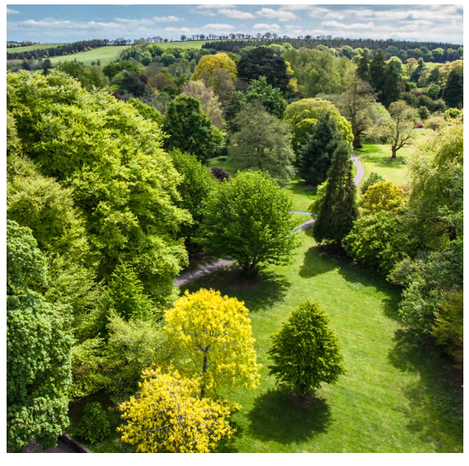

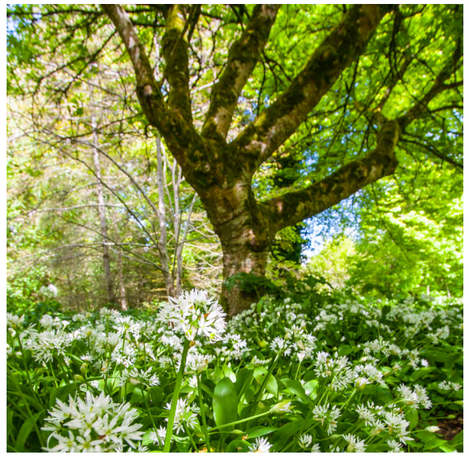

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APPENDIX 7

Land & Soils

VOLUME III | Appendices

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APPENDIX 7-1

Site Investigation Report
- Priority Geotechnical Limited

VOLUME III | Appendices

Our Ref: JMS_GH/Rp/P18170 + attachments (*.pdf)

09th November, 2018

Messrs. AECOM Ireland Ltd.
4th Floor,
Adelphi Plaza,
Georges Street Upper,
Co. Dublin,
Ireland.

Re: Residential Development, Glounthaune (Phase 2), Co. Cork, Site Investigation, Factual Report

Introduction

In June 2018, Priority Geotechnical (PGL) were requested by Aecom Ireland Ltd., acting as Employer's Representative for IDV Glanmire Partnership, to undertake a site investigation for a proposed housing development at Glounthaune, Co. Cork. The proposed development consists of residential dwellings with associated estate roads and retaining structures and infrastructure. It should be noted that the site topography is sloping with significant change in level across the site.

Objectives

The purpose of the investigation in so far as the scope allows was to assess the ground and groundwater conditions present within the site and to provide for reporting; summarising the findings and results of both field and laboratory investigations, make observations on the ground and groundwater conditions encountered and to gives advice on foundations (bearing capacities) and other geotechnical aspects that may be relevant to the proposed development works.

Scope

The scope of the ground investigation, which was specified by Aecom Ireland Ltd., comprised of the following:

- Cable percussion borehole;
- Trial pit excavations;
- *In situ* testing, standard penetration tests and soakaway tests;
- All associated sampling;
- Laboratory testing and
- Factual and interpretive reporting.

This report presents the factual data obtained with regard to the site investigation for the proposed housing development at Glounthaune, Co. Cork. This report should be read in conjunction with the exploratory and laboratory test data accompanying this report.

A separate interpretive report has been produced.

Site Works

This investigation was carried out between the 26th July and the 24th August, 2018 under the supervision of PGL, Engineering Geologist(s) in accordance with the contract specification: 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 +A2:2010 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

Fourteen (14) cable percussion boreholes were bored to a depth 1.2m below existing ground level (bgl) and 4.0m bgl using a Dando 2000 light cable percussive rig with 200mm diameter casing. The boreholes were terminated in general after one (1) hour of chiseling without progress (on obstruction/ bedrock). The records are attached, herein.

Location	Depth, m bgl
BH01	2.10
BH02	1.80
BH03	1.30
BH04	1.20
BH05	4.00
BH06	3.65
BH07	2.40
BH08	3.60
BH09	1.30
BH10	2.50
BH11	2.20
BH12	3.40
BH13	2.00
BH14	2.35

Location	Chiselling, m bgl		Duration, hh:mm
	from	to	
BH01	2.00	2.10	01:00
BH02	1.70	1.80	01:00
BH03	1.20	1.30	01:00
BH04	1.15	1.20	01:00
BH05	3.90	4.00	01:00
BH06	3.60	3.65	01:00
BH07	2.35	2.40	01:00
BH08	3.50	3.60	01:00
BH09	1.20	1.30	01:00
BH10	2.40	2.50	01:00
BH11	2.10	2.20	01:00
BH12	3.30	3.40	01:00
BH13	1.90	2.00	01:00
BH14	2.30	2.35	01:00

Trial Pits

Twenty five (25) trial pit excavations were dug to depths 1.0m bgl to 2.6m bgl using a JCB backhoe excavator. The pits terminated for a variety of reasons as outlined on the exploratory logs accompanying this factual report.

Location	Final Depth (m bgl)	Stability
TP01	1.95	Good
TP02	1.80	Good.
TP03	1.40	Good.
TP04	1.80	Good.
TP05	2.50	Good.
TP06	2.30	Good.
TP07	2.20	Good.
TP08	1.80	Good.
TP09	2.20	Good.
TP10	1.80	Good.
TP11	2.50	Good.
TP12	2.50	Good.
TP13	2.50	Good.
TP14	2.10	Good
TP15	2.60	Good.
TP16	2.50	Good.

Location	Final Depth (m bgl)	Stability
TP17	2.50	Good
TP18	2.30	Good
TP19	2.50	Good.
TP20	1.35	Good.
TP21	2.50	Good.
TP22	1.00	Good.
TP23	2.50	Good.
TP24	2.10	Good.
TP25	1.25	Good

Survey and Drawings

The 'as built' exploration locations were subsequently 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 attached and summarized as follows;

Location	Easting	Northing	Ground Level (mOD Malin)	Final Depth (m bgl)	Date Start (dd/mm/yyyy)
BH01	577011.903	573944.074	97.532	2.10	26/07/2018
BH02	577108.094	573932.301	95.250	1.80	26/07/2018
BH03	577178.951	573977.108	104.712	1.30	13/08/2018
BH04	577282.112	573973.558	102.721	1.20	13/08/2018
BH05	577070.717	573834.821	81.213	4.00	27/07/2018
BH06	577149.916	573841.974	83.043	3.65	30/07/2018
BH07	577234.817	573852.331	85.086	2.40	31/07/2018
BH08	577309.568	573871.645	87.306	3.60	30/07/2018
BH09	577210.073	573779.090	77.292	1.30	31/07/2018
BH10	577281.331	573767.212	76.321	2.50	31/07/2018
BH11	577350.123	573771.793	76.494	2.20	01/08/2018
BH12	577215.385	573667.233	63.349	3.40	02/08/2018
BH13	577295.943	573671.700	65.100	2.00	01/08/2018
BH14	577373.779	573681.265	65.469	2.35	02/08/2018
PT01	577268.868	573890.442	90.596	1.95	23/08/2018
PT02	577219.084	573761.790	75.240	1.80	23/08/2018
PT03	577319.357	573706.391	69.362	1.40	23/08/2018
TP01	577013.223	573938.252	96.680	1.80	22/08/2018
TP02	577092.835	573941.384	97.217	2.50	22/08/2018
TP03	577129.081	573928.632	95.228	2.30	22/08/2018
TP04	577161.497	574002.913	108.054	2.20	22/08/2018
TP05	577213.627	574011.365	107.713	1.80	22/08/2018

Location	Easting	Northing	Ground Level (mOD Malin)	Final Depth (m bgl)	Date Start (dd/mm/yyyy)
TP06	577202.908	573956.019	102.000	2.20	22/08/2018
TP07	577263.389	573976.113	103.339	1.80	24/08/2018
TP08	577270.352	573932.867	98.372	2.50	24/08/2018
TP09	577178.423	573896.885	90.902	2.50	22/08/2018
TP10	577090.754	573880.246	86.541	2.50	22/08/2018
TP11	577099.445	573817.586	80.598	2.10	22/08/2018
TP12	577186.223	573831.000	83.206	2.60	22/08/2018
TP13	577243.644	573848.406	84.960	2.50	23/08/2018
TP14	577234.190	573804.413	80.033	2.50	23/08/2018
TP15	577315.855	573818.617	81.666	2.30	23/08/2018
TP16	577356.566	573764.539	75.695	2.50	23/08/2018
TP17	577272.907	573749.122	74.413	1.35	23/08/2018
TP18	577205.427	573726.246	71.599	2.50	23/08/2018
TP19	577207.801	573672.699	63.919	1.00	23/08/2018
TP20	577260.127	573688.364	66.847	2.50	23/08/2018
TP21	577323.112	573725.647	72.327	2.10	23/08/2018
TP22	577385.507	573677.974	64.841	1.25	22/08/2018
TP23	577322.950	573657.063	62.866	2.10	26/07/2018
TP24	577240.267	573604.895	52.987	1.80	26/07/2018
TP25	577328.839	573896.838	91.141	1.30	13/08/2018

Sampling

A total of ninety seven (97) bulk disturbed samples (B) recovered from the exploratory holes in accordance with Geotechnical Investigation and Sampling – Sampling Methods and Groundwater Measurements (EN ISO 22475-1:2006).

Eight (8) environmental samples (WAC) were taken at 0.6m bgl in accordance with; 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 Geoenvironmental Specialists (AGS) guide to environmental sampling, September 2010. 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.

In-situ testing

Standard penetration test

Thirty three (33) number standard penetration tests, N_{SPT} values, were carried out in the cable percussion boreholes using the 60º solid cone (CPT) in place of the standard split barrel sampler. The Standard Penetration Test was 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 accompanying this report and summarized graphically herein.

Soakaway Tests

Three (3) number infiltration tests were carried out in general accordance with the BRE Digest 365, 2007 Soakaway Design Standards. A single (1) cycle of infiltration/ drainage was undertaken where it was not practical to keep excavations open beyond the duration of the working day. Soakaway pit PT02 failed to drain in full over the test durations 2.25hrs. The data from the testing was presented accompanying the relevant exploratory, trial pit records.

Laboratory Testing

Laboratory testing was scheduled by PGL on behalf of Aecom Ireland Ltd. Testing was carried out by PGL in accordance with BS1377 (1990), Methods of test for soils for civil engineering purposes and the ISRM suggested methods for rock characterisation, testing and monitoring. The laboratory data accompanies this report and was summarised as follows;

SUMMARY OF LABORATORY TESTING

Type	Nr.	Remarks
Natural Moisture Content	32	w 11% to 33%
Atterberg Limits	08	Liquid Limit, w_L 20% to 63% Plastic Limit, w_P 13% to 45% Plasticity Index, I_P 4 to 18
Particle Size Distribution	22	04Nr. hydrometer analysis on fine soils
Organic content	5	<0.4% to 1.4%
pH	10	pH 7.2 to 7.9
SO_4 -water soluble	10 10	<0.010g/l to **1.2g/l (1200mg/**l) <0.010% and **0.3%**

Type	Nr.	Remarks
SO_4 -acid soluble		
California bearing ratio, CBR	05	1.7% - 7.9%
CBR moisture content relationship	01	BH01 1.0m, see attached results.
Dry density moisture content relationship	01	BH01 1.0m Maximum dry density 2.1Mg/m^3 Optimum moisture content 10%
Moisture condition value, MCV moisture content relationship	01	BH01 1.0, see attached results.
Rialta Suite	07	TP01, TP07, TP11, TP13, TP17, TP19 and TP23, see attached results

Published Geology

The Geological Survey of Ireland, 1:100,000 mapping (Sheet 25) indicated that the geology of the area was characterised by two main geological formations. The Gyleen formation (GY) is characterised by Sandstone with Mudstone and Siltstone. The Ballytrasna (BS) formation is mapped to the north and defined by Purple Mudstone and Sandstone. Outcropping bedrock is shown in the area.

Teagasc sub-soil mapping indicated the superficial deposits were characterised by glacial till derived from Devonian Sandstones and Made Ground deposits around Glounthane. Historical bore ID: 1707SWW053, 1707SWW056, 1707SWW055 and 1707SWW022 identified rock at a depth 2.7m to 8.7m.

Ground and groundwater 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 site investigation.

Groundwater was recorded when encountered during boring over a period of 20 minutes, noting any changes that may occur. Groundwater levels were also monitored at start and end of drilling shifts. It should be noted that the normal rate of boring 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. The normal duration over which a trial excavation remains open may not allow for low volume flow to ingress in cohesive deposits. Groundwater conditions observed in the borings and the excavations are those appertaining to the period of the investigation. Groundwater levels may be subject to diurnal, seasonal and climatic variations and can also be affected by drainage conditions, tidal variations etc.

No groundwater was encountered during the period of works.

The groundwater regime should be assessed from standpipe well installations, where available. Under the scope of works, four (4) nr. standpipes were installed in BH01, BH10, BH12 and BH14. Ground gas taps were also installed to allow for ground gas monitoring.

The remaining boreholes and the trial pit excavations were backfilled with arisings, gravel and bentonite grout.


GRAVEL Backfill to installation/ borehole


ARISINGS Backfill


uPVC slotted pipe


BENTONITE Backfill to installation/ borehole

At this time, groundwater and ground gas monitoring has yet to been undertaken.

Should there be 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 or extraneous to 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.

This report has been prepared for the Employer and their Representative as outlined, 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.

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° 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

pg priority geotechnical

Key Sheet

Priority Geotechnical Site

Site Location

JOB NAME: GLOUNTHAUNE Co CORK RESIDENTIAL DEVELOPMENT PHASE 2

Sheet Title: EXPLORATORY LOCATION LAYOUT

JOB NUMBER: P18170

DRAWING NUMBER: P18170-SI-A

DRAWN BY: Gary Curtin

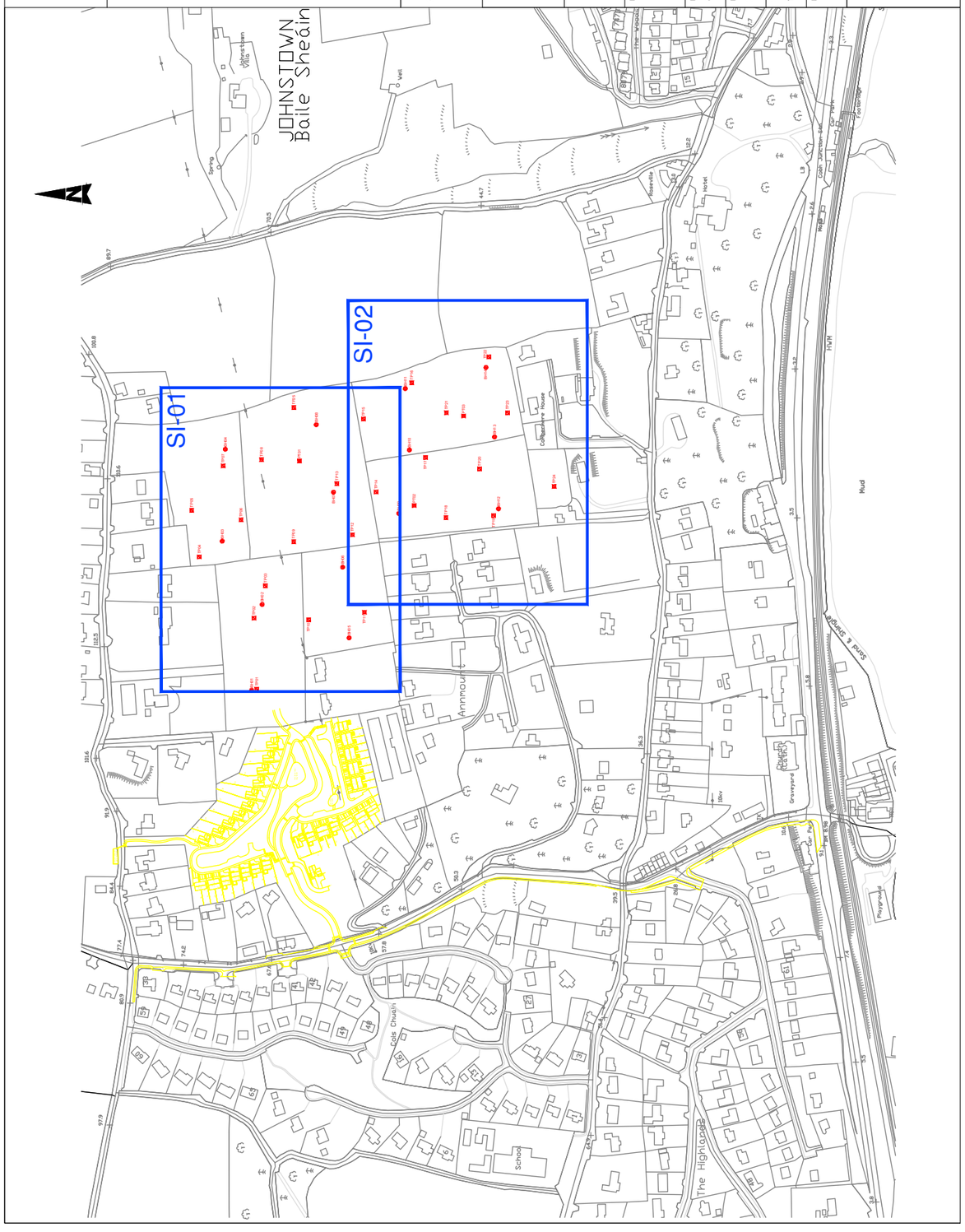
DATE: 24/07/2018

APPROVED: GH

SCALE: 1:2500 ON A3

REVISION: D01

pg priority geotechnical



KEY:

- TP00 Denotes Trial Pit location
- BH00 Denotes Borehole location
- PT00 Denotes Percolation Test location

JOB NAME:
GLOUNTHAUNE Co CORK

RESIDENTIAL DEVELOPMENT PHASE 2

Sheet Title:
EXPLORATION LOCATION PLAN

JOB NUMBER:
P18170

DRAWING NUMBER:
P18170-SI-01

DRAWN BY:
Gary Curtin

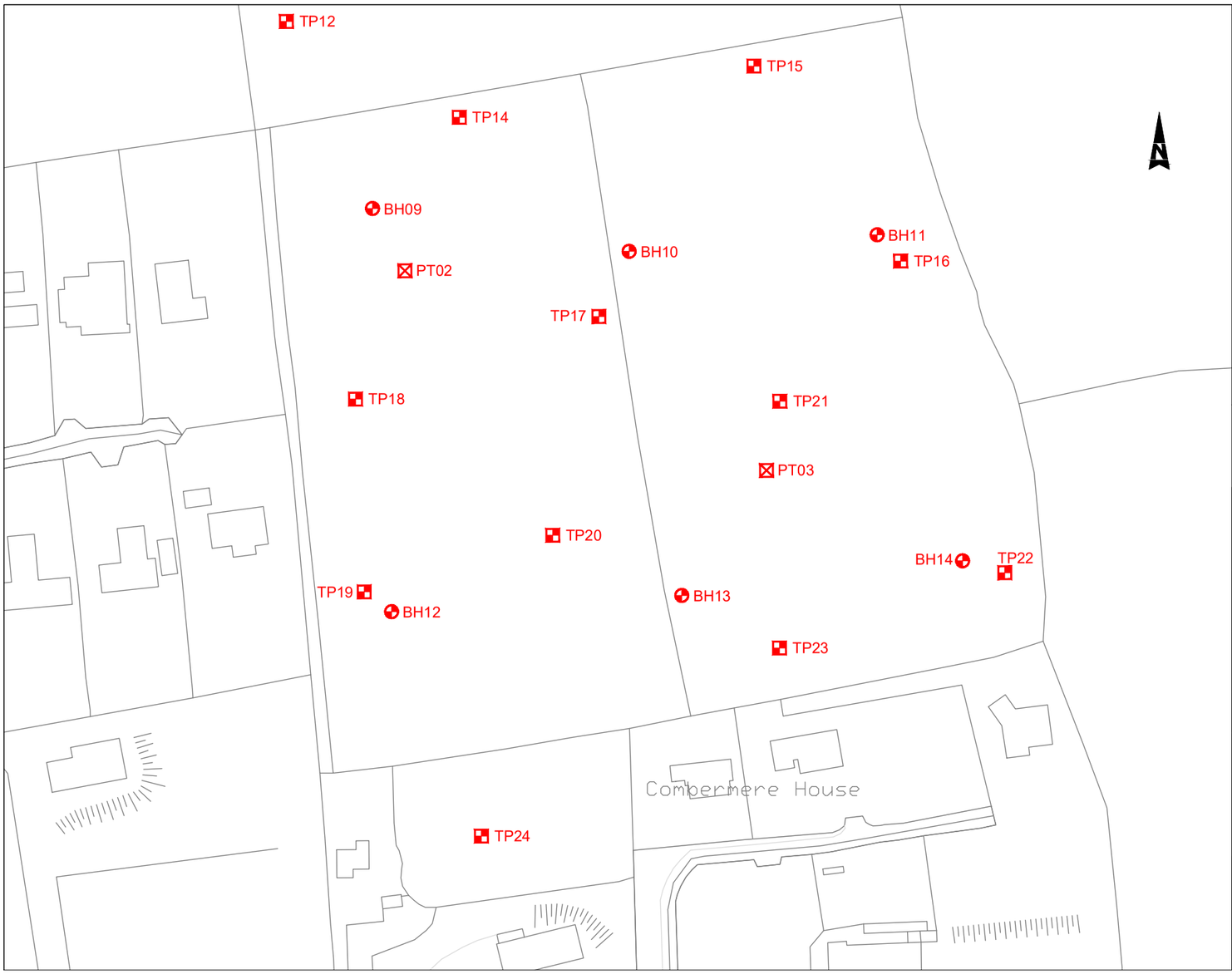
DATE:
16/10/2018

SCALE: 1:1000 ON A3

APPROVED: GH

REVISION:
D01

pgl priority geotechnical



KEY:

- TP00 Denotes Trial Pit location
- BH00 Denotes Borehole location
- PT00 Denotes Percolation Test location

JOB NAME:
GLOUNTHAUNE Co CORK

RESIDENTIAL DEVELOPMENT PHASE 2

Sheet Title:
EXPLORATION LOCATION PLAN

JOB NUMBER:
P18170

DRAWING NUMBER:
P18170-SI-02

DRAWN BY:
Gary Curtin

DATE:
16/10/2018

SCALE: 1:1000 ON A3

APPROVED: GH

REVISION:
D01

pgl priority geotechnical

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Drilled By:	Borehole No.
PC.	**BH01**
Logged By:	Sheet 1 of 1
BL	

Project Name:	Glounthane Houseing Phase 2	**Project No.** P18170	**Co-ords:**	577012E - 573944N	**Hole Type** CP
Location:	Glounthane Co. Cork.		**Level:**	97.53m OD	**Scale** 1:50
Client:	AECOM		**Date:**	26/07/2018 - 26/07/2018	

Well Backfill	Water Strike (m)	Sample and In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (mOD)	Legend	Stratum Description
		0.00 - 1.00	B					Red brown, slightly sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to rounded. Cobbles are
		1.00 - 2.00 1.00	B SPT (C)	N=16 (3,3/4,4,4,4)	1.00	96.53		Medium dense, red brown, clayey sandy GRAVEL with medium cobble content. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to rounded. Cobbles are 63mm to 100mm dia, sub-angular to sub-rounded.
		2.00	SPT (C)	0 (50 for 0mm/0 for 0mm)	2.10	95.43		End of Borehole at 2.100m

Groundwater:

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

Hole Information:

Hole Depth (m)	Hole Dia (mm)	Casing Dia (mm)
2.10	200	200

Equipment: Dando 2000

Chiselling Details:

Top (m)	Base (m)	Duration (hh:mm)	Tool
2.00	2.10	01:00	Chisel.

Remarks:

Borehole terminated at 2.10m bgl due to obstruction. 50mm dia. standpipe installed.
Response zone from 1.0m to 2.10m bgl.

Shift Data:

Groundwater	Shift	Hole Depth (m)	Remarks
	26/07/2018 08:00	0.00	Start of shift.
Dry	26/07/2018 18:00	2.10	End of borehole.

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Drilled By:	Borehole No.
PC	**BH02**
Logged By:	Sheet 1 of 1
BL	

Project Name:	Glounthane Houseing Phase 2	**Project No.** P18170	**Co-ords:**	577108E - 573932N	**Hole Type** CP
Location:	Glounthane Co. Cork.		**Level:**	95.25m OD	**Scale** 1:50
Client:	AECOM		**Date:**	26/07/2018 - 26/07/2018	

Well Backfill	Water Strike (m)	Sample and In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (mOD)	Legend	Stratum Description
		0.00 - 1.00	B					Red 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 100mm dia.
		1.00 - 1.70 1.00	B SPT (C)	N=8 (2,2/2,3,3,0)	1.00	94.25		Firm, red brown, slightly gravelly very sandy CLAY with low cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-rounded. Cobbles are 63mm to 130mm dia, sub-angular.
		1.70	SPT (C)	50 (25 for 5mm/50 for 0mm)	1.80	93.45		End of Borehole at 1.800m

Groundwater:

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

Hole Information:

Hole Depth (m)	Hole Dia (mm)	Casing Dia (mm)
1.80	200	200

Equipment: Dando 2000

Chiselling Details:

Top (m)	Base (m)	Duration (hh:mm)	Tool
1.70	1.80	01:00	Chisel.

Remarks:

Borehole terminated at 1.80m bgl due to boulder obstruction.

Shift Data:

Groundwater	Shift	Hole Depth (m)	Remarks
	26/07/2018 08:00	0.00	Start of shift.
Dry	26/07/2018 18:00	1.80	End of borehole.

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Drilled By:	Borehole No.
PC	**BH03**
Logged By:	Sheet 1 of 1
PH	

Project Name:	Glounthane Houseing Phase 2	**Project No.** P18170	**Co-ords:**	577179E - 573977N	**Hole Type** CP
Location:	Glounthane Co. Cork.		**Level:**	104.71m OD	**Scale** 1:50
Client:	AECOM		**Date:**	13/08/2018 - 13/08/2018	

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					Purple brown, slightly sandy gravelly SILT with low cobble content. Sand is fine to coarse. Gravel fine to coarse, sub-angular to sub-rounded. Cobbles are 63mm to 200mm dia, sub-angular to sub-rounded.
		1.00 1.00	ENV SPT (C)	25 (25,25/25 for 10mm)	1.30	103.41		End of Borehole at 1.300m

Groundwater:

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

Hole Information:

Hole Depth (m)	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.

Shift Data:

Groundwater	Shift	Hole Depth (m)	Remarks
	13/08/2018 08:00	0.00	Start of shift.
Dry	13/08/2018 18:00	1.30	End of borehole

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Drilled By:	Borehole No.
PC	**BH04**
Logged By:	Sheet 1 of 1
PH	

Project Name:	Glounthane Houseing Phase 2	**Project No.** P18170	**Co-ords:**	577282E - 573974N	**Hole Type** CP
Location:	Glounthane Co. Cork.		**Level:**	102.72m OD	**Scale** 1:50
Client:	AECOM		**Date:**	13/08/2018 - 13/08/2018	

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					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 dia, sub-angular to sub-rounded.
		1.00	SPT (C)	25 (10,15/25 for 0mm)	1.20	101.52		End of Borehole at 1.200m

Groundwater:

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

Hole Information:

Hole Depth (m)	Hole Dia (mm)	Casing Dia (mm)
1.20	200	200

Equipment: Dando 2000

Chiselling Details:

Top (m)	Base (m)	Duration (hh:mm)	Tool
1.15	1.20	01:00	Chisel

Remarks:

Borehole terminated at 1.20m bgl due to obstruction.

Shift Data:

Groundwater	Shift	Hole Depth (m)	Remarks
	13/08/2018 08:00	0.00	Start of shift.
Dry	13/08/2018 18:00	1.20	End of borehole.

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Drilled By:	Borehole No.
PC	**BH05**
Logged By:	Sheet 1 of 1
BL	

Project Name:	Glounthane Houseing Phase 2	**Project No.** P18170	**Co-ords:**	577071E - 573835N	**Hole Type** CP
Location:	Glounthane Co. Cork.		**Level:**	81.21m OD	**Scale** 1:50
Client:	AECOM		**Date:**	27/07/2018 - 27/07/2018	

Well Backfill	Water Strike (m)	Sample and In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (mOD)	Legend	Stratum Description
		0.00 - 1.00	B					Red brown, slightly gravelly sandy CLAY with low cobble content. Sand is fine to coarse. Gravel is fine to coarse angular to sub-rounded. Cobbles are 63mm to 140mm.
		1.00 - 2.00 1.00	B SPT (C)	N=23 (5,5/5,6,6,6)	1.00	80.21		Medium dense, red brown, sandy very clayey GRAVEL. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-rounded.
		2.00 - 3.00 2.00	B SPT (C)	N=26 (5,6/6,6,7,7)				
		3.00 - 3.80 3.00	B SPT (C)	N=46 (8,8/10,10,11,15)				
		3.80	SPT (C)	50 (50 for 85mm/50 for 0mm)	4.00	77.21		End of Borehole at 4.000m

Groundwater:

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

Hole Information:

Hole Depth (m)	Hole Dia (mm)	Casing Dia (mm)
4.00	200	200

Equipment: Dando 2000

Chiselling Details:

Top (m)	Base (m)	Duration (hh:mm)	Tool
3.90	4.00	01:00	Chisel

Remarks:

Borehole terminated at 4.00m bgl due to obstruction.

Shift Data:

Groundwater	Shift	Hole Depth (m)	Remarks
	27/07/2018 08:00	0.00	Start of shift.
Dry	27/07/2018 18:00	4.00	End of borehole.

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

Project Name:	Glounthane Houseing Phase 2	**Project No.** P18170	**Co-ords:**	577150E - 573842N	**Hole Type** CP
Location:	Glounthane Co. Cork.		**Level:**	83.04m OD	**Scale** 1:50
Client:	AECOM		**Date:**	30/07/2018 - 30/07/2018	

Well Backfill	Water Strike (m)	Sample and In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (mOD)	Legend	Stratum Description
		0.00 - 1.00	B					Brown, slightly gravelly sandy CLAY with medium cobble content. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded. Cobble is sub-angular to sub-rounded, 63mm-110mm dia.
		1.00 - 2.00 1.00	B SPT (C)	N=23 (4,5/5,6,6,6)	1.00	82.04		Medium dense, red brown, clayey very sandy GRAVEL with high cobble content. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded. Cobble is angular to sub-angular, 63mm-190mm dia.
		2.00 - 3.00 2.00	B SPT (C)	N=25 (5,6/6,6,7,6)				
		3.00 - 3.60 3.00	B SPT (C)	N=26 (6,6/7,6,6,7)				
		3.60	SPT (C)	50 (25 for 0mm/50 for 0mm)	3.65	79.39		End of Borehole at 3.650m

Groundwater:

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

Hole Information:

Hole Depth (m)	Hole Dia (mm)	Casing Dia (mm)
3.65	200	200

Equipment: Dando 2000

Chiselling Details:

Top (m)	Base (m)	Duration (hh:mm)	Tool
3.60	3.65	01:00	Chisel

Remarks:

Borehole terminated at 3.65m bgl. Due to refusal on rock.

Shift Data:

Groundwater	Shift	Hole Depth (m)	Remarks
	30/07/2018 08:00	0.00	Start of shift.
Dry	30/07/2018 18:00	3.65	End of borehole.

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

Project Name:	Glounthane Houseing Phase 2	**Project No.** P18170	**Co-ords:**	577235E - 573852N	**Hole Type** CP
Location:	Glounthane Co. Cork.		**Level:**	85.09m OD	**Scale** 1:50
Client:	AECOM		**Date:**	31/07/2018 - 31/07/2018	

Well Backfill	Water Strike (m)	Sample and In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (mOD)	Legend	Stratum Description
		0.00 - 1.00	B					Red brown, slightly gravelly sandy CLAY with low cobble content. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to rounded. Cobble is sub-rounded, 63mm-140mm dia.
		1.00 - 2.00 1.00	B SPT (C)	N=16 (3,3/4,4,4,4)	1.00	84.09		Stiff, red brown, slightly gravelly sandy CLAY with medium cobble content. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to rounded. Cobble is sub-angular to sub-rounded, 63mm-140mm dia.
		2.00	SPT (C)	N=78 (8,8/78 for 225mm)				
					2.40	82.69		End of Borehole at 2.400m

Groundwater:

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

Hole Information:

Hole Depth (m)	Hole Dia (mm)	Casing Dia (mm)
2.40	200	200

Equipment: Dando 2000

Chiselling Details:

Top (m)	Base (m)	Duration (hh:mm)	Tool
2.35	2.40	01:00	Chisel

Remarks:

Borehole terminated at 2.40m bgl. Due to refusal on rock.

Shift Data:

Groundwater	Shift	Hole Depth (m)	Remarks
	31/07/2018 08:00	0.00	Start of shift.
Dry	31/07/2018 18:00	2.40	End of borehole.

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

Project Name:	Glounthane Houseing Phase 2	**Project No.** P18170	**Co-ords:**	577310E - 573872N	**Hole Type** CP
Location:	Glounthane Co. Cork.		**Level:**	87.31m OD	**Scale** 1:50
Client:	AECOM		**Date:**	30/07/2018 - 30/07/2018	

Well Backfill	Water Strike (m)	Sample and In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (mOD)	Legend	Stratum Description
		0.00 - 1.00	B					Dark brown, slightly sandy gravelly SILT with low cobble content. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded. Cobble is sub-rounded, 63mm-90mm dia.
		1.00 - 2.00 1.00	B SPT (C)	N=11 (2,2/2,3,3,3)	1.00	86.31		Medium dense, red brown grey, clayey sandy GRAVEL with medium to high cobble content. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded. Cobble is sub-angular to sub-rounded, 63mm-110mm.
		2.00 - 3.00 2.00	B SPT (C)	N=23 (4,5/5,6,6,6)				
		3.00 - 3.50 3.00	B SPT (C)	N=45 (8,8/9,10,11,15)				*Dense below 3.0m bgl.*
		3.55	SPT (C)	50 (25 for 0mm/50 for 0mm)	3.60	83.71		End of Borehole at 3.600m

Groundwater:

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

Hole Information:

Hole Depth (m)	Hole Dia (mm)	Casing Dia (mm)
3.60	200	200

Equipment: Dando 2000

Chiselling Details:

Top (m)	Base (m)	Duration (hh:mm)	Tool
3.50	3.60	01:00	Chisel

Remarks:

Borehole terminated at 3.60m bgl due to obstruction, assumed bedrock.

Shift Data:

Groundwater	Shift	Hole Depth (m)	Remarks
	30/07/2018 08:00	0.00	Start of shift.
Dry	30/07/2018 18:00	3.60	End of borehole.

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

Project Name:	Glounthane Houseing Phase 2	**Project No.** P18170	**Co-ords:**	577210E - 573779N	**Hole Type** CP
Location:	Glounthane Co. Cork.		**Level:**	77.29m OD	**Scale** 1:50
Client:	AECOM		**Date:**	31/07/2018 - 31/07/2018	

Well Backfill	Water Strike (m)	Sample and In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (mOD)	Legend	Stratum Description
		0.00 - 1.00	B					Red brown, slightly gravelly sandy CLAY with medium cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-angular. Cobble is sub-angular to sub-rounded, 63mm-110mm dia.
		1.00 - 1.20	B		1.00	76.29		
		1.00	SPT (C)	90 (5,10/90 for 80mm)				Red brown, very clayey very sandy GRAVEL. Sand is fine to coarse.
		1.20	SPT (C)	50 (50 for 0mm/50 for 0mm)	1.30	75.99		End of Borehole at 1.300m

Groundwater:

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

Hole Information:

Hole Depth (m)	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 refusal on rock.

Shift Data:

Groundwater	Shift	Hole Depth (m)	Remarks
	31/07/2018 08:00	0.00	Start of shift.
Dry	31/07/2018 18:00	1.30	End of borehole.

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

Project Name:	Glounthane Houseing Phase 2	**Project No.** P18170	**Co-ords:**	577281E - 573767N	**Hole Type** CP
Location:	Glounthane Co. Cork.		**Level:**	76.32m OD	**Scale** 1:50
Client:	AECOM		**Date:**	31/07/2018 - 01/08/2018	

Well Backfill	Water Strike (m)	Sample and In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (mOD)	Legend	Stratum Description
		0.00 - 1.00	B					Red brown, slightly sandy gravelly CLAY with high cobble content. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded. Cobble is sub-angular to sub-rounded, 63mm-120mm dia.
		1.00 - 2.00	B		1.00	75.32		
		1.00	SPT (C)	N=30 (6,7/7,7,8,8)				Dense, red brown, very clayey very sandy GRAVEL with high cobble content. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded. Cobble is sub-angular to sub-rounded, 63mm-100mm dia.
		2.00 - 2.50	B					
		2.00	SPT (C)	N=39 (7,8/8,9,11,11)				
					2.50	73.82		End of Borehole at 2.500m

Groundwater:

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

Hole Information:

Hole Depth (m)	Hole Dia (mm)	Casing Dia (mm)
2.50	200	200

Equipment: Dando 2000

Chiselling Details:

Top (m)	Base (m)	Duration (hh:mm)	Tool
2.40	2.50	01:00	Chisel

Remarks:

Borehole terminated at 2.50m bgl. Due to refusal on rock. 50mm standpipe installed.
Response zone from 1.5m to 2.5m bgl.

Shift Data:

Groundwater	Shift	Hole Depth (m)	Remarks
	31/07/2018 08:00	0.00	Start of shift.
Dry	31/07/2018 18:00	1.00	End of shift.
Dry	01/08/2018 08:00	1.00	Start of shift.
Dry	01/08/2018 18:00	2.50	End of borehole.

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Drilled By:	Borehole No.
PC	**BH11**
Logged By:	Sheet 1 of 1

Project Name:	Glounthane Houseing Phase 2	**Project No.** P18170	**Co-ords:**	577350E - 573772N	**Hole Type** CP
Location:	Glounthane Co. Cork.		**Level:**	76.49m OD	**Scale** 1:50
Client:	AECOM		**Date:**	01/08/2018 - 01/08/2018	

Well Backfill	Water Strike (m)	Sample and In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (mOD)	Legend	Stratum Description
		0.00 - 1.00	B					Brown, slightly sandy gravelly SILT with low cobble content. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded. Cobble is sub-rounded, 63mm-110mm dia.
		1.00 - 2.00 1.00	B SPT (C)	N=25 (5,5/6,6,6,7)	1.00	75.49		Medium dense, brown red, very clayey very sandy GRAVEL with low cobble content. Sand is fine to coarse. ravel is fine to coarse, sub-angular to sub-rounded. Cobble is sub-rounded to rounded, 63mm-140mm dia.
		2.00	SPT (C)	50 (43 for 80mm/50 for 0mm)	2.20	74.29		End of Borehole at 2.200m

Groundwater:

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

Hole Information:

Hole Depth (m)	Hole Dia (mm)	Casing Dia (mm)
2.20	200	200

Equipment: Dando 2000

Chiselling Details:

Top (m)	Base (m)	Duration (hh:mm)	Tool
2.10	2.20	01:00	Chisel

Remarks:

Borehole terminated at 2.20m bgl, obstruction.

Shift Data:

Groundwater	Shift	Hole Depth (m)	Remarks
	01/08/2018 08:00	0.00	Start of shift.
Dry	01/08/2018 18:00	2.20	End of borehole.

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Drilled By:	Borehole No.
PC	**BH12**
Logged By:	Sheet 1 of 1

Project Name:	Glounthane Houseing Phase 2	**Project No.** P18170	**Co-ords:**	577215E - 573667N	**Hole Type** CP
Location:	Glounthane Co. Cork.		**Level:**	63.35m OD	**Scale** 1:50
Client:	AECOM		**Date:**	02/08/2018 - 02/08/2018	

Well Backfill	Water Strike (m)	Sample and In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (mOD)	Legend	Stratum Description
		0.00 - 1.00	B					Firm, brown, slightly sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded. Cobble is sub-angular to sub-rounded, mudstone and sandstone lithologies, 63mm-70mm dia.
		1.00 - 2.00 1.00	B SPT (C)	N=15 (2,3/3,4,4,4)	1.00	62.35		Firm, red brown, slightly sandy gravelly SILT with low cobble content. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded. Cobble is sub-angular, Mudstone and sandstone lithologies, 63mm-85mm dia.
		2.00 - 3.00 2.00	B SPT (C)	N=19 (3,4/4,4,5,6)	2.00	61.35		Medium dense, red brown, silty sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded.
		3.00 - 3.40 3.00	B SPT (C)	65 (8,10/65 for 75mm)	3.00 3.40	60.35 59.95		Red brown, slightly gravelly sandy CLAY with medium cobble content. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded. Cobble is sub-angular, mudstone lithology, 63mm-90mm dia. End of Borehole at 3.400m

Groundwater:

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

Hole Information:

Hole Depth (m)	Hole Dia (mm)	Casing Dia (mm)
3.40	200	200

Equipment: Dando 2000

Chiselling Details:

Top (m)	Base (m)	Duration (hh:mm)	Tool
3.30	3.40	01:00	Chisel

Remarks:

Borehole terminated at 3.40m bgl. Due to refusal on rock. 50mm standpipe installed.
Response zone from 1.0m to 3.4m bgl.

Shift Data:

Groundwater	Shift	Hole Depth (m)	Remarks
Dry	02/08/2018 08:00	0.00	Start of shift.
Dry	02/08/2018 18:00	3.40	End of borehole.

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Drilled By:	Borehole No.
PC	**BH13**
Logged By:	Sheet 1 of 1

Project Name:	Glounthane Houseing Phase 2	**Project No.** P18170	**Co-ords:**	577296E - 573672N	**Hole Type** CP
Location:	Glounthane Co. Cork.		**Level:**	65.10m OD	**Scale** 1:50
Client:	AECOM		**Date:**	01/08/2018 - 01/08/2018	

Well Backfill	Water Strike (m)	Sample and In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (mOD)	Legend	Stratum Description
		0.00 - 1.00	B					Brown, slightly sandy gravelly SILT with rootlets and a low cobble content. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to rounded. Cobble is rounded, 63mm-85mm dia.
		1.00 - 1.90 1.00	CBR SPT (C)	N=25 (5,5/6,6,6,7)	1.00	64.10		Medium dense, brown, clayey sandy GRAVEL with medium cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-rounded. cobble is sub-angular, 63mm-150mm dia.
		1.90	SPT (C)	50 (25 for 10mm/50 for 0mm)	2.00	63.10		End of Borehole at 2.000m

Groundwater:

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

Hole Information:

Hole Depth (m)	Hole Dia (mm)	Casing Dia (mm)
2.00	200	200

Equipment: Dando 2000

Chiselling Details:

Top (m)	Base (m)	Duration (hh:mm)	Tool
1.90	2.00	01:00	Chisel

Remarks:

Borehole terminated at 2m bgl. due to refusal on rock.

Shift Data:

Groundwater	Shift	Hole Depth (m)	Remarks
	01/08/2018 08:00	0.00	Start of shift.
Dry	01/08/2018 18:00	2.00	End of borehole.

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Drilled By:	Borehole No.
PC	**BH14**
Logged By:	Sheet 1 of 1

Project Name:	Glounthane Houseing Phase 2	**Project No.** P18170	**Co-ords:**	577374E - 573681N	**Hole Type** CP
Location:	Glounthane Co. Cork.		**Level:**	65.47m OD	**Scale** 1:50
Client:	AECOM		**Date:**	02/08/2018 - 02/08/2018	

Well Backfill	Water Strike (m)	Sample and In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (mOD)	Legend	Stratum Description
		0.00 - 1.00	B					Dark brown, slightly sandy gravelly SILT with low cobble content. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded. Cobble is sub-angular, mudstone lithology, 63mm-90mm dia.
		1.00 1.00 - 2.00 1.00	ENV B SPT (C)	N=18 (4,4/4,5,4,5)	1.00	64.47		Medium dense, red brown, very clayey very sandy GRAVEL with low cobble content. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded. Cobble is sub-angular, sandstone lithology, 63mm-65mm dia.
		2.00 - 2.35 2.00	B SPT (C)	75 (15,25/75 for 10mm)	2.35	63.12		End of Borehole at 2.350m

Groundwater:

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

Hole Information:

Hole Depth (m)	Hole Dia (mm)	Casing Dia (mm)
2.35	200	200

Equipment: Dando 2000

Chiselling Details:

Top (m)	Base (m)	Duration (hh:mm)	Tool
2.30	2.35	01:00	Chisel

Remarks:

Borehole terminated at 2.35m bgl. Due to refusal on rock. 50mm standpipe installed.
Response zone from 1.0m to 2.35m bgl.

Shift Data:

Groundwater	Shift	Hole Depth (m)	Remarks
Dry	02/08/2018 08:00	0.00	Start of shift.
Dry	02/08/2018 18:00	2.35	End of borehole.

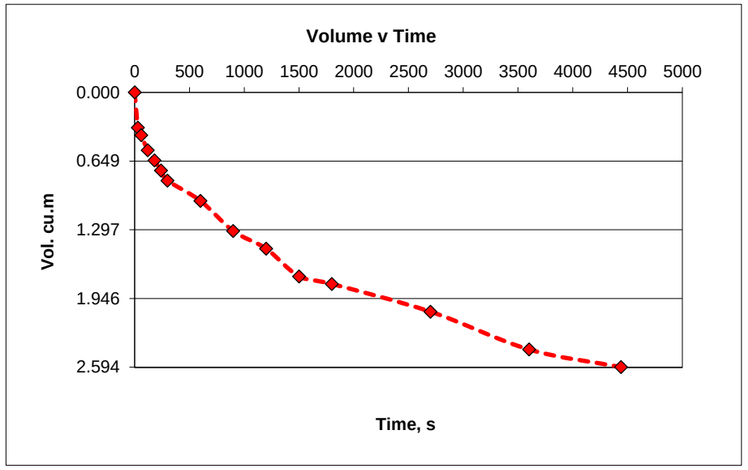
P18170 **Glounthaune**

Test 1 **PT01** **24/08/2018**

				d, m	**1.77**
l, m	**1.7**	b, m	**1.4**	d_eff, m	**1.22**
l_base, m	**1.7**				
l_eff, m	**1.7**				

Time, min	Measure, m bgl	Time, sec	Depth water, m	Fall, m	Volume
0	0.55	0	1.22	0.00	0.000
1	0.69	30	1.08	0.14	0.333
1	0.72	60	1.05	0.17	0.405
2	0.78	120	0.99	0.23	0.547
3	0.82	180	0.95	0.27	0.643
4	0.86	240	0.91	0.31	0.738
5	0.9	300	0.87	0.35	0.833
10	0.98	600	0.79	0.43	1.023
15	1.1	900	0.67	0.55	1.309
20	1.17	1200	0.60	0.62	1.476
25	1.28	1500	0.49	0.73	1.737
30	1.31	1800	0.46	0.76	1.809
45	1.42	2700	0.35	0.87	2.071
60	1.57	3600	0.20	1.02	2.428
74	1.64	4440	0.13	1.09	2.594

Area	2.38	m^2			
50% Area_eff, a_{p50}	6.162	m^2	$V_{p75\text{-}25\ theory}$	volume	1.4518 m^3
50% Area_act, a_{p50}	5.759	m^2	$V_{p\ 75\ -\ 25\ actual}$	volume	1.2971 m^3
			$t_{p\ 75\text{-}25\ actual}$	time	2092.00 s
			Infiltration Coefficient	*f*	0.0001077 ms^-1



NOTES:
No groundwater encountered. Pit assumed unsaturated.

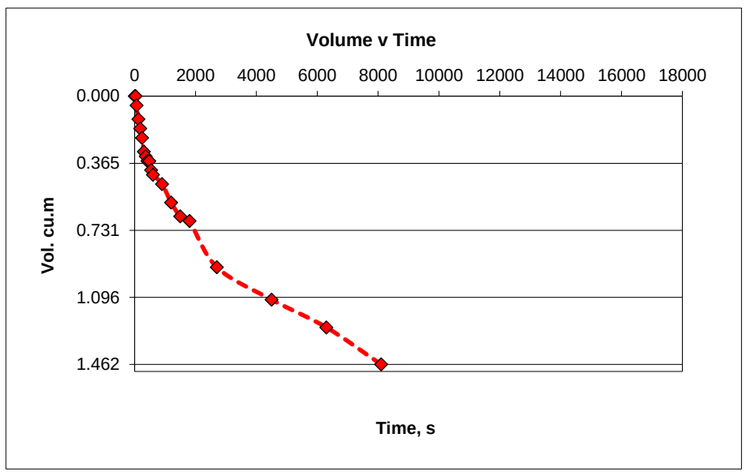
P18170 **Glounthaune**

Test 1 **PT02** **24/08/2018**

				d, m	**2**
l, m	**1.8**	b, m	**1.4**	d_eff, m	**1.45**
l_base, m	**1.8**				
l_eff, m	**1.8**				

Time, min	Measure, m bgl	Time, sec	Depth water, m	Fall, m	Volume
0	0.55	0	1.45	0.00	0.000
0.50	0.55	30	1.45	0.00	0.000
1.00	0.57	60	1.43	0.02	0.050
2.00	0.6	120	1.40	0.05	0.126
3.00	0.62	180	1.38	0.07	0.176
4.00	0.64	240	1.36	0.09	0.227
5.00	0.67	300	1.33	0.12	0.302
6.00	0.68	360	1.32	0.13	0.328
7.00	0.69	420	1.31	0.14	0.353
8.00	0.69	480	1.31	0.14	0.353
9.00	0.71	540	1.29	0.16	0.403
10.00	0.72	600	1.28	0.17	0.428
15.00	0.74	900	1.26	0.19	0.479
20.00	0.78	1200	1.22	0.23	0.580
25.00	0.81	1500	1.19	0.26	0.655
30.00	0.82	1800	1.18	0.27	0.680
45.00	0.92	2700	1.08	0.37	0.932
75	0.99	4500	1.01	0.44	1.109
105	1.05	6300	0.95	0.50	1.260
135	1.13	8100	0.87	0.58	1.462

Area	2.52	m^2			
50% Area_eff, a_{p50}	7.16	m^2	$V_{p75\text{-}25\ theory}$	volume	1.827 m^3
50% Area_act, a_{p50}	4.376	m^2	$V_{p\ 75\ -\ 25\ actual}$	volume	0.7308 m^3
			$t_{p\ 75\text{-}25\ actual}$	time	4020.00 s
			Infiltration Coefficient	*f*	4.154E-05 ms^-1



NOTES:
No groundwater encountered. Pit assumed unsaturated.

BRE 365 Soakway Test

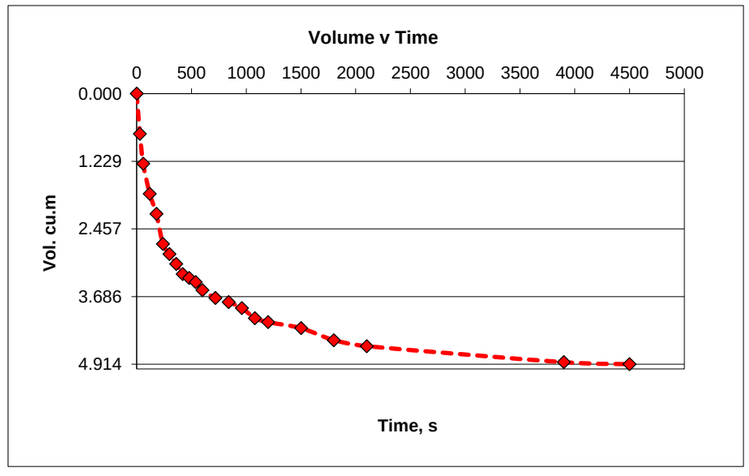
P18170 **Glounthaune**

Test 1 **PT03** **24/08/2018**

				d, m	**2**
l, m	**2.6**	b, m	**1.4**	d_eff, m	**1.40**
l_base, m	**2.6**				
l_eff, m	**2.6**				

Time, min	Measure, m bgl	Time, sec	Depth water, m	Fall, m	Volume
0	0.6	0	1.40	0.00	0.000
0.50	0.8	30	1.20	0.20	0.728
1.00	0.95	60	1.05	0.35	1.274
2.00	1.1	120	0.90	0.50	1.820
3.00	1.2	180	0.80	0.60	2.184
4.00	1.35	240	0.65	0.75	2.730
5.00	1.4	300	0.60	0.80	2.912
6.00	1.45	360	0.55	0.85	3.094
7.00	1.5	420	0.50	0.90	3.276
8.00	1.52	480	0.48	0.92	3.349
9.00	1.54	540	0.46	0.94	3.422
10.00	1.58	600	0.42	0.98	3.567
12.00	1.62	720	0.38	1.02	3.713
14.00	1.64	840	0.36	1.04	3.786
16.00	1.67	960	0.33	1.07	3.895
18.00	1.72	1080	0.28	1.12	4.077
20.00	1.74	1200	0.26	1.14	4.150
25.00	1.77	1500	0.23	1.17	4.259
30.00	1.83	1800	0.17	1.23	4.477
35.00	1.86	2100	0.14	1.26	4.586
65	1.94	3900	0.06	1.34	4.878
75	1.95	4500	0.05	1.35	4.914

Area	3.64	m^2			
50% Area_eff, a_{p50}	9.24	m^2	$V_{p75\text{-}25\ theory}$	volume	2.548 m^3
50% Area_act, a_{p50}	9.04	m^2	$V_{p\ 75\ -\ 25\ actual}$	volume	2.457 m^3
			$t_{p\ 75\text{-}25\ actual}$	time	660.00 s
			Infiltration Coefficient	*f*	0.0004118 ms^-1



NOTES:
No groundwater encountered. Pit assumed unsaturated.

PT03

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Trial Pit No **TP01** Sheet 1 of 1

Project Name: Glounthane Houseing Phase 2	**Project No.** P18170	**Co-ords:** 577013E - 573938N	**Date** 23/08/2018
		Level: 96.68m OD	
Location: Glounthane Co. Cork.		**Dimensions (m):** 2.50 × 1.50	**Scale** 1:25
Client: AECOM		**Depth:** 1.95m BGL	**Logged** EOM

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
				0.30	96.38		(TOPSOIL)
	0.50 - 1.00	B					Brown orange, slightly sandy gravelly SILT with high cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-angular. Cobbles are 63mm to 180mm dia, angular to sub-angular.
	1.00 1.00 - 1.50	WAC B		1.00	95.68		Brown red, slightly gravelly sandy SILT with high cobble content and medium 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 300mm dia, angular to sub-angular.
	1.60 - 1.80	B		1.60	95.08		Purple brown, slightly gravelly sandy SILT with high cobble content and high 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.
				1.95	94.73		End of Pit at 1.950m

Stability: Good
Plant: JCB
Backfill: Arisings.

Groundwater: None encountered.

Remarks: Trial pit terminated at 1.95m bgl, due to bedrock obstruction.

Photographic Record

Number:	**TP01**	**Project**	Glounthaune Housing Phase 2		
		Project No	P18170		
		Engineer	AECOM		

Photographic Record

Number:	**TP01**	**Project**	Glounthaune Housing Phase 2		
		Project No	P18170		
		Engineer	AECOM		

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Trial Pit No
TP02
Sheet 1 of 1

Project Name: Glounthane Houseing Phase 2	**Project No.** P18170	**Co-ords:** 577093E - 573941N **Level:** 97.22m OD	**Date** 23/08/2018
Location: Glounthane Co. Cork.		**Dimensions (m):** 2.60 × 1.50	**Scale** 1:25
Client: AECOM		**Depth:** 1.80m BGL	**Logged** EOM

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
				0.00	97.22		(TOPSOIL)
	0.50 - 1.00	B		0.30	96.92		Brown, slightly sandy gravelly SILT with high cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular. Cobbles are 63mm to 200mm dia, angular.
	1.20 - 1.60	B		1.10	96.12		Brown red, slightly sandy slightly gravelly SILT with high cobble content and high 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. Boulder is 200mm to 280mm dia, angular to sub-angular.
				1.60	95.62		Cobbles and Boulders ripped from bedrock.
				1.80	95.42		End of Pit at 1.800m

1 2 3 4 5

Stability: Good.
Plant: JCB
Backfill: Arisings.

Groundwater: None encountered.

Remarks: Trial pit terminated at 1.80m bgl, due to bedrock.

Photographic Record

Number:	**TP02**	**Project**	Glounthaune Housing Phase 2
		Project No	P18170
		Engineer	AECOM

Photographic Record

Number:	**TP02**	**Project**	Glounthaune Housing Phase 2
		Project No	P18170
		Engineer	AECOM

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Trial Pit No **TP03** Sheet 1 of 1

Project Name: Glounthane Houseing Phase 2	**Project No.** P18170	**Co-ords:** 577129E - 573929N **Level:** 95.23m OD	**Date** 23/08/2018
Location: Glounthane Co. Cork.		**Dimensions (m):** 2.50 x 1.50	**Scale** 1:25
Client: AECOM		**Depth:** 1.40m BGL	**Logged** EOM

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
				0.30	94.93		(TOPSOIL)
	0.40 - 1.00	B					Light brown, slightly sandy gravelly SILT with high cobble content. Cobbles are 63mm to 170mm dia, sub-angular.
	1.00 - 1.30	B		1.00	94.23		Brown red, slightly sandy gravelly SILT with high cobble content and medium boulder content. Cobbles are 63mm to 200mm dia, angular to sub-angular. Boulders are 200mm to 250mm dia, sub-angular to angular.
				1.40	93.83		End of Pit at 1.400m

Stability: Good.
Plant: JCB
Backfill: Arisings.

Groundwater: None encountered.

Remarks: Trial pit terminated at 1.40m bgl, due to bedrock.

Photographic Record

Number:	**TP03**	**Project**	Glounthaune Housing Phase 2
		Project No	P18170
		Engineer	AECOM

Photographic Record

Number:	**TP03**	**Project**	Glounthaune Housing Phase 2
		Project No	P18170
		Engineer	AECOM

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Trial Pit No
TP04
Sheet 1 of 1

Project Name: Glounthane Houseing Phase 2	**Project No.** P18170	**Co-ords:** 577161E - 574003N **Level:** 108.05m OD	**Date** 22/08/2018
Location: Glounthane Co. Cork.		**Dimensions (m):** 2.80 / 1.70 **Depth:** 1.80m BGL	**Scale** 1:25
Client: AECOM			**Logged** EOM

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
				0.00	108.05		(TOPSOIL)
	0.30 - 0.80	B		0.30	107.75		Orange, slightly sandy gravelly SILT with high cobble content and medium boulder content. Sand is fine to coarse. Gravel is fine to coarse, angular. Cobbles are 63mm to 200mm dia, angular. Boulders are 200mm to 300mm, angular.
	1.20 - 1.60	B		1.10	106.95		Dark brown, silty very sandy GRAVEL with high cobble content and high boulder content. Sand is fine to coarse. Gravel is fine to coarse, angular. Cobbles are 63mm to 200mm dia, angular. Boulders are 200mm to 550mm dia, angular.
				1.80	106.25		End of Pit at 1.800m

1 2 3 4 5

Stability: Good.
Plant: JCB
Backfill: Arisings.

Groundwater: None encountered.

Remarks: Trial pit terminated at 1.80m bgl, due to bedrock.

Photographic Record

Number:	**TP04**	**Project**	Glounthaune Housing Phase 2
		Project No	P18170
		Engineer	AECOM

Photographic Record

Number:	**TP04**	**Project**	Glounthaune Housing Phase 2
		Project No	P18170
		Engineer	AECOM

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Trial Pit No **TP05** Sheet 1 of 1

Project Name:	Glounthane Houseing Phase 2	**Project No.** P18170	**Co-ords:** 577214E - 574011N **Level:** 107.71m OD
Location:	Glounthane Co. Cork.	**Dimensions (m):**	3.00 × 1.60
Client:	AECOM	**Depth:**	2.50m BGL

Date 22/08/2018
Scale 1:25
Logged EOM

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
							(TOPSOIL)
	0.50 - 1.00	B		0.40	107.31		Orange, slightly sandy gravelly SILT with high cobble content and medium boulder content. Sand is fine to coarse. Gravel is fine to coarse, angular. Cobbles are 63mm to 200mm dia, angular. Boulders are 200mm to 250mm dia, angular.
	1.00 - 1.50	B		1.00	106.71		Brown red, sandy silty GRAVEL with high cobble content and medium boulder content. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to angular. Cobbles are 63mm to 200mm dia, sub-angular to angular. Boulders are 200mm to 300mm dia, sub-angular to angular.
	1.70 - 2.30	B		1.60	106.11		Brown black, very sandy GRAVEL with high cobble content and medium boulder content. Sand is fine to coarse. Gravel is fine to coarse, angular. Boulders are 200mm to 280mm dia, angular.
				2.50	105.21		End of Pit at 2.500m

Stability: Good.
Plant: JCB
Backfill: Arisings.

Groundwater: None encountered.

Remarks: Trial pit terminated at 2.50m bgl, required depth.

Photographic Record

Number:	**TP05**	**Project** Glounthaune Housing Phase 2 **Project No** P18170 **Engineer** AECOM	

Photographic Record

Number:	**TP05**	**Project** Glounthaune Housing Phase 2 **Project No** P18170 **Engineer** AECOM	

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Trial Pit No
TP06
Sheet 1 of 1

Project Name: Glounthane Houseing Phase 2	**Project No.** P18170	**Co-ords:** 577203E - 573956N **Level:** 102.00m OD	**Date** 22/08/2018
Location: Glounthane Co. Cork.		**Dimensions (m):** 2.60 x 1.60	**Scale** 1:25
Client: AECOM		**Depth:** 2.30m BGL	**Logged** EOM

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
				0.00	101.60		(TOPSOIL)
	0.50 - 1.00	B		0.40	101.60		Orange, slightly sandy gravelly SILT with high cobble content and high boulder content. Sand is fine to coarse. Gravel is fine to coarse. Cobbles are 63mm to 300mm dia, angular. Boulders are 200mm to 300mm dia, angular.
	1.20 - 1.80	B		1.10	100.90		Brown red, very silty very sandy GRAVEL with high cobble content and high boulder content. Sand is fine to coarse. Gravel is fine to coarse, angular. Cobbles are 63mm to 200mm, angular. Boulders are 200mm to 450mm dia, angular.
				1.90	100.10		Brown red, GRAVEL with high cobble content with high boulder content. Gravel is fine to coarse, angular. Cobbles are 63mm to 200mm dia, angular. Boulders are 200mm to 450mm dia, angular.
				2.30	99.70		End of Pit at 2.300m

1 2 3 4 5

Stability: Good.
Plant: JCB
Backfill: Arisings.

Groundwater: None encountered.

Remarks: Trial pit terminated at 2.30m bgl, due to bedrock.

Photographic Record

Number:	**TP06**	**Project**	Glounthaune Housing Phase 2
		Project No	P18170
		Engineer	AECOM

Photographic Record

Number: TP06	**Project** Glounthaune Housing Phase 2 **Project No** P18170 **Engineer** AECOM	

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Trial Pit No **TP07** Sheet 1 of 1

Project Name: Glounthane Houseing Phase 2	**Project No.** P18170	**Co-ords:** 577263E - 573976N **Level:** 103.34m OD	**Date** 22/08/2018
Location: Glounthane Co. Cork.		**Dimensions (m):** 3.00 x 1.60	**Scale** 1:25
Client: AECOM		**Depth:** 2.20m BGL	**Logged** EOM

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
				0.00	103.34		(TOPSOIL)
	0.40 - 0.90	B		0.40	102.94		Brown purple, slightly sandy gravelly SILT with high cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular. Cobbles are 63mm to 180mm dia.
	1.00 1.00 - 1.80	WAC B		0.90	102.44		Orange, slightly sandy silty GRAVEL with high cobble content and high boulder content. Sand is fine to coarse. Gravel is fine to coarse, angular. Cobbles are 63mm to 200mm dia. Boulders are 200mm to 350mm dia, angular.
				2.00	101.34		Assumed bedrock. Recovered as Cobbles and Boulders.
				2.20	101.14		End of Pit at 2.200m

Stability: Good.
Plant: JCB
Backfill: Arisings.

Groundwater: None encountered.

Remarks: Trial pit terminated at 2.20m bgl, due to bedrock.

Photographic Record

Number:	**TP07**	**Project**	Glounthaune Housing Phase 2
		Project No	P18170
		Engineer	AECOM

Photographic Record

Number:	**TP07**	**Project**	Glounthaune Housing Phase 2
		Project No	P18170
		Engineer	AECOM

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Trial Pit No
TP08
Sheet 1 of 1

Project Name: Glounthane Houseing Phase 2	**Project No.** P18170	**Co-ords:** 577270E - 573933N **Level:** 98.37m OD	**Date** 22/08/2018
Location: Glounthane Co. Cork.		**Dimensions (m):** 3.00 x 1.60	**Scale** 1:25
Client: AECOM		**Depth:** 1.80m BGL	**Logged** EOM

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
				0.00	98.37		(TOPSOIL)
	0.40 - 1.00	B		0.30	98.07		Brown red, slightly sandy very gravelly SILT with high cobble content. Sand is fine to coarse. Gravel ia fine to coarse, angular to sub-angular. Cobbles are 63mm to 180mm dia, angular to sub-angular.
	1.00 - 1.70	B		1.00	97.37		Orange, silty sandy GRAVEL with high cobble content and high 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.
				1.80	96.57		End of Pit at 1.800m

1 2 3 4 5

Stability: Good.
Plant: JCB
Backfill: Arisings.

Groundwater: None encountered.

Remarks: Trial pit terminated at 1.80m bgl, bedrock.

Photographic Record

Number:	**TP08**	**Project**	Glounthaune Housing Phase 2
		Project No	P18170
		Engineer	AECOM

Photographic Record

Number:	**TP08**	**Project**	Glounthaune Housing Phase 2
		Project No	P18170
		Engineer	AECOM

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Trial Pit No **TP09** Sheet 1 of 1

Project Name: Glounthane Houseing Phase 2	**Project No.** P18170	**Co-ords:** 577178E - 573897N	**Date** 22/08/2018
		Level: 90.90m OD	
Location: Glounthane Co. Cork.		**Dimensions (m):** 3.00 x 1.60	**Scale** 1:25
Client: AECOM		**Depth:** 2.20m BGL	**Logged** EOM

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
							(TOPSOIL)
	0.50 - 1.00	B		0.40	90.50		Beige orange, slightly gravelly sandy SILT with high cobble content. Sand is fine to coarse. Gravel is fine to coarse, sub-angular. Cobbles are 63mm to 130mm dia, sub-angular.
	1.00 - 1.50	B		1.00	89.90		Brown pink, silty sandy GRAVEL with high cobble content and medium boulder content. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to angular. Cobbles are 63mm to 200mm dia, sub-angular. Boulders are 200mm to 300mm dia, sub-angular to angular.
				1.70	89.20		Cobbles and Boulders onto bedrock.
				2.20	88.70		End of Pit at 2.200m

1 2 3 4 5

Stability: Good.
Plant: JCB
Backfill: Arisings.

Groundwater: None encountered.

Remarks: Trial pit terminated at 2.20m bgl, bedrock.

Photographic Record

Number:	**TP09**	**Project** Glounthaune Housing Phase 2 **Project No** P18170 **Engineer** AECOM	

Photographic Record

Number:	**TP09**	**Project** Glounthaune Housing Phase 2 **Project No** P18170 **Engineer** AECOM	

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Trial Pit No
TP10
Sheet 1 of 1

Project Name: Glounthane Houseing Phase 2	**Project No.** P18170	**Co-ords:** 577091E - 573880N **Level:** 86.54m OD	**Date** 24/08/2018
Location: Glounthane Co. Cork.		**Dimensions (m):** 2.40 × 1.50	**Scale** 1:25
Client: AECOM		**Depth:** 1.80m BGL	**Logged** EOM

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
				0.00	86.54		(TOPSOIL)
	0.50 - 1.00	B		0.40	86.14		Light brown, slightly sandy gravelly SILT with high cobble content and medium boulder content. Sand is fine to coarse. Gravel is fine to coarse, angular. Cobbles are 63mm to 200mm dia, angular. Boulders are 200mm to 250mm dia, angular to sub-angular.
	1.20 - 1.60	B		1.20	85.34		Brown red, slightly sandy gravelly SILT with high cobble content and high boulder content. Sand is fine to coarse. Gravel is fine to coarse, angular. Cobbles are 63mm to 200mm dia. Boulders 200mm to 300mm dia, angular.
				1.80	84.74		End of Pit at 1.800m

1 2 3 4 5

Stability: Good.
Plant: JCB
Backfill: Arisings.

Groundwater: None encountered.

Remarks: Trial pit terminated at 1.80m bgl, bedrock.

Photographic Record

Number:	**TP10**	**Project**	Glounthaune Housing Phase 2
		Project No	P18170
		Engineer	AECOM

Photographic Record

Number:	**TP10**	**Project**	Glounthaune Housing Phase 2
		Project No	P18170
		Engineer	AECOM

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Trial Pit No **TP11** Sheet 1 of 1

Project Name: Glounthane Houseing Phase 2	**Project No.** P18170	**Co-ords:** 577099E - 573818N **Level:** 80.60m OD	**Date** 24/08/2018
Location: Glounthane Co. Cork.		**Dimensions (m):** 2.80 x 1.50	**Scale** 1:25
Client: AECOM		**Depth:** 2.50m BGL	**Logged** EOM

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
							(TOPSOIL)
	0.40 - 0.90	B		0.40	80.20		Light brown orange, slightly sandy slightly gravelly SILT with high cobble content. Cobbles are 63mm to 180mm dia, sub-angular.
	1.00 1.00 - 1.80	WAC B		0.90	79.70		Brown purple, slightly sandy slightly gravelly SILT with high cobble content and medium boulder content. Sand is fine to coarse. Gravel is fine to coarse, sub-angular. Cobbles are 6mm to 200mm dia, sub-angular. Boulders are 200mm to 250mm dia, sub-angular to angular.
	1.80 - 2.30	B		1.80	78.80		Purple, slightly sandy slightly gravelly SILT with high cobble content and low boulder content. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to angular. Cobbles are 63mm to 200mm dia, sub-angular. Boulders are 200mm to 260mm dia, sub-angular.
				2.50	78.10		End of Pit at 2.500m

1 2 3 4 5

Stability: Good.
Plant: JCB
Backfill: Arisings.

Groundwater: None encountered.

Remarks: Trial pit terminated at 2.50m bgl, required depth.

Photographic Record

Number:	**TP11**	**Project** Glounthaune Housing Phase 2 **Project No** P18170 **Engineer** AECOM	

Photographic Record

Number:	**TP11**	**Project** Glounthaune Housing Phase 2 **Project No** P18170 **Engineer** AECOM	

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Trial Pit No
TP12
Sheet 1 of 1

Project Name: Glounthane Houseing Phase 2	**Project No.** P18170	**Co-ords:** 577186E - 573831N **Level:** 83.21m OD	**Date** 22/08/2018
Location: Glounthane Co. Cork.		**Dimensions (m):** 3.00 x 1.60	**Scale** 1:25
Client: AECOM		**Depth:** 2.50m BGL	**Logged** EOM

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
				0.00	83.21		(TOPSOIL)
	0.50 - 1.00	B		0.40	82.81		Brown orange, slightly sandy gravelly SILT with high cobble content and low boulder content. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to angular. Cobbles are 63mm to 200mm dia, sub-angular to angular. Boulders are 200mm to 250mm dia, sub-angular to angular.
	1.00 - 1.50	B		1.00	82.21		Beige pink, slightly sandy slightly gravelly SILT with high cobble content and high boulder content. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-angular. Cobbles are 63mm to 200mm dia. Boulders are 200mm to 250mm dia, sub-angular to angular.
	1.80 - 2.20	B		1.70	81.51		Brown purple, sandy GRAVEL with high cobble content and medium boulder content. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to angular. Cobbles are 63mm to 200mm dia, sub-angular to angular. Boulders are 200mm to 300mm dia, sub-angular to angular.
				2.50	80.71		End of Pit at 2.500m

Stability: Good.
Plant: JCB
Backfill: Arisings.

Groundwater: None encountered.

Remarks: Trial pit terminated at 2.50m bgl, required depth.

Photographic Record

Number:	**TP12**	**Project**	Glounthaune Housing Phase 2
		Project No	P18170
		Engineer	AECOM

Photographic Record

Number:	**TP12**	**Project** Glounthaune Housing Phase 2 **Project No** P18170 **Engineer** AECOM	

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Trial Pit No **TP13** Sheet 1 of 1

Project Name: Glounthane Houseing Phase 2	**Project No.** P18170	**Co-ords:** 577244E - 573848N **Level:** 84.96m OD	**Date** 22/08/2018
Location: Glounthane Co. Cork.		**Dimensions (m):** 3.00 x 1.60	**Scale** 1:25
Client: AECOM		**Depth:** 2.50m BGL	**Logged** EOM

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
							(TOPSOIL)
	0.40 - 0.90	B		0.40	84.56		Orange, slightly sandy gravelly SILT with medium cobble content. Sand is fine to coarse. Gravel is fine to coarse, sub-angular. Cobbles are 63mm to 120mm dia, sub-angular.
	1.00 1.00 - 1.80	WAC B		0.90	84.06		Orange pink, slightly sandy gravelly SILT with high cobble content with medium boulder content. Cobbles are 63mm to 200mm dia, sub-angular. Boulders are 200mm to 250mm dia, sub-angular.
				1.90	83.06		Boulders and Cobbles (weathered bedrock.
				2.50	82.46		End of Pit at 2.500m

Stability: Good.
Plant: JCB
Backfill: Arisings.

Groundwater: None encountered.

Remarks: Trial pit terminated at 2.50m bgl, bedrock.

Photographic Record

Number:	**TP13**	**Project** Glounthaune Housing Phase 2 **Project No** P18170 **Engineer** AECOM	

Photographic Record

Number:	**TP13**	**Project** Glounthaune Housing Phase 2 **Project No** P18170 **Engineer** AECOM	

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Trial Pit No
TP14
Sheet 1 of 1

Project Name: Glounthane Houseing Phase 2	**Project No.** P18170	**Co-ords:** 577234E - 573804N **Level:** 80.03m OD	**Date** 22/08/2018
Location: Glounthane Co. Cork.		**Dimensions (m):** 2.80 x 1.60	**Scale** 1:25
Client: AECOM		**Depth:** 2.10m BGL	**Logged** EOM

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
				0.00	80.03		(TOPSOIL)
	0.50 - 1.00	B		0.40	79.63		Orange, slightly sandy gravelly SILT with high cobble content and low boulder. Sand is fine to coarse. Gravel is fine to coarse, angular. Cobbles are 63mm to 200mm dia, angular. Boulders are 200mm to 250mm dia, angular.
	1.00 - 2.00	B		1.00	79.03		Beige, sandy silty GRAVEL with high cobble content and high 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 320mm dia dia, angular to sub-angular.
				2.10	77.93		End of Pit at 2.100m

1 2 3 4 5

Stability: Good
Plant: JCB
Backfill: Arisings.

Groundwater: None encountered.

Remarks: Trial pit terminated at 2.10m bgl, bedrock.

Photographic Record

Number:	**TP14**	**Project**	Glounthaune Housing Phase 2
		Project No	P18170
		Engineer	AECOM

Photographic Record

Number: TP14	**Project** Glounthaune Housing Phase 2 **Project No** P18170 **Engineer** AECOM	

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Trial Pit No **TP15** Sheet 1 of 1

Project Name: Glounthane Houseing Phase 2	**Project No.** P18170	**Co-ords:** 577316E - 573819N **Level:** 81.67m OD	**Date** 22/08/2018
Location: Glounthane Co. Cork.		**Dimensions (m):** 2.80 x 1.60	**Scale** 1:25
Client: AECOM		**Depth:** 2.60m BGL	**Logged** EOM

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
							(TOPSOIL)
	0.50 - 1.10	B		0.40	81.27		Beige orange, silty very 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 250mm dia, angular to sub-angular.
	1.20 - 1.80	B		1.20	80.47		Beige, dry slightly sandy gravelly SILT with high cobble content and high 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 300mm dia, angular to sub-angular.
	2.00 - 2.30	B		1.90	79.77		Brown grey, slightly sandy gravelly SILT with high cobble content and high boulder content. Cobbles are 63mm to 200mm dia, angular to sub-angular. Boulders are 200mm to 260mm dia, angular to sub-angular.
				2.60	79.07		End of Pit at 2.600m

Stability: Good.
Plant: JCB
Backfill: Arisings.

Groundwater: None encountered.

Remarks: Trial pit terminated at 2.60m bgl, required depth.

Photographic Record

Number:	**TP15**	**Project**	Glounthaune Housing Phase 2
		Project No	P18170
		Engineer	AECOM

Photographic Record

Number:	**TP15**	**Project**	Glounthaune Housing Phase 2
		Project No	P18170
		Engineer	AECOM

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Trial Pit No
TP16
Sheet 1 of 1

Project Name: Glounthane Houseing Phase 2	**Project No.** P18170	**Co-ords:** 577357E - 573765N **Level:** 75.69m OD	**Date** 23/08/2018
Location: Glounthane Co. Cork.		**Dimensions (m):** 2.80 x 1.60	**Scale** 1:25
Client: AECOM		**Depth:** 2.50m BGL	**Logged** EOM

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
				0.00	75.70		(TOPSOIL)
	0.40 - 0.90	B		0.40	75.30		Orange brown, slightly sandy gravelly SILT with high cobble content and low boulder content. Sand is fine to coarse. Gravel is fine to coarse, sub-angular. Cobbles are 63mm to 200mm dia, sub-angular. Boulders are 200mm to 250mm dia, sub-angular.
	1.00 - 1.50	B		0.90	74.80		Beige pink, silty gravelly SAND with high cobble content and low boulder content. Sand is fine to coarse. Gravel is is fine to coarse, sub-angular. Cobbles are 63mm to 200mm dia, sub-angular. Boulders are 200mm to 250mm dia, sub-angular.
	1.70 - 2.30	B		1.60	74.10		Brown red, slightly clayey gravelly SILT with high cobble content and high boulder content. Gravel is fine to coarse, angular to sub-angular. Cobbles are 63mm to 200mm dia, angular to sub-angular. Boulders are 200mm to 35mm dia, angular to sub-angular.
				2.30	73.40		Weathered SILTSTONE bedrock.
				2.50	73.19		End of Pit at 2.500m

1 2 3 4 5

Stability: Good.
Plant: JCB
Backfill: Arisings.

Groundwater: None encountered.

Remarks: Trial pit terminated at 2.50m bgl, required depth.

Photographic Record

Number:	**TP16**	**Project**	Glounthaune Housing Phase 2
		Project No	P18170
		Engineer	AECOM

Photographic Record

Number: TP16	**Project** Glounthaune Housing Phase 2 **Project No** P18170 **Engineer** AECOM	

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Trial Pit No **TP17** Sheet 1 of 1

Project Name: Glounthane Houseing Phase 2	**Project No.** P18170	**Co-ords:** 577273E - 573749N **Level:** 74.41m OD	**Date** 23/08/2018
Location: Glounthane Co. Cork.		**Dimensions (m):** 2.80 x 1.50	**Scale** 1:25
Client: AECOM		**Depth:** 2.50m BGL	**Logged** EOM

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
							(TOPSOIL)
	0.50 - 0.90	B		0.40	74.01		Orange, slightly sandy gravelly SILT with high cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-angular. Cobbles are 63mm to 170mm dia, angular to sub-angular.
	1.00 1.00 - 1.50	WAC B		0.90	73.51		Beige pink, very silty very sandy GRAVEL with low cobble content and high boulder content. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to angular. Cobbles are 63mm to 200mm dia, angular to sub-angular. Boulders are 200mm to 300mm dia, angular to sub-angular.
	1.50 - 1.90	B		1.50	72.91		Brown red, silty gravelly SAND with high cobble content and high boulder content. Cobbles are 63mm to 200mm dia, sub-angular to angular. Boulders are 200mm to 300mm dia, angular to sub-angular.
				2.00	72.41		Weathered SILTSTONE bedrock.
				2.50	71.91		End of Pit at 2.500m

Stability: Good
Plant: JCB
Backfill: Arisings.

Groundwater: None encountered.

Remarks: Trial pit terminated at 2.50m bgl, required depth.

Photographic Record

Number:	**TP17**	**Project** Glounthaune Housing Phase 2 **Project No** P18170 **Engineer** AECOM	

Photographic Record

Number:	**TP17**	**Project** Glounthaune Housing Phase 2 **Project No** P18170 **Engineer** AECOM	

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Trial Pit No
TP18
Sheet 1 of 1

Project Name: Glounthane Houseing Phase 2	**Project No.** P18170	**Co-ords:** 577205E - 573726N **Level:** 71.60m OD	**Date** 23/08/2018
Location: Glounthane Co. Cork.		**Dimensions (m):** 2.60 x 1.50 **Depth:** 2.30m BGL	**Scale** 1:25
Client: AECOM			**Logged** EOM

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
				0.40	71.20		(TOPSOIL)
	0.50 - 1.00	B					Brown, slightly sandy gravelly SILT with high cobble content and high boulder content. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to angular. Cobbles are 63mm to 200mm dia, angular. Boulders are 200mm to 300mm dia, angular.
	1.20 - 1.80	B		1.20	70.40		Brown red, silty sandy GRAVEL with high cobble content and high boulder content. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to angular. Cobbles are 63mm to 200mm dia, angular. Boulders are 200mm to 350mm dia, angular.
				1.90	69.70		Weathered SILTSTONE bedrock.
				2.30	69.30		End of Pit at 2.300m

1 2 3 4 5

Stability: Good
Plant: JCB
Backfill: Arisings.

Groundwater: None encountered.

Remarks: Trial pit terminated at 2.30m bgl due to bedrock.

Photographic Record

Number:	**TP18**	**Project**	Glounthaune Housing Phase 2
		Project No	P18170
		Engineer	AECOM

Photographic Record

Number:	**TP18**	**Project**	Glounthaune Housing Phase 2
		Project No	P18170
		Engineer	AECOM

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Trial Pit No **TP19** Sheet 1 of 1

Project Name: Glounthane Houseing Phase 2	**Project No.** P18170	**Co-ords:** 577208E - 573673N **Level:** 63.92m OD	**Date** 23/08/2018
Location: Glounthane Co. Cork.		**Dimensions (m):** 2.60 x 1.50	**Scale** 1:25
Client: AECOM		**Depth:** 2.50m BGL	**Logged** EOM

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
				0.40	63.52		(TOPSOIL)
	0.50 - 0.90	B					Brown, slightly sandy gravelly SILT with medium cobble content. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to angular. Cobbles are 63mm to 150mm dia, angular to sub-angular.
	1.00	WAC		0.90	63.02		Orange, slightly silty gravelly SAND with high cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-angular. Cobbles are 63mm to 180mm dia, angular to sub-angular.
	1.00 - 1.40	B					
	1.50 - 2.20	B		1.40	62.52		Beige pink, slightly sandy gravelly SILT 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 280mm dia, angular to sub-angular.
				2.30	61.62		Weathered SILTSTONE bedrock.
				2.50	61.42		End of Pit at 2.500m

Stability: Good.
Plant: JCB
Backfill: Arisings.

Groundwater: None encountered.

Remarks: Trial pit terminated at 2.50m bgl, required depth.

Number:	**TP19**	**Project** Glounthaune Housing Phase 2 **Project No** P18170 **Engineer** AECOM	

Photographic Record

Number:	**TP19**	**Project** Glounthaune Housing Phase 2 **Project No** P18170 **Engineer** AECOM	

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Trial Pit No
TP20
Sheet 1 of 1

Project Name: Glounthane Houseing Phase 2	**Project No.** P18170	**Co-ords:** 577260E - 573688N **Level:** 66.85m OD	**Date** 23/08/2018
Location: Glounthane Co. Cork.		**Dimensions (m):** 2.50 x 1.50	**Scale** 1:25
Client: AECOM		**Depth:** 1.35m BGL	**Logged** EOM

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
				0.00	66.85		(TOPSOIL)
	0.50 - 1.00	B		0.40	66.45		Orange, slightly sandy gravelly SILT with medium cobble content. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to angular. Cobbles are 63mm to 150mm dia, angular to sub-angular.
	1.00 - 1.20	B		1.00	65.85		Beige pink, slightly slightly sandy gravelly SILT with high cobble content and low boulder content. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to angular. Cobbles are 63mm to 200mm dia, angular to sub-angular. Boulders are 200mm to 250mm dia, angular to sub-angular.
	1.20 - 1.30	B		1.20	65.65		Brown red, silty sandy GRAVEL with high cobble content and high 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 300mm dia, angular to sub-angular.
				1.35	65.50		End of Pit at 1.350m

1 2 3 4 5

Stability: Good.
Plant: JCB
Backfill: Arisings.

Groundwater: None encountered.

Remarks: Trial pit terminated at 1.35m bgl due to bedrock.

Photographic Record

Number:	**TP20**	**Project**	Glounthaune Housing Phase 2
		Project No	P18170
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Photographic Record

Number: TP20	**Project** Glounthaune Housing Phase 2 **Project No** P18170 **Engineer** AECOM	

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Trial Pit No **TP21** Sheet 1 of 1

Project Name: Glounthane Houseing Phase 2	**Project No.** P18170	**Co-ords:** 577323E - 573726N **Level:** 72.33m OD	**Date** 23/08/2018
Location: Glounthane Co. Cork.		**Dimensions (m):** 2.80 x 1.50	**Scale** 1:25
Client: AECOM		**Depth:** 2.50m BGL	**Logged** EOM

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
							(TOPSOIL)
	0.50 - 1.00	B		0.40	71.93		Beige pink, slightly sandy gravelly SILT with high cobble content. Cobbles are 63mm to 180mm dia, sub-angular.
	1.00 - 1.50	B		1.00	71.33		Light brown, sandy silty GRAVEL with high cobble content and high boulder content. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to angular. Cobbles are 63mm to 200mm dia, angular to sub-angular. Boulders are 200mm to 380mm dia, angular to sub-angular.
	1.60 - 2.20	B		1.60	70.73		Brown, silty sandy GRAVEL with high cobble content and high 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 400mm dia, angular to sub-angular.
				2.30	70.03		Weathered SILSTONE bedrock.
				2.50	69.83		End of Pit at 2.500m

1 2 3 4 5

Stability: Good.
Plant: JCB
Backfill: Arisings.

Groundwater: None encountered.

Remarks: Trial pit terminated at 2.50m, required depth.

Photographic Record

Number:	**TP21**	**Project** Glounthaune Housing Phase 2 **Project No** P18170 **Engineer** AECOM	

Photographic Record

Number:	**TP21**	**Project** Glounthaune Housing Phase 2 **Project No** P18170 **Engineer** AECOM	

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Trial Pit No
TP22
Sheet 1 of 1

Project Name: Glounthane Houseing Phase 2	**Project No.** P18170	**Co-ords:** 577386E - 573678N **Level:** 64.84m OD	**Date** 23/08/2018
Location: Glounthane Co. Cork.		**Dimensions (m):** 2.70 x 1.50	**Scale** 1:25
Client: AECOM		**Depth:** 1.00m BGL	**Logged** EOM

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
				0.00	64.84		(TOPSOIL)
	0.50 - 0.80	B		0.40	64.44		Orange, slightly sandy gravelly SILT with high cobble content. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to angular. Cobbles are 63mm to 180mm dia, angular to sub-angular.
	0.80 - 1.00	B		0.80	64.04		Grey orange, slightly silty sandy GRAVEL with high cobble content and high boulder content. Sand is fine to coarse. Gravel is fine to coarse, angular. Cobbles are 63mm to 200mm dia, angular.
				1.00	63.84		End of Pit at 1.000m

1 2 3 4 5

Stability: Good.
Plant: JCB
Backfill: Arisings.

Groundwater: None encountered

Remarks: Trial pit terminated at 1.00m bgl due to bedrock.

Photographic Record

Number:	**TP22**	**Project**	Glounthaune Housing Phase 2
		Project No	P18170
		Engineer	AECOM

Photographic Record

Number:	**TP22**	**Project**	Glounthaune Housing Phase 2
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		Engineer	AECOM

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Trial Pit No **TP23** Sheet 1 of 1

Project Name: Glounthane Houseing Phase 2	**Project No.** P18170	**Co-ords:** 577323E - 573657N **Level:** 62.87m OD	**Date** 23/08/2018
Location: Glounthane Co. Cork.		**Dimensions (m):** 2.60 x 1.50	**Scale** 1:25
Client: AECOM		**Depth:** 2.50m BGL	**Logged** EOM

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
							(Topsoil).
	0.40 - 0.90	B		0.40	62.47		Orange, slightly sandy gravelly SILT with high cobble content and medium boulder content. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-angular. Cobbles are 63mm to 200mm dia. Boulders are 200mm to 300mm dia, angular to sub-angular.
	1.00 - 1.50	B		0.90	61.97		Beige, slightly gravelly sandy SILT with high cobble content and low boulder content. Cobbles are 63mm to 200mm dia, angular to sub-angular. Boulders are 200mm to 300mm dia, angular to sub-angular.
	1.80 - 2.20	B		1.80	61.07		Brown, slightly sandy gravelly SILT with high cobble content and high boulder content. Sand is fine to coarse. 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 300mm dia, angular to sub-angular.
				2.50	60.37		End of Pit at 2.500m

1 2 3 4 5

Stability: Good.
Plant: JCB
Backfill: Arisings.

Groundwater: None encountered.

Remarks: Trial pit terminated at 2.50m bgl, required depth.

Photographic Record

Number:	**TP23**	**Project** Glounthaune Housing Phase 2 **Project No** P18170 **Engineer** AECOM	

Photographic Record

Number:	**TP23**	**Project** Glounthaune Housing Phase 2 **Project No** P18170 **Engineer** AECOM	

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Trial Pit No
TP24
Sheet 1 of 1

Project Name: Glounthane Houseing Phase 2	**Project No.** P18170	**Co-ords:** 577240E - 573605N **Level:** 52.99m OD	**Date** 23/08/2018
Location: Glounthane Co. Cork.		**Dimensions (m):** 2.80 x 1.40	**Scale** 1:25
Client: AECOM		**Depth:** 2.10m BGL	**Logged** EOM

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
				0.00	52.99		(TOPSOIL)
	0.40 - 0.80	B		0.40	52.59		Brown, slightly sandy slightly gravelly SILT with high cobble content and low boulder content. Sand is fine to coarse. Gravel is fine to coarse, angular. Cobbles are 63mm to 200mm dia, angular to sub-angular. Boulders are 200mm to 300mm dia, angular.
	1.00 - 1.50	B		0.80	52.19		Orange, silty very sandy GRAVEL with high cobble content and high boulder content. Sand is fine to coarse. Gravel is fine to coarse, angular to sub-angular. Cobbles are 63mm to 200mm dia, angular. Boulders 200mm to 300mm dia, angular.
	1.70 - 2.00	B		1.70	51.29		Brown, very silty very sandy GRAVEL with high cobble content and high boulder content. Sand is fine to coarse. Gravel is fine to coarse, angular. Cobbles are 63mm to 200mm dia. Boulders are 200mm to 300mm dia, angular.
				2.10	50.89		End of Pit at 2.100m

1 2 3 4 5

Stability: Good.
Plant: JCB
Backfill: Arisings.

Groundwater: None encountered.

Remarks: Trial pit terminated at 2.10m bgl, due to bedrock.

Photographic Record

Number:	**TP24**	**Project**	Glounthaune Housing Phase 2
		Project No	P18170
		Engineer	AECOM

Photographic Record

Number:	**TP24**	**Project**	Glounthaune Housing Phase 2
		Project No	P18170
		Engineer	AECOM

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Trial Pit No **TP25** Sheet 1 of 1

Project Name: Glounthane Houseing Phase 2	**Project No.** P18170	**Co-ords:** 577329E - 573897N	**Date** 22/08/2018
Location: Glounthane Co. Cork.		**Dimensions (m):** 3.00 x 1.60	**Scale** 1:25
Client: AECOM		**Depth:** 1.25m BGL	**Logged** EOM

Water Strike & Backfill	Samples & In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
							(TOPSOIL)
	0.50 - 1.00	B		0.40	90.74		Orange, slightly sandy gravelly SILT with high cobble content and medium boulder content. Sand is fine to coarse. Gravel is fine to coarse, sub-angular. Cobbles are 63mm to 200mm dia, sub-angular to angular. Boulders 200mm to 250mm dia, sub-angular to angular.
				1.00	90.14		COBBLES and BOULDERS onto bedrock. SILTSTONE lithology.
				1.25	89.89		End of Pit at 1.250m

Stability: Good
Plant: JCB
Backfill: Arisings.

Groundwater: None encountered.

Remarks: Trial pit terminated at 1.25m bgl due to bedrock.

Photographic Record

Number:	**TP25**	**Project** Glounthaune Housing Phase 2 **Project No** P18170 **Engineer** AECOM	

Photographic Record

Number:	**TP25**	**Project** Glounthaune Housing Phase 2 **Project No** P18170 **Engineer** AECOM	

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	

Key sheet		pgl priority geotechnical

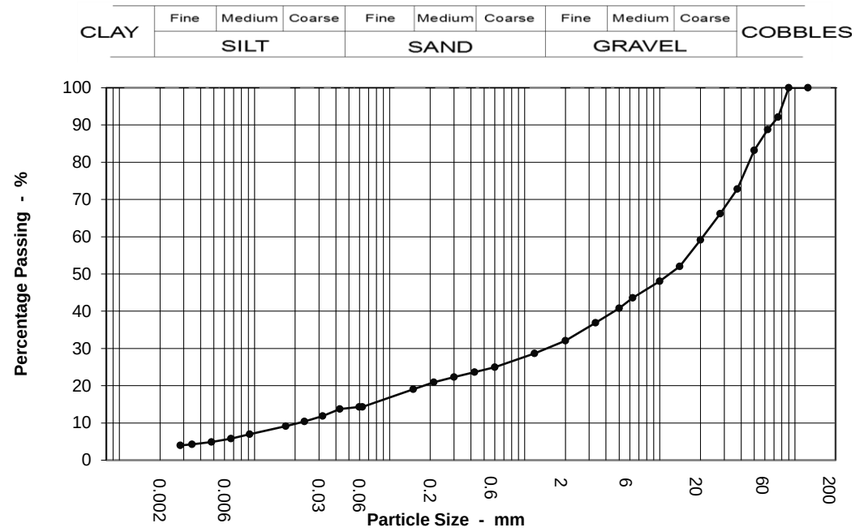
pgl priority geotechnical	**Natural Moisture Content/Atterberg Limits Summary** **BS 1377 : Part 2 : 1990 : Clause 3**	**Job Ref**
Location	**Glounthane Houseing Phase 2**	**P18170**

Hole ID	Sample Ref	Depth (m)	Sample Type	Sample Description	MC	LL	PL	PI	% Pass 425
BH01	2	1	B	Clayey sandy GRAVEL with medium cobble content	14	28	21	7	47.4
BH05	2	1	B	Sandy very clayey GRAVEL with high cobble content	10	20	13	7	64.8
BH05	3	2	B	Clayey very sandy GRAVEL with low cobble content	14				
BH05	4	3	B	Sandy very clayey GRAVEL	9				
BH06	2	1	B	Clayey very sandy GRAVEL	13				
BH06	3	2	B	Clayey very sandy GRAVEL	13				
BH06	4	3	B	Clayey very sandy GRAVEL	13				
BH08	2	1	B	Clayey sandy GRAVEL with high cobble content	14				
BH08	3	2	B	Clayey sandy GRAVEL with medium cobble content	13				
BH08	4	3	B	Clayey sandy GRAVEL with high cobble content	12				
BH10	2	1	B	Very clayey very sandy GRAVEL	12				
BH10	3	2	B	Very clayey very sandy GRAVEL	8				
BH12	1	0	B	Slightly sandy gravelly CLAY	23	41	29	12	61.5
BH12	2	1	B	Slightly sandy gravelly SILT with low cobble content	13	20	16	4	54.6
BH12	3	2	B	Silty sandy GRAVEL	12				
BH12	4	3	B	Slightly sandy gravelly SILT	13				
BH14	1	0	B	Slightly sandy gravelly SILT	13				
BH14	2	1	B	Very clayey very sandy GRAVEL	13	30	21	9	47.6
BH14	3	2	B	Very clayey very sandy GRAVEL	13				
TP01	1	0.5	B	Slightly sandy gravelly SILT with high cobble content	11				

pgl priority geotechnical	**Natural Moisture Content/Atterberg Limits Summary** **BS 1377 : Part 2 : 1990 : Clause 3**	**Job Ref**
Location	**Glounthane Houseing Phase 2**	**P18170**

Hole ID	Sample Ref	Depth (m)	Sample Type	Sample Description	MC	LL	PL	PI	% Pass 425
TP01	2	1	B	Slightly sandy gravelly SILT	16				
TP01	3	1.6	B	Slightly gravelly sandy SILT	12				
TP03	2	1	B	Slightly sandy gravelly SILT		39	29	10	65.5
TP05	1	0.5	B	Slightly sandy gravelly SILT	15				
TP05	2	1	B	Silty sandy GRAVEL with low cobble content	16				
TP05	3	1.7	B	Very sandy GRAVEL	13				
TP06	2	1.2	B	Very silty very sandy GRAVEL with low cobble content	13				
TP08	2	1	B	Silty sandy GRAVEL with high cobble content	33	60	48	12	52.2
TP10	1	0.5	B	Slightly sandy gravelly SILT	7				
TP10	2	1.2	B	Slightly gravelly sandy CLAY with high cobble content	10				
TP11	1	0.4	B	Slightly sandy gravelly SILT	25				
TP11	2	1	B	Slightly sandy slightly gravelly SILT	10				
TP11	3	1.8	B	Slightly sandy slightly gravelly SILT	11				
TP15	1	0.5	B	Silty very sandy GRAVEL with low cobble content		35	25	10	56
TP15	2	1.2	B	Slightly sandy gravelly SILT		21	16	5	63.6
TP24	2	1	B	Silty very sandy GRAVEL		54	41	13	46.8

pgl priority geotechnical	**PARTICLE SIZE DISTRIBUTION** **BS 1377 : Part 2 : 1990 : Clause 9**	**Job Ref**	**P18170**
		Borehole / Pit No	BH01
Location	**Glounthane Houseing Phase 2**	Sample No	2
		Depth	1.00 m
Soil Description	Clayey sandy GRAVEL with medium cobble content	Sample type	B



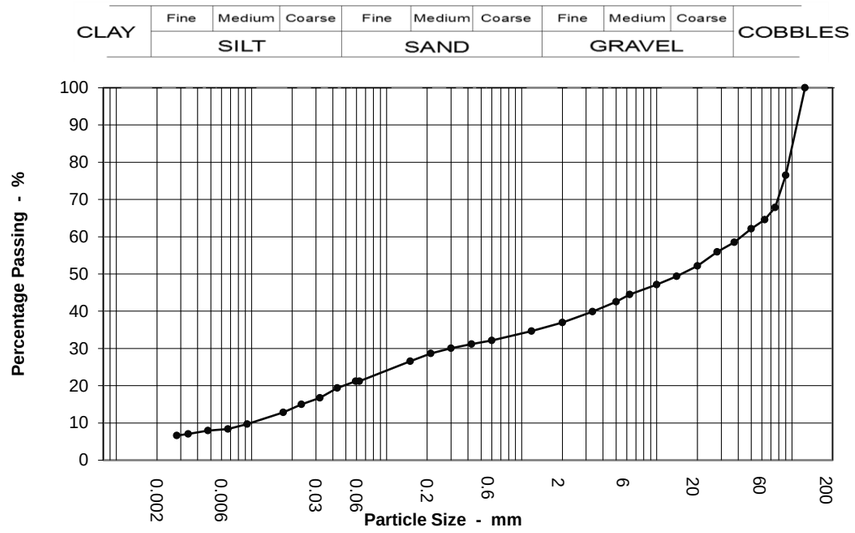
Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.060	14
90	100	0.043	14
75	92	0.032	12
63	89	0.023	10
50	83	0.017	9
37.5	73	0.009	7
28	66	0.007	6
20	59	0.005	5
14	52	0.003	4
10	48	0.003	4
6.3	44	0.001	3
5	41		
3.35	37		
2	32		
1.18	29		
0.6	25		
0.425	24		
0.3	22		
0.212	21		
0.15	19		
0.063	14		

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

Sample Proportions	
Cobbles	11.0
Gravel	57.0
Sand	18.0
Silt	11.0
Clay	4.0

Grading Analysis	
D100	90.00
D60	20.90
D10	0.02
Uniformity Coefficient	980.00

	PARTICLE SIZE DISTRIBUTION BS 1377 : Part 2 : 1990 : Clause 9	Job Ref	P18170
		Borehole / Pit No	BH05
Location	Glounthane Houseing Phase 2	Sample No	2
		Depth	1.00 m
Soil Description	Sandy very clayey GRAVEL with high cobble content	Sample type	B



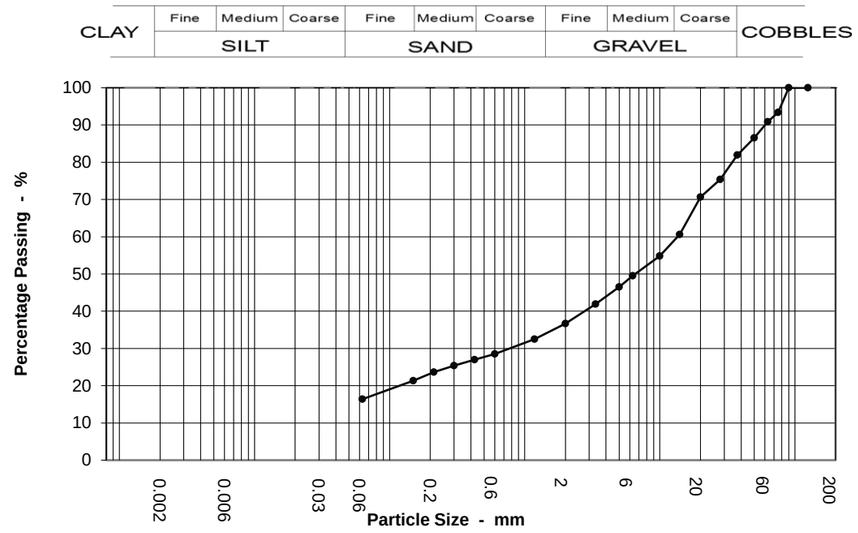
Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.059	21
90	76	0.043	19
75	68	0.032	17
63	65	0.023	15
50	62	0.017	13
37.5	58	0.009	10
28	56	0.007	8
20	52	0.005	8
14	49	0.003	7
10	47	0.003	7
6.3	44	0.001	5
5	43		
3.35	40		
2	37		
1.18	35		
0.6	32		
0.425	31		
0.3	30		
0.212	29		
0.15	27		
0.063	21		

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

Sample Proportions	
Cobbles	35.0
Gravel	28.0
Sand	16.0
Silt	15.0
Clay	6.0

Grading Analysis	
D100	125.00
D60	42.30
D10	0.01
Uniformity Coefficient	4300.00

	PARTICLE SIZE DISTRIBUTION BS 1377 : Part 2 : 1990 : Clause 9	Job Ref	P18170
		Borehole / Pit No	BH06
Location	Glounthane Houseing Phase 2	Sample No	3
		Depth	2.00 m
Soil Description	Clayey very sandy GRAVEL	Sample type	B



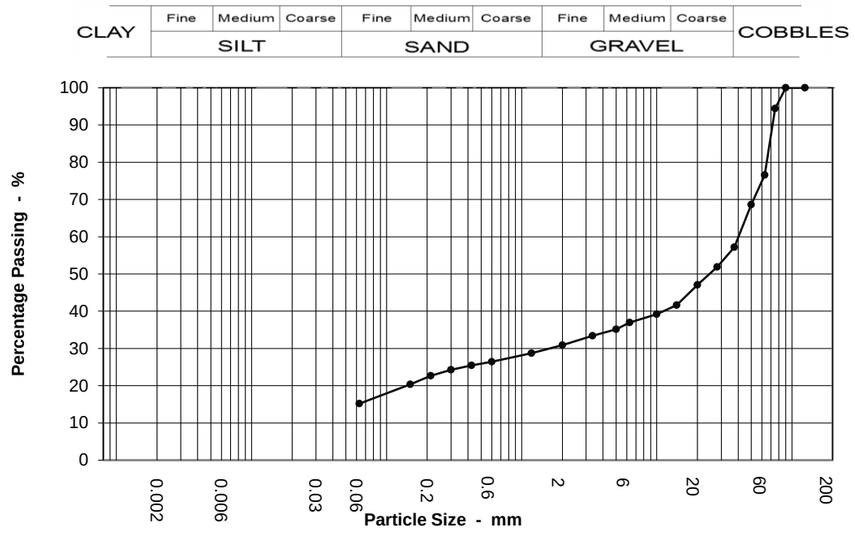
Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	93		
63	91		
50	87		
37.5	82		
28	75		
20	71		
14	61		
10	55		
6.3	50		
5	47		
3.35	42		
2	37		
1.18	32		
0.6	28		
0.425	27		
0.3	25		
0.212	24		
0.15	21		
0.063	16		

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

Sample Proportions	
Cobbles	9.0
Gravel	54.0
Sand	20.0
Silt & Clay	16.0

Grading Analysis	
D100	90.00
D60	13.50
D10	
Uniformity Coefficient	

	PARTICLE SIZE DISTRIBUTION BS 1377 : Part 2 : 1990 : Clause 9	Job Ref	P18170
		Borehole / Pit No	BH08
Location	Glounthane Houseing Phase 2	Sample No	2
		Depth	1.00 m
Soil Description	Clayey sandy GRAVEL with high cobble content	Sample type	B



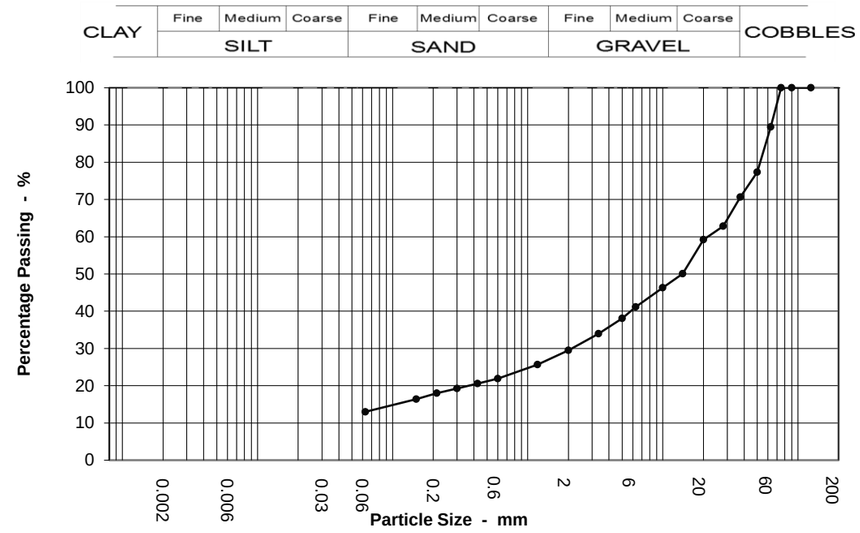
Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	94		
63	77		
50	69		
37.5	57		
28	52		
20	47		
14	42		
10	39		
6.3	37		
5	35		
3.35	33		
2	31		
1.18	29		
0.6	26		
0.425	25		
0.3	24		
0.212	23		
0.15	20		
0.063	15		

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

Sample Proportions	
Cobbles	23.0
Gravel	46.0
Sand	16.0
Silt & Clay	15.0

Grading Analysis	
D100	90.00
D60	40.20
D10	
Uniformity Coefficient	

	PARTICLE SIZE DISTRIBUTION BS 1377 : Part 2 : 1990 : Clause 9	Job Ref	P18170
		Borehole / Pit No	BH08
Location	Glounthane Houseing Phase 2	Sample No	3
		Depth	2.00 m
Soil Description	Clayey sandy GRAVEL with medium cobble content	Sample type	B



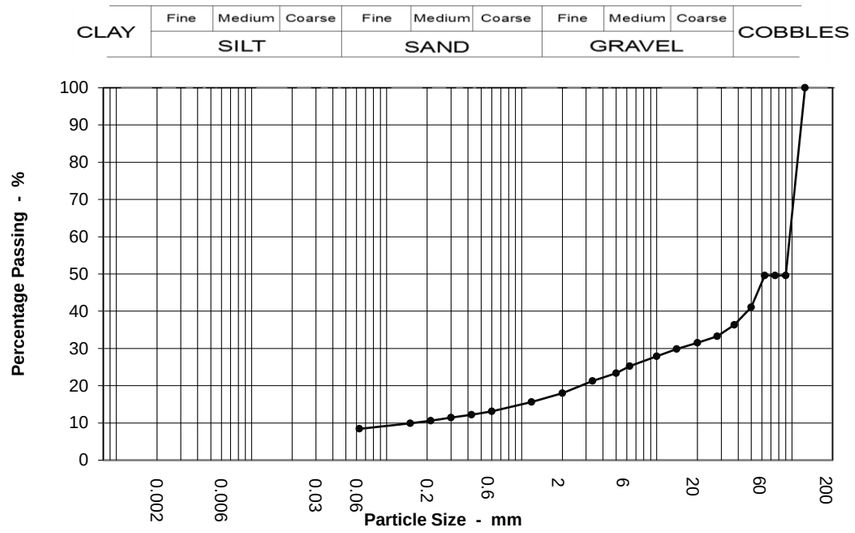
Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	89		
50	77		
37.5	71		
28	63		
20	59		
14	50		
10	46		
6.3	41		
5	38		
3.35	34		
2	29		
1.18	26		
0.6	22		
0.425	21		
0.3	19		
0.212	18		
0.15	16		
0.063	13		

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

Sample Proportions	
Cobbles	11.0
Gravel	60.0
Sand	17.0
Silt & Clay	13.0

Grading Analysis	
D100	75.00
D60	21.60
D10	
Uniformity Coefficient	

	PARTICLE SIZE DISTRIBUTION BS 1377 : Part 2 : 1990 : Clause 9	Job Ref	P18170
		Borehole / Pit No	BH08
Location	Glounthane Houseing Phase 2	Sample No	4
		Depth	3.00 m
Soil Description	Clayey sandy GRAVEL with high cobble content	Sample type	B



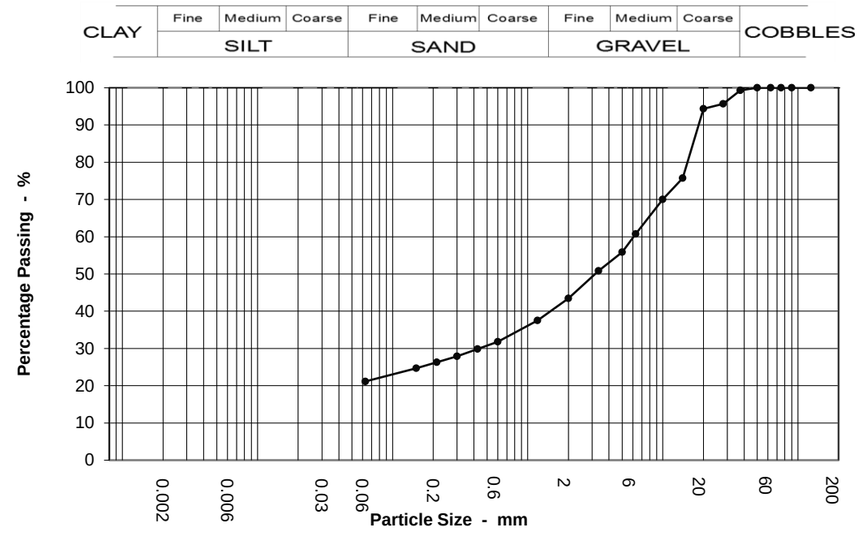
Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	50		
75	50		
63	50		
50	41		
37.5	36		
28	33		
20	32		
14	30		
10	28		
6.3	25		
5	23		
3.35	21		
2	18		
1.18	16		
0.6	13		
0.425	12		
0.3	11		
0.212	11		
0.15	10		
0.063	8		

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

Sample Proportions	
Cobbles	50.0
Gravel	32.0
Sand	10.0
Silt & Clay	8.0

Grading Analysis	
D100	125.00
D60	96.30
D10	0.16
Uniformity Coefficient	620.00

	PARTICLE SIZE DISTRIBUTION BS 1377 : Part 2 : 1990 : Clause 9	Job Ref	P18170
		Borehole / Pit No	BH09
Location	Glounthane Houseing Phase 2	Sample No	2
		Depth	1.00 m
Soil Description	Very clayey very sandy GRAVEL	Sample type	B



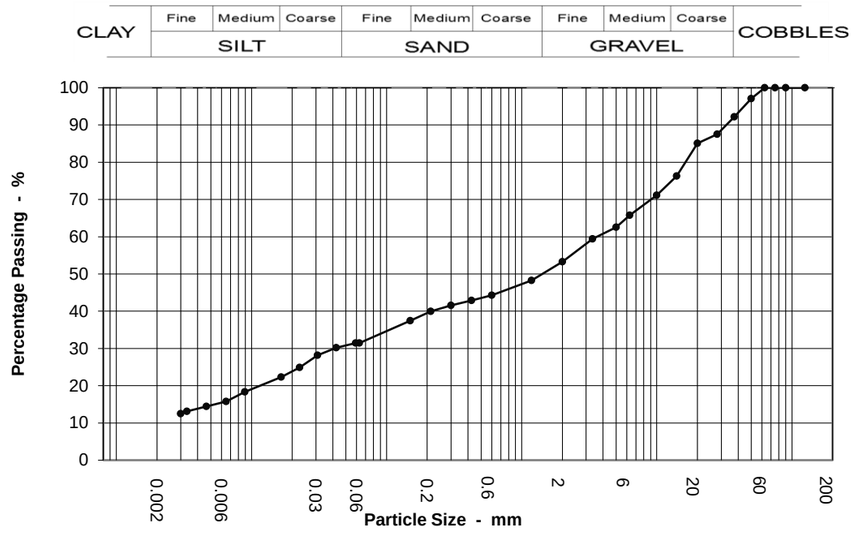
Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	99		
28	96		
20	94		
14	76		
10	70		
6.3	61		
5	56		
3.35	51		
2	43		
1.18	38		
0.6	32		
0.425	30		
0.3	28		
0.212	26		
0.15	25		
0.063	21		

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

Sample Proportions	
Cobbles	0.0
Gravel	57.0
Sand	22.0
Silt & Clay	21.0

Grading Analysis	
D100	50.00
D60	6.08
D10	
Uniformity Coefficient	

	PARTICLE SIZE DISTRIBUTION BS 1377 : Part 2 : 1990 : Clause 9	Job Ref	P18170
		Borehole / Pit No	BH12
Location	Glounthane Houseing Phase 2	Sample No	1
		Depth	0.00 m
Soil Description	Slightly sandy gravelly CLAY	Sample type	B



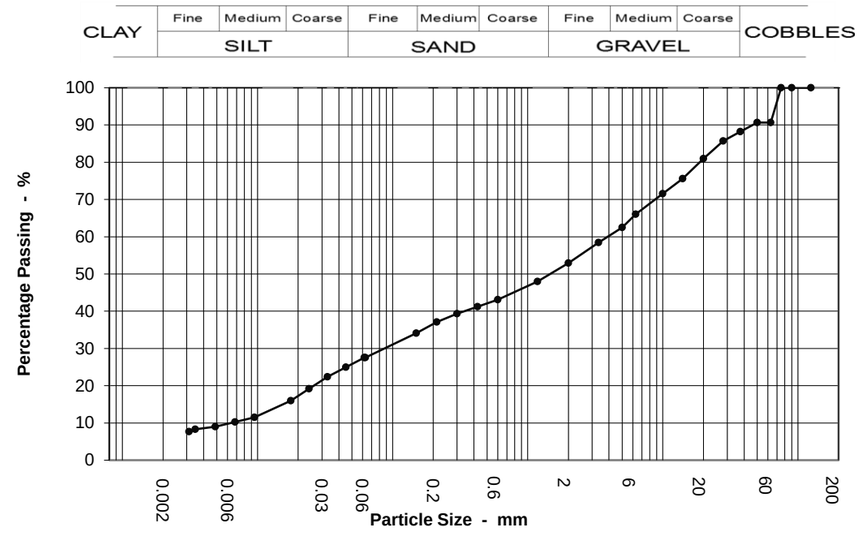
Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.059	31
90	100	0.042	30
75	100	0.031	28
63	100	0.023	25
50	97	0.017	22
37.5	92	0.009	18
28	88	0.006	16
20	85	0.005	14
14	76	0.003	13
10	71	0.003	12
6.3	66	0.001	8
5	63		
3.35	59		
2	53		
1.18	48		
0.6	44		
0.425	43		
0.3	42		
0.212	40		
0.15	37		
0.063	31		

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

Sample Proportions	
Cobbles	0.0
Gravel	47.0
Sand	22.0
Silt	20.0
Clay	11.0

Grading Analysis	
D100	63.00
D60	3.61
D10	0.00
Uniformity Coefficient	2600.00

	PARTICLE SIZE DISTRIBUTION BS 1377 : Part 2 : 1990 : Clause 9	Job Ref	P18170
		Borehole / Pit No	BH12
Location	Glounthane Houseing Phase 2	Sample No	2
		Depth	1.00 m
Soil Description	Slightly sandy gravelly SILT with low cobble content	Sample type	B



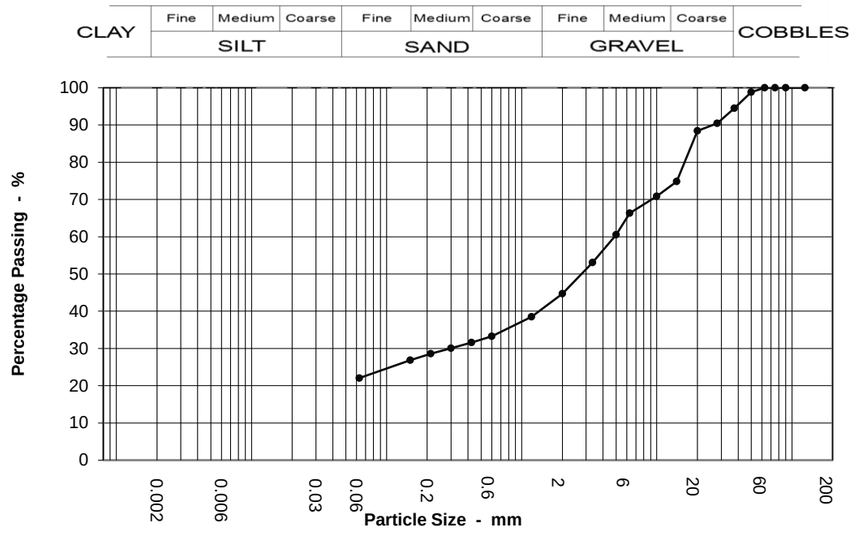
Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.062	28
90	100	0.045	25
75	100	0.033	22
63	91	0.024	19
50	91	0.018	16
37.5	88	0.010	12
28	86	0.007	10
20	81	0.005	9
14	76	0.003	8
10	72	0.003	8
6.3	66	0.001	6
5	63		
3.35	58		
2	53		
1.18	48		
0.6	43		
0.425	41		
0.3	39		
0.212	37		
0.15	34		
0.063	28		

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

Sample Proportions	
Cobbles	9.0
Gravel	38.0
Sand	25.0
Silt	20.0
Clay	7.0

Grading Analysis	
D100	75.00
D60	3.91
D10	0.01
Uniformity Coefficient	610.00

	PARTICLE SIZE DISTRIBUTION BS 1377 : Part 2 : 1990 : Clause 9	Job Ref	P18170
		Borehole / Pit No	BH14
Location	Glounthane Houseing Phase 2	Sample No	2
		Depth	1.00 m
Soil Description	Very clayey very sandy GRAVEL	Sample type	B



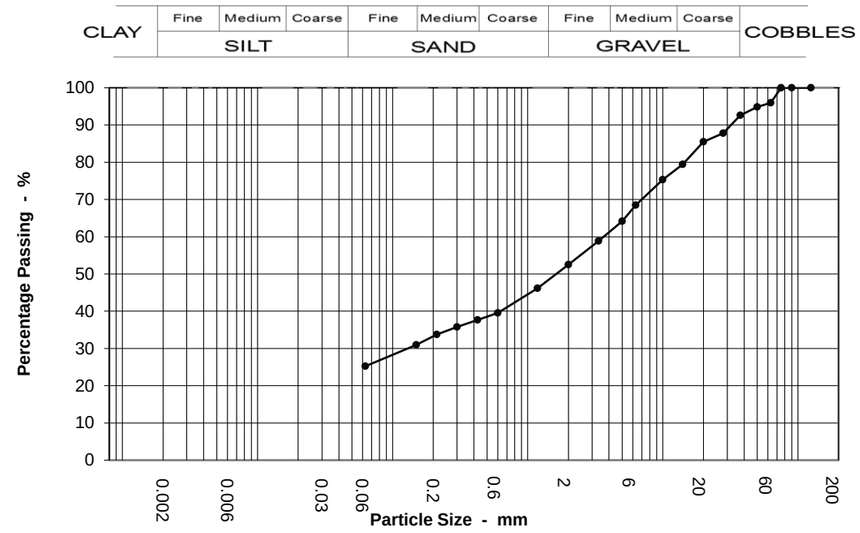
Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	99		
37.5	94		
28	90		
20	88		
14	75		
10	71		
6.3	66		
5	61		
3.35	53		
2	45		
1.18	38		
0.6	33		
0.425	32		
0.3	30		
0.212	29		
0.15	27		
0.063	22		

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

Sample Proportions	
Cobbles	0.0
Gravel	55.0
Sand	23.0
Silt & Clay	22.0

Grading Analysis	
D100	63.00
D60	4.86
D10	
Uniformity Coefficient	

	PARTICLE SIZE DISTRIBUTION BS 1377 : Part 2 : 1990 : Clause 9	Job Ref	P18170
		Borehole / Pit No	TP03
Location	Glounthane Houseing Phase 2	Sample No	2
		Depth	1.00 m
Soil Description	Slightly sandy gravelly SILT	Sample type	B



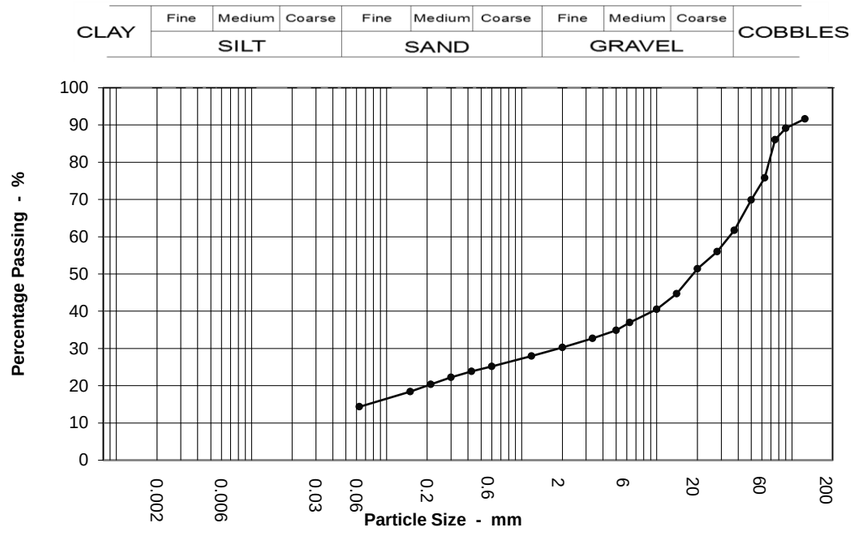
Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	96		
50	95		
37.5	93		
28	88		
20	85		
14	79		
10	75		
6.3	68		
5	64		
3.35	59		
2	53		
1.18	46		
0.6	40		
0.425	38		
0.3	36		
0.212	34		
0.15	31		
0.063	25		

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

Sample Proportions	
Cobbles	4.0
Gravel	43.0
Sand	27.0
Silt & Clay	25.0

Grading Analysis	
D100	75.00
D60	3.66
D10	
Uniformity Coefficient	

PARTICLE SIZE DISTRIBUTION BS 1377 : Part 2 : 1990 : Clause 9		Job Ref	P18170
		Borehole / Pit No	TP04
Location	Glounthane Houseing Phase 2	Sample No	2
		Depth	1.20 m
Soil Description	Silty sandy GRAVEL with high cobble content	Sample type	B



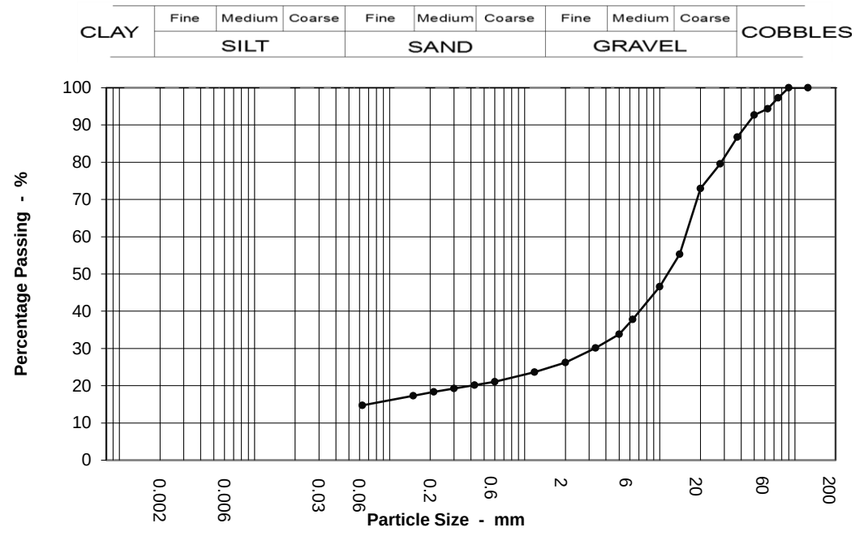
Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	92		
90	89		
75	86		
63	76		
50	70		
37.5	62		
28	56		
20	51		
14	45		
10	41		
6.3	37		
5	35		
3.35	33		
2	30		
1.18	28		
0.6	25		
0.425	24		
0.3	22		
0.212	20		
0.15	18		
0.063	14		

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

Sample Proportions	
Cobbles	24.0
Gravel	46.0
Sand	16.0
Silt & Clay	14.0

Grading Analysis	
D100	
D60	34.40
D10	
Uniformity Coefficient	

PARTICLE SIZE DISTRIBUTION BS 1377 : Part 2 : 1990 : Clause 9		Job Ref	P18170
		Borehole / Pit No	TP05
Location	Glounthane Houseing Phase 2	Sample No	2
		Depth	1.00 m
Soil Description	Silty sandy GRAVEL with low cobble content	Sample type	B



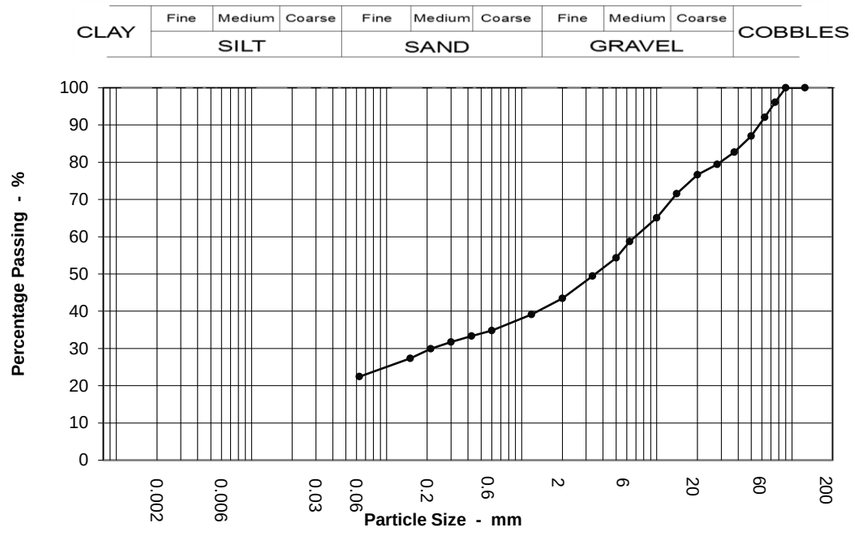
Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	97		
63	94		
50	93		
37.5	87		
28	80		
20	73		
14	55		
10	47		
6.3	38		
5	34		
3.35	30		
2	26		
1.18	24		
0.6	21		
0.425	20		
0.3	19		
0.212	18		
0.15	17		
0.063	15		

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

Sample Proportions	
Cobbles	6.0
Gravel	68.0
Sand	12.0
Silt & Clay	15.0

Grading Analysis	
D100	90.00
D60	15.40
D10	
Uniformity Coefficient	

	PARTICLE SIZE DISTRIBUTION BS 1377 : Part 2 : 1990 : Clause 9	Job Ref	P18170
		Borehole / Pit No	TP06
Location	Glounthane Houseing Phase 2	Sample No	2
		Depth	1.20 m
Soil Description	Very silty very sandy GRAVEL with low cobble content	Sample type	B



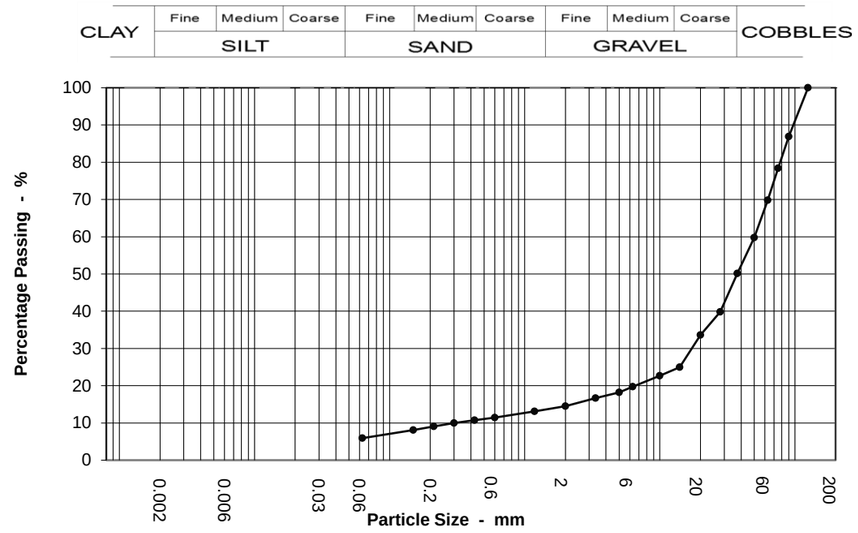
Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	96		
63	92		
50	87		
37.5	83		
28	79		
20	77		
14	72		
10	65		
6.3	59		
5	54		
3.35	49		
2	43		
1.18	39		
0.6	35		
0.425	33		
0.3	32		
0.212	30		
0.15	27		
0.063	22		

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

Sample Proportions	
Cobbles	8.0
Gravel	49.0
Sand	21.0
Silt & Clay	22.0

Grading Analysis	
D100	90.00
D60	6.91
D10	
Uniformity Coefficient	

	PARTICLE SIZE DISTRIBUTION BS 1377 : Part 2 : 1990 : Clause 9	Job Ref	P18170
		Borehole / Pit No	TP08
Location	Glounthane Houseing Phase 2	Sample No	2
		Depth	1.00 m
Soil Description	Silty sandy GRAVEL with high cobble content	Sample type	B



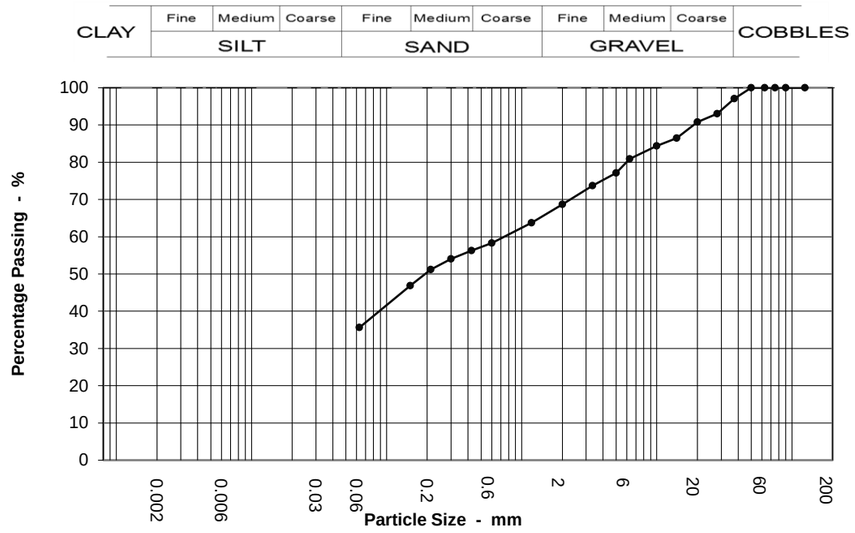
Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	87		
75	78		
63	70		
50	60		
37.5	50		
28	40		
20	34		
14	25		
10	23		
6.3	20		
5	18		
3.35	17		
2	15		
1.18	13		
0.6	11		
0.425	11		
0.3	10		
0.212	9		
0.15	8		
0.063	6		

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

Sample Proportions	
Cobbles	30.0
Gravel	55.0
Sand	9.0
Silt & Clay	6.0

Grading Analysis	
D100	125.00
D60	50.30
D10	0.31
Uniformity Coefficient	160.00

	PARTICLE SIZE DISTRIBUTION BS 1377 : Part 2 : 1990 : Clause 9	Job Ref	P18170
		Borehole / Pit No	TP11
Location	Glounthane Houseing Phase 2	Sample No	2
		Depth	1.00 m
Soil Description	Slightly sandy slightly gravelly SILT	Sample type	B



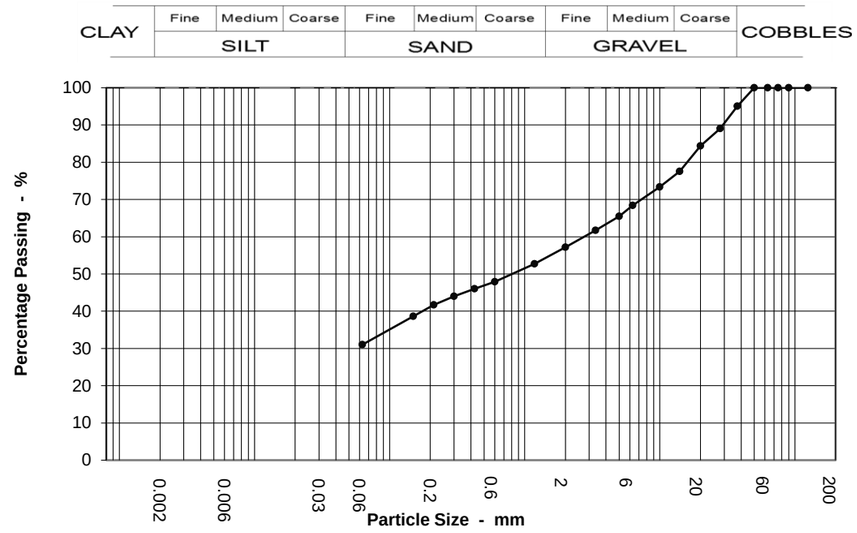
Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	97		
28	93		
20	91		
14	86		
10	84		
6.3	81		
5	77		
3.35	74		
2	69		
1.18	64		
0.6	58		
0.425	56		
0.3	54		
0.212	51		
0.15	47		
0.063	36		

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

Sample Proportions	
Cobbles	0.0
Gravel	31.0
Sand	33.0
Silt & Clay	36.0

Grading Analysis	
D100	50.00
D60	0.74
D10	
Uniformity Coefficient	

	PARTICLE SIZE DISTRIBUTION BS 1377 : Part 2 : 1990 : Clause 9	Job Ref	P18170
		Borehole / Pit No	TP13
Location	Glounthane Houseing Phase 2	Sample No	2
		Depth	1.00 m
Soil Description	Slightly sandy gravelly SILT	Sample type	B



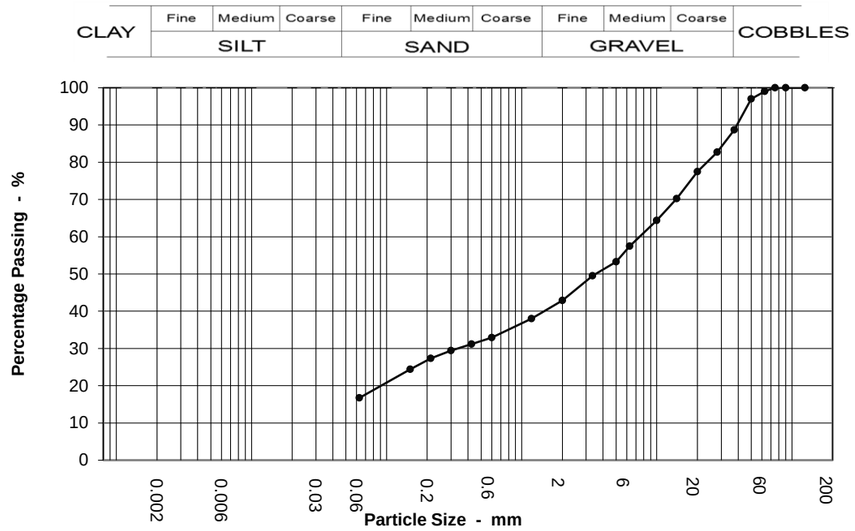
Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	95		
28	89		
20	84		
14	78		
10	73		
6.3	68		
5	66		
3.35	62		
2	57		
1.18	53		
0.6	48		
0.425	46		
0.3	44		
0.212	42		
0.15	39		
0.063	31		

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

Sample Proportions	
Cobbles	0.0
Gravel	43.0
Sand	26.0
Silt & Clay	31.0

Grading Analysis	
D100	50.00
D60	2.76
D10	
Uniformity Coefficient	

	PARTICLE SIZE DISTRIBUTION BS 1377 : Part 2 : 1990 : Clause 9	Job Ref	P18170
		Borehole / Pit No	TP15
Location	Glounthane Houseing Phase 2	Sample No	1
		Depth	0.50 m
Soil Description	Silty very sandy GRAVEL with low cobble content	Sample type	B



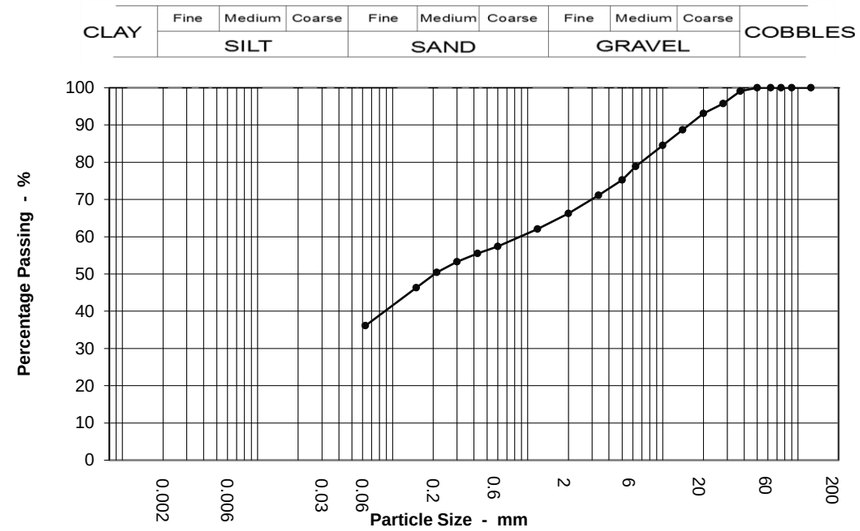
Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	99		
50	97		
37.5	89		
28	83		
20	77		
14	70		
10	64		
6.3	57		
5	53		
3.35	49		
2	43		
1.18	38		
0.6	33		
0.425	31		
0.3	29		
0.212	27		
0.15	24		
0.063	17		

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

Sample Proportions	
Cobbles	1.0
Gravel	56.0
Sand	26.0
Silt & Clay	17.0

Grading Analysis	
D100	75.00
D60	7.46
D10	
Uniformity Coefficient	

	PARTICLE SIZE DISTRIBUTION BS 1377 : Part 2 : 1990 : Clause 9	Job Ref	P18170
		Borehole / Pit No	TP15
Location	Glounthane Houseing Phase 2	Sample No	2
		Depth	1.20 m
Soil Description	Slightly sandy gravelly SILT	Sample type	B



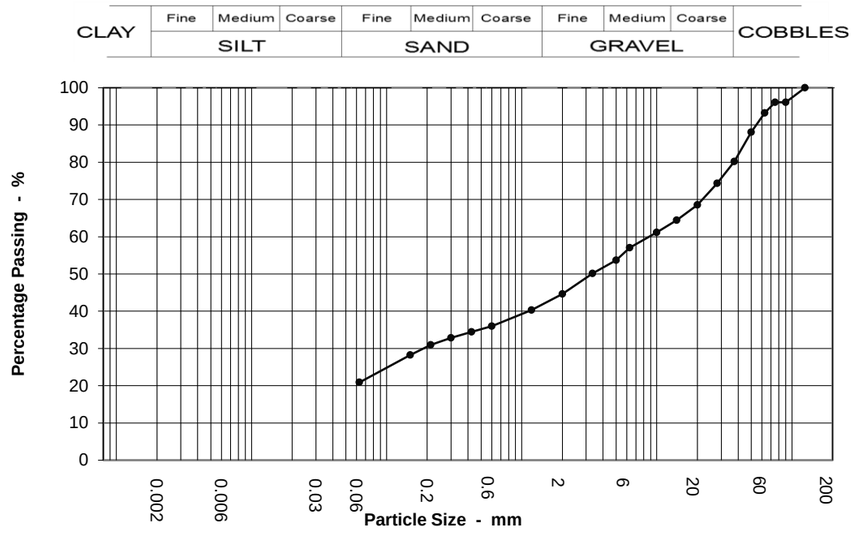
Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	99		
28	96		
20	93		
14	89		
10	84		
6.3	79		
5	75		
3.35	71		
2	66		
1.18	62		
0.6	57		
0.425	56		
0.3	53		
0.212	50		
0.15	46		
0.063	36		

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

Sample Proportions	
Cobbles	0.0
Gravel	34.0
Sand	30.0
Silt & Clay	36.0

Grading Analysis	
D100	50.00
D60	0.88
D10	
Uniformity Coefficient	

	PARTICLE SIZE DISTRIBUTION BS 1377 : Part 2 : 1990 : Clause 9	Job Ref	P18170
		Borehole / Pit No	TP17
Location	Glounthane Houseing Phase 2	Sample No	2
		Depth	1.00 m
Soil Description	Very silty very sandy GRAVEL with low cobble content	Sample type	B



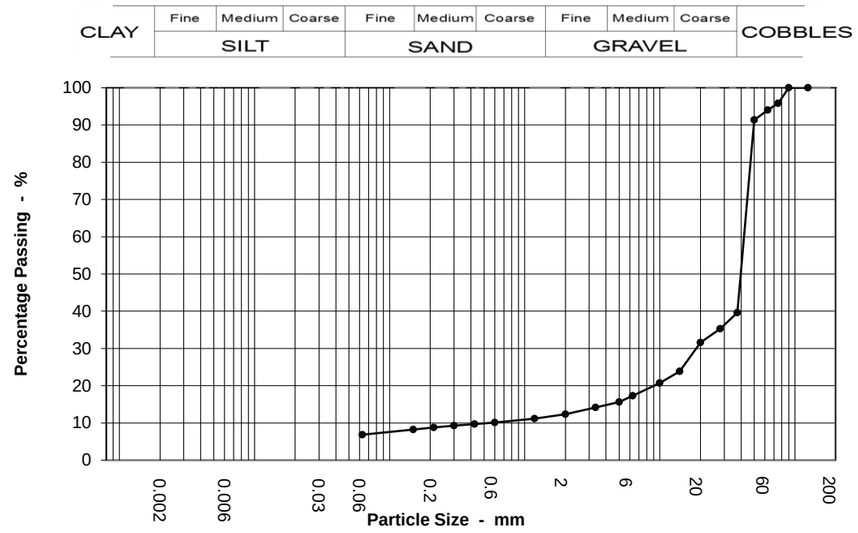
Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	96		
75	96		
63	93		
50	88		
37.5	80		
28	74		
20	69		
14	64		
10	61		
6.3	57		
5	54		
3.35	50		
2	45		
1.18	40		
0.6	36		
0.425	34		
0.3	33		
0.212	31		
0.15	28		
0.063	21		

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

Sample Proportions	
Cobbles	7.0
Gravel	49.0
Sand	24.0
Silt & Clay	21.0

Grading Analysis	
D100	125.00
D60	8.75
D10	
Uniformity Coefficient	

	PARTICLE SIZE DISTRIBUTION BS 1377 : Part 2 : 1990 : Clause 9	Job Ref	P18170
		Borehole / Pit No	TP21
Location	Glounthane Houseing Phase 2	Sample No	2
		Depth	1.00 m
Soil Description	Silty sandy GRAVEL with low cobble content	Sample type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	96		
63	94		
50	91		
37.5	40		
28	35		
20	32		
14	24		
10	21		
6.3	17		
5	16		
3.35	14		
2	12		
1.18	11		
0.6	10		
0.425	10		
0.3	9		
0.212	9		
0.15	8		
0.063	7		

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

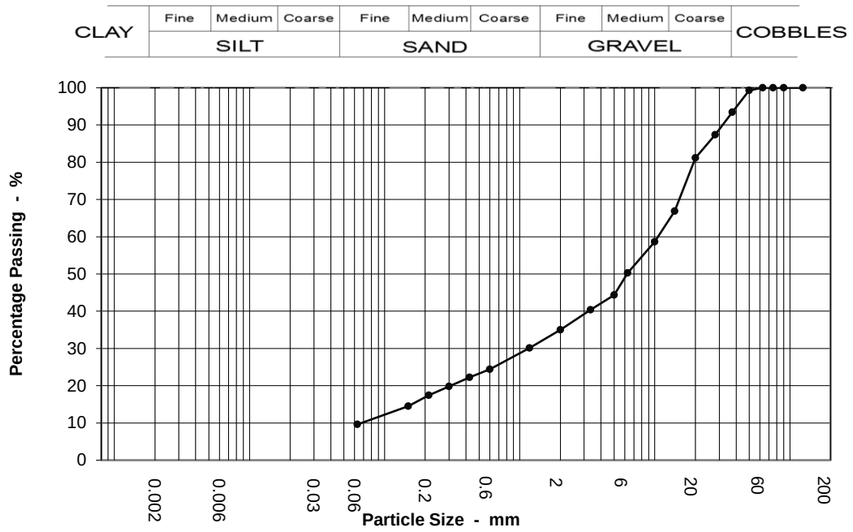
Sample Proportions	
Cobbles	6.0
Gravel	82.0
Sand	6.0
Silt & Clay	7.0

Grading Analysis	
D100	90.00
D60	42.00
D10	0.56
Uniformity Coefficient	75.00

PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

		Job Ref	**P18170**
		Borehole / Pit No	TP24
Location	**Glounthane Houseing Phase 2**	Sample No	2
Soil Description	Silty very sandy GRAVEL	Depth	1.00 m
		Sample type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	99		
37.5	93		
28	87		
20	81		
14	67		
10	59		
6.3	50		
5	44		
3.35	40		
2	35		
1.18	30		
0.6	24		
0.425	22		
0.3	20		
0.212	17		
0.15	14		
0.063	10		

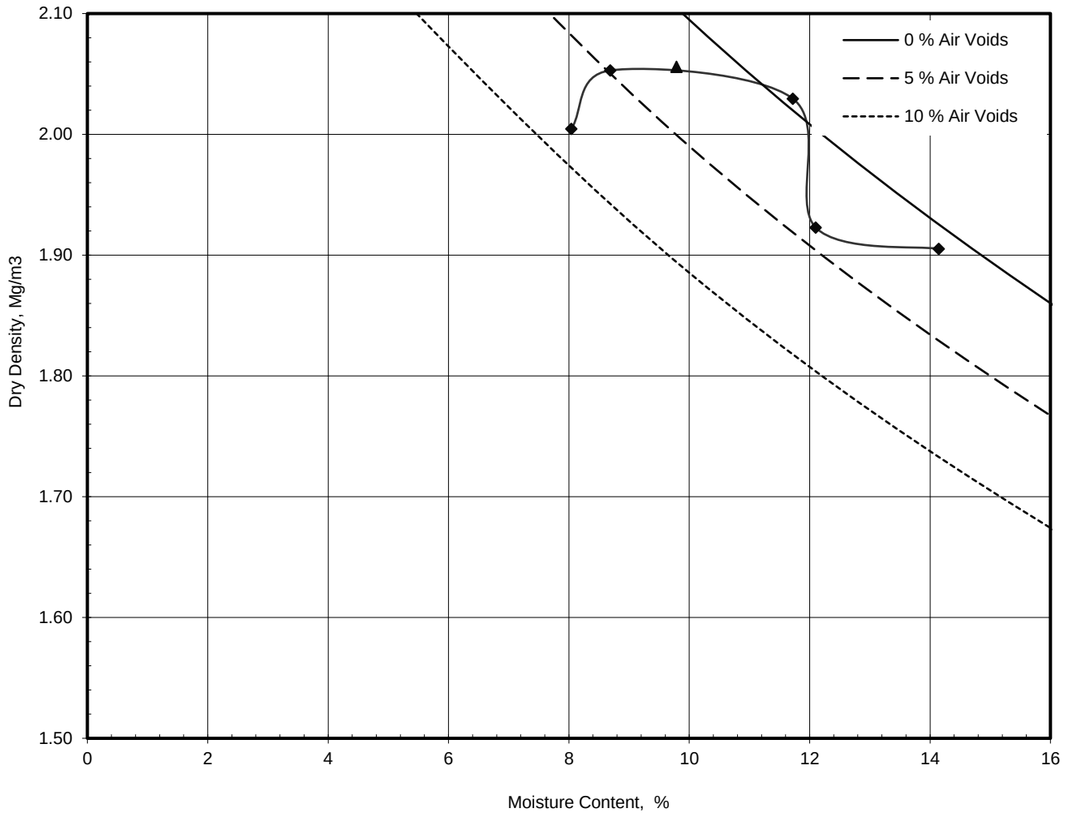
Test Method	
BS 1377 : Part 2 : 1990	
Sieving	Clause 9.3
Sedimentation	N/A

Sample Proportions	
Cobbles	0.0
Gravel	65.0
Sand	25.0
Silt & Clay	10.0

Grading Analysis	
D100	63.00
D60	10.60
D10	0.07
Uniformity Coefficient	160.00

Dry Density / Moisture Content Relationship
Light Compaction

		Job Ref	**P18170**
		Borehole / Pit No	BH01
Location	**Glounthane Houseing Phase 2**	Sample No	2
Soil Description	Clayey sandy GRAVEL with medium cobble content	Depth	1.00 m
		Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer	Keylab ID	PGL12018090568
		Compaction Test Reference/No.	



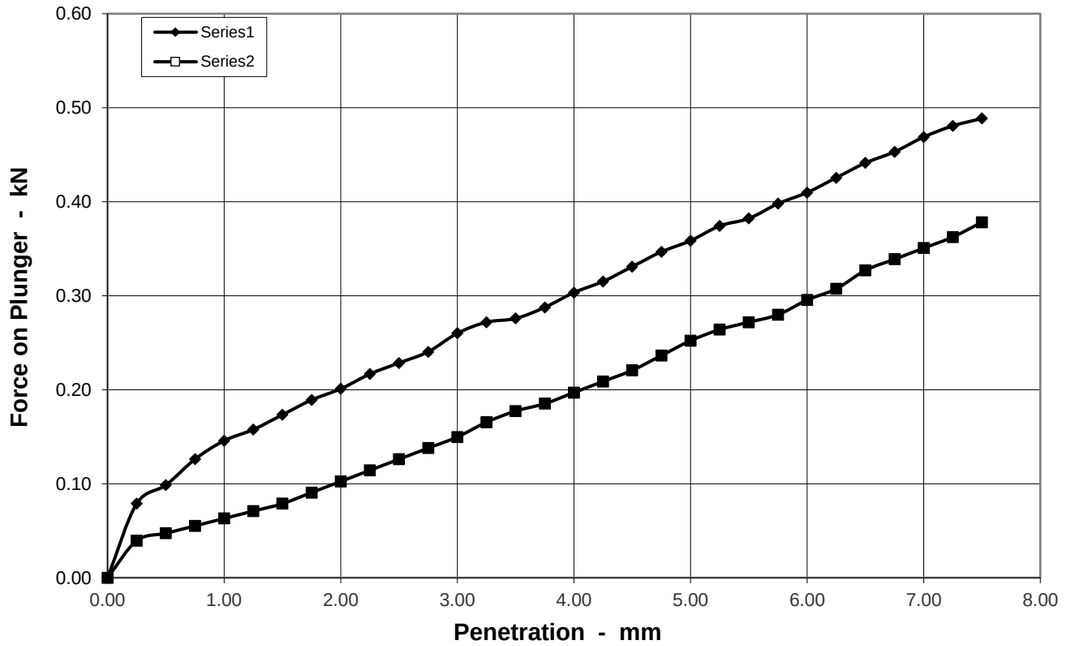
Preparation		Material used was natural
Mould Type		CBR
Samples Used		Single sample tested
Material Retained on 37.5 mm Sieve	%	26
Material Retained on 20.0 mm Sieve	%	40
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	**2.1**

Optimum Moisture Content	%	**9.8**
Natural Mositure Content	**%**	**12.10**

Operator	Checked	Approved	Remarks	Fig
		Cilla		Sheet 1 of 1

pgl priority geotechnical	**CALIFORNIA BEARING RATIO**	**Job Ref**	**P18170**
	BS 13377 : Part 4 : 1990 Clause 7.4	Borehole / Pit No	BH01
Site Name	**Glounthane Houseing Phase 2**	Sample No	1
		Depth	0 m
Soil Description	Slightly sandy gravelly CLAY with low cobble content		



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

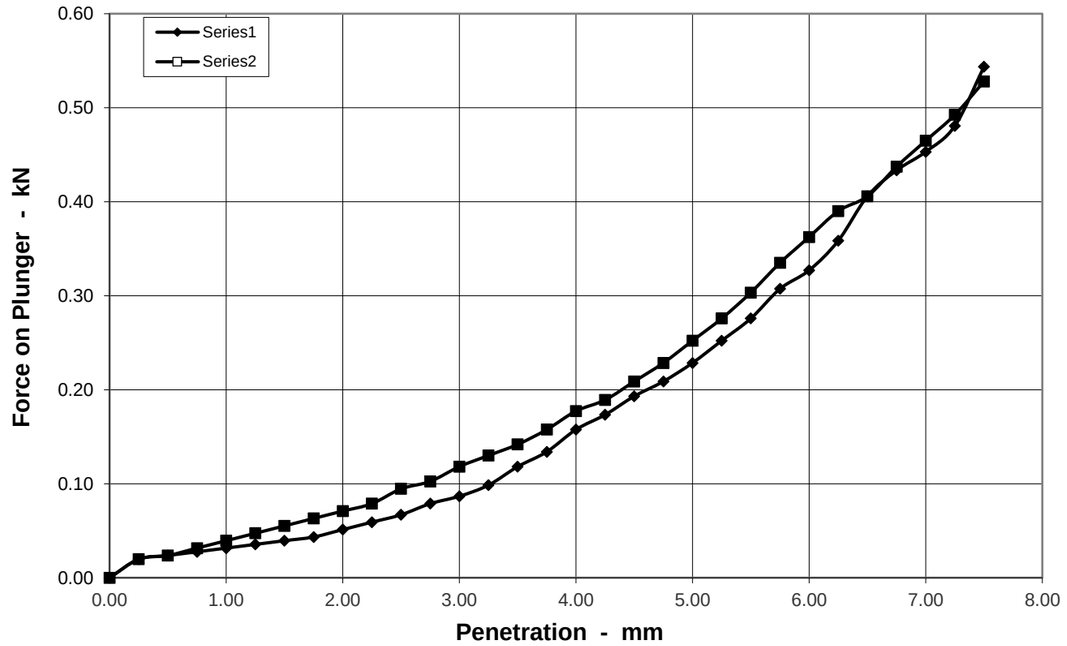
Sample Conditions		
Natural Moisture Content	%	18.0
Moisture Content - TOP	%	17.8
Moisture Content - BASE	%	18.4
Bulk Density	Mg/m³	2.14
Dry Density	Mg/m³	1.81

Test Conditions		
Sample Retained on 20 mm sieve	%	33.1
Seating Load - TOP	N	
Seating Load - BASE	N	
Surcharge	kg	8

Penetration mm	CBR Values %	
	TOP	BASE
2.5	1.7	1.0
5	1.8	1.3
Accepted CBR	**1.8**	**1.3**

			Remarks

pgl priority geotechnical	**CALIFORNIA BEARING RATIO**	**Job Ref**	**P18170**
	BS 13377 : Part 4 : 1990 Clause 7.4	Borehole / Pit No	BH01
Site Name	**Glounthane Houseing Phase 2**	Sample No	2
		Depth	1 m
Soil Description	Clayey sandy GRAVEL with medium cobble content		



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

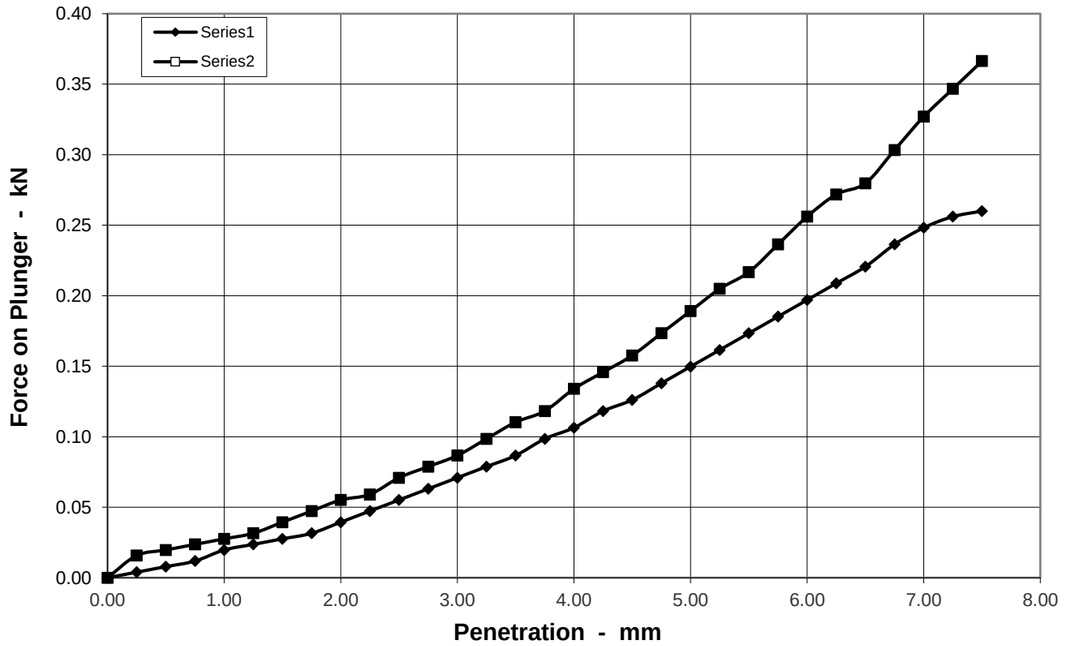
Sample Conditions		
Natural Moisture Content	%	12.0
Moisture Content - TOP	%	15.7
Moisture Content - BASE	%	13.8
Bulk Density	Mg/m³	2.16
Dry Density	Mg/m³	1.92

Test Conditions		
Sample Retained on 20 mm sieve	%	40.2
Seating Load - TOP	N	
Seating Load - BASE	N	
Surcharge	kg	8

Penetration mm	CBR Values %	
	TOP	BASE
2.5	0.5	0.7
5	1.1	1.3
Accepted CBR	**1.1**	**1.3**

			Remarks

pgl priority geotechnical	**CALIFORNIA BEARING RATIO**	**Job Ref**	**P18170**
	BS 13377 : Part 4 : 1990 Clause 7.4	Borehole / Pit No	BH01
Site Name	**Glounthane Houseing Phase 2**	Sample No	2
		Depth	1 m
Soil Description	Clayey sandy GRAVEL with medium cobble content		



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

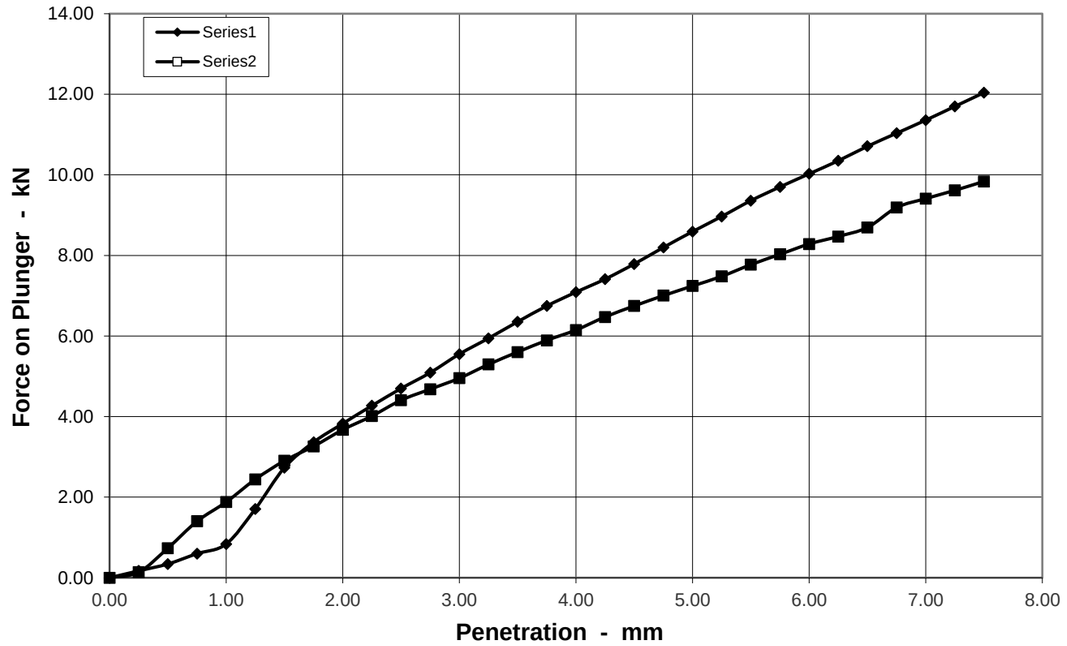
Sample Conditions		
Natural Moisture Content	%	12.0
Moisture Content - TOP	%	16.5
Moisture Content - BASE	%	14.5
Bulk Density	Mg/m³	2.17
Dry Density	Mg/m³	1.94

Test Conditions		
Sample Retained on 20 mm sieve	%	40.2
Seating Load - TOP	N	
Seating Load - BASE	N	
Surcharge	kg	8

Penetration mm	CBR Values %	
	TOP	BASE
2.5	0.4	0.5
5	0.7	0.9
Accepted CBR	**0.7**	**0.9**

			Remarks

pgl priority geotechnical	**CALIFORNIA BEARING RATIO**	**Job Ref**	**P18170**
	BS 13377 : Part 4 : 1990 Clause 7.4	Borehole / Pit No	BH01
Site Name	**Glounthane Houseing Phase 2**	Sample No	2
		Depth	1 m
Soil Description	Clayey sandy GRAVEL with medium cobble content		



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

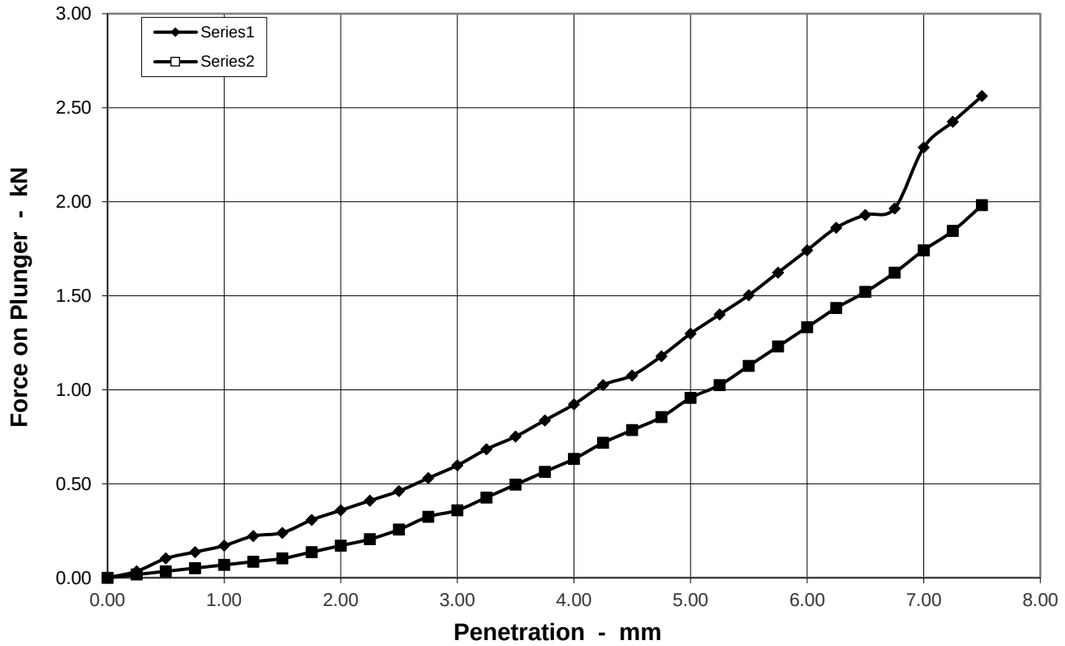
Sample Conditions		
Natural Moisture Content	%	12.0
Moisture Content - TOP	%	10.0
Moisture Content - BASE	%	9.1
Bulk Density	Mg/m³	2.17
Dry Density	Mg/m³	1.93

Test Conditions		
Sample Retained on 20 mm sieve	%	40.2
Seating Load - TOP	N	
Seating Load - BASE	N	
Surcharge	kg	8

Penetration mm	CBR Values %	
	TOP	BASE
2.5	35.6	33.4
5	43.0	36.2
Accepted CBR	**43.0**	**36.2**

			Remarks

pgl priority geotechnical	**CALIFORNIA BEARING RATIO** **BS 13377 : Part 4 : 1990 Clause 7.4**	**Job Ref**	**P18170**
		Borehole / Pit No	BH01
Site Name	**Glounthane Housing Phase 2**	Sample No	2
		Depth	1 m
Soil Description	Clayey sandy GRAVEL with medium cobble content		



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

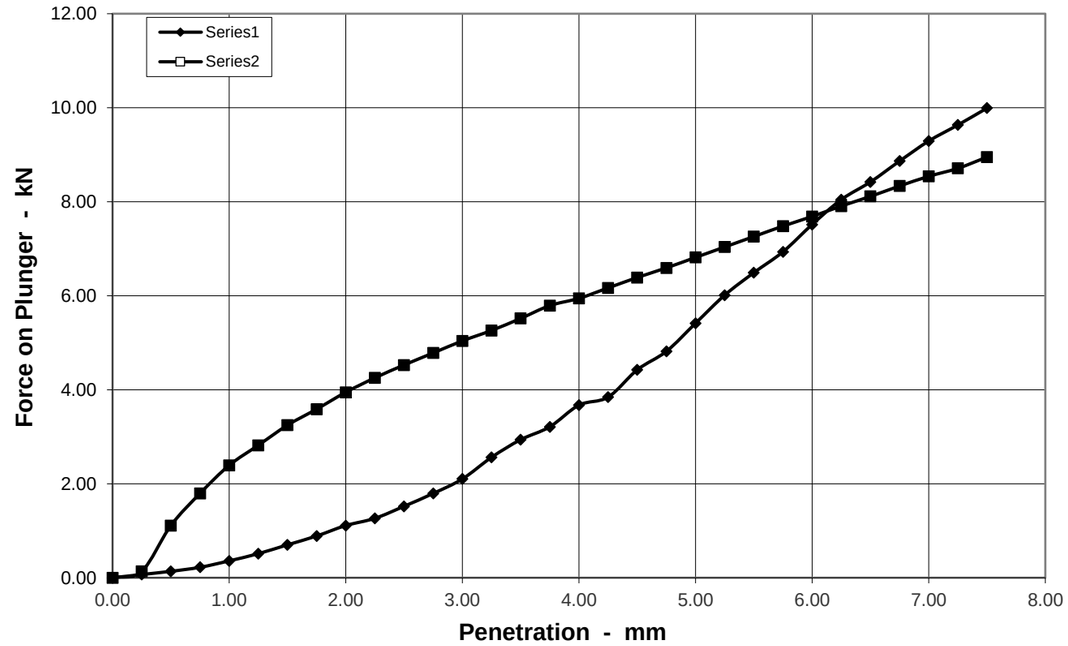
Sample Conditions		
Natural Moisture Content	%	12.0
Moisture Content - TOP	%	12.0
Moisture Content - BASE	%	11.3
Bulk Density	Mg/m³	2.27
Dry Density	Mg/m³	2.02

Test Conditions		
Sample Retained on 20 mm sieve	%	40.2
Seating Load - TOP	N	
Seating Load - BASE	N	
Surcharge	kg	

Penetration mm	CBR Values %	
	TOP	BASE
2.5	3.5	1.9
5	6.5	4.8
Accepted CBR	**6.5**	**4.8**

			Remarks

pgl priority geotechnical	**CALIFORNIA BEARING RATIO** **BS 13377 : Part 4 : 1990 Clause 7.4**	**Job Ref**	**P18170**
		Borehole / Pit No	BH01
Site Name	**Glounthane Housing Phase 2**	Sample No	2
		Depth	1 m
Soil Description	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	%	12.0
Moisture Content - TOP	%	8.6
Moisture Content - BASE	%	9.2
Bulk Density	Mg/m³	2.23
Dry Density	Mg/m³	1.99

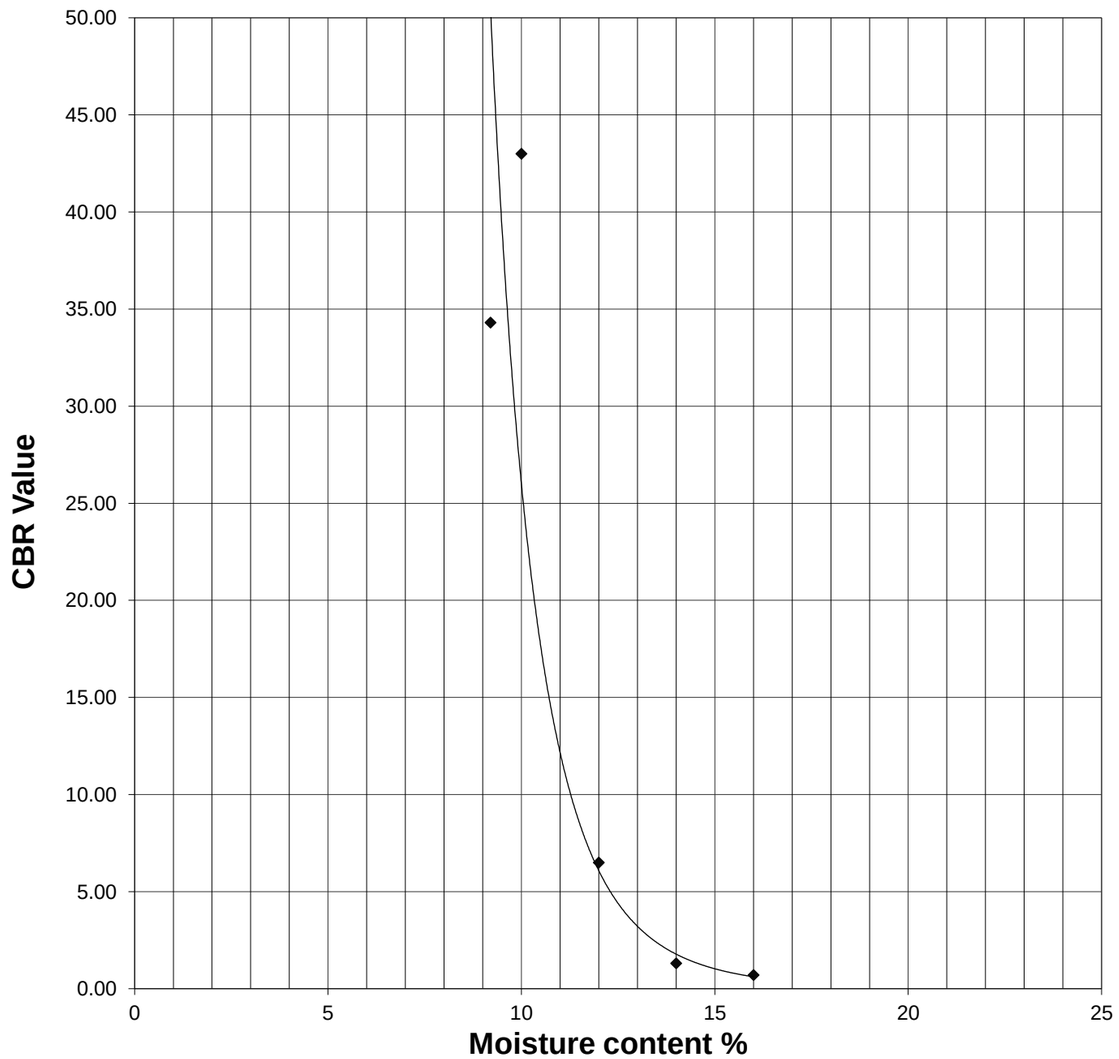
Test Conditions		
Sample Retained on 20 mm sieve	%	40.2
Seating Load - TOP	N	
Seating Load - BASE	N	
Surcharge	kg	8

Penetration mm	CBR Values %	
	TOP	BASE
2.5	11.5	34.3
5	27.1	34.1
Accepted CBR	**27.1**	**34.3**

			Remarks

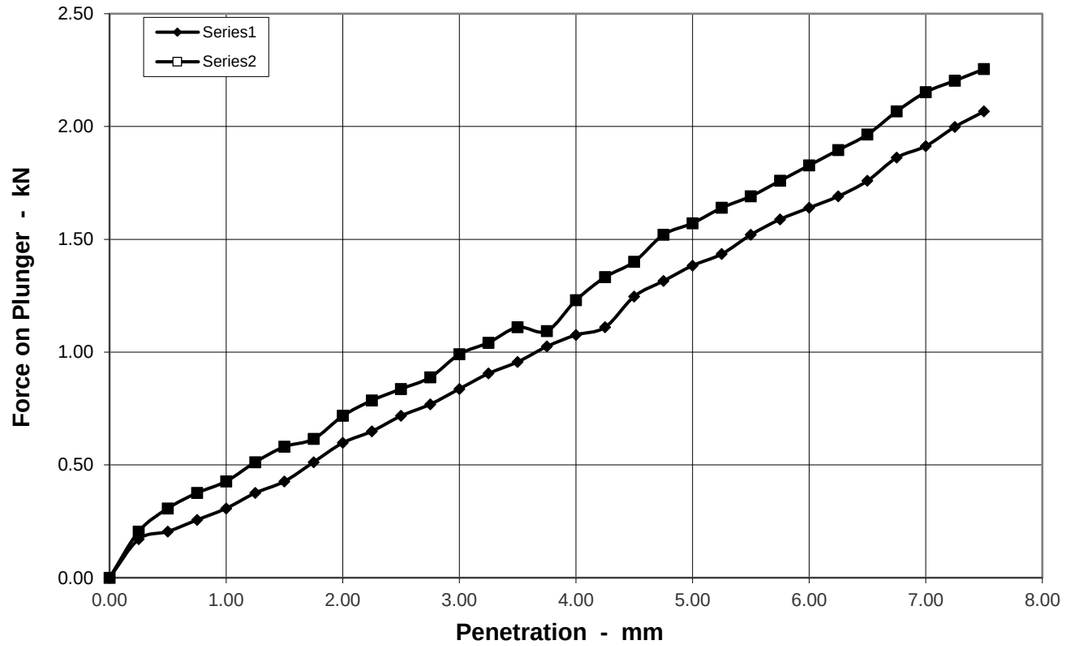
pgl priority geotechnical	**CALIFORNIA BEARING RATIO RELATIONSHIP** **BS 1377 : Part 4 : 1990 Clause 5**	**Job Ref**	**P18170**
		Borehole / Pit No	BH01
Location	Glounthane Housing Phase 2	Sample No	2
Soil Description	Clayey sandy GRAVEL with medium cobble content	Sample Type	B
		Depth	1.00 m

CBR/ Moisture Content Relationship



Operator	Checked	Approved	

pgl priority geotechnical	**CALIFORNIA BEARING RATIO** **BS 13377 : Part 4 : 1990 Clause 7.4**	**Job Ref**	**P18170**
		Borehole / Pit No	BH02
Site Name	**Glounthane Houseing Phase 2**	Sample No	1
		Depth	0 m
Soil Description	Slightly sandy gravelly SILT with low cobble content		



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

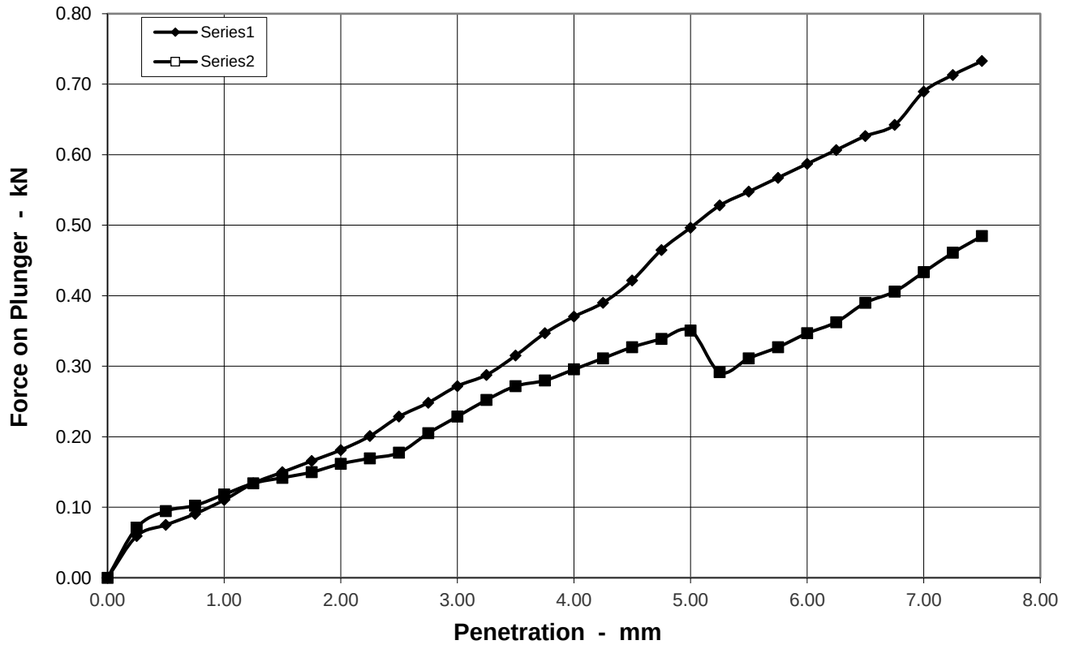
Sample Conditions		
Natural Moisture Content	%	18.0
Moisture Content - TOP	%	17.9
Moisture Content - BASE	%	16.8
Bulk Density	Mg/m³	2.09
Dry Density	Mg/m³	1.77

Test Conditions		
Sample Retained on 20 mm sieve	%	10.9
Seating Load - TOP	N	
Seating Load - BASE	N	
Surcharge	kg	8

Penetration mm	CBR Values %	
	TOP	BASE
2.5	5.4	6.3
5	6.9	7.9
Accepted CBR	**6.9**	**7.9**

			Remarks

pgl priority geotechnical	**CALIFORNIA BEARING RATIO** BS 13377 : Part 4 : 1990 Clause 7.4	**Job Ref**	**P18170**
		Borehole / Pit No	BH07
Site Name	**Glounthane Houseing Phase 2**	Sample No	1
		Depth	0 m
Soil Description	Slightly gravelly sandy CLAY with low cobble content		



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

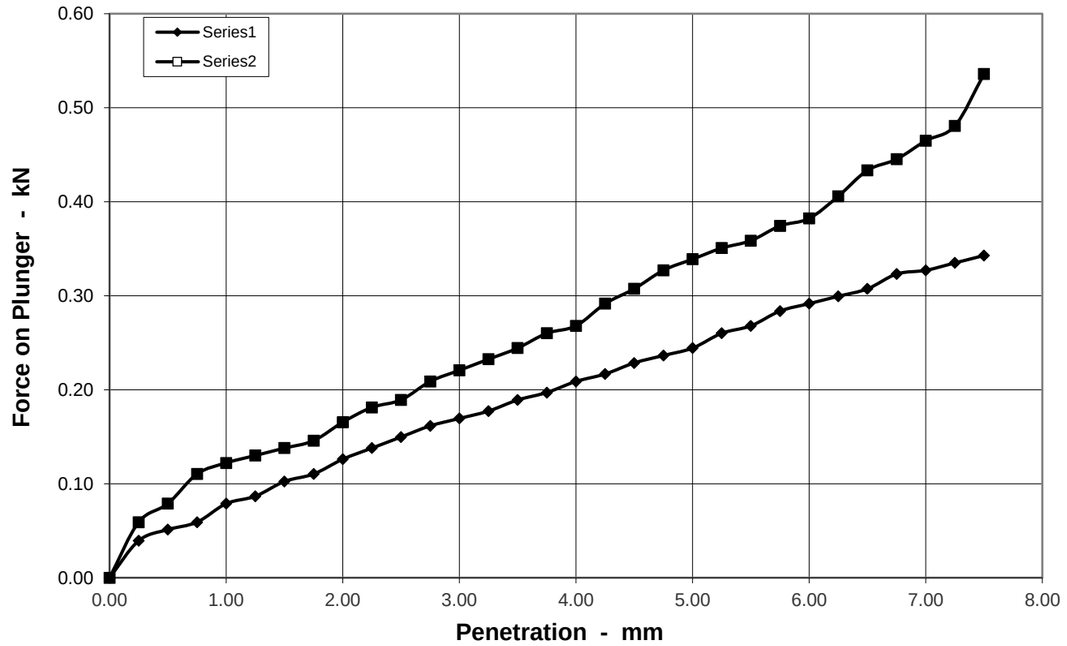
Sample Conditions		
Natural Moisture Content	%	14.0
Moisture Content - TOP	%	14.3
Moisture Content - BASE	%	14.0
Bulk Density	Mg/m³	2.20
Dry Density	Mg/m³	1.93

Test Conditions		
Sample Retained on 20 mm sieve	%	40.1
Seating Load - TOP	N	
Seating Load - BASE	N	
Surcharge	kg	8

Penetration mm	CBR Values %	
	TOP	BASE
2.5	1.7	1.3
5	2.5	1.8
Accepted CBR	**2.5**	**1.8**

			Remarks

pgl priority geotechnical	**CALIFORNIA BEARING RATIO** BS 13377 : Part 4 : 1990 Clause 7.4	**Job Ref**	**P18170**
		Borehole / Pit No	BH10
Site Name	**Glounthane Houseing Phase 2**	Sample No	1
		Depth	0 m
Soil Description	Slightly sandy gravelly CLAY with high cobble content		



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

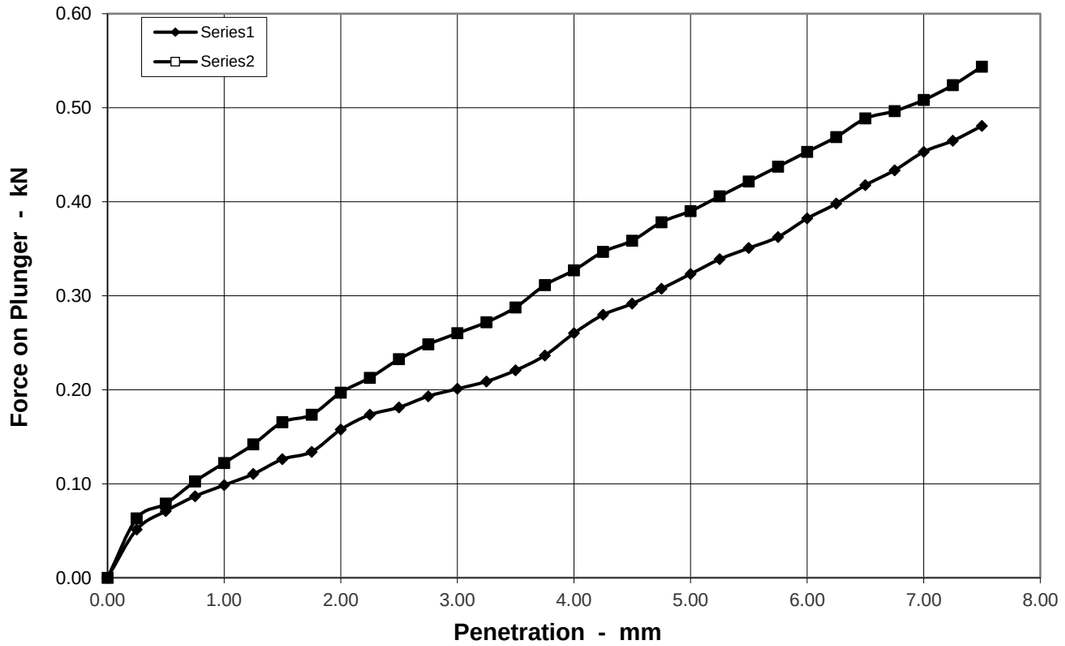
Sample Conditions		
Natural Moisture Content	%	19.0
Moisture Content - TOP	%	18.8
Moisture Content - BASE	%	15.8
Bulk Density	Mg/m³	2.12
Dry Density	Mg/m³	1.79

Test Conditions		
Sample Retained on 20 mm sieve	%	43.5
Seating Load - TOP	N	
Seating Load - BASE	N	
Surcharge	kg	8

Penetration mm	CBR Values %	
	TOP	BASE
2.5	1.1	1.4
5	1.2	1.7
Accepted CBR	**1.2**	**1.7**

			Remarks

pgl priority geotechnical	**CALIFORNIA BEARING RATIO** **BS 13377 : Part 4 : 1990 Clause 7.4**	**Job Ref**	**P18170**
		Borehole / Pit No	BH13
Site Name	**Glounthane Houseing Phase 2**	Sample No	1
		Depth	0 m
Soil Description	Slightly sandy gravelly SILT with low cobble content		



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

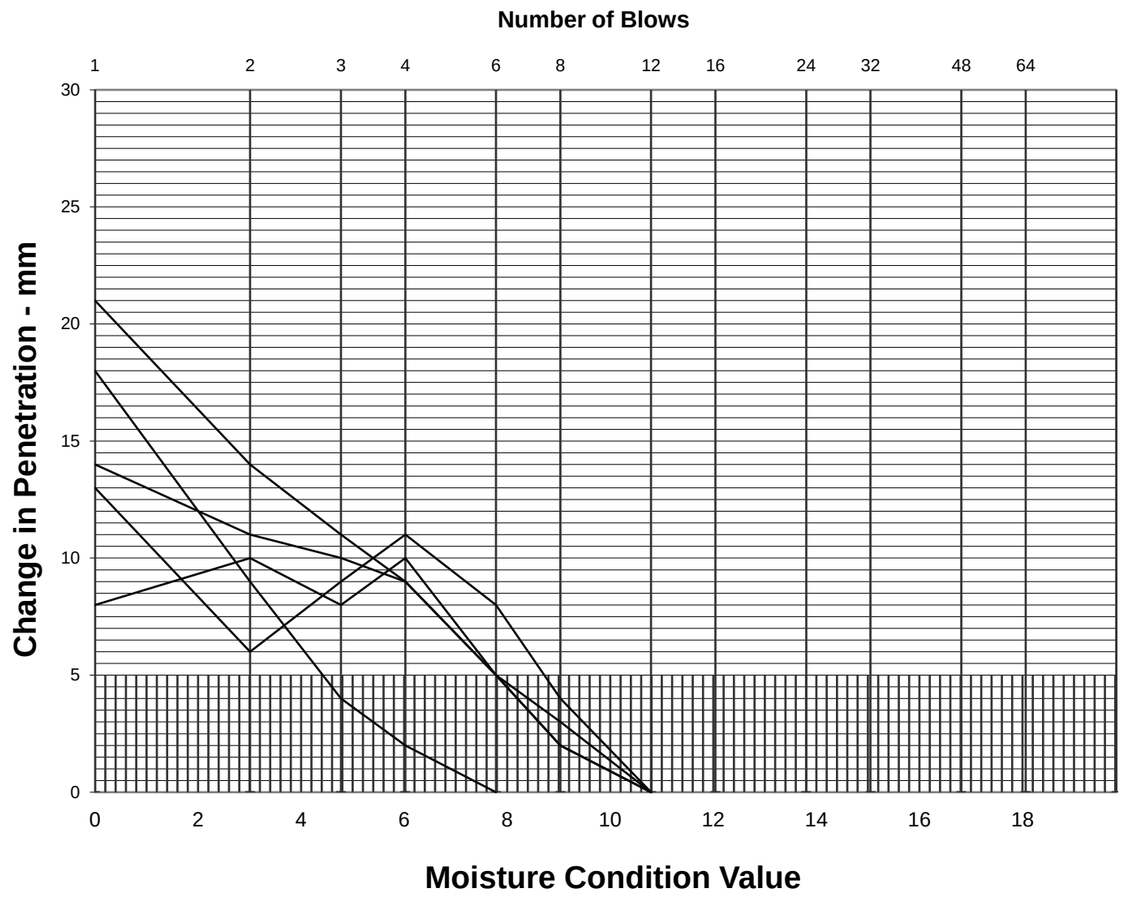
Sample Conditions		
Natural Moisture Content	%	21.0
Moisture Content - TOP	%	21.3
Moisture Content - BASE	%	17.6
Bulk Density	Mg/m³	2.01
Dry Density	Mg/m³	1.66

Test Conditions		
Sample Retained on 20 mm sieve	%	11.2
Seating Load - TOP	N	
Seating Load - BASE	N	
Surcharge	kg	8

Penetration mm	CBR Values %	
	TOP	BASE
2.5	1.4	1.8
5	1.6	2.0
Accepted CBR	**1.6**	**2.0**

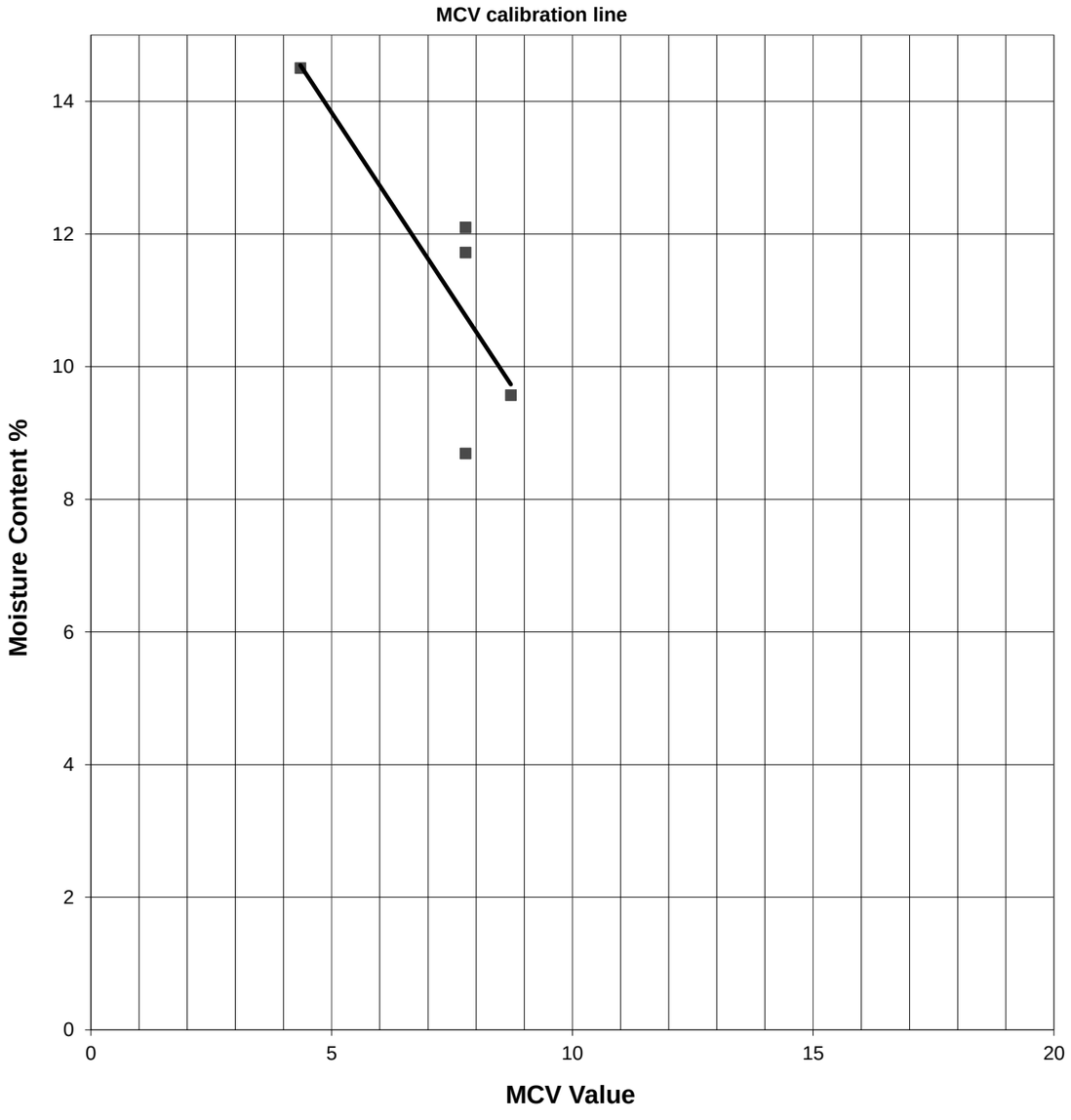
			Remarks	

pgl priority geotechnical	**Moisture Condition Value** **BS 1377 : Part 4 : 1990 Clause 5**	**Job Ref**	**P18170**
		Borehole / Pit No	BH01
Location	Glounthane Houseing Phase 2	Sample No	2
Soil Description	Clayey sandy GRAVEL with medium cobble content	Sample Type	B
		Depth	1.00 m



Specimen No		1	2	3	4	5	6
Moisture Condition Value		7.8	4.3	8.7	7.8	7.8	
Moisture Content	%	12.10	14.15	9.57	11.72	8.69	
Bulk density after compaction	Mg/m³	2.25	2.17	1.99	2.19	2.01	
Dry density after compaction	Mg/m³	2.01	1.90	1.82	1.96	1.85	
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	%	40.2					

pgl priority geotechnical	MCV Relationship Graph BS 1377 : Part 4 : 1990 Clause 5	Job Ref	P18170
		Borehole / Pit No	BH01
Location	Glounthane Housing Phase 2	Sample No	2
Soil Description	Clayey sandy GRAVEL with medium cobble content	Sample Type	B
		Depth	1.00 m



Operator	Checked	Approved	Remarks Single sample / Separate batches tested

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CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.: 18-33998-1

Initial Date of Issue: 07-Nov-2018

Client Priority Geotechnical Ltd

Client Address: Unit 12
Owenacurra Business Park
Midleton
County Cork
Ireland

Contact(s): Colette Kelly

Project P18170 Glounthane

Quotation No.:

Date Received: 01-Nov-2018

Order No.: 11072

Date Instructed: 01-Nov-2018

No. of Samples: 1

Turnaround (Wkdays): 5

Results Due: 07-Nov-2018

Date Approved: 07-Nov-2018

Approved By:

Details: Robert Monk, Technical Manager

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Results - Soil

Project: P18170 Glounthane

Client: Priority Geotechnical Ltd			**Chemtest Job No.:**		18-33998
Quotation No.:			**Chemtest Sample ID.:**		717220
			Sample Location:		TP15
			Sample Type:		SOIL
			Top Depth (m):		0.50
			Date Sampled:		30-Oct-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Moisture	N	2030	%	0.020	8.4
pH	U	2010		N/A	7.2
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	< 0.010
Sulphate (Acid Soluble)	U	2430	%	0.010	0.016

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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.

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Report Information

Key

U	UKAS accredited
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I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
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>	"greater than"

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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.com

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Final Report

Report No.:	18-33207-1		
Initial Date of Issue:	01-Nov-2018		
Client	Priority Geotechnical Ltd		
Client Address:	Unit 12 Owenacurra Business Park Midleton County Cork Ireland		
Contact(s):	Colette Kelly		
Project	P18170 Glounthane		
Quotation No.:		**Date Received:**	26-Oct-2018
Order No.:	11072	**Date Instructed:**	26-Oct-2018
No. of Samples:	8		
Turnaround (Wkdays):	5	**Results Due:**	01-Nov-2018
Date Approved:	01-Nov-2018		
Approved By:			
Details:	Glynn Harvey, Laboratory Manager		

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Results - Soil

Project: P18170 Glounthane

Client: Priority Geotechnical Ltd												
				Chemtest Job No.:	18-33207	18-33207	18-33207	18-33207	18-33207	18-33207	18-33207	18-33207
Quotation No.:				Chemtest Sample ID.:	713509	713510	713511	713512	713513	713514	713515	713516
				Sample Location:	BH06	TP04	TP18	TP17	BH14	TP06	BH09	TP15
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	2.00	1.20	1.20	1.00	0.00	1.20	1.00	1.20
				Date Sampled:	24-Oct-2018	24-Oct-2018	24-Oct-2018	24-Oct-2018	24-Oct-2018	24-Oct-2018	24-Oct-2018	24-Oct-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Moisture	N	2030	%	0.020	9.6	14	7.7	9.5	11	11	9.1	4.1
pH	U	2010		N/A	7.5	7.5	7.7	7.3		7.6	7.5	7.4
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010		< 0.010	< 0.010	< 0.010
Sulphate (Acid Soluble)	U	2430	%	0.010	< 0.010	0.019	< 0.010	0.012		0.023	< 0.010	< 0.010
Organic Matter	U	2625	%	0.40	< 0.40				1.4		< 0.40	

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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.

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Final Report

Report No.:	18-29220-1		
Initial Date of Issue:	01-Oct-2018		
Client	Priority Geotechnical Ltd		
Client Address:	Unit 12 Owenacurra Business Park Midleton County Cork Ireland		
Contact(s):	Colette Kelly		
Project	P18170 - Glounthane		
Quotation No.:		**Date Received:**	25-Sep-2018
Order No.:	11072	**Date Instructed:**	25-Sep-2018
No. of Samples:	2		
Turnaround (Wkdays):	5	**Results Due:**	01-Oct-2018
Date Approved:	01-Oct-2018		
Approved By:			
Details:	Martin Dyer, Laboratory Manager		

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Results - Soil

Project: P18170 - Glounthane

Client: Priority Geotechnical Ltd					**Chemtest Job No.:**	18-29220	18-29220
Quotation No.:					**Chemtest Sample ID.:**	694528	694529
					Sample Location:	BH01	BH14
					Sample Type:	SOIL	SOIL
					Top Depth (m):	1.0	1.0
					Date Sampled:	24-Sep-2018	24-Sep-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Moisture	N	2030	%	0.020		10	10
pH	U	2010		N/A		7.7	7.9
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010		1.2	1.1
Sulphate (Acid Soluble)	U	2430	%	0.010		0.30	0.029
Organic Matter	U	2625	%	0.40		0.43	< 0.40

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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.

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Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

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Final Report

Report No.:	18-26116-1		
Initial Date of Issue:	06-Sep-2018		
Client	Priority Geotechnical Ltd		
Client Address:	Unit 12 Owenacurra Business Park Midleton County Cork Ireland		
Contact(s):	Colette Kelly		
Project	P18170 Glounthane Phase 2		
Quotation No.:		**Date Received:**	30-Aug-2018
Order No.:	10991	**Date Instructed:**	30-Aug-2018
No. of Samples:	7		
Turnaround (Wkdays):	5	**Results Due:**	05-Sep-2018
Date Approved:	06-Sep-2018		
Approved By:			
Details:	Glynn Harvey, Laboratory Manager		

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Results - Leachate

Project: P18170 Glounthane Phase 2

Client: Priority Geotechnical Ltd					**Chemtest Job No.:**	18-26116	18-26116	18-26116	18-26116	18-26116	18-26116	18-26116
Quotation No.:					**Chemtest Sample ID.:**	679669	679670	679671	679672	679673	679674	679675
					Sample Location:	TP01	TP07	TP11	TP13	TP17	TP19	TP23
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	1.0	1.0	1.0	1.0	1.0	1.0	1.0
					Date Sampled:	23-Aug-2018	23-Aug-2018	23-Aug-2018	23-Aug-2018	23-Aug-2018	23-Aug-2018	23-Aug-2018
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Ammonium	U	1220	mg/l	0.050		0.17	0.14	0.13	0.15	0.11	0.075	0.094
Ammonium	N	1220	mg/kg	0.10		1.7	1.4	1.3	1.5	1.1	0.75	0.94

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Results - Soil

Project: P18170 Glounthane Phase 2

Client: Priority Geotechnical Ltd					**Chemtest Job No.:**	18-26116	18-26116	18-26116	18-26116	18-26116	18-26116	18-26116
Quotation No.:					**Chemtest Sample ID.:**	679669	679670	679671	679672	679673	679674	679675
					Sample Location:	TP01	TP07	TP11	TP13	TP17	TP19	TP23
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	1.0	1.0	1.0	1.0	1.0	1.0	1.0
					Date Sampled:	23-Aug-2018	23-Aug-2018	23-Aug-2018	23-Aug-2018	23-Aug-2018	23-Aug-2018	23-Aug-2018
					Asbestos Lab:	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
ACM Type	U	2192		N/A		-	-	-	-	-	-	-
Asbestos Identification	U	2192	%	0.001		No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020		7.3	6.0	7.8	5.7	7.9	9.9	7.0
pH	U	2010		N/A		7.5	7.6	7.2	7.3	7.3	7.1	7.5
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40		< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40
Sulphur (Elemental)	U	2180	mg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cyanide (Total)	U	2300	mg/kg	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50		0.78	9.1	1.0	0.65	0.64	< 0.50	0.56
Sulphate (Total)	U	2430	%	0.010		< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	0.017	< 0.010
Arsenic	U	2450	mg/kg	1.0		5.3	4.1	7.1	7.0	7.2	11	5.4
Barium	U	2450	mg/kg	10		28	32	20	16	15	20	21
Cadmium	U	2450	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chromium	U	2450	mg/kg	1.0		21	25	17	19	19	26	15
Molybdenum	U	2450	mg/kg	2.0		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Antimony	N	2450	mg/kg	2.0		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Copper	U	2450	mg/kg	0.50		9.7	10	20	19	16	31	16
Mercury	U	2450	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Nickel	U	2450	mg/kg	0.50		33	24	25	30	27	39	27
Lead	U	2450	mg/kg	0.50		7.7	8.9	13	11	13	12	17
Selenium	U	2450	mg/kg	0.20		0.36	0.35	0.21	0.20	< 0.20	0.59	< 0.20
Zinc	U	2450	mg/kg	0.50		47	40	44	51	46	78	48
Chromium (Trivalent)	N	2490	mg/kg	1.0		21	25	17	19	19	26	15
Chromium (Hexavalent)	N	2490	mg/kg	0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Total Organic Carbon	U	2625	%	0.20		< 0.20	0.31	< 0.20	< 0.20	0.20	0.25	< 0.20
Mineral Oil	N	2670	mg/kg	10		< 10	< 10	< 10	< 10	< 10	< 10	< 10
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Chemtest
The right chemistry to deliver results

Results - Soil

Project: P18170 Glounthane Phase 2

Client: Priority Geotechnical Ltd				**Chemtest Job No.:**	18-26116	18-26116	18-26116	18-26116	18-26116	18-26116	18-26116
Quotation No.:				**Chemtest Sample ID.:**	679669	679670	679671	679672	679673	679674	679675
				Sample Location:	TP01	TP07	TP11	TP13	TP17	TP19	TP23
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	1.0	1.0	1.0	1.0	1.0	1.0	1.0
				Date Sampled:	23-Aug-2018	23-Aug-2018	23-Aug-2018	23-Aug-2018	23-Aug-2018	23-Aug-2018	23-Aug-2018
				Asbestos Lab:	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**							
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Naphthalene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Coronene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 17 PAH's	N	2800	mg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
PCB 28	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 52	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 90+101	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 118	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 153	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 138	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 180	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Total PCBs (7 Congeners)	N	2815	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Phenols	U	2920	mg/kg	0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30

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Results - Single Stage WAC

Project: P18170 Glounthane Phase 2

Chemtest Job No:	18-26116				**Landflll Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	679669						
Sample Ref:							
Sample ID:							
Sample Location:	TP01				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Top Depth(m):	1.0						
Bottom Depth(m):							
Sampling Date:	23-Aug-2018						
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	< 0.20	3	5	6
Loss On Ignition	2610	U	%	2.4	--	--	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	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	U		7.5	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.0040	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.0017	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	< 0.0010	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.010	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.097	< 1.0	10	150	500
Sulphate	1220	U	2.1	21	1000	20000	50000
Total Dissolved Solids	1020	N	22	220	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	5.7	57	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	7.3

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 - Single Stage WAC

Project: P18170 Glounthane Phase 2

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	18-26116						
Chemtest Sample ID:	679670						
Sample Ref:							
Sample ID:							
Sample Location:	TP07						
Top Depth(m):	1.0						
Bottom Depth(m):							
Sampling Date:	23-Aug-2018				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	0.31	3	5	6
Loss On Ignition	2610	U	%	2.1	--	--	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	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	U		7.6	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.010	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.0017	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	< 0.0010	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.010	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.11	1.1	10	150	500
Sulphate	1220	U	2.0	20	1000	20000	50000
Total Dissolved Solids	1020	N	18	180	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	4.6	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	6.0

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.

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Results - Single Stage WAC

Project: P18170 Glounthane Phase 2

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	18-26116						
Chemtest Sample ID:	679671						
Sample Ref:							
Sample ID:							
Sample Location:	TP11						
Top Depth(m):	1.0						
Bottom Depth(m):							
Sampling Date:	23-Aug-2018				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
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	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	U		7.2	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	< 0.0020	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.0014	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	< 0.0010	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.010	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	2.7	27	800	15000	25000
Fluoride	1220	U	0.096	< 1.0	10	150	500
Sulphate	1220	U	3.2	32	1000	20000	50000
Total Dissolved Solids	1020	N	20	200	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	4.2	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	7.8

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 - Single Stage WAC

Project: P18170 Glounthane Phase 2

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	18-26116						
Chemtest Sample ID:	679672						
Sample Ref:							
Sample ID:							
Sample Location:	TP13						
Top Depth(m):	1.0						
Bottom Depth(m):							
Sampling Date:	23-Aug-2018						
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
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	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	U		7.3	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.012	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.0018	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	< 0.0010	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.010	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.096	< 1.0	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	23	230	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	4.7	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	5.7

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.

Chemtest
The right chemistry to deliver results

Results - Single Stage WAC

Project: P18170 Glounthane Phase 2

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	18-26116						
Chemtest Sample ID:	679673						
Sample Ref:							
Sample ID:							
Sample Location:	TP17						
Top Depth(m):	1.0						
Bottom Depth(m):							
Sampling Date:	23-Aug-2018						
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%	0.20	3	5	6
Loss On Ignition	2610	U	%	2.0	--	--	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	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	U		7.3	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	< 0.0020	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	< 0.0010	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	< 0.0010	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.010	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	3.0	30	10	150	500
Sulphate	1220	U	2.0	20	1000	20000	50000
Total Dissolved Solids	1020	N	23	230	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	5.2	52	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	7.9

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 - Single Stage WAC

Project: P18170 Glounthane Phase 2

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	18-26116						
Chemtest Sample ID:	679674						
Sample Ref:							
Sample ID:							
Sample Location:	TP19						
Top Depth(m):	1.0						
Bottom Depth(m):							
Sampling Date:	23-Aug-2018						
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%	0.25	3	5	6
Loss On Ignition	2610	U	%	3.0	--	--	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	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	U		7.1	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.0020	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	< 0.0010	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	< 0.0010	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.010	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.086	< 1.0	10	150	500
Sulphate	1220	U	2.3	23	1000	20000	50000
Total Dissolved Solids	1020	N	14	140	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	3.9	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	9.9

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.

Chemtest
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Results - Single Stage WAC

Project: P18170 Glounthane Phase 2

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	18-26116						
Chemtest Sample ID:	679675						
Sample Ref:							
Sample ID:							
Sample Location:	TP23						
Top Depth(m):	1.0						
Bottom Depth(m):							
Sampling Date:	23-Aug-2018						
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%	< 0.20	3	5	6
Loss On Ignition	2610	U	%	1.8	--	--	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	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	U		7.5	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.0040	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.0041	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	< 0.0010	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.010	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.093	< 1.0	10	150	500
Sulphate	1220	U	9.8	98	1000	20000	50000
Total Dissolved Solids	1020	N	27	270	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	5.5	55	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	7.0

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.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2180	Sulphur (Elemental) in Soils by HPLC	Sulphur	Dichloromethane extraction / HPLC with UV detection
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2325	Sulphide in Soils	Sulphide	Steam distillation with sulphuric acid / analysis by 'Aquakem 600' Discrete Analyser, using N,N–dimethyl-p-phenylenediamine.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
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
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection

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Test Methods

SOP	Title	Parameters included	Method summary
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.
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	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-MS
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

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.com