Sample I/S = Insufficient Sample

Analytical Report Number : 22-87620

Project / Site name: Penn Hill, Calne

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2445719	WS08	102	0.4	Brown clay and sand with gravel.

Analytical Report Number : 22-87620

Project / Site name: Penn Hill, Calne

Water matrix abbreviations:

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
Fraction Organic Carbon FOC Automated	Determination of fraction of organic carbon in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method	L009	D	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.

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

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

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



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Analytical Report Number : 22-87628

Replaces Analytical Report Number: 22-87628, issue no. 1
Additional analysis undertaken.

Project / Site name:	Penn Hill, Calne	Samples received on:	30/09/2022
Your job number:	24863	Samples instructed on/ Analysis started on:	03/10/2022
Your order number:	PO20486	Analysis completed by:	28/10/2022
Report Issue Number:	2	Report issued on:	28/10/2022
Samples Analysed:	24 soil samples		

Signed:

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

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

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

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

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

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Analytical Report Number: 22-87628
Project / Site name: Penn Hill, Calne
Your Order No: PO20486

Lab Sample Number				2445733	2445734	2445735	2445736	2445737
Sample Reference				TP01	TP06	TP07	TP10	TP15
Sample Number				101	102	101	101	101
Depth (m)				0.20	0.60	0.20	0.10	0.10
Date Sampled				20/09/2022	21/09/2022	21/09/2022	21/09/2022	23/09/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	12	11	7.2	5.4	15
Total mass of sample received	kg	0.001	NONE	1	1	1	1	1

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-	-	-
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	-	-	-
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	-	-	-
Asbestos Analyst ID	N/A	N/A	N/A	SCA	SCA	SCA	SCA	SCA

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	7.3	7.7	7.3	7.7	7.4
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.045	0.062	0.0016	0.0048	0.28
Fraction Organic Carbon (FOC) Automated	N/A	0.001	MCERTS	0.028	0.006	0.013	0.012	-
Fraction Organic Carbon (FOC)	N/A	0.001	MCERTS	-	-	-	-	0.086

Total Phenols

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

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

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80	< 0.80	< 0.80	< 0.80	< 0.80
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Analytical Report Number: 22-87628
Project / Site name: Penn Hill, Calne
Your Order No: PO20486

Lab Sample Number	2445733	2445734	2445735	2445736	2445737
Sample Reference	TP01	TP06	TP07	TP10	TP15
Sample Number	101	102	101	101	101
Depth (m)	0.20	0.60	0.20	0.10	0.10
Date Sampled	20/09/2022	21/09/2022	21/09/2022	21/09/2022	23/09/2022
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	26	86	27	7.2	11
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.2	1.1	0.5	0.23	0.74
Boron (water soluble)	mg/kg	0.2	MCERTS	3	0.8	0.7	0.8	4.7
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	0.6
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8
Chromium (III)	mg/kg	1	NONE	31	34	15	7.3	21
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	32	34	16	7.5	21
Copper (aqua regia extractable)	mg/kg	1	MCERTS	24	31	8.7	6.5	24
Lead (aqua regia extractable)	mg/kg	1	MCERTS	31	15	14	11	16
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	31	44	9	3.8	26
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	54	51	32	15	32
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	78	56	34	17	67

Monoaromatics & Oxygenates

Benzene	µg/kg	1	MCERTS	-	-	-	-	-
Toluene	µg/kg	1	MCERTS	-	-	-	-	-
Ethylbenzene	µg/kg	1	MCERTS	-	-	-	-	-
p & m-xylene	µg/kg	1	MCERTS	-	-	-	-	-
o-xylene	µg/kg	1	MCERTS	-	-	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	-	-	-

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6 HS_ID_AL	mg/kg	0.001	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC6 - EC8 HS_ID_AL	mg/kg	0.001	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC8 - EC10 HS_ID_AL	mg/kg	0.001	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC10 - EC12 EH_CU_ID_AL	mg/kg	1	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC12 - EC16 EH_CU_ID_AL	mg/kg	2	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC16 - EC21 EH_CU_ID_AL	mg/kg	8	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC21 - EC35 EH_CU_ID_AL	mg/kg	8	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC16 - EC35 EH_CU_ID_AL	mg/kg	10	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic > EC35 - EC44 EH_CU_ID_AL	mg/kg	8.4	NONE	-	-	-	-	-
TPH-CWG - Aliphatic (EC5 - EC35) EH_CU+HS_ID_AL	mg/kg	10	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic (EC5 - EC44) EH_CU+HS_ID_AL	mg/kg	10	NONE	-	-	-	-	-

TPH-CWG - Aromatic >EC5 - EC7 HS_ID_AR	mg/kg	0.001	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC7 - EC8 HS_ID_AR	mg/kg	0.001	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC8 - EC10 HS_ID_AR	mg/kg	0.001	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC10 - EC12 EH_CU_ID_AR	mg/kg	1	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC12 - EC16 EH_CU_ID_AR	mg/kg	2	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC16 - EC21 EH_CU_ID_AR	mg/kg	10	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC21 - EC35 EH_CU_ID_AR	mg/kg	10	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic > EC35 - EC44 EH_CU_ID_AR	mg/kg	8.4	NONE	-	-	-	-	-
TPH-CWG - Aromatic (EC5 - EC35) EH_CU+HS_ID_AR	mg/kg	10	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic (EC5 - EC44) EH_CU+HS_ID_AR	mg/kg	10	NONE	-	-	-	-	-

TPH Total C5 - C44 EH_CU+HS_ID_TOTAL	mg/kg	10	NONE	-	-	-	-	-
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U/S = Unsuitable Sample I/S = Insufficient Sample

Analytical Report Number: 22-87628
Project / Site name: Penn Hill, Calne
Your Order No: PO20486

Lab Sample Number				2445738	2445739	2445740	2445741	2445742
Sample Reference				TP17	TP18	SA102	TP22	TP24
Sample Number				101	102	101	101	101
Depth (m)				0.10	0.60	0.10	0.20	0.20
Date Sampled				23/09/2022	23/09/2022	26/09/2022	26/09/2022	27/09/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	8	3	7.7	9.5	7.1
Total mass of sample received	kg	0.001	NONE	1	1	1	1	1

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-	-	-
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	-	-	-
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	-	-	-
Asbestos Analyst ID	N/A	N/A	N/A	SCA	SCA	SCA	SCA	SCA

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	7.2	8.3	7.9	6.8	6.4
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.0032	< 0.0013	0.0063	0.021	0.0026
Fraction Organic Carbon (FOC) Automated	N/A	0.001	MCERTS	0.018	0.0059	0.026	0.037	0.022
Fraction Organic Carbon (FOC)	N/A	0.001	MCERTS	-	-	-	-	-

Total Phenols

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

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

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80	< 0.80	< 0.80	< 0.80	< 0.80
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Analytical Report Number: 22-87628
Project / Site name: Penn Hill, Calne
Your Order No: PO20486

Lab Sample Number				2445738	2445739	2445740	2445741	2445742
Sample Reference				TP17	TP18	SA102	TP22	TP24
Sample Number				101	102	101	101	101
Depth (m)				0.10	0.60	0.10	0.20	0.20
Date Sampled				23/09/2022	23/09/2022	26/09/2022	26/09/2022	27/09/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	47	9.9	15	7.6	15
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.77	0.24	0.57	0.34	0.39
Boron (water soluble)	mg/kg	0.2	MCERTS	0.9	0.5	1.7	2.5	0.7
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8
Chromium (III)	mg/kg	1	NONE	21	7	17	9.2	12
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	22	7.3	18	9.5	13
Copper (aqua regia extractable)	mg/kg	1	MCERTS	16	7.7	12	11	11
Lead (aqua regia extractable)	mg/kg	1	MCERTS	28	9.7	29	27	23
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	11	4.1	9.3	4.7	6.4
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	45	20	35	18	26
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	56	25	53	38	38

Monoaromatics & Oxygenates

Benzene	µg/kg	1	MCERTS	-	-	-	-	-
Toluene	µg/kg	1	MCERTS	-	-	-	-	-
Ethylbenzene	µg/kg	1	MCERTS	-	-	-	-	-
p & m-xylene	µg/kg	1	MCERTS	-	-	-	-	-
o-xylene	µg/kg	1	MCERTS	-	-	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	-	-	-

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6 HS_1D_AL	mg/kg	0.001	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC6 - EC8 HS_1D_AL	mg/kg	0.001	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC8 - EC10 HS_1D_AL	mg/kg	0.001	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC10 - EC12 EH_CU_1D_AL	mg/kg	1	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC12 - EC16 EH_CU_1D_AL	mg/kg	2	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC16 - EC21 EH_CU_1D_AL	mg/kg	8	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC21 - EC35 EH_CU_1D_AL	mg/kg	8	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC16 - EC35 EH_CU_1D_AL	mg/kg	10	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic > EC35 - EC44 EH_CU_1D_AL	mg/kg	8.4	NONE	-	-	-	-	-
TPH-CWG - Aliphatic (EC5 - EC35) EH_CU+HS_1D_AL	mg/kg	10	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic (EC5 - EC44) EH_CU+HS_1D_AL	mg/kg	10	NONE	-	-	-	-	-

TPH-CWG - Aromatic >EC5 - EC7 HS_1D_AR	mg/kg	0.001	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC7 - EC8 HS_1D_AR	mg/kg	0.001	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC8 - EC10 HS_1D_AR	mg/kg	0.001	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC10 - EC12 EH_CU_1D_AR	mg/kg	1	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC12 - EC16 EH_CU_1D_AR	mg/kg	2	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC16 - EC21 EH_CU_1D_AR	mg/kg	10	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC21 - EC35 EH_CU_1D_AR	mg/kg	10	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic > EC35 - EC44 EH_CU_1D_AR	mg/kg	8.4	NONE	-	-	-	-	-
TPH-CWG - Aromatic (EC5 - EC35) EH_CU+HS_1D_AR	mg/kg	10	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic (EC5 - EC44) EH_CU+HS_1D_AR	mg/kg	10	NONE	-	-	-	-	-

TPH Total C5 - C44 EH_CU+HS_1D_TOTAL	mg/kg	10	NONE	-	-	-	-	-
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U/S = Unsuitable Sample I/S = Insufficient Sample

Analytical Report Number: 22-87628
Project / Site name: Penn Hill, Calne
Your Order No: PO20486

Lab Sample Number				2445743	2445744	2445745	2445746	2445747
Sample Reference				TP26	TP28	TP29	TP29	TP30
Sample Number				101	101	101	102	101
Depth (m)				0.20	0.20	0.20	0.50	0.20
Date Sampled				27/09/2022	28/09/2022	28/09/2022	28/09/2022	28/09/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	11	11	12	15	9.7
Total mass of sample received	kg	0.001	NONE	1	1	1	1	1

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-	-	-
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	-	-	-
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	-	-	-
Asbestos Analyst ID	N/A	N/A	N/A	MLO	MLO	MLO	MLO	MLO

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	6.5	6.7	7.2	8.2	7.2
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.0073	0.0062	0.077	0.15	0.0054
Fraction Organic Carbon (FOC) Automated	N/A	0.001	MCERTS	0.021	0.014	0.03	0.0074	0.016
Fraction Organic Carbon (FOC)	N/A	0.001	MCERTS	-	-	-	-	-

Total Phenols

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

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

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80	< 0.80	< 0.80	< 0.80	< 0.80
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Analytical Report Number: 22-87628
Project / Site name: Penn Hill, Calne
Your Order No: PO20486

Lab Sample Number				2445743	2445744	2445745	2445746	2445747
Sample Reference				TP26	TP28	TP29	TP29	TP30
Sample Number				101	101	101	102	101
Depth (m)				0.20	0.20	0.20	0.50	0.20
Date Sampled				27/09/2022	28/09/2022	28/09/2022	28/09/2022	28/09/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	18	44	22	15	36
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.6	0.72	0.91	1.2	0.67
Boron (water soluble)	mg/kg	0.2	MCERTS	1.4	1	3.8	3	1.2
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8
Chromium (III)	mg/kg	1	NONE	19	22	27	35	19
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	19	22	28	35	20
Copper (aqua regia extractable)	mg/kg	1	MCERTS	15	12	25	23	9.3
Lead (aqua regia extractable)	mg/kg	1	MCERTS	24	18	38	13	18
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	11	13	20	31	13
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	38	38	48	51	46
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	48	36	71	45	39

Monoaromatics & Oxygenates

Benzene	µg/kg	1	MCERTS	-	-	-	-	-
Toluene	µg/kg	1	MCERTS	-	-	-	-	-
Ethylbenzene	µg/kg	1	MCERTS	-	-	-	-	-
p & m-xylene	µg/kg	1	MCERTS	-	-	-	-	-
o-xylene	µg/kg	1	MCERTS	-	-	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	-	-	-

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6 _{HS, 1D, AL}	mg/kg	0.001	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC6 - EC8 _{HS, 1D, AL}	mg/kg	0.001	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC8 - EC10 _{HS, 1D, AL}	mg/kg	0.001	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC10 - EC12 _{EH, CU, 1D, AL}	mg/kg	1	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC12 - EC16 _{EH, CU, 1D, AL}	mg/kg	2	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC16 - EC21 _{EH, CU, 1D, AL}	mg/kg	8	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC21 - EC35 _{EH, CU, 1D, AL}	mg/kg	8	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC16 - EC35 _{EH, CU, 1D, AL}	mg/kg	10	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic > EC35 - EC44 _{EH, CU, 1D, AL}	mg/kg	8.4	NONE	-	-	-	-	-
TPH-CWG - Aliphatic (EC5 - EC35) _{EH, CU+HS, 1D, AL}	mg/kg	10	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic (EC5 - EC44) _{EH, CU+HS, 1D, AL}	mg/kg	10	NONE	-	-	-	-	-

TPH-CWG - Aromatic >EC5 - EC7 _{HS, 1D, AR}	mg/kg	0.001	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC7 - EC8 _{HS, 1D, AR}	mg/kg	0.001	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC8 - EC10 _{HS, 1D, AR}	mg/kg	0.001	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC10 - EC12 _{EH, CU, 1D, AR}	mg/kg	1	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC12 - EC16 _{EH, CU, 1D, AR}	mg/kg	2	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC16 - EC21 _{EH, CU, 1D, AR}	mg/kg	10	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC21 - EC35 _{EH, CU, 1D, AR}	mg/kg	10	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic > EC35 - EC44 _{EH, CU, 1D, AR}	mg/kg	8.4	NONE	-	-	-	-	-
TPH-CWG - Aromatic (EC5 - EC35) _{EH, CU+HS, 1D, AR}	mg/kg	10	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic (EC5 - EC44) _{EH, CU+HS, 1D, AR}	mg/kg	10	NONE	-	-	-	-	-

TPH Total C5 - C44 _{EH, CU+HS, 1D, TOTAL}	mg/kg	10	NONE	-	-	-	-	-
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U/S = Unsuitable Sample I/S = Insufficient Sample

Analytical Report Number: 22-87628
Project / Site name: Penn Hill, Calne
Your Order No: PO20486

Lab Sample Number				2445748	2445749	2445750	2445751	2445752
Sample Reference				TP32	TP34	TP38	TP39	WS09
Sample Number				101	101	101	102	102
Depth (m)				0.15	0.10	0.20	0.50	0.50
Date Sampled				28/09/2022	28/09/2022	29/09/2022	29/09/2022	28/09/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	12
Moisture Content	%	0.01	NONE	13	8.3	11	8.4	12
Total mass of sample received	kg	0.001	NONE	1	1	1	1	1

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-	-	-
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	-	-	-
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	-	-	-
Asbestos Analyst ID	N/A	N/A	N/A	MLO	MLO	MLO	MLO	MLO

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	7.1	6.5	6.7	7.6	9.2
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.016	0.016	0.04	0.022	0.15
Fraction Organic Carbon (FOC) Automated	N/A	0.001	MCERTS	0.03	0.026	0.036	0.0067	0.045
Fraction Organic Carbon (FOC)	N/A	0.001	MCERTS	-	-	-	-	-

Total Phenols

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

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	1.7
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	2.8
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	2.8
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	21
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	8.1
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.3	< 0.05	47
Pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.26	< 0.05	46
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	21
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	20
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	25
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	9.4
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	22
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	11
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	3.1
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	12

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80	< 0.80	< 0.80	< 0.80	253
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Analytical Report Number: 22-87628
Project / Site name: Penn Hill, Calne
Your Order No: PO20486

Lab Sample Number				2445748	2445749	2445750	2445751	2445752
Sample Reference				TP32	TP34	TP38	TP39	WS09
Sample Number				101	101	101	102	102
Depth (m)				0.15	0.10	0.20	0.50	0.50
Date Sampled				28/09/2022	28/09/2022	29/09/2022	29/09/2022	28/09/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	46	17	29	20	11
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.2	0.56	1.1	0.86	0.89
Boron (water soluble)	mg/kg	0.2	MCERTS	3.3	2.2	2.8	1.2	1.4
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	0.7
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8
Chromium (III)	mg/kg	1	NONE	33	16	28	27	13
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	34	16	28	27	13
Copper (aqua regia extractable)	mg/kg	1	MCERTS	30	15	26	21	81
Lead (aqua regia extractable)	mg/kg	1	MCERTS	35	28	29	15	88
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	32	8.2	24	28	10
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	56	34	59	45	25
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	88	46	73	44	140

Monoaromatics & Oxygenates

Benzene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
Toluene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
p & m-xylene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
o-xylene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	-	-	< 1.0

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6 HS_ID_AL	mg/kg	0.001	MCERTS	-	-	-	-	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8 HS_ID_AL	mg/kg	0.001	MCERTS	-	-	-	-	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10 HS_ID_AL	mg/kg	0.001	MCERTS	-	-	-	-	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12 EH_CU_ID_AL	mg/kg	1	MCERTS	-	-	-	-	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 EH_CU_ID_AL	mg/kg	2	MCERTS	-	-	-	-	9.9
TPH-CWG - Aliphatic >EC16 - EC21 EH_CU_ID_AL	mg/kg	8	MCERTS	-	-	-	-	11
TPH-CWG - Aliphatic >EC21 - EC35 EH_CU_ID_AL	mg/kg	8	MCERTS	-	-	-	-	140
TPH-CWG - Aliphatic >EC16 - EC35 EH_CU_ID_AL	mg/kg	10	MCERTS	-	-	-	-	150
TPH-CWG - Aliphatic > EC35 - EC44 EH_CU_ID_AL	mg/kg	8.4	NONE	-	-	-	-	210
TPH-CWG - Aliphatic (EC5 - EC35) EH_CU+HS_ID_AL	mg/kg	10	MCERTS	-	-	-	-	160
TPH-CWG - Aliphatic (EC5 - EC44) EH_CU+HS_ID_AL	mg/kg	10	NONE	-	-	-	-	380

TPH-CWG - Aromatic >EC5 - EC7 HS_ID_AR	mg/kg	0.001	MCERTS	-	-	-	-	< 0.001
TPH-CWG - Aromatic >EC7 - EC8 HS_ID_AR	mg/kg	0.001	MCERTS	-	-	-	-	< 0.001
TPH-CWG - Aromatic >EC8 - EC10 HS_ID_AR	mg/kg	0.001	MCERTS	-	-	-	-	< 0.001
TPH-CWG - Aromatic >EC10 - EC12 EH_CU_ID_AR	mg/kg	1	MCERTS	-	-	-	-	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 EH_CU_ID_AR	mg/kg	2	MCERTS	-	-	-	-	14
TPH-CWG - Aromatic >EC16 - EC21 EH_CU_ID_AR	mg/kg	10	MCERTS	-	-	-	-	51
TPH-CWG - Aromatic >EC21 - EC35 EH_CU_ID_AR	mg/kg	10	MCERTS	-	-	-	-	220
TPH-CWG - Aromatic > EC35 - EC44 EH_CU_ID_AR	mg/kg	8.4	NONE	-	-	-	-	370
TPH-CWG - Aromatic (EC5 - EC35) EH_CU+HS_ID_AR	mg/kg	10	MCERTS	-	-	-	-	280
TPH-CWG - Aromatic (EC5 - EC44) EH_CU+HS_ID_AR	mg/kg	10	NONE	-	-	-	-	660

TPH Total C5 - C44 EH_CU+HS_ID_TOTAL	mg/kg	10	NONE	-	-	-	-	1000
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U/S = Unsuitable Sample I/S = Insufficient Sample

Analytical Report Number: 22-87628
Project / Site name: Penn Hill, Calne
Your Order No: PO20486

Lab Sample Number	2445753	2445754	2445755	2446835
Sample Reference	WS09	WS10	WS11	WS10
Sample Number	101	102	102	101
Depth (m)	0.20	0.50	0.50	0.20
Date Sampled	28/09/2022	28/09/2022	28/09/2022	28/09/2022
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status	
Stone Content	%	0.1	NONE	< 0.1
Moisture Content	%	0.01	NONE	4.3
Total mass of sample received	kg	0.001	NONE	1

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	Chrysotile	-	Chrysotile
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Detected	Not-detected	Detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	5.089	-	0.002
Asbestos Quantification Total	%	0.001	ISO 17025	-	5.09	-	0.002
Asbestos Analyst ID	N/A	N/A	N/A	JSW	JSW	JSW	JSW

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.9	7.7	9.4	7.3
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.048	1.8	0.2	1.6
Fraction Organic Carbon (FOC) Automated	N/A	0.001	MCERTS	0.017	0.053	0.0077	0.037
Fraction Organic Carbon (FOC)	N/A	0.001	MCERTS	-	-	-	-

Total Phenols

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

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	0.45
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	0.44
Phenanthrene	mg/kg	0.05	MCERTS	0.29	0.77	0.28	13
Anthracene	mg/kg	0.05	MCERTS	< 0.05	0.26	< 0.05	2.9
Fluoranthene	mg/kg	0.05	MCERTS	0.22	1.6	0.9	44
Pyrene	mg/kg	0.05	MCERTS	0.23	1.5	0.77	43
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	1.1	0.69	38
Chrysene	mg/kg	0.05	MCERTS	< 0.05	0.83	0.57	35
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	1.9	0.78	49
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	0.61	0.41	17
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	1.4	0.73	49
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	0.59	0.46	18
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	5.4
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	0.65	0.58	21

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80	11.4	6.17	336
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Analytical Report Number: 22-87628
 Project / Site name: Penn Hill, Calne
 Your Order No: PO20486

Lab Sample Number				2445753	2445754	2445755	2446835
Sample Reference				WS09	WS10	WS11	WS10
Sample Number				101	102	102	101
Depth (m)				0.20	0.50	0.50	0.20
Date Sampled				28/09/2022	28/09/2022	28/09/2022	28/09/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status				
Heavy Metals / Metalloids							
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	9.8	39	17	46
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.36	1.6	0.41	1.7
Boron (water soluble)	mg/kg	0.2	MCERTS	0.6	9.4	1.4	13
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.7	4.8	0.8	11
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8	< 1.8
Chromium (III)	mg/kg	1	NONE	11	46	15	110
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	11	47	16	110
Copper (aqua regia extractable)	mg/kg	1	MCERTS	9.4	1200	110	4400
Lead (aqua regia extractable)	mg/kg	1	MCERTS	36	670	74	1500
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	1	< 0.3	1.5
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	9.7	68	14	110
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	16	43	39	45
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	83	1500	220	5400

Monoaromatics & Oxygenates

Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6 HS_ID_AL	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	-
TPH-CWG - Aliphatic >EC6 - EC8 HS_ID_AL	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	-
TPH-CWG - Aliphatic >EC8 - EC10 HS_ID_AL	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	-
TPH-CWG - Aliphatic >EC10 - EC12 EH_CU_ID_AL	mg/kg	1	MCERTS	< 1.0	< 1.0	-	-
TPH-CWG - Aliphatic >EC12 - EC16 EH_CU_ID_AL	mg/kg	2	MCERTS	9.7	< 2.0	-	-
TPH-CWG - Aliphatic >EC16 - EC21 EH_CU_ID_AL	mg/kg	8	MCERTS	26	< 8.0	-	-
TPH-CWG - Aliphatic >EC21 - EC35 EH_CU_ID_AL	mg/kg	8	MCERTS	150	55	-	-
TPH-CWG - Aliphatic >EC16 - EC35 EH_CU_ID_AL	mg/kg	10	MCERTS	170	55	-	-
TPH-CWG - Aliphatic > EC35 - EC44 EH_CU_ID_AL	mg/kg	8.4	NONE	230	140	-	-
TPH-CWG - Aliphatic (EC5 - EC35) EH_CU+HS_ID_AL	mg/kg	10	MCERTS	180	62	-	-
TPH-CWG - Aliphatic (EC5 - EC44) EH_CU+HS_ID_AL	mg/kg	10	NONE	410	200	-	-

TPH-CWG - Aromatic >EC5 - EC7 HS_ID_AR	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	-
TPH-CWG - Aromatic >EC7 - EC8 HS_ID_AR	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	-
TPH-CWG - Aromatic >EC8 - EC10 HS_ID_AR	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	-
TPH-CWG - Aromatic >EC10 - EC12 EH_CU_ID_AR	mg/kg	1	MCERTS	< 1.0	< 1.0	-	-
TPH-CWG - Aromatic >EC12 - EC16 EH_CU_ID_AR	mg/kg	2	MCERTS	25	13	-	-
TPH-CWG - Aromatic >EC16 - EC21 EH_CU_ID_AR	mg/kg	10	MCERTS	170	20	-	-
TPH-CWG - Aromatic >EC21 - EC35 EH_CU_ID_AR	mg/kg	10	MCERTS	890	290	-	-
TPH-CWG - Aromatic > EC35 - EC44 EH_CU_ID_AR	mg/kg	8.4	NONE	1100	860	-	-
TPH-CWG - Aromatic (EC5 - EC35) EH_CU+HS_ID_AR	mg/kg	10	MCERTS	1100	320	-	-
TPH-CWG - Aromatic (EC5 - EC44) EH_CU+HS_ID_AR	mg/kg	10	NONE	2200	1200	-	-

TPH Total C5 - C44 EH_CU+HS_ID_TOTAL	mg/kg	10	NONE	2600	1400	-	-
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U/S = Unsuitable Sample I/S = Insufficient Sample



Analytical Report Number: 22-87628
Project / Site name: Penn Hill, Calne
Your Order No: PO20486

Certificate of Analysis - Asbestos Quantification

Methods:

Qualitative Analysis

The samples were analysed qualitatively for asbestos by polarising light and dispersion staining as described by the Health and Safety Executive in HSG 248.

Quantitative Analysis

The analysis was carried out using our documented in-house method A006-PL based on HSE Contract Research Report No: 83/1996: Development and Validation of an analytical method to determine the amount of asbestos in soils and loose aggregates (Davies et al, 1996) and HSG 248. Our method includes initial examination of the entire representative sample, then fractionation and detailed analysis of each fraction, with quantification by hand picking and weighing.

The limit of detection (reporting limit) of this method is 0.001 %.

The method has been validated using samples of at least 100 g, results for samples smaller than this should be interpreted with caution.

Both Qualitative and Quantitative Analyses are UKAS accredited.

Sample Number	Sample ID	Sample Depth (m)	Sample Weight (g)	Asbestos Containing Material Types Detected (ACM)	PLM Results	Asbestos by hand picking/weighing (%)	Total % Asbestos in Sample
2445754	WS10	0.50	133	Hard/Cement Type Material	Chrysotile	5.089	5.09
2446835	WS10	0.20	126	Loose Fibres	Chrysotile	0.002	0.002

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

Analytical Report Number : 22-87628

Project / Site name: Penn Hill, Calne

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2445733	TP01	101	0.2	Brown loam and clay with gravel and vegetation.
2445734	TP06	102	0.6	Brown sandy clay with gravel.
2445735	TP07	101	0.2	Brown loam and sand with gravel and vegetation.
2445736	TP10	101	0.1	Brown sandy loam with vegetation.
2445737	TP15	101	0.1	Brown loam and clay with gravel and vegetation.
2445738	TP17	101	0.1	Brown sandy loam with gravel and vegetation.
2445739	TP18	102	0.6	Brown sandy loam.
2445740	SA102	101	0.1	Brown sandy loam with vegetation.
2445741	TP22	101	0.2	Brown sandy loam with vegetation.
2445742	TP24	101	0.2	Brown sandy loam with vegetation.
2445743	TP26	101	0.2	Brown loam and clay with gravel and vegetation.
2445744	TP28	101	0.2	Brown loam and clay with gravel and vegetation.
2445745	TP29	101	0.2	Brown loam and clay with gravel and vegetation.
2445746	TP29	102	0.5	Brown clay and sand with gravel.
2445747	TP30	101	0.2	Brown loam and sand with gravel and vegetation.
2445748	TP32	101	0.15	Brown loam and clay with gravel and vegetation.
2445749	TP34	101	0.1	Brown loam and sand with gravel and vegetation.
2445750	TP38	101	0.2	Brown loam and sand with gravel and vegetation.
2445751	TP39	102	0.5	Brown clay and loam with vegetation.
2445752	WS09	102	0.5	Brown gravelly loam with stones.
2445753	WS09	101	0.2	Brown loam and sand with gravel and tar.
2445754	WS10	102	0.5	Brown clay and loam with gravel.
2445755	WS11	102	0.5	Light brown sand with gravel.
2446835	WS10	101	0.2	Brown gravelly loam with glass.

Analytical Report Number : 22-87628

Project / Site name: Penn Hill, Calne

Water matrix abbreviations:

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Fraction of Organic Carbon in soil	Determination of fraction of organic carbon in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L023	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L0738-PL	W	MCERTS
TPH Chromatogram in Soil	TPH Chromatogram in Soil.	In-house method	L064-PL	D	NONE
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	MCERTS
Asbestos Quantification - Gravimetric	Asbestos quantification by gravimetric method - in house method based on references.	HSE Report No: 83/1996, HSG 248, HSG 264 & SCA Blue Book (draft).	A006-PL	D	ISO 17025

Analytical Report Number : 22-87628

Project / Site name: Penn Hill, Calne

Water matrix abbreviations:

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Fraction Organic Carbon FOC Automated	Determination of fraction of organic carbon in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method	L009	D	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS

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

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

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

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

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

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

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

Sample Deviation Report

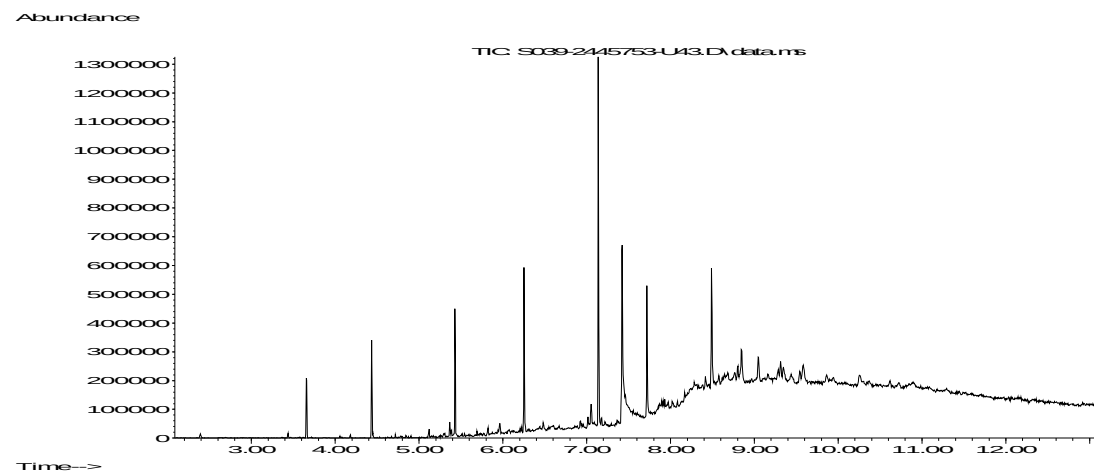


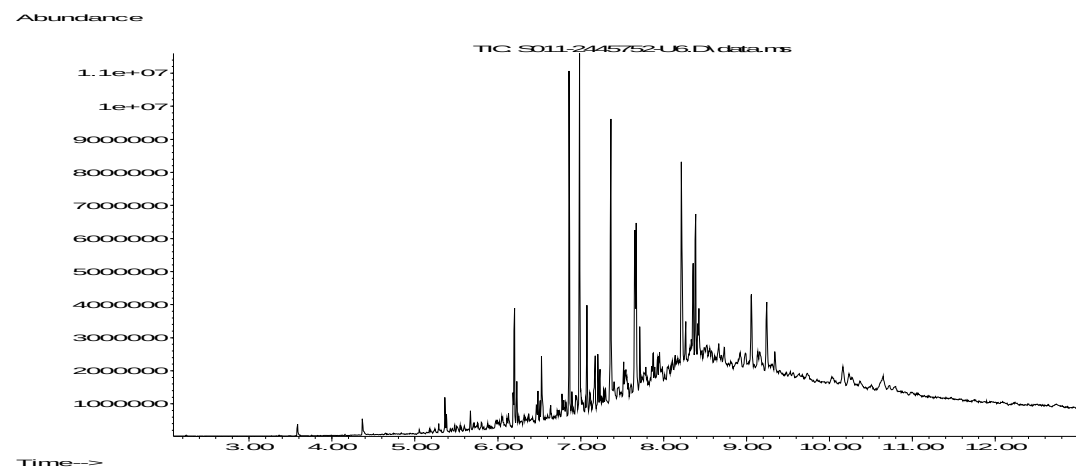
Analytical Report Number : 22-87628

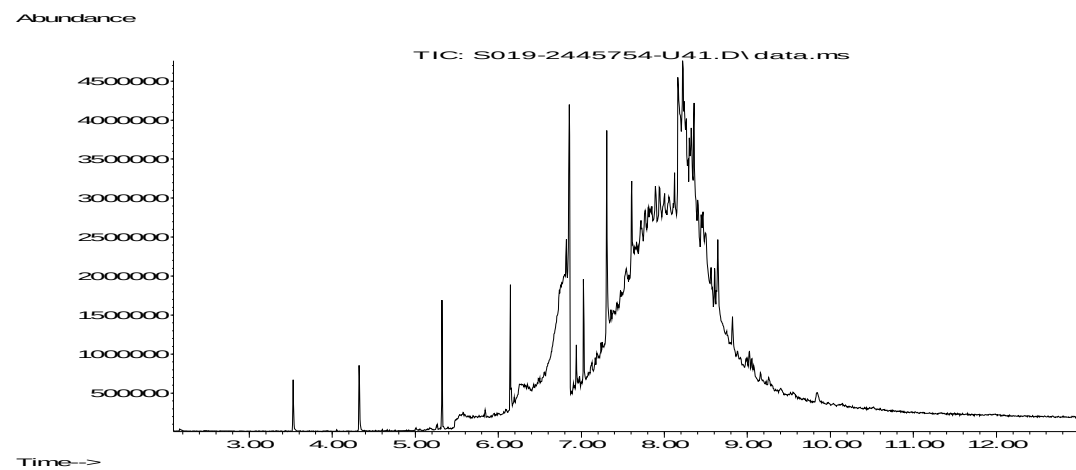
Project / Site name: Penn Hill, Calne

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

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
TP01	101	S	2445733	c	Free cyanide in soil	L080-PL	c
TP06	102	S	2445734	c	Free cyanide in soil	L080-PL	c
TP07	101	S	2445735	c	Free cyanide in soil	L080-PL	c
TP10	101	S	2445736	c	Free cyanide in soil	L080-PL	c
TP15	101	S	2445737	c	Free cyanide in soil	L080-PL	c
TP17	101	S	2445738	c	Free cyanide in soil	L080-PL	c
TP18	102	S	2445739	c	Free cyanide in soil	L080-PL	c







**Daniel Gadsby**

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Analytical Report Number : 22-91562

Project / Site name:	Penn Hill Calne	Samples received on:	19/10/2022
Your job number:	24863	Samples instructed on/ Analysis started on:	20/10/2022
Your order number:	PO21113	Analysis completed by:	27/10/2022
Report Issue Number:	1	Report issued on:	27/10/2022
Samples Analysed:	2 water samples		

Signed:

Adam Fenwick
Technical Reviewer
For & on behalf of i2 Analytical Ltd.

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

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

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

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

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

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

Analytical Report Number: 22-91562
Project / Site name: Penn Hill Calne

Your Order No: PO21113

Lab Sample Number	2469650	2469651
Sample Reference	WS01	WS10
Sample Number	None Supplied	None Supplied
Depth (m)	None Supplied	None Supplied
Date Sampled	18/10/2022	18/10/2022
Time Taken	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	Units	Limit of detection Accreditation Status

General Inorganics

pH	pH Units	N/A	ISO 17025	7.2	7.6
Electrical Conductivity at 20 °C	µS/cm	10	ISO 17025	2100	670
Total Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1.0	< 1.0
Free Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1.0	< 1.0
Sulphate as SO4	µg/l	45	ISO 17025	1310000	91400
Chloride	mg/l	0.15	ISO 17025	11	13
Fluoride	µg/l	50	ISO 17025	660	470
Ammoniacal Nitrogen as N	µg/l	15	ISO 17025	550	5600
Ammoniacal Nitrogen as NH3	µg/l	15	ISO 17025	660	6800
Ammoniacal Nitrogen as NH4	µg/l	15	ISO 17025	700	7200
Dissolved Organic Carbon (DOC)	mg/l	0.1	ISO 17025	11	7.09
Nitrate as N	mg/l	0.01	ISO 17025	0.25	0.06
Nitrate as NO3	mg/l	0.05	ISO 17025	1.11	0.25
Nitrite as N	µg/l	1	ISO 17025	9.1	1.1
Nitrite as NO2	µg/l	5	ISO 17025	30	< 5.0

Hardness - Total	mg CaCO3/l	1	ISO 17025	1920	349
Bromate by IC	mg/l	0.002	ISO 17025	< 0.002	< 0.002

Total Phenols

Total Phenols (monohydric)	µg/l	1	ISO 17025	2.3	1.1
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Speciated PAHs

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

PAH Sums

Sum of Benzo(b)fluoranthene & Benzo(k)fluoranthene	µg/l	0.02	NONE	< 0.020	< 0.020
Sum of Benzo(ghi)perylene & Indeno(1,2,3-cd)pyrene	µg/l	0.02	NONE	< 0.020	< 0.020
Sum of Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene	µg/l	0.04	NONE	< 0.040	< 0.040

Total PAH

Total EPA-16 PAHs	µg/l	0.16	ISO 17025	< 0.16	< 0.16
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Analytical Report Number: 22-91562
Project / Site name: Penn Hill Calne

Your Order No: PO21113

Lab Sample Number				2469650	2469651
Sample Reference				WS01	WS10
Sample Number				None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied
Date Sampled				18/10/2022	18/10/2022
Time Taken				None Supplied	None Supplied
Analytical Parameter (Water Analysis)				Units	Limit of detection
				Accreditation Status	

Heavy Metals / Metalloids

Boron (dissolved)	µg/l	10	ISO 17025	180	640
Calcium (dissolved)	mg/l	0.012	ISO 17025	740	130
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0	< 5.0
Chromium (III)	µg/l	5	NONE	< 5.0	< 5.0
Iron (dissolved)	mg/l	0.004	ISO 17025	0.011	0.034
Iron (dissolved)	µg/l	4	ISO 17025	11	34
Magnesium (dissolved)	mg/l	0.005	ISO 17025	20	6.5
Sodium (dissolved)	mg/l	0.01	ISO 17025	8.7	14

Aluminium (dissolved)	µg/l	1	ISO 17025	4.7	8.3
Antimony (dissolved)	µg/l	0.4	ISO 17025	2.2	0.8
Arsenic (dissolved)	µg/l	0.15	ISO 17025	1.77	2.03
Barium (dissolved)	µg/l	0.06	ISO 17025	32	290
Cadmium (dissolved)	µg/l	0.02	ISO 17025	0.11	0.04
Chromium (dissolved)	µg/l	0.2	ISO 17025	2.6	0.5
Cobalt (dissolved)	µg/l	0.2	ISO 17025	2.1	0.6
Copper (dissolved)	µg/l	0.5	ISO 17025	3	3.5
Lead (dissolved)	µg/l	0.2	ISO 17025	< 0.2	< 0.2
Manganese (dissolved)	µg/l	0.05	ISO 17025	610	580
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05	< 0.05
Nickel (dissolved)	µg/l	0.5	ISO 17025	7.3	3.1
Selenium (dissolved)	µg/l	0.6	ISO 17025	< 0.6	< 0.6
Silver (dissolved)	µg/l	0.05	NONE	< 0.05	< 0.05
Tin (dissolved)	µg/l	0.2	ISO 17025	0.27	< 0.20
Vanadium (dissolved)	µg/l	0.2	ISO 17025	< 0.2	< 0.2
Zinc (dissolved)	µg/l	0.5	ISO 17025	10	5.2

U/S = Unsuitable Sample I/S = Insufficient Sample

Analytical Report Number : 22-91562

Project / Site name: Penn Hill Calne

Water matrix abbreviations:

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in water by ICP-MS (dissolved)	Determination of metals in water by acidification followed by ICP-MS. Accredited Matrices: SW, GW, PW except B=SW,GW, Hg=SW,PW, Al=SW,PW.	In-house method based on USEPA Method 6020 & 200.8 "for the determination of trace elements in water by ICP-MS.	L012-PL	W	ISO 17025
Metals in water by ICP-OES (dissolved)	Determination of metals in water by acidification followed by ICP-OES. Accredited Matrices SW, GW, PW, PrW.(Al, Cu,Fe,Zn).	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Boron in water	Determination of boron in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW	In-house method based on MEWAM	L039-PL	W	ISO 17025
Hexavalent chromium in water	Determination of hexavalent chromium in water by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method by continuous flow analyser. Accredited Matrices SW, GW, PW.	L080-PL	W	ISO 17025
Electrical conductivity at 20oC of water	Determination of electrical conductivity in water by electrometric measurement. Accredited Matrices SW, GW, PW	In-house method	L031-PL	W	ISO 17025
Fluoride in water	Determination of fluoride in water by 1:1 ratio with a buffer solution followed by Ion Selective Electrode. Accredited matrices: SW, PW, GW.	In-house method based on Use of Total Ionic Strength Adjustment Buffer for Electrode Determination"	L033B-PL	W	ISO 17025
Total Hardness of water	Determination of hardness in waters by calculation from calcium and magnesium. Accredited Matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L045-PL	W	ISO 17025
Monohydric phenols in water - LOW LEVEL 1 ug/l	Determination of phenols in water by continuous flow analyser. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
Nitrite in water	Determination of nitrite in water by addition of sulphanilamide and NED followed by discrete analyser (colorimetry).Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	ISO 17025
Nitrate in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08,	L078-PL	W	ISO 17025
Speciated EPA-16 PAHs in water	Determination of PAH compounds in water by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards. Accredited matrices: SW PW GW	In-house method based on USEPA 8270	L102B-PL	W	ISO 17025
Sulphate in water	Determination of sulphate in water after filtration by acidification followed by ICP-OES. Accredited Matrices SW, GW, PW.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Dissolved Organic Carbon in water	Determination of dissolved inorganic carbon in water by TOC/DOC NDIR Analyser.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037-PL	W	ISO 17025
Speciated EPA-16 PAHs in water (LOW LEVEL Dets)	Determination of PAH compounds in water by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270 (low level)	L102B-PL	W	NONE
Ammonia as NH3 in water	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	ISO 17025
Ammoniacal Nitrogen as N in water	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the discrete analyser (colorimetric) salicylate/nitroprusside method. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	ISO 17025

Analytical Report Number : 22-91562

Project / Site name: Penn Hill Calne

Water matrix abbreviations:

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Ammonium as NH ₄ in water	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	ISO 17025
Nitrite as N in water	Determination of nitrite in water by addition of sulphanilamide and NED followed by discrete analyser (colorimetry). Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	ISO 17025
Nitrate as N in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08,	L078-PL	W	ISO 17025
Cr (III) in water	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
Low level total cyanide in water	Determination of total cyanide by distillation followed by colorimetry. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
pH at 20oC in water (automated)	Determination of pH in water by electrometric measurement. Accredited matrices: SW PW GW	In house method.	L099-PL	W	ISO 17025
Free cyanide (low level) in water	Determination of free cyanide by distillation followed by colorimetry. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Bromate in Water	Determination of bromate in waters based on ion chromatography. Accredited matrices GW, PW, SW.	In house method based on Standard Methods for the Analysis of Water and Waste Water, method 4500	L008-PL	W	ISO 17025
Specific PAH sums in water	Determination of PAH compounds in water by extraction in hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L070-PL	W	NONE
Chloride in water	Determination of Chloride (dissolved) colorimetrically by discrete analyser.	In house based on MEWAM Method ISBN 0117516260. Accredited matrices: SW, PW, GW.	L082-PL	W	ISO 17025

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

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

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

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

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

GAC derivation

Background

Initially, the Hydrock GAC were derived following the publishing of soil guideline values (SGV), toxicological (TOX) reports and associated publications by the Environment Agency (EA) in 2009 referenced under Science Report SC050021 (EA, 2009a, b, c, d). The Hydrock GAC have then been periodically updated following publication of new information on toxicological, physico-chemical, land use or receptor parameters, namely:

- LQM/CIEH, 2009. LQM/CIEH Generic Assessment Criteria for Human Health Risk Assessment, second edition. Nathanial, C. P., McCaffrey, C., Ashmore, M., Cheng, Y., Gillet, A. G., Ogden, R. C. and Scott, D.
- CL:AIRE, 2010. 'The EIC/AGS/CL:AIRE Soil Generic Assessment Criteria for Human Health Risk Assessment'. Environmental Industries Commission, The Association of Geotechnical and Geoenvironmental Specialists and Contaminated Land: Applications in Real Environment.
- CL:AIRE, 2014. 'Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination', Revision 2, DEFRA research project SP1010. Contaminated Land: Applications in Real Environment.
- LQM/CIEH, 2015. 'The LQM/CIEH S4ULs for Human Health Risk Assessment'. Nathanial, C. P., McCaffrey, C., Gillet, A. G., Ogden, R. C. and Nathanial, J. F.
- CL:AIRE, 2021. 'C4SL Phase 2 Technical Reports'. Contaminated Land: Applications in Real Environment.

Land Use Scenarios

Hydrock has derived generic assessment criteria (GAC) for human health based on the six exposure scenarios defined in CL:AIRE (2014) using generic default assumptions from published guidance. GAC for each exposure scenario have been derived for three soil organic matter (SOM) contents, 1%, 2.5% and 6%.

All GAC have been rounded to two significant figures.

Exposure Parameters

The exposure parameters used for the Hydrock GAC are the default parameters stated in SR3, unless updated in CL:AIRE (2014) where the CL:AIRE (2014) values have been adopted.

Approach to Consumption Rates

Hydrock have adopted the 90th percentile consumption rates from Table 3.4 of CL:AIRE (2014) for all produce types. This is noted to be more conservative than the "top two" approach taken in the derivation of C4SLs.

Approach to plant uptake for GAC omitted in CL:AIRE (2010)

Plant uptake factors were not identified in CL:AIRE (2010) for antimony, barium and molybdenum. Hydrock has sourced the required parameter values from ORNL (1984) in order to derive GAC that are inclusive of the homegrown produce exposure pathway.

Chemical and Toxicity Parameters

The chemical and toxicity parameters have been adopted based on the following documents:

- IRIS, 2016. 'Toxicological Review of Trimethylbenzenes'. Integrated Risk Information System, National Centre for Environmental Assessment, office of Research and Development, U.S. Environmental Protection Agency.
- LQM/CIEH, 2015.
- ORNL, 1984. 'ORNL-5786. A Review and Analysis of Parameters for Assessing Transport of Environmentally released Radionuclides through Agriculture'. Oak Ridge National Laboratory.
- CL:AIRE, 2010.
- RIVM, 2001. RIVM Report 711701 025 'HCV Re-evaluation of human-toxicological maximum-permissible risk levels'. National Institute of Public Health and the Environment.
- LQM/CIEH, 2009.
- EA, 2009a.

Approach to Cyanide GAC

The Hydrock GAC for free cyanide have been derived based on ingestion of a bolus of contaminated soil. The GAC are derived for acute exposure of a child (0-6 years old) for all land uses except commercial, where the GAC are derived for acute exposure of an adult (16-65 years old). For the purpose of GQRA, the child value may be adopted for all land use scenarios.

For complex cyanide, the GAC have been derived based on chronic exposure, using the default exposure scenarios but excluding the consumption of homegrown produce, soil attached to homegrown produce, indoor vapour and outdoor vapour pathways. The chronic health criteria value (HCV) for complex cyanide is based on the EA (2009a) HCV for free cyanide and the ratio of toxicity between free and complex cyanide proposed by RIVM (2001).

Approach to Phenol GAC

In accordance with the EA Science Report SC050021 / Phenol SGV, a $GAC_{ing/inh}$ has been derived for ingested and inhaled phenol using the CLEA model, with a GAC_{derm} derived for dermal contact using Equation 5.7 within SR3. The lower of the $GAC_{ing/inh}$ and GAC_{derm} has been adopted as the final GAC.

Approach to PCB GAC

GAC for assessing the non-dioxin-like risk from PCBs have been based on the "Dutch 7". As the TDI used by the authors of the Dutch guidance is for the sum of the 7 individual congeners, the TDI has been divided by 7 to create a TDI for each congener. The non-dioxin-like risk from PCBs is therefore assessed using a Hazard Index approach as for total petroleum hydrocarbons (TPH).

Sub-surface soil to indoor air correction factors

Reflecting the approach taken by the Environment Agency in the development of revised SGV in 2009 for BTEX, a sub-surface soil to indoor air correction factor of 10 has been applied for petroleum hydrocarbons in order to account for over-prediction of vapour intrusion into building using the Johnson and Ettinger approach.

The correction factor of 10 has been applied to the following petroleum hydrocarbons (it makes negligible difference to less volatile TPH and PAH compounds):

- TPHCWG fractions, namely aliphatic EC>5-44 and aromatic EC>6-44;
- PAHs (acenaphthene, acenaphthylene, anthracene, benzo(a)anthracene), benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenz(a,h,)anthracene, fluoranthene, fluorene, indeno(1,2,3-c,d)pyrene, naphthalene, phenanthrene, pyrene);
- BTEX;
- Isopropylbenzene;
- Propylbenzene;
- 1,2,4- and 1,3,5-trimethylbenzene; and
- Styrene.

Approach to Saturation Limits

The CLEA model includes a traffic light colour system to highlight when saturated soil conditions have potentially been exceeded for the vapour pathways during calculation of assessment criteria. The colours represent:

- Green: the assessment criteria do not exceed the saturated soil concentration.
- Amber: the assessment criteria exceed the saturated soil concentration but the contribution of the indoor and outdoor vapour pathway to total exposure is less than 10% and will not significantly affect the assessment criteria.
- Red: the assessment criteria exceed the saturated soil concentration and the contribution of the indoor and outdoor vapour pathway to total exposure is greater than 10% and will significantly affect the assessment criteria.

Hydrock have not applied any further calculations or assessment in relation to saturation limits during GAC derivation, with the CLEA-modelled GAC being presented as the GAC. Consideration of saturation limits is undertaken during the data assessment stage.

References

CL:AIRE, 2010. 'The EIC/AGS/CL:AIRE Soil Generic Assessment Criteria for Human Health Risk Assessment'. Environmental Industries Commission, The Association of Geotechnical and Geoenvironmental Specialists and Contaminated Land: Applications in Real Environment.

CL:AIRE, 2014. 'Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination', Revision 2, DEFRA research project SP1010. Contaminated Land: Applications in Real Environment

CL:AIRE, 2021. C4SL Phase 2 Technical Reports for tetrachloroethene, trichloroethene and vinyl chloride. Contaminated Land: Applications in Real Environment.

EA, 2009a. 'Science Reports SC050021 – SGV and TOX reports for: benzene, toluene, ethylbenzene, xylene, arsenic, nickel, mercury, selenium, cadmium, inorganic cyanide, phenol, dioxins, furans and dioxin-like PCBs'; 'Supplementary information for the derivation of SGV for: benzene, toluene, ethylbenzene, xylene, arsenic, nickel, mercury, selenium, cadmium, inorganic cyanide, phenol, dioxins, furans and dioxin-like PCBs', and 'Contaminants in soil: updated collation of toxicological data and intake values for humans: benzene, toluene, ethylbenzene, xylene, arsenic, nickel, mercury, selenium, cadmium, inorganic cyanide, phenol, dioxins, furans and dioxin-like PCBs'. Environment Agency.

- EA, 2009b. 'Science Report – SC050021/SR2. Human health toxicological assessment of contaminants in soil'. Environment Agency.
- EA, 2009c. 'Science Report – SC050021/SR3. Updated technical background to the CLEA model'. Environment Agency.
- EA, 2009d. 'Science Report – SC050021/SR4. CLEA Software (version 1.05) Handbook'. Environment Agency.
- IRIS, 2016. 'Toxicological Review of Trimethylbenzenes'. Integrated Risk Information System, National Centre for Environmental Assessment, office of Research and Development, U.S. Environmental Protection Agency.
- LQM/CIEH, 2009. LQM/CIEH Generic Assessment Criteria for Human Health Risk Assessment, second edition. Nathanial, C. P., McCaffrey, C., Ashmore, M., Cheng, Y., Gillet, A. G., Ogden, R. C. and Scott, D.
- LQM/CIEH, 2015. 'The LQM/CIEH S4ULs for Human Health Risk Assessment'. Nathanial, C. P., McCaffrey, C., Gillet, A. G., Ogden, R. C. and Nathanial, J. F.
- ORNL, 1984. 'ORNL-5786. A Review and Analysis of Parameters for Assessing Transport of Environmentally released Radionuclides through Agriculture'. Oak Ridge National Laboratory.
- RIVM, 2001. RIVM Report 711701 025 'HCV Re-evaluation of human-toxicological maximum-permissible risk levels'. National Institute of Public Health and the Environment.

Human Health GQRA

Hydrock

25/10/2022, 10:57

Assessment of Chemicals of Potential Concern to Human Health



Risk parameter: Default - Human Health - commercial (2.5%SOM)																																																								
Client: Castlewood Pproperties Ventures Limited														Data Filters																																										
Site: Land at Penn Hill, Calne														Zone COM																																										
Job no.: 24863														Strata MG																																										
Lab. report no(s).: 22-87620-1 and 22-87628-1														Depth Min (m bgl) 0.1																																										
														Depth Max (m bgl) 0.6																																										
All values in mg/kg unless otherwise stated														Dataset mean SOM% 4.85																																										
														Scenario SOM% 2.5																																										
CAS No / P Code	Chemical of Potential Concern	Units	LoD	No. Samples	Min. Value	Max. Value	Mean	Median	Standard Deviation	No. Samples >= GAC & > LoD	Soil Saturation Limit @2.5% SOM	GAC	GAC Source	Strata	MG	MG	MG	MG	MG	MG	MG																																			
Hazard Index table - HI or HQ greater than 1 highlighted with orange shading.														Considered additive														Aliphatics >EC8-EC10	2.083E-07	2.083E-07	2.083E-07																									
																												Aliphatics >EC10-EC12	4.348E-05	4.348E-05	4.348E-05																									
																												Aliphatics >EC12-EC16	0.0001207	0.0001183	2.439E-05																									
																												Aliphatics >EC16-EC35	8.824E-05	0.0001	3.235E-05																									
																												Aliphatics >EC35-EC44	0.0001235	0.0001353	8.235E-05																									
																												Aromatics EC5-EC7	2.174E-08	2.174E-08	2.174E-08																									
																												Aromatics >EC7-EC8	9.091E-09	9.091E-09	9.091E-09																									
																												Aromatics >EC8-EC10	1.235E-07	1.235E-07	1.235E-07																									
																												Aromatics >EC10-EC12	3.571E-05	3.571E-05	3.571E-05																									
																												Aromatics >EC12-EC16	0.0003784	0.0006757	0.0003514																									
																												Aromatics >EC16-EC21	0.0018214	0.0060714	0.0007143																									
																												Aromatics >EC21-EC35	0.0078571	0.0317857	0.0103571																									
																												Aromatics >EC35-EC44	0.0132143	0.0392857	0.0307143																									
																												Hazard Index for ali>C8-C16	0.0001644	0.000162	6.808E-05																									
																												Hazard Index for aro>C8-C16	0.0004142	0.0007115	0.0003872																									
																												Hazard Index for aro>C16-C35	0.0096786	0.0378571	0.0110714																									
Legend:														MG	Made Ground	<0.02		Value below the laboratory reporting limit and are considered as being at the detection limit for the purposes of statistical analysis, as a conservative estimate.																																						
														NAT	Natural Ground	0.02		Value greater than, or equal to, the generic assessment criterion (GAC).																																						
														TS	Topsoil	*<10		Value excluded from statistical analysis																																						
																Y		Text result																																						
																-		Represents a determinand that was not tested.																																						
																+		represents a data point that is not included in the current filter settings																																						

Hydrock

25/10/2022, 10:44

Assessment of Chemicals of Potential Concern to Human Health



Risk parameter:														Default - Human Health - POSpark (2.5%SOM)													
Client:														Castlewood Pproperties Ventures Limited													
Site:														Land at Penn Hill, Calne													
Job no.:														24863													
Lab. report no(s).:														22-87620-1 and 22-87628-1													
														Data Filters													
														Zone POS													
														Strata TS													
														Depth Min (m bgl) 0.1													
														Depth Max (m bgl) 0.6													

Hydrock

25/10/2022, 10:51

Assessment of Chemicals of Potential Concern to Human Health



Risk parameter: Default - Human Health - residential with home-grown produce (2.5%SOM)																																	
Client: Castlewood Pproperties Ventures Limited														Data Filters																			
Site: Land at Penn Hill, Calne														Zone RESI																			
Job no.: 24863														Strata TS																			
Lab. report no(s): 22-87620-1 and 22-87628-1														Depth Min (m bgl) 0.1																			
														Depth Max (m bgl) 0.6																			
All values in mg/kg unless otherwise stated														Dataset mean SOM% 4.37																			
														Scenario SOM% 2.5																			
CAS No / P Code	Chemical of Potential Concern	Units	LoD	No. Samples	Min. Value	Max. Value	Mean	Median	Standard Deviation	No. Samples >= GAC & > LoD	Soil Saturation Limit @2.5% SOM	GAC	GAC Source	Strata	TS	TS	TS	TS	TS	TS	TS	TS	TS										
-	Asbestos																																
P1020	Asbestos Identified	Y/N	Y/N	10	-	-	-	-	No. of detects:	0	-	-	-		N	N	N	N	N	N	N	N	N	N									
-	Hydrock Default Suite - FOC / SOM / pH																																
P1085	FOC (dimensionless)	[]	0.001	9	0.014	0.037	0.025	0.026	0.01		-	-	-		0.028		0.018	0.026	0.037	0.022	0.021	0.014	0.026	0.036									
-	SOM (calculated)	%	0.1724	9	2.41	6.38	4.37	4.48	1.32		-	-	-		4.8272		3.1032	4.4824	6.3788	3.7928	3.6204	2.4136	4.4824	6.2064									
P1334	pH (su)	pH Units	0.1	10	6.40	7.90	6.94	6.75	0.49		-	-	-		7.3	7.4	7.2	7.9	6.8	6.4	6.5	6.7	6.5	6.7									
-	Hydrock Default Suite - Metals & PAH																																
7440-38-2	Arsenic	mg/kg	1	10	7.60	47.00	22.96	17.50	13.47	2	NR	37	C4SL - CL:AIRE 2014		26	11	47	15	7.6	15	18	44	17	29									
7440-41-7	Beryllium	mg/kg	0.06	10	0.34	1.20	0.70	0.66	0.28	0	NR	1.7	Hydrock Derived		1.2	0.74	0.77	0.57	0.34	0.39	0.6	0.72	0.56	1.1									
7440-42-8	Boron	mg/kg	0.2	10	0.70	4.70	2.09	1.95	1.22	0	NR	300	Hydrock Derived		3	4.7	0.9	1.7	2.5	0.7	1.4	1	2.2	2.8									
7440-43-9	Cadmium	mg/kg	0.2	10	0.20	0.60	0.24	0.20	0.13	0	NR	22	C4SL - CL:AIRE 2014		0.2	0.6	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2									
16065-83-1	Chromium (III)	mg/kg	1	10	9.20	31.00	19.62	20.00	6.63	0	NR	890	Hydrock Derived		31	21	21	17	9.2	12	19	22	16	28									
18540-29-9	Chromium (VI)	mg/kg	1.2	10	1.80	1.80	1.80	1.80	0.00	0	NR	21	C4SL - CL:AIRE 2014		1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8									
7440-47-3	Chromium (Total)	mg/kg	1	10	9.50	32.00	20.05	20.00	6.64			-			32	21	22	18	9.5	13	19	22	16	28									
7440-50-8	Copper	mg/kg	1	10	11.00	26.00	16.60	15.00	5.85	0	NR	2500	Hydrock Derived		24	24	16	12	11	11	15	12	15	26									
7439-92-1	Lead	mg/kg	1	10	16.00	31.00	25.30	27.50	4.99	0	NR	200	C4SL - CL:AIRE 2014		31	16	28	29	27	23	24	18	28	29									
7439-97-6	Mercury, inorganic	mg/kg	0.3	10	0.30	0.30	0.30	0.30	0.00	0	NR	40	Hydrock Derived		0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3									
7440-02-0	Nickel	mg/kg	1	10	4.70	31.00	14.46	11.00	9.13	0	NR	130	Hydrock Derived		31	26	11	9.3	4.7	6.4	11	13	8.2	24									
7782-49-2	Selenium	mg/kg	1	10	1.00	1.00	1.00	1.00	0.00	0	NR	260	Hydrock Derived		1	1	1	1	1	1	1	1	1	1									
7440-62-2	Vanadium	mg/kg	1	10	18.00	59.00	37.90	36.50	12.25	0	NR	410	Hydrock Derived		54	32	45	35	18	26	38	38	34	59									
7440-66-6	Zinc	mg/kg	1	10	36.00	78.00	53.30	50.50	15.06	0	NR	3900	Hydrock Derived		78	67	56	53	38	38	48	36	46	73									
P1095	Cyanide (free)	mg/kg	1	10	1.00	1.00	1.00	1.00	0.00	0	NR	24	Acute Risk - SoBRA 2020		1	1	1	1	1	1	1	1	1	1									
P1186	Total Phenols (Monohydric)	mg/kg	1	10	1.00	1.00	1.00	1.00	0.00	0	38058	210	Hydrock Derived		1	1	1	1	1	1	1	1	1	1									
83-32-9	Acenaphthene	mg/kg	0.05	10	0.05	0.05	0.05	0.05	0.00	0	141	540	Hydrock Derived		0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05									
208-96-8	Acenaphthylene	mg/kg	0.05	10	0.05	0.05	0.05	0.05	0.00	0	212	440	Hydrock Derived		0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05									
120-12-7	Anthracene	mg/kg	0.05	10	0.05	0.05	0.05	0.05	0.00	0	2.91	5500	Hydrock Derived		0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05									
56-55-3	Benzo(a)anthracene	mg/kg	0.05	10	0.05	0.05	0.05	0.05	0.00	0	4.28	12	Hydrock Derived		0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05									
50-32-8	Benzo(a)pyrene	mg/kg	0.05	10	0.05	0.05	0.05	0.05	0.00	0	2.28	5	C4SL - CL:AIRE 2014		0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05									
205-99-2	Benzo(b)fluoranthene	mg/kg	0.05	10	0.05	0.05	0.05	0.05	0.00	0	3.04	3.3	Hydrock Derived		0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05									
191-24-2	Benzo(ghi)perylene	mg/kg	0.05	10	0.05	0.05	0.05	0.05	0.00	0	0.04	340	Hydrock Derived		0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05									
207-08-9	Benzo(k)fluoranthene	mg/kg	0.05	10	0.05	0.05	0.05	0.05	0.00	0	1.72	93	Hydrock Derived		0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05									
218-01-9	Chrysene	mg/kg	0.05	10	0.05	0.05	0.05	0.05	0.00	0	1.10	22	Hydrock Derived		0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05									
53-70-3	Dibenz(ah)anthracene	mg/kg	0.05	10	0.05	0.05	0.05	0.05	0.00	0	0.010	0.29	Hydrock Derived		0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05									
206-44-0	Fluoranthene	mg/kg	0.05	10	0.05	0.30	0.08	0.05	0.08	0	47	560	Hydrock Derived		0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.3									
86-73-7	Fluorene	mg/kg	0.05	10	0.05	0.05	0.05	0.05	0.00	0	77	420	Hydrock Derived		0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05									
193-39-5	Indeno(123cd)pyrene	mg/kg	0.05	10	0.05	0.05	0.05	0.05	0.00	0	0.15	36	Hydrock Derived		0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05									
91-20-3	Naphthalene	mg/kg	0.05	10	0.05	0.05	0.05	0.05	0.00	0	183	30	Hydrock Derived		0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05									
85-01-8	Phenanthrene	mg/kg	0.05	10	0.05	0.05	0.05	0.05	0.00	0	90	220	Hydrock Derived		0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05									
129-00-0	Pyrene	mg/kg	0.05	10	0.05	0.26	0.07	0.05	0.07	0	5.5	1200	Hydrock Derived		0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.26									
Legend:														MG Made Ground																			
														NAT Natural Ground																			
														TS Topsoil																			
														<0.02 Value below the laboratory reporting limit and are considered as being at the detection limit for the purposes of statistical analysis, as a conservative estimate.																			
														0.02 Value greater than, or equal to, the generic assessment criterion (GAC).																			
														*<10 Value excluded from statistical analysis																			
														Y Text result																			
														- Represents a determinand that was not tested.																			
														+ represents a data point that is not included in the current filter settings																			

Phytotoxic GQRA

Assessment of Chemicals of Potential Concern to Plant Life



Risk parameter: Phytotoxic pH >7 Client: Castlewood Pproperties Ventures Limited Site: Land at Penn Hill, Calne Job no.: 24863 Lab. report no(s).: 22-87620-1 and 22-87628-1 All values in mg/kg unless otherwise stated Dataset mean pH8.42 Scenario pH>7 Data Filters ZoneCOM StrataMG Depth Min (m bgl)0.1 Depth Max (m bgl)0.6 Hydrock Date28/10/2228/10/2228/10/2228/10/2228/10/2227/10/22 ZoneCOMCOMCOMCOMCOMCOM LocationWS09WS09WS10WS11WS10WS08 Depth (m bgl)0.50.20.50.50.20.4																			
CAS No / P Code	Chemical of Potential Concern	Units	LoD	No. Samples	Min. Value	Max. Value	Mean	Median	Standard Deviation	No. Samples >= GAC & > LoD	GAC	GAC Source	Strata	MG	MG	MG	MG	MG	MG
-	Hydrock Default Suite - FOC / SOM / pH																		
P1334	pH (su)	pH Units	0.1	6	7.30	9.40	8.42	8.45	0.87		-	-		9.2	8.9	7.7	9.4	7.3	8
-	Hydrock Default Suite - Metals & PAH																		
7440-38-2	Arsenic	mg/kg	1	6	9.80	49.00	28.63	28.00	18.03	0	250	MAFF 1998		11	9.8	39	17	46	49
7440-42-8	Boron	mg/kg	0.2	6	0.30	13.00	4.35	1.40	5.44	2	5	Nable, et al. 1997		1.4	0.6	9.4	1.4	13	0.3
16065-83-1	Chromium (III)	mg/kg	1	6	11.00	110.00	36.17	18.50	38.38	0	400	MAFF 1998 (Cr(TI))		13	11	46	15	110	22
18540-29-9	Chromium (VI)	mg/kg	1.2	6	1.80	1.80	1.80	1.80	0.00	0	25	ICRCL 70/90 1990		1.8	1.8	1.8	1.8	1.8	1.8
7440-50-8	Copper	mg/kg	1	6	9.40	4400.00	969.07	95.50	1742.66	2	200	BS3882 2015		81	9.4	1200	110	4400	14
7440-02-0	Nickel	mg/kg	1	6	9.70	110.00	37.28	13.00	42.23	1	110	BS3882 2015		10	9.7	68	14	110	12
7440-66-6	Zinc	mg/kg	1	6	30.00	5400.00	1228.83	180.00	2117.81	2	300	BS3882 2015		140	83	1500	220	5400	30
Legend:		MG	Made Ground	<0.02		Value below the laboratory reporting limit and are considered as being at the detection limit for the purposes of statistical analysis, as a conservative estimate.													
		NAT	Natural Ground	0.02		Value greater than, or equal to, the generic assessment criterion (GAC).													
		TS	Topsoil	<10		Value excluded from statistical analysis													
				Y		Text result													
				-		Represents a determinand that was not tested.													
				+		represents a data point that is not included in the current filter settings													