APPENDIX 4-4

CAUSEWAY GEOTECH LAURCLAVAGH WF – GROUND INVESTIGATION REPORT

Laurclavagh WF – Ground Investigation

Client:	Turnkey Developments
Client's Representative:	Enerco Energy
Report No.:	23-0237
Date:	May 2023
Status:	Final for Issue

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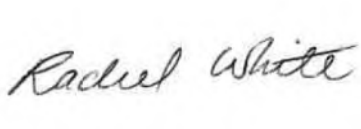
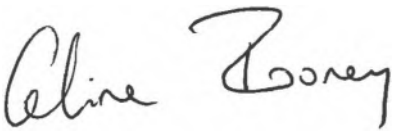
Approved: ISO 9001 • ISO 14001 • OHSAS 18001

CONTENTS

APPENDICES

Document Control Sheet

Report No.:		23-0237			
Project Title:		Laurclavagh WF; Ground Investigation			
Client:		Turnkey Developments			
Client's Representative:		Enerco Energy			
Revision:	A00	**Status:**	Final for Issue	**Issue Date:**	24th May 2023
Prepared by:		**Reviewed by:**		**Approved by:**	
 Rachel White B.A. (Mod) Geoscience		 Celine Rooney BSc MSc PGeo (EurGeol)		 Darren O'Mahony BSc MSc MIEI EurGeol PGeo	

The works were conducted in accordance with:

British Standards Institute (2015) BS 5930:2015+A1:2020, Code of practice for ground investigations.

BS EN 1997-2: 2007: Eurocode 7 - Geotechnical design - Part 2 Ground investigation and testing.

Geotechnical Society of Ireland (2016), Specification & Related Documents for Ground Investigation in Ireland

Laboratory testing was conducted in accordance with:

British Standards Institute BS 1377:1990 parts 2, 4, 5, 7 and 9

METHODS OF DESCRIBING SOILS AND ROCKS

Soil and rock descriptions are based on the guidance in BS5930:2015+A1:2020, The Code of Practice for Ground Investigation.

Abbreviations used on exploratory hole logs	
U	Nominal 100mm diameter undisturbed open tube sample (thick walled sampler).
UT	Nominal 100mm diameter undisturbed open tube sample (thin walled sampler).
P	Nominal 100mm diameter undisturbed piston sample.
B	Bulk disturbed sample.
LB	Large bulk disturbed sample.
D	Small disturbed sample.
C	Core sub-sample (displayed in the Field Records column on the logs).
L	Liner sample from dynamic sampled borehole.
W	Water sample.
ES / EW	Soil sample for environmental testing / Water sample for environmental testing.
SPT (s)	Standard penetration test using a split spoon sampler (small disturbed sample obtained).
SPT (c)	Standard penetration test using 60 degree solid cone.
(x,x/x,x,x,x)	Blows per increment during the standard penetration test. The initial two values relate to the seating drive (150mm) and the remaining four to the 75mm increments of the test length.
(Y for Z/ Y for Z)	Incomplete standard penetration test where the full test length was not achieved. The blows 'X' represent the total blows for the given seating or test length 'Z' (mm).
N=X	SPT blow count 'N' given by the summation of the blows 'X' required to drive the full test length (300mm).
HVP / HVR	In situ hand vane test result (HVP) and vane test residual result (HVR). Results presented in kPa.
V VR	Shear vane test (borehole). Shear strength stated in kPa. V: undisturbed vane shear strength VR: remoulded vane shear strength
Soil consistency description	In cohesive soils, where samples are disturbed and there are no suitable laboratory tests, N values may be used to indicate consistency on borehole logs – a median relationship of Nx5=Cu is used (as set out in Stroud & Butler 1975).
dd-mm-yyyy	Date at the end and start of shifts, shown at the relevant borehole depth. Corresponding casing and water depths shown in the adjacent columns.
▽	Water strike: initial depth of strike.
▼	Water strike: depth water rose to.
Abbreviations relating to rock core – reference Clause 36.4.4 of BS 5930: 2015+A1:2020	
TCR (%)	Total Core Recovery: Ratio of rock/soil core recovered (both solid and non-intact) to the total length of core run.
SCR (%)	Solid Core Recovery: Ratio of solid core to the total length of core run. Solid core has a full diameter, uninterrupted by natural discontinuities, but not necessarily a full circumference and is measured along the core axis between natural fractures.
RQD (%)	Rock Quality Designation: Ratio of total length of solid core pieces greater than 100mm to the total length of core run.
FI	Fracture Index: Number of natural discontinuities per metre over an indicated length of core of similar intensity of fracturing.
NI	Non Intact: Used where the rock material was recovered fragmented, for example as fine to coarse gravel size particles.
AZCL	Assessed zone of core loss: The estimated depth range where core was not recovered.
DIF	Drilling induced fracture: A fracture of non-geological origin brought about by the rock coring.
(xxx/xxx/xxx)	Spacing between discontinuities (minimum/average/maximum) measured in millimetres.

Laurclavagh WF; Ground Investigation

1 AUTHORITY

On the instructions of Enerco Energy ("the Client's Representative"), acting on the behalf of Turnkey Developments ("the Client"), a ground investigation was undertaken at the above location to provide geotechnical and environmental information for input to the design and construction of a proposed wind farm development including access roads and areas of hardstanding.

This report details the work carried out both on site and in the geotechnical and chemical testing laboratories; it contains a description of the site and the works undertaken, the exploratory hole logs and the laboratory test results.

All information given in this report is based upon the ground conditions encountered during the ground investigation works, and on the results of the laboratory and field tests performed. However, there may be conditions at the site that have not been taken into account, such as unpredictable soil strata, contaminant concentrations, and water conditions between or below exploratory holes. It should be noted that groundwater levels usually vary due to seasonal and/or other effects and may at times differ to those recorded during the investigation. No responsibility can be taken for conditions not encountered through the scope of work commissioned, for example between exploratory hole points, or beneath the termination depths achieved.

This report was prepared by Causeway Geotech Ltd for the use of the Client and the Client's Representative in response to a particular set of instructions. Any other parties using the information contained in this report do so at their own risk and any duty of care to those parties is excluded.

2 SCOPE

The extent of the investigation, as instructed by the Client's Representative, included boreholes, trial pits, soil and rock core sampling, in-situ and laboratory testing, and the preparation of a factual report on the findings.

3 DESCRIPTION OF SITE

As shown on the site location plan in Appendix A, the works were conducted over several sites, located in Laurclavagh, County Galway. The sites comprised 3rd Party Owned agricultural lands, within an area spanning approximately 5km located west of the N83 in Clough, County Galway. Elevations vary across the area of the ground investigation.

4 SITE OPERATIONS

4.1 Summary of site works

Site operations, which were conducted between the 20th of March and the 27th of April 2023, comprised:

- ten boreholes by rotary drilling
- seven machine dug trial pits
- an infiltration test performed in thirteen trial pits; and
- indirect CBR tests at forty-six locations.

The exploratory holes and in-situ tests were located as instructed by the Client's Representative, and as shown on the exploratory hole location plan in Appendix A.

4.2 Boreholes

Ten boreholes (RC01-RC09 and RC11) were put to their completion by rotary drilling techniques only. The boreholes were completed to a maximum depth of 10.50m using a Comacchio 602 drilling rig.

Hand dug inspection pits were carried out between ground level and 1.20m depth to ensure boreholes were put down at locations clear of services or subsurface obstructions.

Symmetrix-cased full hole rotary percussive drilling techniques were employed to advance the boreholes to bedrock, after which rotary coring was employed to recover core samples of the bedrock. SPTs were carried out at standard intervals throughout the overburden, with small and bulk disturbed samples obtained where possible through the soils strata.

Standard penetration tests were carried out in accordance with BS EN 22476-3:2005+A1:2011 at standard depth intervals throughout the overburden using the split spoon sampler ($SPT_{(s)}$) or solid cone attachment ($SPT_{(c)}$). The penetrations are stated for those tests for which the full 150mm seating drive or 300mm test drive was not possible. The N-values provided on the borehole logs are uncorrected and no allowance has been made for energy ratio corrections. The SPT hammer energy measurement report is provided in Appendix I.

Where coring was carried out within bedrock strata, Geobor S Coring was used. The core was extracted in up to 1.5m lengths using an SK6L core barrel, which produced core of nominal 102mm diameter, and was placed in single channel wooden core boxes.

The core was subsequently photographed and examined by a qualified and experienced Engineering Geologist, thus enabling the production of an engineering log in accordance with *BS 5930: 2015+A1:2020: Code of practice for ground investigations*.

Appendix B presents the borehole logs, with core photographs presented in Appendix C.

4.3 Trial Pits

Seven trial pits (TP01–TP03 and TP05-TP08) were excavated using a 13t tracked excavator fitted with a 600mm wide bucket, to depths ranging between 0.80m and 3.50m.

Disturbed (bulk bag) samples were taken at standard depth intervals and at change of strata.

No groundwater strikes were encountered during excavation. The stability of the trial pit walls was noted on completion.

Appendix C presents the trial pit logs with photographs of the pits and arising provided in Appendix D.

4.4 Infiltration tests

An infiltration/soakaway test was carried out at thirteen locations (ITP01-ITP13) in accordance with BRE Digest 365 - Soakaways (BRE, 2016). The tests were conducted in similarly numbered trial pits.

Appendix F presents infiltration pit logs and the results and analysis of the infiltration test. The absence of the outflow from the pits precluded calculation of infiltration coefficients.

4.5 Indirect CBR tests (DCP)

An indirect CBR test was conducted at forty-six locations (DCP01-DCP40 and DCP13A, DCP15A, DCP16A, DCP24A, DCP26A, DCP32A and DCP38A) using a Dynamic Cone Penetrometer (DCP). The equipment was developed in conjunction with the UK Transport Research Laboratory, and is discussed in Highways England CS229 (2020) which refers to the methodology described in TRL Overseas Road Note 18 (1999).

The test results are presented in Appendix G in the form of plots of the variation with depth of the penetration per blow. Straight lines have been fitted to the plots and the CBR for each depth range estimated using the following relationship, which is taken from TRRL Overseas Road Note 8 (1990), *A user's manual for a program to analyse dynamic cone penetrometer data*.

$$\text{Log CBR} = 2.48 - 1.057 \text{ Log (mm/blow)}$$

The frequently elevated CBR values are a consequence of the coarse-grained content of the penetrated soils and are often not representative of the soil matrix.

4.6 Surveying

The as-built exploratory hole positions were surveyed following completion of site operations by a Site Engineer from Causeway Geotech. Surveying was carried out using a Trimble R10 GPS system employing VRS and real time kinetic (RTK) techniques.

The plan coordinates (Irish Transverse Mercator) and ground elevation (mOD Malin) at each location are recorded on the individual exploratory hole logs. The exploratory hole location plan presented in Appendix A shows these as-built positions.

5 LABORATORY WORK

Upon their receipt in the laboratory, all disturbed samples were carefully examined and accurately described, and their descriptions incorporated into the borehole logs.

5.1 Geotechnical laboratory testing of soils

Laboratory testing of soils comprised:

- **soil classification:** moisture content measurement, Atterberg Limit tests and particle size distribution analysis.
- **soil chemistry:** pH and water soluble sulphate content

Laboratory testing of soils samples was carried out in accordance with British Standards Institute: *BS 1377, Methods of test for soils for civil engineering purposes; Part 1 (2016), and Parts 2-9 (1990).*

The test results are presented in Appendix H.

5.2 Geotechnical laboratory testing of rock

Laboratory testing of rock sub-samples comprised:

- point load index
- unconfined compressive strength (UCS) tests

Test	Test carried out in accordance with
Point load index	ISRM Suggested Methods (1985) Suggested method for determining point-load strength. Int. J. Rock Mech. Min. Sci. Geomech. Abstr. 22, pp. 53–60
Uniaxial compression strength tests	ISRM Suggested Methods (1981) Suggested method for determining deformability of rock materials in uniaxial compression, Part 2 and

	ISRM (2007) Ulusay R, Hudson JA (eds) The complete ISRM suggested methods for rock characterization, testing and monitoring, 2007

The test results are presented in Appendix H.

6 GROUND CONDITIONS

6.1 General geology of the area

Published geological mapping indicate the superficial deposits underlying the site comprise till derived from limestone and outcrop/subcrop. These deposits are underlain by pale grey clean skeletal limestone of the Burren Formation.

6.2 Ground types encountered during investigation of the site

A summary of the ground types encountered in the exploratory holes is listed below, in approximate stratigraphic order:

- **Topsoil:** encountered typically in 200mm thickness across the site.
- **Glacial Till:** sandy gravelly clay, frequently with low cobble content, typically firm or stiff in upper horizons, becoming very stiff with increasing depth, with occasional sand horizons.
- **Bedrock (Limestone):** Medium strong to strong grey limestone rockhead was encountered at depths ranging from 2.50m in RC02 to 5.85m in RC07. In addition, possible limestone rockhead recovered as gravel through rotary drilling was noted in RC02 at a depth of 1.75m

6.3 Groundwater

Groundwater was not noted at any of the exploratory hole locations. However, it should be noted that the casing used in supporting the borehole walls during drilling may have sealed out any groundwater strikes and the possibility of encountering groundwater during excavation works should not be ruled out.

It should be noted that any groundwater strikes within bedrock may have been masked by the fluid used as the drilling flush medium.

Seasonal variation in groundwater levels should also be factored into design considerations.

7 REFERENCES

Geotechnical Society of Ireland (2016), Specification & Related Documents for Ground Investigation in Ireland.

IS EN 1997-2: 2007: Eurocode 7 - Geotechnical design - Part 2 Ground investigation and testing. National Standards Authority of Ireland.

BS 5930: 2015+A1:2020: Code of practice for ground investigations. British Standards Institution.

BS EN ISO 14688-1:2018: Geotechnical investigation and testing. Identification and classification of soil. Part 1 Identification and description.

BS EN ISO 14688-2:2018: Geotechnical investigation and testing. Identification and classification of soil. Part 2 Principles for a classification.

BS 1377: 1990: Methods of test for soils for civil engineering purposes. British Standards Institution.

BS EN ISO 14689-1:2018: Geotechnical investigation and testing. Identification and classification of rock. Identification and description.

BS EN ISO 22476-3:2005+A1:2011: Geotechnical investigation and testing. Field testing. Standard penetration test.

Building Research Establishment (2007), BRE Digest 365: Soakaways.

CAUSEWAY GEOTECH

APPENDIX A

SITE AND EXPLORATORY HOLE LOCATION PLANS

CAUSEWAY GEOTECH

Project No.:	23-0237	**Client:**	Turnkey Developments
Project Name:	Laurclavagh WF; Ground Investigation	**Client's Representative:**	Enerco Energy

Legend Key

Title:

Site Location Plan

Last Revised:	**Scale:**
10/05/2023	1:25000

CAUSEWAY GEOTECH

Project No.:	23-0237	**Client:**	Turnkey Developments
Project Name:	Laurclavagh WF; Ground Investigation	**Client's Representative:**	Enerco Energy

Legend Key

- Locations By Type - DCP
- Locations By Type - RC
- Locations By Type - TP

Title:
Exploratory Hole Location Plan -1

Last Revised:	**Scale:**
23/05/2023	1:3000

CAUSEWAY GEOTECH

Project No.:	23-0237	**Client:**	Turnkey Developments
Project Name:	Laurclavagh WF; Ground Investigation	**Client's Representative:**	Enerco Energy

Legend Key

- Locations By Type - DCP
- Locations By Type - RC
- Locations By Type - TP

Title:

Exploratory Hole Location Plan - 2

Last Revised:	**Scale:**
19/05/2023	1:3000

CAUSEWAY GEOTECH

Project No.:	23-0237	**Client:**	Turnkey Developments
Project Name:	Laurclavagh WF; Ground Investigation	**Client's Representative:**	Enerco Energy

Legend Key

- Locations By Type - DCP
- Locations By Type - RC
- Locations By Type - TP

Title:

Exploratory Hole Location Plan - 3

Last Revised:	**Scale:**
23/05/2023	1:3000

CAUSEWAY GEOTECH

Project No.:	23-0237	**Client:**	Turnkey Developments
Project Name:	Laurclavagh WF; Ground Investigation	**Client's Representative:**	Enerco Energy

Legend Key

- Locations By Type - DCP
- Locations By Type - RC
- Locations By Type - TP

Title:

Exploratory Hole Location Plan - 4

Last Revised:	**Scale:**
22/05/2023	1:3000

CAUSEWAY GEOTECH

Project No.:	23-0237	**Client:**	Turnkey Developments
Project Name:	Laurclavagh WF; Ground Investigation	**Client's Representative:**	Enerco Energy

Legend Key

- Locations By Type - DCP
- Locations By Type - RC
- Locations By Type - TP

Title:
Exploratory Hole Location Plan - 5

Last Revised:	**Scale:**
22/05/2023	1:3000

CAUSEWAY GEOTECH

Project No.:	23-0237	**Client:**	Turnkey Developments
Project Name:	Laurclavagh WF; Ground Investigation	**Client's Representative:**	Enerco Energy

Legend Key

- Locations By Type - DCP
- Locations By Type - RC
- Locations By Type - TP

Title:
Exploratory Hole Location Plan - 6

Last Revised:	**Scale:**
22/05/2023	1:3000

CAUSEWAY GEOTECH

Project No.:	23-0237	**Client:**	Turnkey Developments
Project Name:	Laurclavagh WF; Ground Investigation	**Client's Representative:**	Enerco Energy

Legend Key

- Locations By Type - DCP
- Locations By Type - RC
- Locations By Type - TP

Title:
Exploratory Hole Location Plan - 7

Last Revised:	**Scale:**
23/05/2023	1:3500

CAUSEWAY GEOTECH

Project No.:	23-0237	**Client:**	Turnkey Developments
Project Name:	Laurclavagh WF; Ground Investigation	**Client's Representative:**	Enerco Energy

Legend Key

- Locations By Type - DCP
- Locations By Type - RC
- Locations By Type - TP

Title:
Exploratory Hole Location Plan - 8

Last Revised:	**Scale:**
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CAUSEWAY GEOTECH

Project No.:	23-0237	**Client:**	Turnkey Developments
Project Name:	Laurclavagh WF; Ground Investigation	**Client's Representative:**	Enerco Energy

Legend Key

- Locations By Type - DCP
- Locations By Type - RC
- Locations By Type - TP

Title:
Exploratory Hole Location Plan - 9

Last Revised:	**Scale:**
24/05/2023	1:1000

CAUSEWAY GEOTECH

APPENDIX B

BOREHOLE LOGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
23-0237	Laurclavagh WF; Ground Investigation	RC01
	Client: Turnkey Developments	
	Client's Rep Enerco Energy	

Method	Plant Used	Top (m)	Base (m)	Coordinates	Final Depth:	Start Date:	Driller:	Sheet 1 of 2
Rotary Percussion	Comacchio 602	0.00	3.50	535359.65 E	10.50 m	22/03/2023	GT	Scale: 1:40
Rotary Coring	Comacchio 602	3.50	10.50	743829.76 N	Elevation: 33.61 mOD	End Date: 22/03/2023	Logger: DM	FINAL

Depth (m)	Samples / Field Records	TCR	SCR	RQD	FI	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
								32.41	1.20		Soft brown slightly sandy CLAY. Sand is fine to coarse.		
1.50	D1										Soft brown CLAY (Driller's Description)		
1.50 - 1.95	SPT(S) N=9 (2,2/2,3,2,2)							31.41	2.20		Stiff to very stiff brownish grey sandy gravelly CLAY with low cobble and boulder content. (Driller's Description).		
3.00	D2												
3.00 - 3.29	SPT(S) 50 (10,15/50 for 136mm)							30.11	3.50		Dense light brownish grey sandy slightly clayey subangular to subrounded fine to medium GRAVEL. Sand is fine to coarse.		
					NI			29.61	4.00		Medium strong light grey LIMESTONE. Moderately weathered: reduced strength, closer fracture spacing, with common light brown discolouration on joint surfaces. Discontinuities: 1. 5-10 degree fractures medium spaced (35/220/475), undulating and rough with light brown staining on joint surfaces. 2. 45-50 degree fractures medium spaced (90/430/1170), undulating, rough with light brown staining on joint surfaces. 3. 80-90 degree joints from 5.65-5.80m, 7.70-7.85m and 9.20-9.30m, undulating, rough with light brown staining on joint surfaces.		
		95	50	10									
5.00													
		97	60	35	11								
6.50 - 6.60	C1												
6.50													
6.80 - 6.90	C2	97	80	20									
		TCR	SCR	RQD	FI								

Water Strikes			
Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details	
To (m)	Diam (mm)
10.50	200

Core Barrel
SK6L

Flush Type
Water

Remarks
Inspection pit hand dug to 1.20m.
No obvious groundwater strikes - water added during coring.

Termination Reason
Terminated at scheduled depth.

Last Updated
23/05/2023

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
23-0237	Laurclavagh WF; Ground Investigation	RC01
	Client: Turnkey Developments	
	Client's Rep Enerco Energy	

Method	Plant Used	Top (m)	Base (m)	Coordinates	Final Depth:	Start Date:	Driller:	Sheet 2 of 2
Rotary Percussion	Comacchio 602	0.00	3.50	535359.65 E	10.50 m	22/03/2023	GT	Scale: 1:40
Rotary Coring	Comacchio 602	3.50	10.50	743829.76 N	Elevation: 33.61 mOD	End Date: 22/03/2023	Logger: DM	FINAL

Depth (m)	Samples / Field Records	TCR	SCR	RQD	FI	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
8.00		95	90	20	>20						Medium strong light grey LIMESTONE. Moderately weathered: reduced strength, closer fracture spacing, with common light brown discolouration on joint surfaces. Discontinuities: 1. 5-10 degree fractures medium spaced (35/220/475), undulating and rough with light brown staining on joint surfaces. 2. 45-50 degree fractures medium spaced (90/430/1170), undulating, rough with light brown staining on joint surfaces. 3. 80-90 degree joints from 5.65-5.80m, 7.70-7.85m and 9.20-9.30m, undulating, rough with light brown staining on joint surfaces.		
9.50													
9.70 - 9.80	C3	75	70	30	8								
10.30 - 10.40	C4												
10.50								23.11	10.50		End of Borehole at 10.50m		

Water Strikes			
Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Remarks

Inspection pit hand dug to 1.20m.
No obvious groundwater strikes - water added during coring.

Casing Details	
To (m)	Diam (mm)
10.50	200

Core Barrel: SK6L

Flush Type: Water

Termination Reason: Terminated at scheduled depth.

Last Updated: 23/05/2023

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
23-0237	Laurclavagh WF; Ground Investigation	RC02
	Client: Turnkey Developments	
	Client's Rep Enerco Energy	

Method	Plant Used	Top (m)	Base (m)	Coordinates	Final Depth:	Start Date:	Driller:	Sheet 1 of 2
Rotary Percussion	Comacchio 602	0.00	2.50	536594.85 E	10.00 m	20/04/2023	GT	Scale: 1:40
Rotary Coring	Comacchio 602	2.50	10.00	744400.04 N	Elevation: 54.18 mOD	End Date: 20/04/2023	Logger: DM	FINAL

Depth (m)	Samples / Field Records	TCR	SCR	RQD	FI	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
											Firm brown CLAY.		
								52.98	1.20		Loose grey COBBLES and BOULDERS (Driller's Description).		
1.50 - 1.50	SPT(C) 50 (25 for 0mm/50 for 0mm)							52.43	1.75		Grey angular GRAVEL of limestone. (Possible bedrock) (Driller's Description).		
								51.68	2.50		Strong dark grey LIMESTONE with white calcite veins up to 10mm thick. Slightly weathered: slightly reduced strength, slightly closer fracture spacing, with rare orangish brown discolouration on fracture surfaces. Discontinuities: 1. 5-10 degree joints medium spaced (50/300/750), planar, smooth and clean. 2. 80-90 degree fractures from 8.50-8.60m and 9.60-9.75m, smooth and clean.		
		97	95	85									
4.00					6								
		97	95	90									
5.50													
		100	100	100	3								
7.00													
		TCR	SCR	RQD	FI								

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details

To (m)	Diam (mm)
10.00	200

Core Barrel

SK6L

Flush Type

Water

Remarks

Inspection pit hand dug to 1.20m.
No obvious groundwater strikes - water added during coring.

Termination Reason

Terminated at scheduled depth.

Last Updated

23/05/2023

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
23-0237	Laurclavagh WF; Ground Investigation	RC02
	Client: Turnkey Developments	
	Client's Rep Enerco Energy	

Method	Plant Used	Top (m)	Base (m)	Coordinates	Final Depth:	Start Date:	Driller:	Sheet 2 of 2
Rotary Percussion	Comacchio 602	0.00	2.50	536594.85 E	10.00 m	20/04/2023	GT	Scale: 1:40
Rotary Coring	Comacchio 602	2.50	10.00	744400.04 N	Elevation: 54.18 mOD	End Date: 20/04/2023	Logger: DM	FINAL

Depth (m)	Samples / Field Records	TCR	SCR	RQD	FI	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
		97	97	95							Strong dark grey LIMESTONE with white calcite veins up to 10mm thick. Slightly weathered: slightly reduced strength, slightly closer fracture spacing, with rare orangish brown discolouration on fracture surfaces. Discontinuities: 1. 5-10 degree joints medium spaced (50/300/750), planar, smooth and clean. 2. 80-90 degree fractures from 8.50-8.60m and 9.60-9.75m, smooth and clean.		
8.50		90	90	80	8								
10.00								44.18	10.00		End of Borehole at 10.00m		
		TCR	SCR	RQD	FI								

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details

To (m)	Diam (mm)
10.00	200

Core Barrel

SK6L

Flush Type

Water

Remarks

Inspection pit hand dug to 1.20m.
No obvious groundwater strikes - water added during coring.

Termination Reason

Terminated at scheduled depth.

Last Updated

23/05/2023

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
23-0237	Laurclavagh WF; Ground Investigation	RC03
	Client: Turnkey Developments	
	Client's Rep Enerco Energy	

Method	Plant Used	Top (m)	Base (m)	Coordinates	Final Depth:	Start Date:	Driller:	Sheet 1 of 2
Rotary Drilling	Comacchio 602	0.00	3.00					Scale: 1:40
Rotary Coring	Comacchio 602	3.00	10.00	534716.37 E	10.00 m	27/04/2023	GT	
				743130.35 N	Elevation: 24.52 mOD	End Date: 27/04/2023	Logger: AK	FINAL

Depth (m)	Samples / Field Records	TCR	SCR	RQD	FI	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
								23.32	1.20		Brown CLAY with low cobble and boulder content. Cobbles are subrounded. Boulders are subrounded.		
1.50 - 1.95	SPT(C) N=44 (6,8/8,10,12,14)										Dense grey GRAVEL (Driller's description)		
								21.82	2.70		LIMESTONE (Driller's description)		
								21.52	3.00		Strong thickly laminated dark grey LIMESTONE. Slightly weathered:, slightly reduced strength, closer fracture spacing with slight orange discolouration Discontinuities: 1. 5-10° bedding fractures closely spaced (40/150/450) undulating, rough, with rare brown staining on fracture surfaces with clay infill on the fracture at 5.70m up to 1mm thick. 2. One 80-90° fracture from 5.45-5.70m, undulating and smooth with patch orange staining on fracture surface		
		100	98	88	3								
4.50		100	97	95	8								
					>20								
6.00		100	100	85	5								
					7								
		TCR	SCR	RQD	FI								

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details

To (m)	Diam (mm)

Core Barrel

SK6L

Flush Type

Water

Remarks

Inspection pit hand dug to 1.20m.
No obvious groundwater strikes - water added during coring.

Termination Reason

Terminated at scheduled depth.

Last Updated

23/05/2023

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
23-0237	Laurclavagh WF; Ground Investigation	RC03
	Client: Turnkey Developments	
	Client's Rep Enerco Energy	

Method	Plant Used	Top (m)	Base (m)	Coordinates	Final Depth:	Start Date:	Driller:	Sheet 2 of 2
Rotary Drilling	Comacchio 602	0.00	3.00					Scale: 1:40
Rotary Coring	Comacchio 602	3.00	10.00	534716.37 E	10.00 m	27/04/2023	GT	
				743130.35 N	Elevation: 24.52 mOD	End Date: 27/04/2023	Logger: AK	FINAL

Depth (m)	Samples / Field Records	TCR	SCR	RQD	FI	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
7.50											Strong thickly laminated dark grey LIMESTONE. Slightly weathered:, slightly reduced strength, closer fracture spacing with slight orange discolouration Discontinuities: 1. 5-10° bedding fractures closely spaced (40/150/450) undulating, rough, with rare brown staining on fracture surfaces with clay infill on the fracture at 5.70m up to 1mm thick. 2. One 80-90° fracture from 5.45-5.70m, undulating and smooth with patch orange staining on fracture surface		
		100	100	95	4								
9.00													
		100	95	88									
10.00								14.52	10.00		End of Borehole at 10.00m		
		TCR	SCR	RQD	FI								

Water Strikes			
Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details	
To (m)	Diam (mm)

Core Barrel
SK6L

Remarks

Inspection pit hand dug to 1.20m.
No obvious groundwater strikes - water added during coring.

Flush Type	Termination Reason	Last Updated
Water	Terminated at scheduled depth.	23/05/2023

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
23-0237	Laurclavagh WF; Ground Investigation	RC04
	Client: Turnkey Developments	
	Client's Rep Enerco Energy	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Rotary Percussion	Comacchio 602	0.00	3.50	
Rotary Coring	Comacchio 602	3.50	10.50	535363.88 E
				743775.96 N

Final Depth:	10.50 m	Start Date:	23/03/2023	Driller:	GT	Sheet 1 of 2
						Scale: 1:40
Elevation:	34.05 mOD	End Date:	23/03/2023	Logger:	DM	FINAL

Depth (m)	Samples / Field Records	TCR	SCR	RQD	FI	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
											Firm brown slightly sandy CLAY. Sand is fine to coarse.		
								32.85	1.20				
1.50	D1										Firm brown CLAY (Driller's Description)		
1.50 - 1.95	SPT(S) N=9 (2,2/2,3,2,2)							32.25	1.80				
											Very stiff greyish brown slightly sandy slightly gravelly CLAY (Driller's Description).		
3.00 - 3.15	SPT(S) 50 (25 for 67mm/50 for 87mm)												
								30.55	3.50		Dense greyish brown sandy clayey subangular to subrounded fine to medium GRAVEL. Sand is fine to coarse.		
					NI			30.05	4.00				
		87	70	35							Medium strong to strong dark grey LIMESTONE with white calcite mineralisation throughout. Moderately weathered: reduced strength, closer fracture spacing, occasional light brown discolouration. Discontinuities: 1. 5-10 degree fractures medium spaced (40/210/450), planar, undulating, rough with light brown staining on joint surfaces. 2. 45-50 degree joints widely spaced (120/818/2670), undulating, rough with light brown staining on joint surfaces. 3. 80-90 degree joints from 5.20-5.30m, 5.90-6.00m and 6.20-6.30m, undulating, rough with light brown staining on joint surfaces.		
5.00													
		100	90	20	9								
6.25 - 6.50	C1												
6.50													
		90	80	10	13								
		TCR	SCR	RQD	FI								

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Remarks

Inspection pit hand dug to 1.20m.
No obvious groundwater strikes - water added during coring.

Casing Details

To (m)	Diam (mm)
10.50	200

Core Barrel

SK6L

Flush Type

Water

Termination Reason

Terminated at scheduled depth.

Last Updated

23/05/2023

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
23-0237	Laurclavagh WF; Ground Investigation	RC04
	Client: Turnkey Developments	
	Client's Rep Enerco Energy	

Method	Plant Used	Top (m)	Base (m)	Coordinates	Final Depth:	Start Date:	Driller:	Sheet 2 of 2
Rotary Percussion	Comacchio 602	0.00	3.50	535363.88 E	10.50 m	23/03/2023	GT	Scale: 1:40
Rotary Coring	Comacchio 602	3.50	10.50	743775.96 N	Elevation: 34.05 mOD	End Date: 23/03/2023	Logger: DM	FINAL

Depth (m)	Samples / Field Records	TCR	SCR	RQD	FI	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
8.00											Medium strong to strong dark grey LIMESTONE with white calcite mineralisation throughout. Moderately weathered: reduced strength, closer fracture spacing, occasional light brown discolouration. Discontinuities: 1. 5-10 degree fractures medium spaced (40/210/450), planar, undulating, rough with light brown staining on joint surfaces. 2. 45-50 degree joints widely spaced (120/818/2670), undulating, rough with light brown staining on joint surfaces. 3. 80-90 degree joints from 5.20-5.30m, 5.90-6.00m and 6.20-6.30m, undulating, rough with light brown staining on joint surfaces.		
9.30 - 9.50	C2	95	90	50	10								
9.50													
10.50 - 10.75	C3	75	75	70	4			23.55	10.50		End of Borehole at 10.50m		
10.50													
		TCR	SCR	RQD	FI								

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details

To (m)	Diam (mm)
10.50	200

Core Barrel

SK6L

Flush Type

Water

Remarks

Inspection pit hand dug to 1.20m.
No obvious groundwater strikes - water added during coring.

Termination Reason

Terminated at scheduled depth.

Last Updated

23/05/2023

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
23-0237	Laurclavagh WF; Ground Investigation	RC05
	Client: Turnkey Developments	
	Client's Rep Enerco Energy	

Method	Plant Used	Top (m)	Base (m)	Coordinates	Final Depth:	Start Date:	Driller:	Sheet 1 of 2
Rotary Drilling	Comacchio 602	0.00	3.00					Scale: 1:40
Rotary Coring	Comacchio 602	3.00	10.00	536480.01 E	10.00 m	27/04/2023	GT	
				743783.20 N	Elevation: 43.53 mOD	End Date: 27/04/2023	Logger: AK	FINAL

Depth (m)	Samples / Field Records	TCR	SCR	RQD	FI	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
								42.33	1.20		Stiff brown CLAY with low cobble and boulder content. Cobbles are subangular. Boulders are subrounded.		
1.50 - 1.65	SPT(C) 50 (25 for 62mm/50 for 87mm)							41.23	2.30		Dense brownish grey GRAVEL (Driller's description)		
								40.53	3.00		LIMESTONE (Driller's description)		
		100	97	93	4						Strong thickly laminated greyish brown LIMESTONE. Slightly weathered: slightly reduced strength, closer fracture spacing, with slight yellowish brown discolouration on fracture surfaces. Discontinuities: 1. 10-20 degree bedding fractures, closely spaced (50/150/500), undulating, smooth, with brownish grey clay infill on joint surfaces up to 2mm thick. 2. Seven 50-60 degree joints at 3.15m, 3.30m, 3.65m, 5.00m, 8.20m and 9.80m, undulating, rough, with brownish grey clay infill on joint surfaces up to 2mm thick.		
4.50		100	85	80									
6.00		100	96	93	9								
		TCR	SCR	RQD	FI								

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details

To (m)	Diam (mm)

Core Barrel

SK6L

Flush Type

Water

Remarks

Inspection pit hand dug to 1.20m.
No obvious groundwater strikes - water added during coring.

Termination Reason

Terminated at scheduled depth.

Last Updated

23/05/2023

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
23-0237	Laurclavagh WF; Ground Investigation	RC05
	Client: Turnkey Developments	
	Client's Rep Enerco Energy	

Method	Plant Used	Top (m)	Base (m)	Coordinates	Final Depth:	Start Date:	Driller:	Sheet 2 of 2
Rotary Drilling	Comacchio 602	0.00	3.00	536480.01 E	10.00 m	27/04/2023	GT	Scale: 1:40
Rotary Coring	Comacchio 602	3.00	10.00	743783.20 N	Elevation: 43.53 mOD	End Date: 27/04/2023	Logger: AK	FINAL

Depth (m)	Samples / Field Records	TCR	SCR	RQD	FI	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
7.50											Strong thickly laminated greyish brown LIMESTONE. Slightly weathered: slightly reduced strength, closer fracture spacing, with slight yellowish brown discolouration on fracture surfaces. Discontinuities: 1. 10-20 degree bedding fractures, closely spaced (50/150/500), undulating, smooth, with brownish grey clay infill on joint surfaces up to 2mm thick. 2. Seven 50-60 degree joints at 3.15m, 3.30m, 3.65m, 5.00m, 8.20m and 9.80m, undulating, rough, with brownish grey clay infill on joint surfaces up to 2mm thick.		
		100	87	75	>20								
					7								
9.00													
		100	90	70	2								
10.00								33.53	10.00		End of Borehole at 10.00m		
		TCR	SCR	RQD	FI								

Water Strikes			
Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Remarks

Inspection pit hand dug to 1.20m.
No obvious groundwater strikes - water added during coring.

Casing Details	
To (m)	Diam (mm)

Core Barrel

SK6L

Flush Type

Water

Termination Reason

Terminated at scheduled depth.

Last Updated

23/05/2023

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
23-0237	Laurclavagh WF; Ground Investigation	RC06
	Client: Turnkey Developments	
	Client's Rep Enerco Energy	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Rotary Percussion	Comacchio 602	0.00	3.00	
Rotary Coring	Comacchio 602	3.00	10.00	537361.34 E
				743494.58 N

Final Depth:	10.00 m	Start Date:	30/03/2023	Driller:	GT	Sheet 1 of 2
						Scale: 1:40
Elevation:	38.01 mOD	End Date:	30/03/2023	Logger:	DM	FINAL

Depth (m)	Samples / Field Records	TCR	SCR	RQD	FI	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
											Soft brown slightly sandy CLAY. Sand is fine to coarse.		
								36.81	1.20		Stiff greyish brown sandy gravelly CLAY (Driller's Description).		
1.50	D1												
1.50 - 1.95	SPT(S) N=19 (2,3/4,4,5,6)												
								35.76	2.25		Medium dense grey angular GRAVEL of limestone. (Possible weathered bedrock) (Driller's Description).		
3.10 - 3.40	C1	95	90	55	6			35.01	3.00		Strong dark grey LIMESTONE with white calcite mineralisation throughout. Slightly weathered: slightly reduced strength, slightly closer fracture spacing, with occasional brown discolouration. Discontinuities: 1. 5-10 degree fractures medium spaced (40/212/470), planar, undulating, rough with light brown staining and clay infill on fracture surfaces. 2. 35-45 degree fractures widely spaced (100/700/1250), undulating, rough with light brown staining on joint surfaces. 3. One 90 degree fracture from 9.15-9.30m, undulating, rough, greyish brown staining on joint surface.		
					>20								
4.50		85	80	75	7								
6.00													
6.30 - 6.45	C2	90	85	75									
		TCR	SCR	RQD	FI								

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details

To (m)	Diam (mm)

Core Barrel

SK6L

Flush Type

Water

Remarks

Inspection pit hand dug to 1.20m.
No obvious groundwater strikes - water added during coring.

Termination Reason

Terminated at scheduled depth.

Last Updated

23/05/2023

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
23-0237	Laurclavagh WF; Ground Investigation	RC06
	Client: Turnkey Developments	
	Client's Rep Enerco Energy	

Method	Plant Used	Top (m)	Base (m)	Coordinates	Final Depth:	Start Date:	Driller:	Sheet 2 of 2
Rotary Percussion	Comacchio 602	0.00	3.00					Scale: 1:40
Rotary Coring	Comacchio 602	3.00	10.00	537361.34 E	10.00 m	30/03/2023	GT	
				743494.58 N	Elevation: 38.01 mOD	End Date: 30/03/2023	Logger: DM	FINAL

Depth (m)	Samples / Field Records	TCR	SCR	RQD	FI	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
7.50											Strong dark grey LIMESTONE with white calcite mineralisation throughout. Slightly weathered: slightly reduced strength, slightly closer fracture spacing, with occasional brown discolouration. Discontinuities:		
		97	95	85							1. 5-10 degree fractures medium spaced (40/212/470), planar, undulating, rough with light brown staining and clay infill on fracture surfaces.		
9.00											2. 35-45 degree fractures widely spaced (100/700/1250), undulating, rough with light brown staining on joint surfaces.		
9.60 - 9.75	C3	80	65	20	10						3. One 90 degree fracture from 9.15-9.30m, undulating, rough, greyish brown staining on joint surface.		
10.00								28.01	10.00		End of Borehole at 10.00m		
		TCR	SCR	RQD	FI								

Water Strikes			
Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details	
To (m)	Diam (mm)

Core Barrel
SK6L

Remarks

Inspection pit hand dug to 1.20m.
No obvious groundwater strikes - water added during coring.

Flush Type	Termination Reason	Last Updated
Water	Terminated at scheduled depth.	23/05/2023

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
23-0237	Laurclavagh WF; Ground Investigation	RC07
	Client: Turnkey Developments	
	Client's Rep Enerco Energy	

Method	Plant Used	Top (m)	Base (m)	Coordinates
Rotary Percussion	Comacchio 602	0.00	3.00	
Rotary Coring	Comacchio 602	3.00	10.50	537370.78 E
				743516.49 N

Final Depth:	10.50 m	Start Date:	30/03/2023	Driller:	GT	Sheet 1 of 2
						Scale: 1:40
Elevation:	39.47 mOD	End Date:	30/03/2023	Logger:	DM	FINAL

Depth (m)	Samples / Field Records	TCR	SCR	RQD	FI	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
											Soft brown CLAY.		
								38.27	1.20		Firm to stiff greyish brown sandy gravelly CLAY (Driller's Description)		
1.50 - 1.95	SPT(C) N=12 (2,3/2,3,4,3)												
3.00 - 3.45	SPT(C) N=29 (4,7/7,8,7,7)							36.47	3.00		Medium dense light brown slightly sandy clayey subrounded to subangular fine to medium GRAVEL. Sand is fine to coarse.		
		90						35.77	3.70		Dense light brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to medium.		
4.50 - 4.64	SPT(C) 50 (25 for 67mm/50 for 78mm)				NI								
4.50													
5.00 - 5.15	C1												
		93	15	15				34.17	5.30		Dense light orangish brown slightly gravelly clayey slightly fine to coarse SAND. Gravel is subangular to subrounded fine to medium.		
6.00								33.62	5.85		Strong dark grey LIMESTONE with white calcite mineralisation throughout. Slightly weathered: slightly reduced strength, slightly closer fracture spacing, rare light brown discolouration. Discontinuities: 1. 5-10 degree fractures medium spaced (90/270/440), planar, undulating and rough.		
		97	93	80									
		TCR	SCR	RQD	FI								

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details

To (m)	Diam (mm)

Core Barrel

SK6L

Flush Type

Water

Remarks

Inspection pit hand dug to 1.20m.
No obvious groundwater strikes - water added during coring.

Termination Reason

Terminated at scheduled depth.

Last Updated

23/05/2023

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
23-0237	Laurclavagh WF; Ground Investigation	RC07
	Client: Turnkey Developments	
	Client's Rep Enerco Energy	

Method	Plant Used	Top (m)	Base (m)	Coordinates	Final Depth:	Start Date:	Driller:	Sheet 2 of 2
Rotary Percussion	Comacchio 602	0.00	3.00					Scale: 1:40
Rotary Coring	Comacchio 602	3.00	10.50	537370.78 E	10.50 m	30/03/2023	GT	
				743516.49 N	Elevation: 39.47 mOD	End Date: 30/03/2023	Logger: DM	FINAL

Depth (m)	Samples / Field Records	TCR	SCR	RQD	FI	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
7.50											Strong dark grey LIMESTONE with white calcite mineralisation throughout. Slightly weathered: slightly reduced strength, slightly closer fracture spacing, rare light brown discolouration. Discontinuities:		
8.20 - 8.40	C2	95	95	95	6						1. 5-10 degree fractures medium spaced (90/270/440), planar, undulating and rough.		
9.00													
9.55 - 9.90	C3	83	80	75									
10.50								28.97	10.50		End of Borehole at 10.50m		
		TCR	SCR	RQD	FI								

Water Strikes			
Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details	
To (m)	Diam (mm)

Core Barrel
SK6L

Remarks

Inspection pit hand dug to 1.20m.
No obvious groundwater strikes - water added during coring.

Flush Type	Termination Reason	Last Updated
Water	Terminated at scheduled depth.	23/05/2023

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
23-0237	Laurclavagh WF; Ground Investigation	RC08
	Client: Turnkey Developments	
	Client's Rep Enerco Energy	

Method	Plant Used	Top (m)	Base (m)	Coordinates	Final Depth:	Start Date:	Driller:	Sheet 1 of 2
Rotary Drilling	Comacchio 602	0.00	3.50	536500.99 E	10.00 m	25/04/2023	GT	Scale: 1:40
Rotary Coring	Comacchio 602	3.50	10.00	743805.31 N	Elevation: 43.75 mOD	End Date: 25/04/2023	Logger: AK	FINAL

Depth (m)	Samples / Field Records	TCR	SCR	RQD	FI	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
											Brown CLAY with low boulder content. Boulders are angular.		
								42.55	1.20		Dense grey BOULDERS and COBBLES (Driller's description)		
1.50 - 1.95	SPT(C) N=44 (4,7/10,12,12,10)							41.25	2.50		LIMESTONE (Driller's description)		
		100	90	95	4			40.25	3.50		Strong very thinly laminated light grey dolomotised LIMESTONE, Moderately weathered: slightly reduced strength, closer fracture spacing with occasional yellowish brown discolouration on surfaces. Discontinuities: 1. 10-20° bedding fractures medium spaced (50/250/750). Undulating, rough with rare yellowish brown staining. Common yellowish brown clay infill up to 5mm thick. 2. One 45°joint at 8.55m planar, smooth with yellowish brown staining. 3. Three 80-90° joints at 4.5-4.6m, 5.0-5.7m, 9.35-9.5m undulating and rough, with occasional yellow, brown staining, clean.		
					>20								
5.00		97	90	86	9								
					>20								
					6								
6.50		100	100	100	>20								
		TCR	SCR	RQD	FI								

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details

To (m)	Diam (mm)

Core Barrel

SK6L

Flush Type

Water

Remarks

Inspection pit hand dug to 1.20m.
No obvious groundwater strikes - water added during coring.

Termination Reason

Terminated at scheduled depth.

Last Updated

23/05/2023

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
23-0237	Laurclavagh WF; Ground Investigation	RC08
	Client: Turnkey Developments	
	Client's Rep Enerco Energy	

Method	Plant Used	Top (m)	Base (m)	Coordinates	Final Depth:	Start Date:	Driller:	Sheet 2 of 2
Rotary Drilling	Comacchio 602	0.00	3.50	536500.99 E	10.00 m	25/04/2023	GT	Scale: 1:40
Rotary Coring	Comacchio 602	3.50	10.00	743805.31 N	Elevation: 43.75 mOD	End Date: 25/04/2023	Logger: AK	FINAL

Depth (m)	Samples / Field Records	TCR	SCR	RQD	FI	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
8.00					3						Strong very thinly laminated light grey dolomotised LIMESTONE, Moderately weathered: slightly reduced strength, closer fracture spacing with occasional yellowish brown discolouration on surfaces. Discontinuities: 1. 10-20° bedding fractures medium spaced (50/250/750). Undulating, rough with rare yellowish brown staining. Common yellowish brown clay infill up to 5mm thick. 2. One 45°joint at 8.55m planar, smooth with yellowish brown staining. 3. Three 80-90° joints at 4.5-4.6m, 5.0-5.7m, 9.35-9.5m undulating and rough, with occasional yellow, brown staining, clean.		
		97	80	76									
9.50					>20								
		100	100	100	2								
10.00								33.75	10.00		End of Borehole at 10.00m		
		TCR	SCR	RQD	FI								

Water Strikes			
Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Remarks

Inspection pit hand dug to 1.20m.
No obvious groundwater strikes - water added during coring.

Casing Details	
To (m)	Diam (mm)

Core Barrel

SK6L

Flush Type

Water

Termination Reason

Terminated at scheduled depth.

Last Updated

23/05/2023

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
23-0237	Laurclavagh WF; Ground Investigation	RC09
	Client: Turnkey Developments	
	Client's Rep Enerco Energy	

Method	Plant Used	Top (m)	Base (m)	Coordinates	Final Depth:	Start Date:	Driller:	Sheet 1 of 2
Rotary Percussion	Comacchio 602	0.00	3.00	536889.19 E	10.00 m	30/03/2023	GT	Scale: 1:40
Rotary Coring	Comacchio 602	3.00	10.00	743548.39 N	Elevation: 36.62 mOD	End Date: 30/03/2023	Logger: DM	FINAL

Depth (m)	Samples / Field Records	TCR	SCR	RQD	FI	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
								35.42	1.20		Soft brown slightly sandy CLAY. Sand is fine to coarse.		
1.50 1.50 - 1.95	D1 SPT(S) N=19 (4,4/4,5,5,5)										Stiff brownish grey sandy gravelly CLAY. (Driller's Description).		
								33.62	3.00		Strong dark grey LIMESTONE with white calcite mineralisation throughout. Slightly weathered: slightly reduced strength, slightly closer fracture spacing, rare light brown discolouration. Discontinuities: 1. 5-10 degree fractures closely spaced (20/115/340), planar, undulating, rough with light brown discolouration on joint surfaces. 2. 40-45 degree fractures widely spaced (110/777/1650), undulating and rough. 3. 90 degree fractures from 4.35-4.50m, 5.75-6.00m and 6.50-6.55m, undulating and rough.		
		90	80	50	8								
4.50													
		92	85	70	12								
6.00													
6.70 - 7.10	C1	99	95	87									
		TCR	SCR	RQD	FI								

Water Strikes			
Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details	
To (m)	Diam (mm)

Core Barrel
SK6L

Remarks

Inspection pit hand dug to 1.20m.
No obvious groundwater strikes - water added during coring.

Flush Type	Termination Reason	Last Updated
Water	Terminated at scheduled depth.	23/05/2023

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
23-0237	Laurclavagh WF; Ground Investigation	RC09
	Client: Turnkey Developments	
	Client's Rep Enerco Energy	

Method	Plant Used	Top (m)	Base (m)	Coordinates	Final Depth:	Start Date:	Driller:	Sheet 2 of 2
Rotary Percussion	Comacchio 602	0.00	3.00					Scale: 1:40
Rotary Coring	Comacchio 602	3.00	10.00	536889.19 E	10.00 m	30/03/2023	GT	
				743548.39 N	Elevation: 36.62 mOD	End Date: 30/03/2023	Logger: DM	FINAL

Depth (m)	Samples / Field Records	TCR	SCR	RQD	FI	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
7.50											Strong dark grey LIMESTONE with white calcite mineralisation throughout. Slightly weathered: slightly reduced strength, slightly closer fracture spacing, rare light brown discolouration. Discontinuities:		
		97	95	65	15						1. 5-10 degree fractures closely spaced (20/115/340), planar, undulating, rough with light brown discolouration on joint surfaces.		
8.60 - 8.80	C2										2. 40-45 degree fractures widely spaced (110/777/1650), undulating and rough.		
9.00											3. 90 degree fractures from 4.35-4.50m, 5.75-6.00m and 6.50-6.55m, undulating and rough.		
9.20 - 9.30	C3												
		100	97	97	4								
10.00								26.62	10.00		End of Borehole at 10.00m		

Water Strikes			
Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details	
To (m)	Diam (mm)

Core Barrel
SK6L

Remarks

Inspection pit hand dug to 1.20m.
No obvious groundwater strikes - water added during coring.

Flush Type	Termination Reason	Last Updated
Water	Terminated at scheduled depth.	23/05/2023

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
23-0237	Laurclavagh WF; Ground Investigation	RC11
	Client: Turnkey Developments	
	Client's Rep Enerco Energy	

Method	Plant Used	Top (m)	Base (m)	Coordinates	Final Depth:	Start Date:	Driller:	Sheet 1 of 2
Rotary Drilling	Comacchio 602	0.00	3.50	536498.64 E	10.00 m	25/04/2023	GT	Scale: 1:40
Rotary Coring	Comacchio 602	3.50	10.00	743790.15 N	Elevation: 43.37 mOD	End Date: 25/04/2023	Logger: AK	FINAL

Depth (m)	Samples / Field Records	TCR	SCR	RQD	FI	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
											Brown CLAY.		
								42.17	1.20		Grey GRAVEL and BOULDERS (Driller's description)		
1.50 - 1.58	SPT(C) N=50 (25 for 0mm/50 for 75mm)												
		100	95	86	4			39.87	3.50		Strong thickly laminated brownish grey LIMESTONE. Slightly weathered: Slightly reduced strength, slightly closer fracture spacing, occasional yellowish brown discolouration on fracture surfaces. Discontinuities: 1. 10-20 degree bedding fractures, closely spaced (20/95/500), undulating, smooth, with brownish grey staining on fracture surfaces. 2. Five 40-50 degree joints at 4.50m, 5.30m, 7.50m, 9.10m and 9.60m, undulating, rough, with brownish grey staining on fracture surfaces.		
					5								
5.00													
		100	95	88	>20								
					6								
6.50													
		100	98	86									
		TCR	SCR	RQD	FI								

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details

To (m)	Diam (mm)

Core Barrel

SK6L

Flush Type

Water

Remarks

Inspection pit hand dug to 1.20m.
No obvious groundwater strikes - water added during coring.

Termination Reason

Terminated at scheduled depth.

Last Updated

23/05/2023

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Borehole ID
23-0237	Laurclavagh WF; Ground Investigation	RC11
	Client: Turnkey Developments	
	Client's Rep Enerco Energy	

Method	Plant Used	Top (m)	Base (m)	Coordinates	Final Depth:	Start Date:	Driller:	Sheet 2 of 2
Rotary Drilling	Comacchio 602	0.00	3.50	536498.64 E	10.00 m	25/04/2023	GT	Scale: 1:40
Rotary Coring	Comacchio 602	3.50	10.00	743790.15 N	Elevation: 43.37 mOD	End Date: 25/04/2023	Logger: AK	FINAL

Depth (m)	Samples / Field Records	TCR	SCR	RQD	FI	Casing Depth (m)	Water Depth (m)	Level mOD	Depth (m)	Legend	Description	Water	Backfill
					5						Strong thickly laminated brownish grey LIMESTONE. Slightly weathered: Slightly reduced strength, slightly closer fracture spacing, occasional yellowish brown discolouration on fracture surfaces. Discontinuities: 1. 10-20 degree bedding fractures, closely spaced (20/95/500), undulating, smooth, with brownish grey staining on fracture surfaces. 2. Five 40-50 degree joints at 4.50m, 5.30m, 7.50m, 9.10m and 9.60m, undulating, rough, with brownish grey staining on fracture surfaces.		
8.00		100	83	83	7								
9.50		100	70	70	3								
10.00								33.37	10.00		End of Borehole at 10.00m		
		TCR	SCR	RQD	FI								

Water Strikes

Struck at (m)	Casing to (m)	Time (min)	Rose to (m)

Casing Details

To (m)	Diam (mm)

Core Barrel

SK6L

Flush Type

Water

Remarks

Inspection pit hand dug to 1.20m.
No obvious groundwater strikes - water added during coring.

Termination Reason

Terminated at scheduled depth.

Last Updated

23/05/2023

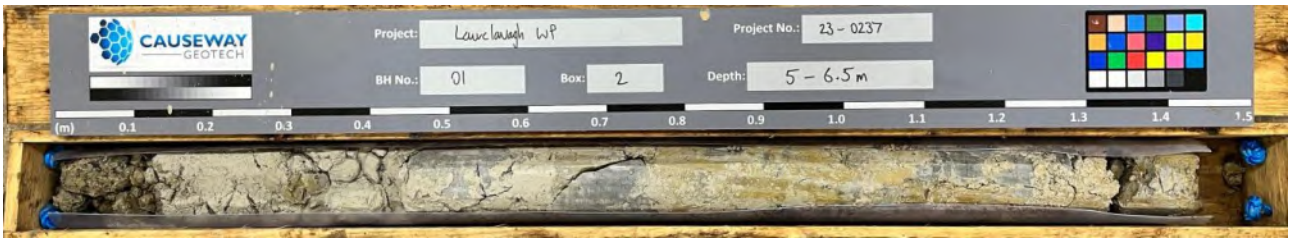
AGS

CAUSEWAY GEOTECH

APPENDIX C

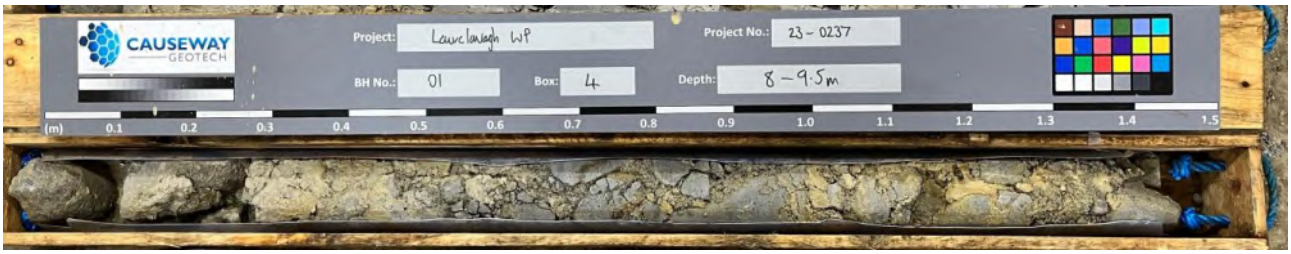
CORE PHOTOGRAPHS

RC01 Box 1 (3.50-5.00m)



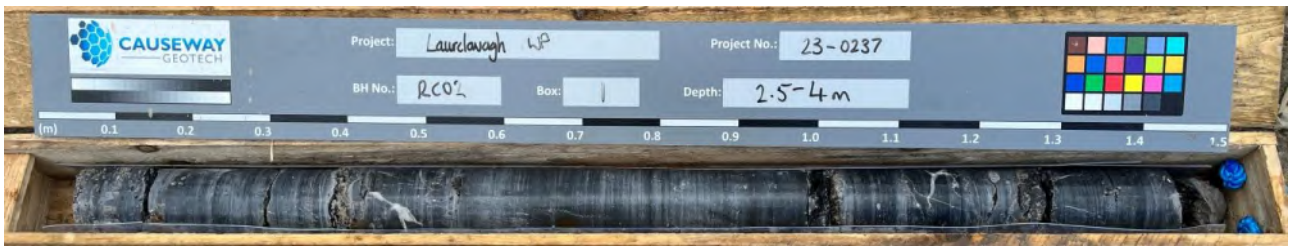
RC02 Box 2 (5.00-6.50m)

RC01 Box 3 (6.50-8.00m)

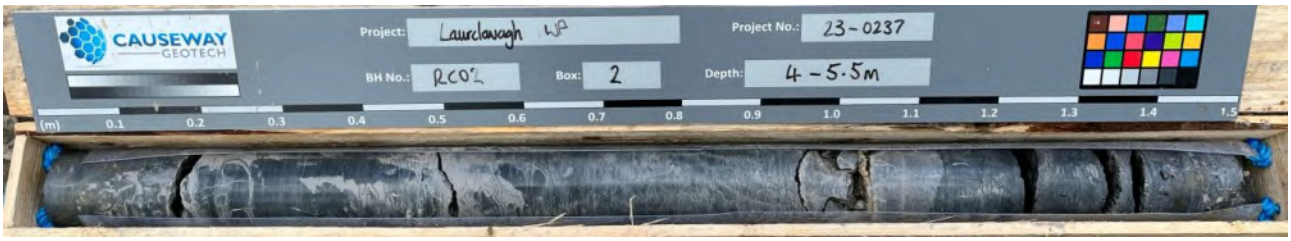


RC01 Box 4 (8.00-9.50m)

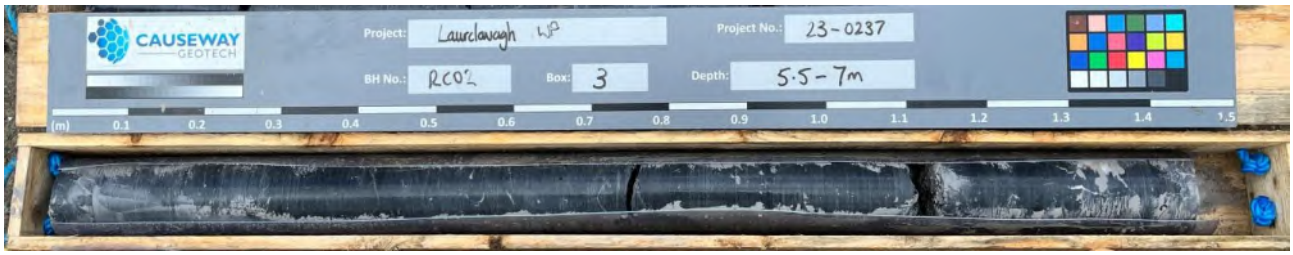
RC01 Box 5 (9.50-10.50m)



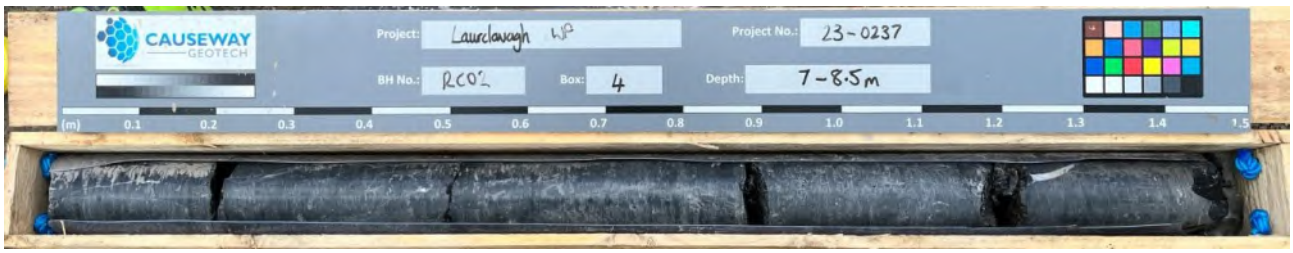
RC02 Box 1 (2.50-4.00m)



RC02 Box 2 (4.00-5.50m)



RC02 Box 3 (5.50-7.00m)



RC02 Box 4 (7.00-8.50m)

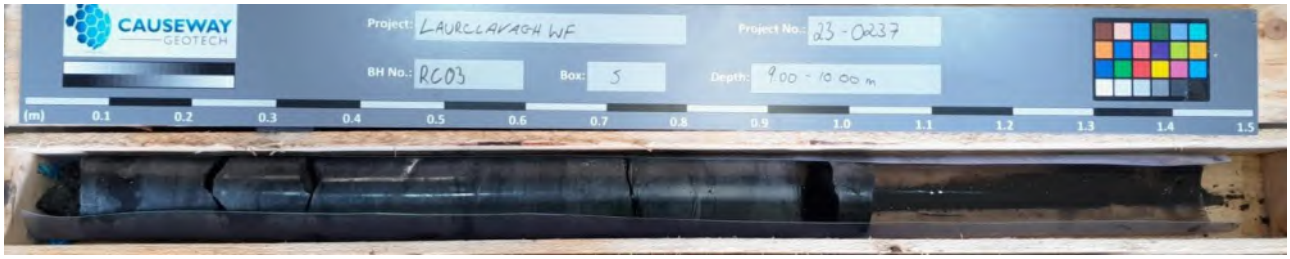
RC02 Box 5 (8.50-10.00m)

RC03 Box 1 (3.00-4.50m)

RC03 Box 2 (4.50-6.00m)

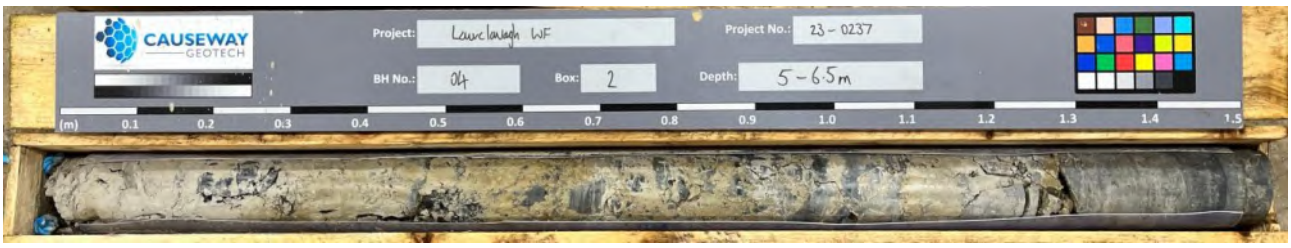
RC03 Box 3 (6.00-7.50m)

RC03 Box 4 (7.50-9.00m)



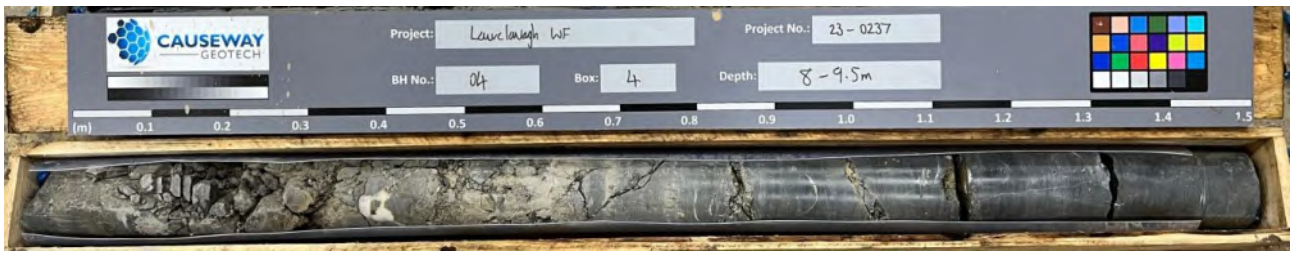
RC03 Box 5 (9.00-10.00m)

RC04 Box 1 (3.50-5.00m)

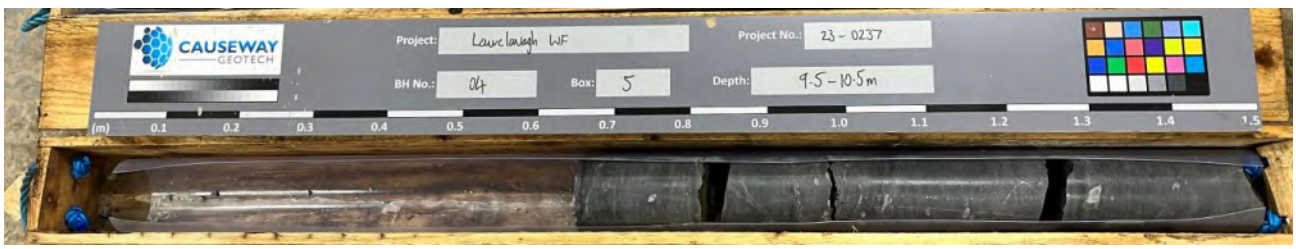


RC04 Box 2 (5.00-6.50m)

RC04 Box 3 (6.50-8.00m)



RC04 Box 4 (8.00-9.50m)



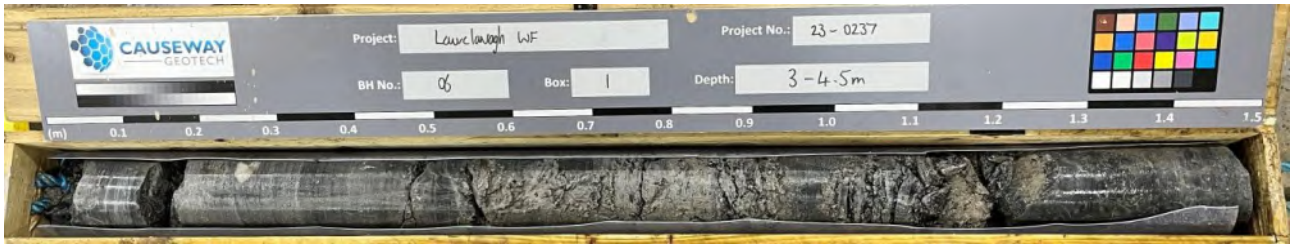
RC04 Box 5 (9.50-10.50m)

RC05 Box 1 (3.00-4.50m)

RC05 Box 2 (4.50-6.00m)

RC05 Box 3 (6.00-7.50m)

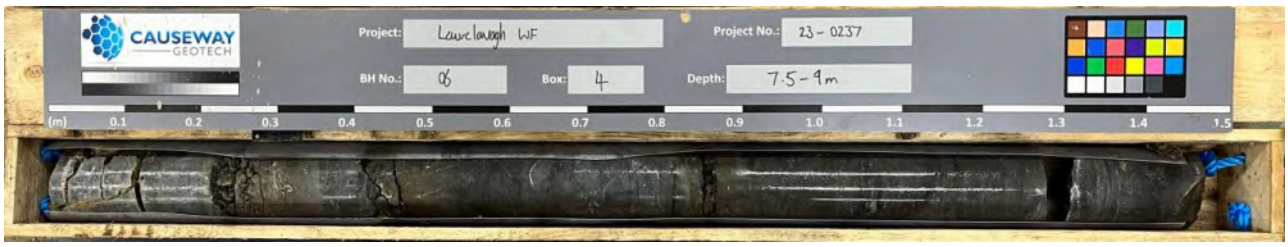
RC05 Box 4 (7.50-9.00m)



RC06 Box 1 (3.00-4.50m)

RC06 Box 2 (4.50-6.00m)

RC06 Box 3 (6.00-7.50m)



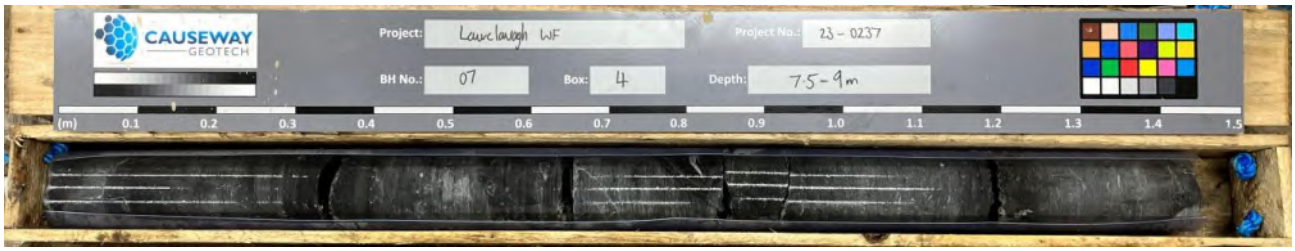
RC06 Box 4 (7.50-9.00m)

RC06 Box 5 (9.00-10.00m)

RC07 Box 1 (3.00-4.50m)

RC07 Box 2 (4.50-6.00m)

RC07 Box 3 (6.00-7.50m)



RC07 Box 4 (7.50-9.00m)

RC07 Box 5 (9.00-10.50m)

RC08 Box 1 (3.50-5.00m)

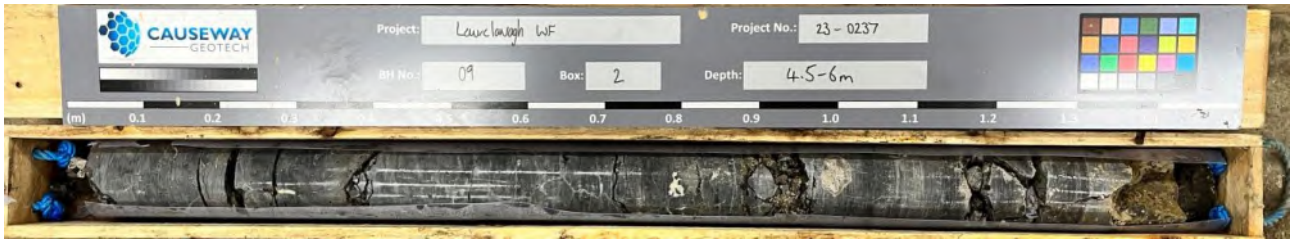
RC08 Box 2 (5.00-6.50m)

RC08 Box 3 (6.50-8.00m)

RC08 Box 4 (8.00-9.50m)

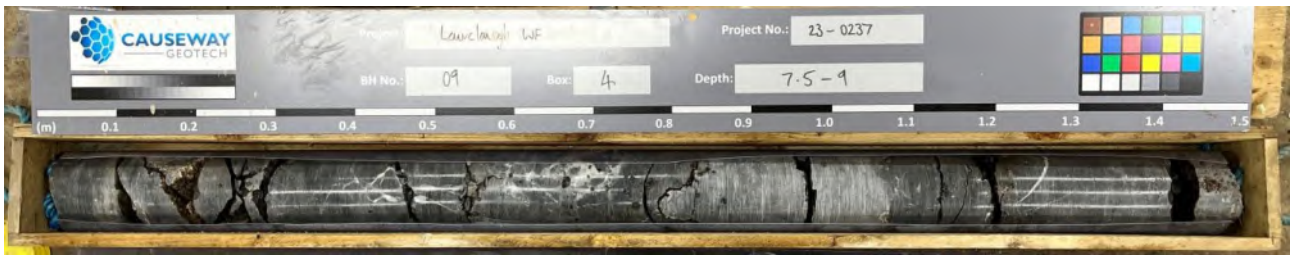
RC08 Box 5 (9.50-10.00m)

RC09 Box 1 (3.00-4.50m)

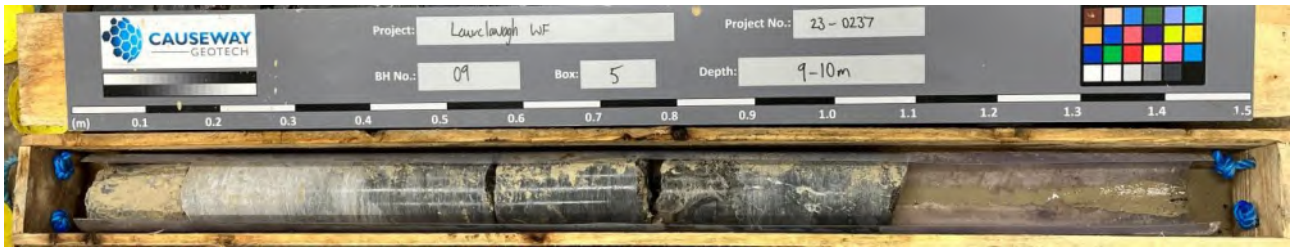


RC09 Box 2 (4.50-6.00m)

RC09 Box 3 (6.00-7.50m)



RC09 Box 4 (7.50-9.00m)



RC09 Box 5 (9.00-10.00m)

RC11 Box 1 (3.50-5.00m)

RC11 Box 2 (5.00-6.50m)

RC11 Box 3 (6.50-8.00m)

RC11 Box 4 (8.00-9.50m)

RC11 Box 5 (9.50-10.00m)

CAUSEWAY GEOTECH

APPENDIX D

TRIAL PIT LOGS

CAUSEWAY GEOTECH

Project No. 23-0237	**Project Name:** Laurclavagh WF; Ground Investigation		**Trial Pit ID** TP01
Coordinates 535630.50 E 743583.82 N	**Client:** Turnkey Developments		
Method: Trial Pitting	**Client's Representative:** Enerco Energy		Sheet 1 of 1 Scale: 1:25
Plant: 13T Tracked Excavator	**Elevation** 32.58 mOD	**Date:** 22/03/2023	**Logger:** MMC	FINAL

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
			32.38	0.20		TOPSOIL: Firm greyish brown slightly sandy CLAY with rootlets. Sand is fine to coarse.	
0.40	B1					Firm light greyish brown slightly sandy CLAY. Sand is fine to coarse.	
			31.98	0.60		Soft to firm light grey sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subrounded fine to coarse of limestone. Cobbles are subrounded of limestone.	
0.90	B2						
1.80	B3						
			30.08	2.50		Firm to stiff light grey slightly sandy slightly gravelly SILT. Sand is fine to coarse. Gravel is subrounded fine to medium of limestone.	
3.00	B4						
			29.08	3.50		End of trial pit at 3.50m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Water Strikes	
Struck at (m)	Remarks

Depth: 3.50
Width: 0.70
Length: 3.50

Remarks:
No groundwater encountered.

Stability:
Unstable

Termination Reason
Terminated due to pit walls collapsing.

Last Updated
23/05/2023

AGS

CAUSEWAY GEOTECH

Project No. 23-0237	**Project Name:** Laurclavagh WF; Ground Investigation		**Trial Pit ID** TP02
Coordinates 536512.78 E 743972.98 N	**Client:** Turnkey Developments		
Method: Trial Pitting	**Client's Representative:** Enerco Energy		Sheet 1 of 1 Scale: 1:25
Plant: 13t Tracked Excavator	**Elevation** 47.46 mOD	**Date:** 17/04/2023	**Logger:** MMC	FINAL

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
			47.26	0.20		TOPSOIL	
0.40	B1					Light grey very clayey fine to coarse SAND and angular to subangular fine to coarse GRAVEL of limestone.	
			46.96	0.50		Light grey very sandy silty angular to subangular GRAVEL of limestone with medium cobble and boulder content. Sand is fine to coarse. Cobbles are subangular of limestone. Boulders are subangular of limestone. (Possible weathered bedrock)	
1.20	B2						
			46.06	1.40		End of trial pit at 1.40m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Water Strikes	
Struck at (m)	Remarks

Depth: 1.40
Width: 1.00
Length: 2.50

Remarks:
No groundwater encountered.

Stability:
Unstable

Termination Reason
Terminated on possible bedrock.

Last Updated
23/05/2023

AGS

CAUSEWAY GEOTECH

Project No. 23-0237	**Project Name:** Laurclavagh WF; Ground Investigation		**Trial Pit ID** TP03
Coordinates 538279.07 E 743808.34 N	**Client:** Turnkey Developments		
Method: Trial Pitting	**Client's Representative:** Enerco Energy		Sheet 1 of 1 Scale: 1:25
Plant: 13T Tracked Excavator	**Elevation** 41.01 mOD	**Date:** 23/03/2023	**Logger:** MMC	FINAL

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
			40.76	0.25		TOPSOIL	
0.60	B1					Firm light brownish grey sandy gravelly SILT. Sand is fine to coarse. Gravel is subangular to subrounded fine to medium of limestone.	
1.30	B2		39.21	1.80		End of trial pit at 1.80m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Water Strikes	
Struck at (m)	Remarks

Depth: 1.80
Width: 0.70
Length: 3.50

Remarks:
No groundwater encountered.

Stability:
Unstable

Termination Reason
Terminated on possible bedrock.

Last Updated
23/05/2023

AGS

CAUSEWAY GEOTECH

Project No. 23-0237	**Project Name:** Laurclavagh WF; Ground Investigation		**Trial Pit ID** TP05
Coordinates 538493.40 E 743923.97 N	**Client:** Turnkey Developments		
Method: Trial Pitting	**Client's Representative:** Enerco Energy		Sheet 1 of 1 Scale: 1:25
Plant: 13T Tracked Excavator	**Elevation** 39.74 mOD	**Date:** 23/03/2023	**Logger:** MMC	FINAL

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
			39.44	0.30		TOPSOIL: Firm brown sandy CLAY with rootlets	
0.50	B1					Light brownish grey subangular COBBLES and BOULDERS of limestone with some sandy gravelly clay. Sand is fine to coarse. Gravel is subrounded to subangular fine to coarse of limestone.	
			38.84	0.90		End of trial pit at 0.90m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Water Strikes	
Struck at (m)	Remarks

Depth: 0.90
Width: 0.80
Length: 3.00

Remarks:
No groundwater encountered.

Stability:	Termination Reason	Last Updated
Stable	Terminated on possible bedrock.	23/05/2023

AGS

CAUSEWAY GEOTECH

Project No. 23-0237	**Project Name:** Laurclavagh WF; Ground Investigation		**Trial Pit ID** TP06
Coordinates 537723.12 E 743898.73 N	**Client:** Turnkey Developments		
Method: Trial Pitting	**Client's Representative:** Enerco Energy		Sheet 1 of 1 Scale: 1:25
Plant: 13T Tracked Excavator	**Elevation** 49.39 mOD	**Date:** 28/03/2023	**Logger:** MMC	FINAL

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
			49.09	0.30		TOPSOIIL: Firm brown slightly sandy CLAY with rootlets. Sand is fine to coarse.	
0.60	B1					Firm light grey slightly gravelly sandy CLAY with low cobble and boulder content. Sand is fine to coarse. Gravel is subrounded fine to coarse of limestone. Cobbles and boulders are subrounded of limestone.	
1.50	B2						
			46.89	2.50			
2.60	B3					Stiff light brownish grey slightly gravelly sandy CLAY with low cobble and boulder content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse.	
3.30	B4						
			45.79	3.60		End of trial pit at 3.60m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Water Strikes	
Struck at (m)	Remarks

Depth: 3.60
Width: 0.60
Length: 3.00

Remarks:
No groundwater encountered.

Stability:	Termination Reason	Last Updated
Stable	Terminated on refusal in very stiff clay.	23/05/2023

AGS

CAUSEWAY GEOTECH

Project No. 23-0237	**Project Name:** Laurclavagh WF; Ground Investigation		**Trial Pit ID** TP07
Coordinates 537204.42 E 743569.80 N	**Client:** Turnkey Developments		
Method: Trial Pitting	**Client's Representative:** Enerco Energy		Sheet 1 of 1 Scale: 1:25
Plant: 13T Tracked Excavator	**Elevation** 39.20 mOD	**Date:** 24/03/2023	**Logger:** MMC	FINAL

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
			38.95	0.25		TOPSOIL: Firm brown slightly sandy CLAY with rootlets	
0.50	B1					Stiff grey slightly gravelly sandy SILT with medium cobble and boulder content. Sand is fine to coarse. Gravel is subangular to angular fine to medium of limestone. Cobbles are subangular of limestone. Boulders are subrounded of limestone.	
			38.40	0.80		End of trial pit at 0.80m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Water Strikes	
Struck at (m)	Remarks

Depth: 0.80
Width: 0.70
Length: 3.00

Remarks:
No groundwater encountered.

Stability:
Stable

Termination Reason
Terminated on possible bedrock.

Last Updated
23/05/2023

AGS

CAUSEWAY GEOTECH

Project No. 23-0237	**Project Name:** Laurclavagh WF; Ground Investigation		**Trial Pit ID** TP08
Coordinates 537713.99 E 743859.60 N	**Client:** Turnkey Developments		
Method: Trial Pitting	**Client's Representative:** Enerco Energy		Sheet 1 of 1 Scale: 1:25
Plant: 13T Tracked Excavator	**Elevation** 48.82 mOD	**Date:** 28/03/2023	**Logger:** MMC	FINAL

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
			48.52	0.30		TOPSOIL: Firm brown slightly sandy CLAY with rootlets. Sand is fine to coarse.	
0.80	B1					Firm light brownish grey slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse.	
1.60	B2						
			46.72	2.10		Light grey subrounded COBBLES and BOULDERS of limestone.	
			46.32	2.50		End of trial pit at 2.50m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Water Strikes	
Struck at (m)	Remarks

Depth: 2.50
Width: 0.60
Length: 3.00

Remarks:
No groundwater encountered.

Stability:
Unstable

Termination Reason
Terminated on possible bedrock.

Last Updated
23/05/2023

AGS

CAUSEWAY GEOTECH

APPENDIX E

TRIAL PIT PHOTOGRAPHS

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CAUSEWAY GEOTECH

APPENDIX F

INFILTRATION TEST LOGS AND RESULTS

CAUSEWAY GEOTECH

Project No.	Project Name:	Trial Pit ID
23-0237	Laurclavagh WF; Ground Investigation	ITP01
Coordinates 537788.42 E 743808.44 N	**Client:** Turnkey Developments	
Method: Trial Pitting	**Client's Representative:** Enerco Energy	Sheet 1 of 1 Scale: 1:25
Plant: 13T Tracked Excavator	**Elevation** 48.39 mOD / **Date:** 28/03/2023 / **Logger:** MMC	FINAL

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
			48.09	0.30		TOPSOIL: Firm brown slightly sandy CLAY with rootlets. Sand is fine to coarse.	
0.40	B1		47.89	0.50		Firm orangish brown slightly sandy CLAY. Sand is fine to coarse.	
1.00	B2					Firm light brownish grey slightly gravelly sandy CLAY with low cobble content and one boulder. Sand is fine to coarse. Gravel is subangular fine to coarse of limestone. Cobbles are subangular to subrounded of limestone. Boulder is subrounded of limestone.	
2.00	B3		47.09	1.30		Firm to stiff light brownish grey slightly sandy slightly gravelly CLAY with low cobble and low boulder content and some pockets of orangish brown very sandy CLAY. Sand is fine to coarse. Gravel is subangular fine to medium of limestone. Cobbles are subangular to subrounded of limestone. Boulders are subrounded of limestone.	
2.70	B4		45.59	2.80		End of trial pit at 2.80m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Water Strikes	
Struck at (m)	Remarks

Depth: 2.80
Width: 0.60
Length: 3.00

Remarks:
No groundwater encountered.
Soakaway completed.

Stability:	Termination Reason	Last Updated
Stable	Terminated on possible bedrock.	23/05/2023

AGS

CAUSEWAY GEOTECH

Project No. 23-0237	**Project Name:** Laurclavagh WF; Ground Investigation		**Trial Pit ID** ITP02
Coordinates 536599.98 E 744364.08 N	**Client:** Turnkey Developments		
Method: Trial Pitting	**Client's Representative:** Enerco Energy		Sheet 1 of 1 Scale: 1:25
Plant: 13t Tracked Excavator	**Elevation** 54.29 mOD	**Date:** 17/04/2023	**Logger:** MMC	FINAL

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
			54.09	0.20		TOPSOIL: Firm brown slightly sandy CLAY. Sand is fine to coarse.	
0.60	B1					Firm to stiff light grey slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to medium of limestone.	
			53.29	1.00		End of trial pit at 1.00m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Water Strikes	
Struck at (m)	Remarks

Depth: 1.00
Width: 0.50
Length: 2.00

Remarks:
No groundwater encountered.
Soakaway completed.

Stability:	Termination Reason	Last Updated
Stable	Terminated on possible bedrock.	23/05/2023

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Trial Pit ID
23-0237	Laurclavagh WF; Ground Investigation	ITP03
Coordinates 537384.54 E 743552.95 N	**Client:** Turnkey Developments	
Method: Trial Pitting	**Client's Representative:** Enerco Energy	Sheet 1 of 1 Scale: 1:25
Plant: 13T Tracked Excavator	**Elevation** 39.80 mOD / **Date:** 24/03/2023 / **Logger:** MMC	FINAL

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
			39.65	0.15		TOPSOIL: Firm brown slightly sandy CLAY with rootlets	
0.50	B1					Light grey subangular BOULDERS of limestone with high cobble content and some sandy slightly clayey gravel. Sand is fine to coarse. Gravel is subangular to angular fine to coarse of limestone. Cobbles are subangular to angular of limestone.	
			38.80	1.00		End of trial pit at 1.00m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Water Strikes	
Struck at (m)	Remarks

Depth: 1.00
Width: 0.70
Length: 1.80

Remarks:
No groundwater encountered.
Soakaway completed.

Stability:	Termination Reason	Last Updated
Stable	Terminated on possible bedrock.	23/05/2023

AGS

CAUSEWAY GEOTECH

Project No. 23-0237	**Project Name:** Laurclavagh WF; Ground Investigation		**Trial Pit ID** ITP04
Coordinates 538320.32 E 743811.54 N	**Client:** Turnkey Developments		
Method: Trial Pitting	**Client's Representative:** Enerco Energy		Sheet 1 of 1 Scale: 1:25
Plant: 13T Tracked Excavator	**Elevation** 40.01 mOD	**Date:** 23/03/2023	**Logger:** MMC	FINAL

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
			39.76	0.25		TOPSOIL: Firm brown slightly sandy CLAY with rootlets. Sand is fine to coarse.	
						Firm light grey sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subrounded fine to coarse of limestone. Cobbles are subrounded of limestone.	
			38.61	1.40		Firm light grey sandy gravelly CLAY with low boulder content. Sand is fine to coarse. Gravel is subrounded fine to coarse of limestone. Boulders are subrounded of limestone.	
			37.21	2.80		End of trial pit at 2.80m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Water Strikes	
Struck at (m)	Remarks

Depth: 2.80
Width: 0.80
Length: 3.50

Remarks:
No groundwater encountered.
Soakaway completed.

Stability: Unstable

Termination Reason: Terminated on possible bedrock.

Last Updated: 23/05/2023

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Trial Pit ID
23-0237	Laurclavagh WF; Ground Investigation	ITP05
Coordinates	**Client:**	
534758.34 E 743142.61 N	Turnkey Developments	
Method:	**Client's Representative:**	Sheet 1 of 1 Scale: 1:25
Trial Pitting	Enerco Energy	
Plant:	**Elevation** / **Date:** / **Logger:**	FINAL
13T Tracked Excavator	25.11 mOD / 25/04/2023 / MMC	

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
			25.01	0.10		TOPSOIL	
						Light grey slightly gravelly very clayey fine to coarse SAND with low cobble content. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded of limestone.	
			23.81	1.30		End of trial pit at 1.30m	

0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
4.5

Water Strikes	
Struck at (m)	Remarks

Depth: 1.30
Width: 0.60
Length: 3.50

Remarks:
No groundwater encountered.
Soakaway carried out at 0.70m.

Stability: Stable

Termination Reason: Terminated on possible bedrock.

Last Updated: 23/05/2023

AGS

CAUSEWAY GEOTECH

Project No. 23-0237	**Project Name:** Laurclavagh WF; Ground Investigation		**Trial Pit ID** ITP06
Coordinates 539457.42 E 743774.26 N	**Client:** Turnkey Developments		
Method: Trial Pitting	**Client's Representative:** Enerco Energy		Sheet 1 of 1 Scale: 1:25
Plant: 13T Tracked Excavator	**Elevation** 30.08 mOD	**Date:** 20/03/2023	**Logger:** MMC	FINAL

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
			29.88	0.20		TOPSOIL	
0.40	B1		29.58	0.50		Soft to firm light orangish brown slightly sandy CLAY. Sand is fine to coarse.	
1.20	B2		28.28	1.80		Stiff light grey slightly sandy slightly gravelly SILT with medium boulder content. Sand is fine to coarse. Gravel is subangular fine to coarse. Boulders are subangular to angular of limestone.	
						End of trial pit at 1.80m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Water Strikes	
Struck at (m)	Remarks

Depth: 1.80
Width: 1.00
Length: 2.50

Remarks:
No groundwater encountered.
Soakaway completed.

Stability: Stable

Termination Reason: Terminated on possible bedrock.

Last Updated: 23/05/2023

AGS

CAUSEWAY GEOTECH

Project No. 23-0237	**Project Name:** Laurclavagh WF; Ground Investigation		**Trial Pit ID** ITP07
Coordinates 538760.65 E 743743.99 N	**Client:** Turnkey Developments		
Method: Trial Pitting	**Client's Representative:** Enerco Energy		Sheet 1 of 1 Scale: 1:25
Plant: 13T Tracked Excavator	**Elevation** 31.30 mOD	**Date:** 21/03/2023	**Logger:** MMC	FINAL

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
			30.95	0.35		TOPSOIL: Brown slightly sandy CLAY with rootlets. Sand is fine to coarse.	
0.80	B1					Firm light grey mottled light brown gravelly very sandy CLAY with medium cobble and high boulder content. Sand is fine to coarse. Gravel is subangular fine to coarse of limestone. Cobbles are subangular of limestone. Boulders are subangular of limestone.	
1.50	B2		30.10	1.20		Stiff light grey sandy gravelly CLAY with medium cobble and boulder content and some light greyish brown sandy slightly gravelly clay. Sand is fine to coarse. Gravel is subangular fine to medium. Cobbles are subangular to angular of limestone. Boulders are angular to subangular of limestone.	
			29.50	1.80		End of trial pit at 1.80m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Water Strikes	
Struck at (m)	Remarks

Depth: 1.80
Width: 1.00
Length: 3.00

Remarks:
No groundwater encountered.
Soakaway completed.

Stability: Stable

Termination Reason: Terminated on possible bedrock.

Last Updated: 23/05/2023

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Trial Pit ID
23-0237	Laurclavagh WF; Ground Investigation	ITP08
Coordinates 534976.50 E 743777.84 N	**Client:** Turnkey Developments	
Method: Trial Pitting	**Client's Representative:** Enerco Energy	Sheet 1 of 1 Scale: 1:25
Plant: 13T Tracked Excavator	**Elevation** 30.15 mOD / **Date:** 22/03/2023 / **Logger:** MMC	FINAL

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
			30.05	0.10		TOPSOIL: Firm brown sandy CLAY with rootlets. Sand is fine to coarse.	
0.60	B1					Brown subangular to subrounded COBBLES of limestone with much sandy gravelly clay. Sand is fine to coarse. Gravel is subrounded fine to coarse of limestone.	
			28.85	1.30		Light grey very sandy clayey subrounded fine to coarse GRAVEL of limestone. Sand is fine to coarse.	
1.50	B2						
			28.35	1.80		End of trial pit at 1.80m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Water Strikes

Struck at (m)	Remarks

Depth: 1.80
Width: 0.70
Length: 2.50

Remarks:
No groundwater encountered.
Soakaway completed.

Stability: Stable

Termination Reason: Terminated on possible bedrock.

Last Updated: 23/05/2023

AGS

CAUSEWAY GEOTECH

Project No.	Project Name:	Trial Pit ID
23-0237	Laurclavagh WF; Ground Investigation	ITP09
Coordinates E N	**Client:** Turnkey Developments	
Method: Trial Pitting	**Client's Representative:** Enerco Energy	Sheet 1 of 1 Scale: 1:25
Plant: 13t Tracked Excavator	**Elevation** mOD / **Date:** 17/04/2023 / **Logger:** MMC	FINAL

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
				0.20		TOPSOIL: Firm brown slightly sandy CLAY. Sand is fine to coarse.	
0.30	B1			0.40		Firm light brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse.	
1.00	B2			1.60		Firm light grey slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subrounded fine to medium.	
2.00	B3			2.30		Firm light brown mottled light grey sandy gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is subrounded fine to coarse of limestone. Cobbles are subrounded of limestone.	
3.00	B4			3.20		Light grey mottled light brown very sandy silty subangular fine to coarse GRAVEL with medium cobble and boulder content. Sand is fine to coarse. Cobbles are angular of limestone. Boulders are angular of limestone. (Possible weathered bedrock).	
						End of trial pit at 3.20m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Water Strikes	
Struck at (m)	Remarks

Depth: 3.20
Width: 1.20
Length: 3.50

Remarks:
No groundwater encountered.
Soakaway completed.

Stability:	Termination Reason	Last Updated
Unstable	Terminated on possible bedrock.	23/05/2023

AGS

CAUSEWAY GEOTECH

Project No. 23-0237	**Project Name:** Laurclavagh WF; Ground Investigation		**Trial Pit ID** ITP10
Coordinates 536926.62 E 743552.52 N	**Client:** Turnkey Developments		
Method: Trial Pitting	**Client's Representative:** Enerco Energy		Sheet 1 of 1 Scale: 1:25
Plant: 13T Tracked Excavator	**Elevation** 36.35 mOD	**Date:** 28/03/2023	**Logger:** MMC	FINAL

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
			36.15	0.20		TOPSOIL: Firm brown slightly sandy CLAY with rootlets. Sand is fine to coarse.	
0.70	B1					Firm light brownish grey slightly sandy slightly gravelly SILT. Sand is fine to coarse. Gravel is subangular to subrounded fine to medium of limestone.	
			35.05	1.30		Firm to stiff light brownish grey slightly sandy gravelly CLAY. Sand is fine to coarse. Grave is subangular to subrounded fine to medium of limestone.	
1.70	B2						
2.50	B3						
			33.65	2.70		End of trial pit at 2.70m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Water Strikes	
Struck at (m)	Remarks

Depth: 2.70
Width: 0.70
Length: 3.00

Remarks:
No groundwater encountered.
Soakaway completed.

Stability:	Termination Reason	Last Updated
Stable	Terminated on possible bedrock.	23/05/2023

AGS

CAUSEWAY GEOTECH

Project No. 23-0237	**Project Name:** Laurclavagh WF; Ground Investigation		**Trial Pit ID** ITP11
Coordinates 535398.89 E 743781.63 N	**Client:** Turnkey Developments		
Method: Trial Pitting	**Client's Representative:** Enerco Energy		Sheet 1 of 1 Scale: 1:25
Plant: 13T Tracked Excavator	**Elevation** 33.28 mOD	**Date:** 22/03/2023	**Logger:** MMC	FINAL

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
			33.03	0.25		TOPSOIL: Soft to firm brown CLAY.	
0.50	B1		32.68	0.60		Firm brown slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of limestone.	
1.00	B2					Light grey slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to medium of limestone.	
1.60	B3		31.28	2.00		Stiff grey slightly gravelly sandy SILT. Sand is fine to coarse. Gravel is subrounded fine to medium.	
2.20	B4		30.98	2.30		End of trial pit at 2.30m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Water Strikes	
Struck at (m)	Remarks

Depth: 2.30
Width: 1.50
Length: 2.10

Remarks:
No groundwater encountered.
Soakaway completed.

Stability: Stable

Termination Reason: Terminated on possible bedrock.

Last Updated: 23/05/2023

AGS

CAUSEWAY GEOTECH	**Project No.** 23-0237	**Project Name:** Laurclavagh WF; Ground Investigation	**Trial Pit ID** ITP12
	Coordinates 536503.17 E 743761.47 N	**Client:** Turnkey Developments	
Method: Trial Pitting		**Client's Representative:** Enerco Energy	Sheet 1 of 1 Scale: 1:25
Plant: 13T Tracked Excavator	**Elevation** 42.48 mOD	**Date:** 21/03/2023	**Logger:** MMC — FINAL

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
			42.13	0.35		TOPSOIL.	
			41.78	0.70		Firm light grey slightly gravelly very sandy CLAY with medium cobble content. Sand is fine to coarse. Gravel is subangular to angular of limestone. Cobbles are angular of limestone.	
						End of trial pit at 0.70m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Water Strikes	
Struck at (m)	Remarks

Depth: 0.70
Width: 0.60
Length: 1.80

Remarks:
No groundwater encountered.
Soakaway completed.

Stability: Stable

Termination Reason: Terminated on possible bedrock.

Last Updated: 23/05/2023

AGS

CAUSEWAY GEOTECH

Project No. 23-0237	**Project Name:** Laurclavagh WF; Ground Investigation		**Trial Pit ID** ITP13
Coordinates 535995.34 E 743532.28 N	**Client:** Turnkey Developments		
Method: Trial Pitting	**Client's Representative:** Enerco Energy		Sheet 1 of 1 Scale: 1:25
Plant: 13T Tracked Excavator	**Elevation** 34.46 mOD	**Date:** 24/03/2023	**Logger:** MMC	FINAL

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
			34.26	0.20		TOPSOIL: Firm brown sandy CLAY with rootlets.	
0.30	B1		34.06	0.40		Firm orangish brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subrounded fine to coarse of limestone.	
1.10	B2		33.16	1.30		Firm light grey slightly gravelly very sandy CLAY with low cobble content. Sand is fine to coarse. Gravel is subrounded fine to coarse of limestone. Cobbles are subrounded of limestone.	
2.00	B3		31.66	2.80		Firm light grey slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is subrounded fine to medium of limestone.	
3.00	B4		30.96	3.50		Firm light grey slightly sandy slightly gravelly CLAY with small lenses of brown very silty sand. Sand is fine to coarse. Gravel is subrounded fine to medium of limestone.	
						End of trial pit at 3.50m	

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5

Water Strikes	
Struck at (m)	Remarks

Depth: 3.50
Width: 0.80
Length: 3.50

Remarks:
No groundwater encountered.
Soakaway completed.

Stability: Unstable

Termination Reason: Terminated due to pit walls collapsing.

Last Updated: 24/05/2023

AGS

Soakaway Infiltration Test

Project No.: 23-0237
Site: Laurclavagh
Test Location: ITP01
Test Date: 28 March 2023

Analysis using method as described in BRE Digest 365 and CIRIA Report C697-The SUDS Manual

	width (m)	length (m)
test pit top dimensions	0.50	2.00
test pit base dimensions	0.50	1.80

test pit depth (m) 1.30

depth to groundwater before adding water (m) = Dry

time (mins)	depth to water surface (m)	depth of water in pit (m)
0	0.45	0.85
1	0.46	0.84
2	0.46	0.84
3	0.46	0.84
4	0.47	0.83
5	0.47	0.83
6	0.47	0.83
7	0.47	0.83
8	0.47	0.83
9	0.47	0.83
10	0.47	0.83
15	0.48	0.82
20	0.48	0.82
25	0.49	0.81
30	0.49	0.81
40	0.50	0.80
50	0.50	0.80
60	0.51	0.79
90	0.52	0.78

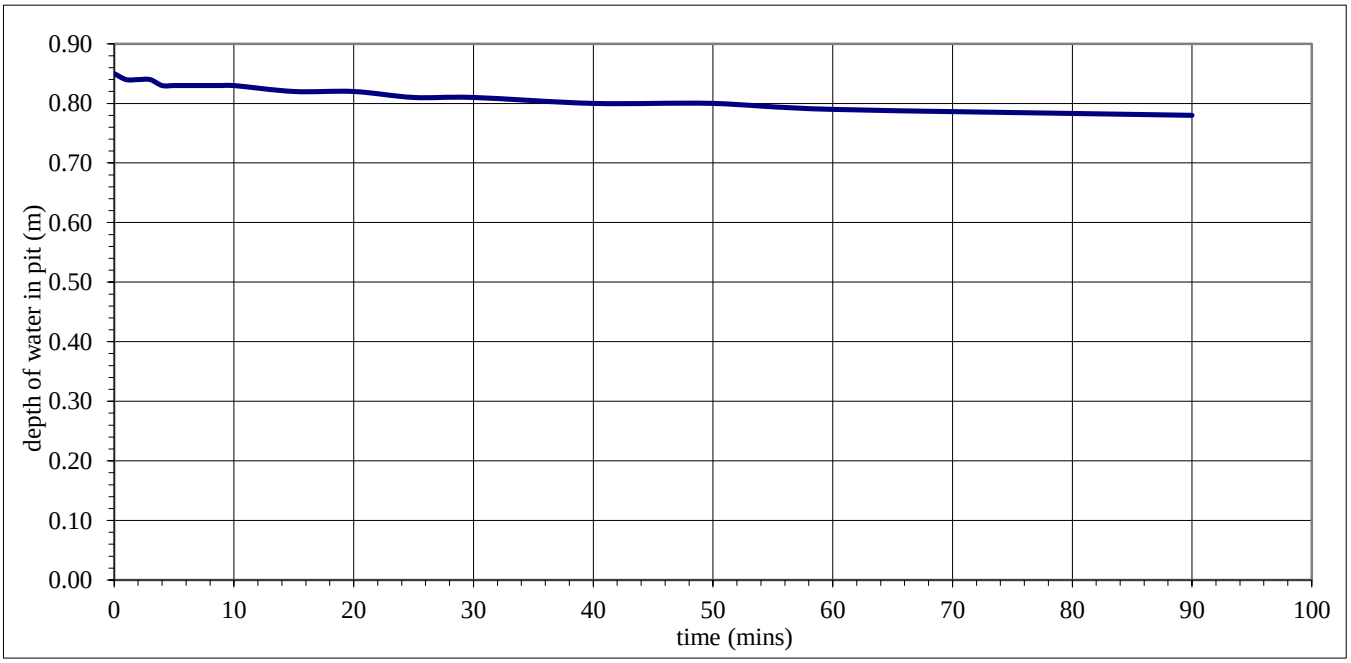
From graph below:

test start - 75% depth at
0.6375 m water depth
time is not determined

test end - 25% depth at
0.2125 m water depth
time is not determined

infiltration rate (q) is very low

time (mins)	depth to water (m)	depth of water in pit (m)	time elapsed (mins)	volume of water lost (m^3)	Area of walls and base at 50% drop (m^2)	q (m/min)	q (m/h)



Soakaway Infiltration Test

Project No.: 23-0237
Site: Laurclavagh
Test Location: ITP02 - Test 1
Test Date: 17 April 2023

	width (m)	length (m)
test pit top dimensions	0.50	2.00
test pit base dimensions	0.50	1.80

Analysis using method as described in BRE Digest 365 and CIRIA Report C697-The SUDS Manual

test pit depth (m) 1.00

depth to groundwater before adding water (m) = Dry

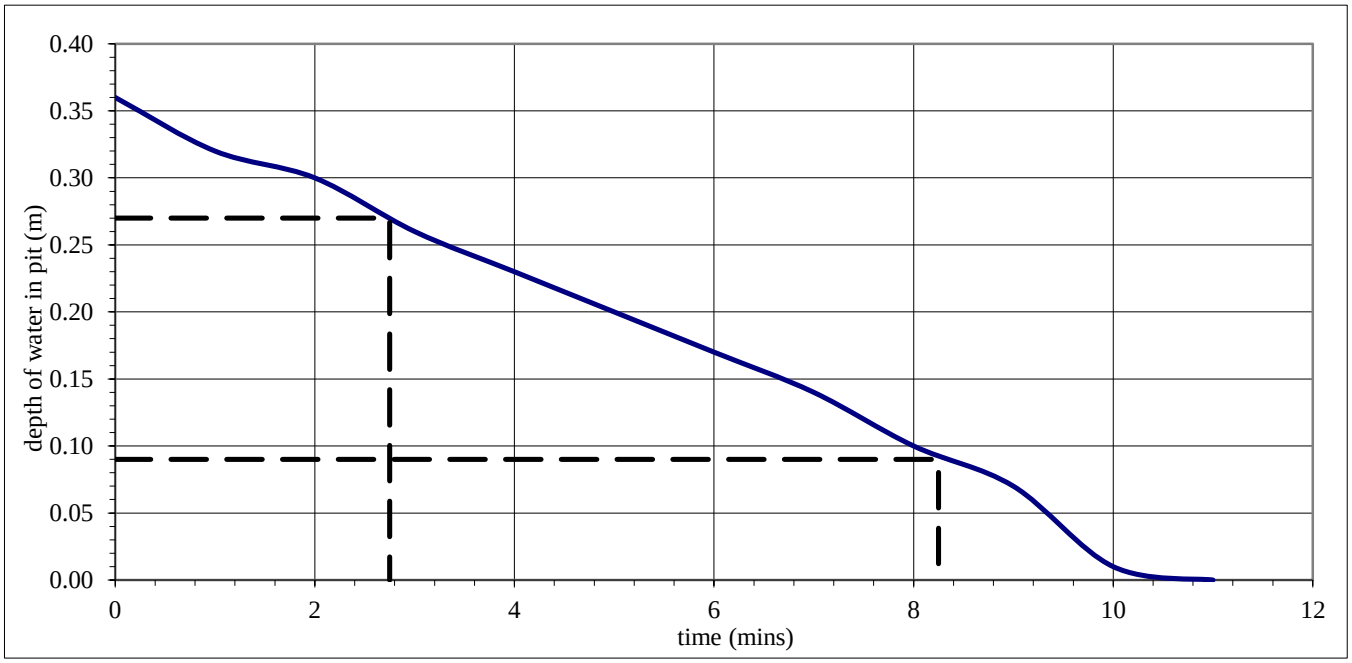
time (mins)	depth to water surface (m)	depth of water in pit (m)
0	0.64	0.36
1	0.68	0.32
2	0.70	0.30
3	0.74	0.26
4	0.77	0.23
5	0.80	0.20
6	0.83	0.17
7	0.86	0.14
8	0.90	0.10
9	0.93	0.07
10	0.99	0.01
11	1.00	0.00

From graph below:
test start - 75% depth at
0.27 m water depth
time is 2.8 minutes

test end - 25% depth at
0.09 m water depth
time is 8.3 minutes

test infiltration rate (q) = 1.038 m/h

time (mins)	depth to water (m)	depth of water in pit (m)	time elapsed (mins)	volume of water lost (m^3)	Area of walls and base at 50% drop (m^2)	q (m/min)	q (m/h)
2.75	0.73	0.27	5.5	0.17	1.74	1.7E-02	1.038
8.25	0.91	0.09					



Soakaway Infiltration Test

Project No.: 23-0237
Site: Laurclavagh
Test Location: ITP02 - Test 2
Test Date: 17 April 2023

	width (m)	length (m)
test pit top dimensions	0.50	2.00
test pit base dimensions	0.50	1.80

Analysis using method as described in BRE Digest 365 and CIRIA Report C697-The SUDS Manual

test pit depth (m) 1.00

depth to groundwater before adding water (m) = Dry

time (mins)	depth to water surface (m)	depth of water in pit (m)
0	0.55	0.45
1	0.58	0.42
2	0.62	0.38
3	0.66	0.34
4	0.70	0.30
5	0.74	0.26
6	0.77	0.23
7	0.81	0.19
8	0.84	0.16
9	0.87	0.13
10	0.90	0.10
11	0.93	0.07
12	0.96	0.04
13	1.00	0.00

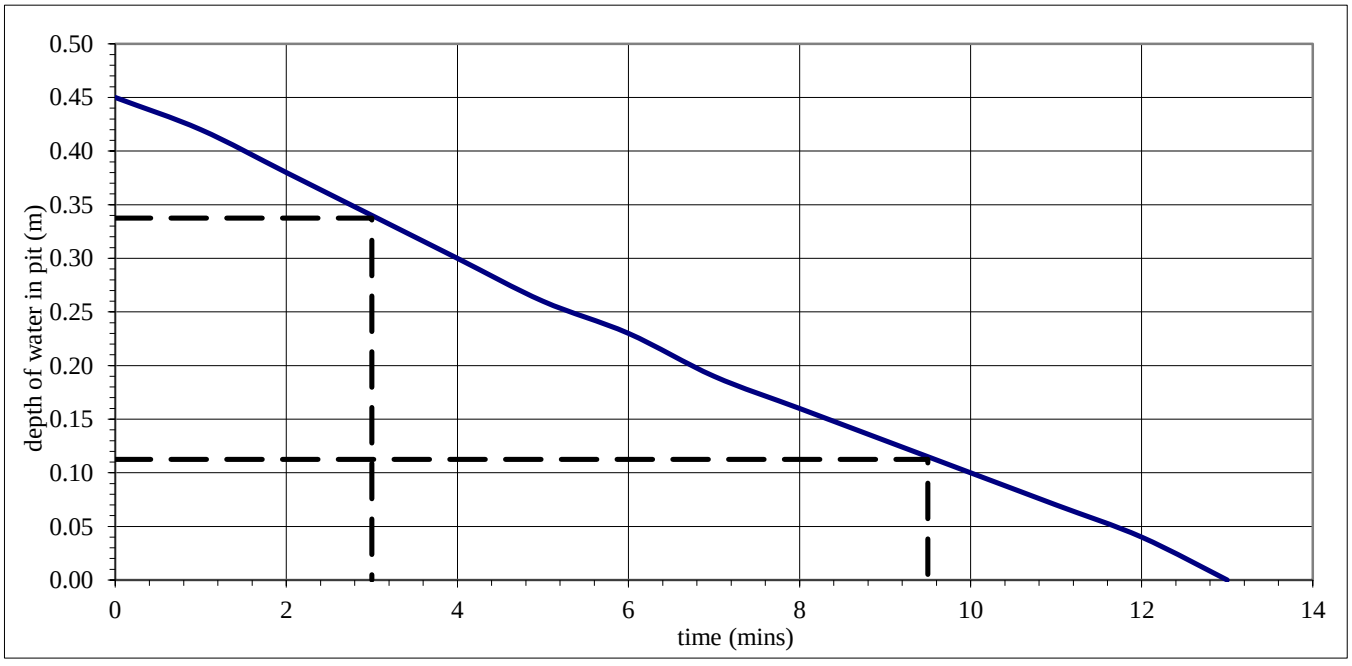
From graph below:

test start - 75% depth at
0.3375 m water depth
time is 3.0 minutes

test end - 25% depth at
0.1125 m water depth
time is 9.5 minutes

test infiltration rate (q) = 0.984 m/h

time (mins)	depth to water (m)	depth of water in pit (m)	time elapsed (mins)	volume of water lost (m^3)	Area of walls and base at 50% drop (m^2)	q (m/min)	q (m/h)
3	0.66	0.3375	6.5	0.21	1.95	1.6E-02	0.984
9.5	0.89	0.1125					



Soakaway Infiltration Test

Project No.: 23-0237
Site: Laurclavagh
Test Location: ITP03 Test 1
Test Date: 23 March 2023

	width (m)	length (m)
test pit top dimensions	0.70	1.80
test pit base dimensions	0.50	1.50
test pit depth (m)	1.00	

Analysis using method as described in BRE Digest 365 and CIRIA Report C697-The SUDS Manual

depth to groundwater before adding water (m) = Dry

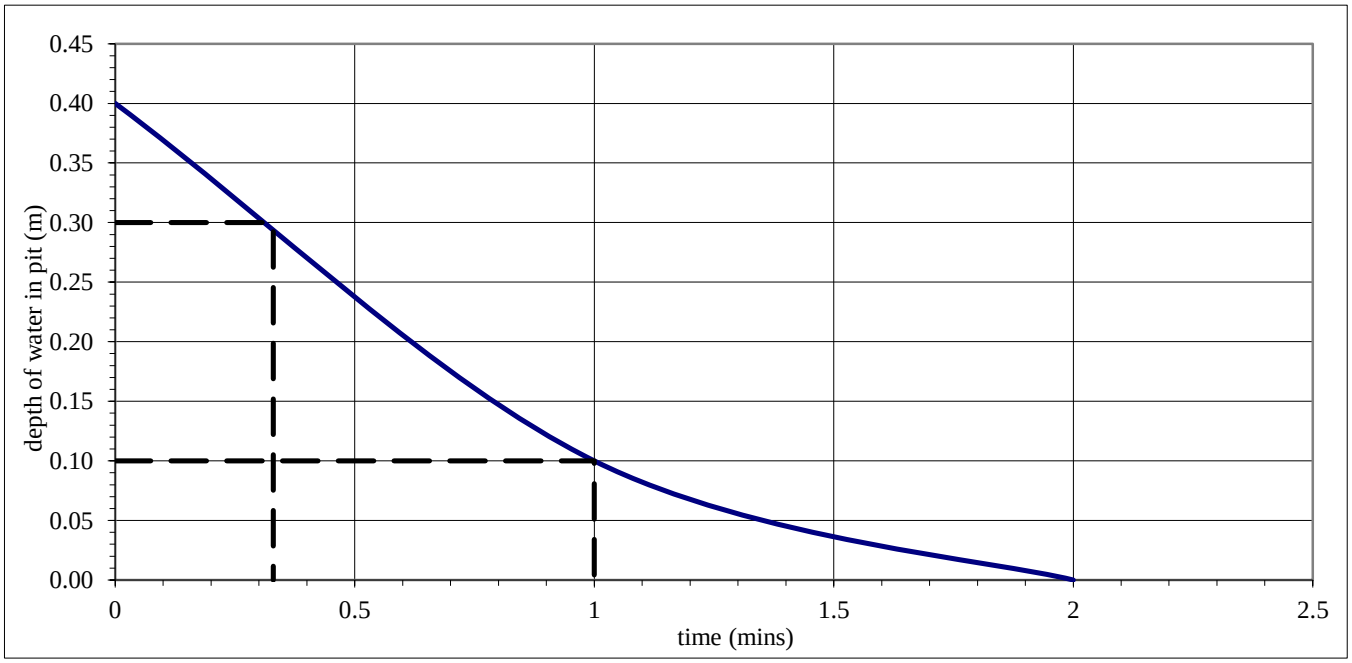
time (mins)	depth to water surface (m)	depth of water in pit (m)
0	0.60	0.40
1	0.90	0.10
2	1.00	0.00

From graph below:
test start - 75% depth at
0.3 m water depth
time is 0.3 minutes

test end - 25% depth at
0.1 m water depth
time is 1.0 minutes

test infiltration rate (q) = 9.586 m/h

time (mins)	depth to water (m)	depth of water in pit (m)	time elapsed (mins)	volume of water lost (m^3)	Area of walls and base at 50% drop (m^2)	q (m/min)	q (m/h)
0.33	0.70	0.3	0.67	0.17	1.58	1.6E-01	9.586
1	0.90	0.1					



Soakaway Infiltration Test

Project No.: 23-0237
Site: Laurclavagh
Test Location: ITP03 Test 2
Test Date: 23 March 2023

	width (m)	length (m)
test pit top dimensions	0.70	1.80
test pit base dimensions	0.50	1.50
test pit depth (m)	1.00	

Analysis using method as described in BRE Digest 365 and CIRIA Report C697-The SUDS Manual

depth to groundwater before adding water (m) = Dry

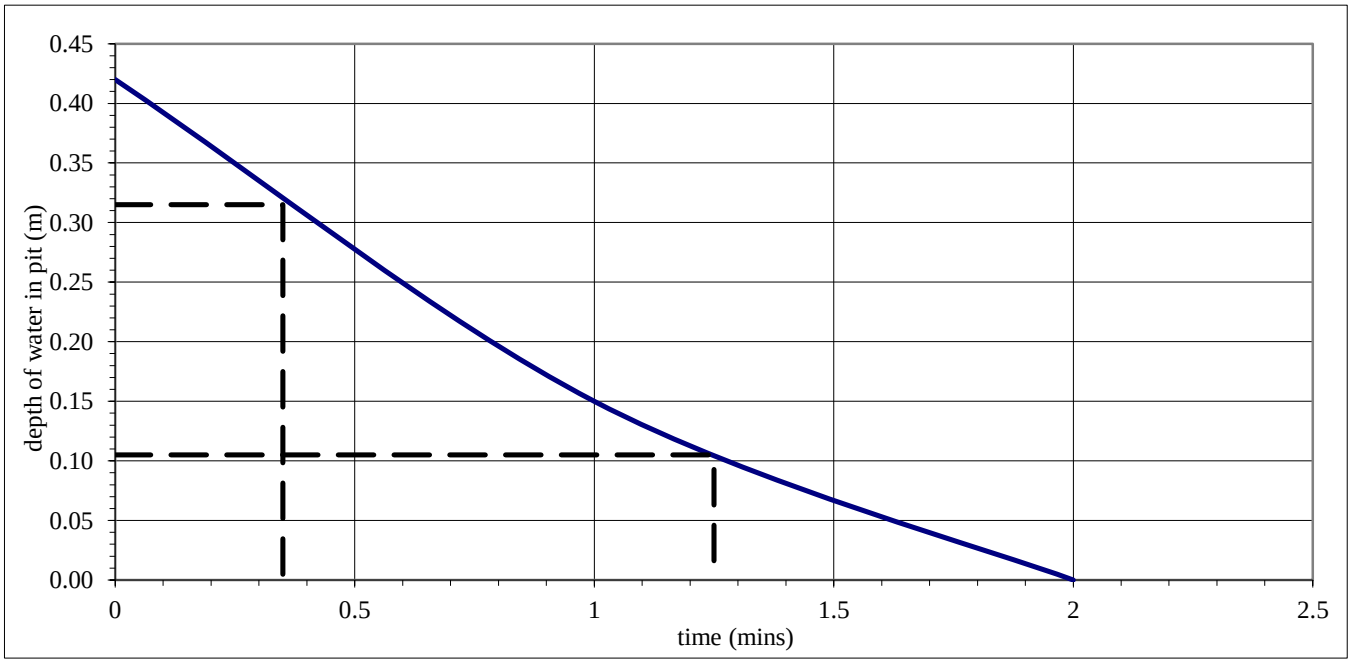
time (mins)	depth to water surface (m)	depth of water in pit (m)
0	0.58	0.42
1	0.85	0.15
2	1.00	0.00

From graph below:
test start - 75% depth at
0.315 m water depth
time is 0.4 minutes

test end - 25% depth at
0.105 m water depth
time is 1.3 minutes

test infiltration rate (q) = 7.338 m/h

time (mins)	depth to water (m)	depth of water in pit (m)	time elapsed (mins)	volume of water lost (m^3)	Area of walls and base at 50% drop (m^2)	q (m/min)	q (m/h)
0.35	0.69	0.315	0.9	0.18	1.62	1.2E-01	7.338
1.25	0.90	0.105					



Soakaway Infiltration Test

Project No.: 23-0237
Site: Laurclavagh
Test Location: ITP04
Test Date: 23 March 2023

Analysis using method as described in BRE Digest 365 and CIRIA Report C697-The SUDS Manual

	width (m)	length (m)
test pit top dimensions	0.55	2.20
test pit base dimensions	0.55	1.70

test pit depth (m) 1.40

depth to groundwater before adding water (m) = Dry

time (mins)	depth to water surface (m)	depth of water in pit (m)
0	0.52	0.88
1	0.53	0.87
2	0.54	0.86
3	0.55	0.85
4	0.56	0.84
5	0.57	0.83
6	0.58	0.82
8	0.60	0.80
10	0.62	0.78
15	0.65	0.75
20	0.68	0.72
25	0.71	0.69
30	0.74	0.66
40	0.81	0.59
60	0.93	0.47
75	0.99	0.41
90	1.10	0.30
100	1.20	0.20
110	1.28	0.12

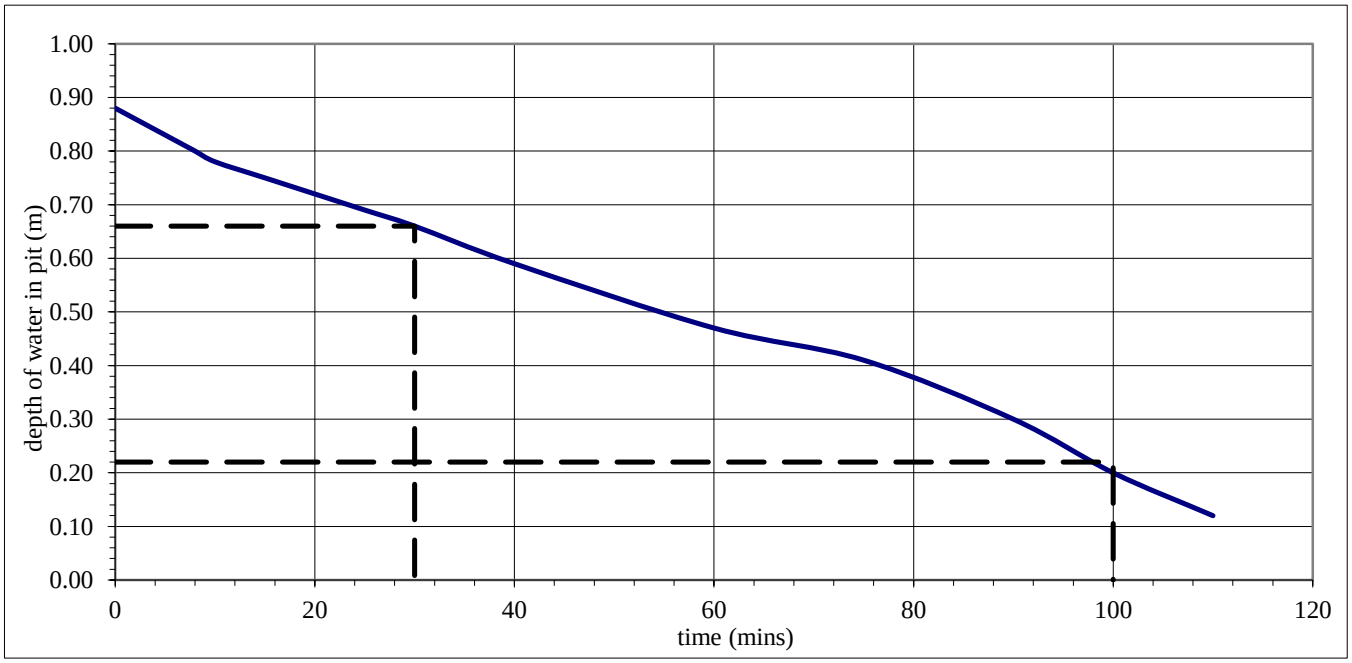
From graph below:

test start - 75% depth at
0.66 m water depth
time is 30.0 minutes

test end - 25% depth at
0.22 m water depth
time is 100.0 minutes

test infiltration rate (q) = 0.128 m/h

time (mins)	depth to water (m)	depth of water in pit (m)	time elapsed (mins)	volume of water lost (m^3)	Area of walls and base at 50% drop (m^2)	q (m/min)	q (m/h)
30	0.74	0.66	70	0.45	3.00	2.1E-03	0.128
100	1.18	0.22					



Soakaway Infiltration Test

Project No.: 23-0237
Site: Laurclavagh
Test Location: ITP05
Test Date: 25 April 2023

Analysis using method as described in BRE Digest 365 and CIRIA Report C697-The SUDS Manual

	width (m)	length (m)
test pit top dimensions	0.60	2.00
test pit base dimensions	0.60	1.80

test pit depth (m) 0.70

depth to groundwater before adding water (m) = Dry

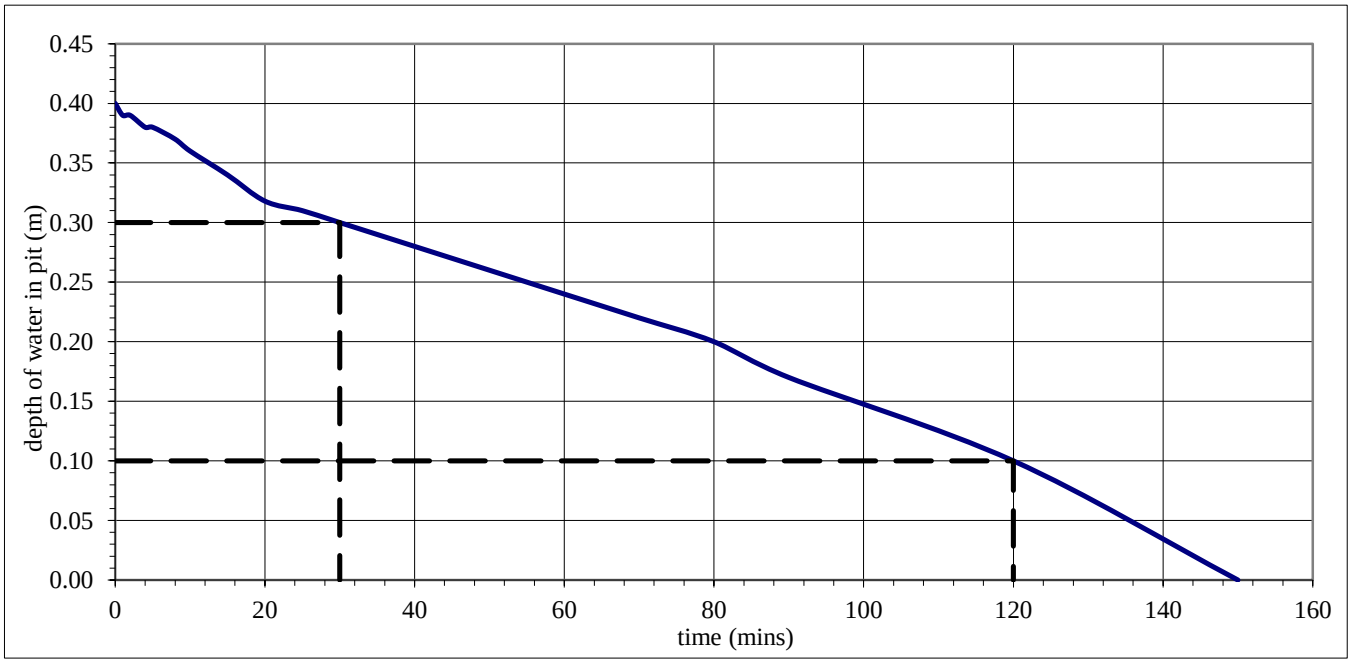
time (mins)	depth to water surface (m)	depth of water in pit (m)
0	0.30	0.40
1	0.31	0.39
2	0.31	0.39
4	0.32	0.38
5	0.32	0.38
8	0.33	0.37
10	0.34	0.36
15	0.36	0.34
20	0.38	0.32
25	0.39	0.31
30	0.40	0.30
40	0.42	0.28
50	0.44	0.26
60	0.46	0.24
70	0.48	0.22
80	0.50	0.20
90	0.53	0.17
120	0.60	0.10
150	0.70	0.00

From graph below:
test start - 75% depth at
0.3 m water depth
time is 30.0 minutes

test end - 25% depth at
0.1 m water depth
time is 120.0 minutes

test infiltration rate (q) = 0.072 m/h

time (mins)	depth to water (m)	depth of water in pit (m)	time elapsed (mins)	volume of water lost (m^3)	Area of walls and base at 50% drop (m^2)	q (m/min)	q (m/h)
30	0.40	0.3	90	0.22	2.05	1.2E-03	0.072
120	0.60	0.1					



Soakaway Infiltration Test

Project No.: 23-0237
Site: Laurclavagh
Test Location: ITP06 Test 1
Test Date: 20 March 2023

	width (m)	length (m)
test pit top dimensions	0.70	1.50
test pit base dimensions	0.70	1.00
test pit depth (m)	1.30	

Analysis using method as described in BRE Digest 365 and CIRIA Report C697-The SUDS Manual

depth to groundwater before adding water (m) = Dry

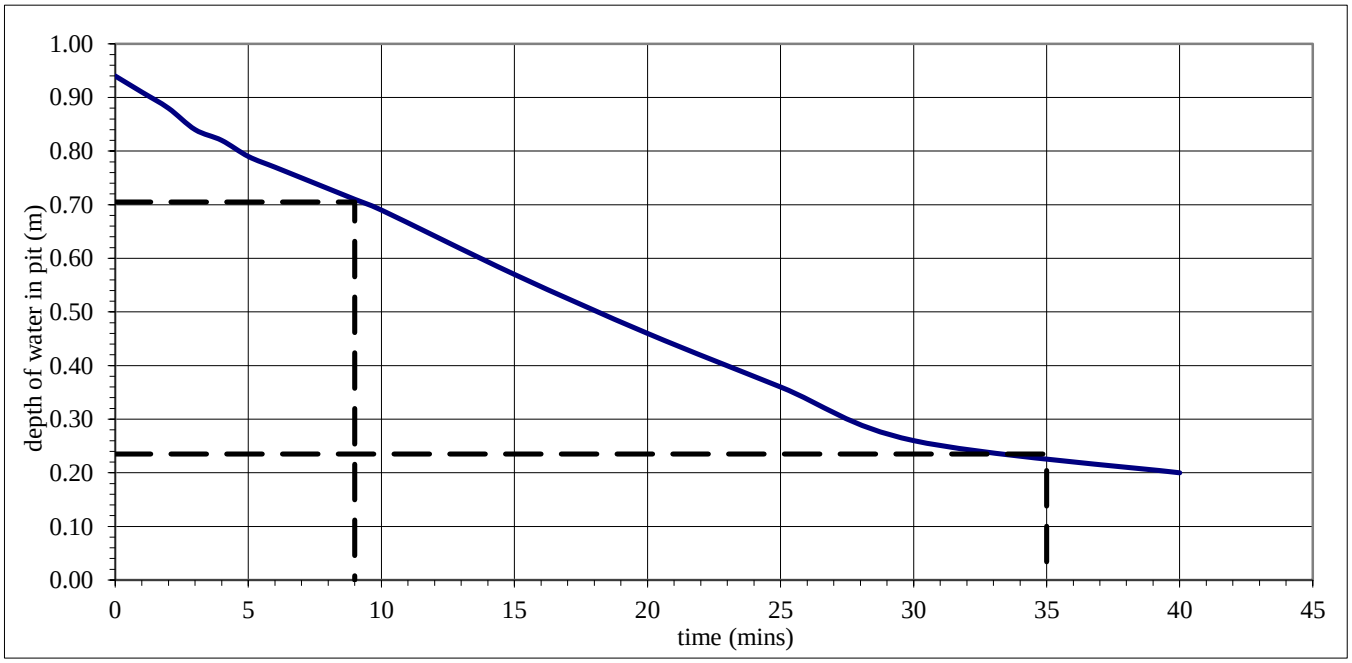
time (mins)	depth to water surface (m)	depth of water in pit (m)
0	0.36	0.94
1	0.39	0.91
2	0.42	0.88
3	0.46	0.84
4	0.48	0.82
5	0.51	0.79
6	0.53	0.77
7	0.55	0.75
8	0.57	0.73
9	0.59	0.71
10	0.61	0.69
15	0.73	0.57
20	0.84	0.46
25	0.94	0.36
30	1.04	0.26
40	1.10	0.20

From graph below:
test start - 75% depth at
0.705 m water depth
time is 9.0 minutes

test end - 25% depth at
0.235 m water depth
time is 35.0 minutes

test infiltration rate (q) = 0.373 m/h

time (mins)	depth to water (m)	depth of water in pit (m)	time elapsed (mins)	volume of water lost (m^3)	Area of walls and base at 50% drop (m^2)	q (m/min)	q (m/h)
9	0.60	0.705	26	0.39	2.40	6.2E-03	0.373
35	1.07	0.235					



Soakaway Infiltration Test

Project No.: 23-0237
Site: Laurclavagh
Test Location: ITP06 Test 2
Test Date: 20 March 2023

Analysis using method as described in BRE Digest 365 and CIRIA Report C697-The SUDS Manual

	width (m)	length (m)
test pit top dimensions	0.70	1.50
test pit base dimensions	0.70	1.00

test pit depth (m) 1.30

depth to groundwater before adding water (m) = Dry

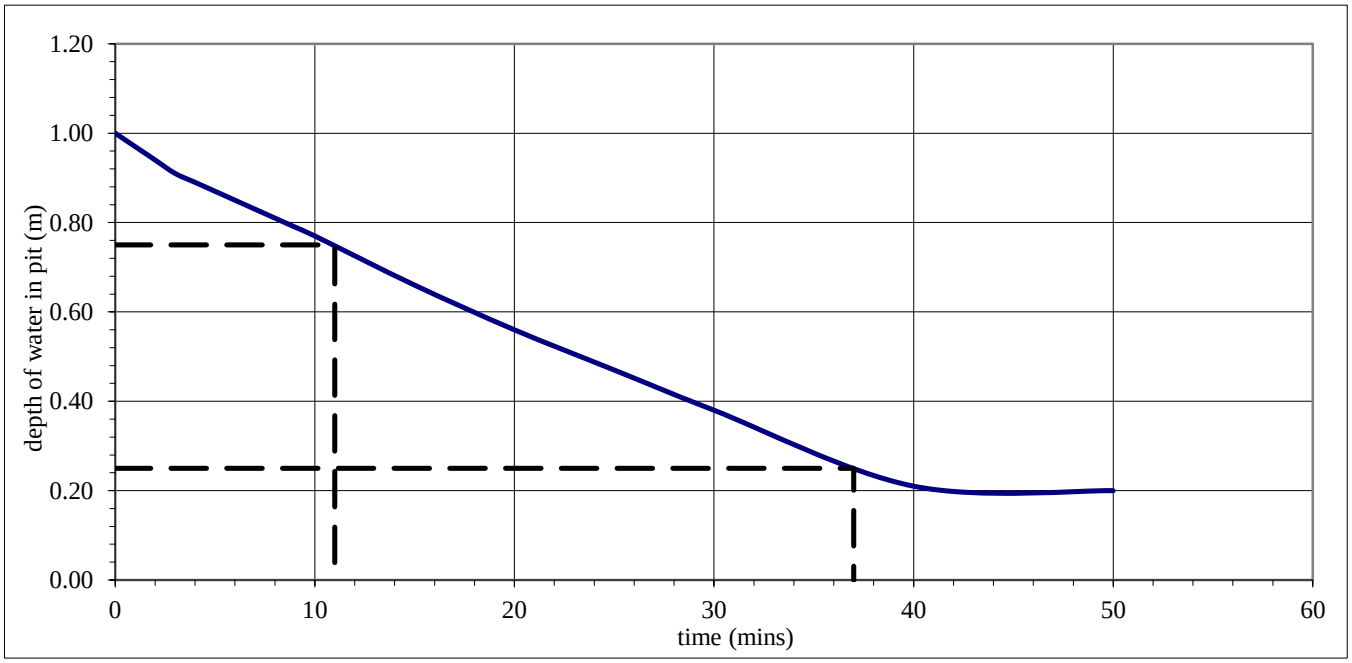
time (mins)	depth to water surface (m)	depth of water in pit (m)
0	0.30	1.00
1	0.33	0.97
2	0.36	0.94
3	0.39	0.91
4	0.41	0.89
5	0.43	0.87
6	0.45	0.85
7	0.47	0.83
8	0.49	0.81
9	0.51	0.79
10	0.53	0.77
15	0.64	0.66
20	0.74	0.56
25	0.83	0.47
30	0.92	0.38
40	1.09	0.21
50	1.10	0.20

From graph below:
test start - 75% depth at
0.75 m water depth
time is 11.0 minutes

test end - 25% depth at
0.25 m water depth
time is 37.0 minutes

test infiltration rate (q) = 0.382 m/h

time (mins)	depth to water (m)	depth of water in pit (m)	time elapsed (mins)	volume of water lost (m^3)	Area of walls and base at 50% drop (m^2)	q (m/min)	q (m/h)
11	0.55	0.75	26	0.42	2.52	6.4E-03	0.382
37	1.05	0.25					



Soakaway Infiltration Test

Project No.: 23-0237
Site: Laurclavagh
Test Location: ITP07
Test Date: 21 March 2023

Analysis using method as described in BRE Digest 365 and CIRIA Report C697-The SUDS Manual

	width (m)	length (m)
test pit top dimensions	0.60	1.90
test pit base dimensions	0.60	1.60
test pit depth (m)	1.20	

depth to groundwater before adding water (m) = Dry

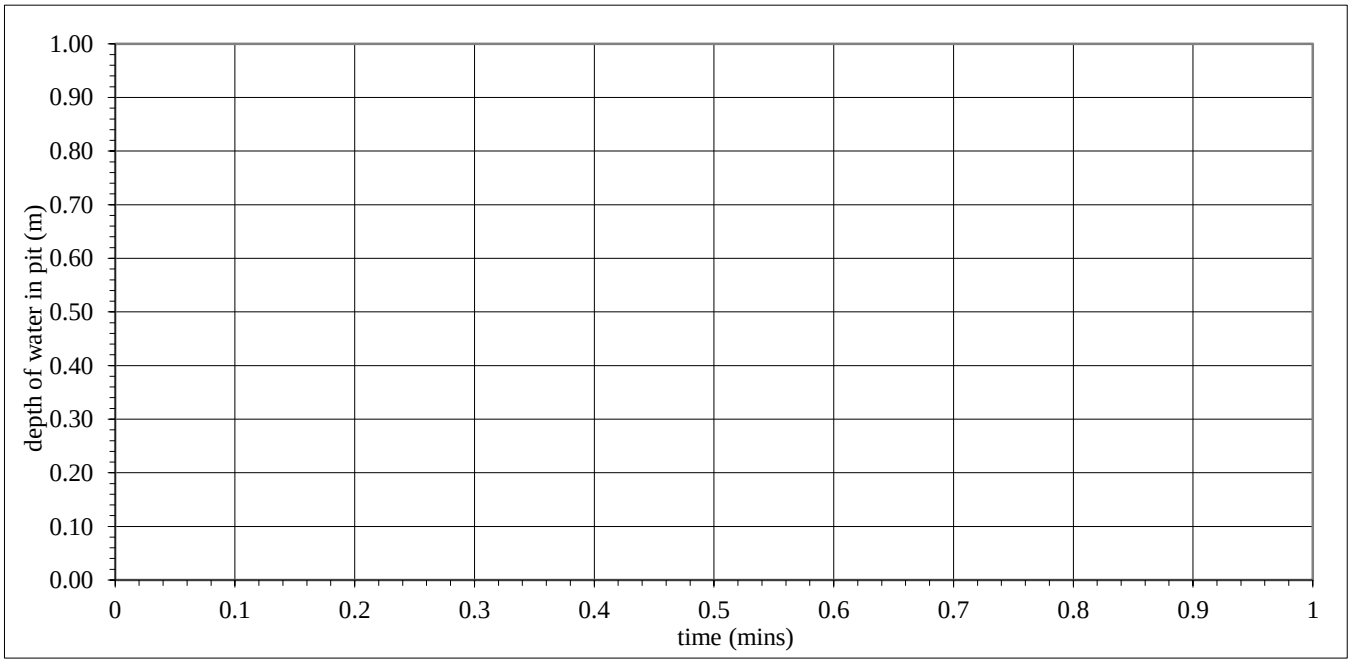
time (mins)	depth to water surface (m)	depth of water in pit (m)

From graph below:
test start - 75% depth at
0.9 m water depth
time is not determined

test end - 25% depth at
0.3 m water depth
time is not determined

Pit filled with 2000L of water and water soaked away instantly, indicating that infiltration rate (q) is quite high.

time (mins)	depth to water (m)	depth of water in pit (m)	time elapsed (mins)	volume of water lost (m^3)	Area of walls and base at 50% drop (m^2)	q (m/min)	q (m/h)



Soakaway Infiltration Test

Project No.: 23-0237
Site: Laurclavagh
Test Location: ITP08
Test Date: 22 March 2023

Analysis using method as described in BRE Digest 365 and CIRIA Report C697-The SUDS Manual

	width (m)	length (m)
test pit top dimensions	0.60	1.80
test pit base dimensions	0.50	1.00

test pit depth (m) 1.30

depth to groundwater before adding water (m) = Dry

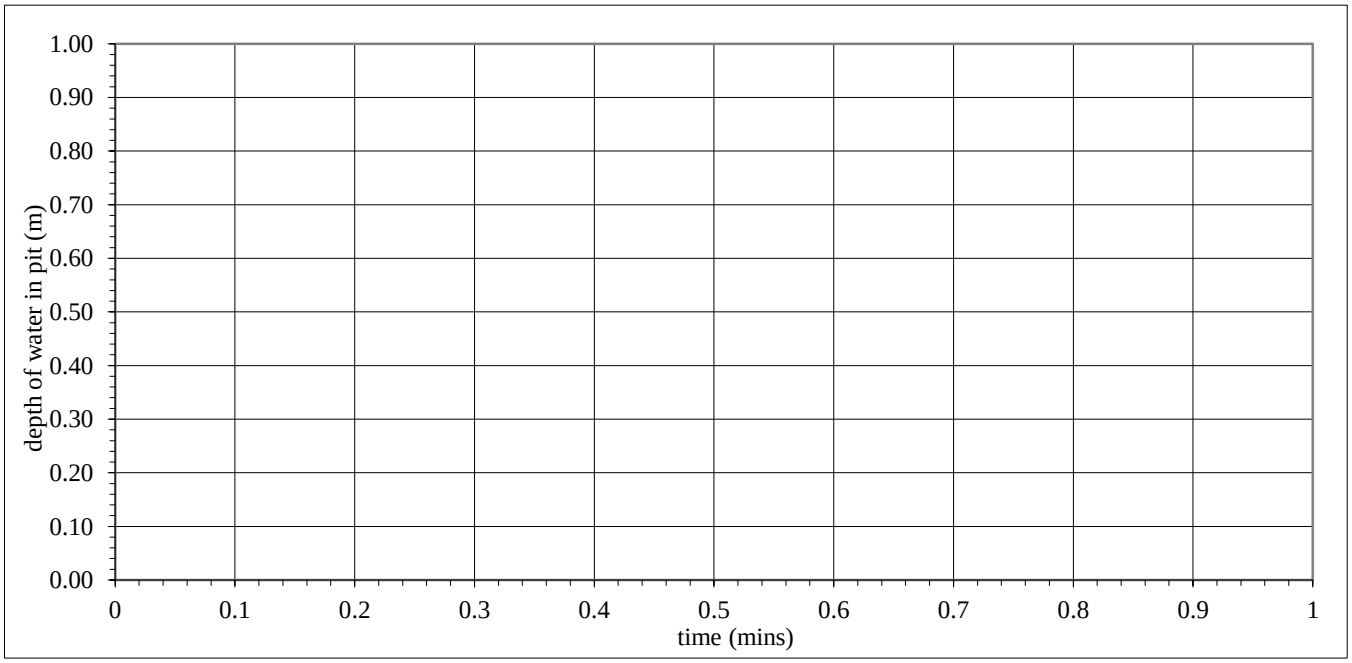
time (mins)	depth to water surface (m)	depth of water in pit (m)

From graph below:
test start - 75% depth at
0.975 m water depth
time is not determined

test end - 25% depth at
0.325 m water depth
time is not determined

Pit filled with 2000L of water and water soaked away in 30 seconds, indicating that infiltration rate (q) is quite high.

time (mins)	depth to water (m)	depth of water in pit (m)	time elapsed (mins)	volume of water lost (m^3)	Area of walls and base at 50% drop (m^2)	q (m/min)	q (m/h)



Soakaway Infiltration Test

Project No.: 23-0237
Site: Laurclavagh
Test Location: ITP09
Test Date: 17 April 2023

Analysis using method as described in BRE Digest 365 and CIRIA Report C697-The SUDS Manual

	width (m)	length (m)
test pit top dimensions	0.50	1.50
test pit base dimensions	0.50	1.30

test pit depth (m) 1.30

depth to groundwater before adding water (m) = Dry

time (mins)	depth to water surface (m)	depth of water in pit (m)
0	0.31	0.99
1	0.31	0.99
2	0.32	0.98
4	0.32	0.98
5	0.32	0.98
6	0.32	0.98
7	0.33	0.97
8	0.33	0.97
9	0.33	0.97
10	0.33	0.97
15	0.34	0.96
20	0.34	0.96
25	0.35	0.95
30	0.35	0.95
40	0.36	0.94
50	0.37	0.93
60	0.38	0.92
90	0.40	0.90
120	0.42	0.88

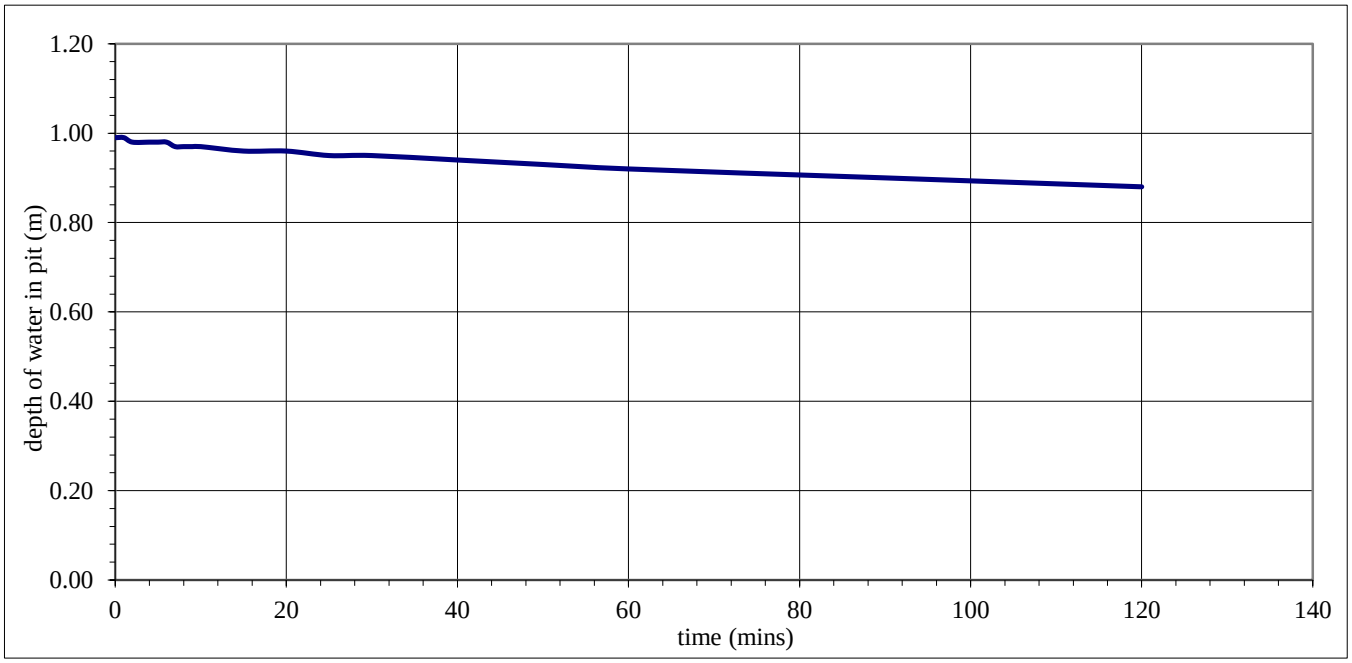
From graph below:

test start - 75% depth at
0.7425 m water depth
time is not determined

test end - 25% depth at
0.2475 m water depth
time is not determined

infiltration rate (q) is very low

time (mins)	depth to water (m)	depth of water in pit (m)	time elapsed (mins)	volume of water lost (m^3)	Area of walls and base at 50% drop (m^2)	q (m/min)	q (m/h)



Soakaway Infiltration Test

Project No.: 23-0237
Site: Laurclavagh
Test Location: ITP10
Test Date: 28 March 2023

Analysis using method as described in BRE Digest 365 and CIRIA Report C697-The SUDS Manual

	width (m)	length (m)
test pit top dimensions	0.55	2.50
test pit base dimensions	0.55	2.00

test pit depth (m) 1.30

depth to groundwater before adding water (m) = Dry

time (mins)	depth to water surface (m)	depth of water in pit (m)
0	0.46	0.84
1	0.47	0.83
2	0.47	0.83
4	0.47	0.83
5	0.47	0.83
6	0.47	0.83
8	0.47	0.83
10	0.47	0.83
15	0.48	0.82
20	0.48	0.82
25	0.48	0.82
30	0.48	0.82
40	0.48	0.82
50	0.48	0.82
60	0.48	0.82
70	0.48	0.82
80	0.48	0.82
90	0.48	0.82
120	0.48	0.82

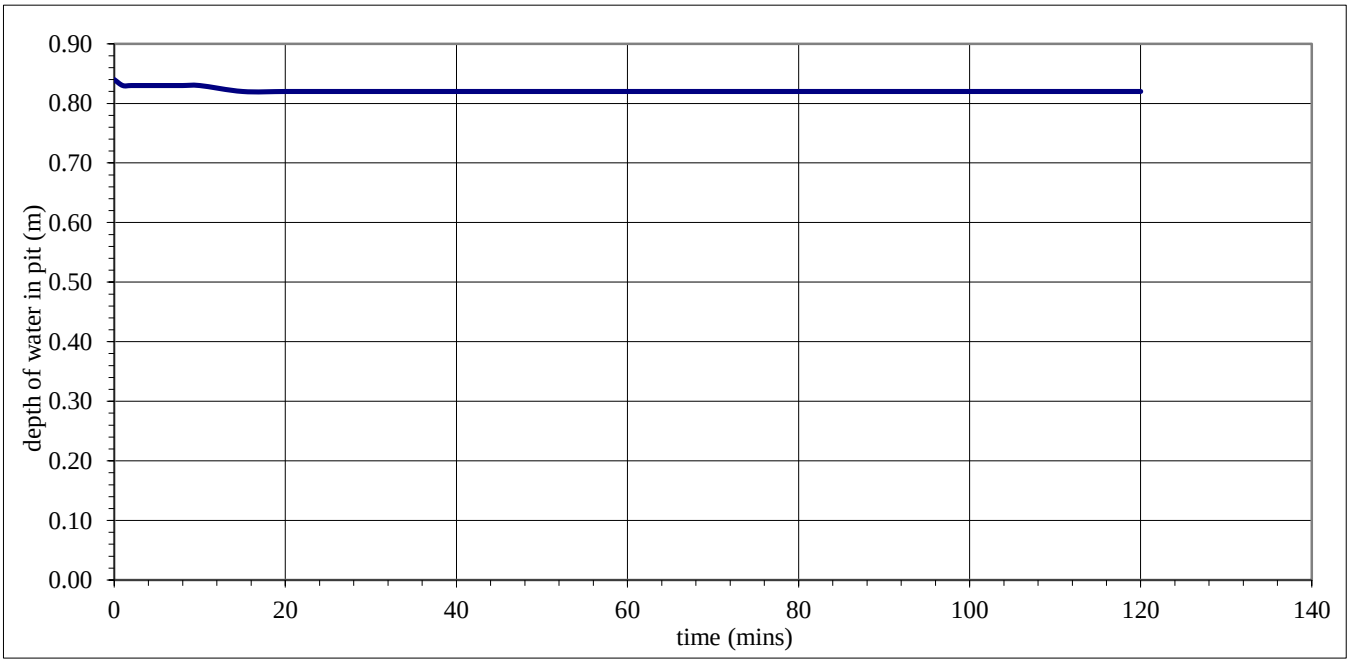
From graph below:

test start - 75% depth at
0.63 m water depth
time is not determined

test end - 25% depth at
0.21 m water depth
time is not determined

infiltration rate (q) is very low

time (mins)	depth to water (m)	depth of water in pit (m)	time elapsed (mins)	volume of water lost (m^3)	Area of walls and base at 50% drop (m^2)	q (m/min)	q (m/h)



Soakaway Infiltration Test

Project No.: 23-0237
Site: Laurclavagh
Test Location: ITP11
Test Date: 22 March 2023

	width (m)	length (m)
test pit top dimensions	0.55	2.10
test pit base dimensions	0.55	1.50

Analysis using method as described in BRE Digest 365 and CIRIA Report C697-The SUDS Manual

test pit depth (m) 1.40

depth to groundwater before adding water (m) = Dry

time (mins)	depth to water surface (m)	depth of water in pit (m)
0	0.41	0.99
1	0.41	0.99
2	0.41	0.99
3	0.41	0.99
4	0.41	0.99
5	0.42	0.98
6	0.42	0.98
7	0.42	0.98
8	0.42	0.98
10	0.42	0.98
15	0.42	0.98
20	0.43	0.97
25	0.43	0.97
30	0.43	0.97
40	0.44	0.96
50	0.44	0.96
60	0.44	0.96
70	0.45	0.95
90	0.46	0.94

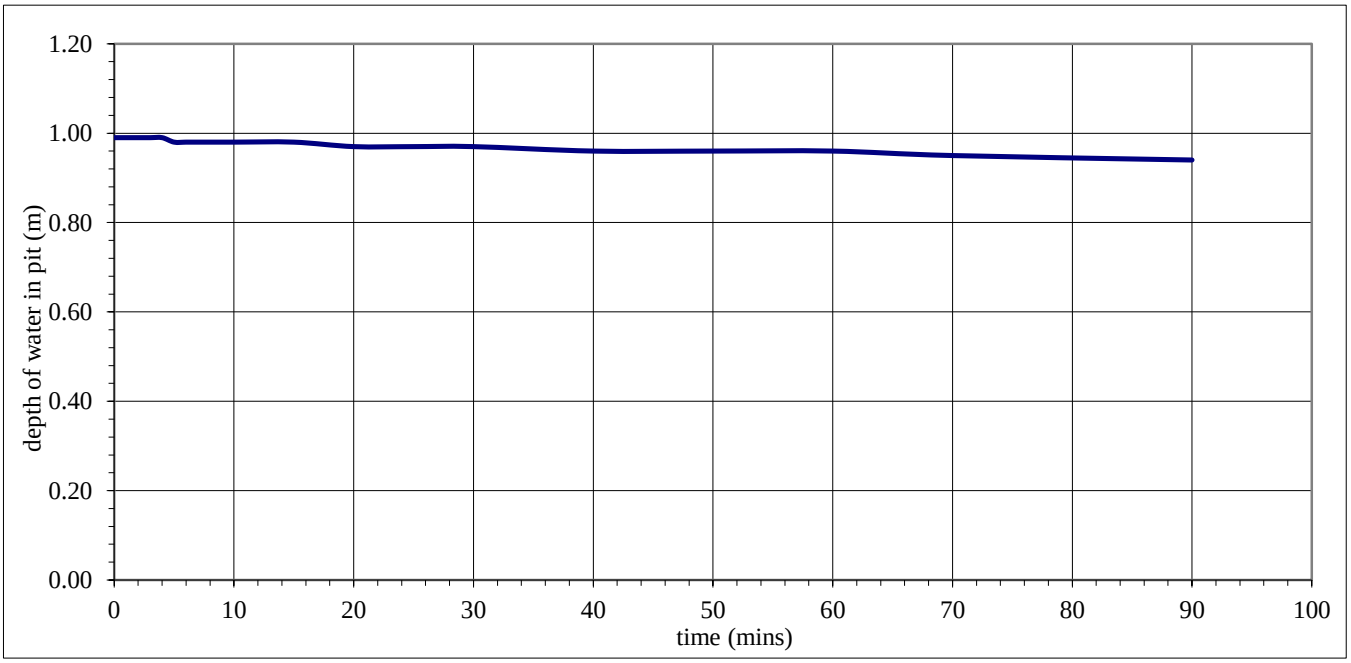
From graph below:

test start - 75% depth at
0.7425 m water depth
time is not determined

test end - 25% depth at
0.2475 m water depth
time is not determined

infiltration rate (q) is very low

time (mins)	depth to water (m)	depth of water in pit (m)	time elapsed (mins)	volume of water lost (m^3)	Area of walls and base at 50% drop (m^2)	q (m/min)	q (m/h)



Soakaway Infiltration Test

Project No.: 23-0237
Site: Laurclavagh
Test Location: ITP12 Test 1
Test Date: 21 March 2023

	width (m)	length (m)
test pit top dimensions	0.60	1.60
test pit base dimensions	0.60	1.20
test pit depth (m)	0.70	

Analysis using method as described in BRE Digest 365 and CIRIA Report C697-The SUDS Manual

depth to groundwater before adding water (m) = Dry

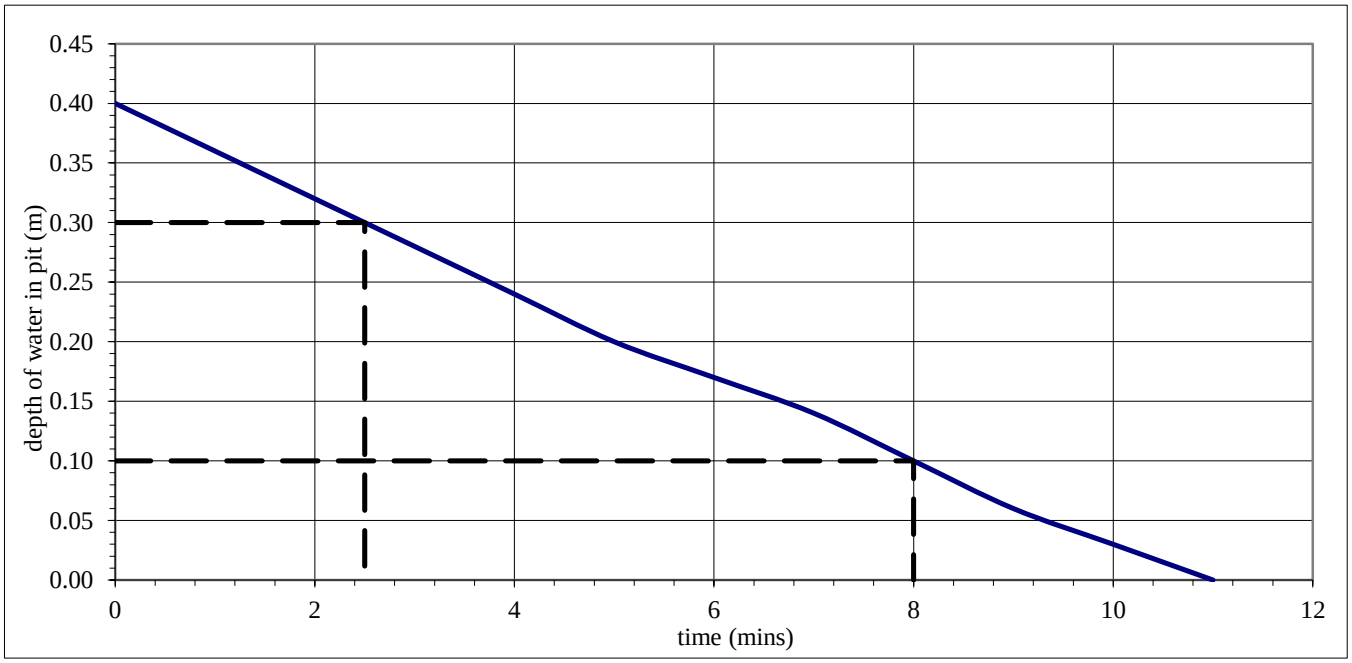
time (mins)	depth to water surface (m)	depth of water in pit (m)
0	0.30	0.40
1	0.34	0.36
2	0.38	0.32
3	0.42	0.28
4	0.46	0.24
5	0.50	0.20
6	0.53	0.17
7	0.56	0.14
8	0.60	0.10
9	0.64	0.06
10	0.67	0.03
11	0.70	0.00

From graph below:
test start - 75% depth at
0.3 m water depth
time is 2.5 minutes

test end - 25% depth at
0.1 m water depth
time is 8.0 minutes

test infiltration rate (q) = 1.172 m/h

time (mins)	depth to water (m)	depth of water in pit (m)	time elapsed (mins)	volume of water lost (m^3)	Area of walls and base at 50% drop (m^2)	q (m/min)	q (m/h)
2.5	0.40	0.3	5.5	0.16	1.47	2.0E-02	1.172
8	0.60	0.1					



Soakaway Infiltration Test

Project No.: 23-0237
Site: Laurclavagh
Test Location: ITP12 Test 2
Test Date: 21 March 2023

	width (m)	length (m)
test pit top dimensions	0.60	1.60
test pit base dimensions	0.60	1.20
test pit depth (m)	0.70	

Analysis using method as described in BRE Digest 365 and CIRIA Report C697-The SUDS Manual

depth to groundwater before adding water (m) = Dry

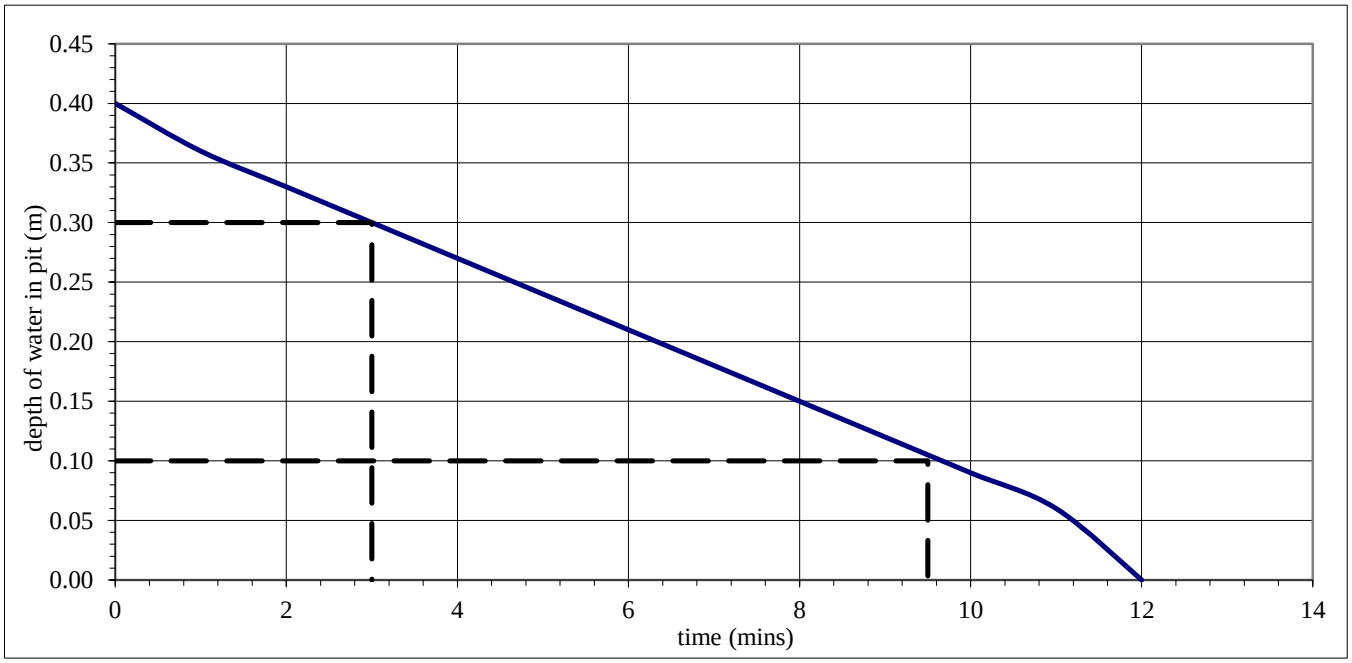
time (mins)	depth to water surface (m)	depth of water in pit (m)
0	0.30	0.40
1	0.34	0.36
2	0.37	0.33
3	0.40	0.30
4	0.43	0.27
5	0.46	0.24
6	0.49	0.21
7	0.52	0.18
8	0.55	0.15
9	0.58	0.12
10	0.61	0.09
11	0.64	0.06
12	0.70	0.00

From graph below:
test start - 75% depth at
0.3 m water depth
time is 3.0 minutes

test end - 25% depth at
0.1 m water depth
time is 9.5 minutes

test infiltration rate (q) = 0.991 m/h

time (mins)	depth to water (m)	depth of water in pit (m)	time elapsed (mins)	volume of water lost (m^3)	Area of walls and base at 50% drop (m^2)	q (m/min)	q (m/h)
3	0.40	0.3	6.5	0.16	1.47	1.7E-02	0.991
9.5	0.60	0.1					



Soakaway Infiltration Test

Project No.: 23-0237
Site: Laurclavagh
Test Location: ITP13
Test Date: 24 March 2023

Analysis using method as described in BRE Digest 365 and CIRIA Report C697-The SUDS Manual

	width (m)	length (m)
test pit top dimensions	0.50	2.10
test pit base dimensions	0.50	2.00

test pit depth (m) 1.30

depth to groundwater before adding water (m) = Dry

time (mins)	depth to water surface (m)	depth of water in pit (m)
0	0.40	0.90
1	0.40	0.90
2	0.41	0.89
3	0.41	0.89
4	0.42	0.88
5	0.42	0.88
6	0.42	0.88
7	0.43	0.87
8	0.43	0.87
9	0.43	0.87
10	0.44	0.86
15	0.45	0.85
20	0.46	0.84
25	0.47	0.83
30	0.48	0.82
40	0.50	0.80
50	0.51	0.79
60	0.52	0.78
90	0.54	0.76

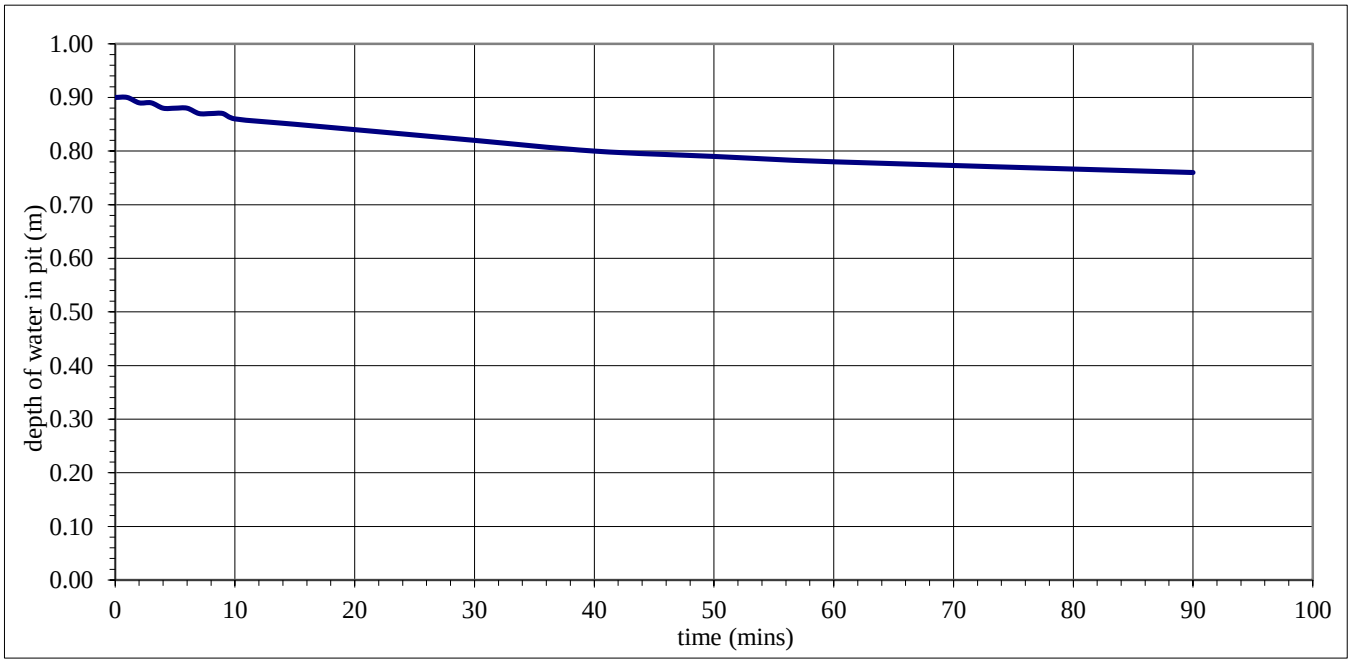
From graph below:

test start - 75% depth at
0.675 m water depth
time is not determined

test end - 25% depth at
0.225 m water depth
time is not determined

infiltration rate (q) is very low

time (mins)	depth to water (m)	depth of water in pit (m)	time elapsed (mins)	volume of water lost (m^3)	Area of walls and base at 50% drop (m^2)	q (m/min)	q (m/h)



CAUSEWAY GEOTECH

APPENDIX G

INDIRECT IN-SITU CBR TEST RESULTS

Dynamic Cone Penetrometer (DCP) test results and estimated CBR

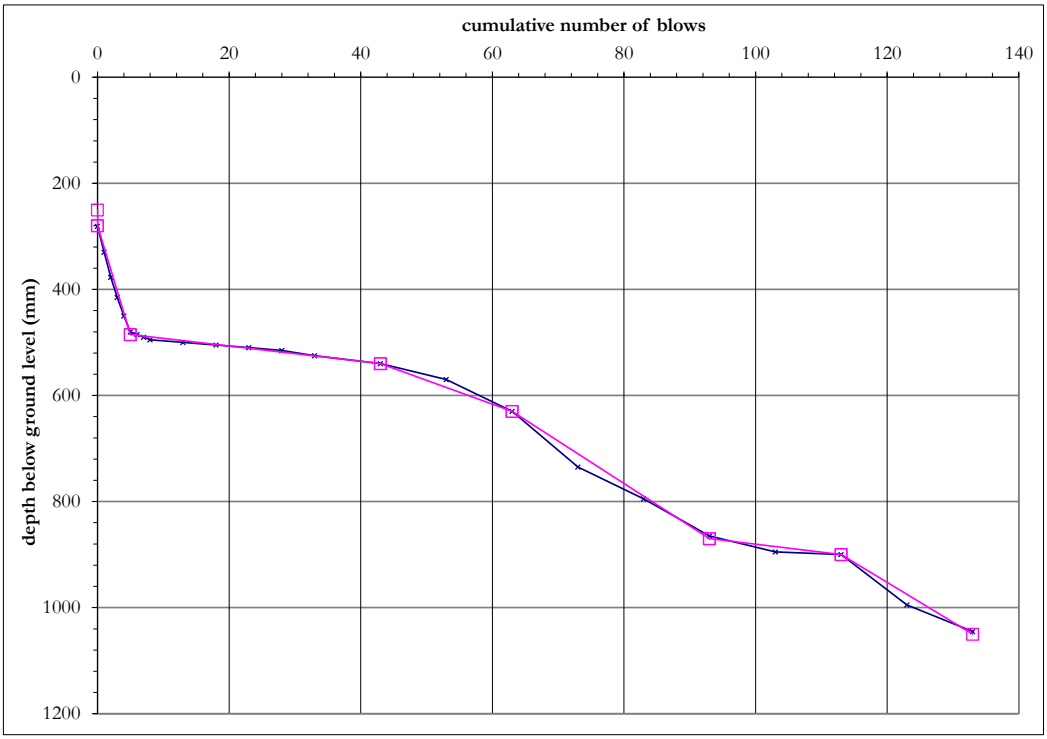
Project Number	23-0237
Project Name	Laurclavagh
Site Location	

Test Number	DCP01
Depth bgl (m)	0.25

Date Tested	14/03/2023
Weather	Dry and windy

Test conducted in accordance with Documented In-House Technical Procedure IMS TP7-4 and DMRB CS 229 Rev 0
CBR calculated using the TRRL CBR DCP relationship: log10(CBR) = 2.48 - 1.057 x log10(mm/blow) in accordance with DMRB CS 229 Rev 0

Surface preparation	Description of surface material at test depth
N/A	CLAY



top / base of layer (mm)	mm/ blow	CBR (%)
250	N/A	N/A
280		
280	41	6
485		
485	1.4	>100
540		
540	4.5	62
630		
630	8	34
870		
870	1.5	>100
900		
900	7.5	36
1050		

CBR Range	Min: 6 Max: >100	The self-weight penetration at the start of the test (shown above) has not been included in the minimum and maximum values shown to the left. The selection of layers is based on visual interpretation of the data. The insitu DCP reading (mm/blow) and CBR values are valid at the time of testing; variation in moisture content or other factors may affect the insitu value. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. This report should not be reproduced except in full without the written approval of the laboratory.

Deviation(s) from standard procedure	None

Observations and comments	

Approved Name and Appointment		
Darren O'Mahony Director		March 2023

UKAS TESTING 10122

Dynamic Cone Penetrometer (DCP) test results and estimated CBR

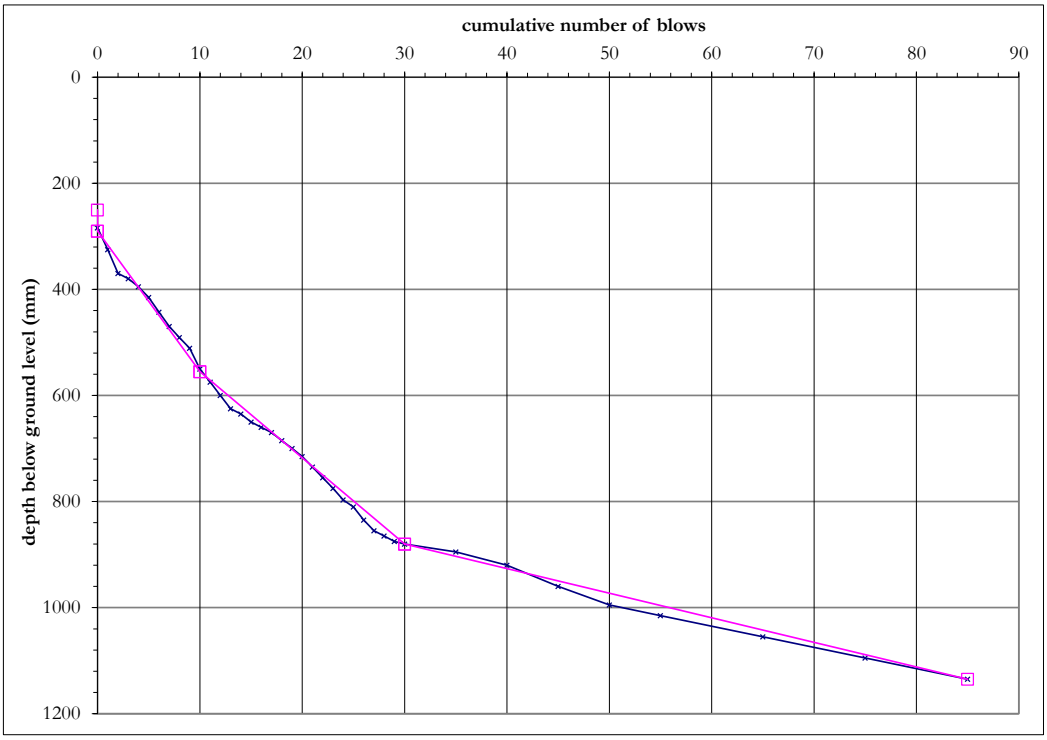
Project Number	23-0237
Project Name	Laurclavagh
Site Location	

Test Number	DCP02
Depth bgl (m)	0.25

Date Tested	14/03/2023
Weather	Dry and windy

Test conducted in accordance with Documented In-House Technical Procedure IMS TP7-4 and DMRB CS 229 Rev 0
CBR calculated using the TRRL CBR DCP relationship: log10(CBR) = 2.48 - 1.057 x log10(mm/blow) in accordance with DMRB CS 229 Rev 0

Surface preparation	Description of surface material at test depth
N/A	CLAY



top / base of layer (mm)	mm/ blow	CBR (%)
250	N/A	N/A
290		
290	27	9.5
555		
555	16	16
880		
880	4.6	60
1135		

CBR Range	Min: 9.5 Max: 60	The self-weight penetration at the start of the test (shown above) has not been included in the minimum and maximum values shown to the left. The selection of layers is based on visual interpretation of the data. The insitu DCP reading (mm/blow) and CBR values are valid at the time of testing; variation in moisture content or other factors may affect the insitu value. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. This report should not be reproduced except in full without the written approval of the laboratory.

Deviation(s) from standard procedure	None

Observations and comments	

Approved Name and Appointment		
Darren O'Mahony Director		March 2023

UKAS TESTING 10122

Dynamic Cone Penetrometer (DCP) test results and estimated CBR

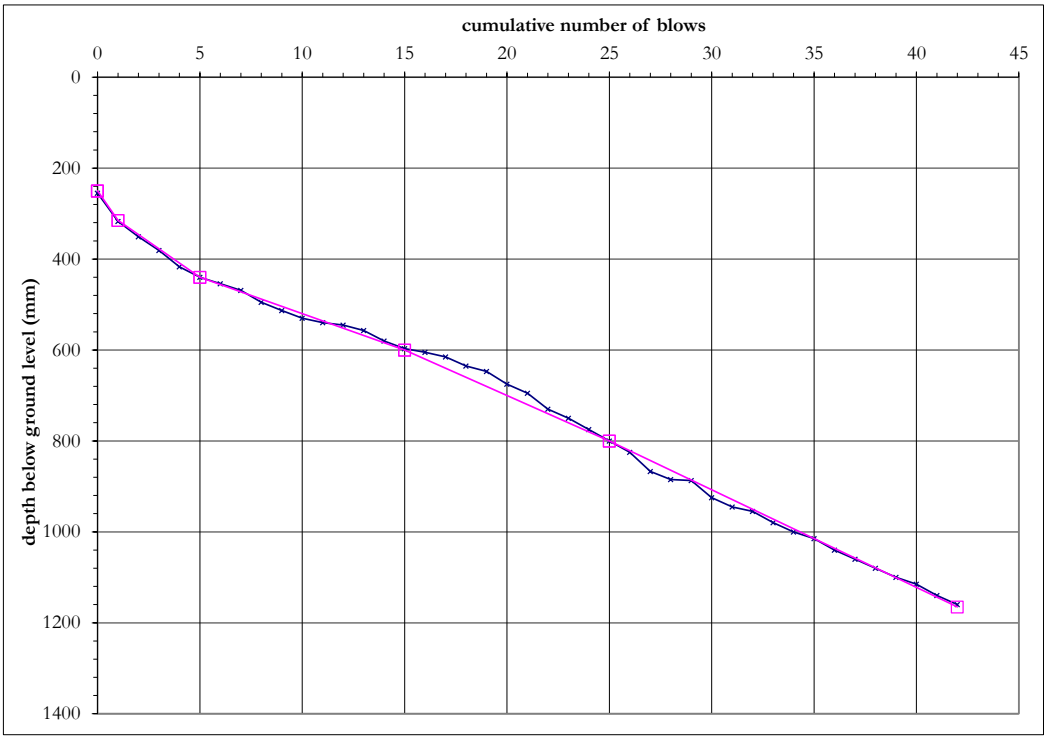
Project Number	23-0237
Project Name	Laurclavagh
Site Location	

Test Number	DCP03
Depth bgl (m)	0.25

Date Tested	14/03/2023
Weather	Dry and windy

Test conducted in accordance with Documented In-House Technical Procedure IMS TP7-4 and DMRB CS 229 Rev 0
CBR calculated using the TRRL CBR DCP relationship: log10(CBR) = 2.48 - 1.057 x log10(mm/blow) in accordance with DMRB CS 229 Rev 0

Surface preparation	Description of surface material at test depth
N/A	CLAY



top / base of layer (mm)	mm/ blow	CBR (%)
250	N/A	N/A
250		
250	65	3.7
315		
315	31	7.9
440		
440	16	16
600		
600	20	13
800		
800	21	12
1165		

CBR Range	Min: 3.7 Max: 16	The self-weight penetration at the start of the test (shown above) has not been included in the minimum and maximum values shown to the left. The selection of layers is based on visual interpretation of the data. The insitu DCP reading (mm/blow) and CBR values are valid at the time of testing; variation in moisture content or other factors may affect the insitu value. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. This report should not be reproduced except in full without the written approval of the laboratory.

Deviation(s) from standard procedure	None

Observations and comments	

Approved Name and Appointment		
Darren O'Mahony Director		March 2023

UKAS TESTING 10122

Dynamic Cone Penetrometer (DCP) test results and estimated CBR

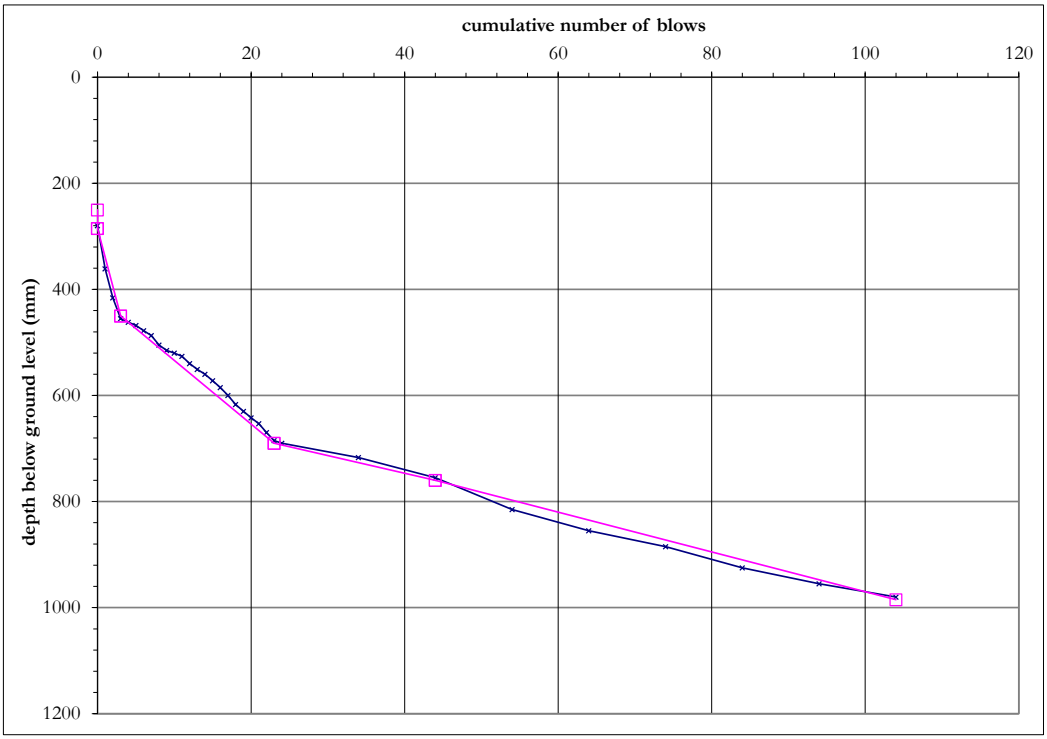
Project Number	23-0237
Project Name	Laurclavagh
Site Location	

Test Number	DCP04
Depth bgl (m)	0.25

Date Tested	14/03/2023
Weather	Dry and windy

Test conducted in accordance with Documented In-House Technical Procedure IMS TP7-4 and DMRB CS 229 Rev 0
CBR calculated using the TRRL CBR DCP relationship: log10(CBR) = 2.48 - 1.057 x log10(mm/blow) in accordance with DMRB CS 229 Rev 0

Surface preparation	Description of surface material at test depth
N/A	CLAY



top / base of layer (mm)	mm/ blow	CBR (%)
250	N/A	N/A
285		
285	55	4.4
450		
450	12	22
690		
690	3.3	85
760		
760	3.8	75
985		

CBR Range	Min: 4.4 Max: 85	The self-weight penetration at the start of the test (shown above) has not been included in the minimum and maximum values shown to the left. The selection of layers is based on visual interpretation of the data. The insitu DCP reading (mm/blow) and CBR values are valid at the time of testing; variation in moisture content or other factors may affect the insitu value. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. This report should not be reproduced except in full without the written approval of the laboratory.

Deviation(s) from standard procedure	None

Observations and comments	

Approved Name and Appointment		
Darren O'Mahony Director		March 2023

UKAS TESTING 10122

Dynamic Cone Penetrometer (DCP) test results and estimated CBR

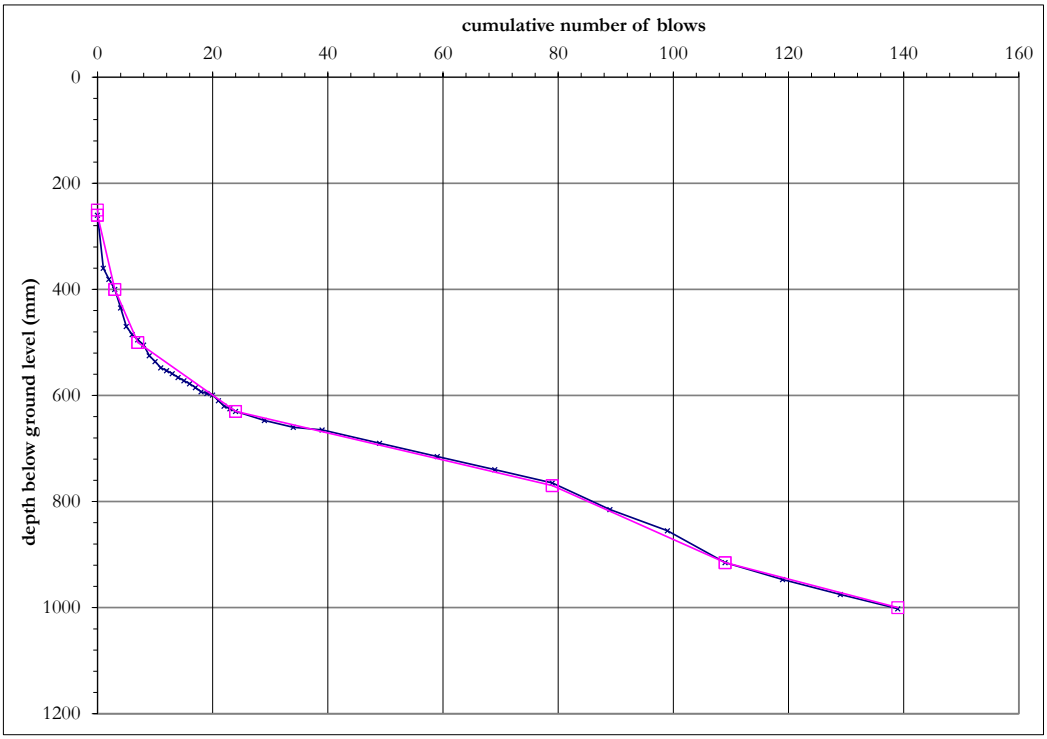
Project Number	23-0237
Project Name	Laurclavagh
Site Location	

Test Number	DCP05
Depth bgl (m)	0.25

Date Tested	14/03/2023
Weather	Dry and windy

Test conducted in accordance with Documented In-House Technical Procedure IMS TP7-4 and DMRB CS 229 Rev 0
CBR calculated using the TRRL CBR DCP relationship: log10(CBR) = 2.48 - 1.057 x log10(mm/blow) in accordance with DMRB CS 229 Rev 0

Surface preparation	Description of surface material at test depth
N/A	CLAY



top / base of layer (mm)	mm/ blow	CBR (%)
250	N/A	N/A
260		
260	47	5.2
400		
400	25	10
500		
500	7.6	35
630		
630	2.5	>100
770		
770	4.8	57
915		
915	2.8	100
1000		

CBR Range	Min: 5.2 Max: >100	The self-weight penetration at the start of the test (shown above) has not been included in the minimum and maximum values shown to the left. The selection of layers is based on visual interpretation of the data. The insitu DCP reading (mm/blow) and CBR values are valid at the time of testing; variation in moisture content or other factors may affect the insitu value. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. This report should not be reproduced except in full without the written approval of the laboratory.

Deviation(s) from standard procedure	None

Observations and comments	

Approved Name and Appointment		
Darren O'Mahony Director		March 2023

UKAS TESTING 10122

Dynamic Cone Penetrometer (DCP) test results and estimated CBR

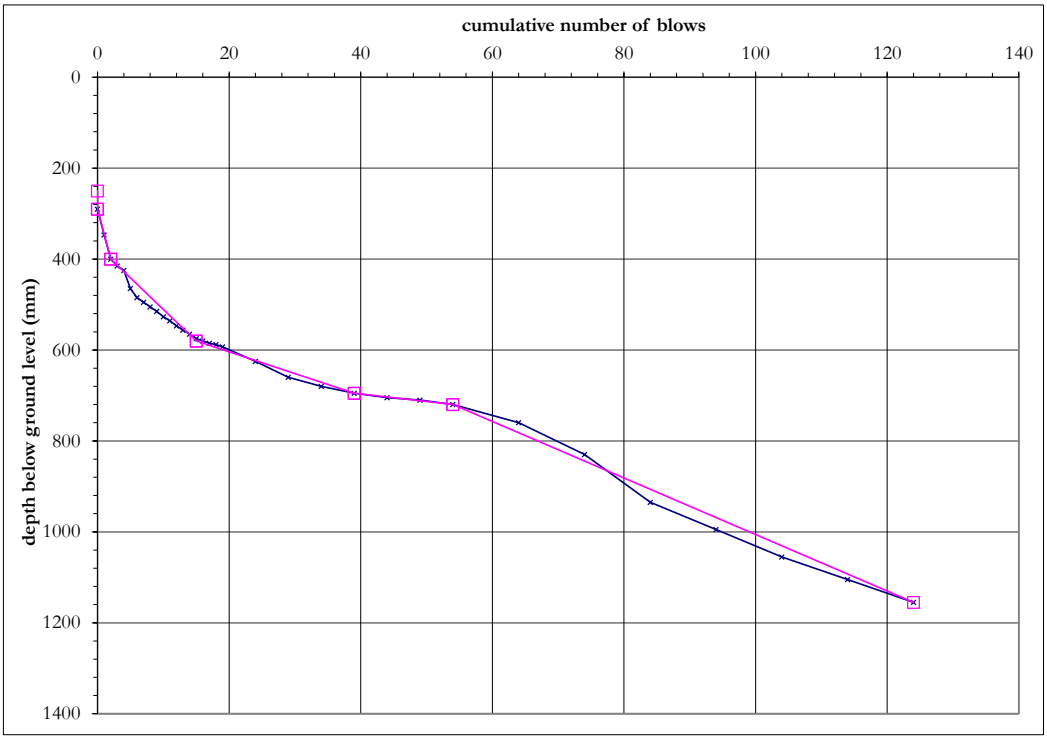
Project Number	23-0237
Project Name	Laurclavagh
Site Location	

Test Number	DCP06
Depth bgl (m)	0.25

Date Tested	14/03/2023
Weather	Dry and windy

Test conducted in accordance with Documented In-House Technical Procedure IMS TP7-4 and DMRB CS 229 Rev 0
CBR calculated using the TRRL CBR DCP relationship: log10(CBR) = 2.48 - 1.057 x log10(mm/blow) in accordance with DMRB CS 229 Rev 0

Surface preparation	Description of surface material at test depth
N/A	CLAY



top / base of layer (mm)	mm/ blow	CBR (%)
250	N/A	N/A
290		
290	55	4.4
400		
400	14	19
580		
580	4.8	58
695		
695	1.7	>100
720		
720	6.2	44
1155		

CBR Range	Min: 4.4 Max: >100	The self-weight penetration at the start of the test (shown above) has not been included in the minimum and maximum values shown to the left. The selection of layers is based on visual interpretation of the data. The insitu DCP reading (mm/blow) and CBR values are valid at the time of testing; variation in moisture content or other factors may affect the insitu value. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. This report should not be reproduced except in full without the written approval of the laboratory.

Deviation(s) from standard procedure	None

Observations and comments	

Approved Name and Appointment		
Darren O'Mahony Director		March 2023

UKAS TESTING 10122

Dynamic Cone Penetrometer (DCP) test results and estimated CBR

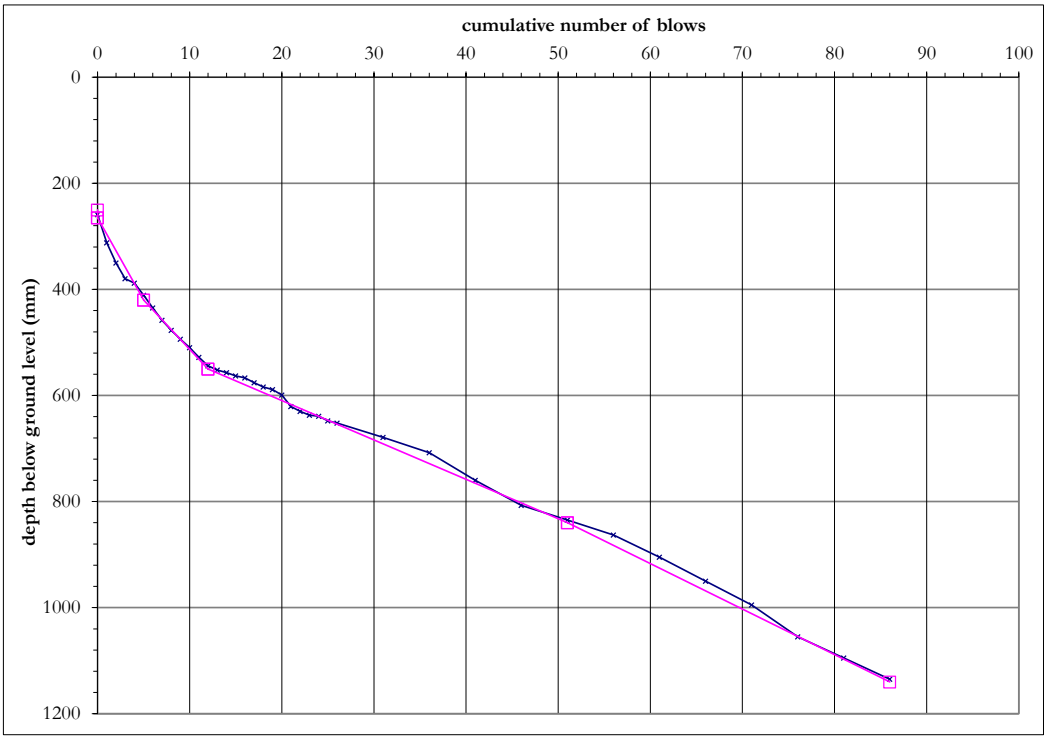
Project Number	23-0237
Project Name	Laurclavagh
Site Location	

Test Number	DCP07
Depth bgl (m)	0.25

Date Tested	14/03/2023
Weather	Dry and windy

Test conducted in accordance with Documented In-House Technical Procedure IMS TP7-4 and DMRB CS 229 Rev 0
CBR calculated using the TRRL CBR DCP relationship: log10(CBR) = 2.48 - 1.057 x log10(mm/blow) in accordance with DMRB CS 229 Rev 0

Surface preparation	Description of surface material at test depth
N/A	CLAY



top / base of layer (mm)	mm/ blow	CBR (%)
250	N/A	N/A
265		
265	31	8
420		
420	19	14
550		
550	7.4	36
840		
840	8.6	31
1140		

CBR Range	Min: 8 Max: 36	The self-weight penetration at the start of the test (shown above) has not been included in the minimum and maximum values shown to the left. The selection of layers is based on visual interpretation of the data. The insitu DCP reading (mm/blow) and CBR values are valid at the time of testing; variation in moisture content or other factors may affect the insitu value. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. This report should not be reproduced except in full without the written approval of the laboratory.

Deviation(s) from standard procedure	None

Observations and comments	

Approved Name and Appointment		
Darren O'Mahony Director		March 2023

UKAS TESTING 10122

Dynamic Cone Penetrometer (DCP) test results and estimated CBR

Project Number	23-0237
Project Name	Laurclavagh
Site Location	

Test Number	DCP08
Depth bgl (m)	0.25

Date Tested	14/03/2023
Weather	Dry and windy

Test conducted in accordance with Documented In-House Technical Procedure IMS TP7-4 and DMRB CS 229 Rev 0
CBR calculated using the TRRL CBR DCP relationship: log10(CBR) = 2.48 - 1.057 x log10(mm/blow) in accordance with DMRB CS 229 Rev 0

Surface preparation	Description of surface material at test depth
N/A	CLAY

top / base of layer (mm)	mm/ blow	CBR (%)
250	N/A	N/A
310		
310	31	8
465		
465	14	18
680		
680	10	26
720		
720	37	6.7
830		
830	19	13
1080		
1080	10	26
1140		

CBR Range	Min: 6.7 Max: 26	The self-weight penetration at the start of the test (shown above) has not been included in the minimum and maximum values shown to the left. The selection of layers is based on visual interpretation of the data. The insitu DCP reading (mm/blow) and CBR values are valid at the time of testing; variation in moisture content or other factors may affect the insitu value. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. This report should not be reproduced except in full without the written approval of the laboratory.

Deviation(s) from standard procedure	None

Observations and comments	

Approved Name and Appointment		
Darren O'Mahony Director		March 2023

UKAS TESTING 10122

Dynamic Cone Penetrometer (DCP) test results and estimated CBR

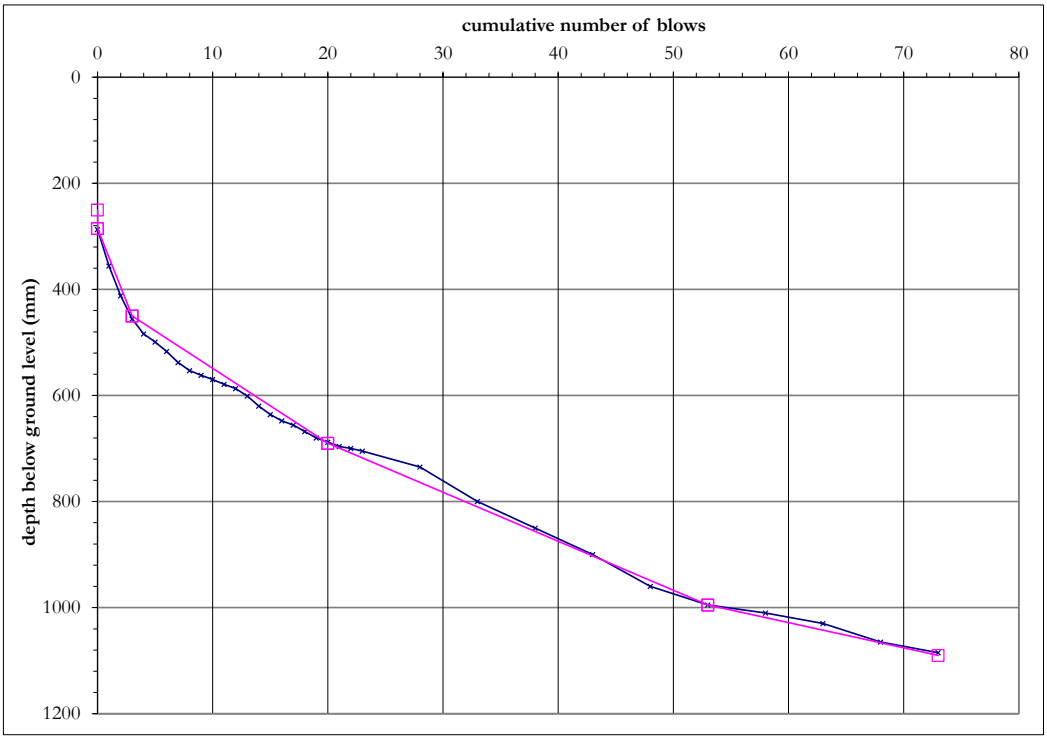
Project Number	23-0237
Project Name	Laurclavagh
Site Location	

Test Number	DCP09
Depth bgl (m)	0.25

Date Tested	14/03/2023
Weather	Dry and windy

Test conducted in accordance with Documented In-House Technical Procedure IMS TP7-4 and DMRB CS 229 Rev 0
CBR calculated using the TRRL CBR DCP relationship: log10(CBR) = 2.48 - 1.057 x log10(mm/blow) in accordance with DMRB CS 229 Rev 0

Surface preparation	Description of surface material at test depth
N/A	CLAY



top / base of layer (mm)	mm/ blow	CBR (%)
250	N/A	N/A
285		
285	55	4.4
450		
450	14	18
690		
690	9.2	29
995		
995	4.8	58
1090		

CBR Range	Min: 4.4 Max: 58	The self-weight penetration at the start of the test (shown above) has not been included in the minimum and maximum values shown to the left. The selection of layers is based on visual interpretation of the data. The insitu DCP reading (mm/blow) and CBR values are valid at the time of testing; variation in moisture content or other factors may affect the insitu value. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. This report should not be reproduced except in full without the written approval of the laboratory.

Deviation(s) from standard procedure	None

Observations and comments	

Approved Name and Appointment		
Darren O'Mahony Director		March 2023

UKAS TESTING 10122

Dynamic Cone Penetrometer (DCP) test results and estimated CBR

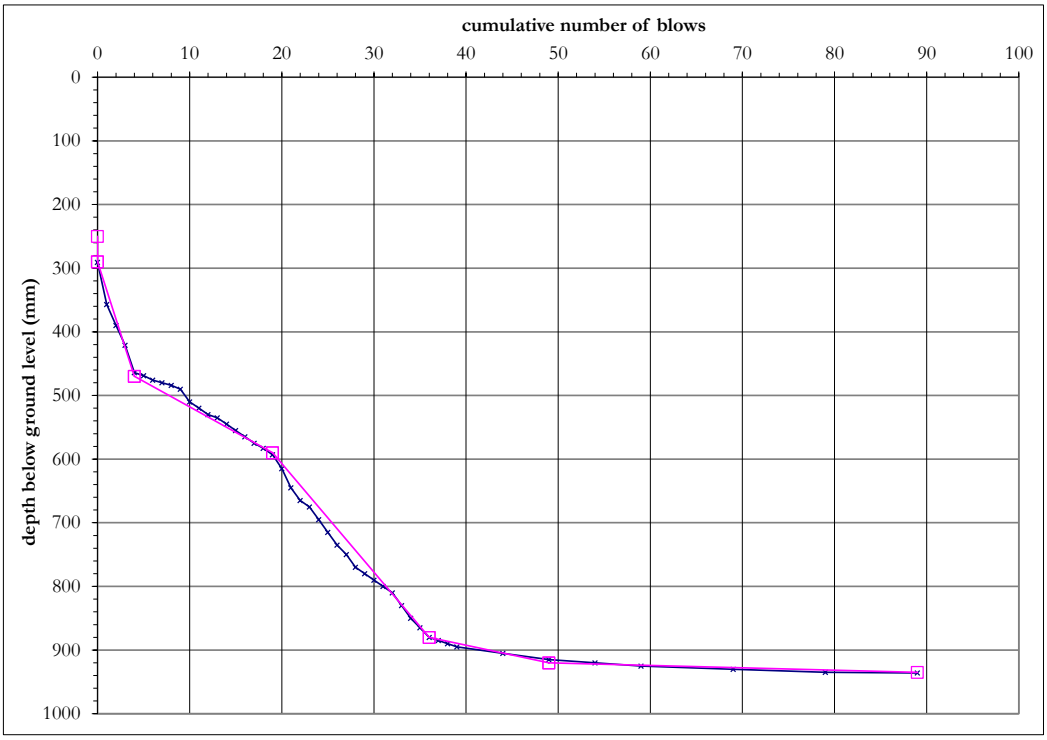
Project Number	23-0237
Project Name	Laurclavagh
Site Location	

Test Number	DCP10
Depth bgl (m)	0.25

Date Tested	14/03/2023
Weather	Dry and windy

Test conducted in accordance with Documented In-House Technical Procedure IMS TP7-4 and DMRB CS 229 Rev 0
CBR calculated using the TRRL CBR DCP relationship: log10(CBR) = 2.48 - 1.057 x log10(mm/blow) in accordance with DMRB CS 229 Rev 0

Surface preparation	Description of surface material at test depth
N/A	CLAY



top / base of layer (mm)	mm/ blow	CBR (%)
250	N/A	N/A
290		
290	45	5.4
470		
470	8	34
590		
590	17	15
880		
880	3.1	92
920		
920	0.4	>100
935		

CBR Range	Min: 5.4 Max: >100	The self-weight penetration at the start of the test (shown above) has not been included in the minimum and maximum values shown to the left. The selection of layers is based on visual interpretation of the data. The insitu DCP reading (mm/blow) and CBR values are valid at the time of testing; variation in moisture content or other factors may affect the insitu value. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. This report should not be reproduced except in full without the written approval of the laboratory.

Deviation(s) from standard procedure	None

Observations and comments	

Approved Name and Appointment		
Darren O'Mahony Director		March 2023

UKAS TESTING 10122

Dynamic Cone Penetrometer (DCP) test results and estimated CBR

Project Number	23-0237
Project Name	Laurclavagh
Site Location	

Test Number	DCP11
Depth bgl (m)	0.25

Date Tested	14/03/2023
Weather	Dry and windy

Test conducted in accordance with Documented In-House Technical Procedure IMS TP7-4 and DMRB CS 229 Rev 0
CBR calculated using the TRRL CBR DCP relationship: log10(CBR) = 2.48 - 1.057 x log10(mm/blow) in accordance with DMRB CS 229 Rev 0

Surface preparation	Description of surface material at test depth
N/A	CLAY

top / base of layer (mm)	mm/ blow	CBR (%)
250	N/A	N/A
280		
280	47	5.2
420		
420	20	13
600		
600	12	23
937		
937	9.1	29
1165		

CBR Range	Min: 5.2 Max: 29	The self-weight penetration at the start of the test (shown above) has not been included in the minimum and maximum values shown to the left. The selection of layers is based on visual interpretation of the data. The insitu DCP reading (mm/blow) and CBR values are valid at the time of testing; variation in moisture content or other factors may affect the insitu value. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. This report should not be reproduced except in full without the written approval of the laboratory.

Deviation(s) from standard procedure	None

Observations and comments	

Approved Name and Appointment		
Darren O'Mahony Director		March 2023

UKAS TESTING 10122

Dynamic Cone Penetrometer (DCP) test results and estimated CBR

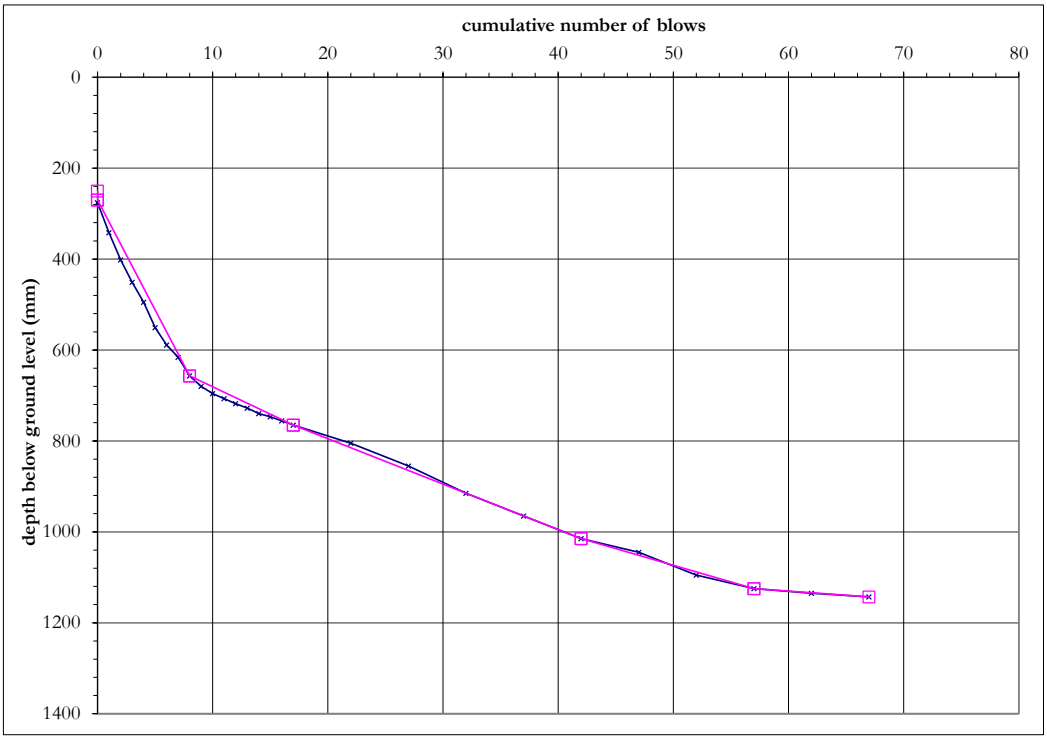
Project Number	23-0237
Project Name	Laurclavagh
Site Location	

Test Number	DCP12
Depth bgl (m)	0.25

Date Tested	14/03/2023
Weather	Dry and windy

Test conducted in accordance with Documented In-House Technical Procedure IMS TP7-4 and DMRB CS 229 Rev 0
CBR calculated using the TRRL CBR DCP relationship: log10(CBR) = 2.48 - 1.057 x log10(mm/blow) in accordance with DMRB CS 229 Rev 0

Surface preparation	Description of surface material at test depth
N/A	CLAY



top / base of layer (mm)	mm/ blow	CBR (%)
250	N/A	N/A
270		
270	48	5
657		
657	12	22
765		
765	10	26
1015		
1015	7.3	37
1125		
1125	1.8	>100
1143		

CBR Range	Min: 5 Max: >100	The self-weight penetration at the start of the test (shown above) has not been included in the minimum and maximum values shown to the left. The selection of layers is based on visual interpretation of the data. The insitu DCP reading (mm/blow) and CBR values are valid at the time of testing; variation in moisture content or other factors may affect the insitu value. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. This report should not be reproduced except in full without the written approval of the laboratory.

Deviation(s) from standard procedure	None

Observations and comments	

Approved Name and Appointment		
Darren O'Mahony Director		March 2023

UKAS TESTING 10122

Dynamic Cone Penetrometer (DCP) test results and estimated CBR

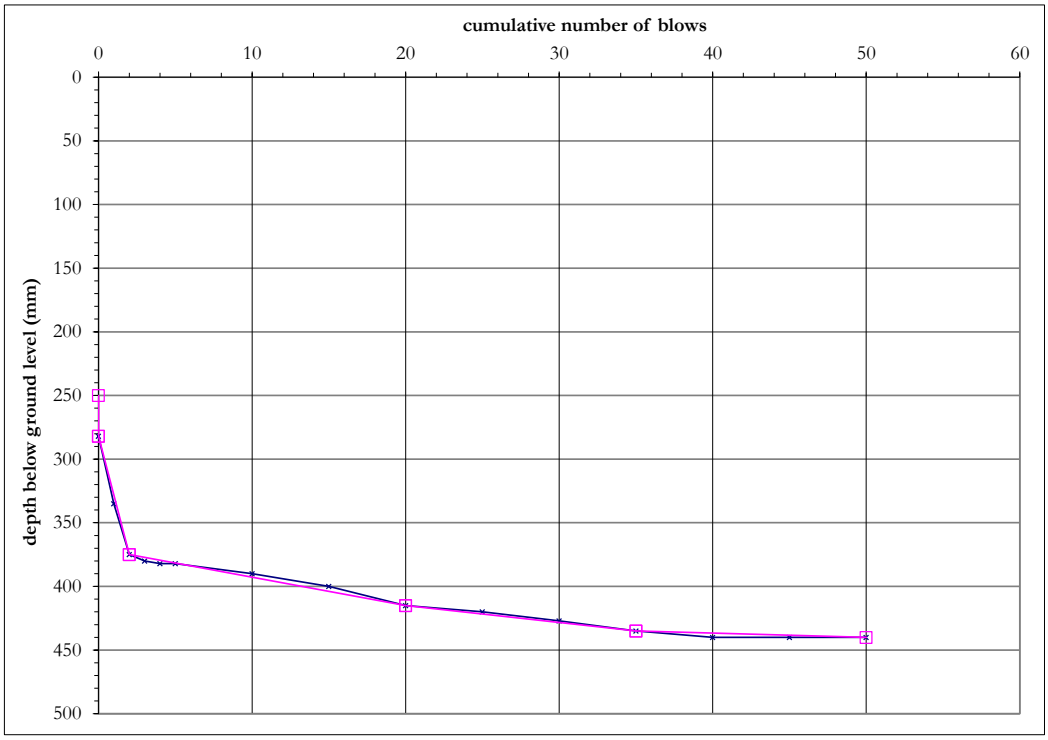
Project Number	23-0237
Project Name	Laurclavagh
Site Location	

Test Number	DCP13
Depth bgl (m)	0.25

Date Tested	14/03/2023
Weather	Dry and windy

Test conducted in accordance with Documented In-House Technical Procedure IMS TP7-4 and DMRB CS 229 Rev 0
CBR calculated using the TRRL CBR DCP relationship: log10(CBR) = 2.48 - 1.057 x log10(mm/blow) in accordance with DMRB CS 229 Rev 0

Surface preparation	Description of surface material at test depth
N/A	CLAY



top / base of layer (mm)	mm/ blow	CBR (%)
250	N/A	N/A
282		
282	47	5.2
375		
375	2.2	>100
415		
415	1.3	>100
435		
435	0.3	>100
440		

CBR Range	Min: 5.2 Max: >100	The self-weight penetration at the start of the test (shown above) has not been included in the minimum and maximum values shown to the left. The selection of layers is based on visual interpretation of the data. The insitu DCP reading (mm/blow) and CBR values are valid at the time of testing; variation in moisture content or other factors may affect the insitu value. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. This report should not be reproduced except in full without the written approval of the laboratory.

Deviation(s) from standard procedure	None

Observations and comments	

Approved Name and Appointment		
Darren O'Mahony Director		March 2023

UKAS TESTING 10122

Dynamic Cone Penetrometer (DCP) test results and estimated CBR

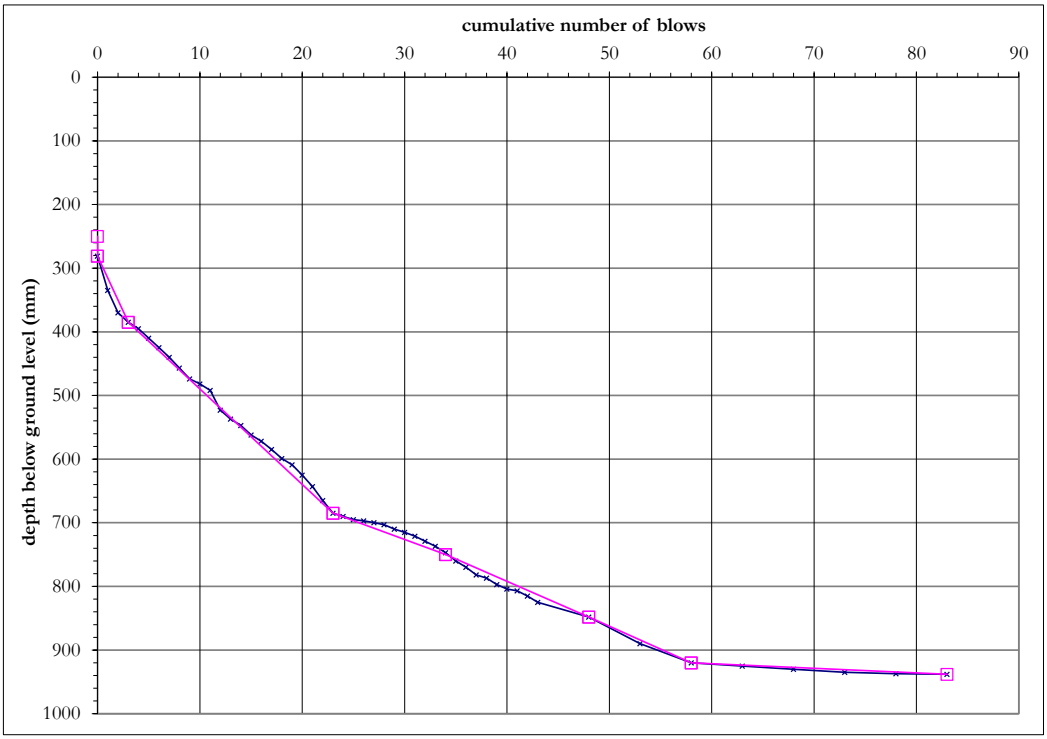
Project Number	23-0237
Project Name	Laurclavagh
Site Location	

Test Number	DCP13A
Depth bgl (m)	0.25

Date Tested	14/03/2023
Weather	Dry and windy

Test conducted in accordance with Documented In-House Technical Procedure IMS TP7-4 and DMRB CS 229 Rev 0
CBR calculated using the TRRL CBR DCP relationship: log10(CBR) = 2.48 - 1.057 x log10(mm/blow) in accordance with DMRB CS 229 Rev 0

Surface preparation	Description of surface material at test depth
N/A	CLAY



top / base of layer (mm)	mm/ blow	CBR (%)
250	N/A	N/A
281		
281	35	7.1
385		
385	15	17
685		
685	5.9	46
750		
750	7	39
848		
848	7.2	37
920		
920	0.7	>100
938		

CBR Range	Min: 7.1 Max: >100	The self-weight penetration at the start of the test (shown above) has not been included in the minimum and maximum values shown to the left. The selection of layers is based on visual interpretation of the data. The insitu DCP reading (mm/blow) and CBR values are valid at the time of testing; variation in moisture content or other factors may affect the insitu value. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. This report should not be reproduced except in full without the written approval of the laboratory.

Deviation(s) from standard procedure	None

Observations and comments	

Approved Name and Appointment		
Darren O'Mahony Director		March 2023

UKAS TESTING 10122

Dynamic Cone Penetrometer (DCP) test results and estimated CBR

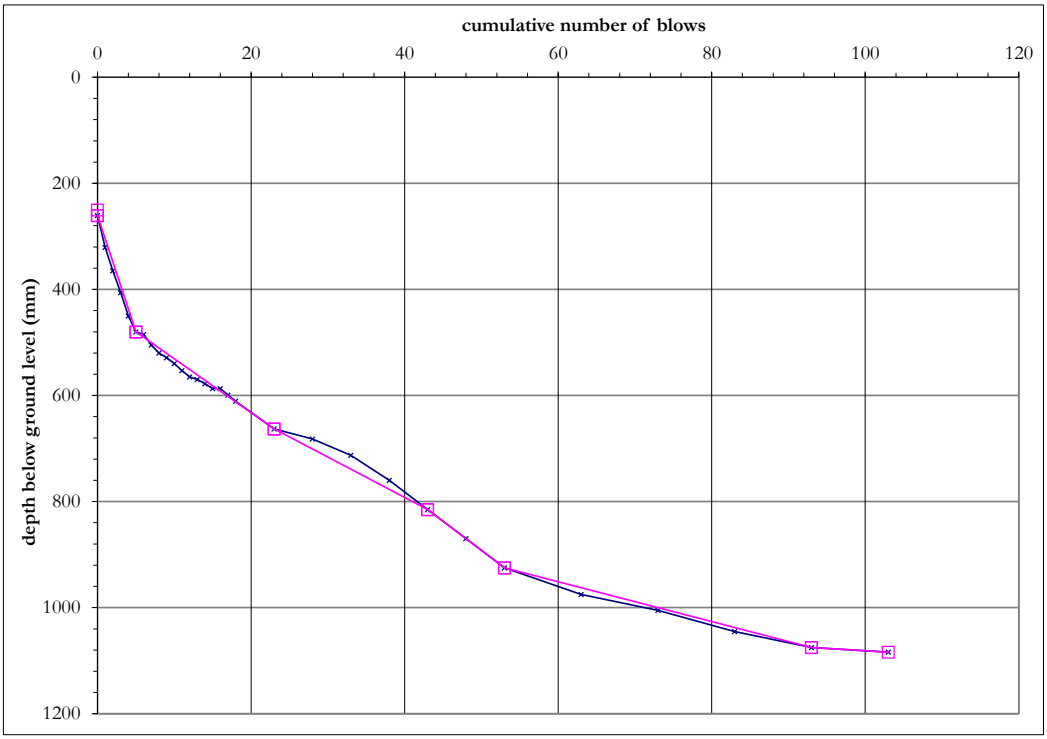
Project Number	23-0237
Project Name	Laurclavagh
Site Location	

Test Number	DCP14
Depth bgl (m)	0.25

Date Tested	14/03/2023
Weather	Dry and windy

Test conducted in accordance with Documented In-House Technical Procedure IMS TP7-4 and DMRB CS 229 Rev 0
CBR calculated using the TRRL CBR DCP relationship: log10(CBR) = 2.48 - 1.057 x log10(mm/blow) in accordance with DMRB CS 229 Rev 0

Surface preparation	Description of surface material at test depth
N/A	CLAY



top / base of layer (mm)	mm/ blow	CBR (%)
250	N/A	N/A
261		
261	44	5.6
480		
480	10	26
663		
663	7.6	35
815		
815	11	24
925		
925	3.8	75
1075		
1075	0.9	>100
1084		

CBR Range	Min: 5.6 Max: >100	The self-weight penetration at the start of the test (shown above) has not been included in the minimum and maximum values shown to the left. The selection of layers is based on visual interpretation of the data. The insitu DCP reading (mm/blow) and CBR values are valid at the time of testing; variation in moisture content or other factors may affect the insitu value. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. This report should not be reproduced except in full without the written approval of the laboratory.

Deviation(s) from standard procedure	None

Observations and comments	

Approved Name and Appointment		
Darren O'Mahony Director		March 2023

UKAS TESTING 10122

Dynamic Cone Penetrometer (DCP) test results and estimated CBR

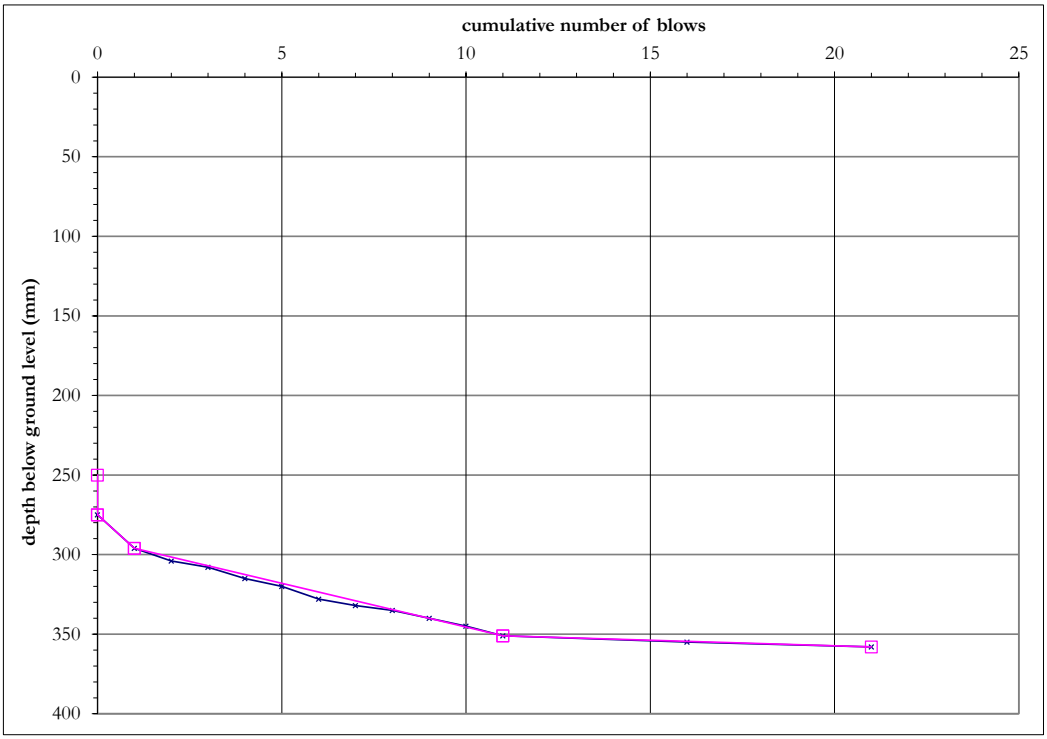
Project Number	23-0237
Project Name	Laurclavagh
Site Location	

Test Number	DCP15
Depth bgl (m)	0.25

Date Tested	15/03/2023
Weather	Dry and windy

Test conducted in accordance with Documented In-House Technical Procedure IMS TP7-4 and DMRB CS 229 Rev 0
CBR calculated using the TRRL CBR DCP relationship: log10(CBR) = 2.48 - 1.057 x log10(mm/blow) in accordance with DMRB CS 229 Rev 0

Surface preparation	Description of surface material at test depth
N/A	CLAY



top / base of layer (mm)	mm/ blow	CBR (%)
250	N/A	N/A
275		
275	21	12
296		
296	5.5	50
351		
351	0.7	>100
358		

CBR Range	Min: 12 Max: >100	The self-weight penetration at the start of the test (shown above) has not been included in the minimum and maximum values shown to the left. The selection of layers is based on visual interpretation of the data. The insitu DCP reading (mm/blow) and CBR values are valid at the time of testing; variation in moisture content or other factors may affect the insitu value. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. This report should not be reproduced except in full without the written approval of the laboratory.

Deviation(s) from standard procedure	None

Observations and comments	

Approved Name and Appointment		
Darren O'Mahony Director		March 2023

UKAS TESTING 10122

Dynamic Cone Penetrometer (DCP) test results and estimated CBR

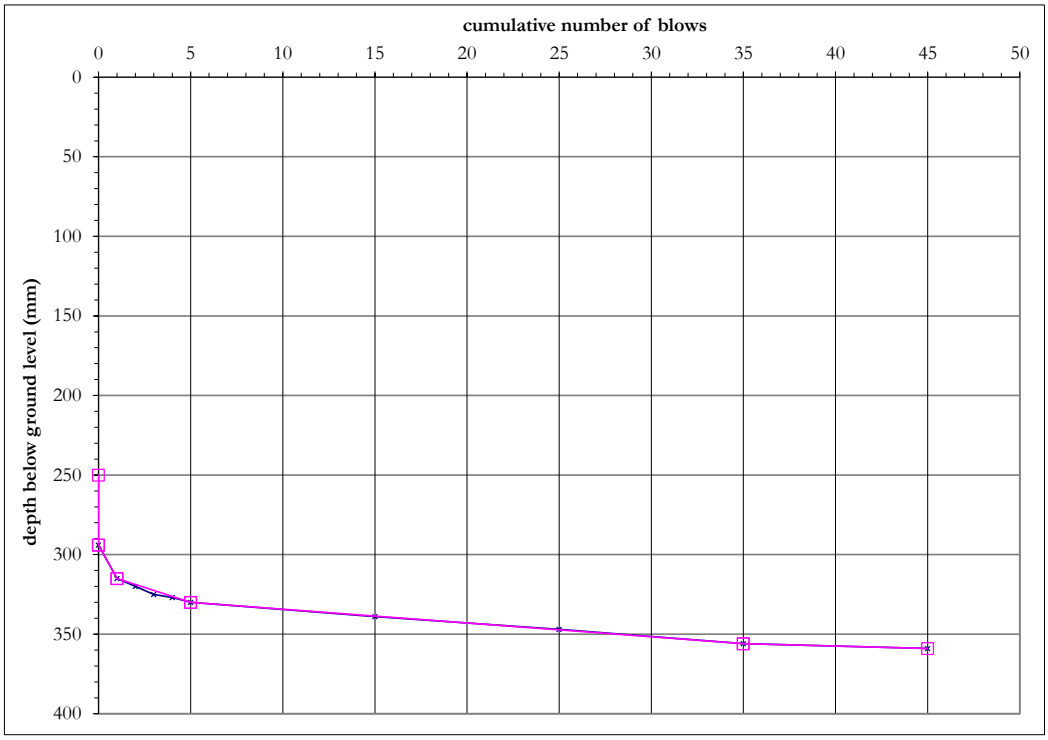
Project Number	23-0237
Project Name	Laurclavagh
Site Location	

Test Number	DCP15A
Depth bgl (m)	0.25

Date Tested	15/03/2023
Weather	Dry and windy

Test conducted in accordance with Documented In-House Technical Procedure IMS TP7-4 and DMRB CS 229 Rev 0
CBR calculated using the TRRL CBR DCP relationship: log10(CBR) = 2.48 - 1.057 x log10(mm/blow) in accordance with DMRB CS 229 Rev 0

Surface preparation	Description of surface material at test depth
N/A	CLAY



top / base of layer (mm)	mm/ blow	CBR (%)
250	N/A	N/A
294		
294	21	12
315		
315	3.8	75
330		
330	0.9	>100
356		
356	0.3	>100
359		

CBR Range	Min: 12 Max: >100	The self-weight penetration at the start of the test (shown above) has not been included in the minimum and maximum values shown to the left. The selection of layers is based on visual interpretation of the data. The insitu DCP reading (mm/blow) and CBR values are valid at the time of testing; variation in moisture content or other factors may affect the insitu value. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. This report should not be reproduced except in full without the written approval of the laboratory.

Deviation(s) from standard procedure	None

Observations and comments	

Approved Name and Appointment		
Darren O'Mahony Director		March 2023

UKAS TESTING 10122

Dynamic Cone Penetrometer (DCP) test results and estimated CBR

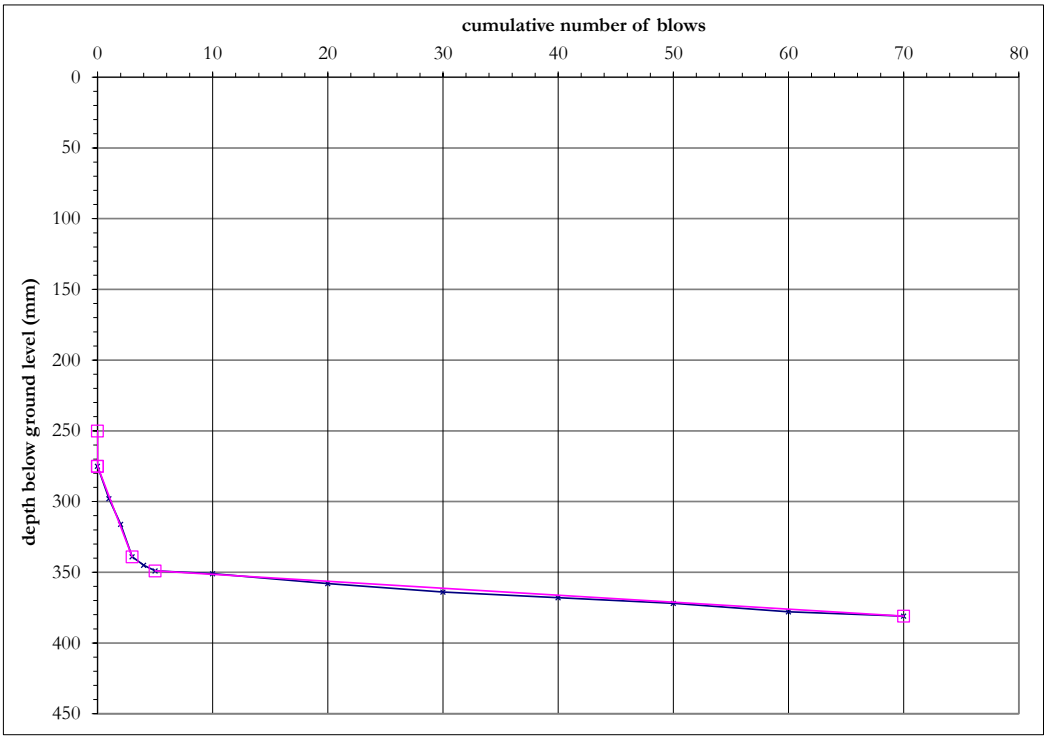
Project Number	23-0237
Project Name	Laurclavagh
Site Location	

Test Number	DCP16
Depth bgl (m)	0.25

Date Tested	15/03/2023
Weather	Wet and windy

Test conducted in accordance with Documented In-House Technical Procedure IMS TP7-4 and DMRB CS 229 Rev 0
CBR calculated using the TRRL CBR DCP relationship: log10(CBR) = 2.48 - 1.057 x log10(mm/blow) in accordance with DMRB CS 229 Rev 0

Surface preparation	Description of surface material at test depth
N/A	CLAY



top / base of layer (mm)	mm/ blow	CBR (%)
250	N/A	N/A
275		
275	21	12
339		
349	0.5	>100
381		

CBR Range	Min: 12 Max: >100	The self-weight penetration at the start of the test (shown above) has not been included in the minimum and maximum values shown to the left. The selection of layers is based on visual interpretation of the data. The insitu DCP reading (mm/blow) and CBR values are valid at the time of testing; variation in moisture content or other factors may affect the insitu value. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. This report should not be reproduced except in full without the written approval of the laboratory.

Deviation(s) from standard procedure	None

Observations and comments	

Approved Name and Appointment		
Darren O'Mahony Director		March 2023

UKAS TESTING 10122

Dynamic Cone Penetrometer (DCP) test results and estimated CBR

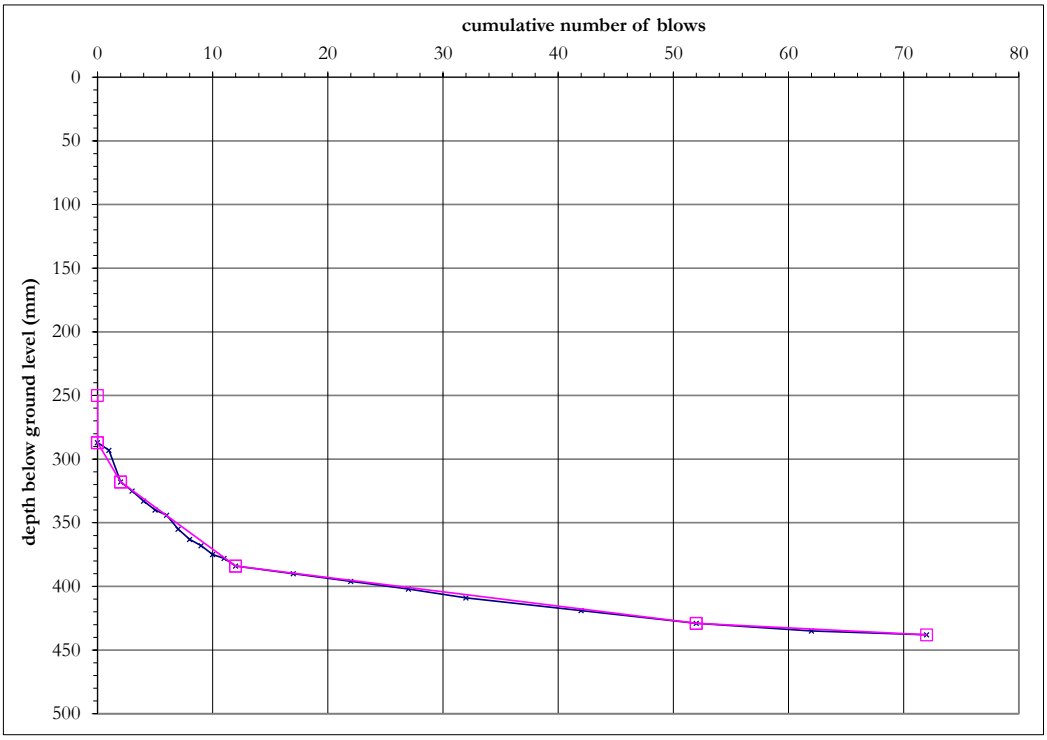
Project Number	23-0237
Project Name	Laurclavagh
Site Location	

Test Number	DCP16A
Depth bgl (m)	0.25

Date Tested	15/03/2023
Weather	Wet and windy

Test conducted in accordance with Documented In-House Technical Procedure IMS TP7-4 and DMRB CS 229 Rev 0
CBR calculated using the TRRL CBR DCP relationship: log10(CBR) = 2.48 - 1.057 x log10(mm/blow) in accordance with DMRB CS 229 Rev 0

Surface preparation	Description of surface material at test depth
N/A	CLAY



top / base of layer (mm)	mm/ blow	CBR (%)
250	N/A	N/A
287		
287	16	17
318		
318	6.6	41
384		
384	1.1	>100
429		
429	0.5	>100
438		

CBR Range	Min: 17 Max: >100	The self-weight penetration at the start of the test (shown above) has not been included in the minimum and maximum values shown to the left. The selection of layers is based on visual interpretation of the data. The insitu DCP reading (mm/blow) and CBR values are valid at the time of testing; variation in moisture content or other factors may affect the insitu value. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. This report should not be reproduced except in full without the written approval of the laboratory.

Deviation(s) from standard procedure	None

Observations and comments	

Approved Name and Appointment		
Darren O'Mahony Director		March 2023

UKAS TESTING 10122

Dynamic Cone Penetrometer (DCP) test results and estimated CBR

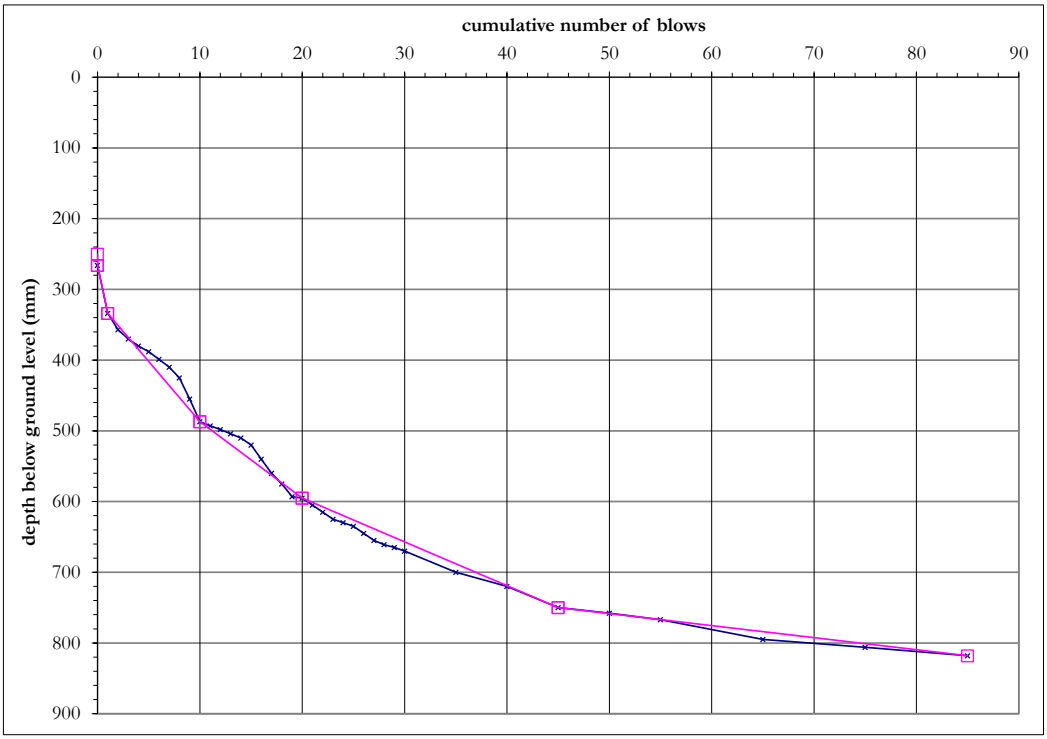
Project Number	23-0237
Project Name	Laurclavagh
Site Location	

Test Number	DCP17
Depth bgl (m)	0.25

Date Tested	15/03/2023
Weather	Wet and windy

Test conducted in accordance with Documented In-House Technical Procedure IMS TP7-4 and DMRB CS 229 Rev 0
CBR calculated using the TRRL CBR DCP relationship: log10(CBR) = 2.48 - 1.057 x log10(mm/blow) in accordance with DMRB CS 229 Rev 0

Surface preparation	Description of surface material at test depth
N/A	CLAY



top / base of layer (mm)	mm/ blow	CBR (%)
250	N/A	N/A
266		
266	68	3.5
334		
334	17	15
487		
487	11	24
595		
595	6.2	44
750		
750	1.7	>100
818		

CBR Range	Min: 3.5 Max: >100	The self-weight penetration at the start of the test (shown above) has not been included in the minimum and maximum values shown to the left. The selection of layers is based on visual interpretation of the data. The insitu DCP reading (mm/blow) and CBR values are valid at the time of testing; variation in moisture content or other factors may affect the insitu value. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. This report should not be reproduced except in full without the written approval of the laboratory.

Deviation(s) from standard procedure	None

Observations and comments	

Approved Name and Appointment		
Darren O'Mahony Director		March 2023

UKAS TESTING 10122

Dynamic Cone Penetrometer (DCP) test results and estimated CBR

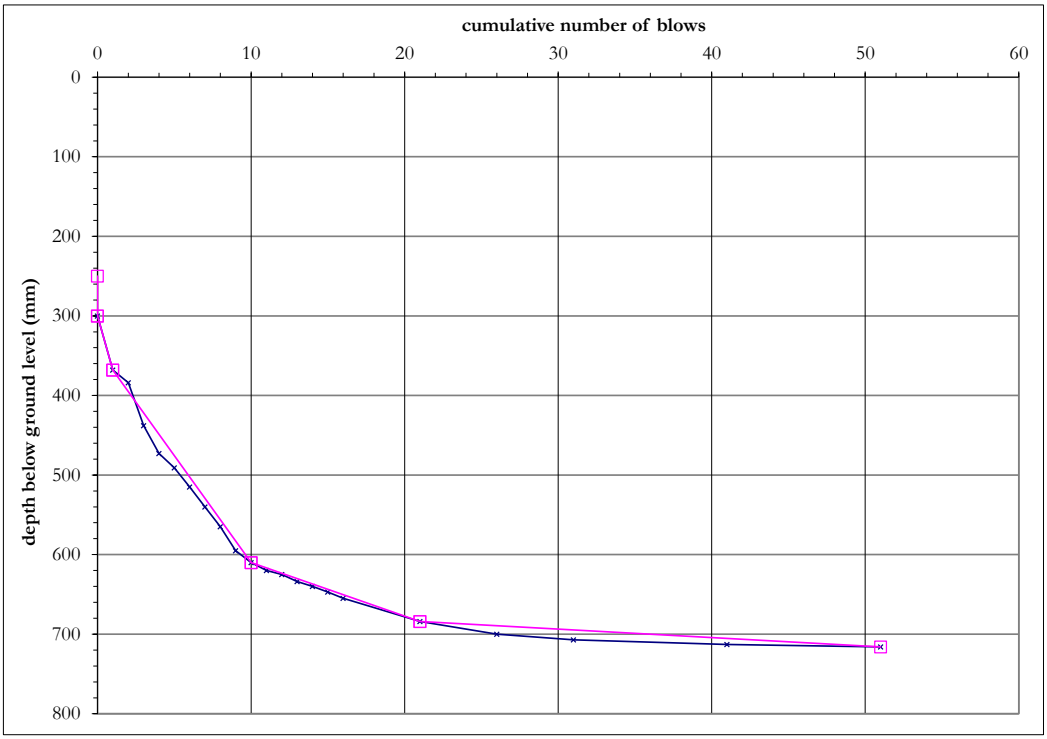
Project Number	23-0237
Project Name	Laurclavagh
Site Location	

Test Number	DCP18
Depth bgl (m)	0.25

Date Tested	15/03/2023
Weather	Wet and windy

Test conducted in accordance with Documented In-House Technical Procedure IMS TP7-4 and DMRB CS 229 Rev 0
CBR calculated using the TRRL CBR DCP relationship: log10(CBR) = 2.48 - 1.057 x log10(mm/blow) in accordance with DMRB CS 229 Rev 0

Surface preparation	**Description of surface material at test depth**
N/A	CLAY



top / base of layer (mm)	**mm/ blow**	**CBR (%)**
250	N/A	N/A
300		
300	68	3.5
368		
368	27	9.3
610		
610	6.7	40
684		
684	1.1	>100
716		

CBR Range	Min: 3.5 Max: >100	The self-weight penetration at the start of the test (shown above) has not been included in the minimum and maximum values shown to the left. The selection of layers is based on visual interpretation of the data. The insitu DCP reading (mm/blow) and CBR values are valid at the time of testing; variation in moisture content or other factors may affect the insitu value. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. This report should not be reproduced except in full without the written approval of the laboratory.

Deviation(s) from standard procedure	None

Observations and comments	

Approved Name and Appointment		
Darren O'Mahony Director		March 2023

UKAS TESTING 10122

Dynamic Cone Penetrometer (DCP) test results and estimated CBR

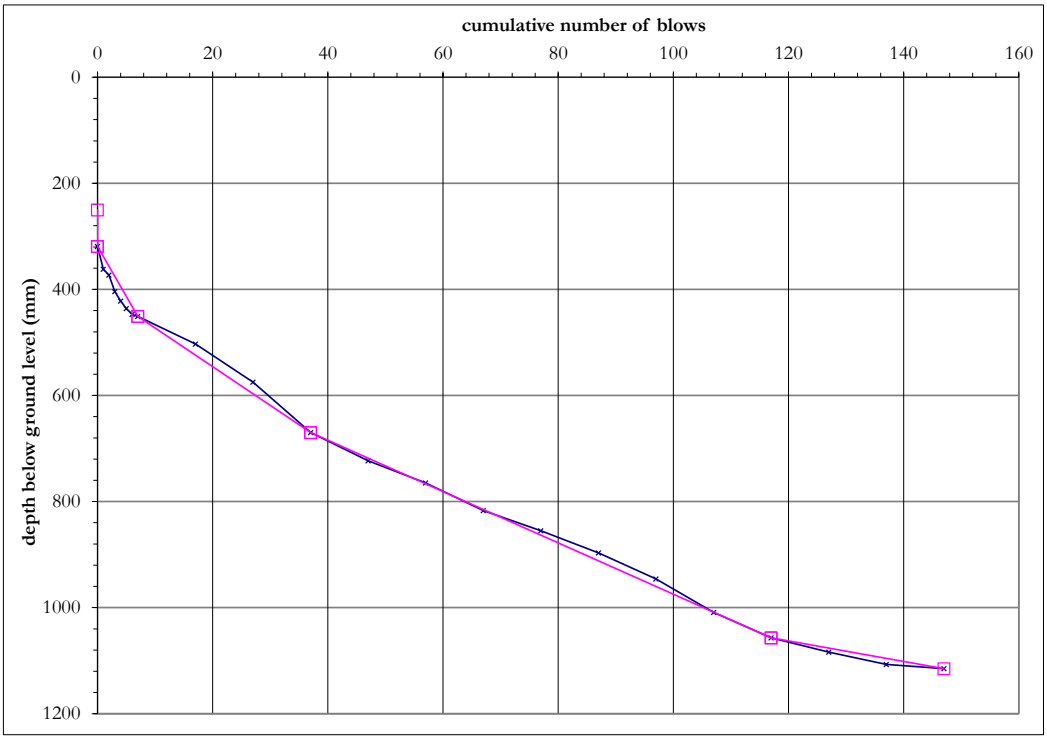
Project Number	23-0237
Project Name	Laurclavagh
Site Location	

Test Number	DCP19
Depth bgl (m)	0.25

Date Tested	15/03/2023
Weather	Wet and windy

Test conducted in accordance with Documented In-House Technical Procedure IMS TP7-4 and DMRB CS 229 Rev 0
CBR calculated using the TRRL CBR DCP relationship: log10(CBR) = 2.48 - 1.057 x log10(mm/blow) in accordance with DMRB CS 229 Rev 0

Surface preparation	Description of surface material at test depth
N/A	CLAY



top / base of layer (mm)	mm/ blow	CBR (%)
250	N/A	N/A
319		
319	19	14
451		
451	7.3	37
670		
670	4.8	57
1057		
1057	1.9	>100
1115		

CBR Range	Min: 14 Max: >100	The self-weight penetration at the start of the test (shown above) has not been included in the minimum and maximum values shown to the left. The selection of layers is based on visual interpretation of the data. The insitu DCP reading (mm/blow) and CBR values are valid at the time of testing; variation in moisture content or other factors may affect the insitu value. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. This report should not be reproduced except in full without the written approval of the laboratory.

Deviation(s) from standard procedure	None

Observations and comments	

Approved Name and Appointment		
Darren O'Mahony Director		March 2023

UKAS TESTING 10122

Dynamic Cone Penetrometer (DCP) test results and estimated CBR

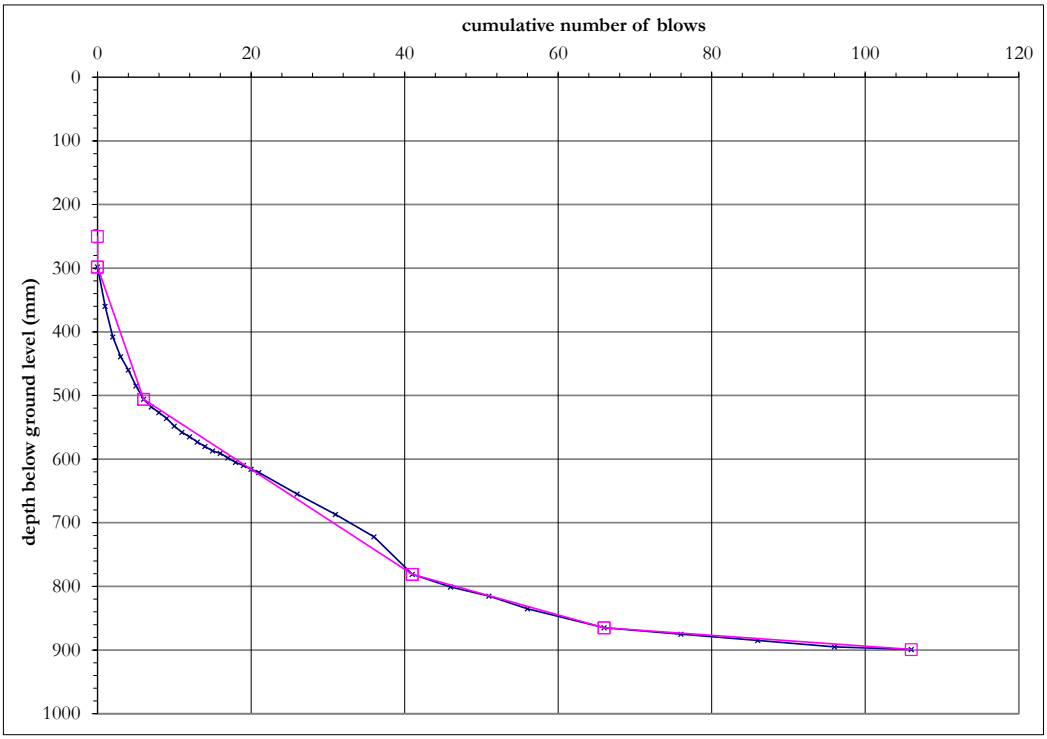
Project Number	23-0237
Project Name	Laurclavagh
Site Location	

Test Number	DCP20
Depth bgl (m)	0.25

Date Tested	15/03/2023
Weather	Wet and windy

Test conducted in accordance with Documented In-House Technical Procedure IMS TP7-4 and DMRB CS 229 Rev 0
CBR calculated using the TRRL CBR DCP relationship: log10(CBR) = 2.48 - 1.057 x log10(mm/blow) in accordance with DMRB CS 229 Rev 0

Surface preparation	Description of surface material at test depth
N/A	CLAY



top / base of layer (mm)	mm/ blow	CBR (%)
250	N/A	N/A
298		
298	35	7.1
506		
506	7.9	34
781		
781	3.4	84
865		
865	0.9	>100
899		

CBR Range	Min: 7.1 Max: >100	The self-weight penetration at the start of the test (shown above) has not been included in the minimum and maximum values shown to the left. The selection of layers is based on visual interpretation of the data. The insitu DCP reading (mm/blow) and CBR values are valid at the time of testing; variation in moisture content or other factors may affect the insitu value. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. This report should not be reproduced except in full without the written approval of the laboratory.

Deviation(s) from standard procedure	None

Observations and comments	

Approved Name and Appointment		
Darren O'Mahony Director		March 2023

UKAS TESTING 10122

Dynamic Cone Penetrometer (DCP) test results and estimated CBR

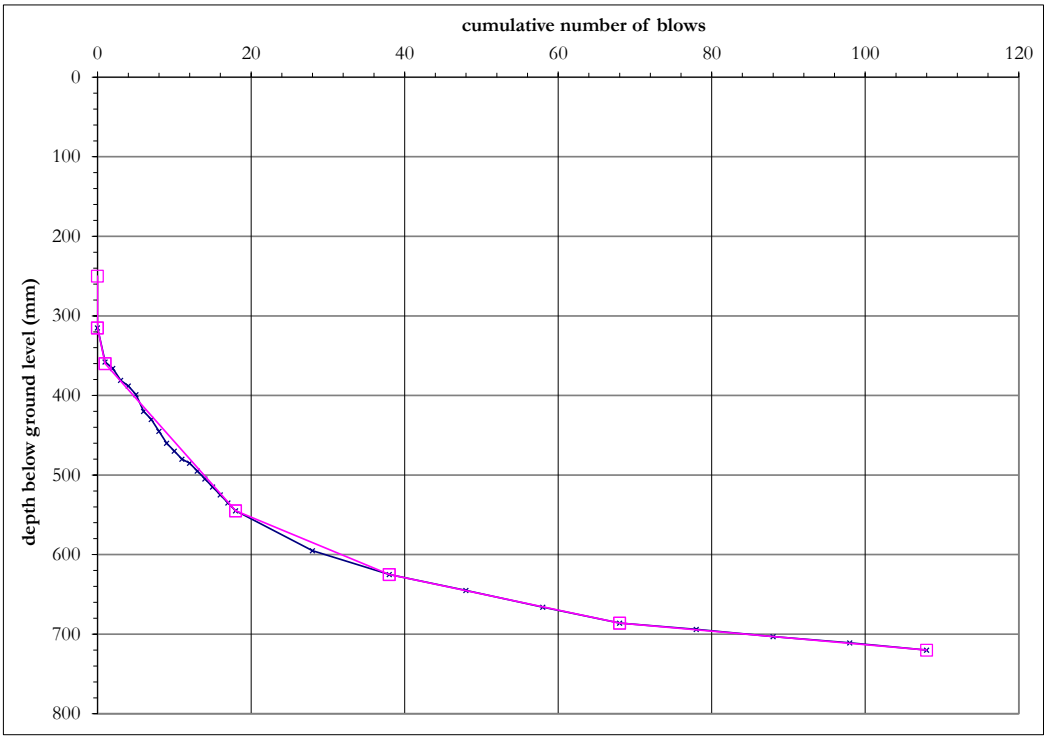
Project Number	23-0237
Project Name	Laurclavagh
Site Location	

Test Number	DCP21
Depth bgl (m)	0.25

Date Tested	15/03/2023
Weather	Wet and windy

Test conducted in accordance with Documented In-House Technical Procedure IMS TP7-4 and DMRB CS 229 Rev 0
CBR calculated using the TRRL CBR DCP relationship: log10(CBR) = 2.48 - 1.057 x log10(mm/blow) in accordance with DMRB CS 229 Rev 0

Surface preparation	**Description of surface material at test depth**
N/A	CLAY



top / base of layer (mm)	**mm/ blow**	**CBR (%)**
250	N/A	N/A
315		
315	45	5.4
360		
360	11	24
545		
545	4	70
625		
625	2	>100
686		
686	0.9	>100
720		

CBR Range	Min: 5.4 Max: >100	The self-weight penetration at the start of the test (shown above) has not been included in the minimum and maximum values shown to the left. The selection of layers is based on visual interpretation of the data. The insitu DCP reading (mm/blow) and CBR values are valid at the time of testing; variation in moisture content or other factors may affect the insitu value. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. This report should not be reproduced except in full without the written approval of the laboratory.

Deviation(s) from standard procedure	None

Observations and comments	

Approved Name and Appointment		
Darren O'Mahony Director		March 2023

UKAS TESTING 10122

Dynamic Cone Penetrometer (DCP) test results and estimated CBR

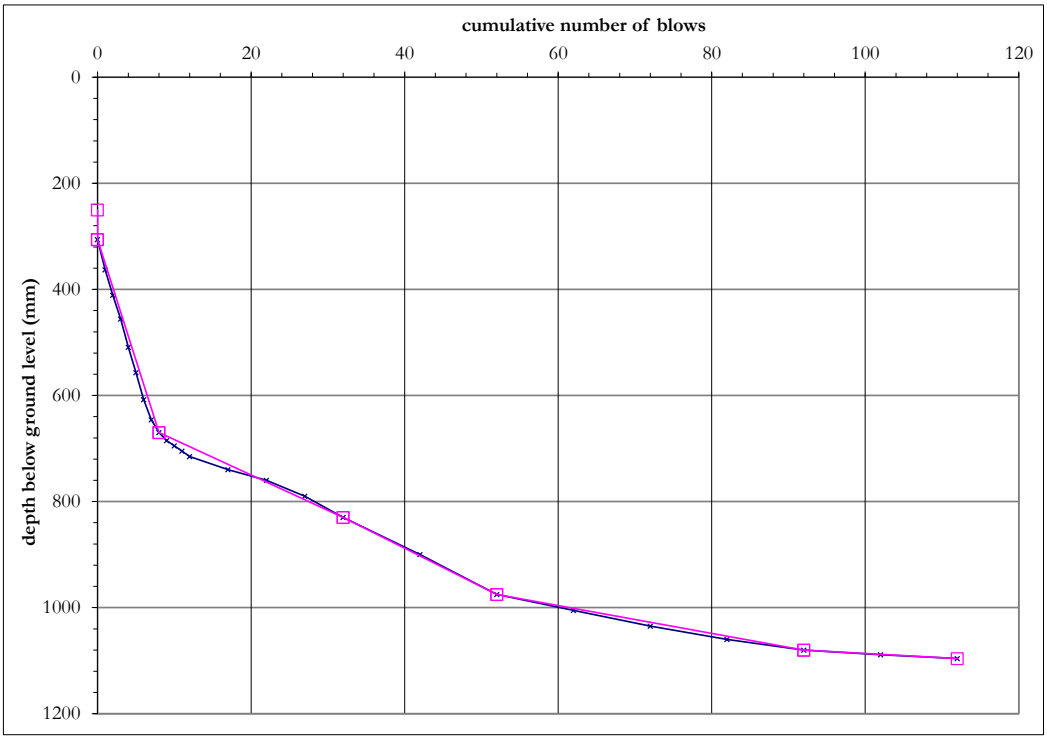
Project Number	23-0237
Project Name	Laurclavagh
Site Location	

Test Number	DCP22
Depth bgl (m)	0.25

Date Tested	15/03/2023
Weather	Wet and windy

Test conducted in accordance with Documented In-House Technical Procedure IMS TP7-4 and DMRB CS 229 Rev 0
CBR calculated using the TRRL CBR DCP relationship: log10(CBR) = 2.48 - 1.057 x log10(mm/blow) in accordance with DMRB CS 229 Rev 0

Surface preparation	Description of surface material at test depth
N/A	CLAY



top / base of layer (mm)	mm/ blow	CBR (%)
250	N/A	N/A
306		
306	46	5.3
670		
670	6.7	41
830		
830	7.3	37
975		
975	2.6	>100
1080		
1080	0.8	>100
1096		

CBR Range	Min: 5.3 Max: >100	The self-weight penetration at the start of the test (shown above) has not been included in the minimum and maximum values shown to the left. The selection of layers is based on visual interpretation of the data. The insitu DCP reading (mm/blow) and CBR values are valid at the time of testing; variation in moisture content or other factors may affect the insitu value. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. This report should not be reproduced except in full without the written approval of the laboratory.

Deviation(s) from standard procedure	None

Observations and comments	

Approved Name and Appointment		
Darren O'Mahony Director		March 2023

UKAS TESTING 10122

Dynamic Cone Penetrometer (DCP) test results and estimated CBR

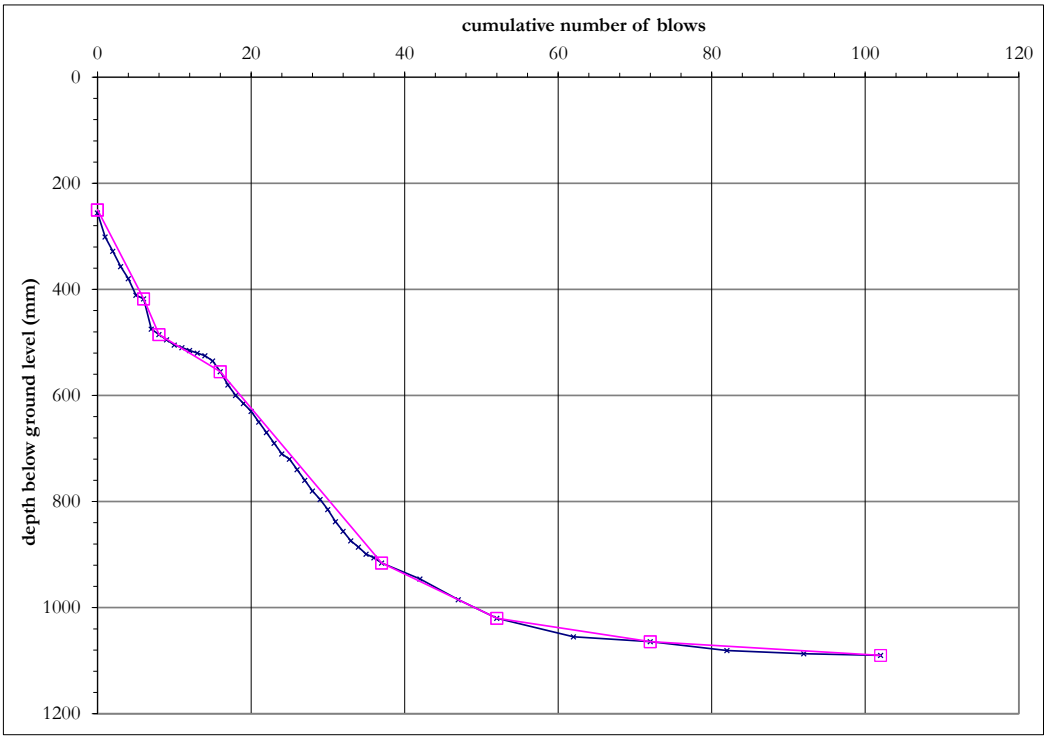
Project Number	23-0237
Project Name	Laurclavagh
Site Location	

Test Number	DCP23
Depth bgl (m)	0.25

Date Tested	15/03/2023
Weather	Wet and windy

Test conducted in accordance with Documented In-House Technical Procedure IMS TP7-4 and DMRB CS 229 Rev 0
CBR calculated using the TRRL CBR DCP relationship: log10(CBR) = 2.48 - 1.057 x log10(mm/blow) in accordance with DMRB CS 229 Rev 0

Surface preparation	Description of surface material at test depth
N/A	CLAY



top / base of layer (mm)	mm/ blow	CBR (%)
250	N/A	N/A
250		
250	28	8.9
418		
418	34	7.4
485		
485	8.8	30
555		
555	17	15
916		
916	6.9	39
1020		
1020	2.2	>100
1064		
1064	0.9	>100
1090		

CBR Range	Min: 7.4 Max: >100	The self-weight penetration at the start of the test (shown above) has not been included in the minimum and maximum values shown to the left. The selection of layers is based on visual interpretation of the data. The insitu DCP reading (mm/blow) and CBR values are valid at the time of testing; variation in moisture content or other factors may affect the insitu value. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. This report should not be reproduced except in full without the written approval of the laboratory.

Deviation(s) from standard procedure	None

Observations and comments	

Approved Name and Appointment		
Darren O'Mahony Director		March 2023

UKAS TESTING 10122

Dynamic Cone Penetrometer (DCP) test results and estimated CBR

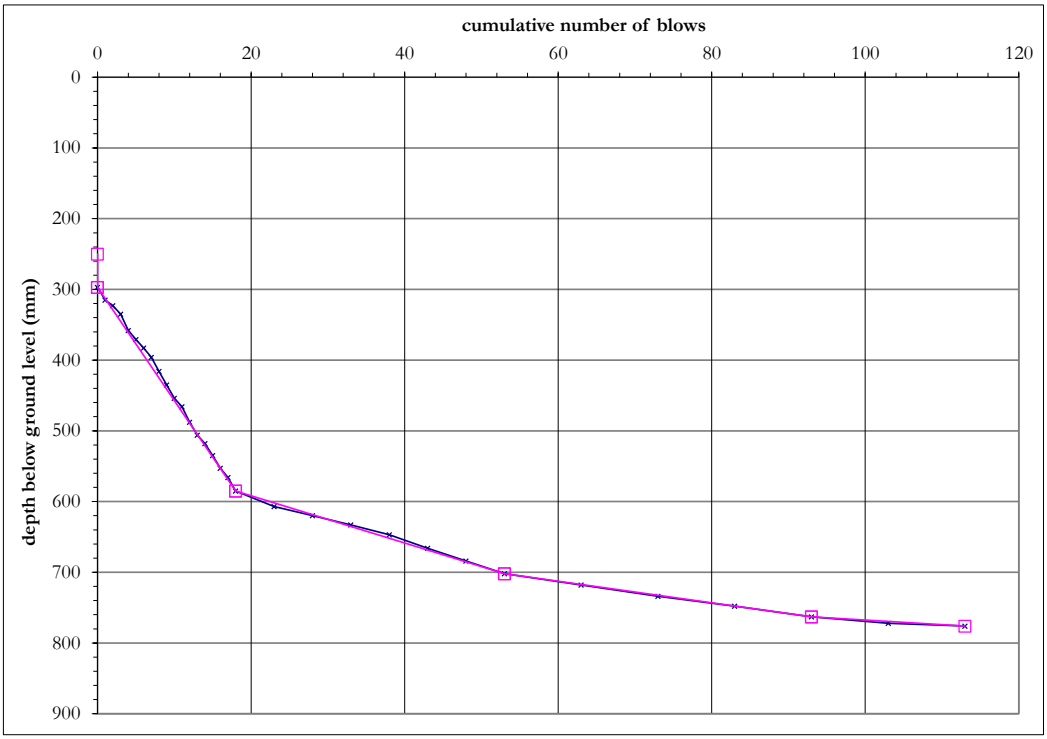
Project Number	23-0237
Project Name	Laurclavagh
Site Location	

Test Number	DCP24A
Depth bgl (m)	0.25

Date Tested	15/03/2023
Weather	Wet and windy

Test conducted in accordance with Documented In-House Technical Procedure IMS TP7-4 and DMRB CS 229 Rev 0
CBR calculated using the TRRL CBR DCP relationship: log10(CBR) = 2.48 - 1.057 x log10(mm/blow) in accordance with DMRB CS 229 Rev 0

Surface preparation	Description of surface material at test depth
N/A	CLAY



top / base of layer (mm)	mm/ blow	CBR (%)
250	N/A	N/A
297		
297	16	16
585		
585	3.3	84
702		
702	1.5	>100
763		
763	0.7	>100
776		

CBR Range	Min: 16 Max: >100	The self-weight penetration at the start of the test (shown above) has not been included in the minimum and maximum values shown to the left. The selection of layers is based on visual interpretation of the data. The insitu DCP reading (mm/blow) and CBR values are valid at the time of testing; variation in moisture content or other factors may affect the insitu value. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. This report should not be reproduced except in full without the written approval of the laboratory.

Deviation(s) from standard procedure	None

Observations and comments	

Approved Name and Appointment		
Darren O'Mahony Director		March 2023

UKAS TESTING 10122

Dynamic Cone Penetrometer (DCP) test results and estimated CBR

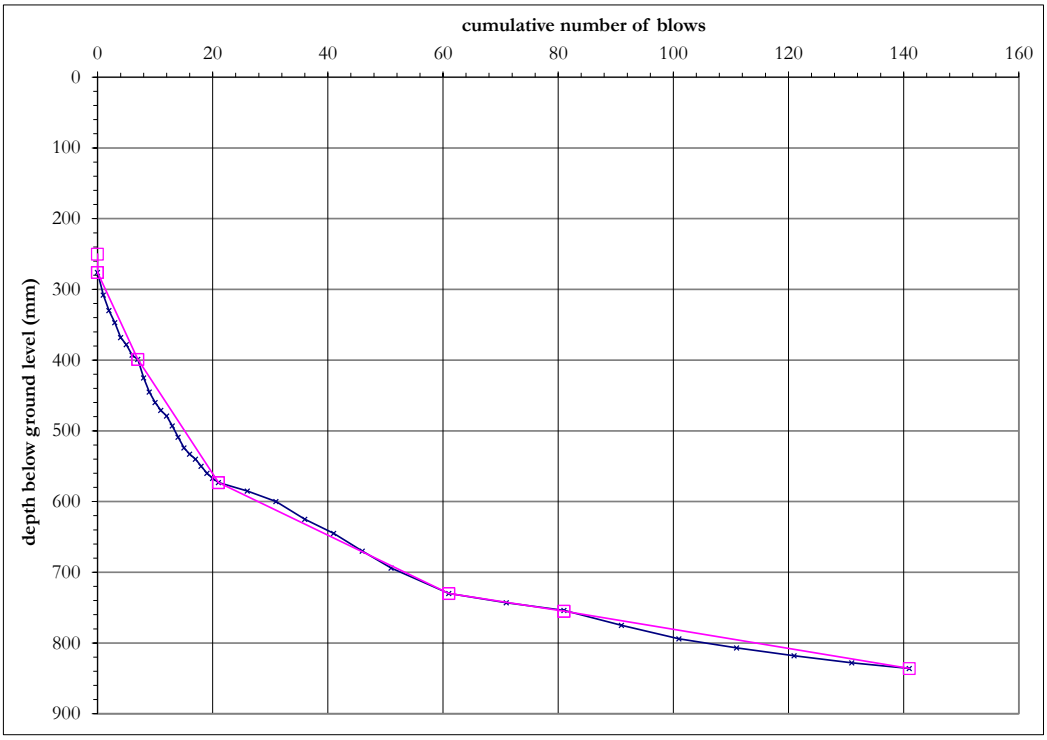
Project Number	23-0237
Project Name	Laurclavagh
Site Location	

Test Number	DCP25
Depth bgl (m)	0.25

Date Tested	15/03/2023
Weather	Wet and windy

Test conducted in accordance with Documented In-House Technical Procedure IMS TP7-4 and DMRB CS 229 Rev 0
CBR calculated using the TRRL CBR DCP relationship: log10(CBR) = 2.48 - 1.057 x log10(mm/blow) in accordance with DMRB CS 229 Rev 0

Surface preparation	Description of surface material at test depth
N/A	CLAY



top / base of layer (mm)	mm/ blow	CBR (%)
250	N/A	N/A
276		
276	18	15
399		
399	12	21
573		
573	3.9	71
730		
730	1.3	>100
755		
755	1.4	>100
836		

CBR Range	Min: 15 Max: >100	The self-weight penetration at the start of the test (shown above) has not been included in the minimum and maximum values shown to the left. The selection of layers is based on visual interpretation of the data. The insitu DCP reading (mm/blow) and CBR values are valid at the time of testing; variation in moisture content or other factors may affect the insitu value. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. This report should not be reproduced except in full without the written approval of the laboratory.

Deviation(s) from standard procedure	None

Observations and comments	

Approved Name and Appointment		
Darren O'Mahony Director		March 2023

UKAS TESTING 10122

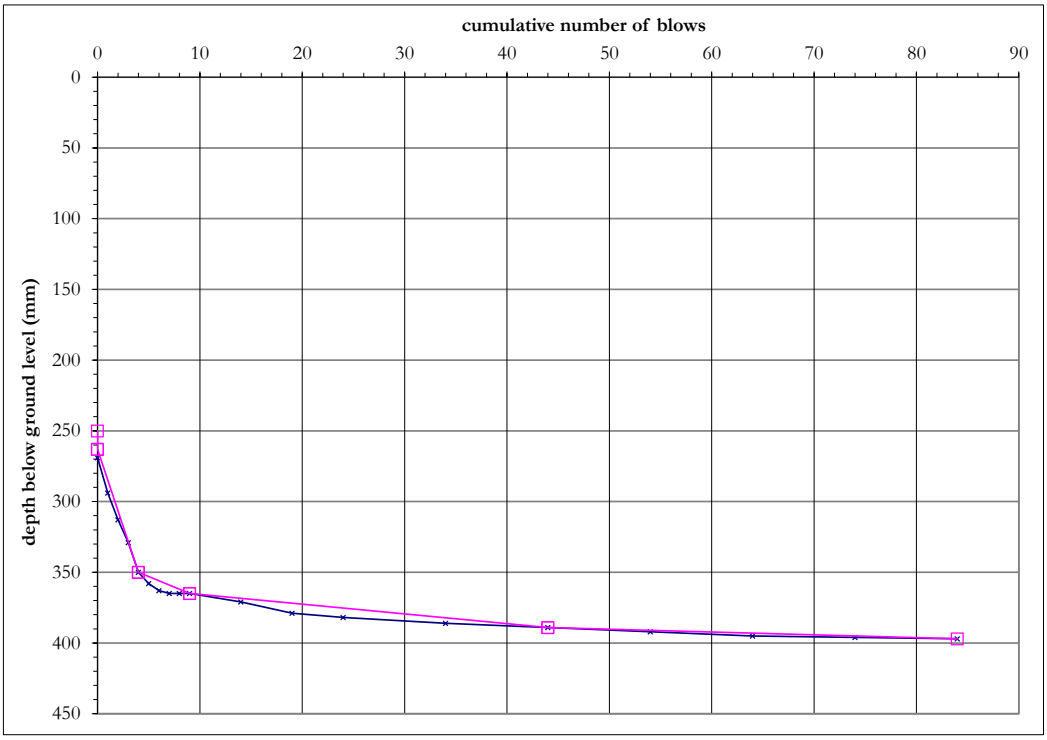
Dynamic Cone Penetrometer (DCP) test results and estimated CBR

Project Number	23-0237
Project Name	Laurclavagh
Site Location	

Test Number	DCP26	**Date Tested**	15/03/2023
Depth bgl (m)	0.25	**Weather**	Wet and windy

Test conducted in accordance with Documented In-House Technical Procedure IMS TP7-4 and DMRB CS 229 Rev 0
CBR calculated using the TRRL CBR DCP relationship: log10(CBR) = 2.48 - 1.057 x log10(mm/blow) in accordance with DMRB CS 229 Rev 0

Surface preparation	Description of surface material at test depth
N/A	CLAY



top / base of layer (mm)	mm/ blow	CBR (%)
250	N/A	N/A
263		
263	22	12
350		
350	3	95
365		
365	0.7	>100
389		
389	0.2	>100
397		

CBR Range	Min: 12 Max: >100	The self-weight penetration at the start of the test (shown above) has not been included in the minimum and maximum values shown to the left. The selection of layers is based on visual interpretation of the data. The insitu DCP reading (mm/blow) and CBR values are valid at the time of testing; variation in moisture content or other factors may affect the insitu value. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. This report should not be reproduced except in full without the written approval of the laboratory.

Deviation(s) from standard procedure	None

Observations and comments	

Approved Name and Appointment		
Darren O'Mahony Director		March 2023

UKAS TESTING 10122

Dynamic Cone Penetrometer (DCP) test results and estimated CBR

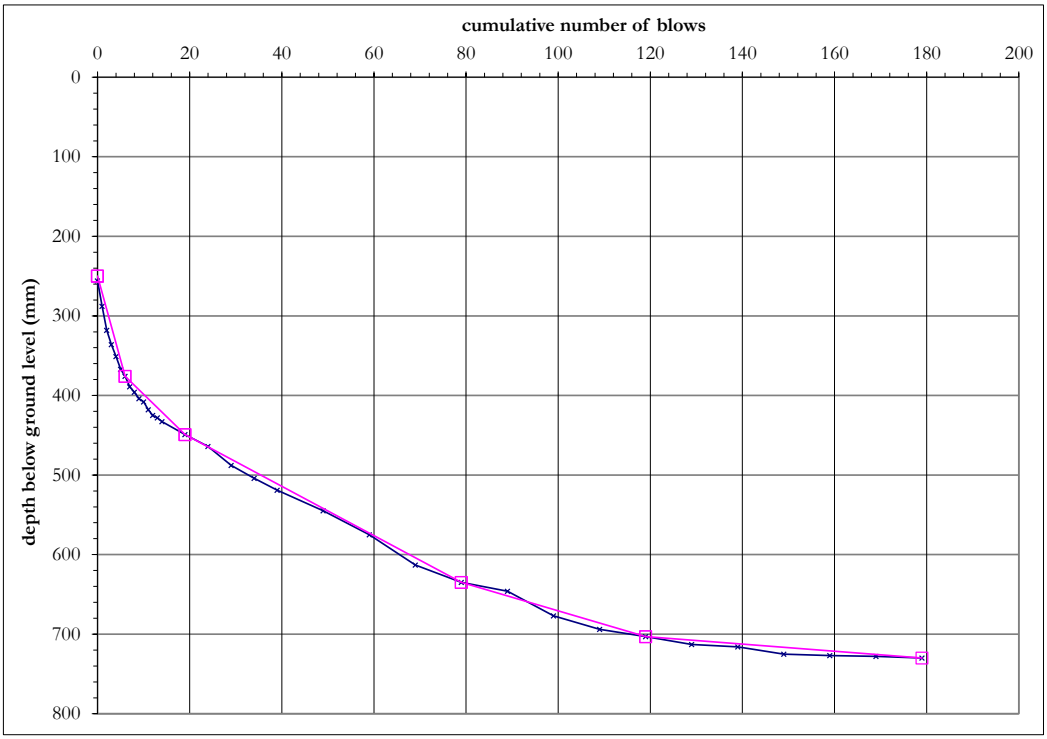
Project Number	23-0237
Project Name	Laurclavagh
Site Location	

Test Number	DCP26A
Depth bgl (m)	0.25

Date Tested	15/03/2023
Weather	Wet and windy

Test conducted in accordance with Documented In-House Technical Procedure IMS TP7-4 and DMRB CS 229 Rev 0
CBR calculated using the TRRL CBR DCP relationship: log10(CBR) = 2.48 - 1.057 x log10(mm/blow) in accordance with DMRB CS 229 Rev 0

Surface preparation	Description of surface material at test depth
N/A	CLAY



top / base of layer (mm)	mm/ blow	CBR (%)
250	N/A	N/A
250		
250	21	12
376		
376	5.6	49
449		
449	3.1	91
635		
635	1.7	>100
703		
703	0.5	>100
730		

CBR Range	Min: 12 Max: >100	The self-weight penetration at the start of the test (shown above) has not been included in the minimum and maximum values shown to the left. The selection of layers is based on visual interpretation of the data. The insitu DCP reading (mm/blow) and CBR values are valid at the time of testing; variation in moisture content or other factors may affect the insitu value. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. This report should not be reproduced except in full without the written approval of the laboratory.

Deviation(s) from standard procedure	None

Observations and comments	

Approved Name and Appointment		
Darren O'Mahony Director		March 2023

UKAS TESTING 10122

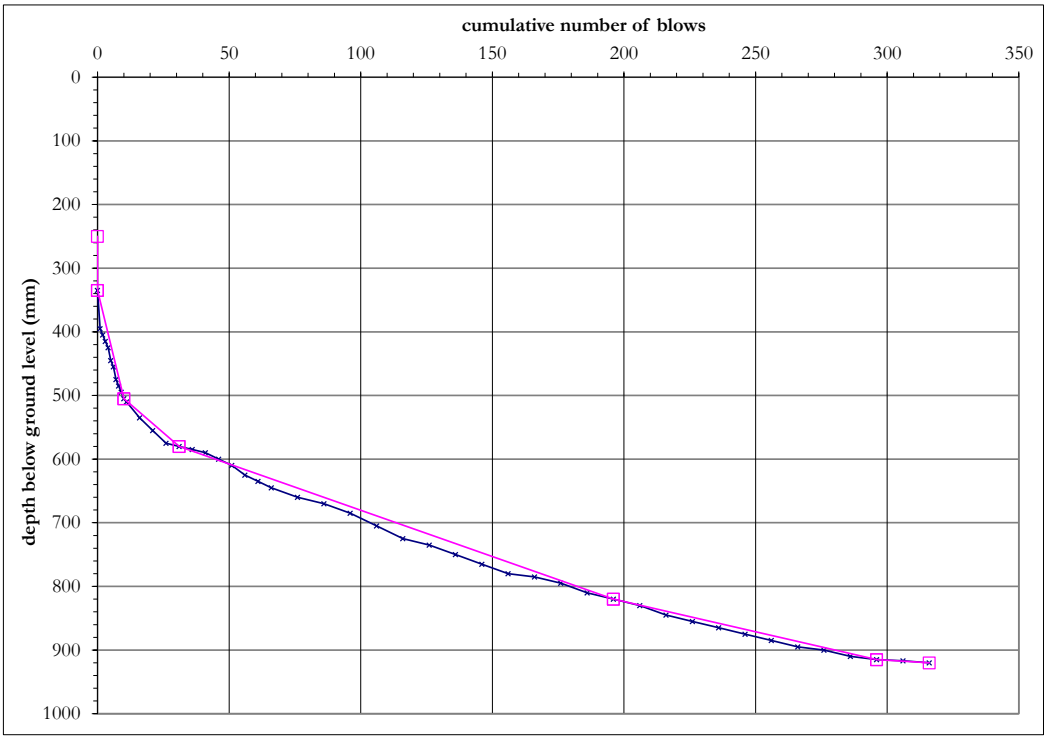
Dynamic Cone Penetrometer (DCP) test results and estimated CBR

Project Number	23-0237
Project Name	Laurclavagh
Site Location	

Test Number	DCP27	**Date Tested**	15/03/2023
Depth bgl (m)	0.25	**Weather**	Wet

Test conducted in accordance with Documented In-House Technical Procedure IMS TP7-4 and DMRB CS 229 Rev 0
CBR calculated using the TRRL CBR DCP relationship: log10(CBR) = 2.48 - 1.057 x log10(mm/blow) in accordance with DMRB CS 229 Rev 0

Surface preparation	Description of surface material at test depth
N/A	CLAY



top / base of layer (mm)	mm/ blow	CBR (%)
250	N/A	N/A
335		
335	17	15
505		
505	3.6	79
580		
580	1.5	>100
820		
820	1	>100
915		
915	0.3	>100
920		

CBR Range	Min: 15 Max: >100	The self-weight penetration at the start of the test (shown above) has not been included in the minimum and maximum values shown to the left. The selection of layers is based on visual interpretation of the data. The insitu DCP reading (mm/blow) and CBR values are valid at the time of testing; variation in moisture content or other factors may affect the insitu value. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. This report should not be reproduced except in full without the written approval of the laboratory.

Deviation(s) from standard procedure	None

Observations and comments	

Approved Name and Appointment		
Darren O'Mahony Director		March 2023

UKAS TESTING 10122

Dynamic Cone Penetrometer (DCP) test results and estimated CBR

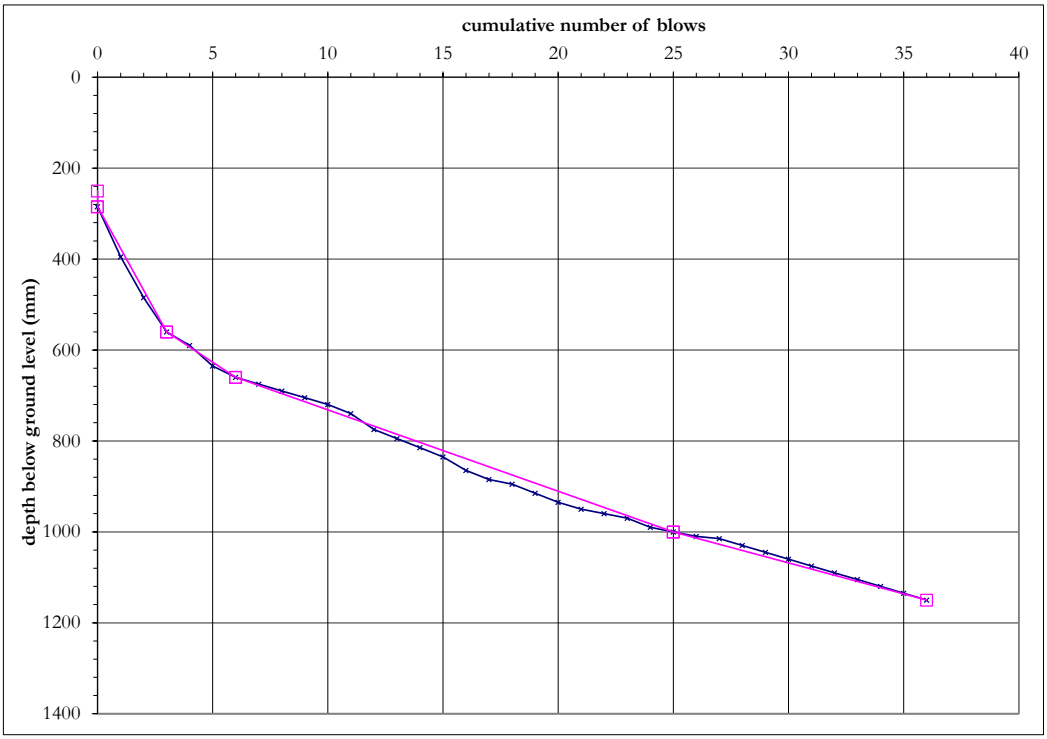
Project Number	23-0237
Project Name	Laurclavagh
Site Location	

Test Number	DCP28
Depth bgl (m)	0.25

Date Tested	15/03/2023
Weather	Wet

Test conducted in accordance with Documented In-House Technical Procedure IMS TP7-4 and DMRB CS 229 Rev 0
CBR calculated using the TRRL CBR DCP relationship: log10(CBR) = 2.48 - 1.057 x log10(mm/blow) in accordance with DMRB CS 229 Rev 0

Surface preparation	Description of surface material at test depth
N/A	CLAY



top / base of layer (mm)	mm/ blow	CBR (%)
250	N/A	N/A
285		
285	92	2.5
560		
560	33	7.4
660		
660	18	14
1000		
1000	14	19
1150		

CBR Range	Min: 2.5 Max: 19	The self-weight penetration at the start of the test (shown above) has not been included in the minimum and maximum values shown to the left. The selection of layers is based on visual interpretation of the data. The insitu DCP reading (mm/blow) and CBR values are valid at the time of testing; variation in moisture content or other factors may affect the insitu value. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. This report should not be reproduced except in full without the written approval of the laboratory.

Deviation(s) from standard procedure	None

Observations and comments	

Approved Name and Appointment		
Darren O'Mahony Director		March 2023

UKAS TESTING 10122

Dynamic Cone Penetrometer (DCP) test results and estimated CBR

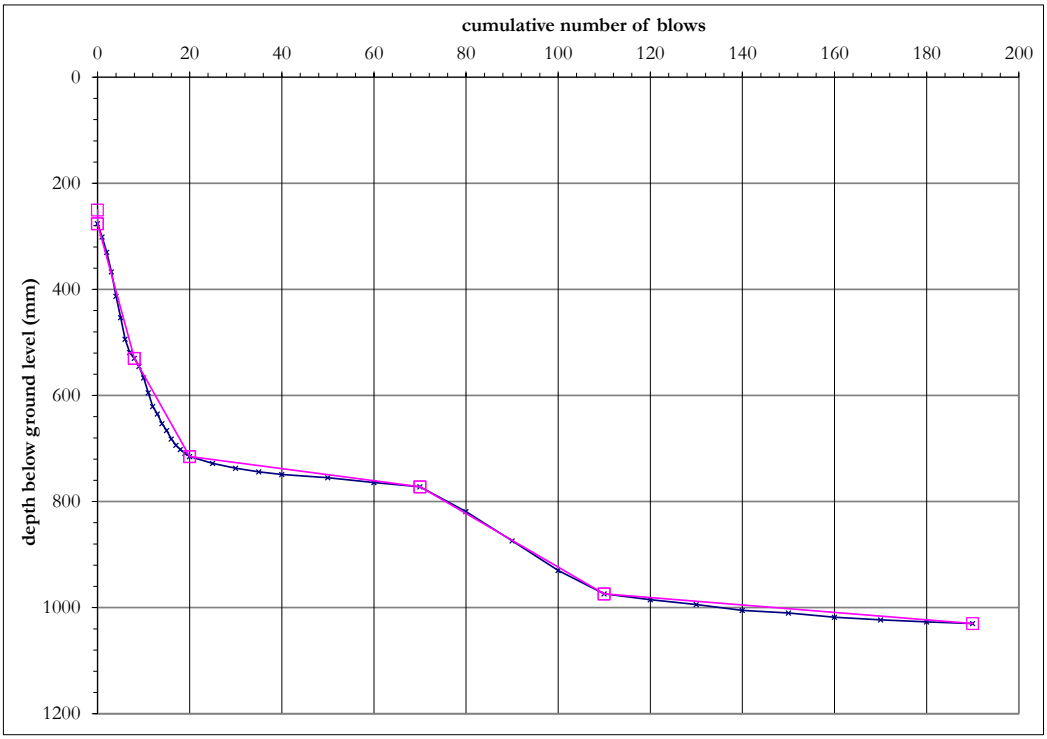
Project Number	23-0237
Project Name	Laurclavagh
Site Location	

Test Number	DCP29
Depth bgl (m)	0.25

Date Tested	15/03/2023
Weather	Wet

Test conducted in accordance with Documented In-House Technical Procedure IMS TP7-4 and DMRB CS 229 Rev 0
CBR calculated using the TRRL CBR DCP relationship: log10(CBR) = 2.48 - 1.057 x log10(mm/blow) in accordance with DMRB CS 229 Rev 0

Surface preparation	Description of surface material at test depth
N/A	CLAY



top / base of layer (mm)	mm/ blow	CBR (%)
250	N/A	N/A
276		
276	32	7.8
530		
530	15	17
715		
715	1.1	>100
772		
772	5.1	55
974		
974	0.7	>100
1030		

CBR Range	Min: 7.8 Max: >100	The self-weight penetration at the start of the test (shown above) has not been included in the minimum and maximum values shown to the left. The selection of layers is based on visual interpretation of the data. The insitu DCP reading (mm/blow) and CBR values are valid at the time of testing; variation in moisture content or other factors may affect the insitu value. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. This report should not be reproduced except in full without the written approval of the laboratory.

Deviation(s) from standard procedure	None

Observations and comments	

Approved Name and Appointment		
Darren O'Mahony Director		March 2023

UKAS TESTING 10122

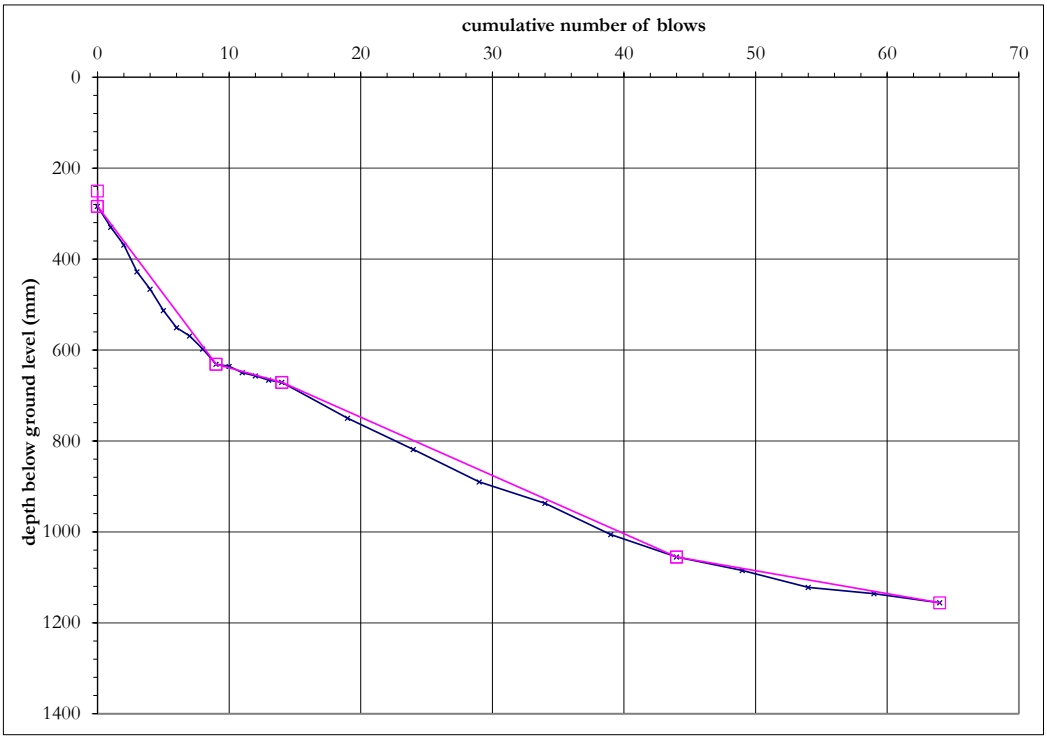
Dynamic Cone Penetrometer (DCP) test results and estimated CBR

Project Number	23-0237
Project Name	Laurclavagh
Site Location	

Test Number	DCP30	**Date Tested**	15/03/2023
Depth bgl (m)	0.25	**Weather**	Wet

Test conducted in accordance with Documented In-House Technical Procedure IMS TP7-4 and DMRB CS 229 Rev 0
CBR calculated using the TRRL CBR DCP relationship: log10(CBR) = 2.48 - 1.057 x log10(mm/blow) in accordance with DMRB CS 229 Rev 0

Surface preparation	Description of surface material at test depth
N/A	CLAY



top / base of layer (mm)	mm/ blow	CBR (%)
250	N/A	N/A
284		
284	39	6.4
631		
631	8	34
671		
671	13	20
1055		
1055	5.1	55
1156		

CBR Range	Min: 6.4 Max: 55	The self-weight penetration at the start of the test (shown above) has not been included in the minimum and maximum values shown to the left. The selection of layers is based on visual interpretation of the data. The insitu DCP reading (mm/blow) and CBR values are valid at the time of testing; variation in moisture content or other factors may affect the insitu value. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. This report should not be reproduced except in full without the written approval of the laboratory.

Deviation(s) from standard procedure	None

Observations and comments	

Approved Name and Appointment		
Darren O'Mahony Director		March 2023

UKAS TESTING 10122

Dynamic Cone Penetrometer (DCP) test results and estimated CBR

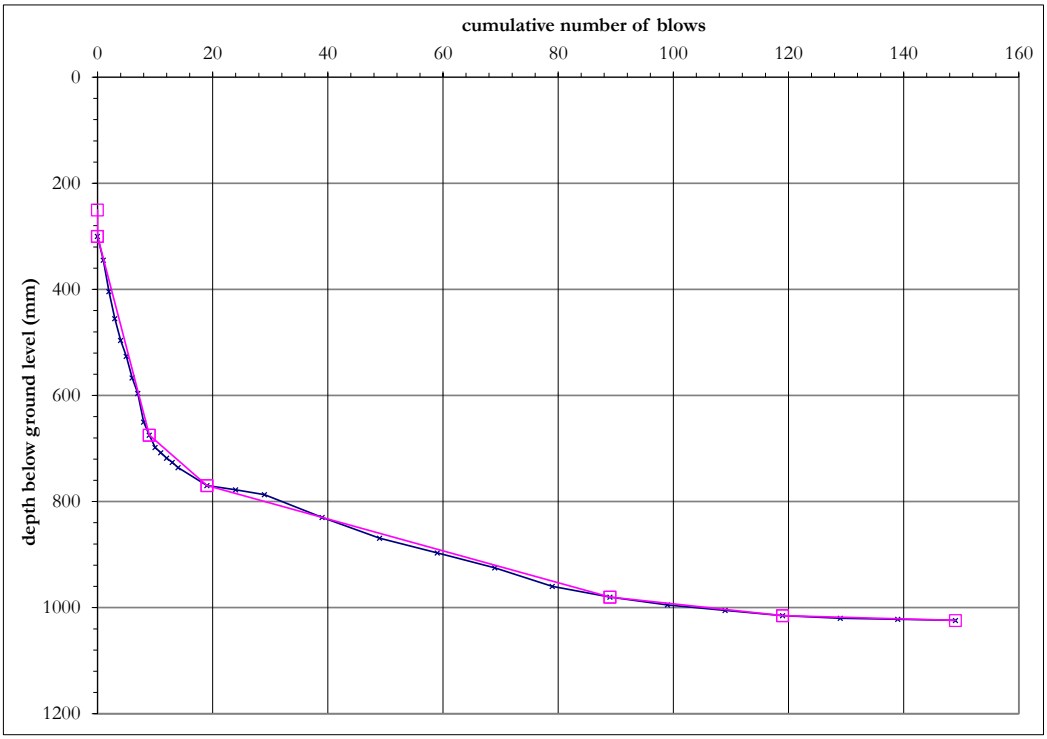
Project Number	23-0237
Project Name	Laurclavagh
Site Location	

Test Number	DCP31
Depth bgl (m)	0.25

Date Tested	15/03/2023
Weather	Wet

Test conducted in accordance with Documented In-House Technical Procedure IMS TP7-4 and DMRB CS 229 Rev 0
CBR calculated using the TRRL CBR DCP relationship: log10(CBR) = 2.48 - 1.057 x log10(mm/blow) in accordance with DMRB CS 229 Rev 0

Surface preparation	Description of surface material at test depth
N/A	CLAY



top / base of layer (mm)	mm/ blow	CBR (%)
250	N/A	N/A
300		
300	42	5.9
675		
675	9.5	28
770		
770	3	95
980		
980	1.2	>100
1015		
1015	0.3	>100
1024		

CBR Range	Min: 5.9 Max: >100	The self-weight penetration at the start of the test (shown above) has not been included in the minimum and maximum values shown to the left. The selection of layers is based on visual interpretation of the data. The insitu DCP reading (mm/blow) and CBR values are valid at the time of testing; variation in moisture content or other factors may affect the insitu value. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. This report should not be reproduced except in full without the written approval of the laboratory.

Deviation(s) from standard procedure	None

Observations and comments	

Approved Name and Appointment		
Darren O'Mahony Director		March 2023

UKAS TESTING 10122

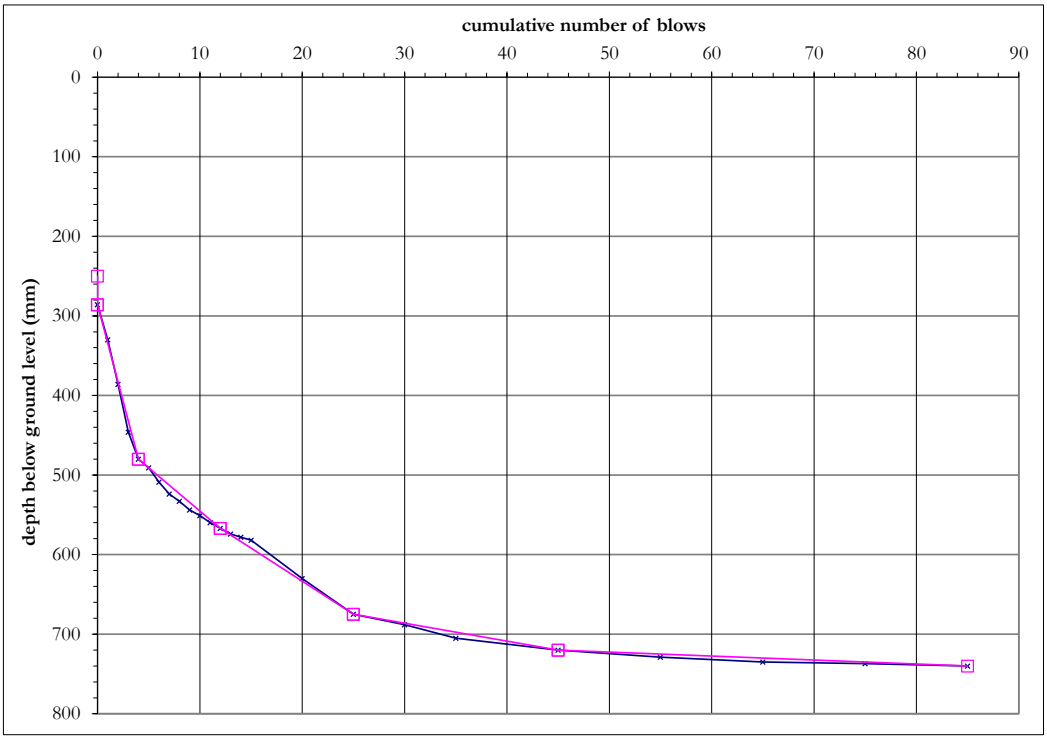
Dynamic Cone Penetrometer (DCP) test results and estimated CBR

Project Number	23-0237
Project Name	Laurclavagh
Site Location	

Test Number	DCP32	**Date Tested**	15/03/2023
Depth bgl (m)	0.25	**Weather**	Wet

Test conducted in accordance with Documented In-House Technical Procedure IMS TP7-4 and DMRB CS 229 Rev 0
CBR calculated using the TRRL CBR DCP relationship: log10(CBR) = 2.48 - 1.057 x log10(mm/blow) in accordance with DMRB CS 229 Rev 0

Surface preparation	Description of surface material at test depth
N/A	CLAY



top / base of layer (mm)	mm/ blow	CBR (%)
250	N/A	N/A
286		
286	49	5
480		
480	11	24
567		
567	8.3	32
675		
675	2.3	>100
720		
720	0.5	>100
740		

CBR Range	Min: 5 Max: >100	The self-weight penetration at the start of the test (shown above) has not been included in the minimum and maximum values shown to the left. The selection of layers is based on visual interpretation of the data. The insitu DCP reading (mm/blow) and CBR values are valid at the time of testing; variation in moisture content or other factors may affect the insitu value. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. This report should not be reproduced except in full without the written approval of the laboratory.

Deviation(s) from standard procedure	None

Observations and comments	

Approved Name and Appointment		
Darren O'Mahony Director		March 2023

UKAS TESTING 10122

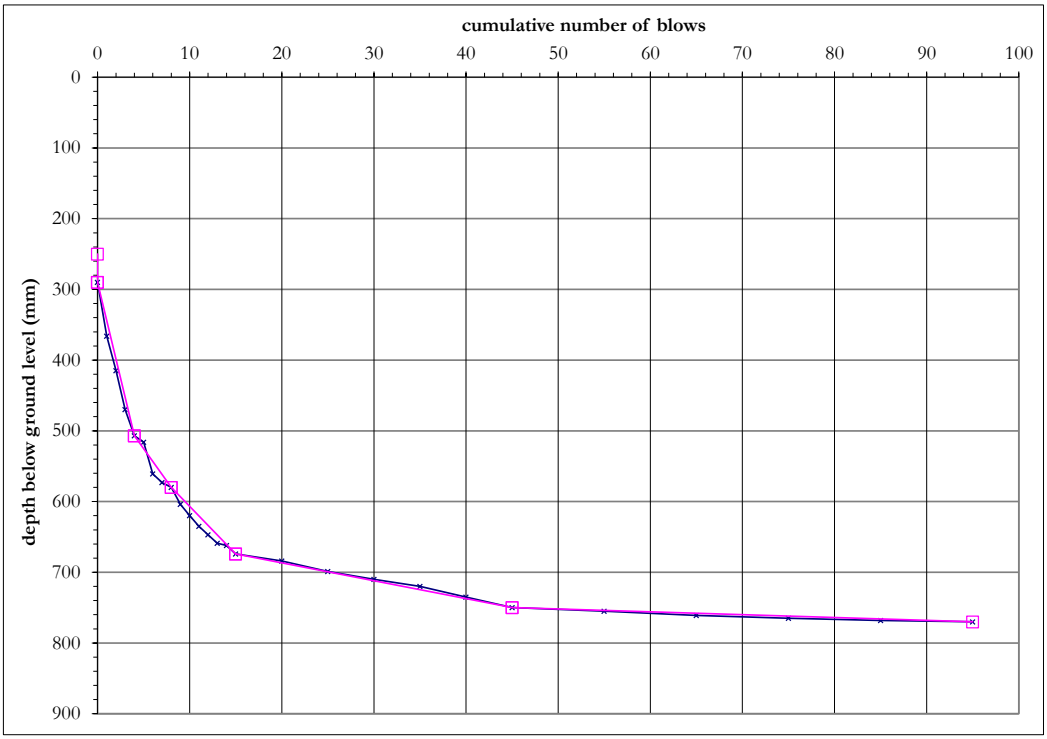
Dynamic Cone Penetrometer (DCP) test results and estimated CBR

Project Number	23-0237
Project Name	Laurclavagh
Site Location	

Test Number	DCP32A	**Date Tested**	15/03/2023
Depth bgl (m)	0.25	**Weather**	Wet

Test conducted in accordance with Documented In-House Technical Procedure IMS TP7-4 and DMRB CS 229 Rev 0
CBR calculated using the TRRL CBR DCP relationship: log10(CBR) = 2.48 - 1.057 x log10(mm/blow) in accordance with DMRB CS 229 Rev 0

Surface preparation	Description of surface material at test depth
N/A	CLAY



top / base of layer (mm)	mm/ blow	CBR (%)
250	N/A	N/A
290		
290	54	4.4
507		
507	18	14
580		
580	13	19
674		
674	2.5	>100
750		
750	0.4	>100
770		

CBR Range	Min: 4.4 Max: >100	The self-weight penetration at the start of the test (shown above) has not been included in the minimum and maximum values shown to the left. The selection of layers is based on visual interpretation of the data. The insitu DCP reading (mm/blow) and CBR values are valid at the time of testing; variation in moisture content or other factors may affect the insitu value. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. This report should not be reproduced except in full without the written approval of the laboratory.

Deviation(s) from standard procedure	None

Observations and comments	

Approved Name and Appointment		
Darren O'Mahony Director		March 2023

UKAS TESTING 10122

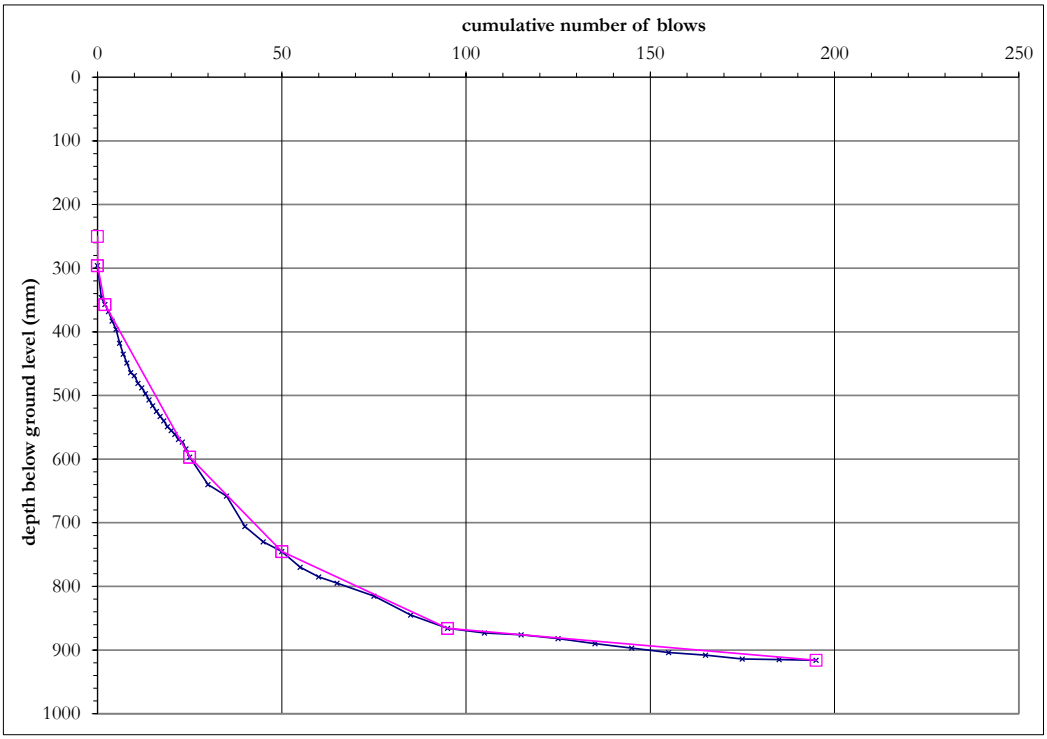
Dynamic Cone Penetrometer (DCP) test results and estimated CBR

Project Number	23-0237
Project Name	Laurclavagh
Site Location	

Test Number	DCP33	**Date Tested**	15/03/2023
Depth bgl (m)	0.25	**Weather**	Wet

Test conducted in accordance with Documented In-House Technical Procedure IMS TP7-4 and DMRB CS 229 Rev 0
CBR calculated using the TRRL CBR DCP relationship: log10(CBR) = 2.48 - 1.057 x log10(mm/blow) in accordance with DMRB CS 229 Rev 0

Surface preparation	Description of surface material at test depth
N/A	CLAY



top / base of layer (mm)	mm/ blow	CBR (%)
250	N/A	N/A
296		
296	31	8.1
357		
357	10	25
597		
597	5.9	46
745		
745	2.7	>100
866		
866	0.5	>100
916		

CBR Range	Min: 8.1 Max: >100	The self-weight penetration at the start of the test (shown above) has not been included in the minimum and maximum values shown to the left. The selection of layers is based on visual interpretation of the data. The insitu DCP reading (mm/blow) and CBR values are valid at the time of testing; variation in moisture content or other factors may affect the insitu value. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. This report should not be reproduced except in full without the written approval of the laboratory.

Deviation(s) from standard procedure	None

Observations and comments	

Approved Name and Appointment		
Darren O'Mahony Director		March 2023

UKAS TESTING 10122

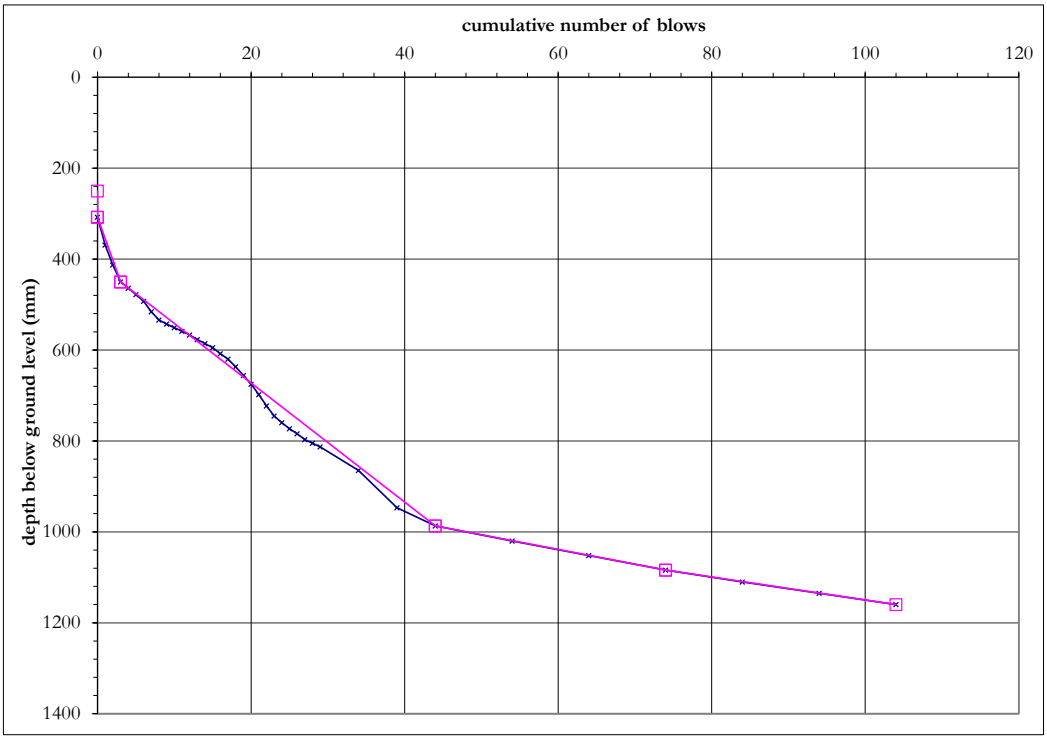
Dynamic Cone Penetrometer (DCP) test results and estimated CBR

Project Number	23-0237
Project Name	Laurclavagh
Site Location	

Test Number	DCP34	**Date Tested**	15/03/2023
Depth bgl (m)	0.25	**Weather**	Wet

Test conducted in accordance with Documented In-House Technical Procedure IMS TP7-4 and DMRB CS 229 Rev 0
CBR calculated using the TRRL CBR DCP relationship: log10(CBR) = 2.48 - 1.057 x log10(mm/blow) in accordance with DMRB CS 229 Rev 0

Surface preparation	Description of surface material at test depth
N/A	CLAY



top / base of layer (mm)	mm/ blow	CBR (%)
250	N/A	N/A
308		
308	47	5.1
450		
450	13	20
987		
987	3.2	87
1084		
1084	2.5	>100
1160		

CBR Range	Min: 5.1 Max: >100	The self-weight penetration at the start of the test (shown above) has not been included in the minimum and maximum values shown to the left. The selection of layers is based on visual interpretation of the data. The insitu DCP reading (mm/blow) and CBR values are valid at the time of testing; variation in moisture content or other factors may affect the insitu value. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. This report should not be reproduced except in full without the written approval of the laboratory.

Deviation(s) from standard procedure	None

Observations and comments	

Approved Name and Appointment		
Darren O'Mahony Director		March 2023

UKAS TESTING 10122

Dynamic Cone Penetrometer (DCP) test results and estimated CBR

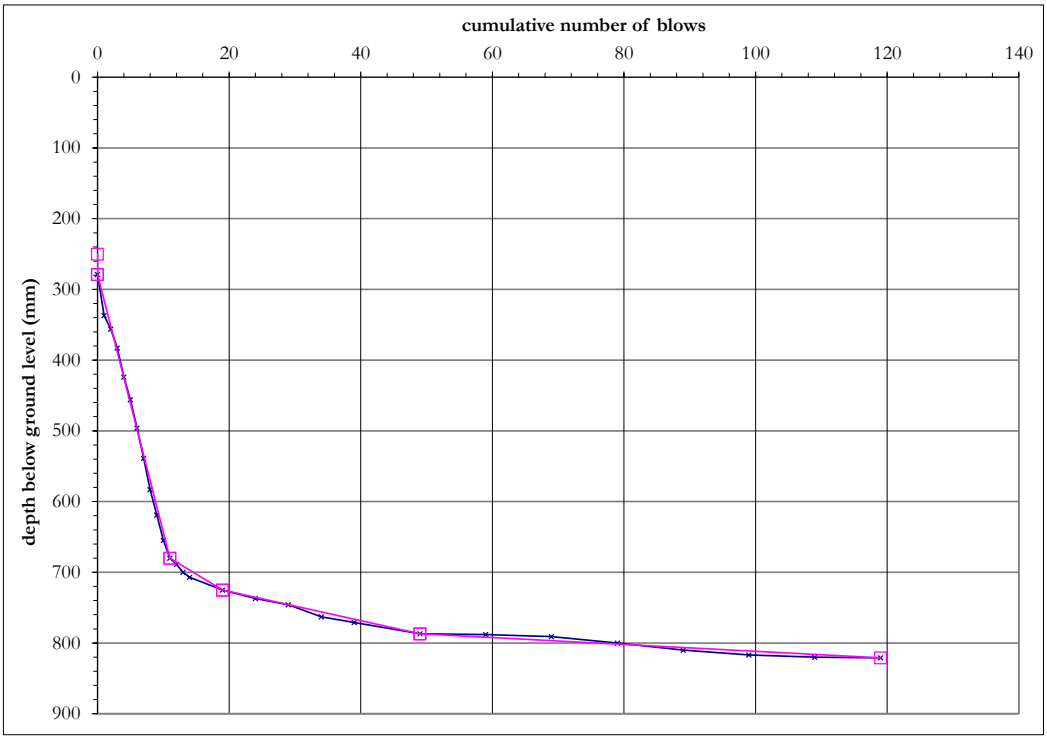
Project Number	23-0237
Project Name	Laurclavagh
Site Location	

Test Number	DCP35
Depth bgl (m)	0.25

Date Tested	15/03/2023
Weather	Wet

Test conducted in accordance with Documented In-House Technical Procedure IMS TP7-4 and DMRB CS 229 Rev 0
CBR calculated using the TRRL CBR DCP relationship: log10(CBR) = 2.48 - 1.057 x log10(mm/blow) in accordance with DMRB CS 229 Rev 0

Surface preparation	Description of surface material at test depth
N/A	CLAY



top / base of layer (mm)	mm/ blow	CBR (%)
250	N/A	N/A
279		
279	36	6.7
680		
680	5.6	49
725		
725	2.1	>100
787		
787	0.5	>100
821		

CBR Range	Min: 6.7 Max: >100	The self-weight penetration at the start of the test (shown above) has not been included in the minimum and maximum values shown to the left. The selection of layers is based on visual interpretation of the data. The insitu DCP reading (mm/blow) and CBR values are valid at the time of testing; variation in moisture content or other factors may affect the insitu value. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. This report should not be reproduced except in full without the written approval of the laboratory.

Deviation(s) from standard procedure	None

Observations and comments	

Approved Name and Appointment		
Darren O'Mahony Director		March 2023

UKAS TESTING 10122

Dynamic Cone Penetrometer (DCP) test results and estimated CBR

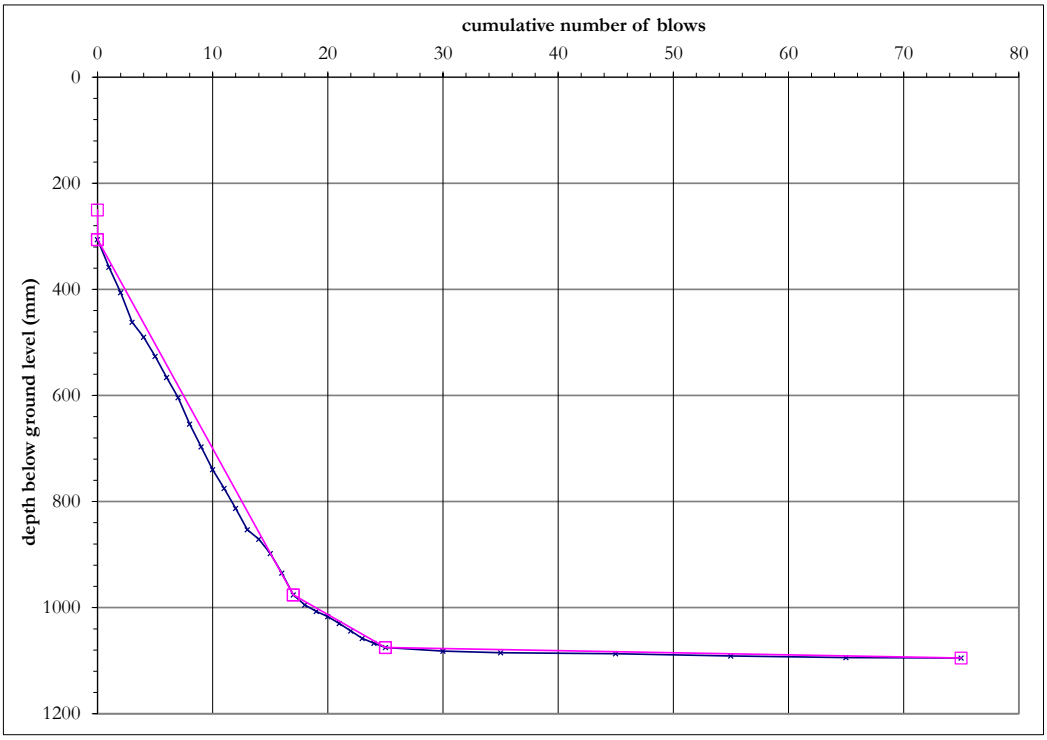
Project Number	23-0237
Project Name	Laurclavagh
Site Location	

Test Number	DCP36
Depth bgl (m)	0.25

Date Tested	15/03/2023
Weather	Wet

Test conducted in accordance with Documented In-House Technical Procedure IMS TP7-4 and DMRB CS 229 Rev 0
CBR calculated using the TRRL CBR DCP relationship: log10(CBR) = 2.48 - 1.057 x log10(mm/blow) in accordance with DMRB CS 229 Rev 0

Surface preparation	Description of surface material at test depth
N/A	CLAY



top / base of layer (mm)	mm/ blow	CBR (%)
250	N/A	N/A
306		
306	39	6.2
976		
976	12	21
1075		
1075	0.4	>100
1095		

CBR Range	Min: 6.2 Max: >100	The self-weight penetration at the start of the test (shown above) has not been included in the minimum and maximum values shown to the left. The selection of layers is based on visual interpretation of the data. The insitu DCP reading (mm/blow) and CBR values are valid at the time of testing; variation in moisture content or other factors may affect the insitu value. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. This report should not be reproduced except in full without the written approval of the laboratory.

Deviation(s) from standard procedure	None

Observations and comments	

Approved Name and Appointment		
Darren O'Mahony Director		March 2023

UKAS TESTING 10122

Dynamic Cone Penetrometer (DCP) test results and estimated CBR

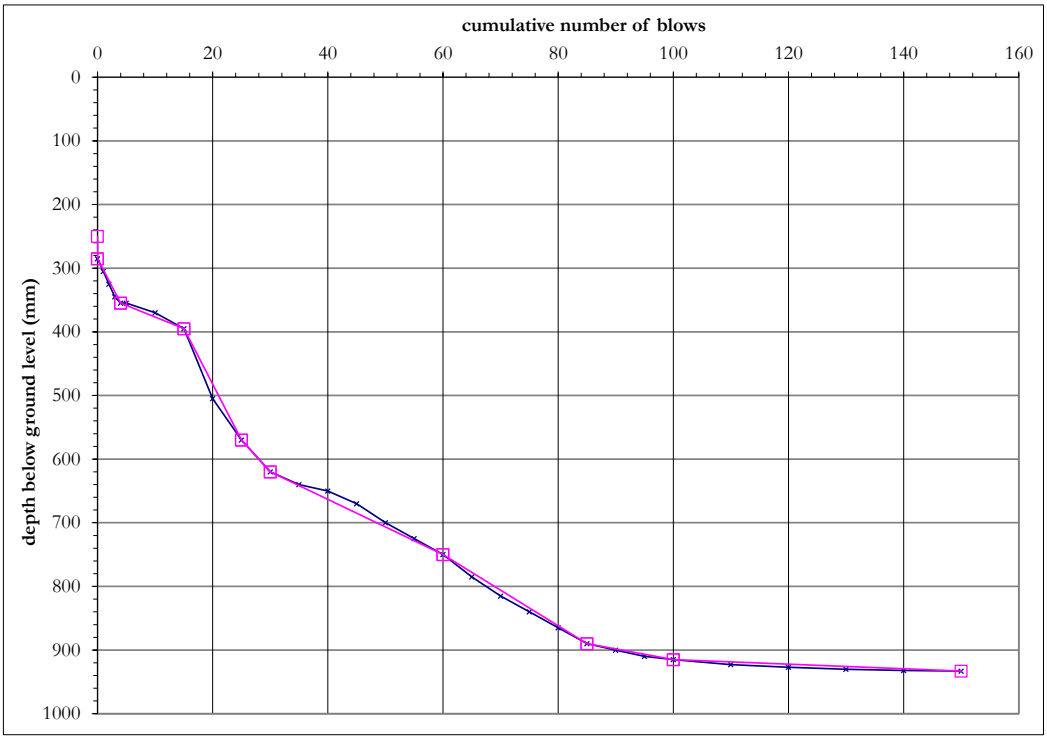
Project Number	23-0237
Project Name	Laurclavagh
Site Location	

Test Number	DCP37
Depth bgl (m)	0.25

Date Tested	16/03/2023
Weather	Wet

Test conducted in accordance with Documented In-House Technical Procedure IMS TP7-4 and DMRB CS 229 Rev 0
CBR calculated using the TRRL CBR DCP relationship: log10(CBR) = 2.48 - 1.057 x log10(mm/blow) in accordance with DMRB CS 229 Rev 0

Surface preparation	Description of surface material at test depth
N/A	CLAY



top / base of layer (mm)	mm/ blow	CBR (%)
250	N/A	N/A
285		
285	18	15
355		
355	3.6	77
395		
395	18	15
570		
570	10	26
620		
620	4.3	64
750		
750	5.6	49
890		
890	1.7	>100
915		
915	0.4	>100
933		

CBR Range	Min: 15 Max: >100	The self-weight penetration at the start of the test (shown above) has not been included in the minimum and maximum values shown to the left. The selection of layers is based on visual interpretation of the data. The insitu DCP reading (mm/blow) and CBR values are valid at the time of testing; variation in moisture content or other factors may affect the insitu value. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. This report should not be reproduced except in full without the written approval of the laboratory.

Deviation(s) from standard procedure	None

Observations and comments	

Approved Name and Appointment		
Darren O'Mahony Director		March 2023

UKAS TESTING 10122

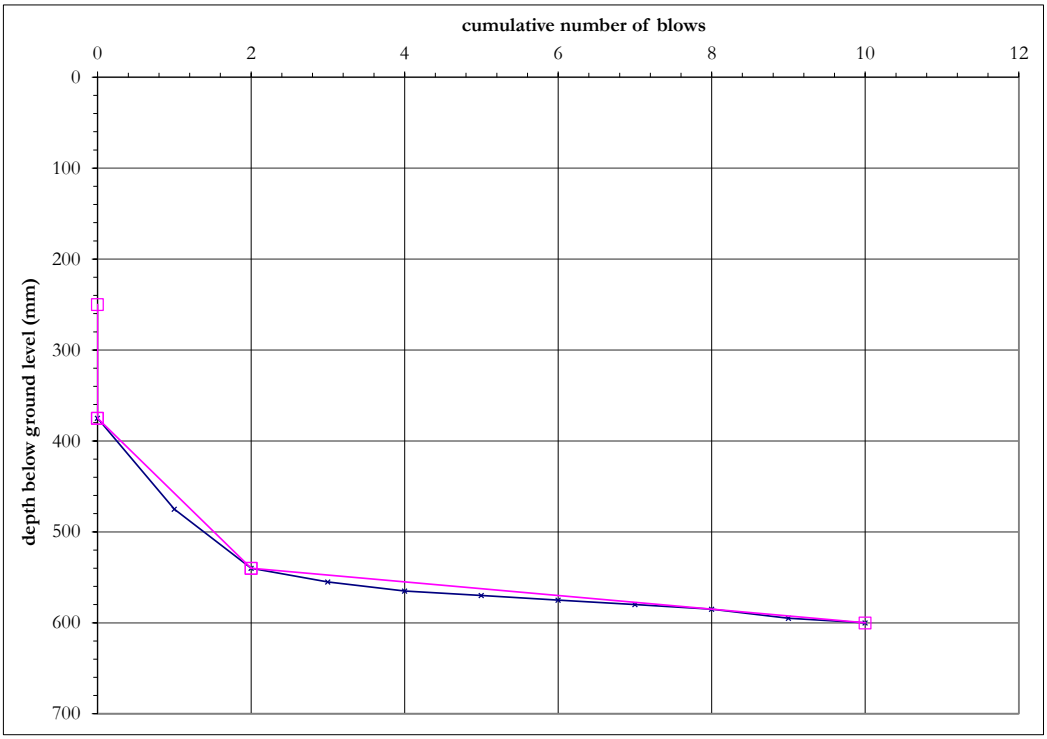
Dynamic Cone Penetrometer (DCP) test results and estimated CBR

Project Number	23-0237
Project Name	Laurclavagh
Site Location	

Test Number	DCP38	**Date Tested**	16/03/2023
Depth bgl (m)	0.25	**Weather**	Wet

Test conducted in accordance with Documented In-House Technical Procedure IMS TP7-4 and DMRB CS 229 Rev 0
CBR calculated using the TRRL CBR DCP relationship: log10(CBR) = 2.48 - 1.057 x log10(mm/blow) in accordance with DMRB CS 229 Rev 0

Surface preparation	Description of surface material at test depth
N/A	CLAY



top / base of layer (mm)	mm/ blow	CBR (%)
250	N/A	N/A
375		
375	83	2.8
540		
540	7.5	36
600		

CBR Range	Min: 2.8 Max: 36	The self-weight penetration at the start of the test (shown above) has not been included in the minimum and maximum values shown to the left. The selection of layers is based on visual interpretation of the data. The insitu DCP reading (mm/blow) and CBR values are valid at the time of testing; variation in moisture content or other factors may affect the insitu value. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. This report should not be reproduced except in full without the written approval of the laboratory.

Deviation(s) from standard procedure	None

Observations and comments	

Approved Name and Appointment		
Darren O'Mahony Director		March 2023

UKAS TESTING 10122

Dynamic Cone Penetrometer (DCP) test results and estimated CBR

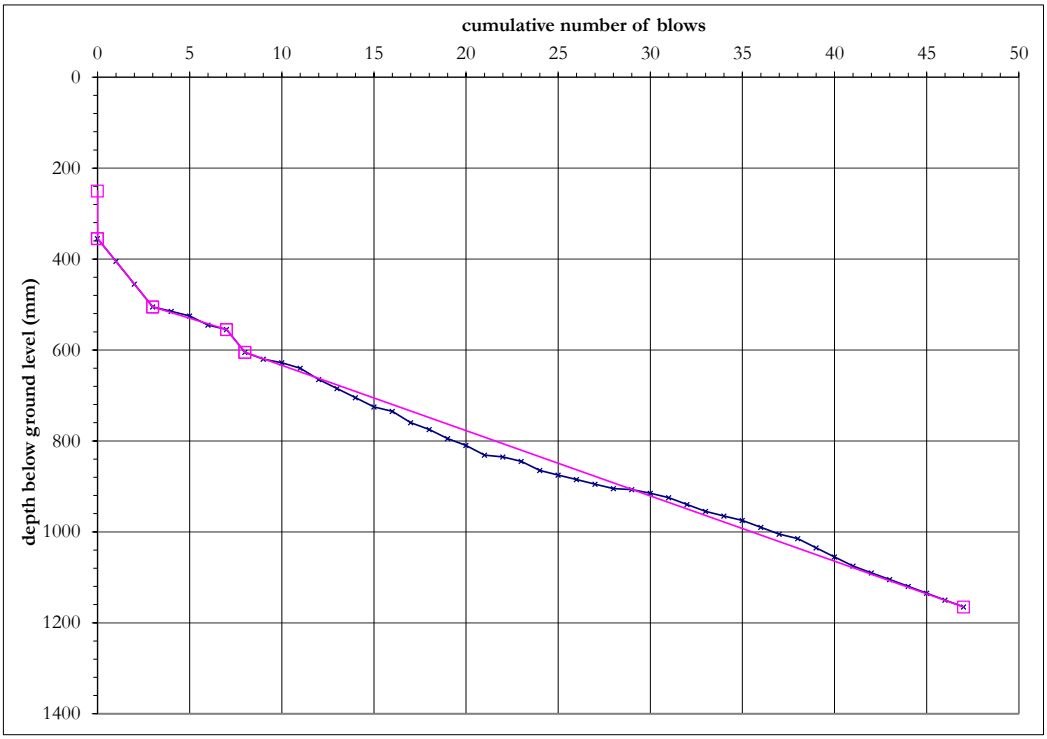
Project Number	23-0237
Project Name	Laurclavagh
Site Location	

Test Number	DCP38A
Depth bgl (m)	0.25

Date Tested	16/03/2023
Weather	Wet

Test conducted in accordance with Documented In-House Technical Procedure IMS TP7-4 and DMRB CS 229 Rev 0
CBR calculated using the TRRL CBR DCP relationship: log10(CBR) = 2.48 - 1.057 x log10(mm/blow) in accordance with DMRB CS 229 Rev 0

Surface preparation	Description of surface material at test depth
N/A	CLAY



top / base of layer (mm)	mm/ blow	CBR (%)
250	N/A	N/A
355		
355	50	4.8
505		
505	13	21
555		
555	50	4.8
605		
605	14	18
1165		

CBR Range	Min: 4.8 Max: 21	The self-weight penetration at the start of the test (shown above) has not been included in the minimum and maximum values shown to the left. The selection of layers is based on visual interpretation of the data. The insitu DCP reading (mm/blow) and CBR values are valid at the time of testing; variation in moisture content or other factors may affect the insitu value. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. This report should not be reproduced except in full without the written approval of the laboratory.

Deviation(s) from standard procedure	None

Observations and comments	

Approved Name and Appointment		
Darren O'Mahony Director		March 2023

UKAS TESTING 10122

Dynamic Cone Penetrometer (DCP) test results and estimated CBR

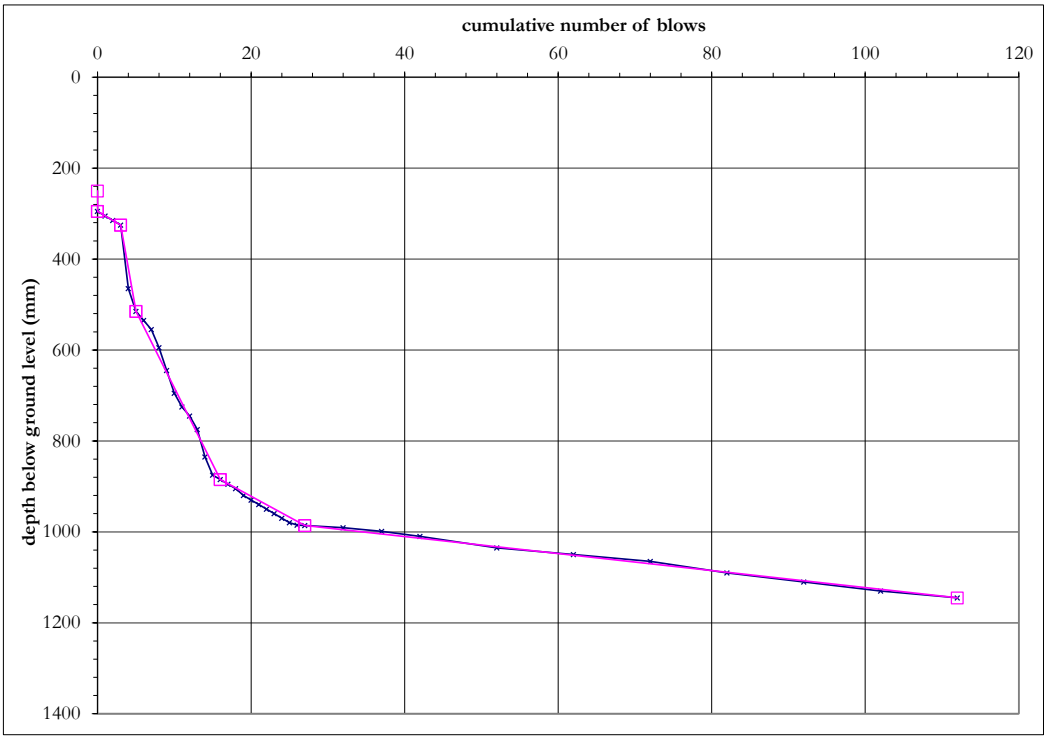
Project Number	23-0237
Project Name	Laurclavagh
Site Location	

Test Number	DCP39
Depth bgl (m)	0.25

Date Tested	16/03/2023
Weather	Wet

Test conducted in accordance with Documented In-House Technical Procedure IMS TP7-4 and DMRB CS 229 Rev 0
CBR calculated using the TRRL CBR DCP relationship: log10(CBR) = 2.48 - 1.057 x log10(mm/blow) in accordance with DMRB CS 229 Rev 0

Surface preparation	Description of surface material at test depth
N/A	CLAY



top / base of layer (mm)	mm/ blow	CBR (%)
250	N/A	N/A
295		
295	10	26
325		
325	95	2.5
515		
515	34	7.3
885		
885	9.2	29
986		
986	1.9	>100
1145		

CBR Range	Min: 2.5 Max: >100	The self-weight penetration at the start of the test (shown above) has not been included in the minimum and maximum values shown to the left. The selection of layers is based on visual interpretation of the data. The insitu DCP reading (mm/blow) and CBR values are valid at the time of testing; variation in moisture content or other factors may affect the insitu value. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. This report should not be reproduced except in full without the written approval of the laboratory.

Deviation(s) from standard procedure	None

Observations and comments	

Approved Name and Appointment		
Darren O'Mahony Director		March 2023

UKAS TESTING 10122

Dynamic Cone Penetrometer (DCP) test results and estimated CBR

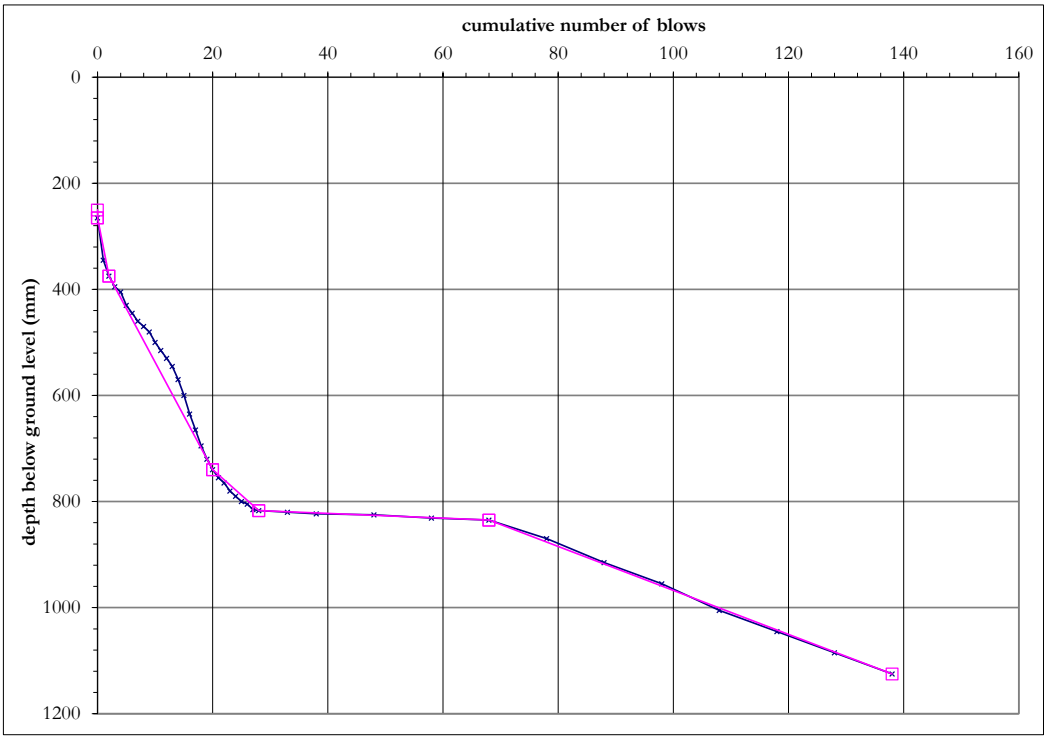
Project Number	23-0237
Project Name	Laurclavagh
Site Location	

Test Number	DCP40
Depth bgl (m)	0.25

Date Tested	16/03/2023
Weather	Dry and Cold

Test conducted in accordance with Documented In-House Technical Procedure IMS TP7-4 and DMRB CS 229 Rev 0
CBR calculated using the TRRL CBR DCP relationship: log10(CBR) = 2.48 - 1.057 x log10(mm/blow) in accordance with DMRB CS 229 Rev 0

Surface preparation	Description of surface material at test depth
N/A	CLAY



top / base of layer (mm)	mm/ blow	CBR (%)
250	N/A	N/A
265		
265	55	4.4
375		
375	20	13
740		
740	9.6	28
817		
817	0.5	>100
835		
835	4.1	67
1125		

CBR Range	Min: 4.4 Max: >100	The self-weight penetration at the start of the test (shown above) has not been included in the minimum and maximum values shown to the left. The selection of layers is based on visual interpretation of the data. The insitu DCP reading (mm/blow) and CBR values are valid at the time of testing; variation in moisture content or other factors may affect the insitu value. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. This report should not be reproduced except in full without the written approval of the laboratory.

Deviation(s) from standard procedure	None

Observations and comments	

Approved Name and Appointment		
Darren O'Mahony Director		March 2023

UKAS TESTING 10122

CAUSEWAY GEOTECH

APPENDIX H

GEOTECHNICAL LABORATORY TEST RESULTS

HEAD OFFICE
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ROI: +353 (0)1 526 7465
Registered in Ireland.
Company Number: 633786

www.causewaygeotech.com

SOIL AND ROCK SAMPLE ANALYSIS
LABORATORY TEST REPORT

19 May 2023

Project Name:	Laurclavagh WF; Ground Investigation
Project No.:	23-0237
Client:	Turnkey Developments
Engineer:	Enerco Energy

We are pleased to attach the results of laboratory testing carried out for the above project. This memo and its attachments constitute a report of the results of tests as detailed in the Contents page(s). This testing was performed between 10/05/2023 and 19/05/2023.

The attached results complete the testing requested and we would therefore wish to confirm that samples will be retained without charge for a period of 28 days from the above date after which they will be appropriately disposed of unless we receive written instructions to the contrary prior to that date.

We trust our report meets with your approval but if you have any queries or require additional information, please do not hesitate to contact the undersigned.

Stephen Watson

Laboratory Manager

Signed for and on behalf of Causeway Geotech Ltd

Project Name: Laurclavagh WF; Ground Investigation

Report Reference: Schedule 1

The table below details the tests carried out, the specifications used, and the number of tests included in this report. The results contained in this report relate to the sample(s) as received

Tests marked with* in this report are not United Kingdom Accreditation Service (UKAS) accredited and are not included in Causeway Geotech Limited's scope of UKAS Accreditation Schedule of Tests. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

Material tested	Type of test/Properties measured/Range of measurement	Standard specifications	No. of results included in the report
SOIL	Moisture Content of Soil	BS 1377-2: 1990: Cl 3.2	20
SOIL	Liquid and Plastic Limits of soil-1 point cone penetrometer method	BS 1377-2: 1990: Cl 4.4, 5.3 & 5.4	20
SOIL	Particle size distribution - wet sieving	BS 1377-2: 1990: Cl 9.2	20
SOIL	Particle size distribution - sedimentation hydrometer method	BS 1377-2: 1990: Cl 9.5	18

SUB-CONTRACTED TESTS

In agreement with Client, the following tests were conducted by an approved sub-contractor. All sub-contracting laboratories used are UKAS accredited.

Material tested	Type of test/Properties measured/Range of measurement	Standard specifications	No. of results included in the report
SOIL – Subcontracted to Eurofins Chemtest Ltd *(UKAS 2183)*	pH Value of Soil		15
SOIL – Subcontracted to Eurofins Chemtest Ltd *(UKAS 2183)*	Sulphate Content water extract		15

Summary of Classification Test Results

CAUSEWAY GEOTECH

Project No.	Project Name
23-0237	Laurclavagh

Hole No.	Sample				Specimen Description	Density bulk	Density dry	*w*	Passing 425µm	LL	PL	PI	Particle density	Casagrande Classification
	Ref	Top	Base	Type		Mg/m3		%	%	%	%	%	Mg/m3	
ITP01	3	2.00		B	Brown sandy slightly gravelly silty CLAY.			8.7	71	20 -1pt	10	10		CL
ITP02	1	0.60		B	Brown sandy slightly gravelly silty CLAY.			8.3	57	21 -1pt	12	9		CL
ITP06	2	1.20		B	Brown sandy slightly gravelly clayey SILT.			31	94	58 -1pt	33	25		MH
ITP07	2	1.50		B	Brown sandy slightly gravelly silty CLAY.			12	56	24 -1pt	15	9		CL
ITP08	2	1.50		B	Grey gravelly slightly silty fine to ocarse SAND.			8.4	32	24 -1pt	17	7		CL
ITP09	2	1.00		B	Greyish brown sandy slightly gravelly silty CLAY.			8.6	57	20 -1pt	12	8		CL
ITP09	4	3.00		B	Brown sandy gravelly clayey SILT.			11	58	28 -1pt	23	5		ML
ITP10	1	0.70		B	Greyish brown sandy slightly gravelly silty CLAY.			10	65	20 -1pt	14	6		ML/CL
ITP10	3	2.50		B	Greyish brown sandy slightly gravelly silty CLAY.			8.4	55	20 -1pt	11	9		CL
ITP11	2	1.00		B	Greyish brown sandy slightly gravelly silty CLAY.			10	60	22 -1pt	13	9		CL
ITP11	4	2.20		B	Greyish brown slightly gravelly silty fine to coarse SAND.			13	67	20 -1pt	15	5		ML
ITP13	3	2.00		B	Greyish brown sandy slightly gravelly silty CLAY.			9.2	58	20 -1pt	12	8		CL

All tests performed in accordance with BS1377:1990 unless specified otherwise

LAB 01R Version 6

Key

Density test	Liquid Limit	Particle density
Linear measurement unless :	4pt cone unless :	sp - small pyknometer
wd - water displacement	cas - Casagrande method	gj - gas jar
wi - immersion in water	1pt - single point test	

Date Printed

19/05/2023

Approved By

Stephen Watson

UKAS TESTING

10122

Summary of Classification Test Results

Project No.	Project Name
23-0237	Laurclavagh

Hole No.	Sample				Specimen Description	Density bulk	Density dry	w	Passing 425µm	LL	PL	PI	Particle density	Casagrande Classification
	Ref	Top	Base	Type		Mg/m3		%	%	%	%	%	Mg/m3	
ITP13	4	3.00		B	Greyish brown sandy slightly gravelly silty CLAY.			13	49	21 -1pt	13	8		CL
TP01	4	3.00		B	Greyish brown sandy slightly gravelly clayey SILT.			10	63	20 -1pt	15	5		ML
TP02	2	1.20		B	Greyish brown gravelly slightly silty fine to coarse SAND.			11	39	38 -1pt	27	11		MI
TP03	2	1.30		B	Greyish brown sandy slightly gravelly clayey SILT.			11	57	20 -1pt	15	5		ML
TP06	2	1.50		B	Greyish brown sandy slightly gravelly silty CLAY.			9.3	69	20 -1pt	12	8		CL
TP06	4	3.30		B	Greyish brown sandy slightly gravelly silty CLAY.			7.7	71	20 -1pt	12	8		CL
TP07	1	0.50		B	Greyish brown sandy slightly gravelly clayey SILT.			39	66	51 -1pt	34	17		MH
TP08	2	1.60		B	Greyish brown sandy slightly gravelly silty CLAY.			9.3	61	20 -1pt	13	7		CL

All tests performed in accordance with BS1377:1990 unless specified otherwise

LAB 01R Version 6

Key

Density test	Liquid Limit	Particle density
Linear measurement unless :	4pt cone unless :	sp - small pyknometer
wd - water displacement	cas - Casagrande method	gj - gas jar
wi - immersion in water	1pt - single point test	

Date Printed

19/05/2023

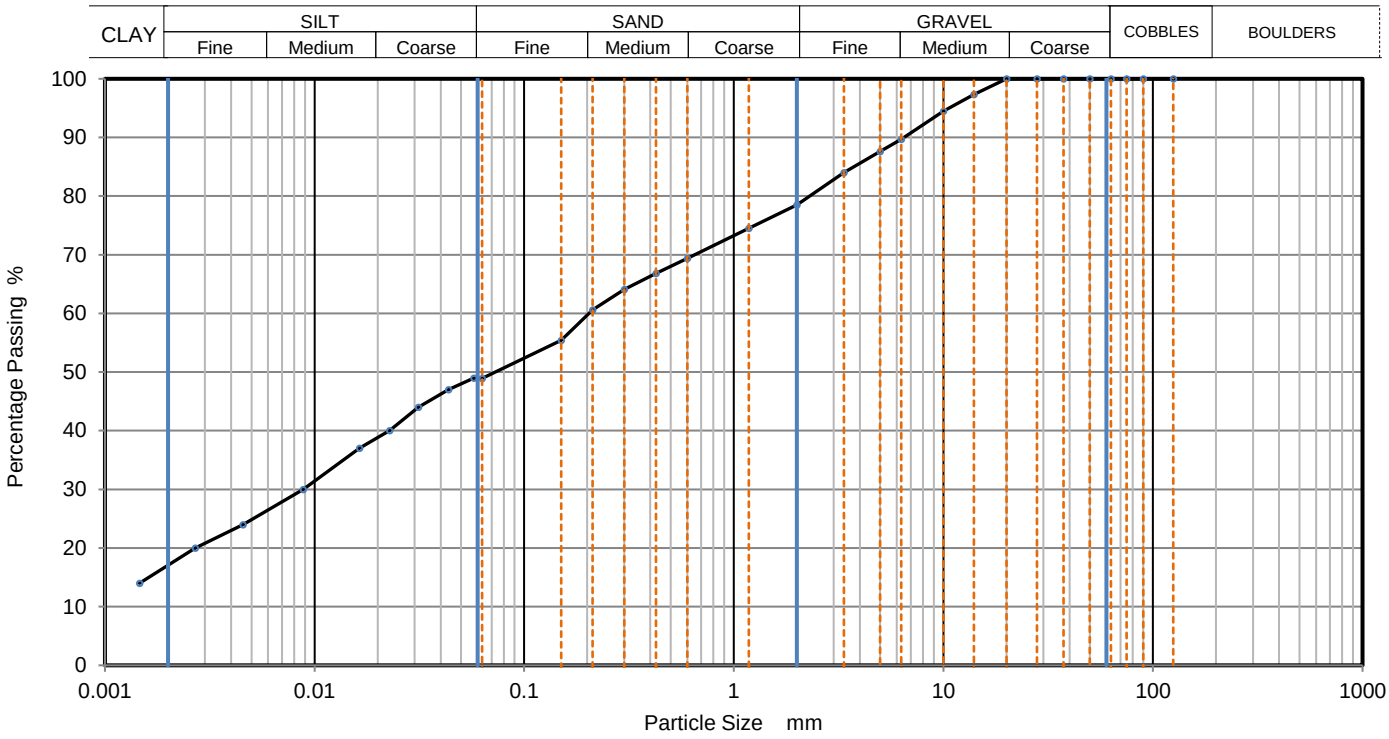
Approved By

Stephen Watson

UKAS TESTING

10122

CAUSEWAY GEOTECH	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**23-0237**
				Borehole/Pit No.	ITP01
Site Name	Laurclavagh			Sample No.	3
Specimen Description	Brown sandy slightly gravelly silty CLAY.			Sample Depth (m) Top	2.00
				Sample Depth (m) Base	
Specimen Reference	6	Specimen Depth	2 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2023051017



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.05761	49
90	100	0.04357	47
75	100	0.03131	44
63	100	0.02284	40
50	100	0.01639	37
37.5	100	0.00883	30
28	100	0.00456	24
20	100	0.00270	20
14	97	0.00146	14
10	95		
6.3	90		
5	88		
3.35	84		
2	79		
1.18	75		
0.6	69	Particle density	(assumed)
0.425	67	2.65	Mg/m3
0.3	64		
0.212	61		
0.15	55		
0.063	49		

Dry Mass of sample, g: 504

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	21.5
Sand	29.6
Silt	32.0
Clay	16.9

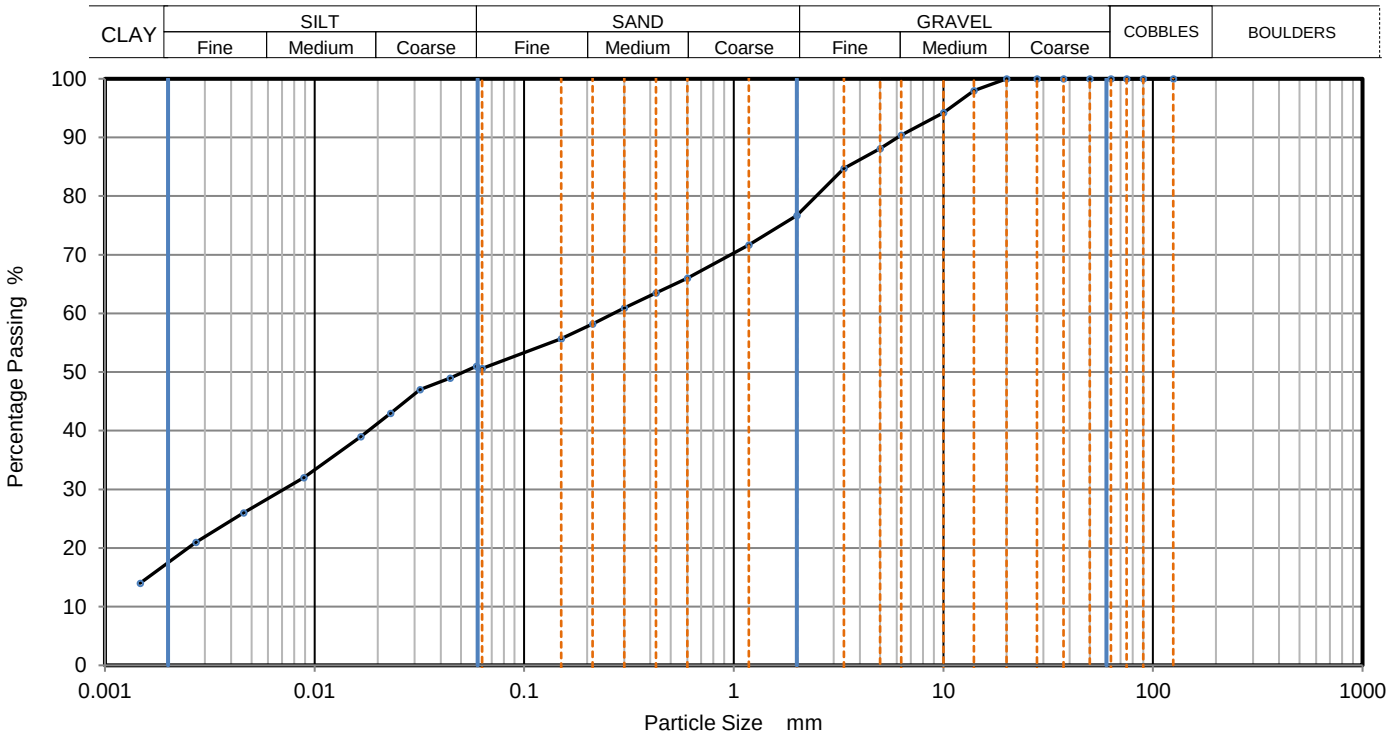
Grading Analysis		
D100	mm	
D60	mm	0.204
D30	mm	0.00856
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved
Stephen Watson

CAUSEWAY GEOTECH	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**23-0237**
				Borehole/Pit No.	ITP02
Site Name	Laurclavagh			Sample No.	1
Specimen Description	Brown sandy slightly gravelly silty CLAY.			Sample Depth (m) Top	0.60
				Sample Depth (m) Base	
Specimen Reference	6	Specimen Depth	0.6 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2023051018



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.05908	51
90	100	0.04428	49
75	100	0.03181	47
63	100	0.02301	43
50	100	0.01663	39
37.5	100	0.00889	32
28	100	0.00459	26
20	100	0.00271	21
14	98	0.00147	14
10	94		
6.3	90		
5	88		
3.35	85		
2	77		
1.18	72		
0.6	66	Particle density	(assumed)
0.425	64	2.65	Mg/m3
0.3	61		
0.212	58		
0.15	56		
0.063	51		

Dry Mass of sample, g: 535

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	23.3
Sand	26.2
Silt	33.0
Clay	17.5

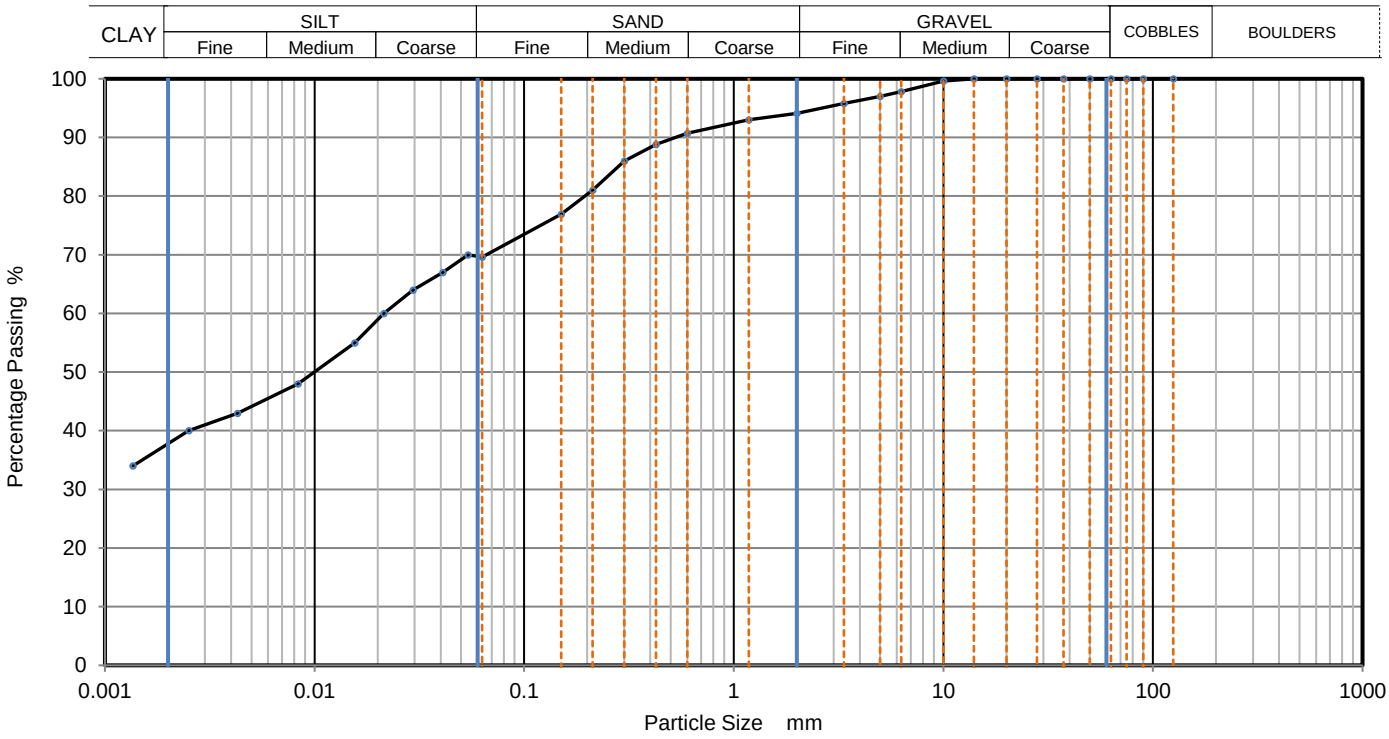
Grading Analysis		
D100	mm	
D60	mm	0.267
D30	mm	0.00693
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved
Stephen Watson

CAUSEWAY GEOTECH	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**23-0237**
				Borehole/Pit No.	ITP06
Site Name	Laurclavagh			Sample No.	2
Specimen Description	Brown sandy slightly gravelly clayey SILT.			Sample Depth (m) Top	1.20
				Sample Depth (m) Base	
Specimen Reference	6	Specimen Depth	1.2 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2023051021



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.05404	70
90	100	0.04096	67
75	100	0.02950	64
63	100	0.02142	60
50	100	0.01553	55
37.5	100	0.00834	48
28	100	0.00429	43
20	100	0.00251	40
14	100	0.00136	34
10	100		
6.3	98		
5	97		
3.35	96		
2	94		
1.18	93		
0.6	91	Particle density	(assumed)
0.425	89	2.65	Mg/m3
0.3	86		
0.212	81		
0.15	77		
0.063	70		

Dry Mass of sample, g: 469

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	5.9
Sand	24.6
Silt	31.8
Clay	37.7

Grading Analysis		
D100	mm	
D60	mm	0.022
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

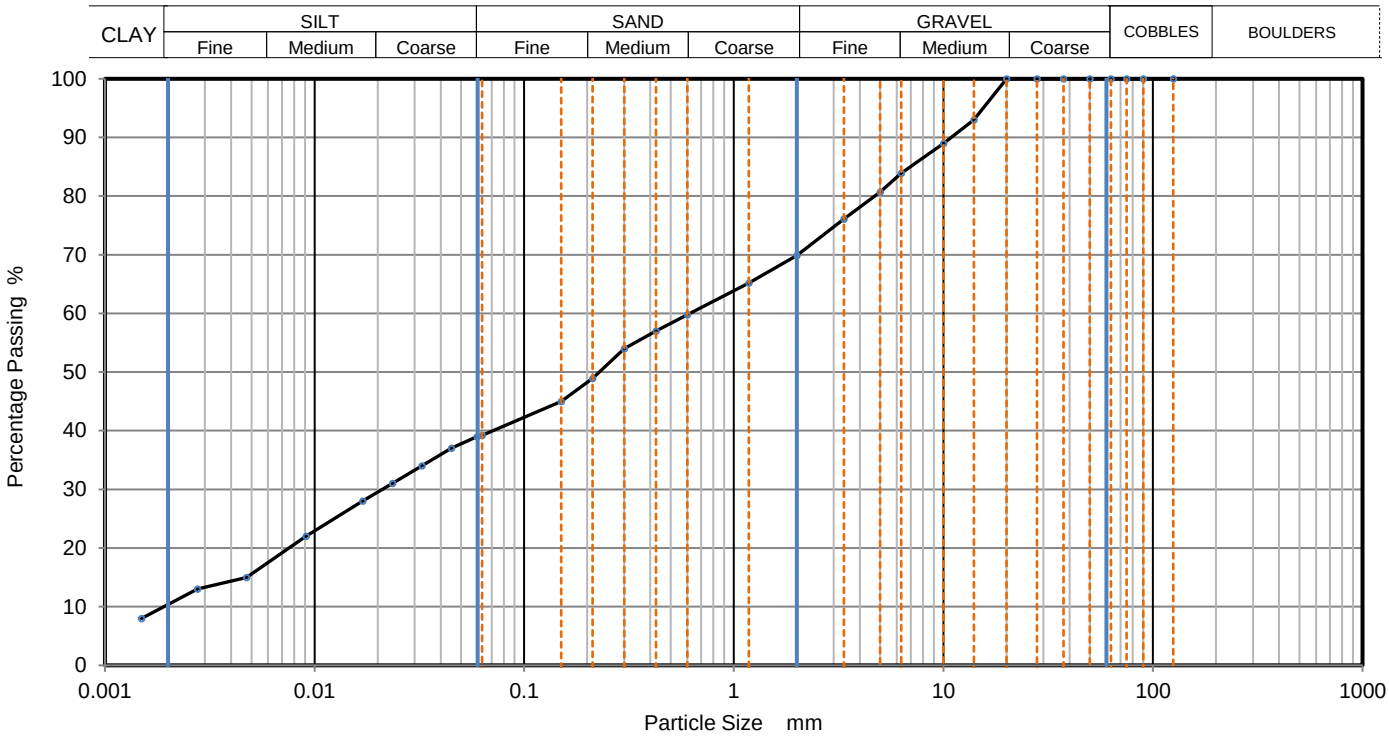
Remarks

Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved
Stephen Watson

PARTICLE SIZE DISTRIBUTION

Job Ref					23-0237
Borehole/Pit No.					ITP07
Site Name	Laurclavagh			Sample No.	2
Specimen Description	Brown sandy slightly gravelly silty CLAY.			Sample Depth (m) Top	1.50
				Sample Depth (m) Base	
Specimen Reference	6	Specimen Depth	1.5 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2023051023



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.05956	39
90	100	0.04499	37
75	100	0.03255	34
63	100	0.02352	31
50	100	0.01698	28
37.5	100	0.00912	22
28	100	0.00473	15
20	100	0.00276	13
14	93	0.00149	8
10	89		
6.3	84		
5	81		
3.35	76		
2	70		
1.18	65		
0.6	60	Particle density	(assumed)
0.425	57	2.65	Mg/m3
0.3	54		
0.212	49		
0.15	45		
0.063	39		

Dry Mass of sample, g: 540

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	30.1
Sand	30.8
Silt	28.4
Clay	10.7

Grading Analysis		
D100	mm	
D60	mm	0.619
D30	mm	0.0213
D10	mm	0.00184
Uniformity Coefficient		340
Curvature Coefficient		0.4

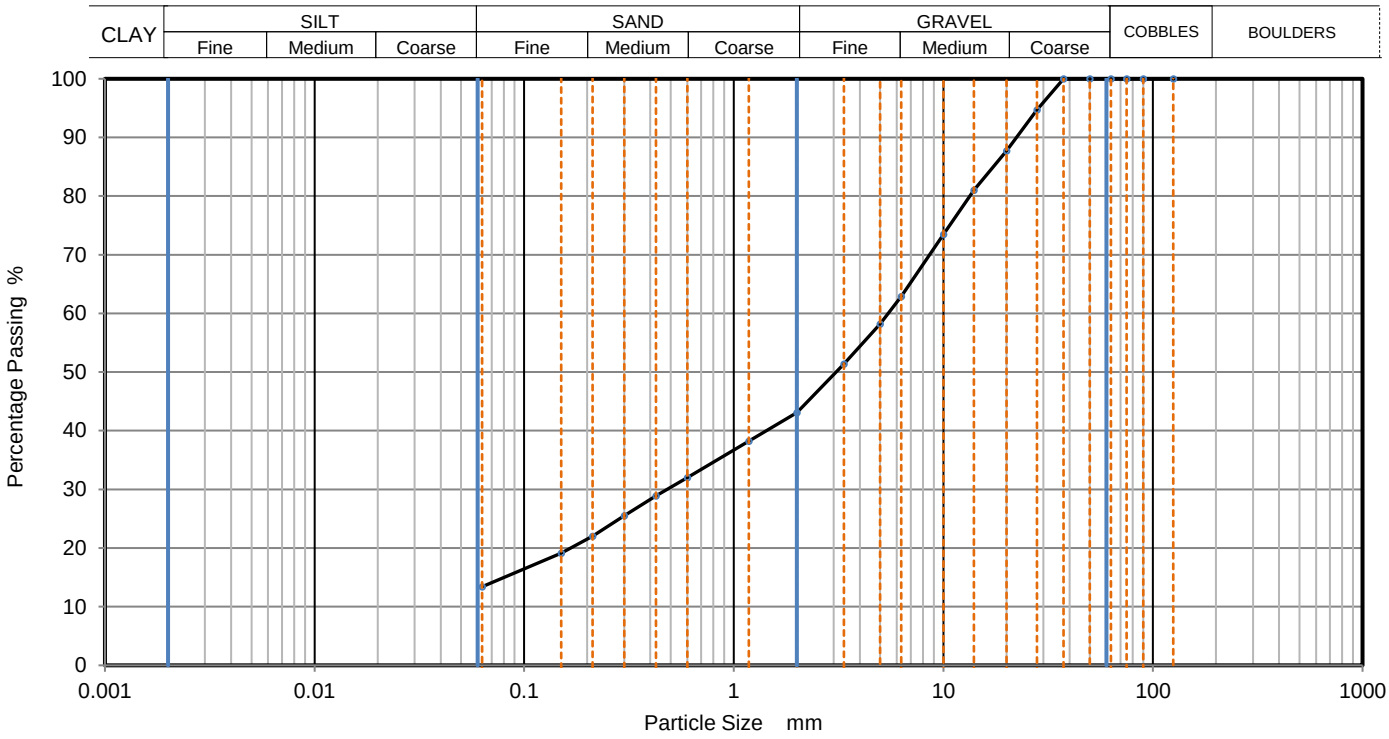
Remarks

Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved
Stephen Watson

PARTICLE SIZE DISTRIBUTION

				Job Ref	**23-0237**
				Borehole/Pit No.	ITP08
Site Name	Laurclavagh			Sample No.	2
Specimen Description	Grey gravelly silty fine to ocarse SAND.			Sample Depth (m) Top	1.50
				Sample Depth (m) Base	
Specimen Reference	6	Specimen Depth	1.5 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2			KeyLAB ID	Caus2023051025



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	95		
20	88		
14	81		
10	74		
6.3	63		
5	58		
3.35	51		
2	43		
1.18	38		
0.6	32		
0.425	29		
0.3	26		
0.212	22		
0.15	19		
0.063	13		

Dry Mass of sample, g: 4043

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	56.9
Sand	29.7
Fines <0.063mm	13.0

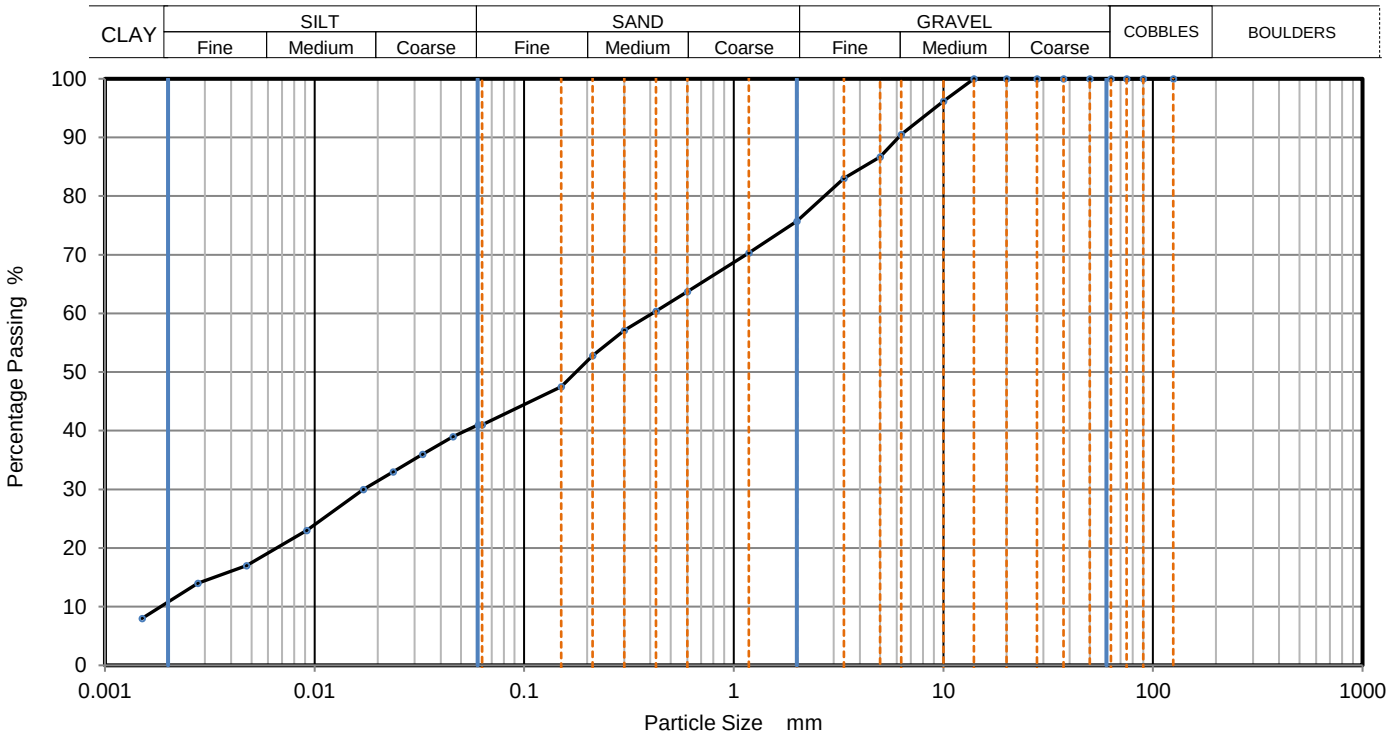
Grading Analysis		
D100	mm	
D60	mm	5.48
D30	mm	0.481
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved
Stephen Watson

CAUSEWAY GEOTECH	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**23-0237**
				Borehole/Pit No.	ITP09
Site Name	Laurclavagh			Sample No.	2
Specimen Description	Greyish brown sandy slightly gravelly silty CLAY.			Sample Depth (m) Top	1.00
				Sample Depth (m) Base	
Specimen Reference	6	Specimen Depth	1 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2023051027



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.06050	41
90	100	0.04568	39
75	100	0.03279	36
63	100	0.02369	33
50	100	0.01710	30
37.5	100	0.00918	23
28	100	0.00473	17
20	100	0.00278	14
14	100	0.00150	8
10	96		
6.3	91		
5	87		
3.35	83		
2	76		
1.18	70		
0.6	64	Particle density	(assumed)
0.425	60	2.65	Mg/m3
0.3	57		
0.212	53		
0.15	48		
0.063	41		

Dry Mass of sample, g: 537

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	24.3
Sand	34.7
Silt	30.4
Clay	10.6

Grading Analysis		
D100	mm	
D60	mm	0.409
D30	mm	0.0177
D10	mm	0.00187
Uniformity Coefficient		220
Curvature Coefficient		0.41

Remarks

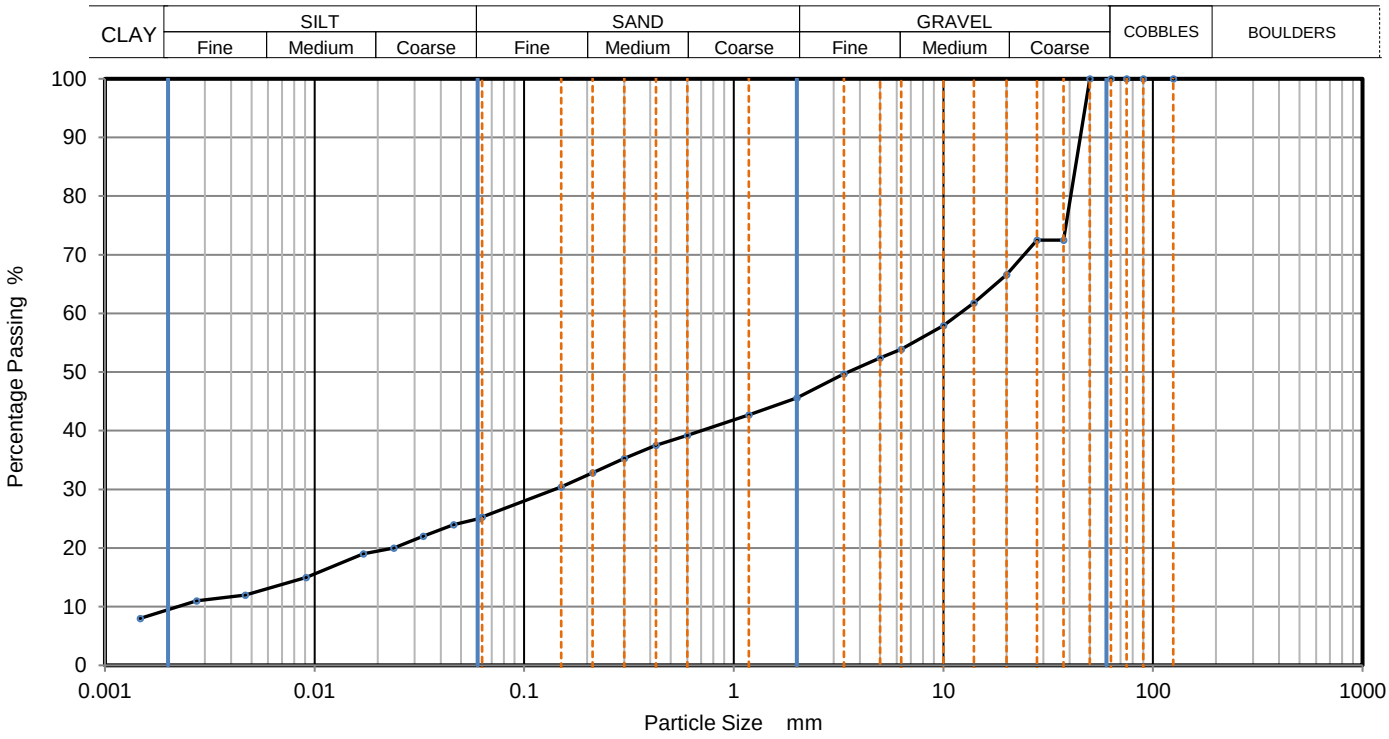
Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved
Stephen Watson

UKAS TESTING

PARTICLE SIZE DISTRIBUTION

Job Ref					23-0237
Borehole/Pit No.					ITP09
Site Name	Laurclavagh			Sample No.	4
Specimen Description	Brown sandy slightly gravelly clayey SILT.			Sample Depth (m) Top	3.00
				Base	
Specimen Reference	6	Specimen Depth	3 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2023051028



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.06097	25
90	100	0.04603	24
75	100	0.03303	22
63	100	0.02385	20
50	100	0.01710	19
37.5	73	0.00912	15
28	73	0.00467	12
20	67	0.00273	11
14	62	0.00147	8
10	58		
6.3	54		
5	52		
3.35	50		
2	46		
1.18	43		
0.6	39	Particle density	(assumed)
0.425	38	2.65	Mg/m3
0.3	35		
0.212	33		
0.15	30		
0.063	25		

Dry Mass of sample, g: 2544

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	54.4
Sand	20.3
Silt	15.9
Clay	9.4

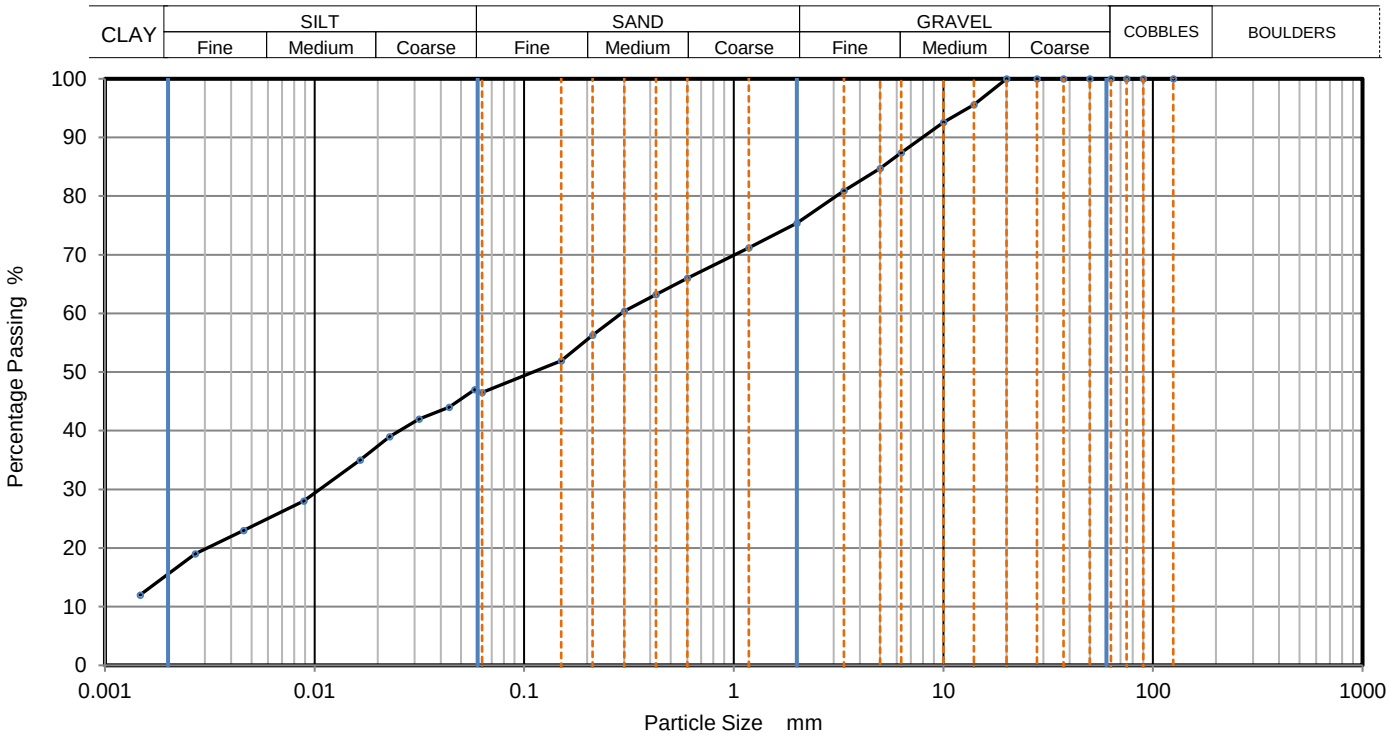
Grading Analysis		
D100	mm	
D60	mm	12
D30	mm	0.141
D10	mm	0.00228
Uniformity Coefficient		5300
Curvature Coefficient		0.73

Remarks

Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved
Stephen Watson

CAUSEWAY GEOTECH	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**23-0237**
				Borehole/Pit No.	ITP10
Site Name	Laurclavagh			Sample No.	1
Specimen Description	Greyish brown sandy slightly gravelly silty CLAY.			Sample Depth (m) Top	0.70
				Sample Depth (m) Base	
Specimen Reference	6	Specimen Depth	0.7 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2023051029



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.05810	47
90	100	0.04393	44
75	100	0.03156	42
63	100	0.02284	39
50	100	0.01651	35
37.5	100	0.00889	28
28	100	0.00459	23
20	100	0.00270	19
14	96	0.00147	12
10	93		
6.3	87		
5	85		
3.35	81		
2	75		
1.18	71		
0.6	66	Particle density	(assumed)
0.425	63	2.65	Mg/m3
0.3	60		
0.212	56		
0.15	52		
0.063	47		

Dry Mass of sample, g: 508

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	24.6
Sand	28.9
Silt	30.6
Clay	15.9

Grading Analysis		
D100	mm	
D60	mm	0.29
D30	mm	0.0103
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

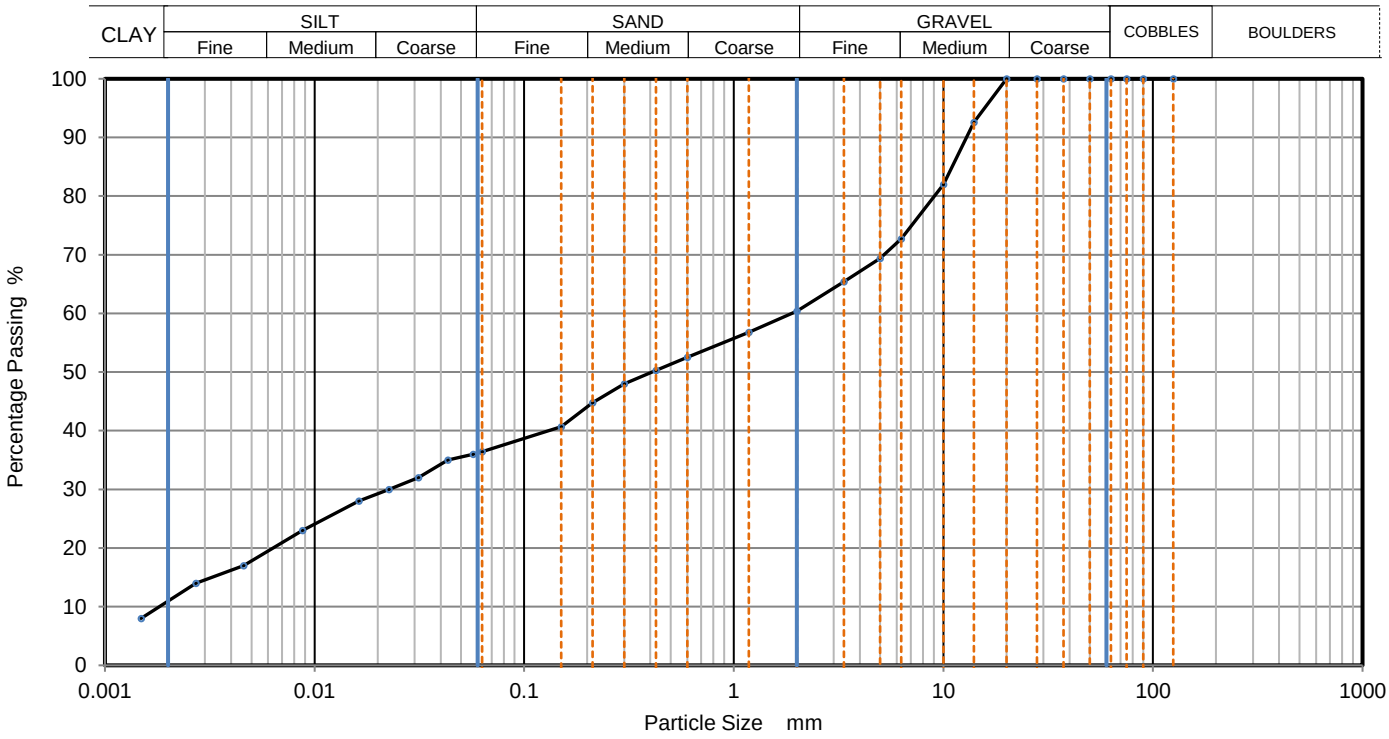
Remarks

Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved
Stephen Watson

PARTICLE SIZE DISTRIBUTION

Job Ref					23-0237
Borehole/Pit No.					ITP10
Site Name	Laurclavagh			Sample No.	3
Specimen Description	Greyish brown sandy slightly gravelly silty CLAY.			Sample Depth (m) Top	2.50
				Base	
Specimen Reference	6	Specimen Depth	2.5 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2023051031



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.05712	36
90	100	0.04320	35
75	100	0.03131	32
63	100	0.02267	30
50	100	0.01627	28
37.5	100	0.00877	23
28	100	0.00459	17
20	100	0.00271	14
14	93	0.00149	8
10	82		
6.3	73		
5	69		
3.35	65		
2	60		
1.18	57		
0.6	53	Particle density	(assumed)
0.425	50	2.65	Mg/m3
0.3	48		
0.212	45		
0.15	41		
0.063	36		

Dry Mass of sample, g: 512

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	39.6
Sand	24.0
Silt	25.9
Clay	10.5

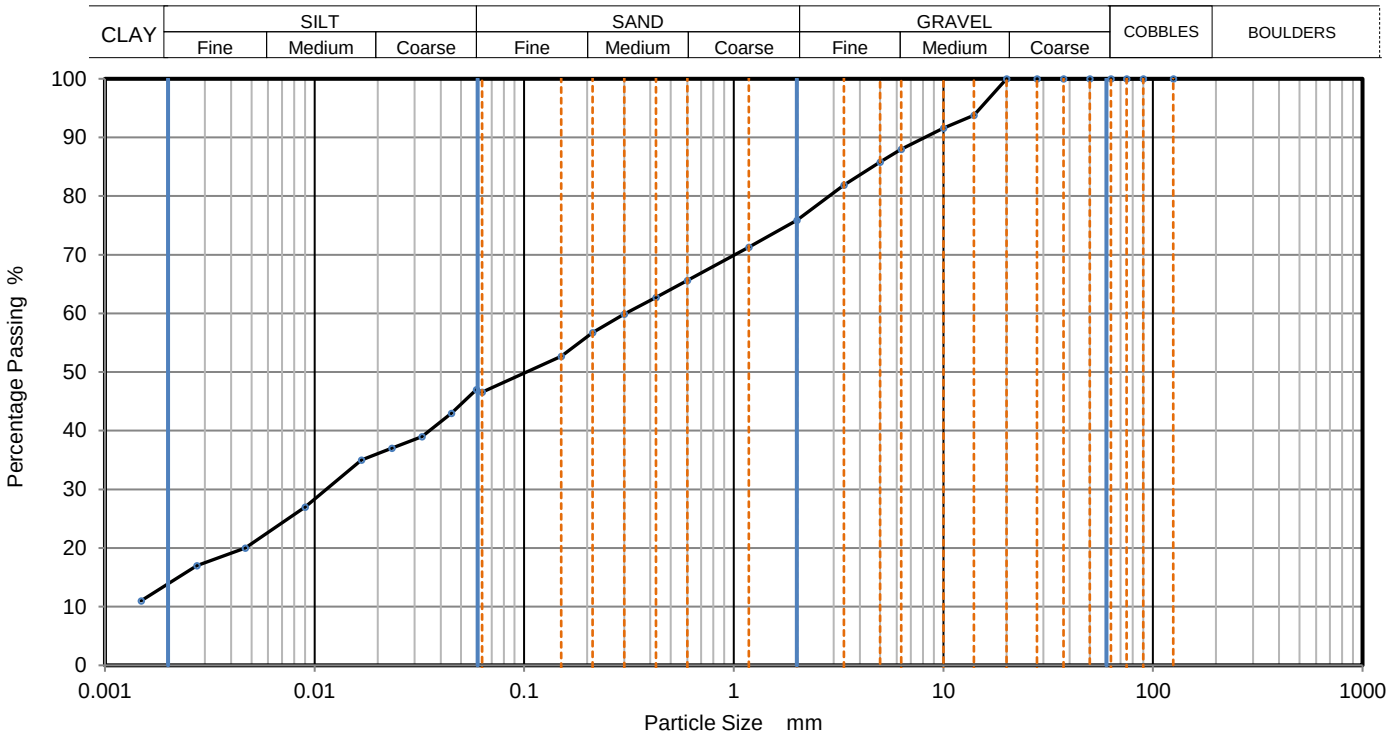
Grading Analysis		
D100	mm	
D60	mm	1.89
D30	mm	0.0238
D10	mm	0.00189
Uniformity Coefficient		1000
Curvature Coefficient		0.16

Remarks

Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved
Stephen Watson

CAUSEWAY GEOTECH	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**23-0237**
				Borehole/Pit No.	ITP11
Site Name	Laurclavagh			Sample No.	2
Specimen Description	Greyish brown sandy slightly gravelly silty CLAY.			Sample Depth (m) Top	1.00
				Sample Depth (m) Base	
Specimen Reference	6	Specimen Depth	1 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2023051032



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.05908	47
90	100	0.04499	43
75	100	0.03255	39
63	100	0.02335	37
50	100	0.01675	35
37.5	100	0.00901	27
28	100	0.00467	20
20	100	0.00275	17
14	94	0.00149	11
10	92		
6.3	88		
5	86		
3.35	82		
2	76		
1.18	71		
0.6	66	Particle density	(assumed)
0.425	63	2.65	Mg/m3
0.3	60		
0.212	57		
0.15	53		
0.063	47		

Dry Mass of sample, g: 504

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	24.1
Sand	29.3
Silt	33.0
Clay	13.6

Grading Analysis		
D100	mm	
D60	mm	0.303
D30	mm	0.0112
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

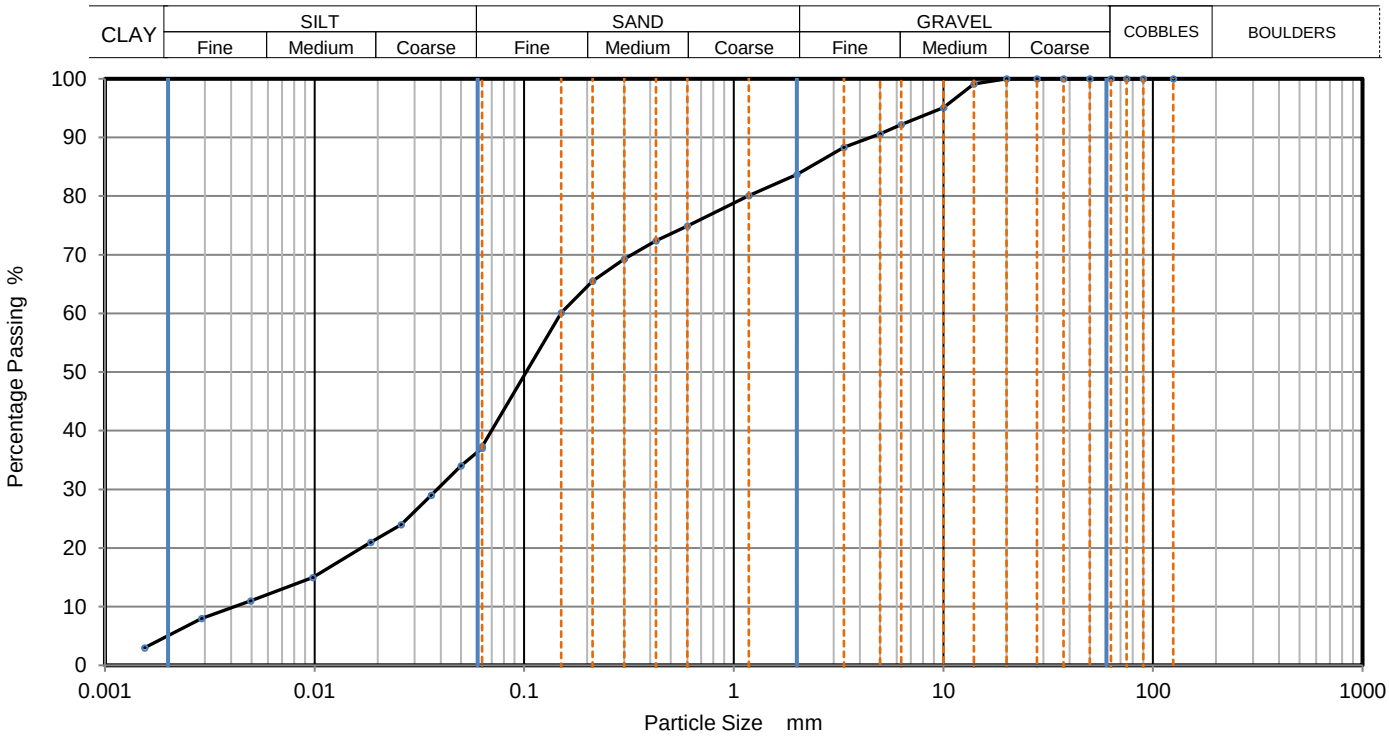
Remarks

Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved
Stephen Watson

PARTICLE SIZE DISTRIBUTION

Job Ref					23-0237
Borehole/Pit No.					ITP11
Site Name	Laurclavagh			Sample No.	4
Specimen Description	Greyish brown sandy slightly gravelly clayey SILT.			Sample Depth (m) Top	2.20
				Sample Depth (m) Base	
Specimen Reference	6	Specimen Depth	2.2 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2023051034



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.06300	37
90	100	0.04994	34
75	100	0.03599	29
63	100	0.02592	24
50	100	0.01855	21
37.5	100	0.00980	15
28	100	0.00495	11
20	100	0.00289	8
14	99	0.00155	3
10	95		
6.3	92		
5	91		
3.35	88		
2	84		
1.18	80		
0.6	75	Particle density	(assumed)
0.425	72	2.65	Mg/m3
0.3	69		
0.212	66		
0.15	60		
0.063	37		

Dry Mass of sample, g: 540

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	16.3
Sand	46.4
Silt	32.1
Clay	5.2

Grading Analysis		
D100	mm	
D60	mm	0.149
D30	mm	0.038
D10	mm	0.00396
Uniformity Coefficient		38
Curvature Coefficient		2.4

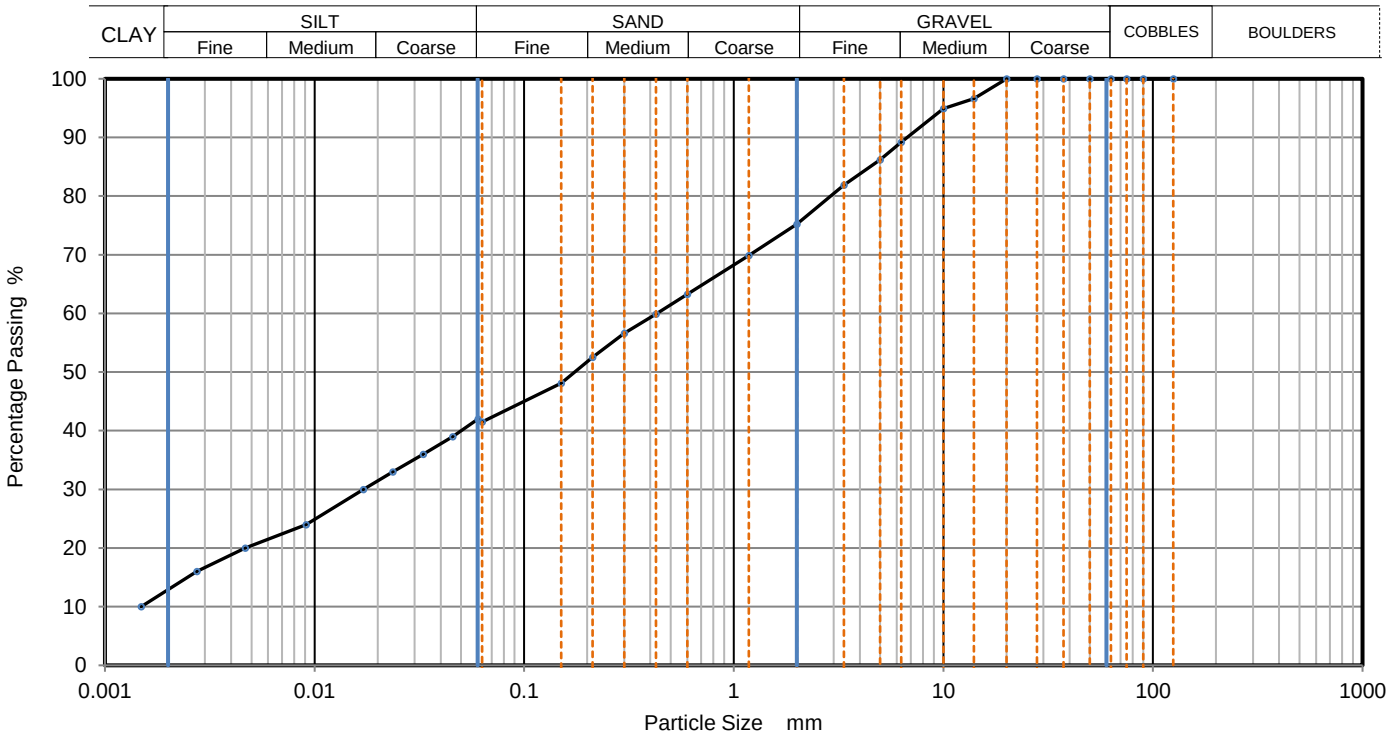
Remarks

Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved
Stephen Watson

PARTICLE SIZE DISTRIBUTION

Job Ref					23-0237
Borehole/Pit No.					ITP13
Site Name	Laurclavagh			Sample No.	3
Specimen Description	Greyish brown sandy slightly gravelly silty CLAY.			Sample Depth (m) Top	2.00
				Sample Depth (m) Base	
Specimen Reference	6	Specimen Depth	2 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2023051036



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.06028	42
90	100	0.04554	39
75	100	0.03295	36
63	100	0.02364	33
50	100	0.01707	30
37.5	100	0.00912	24
28	100	0.00468	20
20	100	0.00275	16
14	97	0.00149	10
10	95		
6.3	89		
5	86		
3.35	82		
2	75		
1.18	70		
0.6	63	Particle density	(assumed)
0.425	60	2.65	Mg/m3
0.3	57		
0.212	53		
0.15	48		
0.063	42		

Dry Mass of sample, g: 516

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	24.8
Sand	33.7
Silt	28.4
Clay	13.1

Grading Analysis		
D100	mm	
D60	mm	0.428
D30	mm	0.0171
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

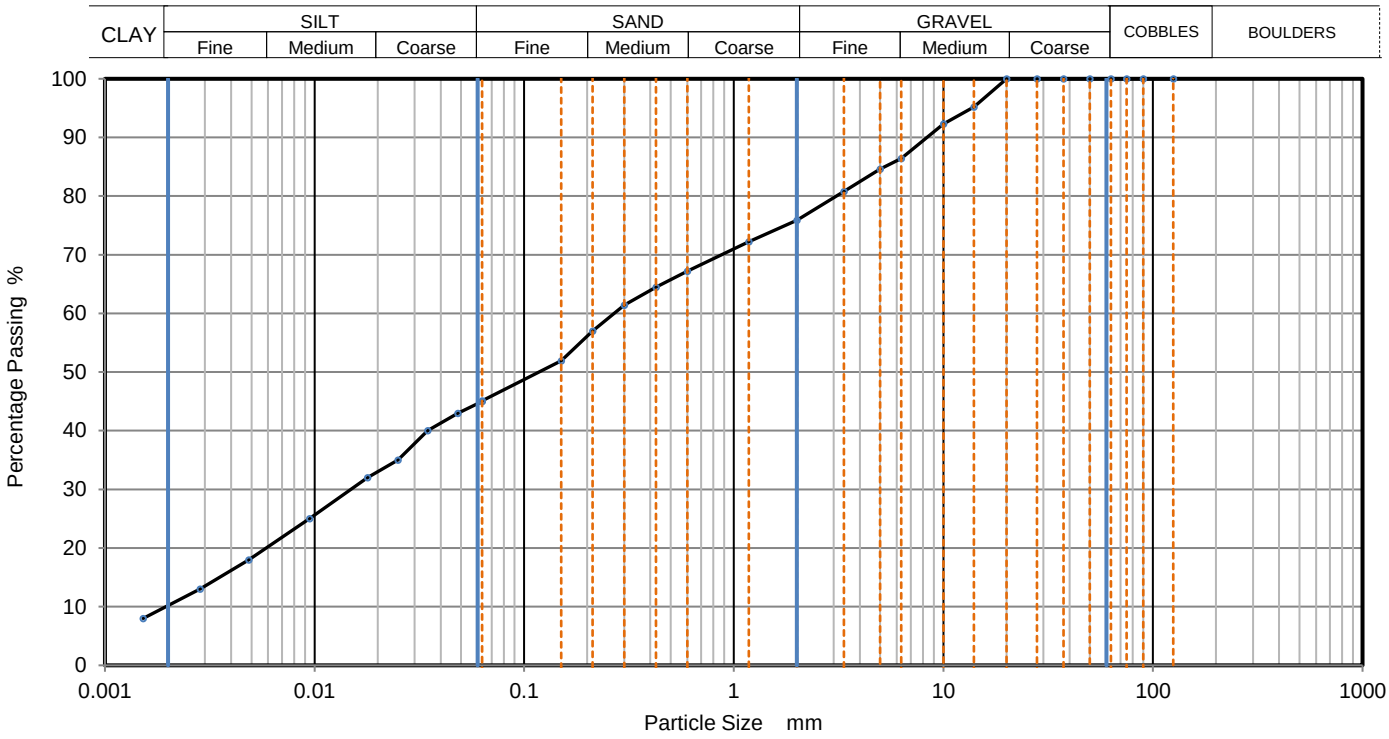
Remarks

Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved
Stephen Watson

PARTICLE SIZE DISTRIBUTION

Job Ref					23-0237
Borehole/Pit No.					ITP13
Site Name	Laurclavagh			Sample No.	4
Specimen Description	Greyish brown sandy slightly gravelly silty CLAY.			Sample Depth (m) Top	3.00
				Base	
Specimen Reference	6	Specimen Depth	3 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2023051037



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.06300	45
90	100	0.04829	43
75	100	0.03462	40
63	100	0.02497	35
50	100	0.01788	32
37.5	100	0.00947	25
28	100	0.00484	18
20	100	0.00284	13
14	95	0.00152	8
10	92		
6.3	86		
5	85		
3.35	81		
2	76		
1.18	72		
0.6	67	Particle density	(assumed)
0.425	65	2.65	Mg/m3
0.3	61		
0.212	57		
0.15	52		
0.063	45		

Dry Mass of sample, g: 503

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	24.1
Sand	30.9
Silt	34.5
Clay	10.5

Grading Analysis		
D100	mm	
D60	mm	0.269
D30	mm	0.0152
D10	mm	0.00187
Uniformity Coefficient		140
Curvature Coefficient		0.46

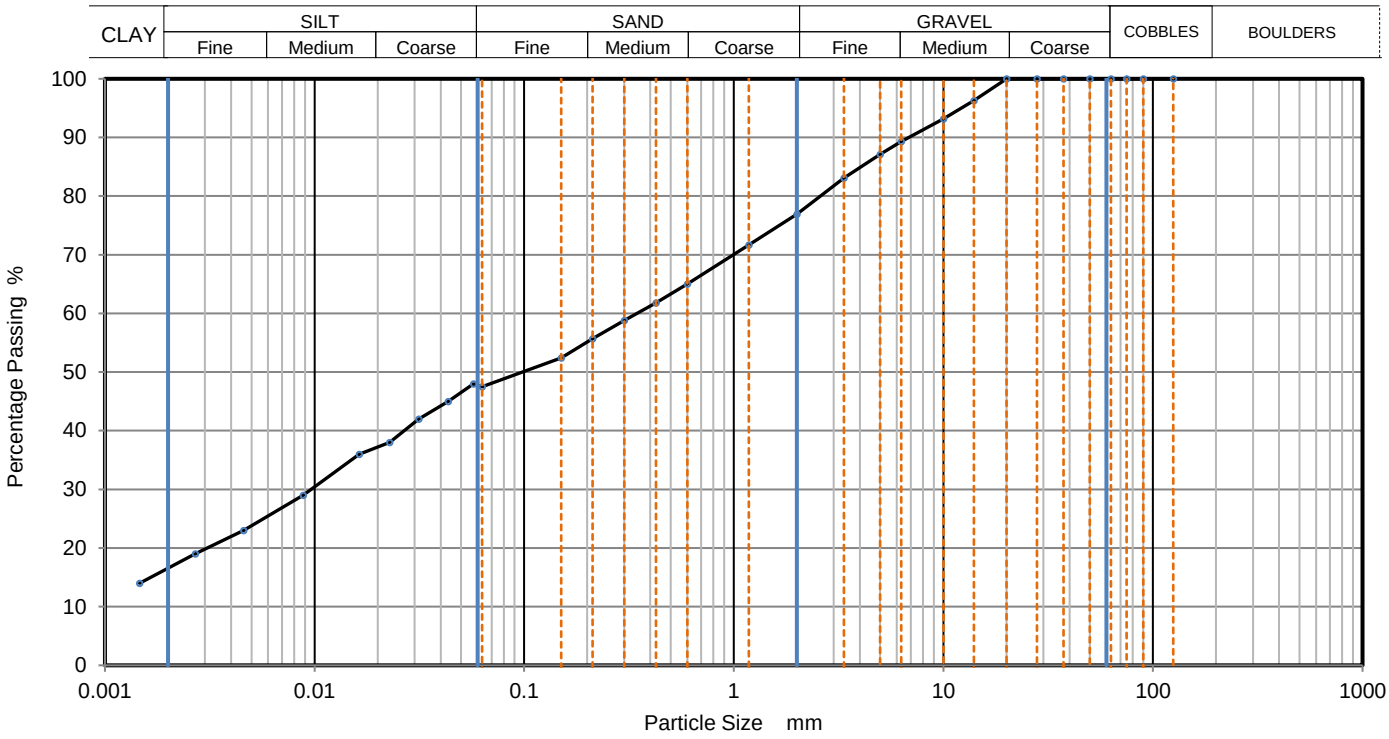
Remarks

Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved
Stephen Watson

PARTICLE SIZE DISTRIBUTION

Job Ref					23-0237
Borehole/Pit No.					TP01
Site Name	Laurclavagh			Sample No.	4
Specimen Description	Greyish brown sandy slightly gravelly clayey SILT.			Sample Depth (m) Top	3.00
				Sample Depth (m) Base	
Specimen Reference	6	Specimen Depth	3 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2023051039



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.05730	48
90	100	0.04336	45
75	100	0.03144	42
63	100	0.02277	38
50	100	0.01635	36
37.5	100	0.00882	29
28	100	0.00459	23
20	100	0.00270	19
14	96	0.00146	14
10	93		
6.3	89		
5	87		
3.35	83		
2	77		
1.18	72		
0.6	65	Particle density	(assumed)
0.425	62	2.65	Mg/m3
0.3	59		
0.212	56		
0.15	52		
0.063	48		

Dry Mass of sample, g: 515

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	23.1
Sand	29.3
Silt	31.1
Clay	16.5

Grading Analysis		
D100	mm	
D60	mm	0.346
D30	mm	0.00931
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

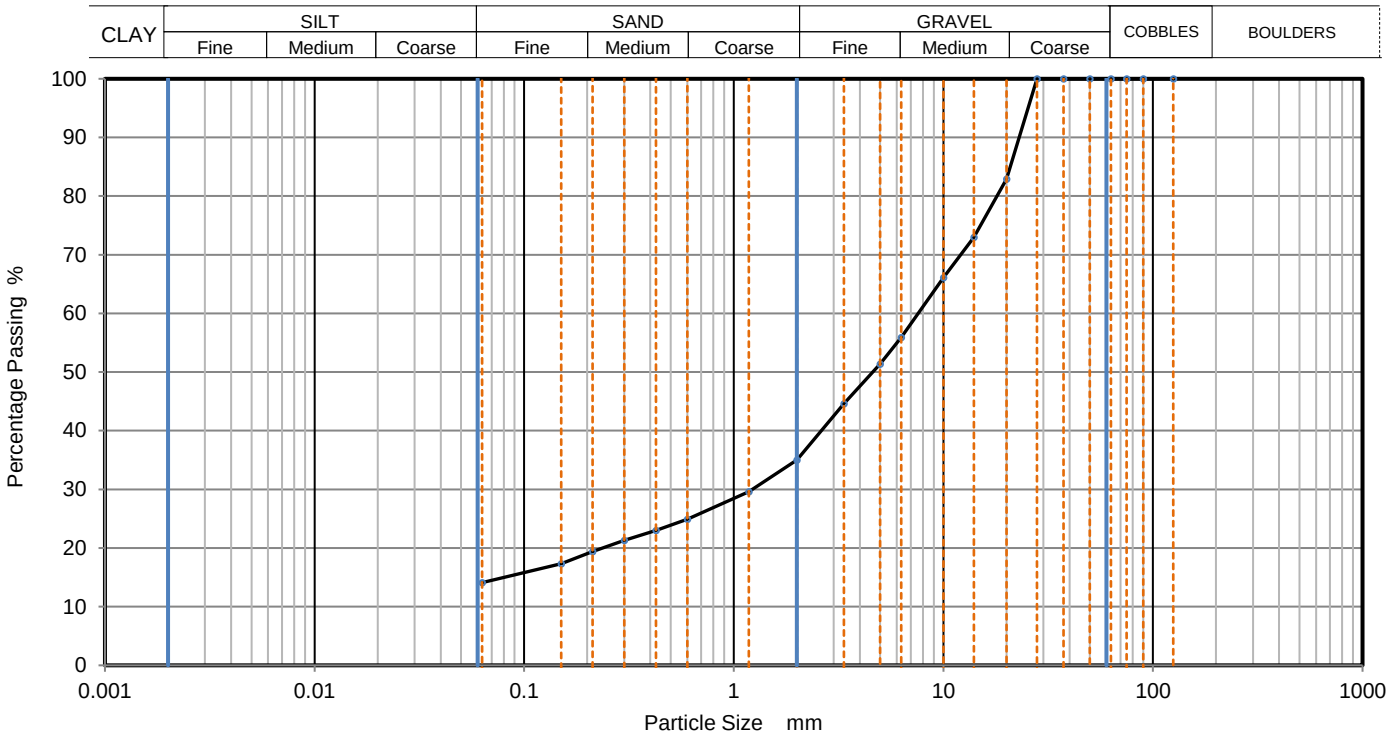
Remarks

Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved
Stephen Watson

PARTICLE SIZE DISTRIBUTION

Job Ref					23-0237
Borehole/Pit No.					TP02
Site Name	Laurclavagh			Sample No.	2
Specimen Description	Greyish brown sandy slightly gravelly clayey SILT.			Sample Depth (m) Top	1.20
				Sample Depth (m) Base	
Specimen Reference	6	Specimen Depth	1.2 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2			KeyLAB ID	Caus2023051041



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	83		
14	73		
10	66		
6.3	56		
5	51		
3.35	45		
2	35		
1.18	30		
0.6	25		
0.425	23		
0.3	21		
0.212	19		
0.15	17		
0.063	14		

Dry Mass of sample, g: 1307

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	65.0
Sand	20.8
Fines <0.063mm	14.0

Grading Analysis		
D100	mm	
D60	mm	7.59
D30	mm	1.23
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

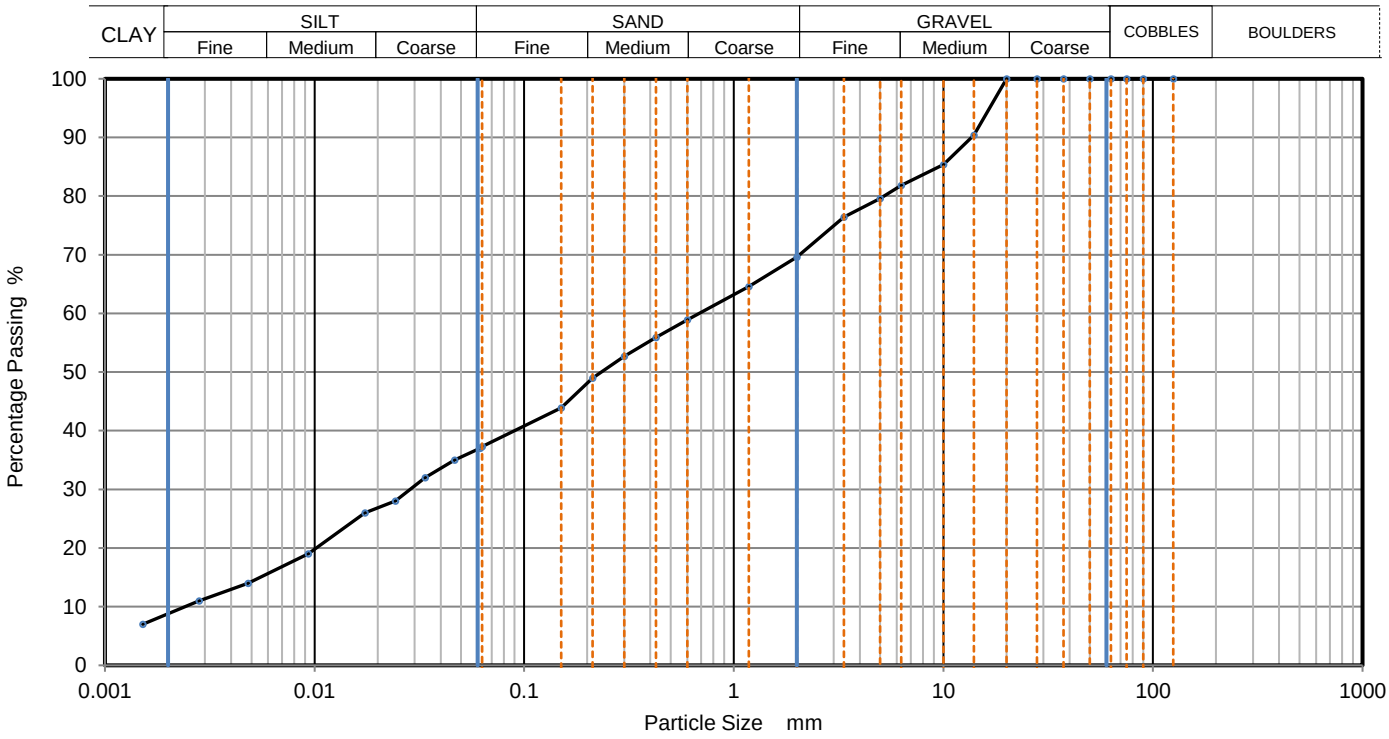
Remarks

Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved
Stephen Watson

PARTICLE SIZE DISTRIBUTION

Job Ref					23-0237
Borehole/Pit No.					TP03
Site Name	Laurclavagh			Sample No.	2
Specimen Description	Greyish brown sandy slightly gravelly clayey SILT.			Sample Depth (m) Top	1.30
				Base	
Specimen Reference	6	Specimen Depth	1.3 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2023051043



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.06172	37
90	100	0.04659	35
75	100	0.03367	32
63	100	0.02431	28
50	100	0.01743	26
37.5	100	0.00935	19
28	100	0.00482	14
20	100	0.00281	11
14	90	0.00151	7
10	85		
6.3	82		
5	80		
3.35	76		
2	70		
1.18	65		
0.6	59	Particle density	(assumed)
0.425	56	2.65	Mg/m3
0.3	53		
0.212	49		
0.15	44		
0.063	37		

Dry Mass of sample, g: 532

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	30.4
Sand	32.4
Silt	28.4
Clay	8.8

Grading Analysis		
D100	mm	
D60	mm	0.68
D30	mm	0.0287
D10	mm	0.00235
Uniformity Coefficient		290
Curvature Coefficient		0.52

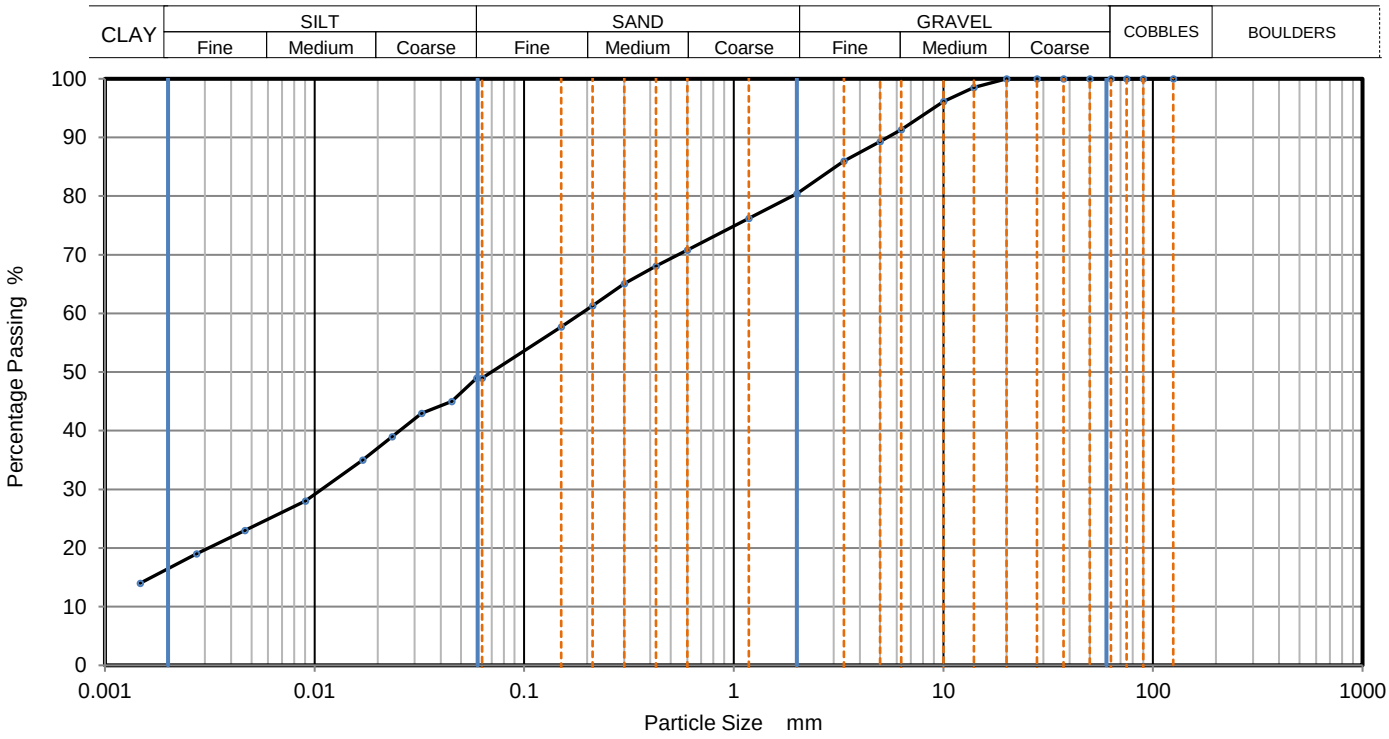
Remarks

Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved
Stephen Watson

PARTICLE SIZE DISTRIBUTION

Job Ref					23-0237
Borehole/Pit No.					TP06
Site Name	Laurclavagh			Sample No.	2
Specimen Description	Greyish brown sandy slightly gravelly silty CLAY.			Sample Depth (m) Top	1.50
				Base	
Specimen Reference	6	Specimen Depth	1.5 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2023051045



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.05931	49
90	100	0.04518	45
75	100	0.03245	43
63	100	0.02347	39
50	100	0.01696	35
37.5	100	0.00906	28
28	100	0.00465	23
20	100	0.00273	19
14	99	0.00147	14
10	96		
6.3	91		
5	89		
3.35	86		
2	80		
1.18	76		
0.6	71	Particle density	(assumed)
0.425	68	2.65	Mg/m3
0.3	65		
0.212	61		
0.15	58		
0.063	49		

Dry Mass of sample, g: 541

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	19.6
Sand	31.4
Silt	32.3
Clay	16.7

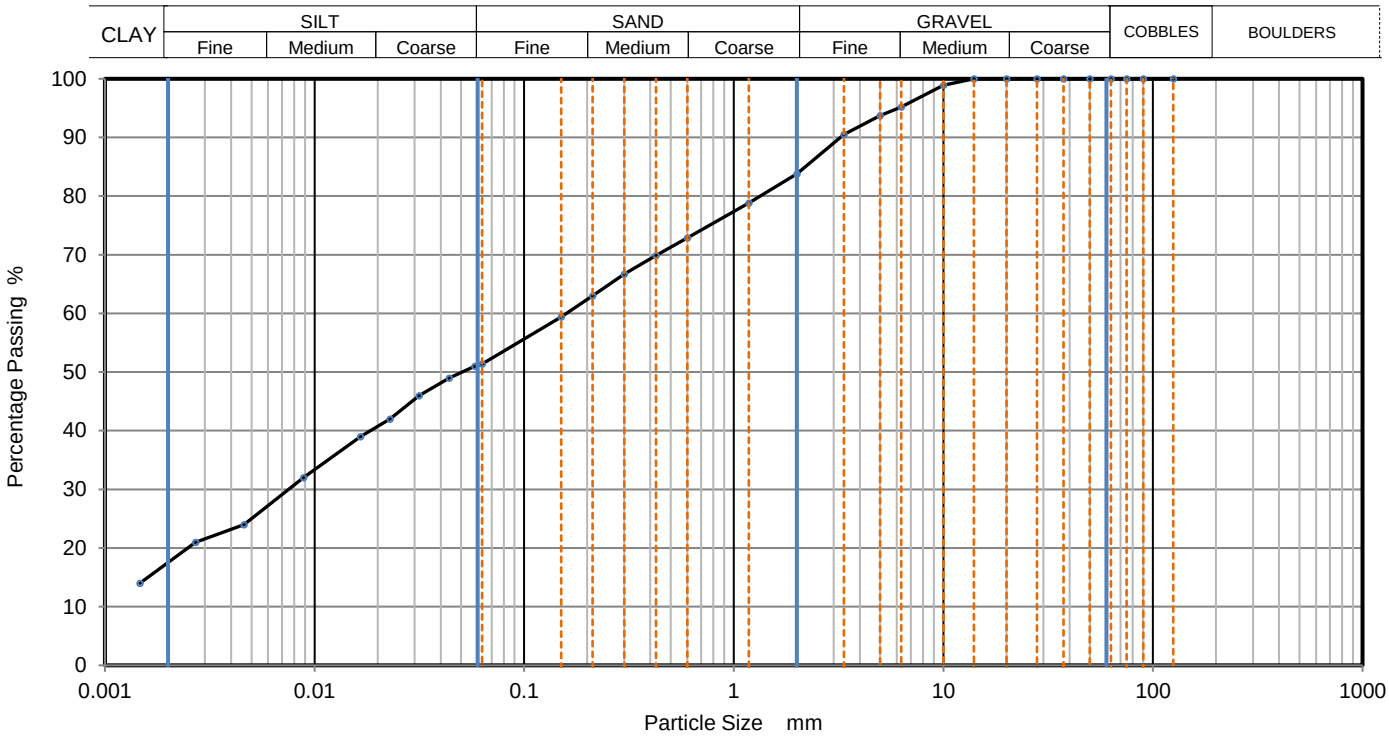
Grading Analysis		
D100	mm	
D60	mm	0.187
D30	mm	0.0106
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved
Stephen Watson

CAUSEWAY GEOTECH	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**23-0237**
				Borehole/Pit No.	TP06
Site Name	Laurclavagh			Sample No.	4
Specimen Description	Greyish brown sandy slightly gravelly silty CLAY.			Sample Depth (m) Top	3.30
				Sample Depth (m) Base	
Specimen Reference	6	Specimen Depth	3.3 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2023051047



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.05805	51
90	100	0.04391	49
75	100	0.03157	46
63	100	0.02286	42
50	100	0.01653	39
37.5	100	0.00885	32
28	100	0.00460	24
20	100	0.00271	21
14	100	0.00147	14
10	99		
6.3	95		
5	94		
3.35	91		
2	84		
1.18	79		
0.6	73	Particle density	(assumed)
0.425	70	2.65	Mg/m3
0.3	67		
0.212	63		
0.15	59		
0.063	51		

Dry Mass of sample, g: 568

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	16.2
Sand	32.4
Silt	34.0
Clay	17.4

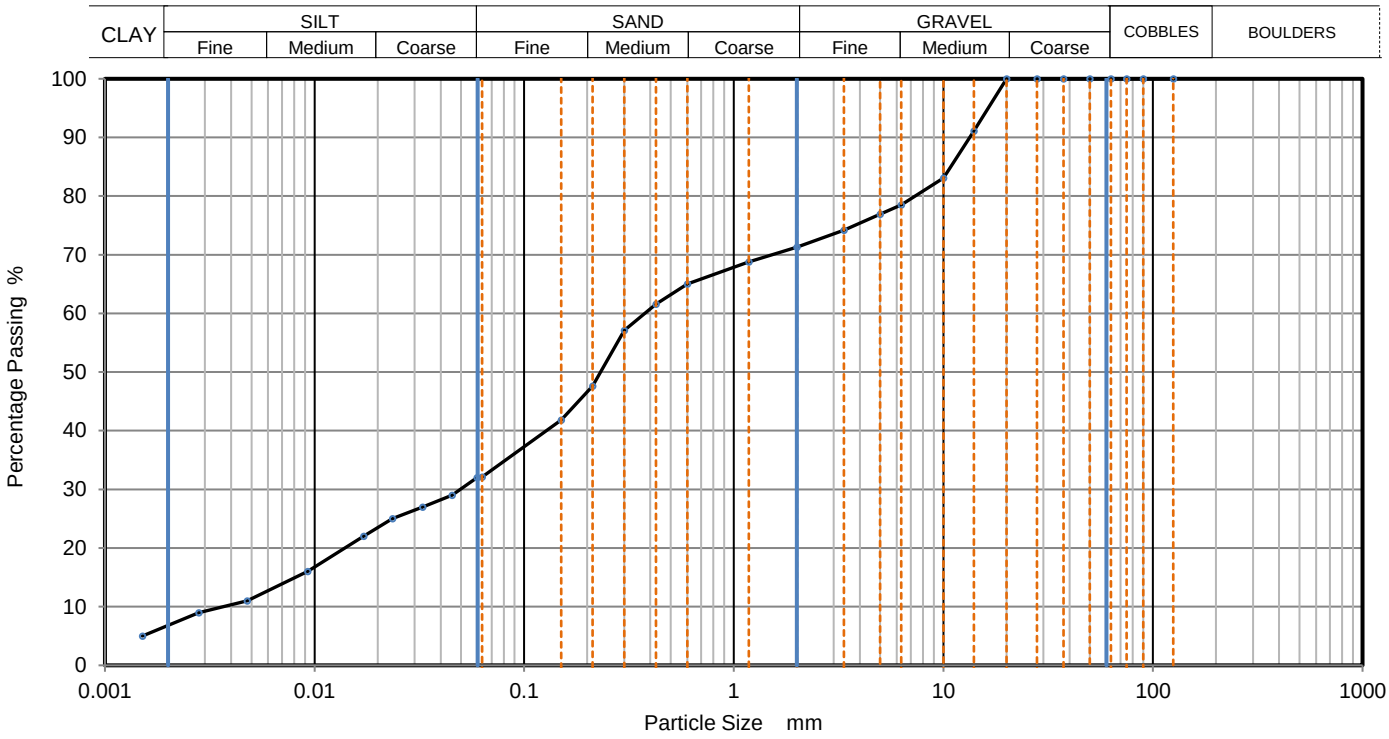
Grading Analysis		
D100	mm	
D60	mm	0.159
D30	mm	0.00739
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved
Stephen Watson

CAUSEWAY GEOTECH	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**23-0237**
				Borehole/Pit No.	TP07
Site Name	Laurclavagh			Sample No.	1
Specimen Description	Greyish brown sandy slightly gravelly clayey SILT.			Sample Depth (m) Top	0.50
				Sample Depth (m) Base	
Specimen Reference	6	Specimen Depth	0.5 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2023051048



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.05955	32
90	100	0.04536	29
75	100	0.03282	27
63	100	0.02355	25
50	100	0.01713	22
37.5	100	0.00926	16
28	100	0.00477	11
20	100	0.00281	9
14	91	0.00151	5
10	83		
6.3	79		
5	77		
3.35	74		
2	71		
1.18	69		
0.6	65	Particle density	(assumed)
0.425	62	2.65	Mg/m3
0.3	57		
0.212	48		
0.15	42		
0.063	32		

Dry Mass of sample, g: 545

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	28.7
Sand	39.2
Silt	25.3
Clay	6.8

Grading Analysis		
D100	mm	
D60	mm	0.376
D30	mm	0.0478
D10	mm	0.00368
Uniformity Coefficient		100
Curvature Coefficient		1.7

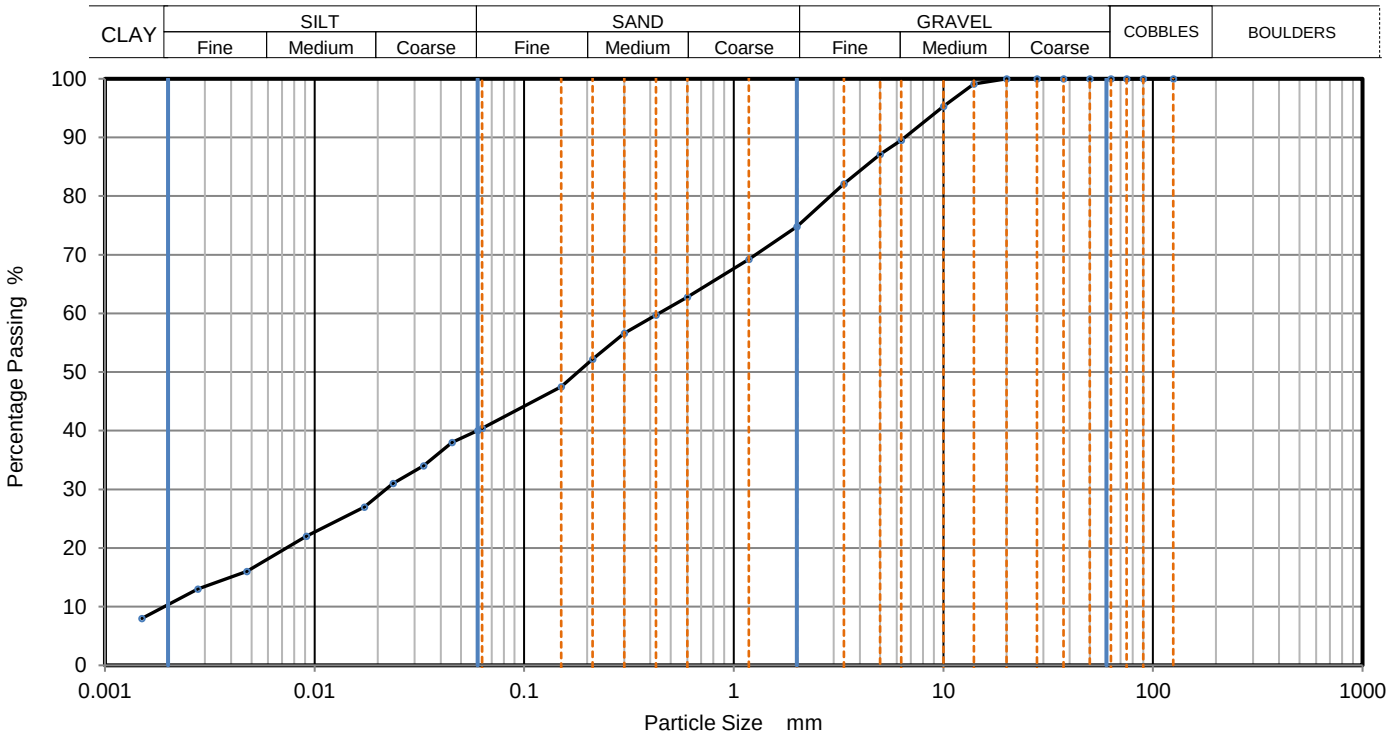
Remarks

Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved
Stephen Watson

PARTICLE SIZE DISTRIBUTION

Job Ref					23-0237
Borehole/Pit No.					TP08
Site Name	Laurclavagh			Sample No.	2
Specimen Description	Greyish brown sandy slightly gravelly silty CLAY.			Sample Depth (m) Top	1.60
				Base	
Specimen Reference	6	Specimen Depth	1.6 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2023051050



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.06003	40
90	100	0.04536	38
75	100	0.03306	34
63	100	0.02372	31
50	100	0.01725	27
37.5	100	0.00915	22
28	100	0.00475	16
20	100	0.00277	13
14	99	0.00150	8
10	95		
6.3	90		
5	87		
3.35	82		
2	75		
1.18	69		
0.6	63	Particle density	(assumed)
0.425	60	2.65	Mg/m3
0.3	57		
0.212	52		
0.15	48		
0.063	40		

Dry Mass of sample, g: 562

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	25.2
Sand	34.4
Silt	29.9
Clay	10.5

Grading Analysis		
D100	mm	
D60	mm	0.438
D30	mm	0.0214
D10	mm	0.0019
Uniformity Coefficient		230
Curvature Coefficient		0.55

Remarks

Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved
Stephen Watson

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

UKAS TESTING 2183

Final Report

Report No.: 23-16004-1

Initial Date of Issue: 19-May-2023

Re-Issue Details:

Client Causeway Geotech Ltd

Client Address: 8 Drumahiskey Road
Balnamore
Ballymoney
County Antrim
BT53 7QL

Contact(s): Alistair McQuat
Carin Cornwall
Celine Rooney
Colm Hurley
Dean McCloskey
Gabriella Horan
Lucy Newland
Matthew Gilbert
Matthew Graham
Neil Haggan
Sean Ross
Stephen Franey
Stephen Watson
Stuart Abraham
Darren O'Mahony
Neil Patton
Paul Dunlop

Project 23-0237 Laurclavagh

Quotation No.:

Date Received: 15-May-2023

Order No.:

Date Instructed: 15-May-2023

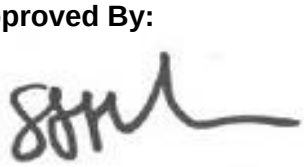
No. of Samples: 15

Turnaround (Wkdays): 5

Results Due: 19-May-2023

Date Approved: 19-May-2023

Approved By:



Details: Stuart Henderson, Technical Manager

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

Results - Soil

Project: 23-0237 Laurclavagh

Client: Causeway Geotech Ltd			**Chemtest Job No.:**		23-16004	23-16004	23-16004	23-16004	23-16004	23-16004	23-16004	23-16004
Quotation No.:			**Chemtest Sample ID.:**		1639216	1639217	1639218	1639219	1639220	1639221	1639222	1639223
Order No.:			Client Sample Ref.:		2	1	1	1	1	1	2	3
			Sample Location:		ITP01	ITP03	ITP06	ITP07	ITP08	ITP09	ITP10	ITP11
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		1	0.5	0.4	0.8	0.6	0.3	1.7	1.6
			Date Sampled:		12-May-2023	12-May-2023	12-May-2023	12-May-2023	12-May-2023	12-May-2023	12-May-2023	12-May-2023
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Moisture	N	2030	%	0.020	17	11	24	13	16	24	12	12
pH	U	2010		4.0	8.1	8.2	8.1	8.5	8.7	7.8	8.7	8.5
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	0.030	0.030	0.017	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010

Results - Soil

Project: 23-0237 Laurclavagh

Client: Causeway Geotech Ltd			**Chemtest Job No.:**		23-16004	23-16004	23-16004	23-16004	23-16004	23-16004	23-16004
Quotation No.:			**Chemtest Sample ID.:**		1639224	1639225	1639226	1639227	1639228	1639229	1639230
Order No.:			Client Sample Ref.:		2	2	1	1	1	3	1
			Sample Location:		ITP13	TP01	TP02	TP03	TP05	TP06	TP08
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		1.1	0.9	0.4	0.6	0.5	2.6	0.8
			Date Sampled:		12-May-2023	12-May-2023	12-May-2023	12-May-2023	12-May-2023	12-May-2023	12-May-2023
Determinand	**Accred.**	**SOP**	**Units**	**LOD**							
Moisture	N	2030	%	0.020	10	14	11	11	14	8.8	9.9
pH	U	2010		4.0	8.6	8.5	8.3	8.0	8.2	8.4	8.7
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES

Report Information

Key

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

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

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

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

Sample Deviation Codes

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

Sample Retention and Disposal

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

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

CAUSEWAY GEOTECH

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Registered in Ireland.
Company Number: 633786

www.causewaygeotech.com

SOIL AND ROCK SAMPLE ANALYSIS
LABORATORY TEST REPORT

2 May 2023

Project Name:	Laurclavagh WF; Ground Investigation
Project No.:	23-0237
Client:	Turnkey Developments
Engineer:	Enerco Energy

We are pleased to attach the results of laboratory testing carried out for the above project. This memo and its attachments constitute a report of the results of tests as detailed in the Contents page(s). This testing was performed between 18/04/2023 and 02/05/2023.

The attached results complete the testing requested and we would therefore wish to confirm that samples will be retained without charge for a period of 28 days from the above date after which they will be appropriately disposed of unless we receive written instructions to the contrary prior to that date.

We trust our report meets with your approval but if you have any queries or require additional information, please do not hesitate to contact the undersigned.

Stephen Watson

Laboratory Manager

Signed for and on behalf of Causeway Geotech Ltd

Project Name: Laurclavagh WF; Ground Investigation

Report Reference: Schedule 1

The table below details the tests carried out, the specifications used, and the number of tests included in this report. The results contained in this report relate to the sample(s) as received

Tests marked with* in this report are not United Kingdom Accreditation Service (UKAS) accredited and are not included in Causeway Geotech Limited's scope of UKAS Accreditation Schedule of Tests. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

Material tested	Type of test/Properties measured/Range of measurement	Standard specifications	No. of results included in the report
ROCK	Point load index	ISRM Commission on Testing Methods. Suggested Method for Determining Point Load Strength 1985	12
ROCK	Uniaxial Compressive Strength (UCS)*	ISRM Suggested Methods -Rock Characterization Testing and Monitoring, Ed. E T Brown - 1981	4

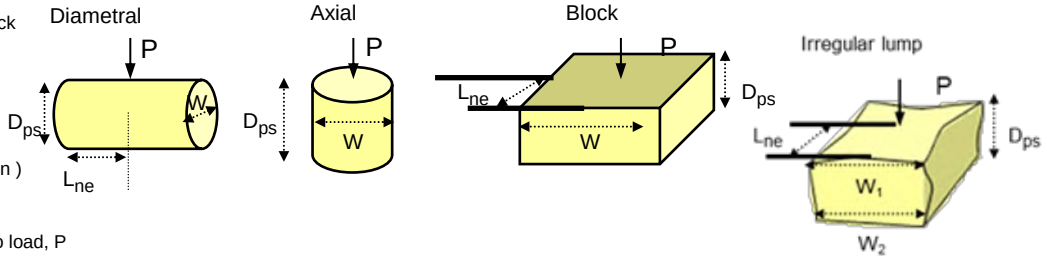
CAUSEWAY GEOTECH

Point Load Strength Index Tests
Summary of Results

Project No.	Project Name
23-0237	Laurclavagh

Borehole No.	Sample			Specimen		Rock Type	Test Type see ISRM		Failure Valid (Y/N)	Dimensions				Force P	Equivalent diameter, De	Point Load Strength Index		Remarks (including water content if measured)
	Depth	Ref.	Type	Ref.	Depth		Type (D, A, I, B)	Direction (L, P or U)		Lne	W	Dps	Dps'			Is	Is(50)	
	m				m					mm	mm	mm	mm	kN	mm	MPa	MPa	
BH RC01	6.50	1	C	1	6.50	LIMESTONE	A	U	YES		101.7	67.0	58.0	0.7	86.7	0.1	0.1	
BH RC01	6.80	2	C	1	6.80	LIMESTONE	A	U	YES		101.0	90.0	80.0	10.9	101.4	1.1	1.5	
BH RC01	9.70	3	C	1	9.70	LIMESTONE	A	U	YES		100.3	102.0	91.0	6.8	107.8	0.6	0.8	
BH RC01	10.30	4	C	1	10.30	LIMESTONE	D	U	YES	85.7	101.6	101.6	100.0	9.4	100.8	0.9	1.3	
BH RC04	6.25	1	C	1	6.25	LIMESTONE	D	U	YES	122.4	101.6	101.6	100.0	15.4	100.8	1.5	2.1	
BH RC04	9.30	2	C	1	9.30	LIMESTONE	A	U	NO		101.9	88.0	86.0	23.7	105.6	2.1	3.0	
BH RC06	6.30	2	C	1	6.30	LIMESTONE	D	U	NO	82.0	101.4	101.4	98.0	20.1	99.7	2.0	2.8	
BH RC06	9.60	3	C	1	9.60	LIMESTONE	A	U	YES		101.9	87.0	85.0	15.5	105.0	1.4	2.0	
BH RC07	5.00	1	C	1	5.00	LIMESTONE	A	U	NO		101.6	94.0	91.0	25.8	108.5	2.2	3.1	
BH RC07	8.20	2	C	1	8.20	LIMESTONE	D	U	NO	100.3	101.8	101.8	99.0	35.5	100.4	3.5	4.8	
BH RC09	8.60	2	C	1	8.60	LIMESTONE	D	U	NO	116.2	101.8	101.8	99.0	24.5	100.4	2.4	3.3	
BH RC09	9.20	3	C	1	9.20	LIMESTONE	A	U	YES		101.8	90.0	88.0	14.2	106.8	1.2	1.8	

Test Type
D - Diametral, A - Axial, I - Irregular Lump, B - Block
Direction
L - parallel to planes of weakness
P - perpendicular to planes of weakness
U - unknown or random
Dimensions
Dps - Distance between platens (platen separation)
Dps' - at failure (see ISRM note 6)
Lne - Length from platens to nearest free end
W - Width of shortest dimension perpendicular to load, P



Test performed in accordance with ISRM Suggested Methods : 2007, unless noted otherwise

Detailed legend for test and dimensions, based on ISRM, is shown above.

Size factor, F = (De/50)0.45 for all tests.

LAB 17R - Version 5

Date Printed: 05/02/2023 00:00

Approved By: Stephen Watson

UKAS TESTING
10122

UNIAXIAL COMPRESSION TEST ON ROCK - SUMMARY OF RESULTS

Project No.	Project Name
23-0237	Laurclavagh

Hole No.	Sample				Rock Type	Specimen Dimensions2			Bulk Density2	Water Content 1	Uniaxial Compression3			Remarks
	Ref	Top	Base	Type		Dia. mm	Length mm	H/D	Mg/m3	%	Condition	Mode of failure	UCS MPa	
BH RC04	3	10.50	10.75	C	LIMESTONE	101.8	200.2	2.0	2.68	0.1	as received	MS	63.4	
BH RC06	1	3.10	3.40	C	LIMESTONE	101.4	201.2	2.0	2.68	0.1	as received	F	95.5	
BH RC07	3	9.55	9.90	C	LIMESTONE	101.7	196.5	1.9	2.73	0.1	as received	F	66.3	
BH RC09	1	6.70	7.10	C	LIMESTONE	101.7	197.7	1.9	2.69	0.4	as received	F	52.2	

Notes

1 ISRM p87 test 1, water content at 105 ± 3 oC, specimen as tested for UCS

2 ISRM p86 clause (vii), Caliper method used for determination of bulk volume and derivation of bulk density

3 ISRM p153 part 1, determination of Uniaxial Compressive Strength (UCS) of Rock Materials

above notes apply unless annotated otherwise in the remarks

Mode of failure :

S - Single shear MS - multiple shear

AC - Axial cleavage F - Fragmented

Test Specification	Date Printed	Approved By	Table
International Society for Rock Mechanics, The complete ISRM suggested methods for Rock Characterization Testing and Monitoring, 2007	05/02/2023 00:00	Stephen Watson	1 sheet 1

CAUSEWAY GEOTECH

APPENDIX I

SPT HAMMER ENERGY MEASUREMENT REPORT

SPT Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

Southern Testing
Unit 11
Charlwoods Road
East Grinstead
West Sussex
RH19 2HU

SPT Hammer Ref:	0208.
Test Date:	18/02/2023
Report Date:	20/02/2023
File Name:	0208..spt
Test Operator:	RWS

Instrumented Rod Data

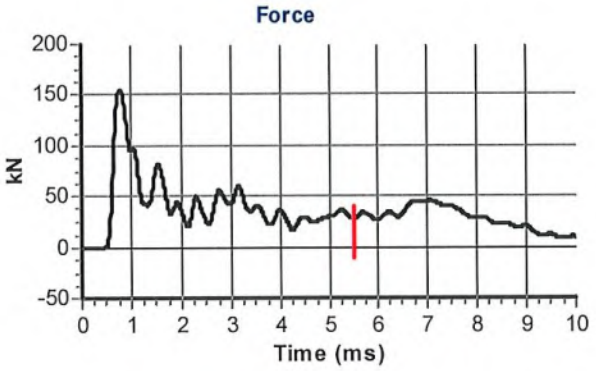
Diameter d_r (mm):	54
Wall Thickness t_r (mm):	6.7
Assumed Modulus E_a (GPa):	208
Accelerometer No.1:	64786
Accelerometer No.2:	64789

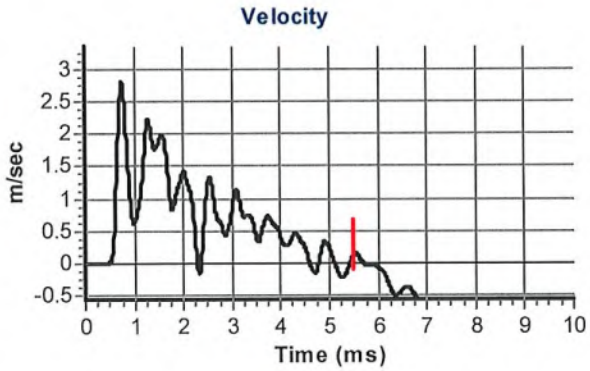
SPT Hammer Information

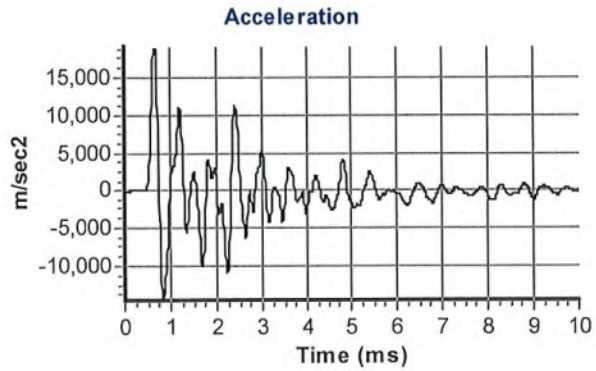
Hammer Mass m (kg):	63.5
Falling Height h (mm):	760
SPT String Length L (m):	10.0

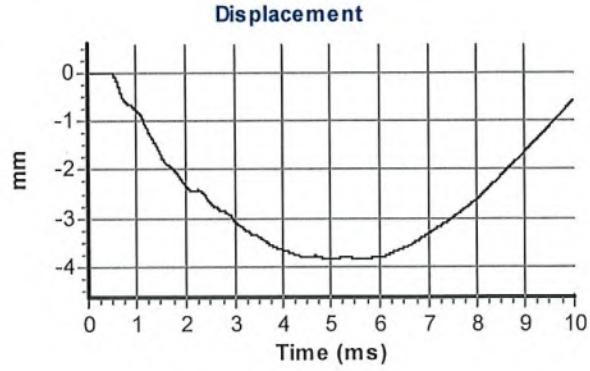
Comments / Location

CAUSEWAY









Calculations

Area of Rod A (mm2):	996
Theoretical Energy E_{theor} (J):	473
Measured Energy E_{meas} (J):	244

Energy Ratio E_r (%): **52**

Signed: Bob Stewart

Title: Technician

The recommended calibration interval is 12 months