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Ground Investigations Ireland

A034 Tinakilly Co. Wicklow

CS Consulting

Ground Investigation Report

November 2022





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1.0 Preamble

On the instructions of CS Consulting Engineers, a site investigation was carried out by Ground Investigations Ireland Ltd. (GII) between July and August 2022, at the site of the proposed residential development in Tinakilly, Rathnew, County Wicklow.

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2.0 Overview

2.1. Background

It is proposed to construct a new residential development with associated services, access roads and car parking at the proposed site. At the time of the site investigation the site was greenfield agricultural land. The proposed construction is envisaged to consist of conventional foundations and pavement make up with some local excavations for services and plant.

2.2. Purpose and Scope

The purpose of the site investigation was to investigate subsurface conditions utilising a variety of investigative methods in accordance with the project specification. The scope of the work undertaken for this project included the following:

- Visit project site to observe existing conditions
- Carry out 25 No. Trial Pits to a maximum depth of 4.00m BGL
- Carry out 6 No. Soakaways to determine a soil infiltration value to BRE Digest 365
- Carry out 25 No. Dynamic Probes to determine soil strength/density characteristics
- Carry out 6 No. Cable Percussion boreholes to a maximum depth of 10.00m BGL
- Carry out 16 No. Plate bearing tests to determine the modulus of subgrade reaction and equivalent CBR values
- Installation of 6 No. Groundwater monitoring wells
- Geotechnical & Environmental Laboratory testing
- Geotechnical Report with recommendations

3.0 Subsurface Exploration

3.1. General

During the ground investigation a programme of intrusive investigation specified by the Consulting Engineer was undertaken to determine the sub surface conditions at the proposed site. Regular sampling and in-situ testing was undertaken in the exploratory holes to facilitate the geotechnical descriptions and to enable laboratory testing to be carried out on the soil samples recovered during excavation and drilling.

The procedures used in this site investigation are in accordance with Eurocode 7 Part 2: Ground Investigation and testing (ISEN 1997 – 2:2007) and B.S. 5930:2015+A1:2020.

3.2. Trial Pits

The trial pits were excavated using a JCB 3CX excavator at the locations shown in the exploratory hole location plan in Appendix 1. The locations were checked using a CAT scan to minimise the potential for encountering services during the excavation. The trial pits were sampled, logged, and photographed by a Geotechnical Engineer/Engineering Geologist prior to backfilling with arisings. Notes were made of any services, inclusions, pit stability, groundwater encountered, and the characteristics of the strata encountered and are presented on the trial pit logs which are provided in Appendix 2 of this Report.

3.3. Soakaway Testing

The soakaway testing was carried out in selected trial pits at the locations shown in the exploratory hole location plan in Appendix 1. These pits were carefully excavated and filled with water to assess the infiltration characteristics of the proposed site. The pits were allowed to drain and the drop in water level was recorded over time as required by BRE Digest 365. The pits were logged prior to completing the soakaway test and were backfilled with arising's upon completion. The soakaway test results are provided in Appendix 3 of this Report.

3.4. Dynamic Probing

The dynamic probe tests (DPH) were carried out at the locations shown in the location plan in Appendix 1 in accordance with B.S. 1377: Part 9 1990. The test consists of mechanically driving a cone with a 50kg weight in 100mm intervals and monitoring the number of blows required. An equivalent Standard Penetration Test (SPT) 'N' value may be calculated by dividing the total number of blows over a 300mm drive length by 1.5. The dynamic probe logs are provided in Appendix 4 of this Report.

3.5. Cable Percussion Boreholes

The Cable Percussion Boreholes were drilled using a Dando 2000 drilling rig with regular in-situ testing and sampling undertaken to facilitate the production of geotechnical logs and laboratory testing.

The standard method of boring in soil for site investigation is known as the Cable Percussion method. It consists of using a Shell in non cohesive soils and a clay cutter in cohesive soils, both operated on a wire cable. Very hard soils, boulders and other hard obstructions are broken up by chiselling and the fragments removed with the Shell. Where ground conditions made it necessary, the borehole was lined with 200mm diameter steel casing. While the use of the Cable Percussion method of boring gives the maximum data on soil conditions, some mixing of laminated soil is inevitable. For this reason, thin lenses of granular material may not be noticed. Disturbed samples were taken from the boring tools at suitable depths, so that there is a representative sample at the top of each change in stratum and thereafter at regular intervals down the

borehole until the next stratum was encountered. The disturbed samples were then sealed and sent to the laboratory where they were visually examined to confirm the description of the relevant strata.

Standard Penetration Tests were carried out in the boreholes. The results of these tests, together with the depths at which the tests were taken are shown on the accompanying borehole records. The test consists of a thick wall sampler tube, 50mm external diameter, being driven into the soil by a monkey weighing 63.5kg and with a free drop of 760mm. For gravels and glacial till the driving shoe was replaced by a solid 60° cone. The Standard Penetration Test number referred to as the 'N' value is the number of blows required to drive the tube 300mm, after an initial penetration of 150mm. The number gives a guide to the consistency of the soil and can also be used to estimate the relative strength/density at the depth of the test and also to estimate the bearing capacity and compressibility of the soil. The cable percussion borehole logs are provided in Appendix 5 of this Report.

3.6. Surveying

The exploratory hole locations have been recorded using a KQGeo M8 GNSS System which records the coordinates and elevation of the locations to ITM as required by the project specification. The coordinates and elevations are provided on the exploratory hole logs in the appendices of this Report.

3.7. Groundwater Monitoring Installations

Groundwater Monitoring Installations were installed upon the completion of the boreholes to enable sampling and the determination of the equilibrium groundwater level. The typical groundwater monitoring installation consists of a 50mm uPVC/HDPE slotted pipe with a pea gravel response zone and bentonite seal installed to the Engineers specification. The standpipe is finished with a durable steel cover fixed in place with a concrete surround. The installation details are provided on the exploratory hole logs in the appendices of this Report.

3.8. Insitu Plate Bearing Test

The plate bearing tests were carried out using a 457mm diameter plate at the locations shown on the site plan in Appendix 1. The plate was loaded in increments using a hydraulic jack and an excavator to provide a reaction and the displacement was monitored in accordance with BS1377 Part 9 using independently mounted digital strain gauges. The constrained modulus and equivalent CBR are calculated in accordance with HD29/75 and are provided on the test reports in Appendix 6 of this Report.

3.9. Laboratory Testing

Samples were selected from the exploratory holes for a range of geotechnical and environmental testing to assist in the classification of soils and to provide information for the proposed design.

Environmental & Chemical testing as required by the specification, including the Rilta Suite, pH and sulphate testing was carried out by Element Materials Technology Laboratory in the United Kingdom (UK). The Rilta suite testing includes both Solid Waste and Leachate Waste Acceptance Criteria.

Geotechnical testing consisting of moisture content, Atterberg limits, Particle Size Distribution (PSD), Moisture Condition Value (MCV), Compaction/California Bearing Ratio (CBR) 5 point and Compaction/MCV 5 point tests were carried out by Professional Soils Laboratory (PSL) in the UK. The results of the laboratory testing are included in Appendix 7 of this Report.

4.0 Ground Conditions

4.1. General

The ground conditions encountered during the investigation are summarised below with reference to insitu and laboratory test results. The full details of the strata encountered during the ground investigation are provided in the exploratory hole logs included in the appendices of this report.

The sequence of strata encountered were variable across the site but generally comprised;

- Topsoil
- Granular Deposits
- Cohesive Deposits

TOPSOIL: Topsoil was encountered in all the exploratory holes and was present to a maximum depth of 0.40m BGL.

GRANULAR DEPOSITS: An upper granular deposit was encountered beneath the Topsoil in TP02, TP03, TP04, TP05, TP06, TP07, TP08, TP11, TP12, TP13, TP14, TP15, TP18, TP19, TP20, TP22 and TP25 and was typically described as *brown clayey very gravelly fine to coarse SAND*. This deposit was also found to marginally grade into a sandy CLAY in places. A second (lower) granular deposit was typically present below the upper granular deposits or the cohesive deposits and was generally described as *grey clayey very sandy subangular to subrounded fine to coarse GRAVEL*. The secondary sand/gravel and fines constituents varied across the site and with depth, while occasional (<5%), some (5%-20%) or many (20%-50%) cobble and boulder content was also present, where noted on the exploratory hole logs.

Based on the correlated N100 values the deposits are typically loose to medium dense. It should be noted that many of the trial pits where granular deposits were encountered, experienced instability. This was described either as side wall spalling or as side wall collapse in the remarks section at the base of the trial pit logs.

COHESIVE DEPOSITS: Cohesive deposits were encountered at various depths and thicknesses across the site. Cohesive deposits were encountered beneath the topsoil in TP01, TP09, TP10, TP16, TP17, TP24 and in between the granular deposits at TP01, TP03, TP04, TP06, TP11, TP19, TP20, TP22 and TP24. In trial pits TP05, TP07, TP08, TP10, TP13, TP15, TP18, TP21 and the cohesive deposits were encountered below the granular deposits. It should be noted that no cohesive material was encountered in TP02, TP14

and TP25. The cohesive deposits are described typically as *brown slightly gravelly sandy CLAY with occasional cobbles and boulders*. The secondary sand and gravel constituents varied across the site and with depth, with granular lenses occasionally present in the glacial till matrix. The strength of the cohesive deposits typically were soft or soft to firm below 1.00m BGL in many of the exploratory holes. These deposits had occasional (<5%), some (5%-20%) or many (20%-50%) cobble and boulder content, where noted on the exploratory hole logs.

4.2. Insitu Strength Testing

The correlated DPH blow counts indicate that the overburden deposits vary across the site and were soft to firm / loose to depth of 0.90m to 4.30m BGL and become firm or firm to stiff/medium dense with depth.

4.3. Groundwater

Groundwater strikes are noted on the exploratory hole logs where they occurred and where possible drilling was suspended for twenty minutes to allow the subsequent rise in groundwater to be recorded. We would point out that these exploratory holes did not remain open for sufficiently long periods of time to establish the hydrogeological regime and groundwater levels would be expected to vary with the tide, time of year, rainfall, nearby construction, and other factors. For this reason, standpipes were installed at all borehole locations to allow the equilibrium groundwater level to be determined. The groundwater monitoring is included in Appendix 8 of this Report.

4.4. Laboratory Testing

4.4.1. Geotechnical Laboratory Testing

The geotechnical testing carried out on soil samples recovered generally confirm the descriptions on the logs with the primary constituent of the cohesive deposits found to be a CLAY of low to intermediate plasticity. The Particle Size Distribution tests confirm that generally the cohesive deposits are well-graded with percentages of sands ranging between 14% to 50% and gravels ranging between 0% and 39% with a fines contents of between 23% to 86%. The moisture content for the cohesive samples ranged from 7.2% to 23%.

The Particle Size Distribution tests on the granular deposits confirm there are both sand and gravel deposits present on site. The gravel deposits are generally uniformly graded with percentages of fines ranging between 3% to 5% and gravels ranging between 62% and 71% generally with sand contents of 17% to 30%. The sand deposits are also uniformly graded with percentages of fines ranging between 3% to 11% and gravels ranging between 0% and 25% generally with sand contents of 55% to 86%. The moisture content for the granular samples ranged from 5.6% to 10%.

The MCV results range from less than 1 to 15.4 in the cohesive samples and 8.1 to 17.5 in the granular deposits. The consolidated undrained testing to determine the effective shear strength parameters of the cohesive deposits, gave an effective angle of friction of 25.2 degrees to 31.3 degrees, and effective cohesive of 5.34 kPa to 8.57 kPa. The consolidated undrained testing on the granular deposit sample, gave an effective angle of friction of 35 degrees, and effective cohesive of 4 kPa.

The compaction testing (DD/MC relationship) using the 2.5kg rammer reported Optimum Moisture Contents (OMC) of 8% to 11% for the granular deposits and 9% to 20% for the cohesive samples tested, compared to a Natural Moisture Content (NMC) of 5.6% to 10% in the granular deposits and 7.2% to 23% in the cohesive deposits. The granular deposits are generally within 2.5% of the OMC and the cohesive samples are typically range between 3% to 6% wet or dry of the OMC. Both cohesive and granular samples show a sensitivity to moisture content with the MCV and CBR parameters varying significantly with small increases in moisture content.

4.4.2. Chemical Laboratory Testing

The pH and sulphate testing carried out indicate that pH results are near neutral and that the water soluble sulphate results is low when compared to the guideline values from BRE Special Digest 1:2005. The samples tested classify the soil as a Design Sulphate Level DS-1.

4.4.3. Environmental Laboratory Testing

A number of samples were analysed for a suite of parameters which allows for the assessment of the sampled material in terms of total pollutant content for classification of materials as *hazardous* or *non-hazardous*. The suite also allows for the assessment of the sampled material in terms of suitability for placement at licenced landfills (inert, stable non-reactive, hazardous etc.). The parameter list for the suite includes analysis of the solid samples for arsenic, barium, cadmium, chromium, copper, cyanide, lead, nickel, mercury, zinc, speciated aliphatic and aromatic petroleum hydrocarbons, pH, sulphate, sulphide, moisture content, soil organic matter and an asbestos screen.

The suite also includes those parameters specified in the EU Council Decision establishing criteria for the acceptance of waste at Landfills (Council Decision 2003/33/EC), which for the solid samples are total organic carbon (TOC), speciated aliphatic and aromatic petroleum hydrocarbons, BTEX, phenol, polychlorinated biphenyls (PCB) and PAH.

As part of the suite a leachate is generated from the solid sample which is analysed for antimony, arsenic, barium, cadmium, chromium, copper, lead, mercury, molybdenum, nickel, selenium, zinc, chloride, fluoride, soluble sulphate, sulphide, phenols, dissolved organic carbon (DOC) and total dissolved solids (TDS).

While the laboratory report provides a comparison with the waste acceptance criteria limits it does not provide a waste classification of the material sampled nor does it comment on any potentially hazardous properties of the materials tested. The possibility for contamination, not revealed by the testing undertaken should be borne in mind particularly where Made Ground deposits are present or the previous site use or location indicate a risk of environmental variation. The waste classification report is included under the cover of a separate report by Ground Investigations Ireland.

The results from the completed laboratory testing are included in Appendix 7 of this report.

5.0 Recommendations & Conclusions

5.1. General

The recommendations given and opinions expressed in this report are based on the findings as detailed in the exploratory hole records. Where an opinion is expressed on the material between exploratory hole locations, this is for guidance only and no liability can be accepted for its accuracy. No responsibility can be accepted for conditions which have not been revealed by the exploratory holes. Limited information has been provided at the ground investigation stage and any designs based on the recommendations or conclusions should be completed in accordance with the current design codes, taking into account the variation and the specific details contained within the exploratory hole logs.

5.2. Foundations

The allowable bearing capacities recommended for conventional strip or pad foundations are outlined in Table 1 below. The depths recommended have been kept as shallow as possible due to the loose or soft deposits encountered and collapsing sides noted on the trial pit logs, which may make conventional strip foundations difficult to construct. Piled or vibro stone column foundations are recommended where noted on the table or may be more appropriate for the entire site if the volume of excavation and the constructability of the foundations make that foundation type more economically advantageous.

Table 1 - Allowable Bearing Capacities

Depth to 80 kN/m ²				Depth to 125 kN/m ²			
Exp. Hole	ABC	Depth		Exp. Hole	ABC	Depth	
No.	kN/m ²	m BGL	Comment	No.	kN/m ²	m BGL	Comment
BH01	80	1.00		BH01	125	4.00	Vibro / Piling
BH02	80	2.00		BH02	125	3.00	Vibro / Piling
BH03	80	2.00		BH03	125	3.10	Vibro / Piling
BH04	80	1.00		BH04	125	6.00	Vibro / Piling
BH05	80	2.00		BH05	125	3.70	Vibro / Piling
BH06	80	3.00	Vibro / Piling	BH06	125	4.00	Vibro / Piling
DP01	80	2.60	Vibro / Piling	DP01	125	3.20	Vibro / Piling
DP02	-	-		DP02	125	1.00	
DP03	-	-		DP03	125	2.30	Vibro / Piling
DP04	-	-		DP04	125	4.30	Vibro / Piling
DP05	80	3.30	Vibro / Piling	DP05	125	3.60	Vibro / Piling
DP06	80	1.30		DP06	125	3.60	Vibro / Piling
DP07	-	-		DP07	125	2.50	Vibro / Piling
DP08	-	-		DP08	125	3.20	Vibro / Piling
DP09	80	3.70	Vibro / Piling	DP09	125	4.10	Vibro / Piling
DP10	-	-		DP10	125	3.30	Vibro / Piling
DP11	80	2.40	Vibro / Piling	DP11	125	2.90	Vibro / Piling
DP12	80	2.30	Vibro / Piling	DP12	125	2.80	Vibro / Piling
DP13	80	3.30	Vibro / Piling	DP13	125	4.20	Vibro / Piling
DP14	80	0.80		DP14	125	1.30	

Depth to 80 kN/m ²				Depth to 125 kN/m ²			
Exp. Hole	ABC	Depth		Exp. Hole	ABC	Depth	
No.	kN/m ²	m BGL	Comment	No.	kN/m ²	m BGL	Comment
DP15	80	4.50	Vibro / Piling	DP15	125	4.80	Vibro / Piling
DP16	80	3.20	Vibro / Piling	DP16	125	4.50	Vibro / Piling
DP17	80	3.10	Vibro / Piling	DP17	125	3.30	Vibro / Piling
DP18	80	3.20	Vibro / Piling	DP18	125	3.40	Vibro / Piling
DP19	80	3.30	Vibro / Piling	DP19	125	3.50	Vibro / Piling
DP20	80	2.60	Vibro / Piling	DP20	125	3.20	Vibro / Piling
DP21	80	1.00		DP21	125	1.70	
DP22	80	3.00	Vibro / Piling	DP22	125	4.70	Vibro / Piling
DP23	80	2.50	Vibro / Piling	DP23	125	2.90	Vibro / Piling
DP24	80	2.80	Vibro / Piling	DP24	125	3.20	Vibro / Piling
DP25	80	1.10		DP25	125	1.70	

The possibility for variation in the depth of the soft deposits in the vicinity of these foundations should be considered and foundation inspections should be carried out. Any soft spots encountered at the proposed foundation depths should be excavated and replaced with lean mix concrete.

In any part of the site, should both a cohesive deposit and granular deposit be encountered at foundation level, it is recommended that all foundations of the unit in question be lowered to the same stratum to avoid differential settlement.

The pH and sulphate testing completed on samples recovered from the exploratory holes indicates the pH results are near neutral and the sulphate results are low, when compared to the guideline values from BRE Special Digest 1:2005. No special precautions are required for concrete foundations to prevent sulphate attack. The samples tested were below the limits of DS1 in the BRE Special Digest 1:2005.

5.3. External Pavements

The proposed pavements are recommended to be designed in accordance with the CBR test results included in the Appendices of this Report. The low CBR test results indicate that a capping layer or a sufficient depth of crushed stone fill may be required. Plate bearing tests are recommended at the time of construction to verify the design assumptions for the proposed pavement make up and to verify adequate compaction has been achieved.

The use of a geogrid and separation membrane may improve the performance of the proposed pavement and enable a more economical pavement design to be achieved, a specialist supplier is recommended to advise of the required strength, depth and type of geotextile for the proposed design.

5.4. Material Reuse

Table 2 below summarises the results of the material reuse testing. The results of the cohesive material are variable, with eighteen of the eighteen cohesive samples tested indicating they would not be suitable in their current state and would require treatment during the earthworks to reduce the moisture content to an acceptable level for use as Class 2 fill. The MCV testing is typically required to be greater than 8 for acceptable fill with 7-8 considered marginal. Four of the samples tested were below these guideline values. Additionally, a further four samples which underwent compaction testing were found to be 3% wet of optimum moisture content (OMC) and thus require treatment to reduce the moisture content to be rendered useable as a Class 2 Fill.

Generally, the granular samples tested would be acceptable for use as Class 1B Fill (Uniformly Graded Granular Fill). However, where the fines content is found to exceed 15% during site processing, the material must be considered a Class 2 Fill (Cohesive). Some of this material (TP18 at 3.00m BGL) requires treatment to reduce or increase the optimum moisture content to within 2% of the OMC or to achieve an MCV of greater than 7 or 8.

The addition of lime and/or cement can assist in reducing the moisture content and render it suitable for use as capping material, providing strict controls are put in place to monitor the works and to ensure compliance with the project earthworks specification. A specialist geotechnical consultant is recommended to review and to develop the earthworks specification for the proposed works, particularly where the uniformly grading granular material or lime/cement stabilisation is proposed. To assess fully the percentage of lime and/or cement required to carry out the soil stabilisation, further testing needs to be carried out.

The moisture content should be carefully monitored and control to be within +/- 2% of the OMC or to achieve an MCV of greater than 7 or 8. The compaction should be specified to achieve 95% relative compaction where construction is proposed, and settlement monitoring undertaken over an appropriate time period to confirm the formation level is suitable for pavement construction. A programme of regular compliance testing, including regular density testing should be undertaken during earthworks to confirm the final compaction achieved. Material outside of the acceptable moisture content can be used as landscaping fill or in areas where settlement can be tolerated without further treatment.

Table 2 - Material Reuse

Exp. Hole No.	Sample Depth (m BGL)	Sample Depths (m OD)	MC (%)	MCV	OMC (%)	Stratum	Silt/Clay Content (%)	Material Reuse
TP01	0.50	17.60	7.2	12.8*	9	slightly gravelly sandy CLAY	23	Class 2 Fill
TP01	1.50	16.60	11	10.5	-	CLAY	-	Class 2 Fill
TP01	2.00	16.10	21	9.5	-	slightly gravelly slightly sandy CLAY	77	Class 2 Fill
TP02	1.50	12.39	5.6	12	-	slightly clayey very sandy GRAVEL	5	Class 1B Fill

Exp. Hole No.	Sample Depth (m BGL)	Sample Depths (m OD)	MC (%)	MCV	OMC (%)	Stratum	Silt/Clay Content (%)	Material Reuse
TP04	0.50	17.45	11	13.8	-	CLAY	-	Class 2 Fill
TP04	1.50	16.45	17	-	14	slightly gravelly slightly sandy CLAY	64	Presumed Class 2 Fill
TP05	0.50	18.96	8	7.8	-	CLAY	-	Class 2 Fill
TP05	2.00	17.46	6.5	17.2	8	slightly clayey very sandy GRAVEL	3	Class 1B Fill
TP07	2.50	20.08	6.1	11.2	-	slightly clayey sandy GRAVEL	4	Class 1B Fill
TP08	2.00	21.84	23	6.3	20	slightly sandy CLAY	86	Requires Treatment
TP10	0.50	16.61	11	12.7	-	slightly gravelly sandy CLAY	30	Class 2 Fill
TP12	1.00	13.09	12	8.8*	12	slightly gravelly sandy CLAY	45	Class 2 Fill
TP12	2.50	11.59	18	4.7	-	CLAY	-	Requires Treatment
TP13	1.00	18.92	12	12	-	slightly gravelly sandy CLAY	39	Class 2 Fill
TP14	2.00	19.56	5.8	14.1	-	slightly clayey sandy GRAVEL	5	Class 1B Fill
TP15	0.50	21.35	12	15.4	-	CLAY	-	Class 2 Fill
TP15	1.50	20.35	16	-	13	slightly gravelly slightly sandy CLAY	47	Presumed Class 2 Fill
TP16	1.00	23.73	6.1	13.4	-	clayey SAND	12	Class 1B Fill
TP16	2.50	22.23	29	3.3	-	CLAY	-	Requires Treatment
TP17	0.50	11.47	13	9*	13	slightly gravelly sandy CLAY	33	Class 2 Fill
TP17	2.00	9.97	9.7	16.2	-	clayey very gravelly SAND	11	Class 1B Fill
TP18	3.00	14.16	17	0.8	-	slightly gravelly sandy CLAY	18	Requires Treatment
TP20	1.50	17.78	13	8	-	slightly gravelly sandy CLAY	32	Class 2 Fill
TP20	3.00	16.28	8.3	8.1*	8	SAND	-	Class 1B Fill
TP22	2.00	18.25	10	17.5	-	slightly clayey very gravelly SAND	3	Class 1B Fill
TP23	1.50	22.03	18	6.8	-	slightly gravelly slightly sandy CLAY	66	Requires Treatment
TP24	0.50	25.63	10	11.7	-	CLAY	-	Class 2 Fill
TP24	1.50	24.63	18	-	15	sandy CLAY	65	Presumed Class 2 Fill
TP25	1.00	26.09	7.2	17.1*	11	SAND	-	Class 1B Fill

*5-point MCV Result

5.5. Excavations

Short term temporary excavations in the cohesive deposits will remain stable for a limited time only and will require to be appropriately battered or the sides supported if the excavation is below 1.25m BGL or is

required to permit man entry. Excavations in the soft Cohesive Deposits will require to be appropriately battered or the sides supported due to the low strength of these deposits. Any excavations which penetrate the granular deposits will require to be appropriately battered or the sides supported and may require dewatering. The groundwater and stability noted on the trial pit logs should be consulted when determining the most appropriate construction methods for excavations.

Any waste material to be removed off site should be disposed of to a suitably licenced landfill. The environmental testing completed during the ground investigation is reported under the cover of a separate GII Waste Classification Report.

5.6. Soakaway Design

Infiltration rates of $f = 3.346 \times 10^{-6}$ m/s, 3.979×10^{-6} m/s, 3.616×10^{-6} m/s, 6.314×10^{-6} m/s were calculated for the soakaway location ST01, ST02, ST03, and ST06, respectively. At the locations of ST04 and ST05 the water level dropped too slowly to allow calculation of 'f' the soil infiltration rate. These locations are therefore not recommended as suitable for soakaway design and construction.

The recommendations provided in this report should be verified in the design of the proposed buildings, using the full details of the loading conditions and taking into consideration the allowable tolerable settlements/movements that the building can accommodate. The founding strata should be inspected and verified by a suitably qualified engineer prior to construction of the building foundations.

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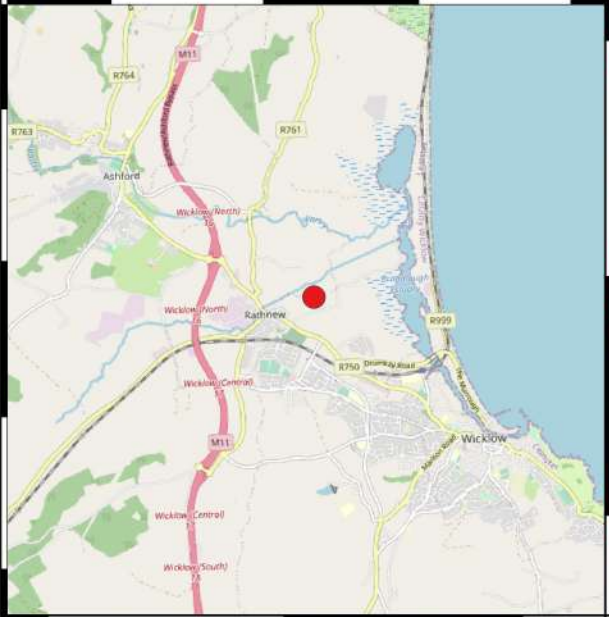
APPENDIX 1 - Figures



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727500E 727800E 728100E 728400E 728700E 729000E 729300E 729600E 729900E 730200E 730500E

697200N
696900N
696600N
696300N
696000N
695700N
695400N
695100N
694800N



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- Site Location
- ▭ Indicative Site Boundary

Engineer:



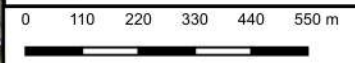
Project Code:
11957-06-22

Project Title:
A034 Tinakilly, Co. Wicklow

Drawing Title:
Figure 1 Site Location



GROUND INVESTIGATIONS IRELAND
Geotechnical & Environmental
Ground Investigations Ireland Ltd.
Catherinstown House,
Hazelhatch Road,
Newcastle, Co. Dublin
www.gii.ie 01-6015175/5176



Drawn By:
FOD
Date:
06/09/2022

727500E 727800E 728100E 728400E 728700E 729000E 729300E 729600E 729900E 730200E 730500E

728850E

729000E

729150E

729300E

729450E

729600E

696150N

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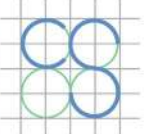


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- Soakaways
- CBRs
- Trial Pits
- Borehole
- Site Location
- Indicative Site Boundary

Client:



CS CONSULTING GROUP

Project Code:
11957-06-22

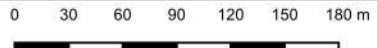
Project Title:
A034 Tinakilly, Co. Wicklow

Drawing Title:
Figure 2 - SI Plan



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Drawn By: FOD	Date: 06/09/2022
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APPENDIX 2 – Trial Pit Records





Machine : JCB 3CX Method : Trial Pit	Dimensions 4.00m x 0.80m x 3.50m L x W x D	Ground Level (mOD) 18.10	Client Ardale	Job Number 11957-06-22
	Location (dGPS) 729237.5 E 695787.2 N	Dates 17/08/2022	Engineer CS Consulting	Sheet 1/1

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Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50 0.50	B ES			17.80	(0.30) 0.30	TOPSOIL Soft orangish brown slightly gravelly sandy CLAY with granular lenses. Gravel is subangular to subrounded fine to coarse		
1.50	B			17.20	(0.60) 0.90	Loose brown slightly clayey very gravelly fine to coarse SAND with occasional subrounded cobbles and clay pockets. Gravel is subrounded fine to coarse		
2.00	B			16.30	(0.60) 1.80	Soft to firm brown mottled black slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse		
3.00	B			15.70	(1.10) 2.40	Medium dense grey very sandy subangular to subrounded fine to coarse predominantly fine GRAVEL with pockets of brownish grey silt Possible brownish grey slightly sandy clayey SILT at base of pit		
				14.60	3.50	Complete at 3.50m		

Plan	Remarks
	No groundwater encountered Trial pit stable Trial pit backfilled upon completion
	Scale (approx) 1:25
	Logged By SG
	Figure No. 11957-06-22.TP01



Machine : JCB 3CX Method : Trial Pit	Dimensions 4.00m x 0.80m x 3.50m L x W x D	Ground Level (mOD) 13.89	Client Ardale	Job Number 11957-06-22
	Location (dGPS) 729320.4 E 695845.5 N	Dates 17/08/2022	Engineer CS Consulting	Sheet 1/1

RECEIVED: 14/08/2023

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50 0.50	B ES			13.64	(0.25) 0.25	TOPSOIL		
					(0.65)	Medium dense brown slightly clayey very gravelly fine to coarse SAND. Gravel is subrounded fine to coarse		
1.50	B			12.99	0.90	Medium dense brownish grey slightly clayey very sandy subangular to subrounded fine to coarse predominantly fine GRAVEL		
					(1.00)			
				11.99	1.90	Dense brownish grey very sandy subangular to subrounded fine to coarse predominantly fine GRAVEL		
					(1.60)			
				10.39	3.50	Complete at 3.50m		

Plan .	Remarks No groundwater encountered Trial pit unstable; walls collapsing Trial pit backfilled upon completion		
	Scale (approx) 1:25	Logged By SG	Figure No. 11957-06-22.TP02



Machine : JCB 3CX Method : Trial Pit	Dimensions 4.00m x 0.80m x 3.50m L x W x D	Ground Level (mOD) 17.73	Client Ardale	Job Number 11957-06-22
	Location (dGPS) 729347.7 E 695809.9 N	Dates 17/08/2022	Engineer CS Consulting	Sheet 1/1

RECEIVED: 14/08/2023

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
1.00 1.00	B ES			17.43	(0.30) 0.30	TOPSOIL		
					(0.60)	Loose brown slightly gravelly clayey fine to coarse SAND. Gravel is subrounded fine to medium		
				16.83	0.90	Soft to firm brown slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse		
					(1.10)			
				15.73	2.00	Medium dense brownish grey slightly clayey very sandy subangular to subrounded fine to coarse GRAVEL		
2.50	B				(0.90)			
				14.83	2.90	Dense brownish grey slightly clayey very sandy subangular to subrounded fine to coarse GRAVEL		
					(0.60)	Onto a grey very sandy subangular to subrounded fine to coarse predominantly fine GRAVEL		
				14.23	3.50	Complete at 3.50m		

Plan .	Remarks No groundwater encountered Trial pit unstable; walls collapsing Trial pit backfilled upon completion		
	Scale (approx) 1:25	Logged By SG	Figure No. 11957-06-22.TP03



Machine : JCB 3CX Method : Trial Pit		Dimensions 3.80m x 0.80m x 4.00m L x W x D		Ground Level (mOD) 17.95		Client Ardale		Job Number 11957-06-22	
		Location (dGPS) 729459.9 E 695853.2 N		Dates 16/08/2022		Engineer CS Consulting		Sheet 1/1	

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Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50 0.50	B ES			17.65	(0.30) 0.30	TOPSOIL Loose light brown clayey gravelly fine to medium SAND with occasional clay pockets. Gravel is subrounded fine to coarse		
1.50	B			16.95	(1.20) 1.20	Soft to firm brown slightly sandy slightly gravelly CLAY. Gravel is subrounded fine to medium		
				15.75	(1.10) 1.10	Loose to medium dense light brown slightly gravelly clayey fine SAND with occasional clay pockets. Gravel is subrounded fine to medium		
				14.65	(0.70) 0.70	Medium dense light brown slightly gravelly clayey fine SAND with occasional clay pockets. Gravel is subrounded fine to medium		
				13.95	4.00			

Plan .	Remarks No groundwater encountered Trial pit stable Trial pit backfilled upon completion		
	Scale (approx) 1:25	Logged By SG	Figure No. 11957-06-22.TP04



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Site
A034 Tinakilly Co. Wicklow

Trial Pit Number
TP05

Machine : JCB 3CX	Dimensions 3.80m x 0.80m x 4.00m L x W x D	Ground Level (mOD) 19.46	Client Ardale	Job Number 11957-06-22
Method : Trial Pit	Location (dGPS) 729241.8 E 695732.3 N	Dates 16/08/2022	Engineer CS Consulting	Sheet 1/1

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Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50 0.50	B ES			19.21	(0.25) 0.25	TOPSOIL Loose brown gravelly very clayey fine to medium SAND. Gravel is subrounded to rounded fine to coarse		
2.00	B			18.26	(1.50) 1.20	Loose brownish grey slightly clayey very sandy subangular to subrounded fine to coarse GRAVEL with occasional subrounded cobbles		
				16.76	(0.90) 2.70	Soft to firm redish brown slightly sandy slightly gravelly CLAY with occasional subrounded cobbles and granular lenses. Gravel is subrounded fine to coarse		
				15.86	(0.40) 3.60	Stiff redish brown slightly sandy slightly gravelly CLAY with occasional subrounded cobbles and granular lenses. Gravel is subrounded fine to coarse		
				15.46	4.00			

Plan	.	.	.	.	.	.	.	.	.	.

Remarks

No groundwater encountered
Trial pit unstable; walls collapsing
Trial pit backfilled upon completion

Scale (approx) 1:25	Logged By SG	Figure No. 11957-06-22.TP05
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Machine : JCB 3CX Method : Trial Pit	Dimensions 3.80m x 0.80m x 4.00m L x W x D	Ground Level (mOD) 21.32	Client Ardale	Job Number 11957-06-22
	Location (dGPS) 729298.6 E 695766.7 N	Dates 16/08/2022	Engineer CS Consulting	Sheet 1/1

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Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
1.00 1.00	B ES			21.02	(0.30) 0.30	TOPSOIL		
				20.62	(0.40) 0.70	Loose brown slightly gravelly very clayey medium SAND. Gravel is subrounded fine to coarse		
				19.92	(0.70) 1.40	Soft to firm redish brown slightly sandy slightly gravelly CLAY. Gravel is subrounded fine to coarse		
2.00	B			18.72	(1.20) 2.60	Medium dense brown gravelly coarse SAND with occasional clay and silt pockets		
3.00	B			17.62	(1.10) 3.70	Firm brown slightly gravelly sandy clayey SILT. Gravel is subrounded fine to coarse		
				17.32	(0.30) 4.00	Very stiff brown slightly gravelly sandy clayey SILT. Gravel is subrounded fine to coarse		

Plan .	Remarks No groundwater encountered Trial pit stable Trial pit backfilled upon completion		
	Scale (approx) 1:25	Logged By SG	Figure No. 11957-06-22.TP06



Machine : JCB 3CX Method : Trial Pit	Dimensions 3.80m x 0.80m x 3.50m L x W x D	Ground Level (mOD) 22.58	Client Ardale	Job Number 11957-06-22
	Location (dGPS) 729331.3 E 695735.3 N	Dates 16/08/2022	Engineer CS Consulting	Sheet 1/1

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Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50	B			22.28	(0.30)	TOPSOIL		
					0.30	Loose to medium dense orangish brown gravelly fine SAND. Gravel is subrounded fine to coarse		
1.00	ES			21.78	(0.50)			
					0.80	Medium dense greyish brown very sandy subrounded fine to coarse predominantly fine GRAVEL with some subrounded cobbles		
2.50	B			20.88	(0.90)			
					1.70	Medium dense slightly clayey sandy subangular to subrounded fine to coarse predominately fine GRAVEL with some subrounded cobbles		
3.50	B			19.38	(1.50)			
					3.20	Very stiff brown slightly sandy slightly gravelly silty CLAY. Gravel is subrounded fine to medium		
				19.08	3.50	Complete at 3.50m		

Plan .	Remarks No groundwater encountered Trial pit unstable; walls collapsing Trial pit backfilled upon completion	
		Scale (approx) 1:25



Machine : JCB 3CX Method : Trial Pit		Dimensions 3.80m x 0.80m x 4.00m L x W x D	Ground Level (mOD) 23.84	Client Ardale	Job Number 11957-06-22
		Location (dGPS) 729423.6 E 695769.9 N	Dates 16/08/2022	Engineer CS Consulting	Sheet 1/1

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Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50 0.50	B ES			23.49	(0.35) 0.35	TOPSOIL		
				22.89	(0.60) 0.95	Loose light brown slightly clayey gravelly medium SAND with occasional clay pockets. Gravel is subrounded fine to coarse		
2.00	B			20.64	(2.25) 3.20	Soft to firm brown slightly sandy silty CLAY		
				19.84	(0.80) 4.00	Stiff to very stiff brown slightly sandy slightly gravelly silty CLAY. Gravel is subrounded fine to coarse		

Plan .	Remarks No groundwater encountered Trial pit stable Trial pit backfilled upon completion					
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Scale (approx)	Logged By	Figure No.				
1:25	SG	11957-06-22.TP08				



Machine : JCB 3CX Method : Trial Pit	Dimensions 3.80m x 0.80m x 4.00m L x W x D	Ground Level (mOD) 23.15	Client Ardale	Job Number 11957-06-22
	Location (dGPS) 729478.9 E 695805 N	Dates 16/08/2022	Engineer CS Consulting	Sheet 1/1

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Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
1.00 1.00	B ES			22.80	(0.35) 0.35	TOPSOIL Soft to firm brown slightly sandy slightly gravelly CLAY. Gravel is subrounded fine to coarse		
2.50	B			21.35	(1.45) 1.80	Loose brown slightly gravelly clayey fine SAND with clay pockets. Gravel is subrounded fine to medium Interbedded with soft to firm brown slightly gravelly sandy Clay		
4.00	B			19.35	3.80 (0.20)	Firm brown silty sandy CLAY		
4.00				19.15	4.00			

Plan								

Remarks
No groundwater encountered
Trial pit stable
Trial pit backfilled upon completion

Scale (approx) 1:25	Logged By SG	Figure No. 11957-06-22.TP09
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Machine : JCB 3CX
Method : Trial Pit

Dimensions
4.20m x 0.70m x 4.00m
L x W x D

Ground Level (mOD)
17.11

Client
Ardale

Job Number
11957-06-22

Location (dGPS)
729220.1 E 695686.7 N

Dates
15/08/2022

Engineer
CS Consulting

Sheet
1/1

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Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50	B ES			16.81	(0.30)	TOPSOIL		
0.50					0.30	Soft brown slightly gravelly sandy CLAY. Gravel is subangular to subrounded fine to coarse		
1.50	B			16.21	(0.60)	Soft brown slightly sandy slightly gravelly CLAY. Gravel is subrounded fine to coarse		
					0.90			
					(2.30)			
					13.91			3.20	Stiff brown slightly silty slightly sandy slightly gravelly CLAY with many granular lenses. Gravel is subrounded fine to coarse
				13.51	3.60	Very stiff brown slightly silty slightly sandy slightly gravelly CLAY with many granular lenses. Gravel is subrounded fine to coarse		
				13.11	4.00			

Plan
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Remarks

No groundwater encountered
Trial pit stable
Pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	SG	11957-06-22.TP10



Machine : JCB 3CX Method : Trial Pit	Dimensions 3.80m x 0.80m x 3.50m L x W x D	Ground Level (mOD) 20.41	Client Ardale	Job Number 11957-06-22
	Location (dGPS) 729274 E 695688.8 N	Dates 16/08/2022	Engineer CS Consulting	Sheet 1/1

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Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50 0.50	B ES			20.11	(0.30) 0.30	TOPSOIL		
					(0.80)	Loose to medium dense brown very gravelly fine to coarse SAND. Gravel is subrounded fine to coarse		
				19.31	1.10	Loose to medium dense brown clayey very gravelly fine to coarse SAND with many clay pockets. Gravel is subangular to subrounded fine to coarse		
				19.01	1.40	Soft to firm brown slightly sandy slightly gravelly CLAY with occasional granular lenses. Gravel is subrounded fine to coarse		
2.00	B				(1.70)			
				17.31	3.10	Medium dense grey very sandy subangular to subrounded fine to coarse GRAVEL		
				16.91	3.50	Complete at 3.50m		

Plan .	Remarks No groundwater encountered Trial pit stable Trial pit backfilled upon completion		
	Scale (approx) 1:25	Logged By SG	Figure No. 11957-06-22.TP11



Machine : JCB 3CX Method : Trial Pit		Dimensions 4.20m x 0.70m x 4.00m L x W x D	Ground Level (mOD) 14.09	Client Ardale	Job Number 11957-06-22
		Location (dGPS) 729199.1 E 695635.7 N	Dates 15/08/2022	Engineer CS Consulting	Sheet 1/1

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Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
1.00	B ES			13.79	(0.30)	TOPSOIL		
1.00				13.29	(0.50)	Loose brown clayey gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to coarse		
				12.49	(0.80)	Soft to firm brown slightly gravelly sandy CLAY with many granular lenses. Gravel is subrounded fine to coarse		
				11.79	(0.70)	Soft to firm brown slightly sandy slightly gravelly CLAY with occasional subrounded cobbles. Gravel is subrounded to rounded fine to coarse		
2.50	B			11.19	(0.60)	Stiff brown slightly sandy slightly gravelly CLAY with occasional subrounded cobbles. Gravel is subrounded to rounded fine to coarse		
					10.09	(1.10)	Very stiff brown slightly sandy slightly gravelly CLAY with occasional subrounded cobbles. Gravel is subrounded to rounded fine to coarse	

Plan .	Remarks No groundwater encountered Trial pit good Pit backfilled upon completion					
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Scale (approx)	Logged By	Figure No.				
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Machine : JCB 3CX
Method : Trial Pit

Dimensions
4.20m x 0.70m x 4.00m
L x W x D

Ground Level (mOD)
19.92

Client
Ardale

Job
Number
11957-06-22

Location (dGPS)
729299.9 E 695652.7 N

Dates
15/08/2022

Engineer
CS Consulting

Sheet
1/1

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Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
1.00 1.00	B ES			19.62	(0.30) 0.30	TOPSOIL		
					(0.60)	Loose brown clayey gravelly fine to medium SAND. Gravel is subrounded fine to coarse		
				19.02	0.90	Soft brown slightly gravelly sandy CLAY with granular lenses. Gravel is subrounded fine to coarse		
					(1.40)			
2.00	B			17.62	2.30	Soft to firm brown slightly silty slightly gravelly sandy CLAY with occasional boulders and granular lenses. Gravel is subrounded fine to coarse		
					(0.90)			
				16.72	3.20	Firm brown slightly sandy slightly gravelly CLAY. Gravel is subrounded fine to coarse		
					(0.80)			
4.00	B			15.92	4.00			

Plan

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Remarks

No groundwater encountered
Trial pit good
Pit backfilled upon completion

Scale (approx) 1:25	Logged By SG	Figure No. 11957-06-22.TP13
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Machine : JCB 3CX Method : Trial Pit	Dimensions 4.20m x 0.70m x 3.80m L x W x D	Ground Level (mOD) 21.56	Client Ardale	Job Number 11957-06-22
	Location (dGPS) 729386.4 E 695677.3 N	Dates 15/08/2022	Engineer CS Consulting	Sheet 1/1

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Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50 0.50	B ES			21.26	(0.30) 0.30	TOPSOIL		
				20.76	(0.50) 0.80	Loose to medium dense light brown slightly clayey gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to coarse		
				20.16	(0.60) 1.40	Medium dense dark brown and grey clayey very gravelly coarse SAND with occasional subrounded cobbles and clay bands. Gravel is subrounded to rounded fine to coarse		
2.00	B			19.16	(1.00) 2.40	Dense dark brown and grey slightly clayey very sandy subrounded to rounded fine to coarse GRAVEL with occasional subrounded cobbles and clay bands		
				17.56	(1.60) 4.00	Dense grey slightly clayey very sandy subrounded fine to coarse GRAVEL with occasional subrounded cobbles, boulders and clay pockets		

Plan .	Remarks No groundwater encountered Trial pit unstable; walls collapsing Pit backfilled upon completion					
	<table border="1"> <tr> <td>Scale (approx)</td> <td>Logged By</td> <td>Figure No.</td> </tr> <tr> <td>1:25</td> <td>SG</td> <td>11957-06-22.TP14</td> </tr> </table>	Scale (approx)	Logged By	Figure No.	1:25	SG
Scale (approx)	Logged By	Figure No.				
1:25	SG	11957-06-22.TP14				



Machine : JCB 3CX Method : Trial Pit		Dimensions 4.20m x 0.70m x 4.00m L x W x D	Ground Level (mOD) 21.85	Client Ardale	Job Number 11957-06-22
		Location (dGPS) 729471 E 695687.4 N	Dates 15/08/2022	Engineer CS Consulting	Sheet 1/1

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Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50 0.50	B ES			21.65	(0.20) 0.20	TOPSOIL		
				21.45	(0.20) 0.40	Loose brown gravelly fine to coarse SAND. Gravel is subrounded fine to coarse		
				21.15	(0.30) 0.70	Loose orangish brown clayey fine to medium SAND		
				20.85	(0.30) 1.00	Loose brown slightly clayey fine to medium SAND		
1.50	B			17.85	(3.00) 4.00	Soft brown slightly sandy slightly gravelly CLAY. Gravel is subrounded to rounded fine to coarse with rare granular lenses		

Plan .	Remarks No groundwater encountered Trial pit stable Pit backfilled upon completion					
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Scale (approx)	Logged By	Figure No.				
1:25	SG	11957-06-22.TP15				



Machine : JCB 3CX Method : Trial Pit	Dimensions 4.20m x 0.70m x 4.00m L x W x D	Ground Level (mOD) 24.73	Client Ardale	Job Number 11957-06-22
	Location (dGPS) 729506.2 E 695751.4 N	Dates 15/08/2022	Engineer CS Consulting	Sheet 1/1

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Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
1.00 1.00	B ES			24.43	(0.30) 0.30	TOPSOIL		
				24.03	(0.40) 0.70	Soft to firm brown slightly sandy slightly gravelly CLAY. Gravel is subrounded fine to medium		
				22.93	(1.10) 1.80	Loose to medium dense light brown clayey fine SAND		
2.50	B			21.53	(1.40) 3.20	Soft to firm laminated brown slightly sandy silty CLAY		
				20.73	(0.80) 4.00	Firm laminated brown slightly sandy silty CLAY		

Plan .	Remarks No groundwater encountered Trial pit stable Pit backfilled upon completion					
	<table border="1"> <tr> <td>Scale (approx)</td> <td>Logged By</td> <td>Figure No.</td> </tr> <tr> <td>1:25</td> <td>SG</td> <td>11957-06-22.TP16</td> </tr> </table>	Scale (approx)	Logged By	Figure No.	1:25	SG
Scale (approx)	Logged By	Figure No.				
1:25	SG	11957-06-22.TP16				



Machine : JCB 3CX Method : Trial Pit		Dimensions 3.80m x 0.80m x 3.50m L x W x D	Ground Level (mOD) 11.97	Client Ardale	Job Number 11957-06-22
		Location (dGPS) 729195.4 E 695578.6 N	Dates 16/08/2022	Engineer CS Consulting	Sheet 1/1

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Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50 0.50	B ES			11.67	(0.30) 0.30	TOPSOIL Soft light brown slightly gravelly sandy CLAY with granular lenses. Gravel is subrounded fine to medium		
					(1.40)			
2.00	B			10.27	1.70	Loose brown clayey very gravelly fine to coarse SAND with occasional rounded cobbles. Gravel is subangular to subrounded fine to coarse		
					(1.30)			
				8.97	3.00	Medium dense brown slightly clayey very sandy subangular to subrounded fine to coarse GRAVEL with occasional rounded cobbles		
					(0.50)			
				8.47	3.50	Complete at 3.50m		

Plan .	Remarks		
	No groundwater encountered Trial pit unstable; walls collapsing Trial pit backfilled upon completion		
	Scale (approx)	Logged By	Figure No.
	1:25	SG	11957-06-22.TP17



Machine : JCB 3CX Method : Trial Pit	Dimensions 4.20m x 0.70m x 4.00m L x W x D	Ground Level (mOD) 17.16	Client Ardale	Job Number 11957-06-22
	Location (dGPS) 729252.3 E 695617.7 N	Dates 15/08/2022	Engineer CS Consulting	Sheet 1/1

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Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50 0.50	B ES			16.76	0.40	TOPSOIL		
				16.26	0.90	Very loose brown very sandy subangular to subrounded fine to coarse predominantly fine GRAVEL		
				15.16	2.00	Very loose dark brown slightly clayey very gravelly fine to coarse predominantly coarse SAND. Gravel is subangular to subrounded fine to coarse		
3.00	B			13.96	3.20	Very soft brown slightly silty slightly gravelly sandy CLAY. Gravel is subrounded fine to coarse		
				13.46	3.70	Firm to stiff brown slightly silty slightly sandy slightly gravelly CLAY. Gravel is subrounded fine to coarse		
				13.16	4.00	Very stiff brown slightly silty slightly sandy slightly gravelly CLAY. Gravel is subrounded fine to coarse		

Plan								

Remarks

No groundwater encountered
Trial pit stable
Pit backfilled upon completion

Scale (approx) 1:25	Logged By SG	Figure No. 11957-06-22.TP18
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Machine : JCB 3CX Method : Trial Pit	Dimensions 3.80m x 0.80m x 4.00m L x W x D	Ground Level (mOD) 16.99	Client Ardale	Job Number 11957-06-22
	Location (dGPS) 729295.3 E 695576.1 N	Dates 16/08/2022	Engineer CS Consulting	Sheet 1/1

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Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
1.00 1.00	B ES			16.69	(0.30) 0.30	TOPSOIL		
					(1.10)	Loose brown slightly clayey gravelly fine to coarse SAND. Gravel is subrounded fine to coarse		
				15.59	1.40	Soft to firm brown slightly gravelly sandy CLAY. Gravel is subrounded fine to coarse		
					(0.40)			
2.00	B			15.19	1.80	Soft to firm brown slightly sandy slightly gravelly CLAY with granular lenses. Gravel is subrounded fine to coarse		
					(1.40)			
				13.79	3.20	Medium dense brown gravelly very clayey fine to coarse SAND. Gravel is subrounded fine to coarse		
					(0.30)			
				13.49	3.50	Complete at 4.00m		

Plan .	Remarks No groundwater encountered Trial pit stable Trial pit backfilled upon completion		
	<table border="1"> <tr> <td>Scale (approx) 1:25</td> <td>Logged By SG</td> <td>Figure No. 11957-06-22.TP19</td> </tr> </table>	Scale (approx) 1:25	Logged By SG
Scale (approx) 1:25	Logged By SG	Figure No. 11957-06-22.TP19	



Machine : JCB 3CX Method : Trial Pit	Dimensions 3.80m x 0.80m x 4.00m L x W x D	Ground Level (mOD) 19.28	Client Ardale	Job Number 11957-06-22
	Location (dGPS) 729345.3 E 695606.9 N	Dates 16/08/2022	Engineer CS Consulting	Sheet 1/1

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Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50 0.50	B ES			18.98	(0.30)	TOPSOIL		
				18.38	0.30 (0.60)	Loose brown clayey very gravelly fine to coarse SAND. Gravel is subrounded fine to coarse		
1.50	B			17.38	0.90 (1.00)	Soft to firm brown slightly gravelly sandy CLAY. Gravel is subrounded fine to coarse		
				16.68	1.90 (0.70)	Loose brownish grey clayey sandy subrounded fine to coarse GRAVEL		
3.00	B			15.98	2.60 (0.70)	Medium dense to dense brownish grey clayey very sandy subrounded fine to coarse GRAVEL		
				15.28	3.30 (0.70)	Dense light brown gravelly fine to medium SAND. Gravel is subrounded to rounded fine to coarse		
					4.00			

Plan	Remarks		
.	No groundwater encountered Pit stability poor; walls collapsing Trial pit backfilled upon completion		
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	Scale (approx)	Logged By	Figure No.
	1:25	SG	11957-06-22.TP20



Machine : JCB 3CX Method : Trial Pit		Dimensions 4.20m x 0.70m x 3.80m L x W x D	Ground Level (mOD) 20.72	Client Ardale	Job Number 11957-06-22
		Location (dGPS) 729422.2 E 695640.4 N	Dates 15/08/2022	Engineer CS Consulting	Sheet 1/1

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Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50 0.50	B ES			20.42	(0.30) 0.30	TOPSOIL Firm to stiff brown slightly gravelly sandy CLAY. Gravel is subrounded fine to coarse		
1.80	B			19.72	(1.50)	Medium dense brown slightly clayey fine to medium SAND with occasional clay pockets		
				18.22	(0.90)	Dense brown slightly clayey fine to medium SAND with occasional clay pockets		
				17.32	(0.60)	Dense brown clayey medium SAND		
4.00	B			16.72	4.00			

Plan .	Remarks No groundwater encountered Trial pit stable Pit backfilled upon completion					
	<table border="1"> <tr> <td>Scale (approx)</td> <td>Logged By</td> <td>Figure No.</td> </tr> <tr> <td>1:25</td> <td>SG</td> <td>11957-06-22.TP21</td> </tr> </table>	Scale (approx)	Logged By	Figure No.	1:25	SG
Scale (approx)	Logged By	Figure No.				
1:25	SG	11957-06-22.TP21				



Machine : JCB 3CX Method : Trial Pit		Dimensions 4.20m x 0.70m x 4.00m L x W x D	Ground Level (mOD) 20.25	Client Ardale	Job Number 11957-06-22
		Location (dGPS) 729456.5 E 695614.8 N	Dates 15/08/2022	Engineer CS Consulting	Sheet 1/1

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Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
1.00	B ES			19.95	(0.30)	TOPSOIL		
1.00				19.45	(0.50)	Loose to medium dense brown clayey fine to medium SAND		
	B			18.75	(0.70)	Soft to firm brown slightly gravelly sandy CLAY. Gravel is subrounded fine to coarse		
2.00				17.25	(1.50)	Loose to medium dense brown slightly clayey very gravelly coarse SAND with occasional clay pockets		
				16.85	(0.40)	Firm to stiff light brown silty sandy CLAY		
				16.25	(0.60)	Medium dense light brown slightly gravelly medium SAND. Gravel is subrounded fine to medium		
					4.00			

Plan .	Remarks No groundwater encountered Trial pit stable Pit backfilled upon completion					
	<table border="1"> <tr> <td>Scale (approx)</td> <td>Logged By</td> <td>Figure No.</td> </tr> <tr> <td>1:25</td> <td>SG</td> <td>11957-06-22.TP22</td> </tr> </table>	Scale (approx)	Logged By	Figure No.	1:25	SG
Scale (approx)	Logged By	Figure No.				
1:25	SG	11957-06-22.TP22				



Machine : JCB 3CX Method : Trial Pit	Dimensions 4.20m x 0.70m x 4.00m L x W x D	Ground Level (mOD) 23.53	Client Ardale	Job Number 11957-06-22
	Location (dGPS) 729537.6 E 695653.8 N	Dates 15/08/2022	Engineer CS Consulting	Sheet 1/1

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Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50 0.50	B ES			23.43	(0.10) 0.10	TOPSOIL Soft to firm brown slightly sandy CLAY		
				22.98	(0.45) 0.55	Soft brown slightly sandy slightly gravelly CLAY with granular lenses. Gravel is subangular to subrounded fine to coarse		
1.50	B			21.63	(1.35) 1.90	Soft to firm brownish grey slightly silty slightly sandy CLAY interbedded with many Sand bands		
				20.93	(0.70) 2.60	Stiff brownish grey slightly silty slightly sandy CLAY interbedded with many Sand bands		
			Seepage(1) at 2.80m.	20.63	(0.30) 2.90	Very stiff brownish grey slightly silty slightly sandy CLAY interbedded with many Sand bands		∇1
				19.53	(1.10) 4.00			

Plan 	Remarks		
	Groundwater encountered at 2.80m BGL; seepage Trial pit stable Pit backfilled upon completion		
	Scale (approx)	Logged By	Figure No.
	1:25	SG	11957-06-22.TP23



Machine : JCB 3CX Method : Trial Pit	Dimensions 4.20m x 0.70m x 4.00m L x W x D	Ground Level (mOD) 26.13	Client Ardale	Job Number 11957-06-22
	Location (dGPS) 729571.3 E 695713.4 N	Dates 15/08/2022	Engineer CS Consulting	Sheet 1/1

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Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50	B ES					TOPSOIL		
0.50				25.73	0.40 (0.30)	Soft orangish brown slightly gravelly sandy CLAY. Gravel is subrounded fine to coarse		
	B			25.43	0.70 (0.40)	Loose brown slightly clayey fine to medium SAND		
1.50				25.03	1.10 (1.40)	Soft to firm brown sandy CLAY		
				23.63	2.50 (0.30)	Loose to medium dense brownish grey clayey fine to medium SAND with many clay pockets		
				23.33	2.80 (0.70)	Medium dense brownish grey clayey fine to medium SAND with many clay pockets		
4.00	B			22.63	3.50 (0.50)	Dense brownish grey clayey fine to medium SAND with many clay pockets		
				22.13	4.00			

Plan
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Remarks

No groundwater encountered
Trial pit stable
Pit backfilled upon completion

Scale (approx) 1:25	Logged By SG	Figure No. 11957-06-22.TP24
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Machine : JCB 3CX Method : Trial Pit	Dimensions 4.20m x 0.70m x 4.00m L x W x D	Ground Level (mOD) 27.09	Client Ardale	Job Number 11957-06-22
	Location (dGPS) 729613.6 E 695671.9 N	Dates 15/08/2022	Engineer CS Consulting	Sheet 1/1

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Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
1.00 1.00	B ES			26.79	(0.30) 0.30	TOPSOIL		
					(1.20)	Medium dense greyish brown slightly silty slightly gravelly fine to coarse SAND. Gravel is subrounded fine to medium		
2.00	B			25.59	1.50	Medium dense brown clayey fine SAND with some clay pockets		
					(0.40)			
				25.19	1.90	Dense brown clayey fine SAND with some clay pockets		
					(1.20)			
3.00	B			23.99	3.10	Dense brownish grey slightly clayey medium SAND		
					(0.90)			
4.00	B			23.09	4.00			

Plan	Remarks		
	No groundwater encountered Trial pit stable Pit backfilled upon completion		
	Scale (approx)	Logged By	Figure No.
	1:25	SG	11957-06-22.TP25

A034 Tinakilly Co. Wicklow – Trial Pit Photographs

TP01



TP01



A034 Tinakilly Co. Wicklow – Trial Pit Photographs

TP01



TP01



A034 Tinakilly Co. Wicklow – Trial Pit Photographs

TP02



TP02



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TP02



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TP02



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TP03



TP03



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TP03



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TP04



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TP05



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TP06



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TP25



TP25



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APPENDIX 3 – Soakaway Testing Records





Machine : JCB 3CX Method : Trial Pit		Dimensions 1.80m x 0.50m x 1.90m L x W x D	Ground Level (mOD)	Client Ardale	Job Number 11957-06-22
		Location (dGPS)	Dates 19/08/2022	Engineer CS Consulting	Sheet 1/1

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Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					0.20	TOPSOIL		
					0.20 - 0.40	Brown gravelly clayey fine to coarse SAND with occasional cobbles		
					0.40 - 1.20	Soft to firm brown slightly gravelly sandy CLAY with occasional cobbles		
					1.20 - 1.80	Brown clayey gravelly fine to coarse SAND with occasional cobbles		
					1.80 - 1.90	Complete at 1.90m		

Plan .	Remarks No groundwater encountered Trial pit stable Trial pit backfilled upon completion					
	<table border="1"> <tr> <td>Scale (approx)</td> <td>Logged By</td> <td>Figure No.</td> </tr> <tr> <td>1:25</td> <td>SG</td> <td>11957-06-22.ST01</td> </tr> </table>	Scale (approx)	Logged By	Figure No.	1:25	SG
Scale (approx)	Logged By	Figure No.				
1:25	SG	11957-06-22.ST01				



Machine : JCB 3CX Method : Trial Pit		Dimensions 1.80m x 0.50m x 1.70m L x W x D		Ground Level (mOD)		Client Ardale		Job Number 11957-06-22	
		Location (dGPS)		Dates 19/08/2022		Engineer CS Consulting		Sheet 1/1	

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Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.30)	TOPSOIL		
					0.30	Firm brown slightly sandy slightly gravelly CLAY with gravel lenses and occasional cobbles		
					(0.60)			
					0.90	Firm brown slightly sandy slightly gravelly CLAY with occasional cobbles		
					(0.50)			
					1.40	Brownish grey clayey sandy subangular to subrounded fine GRAVEL		
					(0.30)			
					1.70	Complete at 1.70m		

Plan .	Remarks No groundwater encountered Trial pit stable Trial pit backfilled upon completion		
	Scale (approx) 1:25	Logged By SG	Figure No. 11957-06-22.ST02



Machine : JCB 3CX Method : Trial Pit		Dimensions 1.60m x 0.50m x 1.65m L x W x D		Ground Level (mOD)		Client Ardale		Job Number 11957-06-22	
		Location (dGPS)		Dates 17/08/2022		Engineer CS Consulting		Sheet 1/1	

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Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.35)	TOPSOIL		
					0.35 (0.55)	Brown gravelly very clayey fine to coarse SAND with occasional cobbles		
					0.90 (0.50)	Brown clayey gravelly fine to coarse SAND with occasional cobbles		
					1.40 (0.25)	Soft to firm brown slightly sandy slightly gravelly CLAY with occasional cobbles		
					1.65	Complete at 1.65m		

Plan .	Remarks No groundwater encountered Trial pit stable Trial pit backfilled upon completion		
	Scale (approx) 1:25	Logged By SG	Figure No. 11957-06-22.ST03



Machine : JCB 3CX Method : Trial Pit		Dimensions 1.70m x 0.50m x 1.70m L x W x D		Ground Level (mOD)		Client Ardale		Job Number 11957-06-22	
		Location (dGPS)		Dates 19/08/2022		Engineer CS Consulting		Sheet 1/1	

RECEIVED: 14/08/2023

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	TOPSOIL		
					0.20	Brown gravelly very clayey fine to medium SAND with occasional clay lenses		
					(0.80)			
					1.00	Firm brownish grey slightly gravelly slightly silty CLAY with occasional cobbles		
					(0.50)			
					1.50	Grey slightly silty gravelly fine to coarse SAND		
					(0.20)			
					1.70	Complete at 1.70m		

Plan .	Remarks No groundwater encountered Trial pit stable Trial pit backfilled upon completion		
	Scale (approx) 1:25	Logged By SG	Figure No. 11957-06-22.ST04



Machine : JCB 3CX Method : Trial Pit		Dimensions 1.70m x 0.50m x 1.60m L x W x D		Ground Level (mOD)		Client Ardale		Job Number 11957-06-22	
		Location (dGPS)		Dates 19/08/2022		Engineer CS Consulting		Sheet 1/1	

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Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					0.00 - 0.40	TOPSOIL		
					0.40 - 0.80	Soft to firm brown slightly gravelly sandy CLAY with occasional cobbles		
					0.80 - 1.60	Soft to firm brown slightly gravelly sandy CLAY with occasional cobbles and sand lenses		
					1.60 - 1.60	Complete at 1.60m		

Plan .	Remarks No groundwater encountered Trial pit stable Trial pit backfilled upon completion		
	Scale (approx) 1:25	Logged By SG	Figure No. 11957-06-22.ST05



Machine : JCB 3CX Method : Trial Pit		Dimensions 1.80m x 0.50m x 1.55m L x W x D	Ground Level (mOD)	Client Ardale	Job Number 11957-06-22
		Location (dGPS)	Dates 18/08/2022	Engineer CS Consulting	Sheet 1/1

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Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.30)	TOPSOIL		
					0.30	Brown clayey gravelly fine to medium SAND with occasional cobbles		
					(1.00)			
					1.30	Firm brown slightly sandy slightly gravelly CLAY		
					(0.25)			
					1.55	Complete at 1.55m		

Plan .	Remarks No groundwater encountered Trial pit stable Trial pit backfilled upon completion		
	<table border="1"> <tr> <td>Scale (approx) 1:25</td> <td>Logged By SG</td> <td>Figure No. 11957-06-22.ST06</td> </tr> </table>	Scale (approx) 1:25	Logged By SG
Scale (approx) 1:25	Logged By SG	Figure No. 11957-06-22.ST06	



Catherinstown House,
Hazelhatch Road,
Newcastle,
Co. Dublin,
D12 YD52

Tel: 01 601 5175 / 5176
Email: info@gii.ie
Web: www.gii.ie

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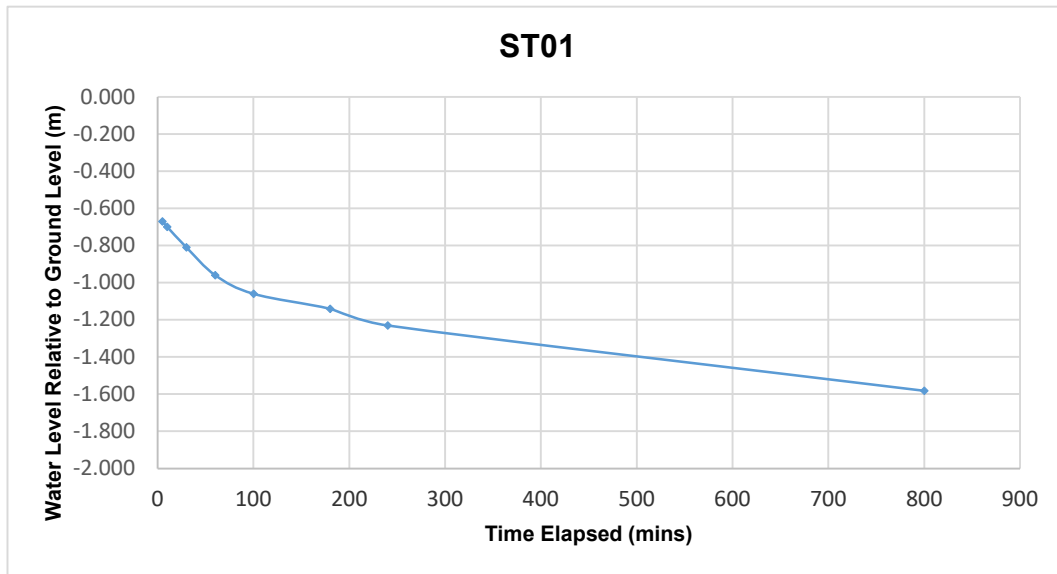
ST01

Soakaway Test to BRE Digest 365

Trial Pit Dimensions: 1.80m x 0.50m x 1.90m (L x W x D)

Date	Time	Water level (m bgl)
18/08/2022	0	-0.630
18/08/2022	5	-0.670
18/08/2022	10	-0.700
18/08/2022	30	-0.810
18/08/2022	60	-0.960
18/08/2022	100	-1.060
18/08/2022	180	-1.140
18/08/2022	240	-1.230
18/08/2022	800	-1.583
		*Data Extrapolated

Start depth 0.63	Depth of Pit 1.900	Diff 1.270	75% full 0.9475	25%full 1.5825
Length of pit (m)	Width of pit (m)		75-25Ht (m)	Vp75-25 (m3)
1.800	0.500		0.635	0.57
Tp75-25 (from graph) (s)		44700	50% Eff Depth	ap50 (m2)
			0.635	3.821
f =	3.346E-06	m/s		





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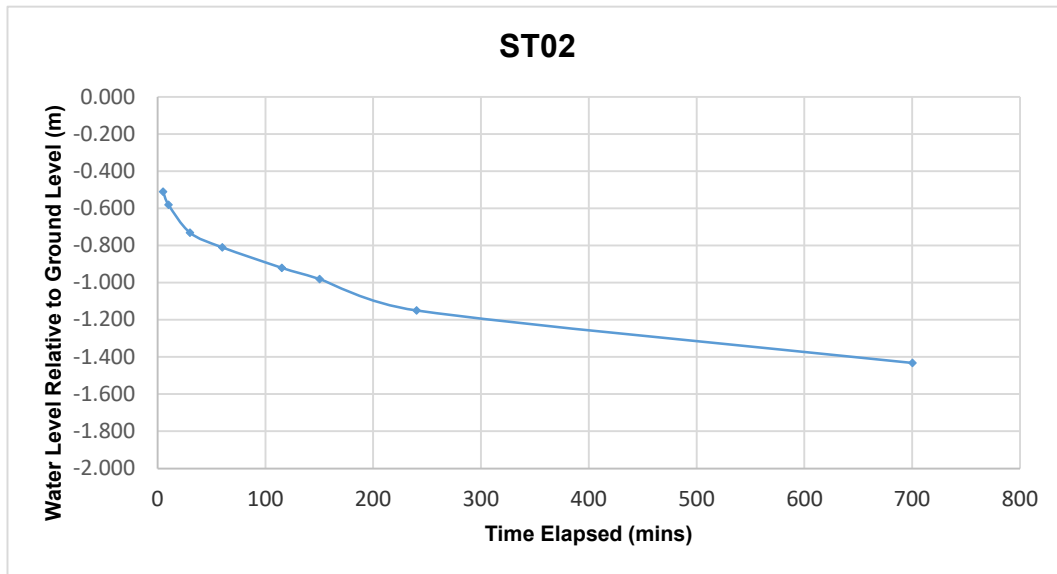
ST02

Soakaway Test to BRE Digest 365

Trial Pit Dimensions: 1.80m x 0.50m x 1.70m (L x W x D)

Date	Time	Water level (m bgl)
18/08/2022	0	-0.460
18/08/2022	5	-0.510
18/08/2022	10	-0.580
18/08/2022	30	-0.730
18/08/2022	60	-0.810
18/08/2022	115	-0.920
18/08/2022	150	-0.980
18/08/2022	240	-1.150
18/08/2022	700	-1.433
		<i>*Data Extrapolated</i>

Start depth 0.63	Depth of Pit 1.700	Diff 1.070	75% full 0.8975	25%full 1.4325
Length of pit (m)	Width of pit (m)		75-25Ht (m)	Vp75-25 (m3)
1.800	0.500		0.535	0.48
Tp75-25 (from graph) (s)		36000	50% Eff Depth	ap50 (m2)
			0.535	3.361
f =	3.979E-06	m/s		





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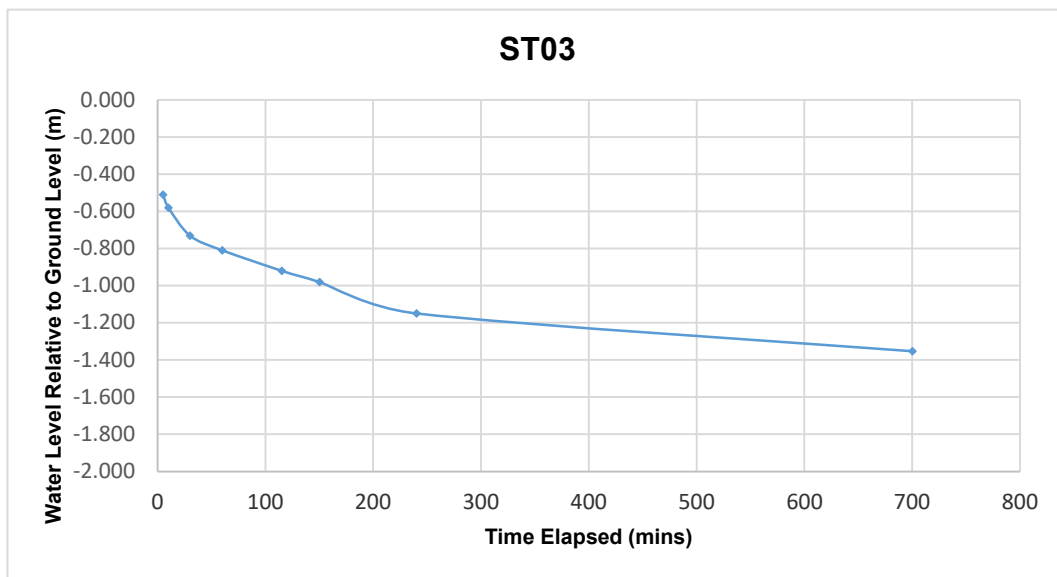
ST03

Soakaway Test to BRE Digest 365

Trial Pit Dimensions: 1.60m x 0.50m x 1.65m (L x W x D)

Date	Time	Water level (m bgl)
18/08/2022	0	-0.460
18/08/2022	5	-0.510
18/08/2022	10	-0.580
18/08/2022	30	-0.730
18/08/2022	60	-0.810
18/08/2022	115	-0.920
18/08/2022	150	-0.980
18/08/2022	240	-1.150
18/08/2022	700	-1.353
		*Data Extrapolated

Start depth 0.46	Depth of Pit 1.650	Diff 1.190	75% full 0.7575	25%full 1.3525
Length of pit (m)	Width of pit (m)		75-25Ht (m)	Vp75-25 (m3)
1.600	0.500		0.595	0.48
Tp75-25 (from graph) (s)		39900	50% Eff Depth	ap50 (m2)
			0.595	3.299
f =	3.616E-06	m/s		





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ST04

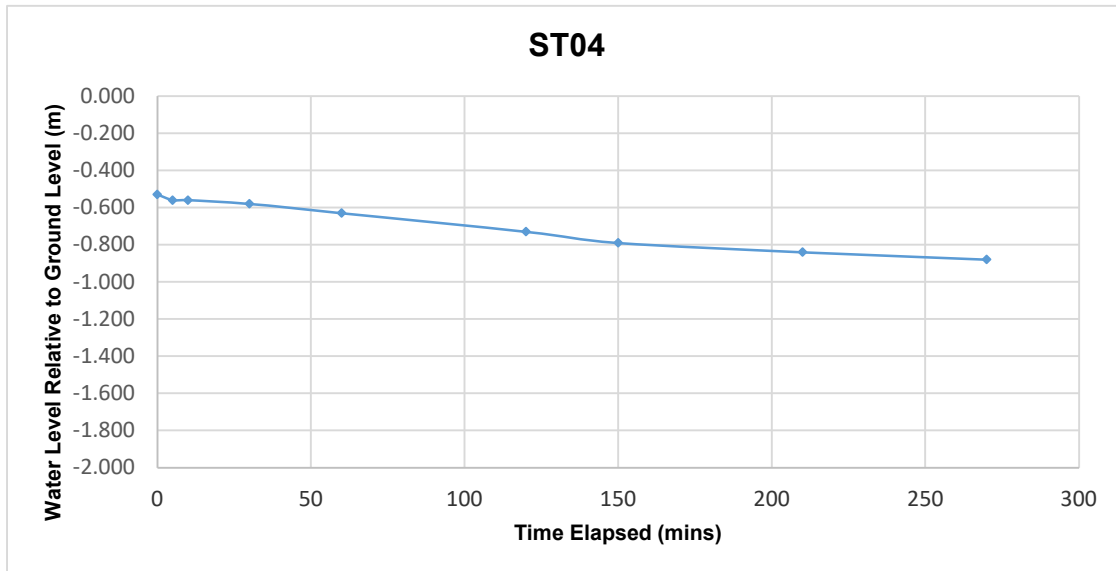
Soakaway Test to BRE Digest 365

Trial Pit Dimensions: 1.70m x 0.50m x 1.70m (L x W x D)

Date	Time	Water level (m bgl)
18/08/2022	0	-0.530
18/08/2022	5	-0.560
18/08/2022	10	-0.560
18/08/2022	30	-0.580
18/08/2022	60	-0.630
18/08/2022	120	-0.730
18/08/2022	150	-0.790
18/08/2022	210	-0.840
18/08/2022	270	-0.880

***Soakaway failed - Pit backfilled**

Start depth	Depth of Pit	Diff	75% full	25%full
0.50	1.700	1.200	0.8	1.4





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ST05

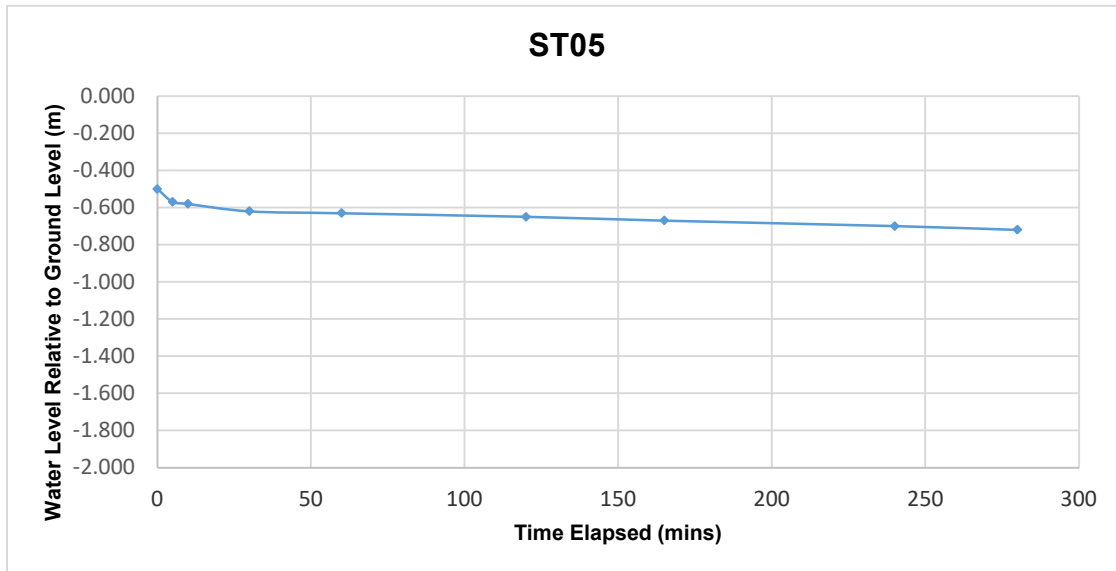
Soakaway Test to BRE Digest 365

Trial Pit Dimensions: 1.70m x 0.50m x 1.60m (L x W x D)

Date	Time	Water level (m bgl)
18/08/2022	0	-0.500
18/08/2022	5	-0.570
18/08/2022	10	-0.580
18/08/2022	30	-0.620
18/08/2022	60	-0.630
18/08/2022	120	-0.650
18/08/2022	165	-0.670
18/08/2022	240	-0.700
18/08/2022	280	-0.720

***Soakaway failed - Pit backfilled**

Start depth	Depth of Pit	Diff	75% full	25%full
0.50	1.700	1.200	0.8	1.4





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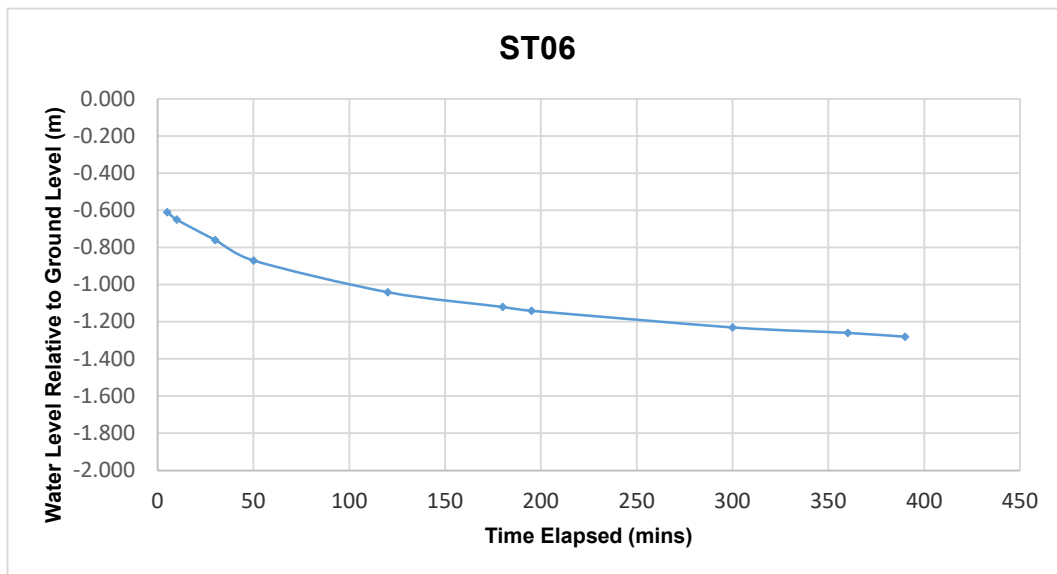
SA06

Soakaway Test to BRE Digest 365

Trial Pit Dimensions: 1.50m x 0.70m 2.00m (L x W x D)

Date	Time	Water level (m bgl)
18/08/2022	0	-0.460
18/08/2022	5	-0.610
18/08/2022	10	-0.650
18/08/2022	30	-0.760
18/08/2022	50	-0.870
18/08/2022	120	-1.040
18/08/2022	180	-1.120
18/08/2022	195	-1.140
18/08/2022	300	-1.230
18/08/2022	360	-1.260
18/08/2022	390	-1.280

Start depth 0.46	Depth of Pit 1.550	Diff 1.090	75% full 0.7325	25%full 1.2775
Length of pit (m)	Width of pit (m)		75-25Ht (m)	Vp75-25 (m3)
1.800	0.500		0.545	0.49
Tp75-25 (from graph) (s)		22800	50% Eff Depth	ap50 (m2)
			0.545	3.407
f =	6.314E-06	m/s		



A034 Tinakilly, Co. Wicklow – Soakaway Testing Photographs

ST01



ST01



A034 Tinakilly, Co. Wicklow – Soakaway Testing Photographs

ST01



ST01



A034 Tinakilly, Co. Wicklow – Soakaway Testing Photographs

ST02



ST02



A034 Tinakilly, Co. Wicklow – Soakaway Testing Photographs

ST02



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A034 Tinakilly, Co. Wicklow – Soakaway Testing Photographs

ST03



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A034 Tinakilly, Co. Wicklow – Soakaway Testing Photographs

ST04



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A034 Tinakilly, Co. Wicklow – Soakaway Testing Photographs

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ST05



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A034 Tinakilly, Co. Wicklow – Soakaway Testing Photographs

ST06



ST06



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ST06



ST06



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APPENDIX 4 – Dynamic Probe Records





Method Dynamic Probe Heavy (DPH) fall height 500mm, hammer weight 50.0kg	Cone Dimensions Diameter 43.7mm	Ground Level (mOD) 18.10	Client Ardale	Job Number 11957-06-22
	Location (dGPS) 729237.5 E 695787.2 N	Dates 14/07/2022	Engineer CS Consulting	Sheet 1/1

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Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)	Depth (m)	Blows for Depth Increment												
					0	3	6	9	12	15	18	21	24	27	30		
0.00-0.10	4		18.10	0.00	[Bar chart showing 4 blows]												
0.10-0.20	5				[Bar chart showing 5 blows]												
0.20-0.30	8				[Bar chart showing 8 blows]												
0.30-0.40	9				[Bar chart showing 9 blows]												
0.40-0.50	10				[Bar chart showing 10 blows]												
0.50-0.60	6		17.60	0.50	[Bar chart showing 6 blows]												
0.60-0.70	4				[Bar chart showing 4 blows]												
0.70-0.80	3				[Bar chart showing 3 blows]												
0.80-0.90	4				[Bar chart showing 4 blows]												
0.90-1.00	3				[Bar chart showing 3 blows]												
1.00-1.10	3		17.10	1.00	[Bar chart showing 3 blows]												
1.10-1.20	6				[Bar chart showing 6 blows]												
1.20-1.30	11				[Bar chart showing 11 blows]												
1.30-1.40	14				[Bar chart showing 14 blows]												
1.40-1.50	16				[Bar chart showing 16 blows]												
1.50-1.60	17		16.60	1.50	[Bar chart showing 17 blows]												
1.60-1.70	18				[Bar chart showing 18 blows]												
1.70-1.80	20				[Bar chart showing 20 blows]												
1.80-1.90	12				[Bar chart showing 12 blows]												
1.90-2.00	3				[Bar chart showing 3 blows]												
2.00-2.10	6		16.10	2.00	[Bar chart showing 6 blows]												
2.10-2.20	3				[Bar chart showing 3 blows]												
2.20-2.30	3				[Bar chart showing 3 blows]												
2.30-2.40	3				[Bar chart showing 3 blows]												
2.40-2.50	3				[Bar chart showing 3 blows]												
2.50-2.60	3		15.60	2.50	[Bar chart showing 3 blows]												
2.60-2.70	4				[Bar chart showing 4 blows]												
2.70-2.80	4				[Bar chart showing 4 blows]												
2.80-2.90	5				[Bar chart showing 5 blows]												
2.90-3.00	4				[Bar chart showing 4 blows]												
3.00-3.10	7		15.10	3.00	[Bar chart showing 7 blows]												
3.10-3.20	8				[Bar chart showing 8 blows]												
3.20-3.30	9				[Bar chart showing 9 blows]												
3.30-3.40	13				[Bar chart showing 13 blows]												
3.40-3.50	18				[Bar chart showing 18 blows]												
3.50-3.60	20		14.60	3.50	[Bar chart showing 20 blows]												
3.60-3.70	17				[Bar chart showing 17 blows]												
3.70-3.80	20				[Bar chart showing 20 blows]												
3.80-3.90	16				[Bar chart showing 16 blows]												
3.90-4.00	17				[Bar chart showing 17 blows]												
4.00-4.10	20		14.10	4.00	[Bar chart showing 20 blows]												
4.10-4.20	25				[Bar chart showing 25 blows]												
			13.60	4.50	[Bar chart showing 0 blows]												
					[Bar chart showing 0 blows]												
			13.10	5.00	[Bar chart showing 0 blows]												

Remarks
2 No. probes attempted due to shallow refusal
Refusal at 4.20m BGL

Scale (approx)	1:25	Logged By	SG
Figure No.	11957-06-22.DP01		



Method Dynamic Probe Heavy (DPH) fall height 500mm, hammer weight 50.0kg	Cone Dimensions Diameter 43.7mm	Ground Level (mOD) 13.89	Client Ardale	Job Number 11957-06-22
	Location (dGPS) 729320.4 E 695845.5 N	Dates 14/07/2022	Engineer CS Consulting	Sheet 1/1

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Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)	Depth (m)	Blows for Depth Increment												
					0	3	6	9	12	15	18	21	24	27	30		
0.00-0.10	2		13.89	0.00													
0.10-0.20	2																
0.20-0.30	3																
0.30-0.40	5																
0.40-0.50	6																
0.50-0.60	11		13.39	0.50													
0.60-0.70	16																
0.70-0.80	10																
0.80-0.90	9																
0.90-1.00	12																
1.00-1.10	7		12.89	1.00													
1.10-1.20	7																
1.20-1.30	9																
1.30-1.40	10																
1.40-1.50	11																
1.50-1.60	12		12.39	1.50													
1.60-1.70	13																
1.70-1.80	13																
1.80-1.90	14																
1.90-2.00	16																
2.00-2.10	15		11.89	2.00													
2.10-2.20	16																
2.20-2.30	22																
2.30-2.40	24																
2.40-2.50	26		11.39	2.50													
			10.89	3.00													
			10.39	3.50													
			9.89	4.00													
			9.39	4.50													
			8.89	5.00													

Remarks
Refusal at 2.50m BGL

Scale (approx)	Logged By
1:25	SG
Figure No.	
11957-06-22.DP02	



Method
Dynamic Probe Heavy (DPH)
fall height 500mm, hammer
weight 50.0kg

Cone Dimensions
Diameter 43.7mm

Ground Level (mOD)
17.73

Client
Ardale

Job Number
11957-06-22

Location (dGPS)
729347.7 E 695809.9 N

Dates
14/07/2022

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Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)	Depth (m)	Blows for Depth Increment												
					0	3	6	9	12	15	18	21	24	27	30		
0.00-0.10	3		17.73	0.00	[Bar chart showing 3 blows]												
0.10-0.20	4				[Bar chart showing 4 blows]												
0.20-0.30	6				[Bar chart showing 6 blows]												
0.30-0.40	5				[Bar chart showing 5 blows]												
0.40-0.50	5				[Bar chart showing 5 blows]												
0.50-0.60	6		17.23	0.50	[Bar chart showing 6 blows]												
0.60-0.70	6				[Bar chart showing 6 blows]												
0.70-0.80	4				[Bar chart showing 4 blows]												
0.80-0.90	6				[Bar chart showing 6 blows]												
0.90-1.00	5				[Bar chart showing 5 blows]												
1.00-1.10	2		16.73	1.00	[Bar chart showing 2 blows]												
1.10-1.20	3				[Bar chart showing 3 blows]												
1.20-1.30	3				[Bar chart showing 3 blows]												
1.30-1.40	3				[Bar chart showing 3 blows]												
1.40-1.50	2				[Bar chart showing 2 blows]												
1.50-1.60	3		16.23	1.50	[Bar chart showing 3 blows]												
1.60-1.70	2				[Bar chart showing 2 blows]												
1.70-1.80	3				[Bar chart showing 3 blows]												
1.80-1.90	3				[Bar chart showing 3 blows]												
1.90-2.00	3				[Bar chart showing 3 blows]												
2.00-2.10	2		15.73	2.00	[Bar chart showing 2 blows]												
2.10-2.20	3				[Bar chart showing 3 blows]												
2.20-2.30	4				[Bar chart showing 4 blows]												
2.30-2.40	8				[Bar chart showing 8 blows]												
2.40-2.50	11				[Bar chart showing 11 blows]												
2.50-2.60	11		15.23	2.50	[Bar chart showing 11 blows]												
2.60-2.70	12				[Bar chart showing 12 blows]												
2.70-2.80	13				[Bar chart showing 13 blows]												
2.80-2.90	13				[Bar chart showing 13 blows]												
2.90-3.00	18				[Bar chart showing 18 blows]												
3.00-3.10	20		14.73	3.00	[Bar chart showing 20 blows]												
3.10-3.20	21				[Bar chart showing 21 blows]												
3.20-3.30	21				[Bar chart showing 21 blows]												
			14.23	3.50	[Bar chart showing 21 blows]												
			13.73	4.00	[Bar chart showing 21 blows]												
			13.23	4.50	[Bar chart showing 21 blows]												
			12.73	5.00	[Bar chart showing 21 blows]												

Remarks
Refusal at 3.30m BGL

Scale (approx)	Logged By
1:25	SG
Figure No.	
11957-06-22.DP03	



Method Dynamic Probe Heavy (DPH) fall height 500mm, hammer weight 50.0kg	Cone Dimensions Diameter 43.7mm	Ground Level (mOD) 17.95	Client Ardale	Job Number 11957-06-22
	Location (dGPS) 729459.9 E 695853.2 N	Dates 14/07/2022	Engineer CS Consulting	Sheet 1/2

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Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)	Depth (m)	Blows for Depth Increment												
					0	3	6	9	12	15	18	21	24	27	30		
0.00-0.10	2		17.95	0.00													
0.10-0.20	3																
0.20-0.30	4																
0.30-0.40	6																
0.40-0.50	6																
0.50-0.60	10		17.45	0.50													
0.60-0.70	9																
0.70-0.80	9																
0.80-0.90	7																
0.90-1.00	4																
1.00-1.10	4		16.95	1.00													
1.10-1.20	3																
1.20-1.30	3																
1.30-1.40	4																
1.40-1.50	4																
1.50-1.60	3		16.45	1.50													
1.60-1.70	3																
1.70-1.80	3																
1.80-1.90	3																
1.90-2.00	3																
2.00-2.10	3		15.95	2.00													
2.10-2.20	4																
2.20-2.30	4																
2.30-2.40	3																
2.40-2.50	3																
2.50-2.60	4		15.45	2.50													
2.60-2.70	6																
2.70-2.80	5																
2.80-2.90	4																
2.90-3.00	5																
3.00-3.10	3		14.95	3.00													
3.10-3.20	3																
3.20-3.30	4																
3.30-3.40	6																
3.40-3.50	7																
3.50-3.60	10		14.45	3.50													
3.60-3.70	12																
3.70-3.80	8																
3.80-3.90	5																
3.90-4.00	4																
4.00-4.10	4		13.95	4.00													
4.10-4.20	3																
4.20-4.30	3																
4.30-4.40	13																
4.40-4.50	15																
4.50-4.60	17		13.45	4.50													
4.60-4.70	17																
4.70-4.80	18																
4.80-4.90	20																
4.90-5.00	21		12.95	5.00													

Remarks Refusal at 5.10m BGL	Scale (approx) 1:25	Logged By SG
	Figure No. 11957-06-22.DP04	



Method
Dynamic Probe Heavy (DPH)
fall height 500mm, hammer
weight 50.0kg

Cone Dimensions
Diameter 43.7mm

Ground Level (mOD)
17.95

Client
Ardale

Job Number
11957-06-22

Location (dGPS)
729459.9 E 695853.2 N

Dates
14/07/2022

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2/2

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Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)	Depth (m)	Blows for Depth Increment																	
					0	3	6	9	12	15	18	21	24	27	30							
5.00-5.10	21		12.95	5.00																		
			12.45	5.50																		
			11.95	6.00																		
			11.45	6.50																		
			10.95	7.00																		
			10.45	7.50																		
			9.95	8.00																		
			9.45	8.50																		
			8.95	9.00																		
			8.45	9.50																		
			7.95	10.00																		

Remarks

Scale (approx) 1:25
Logged By SG
Figure No. 11957-06-22.DP04



Method Dynamic Probe Heavy (DPH) fall height 500mm, hammer weight 50.0kg	Cone Dimensions Diameter 43.7mm	Ground Level (mOD) 19.46	Client Ardale	Job Number 11957-06-22
	Location (dGPS) 729241.8 E 695732.3 N	Dates 14/07/2022	Engineer CS Consulting	Sheet 1/1

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Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)	Depth (m)	Blows for Depth Increment												
					0	3	6	9	12	15	18	21	24	27	30		
0.00-0.10	2		19.46	0.00	[Bar chart showing 2 blows]												
0.10-0.20	6				[Bar chart showing 6 blows]												
0.20-0.30	8				[Bar chart showing 8 blows]												
0.30-0.40	7				[Bar chart showing 7 blows]												
0.40-0.50	5				[Bar chart showing 5 blows]												
0.50-0.60	4		18.96	0.50	[Bar chart showing 4 blows]												
0.60-0.70	6				[Bar chart showing 6 blows]												
0.70-0.80	5				[Bar chart showing 5 blows]												
0.80-0.90	8				[Bar chart showing 8 blows]												
0.90-1.00	9				[Bar chart showing 9 blows]												
1.00-1.10	7		18.46	1.00	[Bar chart showing 7 blows]												
1.10-1.20	10				[Bar chart showing 10 blows]												
1.20-1.30	12				[Bar chart showing 12 blows]												
1.30-1.40	11				[Bar chart showing 11 blows]												
1.40-1.50	10				[Bar chart showing 10 blows]												
1.50-1.60	12		17.96	1.50	[Bar chart showing 12 blows]												
1.60-1.70	14				[Bar chart showing 14 blows]												
1.70-1.80	16				[Bar chart showing 16 blows]												
1.80-1.90	15				[Bar chart showing 15 blows]												
1.90-2.00	13				[Bar chart showing 13 blows]												
2.00-2.10	18		17.46	2.00	[Bar chart showing 18 blows]												
2.10-2.20	17				[Bar chart showing 17 blows]												
2.20-2.30	14				[Bar chart showing 14 blows]												
2.30-2.40	18				[Bar chart showing 18 blows]												
2.40-2.50	20				[Bar chart showing 20 blows]												
2.50-2.60	8		16.96	2.50	[Bar chart showing 8 blows]												
2.60-2.70	9				[Bar chart showing 9 blows]												
2.70-2.80	8				[Bar chart showing 8 blows]												
2.80-2.90	2				[Bar chart showing 2 blows]												
2.90-3.00	3				[Bar chart showing 3 blows]												
3.00-3.10	2		16.46	3.00	[Bar chart showing 2 blows]												
3.10-3.20	2				[Bar chart showing 2 blows]												
3.20-3.30	3				[Bar chart showing 3 blows]												
3.30-3.40	4				[Bar chart showing 4 blows]												
3.40-3.50	4				[Bar chart showing 4 blows]												
3.50-3.60	5		15.96	3.50	[Bar chart showing 5 blows]												
3.60-3.70	8				[Bar chart showing 8 blows]												
3.70-3.80	13				[Bar chart showing 13 blows]												
3.80-3.90	16				[Bar chart showing 16 blows]												
3.90-4.00	20				[Bar chart showing 20 blows]												
4.00-4.10	20		15.46	4.00	[Bar chart showing 20 blows]												
4.10-4.20	22				[Bar chart showing 22 blows]												
			14.96	4.50	[Refusal]												
			14.46	5.00	[Refusal]												

Remarks Refusal at 4.20m BGL	Scale (approx) 1:25	Logged By SG
	Figure No.	
	11957-06-22.DP05	



Method
Dynamic Probe Heavy (DPH)
fall height 500mm, hammer
weight 50.0kg

Cone Dimensions
Diameter 43.7mm

Ground Level (mOD)
21.32

Client
Ardale

Job Number
11957-06-22

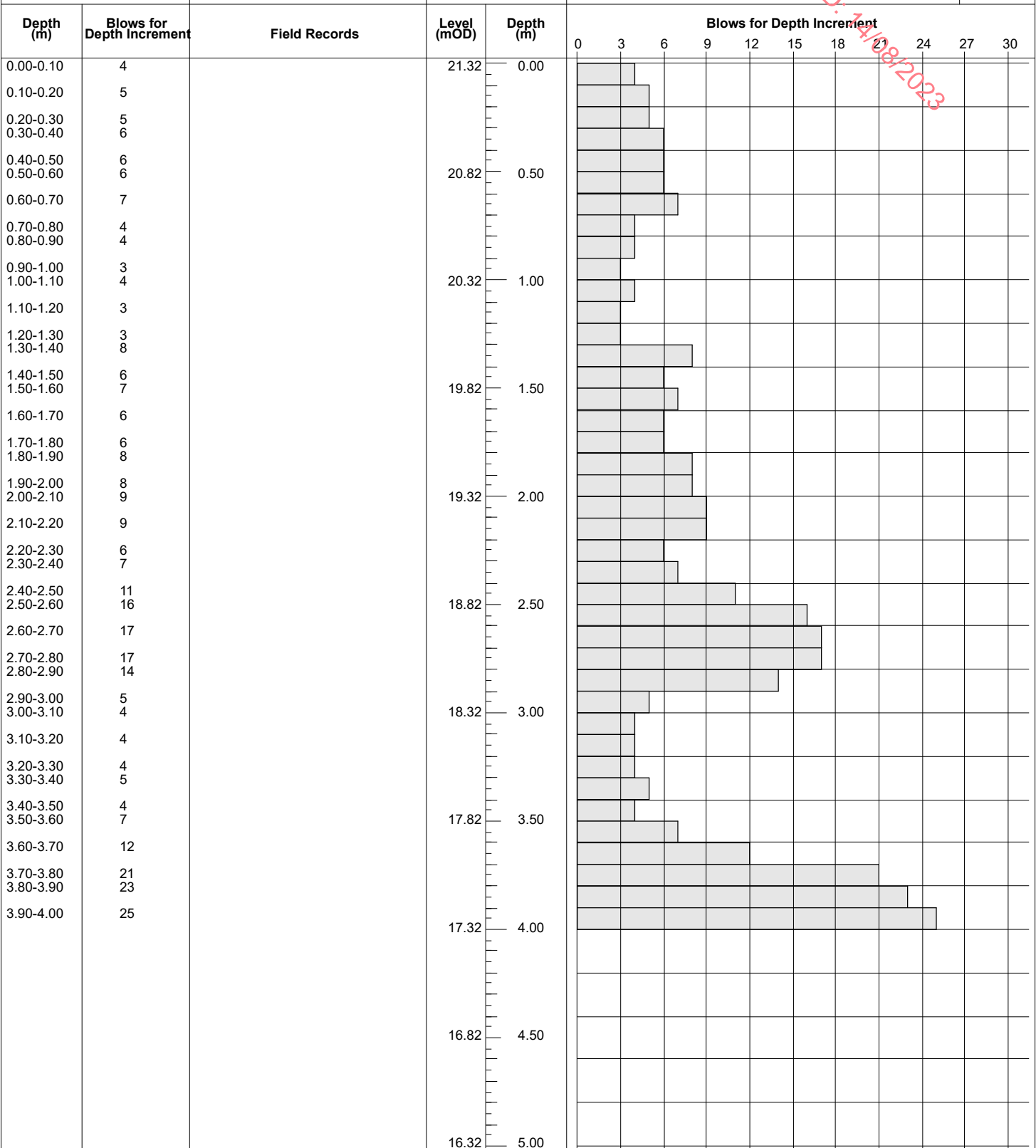
Location (dGPS)
729298.6 E 695766.7 N

Dates
14/07/2022

Engineer
CS Consulting

Sheet
1/1

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Remarks
Refusal at 4.00m BGL

Scale (approx)	Logged By
1:25	SG
Figure No.	
11957-06-22.DP06	



Method Dynamic Probe Heavy (DPH) fall height 500mm, hammer weight 50.0kg	Cone Dimensions Diameter 43.7mm	Ground Level (mOD) 22.58	Client Ardale	Job Number 11957-06-22
	Location (dGPS) 729331.3 E 695735.3 N	Dates 14/07/2022	Engineer CS Consulting	Sheet 1/1

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Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)	Depth (m)	Blows for Depth Increment												
					0	3	6	9	12	15	18	21	24	27	30		
0.00-0.10	2		22.58	0.00													
0.10-0.20	3																
0.20-0.30	6																
0.30-0.40	6																
0.40-0.50	4																
0.50-0.60	5		22.08	0.50													
0.60-0.70	5																
0.70-0.80	6																
0.80-0.90	8																
0.90-1.00	14																
1.00-1.10	17		21.58	1.00													
1.10-1.20	16																
1.20-1.30	18																
1.30-1.40	20																
1.40-1.50	17																
1.50-1.60	18		21.08	1.50													
1.60-1.70	18																
1.70-1.80	19																
1.80-1.90	16																
1.90-2.00	16																
2.00-2.10	7		20.58	2.00													
2.10-2.20	6																
2.20-2.30	3																
2.30-2.40	4																
2.40-2.50	8																
2.50-2.60	8		20.08	2.50													
2.60-2.70	9																
2.70-2.80	8																
2.80-2.90	10																
2.90-3.00	12																
3.00-3.10	15		19.58	3.00													
3.10-3.20	18																
3.20-3.30	20																
3.30-3.40	25		19.08	3.50													
			18.58	4.00													
			18.08	4.50													
			17.58	5.00													

Remarks
Refusal at 3.40m BGL

Scale (approx)	Logged By
1:25	SG
Figure No.	
11957-06-22.DP07	



Method
Dynamic Probe Heavy (DPH)
fall height 500mm, hammer
weight 50.0kg

Cone Dimensions
Diameter 43.7mm

Ground Level (mOD)
23.84

Client
Ardale

Job Number
11957-06-22

Location (dGPS)
729423.6 E 695769.9 N

Dates
14/07/2022

Engineer
CS Consulting

Sheet
1/1

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Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)	Depth (m)	Blows for Depth Increment												
					0	3	6	9	12	15	18	21	24	27	30		
0.00-0.10	3		23.84	0.00	[Bar chart showing 3 blows]												
0.10-0.20	4				[Bar chart showing 4 blows]												
0.20-0.30	4				[Bar chart showing 4 blows]												
0.30-0.40	5				[Bar chart showing 5 blows]												
0.40-0.50	6				[Bar chart showing 6 blows]												
0.50-0.60	6		23.34	0.50	[Bar chart showing 6 blows]												
0.60-0.70	5				[Bar chart showing 5 blows]												
0.70-0.80	8				[Bar chart showing 8 blows]												
0.80-0.90	10				[Bar chart showing 10 blows]												
0.90-1.00	10				[Bar chart showing 10 blows]												
1.00-1.10	4		22.84	1.00	[Bar chart showing 4 blows]												
1.10-1.20	4				[Bar chart showing 4 blows]												
1.20-1.30	4				[Bar chart showing 4 blows]												
1.30-1.40	5				[Bar chart showing 5 blows]												
1.40-1.50	4				[Bar chart showing 4 blows]												
1.50-1.60	4		22.34	1.50	[Bar chart showing 4 blows]												
1.60-1.70	3				[Bar chart showing 3 blows]												
1.70-1.80	3				[Bar chart showing 3 blows]												
1.80-1.90	3				[Bar chart showing 3 blows]												
1.90-2.00	4				[Bar chart showing 4 blows]												
2.00-2.10	4		21.84	2.00	[Bar chart showing 4 blows]												
2.10-2.20	3				[Bar chart showing 3 blows]												
2.20-2.30	4				[Bar chart showing 4 blows]												
2.30-2.40	3				[Bar chart showing 3 blows]												
2.40-2.50	3				[Bar chart showing 3 blows]												
2.50-2.60	2		21.34	2.50	[Bar chart showing 2 blows]												
2.60-2.70	2				[Bar chart showing 2 blows]												
2.70-2.80	4				[Bar chart showing 4 blows]												
2.80-2.90	12				[Bar chart showing 12 blows]												
2.90-3.00	3				[Bar chart showing 3 blows]												
3.00-3.10	3		20.84	3.00	[Bar chart showing 3 blows]												
3.10-3.20	5				[Bar chart showing 5 blows]												
3.20-3.30	9				[Bar chart showing 9 blows]												
3.30-3.40	14				[Bar chart showing 14 blows]												
3.40-3.50	18				[Bar chart showing 18 blows]												
3.50-3.60	23		20.34	3.50	[Bar chart showing 23 blows]												
3.60-3.70	25				[Bar chart showing 25 blows]												
			19.84	4.00	[Bar chart showing 0 blows - Refusal]												
			19.34	4.50	[Bar chart showing 0 blows - Refusal]												
			18.84	5.00	[Bar chart showing 0 blows - Refusal]												

Remarks
Refusal at 3.70m BGL

Scale (approx)
1:25

Logged By
SG

Figure No.
11957-06-22.DP08



Ground Investigations Ireland Ltd
www.gii.ie

Site
A034 Tinakilly Co. Wicklow

Probe Number
DP09

Method Dynamic Probe Heavy (DPH) fall height 500mm, hammer weight 50.0kg	Cone Dimensions Diameter 43.7mm	Ground Level (mOD) 23.15	Client Ardale	Job Number 11957-06-22
	Location (dGPS) 729478.9 E 695805 N	Dates 14/07/2022	Engineer CS Consulting	Sheet 1/1

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Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)	Depth (m)	Blows for Depth Increment																				
					0	3	6	9	12	15	18	21	24	27	30										
0.00-0.10	0		23.15	0.00																					
0.10-0.20	1																								
0.20-0.30	3																								
0.30-0.40	3																								
0.40-0.50	4																								
0.50-0.60	5		22.65	0.50																					
0.60-0.70	4																								
0.70-0.80	4																								
0.80-0.90	4																								
0.90-1.00	3																								
1.00-1.10	4		22.15	1.00																					
1.10-1.20	3																								
1.20-1.30	4																								
1.30-1.40	3																								
1.40-1.50	3																								
1.50-1.60	4		21.65	1.50																					
1.60-1.70	4																								
1.70-1.80	3																								
1.80-1.90	4																								
1.90-2.00	4																								
2.00-2.10	5		21.15	2.00																					
2.10-2.20	5																								
2.20-2.30	3																								
2.30-2.40	3																								
2.40-2.50	4																								
2.50-2.60	4		20.65	2.50																					
2.60-2.70	4																								
2.70-2.80	4																								
2.80-2.90	3																								
2.90-3.00	3																								
3.00-3.10	2		20.15	3.00																					
3.10-3.20	2																								
3.20-3.30	3																								
3.30-3.40	2																								
3.40-3.50	2																								
3.50-3.60	2		19.65	3.50																					
3.60-3.70	2																								
3.70-3.80	4																								
3.80-3.90	4																								
3.90-4.00	6																								
4.00-4.10	6		19.15	4.00																					
4.10-4.20	8																								
4.20-4.30	10																								
4.30-4.40	13																								
4.40-4.50	14																								
4.50-4.60	17		18.65	4.50																					
4.60-4.70	20																								
4.70-4.80	22																								
4.80-4.90	22		18.15	5.00																					

Remarks
Refusal at 4.90m BGL

Scale (approx)	Logged By
1:25	SG
Figure No.	
11957-06-22.DP09	



Method Dynamic Probe Heavy (DPH) fall height 500mm, hammer weight 50.0kg	Cone Dimensions Diameter 43.7mm	Ground Level (mOD) 17.11	Client Ardale	Job Number 11957-06-22
	Location (dGPS) 729220.1 E 695686.7 N	Dates 14/07/2022	Engineer CS Consulting	Sheet 1/1

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Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)	Depth (m)	Blows for Depth Increment												
					0	3	6	9	12	15	18	21	24	27	30		
0.00-0.10	1		17.11	0.00	[Blows data]												
0.10-0.20	4				[Blows data]												
0.20-0.30	5				[Blows data]												
0.30-0.40	11				[Blows data]												
0.40-0.50	14				[Blows data]												
0.50-0.60	16		16.61	0.50	[Blows data]												
0.60-0.70	11				[Blows data]												
0.70-0.80	8				[Blows data]												
0.80-0.90	6				[Blows data]												
0.90-1.00	4				[Blows data]												
1.00-1.10	4		16.11	1.00	[Blows data]												
1.10-1.20	3				[Blows data]												
1.20-1.30	3				[Blows data]												
1.30-1.40	3				[Blows data]												
1.40-1.50	3				[Blows data]												
1.50-1.60	2		15.61	1.50	[Blows data]												
1.60-1.70	3				[Blows data]												
1.70-1.80	2				[Blows data]												
1.80-1.90	3				[Blows data]												
1.90-2.00	3				[Blows data]												
2.00-2.10	2		15.11	2.00	[Blows data]												
2.10-2.20	2				[Blows data]												
2.20-2.30	3				[Blows data]												
2.30-2.40	2				[Blows data]												
2.40-2.50	3				[Blows data]												
2.50-2.60	2		14.61	2.50	[Blows data]												
2.60-2.70	3				[Blows data]												
2.70-2.80	3				[Blows data]												
2.80-2.90	3				[Blows data]												
2.90-3.00	4				[Blows data]												
3.00-3.10	3		14.11	3.00	[Blows data]												
3.10-3.20	4				[Blows data]												
3.20-3.30	6				[Blows data]												
3.30-3.40	9				[Blows data]												
3.40-3.50	11				[Blows data]												
3.50-3.60	13		13.61	3.50	[Blows data]												
3.60-3.70	18				[Blows data]												
3.70-3.80	20				[Blows data]												
3.80-3.90	24				[Blows data]												
3.90-4.00	25		13.11	4.00	[Blows data]												
					[Blows data]												
			12.61	4.50	[Blows data]												
					[Blows data]												
			12.11	5.00	[Blows data]												

Remarks Refusal at 4.00m BGL	Scale (approx) 1:25	Logged By SG
	Figure No. 11957-06-22.DP10	



Method
Dynamic Probe Heavy (DPH)
fall height 500mm, hammer
weight 50.0kg

Cone Dimensions
Diameter 43.7mm

Ground Level (mOD)
20.41

Client
Ardale

Job Number
11957-06-22

Location (dGPS)
729274 E 695688.8 N

Dates
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Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)	Depth (m)	Blows for Depth Increment												
					0	3	6	9	12	15	18	21	24	27	30		
0.00-0.10	2		20.41	0.00	[Bar chart showing 2 blows]												
0.10-0.20	3				[Bar chart showing 3 blows]												
0.20-0.30	4				[Bar chart showing 4 blows]												
0.30-0.40	8				[Bar chart showing 8 blows]												
0.40-0.50	7				[Bar chart showing 7 blows]												
0.50-0.60	7		19.91	0.50	[Bar chart showing 7 blows]												
0.60-0.70	5				[Bar chart showing 5 blows]												
0.70-0.80	7				[Bar chart showing 7 blows]												
0.80-0.90	8				[Bar chart showing 8 blows]												
0.90-1.00	4				[Bar chart showing 4 blows]												
1.00-1.10	5		19.41	1.00	[Bar chart showing 5 blows]												
1.10-1.20	4				[Bar chart showing 4 blows]												
1.20-1.30	3				[Bar chart showing 3 blows]												
1.30-1.40	3				[Bar chart showing 3 blows]												
1.40-1.50	3				[Bar chart showing 3 blows]												
1.50-1.60	4		18.91	1.50	[Bar chart showing 4 blows]												
1.60-1.70	3				[Bar chart showing 3 blows]												
1.70-1.80	3				[Bar chart showing 3 blows]												
1.80-1.90	3				[Bar chart showing 3 blows]												
1.90-2.00	3				[Bar chart showing 3 blows]												
2.00-2.10	4		18.41	2.00	[Bar chart showing 4 blows]												
2.10-2.20	3				[Bar chart showing 3 blows]												
2.20-2.30	3				[Bar chart showing 3 blows]												
2.30-2.40	3				[Bar chart showing 3 blows]												
2.40-2.50	4				[Bar chart showing 4 blows]												
2.50-2.60	4		17.91	2.50	[Bar chart showing 4 blows]												
2.60-2.70	4				[Bar chart showing 4 blows]												
2.70-2.80	4				[Bar chart showing 4 blows]												
2.80-2.90	9				[Bar chart showing 9 blows]												
2.90-3.00	10				[Bar chart showing 10 blows]												
3.00-3.10	12		17.41	3.00	[Bar chart showing 12 blows]												
3.10-3.20	15				[Bar chart showing 15 blows]												
3.20-3.30	16				[Bar chart showing 16 blows]												
3.30-3.40	16				[Bar chart showing 16 blows]												
3.40-3.50	6				[Bar chart showing 6 blows]												
3.50-3.60	5		16.91	3.50	[Bar chart showing 5 blows]												
3.60-3.70	4				[Bar chart showing 4 blows]												
3.70-3.80	3				[Bar chart showing 3 blows]												
3.80-3.90	5				[Bar chart showing 5 blows]												
3.90-4.00	13				[Bar chart showing 13 blows]												
4.00-4.10	17		16.41	4.00	[Bar chart showing 17 blows]												
4.10-4.20	18				[Bar chart showing 18 blows]												
4.20-4.30	20				[Bar chart showing 20 blows]												
4.30-4.40	21				[Bar chart showing 21 blows]												
4.40-4.50	22		15.91	4.50	[Bar chart showing 22 blows]												
			15.41	5.00													

Remarks
Refusal at 4.50m BGL

Scale (approx)
1:25

Logged By
FOD

Figure No.
11957-06-22.DP11



Method
Dynamic Probe Heavy (DPH)
fall height 500mm, hammer
weight 50.0kg

Cone Dimensions
Diameter 43.7mm

Ground Level (mOD)
14.09

Client
Ardale

Job Number
11957-06-22

Location (dGPS)
729199.1 E 695635.7 N

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Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)	Depth (m)	Blows for Depth Increment												
					0	3	6	9	12	15	18	21	24	27	30		
0.00-0.10	2		14.09	0.00													
0.10-0.20	4																
0.20-0.30	6																
0.30-0.40	8																
0.40-0.50	10																
0.50-0.60	10		13.59	0.50													
0.60-0.70	8																
0.70-0.80	4																
0.80-0.90	4																
0.90-1.00	5																
1.00-1.10	5		13.09	1.00													
1.10-1.20	4																
1.20-1.30	3																
1.30-1.40	4																
1.40-1.50	4																
1.50-1.60	4		12.59	1.50													
1.60-1.70	3																
1.70-1.80	3																
1.80-1.90	2																
1.90-2.00	3																
2.00-2.10	3		12.09	2.00													
2.10-2.20	2																
2.20-2.30	3																
2.30-2.40	5																
2.40-2.50	4																
2.50-2.60	6		11.59	2.50													
2.60-2.70	7																
2.70-2.80	9																
2.80-2.90	13																
2.90-3.00	18																
3.00-3.10	18		11.09	3.00													
3.10-3.20	20																
3.20-3.30	21																
3.30-3.40	23		10.59	3.50													

Remarks
Refusal at 3.40m BGL

Scale (approx)	Logged By
1:25	FOD
Figure No.	
11957-06-22.DP11	



Method Dynamic Probe Heavy (DPH) fall height 500mm, hammer weight 50.0kg	Cone Dimensions Diameter 43.7mm	Ground Level (mOD) 19.92	Client Ardale	Job Number 11957-06-22
	Location (dGPS) 729299.9 E 695652.7 N	Dates 14/07/2022	Engineer CS Consulting	Sheet 1/1

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Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)	Depth (m)	Blows for Depth Increment												
					0	3	6	9	12	15	18	21	24	27	30		
0.00-0.10	2		19.92	0.00													
0.10-0.20	4																
0.20-0.30	5																
0.30-0.40	5																
0.40-0.50	7																
0.50-0.60	16		19.42	0.50													
0.60-0.70	20																
0.70-0.80	16																
0.80-0.90	13																
0.90-1.00	10		18.92	1.00													
1.00-1.10	12																
1.10-1.20	9																
1.20-1.30	9																
1.30-1.40	10																
1.40-1.50	8		18.42	1.50													
1.50-1.60	10																
1.60-1.70	8																
1.70-1.80	10																
1.80-1.90	8																
1.90-2.00	14		17.92	2.00													
2.00-2.10	8																
2.10-2.20	5																
2.20-2.30	8																
2.30-2.40	14																
2.40-2.50	9		17.42	2.50													
2.50-2.60	6																
2.60-2.70	6																
2.70-2.80	3																
2.80-2.90	3																
2.90-3.00	2		16.92	3.00													
3.00-3.10	2																
3.10-3.20	2																
3.20-3.30	3																
3.30-3.40	4																
3.40-3.50	4		16.42	3.50													
3.50-3.60	4																
3.60-3.70	4																
3.70-3.80	4																
3.80-3.90	4																
3.90-4.00	4		15.92	4.00													
4.00-4.10	5																
4.10-4.20	7																
4.20-4.30	11																
4.30-4.40	16																
4.40-4.50	18		15.42	4.50													
4.50-4.60	20																
4.60-4.70	20																
4.70-4.80	22		14.92	5.00													

Remarks Refusal at m BGL	Scale (approx)	Logged By
	1:25	FOD
	Figure No. 11957-06-22.DP11	



Method
Dynamic Probe Heavy (DPH)
fall height 500mm, hammer
weight 50.0kg

Cone Dimensions
Diameter 43.7mm

Ground Level (mOD)
21.56

Client
Ardale

Job Number
11957-06-22

Location (dGPS)
729386.4 E 695677.3 N

Dates
13/07/2022

Engineer
CS Consulting

Sheet
1/1

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Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)	Depth (m)	Blows for Depth Increment												
					0	3	6	9	12	15	18	21	24	27	30		
0.00-0.10	3		21.56	0.00	[Bar chart showing 3 blows]												
0.10-0.20	4				[Bar chart showing 4 blows]												
0.20-0.30	4				[Bar chart showing 4 blows]												
0.30-0.40	6				[Bar chart showing 6 blows]												
0.40-0.50	8				[Bar chart showing 8 blows]												
0.50-0.60	7		21.06	0.50	[Bar chart showing 7 blows]												
0.60-0.70	10				[Bar chart showing 10 blows]												
0.70-0.80	11				[Bar chart showing 11 blows]												
0.80-0.90	7				[Bar chart showing 7 blows]												
0.90-1.00	8				[Bar chart showing 8 blows]												
1.00-1.10	8		20.56	1.00	[Bar chart showing 8 blows]												
1.10-1.20	6				[Bar chart showing 6 blows]												
1.20-1.30	9				[Bar chart showing 9 blows]												
1.30-1.40	10				[Bar chart showing 10 blows]												
1.40-1.50	15				[Bar chart showing 15 blows]												
1.50-1.60	15		20.06	1.50	[Bar chart showing 15 blows]												
1.60-1.70	16				[Bar chart showing 16 blows]												
1.70-1.80	20				[Bar chart showing 20 blows]												
1.80-1.90	22				[Bar chart showing 22 blows]												
1.90-2.00	26				[Bar chart showing 26 blows]												
2.00-2.10	25		19.56	2.00	[Bar chart showing 25 blows]												
			19.06	2.50	[Bar chart showing 25 blows]												
			18.56	3.00	[Bar chart showing 25 blows]												
			18.06	3.50	[Bar chart showing 25 blows]												
			17.56	4.00	[Bar chart showing 25 blows]												
			17.06	4.50	[Bar chart showing 25 blows]												
			16.56	5.00	[Bar chart showing 25 blows]												

Remarks
Refusal at m BGL

Scale (approx)
1:25

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FOD

Figure No.
11957-06-22.DP11



Ground Investigations Ireland Ltd
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Site
A034 Tinakilly Co. Wicklow

Probe
Number
DP15

Method
Dynamic Probe Heavy (DPH)
fall height 500mm, hammer
weight 50.0kg

Cone Dimensions
Diameter 43.7mm

Ground Level (mOD)
21.85

Client
Ardale

**Job
Number**
11957-06-22

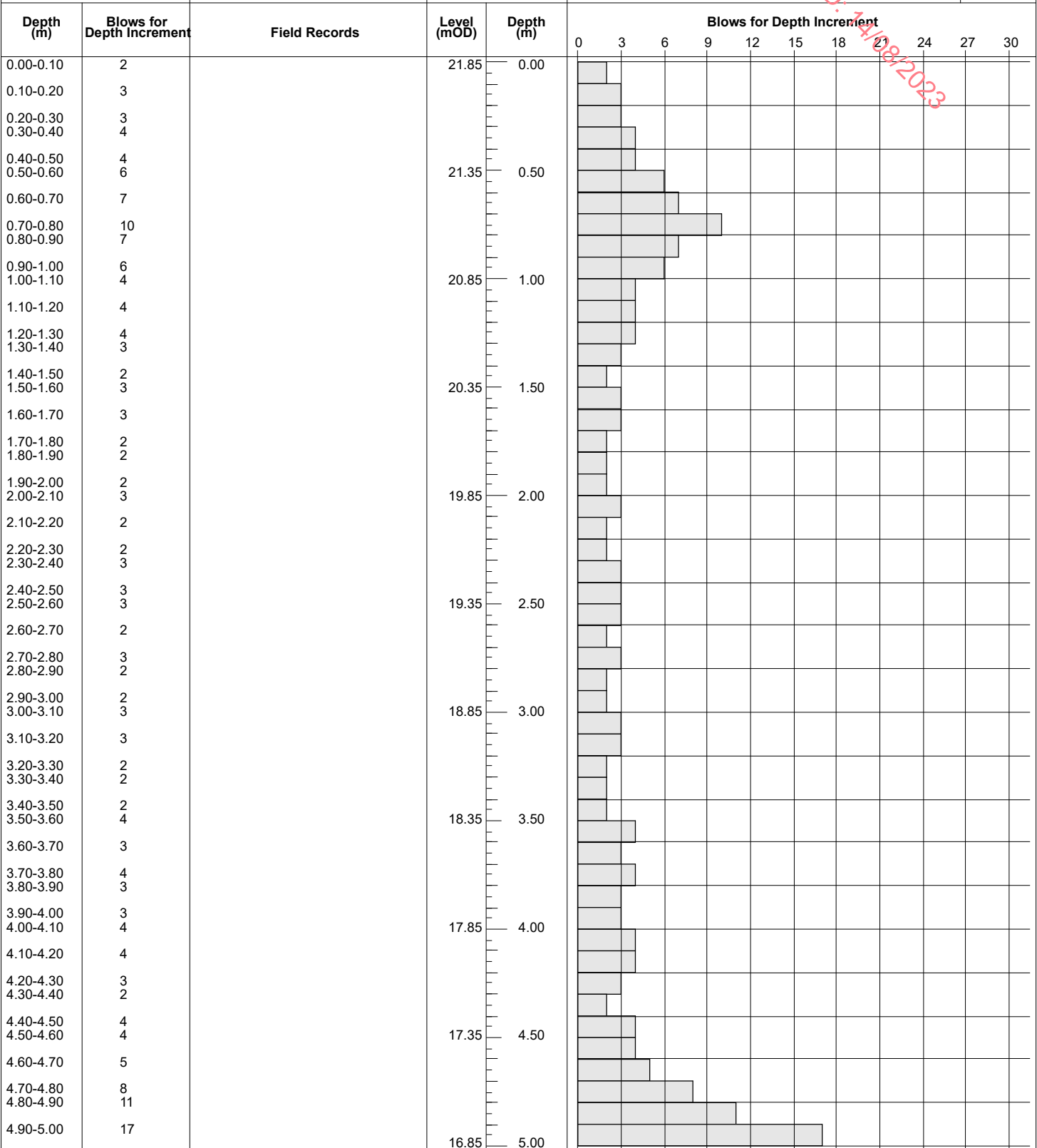
Location (dGPS)
729471 E 695687.4 N

Dates
14/07/2022

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Remarks
Refusal at 5.40m BGL

Scale (approx)
1:25

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FOD

Figure No.
11957-06-22.DP11



Method
Dynamic Probe Heavy (DPH)
fall height 500mm, hammer
weight 50.0kg

Cone Dimensions
Diameter 43.7mm

Ground Level (mOD)
21.85

Client
Ardale

Job Number
11957-06-22

Location (dGPS)
729471 E 695687.4 N

Dates
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Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)	Depth (m)	Blows for Depth Increment												
					0	3	6	9	12	15	18	21	24	27	30		
5.00-5.10	14		16.85	5.00	[Bar chart showing 14 blows for depth increment 5.00-5.10]												
5.10-5.20	18				[Bar chart showing 18 blows for depth increment 5.10-5.20]												
5.20-5.30	21				[Bar chart showing 21 blows for depth increment 5.20-5.30]												
5.30-5.40	25				[Bar chart showing 25 blows for depth increment 5.30-5.40]												
			16.35	5.50	[Empty grid for depth 5.50-6.00]												
			15.85	6.00	[Empty grid for depth 6.00-6.50]												
			15.35	6.50	[Empty grid for depth 6.50-7.00]												
			14.85	7.00	[Empty grid for depth 7.00-7.50]												
			14.35	7.50	[Empty grid for depth 7.50-8.00]												
			13.85	8.00	[Empty grid for depth 8.00-8.50]												
			13.35	8.50	[Empty grid for depth 8.50-9.00]												
			12.85	9.00	[Empty grid for depth 9.00-9.50]												
			12.35	9.50	[Empty grid for depth 9.50-10.00]												
			11.85	10.00	[Empty grid for depth 10.00-10.50]												

Remarks

Scale (approx)	Logged By
1:25	FOD
Figure No.	
11957-06-22.DP11	



Method Dynamic Probe Heavy (DPH) fall height 500mm, hammer weight 50.0kg	Cone Dimensions Diameter 43.7mm	Ground Level (mOD) 24.73	Client Ardale	Job Number 11957-06-22
	Location (dGPS) 729506.2 E 695751.4 N	Dates 14/07/2022	Engineer CS Consulting	Sheet 1/2

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Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)	Depth (m)	Blows for Depth Increment												
					0	3	6	9	12	15	18	21	24	27	30		
0.00-0.10	2		24.73	0.00	[Bar chart showing 2 blows]												
0.10-0.20	4				[Bar chart showing 4 blows]												
0.20-0.30	6				[Bar chart showing 6 blows]												
0.30-0.40	6				[Bar chart showing 6 blows]												
0.40-0.50	6				[Bar chart showing 6 blows]												
0.50-0.60	8		24.23	0.50	[Bar chart showing 8 blows]												
0.60-0.70	6				[Bar chart showing 6 blows]												
0.70-0.80	5				[Bar chart showing 5 blows]												
0.80-0.90	4				[Bar chart showing 4 blows]												
0.90-1.00	4				[Bar chart showing 4 blows]												
1.00-1.10	5		23.73	1.00	[Bar chart showing 5 blows]												
1.10-1.20	4				[Bar chart showing 4 blows]												
1.20-1.30	4				[Bar chart showing 4 blows]												
1.30-1.40	4				[Bar chart showing 4 blows]												
1.40-1.50	5				[Bar chart showing 5 blows]												
1.50-1.60	5		23.23	1.50	[Bar chart showing 5 blows]												
1.60-1.70	4				[Bar chart showing 4 blows]												
1.70-1.80	4				[Bar chart showing 4 blows]												
1.80-1.90	4				[Bar chart showing 4 blows]												
1.90-2.00	5				[Bar chart showing 5 blows]												
2.00-2.10	4		22.73	2.00	[Bar chart showing 4 blows]												
2.10-2.20	5				[Bar chart showing 5 blows]												
2.20-2.30	5				[Bar chart showing 5 blows]												
2.30-2.40	4				[Bar chart showing 4 blows]												
2.40-2.50	5				[Bar chart showing 5 blows]												
2.50-2.60	4		22.23	2.50	[Bar chart showing 4 blows]												
2.60-2.70	3				[Bar chart showing 3 blows]												
2.70-2.80	3				[Bar chart showing 3 blows]												
2.80-2.90	2				[Bar chart showing 2 blows]												
2.90-3.00	2				[Bar chart showing 2 blows]												
3.00-3.10	3		21.73	3.00	[Bar chart showing 3 blows]												
3.10-3.20	2				[Bar chart showing 2 blows]												
3.20-3.30	4				[Bar chart showing 4 blows]												
3.30-3.40	4				[Bar chart showing 4 blows]												
3.40-3.50	5				[Bar chart showing 5 blows]												
3.50-3.60	4		21.23	3.50	[Bar chart showing 4 blows]												
3.60-3.70	7				[Bar chart showing 7 blows]												
3.70-3.80	8				[Bar chart showing 8 blows]												
3.80-3.90	10				[Bar chart showing 10 blows]												
3.90-4.00	3				[Bar chart showing 3 blows]												
4.00-4.10	4		20.73	4.00	[Bar chart showing 4 blows]												
4.10-4.20	3				[Bar chart showing 3 blows]												
4.20-4.30	3				[Bar chart showing 3 blows]												
4.30-4.40	4				[Bar chart showing 4 blows]												
4.40-4.50	5				[Bar chart showing 5 blows]												
4.50-4.60	12		20.23	4.50	[Bar chart showing 12 blows]												
4.60-4.70	13				[Bar chart showing 13 blows]												
4.70-4.80	15				[Bar chart showing 15 blows]												
4.80-4.90	18				[Bar chart showing 18 blows]												
4.90-5.00	20		19.73	5.00	[Bar chart showing 20 blows]												

Remarks Refusal at 5.40m BGL	Scale (approx) 1:25	Logged By FOD
	Figure No.	
	11957-06-22.DP16	



Method
Dynamic Probe Heavy (DPH)
fall height 500mm, hammer
weight 50.0kg

Cone Dimensions
Diameter 43.7mm

Ground Level (mOD)
24.73

Client
Ardale

Job Number
11957-06-22

Location (dGPS)
729506.2 E 695751.4 N

Dates
14/07/2022

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Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)	Depth (m)	Blows for Depth Increment																				
					0	3	6	9	12	15	18	21	24	27	30										
5.00-5.10	10		19.73	5.00																					
5.10-5.20	20																								
5.20-5.30	21																								
5.30-5.40	22																								
			19.23	5.50																					
			18.73	6.00																					
			18.23	6.50																					
			17.73	7.00																					
			17.23	7.50																					
			16.73	8.00																					
			16.23	8.50																					
			15.73	9.00																					
			15.23	9.50																					
			14.73	10.00																					

Remarks

Scale (approx)	Logged By
1:25	FOD
Figure No.	
11957-06-22.DP16	



Method Dynamic Probe Heavy (DPH) fall height 500mm, hammer weight 50.0kg	Cone Dimensions Diameter 43.7mm	Ground Level (mOD) 11.97	Client Ardale	Job Number 11957-06-22
	Location (dGPS) 729195.4 E 695578.6 N	Dates 13/07/2022	Engineer CS Consulting	Sheet 1/1

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Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)	Depth (m)	Blows for Depth Increment												
					0	3	6	9	12	15	18	21	24	27	30		
0.00-0.10	3		11.97	0.00	[Bar chart showing 3 blows]												
0.10-0.20	4				[Bar chart showing 4 blows]												
0.20-0.30	5				[Bar chart showing 5 blows]												
0.30-0.40	4				[Bar chart showing 4 blows]												
0.40-0.50	4				[Bar chart showing 4 blows]												
0.50-0.60	4		11.47	0.50	[Bar chart showing 4 blows]												
0.60-0.70	5				[Bar chart showing 5 blows]												
0.70-0.80	6				[Bar chart showing 6 blows]												
0.80-0.90	14				[Bar chart showing 14 blows]												
0.90-1.00	10				[Bar chart showing 10 blows]												
1.00-1.10	7		10.97	1.00	[Bar chart showing 7 blows]												
1.10-1.20	4				[Bar chart showing 4 blows]												
1.20-1.30	7				[Bar chart showing 7 blows]												
1.30-1.40	16				[Bar chart showing 16 blows]												
1.40-1.50	11				[Bar chart showing 11 blows]												
1.50-1.60	6		10.47	1.50	[Bar chart showing 6 blows]												
1.60-1.70	2				[Bar chart showing 2 blows]												
1.70-1.80	3				[Bar chart showing 3 blows]												
1.80-1.90	2				[Bar chart showing 2 blows]												
1.90-2.00	3				[Bar chart showing 3 blows]												
2.00-2.10	2		9.97	2.00	[Bar chart showing 2 blows]												
2.10-2.20	3				[Bar chart showing 3 blows]												
2.20-2.30	2				[Bar chart showing 2 blows]												
2.30-2.40	3				[Bar chart showing 3 blows]												
2.40-2.50	3				[Bar chart showing 3 blows]												
2.50-2.60	3		9.47	2.50	[Bar chart showing 3 blows]												
2.60-2.70	2				[Bar chart showing 2 blows]												
2.70-2.80	3				[Bar chart showing 3 blows]												
2.80-2.90	2				[Bar chart showing 2 blows]												
2.90-3.00	1				[Bar chart showing 1 blow]												
3.00-3.10	6		8.97	3.00	[Bar chart showing 6 blows]												
3.10-3.20	9				[Bar chart showing 9 blows]												
3.20-3.30	6				[Bar chart showing 6 blows]												
3.30-3.40	8				[Bar chart showing 8 blows]												
3.40-3.50	8				[Bar chart showing 8 blows]												
3.50-3.60	10		8.47	3.50	[Bar chart showing 10 blows]												
3.60-3.70	16				[Bar chart showing 16 blows]												
3.70-3.80	20				[Bar chart showing 20 blows]												
3.80-3.90	22				[Bar chart showing 22 blows]												
3.90-4.00	25		7.97	4.00	[Bar chart showing 25 blows]												
					[Bar chart showing 0 blows]												
			7.47	4.50	[Bar chart showing 0 blows]												
					[Bar chart showing 0 blows]												
					[Bar chart showing 0 blows]												
			6.97	5.00	[Bar chart showing 0 blows]												

Remarks Refusal at 4.00m BGL	Scale (approx) 1:25	Logged By FOD
	Figure No.	
	11957-06-22.DP16	



Method Dynamic Probe Heavy (DPH) fall height 500mm, hammer weight 50.0kg	Cone Dimensions Diameter 43.7mm	Ground Level (mOD) 17.16	Client Ardale	Job Number 11957-06-22
	Location (dGPS) 729252.3 E 695617.7 N	Dates 13/07/2022	Engineer CS Consulting	Sheet 1/1

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Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)	Depth (m)	Blows for Depth Increment												
					0	3	6	9	12	15	18	21	24	27	30		
0.00-0.10	3		17.16	0.00	[Bar chart showing 3 blows]												
0.10-0.20	10				[Bar chart showing 10 blows]												
0.20-0.30	9				[Bar chart showing 9 blows]												
0.30-0.40	7				[Bar chart showing 7 blows]												
0.40-0.50	6				[Bar chart showing 6 blows]												
0.50-0.60	7		16.66	0.50	[Bar chart showing 7 blows]												
0.60-0.70	6				[Bar chart showing 6 blows]												
0.70-0.80	5				[Bar chart showing 5 blows]												
0.80-0.90	3				[Bar chart showing 3 blows]												
0.90-1.00	4				[Bar chart showing 4 blows]												
1.00-1.10	4		16.16	1.00	[Bar chart showing 4 blows]												
1.10-1.20	4				[Bar chart showing 4 blows]												
1.20-1.30	3				[Bar chart showing 3 blows]												
1.30-1.40	3				[Bar chart showing 3 blows]												
1.40-1.50	3				[Bar chart showing 3 blows]												
1.50-1.60	2		15.66	1.50	[Bar chart showing 2 blows]												
1.60-1.70	3				[Bar chart showing 3 blows]												
1.70-1.80	3				[Bar chart showing 3 blows]												
1.80-1.90	3				[Bar chart showing 3 blows]												
1.90-2.00	3				[Bar chart showing 3 blows]												
2.00-2.10	2		15.16	2.00	[Bar chart showing 2 blows]												
2.10-2.20	2				[Bar chart showing 2 blows]												
2.20-2.30	2				[Bar chart showing 2 blows]												
2.30-2.40	2				[Bar chart showing 2 blows]												
2.40-2.50	1				[Bar chart showing 1 blow]												
2.50-2.60	2		14.66	2.50	[Bar chart showing 2 blows]												
2.60-2.70	1				[Bar chart showing 1 blow]												
2.70-2.80	0				[Bar chart showing 0 blows]												
2.80-2.90	2				[Bar chart showing 2 blows]												
2.90-3.00	2				[Bar chart showing 2 blows]												
3.00-3.10	4		14.16	3.00	[Bar chart showing 4 blows]												
3.10-3.20	3				[Bar chart showing 3 blows]												
3.20-3.30	6				[Bar chart showing 6 blows]												
3.30-3.40	6				[Bar chart showing 6 blows]												
3.40-3.50	12				[Bar chart showing 12 blows]												
3.50-3.60	14		13.66	3.50	[Bar chart showing 14 blows]												
3.60-3.70	11				[Bar chart showing 11 blows]												
3.70-3.80	17				[Bar chart showing 17 blows]												
3.80-3.90	20				[Bar chart showing 20 blows]												
3.90-4.00	21				[Bar chart showing 21 blows]												
4.00-4.10	24		13.16	4.00	[Bar chart showing 24 blows]												
					[Bar chart showing 0 blows]												
			12.66	4.50	[Bar chart showing 0 blows]												
					[Bar chart showing 0 blows]												
					[Bar chart showing 0 blows]												
			12.16	5.00	[Bar chart showing 0 blows]												

Remarks Refusal at 4.10m BGL	Scale (approx) 1:25	Logged By FOD
	Figure No.	
	11957-06-22.DP16	



Method Dynamic Probe Heavy (DPH) fall height 500mm, hammer weight 50.0kg	Cone Dimensions Diameter 43.7mm	Ground Level (mOD) 16.99	Client Ardale	Job Number 11957-06-22
	Location (dGPS) 729295.3 E 695576.1 N	Dates 14/07/2022	Engineer CS Consulting	Sheet 1/1

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Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)	Depth (m)	Blows for Depth Increment												
					0	3	6	9	12	15	18	21	24	27	30		
0.00-0.10	3		16.99	0.00	[Bar chart showing 3 blows]												
0.10-0.20	4				[Bar chart showing 4 blows]												
0.20-0.30	5				[Bar chart showing 5 blows]												
0.30-0.40	9				[Bar chart showing 9 blows]												
0.40-0.50	11				[Bar chart showing 11 blows]												
0.50-0.60	11		16.49	0.50	[Bar chart showing 11 blows]												
0.60-0.70	9				[Bar chart showing 9 blows]												
0.70-0.80	11				[Bar chart showing 11 blows]												
0.80-0.90	12				[Bar chart showing 12 blows]												
0.90-1.00	12				[Bar chart showing 12 blows]												
1.00-1.10	7		15.99	1.00	[Bar chart showing 7 blows]												
1.10-1.20	3				[Bar chart showing 3 blows]												
1.20-1.30	4				[Bar chart showing 4 blows]												
1.30-1.40	5				[Bar chart showing 5 blows]												
1.40-1.50	4				[Bar chart showing 4 blows]												
1.50-1.60	7		15.49	1.50	[Bar chart showing 7 blows]												
1.60-1.70	3				[Bar chart showing 3 blows]												
1.70-1.80	3				[Bar chart showing 3 blows]												
1.80-1.90	2				[Bar chart showing 2 blows]												
1.90-2.00	3				[Bar chart showing 3 blows]												
2.00-2.10	3		14.99	2.00	[Bar chart showing 3 blows]												
2.10-2.20	3				[Bar chart showing 3 blows]												
2.20-2.30	4				[Bar chart showing 4 blows]												
2.30-2.40	4				[Bar chart showing 4 blows]												
2.40-2.50	2				[Bar chart showing 2 blows]												
2.50-2.60	3		14.49	2.50	[Bar chart showing 3 blows]												
2.60-2.70	2				[Bar chart showing 2 blows]												
2.70-2.80	2				[Bar chart showing 2 blows]												
2.80-2.90	3				[Bar chart showing 3 blows]												
2.90-3.00	3				[Bar chart showing 3 blows]												
3.00-3.10	3		13.99	3.00	[Bar chart showing 3 blows]												
3.10-3.20	3				[Bar chart showing 3 blows]												
3.20-3.30	4				[Bar chart showing 4 blows]												
3.30-3.40	5				[Bar chart showing 5 blows]												
3.40-3.50	12				[Bar chart showing 12 blows]												
3.50-3.60	18		13.49	3.50	[Bar chart showing 18 blows]												
3.60-3.70	21				[Bar chart showing 21 blows]												
3.70-3.80	23				[Bar chart showing 23 blows]												
3.80-3.90	25		12.99	4.00	[Bar chart showing 25 blows]												
					[Bar chart showing 0 blows]												
					[Bar chart showing 0 blows]												
			12.49	4.50	[Bar chart showing 0 blows]												
					[Bar chart showing 0 blows]												
					[Bar chart showing 0 blows]												
			11.99	5.00	[Bar chart showing 0 blows]												

Remarks
Refusal at 3.90m BGL

Scale (approx)	Logged By
1:25	FOD
Figure No.	
11957-06-22.DP19	



Method Dynamic Probe Heavy (DPH) fall height 500mm, hammer weight 50.0kg	Cone Dimensions Diameter 43.7mm	Ground Level (mOD) 19.28	Client Ardale	Job Number 11957-06-22
	Location (dGPS) 729345.3 E 695606.9 N	Dates 13/07/2022	Engineer CS Consulting	Sheet 1/1

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Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)	Depth (m)	Blows for Depth Increment												
					0	3	6	9	12	15	18	21	24	27	30		
0.00-0.10	2		19.28	0.00	[Bar chart showing 2 blows]												
0.10-0.20	5				[Bar chart showing 5 blows]												
0.20-0.30	8				[Bar chart showing 8 blows]												
0.30-0.40	7				[Bar chart showing 7 blows]												
0.40-0.50	6				[Bar chart showing 6 blows]												
0.50-0.60	5		18.78	0.50	[Bar chart showing 5 blows]												
0.60-0.70	4				[Bar chart showing 4 blows]												
0.70-0.80	9				[Bar chart showing 9 blows]												
0.80-0.90	8				[Bar chart showing 8 blows]												
0.90-1.00	8				[Bar chart showing 8 blows]												
1.00-1.10	10		18.28	1.00	[Bar chart showing 10 blows]												
1.10-1.20	9				[Bar chart showing 9 blows]												
1.20-1.30	2				[Bar chart showing 2 blows]												
1.30-1.40	4				[Bar chart showing 4 blows]												
1.40-1.50	4				[Bar chart showing 4 blows]												
1.50-1.60	3		17.78	1.50	[Bar chart showing 3 blows]												
1.60-1.70	3				[Bar chart showing 3 blows]												
1.70-1.80	4				[Bar chart showing 4 blows]												
1.80-1.90	3				[Bar chart showing 3 blows]												
1.90-2.00	3				[Bar chart showing 3 blows]												
2.00-2.10	4		17.28	2.00	[Bar chart showing 4 blows]												
2.10-2.20	3				[Bar chart showing 3 blows]												
2.20-2.30	3				[Bar chart showing 3 blows]												
2.30-2.40	2				[Bar chart showing 2 blows]												
2.40-2.50	2				[Bar chart showing 2 blows]												
2.50-2.60	5		16.78	2.50	[Bar chart showing 5 blows]												
2.60-2.70	10				[Bar chart showing 10 blows]												
2.70-2.80	14				[Bar chart showing 14 blows]												
2.80-2.90	15				[Bar chart showing 15 blows]												
2.90-3.00	16				[Bar chart showing 16 blows]												
3.00-3.10	18		16.28	3.00	[Bar chart showing 18 blows]												
3.10-3.20	8				[Bar chart showing 8 blows]												
3.20-3.30	14				[Bar chart showing 14 blows]												
3.30-3.40	20				[Bar chart showing 20 blows]												
3.40-3.50	21				[Bar chart showing 21 blows]												
3.50-3.60	23		15.78	3.50	[Bar chart showing 23 blows]												
					[Bar chart showing 0 blows]												
			15.28	4.00	[Bar chart showing 0 blows]												
					[Bar chart showing 0 blows]												
					[Bar chart showing 0 blows]												
			14.78	4.50	[Bar chart showing 0 blows]												
					[Bar chart showing 0 blows]												
					[Bar chart showing 0 blows]												
			14.28	5.00	[Bar chart showing 0 blows]												

Remarks Refusal at m BGL	Scale (approx)	Logged By
	1:25	FOD
	Figure No. 11957-06-22.DP19	



Method Dynamic Probe Heavy (DPH) fall height 500mm, hammer weight 50.0kg	Cone Dimensions Diameter 43.7mm	Ground Level (mOD) 20.72	Client Ardale	Job Number 11957-06-22
	Location (dGPS) 729422.2 E 695640.4 N	Dates 13/07/2022	Engineer CS Consulting	Sheet 1/1

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Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)	Depth (m)	Blows for Depth Increment												
					0	3	6	9	12	15	18	21	24	27	30		
0.00-0.10	2		20.72	0.00													
0.10-0.20	4																
0.20-0.30	4																
0.30-0.40	6																
0.40-0.50	7																
0.50-0.60	7		20.22	0.50													
0.60-0.70	7																
0.70-0.80	6																
0.80-0.90	5																
0.90-1.00	6																
1.00-1.10	8		19.72	1.00													
1.10-1.20	9																
1.20-1.30	7																
1.30-1.40	7																
1.40-1.50	6																
1.50-1.60	8		19.22	1.50													
1.60-1.70	8																
1.70-1.80	9																
1.80-1.90	10																
1.90-2.00	11																
2.00-2.10	11		18.72	2.00													
2.10-2.20	10																
2.20-2.30	12																
2.30-2.40	13																
2.40-2.50	14																
2.50-2.60	16		18.22	2.50													
2.60-2.70	16																
2.70-2.80	18																
2.80-2.90	18																
2.90-3.00	20																
3.00-3.10	21		17.72	3.00													
3.10-3.20	22																
			17.22	3.50													
			16.72	4.00													
			16.22	4.50													
			15.72	5.00													

Remarks
Refusal at 3.20m BGL

Scale (approx)	Logged By
1:25	FOD
Figure No.	
11957-06-22.DP21	



Method Dynamic Probe Heavy (DPH) fall height 500mm, hammer weight 50.0kg	Cone Dimensions Diameter 43.7mm	Ground Level (mOD) 20.25	Client Ardale	Job Number 11957-06-22
	Location (dGPS) 729456.5 E 695614.8 N	Dates 13/07/2022	Engineer CS Consulting	Sheet 1/2

RECEIVED: 21/08/2023

Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)	Depth (m)	Blows for Depth Increment												
					0	3	6	9	12	15	18	21	24	27	30		
0.00-0.10	4		20.25	0.00	[Bar chart showing 4 blows]												
0.10-0.20	3				[Bar chart showing 3 blows]												
0.20-0.30	4				[Bar chart showing 4 blows]												
0.30-0.40	5				[Bar chart showing 5 blows]												
0.40-0.50	4				[Bar chart showing 4 blows]												
0.50-0.60	7		19.75	0.50	[Bar chart showing 7 blows]												
0.60-0.70	6				[Bar chart showing 6 blows]												
0.70-0.80	5				[Bar chart showing 5 blows]												
0.80-0.90	4				[Bar chart showing 4 blows]												
0.90-1.00	4				[Bar chart showing 4 blows]												
1.00-1.10	3		19.25	1.00	[Bar chart showing 3 blows]												
1.10-1.20	3				[Bar chart showing 3 blows]												
1.20-1.30	4				[Bar chart showing 4 blows]												
1.30-1.40	3				[Bar chart showing 3 blows]												
1.40-1.50	4				[Bar chart showing 4 blows]												
1.50-1.60	4		18.75	1.50	[Bar chart showing 4 blows]												
1.60-1.70	3				[Bar chart showing 3 blows]												
1.70-1.80	4				[Bar chart showing 4 blows]												
1.80-1.90	5				[Bar chart showing 5 blows]												
1.90-2.00	5				[Bar chart showing 5 blows]												
2.00-2.10	4		18.25	2.00	[Bar chart showing 4 blows]												
2.10-2.20	3				[Bar chart showing 3 blows]												
2.20-2.30	2				[Bar chart showing 2 blows]												
2.30-2.40	3				[Bar chart showing 3 blows]												
2.40-2.50	2				[Bar chart showing 2 blows]												
2.50-2.60	4		17.75	2.50	[Bar chart showing 4 blows]												
2.60-2.70	5				[Bar chart showing 5 blows]												
2.70-2.80	5				[Bar chart showing 5 blows]												
2.80-2.90	3				[Bar chart showing 3 blows]												
2.90-3.00	6				[Bar chart showing 6 blows]												
3.00-3.10	6		17.25	3.00	[Bar chart showing 6 blows]												
3.10-3.20	5				[Bar chart showing 5 blows]												
3.20-3.30	8				[Bar chart showing 8 blows]												
3.30-3.40	8				[Bar chart showing 8 blows]												
3.40-3.50	10				[Bar chart showing 10 blows]												
3.50-3.60	9		16.75	3.50	[Bar chart showing 9 blows]												
3.60-3.70	9				[Bar chart showing 9 blows]												
3.70-3.80	7				[Bar chart showing 7 blows]												
3.80-3.90	4				[Bar chart showing 4 blows]												
3.90-4.00	4				[Bar chart showing 4 blows]												
4.00-4.10	4		16.25	4.00	[Bar chart showing 4 blows]												
4.10-4.20	6				[Bar chart showing 6 blows]												
4.20-4.30	6				[Bar chart showing 6 blows]												
4.30-4.40	7				[Bar chart showing 7 blows]												
4.40-4.50	6				[Bar chart showing 6 blows]												
4.50-4.60	4		15.75	4.50	[Bar chart showing 4 blows]												
4.60-4.70	6				[Bar chart showing 6 blows]												
4.70-4.80	9				[Bar chart showing 9 blows]												
4.80-4.90	16				[Bar chart showing 16 blows]												
4.90-5.00	21		15.25	5.00	[Bar chart showing 21 blows]												

Remarks Refusal at 5.10m BGL	Scale (approx) 1:25	Logged By FOD
	Figure No.	
	11957-06-22.DP21	



Method Dynamic Probe Heavy (DPH) fall height 500mm, hammer weight 50.0kg	Cone Dimensions Diameter 43.7mm	Ground Level (mOD) 20.25	Client Ardale	Job Number 11957-06-22
	Location (dGPS) 729456.5 E 695614.8 N	Dates 13/07/2022	Engineer CS Consulting	Sheet 2/2

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Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)	Depth (m)	Blows for Depth Increment																							
					0	3	6	9	12	15	18	21	24	27	30													
5.00-5.10	25		15.25	5.00																								
			14.75	5.50																								
			14.25	6.00																								
			13.75	6.50																								
			13.25	7.00																								
			12.75	7.50																								
			12.25	8.00																								
			11.75	8.50																								
			11.25	9.00																								
			10.75	9.50																								
			10.25	10.00																								

Remarks	Scale (approx)	Logged By
	1:25	FOD
	Figure No. 11957-06-22.DP21	



Method Dynamic Probe Heavy (DPH) fall height 500mm, hammer weight 50.0kg	Cone Dimensions Diameter 43.7mm	Ground Level (mOD) 23.53	Client Ardale	Job Number 11957-06-22
	Location (dGPS) 729537.6 E 695653.8 N	Dates 13/07/2022	Engineer CS Consulting	Sheet 1/1

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Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)	Depth (m)	Blows for Depth Increment												
					0	3	6	9	12	15	18	21	24	27	30		
0.00-0.10	2		23.53	0.00	[Bar chart showing 2 blows]												
0.10-0.20	3				[Bar chart showing 3 blows]												
0.20-0.30	4				[Bar chart showing 4 blows]												
0.30-0.40	4				[Bar chart showing 4 blows]												
0.40-0.50	3				[Bar chart showing 3 blows]												
0.50-0.60	3		23.03	0.50	[Bar chart showing 3 blows]												
0.60-0.70	4				[Bar chart showing 4 blows]												
0.70-0.80	5				[Bar chart showing 5 blows]												
0.80-0.90	4				[Bar chart showing 4 blows]												
0.90-1.00	3				[Bar chart showing 3 blows]												
1.00-1.10	3		22.53	1.00	[Bar chart showing 3 blows]												
1.10-1.20	2				[Bar chart showing 2 blows]												
1.20-1.30	3				[Bar chart showing 3 blows]												
1.30-1.40	4				[Bar chart showing 4 blows]												
1.40-1.50	4				[Bar chart showing 4 blows]												
1.50-1.60	4		22.03	1.50	[Bar chart showing 4 blows]												
1.60-1.70	2				[Bar chart showing 2 blows]												
1.70-1.80	3				[Bar chart showing 3 blows]												
1.80-1.90	2				[Bar chart showing 2 blows]												
1.90-2.00	3				[Bar chart showing 3 blows]												
2.00-2.10	3		21.53	2.00	[Bar chart showing 3 blows]												
2.10-2.20	3				[Bar chart showing 3 blows]												
2.20-2.30	3				[Bar chart showing 3 blows]												
2.30-2.40	3				[Bar chart showing 3 blows]												
2.40-2.50	4				[Bar chart showing 4 blows]												
2.50-2.60	5		21.03	2.50	[Bar chart showing 5 blows]												
2.60-2.70	9				[Bar chart showing 9 blows]												
2.70-2.80	11				[Bar chart showing 11 blows]												
2.80-2.90	7				[Bar chart showing 7 blows]												
2.90-3.00	16				[Bar chart showing 16 blows]												
3.00-3.10	20		20.53	3.00	[Bar chart showing 20 blows]												
3.10-3.20	25				[Bar chart showing 25 blows]												
					[Bar chart showing 25 blows]												
			20.03	3.50	[Bar chart showing 25 blows]												
					[Bar chart showing 25 blows]												
			19.53	4.00	[Bar chart showing 25 blows]												
					[Bar chart showing 25 blows]												
			19.03	4.50	[Bar chart showing 25 blows]												
					[Bar chart showing 25 blows]												
			18.53	5.00	[Bar chart showing 25 blows]												

Remarks
Refusal at 3.20m BGL

Scale (approx)	Logged By
1:25	FOD
Figure No.	
11957-06-22.DP21	



Method
Dynamic Probe Heavy (DPH)
fall height 500mm, hammer
weight 50.0kg

Cone Dimensions
Diameter 43.7mm

Ground Level (mOD)
26.13

Client
Ardale

Job Number
11957-06-22

Location (dGPS)
729571.3 E 695713.4 N

Dates
13/07/2022

Engineer
CS Consulting

Sheet
1/1

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Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)	Depth (m)	Blows for Depth Increment												
					0	3	6	9	12	15	18	21	24	27	30		
0.00-0.10	3		26.13	0.00	[Bar chart showing 3 blows]												
0.10-0.20	4				[Bar chart showing 4 blows]												
0.20-0.30	6				[Bar chart showing 6 blows]												
0.30-0.40	7				[Bar chart showing 7 blows]												
0.40-0.50	4				[Bar chart showing 4 blows]												
0.50-0.60	4		25.63	0.50	[Bar chart showing 4 blows]												
0.60-0.70	9				[Bar chart showing 9 blows]												
0.70-0.80	8				[Bar chart showing 8 blows]												
0.80-0.90	7				[Bar chart showing 7 blows]												
0.90-1.00	7				[Bar chart showing 7 blows]												
1.00-1.10	5		25.13	1.00	[Bar chart showing 5 blows]												
1.10-1.20	4				[Bar chart showing 4 blows]												
1.20-1.30	4				[Bar chart showing 4 blows]												
1.30-1.40	3				[Bar chart showing 3 blows]												
1.40-1.50	4				[Bar chart showing 4 blows]												
1.50-1.60	3		24.63	1.50	[Bar chart showing 3 blows]												
1.60-1.70	4				[Bar chart showing 4 blows]												
1.70-1.80	7				[Bar chart showing 7 blows]												
1.80-1.90	5				[Bar chart showing 5 blows]												
1.90-2.00	6				[Bar chart showing 6 blows]												
2.00-2.10	5		24.13	2.00	[Bar chart showing 5 blows]												
2.10-2.20	3				[Bar chart showing 3 blows]												
2.20-2.30	3				[Bar chart showing 3 blows]												
2.30-2.40	3				[Bar chart showing 3 blows]												
2.40-2.50	4				[Bar chart showing 4 blows]												
2.50-2.60	4		23.63	2.50	[Bar chart showing 4 blows]												
2.60-2.70	3				[Bar chart showing 3 blows]												
2.70-2.80	4				[Bar chart showing 4 blows]												
2.80-2.90	6				[Bar chart showing 6 blows]												
2.90-3.00	7				[Bar chart showing 7 blows]												
3.00-3.10	7		23.13	3.00	[Bar chart showing 7 blows]												
3.10-3.20	8				[Bar chart showing 8 blows]												
3.20-3.30	11				[Bar chart showing 11 blows]												
3.30-3.40	11				[Bar chart showing 11 blows]												
3.40-3.50	10				[Bar chart showing 10 blows]												
3.50-3.60	16		22.63	3.50	[Bar chart showing 16 blows]												
3.60-3.70	18				[Bar chart showing 18 blows]												
3.70-3.80	23				[Bar chart showing 23 blows]												
3.80-3.90	25		22.13	4.00	[Bar chart showing 25 blows]												
					[Bar chart showing 0 blows]												
					[Bar chart showing 0 blows]												
					[Bar chart showing 0 blows]												
					[Bar chart showing 0 blows]												
			21.63	4.50	[Bar chart showing 0 blows]												
					[Bar chart showing 0 blows]												
					[Bar chart showing 0 blows]												
					[Bar chart showing 0 blows]												
					[Bar chart showing 0 blows]												
			21.13	5.00	[Bar chart showing 0 blows]												

Remarks
Refusal at 3.90m BGL

Scale (approx)
1:25

Logged By
FOD

Figure No.
11957-06-22.DP21



Method Dynamic Probe Heavy (DPH) fall height 500mm, hammer weight 50.0kg	Cone Dimensions Diameter 43.7mm	Ground Level (mOD) 27.09	Client Ardale	Job Number 11957-06-22
	Location (dGPS) 729613.6 E 695671.9 N	Dates 14/07/2022	Engineer CS Consulting	Sheet 1/1

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Depth (m)	Blows for Depth Increment	Field Records	Level (mOD)	Depth (m)	Blows for Depth Increment												
					0	3	6	9	12	15	18	21	24	27	30		
0.00-0.10	2		27.09	0.00													
0.10-0.20	3																
0.20-0.30	5																
0.30-0.40	6																
0.40-0.50	7																
0.50-0.60	7		26.59	0.50													
0.60-0.70	8																
0.70-0.80	13																
0.80-0.90	13																
0.90-1.00	14																
1.00-1.10	12		26.09	1.00													
1.10-1.20	9																
1.20-1.30	6																
1.30-1.40	7																
1.40-1.50	8																
1.50-1.60	5		25.59	1.50													
1.60-1.70	8																
1.70-1.80	10																
1.80-1.90	12																
1.90-2.00	15																
2.00-2.10	16		25.09	2.00													
2.10-2.20	16																
2.20-2.30	17																
2.30-2.40	18																
2.40-2.50	18																
2.50-2.60	20		24.59	2.50													
2.60-2.70	22																
2.70-2.80	23																
			24.09	3.00													
			23.59	3.50													
			23.09	4.00													
			22.59	4.50													
			22.09	5.00													

Remarks
Refusal at m BGL

Scale (approx)	Logged By
1:25	FOD
Figure No.	
11957-06-22.DP25	

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APPENDIX 5 – Cable Percussion Borehole Records





Machine : Dando 2000 Method : Cable Percussion	Casing Diameter 200mm cased to 10.00m	Ground Level (mOD) 17.64	Client Ardale	Job Number 11957-06-22
	Location 729266.8 E 695807.5 N	Dates 22/08/2022	Engineer CS Consulting	Sheet 1/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.50	B				17.44	(0.20)	TOPSOIL			
					17.24	(0.20)	Reddish brown slightly sandy gravelly CLAY with occasional plant rootlets			
						(0.40)				
1.00-1.38 1.00	SPT(C) 50/225 B			8,12/17,20,13	16.64	1.00	Grey slightly clayey sandy medium to coarse GRAVEL with occasional cobbles			
						(1.20)	Medium dense grey slightly clayey sandy medium to coarse GRAVEL with occasional cobbles			
2.00-2.45 2.00	SPT(C) N=9 B			7,9/2,2,3,2	15.44	2.20	Firm reddish brown slightly sandy gravelly CLAY with occasional cobbles			
3.00-3.45 3.00	SPT(C) N=8 B			1,2/1,2,2,3		(2.10)				
4.00-4.45 4.00	SPT(C) N=24 B			7,6/7,7,6,4	13.34	4.30	Medium dense reddish brown silty fine SAND			
5.00-5.45 5.00	SPT(C) N=35 B			7,7/9,9,8,9	12.64	5.00	Dense reddish brown silty fine SAND			
					12.14	(0.50)				
6.00-6.45 6.00	SPT(C) N=48 B			7,10/14,14,9,11		5.50	Dense grey slightly clayey sandy medium to coarse GRAVEL with occasional cobbles			
						(1.90)				
7.00-7.45 7.00	SPT(C) N=40 B			7,8/9,10,9,12	10.24	7.40	Very stiff reddish brown slightly sandy slightly gravelly CLAY			
8.00-8.45 8.00	SPT(C) 50/295 B			7,7/10,12,28		(1.40)				
9.00-9.42 9.00	SPT(C) 50/265 B			7,7/12,14,24	8.84	8.80	Very stiff dark grey slightly sandy gravelly CLAY			
						(1.20)				
10.00-10.38	SPT(C) 50/225			8,12/14,36	7.64	10.00				

Remarks No groundwater encountered Borehole complete at 10.00m BGL 50mm slotted standpipe with a pea gravel surround installed from 10.00m to 1.00m BGL. 50mm plain standpipe with a bentonite seal installed from 1.00m BGL to GL, with a raised cover.	Scale (approx)	Logged By
	1:50	FOD
	Figure No. 11957-06-22.BH01	



Machine : Dando 2000 Method : Cable Percussion	Casing Diameter 200mm cased to 10.00m	Ground Level (mOD) 17.64	Client Ardale	Job Number 11957-06-22
	Location 729266.8 E 695807.5 N	Dates 22/08/2022	Engineer CS Consulting	Sheet 2/2

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Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
10.00	B									

Remarks	Scale (approx)	Logged By
	1:50	FOD
Figure No. 11957-06-22.BH01		



Machine : Dando 2000 Method : Cable Percussion	Casing Diameter 200mm cased to 10.00m	Ground Level (mOD) 18.45	Client Ardale	Job Number 11957-06-22
	Location 729385.1 E 695809.9 N	Dates 22/08/2022- 24/08/2022	Engineer CS Consulting	Sheet 1/2

RECEIVED: 14/08/2022

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.50	B				18.15	(0.30) 0.30	TOPSOIL Loose reddish brown slightly clayey fine SAND			
1.00-1.45 1.00	SPT(C) N=6 B			2,1/2,1,1,2		(1.70)				
2.00-2.45 2.00	SPT(C) N=9 B			1,1/2,2,2,3	16.45	2.00 (1.00)	Loose to medium dense reddish brown slightly clayey fine SAND			
3.00-3.45 3.00	SPT(C) N=13 B			2,2/3,3,3,4	15.45	3.00 (1.70)	Medium dense reddish brown slightly clayey fine SAND			
4.00-4.45 4.00	SPT(C) N=16 B			2,3/3,4,4,5		4.70 (1.30)	Dense dark brown slightly gravelly clayey medium to coarse SAND with occasional cobbles			
5.00-5.45 5.00	SPT(C) N=43 B			4,5/9,10,12,12	13.75	6.00 (1.00)	Very stiff brown sandy SILT			
6.00-6.45 6.00	SPT(C) N=48 B			7,10/12,12,12,12	12.45	7.00 (1.00)	Very stiff brown slightly silty sandy CLAY			
7.00-7.45 7.00	SPT(C) 50/295 B			4,7/10,14,26	11.45	8.00 (2.00)	Very stiff brown slightly sandy slightly silty slightly gravelly CLAY			
8.00-8.44 8.00	SPT(C) 50/285 B			10,10/12,14,24	10.45					
9.00-9.40 9.00	SPT(C) 50/245 B			7,10/10,14,26						
10.00-10.33	SPT(C) 50/180			8,12/12,38	8.45	10.00				

Remarks No groundwater encountered Borehole complete at 10.00m BGL 50mm slotted standpipe with a pea gravel surround installed from 10.00m to 1.00m BGL. 50mm plain standpipe with a bentonite seal installed from 1.00m BGL to GL, with a raised cover.	Scale (approx)	Logged By
	1:50	FOD
	Figure No. 11957-06-22.BH01	



Machine : Dando 2000 Method : Cable Percussion		Casing Diameter 200mm cased to 10.00m	Ground Level (mOD) 18.45	Client Ardale	Job Number 11957-06-22
Location 729385.1 E 695809.9 N		Dates 22/08/2022- 24/08/2022	Engineer CS Consulting	Sheet 2/2	

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Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
10.00	B									

Remarks	Scale (approx)	Logged By
	1:50	FOD
Figure No. 11957-06-22.BH01		



Machine : Dando 2000	Casing Diameter 200mm cased to 10.00m	Ground Level (mOD) 22.88	Client Ardale	Job Number 11957-06-22
Method : Cable Percussion	Location 729394.8 E 695762.6 N	Dates 19/08/2022	Engineer CS Consulting	Sheet 1/1

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Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.50	B				22.68	(0.20) 0.20	TOPSOIL			
1.00-1.45 1.00	SPT(C) N=7 B			1,1/2,2,2,1	21.88	(0.80) 1.00	Reddish brown clayey fine SAND			
2.00-2.45 2.00	SPT(C) N=8 B			2,2/2,2,2,2	20.88	(1.00) 2.00	Loose reddish brown clayey fine SAND			
3.00-3.38 3.00	SPT(C) 50/225 B			7,9/13,19,18	20.08	(0.80) 2.00	Loose to medium dense reddish brown clayey fine SAND			
3.00-3.38 3.00	SPT(C) 50/225 B			7,9/13,19,18	20.08	(0.30) 3.10	Soft to firm brown slightly clayey SILT			
3.00-3.38 3.00	SPT(C) 50/225 B			7,9/13,19,18	19.78	(0.70) 3.10	Dense grey slightly sandy slightly clayey subangular to subrounded fine to coarse GRAVEL. Sand is medium to coarse			
4.00-4.45 4.00	SPT(C) N=28 B			3,4/5,7,7,9	19.08	(1.20) 3.80	Stiff to very stiff brown sandy silty CLAY. Sand is fine			
5.00-5.45 5.00	SPT(C) N=37 B			4,7/8,8,9,12	17.88	(0.80) 5.00	Very stiff brown sandy silty CLAY. Sand is fine			
6.00-6.45 6.00	SPT(C) N=31 B			5,7/7,8,8,8	17.08	(3.00) 5.80	Dense brown clayey fine to medium SAND.			
7.00-7.45 7.00	SPT(C) N=34 B			6,9/9,9,8,8						
8.00-8.45 8.00	SPT(C) N=36 B			7,8/8,9,10,9						
9.00	B				14.08	(1.20) 8.80	Very stiff brown slightly sandy clayey SILT. Sand is fine			
					12.88	10.00				

Remarks No groundwater encountered Complete at 10.00m BGL 50mm slotted standpipe with a pea gravel surround installed from 10.00m to 1.00m BGL. 50mm plain standpipe with a bentonite seal installed from 1.00m BGL to GL, with a raised cover.	Scale (approx)	Logged By
	1:50	FOD
	Figure No. 11957-06-22.BH03	



Machine : Dando 2000	Casing Diameter 200mm cased to 10.00m	Ground Level (mOD) 17.28	Client Ardale	Job Number 11957-06-22
Method : Cable Percussion	Location 729272.3 E 695598.3 N	Dates 16/08/2022- 17/08/2022	Engineer CS Consulting	Sheet 1/2

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Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.50	B				16.88	(0.40) 0.40	TOPSOIL			
1.00-1.45 1.00	SPT(C) N=8 B			1,2/1,3,2,2	16.28	(0.60) 1.00	Reddish brown slightly gravelly sandy CLAY with occasional cobbles. Gravel is subangular to subrounded			
2.00-2.45 2.00	SPT(C) N=14 B			2,2/3,4,3,4	15.28	(1.00) 2.00	Soft to firm reddish brown slightly gravelly sandy CLAY with occasional cobbles. Gravel is subangular to subrounded			
3.00-3.45 3.00	SPT(C) N=8 B			2,2/2,2,2,2	13.68	(1.60) 3.60	Loose to medium dense grey sandy clayey subrounded to rounded fine to medium GRAVEL. Sand is fine to coarse			
4.00-4.45 4.00	SPT(C) N=11 B			2,3/3,3,2,3	13.28	(1.00) 4.00	Soft to firm grey slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded			
5.00-5.45 5.00	SPT(C) N=11 B			2,2/2,2,3,4	12.28	(1.00) 5.00	Firm grey slightly sandy slightly gravelly silty CLAY. Gravel is subangular to subrounded			
6.00-6.45 6.00	SPT(C) N=15 B			2,3/3,4,4,4	11.28	(1.80) 6.00	Firm grey slightly sandy slightly gravelly silty CLAY. Gravel is subangular to subrounded			
7.00-7.45 7.00	SPT(C) N=15 B			2,3/4,4,4,3	9.48	(0.40) 7.80	Medium dense to dense grey slightly sandy clayey angular to subrounded fine to coarse GRAVEL. Sand is fine to coarse			
8.00-8.45 8.00	SPT(C) N=26 B			3,4/5,7,7,7	9.08	(0.80) 8.20	Stiff dark brown slightly sandy slightly gravelly CLAY with occasional cobbles. Gravel is subangular to subrounded			
9.00-9.45 9.00	SPT(C) N=46 B			4,8/10,10,12,14	8.28	(0.50) 9.00	Very stiff dark brown slightly sandy slightly gravelly CLAY with occasional cobbles. Gravel is subangular to subrounded			
10.00-10.45	SPT(C) N=40			7,9/10,10,10,10	7.78	(0.50) 9.50	Very stiff dark brown slightly sandy slightly gravelly clayey SILT. Gravel is subangular to subrounded			
					7.28	10.00				

Remarks No groundwater encountered Complete at 10.00m BGL 50mm slotted standpipe with a pea gravel surround installed from 10.00m to 1.00m BGL. 50mm plain standpipe with a bentonite seal installed from 1.00m BGL to GL, with a raised cover.	Scale (approx)	Logged By
	1:50	FOD
	Figure No. 11957-06-22.BH04	



Machine : Dando 2000 Method : Cable Percussion		Casing Diameter 200mm cased to 10.00m	Ground Level (mOD) 17.28	Client Ardale	Job Number 11957-06-22
Location 729272.3 E 695598.3 N		Dates 16/08/2022- 17/08/2022	Engineer CS Consulting	Sheet 2/2	

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Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
10.00	B									

Remarks	Scale (approx)	Logged By
	1:50	FOD
Figure No. 11957-06-22.BH04		



Machine : Dando 2000 Method : Cable Percussion	Casing Diameter 200mm cased to 10.00m	Ground Level (mOD) 22.22	Client Ardale	Job Number 11957-06-22
	Location 729497.8 E 695672.4 N	Dates 15/08/2022- 16/08/2022	Engineer CS Consulting	Sheet 1/2

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Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.50	B				21.92	(0.30) 0.30	TOPSOIL			
1.00-1.45 1.00	SPT(C) N=6 B			2,2/1,2,1,2	21.22	1.00 (0.70)	Reddish brown slightly clayey slightly gravelly slightly silty SAND. Gravel is subangular to subrounded			
2.00-2.45 2.00	SPT(C) N=8 B			2,2/2,2,2,2	20.62	1.60 (0.60)	Loose reddish brown slightly clayey slightly gravelly slightly silty SAND. Gravel is subangular to subrounded			
2.00-2.45 2.00	SPT(C) N=8 B			2,2/2,2,2,2	20.22	2.00 (0.30)	Loose reddish brown slightly gravelly slightly clayey fine SAND. Gravel is subangular to subrounded			
3.00-3.45 3.00	SPT(C) N=11 B			2,2/2,3,3,3	19.92	2.30 (1.40)	Loose to medium dense reddish brown slightly gravelly slightly clayey fine SAND. Gravel is subangular to subrounded			
3.00-3.45 3.00	SPT(C) N=11 B			2,2/2,3,3,3			Firm brown slightly gravelly sandy CLAY. Gravel is subangular to subrounded			
4.00-4.45 4.00	SPT(C) N=23 B			3,4/4,5,7,7	18.52	3.70 (1.30)	Medium dense dark brown slightly clayey sandy subrounded to rounded GRAVEL. Sand is fine to coarse			
5.00-5.45 5.00	SPT(C) N=30 B			7,7/7,7,8,8	17.22	5.00	Medium dense to dense brown slightly gravelly clayey fine to medium SAND			
6.00-6.45 6.00	SPT(C) N=30 B			4,5/8,7,7,8		(2.00)				
7.00-7.45 7.00	SPT(C) N=31 B			7,7/7,7,8,9	15.22	7.00	Dense brown slightly gravelly clayey fine to medium SAND			
8.00-8.45 8.00	SPT(C) N=32 B			8,7/8,8,8,8		(3.00)				
9.00-9.45 9.00	SPT(C) N=34 B			8,8/8,8,9,9						
10.00-10.45	SPT(C) N=36			8,8/9,9,9,9	12.22	10.00				

Remarks No groundwater encountered Complete at 10.00m BGL 50mm slotted standpipe with a pea gravel surround installed from 10.00m to 1.00m BGL. 50mm plain standpipe with a bentonite seal installed from 1.00m BGL to GL, with a raised cover.	Scale (approx) 1:50	Logged By FOD
	Figure No. 11957-06-22.BH04	



Machine : Dando 2000 Method : Cable Percussion	Casing Diameter 200mm cased to 10.00m	Ground Level (mOD) 22.22	Client Ardale	Job Number 11957-06-22
	Location 729497.8 E 695672.4 N	Dates 15/08/2022- 16/08/2022	Engineer CS Consulting	Sheet 2/2

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Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
10.00	B									

Remarks	Scale (approx)	Logged By
	1:50	FOD
Figure No. 11957-06-22.BH04		



Machine : Dando 2000	Casing Diameter 200mm cased to 10.00m	Ground Level (mOD) 25.32	Client Ardale	Job Number 11957-06-22
Method : Cable Percussion	Location 729537.4 E 695729.9 N	Dates 17/08/2022- 18/08/2022	Engineer CS Consulting	Sheet 1/2

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Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.50	B				25.12	(0.20) 0.20	TOPSOIL			
1.00-1.45 1.00	SPT(C) N=9 B			1,2/2,2,2,3	24.32	1.00	Reddish brown slightly gravelly sandy CLAY with occasional plant rootlets. Gravel is subangular to subrounded			
2.00-2.45 2.00	SPT(C) N=7 B			2,2/2,2,1,2		(2.00)	Soft to firm reddish brown slightly sandy SILT. Sand is fine			
3.00-3.45 3.00	SPT(C) N=8 B			2,1/2,2,2,2	22.32	3.00	Firm reddish brown slightly sandy SILT. Sand is fine			
4.00-4.45 4.00	SPT(C) N=26 B			2,3/4,6,7,9	21.32	4.00	Stiff reddish brown slightly sandy SILT. Sand is fine		▽1	
5.00-5.45 5.00	SPT(C) N=22 B			3,4/5,5,6,6	20.62	4.70	Stiff reddish brown sandy slightly silty slightly gravelly CLAY. Gravel is subangular to subrounded			
6.00-6.45 6.00	SPT(C) N=50 B			7,9/11,13,12,14 Water strike(1) at 6.20m, rose to 4.00m in 20 mins.	19.12	6.20	Very stiff dark brown slightly gravelly silty CLAY. Gravel is subangular to subrounded		▽1	
7.00-7.45 7.00	SPT(C) N=50 B			8,10/10,16,19,5		(2.60)				
8.00-8.38 8.00	SPT(C) 50/225 B			10,12/17,21,12						
9.00-9.45 9.00	SPT(C) N=18 B			3,7/7,3,4,4	16.52	8.80	Medium dense dark brown slightly clayey fine to medium SAND.			
10.00-10.45	SPT(C) N=14			3,3/3,3,4,4	15.32	10.00				

Remarks Groundwater encountered 6.20m BGL Complete at 10.00m BGL 50mm slotted standpipe with a pea gravel surround installed from 10.00m to 1.00m BGL. 50mm plain standpipe with a bentonite seal installed from 1.00m BGL to GL, with a raised cover.	Scale (approx)	Logged By
	1:50	FOD
	Figure No. 11957-06-22.BH04	



Machine : Dando 2000 Method : Cable Percussion	Casing Diameter 200mm cased to 10.00m	Ground Level (mOD) 25.32	Client Ardale	Job Number 11957-06-22
	Location 729537.4 E 695729.9 N	Dates 17/08/2022- 18/08/2022	Engineer CS Consulting	Sheet 2/2

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Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
10.00	B									

Remarks	Scale (approx) 1:50	Logged By FOD
	Figure No. 11957-06-22.BH04	

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APPENDIX 6 – Plate Testing Records

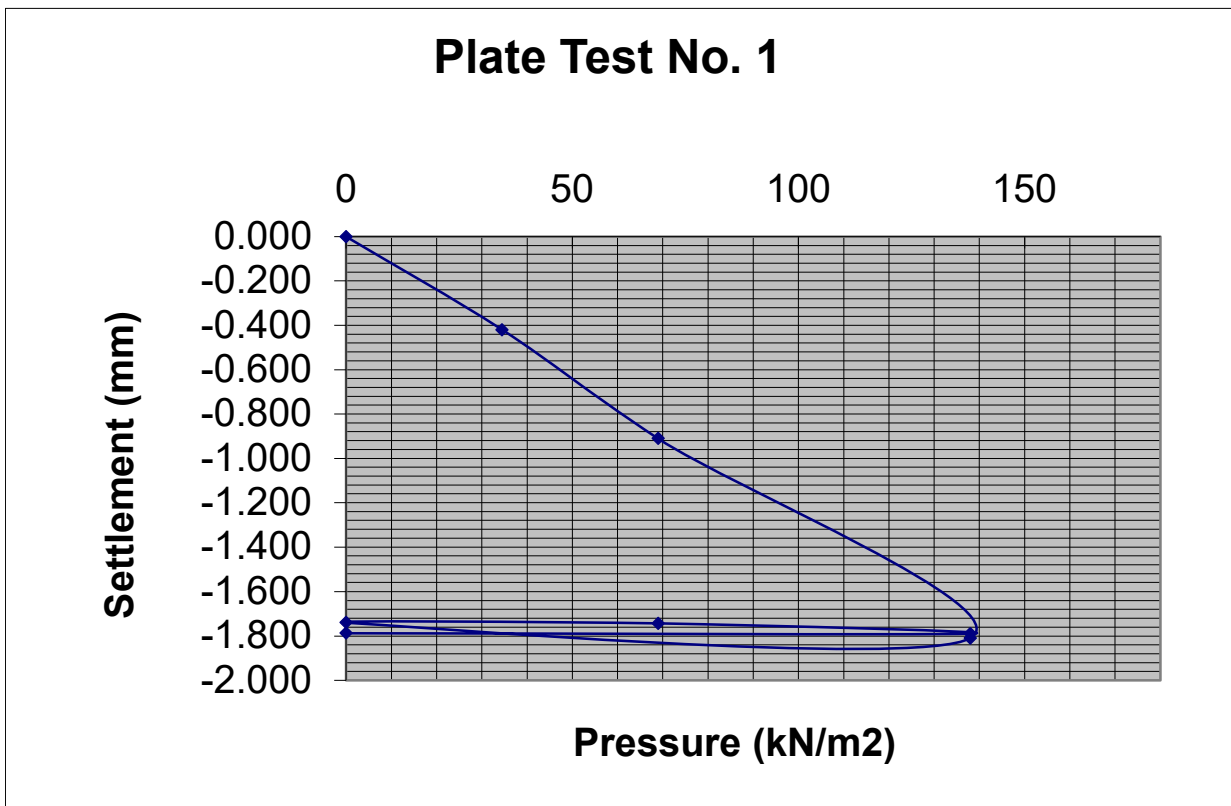


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Applied Load	Gauge settlement
0	0.000
34.5	-0.42
69	-0.91
138	-1.81
0	-1.74
69	-1.744
138	-1.79
0	-1.788



LOCATION	A034 Tinakilly	MATERIAL	Brown slightly gravelly clayey fine to medium SAND
CONTRACT NO.	11957-06-22		
DATE	19/08/2022		
CLIENT	Ardale	DEPTH	0.4
PLATE DIAMETER	457mm	NOTES	
TEST NO.	CBR-01	SAMPLES	



Modulus of subgrade reaction, K (Initial) = **51.23 MN/m²/m**

Modulus of subgrade reaction, K (Reload) = **11655.83 MN/m²/m**

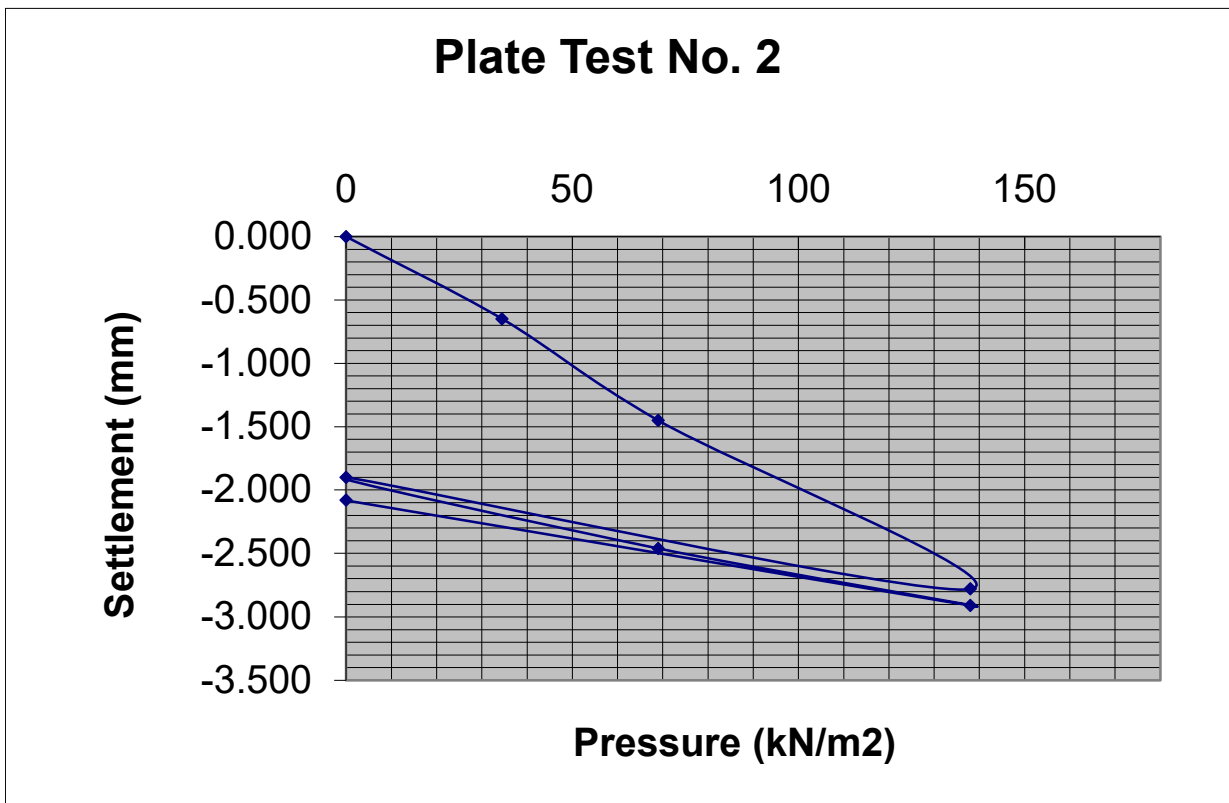
Equivalent CBR(initial)in accordance with HD25/94 volume7 section2 = **8.85 %**

Equivalent CBR(reload)in accordance with HD25/94 volume7 section2 = **107559.53 %**

Applied Load	Gauge settlement
0	0.000
34.5	-0.65
69	-1.45
138	-2.78
0	-1.9
69	-2.46
138	-2.91
0	-2.08



LOCATION	A034 Tinakilly	MATERIAL	Brown clayey gravelly fine to coarse SAND
CONTRACT NO.	11957-06-22		
DATE	19/08/2022		
CLIENT	Ardale	DEPTH	0.4
PLATE DIAMETER	457mm	NOTES	
TEST NO.	CBR-02	SAMPLES	



Modulus of subgrade reaction, K (Initial) = **32.15 MN/m²/m**

Modulus of subgrade reaction, K (Reload) = **83.26 MN/m²/m**

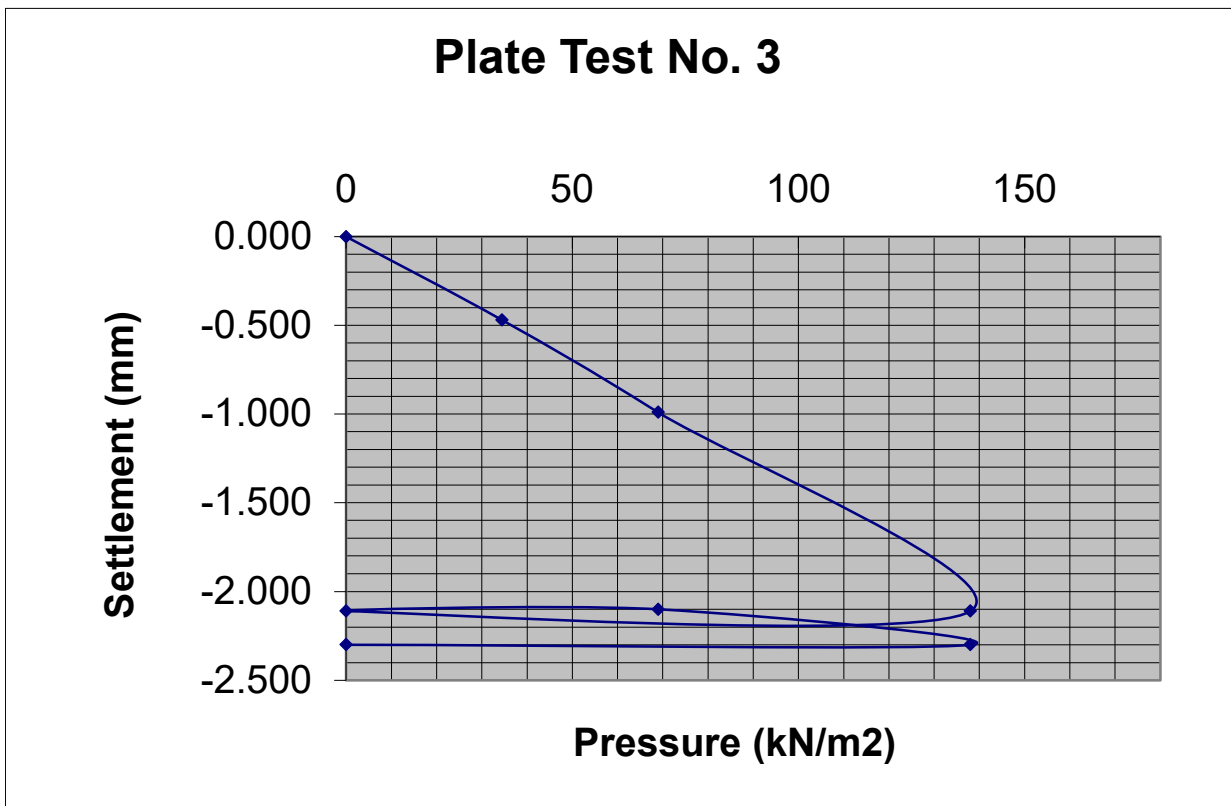
Equivalent CBR(initial)in accordance with HD25/94 volume7 section2 = **3.95 %**

Equivalent CBR(reload)in accordance with HD25/94 volume7 section2 = **20.53 %**

Applied Load	Gauge settlement
0	0.000
34.5	-0.47
69	-0.99
138	-2.11
0	-2.11
69	-2.1
138	-2.3
0	-2.3



LOCATION	A034 Tinakilly	MATERIAL	Brown slightly gravelly sandy CLAY onto Sand
CONTRACT NO.	11957-06-22		
DATE	19/08/2022		
CLIENT	Ardale	DEPTH	0.4
PLATE DIAMETER	457mm	NOTES	
TEST NO.	CBR-03	SAMPLES	



Modulus of subgrade reaction, K (Initial) = **47.09 MN/m²/m**

Modulus of subgrade reaction, K (Reload) = **-4662.33 MN/m²/m**

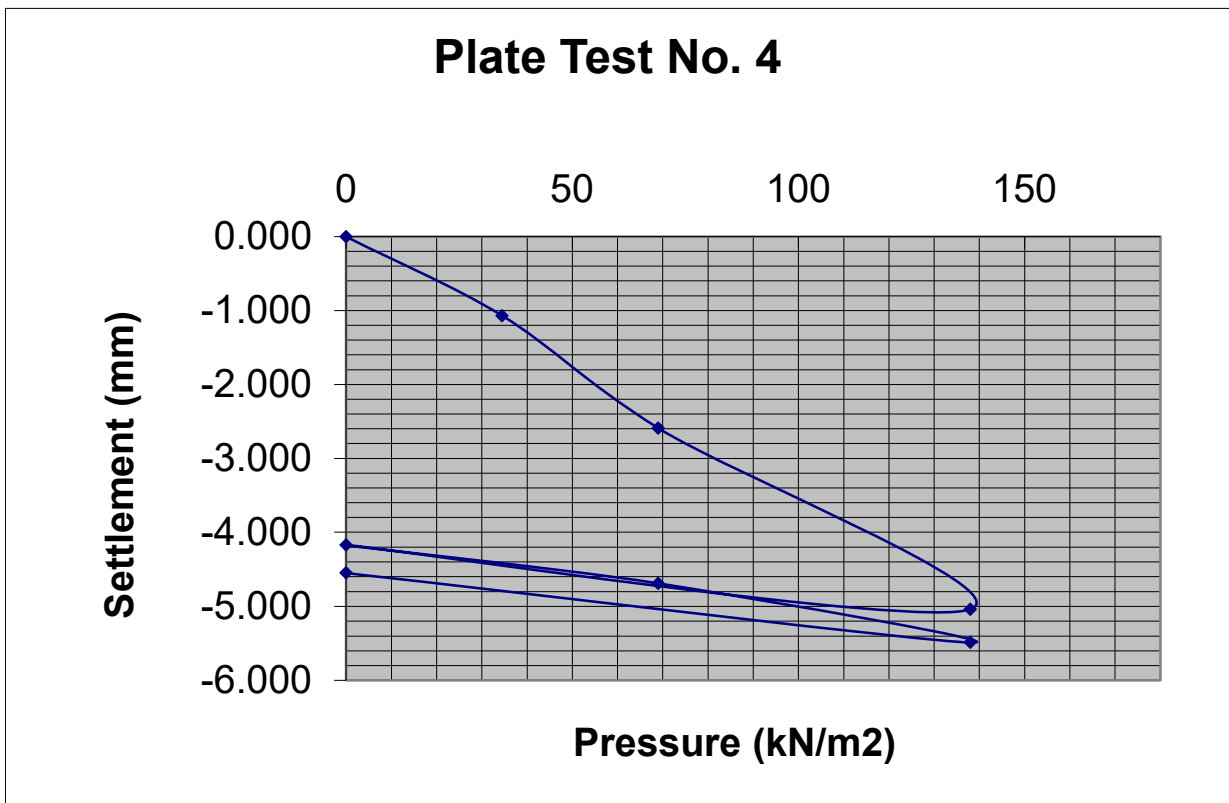
Equivalent CBR(initial)in accordance with HD25/94 volume7 section2 = **7.65 %**

Equivalent CBR(reload)in accordance with HD25/94 volume7 section2 = **#NUM! %**

Applied Load	Gauge settlement
0	0.000
34.5	-1.07
69	-2.59
138	-5.04
0	-4.17
69	-4.69
138	-5.49
0	-4.55



LOCATION	A034 Tinakilly	MATERIAL	Brown gravelly very clayey fine to medium SAND
CONTRACT NO.	11957-06-22		
DATE	19/08/2022		
CLIENT	Ardale	DEPTH	0.4
PLATE DIAMETER	457mm	NOTES	
TEST NO.	CBR-04	SAMPLES	



Modulus of subgrade reaction, K (Initial) = **18.00 MN/m²/m**

Modulus of subgrade reaction, K (Reload) = **89.66 MN/m²/m**

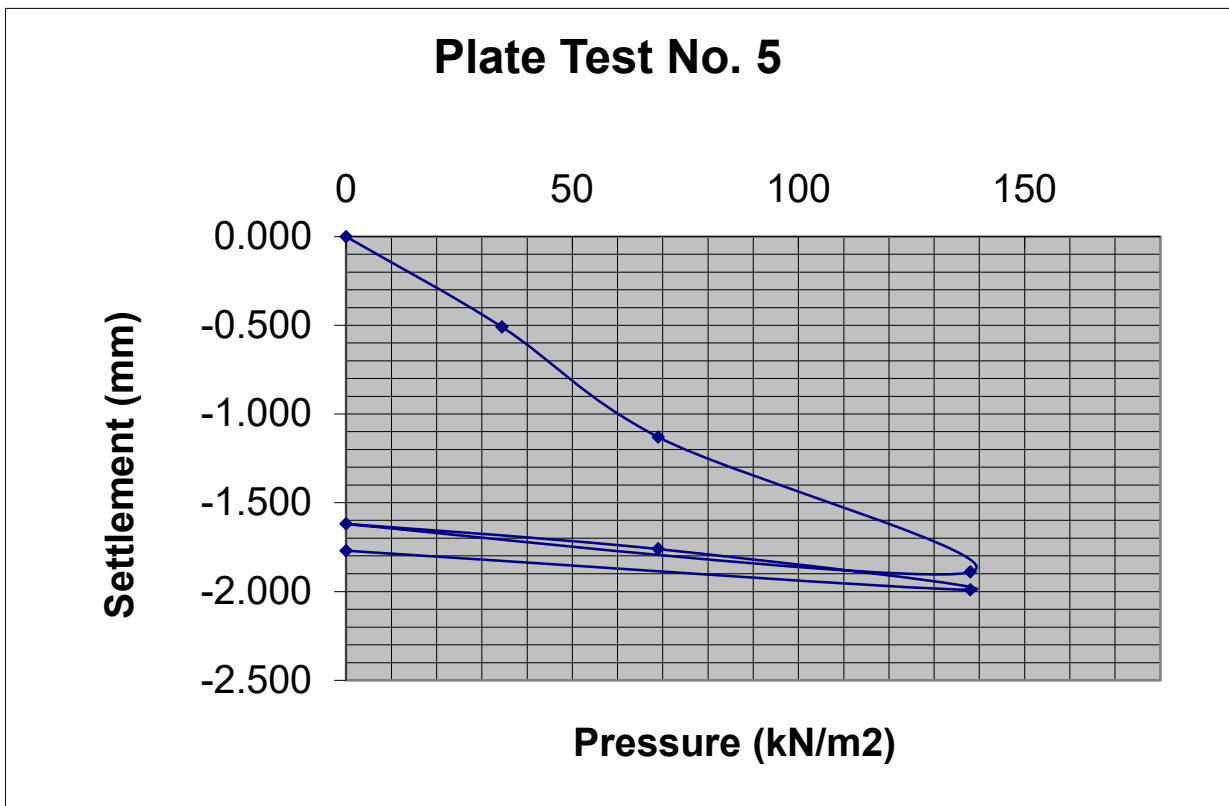
Equivalent CBR(initial)in accordance with HD25/94 volume7 section2 = **1.44 %**

Equivalent CBR(reload)in accordance with HD25/94 volume7 section2 = **23.34 %**

Applied Load	Gauge settlement
0	0.000
34.5	-0.51
69	-1.13
138	-1.89
0	-1.62
69	-1.76
138	-1.99
0	-1.77



LOCATION	A034 Tinakilly	MATERIAL	Brown clayey gravelly fine to coarse SAND
CONTRACT NO.	11957-06-22		
DATE	19/08/2022		
CLIENT	Ardale	DEPTH	0.4
PLATE DIAMETER	457mm	NOTES	
TEST NO.	CBR-05	SAMPLES	



Modulus of subgrade reaction, K (Initial) = **41.26 MN/m²/m**

Modulus of subgrade reaction, K (Reload) = **333.02 MN/m²/m**

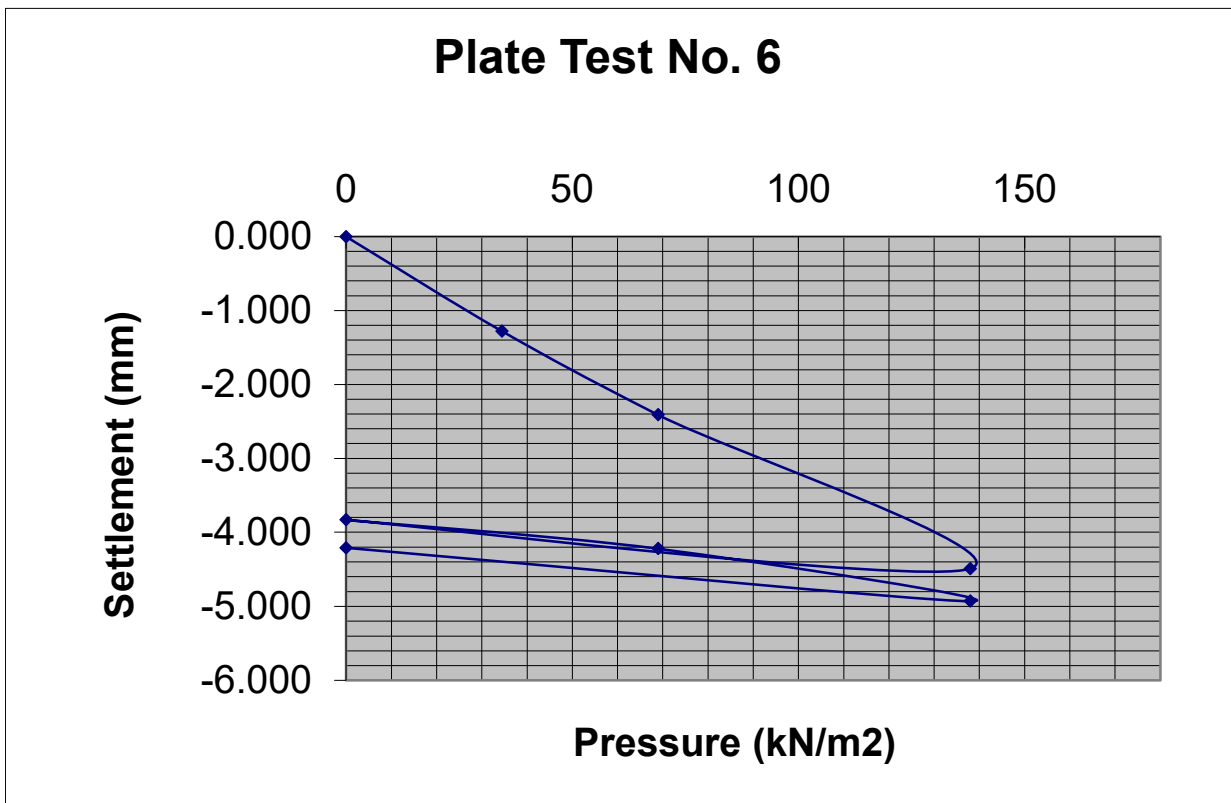
Equivalent CBR(initial)in accordance with HD25/94 volume7 section2 = **6.08 %**

Equivalent CBR(reload)in accordance with HD25/94 volume7 section2 = **226.87 %**

Applied Load	Gauge settlement
0	0.000
34.5	-1.28
69	-2.41
138	-4.49
0	-3.83
69	-4.22
138	-4.93
0	-4.21



LOCATION	A034 Tinakilly	MATERIAL	Brown slightly gravelly silty fine to medium SAND
CONTRACT NO.	11957-06-22		
DATE	19/08/2022		
CLIENT	Ardale	DEPTH	0.5
PLATE DIAMETER	457mm	NOTES	
TEST NO.	CBR-06	SAMPLES	



Modulus of subgrade reaction, K (Initial) = **19.35 MN/m²/m**

Modulus of subgrade reaction, K (Reload) = **119.55 MN/m²/m**

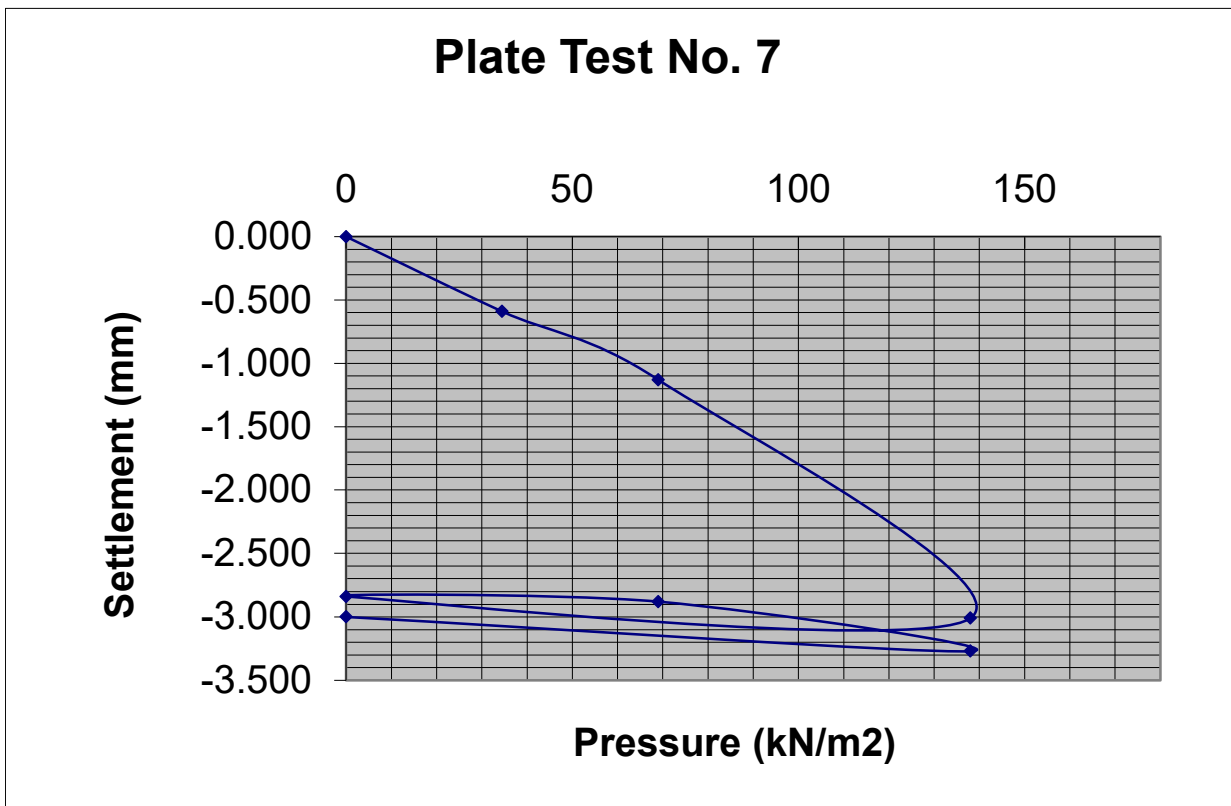
Equivalent CBR(initial)in accordance with HD25/94 volume7 section2 = **1.64 %**

Equivalent CBR(reload)in accordance with HD25/94 volume7 section2 = **38.43 %**

Applied Load	Gauge settlement
0	0.000
34.5	-0.59
69	-1.13
138	-3.01
0	-2.84
69	-2.88
138	-3.27
0	-3



LOCATION	A034 Tinakilly	MATERIAL	Brown gravelly very clayey fine to coarse SAND
CONTRACT NO.	11957-06-22		
DATE	19/08/2022		
CLIENT	Ardale	DEPTH	0.4
PLATE DIAMETER	457mm	NOTES	
TEST NO.	CBR-07	SAMPLES	



Modulus of subgrade reaction, K (Initial) = **41.26 MN/m²/m**

Modulus of subgrade reaction, K (Reload) = **1165.58 MN/m²/m**

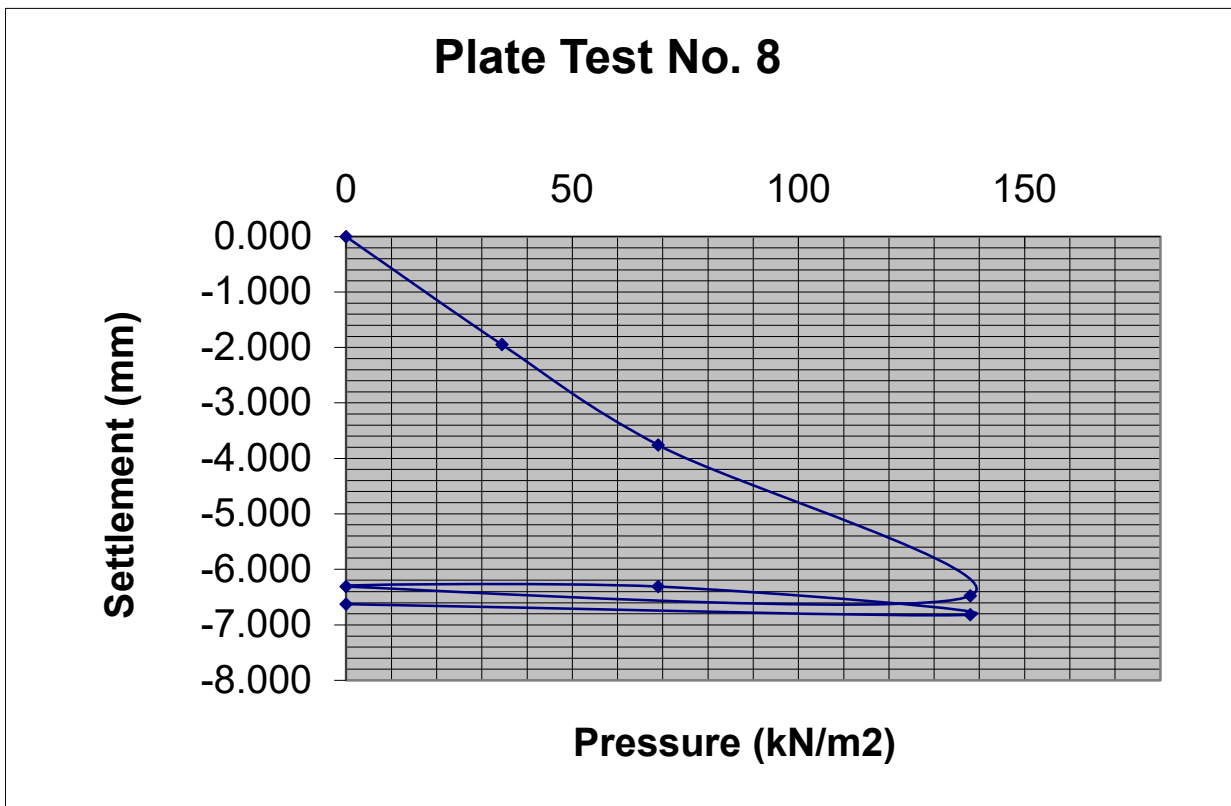
Equivalent CBR(initial)in accordance with HD25/94 volume7 section2 = **6.08 %**

Equivalent CBR(reload)in accordance with HD25/94 volume7 section2 = **1989.06 %**

Applied Load	Gauge settlement
0	0.000
34.5	-1.95
69	-3.76
138	-6.48
0	-6.31
69	-6.31
138	-6.82
0	-6.63



LOCATION	A034 Tinakilly	MATERIAL	Brown slightly sandy slightly gravelly
CONTRACT NO.	11957-06-22		CLAY onto clayey SAND
DATE	18/08/2022		
CLIENT	Ardale	DEPTH	0.4
PLATE DIAMETER	457mm	NOTES	
TEST NO.	CBR-08	SAMPLES	



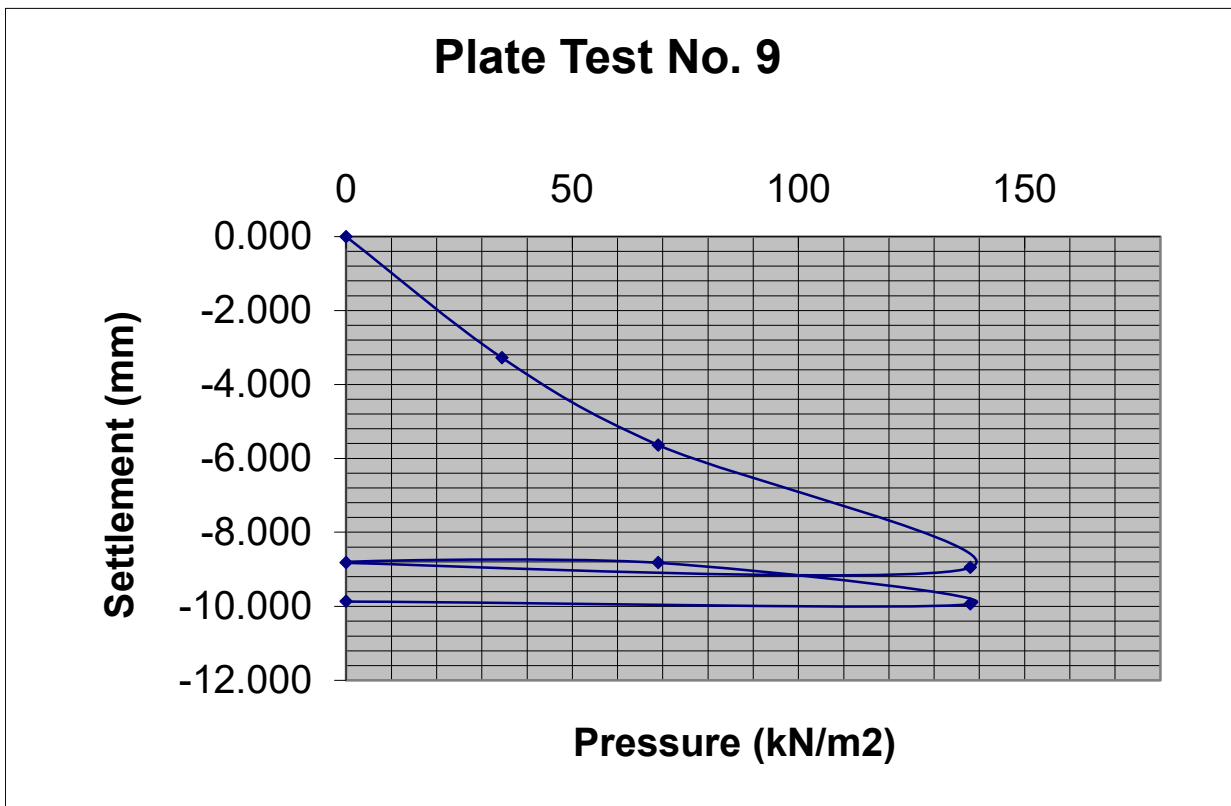
Modulus of subgrade reaction, K (Initial) = **12.40 MN/m²/m**
 Modulus of subgrade reaction, K (Reload) = **#DIV/0! MN/m²/m**

Equivalent CBR(initial)in accordance with HD25/94 volume7 section2 = **0.76 %**
 Equivalent CBR(reload)in accordance with HD25/94 volume7 section2 = **#DIV/0! %**

Applied Load	Gauge settlement
0	0.000
34.5	-3.28
69	-5.64
138	-8.95
0	-8.82
69	-8.82
138	-9.94
0	-9.87



LOCATION	A034 Tinakilly	MATERIAL	Brown clayey gravelly fine to coarse SAND
CONTRACT NO.	11957-06-22		
DATE	18/08/2022		
CLIENT	Ardale	DEPTH	0.4
PLATE DIAMETER	457mm	NOTES	
TEST NO.	CBR-09	SAMPLES	



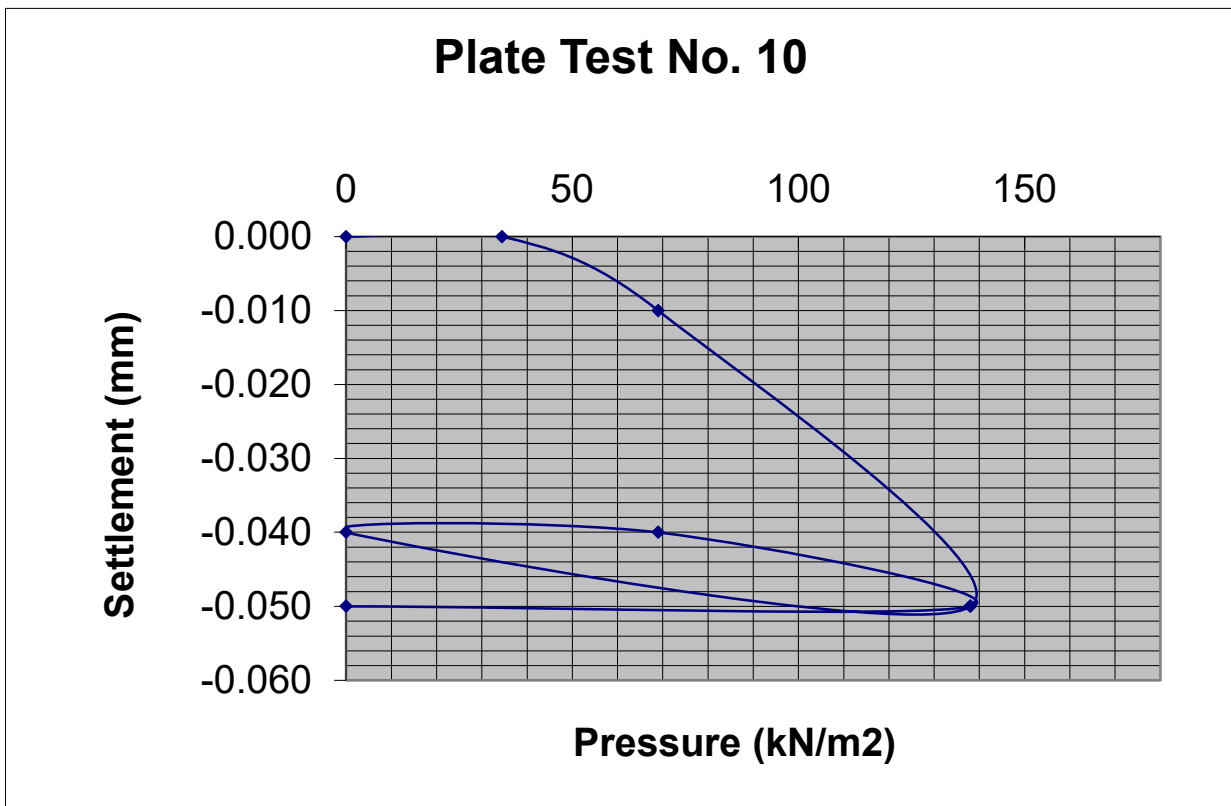
Modulus of subgrade reaction, K (Initial) = **8.27 MN/m²/m**
 Modulus of subgrade reaction, K (Reload) = **#DIV/0! MN/m²/m**

Equivalent CBR(initial)in accordance with HD25/94 volume7 section2 = **0.38 %**
 Equivalent CBR(reload)in accordance with HD25/94 volume7 section2 = **#DIV/0! %**

Applied Load	Gauge settlement
0	0.000
34.5	0
69	-0.01
138	-0.05
0	-0.04
69	-0.04
138	-0.05
0	-0.05



LOCATION	A034 Tinakilly	MATERIAL	Brown slightly gravelly sandy CLAY
CONTRACT NO.	11957-06-22		
DATE	19/08/2022		
CLIENT	Ardale	DEPTH	0.4
PLATE DIAMETER	457mm	NOTES	
TEST NO.	CBR-10	SAMPLES	



Modulus of subgrade reaction, K (Initial) = **4662.33 MN/m²/m**

Modulus of subgrade reaction, K (Reload) = **#DIV/0! MN/m²/m**

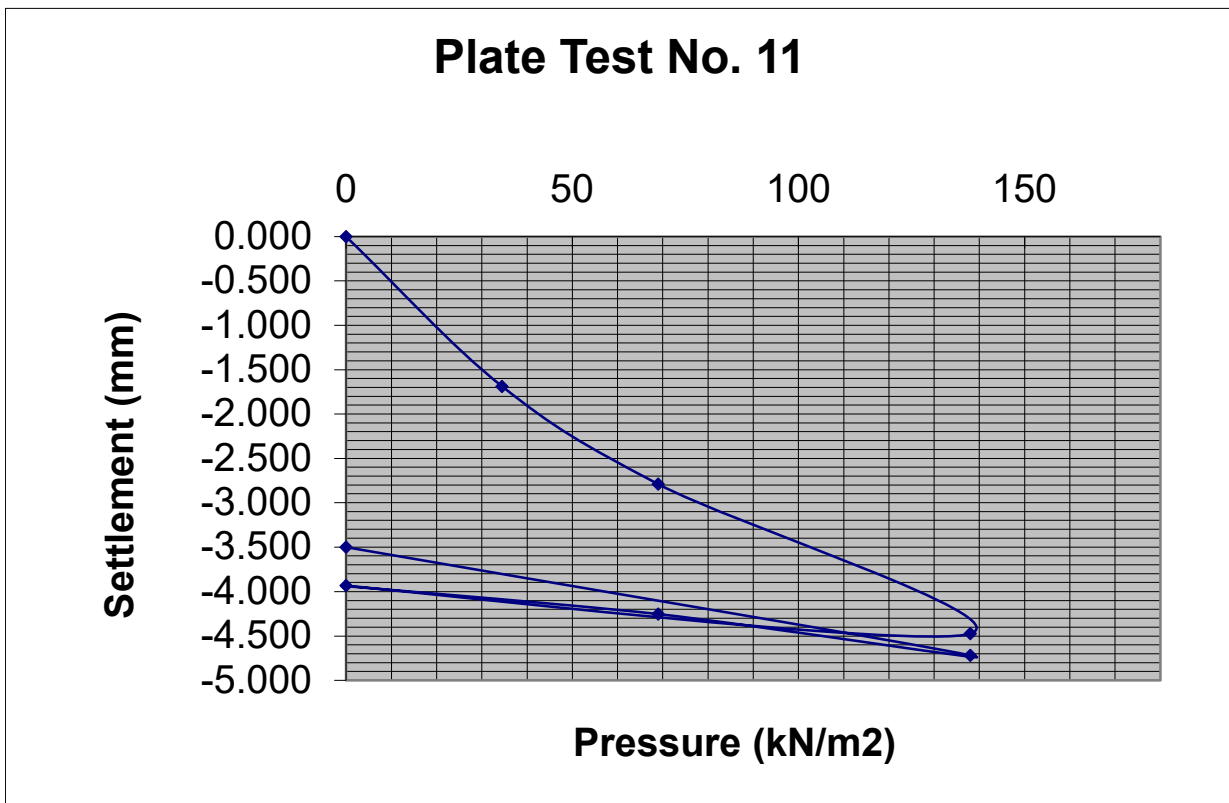
Equivalent CBR(initial)in accordance with HD25/94 volume7 section2 = **21979.55 %**

Equivalent CBR(reload)in accordance with HD25/94 volume7 section2 = **#DIV/0! %**

Applied Load	Gauge settlement
0	0.000
34.5	-1.69
69	-2.79
138	-4.475
0	-3.935
69	-4.255
138	-4.72
0	-3.5



LOCATION	A034 Tinakilly	MATERIAL	Brown clayey gravelly fine to coarse SAND
CONTRACT NO.	11957-06-22		
DATE	17/08/2022		
CLIENT	Ardale	DEPTH	0.4
PLATE DIAMETER	457mm	NOTES	
TEST NO.	CBR-11	SAMPLES	



Modulus of subgrade reaction, K (Initial) = **16.71 MN/m²/m**

Modulus of subgrade reaction, K (Reload) = **145.70 MN/m²/m**

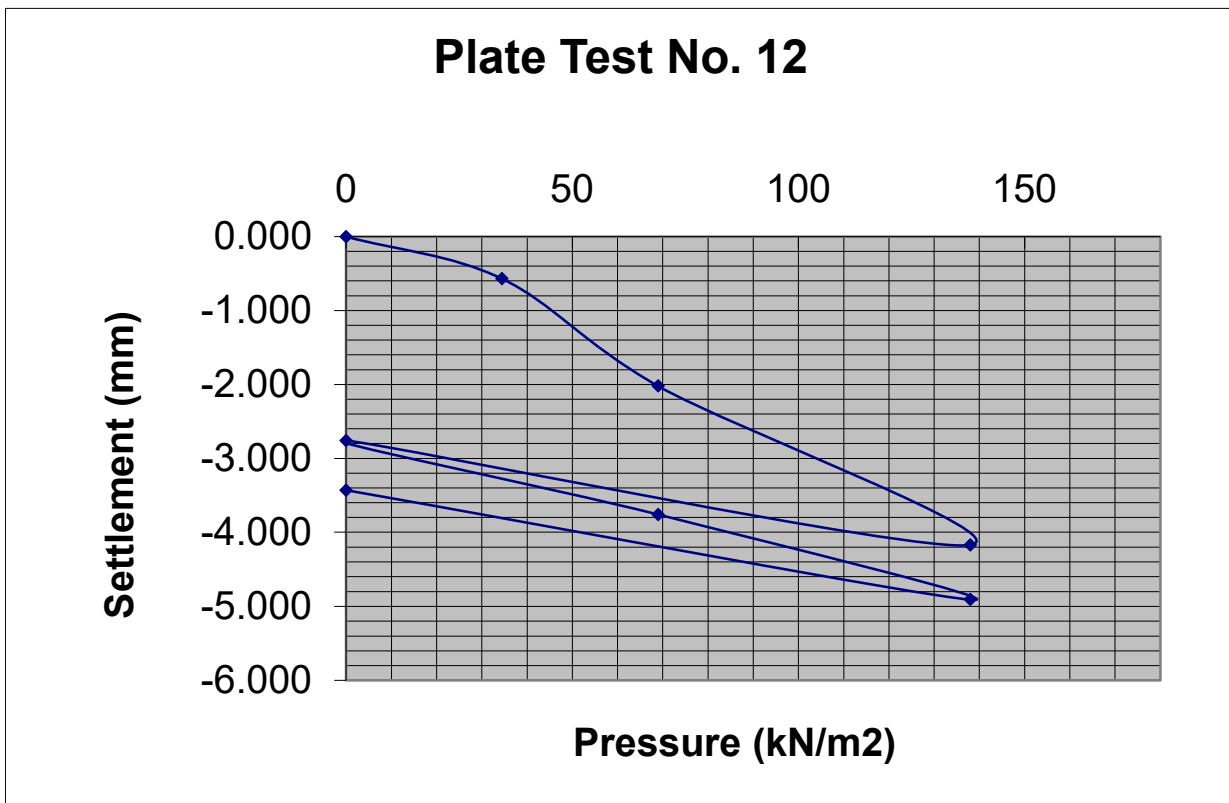
Equivalent CBR(initial)in accordance with HD25/94 volume7 section2 = **1.27 %**

Equivalent CBR(reload)in accordance with HD25/94 volume7 section2 = **54.15 %**

Applied Load	Gauge settlement
0	0.000
34.5	-0.57
69	-2.02
138	-4.17
0	-2.76
69	-3.76
138	-4.91
0	-3.43



LOCATION	A034 Tinakilly	MATERIAL	Brown slightly sandy slightly gravelly CLAY
CONTRACT NO.	11957-06-22		
DATE	18/08/2022		
CLIENT	Ardale	DEPTH	0.3
PLATE DIAMETER	457mm	NOTES	
TEST NO.	CBR-12	SAMPLES	



Modulus of subgrade reaction, K (Initial) = **23.08 MN/m²/m**

Modulus of subgrade reaction, K (Reload) = **46.62 MN/m²/m**

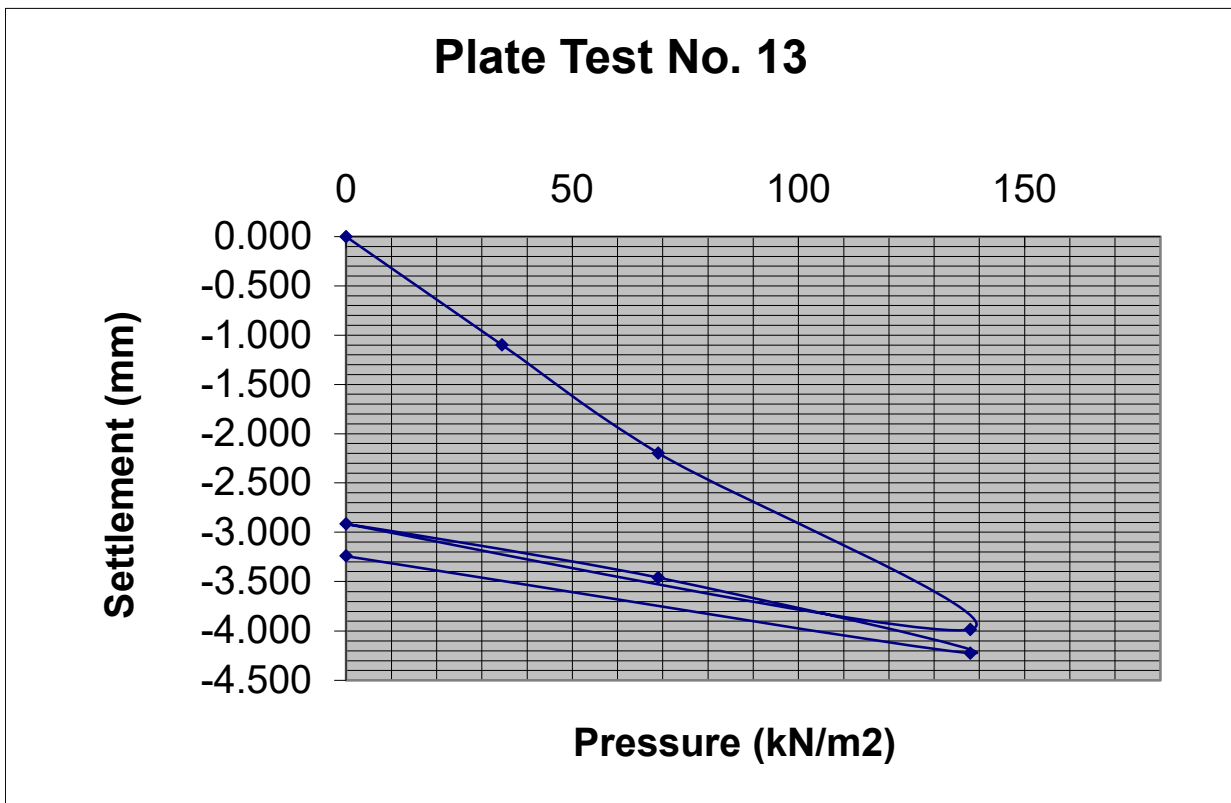
Equivalent CBR(initial)in accordance with HD25/94 volume7 section2 = **2.22 %**

Equivalent CBR(reload)in accordance with HD25/94 volume7 section2 = **7.52 %**

Applied Load	Gauge settlement
0	0.000
34.5	-1.1
69	-2.195
138	-3.985
0	-2.915
69	-3.46
138	-4.225
0	-3.24



LOCATION	A034 Tinakilly	MATERIAL	Brown clayey gravelly fine to coarse SAND
CONTRACT NO.	11957-06-22		
DATE	17/08/2022		
CLIENT	Ardale	DEPTH	0.4
PLATE DIAMETER	457mm	NOTES	
TEST NO.	CBR-13	SAMPLES	



Modulus of subgrade reaction, K (Initial) = **21.24 MN/m²/m**

Modulus of subgrade reaction, K (Reload) = **85.55 MN/m²/m**

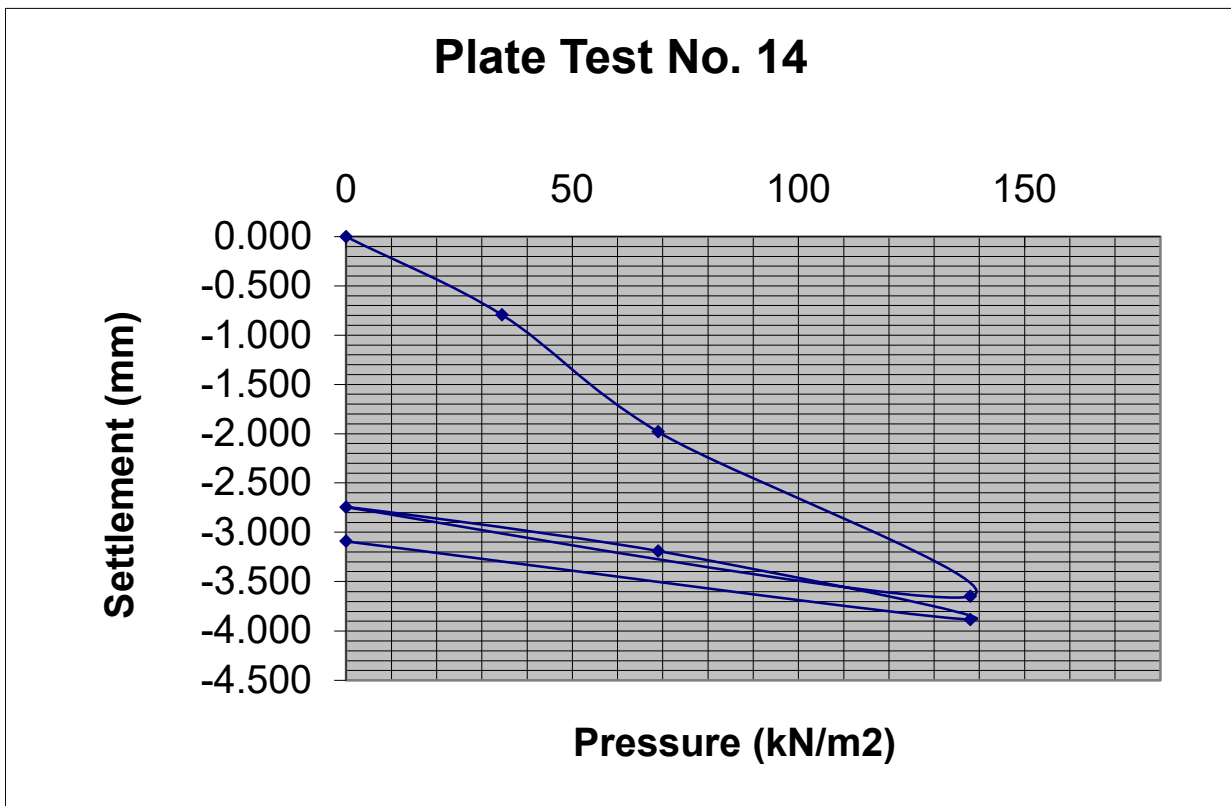
Equivalent CBR(initial)in accordance with HD25/94 volume7 section2 = **1.92 %**

Equivalent CBR(reload)in accordance with HD25/94 volume7 section2 = **21.52 %**

Applied Load	Gauge settlement
0	0.000
34.5	-0.795
69	-1.98
138	-3.65
0	-2.745
69	-3.19
138	-3.885
0	-3.09



LOCATION	A034 Tinakilly	MATERIAL	Brown slightly sandy slightly gravelly CLAY
CONTRACT NO.	11957-06-22		
DATE	17/08/2022		
CLIENT	Ardale	DEPTH	0.4
PLATE DIAMETER	457mm	NOTES	
TEST NO.	CBR-14	SAMPLES	



Modulus of subgrade reaction, K (Initial) = **23.55 MN/m²/m**

Modulus of subgrade reaction, K (Reload) = **104.77 MN/m²/m**

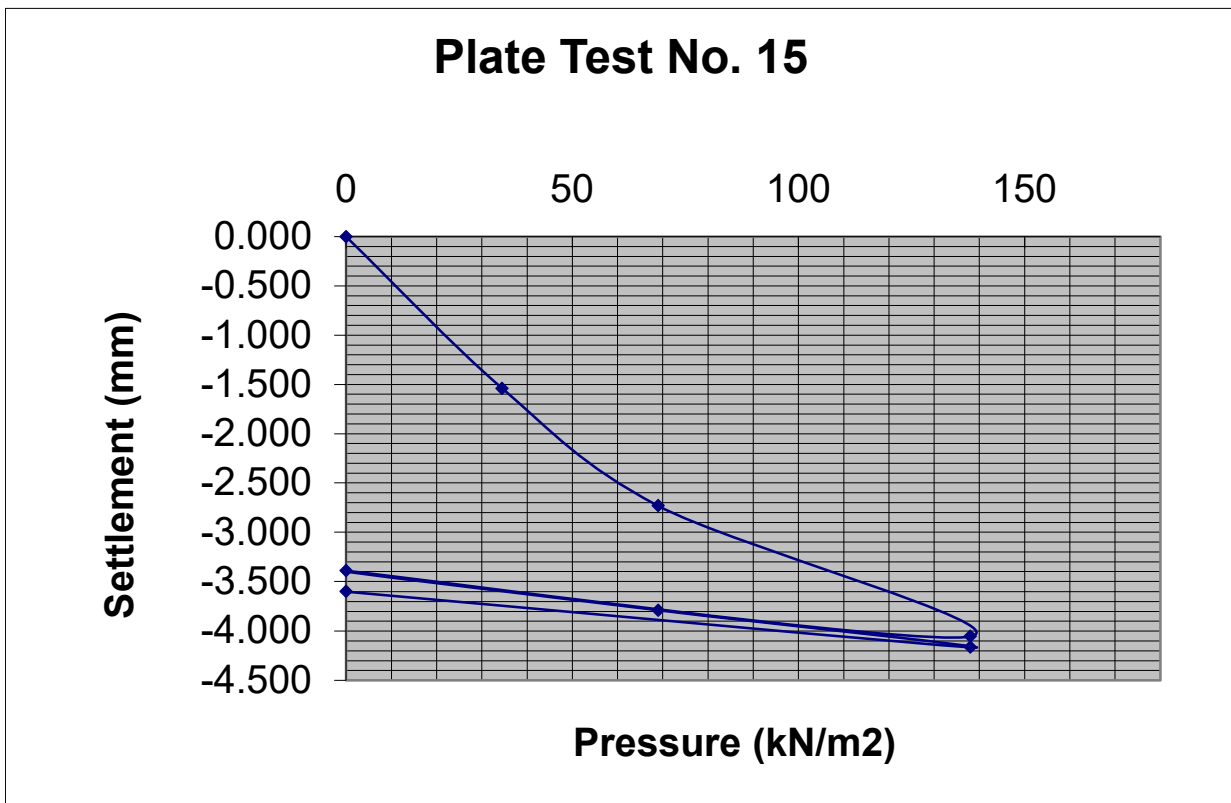
Equivalent CBR(initial)in accordance with HD25/94 volume7 section2 = **2.30 %**

Equivalent CBR(reload)in accordance with HD25/94 volume7 section2 = **30.58 %**

Applied Load	Gauge settlement
0	0.000
34.5	-1.54
69	-2.73
138	-4.055
0	-3.39
69	-3.79
138	-4.165
0	-3.6



LOCATION	A034 Tinakilly	MATERIAL	Brown clayey gravelly fine to coarse SAND
CONTRACT NO.	11957-06-22		
DATE	17/08/2022		
CLIENT	Ardale	DEPTH	0.4
PLATE DIAMETER	457mm	NOTES	
TEST NO.	CBR-15	SAMPLES	



Modulus of subgrade reaction, K (Initial) = **17.08 MN/m²/m**

Modulus of subgrade reaction, K (Reload) = **116.56 MN/m²/m**

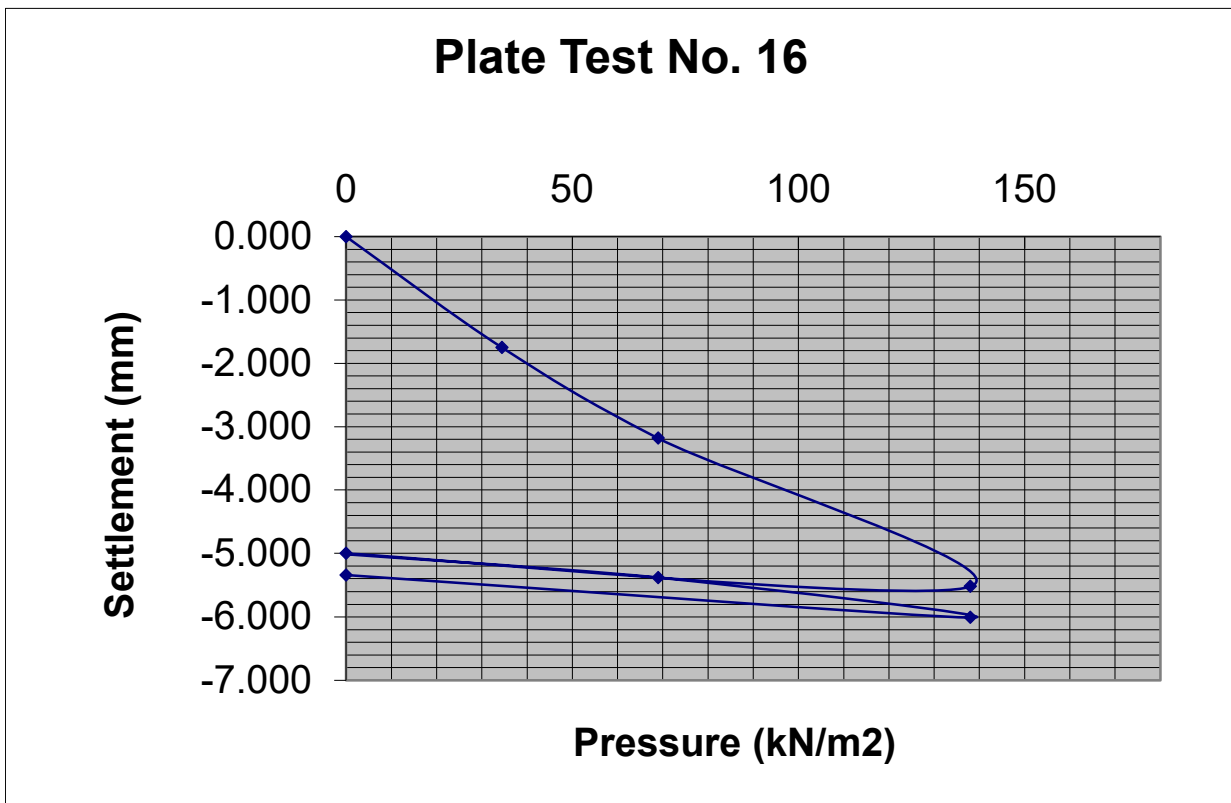
Equivalent CBR(initial)in accordance with HD25/94 volume7 section2 = **1.32 %**

Equivalent CBR(reload)in accordance with HD25/94 volume7 section2 = **36.78 %**

Applied Load	Gauge settlement
0	0.000
34.5	-1.75
69	-3.18
138	-5.52
0	-5
69	-5.38
138	-6.01
0	-5.34



LOCATION	A034 Tinakilly	MATERIAL	Brown slightly gravelly sandy CLAY
CONTRACT NO.	11957-06-22		
DATE	19/08/2022		
CLIENT	Ardale	DEPTH	0.4
PLATE DIAMETER	457mm	NOTES	
TEST NO.	CBR-16	SAMPLES	



Modulus of subgrade reaction, K (Initial) = **14.66 MN/m²/m**

Modulus of subgrade reaction, K (Reload) = **122.69 MN/m²/m**

Equivalent CBR(initial)in accordance with HD25/94 volume7 section2 = **1.01 %**

Equivalent CBR(reload)in accordance with HD25/94 volume7 section2 = **40.20 %**

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APPENDIX 7 – Laboratory Testing



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Ground Investigations Ireland
Catherinstown House
Hazelhatch Road
Newcastle
Co. Dublin
Ireland



Attention : Barry Sexton
Date : 6th September, 2022
Your reference : 11957-06-22
Our reference : Test Report 22/13616 Batch 1
Location : A034 Tinakilly
Date samples received : 23rd August, 2022
Status : Final Report
Issue : 1

Twenty five samples were received for analysis on 23rd August, 2022 of which ten were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.

All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Authorised By:

Bruce Leslie
Project Manager

Please include all sections of this report if it is reproduced

Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 11957-06-22
Location: A034 Tinakilly
Contact: Barry Sexton
EMT Job No: 22/13616

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	5-8	13-16	17-20	25-28	49-52	61-64	65-68	73-76	81-84	97-100	LOD/LOR	Units	Method No.
	Sample ID	TP02	TP04	TP05	TP07	TP13	TP16	TP17	TP19	TP21				TP25
Depth	0.50	0.50	0.50	1.00	1.00	1.00	0.50	1.00	0.50	1.00			
COC No / misc													
Containers	V T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T			
Sample Date	17/08/2022	16/08/2022	16/08/2022	16/08/2022	15/08/2022	15/08/2022	16/08/2022	16/08/2022	15/08/2022	15/08/2022			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	23/08/2022	23/08/2022	23/08/2022	23/08/2022	23/08/2022	23/08/2022	23/08/2022	23/08/2022	23/08/2022	23/08/2022			
Antimony	3	2	2	2	2	2	2	2	1	1	<1	mg/kg	TM30/PM15
Arsenic #	14.5	10.3	7.5	9.0	8.8	10.3	10.2	11.0	8.1	11.8	<0.5	mg/kg	TM30/PM15
Barium #	74	34	22	16	21	34	30	34	26	29	<1	mg/kg	TM30/PM15
Cadmium #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM30/PM15
Chromium #	100.7	86.0	61.8	157.8	149.2	122.6	62.3	58.3	85.4	45.6	<0.5	mg/kg	TM30/PM15
Copper #	28	16	17	13	14	16	13	18	10	17	<1	mg/kg	TM30/PM15
Lead #	13	14	7	10	10	9	11	11	15	13	<5	mg/kg	TM30/PM15
Mercury #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM30/PM15
Molybdenum #	5.1	5.0	3.5	9.9	9.4	7.6	3.9	3.5	5.9	2.2	<0.1	mg/kg	TM30/PM15
Nickel #	33.6	30.3	29.4	17.9	20.0	23.1	28.0	37.2	22.7	27.0	<0.7	mg/kg	TM30/PM15
Selenium #	2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	mg/kg	TM30/PM15
Zinc #	74	69	63	44	46	39	59	72	50	57	<5	mg/kg	TM30/PM15
PAH MS													
Naphthalene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Acenaphthylene	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg	TM4/PM8
Acenaphthene #	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	mg/kg	TM4/PM8
Fluorene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Phenanthrene #	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg	TM4/PM8
Anthracene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Fluoranthene #	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg	TM4/PM8
Pyrene #	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	mg/kg	TM4/PM8
Chrysene #	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Coronene	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
PAH 6 Total #	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	mg/kg	TM4/PM8
PAH 17 Total	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	mg/kg	TM4/PM8
Benzo(b)fluoranthene	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	mg/kg	TM4/PM8
Benzo(j)fluoranthene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	mg/kg	TM4/PM8
PAH Surrogate % Recovery	98	101	98	97	102	106	103	100	101	89	<0	%	TM4/PM8
Mineral Oil (C10-C40) (EH_CU_1D_AL)	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	mg/kg	TM5/PM8/PM16

Please see attached notes for all abbreviations and acronyms

Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 11957-06-22
Location: A034 Tinakilly
Contact: Barry Sexton
EMT Job No: 22/13616

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

RECEIVED: 14/08/2023

EMT Sample No.	5-8	13-16	17-20	25-28	49-52	61-64	65-68	73-76	81-84	97-100			
Sample ID	TP02	TP04	TP05	TP07	TP13	TP16	TP17	TP19	TP21	TP25			
Depth	0.50	0.50	0.50	1.00	1.00	1.00	0.50	1.00	0.50	1.00			
COC No / misc													
Containers	V T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T			
Sample Date	17/08/2022	16/08/2022	16/08/2022	16/08/2022	15/08/2022	15/08/2022	16/08/2022	16/08/2022	15/08/2022	15/08/2022			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	23/08/2022	23/08/2022	23/08/2022	23/08/2022	23/08/2022	23/08/2022	23/08/2022	23/08/2022	23/08/2022	23/08/2022	LOD/LOR	Units	Method No.
TPH CWG													
Aliphatics													
>C5-C6 (HS_1D_AL) #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C6-C8 (HS_1D_AL) #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C8-C10 (HS_1D_AL)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C10-C12 (EH_CU_1D_AL) #	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	mg/kg	TMS/IPM8/PM16
>C12-C16 (EH_CU_1D_AL) #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	mg/kg	TMS/IPM8/PM16
>C16-C21 (EH_CU_1D_AL) #	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	mg/kg	TMS/IPM8/PM16
>C21-C35 (EH_CU_1D_AL) #	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	mg/kg	TMS/IPM8/PM16
>C35-C40 (EH_1D_AL)	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	mg/kg	TMS/IPM8/PM16
Total aliphatics C5-40 (EH+HS_1D_AL)	<26	<26	<26	<26	<26	<26	<26	<26	<26	<26	<26	mg/kg	TMS/TMS/IPM8/PM12/PM16
>C6-C10 (HS_1D_AL)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C10-C25 (EH_1D_AL)	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	mg/kg	TMS/IPM8/PM16
>C25-C35 (EH_1D_AL)	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	mg/kg	TMS/IPM8/PM16
Aromatics													
>C5-EC7 (HS_1D_AR) #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC7-EC8 (HS_1D_AR) #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC8-EC10 (HS_1D_AR) #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC10-EC12 (EH_CU_1D_AR) #	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	mg/kg	TMS/IPM8/PM16
>EC12-EC16 (EH_CU_1D_AR) #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	mg/kg	TMS/IPM8/PM16
>EC16-EC21 (EH_CU_1D_AR) #	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	mg/kg	TMS/IPM8/PM16
>EC21-EC35 (EH_CU_1D_AR) #	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	mg/kg	TMS/IPM8/PM16
>EC35-EC40 (EH_1D_AR)	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	mg/kg	TMS/IPM8/PM16
Total aromatics C5-40 (EH+HS_1D_AR)	<26	<26	<26	<26	<26	<26	<26	<26	<26	<26	<26	mg/kg	TMS/TMS/IPM8/PM12/PM16
Total aliphatics and aromatics(C5-40) (EH+HS_CU_1D_Total)	<52	<52	<52	<52	<52	<52	<52	<52	<52	<52	<52	mg/kg	TMS/TMS/IPM8/PM12/PM16
>EC6-EC10 (HS_1D_AR) #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC10-EC25 (EH_1D_AR)	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	mg/kg	TMS/IPM8/PM16
>EC25-EC35 (EH_1D_AR)	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	mg/kg	TMS/IPM8/PM16
MTBE #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM36/PM12
Benzene #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM36/PM12
Toluene #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM36/PM12
Ethylbenzene #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM36/PM12
m/p-Xylene #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM36/PM12
o-Xylene #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM36/PM12
PCB 28 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 52 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 101 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 118 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 138 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 153 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
PCB 180 #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM17/PM8
Total 7 PCBs #	<35	<35	<35	<35	<35	<35	<35	<35	<35	<35	<35	ug/kg	TM17/PM8

Please see attached notes for all abbreviations and acronyms

Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 11957-06-22
Location: A034 Tinakilly
Contact: Barry Sexton
EMT Job No: 22/13616

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

RECEIVED: 14/08/2023

EMT Sample No.	5-8	13-16	17-20	25-28	49-52	61-64	65-68	73-76	81-84	97-100			
Sample ID	TP02	TP04	TP05	TP07	TP13	TP16	TP17	TP19	TP21	TP25			
Depth	0.50	0.50	0.50	1.00	1.00	1.00	0.50	1.00	0.50	1.00			
COC No / misc													
Containers	V T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T			
Sample Date	17/08/2022	16/08/2022	16/08/2022	16/08/2022	15/08/2022	15/08/2022	16/08/2022	16/08/2022	15/08/2022	15/08/2022			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	23/08/2022	23/08/2022	23/08/2022	23/08/2022	23/08/2022	23/08/2022	23/08/2022	23/08/2022	23/08/2022	23/08/2022	LOD/LOR	Units	Method No.
Natural Moisture Content	5.1	10.0	8.7	3.5	9.0	5.4	12.2	8.5	12.6	9.1	<0.1	%	PM4/PM0
Moisture Content (% Wet Weight)	4.9	9.1	8.0	3.4	8.3	5.1	10.9	7.8	11.2	8.4	<0.1	%	PM4/PM0
Hexavalent Chromium #	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	mg/kg	TM38/PM20
Sulphate as SO4 (2:1 Ext) #	-	0.0196	0.0148	-	-	-	-	0.0110	-	0.0114	<0.0015	g/l	TM38/PM20
Chromium III	100.7	86.0	61.8	157.8	149.2	122.6	62.3	58.3	85.4	45.6	<0.5	mg/kg	NONE/NONE
Total Organic Carbon #	0.13	0.24	0.10	0.06	0.08	0.07	0.15	0.13	0.19	0.28	<0.02	%	TM21/PM24
pH #	7.61	6.78	6.99	7.13	5.37	6.27	6.54	6.81	6.35	6.40	<0.01	pH units	TM73/PM11
Mass of raw test portion	0.0894	0.095	0.0938	0.0943	0.0945	0.0907	0.0965	0.0938	0.0982	0.0918		kg	NONE/PM17
Mass of dried test portion	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09		kg	NONE/PM17

Please see attached notes for all abbreviations and acronyms

Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 11957-06-22
Location: A034 Tinakilly
Contact: Barry Sexton
EMT Job No: 22/13616

Report : CEN 10:1 1 Batch

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	5-8	13-16	17-20	25-28	49-52	61-64	65-68	73-76	81-84	97-100			
Sample ID	TP02	TP04	TP05	TP07	TP13	TP16	TP17	TP19	TP21	TP25			
Depth	0.50	0.50	0.50	1.00	1.00	1.00	0.50	1.00	0.50	1.00			
COC No / misc													
Containers	V T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T			
Sample Date	17/08/2022	16/08/2022	16/08/2022	16/08/2022	15/08/2022	15/08/2022	16/08/2022	16/08/2022	15/08/2022	15/08/2022			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	23/08/2022	23/08/2022	23/08/2022	23/08/2022	23/08/2022	23/08/2022	23/08/2022	23/08/2022	23/08/2022	23/08/2022	LOD/LOR	Units	Method No.
Dissolved Antimony #	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	mg/l	TM30/PM17
Dissolved Antimony (A10) #	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	mg/kg	TM30/PM17
Dissolved Arsenic #	<0.0025	<0.0025	<0.0025	<0.0025	0.0028	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	mg/l	TM30/PM17
Dissolved Arsenic (A10) #	<0.025	<0.025	<0.025	<0.025	0.028	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	mg/kg	TM30/PM17
Dissolved Barium #	<0.003	<0.003	<0.003	0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	mg/l	TM30/PM17
Dissolved Barium (A10) #	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg	TM30/PM17
Dissolved Cadmium #	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	mg/l	TM30/PM17
Dissolved Cadmium (A10) #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	mg/kg	TM30/PM17
Dissolved Chromium #	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	mg/l	TM30/PM17
Dissolved Chromium (A10) #	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	mg/kg	TM30/PM17
Dissolved Copper #	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	mg/l	TM30/PM17
Dissolved Copper (A10) #	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	mg/kg	TM30/PM17
Dissolved Lead #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	mg/l	TM30/PM17
Dissolved Lead (A10) #	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	mg/kg	TM30/PM17
Dissolved Molybdenum #	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	mg/l	TM30/PM17
Dissolved Molybdenum (A10) #	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	mg/kg	TM30/PM17
Dissolved Nickel #	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	mg/l	TM30/PM17
Dissolved Nickel (A10) #	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	mg/kg	TM30/PM17
Dissolved Selenium #	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	mg/l	TM30/PM17
Dissolved Selenium (A10) #	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg	TM30/PM17
Dissolved Zinc #	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	mg/l	TM30/PM17
Dissolved Zinc (A10) #	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg	TM30/PM17
Mercury Dissolved by CVAF #	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	mg/l	TM61/PM0
Mercury Dissolved by CVAF #	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	mg/kg	TM61/PM0
Phenol	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/l	TM26/PM0
Phenol	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM26/PM0
Fluoride	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	mg/l	TM173/PM0
Fluoride	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	mg/kg	TM173/PM0
Sulphate as SO4 #	<0.5	1.1	0.8	0.6	2.7	1.9	3.6	1.5	1.5	0.8	<0.5	mg/l	TM38/PM0
Sulphate as SO4 #	<5	11	8	6	27	19	36	15	15	8	<5	mg/kg	TM38/PM0
Chloride #	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	mg/l	TM38/PM0
Chloride #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	mg/kg	TM38/PM0
Dissolved Organic Carbon	3	<2	3	2	2	<2	<2	<2	<2	2	<2	mg/l	TM60/PM0
Dissolved Organic Carbon	30	<20	30	<20	20	<20	<20	<20	<20	<20	<20	mg/kg	TM60/PM0
pH	7.82	6.44	8.08	7.48	7.07	6.13	6.32	6.42	6.97	7.56	<0.01	pH units	TM73/PM0
Total Dissolved Solids #	<35	<35	<35	<35	<35	<35	<35	<35	<35	<35	<35	mg/l	TM20/PM0
Total Dissolved Solids #	<350	<350	<350	<350	<350	<350	<350	<350	<350	<350	<350	mg/kg	TM20/PM0

Please see attached notes for all abbreviations and acronyms

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Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 11957-06-22
Location: A034 Tinakilly
Contact: Barry Sexton
EMT Job No: 22/13616

Report : EN12457_2

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

RECEIVED: 14/09/2023

Please see attached notes for all abbreviations and acronyms

EMT Sample No.	5-8	13-16	17-20	25-28	49-52	61-64	65-68	73-76	81-84	97-100						
Sample ID	TP02	TP04	TP05	TP07	TP13	TP16	TP17	TP19	TP21	TP25						
Depth	0.50	0.50	0.50	1.00	1.00	1.00	0.50	1.00	0.50	1.00						
COC No / misc																
Containers	V T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T						
Sample Date	17/08/2022	16/08/2022	16/08/2022	16/08/2022	15/08/2022	15/08/2022	16/08/2022	16/08/2022	15/08/2022	15/08/2022						
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil						
Batch Number	1	1	1	1	1	1	1	1	1	1						
Date of Receipt	23/08/2022	23/08/2022	23/08/2022	23/08/2022	23/08/2022	23/08/2022	23/08/2022	23/08/2022	23/08/2022	23/08/2022	Inert	Stable Non-reactive	Hazardous	LOD LOR	Units	Method No.
Solid Waste Analysis																
Total Organic Carbon #	0.13	0.24	0.10	0.06	0.08	0.07	0.15	0.13	0.19	0.28	3	5	6	<0.02	%	TM21/PM24
Sum of BTEX	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	6	-	-	<0.025	mg/kg	TM36/PM12
Sum of 7 PCBs #	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	1	-	-	<0.035	mg/kg	TM17/PM8
Mineral Oil	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	500	-	-	<30	mg/kg	TM5/PM8/PM16
PAH Sum of 6 #	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	-	-	-	<0.22	mg/kg	TM4/PM8
PAH Sum of 17	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	100	-	-	<0.64	mg/kg	TM4/PM8
CEN 10:1 Leachate																
Arsenic #	<0.025	<0.025	<0.025	<0.025	0.028	<0.025	<0.025	<0.025	<0.025	<0.025	0.5	2	25	<0.025	mg/kg	TM30/PM17
Barium #	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	20	100	300	<0.03	mg/kg	TM30/PM17
Cadmium #	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.04	1	5	<0.005	mg/kg	TM30/PM17
Chromium #	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	0.5	10	70	<0.015	mg/kg	TM30/PM17
Copper #	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	2	50	100	<0.07	mg/kg	TM30/PM17
Mercury #	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.01	0.2	2	<0.0001	mg/kg	TM61/PM0
Molybdenum #	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.5	10	30	<0.02	mg/kg	TM30/PM17
Nickel #	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.4	10	40	<0.02	mg/kg	TM30/PM17
Lead #	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.5	10	50	<0.05	mg/kg	TM30/PM17
Antimony #	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.06	0.7	5	<0.02	mg/kg	TM30/PM17
Selenium #	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.1	0.5	7	<0.03	mg/kg	TM30/PM17
Zinc #	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	4	50	200	<0.03	mg/kg	TM30/PM17
Total Dissolved Solids #	<350	<350	<350	<350	<350	<350	<350	<350	<350	<350	4000	60000	100000	<350	mg/kg	TM20/PM0
Dissolved Organic Carbon	30	<20	30	<20	20	<20	<20	<20	<20	<20	500	800	1000	<20	mg/kg	TM60/PM0
Dry Matter Content Ratio	100.5	94.4	96.5	95.0	95.4	99.7	93.3	95.6	91.5	97.9	-	-	-	<0.1	%	NONE/PM4
Moisture Content 105C (% Dry Weight)	<0.1	5.9	3.6	5.3	4.8	0.3	7.2	4.6	9.3	2.2	-	-	-	<0.1	%	PM4/PM0
pH #	7.61	6.78	6.99	7.13	5.37	6.27	6.54	6.81	6.35	6.40	-	-	-	<0.01	pH units	TM73/PM11
Phenol	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	1	-	-	<0.1	mg/kg	TM26/PM0
Fluoride	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	10	150	500	<3	mg/kg	TM173/PM0
Sulphate as SO4 #	<5	11	8	6	27	19	36	15	15	8	1000	20000	50000	<5	mg/kg	TM38/PM0
Chloride #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	800	15000	25000	<3	mg/kg	TM38/PM0

Client Name: Ground Investigations Ireland
Reference: 11957-06-22
Location: A034 Tinakilly
Contact: Barry Sexton

Note:

Asbestos Screen analysis is carried out in accordance with our documented in-house methods PM042 and TM065 and HSG 248 by Stereo and Polarised Light Microscopy using Dispersion Staining Techniques and is covered by our UKAS accreditation. Detailed Gravimetric Quantification and PCOM Fibre Analysis is carried out in accordance with our documented in-house methods PM042 and TM131 and HSG 248 using Stereo and Polarised Light Microscopy and Phase Contrast Optical Microscopy (PCOM). Asbestos sub-samples are retained for not less than 6 months from the date of analysis unless specifically requested.

The LOQ of the Asbestos Quantification is 0.001% dry fibre of dry mass of sample.

Where the sample is not taken by a Element Materials Technology consultant, Element Materials Technology cannot be responsible for inaccurate or unrepresentative sampling.

Where trace asbestos is reported the amount of asbestos will be <0.1%.

RECEIVED 14/08/2022

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analyst Name	Date Of Analysis	Analysis	Result
22/13616	1	TP02	0.50	8	Remigiusz Blichowski	26/08/2022	General Description (Bulk Analysis)	Brown sand
					Remigiusz Blichowski	26/08/2022	Asbestos Fibres	NAD
					Remigiusz Blichowski	26/08/2022	Asbestos ACM	NAD
					Remigiusz Blichowski	26/08/2022	Asbestos Type	NAD
22/13616	1	TP04	0.50	16	Matthew Turner	26/08/2022	General Description (Bulk Analysis)	Brown soil/Stone
					Matthew Turner	26/08/2022	Asbestos Fibres	NAD
					Matthew Turner	26/08/2022	Asbestos ACM	NAD
					Matthew Turner	26/08/2022	Asbestos Type	NAD
22/13616	1	TP05	0.50	20	Remigiusz Blichowski	26/08/2022	General Description (Bulk Analysis)	Brown sand
					Remigiusz Blichowski	26/08/2022	Asbestos Fibres	NAD
					Remigiusz Blichowski	26/08/2022	Asbestos ACM	NAD
					Remigiusz Blichowski	26/08/2022	Asbestos Type	NAD
22/13616	1	TP07	1.00	28	Matthew Turner	26/08/2022	General Description (Bulk Analysis)	Brown soil/Stone
					Matthew Turner	26/08/2022	Asbestos Fibres	NAD
					Matthew Turner	26/08/2022	Asbestos ACM	NAD
					Matthew Turner	26/08/2022	Asbestos Type	NAD
22/13616	1	TP13	1.00	52	Matthew Turner	26/08/2022	General Description (Bulk Analysis)	Brown soil/Stone
					Matthew Turner	26/08/2022	Asbestos Fibres	NAD
					Matthew Turner	26/08/2022	Asbestos ACM	NAD
					Matthew Turner	26/08/2022	Asbestos Type	NAD
22/13616	1	TP16	1.00	64	Remigiusz Blichowski	26/08/2022	General Description (Bulk Analysis)	Brown Sand
					Remigiusz Blichowski	26/08/2022	Asbestos Fibres	NAD
					Remigiusz Blichowski	26/08/2022	Asbestos ACM	NAD
					Remigiusz Blichowski	26/08/2022	Asbestos Type	NAD
22/13616	1	TP17	0.50	68	Matthew Turner	26/08/2022	General Description (Bulk Analysis)	Brown soil/Stone
					Matthew Turner	26/08/2022	Asbestos Fibres	NAD
					Matthew Turner	26/08/2022	Asbestos ACM	NAD
					Matthew Turner	26/08/2022	Asbestos Type	NAD
22/13616	1	TP19	1.00	76	Remigiusz Blichowski	26/08/2022	General Description (Bulk Analysis)	Brown sand
					Remigiusz Blichowski	26/08/2022	Asbestos Fibres	NAD
					Remigiusz Blichowski	26/08/2022	Asbestos ACM	NAD
					Remigiusz Blichowski	26/08/2022	Asbestos Type	NAD

Client Name: Ground Investigations Ireland
Reference: 11957-06-22
Location: A034 Tinakilly
Contact: Barry Sexton

RECEIVED: 14/08/2023

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analyst Name	Date Of Analysis	Analysis	Result
22/13616	1	TP21	0.50	84	Matthew Turner	26/08/2022	General Description (Bulk Analysis)	Brown soil/Stone
					Matthew Turner	26/08/2022	Asbestos Fibres	NAD
					Matthew Turner	26/08/2022	Asbestos ACM	NAD
					Matthew Turner	26/08/2022	Asbestos Type	NAD
22/13616	1	TP25	1.00	100	Matthew Turner	26/08/2022	General Description (Bulk Analysis)	Brown soil/Stone
					Matthew Turner	26/08/2022	Asbestos Fibres	NAD
					Matthew Turner	26/08/2022	Asbestos ACM	NAD
					Matthew Turner	26/08/2022	Asbestos Type	NAD

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

EMT Job No.: 22/13616

SOILS and ASH

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary. Asbestos samples are retained for 6 months.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Limits of detection for analyses carried out on as received samples are not moisture content corrected. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C. Ash samples are dried at 37°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Sufficient amount of sample must be received to carry out the testing specified. Where an insufficient amount of sample has been received the testing may not meet the requirements of our accredited methods, as such accreditation may be removed.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overestimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

STACK EMISSIONS

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation for Dioxins and Furans and Dioxin like PCBs has been performed on XAD-2 Resin, only samples which use this resin will be within our MCERTS scope.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

DEVIATING SAMPLES

All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. The temperature of sample receipt is recorded on the confirmation schedules in order that the client can make an informed decision as to whether testing should still be undertaken.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.

Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation. Laboratory records are kept for a period of no less than 6 years.

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

Measurement Uncertainty

Measurement uncertainty defines the range of values that could reasonably be attributed to the measured quantity. This range of values has not been included within the reported results. Uncertainty expressed as a percentage can be provided upon request.

Customer Provided Information

Sample ID and depth is information provided by the customer.

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ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
>>	Results above calibration range, the result should be considered the minimum value. The actual result could be significantly higher.
*	Analysis subcontracted to an Element Materials Technology approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range

RECEIVED: 14/08/2023

HWOL ACRONYMS AND OPERATORS USED

HS	Headspace Analysis.
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent.
CU	Clean-up - e.g. by florisil, silica gel.
1D	GC - Single coil gas chromatography.
Total	Aliphatics & Aromatics.
AL	Aliphatics only.
AR	Aromatics only.
2D	GC-GC - Double coil gas chromatography.
#1	EH_Total but with humics mathematically subtracted
#2	EU_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +).
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total
MS	Mass Spectrometry.

RECEIVED: 14/08/2023

EMT Job No: 22/13616

RECEIVED 14/08/2023

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465:1993(E) and BS1377-2:1990.	PM0	No preparation is required.			AR	
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM16	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	Yes
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details			AR	Yes
TM17	Modified US EPA method 8270D v5:2014. Determination of specific Polychlorinated Biphenyl congeners by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM20	Modified BS 1377-3:1990/USEPA 160.1/3 (TDS/TS: 1971) Gravimetric determination of Total Dissolved Solids/Total Solids	PM0	No preparation is required.	Yes		AR	Yes
TM21	Modified BS 7755-3:1995, ISO10694:1995 Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil, March 2012 v4.	PM24	Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.	Yes		AD	Yes

EMT Job No: 22/13616

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM0	No preparation is required.			AR	Yes
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry); WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.			AD	Yes
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry); WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.	Yes		AD	Yes
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry); WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM17	Modified method BS EN12457-2:2002 As received solid samples are leached with water in a 10:1 water to soil ratio for 24 hours, the moisture content of the sample is included in the ratio.	Yes		AR	Yes
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GC/FID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GC/FID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013l	PM0	No preparation is required.	Yes		AR	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013l	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AD	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013l	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AR	Yes
TM60	TC/TOC analysis of Waters by High Temperature Combustion followed by NDIR detection. Based on the following modified standard methods: USEPA 9060A (2002), APHA SMEWW 5310B:1999 22nd Edition, ASTM D 7573, and USEPA 415.1.	PM0	No preparation is required.			AR	Yes

RECEIVED 14/08/2023

EMT Job No: 22/13616

RECEIVED 14/08/2023

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM61	Determination of Mercury by Cold Vapour Atomic Fluorescence - WATERS: Modified USEPA Method 245.7, Rev 2, Feb 2005. SOILS: Modified USEPA Method 7471B, Rev.2, Feb 2007	PM0	No preparation is required.	Yes		AR	Yes
TM65	Asbestos Bulk Identification method based on HSG 248 Second edition (2021)	PM42	Modified SCA Blue Book V.12 draft 2017 and WM3 1st Edition v1.1:2018. Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.	Yes		AR	
TM73	Modified US EPA methods 150.1 (1982) and 9045D Rev. 4 - 2004) and BS1377-3:1990. Determination of pH by Metrohm automated probe analyser.	PM0	No preparation is required.			AR	Yes
TM73	Modified US EPA methods 150.1 (1982) and 9045D Rev. 4 - 2004) and BS1377-3:1990. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes		AR	No
TM173	Analysis of fluoride by ISE (Ion Selective Electrode) using modified ISE method 9214 - 340.2 (EPA 1998)	PM0	No preparation is required.			AR	Yes
NONE	No Method Code	NONE	No Method Code			AD	Yes
NONE	No Method Code	PM17	Modified method BS EN12457-2:2002 As received solid samples are leached with water in a 10:1 water to soil ratio for 24 hours, the moisture content of the sample is included in the ratio.			AR	
NONE	No Method Code	PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465:1993(E) and BS1377-2:1990.			AR	



LABORATORY REPORT



4043

RECEIVED: 14/08/2023

Contract Number: PSL22/5678

Report Date: 03 October 2022
Client's Reference: 11957-06-22
Client Name: Ground Investigations Ireland Ltd
Catherinestown House
Hazelhatch Road
Newcastle
Co Dublin
D22 YD52

For the attention of: Frank O'Dea/Adam Browne

Contract Title: A034 Tinakilly
Date Received: 31/8/2022
Date Commenced: 31/8/2022
Date Completed: 3/10/2022

Notes: Opinions and Interpretations are outside the UKAS Accreditation

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

Checked and Approved Signatories:

A Watkins
(Director)

R Berriman
(Quality Manager)


S Royle
(Laboratory Manager)

L Knight
(Assistant Laboratory Manager)

S Eyre
(Senior Technician)

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SUMMARY OF LABORATORY SOIL DESCRIPTIONS

RECEIVED: 14/08/2023

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
TP01		B	0.50		Brown sandy slightly gravelly CLAY.
TP01		B	1.50		Brown sandy slightly gravelly CLAY.
TP01		B	2.00		Brown slightly sandy slightly gravelly CLAY.
TP02		B	1.50		Brown very sandy GRAVEL.
TP04		B	0.50		Brown slightly sandy slightly gravelly CLAY.
TP04		B	1.50		Brown slightly gravelly very sandy CLAY.
TP05		B	0.50		Brown sandy gravelly CLAY.
TP05		B	2.00		Brown very sandy GRAVEL with cobbles.
TP07		B	2.50		Brown sandy GRAVEL with some cobbles.
TP08		B	2.00		Brown slightly sandy CLAY.
TP10		B	0.50		Brown sandy slightly gravelly CLAY.
TP12		B	1.00		Brown sandy slightly gravelly CLAY.
TP12		B	2.50		Brown sandy slightly gravelly CLAY.
TP13		B	1.00		Brown sandy slightly gravelly CLAY.
TP14		B	2.00		Brown very sandy GRAVEL.
TP15		B	0.50		Brown sandy slightly gravelly CLAY.
TP15		B	1.50		Brown slightly sandy slightly gravelly CLAY.
TP16		B	1.00		Brown clayey SAND.
TP16		B	2.50		Brown slightly sandy CLAY.

 4043		A034 Tinakilly	Contract No:
			PSL22/5678
			Client Ref:
			11957-06-22

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
TP17		B	0.50		Brown sandy slightly gravelly CLAY.
TP17		B	2.00		Brown clayey very gravelly SAND.
TP18		B	3.00		Brown sandy slightly gravelly CLAY.
TP19		B	2.00		Brown slightly sandy slightly gravelly CLAY.
TP20		B	1.50		Brown sandy slightly gravelly CLAY.
TP20		B	3.00		Brown clayey very gravelly SAND.
TP22		B	2.00		Brown very gravelly SAND.
TP23		B	1.50		Brown slightly sandy slightly gravelly CLAY.
TP24		B	0.50		Brown sandy gravelly CLAY.
TP24		B	1.50		Brown sandy CLAY.
TP25		B	1.00		Brown clayey slightly gravelly SAND.
TP25		B	2.00		Brown slightly gravelly SAND.

RECEIVED: 14/08/2023



A034 Tinakilly

Contract No:
PSL22/5678
Client Ref:
11957-06-22

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m ³ Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
TP01		B	0.50		7.2			31	16	15	49	Low Plasticity CL
TP01		B	2.00		21			46	22	24	93	Intermediate Plasticity CI
TP02		B	1.50		5.6				NP			
TP04		B	1.50		17			38	18	20	82	Intermediate Plasticity CI
TP05		B	2.00		6.5				NP			
TP07		B	2.50		6.1				NP			
TP08		B	2.00		23			44	22	22	100	Intermediate Plasticity CI
TP10		B	0.50		11			34	17	17	56	Low Plasticity CL
TP12		B	1.00		12			30	15	15	85	Low Plasticity CL
TP13		B	1.00		12			33	17	16	65	Low Plasticity CL
TP14		B	2.00		5.8				NP			
TP15		B	1.50		16			32	16	16	69	Low Plasticity CL
TP16		B	1.00		6.1				NP			
TP17		B	0.50		13			35	17	18	69	Intermediate Plasticity CI
TP17		B	2.00		9.7				NP			
TP18		B	3.00		17			28	14	14	70	Low Plasticity CL
TP20		B	1.50		13			36	18	18	60	Intermediate Plasticity CI
TP22		B	2.00		10				NP			
TP23		B	1.50		18			35	18	17	95	Intermediate Plasticity CI

SYMBOLS : NP : Non Plastic

* : Liquid Limit and Plastic Limit Wet Sieved.



PSL
Professional Soils Laboratory

A034 Tinakilly

Contract No:

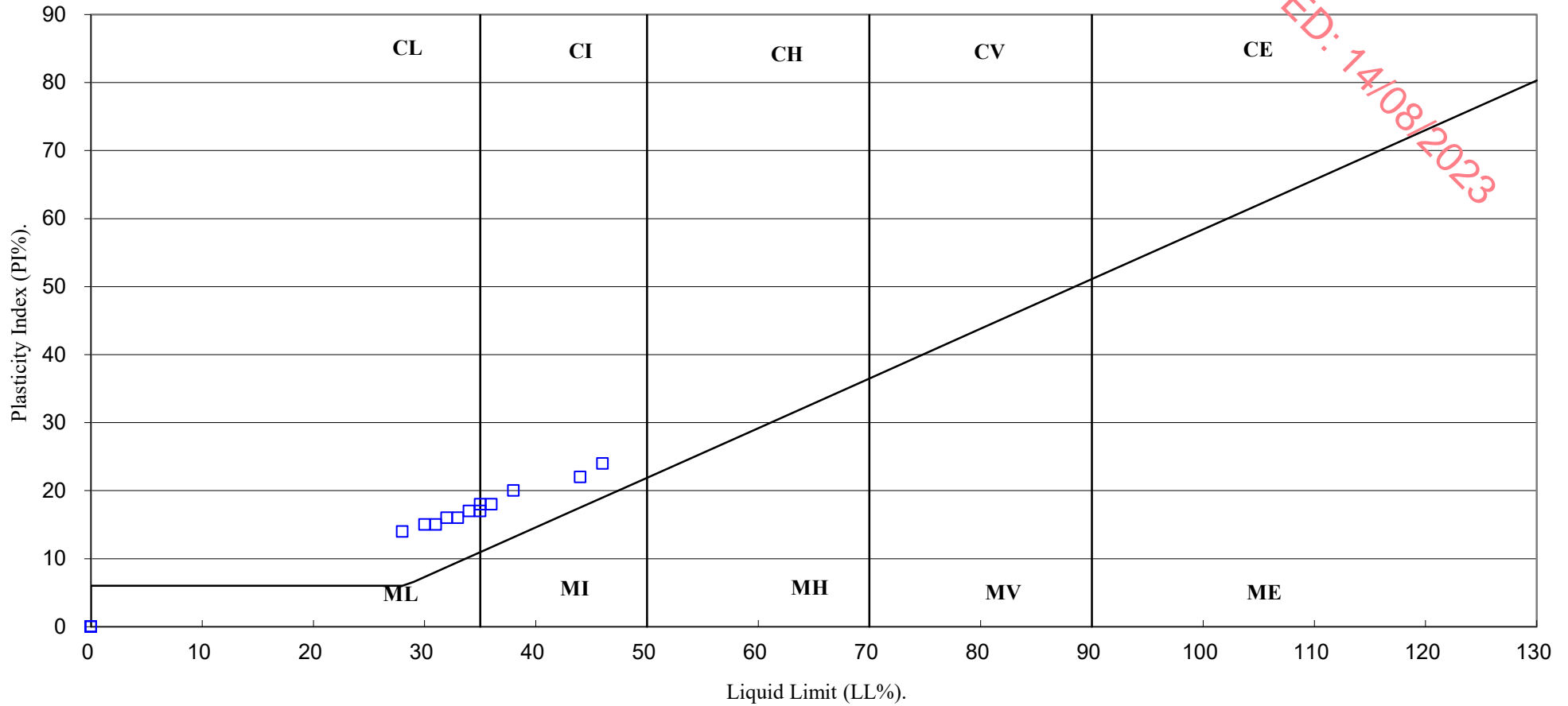
PSL22/5678

Client Ref:

11957-06-22

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.

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PSL
Professional Soils Laboratory

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Contract No:

PSL22/5678

Client Ref:

11957-06-22

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

RECEIVED: 14/05/2023

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % <small>Clause 3.2</small>	Linear Shrinkage % <small>Clause 6.5</small>	Particle Density Mg/m ³ <small>Clause 8.2</small>	Liquid Limit % <small>Clause 4.3/4</small>	Plastic Limit % <small>Clause 5.3</small>	Plasticity Index % <small>Clause 5.4</small>	Passing .425mm %	Remarks
TP24		B	1.50		18			35	18	17	80	Intermediate Plasticity CI

SYMBOLS : NP : Non Plastic

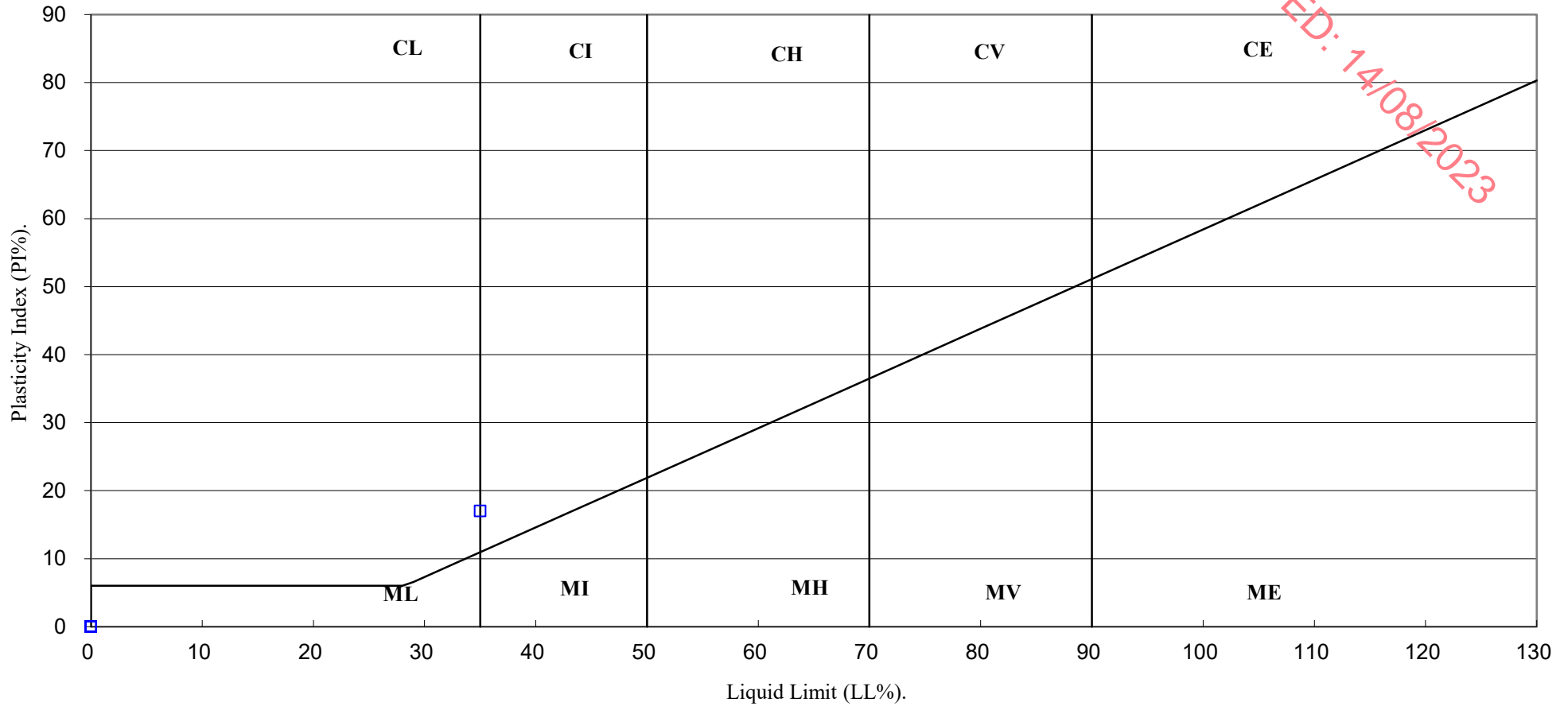
* : Liquid Limit and Plastic Limit Wet Sieved.



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Contract No:
PSL22/5678
Client Ref:
11957-06-22

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



RECEIVED: 14/08/2023



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PSL
Professional Soils Laboratory

A034 Tinakilly

Contract No:

PSL22/5678

Client Ref:

11957-06-22

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: TP01

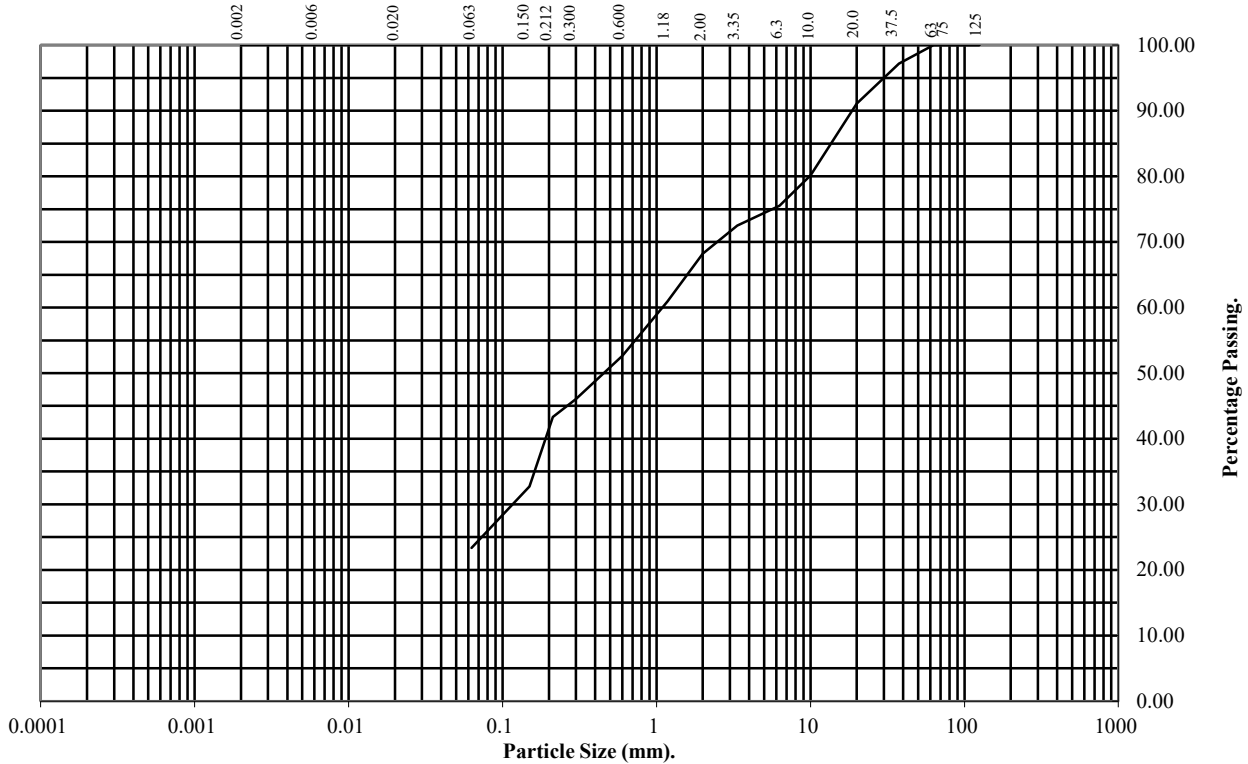
Top Depth (m): 0.50

Sample Number:

Base Depth(m):

Sample Type: B

RECEIVED: 14/08/2023



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	97
20	91
10	80
6.3	76
3.35	73
2	68
1.18	61
0.6	53
0.3	46
0.212	43
0.15	33
0.063	23

Soil Fraction	Total Percentage
Cobbles	0
Gravel	32
Sand	45
Silt/Clay	23

Remarks:
See Summary of Soil Descriptions



A034 Tinakilly

Contract No:
PSL22/5678
Client Ref:
11957-06-22

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: TP01

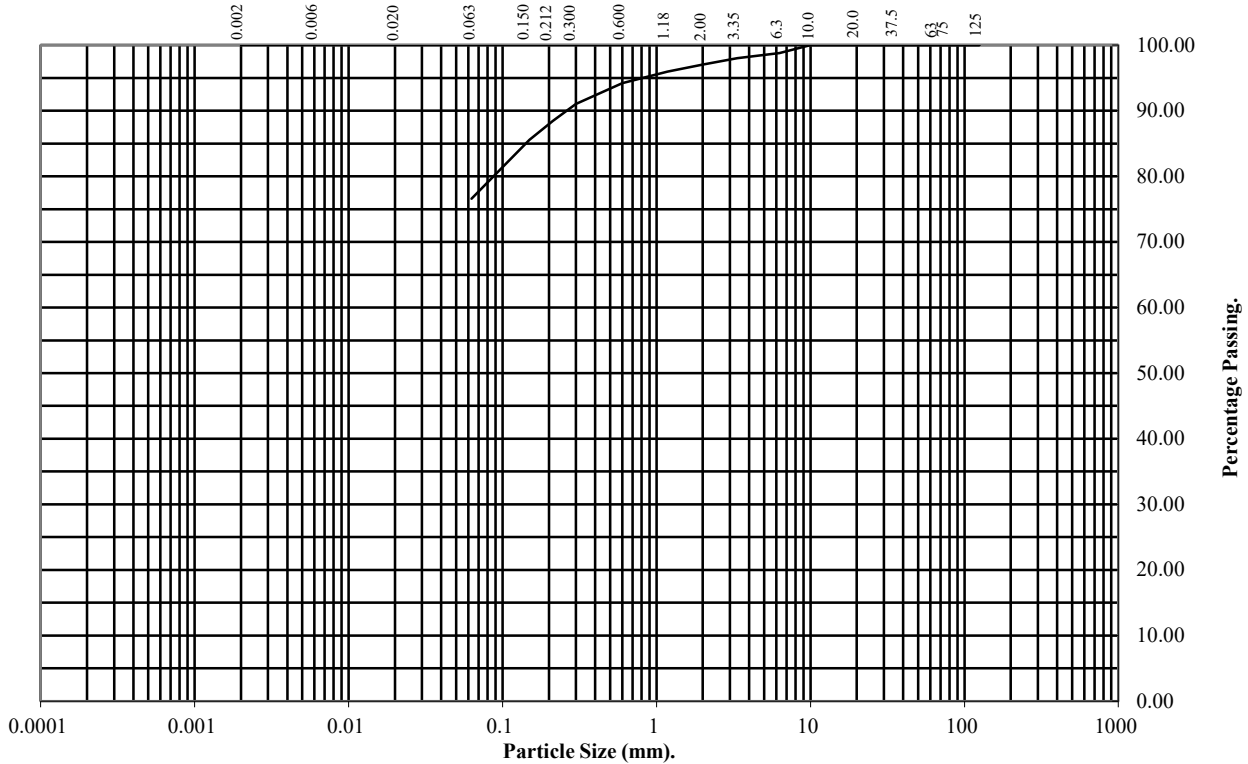
Top Depth (m): 2.00

Sample Number:

Base Depth(m):

Sample Type: B

RECEIVED: 14/08/2023



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	99
3.35	98
2	97
1.18	96
0.6	94
0.3	91
0.212	88
0.15	86
0.063	77

Soil Fraction	Total Percentage
Cobbles	0
Gravel	3
Sand	20
Silt/Clay	77

Remarks:
See Summary of Soil Descriptions



A034 Tinakilly

Contract No:
PSL22/5678
Client Ref:
11957-06-22

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: TP02

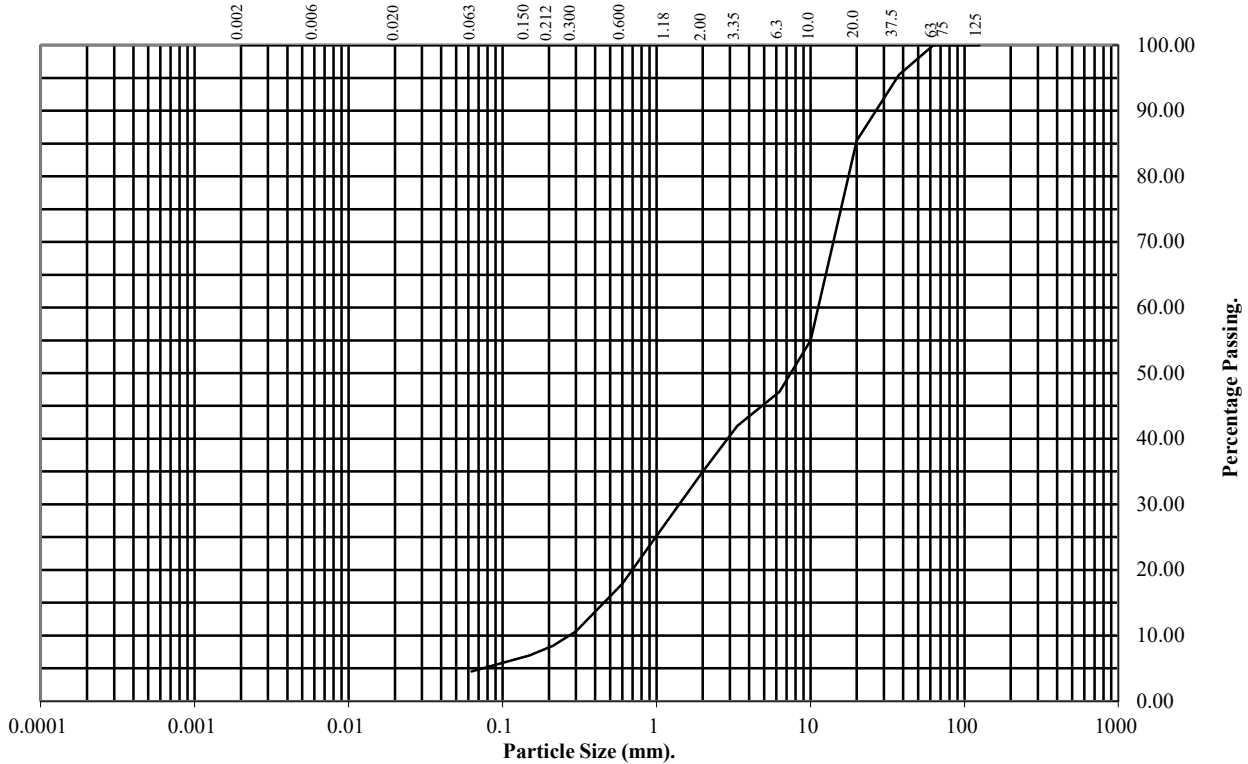
Top Depth (m): 1.50

Sample Number:

Base Depth(m):

Sample Type: B

RECEIVED: 14/08/2023



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	95
20	85
10	55
6.3	47
3.35	42
2	35
1.18	27
0.6	18
0.3	11
0.212	8
0.15	7
0.063	5

Soil Fraction	Total Percentage
Cobbles	0
Gravel	65
Sand	30
Silt/Clay	5

Remarks:
See Summary of Soil Descriptions



A034 Tinakilly

Contract No:
PSL22/5678
Client Ref:
11957-06-22

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **TP04**

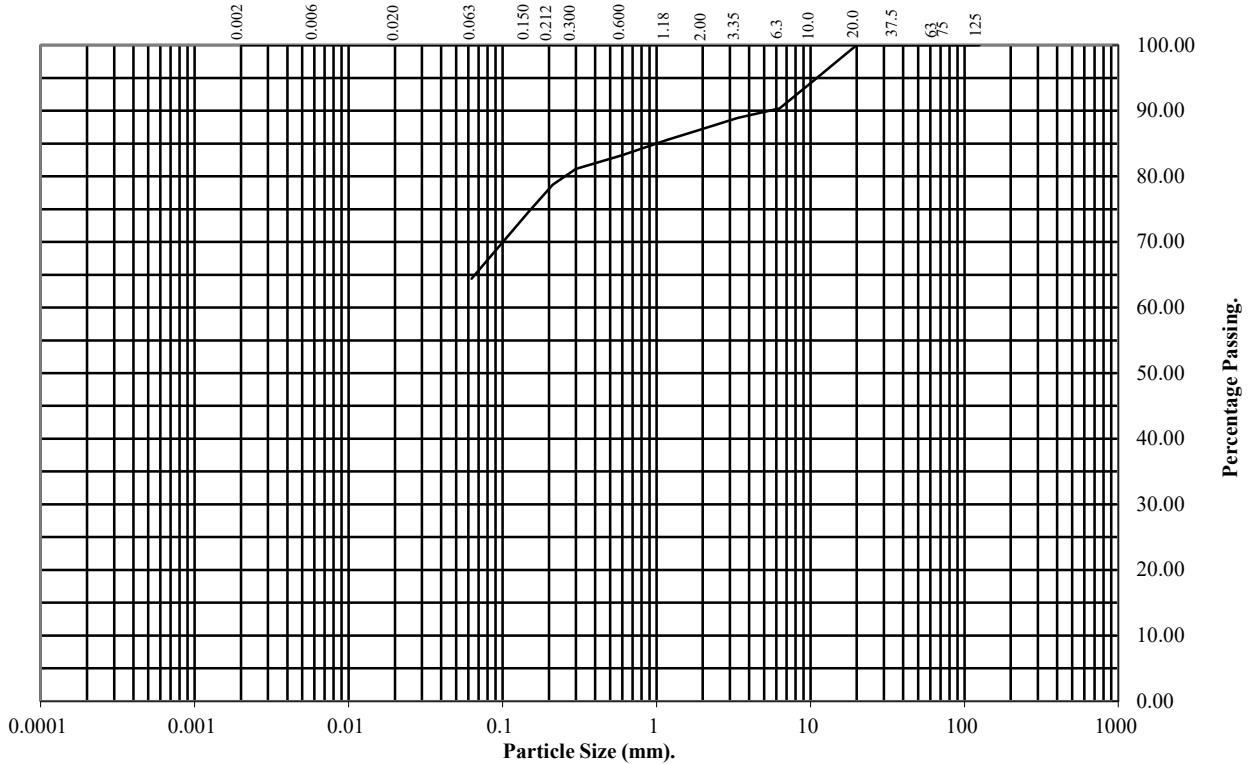
Top Depth (m): **1.50**

Sample Number:

Base Depth(m):

Sample Type: **B**

RECEIVED: 14/08/2023



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	94
6.3	90
3.35	89
2	87
1.18	86
0.6	83
0.3	81
0.212	79
0.15	75
0.063	64

Soil Fraction	Total Percentage
Cobbles	0
Gravel	13
Sand	23
Silt/Clay	64

Remarks:
See Summary of Soil Descriptions



A034 Tinakilly

Contract No:
PSL22/5678
Client Ref:
11957-06-22

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: TP05

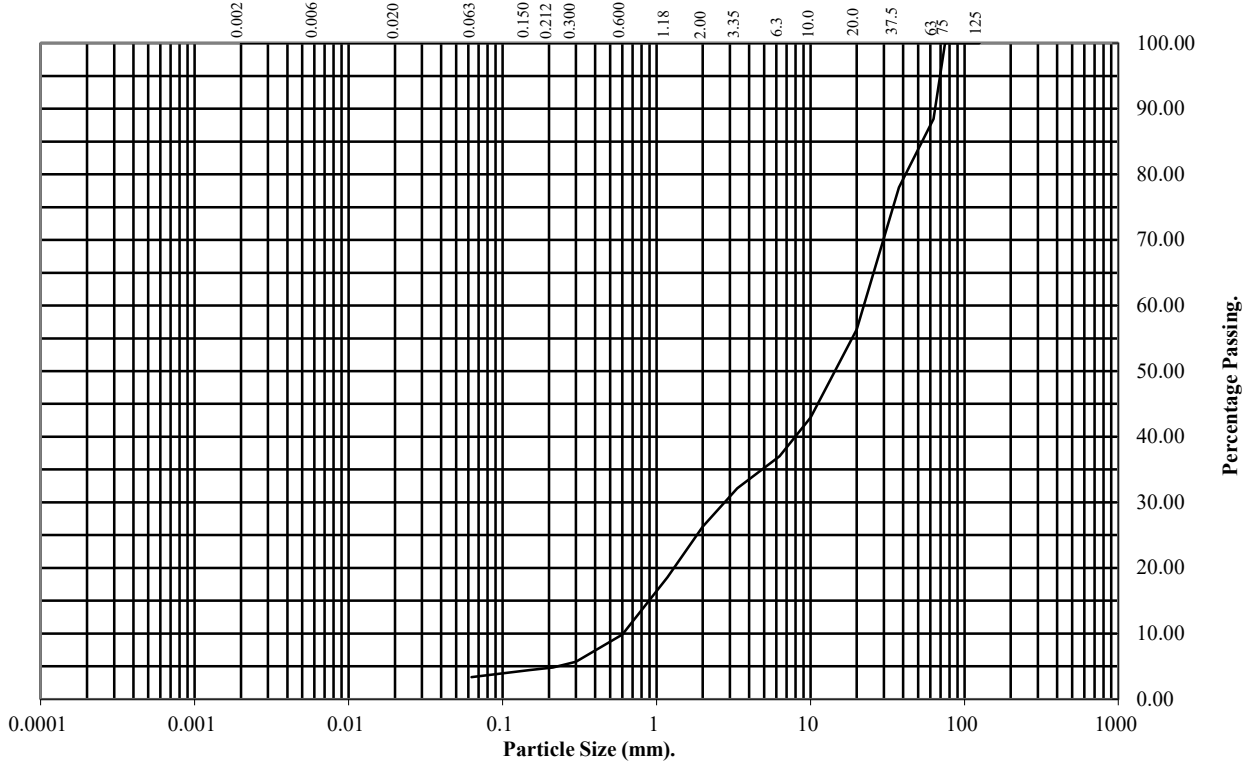
Top Depth (m): 2.00

Sample Number:

Base Depth(m):

Sample Type: B

RECEIVED: 14/08/2023



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	88
37.5	78
20	56
10	43
6.3	37
3.35	32
2	26
1.18	19
0.6	10
0.3	6
0.212	5
0.15	4
0.063	3

Soil Fraction	Total Percentage
Cobbles	12
Gravel	62
Sand	23
Silt/Clay	3

Remarks:
See Summary of Soil Descriptions



A034 Tinakilly

Contract No:
PSL22/5678
Client Ref:
11957-06-22

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: TP07

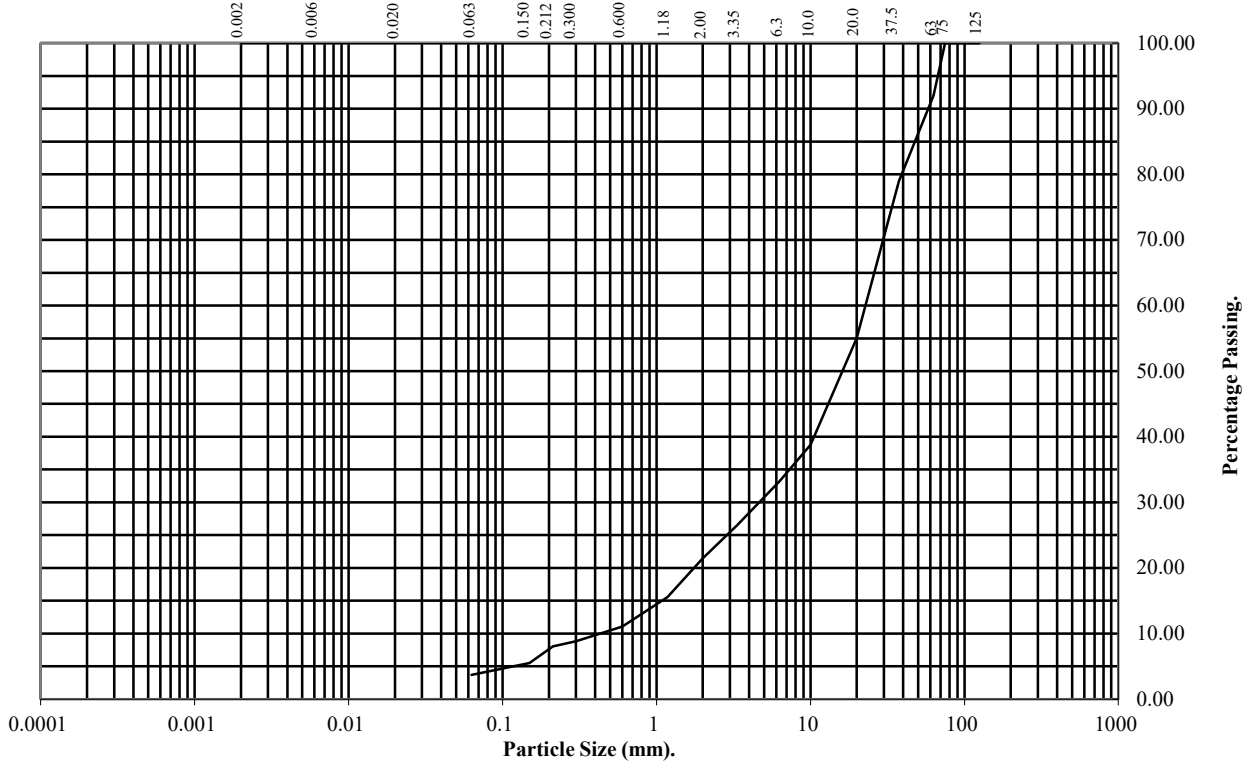
Top Depth (m): 2.50

Sample Number:

Base Depth(m):

Sample Type: B

RECEIVED: 14/08/2023



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	92
37.5	79
20	55
10	39
6.3	33
3.35	27
2	21
1.18	16
0.6	11
0.3	9
0.212	8
0.15	6
0.063	4

Soil Fraction	Total Percentage
Cobbles	8
Gravel	71
Sand	17
Silt/Clay	4

Remarks:
See Summary of Soil Descriptions



A034 Tinakilly

Contract No:
PSL22/5678
Client Ref:
11957-06-22

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **TP08**

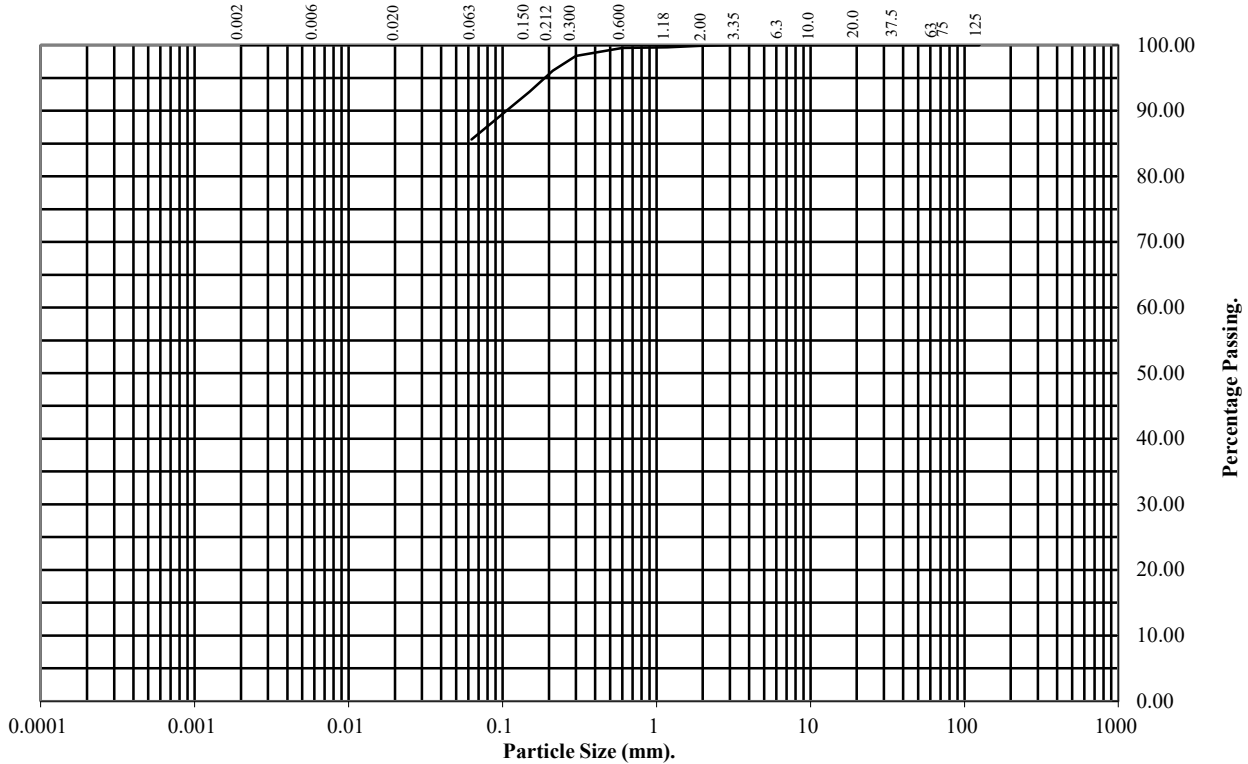
Top Depth (m): **2.00**

Sample Number:

Base Depth(m):

Sample Type: **B**

RECEIVED: 14/08/2023



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	100
2	100
1.18	100
0.6	100
0.3	98
0.212	96
0.15	93
0.063	86

Soil Fraction	Total Percentage
Cobbles	0
Gravel	0
Sand	14
Silt/Clay	86

Remarks:
See Summary of Soil Descriptions



A034 Tinakilly

Contract No:
PSL22/5678
Client Ref:
11957-06-22

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: TP10

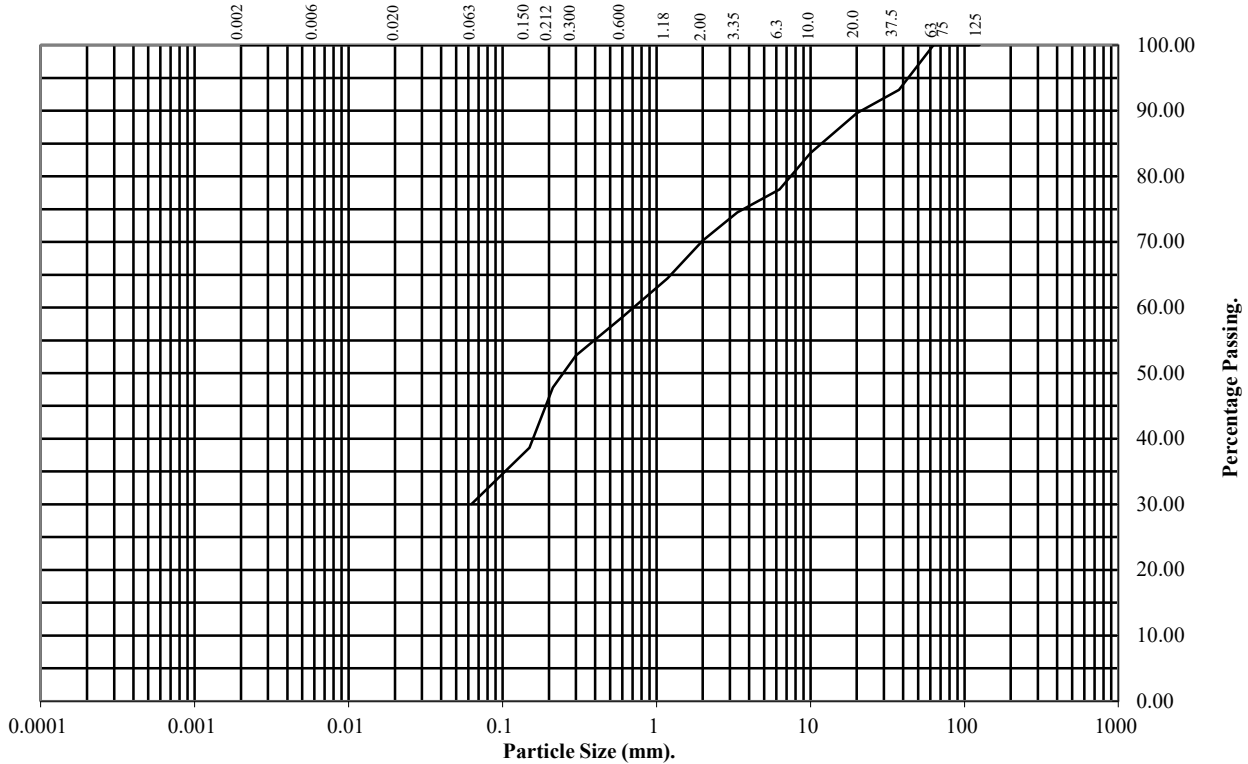
Top Depth (m): 0.50

Sample Number:

Base Depth(m):

Sample Type: B

RECEIVED: 14/08/2023



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	93
20	90
10	84
6.3	78
3.35	74
2	70
1.18	64
0.6	59
0.3	53
0.212	48
0.15	39
0.063	30

Soil Fraction	Total Percentage
Cobbles	0
Gravel	30
Sand	40
Silt/Clay	30

Remarks:
See Summary of Soil Descriptions



A034 Tinakilly

Contract No:
PSL22/5678
Client Ref:
11957-06-22

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **TP12**

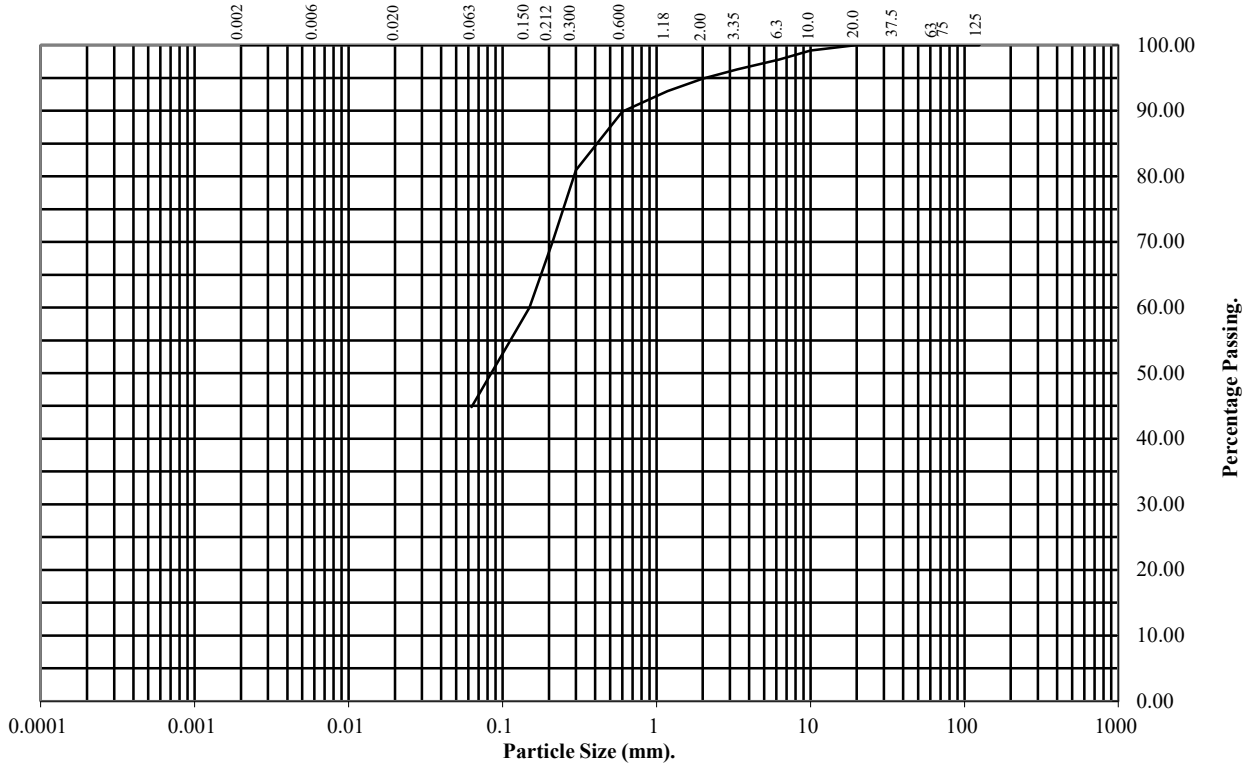
Top Depth (m): **1.00**

Sample Number:

Base Depth(m):

Sample Type: **B**

RECEIVED: 14/08/2023



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	99
6.3	98
3.35	96
2	95
1.18	93
0.6	90
0.3	81
0.212	70
0.15	60
0.063	45

Soil Fraction	Total Percentage
Cobbles	0
Gravel	5
Sand	50
Silt/Clay	45

Remarks:
See Summary of Soil Descriptions



A034 Tinakilly

Contract No:
PSL22/5678
Client Ref:
11957-06-22

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: TP13

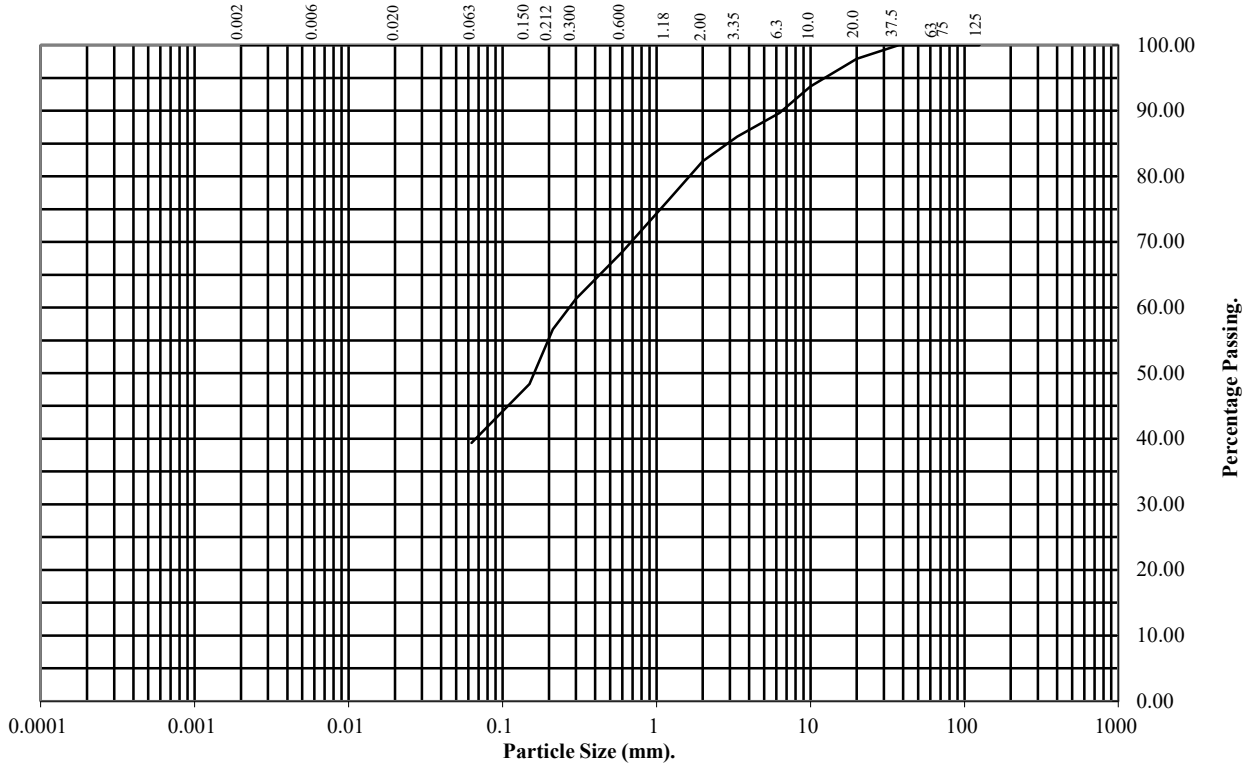
Top Depth (m): 1.00

Sample Number:

Base Depth(m):

Sample Type: B

RECEIVED: 14/08/2023



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	98
10	94
6.3	90
3.35	86
2	82
1.18	76
0.6	69
0.3	61
0.212	57
0.15	48
0.063	39

Soil Fraction	Total Percentage
Cobbles	0
Gravel	18
Sand	43
Silt/Clay	39

Remarks:
See Summary of Soil Descriptions



A034 Tinakilly

Contract No:
PSL22/5678
Client Ref:
11957-06-22

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: TP14

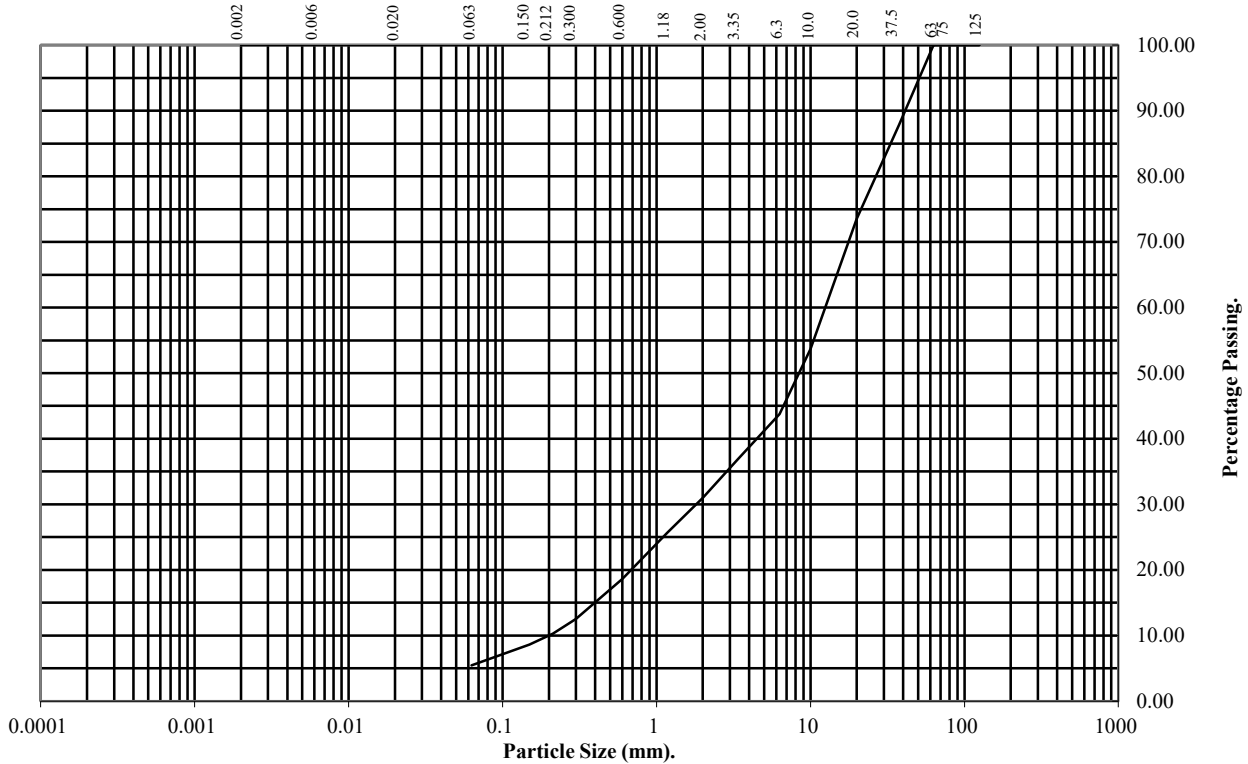
Top Depth (m): 2.00

Sample Number:

Base Depth(m):

Sample Type: B

RECEIVED: 14/08/2023



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	88
20	74
10	54
6.3	44
3.35	37
2	31
1.18	26
0.6	19
0.3	13
0.212	10
0.15	9
0.063	5

Soil Fraction	Total Percentage
Cobbles	0
Gravel	69
Sand	26
Silt/Clay	5

Remarks:
See Summary of Soil Descriptions



A034 Tinakilly

Contract No:
PSL22/5678
Client Ref:
11957-06-22

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: TP15

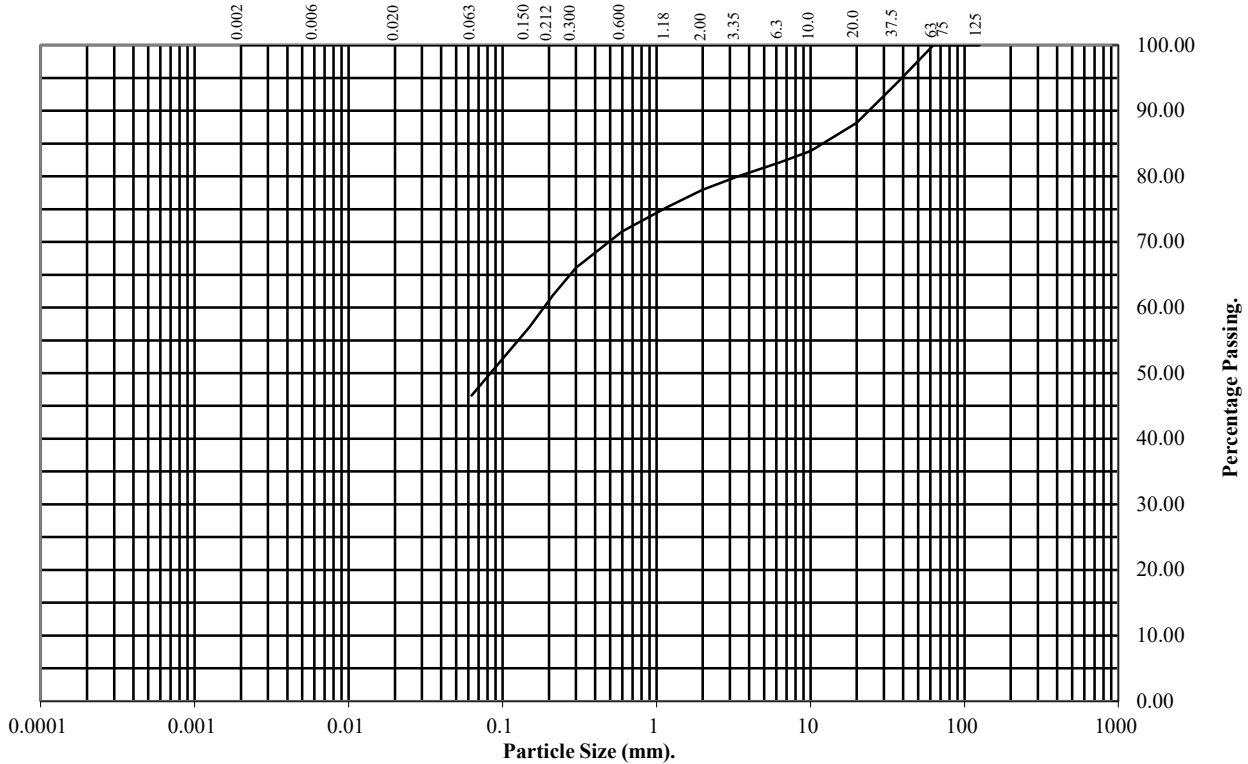
Top Depth (m): 1.50

Sample Number:

Base Depth(m):

Sample Type: B

RECEIVED: 14/08/2023



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	95
20	88
10	84
6.3	82
3.35	80
2	78
1.18	75
0.6	72
0.3	66
0.212	62
0.15	57
0.063	47

Soil Fraction	Total Percentage
Cobbles	0
Gravel	22
Sand	31
Silt/Clay	47

Remarks:
See Summary of Soil Descriptions



A034 Tinakilly

Contract No:
PSL22/5678
Client Ref:
11957-06-22

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: TP16

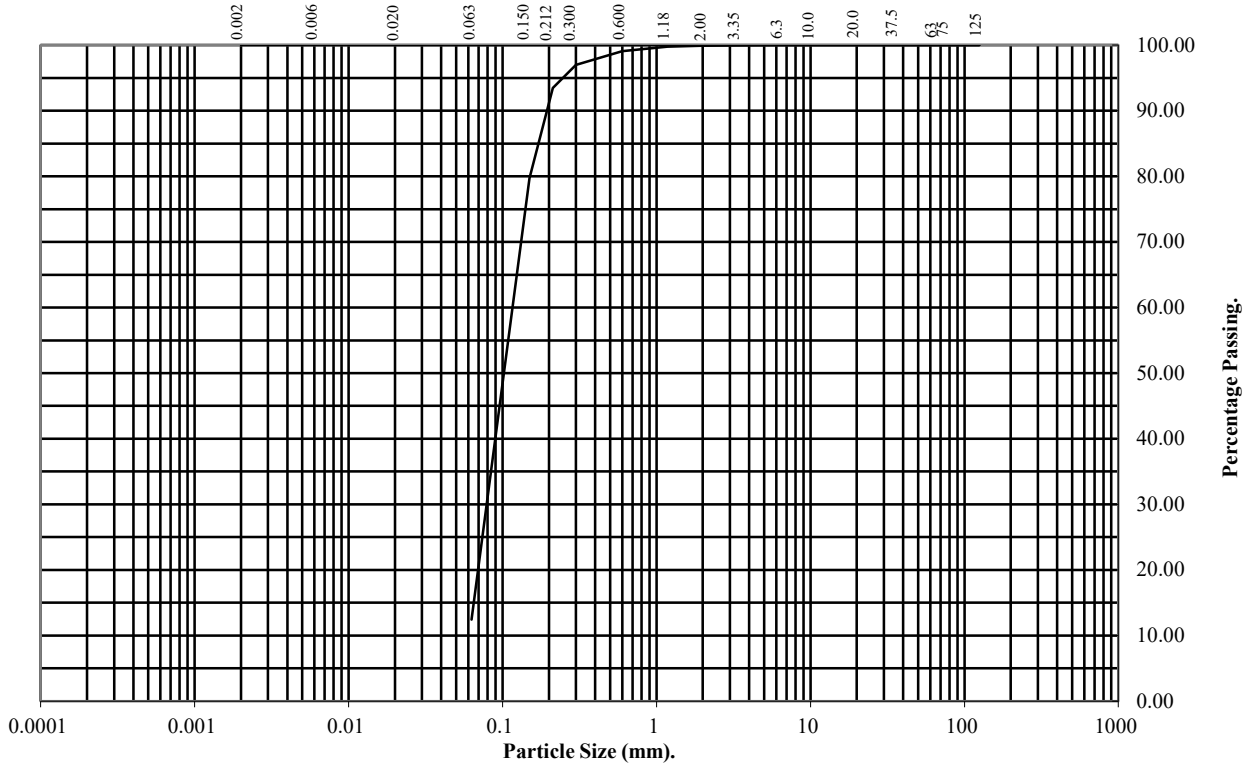
Top Depth (m): 1.00

Sample Number:

Base Depth(m):

Sample Type: B

RECEIVED: 14/08/2023



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	100
2	100
1.18	100
0.6	99
0.3	97
0.212	93
0.15	80
0.063	12

Soil Fraction	Total Percentage
Cobbles	0
Gravel	0
Sand	88
Silt/Clay	12

Remarks:
See Summary of Soil Descriptions



A034 Tinakilly

Contract No:
PSL22/5678
Client Ref:
11957-06-22

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: TP17

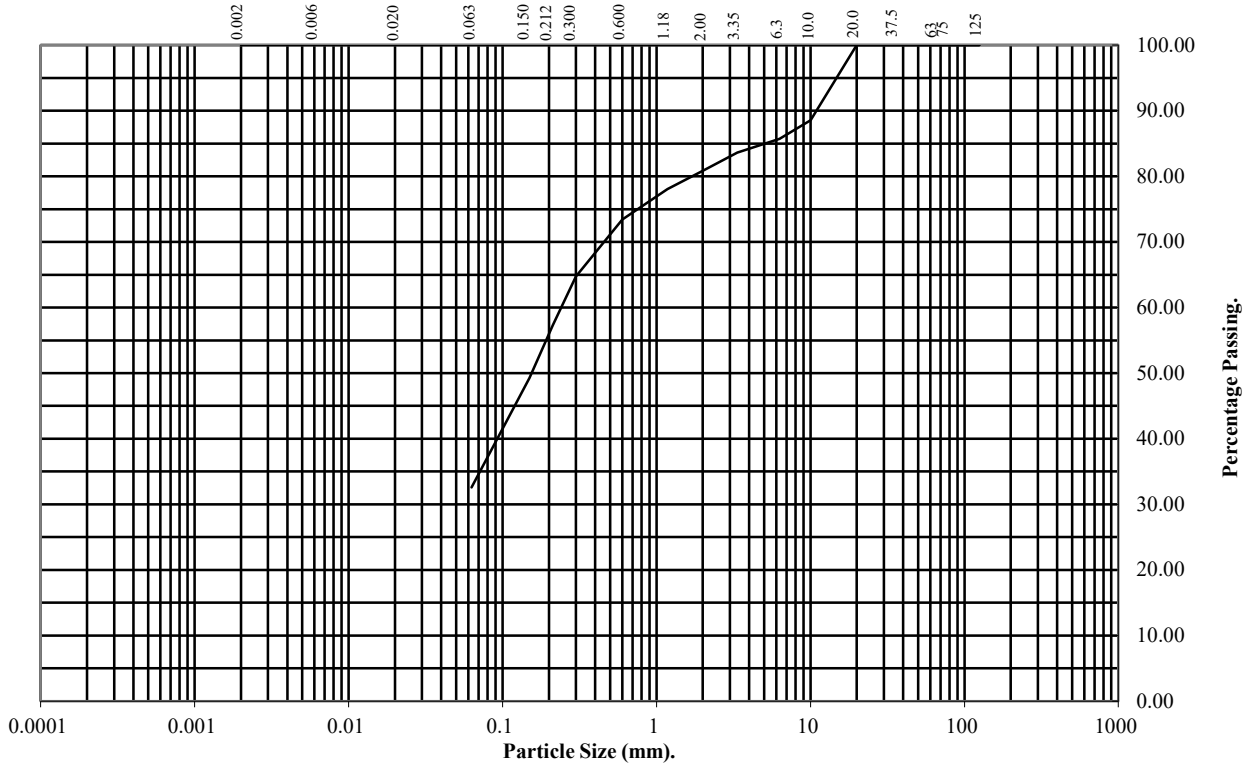
Top Depth (m): 0.50

Sample Number:

Base Depth(m):

Sample Type: B

RECEIVED: 14/08/2023



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	89
6.3	86
3.35	84
2	81
1.18	78
0.6	73
0.3	65
0.212	57
0.15	49
0.063	33

Soil Fraction	Total Percentage
Cobbles	0
Gravel	19
Sand	48
Silt/Clay	33

Remarks:
See Summary of Soil Descriptions



A034 Tinakilly

Contract No:
PSL22/5678
Client Ref:
11957-06-22

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: TP17

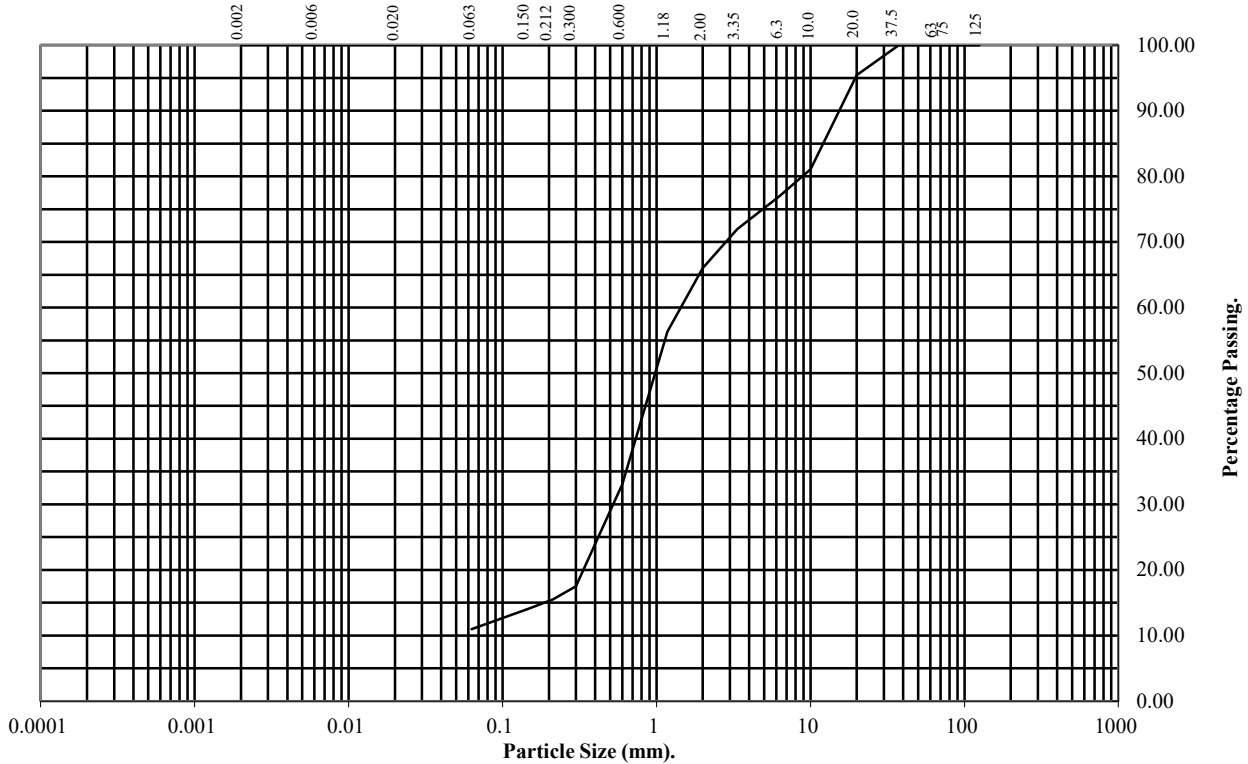
Top Depth (m): 2.00

Sample Number:

Base Depth(m):

Sample Type: B

RECEIVED: 14/08/2023



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	95
10	81
6.3	77
3.35	72
2	66
1.18	56
0.6	33
0.3	17
0.212	15
0.15	14
0.063	11

Soil Fraction	Total Percentage
Cobbles	0
Gravel	34
Sand	55
Silt/Clay	11

Remarks:
See Summary of Soil Descriptions



A034 Tinakilly

Contract No:
PSL22/5678
Client Ref:
11957-06-22

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: TP18

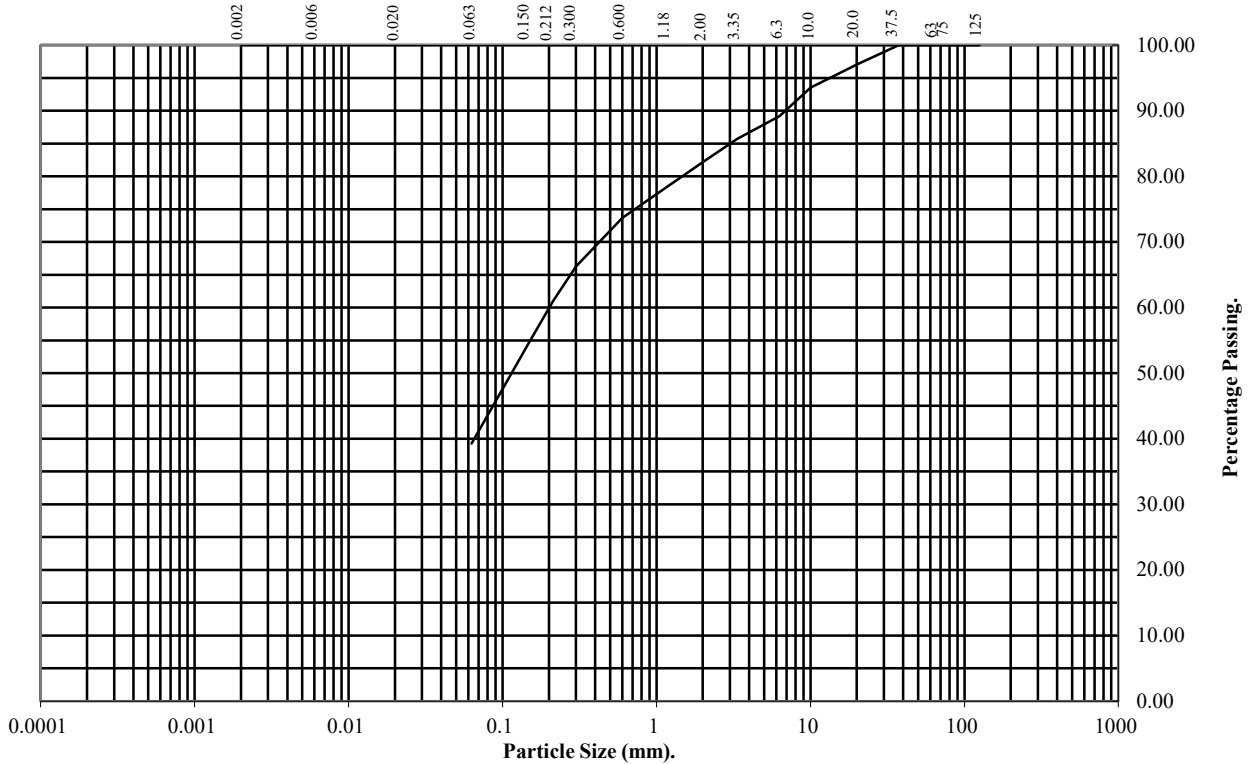
Top Depth (m): 3.00

Sample Number:

Base Depth(m):

Sample Type: B

RECEIVED: 14/08/2023



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	97
10	94
6.3	89
3.35	86
2	82
1.18	78
0.6	74
0.3	66
0.212	61
0.15	55
0.063	39

Soil Fraction	Total Percentage
Cobbles	0
Gravel	18
Sand	43
Silt/Clay	39

Remarks:
See Summary of Soil Descriptions



A034 Tinakilly

Contract No:
PSL22/5678
Client Ref:
11957-06-22

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: TP20

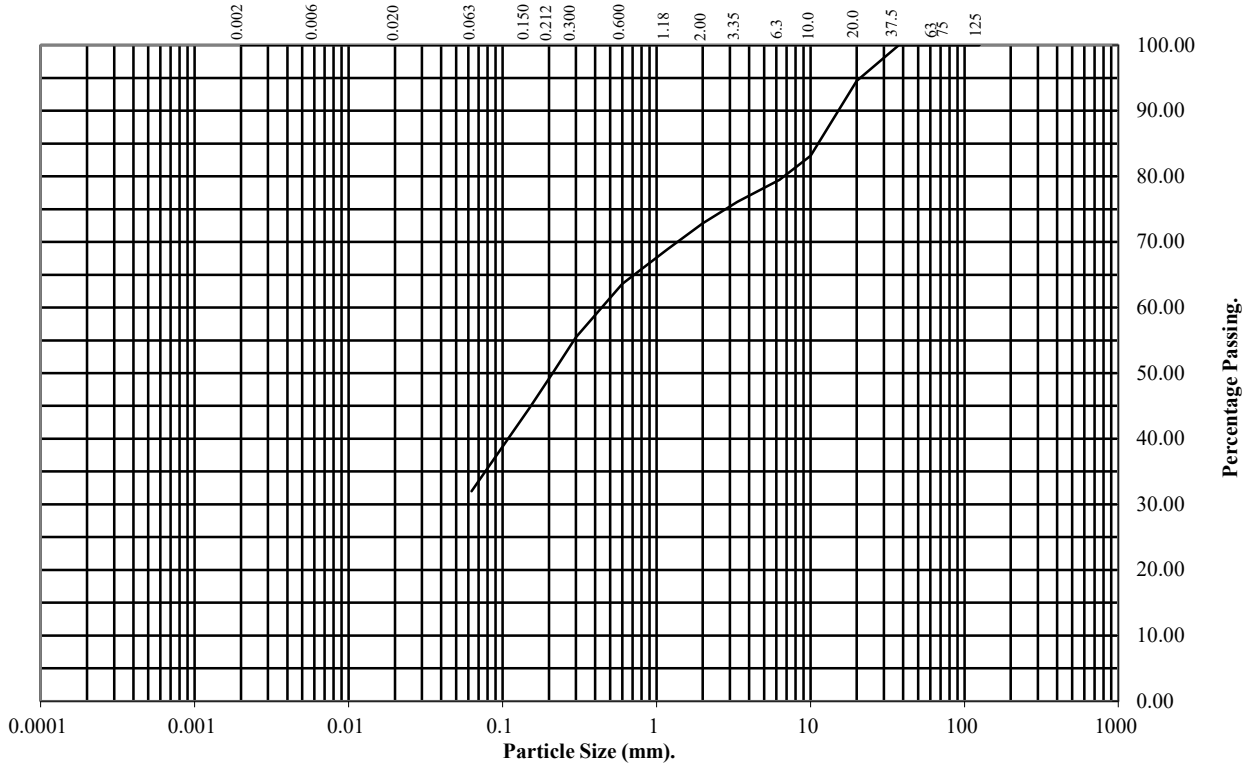
Top Depth (m): 1.50

Sample Number:

Base Depth(m):

Sample Type: B

RECEIVED: 14/08/2023



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	95
10	83
6.3	79
3.35	76
2	73
1.18	69
0.6	64
0.3	55
0.212	50
0.15	45
0.063	32

Soil Fraction	Total Percentage
Cobbles	0
Gravel	27
Sand	41
Silt/Clay	32

Remarks:
See Summary of Soil Descriptions



A034 Tinakilly

Contract No:
PSL22/5678
Client Ref:
11957-06-22

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: TP22

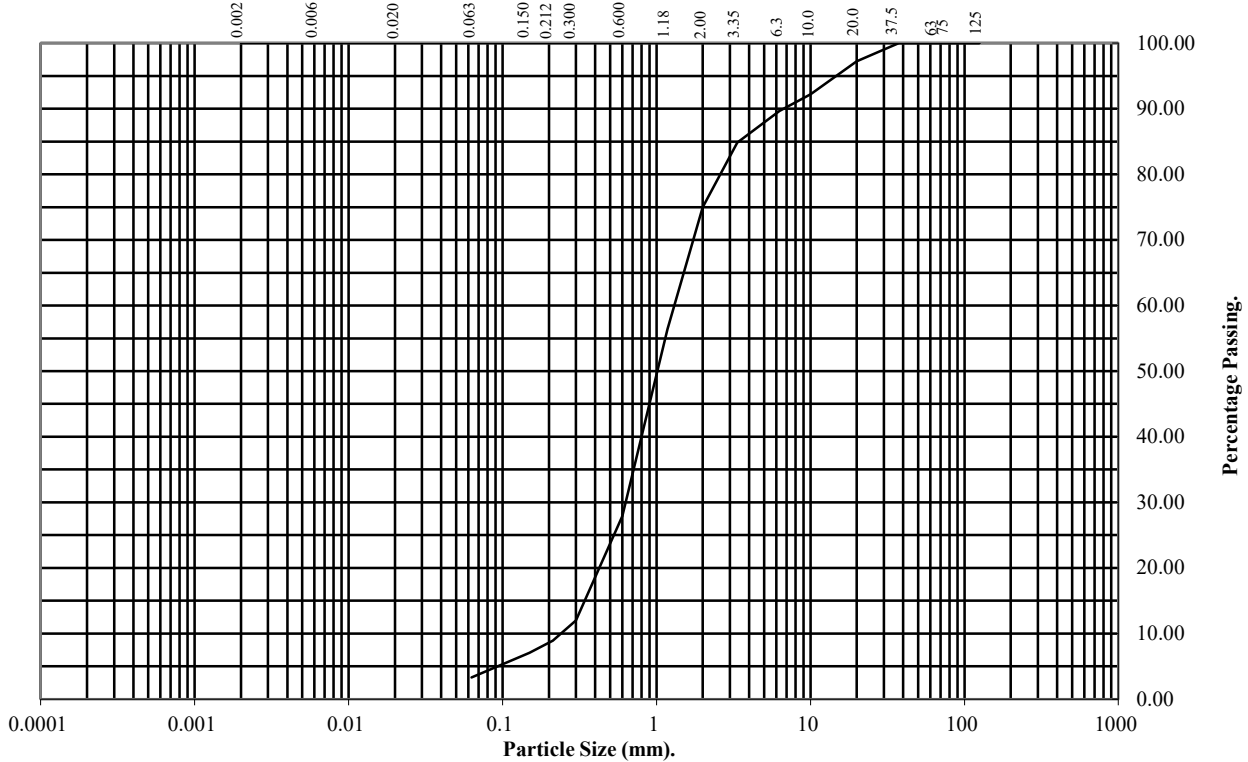
Top Depth (m): 2.00

Sample Number:

Base Depth(m):

Sample Type: B

RECEIVED: 14/08/2023



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	97
10	92
6.3	90
3.35	85
2	75
1.18	56
0.6	28
0.3	12
0.212	9
0.15	7
0.063	3

Soil Fraction	Total Percentage
Cobbles	0
Gravel	25
Sand	72
Silt/Clay	3

Remarks:
See Summary of Soil Descriptions



A034 Tinakilly

Contract No:
PSL22/5678
Client Ref:
11957-06-22

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **TP23**

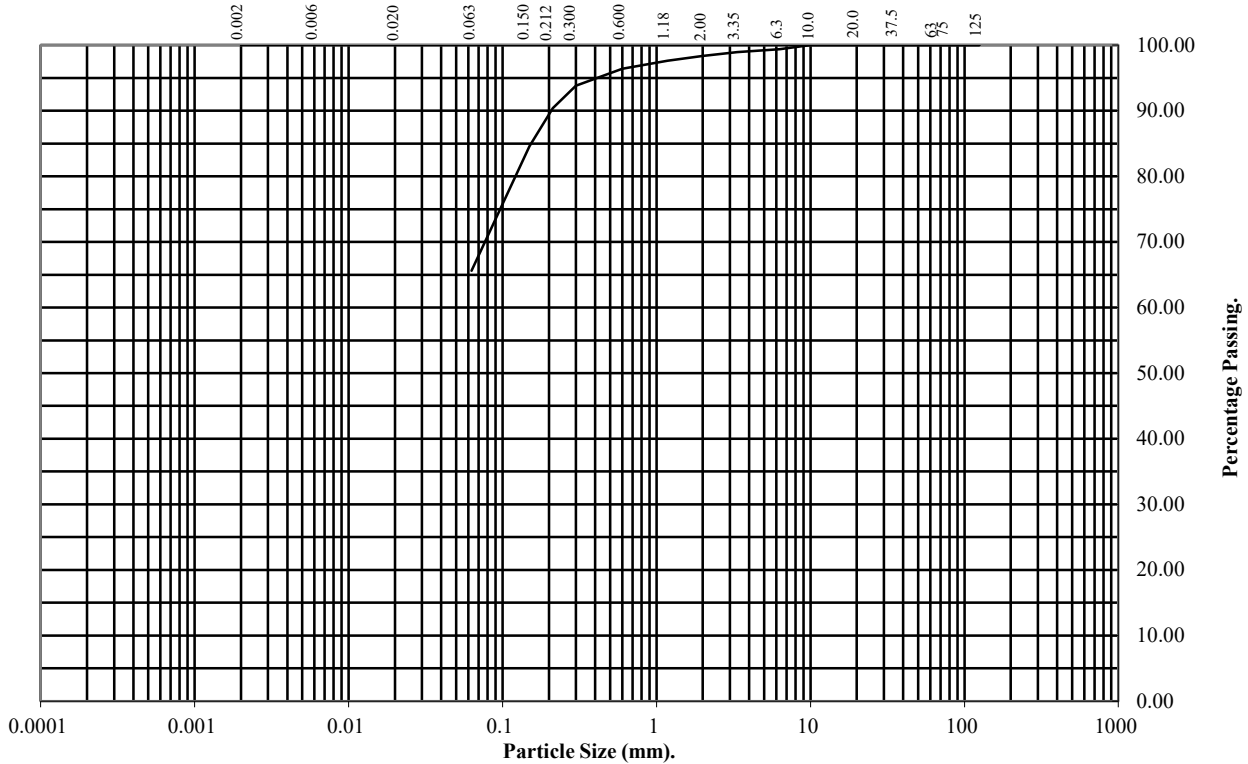
Top Depth (m): **1.50**

Sample Number:

Base Depth(m):

Sample Type: **B**

RECEIVED: 14/08/2023



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	99
3.35	99
2	98
1.18	98
0.6	96
0.3	94
0.212	90
0.15	85
0.063	66

Soil Fraction	Total Percentage
Cobbles	0
Gravel	2
Sand	32
Silt/Clay	66

Remarks:
See Summary of Soil Descriptions



A034 Tinakilly

Contract No:
PSL22/5678
Client Ref:
11957-06-22

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **TP24**

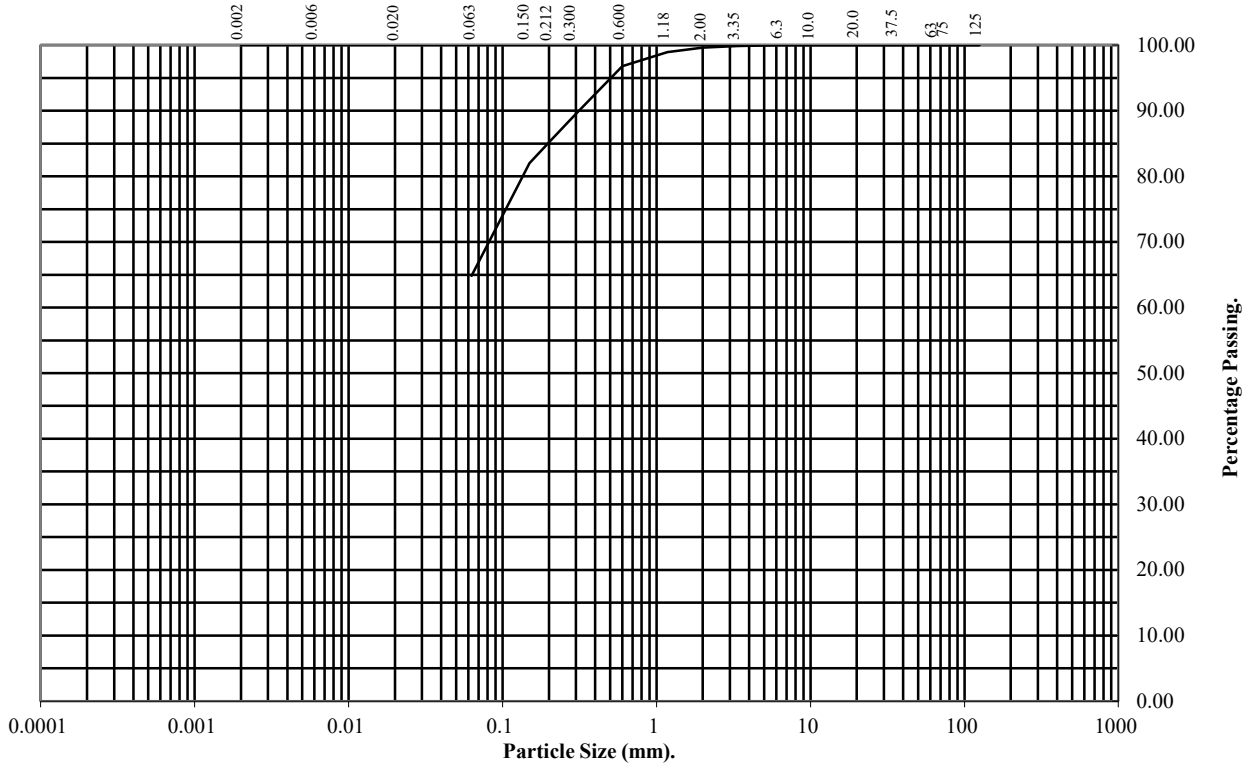
Top Depth (m): **1.50**

Sample Number:

Base Depth(m):

Sample Type: **B**

RECEIVED: 14/08/2023



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	100
2	100
1.18	99
0.6	97
0.3	90
0.212	86
0.15	82
0.063	65

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

Remarks:
See Summary of Soil Descriptions



A034 Tinakilly

Contract No:
PSL22/5678
Client Ref:
11957-06-22

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.4 : 1990

Hole Number: TP01

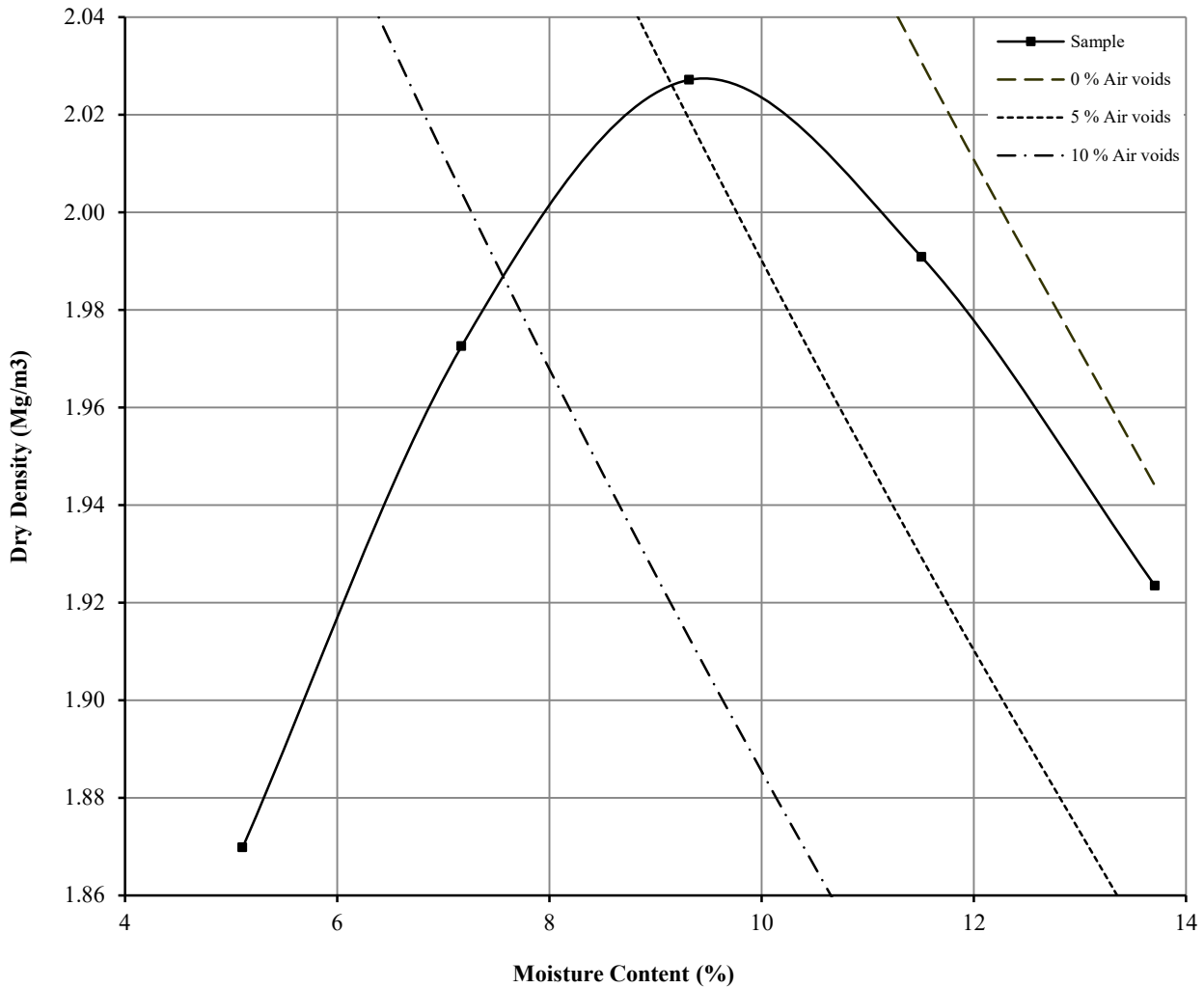
Top Depth (m) : 0.50

Sample Number:

Base Depth (m) :

Sample Type: B

RECEIVED: 14/08/2023



Initial Moisture Content:	7.2	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m ³):	2.65	Assumed	Material Retained on 37.5 mm Test Sieve (%):	3
Maximum Dry Density (Mg/m ³):	2.03		Material Retained on 20.0 mm Test Sieve (%):	6
Optimum Moisture Content (%):	9			
Remarks See summary of soil descriptions				



A034 Tinakilly

Contract
PSL22/5678
Client Ref
11957-06-22

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.4 : 1990

Hole Number: TP04

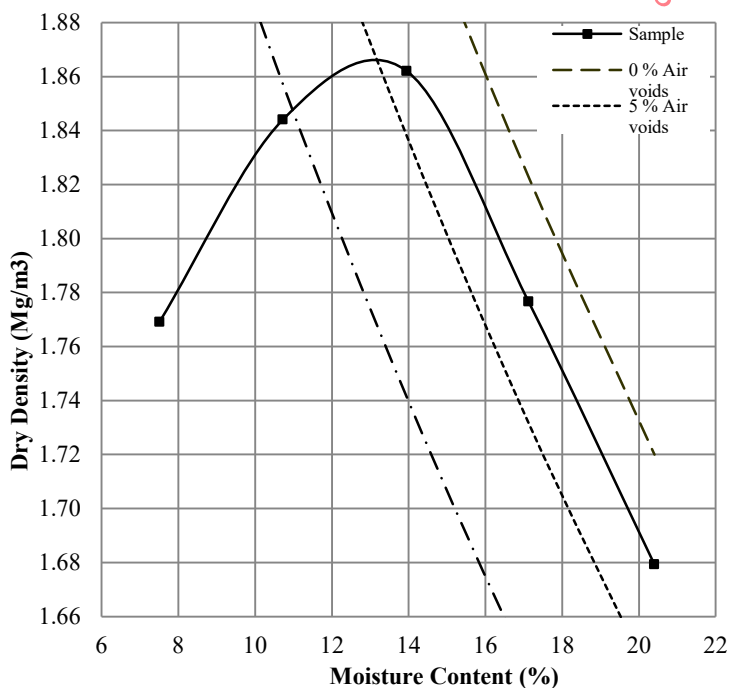
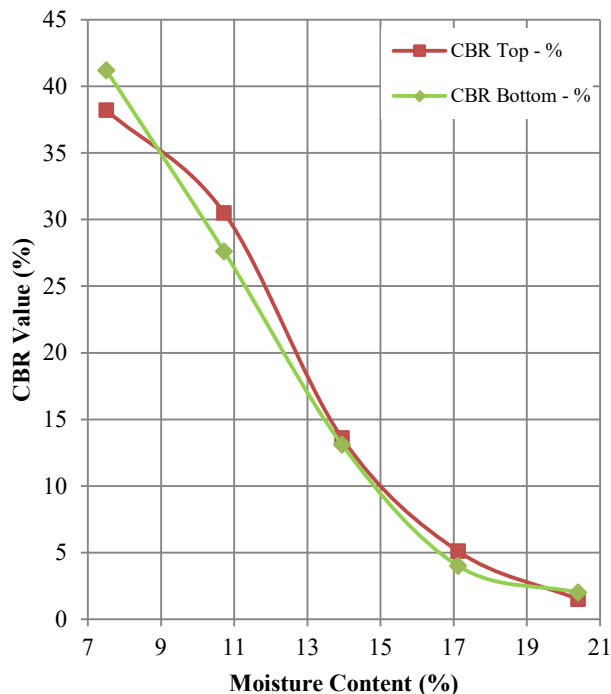
Top Depth (m) : 1.50

Sample Number:

Base Depth (m) :

Sample Type: B

RECEIVED: 14/08/2023



Initial Moisture Content:	17	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m ³):	2.65	Assumed	Material Retained on 37.5 mm Test Sieve (%):	0
Maximum Dry Density (Mg/m ³):	1.86	Material Retained on 20.0 mm Test Sieve (%):	0	
Optimum Moisture Content (%):	14			
Remarks See summary of soil descriptions				

CALIFORNIA BEARING RATIO TEST AT EACH COMPACTION POINT

BS 1377 : Part 4 : Clause 7 : 1990

Moisture Content (%)	Dry Density (Mg/m ³)	CBR Value %		Surcharge (kg)	Soaking Time (hr)	Swelling (mm)
		Sample Top	Sample Bottom			
7.5	1.77	38.2	41.2	4	n/a	0.00
11	1.84	30.5	27.6	4	n/a	0.00
14	1.86	13.6	13.1	4	n/a	0.00
17	1.78	5.1	4.0	4	n/a	0.00
20	1.68	1.5	2	4	n/a	0.00



A034 Tinakilly

Contract
PSL22/5678
Client Ref
11957-06-22

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

Non compliance with BS 1377 : Part 4 : Clause 3.4 : 1990

Hole Number: TP05

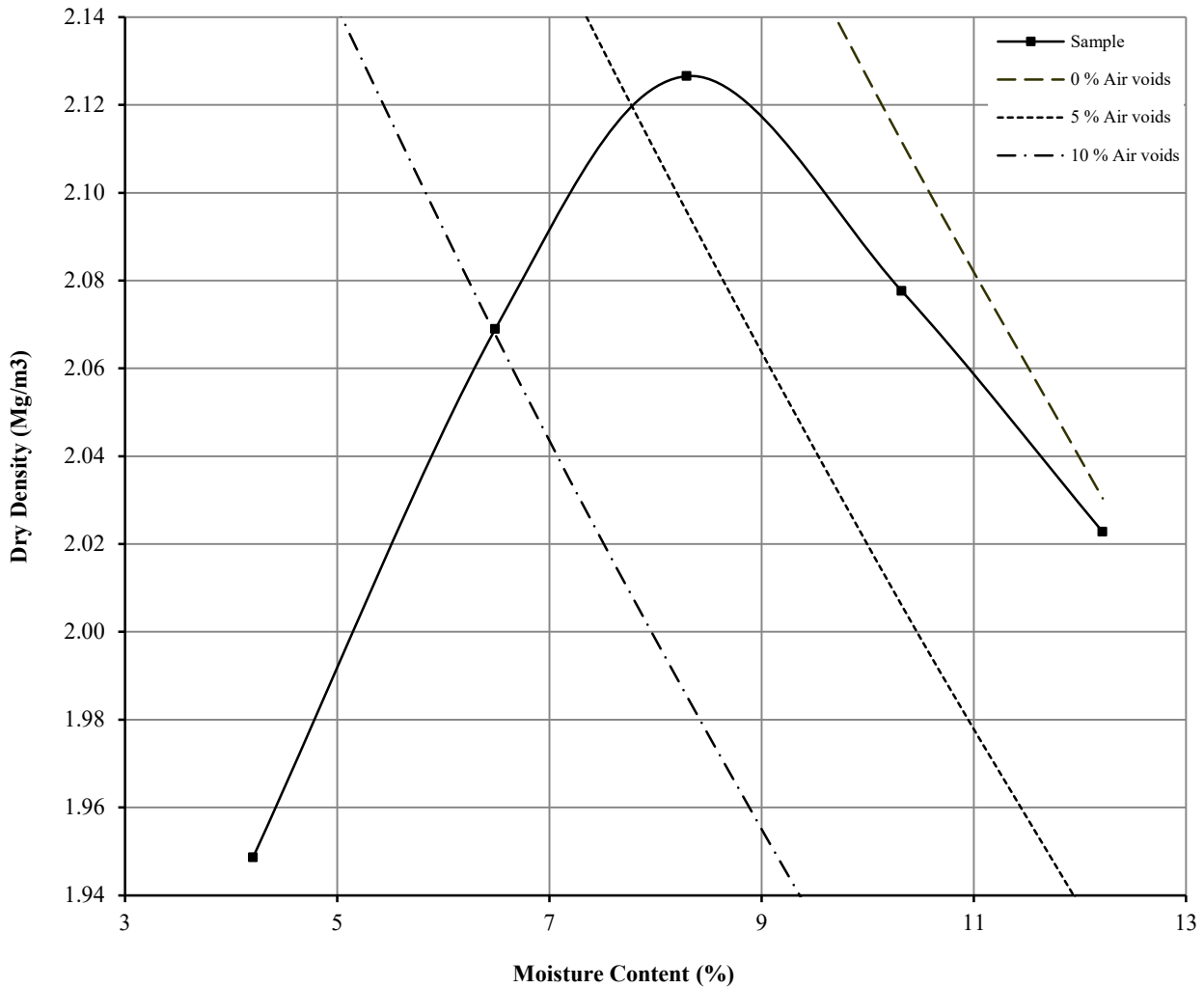
Top Depth (m) : 2.00

Sample Number:

Base Depth (m) :

Sample Type: B

RECEIVED: 14/08/2023



Initial Moisture Content:	6.5	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m ³):	2.7	Assumed	Material Retained on 37.5 mm Test Sieve (%):	22
Maximum Dry Density (Mg/m ³):	2.13		Material Retained on 20.0 mm Test Sieve (%):	22
Optimum Moisture Content (%):	8			
Remarks See summary of soil descriptions				



A034 Tinakilly

Contract
PSL22/5678
Client Ref
11957-06-22

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.4 : 1990

Hole Number: TP08

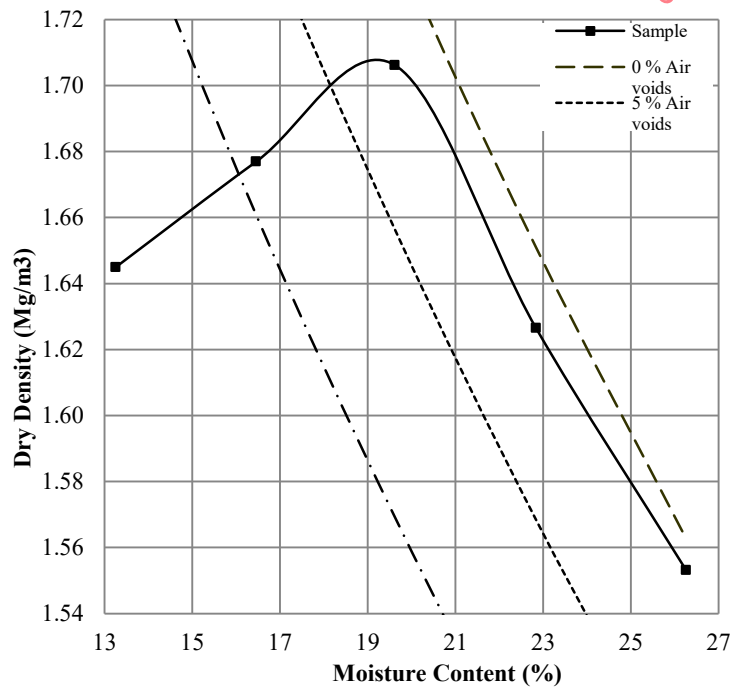
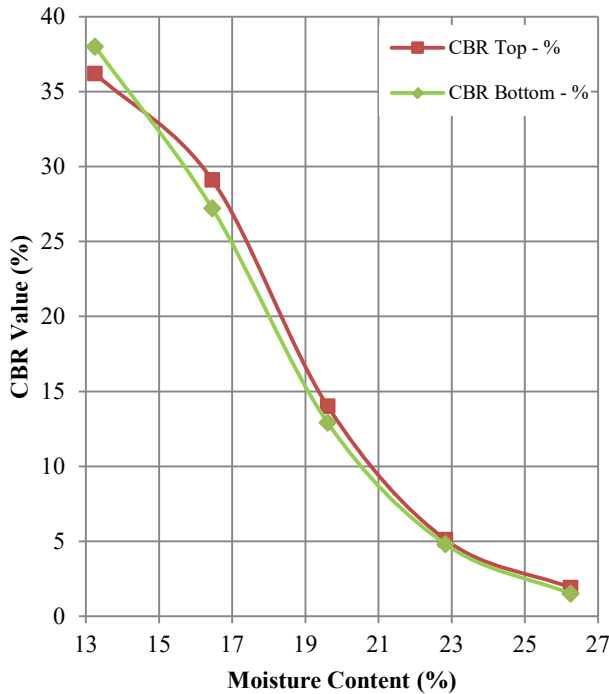
Top Depth (m) : 2.00

Sample Number:

Base Depth (m) :

Sample Type: B

RECEIVED: 14/08/2023



Initial Moisture Content:	23	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m3):	2.65	Assumed	Material Retained on 37.5 mm Test Sieve (%):	0
Maximum Dry Density (Mg/m3):	1.71	Material Retained on 20.0 mm Test Sieve (%):	0	
Optimum Moisture Content (%):	20			
Remarks See summary of soil descriptions				

CALIFORNIA BEARING RATIO TEST AT EACH COMPACTION POINT

BS 1377 : Part 4 : Clause 7 : 1990

Moisture Content (%)	Dry Density (Mg/m3)	CBR Value %		Surcharge (kg)	Soaking Time (hr)	Swelling (mm)
		Sample Top	Sample Bottom			
13	1.64	36.2	38	4	n/a	0.00
16	1.68	29.1	27.2	4	n/a	0.00
20	1.71	14	12.9	4	n/a	0.00
23	1.63	5.1	4.8	4	n/a	0.00
26	1.55	1.9	1.5	4	n/a	0.00



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DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.3 : 1990

Hole Number: TP12

Top Depth (m) :

1.00

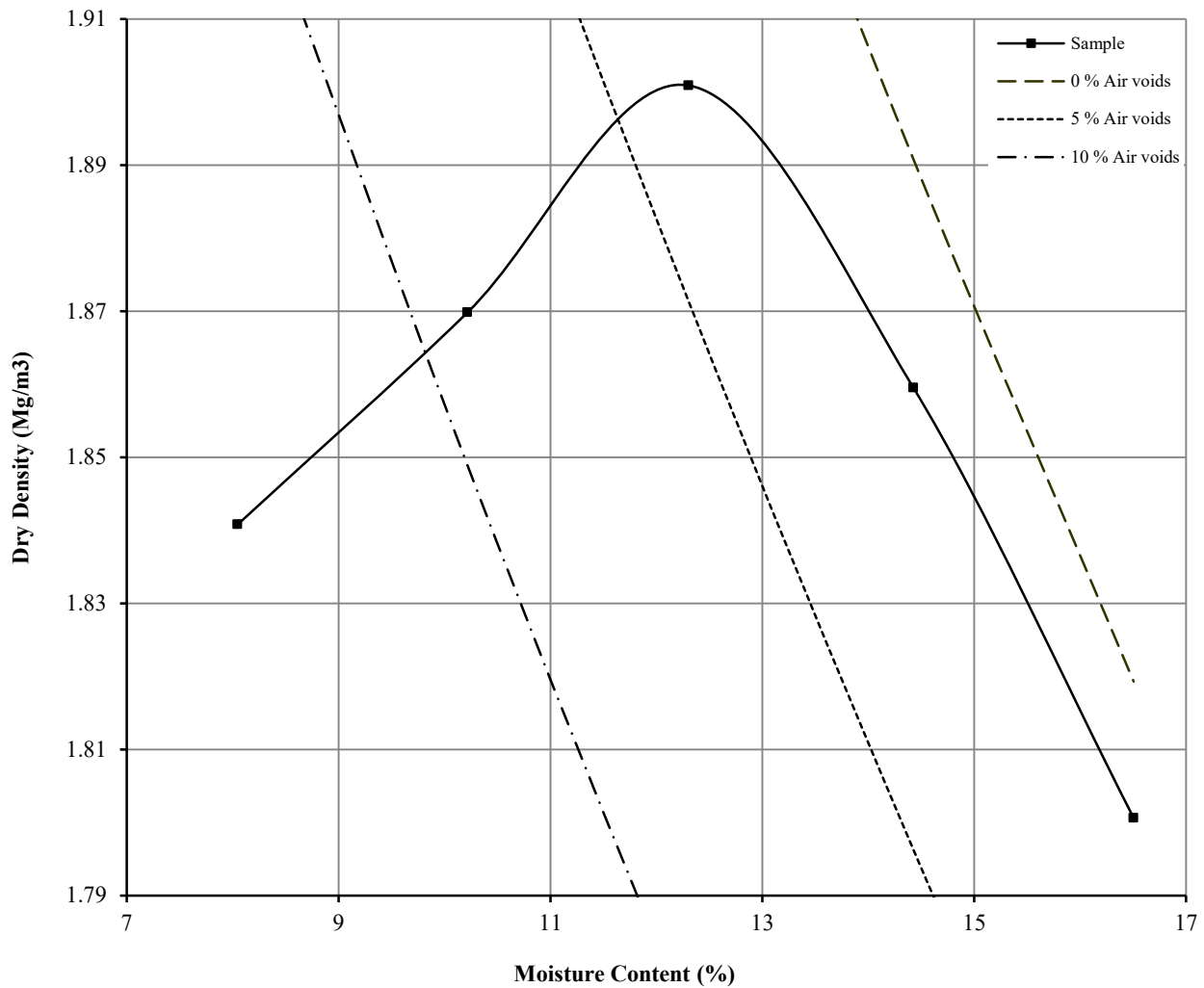
Sample Number:

Base Depth (m) :

Sample Type:

B

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Initial Moisture Content:	12	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m ³):	2.6	Assumed	Material Retained on 37.5 mm Test Sieve (%):	0
Maximum Dry Density (Mg/m ³):	1.90		Material Retained on 20.0 mm Test Sieve (%):	0
Optimum Moisture Content (%):	12			
Remarks See summary of soil descriptions				



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DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.4 : 1990

Hole Number: TP15

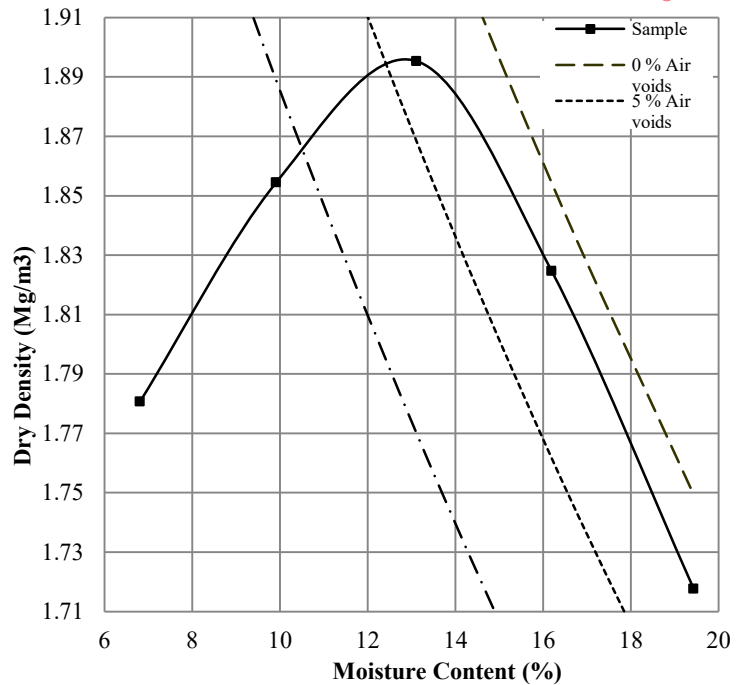
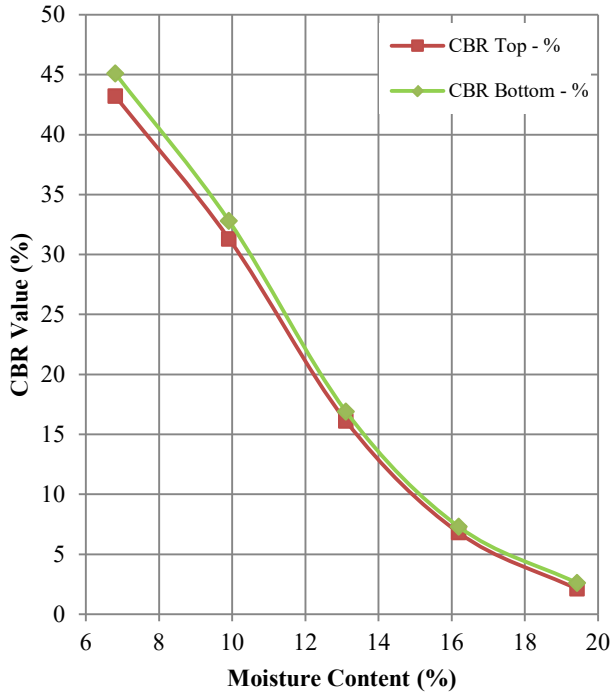
Top Depth (m) : 1.50

Sample Number:

Base Depth (m) :

Sample Type: B

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Initial Moisture Content:	16	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m ³):	2.65	Assumed	Material Retained on 37.5 mm Test Sieve (%):	5
Maximum Dry Density (Mg/m ³):	1.90	Material Retained on 20.0 mm Test Sieve (%):	7	
Optimum Moisture Content (%):	13			
Remarks See summary of soil descriptions				

CALIFORNIA BEARING RATIO TEST AT EACH COMPACTION POINT

BS 1377 : Part 4 : Clause 7 : 1990

Moisture Content (%)	Dry Density (Mg/m ³)	CBR Value %		Surcharge (kg)	Soaking Time (hr)	Swelling (mm)
		Sample Top	Sample Bottom			
6.8	1.78	43.2	45.1	4	n/a	0.00
10	1.85	31.3	32.8	4	n/a	0.00
13	1.90	16.1	16.9	4	n/a	0.00
16	1.82	6.8	7.3	4	n/a	0.00
19	1.72	2.1	2.6	4	n/a	0.00



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DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.3 : 1990

Hole Number: TP17

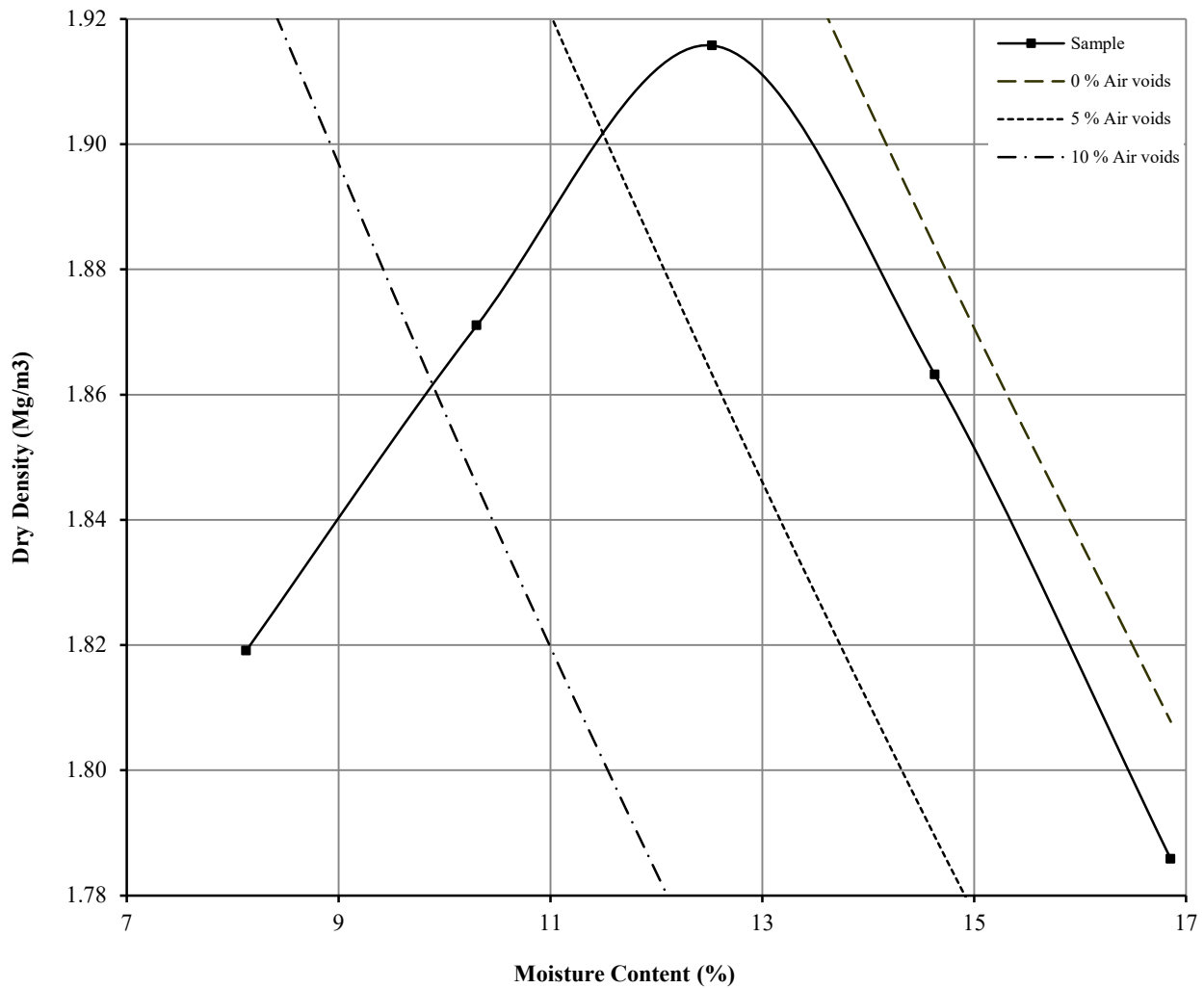
Top Depth (m) : 0.50

Sample Number:

Base Depth (m) :

Sample Type: B

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Initial Moisture Content:	13	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m ³):	2.6	Assumed	Material Retained on 37.5 mm Test Sieve (%):	0
Maximum Dry Density (Mg/m ³):	1.92		Material Retained on 20.0 mm Test Sieve (%):	0
Optimum Moisture Content (%):	13			
Remarks See summary of soil descriptions				



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DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.4 : 1990

Hole Number: TP20

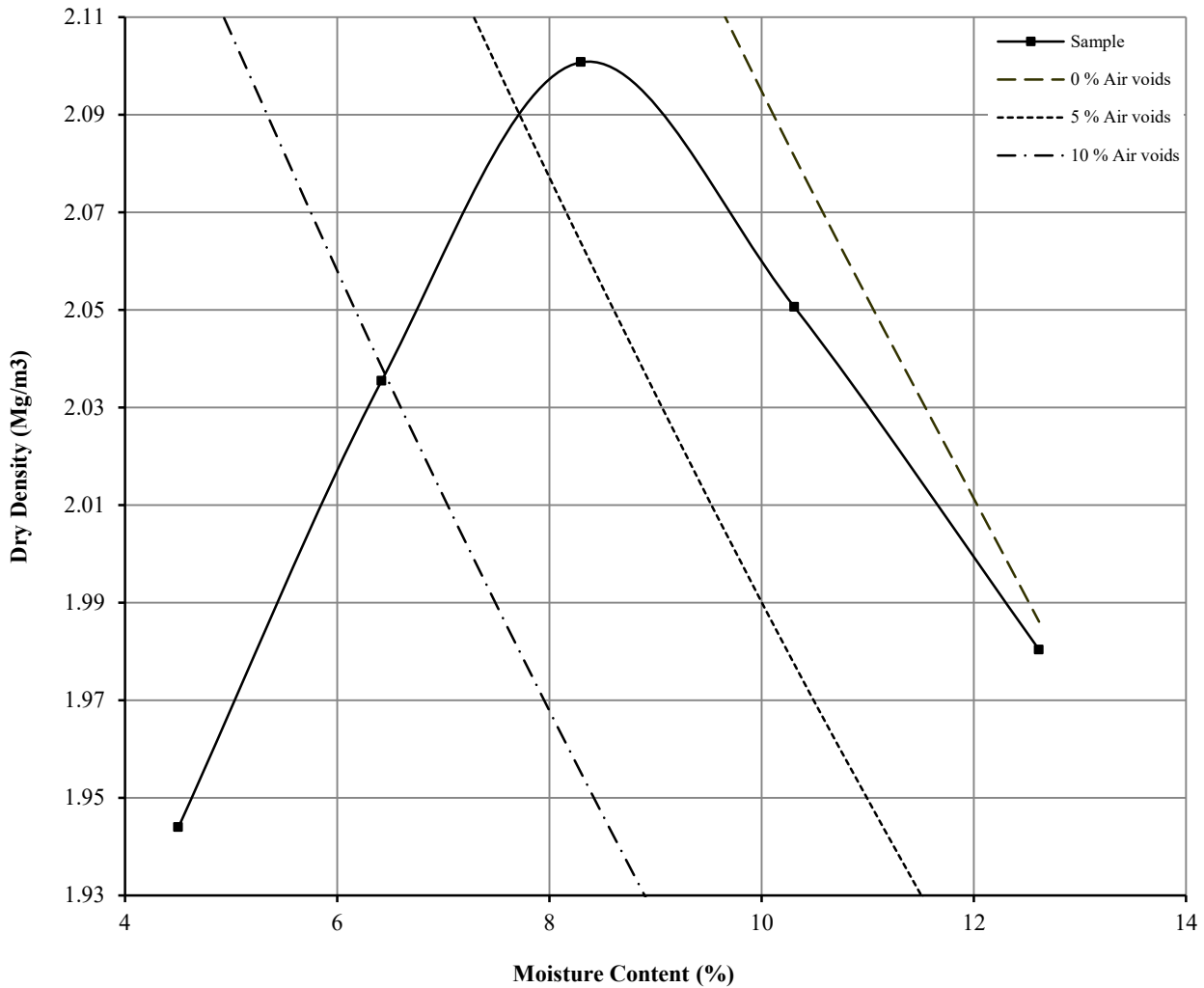
Top Depth (m) : 3.00

Sample Number:

Base Depth (m) :

Sample Type: B

RECEIVED: 14/08/2023



Initial Moisture Content:	6.1	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m ³):	2.65	Assumed	Material Retained on 37.5 mm Test Sieve (%):	6
Maximum Dry Density (Mg/m ³):	2.10	Material Retained on 20.0 mm Test Sieve (%):	11	
Optimum Moisture Content (%):	8			
Remarks See summary of soil descriptions				



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DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.4 : 1990

Hole Number: TP24

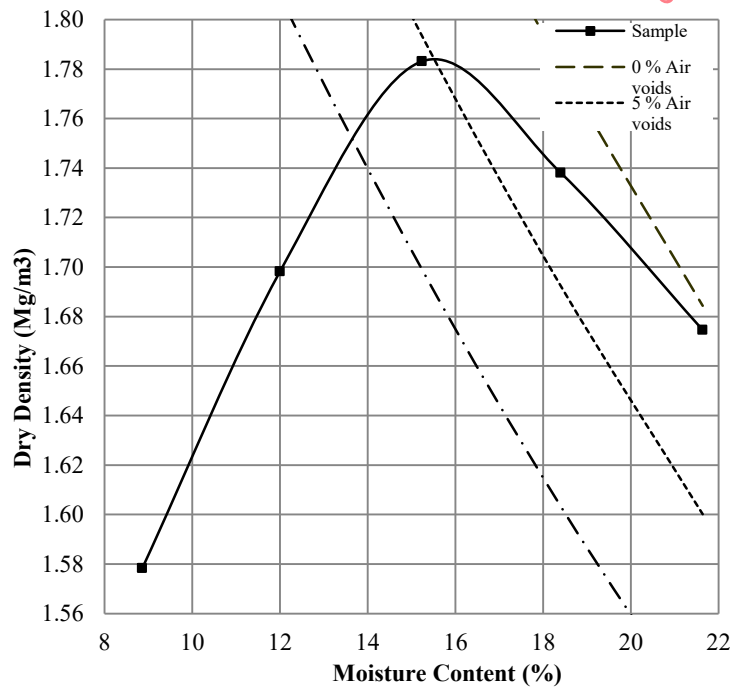
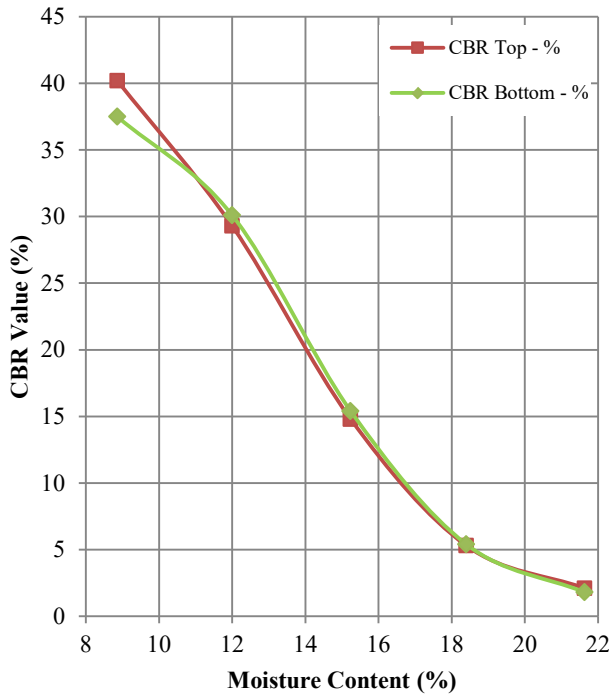
Top Depth (m) : 1.50

Sample Number:

Base Depth (m) :

Sample Type: B

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Initial Moisture Content:	18	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m3):	2.65	Assumed	Material Retained on 37.5 mm Test Sieve (%):	0
Maximum Dry Density (Mg/m3):	1.78	Material Retained on 20.0 mm Test Sieve (%):	0	
Optimum Moisture Content (%):	15			
Remarks See summary of soil descriptions				

CALIFORNIA BEARING RATIO TEST AT EACH COMPACTION POINT

BS 1377 : Part 4 : Clause 7 : 1990

Moisture Content (%)	Dry Density (Mg/m3)	CBR Value %		Surcharge (kg)	Soaking Time (hr)	Swelling (mm)
		Sample Top	Sample Bottom			
8.9	1.58	40.2	37.5	4	n/a	0.00
12	1.70	29.3	30.1	4	n/a	0.00
15	1.78	14.8	15.4	4	n/a	0.00
18	1.74	5.3	5.4	4	n/a	0.00
22	1.67	2.1	1.8	4	n/a	0.00



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DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.3 : 1990

Hole Number: TP25

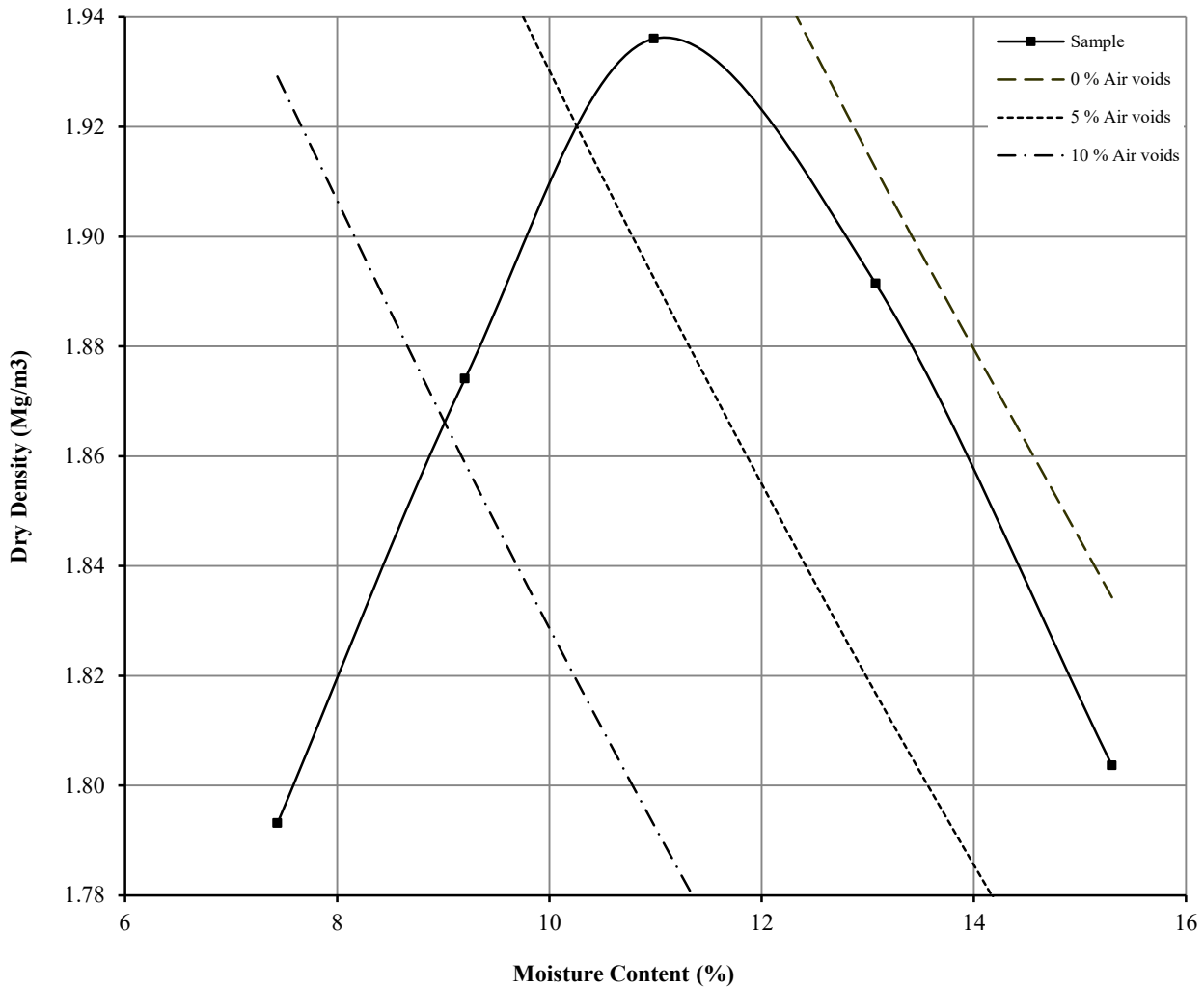
Top Depth (m) : 1.00

Sample Number:

Base Depth (m) :

Sample Type: B

RECEIVED: 14/08/2023



Initial Moisture Content:	7.2	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m ³):	2.55	Assumed	Material Retained on 37.5 mm Test Sieve (%):	0
Maximum Dry Density (Mg/m ³):	1.94		Material Retained on 20.0 mm Test Sieve (%):	2
Optimum Moisture Content (%):	11			
Remarks See summary of soil descriptions				



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MOISTURE CONDITION VALUE CALIBRATION

BS1377 : Part 4 : 1990 Clause 5.5

Hole Number: TP01

Top Depth (m): 0.50

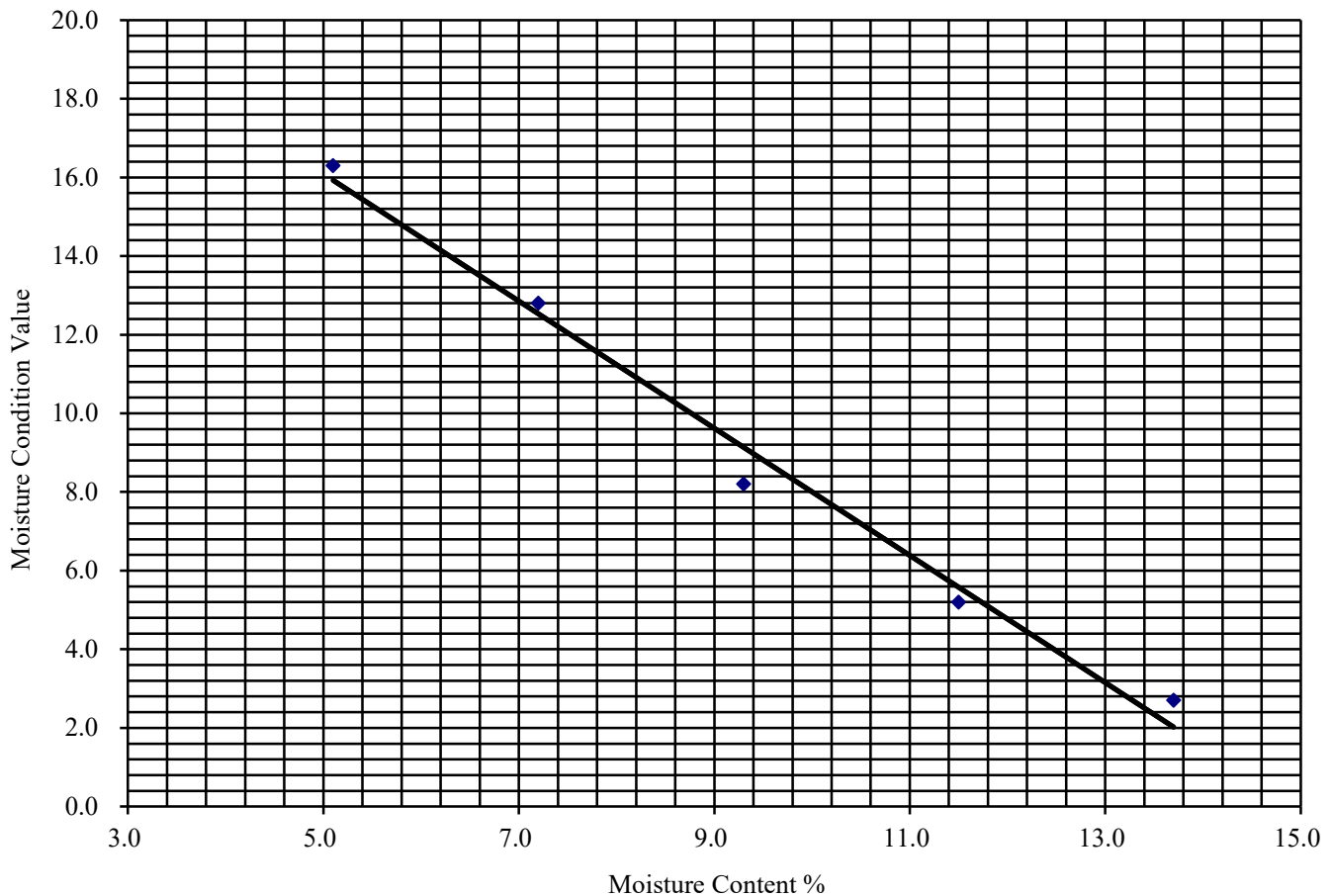
Sample Number:

Base Depth (m):

Sample Type: B

RECEIVED: 14/08/2023

Initial Moisture Content (%):	7.2
Single/Separate Samples Tested	Separate
Material Retained on the 20mm BS Test Sieve (%):	9



Test Results.

Test Number	1	2	3	4	5
Moisture Content (%)	5.1	7.2	9.3	11.5	13.7
MCV	16.3	12.8	8.2	5.2	2.7



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MOISTURE CONDITION VALUE

BS1377 : Part 4 : 1990 Clause 5.4

Hole Number: TP01 Top Depth (m): 1.50

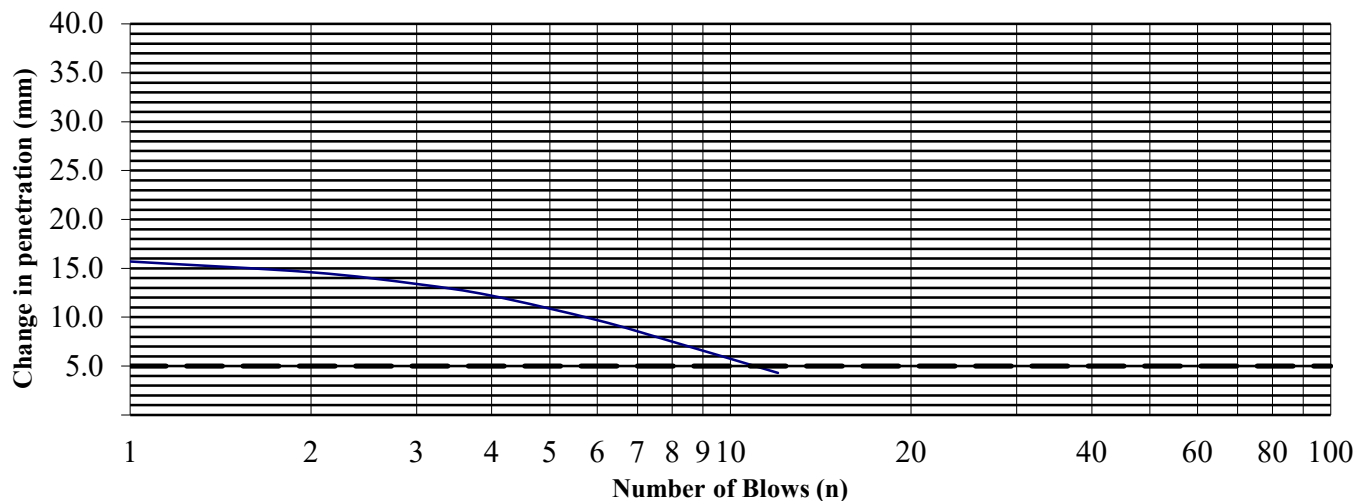
Sample Number: Base Depth (m):

Sample Type: B

RECEIVED: 14/08/2023

Material Retained on the 20mm BS Test Sieve (%):	12
Interpretation based on steepest straight line intercept with 5mm change in penetration.	

MCV Determination



Blows (N)	Penetration (mm)	n to 4n (mm)
1	62.7	15.7
2	54.8	14.6
3	50.1	13.4
4	47.0	12.2
6	42.8	9.7
8	40.2	7.5
12	36.7	4.3
16	34.8	
24	33.1	
32	32.7	
48	32.4	
64		
96		
128		
192		
256		

Test Results.

Moisture Content (%)	11
MCV	10.5



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MOISTURE CONDITION VALUE

BS1377 : Part 4 : 1990 Clause 5.4

Hole Number: TP01 Top Depth (m): 2.00

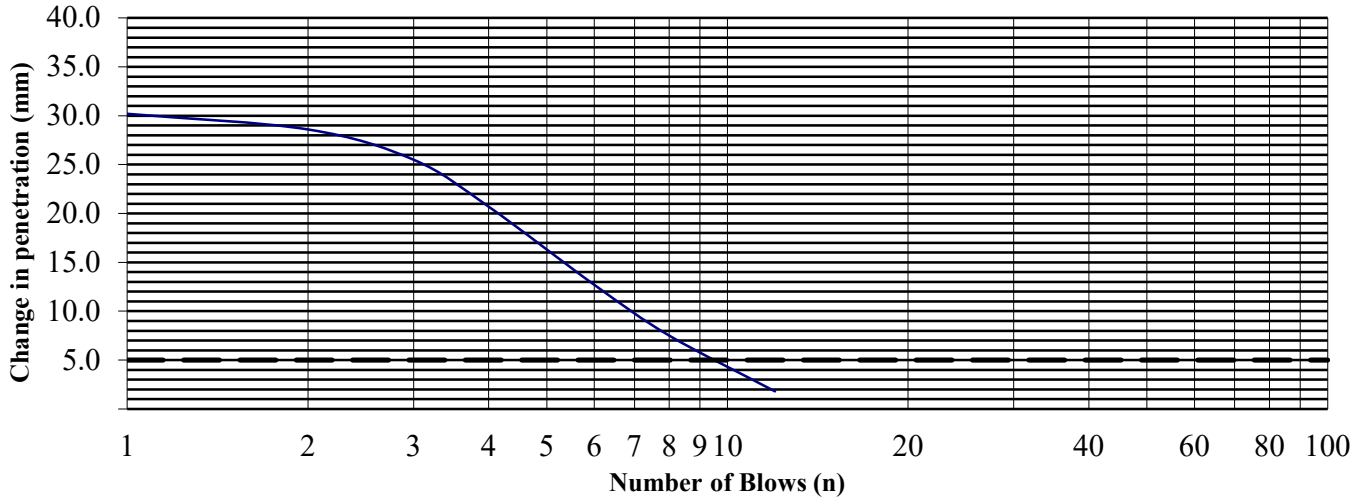
Sample Number: Base Depth (m):

Sample Type: B

RECEIVED: 14/08/2023

Material Retained on the 20mm BS Test Sieve (%):	0
Interpretation based on steepest straight line intercept with 5mm change in penetration.	

MCV Determination



Blows (N)	Penetration (mm)	n to 4n (mm)
1	90.9	30.2
2	75.8	28.6
3	66.8	25.5
4	60.7	20.7
6	52.5	12.7
8	47.2	7.5
12	41.3	1.8
16	40.0	
24	39.8	
32	39.7	
48	39.5	
64		
96		
128		
192		
256		

Test Results.

Moisture Content (%)	21
MCV	9.5



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MOISTURE CONDITION VALUE

BS1377 : Part 4 : 1990 Clause 5.4

Hole Number: TP02 Top Depth (m): 1.50

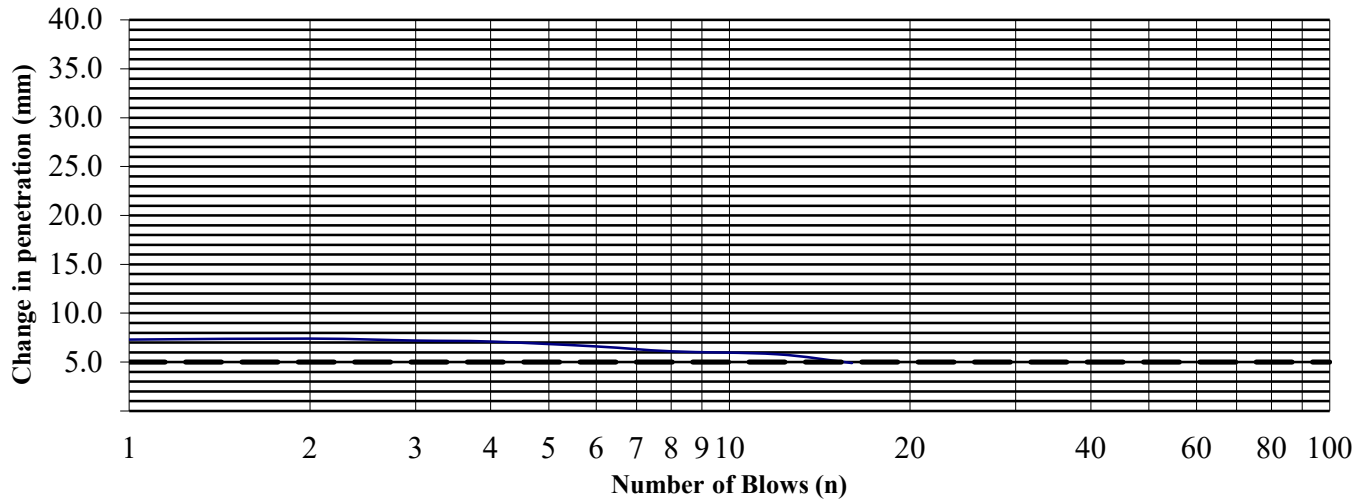
Sample Number: Base Depth (m):

Sample Type: B

RECEIVED: 14/08/2023

Material Retained on the 20mm BS Test Sieve (%):	15
Interpretation based on steepest straight line intercept with 5mm change in penetration.	

MCV Determination



Blows (N)	Penetration (mm)	n to 4n (mm)
1	56.4	7.3
2	52.8	7.4
3	50.7	7.2
4	49.1	7.1
6	46.9	6.6
8	45.4	6.1
12	43.5	5.8
16	42.0	4.9
24	40.3	
32	39.3	
48	37.7	
64	37.1	
96		
128		
192		
256		

Test Results.

Moisture Content (%)	5.6
MCV	12.0



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MOISTURE CONDITION VALUE

BS1377 : Part 4 : 1990 Clause 5.4

Hole Number: TP04 Top Depth (m): 0.50

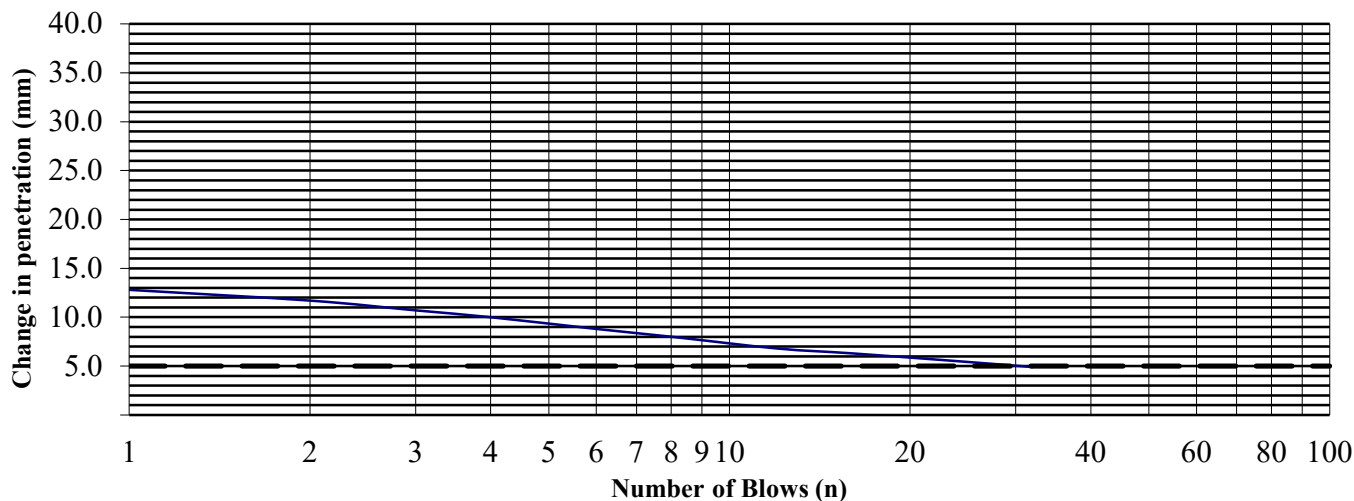
Sample Number: Base Depth (m):

Sample Type: B

RECEIVED: 14/08/2023

Material Retained on the 20mm BS Test Sieve (%):	2
Interpretation based on steepest straight line intercept with 5mm change in penetration.	

MCV Determination



Blows (N)	Penetration (mm)	n to 4n (mm)
1	66.7	12.8
2	60.2	11.7
3	56.3	10.7
4	53.9	10.0
6	50.6	8.8
8	48.5	8.0
12	45.6	6.8
16	43.9	6.3
24	41.8	5.5
32	40.5	4.9
48	38.8	
64	37.6	
96	36.3	
128	35.6	
192		
256		

Test Results.

Moisture Content (%)	11
MCV	13.8



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MOISTURE CONDITION VALUE

BS1377 : Part 4 : 1990 Clause 5.4

Hole Number: TP05 Top Depth (m): 0.50

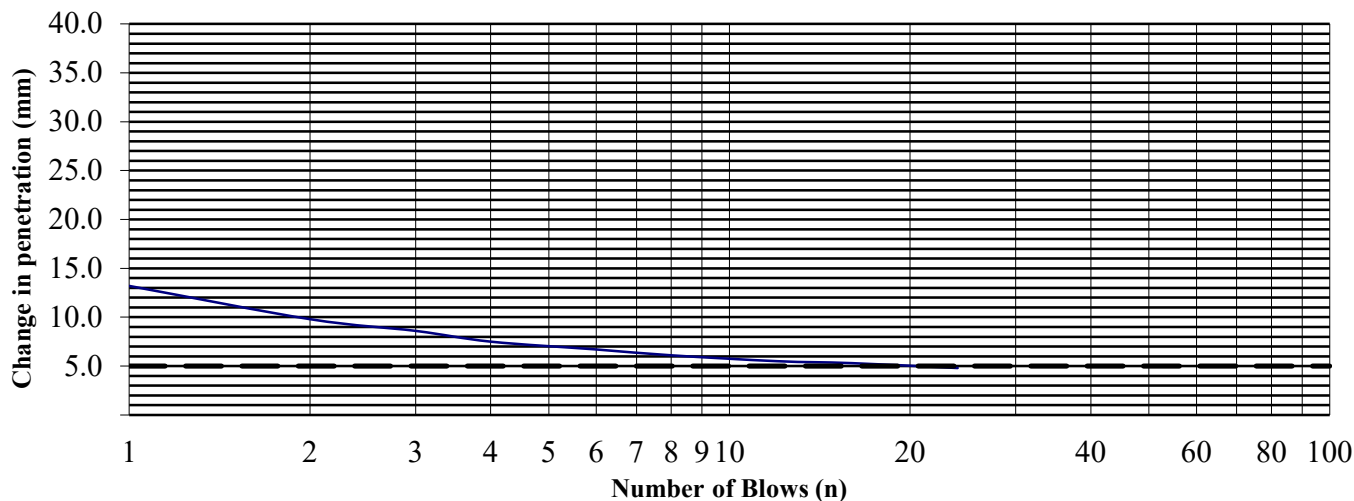
Sample Number: Base Depth (m):

Sample Type: B

RECEIVED: 14/08/2023

Material Retained on the 20mm BS Test Sieve (%):	10
Interpretation based on steepest straight line intercept with 5mm change in penetration.	

MCV Determination



Blows (N)	Penetration (mm)	n to 4n (mm)
1	63.8	13.2
2	56.2	9.8
3	52.9	8.6
4	50.6	7.5
6	48.0	6.7
8	46.4	6.1
12	44.3	5.5
16	43.1	5.3
24	41.3	4.8
32	40.3	
48	38.8	
64	37.8	
96	36.5	
128		
192		
256		

Test Results.

Moisture Content (%)	8.0
MCV	7.8



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MOISTURE CONDITION VALUE

BS1377 : Part 4 : 1990 Clause 5.4

Hole Number: TP05 Top Depth (m): 2.00

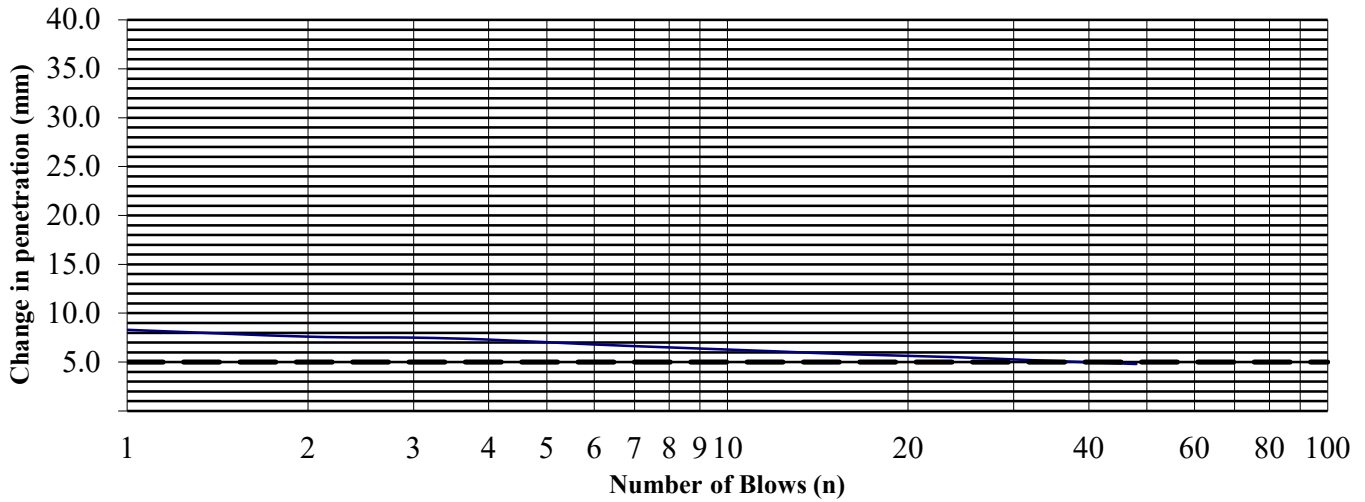
Sample Number: Base Depth (m):

Sample Type: B

RECEIVED: 14/08/2023

Material Retained on the 20mm BS Test Sieve (%):	44
Interpretation based on steepest straight line intercept with 5mm change in penetration.	

MCV Determination



Blows (N)	Penetration (mm)	n to 4n (mm)
1	55.5	8.3
2	51.0	7.6
3	48.8	7.5
4	47.2	7.3
6	44.9	6.8
8	43.4	6.5
12	41.3	6.1
16	39.9	5.8
24	38.1	5.5
32	36.9	5.2
48	35.2	4.8
64	34.1	
96	32.6	
128	31.7	
192	30.4	
256		

Test Results.

Moisture Content (%)	6.5
MCV	17.2

Single stage test undertaken due to non cohesive material, relationship deemed unreliable



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MOISTURE CONDITION VALUE

BS1377 : Part 4 : 1990 Clause 5.4

Hole Number: TP07 Top Depth (m): 2.50

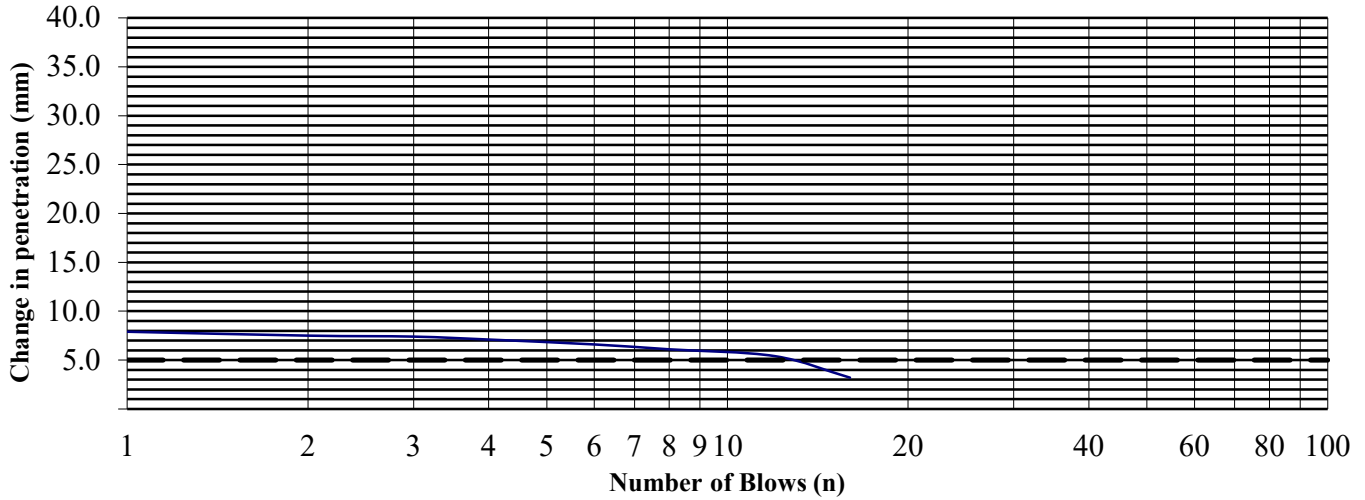
Sample Number: Base Depth (m):

Sample Type: B

RECEIVED: 14/08/2023

Material Retained on the 20mm BS Test Sieve (%):	45
Interpretation based on steepest straight line intercept with 5mm change in penetration.	

MCV Determination



Blows (N)	Penetration (mm)	n to 4n (mm)
1	52.5	7.9
2	48.3	7.5
3	46.1	7.4
4	44.6	7.1
6	42.4	6.6
8	40.8	6.1
12	38.7	5.4
16	37.5	3.2
24	35.8	
32	34.7	
48	33.3	
64	34.3	
96		
128		
192		
256		

Test Results.

Moisture Content (%)	6.1
MCV	11.2



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MOISTURE CONDITION VALUE

BS1377 : Part 4 : 1990 Clause 5.4

Hole Number: TP08 Top Depth (m): 2.00

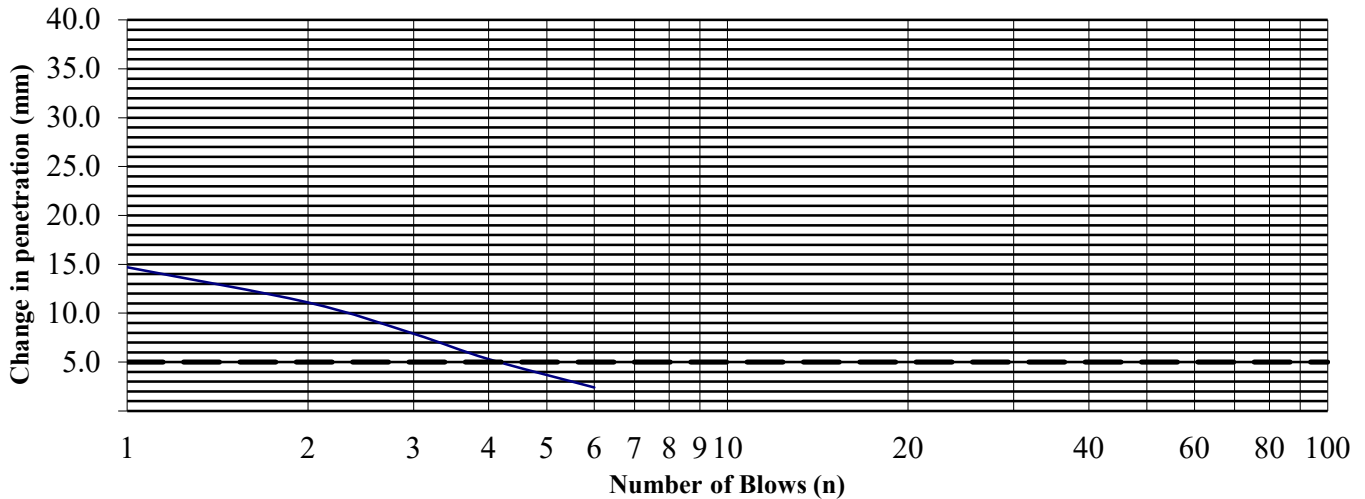
Sample Number: Base Depth (m):

Sample Type: B

RECEIVED: 14/08/2023

Material Retained on the 20mm BS Test Sieve (%):	0
Interpretation based on steepest straight line intercept with 5mm change in penetration.	

MCV Determination



Blows (N)	Penetration (mm)	n to 4n (mm)
1	62.6	14.7
2	54.7	11.1
3	50.7	7.9
4	47.9	5.3
6	44.9	2.4
8	43.6	
12	42.8	
16	42.6	
24	42.5	
32		
48		
64		
96		
128		
192		
256		

Test Results.

Moisture Content (%)	23
MCV	6.3



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MOISTURE CONDITION VALUE

BS1377 : Part 4 : 1990 Clause 5.4

Hole Number: TP10 Top Depth (m): 0.50

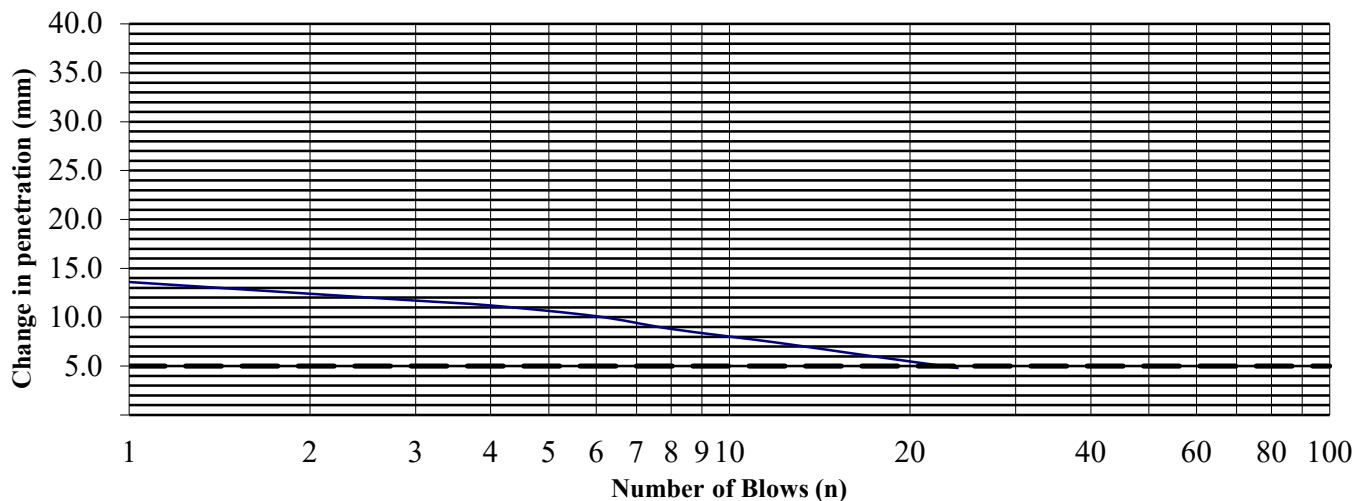
Sample Number: Base Depth (m):

Sample Type: B

RECEIVED: 14/08/2023

Material Retained on the 20mm BS Test Sieve (%):	10
Interpretation based on steepest straight line intercept with 5mm change in penetration.	

MCV Determination



Blows (N)	Penetration (mm)	n to 4n (mm)
1	64.6	13.6
2	57.4	12.4
3	53.6	11.7
4	51.0	11.2
6	47.3	10.1
8	45.0	8.8
12	41.9	7.4
16	39.8	6.3
24	37.2	4.8
32	36.2	
48	34.5	
64	33.5	
96	32.4	
128		
192		
256		

Test Results.

Moisture Content (%)	11
MCV	12.7



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Client Ref:
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MOISTURE CONDITION VALUE CALIBRATION

BS1377 : Part 4 : 1990 Clause 5.5

Hole Number: TP12

Top Depth (m): 1.00

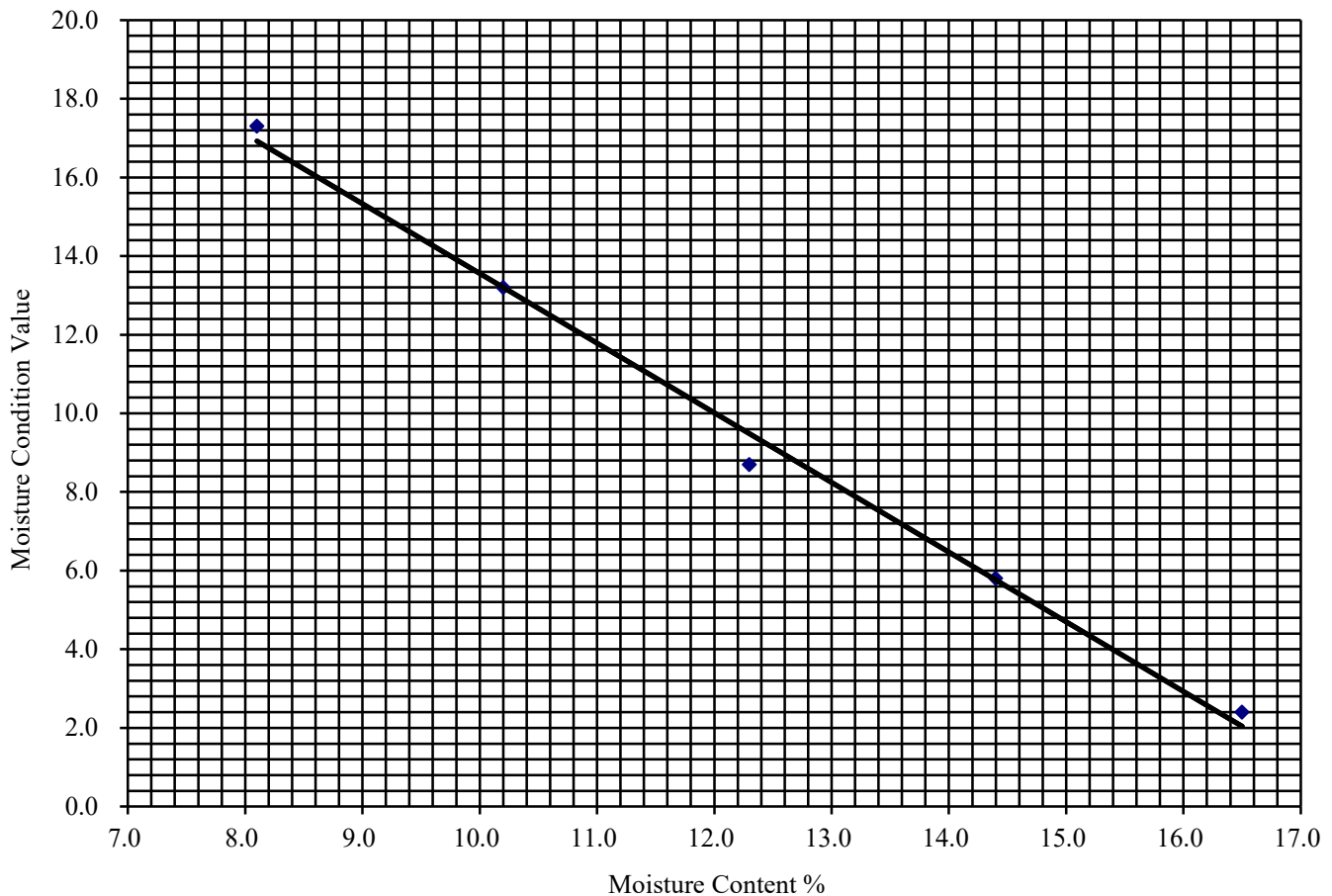
Sample Number:

Base Depth (m):

Sample Type: B

RECEIVED: 14/08/2023

Initial Moisture Content (%):	12
Single/Separate Samples Tested	Separate
Material Retained on the 20mm BS Test Sieve (%):	0



Test Results.

Test Number	1	2	3	4	5
Moisture Content (%)	8.1	10.2	12.3	14.4	16.5
MCV	17.3	13.2	8.7	5.8	2.4



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MOISTURE CONDITION VALUE

BS1377 : Part 4 : 1990 Clause 5.4

Hole Number: TP12 Top Depth (m): 2.50

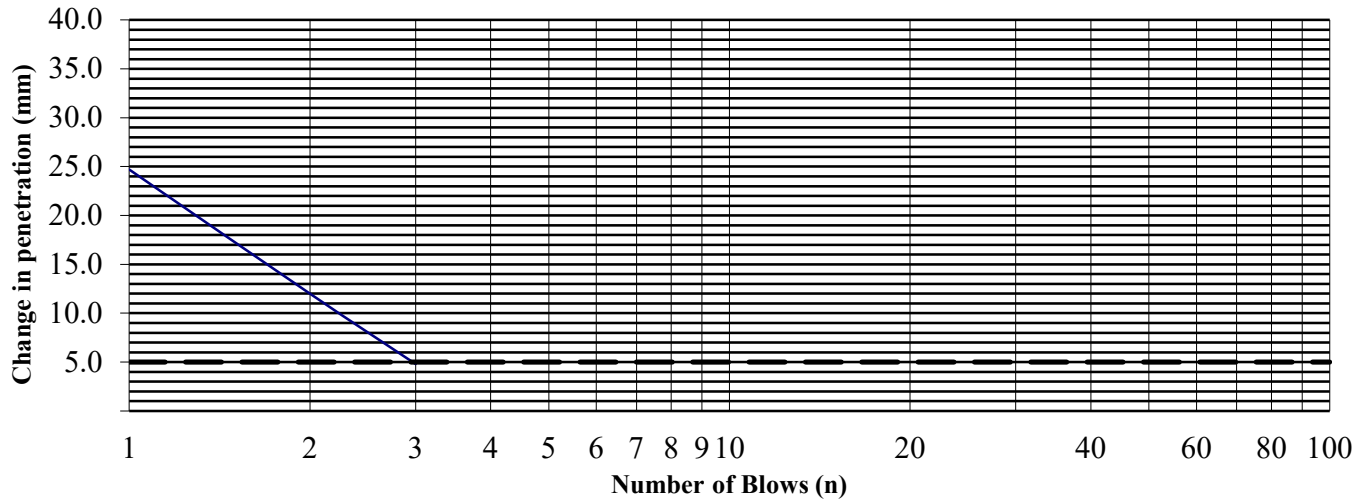
Sample Number: Base Depth (m):

Sample Type: B

RECEIVED: 14/08/2023

Material Retained on the 20mm BS Test Sieve (%):	2
Interpretation based on steepest straight line intercept with 5mm change in penetration.	

MCV Determination



Blows (N)	Penetration (mm)	n to 4n (mm)
1	63.5	24.7
2	49.8	12.0
3	42.3	4.8
4	38.8	
6	38.0	
8	37.8	
12	37.5	
16		
24		
32		
48		
64		
96		
128		
192		
256		

Test Results.

Moisture Content (%)	18
MCV	4.7



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MOISTURE CONDITION VALUE

BS1377 : Part 4 : 1990 Clause 5.4

Hole Number: TP13 Top Depth (m): 1.00

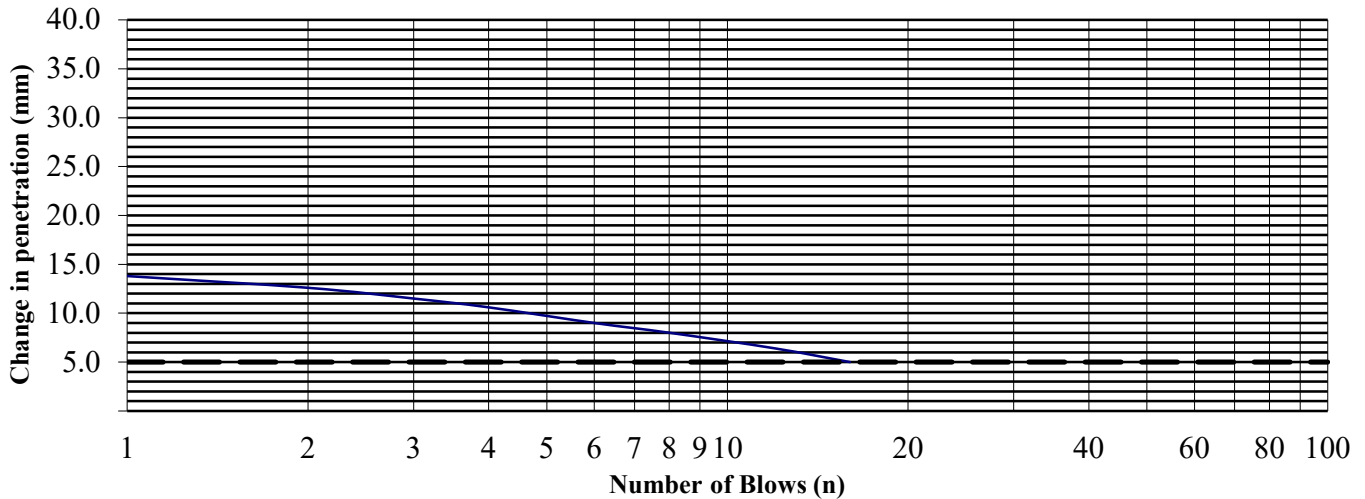
Sample Number: Base Depth (m):

Sample Type: B

RECEIVED: 14/08/2023

Material Retained on the 20mm BS Test Sieve (%):	2
Interpretation based on steepest straight line intercept with 5mm change in penetration.	

MCV Determination



Blows (N)	Penetration (mm)	n to 4n (mm)
1	63.0	13.8
2	55.8	12.6
3	51.8	11.5
4	49.2	10.6
6	45.6	9.0
8	43.2	8.0
12	40.3	6.4
16	38.6	5.0
24	36.6	
32	35.2	
48	33.9	
64	33.6	
96		
128		
192		
256		

Test Results.

Moisture Content (%)	12
MCV	12.0



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MOISTURE CONDITION VALUE

BS1377 : Part 4 : 1990 Clause 5.4

Hole Number: TP14 Top Depth (m): 2.00

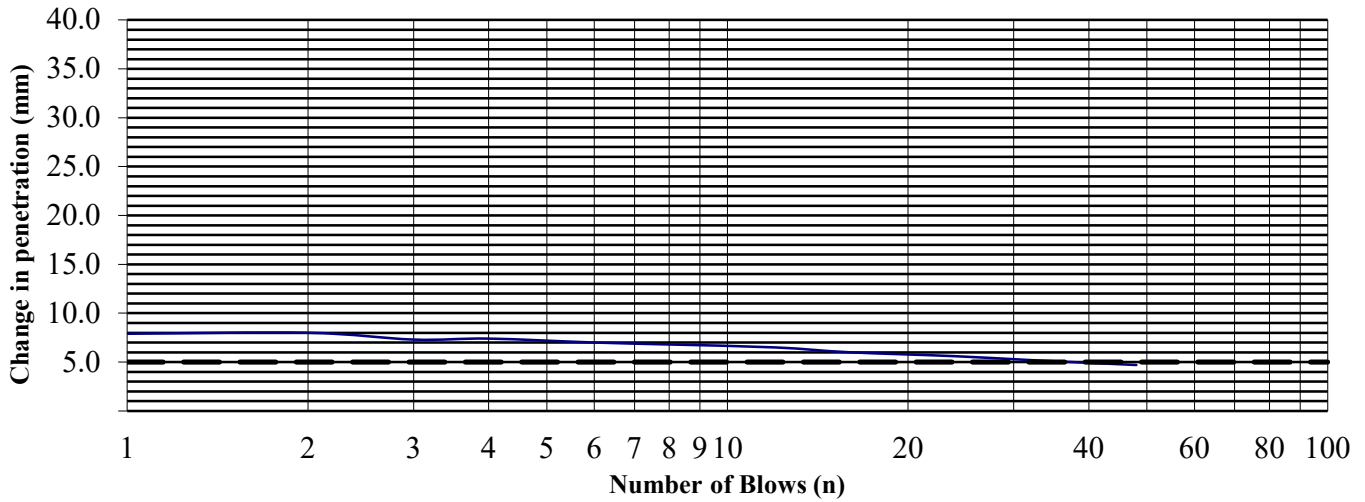
Sample Number: Base Depth (m):

Sample Type: B

RECEIVED: 14/08/2023

Material Retained on the 20mm BS Test Sieve (%):	27
Interpretation based on steepest straight line intercept with 5mm change in penetration.	

MCV Determination



Blows (N)	Penetration (mm)	n to 4n (mm)
1	55.1	7.9
2	51.4	8.0
3	48.7	7.3
4	47.2	7.4
6	44.9	7.0
8	43.4	6.8
12	41.4	6.5
16	39.8	6.0
24	37.9	5.6
32	36.6	5.2
48	34.9	4.7
64	33.8	
96	32.3	
128	31.4	
192	30.2	
256		

Test Results.

Moisture Content (%)	5.8
MCV	14.1



A034 Tinakilly

Contract No:
PSL22/5678
Client Ref:
11957-06-22

MOISTURE CONDITION VALUE

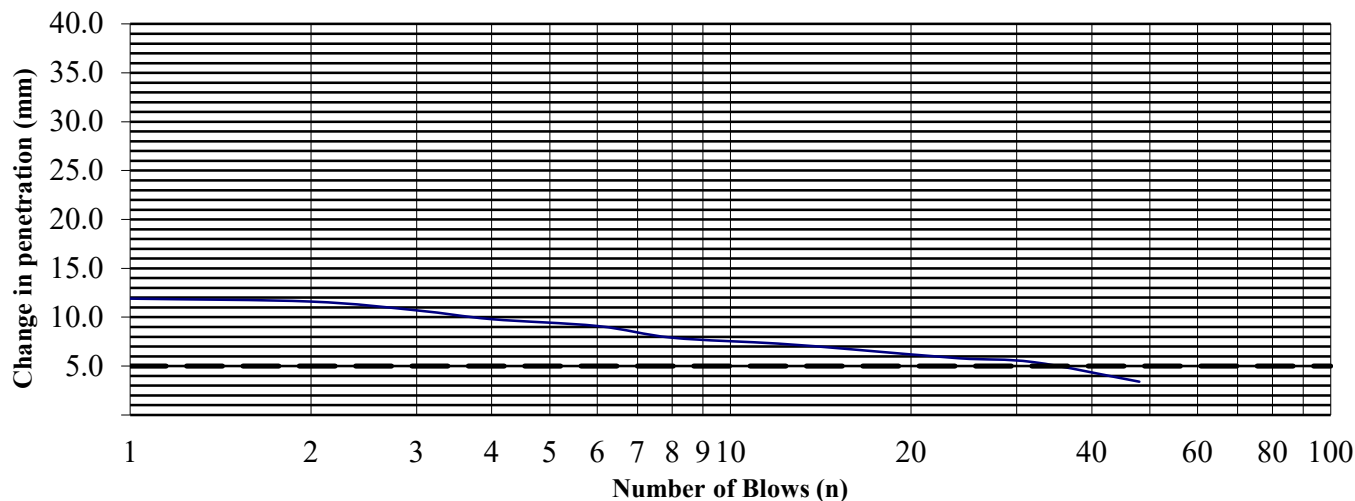
BS1377 : Part 4 : 1990 Clause 5.4

Hole Number: TP15 Top Depth (m): 0.50
 Sample Number: Base Depth (m):
 Sample Type: B

RECEIVED: 14/08/2023

Material Retained on the 20mm BS Test Sieve (%):	0
Interpretation based on steepest straight line intercept with 5mm change in penetration.	

MCV Determination



Blows (N)	Penetration (mm)	n to 4n (mm)
1	87.3	11.9
2	81.7	11.6
3	78.0	10.7
4	75.4	9.8
6	72.4	9.1
8	70.1	7.9
12	67.3	7.3
16	65.6	6.7
24	63.3	5.8
32	62.2	5.4
48	60.0	3.4
64	58.9	
96	57.5	
128	56.8	
192	56.6	
256		

Test Results.

Moisture Content (%)	12
MCV	15.4



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Contract No:
PSL22/5678
Client Ref:
11957-06-22

MOISTURE CONDITION VALUE

BS1377 : Part 4 : 1990 Clause 5.4

Hole Number: TP16 Top Depth (m): 1.00

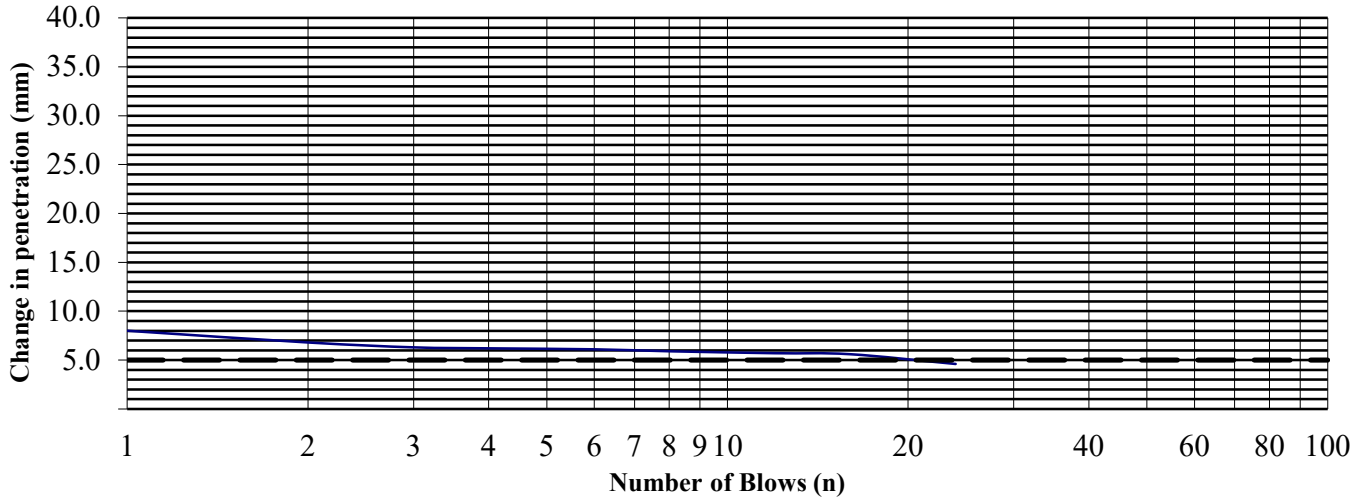
Sample Number: Base Depth (m):

Sample Type: B

RECEIVED: 14/08/2023

Material Retained on the 20mm BS Test Sieve (%):	0
Interpretation based on steepest straight line intercept with 5mm change in penetration.	

MCV Determination



Blows (N)	Penetration (mm)	n to 4n (mm)
1	83.2	8.0
2	78.8	6.8
3	76.7	6.3
4	75.2	6.2
6	73.3	6.1
8	72.0	5.9
12	70.4	5.7
16	69.0	5.6
24	67.2	4.6
32	66.1	
48	64.7	
64	63.4	
96	62.6	
128		
192		
256		

Test Results.

Moisture Content (%)	6.1
MCV	13.4



A034 Tinakilly

Contract No:
PSL22/5678
Client Ref:
11957-06-22

MOISTURE CONDITION VALUE

BS1377 : Part 4 : 1990 Clause 5.4

Hole Number: TP16 Top Depth (m): 2.50

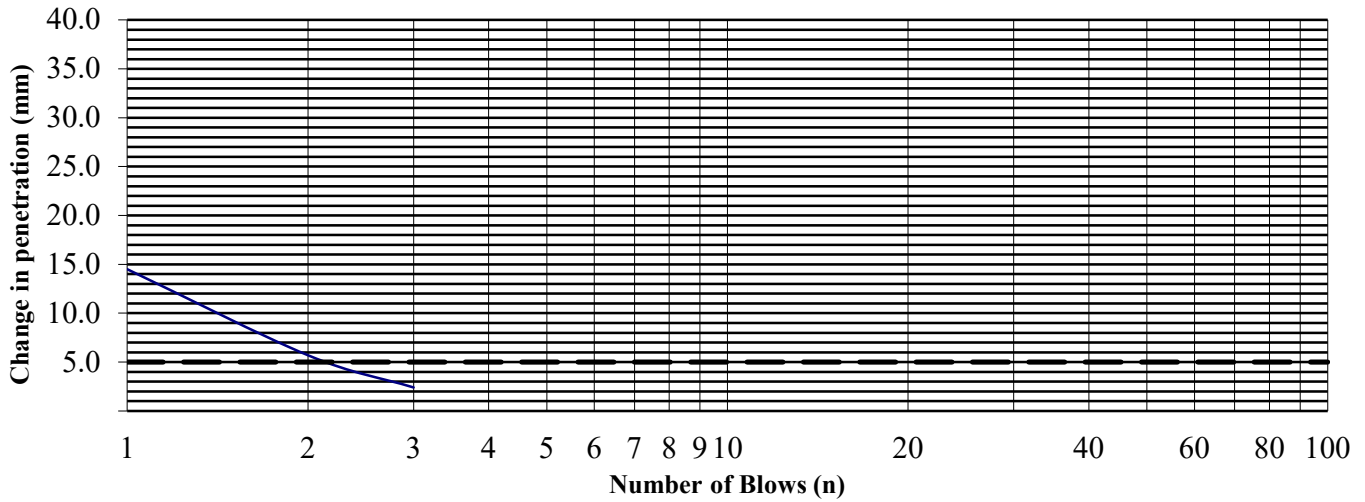
Sample Number: Base Depth (m):

Sample Type: B

RECEIVED: 14/08/2023

Material Retained on the 20mm BS Test Sieve (%):	0
Interpretation based on steepest straight line intercept with 5mm change in penetration.	

MCV Determination



Blows (N)	Penetration (mm)	n to 4n (mm)
1	62.2	14.5
2	52.4	5.7
3	48.7	2.4
4	47.7	
6	47.1	
8	46.7	
12	46.3	
16		
24		
32		
48		
64		
96		
128		
192		
256		

Test Results.

Moisture Content (%)	29
MCV	3.3



A034 Tinakilly

Contract No:
PSL22/5678
Client Ref:
11957-06-22

MOISTURE CONDITION VALUE CALIBRATION

BS1377 : Part 4 : 1990 Clause 5.5

Hole Number: TP17

Top Depth (m): 0.50

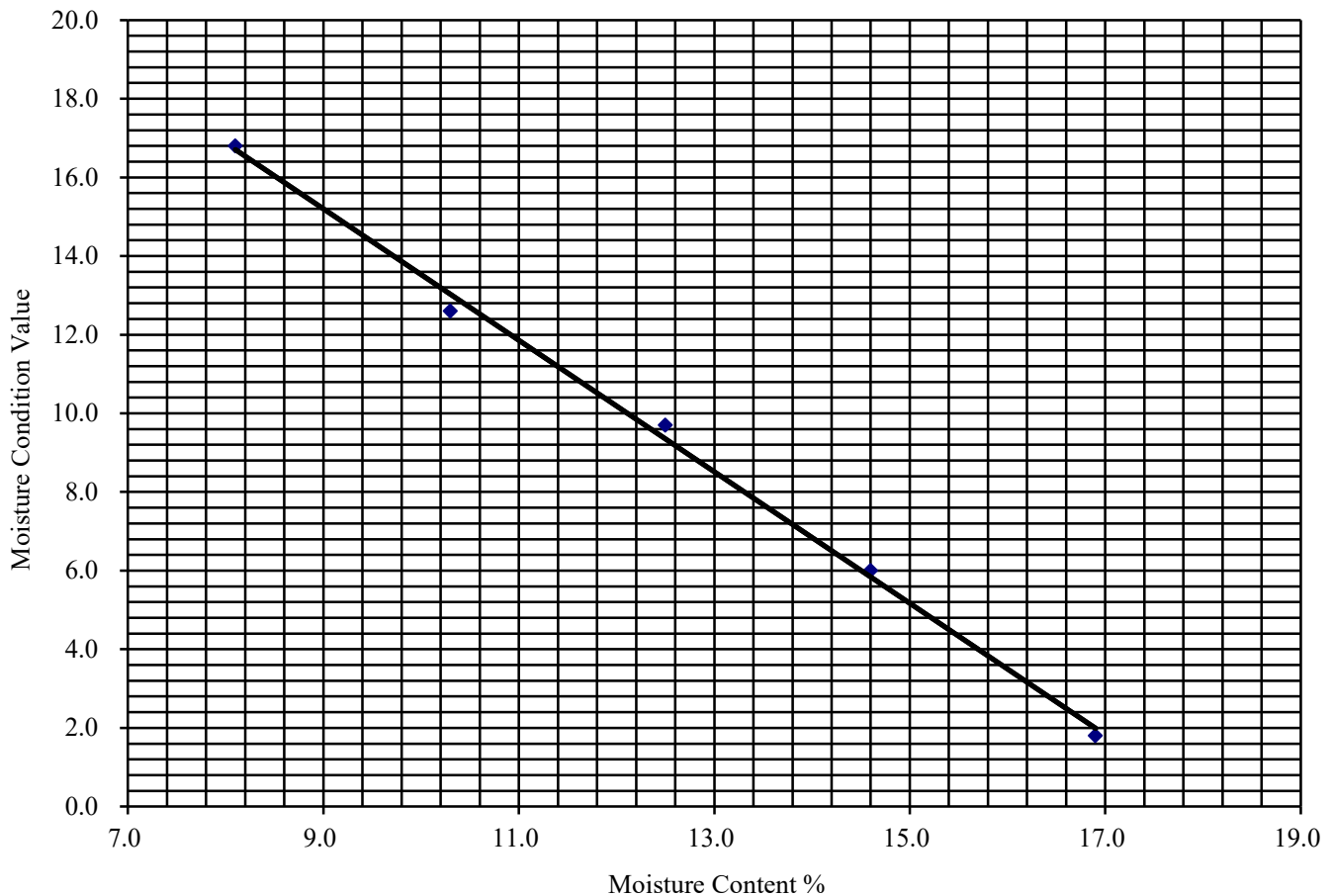
Sample Number:

Base Depth (m):

Sample Type: B

RECEIVED: 14/08/2023

Initial Moisture Content (%):	13
Single/Separate Samples Tested	Separate
Material Retained on the 20mm BS Test Sieve (%):	0



Test Results.

Test Number	1	2	3	4	5
Moisture Content (%)	8.1	10.3	12.5	14.6	16.9
MCV	16.8	12.6	9.7	6.0	1.8



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Contract No:
PSL22/5678
Client Ref:
11957-06-22

MOISTURE CONDITION VALUE

BS1377 : Part 4 : 1990 Clause 5.4

Hole Number: TP17 Top Depth (m): 2.00

Sample Number: Base Depth (m):

Sample Type: B

RECEIVED: 14/08/2023

Material Retained on the 20mm BS Test Sieve (%):	5
Interpretation based on steepest straight line intercept with 5mm change in penetration.	

MCV Determination



Blows (N)	Penetration (mm)	n to 4n (mm)
1	67.2	12.3
2	60.8	11.2
3	57.2	10.5
4	54.9	10.0
6	51.9	9.5
8	49.6	8.9
12	46.7	8.2
16	44.9	7.8
24	42.4	7.2
32	40.7	6.5
48	38.5	5.5
64	37.1	4.8
96	35.2	
128	34.2	
192	33.0	
256	32.3	

Test Results.

Moisture Content (%)	9.7
MCV	16.2



A034 Tinakilly

Contract No:	PSL22/5678
Client Ref:	11957-06-22

MOISTURE CONDITION VALUE

BS1377 : Part 4 : 1990 Clause 5.4

Hole Number: TP18 Top Depth (m): 3.00

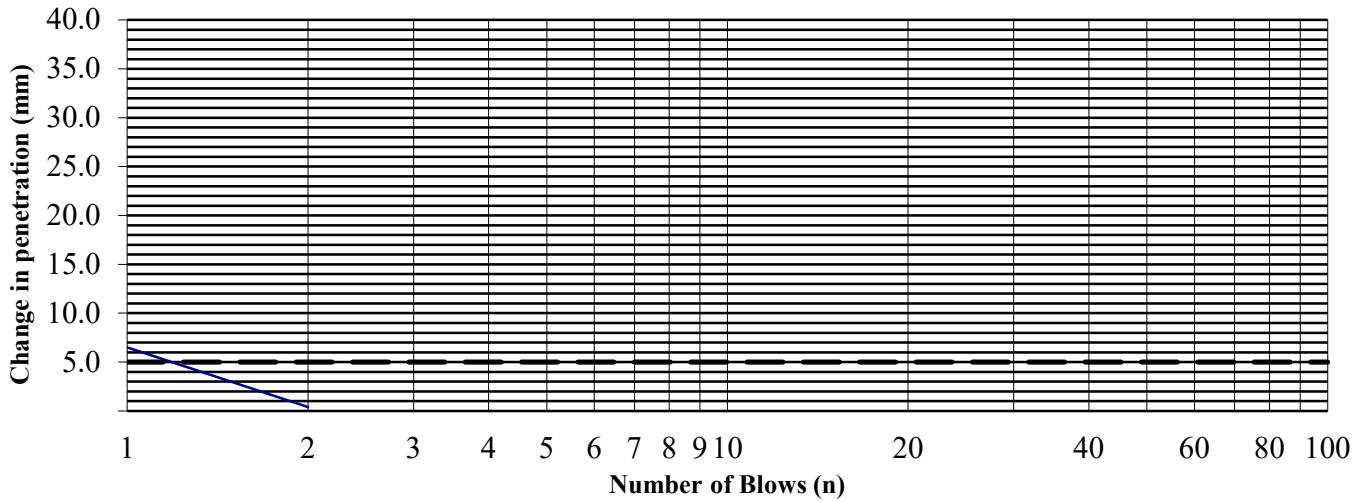
Sample Number: Base Depth (m):

Sample Type: B

RECEIVED: 14/08/2023

Material Retained on the 20mm BS Test Sieve (%):	3
Interpretation based on steepest straight line intercept with 5mm change in penetration.	

MCV Determination



Blows (N)	Penetration (mm)	n to 4n (mm)
1	45.2	6.5
2	39.0	0.4
3	38.8	
4	38.7	
6	38.6	
8	38.6	
12		
16		
24		
32		
48		
64		
96		
128		
192		
256		

Test Results.

Moisture Content (%)	17
MCV	0.8



A034 Tinakilly

Contract No:
PSL22/5678
Client Ref:
11957-06-22

MOISTURE CONDITION VALUE

BS1377 : Part 4 : 1990 Clause 5.4

Hole Number: TP20 Top Depth (m): 1.50

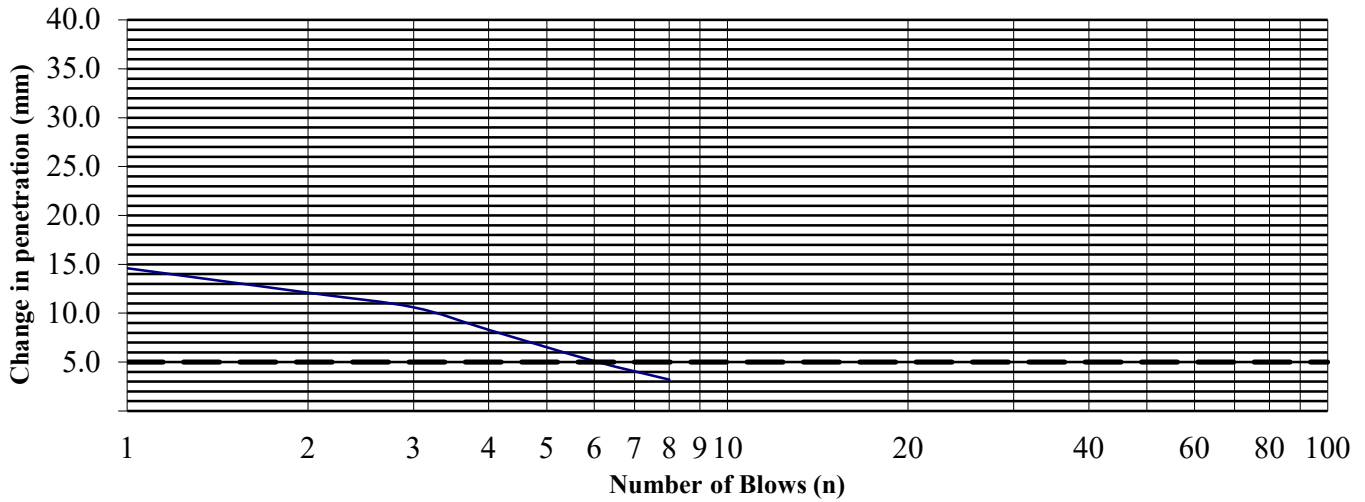
Sample Number: Base Depth (m):

Sample Type: B

RECEIVED: 14/08/2023

Material Retained on the 20mm BS Test Sieve (%):	5
Interpretation based on steepest straight line intercept with 5mm change in penetration.	

MCV Determination



Blows (N)	Penetration (mm)	n to 4n (mm)
1	58.0	14.6
2	50.1	12.1
3	46.3	10.6
4	43.4	8.3
6	40.0	5.1
8	38.0	3.2
12	35.7	
16	35.1	
24	34.9	
32	34.8	
48		
64		
96		
128		
192		
256		

Test Results.

Moisture Content (%)	13
MCV	8.0



A034 Tinakilly

Contract No:
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Client Ref:
11957-06-22

MOISTURE CONDITION VALUE CALIBRATION

BS1377 : Part 4 : 1990 Clause 5.5

Hole Number: TP20

Top Depth (m): 3.00

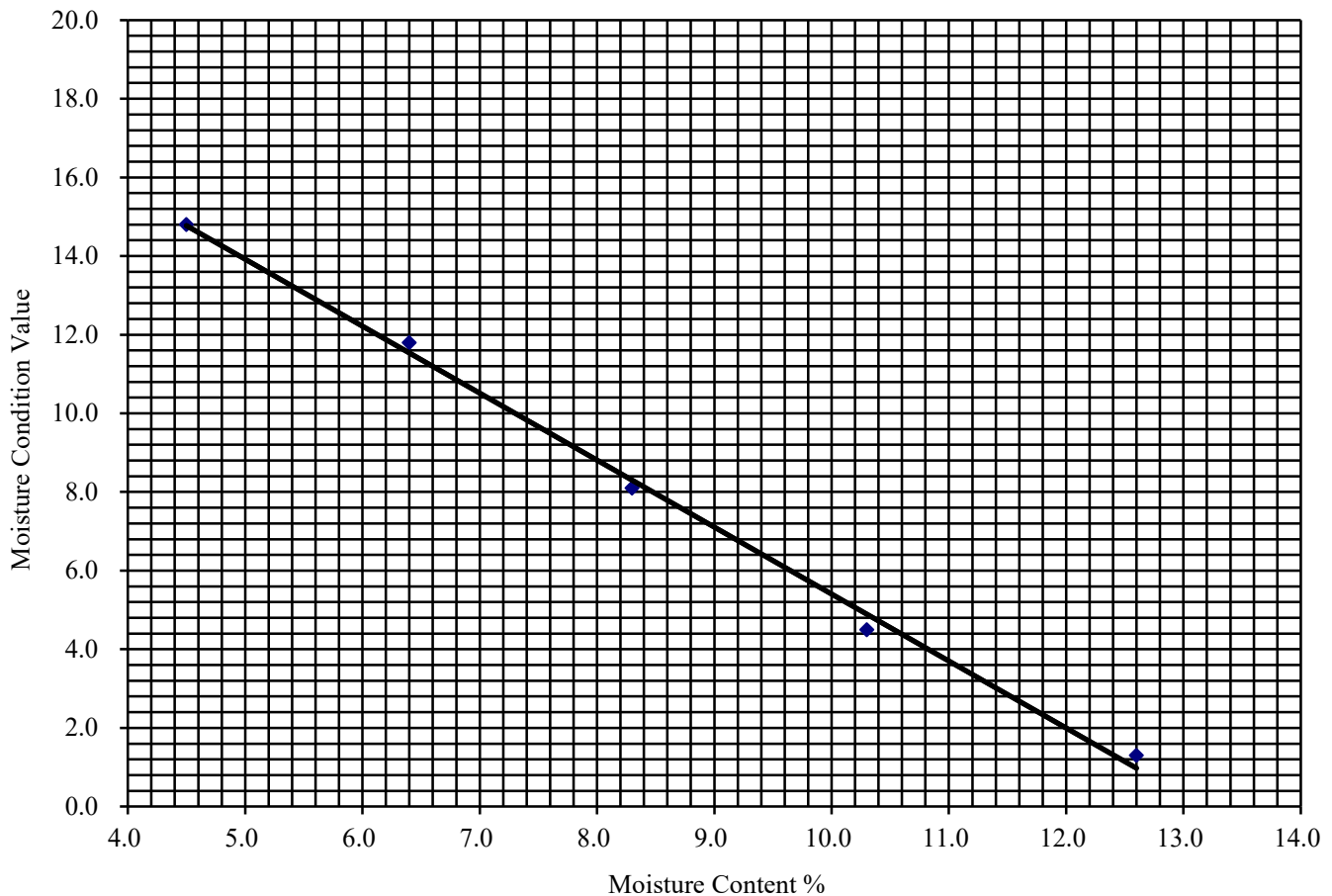
Sample Number:

Base Depth (m):

Sample Type: B

RECEIVED: 14/08/2023

Initial Moisture Content (%):	8.3
Single/Separate Samples Tested	Separate
Material Retained on the 20mm BS Test Sieve (%):	17



Test Results.

Test Number	1	2	3	4	5
Moisture Content (%)	4.5	6.4	8.3	10.3	12.6
MCV	14.8	11.8	8.1	4.5	1.3



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Contract No:
PSL22/5678
Client Ref:
11957-06-22

MOISTURE CONDITION VALUE

BS1377 : Part 4 : 1990 Clause 5.4

Hole Number: TP22 Top Depth (m): 2.00

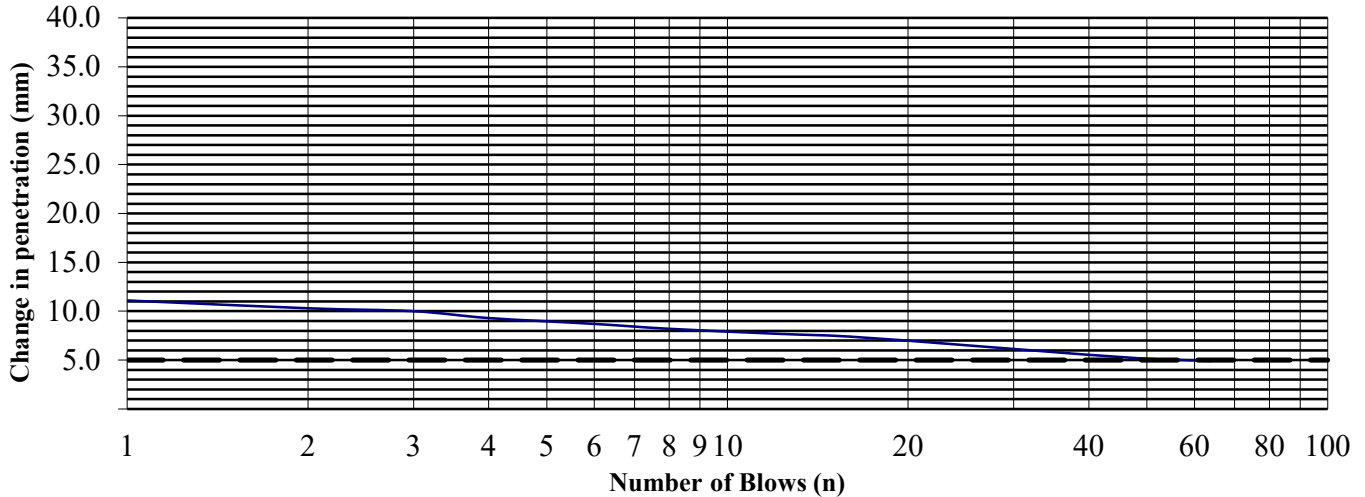
Sample Number: Base Depth (m):

Sample Type: B

RECEIVED: 14/08/2023

Material Retained on the 20mm BS Test Sieve (%):	3
Interpretation based on steepest straight line intercept with 5mm change in penetration.	

MCV Determination



Blows (N)	Penetration (mm)	n to 4n (mm)
1	68.1	11.1
2	62.3	10.3
3	59.3	10.0
4	57.0	9.3
6	54.0	8.7
8	52.0	8.2
12	49.3	7.7
16	47.7	7.4
24	45.3	6.6
32	43.8	6.0
48	41.6	5.2
64	40.3	4.9
96	38.7	
128	37.8	
192	36.4	
256	35.4	

Test Results.

Moisture Content (%)	10
MCV	17.5



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Contract No:
PSL22/5678
Client Ref:
11957-06-22

MOISTURE CONDITION VALUE

BS1377 : Part 4 : 1990 Clause 5.4

Hole Number: TP23 Top Depth (m): 1.50

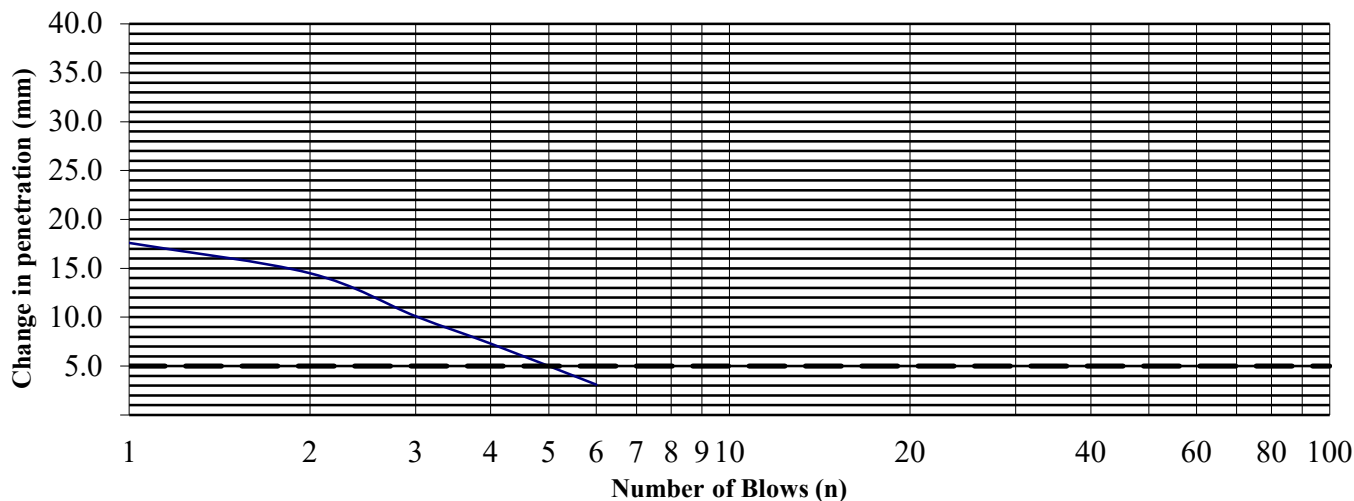
Sample Number: Base Depth (m):

Sample Type: B

RECEIVED: 14/08/2023

Material Retained on the 20mm BS Test Sieve (%):	0
Interpretation based on steepest straight line intercept with 5mm change in penetration.	

MCV Determination



Blows (N)	Penetration (mm)	n to 4n (mm)
1	63.8	17.6
2	54.5	14.5
3	49.2	10.1
4	46.2	7.3
6	41.9	3.1
8	40.0	
12	39.1	
16	38.9	
24	38.8	
32		
48		
64		
96		
128		
192		
256		

Test Results.

Moisture Content (%)	18
MCV	6.8



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Contract No:
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Client Ref:
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MOISTURE CONDITION VALUE

BS1377 : Part 4 : 1990 Clause 5.4

Hole Number: TP24 Top Depth (m): 0.50

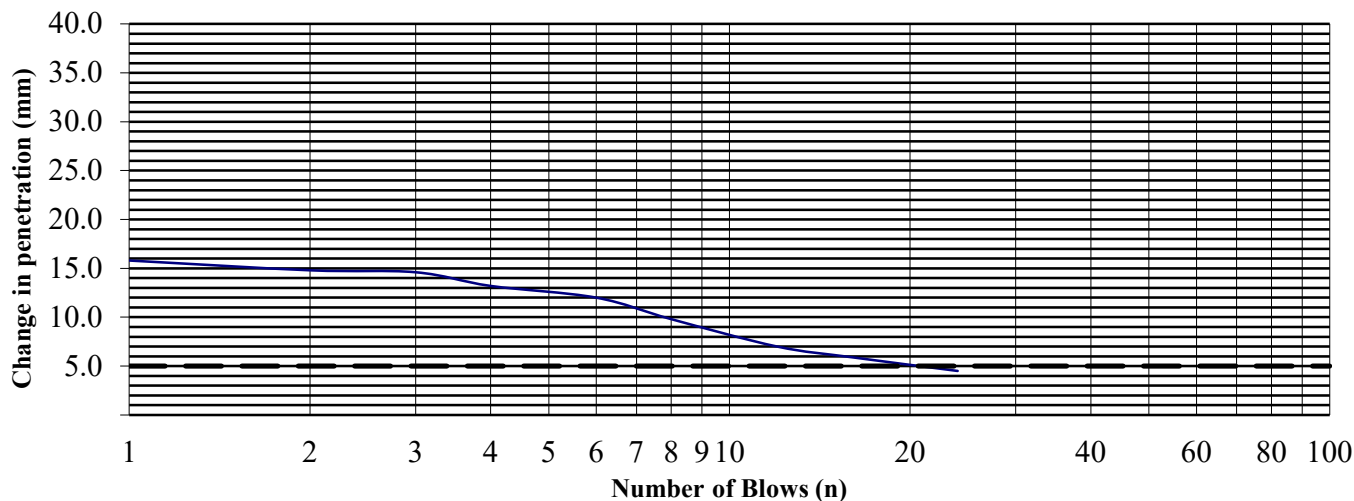
Sample Number: Base Depth (m):

Sample Type: B

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Material Retained on the 20mm BS Test Sieve (%):	9
Interpretation based on steepest straight line intercept with 5mm change in penetration.	

MCV Determination



Blows (N)	Penetration (mm)	n to 4n (mm)
1	67.9	15.8
2	60.0	14.8
3	55.8	14.6
4	52.1	13.2
6	48.7	12.0
8	45.2	9.8
12	41.2	7.0
16	38.9	5.9
24	36.7	4.5
32	35.4	
48	34.2	
64	33.0	
96	32.2	
128		
192		
256		

Test Results.

Moisture Content (%)	10
MCV	11.7



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Contract No:
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Client Ref:
11957-06-22

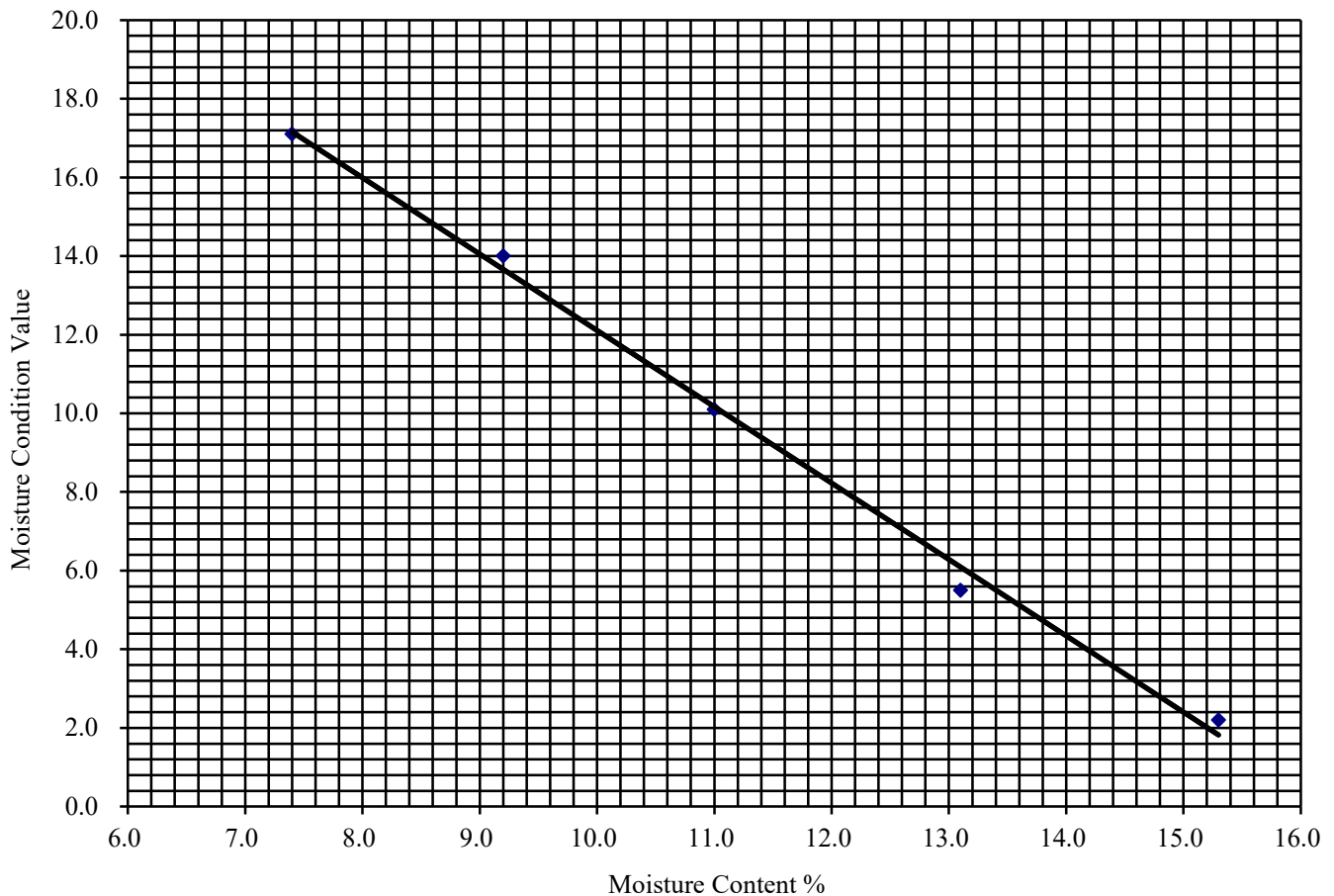
MOISTURE CONDITION VALUE CALIBRATION

BS1377 : Part 4 : 1990 Clause 5.5

Hole Number: TP25 Top Depth (m): 1.00
 Sample Number: Base Depth (m):
 Sample Type: B

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Initial Moisture Content (%):	7.2
Single/Separate Samples Tested	Separate
Material Retained on the 20mm BS Test Sieve (%):	2



Test Results.

Test Number	1	2	3	4	5
Moisture Content (%)	7.4	9.2	11.0	13.1	15.3
MCV	17.1	14.0	10.1	5.5	2.2



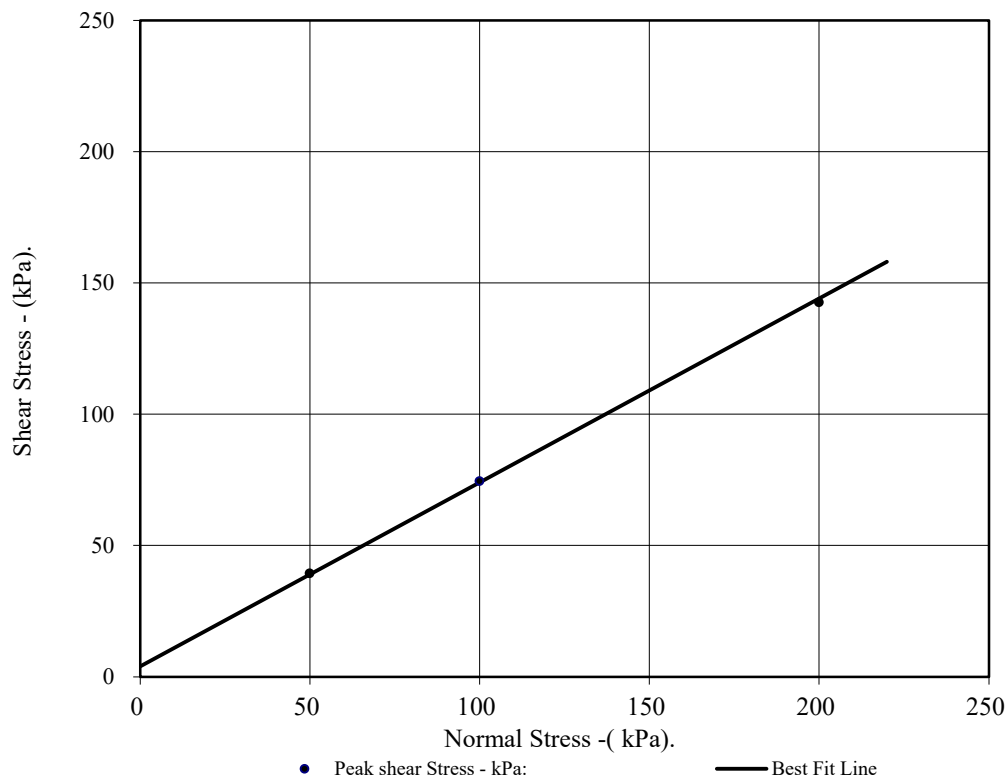
A034 Tinakilly

Contract No:	PSL22/5678
Client Ref:	11957-06-22

CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4

Hole Number:	TP25		Top Depth:	2.00	
Sample Number:			Base Depth:		
Sample Conditions:	Dry		Sample Type	B	
Particle Density - Mg/m ³ :	2.65	Assumed	Remarks:		
Sample Preparation:	Material tested passing 2mm sieve Remoulded using hand tamped effort.				
Sample Description:	See summary of soil descriptions.				
STAGE			1	2	3
Initial Conditions					
Height - mm:			19.99	19.99	19.99
Length - mm:			60.05	60.05	60.05
Moisture Content - %:			12	12	12
Bulk Density - Mg/m ³ :			1.74	1.74	1.74
Dry Density - Mg/m ³ :			1.56	1.56	1.56
Voids Ratio:			0.698	0.699	0.699
Normal Pressure- kPa			50	100	200
Consolidation Stage					
Consolidated Height - mm:			19.76	19.42	19.22
Shearing Stage					
Rate of Strain - mm/min			0.60	0.60	0.60
Displacement at peak shear stress - mm			3.01	6.01	5.72
Peak shear Stress - kPa:			39	75	143
Final Consolidated Conditions					
Moisture Content - %:			11	10	8.7
Bulk Density - Mg/m ³ :			1.76	1.80	1.81
Dry Density - Mg/m ³ :			1.58	1.63	1.67
Peak					
Angle of Shearing Resistance:(θ)			35		
Effective Cohesion - kPa:			4		



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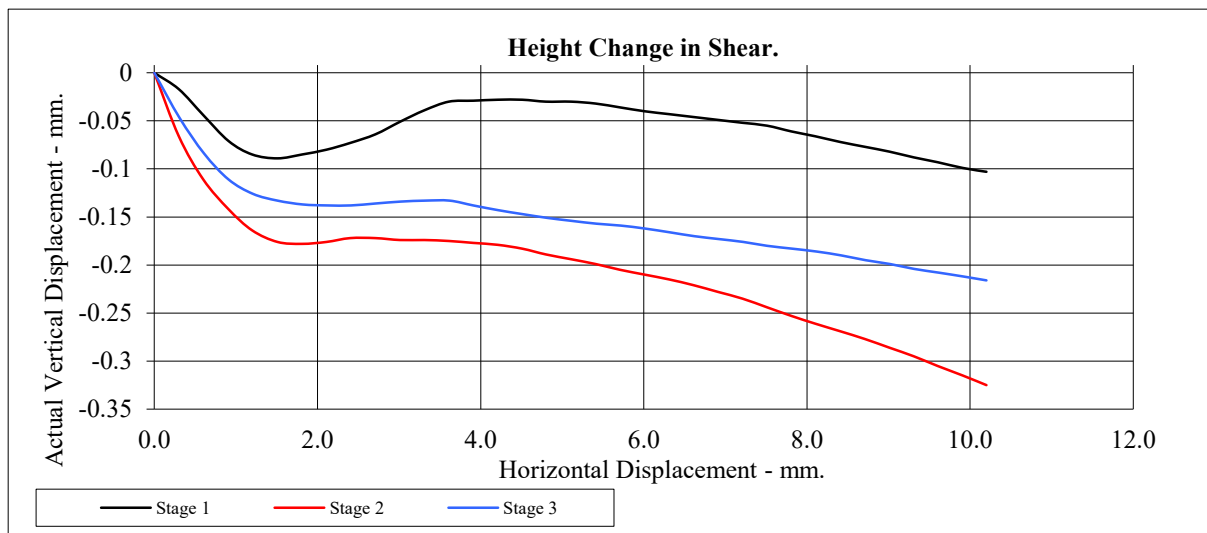
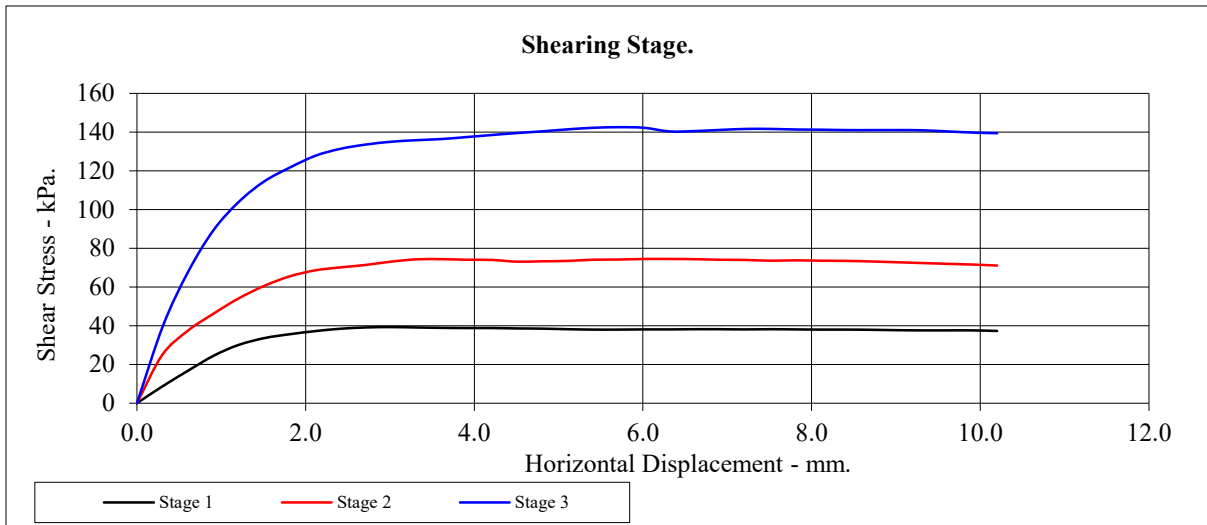
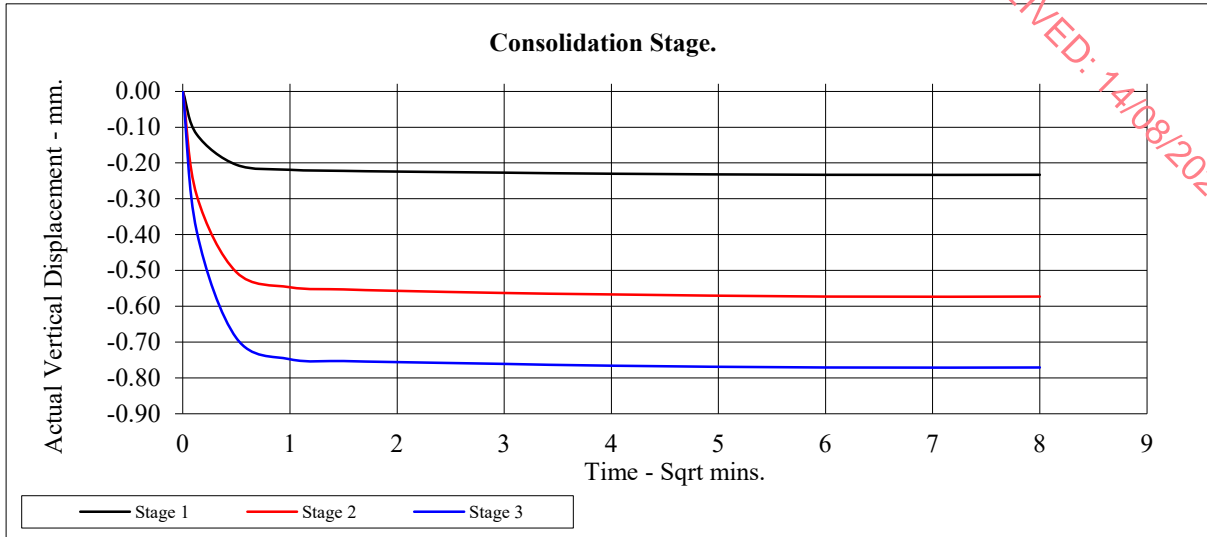
Contract No:
PSL22/5678
Client Ref:
11957-06-22

CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4

Hole Number:	TP25	Top Depth:	2.00
Sample Number:		Base Depth:	

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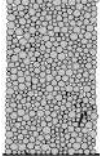
Contract No:
PSL22/5678
Client Ref:
11957-06-22

Effective Stress Triaxial Compression

Consolidated Undrained

Summary Report

RECEIVED: 14/08/2023

Sample Details  <i>sketch showing specimen location in original sample</i>	Depth	2.00m		
	Description Type	See summary of soil descriptions. Recompacted at 2.5kg effort, natural moisture content.		
Initial Sample Length	L ₀	(mm)	200.0	
Initial Sample Diameter	D ₀	(mm)	101.7	
Initial Sample Weight	W ₀	(gr)	3352.0	
Initial Bulk Density	ρ ₀	(Mg/m ³)	2.06	
Particle Density	ρ _s	(Mg/m ³)	2.66	


Initial Conditions			Stage 1	2	3	4
Initial Cell Pressure	σ _{3i}	(kPa)	1300	1350	1450	
Initial Back Pressure	U _{bi}	(kPa)	1250	1250	1250	
Membrane Thickness	m _b	(mm)	0.600			
Displacement Input	L _{IP}	(mm)	CH 2			
Load Input	N _{IP}	(N)	CH 1			
Pore Water Pressure Input	U _{pwp}	(kPa)	CH 3			
Sample Volume	V	(cc)	CH 2			
Initial Moisture	ω _i	(%)	21			
Initial Dry Density	ρ _{di}	(Mg/m ³)	1.70			
Initial Voids Ratio	e _i	.	0.562			
Initial Degree of Saturation	S _i	(%)	100			
B Value	B	.	0.98			

Final Conditions			Stage 1	2	3	4
Final Moisture	ω _f	(%)	19			
Final Dry Density	ρ _{df}	(Mg/m ³)	1.80			
Final Voids Ratio	e _f	.	0.474			
Final Degree of Saturation	S _f	(%)	100.0			
Failure Criteria	.	.	Max. Dev. Stress	Max. Dev. Stress	Max. Dev. Stress	
Strain At Failure	ε _f	(%)	4.89	15.05	19.99	
Stress At Failure	(σ ₁ - σ ₃)	(kPa)	78.3	127.6	209.0	
Minor Stress At Failure	σ ₃ '	(kPa)	39.0	70.0	128.0	
Major Stress At Failure	σ ₁ '	(kPa)	117.3	197.6	337.0	
Principal Stress Ratio At Failure	σ ₁ ' / σ ₃ '		3.008	2.823	2.632	

Notes



Plastic

	Test Method	BS1377-8 : 1990 : Clause 7	Test Name	TP01 2m
			Test Date	14/09/2022
	Jobfile	AO34 Tinakilly	Borehole	TP01
	Client	CS Consulting	Sample	2m
			Depth	2.00m

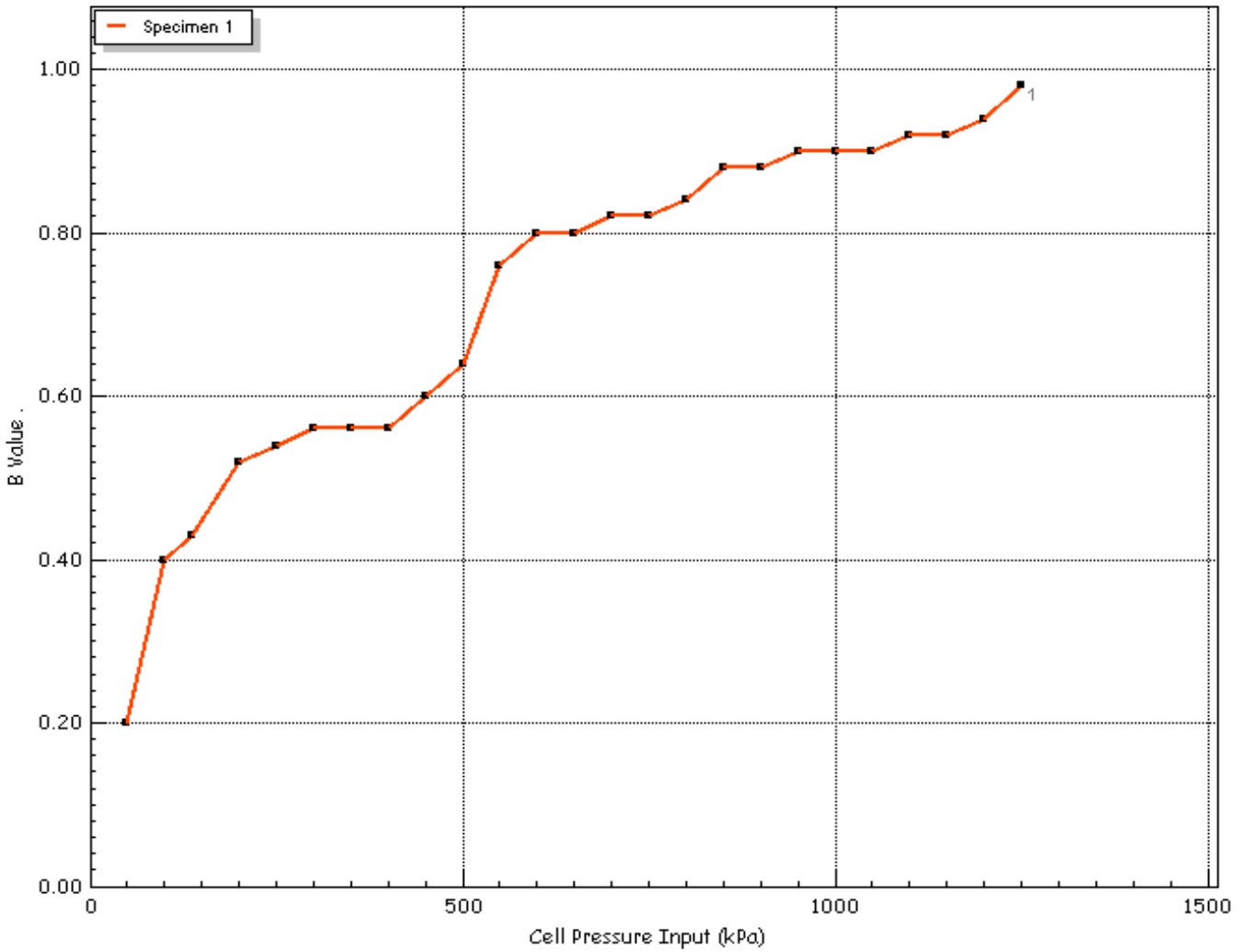
Effective Stress Triaxial Compression


Consolidated Undrained

Saturation Plots

RECEIVED: 14/08/2023

Saturation Method		Stepped
Cell Pressure Input	σ (kPa)	1250
Pore Water Pressure Input	u_{pwp} (kPa)	1227
B Value	B	0.98



	Test Method	BS1377-8 : 1990 : Clause 7	Test Name	TP01 2m
			Test Date	14/09/2022
	Jobfile	AO34 Tinakilly	Borehole	TP01
	Client	CS Consulting	Sample Depth	2m / 2.00m

Effective Stress Triaxial Compression

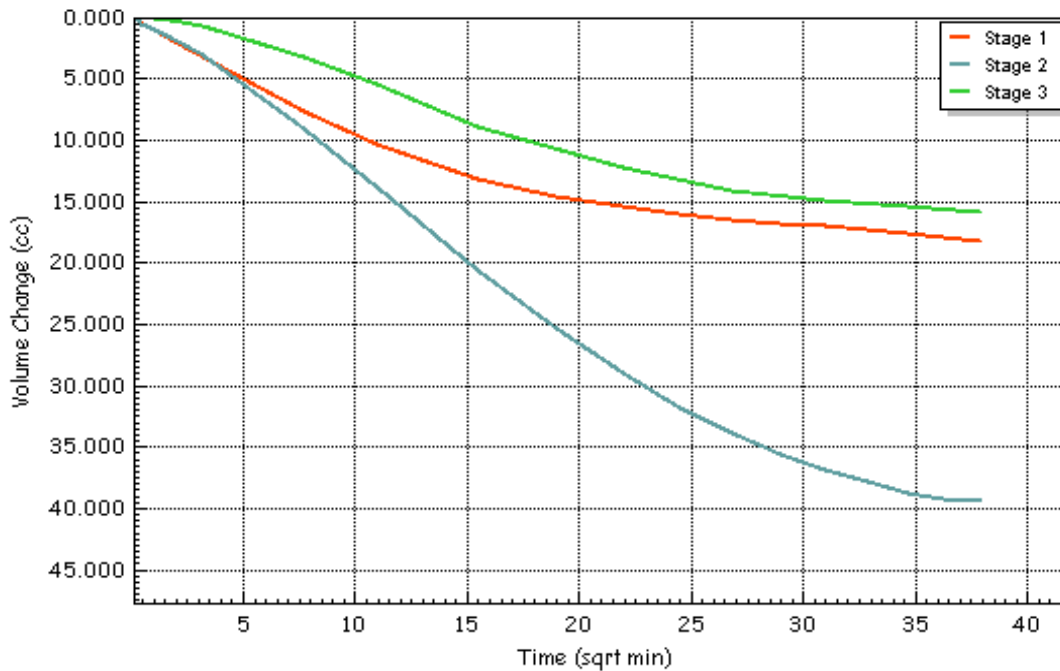
Consolidated Undrained


Consolidation Plots

Initial Conditions			Stage 1	2	3
Initial Cell Pressure	σ_3	(kPa)	1300	1350	1450
Initial Back Pressure	u_{bi}	(kPa)	1250	1250	1250
Pore Water Pressure Input	u_{pwp}	(kPa)	1270	1306	1360
Drainage Method			Radial+One End		

Final Conditions			Stage 1	2	3
PWP Dissipation %	$U\%$	(%)	100.00	100.00	100.00
Volumetric Strain	$\epsilon_v\%$	(%)	1.12	2.43	0.98
Corrected Length	L_c	(mm)	199.3	188.0	168.7
Corrected Area	A_c	(cm ²)	80.63	83.38	91.97
Corrected Volume	V_c	(cc)	1606.475	1567.076	1551.234
t ₁₀₀	t_{100}	(min)	369.54	780.05	628.15
Consolidation	c_v	(m ² /year)	0.594	0.281	0.349
Compressibility	m_v	(m ² /MN)	0.560	0.433	0.089
Test Time	t_F	(h:m:s)	11:05:10	23:24:05	18:50:40
Estimated Strain to Failure	$\epsilon\%$	(%)	5.0	5.0	5.0
Shear Machine Speed	d_r	(mm/min)	0.01498	0.01498	0.01498

Notes

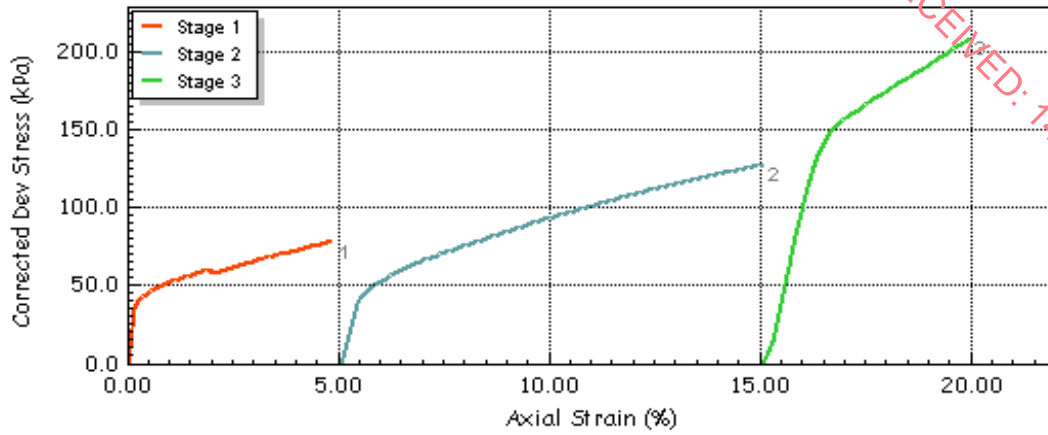


	Test Method	BS1377-8 : 1990 : Clause 7	Test Name	TP01 2m
			Test Date	14/09/2022
Jobfile	AO34 Tinakilly	Borehole	TP01	
Client	CS Consulting	Sample	2m	
		Depth	2.00m	

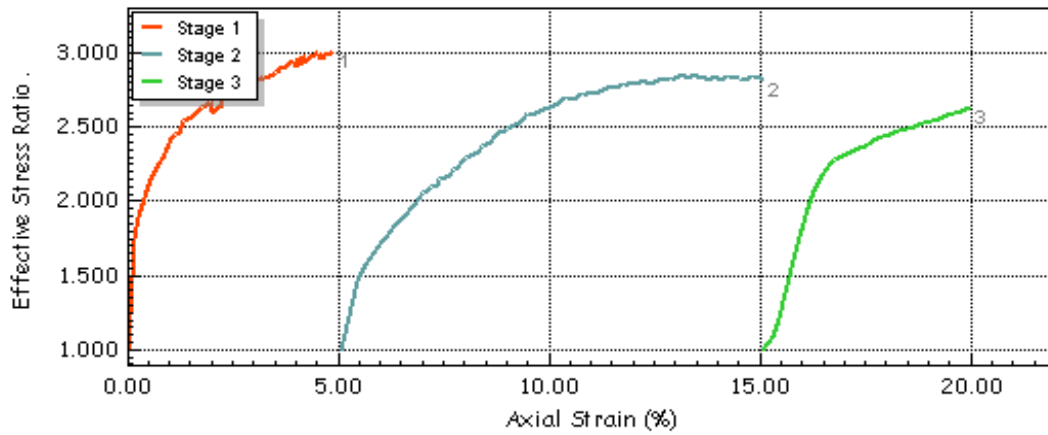
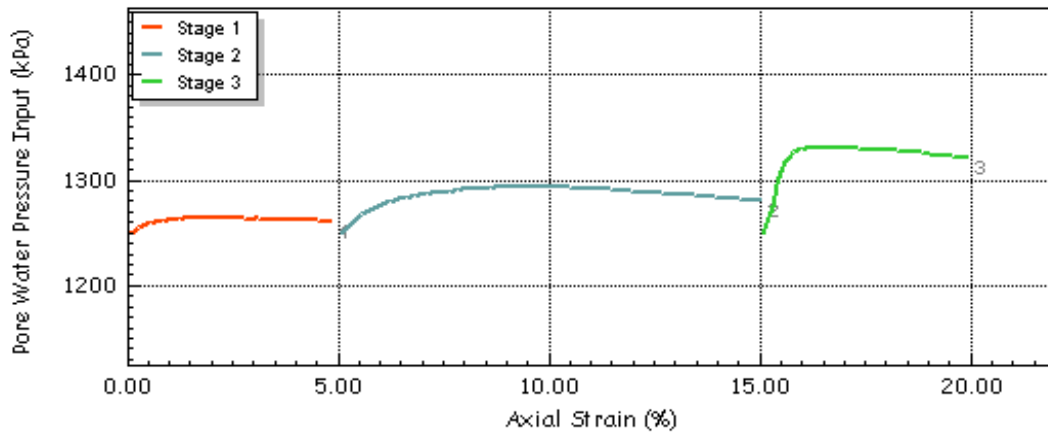
Effective Stress Triaxial Compression


Consolidated Undrained

Shear Stage Plots



RECEIVED: 14/08/2023



	Test Method	BS1377-8 : 1990 : Clause 7	Test Name	TP01 2m
			Test Date	14/09/2022
	Jobfile	AO34 Tinakilly	Borehole	TP01
	Client	CS Consulting	Sample	2m
			Depth	2.00m

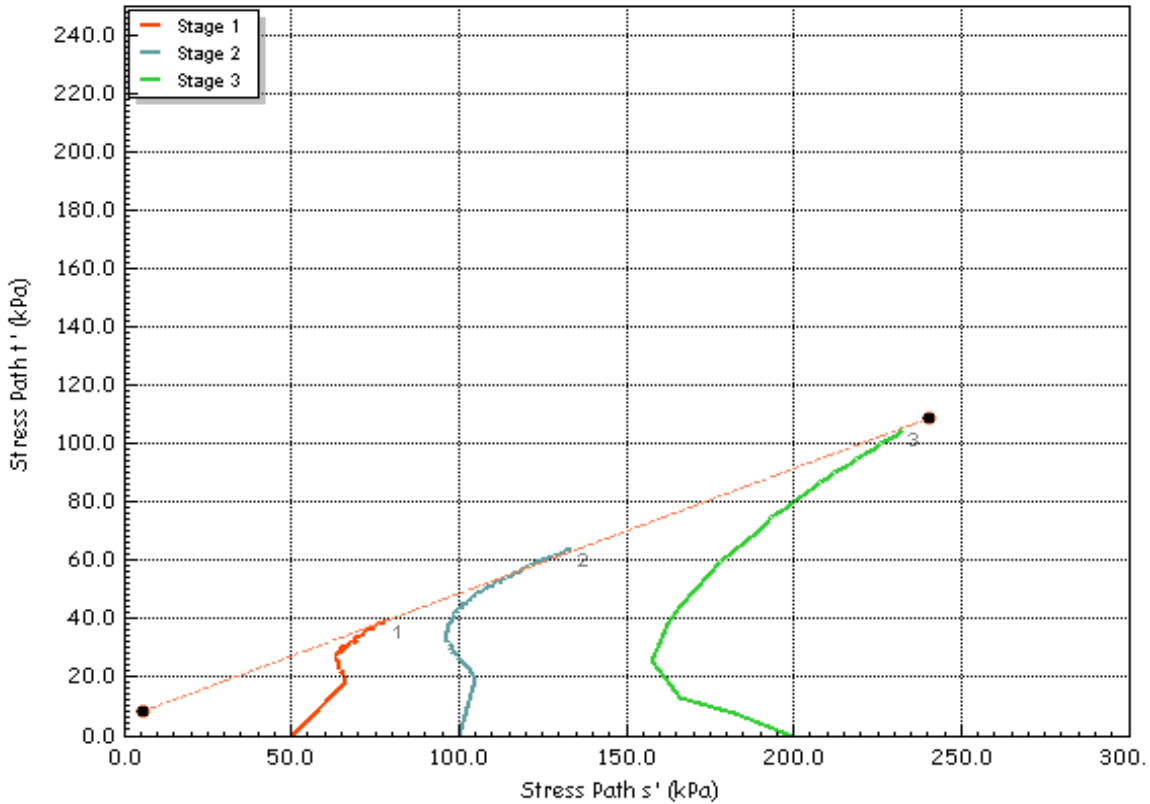
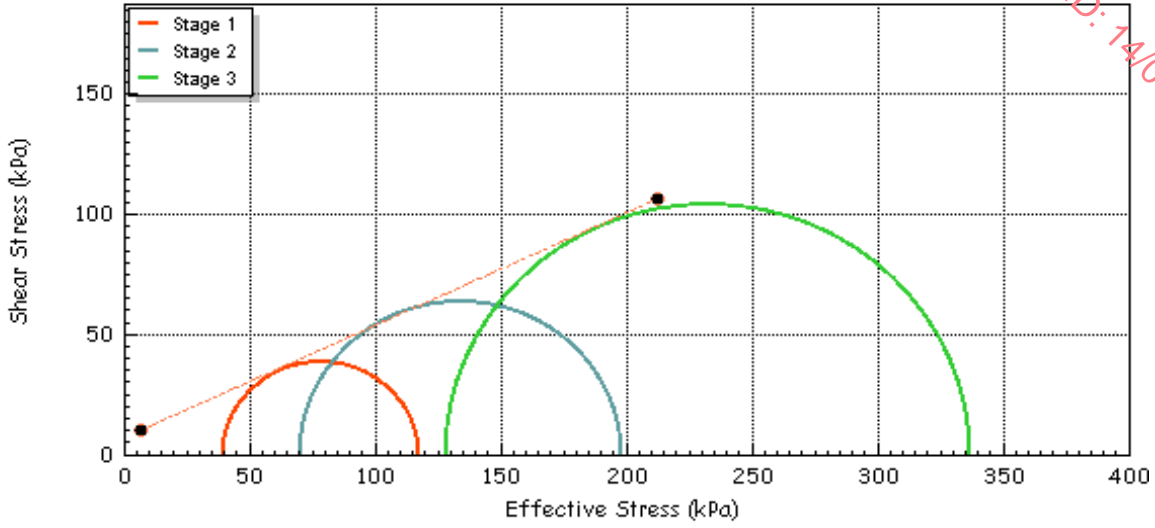
Effective Stress Triaxial Compression

Consolidated Undrained

Shear Stage Plots

Effective	c'	(kPa)	6.77	Effective Cohesion c'	(kPa)	6.77
Effective Friction	ϕ'	(deg)	25.2	Effective Friction ϕ'	(deg)	25.2

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Test Method BS1377-8 : 1990 : Clause 7
Database: .\SQLEXPRESS \ tester

Test Name TP01 2m
Test Date 14/09/2022

Site Reference
Jobfile AO34 Tinakilly
Client CS Consulting

Borehole TP01
Sample 2m
Depth 2.00m

Operator *

Checked *

Approved *

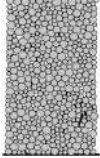
*

Effective Stress Triaxial Compression

Consolidated Undrained

Summary Report

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Sample Details	Depth	1.50m		
 <i>sketch showing specimen location in original sample</i>	Description	See summary of soil descriptions.		
	Type	Recompacted at 2.5kg effort, natural moisture cont		
	Initial Sample Length	L ₀	(mm)	200.0
	Initial Sample Diameter	D ₀	(mm)	100.5
	Initial Sample Weight	W ₀	(gr)	3427.0
Initial Bulk Density	ρ ₀	(Mg/m ³)	2.16	
Particle Density	ρ _s	(Mg/m ³)	2.66	


Initial Conditions				Stage 1	2	3	4
Initial Cell Pressure	σ _{3i}	(kPa)	700	750	850		
Initial Back Pressure	U _{bi}	(kPa)	650	650	650		
Membrane Thickness	m _b	(mm)	0.600				
Displacement Input	L _{IP}	(mm)	CH 4				
Load Input	N _{IP}	(N)	CH 1				
Pore Water Pressure Input	U _{pwp}	(kPa)	CH 3				
Sample Volume	V	(cc)	CH 2				
Initial Moisture	ω _i	(%)	16				
Initial Dry Density	ρ _{di}	(Mg/m ³)	1.86				
Initial Voids Ratio	e _i	.	0.432				
Initial Degree of Saturation	S _i	(%)	100				
B Value	B	.	0.95				

Final Conditions				Stage 1	2	3	4
Final Moisture	ω _f	(%)	15				
Final Dry Density	ρ _{df}	(Mg/m ³)	1.93				
Final Voids Ratio	e _f	.	0.378				
Final Degree of Saturation	S _f	(%)	100.0				
Failure Criteria	.	.		Max. Dev. Stress	Max. Dev. Stress	Max. Dev. Stress	
Strain At Failure	ε _f	(%)	1.70	5.43	17.75		
Stress At Failure	(σ ₁ - σ ₃)'	(kPa)	53.1	109.2	346.6		
Minor Stress At Failure	σ ₃ '	(kPa)	12.3	38.6	148.3		
Major Stress At Failure	σ ₁ '	(kPa)	65.4	147.8	494.9		
Principal Stress Ratio At Failure	σ ₁ ' / σ ₃ '		5.319	3.829	3.337		

Notes



Plastic

	Test Method	BS1377-8 : 1990 : Clause 7	Test Name	TP15 1.5m
			Test Date	14/09/2022
	Jobfile	AO34 Tinakilly	Borehole	tp15
	Client	CS Consulting	Sample	1.5m
		Depth	1.50m	

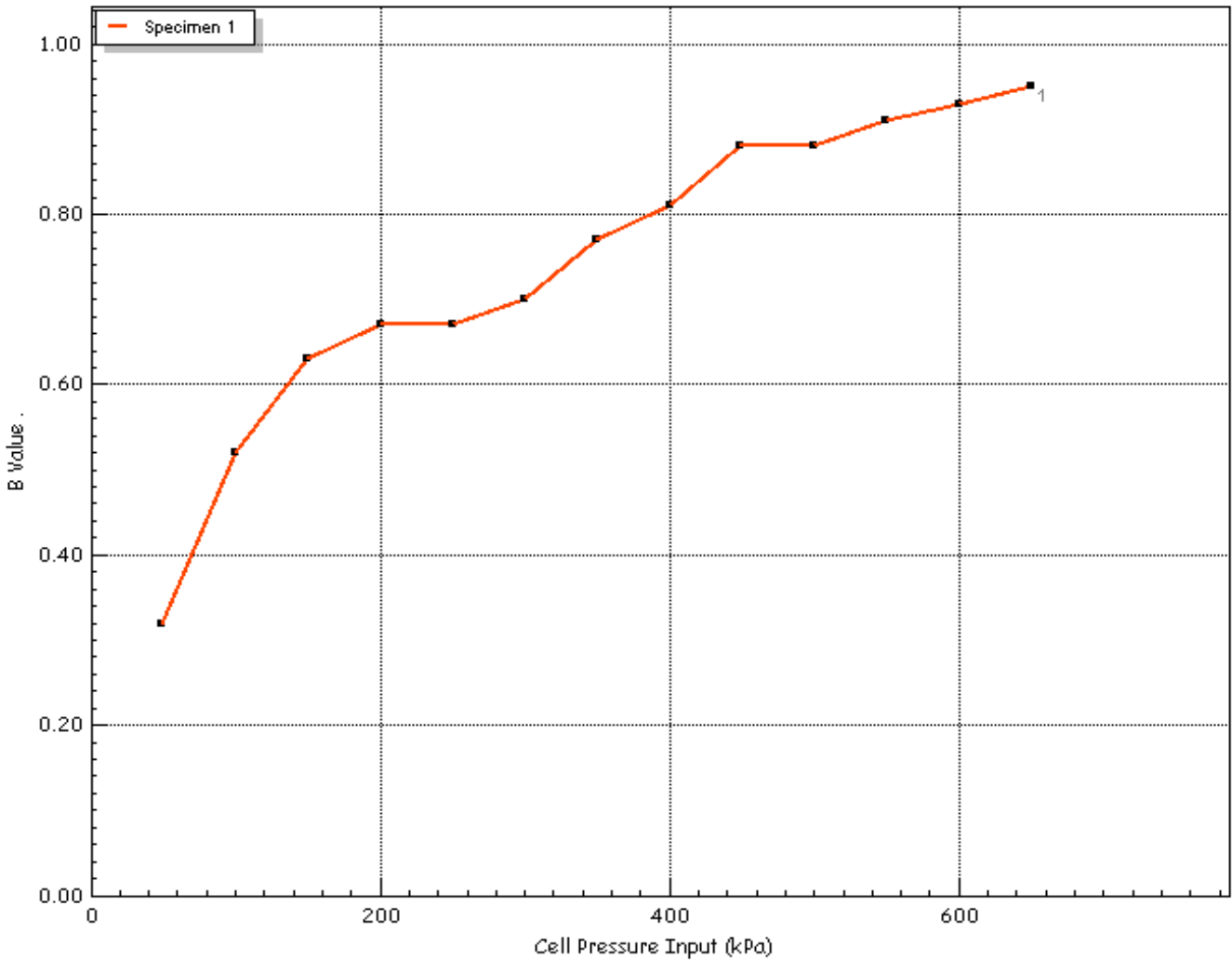
Effective Stress Triaxial Compression


Consolidated Undrained

Saturation Plots

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Saturation Method			Stepped
Cell Pressure Input	σ	(kPa)	650
Pore Water Pressure Input	u_{pwp}	(kPa)	639
B Value	B	.	0.95



	Test Method	BS1377-8 : 1990 : Clause 7	Test Name	TP15 1.5m
			Test Date	14/09/2022
	Jobfile	AO34 Tinakilly	Borehole	tp15
	Client	CS Consulting	Sample	1.5m
			Depth	1.50m

Effective Stress Triaxial Compression

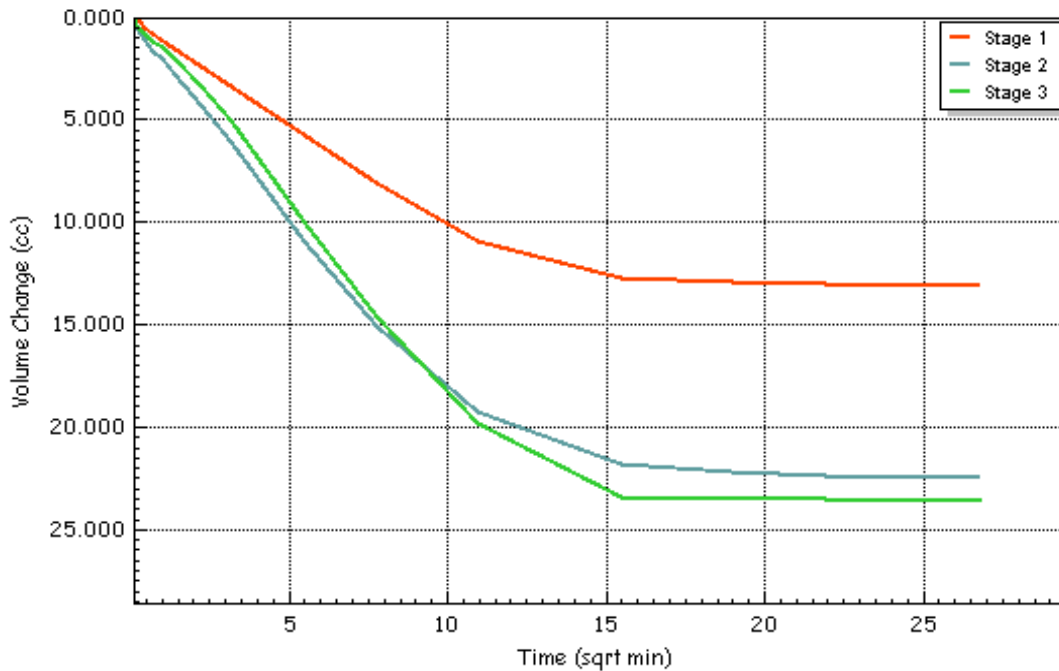
Consolidated Undrained


Consolidation Plots

Initial Conditions			Stage 1	2	3
Initial Cell Pressure	σ_3	(kPa)	700	750	850
Initial Back Pressure	u_{bi}	(kPa)	650	650	650
Pore Water Pressure Input	u_{pwp}	(kPa)	684	734	817
Drainage Method			Radial+One End		

Final Conditions			Stage 1	2	3
PWP Dissipation %	U%	(%)	100.00	100.00	100.00
Volumetric Strain	ϵ_v	(%)	0.82	2.24	3.73
Corrected Length	L_c	(mm)	199.5	194.6	184.7
Corrected Area	A_c	(cm ²)	78.89	79.04	80.80
Corrected Volume	V_c	(cc)	1573.465	1550.971	1527.373
T100 Time to Failure	t_{100}	(min)	160.14	130.54	136.74
Consolidation	c_v	(m ² /year)	1.313	1.611	1.538
Compressibility	m_v	(m ² /MN)	0.243	0.266	0.223
Test Time	t_F	(h:m:s)	04:48:15	03:54:58	04:06:07
Estimated Strain to Failure	ϵ	(%)	5.0	5.0	5.0
Shear Machine Speed	d_r	(mm/min)	0.03460	0.03460	0.03460

Notes

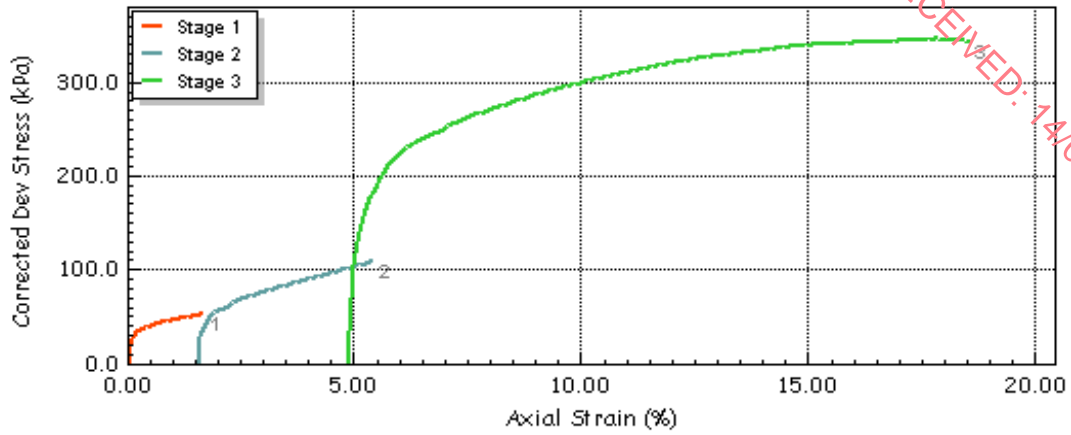


	Test Method	BS1377-8 : 1990 : Clause 7	Test Name	TP15 1.5m
			Test Date	14/09/2022
Jobfile	AO34 Tinakilly	Borehole	tp15	
Client	CS Consulting	Sample	1.5m	
		Depth	1.50m	

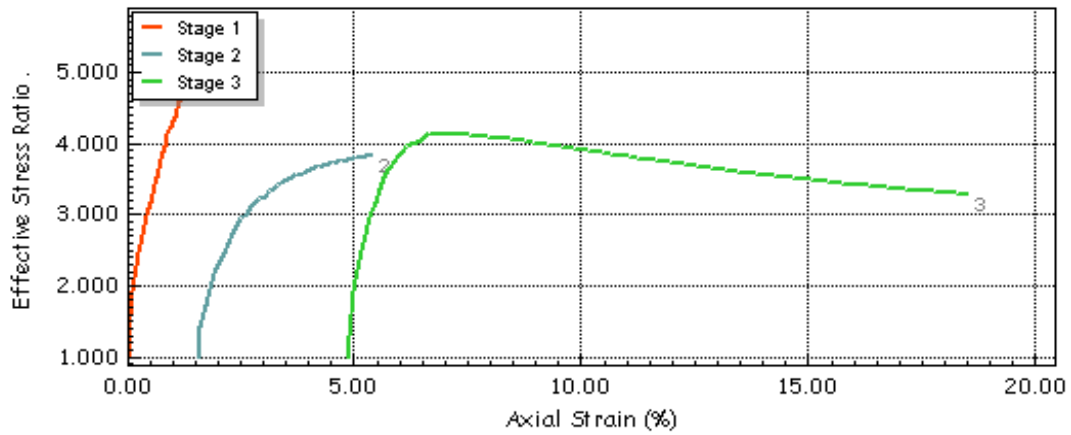
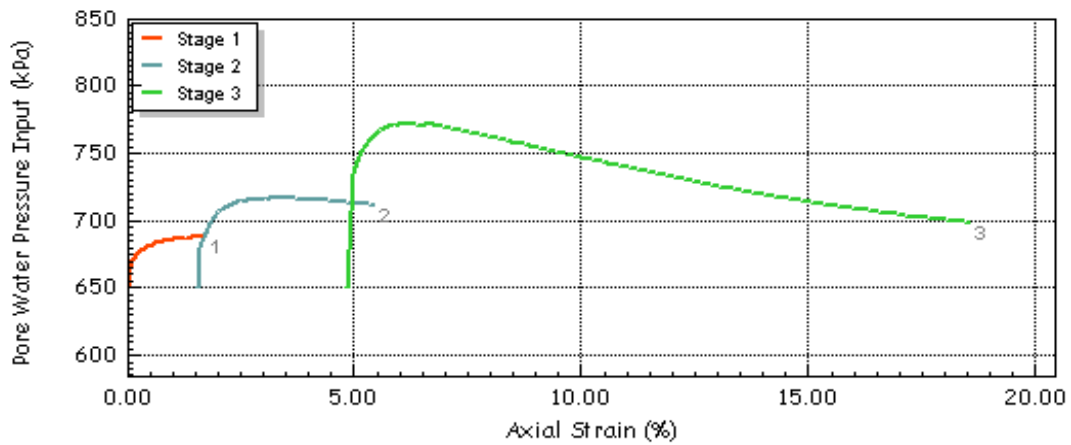
Effective Stress Triaxial Compression


Consolidated Undrained

Shear Stage Plots



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	Test Method	BS1377-8 : 1990 : Clause 7	Test Name	TP15 1.5m
			Test Date	14/09/2022
	Jobfile	AO34 Tinakilly	Borehole	tp15
	Client	CS Consulting	Sample	1.5m
			Depth	1.50m

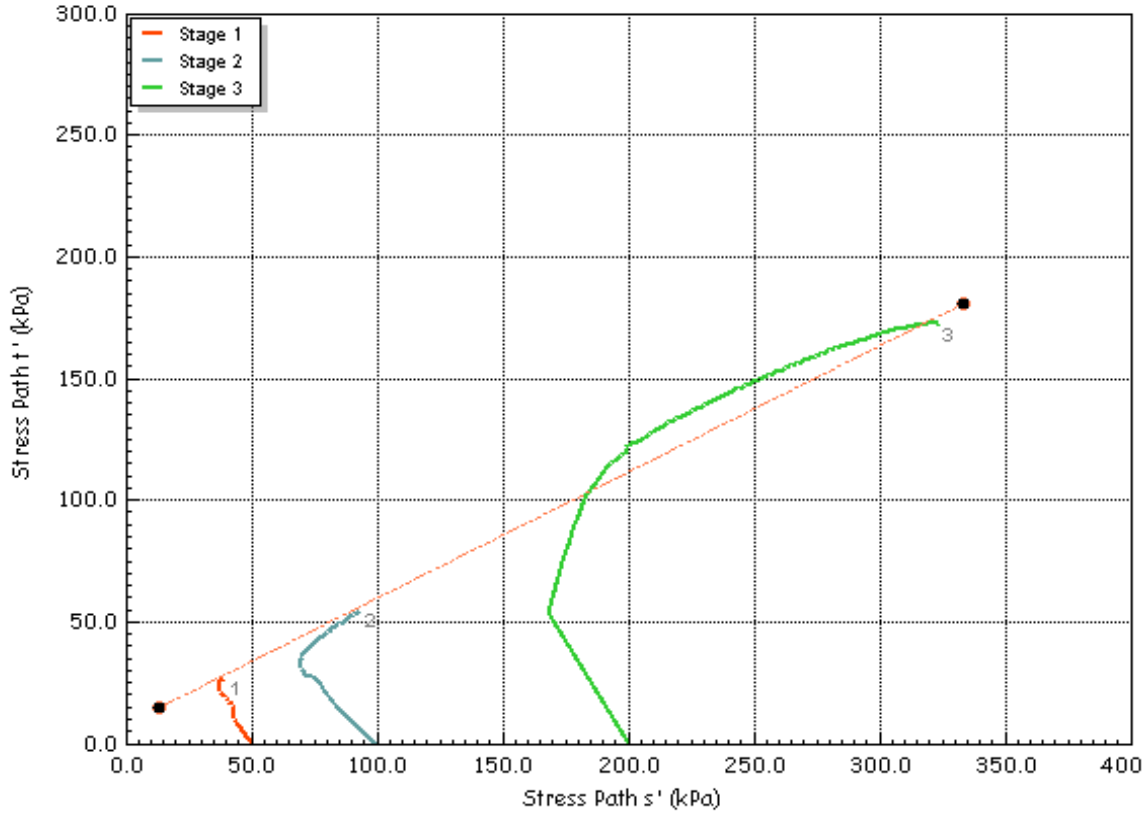
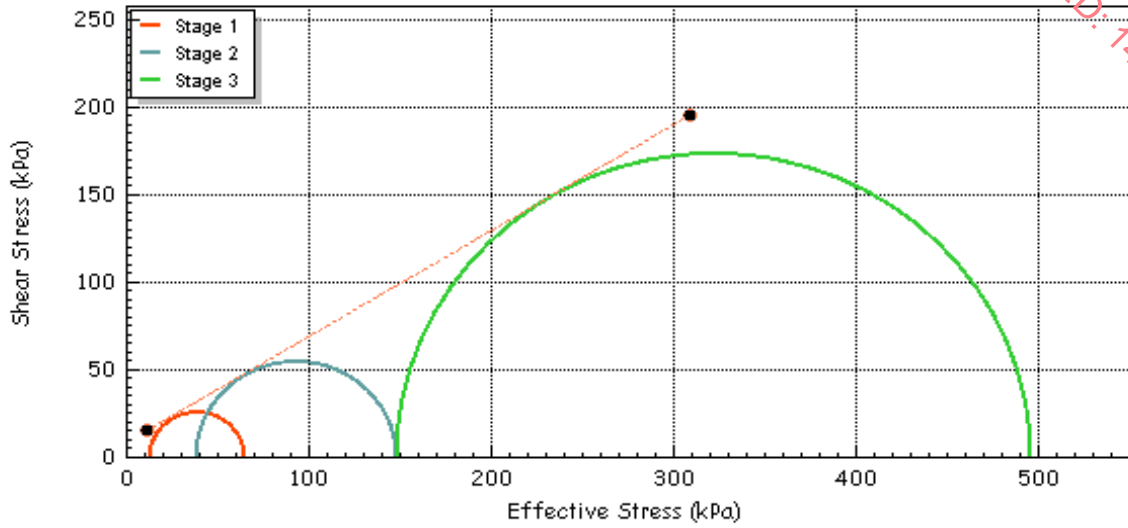
Effective Stress Triaxial Compression


Consolidated Undrained

Shear Stage Plots

Effective	c'	(kPa)	8.57	Effective Cohesion c'	(kPa)	8.57
Effective Friction	ϕ'	(deg)	31.3	Effective Friction ϕ'	(deg)	31.3

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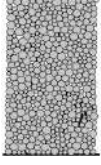
	Test Method	BS1377-8 : 1990 : Clause 7	Test Name	TP15 1.5m
	Jobfile	AO34 Tinakilly	Test Date	14/09/2022
Client	CS Consulting	Borehole	tp15	
		Sample	1.5m	
		Depth	1.50m	

Effective Stress Triaxial Compression

Consolidated Undrained

Summary Report


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Sample Details	Depth	2.00m		
 <i>sketch showing specimen location in original sample</i>	Description	See summary of soil descriptions.		
	Type	Recompacted at 2.5kg effort, natural moisture content.		
Initial Sample Length	L ₀	(mm)	200.0	
Initial Sample Diameter	D ₀	(mm)	100.8	
Initial Sample Weight	W ₀	(gr)	3323.0	
Initial Bulk Density	ρ ₀	(Mg/m ³)	2.08	
Particle Density	ρ _s	(Mg/m ³)	2.66	

Initial Conditions			Stage 1	2	3	4
Initial Cell Pressure	σ _{3i}	(kPa)	600	650	750	
Initial Back Pressure	U _{bi}	(kPa)	550	550	550	
Membrane Thickness	m _b	(mm)	0.600			
Displacement Input	L _{IP}	(mm)	CH 2			
Load Input	N _{IP}	(N)	CH 4			
Pore Water Pressure Input	U _{pwp}	(kPa)	CH 3			
Sample Volume	V	(cc)	CH 2			
Initial Moisture	ω _i	(%)	21			
Initial Dry Density	ρ _{di}	(Mg/m ³)	1.71			
Initial Voids Ratio	e _i	.	0.552			
Initial Degree of Saturation	S _i	(%)	100			
B Value	B	.	0.96			

Final Conditions			Stage 1	2	3	4
Final Moisture	ω _f	(%)	20			
Final Dry Density	ρ _{df}	(Mg/m ³)	1.80			
Final Voids Ratio	e _f	.	0.474			
Final Degree of Saturation	S _f	(%)	100.0			
Failure Criteria	.		Max. Dev. Stress	Max. Dev. Stress	Max. Dev. Stress	
Strain At Failure	ε _f	(%)	1.91	5.53	20.00	
Stress At Failure	(σ ₁ - σ ₃)	(kPa)	52.3	100.9	287.1	
Minor Stress At Failure	σ ₃ '	(kPa)	27.0	58.0	183.0	
Major Stress At Failure	σ ₁ '	(kPa)	79.3	158.9	470.1	
Principal Stress Ratio At Failure	σ ₁ ' / σ ₃ '		2.936	2.740	2.569	

Notes	
	Plastic

	Test Method	BS1377-8 : 1990 : Clause 7	Test Name	TP19 2m
			Test Date	14/09/2022
	Jobfile	AO34 Tinakilly	Borehole	TP19
	Client	CS Consulting	Sample	2m
			Depth	2.00m

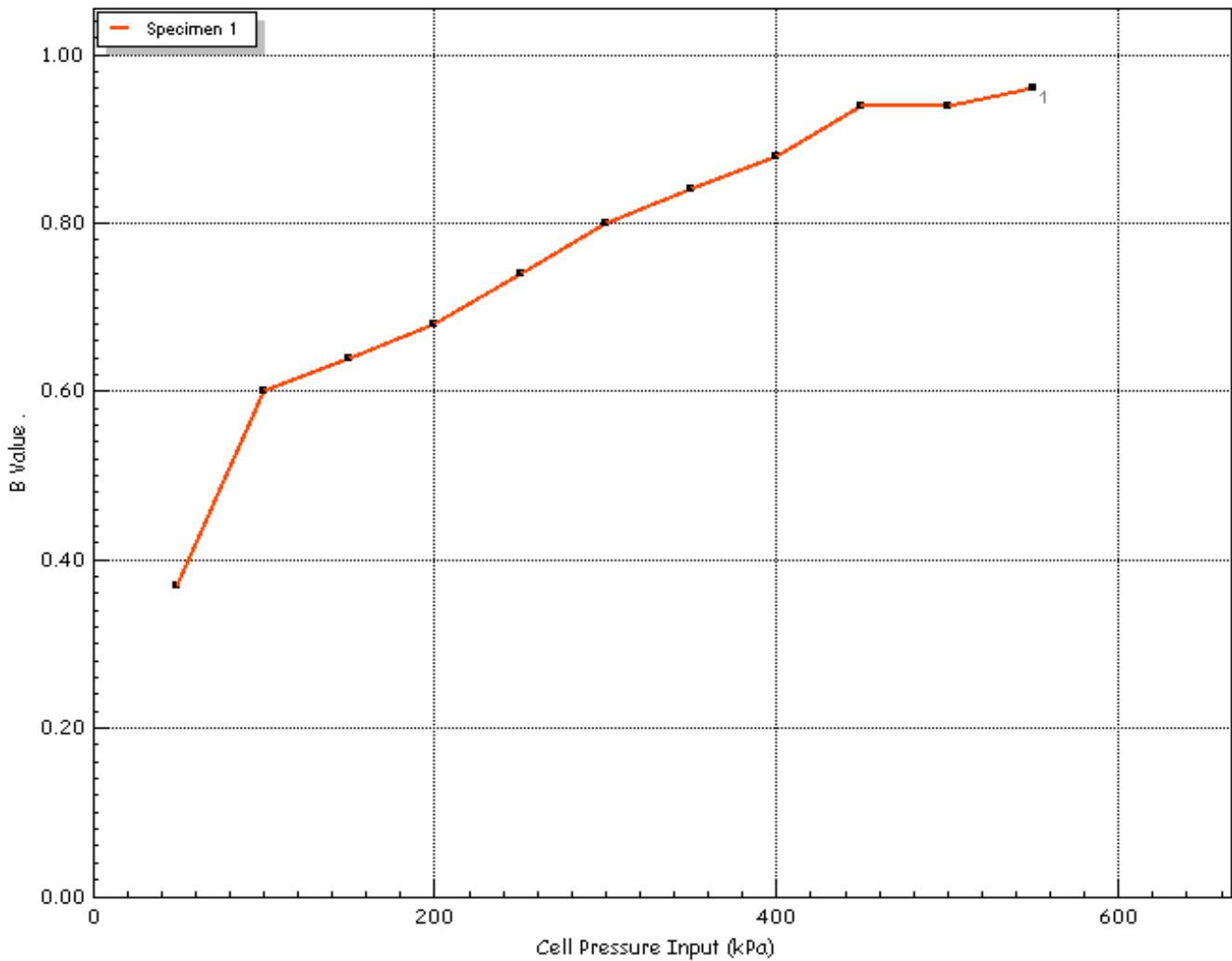
Effective Stress Triaxial Compression


Consolidated Undrained

Saturation Plots

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Saturation Method			Stepped
Cell Pressure Input	σ	(kPa)	550
Pore Water Pressure Input	u_{pwp}	(kPa)	535
B Value	B	.	0.96



	Test Method	BS1377-8 : 1990 : Clause 7	Test Name	TP19 2m
			Test Date	14/09/2022
	Jobfile	AO34 Tinakilly	Borehole	TP19
	Client	CS Consulting	Sample	2m
			Depth	2.00m

Effective Stress Triaxial Compression

Consolidated Undrained

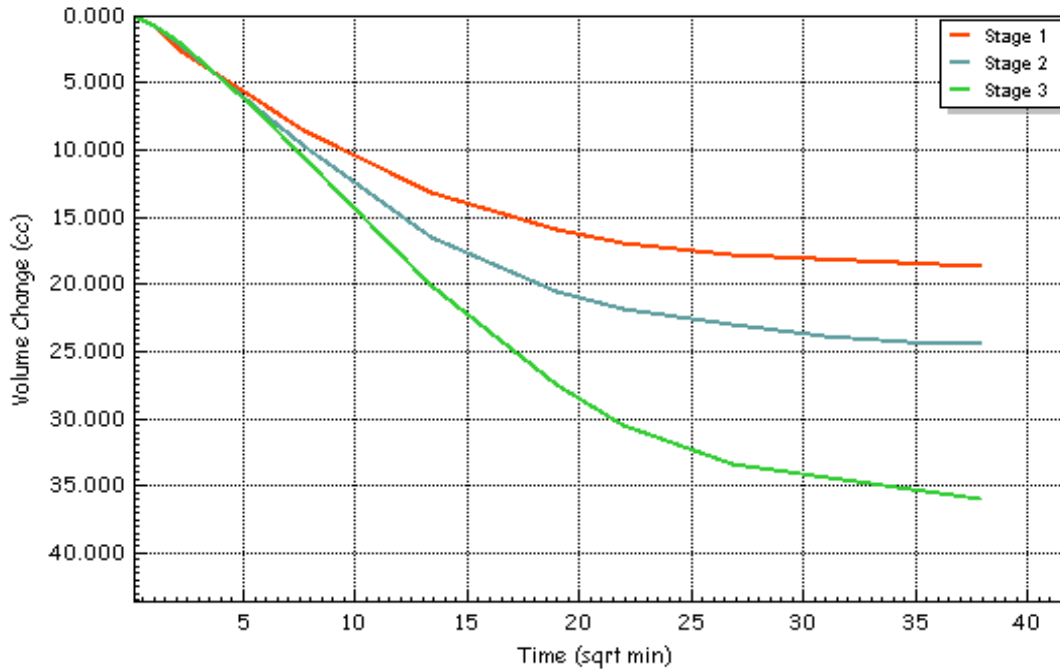
Consolidation Plots


Initial Conditions			Stage 1	2	3
Initial Cell Pressure	σ_3	(kPa)	600	650	750
Initial Back Pressure	u_{bi}	(kPa)	550	550	550
Pore Water Pressure Input	u_{pwp}	(kPa)	581	616	676
Drainage Method			Radial+One End		

Final Conditions			Stage 1	2	3
PWP Dissipation %	U%	(%)	100.00	100.00	100.00
Volumetric Strain	ϵ_v	(%)	1.17	1.53	2.25
Corrected Length	L_c	(mm)	199.2	194.4	185.1
Corrected Area	A_c	(cm ²)	79.18	79.88	81.95
Corrected Volume	V_c	(cc)	1577.361	1552.932	1516.947
t ₁₀₀	t ₁₀₀	(min)	255.73	328.27	420.56
Consolidation	c_v	(m ² /year)	0.831	0.647	0.505
Compressibility	m_v	(m ² /MN)	0.377	0.232	0.179
Test Time	t _F	(h:m:s)	07:40:18	09:50:53	12:37:00
Estimated Strain to Failure	ϵ	(%)	5.0	5.0	5.0
Shear Machine Speed	d _r	(mm/min)	0.02164	0.02164	0.02164

Notes

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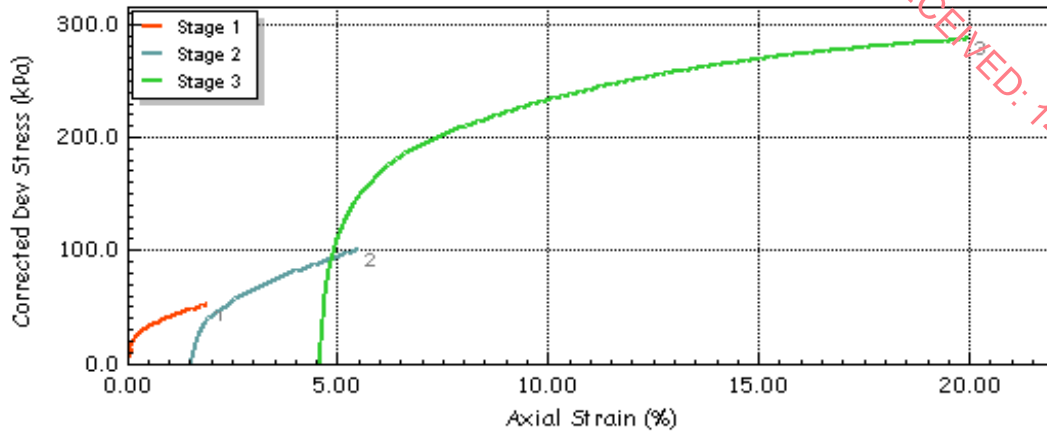


	Test Method	BS1377-8 : 1990 : Clause 7	Test Name	TP19 2m
			Test Date	14/09/2022
Jobfile	AO34 Tinakilly	Borehole	TP19	
Client	CS Consulting	Sample	2m	
		Depth	2.00m	

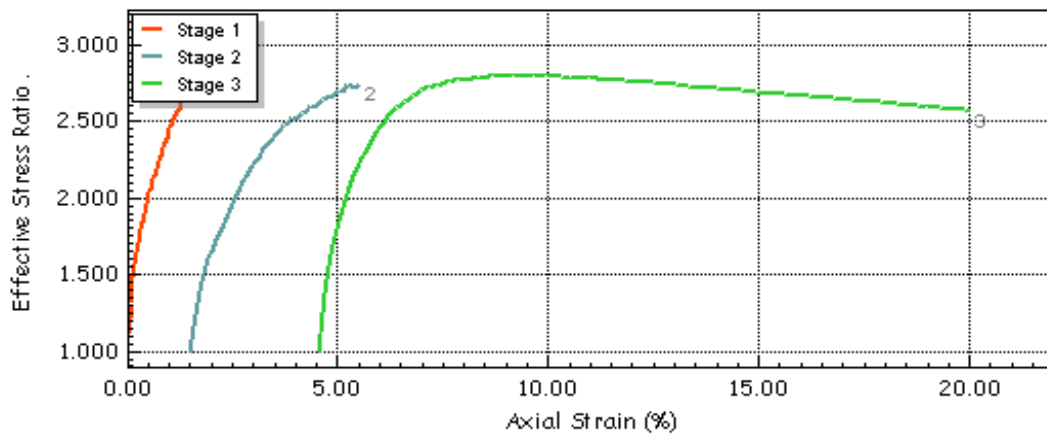
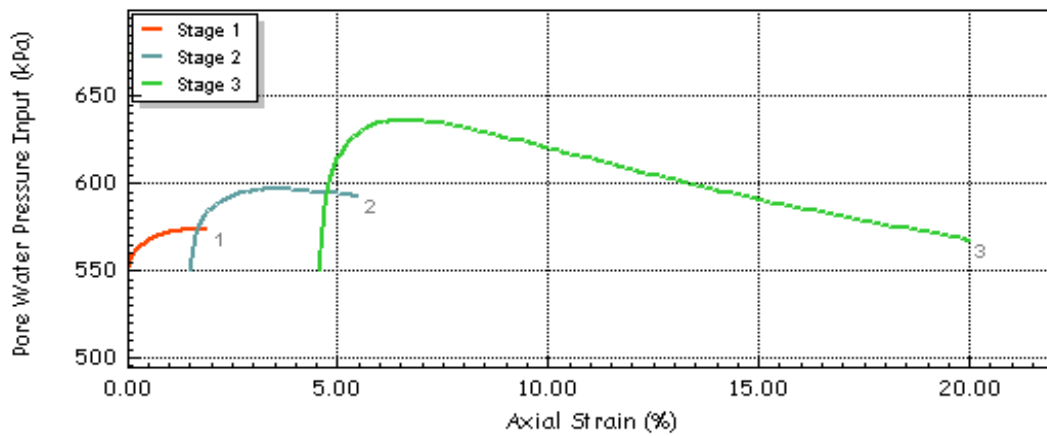
Effective Stress Triaxial Compression


Consolidated Undrained

Shear Stage Plots



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	Test Method	BS1377-8 : 1990 : Clause 7	Test Name	TP19 2m
			Test Date	14/09/2022
	Jobfile	AO34 Tinakilly	Borehole	TP19
	Client	CS Consulting	Sample	2m
			Depth	2.00m

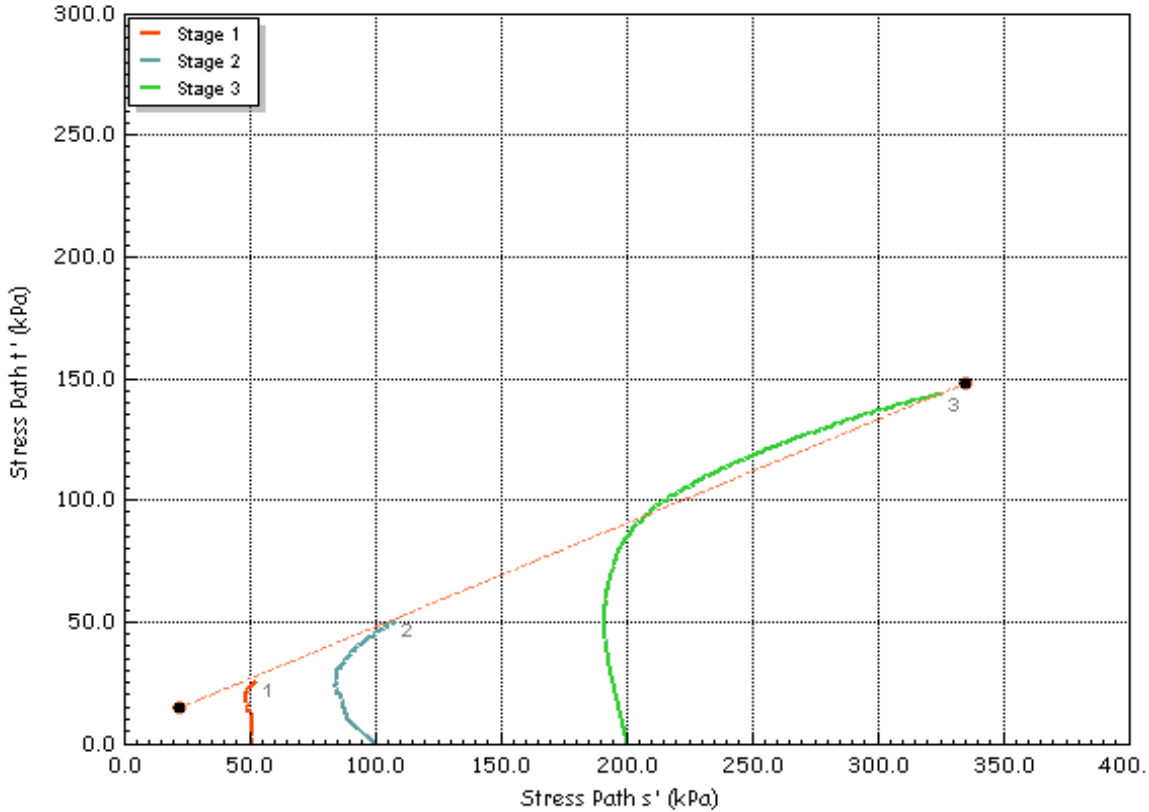
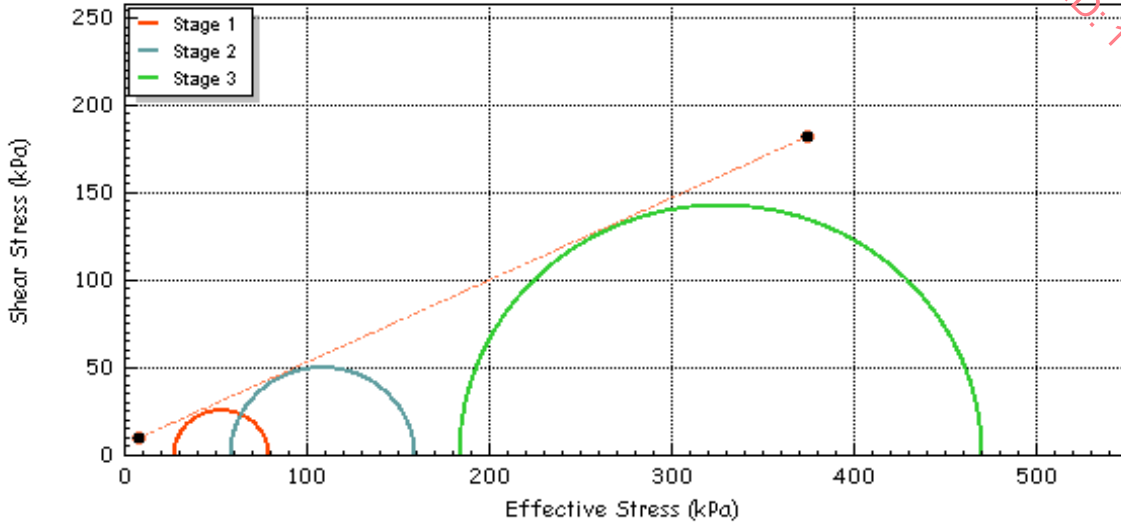
Effective Stress Triaxial Compression


Consolidated Undrained

Shear Stage Plots

Effective	c'	(kPa)	5.34	Effective Cohesion c'	(kPa)	5.34
Effective Friction	ϕ'	(deg)	25.3	Effective Friction ϕ'	(deg)	25.3

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	Test Method	BS1377-8 : 1990 : Clause 7	Test Name	TP19 2m
	Jobfile	AO34 Tinakilly	Test Date	14/09/2022
Client	CS Consulting	Borehole	TP19	
		Sample	2m	
		Depth	2.00m	

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APPENDIX 8 – Groundwater Monitoring



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GROUND INVESTIGATIONS IRELAND
Geotechnical & Environmental

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Hazelhatch Road,
Newcastle,
Co. Dublin,
D22 YD52

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Email: info@gii.ie
Web: www.gii.ie

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GROUNDWATER MONITORING

A034 Tinakilly, Co. Wicklow

BOREHOLE	DATE	TIME	GROUNDWATER (m BGL)	Comment
BH01	09/09/2022	09:30:00	8.91	
BH02	09/09/2022	09:25:00	7.75	
BH03	09/09/2022	09:20:00	9.76	
BH04	09/09/2022	09:10:00	5.82	
BH05	09/09/2022	09:00:00	-	Dry
BH06	09/09/2022	08:15:00	6.85	
BH01	20/09/2022	09:00:00	8.90	
BH02	20/09/2022	08:55:00	7.78	
BH03	20/09/2022	08:45:00	9.80	
BH04	20/09/2022	08:35:00	5.93	
BH05	20/09/2022	08:30:00	-	Dry
BH06	20/09/2022	08:25:00	6.34	