Castletreasure

CARR'S HILL, CO. CORK

VOLUME 2

Appendix 6.1

Soil Contamination Tests

Environmental Impact Assessment Report (EIAR

CAIRN PLC

Our Ref: JMS/Rp/P18081 + attachments (*.pdf)

27th March, 2019

Messrs. J.B Barry and Partners Ltd.
3 Eastgate Road,
Eastgate Business Park,
Little Island,
Co. Cork,
T45 KH74.

Re: Castletreasure Development, Douglas, Ground investigation factual report.

Introduction

In April 2018, Priority Geotechnical (PGL) were requested by JB Barry and Partners Ltd., on behalf of their client, Cairn PLC to undertake a site investigation for a proposed housing development at Castletreasure, Douglas, Co. Cork. The proposed works shall also comprise of the construction of a bridge structure across the Moneygourney Stream.

The proposed development site is located along the Carrigaline Road in Douglas. The main hydrological features of the area are the Douglas and Moneygurney Streams which flow in a northerly direction through the site. The Moneygurney Stream flows in a north westerly direction through the site and forms a portion of the northern boundary of the site. The Douglas Stream flows in a northern direction along the western boundary of the site.

Scope

The scope of the ground investigation, which was specified by JB Barry, comprised of the following;

- 9Nr. Cable percussion boreholes;
- 7Nr. Rotary follow on boreholes;
- 20Nr. Trial pit excavations;
- 5Nr: Slit trench excavations;
- *In situ* testing including standard penetration tests,
- All associated sampling;
- Laboratory testing and
- Reporting.

The scope of works was altered during the period of investigation. The final works as completed are summarised herein.

Objectives

The purpose of the ground investigation was to provide information to inform the engineering design solutions for the proposed housing development.

This factual report presents the factual records with regard to the ground investigation and data obtained at Castletreasure, Douglas Co. Cork. This report should be read in conjunction with the accompanying exploratory records and laboratory test data.

Site Works

The fieldworks were undertaken between the 17th May and the 06th June, 2018. The investigation was carried out in accordance with Eurocode 7- Geotechnical Design Part 2, ground investigation and testing (BS EN 1997-2: 2007) and the relevant British Standards (BS 5930 (2015) Code of Practice for Site Investigation and BS 1377, Method of Tests for Soil for Civil Engineering Purposes, *in situ* Tests Parts 1 to 9). Details of the plant and equipment used are detailed on the relevant exploratory records, attached.

Cable Percussion Boreholes

Ten (10) number cable percussion boreholes were advanced to a depth 1.3m below existing ground level (bgl) to 8.1m bgl using PGL's Dando 2000 cable percussion rig. The boreholes were terminated after one (1) hour of chiselling without progress. The borehole records are attached, herein.

Location	Final Depth, (m bgl)
BH01	3.1
BH02	3.2
BH03	6.8
BH04	3.7
BH05	1.3
BH06	2.9
BH07	8.1
BH08	3.7
BH09	4.2
BH10	4.2

Location	Chiselling Depth Top (m bgl)	Chiselling Depth Base (m bgl)	Duration (hh:mm)	Tool
BH01	2.4	2.57	00:30	Chisel.
BH01	3.0	3.1	01:00	Chisel.
BH02	3.2	3.2	01:00	Chisel.
BH03	0.7	0.8	00:30	Chisel.
BH03	6.7	6.8	01:00	Chisel.
BH04	3.3	3.48	00:30	Chisel.
BH05	1.2	1.3	01:00	Chisel.
BH06	2.8	2.9	01:00	Chisel.
BH07	8.0	8.1	01:00	Chisel.
BH08	2.8	2.96	00:30	Chisel.
BH08	3.6	3.7	01:00	Chisel.
BH09	3.3	3.46	00:30	Chisel.
BH09	3.7	3.85	00:30	Chisel.
BH09	4.1	4.2	01:00	Chisel.
BH10	0.6	0.74	00:30	Chisel.
BH10	4.1	4.2	01:00	Chisel.

Rotary Boreholes

Eight (8) number rotary boreholes were advanced to a depth 9.0m bgl to 14.0m bgl using PGL's 8t Deltabase 520 tracked rotary rig. The borehole records are attached, herein.

Location	Final Depth, (m bgl)
RC01	10.3
RC02	12.5
RC03	14.0
RC04	11.65
RC06	9.0
RC07	12.0
RC08	12.0
RC10	10.6

Trial Pits

Eighteen (18) trial pits were excavated to depths 1.3m bgl to 4.5m bgl using a 14t tracked excavator. Trial pits terminated for a variety of reasons as outlined on the exploratory logs attached, herein.

Location	Final Depth (m bgl)	Stability
TP01	3.4	Very poor.
TP02	2.9	Moderate.
TP03	4.5	Moderate
TP04	4.5	Moderate.
TP05	3.8	Good.
TP06	4.5	Moderate.
TP07	3.1	Moderate
TP08	3.6	Poor.
TP09	3.5	Poor.
TP11	4.5	Good.
TP12	4.5	Good.
TP13	2.9	Moderate.
TP14	4.5	Very poor.
TP15	1.3	Good.
TP16	4.5	Good.
TP17	4.5	Good.
TP18	2.7	Good.
TP21	3.1	Good.

Slit Trenches

Six (6) slit trenches were excavated to depths 0.9m bgl to 2.4m bgl using a 14t tracked excavator. Slit trenches were terminated at the required depth. The exploratory logs and relevant cross sectional drawings are attached, herein.

Location	Final Depth (m bgl)	Stability
ST01	0.9	Good.
ST02	1.3	Good.
ST03	1.1	Good.
ST04	1.9	Moderate.
ST05	2.4	Good.
ST05A	1.4	Good.

Sampling

Ninety Eight (98) large disturbed samples (B), ten (10) small disturbed samples (D) and rotary core were recovered from the borehole and trial pit excavations, in general accordance with Geotechnical Investigation and Sampling – Sampling Methods and Groundwater Measurements (EN ISO 22475-1:2006).

Three (3) environmental samples (ENV) were taken between 0.4 bgl and 0.5m bgl at three locations (TP11, TP14 and TP21). These were placed immediately in air-tight containers, which were filled to the top of the sample container. The sample suite consisted of: 2No. small disturbed samples (D) not less than 1.0kg, 2No. 250g amber glass sample containers and 2No. 60g amber glass sample containers.

The preparation for and methods of taking environmental samples, together with their size, preservation and handling was in accordance with British Standard BS 5930: 1981- Code of Practice for Site investigation, the contract documents and the Association of Geotechnical and Geo-environmental Specialists (AGS) guide to environmental sampling, September 2010.

Standard Penetration Tests

Fifty four (54) number standard penetration tests, N_{SPT} values, were carried out in the cable percussion and rotary boreholes using the 60^{o} solid cone SPT(C) in place of the standard split barrel sampler. The standard penetration tests were carried out in accordance with Geotechnical Investigation and Testing, Part 3 Standard penetration test, BS EN ISO 22476-3:2005+A1:2011. The data is presented on the exploratory logs, attached. The uncorrected N values measured ranged between 5 and >50.

Plate Bearing Tests

Four (4) plate loading tests were undertaken at TP01, TP13, TP16 and TP17 using 450mm diameter plates and 14t tracked excavator for reaction, in accordance with EC7 Geotechnical design Pt. 2, ground investigation and testing, EN 1997-2:2001 (E), Cl. 4.11, Plate loading test (Annex K). The data from the testing was presented, herein.

Survey and Drawings

The exploration locations were selected by JB Barry and set out by PGL subject to work space and access. The 'as built' locations were surveyed using Trimble 5700/5800 GPS equipment to the Ordinance Survey Irish Transverse Mercator system of co-ordinates (ITM) and elevations to Malin Head datum. The co-ordinates and elevations are presented on the relevant exploratory records accompanying the factual report and summarized as follows;

Location	Easting	Northing	Ground Level (mOD)	Final Depth (m bgl)	Date (dd/mm/yyyy)
BH01	570641.6	568270.2	41.94	3.1	24/05/2018
BH02	570624.5	568242.8	42.34	3.2	25/05/2018
BH03	570611.3	568211.4	47.44	6.8	18/05/2018
BH04	570731.4	568216.4	27.45	3.7	25/05/2018
BH05	570843.2	568124.3	45.94	1.3	24/05/2018
BH06	570536.7	568041.3	77.75	2.9	23/05/2018
BH07	570246.4	568117.0	53.68	8.1	22/05/2018
BH08	570259.0	568203.2	44.01	3.7	21/05/2018
BH09	570519.5	568226.3	46.67	4.2	17/05/2018
BH10	570431.0	568368.8	35.34	4.2	21/05/2018
RC01	570641.6	568270.2	41.94	10.3	06/06/2018
RC02	570624.5	568242.8	42.34	12.5	05/06/2018
RC03	570611.3	568211.4	47.44	14.0	28/05/2018
RC04	570731.4	568216.4	27.45	11.65	24/05/2018

Location	Easting	Northing	Ground Level (mOD)	Final Depth (m bgl)	Date (dd/mm/yyyy)
RC06	570536.7	568041.3	77.75	9.0	29/05/2018
RC07	570246.4	568117.0	53.68	12.0	30/05/2018
RC08	570259.0	568203.2	44.01	12.0	31/05/2018
RC10	570431.0	568368.8	35.34	10.6	23/05/2018
ST01	570796.9	568153.0	52.25	0.9	18/05/2018
ST02	570651.4	568124.3	58.93	1.3	18/05/2018
ST03	570531.9	568137.6	62.54	1.1	18/05/2018
ST04	570405.9	568141.9	58.96	1.9	18/05/2018
ST05	570235.1	568179.0	42.52	2.4	18/05/2018
ST05A	570352.6	568140.2	57.63	1.4	21/05/2018
TP01	570306.6	567958.4	66.15	3.4	28/05/2018
TP02	570475.2	567975.4	80.25	2.9	29/05/2018
TP03	570633.0	567981.6	81.79	4.5	24/05/2018
TP04	570267.7	568039.8	61.11	4.5	29/05/2018
TP05	570424.0	568033.8	76.32	3.8	29/05/2018
TP06	570668.0	568047.1	73.9	4.5	24/05/2018
TP07	570388.1	568100.6	64.97	3.1	29/05/2018
TP08	570596.4	568099.4	68.11	3.6	24/05/2018
TP09	570758.4	568015.7	70.14	3.5	25/05/2018
TP11	570225.5	568221.9	40.17	4.5	29/05/2018
TP12	570345.7	568152.0	55.53	4.5	29/05/2018
TP13	570513.0	568183.9	52.98	2.9	28/05/2018
TP14	570381.3	568388.9	34.84	4.5	24/05/2018
TP15	570643.9	568272.0	40.34	1.3	05/06/2018
TP16	570648.9	568174.0	50.57	4.5	28/05/2018
TP17	570757.1	568098.5	55.54	4.5	28/05/2018
TP18	570511.9	568100.1	70.45	2.7	29/05/2018
TP21	570476.0	568344.6	37.14	3.1	24/05/2018

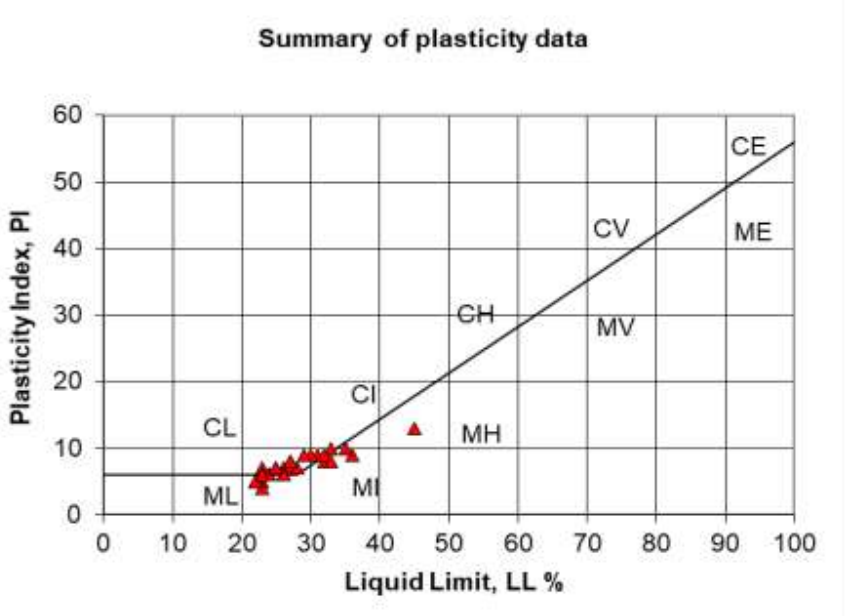
Laboratory Testing

Laboratory testing was scheduled by JB Barry. Laboratory testing was carried out by PGL in accordance with BS1377 (1990), Methods of test for soils for civil engineering purposes. Specialist geo-chemical analysis was undertaken by Chemtest Ltd. (UK) on behalf of PGL. Laboratory test data was not completed at the time of issuing this factual report. The available laboratory data accompanies this report and was summarised as follows;

SUMMARY OF LABORATORY TESTING

SOIL		
Type	**Nr.**	**Remarks**
Natural Moisture Content	37	10% to 21%
Atterberg Limits	34	Liquid Limit, LL 22% to 45% Plastic Limit, PL 17% to 32% Plasticity Index, PI 5 to 13
Particle Size Distribution	29	No. hydrometer analysis on fine soils
California Bearing Ratio Relationship	03	See attached results
Dry Density Moisture relationship	05	Maximum dry density, 1.8mg/m^3 – 2.1 mg/m^3 Optimal moisture content, 3.4% to 12.5%
Moisture Condition Value	09	See attached results
Small Direct Shearbox	01	See attached results
Multi-stage quick undrained triaxial	02	See attached results
pH SO_4 water soluble SO_4 acid Soluble	06	pH 6.4 to 7.7 <0.010g/l <0.010%
Organic Matter	01	0.78%
Waste Acceptance Criteria (WAC)	03	See attached results

Rock		
Type	**Nr.**	**Remarks**
Point Load Is(50)	56	0.04MPa to 3.7MPa
Slake durability test	01	See attached results
Los Angeles Abrasion Value	01	See attached results
Magnesium Sulphate soundness Value	01	See attached results



Ground conditions

The full details of the ground conditions encountered are provided for on the exploratory records accompanying this report. The records provide descriptions, in accordance with BS 5930 (2015) and Eurocode 7, Geotechnical Investigation and Testing, Identification and classification of soils, Part 1, Identification and description (EN ISO 14688-1: 2002)– Identification and Classification of Soil, Part 2: Classification Principles (EN ISO 14688-2:2004) and Identification and Classification of Rock, Part 1:

Identification & Description (EN ISO 14689-1:2004) of the materials encountered, *in situ* testing and details of the samples taken, together with any observations made during the ground investigation.

Published Geology

The geology of the immediate study area (GSI 1:100,000 mapping Sheet 25) is defined by the Ballytrasna Formation (BS), defined by Purple Mudstones and subordinate Sandstones. Outcropping bedrock is mapped within the locality. To the north of the site lies the Gyleen formation (GY) characterised by Sandstone with Mudstone and Siltstone. The greater area is effected by north south trending structural faults.

Teagasc subsoil mapping indicates that the area is underlain by deposits of glacial til derived from Devonian Sandstone. Made Ground deposits are mapped to the north. The national groundwater vulnerability mapping indicates the area is characterised with an 'extreme vulnerability' indicative of shallow depth to bedrock.

Groundwater conditions

Groundwater was encountered during the investigation at depths 0.8m bgl to 9.0m bgl. It should be noted that the normal rate of boring or duration a trial pit excavation remains open may not permit the recording of equilibrium groundwater levels for any one groundwater water strike where casing may exclude low volume flows as the borehole progresses. Groundwater conditions observed in the borings and excavations are those appertaining to the period of the investigation. The groundwater regime should be assessed from standpipe well installations, where available.

SUMMARY OF GROUNDWATER

Location	Depth Strike (m bgl)	Remarks	Standpipe Installation (Y/N)
BH01	2.7	See shift data.	N
BH02	2.6	See shift data.	N
BH03	6.4	See shift data.	N
BH04	-	None encountered.	N
BH05	-	None encountered.	N
BH06	-	None encountered.	N
BH07	-	None encountered.	N
BH08	-	None encountered.	N
BH09	-	None encountered.	N
BH10	-	None encountered.	N
RC01	3.0	See shift data	N
RC02	9.0	See shift data.	Y
RC03	-	None encountered.	N
RC04	8.0	See shift data.	N
RC06	-	None encountered.	Y
RC07	-	None encountered	N
RC08	-	None encountered.	Y
RC10	4.0	See shift data.	N
ST01	0.8	Water strike at 0.80m.	N
ST02	-	None encountered.	N
ST03	-	None encountered.	N

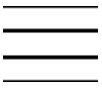
Location	Depth Strike (m bgl)	Remarks	Standpipe Installation (Y/N)
ST04	-	None encountered.	N
ST05	-	None encountered.	N
ST05A	-	None encountered.	N
TP01	-	None encountered.	N
TP02	-	None encountered	N
TP03	-	None encountered.	N
TP04	1.9	1.90m: Trickle flow rate.	N
TP05	-	None encountered.	N
TP06	-	None encountered.	N
TP07	-	None encountered.	N
TP08	-	None encountered.	N
TP09	-	None encountered.	N
TP11	-	None encountered.	N
TP12	-	None encountered.	N
TP13	-	None encountered.	N
TP14	-	None encountered.	N
TP15	1.3	1.30m: Trickle rate of flow.	N
TP16	-	None encountered.	N
TP17	-	None encountered.	N
TP18	-	None encountered.	N
TP21	3.1	3.10m: Slow rate of flow.	N

Under the scope of works, three (3) number standpipe installations were installed at locations RC02, RC06 and RC08 to allow for groundwater monitoring. The exploratory boreholes were backfilled with gravel, bentonite and arisings.

Arisings, backfill to borehole

GRAVEL, backfill to installation/ borehole

BENTONITE, backfill to installation/ borehole



uPVC slotted pipe (well)

SUMMARY OF GROUNDWATER READINGS

Location	Date (dd/mm/yyyy)	Level (m bgl)
RC02	19/03/2019	1.15
RC06		6.75
RC08		Dry

Should you have any queries in relation to the data collected or subsequent analysis please do not hesitate to contact our office.

Yours sincerely,
For **Priority Geotechnical,**

James McSweeney
BSc Engineering Geologist

No responsibility or liability can be held by PGL for ground conditions between exploratory locations. The exploratory logs provide for ground profiles and configuration of strata relevant to the investigation depths achieved during the fieldworks. Caution shall be taken when extrapolating between such exploratory locations.

The interpretation of the current data set may be subject to change where additional data becomes available.

This report has been prepared for the Employer and their Representative as outline, herein. The information should not be used without their prior written permission. PGL accepts no responsibility or liability for this document being used other than for the purposes for which it was intended.

Priority Geotechnical Site

JOB NAME:

CASTLETREASURE
HOUSING DEVELOPMENT

Sheet Title:

EXPLORATORY LOCATION
LAYOUT

JOB NUMBER:

P18081

DRAWING NUMBER:

P18081-SI-A

DRAWN BY:

Gary Curtin

DATE:

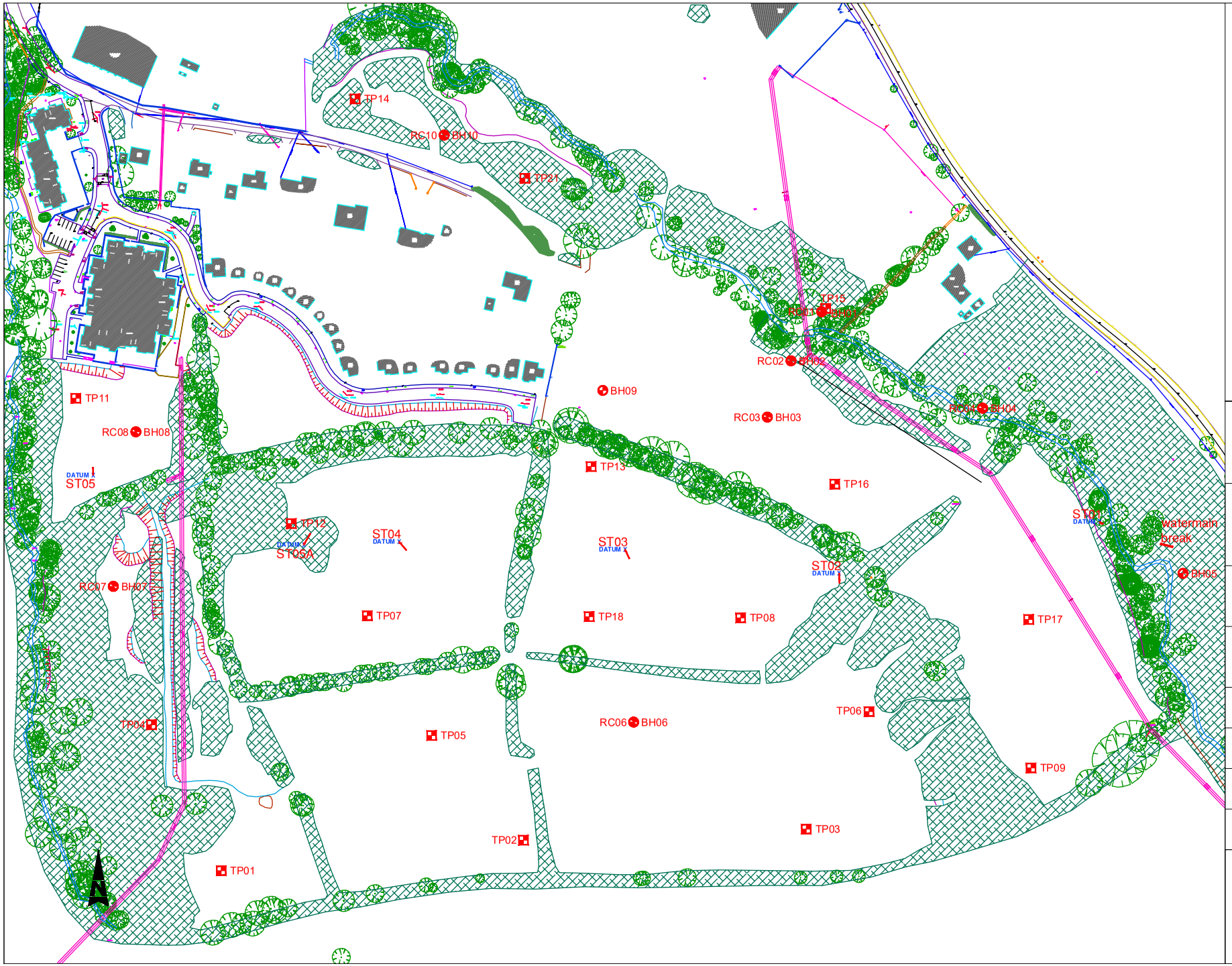
03/05/2018

SCALE:	APPROVED:
1:2500 ON A3	GH

REVISION:

D01

pgl priority geotechnical



KEY:

- ST00 DATUM X — Denotes Slit Trench and Datum location
- TP00 — Denotes Trial Pit location
- BH00 — Denotes Borehole location
- RC00 — Denotes Rotary Core location

JOB NAME:

CASTLETREASURE HOUSING DEVELOPMENT

Sheet Title:

EXPLORATION LOCATION PLAN

JOB NUMBER:

P18081

DRAWING NUMBER:

P18081-SI-01

DRAWN BY:

Gary Curtin

DATE:

03/05/2018

SCALE:	APPROVED:
1:2000 ON A3	GH

REVISION:

D01

pgl priority geotechnical

KEY TO SYMBOLS ON EXPLORATORY HOLE RECORDS

All linear dimensions are in metres or millimetres

DESCRIPTIONS

**	Drillers Description
Friable	Easily crumbled

SAMPLES

U( )	Undisturbed 102mm diameter sample, ( ) denotes number of blows to drive sampler
U( )F, U( )P	F- not recovered, P-partially recovered
U38	Undisturbed 38mm diameter sample
P(F), (P)	Piston sample - disturbed
B	Bulk sample - disturbed
D	Jar Sample - disturbed
W	Water Sample
CBR	California Bearing Ratio mould sample
ES	Chemical Sample for Contamination Analysis
SPTLS	Standard Penetration Test S lump sample from split sampler

CORE RECOVERY AND ROCK QUALITY

TCR	Total Core Recovery (% of Core Run)
SCR	Solid Core Recovery (length of core having at least one full diameter as % of core run)
RQD	Rock Quality Designation (length of solid core greater than 100mm as % of core run)

Where there is insufficient space for the TCR, SCR and RQD, the results may be found in the remarks column

If	Fracture Spacing in mm (Minimum/Average/Maximum) NI - non intact, NR - no recovery
AZCL	Assumed Zone of Core Loss
NI	Non intact

GROUNDWATER

▽	Groundwater strike
▼	Groundwater level after standing period
Date/Water	Date of shift (day/month)/Depth to water at end of previous shift shown above the date and depth to water at beginning of shift given below the date

INSITU TESTING

S	Standard Penetration Test - split barrel sampler
C	Standard Penetration Test - solid 60^o cone
SW	Self Weight Penetration
Ivp, HVp (R)	In Situ Vane Test, Hand Vane Test (R) demonstrates remoulded strength
K(F), (C), (R), (P)	Permeability Test
HP	Hand Penetrometer Test

MEASURED PROPERTIES

N	Standard Penetration Test - blows required to drive 300mm after seating drive
x/y	Denotes x blows for y mm within the Standard Penetration Test
x*/y	Denotes x blows for y mm within the seating drive
c_u	Undrained Shear Strength (kN/m^2)
CBR	California Bearing Ratio

ROTARY DRILLING SIZES

Index Letter	Nominal Diameter (mm)	
	Borehole	Core
N	75	54
H	99	76
P	120	92
S	146	113

Priority Geotechnical Ltd.
Tel: 021 4631600
Fax: 021 4638690
www.prioritygeotechnical.ie

Drilled By:	Borehole No.
JC	**BH01**
Logged By:	Sheet 1 of 1
SR	

Project Name:	Castletreasure Development	**Project No.** P18081	**Co-ords:**	570642E - 568270N	**Hole Type** CP
Location:	Douglas, Co. Cork		**Level:**	41.94m OD	**Scale** 1:50
Client:	Cairn Homes PLC		**Date:**	24/05/2018 - 24/05/2018	

Well Backfill	Water Strike (m)	Sample and In Situ Testing			Depth (m)	Level (mOD)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.50 - 1.00	B					Medium dense becoming dense, brown, very clayey very sandy GRAVEL with low cobble content. Sand is fine to coarse. Gravel is fine to coarse, sub-angular, varied lithology. Cobbles are 63mm to 160mm dia, sub-angular.
		1.00	SPT (C)	N=17 (3,3/4,4,4,5)				
		1.50 - 2.00	B					
		2.00	SPT (C)	N=37 (4,4/5,8,10,14)				
	▼	2.70 - 3.00	B		2.70	39.24		Purple, slightly silty sandy GRAVEL with low cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular, Mudstone. Cobbles are 63mm to 110mm dia, angular, Mudstone.
					3.10	38.84		End of Borehole at 3.100m

Groundwater:

Struck (m)	Rose to	After (mins)	Sealed	Comment
2.70	2.5	20		See shift data.

Hole Information:

Hole Depth (m)	Hole Dia (mm)	Casing Dia (mm)
3.10	200	200

Equipment: Dando 2000

Chiselling:

Depth Top	Depth Base	Duration	Tool
2.40	2.57	00:30	Chisel
3.00	3.10	01:00	Chisel

Remarks:

Borehole terminated at 3.10m bgl due to obstruction.

Shift Data:

Groundwater	Shift	Hole Depth (m)	Remarks
	24/05/2018 08:00	0.00	Start of shift.
2.3	24/05/2018 18:00	3.10	End of borehole.

Priority Geotechnical Ltd. Tel: 021 4631600 Fax: 021 4638690 www.prioritygeotechnical.ie	Drilled By: AK Logged By: JMS	Borehole No. **RC01** Sheet 1 of 2

Project Name:	Castletreasure Development	**Project No.** P18081	**Co-ords:** 570642E - 568270N	**Hole Type** Rotary cored
Location:	Douglas, Co. Cork		**Level:** 41.94m OD	**Scale** 1:50
Client:	Cairn Homes PLC		**Dates:** 06/06/2018	07/06/2018

Well	Water Strike (m)	Depth (m)	Type /Fs (min, max, avg)	Coring (%) TCR	SCR	RQD	Depth (m) / Fl (/m)	Level (mOD)	Legend	Stratum Description
										Open hole drilling. Driller described: Topsoil.
		N=84 (12,18/21,21,20,22) 1.50-2.25	5mm 80mm 25mm	93	35	0	1.50	40.44		Lithology: Weak to Medium Weak, Purple/ Brown/ MUDSTONE. Weathering: Weathered, clay smearing and orange oxidation discolouration. fractures: One set, dip 50-60 degrees, very close-close spacing, planar smooth. Other Details: Rock not intact from 3.80m-4.70m.
	▼	2.25 - 3.60	5mm 20mm 15mm	100	34	0				
		3.60 - 4.70	5mm 50mm 20mm	100	10	0				
		4.70 - 5.70		0	0	0	4.70	37.24		No recovery. Assumed Mudstone lithology. Driller re-cased hole to 5.7m bgl.
		5.70 - 7.00	5mm 80mm 20mm	100	24	0	5.70	36.24		Lithology: Weak to Medium Weak, Purple/ Brown/ MUDSTONE. Weathering: Weathered, clay smearing and orange oxidation discolouration. fractures: One set, dip 50-60 degrees, very close-close spacing, planar smooth. Other Details: Rock not intact from 3.80m-4.
		7.00 - 8.25	5mm 75mm 15mm	100	52	0				
		8.25 - 9.50	5mm 55mm 20mm	100	50	0				

Groundwater:

Struck, m	Rose to	After, min	Sealed	Comment
3.00				See shift data

Hole Information:

Hole Depth (m)	Hole Dia (mm)	Casing Dia (mm)
10.30	76	131

Equipment:	Deltabase 520
Method:	Compressed air mist

Remarks:

Borehole terminated at 10.30m bgl.

Shift Data:

Groundwater	Shift	Hole Depth	Remarks
	06/06/2018 08:00	0.00	Start of shift.
3.0	06/06/2018 18:00	5.70	End of borehole.
3.0	07/06/2018 08:00	5.70	Start of shift.
4.0	28/06/2018 18:00	10.30	End of borehole.

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Project Name:	Castletreasure Development	**Project No.** P18081	**Co-ords:** 570642E - 568270N	**Hole Type** Rotary cored
Location:	Douglas, Co. Cork		**Level:** 41.94m OD	**Scale** 1:50
Client:	Cairn Homes PLC		**Dates:** 06/06/2018	07/06/2018

Well	Water Strike (m)	Depth (m)	Type /Fs (min, max, avg)	Coring (%) TCR	SCR	RQD	Depth (m) / Fl (/m)	Level (mOD)	Legend	Stratum Description
		9.50 - 10.30	5mm 50mm 15mm	100	76	0	10.30	31.64		Lithology: Weak to Medium Weak, Purple/ Brown/ MUDSTONE. Weathering: Weathered, clay smearing and orange oxidation discolouration. fractures: One set, dip 50-60 degrees, very close-close spacing, planar smooth. Other Details: Rock not intact from 3.80m-4. End of Borehole at 10.300m

10 11 12 13 14 15 16 17 18

Groundwater:

Struck, m	Rose to	After, min	Sealed	Comment
3.00				See shift data

Hole Information:

Hole Depth (m)	Hole Dia (mm)	Casing Dia (mm)
10.30	76	131

Equipment:	Deltabase 520
Method:	Compressed air mist

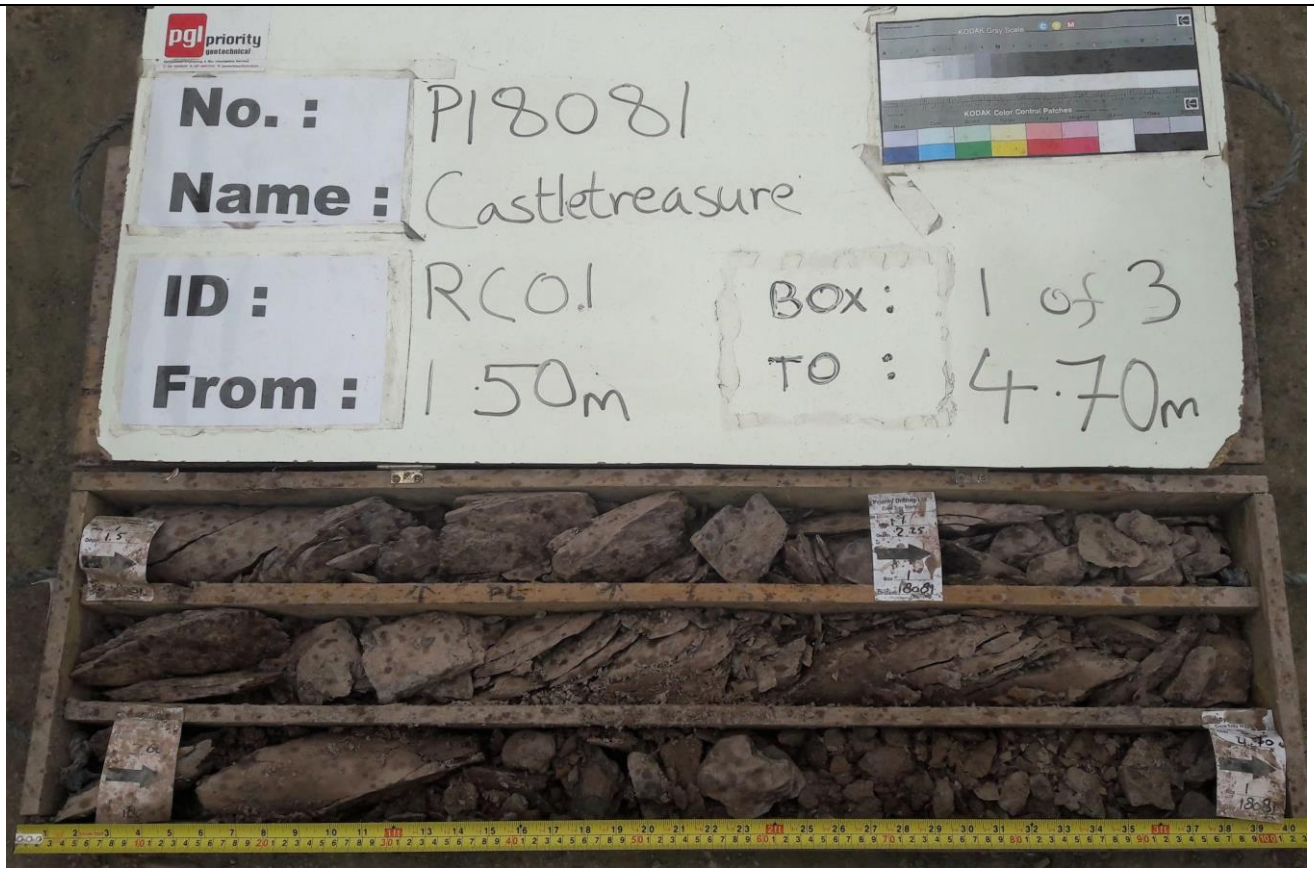
Remarks:

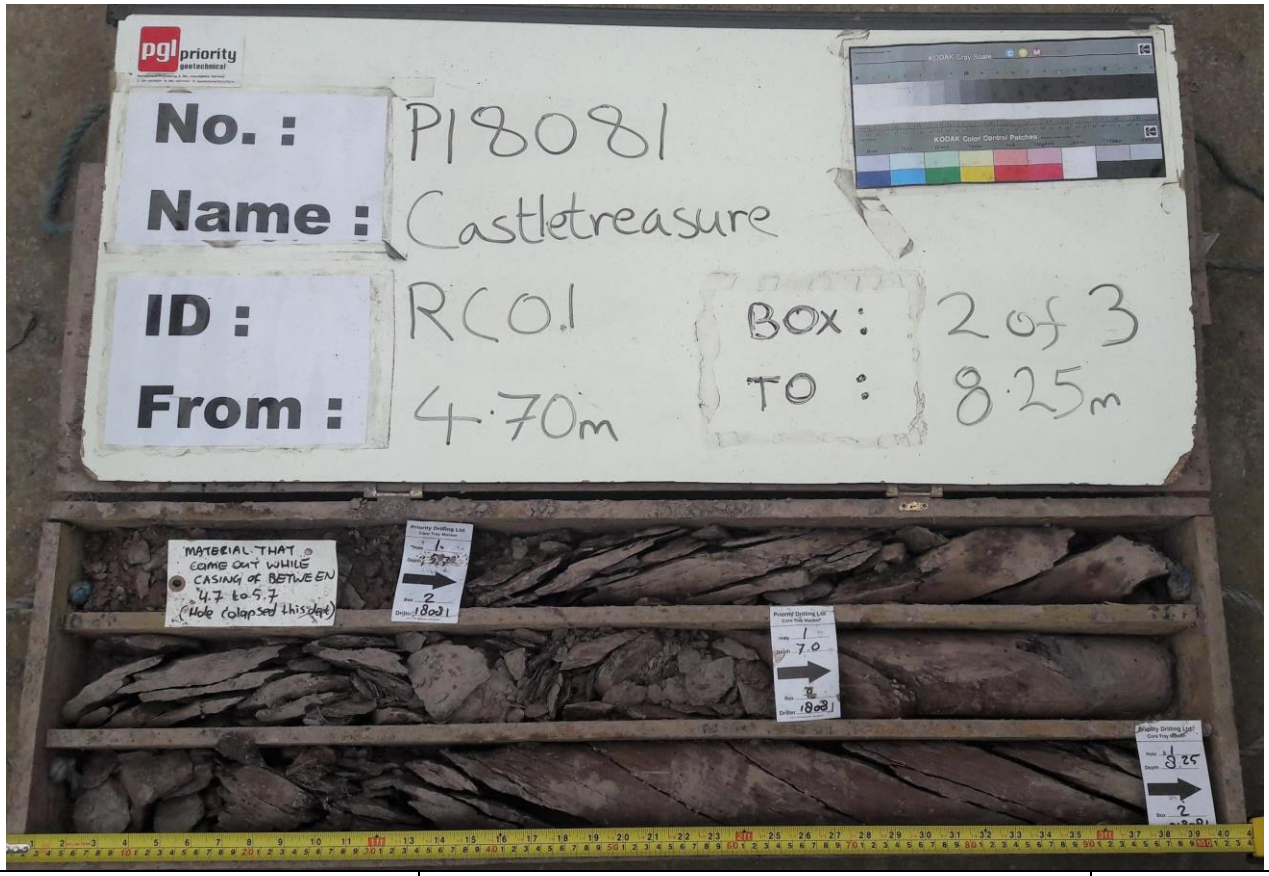
Borehole terminated at 10.30m bgl.

Shift Data:

Groundwater	Shift	Hole Depth	Remarks
	06/06/2018 08:00	0.00	Start of shift.
3.0	06/06/2018 18:00	5.70	End of borehole.
3.0	07/06/2018 08:00	5.70	Start of shift.
4.0	28/06/2018 18:00	10.30	End of borehole.

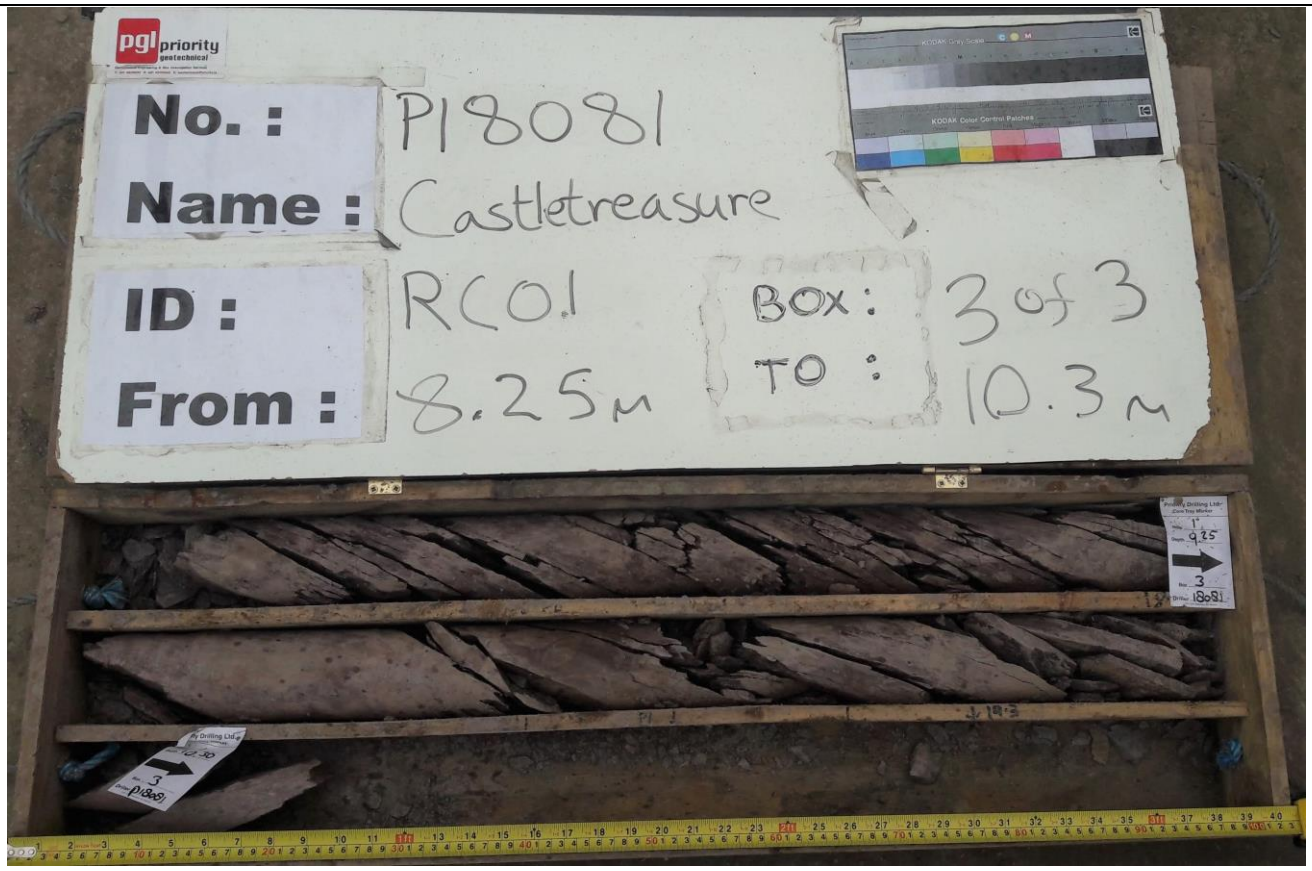
Photographic Record





Number:	**RC01**	**Project**	Castletreasure, Douglas Development
		Project No	P18081
		Engineer	J.B. Barry & Partners Consulting Engineers

Photographic Record



Number:	**RC01**	**Project**	Castletreasure, Douglas Development	
		Project No	P18081	
		Engineer	J.B. Barry & Partners Consulting Engineers	

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Drilled By:	Borehole No.
JC	**BH02**
Logged By:	Sheet 1 of 1
SR	

Project Name:	Castletreasure Development	**Project No.** P18081	**Co-ords:**	570624E - 568243N	**Hole Type** CP
Location:	Douglas, Co. Cork		**Level:**	42.34m OD	**Scale** 1:50
Client:	Cairn Homes PLC		**Date:**	25/05/2018 - 25/05/2018	

Well Backfill	Water Strike (m)	Sample and In Situ Testing			Depth (m)	Level (mOD)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.50 - 1.00	B					Firm to stiff, brown, slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-angular. Cobbles are 63mm to 110mm dia, angular to sub-angular.
		1.00	SPT (C)	N=15 (3,3/4,3,4,4)				
		1.50 - 2.00	B					
		2.00	SPT (C)	N=16 (3,3/3,4,5,4)				
		2.60 - 3.00	B		2.60	39.74		Dense, brown, slightly clayey sandy GRAVEL with medium cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-angular, varied lithology. Cobbles are 63mm to 100mm dia, angular to sub-angular, varied lithology.
		3.00	SPT (C)	50 (6,15/50 for 0mm)	3.20	39.14		End of Borehole at 3.200m

Groundwater:

Struck (m)	Rose to	After (mins)	Sealed	Comment
2.60	2.3	20		See shift data.

Hole Information:

Hole Depth (m)	Hole Dia (mm)	Casing Dia (mm)
3.20	200	200

Equipment: Dando 2000

Chiselling:

Depth Top	Depth Base	Duration	Tool
3.20	3.20	01:00	Chisel.

Remarks:

Borehole terminated at 3.20m bgl due to obstruction.

Shift Data:

Groundwater	Shift	Hole Depth (m)	Remarks
	25/05/2018 08:00	0.00	Start of shift.
2.2	25/08/2018 18:00	3.20	End of borehole.

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Drilled By:	Borehole No.
AK	**RC02**
Logged By:	Sheet 1 of 2
EOM	

Project Name:	Castletreasure Development	**Project No.** P18081	**Co-ords:**	570624E - 568243N	**Hole Type** Rotary cored
Location:	Douglas, Co. Cork		**Level:**	42.34m OD	**Scale** 1:50
Client:	Cairn Homes PLC		**Dates:**	05/06/2018	05/06/2018

Well	Water Strike (m)	Depth (m)	Type /Fs (min, max, avg)	Coring (%) TCR	SCR	RQD	Depth (m) / Fl (/m)	Level (mOD)	Legend	Stratum Description
										Refer to BH02 for detailed overburden description.
							3.60	38.74		Open hole drilling. Driller described: Firm, CLAY.
		N=14 (2,4/3,4,4,3) (C)								
		N=65 (4,7/11,18,17,19) (C) 5.50 - 6.50	5mm 40mm 15mm	100	41	0	5.50	36.84		Lithology: Medium weak, purple, MUDSTONE. Weathering: Moderately weathered, clay infill on on fracture surfaces. Fractures: One set, dip 50-60 degrees, closely spaced, planar smooth.
		6.50 - 7.50	5mm 45mm 15mm	90	69	0				
	▼	7.50 - 9.50	5mm 85mm 10mm	58	35	0				

Groundwater:

Struck, m	Rose to	After, min	Sealed	Comment
9.00				See shift data.

Hole Information:

Hole Depth (m)	Hole Dia (mm)	Casing Dia (mm)
12.50	76	131

Equipment:	Deltabase 520
Method:	Compressed air mist.

Remarks:

Borehole terminated at 12.50m bgl. 50mm standpipe installed. Response zone from 1.5m bgl to 5.0m bgl.

Shift Data:

Groundwater	Shift	Hole Depth	Remarks
	05/06/2018 08:00	0.00	Start of shift.
9.00	05/06/2018 18:00	12.50	of borehole.

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Project Name:	Castletreasure Development	**Project No.** P18081	**Co-ords:**	570624E - 568243N	**Hole Type** Rotary cored
Location:	Douglas, Co. Cork		**Level:**	42.34m OD	**Scale** 1:50
Client:	Cairn Homes PLC		**Dates:**	05/06/2018	05/06/2018

Well	Water Strike (m)	Depth (m)	Type /Fs (min, max, avg)	Coring (%) TCR	SCR	RQD	Depth (m) / FI (/m)	Level (mOD)	Legend	Stratum Description
			5mm 80mm 20mm							Lithology: Medium weak, purple, MUDSTONE. Weathering: Moderately weathered, clay infill on on fracture surfaces. Fractures: One set, dip 50-60 degrees, closely spaced, planar smooth.
		9.50 - 10.75	10mm 130mm 20mm	85	59	0				
		10.75 - 11.75	10mm 60mm 15mm	100	40	0				
		11.75 - 12.50	5mm 40mm 15mm	93	3	0	12.50	29.84		End of Borehole at 12.500m

10 11 12 13 14 15 16 17 18

Groundwater:

Struck, m	Rose to	After, min	Sealed	Comment
9.00				See shift data.

Hole Information:

Hole Depth (m)	Hole Dia (mm)	Casing Dia (mm)
12.50	76	131

Equipment:	Deltabase 520
Method:	Compressed air mist.

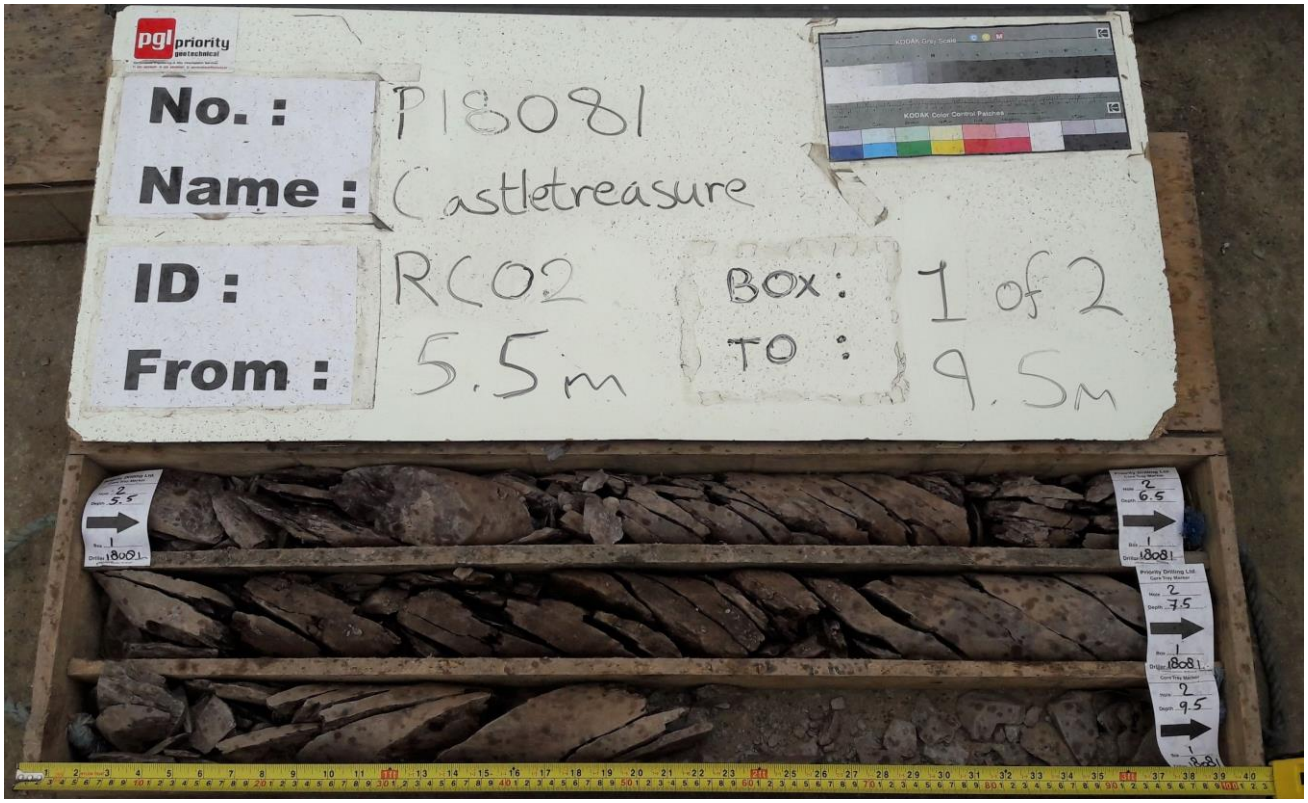
Remarks:

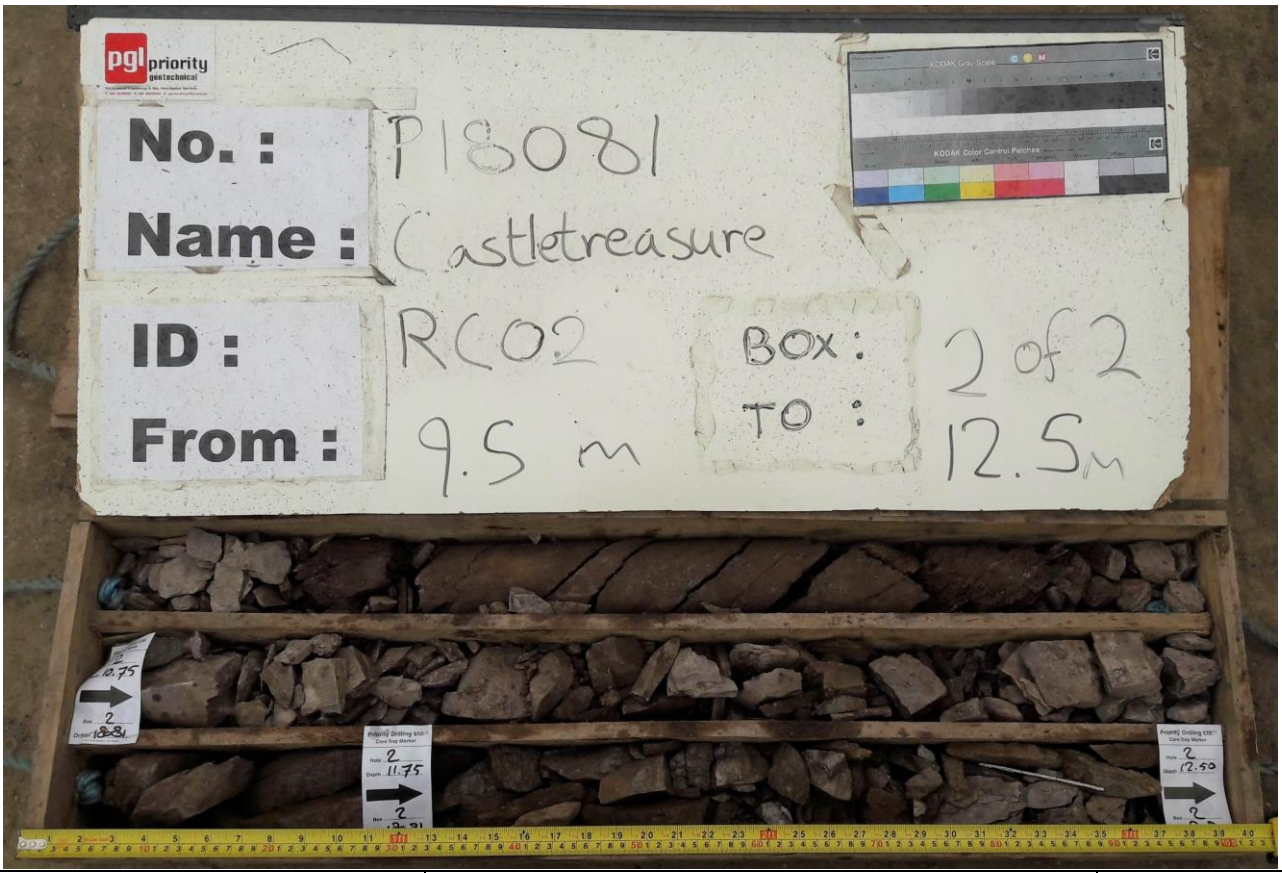
Borehole terminated at 12.50m bgl. 50mm standpipe installed. Response zone from 1.5m bgl to 5.0m bgl.

Shift Data:

Groundwater	Shift	Hole Depth	Remarks
9.00	05/06/2018 08:00 05/06/2018 18:00	0.00 12.50	Start of shift. of borehole.

Photographic Record





Number:	**RC02**	**Project**	Castletreasure, Douglas Development
		Project No	P18081
		Engineer	J.B. Barry & Partners Consulting Engineers

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Drilled By:	Borehole No.
JC	**BH03**
Logged By:	Sheet 1 of 1
SR	

Project Name:	Castletreasure Development	**Project No.** P18081	**Co-ords:**	570611E - 568211N	**Hole Type** CP
Location:	Douglas, Co. Cork		**Level:**	47.44m OD	**Scale** 1:50
Client:	Cairn Homes PLC		**Date:**	18/05/2018 - 18/05/2018	

Well Backfill	Water Strike (m)	Sample and In Situ Testing			Depth (m)	Level (mOD)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.50 - 1.00	B					Medium dense, brown, very sandy very silty GRAVEL. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-angular. .
		1.00	SPT (C)	N=22 (6,4/5,6,5,6)				
		1.50 - 2.00	B					
		2.00	SPT (C)	N=19 (3,3/5,4,5,5)				
		2.50 - 3.00	B					
		3.00	SPT (C)	N=14 (3,3/3,4,3,4)				
		3.50 - 4.00	B		3.50	43.94		Firm, slightly gravelly slightly sandy SILT. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-angular.
		4.00	SPT (C)	N=11 (2,3/2,3,3,3)				
		4.50 - 5.00	B					
		5.00	SPT (C)	N=12 (3,2/2,3,3,4)				
		5.60 - 6.00	B		5.60	41.84		Stiff, brown, slightly sandy gravelly SILT with low cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-angular. Cobbles are 63mm to 150mm dia, angular.
	▼	6.00	SPT (C)	N=32 (4,4/5,4,10,13)				
	▽	6.40 - 6.70	B		6.40	41.04		Light brown, slightly sandy clayey GRAVEL with medium cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-angular, Siltstone. Cobbles are 63mm to 110mm dia, angular, Siltstone.
		6.80	SPT (C)	50 (25 for 0mm/50 for 0mm)	6.80	40.64		End of Borehole at 6.800m

Groundwater:

Struck (m)	Rose to	After (mins)	Sealed	Comment
6.40	6.1	20		See shift data.

Hole Information:

Hole Depth (m)	Hole Dia (mm)	Casing Dia (mm)
6.80	200	200

Equipment: Dando 2000

Chiselling:

Depth Top	Depth Base	Duration	Tool
0.70	0.80	00:30	Chisel.
6.70	6.80	01:00	Chisel.

Remarks:

Borehole terminated at 6.80m bgl due to obstruction.

Shift Data:

Groundwater	Shift	Hole Depth (m)	Remarks
	18/05/2018 08:00	0.00	Start of shift.
5.8	18/05/2018 18:00	6.80	End of borehole.

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Project Name:	Castletreasure Development	**Project No.** P18081	**Co-ords:**	570611E - 568211N	**Hole Type** Rotary cored
Location:	Douglas, Co. Cork		**Level:**	47.44m OD	**Scale** 1:50
Client:	Cairn Homes PLC		**Dates:**	28/05/2018	28/05/2018

Well	Water Strike (m)	Depth (m)	Type /Fs (min, max, avg)	Coring (%) TCR	SCR	RQD	Depth (m) / Fl (/m)	Level (mOD)	Legend	Stratum Description
										Refer to BH03 for detailed overburden description.
		N=8 (2,2/1,2,3,2) (C)								
							6.80	40.64		Open hole boring. Assumed weathered Mudstone.
		N=20 (4,7/5,5,6,4) (C)								
		~~N=64~~ (12,15/18,17,13,16) (C)					8.75	38.69		Lithology: Weak to Medium Weak,

1 2 3 4 5 6 7 8 9

Groundwater:

Struck, m	Rose to	After, min	Sealed	Comment
				None encountered.

Hole Information:

Hole Depth (m)	Hole Dia (mm)	Casing Dia (mm)
14.00	76	131

Equipment:	Deltabase 520
Method:	Compressed air mist.

Remarks:

Borehole terminated at 14.00m bgl.

Shift Data:

Groundwater	Shift	Hole Depth	Remarks
	28/05/2018 08:00	0.75	Start of shift.
Dry	28/05/2018 18:00	14.00	End of borehole.

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Project Name: Castletreasure Development	**Project No.** P18081	**Co-ords:** 570611E - 568211N	**Hole Type** Rotary cored
Location: Douglas, Co. Cork		**Level:** 47.44m OD	**Scale** 1:50
Client: Cairn Homes PLC		**Dates:** 28/05/2018	28/05/2018

Well	Water Strike (m)	Depth (m)	Type /Fs (min, max, avg)	Coring (%) TCR	SCR	RQD	Depth (m) / FI (/m)	Level (mOD)	Legend	Stratum Description
		8.75 - 10.00	5mm 35mm 15mm	38	19	0				Lithology: Weak to Medium Weak, Purple/ Brown, MUDSTONE. Weathering: Weathered, oxidation discolouration, clay infill. Fractures: One set, dip 70-80 degrees, close to very close spacing, planar rough. Other details: 12.75m-13.25m not intact.
		10.00 - 11.50	5mm 30mm 10mm 5mm 35mm 10mm	43	3	0				
		11.50 - 12.75	5mm 20mm 75mm	72	8	0				
		12.75 - 14.00		100	10	0				
							14.00	33.44		End of Borehole at 14.000m

10 11 12 13 14 15 16 17 18

Groundwater:

Struck, m	Rose to	After, min	Sealed	Comment
				None encountered.

Hole Information:

Hole Depth (m)	Hole Dia (mm)	Casing Dia (mm)
14.00	76	131

Equipment:	Deltabase 520
Method:	Compressed air mist.

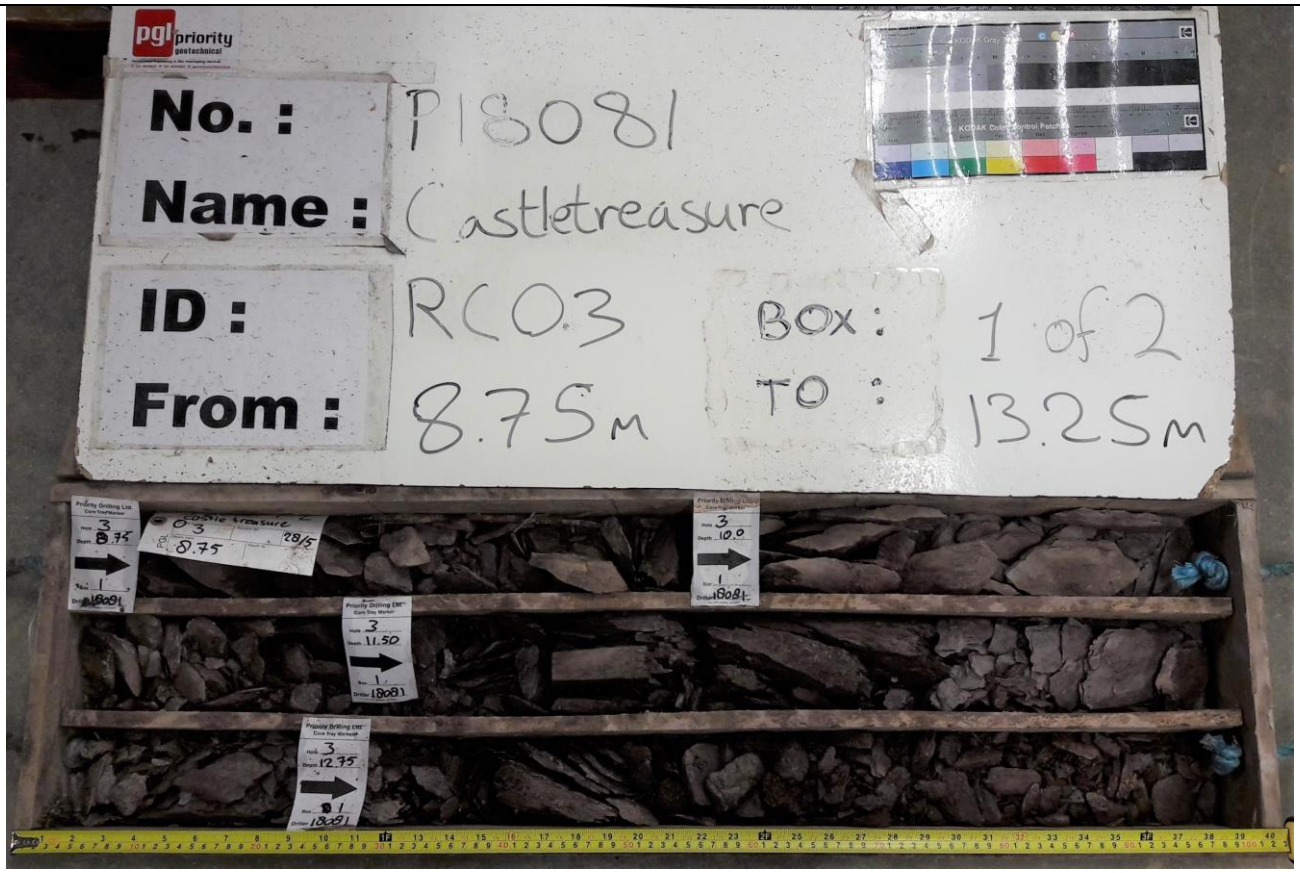
Remarks:

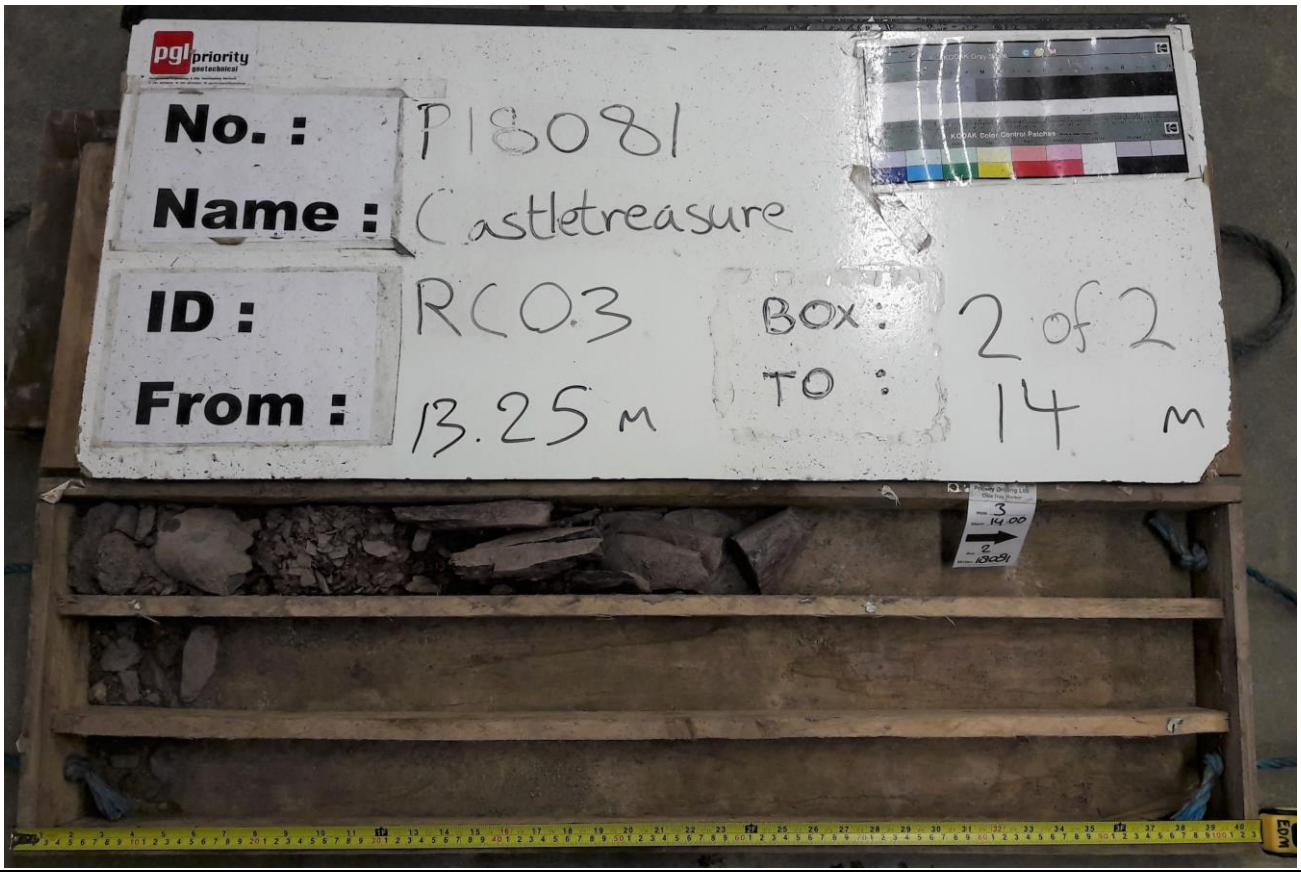
Borehole terminated at 14.00m bgl.

Shift Data:

Groundwater	Shift	Hole Depth	Remarks
Dry	28/05/2018 08:00	0.75	Start of shift.
	28/05/2018 18:00	14.00	End of borehole.

Photographic Record





Number:	**RC03**	**Project**	Castletreasure, Douglas Development
		Project No	P18081
		Engineer	J.B. Barry & Partners Consulting Engineers

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Drilled By:	Borehole No.
JC	**BH04**
Logged By:	Sheet 1 of 1
SR	

Project Name:	Castletreasure Development	**Project No.** P18081	**Co-ords:**	570731E - 568216N	**Hole Type** CP
Location:	Douglas, Co. Cork		**Level:**	27.44m OD	**Scale** 1:50
Client:	Cairn Homes PLC		**Date:**	25/05/2018 - 25/05/2018	

Well Backfill	Water Strike (m)	Sample and In Situ Testing			Depth (m)	Level (mOD)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.50 - 1.00	B					Medium dense to dense, purple brown, very silty very sandy GRAVEL. Gravel is fine to coarse, angular to sub-angular, Mudstone.
		1.00	SPT (C)	N=18 (3,4/4,5,5,4)				
		1.50 - 2.00	B					
		2.00	SPT (C)	N=28 (5,6/6,7,8,7)				
		2.50 - 3.00	B					
		3.00	SPT (C)	N=52 (8,9/10,12,15,15)				
					3.70	23.74		End of Borehole at 3.700m

Groundwater:

Struck (m)	Rose to	After (mins)	Sealed	Comment
				None encountered.

Hole Information:

Hole Depth (m)	Hole Dia (mm)	Casing Dia (mm)
3.70	200	200

Equipment: Dando 2000

Chiselling:

Depth Top	Depth Base	Duration	Tool
3.30	3.48	00:30	Chisel.

Remarks:

Borehole terminated at 3.70m bgl due to obstruction.

Shift Data:

Groundwater	Shift	Hole Depth (m)	Remarks
	25/05/2018 08:00	0.00	Start of shift.
Dry.	25/05/2018 18:00	3.70	End of borehole.

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Project Name:	Castletreasure Development	**Project No.** P18081	**Co-ords:**	570731E - 568216N	**Hole Type** Rotary cored
Location:	Douglas, Co. Cork		**Level:**	27.44m OD	**Scale** 1:50
Client:	Cairn Homes PLC		**Dates:**	24/05/2018	25/05/2018

Well	Water Strike (m)	Depth (m)	Type /Fs (min, max, avg)	Coring (%) TCR	SCR	RQD	Depth (m) / FI (/m)	Level (mOD)	Legend	Stratum Description
										Refer to BH04 for detailed overburden description.
		3.70 - 4.20		0	0	0	3.70	23.74		Core runs attempted. Poor recovery. Assumed weathered Mudstone.
		4.20 - 4.70		0	0	0				
		4.70 - 5.20		0	0	0				
		5.20 - 5.70		94	0	0	5.20	22.24		Lithology: Weak to Medium Weak, Purple/ Brown, MUDSTONE. Weathering: Weathered, oxidation discolouration, clay smearing. Fractures: One set: dip 70-80 degrees, closely spaced, planar smooth.
		N=67 (9,12/15,18,17,17) 5.70-7.50	5mm 20mm 10mm 5mm 30mm 5mm	0	0	0	5.70 2/m 12/m	21.74		No recovery. Assumed Mudstone. Driller re-cased borehole to 7.5m bgl.
	▼	N=62 (12,14/12,17,15,18) (C) 7.50 - 8.75	5mm 20mm 10mm	37	11	0	7.50 25/m	19.94		Lithology: Weak to Medium Weak, Purple/ Brown, MUDSTONE. Weathering: Weathered, oxidation discolouration, clay smearing. Fractures: One set: dip 70-80 degrees, closely spaced, planar smooth.

Groundwater:

Struck, m	Rose to	After, min	Sealed	Comment
8.00				See shift data.

Hole Information:

Hole Depth (m)	Hole Dia (mm)	Casing Dia (mm)
11.65	76	131

Equipment:	Deltabase 520
Method:	Compressed air mist.

Remarks:

Borehole terminated at 11.65m bgl.

Shift Data:

Groundwater	Shift	Hole Depth	Remarks
	24/05/2018 08:00	5.20	Start of shift.
Dry	24/05/2018 18:00	7.50	End of shift.
Dry	25/05/2018 08:00	7.50	Start of shift.
8.00	25/05/2018 18:00	11.65	End of borehole.

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Project Name:	Castletreasure Development	**Project No.** P18081	**Co-ords:** 570731E - 568216N	**Hole Type** Rotary cored
Location:	Douglas, Co. Cork		**Level:** 27.44m OD	**Scale** 1:50
Client:	Cairn Homes PLC		**Dates:** 24/05/2018	25/05/2018

Well	Water Strike (m)	Depth (m)	Type /Fs (min, max, avg)	Coring (%) TCR	SCR	RQD	Depth (m) / FI (/m)	Level (mOD)	Legend	Stratum Description
		8.75 - 10.25		10	63	0				Lithology: Weak to Medium Weak, Purple/ Brown, MUDSTONE. Weathering: Weathered, oxidation discolouration, clay smearing. Fractures: One set: dip 70-80 degrees, closely spaced, planar smooth.
		10.25 - 11.15		50	89	0				
		11.15 - 11.65		82	43	0				
							11.65	15.80		End of Borehole at 11.650m

10 11 12 13 14 15 16 17 18

Groundwater:

Struck, m	Rose to	After, min	Sealed	Comment
8.00				See shift data.

Hole Information:

Hole Depth (m)	Hole Dia (mm)	Casing Dia (mm)
11.65	76	131

Equipment:	Deltabase 520
Method:	Compressed air mist.

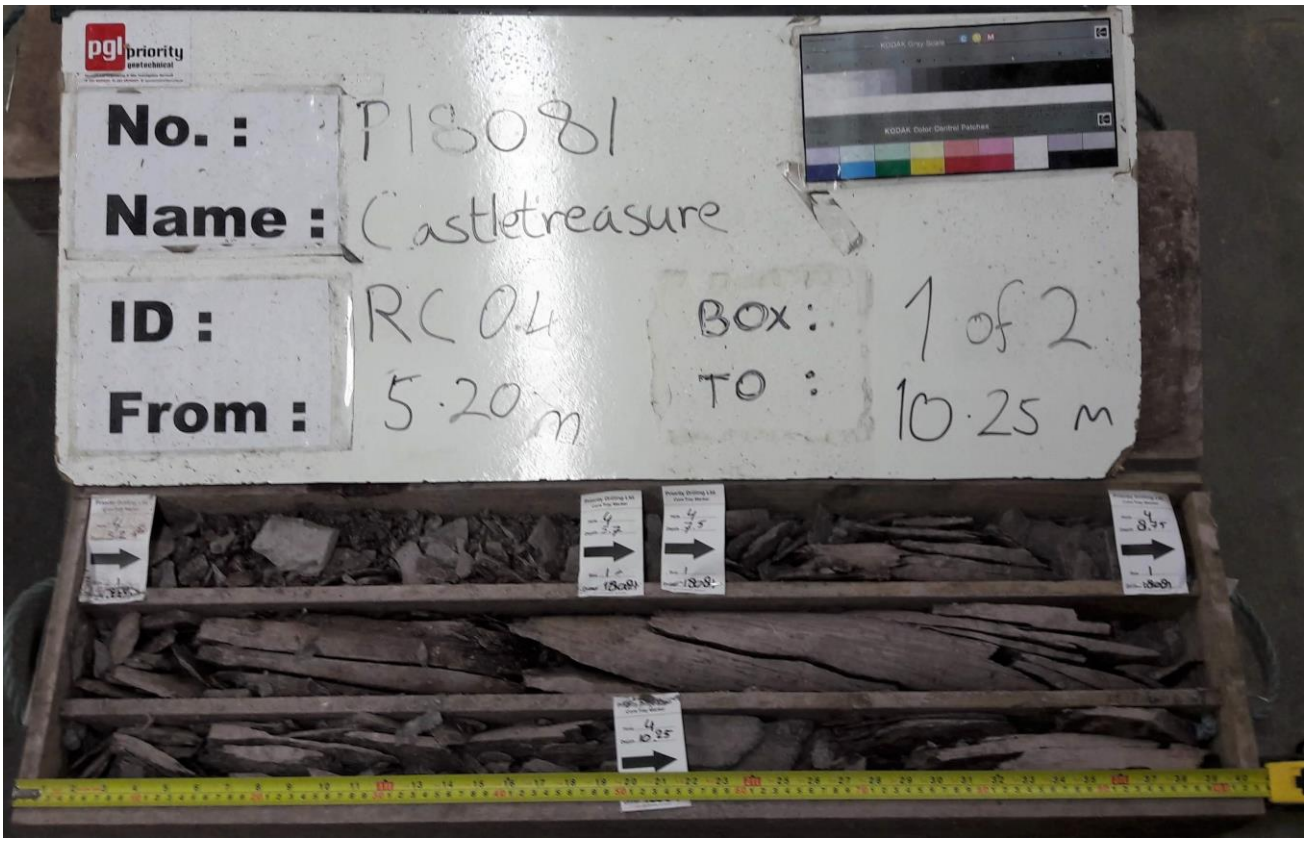
Remarks:

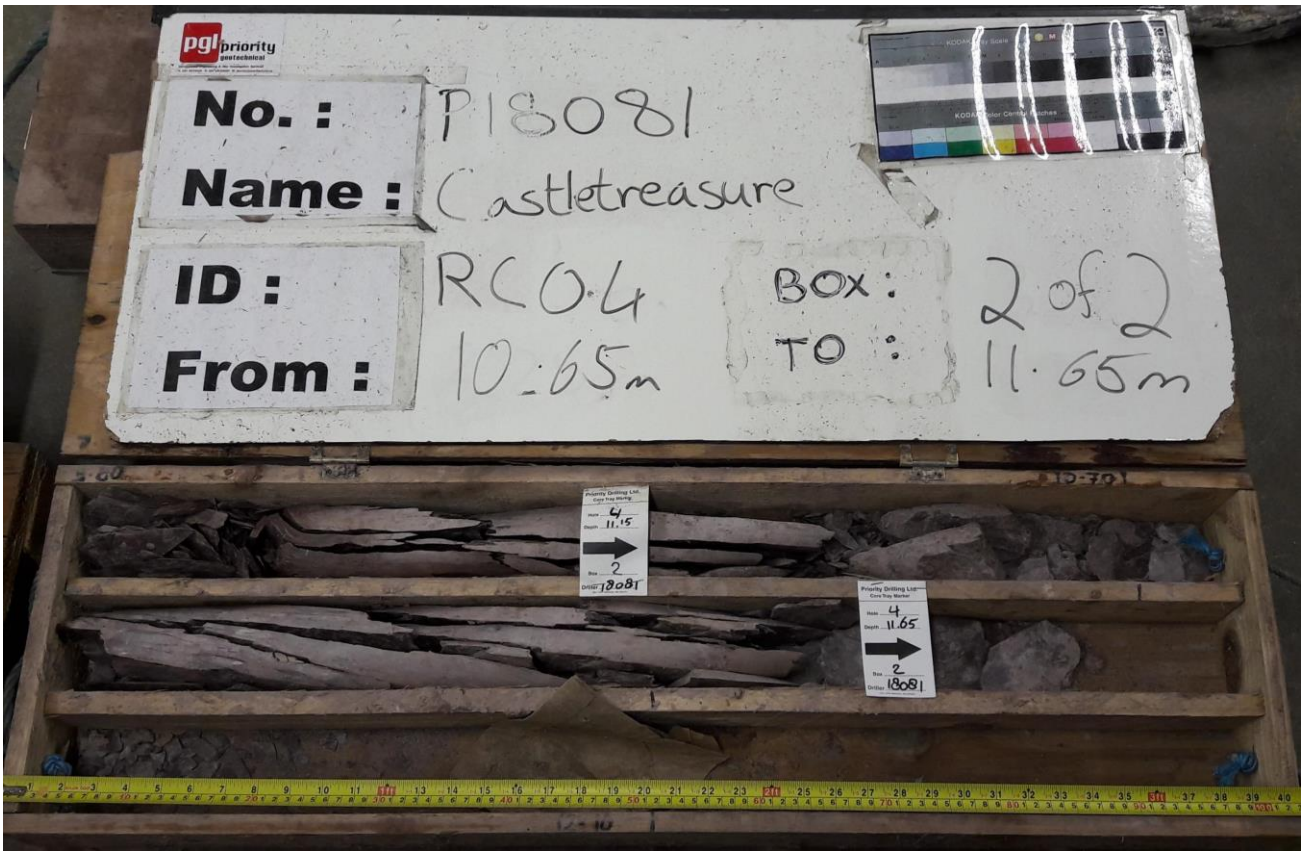
Borehole terminated at 11.65m bgl.

Shift Data:

Groundwater	Shift	Hole Depth	Remarks
	24/05/2018 08:00	5.20	Start of shift.
Dry	24/05/2018 18:00	7.50	End of shift.
Dry	25/05/2018 08:00	7.50	Start of shift.
8.00	25/05/2018 18:00	11.65	End of borehole.

Photographic Record





Number:	**RC04**	**Project**	Castletreasure, Douglas Development
		Project No	P18081
		Engineer	J.B. Barry & Partners Consulting Engineers

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Drilled By:	Borehole No.
JC	**BH05**
Logged By:	Sheet 1 of 1
SR	

Project Name:	Castletreasure Development	**Project No.** P18081	**Co-ords:**	570843E - 568124N	**Hole Type** CP
Location:	Douglas, Co. Cork		**Level:**	45.94m OD	**Scale** 1:50
Client:	Cairn Homes PLC		**Date:**	24/05/2018 - 24/05/2018	

Well Backfill	Water Strike (m bgl)	Sample and In Situ Testing			Depth (m bgl)	Level (mOD)	Legend	Stratum Description
		Depth (m bgl)	Type	Results				
		0.50 - 1.00	B					Purple, gravelly SILT with medium cobble content. Gravel is fine to coarse, angular to sub-angular, Mudstone. Cobbles are 63mm to 100mm dia, angular, Mudstone.
		1.00	SPT (C)	65 (5,8/65 for 75mm)	1.30	44.64		End of Borehole at 1.300m

Groundwater:

Struck (m bgl)	Rose to	After (mins)	Sealed	Comment
				None encountered.

Hole Information:

Depth (m bgl)	Hole Dia (mm)	Casing Dia (mm)
1.30	200	200

Equipment: Dando 2000

Chiselling Details:

Top (m)	Base (m)	Duration (hh:mm)	Tool
1.20	1.30	01:00	Chisel.

Remarks:

Borehole terminated at 1.30m bgl due to obstruction, possible rock.

Shift Data:

GW (m bgl)	Shift	Depth (m bgl)	Remarks
	24/05/2018 08:00	0.00	Start of shift.
Dry	24/05/2018 18:00	1.30	End of borehole.

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Drilled By:	Borehole No.
JC	**BH06**
Logged By:	Sheet 1 of 1
SR	

Project Name:	Castletreasure Development	**Project No.** P18081	**Co-ords:**	570537E - 568041N	**Hole Type** CP
Location:	Douglas, Co. Cork		**Level:**	77.75m OD	**Scale** 1:50
Client:	Cairn Homes PLC		**Date:**	23/05/2018 - 23/05/2018	

Well Backfill	Water Strike (m)	Sample and In Situ Testing			Depth (m)	Level (mOD)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.30	77.45		(TOPSOIL)
		0.50 - 1.00	B					Medium dense, brown, very silty very sandy GRAVEL with rootlets. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-rounded, varied lithology.
		1.00	SPT (C)	N=14 (3,4/3,3,4,4)				
		1.50 - 2.00	B					
		2.00	SPT (C)	N=19 (3,3/4,5,4,6)				
		2.40 - 2.90	B		2.40	75.35		Brown, slightly sandy gravelly SILT with medium cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-angular. Cobbles are 63mm to 120mm dia, angular to sub-angular.
		2.90	SPT (C)	50 (25 for 0mm/50 for 145mm)	2.90	74.85		End of Borehole at 2.900m

Groundwater:

Struck (m)	Rose to	After (mins)	Sealed	Comment
				None encountered.

Hole Information:

Hole Depth (m)	Hole Dia (mm)	Casing Dia (mm)
2.90	200	200

Equipment: Dando 2000

Chiselling:

Depth Top	Depth Base	Duration	Tool
2.80	2.90	01:00	Chisel.

Remarks:

Borehole terminated at 2.90m bgl due to obstruction.

Shift Data:

Groundwater	Shift	Hole Depth (m)	Remarks
	23/05/2018 08:00	0.00	Start of shift.
Dry	23/05/2018 18:00	2.90	End of borehole.

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Project Name:	Castletreasure Development	**Project No.** P18081	**Co-ords:**	570537E - 568041N	**Hole Type** Rotary cored
Location:	Douglas, Co. Cork		**Level:**	77.75m OD	**Scale** 1:50
Client:	Cairn Homes PLC		**Dates:**	29/05/2018	29/05/2018

Well	Water Strike (m)	Depth (m)	Type /Fs (min, max, avg)	Coring (%) TCR	SCR	RQD	Depth (m) / Fl (/m)	Level (mOD)	Legend	Stratum Description
							2.75	75.00		Refer to BH06 for detailed overburden description.
		2.75 - 4.30	20mm 100mm 35mm	99	46	0				Lithology: Medium weak, purple brown, MUDSTONE. Weathering: Slightly weathered, oxidation discolouration, and minor clay infill. Fractures: One set, dip 80-90 degree, closely spaced, planar rough.
		4.30 - 5.85	20mm 130mm 35mm	100	54	8				
		5.85 - 7.35	20mm 60mm 30mm	93	86	14				
		7.35 - 8.25	30mm 190mm 70mm	100	69	0				
		8.25 - 9.00	20mm 130mm 80mm	100	100	0				
							9.00	68.75		End of Borehole at 9.000m

Groundwater:

Struck, m	Rose to	After, min	Sealed	Comment
				None encountered.

Hole Information:

Hole Depth (m)	Hole Dia (mm)	Casing Dia (mm)
9.00	76	131

Equipment:	Deltabase 520
Method:	Compressed air mist.

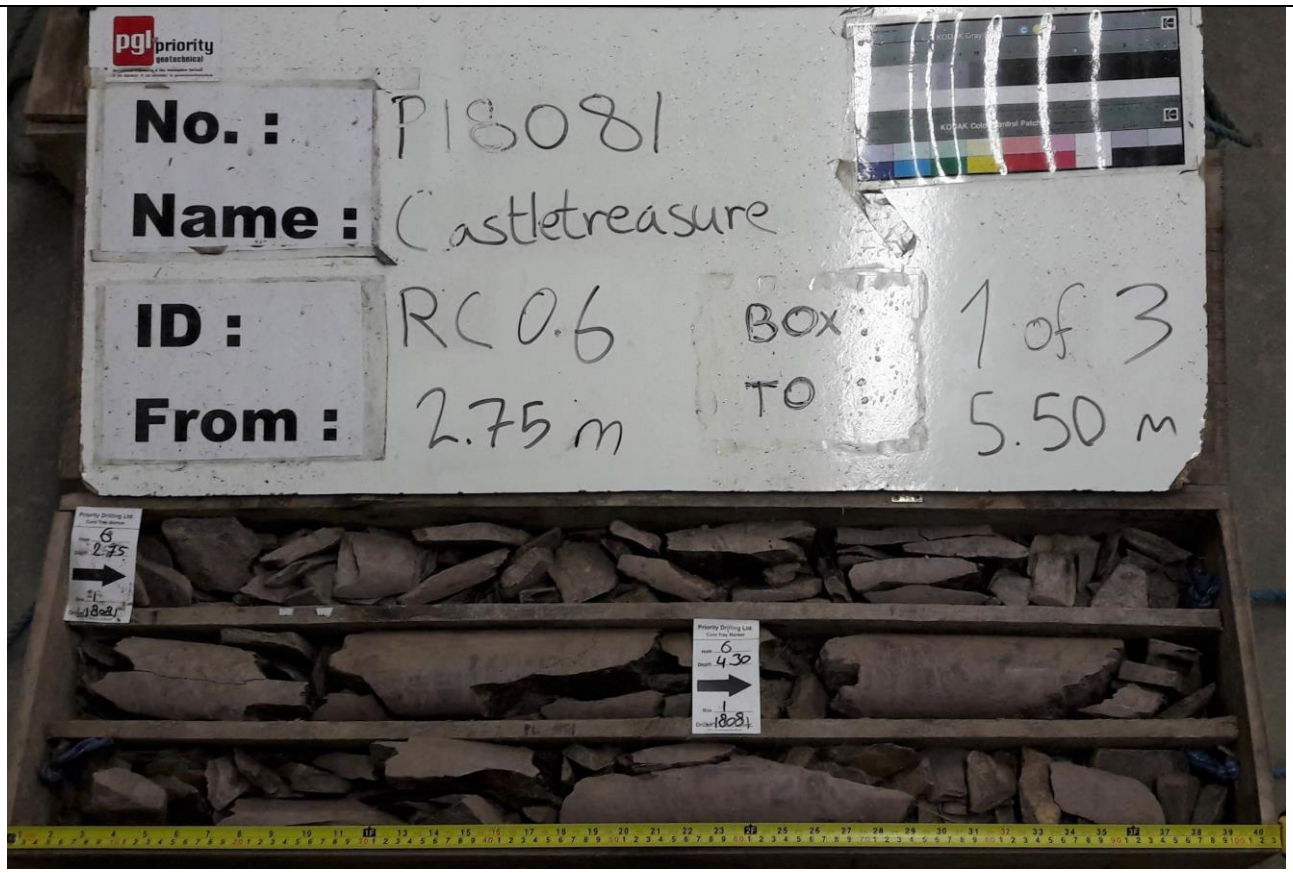
Remarks:

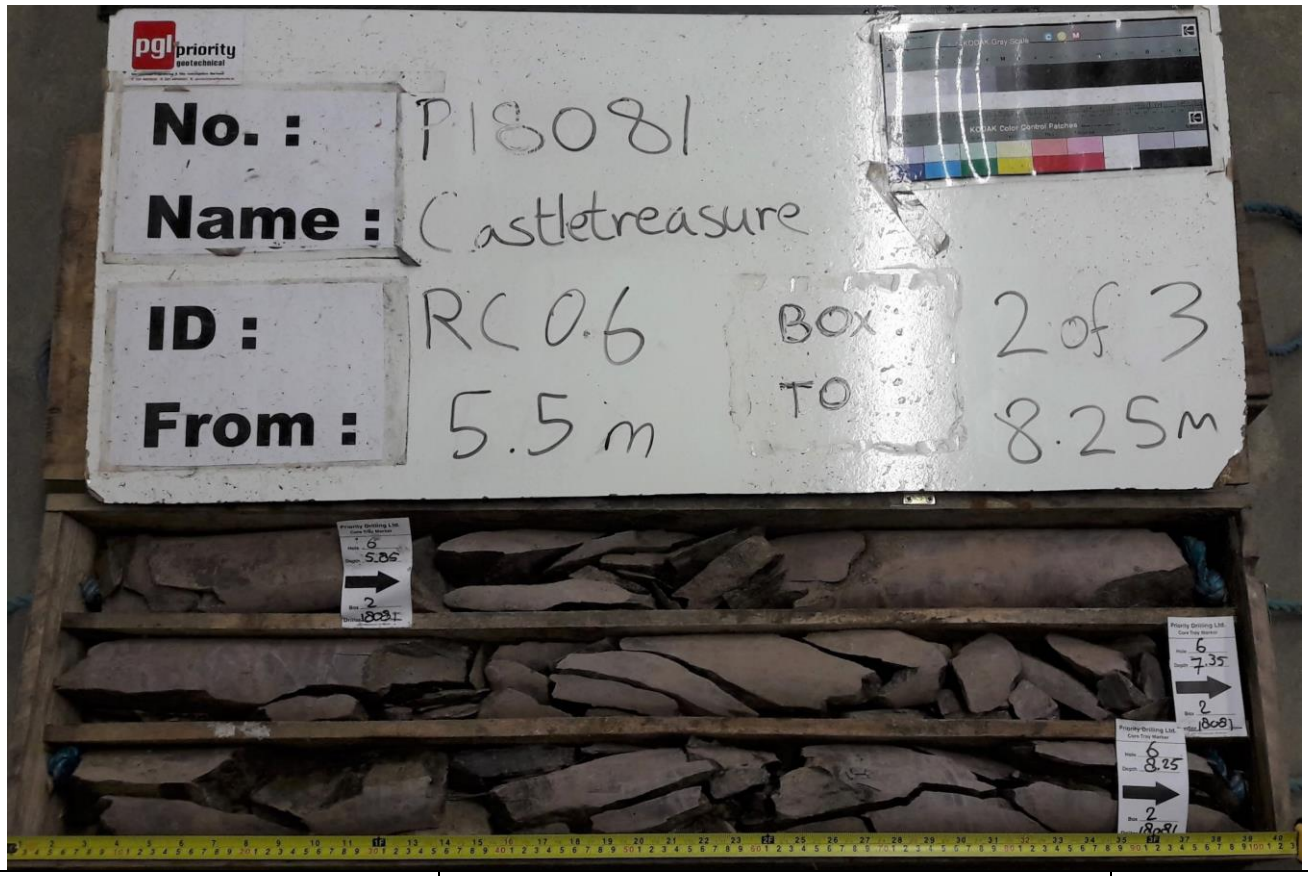
Borehole terminated at 9.00m bgl. 50mm standpipe installed. Response zone from 5.0m to 9.0m bgl.

Shift Data:

Groundwater	Shift	Hole Depth	Remarks
	29/05/2018 08:00	0.00	Start of shift.
Dry	29/05/2018 18:00	9.00	End of borehole.

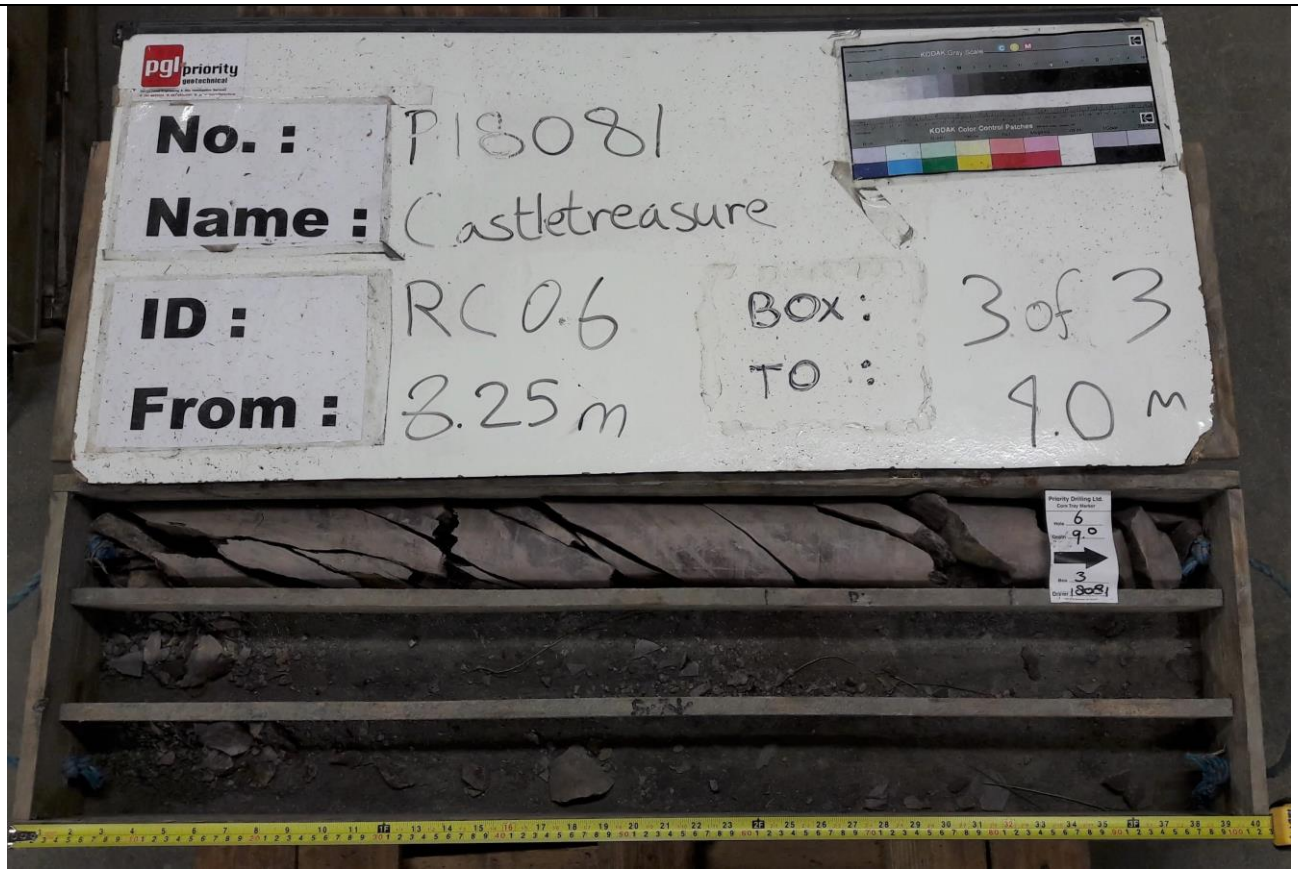
Photographic Record





Number:	**RC06**	**Project**	Castletreasure, Douglas Development	
		Project No	P18081	
		Engineer	J.B. Barry & Partners Consulting Engineers	

Photographic Record



Number:	**RC06**	**Project**	Castletreasure, Douglas Development	
		Project No	P18081	
		Engineer	J.B. Barry & Partners Consulting Engineers	

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Drilled By:	Borehole No.
JC	**BH07**
Logged By:	Sheet 1 of 1
SR	

Project Name:	Castletreasure Development	**Project No.** P18081	**Co-ords:**	570246E - 568117N	**Hole Type** CP
Location:	Douglas, Co. Cork		**Level:**	53.68m OD	**Scale** 1:50
Client:	Cairn Homes PLC		**Date:**	22/05/2018 - 22/05/2018	

Well Backfill	Water Strike (m)	Sample and In Situ Testing			Depth (m)	Level (mOD)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.00 - 1.00	B					(MADE GROUND) Firm, brown, gravelly SILT with low cobble content. Gravel is fine to coarse, angular to sub-angular. Cobbles are 63mm to 110mm dia, angular, Siltstone.
		1.00	SPT (C)	N=9 (4,4/3,2,2,2)				
					1.30	52.38		
		1.50 - 2.00	B					(MADE GROUND) Loose, brown, very silty very sandy GRAVEL with low cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-angular. Cobbles are 63mm to 110mm dia, angular to sub-angular.
		2.00	SPT (C)	N=8 (2,2/3,2,1,2)				
		2.50 - 3.00	B					
		3.00	SPT (C)	N=8 (2,2/1,2,2,3)				
		3.50 - 4.00	B					
		4.00	SPT (C)	N=17 (3,3/4,4,5,4)				
		4.50 - 5.00	B		4.50	49.18		(MADE GROUND) Medium dense, very sandy very clayey GRAVEL with low cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-angular.
		5.00	SPT (C)	N=14 (3,3/4,3,4,3)				
		6.00 - 6.50	B		6.00	47.68		(MADE GROUND) Brown, gravelly SILT with low cobble content and concrete inclusions. Gravel is fine to coarse, angular to sub-rounded, varied lithology.
		6.50	SPT (C)	N=16 (4,4/5,4,3,4)	6.50	47.18		Stiff, purple brown, slightly sandy gravelly SILT with orange oxidation staining and low cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-angular.
		7.30 - 7.80	B					
		7.50	SPT (C)	N=22 (4,4/5,4,5,8)				
					8.10	45.58		
		8.20	SPT (C)	50 (25 for 75mm/50 for 135mm)				End of Borehole at 8.100m

Groundwater:

Struck (m)	Rose to	After (mins)	Sealed	Comment
				None encountered.

Hole Information:

Hole Depth (m)	Hole Dia (mm)	Casing Dia (mm)
8.10	200	200

Equipment: Dando 2000

Chiselling:

Depth Top	Depth Base	Duration	Tool
8.00	8.10	01:00	Chisel.

Remarks:

Borehole terminated at 8.10m bgl due to obstruction.

Shift Data:

Groundwater	Shift	Hole Depth (m)	Remarks
	22/05/2018 08:00	0.00	Start of shift.
Dry.	22/05/2018 18:00	8.10	End of borehole.

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Project Name:	Castletreasure Development	**Project No.** P18081	**Co-ords:**	570246E - 568117N	**Hole Type** Rotary cored
Location:	Douglas, Co. Cork		**Level:**	53.68m OD	**Scale** 1:50
Client:	Cairn Homes PLC		**Dates:**	30/05/2018	31/05/2018

Well	Water Strike (m)	Depth (m)	Type /Fs (min, max, avg)	Coring (%) TCR	SCR	RQD	Depth (m) / Fl (/m)	Level (mOD)	Legend	Stratum Description
										Refer to BH07 for detailed overburden description.
		N=13 (3,4/3,3,4,3) (C)					8.10	45.58		Open hole boring. Driller described Rock. Assumed weathered Mudstone.
							8.95	44.73		

Groundwater:

Struck, m	Rose to	After, min	Sealed	Comment
				None encountered

Hole Information:

Hole Depth (m)	Hole Dia (mm)	Casing Dia (mm)
12.00	76	131

Equipment:	Deltabase 520
Method:	Compressed air mist

Remarks:

Borehole terminated at 12.00m bgl.

Shift Data:

Groundwater	Shift	Hole Depth	Remarks
	30/05/2018 08:00	0.00	Start of shift.
Dry	30/05/2018 18:00	9.75	End of shift.
Dry	31/05/2018 08:00	9.75	Start of shift.
Dry	31/05/2018 18:00	12.00	End of borehole.

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Project Name:	Castletreasure Development	**Project No.** P18081	**Co-ords:**	570246E - 568117N	**Hole Type** Rotary cored
Location:	Douglas, Co. Cork		**Level:**	53.68m OD	**Scale** 1:50
Client:	Cairn Homes PLC		**Dates:**	30/05/2018	31/05/2018

Well	Water Strike (m)	Depth (m)	Type /Fs (min, max, avg)	Coring (%) TCR	SCR	RQD	Depth (m) / FI (/m)	Level (mOD)	Legend	Stratum Description
		0 (50 for 0mm/0 for 0mm) 8.95 (C) 9.70	5mm 40mm 20mm	72	8	0	8/m			Lithology: Weak to medium weak, purple brown, thinly laminated MUDSTONE. Weathering: Orange oxidation discolouration and clay smearing on fracture surfaces. Fracturing: 1 main set dipping 70 to 75 degrees, planar smooth fracture surfaces, closely spaced.
		9.70 - 10.50		100	20	0				
		10.50 - 11.00	5mm 50mm 25mm	100	74	0	13/m			
		11.00 - 12.00		100	18	0	12/m			
							12.00	41.68		End of Borehole at 12.000m

10 11 12 13 14 15 16 17 18

Groundwater:

Struck, m	Rose to	After, min	Sealed	Comment
				None encountered

Hole Information:

Hole Depth (m)	Hole Dia (mm)	Casing Dia (mm)
12.00	76	131

Equipment:	Deltabase 520
Method:	Compressed air mist

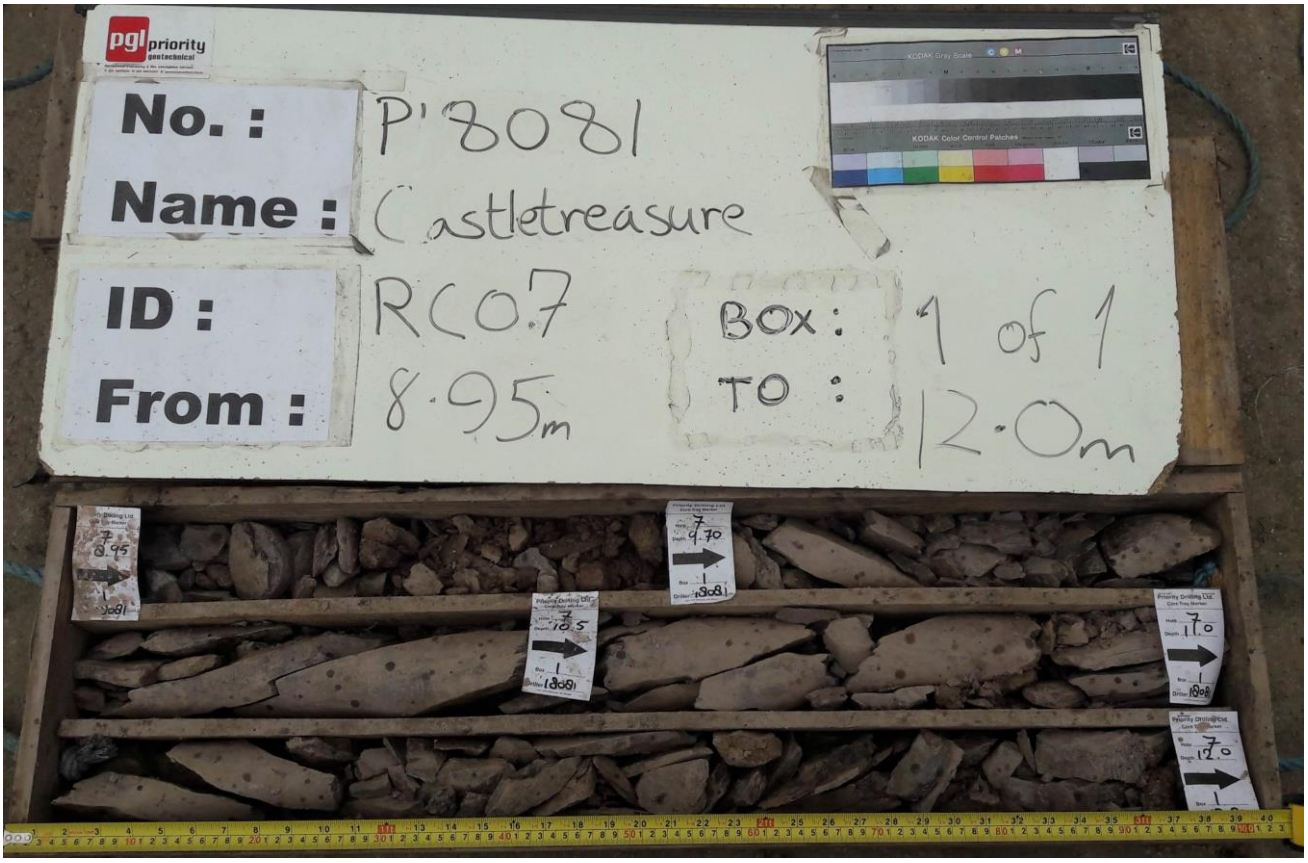
Remarks:

Borehole terminated at 12.00m bgl.

Shift Data:

Groundwater	Shift	Hole Depth	Remarks
	30/05/2018 08:00	0.00	Start of shift.
Dry	30/05/2018 18:00	9.75	End of shift.
Dry	31/05/2018 08:00	9.75	Start of shift.
Dry	31/05/2018 18:00	12.00	End of borehole.

Photographic Record



Number:	**RC07**	**Project**	Castletreasure, Douglas Development	
		Project No	P18081	
		Engineer	J.B. Barry & Partners Consulting Engineers	

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Drilled By:	Borehole No.
JC	**BH08**
Logged By:	Sheet 1 of 1
SR	

Project Name:	Castletreasure Development	**Project No.** P18081	**Co-ords:**	570259E - 568203N	**Hole Type** CP
Location:	Douglas, Co. Cork		**Level:**	44.01m OD	**Scale** 1:50
Client:	Cairn Homes PLC		**Date:**	21/05/2018 - 22/05/2018	

Well Backfill	Water Strike (m)	Sample and In Situ Testing			Depth (m)	Level (mOD)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.50 - 1.00	B					(MADE GROUND) Stiff, brown, gravelly SILT with medium cobble content and plastic and concrete inclusions. Gravel is fine to coarse, angular to sub-rounded. Cobbles are 63mm to 150mm dia, angular to sub-rounded. Cobbles are 63mm to 150mm dia, angular to sub-rounded.
		1.00	SPT (C)	N=39 (13,13/11,11,9,8)				
		1.50 - 2.00	B					
		2.00	SPT (C)	N=17 (4,3/4,4,5,4)				
					2.30	41.71		
		2.50 - 3.00	B					Stiff, brown, slightly sandy gravelly SILT. Gravel is fine to coarse, sub-angular to sub-rounded.
		3.00	SPT (C)	N=40 (10,12/10,9,10,11)				
		3.70	SPT (C)	50 (25 for 75mm/50 for 150mm)	3.70	40.31		End of Borehole at 3.700m

1 2 3 4 5 6 7 8 9

Groundwater:

Struck (m)	Rose to	After (mins)	Sealed	Comment
				None encountered.

Hole Information:

Hole Depth (m)	Hole Dia (mm)	Casing Dia (mm)
3.70	200	200

Equipment: Dando 2000

Chiselling:

Depth Top	Depth Base	Duration	Tool
0.50	0.64	00:30	Chisel.
1.10	1.23	00:30	Chisel.
2.80	2.96	00:30	Chisel.
3.60	3.70	01:00	Chisel.

Remarks:

Borehole terminated at 3.70m bgl due to obstruction.

Shift Data:

Groundwater	Shift	Hole Depth (m)	Remarks
	21/05/2018 08:00	0.00	Start of shift.
Dry	21/05/2018 18:00	2.30	End of shift.
Dry	22/05/2018 08:00	2.30	Start of shift.
Dry	22/05/2018 18:00	3.70	End of borehole.

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Drilled By:	Borehole No.
AK	**RC08**
Logged By:	Sheet 1 of 2
BL	

Project Name:	Castletreasure Development	**Project No.** P18081	**Co-ords:**	570259E - 568203N	**Hole Type** Rotary cored
Location:	Douglas, Co. Cork		**Level:**	44.01m OD	**Scale** 1:50
Client:	Cairn Homes PLC		**Dates:**	31/05/2018	01/06/2018

Well	Water Strike (m)	Depth (m)	Type /Fs (min, max, avg)	Coring (%) TCR	SCR	RQD	Depth (m) / Fl (/m)	Level (mOD)	Legend	Stratum Description
										Refer to BH08 for detailed overburden description.
							3.70	40.31		Open hole boring.
							6.20	37.81		Core run attempted. No recovery. Assumed weathered Mudstone
		~~0 (48 for 75mm/0~~ for 0mm) (C)					7.25	36.76		Lithology: Purple brown, weak to medium weak laminated MUDSTONE.
		7.25 - 8.25	5mm 20mm 10mm	100	53	0	30/m			Weathering: Orange oxidation discolouration and clay smearing on fracture surfaces.
		8.25 - 9.25	5mm 25mm 10mm	100	63	0	39/m			Fractures: 1 main set dipping 60-70 degrees, closely spaced.

Groundwater:

Struck, m	Rose to	After, min	Sealed	Comment
				None encountered.

Hole Information:

Hole Depth (m)	Hole Dia (mm)	Casing Dia (mm)
12.00	76	131

Equipment:	Deltabase 520
Method:	Compressed air mist

Remarks:

Borehole terminated at 12.00m bgl. 50mm dia. standpipe installed. Response zone from 1.5m to 7.0m bgl.

Shift Data:

Groundwater	Shift	Hole Depth	Remarks
	31/05/2018 08:00	0.00	Start of shift.
Dry	31/05/2018 18:00	0.00	End of shift.
Dry	01/06/2018 08:00	0.00	Start of shift.
Dry	01/06/2018 18:00	12.00	End of borehole.

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Drilled By:	Borehole No.
AK	**RC08**
Logged By:	Sheet 2 of 2
BL	

Project Name:	Castletreasure Development	**Project No.** P18081	**Co-ords:**	570259E - 568203N	**Hole Type** Rotary cored
Location:	Douglas, Co. Cork		**Level:**	44.01m OD	**Scale** 1:50
Client:	Cairn Homes PLC		**Dates:**	31/05/2018	01/06/2018

Well	Water Strike (m)	Depth (m)	Type /Fs (min, max, avg)	Coring (%) TCR	SCR	RQD	Depth (m) / Fl (/m)	Level (mOD)	Legend	Stratum Description
		9.25 - 10.25	5mm 25mm 10mm	100	14	0	27/m			Lithology: Purple brown, weak to medium weak laminated MUDSTONE. Weathering: Orange oxidation discolouration and clay smearing on fracture surfaces. Fractures: 1 main set dipping 60-70 degrees, closely spaced.
		10.25 - 12.00	5mm 70mm 10mm	100	53	0	40/m			
							12.00	32.01		End of Borehole at 12.000m

10 11 12 13 14 15 16 17 18

Groundwater:

Struck, m	Rose to	After, min	Sealed	Comment
				None encountered.

Hole Information:

Hole Depth (m)	Hole Dia (mm)	Casing Dia (mm)
12.00	76	131

Equipment:	Deltabase 520
Method:	Compressed air mist

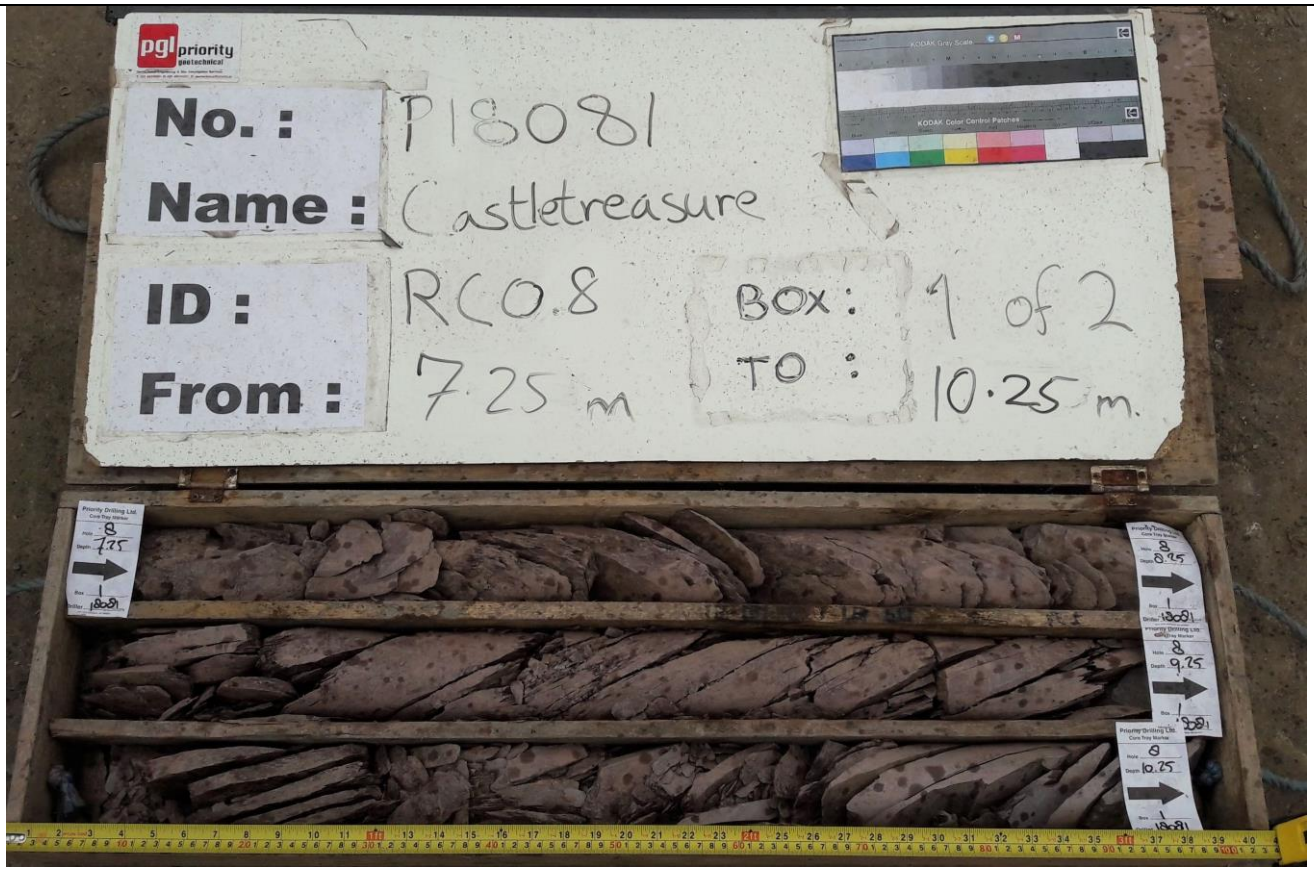
Remarks:

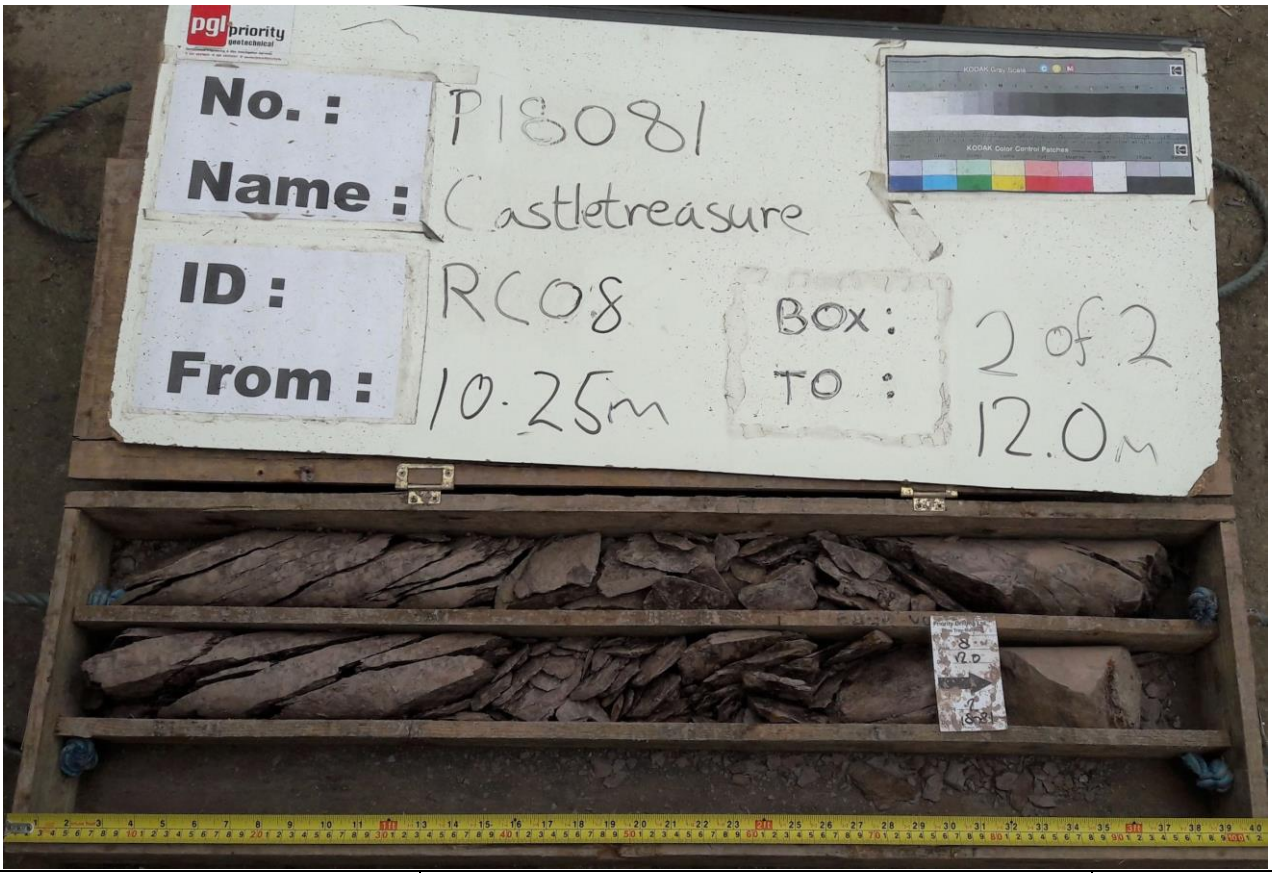
Borehole terminated at 12.00m bgl. 50mm dia. standpipe installed. Response zone from 1.5m to 7.0m bgl.

Shift Data:

Groundwater	Shift	Hole Depth	Remarks
	31/05/2018 08:00	0.00	Start of shift.
Dry	31/05/2018 18:00	0.00	End of shift.
Dry	01/06/2018 08:00	0.00	Start of shift.
Dry	01/06/2018 18:00	12.00	End of borehole.

Photographic Record





Number:	**RC08**	**Project**	Castletreasure, Douglas Development
		Project No	P18081
		Engineer	J.B. Barry & Partners Consulting Engineers

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Drilled By:	Borehole No.
JC	**BH09**
Logged By:	Sheet 1 of 1
SR	

Project Name:	Castletreasure Development	**Project No.** P18081	**Co-ords:**	570519E - 568226N	**Hole Type** CP
Location:	Douglas, Co. Cork		**Level:**	46.67m OD	**Scale** 1:50
Client:	Cairn Homes PLC		**Date:**	17/05/2018 - 17/05/2018	

Well Backfill	Water Strike (m)	Sample and In Situ Testing			Depth (m)	Level (mOD)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.50 - 1.00	B					Stiff, brown, slightly sandy gravelly SILT with low cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-angular. Cobbles are 63mm to 130mm dia, angular to sub-angular.
		1.00	SPT (C)	N=16 (4,4/5,4,3,4)				
		1.50 - 2.00	B					
		2.00	SPT (C)	N=17 (4,3/4,4,4,5)				
		2.50 - 3.00	B					
		3.00	SPT (C)	50 (9,7/50 for 225mm)	3.00	43.67		Stiff, slightly sandy gravelly CLAY.
		3.50 - 4.00	B					
		4.00	SPT (C)	50 (14,17/50 for 135mm)				
		4.20	SPT (C)	50 (25 for 75mm/50 for 135mm)	4.20	42.47		End of Borehole at 4.200m

Groundwater:

Struck (m)	Rose to	After (mins)	Sealed	Comment
				None encountered.

Hole Information:

Hole Depth (m)	Hole Dia (mm)	Casing Dia (mm)
4.20	200	200

Equipment: Dando 2000

Chiselling:

Depth Top	Depth Base	Duration	Tool
3.30	3.46	00:30	Chisel.
3.70	3.85	00:30	Chisel.
4.10	4.20	01:00	Chisel.

Remarks:

Borehole terminated at 4.20m bgl due to obstruction.

Shift Data:

Groundwater	Shift	Hole Depth (m)	Remarks
	17/05/2018 08:00	0.00	Start of shift.
Dry.	17/05/2018 18:00	4.20	End of borehole.

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Drilled By:	Borehole No.
JC	**BH10**
Logged By:	Sheet 1 of 1
SR	

Project Name:	Castletreasure Development	**Project No.** P18081	**Co-ords:**	570431E - 568369N	**Hole Type** CP
Location:	Douglas, Co. Cork		**Level:**	35.34m OD	**Scale** 1:50
Client:	Cairn Homes PLC		**Date:**	21/05/2018 - 21/05/2018	

Well Backfill	Water Strike (m)	Sample and In Situ Testing			Depth (m)	Level (mOD)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.50 - 1.00	B					(MADE GROUND) Stiff, brown slightly sandy gravelly SILT., Sand is fine to coarse. Gravel is fine to coarse, sub-rounded to sub-angular, Siltstone.
		1.00	SPT (C)	N=17 (8,5/4,5,4,4)				
		1.50 - 2.00	B					
		2.00	SPT (C)	N=14 (3,4/4,3,3,4)	2.00	33.34		Firm, purple brown, slightly sandy gravelly SILT. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-angular, varied lithology.
		2.50 - 3.00	B					
		3.00	SPT (C)	N=14 (3,3/4,3,4,3)				
		3.60 - 4.00	B					
		4.00	SPT (C)	50 (8,15/50 for 150mm)				
		4.20	SPT (C)	50 (25 for 75mm/50 for 150mm)	4.20	31.14		End of Borehole at 4.200m

1 2 3 4 5 6 7 8 9

Groundwater:

Struck (m)	Rose to	After (mins)	Sealed	Comment
				None encountered.

Hole Information:

Hole Depth (m)	Hole Dia (mm)	Casing Dia (mm)
4.20	200	200

Equipment: Dando 2000

Chiselling:

Depth Top	Depth Base	Duration	Tool
0.60	0.74	00:30	Chisel.
4.10	4.20	01:00	Chisel.

Remarks:

Borehole terminated at 4.20m bgl due to obstruction.

Shift Data:

Groundwater	Shift	Hole Depth (m)	Remarks
	21/05/2018 08:00	0.00	Start of shift.
Dry	21/05/2018 18:00	4.20	End of borehole.

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Drilled By:	Borehole No.
AK	**RC10**
Logged By:	Sheet 1 of 2
BL	

Project Name:	Castletreasure Development	**Project No.** P18081	**Co-ords:** 570431E - 568369N	**Hole Type** Rotary cored
Location:	Douglas, Co. Cork		**Level:** 35.34m OD	**Scale** 1:50
Client:	Cairn Homes PLC		**Dates:** 23/05/2018	24/05/2018

Well	Water Strike (m)	Depth (m)	Type /Fs (min, max, avg)	Coring (%) TCR	SCR	RQD	Depth (m) / Fl (/m)	Level (mOD)	Legend	Stratum Description
										Open hole drilling. Driller described: TOPSOIL
							1.00	34.34		
		N=5 (1,2/1,1,2,1) (C)								Open hole drilling. Driller described: Soft, CLAY.
		N=7 (2,1/2,2,1,2) (C)								
	▼									
		N=24 (3,6/7,5,5,7) (C)					4.40	30.94		Open hole drilling. Driller described: Medium dense GRAVEL.
		N=42 (11,10/12,9,10,11) (C) 5.85 - 7.35	5mm 10mm 10mm	100	0	0	5.85	29.49		Lithology: Medium weak, purple brown, MUDSTONE. Weathering: Weathered, oxidation discolouration, clay smearing. Fractures, One set, dip 60 degrees, close to very close spacing, planar/stepped smooth.
		7.35 - 8.15	5mm 40mm 10mm	100	0	0				
		8.15 - 9.25	5mm 30mm 5mm	100	12	0				

Groundwater:

Struck, m	Rose to	After, min	Sealed	Comment
4.00				See shift data.

Hole Information:

Hole Depth (m)	Hole Dia (mm)	Casing Dia (mm)
10.60	76	131

Equipment:	Deltabase 520
Method:	Compressed air mist.

Remarks:

Borehole terminated at 10.60m bgl.

Shift Data:

Groundwater	Shift	Hole Depth	Remarks
Dry	23/05/2018 08:00	5.85	Start of shift.
4.00	23/05/2018 18:00	8.15	End of shift.
4.00	24/05/2018 08:00	8.15	Start of shift.
4.00	24/05/2018 18:00	10.60	End of borehole.

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Project Name:	Castletreasure Development	**Project No.** P18081	**Co-ords:**	570431E - 568369N	**Hole Type** Rotary cored
Location:	Douglas, Co. Cork		**Level:**	35.34m OD	**Scale** 1:50
Client:	Cairn Homes PLC		**Dates:**	23/05/2018	24/05/2018

Well	Water Strike (m)	Depth (m)	Type /Fs (min, max, avg)	Coring (%) TCR	SCR	RQD	Depth (m) / Fl (/m)	Level (mOD)	Legend	Stratum Description
		9.25 - 10.60	5mm 50mm 20mm 5mm 30mm 7mm	100	36	0	10.60	24.74		Lithology: Medium weak, purple brown, MUDSTONE. Weathering: Weathered, oxidation discolouration, clay smearing. Fractures, One set, dip 60 degrees, close to very close spacing, planar/stepped smooth. End of Borehole at 10.600m

10 11 12 13 14 15 16 17 18

Groundwater:

Struck, m	Rose to	After, min	Sealed	Comment
4.00				See shift data.

Hole Information:

Hole Depth (m)	Hole Dia (mm)	Casing Dia (mm)
10.60	76	131

Equipment:	Deltabase 520
Method:	Compressed air mist.

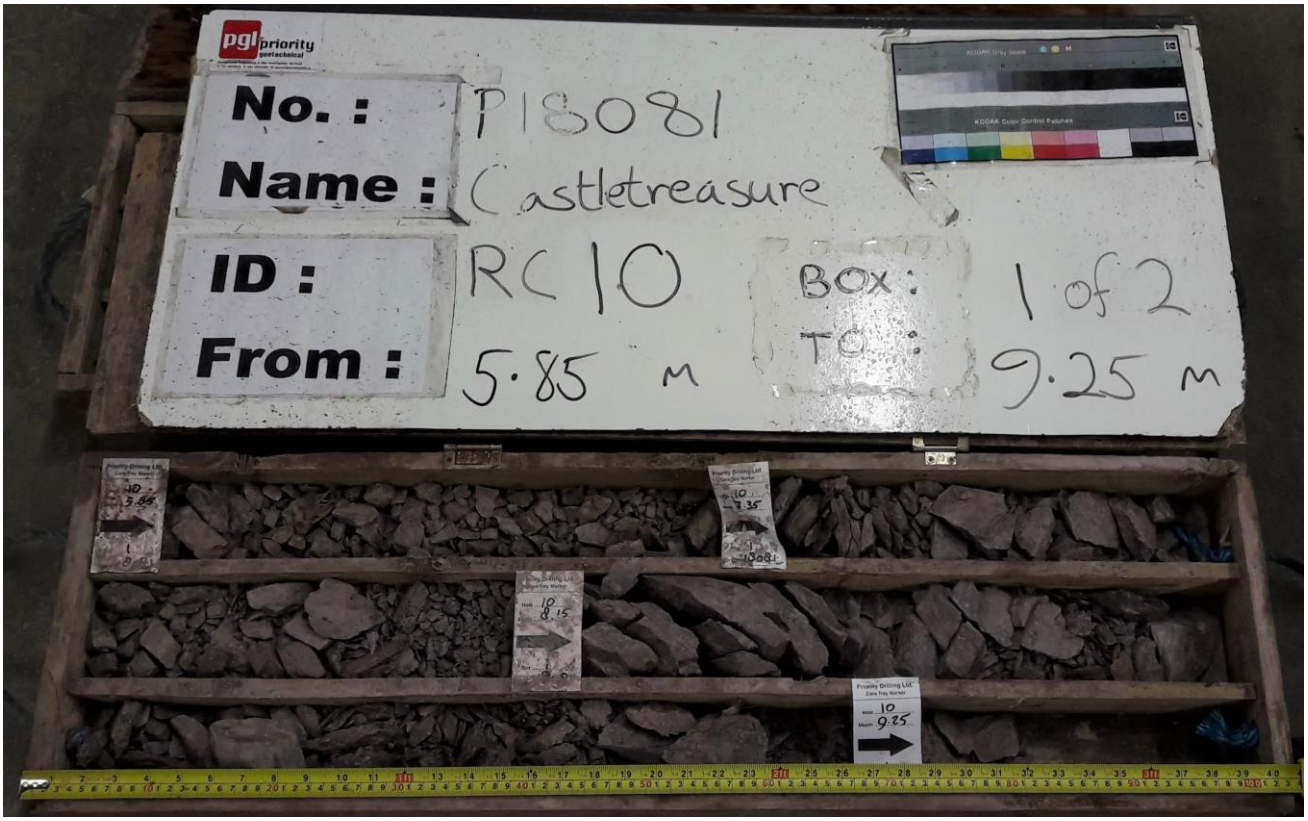
Remarks:

Borehole terminated at 10.60m bgl.

Shift Data:

Groundwater	Shift	Hole Depth	Remarks
Dry	23/05/2018 08:00	5.85	Start of shift.
4.00	23/05/2018 18:00	8.15	End of shift.
4.00	24/05/2018 08:00	8.15	Start of shift.
4.00	24/05/2018 18:00	10.60	End of borehole.

Photographic Record



Number:	**RC10**	**Project**	Castletreasure, Douglas Development
		Project No	P18081
		Engineer	J.B. Barry & Partners Consulting Engineers

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Trial Pit No
TP01
Sheet 1 of 1

Project Name: Castletreasure Development	**Project No.** P18081	**Co-ords:** 570307E - 567958N **Level:** 66.15m OD	**Date** 28/05/2018
Location: Douglas, Co. Cork		**Dimensions (m):** 4.10 x 1.60 **Depth:** 3.40m BGL	**Scale** 1:25
Client: Cairn Homes PLC			**Logged** PH

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
				0.00	66.15		(TOPSOIL) Brown, slightly sandy SILT. Sand is fine to coarse.
	0.40 - 1.40	B		0.40	65.75		Purple brown, silty very sandy GRAVEL.. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-angular.
	1.50 - 2.50	B		1.40	64.75		Purple brown, slightly silty sandy GRAVEL with high cobble content and low boulder content. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-angular. Cobbles are 63mm to 200mm dia, angular to sub-angular. Boulders are 200mm to 350mm dia, angular to sub-angular.
	2.50 - 3.40	B		3.40	62.75		End of Pit at 3.400m

1
2
3
4
5

Stability: Very poor.
Plant: 14t track machine
Backfill: Arisings.

Groundwater: None encountered.

Remarks: Trial pit terminated at 3.40m bgl due to pit instability.

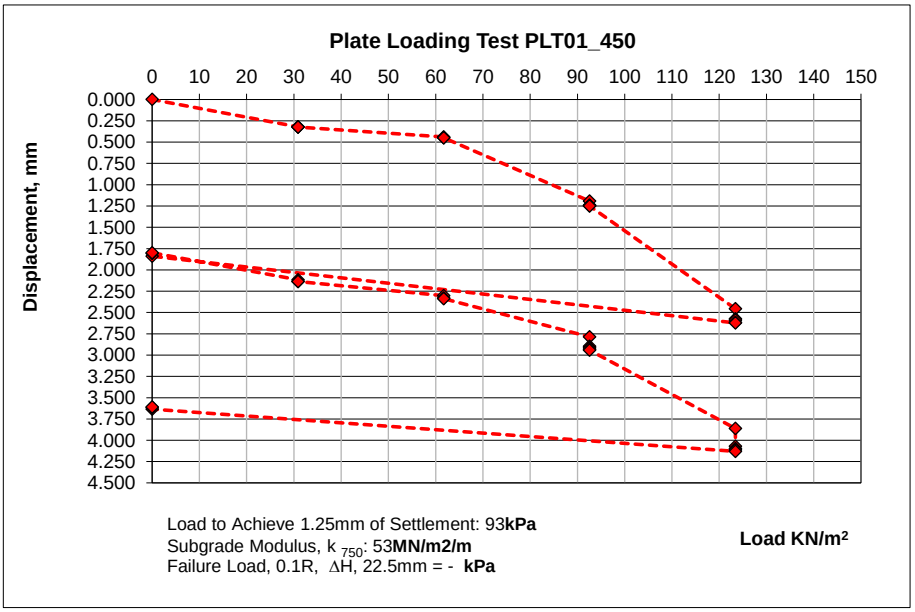
JOB REF:	P18081
JOB Name:	Castletreasure

		GPS Test Location
Plate Bearing Test	PLT01_TP01	**E: 570306.556**
Test Number		**N:567958.395**
Depth	0.65	**mOD 66.152**
Bedding Material	-	
Date	28/05/2018	
Ground Conditions	Sandy gravelly SILT.	
Seating Load	0.75t/ 25kPa	
Plate Diameter	**450** mm	
Plate Area	0.1589625 m2	

	G1	**G2**	**G3**	
Zero gauge	**0.00**	**0.00**	**0.00**	**0.00 mm**

Pressure (t)	Pressure (kPa)	Time (min)	Div (mm)	Div (mm)	Div (mm)	Average	D h, mm
0	0	0	0.00	0.00	0.00	0.00	0.000
0.5	31	1	-0.23	-0.34	-0.39	-0.32	0.320
0.5	31	2	-0.23	-0.34	-0.40	-0.32	0.323
0.5	31	3	-0.23	-0.34	-0.40	-0.32	0.323
1	62	1	-0.32	-0.49	-0.51	-0.44	0.440
1	62	2	-0.33	-0.50	-0.52	-0.45	0.450
1	62	3	-0.33	-0.50	-0.52	-0.45	0.450
1.5	93	1	-0.91	-0.99	-1.68	-1.19	1.193
1.5	93	2	-0.95	-1.04	-1.73	-1.24	1.240
1.5	93	3	-0.95	-1.04	-1.75	-1.25	1.247
1.5	93	4	-0.95	-1.05	-1.75	-1.25	1.250
2	123	1	-1.61	-2.31	-3.45	-2.46	2.457
2	123	2	-1.73	-2.44	-3.55	-2.57	2.573
2	123	3	-1.73	-2.47	-3.57	-2.59	2.590
2	123	4	-1.76	-2.50	-3.59	-2.62	2.617
2	123	5	-1.76	-2.51	-3.60	-2.62	2.623
0	0	1	-1.27	-1.74	-2.51	-1.84	1.840
0	0	2	-1.24	-1.70	-2.48	-1.81	1.807
0	0	3	-1.23	-1.69	-2.48	-1.80	1.800
0.5	31	1	-0.36	-0.30	-0.29	-0.32	2.117
0.5	31	2	-0.39	-0.33	-0.29	-0.34	2.137
0.5	31	3	-0.39	-0.33	-0.29	-0.34	2.137
1	62	1	-0.56	-0.49	-0.46	-0.50	2.303
1	62	2	-0.59	-0.53	-0.47	-0.53	2.330
1	62	3	-0.60	-0.54	-0.47	-0.54	2.337
1.5	93	1	-1.10	-0.97	-0.89	-0.99	2.787
1.5	93	2	-1.17	-1.15	-0.97	-1.10	2.897
1.5	93	3	-1.19	-1.17	-0.98	-1.11	2.913
1.5	93	4	-1.23	-1.19	-0.98	-1.13	2.933
1.5	93	5	-1.24	-1.20	-0.99	-1.14	2.943
2	123	1	-2.31	-2.16	-1.71	-2.06	3.860
2	123	2	-2.56	-2.43	-1.82	-2.27	4.070
2	123	3	-2.58	-2.47	-1.84	-2.30	4.097
2	123	4	-2.60	-2.49	-1.85	-2.31	4.113
2	123	5	-2.61	-2.52	-1.86	-2.33	4.130
0	0	1	-2.21	-1.97	-1.32	-1.83	3.633
0	0	2	-2.20	-1.94	-1.30	-1.81	3.613
0	0	3	-2.20	-1.94	-1.29	-1.81	3.610

Load to Achieve 1.25mm of Settlement:	**93**	kPa
Subgrade Modulus (MN/m^2/m) k $_{750}$:	**53**	
Estimated CBR (NRA DMRB HD25-26 3.62)	**9**	%
Plate scaling factor	**0.60**	
Plate rigidity factor	**1.18**	
Failure load Δh 0.1R	-	kPa
Estimated undrained shear strength	**-**	kPa



Photographic Record

Number:	**TP01**	**Project**	Castletreasure, Douglas Development	
		Project No	P18081	
		Engineer	J.B. Barry & Partners Consulting Engineers	

Photographic Record

Number:	**TP01**	**Project**	Castletreasure, Douglas Development	
		Project No	P18081	
		Engineer	J.B. Barry & Partners Consulting Engineers	

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Trial Pit No
TP02
Sheet 1 of 1

Project Name: Castletreasure Development	**Project No.** P18081	**Co-ords:** 570475E - 567975N **Level:** 80.25m OD	**Date** 29/05/2018
Location: Douglas, Co. Cork		**Dimensions (m):** 3.10 x 1.00 **Depth:** 2.90m BGL	**Scale** 1:25
Client: Cairn Homes PLC			**Logged** PH

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
							(TOPSOIL) Brown, sandy SILT. Sand is fine to coarse.
				0.30	79.95		
	0.50 - 1.50	B					Purple brown, very sandy very clayey GRAVEL. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded.
	0.50 - 1.50	D					
	1.50 - 2.00	B		1.50	78.75		(WEATHERED BEDROCK) Recovered as: Purple brown, slightly sandy slightly silty GRAVEL with medium cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-angular. Cobbles are 63mm to 200mm dia, angular to sub-angular.
	2.50 - 2.90	B					
				2.90	77.35		End of Pit at 2.900m

Stability: Moderate.
Plant: 14t track machine
Backfill: Arisings.

Groundwater: None encountered

Remarks: Trial pit terminated at 2.90m bgl due to bedrock obstruction.

Photographic Record

Number:	**TP02**	**Project**	Castletreasure, Douglas Development	
		Project No	P18081	
		Engineer	J.B. Barry & Partners Consulting Engineers	

Photographic Record

Number:	**TP02**	**Project**	Castletreasure, Douglas Development	
		Project No	P18081	
		Engineer	J.B. Barry & Partners Consulting Engineers	

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Trial Pit No
TP03
Sheet 1 of 1

Project Name: Castletreasure Development	**Project No.** P18081	**Co-ords:** 570633E - 567982N **Level:** 81.79m OD	**Date** 24/05/2018
Location: Douglas, Co. Cork		**Dimensions (m):** 3.90 x 1.20 **Depth:** 4.50m BGL	**Scale** 1:25
Client: Cairn Homes PLC			**Logged** PH

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
							(TOPSOIL) Brown, slightly sandy SILT. Sand is fine to coarse.
				0.40	81.39		
	0.50 - 1.30	B					Purple brown, sandy very silty GRAVEL. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded.
	0.50 - 1.30	D					
				1.30	80.49		
	1.50 - 2.50	B					Purple brown, silty sandy GRAVEL with low cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-rounded. Cobbles are 63mm to 200mm dia, angular to sub-rounded.`
				2.90	78.89		
	3.00 - 3.50	B					(WEATHERED BEDROCK) Recovered as: Purple brown, slightly silty slightly sandy GRAVEL with low cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular. Cobbles are 63mm to 200mm dia, angular.
	4.00 - 4.50	B					
				4.50	77.29		End of Pit at 4.500m

1 2 3 4 5

Stability: Moderate
Plant: 14t track machine
Backfill: Arisings.

Groundwater: None encountered.

Remarks: Trial pit terminated at 4.50m bgl, required depth.

Photographic Record

Number:	**TP03**	**Project**	Castletreasure, Douglas Development	
		Project No	P18081	
		Engineer	J.B. Barry & Partners Consulting Engineers	

Photographic Record

Number:	**TP03**	**Project**	Castletreasure, Douglas Development	
		Project No	P18081	
		Engineer	J.B. Barry & Partners Consulting Engineers	

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Trial Pit No
TP04
Sheet 1 of 1

Project Name: Castletreasure Development	**Project No.** P18081	**Co-ords:** 570268E - 568040N **Level:** 61.11m OD	**Date** 29/05/2018
Location: Douglas, Co. Cork		**Dimensions (m):** 3.10 x 1.10	**Scale** 1:25
Client: Cairn Homes PLC		**Depth:** 4.50m BGL	**Logged** PH

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
				0.10	61.01		(TOPSOIL) Brown SILT.
	0.50 - 1.50 0.50 - 1.50	B D					Soft to firm, purple, slightly sandy gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded. Cobbles are 63mm to 200mm dia, sub-angular to sub-rounded.
▼				1.90	59.21		Brown, sandy SILT. Sand is fine to coarse.
	2.00 - 3.00	B		2.00	59.11		Light brown, clayey very sandy GRAVEL with low cobble content. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded. Cobbles are 63mm to 200mm dia, sub-angular to sub-rounded.
	3.50 - 4.50	B					
				4.50	56.61		End of Pit at 4.500m

1 2 3 4 5

Stability: Moderate.
Plant: 14t track machine.
Backfill: Arisings.

Groundwater: 1.90m: Trickle flow rate.

Remarks: Trial pit terminated at 4.50m bgl, required depth.

Photographic Record

Number:	**TP04**	**Project**	Castletreasure, Douglas Development	
		Project No	P18081	
		Engineer	J.B. Barry & Partners Consulting Engineers	

Photographic Record

Number:	**TP04**	**Project**	Castletreasure, Douglas Development
		Project No	P18081
		Engineer	J.B. Barry & Partners Consulting Engineers

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Trial Pit No
TP05
Sheet 1 of 1

Project Name: Castletreasure Development	**Project No.** P18081	**Co-ords:** 570424E - 568034N **Level:** 76.32m OD	**Date** 29/05/2018
Location: Douglas, Co. Cork		**Dimensions (m):** 3.50 x 1.10	**Scale** 1:25
Client: Cairn Homes PLC		**Depth:** 3.80m BGL	**Logged** PH

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
	0.50 - 1.50	B		0.50	75.82		(TOPSOIL) Brown, slightly sandy SILT. Sand is fine to coarse.
	1.50 - 2.50	B					Brown, silty very sandy GRAVEL with low cobble content. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded. Cobbles are 63mm to 200mm dia, sub-angular to sub-rounded.
	2.50 - 3.20	B					
	3.20 - 3.80	B		3.20	73.12		(WEATHERED BEDROCK) Recovered as: Light brown, slightly sandy slightly clayey GRAVEL with high cobble content. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded. Cobbles are 63mm to 200mm dia, angular to sub-angular.
				3.80	72.52		End of Pit at 3.800m

1 2 3 4 5

Stability: Good
Plant: 14t track machine
Backfill: Arisings.

Groundwater: None encountered.

Remarks: Trial pit terminated at 3.90m bgl due to bedrock.

Photographic Record

Number:	**TP05**	**Project**	Castletreasure, Douglas Development
		Project No	P18081
		Engineer	J.B. Barry & Partners Consulting Engineers

Photographic Record

Number:	**TP05**	**Project**	Castletreasure, Douglas Development
		Project No	P18081
		Engineer	J.B. Barry & Partners Consulting Engineers

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Trial Pit No
TP06
Sheet 1 of 1

Project Name: Castletreasure Development	**Project No.** P18081	**Co-ords:** 570668E - 568047N **Level:** 73.90m OD	**Date** 24/05/2018
Location: Douglas, Co. Cork		**Dimensions (m):** 4.00 x 1.00 **Depth:** 4.50m BGL	**Scale** 1:25
Client: Cairn Homes PLC			**Logged** PH

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
				0.00	73.90		(TOPSOIL) Brown, slightly sandy SILT. Sand is fine to coarse.
	0.50 - 1.50	B		0.50	73.40		Purple brown, very clayey very sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded.
				1.70	72.20		Purple brown, very silty very gravelly SAND. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded.
	2.00 - 3.00	B					
	3.00 - 4.00	B					
	4.00 - 4.50	B		4.00	69.90		Purple brown, slightly silty very sandy GRAVEL with low cobble content. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded. Cobbles are 63mm to 200mm dia, sub-angular to sub-rounded.
				4.50	69.40		End of Pit at 4.500m

1 2 3 4 5

Stability: Moderate.
Plant: 14t track machine.
Backfill: Arisings.

Groundwater: None encountered.

Remarks: Trial pit terminated at 4.50m bgl, required depth.

Photographic Record

Number:	**TP06**	**Project**	Castletreasure, Douglas Development	
		Project No	P18081	
		Engineer	J.B. Barry & Partners Consulting Engineers	

Photographic Record

Number:	**TP06**	**Project**	Castletreasure, Douglas Development	
		Project No	P18081	
		Engineer	J.B. Barry & Partners Consulting Engineers	

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Trial Pit No
TP07
Sheet 1 of 1

Project Name: Castletreasure Development	**Project No.** P18081	**Co-ords:** 570388E - 568101N **Level:** 64.97m OD	**Date** 29/05/2018
Location: Douglas, Co. Cork		**Dimensions (m):** 3.90 x 1.10 **Depth:** 3.10m BGL	**Scale** 1:25
Client: Cairn Homes PLC			**Logged** PH

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
							(TOPSOIL) Brown, slightly sandy SILT. Sand is fine to coarse.
	0.50 - 1.50	B		0.50	64.47		Grey brown, slightly clayey sandy GRAVEL with medium cobble content and low boulder content. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-rounded. Cobbles are 63mm to 200mm dia, angular to sub-rounded. Boulders are 200mm to 400mm dia, angular to sub-rounded.
	1.50 - 2.50	B					
	2.50 - 3.10	B					
				3.00	61.97		(WEATHERED BEDROCK) Recovered as: Purple brown, slightly sandy clayey GRAVEL with high cobble content..
				3.10	61.87		End of Pit at 3.100m

1
2
3
4
5

Stability: Moderate
Plant: 14 track machine
Backfill: Arisings.

Groundwater: None encountered.

Remarks: Trial pit terminated at 3.10m bgl due to assumed bedrock.

Photographic Record

Number:	**TP07**	**Project**	Castletreasure, Douglas Development
		Project No	P18081
		Engineer	J.B. Barry & Partners Consulting Engineers

Photographic Record

Number:	**TP07**	**Project**	Castletreasure, Douglas Development	
		Project No	P18081	
		Engineer	J.B. Barry & Partners Consulting Engineers	

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Trial Pit No
TP08
Sheet 1 of 1

Project Name: Castletreasure Development	**Project No.** P18081	**Co-ords:** 570596E - 568099N **Level:** 68.11m OD	**Date** 24/05/2018
Location: Douglas, Co. Cork		**Dimensions (m):** 4.20 x 1.15 **Depth:** 3.60m BGL	**Scale** 1:25
Client: Cairn Homes PLC			**Logged** PH

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
							(TOPSOIL) Brown, slightly sandy SILT. Sand is fine to coarse.
	0.50 - 1.50	B		0.45	67.66		Red purple brown, silty very sandy GRAVEL with low cobble content. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded. Cobbles are 63mm to 200mm dia, sub-angular to sub-rounded.
	1.50 - 2.50	B					
	2.80 - 3.60	B		2.80	65.31		(WEATHERED ROCK) Recovered as: Purple brown, silty sandy GRAVEL with medium cobble content and low boulder content. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-rounded. Cobbles are 63mm to 200mm dia, angular to sub-angular. Boulders are 200mm to 500mm dia, angular to sub-angular.
				3.60	64.51		End of Pit at 3.600m

1 2 3 4 5

Stability: Poor
Plant: 14t track machine
Backfill: Arisings

Groundwater: None encountered.

Remarks: Trial pit terminated at 3.60m bgl due to bedrock.

Photographic Record

Number:	**TP08**	**Project**	Castletreasure, Douglas Development	
		Project No	P18081	
		Engineer	J.B. Barry & Partners Consulting Engineers	

Photographic Record

Number:	**TP08**	**Project**	Castletreasure, Douglas Development	
		Project No	P18081	
		Engineer	J.B. Barry & Partners Consulting Engineers	

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Trial Pit No
TP09
Sheet 1 of 1

Project Name: Castletreasure Development	**Project No.** P18081	**Co-ords:** 570758E - 568016N **Level:** 70.14m OD	**Date** 25/05/2018
Location: Douglas, Co. Cork		**Dimensions (m):** 4.30 x 1.20 **Depth:** 3.50m BGL	**Scale** 1:25
Client: Cairn Homes PLC			**Logged** PH

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
							(TOPSOIL) Brown, slightly sandy SILT. Sand is fine to coarse.
	0.50 - 1.50	B		0.40	69.74		Brown, gravelly very silty SAND with low cobble content. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded. Cobbles are 63mm to 200mm dia, sub-angular to sub-rounded.
	1.50 - 2.40	B		1.50	68.64		Very silty very sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse.
	2.50 - 3.50	B		2.40	67.74		(WEATHERED ROCK) Recovered as: Brown, silty sandy GRAVEL with low cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-rounded. Cobbles are 63mm to 200mm dia, angular to sub-rounded.
				3.50	66.64		End of Pit at 3.500m

1 2 3 4 5

Stability: Poor
Plant: 14t track machine
Backfill: Arisings.

Groundwater: None encountered.

Remarks: Trial pit terminated at 3.50m bgl due to hard rock.

Photographic Record

Number:	**TP09**	**Project**	Castletreasure, Douglas Development
		Project No	P18081
		Engineer	J.B. Barry & Partners Consulting Engineers

Photographic Record

Number:	**TP09**	**Project**	Castletreasure, Douglas Development	
		Project No	P18081	
		Engineer	J.B. Barry & Partners Consulting Engineers	

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Trial Pit No
TP11
Sheet 1 of 1

Project Name: Castletreasure Development	**Project No.** P18081	**Co-ords:** 570225E - 568222N **Level:** 40.17m OD	**Date** 29/05/2018
Location: Douglas, Co. Cork		**Dimensions (m):** 3.20 x 1.10 **Depth:** 4.50m BGL	**Scale** 1:25
Client: Cairn Homes PLC			**Logged** PH

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
				0.35	39.82		(TOPSOIL) Brown, slightly sandy SILT. Sand is fine to coarse.
	0.50 0.50 - 1.35 0.50 - 1.35	ENV B D					(MADE GROUND) Purple brown, slightly sandy gravelly CLAY fill with low cobble content. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded. Cobbles are 63mm to 200mm dia, sub-angular to sub-rounded.
				1.35	38.82		Brown, slightly sandy SILT with rootlets. Sand is fine to coarse.
	1.50 - 2.50	B		1.60	38.57		Brown, silty very sandy GRAVEL with medium cobble content and low boulder content. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded. Cobbles are 63mm to 200mm dia, sub-angular to sub-rounded. Boulders are 200mm to 350mm dia, sub-angular to sub-rounded.
	2.50 - 3.50	B					
	3.50 - 4.50	B					
				4.50	35.67		End of Pit at 4.500m

1
2
3
4
5

Stability: Good
Plant: 14t track machine
Backfill: Arisings.

Groundwater: None encountered.

Remarks: Trial pit terminated at 4.50m bgl, required depth.

Photographic Record

Number:	**TP11**	**Project**	Castletreasure, Douglas Development	
		Project No	P18081	
		Engineer	J.B. Barry & Partners Consulting Engineers	

Photographic Record

Number:	**TP11**	**Project**	Castletreasure, Douglas Development	
		Project No	P18081	
		Engineer	J.B. Barry & Partners Consulting Engineers	

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Trial Pit No
TP12
Sheet 1 of 1

Project Name: Castletreasure Development	**Project No.** P18081	**Co-ords:** 570346E - 568152N **Level:** 55.53m OD	**Date** 29/05/2018
Location: Douglas, Co. Cork		**Dimensions (m):** 3.90 × 1.20	**Scale** 1:25
Client: Cairn Homes PLC		**Depth:** 4.50m BGL	**Logged** PH

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
				0.20	55.33		(TOPSOIL) Brown, slightly sandy SILT. Sand is fine to coarse.
	0.50 - 1.50 0.50 - 1.50	B D					Brown, slightly sandy gravelly SILT with low cobble content. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded. Cobbles are 63mm to 200mm dia, sub-angular to sub-rounded.
	2.10 - 3.00	B		2.10	53.43		Brown, slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded.
	3.00 - 4.00	B					
	4.00 - 4.50	B					
				4.50	51.03		End of Pit at 4.500m

1 2 3 4 5

Stability: Good
Plant: 14t track machine
Backfill: Arisings.

Groundwater: None encountered.

Remarks: Trial pit terminated at 4.50m bgl, required depth.

Photographic Record

Number:	**TP12**	**Project**	Castletreasure, Douglas Development	
		Project No	P18081	
		Engineer	J.B. Barry & Partners Consulting Engineers	

Photographic Record

Number:	**TP12**	**Project**	Castletreasure, Douglas Development	
		Project No	P18081	
		Engineer	J.B. Barry & Partners Consulting Engineers	

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Trial Pit No
TP13
Sheet 1 of 1

Project Name: Castletreasure Development	**Project No.** P18081	**Co-ords:** 570513E - 568184N **Level:** 52.98m OD	**Date** 28/05/2018
Location: Douglas, Co. Cork		**Dimensions (m):** 4.10 × 0.90 **Depth:** 2.90m BGL	**Scale** 1:25
Client: Cairn Homes PLC			**Logged** PH

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
							(TOPSOIL) Brown, slightly sandy SILT. Sand is fine to coarse.
	0.60 - 1.50 0.60 - 1.50	B D		0.55	52.43		Purple brown, very clayey very sandy GRAVEL with low cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-rounded. Cobbles are 63mm to 200mm dia, angular to sub-rounded.
	1.50 - 2.40	B					
	2.40 - 2.90	B		2.40	50.58		Purple brown, very sandy very silty GRAVEL with low cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-rounded. Cobbles are 63mm to 200mm dia, angular to sub-rounded.
				2.90	50.08		*2.90m: WEATHERED ROCK.* End of Pit at 2.900m

1 2 3 4 5

Stability: Moderate
Plant: 14t track machine
Backfill: Arisings.

Groundwater: None encountered.

Remarks: Trial pit terminated at 2.90m bgl, assumed weathered rock. Plate load test carried out at 0.80m.

JOB REF:	P18081
JOB Name:	Castletreasure

Plate Bearing Test	PLT13_TP13
Test Number	
Depth	0.8
Bedding Material	-
Date	28/05/2018
Ground Conditions	Sandy gravelly SILT.
Seating Load	0.75t/ 25kPa
Plate Diameter	**450** mm
Plate Area	0.1589625 m2

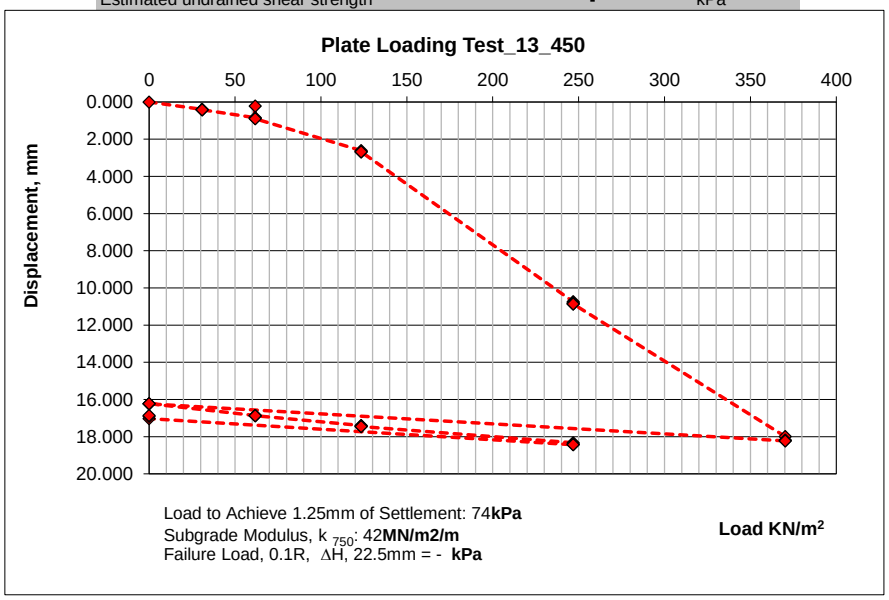
GPS Test Location

E: 570512.972	
N: 568183.847	
mOD	**52.984**

	G1	**G2**	**G3**	
Zero gauge	**0.00**	**0.00**	**0.00**	**0.00 mm**

Pressure (t)	Pressure (kPa)	Time (min)	Div (mm)	Div (mm)	Div (mm)	Average	D h, mm
0	0	0	0.00	0.00	0.00	0.00	0.000
0.5	31	1	-0.29	-0.45	-0.46	-0.40	0.400
0.5	31	2	-0.29	-0.46	-0.48	-0.41	0.410
0.5	31	3	-0.29	-0.46	-0.49	-0.41	0.413
0.5	31	4	-0.29	-0.46	-0.49	-0.41	0.413
1	62	1	-0.66	-0.95	-0.93	-0.85	0.847
1	62	2	-0.66	-1.00	-0.96	-0.87	0.873
1	62	3	-0.69	1.02	-0.98	-0.22	0.217
1	62	4	-0.69	-1.02	-0.99	-0.90	0.900
2	123	1	-2.29	-2.67	-2.86	-2.61	2.607
2	123	2	-2.36	-2.74	-2.91	-2.67	2.670
2	123	3	-2.36	-2.75	-2.92	-2.68	2.677
2	123	4	-2.36	-2.76	-2.93	-2.68	2.683
4	247	1	-9.54	-11.32	-11.35	-10.74	10.737
4	247	2	-9.60	-11.45	-11.35	-10.80	10.800
4	247	3	-9.66	-11.51	-11.35	-10.84	10.840
4	247	4	-9.67	-11.53	-11.37	-10.86	10.857
4	247	5	-9.67	-11.53	-11.37	-10.86	10.857
6	370	1	-17.71	-20.12	-16.14	-17.99	17.990
6	370	2	-18.11	-20.24	-16.19	-18.18	18.180
6	370	3	-18.14	-20.29	-16.22	-18.22	18.217
6	370	4	-18.16	-20.29	-16.22	-18.22	18.223
0	0	1	-16.78	-17.98	-13.95	-16.24	16.237
0	0	2	-16.77	-17.97	-13.93	-16.22	16.223
0	0	3	-16.77	-17.97	-13.92	-16.22	16.220
1	62	1	-0.40	-0.69	-0.82	-0.64	16.857
1	62	2	-0.40	-0.71	-0.83	-0.65	16.867
1	62	3	-0.40	-0.72	-0.83	-0.65	16.870
1	62	4	-0.40	-0.72	-0.83	-0.65	16.870
2	123	1	-0.88	-1.29	-1.37	-1.18	17.400
2	123	2	-0.91	-1.32	-1.39	-1.21	17.427
2	123	3	-0.94	-1.35	-1.42	-1.24	17.457
2	123	4	-0.94	-1.35	-1.42	-1.24	17.457
4	247	1	-1.68	-2.30	-2.35	-2.11	18.330
4	247	2	-1.70	-2.40	-2.43	-2.18	18.397
4	247	3	-1.71	-2.47	-2.44	-2.21	18.427
4	247	4	-1.71	-2.48	-2.45	-2.21	18.433
0	0	1	-0.48	-0.85	-1.09	-0.81	17.027
0	0	2	-0.39	-0.79	-0.89	-0.69	16.910
0	0	3	-0.37	-0.71	-0.85	-0.64	16.863

Load to Achieve 1.25mm of Settlement:	**74**	kPa
Subgrade Modulus ($MN/m^2/m$) k_{750}:	**42**	
Estimated CBR (NRA DMRB HD25-26 3.62)	**6**	%
Plate scaling factor	**0.60**	
Plate rigidity factor	**1.18**	
Failure load Δh 0.1R	-	kPa
Estimated undrained shear strength	-	kPa



Photographic Record

Number:	**TP13**	**Project**	Castletreasure, Douglas Development	
		Project No	P18081	
		Engineer	J.B. Barry & Partners Consulting Engineers	

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Trial Pit No
TP14
Sheet 1 of 1

Project Name: Castletreasure Development	**Project No.** P18081	**Co-ords:** 570381E - 568389N **Level:** 34.84m OD	**Date** 24/05/2018
Location: Douglas, Co. Cork		**Dimensions (m):** 3.90 x 1.10 **Depth:** 4.50m BGL	**Scale** 1:25
Client: Cairn Homes PLC			**Logged** PH

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
	0.40	ENV					(MADE GROUND) Brown purple, sandy slightly gravelly SILT/CLAY with fill. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded.
	0.50 - 1.50	B					
	0.50 - 1.50	D					
	1.70 - 2.50	B		1.70	33.14		(MADE GROUND) Dark brown, sandy SILT with rootlets, rubbish and timber. Sand is fine to coarse.
	2.50 - 3.50	B		2.50	32.34		Brown purple, slightly gravelly sandy CLAY with low cobble content. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded. Cobbles are 63mm to 200mm dia, sub-angular to sub-rounded.
	3.50 - 4.50	B					
	3.50 - 4.50	D					
				4.50	30.34		End of Pit at 4.500m

1 2 3 4 5

Stability: Very poor.
Plant: 14t track machine.
Backfill: Arisings.

Groundwater: None encountered.

Remarks: Trial pit terminated at 4.50m bgl, required depth.

Photographic Record

Number:	**TP14**	**Project**	Castletreasure, Douglas Development	
		Project No	P18081	
		Engineer	J.B. Barry & Partners Consulting Engineers	

Photographic Record

Number:	**TP14**	**Project**	Castletreasure, Douglas Development	
		Project No	P18081	
		Engineer	J.B. Barry & Partners Consulting Engineers	

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Trial Pit No
TP15
Sheet 1 of 1

Project Name: Castletreasure Development	**Project No.** P18081	**Co-ords:** 570644E - 568272N **Level:** 40.34m OD	**Date** 05/06/2018
Location: Douglas, Co. Cork		**Dimensions (m):** 2.40 **Depth:** 1.30m BGL	**Scale** 1:25
Client: Cairn Homes PLC			**Logged** PH

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
	0.20 - 0.60	B					(TOPSOIL) Brown, slightly sandy slightly gravelly SILT with rootlets.
	0.60 - 1.30	B		0.60	39.74		Brown purple, slightly clayey sandy GRAVEL with low cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-angular. Cobbles are 63mm to 200mm dia, angular to sub-angular (WEATHERED ROCK).
				1.30	39.04		End of Pit at 1.300m

Stability: Good.
Plant: 14t track machine.
Backfill: Arisings.

Groundwater: 1.30m: Trickle rate of flow.

Remarks: Trial pit terminated at 1.30m bgl due to assumed bedrock.

Photographic Record

Number:	**TP15**	**Project**	Castletreasure, Douglas Development	
		Project No	P18081	
		Engineer	J.B. Barry & Partners Consulting Engineers	

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Trial Pit No
TP16
Sheet 1 of 1

Project Name: Castletreasure Development	**Project No.** P18081	**Co-ords:** 570649E - 568174N **Level:** 50.57m OD	**Date** 28/05/2018
Location: Douglas, Co. Cork		**Dimensions (m):** 3.20 x 1.10 **Depth:** 4.50m BGL	**Scale** 1:25
Client: Cairn Homes PLC			**Logged** PH

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
							(TOPSOIL) Brown, slightly sandy SILT. Sand is fine to coarse.
	0.50 - 1.50	B		0.40	50.17		Firm to stiff, purple brown, slightly sandy gravelly SILT. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded.
	2.00 - 3.00	B		2.00	48.57		Purple brown, sandy very clayey GRAVEL with low cobble content.
	3.00 - 4.00	B					
	4.00 - 4.50	B		4.00	46.57		Purple brown, silty sandy GRAVEL with medium cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-rounded. Cobbles are 63mm to 200mm dia, angular to sub-rounded (WEATHERED ROCK).
				4.50	46.07		End of Pit at 4.500m

1 2 3 4 5

Stability: Good.
Plant: 14t track machine
Backfill: Arisings.

Groundwater: None encountered.

Remarks: Trial pit terminated at 4.50m bgl, required depth. Plate load test carried out at 0.70m.

JOB REF:	P18081
JOB Name:	Castletreasure

GPS Test Location

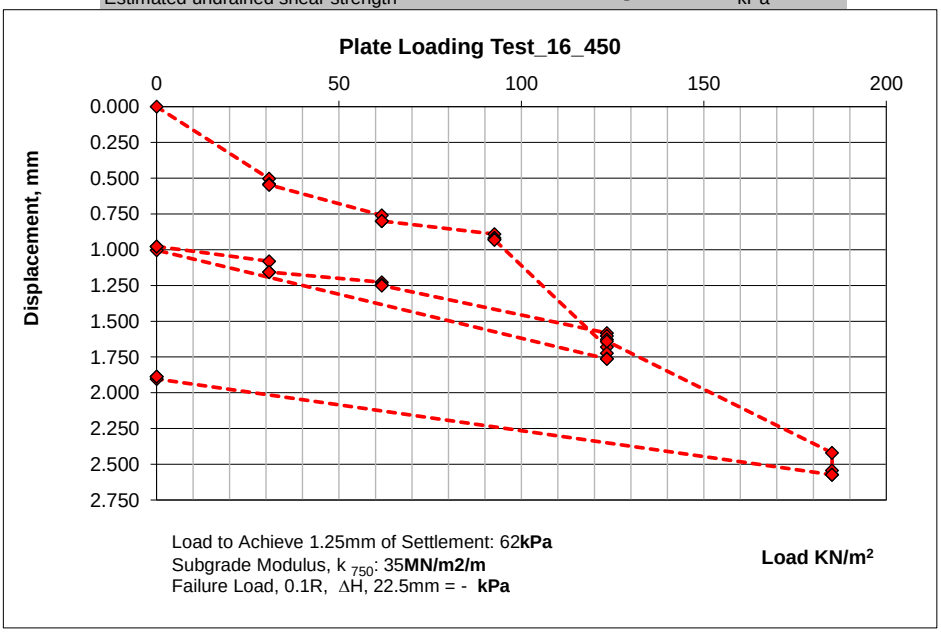
Plate Bearing Test	PLT16_TP16
Test Number	
Depth	0.7
Bedding Material	-
Date	28/05/2018
Ground Conditions	Sandy gravelly SILT.
Seating Load	0.75t/ 25kPa
Plate Diameter	**450** mm
Plate Area	0.1589625 m2

	E: 570648.858
	N: 568173.956
	mOD 50.568

	G1	**G2**	**G3**	
Zero gauge	**0.00**	**0.00**	**0.00**	**0.00 mm**

Pressure (t)	Pressure (kPa)	Time (min)	Div (mm)	Div (mm)	Div (mm)	Average	D h, mm
0	0	0	0.00	0.00	0.00	0.00	0.000
0.5	31	1	-0.73	-0.59	-0.19	-0.50	0.503
0.5	31	2	-0.76	-0.63	-0.23	-0.54	0.540
0.5	31	3	-0.77	-0.64	-0.23	-0.55	0.547
1	62	1	-1.04	-0.83	-0.41	-0.76	0.760
1	62	2	-1.08	-0.87	-0.45	-0.80	0.800
1	62	3	-1.08	-0.87	-0.45	-0.80	0.800
1.5	93	1	-1.14	-0.95	-0.58	-0.89	0.890
1.5	93	2	-1.17	-0.97	-0.61	-0.92	0.917
1.5	93	3	-1.18	-0.99	-0.61	-0.93	0.927
1.5	93	4	-1.18	-1.00	-0.61	-0.93	0.930
2	123	1	-2.05	-1.80	-1.19	-1.68	1.680
2	123	2	-2.09	-1.85	-1.23	-1.72	1.723
2	123	3	-2.12	-1.89	-1.27	-1.76	1.760
2	123	4	-2.12	-1.89	-1.28	-1.76	1.763
0	0	1	-1.48	-1.14	-0.39	-1.00	1.003
0	0	2	-1.44	-1.13	-0.36	-0.98	0.977
0	0	3	-1.44	-1.13	-0.36	-0.98	0.977
0.5	31	1	0.10	-0.25	-0.16	-0.10	1.08
0.5	31	2	-0.11	-0.26	-0.17	-0.18	1.16
0.5	31	3	-0.11	-0.26	-0.17	-0.18	1.16
1	62	1	-0.18	-0.32	-0.25	-0.25	1.23
1	62	2	-0.19	-0.34	-0.27	-0.27	1.24
1	62	3	-0.20	-0.34	-0.28	-0.27	1.25
2	123	1	-0.47	-0.74	-0.61	-0.61	1.58
2	123	2	-0.49	-0.76	-0.63	-0.63	1.60
2	123	3	-0.51	-0.79	-0.65	-0.65	1.63
2	123	4	-0.53	-0.80	-0.66	-0.66	1.64
3	185	1	-1.11	-1.97	-1.25	-1.44	2.42
3	185	2	-1.21	-2.16	-1.33	-1.57	2.54
3	185	3	-1.25	-2.18	-1.36	-1.60	2.57
3	185	4	-1.25	-2.18	-1.36	-1.60	2.57
0	0	1	-0.66	-1.29	-0.83	-0.93	1.90
0	0	2	-0.64	-1.28	-0.81	-0.91	1.89
0	0	3	-0.64	-1.28	-0.81	-0.91	1.89

Load to Achieve 1.25mm of Settlement:	**62**	kPa
Subgrade Modulus (MN/m^2/m) k $_{750}$:	**35**	
Estimated CBR (NRA DMRB HD25-26 3.62)	**5**	%
Plate scaling factor	**0.60**	
Plate rigidity factor	**1.18**	
Failure load Δh 0.1R	-	kPa
Estimated undrained shear strength	**-**	kPa



Photographic Record

Number:	**TP16**	**Project**	Castletreasure, Douglas Development
		Project No	P18081
		Engineer	J.B. Barry & Partners Consulting Engineers

Photographic Record

Number:	**TP16**	**Project**	Castletreasure, Douglas Development	
		Project No	P18081	
		Engineer	J.B. Barry & Partners Consulting Engineers	

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Trial Pit No
TP17
Sheet 1 of 1

Project Name: Castletreasure Development	**Project No.** P18081	**Co-ords:** 570757E - 568099N **Level:** 55.54m OD	**Date** 28/05/2018
Location: Douglas, Co. Cork		**Dimensions (m):** 3.80 x 1.20	**Scale** 1:25
Client: Cairn Homes PLC		**Depth:** 4.50m BGL	**Logged** PH

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
				0.40	55.14		(TOPSOIL) Brown, slightly sandy SILT. Sand is fine to coarse.
	0.50 - 1.50	B					Stiff, purple brown, slightly sandy gravelly SILT with low cobble content. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded. Cobbles are 63mm to 200mm, sub-angular to sub-rounded.
	1.50 - 2.50	B		1.50	54.04		Purple brown, very sandy very clayey GRAVEL. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded.
	2.50 - 3.50	B					
	3.50 - 4.50	B					
				4.50	51.04		End of Pit at 4.500m

1 2 3 4 5

Stability: Good
Plant: 14t track machine
Backfill: Arisings.

Groundwater: None encountered.

Remarks: Trial pit terminated at 4.50m bgl, required depth. Plate load test carried out at 0.60m.

JOB REF:	P18081
JOB Name:	Castletreasure

Plate Bearing Test	PLT17_TP17
Test Number	
Depth	0.6
Bedding Material	-
Date	28/05/2018
Ground Conditions	Sandy gravelly SILT.
Seating Load	0.75t/ 25kPa
Plate Diameter	**450** mm
Plate Area	0.1589625 m2

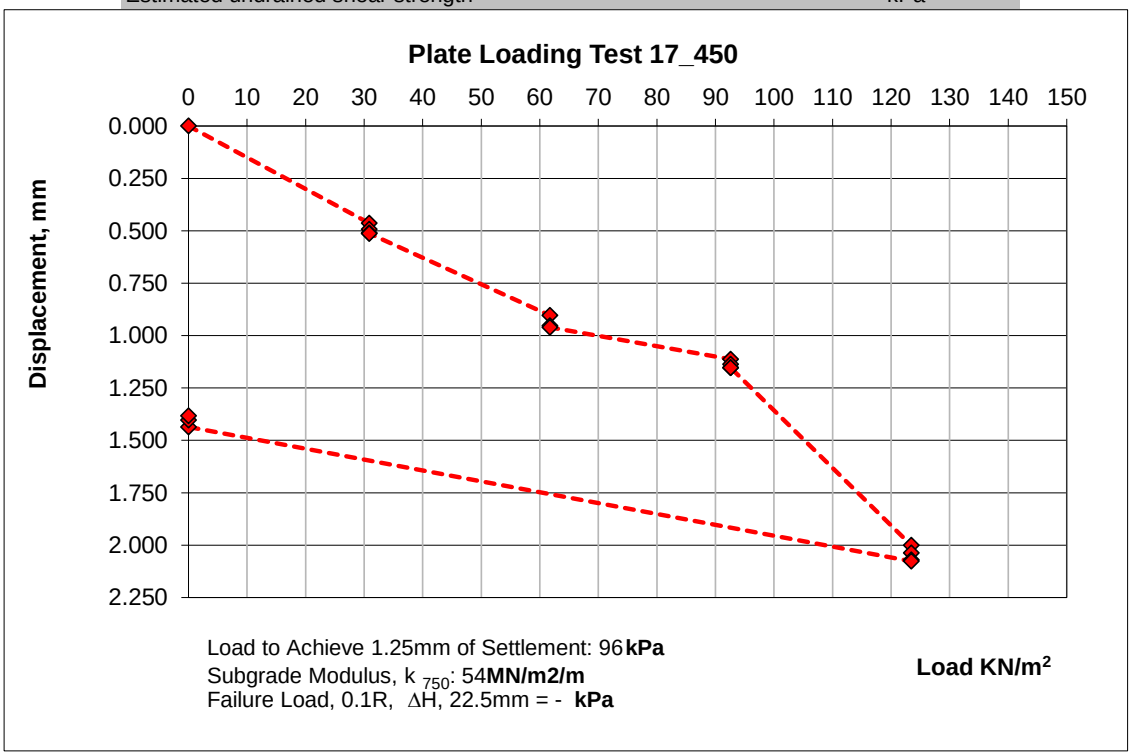
GPS Test Location

E: 570511.85	
N: 568100.115	
mOD	**70.447**

	G1	**G2**	**G3**	
Zero gauge	**0.00**	**0.00**	**0.00**	**0.00 mm**

Pressure (t)	Pressure (kPa)	Time (min)	Div (mm)	Div (mm)	Div (mm)	Average	D h, mm
0	0	0	0.00	0.00	0.00	0.00	0.000
0.5	31	1	-0.56	-0.53	-0.30	-0.46	0.463
0.5	31	2	-0.60	-0.56	-0.32	-0.49	0.493
0.5	31	3	-0.62	-0.58	-0.33	-0.51	0.510
0.5	31	4	-0.62	-0.59	-0.33	-0.51	0.513
1	62	1	-1.09	-0.97	-0.65	-0.90	0.903
1	62	2	-1.15	-1.02	-0.69	-0.95	0.953
1	62	3	-1.16	-1.03	-0.69	-0.96	0.960
1.5	93	1	-1.29	-1.18	-0.87	-1.11	1.113
1.5	93	2	-1.32	-1.20	-0.89	-1.14	1.137
1.5	93	3	-1.33	-1.22	-0.91	-1.15	1.153
1.5	93	4	-1.33	-1.22	-0.91	-1.15	1.153
2	123	1	-2.45	-2.05	-1.50	-2.00	2.000
2	123	2	-2.50	-2.07	-1.54	-2.04	2.037
2	123	3	-2.53	-2.09	-1.59	-2.07	2.070
2	123	4	-2.54	-2.10	-1.59	-2.08	2.077
0	0	1	-1.87	-1.66	-0.78	-1.44	1.437
0	0	2	-1.84	-1.60	-0.77	-1.40	1.403
0	0	3	-1.83	-1.59	-0.73	-1.38	1.383

Load to Achieve 1.25mm of Settlement:	**96**	kPa
Subgrade Modulus (MN/m^2/m) k $_{750}$:	**54**	
Estimated CBR (NRA DMRB HD25-26 3.62)	**10**	%
Plate scaling factor	**0.60**	
Plate rigidity factor	**1.18**	
Failure load Δh 0.1R	-	kPa
Estimated undrained shear strength	-	kPa



Photographic Record

Number:	**TP17**	**Project**	Castletreasure, Douglas Development	
		Project No	P18081	
		Engineer	J.B. Barry & Partners Consulting Engineers	

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Trial Pit No
TP18
Sheet 1 of 1

Project Name: Castletreasure Development	**Project No.** P18081	**Co-ords:** 570512E - 568100N **Level:** 70.45m OD	**Date** 29/05/2018
Location: Douglas, Co. Cork		**Dimensions (m):** 3.60 x 1.10	**Scale** 1:25
Client: Cairn Homes PLC		**Depth:** 2.70m BGL	**Logged** PH

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
	0.50 - 1.50	B		0.45	70.00		(TOPSOIL) Brown, slightly sandy SILT. Sand is fine to coarse.
	1.50 - 2.50	B					Purple brown, clayey sandy GRAVEL with low cobble content. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded. Cobbles are 63mm to 200mm dia, sub-angular to sub-rounded. (Possible weathered bedrock)
				2.70	67.75		End of Pit at 2.700m

1
2
3
4
5

Stability: Good.
Plant: 14t track machine.
Backfill: Arisings.

Groundwater: None encountered.

Remarks: Trial pit terminated at 2.70m bgl due to bedrock obstruction.

Photographic Record

Number:	**TP18**	**Project**	Castletreasure, Douglas Development	
		Project No	P18081	
		Engineer	J.B. Barry & Partners Consulting Engineers	

Photographic Record

Number:	**TP18**	**Project**	Castletreasure, Douglas Development	
		Project No	P18081	
		Engineer	J.B. Barry & Partners Consulting Engineers	

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Trial Pit No
TP21
Sheet 1 of 1

Project Name: Castletreasure Development	**Project No.** P18081	**Co-ords:** 570476E - 568345N **Level:** 37.14m OD	**Date** 24/05/2018
Location: Douglas, Co. Cork		**Dimensions (m):** 3.80 x 0.70 **Depth:** 3.10m BGL	**Scale** 1:25
Client: Cairn Homes PLC			**Logged** PH

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
	0.40	ENV					Brown purple, sandy slightly gravelly SILT. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded.
	0.50 - 1.00	B					
	0.50 - 1.00	D					
				1.00	36.14		
							Brown, slightly sandy gravelly CLAY with rootlets. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded.
	1.50 - 2.50	B					
	1.50 - 2.50	D					
	2.50 - 3.10	B		2.50	34.64		Purple brown, slightly clayey GRAVEL with medium cobble content. Gravel is fine to coarse, angular to sub-angular. Cobbles are 63mm to 200mm dia, sub-angular to sub-rounded (WEATHERED ROCK).
				3.10	34.04		End of Pit at 3.100m

Stability: Good.
Plant: 14t track machine
Backfill: Arisings.

Groundwater: 3.10m: Slow rate of flow.

Remarks: Trial pit terminated at 3.10m bgl due to bedrock obstruction.

Photographic Record

Number:	**TP21**	**Project**	Castletreasure, Douglas Development
		Project No	P18081
		Engineer	J.B. Barry & Partners Consulting Engineers

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Trial Pit No
ST01
Sheet 1 of 1

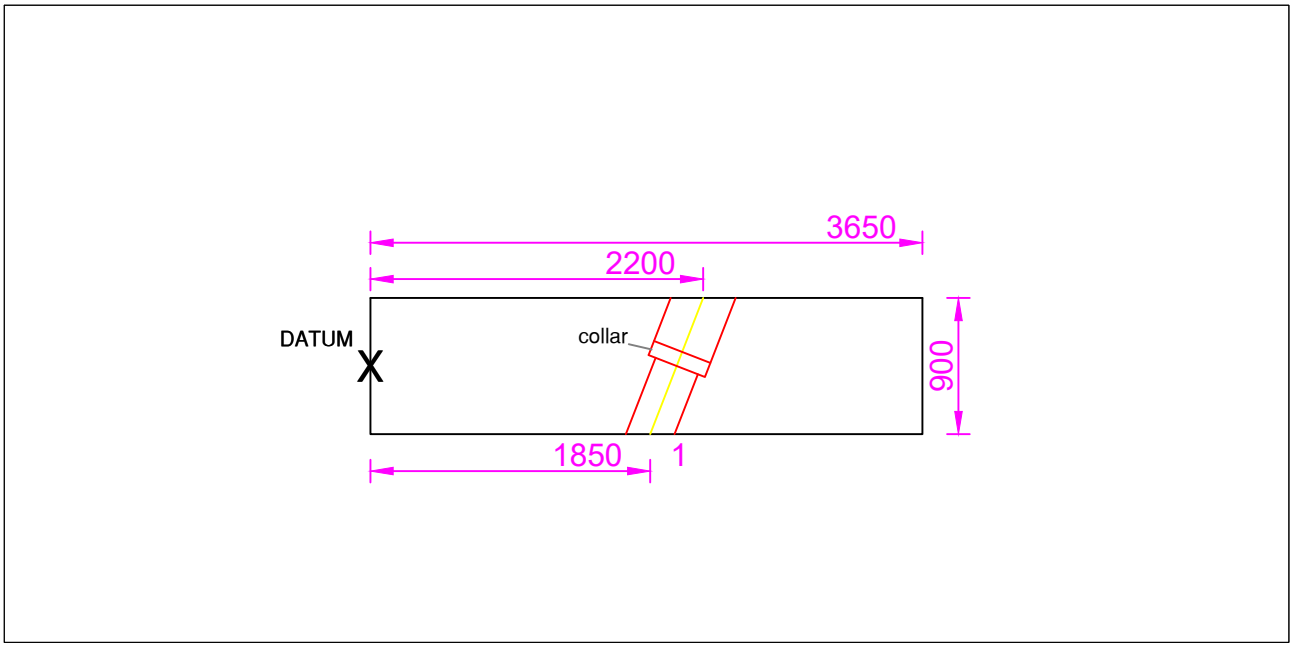
Project Name: Castletreasure Development	**Project No.** P18081	**Co-ords:** 570797E - 568153N **Level:** 52.24m OD	**Date** 18/05/2018
Location: Douglas, Co. Cork		**Dimensions (m):** 3.65 x 0.90 **Depth:** 0.90m BGL	**Scale** 1:25
Client: Cairn Homes PLC			**Logged** PH

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
				0.20	52.04		(TOPSOIL) Brown, slightly sandy SILT with rootlets. Sand is fine to coarse.
							Soft, brown, slightly sandy slightly gravelly SILT. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded.
				0.90	51.34		End of Pit at 0.900m

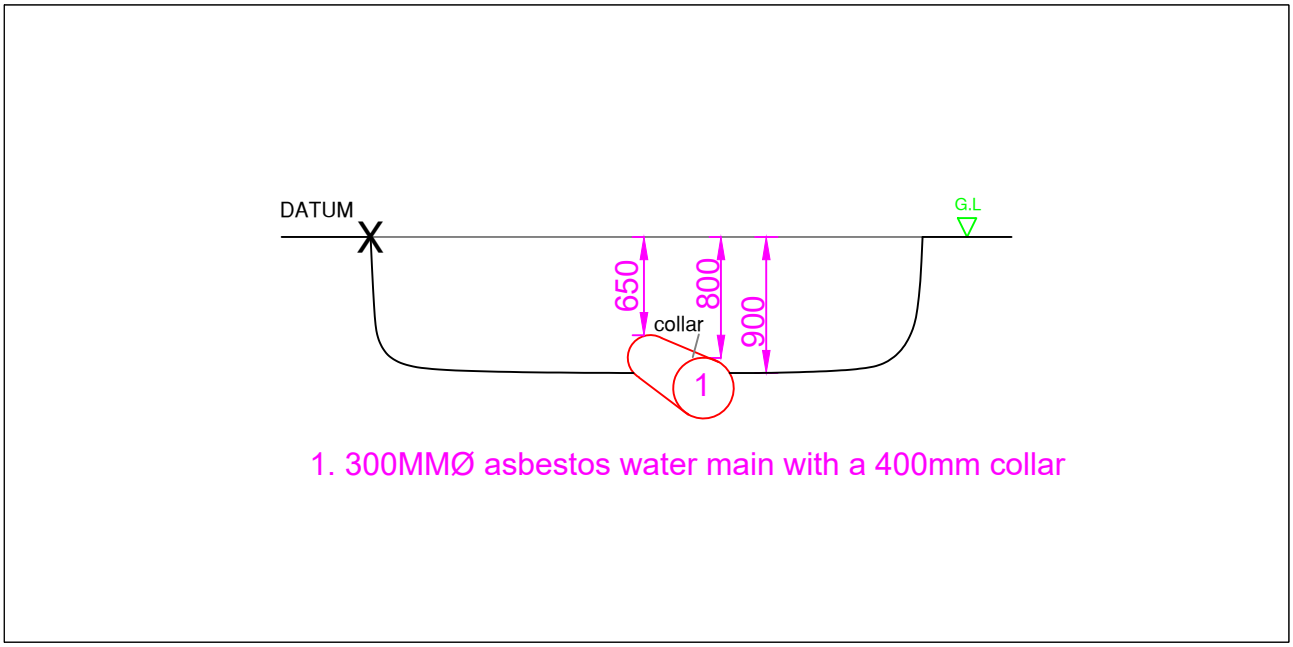
Stability: Good
Plant: 6t track machine
Backfill: Arisings.

Groundwater: Water strike at 0.80m.

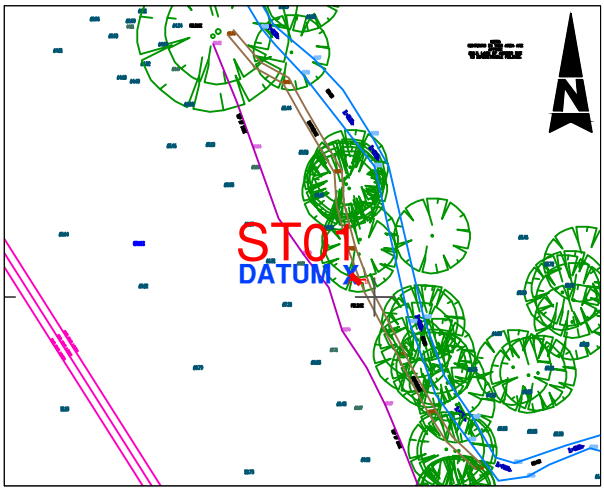
Remarks: Slit trench terminated at 0.90m bgl. Refer to DWG P18081 ST01 for cross sectional detail.



SLIT TRENCH PLAN, 1:50 ON A4



SLIT TRENCH SECTION, 1:50 ON A4



SLIT TRENCH LOCATION PLAN, 1:1000 ON A4

DATUM COORDINATES:
EASTING: 570796.9
NORTHING: 568153.0
LEVEL: 52.245mAOD

KEY:
DATUM: X

SLIT TRENCH DIMENSIONS:
LENGTH: 3.65m
WIDTH: 0.90m
DEPTH: 0.90m

STRATA SHOWN ON DETAILED LOG

DRAWN BY:		DATE:
Gary Curtin		31/05/2018
LOGGED BY:		DATE:
P.H.		18/05/2018
SCALE:	APPROVED:	REVISION:
AS STATED	GH	D01

SLIT TRENCH NUMBER:
ST01

JOB NAME:
CASTLETREASURE HOUSING DEVELOPMENT

JOB NUMBER:
P18081

DRAWING NUMBER:
P18081-ST01

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Photographic Record

Number:	**ST01**	**Project**	Castletreasure, Douglas Development
		Project No	P18081
		Engineer	J.B. Barry & Partners Consulting Engineers

Photographic Record

Number:	**ST01**	**Project**	Castletreasure, Douglas Development	
		Project No	P18081	
		Engineer	J.B. Barry & Partners Consulting Engineers	

Photographic Record

Number:	**ST01**	**Project**	Castletreasure, Douglas Development	
		Project No	P18081	
		Engineer	J.B. Barry & Partners Consulting Engineers	

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Trial Pit No
ST02
Sheet 1 of 1

Project Name: Castletreasure Development	**Project No.** P18081	**Co-ords:** 570651E - 568124N **Level:** 58.92m OD	**Date** 18/05/2018
Location: Douglas, Co. Cork		**Dimensions (m):** 5.80 × 0.90 **Depth:** 1.30m BGL	**Scale** 1:25
Client: Cairn Homes PLC			**Logged** PH

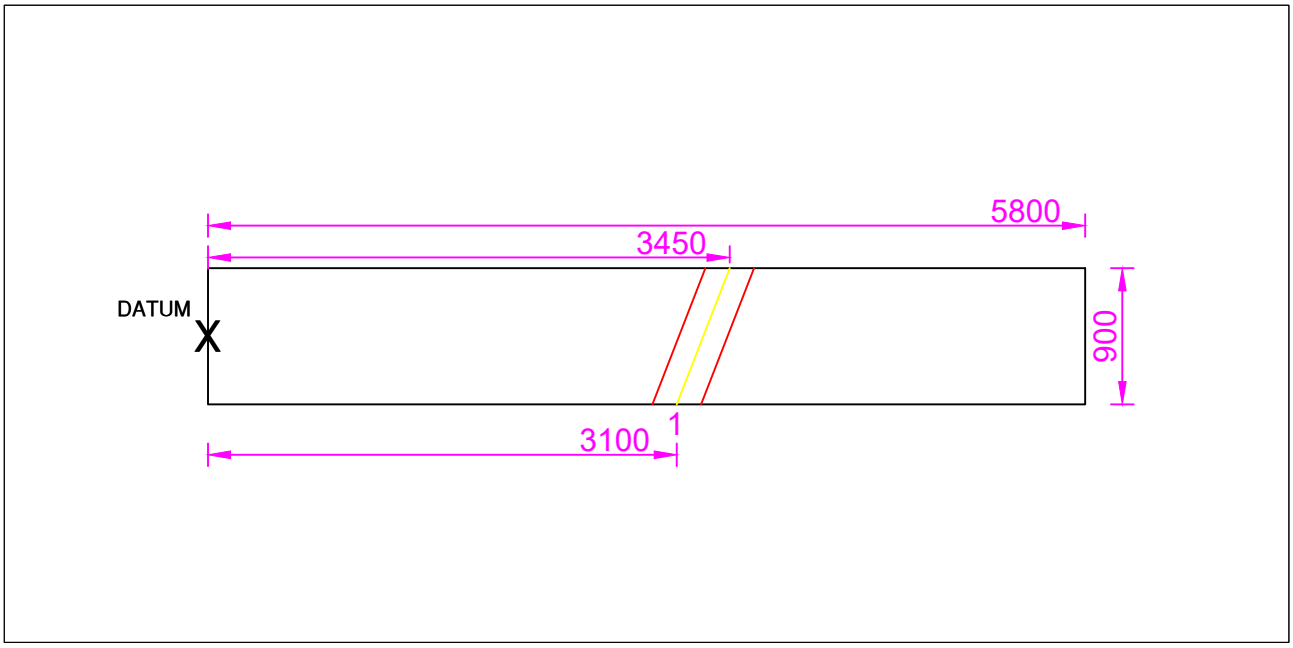
Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
							Brown, slightly sandy SILT. Sand is fine to coarse.
				0.80	58.12		Brown, silty slightly sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse.
				1.30	57.62		End of Pit at 1.300m

1
2
3
4
5

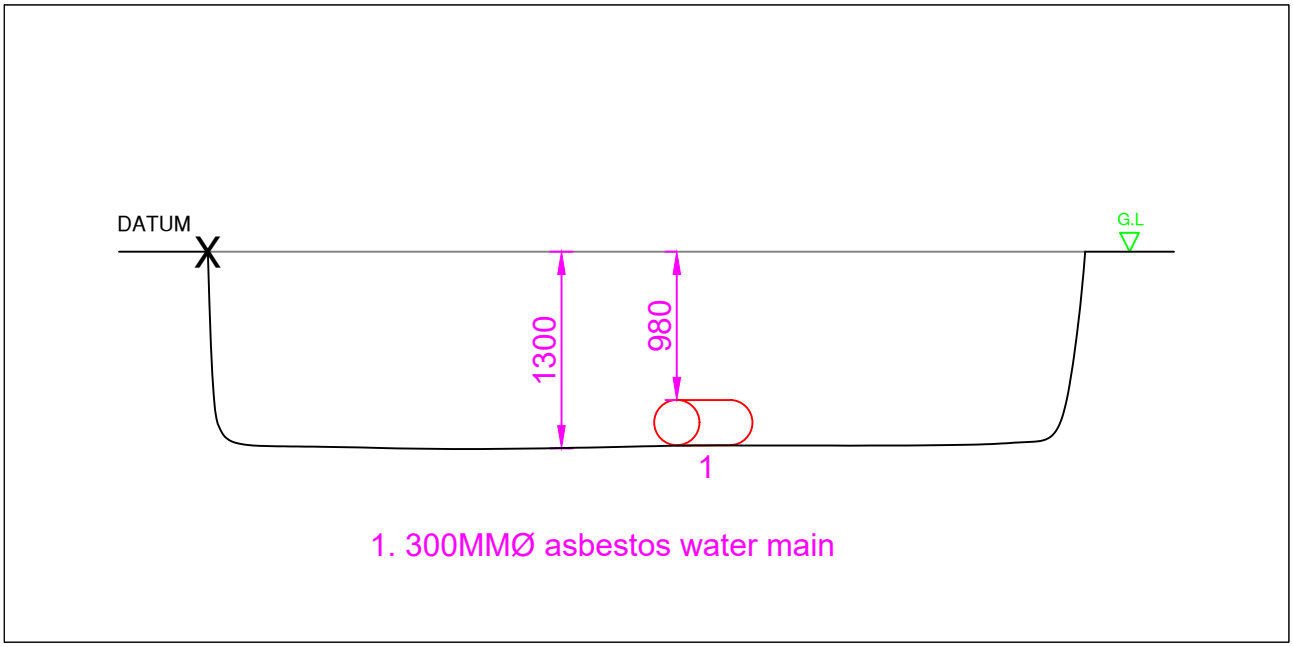
Stability: Good.
Plant: 6t track machine
Backfill: Arisings

Groundwater: None encountered.

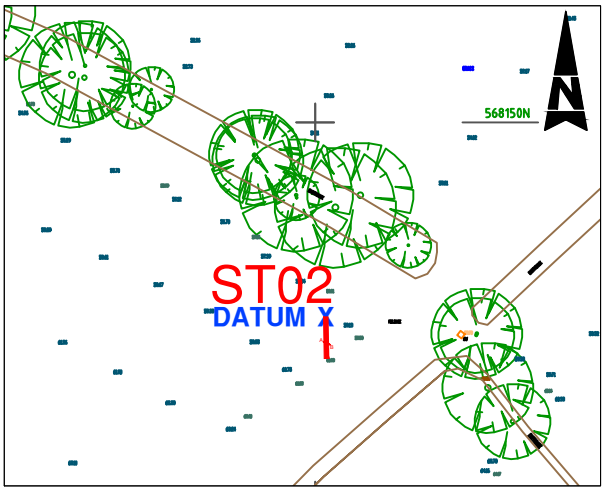
Remarks: Slit trench terminated a 1.30m bgl. Refer to DWG P18081 ST02 for cross sectional detail.



SLIT TRENCH PLAN, 1:50 ON A4



SLIT TRENCH SECTION, 1:50 ON A4



SLIT TRENCH LOCATION PLAN, 1:1000 ON A4

DATUM COORDINATES:
EASTING: 570651.4
NORTHING: 568124.3
LEVEL: 58.925mAOD

KEY:
DATUM: X

SLIT TRENCH DIMENSIONS:
LENGTH: 5.80m
WIDTH: 0.90m
DEPTH: 1.30m

STRATA SHOWN ON DETAILED LOG

DRAWN BY:		DATE:
Gary Curtin		31/05/2018
LOGGED BY:		DATE:
P.H.		18/05/2018
SCALE:	APPROVED:	REVISION:
AS STATED	GH	D01

SLIT TRENCH NUMBER:
ST02

JOB NAME:
CASTLETREASURE HOUSING DEVELOPMENT

JOB NUMBER:
P18081

DRAWING NUMBER:
P18081-ST02

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Photographic Record

Number:	**ST02**	**Project**	Castletreasure, Douglas Development
		Project No	P18081
		Engineer	J.B. Barry & Partners Consulting Engineers

Photographic Record

Number:	**ST02**	**Project**	Castletreasure, Douglas Development
		Project No	P18081
		Engineer	J.B. Barry & Partners Consulting Engineers

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Trial Pit No
ST03
Sheet 1 of 1

Project Name: Castletreasure Development	**Project No.** P18081	**Co-ords:** 570532E - 568138N **Level:** 62.54m OD	**Date** 18/05/2018
Location: Douglas, Co. Cork		**Dimensions (m):** 6.10 × 0.66 **Depth:** 1.10m BGL	**Scale** 1:25
Client: Cairn Homes PLC			**Logged** PH

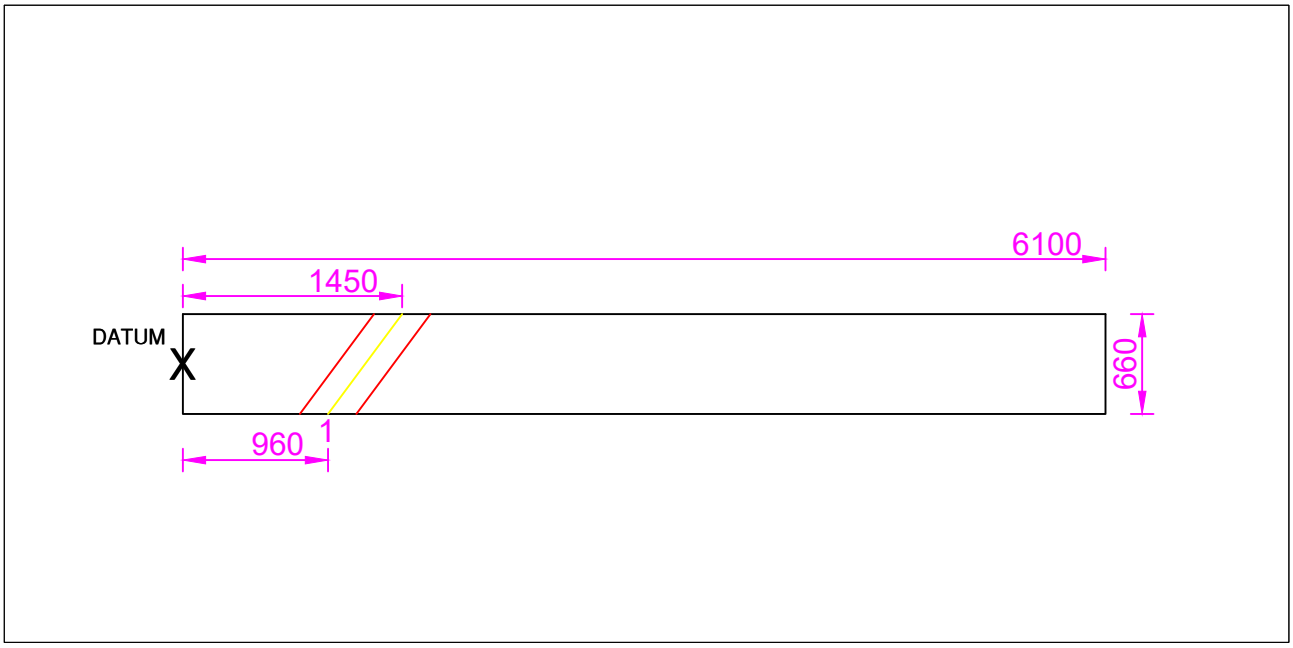
Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
							Brown, slightly sandy SILT.
				0.80	61.74		Brown, slightly gravelly sandy SILT with low cobble content. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded. Cobbles are 63mm to 90mm dia, sub-angular to sub-rounded.
				1.10	61.44		End of Pit at 1.100m

1
2
3
4
5

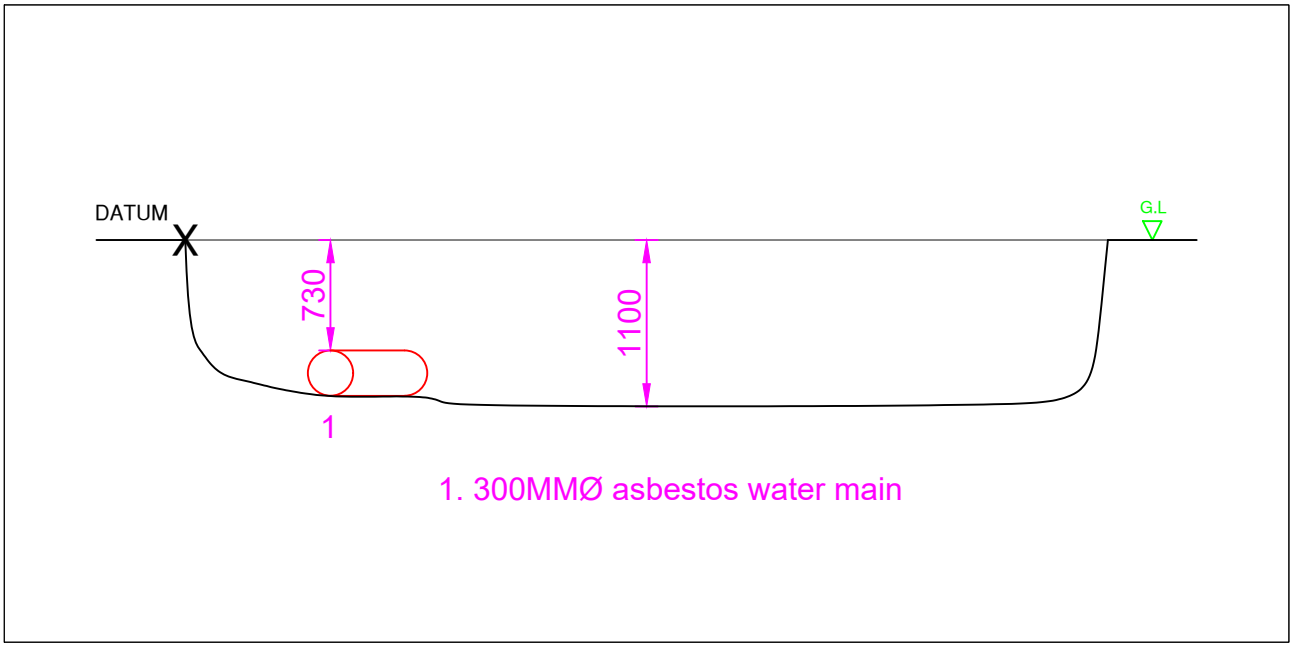
Stability: Good
Plant: 6t track machine
Backfill: Arisings.

Groundwater: None encountered.

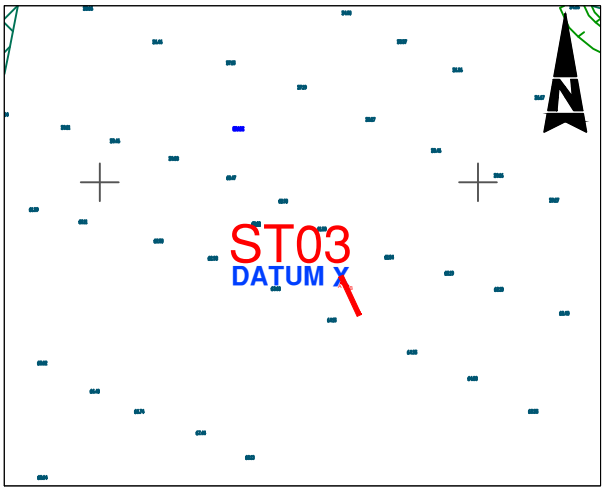
Remarks: Slit trench terminated a 1.30m bgl. Refer to DWG P19081 ST03 for cross sectional detail.



SLIT TRENCH PLAN, 1:50 ON A4



SLIT TRENCH SECTION, 1:50 ON A4



SLIT TRENCH LOCATION PLAN, 1:1000 ON A4

DATUM COORDINATES:
EASTING: 570531.9
NORTHING: 568137.6
LEVEL: 62.537mAOD

KEY:
DATUM: X

SLIT TRENCH DIMENSIONS:
LENGTH: 6.10m
WIDTH: 0.66m
DEPTH: 1.10m

STRATA SHOWN ON DETAILED LOG

DRAWN BY:		DATE:
Gary Curtin		31/05/2018
LOGGED BY:		DATE:
P.H.		18/05/2018
SCALE:	APPROVED:	REVISION:
AS STATED	GH	D01

SLIT TRENCH NUMBER:
ST03

JOB NAME:
CASTLETREASURE HOUSING DEVELOPMENT

JOB NUMBER:
P18081

DRAWING NUMBER:
P18081-ST03

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Photographic Record

Number:	**ST03**	**Project**	Castletreasure, Douglas Development
		Project No	P18081
		Engineer	J.B. Barry & Partners Consulting Engineers

Photographic Record

Number:	**ST03**	**Project**	Castletreasure, Douglas Development
		Project No	P18081
		Engineer	J.B. Barry & Partners Consulting Engineers

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Trial Pit No
ST04
Sheet 1 of 1

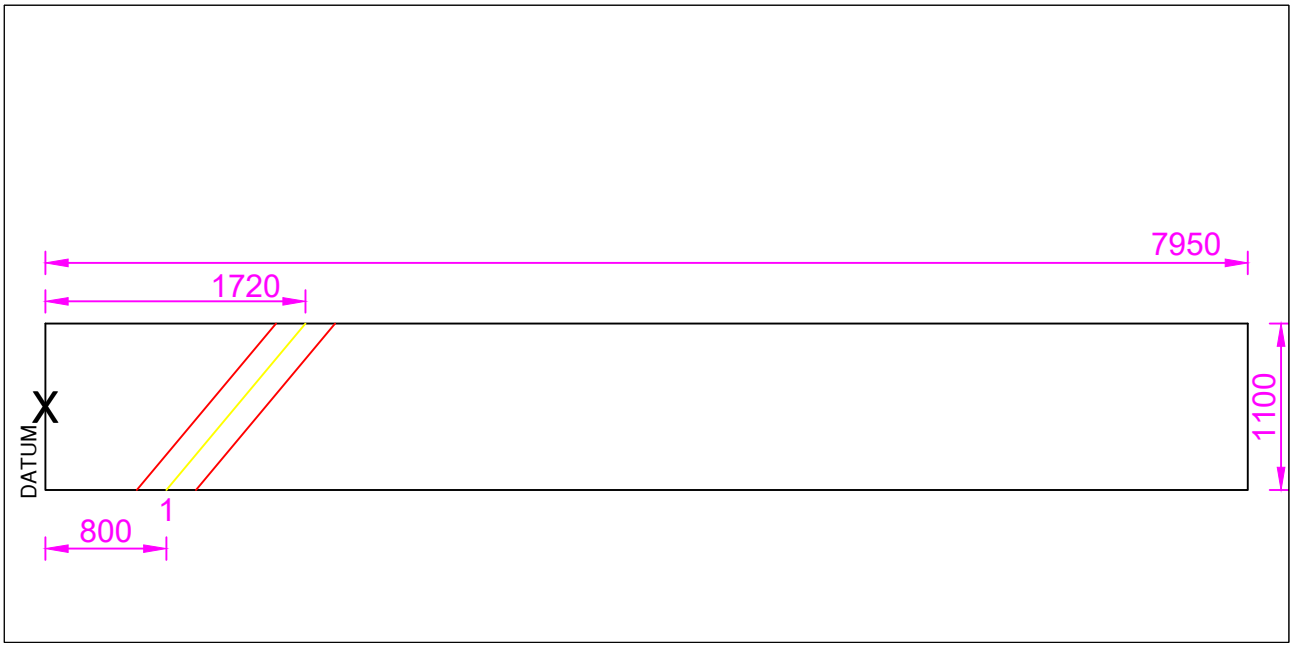
Project Name: Castletreasure Development	**Project No.** P18081	**Co-ords:** 570406E - 568142N **Level:** 58.96m OD	**Date** 18/05/2018
Location: Douglas, Co. Cork		**Dimensions (m):** 7.95 × 1.10	**Scale** 1:25
Client: Cairn Homes PLC		**Depth:** 1.90m BGL	**Logged** PH

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
				0.30	58.66		(TOPSOIL) Brown, slightly sandy SILT. Sand is fine to coarse.
				1.50	57.46		Purple brown, slightly sandy gravelly SILT. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-rounded.
				1.90	57.06		Purple brown, slightly sandy silty GRAVEL. Sand is fine to coarse. Gravel is angular to sub-angular.
							End of Pit at 1.900m

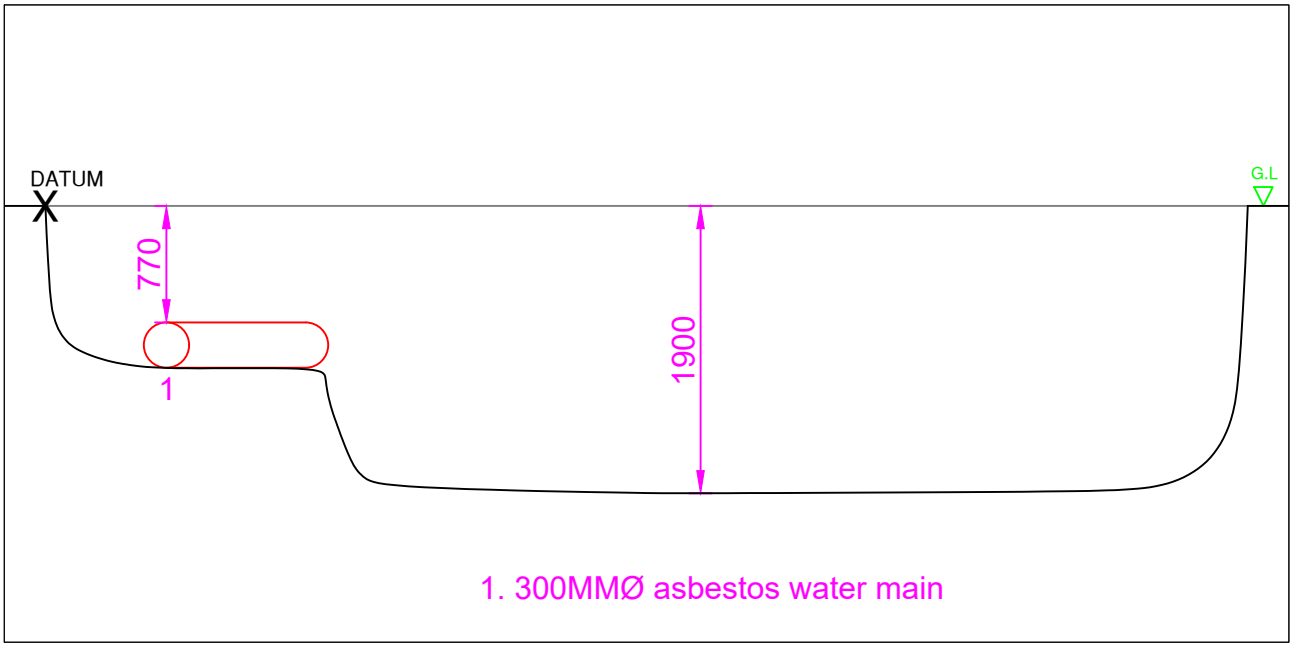
Stability: Moderate
Plant: 6t track machine
Backfill: Arisings.

Groundwater: None encountered.

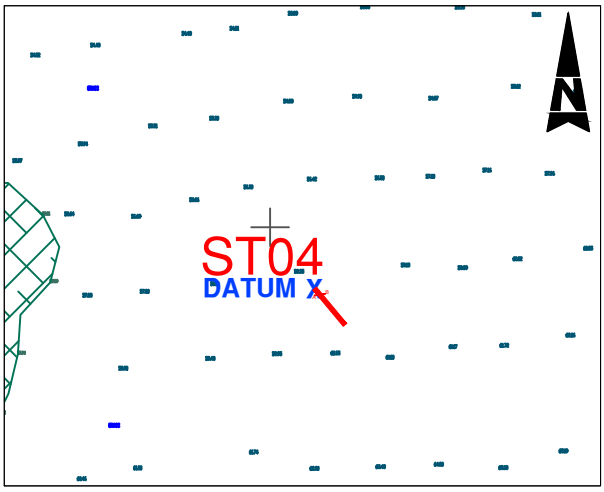
Remarks: Slit trench terminated at 1.90m bgl. Refer to DWG P18081 ST04 for cross sectional detail.



SLIT TRENCH PLAN, 1:50 ON A4



SLIT TRENCH SECTION, 1:50 ON A4



SLIT TRENCH LOCATION PLAN, 1:1000 ON A4

DATUM COORDINATES:
EASTING: 570405.9
NORTHING: 568141.9
LEVEL: 58.961mAOD

KEY:
DATUM: X

SLIT TRENCH DIMENSIONS:
LENGTH: 7.95m
WIDTH: 1.10m
DEPTH: 1.90m

STRATA SHOWN ON DETAILED LOG

DRAWN BY:		DATE:
Gary Curtin		31/05/2018
LOGGED BY:		DATE:
P.H.		18/05/2018
SCALE:	APPROVED:	REVISION:
AS STATED	GH	D01

SLIT TRENCH NUMBER:
ST04

JOB NAME:
CASTLETREASURE HOUSING DEVELOPMENT

JOB NUMBER:
P18081

DRAWING NUMBER:
P18081-ST04

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Photographic Record

Number:	**ST04**	**Project**	Castletreasure, Douglas Development
		Project No	P18081
		Engineer	J.B. Barry & Partners Consulting Engineers

Photographic Record

Number:	**ST04**	**Project**	Castletreasure, Douglas Development
		Project No	P18081
		Engineer	J.B. Barry & Partners Consulting Engineers

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Trial Pit No
ST05
Sheet 1 of 1

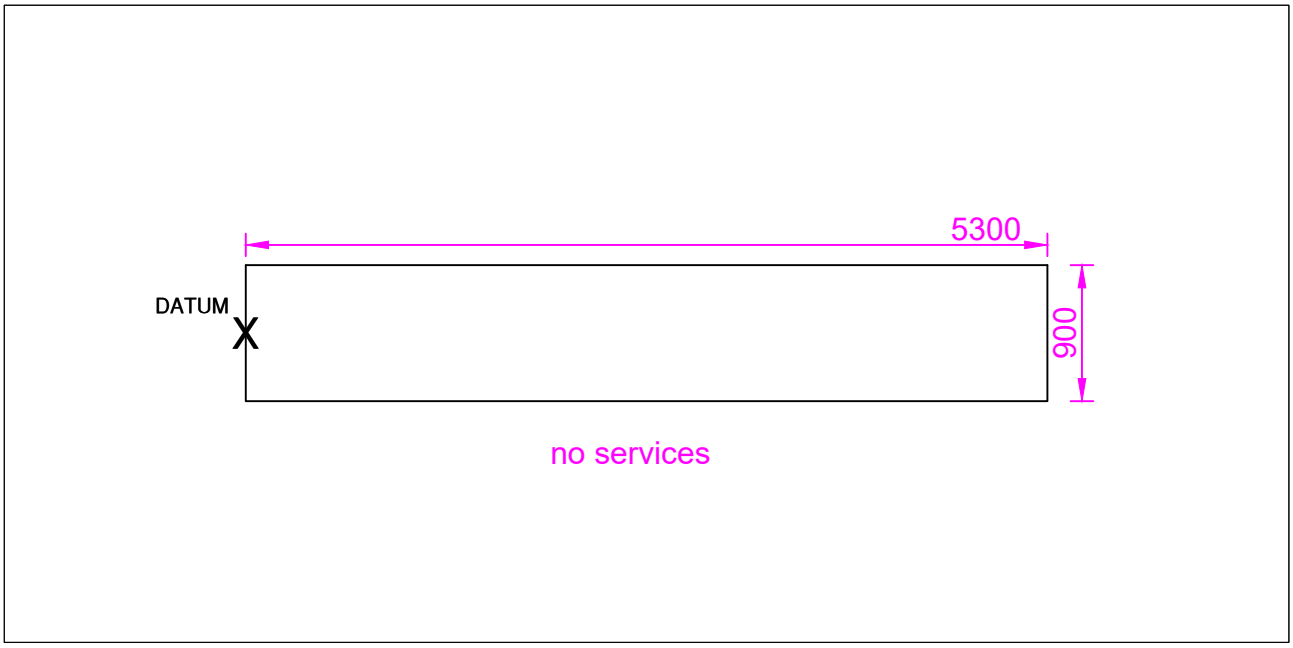
Project Name: Castletreasure Development	**Project No.** P18081	**Co-ords:** 570235E - 568179N **Level:** 42.52m OD	**Date** 18/05/2018
Location: Douglas, Co. Cork		**Dimensions (m):** 5.30 × 0.90 **Depth:** 2.40m BGL	**Scale** 1:25
Client: Cairn Homes PLC			**Logged** PH

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
							(MADE GROUND) Slightly clayey sandy GRAVEL with low cobble content. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded. Cobbles are 63mm to 200mm dia, sub-angular to sub-rounded.
				1.10	41.42		Brown, sandy SILT (possible made ground)
				2.40	40.12		End of Pit at 2.400m

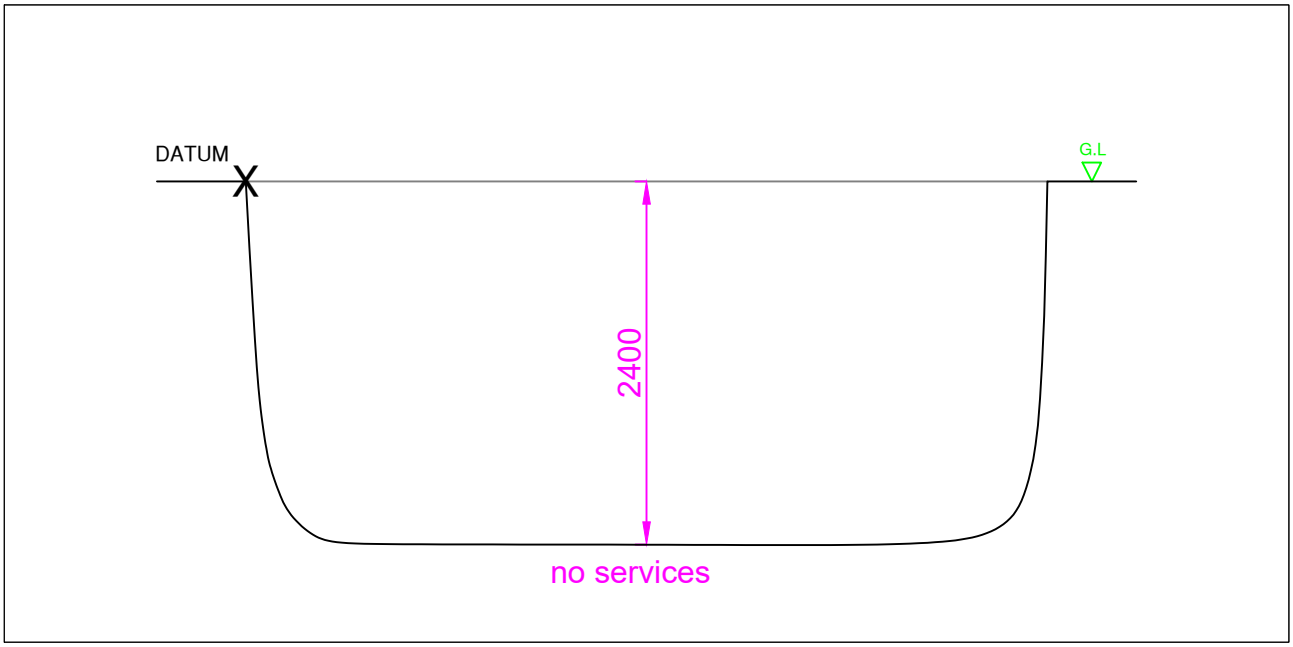
Stability: Good
Plant: 6t track machine
Backfill: Arisings.

Groundwater: None encountered.

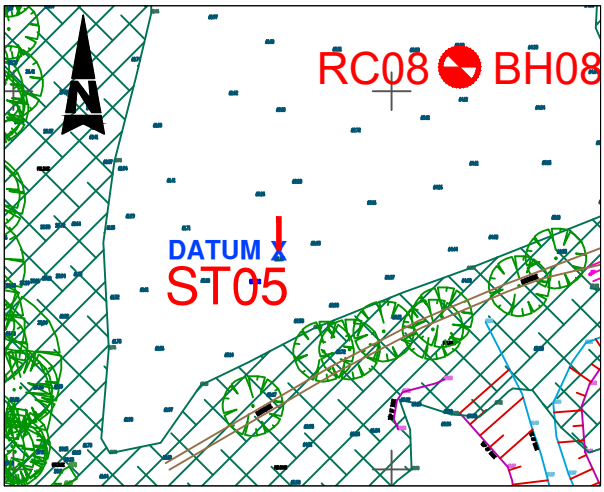
Remarks: Slit trench terminated at 2.40m bgl. 300m water main not located. See also ST05A. Refer to DWG P18081 ST05 for cross sectional detail.



SLIT TRENCH PLAN, 1:50 ON A4



SLIT TRENCH SECTION, 1:50 ON A4



SLIT TRENCH LOCATION PLAN, 1:1000 ON A4

DATUM COORDINATES:
EASTING: 570235.1
NORTHING: 568179.0
LEVEL: 42.523mAOD

KEY:
DATUM: X

SLIT TRENCH DIMENSIONS:
LENGTH: 5.30m
WIDTH: 0.90m
DEPTH: 2.40m

STRATA SHOWN ON DETAILED LOG

DRAWN BY:	DATE:
Gary Curtin	31/05/2018
LOGGED BY:	DATE:
P.H.	18/05/2018

SCALE:	APPROVED:	REVISION:
AS STATED	GH	D01

SLIT TRENCH NUMBER:
ST05

JOB NAME:
CASTLETREASURE HOUSING DEVELOPMENT

JOB NUMBER:
P18081

DRAWING NUMBER:
P18081-ST05

pgl priority geotechnical

Photographic Record

Number:	**ST05**	**Project**	Castletreasure, Douglas Development	
		Project No	P18081	
		Engineer	J.B. Barry & Partners Consulting Engineers	

Priority Geotechnical Ltd.
Tel: 021 4631600
Fax: 021 4638690
www.prioritygeotechnical.ie

Trial Pit No
ST05A
Sheet 1 of 1

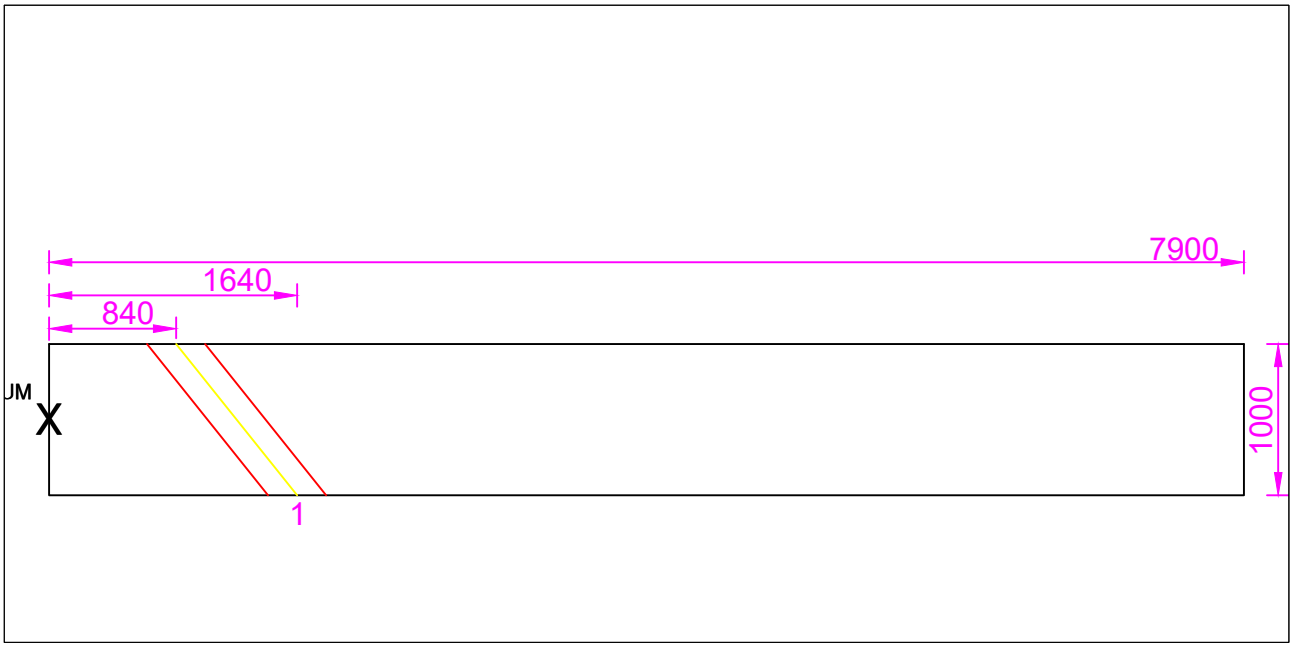
Project Name: Castletreasure Development	**Project No.** P18081	**Co-ords:** 570353E - 568140N **Level:** 57.63m OD	**Date** 21/05/2018
Location: Douglas, Co. Cork		**Dimensions (m):** 7.90 × 1.00 **Depth:** 1.40m BGL	**Scale** 1:25
Client: Cairn Homes PLC			**Logged** PH

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
							Brown, sandy SILT.
				1.30	56.33		Brown slightly sandy SILT.
				1.40	56.23		End of Pit at 1.400m

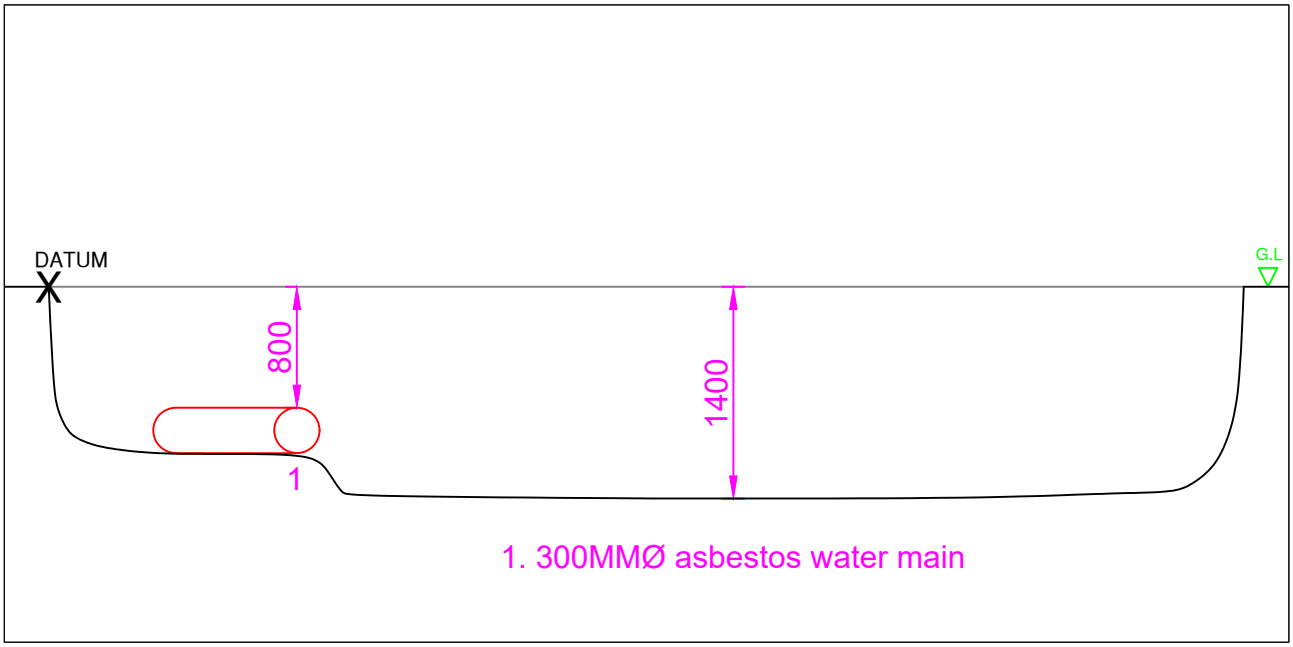
Stability: Good
Plant: 6t track machine
Backfill: Arisings.

Groundwater: None encountered.

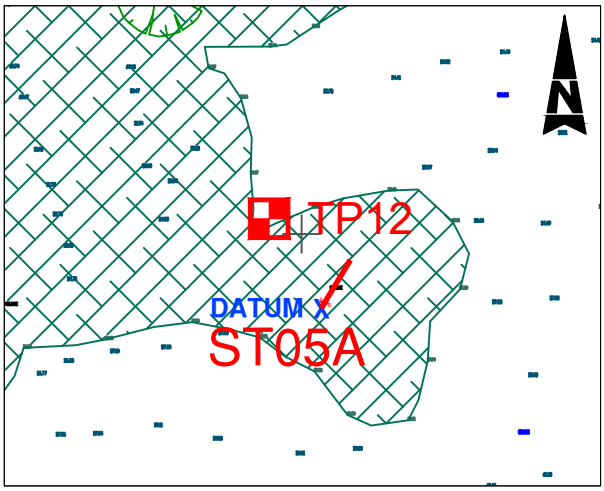
Remarks: Slit trench terminated at 1.40m bgl. Refer to DWG P18081 ST05A for cross sectional detail.



SLIT TRENCH PLAN, 1:50 ON A4



SLIT TRENCH SECTION, 1:50 ON A4



SLIT TRENCH LOCATION PLAN, 1:1000 ON A4

DATUM COORDINATES:
EASTING: 570352.6
NORTHING: 568140.2
LEVEL: 57.631mAOD

KEY:
DATUM: X

SLIT TRENCH DIMENSIONS:
LENGTH: 7.90m
WIDTH: 1.00m
DEPTH: 1.40m

STRATA SHOWN ON DETAILED LOG

DRAWN BY:		DATE:
Gary Curtin		31/05/2018
LOGGED BY:		DATE:
P.H.		21/05/2018
SCALE:	APPROVED:	REVISION:
AS STATED	GH	D01

SLIT TRENCH NUMBER:
ST05A

JOB NAME:
CASTLETREASURE HOUSING DEVELOPMENT

JOB NUMBER:
P18081

DRAWING NUMBER:
P18081-ST05A

pgl priority geotechnical

Photographic Record

Number:	**ST05A**	**Project**	Castletreasure, Douglas Development
		Project No	P18081
		Engineer	J.B. Barry & Partners Consulting Engineers

Photographic Record

Number:	**ST05A**	**Project** Castletreasure, Douglas Development **Project No** P18081 **Engineer** J.B. Barry & Partners Consulting Engineers	

KEY TO SYMBOLS - LABORATORY TEST RESULT

U	Undisturbed Sample	
P	Piston Sample	
TWS	Thin Wall Sample	
B	Bulk Sample - Disturbed	
D	Jar Sample - Disturbed	
W	Water Sample	
pH	Acidity/Alkalinity Index	
SO_3	% - Total Sulphate Content (acid soluble)	
SO_3	g/ltr - Water Soluble Sulphate (Water or 2:1 Aqueous Soil Extract)	
+	Calcareous Reaction	
Cl	Chloride Content	
PI	Plasticity Index	
<425	% of material in sample passing 425 micron sieve	
LL	Liquid Limit	
PL	Plastic Limit	
MC	Water Content	
NP	Non Plastic	
Yb	Bulk Density	
Yd	Dry Density	
Ps	Particle Density	
U/D	Undrained/Drained Triaxial	
U/C	Unconsolidated/Consolidated Triaxial	
T/M	Single Stage/Multistage Triaxial	
100/38	Sample Diameter (mm)	
REM	Remoulded Triaxial Test Specimen	
TST	Triaxial Suction Test	
V	Vane Test	
DSB	Drained Shear Box	
RSB	Residual Shear Box	
RS	Ring Shear	
σ_3	Cell Pressure	
σ_1-σ_3	Deviator Stress	
c	Cohesion	
c_	Effective Cohesion Intercept	
ϕ	Angle of Shearing Resistance - Degrees	
ϕ_	Effective Angle of Shearing Resistance	
εf	Strain at Failure	
*	Failed under 1st Load	
**	Failed under 2nd Load	
#	Untestable	
##	Excessive Strain	
p_o	Effective Overburden Pressure	
m_v	Coefficient of Volume Decrease	
c_v	Coefficient of Consolidation	
Opt	Optimum	
Nat	Natural	
Std	Standard Compaction - 2.5kg Rammer	(¶ CBR)
Hvy	Heavy Compaction - 4.5kg Rammer	(§ CBR)
Vib	Vibratory Compaction	
CBR	California Bearing Ratio	
Sat m.c.	Saturation Moisture Content	
MCV	Moisture Condition Value	

pgl priority geotechnical	**Natural Moisture Content/Atterberg Limits Summary** **BS 1377 : Part 2 : 1990 : Clause 3**	**Job Ref**
Location	**Castletreasure Development**	**P18081**

Hole ID	Sample Ref	Depth (m)	Sample Type	Sample Description	MC	LL	PL	PI	% Pass 425
BH01	1	0.5	B	Slighlty sandy gravelly SILT with low cobble content	21	32	24	8	53.5
BH01	2	1.5	B	Very clayey very sandy GRAVEL	15	31	22	9	48.6
BH02	2	1.5	B	Slightly sandy slightly gravelly CLAY with low cobble content	14	26	19	7	53.7
BH03	2	1.5	B	Very sandy very silty GRAVEL	13	45	32	13	59.8
BH03	3	2.5	B	Very sandy very silty GRAVEL	17	24	18	6	81.3
BH03	5	4.5	B	Slightly gravelly slightly sandy SILT	21	33	23	10	78.4
BH04	2	1.5	B	Very silty very sandy GRAVEL	16	32	23	9	55.6
BH04	3	2.5	B	Very silty very sandy GRAVEL	15	31	22	9	45.7
BH06	2	1.5	B	Very silty very sandy GRAVEL	13	22	17	5	47
BH07	3	2.5	B	Very silty very sandy GRAVEL with low cobble content	18	24	18	6	-34
BH07	5	4.5	B	Very sandy very clayey GRAVEL with low cobble content	15	27	20	7	57.9
BH08	3	2.5	B	Slightly sandy gravelly SILT	16	26	20	6	69.4
BH09	2	1.5	B	Slightly sandy gravelly SILT	12	23	18	5	56.8
BH09	4	3.5	B	Slightly sandy gravelly CLAY	15	23	16	7	57.9
BH10	3	2.5	B	Slightly sandy gravelly SILT	17	26	20	6	58
TP01	1	0.4	B	Silty very sandy GRAVEL	13	36	27	9	39.6
TP02	2	0.5	D	Very sandy very clayey GRAVEL	14	30	21	9	49.5
TP03	2	0.5	D	Sandy very silty GRAVEL	16	33	25	8	59.8
TP04	2	0.5	D	Slightly sandy gravelly CLAY	17				
TP05	1	0.5	B	Silty very sandy GRAVEL	10				

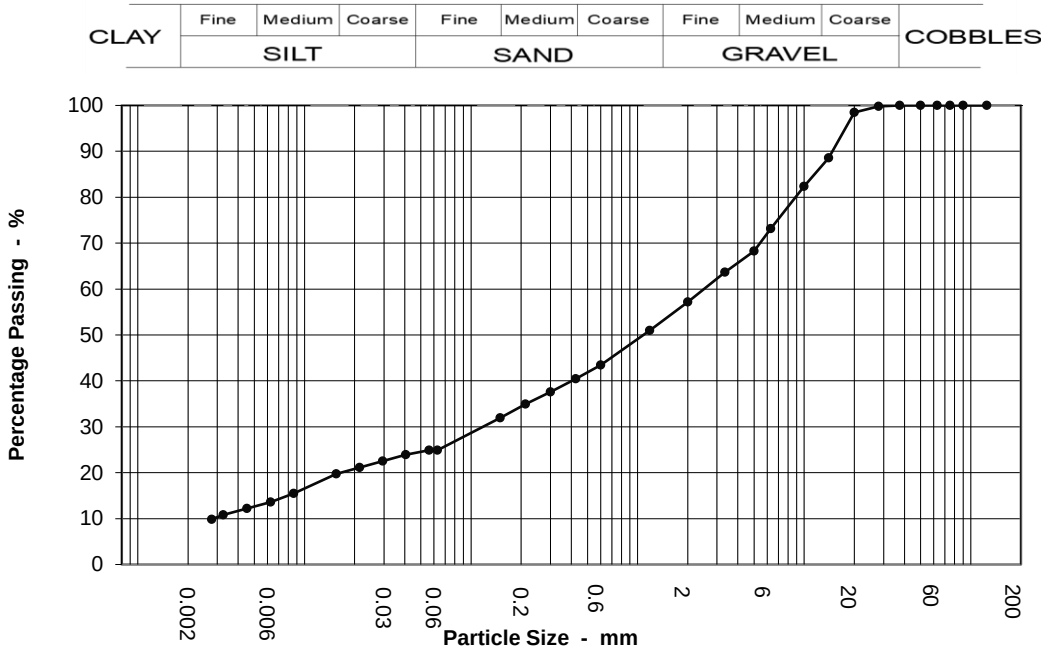
pgl priority geotechnical	**Natural Moisture Content/Atterberg Limits Summary** **BS 1377 : Part 2 : 1990 : Clause 3**	**Job Ref**
Location	**Castletreasure Development**	**P18081**

Hole ID	Sample Ref	Depth (m)	Sample Type	Sample Description	MC	LL	PL	PI	% Pass 425
TP05	3	2.5	B	Silty very sandy GRAVEL	11				
TP06	1	0.5	B	Very clayey very sandy GRAVEL	13	28	21	7	52.9
TP06	2	2	B	Very silty very gravelly SAND	12	23	17	6	80.1
TP06	3	3	B	Very clayey very gravelly SAND	17	25	19	6	73.3
TP07	2	1.5	B	Slightly clayey sandy GRAVEL with medium cobble content	12	36	24	12	42.4
TP08	1	0.5	B	Silty very sandy GRAVEL	15	24	18	6	53.6
TP08	2	1.5	B	Silty very sandy GRAVEL	13	25	18	7	40.3
TP09	2	1.5	B	Very silty very sandy GRAVEL	14	23	17	6	57
TP12	2	0.5	D	Slightly sandy gravelly SITL	12	22	17	5	55.2
TP12	5	4	B	Slightly gravelly slightly sandy CLAY	19	26	20	6	85.2
TP13	2	0.6	D	Very clayey very sandy GRAVEL	11	26	20	6	-0.66
TP13	3	1.5	B	Very sandy very sitly GRAVEL	19	35	25	10	51.6
TP16	2	2	B	Sandy very clayey GRAVEL with low cobble content	13	27	19	8	46.2
TP17	2	1.5	B	Very clayey very sandy GRAVEL	11	25	18	7	48.1
TP17	4	3.5	B	Sandy very clayey GRAVEL	11	25	18	7	49.4
TP18	2	1.5	B	Clayey sandy GRAVEL with low cobble content	10	29	20	9	34.8
TP21	4	1.5	D	Slightly sandy gravelly CLAY	16	23	17	6	44.5

PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

		Job Ref	**P18081**
		Borehole / Pit No	BH01
Location	**Castletreasure Development**	Sample No	2
		Depth	1.50 m
Soil Description	Very clayey very sandy GRAVEL	Sample type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.056	25
90	100	0.041	24
75	100	0.029	23
63	100	0.021	21
50	100	0.016	20
37.5	100	0.009	15
28	100	0.006	14
20	98	0.005	12
14	89	0.003	11
10	82	0.003	10
6.3	73	0.001	6
5	68		
3.35	64		
2	57		
1.18	51		
0.6	43		
0.425	40		
0.3	38		
0.212	35		
0.15	32		
0.063	25		

Test Method	
BS 1377 : Part 2 : 1990	
Sieving	Clause 9.5
Sedimentation	Clause 9.5

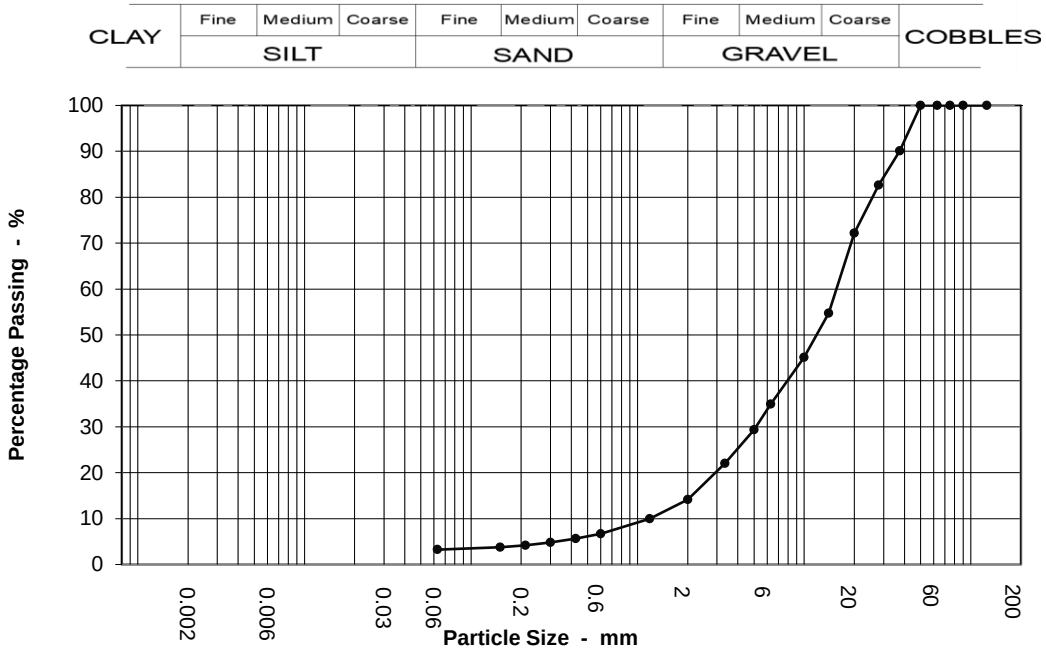
Sample Proportions	
Cobbles	0.0
Gravel	43.0
Sand	32.0
Silt	17.0
Clay	8.0

Grading Analysis	
D100	37.50
D60	2.50
D10	0.00
Uniformity Coefficient	880.00

PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

		Job Ref	**P18081**
		Borehole / Pit No	BH02
Location	**Castletreasure Development**	Sample No	3
		Depth	2.60 m
Soil Description	Slightly clayey sandy GRAVEL	Sample type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	90		
28	83		
20	72		
14	55		
10	45		
6.3	35		
5	29		
3.35	22		
2	14		
1.18	10		
0.6	7		
0.425	6		
0.3	5		
0.212	4		
0.15	4		
0.063	3		

Test Method	
BS 1377 : Part 2 : 1990	
Sieving	Clause 9.3
Sedimentation	N/A

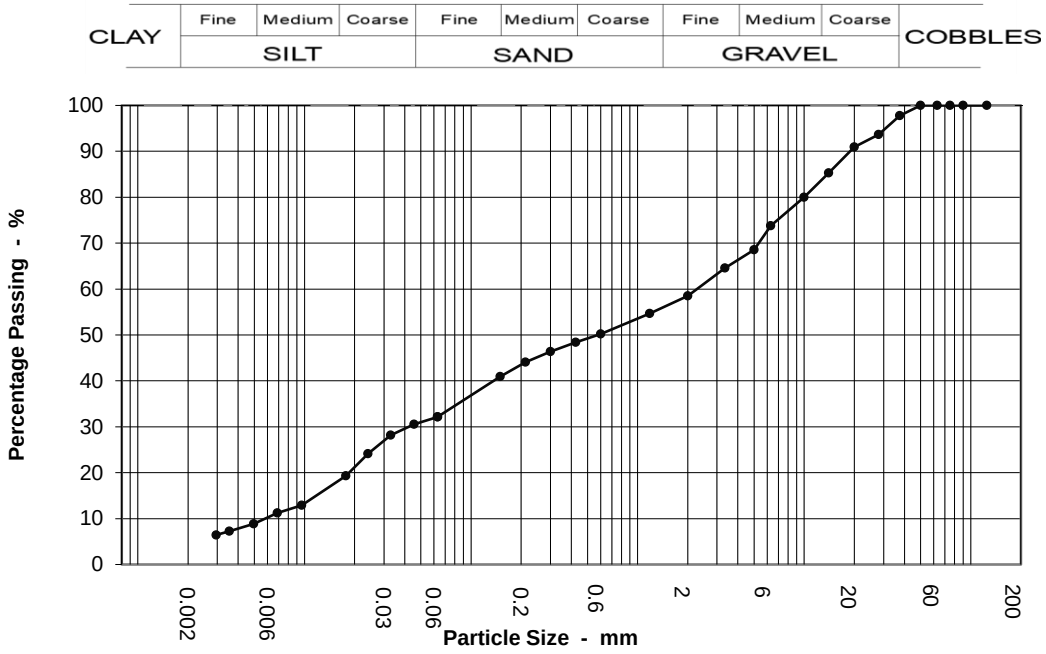
Sample Proportions	
Cobbles	0.0
Gravel	86.0
Sand	11.0
Silt & Clay	3.0

Grading Analysis	
D100	50.00
D60	15.60
D10	1.19
Uniformity Coefficient	13.00

PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

		Job Ref	**P18081**
		Borehole / Pit No	BH03
Location	**Castletreasure Development**	Sample No	2
		Depth	1.50 m
Soil Description	Very sandy very silty GRAVEL	Sample type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.063	32
90	100	0.045	31
75	100	0.033	28
63	100	0.024	24
50	100	0.018	19
37.5	98	0.010	13
28	94	0.007	11
20	91	0.005	9
14	85	0.004	7
10	80	0.003	6
6.3	74	0.002	5
5	69		
3.35	65		
2	58		
1.18	55		
0.6	50		
0.425	48		
0.3	46		
0.212	44		
0.15	41		
0.063	32		

Test Method	
BS 1377 : Part 2 : 1990	
Sieving	Clause 9.5
Sedimentation	Clause 9.5

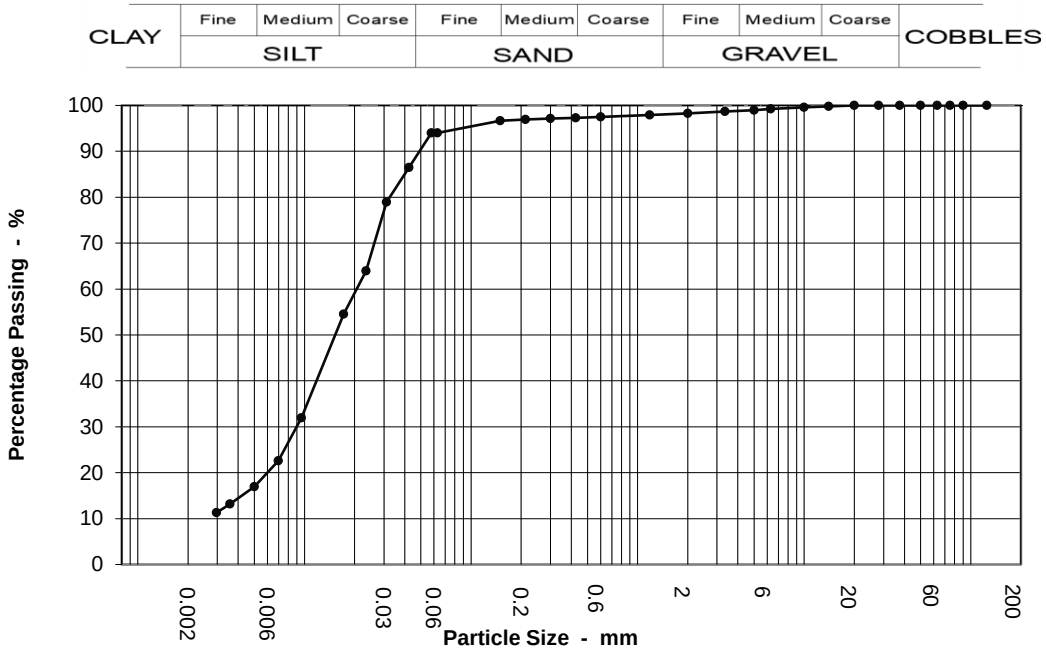
Sample Proportions	
Cobbles	0.0
Gravel	42.0
Sand	26.0
Silt	27.0
Clay	5.0

Grading Analysis	
D100	50.00
D60	2.27
D10	0.01
Uniformity Coefficient	390.00

PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

		Job Ref	**P18081**
		Borehole / Pit No	BH03
Location	**Castletreasure Development**	Sample No	4
		Depth	3.50 m
Soil Description	Slightly gravelly slightly sandy SILT	Sample type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.058	94
90	100	0.042	86
75	100	0.031	79
63	100	0.023	64
50	100	0.017	55
37.5	100	0.010	32
28	100	0.007	23
20	100	0.005	17
14	100	0.004	13
10	100	0.003	11
6.3	99	0.001	4
5	99		
3.35	99		
2	98		
1.18	98		
0.6	97		
0.425	97		
0.3	97		
0.212	97		
0.15	97		
0.063	94		

Test Method	
BS 1377 : Part 2 : 1990	
Sieving	Clause 9.5
Sedimentation	Clause 9.5

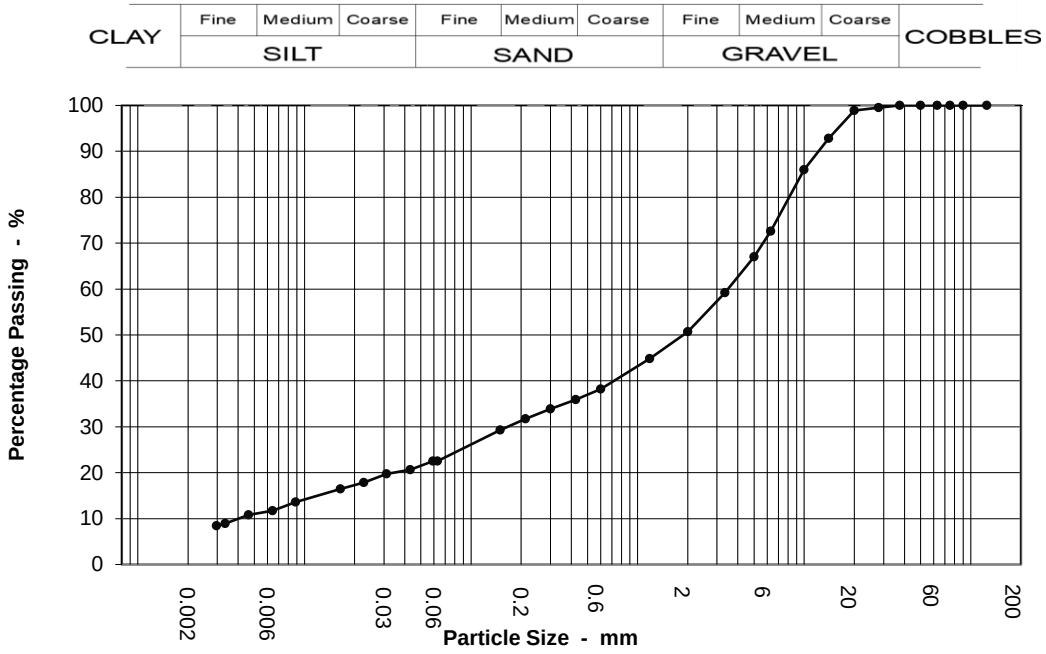
Sample Proportions	
Cobbles	0.0
Gravel	2.0
Sand	4.0
Silt	85.0
Clay	9.0

Grading Analysis	
D100	20.00
D60	0.02
D10	0.00
Uniformity Coefficient	8.50

PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

		Job Ref	**P18081**
		Borehole / Pit No	BH04
Location	**Castletreasure Development**	Sample No	3
		Depth	2.50 m
Soil Description	Very silty very sandy GRAVEL	Sample type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.059	23
90	100	0.043	21
75	100	0.031	20
63	100	0.023	18
50	100	0.016	16
37.5	100	0.009	14
28	100	0.006	12
20	99	0.005	11
14	93	0.003	9
10	86	0.003	8
6.3	73	0.001	4
5	67		
3.35	59		
2	51		
1.18	45		
0.6	38		
0.425	36		
0.3	34		
0.212	32		
0.15	29		
0.063	23		

Test Method	
BS 1377 : Part 2 : 1990	
Sieving	Clause 9.5
Sedimentation	Clause 9.5

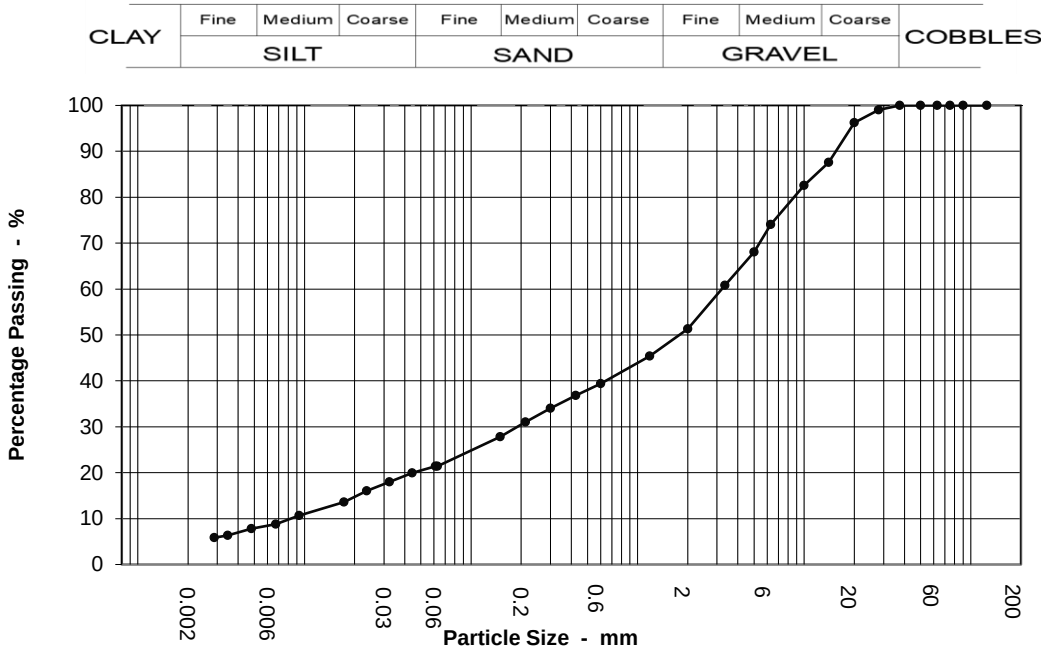
Sample Proportions	
Cobbles	0.0
Gravel	49.0
Sand	28.0
Silt	16.0
Clay	7.0

Grading Analysis	
D100	37.50
D60	3.49
D10	0.00
Uniformity Coefficient	870.00

PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

		Job Ref	**P18081**
		Borehole / Pit No	BH06
Location	**Castletreasure Development**	Sample No	2
		Depth	1.50 m
Soil Description	Very silty very sandy GRAVEL	Sample type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.061	21
90	100	0.044	20
75	100	0.032	18
63	100	0.024	16
50	100	0.017	14
37.5	100	0.009	11
28	99	0.007	9
20	96	0.005	8
14	88	0.003	6
10	83	0.003	6
6.3	74	0.002	4
5	68		
3.35	61		
2	51		
1.18	45		
0.6	39		
0.425	37		
0.3	34		
0.212	31		
0.15	28		
0.063	21		

Test Method	
BS 1377 : Part 2 : 1990	
Sieving	Clause 9.5
Sedimentation	Clause 9.5

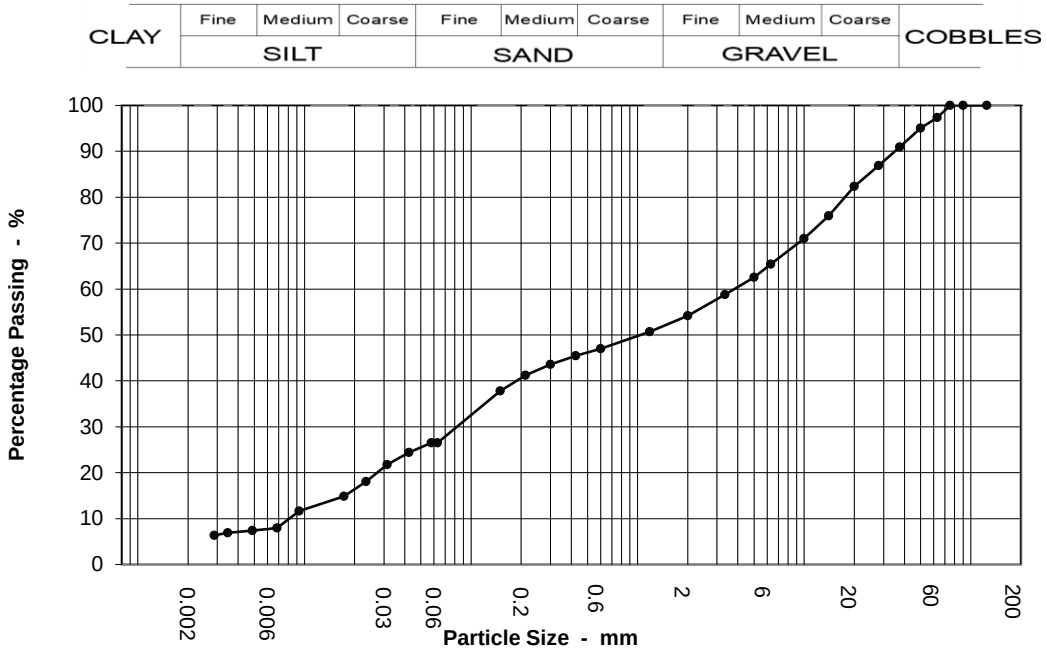
Sample Proportions	
Cobbles	0.0
Gravel	49.0
Sand	30.0
Silt	16.0
Clay	5.0

Grading Analysis	
D100	37.50
D60	3.20
D10	0.01
Uniformity Coefficient	390.00

PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

		Job Ref	**P18081**
		Borehole / Pit No	BH07
Location	**Castletreasure Development**	Sample No	3
		Depth	2.50 m
Soil Description	Very silty very sandy GRAVEL with low cobble content	Sample type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.058	27
90	100	0.042	24
75	100	0.031	22
63	97	0.023	18
50	95	0.017	15
37.5	91	0.009	12
28	87	0.007	8
20	82	0.005	7
14	76	0.003	7
10	71	0.003	6
6.3	65	0.002	5
5	63		
3.35	59		
2	54		
1.18	51		
0.6	47		
0.425	45		
0.3	44		
0.212	41		
0.15	38		
0.063	27		

Test Method	
BS 1377 : Part 2 : 1990	
Sieving	Clause 9.5
Sedimentation	Clause 9.5

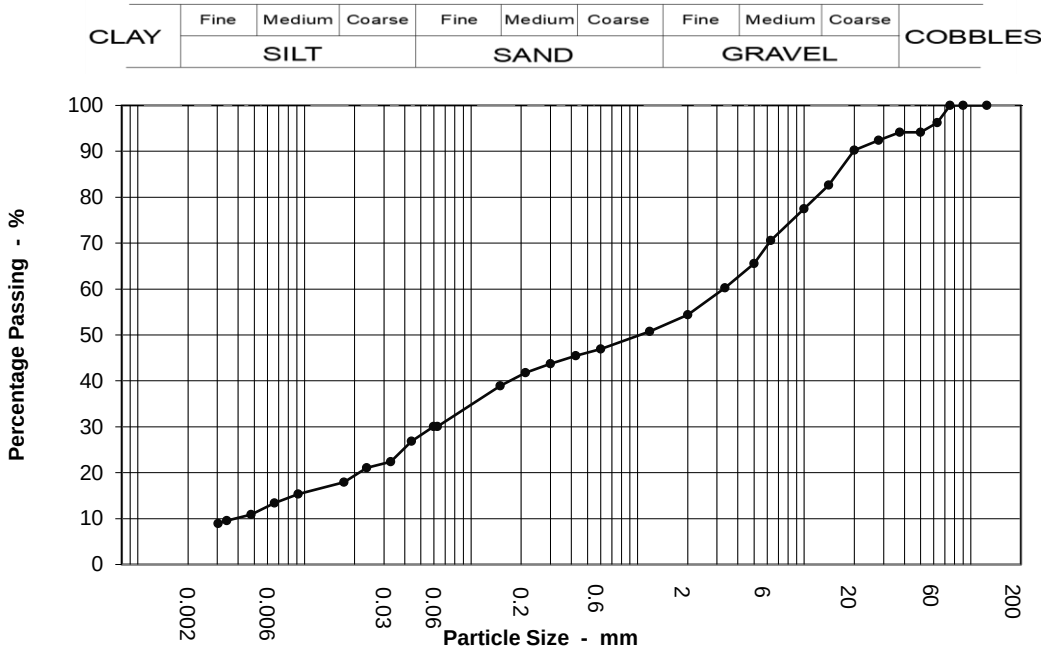
Sample Proportions	
Cobbles	3.0
Gravel	43.0
Sand	28.0
Silt	21.0
Clay	5.0

Grading Analysis	
D100	75.00
D60	3.81
D10	0.01
Uniformity Coefficient	470.00

PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

		Job Ref	**P18081**
		Borehole / Pit No	BH07
Location	**Castletreasure Development**	Sample No	5
		Depth	4.50 m
Soil Description	Very sandy very clayey GRAVEL with low cobble content	Sample type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.060	30
90	100	0.044	27
75	100	0.033	22
63	96	0.024	21
50	94	0.017	18
37.5	94	0.009	15
28	92	0.007	13
20	90	0.005	11
14	83	0.003	10
10	77	0.003	9
6.3	71	0.001	6
5	66		
3.35	60		
2	54		
1.18	51		
0.6	47		
0.425	45		
0.3	44		
0.212	42		
0.15	39		
0.063	30		

Test Method	
BS 1377 : Part 2 : 1990	
Sieving	Clause 9.5
Sedimentation	Clause 9.5

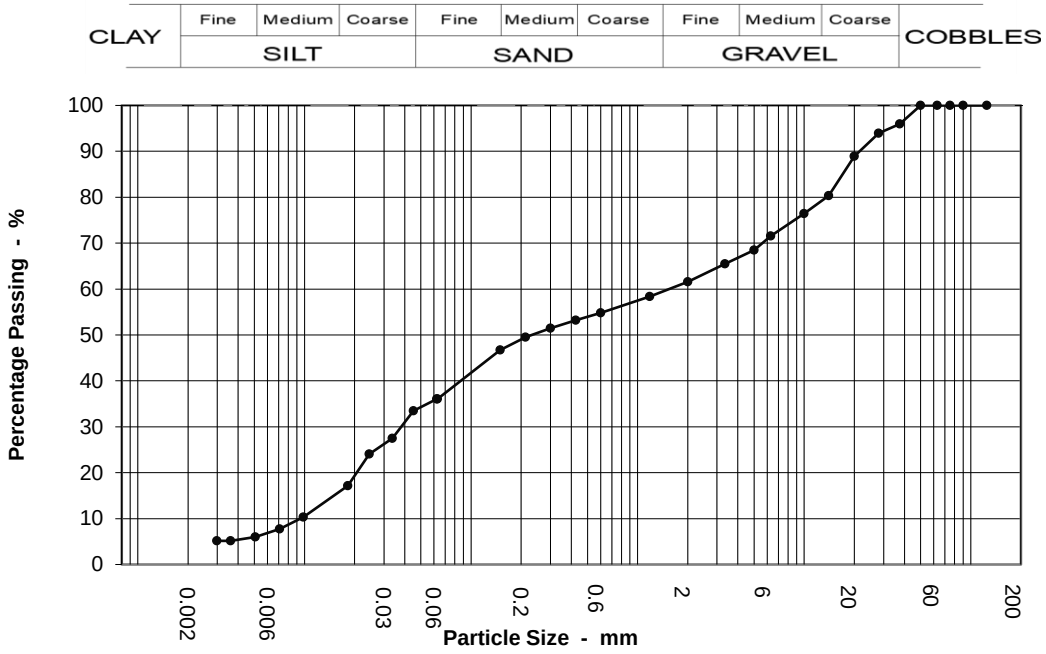
Sample Proportions	
Cobbles	4.0
Gravel	42.0
Sand	24.0
Silt	22.0
Clay	8.0

Grading Analysis	
D100	75.00
D60	3.28
D10	0.00
Uniformity Coefficient	860.00

PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

		Job Ref	**P18081**
		Borehole / Pit No	BH08
Location	**Castletreasure Development**	Sample No	3
		Depth	2.50 m
Soil Description	Slightly sandy gravelly SILT	Sample type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.062	36
90	100	0.045	33
75	100	0.034	27
63	100	0.024	24
50	100	0.018	17
37.5	96	0.010	10
28	94	0.007	8
20	89	0.005	6
14	80	0.004	5
10	76	0.003	5
6.3	72	0.002	3
5	68		
3.35	65		
2	62		
1.18	58		
0.6	55		
0.425	53		
0.3	51		
0.212	50		
0.15	47		
0.063	36		

Test Method	
BS 1377 : Part 2 : 1990	
Sieving	Clause 9.5
Sedimentation	Clause 9.5

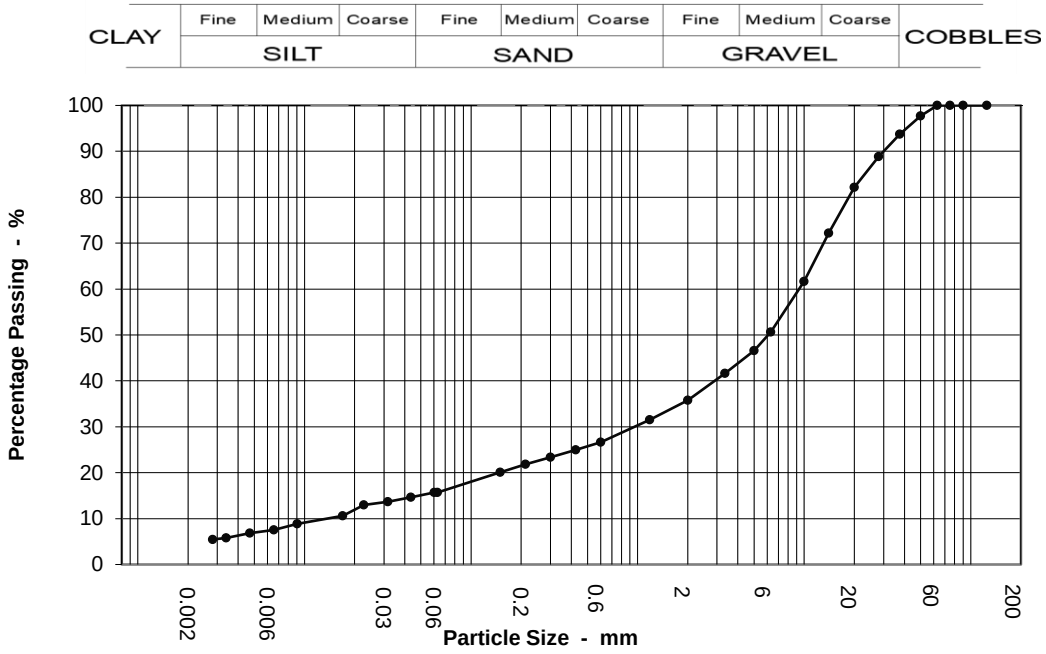
Sample Proportions	
Cobbles	0.0
Gravel	38.0
Sand	26.0
Silt	32.0
Clay	4.0

Grading Analysis	
D100	50.00
D60	1.54
D10	0.01
Uniformity Coefficient	160.00

PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

		Job Ref	**P18081**
		Borehole / Pit No	TP01
Location	**Castletreasure Development**	Sample No	1
		Depth	0.40 m
Soil Description	Silty very sandy GRAVEL	Sample type	B



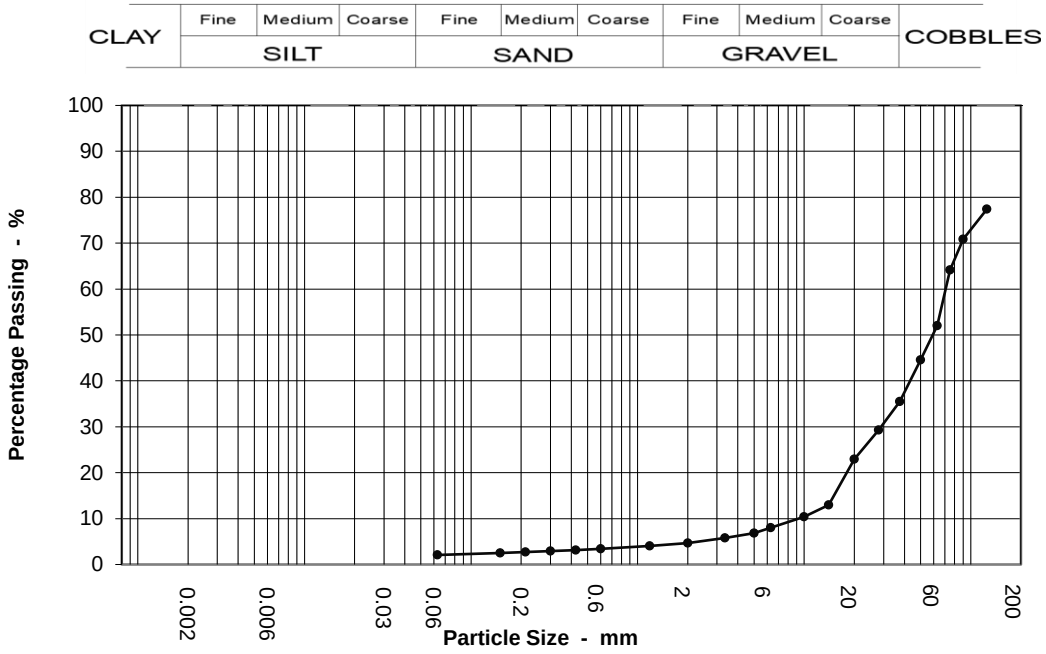
Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.060	16
90	100	0.044	15
75	100	0.032	14
63	100	0.023	13
50	98	0.017	11
37.5	94	0.009	9
28	89	0.007	8
20	82	0.005	7
14	72	0.003	6
10	62	0.003	5
6.3	51	0.002	4
5	47		
3.35	42		
2	36		
1.18	31		
0.6	27		
0.425	25		
0.3	23		
0.212	22		
0.15	20		
0.063	16		

Test Method	
BS 1377 : Part 2 : 1990	
Sieving	Clause 9.5
Sedimentation	Clause 9.5

Sample Proportions	
Cobbles	0.0
Gravel	64.0
Sand	20.0
Silt	11.0
Clay	5.0

Grading Analysis	
D100	63.00
D60	9.33
D10	0.01
Uniformity Coefficient	680.00

pgl priority geotechnical	**PARTICLE SIZE DISTRIBUTION** **BS 1377 : Part 2 : 1990 : Clause 9**	**Job Ref**	**P18081**
		Borehole / Pit No	TP01
Location	**Castletreasure Development**	Sample No	3
		Depth	2.50 m
Soil Description	Slightly silty sandy GRAVEL with high cobble content	Sample type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	77		
90	71		
75	64		
63	52		
50	45		
37.5	35		
28	29		
20	23		
14	13		
10	10		
6.3	8		
5	7		
3.35	6		
2	5		
1.18	4		
0.6	3		
0.425	3		
0.3	3		
0.212	3		
0.15	3		
0.063	2		

Test Method	
BS 1377 : Part 2 : 1990	
Sieving	Clause 9.3
Sedimentation	N/A

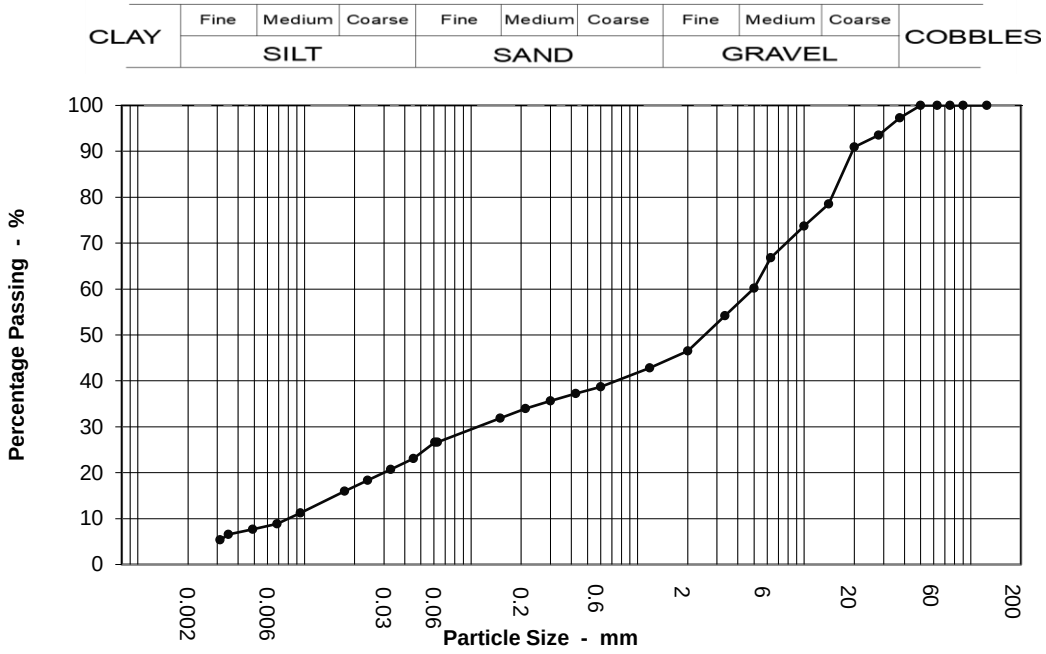
Sample Proportions	
Cobbles	48.0
Gravel	47.0
Sand	3.0
Silt & Clay	2.0

Grading Analysis	
D100	
D60	70.70
D10	9.31
Uniformity Coefficient	7.60

PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

		Job Ref	**P18081**
		Borehole / Pit No	TP02
Location	**Castletreasure Development**	Sample No	1
		Depth	0.50 m
Soil Description	Very sandy very clayey GRAVEL	Sample type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.061	27
90	100	0.045	23
75	100	0.033	21
63	100	0.024	18
50	100	0.017	16
37.5	97	0.009	11
28	94	0.007	9
20	91	0.005	8
14	79	0.004	7
10	74	0.003	5
6.3	67	0.001	3
5	60		
3.35	54		
2	47		
1.18	43		
0.6	39		
0.425	37		
0.3	36		
0.212	34		
0.15	32		
0.063	27		

Test Method	
BS 1377 : Part 2 : 1990	
Sieving	Clause 9.5
Sedimentation	Clause 9.5

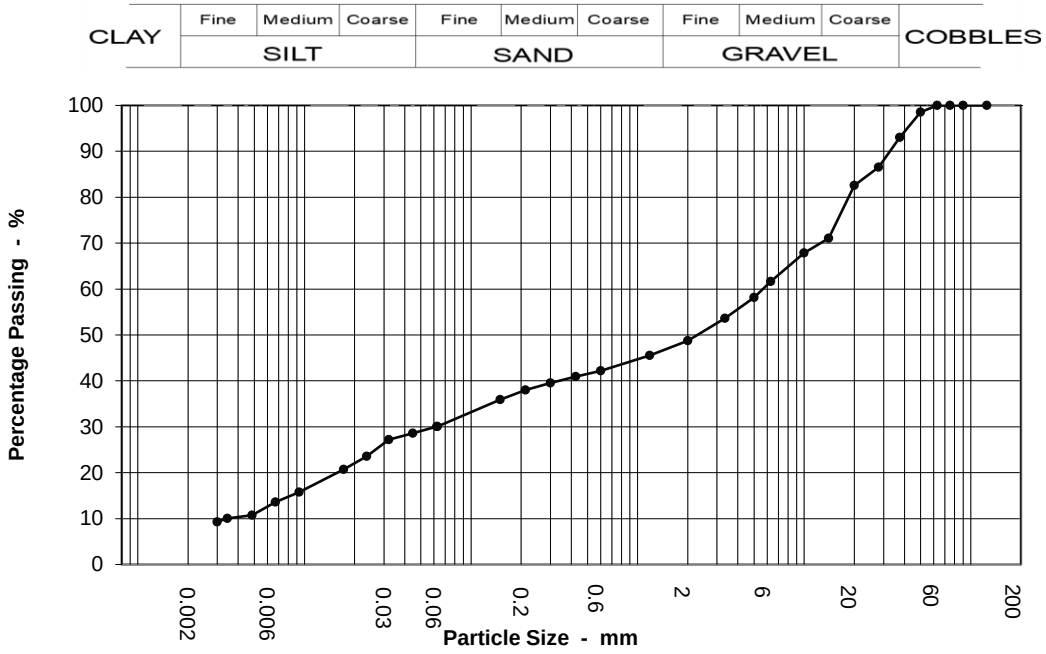
Sample Proportions	
Cobbles	0.0
Gravel	53.0
Sand	20.0
Silt	22.0
Clay	4.0

Grading Analysis	
D100	50.00
D60	4.94
D10	0.01
Uniformity Coefficient	620.00

PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

		Job Ref	**P18081**
		Borehole / Pit No	TP03
Location	**Castletreasure Development**	Sample No	1
		Depth	0.50 m
Soil Description	Sandy very silty GRAVEL	Sample type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.062	30
90	100	0.045	29
75	100	0.032	27
63	100	0.024	24
50	99	0.017	21
37.5	93	0.009	16
28	87	0.007	14
20	83	0.005	11
14	71	0.003	10
10	68	0.003	9
6.3	62	0.002	7
5	58		
3.35	54		
2	49		
1.18	46		
0.6	42		
0.425	41		
0.3	40		
0.212	38		
0.15	36		
0.063	30		

Test Method	
BS 1377 : Part 2 : 1990	
Sieving	Clause 9.5
Sedimentation	Clause 9.5

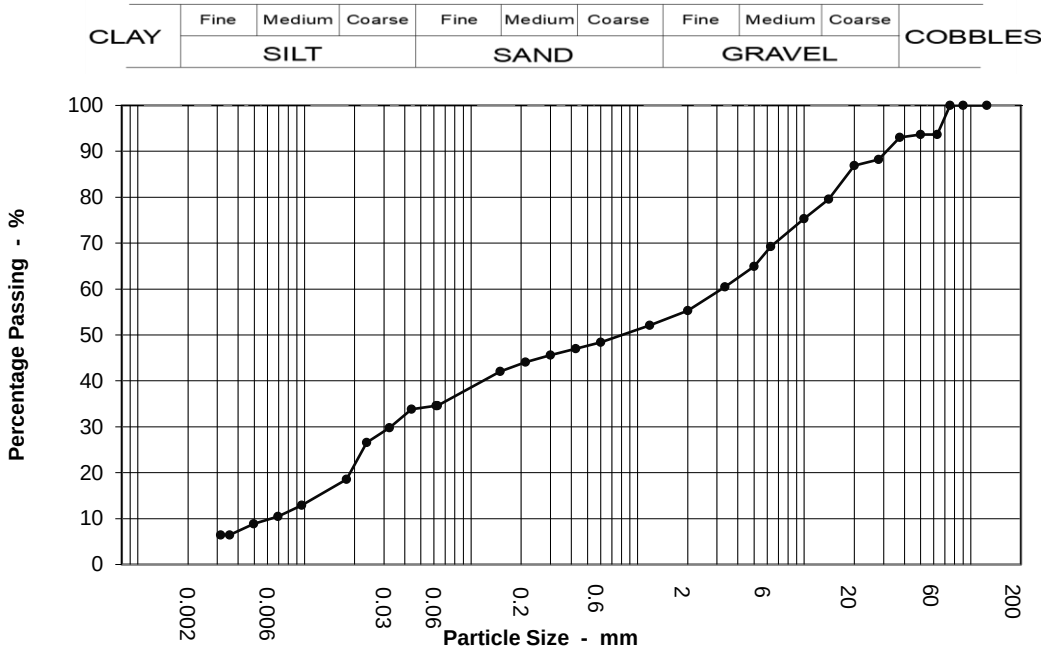
Sample Proportions	
Cobbles	0.0
Gravel	51.0
Sand	19.0
Silt	22.0
Clay	8.0

Grading Analysis	
D100	63.00
D60	5.65
D10	0.00
Uniformity Coefficient	1600.00

PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

		Job Ref	**P18081**
		Borehole / Pit No	TP04
Location	**Castletreasure Development**	Sample No	1
		Depth	0.50 m
Soil Description	Slightly sandy gravelly CLAY with medium cobble content	Sample type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.062	35
90	100	0.044	34
75	100	0.032	30
63	94	0.024	27
50	94	0.018	19
37.5	93	0.010	13
28	88	0.007	10
20	87	0.005	9
14	80	0.004	6
10	75	0.003	6
6.3	69	0.001	4
5	65		
3.35	60		
2	55		
1.18	52		
0.6	48		
0.425	47		
0.3	46		
0.212	44		
0.15	42		
0.063	35		

Test Method	
BS 1377 : Part 2 : 1990	
Sieving	Clause 9.5
Sedimentation	Clause 9.5

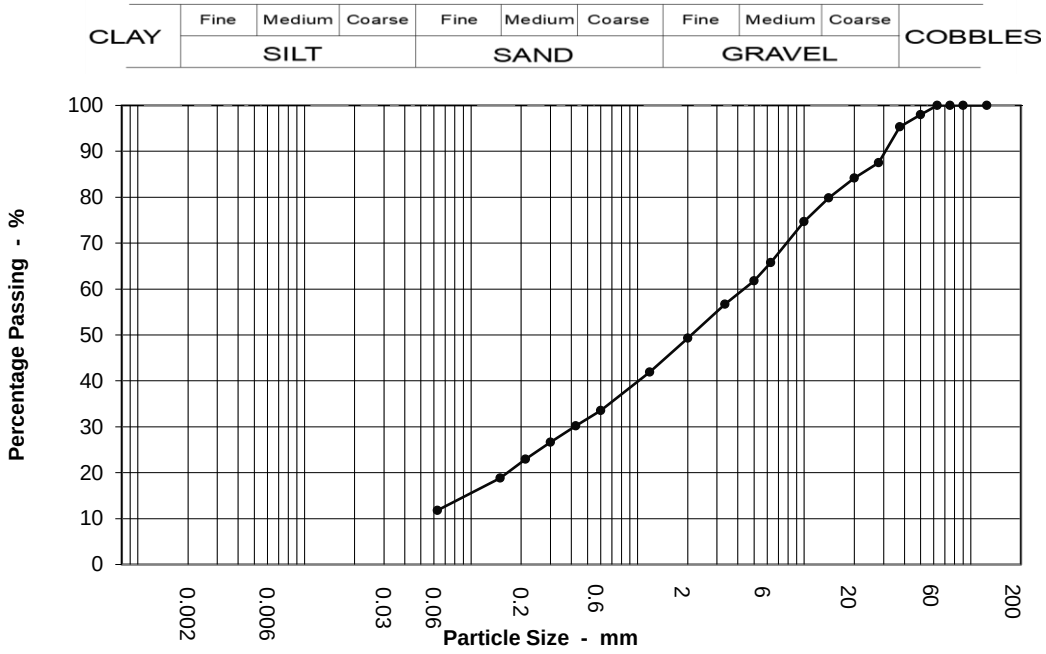
Sample Proportions	
Cobbles	6.0
Gravel	38.0
Sand	21.0
Silt	29.0
Clay	6.0

Grading Analysis	
D100	75.00
D60	3.19
D10	0.01
Uniformity Coefficient	510.00

PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

		Job Ref	**P18081**
		Borehole / Pit No	TP05
Location	**Castletreasure Development**	Sample No	1
		Depth	0.50 m
Soil Description	Silty very sandy GRAVEL	Sample type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	98		
37.5	95		
28	88		
20	84		
14	80		
10	75		
6.3	66		
5	62		
3.35	57		
2	49		
1.18	42		
0.6	34		
0.425	30		
0.3	27		
0.212	23		
0.15	19		
0.063	12		

Test Method	
BS 1377 : Part 2 : 1990	
Sieving	Clause 9.3
Sedimentation	N/A

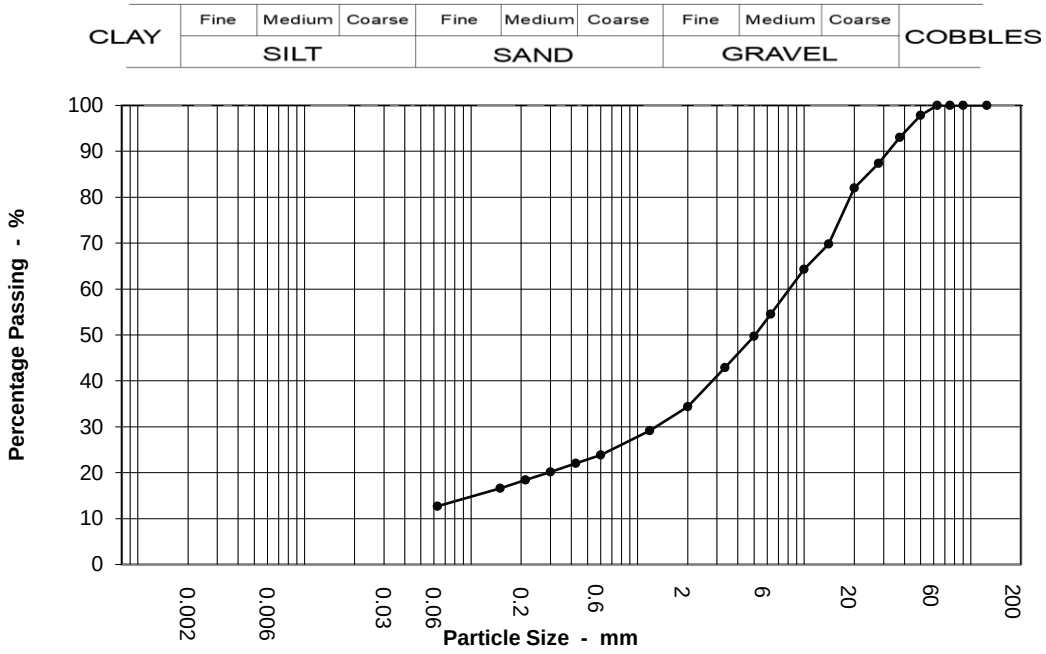
Sample Proportions	
Cobbles	0.0
Gravel	51.0
Sand	37.0
Silt & Clay	12.0

Grading Analysis	
D100	63.00
D60	4.35
D10	
Uniformity Coefficient	

PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

		Job Ref	**P18081**
		Borehole / Pit No	TP05
Location	**Castletreasure Development**	Sample No	3
		Depth	2.50 m
Soil Description	Silty very sandy GRAVEL	Sample type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	98		
37.5	93		
28	87		
20	82		
14	70		
10	64		
6.3	55		
5	50		
3.35	43		
2	34		
1.18	29		
0.6	24		
0.425	22		
0.3	20		
0.212	18		
0.15	17		
0.063	13		

Test Method	
BS 1377 : Part 2 : 1990	
Sieving	Clause 9.3
Sedimentation	N/A

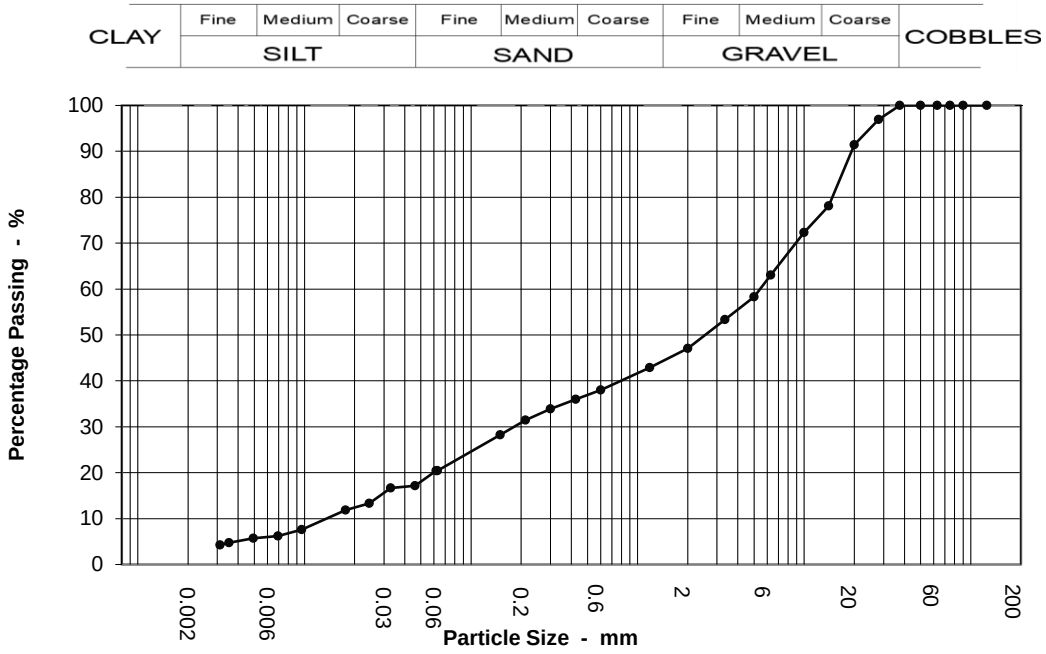
Sample Proportions	
Cobbles	0.0
Gravel	66.0
Sand	22.0
Silt & Clay	13.0

Grading Analysis	
D100	63.00
D60	8.16
D10	
Uniformity Coefficient	

PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

		Job Ref	**P18081**
		Borehole / Pit No	TP06
Location	**Castletreasure Development**	Sample No	1
		Depth	0.50 m
Soil Description	Very clayey very sandy GRAVEL	Sample type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.062	20
90	100	0.046	17
75	100	0.033	17
63	100	0.024	13
50	100	0.018	12
37.5	100	0.010	8
28	97	0.007	6
20	91	0.005	6
14	78	0.004	5
10	72	0.003	4
6.3	63	0.001	3
5	58		
3.35	53		
2	47		
1.18	43		
0.6	38		
0.425	36		
0.3	34		
0.212	31		
0.15	28		
0.063	20		

Test Method	
BS 1377 : Part 2 : 1990	
Sieving	Clause 9.5
Sedimentation	Clause 9.5

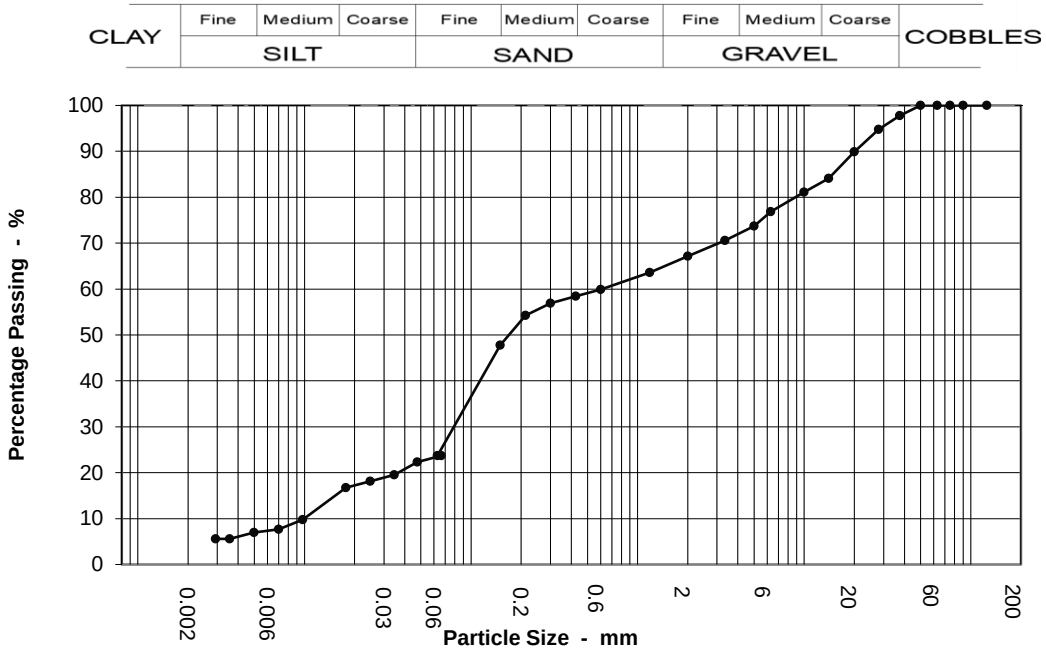
Sample Proportions	
Cobbles	0.0
Gravel	53.0
Sand	27.0
Silt	17.0
Clay	4.0

Grading Analysis	
D100	37.50
D60	5.43
D10	0.01
Uniformity Coefficient	400.00

PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

		Job Ref	**P18081**
		Borehole / Pit No	TP06
Location	**Castletreasure Development**	Sample No	3
		Depth	3.00 m
Soil Description	Very clayey very gravelly SAND	Sample type	B



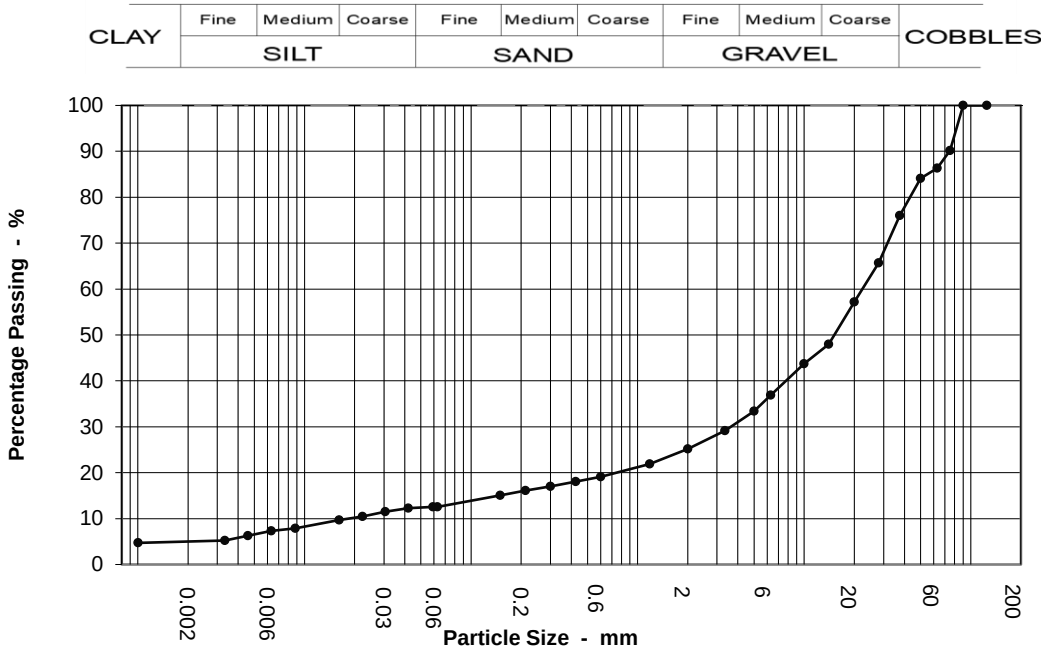
Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.066	24
90	100	0.048	22
75	100	0.035	20
63	100	0.025	18
50	100	0.018	17
37.5	98	0.010	10
28	95	0.007	8
20	90	0.005	7
14	84	0.004	6
10	81	0.003	6
6.3	77	0.001	3
5	74		
3.35	71		
2	67		
1.18	64		
0.6	60		
0.425	58		
0.3	57		
0.212	54		
0.15	48		
0.063	24		

Test Method	
BS 1377 : Part 2 : 1990	
Sieving	Clause 9.5
Sedimentation	Clause 9.5

Sample Proportions	
Cobbles	0.0
Gravel	33.0
Sand	43.0
Silt	19.0
Clay	5.0

Grading Analysis	
D100	50.00
D60	0.61
D10	0.01
Uniformity Coefficient	61.00

pgl priority geotechnical	**PARTICLE SIZE DISTRIBUTION** **BS 1377 : Part 2 : 1990 : Clause 9**	**Job Ref**	**P18081**
		Borehole / Pit No	TP07
Location	**Castletreasure Development**	Sample No	2
		Depth	1.50 m
Soil Description	Slightly clayey sandy GRAVEL with medium cobble content	Sample type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.059	13
90	100	0.042	12
75	90	0.031	12
63	86	0.022	10
50	84	0.016	10
37.5	76	0.009	8
28	66	0.006	7
20	57	0.005	6
14	48	0.003	5
10	44	0.001	5
6.3	37	0.001	2
5	33		
3.35	29		
2	25		
1.18	22		
0.6	19		
0.425	18		
0.3	17		
0.212	16		
0.15	15		
0.063	13		

Test Method	
BS 1377 : Part 2 : 1990	
Sieving	Clause 9.5
Sedimentation	Clause 9.5

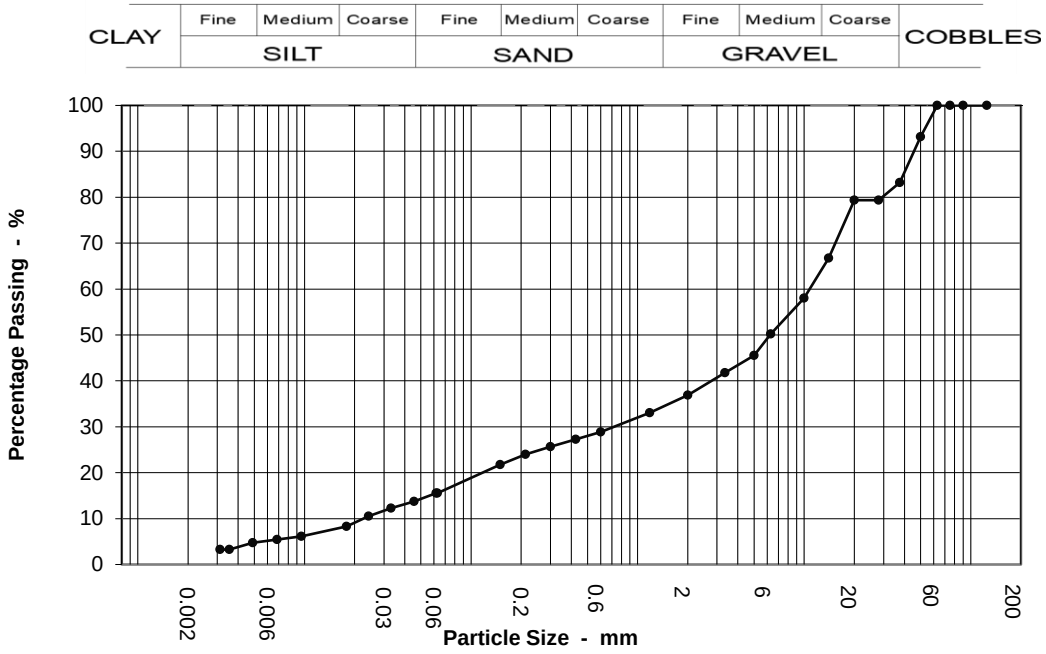
Sample Proportions	
Cobbles	14.0
Gravel	61.0
Sand	13.0
Silt	8.0
Clay	5.0

Grading Analysis	
D100	90.00
D60	22.40
D10	0.02
Uniformity Coefficient	1200.00

PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

		Job Ref	**P18081**
		Borehole / Pit No	TP08
Location	**Castletreasure Development**	Sample No	2
		Depth	1.50 m
Soil Description	Silty very sandy GRAVEL	Sample type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.062	16
90	100	0.045	14
75	100	0.033	12
63	100	0.024	10
50	93	0.018	8
37.5	83	0.010	6
28	79	0.007	5
20	79	0.005	5
14	67	0.004	3
10	58	0.003	3
6.3	50	0.001	2
5	46		
3.35	42		
2	37		
1.18	33		
0.6	29		
0.425	27		
0.3	26		
0.212	24		
0.15	22		
0.063	16		

Test Method	
BS 1377 : Part 2 : 1990	
Sieving	Clause 9.5
Sedimentation	Clause 9.5

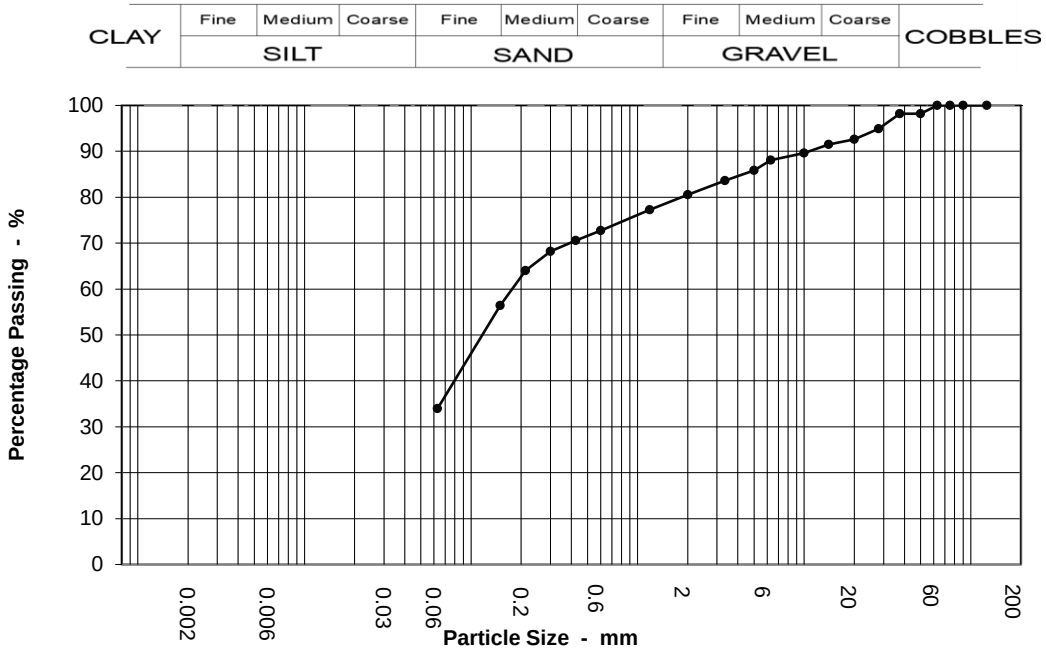
Sample Proportions	
Cobbles	0.0
Gravel	63.0
Sand	21.0
Silt	13.0
Clay	3.0

Grading Analysis	
D100	63.00
D60	10.80
D10	0.02
Uniformity Coefficient	480.00

PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

		Job Ref	**P18081**
		Borehole / Pit No	TP09
Location	**Castletreasure Development**	Sample No	1
		Depth	0.50 m
Soil Description	Gravelly very silty SAND	Sample type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	98		
37.5	98		
28	95		
20	93		
14	92		
10	90		
6.3	88		
5	86		
3.35	84		
2	81		
1.18	77		
0.6	73		
0.425	71		
0.3	68		
0.212	64		
0.15	56		
0.063	34		

Test Method	
BS 1377 : Part 2 : 1990	
Sieving	Clause 9.3
Sedimentation	N/A

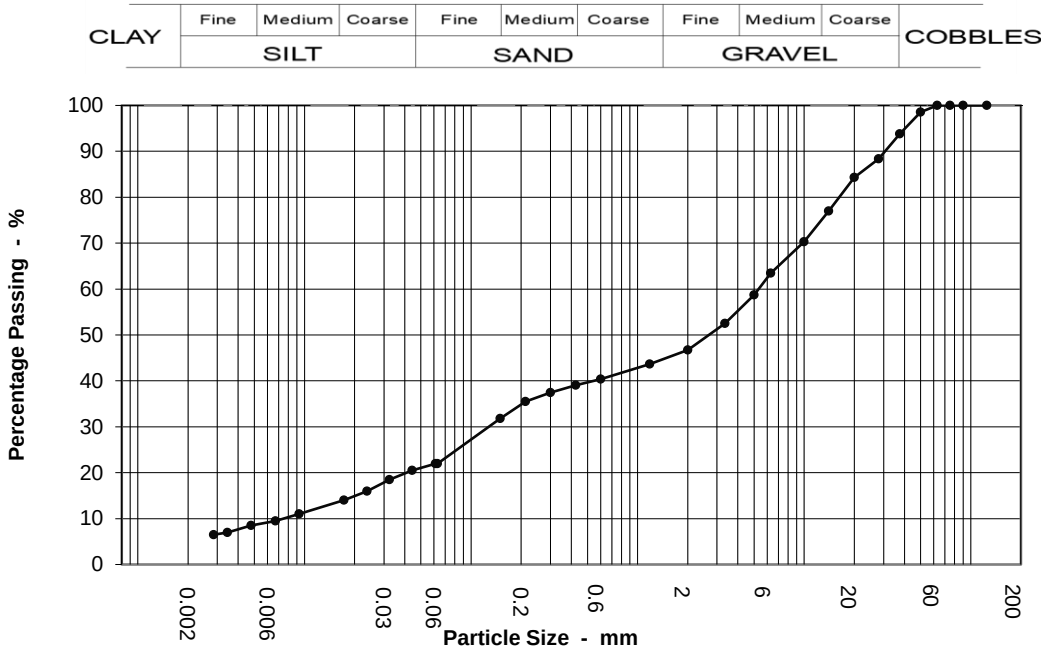
Sample Proportions	
Cobbles	0.0
Gravel	19.0
Sand	47.0
Silt & Clay	34.0

Grading Analysis	
D100	63.00
D60	0.18
D10	
Uniformity Coefficient	

PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

		Job Ref	**P18081**
		Borehole / Pit No	TP09
Location	**Castletreasure Development**	Sample No	2
		Depth	1.50 m
Soil Description	Very silty very sandy GRAVEL	Sample type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.061	22
90	100	0.044	20
75	100	0.032	18
63	100	0.024	16
50	99	0.017	14
37.5	94	0.009	11
28	88	0.007	9
20	84	0.005	8
14	77	0.003	7
10	70	0.003	6
6.3	63	0.001	4
5	59		
3.35	53		
2	47		
1.18	44		
0.6	40		
0.425	39		
0.3	37		
0.212	35		
0.15	32		
0.063	22		

Test Method	
BS 1377 : Part 2 : 1990	
Sieving	Clause 9.5
Sedimentation	Clause 9.5

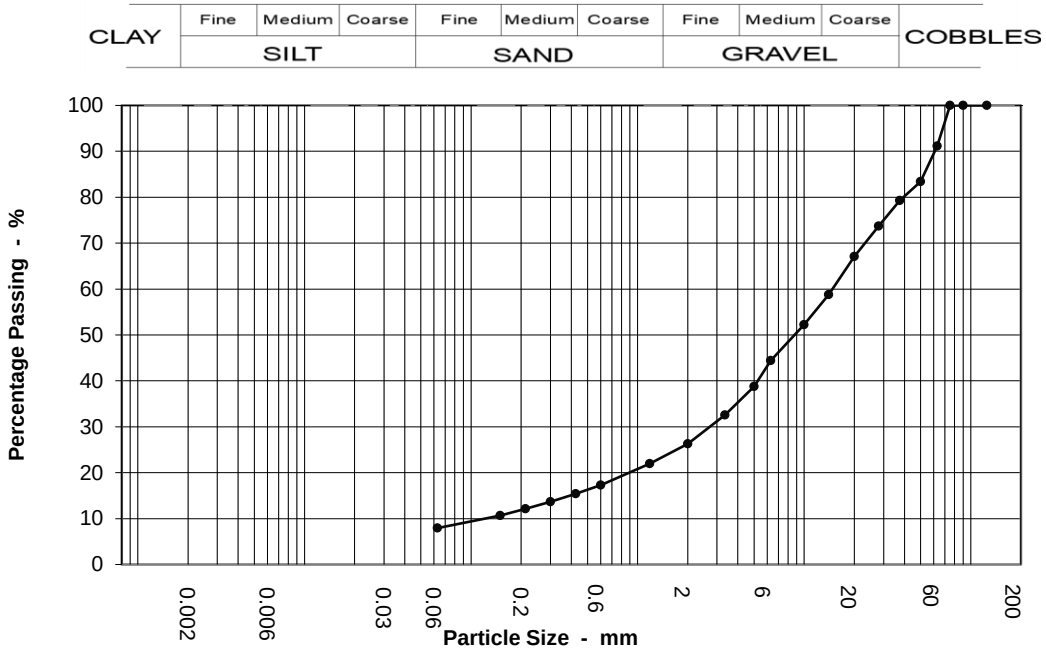
Sample Proportions	
Cobbles	0.0
Gravel	53.0
Sand	25.0
Silt	16.0
Clay	6.0

Grading Analysis	
D100	63.00
D60	5.33
D10	0.01
Uniformity Coefficient	710.00

PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

		Job Ref	**P18081**
		Borehole / Pit No	TP11
Location	**Castletreasure Development**	Sample No	4
		Depth	2.50 m
Soil Description	Silty very sandy GRAVEL with medium cobble content	Sample type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	91		
50	83		
37.5	79		
28	74		
20	67		
14	59		
10	52		
6.3	44		
5	39		
3.35	33		
2	26		
1.18	22		
0.6	17		
0.425	15		
0.3	14		
0.212	12		
0.15	11		
0.063	8		

Test Method	
BS 1377 : Part 2 : 1990	
Sieving	Clause 9.3
Sedimentation	N/A

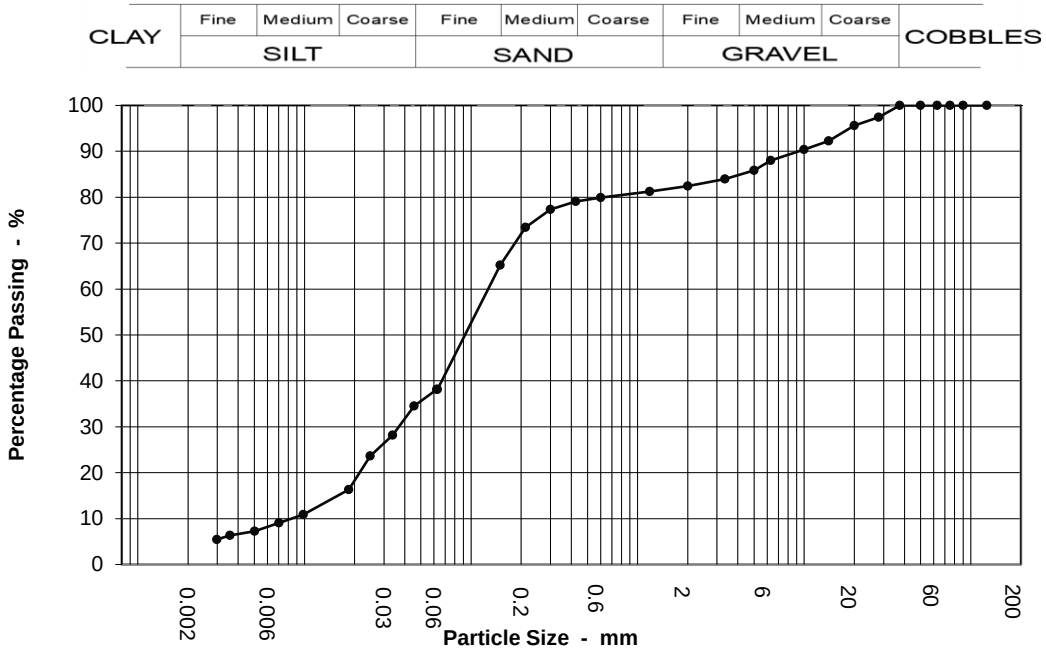
Sample Proportions	
Cobbles	9.0
Gravel	65.0
Sand	18.0
Silt & Clay	8.0

Grading Analysis	
D100	75.00
D60	14.70
D10	0.12
Uniformity Coefficient	120.00

PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

		Job Ref	**P18081**
		Borehole / Pit No	TP12
Location	**Castletreasure Development**	Sample No	3
		Depth	2.10 m
Soil Description	Slightly gravelly sandy CLAY	Sample type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.062	38
90	100	0.045	34
75	100	0.034	28
63	100	0.025	24
50	100	0.018	16
37.5	100	0.010	11
28	97	0.007	9
20	96	0.005	7
14	92	0.004	6
10	90	0.003	5
6.3	88	0.002	5
5	86		
3.35	84		
2	82		
1.18	81		
0.6	80		
0.425	79		
0.3	77		
0.212	73		
0.15	65		
0.063	38		

Test Method	
BS 1377 : Part 2 : 1990	
Sieving	Clause 9.5
Sedimentation	Clause 9.5

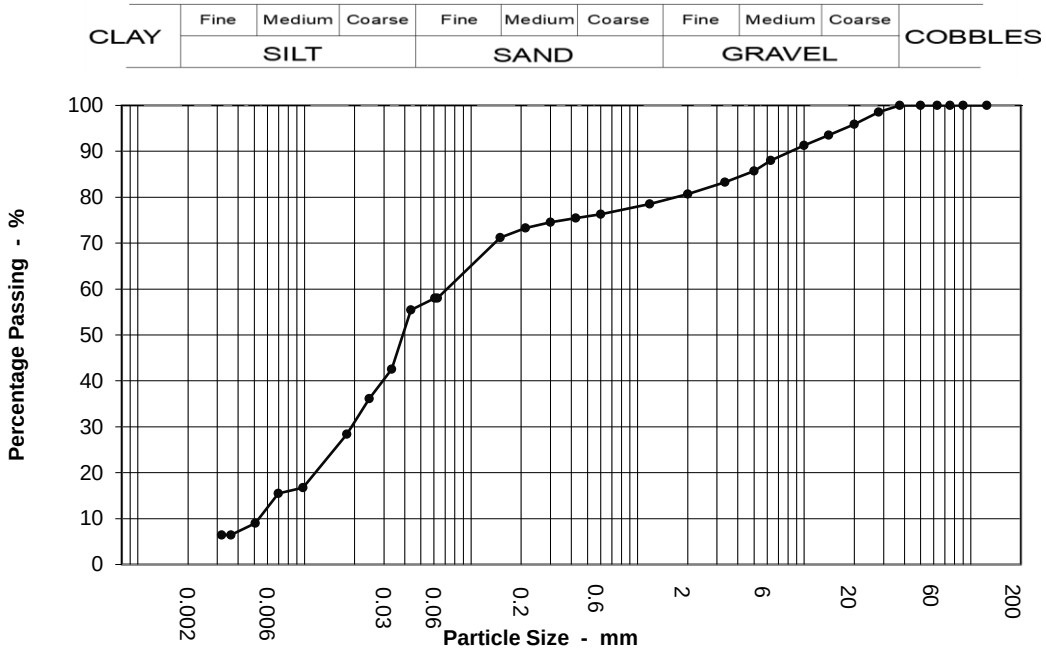
Sample Proportions	
Cobbles	0.0
Gravel	18.0
Sand	44.0
Silt	33.0
Clay	5.0

Grading Analysis	
D100	37.50
D60	0.13
D10	0.01
Uniformity Coefficient	15.00

PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

		Job Ref	**P18081**
		Borehole / Pit No	TP12
Location	**Castletreasure Development**	Sample No	5
		Depth	4.00 m
Soil Description	Slightly gravelly slightly sandy CLAY	Sample type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.061	58
90	100	0.044	55
75	100	0.033	43
63	100	0.024	36
50	100	0.018	28
37.5	100	0.010	17
28	99	0.007	15
20	96	0.005	9
14	93	0.004	6
10	91	0.003	6
6.3	88	0.001	4
5	86		
3.35	83		
2	81		
1.18	79		
0.6	76		
0.425	75		
0.3	75		
0.212	73		
0.15	71		
0.063	58		

Test Method	
BS 1377 : Part 2 : 1990	
Sieving	Clause 9.5
Sedimentation	Clause 9.5

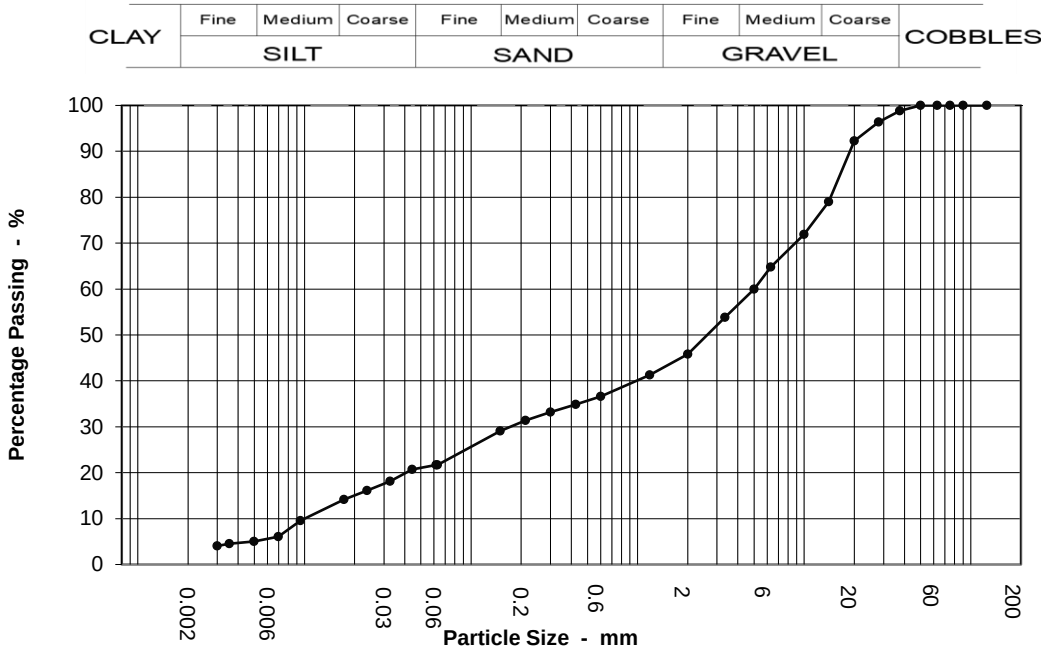
Sample Proportions	
Cobbles	0.0
Gravel	19.0
Sand	23.0
Silt	53.0
Clay	5.0

Grading Analysis	
D100	37.50
D60	0.07
D10	0.01
Uniformity Coefficient	14.00

PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

		Job Ref	**P18081**
		Borehole / Pit No	TP13
Location	**Castletreasure Development**	Sample No	1
		Depth	0.60 m
Soil Description	Very clayey very sandy GRAVEL	Sample type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.062	22
90	100	0.044	21
75	100	0.033	18
63	100	0.024	16
50	100	0.017	14
37.5	99	0.009	10
28	96	0.007	6
20	92	0.005	5
14	79	0.004	5
10	72	0.003	4
6.3	65	0.002	3
5	60		
3.35	54		
2	46		
1.18	41		
0.6	37		
0.425	35		
0.3	33		
0.212	31		
0.15	29		
0.063	22		

Test Method	
BS 1377 : Part 2 : 1990	
Sieving	Clause 9.5
Sedimentation	Clause 9.5

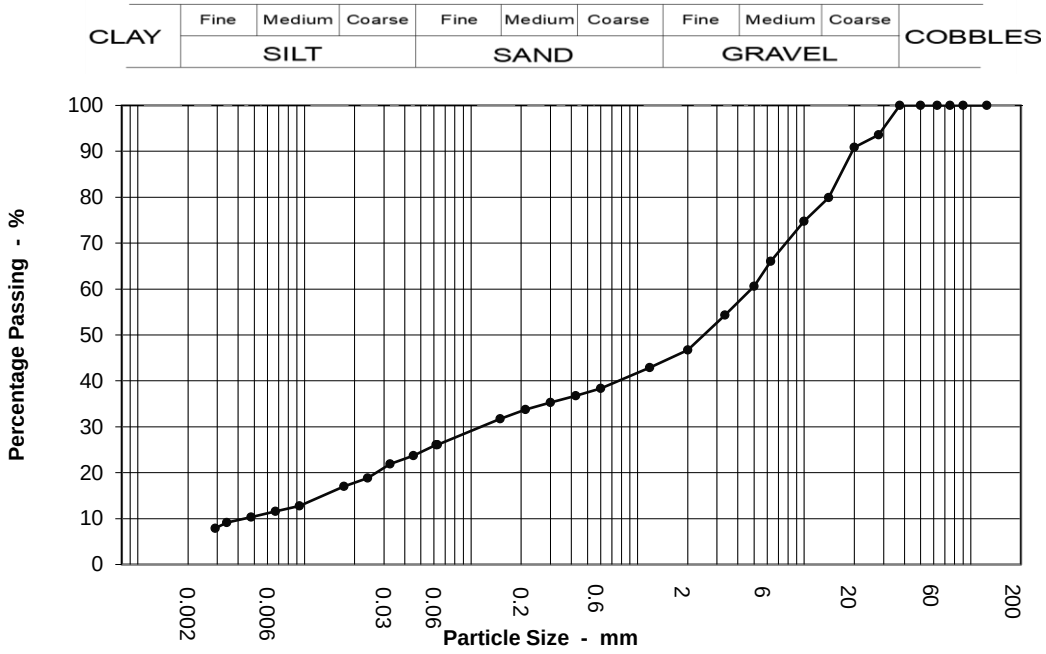
Sample Proportions	
Cobbles	0.0
Gravel	54.0
Sand	24.0
Silt	18.0
Clay	3.0

Grading Analysis	
D100	50.00
D60	5.00
D10	0.01
Uniformity Coefficient	500.00

PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

		Job Ref	**P18081**
		Borehole / Pit No	TP13
Location	**Castletreasure Development**	Sample No	3
		Depth	1.50 m
Soil Description	Very sandy very sitly GRAVEL	Sample type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.062	26
90	100	0.045	24
75	100	0.033	22
63	100	0.024	19
50	100	0.017	17
37.5	100	0.009	13
28	94	0.007	12
20	91	0.005	10
14	80	0.003	9
10	75	0.003	8
6.3	66	0.002	7
5	61		
3.35	54		
2	47		
1.18	43		
0.6	38		
0.425	37		
0.3	35		
0.212	34		
0.15	32		
0.063	26		

Test Method	
BS 1377 : Part 2 : 1990	
Sieving	Clause 9.5
Sedimentation	Clause 9.5

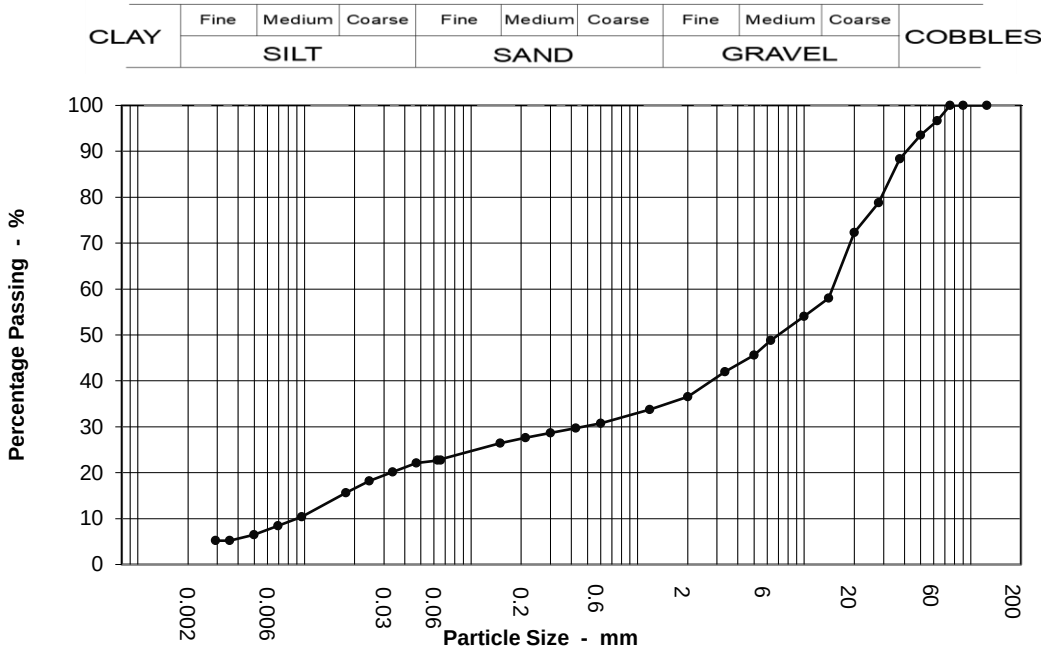
Sample Proportions	
Cobbles	0.0
Gravel	53.0
Sand	21.0
Silt	19.0
Clay	7.0

Grading Analysis	
D100	37.50
D60	4.80
D10	0.00
Uniformity Coefficient	1100.00

PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

		Job Ref	**P18081**
		Borehole / Pit No	TP16
Location	**Castletreasure Development**	Sample No	2
		Depth	2.00 m
Soil Description	Sandy very clayey GRAVEL with low cobble content	Sample type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.066	23
90	100	0.047	22
75	100	0.034	20
63	97	0.024	18
50	94	0.018	16
37.5	88	0.010	10
28	79	0.007	8
20	72	0.005	6
14	58	0.004	5
10	54	0.003	5
6.3	49	0.001	3
5	46		
3.35	42		
2	37		
1.18	34		
0.6	31		
0.425	30		
0.3	29		
0.212	28		
0.15	26		
0.063	23		

Test Method	
BS 1377 : Part 2 : 1990	
Sieving	Clause 9.5
Sedimentation	Clause 9.5

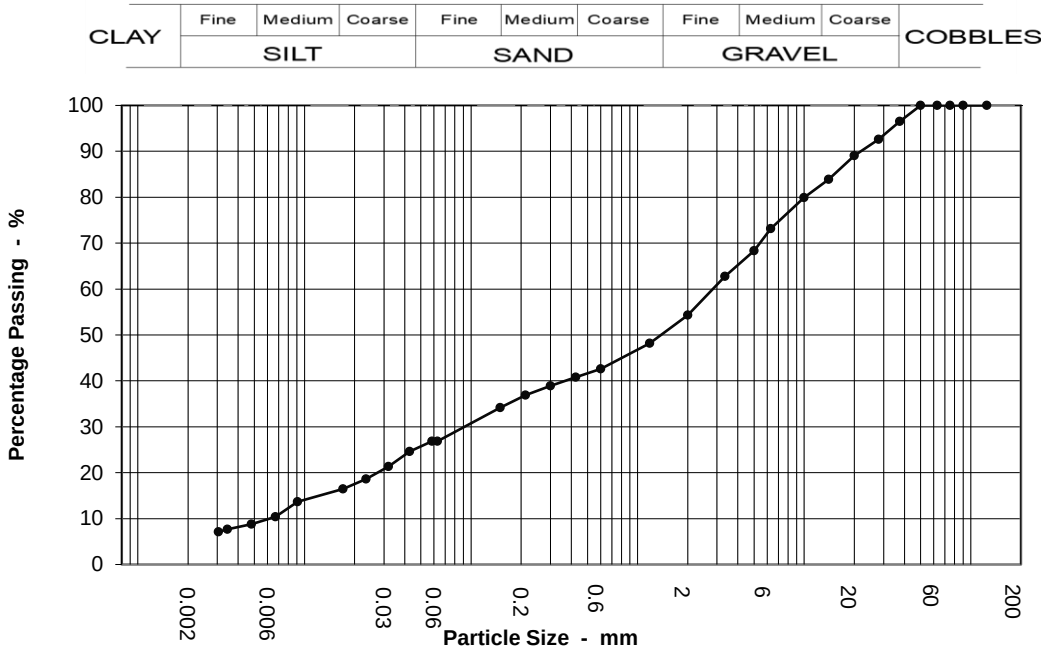
Sample Proportions	
Cobbles	3.0
Gravel	60.0
Sand	14.0
Silt	18.0
Clay	4.0

Grading Analysis	
D100	75.00
D60	14.70
D10	0.01
Uniformity Coefficient	1600.00

PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

		Job Ref	**P18081**
		Borehole / Pit No	TP17
Location	**Castletreasure Development**	Sample No	2
		Depth	1.50 m
Soil Description	Very clayey very sandy GRAVEL	Sample type	B



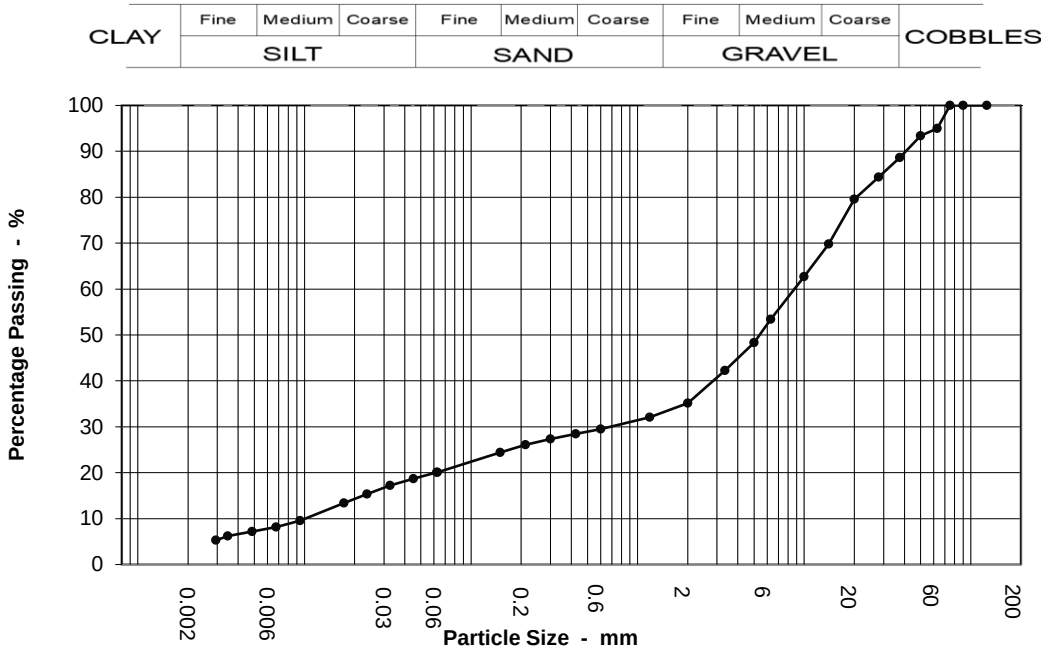
Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.058	27
90	100	0.043	25
75	100	0.032	21
63	100	0.023	19
50	100	0.017	16
37.5	97	0.009	14
28	93	0.007	10
20	89	0.005	9
14	84	0.003	8
10	80	0.003	7
6.3	73	0.001	4
5	68		
3.35	63		
2	54		
1.18	48		
0.6	43		
0.425	41		
0.3	39		
0.212	37		
0.15	34		
0.063	27		

Test Method	
BS 1377 : Part 2 : 1990	
Sieving	Clause 9.5
Sedimentation	Clause 9.5

Sample Proportions	
Cobbles	0.0
Gravel	46.0
Sand	27.0
Silt	21.0
Clay	6.0

Grading Analysis	
D100	50.00
D60	2.83
D10	0.01
Uniformity Coefficient	460.00

pgl priority geotechnical	**PARTICLE SIZE DISTRIBUTION** **BS 1377 : Part 2 : 1990 : Clause 9**	**Job Ref**	**P18081**
		Borehole / Pit No	TP17
Location	**Castletreasure Development**	Sample No	4
		Depth	3.50 m
Soil Description	Sandy very clayey GRAVEL	Sample type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.062	20
90	100	0.045	19
75	100	0.033	17
63	95	0.024	15
50	93	0.017	13
37.5	89	0.009	10
28	84	0.007	8
20	80	0.005	7
14	70	0.003	6
10	63	0.003	5
6.3	53	0.002	4
5	48		
3.35	42		
2	35		
1.18	32		
0.6	29		
0.425	28		
0.3	27		
0.212	26		
0.15	24		
0.063	20		

Test Method	
BS 1377 : Part 2 : 1990	
Sieving	Clause 9.5
Sedimentation	Clause 9.5

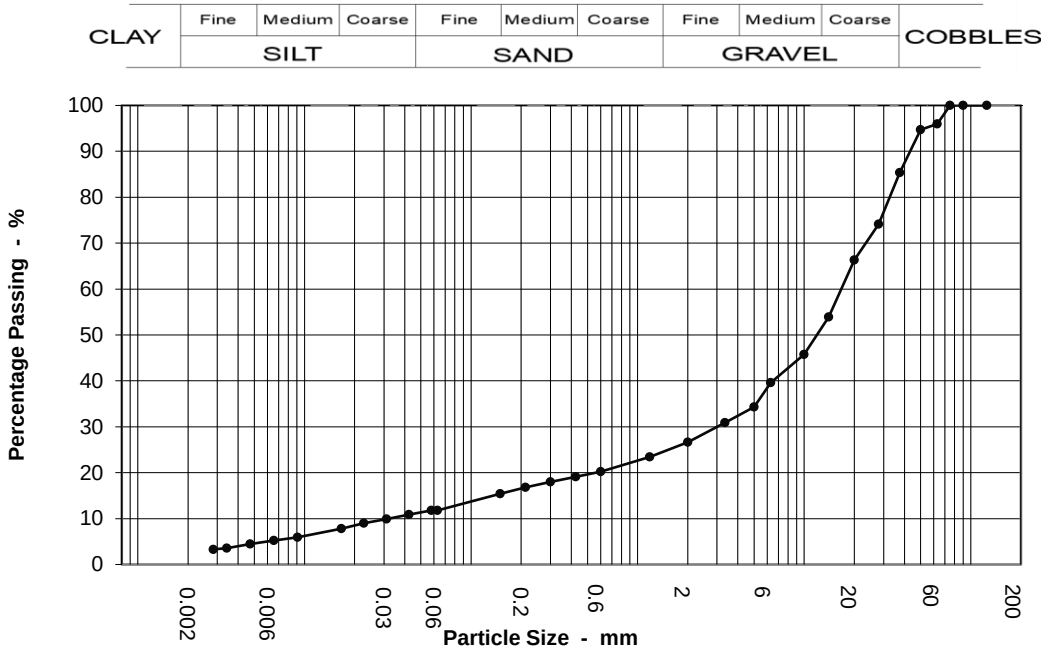
Sample Proportions	
Cobbles	5.0
Gravel	60.0
Sand	15.0
Silt	16.0
Clay	4.0

Grading Analysis	
D100	75.00
D60	8.74
D10	0.01
Uniformity Coefficient	870.00

PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

		Job Ref	**P18081**
		Borehole / Pit No	TP18
Location	**Castletreasure Development**	Sample No	2
		Depth	1.50 m
Soil Description	Clayey sandy GRAVEL with low cobble content	Sample type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.058	12
90	100	0.042	11
75	100	0.031	10
63	96	0.023	9
50	95	0.017	8
37.5	85	0.009	6
28	74	0.007	5
20	66	0.005	4
14	54	0.003	4
10	46	0.003	3
6.3	40	0.002	3
5	34		
3.35	31		
2	27		
1.18	23		
0.6	20		
0.425	19		
0.3	18		
0.212	17		
0.15	15		
0.063	12		

Test Method	
BS 1377 : Part 2 : 1990	
Sieving	Clause 9.5
Sedimentation	Clause 9.5

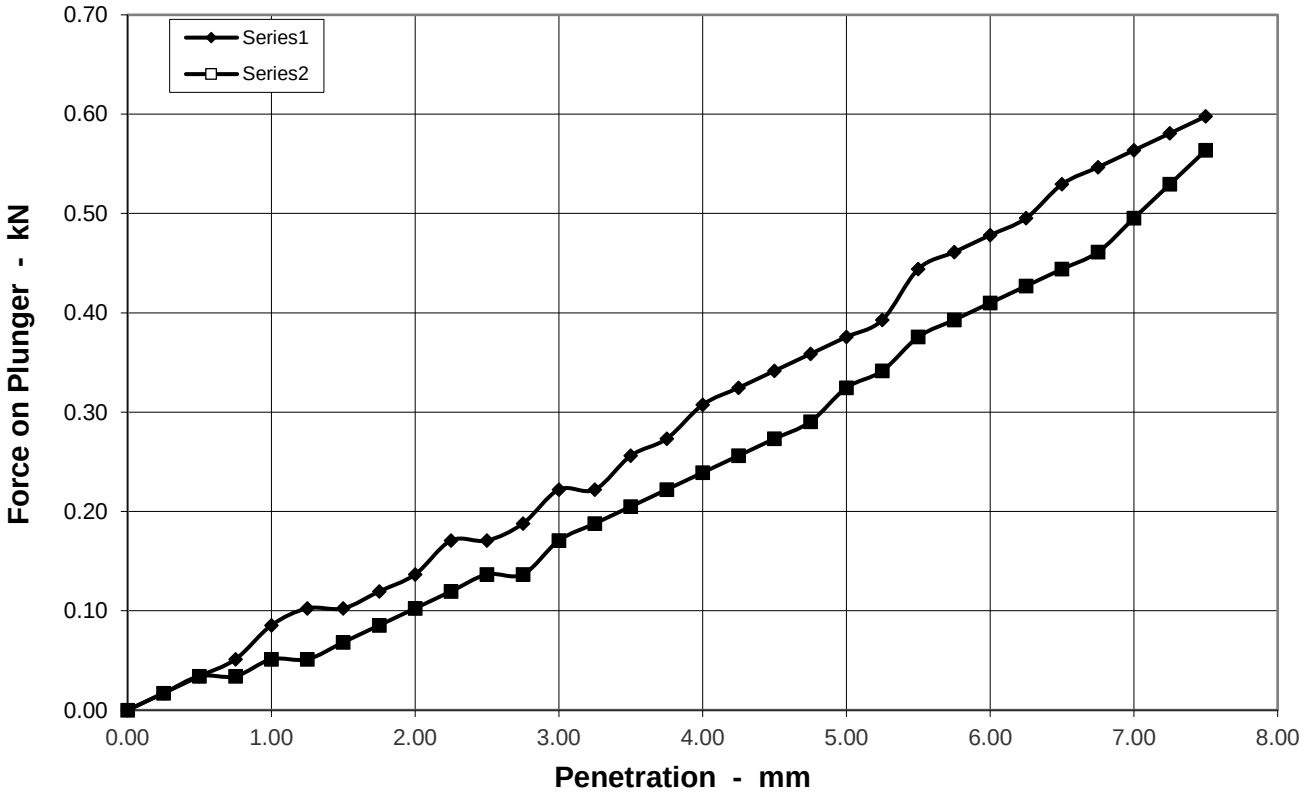
Sample Proportions	
Cobbles	4.0
Gravel	69.0
Sand	15.0
Silt	9.0
Clay	3.0

Grading Analysis	
D100	75.00
D60	16.70
D10	0.03
Uniformity Coefficient	520.00

CALIFORNIA BEARING RATIO

BS 13377 : Part 4 : 1990 Clause 7.4

		Job Ref	**P18081**
		Borehole / Pit No	TP07
Site Name	**Castletreasure Development**	Sample No	2
		Depth	1.5 m
Soil Description	Slightly clayey sandy GRAVEL with medium cobble content		



Preparation	Method of Compation		
	Hammer type		2.5kg Rammer
	Soaking Period	days	
	Amount of Swell	mm	

Sample Conditions		
Natural Moisture Content	%	14.0
Moisture Content - TOP	%	14.4
Moisture Content - BASE	%	12.9
Bulk Density	Mg/m³	2.23
Dry Density	Mg/m³	1.95

Test Conditions		
Sample Retained on 20 mm sieve	%	0.0
Seating Load - TOP	N	
Seating Load - BASE	N	
Surcharge	kg	8

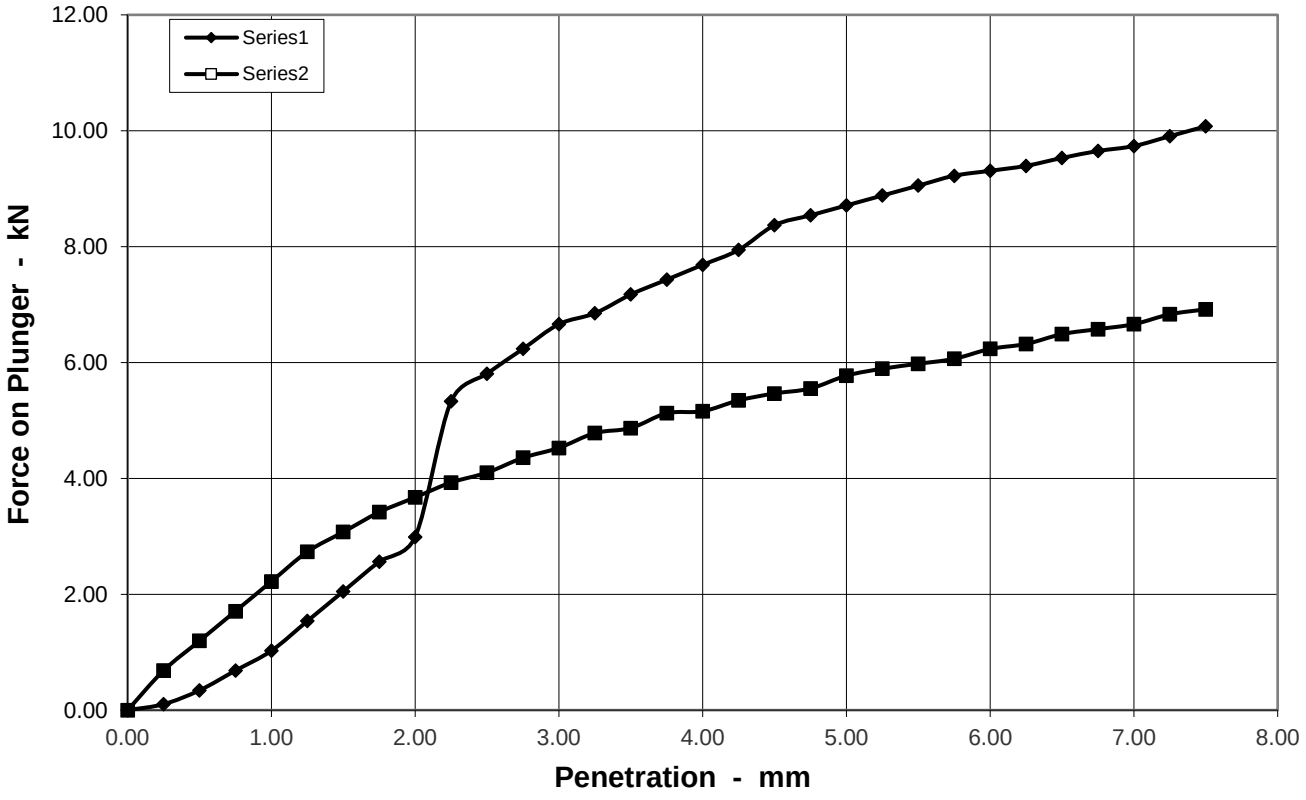
Penetration mm	CBR Values %	
	TOP	BASE
2.5	1.3	1.0
5	1.9	1.6
Accepted CBR	**1.9**	**1.6**

			Remarks	

CALIFORNIA BEARING RATIO

BS 13377 : Part 4 : 1990 Clause 7.4

		Job Ref	**P18081**
		Borehole / Pit No	TP07
Site Name	**Castletreasure Development**	Sample No	2
		Depth	1.5 m
Soil Description	Slightly clayey sandy GRAVEL with medium cobble content		



Preparation	Method of Compation		
	Hammer type		2.5kg Rammer
	Soaking Period	days	
	Amount of Swell	mm	

Sample Conditions		
Natural Moisture Content	%	14.0
Moisture Content - TOP	%	7.6
Moisture Content - BASE	%	7.8
Bulk Density	Mg/m³	2.25
Dry Density	Mg/m³	1.96

Test Conditions		
Sample Retained on 20 mm sieve	%	0.0
Seating Load - TOP	N	
Seating Load - BASE	N	
Surcharge	kg	8

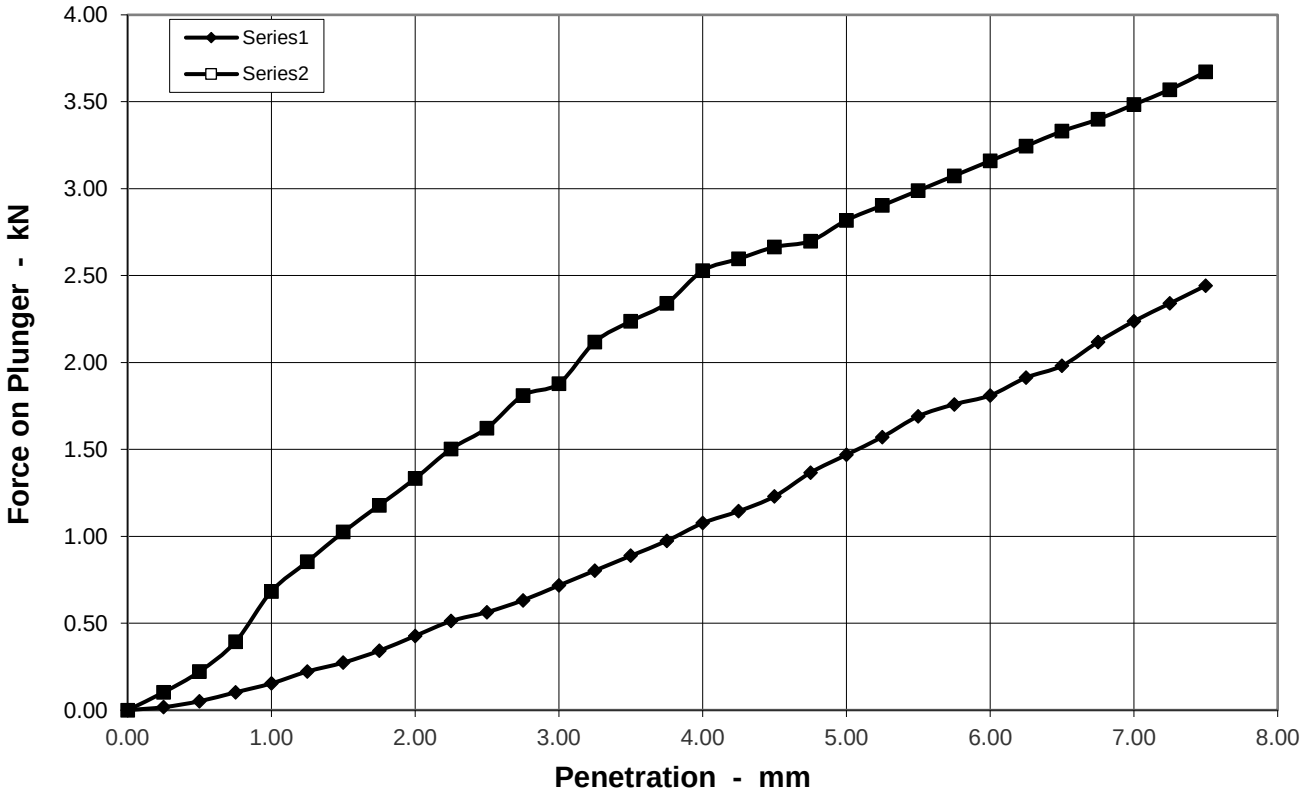
Penetration mm	CBR Values %	
	TOP	BASE
2.5	44.0	31.1
5	43.6	28.9
Accepted CBR	**44.0**	**31.1**

			Remarks	

CALIFORNIA BEARING RATIO

BS 13377 : Part 4 : 1990 Clause 7.4

		Job Ref	**P18081**
		Borehole / Pit No	TP07
Site Name	**Castletreasure Development**	Sample No	2
		Depth	1.5 m
Soil Description	Slightly clayey sandy GRAVEL with medium cobble content		



Preparation	Method of Compation		
	Hammer type		2.5kg Rammer
	Soaking Period	days	
	Amount of Swell	mm	

Sample Conditions		
Natural Moisture Content	%	14.0
Moisture Content - TOP	%	11.2
Moisture Content - BASE	%	9.5
Bulk Density	Mg/m³	2.28
Dry Density	Mg/m³	2.00

Test Conditions		
Sample Retained on 20 mm sieve	%	40.7
Seating Load - TOP	N	
Seating Load - BASE	N	
Surcharge	kg	8

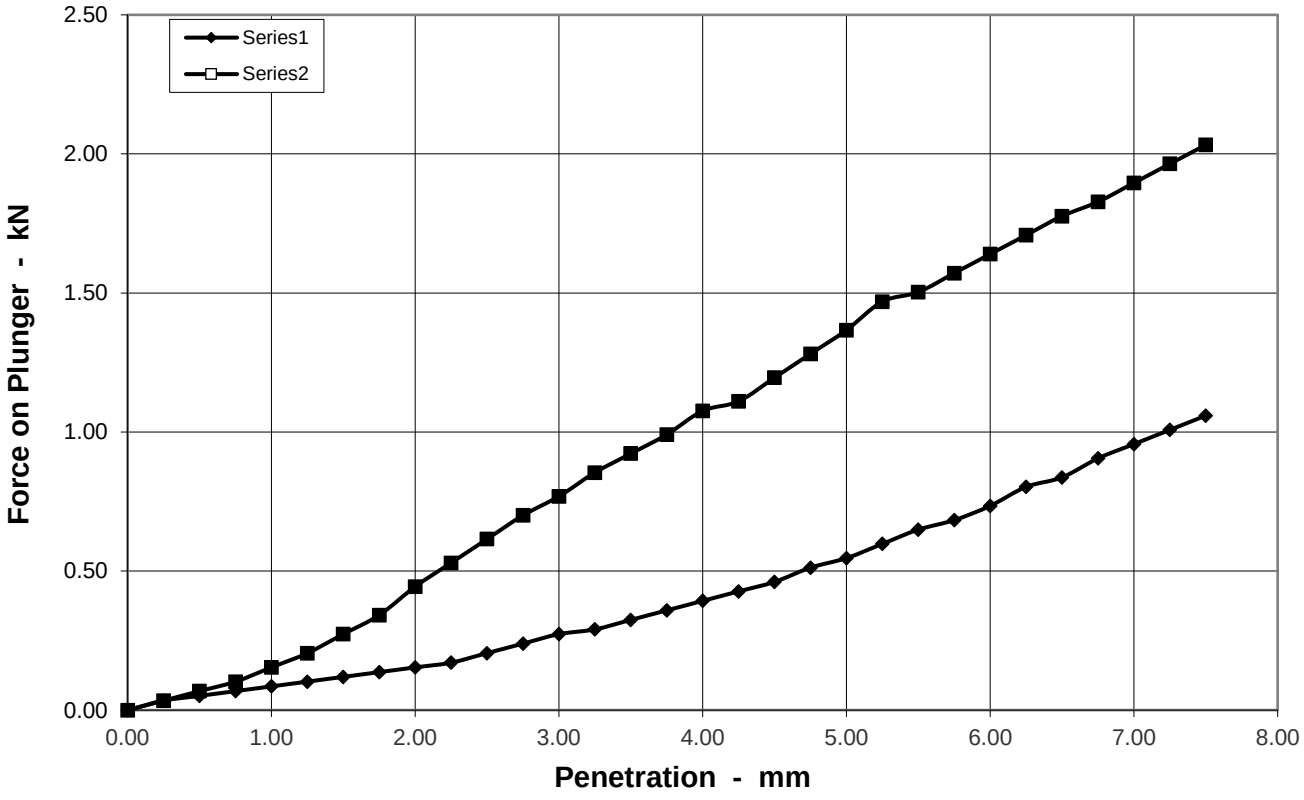
Penetration mm	CBR Values %	
	TOP	BASE
2.5	4.3	12.3
5	7.3	14.1
Accepted CBR	**7.3**	**14.1**

			Remarks	

CALIFORNIA BEARING RATIO

BS 13377 : Part 4 : 1990 Clause 7.4

		Job Ref	**P18081**
		Borehole / Pit No	TP07
Site Name	**Castletreasure Development**	Sample No	2
		Depth	1.5 m
Soil Description	Slightly clayey sandy GRAVEL with medium cobble content		



Preparation	Method of Compation		
	Hammer type		2.5kg Rammer
	Soaking Period	days	
	Amount of Swell	mm	

Sample Conditions		
Natural Moisture Content	%	14.0
Moisture Content - TOP	%	11.1
Moisture Content - BASE	%	10.6
Bulk Density	Mg/m³	2.26
Dry Density	Mg/m³	1.97

Test Conditions		
Sample Retained on 20 mm sieve	%	40.7
Seating Load - TOP	N	
Seating Load - BASE	N	
Surcharge	kg	8

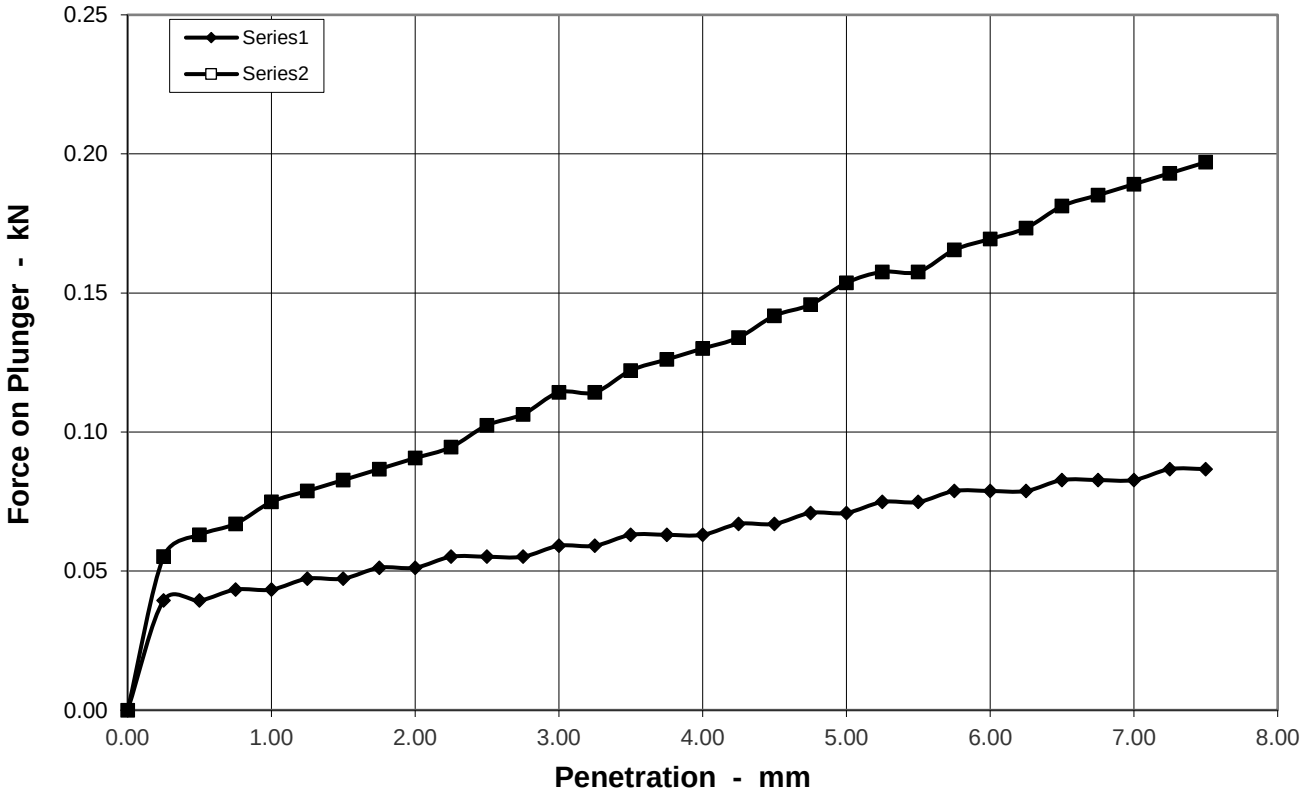
Penetration mm	CBR Values %	
	TOP	BASE
2.5	1.6	4.7
5	2.7	6.8
Accepted CBR	**2.7**	**6.8**

			Remarks	

CALIFORNIA BEARING RATIO

BS 13377 : Part 4 : 1990 Clause 7.4

		Job Ref	**P18081**
		Borehole / Pit No	TP07
Site Name	**Castletreasure Development**	Sample No	2
		Depth	1.5 m
Soil Description	Slightly clayey sandy GRAVEL with medium cobble content		



Preparation	Method of Compation		
	Hammer type		2.5kg Rammer
	Soaking Period	days	
	Amount of Swell	mm	

Sample Conditions		
Natural Moisture Content	%	14.0
Moisture Content - TOP	%	19.1
Moisture Content - BASE	%	14.7
Bulk Density	Mg/m³	2.23
Dry Density	Mg/m³	1.95

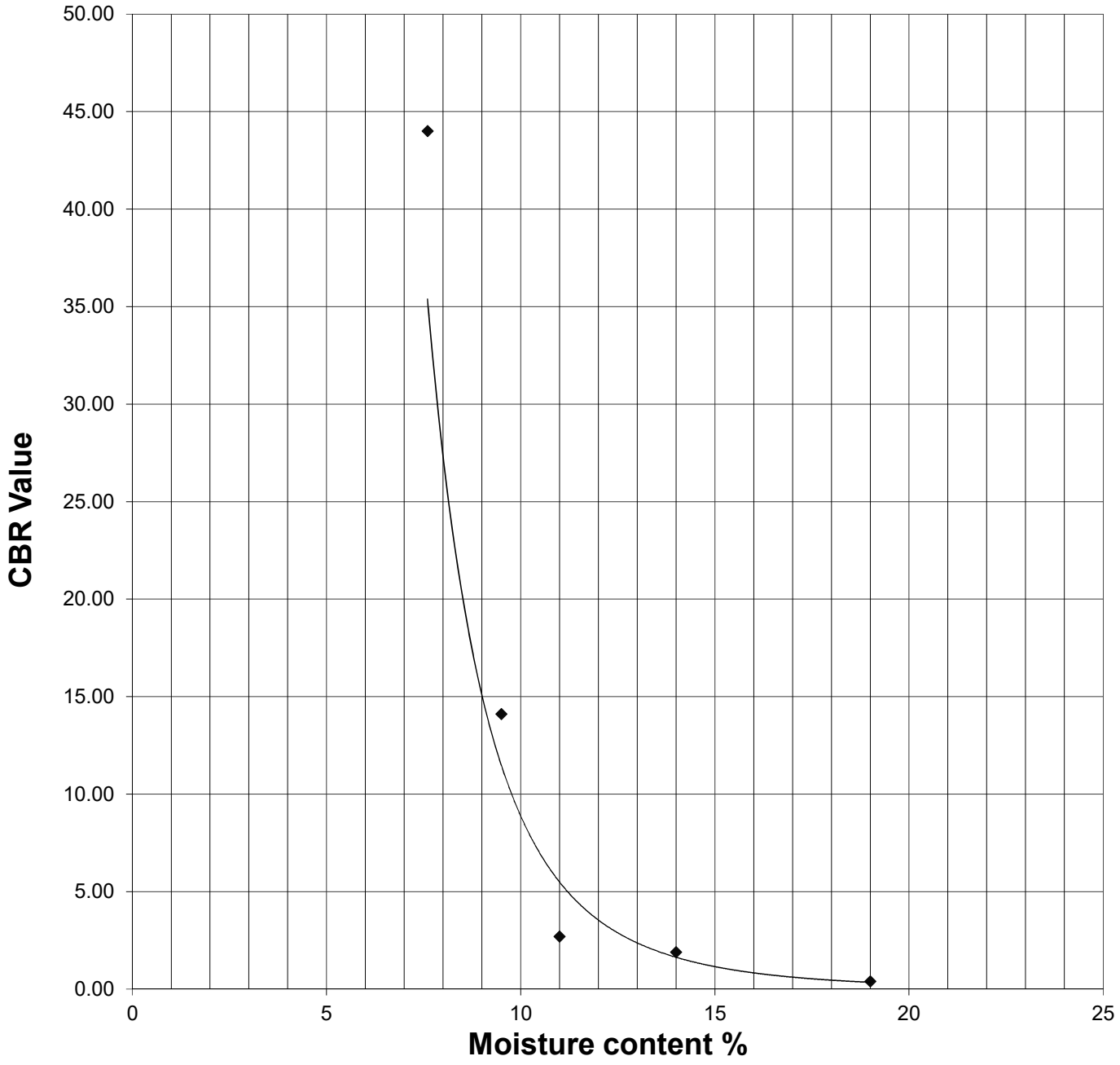
Test Conditions		
Sample Retained on 20 mm sieve	%	40.7
Seating Load - TOP	N	
Seating Load - BASE	N	
Surcharge	kg	8

Penetration mm	CBR Values %	
	TOP	BASE
2.5	0.4	0.8
5	0.4	0.8
Accepted CBR	**0.4**	**0.8**

			Remarks	

pgl priority geotechnical	**CALIFORNIA BEARING RATIO RELATIONSHIP** **BS 1377 : Part 4 : 1990 Clause 5**	**Job Ref**	**P18081**
		Borehole / Pit No	TP07
Location	Castletreasure Developments		
		Sample No	2
Soil Description	Slightly clayey sandy GRAVEL with medium cobble content	Sample Type	B
		Depth	1.50 m

CBR/ Moisture Content Relationship

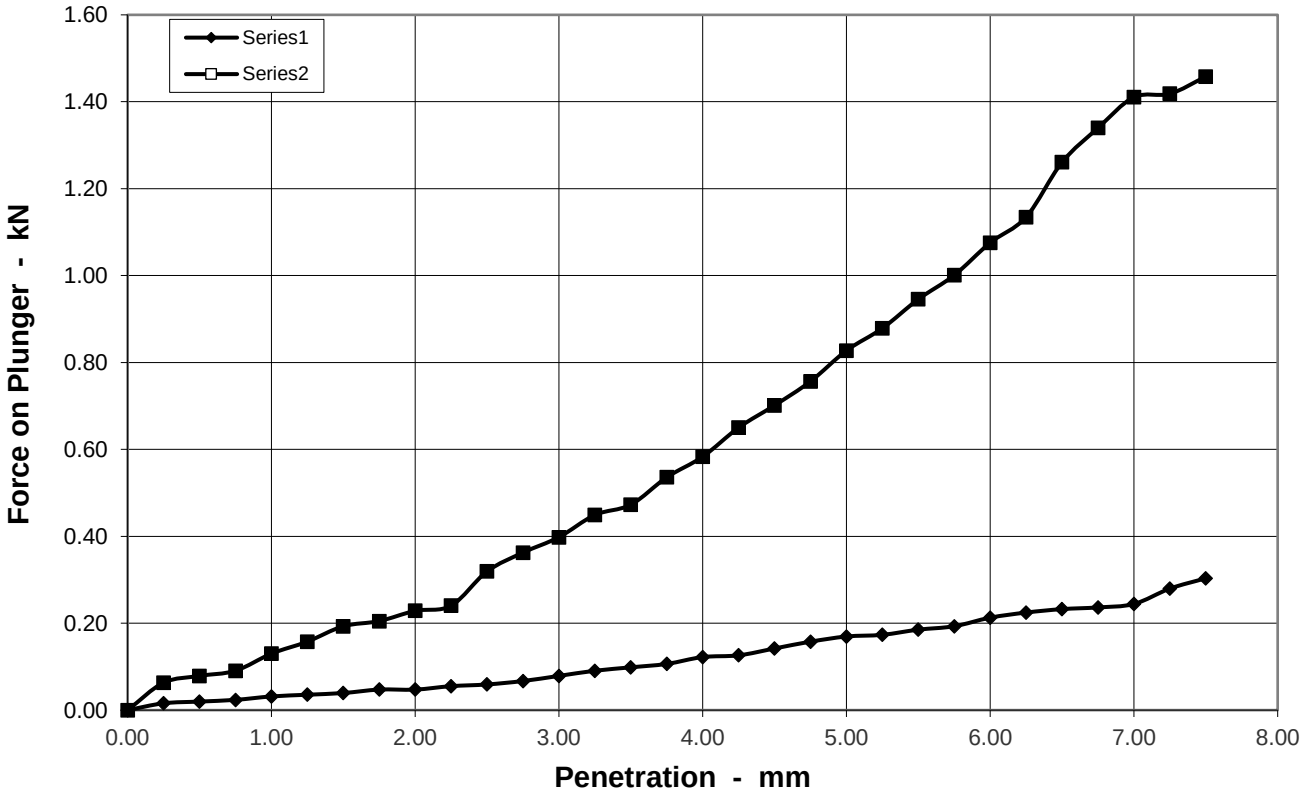


Operator	Checked	Approved

CALIFORNIA BEARING RATIO

BS 13377 : Part 4 : 1990 Clause 7.4

		Job Ref	**P18081**
		Borehole / Pit No	TP08
Site Name	**Castletreasure Development**	Sample No	2
		Depth	1.5 m
Soil Description	Silty very sandy GRAVEL		



Preparation	Method of Compation	
	Hammer type	2.5kg Rammer
	Soaking Period days	
	Amount of Swell mm	

Sample Conditions		
Natural Moisture Content	%	13.0
Moisture Content - TOP	%	13.3
Moisture Content - BASE	%	11.6
Bulk Density	Mg/m³	2.25
Dry Density	Mg/m³	1.98

Test Conditions		
Sample Retained on 20 mm sieve	%	24.8
Seating Load - TOP	N	
Seating Load - BASE	N	
Surcharge	kg	8

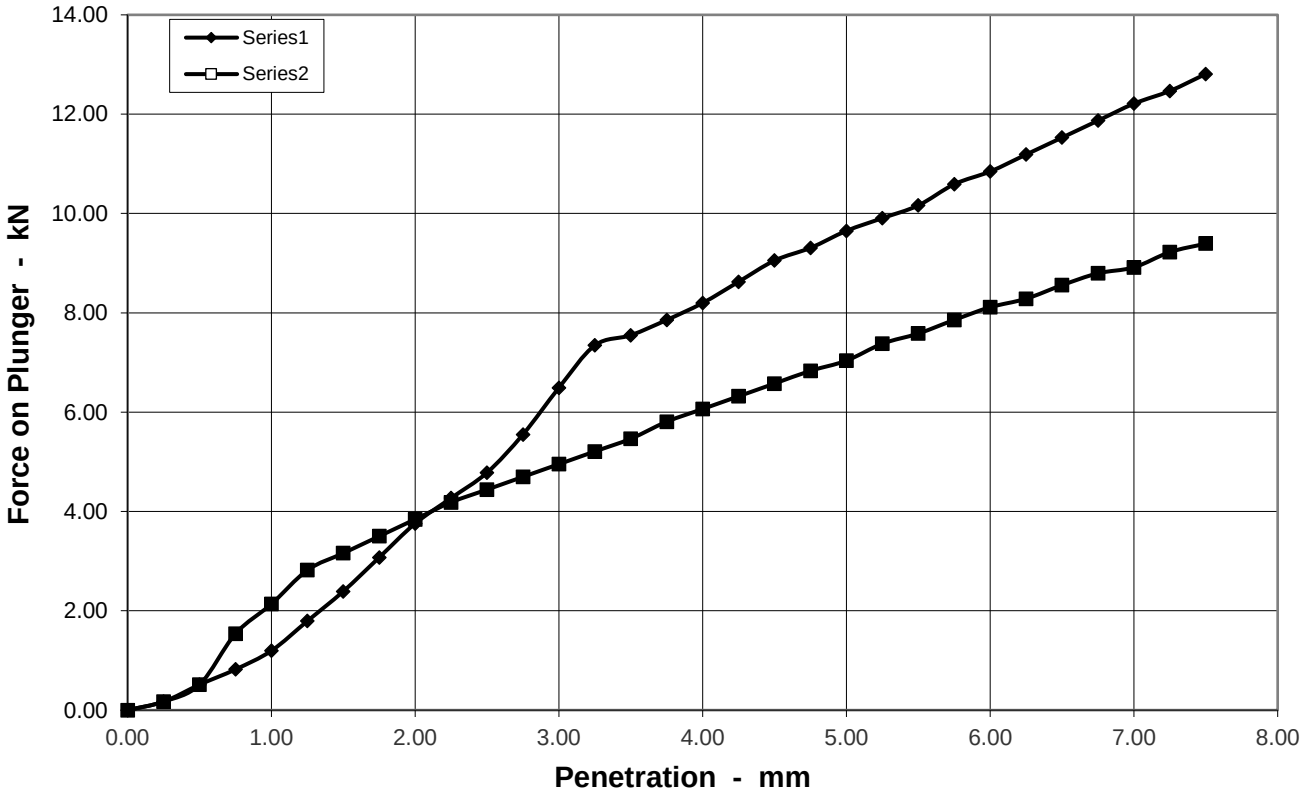
Penetration mm	CBR Values %	
	TOP	BASE
2.5	0.4	2.4
5	0.8	4.1
Accepted CBR	**0.8**	**4.1**

			Remarks	

CALIFORNIA BEARING RATIO

BS 13377 : Part 4 : 1990 Clause 7.4

		Job Ref	**P18081**
		Borehole / Pit No	TP08
Site Name	**Castletreasure Development**	Sample No	2
		Depth	1.5 m
Soil Description	Silty very sandy GRAVEL		



Preparation	Method of Compation	
	Hammer type	2.5kg Rammer
	Soaking Period days	
	Amount of Swell mm	

Sample Conditions		
Natural Moisture Content	%	13.0
Moisture Content - TOP	%	7.3
Moisture Content - BASE	%	7.4
Bulk Density	Mg/m³	2.29
Dry Density	Mg/m³	2.03

Test Conditions		
Sample Retained on 20 mm sieve	%	24.8
Seating Load - TOP	N	
Seating Load - BASE	N	
Surcharge	kg	8

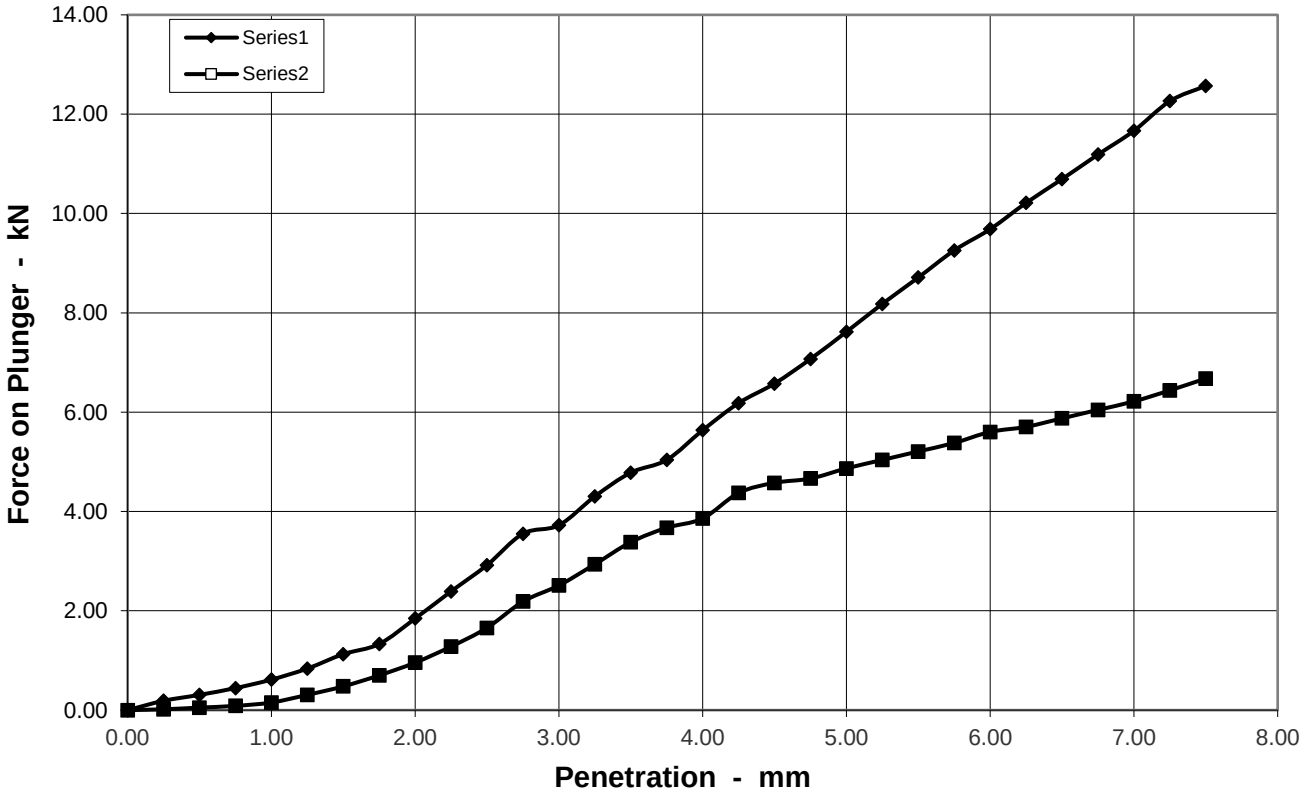
Penetration mm	CBR Values %	
	TOP	BASE
2.5	36.2	33.6
5	48.3	35.2
Accepted CBR	**48.3**	**35.2**

			Remarks	

CALIFORNIA BEARING RATIO

BS 13377 : Part 4 : 1990 Clause 7.4

		Job Ref	**P18081**
		Borehole / Pit No	TP08
Site Name	**Castletreasure Development**	Sample No	2
		Depth	1.5 m
Soil Description	Silty very sandy GRAVEL		



Preparation	Method of Compation	
	Hammer type	2.5kg Rammer
	Soaking Period days	
	Amount of Swell mm	

Sample Conditions		
Natural Moisture Content	%	13.0
Moisture Content - TOP	%	8.3
Moisture Content - BASE	%	9.1
Bulk Density	Mg/m³	2.07
Dry Density	Mg/m³	1.83

Test Conditions		
Sample Retained on 20 mm sieve	%	24.8
Seating Load - TOP	N	
Seating Load - BASE	N	
Surcharge	kg	8

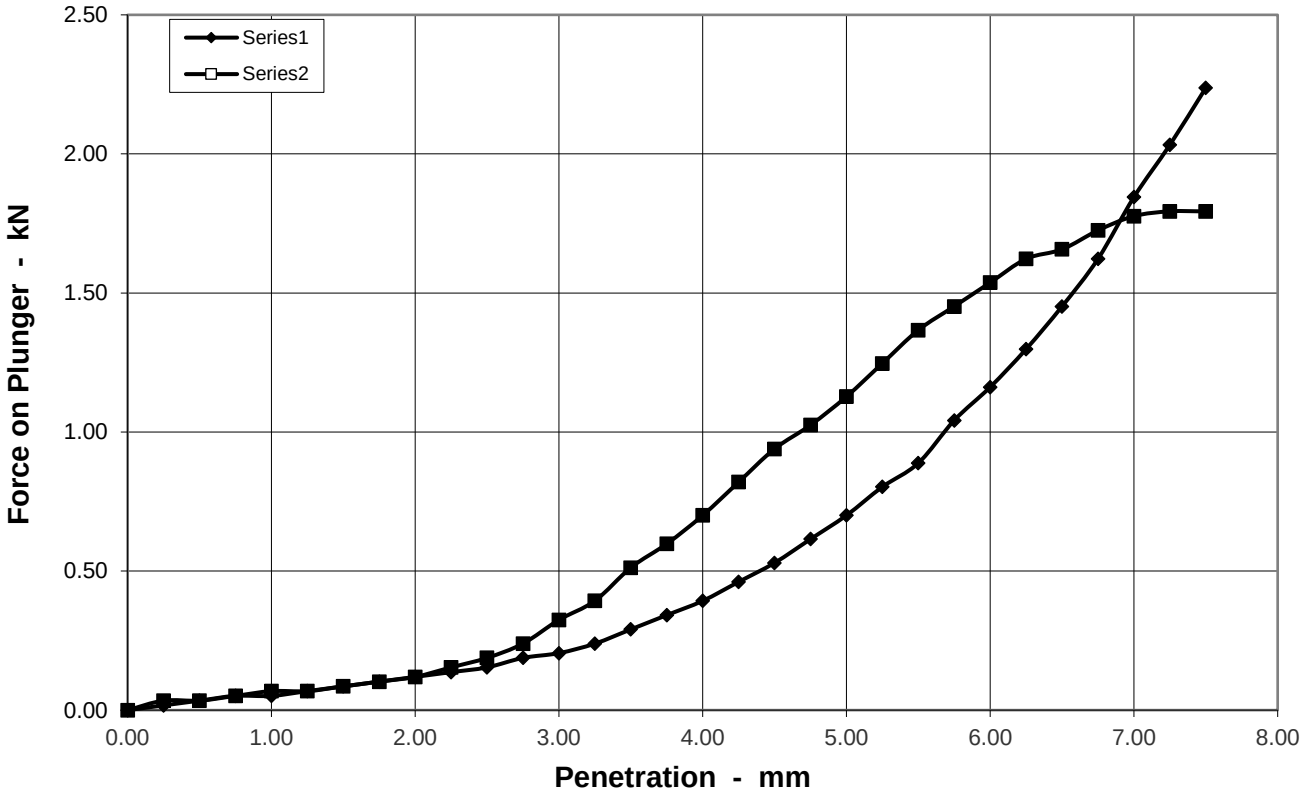
Penetration mm	CBR Values %	
	TOP	BASE
2.5	22.1	12.6
5	38.1	24.3
Accepted CBR	**38.1**	**24.3**

Remarks

CALIFORNIA BEARING RATIO

BS 13377 : Part 4 : 1990 Clause 7.4

		Job Ref	**P18081**
		Borehole / Pit No	TP08
Site Name	**Castletreasure Development**	Sample No	2
		Depth	1.5 m
Soil Description	Silty very sandy GRAVEL		



Preparation	Method of Compation		
	Hammer type		2.5kg Rammer
	Soaking Period	days	
	Amount of Swell	mm	

Sample Conditions		
Natural Moisture Content	%	13.0
Moisture Content - TOP	%	10.9
Moisture Content - BASE	%	9.4
Bulk Density	Mg/m³	1.97
Dry Density	Mg/m³	1.74

Test Conditions		
Sample Retained on 20 mm sieve	%	24.8
Seating Load - TOP	N	
Seating Load - BASE	N	
Surcharge	kg	8

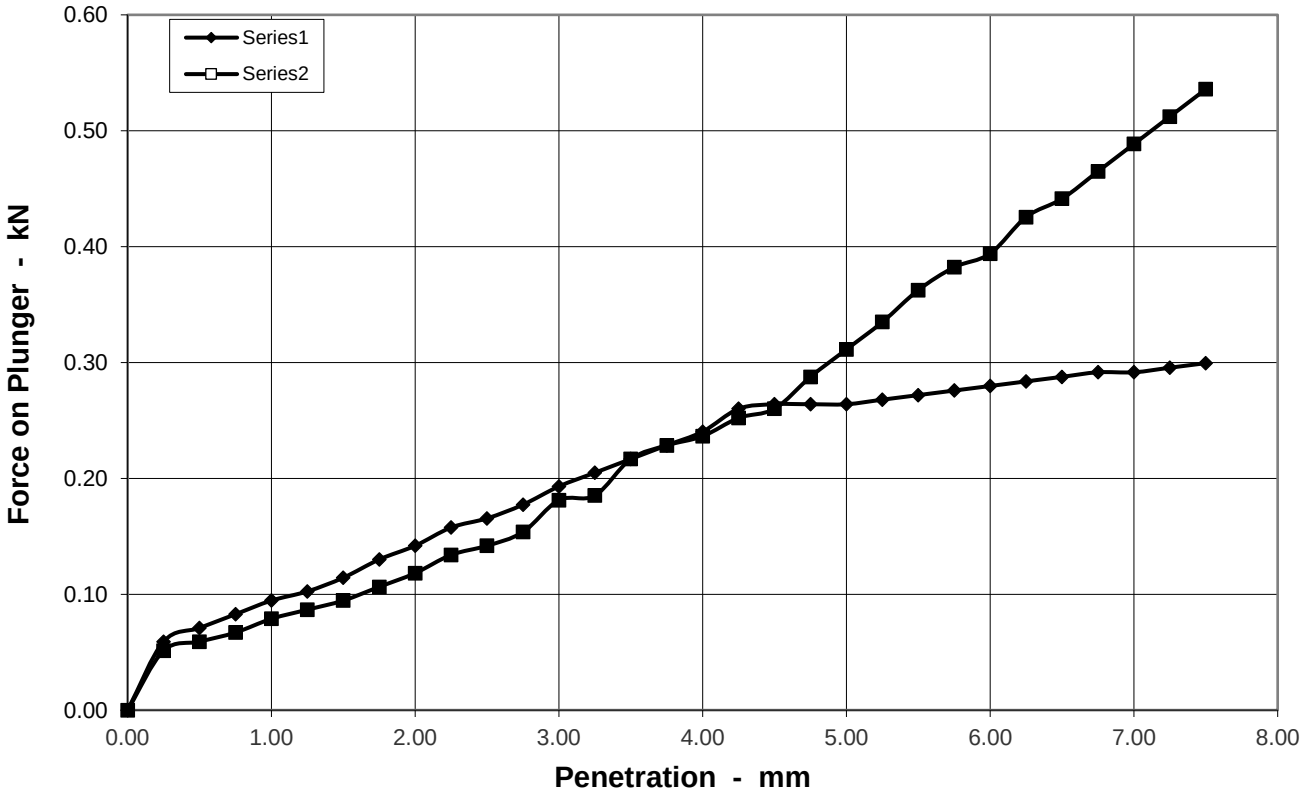
Penetration mm	CBR Values %	
	TOP	BASE
2.5	1.2	1.4
5	3.5	5.6
Accepted CBR	**3.5**	**5.6**

			Remarks	

CALIFORNIA BEARING RATIO

BS 13377 : Part 4 : 1990 Clause 7.4

		Job Ref	**P18081**
		Borehole / Pit No	TP08
Site Name	**Castletreasure Development**	Sample No	2
		Depth	1.5 m
Soil Description	Silty very sandy GRAVEL		



Preparation	Method of Compation		
	Hammer type		2.5kg Rammer
	Soaking Period	days	
	Amount of Swell	mm	

Sample Conditions		
Natural Moisture Content	%	13.0
Moisture Content - TOP	%	14.8
Moisture Content - BASE	%	13.1
Bulk Density	Mg/m³	1.89
Dry Density	Mg/m³	1.66

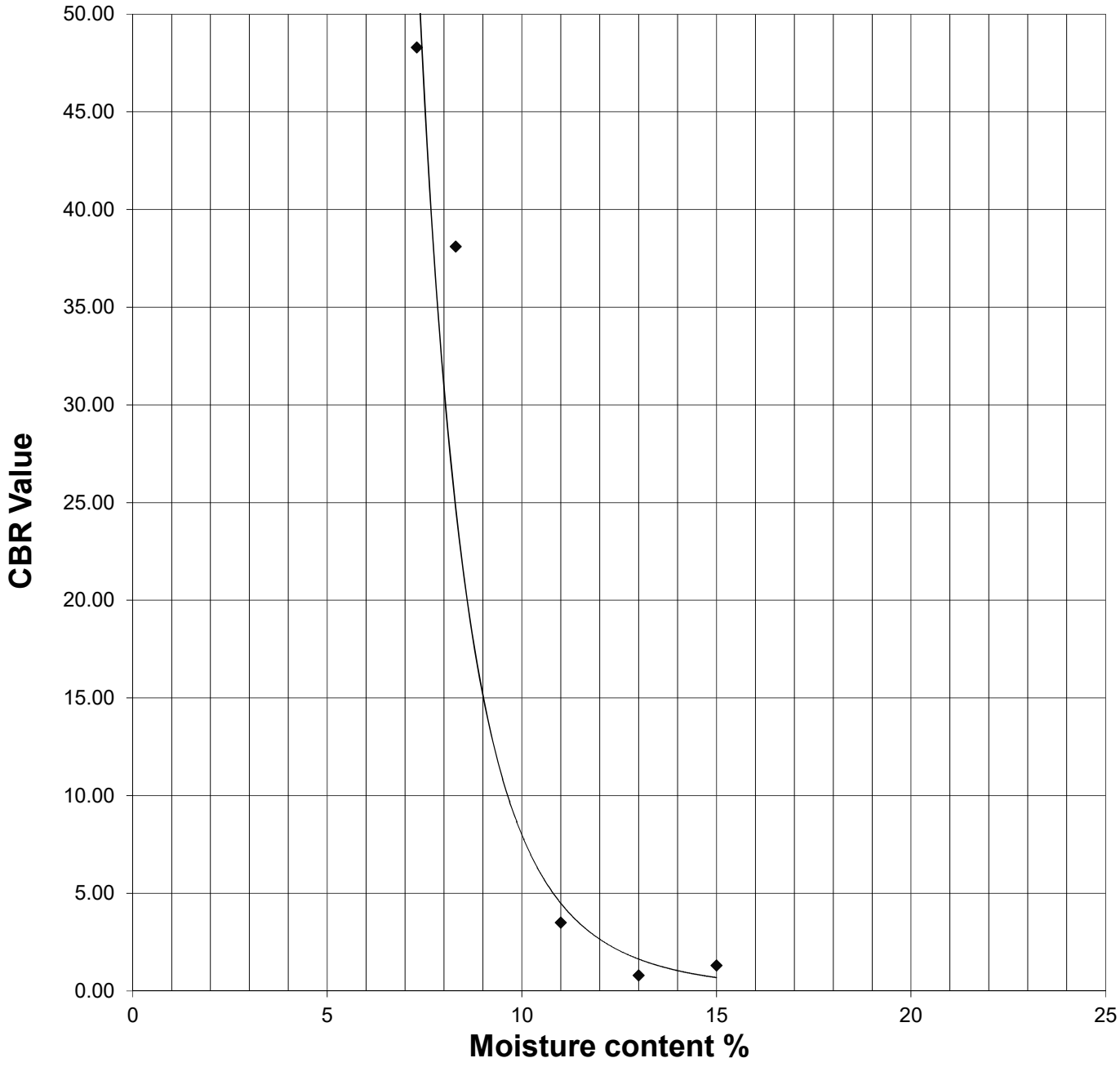
Test Conditions		
Sample Retained on 20 mm sieve	%	24.8
Seating Load - TOP	N	
Seating Load - BASE	N	
Surcharge	kg	8

Penetration mm	CBR Values %	
	TOP	BASE
2.5	1.3	1.1
5	1.3	1.6
Accepted CBR	**1.3**	**1.6**

			Remarks

pgl priority geotechnical	**CALIFORNIA BEARING RATIO RELATIONSHIP** **BS 1377 : Part 4 : 1990 Clause 5**	**Job Ref**	**P18081**
		Borehole / Pit No	TP08
Location	Castletreasure Developments	Sample No	2
Soil Description	Silty very sandy GRAVEL	Sample Type	B
		Depth	1.50 m

CBR/ Moisture Content Relationship

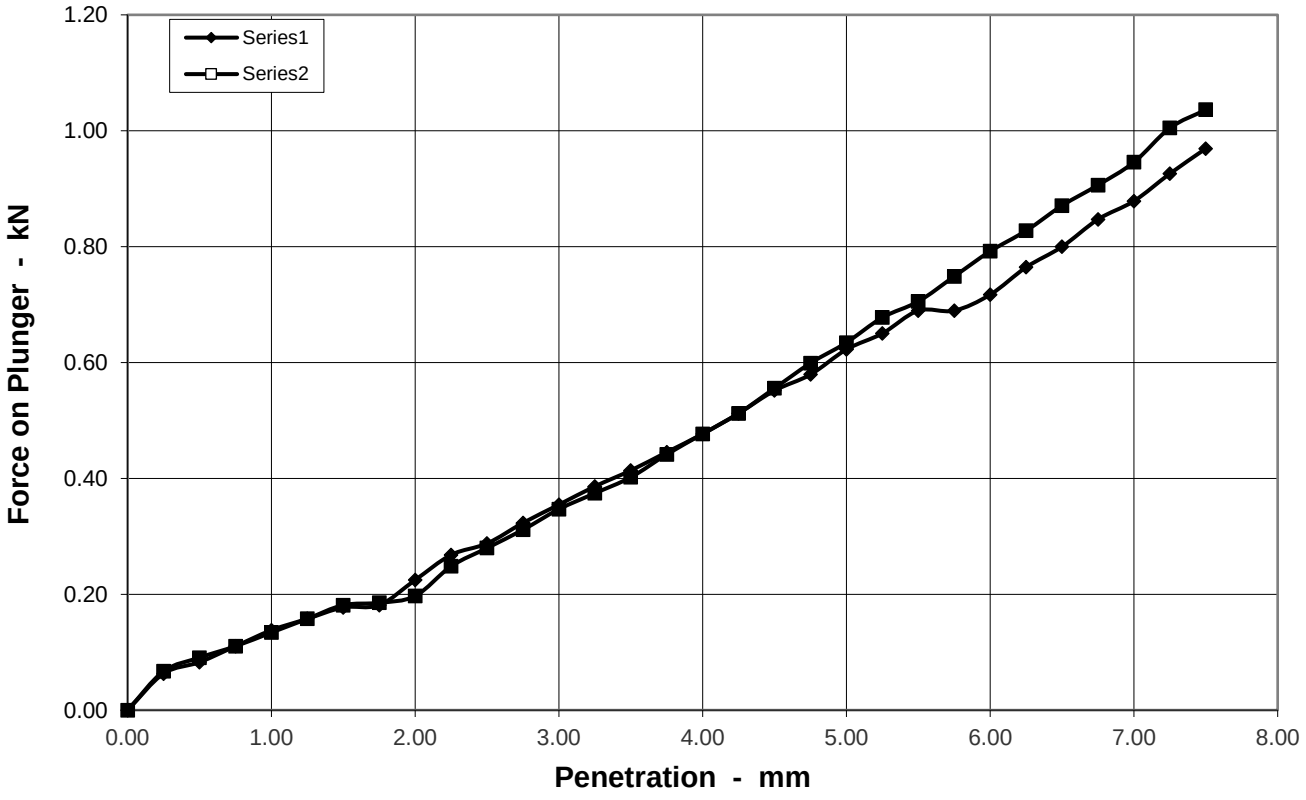


Operator	Checked	Approved

CALIFORNIA BEARING RATIO

BS 13377 : Part 4 : 1990 Clause 7.4

		Job Ref	**P18081**
		Borehole / Pit No	TP18
Site Name	**Castletreasure Development**	Sample No	1
		Depth	0.5 m
Soil Description	Slightly clayey sandy GRAVEL		



Preparation	Method of Compation		
	Hammer type		2.5kg Rammer
	Soaking Period	days	
	Amount of Swell	mm	

Sample Conditions		
Natural Moisture Content	%	12.0
Moisture Content - TOP	%	11.9
Moisture Content - BASE	%	10.6
Bulk Density	Mg/m³	2.31
Dry Density	Mg/m³	2.07

Test Conditions		
Sample Retained on 20 mm sieve	%	14.7
Seating Load - TOP	N	
Seating Load - BASE	N	
Surcharge	kg	8

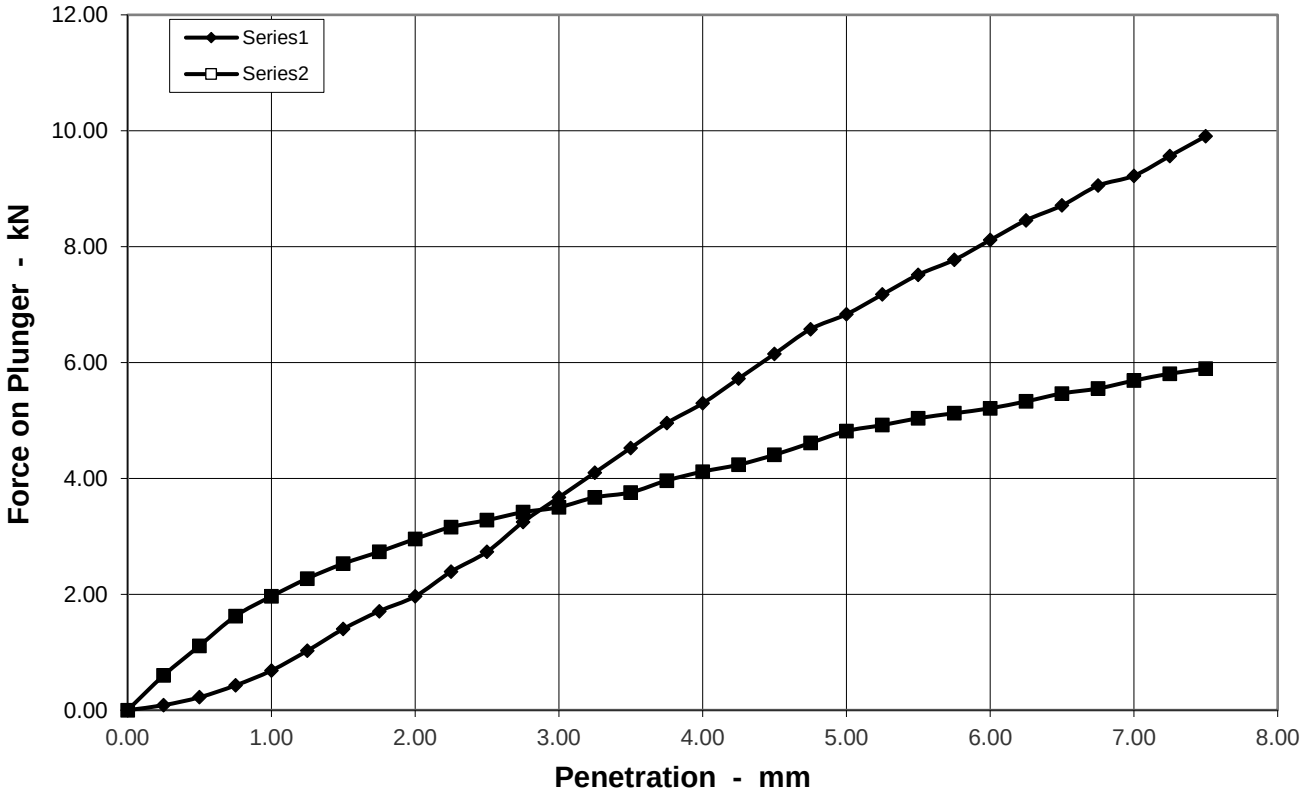
Penetration mm	CBR Values %	
	TOP	BASE
2.5	2.2	2.1
5	3.1	3.2
Accepted CBR	**3.1**	**3.2**

			Remarks

CALIFORNIA BEARING RATIO

BS 13377 : Part 4 : 1990 Clause 7.4

		Job Ref	**P18081**
		Borehole / Pit No	TP18
Site Name	**Castletreasure Development**	Sample No	1
		Depth	0.5 m
Soil Description	Slightly clayey sandy GRAVEL		



Preparation	Method of Compation		
	Hammer type		2.5kg Rammer
	Soaking Period	days	
	Amount of Swell	mm	

Sample Conditions		
Natural Moisture Content	%	12.0
Moisture Content - TOP	%	9.1
Moisture Content - BASE	%	8.4
Bulk Density	Mg/m³	2.25
Dry Density	Mg/m³	2.01

Test Conditions		
Sample Retained on 20 mm sieve	%	14.7
Seating Load - TOP	N	
Seating Load - BASE	N	
Surcharge	kg	8

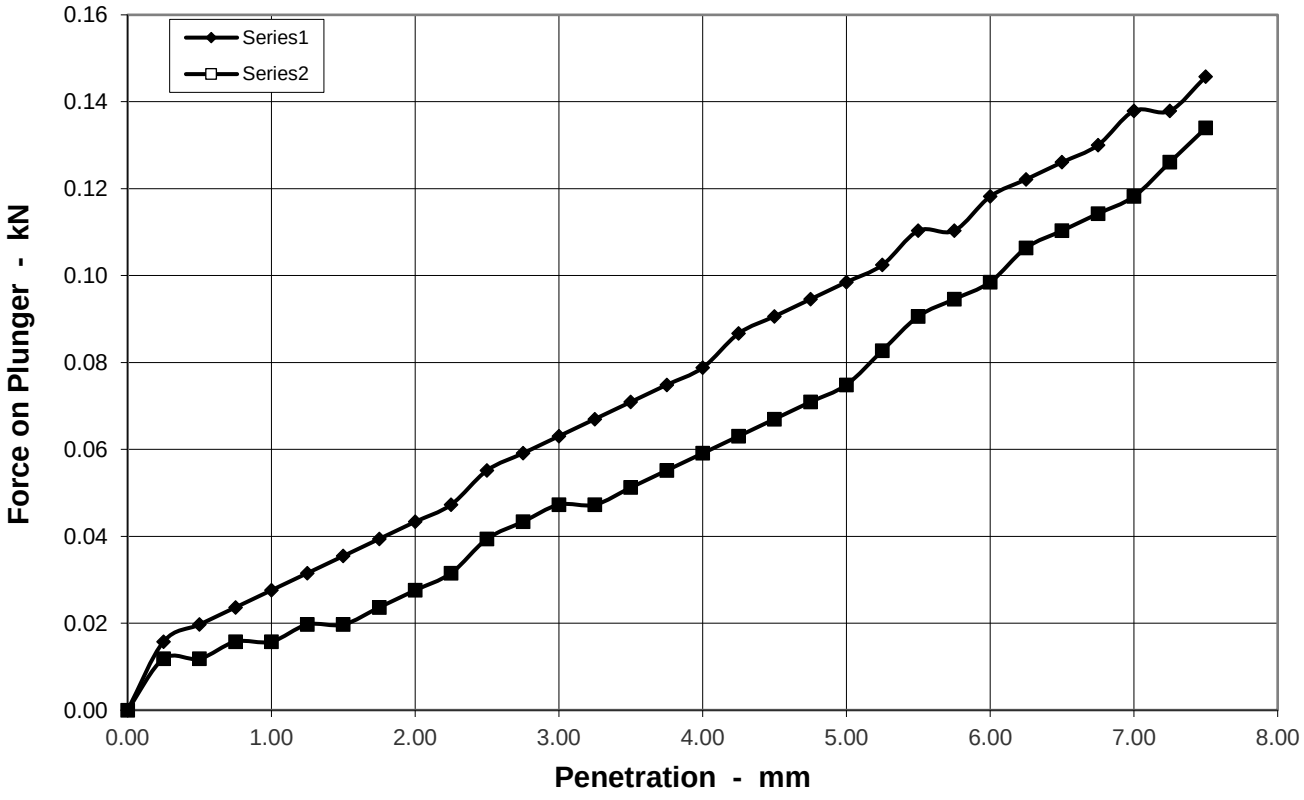
Penetration mm	CBR Values %	
	TOP	BASE
2.5	20.7	24.8
5	34.2	24.1
Accepted CBR	**34.2**	**24.8**

Remarks

CALIFORNIA BEARING RATIO

BS 13377 : Part 4 : 1990 Clause 7.4

		Job Ref	**P18081**
		Borehole / Pit No	TP18
Site Name	**Castletreasure Development**	Sample No	1
		Depth	0.5 m
Soil Description	Slightly clayey sandy GRAVEL		



Preparation	Method of Compation	
	Hammer type	2.5kg Rammer
	Soaking Period days	
	Amount of Swell mm	

Sample Conditions		
Natural Moisture Content	%	12.0
Moisture Content - TOP	%	12.4
Moisture Content - BASE	%	10.5
Bulk Density	Mg/m³	2.30
Dry Density	Mg/m³	2.06

Test Conditions		
Sample Retained on 20 mm sieve	%	14.7
Seating Load - TOP	N	
Seating Load - BASE	N	
Surcharge	kg	8

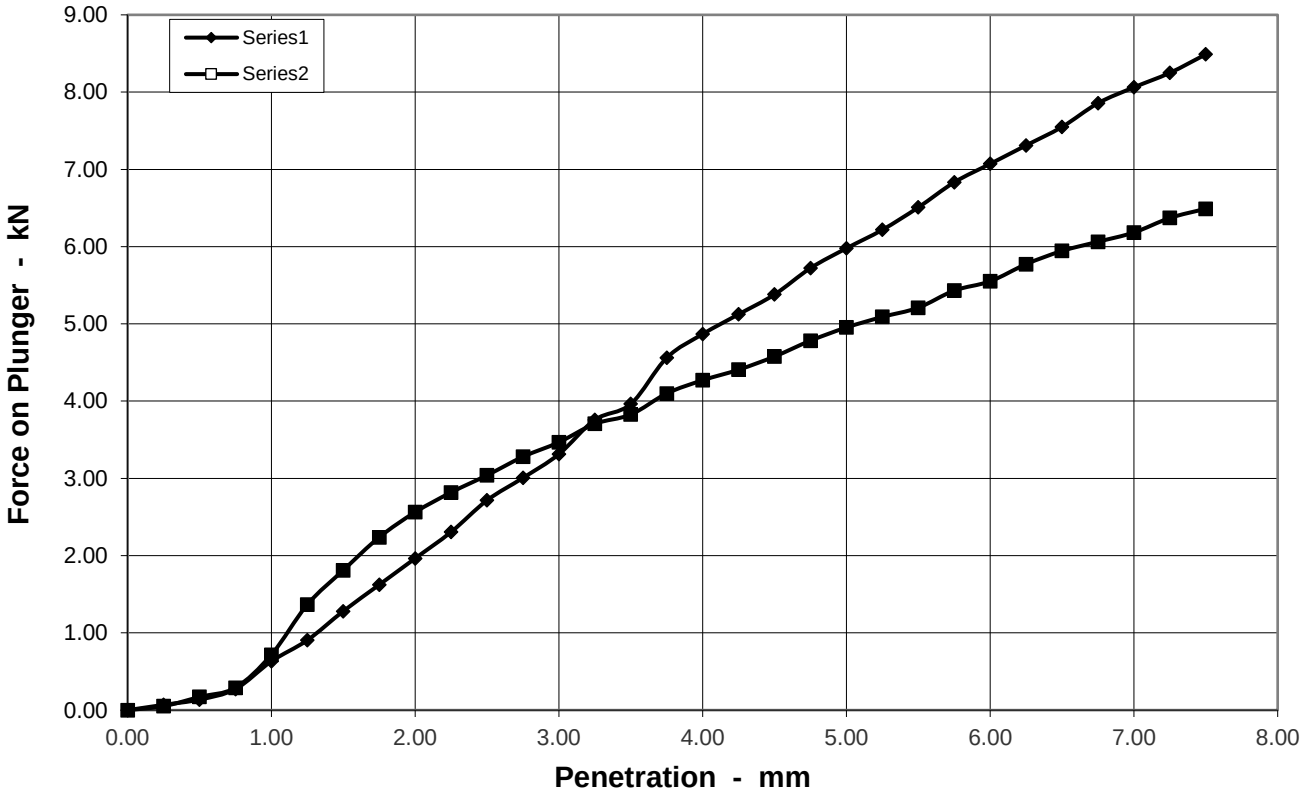
Penetration mm	CBR Values %	
	TOP	BASE
2.5	0.4	0.3
5	0.5	0.4
Accepted CBR	**0.5**	**0.4**

			Remarks

CALIFORNIA BEARING RATIO

BS 13377 : Part 4 : 1990 Clause 7.4

		Job Ref	**P18081**
		Borehole / Pit No	TP18
Site Name	**Castletreasure Development**	Sample No	1
		Depth	0.5 m
Soil Description	Slightly clayey sandy GRAVEL		



Preparation	Method of Compation		
	Hammer type		2.5kg Rammer
	Soaking Period	days	
	Amount of Swell	mm	

Sample Conditions		
Natural Moisture Content	%	12.0
Moisture Content - TOP	%	8.3
Moisture Content - BASE	%	8.9
Bulk Density	Mg/m³	2.18
Dry Density	Mg/m³	1.94

Test Conditions		
Sample Retained on 20 mm sieve	%	14.7
Seating Load - TOP	N	
Seating Load - BASE	N	
Surcharge	kg	8

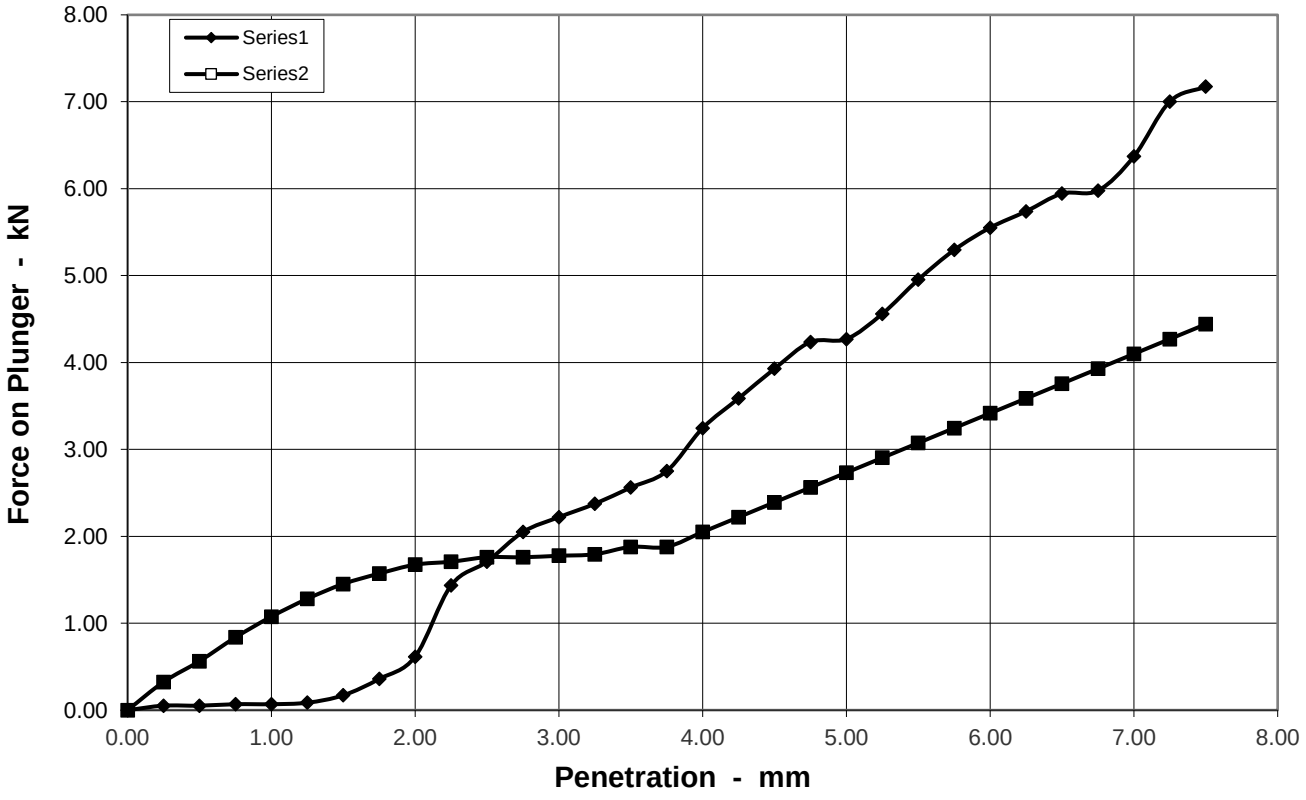
Penetration mm	CBR Values %	
	TOP	BASE
2.5	20.6	23.0
5	29.9	24.8
Accepted CBR	**29.9**	**24.8**

Remarks

CALIFORNIA BEARING RATIO

BS 13377 : Part 4 : 1990 Clause 7.4

		Job Ref	**P18081**
		Borehole / Pit No	TP18
Site Name	**Castletreasure Development**	Sample No	1
		Depth	0.5 m
Soil Description	Slightly clayey sandy GRAVEL		



Preparation	Method of Compation		
	Hammer type		2.5kg Rammer
	Soaking Period	days	
	Amount of Swell	mm	

Sample Conditions		
Natural Moisture Content	%	12.0
Moisture Content - TOP	%	10.2
Moisture Content - BASE	%	9.8
Bulk Density	Mg/m³	2.02
Dry Density	Mg/m³	1.80

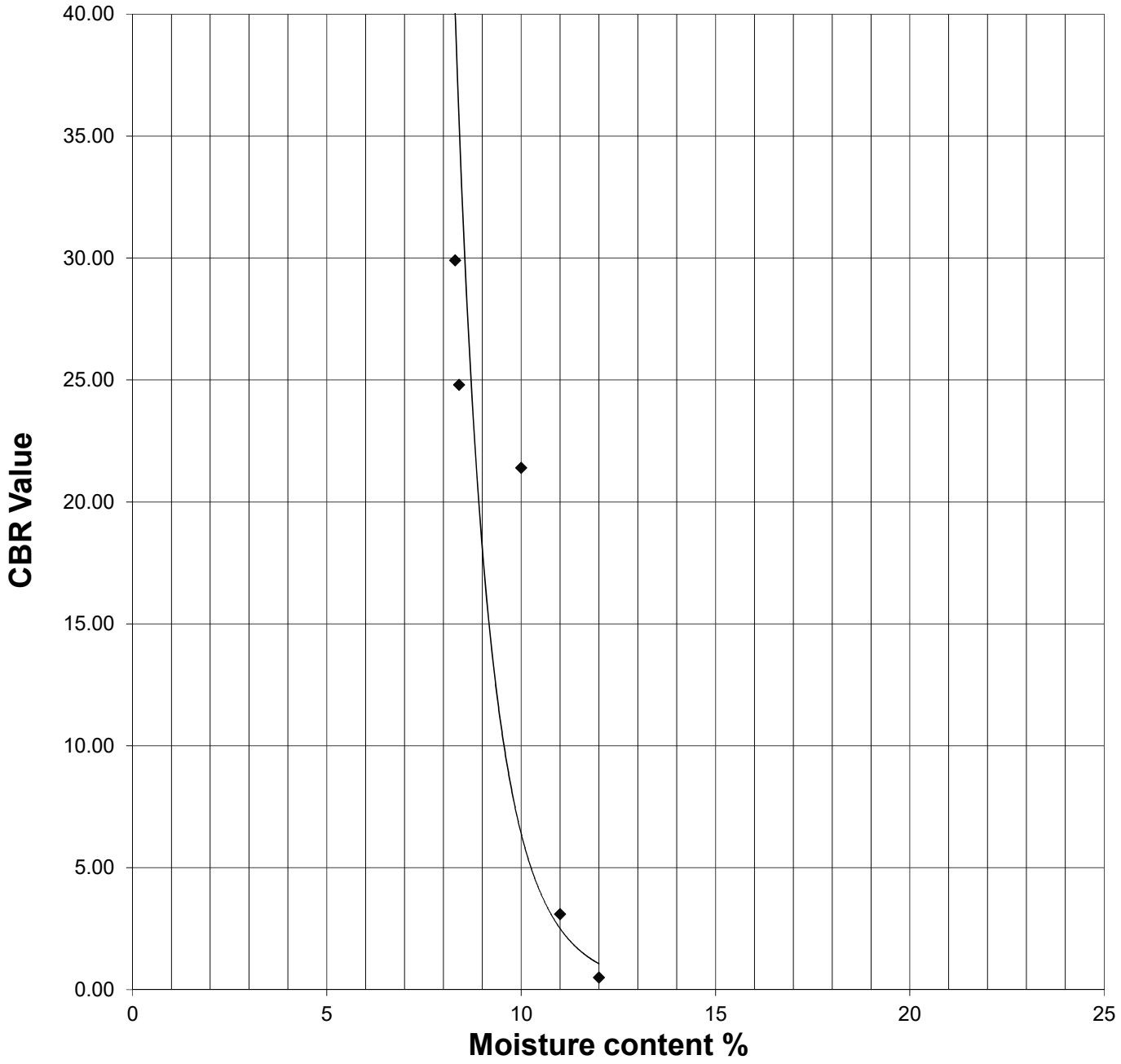
Test Conditions		
Sample Retained on 20 mm sieve	%	14.7
Seating Load - TOP	N	
Seating Load - BASE	N	
Surcharge	kg	8

Penetration mm	CBR Values %	
	TOP	BASE
2.5	12.9	13.3
5	21.4	13.7
Accepted CBR	**21.4**	**13.7**

			Remarks	

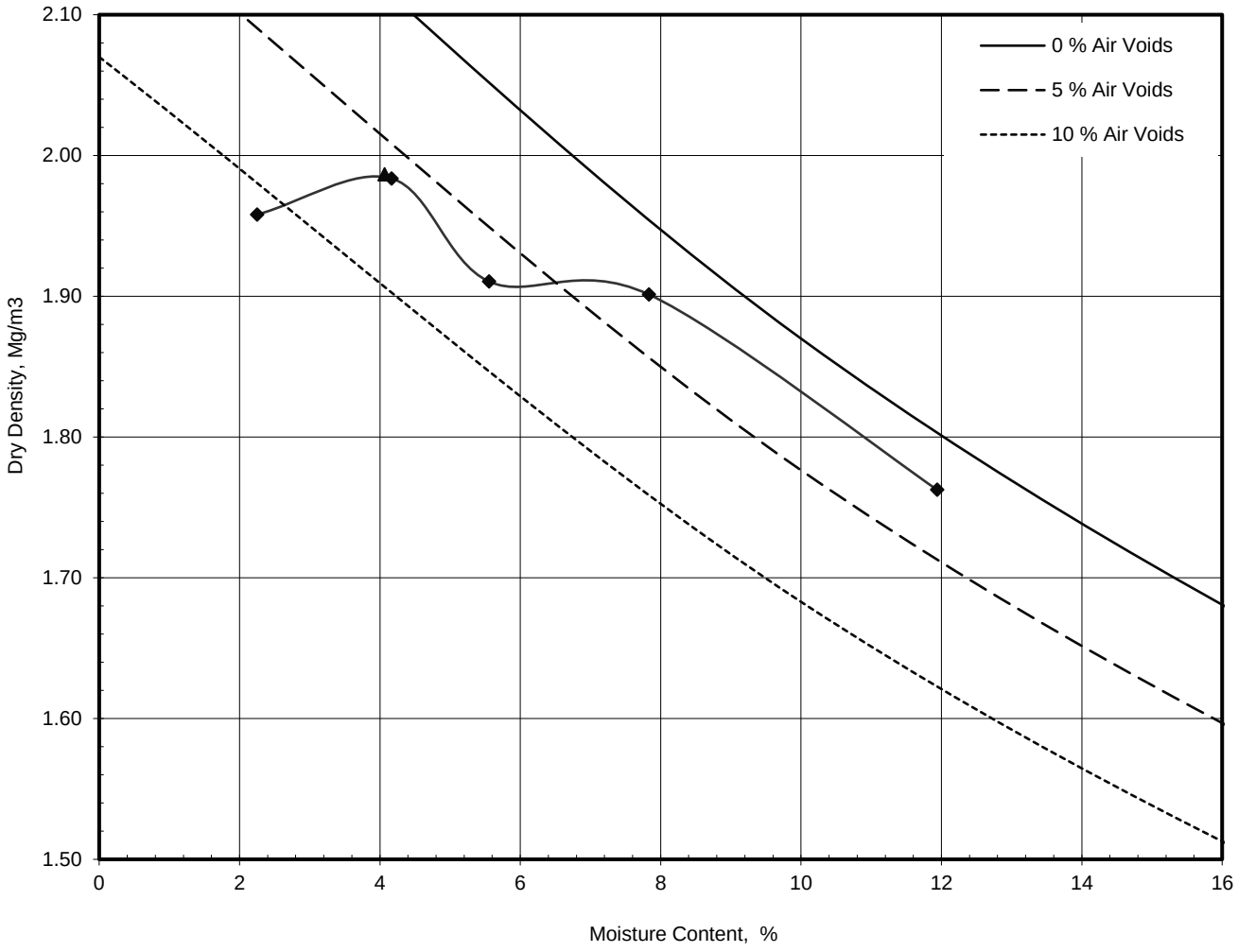
pgl priority geotechnical	**CALIFORNIA BEARING RATIO RELATIONSHIP** **BS 1377 : Part 4 : 1990 Clause 5**	**Job Ref**	**P18081**
		Borehole / Pit No	TP18
Location	Castletreasure Developments	Sample No	1
Soil Description	Slightly clayey sandy GRAVEL	Sample Type	B
		Depth	0.50 m

CBR/ Moisture Content Relationship



Operator	Checked	Approved

	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	P18081
				Borehole / Pit No	TP01
Location	**Castletreasure Development**			Sample No	2
Soil Description	Slightly sitly sandy GRAVEL with high cobble content			Depth	1.50 m
				Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	PGL12018062139
				Compaction Test Reference/No.	



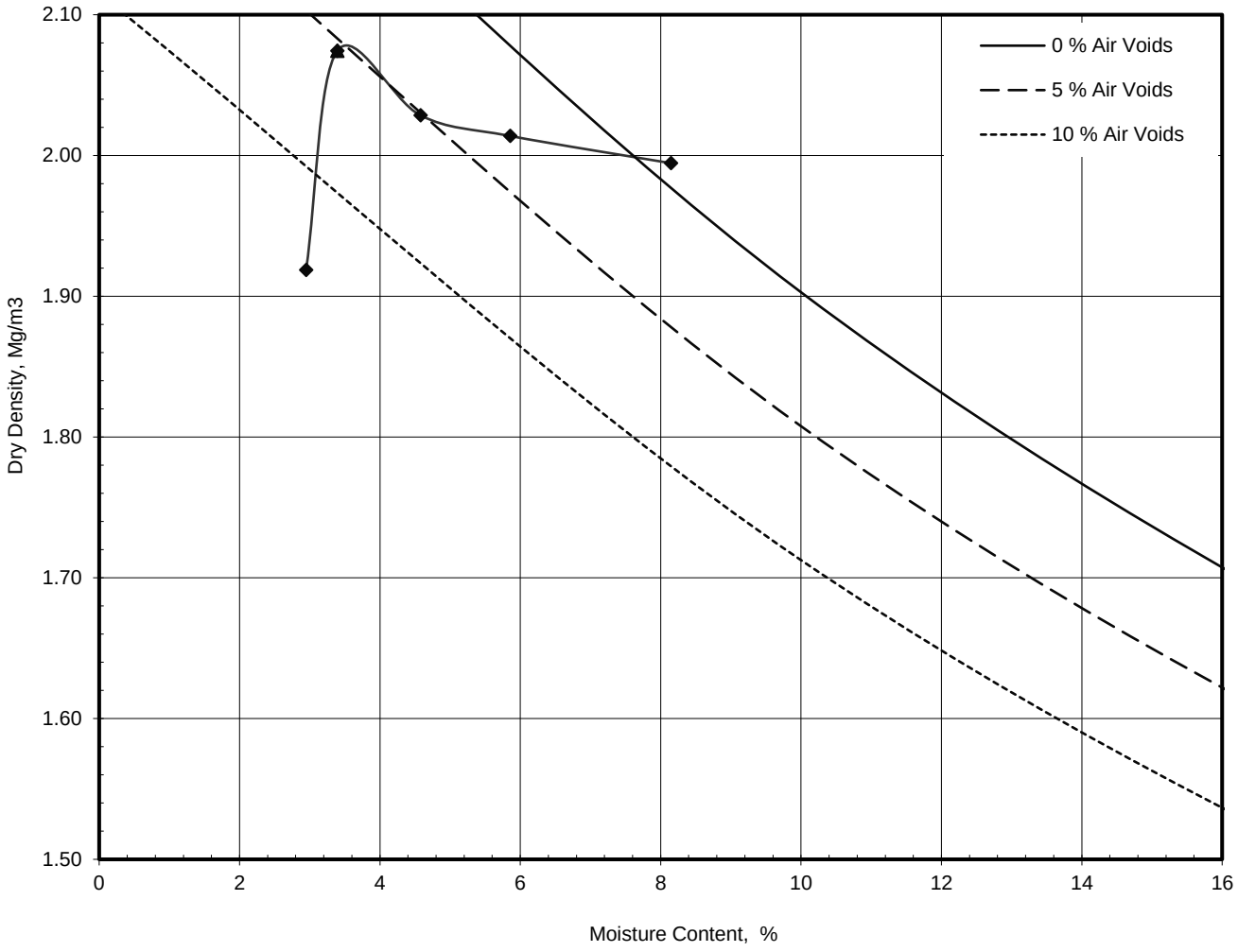
Preparation		Material used was natural
Mould Type		CBR
Samples Used		Single sample tested
Material Retained on 37.5 mm Sieve	%	29
Material Retained on 20.0 mm Sieve	%	44
Particle Density - Assumed	Mg/m³	2.30

Maximum Dry Density	Mg/m³	**2.00**

Optimum Moisture Content	%	**4.1**
Natural Mositure Content	**%**	**7.83**

Operator	Checked	Approved	Remarks	**Fig**
		Cilla		Sheet 1 of 1

	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	P18081
				Borehole / Pit No	TP02
Location	**Castletreasure Development**			Sample No	3
Soil Description	Slightly sandy slightly silty GRAVEL with medium cobble content			Depth	1.50 m
				Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	PGL12018062142
				Compaction Test Reference/No.	



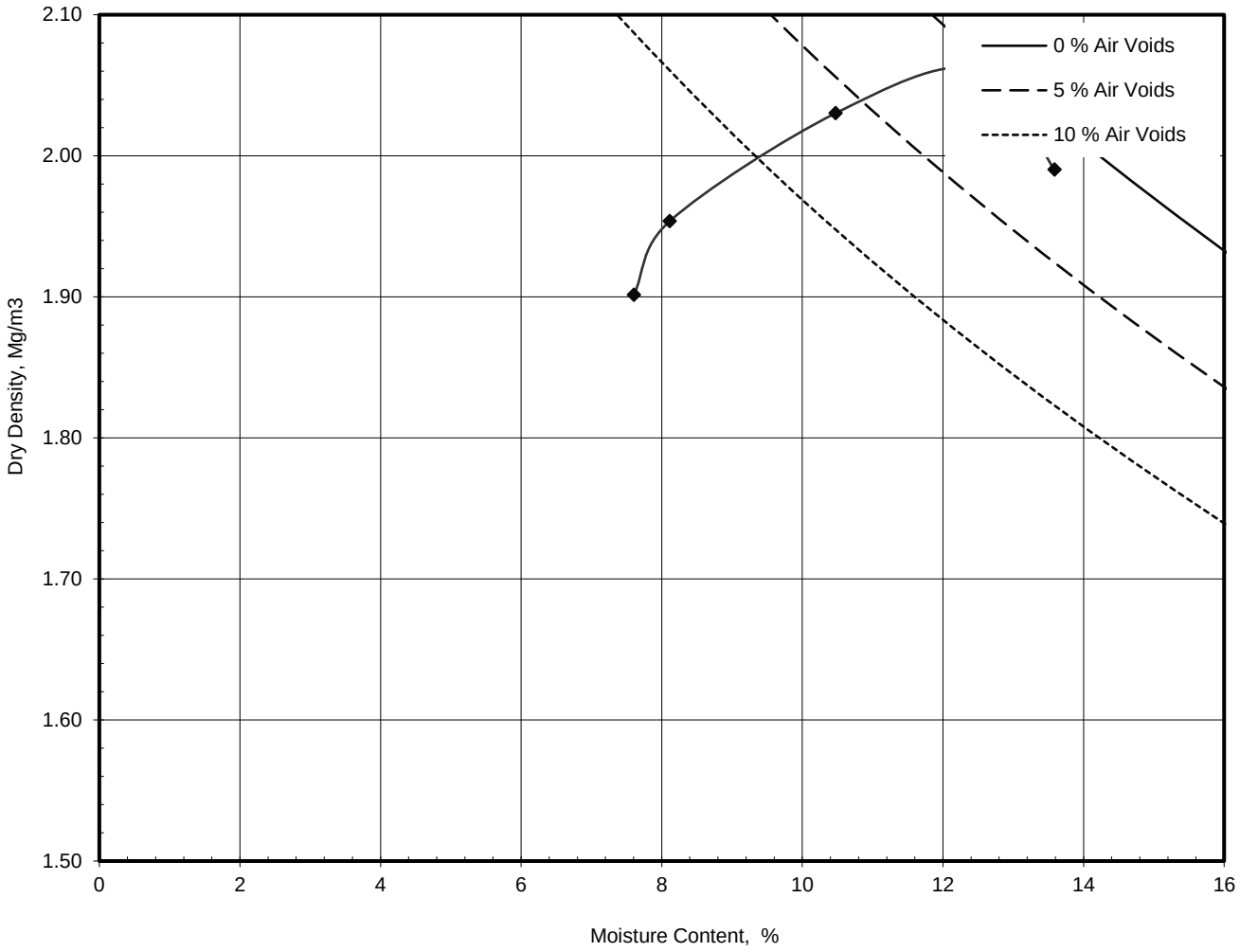
Preparation		Material used was natural
Mould Type		CBR
Samples Used		
Material Retained on 37.5 mm Sieve	%	4
Material Retained on 20.0 mm Sieve	%	18
Particle Density - Assumed	Mg/m³	2.35

Maximum Dry Density	Mg/m³	**2.10**

Optimum Moisture Content	%	**3.4**
Natural Mositure Content	**%**	**8.15**

Operator	Checked	Approved	Remarks	Fig
		Cilla		Sheet 1 of 1

	Dry Density / Moisture Content Relationship **Light Compaction**	Job Ref	**P18081**
		Borehole / Pit No	TP03
Location	**Castletreasure Development**	Sample No	3
Soil Description	Silty sandy GRAVEL with low cobble content	Depth	1.50 m
		Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer	Keylab ID	PGL12018062146
		Compaction Test Reference/No.	



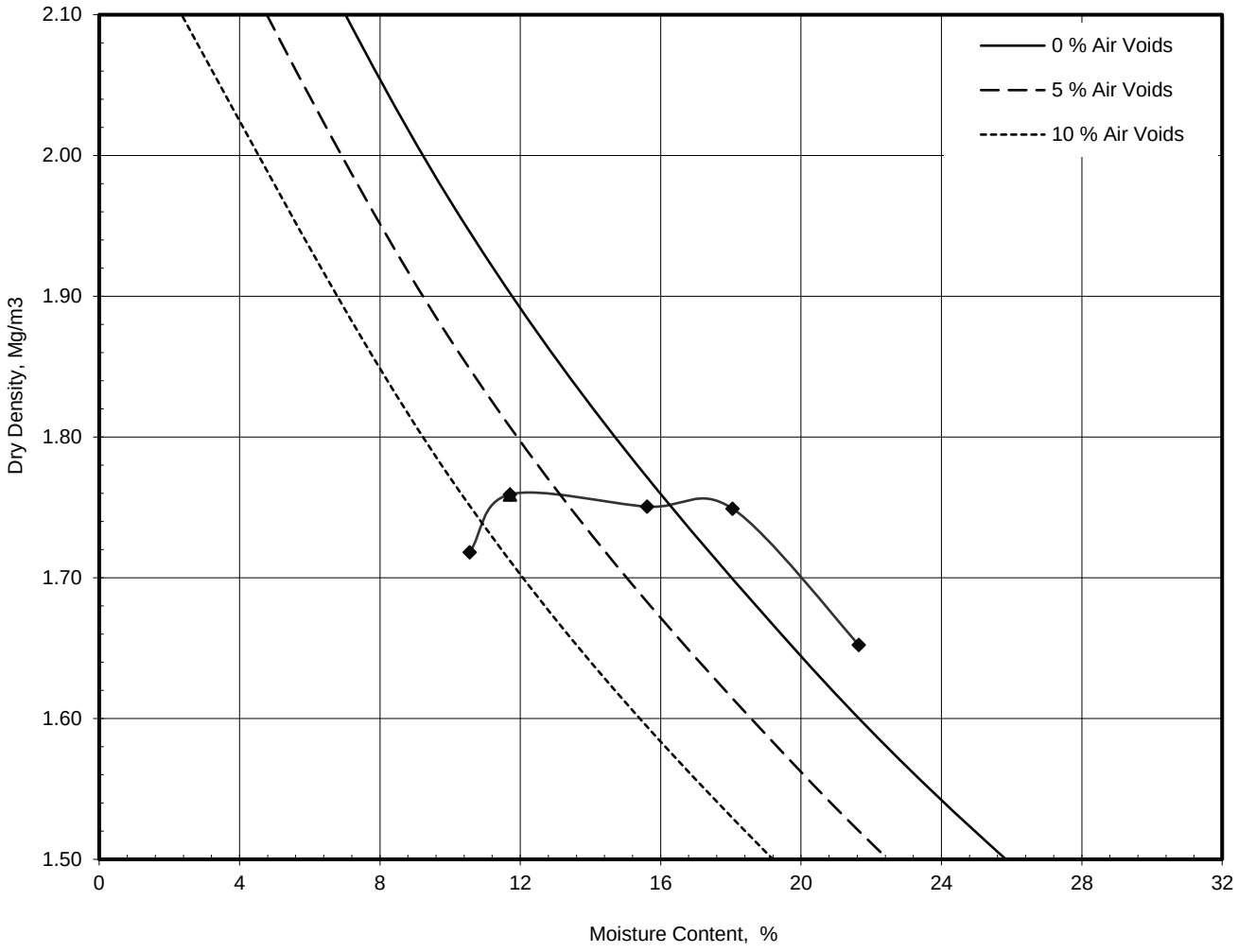
Preparation		Material used was natural
Mould Type		CBR
Samples Used		
Material Retained on 37.5 mm Sieve	%	18
Material Retained on 20.0 mm Sieve	%	27
Particle Density - Assumed	Mg/m³	2.80

Maximum Dry Density	Mg/m³	**2.10**

Optimum Moisture Content	%	**12.5**
Natural Mositure Content	**%**	**13.59**

Operator	Checked	Approved	Remarks	
		Cilla		**Fig**
				Sheet 1 of 1

	Dry Density / Moisture Content Relationship Light Compaction	Job Ref	**P18081**
		Borehole / Pit No	TP12
Location	**Castletreasure Development**	Sample No	4
Soil Description	Slightly gravelly sandy CLAY	Depth	3.00 m
		Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.3, 2.5kg rammer	Keylab ID	PGL12018062179
		Compaction Test Reference/No.	



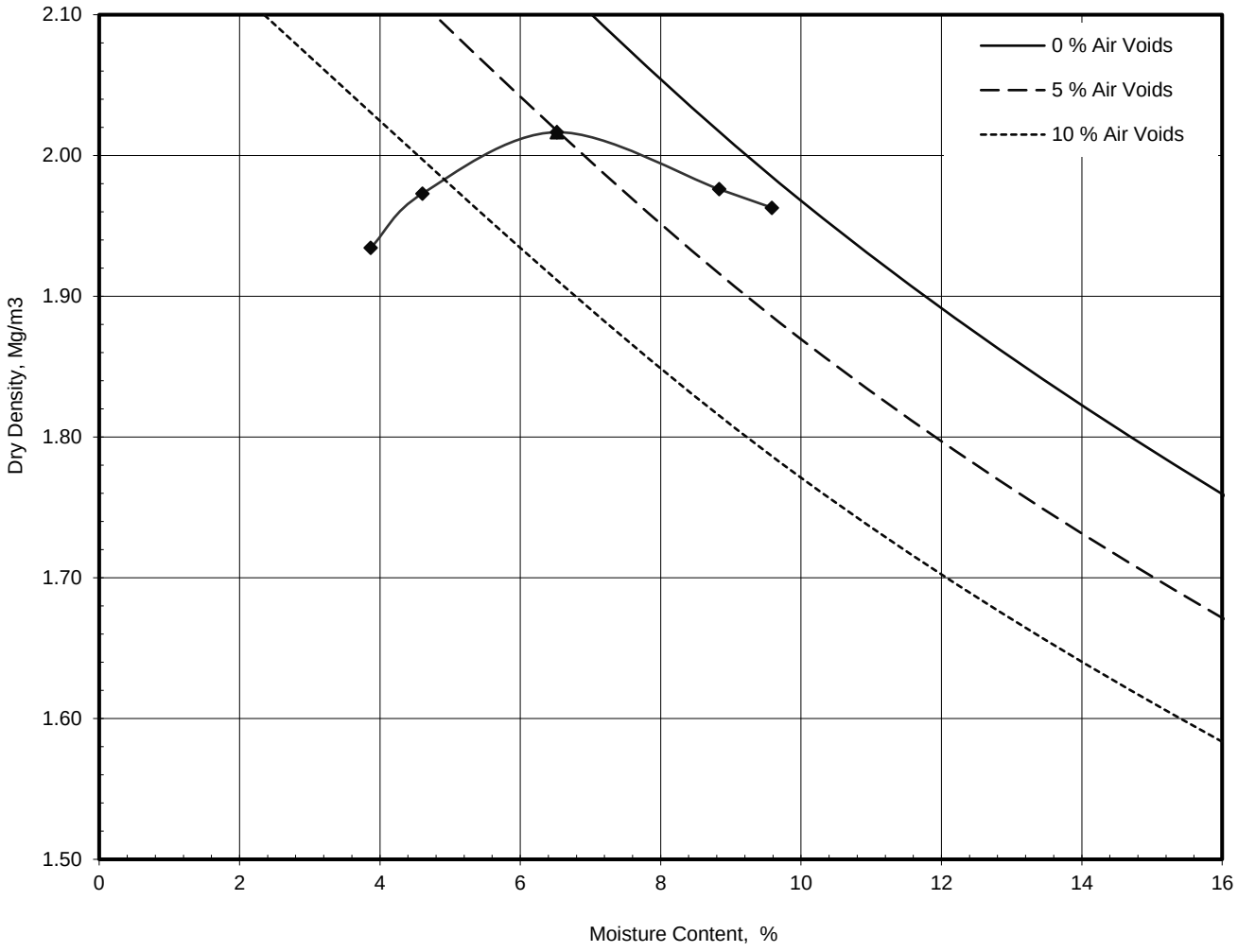
Preparation		Material used was natural
Mould Type		One Litre
Samples Used		Single sample tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	0
Particle Density - Assumed	Mg/m³	2.45

Maximum Dry Density	Mg/m³	**1.80**

Optimum Moisture Content	%	**11.7**
Natural Mositure Content	**%**	**21.65**

Operator	Checked	Approved	Remarks	**Fig**
		Cilla		Sheet 1 of 1

	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	P18081
				Borehole / Pit No	TP13
Location	**Castletreasure Development**			Sample No	4
Soil Description	Very sandy very silty GRAVEL			Depth	2.40 m
				Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	PGL12018062184
				Compaction Test Reference/No.	



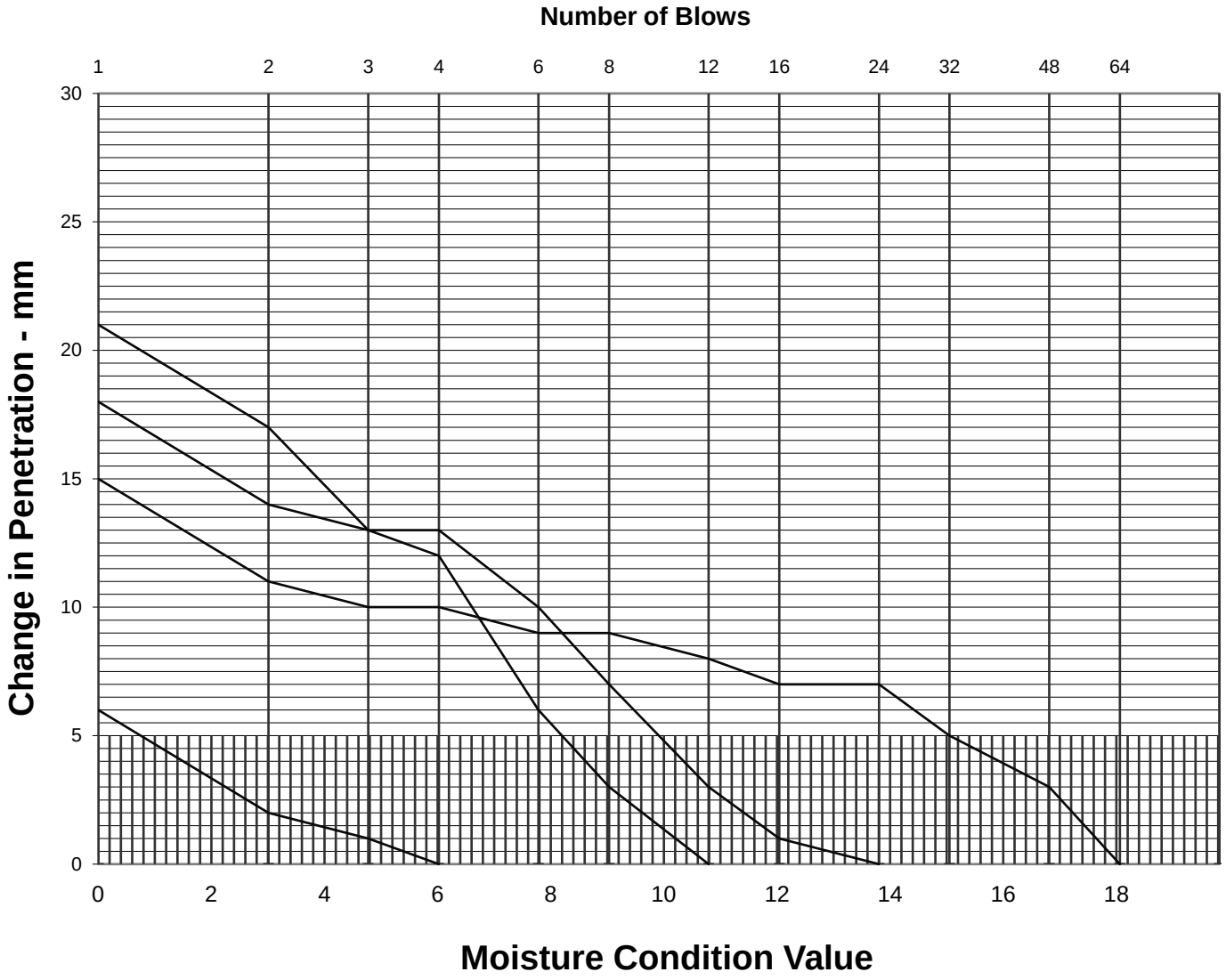
Preparation		Material used was natural
Mould Type		CBR
Samples Used		
Material Retained on 37.5 mm Sieve	%	11
Material Retained on 20.0 mm Sieve	%	32
Particle Density - Assumed	Mg/m³	2.45

Maximum Dry Density	Mg/m³	**2.00**

Optimum Moisture Content	%	**6.5**
Natural Mositure Content	**%**	**9.59**

Operator	Checked	Approved	Remarks	**Fig**
		Cilla		Sheet 1 of 1

pgl priority geotechnical	**Moisture Condition Value** **BS 1377 : Part 4 : 1990 Clause 5**	**Job Ref**	**P18081**
		Borehole / Pit No	TP01
Location	Castletreasure Development	Sample No	1
Soil Description	Silty very sandy GRAVEL	Sample Type	B
		Depth	0.40 m

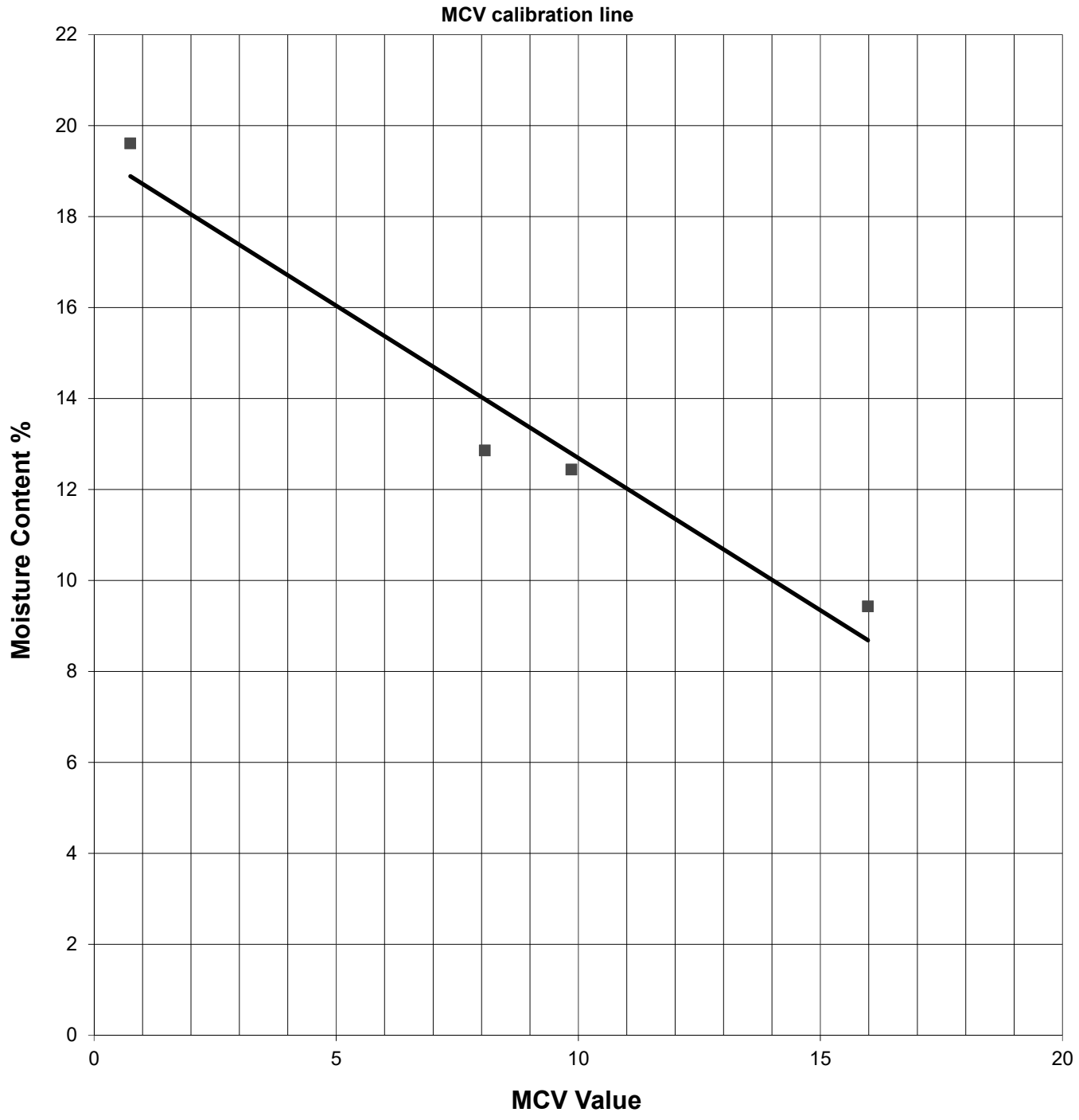


Specimen No		1	2	3	4	5	6
Moisture Condition Value		9.9	16.0	0.8	8.1		
Moisture Content	%	12.44	9.43	19.61	12.86		
Bulk density after compaction	Mg/m³	2.27	2.27	2.12	2.25		
Dry density after compaction	Mg/m³	2.02	2.07	1.77	1.99		
Hand vane strength	kPa						
Method of determining MCV		Steeptest fit line	Steeptest fit line	Steeptest fit line	Steeptest fit line	Steeptest fit line	
Mass retained on 20mm sieve	%	17.2					

MCV Relationship Graph

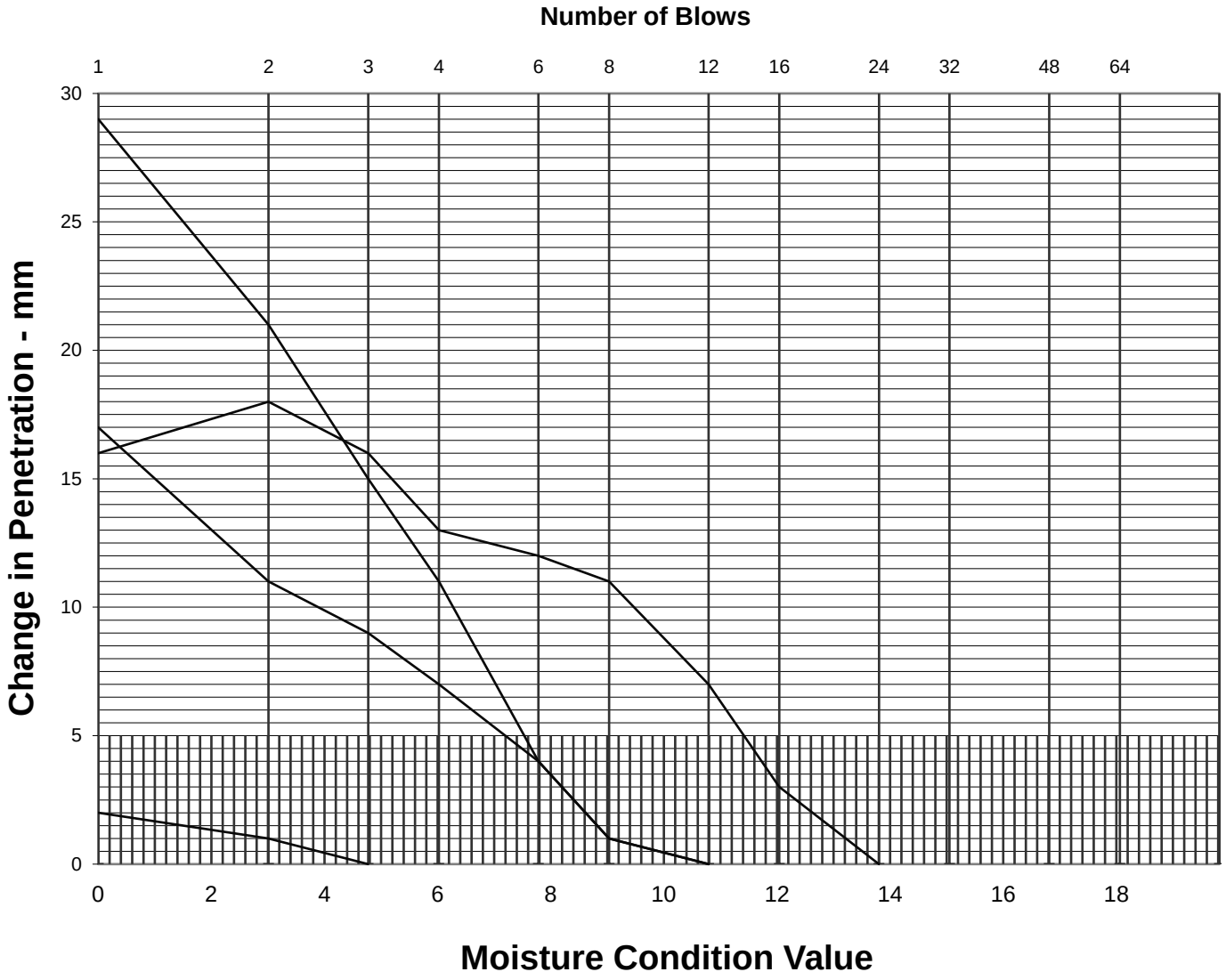
BS 1377 : Part 4 : 1990 Clause 5

		Job Ref	**P18081**
		Borehole / Pit No	TP01
Location	Castletreasure Development	Sample No	1
Soil Description	Silty very sandy GRAVEL	Sample Type	B
		Depth	0.40 m



Operator	Checked	Approved	Remarks Single sample / Separate batches tested

pgl priority geotechnical	**Moisture Condition Value** **BS 1377 : Part 4 : 1990 Clause 5**	**Job Ref**	**P18081**
		Borehole / Pit No	TP02
Location	Castletreasure Development	Sample No	1
Soil Description	Very sandy very clayey GRAVEL	Sample Type	B
		Depth	0.50 m

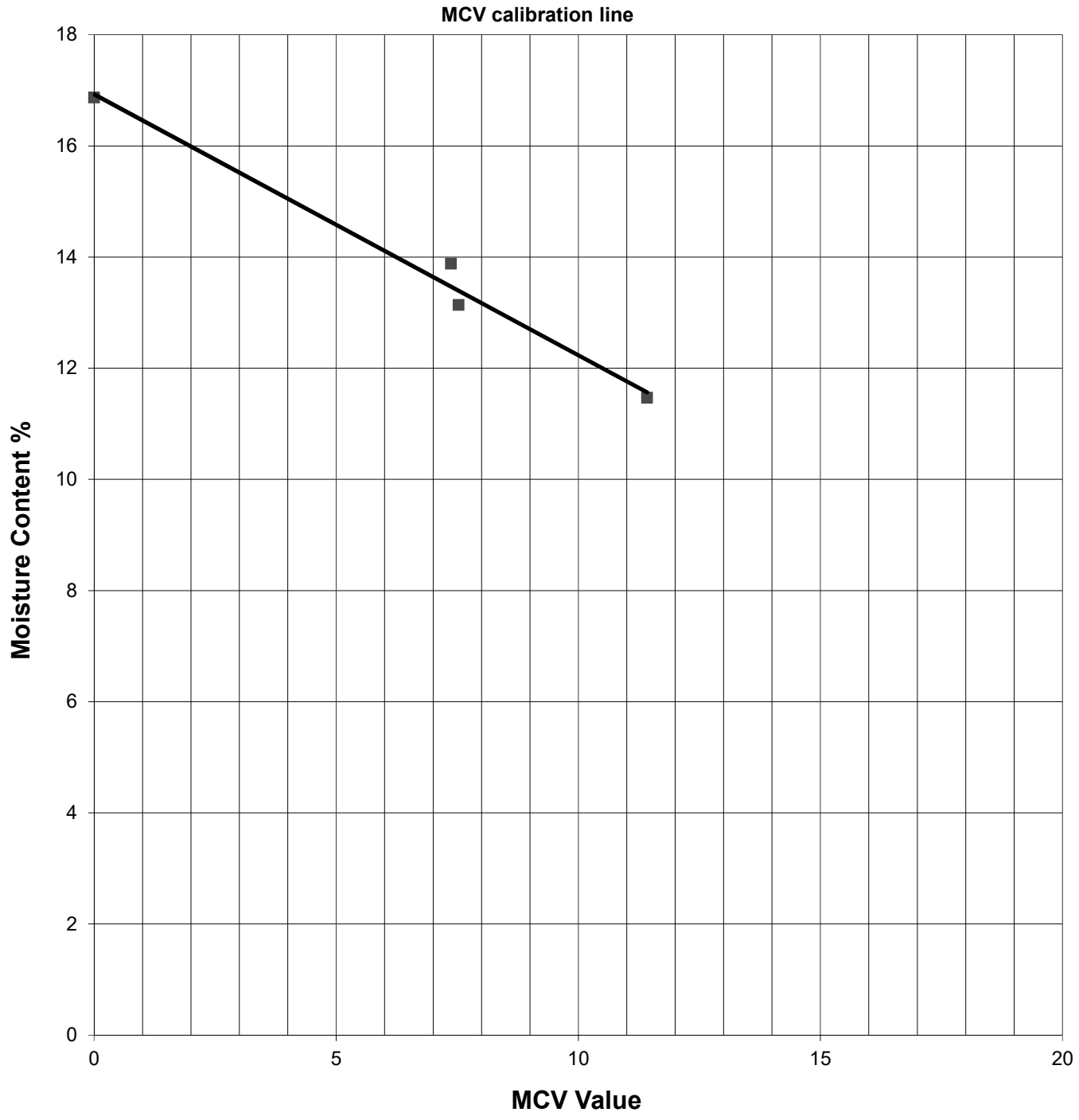


Specimen No		1	2	3	4	5	6
Moisture Condition Value		7.4	11.4	0.0	7.5		
Moisture Content	%	13.88	11.47	16.87	13.14		
Bulk density after compaction	Mg/m³	2.25	2.07	2.10	2.27		
Dry density after compaction	Mg/m³	1.98	1.86	1.80	2.01		
Hand vane strength	kPa						
Method of determining MCV		Steeptest fit line	Steeptest fit line	Steeptest fit line	Steeptest fit line	Steeptest fit line	
Mass retained on 20mm sieve	%	8.6					

MCV Relationship Graph

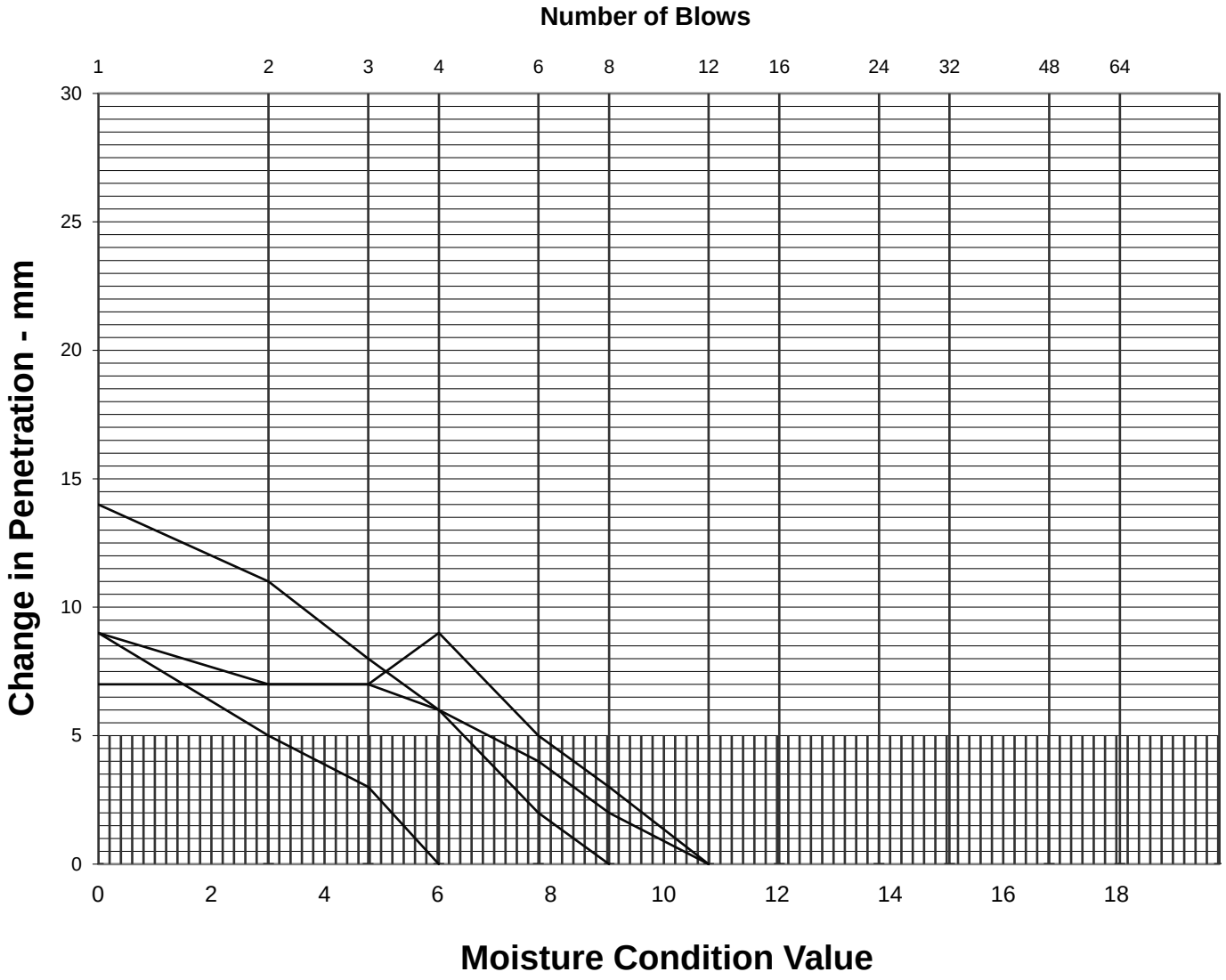
BS 1377 : Part 4 : 1990 Clause 5

		Job Ref	**P18081**
		Borehole / Pit No	TP02
Location	Castletreasure Development	Sample No	1
Soil Description	Very sandy very clayey GRAVEL	Sample Type	B
		Depth	0.50 m



Operator	Checked	Approved	Remarks Single sample / Separate batches tested

pgl priority geotechnical	**Moisture Condition Value** **BS 1377 : Part 4 : 1990 Clause 5**	**Job Ref**	**P18081**
		Borehole / Pit No	TP05
Location	Castletreasure Development	Sample No	2
Soil Description	Silty very sandy GRAVEL	Sample Type	B
		Depth	1.50 m

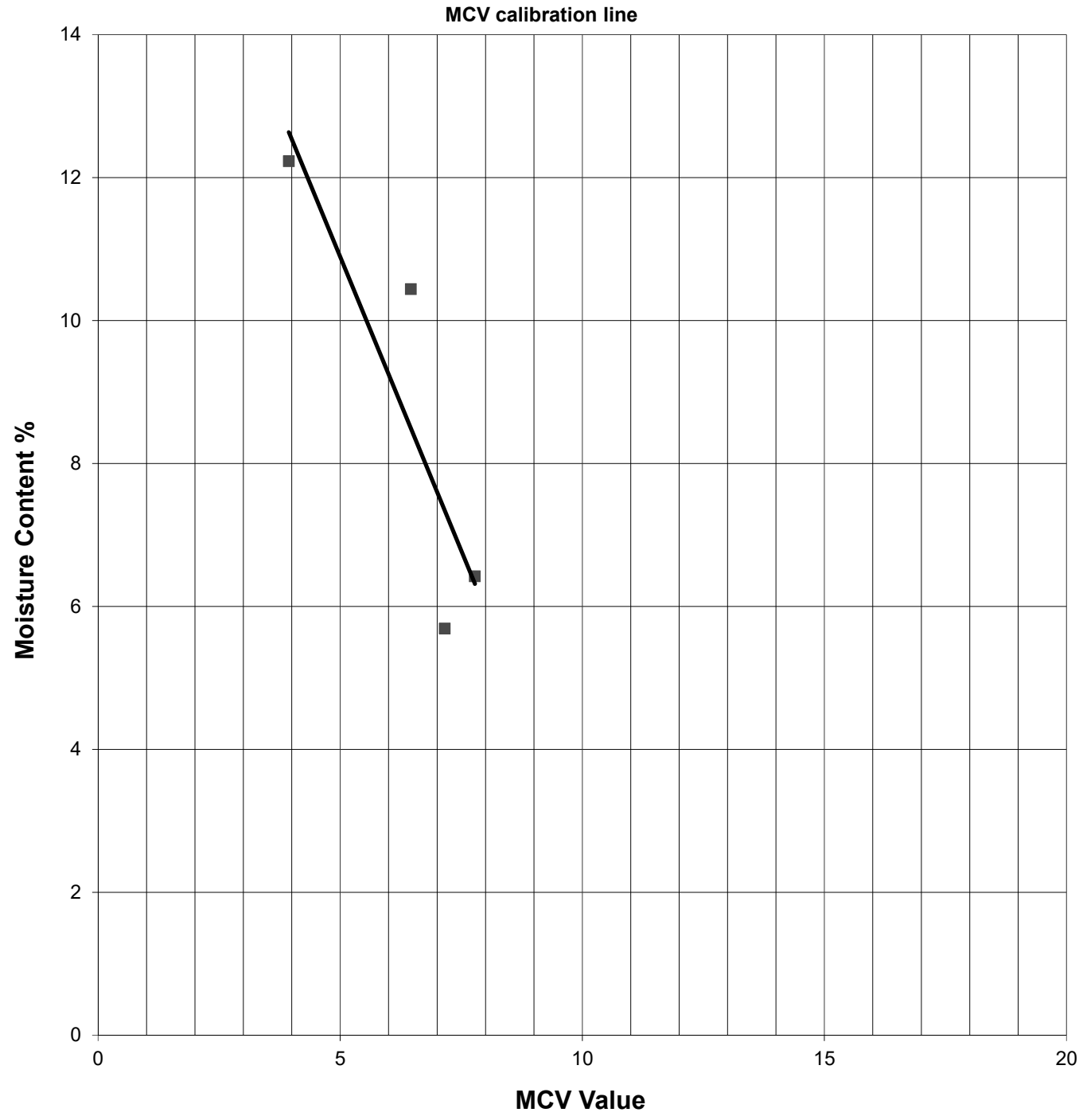


Specimen No		1	2	3	4	5	6
Moisture Condition Value		6.5	7.2	3.9	7.8		
Moisture Content	%	10.44	5.69	12.23	6.42		
Bulk density after compaction	Mg/m³	2.07	2.27	2.22	2.01		
Dry density after compaction	Mg/m³	1.87	2.15	1.98	1.89		
Hand vane strength	kPa						
Method of determining MCV		Steeptest fit line	Steeptest fit line	Steeptest fit line	Steeptest fit line	Steeptest fit line	
Mass retained on 20mm sieve	%	22.9					

MCV Relationship Graph

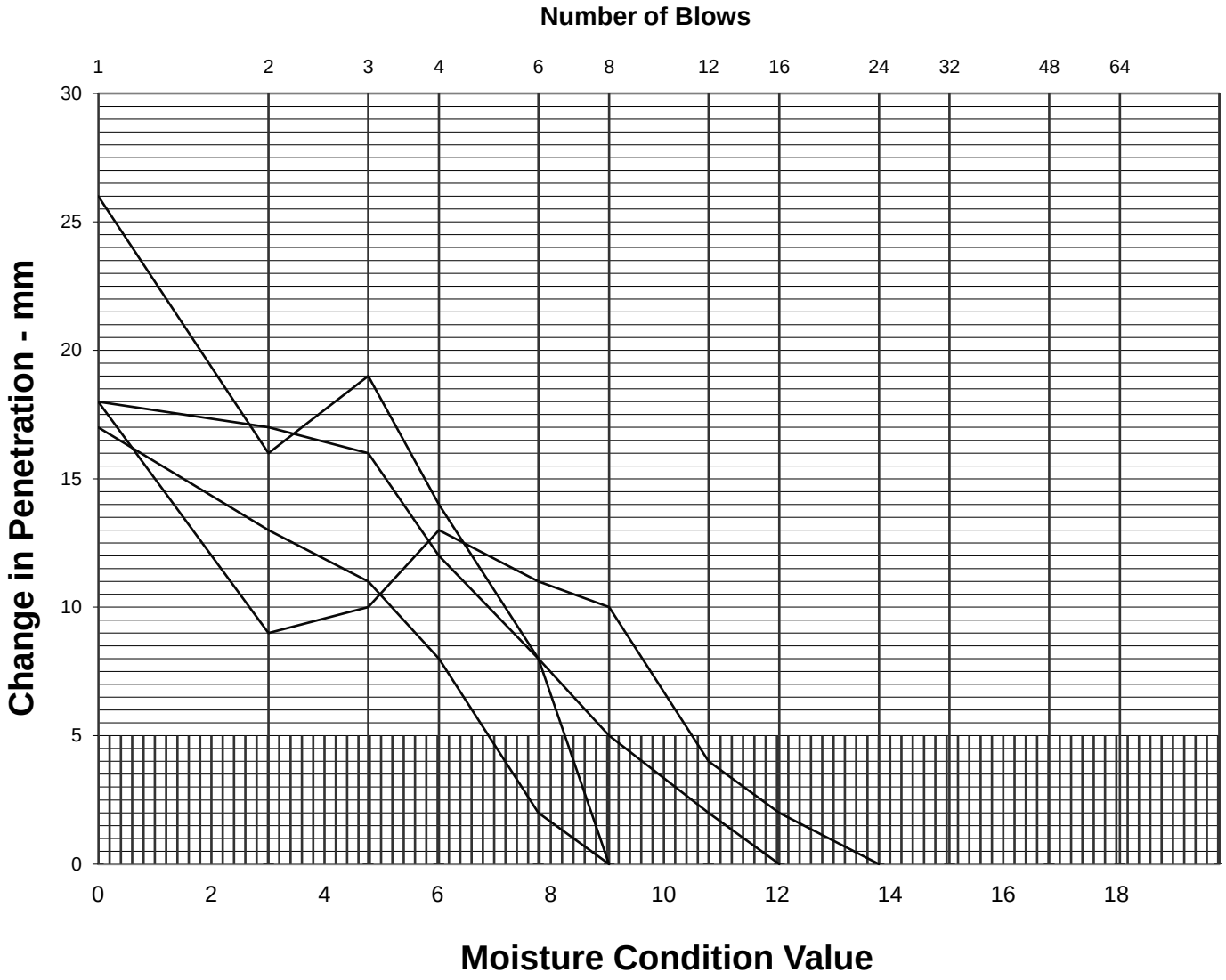
BS 1377 : Part 4 : 1990 Clause 5

		Job Ref	**P18081**
		Borehole / Pit No	TP05
Location	Castletreasure Development	Sample No	2
Soil Description	Slightly sandy slightly silty GRAVEL with medium cobble content	Sample Type	B
		Depth	1.50 m



Operator	Checked	Approved	Remarks Single sample / Separate batches tested

pgl priority geotechnical	**Moisture Condition Value** **BS 1377 : Part 4 : 1990 Clause 5**	**Job Ref**	**P18081**
		Borehole / Pit No	TP05
Location	Castletreasure Development	Sample No	4
Soil Description	Slightly sandy slightly clayey GRAVEL with high cobble content	Sample Type	B
		Depth	3.20 m

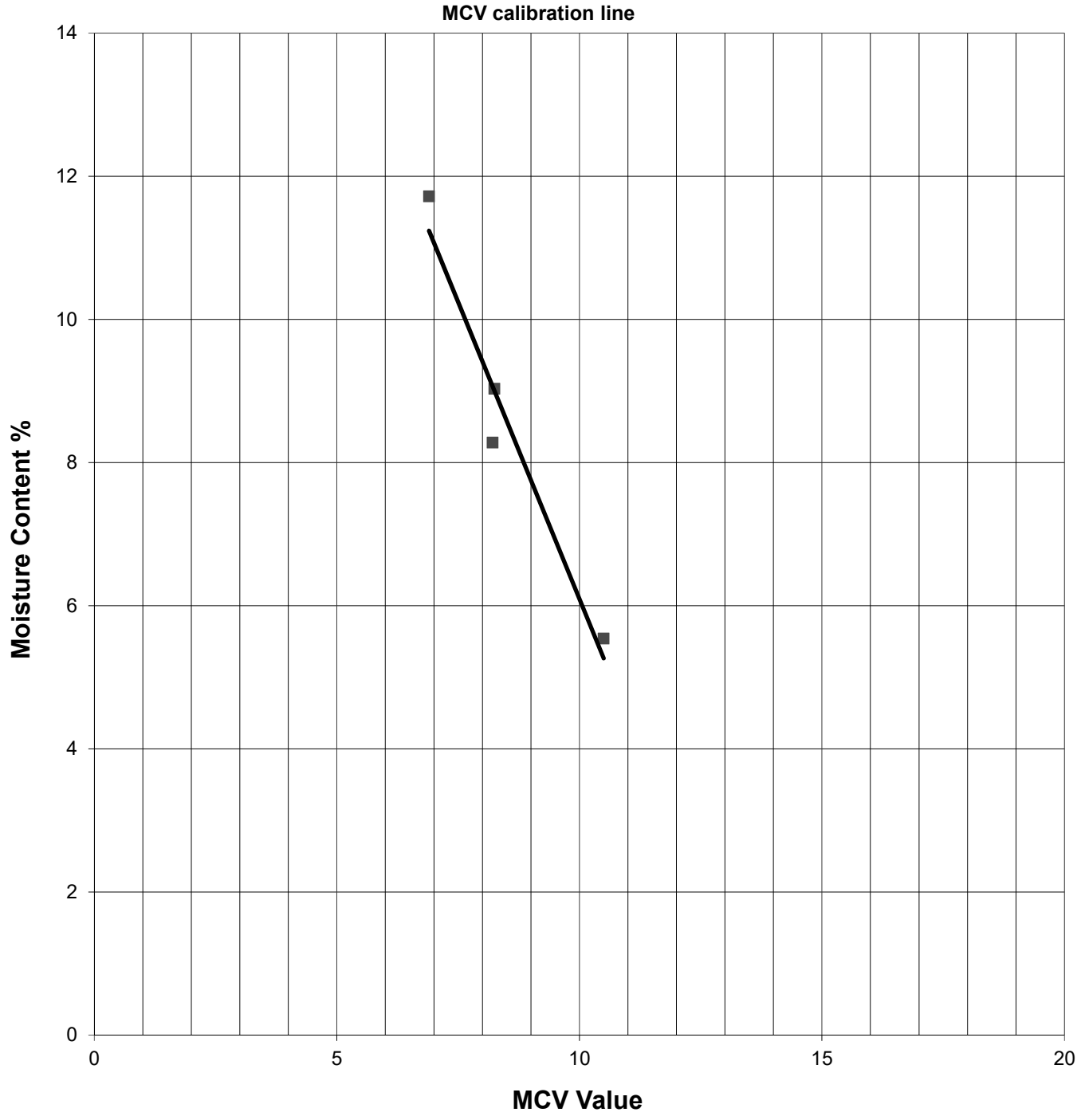


Specimen No		1	2	3	4	5	6
Moisture Condition Value		6.9	8.3	10.5	8.2		
Moisture Content	%	11.72	9.03	5.54	8.28		
Bulk density after compaction	Mg/m³	2.22	1.97	2.03	2.25		
Dry density after compaction	Mg/m³	1.99	1.81	1.92	2.08		
Hand vane strength	kPa						
Method of determining MCV		Steeptest fit line	Steeptest fit line	Steeptest fit line	Steeptest fit line	Steeptest fit line	
Mass retained on 20mm sieve	%	58.0					

MCV Relationship Graph

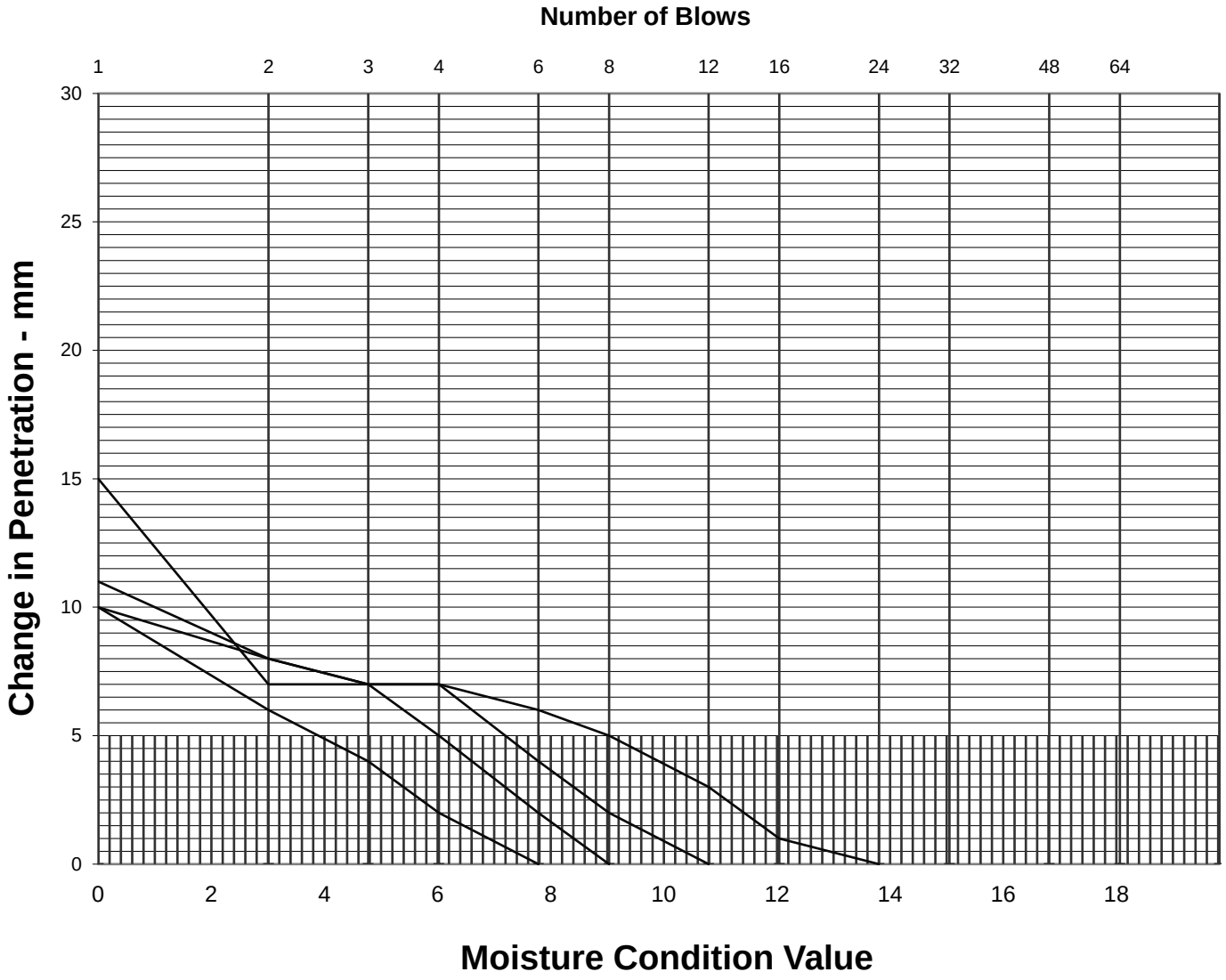
BS 1377 : Part 4 : 1990 Clause 5

		Job Ref	**P18081**
		Borehole / Pit No	TP05
Location	Castletreasure Development	Sample No	4
Soil Description	Slightly sandy slightly clayey GRAVEL with high cobble content	Sample Type	B
		Depth	3.20 m



Operator	Checked	Approved	Remarks Single sample / Separate batches tested

pgl priority geotechnical	**Moisture Condition Value** **BS 1377 : Part 4 : 1990 Clause 5**	**Job Ref**	**P18081**
		Borehole / Pit No	TP08
Location	Castletreasure Development	Sample No	1
Soil Description	Silty very sandy GRAVEL	Sample Type	B
		Depth	0.50 m

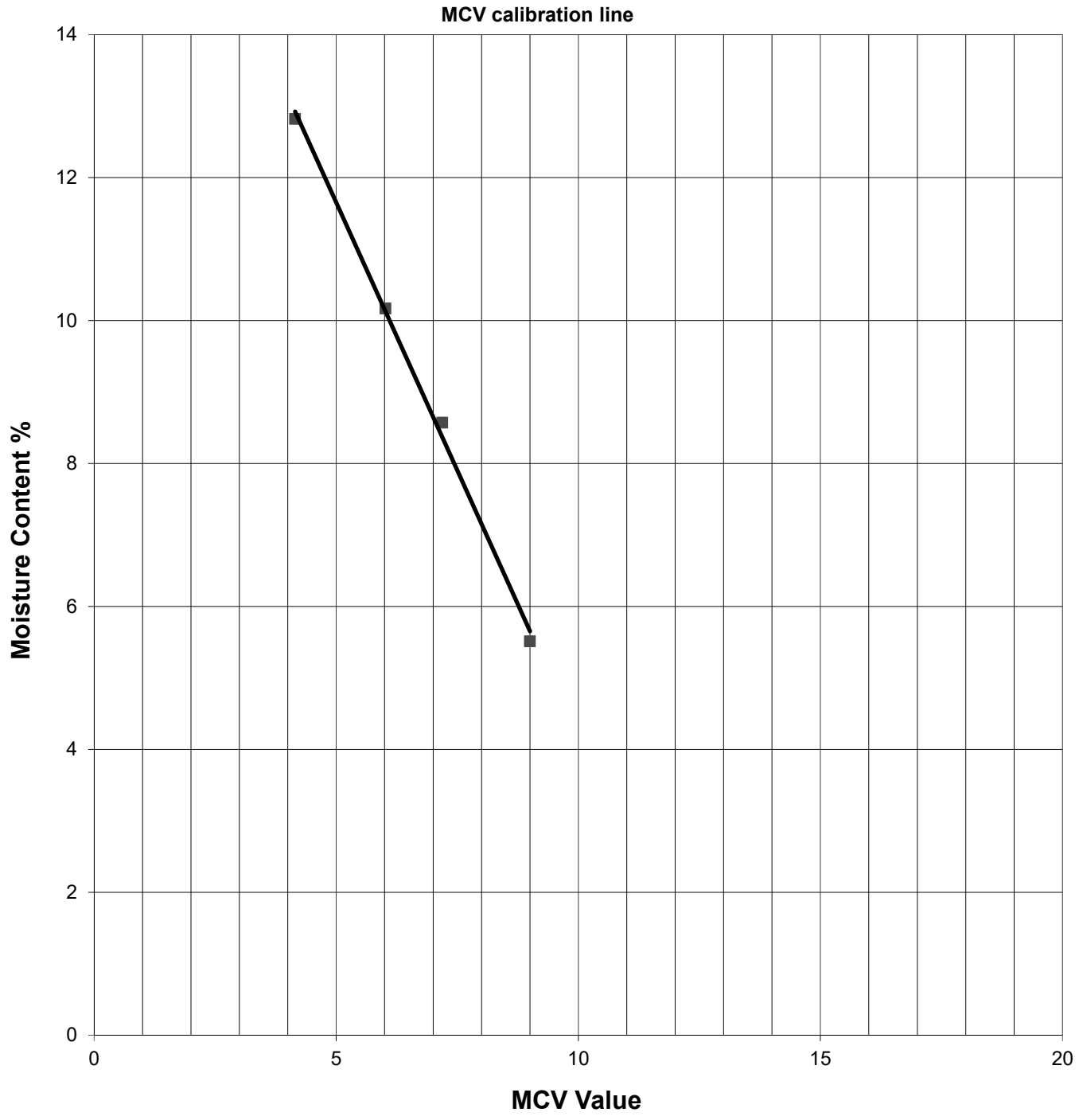


Specimen No		1	2	3	4	5	6
Moisture Condition Value		4.1	6.0	7.2	9.0		
Moisture Content	%	12.82	10.13	8.57	5.51		
Bulk density after compaction	Mg/m³	2.25	2.05	1.93	2.05		
Dry density after compaction	Mg/m³	1.99	1.86	1.78	1.94		
Hand vane strength	kPa						
Method of determining MCV		Steeptest fit line	Steeptest fit line	Steeptest fit line	Steeptest fit line	Steeptest fit line	
Mass retained on 20mm sieve	%	14.5					

MCV Relationship Graph

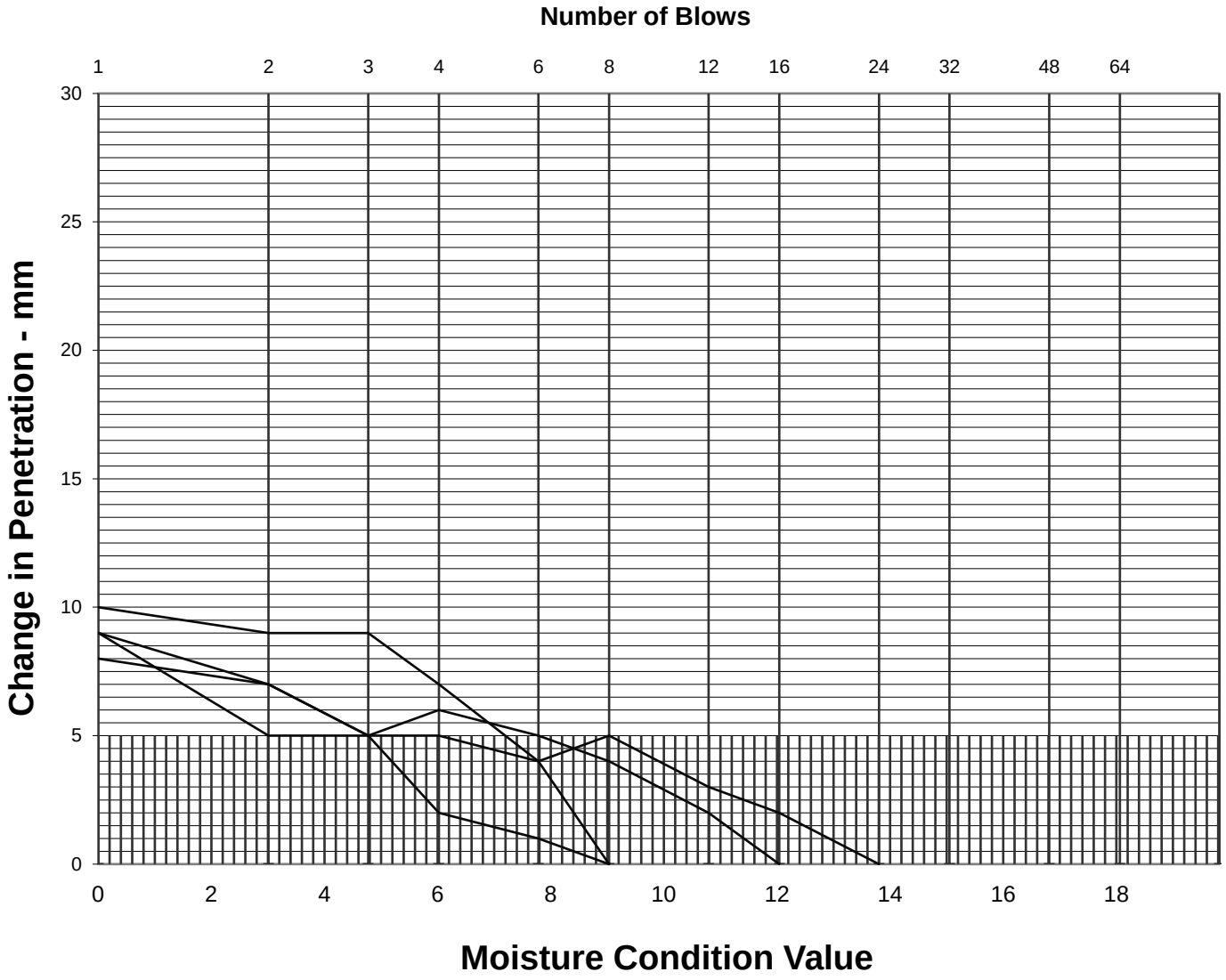
BS 1377 : Part 4 : 1990 Clause 5

		Job Ref	**P18081**
		Borehole / Pit No	TP08
Location	Castletreasure Development	Sample No	1
Soil Description	Silty very sandy GRAVEL	Sample Type	B
		Depth	0.50 m



Operator	Checked	Approved	Remarks Single sample / Separate batches tested

pgl priority geotechnical	**Moisture Condition Value** **BS 1377 : Part 4 : 1990 Clause 5**	**Job Ref**	**P18081**
		Borehole / Pit No	TP12
Location	Castletreasure Development	Sample No	3
Soil Description	Slightly gravelly sandy CLAY	Sample Type	B
		Depth	2.10 m

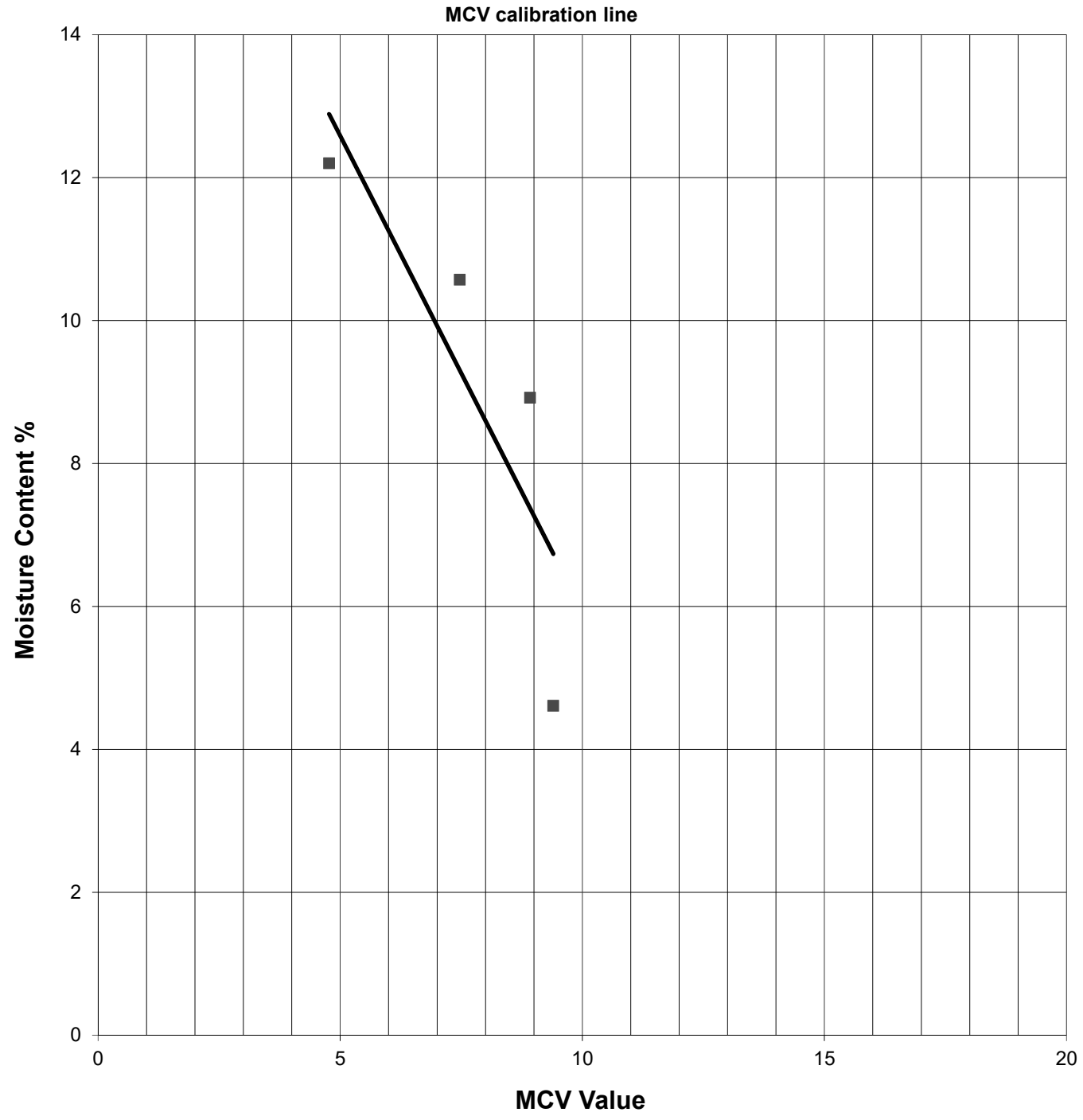


Specimen No		1	2	3	4	5	6
Moisture Condition Value		4.8	7.5	8.9	9.4		
Moisture Content	%	12.20	10.57	7.53	4.61		
Bulk density after compaction	Mg/m³	1.91	1.89	1.89	1.87		
Dry density after compaction	Mg/m³	1.70	1.71	1.76	1.79		
Hand vane strength	kPa						
Method of determining MCV		Steeptest fit line	Steeptest fit line	Steeptest fit line	Steeptest fit line	Steeptest fit line	
Mass retained on 20mm sieve	%	4.5					

MCV Relationship Graph

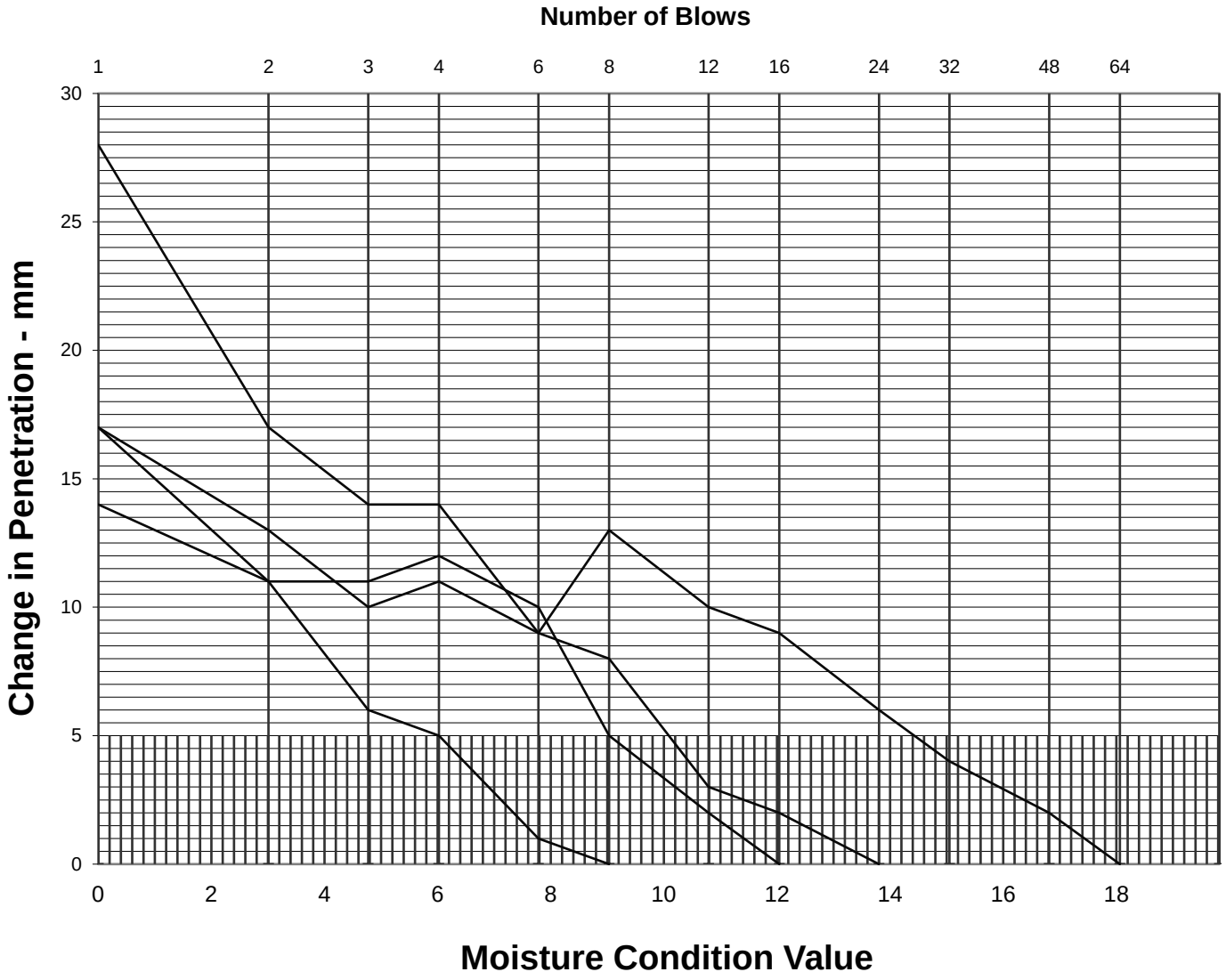
BS 1377 : Part 4 : 1990 Clause 5

		Job Ref	**P18081**
		Borehole / Pit No	TP12
Location	Castletreasure Development	Sample No	3
Soil Description	Slightly gravelly sandy CLAY	Sample Type	B
		Depth	2.10 m



Operator	Checked	Approved	Remarks Single sample / Separate batches tested

pgl priority geotechnical	**Moisture Condition Value** **BS 1377 : Part 4 : 1990 Clause 5**	**Job Ref**	**P18081**
		Borehole / Pit No	TP13
Location	Castletreasure Development	Sample No	3
Soil Description	Very sandy very sitly GRAVEL	Sample Type	B
		Depth	1.50 m

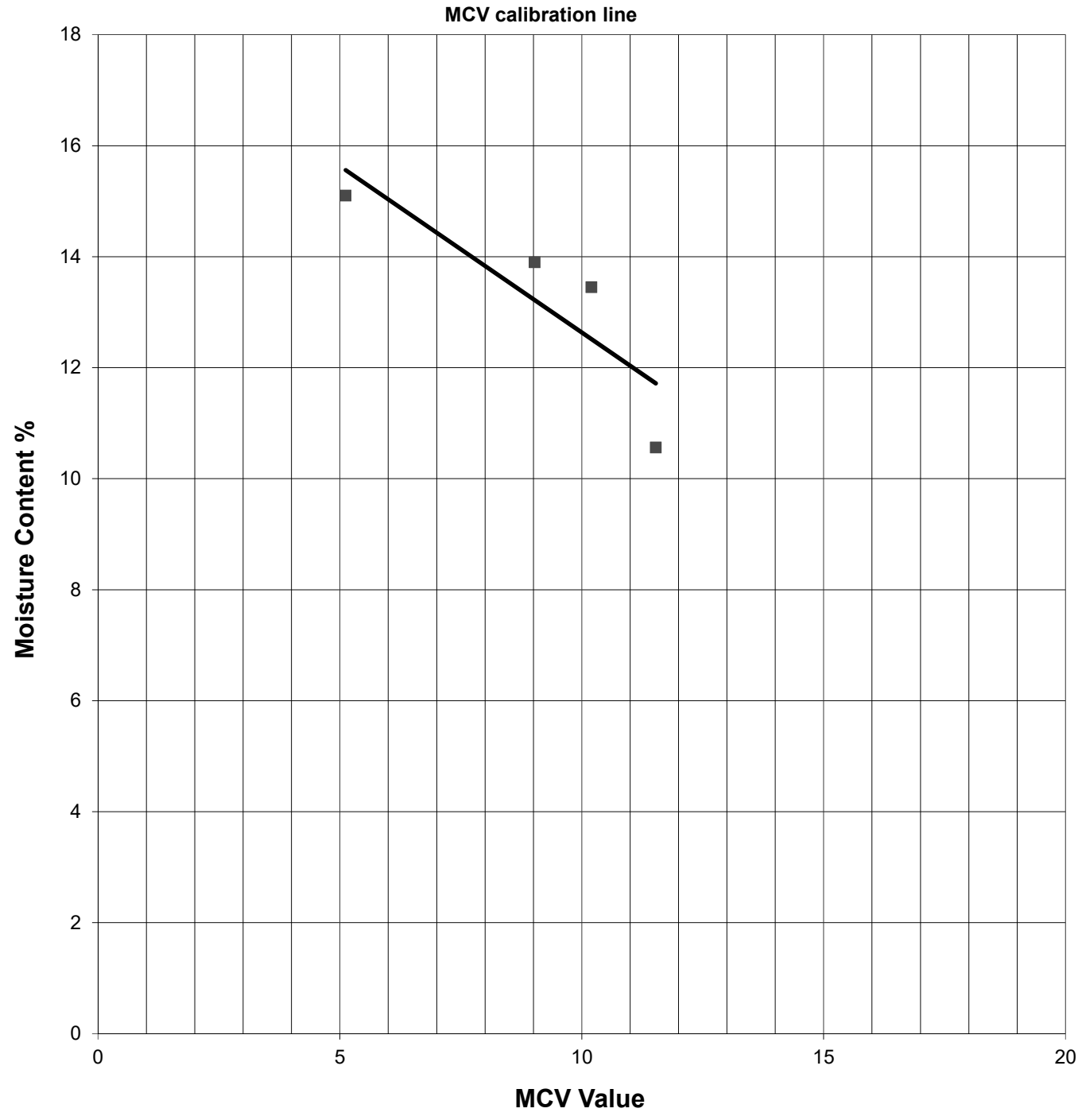


Specimen No		1	2	3	4	5	6
Moisture Condition Value		9.0	11.5	5.1	10.2		
Moisture Content	%	13.90	10.56	15.10	13.45		
Bulk density after compaction	Mg/m³	2.25	2.22	2.22	2.27		
Dry density after compaction	Mg/m³	1.98	2.01	1.93	2.00		
Hand vane strength	kPa						
Method of determining MCV		Steeptest fit line	Steeptest fit line	Steeptest fit line	Steeptest fit line	Steeptest fit line	
Mass retained on 20mm sieve	%	8.1					

MCV Relationship Graph

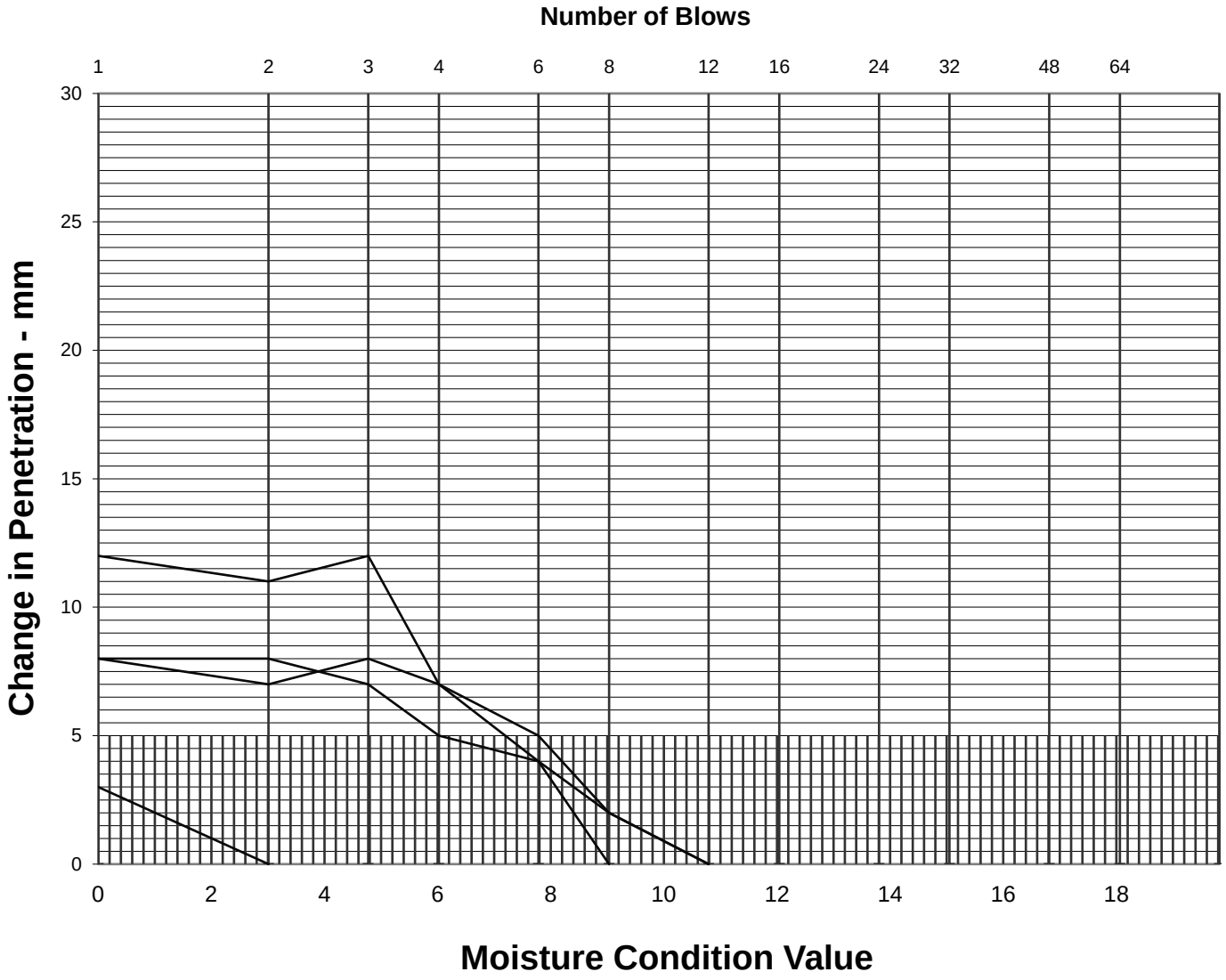
BS 1377 : Part 4 : 1990 Clause 5

		Job Ref	**P18081**
		Borehole / Pit No	TP13
Location	Castletreasure Development	Sample No	3
Soil Description	Very sandy very silty GRAVEL	Sample Type	B
		Depth	2.10 m



Operator	Checked	Approved	Remarks Single sample / Separate batches tested

pgl priority geotechnical	**Moisture Condition Value** **BS 1377 : Part 4 : 1990 Clause 5**	**Job Ref**	**P18081**
		Borehole / Pit No	TP16
Location	Castletreasure Development	Sample No	1
Soil Description	Slightly sandy gravelly SILT	Sample Type	B
		Depth	0.50 m

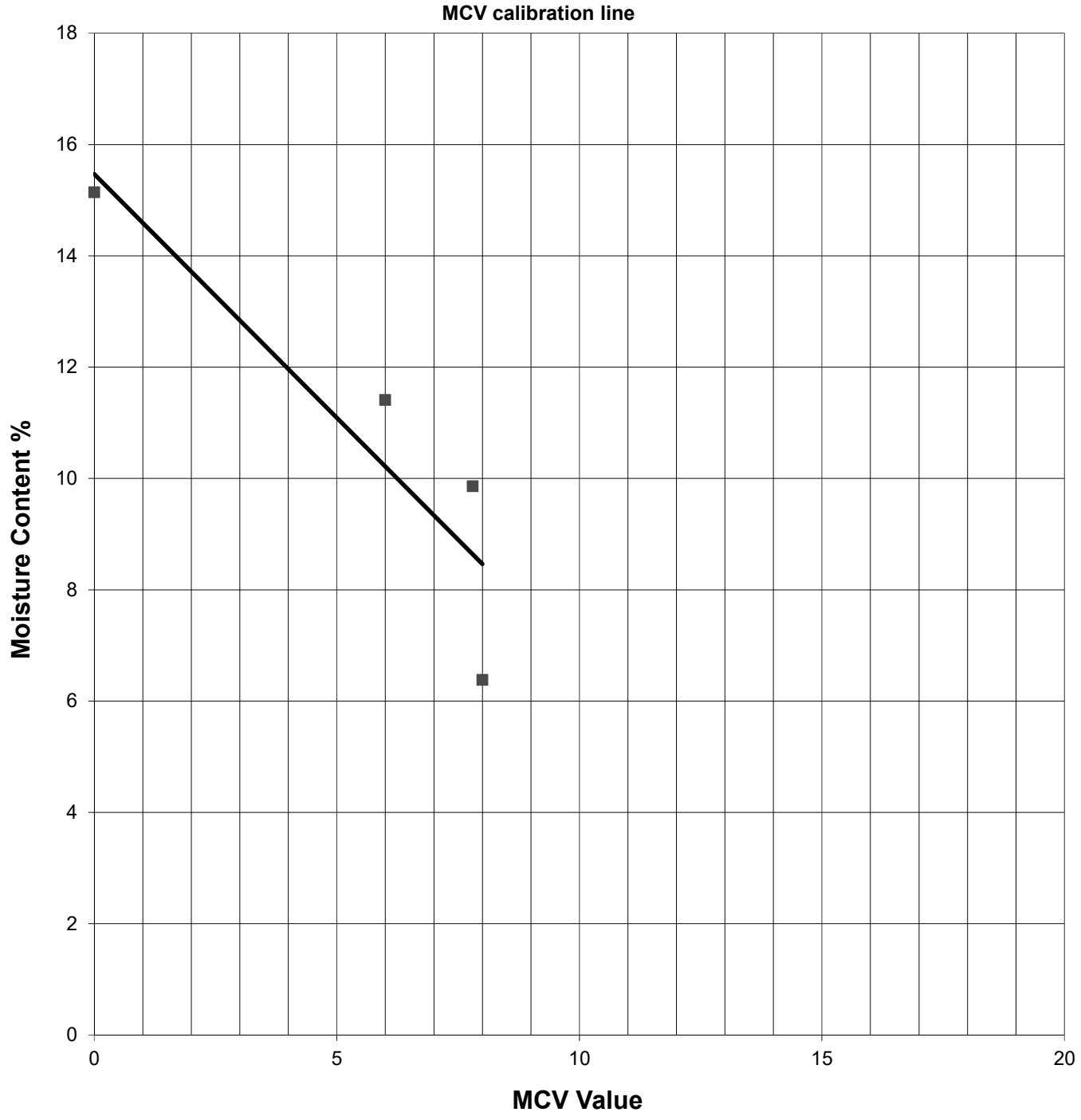


Specimen No		1	2	3	4	5	6
Moisture Condition Value		0.0	6.0	7.8	8.0		
Moisture Content	%	15.14	11.41	9.86	6.38		
Bulk density after compaction	Mg/m³	2.19	2.01	2.17	2.01		
Dry density after compaction	Mg/m³	1.90	1.80	1.98	1.89		
Hand vane strength	kPa						
Method of determining MCV		Steeptest fit line	Steeptest fit line	Steeptest fit line	Steeptest fit line	Steeptest fit line	
Mass retained on 20mm sieve	%	7.5					

MCV Relationship Graph

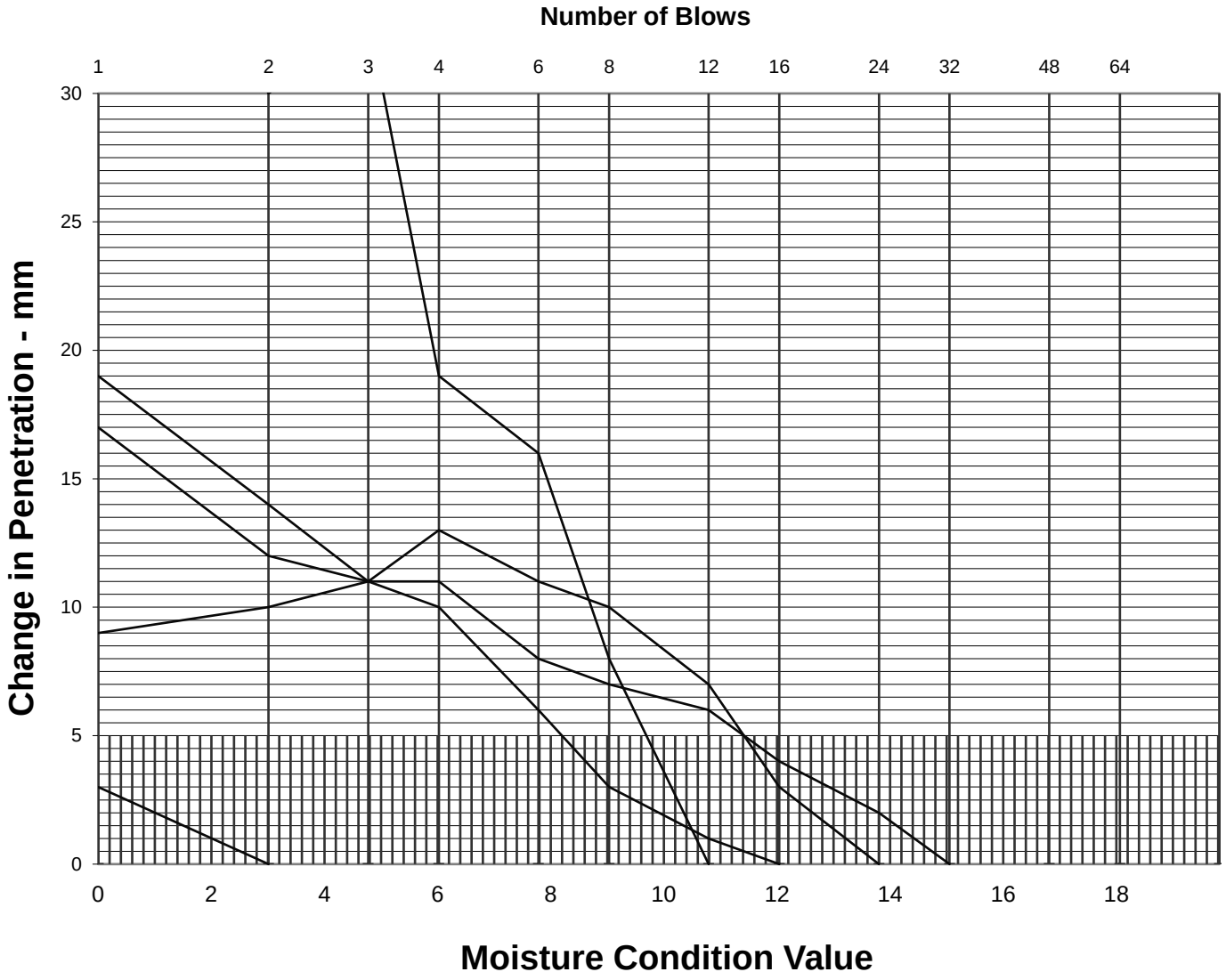
BS 1377 : Part 4 : 1990 Clause 5

		Job Ref	**P18081**
		Borehole / Pit No	TP16
Location	Castletreasure Development	Sample No	1
Soil Description	Slightly sandy gravelly SILT	Sample Type	B
		Depth	0.50 m



Operator	Checked	Approved	Remarks Single sample / Separate batches tested

pgl priority geotechnical	**Moisture Condition Value** **BS 1377 : Part 4 : 1990 Clause 5**	**Job Ref**	**P18081**
		Borehole / Pit No	TP18
Location	Castletreasure Development	Sample No	1
Soil Description	Slightly clayey sandy GRAVEL	Sample Type	B
		Depth	0.50 m

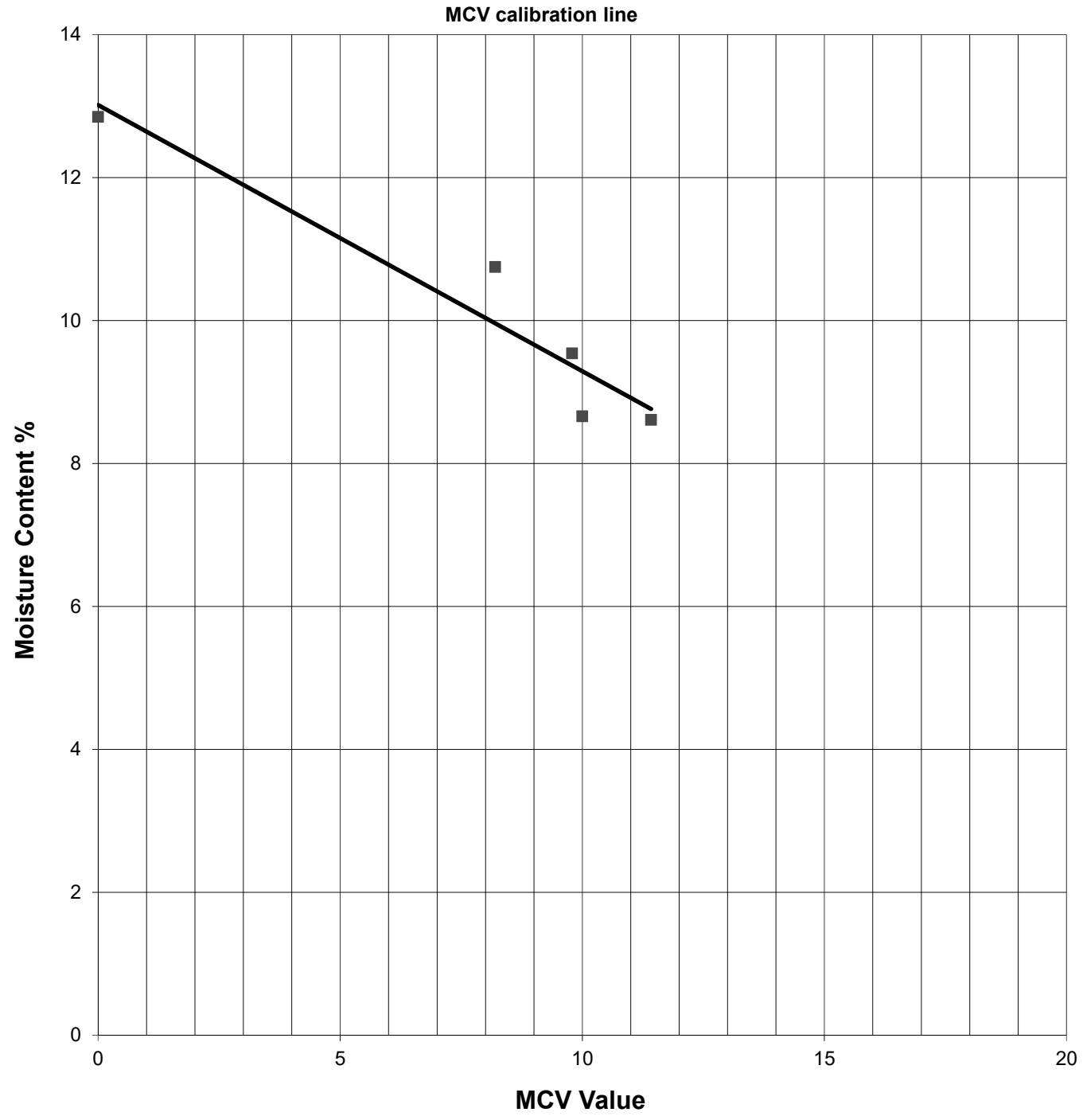


Specimen No		1	2	3	4	5	6
Moisture Condition Value		8.2	10.0	0.0	11.4	9.5	
Moisture Content	%	10.75	8.66	12.85	8.61	9.79	
Bulk density after compaction	Mg/m³	2.34	1.93	2.14	2.10	2.34	
Dry density after compaction	Mg/m³	2.11	1.78	1.90	1.93	2.13	
Hand vane strength	kPa						
Method of determining MCV		Steeptest fit line	Steeptest fit line	Steeptest fit line	Steeptest fit line	Steeptest fit line	
Mass retained on 20mm sieve	%	14.7					

MCV Relationship Graph

BS 1377 : Part 4 : 1990 Clause 5

		Job Ref	**P18081**
		Borehole / Pit No	TP18
Location	Castletreasure Development	Sample No	1
Soil Description	Slightly clayey sandy GRAVEL	Sample Type	B
		Depth	0.50 m



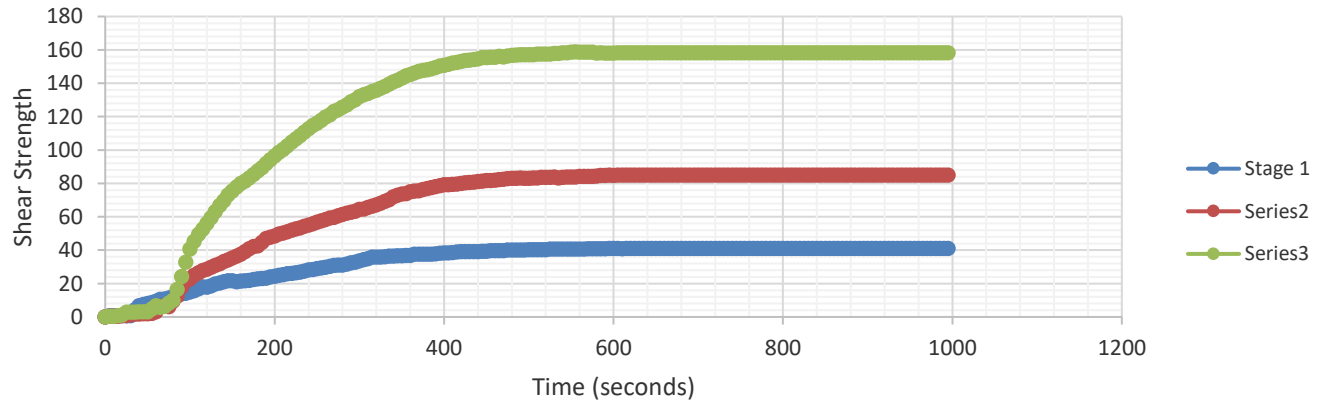
Operator	Checked	Approved	Remarks Single sample / Separate batches tested

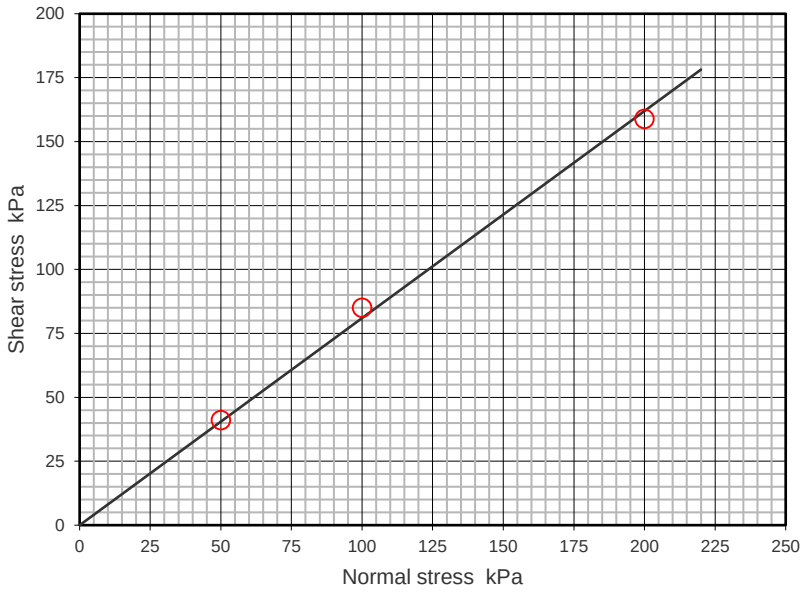
	Determination of shear strength using the Small Direct Shearbox Apparatus	Job Ref	P18081
		Borehole/Pit No.	TP13
Site Name	Castletreasure Development	Sample No	3
Soil Description	Very sandy very sitly GRAVEL	Depth m	1.5
		Sample Type	B
Test Method	BS1377 : Part 7 : 1990, clause 4	KeyLAB ID	PGL12018062183

Preparation Details: Peak Dry

Specimen Details

		Test No.	1	2	3				
Initial	Height								mm
	Bulk Density		2.09	2.16	2.21				Mg/m³
	Moisture Content		25.0	25.0	25.0				%
	Dry density		1.67	1.73	1.77				Mg/m³
	Voids ratio		0.587	0.532	0.497				
	Degree of Saturation		113	125	133				%
Consolidation	Consolidation / Normal Stress applied		**50**	**100**	**200**				kPa
	Change in height during consolidation*								mm
	Voids ratio after consolidation								
After test	Final Moisture content		23.2	21.5	19.5				





Shear Strength Parameters

Peak strength, (o)		Regression	Manual
c '	kPa	[4.2]	0
Ø '	degrees	[38.0]	39

Residual strength, (x)

c 'R	kPa	[0.0]	-
Ø 'R	degrees	[ ]	-

Remarks :

Lab Sheet Reference :		Date printed	Fig No.
		29/08/2018 11:57	1
			sheet 1 of 2

Laboratory Report

2788

GEO Site & Testing Services Ltd

Contract Number: 39943

Client Ref: **P18081**
Client PO: **10797**

Report Date: **26-07-2018**

Client **Priority Geotechnical Limited**
Unit 12
Owenacurra Business Park
Midleton
Co. Cork.

Contract Title: **Castletreasure**
For the attention of: **Colette Kelly**

Date Received: **06-07-2018**
Date Commenced: **06-07-2018**
Date Completed: **26-07-2018**

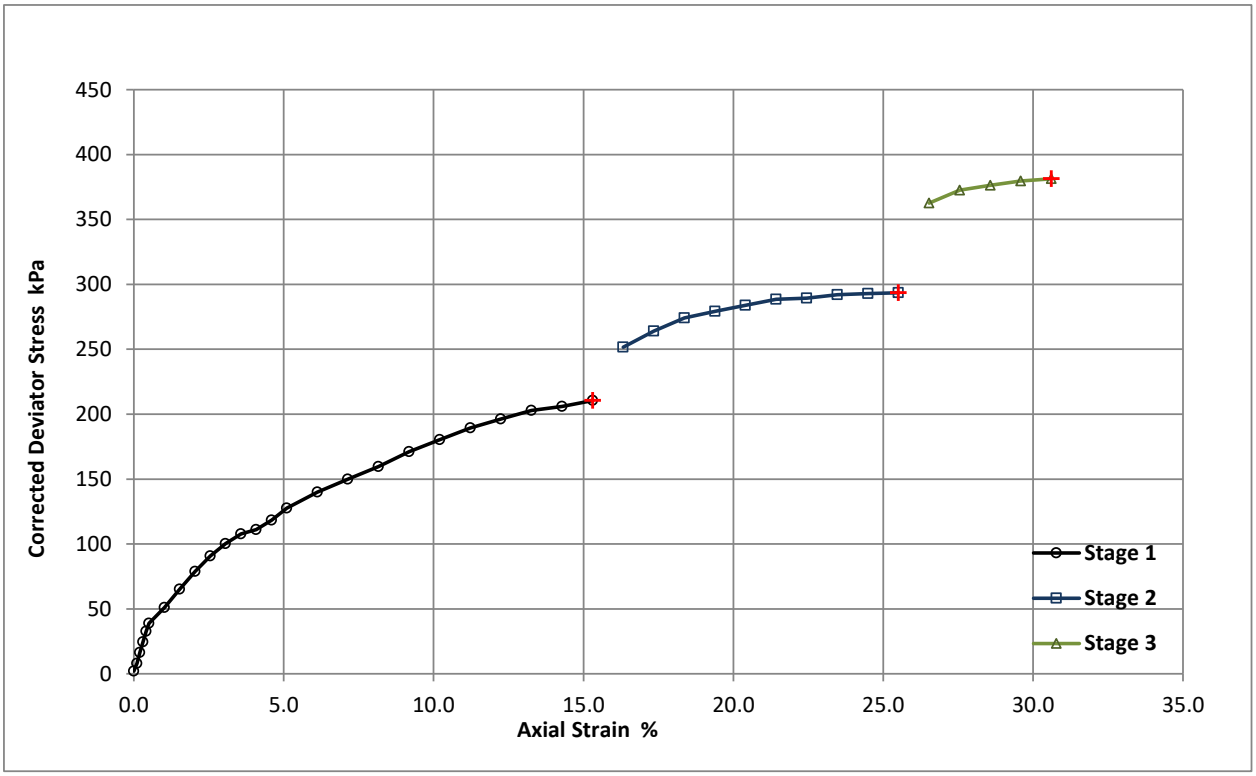
Test Description	Qty
Quick Undrained Triaxial Compression Test - Multi-stage Loading of a single specimen (100mm diameter) BS1377 : 1990 Part 7 : 9 - * UKAS	2
Remoulding Triaxial Specimens	2
Disposal of samples for job	1

Notes: **Observations and Interpretations are outside the UKAS Accreditation**
*** - denotes test included in laboratory scope of accreditation**
 # - denotes test carried out by approved contractor
@ - denotes non accredited tests

Approved Signatories:
Alex Wynn (Associate Director) - Ben Sharp (Contracts Manager) - Emma Sharp (Office Manager)
Paul Evans (Quality/Technical Manager) - Richard John (Advanced Testing Manager) - Sean Penn (Administrative/Accounts Assistant)
Wayne Honey (Administrative/Quality Assistant)

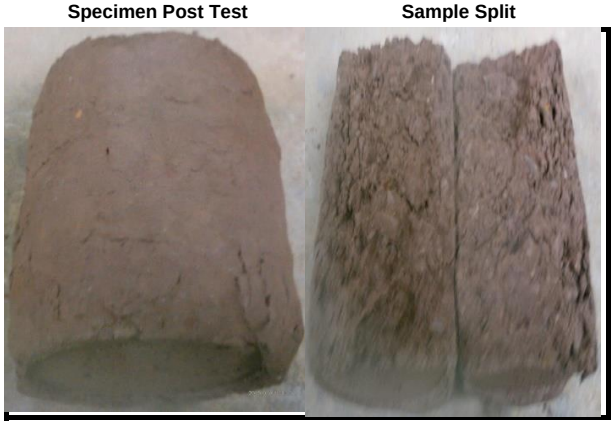
GEO Site & Testing Services Ltd
Unit 3-4, Heol Aur, Dafen Ind Estate, Dafen, Llanelli, Carmarthenshire SA14 8QN
Tel: 01554 784040 Fax: 01554 784041 info@gstl.co.uk gstl.co.uk

GSTL	Multi Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 9	Contract Number	39943
		Borehole/Pit No.	TP17
Site Name	Castletreasure	Sample No.	
Soil Description	Brown fine to medium gravelly sandy silty CLAY	Depth Top	2.50
		Depth Base	3.50
		Sample Type	U



Moisture Content (%)	13		
Bulk Density (Mg/m^3)	2.27		
Dry Density (Mg/m^3)	2.02		
Specimen Length (mm)	196		
Specimen Diamteter (mm)	101		
Cell Pressures (kPa)	50	100	200
Deviator Stress (kPa)	210	294	381
Undrained Shear Strength (kPa)	105	147	191
Failure Strain (%)	15	26	31
Mode Of Failure	Plastic		
Mrmbrane Used/Thickness	Rubber/0.3mm		
Rate of Strain (%/min)	3.00		

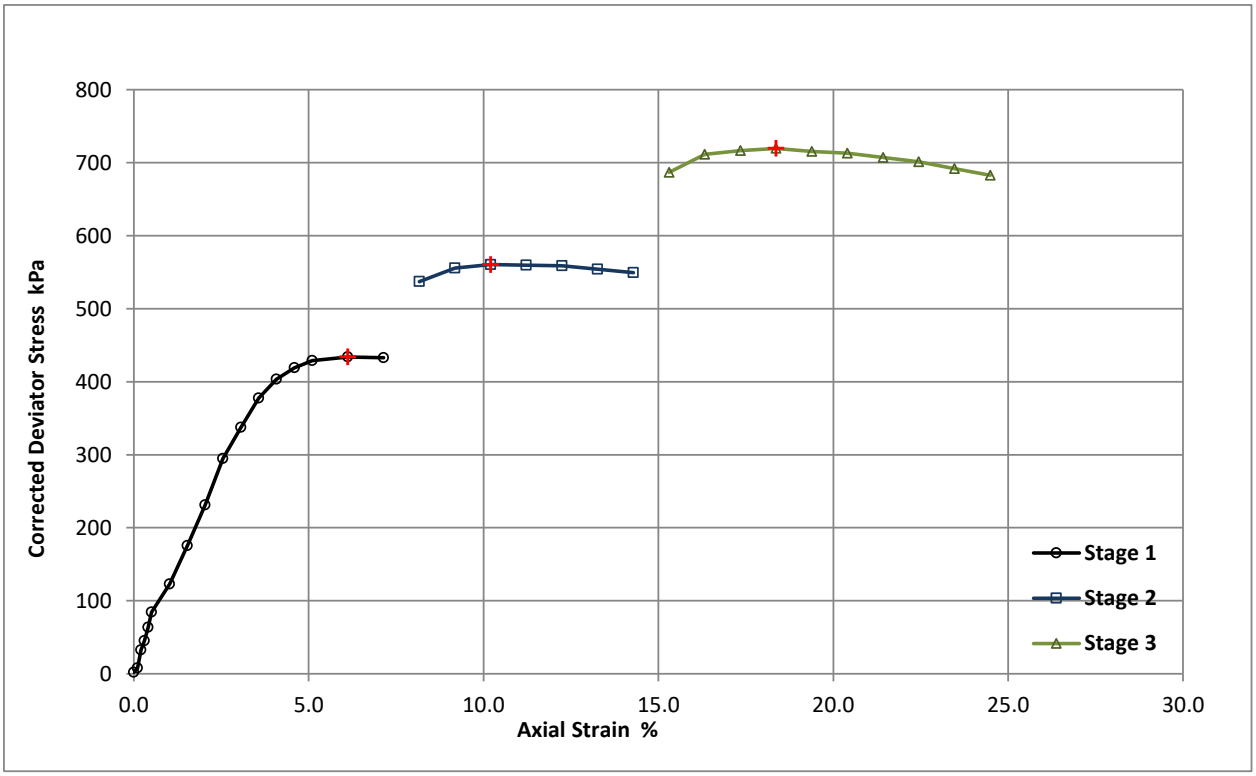
Specimen Post Test **Sample Split**



Checked	25-07-2018	Ben Sharp	
Approved	26-07-2018	Paul Evans	

UKAS TESTING 2788

GSTL	Multi Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 9	Contract Number	39943
		Borehole/Pit No.	TP18
Site Name	Castletreasure	Sample No.	
Soil Description	Brown fine to medium gravelly sandy silty CLAY	Depth Top	1.50
		Depth Base	
		Sample Type	U



Moisture Content (%)	8.0		
Bulk Density (Mg/m^3)	2.27		
Dry Density (Mg/m^3)	2.10		
Specimen Length (mm)	196		
Specimen Diamteter (mm)	101		
Cell Pressures (kPa)	50	100	200
Deviator Stress (kPa)	434	561	719
Undrained Shear Strength (kPa)	217	280	360
Failure Strain (%)	6.1	10	18
Mode Of Failure	Plastic		
Mrmbrane Used/Thickness	Rubber/0.3mm		
Rate of Strain (%/min)	3.00		

Specimen Post Test

Sample Split

Checked	25-07-2018	Ben Sharp	
Approved	26-07-2018	Paul Evans	

UKAS TESTING 2788

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Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

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Final Report

Report No.:	18-15117-1
Initial Date of Issue:	07-Jun-2018
Client	Priority Geotechnical Ltd
Client Address:	Unit 12 Owenacurra Business Park Midleton County Cork Ireland
Contact(s):	Colette Kelly
Project	P18081 Castletreasure

Quotation No.:		**Date Received:**	30-May-2018
Order No.:	10688	**Date Instructed:**	30-May-2018
No. of Samples:	2		
Turnaround (Wkdays):	7	**Results Due:**	07-Jun-2018
Date Approved:	07-Jun-2018		

Approved By:

Details: Glynn Harvey, Laboratory Manager

Results - 2 Stage WAC

Project: P18081 Castletreasure

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	18-15117						**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Chemtest Sample ID:	630429								
Sample Ref:	TP14								
Sample ID:									
Top Depth(m):	0.4								
Bottom Depth(m):									
Sampling Date:	24-May-2018								
Determinand	**SOP**	**Accred.**	**Units**						
Total Organic Carbon	2625	U	%			< 0.20	3	5	6
Loss On Ignition	2610	U	%			1.3	--	--	10
Total BTEX	2760	U	mg/kg			< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg			< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg			< 10	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg			< 2.0	100	--	--
pH	2010	U				8.0	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg			0.083	--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.0010	< 0.050	< 0.050	0.5	2	25
Barium	1450	U	0.0023	0.0013	< 0.50	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.00010	< 0.010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.0010	< 0.050	< 0.050	0.5	10	70
Copper	1450	U	0.0013	0.0013	< 0.050	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.00050	< 0.0010	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0012	< 0.0010	< 0.050	< 0.050	0.5	10	30
Nickel	1450	U	0.0012	< 0.0010	< 0.050	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.0010	< 0.010	< 0.010	0.5	10	50
Antimony	1450	U	0.0011	< 0.0010	< 0.010	< 0.010	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.0010	< 0.010	< 0.010	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.0010	< 0.50	< 0.50	4	50	200
Chloride	1220	U	1.1	5.3	< 10	47	800	15000	25000
Fluoride	1220	U	0.11	0.24	< 1.0	2.2	10	150	500
Sulphate	1220	U	13	5.0	26	61	1000	20000	50000
Total Dissolved Solids	1020	N	35	26	70	270	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	12	4.9	< 50	59	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	11

Leachate Test Information	
Leachant volume 1st extract/l	0.329
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.245

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - 2 Stage WAC

Project: P18081 Castletreasure

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	18-15117						**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Chemtest Sample ID:	630430								
Sample Ref:	TP21								
Sample ID:									
Top Depth(m):	0.4								
Bottom Depth(m):									
Sampling Date:	24-May-2018								
Determinand	**SOP**	**Accred.**	**Units**						
Total Organic Carbon	2625	U	%			< 0.20	3	5	6
Loss On Ignition	2610	U	%			1.5	--	--	10
Total BTEX	2760	U	mg/kg			< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg			< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg			< 10	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg			< 2.0	100	--	--
pH	2010	U				7.8	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg			0.014	--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.0010	< 0.050	< 0.050	0.5	2	25
Barium	1450	U	0.0030	0.0031	< 0.50	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.00010	< 0.010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.0010	< 0.050	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	0.0015	< 0.050	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.00050	< 0.0010	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	< 0.0010	< 0.0010	< 0.050	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.0010	< 0.050	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.0010	< 0.010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.0010	< 0.010	< 0.010	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.0010	< 0.010	< 0.010	0.1	0.5	7
Zinc	1450	U	< 0.0010	0.0014	< 0.50	< 0.50	4	50	200
Chloride	1220	U	2.1	5.2	< 10	47	800	15000	25000
Fluoride	1220	U	0.11	0.21	< 1.0	1.9	10	150	500
Sulphate	1220	U	7.6	8.9	15	87	1000	20000	50000
Total Dissolved Solids	1020	N	35	35	70	350	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	13	11	< 50	110	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	8.6

Leachate Test Information	
Leachant volume 1st extract/l	0.334
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.285

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Test Methods

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
640	Characterisation of Waste – Leaching	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

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For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
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Sample Deviation Codes

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

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
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Depot Road
Newmarket
CB8 0AL
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Email: info@chemtest.co.uk

UKAS TESTING
2183

Final Report

Report No.:	18-15901-1
Initial Date of Issue:	14-Jun-2018
Client	Priority Geotechnical Ltd
Client Address:	Unit 12 Owenacurra Business Park Midleton County Cork Ireland
Contact(s):	Colette Kelly
Project	P18081 - Castletreasure

Quotation No.:		**Date Received:**	06-Jun-2018
Order No.:	10688	**Date Instructed:**	06-Jun-2018
No. of Samples:	1		
Turnaround (Wkdays):	7	**Results Due:**	14-Jun-2018
Date Approved:	14-Jun-2018		

Approved By:

Details: Martin Dyer, Laboratory Manager

Results - 2 Stage WAC

Project: P18081 - Castletreasure

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	18-15901						**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Chemtest Sample ID:	633963								
Sample Ref:	TP11								
Sample ID:									
Top Depth(m):	0.50								
Bottom Depth(m):									
Sampling Date:	29-May-2018								
Determinand	**SOP**	**Accred.**	**Units**						
Total Organic Carbon	2625	U	%			< 0.20	3	5	6
Loss On Ignition	2610	U	%			1.5	--	--	10
Total BTEX	2760	U	mg/kg			< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg			< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg			< 10	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg			< 2.0	100	--	--
pH	2010	U				8.1	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg			0.012	--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.0010	< 0.050	< 0.050	0.5	2	25
Barium	1450	U	0.0043	0.0012	< 0.50	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.00010	< 0.010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.0010	< 0.050	< 0.050	0.5	10	70
Copper	1450	U	0.0012	< 0.0010	< 0.050	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.00050	< 0.0010	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0030	< 0.0010	< 0.050	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.0010	< 0.050	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.0010	< 0.010	< 0.010	0.5	10	50
Antimony	1450	U	0.0018	< 0.0010	< 0.010	< 0.010	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.0010	< 0.010	< 0.010	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.0010	< 0.50	< 0.50	4	50	200
Chloride	1220	U	4.7	1.8	< 10	22	800	15000	25000
Fluoride	1220	U	0.14	0.15	< 1.0	1.5	10	150	500
Sulphate	1220	U	13	8.5	26	91	1000	20000	50000
Total Dissolved Solids	1020	N	140	61	280	710	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	12	9.8	< 50	100	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	11

Leachate Test Information	
Leachant volume 1st extract/l	0.329
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.224

Waste Acceptance Criteria

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Test Methods

SOP	Title	Parameters included	Method summary
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1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
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2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
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640	Characterisation of Waste – Leaching	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

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UKAS TESTING
2183

Final Report

Report No.:	18-18571-1
Initial Date of Issue:	02-Jul-2018
Client	Priority Geotechnical Ltd
Client Address:	Unit 12 Owenacurra Business Park Midleton County Cork Ireland
Contact(s):	Colette Kelly
Project	P18081 Castletreasure

Quotation No.:		**Date Received:**	27-Jun-2018
Order No.:	10688	**Date Instructed:**	27-Jun-2018
No. of Samples:	2		
Turnaround (Wkdays):	5	**Results Due:**	03-Jul-2018
Date Approved:	02-Jul-2018		

Approved By:

Details: Martin Dyer, Laboratory Manager

Results - Soil

Project: P18081 Castletreasure

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		18-18571	18-18571
Quotation No.:			**Chemtest Sample ID.:**		645314	645315
Order No.: 10688			Client Sample Ref.:		TP08	TP17
			Sample Type:		SOIL	SOIL
			Top Depth (m):		1.5	3.5
			Date Sampled:		25-Jun-2018	25-Jun-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Moisture	N	2030	%	0.020	10	9.6
pH	U	2010		N/A	7.3	6.5
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	< 0.010	< 0.010
Sulphate (Acid Soluble)	U	2430	%	0.010	< 0.010	< 0.010

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.

Report Information

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Sample Deviation Codes

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Final Report

Report No.:	18-19315-1
Initial Date of Issue:	06-Jul-2018
Client	Priority Geotechnical Ltd
Client Address:	Unit 12 Owenacurra Business Park Midleton County Cork Ireland
Contact(s):	Colette Kelly
Project	P18081 Castletreasure

Quotation No.:		**Date Received:**	03-Jul-2018
Order No.:	10688	**Date Instructed:**	03-Jul-2018
No. of Samples:	3		
Turnaround (Wkdays):	5	**Results Due:**	09-Jul-2018
Date Approved:	06-Jul-2018		

Approved By:

Details: Martin Dyer, Laboratory Manager

Chemtest
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Results - Soil

Project: P18081 Castletreasure

Client: Priority Geotechnical Ltd					**Chemtest Job No.:**	18-19315	18-19315	18-19315
Quotation No.:					**Chemtest Sample ID.:**	648404	648405	648406
Order No.: 10688					Client Sample Ref.:	BH01	TP21	BH08
					Sample Type:	SOIL	SOIL	SOIL
					Top Depth (m):	1.5	1.5	2.5
					Date Sampled:	29-Jun-2018	29-Jun-2018	29-Jun-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
Moisture	N	2030	%	0.020		13	17	13
pH	U	2010		N/A		7.6		6.4
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010		< 0.010		< 0.010
Sulphate (Acid Soluble)	U	2430	%	0.010		< 0.010		< 0.010
Organic Matter	U	2625	%	0.40			0.78	

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.

Report Information

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Final Report

Report No.:	18-19739-1
Initial Date of Issue:	10-Jul-2018
Client	Priority Geotechnical Ltd
Client Address:	Unit 12 Owenacurra Business Park Midleton County Cork Ireland
Contact(s):	Colette Kelly
Project	P18081 Castletreasure

Quotation No.:		**Date Received:**	06-Jul-2018
Order No.:	10688	**Date Instructed:**	06-Jul-2018
No. of Samples:	1		
Turnaround (Wkdays):	5	**Results Due:**	12-Jul-2018
Date Approved:	10-Jul-2018		

Approved By:

Details: Glynn Harvey, Laboratory Manager

Results - Soil

Project: P18081 Castletreasure

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		18-19739
Quotation No.:			**Chemtest Sample ID.:**		650178
Order No.: 10688			Client Sample Ref.:		BH07
			Sample Type:		SOIL
			Top Depth (m):		2.50
			Date Sampled:		05-Jul-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Moisture	N	2030	%	0.020	13
pH	U	2010		N/A	7.7
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	< 0.010
Sulphate (Acid Soluble)	U	2430	%	0.010	< 0.010

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.

Report Information

Key

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

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

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

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

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

Chemtest
The right chemistry to deliver results
Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

UKAS TESTING
2183

Final Report

Report No.:	18-21056-1
Initial Date of Issue:	20-Jul-2018
Client	Priority Geotechnical Ltd
Client Address:	Unit 12 Owenacurra Business Park Midleton County Cork Ireland
Contact(s):	Colette Kelly
Project	P18081 Castletreasure

Quotation No.:		**Date Received:**	17-Jul-2018
Order No.:	10688	**Date Instructed:**	17-Jul-2018
No. of Samples:	1		
Turnaround (Wkdays):	5	**Results Due:**	23-Jul-2018
Date Approved:	20-Jul-2018		

Approved By:

Details: Glynn Harvey, Laboratory Manager

Results - Soil

Project: P18081 Castletreasure

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		18-21056
Quotation No.:			**Chemtest Sample ID.:**		655492
			Client Sample ID.:		BH03
			Sample Type:		SOIL
			Top Depth (m):		2.5
			Date Sampled:		13-Jul-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Moisture	N	2030	%	0.020	14
pH	U	2010		N/A	7.6
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	< 0.010
Sulphate (Acid Soluble)	U	2430	%	0.010	< 0.010

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
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>	"greater than"

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All results are expressed on a dry weight basis
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Sample Deviation Codes

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C - Sample not received in appropriate containers
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E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

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

Laboratory Report

2788

GEO Site & Testing Services Ltd

Contract Number: 40192

Client Ref: **P18081**
Client PO: **10797**

Report Date: **20-08-2018**

Client **Priority Geotechnical Limited**
Unit 12
Owenacurra Business Park
Midleton
Co. Cork.

Contract Title: **Castletreasure**
For the attention of: **Colette Kelly**

Date Received: **01-08-2018**
Date Commenced: **01-08-2018**
Date Completed: **20-08-2018**

Test Description	Qty
Determination of the slake durability index, two cycles. ISRM / BS 1377/2/3.3 2/2 - @ Non Accredited Test	1
Los Angeles Abrasion Value BS EN 1097-2 - * UKAS	1
Magnesium sulfate test soundness value. BS EN 1367-2 - * UKAS	1
Disposal of samples for job	1

Notes: **Observations and Interpretations are outside the UKAS Accreditation**
*** - denotes test included in laboratory scope of accreditation**
 # - denotes test carried out by approved contractor
@ - denotes non accredited tests

Approved Signatories:
Alex Wynn (Associate Director) - Ben Sharp (Contracts Manager) - Emma Sharp (Office Manager)
Paul Evans (Quality/Technical Manager) - Richard John (Advanced Testing Manager) - Sean Penn (Administrative/Accounts Assistant)
Wayne Honey (Administrative/Quality Assistant)

GEO Site & Testing Services Ltd
Unit 3-4, Heol Aur, Dafen Ind Estate, Dafen, Llanelli, Carmarthenshire SA14 8QN
Tel: 01554 784040 Fax: 01554 784041 info@gstl.co.uk gstl.co.uk

GSTL	Determination of Resistance to Fragmentation by the Los Angeles Test Method BS EN 1097-2:2010 Cl 5	
Contract Number	40192	
Site Name	Castletreasure	
Sample Preperation	Crushed Down Core Sample	
Date Tested	17/08/2018	

Hole Reference	Depth (m)			Size Fraction (Max)	Size Fraction (Min)	LA Value						Target Specification
TP02	2.50			14	10	27						N/A

Key	Reported As
Size Fraction Max	mm
Size Fraction Min	mm

Method of Sampling in accordance with BS932-1 General Requirements and Sample Preparation

Operators	Checked	19/08/2018	Wayne Honey	W. Honey
JD	Approved	20/08/2018	Ben Sharp	

GSTL	Determination of Thermal Weathering Properties of Aggregates Magnesium Sulfate Test BS EN 1367-2:1998	
Contract Number	40192	
Site Name	Castletreasure	
Sample Preperation	Crushed rock core	
Date Tested	17/08/2018	

Hole Reference	Depth (m)			Size Fraction (Max)	Size Fraction (Min)	Mass of test portions	Magnesium Sulfate Value					Target Specification
TP02	2.50			14	10	420-430	8.6					N/A

Key	Reported As
Size Fraction Max	mm
Size Fraction Min	mm
Mass of test portions	g
Magnesium Sulfate Value	%

Method of Sampling in accordance with BS932-1 General Requirements and Sample Preparation

Operators	Checked	19/08/2018	Wayne Honey	W. Honey
JD	Approved	20/08/2018	Ben Sharp	

UKAS TESTING 2788

GSTL	Determination of Slake Durability Index ISRM Part 2.2	
Contract Number	40192	
Site Name	Castletreasure	
Nature of Slaking Fluid	Water at 20°C	
Date Tested	17/08/2018	

Hole Reference	Depth (m)			Slake First Cycle	Slake Second Cycle	Appearance Of Material Retained In The Drum	Appearance Of Material Passing Through The Drum
RC06	2.75	-	4.30	86.66	85.41	10 Pieces of Sub-angular to rounded rock core with some pieces with ground corners and edges	Sub-angular to well rounded <2mm fragments to a silt.

Key	Reported As
Slake First Cycle	%
Slake Second Cycle	%

Operators	Checked	19/08/2018	Wayne Honey	W. Honey
JD	Approved	20/08/2018	Ben Sharp	

Priority Geotechnical Limited

Point Load Test Results

Project: **Castletreasure**

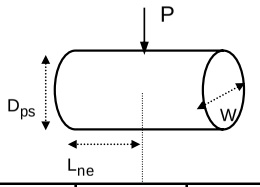
Project No: P18081

Carried out by: Evan

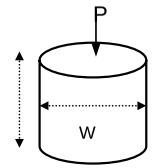
Test Type
D - Diametral, A - Axial, I - Irregular Lump
Direction (U = unknown or random)
Par - parallel to planes of weakness
Per - perpendicular to planes of weakness
Dimensions
Dps - Distance between platens (platen separation)
Dps' - at failure
Lne - Length from platens to nearest free end
W - Width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

Machine Ram Area, cm^2

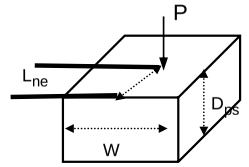
Diametral



Axial



Block/irregular lump



Borehole	Sample Top, m BGL	Sample Ref	Sample Type	Sample Base, m BGL	Specimen Ref	Specimen Depth, m BGL	Description	Test Type see ISRM Fig 5 and 8		Failure Valid (Y/N)	Dimensions			Gauge reading, kN	P Failure Load, kN	De equivalent diameter, mm	Is MPa	Is(50) point load index, MPa	Remarks
								Type (D, A, I)	Direction (Par/Per/U)		L mm	Dps, mm	W mm						
RC01						1.5	SILTSTONE	D	Par	Y	21	76	76	0.78	0.78	76.0	0.13	0.16	Planar Smooth
RC01						1.6	SILTSTONE	D	Par	Y	25	76	76	1.6	1.60	76.0	0.28	0.33	Planar Rough
RC01						2.05	SILTSTONE	I	Per	Y	40	32	75	4.46	4.46	55.3	1.46	1.53	Stepped Smooth
RC01						3.2	SILTSTONE	D	Par	Y	12	76	76	0.19	0.19	76.0	0.03	0.04	Undulating Rough
RC01						3.6	SILTSTONE	D	Par	Y	13	76	76	0.475	0.48	76.0	0.08	0.10	Stepped Rough
RC01						3.8	SILTSTONE	I	Per	Y	34	22	76	2.895	2.90	46.1	1.36	1.31	Stepped Rough
RC01						3.85	SILTSTONE	I	Per	Y	27	24	74	1.565	1.57	47.6	0.69	0.68	Stepped Rough
RC01						6.1	SILTSTONE	D	Par	Y	61	76	76	0.345	0.35	76.0	0.06	0.07	Undulating Rough
RC01						6.3	SILTSTONE	D	Par	Y	76	76	76	0.415	0.42	76.0	0.07	0.09	Undulating Rough
RC01						7.2	SILTSTONE	D	Per	Y	87	76	76	3.675	3.68	76.0	0.64	0.77	Planar Rough
RC01						7.8	SILTSTONE	D	Par	Y	51	76	76	0.11	0.11	76.0	0.02	0.02	Planar Rough
RC01						8.45	SILTSTONE	I	Per	Y	45	46	76	1.405	1.41	66.7	0.32	0.36	Undulating Rough
RC01						8.7	SILTSTONE	I	Per	Y	42	46	76	2.675	2.68	66.7	0.60	0.68	Undulating Rough
RC01						9.5	SILTSTONE	D	Per	Y	76	76	76	4.115	4.12	76.0	0.71	0.86	Undulating Rough
RC01						10	SILTSTONE	D	Par	Y	61	76	76	0.37	0.37	76.0	0.06	0.08	Planar Rough
RC02						5.5	SILTSTONE	D	Par	Y	56	76	76	0.465	0.47	76.0	0.08	0.10	Undulating Rough
RC02						5.7	SILTSTONE	D	Par	Y	21	76	76	0.08	0.08	76.0	0.01	0.02	Undulating Rough
RC02						6.2	SILTSTONE	D	Par	Y	65	76	76	0.624	0.62	76.0	0.11	0.13	Undulating Rough
RC02						7.3	SILTSTONE	D	Par	Y	24	76	76	1.51	1.51	76.0	0.26	0.32	Planar Rough
RC02						7.5	SILTSTONE	D	Par	Y	17	76	76	0.795	0.80	76.0	0.14	0.17	Undulating Rough
RC02						8.8	SILTSTONE	D	Par	Y	13	76	76	0.95	0.95	76.0	0.16	0.20	Undulating Rough

Borehole	Sample Top, m BGL	Sample Ref	Sample Type	Sample Base, m BGL	Specimen Ref	Specimen Depth, m BGL	Description	Test Type see ISRM Fig 5 and 8		Failure Valid (Y/N)	Dimensions			Gauge reading, kN	P Failure Load, kN	De equivalent diameter, mm	Is MPa	Is(50) point load index, MPa	Remarks
								Type (D, A, I)	Direction (Par/Per/U)		L mm	Dps, mm	W mm						
RC02						9	SILTSTONE	D	Par	Y	29	76	76	0.545	0.55	76.0	0.09	0.11	Undulating Smooth
RC02						10.2	SANDSTONE	D	Par	Y	33	76	76	0.575	0.58	76.0	0.10	0.12	Stepped Rough
RC03						9	SILTSTONE	D	Par	Y	24	76	76	0.205	0.21	76.0	0.04	0.04	Planar Rough
RC03						9.3	SILTSTONE	D	Par	Y	32	76	76	0.35	0.35	76.0	0.06	0.07	Undulating Rough
RC03						10.15	SILTSTONE	I	Per	Y	60	22	73	3.795	3.80	45.2	1.86	1.77	Undulating Rough
RC03						10.3	SILTSTONE	I	Par	Y	55	21	74	1.625	1.63	44.5	0.82	0.78	Stepped Rough
RC03						11.9	SILTSTONE	D	Par	Y	61	76	76	0.2	0.20	76.0	0.03	0.04	Undulating Rough
RC03						12.6	SILTSTONE	D	Par	Y	25	76	76	0.205	0.21	76.0	0.04	0.04	Undulating Rough
RC03						13.8	SILTSTONE	D	Par	Y	11	76	76	0.27	0.27	76.0	0.05	0.06	Undulating Smooth
RC03						13.9	SILTSTONE	D	Par	Y	24	76	76	0.17	0.17	76.0	0.03	0.04	Undulating Rough
RC04						7.8	SILTSTONE	D	Per	Y	9	76	76	0.13	0.13	76.0	0.02	0.03	Planar Smooth
RC04						7.85	SILTSTONE	D	Per	Y	12	76	76	0.671	0.67	76.0	0.12	0.14	Planar Smooth
RC06						3.8	SILTSTONE	D	Par	Y	62	76	76	2.065	2.07	76.0	0.36	0.43	Stepped Striated
RC06						4.1	SILTSTONE	D	Par	Y	106	76	76	2.42	2.42	76.0	0.42	0.51	Undulating Rough
RC06						4.25	SILTSTONE	D	Par	Y	25	76	76	1.585	1.59	76.0	0.27	0.33	Stepped Rough
RC06						4.5	SILTSTONE	D	Per	Y	89	76	76	5.275	5.28	76.0	0.91	1.10	Stepped Rough
RC06						5.3	SILTSTONE	D	Par	Y	88	76	76	1.8	1.80	76.0	0.31	0.38	Undulating Rough
RC06						5.65	SILTSTONE	D	Par	Y	84	76	76	3.94	3.94	76.0	0.68	0.82	Stepped Striated
RC06						6.35	SILTSTONE	D	Per	Y	144	76	76	4.295	4.30	76.0	0.74	0.90	Stepped Striated
RC06						6.95	SILTSTONE	D	Par	Y	54	76	76	3.305	3.31	76.0	0.57	0.69	Stepped Rough
RC06						7.5	SILTSTONE	D	Par	Y	42	76	76	2.395	2.40	76.0	0.41	0.50	Stepped Striated
RC06						8	SILTSTONE	D	Par	Y	62	76	76	2.8	2.80	76.0	0.48	0.59	Undulating Rough
RC06						8.6	SILTSTONE	D	Par	Y	42	76	76	0.635	0.64	76.0	0.11	0.13	Stepped Striated
RC06						8.7	SILTSTONE	D	Par	Y	51	76	76	2.245	2.25	76.0	0.39	0.47	Stepped Striated
RC07						9	SILTSTONE	D	Par	Y	8	76	76	1.78	1.78	76.0	0.31	0.37	Planar Smooth

Borehole	Sample Top, m BGL	Sample Ref	Sample Type	Sample Base, m BGL	Specimen Ref	Specimen Depth, m BGL	Description	Test Type see ISRM Fig 5 and 8		Failure Valid (Y/N)	Dimensions			Gauge reading, kN	P Failure Load, kN	De equivalent diameter, mm	Is MPa	Is(50) point load index, MPa	Remarks
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RC07						9.7	SILTSTONE	D	Par	Y	16	76	76	2.955	2.96	76.0	0.51	0.62	Undulating Smooth
RC08						7.45	SILTSTONE	D	Par	Y	44	76	26	0.1	0.10	44.5	0.05	0.05	Planar Rough
RC08						7.75	SILTSTONE	D	Par	Y	86	76	27	0.065	0.07	45.3	0.03	0.03	Planar Rough
RC08						7.95	SILTSTONE	D	Par	Y	78	76	15	0.64	0.64	33.8	0.56	0.47	Planar Rough
RC08						8.45	SILTSTONE	D	Par	Y	43	76	46	0.145	0.15	59.1	0.04	0.04	Undulating Smooth
RC08						8.55	SILTSTONE	D	Par	Y	70	76	58	0.13	0.13	66.4	0.03	0.03	Undulating Rough
RC08						9	SILTSTONE	D	Par	Y	36	76	28	0.2	0.20	46.1	0.09	0.09	Undulating Rough
RC08						10.25	SILTSTONE	D	Par	Y	17	76	37	0.63	0.63	53.0	0.22	0.23	Planar Smooth
RC08						11.15	SILTSTONE	D	Par	Y	74	76	52	0.5	0.50	62.9	0.13	0.14	Stepped Rough
RC08						12	SANDSTONE	D	Par	Y	54	76	76	17.695	17.70	76.0	3.06	3.70	Undulating Rough