

TRIAL PIT 3

Depth (m)	Strata
0.00 – 1.80m	Scrub over loose orangish brown to black sandy angular to subangular fine to coarse GRAVEL of mudstone and burnt shale. (MADE GROUND - Colliery Spoil)
1.80 – 2.50m	Firm black slightly sandy CLAY. (GLACIAL TILL)
2.50 – 3.00m	Dense greenish brown clayey slightly gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to coarse of sandstone. (GLACIAL DEPOSITS)

Notes

1. Pit sides stable,
2. Slow groundwater seepage from 1.80m.

Trial Pit 3 – Spoil



Trial Pit 3



TRIAL PIT 4

Depth (m)	Strata
00.0 – 1.70m	Scrub over loose black sandy angular to subangular fine to coarse GRAVEL of mudstone and burnt shale with a medium cobble content of subangular mudstone. (MADE GROUND – Colliery Spoil)
1.70 – 2.40m	Firm black slightly sandy CLAY. (GLACIAL TILL)
2.40 – 3.00m	Dense greenish grey clayey slightly gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to coarse of sandstone. (GLACIAL DEPOSITS)

Notes

1. Pit sides stable,
2. Slow seepage from 1.70m.

Trial Pit 4 – Spoil



Trial Pit 4



TRIAL PIT 5

Depth (m)	Strata
00.0 – 1.60m	Grass over loose black sandy angular to subangular fine to coarse GRAVEL of mudstone and burnt shale. (MADE GROUND – Colliery Spoil)
1.60 – 2.30m	Firm black slightly sandy CLAY. (GLACIAL TILL)
2.30 – 3.00m	Dense greenish grey clayey slightly gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to coarse of sandstone. (GLACIAL DEPOSITS)

Notes

1. Pit sides stable,
2. Slow seepage from 1.60m.

Trial Pit 5 -Spoil



Trial Pit 5



TRIAL PIT 6

Depth (m)	Strata
00.0 – 1.30m	Grass over loose reddish brown to black sandy angular to subangular fine to coarse GRAVEL of mudstone and burnt shale. (MADE GROUND – Colliery Spoil)
1.30 – 1.80m	Firm black slightly sandy CLAY. (GLACIAL TILL)
1.80 – 2.50m	Dense greenish grey clayey slightly gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to coarse of sandstone. (GLACIAL DEPOSITS)

Notes

1. Pit sides stable,
2. Trial pit terminated at 2.50m due to rapid inflow of groundwater,
3. Fast inflow from 1.30m.

Trial Pit 6 – Spoil



Trial Pit 6



TRIAL PIT 7

Depth (m)	Strata
00.0 – 1.90m	Scrub over loose dark brown to black sandy angular to subangular fine to coarse GRAVEL of mudstone and brick. (MADE GROUND – Colliery Spoil)
1.90 – 2.50m	Firm black slightly sandy CLAY. (GLACIAL TILL)
2.50 – 3.00m	Dense greenish grey clayey slightly gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to coarse of sandstone. (GLACIAL DEPOSITS)

Notes

1. Pit sides stable,
2. No groundwater encountered.

Trial Pit 7 – Spoil



Trial Pit 7



TRIAL PIT 8

Depth (m)	Strata
00.0 – 1.80m	Scrub over loose dark brown to black sandy angular to subangular fine to coarse GRAVEL of mudstone and burnt shale. (MADE GROUND – Colliery Spoil)
1.80 – 2.30m	Firm black slightly sandy CLAY. (GLACIAL TILL)
2.30 – 3.00m	Dense greenish grey clayey slightly gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to coarse of sandstone. (GLACIAL DEPOSITS)

Notes

1. Pit sides stable,
2. Slow seepage from 1.80m.

Trial Pit 8 – Spoil



Trial Pit 8



TRIAL PIT 9

Depth (m)	Strata
00.0 – 2.60m	Scrub over loose orangish brown to black sandy angular to subangular fine to coarse GRAVEL of mudstone, burnt shale and brick. (MADE GROUND – Colliery Spoil)
2.60 – 3.00m	Dense greenish grey clayey slightly gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to coarse of sandstone. (GLACIAL DEPOSITS)

Notes

1. Pit sides stable,
2. Slow seepage from 2.60m.

Trial Pit 9 – Spoil



Trial Pit 9



TRIAL PIT 10

Depth (m)	Strata
00.0 – 2.10m	Scrub over loose orangish brown to black sandy angular to subangular fine to coarse GRAVEL of mudstone, burnt shale, slag and brick with a medium cobble content of subangular slag. Black soot at 1.10m (MADE GROUND – Colliery Spoil)
2.10m	Brick structure. (MADE GROUND)

Notes

1. Pit sides stable,
2. Trial pit terminated due to solid brick structure @ 2.10m,
3. No groundwater encountered.

Trial Pit 10 – Spoil



Trial Pit 10

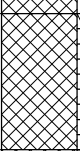
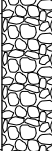
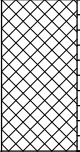
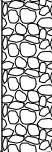
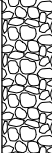
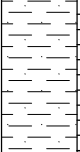
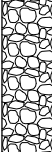
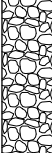
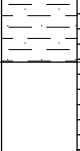
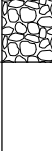
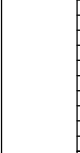
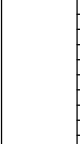


APPENDIX G

Borehole Logs

BOREHOLE LOG

Project Wynnstay Technology Park, Ruabon				BOREHOLE No WS01	
Job No 2387	Date 09-09-20 09-09-20	Ground Level (m)	Co-Ordinates ()		
Contractor Regional Drilling				Sheet 1 of 1	

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION		
1.00		N14				0.10	Grass over loose dark brown sandy gravelly SILT. Gravel is subangular to angular fine to coarse of mudstone (MADE GROUND- Colliery Spoil). Medium dense brown to black clayey gravelly fine to coarse SAND. Gravel is angular to subangular fine to coarse of mudstone and burnt shale (MADE GROUND- Colliery Spoil).		
						(0.90)			
1.00		N14				1.00	Firm black sandy gravelly CLAY. Gravel is angular to subangular fine to coarse of mudstone, burnt shale and brick (MADE GROUND).		
				(1.00)					
2.00		N3				2.00	Very soft becoming firm light greyish brown very sandy CLAY (GLACIAL TILL).		
3.00		N5							
						(3.42)			
4.00		N12							
5.00		N50/ 250 mm							
						5.42			
									
									

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To	
											1.) Water strike @ 1.00m, 2.) SPT Refusal @ 5.42m.
All dimensions in metres Scale 1:50			Client Gratton Oaks Ltd			Method/ Plant Used			Logged By AB		

BOREHOLE LOG

Project Wynnstay Technology Park, Ruabon				BOREHOLE No WS02
Job No 2387	Date 09-09-20 09-09-20	Ground Level (m)	Co-Ordinates ()	
Contractor Regional Drilling				Sheet 1 of 1

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION		
1.00		N10				(2.10)	Medium dense black sandy angular to subangular fine to coarse GRAVEL of mudstone and burnt shale (MADE GROUND- Colliery Spoil).		
2.00		N10				2.10 (0.40) 2.50	Firm black slightly sandy slightly gravelly CLAY. Gravel is angular to suangular fine to coarse of burnt shale. (MADE GROUND- Colliery Spoil)		
3.00		N12				(0.70) 3.20	Firm silty sandy CLAY (GLACIAL TILL).		
4.00		N27				(2.25)	Stiff brown sandy gravelly CLAY (GLACIAL TILL).		
5.00		N23				5.45			

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To	
											1.) Water strike @ 2.00m.
All dimensions in metres Scale 1:50			Client Gratton Oakes Ltd			Method/ Plant Used			Logged By TG		

BOREHOLE LOG

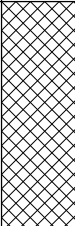
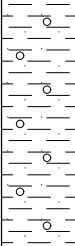
Project Wynnstay Technology Park, Ruabon				BOREHOLE No WS03	
Job No 2387	Date 09-09-20 09-09-20	Ground Level (m)	Co-Ordinates ()		
Contractor Regional Drilling				Sheet 1 of 1	

SAMPLES & TESTS			STRATA					Geology	Instrument/ Backfill
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION		
1.00		N13				(1.50) 1.50	Grass over dense brown becoming black clayey gravelly fine to coarse SAND. Gravel is angular to subangular fine to coarse of mudstone, burnt shale and brick (MADE GROUND).		
2.00		N14				(0.50) 2.00	Very stiff black sandy gravelly CLAY. Gravel is angular to subangular fine to coarse of mudstone (GLACIAL TILL).		
3.00		N25				(2.20)	Firm becoming very stiff greyish brown sandy CLAY (GLACIAL TILL).		
4.00		N39				4.20			
5.00		N31				(1.25) 5.45	Very stiff dark brown slightly sandy gravelly CLAY. Gravel is angular to subrounded fine to coarse of mudstone (GLACIAL TILL).		

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To	
											1.) Water strike @ 1.50m.
All dimensions in metres Scale 1:50			Client Gratton Oakes Ltd			Method/ Plant Used			Logged By AB		

BOREHOLE LOG

Project Wynnstay Technology Park, Ruabon				BOREHOLE No WS04
Job No 2387	Date 09-09-20 09-09-20	Ground Level (m)	Co-Ordinates ()	
Contractor Regional Drilling				Sheet 1 of 1

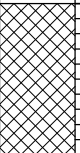
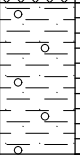
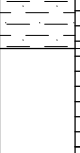
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Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)			DESCRIPTION
1.00		N8				(1.50)	Loose reddish brown to light brown sandy angular to subangular fine to coarse GRAVEL of mudstone and burnt shale (MADE GROUND-Colliery Spoil).		
						1.50 (0.60)	Firm black to grey silty CLAY (GLACIAL TILL).		
2.00		N8				2.10			
3.00		N6				(2.27)	Soft becoming very stiff greyish brown sandy gravelly CLAY. Gravel is subrounded to rounded fine to coarse of sandstone (GLACIAL TILL).		
4.00		N50/ 220 mm				4.37			

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Casing Depth	Dia. mm	Water Dpt	From	To	Hours	From	To	
											1.) Water strike @ 1.50m, 2.) SPT Refusal @ 4.37m.
All dimensions in metres Scale 1:50		Client Gratton Oakes Ltd				Method/ Plant Used					Logged By TG

AGS3 UK BH 2387 WYNNSTAY.GPJ GINT STD AGS3 1.GDT 14/10/20

BOREHOLE LOG

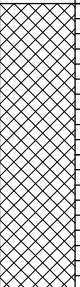
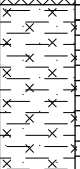
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Job No 2387	Date 09-09-20 09-09-20	Ground Level (m)	Co-Ordinates ()		
Contractor Regional Drilling				Sheet 1 of 1	

SAMPLES & TESTS			STRATA					Geology	Instrument/ Backfill
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	DESCRIPTION		
1.00		N31				1.00	Grass over dense brown becoming black clayey gravelly fine to coarse SAND. Gravel is angular to subangular fine to coarse of mudstone, burnt shale and brick (MADE GROUND- Colliery Spoil).		
						1.00	Very stiff black sandy gravelly CLAY. Gravel is angular to subangular fine to coarse of mudstone (GLACIAL TILL).		
2.00		N3				2.00			
3.00		N14				(3.35)			
4.00		N40							
5.00		N50/ 200 mm				5.35			

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To	
											1.) Water strike @ 1.00m, 2.) SPT Refusal @ 4.35m.
All dimensions in metres Scale 1:50			Client Gratton Oaks Ltd			Method/ Plant Used			Logged By AB		

BOREHOLE LOG

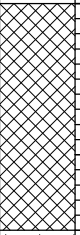
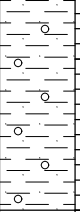
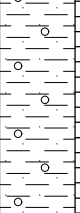
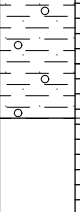
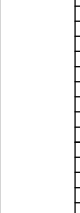
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Job No 2387	Date 09-09-20 09-09-20	Ground Level (m)	Co-Ordinates ()		
Contractor Regional Drilling				Sheet 1 of 1	

SAMPLES & TESTS			STRATA					Geology	Instrument/ Backfill
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	DESCRIPTION		
1.00		N14				(1.90)	Medium dense black sandy angular to subangular fine to coarse GRAVEL of mudstone and burnt shale (MADE GROUND- Colliery Spoil).		
2.00		N7				1.90 (1.10)	Firm to stiff brown silty sandy CLAY (GLACIAL TILL).		
3.00		N30				3.00	No Recovery- Probably SAND (GLACIAL DEPOSITS).		
4.00		N50/ 255 mm				(1.41) 4.41			

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To	
											1.) Water strike @ 1.80m, 2.) SPT Refusal @ 4.41m.
All dimensions in metres Scale 1:50			Client Gratton Oakes Ltd			Method/ Plant Used			Logged By TG		

BOREHOLE LOG

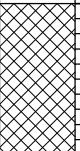
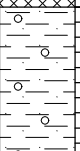
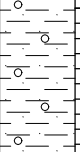
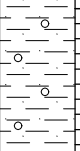
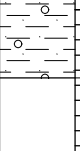
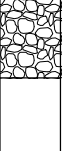
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Job No 2387	Date 09-09-20 09-09-20	Ground Level (m)	Co-Ordinates ()		
Contractor Regional Drilling				Sheet 1 of 1	

SAMPLES & TESTS			STRATA					Geology	Instrument/ Backfill
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	DESCRIPTION		
1.00		N33				(1.50)	Scrub over dense grey to black clayey gravelly fine to coarse SAND. Gravel is angular to subangular fine to coarse of brick and clinker (MADE GROUND- Colliery Spoil).		
2.00		N3				(1.50)	Very soft grey sandy slightly gravelly CLAY. Gravel is angular to subangular fine to coarse of mudstone (GLACIAL TILL).		
3.00		N24				3.00	Stiff to very stiff grey very sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse of sandstone (GLACIAL TILL).		
4.00		N26				(2.36)			
5.00		N50/ 215 mm				5.36			

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To	
											1.) Water strike @ 1.50m, 2.) SPT Refusal @ 5.36m.
All dimensions in metres Scale 1:50			Client Gratton Oakes Ltd			Method/ Plant Used			Logged By AB		

BOREHOLE LOG

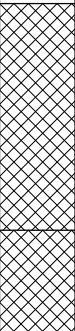
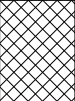
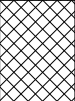
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Job No 2387	Date 09-09-20 09-09-20	Ground Level (m)	Co-Ordinates ()		
Contractor Regional Drilling				Sheet 1 of 1	

SAMPLES & TESTS			STRATA					Geology	Instrument/ Backfill
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	DESCRIPTION		
1.00		N34				(1.00) 1.00	Medium dense black sandy angular to subangular fine to coarse GRAVEL of mudstone and burnt shale (MADE GROUND).		
						(0.50) 1.50	Dense black SILT (MADE GROUND).		
						(0.50) 2.00	Firm black slightly sandy CLAY (MADE GROUND).		
2.00		N10				(3.45) 2.00	Stiff to very stiff greyish brown sandy gravelly CLAY (GLACIAL TILL).		
3.00		N30				(3.45) 2.00			
4.00		N24				(3.45) 2.00			
5.00		N34				(3.45) 2.00			
						5.45			

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To	
											1.) No groundwater encountered.
All dimensions in metres Scale 1:50			Client Gratton Oaks Ltd			Method/ Plant Used			Logged By TG		

BOREHOLE LOG

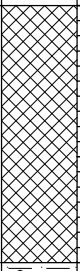
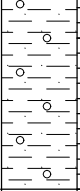
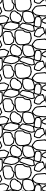
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Job No 2387	Date 09-09-20 09-09-20	Ground Level (m)	Co-Ordinates ()		
Contractor Regional Drilling				Sheet 1 of 1	

SAMPLES & TESTS			STRATA					Geology	Instrument/ Backfill
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	DESCRIPTION		
1.00		N26				(1.50)	Scrub over medium dense black slightly clayey very gravelly fine to coarse SAND. Gravel is angular to subangular fine to coarse of burnt shale and brick. (MADE GROUND)		
						1.50			
2.00		N50/ 95 mm				(0.68)	Very dense black asphalt. (MADE GROUND)		
						2.18			

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To	
											1.) Water strike @ 1.50m, 2.) SPT Refusal @ 5.42m.
All dimensions in metres Scale 1:50			Client Gratton Oakes Ltd			Method/ Plant Used			Logged By AB		

BOREHOLE LOG

Project Wynnstay Technology Park, Ruabon				BOREHOLE No WS10	
Job No 2387	Date 09-09-20 09-09-20	Ground Level (m)	Co-Ordinates ()		
Contractor Regional Drilling				Sheet 1 of 1	

SAMPLES & TESTS			Water	STRATA			Geology	Instrument/ Backfill	
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)			DESCRIPTION
1.00		N37				(1.70) 1.70	Scrub over dense grey to black gravelly fine to coarse SAND. Gravel is angular to subrounded fine to coarse of burnt shale and brick (MADE GROUND).		
2.00		N42				(1.30) 3.00	Very stiff dark grey sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse of mudstone (GLACIAL TILL).		
3.00		N39				(0.72) 3.72	Very stiff grey slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse of sandstone (GLACIAL TILL).		
3.60		N50/ 155 mm							

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To	
											1.) Water strike @ 1.70m, 2.) SPT Refusal @ 5.42m.
All dimensions in metres Scale 1:50			Client Gratton Oakes Ltd			Method/ Plant Used			Logged By AB		

APPENDIX H
CBR Testing Results

Units 1 & 2
Deltic Place
Deltic Way
Knowsley Industrial Estate
Liverpool
L33 7BU

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www.ccgeotechnical.com



LABORATORY REPORT

CONTRACT NUMBER: CCG-C-20-11845

CONTRACT TITLE: WYNNSTAY TECH PARK, RUABON

CLIENT: GROUND SOLVE LTD

Unit 1 Charter Court, Well House Barns, Chester Road, Bretton, Flintshire, CH4 0DH

DATE RECEIVED: 04/09/20
DATE COMMENCED: 09/09/20
DATE COMPLETED: 09/09/20
REPORT DATE: 12/09/20

Test Description	Qty
Dynamic Cone Penetrometer (TRRL Method) (#)	18

Notes: Observations and interpretations are not accredited by UKAS
All testing undertaken at laboratory permanent facilities

denotes non-accredited test

a denotes UKAS accredited test

s denotes test undertaken by approved subcontractor

Test locations determined and recorded by client

This report is issued in accordance with the requirements of the United Kingdom Accreditation Services and EN ISO/IEC 17025:2005. The results reported herein relate only to the material supplied to the laboratory. This report shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved Signatories: Chris Bolan (Managing Director) – Daniel Kerfoot (Laboratory Manager)



Dynamic Cone Penetrometer Strength Analysis Report

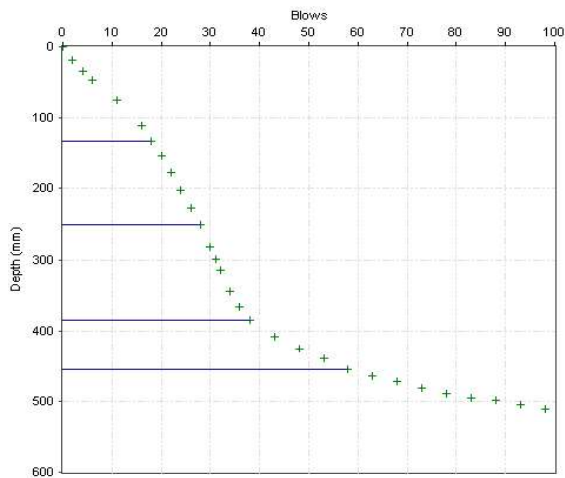
Site: WYNNSTAY TECH PARK, RUABON
 Location: DCP1
 Cone Angle: 60 degrees
 Zero Error: 86
 Test Date: 09/09/2020

Job Number: CCG-C-20-11845
 Surface Type: -
 Thickness (mm): -

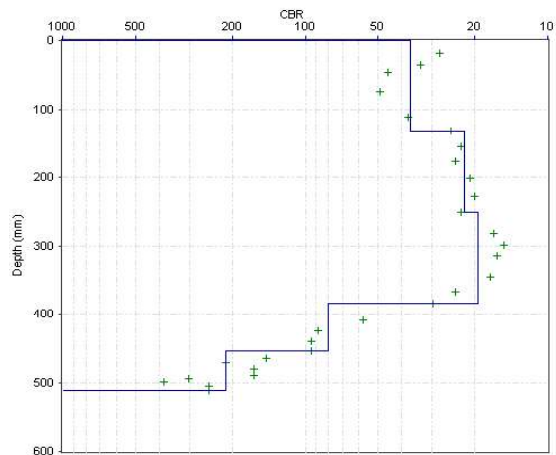
No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/b)
1	0	0	105	0
2	2	2	124	9.5
3	2	4	140	8.0
4	2	6	152	6.0
5	5	11	180	5.6
6	5	16	216	7.2
7	2	18	237	10.5
8	2	20	260	11.5
9	2	22	282	11.0
10	2	24	307	12.5
11	2	26	333	13.0
12	2	28	356	11.5
13	2	30	387	15.5
14	1	31	404	17.0
15	1	32	420	16.0
16	2	34	450	15.0
17	2	36	472	11.0
18	2	38	490	9.0
19	5	43	514	4.8
20	5	48	530	3.2

No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/b)
21	5	53	545	3.0
22	5	58	560	3.0
23	5	63	570	2.0
24	5	68	577	1.4
25	5	73	586	1.8
26	5	78	595	1.8
27	5	83	600	1.0
28	5	88	604	0.8
29	5	93	610	1.2
30	5	98	616	1.2

Layer Boundaries: Chainage 1.000



Layer Boundaries Chart



CBR Chart

Layer Properties

No.	CBR value	Thickness	Depth	Depth (mmbgl)	Strength Coefficient
1	37	132	132	218	
2	22	119	251	337	
3	19	134	385	471	
4	80	70	455	541	
5	212	56	511	597	

CBR Derived by TDR equation

$$\log_{10}(\text{CBR}) = 2.48 - 1.057 \times \log_{10}(\text{penetration rate})$$

Remarks Surface material description: Dark brown silty sandy GRAVEL



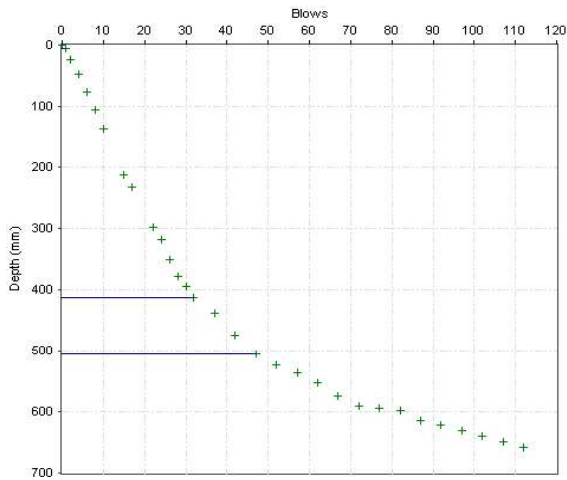
Dynamic Cone Penetrometer Strength Analysis Report

Site: WYNNSTAY TECH PARK, RUABON
 Location: DCP2
 Cone Angle: 60 degrees
 Zero Error: 98
 Test Date: 09/09/2020

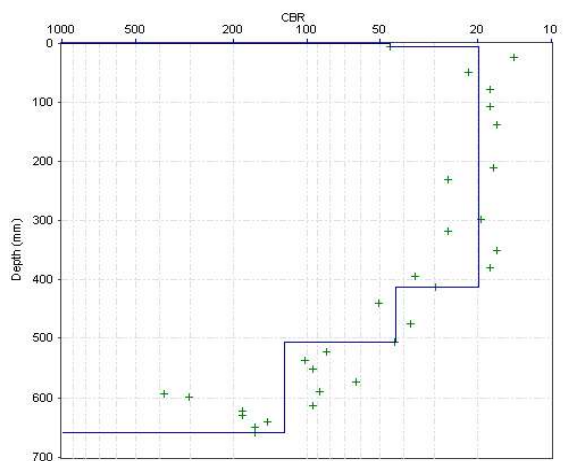
Job Number: CCG-C-20-11845
 Surface Type: -
 Thickness (mm): -

No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/b)	No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/b)
1	0	0	98	0	21	5	62	650	3.0
2	1	1	104	6.0	22	5	67	672	4.4
3	1	2	122	18.0	23	5	72	688	3.2
4	2	4	146	12.0	24	5	77	692	0.8
5	2	6	175	14.5	25	5	82	697	1.0
6	2	8	204	14.5	26	5	87	712	3.0
7	2	10	235	15.5	27	5	92	720	1.6
8	5	15	310	15.0	28	5	97	728	1.6
9	2	17	330	10.0	29	5	102	738	2.0
10	5	22	397	13.4	30	5	107	747	1.8
11	2	24	417	10.0	31	5	112	756	1.8
12	2	26	448	15.5					
13	2	28	477	14.5					
14	2	30	492	7.5					
15	2	32	510	9.0					
16	5	37	537	5.4					
17	5	42	573	7.2					
18	5	47	604	6.2					
19	5	52	621	3.4					
20	5	57	635	2.8					

Layer Boundaries: Chainage 2.000



Layer Boundaries Chart



CBR Chart

Layer Properties

No.	CBR value	Thickness	Depth	Depth (mmbgl)	Strength Coefficient
1	45	6	6	104	
2	20	406	412	510	
3	43	94	506	604	
4	123	152	658	756	

CBR Derived by TDR equation

$$\log_{10}(\text{CBR}) = 2.48 - 1.057 \times \log_{10}(\text{penetration rate})$$

Remarks Surface material description: Dark brown silty sandy GRAVEL



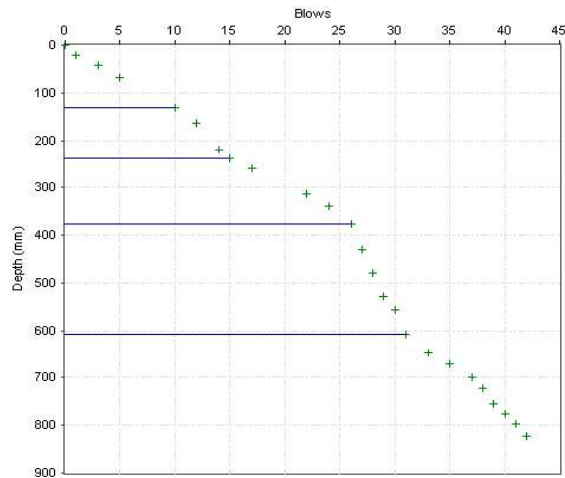
Dynamic Cone Penetrometer Strength Analysis Report

Site: WYNNSTAY TECH PARK, RUABON
 Location: DCP3
 Cone Angle: 60 degrees
 Zero Error: 98
 Test Date: 09/09/2020

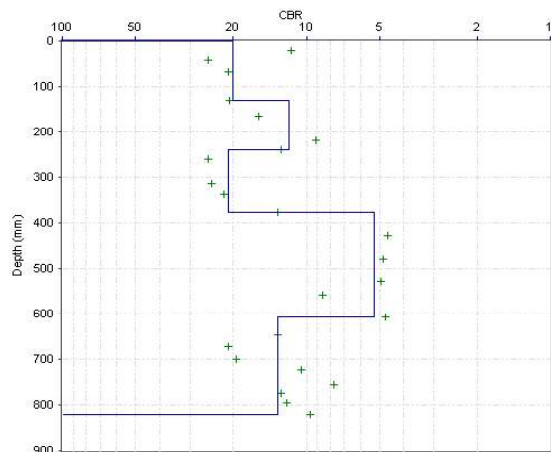
Job Number: CCG-C-20-11845
 Surface Type: -
 Thickness (mm): -

No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/b)	No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/b)
1	0	0	98	0	21	1	38	821	24.0
2	1	1	120	22.0	22	1	39	853	32.0
3	2	3	141	10.5	23	1	40	873	20.0
4	2	5	166	12.5	24	1	41	894	21.0
5	5	10	229	12.6	25	1	42	920	26.0
6	2	12	262	16.5					
7	2	14	317	27.5					
8	1	15	337	20.0					
9	2	17	358	10.5					
10	5	22	412	10.8					
11	2	24	436	12.0					
12	2	26	475	19.5					
13	1	27	527	52.0					
14	1	28	577	50.0					
15	1	29	626	49.0					
16	1	30	655	29.0					
17	1	31	706	51.0					
18	2	33	745	19.5					
19	2	35	770	12.5					
20	2	37	797	13.5					

Layer Boundaries: Chainage 3.000



Layer Boundaries Chart



CBR Chart

Layer Properties

No.	CBR value	Thickness	Depth	Depth (mmbgl)	Strength Coefficient
1	20	131	131	229	
2	12	108	239	337	
3	21	138	377	475	
4	5	231	608	706	
5	13	214	822	920	

CBR Derived by TDR equation

$$\log_{10}(\text{CBR}) = 2.48 - 1.057 \times \log_{10}(\text{penetration rate})$$

Remarks Surface material description: Dark brown silty sandy GRAVEL



Dynamic Cone Penetrometer Strength Analysis Report

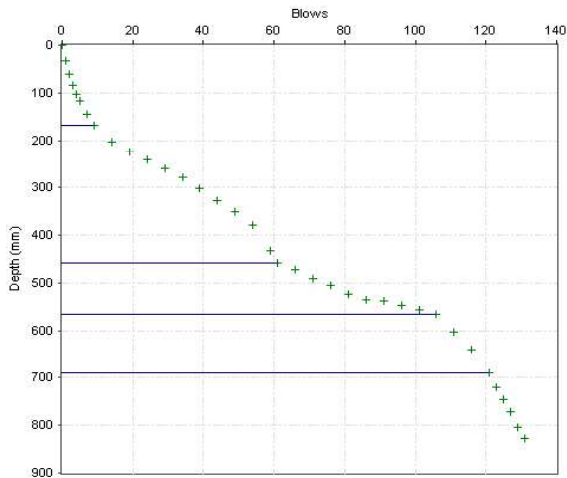
Site: WYNNSTAY TECH PARK, RUABON
 Location: DCP4
 Cone Angle: 60 degrees
 Zero Error: 92
 Test Date: 09/09/2020

Job Number: CCG-C-20-11845
 Surface Type: -
 Thickness (mm): -

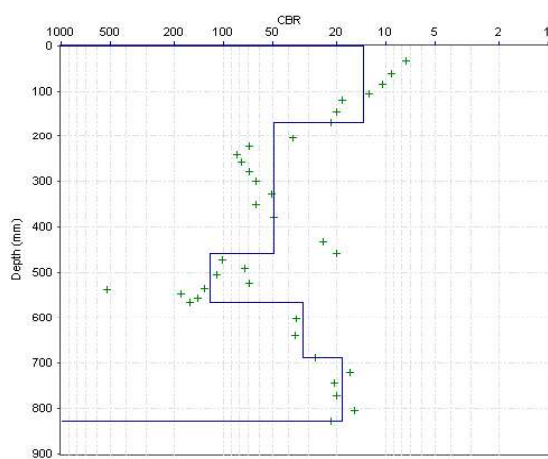
No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/b)
1	0	0	92	0
2	1	1	125	33.0
3	1	2	152	27.0
4	1	3	176	24.0
5	1	4	196	20.0
6	1	5	210	14.0
7	2	7	236	13.0
8	2	9	260	12.0
9	5	14	296	7.2
10	5	19	316	4.0
11	5	24	333	3.4
12	5	29	351	3.6
13	5	34	371	4.0
14	5	39	393	4.4
15	5	44	420	5.4
16	5	49	442	4.4
17	5	54	470	5.6
18	5	59	524	10.8
19	2	61	550	13.0
20	5	66	564	2.8

No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/b)
21	5	71	583	3.8
22	5	76	596	2.6
23	5	81	616	4.0
24	5	86	627	2.2
25	5	91	630	0.6
26	5	96	638	1.6
27	5	101	648	2.0
28	5	106	657	1.8
29	5	111	695	7.6
30	5	116	732	7.4
31	5	121	781	9.8
32	2	123	812	15.5
33	2	125	837	12.5
34	2	127	863	13
35	2	129	896	16.5
36	2	131	920	12

Layer Boundaries: Chainage 4.000



Layer Boundaries Chart



CBR Chart

Layer Properties

No.	CBR value	Thickness	Depth	Depth (mmbgl)	Strength Coefficient
1	14	168	168	260	
2	49	290	458	550	
3	121	107	565	657	
4	32	124	689	781	
5	19	139	828	920	

CBR Derived by TDR equation

$$\log_{10}(\text{CBR}) = 2.48 - 1.057 \times \log_{10}(\text{penetration rate})$$

Remarks Surface material description: Dark brown silty sandy GRAVEL



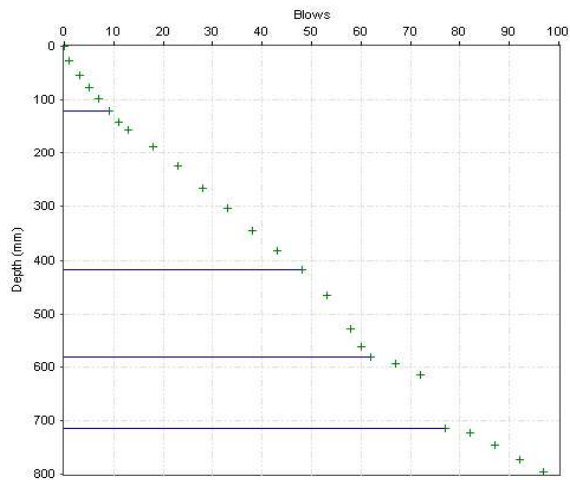
Dynamic Cone Penetrometer Strength Analysis Report

Site: WYNNSTAY TECH PARK, RUABON
 Location: DCP5
 Cone Angle: 60 degrees
 Zero Error: 96
 Test Date: 09/09/2020

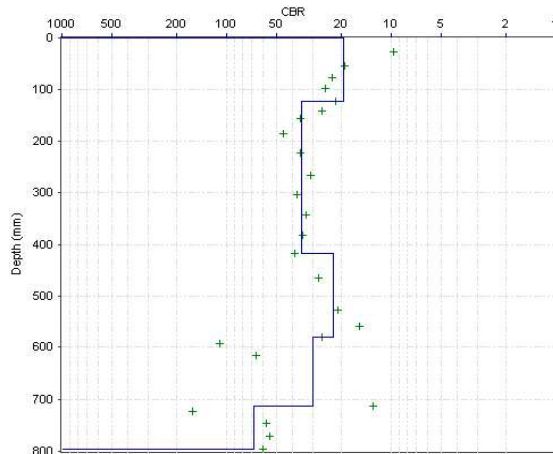
Job Number: CCG-C-20-11845
 Surface Type: -
 Thickness (mm): -

No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/b)	No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/b)
1	0	0	96	0	21	5	72	711	4.2
2	1	1	122	26.0	22	5	77	810	19.8
3	2	3	149	13.5	23	5	82	819	1.8
4	2	5	172	11.5	24	5	87	843	4.8
5	2	7	193	10.5	25	5	92	868	5.0
6	2	9	217	12.0	26	5	97	891	4.6
7	2	11	237	10.0					
8	2	13	252	7.5					
9	5	18	282	6.0					
10	5	23	320	7.6					
11	5	28	363	8.6					
12	5	33	399	7.2					
13	5	38	440	8.2					
14	5	43	479	7.8					
15	5	48	514	7.0					
16	5	53	562	9.6					
17	5	58	624	12.4					
18	2	60	657	16.5					
19	2	62	677	10.0					
20	5	67	690	2.6					

Layer Boundaries: Chainage 5.000



Layer Boundaries Chart



CBR Chart

Layer Properties

No.	CBR value	Thickness	Depth	Depth (mmbgl)	Strength Coefficient
1	19	121	121	217	
2	35	297	418	514	
3	23	163	581	677	
4	30	133	714	810	
5	69	81	795	891	

CBR Derived by TDR equation

$$\log_{10}(\text{CBR}) = 2.48 - 1.057 \times \log_{10}(\text{penetration rate})$$

Remarks Surface material description: Dark brown silty sandy GRAVEL



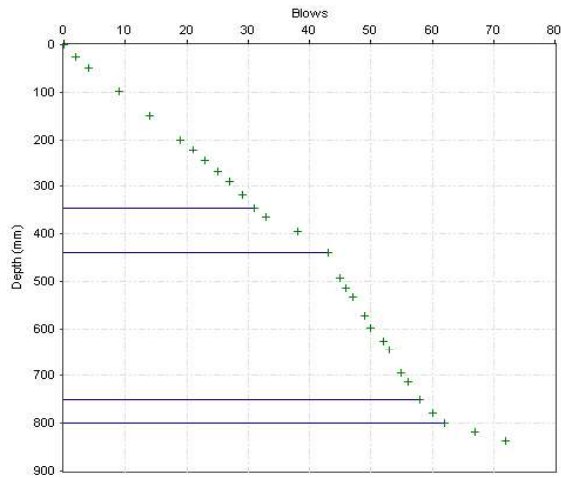
Dynamic Cone Penetrometer Strength Analysis Report

Site: WYNNSTAY TECH PARK, RUABON
 Location: DCP6
 Cone Angle: 60 degrees
 Zero Error: 92
 Test Date: 09/09/2020

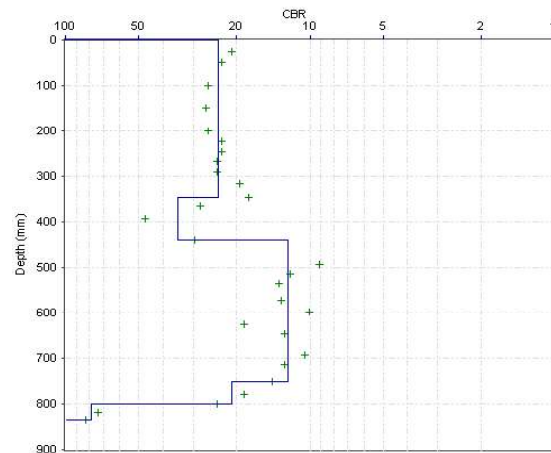
Job Number: CCG-C-20-11845
 Surface Type: -
 Thickness (mm): -

No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/b)	No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/b)
1	0	0	92	0	21	2	52	718	14.0
2	2	2	117	12.5	22	1	53	738	20.0
3	2	4	140	11.5	23	2	55	786	24.0
4	5	9	191	10.2	24	1	56	806	20.0
5	5	14	241	10.0	25	2	58	842	18.0
6	5	19	292	10.2	26	2	60	870	14.0
7	2	21	315	11.5	27	2	62	892	11.0
8	2	23	338	11.5	28	5	67	911	3.8
9	2	25	360	11.0	29	5	72	928	3.4
10	2	27	382	11.0					
11	2	29	409	13.5					
12	2	31	438	14.5					
13	2	33	457	9.5					
14	5	38	486	5.8					
15	5	43	531	9.0					
16	2	45	586	27.5					
17	1	46	607	21.0					
18	1	47	626	19.0					
19	2	49	665	19.5					
20	1	50	690	25.0					

Layer Boundaries: Chainage 6.000



Layer Boundaries Chart



CBR Chart

Layer Properties

No.	CBR value	Thickness	Depth	Depth (mmbgl)	Strength Coefficient
1	24	346	346	438	
2	35	93	439	531	
3	12	311	750	842	
4	21	50	800	892	
5	78	36	836	928	

CBR Derived by TDR equation

$$\log_{10}(\text{CBR}) = 2.48 - 1.057 \times \log_{10}(\text{penetration rate})$$

Remarks Surface material description: Dark brown silty sandy GRAVEL



Dynamic Cone Penetrometer Strength Analysis Report

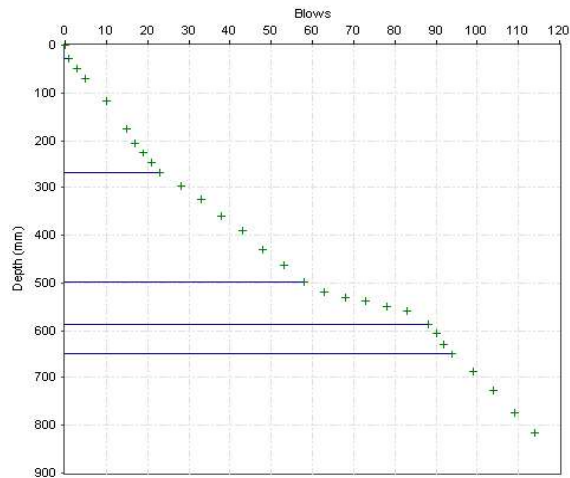
Site: WYNNSTAY TECH PARK, RUABON
 Location: DCP7
 Cone Angle: 60 degrees
 Zero Error: 94
 Test Date: 09/09/2020

Job Number: CCG-C-20-11845
 Surface Type: -
 Thickness (mm): -

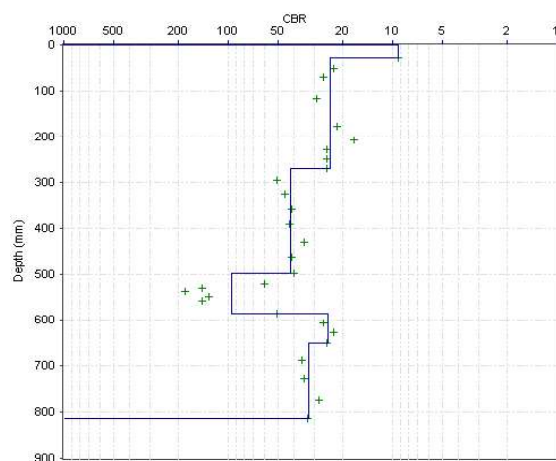
No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/b)
1	0	0	86	0
2	1	1	113	27.0
3	2	3	136	11.5
4	2	5	156	10.0
5	5	10	202	9.2
6	5	15	262	12.0
7	2	17	292	15.0
8	2	19	313	10.5
9	2	21	334	10.5
10	2	23	355	10.5
11	5	28	382	5.4
12	5	33	412	6.0
13	5	38	445	6.6
14	5	43	477	6.4
15	5	48	516	7.8
16	5	53	549	6.6
17	5	58	583	6.8
18	5	63	606	4.6
19	5	68	616	2.0
20	5	73	624	1.6

No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/b)
21	5	78	635	2.2
22	5	83	645	2.0
23	5	88	672	5.4
24	2	90	692	10.0
25	2	92	715	11.5
26	2	94	736	10.5
27	5	99	774	7.6
28	5	104	813	7.8
29	5	109	860	9.4
30	5	114	901	8.2

Layer Boundaries: Chainage 7.000



Layer Boundaries Chart



CBR Chart

Layer Properties

No.	CBR value	Thickness	Depth	Depth (mmbgl)	Strength Coefficient
1	9	27	27	121	
2	24	242	269	363	
3	42	228	497	591	
4	96	89	586	680	
5	25	64	650	744	
6	32	165	815	909	

CBR Derived by TDR equation

$$\log_{10}(\text{CBR}) = 2.48 - 1.057 \times \log_{10}(\text{penetration rate})$$

Remarks

Surface material description: Dark brown silty sandy GRAVEL



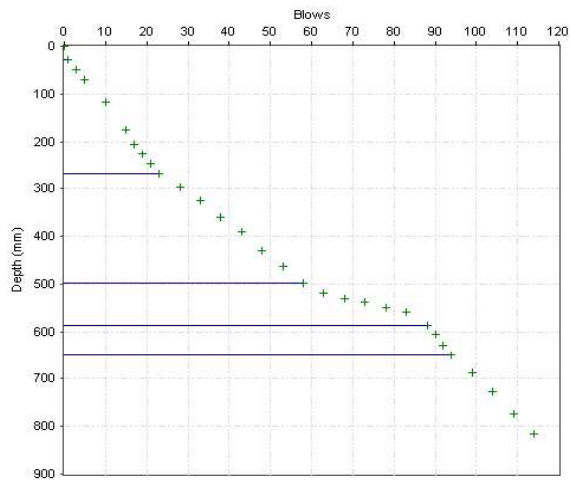
Dynamic Cone Penetrometer Strength Analysis Report

Site: WYNNSTAY TECH PARK, RUABON
 Location: DCP8
 Cone Angle: 60 degrees
 Zero Error: 101
 Test Date: 09/09/2020

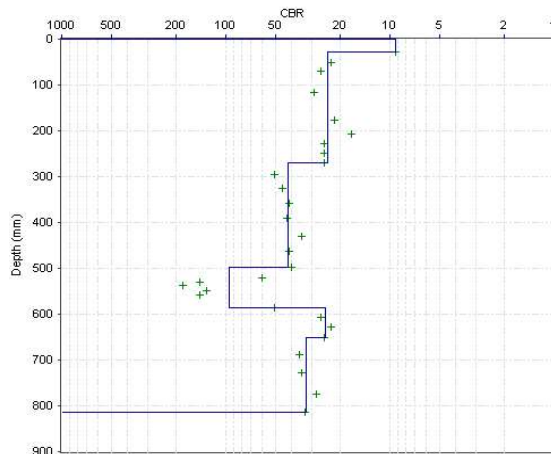
Job Number: CCG-C-20-11845
 Surface Type: -
 Thickness (mm): -

No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/b)	No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/b)
1	0	0	101	0	21	5	78	731	1.8
2	1	1	123	22.0	22	5	83	743	2.4
3	2	3	151	14.0	23	5	88	752	1.8
4	2	5	179	14.0	24	5	93	763	2.2
5	2	7	217	19.0	25	5	98	778	3.0
6	5	12	260	8.6	26	5	103	790	2.4
7	5	17	300	8.0	27	5	108	802	2.4
8	5	22	324	4.8	28	5	113	819	3.4
9	5	27	344	4.0	29	5	118	837	3.6
10	5	32	373	5.8	30	5	123	851	2.8
11	5	37	409	7.2	31	5	128	877	5.2
12	5	42	451	8.4	32	5	133	900	4.6
13	5	47	496	9.0					
14	5	52	550	10.8					
15	2	54	581	15.5					
16	5	59	607	5.2					
17	5	64	654	9.4					
18	2	66	679	12.5					
19	2	68	697	9.0					
20	5	73	722	5.0					

Layer Boundaries: Chainage 7.000



Layer Boundaries Chart



CBR Chart

Layer Properties

No.	CBR value	Thickness	Depth	Depth (mmbgl)	Strength Coefficient
1	16	116	116	217	
2	34	480	596	697	
3	55	25	621	722	
4	126	80	701	802	
5	71	98	799	900	

CBR Derived by TDR equation

$$\log_{10}(\text{CBR}) = 2.48 - 1.057 \times \log_{10}(\text{penetration rate})$$

Remarks Surface material description: Dark brown silty sandy GRAVEL



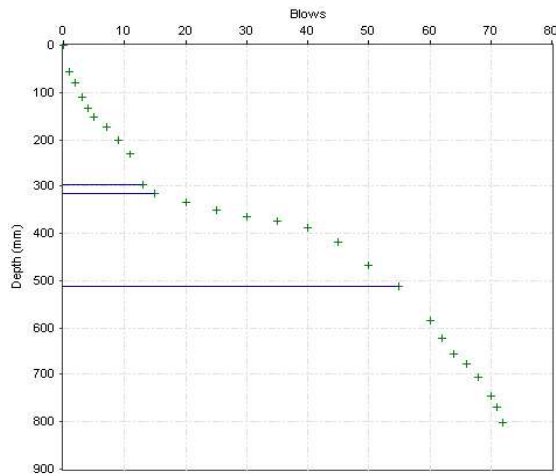
Dynamic Cone Penetrometer Strength Analysis Report

Site: WYNNSTAY TECH PARK, RUABON
 Location: DCP10
 Cone Angle: 60 degrees
 Zero Error: 130
 Test Date: 09/09/2020

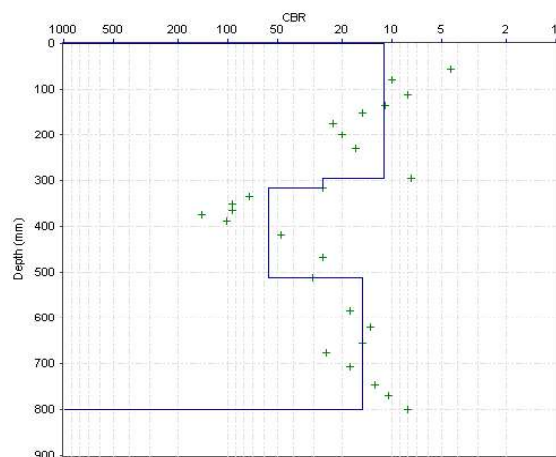
Job Number: CCG-C-20-11845
 Surface Type: -
 Thickness (mm): -

No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/b)	No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/b)
1	0	0	130	0	21	2	62	752	19.0
2	1	1	185	55.0	22	2	64	786	17.0
3	1	2	210	25.0	23	2	66	807	10.5
4	1	3	241	31.0	24	2	68	836	14.5
5	1	4	264	23.0	25	2	70	876	20.0
6	1	5	281	17.0	26	1	71	900	24.0
7	2	7	304	11.5	27	1	72	931	31.0
8	2	9	330	13.0					
9	2	11	361	15.5					
10	2	13	426	32.5					
11	2	15	446	10.0					
12	5	20	465	3.8					
13	5	25	480	3.0					
14	5	30	495	3.0					
15	5	35	505	2.0					
16	5	40	519	2.8					
17	5	45	548	5.8					
18	5	50	598	10.0					
19	5	55	642	8.8					
20	5	60	714	14.4					

Layer Boundaries: Chainage 10.000



Layer Boundaries Chart



CBR Chart

Layer Properties

No.	CBR value	Thickness	Depth	Depth (mmbgl)	Strength Coefficient
1	11	296	296	426	
2	26	20	316	446	
3	56	196	512	642	
4	15	289	801	931	

CBR Derived by TDR equation

$$\text{Log}_{10}(\text{CBR}) = 2.48 - 1.057 \times \text{Log}_{10}(\text{penetration rate})$$

Remarks Surface material description: Grassed TOPSOIL



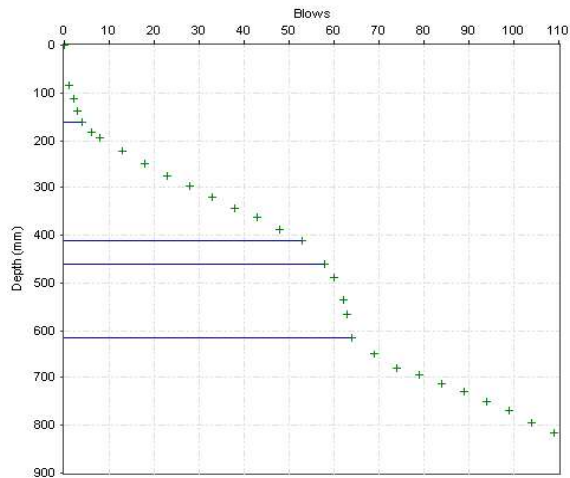
Dynamic Cone Penetrometer Strength Analysis Report

Site: WYNNSTAY TECH PARK, RUABON
 Location: DCP11
 Cone Angle: 60 degrees
 Zero Error: 139
 Test Date: 09/09/2020

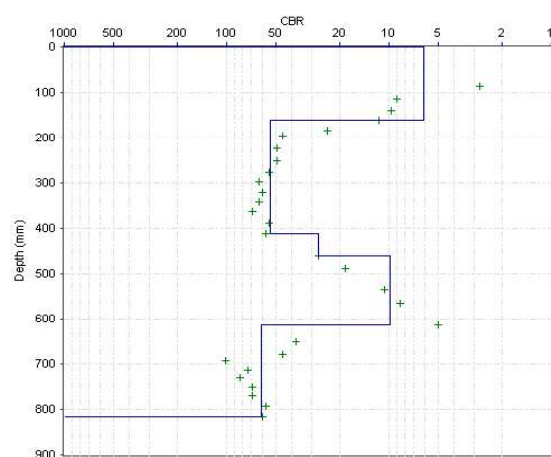
Job Number: CCG-C-20-11845
 Surface Type: -
 Thickness (mm): -

No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/b)	No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/b)
1	0	0	139	0	21	1	64	753	49.0
2	1	1	224	85.0	22	5	69	789	7.2
3	1	2	252	28.0	23	5	74	819	6.0
4	1	3	278	26.0	24	5	79	833	2.8
5	1	4	300	22.0	25	5	84	852	3.8
6	2	6	322	11.0	26	5	89	869	3.4
7	2	8	334	6.0	27	5	94	889	4.0
8	5	13	362	5.6	28	5	99	909	4.0
9	5	18	390	5.6	29	5	104	933	4.8
10	5	23	415	5.0	30	5	109	956	4.6
11	5	28	437	4.4					
12	5	33	460	4.6					
13	5	38	482	4.4					
14	5	43	502	4.0					
15	5	48	527	5.0					
16	5	53	551	4.8					
17	5	58	600	9.8					
18	2	60	628	14.0					
19	2	62	675	23.5					
20	1	63	704	29.0					

Layer Boundaries: Chainage 11.000



Layer Boundaries Chart



CBR Chart

Layer Properties

No.	CBR value	Thickness	Depth	Depth (mmbgl)	Strength Coefficient
1	6	161	161	300	
2	54	251	412	551	
3	27	49	461	600	
4	10	153	614	753	
5	61	203	817	956	

CBR Derived by TDR equation

$$\log_{10}(\text{CBR}) = 2.48 - 1.057 \times \log_{10}(\text{penetration rate})$$

Remarks Surface material description: Grassed TOPSOIL



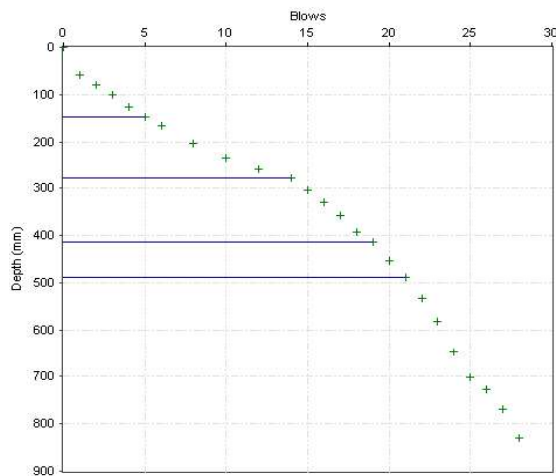
Dynamic Cone Penetrometer Strength Analysis Report

Site: WYNNSTAY TECH PARK, RUABON
 Location: DCP12
 Cone Angle: 60 degrees
 Zero Error: 103
 Test Date: 09/09/2020

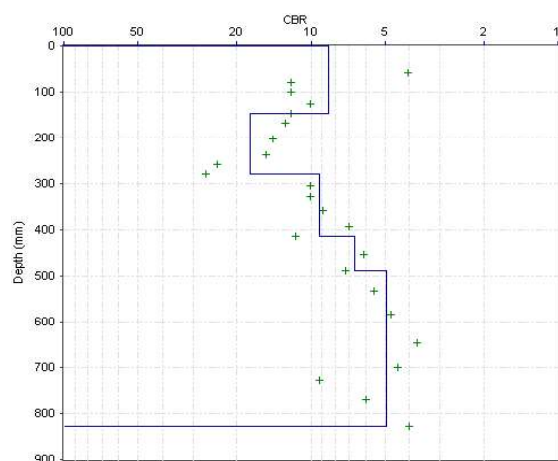
Job Number: CCG-C-20-11845
 Surface Type: -
 Thickness (mm): -

No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/b)	No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/b)
1	0	0	103	0	21	1	24	750	64.0
2	1	1	162	59.0	22	1	25	804	54.0
3	1	2	183	21.0	23	1	26	831	27.0
4	1	3	204	21.0	24	1	27	872	41.0
5	1	4	229	25.0	25	1	28	932	60.0
6	1	5	250	21.0					
7	1	6	270	20.0					
8	2	8	306	18.0					
9	2	10	340	17.0					
10	2	12	362	11.0					
11	2	14	382	10.0					
12	1	15	407	25.0					
13	1	16	432	25.0					
14	1	17	460	28.0					
15	1	18	495	35.0					
16	1	19	517	22.0					
17	1	20	557	40.0					
18	1	21	591	34.0					
19	1	22	635	44.0					
20	1	23	686	51.0					

Layer Boundaries: Chainage 12.000



Layer Boundaries Chart



CBR Chart

Layer Properties

No.	CBR value	Thickness	Depth	Depth (mmbgl)	Strength Coefficient
1	8	147	147	250	
2	18	132	279	382	
3	9	135	414	517	
4	7	74	488	591	
5	5	341	829	932	

CBR Derived by TDR equation

$$\log_{10}(\text{CBR}) = 2.48 - 1.057 \times \log_{10}(\text{penetration rate})$$

Remarks Surface material description: Dark brown silty sandy GRAVEL



Dynamic Cone Penetrometer Strength Analysis Report

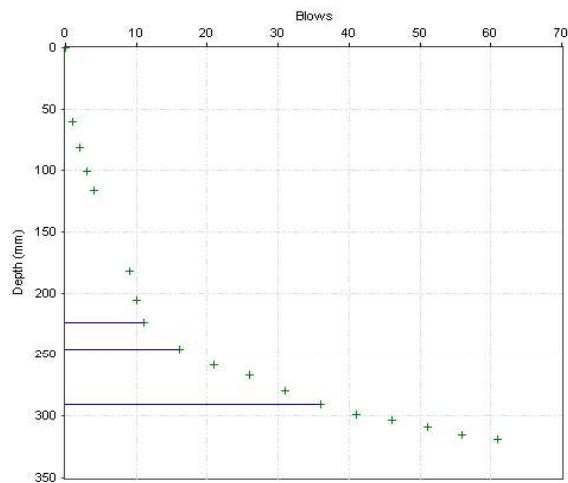
Site: WYNNSTAY TECH PARK, RUABON
 Location: DCP13
 Cone Angle: 60 degrees
 Zero Error: 151
 Test Date: 09/09/2020

Job Number: CCG-C-20-11845
 Surface Type: -
 Thickness (mm): -

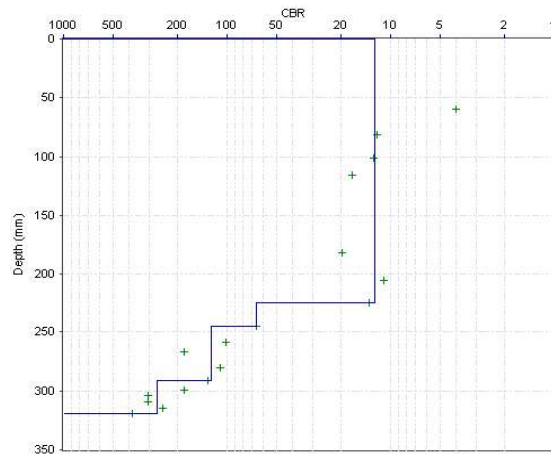
No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/b)
1	0	0	151	0
2	1	1	211	60.0
3	1	2	232	21.0
4	1	3	252	20.0
5	1	4	267	15.0
6	5	9	333	13.2
7	1	10	356	23.0
8	1	11	375	19.0
9	5	16	396	4.2
10	5	21	410	2.8
11	5	26	418	1.6
12	5	31	431	2.6
13	5	36	442	2.2
14	5	41	450	1.6
15	5	46	455	1.0
16	5	51	460	1.0
17	5	56	466	1.2
18	5	61	470	0.8

No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/b)

Layer Boundaries: Chainage 13.000



Layer Boundaries Chart



CBR Chart

Layer Properties

No.	CBR value	Thickness	Depth	Depth (mmbgl)	Strength Coefficient
1	12	224	224	375	
2	66	21	245	396	
3	125	46	291	442	
4	268	28	319	470	

CBR Derived by TDR equation

$$\log_{10}(\text{CBR}) = 2.48 - 1.057 \times \log_{10}(\text{penetration rate})$$

Remarks Surface material description: Dark brown silty sandy GRAVEL



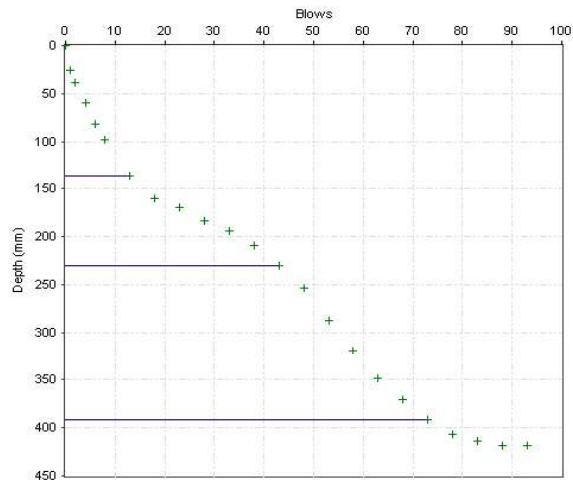
Dynamic Cone Penetrometer Strength Analysis Report

Site: WYNNSTAY TECH PARK, RUABON
 Location: DCP14
 Cone Angle: 60 degrees
 Zero Error: 103
 Test Date: 09/09/2020

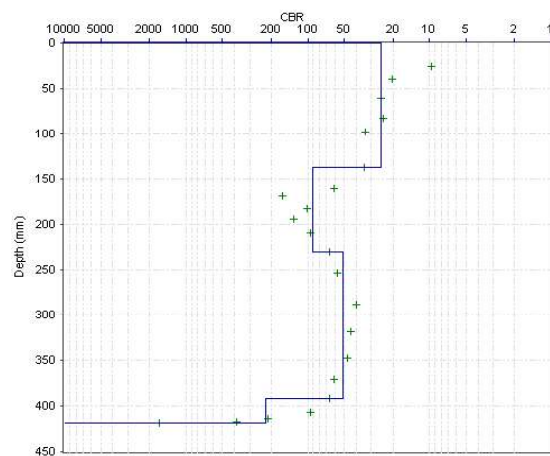
Job Number: CCG-C-20-11845
 Surface Type: -
 Thickness (mm): -

No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/b)	No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/b)
1	0	0	103	0	21	5	83	517	1.4
2	1	1	129	26.0	22	5	88	521	0.8
3	1	2	142	13.0	23	5	93	522	0.2
4	2	4	163	10.5					
5	2	6	185	11.0					
6	2	8	201	8.0					
7	5	13	240	7.8					
8	5	18	263	4.6					
9	5	23	272	1.8					
10	5	28	286	2.8					
11	5	33	297	2.2					
12	5	38	312	3.0					
13	5	43	333	4.2					
14	5	48	357	4.8					
15	5	53	391	6.8					
16	5	58	422	6.2					
17	5	63	451	5.8					
18	5	68	474	4.6					
19	5	73	495	4.2					
20	5	78	510	3.0					

Layer Boundaries: Chainage 14.000



Layer Boundaries Chart



CBR Chart

Layer Properties

No.	CBR value	Thickness	Depth	Depth (mmbgl)	Strength Coefficient
1	25	137	137	240	
2	91	93	230	333	
3	51	162	392	495	
4	220	27	419	522	

CBR Derived by TDR equation

$$\log_{10}(\text{CBR}) = 2.48 - 1.057 \times \log_{10}(\text{penetration rate})$$

Remarks Surface material description: Dark brown silty sandy GRAVEL



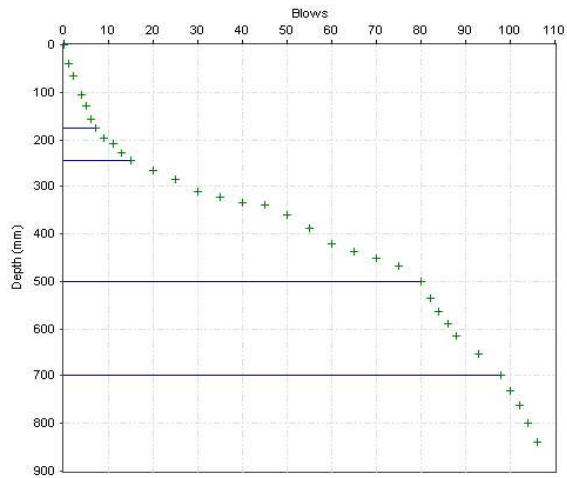
Dynamic Cone Penetrometer Strength Analysis Report

Site: WYNNSTAY TECH PARK, RUABON
 Location: DCP15
 Cone Angle: 60 degrees
 Zero Error: 96
 Test Date: 09/09/2020

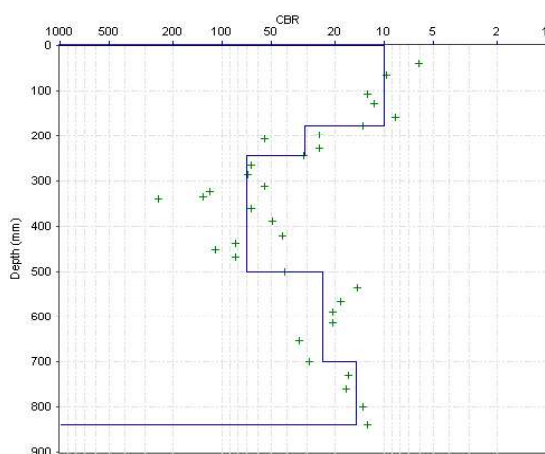
Job Number: CCG-C-20-11845
 Surface Type: -
 Thickness (mm): -

No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/b)	No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/b)
1	0	0	96	0	21	5	65	534	3.4
2	1	1	136	40.0	22	5	70	547	2.6
3	1	2	162	26.0	23	5	75	564	3.4
4	2	4	202	20.0	24	5	80	597	6.6
5	1	5	224	22.0	25	2	82	632	17.5
6	1	6	253	29.0	26	2	84	660	14.0
7	1	7	272	19.0	27	2	86	685	12.5
8	2	9	293	10.5	28	2	88	710	12.5
9	2	11	303	5.0	29	5	93	750	8.0
10	2	13	324	10.5	30	5	98	796	9.2
11	2	15	341	8.5	31	2	100	827	15.5
12	5	20	362	4.2	32	2	102	857	15
13	5	25	382	4.0	33	2	104	895	19
14	5	30	407	5.0	34	2	106	935	20
15	5	35	419	2.4					
16	5	40	430	2.2					
17	5	45	436	1.2					
18	5	50	457	4.2					
19	5	55	485	5.6					
20	5	60	517	6.4					

Layer Boundaries: Chainage 15.000



Layer Boundaries Chart



CBR Chart

Layer Properties

No.	CBR value	Thickness	Depth	Depth (mmbgl)	Strength Coefficient
1	10	176	176	272	
2	31	69	245	341	
3	71	256	501	597	
4	24	199	700	796	
5	15	139	839	935	

CBR Derived by TDR equation

$$\log_{10}(\text{CBR}) = 2.48 - 1.057 \times \log_{10}(\text{penetration rate})$$

Remarks Surface material description: Dark brown silty sandy GRAVEL



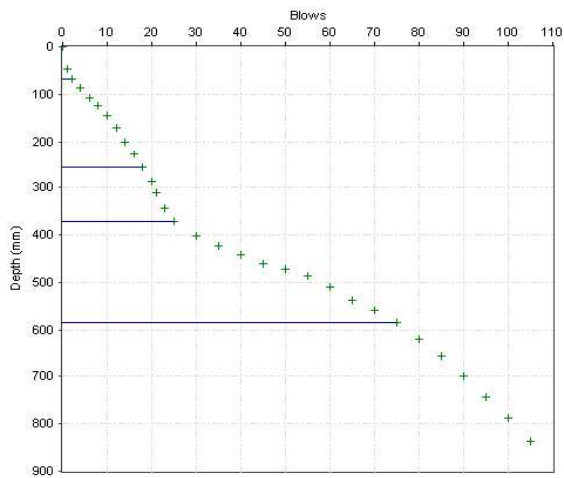
Dynamic Cone Penetrometer Strength Analysis Report

Site: WYNNSTAY TECH PARK, RUABON
 Location: DCP17
 Cone Angle: 60 degrees
 Zero Error: 90
 Test Date: 09/09/2020

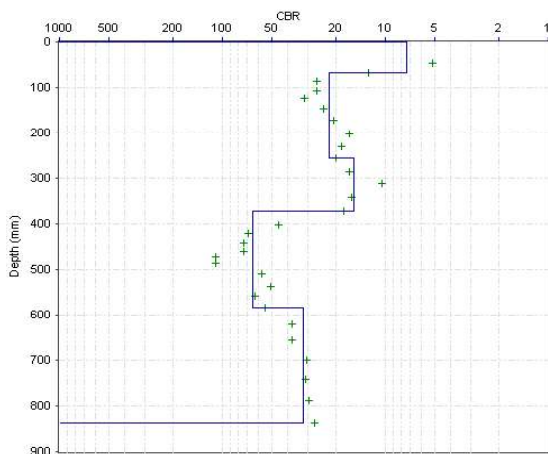
Job Number: CCG-C-20-11845
 Surface Type: -
 Thickness (mm): -

No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/b)	No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/b)
1	0	0	90	0	21	5	55	576	2.6
2	1	1	137	47.0	22	5	60	600	4.8
3	1	2	157	20.0	23	5	65	627	5.4
4	2	4	177	10.0	24	5	70	649	4.4
5	2	6	197	10.0	25	5	75	674	5.0
6	2	8	214	8.5	26	5	80	710	7.2
7	2	10	236	11.0	27	5	85	746	7.2
8	2	12	261	12.5	28	5	90	790	8.8
9	2	14	292	15.5	29	5	95	833	8.6
10	2	16	320	14.0	30	5	100	878	9
11	2	18	346	13.0	31	5	105	927	9.8
12	2	20	377	15.5					
13	1	21	401	24.0					
14	2	23	433	16.0					
15	2	25	462	14.5					
16	5	30	492	6.0					
17	5	35	512	4.0					
18	5	40	531	3.8					
19	5	45	550	3.8					
20	5	50	563	2.6					

Layer Boundaries: Chainage 17.000



Layer Boundaries Chart



CBR Chart

Layer Properties

No.	CBR value	Thickness	Depth	Depth (mmbgl)	Strength Coefficient
1	7	67	67	157	
2	22	189	256	346	
3	16	116	372	462	
4	66	212	584	674	
5	32	253	837	927	

CBR Derived by TDR equation

$$\log_{10}(\text{CBR}) = 2.48 - 1.057 \times \log_{10}(\text{penetration rate})$$

Remarks Surface material description: Dark brown silty sandy GRAVEL



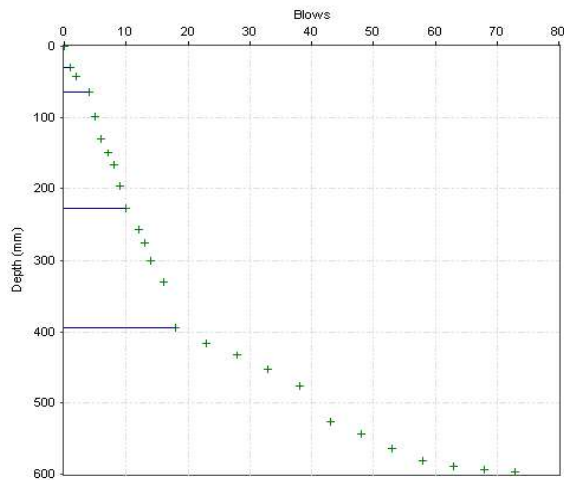
Dynamic Cone Penetrometer Strength Analysis Report

Site: WYNNSTAY TECH PARK, RUABON
 Location: DCP18
 Cone Angle: 60 degrees
 Zero Error: 113
 Test Date: 09/09/2020

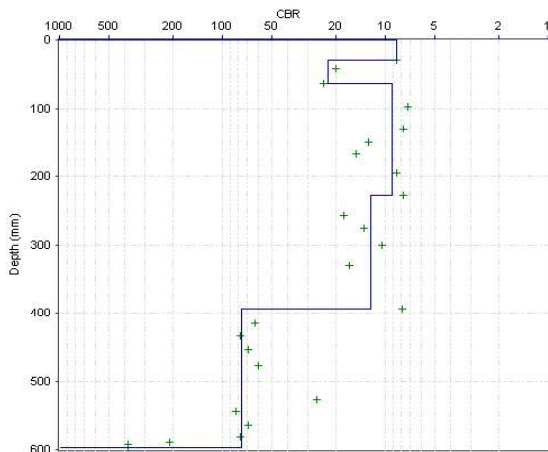
Job Number: CCG-C-20-11845
 Surface Type: -
 Thickness (mm): -

No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/b)	No.	Blows	Cumulative Blows	Penetration Depth (mm)	Penetration Rate (mm/b)
1	0	0	113	0	21	5	48	657	3.4
2	1	1	142	29.0	22	5	53	677	4.0
3	1	2	155	13.0	23	5	58	695	3.6
4	2	4	177	11.0	24	5	63	702	1.4
5	1	5	211	34.0	25	5	68	706	0.8
6	1	6	243	32.0	26	5	73	710	0.8
7	1	7	263	20.0					
8	1	8	280	17.0					
9	1	9	309	29.0					
10	1	10	341	32.0					
11	2	12	370	14.5					
12	1	13	389	19.0					
13	1	14	413	24.0					
14	2	16	444	15.5					
15	2	18	507	31.5					
16	5	23	529	4.4					
17	5	28	547	3.6					
18	5	33	567	4.0					
19	5	38	590	4.6					
20	5	43	640	10.0					

Layer Boundaries: Chainage 18.000



Layer Boundaries Chart



CBR Chart

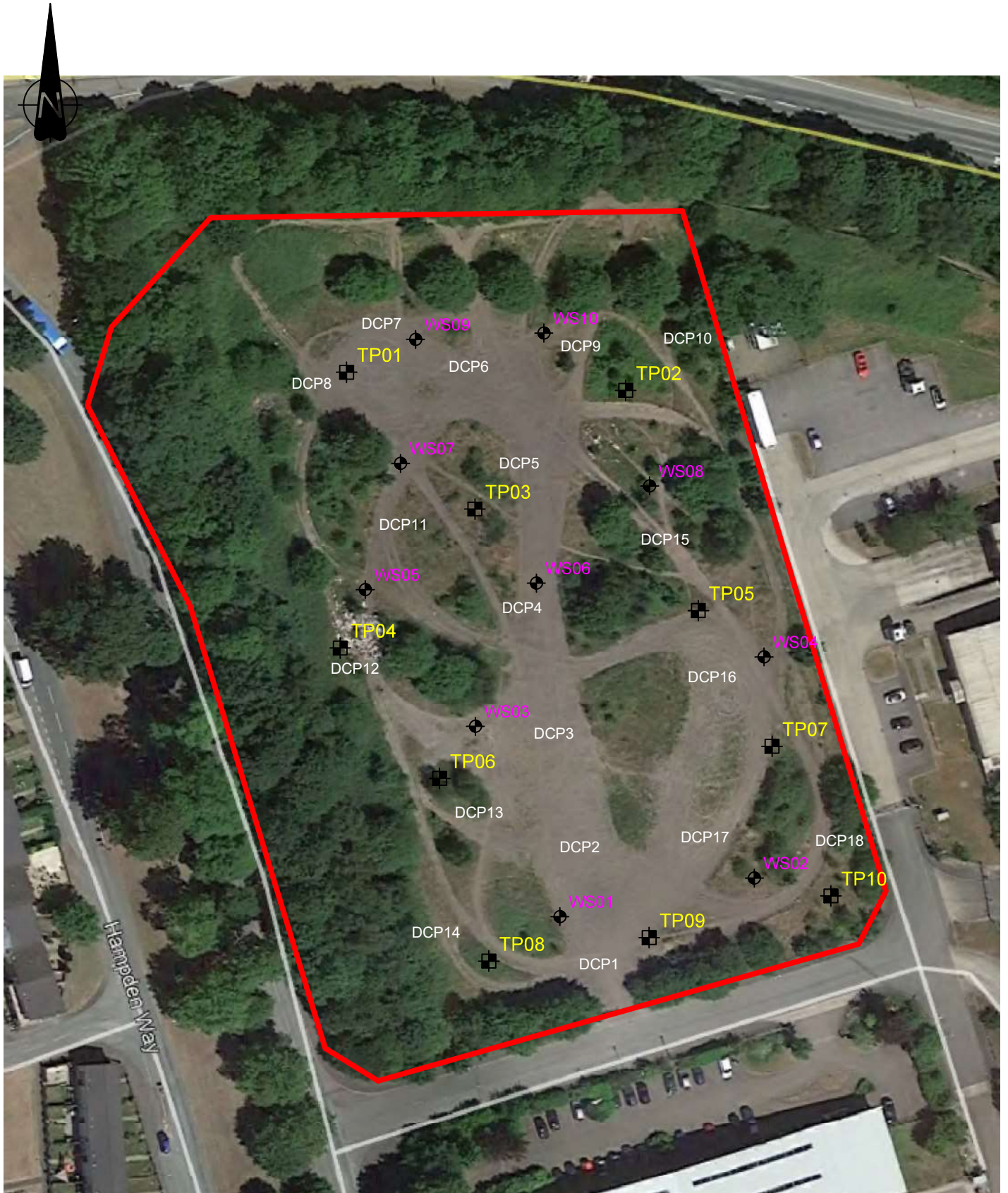
Layer Properties

No.	CBR value	Thickness	Depth	Depth (mmbgl)	Strength Coefficient
1	9	29	29	142	
2	23	35	64	177	
3	9	164	228	341	
4	12	166	394	507	
5	76	203	597	710	

CBR Derived by TDR equation

$$\log_{10}(\text{CBR}) = 2.48 - 1.057 \times \log_{10}(\text{penetration rate})$$

Remarks Surface material description: Dark brown silty sandy GRAVEL



SCALE 1: 500 @ A3

Figure Title
Site Layout & Exploratory
Hole Location Plan

APPENDIX I

Physical Testing Results

Certificate of Accreditation



Geotechnics Limited

Testing Laboratory No. 1365

Is accredited in accordance with International Standard ISO/IEC 17025:2017 – General Requirements for the competence of testing and calibration laboratories.

This accreditation demonstrates technical competence for a defined scope specified in the schedule to this certificate, and the operation of a management system (refer joint ISO-ILAC-IAF Communiqué dated April 2017). The schedule to this certificate is an essential accreditation document and from time to time may be revised and reissued.

The most recent issue of the schedule of accreditation, which bears the same accreditation number as this certificate, is available from www.ukas.com.

This accreditation is subject to continuing conformity with United Kingdom Accreditation Service requirements.

A handwritten signature in black ink, reading "Matt Gantley", is positioned above a horizontal line.

Matt Gantley, *Chief Executive Officer*
United Kingdom Accreditation Service

Initial Accreditation: 1 September 1993
Certificate Issued: 9 December 2019



Scan QR Code to
verify

Schedule of Accreditation

issued by

United Kingdom Accreditation Service

2 Pine Trees, Chertsey Lane, Staines-Upon-Thames, Middlesex TW18 3HR

 Accredited to ISO/IEC 17025:2017	Geotechnics Limited Issue No: 021 Issue date: 14 September 2020 <table border="1" style="width: 100%;"> <tr> <td style="width: 50%;"> The Geotechnical Centre 203 Torrington Avenue Tile Hill Coventry CV4 9AP </td><td style="width: 50%;"> Contact: Mr Stephane Schiano Tel: +44 (0)24 7662 9024 E-Mail: sschiano@geotechnics.co.uk Website: www.geotechnics.co.uk </td></tr> </table> Testing performed at the above address only	The Geotechnical Centre 203 Torrington Avenue Tile Hill Coventry CV4 9AP	Contact: Mr Stephane Schiano Tel: +44 (0)24 7662 9024 E-Mail: sschiano@geotechnics.co.uk Website: www.geotechnics.co.uk
The Geotechnical Centre 203 Torrington Avenue Tile Hill Coventry CV4 9AP	Contact: Mr Stephane Schiano Tel: +44 (0)24 7662 9024 E-Mail: sschiano@geotechnics.co.uk Website: www.geotechnics.co.uk		

DETAIL OF ACCREDITATION

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
AGGREGATES	Particle size distribution - sieving method	BS EN 933-1:2012
	Water content	BS EN 1097-5:2008
ROCK	Point load strength and anisotropy indices	ISRM Commission on Testing Methods. Suggested Method for Determining Point Load Strength 1985
	Water content – method 1	International Society for Rock Mechanics – suggested methods, Part 1 Test 1: 1981
GEOTECHNICAL INVESTIGATION and TESTING - Laboratory testing of soil	Water content	BS EN ISO 17892-1:2014
	Bulk density - linear measurement method	BS EN ISO 17892-2:2014
	Determination of particle density – fluid pycnometer method,	BS EN ISO 17892-3:2015
	Determination of particle size distribution - Sieving method	BS EN ISO 17892-4:2016
	Determination of particle size distribution - Pipette method	BS EN ISO 17892-4:2016
	Incremental loading odometer test	BS EN ISO 17892-5:2017
	Unconsolidated undrained triaxial test	BS EN ISO 17892-8:2018
	Direct shear (small shearbox)	BS EN ISO 17892-10:2018
	Determination of liquid limit (fall cone method)	BS EN ISO 17892-12:2018



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ISO/IEC 17025:2017

Schedule of Accreditation
issued by
United Kingdom Accreditation Service
2 Pine Trees, Chertsey Lane, Staines-Upon-Thames, Middlesex TW18 3HR

Geotechnics Limited

Issue No: 021 Issue date: 14 September 2020

Testing performed at main address only

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
GEOTECHNICAL INVESTIGATION and TESTING - Laboratory testing of soil (cont'd) SOILS for civil engineering purposes	Determination of liquid limit (one-point fall cone method)	BS EN ISO 17892-12:2018
	Determination of plastic limit	BS EN ISO 17892-12:2018
	Determination of plasticity index	BS EN ISO 17892-12:2018
	Moisture content - oven drying method	BS 1377-2:1990
	Saturation moisture content of chalk	BS 1377-2:1990
	Liquid limit - cone penetrometer	BS 1377-2:1990
	Liquid limit - cone penetrometer - one point	BS 1377-2:1990
	Plastic limit	BS 1377-2:1990
	Plasticity index	BS 1377-2:1990
	Linear shrinkage	BS 1377-2:1990
	Density - linear measurement	BS 1377-2:1990
	Particle density - gas jar	BS 1377-2:1990
	Particle density - small pycnometer	BS 1377-2:1990
	Particle density - large pycnometer	BS 1377-2:1990
	Particle size distribution - wet sieving	BS 1377-2:1990
	Particle size distribution - dry sieving	BS 1377-2:1990
	Particle size distribution - sedimentation - pipette method	BS 1377-2:1990
	Sulphate content of soil and ground water gravimetric method	BS 1377-3:1990 (withdrawn)



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ISO/IEC 17025:2017

Schedule of Accreditation

issued by

United Kingdom Accreditation Service

2 Pine Trees, Chertsey Lane, Staines-Upon-Thames, Middlesex TW18 3HR

Geotechnics Limited

Issue No: 021 Issue date: 14 September 2020

Testing performed at main address only

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
SOILS for civil engineering purposes (cont'd)	pH value	BS 1377-3:1990 (withdrawn)
	California Bearing Ratio (CBR)	BS 1377-4:1990
	Dry density/moisture content relationship (vibrating hammer)	BS 1377-4:1990
	Maximum and minimum dry densities for granular soils	BS 1377-4:1990
	Moisture condition value (MCV)	BS 1377-4:1990
	MCV/moisture content relation	BS 1377-4:1990
	Chalk crushing value	BS 1377-4:1990
	One-dimensional consolidation properties	BS 1377-5:1990
	Shear strength - small shear box	BS1377-7:1990
	Residual strength - small ring shear apparatus	BS1377-7:1990
	Unconfined compressive strength - load frame method	BS 1377-7:1990
	Undrained shear strength - triaxial compression without measurement of pore pressure	BS 1377-7:1990
	Undrained shear strength - triaxial compression with multistage loading and without measurement of pore pressure	BS 1377-7:1990
Hydraulically bound and stabilized materials for civil engineering purposes	Initial consumption of lime	BS 1924-2:2018
	California Bearing Ratio / immediate bearing index	BS EN 13286-47:2012
	Moisture content - oven drying method (definitive)	BS EN 17892-1:2014
	Plastic limit	BS 1924-2:2018
	Liquid limit	BS 1924-2:2018
	Plasticity index	BS 1924-2:2018



1365
Accredited to
ISO/IEC 17025:2017

Schedule of Accreditation
issued by
United Kingdom Accreditation Service
2 Pine Trees, Chertsey Lane, Staines-Upon-Thames, Middlesex TW18 3HR

Geotechnics Limited

Issue No: 021 **Issue date:** 14 September 2020

Testing performed at main address only

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
Hydraulically bound and stabilized Materials for civil engineering purposes	Dry density/moisture content relationship (2.5 kg rammer)	BS 1924-2:2018 and BS EN 13826-2:2010
	Dry density/moisture content relationship (4.5 kg rammer)	BS 1924-2:2018 and BS EN 13826-2:2010
	Dry density/moisture content relationship (vibrating hammer - subsidiary method)	BS 1924-2:2018 and BS EN 13826-4:2003
	Moisture condition value (MCV)	BS EN 13826-46:2003
END		

Classification and Strength

Symbol	C - Clay (0 - containing organic matter) Plasticity	M - Silt L - Low I - Intermediate H - High V - Very High E - Extremely High
I_p	Plasticity Index	
%	% retained on 425 μ m sieve, shown under I_p value	
w_L	Liquid Limit	
w_p	Plastic Limit	
NP	Non-Plastic	
NAT	Sample tested in natural state	
w	Water Content	
ρ_d	Particle Density	
Test	Quick undrained triaxial tests	
	SS	Single stage - 102mm diameter.
	S3	Single stage - set of 3 38mm diameter.
	MS	Multistage - 102mm diameter.
	D	Drained Test
	HV	Hand Vane
	PP	Pocket Penetrometer (kg/cm^2)
	NST	Not suitable for test
γ_b	Bulk Density	
σ_3	Triaxial Cell Pressure	
$\sigma_1 - \sigma_3$	Deviator Stress	
##	Excessive Strain	
c_u	Undrained Cohesion	
c	Cohesion Intercept	
ϕ	Angle of Shearing Resistance	
Linear Shrink	Linear Shrinkage	
Stab add-	Stabiliser which is added	

Consolidation

m_v	Coefficient of Volume Compressibility
c_{v50}	Coefficient of Consolidation - Log t
c_{v90}	Coefficient of Consolidation - $\sqrt{t}$

Rock

UF	Unacceptable Failure
----	----------------------

Chemical Analysis

Acid Soluble	Total sulphate in specimen, expressed as SO_3 %, value in brackets expressed as SO_4 %
Water Soluble	Soluble sulphate in 2:1 water : soil extract, expressed as SO_3 g/l, value in brackets expressed as SO_4 g/l
In Water	Sulphate content of groundwater, expressed as SO_3 g/l, value in brackets expressed as SO_4 g/l
pH	pH value
Organic content	Organic content expressed as a percentage of dry weight
Chloride	Chloride Ion content expressed as a percentage of dry weight

MCV, Compaction, CBR

MCV	Moisture Condition Value at natural water content
MCC	Moisture Condition Calibration
CCV	Chalk Crushing Value

Compaction

Type	2.5	=	2.5 kg Rammer
	4.5	=	4.5 kg Rammer
	V	=	Vibrating Hammer
γ_b	Bulk Density		
γ_d	Dry Density		
CBR California Bearing Ratio			
Type	2.5	=	Test on Specimen Recompacted using 2.5 kg Rammer
	4.5	=	As above but using 4.5 kg Rammer
	V	=	As above but using Vibrating Hammer
	M	=	Test on open drive mould specimen cut in field
	S	=	Soaked Specimen

Top	CBR at top of mould
Bottom	CBR at bottom of mould
ND	None Detected

* In the Sample Description denotes a laboratory only description

Laboratory Test Certificate

Form REP008 Rev 3

Issued To	Tyler Goodrick Groundsolve Ltd Unit 1 Charter Court, Well House Barns Chester Road, Bretton Flintshire, CH4 0DH	Date of issue	25/09/2020
		Issue No.	1
		Client Ref. No.	2387/WNY/TG
		Samples / Material Source	
		Samples Recv'd	14/09/2020
Testing Start Date	14/09/2020	Sample State	As received
Testing Complete	25/09/2020	Sampled by	Groundsolve Ltd
Comments			
Project No	PC207961		
Project Name	2387 - WYNNSTAY, RUABON		

Summary of Tests

Standard	Test Description	Test Quantity	UKAS
BS EN ISO 17892-1:2014	Water Content	5	Yes
BS EN ISO 17892-12:2018 Cl. 5.3 & 5.5	Liquid Limit and Plastic Limit (4 Points Method)	5	Yes
BS EN ISO 17892-4:2016 Cl. 5.2	Particle Size Distribution by Sieving Method	10	Yes
BS 1377-4:1990 Cl. 3.3	2.5 kg Rammer Dry Density/Moisture Content Relationship (Compaction)	3	Yes

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



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

Stephane Schiano (Laboratory Testing Manager)

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geotechnical and geoenvironmental specialists

203 Torrington Avenue, Tile Hill,
Coventry, CV4 9UT

LABORATORY RESULTS - Atterberg Limit

Project 2387 - WYNNSTAY, RUABON

Project No: PC207961

Sample					Results							
Hole	Depth (Specimen Depth) m	Type	Sample Ref	Description	Test Type	Point Data		Sym- bol	p %	>425 sieve µm	w _L %	w _p %
						Cone Pene.	Water % (Factor)					
TP01	1.50 (1.50)	D	C48351	Dark grey slightly sandy organic slightly gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CI	20	20%	35	15
TP04	2.00 (2.00)	D	C48352	Dark grey slightly sandy organic slightly gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CL	16	8%	33	17
WS03	3.00 (3.00)	D	C48353	Brown occasionally light grey slightly sandy slightly gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CL	13	37%	26	13
WS05	2.00 (2.00)	D	C48354	Grey slightly sandy slightly gravelly slightly organic CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CI	17	17%	36	19
WS08	1.50 (1.50)	D	C48355	Greenish brown occasionally light grey slightly sandy slightly gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CL	17	17%	32	15

Remarks





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LABORATORY RESULTS - Classification and Strength

Project 2387 - WYNNSTAY, RUABON

Project No: PC207961

Sample					Classification					Strength					
Hole	Depth (Specimen Depth) m	Type	Sample Ref	Description	Symbol	I_p (>425) %	w_L %	w_p %	w (p_d) %	Test	γ_b (γ_d) ³ Mg/m ³	σ_3 kN/m ²	$\sigma_1 - \sigma_3$ kN/m ²	c_u kN/m ²	c_{Avg} kN/m ²
TP01	1.50 (1.50)	D	C48351	Dark grey slightly sandy organic slightly gravelly CLAY.	CI	20 (20%)	35	15	24.1						
TP04	2.00 (2.00)	D	C48352	Dark grey slightly sandy organic slightly gravelly CLAY.	CL	16 (8%)	33	17	23.4						
WS03	3.00 (3.00)	D	C48353	Brown occasionally light grey slightly sandy slightly gravelly CLAY.	CL	13 (37%)	26	13	14.2						
WS05	2.00 (2.00)	D	C48354	Grey slightly sandy slightly gravelly slightly organic CLAY.	CI	17 (17%)	36	19	31.2						
WS08	1.50 (1.50)	D	C48355	Greenish brown occasionally light grey slightly sandy slightly gravelly CLAY.	CL	17 (17%)	32	15	20.4						

Remarks NST - Not suitable for Test
 For Standards followed see Laboratory Test Certificate
 $w\%$ - ^ = Rock water content test; x = Aggregate moisture content test
 QUT Water Contents: <Failure Zone>, [After test]

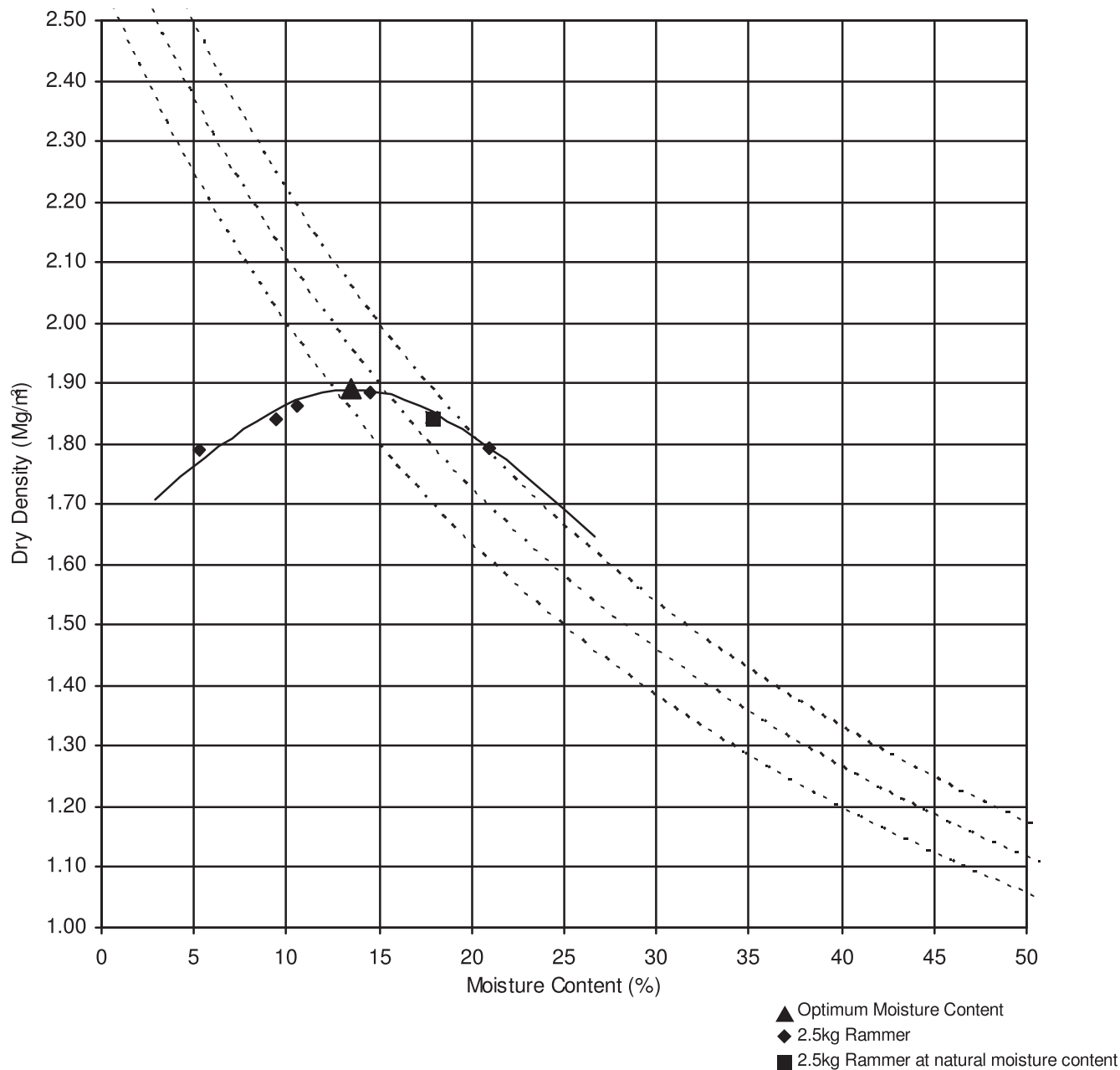
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LABORATORY RESULTS - *Compaction*

Project: 2387 - WYNNSTAY, RUABON

Project No: PC207961

Hole TP03
Sample Depth 1.00m
Sample Type B
Sample Ref C48343



Optimum Moisture Content 13.5
Maximum Dry Density 1.89 Mg/m³

Particles retained on 37.5mm sieve 5 %
 20mm sieve 12 %

Particle Density 2.85 (Ass'm) Mg/m³
 Preparation Single Sample
 2.5kg Rammer

Description MADE GROUND: dark grey mottled reddish brown sandy shale/gravel.

Remarks  BS1377 Part 4 1990 : Clause 3.3 and 3.4

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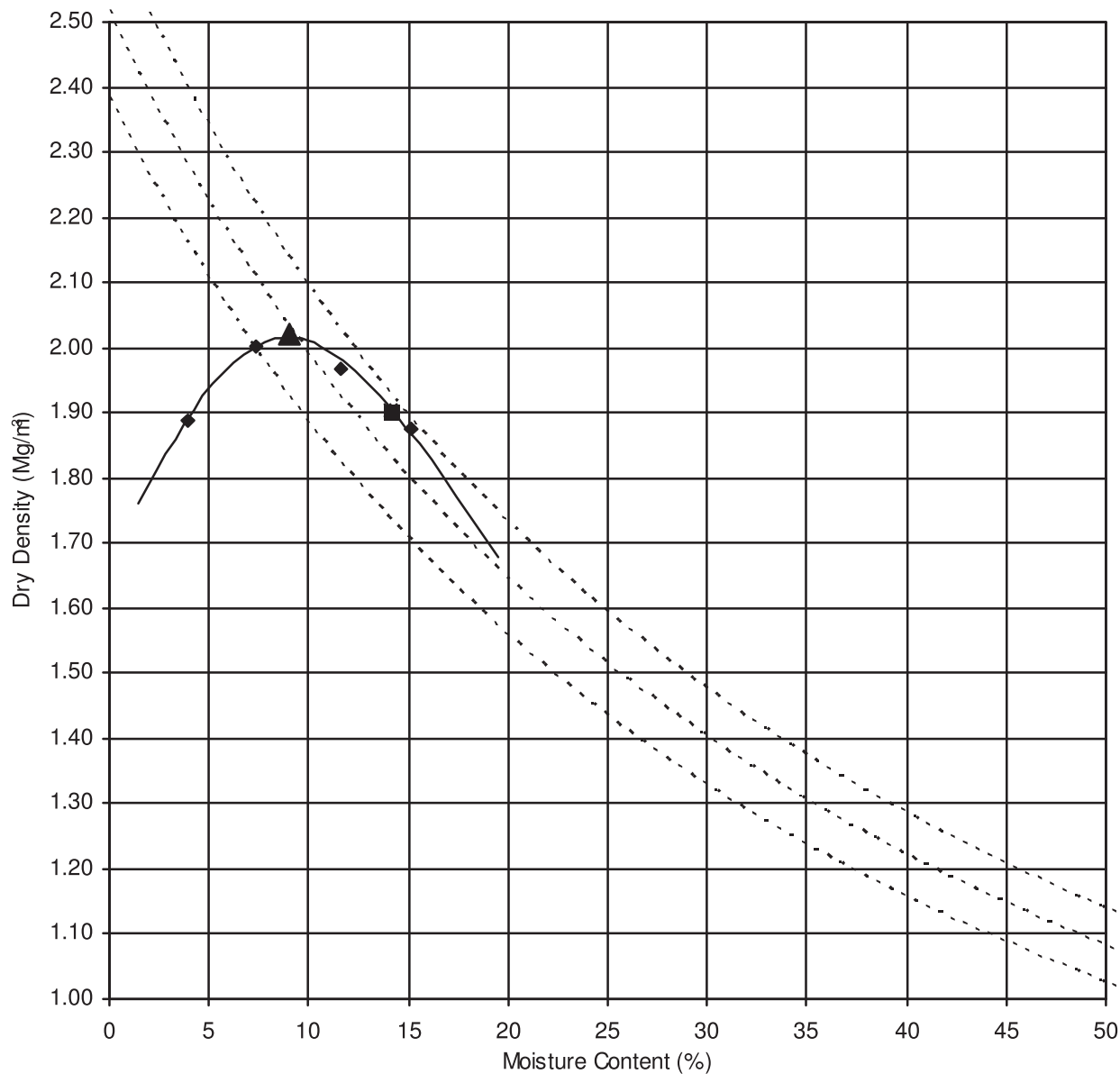
25/09/2020

LABORATORY RESULTS - *Compaction*

Project: 2387 - WYNNSTAY, RUABON

Project No: PC207961

Hole TP06
Sample Depth 1.00m
Sample Type B
Sample Ref C48346



▲ Optimum Moisture Content
 ◆ 2.5kg Rammer
 ■ 2.5kg Rammer at natural moisture content

Optimum Moisture Content 9.0
Maximum Dry Density 2.02 Mg/m³

Particles retained on 37.5mm sieve 7 %
 20mm sieve 14 %

Particle Density 2.65 (Assumed) Mg/m³
 Preparation Single Sample
 2.5kg Rammer

Description MADE GROUND: brown clayey shale/gravel (wet).

Remarks  BS1377 Part 4 1990 : Clause 3.3 and 3.4

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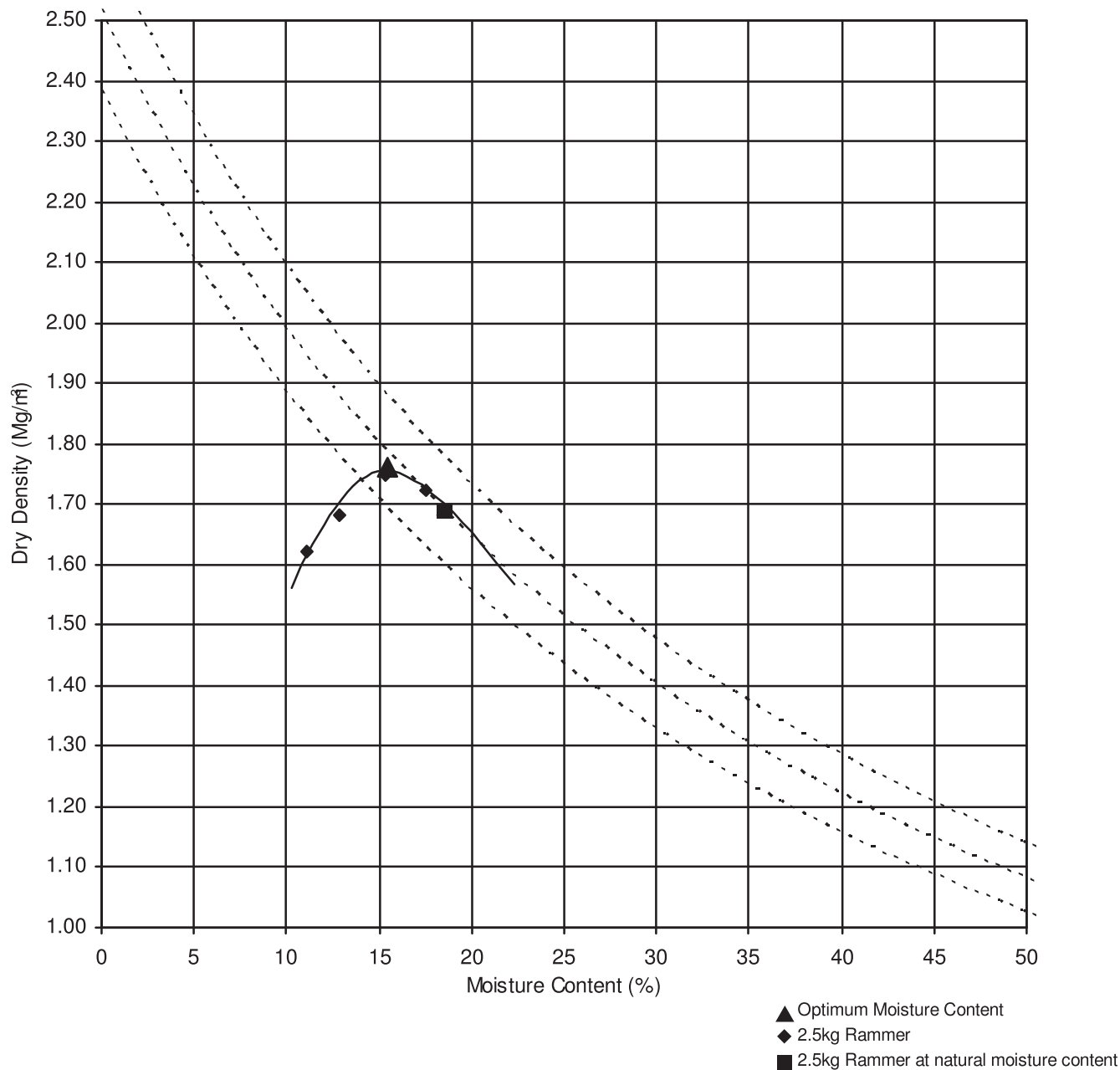
25/09/2020

LABORATORY RESULTS - *Compaction*

Project: 2387 - WYNNSTAY, RUABON

Project No: PC207961

Hole TP09
Sample Depth 0.50m
Sample Type B
Sample Ref C48349



Optimum Moisture Content 15.5
Maximum Dry Density 1.76 Mg/m³

Particles retained on 37.5mm sieve 8 %
 20mm sieve 23 %

Particle Density 2.65 (Assumed) Mg/m³
 Preparation Single Sample
 2.5kg Rammer

Description MADE GROUND: dark brown clayey sandy shale/gravel with brick fragments.

Remarks  BS1377 Part 4 1990 : Clause 3.3 and 3.4

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LABORATORY RESULTS - MCV, Compaction, CBR

Project 2387 - WYNNSTAY, RUABON

Project No: PC207961

Sample					MCV		Compaction					CBR				
Hole	Depth (Specimen Depth) m	Type	Sample Ref	Description	MCV	w %	Type	w (Opt) %	ρ_d Mg/m ³	γ_b Mg/m ³	γ_d (Max) Mg/m ³	Type	Top		Bottom	
													CBR %	w %	CBR %	w %
TP03	1.00 (1.00)	B	C48343	MADE GROUND: dark grey mottled reddish brown sandy shale/gravel.			2.5kg	(13.5)	2.85a		(1.89)					
								10.6		2.06	1.86					
								14.5		2.16	1.89					
								17.9*		*2.18	*1.85					
								21.0		2.17	1.79					
								5.3		1.88	1.79					
								9.4		2.01	1.84					
TP06	1.00 (1.00)	B	C48346	MADE GROUND: brown clayey shale/gravel (wet).			2.5kg	(9.0)	2.65a		(2.02)					
								14.1*		*2.17	*1.91					
								11.7		2.20	1.97					
								15.2		2.16	1.88					
								4.0		1.96	1.89					
								7.4		2.15	2.00					
TP09	0.50 (0.50)	B	C48349	MADE GROUND: dark brown clayey sandy shale/gravel with brick fragments.			2.5kg	(15.5)	2.65a		(1.76)					
								12.9		1.90	1.68					
								15.3		2.02	1.75					
								17.5		2.03	1.72					
								18.5*		*2.00	*1.69					
								11.1		1.80	1.62					

Remarks

Particle Density - a=assumed, m=measured
w% - * = at natural moisture content; x = aggregate moisture content
= stabilised, see relevant test plot for details
NST = Not suitable for Test
For Standards followed see Laboratory Test Certificate

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LABORATORY RESULTS - Particle Size Distribution

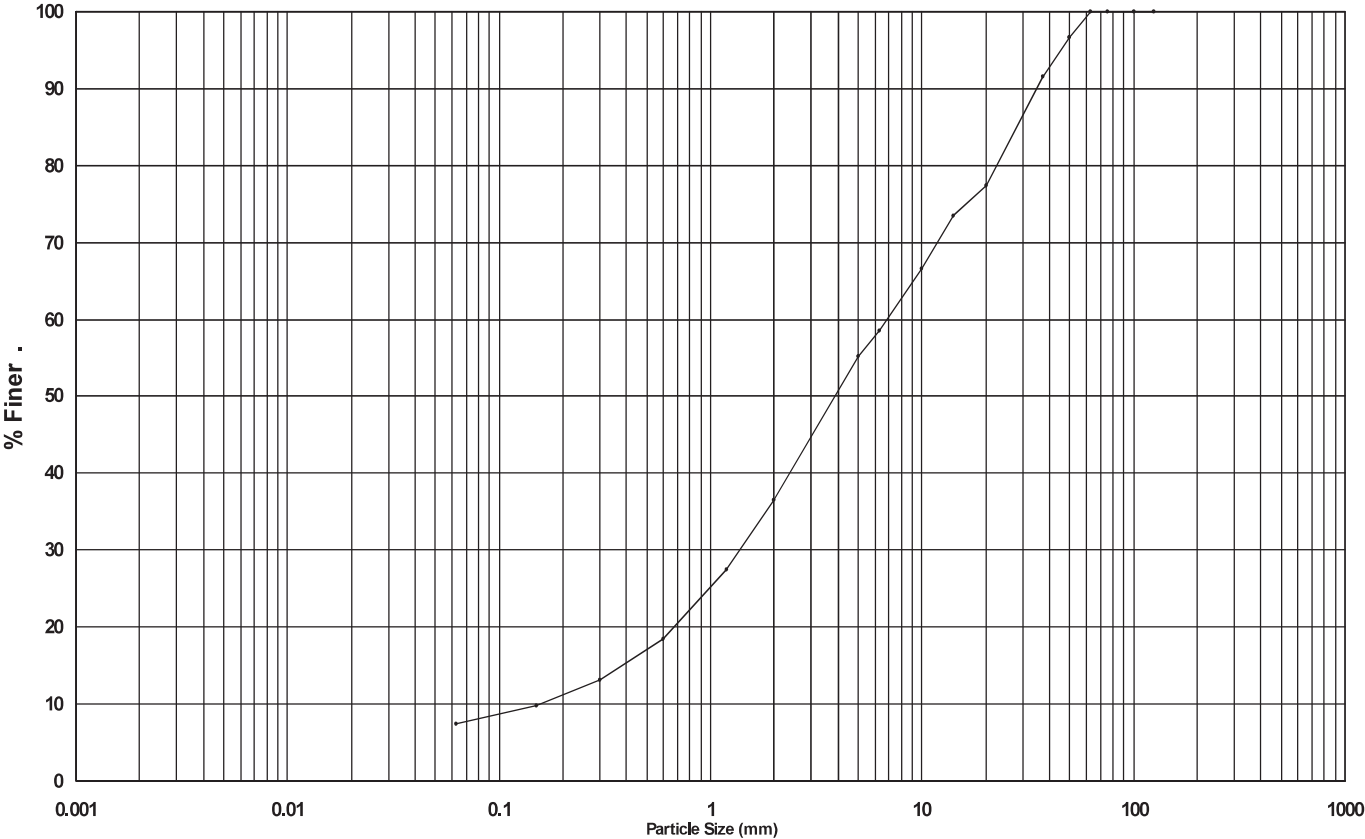
Project: 2387 - WYNNSTAY, RUABON

Project No: PC207961

Hole TP01
Sample Depth 0.50m
Sample Type B
Sample Ref C48341

Sample Description

MADE GROUND: dark grey clayey very sandy shale/gravel.



Classification	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
CLAY	SILT			SAND			Gravel				

Classification	% of each
SILT (including CLAY)	7
SAND	30
GRAVEL	63
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	97
37.5 mm	92
20 mm	77
14 mm	73
10 mm	67
6.3 mm	59
5 mm	55
2 mm	37
1.18 mm	27
600 µm	19
300 µm	13
150 µm	10

Size	% Finer
63 µm	7

Uniformity Coefficient	
44.71	
Sieving Method	
Wet sieve	
Fine Particle Analysis	
Method	
Pre-treated with	
% loss on Pre-treatment	
Particle Density	

Remarks Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016

25/09/2020

LABORATORY RESULTS - Particle Size Distribution

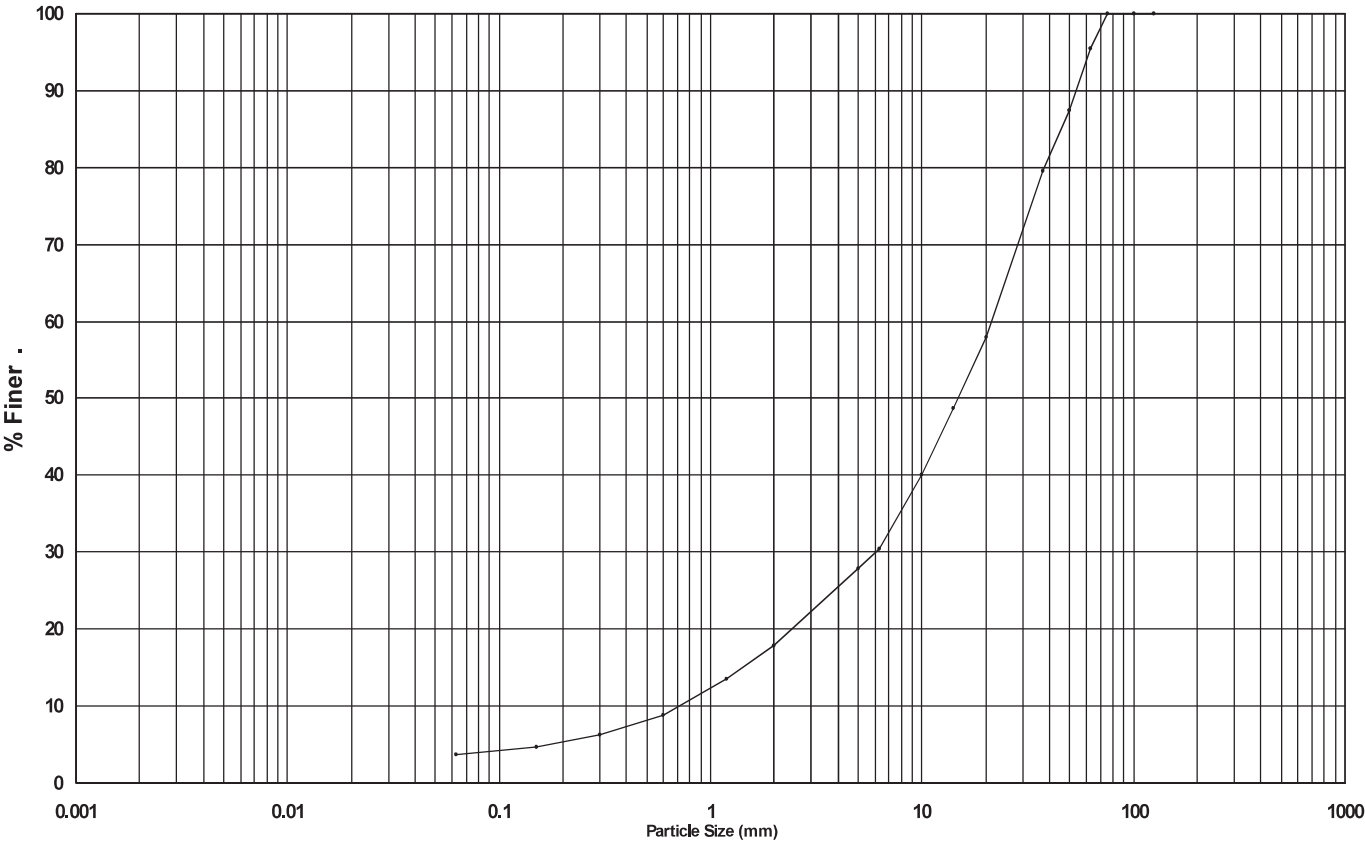
Project: 2387 - WYNNSTAY, RUABON

Project No: PC207961

Hole TP02
Sample Depth 1.00m
Sample Type B
Sample Ref C48342

Sample Description

MADE GROUND: reddish brown slightly clayey sandy gravel with roots and occasional cobbles.
Gravel/cobble are mainly brick fragments.



Classification	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
CLAY	SILT			SAND			Gravel				

Classification	% of each
SILT (including CLAY)	4
SAND	14
GRAVEL	78
COBBLES	4
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	96
50 mm	87
37.5 mm	80
20 mm	58
14 mm	49
10 mm	40
6.3 mm	31
5 mm	28
2 mm	18
1.18 mm	14
600 μm	9
300 μm	6
150 μm	5

Size	% Finer
63 μm	4

Uniformity Coefficient	
29.77	
Sieving Method	
Wet sieve	
Fine Particle Analysis	
Method	
Pre-treated with	
% loss on Pre-treatment	
Particle Density	

Remarks Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016

25/09/2020

LABORATORY RESULTS - Particle Size Distribution

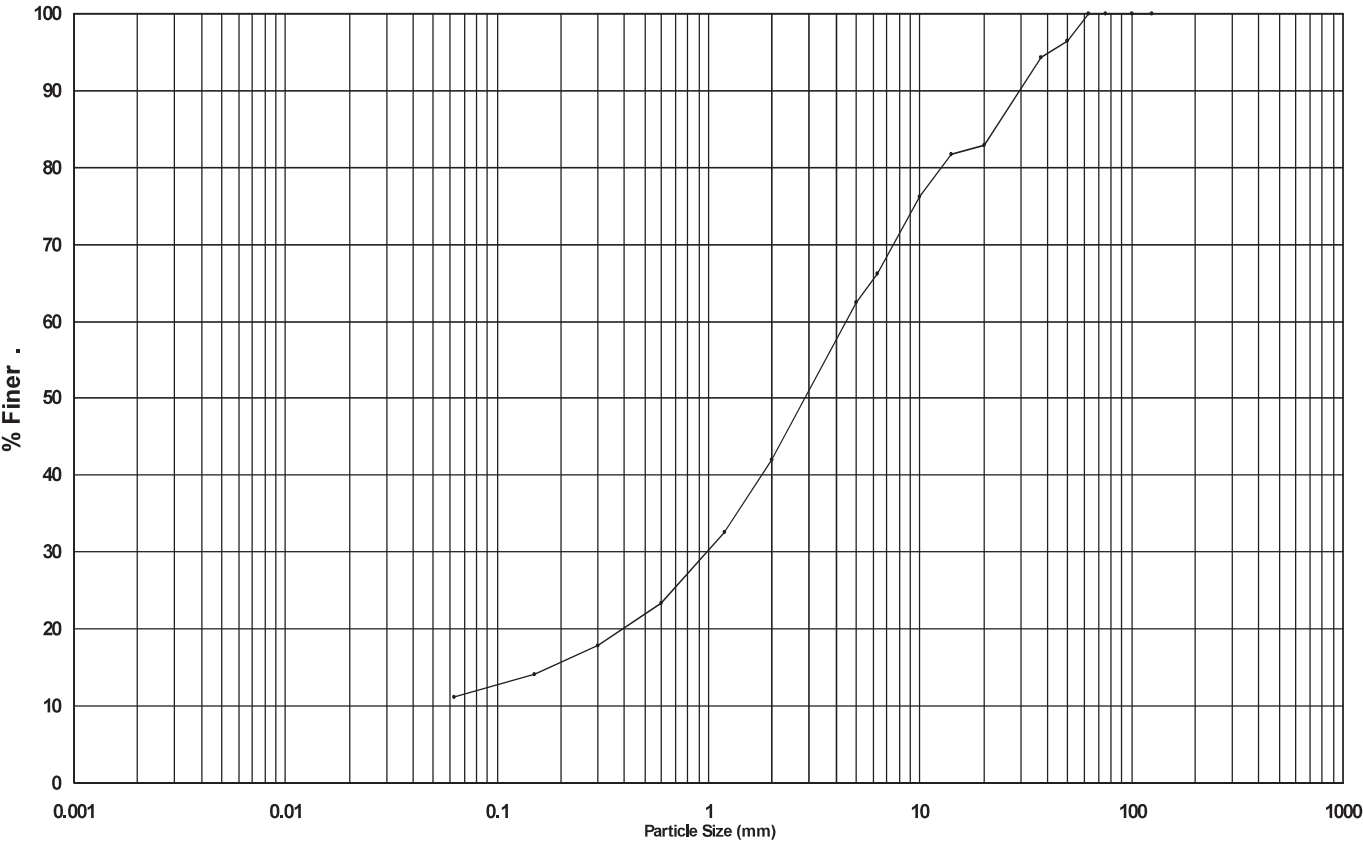
Project: 2387 - WYNNSTAY, RUABON

Project No: PC207961

Hole TP03
Sample Depth 1.00m
Sample Type B
Sample Ref C48343

Sample Description

MADE GROUND: dark grey mottled reddish brown sandy shale/gravel.



Classification	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
CLAY	SILT			SAND			Gravel				

Classification	% of each
SILT (including CLAY)	11
SAND	31
GRAVEL	58
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	97
37.5 mm	94
20 mm	83
14 mm	82
10 mm	76
6.3 mm	66
5 mm	63
2 mm	42
1.18 mm	33
600 μm	23
300 μm	18
150 μm	14

Size	% Finer
63 μm	11

Uniformity Coefficient	
Not Available	
Sieving Method	
Wet sieve	
Fine Particle Analysis	
Method	
Pre-treated with	
% loss on Pre-treatment	
Particle Density	

Remarks Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016

25/09/2020

LABORATORY RESULTS - Particle Size Distribution

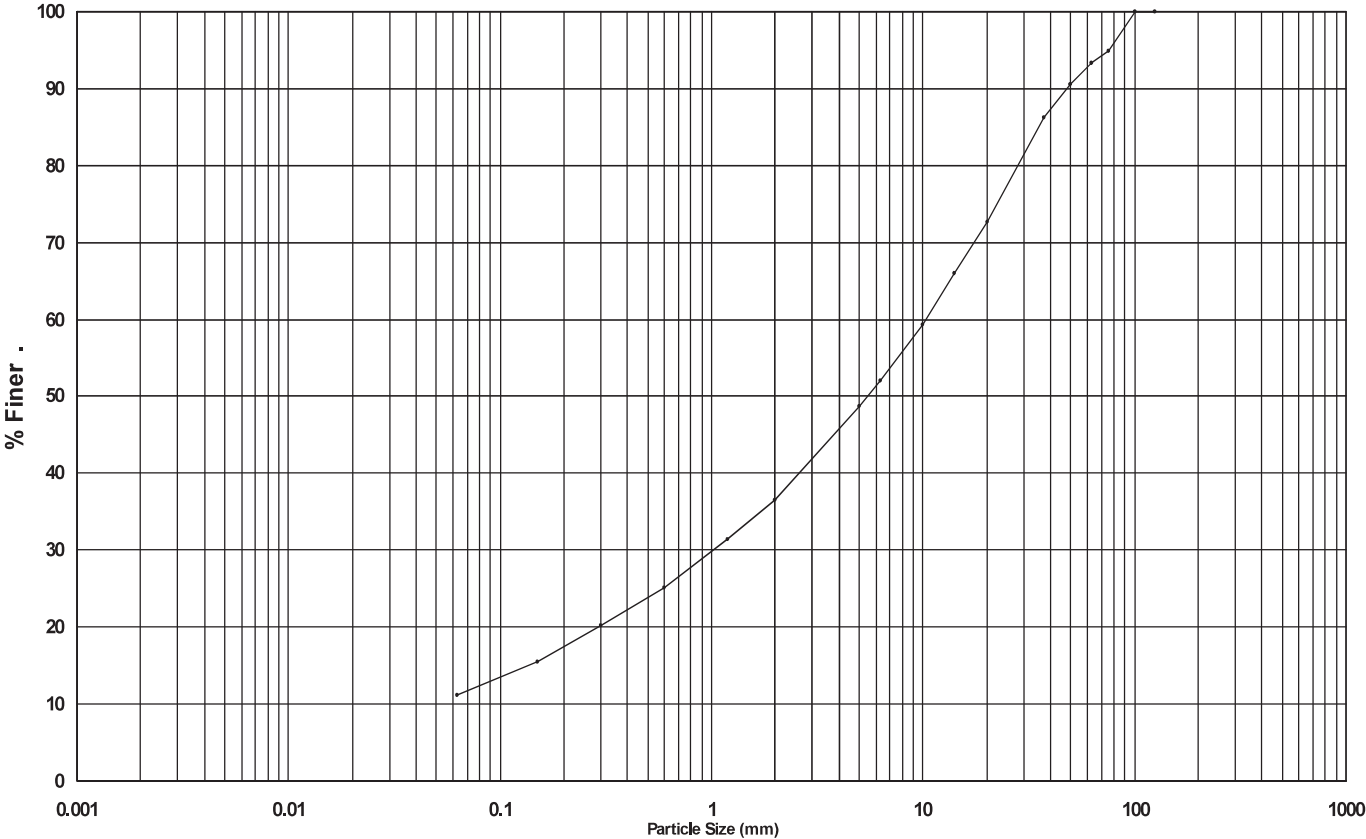
Project: 2387 - WYNNSTAY, RUABON

Project No: PC207961

Hole TP04
Sample Depth 0.50m
Sample Type B
Sample Ref C48344

Sample Description

MADE GROUND: dark grey clayey sandy gravel with occasional brick fragments.



Classification	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
CLAY	SILT			SAND			Gravel				

Classification	% of each
SILT (including CLAY)	11
SAND	26
GRAVEL	56
COBBLES	7
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	95
63 mm	93
50 mm	90
37.5 mm	86
20 mm	73
14 mm	66
10 mm	59
6.3 mm	52
5 mm	49
2 mm	37
1.18 mm	31
600 μm	25
300 μm	20
150 μm	15

Size	% Finer
63 μm	11

Uniformity Coefficient	
Not Available	
Sieving Method	
Wet sieve	
Fine Particle Analysis	
Method	
Pre-treated with	
% loss on Pre-treatment	
Particle Density	

Remarks Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016

25/09/2020

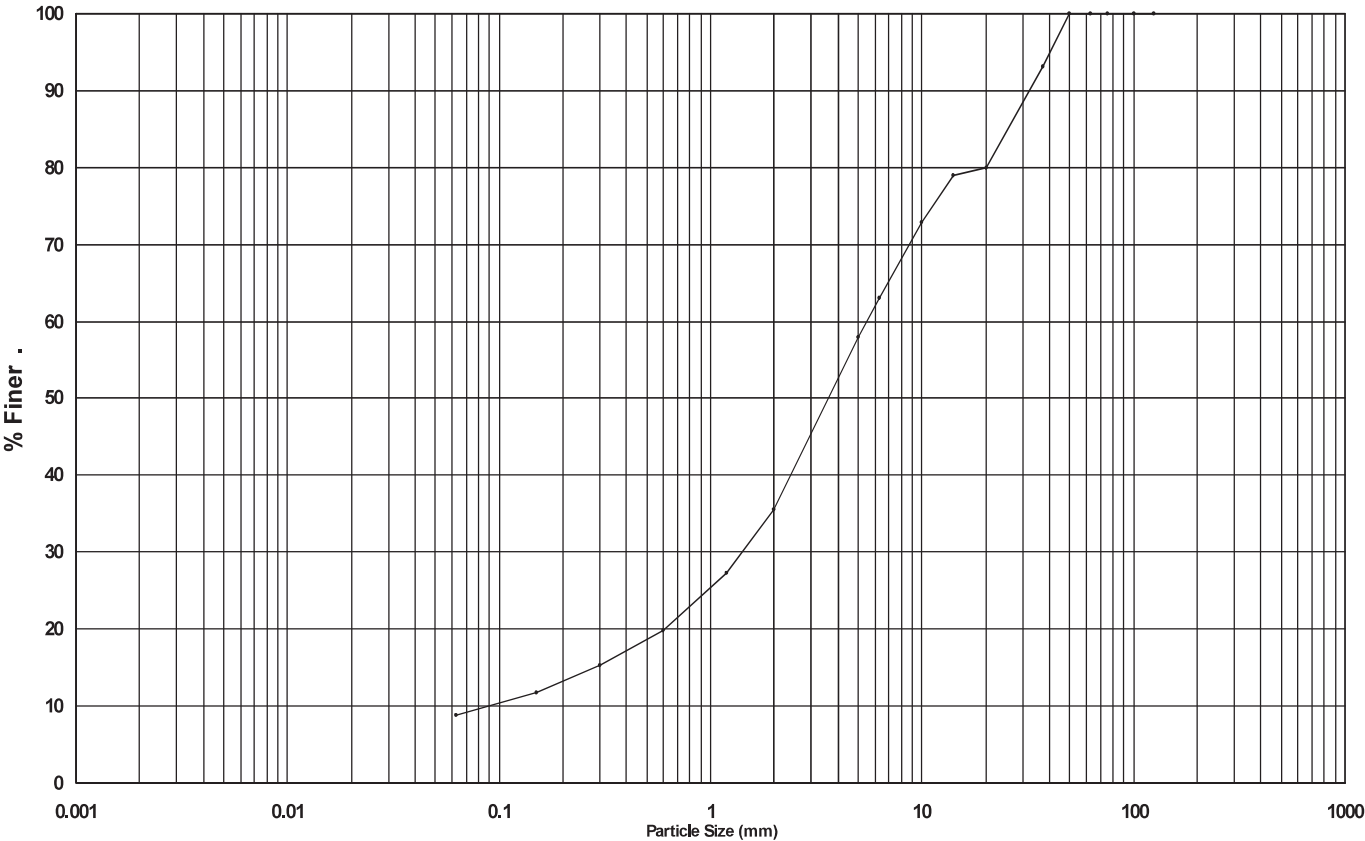
LABORATORY RESULTS - Particle Size Distribution

Project: 2387 - WYNNSTAY, RUABON

Project No: PC207961

Hole TP05
Sample Depth 0.50m
Sample Type B
Sample Ref C48345

Sample Description
MADE GROUND: dark grey clayey sandy shale/gravel.



Classification	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
CLAY	SILT			SAND			Gravel				

Classification	% of each
SILT (including CLAY)	9
SAND	27
GRAVEL	64
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	93
20 mm	80
14 mm	79
10 mm	73
6.3 mm	63
5 mm	58
2 mm	36
1.18 mm	27
600 µm	20
300 µm	15
150 µm	12

Size	% Finer
63 µm	9

Uniformity Coefficient	
61.07	
Sieving Method	
Wet sieve	
Fine Particle Analysis	
Method	
Pre-treated with	
% loss on Pre-treatment	
Particle Density	

Remarks Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016

25/09/2020

LABORATORY RESULTS - Particle Size Distribution

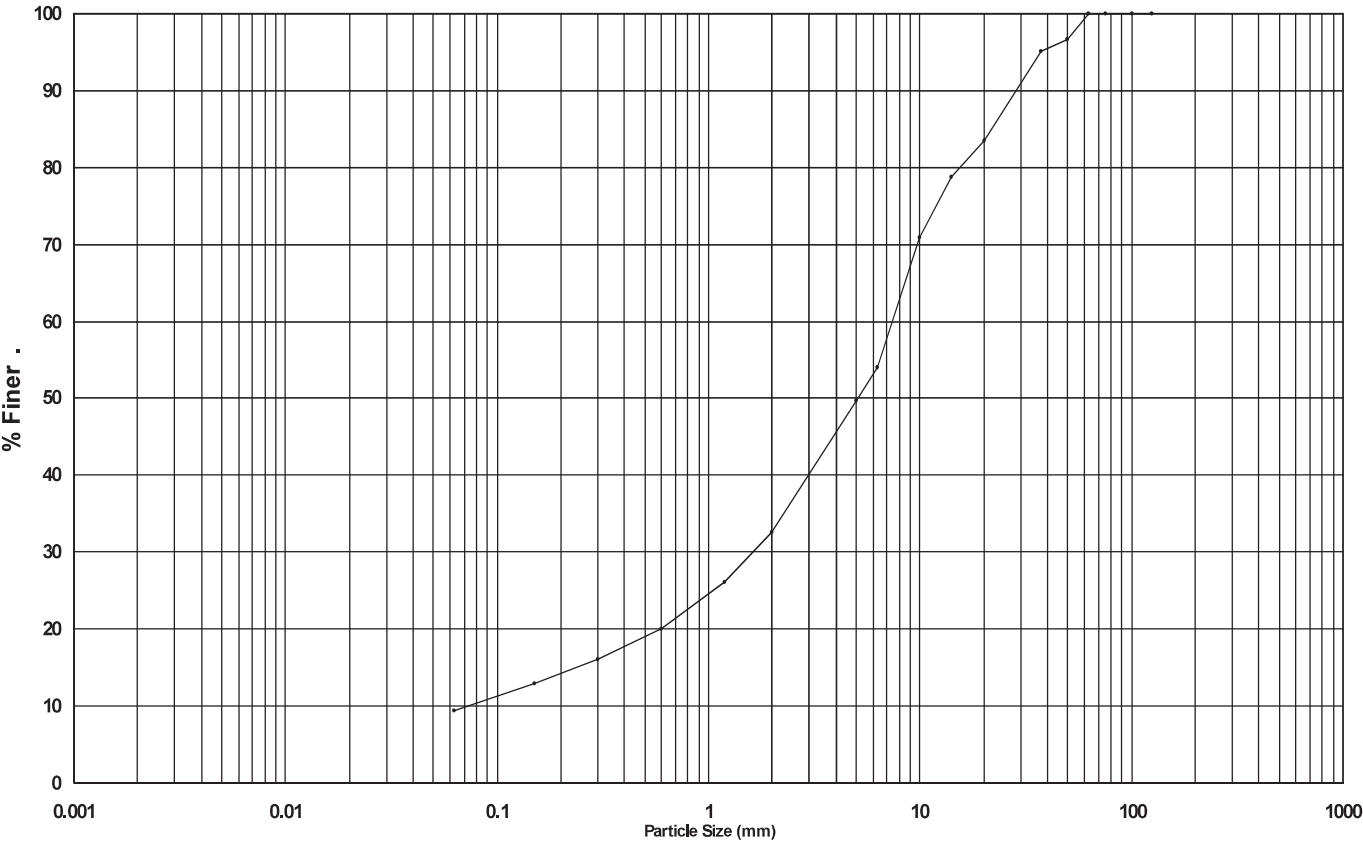
Project: 2387 - WYNNSTAY, RUABON

Project No: PC207961

Hole TP06
Sample Depth 1.00m
Sample Type B
Sample Ref C48346

Sample Description

MADE GROUND: brown clayey shale/gravel (wet).



Classification	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
CLAY	SILT			SAND			Gravel				

Classification	% of each
SILT (including CLAY)	9
SAND	24
GRAVEL	67
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	97
37.5 mm	95
20 mm	83
14 mm	79
10 mm	71
6.3 mm	54
5 mm	50
2 mm	33
1.18 mm	26
600 µm	20
300 µm	16
150 µm	13

Size	% Finer
63 µm	9

Uniformity Coefficient	
102.73	
Sieving Method	
Wet sieve	
Fine Particle Analysis	
Method	
Pre-treated with	
% loss on Pre-treatment	
Particle Density	

Remarks Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016

25/09/2020

LABORATORY RESULTS - Particle Size Distribution

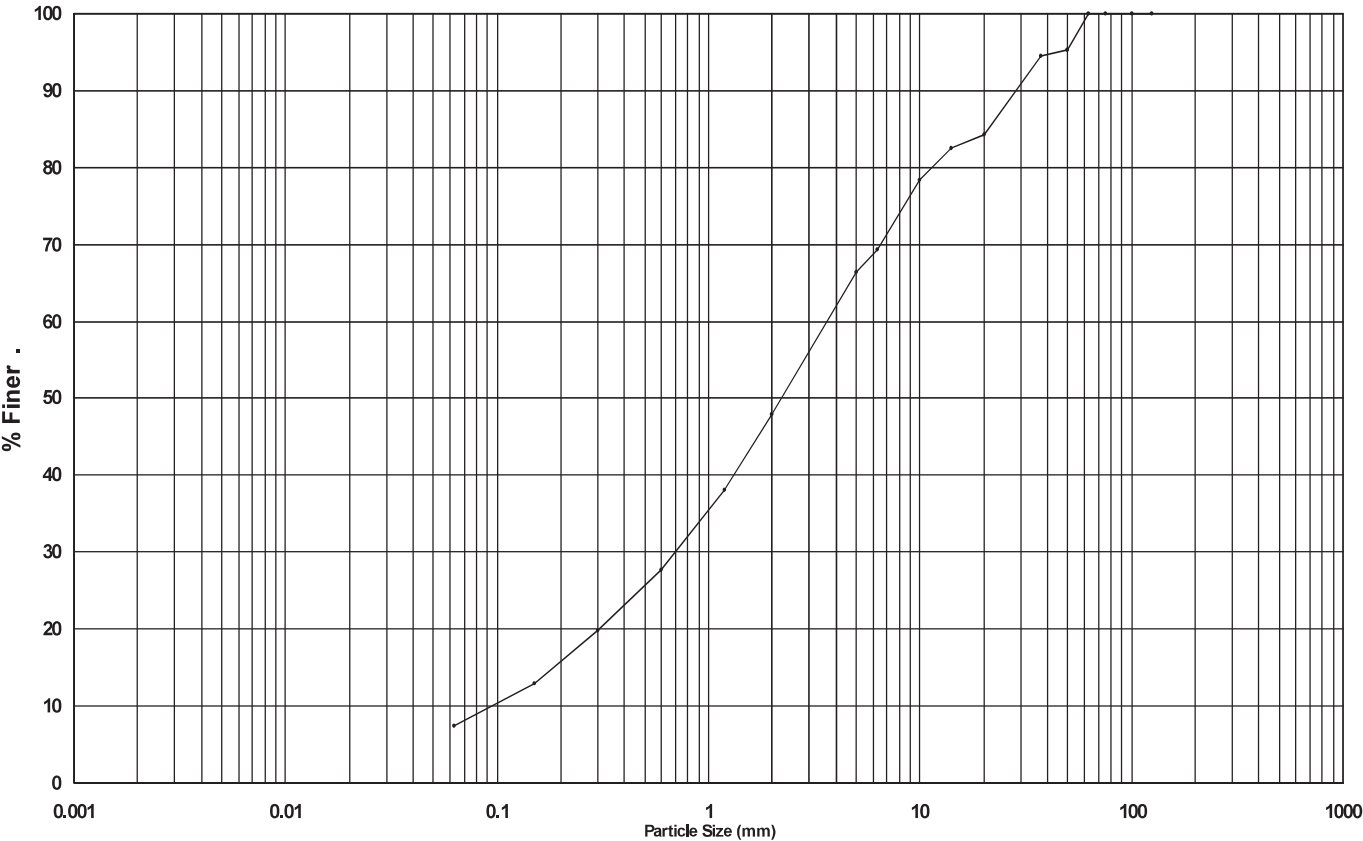
Project: 2387 - WYNNSTAY, RUABON

Project No: PC207961

Hole TP07
Sample Depth 1.00m
Sample Type B
Sample Ref C48347

Sample Description

MADE GROUND: dark grey clayey very sandy shale/gravel with brick fragments.



Classification	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
CLAY	SILT			SAND			Gravel				

Classification	% of each
SILT (including CLAY)	7
SAND	41
GRAVEL	52
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	95
37.5 mm	94
20 mm	84
14 mm	83
10 mm	78
6.3 mm	69
5 mm	66
2 mm	48
1.18 mm	38
600 μm	28
300 μm	20
150 μm	13

Size	% Finer
63 μm	7

Uniformity Coefficient	
38.43	
Sieving Method	
Wet sieve	
Fine Particle Analysis	
Method	
Pre-treated with	
% loss on Pre-treatment	
Particle Density	

Remarks Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016

25/09/2020

LABORATORY RESULTS - Particle Size Distribution

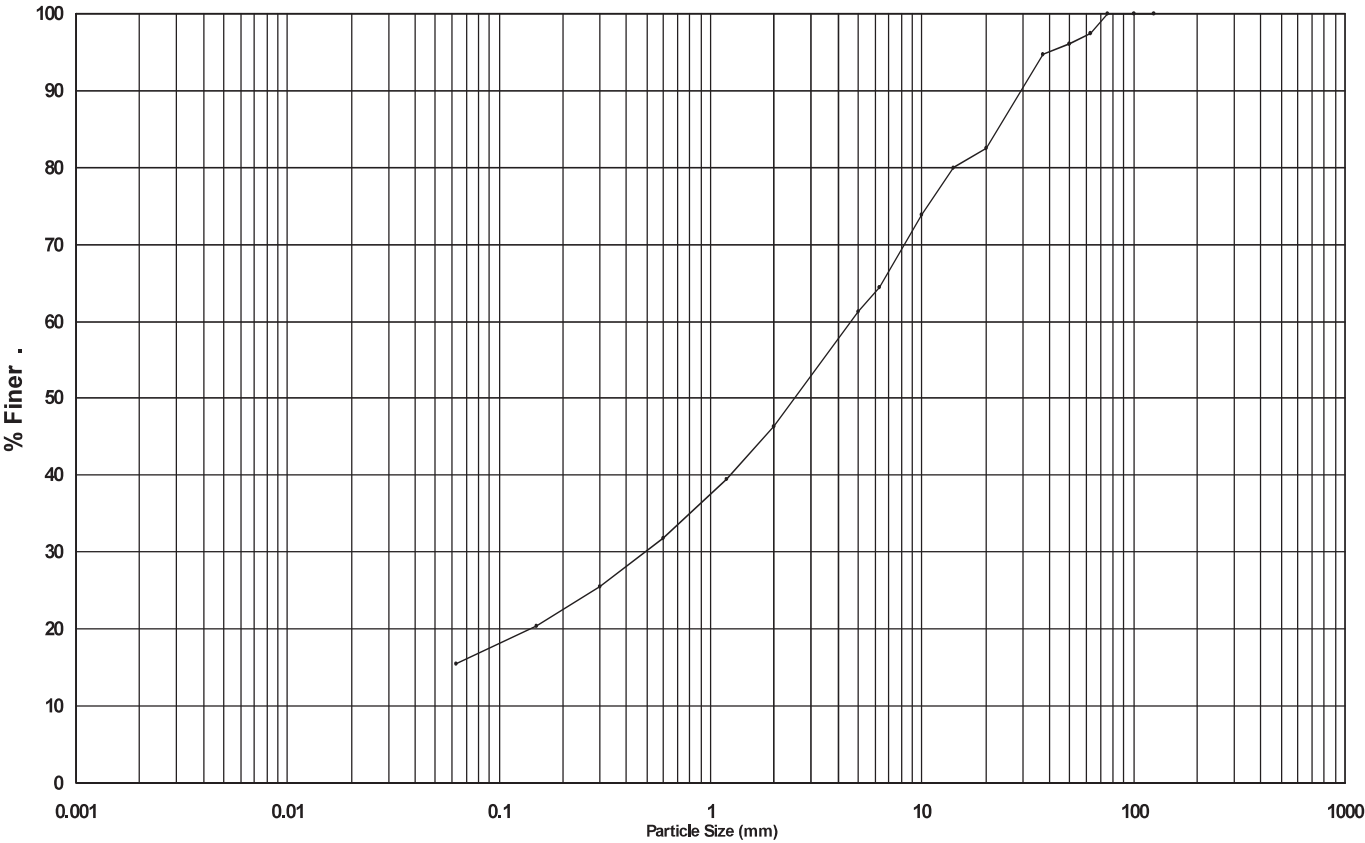
Project: 2387 - WYNNSTAY, RUABON

Project No: PC207961

Hole TP08
Sample Depth 1.00m
Sample Type B
Sample Ref C48348

Sample Description

MADE GROUND: brown clayey very sandy shale/gravel with brick and roots.



Classification	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
CLAY	SILT			SAND			Gravel				

Classification	% of each
SILT (including CLAY)	15
SAND	31
GRAVEL	52
COBBLES	2
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	98
50 mm	96
37.5 mm	95
20 mm	83
14 mm	80
10 mm	74
6.3 mm	64
5 mm	61
2 mm	46
1.18 mm	40
600 μm	32
300 μm	26
150 μm	20

Size	% Finer
63 μm	15

Uniformity Coefficient	
Not Available	
Sieving Method	
Wet sieve	
Fine Particle Analysis	
Method	
Pre-treated with	
% loss on Pre-treatment	
Particle Density	

Remarks Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016

25/09/2020

LABORATORY RESULTS - Particle Size Distribution

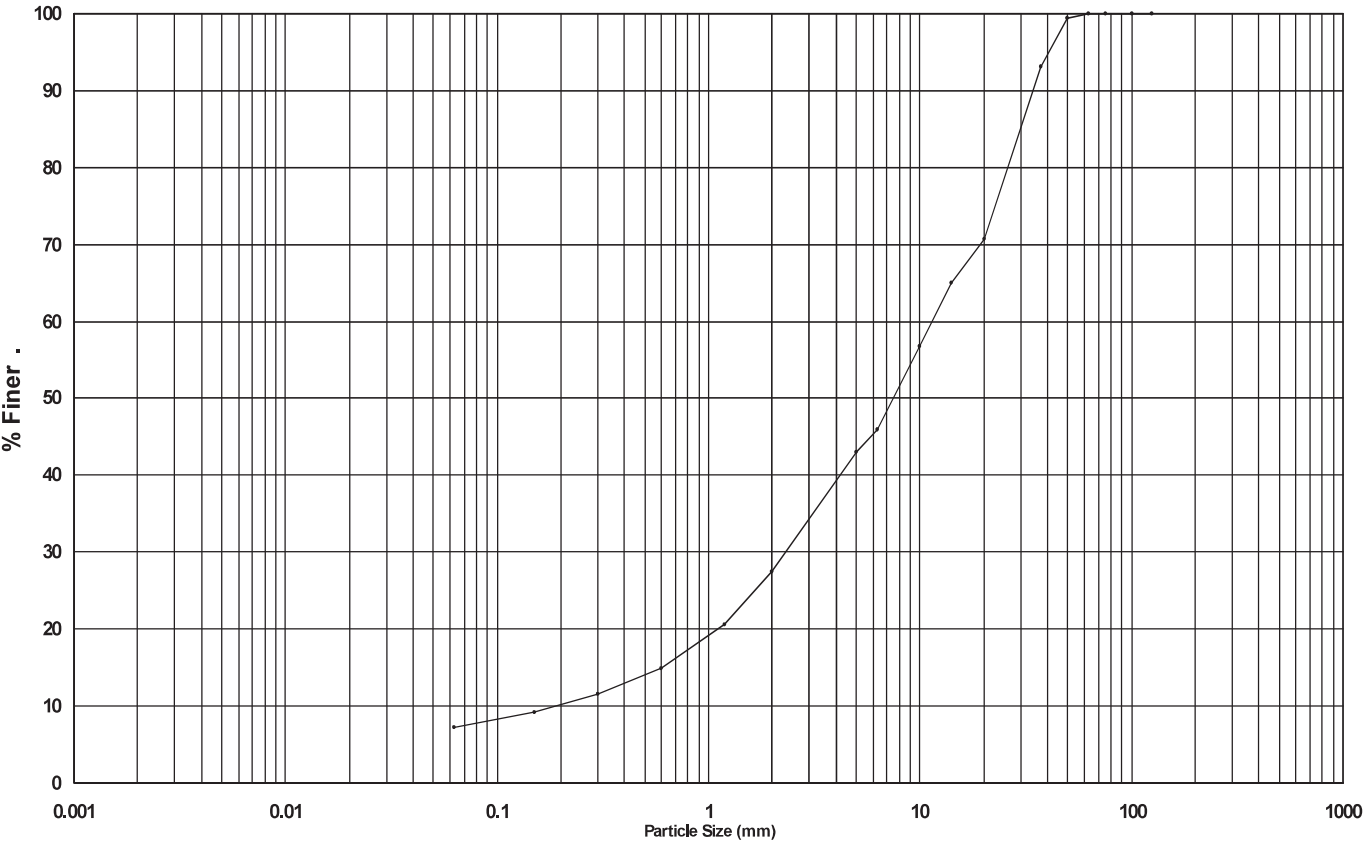
Project: 2387 - WYNNSTAY, RUABON

Project No: PC207961

Hole TP09
Sample Depth 0.50m
Sample Type B
Sample Ref C48349

Sample Description

MADE GROUND: dark brown clayey sandy shale/gravel with brick fragments.



Classification	CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
		SILT			SAND			Gravel				

Classification	% of each
SILT (including CLAY)	7
SAND	21
GRAVEL	72
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	99
37.5 mm	93
20 mm	71
14 mm	65
10 mm	57
6.3 mm	46
5 mm	43
2 mm	28
1.18 mm	21
600 µm	15
300 µm	12
150 µm	9

Size	% Finer
63 µm	7

Uniformity Coefficient	
59.81	
Sieving Method	
Wet sieve	
Fine Particle Analysis	
Method	
Pre-treated with	
% loss on Pre-treatment	
Particle Density	

Remarks Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016

25/09/2020

LABORATORY RESULTS - Particle Size Distribution

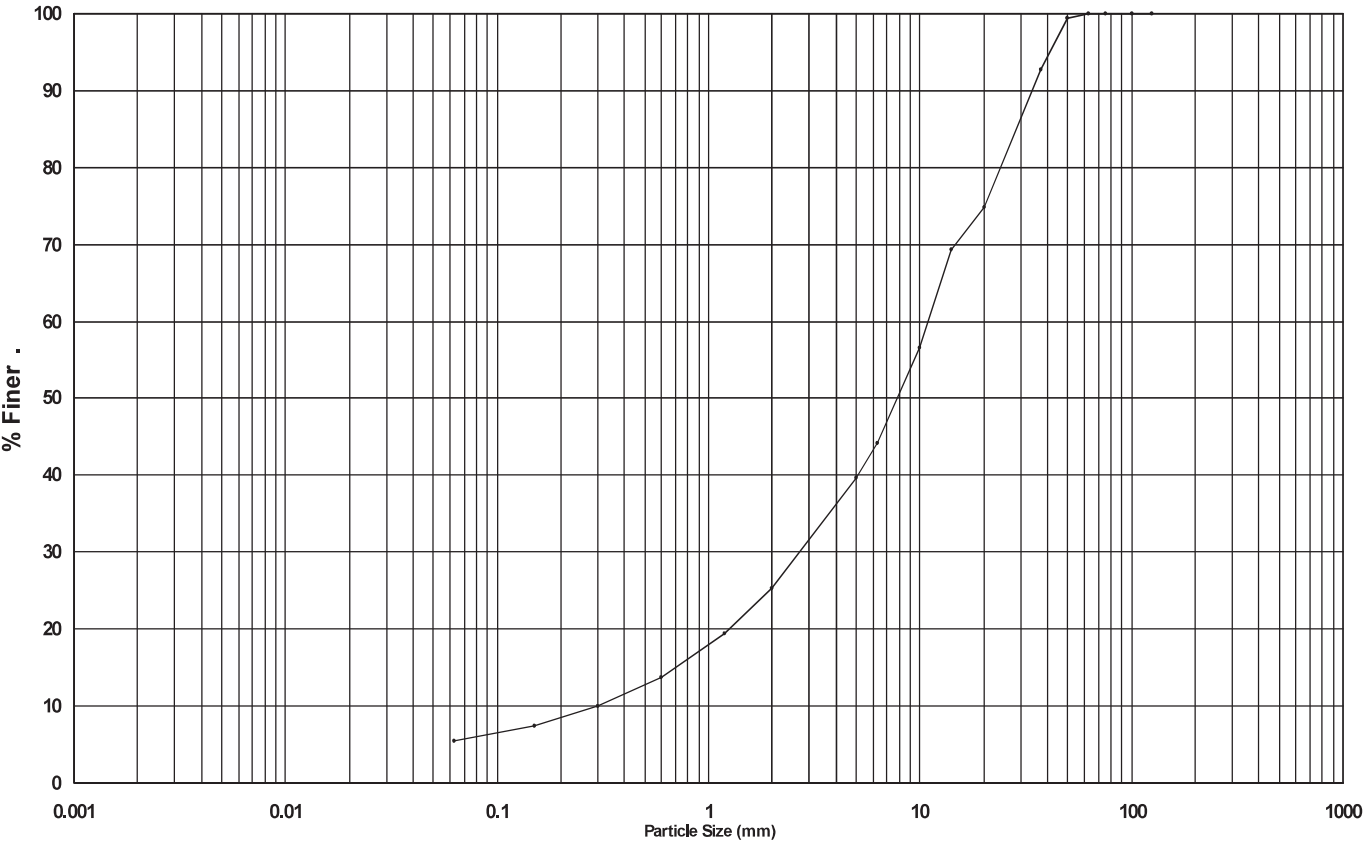
Project: 2387 - WYNNSTAY, RUABON

Project No: PC207961

Hole TP10
Sample Depth 1.00m
Sample Type B
Sample Ref C48350

Sample Description

MADE GROUND: dark grey slightly clayey shale gravel with brick.



Classification	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
CLAY	SILT			SAND			Gravel				

Classification	% of each
SILT (including CLAY)	5
SAND	20
GRAVEL	75
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	99
37.5 mm	93
20 mm	75
14 mm	69
10 mm	56
6.3 mm	44
5 mm	40
2 mm	25
1.18 mm	20
600 μm	14
300 μm	10
150 μm	7

Size	% Finer
63 μm	5

Uniformity Coefficient	
36.73	
Sieving Method	
Wet sieve	
Fine Particle Analysis	
Method	
Pre-treated with	
% loss on Pre-treatment	
Particle Density	

Remarks Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016

25/09/2020

APPENDIX J

Chemical Testing Results



Certificate of Analysis

Certificate Number 20-17753

23-Sep-20

Client GroundSolve Limited
Unit 1
Well House Barns
Bretton
Flintshire
FAO Adam Fenwick
CH4 0DH

Our Reference 20-17753

Client Reference 2387

Order No (not supplied)

Contract Title Wynnstay

Description 12 Soil samples.

Date Received 15-Sep-20

Date Started 15-Sep-20

Date Completed 23-Sep-20

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

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

Approved By

Adam Fenwick
Contracts Manager



2139



Summary of Chemical Analysis

Soil Samples

Our Ref 20-17753

Client Ref 2387

Contract Title Wynnstay

Lab No	1726746	1726747	1726748	1726749	1726901	1726902	1726903	1726904	1726905	1726906	1726907	1726908
Sample ID	TP02	TP04	TP06	TP10	WS02	WS04	TP01	TP01	TP02	TP05	TP07	TP08
Depth	2.10	0.50	1.00	0.50	3.50	2.00	2.00	0.50	0.50	0.50	0.50	0.50
Other ID												
Sample Type	D	ES	ES	ES	D	D	D	ES	ES	ES	ES	ES
Sampling Date	08/09/2020	08/09/2020	08/09/2020	08/09/2020	08/09/2020	08/09/2020	08/09/2020	08/09/2020	08/09/2020	08/09/2020	08/09/2020	08/09/2020
Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units
Metals			
Magnesium Aqueous Extract	DETSC 2076*	10	mg/l
Inorganics			
pH	DETSC 2008#		pH
Chloride Aqueous Extract	DETSC 2055	1	mg/l
Nitrate Aqueous Extract as NO3	DETSC 2055	1	mg/l
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l
Sulphur as S, Total	DETSC 2320	0.01	%
Sulphate as SO4, Total	DETSC 2321#	0.01	%

Information in Support of the Analytical Results

Our Ref 20-17753
Client Ref 2387
Contract Wynnstay

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1726746	TP02 2.10 SOIL	08/09/20	PT 1L		
1726747	TP04 0.50 SOIL	08/09/20	GJ 250ml, GJ 60ml x2, PT 1L		
1726748	TP06 1.00 SOIL	08/09/20	GJ 250ml, GJ 60ml x2, PT 1L		
1726749	TP10 0.50 SOIL	08/09/20	GJ 250ml, GJ 60ml x2, PT 1L		
1726901	WS02 3.50 SOIL	08/09/20	PT 1L		
1726902	WS04 2.00 SOIL	08/09/20	PT 1L		
1726903	TP01 2.00 SOIL	08/09/20	PT 1L		
1726904	TP01 0.50 SOIL	08/09/20	GJ 250ml, GJ 60ml x2, PT 1L		
1726905	TP02 0.50 SOIL	08/09/20	GJ 250ml, GJ 60ml x2, PT 1L		
1726906	TP05 0.50 SOIL	08/09/20	GJ 250ml, GJ 60ml x2, PT 1L		
1726907	TP07 0.50 SOIL	08/09/20	GJ 250ml, GJ 60ml x2, PT 1L		
1726908	TP08 0.50 SOIL	08/09/20	GJ 250ml, GJ 60ml x2, PT 1L		

Key: P-Plastic T-Tub G-Glass J-Jar

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

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

End of Report



Certificate of Analysis

Certificate Number 20-17753-1

06-Oct-20

Client GroundSolve Limited
Unit 1
Well House Barns
Bretton
Flintshire
FAO Adam Fenwick
CH4 ODH

Our Reference 20-17753-1

Client Reference 2387

Order No (not supplied)

Contract Title Wynnstay

Description 12 Soil samples.

Date Received 15-Sep-20

Date Started 15-Sep-20

Date Completed 06-Oct-20

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

Notes **This report supersedes 20-17753, extra testing added**

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

Approved By

A handwritten signature in grey ink, appearing to read "A Fenwick", is positioned above the printed name.

Adam Fenwick
Contracts Manager



2139

Summary of Chemical Analysis Soil Samples

Our Ref 20-17753-1

Client Ref 2387

Contract Title Wynnstay

Lab No	1726746	1726747	1726748	1726749	1726901	1726902
Sample ID	TP02	TP04	TP06	TP10	WS02	WS04
Depth	2.10	0.50	1.00	0.50	3.50	2.00
Other ID						
Sample Type	D	ES	ES	ES	D	D
Sampling Date	08/09/2020	08/09/2020	08/09/2020	08/09/2020	08/09/2020	08/09/2020
Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units						
Metals									
Arsenic	DETSC 2301#	0.2	mg/kg		16	2.8	14		
Boron, Water Soluble	DETSC 2311#	0.2	mg/kg		0.4	0.5	0.5		
Cadmium	DETSC 2301#	0.1	mg/kg		0.3	< 0.1	0.5		
Chromium	DETSC 2301#	0.15	mg/kg		15	16	10		
Chromium III	DETSC 2301*	0.15	mg/kg		15	16	10		
Chromium, Hexavalent	DETSC 2204*	1	mg/kg		< 1.0	< 1.0	< 1.0		
Copper	DETSC 2301#	0.2	mg/kg		45	24	31		
Lead	DETSC 2301#	0.3	mg/kg		49	15	30		
Magnesium Aqueous Extract	DETSC 2076*	10	mg/l		< 10	< 10	< 10		
Mercury	DETSC 2325#	0.05	mg/kg		0.10	< 0.05	< 0.05		
Nickel	DETSC 2301#	1	mg/kg		32	56	62		
Selenium	DETSC 2301#	0.5	mg/kg		2.2	< 0.5	3.3		
Zinc	DETSC 2301#	1	mg/kg		91	59	92		
Inorganics									
pH	DETSC 2008#		pH	7.8	6.7	7.6	7.6	7.7	7.6
Cyanide, Total	DETSC 2130#	0.1	mg/kg		0.1	< 0.1	< 0.1		
Organic matter	DETSC 2002#	0.1	%		1.8	2.0	0.6		
Chloride Aqueous Extract	DETSC 2055	1	mg/l		< 10.00	4.3	2.2		
Nitrate Aqueous Extract as NO3	DETSC 2055	1	mg/l		5.3	< 1.0	< 1.0		
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	1700	89	110	110	94	100
Sulphide	DETSC 2024*	10	mg/kg		24	52	< 10		
Sulphur (free)	DETSC 3049#	0.75	mg/kg		13	5.0	< 0.75		
Sulphur as S, Total	DETSC 2320	0.01	%		0.08	0.04	0.12		
Sulphate as SO4, Total	DETSC 2321#	0.01	%		0.11	0.05	0.25		
Petroleum Hydrocarbons									
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg		< 0.01	< 0.01	< 0.01		
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg		< 0.01	< 0.01	< 0.01		
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg		< 0.01	< 0.01	< 0.01		
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg		< 1.5	< 1.5	< 1.5		
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg		< 1.2	< 1.2	< 1.2		
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg		< 1.5	< 1.5	< 1.5		
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg		< 3.4	< 3.4	< 3.4		
Aliphatic C35-C40	DETSC 3072*	3.4	mg/kg		< 3.4	< 3.4	< 3.4		
Aliphatic C5-C35	DETSC 3072*	10	mg/kg		< 10	< 10	< 10		
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg		< 0.01	< 0.01	< 0.01		
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg		< 0.01	< 0.01	< 0.01		
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg		< 0.01	< 0.01	< 0.01		
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg		< 0.9	< 0.9	< 0.9		
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg		< 0.5	< 0.5	< 0.5		
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg		< 0.6	< 0.6	< 0.6		
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg		< 1.4	< 1.4	< 1.4		
Aromatic C35-C40	DETSC 3072*	1.4	mg/kg		< 1.4	< 1.4	< 1.4		

Summary of Chemical Analysis

Soil Samples

Our Ref 20-17753-1

Client Ref 2387

Contract Title Wynnstay

Lab No	1726746	1726747	1726748	1726749	1726901	1726902
Sample ID	TP02	TP04	TP06	TP10	WS02	WS04
Depth	2.10	0.50	1.00	0.50	3.50	2.00
Other ID						
Sample Type	D	ES	ES	ES	D	D
Sampling Date	08/09/2020	08/09/2020	08/09/2020	08/09/2020	08/09/2020	08/09/2020
Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units						
Aromatic C5-C35	DETSC 3072*	10	mg/kg		< 10	< 10	< 10		
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg		< 10	< 10	< 10		
PAHs									
Naphthalene	DETSC 3303#	0.03	mg/kg		< 0.03	< 0.03	< 0.03		
Acenaphthylene	DETSC 3303#	0.03	mg/kg		< 0.03	< 0.03	< 0.03		
Acenaphthene	DETSC 3303#	0.03	mg/kg		< 0.03	< 0.03	< 0.03		
Fluorene	DETSC 3303	0.03	mg/kg		< 0.03	< 0.03	< 0.03		
Phenanthrene	DETSC 3303#	0.03	mg/kg		< 0.03	< 0.03	< 0.03		
Anthracene	DETSC 3303	0.03	mg/kg		< 0.03	< 0.03	< 0.03		
Fluoranthene	DETSC 3303#	0.03	mg/kg		< 0.03	< 0.03	< 0.03		
Pyrene	DETSC 3303#	0.03	mg/kg		< 0.03	< 0.03	< 0.03		
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg		< 0.03	< 0.03	< 0.03		
Chrysene	DETSC 3303	0.03	mg/kg		< 0.03	< 0.03	< 0.03		
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg		< 0.03	< 0.03	< 0.03		
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg		< 0.03	< 0.03	< 0.03		
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg		< 0.03	< 0.03	< 0.03		
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg		< 0.03	< 0.03	< 0.03		
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg		< 0.03	< 0.03	< 0.03		
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg		< 0.03	< 0.03	< 0.03		
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg		< 0.10	< 0.10	< 0.10		
Phenols									
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg		1.7	< 0.3	< 0.3		

Summary of Chemical Analysis Soil Samples

Our Ref 20-17753-1

Client Ref 2387

Contract Title Wynnstay

Lab No	1726903	1726904	1726905	1726906	1726907	1726908
Sample ID	TP01	TP01	TP02	TP05	TP07	TP08
Depth	2.00	0.50	0.50	0.50	0.50	0.50
Other ID						
Sample Type	D	ES	ES	ES	ES	ES
Sampling Date	08/09/2020	08/09/2020	08/09/2020	08/09/2020	08/09/2020	08/09/2020
Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units						
Metals									
Arsenic	DETSC 2301#	0.2	mg/kg		9.0	57	10	15	20
Boron, Water Soluble	DETSC 2311#	0.2	mg/kg		0.3	0.8	0.5	0.7	0.5
Cadmium	DETSC 2301#	0.1	mg/kg		0.3	< 0.1	0.3	0.7	0.4
Chromium	DETSC 2301#	0.15	mg/kg		15	29	11	15	17
Chromium III	DETSC 2301*	0.15	mg/kg		15	29	11	15	17
Chromium, Hexavalent	DETSC 2204*	1	mg/kg		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg		27	60	49	43	53
Lead	DETSC 2301#	0.3	mg/kg		72	68	24	69	36
Magnesium Aqueous Extract	DETSC 2076*	10	mg/l		< 10	< 10	< 10	< 10	< 10
Mercury	DETSC 2325#	0.05	mg/kg		< 0.05	< 0.05	< 0.05	0.12	0.18
Nickel	DETSC 2301#	1	mg/kg		27	37	30	31	33
Selenium	DETSC 2301#	0.5	mg/kg		< 0.5	< 0.5	1.6	1.0	1.6
Zinc	DETSC 2301#	1	mg/kg		79	71	83	220	91
Inorganics									
pH	DETSC 2008#		pH	5.4	8.0	6.6	6.3	7.0	7.1
Cyanide, Total	DETSC 2130#	0.1	mg/kg		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Organic matter	DETSC 2002#	0.1	%		0.8	0.6	5.7	7.4	5.1
Chloride Aqueous Extract	DETSC 2055	1	mg/l		21	2.7	2.8	9.1	3.5
Nitrate Aqueous Extract as NO3	DETSC 2055	1	mg/l		1.4	< 1.0	2.9	7.6	1.3
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	110	55	17	15	30	18
Sulphide	DETSC 2024*	10	mg/kg		< 10	< 10	< 10	60	16
Sulphur (free)	DETSC 3049#	0.75	mg/kg		< 0.75	< 0.75	< 0.75	5.3	1.9
Sulphur as S, Total	DETSC 2320	0.01	%		0.05	0.06	0.06	0.07	0.19
Sulphate as SO4, Total	DETSC 2321#	0.01	%		0.04	0.12	0.06	0.09	0.28
Petroleum Hydrocarbons									
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg		< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg		< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg		< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg		< 3.4	< 3.4	< 3.4	< 3.4	< 3.4
Aliphatic C35-C40	DETSC 3072*	3.4	mg/kg		< 3.4	< 3.4	< 3.4	< 3.4	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg		< 10	< 10	< 10	< 10	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg		< 0.9	< 0.9	< 0.9	< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg		< 0.6	< 0.6	< 0.6	< 0.6	< 0.6
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg		< 1.4	< 1.4	< 1.4	< 1.4	< 1.4
Aromatic C35-C40	DETSC 3072*	1.4	mg/kg		< 1.4	< 1.4	< 1.4	< 1.4	< 1.4

Summary of Chemical Analysis

Soil Samples

Our Ref 20-17753-1

Client Ref 2387

Contract Title Wynnstay

Lab No	1726903	1726904	1726905	1726906	1726907	1726908
Sample ID	TP01	TP01	TP02	TP05	TP07	TP08
Depth	2.00	0.50	0.50	0.50	0.50	0.50
Other ID						
Sample Type	D	ES	ES	ES	ES	ES
Sampling Date	08/09/2020	08/09/2020	08/09/2020	08/09/2020	08/09/2020	08/09/2020
Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units						
Aromatic C5-C35	DETSC 3072*	10	mg/kg		< 10	< 10	< 10	< 10	< 10
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg		< 10	< 10	< 10	< 10	< 10
PAHs									
Naphthalene	DETSC 3303#	0.03	mg/kg		< 0.03	< 0.03	< 0.03	0.05	< 0.03
Acenaphthylene	DETSC 3303#	0.03	mg/kg		< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Acenaphthene	DETSC 3303#	0.03	mg/kg		< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Fluorene	DETSC 3303	0.03	mg/kg		< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Phenanthrene	DETSC 3303#	0.03	mg/kg		< 0.03	< 0.03	< 0.03	0.44	< 0.03
Anthracene	DETSC 3303	0.03	mg/kg		< 0.03	< 0.03	< 0.03	0.09	0.04
Fluoranthene	DETSC 3303#	0.03	mg/kg		< 0.03	< 0.03	< 0.03	1.1	< 0.03
Pyrene	DETSC 3303#	0.03	mg/kg		< 0.03	< 0.03	< 0.03	0.96	< 0.03
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg		< 0.03	< 0.03	< 0.03	0.34	< 0.03
Chrysene	DETSC 3303	0.03	mg/kg		< 0.03	< 0.03	< 0.03	0.39	< 0.03
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg		< 0.03	< 0.03	< 0.03	0.35	< 0.03
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg		< 0.03	< 0.03	< 0.03	0.14	< 0.03
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg		< 0.03	< 0.03	< 0.03	0.27	< 0.03
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg		< 0.03	< 0.03	< 0.03	0.12	< 0.03
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg		< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg		< 0.03	< 0.03	< 0.03	0.13	< 0.03
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg		< 0.10	< 0.10	< 0.10	4.4	< 0.10
Phenols									
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg		< 0.3	< 0.3	< 0.3	0.4	0.3

Summary of Asbestos Analysis Soil Samples

Our Ref 20-17753-1

Client Ref 2387

Contract Title Wynnstay

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1726747	TP04 0.50	SOIL	NAD	none	Joanne Luscombe
1726748	TP06 1.00	SOIL	NAD	none	Joanne Luscombe
1726749	TP10 0.50	SOIL	NAD	none	Joanne Luscombe
1726904	TP01 0.50	SOIL	NAD	none	Joanne Luscombe
1726905	TP02 0.50	SOIL	NAD	none	Joanne Luscombe
1726906	TP05 0.50	SOIL	NAD	none	Joanne Luscombe
1726907	TP07 0.50	SOIL	NAD	none	Joanne Luscombe
1726908	TP08 0.50	SOIL	NAD	none	Joanne Luscombe

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * - not included in laboratory scope of accreditation.

Information in Support of the Analytical Results

Our Ref 20-17753-1
 Client Ref 2387
 Contract Wynnstay

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Hold time exceeded for tests	Inappropriate container for tests
1726746	TP02 2.10 SOIL	08/09/20	PT 1L		
1726747	TP04 0.50 SOIL	08/09/20	GJ 250ml, GJ 60ml x2, PT 1L		
1726748	TP06 1.00 SOIL	08/09/20	GJ 250ml, GJ 60ml x2, PT 1L		
1726749	TP10 0.50 SOIL	08/09/20	GJ 250ml, GJ 60ml x2, PT 1L		
1726901	WS02 3.50 SOIL	08/09/20	PT 1L		
1726902	WS04 2.00 SOIL	08/09/20	PT 1L		
1726903	TP01 2.00 SOIL	08/09/20	PT 1L		
1726904	TP01 0.50 SOIL	08/09/20	GJ 250ml, GJ 60ml x2, PT 1L		
1726905	TP02 0.50 SOIL	08/09/20	GJ 250ml, GJ 60ml x2, PT 1L		
1726906	TP05 0.50 SOIL	08/09/20	GJ 250ml, GJ 60ml x2, PT 1L		
1726907	TP07 0.50 SOIL	08/09/20	GJ 250ml, GJ 60ml x2, PT 1L		
1726908	TP08 0.50 SOIL	08/09/20	GJ 250ml, GJ 60ml x2, PT 1L		

Key: P-Plastic T-Tub G-Glass J-Jar

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

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

End of Report